

Series F

- 543 - Improved drive trip mechanism
- 545 - Method of setting .050 clearance (carriage)
- 546 - Safety shutter (end of carriage)  
Double end screw post FB323
- 549 - Heavier spring for total limit bail  
Straight tubular pins - identification  
Improved total index link
- 551 - Complementary black totals
- 552 - Parts to assure positive release of register detent pawls
- 555 - Erratic skip & return (new sensing levers)  
Early disengagement of accumulators when totaling  
Loss of subtract relay carries  
breakage of register detent step plate
- 559 - Wrong accumulation during carr. controlled subtraction
- 563 - Threaded repair post for supporting the rear form chute  
Improved leather coupler to quiet motor  
cam to prevent resetting of 9 to 9 carries
- 566 - Oil leakage around case screws  
new drive trip control cam
- 571 - Re: breakage of screw BR (Pl 28) - C19  
test for tab and return clutch reset
- 579 - Improved total stop bail  
Improved adjustment of carry rack reset shaft  
Overthrow limit for reg 4 (series F200)  
Adj overthrow limit
- 580 - New ribbon reverse bails  
New drive bracket  
failure to clear totals
- 587 - Thrust limit for tab and return clutches  
New worm shaft to prevent overthrow of register  
Copper plated shim on drive - discard
- 588 - Redesigned meshing hooks  
New Clutch dogs  
Positive reset of motor bar 1 in O.D. position (Bank use)
- ~~591 - wear of carr drive gears~~
- 597 - Wear of sensing camshaft  
Use #7 pin for plus net index

H/

Failure to reset carry pawls	556
loss of cf totals - scattered printing of cf totals	
(Wear of stud in total lever	556
burning of goo points (D.C.)	576
Wear of plastic form clutches	584
To replace side frame bearing	584
To replace hammer block tail	594

Limit Plate - Factor to Print	544
<del>Breaking</del> New Hammer Driver Springs	544
<del>Breaking of Return lever</del>	
Breaking of Carr. Ret. lever or date key lever	544
New reg. return limit	548
New booster spring to prevent keyboard lockup, extra machine cycles + wear of roll Y-Plate 12 - Power	548
Wear of Carr. Ret gears	548 1003
New Old style type springs	548
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Failure of carr. ret.	548 553 1003
Print wrong symbol - minus bal - M 800	548 553
Breaking of screws AU - Carr.	553 1006
Failure of solenoid or failure of carr or reg ret	553 548
Improved reg. ret. clutch	553
Failure of cr. bal. lock - M 800 runaway machine	553 548
Erratic form spacing	562 1001
return clutch chatter	562 1003
repeat of mach. operation	567
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New keyboard lock	582 1001
Improved restoring spring machine	585
continuous operation M 200	585
Failure of repeat mech.	590 1001 1003
Incorrect form spacing	595
Printing in non-print position	595
	574

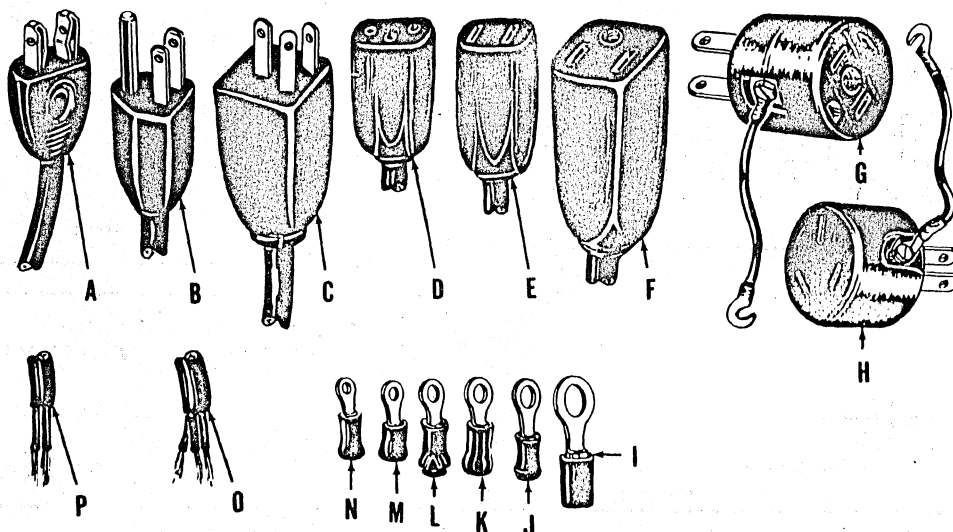
# CORDS - ADAPTORS - CONNECTORS

17-1  
A

Cords furnished for permanent attachment to a machine terminal block should be modified locally, using applicable terminal connectors I through N. The terminal connectors may be crimped to the wires with pliers or a hammer.

When using adaptor G or H, be sure the ground lead is firmly attached to a grounded contact.

The following cords and accessories are available:

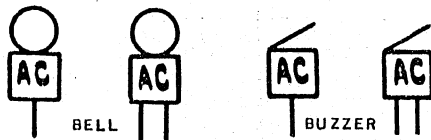


1X78-3	Two wire detachable.	Contains A and D.
1X78-6	Three wire detachable.	Contains C and D.
1-78 No. 3	Three wire detachable.	Contains B and D.
1Z-3697 1/2C	Two wire non-detachable.	Contains A and P.
11Z-81997 3/4B	Three wire non-detachable.	Contains C and O.
1Z-81997 3/4C	Three wire non-detachable.	Contains B and O.
1-3697 7/8	Two wire 6' extension.	Contains A and E.
1-78 No. 11	Three wire 6' extension.	Contains B and F.
G 4394 7/8A	Adaptor for B	
H 4394 7/8	Adaptor for C	
I 24A No. 4	Terminal connector	.390" dia. hole.
J 24A No. 3	Terminal connector	.228" dia. hole.
K 24A No. 6	Terminal connector	.171" dia. hole.
L 24A No. 10	Terminal connector	.145" dia. hole.
M 24A No. 7	Terminal connector	.119" dia. hole.
N 24A No. 14	Terminal connector	.093" dia. hole.

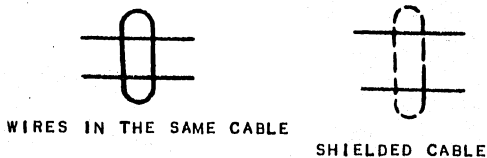
## ELECTRICAL ABBREVIATIONS

The use of electrical symbols in schematic and wiring diagrams eliminates the need to provide detailed drawings of the electrical components dealt with or represented. Due to the rapid developments in electronics, symbols frequently are changed and do vary between industries. Many of the symbols presently being used by Burroughs are illustrated on the following pages.

### ALARMS, (AL)



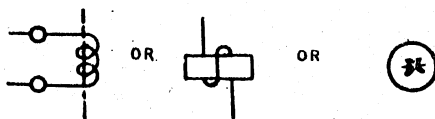
### CABLE, (CB)



### CAPACITOR, (C)



### COIL -- Operating

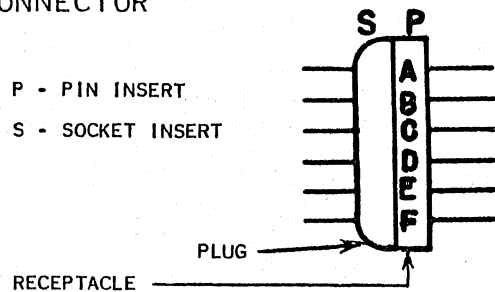


### COLOR ABBREVIATIONS

BLACK.....BK	BLUE.....BU
BROWN.....BN	VIOLET.....VI
RED.....RD	GRAY.....GY
ORANGE.....OR	WHITE.....WH
YELLOW.....YL	TAN.....TN
GREEN.....GN	PINK.....PK

### CONNECTOR

P - PIN INSERT  
S - SOCKET INSERT



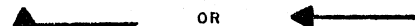
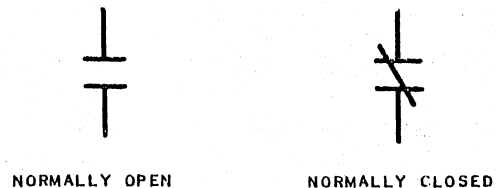
### CONNECTING DEVICE

(coupling or plug type contact)  
--see "Terminal"

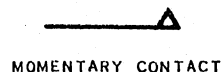


### CONTACTS, (CO) -- see "Switches"

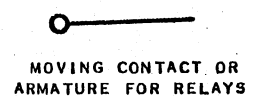
TYPICAL CONTACTS FOR  
RELAYS, CONTACTORS, ETC.



ADJUSTABLE OR SLIDING CONTACT



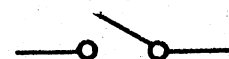
MOMENTARY CONTACT



MOVING CONTACT OR  
ARMATURE FOR RELAYS



MOVING CONTACT



LEVER SWITCH CONTACT

# Burroughs

## MECANOGRAM

No. 597

July 6, 1956

### SERIES F MACHINES

1-WEAR OF THE SENSING CAMSHAFT B, (Plate 5B Symbol List) by the spacing sleeve H with the resulting loss of throw of the forward sensing levers, has been corrected by discontinuing the hardening of the sleeve.

All sleeves on sensing cam shafts in stock shipped from factory prior to May 10, 1956, should be replaced with sleeves of later manufacture. It is recommended that the hardened sleeve be replaced with a soft sleeve in machines between serial numbers F39479P and F49500P before wear develops.

A repair cam 1FS75, with the hub extended to form the sleeve, and collar FX1-2, to replace collar I will be available to the Field approximately August 10, making it unnecessary to replace the cam shaft after wear has developed.

The following installation procedure should be followed:

1. Remove the sensing unit from the machine. See subject 8, section IV, Service Mechanical Manual.
2. Remove coupler M (Plate 5B, Symbol List) and lock nut N.
3. Unhook spring A and remove the pin to permit removal of the detent cam and collar I.
4. Remove sleeve

Note: Removal of the sleeve from a worn shaft may be facilitated by inserting an .008" feeler gauge between blank G and the sleeve, while centering the shaft, to lift the sleeve on to the unworn end of the shaft. Still holding the feeler gauge in place, turn the unit over and the sleeve will drop out.

5. Remove the pin from the 1FS75 repair cam and discard the stub shaft.
6. Place the FX1-2 collar over the sleeve end of the repair part and place it on the cam shaft.
7. Align the pin hole through the hub and shaft and ream with a Kit 277 No. 3 reamer for the 82501 pin.
8. If the machine is equipped with a concentric screw L, a 405516 eccentric screw should be installed, since misalignment, due to interchanging pinned assemblies on the shaft, may occur.
9. Rehook spring A and adjust eccentric screw L for approximately 3° rotation before pick up of sensing levers in total, sub-total, subtract and net proof lanes.
10. Install coupler M and lock nut N.
11. Replace sensing unit.
12. With the main cam shaft rotated to the rear against the overthrow limit, lock nut N should position coupler M to remove all back lash from the coupling shaft and gears consistent with free engagement of the gears as lever AF (Plate 9) is moved back and forth.

(Over)

### Parts Required For Field Installation

Quantity	Symbol	Description
1	1FS75	Repair Cam and Sleeve
1	FX1-2	Space Collar
1	405516	Eccentric Screw
1	X10-215	Soft sleeve only

*2-NUMBER 7 CONTROL PINS SHOULD NOW BE USED FOR PLUS NET INDEX* in Lane 16 when constructing Series F control Units.

The shorter pin length is necessary because of a change in outline of the sensing cam (now FS9-10) and several other dimensional changes in parts for the features "Lane 3 Control From Sign of Crossfooter A" and "Net Proof Dual", starting with Serial No. F44000P approximately.

Suitable notations should be made on Plate 47 of the Instruction Book, Subjects 8 and 10 in Section III D of the Series F Mechanical Manual and on the Series F Information Guide, Form S2092.

SERVICE DISTRIBUTION DEPARTMENT  
PLYMOUTH DIVISION

# Burroughs

## MECANOGRAM

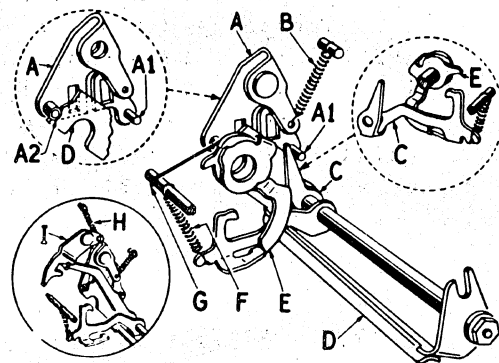
No. 596

July 1, 1956

### SERIES J MACHINES

**1-CARRY FAILURE IN THE FIRST COLUMN**  
will be prevented by installing improved parts B, C, D, F, and G as illustrated.

Spring B is stronger to provide a more positive detenting action of bail D. Adding rack stop C is redesigned by removal of part of its upper extension. Carry bail D is reinforced to prevent weaving and loss of driving action between the last and first columns. Spring F is lighter to permit easier tripping of the adding rack stop C. Spring G is assembled on the intermediate rack stop E in the first column to assure positive indexing of a tripped carry.



Removal of the upper end of the extension of rack stop C requires the removal of latch I and spring H.

After installing the improved parts, test detent A for having slight play when roll A2 is in either pocket of bail D. Too much play reduces the lift of rack stop C needed to trip a carry. Insufficient play may result in complementary totals. There should be .005" to .015" lift of rack stop C over intermediate stop E as roll A2 passes over the high point between the pockets of bail D.

To adjust, reduce play by closing the slot in detent A with pliers. Increase play by opening the slot in detent A with a screw driver.

Parts required are available as follows:

B	2883 3/4	Spring for detent A
C	JT11-3	Adding rack stop
D	1JT25	Automatic one bail
F	404809	Spring for adding rack stop
G	JT48-1	Torsion spring for intermediate rack stop E

This cancels Item 1, Mecanogram 561.

**2-PARTIAL PRINTING AND ADDING OF INDEXED AMOUNT** may be caused by dislodging of spring K (Plate 4, Symbol Book) from the groove of pulley L (Plate 8), thereby preventing full movement of the intermediate keyboard.

The pulley now has a deeper groove and may be installed in field machines as follows:

- A. File the riveted end of the shoulder stud holding the pulley to the bracket, flush with the bracket. The stud may then be easily removed from the bracket by wedging a screw driver bit between the pulley and the bracket.

(Over)

B. Install improved pulley JB24 using shoulder screw 83515 1/2 and nut 45 1/4.

Parts are available.

3-MOTOR FAILURE may be caused by the spring of brush E (Plate 14, Symbol Book) lodging on the brass insert of brush holder F.

The channel for the brush spring has been enlarged .014" to provide freer passage of the brush and spring. Order as 1JM7-1.

Parts are available.

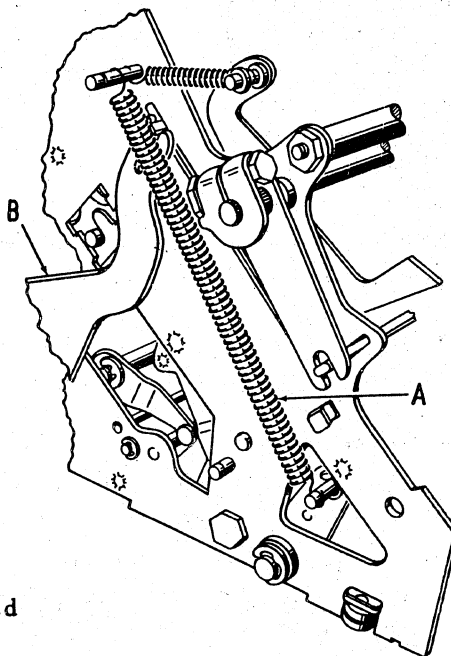
4-BREAKING OF TYPE BARS IN COLUMNS 1, 2, 5 AND 6 AND MACHINE LOCKUPS may be caused by vibration of the front ends of the bars as they are being restored, resulting in contact with the rearward extensions of bails Y and Z. (Plate 6, Symbol Book).

When evidence of such contact exists, the bails should be aligned centrally between their adjacent type bars, and the rearward edges of the bail extensions should be chamfered 45° on each side at the point of contact. This should be done on the next attention.

5-WRONG PRINTING caused by a broken restoring spring in the left end of the cipher block mechanism will be prevented by installing longer and more flexible spring A (J X 3), as illustrated. The offset eyes of the spring should be hooked inward to provide clearance between the spring and the type bar restoring arm B.

Spring X80-54 is still used in the right end of the cipher block mechanism in machines with ten or more columns. No spring is required at the right end of the cipher block mechanism in machines of less than ten columns when the improved spring A is installed.

Parts are available.



SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 595

July 1, 1956

### SERIES M MACHINES.

**1-FAILURE OF THE REPEAT OF ITEMS MECHANISM TO FUNCTION PROPERLY IN SERIES M800 MACHINES** may be caused by breakage of the forward projection of latch release arm C.

Latch release arm A replaces release arm C - in Series M800 machines of current construction beginning with machine Serial No. M9568D.

Installation of release arm A in Class 78 and M800 machines prior to Serial No. M9568D also requires the use of new link B. Parts are available.

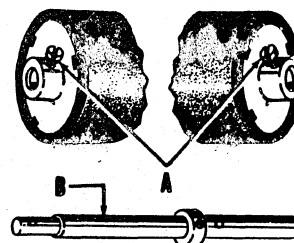
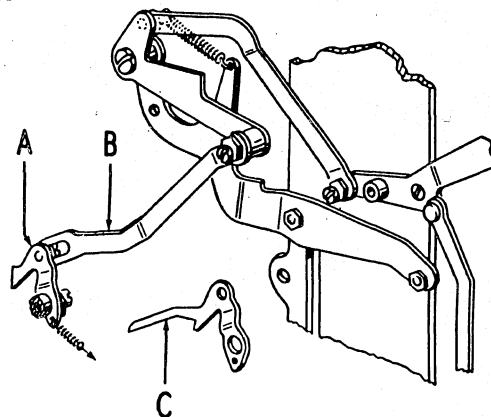
#### Parts Required:

A	118 Fte. 141 No. 3
B	123A Fte. 141 No. 2

Latch release arm
Link

**2-INCORRECT FORM SPACING** caused by loosening of screw A (illustrated) may be eliminated by installing straight tubular rolled pin X36-7 (Mecanogram No. 549, Item 2) to secure the platen firmly to platen shaft B.

Installation requires drilling of the platen hub and platen shaft at right angle to screw A. Use drill Kit 260 No. 42 (.0935).



SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

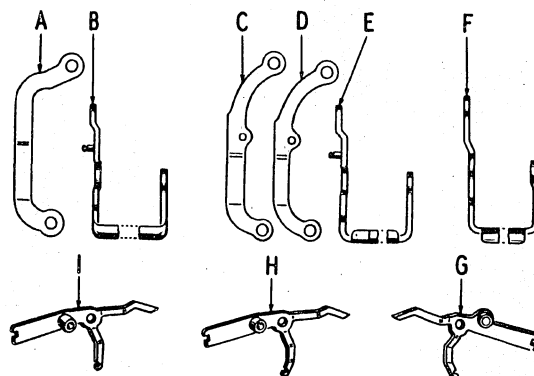
No. 594

July 1, 1956

### SERIES H MACHINES

1-REPLACEMENT OF A HAMMER BLOCK BAIL P OR R, OR CONTROL ARM V OR W (PLATE 6, PRINTING SYMBOL LIST) will be facilitated by using one of the following blank hardened bails or bail control arms and grinding it to the desired outline:

F	10718DZ No. 2 Style 13-17	Outer bail
E	1-10718DZ No. 3 Style 13-17	Inner bail, for machines containing link C or D.
B	1-10718EZ No. 3 Style 13-17	Inner bail, for machines containing link A.
I	1-10712 3/4 CZ No. 1	Control arm for single bail construction.
H	11-10712 3/4 BZ No. 2	Control arm for outer bail.
G	11-10712 3/4 BZ No. 3	Control arm for inner bail.



The bail or control arm to be replaced may be used as a template for scribing the desired outline on the replacement part. Care should be used when grinding the bail or arm to avoid excessive heating which may result in loss of hardening.

2-WRONG TOTALS IN CLASS 2 MACHINES from repeat machine cycles following a transfer total key depression may happen in machines equipped with cam lever K (Plate 14, Accumulation Symbol List).

Repeat machine cycles from result key depressions will be prevented by installing cam lever 200138 No. 2, having a lower extension illustrated as O (Plate 45, Keyboard Symbol List) and shoulder screw 200517 No. 2. Parts are available in limited quantity.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 593

July 1, 1956

### SERIES P MACHINES

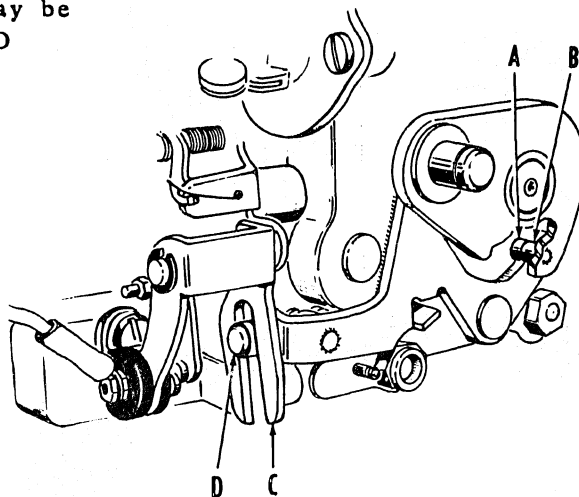
*1-BREAKAGE OF STUD B (81533C) may be caused by an early limit of roll D against the upper end of the fork portion of rocker arm C.*

Should an early upward limit of roll D be present, stock should be filed from the upper end of fork C during the next attention.

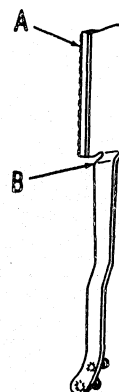
Installation of a new stud B may be facilitated by using Kit 587B-8 to hold the stud while riveting.

#### Parts required:

- A 83422 roller
- X5-27 clip
- B 81533C stud



*2-BREAKAGE OF TYPE BAR A (1-906118 (months) No. 2) in Series P600 has been prevented by adding stock to the uppermost portion of the offset at point B. Improved month bars are available.*



SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 592

July 1, 1956

### SERIES C MACHINES

*1-TO PREVENT DAMAGE DURING SHIPMENT*, all styles of currently manufactured Series C machines that include rubber shockmounts A (Mecanogram 575) will be fitted with solid mounts B when packed. The rubber shockmounts will be packed separately and should be installed as directed in Mecanogram 575.

Proper adjustment of the rubber shockmounts will be aided by the following suggestions:

1. Remove any rubber that may be in the threads of the shockmount screw. Use a 5-44 die Kit 283 No. 4.
2. Tap the rubber from the screw holes in the mounts for screws E. Use a 5-44 tap, Kit 270 No. 4.
3. For the initial adjustment, assemble all shockmounts by screwing them to their limits into the threaded hubs of the machine side frames - then back them up about two turns. Adjust from this point for about .005" clearance between the case and the keyboard panels - always taking the same number of turns in each shockmount.
4. There should always be clearance between the feet of the rear accumulator side frames and the base. If there isn't sufficient clearance, remove the sponge rubber pads from the undersides of the rear side frame feet.
5. If clearance is obtained at all points between the case and keyboard except at the ends of the rear dial wheel panel, scrape some of the felt lining from the inside edge of the case at the affected position.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 591

SERIES F MACHINES

June 4, 1956

1-WEAR OF CARRIAGE DRIVE GEARS D, I, J AND Q in illustration, will be overcome by using the following revised tests and adjustments. Several part changes are also noted below. The revised tests and adjustments should be used with or without a change of parts in the machine.

1. Gear Q (FG106) and its mating gear on assembly D (1FG108) are case hardened and copper plated for identification. If gear D is worn, both gears D and Q should be replaced with the new copper plated gears.

However, if only gear Q is worn, the older cadmium plated gear 408303A may be used for replacement. Soft gears should not be mated with hard gears as severe wear will result.

2. The coupling flat mill cuts on shaft E for gear Q have been extended and an additional mill cut has been made, under screw N, so that gear Q will float on the shaft. Screw N is used by manufacturing only to facilitate assembly.

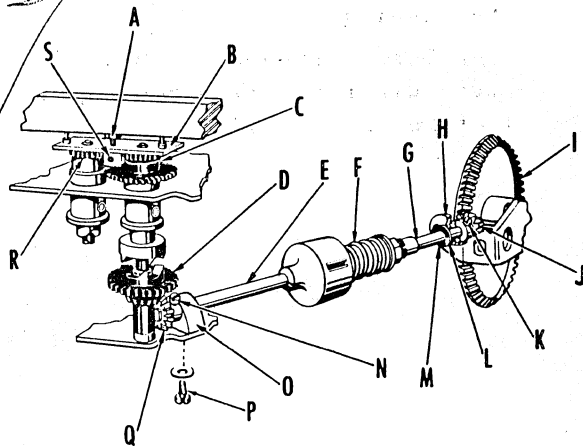
3. The mill cuts on shaft G have been shortened leaving a cylindrical plug end which when inserted to couple with clutch F provides better alignment of the three clutch parts E, F and G.

Note: If the new shaft G (no change in symbol) is used, auxiliary brace 401146 (Mecanogram 485) may be omitted.

4. The rearward end of clutch F has been counter bored .017" to permit the clutch to seat deeper in clutch drum E for added hold of the outer disk on the keys of the drum.

#### Adjustment:

1. Loosen screws K and P
2. Discard screw N when using shafts E without clearance cut.
3. Reduce end play of spindle C to approximately .003". In current construction, loosen set screw S and place a .003" feeler gauge between the bearing on plate B and spindle C. With the other bearing on plate B limiting against the top of spindle R, adjust screw A for a snug fit of the feeler gauge. Tighten set screw S.
4. Add or remove washers L, between clip M and bracket H, for .005" to .025" overall end play of clutch assembly between bracket H and hub of gear D.



(Over)

Note: It is good practice to place two 707302 No. 1 washers (L) over shaft before it is assembled into the machine so that disassembly is not necessary to add a washer or washers between the clip and bracket for proper end play of clutch assembly.

5. Position bushing O against gear Q for maximum depth mesh, consistent with free running engagement of gears Q and D. Tighten screw P.

6. Position shaft G forward limiting through the clip and washer against bracket H. Place a .003" feeler gauge between gear J and bushing H and move the gear against the feeler gauge. Tighten screw K on the flat of shaft G to provide .003" end play of the gear and shaft through the bushing.

7. Gear I should be located on the main camshaft so the edges of its teeth are flush with the edges of teeth of gear J as outlined in Item 1 of Mecanogram 551.

SERVICE DISTRIBUTION DEPARTMENT  
PLYMOUTH DIVISION

# Burroughs

No. 590

## M E C A N O G R A M

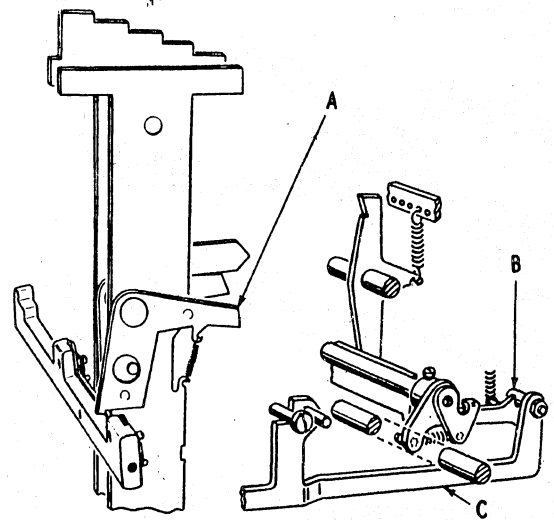
May 1, 1956

### SERIES M MACHINES

*Item 1  
Cancelled  
Com. Page 3*

**1-CONTINUOUS MACHINE OPERATIONS IN SERIES M200 MACHINES** may result from failure of lift pawl A to be released before power indexing slide C is released. Inability to adjust for the proper timing relationship between the releasing of these two parts may be caused by the horizontal arm of the lift pawl being too long.

The arm of lift pawl A on cipher multiplier plate and full cent plate 1A-74107 No. 1 and on tens multiplier plates 1A-74107 Nos. 2, 4, 6, 8, 10, 12, 14, 16, 18, and subtract plate 1A-16 1/2A Fte. 134 has been shortened .015" beginning with Machine Serial No. M9029D so that eccentric screw B may be adjusted for releasing slide C after the lift pawl has been released.



The arm of the lift pawl on the second cycle (Unit) multiplier plates has also been shortened to the same dimension as the above numbered plates, beginning with Machine Serial No. M9296D.

Machines prior to Serial No. M9029D containing pawls A that are difficult to adjust for proper timing of release should have the multiplier plates replaced with plates containing the shorter lift pawls. Plates with the shorter lift pawl are being temporarily identified with red paint in or near the stamped plate numbers.

This supplements Item 1, Mecanogram No. 562.

*103*

**2-REGISTER RETURN DRAW CORDS** will provide better results by making them more flexible before installing in field machines. This may be accomplished by placing the draw cord around the machine stand leg, or other similar object, and drawing it back and forth. The two ends, where held, should then be worked until they become flexible.

SERVICE DIVISION

# Burroughs

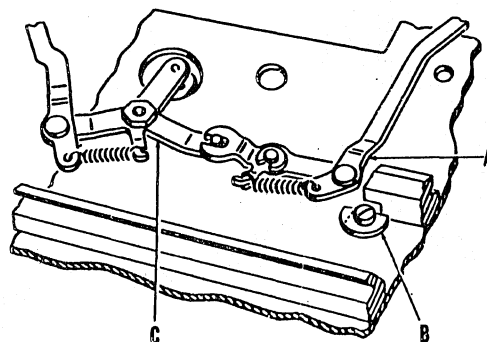
## MECANOGRAM

No. 589

May 1, 1956

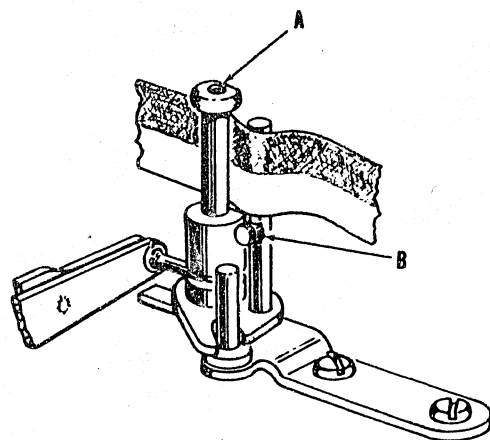
### SERIES P MACHINES

**1-BREAKAGE OF RIBBON FEED ARM ASSEMBLY C (BP, PLATE 31-4, SERIES P CARRIAGE PARTS CATALOGUE)** may be caused by a false limit of arm A against washer B. Stock should be removed from this washer as indicated by the dotted lines in the illustration during the next attention.



**2-FAILURE OF CARRIAGE TO RETURN** caused by the accidental movement of lever AC (Plate 31-5, Carriage Parts Catalogue) may be reduced by installing stronger spring 72833 in place of spring 7286 1/2, BG (Plate 31-5).

**3-PARTIAL BLACK AND RED PRINT CAUSED BY sagging of the ribbon on styles NA-2 and W2 carriages** will be corrected by installing improved ribbon guide post assemblies A (1-83205R and L) containing guide roller B.



SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 588

May 1, 1956

### SERIES F MACHINES

**1-LOCKED MACHINES AND SHEARING OF PINS** in Accumulator Meshing Shaft Assemblies, resulting from meshing hooks L and M (Plate 39, Symbol List) slipping off the square studs of control slides Z and AF, is prevented by redesigned meshing hooks. The new subtract hook 1FA56, replacing L and new sub-total hook 1FA57 replacing M, have 45° angle cuts on their rear projections permitting the square studs to cam under the hooks, and the machine to restore to normal.

In addition to the camming angle on the hooks, stock has been removed from the lower projection of the sub-total hook preventing a machine lock due to overthrow of the subtract hook during sub-total operations. Also, a lower arm has been added to the sub-total hook providing an upward normal limit of the hook against the square stud in the sub-total slide.

The new subtract and sub-total hooks use an eccentric collar and lock nut on a concentric post providing an accessible adjustment to align the hooks with the square studs of the control slides.

New accumulators with 1B-409000 or 1B-409000 No.2 meshing shaft assemblies containing a concentric post require the following for Field installation:

1FA56	Subtract hook
10082 1/2	Spring for subtract hook
1FA57	Sub-total hook
409808	Spring for sub-total hook
X57-12	Eccentric collar
10746 1/4	Lock nut

Older accumulators with eccentric post O also require:

FA123	Concentric post for service use
-------	---------------------------------

Except for the construction change in post O, the adjustments given on Plate 39 of the Instruction Book have not been changed.

**2-WEAR OF 1FD12 CLUTCH DOGS** will be reduced by a recent change in the hardening process.

The new dogs are file hard, Rockwell C61 to a depth of .001" to .003" at points of wear, and are colored blue for identification. Only new parts, furnished on Service Parts Orders since March 13th, should be used for Field replacement. All stock parts that are not file hard should be discarded.

Note: Kit 242, 244 and 246 files supplied for Service normally are hardened to Rockwell C65 to C67 and may cut the blue dogs if used under firm pressure.

(Over)

3-POSITIVE RESETTING OF DRIVE TRIP SHAFT AW (PLATE 56 SYMBOL BOOK) prior to release of motor bar No.1, prevents an automatic overdraft balance operation when motor bar No.1 is restored from depression of the error key.

A fixed angle of the formed ear positions locking slide FK19-9 (AB Plate 59) farther rearward at normal and consequently provides a later release of motor bar No.1. Ease of depression of small motor bars is provided by a longer milled camming surface of the upper projections.

Similarly, locking slides FK19-37 and FK19-36 for result key columns of accumulators "A" and "B" respectively are improved to coordinate release timing of result keys with motor bar No.1 and provide ease of depression of result keys.

The necessary additional movement from machine operation to release the small motor bars and the result keys is secured by a larger diameter stud X50-404 in AD (Plate 56) which is driven by arm Z. Parts are available.

#### TESTS AND ADJUSTMENTS.

With the machine locked from an overdraft balance operation, slowly depress the error key. Bail assemblies AR and Q (Plate 24) should simultaneously allow drive trip shaft AW (Plate 56) to restore just prior to release of motor bar No.1.

To Adjust - Weave the rearward portion of link W (Plate 24).

To insure release of motor bar No.1 from depression of the error key, turn eccentric O (Plate 24).

Note: The date repeat must be active with keys depressed when making the above adjustments.

Service Distribution Department

Plymouth Division

# Burroughs

## MECANOGRAM

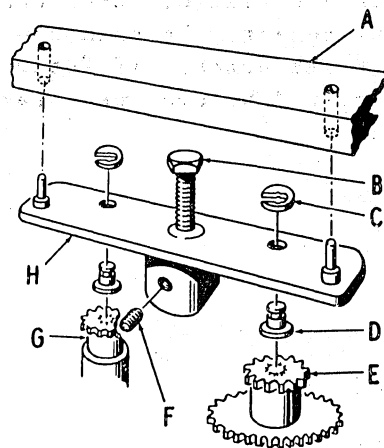
No. 587

March 1, 1956

### SERIES F MACHINES

#### 1-IMPROVED ADJUSTABLE THRUST LIMIT FOR TABULATION AND RETURN CLUTCH SHAFT ASSEMBLIES

G AND E maintains the correct depth mesh of gears AA and AC (Plate 2, Symbol Book). Limit plate H (illustrated) is positioned by guide studs utilizing existing holes in the underside of rear carriage rail A. Replaceable limit pads D centered over shaft assemblies G and E are retained by clips C. Screw B limiting against the bottom of the carriage rail is adjusted to provide .003" clearance between the limit pad and the return clutch shaft. The limit pads should be lubricated.



#### Symbol List:

B.	X60-100	F.	403583
C.	(2) 21 No. 20	H.	1-408164 Complete assembly includes
D.	(2) X50-255		B, C, D and F

2-EXCESSIVE OVERTHROW OF THE REGISTER PINION ASSEMBLY is eliminated and a better alignment of register No. 1 at normal is provided in a redesigned register worm shaft and sleeve assembly, 1FA20, for both four register and nine register units. The longer worm sleeve replaces bail BB and DV (Plates 40-2 and 40-5 Symbol Book) and provides an overthrow limit for the pinion assembly when selecting register No. 9. A new coupler, 1FA100, provides a straight alignment of the worm shaft to the register selection rack gear.

Collar X10-130 installed over the compression spring on the pinion sleeve guide shaft now prevents excessive overthrow of the pinion assembly when selecting register No. 4 of the four register unit.

1FA20 includes { 1FA83 worm sleeve  
FA20 worm shaft

1FA100 coupler

X10-130 overthrow collar

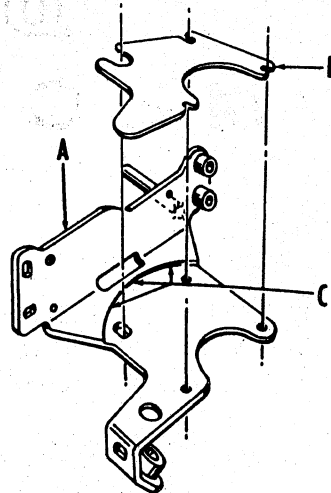
3-BROKEN SUPPORT POST FOR RIGHT STOP BUMPER ASSEMBLY G (Plate 15, Symbol Book) can be replaced with threaded repair post 408509Z. Minimum replacement time is required as it is not necessary to remove the gear box or the carriage to complete installation. With the broken post removed, the repair post can be inserted through the stop bumper assembly and the gear box back plate and secured with 1097 3/4 lock washer and 46 nut.

(Over)

4-COPPER PLATED SHIMS B were used in approximately 1500 complete drive assemblies (2-401118A).

These shims, located between A and the worm shaft assembly, should be used only with the stock corrected brackets which may be identified by the surface mill cut indicated by arrow C.

Since none of these stock corrected brackets will be furnished for service replacement, the shim should be discarded with the bracket if future replacement of bracket A becomes necessary because of wear.



Service Distribution Department  
Plymouth Division

# Burroughs

## MECANOGRAM

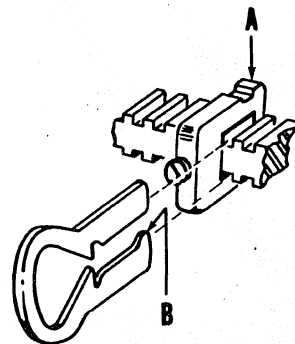
No. 586

March 1, 1956

### SERIES P MACHINES

**1-SKIPPING OF THE CARRIAGE THROUGH TABULATOR STOPS IN P400 MACHINES** may be caused by incorrect installation of the stops in the stop bar.

Stop B should be installed with its retaining projection, at the point of the arrow, on the underside of the bar, thus placing its rounded (die side) surface away from contact with the carriage stop bail. The stop should also be firmly supported by brace A.

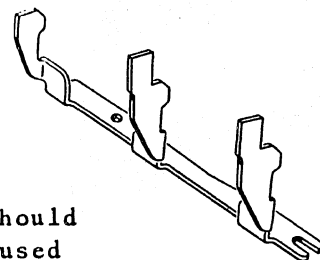


**2-INSERTION OF HEAVY OR MULTIPLE FORMS** in an NA-2 carriage may require installation of guide 1-83152 1/8 A No. 2 which contains shorter fingers than guide No. 10 (Plate 41, Carriage Parts Catalogue) for the necessary clearance of the plastic tear off blade.

Remove the ribbon feed arm limit screw or stud from the carriage bottom plate and install the guide using two screws 7257.

This cancels Item 1, Mecanogram 533.

**3-WRONG PRINTING AND ADDING IN STYLE 1010304 BILL RECEIPTING MACHINES** - caused by heavy forms interfering with movement of type bars - will be eliminated by improved form support 83150 5/8 (illustrated).



The improved support, which replaces Item 6 (Plate 40, Carriage Parts Catalogue) is extended upward to hold the forms away from the type. It should be installed in any Style 1010304 machine that is used for receipting heavy forms. Parts are available.

This supplements Item 1, Mecanogram 550.

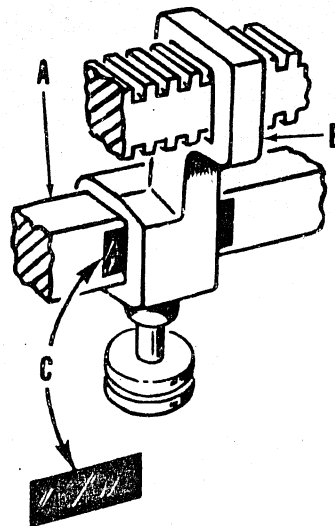
**4-BREAKING OF SPRINGS 79804 AND 7480B (F AND BC, PLATE 20, KEYBOARD PARTS CATALOGUE)** is reduced by using a material less subject to rusting and corroding. All springs 79804 (used in machines prior to serial No. P154737D) and springs 7480B (used in machines after serial No. P154737D) now furnished from the factory will be made from the new material.

**5-IMPROVED SPRING X80-123** replaces spring BH (Plate 123-3B, Symbol List). Breakage of spring BH results in improper functioning of the four position printing control mechanism.

The improved springs are available.

**6-SELECTION OF THE WRONG PRINTING CAMSHAFT POSITION** may result from control bar A being held bowed because of an enlarged opening in center hanger B.

The control bar will be held straight, and all control hangers in correct alignment, by installing shim C (903165 1/4Y) in the opening of the center hanger as illustrated before tightening the screw. Parts are available.



SERVICE DIVISION

# Burroughs

## MECANOGRAM

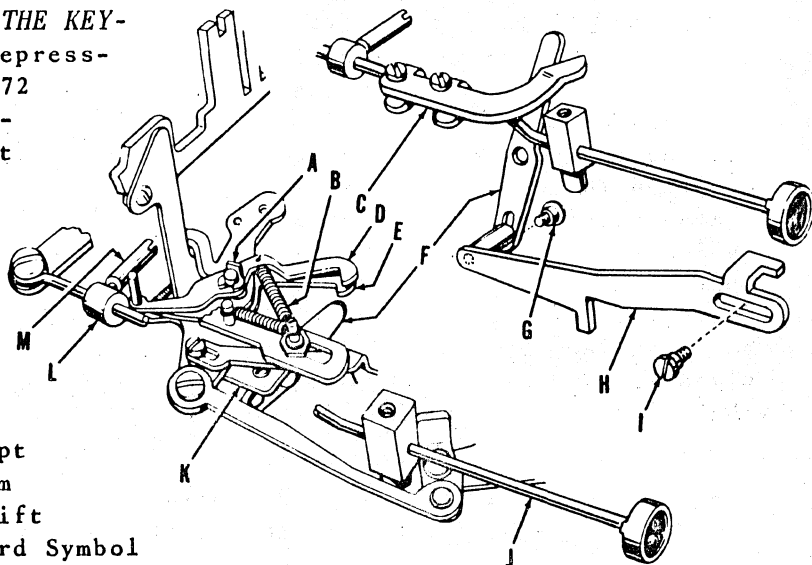
No. 585

March 1, 1956

### SERIES M MACHINES

**1-EFFECTIVE LOCKING OF THE KEY-BOARD** from a partially depressed subtract key in Class 72 and Series M200 machines - without causing subsequent hard depression when fully depressing the key to index the power mechanism - will be provided by installing new auxiliary latch D.

The new latch retains arm F in position to lock the entire keyboard (except Clear Multiplier Key) from the time subtract plate lift pawl AB (Plate 30, Keyboard Symbol List) is released until latch E (illustrated) is positioned during the machine operation. The new auxiliary latch may be installed to facilitate adjustment of machines subsequent to Serial No. B46251. Parts are available.



Make the following tests and adjustments:

Test 1. With the subtract key normal, the rear of the subtract key button should align with the front edge of guard Y (Plate 40-1, Keyboard Symbol List).

To adjust, shorten or lengthen wire R (Plate 30-1, Keyboard Symbol List) using turnbuckle T.

Test 2. With the power off depress the subtract key slowly. Latch D (illustrated) should latch arm F just prior to the release of the subtract plate lift pawl.

To adjust, position clamp C.

Test 3. With the subtract key normal there should be  $3/32$ " clearance between latch D and arm F to assure release of the arm when the subtract key restores following a subtract operation.

To adjust, position collar L.

Parts required:

K 1C-702246 1/2

11B-702246 1/2

Locking plate assembly used with carriage controlled totals

Locking plate assembly used without carriage controlled totals

(Over)

H	1-72144A	Locking slide (For machines subsequent to Serial No. M8176D)
G	72599	Screw for locking slide H
I	79511	Screw for locking slide H
J	1A-702709A No. 5	Subtract wire with collar L
D	1-702246 3/4	Auxiliary latch
A	21 No. 7	Clip to retain auxiliary latch D
B	53804	Spring for auxiliary latch D
M	702641	Screw stud in collar L

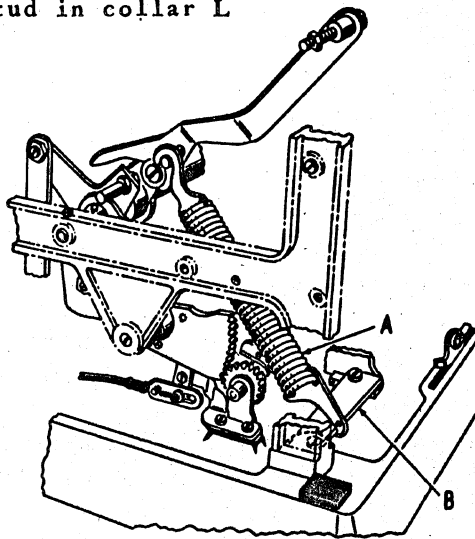
## 2-IMPROVED MACHINE RESTORING

**SPRING HOOKUP** is used in all currently manufactured Series M800 machines to derive maximum benefit from restoring spring A when restoring the machine to its home position while clearing an extended amount from the subtractor during subtract and minus balance operations.

The improved spring hookup may be installed in Series M800 and class 78 wide base Field machines where needed.

### Parts required:

A	1-701812 No. 2	Restoring spring for machines of 10 capacity or less
	11-701812 No. 2	Restoring spring for machines of more than 10 capacity (Identified by its red spring anchor)
B	20 No. 158	Anchor plate



SERVICE DIVISION

# Burroughs

## MECANOGRAM

10  
No. 584

March 1, 1956

### SERIES H MACHINES

*1-WEAR OF PLASTIC FORM CHUTES IN NO SPACE STROKE BANK MACHINES* caused by form insertion will be prevented by metal inserts imbedded in the area of the surface contacted by the edge of the forms.

The following reinforced chutes are available:

- |                   |                             |
|-------------------|-----------------------------|
| 1-203237 AR No. 4 | Standard chute - right side |
| 1-203237 AL No. 4 | Standard chute - left side  |

*2-REPLACING WORN BEARING 35 NO. 17 IN LEFT SIDE FRAME* - for shaft assembly J (Plate 54-1, Accumulation Symbol List) No Space Stroke Total Bank Posting Machines - without side frame removal or replacement.

- A Remove driving arm BZ (Plate 43-1, Accumulation).
- B Drill a series of closely placed holes, using drill Kit 260-44, circling the worn bearing. Drill only far enough to break through the inner end of the bearing. Use care to avoid scarring the bearing surface of the shaft or the contact surface of the side frame for the bearing. Note: The depth to be drilled may be gauged by locating collar 1-16841 1/2 on the drill shank to act as a depth limit, or the drill can be marked with touch up paint.
- C Using holder 1 Kit 96B-1 and a chisel sharpened tip Kit 96B-7 or Kit 96B-8, break the worn bearing into pieces small enough to be easily removed from the side frame.
- D Clean casting and shaft surfaces of all foreign substances.
- E Install washer 68115 on the shaft to provide a smooth thrust surface for the replacement bearing.
- F Saturate replacement bearing 35 No. 17 with oil S131A.
- G Tap the replacement bearing into the side frame while supporting the inside of the frame with an extended screw driver. When the bearing is correctly located, there should be approximately .010" end play in the shaft assembly. Note: A driving block, for tapping the bearing into position, may be made from the core of a paper roll by wrapping the core with friction tape to prevent its being split during use.
- H Replace driving arm BZ (Plate 43-1) and make any needed compensating adjustments to the totaling mechanisms.

SERVICE DIVISION

*Seaford*  
**Burroughs**

No. 583

# M E C A N O G R A M

February 1, 1956

## SERIES C MACHINES

**1-RESTYLED SERIES C MACHINES**, released January 16, 1956, have been assigned new style designations and contain a number of improvements. Basic designations are Series C100 - simplex, hand machines; Series C200 - simplex - electric machines; and Series C300 - duplex machines.

New individual styles are identified through the basic designations as follows:

New Style Nos.		Old Style Nos.
C101	simplex, hand	5 06 05
C103		5 10 05
C105		5 14 05
C203	simplex, electric	5 10 35
C205		5 14 35
C303	duplex	5 10 55
C305		5 14 55

Improvements incorporated in the various new styles include light amber gray finish (smooth, dull No. 203 and ripple No. 215), flush-mounted plastic dial cover, rubber shockmounts (announced in Mecanogram 575) and detachable line cord.

Individual styles and their improvements are as follows:

C101	Color 203
C103	Color 203 New dial cover Rubber shockmounts
C105	Color 215 Rubber shockmounts
C203	Color 203 New dial cover Rubber shockmounts Detachable line cord
C205	Color 215 Rubber shockmounts Detachable line cord
C303	Color 203 New dial cover Rubber shockmounts Detachable line cord
C305	Color 215 Rubber shockmounts Detachable line cord

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 582

February 1, 1956

### SERIES M MACHINES

*Item 2  
Cancelled by  
Circ. Ind.  
Page 5*

1-CARRIAGE RETURN FAILURE may be caused by insufficient driving power that results from wear of carriage return gear 1-71902A (N, Plate 3, Power Symbol List).

All 1-71902A gears are now hardened by a new process assuring effective case depth.

Correct meshing of gears N and S, as explained in Item 3 of Mecanogram No. 548, should be observed.

2-ADDITIONAL MACHINE STROKES IN SERIES M200 MACHINES may be caused by actuating arm BC (Plate 8-4A, Keyboard Symbol List) having insufficient movement upward to permit switch BG to open sufficiently. The additional machine strokes are sometimes accompanied by printing of nines.

Switch failure resulting from pitted or fused points may also be caused from insufficient movement upward of the arm.

Improved switch actuating arm 1-700146, containing an open slot at the bottom, permits the arm of switch BG to travel farther and assure sufficient opening of the switch.

The improved arm is being installed in currently manufactured machines beginning with Serial No. M9040D and parts are available for field installation.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 581

February 1, 1956

### SERIES P MACHINES

*1-DAMAGE TO THE COMMUTATOR SURFACE OF ARMATURE AG* (Plate 134, Symbol List) caused by the brush spring contacting the commutator, can be prevented by using the new brush holder 4333AZ which prevents the brush spring from protruding out of the inner end of the brush holder. The improved brush holders should be installed where heavy usage or electric current conditions cause rapid wear of the brushes. Parts are available.

*2-DAMAGED TEETH OF GEAR BB* (Plate 132, Symbol List) may result from improper setting of eccentric BY. Proper setting may be accomplished as follows:

Test 1: With power off, cause a handle break by depressing a listing and result key and manually turn the motor until the drive is restored to normal. Driver BU should engage latch BT with .005" to .010" lead.

To adjust: Turn eccentric BY with the high point of the eccentric downward and toward the front of the machine.

Test 2: With the drive tripped, turn the motor manually for full throw of link BX. There should be perceptible additional forward movement of the handle when pressure is applied thereto. No movement of the handle on this test indicates excessive driving movement which could place an undesirable strain on the worm and bronze gear of the drive.

To adjust: Turn eccentric BY and recheck Test 1.

When it becomes necessary to replace a bronze gear BB or a worm assembly AE, both should be changed. This drive housing should be thoroughly cleaned before installing new parts. Assembly 2Z-81367A, which includes gear BB (fiber replaces bronze) and worm gear AE (includes bearing assemblies, is now available for Field replacement. This cancels Item 1, Mekanogram 516.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

hovejaif  
No. 580

February 1, 1956

### SERIES F MACHINES

**1-RIBBON FRAYING AND PREMATURE REVERSING** may be caused by drag on ribbon reverse indexing bails F and N (Plate 33, Symbol List). Ribbon reverse indexing bails F and N may be replaced with new bails (1FP38 and 1FP38-1) containing floating ribbon reverse indexing arms which follow the angle of ribbon feed to or from the ribbon spool. To permit full movement of the left ribbon reverse indexing arm, a corner of turret cover G (Plate 60, Symbol List) should be filed off as required for clearance.

Parts required as listed below are available.

1FP38 Right Ribbon Reverse Indexing Bail

1FP38-1 Left Ribbon Reverse Indexing Bail

**2-WHEN INSTALLING NEW DRIVE BRACKET 1-401118A** (C, Plate 53, Symbol List), it is necessary to replace screw and nut D (Plate 33) with a 79598 screw and a 12046 3/16 threaded bushing to provide clearance for added stock on the new bracket.

Suitable reference notations should be made on both plates.

**3-A POSSIBLE FAILURE TO CLEAR TOTALS** due to rearward movement of index strips K (Plate 44) before lock bail J is raised fully into position is prevented by the following changes in parts and adjustments.

Part BH (Plate 39) is replaced by part FB124 which has stock added at point of contact with the roll on cam BG for earlier forward movement of the minus balance slide BF. Also the guide slots in the minus balance slide (1FB130 in Series F100 and F300 machines or 1FB130-1 in Series F200, F400 and F500 machines) are lengthened to permit 1/16" additional forward movement.

Stock is removed from pawls X (Plate 42) at their points of contact with studs Z. Detent BC (Plate 39) is replaced by 1FB128 with the forward pocket moved forward because of additional forward movement of the minus balance slide.

The roller on cam S (no change in symbol) was moved forward 7 degrees for better contact with the forward arm of part BH with the machine at normal to insure full rearward travel of slide BF.

#### Tests and Adjustments

- To obtain the correct position of crossfooter shift lever AA (Plate 42), stud Z should have minimum clearance at front end of the slot in slide AB with the machine and crossfooter at normal.

- To adjust, loosen screw C and move crossfooter shift lever AA.

- To assure correct red ribbon index and cross slide action, the roll on arm F (Plate 34) should be safely on the radial surface of bail I with slide Y (Plate 42) in negative position and machine cycles to 110°. With the machine at normal, the roll on arm F (Plate 34) should be safely on the angular surface of bail I.

- To adjust, weave bail I.

These revised adjustments should be used on all machines above Serial No. F33407P containing these improved parts. The new construction may quickly be identified by the flat dwell between the pockets of detent BC (Plate 39).

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 579

January 3, 1956

### SERIES F MACHINES

**1-IMPROVED TOTAL STOP BAIL AND LATCH ASSEMBLY** for crossfooters and registers will prevent printing of 9's on a total operation resulting from the long pinion teeth camming the total stop bail AJ (Plate 40) or I (Plate 40-3) out of active position.

Limits for the total stop bail at normal and indexed positions are provided by projections F and C. Latch I engages the latch projection of latch plate C to prevent the bail being cammed out of active position by the long pinion teeth and is released by the forward projection of latch plate C as spring B restores the total stop bail to normal. Further improvement is an eccentric headed screw G to secure clearance of index arm AE (Plate 42).

Mecanogram 549 Sub. 1 is still the correction of the above trouble for earlier construction but consistency 2Z-409001 specify No. (Chart Plate B, Symbol Book) should be used when ordering replacement for AV (Plate 40) or W (Plate 40-3).

#### Tests and Adjustments

With the accumulator section out of the machine, the pinion assembly in raised position and the total stop bail manually held in active position:

1. There should be .005" to .010" clearance of the total stop bail and the short pinion teeth.

To adjust - bend the upper projection C of the latch plate for earlier or later contact of shaft E.

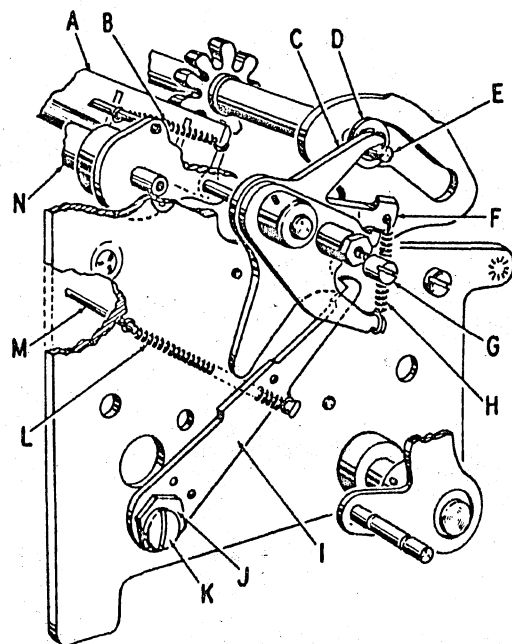
2. There should be .005" to .010" latching lead of latch I.

To adjust - reposition eccentric J.

Note: Arm F limiting against shaft E provides the normal limit for total stop bail A and allows the necessary movement of carry pawls in add direction.

With the accumulator unit in the machine, the total linkage indexed and the machine normal (zero degrees):

3. There should be .003" clearance between screw G and arm AE (Plate 42).



(Over)

To adjust - reposition eccentric screw G maintaining the high point forward to prevent interference with AE (Plate 42) on add and subtract operations.

#### Symbol List

A	Included in N	I	FA122 latch
B	71808	J	709385
C	Included in N	K	409005 No. 2 Shaft, 403571 Screw
D	21 No. 20	L	701806
E	FA5	M	409003 shaft
G	X57-1 screw, 46 1/4 nut	N	2A-409001 specify No. includes A, C and F
H	X80-64		

2-IMPROVED ADJUSTMENT OF THE CARRY RACK RESET SHAFT is provided in a change of shaft assembly AZ (Plate 41).

The carry rack resetting links have a formed ear drilled and tapped for X60-250 screws and 47 1/4 locking nuts to replace eccentric screws AU. The screw is reversed so that its head will provide a larger contact surface to shaft AQ.

The symbol number of the shaft assembly with the above improvement is 1B-409000 for crossfooters and 1B-409000 No. 2 for registers.

3-TRAPPING OF SUBTRACT CARRIES caused by excessive overthrow of the register pinion assembly when selecting register No. 4 on Series F200 and F400 machines will be prevented by installing overthrow limit FB136-1. This limits the throw of register selection rack AM (Plate 40-2, Symbol List) when selecting register No. 4.

The new limit is secured to the left side frame with two 950 5/8 screws and two 46 1/4 nuts replacing the screws holding the front guide comb for the adding racks. Parts are available.

Adjustment: With register 4 selected and the machine operated manually to give the register selection rack its maximum forward drive, there should be minimum clearance between the end of the register selection rack and the overthrow limit.

To adjust, bend the overthrow limit forward or rearward.

4-SIMPLIFIED ADJUSTMENT OF THE OVERTHROW LIMIT FOR REGISTER SELECTION RACK AM (PLATE 40-2, SYMBOL LIST) on Series F200 and F400 machines containing the Improved Register Selection Mechanism described in General Release Print 608-1/F will be provided by installing overthrow limit 1FB173-2.

The new overthrow limit for registers 2 and 3 replaces the two limits L and M previously used and eliminates the need for independent adjustment of each of the limit steps. Two 10086 springs are used with the new limit replacing springs BO and BJ. Parts are available.

Adjustment: The new overthrow limit is adjusted in the same manner as the previous limits except that no adjustment is required for clearance over the No. 3 step when selecting register 4.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 578

January 3, 1956

### SERIES J MACHINES

**1-SKEWING OF THE ROLL PAPER IN THE CARRIAGE** will be eliminated by installing the improved roll holder illustrated.

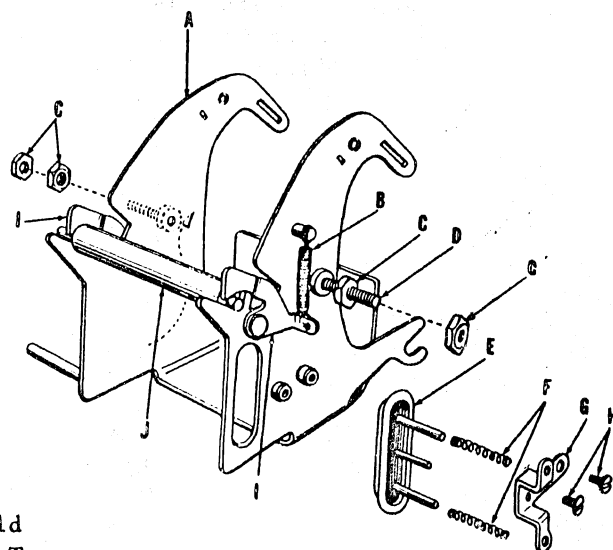
The improved holder contains pressure plate E which guides and controls the unreeling of the roll paper into the carriage. It also contains a threaded post D on each side to permit lateral alignment of the holder with the platen.

Field machines may be amended by the following procedure:

- A Remove the case and roll holder A2 (Plate C1, Parts Catalogue).
- B Assemble parts A1, A4, A5, A6, A7, A9 (two) and A10 from the old holder to the improved holder. Turn one nut C (illustrated) nearly to the shoulder of each threaded post in the improved holder.
- C Manually operate the machine enough to raise the platen into printing position.
- D Loosen, by several turns, the upper screw C2 (Plate R1) and remove the two lower screws C2. Do likewise with screws H2 on the right side of the machine.
- E Install the improved holder by pivoting upward and spreading frames C1 and H1 to permit the threaded posts of the holder to enter the holes in the rearward extensions of the frames. Install nut C on each post outside of the frames.
- F Replace and tighten all screws C2 and H2 in the frames.
- G Align the right side of the holder flush with the right end of the platen and lock in position by tightening nuts C. It may be necessary to align the lower forward extensions of the holder with the grooves in shaft L (Plate R1) by bending, or by installing a new shaft JB 2-2 having wider grooves.

#### Parts Required:

A	1JC 15-2	1	Paper roll holder
J	JC 5-1	1	Paper roll shaft
E	JC 29	1	Pressure plate
G	JC 30	1	Pressure plate guide bracket
F	2881 1/8	2	Spring for pressure plate
H	X60-132	2	Screw for bracket JC 30
C	X30-5	4	Lock nut to position holder A
B	72826	2	Spring for latch I
	JB 2-2	1	Ribbon reverse shaft with wide grooves

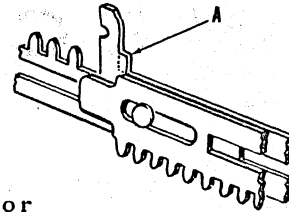


(Over)

2-BREAKING OF TYPE BAR EXTENSION A is prevented by adding stock to the contact with restoring blade G2 (Plate T1, Parts Catalogue).

The improved assemblies are not interchangeable with those of early construction. When breaking of an early construction bar is experienced, a complete set of improved bars should be installed. When circumstances are inexpedient for installing a complete set, individual bars of early construction are available for replacement.

The following bars of both improved and early construction are available for replacement:



Improved	Early	Description
1JT118-11	1JT118-1	Plain
1JT118-12	1JT118-2	Period on left
1JT118-13	1JT118-3	Comma on right
1JT118-14	1JT118-4	Symbol-Standard
1JT118-15	1JT118-5	Period on right - European and Brazilian Monetary, and European Numerical
1JT118-16	1JT118-6	Comma on left - European Monetary
1JT118-17	1JT118-7	,00 thru ,90 - Brazilian Monetary
1JT118-18	1JT118-8	Symbol - Brazilian Monetary
1JT118-19	1JT118-9	Plain - Offset left - Egyptian - First Option
1JT118-21	1JT118-20	Symbol - Option A

Blade JT14-1 is required with the improved bars. Parts are available.

3-TYPE BAR REPLACEMENT will be facilitated by the following procedure:

- A Remove keyboard, machine base, paper holder, motor, intermediate keyboard, left and right ribbon side frames and carriage as outlined in steps 1 through 7 in Procedure for Removing Sections of Series J machines, Section III in the Service Mechanical Manual.
- B Remove guard H3 (Plate S1, Parts Catalogue).
- C Loosen the two rear and remove the two front screws J3 (Plate T1) which retain side frames J and K to the auxiliary machine base.
- D Loosen screws E2 (Plate T2) in shaft E5.
- E Loosen screw H2 (Plate T1) and move arm H1 part way off shaft assembly H5.
- F Loosen nuts M2 and M6 on shaft M7. Indicator plate M5 may be removed.
- G Remove upper tie shaft C and type bar cushion assembly A. Loosen the nuts on lower tie shaft C.
- H Remove spring shaft B4 and all type bar springs B3.
- I Remove type bar restoring blade G2. Turn the blade at an angle for easy removal.
- J Spread side frames J and K enough to slide the limit lip of the symbol bar from the slot in side frame J to back of the side frame. Wrap a rubber binder firmly around the type portion of all type bars and move them to nine position.

SERIES J MACHINES

- 3 -

Mecanogram No. 578

- K Spread the front of the side frames sufficiently, by raising the front of the side frames out of the base, to remove the front guide bar B1. Turn the bar on its side through the enlarged opening in the front slot of the type bars and then turn the bar at an angle for non-interference with the side frames.
- L Spread the back of the side frames and remove the upper and lower guide bars B1 and B2. Remove the type bars as a unit from the machine.
- M Assemble the replacement type bar or bars on the upper and front guide bars. Start the grouped bars into the machine by carefully guiding the lower wings of the adding racks between the carry pawls. Be sure that other parts, such as bail F11, that may have been dislodged when the side frames were spread, are in their correct locations.
- N Remaining steps are in reverse order of the disassembling procedure. One of the upper guide bars B1 or B2 may be used to space the type bars for easier replacement of front guide bar B1 in the slots of the type bars.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 577

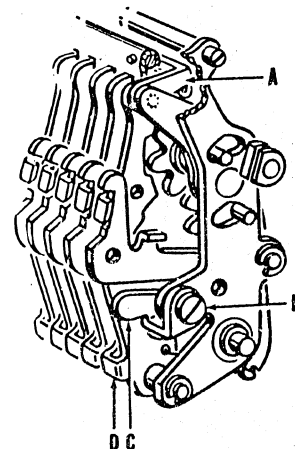
January 3, 1956

### SERIES P MACHINES

1-CARRY PAWL GUIDE C is now used in Style P208 machines to retain carry pawl D in its correct lateral position thus preventing a possible lock caused by the rearmost portion of bail A limiting against the uppermost portion of pawl D as the tumbling frame moves from minus to plus position.

Parts required for field installation are available as follows:

B	7356 1/2	Screw
C	99101 1/2	Guide



2-REMOVAL OF CARRIAGES ON CURRENTLY CONSTRUCTED SERIES P100, P200, AND P300 MACHINES is now facilitated by a shorter stud on bell crank 1-83224 7/8 A similar to AI (Plate 3-1, Carriage Parts Catalogue) which permits easier removal of link AK. The stud on bell crank AI in Field machines may be shortened by approximately 7/32" to facilitate the removal of the carriage.

Parts are available.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 576

January 3, 1956

### SERIES H MACHINES

*1-BURNING OF GOVERNOR POINTS P AND R* (Plate 4, Power Symbol List) in Series H machines with 6A motors using direct current, will be reduced by replacing resistors T with resistors 1B-200911 (2 required) of the following capacities:

110 Volts	35 Ohm
150 Volts	65 Ohm
220 Volts	140 Ohm
250 Volts	180 Ohm

When governor points are found burned, new resistors of the correct capacity should be installed and the machine adjusted as outlined in paragraphs 5, 6 and 7 of "Speed Regulations of Type 6A Motors" (Plate 4, Power Instruction Book). Parts are available.

SERVICE DIVISION.

# Burroughs

## MECANOGRAM

No. 575

January 3, 1956

### SERIES C MACHINES

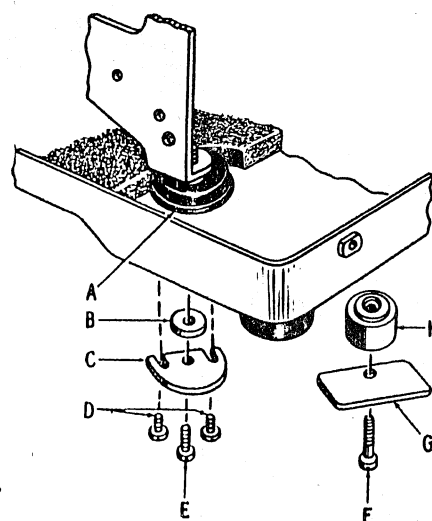
1-RUBBER SHOCKMOUNTS A (1-50998) are used on all currently manufactured calculators except Style 5 06 05 to reduce the sound of machine operation. The mounts are held to the machine base by two screws D (50558).

For shipping purposes - on all machines except Style 5 14 55 - the mounts are assembled and pulled down tight to eliminate machine sway and subsequent damage. Style 5 14 55 machines, being heavier, are shipped with temporary solid mounts H assembled and the rubber mounts packed separately.

When machines packed with rubber mounts assembled are received, plates C, washers B, and screws E should be removed and discarded. The height of the machine should then be adjusted for case and keyboard clearance (see step J below) and screws D retightened. On receipt of machines shipped with solid mounts, the solid mounts should be removed and the rubber mounts installed as follows:

- a. Remove the machine case.
- b. Turn the machine with the base up, and remove and discard the four screws F and plate G.
- c. Disconnect the wires from the motor to the base plug.
- d. Remove the base.
- e. Remove and discard the four solid mounts H.
- f. Assemble the rubber mounts to the side frame feet, entering the full length of the shockmount screw thread.
- g. Reassemble the base.
- h. Reconnect the wires from the motor to the base plug.
- i. Replace the case.
- j. Using a screwdriver in the shockmounts slots (which are accessible through holes in the base) adjust the height of the machine until there is about .005" clearance between the keyboard and the case. (Noise will be transmitted if the case and keyboard contact).
- k. Secure the shockmounts to the base with screws D.

If machines in use - and equipped with shockmounts - are to be shipped, prepare the machine for shipping as described in the second paragraph and as illustrated.



SERVICE DIVISION

# Burroughs

No. 574

## MECANOGRAM

December 1, 1953

### SERIES M MACHINES

*Stam  
Camm  
Corr. Ind. 7  
Page 7*

1-REPEAT OF MACHINE OPERATION caused by roll N camming clutch trip slide D upward at the end of a machine cycle will be prevented by installing latch E. After installing make the following tests and adjustments.

Test - Latch E should have .010" passing clearance over the projection of latch plate A.

To adjust, turn eccentric screw B.

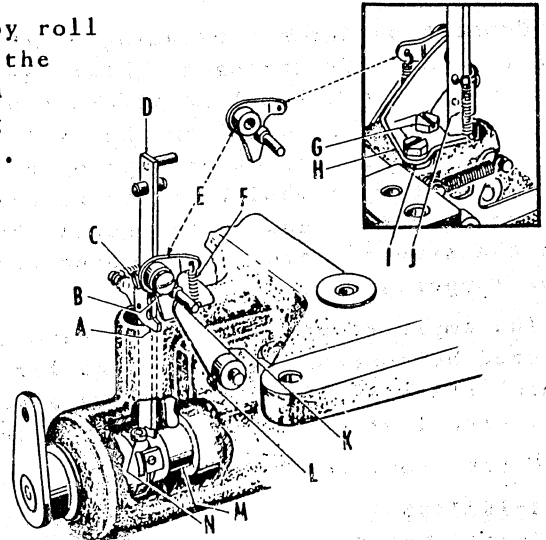
Test - With current off and the drive clutch tripped, latch E should have flush hold of the projection of latch plate A.

To adjust, position arm K and tighten screw L.

#### Parts required:

A	71240	Latch plate on clutch trip slide C.
B	71627	Eccentric screw to retain latch E. Use 46 1/4 nut.
C	75608	Screw to attach latch plate A to clutch trip slide D.
D	1-71903A No. 2	Clutch trip slide for Classes 72-78 and Series M200 and M800 machines.
	1-701903A	Clutch trip slide for Class 77 and Series M700 machines.
E	1-71241	Latch to detain clutch trip slide D.
F	283A	Spring for latch E.
G	76567 (2 req)	Screw to retain bracket H on drive housing. Use drill template Kit 532, drill Kit 260 No. 37, and tap Kit 270 No. 4.
H	1-71239	Bracket for latch E.
I	76120 (2 req)	Space washer between drive housing and bracket H.
J	10784	Spring to restore clutch trip slide D.
K	1-71242	Arm to control latch E.
L	700556	Setscrew for arm K.
M	1-71304B	Drive clutch member.
	701272	Bracket AU (Plate 8-4A, Keyboard Symbol List) for switch in machines containing solenoid control mechanism.
		Drill Template. One furnished to each Service Station.

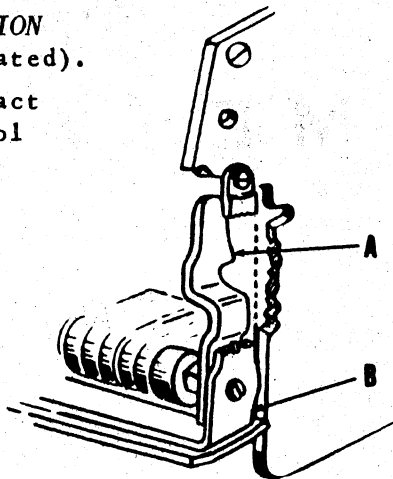
Kit 532



(Over)

2-PRINTING OF AMOUNTS IN A NON-PRINT POSITION may be caused by twisting of bail B (illustrated).

The bail now contains added arm A for contact with roller shaft CC (Plate 3, Printing Symbol List) to support the right end of the bail during the machine stroke. Bearing screw AE (Plate 6-2, Printing Symbol List) for the right end of the bail is now headless and provides free turning of shaft AH in its bearings.



Protection against breaking of the bail at the hole for spring AP (Plate 6-1, Printing Symbol List) is afforded by eliminating the hole from the bail and attaching a longer detent spring V (Plate 6-2, Printing Symbol List) to an extension on the threaded end of the screw through eccentric N. The spring groove in the stud of detent T is moved closer to the detent for alignment with the longer spring.

The improved bail should be used to provide printing results established by control shaft AH, and for replacement of a broken bail, after which the tests and adjustments given in Plate 6-1, revised 10-4-55, Printing Instruction Book, should be followed. Parts are available.

Parts required:

1-707148B

707511 No. 2

1A-707146

707519

707803

Hammer block bail.

Bearing screw for right end shaft AH.

Detent for gear W on shaft AH.

Screw thru eccentric N for spring V.

Spring for detent T.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

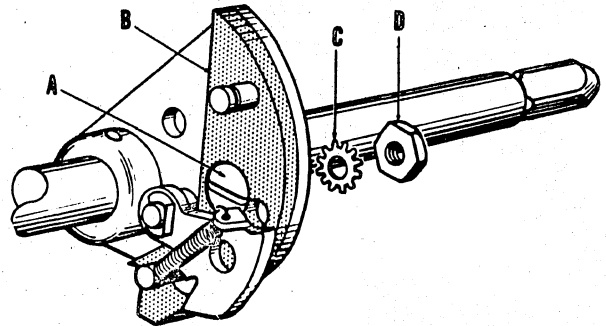
No. 573

December 1, 1955

### SERIES P MACHINES

**1-MACHINE LOCK ON FORWARD STROKE (ALL STYLES)** could be caused by the roll on arm AI (Plate 133-1, Symbol List) lodging in a pocket worn in cam AG.

Wear of cam AG will be prevented by installing auxiliary cam B as illustrated. It should be installed in all Series P machines (between serial numbers P146871D to P174985D and P18011C to P20797C) on the next attention.

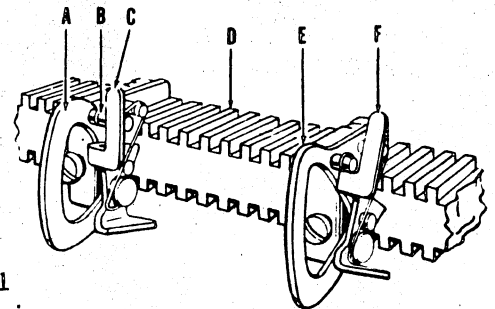


Parts required are available as follows:

81150Y	Cam B	For all styles
81609	Screw A	For Classes 8, 9, and 10
1097 3/32	Lockwasher C	and Series P100, P200
45	Nut D	and P300

**2-UNIFORM SPACING OF HEAVY FORMS ON SERIES P600 MACHINES** requires the use of geared pressure rolls of correct diameter. Standard pressure rolls 1-903992A No. 1, identified by a groove around its outside diameter are used with forms up to .012" thick, and pressure rolls 1-903992A No. 2 are used with forms from .012" to .029" thick. Parts are available for installation on Field Machines.

**3-FAILURE OF CARRIAGES ON SERIES P400 AND P600 MACHINES TO SKIP TABULATE INACTIVE COLUMNS** may be caused by limit stop E becoming partially dislodged from stop bar D during the changing of lever F from skip to normal position.



Improved stops (1-903215 No. 6 for P400, and 11-903215 No. 6 for P600 machines) now contain longer stud B which provides a limit for lever C as it is moved from skip to normal position thereby safeguarding the stop from being partially dislodged from bar D.

**4-MACHINE LOCKUP, OR WRONG ADDITION IN SERIES P400 AND P600 MACHINES** caused by sluggish and incomplete positioning of rocker arm X (Plate 123-7, Symbol List) when moving from add to subtract or vice versa will be prevented by installing improved assembly Z. The improved assembly contains a roll and a stud for contact with the spear point of the rocker arm and also contains longer spring 4487 replacing spring Y.

Improved assemblies 2A-909136 (2 required) should be installed where this trouble occurs.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 572

December 1, 1955

### SERIES J MACHINES

**1-POOR ALIGNMENT OF PRINTED AMOUNTS** may result from a bent aligning blade H10 (Plate T1, Parts Catalogue) caused by rolls G4 forcing the aligning teeth of the type bars against the blade.

Rolls G4 are available in the following diameters to ensure clearance (.005" to .010") between the spring projections of the type bars and the restoring blade G2 at the end of the machine cycle:

X10-273	Not Plated (dark color)	Diameter .375"
X10-42	Copper plated	Diameter .387"
X10-113	Cadmium plated	Diameter .399"

Interference between the type bars and the cipher shutter, as the keyboard is restored to normal, may result from use of rolls having insufficient diameter.

**2-REPLACEMENT OF TORSION SPRING D4 (PLATE H1, PARTS CATALOGUE)** will be facilitated by using the following method:

Remove case.

Advance all type bars to 9 position.

Remove machine base and auxiliary base.

Remove cipher block actuating springs D9 from right and left sides.

Unhook springs C2 and either raise or remove latches C3 to make the torsion springs more accessible.

Remove clip D7 from right end of shaft D8.

Remove restoring arms and torsion springs by moving shaft D8 to the left.

A follow-up shaft made by bending approximately 3/4" of the blunt end of spring hook Kit 145A at right angle will permit removal of an individual spring as far over as four columns. Replacement of a spring in a column to the left of column four will require removal of the intervening restoring arms and springs.

**3-INCORRECT LISTING** caused by failure of the intermediate keyboard to fully restore during the previous machine cycle may result from loss of adjustment in restoring arm D3 (Plate D4, Parts Catalogue).

Permanent adjustment of the restoring arm is assured by installing improved arm 1JD64-1 and replacing washers D4 and D5 with eccentric X57-4. Parts are available.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 571

December 1, 1955

### SERIES F MACHINES

*1-LOCKED MACHINE RESULTING FROM BREAKAGE OF SCREW BR (PLATE 28, SYMBOL BOOK)* will be prevented by using lock washer 200204 and one full size 47 nut in place of two 47 1/8 nuts when installing screw BR.

The tightening of two 47 1/8 nuts on screw BR may cause a partial fracture at the time of installation and the resulting break during machine operation. To prevent undue strain on bellcrank K and screw BR recheck adjustments of the calendar feature and count section racks. The tests and adjustments outlined in subject 2, Sequential Adjustment Procedures, Section IV, Series F Service Mechanical Manual, also apply to the calendar feature and count section racks.

*2-TABULATION AND RETURN CLUTCH RESET* from the blue colored reference stop dog of "Test Panels" is revised to be .013" to .023". Tabulation and return clutch reset when adjusting panels other than Test Panels should be .008" to .028" when checked from any stop dog.

Paragraph E of Subject 1, Sequential Adjustment Procedures, Section IV, Series F Service Mechanical Manual should be corrected to read ".008" to .028" reset lead". Also add this sentence to paragraph E: "Reset lead from the (blue) reference dog of a Test Panel should be .013" to .023"."

With the above notations made in Series F Service Mechanical Manual, Mecanogram 545 is canceled.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 570

November 14, 1955

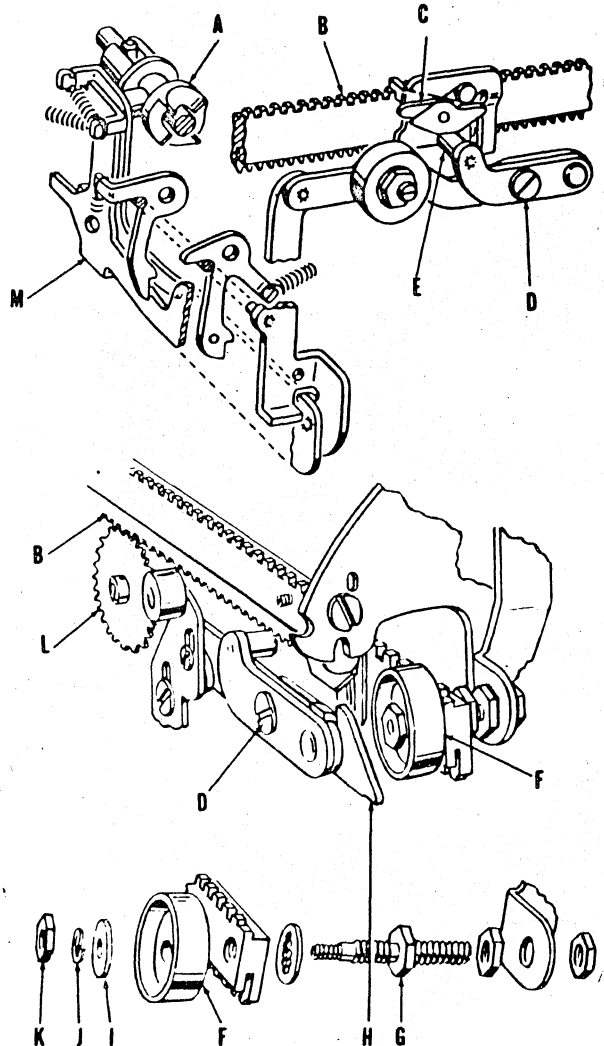
### SERIES P MACHINES

**1-BREAKAGE OF CLUTCH PIN BW (PLATE 31-5, SYMBOL LIST)** may be caused by the carriage stopping against its extreme right-hand limit before the carriage return clutch becomes disengaged.

Safety release cam H and eccentric roll F - now included in currently manufactured Series P600 machines - will assure disengagement of the M.R.C. clutch members before the carriage reaches its extreme right-hand limit, thereby safeguarding against breakage of pin BW (Plate 31-5).

Cam H and roll F may be installed in Field machines as illustrated. After the installation, the following tests and adjustments should be made:

1. The lower teeth of rack B should be centrally located in the teeth of gear L when the carriage is in any stop position. To adjust, turn post G on the right and left ends of rack B to position the rack forward or rearward.
2. With cam C positioned directly over roll E, clutch member A held rearward, and gear L held forward, there should be a minimum of .010" clearance between the teeth of clutch member A and the teeth of the clutch member on gear L. To adjust, turn eccentric D to give more or less throw to lever M. Do not adjust roll E high enough to create a bind.
3. There should be approximately  $1/64$ " clearance between the upper edge of cam H and roll F when the carriage is held in its rightmost position to locate cam H directly under roll F and when cam H is held depressed manually. To adjust, turn eccentric roll F.



(Over)

The following parts which are available are required for installation on Field Machines:

Part Number	Description	Amount Required
F X57-17	Eccentric Roll	1
G 905501	Post	1
H 905175	Cam	1
I 3826 1/2	Washer	1
J 1097 3/4	Lock Washer	1
K 46 1/4	Nut	1
46 1/4	Nut	used in place of
1097 7/16	Washer	Nut N (Plate 31-5, Symbol List) on screw D illustrated

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 569

November 1, 1955

### SERIES J MACHINES

1-WRONG ACCUMULATION may result from insufficient movement of bail F5 (Plate T1, Parts Catalogue) to fully reset adding rack stops F10.

Rolls F7 and F8 are available in the following diameters to ensure .010" to .015" reset clearance of the stops;

705339	Cadmium plated	Diameter .250"
X10-271	Not plated (dark color)	Diameter .260"
X10-199	Copper plated	Diameter .270"

Excessive resetting action (over .020") may result in loss of carries by preventing sufficient latching of a semi-carry.

Before changing roll size the trunnions of shaft F2 should be examined for being concentric with the shaft and the shaft for being straight. Parts are available. This cancels Item 4, Mecanogram No. 558.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 568

November 1, 1955

### SERIES P MACHINES

**1-FAILURE OF THE MOTOR TO RETURN THE CARRIAGE IN SERIES P600 MACHINES** may be due to a sheared pin F (illustrated).

Shaft H (1-905000Z) now contains a larger pin and larger rollers for added strength and requires clutch member G (905306) with wider slots to accommodate the rollers.

Excessive strain on the pin of shaft H may develop from a build up of friction tension in clutch assembly E. Improved clutch assembly E (2-905310A) includes cork and neoprene discs adjusted at the factory to provide 6 to 8 lbs. tension.

Increase of tension in field machines will be minimized by replacing two of the four carbon discs with two (cork and neoprene) discs A (905904). Reassemble the clutch components in the order illustrated. Clutches that are modified should be adjusted as follows:

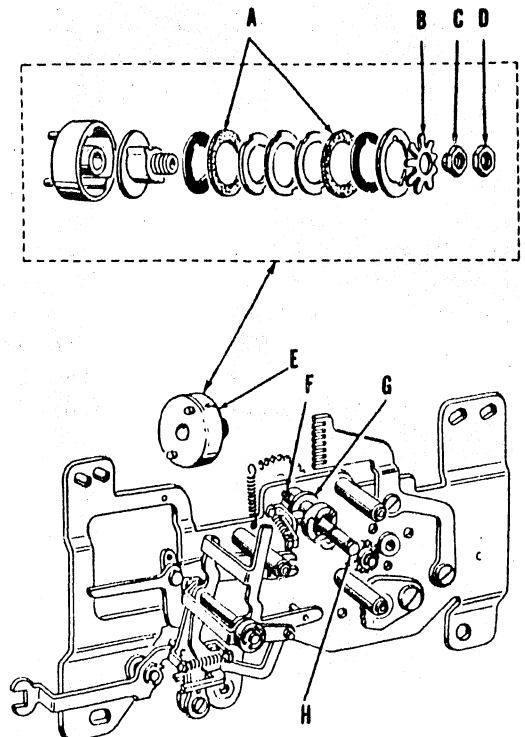
**Test:** Attach scale Kit 408 to the bottom edge of the left carriage end plate cover midway between the carriage rails. Motor driven return of the carriage should produce 6 to 8 lbs. reading on the scale.

To adjust, tighten or loosen nut C against spring B and lock by tightening nut D.

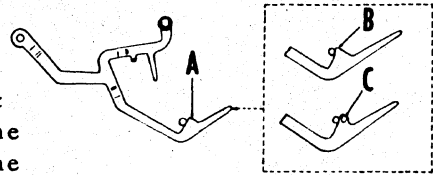
The improved drive shaft and clutch member should be installed and the friction clutch assembly either modified or replaced with an improved clutch when a sheared pin is encountered. Parts are available.

**2-INSTALLATION OF THE PLATEN ASSEMBLY IN SERIES P600 MACHINES** will be facilitated by using pivot screw X64-3 instead of screw D (Series P Service Mechanical Manual, Subject 15, Section IV.)

The unthreaded end of the pivot screw assists in aligning the holes in the carriage and platen end plates.



**3-ADDING INSTEAD OF SUBTRACTING CREDITS**  
**WHEN USING THE MULTIPLE CREDIT MOTOR BAR IN**  
**P600 MACHINES** may be caused by failure of latch A (illustration) to retain the subtract mechanism active after carriage control of the subtract lever is inactivated by return of the carriage in preparation for the second credit posting.



The retaining step in the lower extension of latch 1-904156A will be formed - as illustrated at B - for positive retention of the subtract mechanism until near the end of the machine cycle.

Machines in the field having latches constructed as illustrated in A may be adjusted by peening - as illustrated at C - to extend the high point of the step surface between 1/64" and 1/32" to insure retaining the subtract mechanism active.

#### ALL SERIES MACHINES

**4-DRIFT AND CENTER PUNCHES KIT 96B-4 THROUGH KIT 96B-12** are now being made of improved material to eliminate chipping and reduce risk of injury to servicemen.

All punches Kit 96B-4 through Kit 96B-12 located in Parts Distribution Centers, Branches and Servicemen's Bags should be scrapped and replaced with the improved punches as a safety measure.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 567

November 1, 1955

### SERIES M MACHINES

**1-REPEATED ENGAGEMENT AND DISENGAGEMENT OF THE REGISTER RETURN CLUTCH IN M200 AND M800 MACHINES** when a return trip pawl D or E (Plate 18, Power Symbol List) is located over roll A (illustrated) will be prevented by installing restraining latch F (not applicable to Sterling construction).

Lowering of roll A by a trip pawl lowers detent D, moving slide H to the left and engages the register return clutch. As the detent is lowered, latch F follows, under tension of spring I, until it rests on top of stud G in slide H.

Return of the register to its limit moves slide H to the right far enough to permit latch F to engage stud G, thereby preventing reengagement of the clutch as long as the trip pawl remains over roll A.

Movement of the trip pawl from roll A permits lever assembly J to restore and raise restraining latch F clear of stud G to re-activate the register return mechanism.

Changes to other parts required in conjunction with installing the restraining latch are as follows:

The guide slots in slide H are elongated to permit sufficient movement of the slide for safe latching of stud G by latch F as the slide is restored during register return.

Limit stud L has been added to control plate K to prevent overthrow of lever Q.

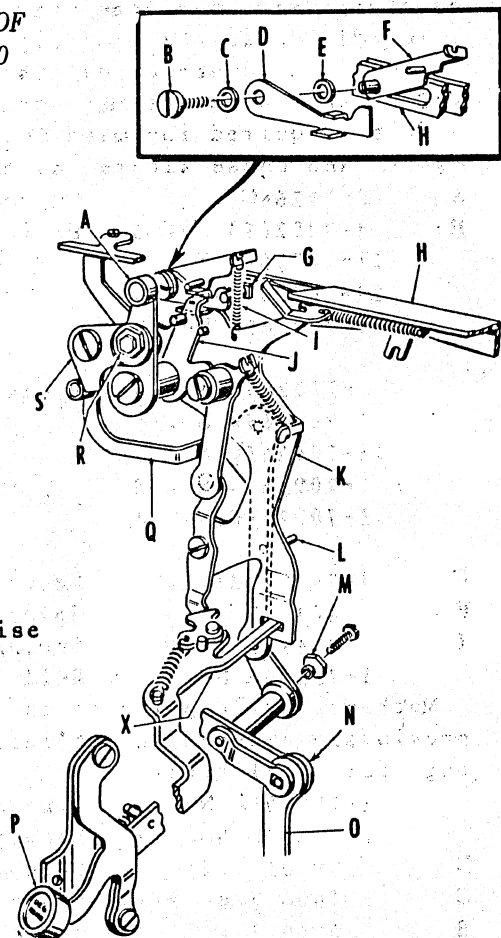
Bellcrank N is altered to provide more movement to power indexing link O and insure positive switch contact during register return.

Latch L (Plate 18, Power Symbol List) is removed to prevent conflict with the functioning of latch F (illustrated).

Install the improved parts when the control bar setup causes frequent stopping of a trip pawl over roll A, after which the following tests and adjustments will apply:

Test 1 - There should be lateral clearance of register trip pawls with roll A in each tabulator stop position.

To adjust, move register trip pawl to the right or left. When closeness of the setup does not permit moving the trip pawl, eccentric R may be turned to cause lateral movement of roll A for clearance. Note: The wide



(Over)

side of the eccentric should be upward to insure full restoring of bell crank N and link O.

Test 2 - Depression of register return key P should cause the following actions in sequence; (1) the switch points to close, (2) the return clutch to engage, and (3) stud G to pass over detent D with approximately .005" latching lead.

To adjust, for action 1, turn eccentric M. For action 2, locate arm AC (Plate 19-1, Power Symbol List) on shaft AI. For action 3, bend the pilot arm of the register return key slide at X.

Test 3 - Register return pawls D and E (Plate 18, Power Symbol List) should provide the same action as given in test 2.

To adjust, locate the trip pawls up or down.

The above construction started in Series M200 machines with Serial No. M8232D and in Series M800 machines with Serial No. M8343D.

Parts required for machines starting with Serial No. M6503D, M1565C, M2975E and those altered as outlined in Mekanogram 505 are as follows:

K	2-79266C	Support plate bracket, includes lever J
H	1-709265A No. 9	Register return slide, 100 pinion 12 x 8
	11-709265A No. 9	" " " " " 8 x 12
	21-709265A No. 9	" " " " " 6 x 15
	31-709265A No. 9	" " " " " 8 x 10 and 10 x 10
	1-709265D No. 1	Register return slide, 60 pinion 6 x 10
	1-709265D No. 2	" " " " " 7 x 8
	11-709265D No. 2	" " " " " 5 x 12
	1-709265D No. 3	" " " " " 8 x 7
	1-709265D No. 4	" " " " " 4 x 14 and 4 x 15

F	1-79105 3/4	Restraining latch
E	404157	Space collar
I	404809	Spring for latch F
	1-75240A No. 2	Bell Crank

Machines built prior to the above serial numbers - except machines previously altered as outlined in Mekanogram 505 - require the following additional parts:

	1-709105B No. 2	Support plate, 100 pinion
	1-79105D No. 13	Support plate, 60 pinion
D	79105 1/2	Detent
C	160A Fte. 217	Space collar
B	2850 3/8	Screw

NOTE: Machines with register indicator control arm O (Plate 19, Power Symbol List) not previously altered as outlined in Mekanogram 505 will require counterboring of the holes in support plate 1-79105D No. 13 to provide clearance between the retaining screws and the register indicator control arm.

This supplements Mekanogram No. 505.

2-MACHINE LOCKUP OR WRONG RESULTS IN SERIES M800 (STERLING) MACHINES may be caused from failure of the adding pinions in the register section to engage the carry racks in the carry section prior to the start of the full carry operation.

Stronger spring 69804 replaces spring 79812 No. 3 (Plate S-8-1A, Accumulation Symbol List) to provide faster movement of the register section when disengaging from the adding racks and entering the carry racks.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

*Loejoy*  
No. 566

November 1, 1955

### SERIES F MACHINES

**1-OIL LEAKAGE AROUND THE CASE SCREWS** can now be prevented by cementing plastic caps inside the base over the tapped holes.

The following method for installation is recommended.

- Remove the machine case and thoroughly clean the surface around all case screw holes with a clean cloth dampened with Burroughs Platen Restorer to be sure it is clean, dry, and free of grease or oil.
- Apply a heavy ring of S166 cement, about one-half inch in diameter, around the screw hole and press the FB480 plastic cap in place, being careful to center the cap over the hole to prevent the cap from being moved as the case screw is tightened.

Parts required:

S166 - 1 ounce tube of cement

FB480 - Plastic Caps - 8 required for each machine

**2-DRIVE TRIP CONTROL CAM (AE, PLATE 56)** information supplements Item 2 of Mecanogram 551 to clarify changes made.

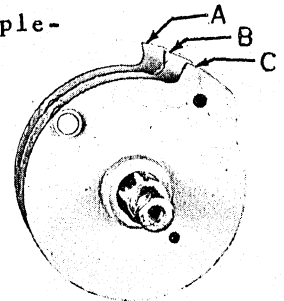
Cam 1A-401129 (B illustrated) was designed for use with the camshaft in all series of machines above Serial F15006P and in Series F300 and F500 machines below Serial F15006P.

This camshaft was designed for the F300 machines. A delay of 7° of all machine functions to permit additional time for register selection was obtained by repinning the clutch dog, clutch reset, full cycle and degree pointer assemblies 7° in advance.

The projection of cam B has been repositioned to provide a later release of the roll controlling the drive trip and the trailing contour has been undercut to remove interference with the dropping of the roll at the end of the machine cycle. Cam B assures the latest possible release of the roll and provides a positive delay between machine cycles for add relay carries.

Cam 1Z-401129, (A and referred to in Mecanogram 551) which is copper plated for identification, was designed to provide the same positive delay between machine cycles in Series F100, F200 and F400 machines below serial F15006P as that obtained in machines of current construction using cam B.

Cam 1-401129Z (C) was designed for early F300 production machines to restore the relationship between the drive trip and the 7° advanced pinning of the clutch dog, clutch reset and full cycle assemblies. It is no longer required for Field use since it has been replaced by cam B.



SERVICE DIVISION

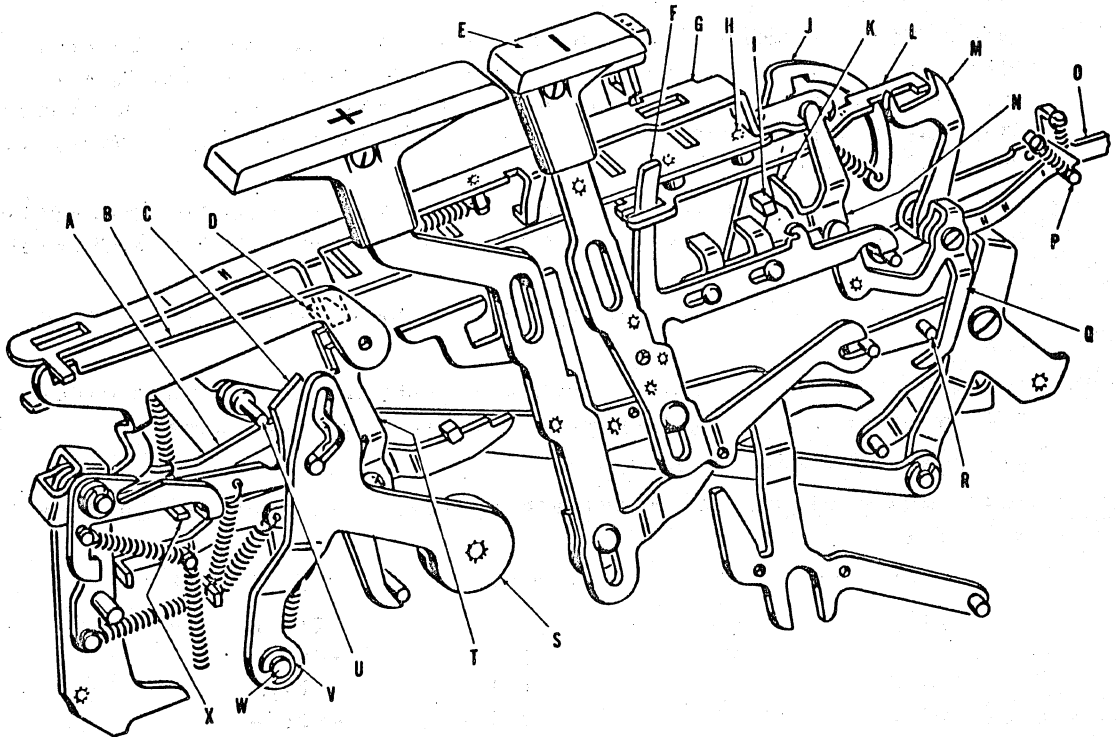
# Burroughs

## MECANOGRAM

No. 565

October 1, 1955

SERIES P MACHINES



1-COMPLIMENTARY TOTALS CAUSED BY PREMATURE DEPRESSION OF THE TOTAL KEYS OR MINUS BAR E ON STYLES P 206 AND P 208 MACHINES may be prevented by installing an improved slide L, timing arm S, and checking the following adjustments for being correct.

1. Timing arm C should be positioned to permit the upper edge of its lip to be approximately flush with the upper edge of latch T when the handle is forward during an add operation; timing arm C should also be positioned to provide approximately .010" clearance of stud U over the upper edge of timing arm C as minus bar E is slowly depressed.

To adjust, bend the vertical leg of timing arm C.

- 2- There should be approximately .010" clearance between the lowermost portion of lip D and the top edge of the vertical portion of latch A when the machine is normal.

To adjust, bend lip X.

3. The vertical projection on latch A should be centrally aligned with lip D when minus bar E is depressed and the handle is forward.

(Over)

To adjust, bend the rearmost portion of latch A.

4. There should be minimum (pass by) clearance between the rear edge of the vertical projection on latch A and the forward edge of lip D when minus bar E is depressed and the handle is forward.

To adjust, bend the vertical projection on the forward portion of slide G.

5. There should be only a minimum amount of upward movement in the horizontal arm of bail O when the machine is in a clear minus balance position and stud P is manually moved slowly down and up.

To adjust, weave bail O.

Note: Before proceeding with test No. 6 care should be taken that there is at least  $1/16$ " clearance between stud R and leg Q when the machine is in a minus balance position and the total key is latched depressed. Should there be a lack of clearance at this point, leg Q should be bent slightly rearward.

6. There should be minimum of clearance between the lower edge of lip K and the upper portion of square stud I during the forward stroke of a minus balance total.

To adjust, bend the rearmost portion of bell crank N to or from stud P.

7. Stud R should just contact leg Q when the machine is in a minus balance position and the total key is latched depressed.

To adjust, bend leg Q.

Parts required, will be available approximately October 10, are as follows:

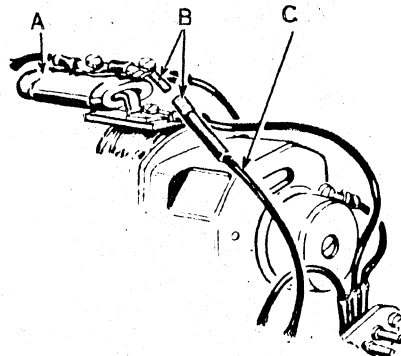
Part Number	Quantity	Description
S 1-94140 1/4	1	-Timing arm
W 84560 No. 3	1	-Post
V 21 No. 2	1	-Clip
L 1Y-92131 No. 4	1	-Slide
H 92559	2	-Rivets

2-IRREGULAR SPACING IN STYLE W AND W2 CARRIAGES may be caused by a broken eye in the lower end of spring X (Plate 27, Carriage Parts Catalogue).

Spring 1-72825, containing metal eyelets at both end of the spring, now replaces spring X. Deepen the spring notch in bracket AR for the lower spring eyelet, using warding file Kit 240. Parts are available.

3-BREAKAGE OF HAMMER SPRINGS ON SERIES P600 MACHINES may be caused by improper assembly on shaft B (Plate 1-1, Printing Parts Catalogue).

These springs must be assembled on the shaft with the double portion of upper eye facing toward the front of the machine. When assembled in reverse, the eye of the spring interferes with the forward portion of the hammerhead comb, resulting in breakage of the spring.



4-REMOVAL OF MOTORS FROM DIRECTOR STYLING SERIES P MACHINES has now been facilitated by the adoption of slip connector B between resistor A and handle switch wire C.

SERVICE DIVISION

Printed in U.S. America

## M E C A N O G R A M

October 1, 1955

### SERIES C MACHINES

*1-DIE - CAST ALUMINUM CASE 1-50667C STYLE 9* is used on currently manufactured Style 5 10 55 machines. It may be identified by the oval opening in the rear of the case for the detachable line cord and by the tapered sides which provide a rear top outside width of 9 3/4".

Case 1Z-50667C Style 9 (also of die - cast aluminum) is available for replacement of straight-sided plastic cases 1-50967B No. 2 Style 9, 1-50967BZ No. 2 Style 9, 1-50967C No. 2 Style 9 on Style 5 10 55 machines without detachable line cords. It may be identified by the tapered sides and by a slot extending downward from the oval opening in the rear side to accommodate the line cord and the grommet.

When installing case 1Z-50667C Style 9 in place of a straight-sided plastic case, remove shipping braces PI (Plate 3, Symbol List) and replace space collars AA and screws Z with shorter collars 50304A and shorter screws 50507.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 563

October 1, 1955

### SERIES F MACHINES

**1-THREADED REPAIR POST 403555Z FOR SUPPORTING THE REAR FORM CHUTE ASSEMBLY** is available to replace the riveted post in the carriage side frames to which latch plates D and P (Plate 3, Series F Symbol List) are latched and which have become loosened.

The threaded end of the repair post fits through the hole in the side frame in which the old post was riveted and is held by a 45 1/4 nut.

**2-MOTOR PERFORMANCE WILL BE MORE CONSTANT AND QUIETER** as a result of installing improved leather coupling R (Plate 53, Symbol List).

The coupling (401904) has two of its four holes elongated to permit turning of the motor armature shaft and worm shaft E without cramping when the shafts are slightly out of alignment. Parts will be available 10-11-55.

**3-RESETTING OF NINE TO NINE CARRIES** from the rebound of shaft AQ (Plate 41, Symbol List) will be prevented by installing redesigned cams M and N (Plate 54).

The carry reset dwells of the cams are shorter and the cam surfaces between the reset and initial carry dwells are more gradual to permit earlier starting and smoother action of the reset shaft when moving from the carry reset to the initial carry position.

Install the redesigned cams where loss of early initial carries is experienced. Parts are available.

1A-401138

Adding Cam

1A-401136

Subtracting Cam

SERVICE DIVISION

[illegible]

PLATE 10. 10-14-1944

# Burroughs

No. 562

## MECANOGRAM

*Item 1  
Cancelled by  
Cort Jan. 1.*

SERIES M MACHINES

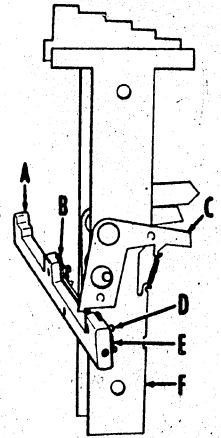
*See Mec 590*

September 1, 1955

**1-CONTINUOUS MACHINE CYCLES (RUNAWAY) IN SERIES M200 AND CLASS 72 MACHINES** caused by accidental reset of an indexed lift pawl C (Plate 22-1, Accumulation Symbol List) from the initial impact of raise bar AM will be prevented by spring-cushioned auxiliary bar B (illustrated) and re-designed lift pawls C.

The auxiliary bar, which is under tension of springs E, cushions the initial impact of the bar against lift pawl C and provides positive locating of the pawl over the raise bar. As the pawl locates fully over the raise bar, the auxiliary bar raises into the milled recess in the lower surface of the lift pawl to hold the pawl from accidental reset throughout the machine cycle.

When continuous machine cycling is experienced during multiplying or subtract operations, hook AN (Plate 22-1) should be removed and the following parts installed:



Part number	Reference	Quantity	Description
1-704914B No. 6	A	1	Raise bar. Includes B and D
403572		2	Screws in each end of A
1685 No. 3	E	2	Cushion springs for B
704150 No. 8		1	Lift arm for position 7. Machines prior to A915678 (Style 720722) and B62810 (Other styles) use 704150 No. 2
1A-74107 No. 1	F	2	Cipher and Full Cent plate assemblies
1A-74107 Nos. 2 thru 18 F		1 each	No. 2 thru No. 9 multiplying plate assemblies
1A-16 1/2A Fte. 134	F	1	Subtract plate assembly

Machines prior to Serial No. B 131300 should have eccentrics U (Plate 22-1) moved from the lower to the upper ends of links L. Parts required:

Part number	Quantity	Description
704300 1/2 No. 2	2	Eccentrics on screws 403572
702589	1	Screw to replace AJ (Plate 22-1)
406320	1	Collar on 702589
704588	1	Screw to replace T (Plate 22-1)

Parts are available.

**2-ERRATIC FORM SPACING** may result from loosened screw I (Plate 1-1, Carriage Symbol List) in variable space twirler H.

Screw B (8850 1/8) which has more threaded length is now being used to provide tightening of the screw against the platen shaft instead of against the hub of the twirler and should be used where loosening is experienced.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 561

September 1, 1955

### SERIES J MACHINES

**1-CARRY FAILURE IN THE FIRST COLUMN**  
will be prevented by installing improved parts A, B, C, D and E as illustrated.

Spring A is assembled on the intermediate rack stop in the first column to assure more positive indexing of a carry.

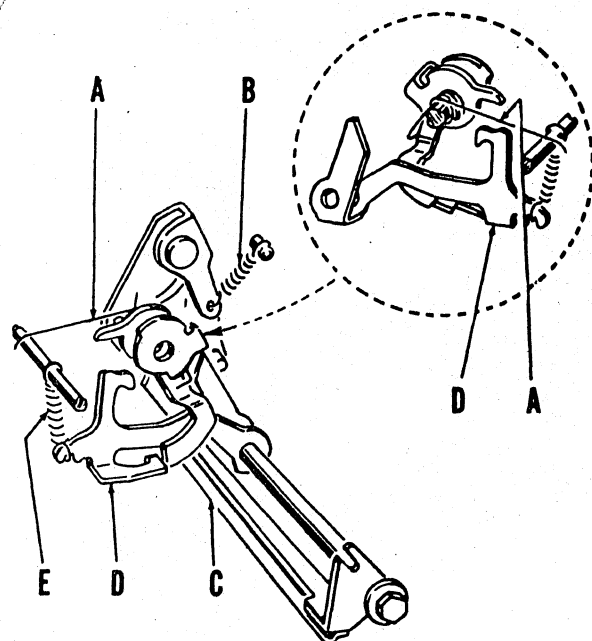
Carry bail C is reinforced to prevent weaving, and lighter detent springs B and E permit easier action of the carry bail.

The extension on adding rack stop D is removed as latch A (Plate T2, Parts Catalogue) is not required on machines equipped with spring A (illustrated).

Remove latch F and spring A (Plate T2) before installing the improved parts in field machines.

Parts required are available as follows:

Part number	Description
A. JT 48	Spring
B. 2883 3/4	Spring
C. 1JT25	Carry bail
D. JT11	Adding rack stop
E. 404809	Spring



*See Memo 596*

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 560

September 1, 1955

### SERIES P MACHINES

**1-ERRATIC PAPER FEED** may be caused by the right end of tear off blade Q (Plate 3, Carriage Parts Catalogue) binding detent D.

In new machines, the hub of the detent 1A-83213A No. 2 is 1/8" shorter and has space collar X10-75 next to end plate I to align the detent with the spacing pinion.

In Field machines, free action of the detent will be provided by removing stock from the underside of the detent hub or from the upper edge of blade Q for passing clearance.

**2-OPEN END, WRENCH KIT 21**, is available for removing and replacing the sub base screws in Series P600 machines.

Order for immediate need only.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 559

September 1, 1955

### SERIES F MACHINES

1-WRONG ACCUMULATION during carriage controlled subtraction may be caused by premature release of meshing hooks L (Plate 39, Symbol List) from subtract slide Z, thereby losing positive control of accumulator sections "A", "B" and "C".

Full hold of meshing hooks L on the square studs of subtract-total control slide Z, until  $320^\circ$  in the machine cycle, will be provided by new auxiliary latch plates FB326 and added latch projections on subtract bell cranks 1FB175-7 ("A" section), 1FB175-11 ("B" section), and 1FB176-13 ("C" section).

The main latch plates 1FB178-1 (A, Plate 7) and 1FB178-2 now have slots to clear the auxiliary latches. The auxiliary latches pivot on the posts with the main latch plates and through torsion springs X80-92 are flexible to permit full hold of the main latch plates on other lanes of control with non-add indexed in sections "A", "B" or "C".

The stud on the lower arm of net accumulation bell crank 21-404183 No. 5 (T, Plate 47) has been shortened to prevent interference with the new section "C" subtract bell crank.

The following parts should be installed in machines requiring more positive control of meshing hooks:

<u>Symbol</u>	<u>Quantity</u>
21-404183 No. 5	1
1FB175-7	1
1FB175-11	1
1FB176-13	1
1FB178-1	1
1FB178-2	1
FB326	2 required for F100 & F200 3 required for F300, F400 & F500
X80-92	1 for each FB326

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 558

July 1, 1955

### SERIES J MACHINES

**1-FAILURE OF THE ACCUMULATOR PINION ASSEMBLY TO MESH WITH THE CORRECT ADDING RACKS**, add or subtract position as selected from a control key, may be caused by binding of listing hook 19 (Plate D3, Parts Catalogue) in the slot of guide plate L3. Replacement of nut 111 with shoulder nut 203446 No. 2 will assure free action of the listing hook in the guide plate. Access to the nut is available through an opening in the right side frame.

**2-FAILURE OF THE RIBBON MECHANISM TO REVERSE** caused by the projection on bail K1 (Plate R1, Parts Catalogue) binding in the slot of detent L5, should be prevented by reassembling detent L5 on the shaft in reverse manner - i.e., locating the head of the detent toward the right side frame - and replacing spring L6 with lighter spring 7283A Style 10.

**3-RETENTION OF MACHINE MOUNTING SCREWS L** (Plate B1, Parts Catalogue) while machines are in transit will be assured with screws which have been lengthened 3/64". The part number has not been changed but the new screw can be readily identified as the threads do not extend the full length.

**4-WRONG ACCUMULATION** resulting from failure of bail F5 (Plate T1) to fully reset intermediate adding rack stops F10 will be overcome by installing larger diameter rollers X10-199 in place of rollers F7 and F8.

*See Memo 569*

SERVICE DIVISION

# Burroughs MECANOGRAM

No. 557

July 1, 1955

## SERIES P MACHINES

**1-PRINTING ALL NINES ON A SUBTOTAL OPERATION** in Classes 8, 9 and 10 or Series P200 machines may result when wear of lip A (illustrated) reduces throw needed to position pawl C or D in the path of roll X (Plate 96, Symbol List).

The lip is now hardened to prevent wear and should be used for replacement.

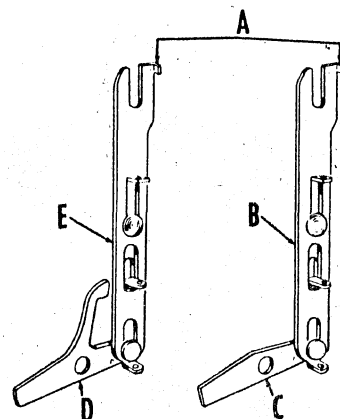
Parts required are available as follows:

B (Illustrated)	11-94116 No. 1	Class 9 or P200 Machines
E (Illustrated)	1-94116 No. 1	Classes 8 or 10 Machines

K (Plate 96-1,  
Symbol List)

81503

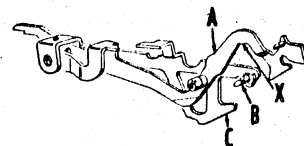
Rivet to attach B or E (illustrated)  
to J (Plate 96-1)



**2-REPLACEMENT OF MOTOR BRUSHES IN SERIES P200, P400 AND P600 MACHINES** may be made without removing the base by using new knurled brass brush holder caps 4354 No. 3 (AB, Plate 131, Symbol List).

Brass caps should be installed in the lower brush holders during the next regular inspection.

**3-FAILURE TO PRINT THE SYMBOL AND DAYS OF THE MONTH** from OCK's 6 and 5 in Bank Teller Machines Styles 1010359 and 361 may be caused by a broken control arm A (illustrated).



Stock has been added to the arm at X for added strength. Compensating stock has been removed from the flange of stud B. Replacement requires assemblies A (1-84160A No. 18) and C (11A-84113 No. 5). Parts are available.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 556

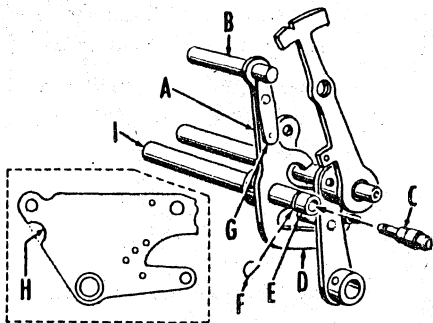
July 1, 1955

### SERIES H MACHINES

*1-FAILURE TO RESET CARRY PAWLS* may be caused by wear of the bearings for shaft B (illustrated).

Repair assembly A is now available and may be installed without removing a machine side frame.

NOTE: To avoid damage to springs F, do not insert trunnions C into shaft I until the shaft is in the machine. Install as follows:

- 
- Remove the keyboard. Remove shaft B. Remove index wires No's. 4 thru 8 in column one. Move the subtract lever to subtract position and advance the machine to the last step of the forward stroke. Drop all sectors to 9 position.
  - Remove the motor bar attachments from the front outside area of the right side frame to provide an opening for the repair assembly.
  - Disconnect links K and H (Plate 85-1, Accumulation Symbol List) from the lower left extension of the worn assembly, and break the extension away from its hub.
  - Cut the shaft of the worn assembly in two with a hacksaw blade, and remove the pieces.
  - In early machines, cut a notch in the full stroke segment retaining plate to the approximate outline shown at H (illustrated) for clearance of the repair assembly when it is being installed. Half-round file Kit 243 may be used.
  - Remove the left arm from the repair assembly. The taper pin in the arm is lightly driven for easy removal.
  - Install the repair assembly through the right side of the machine, and in the process, reassemble the left arm, previously removed, on the assembly as it nears its working location. Position stud E through the opening in arm D.
  - When the repair assembly is in working location, replace the taper pin in the hub of the left arm. Support the hub and set the pin firmly.
  - Insert a trunnion C into each end of the repair assembly, after the pin has been set in the hub.
  - Reassemble the machine.

Parts required are available as follows:

(Over)

- A 21AZ-209004 Style 17 Reset assembly, standard construction.  
or  
31AZ-209004 Style 17 Reset assembly, with permanent split  
between columns 7 and 8.
- C 209516Z (2 required) Trunnion for repair assembly.

2-FAILURE TO RESET CARRY PAWLS, caused by a broken or worn retaining clip G, may be corrected by installing set collar 1-73375 on shaft B to the left of its central bearing. The collar should not interfere with adjacent parts. It is not necessary to replace a worn or broken clip.

3-LOSS OF CROSSFOOTER CARRIES, SCATTERED PRINTING OF CROSSFOOTER TOTALS OR SUBTOTALING OF CROSSFOOTER TOTALS IN NO SPACE STROKE TOTAL BANK MACHINES may be caused by wear of the shoulder stud in total lever N (Plate 43-1, Accumulation Symbol List) for link U.

Destroy all total levers containing studs that are soft to a file test, and order new assemblies 1-62127 for replacement. The new assemblies have studs hardened by an improved process.

SERVICE DIVISION

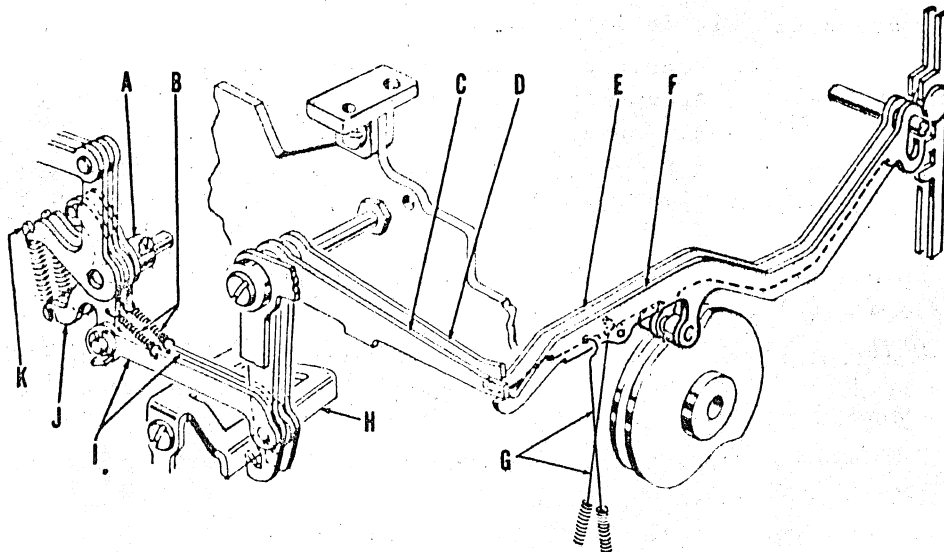
# Burroughs

## MECANOGRAM

No. 555

July 1, 1955

### SERIES F MACHINES



**1-ERRATIC SKIP OR RETURN RESULTS** may be caused by a tendency of bellcrank C or D to float out of position during keyboard indexed accumulator "B" total or sub-total operation. This floating action can bring the latching point of the bellcrank in line with the lower edge of latch plate H, preventing the plate from lowering to hold the index of lanes 1 thru 5.

Positive control may be obtained by installing heavier springs B and installing new sensing levers E and F which have springs G located closer to the right side frame preventing upward motion of bellcranks C or D as the sensing camshaft is rotated with no control pins active. Parts are available.

Note: Collar A should be located to assure free action of arms J and K.

Parts Required	Quantity	Letter
7282 1/4	2	B
1FS10-9	1	E
1FS10-10	1	F

**2-EARLY DISENGAGEMENT OF ACCUMULATORS "A", "B" OR "C" WHEN TOTALING** may be caused by excessive receding of bell crank D (Plate 7, Symbol List) against latch plate A after the high point of the sensing cam has passed under the connecting control lever. Minimum receding is necessary to maintain hold of meshing hook X (Plate 48-4) on the square stud of the accumulator slide.

(Over)

The latching surface of bell cranks D (Plate 7) for latch plate A contact has been changed to reduce receding during "A" and "B" totals. The stud in the upper extension of bail BX (Plate 40-7) has been relocated to reduce receding during "C" totals.

The improved parts - copper plated for identification - should be installed where inadequate hold of the meshing hook over the square stud in the control slide permits lost control of an accumulator.

Parts required are available as follows:

1-404182 No. 6	Accumulator "A" bell crank
1-404182 No. 10	Accumulator "B" bell crank
1-404144 No. 3	Accumulator "C" bail

3-BURNING OF FUSETRONS V (Plate 50-2, Symbol List) with 110 volt motors operating under normal conditions can be prevented by using a fusetrone of a heavier rating.

A new 1.25 ampere fusetrone 1X82-5 will be available approximately August 10, 1955 for use with 110 volt motors.

4-LOSS OF SUBTRACT RELAY CARRIES IN 10 PITCH CONSTRUCTION ACCUMULATORS may be caused by insufficient releasing clearance between latch bail D and driver E when driven by the long tooth of pinion A.

Additional drive during relay subtract carries is provided by the following design changes:

The slot in the lower end of link C is shortened to provide earlier movement of directional index bail G.

Carry Latch D has the angle of the surface at F increased to provide more releasing clearance for the formed lip of driver E.

Directional index bail G has the subtract cam surface altered at H so the actuation of the carry rack will take place while the driver spring is strongest. The cutout at I provides clearance for the stud in driver E made necessary by the alteration at H.

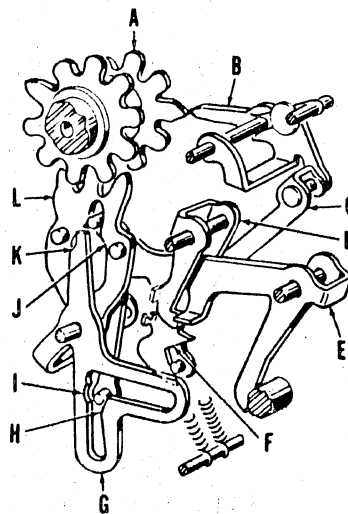
The milled portion of the bail finger at K is necessary because of the additional movement of the bail from link C.

Carry rack L is altered in outline at J to provide clearance for the directional stud in driver E because of the earlier movement of the carry rack provided by the altered cam surface at H.

Improved parts should be installed when insufficient releasing clearance causes loss of subtract relay carries.

Parts required will be available August 15.

1A-409013		Fugitive one shaft assembly
1A-409101	B	Carry pawl



SERIES F MACHINES

- 3 -

Mecanogram No. 555

1-409103A No. 1	L	Carry rack (all except right-hand column)
1-409103A No. 2	L	Carry rack (right-hand column)
409104A	D	Carry latch bail
1-409106A	G	Directional index bail

5-BREAKAGE OF REGISTER DETENT STEP PLATE M (Plate 40-4, Symbol Book) at the number 9 step undercut has been overcome by reducing the width of the guide slots.

The new step plate FA66 requires two screws 79511 with smaller diameter shoulders and two smaller washers 3821 1/2.

6-TIE CLIP FC190 is used in control units constructed at the factory to stabilize the control pin magazine retaining strips and prevent dislodging the magazines during shipment or rough handling.

Two or more of the clips should be installed in control units constructed in branches.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 554

July 1, 1955

### SERIES A PRODUCTS

1-STUDS A AND C AND NUT B (illustrated) are now available for retaining Series C and P machines in position on Styles 65A and 66A stands. The assemblies used to accommodate the various styles of feet are as follows:

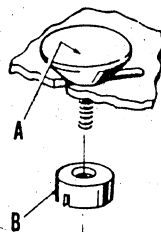


Fig. 1

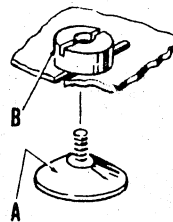


Fig. 2

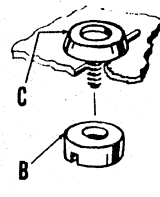


Fig. 3

Fig. 1 - for machines containing round feet.

Fig. 2 - for machines containing rocker feet (nut B used as retainer).

Fig. 3 - for Series P200 machines with shock mount feet.

A	20958 1/4
B	20947 3/4
C	20958 1/4 No. 3

The set of holes in the extreme left side of the stand platform (next to the check table) is used to anchor Series C machines; the other set of holes to anchor Series P machines. The rear hole of the latter set in early stands should be elongated to accommodate Series P200 machines. Approximately 3/8" of stock should be removed from the forward portion of this hole.

Stands 65A and 66A packed after (date stamped on exterior of carton) will contain two each of the above studs and nut.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 553

July 1, 1955

### SERIES M MACHINES

*1-NONESCAPEMENT OF THE INTERMEDIATE KEYBOARD FROM LISTING KEY DEPRESSIONS* may result from a worn escapement slide D (Plate 2, Keyboard Instruction Book).

The escapement slide is improved by attaching an auxiliary plate to plate I with eccentrics, which removes the need to adjust by grinding. It is further improved by lengthening the formed lip at the top to delay escapement of the intermediate keyboard until indexing strips E are restored below intermediate stops A. Clearance is maintained between the longer formed lip, when in normal position, and the teeth of escapement rack C by using a thinner guide plate R. When installing an improved slide in early machines, guide plate R should be bent down slightly at its left end to compensate for the longer lip on the slide; or a new escapement segment AE (Plate 5), which now contains a thinner guide plate, should be installed.

The following assemblies are available for replacement:

- 1-702274 No. 4    Classes 72-78 and Series M200-800 without fractions
- 11-702274 No. 4    Classes 72-78 and Series M200-800 with fractions
- 1A-702274 No. 3    Classes 75-77 and Series M700

The following tests and adjustments supersede those given in Plate 2 and should be followed when installing an improved escapement slide.

Test - Align intermediate keyboard stops A with adding rack stops O.

Note: Because the intermediate keyboard travels in an arc as it is raised, flush alignment of stops A and O should be toward the midpoint of upward travel of the keyboard assembly.

To adjust, turn eccentric N.

Test - The formed lip at the top of slide D should have only passing clearance with the tooth of rack C on its left to provide initial escapement of the keyboard as pawl B is raised above the teeth of rack C.

To adjust, turn eccentric Q.

Test - Indexing strip E should align with intermediate stop A.

To adjust, turn eccentric E1. Machines that do not contain eccentric E1 require turning eccentric N to equalize between alignment of intermediate stop A with adding rack stop O and intermediate stop A with indexing strip E.

Test - When a listing key is depressed slowly, stop A should latch into its raised position just prior to the initial escapement of the keyboard. All key levers should cause uniform lift of slide D.

To adjust, turn one or both eccentrics in plate I. Note: With a listing key fully depressed there should be at least .010" clearance between pawl B and rack C.

Parts will be available July 15, 1955.

(Over)

1002  
2-ELECTRIC SHOCK may result from absence or ineffectiveness of insulator AK (Plate 38, Carriage Symbol List) permitting contact of the spring used with shield I and the base of lamp O.

Improved insulator 200194 1/4A, made of neoprene, is available for replacement.

3-FAILURE OF THE CARRIAGE TO RETURN may result from worn teeth of clutch members AC and AD (Plate 22, Carriage Symbol List).

The teeth of clutch member AC are now repositioned to provide full contact of the teeth in both clutch members to distribute the load more evenly. When wear is encountered both clutch members should be replaced.

Parts required:

1-705260A Driven clutch member  
1-705353 Driving clutch member

Parts will be available July 15, 1955.

4-PRINTING THE WRONG SYMBOL WITH MINUS BALANCE TOTALS IN SERIES M800 MACHINES-caused by failure of latch AD (Plate 55, Accumulation Symbol List) to release from the formed lip of bracket C, thus retaining symbol type A (Plate 31, Printing Symbol List) in subtract position during the last cycle of a minus balance operation-will be corrected by installing the following improved parts:

Intermediate arm X (Plate 55, Accumulation Symbol List) contains a larger diameter stud AC to insure release of latch AD by the camming action of the arm on the twin cam shaft assembly.

Drive trip slide Y has a stud for spring 480B to retain the slide in normal position until it is indexed through machine operation. Spring anchor 20 No. 104 is placed under the forward screw AE (Plate 7-1) for the other end of the spring.

Latch AD (Plate 55) has stock removed from its underside to compensate for the larger diameter of stud AC and to prevent cramping the latch against the adding rack index arm shaft located immediately under the latch.

Bell crank AB is no longer milled at the form thus insuring full hold on slide Y and providing early forward movement of stud AC under the arm in the twin cam shaft assembly.

Parts required:

1A-702221 No. 3	Keylock slide
1-702102 A No. 5	Drive trip slide
1A-72220 No. 2	Intermediate arm
20 No. 104	Spring anchor
480B	Spring between 20 No. 104 and
	1-702102A No. 5
1-704124 No. 2	Bell crank

Parts will be available August 1, 1955.

5-BREAKING OR LOOSENING OF SCREWS AU (Plate 2, Carriage Symbol List) will be prevented by having the counterbored holes in bar AY aligned with the heads of the screws as the latter are tightened.

Alignment will be provided by installing but not tightening screws AU with screws AG loose. Then tighten screws AG and finally tighten screws AU.

**6-FAILURE OF SOLENOID BY (PLATE 8-4A, KEYBOARD SYMBOL LIST) TO OPERATE OR FAILURE OF THE CARRIAGE OR REGISTER TO RETURN IN SERIES M200 AND M800 MACHINES** may be caused by insufficient movement of the switch contact arm in switch assembly AI to close or open the switch points.

Increased movement of the switch arm has been provided by lengthening the formed end of lever AG (1-701274) so that it contacts the switch arm closer to its fulcrum. Stronger spring 44805 replaces spring AH to provide positive restoring of lever AG.

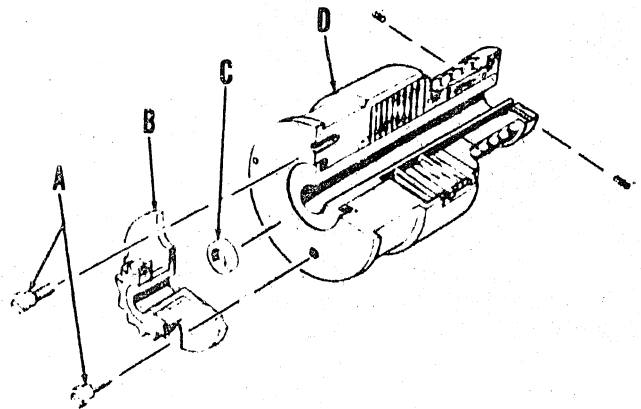
Install the lengthened lever and stronger spring when solenoid failure is experienced.

Parts are available.

**7-REGISTER RETURN CLUTCH FAILURE**

resulting in partial or sluggish return of the register pinion assembly will be eliminated by installing the improved clutch assembly illustrated. Installation of the improved assembly will also overcome excessive clutch slipping.

The improved clutch contains felt discs for better friction quality and has a bronze bearing C for free turning of the clutch on its shaft.



Machines built after Serial No. M2519D require:

1-71373D	D, Illustration	Clutch assembly
701377	C, Illustration	Bronze bearing
1-701306A	B, Illustration	Gear to drive take-up spindle
71626 (2 req.)	A, Illustration	Screws to hold gear B to clutch D

Machines prior to Serial No. M2519D and after A442270 require the following additional parts:

71209 No. 3	Shield for clutch drum
1-701206 1/2	Bracket to support right end of shaft BA
1A-701241	Take-up spring drum assembly
1-701242	Take-up spindle assembly
701572	Screw to retain spindle
709902 No. 2	Take-up draw cord

Machines prior to Serial No. A442270 require the following additional parts:

71518 (2 req.)	Screws to retain spring drum bracket on right side frame of machine. Use Kit 260 No. 21 to drill machine side frame
10735 1/8 (2 req.)	Space washers between bracket and right side frame
47 1/4 (2 req.)	Nuts for screws 71518

(Over)

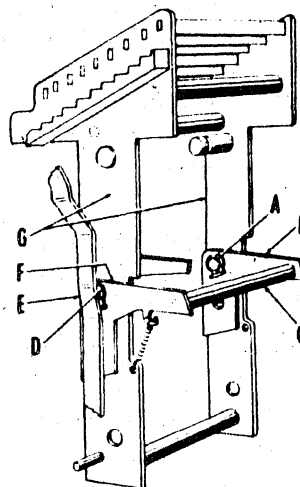
1A-79248 No. 2	Draw cord guide
79640	Screw for draw cord
79143AL	Brace - Stock removed for clearance of draw cord
1-71214A	Clutch control arm
1-71017A No. 1	Clutch shaft
71372A	Clutch dog

Parts are available.

8-FAILURE OF THE CREDIT BALANCE LOCK FUNCTION IN M800 MACHINES may result from wear of the shoulder stud in bail K (Plate 36, Accumulation Symbol List) allowing premature release of latch F.

Bail K (1-706108 No. 2) now contains a hardened stud 706509 to avoid wear and should be used for replacement. Bails in stock with studs that are soft to a file test should be discarded. Bails with hardened studs are available.

9-THE SUBTRACT BASKET ASSEMBLY (illustrated)  
- in Sterling Series M700 and M800 machines -  
has been improved by riveting both flipper pawls B and F to shaft C.



This improvement reduces the possibility of the subtract plate pawl sagging and being contacted by raise bar BG (Plate S-50-1, Accumulation Symbol List) during the first cycle of a subtract operation - in Class 78 new wide base and Series M800 machines. Should this condition occur, the basket assembly would be raised and the machine would lock because of simultaneously attempting to index and restore bail BJ (Plate S-50-1). The basket assembly could also be raised from other machine operations, thereby resulting in incorrect printing and totaling.

Pawls B and F (illustrated) in the improved assembly are retained on the studs in side plates G by clips A and D (21 No. 2).

The improved basket assembly should be installed when the trouble described above exists.

- For Class 78 new wide base and Series M800 machines (Pence), use assembly 1A-704107 No. 26R.
- For Class 78 new wide base and Series M800 machines (Farthing), use assembly 11A-704107 No. 26R.
- For Class 77 and Series M700 machines (Pence), use assembly 12B-704107 No. 21R.

A slight re-forming of register automatic one arm E will be necessary for clearance of clip D.

Order for immediate need only. Parts will be available August 10.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

51  
No. 552

June 3, 1955

### SERIES F MACHINES

1-POSITIVE RELEASE OF REGISTER DETENT PAWLS AT AND AU (PLATE 40-4, SERIES F SYMBOL LIST) can be assured by installing the following improved parts.

1. New auxiliary hammer arm 1FA126 and spring 81806 prevents trapping of the register due to detents AT and AU rebounding and catching on the next lower step of plate M.

The new auxiliary arm is installed between release arm AX and detent pawl AU. The 1-74326 set collar is discarded. The spring is hooked to the rear, over the weight, and in the spring groove for spring BB.

2. Release hammer arm 1-409153B (AX) has been changed and is now secured to shaft AZ with two screws. A pilot screw 4551 1/2, which is tightened first, locates the arm on the shaft and a 75618 flat ended screw securely locks the two parts together.

3. Timer slide 1-404290A (X) and latch 1-404276A No. 2 (Z) have been redesigned to provide an escapement for additional time for run through carries.

4. In addition to the above part changes the tension of springs AI, AH, AM, AW and BB has been changed to provide a better spring balance.

The following parts are required for installation.

<u>Part Number</u>	<u>Description</u>
1FA126	Auxiliary hammer arm
81806	Spring on 1FA126
1-409153B	New release hammer
4551 1/2	Screw for 1-409153B
75618	Screw for 1-409153B
1A-409016A	Shaft AZ required for machines below Serial No. F9115P and F3296C
1-404290A	Timer slide X
1-404276A No. 2	Timer slide latch Z
9282 1/4	Spring AH for Series F100, F200 and F300
71805	Spring AH for Series F400 and F500
407809	Spring AM on arm AN
9181A	Lighter spring BB - anchor X85-12 is no longer required
89806	Heavier springs for detents AT and AU
10085	Spring AI

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 551

May 23, 1955

### SERIES F MACHINES

C1# 25

1-WEAR AND BREAKAGE OF GEAR 401321A (E, Plate 2, Symbol List) may be overcome by installing improved gear F, by using one or more .005" shims FD78 to maintain accurate alignment and mesh of gear E with gear F, and by replacing eccentric B with lock washer 86129.

Gear F (408302A) has .010" of stock removed from the rear of its hub to facilitate alignment of the two gears. The improved gear may be identified by the lack of cadmium plating on the ground off hub.

Install the shims as follows:

1. Locate gear F on the angle clutch shaft for not more than .003" end play of the shaft rather than .005" as outlined in Mecanogram 524, Item 1.

2. With gear F rearward against the shaft bushing, move gear E to the left on the camshaft until the edges of its teeth are flush with the edges of the teeth of gear F.

3. Move the collar against gear E. Use feeler gauges (Kit 124 3/4) to determine the number of shims required to fill the space between the collar and the blank carrying roll C (Plate 56).

Note: The screws should be removed from the collar since the shims will maintain its position.

4. Stack the required number of shims. Then with pliers (Kit 36 3/4) hold the shims by their perforated projections, and clip them over the camshaft between the collar and the adjacent blank to maintain the gear alignment.

5. Lubricate the gears with S167 1/4A grease to prevent wear of the tooth surfaces.

2-COMPLEMENTARY BLACK TOTALS IN SERIES F100, F200 AND F400 MACHINES may be caused by early release of the drive trip by cam AE (Plate 56, Symbol List).

Cam 1Z-401129, which is retarded 7° on its hub to delay the drive trip, may be installed in the above series of machines constructed prior to Serial No. F15006P when more time is required between machine cycles.

Starting with Serial No. F15006P, all Series F machines are constructed with main camshaft BH (Plate 40-5) designed for Series F300 and F500 machines. It is designed to provide sufficient delay between machine cycles to allow completing a relay carry when shifting from subtract to add position. Cams V and X, not required in Series F100, F200 and F400 machines, will identify machines with the currently used camshaft.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

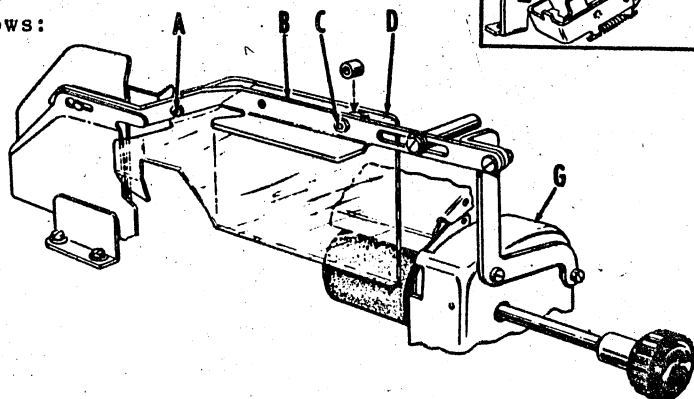
No. 550

May 17, 1955

### SERIES P MACHINES

**1-WRONG PRINTING AND ADDING IN STYLE 1010304, BILL RECEIPTING MACHINES** - caused by the form guard and guide 16 (Plate 40, Carriage Parts Catalogue) interfering with movement of type bars - will be eliminated and form handling will be improved by installing the new guard and guide illustrated. Install as follows:

- Remove the tear-off blade and install spring anchor E for spring F formerly hooked to the tear-off blade. The spring extension should be bent upward for minimum clearance with cover G.
- Install the new guard and guide as shown.



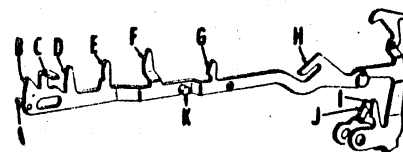
It is desirable to have slight tension of the lower edge of plastic guard D against the platen. Loosen screws A and C and move the guard to the right or left as required.

#### Parts required:

A	84632 1/2	Screw - Use nut 46 1/4
B	1-83150 3/8A	Support bar for plastic guard
C	403571	Screw - Use nut 46 1/4
	X10-302	Spacer for screw 403571
	7919 1/2A	Washer under head of screw 403571
D	83150 1/16A	Plastic guard
E	20 No. 152	Spring anchor

Order for immediate need only.

**2-RESULT KEY FUNCTIONAL CHANGES OR PART REPLACEMENTS** requiring a control link similar to link B (Plate 97, Symbol List) will be facilitated by use of all-purpose link assembly 131Z-84156 No. 4 (illustrated). The functions established from each projection or stud as noted below will be normalized by removal of that portion of the link.



A	Motor Bar	Add register "A", Non-add register "B"
B	OCC No. 3-0	Non-add register "B"
C	Lock No. 2-0	Non-add register "B"

(Over)

D	OCK No. 4-0	Non-add register "B"
E	OCK No. 5-0	Non-add register "B"
F	OCK No. 6-0	Non-add register "B"
G	OCK No. 51	Total register "B"
H	OCK No. 9-0	Total register "B"
I	OCK No. 8-0	Non-add register "B" from register "A" Total
J	OCK No. 3-0 ) Lock No. 2-0 )	Symbol Control
K	OCK No. 4-0	Non-add registers "A" and "B". (Paid Out Key) Use where mechanical conflict with A (Plate 52-2, Symbol List) requires removal of projection D.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

*For filing*  
No. 549

May 1, 1955

### SERIES F MACHINES

**1-WRONG TOTALS CAUSED BY TOTAL LIMIT BAIL F** (Plate 44, Symbol List) being cammed out of position by the long teeth of the accumulator pinions during totaling operations may be overcome by installing heavier spring 409806 on the yielding joint at the right end of the bail.

The new spring has been copper plated for identification.

**2-STRAIGHT TUBULAR ROLLED PINS** held in place by their expanding spring tension are being used in various locations in Series F machines.

The pins are easily removed by driving them all of the way through the hub with a drift punch slightly smaller than the pins. Repeated light taps with a hammer work best. They may be driven in or out in either direction.

A pin may best be installed by inserting a small drift punch Kit 96B-12 in the hollow of the pin then starting it in the hub by tapping with hammer, following up with a larger punch for a flush insertion.

Pin Symbol	Nominal Diameter	Drift Punch Size
X36-13	.062"	Kit 96B-4 (.053")
X36-15	.062"	Kit 96B-4 (.053")
X36-7 - <i>see 595</i>	.094"	Kit 96B-9 (.089")
X36-6	.078"	Kit 96B-5 (.072")

**3-WRONG TOTALS DUE TO OVERTHROW OF TOTAL INDEX LINK C** (Plate 44, Symbol List) will be corrected by installing improved part BH (1FB159-1) equipped with an eccentric headed screw 409530 to limit against collar V (Plate 39).

This trouble could occur on operations requiring a carriage controlled total of register "B" transferred to crossfooter "A" subtract. With slide Y (Plate 42) of the "A" crossfooter in its lowered minus balance position, overthrow of link C (Plate 44) results in bumping of bell crank AE (Plate 42), lowering of pusher pawl X, shifting of the pinions of the "A" crossfooter to minus balance position and indexing of the red ribbon. Since both accumulators under these conditions would be in mesh with adding racks during the first part of the machine cycle, each adding rack would be limited by the pinion with the lowest amount.

Eccentric 409530 on the new arm should be adjusted to just contact collar V (Plate 39) as the total or sub-total keys are held depressed against their downward limit.

When installing the new 1FB159-1 in machines below serial number B212195, larger post BD, Plate 39 (404520A) is also required.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

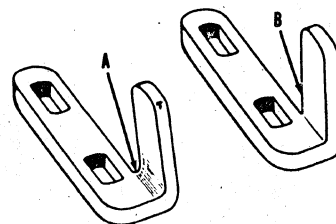
51  
No. 548

April 29, 1955

### SERIES M MACHINES

1-FRACTURE OF LIMIT CK (PLATE 19-1, POWER SYMBOL LIST) may prevent the register assembly from settling against escapement detent T (Plate 17-1, Accumulation Symbol List) following a register return function.

The radius of the limit is now increased as shown at A. The improved limit, 709118 No. 14, should be used for replacement. Earlier limits formed as shown at B should be discarded.



2-KEYBOARD LOCKUP, EXTRA MACHINE CYCLES AND WEAR OF ROLL Y (PLATE 12, POWER SYMBOL LIST) may result from incorrect tension of booster spring Z (Plate 14).

Spring 10780 will provide the correct tension on booster arm AF in all Series M machines. It should be used where the above conditions are encountered.

see 582  
3-WEAR OF CARRIAGE RETURN GEARS N AND S (PLATE 3, POWER SYMBOL LIST) may result if the mesh between the gears is not correct.

Correct mesh will be provided by having the outside diameter of the gears flush with each other.

When the mesh between the gears in earlier machines is too tight, the right end of the bushing for shaft assembly M should be faced enough to permit flush alignment. If the mesh is too loose, one or more brass washers 8823 1/2 should be used on shaft assembly M to reduce play and align the gears.

4-TYPE SPRINGS 76882 A, required in early style type magazines, are now made of improved wire similar to that used in springs in late style type magazines. The new springs are silver colored for identification.

When breakage of the earlier springs is encountered, replacement should be made with springs made of the improved wire.

5-BREAKING OF PENCE STOP 1A-76135 NO. 11 (AG, PLATE S-1-1, ACCUMULATION SYMBOL LIST) IN STERLING MACHINES will be reduced by the present method of welding the stud in the stop.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

51  
No. 547

April 25, 1955

### SERIES C MACHINES

1-OVERTHROWING AND LOCKING OF DIAL WHEELS ON ROLL BD (Plate 9, Symbol List) in the pence column (position 11) and first pound column (position 9) of Sterling machines may be corrected by installing dial wheels 12-16913A (12ths) (pence column) and 82-16913A (first pound column) to which stock has been added to form a point on cam 16917A.

These improved dial wheels are used in construction of currently manufactured machines - the 12-16913A (12ths) in machines starting with Serial No. C21394S and the 82-16913A in machines starting with Serial No. C12529S.

### ALL SERIES

2-MECANOGRAMS 300 THROUGH 399 are no longer of current value and may be discarded, however, one copy of each issue will be retained in the Branch for reference whenever necessary.

3-REPLACEMENT OF A MACHINE BASE WITH DETACHABLE SERIAL NUMBER PLATE requires transfer of the serial number plate to the new base at time of installation. Do not forward to the Home Office either the removable serial number plate or the scrap base.

When installing a cash drawer in a Series P machine containing a detachable serial number plate, the plate should be removed from the machine base and attached in the space provided on the front of the cash drawer housing. Conversely, when a cash drawer having a detachable serial number plate is removed from a Series P machine, the plate should be removed from the cash drawer housing and attached in the space provided on the machine base.

Pins required for attaching removable plates are:

53 No. 2 (2 required)	Series H, J, M, V and P200 Machines
53 No. 4 (2 required)	Series C Machines
53 No. 5 (2 required)	Series P (Class 8, 9 or 10) Machines
X55-15 (2 required)	Series P400 and P600 Machines

SERVICE DIVISION

# Burroughs

## MECANOGRAM

51  
No. 546

April 4, 1955

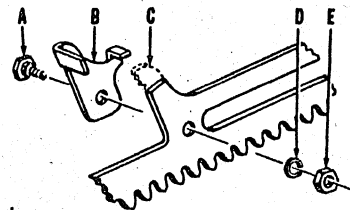
### SERIES F MACHINES

*C1 #25*

**1-WORN OR BROKEN EARS ON ADDING RACKS 1-406110 NO. 1, 1-406110 NO. 3, AND 1-406110A NO. 7** may be repaired by using repair part B (illustrated) - without removing the rack from the machine.

Repair part 1-406110Z includes parts A, B, D and E and is installed as follows:

1. Remove the keyboard.
2. Remove index strip BH (Plate 28, Symbol List) in the same column as the broken or worn ear.
3. Unhook springs J on the sector bar lock and BF on the index rack to permit them to swing downward out of the way.
4. Operate the machine manually to move the rack forward to about the 8th position.
5. Hold the rack below the broken ear with "duck bill" pliers, and with another pair of pliers, bend the part illustrated by dotted line to the right to break it off.
6. Assemble the parts as illustrated. Hold the repair part toward the rear with its rearward ear limiting against the top of the rack and tighten the nut.
7. Rehook springs J and BF (Plate 28) and replace the index strip.
8. Before replacing the keyboard, check the positioning of the adding rack latch stud in the pockets of the lock plate and, if necessary, adjust the repair part as you would the regular adding rack ear - as outlined in adjustment 2, Plate 28, Series F Instruction Book.
9. Replace the keyboard.



**2-SAFETY SHUTTER 403229** is now available to eliminate the possibility of an operator trapping a finger between the platen shaft and the opening of the carriage left end cap as the carriage opens or closes.

The shutter, actuated by the platen shaft and located between the end cap and the carriage side frame, pivots on post X45-37. The post is held by screw 200654B in the scoring hole located just below the rear of the platen shaft opening in the carriage side frame. The shutter is held in position on the post with clip 21 No. 9.

This device is intended only for carriages not equipped with variable line spacers on the left.

Parts required for Field installations:

1	X45-37	1	21 No. 9
1	403229	1	200654B

**3-NEW DOUBLE ENDED SCREW POST FB323 AND NUT 47 1/8** replace post I (X45-24) and screw F (84523A Sty. 13 No. 2) Fig. 2 of Print 609-1/F to overcome breakage due to depth of counter boring.

The new post and nut are now included with the consistency of parts furnished under symbol 5Z-406110B and are available separately for replacement.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

51  
No. 545

See 571  
March 28, 1955

### SERIES F MACHINES

**1-ACCURATE SETTING OF THE .050" CLEARANCE BETWEEN MACHINE TAPPETS AND CONTROL PINS** may now be accomplished by using panel setting reference gauge FC156-2, .047" and .053" "Go" and "No Go" feeler gauge Kit 420, and the revised adjustments given below.

The reference gauge, a feature of the test panels, Kits 426 and 426 No. 1, is now available for installation in all panels assembled in the field. Three reference gauges should be used - two located between stop positions, approximately but not less than one inch from either end, and the third as near as possible to the center.

The blue colored reference stop dog is also a feature of the test panel Kit 426 No. 1 and will be in all subsequent test panels. The dog is ground, after assembly into the panel, to the exact dimension specified.

The adjustments given here are primarily intended for use with the test panels but exceptions have been noted for use with other panels.

- There should be .047" to .053" clearance between the forward projection of the panel setting reference gauge and the tappets in lanes 6 and 7.

#### To adjust:

- a. Place only one shim in each position between the carriage rails and the side frames and gear box.
- b. Remove the carriage end caps.
- c. Loosen panel supporting posts BP (Plate 4, Series F Symbol Book). Raise the posts to their upper limit and retighten.
- d. Remove the third rail and check the panel for being straight, using the lower edge of the rail over the reference gauges and stop dogs.
- e. Move the carriage to align the right-end reference gauge with the tappets.
- f. Loosen the two screws AJ (Plate 1) holding the carriage side frame to the raceway casting and raise or lower the side plate until a .053" gauge will fit between the front reference projection and the tappets in lanes 6 and 7.
- g. Repeat steps "e" and "f" at the left end of the carriage.

#### Note:

If a test panel is not available, set the eccentrics for the adjustable hooks of another panel at the midpoint of their throw with the high side toward the rear, and use that panel to adjust the machine.

- There should be .047" to .053" clearance between the rear projections of the panel setting reference gauges and the tappets in lanes 20 through 23.

#### To adjust:

- a. Move the carriage to align the right-end reference gauge with the tappets. Loosen panel supporting post BP (Plate 4) in the side frame and position it to provide the .047" to .053" clearance.

(Over)

- b. Repeat step "a" at the left end of the carriage.
- c. Recheck the clearance at the front of the panel to be .047" to .053" since the front of the panel will be lowered slightly as the rear clearance is adjusted.
- d. When installing subsequent panels, the adjustable hooks should be adjusted for the .047" to .053" clearance of the rear lanes by turning eccentrics F (Mecanogram 510).

- The panel latches should hold the panel forward for minimum clearance without bind in the hooks of the carriage side frames.

To adjust:

- a. Turn eccentrics O, (Plate 4).
- b. Check the schedule selector knob to turn freely.

- With the reference stop dog aligned with the top of the left-hand bumper, the return clutch should have approximately .013" reset lead.

To adjust:

- a. Turn eccentric AO (Plate 9).
- b. If further adjustment is necessary, review the sequence of interlock adjustments given in Mecanogram 453, Item No. 2.

Note:

Since the length of stop dogs and their projections varies, the clutch reset lead from several dogs should be checked before adjustment is made when using other than a test panel.

- Replace the third rail but do not tighten the four screws, then move the carriage to the extreme right. There should be .003" to .005" clearance between the lower guide roll and the third rail.

To adjust:

- a. Place a .005" gauge between the lower roll and the third rail and, with the weight of the panel supported by the hooks on the posts in the carriage side frames, tighten the end screw.
- b. Move the carriage to the extreme left and repeat step "a".
- c. With the carriage in the end position, tighten the center screws in the third rail.

- There should be .003" to .005" clearance between the rear form guide assembly and eccentrics BS (Plate 4) on the panel.

To adjust:

Place a .003" feeler gauge between the form guide assembly and eccentrics BS and turn the eccentrics.

SERVICE DIVISION

# Burroughs

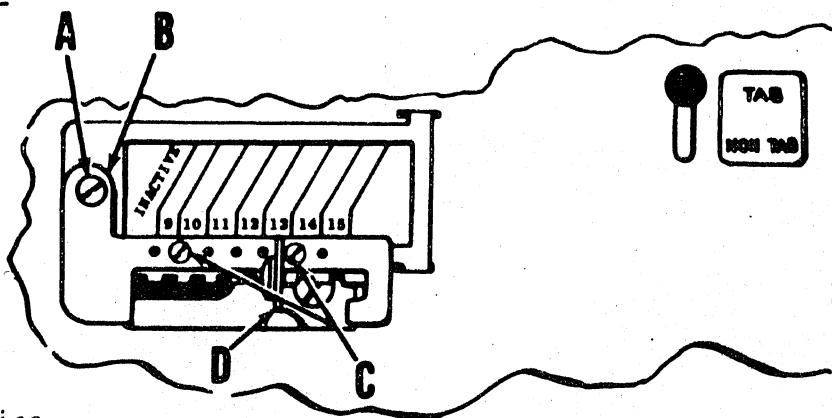
## M E C A N O G R A M

51  
No. 544

March 23, 1955

### SERIES M MACHINES

**1-SELECTION OF DIFFERENT COLUMNS** for the Multiplying Factor Mechanism will be made easier by installing limit plate B (705155 1/4). Use screw A (705503 1/2). When other than either extreme position of lever D is required, install limit screw C (709508) according to need.



Screws C will be included with the accessories for each machine when shipped from the factory.

**2-MACHINE LOCK OR BENDING OF THE DRIVE TRIP BAIL CK** (Plate 33-1, Keyboard Symbol List) - in Series M800 Sterling machines - may result from contact of the roll on extend plate CL on the end of the projection of bail CK causing a severe cramp between the roll and the bail.

The roll on extend plate 1-704107 No. 25 is relocated rearward to contact on the underside of the bail for smooth pickup.

**3-BREAKING OF HAMMER DRIVER SPRINGS** will be reduced since eyelets (20 No. 156) have been added to the driver end of the springs.

The new springs which include eyelets should be installed where breaking occurs.

1-77880 No. 8	Test 12 3/4 oz.	Replaces 77880A No. 1
1-77880B No. 2	Test 1 lb. 2 3/4 oz.	Replaces 77880A No. 2
1-77880 No. 9	Test 1 lb. 8 3/4 oz.	Replaces 77880A No. 3
1-77880B No. 4	Test 2 lb. 3 1/2 oz.	Replaces 77880A No. 4
1-77880B No. 5	Test 2 lb. 11 oz.	Replaces 77880A No. 5
1-77880B No. 6	Test 4 lb. 11 oz.	Replaces 77880A No. 6
1-77880A No. 7	Test 8 3/4 oz.	

Spring 1-77880A No. 7 not previously covered in Plate 3-2 (Printing Symbol List) is required for the symbol hammer driver in machines having a credit balance symbol.

**4-BREAKING OF CARRIAGE RETURN KEY LEVER AY (PLATE 15, PRINTING SYMBOL LIST) OR DATE KEY LEVER AR (PLATE 24-1)** at the cutout for clearance of space bar BA (Plate 16) is prevented by adding a radius to each corner of the milled cut.

When breaking occurs use:

1B-75110A No. 14  
1B-75110 No. 20

Carriage return key lever  
Date key lever

SERVICE DIVISION

# Burroughs

## MECANOGRAM

March 17, 1955

### SERIES F MACHINES

**1-STABILIZED ALIGNMENT OF CONTROL PINS AND TAPPETS PRIOR TO RELEASE OF THE DRIVE TRIP** will be assured by installing the improved drive trip interlock mechanism illustrated, in conjunction with the recoil blocking mechanism covered in Item 1, Mecanogram 534.

Interlock I and N are activated, through movement of levers S and R, by any carriage function which lowers or separates the tabulator bumpers. The interlocks are held active by latch E until restoring of the bumpers to normal permits release of the latch by lever S.

The carriage, as it passes an aligned position of the control pins and tappets during tabulation, potentially opens the way for a drive trip at the point of alignment. However, as the inertia of the carriage causes its continued movement, the tabulator stop separates the bumpers and again activates the interlocks before they have had sufficient time to release the drive trip mechanism.

The improved interlock arrangement should be installed in any machine that requires more time for aligning the pins and tappets. When installing the improved parts, the following should be considered.

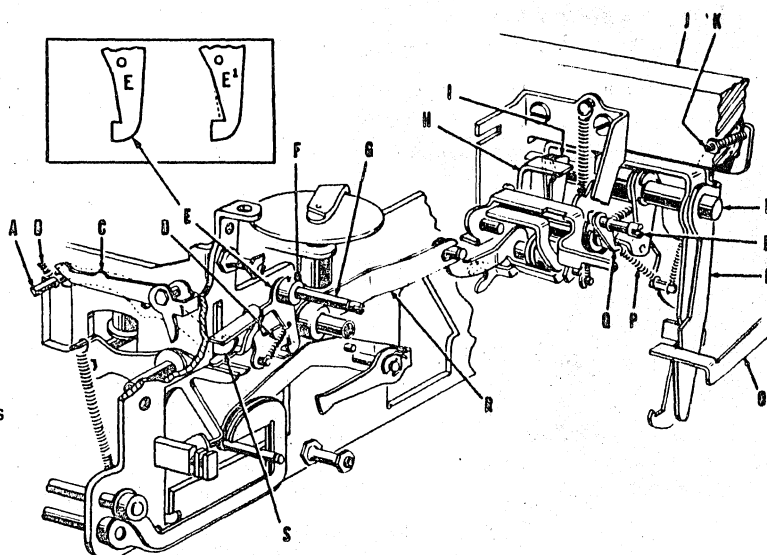
The settings of eccentrics AO (Plate 9, Symbol List) and eccentric U (Plate 57) should be balanced for simultaneous contact of the bumpers and lever C (illustrated) on stud A. Machines of current manufacture contain lever C having only one downward extension to facilitate the above adjustments.

Brace AQ (Plate 60) is required over the end of shaft L (illustrated) to stabilize the end of the shaft and maintain the adjusted passing clearance between the step of interlock N and the formed ear of arm O.

Setscrew K should be turned so that it does not limit interlock N (bend the upward projection of interlock N in early machines) when making the first two of the following tests and adjustments.

1. Test - There should be not more than .010" passing clearance between the formed ear of lever H and the rearward edge of interlock I as lever R is lowered slowly to its tripped position.

To adjust, bend the rearward projection of lever R.



(Over)

2. Test - There should be .010" to .015" passing clearance between the formed ear of arm O and the step of interlock N when the drive is tripped as lever R is lowered slowly to its tripped position.

To adjust, bend the formed ear of interlock N at its contact with screw M.

3. Test - There should be .010" to .015" clearance between the upward projection of interlock N and screw K (or cross member J in early machines without the screw). Note: The function of the upward projection of interlock N is to prevent excessive overthrow of the interlock which should not limit against screw K (or cross member J) as the drive is tripped.

To adjust, turn screw K (or bend the upward projection of interlock N).

4. Test - With the machine normal, there should be .003" clearance between lever S and the rearward extension of latch E.

To adjust, bend the rearward extension of latch E.

Parts required:

B 89800A	Spring between stud A and bracket A (Figure 1, Mecanogram 497). Move spring U (Mec. 497) forward and hook spring B (illustrated) in spring groove.
D 287	Spring between lever R and latch E (Early construction).
12080	Spring between lever R and latch E1 (Present construction).
E FG165	Latch for lever R.
F 1-82309	Collar on screw G to retain latch E.
G FG147	Shoulder screw for latch E.
I 1-401181 No. 1	Interlock for lever H.
P 94803 No. 2	Stronger spring replacing spring 3981 (Item 1, Mecanogram 486).
Q X85-9	Spring anchor replacing clip 20 No. 91 (Item 1, Mecanogram 486); open at both ends for easy installation. Not required if 20 No. 91 is contained in machine.
R 1FG49	Interlock control lever.

This cancels Item 2, Mecanogram 453, and Item 1, Mecanogram 486.

SERVICE DIVISION

*Long*

BURROUGHS CORPORATION

Mecanograms

Great Lakes Region  
March 10, 1955

All Service Personnel  
GREAT LAKES REGION

Supplementary List of Mecanogram Announcements

The attached list of material represents improved parts and adjustments covered by Mecanograms 502 to 542 and B&H 11 to B&H 14, both inclusive. The ease of reference by symbol, name, or associated trouble may help you to secure more benefits from these Mecanogram announcements.

Please refer to these lists frequently to assist you in the analysis of problems, maintaining your grip stock, parts ordering and making more permanent repairs on customers' machines.

Last but not least, use selected improved parts on regular inspections. It will pay you dividends in more trouble-free machines and satisfied customers. Satisfied customers, who receive good inspections, including improved parts are more receptive to your supply sales message. They pay their bills more promptly, too.

We hope you like these sheets and get a lot of benefit from their compact, easy reference.

"A" and "B" men may find it convenient to segregate the sheets for which they may have the most use.

H. O. Cordts  
Regional Service Representative  
Mechanical

HOC:djb

A PRODUCTS AND MISCELLANEOUS

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
Kit 412	Tool for equalizing resetting of tab and ret. clutch Series F	523-2
Kit 582D	New plastic tool roll	537-1
Kit 413	Double endbender for drive trip interlocks and carry drivers	537-2
20911ZR )	Check table repair brackets	537-3
20911ZL )		
9355 (2 req.) )		
47 (2 req.) )		
20911Z #4 )		
S753	Anti Freeze Compound for Armatures	538-3
Form 980	Prepare on each attention to J, K, F212, P600, B & H	540-4

SERIES B & H

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
B & H 82534 )	To cut improperly loaded film	B & H 11-1
B & H 80086 )		
B & H 80591 )		
B & H 82537 )	To assist in proper loading of film	B & H 11-2
B & H 82535 )		
B & H 82536 )		
B & H 22289 )		
B & H 19481 )		
B & H 080575 )	To permit operation of recorder when	B & H 12-1
B & H 81577 )	panel is raised, without camera in	
B & H 81108 (2 req.)	position	
B & H 81107 (2 req.)		
B & H 80776 )		
B & H 080598 )	Rheostat cover	B & H 13-1
B & H 736 )		
B & H 82304 )	Wearing of feeder belt driving sleeve	B & H 13-2
B & H 10881 )		
B & H 22442 )		
B & H 82586 (2 req.)	To prevent feeding of lost two documents	B & H 13-3
	at one time from acro-feeder	
B & H 81104	Clutch microswitch reinstated	B & H 14-1
B & H 82580 (4 req.)	Floor stand mounting of Micro-Twin	B & H 14-2
B & H 23100 (4 req.)		
B & H 82560	Underexposed outside edges of film	B & H 14-3
Micro-Twin	Mounting to floor stand	B & H 14-4

# SERIES F

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
1-403918 No. 1	Trim when installing 5/8" tabulation parts	507-2
401509B	Headed replacement screw (interlocks)	507-3
404188 #1 & #3	No. 3 or 4 motor bar locking	507-5
403334AZ	Short skip disc to be used for cutting short projections	507-6
1-405104A #11)	To assist in correction of wrong register selection, F300 - F500 machines without improved register selection mech.	509-1
1-405127A )		"
984 )		"
10784 )		"
X50-91)	Loosening of rubber feet below serial)	509-2
45 3/4)	FL3216P )	"
1-403277R )	Adjustable hooks for control unit	510-1
1-4032274, etc.)		"
1FD12	New clutch dog, Loss of subtract carry.	514-1
	How to install	"
1A-407115	Improved hammer	514-2
1-401348Z)	Parts and adjustments drive trip and continuous running motor	521-1
1-404011 )		"
1-401130 )		"
3282 )		"
401326A )		"
401321A	Breakage of lugs	524-1
1-403909 1/2 #1, #2, & #3)	Collars between tab stops	524-2
403909 1/2 #4 & #5 )		"
403802 )	Easy removal of front inserted forms	530-1
1-403192AR etc.)	Flexible latches, form chute assembly	"
1-404151 1/2)	Parts to assist release of register detent pawls from limit plate.	530-2
FA118 )		"
681 1/8 )		"
X85-12 )		"
1FG13-1	Wet, Felt Angle Clutch	531-1
406118 #39	Improved non printing dummy type	531-2
406118 #4	New year date arrangement	531-3
1FG161 )	Recoil blocking mechanism to prevent operation off control pins	534-1
3489 3/4)		"
1FG162 )		"
1625 )		"
FG28 )		"
3688 )		"
X1-31 )		"
1FD16 )	To prevent breakage of register selection tappet	534-2
X80-23 )		"
X10-197 (4 req) )		"
75818 )		"

SERIES H

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
1-205215Z #2 ) 205533Z #5 ) 1-691111 $\frac{1}{2}$	Loss of second balance	502-1
1-205138BR 202530	Complementary totals (no space stroke totals)	502-2
73381) 46 $\frac{1}{4}$ ) 4611 $\frac{1}{2}$ A	Improved ribbon reverse pawl	522-1
	Wrong selection of carriage position (no space stroke total)	522-2
	Repair of broken hammer block rod	522-3
201307B) 201307 $\frac{1}{2}$ )	To reduce brush noise and lengthen life of brushes	523-1
11B-60137B #2	Failure of auto-total of C.F.	540-1
11B-60137B #2 Env. 1631)	No space stroke total bank machines	540-2
1-9516R #2)	) Failure to shift register	540-3
1-9516L #2)	Worn roller on woodpecker	
	To prevent wear of ribbon spools, and driver studs	

SERIES J

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
X80-65	New brush spring, occasional motor failure	525-1
LJR11 )	Ribbon guide parts	525-2
LJR11-1 )	Dim print occasionally	
84334A )		
X10-69 )		
LJR16 )		
LJC26 )	Crooked feeding and tearing of paper	532-1
1-8344 )		
X80-36 (for 10 Col.)	New cipher block assembly spring	532-2
X80-23 (for 8 col.)		
63800 )	Half cycle operation	532-3
10025 1/16 #3)		
X36-22)	Heavy or light print pins	532-4
X36-23)	(X36-32 for heavier print)	
X80-36 )	Accidental carries or failing to trip	539-1
X80-23 )	carries	
X80-54 )	Used on machines with 4 rollers on cam D (P1 D1)	
LJH5	Accidental carries	541-1
404809	Correct spring D4 (plate T2)	541-2
	77801 spring might cause accidental carries	

# SERIES M

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
705103 $\frac{1}{2}$ )	Incorrect tabulation	502-3
76812 )		
79105 $\frac{1}{2}$ )	Part of 10 symbols to correct continuous	505-1
1-79268C #2 etc)	running motor caused by accidental move- ment of register slide.	
709181 )	Register limit for last register	506-1
709543 )		"
1097 3/4)		"
46 )		"
1A2-701010 #1	Breakage of carriage return shaft	506-2
1-100A FTE 141 #2	Failure to repeat items with repeat bar	506-3
1-761111 All sty.	Identification stamp rear end of bar	506-4
705664 )	Repair to make unnecessary the replace- ment of spring beam AI plate 11 carriage	506-5
705373 )		
No. 35 drill req.)		
702145 $\frac{1}{4}$ #2)	Failure to index the second operation of	511-1
702147 )	auto subtract in conjunction with carriage	
1361 $\frac{1}{2}$ )	controlled total M800 machines	
72830 )		
1A-701671Z	Replacement for casting 1A-701671 (BT PL 40, acc)	511-2
20 #89 )	Failure to print or printing the incorrect	511-3
504 FTE 138)	factor in machines with factor to print mech.	
Sterling construction	For improvements of sterling const. mach.	512
1503A FTE 717)	To prevent continuous cycling after sub-	513-1
1097 3/4 )	tract, 72 and M200	
46 )		
74535	To correct breakage(A, plate 19-1,Keyboard)	513-2
702227	New limit plate to prevent breakage of	513-3
	error key slide	
2-709041)	New suspension of spring barrel for	517-1
ect. )	register tabulation	
1-71181A)	Installation of new style governor explain-	
etc. )	ed. Motor failure or erratic speed.	518-1
709902 #1 )	Improved register draw cords and guiding	519-1
709902 #2 etc.)	parts	
1-706231B	Straight travel and longer life register	520-1
	draw cord	
701901Z	Protective shield to prevent electrical	520-2
	shock	
1A-73214A )	Improved brackets to prevent accidental	520-4
1-73214C #2)	dislodgement	
4611 $\frac{1}{2}$ A	To reduce brush noise and lengthen life	523-1
	of brushes	
700903Z #3 )	Sound abatement parts	526-1
700113 #2 etc)		
1-74135 #2	Improper indexing extended amount	527-1

# SERIES M (Continued)

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
1-702219A) 1-702760B) 1-702235 $\frac{1}{2}$ A) 1-703993 #3 12081 $\frac{1}{2}$	Binding of extend restoring assembly	527-2 *1002
709109 #4	Equipped with screw to fasten to bar Total resulting from sub total operation (broken spring)	527-3 527-4
72186 $\frac{1}{2}$	New carry pawls (copper plated) for printing alignment	528-2
16340 ) 73612 etc) 701626) 46 ) 308538 ) Kit 261) Kit 370) 70302A	Hardened limit. Simultaneous addition bail To prevent electric shock and arcing bet- ween terminals of registers and bracket Failure to tabulate	528-3 528-4 528-5
702511 $\frac{1}{4}$	Oversize taper pins for D section drill reamer Plastic brushing in base for register, carriage return shaft	535-1 <u>535-2</u> / 1003
1B-702171 #14) 21 #7 ) 702637 ) 707514) 707303)	Failure of sub total or non subtract, M800 or non clear subtractor M700 Wrong totals, bending of index bars	536-1 536-2
1-77122A #3 (for regular) 1-707122B for 4 pos. pr. cont.) 707118 $\frac{1}{2}$ ) 60550 ) 1097 3/4) 1-709103A ) 1-709100A )	Failure to print Printing cephers to left M200 - M800 Mach. lock - wrong multiplication	536-3 " " 538-1 538-2

# SERIES P

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
1-86118 ) All Sty.)	Shadow printing	502-4
909535) 909528) etc. )	Part of group of 11 parts to secure improved alignment between carry pawls and Pinions Styles P401 and P402	503-1
99131 $\frac{1}{2}$ Z ) 79582 ) 533 Fte 217) 46 $\frac{1}{4}$ )	Failure to carry, Class 9 machines	504-1
81533C ) X10-176) 21 #16 ) Lubrication	Excessive burning of governor contact points	504-2
84109 #4 ) 12055 3/8 ) 1-900123A	Series P beginning serial No. P73500D, P8131C, and P18607S Excessive noise of key release function P200 mach.	504-3 508-1
1-900123A	To assure Auto shift of reg. cont., Locked mach., bent parts	508-2
X51-152	Shorter stud in carriage end plate, prevents breakage	508-3
8054 3/4 ) 702632 ) 903199 ) 81816	Failure to tabulate caused by broken spring anchor	515-1
2Z-81367A ) X80-88	Spring to reduce noise of carriage tabulation	515-3
1-903205L 1-903329 99116B #4 1-909129A ) 1A909133 ) 903158A (3 7/8) ) 73611 (2 req.) ) 46 $\frac{1}{4}$ (2 req.) ) 1-904111	Replacement Fibre drive gear	516-1
1-83152 1/8 #2 7356 $\frac{1}{2}$ (2 req.) 1-96305 (2 req.) 1-81215C	Plastic tear off blade failing to restore Erratic spacing wide forms, B carriages Steel pinions to prevent rusting Complementary totals series P400	516-2 529-1 529-2 529-3
P400 & P600 Class 9 & P200	Improved tear off blade	529-4
	Improved, hardened. Addition and symbol print trouble	529-5
	Improved insertion heavy forms	533-1
	Wrong addition	533-2
	Failure of motor to operate or retarded speed	533-3
	Method for type bar replacement	542-1
	Inertia or trapped carries	542-2

# Burroughs

No. 542

## M E C A N O G R A M

March 8, 1955

### SERIES P MACHINES

*1-TYPE BAR REPLACEMENT IN SERIES P400 AND P600 MACHINES* will be facilitated by the following procedure. The instructions identified with an asterisk do not apply to Series P400 machines.

- Remove case and base.
- \* Disconnect the link located between columns 2 and 3 on shaft R (Plate 40-1A, Symbol List) from the lever similar to the front part of cipher stop S to disable the carriage opening interlock.
- Remove guide comb CB (Plate 94-1A) - retained by screws CC - from the bottom of the adding sectors. Series P600 Sterling Machines require loosening of the shoulder collars used to attach the red ribbon shaft assembly to the machine frames, so the shaft can be lowered sufficiently to remove the comb.
- \* Remove the plastic form aligning table - retained by two screws. When re-assembling, apply pressure against the plastic toward the adjustable arms as the screws are tightened.
- \* Remove the ledger pressure bail - turn four flat-sided studs - from the top of the hammer head.
- With nines indexed in all columns to the right of the bar to be removed, operate the handle to the last forward step on the full stroke segment.
- \* Position the carriage so the type bar to be removed is aligned between pressure rolls - then, open the carriage. Close the pressure rolls by depressing the button in the cover plate on the left end of the carriage.
- Unhook spring M (Plate 77) and remove clip L. A light application of oil or grease on the side of the clip will assist when reassembling.
- Remove the type bar through the top of the machine carefully to avoid damage to the bar and adjacent parts.
- Install new bar and reassemble the machine in reverse order.

*2-INERTIA OR TRAPPED CARRIES IN CLASS 9 OR SERIES P200 MACHINES* may result from improper timing of total stop bail F (Plate 109-1, Instruction Book).

The following change to Adjustment 3 will assure correct results:

Test - Remove limit L (Plate 110) for accessibility to Stud A (Plate 109-1) and control arm B. With all carry latches tripped and the forward stroke completed, insert the shaft of bender Kit 55 in the lower rearward opening of the right accumulator side frame, and allow the machine to restore until limited by the bender. In this position, there should be .083" clearance between stud A and control arm B at point K. Wrench Kit 19 5/8 may be used as a gauge.

To adjust, tilt stud D by bending part G.

*3-BREAKING OF THE LEAF SPRING IN MICROSWITCH Q* (Plate E131-1, Symbol List) for Type P motors in machines manufactured for International Activity will be eliminated by using improved switch 1-81121 No.2 (specify with or without wires) for replacement.

SERVICE DIVISION

*Spring*

# Burroughs

No. 541

## M E C A N O G R A M

February 28, 1955

### SERIES J MACHINES

**1-ACCIDENTAL CARRIES** caused by rocking of carry links F1 (Plate A1, Series J Parts Catalogue) through spring anchor shaft C1 (Plate H1) may be eliminated by installing a redesigned cipher block actuating arm B1 - (1JH5) no change in parts number. The stud in the new actuating arm contains a larger hub which, when the machine is normal, contacts the auxiliary base to limit the travel of the cipher block mechanism and thus increase the clearance between the spring anchor shaft and carry links.

**2-PART NUMBER OF SPRING D4** (Plate T2, Series J Parts Catalogue) should be 404809. Spring 77801 shown in the Parts Catalogue is much weaker than spring 404809 and if used may result in accidental carries. Please enter the correct number in your Parts Catalogue.

SERVICE DIVISION

# Burroughs

No. 540

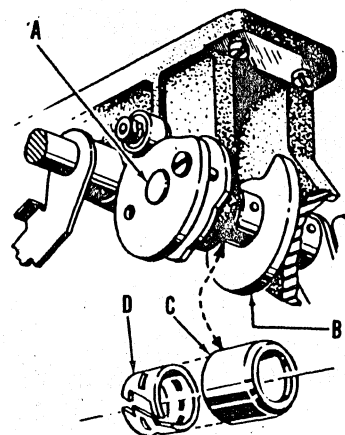
## M E C A N O G R A M

February 11, 1955

### SERIES H MACHINES

*1-FAILURE TO AUTOMATICALLY TOTAL THE CROSSFOOTER IN NO SPACE STROKE TOTAL BANK MACHINES* may be caused by insufficient movement of arm CA (Plate 43-1, Accumulation Instruction Book) to meet the plug gauge test (Adjustment No.1). When the setting of eccentric CB for maximum throw does not provide sufficient movement, the reason may be worn bushings for shaft A (illustrated).

Bearing retainers C (201307B) and bearing inserts D (201307 1/2) may be used as replacements where worn bearings are encountered. The tapered ends of the retainers, with the inside retaining rims, should be positioned toward central cam B so that the bearing inserts will be held in the desired locations.



*2-FAILURE TO SHIFT REGISTERS* may be caused by wear of the tapered roll in control slide I (Plate 28-1, Accumulation Symbol List) and slide B (Plate 51) of the register detent assembly. The rolls are now made of different steel with an improved hardening process.

Register detent assemblies 11B-60137B No.2 and 11B-60137B No.2 Env. 1631 shipped from the factory after September, 1954, will have the new rolls. Assemblies shipped before this date should be corrected by installing new slide 1-60138B No.2 or 1-60138B No.2 Env. 1631, as required.

### SERIES H AND V MACHINES

*3-WEAR OF RIBBON SPOOLS* at the contact with the driving stud on ratchet wheels G (Plate 38-1, Series H Printing Symbol List) and F (Plate 52, Series V Symbol List) will be reduced by the addition of a second driving stud in the new ratchets (1-9516R No.2 and 1-9516L No.2) and a second driving slot in the spool (1-205126A). The new spool also has a barbed ribbon prong in its hub, replacing the wedge shaped prong, for better retention of the hooked ribbon.

When a new ribbon, wound on a spool constructed for the single stud ratchet wheel, is being installed on a machine having ratchet wheels with two studs, the ribbon spools furnished with the machine should be used and the carrier spool discarded.

The new ratchet wheels may be used for replacement on all Series 20 and 30 machines and Series V machines with the double wound ribbon feature.

### ALL CLASSES

*4-EACH SERVICE ATTENTION RENDERED TO SERIES J, K, F212, P600 AND B & H EQUIPMENT* during the guaranty period should be reported by the Service Representative on Mechanical Report, Form 980. Refer to Service Letter No.103 for procedure.

Reports should be complete, accurate and legible - listing the mechanical conditions, analysis and adjustments.

This cancels Item 3, Mekanogram No.523.

SERVICE DIVISION

## MECANOGRAM

January 27, 1955

### SERIES J MACHINES

*1-ACCIDENTAL CARRIES OR FAILURE TO TRIP CARRIES* may result from the following conditions which are being offered to assist in analyzing customer complaints.

- a. Cipher block spring 60809 used in early machines in place of spring D9 (Plate H1, Parts Catalogue) was too strong and caused carries to be tripped; it also was subject to excessive breakage. The correct springs for the left side of cipher block mechanisms are X80-23 used with 8 column machines and X80-36 used with 10 column machines. Later machines constructed with a new cam D (Plate D1) containing 4 rolls and improved levers P1 (Plate D3) have a new spring X80-54 added to the right side of the cipher block.
- b. Accidental carry in the first column may be caused by excessive play and poor alignment of the lip on rack stop D (Plate T2) with the rack stop latch F. Adjust for correct alignment if unwanted carries are being tripped in the first column.
- c. Tripping of carries in some earlier machines is caused by rack stops D5 (Plate T2) and intermediate rack stops D6 having chamfers ground on the surfaces where the stops make contact with each other. These chamfers reduce the hold to a point where it is unsafe and vibration of the machine may cause a carry to be tripped. Accidental carries recurring in the same column would indicate that the rack stop is chamfered and should be replaced.
- d. In some early machines, the spinning on the hub of the extreme left carry pawl B4 (Plate A1) in 8 column machines loosens, causing a carry failure and the indexing of a credit balance operation. The hub on this carry pawl is now being pinned to overcome loosening.
- e. Failure to index a carry may be caused by an excessive amount of play and poor alignment of rack stops D5 (Plate T2) with carry rack link F1 (Plate A1). This play plus the poor alignment permits the stud in the carry rack to move out of the slot in the carry link at times and fail to index a carry.

SERVICE DIVISION

# Burroughs

No. 538

## MECANOGRAM

SERIES M MACHINES

January 27, 1955

*Service*

**1-PRINTING OF CIPHERS TO THE LEFT OF AMOUNTS IN SERIES M200 AND M800 MACHINES** may result from overthrow of hammer driver latch A or excessive length of formed lip E on the hammer driver latch slide.

Overthrow of the latch may occur from the camming action of the adding rack as it is indexed, causing formed lip E to raise far enough to contact extension F of the latch to the left, lifting the latter to release its hammer driver.

To correct, install limit C (707118 1/2) using longer screw D (60550) and washer 1097 3/4.

To adjust, index all adding racks to nine position and locate the limit against bail B without bind. All adding racks must have free travel.

Excessive length of formed lip E, when enough to rub against the side of slide G, may raise the adjacent hammer driver latch and release the hammer to fire.

To adjust, remove .010" stock from the end of the formed lip.

**2-MACHINE LOCK OR WRONG MULTIPLICATION IN SERIES M200 MACHINES** may be the result of check pawl E (Plate 24-1, Keyboard Symbol List) lodging under the step at the lower end of the bell crank AA when the crossfooter is meshed with the adding racks. This possibility may be aggravated when grinding the step of the bell crank to obtain equal throw of the check pawl and feed pawl F for the point off action.

Bell crank A (1-709103A) - illustrated - includes equalizing plate C which presents a straight surface to the pawls to assure their uniform release during point off, without impeding the crossfooter restoring from the adding racks to the carry racks.

Control plate assembly D (1-709100A) includes limit plate B to permit adjustment of the normal position of the bell crank. The improved parts should be installed if the above difficulty is encountered.

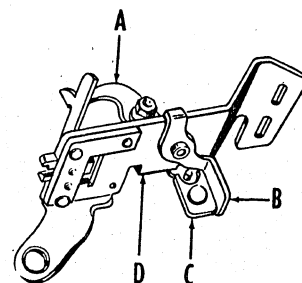
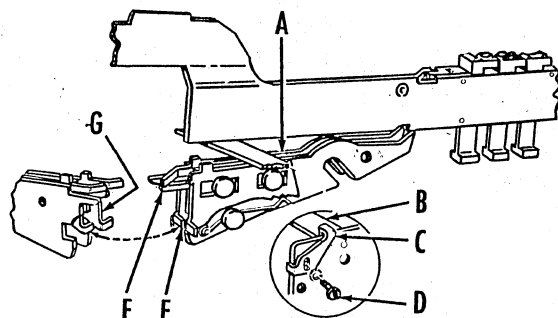
Test - With both feed and check pawls fully engaged in the teeth of the feed rack, there should be slight clearance of equalizing plate C with the pawls.

To adjust, move limit plate B.

### MOTORS

**3-DIFFICULTY OF REMOVING THE ARMATURE OF TYPE 3, 6 AND 6A MOTORS FROM THE WORM SHAFT OF THE DRIVE ASSEMBLY** usually is caused by corrosion that has developed in the sleeve coupling of the shafts.

Anti-seize compound S753 is now available and should be applied to all worm shafts before assembly of the armature to prevent this corrosive action.



SERVICE DIVISION

# Burroughs

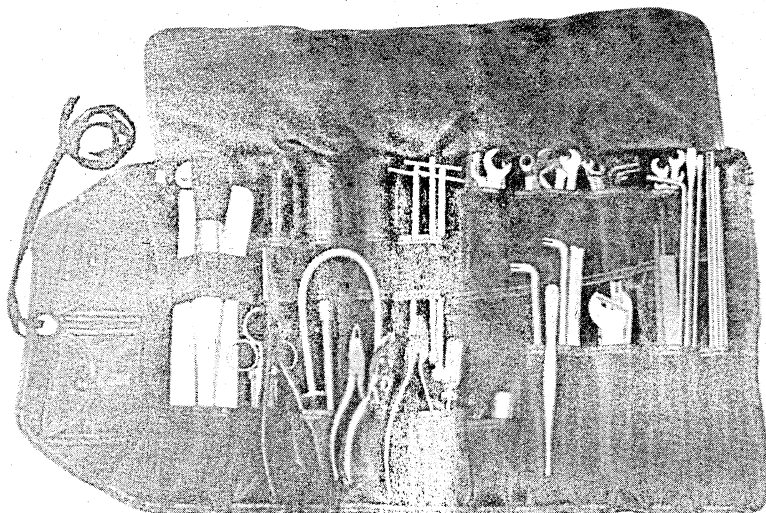
## M E C A N O G R A M

No. 537

January 24, 1955

### SERIES A

**1-NEW PLASTIC TOOL ROLLS (KIT 582D)**, more attractive in appearance and more durable in construction, will be furnished on Service Parts Orders as soon as present stocks of old rolls are depleted. The change in design provides ample space for both the active and reserve tools, as illustrated, and permits rolling into a more compact bundle. Two pockets with button-down flaps have been added to prevent loss of small tools such as punches, etc.



Oil and grease spots may be readily removed by wiping with platen restorer.

**2-DOUBLE END BENDER KIT 413** is now available for adjusting the carry drivers and drive trip interlocks in Series F Machines. The end with the larger slot is used for adjusting the ear of interlock K (Plate 57, Series F Symbol List) at point of contact with stud N, to secure the necessary clearance between the lower portion of interlock K and part L. The other end of the bender with the small slot is used for adjusting the ears of carry drivers AK (Plate 41) in machines below Serial F21702P to equalize the clearance between the arms of carry drivers AK and carry reset shaft AQ.

**3-CHECK TABLE BRACKETS** on amber grey stands Styles 91A, 92A, and 93 and on current stands Series 40 now receive an improved welding operation to overcome breakage. The packaging has also been improved to better protect the brackets during shipment.

Check table repair brackets 20911ZR and ZL for early stands Style 91A, 92A, and Series 30 and 40 - and bracket 20911Z No. 4 for early stands Styles 91A and 92A are now available for replacement of check table brackets that are broken loose from the check table at the spot welding. The brackets are shown on Plate 13-2, Series A Symbol Book as the anchorage for support AQ and bracket D.

Replacement brackets may be used as templates for drilling the 3/16" holes in the check table. These holes should be countersunk to the full depth of the metal so that the 9355 screws (used to attach brackets) will be flush with the top of the table when held in place with 47 nuts.

SERVICE DIVISION

*Longway*

# Burroughs

## MECANOGRAM

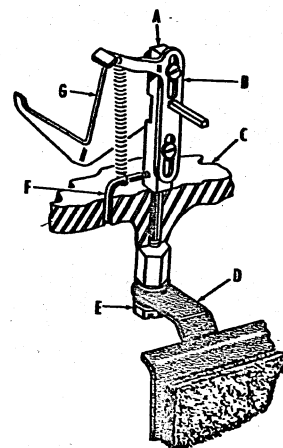
No. 536

January 17, 1955

### SERIES M MACHINES

**1-FAILURE TO SUB-TOTAL OR NON-SUBTRACT, SERIES M800 MACHINES, OR TO NON-CLEAR SUBTRACTOR, SERIES M700 MACHINES,** may be due to bind in lever G and slide B (illustrated) caused by accidental turning of post A (Plate 32, Keyboard Symbol List) when loosening or tightening front retaining screw E (illustrated) in the drive housing cover D.

Post A is now prevented from turning by replacing the spring stud in the post with spring anchor F (702511 1/4) which extends into a hole through machine base C. The hole is located by using the spring anchor installed in the post as a template. Use drill Kit 260 No.38. The new spring anchor should be installed the first time the typewriter is removed.



**2-WRONG TOTALS, BENDING OF SHAFT C (PLATE 19-1, KEYBOARD SYMBOL LIST) OR BENDING OF INDEX ARMS BX** may result from simultaneous use of the First Product Key and the Add Register - Clear Multiplier Key with an add crossfooter block active on the control bar.

The extra load resulting from the functions set up by the two keys tends to temporarily stretch link K (Plate 6D) thereby reducing latching lead and causing premature restoring of the linkages. Adjustment of eccentric S (Plate 6F) for latching lead when the two linkages are indexed may result in otherthrow of the twin cams by an individually indexed linkage.

Improved linkage assembly 1B-702171 No.14, with stronger front link K (Plate 6D) and thin retaining clip 21 No.7 replacing clip BS (Plate 6E), should be installed to eliminate the above condition. Longer screws 702637 should also be installed in place of screws BQ (Plate 8-3).

This cancels Item 3, Mecanogram No. 520.

**3-FAILURE TO PRINT IN NEW WIDE BASE MACHINES** may be caused by worn shoulder screw S (Plate 3, Printing Symbol List).

New shoulder screw 707514 and hardened roll 707303 are used in currently manufactured machines and should be used for replacement. Driving link 1-77122A No.3 (T, Plate 3) for regular construction or 1-707122B (AT, Plate 6-1) for four position printing control mechanism is also required.

SERVICE DIVISION

## M E C A N O G R A M

January 10, 1955

### SERIES M MACHINES

**1-MALFUNCTION OF ACCUMULATING AND/OR PRINTING SECTIONS** may be caused by insufficient driving motion of power operating shaft assembly J (illustrated) resulting from worn pin C and enlargement of the pin hole in the shaft.

This condition may be remedied by resizing the pin hole with a Kit 261 drill and Kit 370 reamer for larger taper pin C (308538).

The repinning should be followed by adjustment of eccentrics A and D as follows:

Eccentric A should be adjusted so that twin cam R (Plate 11, Accumulation Symbol List) will drive the flat surface of cam U fully into contact with roll W at the end of the forward stroke.

Eccentric D (illustrated) should be adjusted to provide minimum play between the teeth of segment G and gear H.

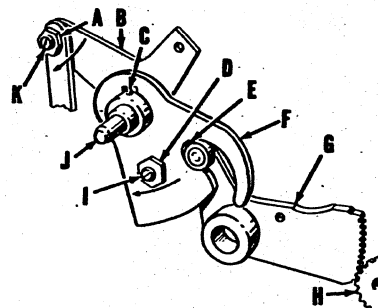
It is important to set eccentrics A and D with the wide side to the right of center so the power applied to the eccentrics during the machine operation will not have a loosening effect on screws K and I. The force in a clockwise direction, indicated by the bent arrows, applied to the right of center will tend to tighten the screws.

Setting eccentric A with the wide side to the right of center (toward the power shaft) will shorten the distance to the fulcrum of driving arm B, and thereby provide maximum movement of the power shaft.

After adjusting the eccentrics there should be clearance at E between the roll in segment G and the end of the slot in driving cam F with the machine fully restored to normal. If clearance is lacking, stock should be removed from the end of the slot by grinding. This will prevent loosening of the threaded hub to which eccentric D is attached.

**2-ERRATIC CARRIAGE OR REGISTER RETURN** may be caused by a worn bushing in the machine base for shaft assembly O (Plate 3, Power Symbol List).

New plastic bushing 70302A with longer wearing quality is available for replacement.



SERVICE DIVISION

# Burroughs

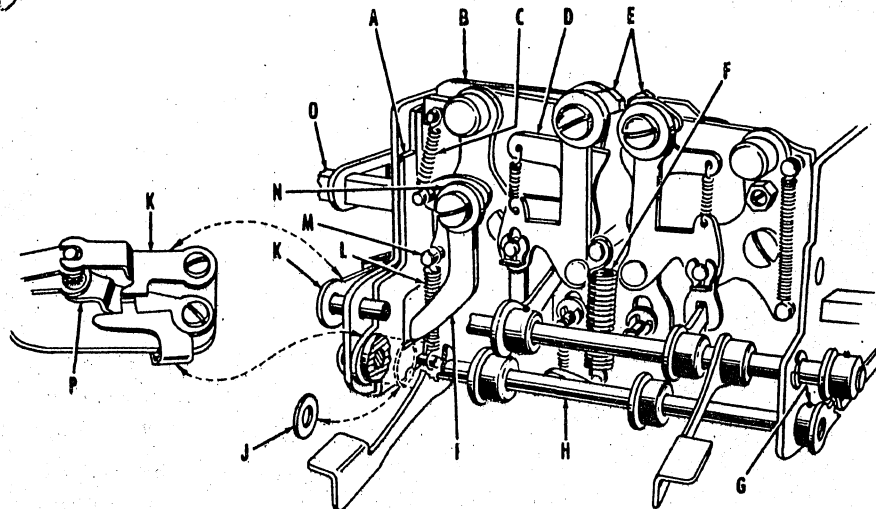
## MECANOGRAM

No. 534

January 7, 1955

SERIES F MACHINES

*Rec 543*



**1-MACHINE OPERATION WITH CONTROL PINS AND TAPPETS OUT OF ALIGNMENT**  
will be prevented by installing the recoil blocking mechanism illustrated.  
It functions as follows:

As a tabulator stop separates bumpers E, stud M disengages latch I from blocking arm A, releasing the latter to limit against the right bumper. As the bumpers are closed by spring F, the blocking arm is moved into position between the bumper and the gear box side frame by spring L - preventing reseparation of the bumpers.

The blocking arm is normalized from the movement of either arm K or P.

To install:

- Remove the gear box from the machine.
- Remove arm P from the right end of shaft H.
- Remove taper pin G from the left end of shaft H.
- Remove linkage D and move shaft assembly H to the left far enough to assemble washer J and blocking arm A on shaft H.
- Reassemble the shaft assembly and linkage in the gear box.
- Install new arm K which has a foot added for contact with blocking arm A.
- Assemble latch I, collar N, spring L and spring C as shown.
- Remove stock from the right end of auxiliary brake control lever B for clearance of the blocking arm.
- Remove auxiliary timer latch C (Item No.1, Mecanogram 497).

(Over)

- Test the blocking arm to lie against the right side frame of the gear box and to be free. To adjust, bend the arm.

NOTE - It may be necessary to file the riveted end of post O flush with the inside of the gear box side frame.

- Reassemble the gear box in the machine.

Test: The blocking arm should restore with approximately .010" lead of latch I. To adjust, bend the blocking arm for earlier or later contact with arms K and P.

#### Parts required:

A	1FG161	- Recoil block
C	3489 3/4	- Spring between latch I and bumper
I	1FG162	- Recoil latch
J	1625	- Washer on shaft H
K	FG28	- Lever to reset recoil block
L	3688	- Spring for recoil block A
N	X1-31	- Space collar for latch I

2-BREAKAGE OF REGISTER SELECTION TAPPET A (Plate 40-5, Symbol List) due to overthrow of the sensing camshaft may be overcome by installing the following corrected parts and using the revised adjustment.

- Full cycle detent arm 1FD16 and spring X80-23 replace parts B and F of Mecnaogram 494, Item 1. The two spring studs on the new detent arm provide a means of varying the pull of the X80-23 spring for the camshaft load of the various styles of machines.
- Larger coupling rollers X10-197 (use same pin 71599 and clips 277) are used on drive shaft BK (Plate 6) for gear BF to reduce the lost motion in the coupling between the main and sensing camshafts.
- Stronger spring 75818 replaces spring BQ.

With the above improved parts installed and the sensing camshaft adjusted as directed in Plate 6 (Series F Instruction Book) lock nuts AB should be loosened and retightened after register selection cam F (Plate 40-5) is rotated to release the tappet at 5 to 8 degrees in the machine cycle.

The scribe mark on the cam is no longer used to position the cam in relation to the square stud of lever C and it will be omitted from cams constructed in the future.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

*Lovejoy*  
No. 533

December 15, 1954

### SERIES P MACHINES

**1-INSERTION OF HEAVY OR MULTIPLE FORMS** in an NA-2 carriage may require installation of guide 1-83152 1/8 No.2 (No. 10, Plate 41, Carriage Parts Catalogue) to prevent contact with the ribbon. Shorten the fingers 1/16" for clearance of the plastic tear off blade.

Remove the ribbon feed arm limit screw or stud from the carriage bottom plate and install the guide using two screws 7356 1/2.

This cancels Item 4, Mecanogram 516.

**2-WRONG ADDITION** may result if shaft P (Plate 2, Keyboard Parts Catalogue) is not perfectly straight and is allowed to rotate. This condition prevents holding a constant cipher stop adjustment.

Constant adjustment will be assured by installing two set collars 1-96305 in available spaces on the shaft. Tighten one set collar screw and turn the shaft until the screw head limits against the under side of the lower keyboard plate. Tighten the other set collar screw to hold firmly against the front edge of the keyboard plate. Recheck all cipher stop adjustments.

The shaft in new machines is retained by one set collar with the set-screw extending through the opening in an extension added to the lower keyboard plate.

**3-RETARDED MACHINE SPEED OR FAILURE OF MOTOR TO OPERATE** may be caused by a worn switch arm O (Plate 132, Symbol list).

Switch arm assembly 1-81215C now furnished by the factory is harder to preclude wear and should be ordered for replacement.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 532

December 10, 1954

### SERIES J MACHINES

**1-CROOKED FEEDING AND TEARING OF PAPER** may be corrected by replacing guide plate A1 (Plate C1, Parts Catalogue) with a new guide plate 1JC26 and installing set collar 1-8344. This set collar should be assembled on the platen shaft to the right of the carriage right side frame and set to remove any excess play of the platen between the carriage side frames.

**2-BREAKAGE OF CIPHER BLOCK ASSEMBLY SPRING D9** (Plate H1, Series J Parts Catalogue) has been corrected by using spring X80-36 in 10 column machines. Spring X80-23 is used in 8 column machines.

**3-REPEAT BAIL G2**, (Plate K1, Parts Catalogue) has been discarded and removed from assembly in all currently manufactured machines to eliminate a half-cycle operation which occurs at times from a slow release of the repeat key.

Removal of the repeat bail in Field machines requires removal of drive trip repeat latch B1 and replacement of spring A2 (Plate D2) with spring 63800. Use washer 10025 1/16 No.3 to take up excess play on bushing B4. The following adjustments should be made to prevent disengagement of the clutch dog when the repeat key is held depressed.

#### Adjustment:

- a. With the power shut off and the machine normal, clutch release arm C1 should have approximately .050" clearance over restoring cam B (Plate D1).
- b. With the repeat key held depressed and the machine operated manually, clutch release arm C1 (Plate D2) should raise out of the path of the clutch dog (without touching the clutch dog) near the end of the machine cycle.

To adjust, bend the projection on drive trip slide A1 which contacts clutch release arm C1.

Note: Recheck adjustments on switch shut-off arm E1 to function properly.

**4-NEW CUSHION PINS X36-22 AND X36-23** are now available to provide a heavier or lighter print of individual sectors. Each new pin along with the regular pin A5 (Plate T1, Parts Catalogue) has different plating for easy identification as shown below.

X36-3	Cadmium Plated	Regular Pin
X36-22	Copper Plated	Used for Lighter Print
X36-23	Blue In Nitro Plated (Black)	Used for Heavier Print

SERVICE DIVISION

CONFIDENTIAL

MEMORANDUM

MEMORANDUM FOR THE RECORD

1. The following information was obtained from a review of the files of the Department of the Army, Office of the Adjutant General, and the Office of the Quartermaster General, and is being furnished to you for your information.

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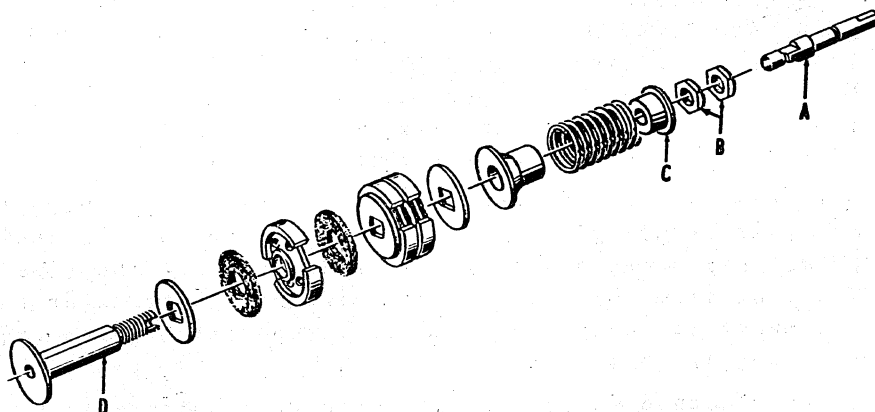
# Burroughs

## MECANOGRAM

No. 531

December 3, 1954

### SERIES F MACHINES



**1-CARRIAGE DRIVE CLUTCH 1FG13-1**, equipped with oiled felt disks in place of carbon disks for improved power transmission, is available for Field installation.

The clutch is factory gauged to provide 15 lbs. to 20 lbs. of force on dynamic test with nuts B (illustration) tightened to cause longer flanged collar C to limit against the shoulder of spindle D. Note: It is recommended that the factory setting be left undisturbed. Before replacing these clutch assemblies because of low output, it should be determined that all mechanisms driven through the clutch are on test and lubricated.

Shaft A is keyed into a slot of the spindle to provide a flexible coupling for reduction of strain on the bearing in bracket H (Plate 2, Symbol List).

When installing the improved clutch, Item 1, Mecanogram 524, should be reviewed and the following observed:

- Clutch drum W (Plate 2, Symbol List) should be replaced if the keys for the driven disks show wear.
- There should be not more than .015" end play of the clutch assembly in drum W (Plate 2). Use one or more washers 707302 No.1 on shaft J between clip I and bracket H for required play.
- The felt disks should be oiled with Kit 131A when the clutch is installed and on regular attentions.

This cancels Item 1, Mecanogram 480.

**2-IMPROVED NON-PRINTING DUMMY TYPE 406118 No.39 and 406118 No.39 1/4** are available and should be used to replace type removed to effect permanent non-print of symbols or characters.

These type are installed with the longest projection toward the front of the machine to prevent hammer breakage resulting from excessive movement and collision of hammers with the hammer restoring bail. Also, these type prevent the type in adjacent magazine spaces from sticking as a result of the peening effect of the hammer striking the magazine.

This cancels Item 3, Mecanogram 486.

(Over)

**3-CURRENTLY MANUFACTURED MACHINES** contain year date type 406118 No.4. The new arrangement started with Commercial Machines in Serial No. F15097P and with Bank Machines in Serial No. F15155P.

Older machines can be changed to the new arrangement as follows:

1. Bank Machine Styles F102, F106. and F202 require replacement of index strip BH (Plate 28, Symbol List) with new style strip 1-406109A No.9 in the year date column. This arrangement permits relocation of the year date type from magazine positions 5, 6, and 7, to positions 9, 10, and 11. The shaved type are replaced with type (406118 No.4), and a dummy type (406118 No.39) is installed in position 2. The latter is necessary to protect the type magazine against the hammer firing when no year date is indexed on the keyboard.
2. All other styles of machines require a new type bar 11Z-406111 No.14 in printing column 13. The new type bar is designed to permit use of standard type in position 1 of the type magazine. The type from the old type magazine may be transferred to the new magazine except in the number 1 position which requires type 406118 No.4.

Another method where two year type will suffice is to remove the keystone in number one position and install plug 90 1/4 No.18. The year dates may then be advanced by alternating between positions 2 and 3.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 530

November 30, 1954

### SERIES F MACHINES

**1-EASY REMOVAL OF FRONT INSERTED FORMS** is assured by installing the rear form chute flexible latches shown in the illustration. This new construction prevents pinching the lower edges of forms between pan I and chutes A as the carriage opens since springs G will yield and permit the front ends of the chutes to rise.

#### Adjustment:

1. With the carriage open, the front end of chutes A should be free in the channel of pan I.

To adjust, file stock from the front end of chutes A.

**Note:** If the chutes are tight in the channel of pan I, the form chute assembly will be forced rearward as the carriage opens and will loosen the posts in the carriage side frames to which latches D are latched.

2. There should be .003" clearance between the bottom of cross bar B and eccentrics BS (Plate 4, Symbol List) of the control unit.

To adjust, turn eccentrics BS.

#### Parts required for Field installation:

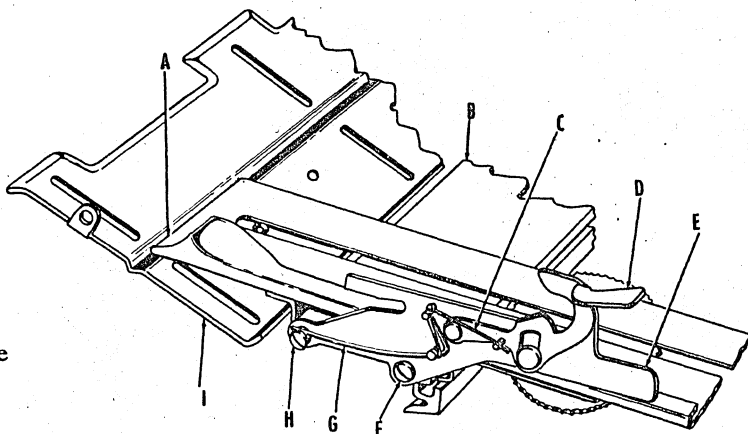
C	403802	2 required
E	1-403192AR	
	1-403192AL	
F	X60-114	2 required
G	X81-11	2 required
H	X60-113	2 required

**2-FAILURE TO RELEASE REGISTER DETENT PAWLS T AND U** (Plate 40-3, Symbol List), in Style F500 machines with the improved register selection mechanism may be overcome by installing the following improved parts and heavier spring.

Pusher pawl 1-404151 1/2 (AP, Print 609-1/F) now has an upper projection limiting the initial rearward movement of register selection rack AC to prevent cramping of worm AD and bracket AI (Plate 40-3).

Spring anchor stud FA118 in register right side frame BD for torsion spring P is lengthened, reduced in diameter and made without a spring groove. These changes in the stud prevent a cramping of bracket AI by the additional coils wound onto spring P as the higher numbered registers are selected.

Stronger spring 681 1/8 replaces spring BB (Plate 40-4) use X85-12 clip.



# Burroughs

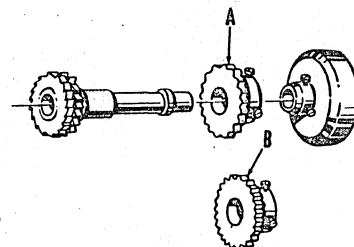
## M E C A N O G R A M

No. 529

November 29, 1954

### SERIES P MACHINES

*1-ERRATIC SPACING OF WIDE FORMS IN B CARRIAGES* (Plate 27, Carriage Parts Catalogue) may result from rapid insertion or withdrawal of the forms, and inadvertent positioning of the detent roll on a tooth of star wheel A (illustrated) instead of between the teeth.



Ratchet wheel B (1-903329 (15), with sharp teeth, 1/6" spacing only, may be substituted for wheel A, to improve spacing of wide forms, when necessary.

*2-BREAKING OR RUSTING OF ADDING PINIONS IN CLASS 9 AND SERIES P200 MACHINES* will be prevented by use of improved steel pinions 99116B No. 4.

The new pinions were first used in Class 9 Machine, Serial No. P116267D, and in Series P200 Machine, Serial No. P117619D. When replacing a broken or rusted pinion, a complete set should be installed.

*3-COMPLEMENTARY TOTALS* in Series P400 machines may be caused by disengagement of arm AD (Plate 123-7, Symbol List) from the stud in detent assembly AI.

New detent assembly 1-909129A with a longer stud should be installed when this condition is encountered. Assembly AN (1A-909133) with arm AH offset to clear the longer stud is also required.

*4-BREAKING OR SMUDGING OF TEAR OFF BLADE O* (Plate 3-1, Carriage Parts Catalogue) is eliminated by a change to material that is more flexible and by the addition of embossments to the underside. The new blade, 903158A (3 7/8), is attached with two screws 73611 and the two nuts 46 1/4. This cancels Item 2, Mekanogram 515.

*5-ACCUMULATION OF "A" TOTALS IN "B" REGISTER AND/OR PRINTING OF "AB" SYMBOL ON AN "A" TOTAL WITH THE SELECTION LEVER IN "AB" POSITION* may be caused by wear of the slot in link BM (Plate 123-5, Symbol List) and/or wear of the pivot hole in bell crank BG.

Assembly BG (includes link BM) is now hardened to prevent wear. Destroy all unhardened assemblies and order assembly 1-904111 for replacement.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

*Long*

No. 528

November 24, 1954

### SERIES M MACHINES

**1-MACHINE LOCKUPS OR WRONG ADDITION (IN STERLING MACHINES)** may result from failure of limit AB (Plate S-50-2, Accumulation Symbol List) to engage the subtract plate latch at the end of a subtract cycle, thus permitting the subtract plate to be indexed on the next machine operation.

Spring AT is replaced by stronger spring 77881 and should be used in earlier machines when required.

**2-POOR PRINTING ALIGNMENT** when adding simultaneously or transferring amounts from the crossfooter to a register may result from the limit surface of the register carry pawls causing the pinions in cipher position to move the adding racks rearward when meshing.

New carry pawls 709109 No.4, with .007" stock removed from the limit surface, may be installed (in complete sets) in register sections only to improve printing alignment. The new pawls are copper plated for identification.

**3-NON-ADDING OF AMOUNTS IN THE CROSSFOOTER** may result when adding simultaneously if wear of adjustable limit B (illustrated) changes adjustment of finger bail A.

Hardened limit BB(72186 1/2) is available for Field replacement.

Symbol List reference, Plate 51, Accumulation.

**4-ELECTRIC SHOCK AND ARCING BETWEEN TERMINALS OF RESISTOR G AND BRACKET DD** (Plate 8-4A, Keyboard Symbol List) - and between resistors when more than one is required - will be eliminated by using the following spacers and screws to increase the gap:

16340 spacer (2 required) between resistor G and bracket DD.

73612 screw (2 required) to hold one resistor to the bracket.

200416 spacer (2 required) for each additional resistor.

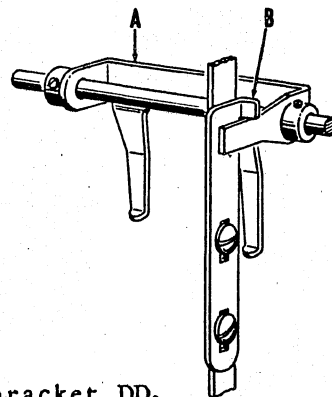
74531 screw (2 required) to replace 73612 screws when two resistors are used.

200537 1/2 screw (2 required) to replace 73612 screws when three resistors are used.

203559 1/2 screw (2 required) to replace 73612 screws when four resistors are used.

The increased spacing between resistors started with Serial No. M7440D, approximately. Machines prior to the above number should be changed when need is indicated.

**5-FAILURE TO TABULATE** caused by loosening of the shoulder screw in pass-by pawl BB (Plate 18, Carriage Symbol List) will be prevented by installing longer-threaded screw 701626 and lock nut 46.



SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 527

November 22, 1954

### SERIES M MACHINES

**1-IMPROPER INDEXING OF EXTENDED AMOUNTS** may result from wear of the upper forked ends of extend arms BW (Plate 19-1, Keyboard Symbol List) where they contact the studs in arms BY.

The forked end of extend arms 1-74135 No.2 now receive a hardening operation to prevent wear. These arms should be used for replacement.

*See 1002*

**2-BENDING OF RESTORING ASSEMBLY B OR ARMS BX** (Plate 19-1, Keyboard Symbol List) may be caused by failure of the normalizing mechanism to latch on depression of a clear multiplier key or a final product key with the Non-extend of Specified Columns Mechanism under active carriage control.

Redesigned normalizing cam 1-702219A (BI, Plate 18-2) with the formed arm for rod AY moved rearward, causes the rod to have a downward and forward movement thereby reducing the tendency to flip latch W upward at the time of latching block BC.

Installation of the new cam in field machines also requires longer rod 1-702760B, intermediate arm 1A-702119 3/4A with a longer hub, and latch 1-702235 1/2A with a deeper step for better hold of block BC.

**3-INNER MARGIN RELEASE BLOCK** 1-703993 No.3 (X, Plate 26-1, Carriage Symbol List) now includes a screw to secure the margin release block rigidly on the control bar. This provides better alignment of a control rail assembled to the margin release block with other control rails on the control bar.

The locking screw should be used only when the operation permits permanent setting of the margin release block. Control rails 73216 No.4 1/2 (non-add) and 73216 No.5 1/2 (add crossfooter) with stock added to the upper surface to compensate for the tilting of the margin release block without the locking screw are available for Field use when it is inadvisable to install the new block.

**4-A TOTAL RESULTING FROM A SUB-TOTAL OPERATION** may be caused by a broken spring BJ (Plate 40-1, Keyboard Symbol List).

Longer spring 12081 1/2 with larger diameter coils has replaced spring BJ and should be used as replacement. It also replaces spring BX (Plate 40A).

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 526

November 19, 1954

### SERIES M MACHINES

**1-IMPROVED CASE CONSTRUCTION FOR SOUND ABATEMENT** is now standard on Series M200 and M800 machines of current manufacture. A similar arrangement for Field installation is available for consignment machines or as a "repair" attention to customers' machines.

Rubber pads 700903Z No.3 that fit under the case and around the feet of side frames are used for Field installation in place of the rubber grommets used in factory construction.

Parts required for Field installation and the procedure used are as follows:

Part Number	Description	Quantity
700903Z No.3	Rubber pad	4
700113 No.2	Case Bracket	1
700554	Case bracket pin	1
700505 No.3	Case screw	2
700904	Rubber washer for case	2
701343	Bushing for drive cover	3
88903	Rubber grommets used with 701343 and 700113 No.2	4
701580 No.2	Drive cover screws	3
3820 1/2	Washer for drive cover screws	3

- Remove case lock G (Plate 14, Power Symbol List) by driving pin 700554 from the underside of the base.
- Install new case bracket 700113 No.2, equipped with grommet 88903.
- Remove the two dowel pins for the case from the rear corners of the machine base.
- Install four rubber pads 700903Z No.3 - one on each foot of side frame M.
- Remove the bosses at the case screw holes on the inside of the case to provide clearance between the case and the side frames. A hacksaw may be used.
- Enlarge the case screw holes in the case to compensate for the raised position given the case by the rubber pads. Use a 7/16" drill.
- Assemble two sets of bushings 701343, rubber grommets 88903, washers 3820 1/2 and screws 701580 No.2 on the under side of the base for the retaining slots in the drive cover. The third set is to be used for retaining the front end of the drive cover with the grommet forced into the hole in the support bracket of the cover before the bushing is placed in position.
- Install the machine case and retain with two screws 700505 No.3 with a rubber washer 700904 between each screw head and the case. Tighten the screws to apply sufficient pressure on the rubber washer to prevent loosening of the screws but not enough to draw in the case.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

1st J. Meco.  
No. 525

October 27, 1954

### SERIES J MACHINES

*1-OCCASIONAL FAILURE OF SERIES J MACHINES TO OPERATE FROM A MOTOR BAR DEPRESSION* may be caused by a poor electrical contact of the motor brush and spring with the brush sleeve. This condition will be corrected by installing a new spring X80-65 on brush D2 (Plate M1, Section M, Series J Parts Catalogue). The top coil of the new spring has a large loop which rests on top of the brush sleeve and assures good electrical contact when forced against the sleeve by the brush cap.

The new spring should be installed in all consignment machines below Serial Number J5055D before delivery and in users machines where complaints have been experienced.

In emergency, the top coil on the present spring may be enlarged to provide the same result as that obtained from the new spring.

*2-DIM SPOTS IN PRINTING* - caused by dry spots in ribbons - may be the result of the affinity and chemical reaction between ribbon ink and the cadmium plating on ribbon guide parts. These dry spots occur temporarily in ribbons that are allowed to remain stationary for long periods of time.

The plating of all ribbon guide parts contacting the ribbon has been changed from cadmium to nickel and new parts are now available for the Field.

The following parts are required for Field installation.

1JR11	Right Ribbon Guide
1JR11-1	Left Ribbon Guide
84334A	Roller (2 required)
X10-69	Roller (2 required)
1JR16	Ribbon take-up arm

Removal of the cadmium plating from parts in contact with ribbons also tends to alleviate the condition.

SERVICE DIVISION

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# Burroughs

## M E C A N O G R A M

No. 524

September 30, 1954

### SERIES F MACHINES

*1-BREAKING OF THE DRIVING LUGS OF GEAR E* (Plate 2, Symbol List) or blowing of fusetron V (Plate 50-2) may be caused by excessive end play of shaft J (Plate 2) allowing the teeth of gear F to lock on the edge of the clearance hole in bracket H.

The following adjustment should be made on the next attention to each machine.

With the space washer and clip I in place on shaft J, gear F should be located so that the shaft will have not more than .005" end play.

The brackets in new machines will have a larger hole for added running clearance for gear F and the hole should be enlarged in Field machines when the gears or bracket are changed because of wear or breakage.

*2-OPERATING OFF THE PINS* caused by shifting of tabulator stops will be remedied by securely tightening all stops and installing combinations of split set collars and separator clamps to fill the spaces between all stops on the bar.

The collars and clamps are of different lengths and have open sides to permit easy assembly without removing the stops from the bar.

The various lengths are:

1-403909 1/2 No. 1	.308"	Split collar
1-403909 1/2 No. 2	.433"	Split collar
1-403909 1/2 No. 3	.558"	Split collar
403909 1/2 No. 4	.120"	Separator clamp
403909 1/2 No. 5	.183"	Separator clamp

*3-THE MACHINE SERIAL NUMBER* given in the first paragraph of Mekanogram No. 521 should be corrected to read No. F17000P.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 523

September 10, 1954

### SERIES H, M AND V MACHINES

*1-BRUSH NOISE* will be reduced and longer brush life assured by replacing clamp G (Plate 6-1, Series H Power Symbol List) with redesigned clamp 4611 1/2A. The new clamp has an added extension that acts as a back stop for the brush and permits the brush to "float" independent of the movement of brush arm F.

The new clamps should be installed where complaints are received of brush noise or where brush wear is excessive.

### TOOLS

*2-A NEW BENDER, KIT 412, IS AVAILABLE FOR EQUALIZING RESETTING OF THE TABULATION AND RETURN CLUTCHES ON SERIES F MACHINES.* The new bender is used with punch holder Kit 96B-1 to adjust the ear on parts AZ (Plate 9, Series F Symbol List) and part BB (Plate 10).

### ALL CLASSES

*3-EACH SERVICE ATTENTION RENDERED TO SERIES J, K, F500 AND B & H EQUIPMENT* during the guarantee period should be reported by the Service Representative on Mechanical Report, Form 980. The reports should be processed according to Service Letter 106.

Reports should be prepared completely, accurately and legibly - listing the mechanical conditions, analysis and adjustments.

This cancels Item 2, Mekanogram 499.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 522

August 31, 1954

### SERIES H MACHINES

**1-DAMAGE TO RIBBON REVERSE PAWL L** (Plate 38-1, Printing Symbol List) which may be caused inadvertently during a ribbon installation will be avoided by installing improved reverse pawl 1-205138BR. The flat spring extension has been omitted and the ribbon contact arm of the pawl lengthened.

Only the improved reverse pawl is available for replacement and when installed requires the idler roll construction outlined in Item 1, Mecanogram 448.

With the above change, Adjustment No.1 (Plate 38-1, Printing Instruction Book) should be changed to read:

"At the end of the return stroke of the machine operation (with the ribbon being wound onto the left ribbon spool) the flange of feed pawl Y, by its contact with the beveled surface of cam AD, should disengage the feed pawl from the teeth of ratchet gear G.

To adjust, loosen screw AC and shift feed pawl Y as required."

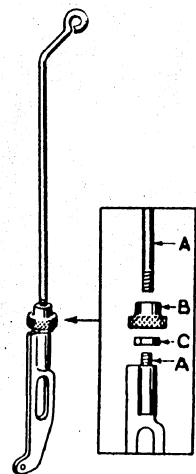
**2-WRONG SELECTION OF THE CARRIAGE POSITION** (No Space Stroke Total Bank Machines) may be caused by lost motion of the control slides when indexing control fan BH (Plate 37-5, Carriage Symbol List).

Peening compensating arm BQ to remove play will be unnecessary if eccentric screw 202530 is properly installed in place of hexagon head screw BY.

The eccentric screw was first used in machine Serial No. H6238D.

**3-FAILURE TO SELECT THE CORRECT HAMMER BLOCK POSITION** may result from a broken rod R (Plate 6-1, Printing Symbol List).

The broken rod may be repaired when the break is in the threaded portion above the lock nut by replacing the full size nut with half nut 46 1/4 (C, in illustration) and installing knurled nut 73381 (B, in illustration) to hold the broken sections together.



SERVICE DIVISION

# Burroughs

No. 521

## M E C A N O G R A M

SERIES F MACHINES

August 27, 1954

*1-CONTINUOUS RUNNING MOTOR DURING AN OVERDRAFT BALANCE LOCK OR FAILURE TO TO RESET THE DRIVE TRIP AS MOTOR BAR NO. 1 IS RELEASED* on Style F102, F202 and F302 machines below serial No. F1700P (approximately) may be corrected by installing the improved parts and making the revised adjustments listed below.

### A. Improved Parts

1. Split collar 1-401348Z to prevent upward bowing of shaft AT (Plate 56, Symbol List); and shorter spring AA (39 coils) on bail assembly AD - Mekanogram 501, Item 2.
2. Improved register selection and drive trip interlock shaft assembly 1-404011 (W, Fig. 1, Print 609-1/F) and overdraft interlock hook 1-401130 (BQ, Plate 48-1).

Note: Both interlocks were changed to reduce resistance and insure resetting of latch bail F.

3. Improved auxiliary cam and spring anchor construction - Mekanogram 494, Item 1.
4. Weaker spring 3282 in place of spring M (Plate 56).
5. New limit screwpost 401326A in place of screw O (Plate 57) to prevent overthrow of latch bail J so that the formed ear of clutch arm L will fall in the pocket of the latch bail J and not on the rear projection as the drive is tripped.

Note: The normal limit for the original style latch bail E (Plate 56) was against the ear of clutch release bail J. Later the outline of latch bail E was changed by making a clearance cut in front of the ear and adding stock to limit against shaft H. The first new style latch bails E were corrected with the clearance cut in front of the ear of clutch release bail J but without added stock for a normal limit. It was intended that collars 235 1/2 and 200386 be placed over shaft H to provide the normal limit for the corrected latch bails until new parts were available. However, a number of machines were built without these collars which must be installed before the following sequence of adjustments is made.

### B. Adjustments

1. With latch bail E (Plate 56) in its normal position against shaft H (or the temporary limit collars on shaft H), the forward edge of the formed ear of clutch bail J should be even with the main outline (above the clearance cut) of latch bail E. Manually raise the formed ear of clutch bail J to check.

To adjust, weave bail E.

2. With latch bail E adjusted as specified on adjustment No. 1, there should be .030" to .040" normal clearance between the ear of latch bail E and the hook of register interlock hook M-1 (Plate 40-4) and overdraft interlock hook BQ (Plate 48-1).

To adjust, weave the formed ear of latch bail E (Plate 56).

(Over)

3. With latch bail O (Plate 40-4) manually rocked forward and its ear limited against register interlock M-1 or overdraft interlock hook BQ (Plate 48-1), the motor switch points should remain open. Also, toward the end of the machine cycle, the switch points should remain closed until clutch release bail J (Plate 56) is raised high enough for the step of latch bail E to clear under the formed ear of clutch release bail J.

To adjust, loosen screw AD (Plate 50-2) and raise or lower plate A for more or less throw of the microswitch.

Notes:

- (a) The rear arm of latch bail E (Plate 56) that contacts the stud of bail AB (Plate 50-2) should be square and not tilted upward or downward.
  - (b) When adjusting the old style switch points, consideration should also be given to obtaining good switch point contact from the carriage opening and closing clutches through arm CW (Plate 17) and the tabulation and return clutches through arm AC (Plate 9).
4. With the machine normal and bail assemblies AD (Plate 56) and AS limited against the fingers of trip shaft AW, the rear projection of arm Q should clear over the top of interlock E (Plate 57) by .050" to .060".

To adjust, tilt stud S or X (Plate 56) by bending blank T.

5. Manually hold the formed projection of clutch release bail J to prevent its dropping and depress a live result key in column "A". The rear edge of the step of latch bail E should clear arm J by .025".

To adjust, weave the rear projection of locking slide L (Plate 24) toward or away from shaft N. Repeat the test and adjustment for columns "B" and "C".

6. Eccentric stud O in error key link W should be set to swing shafts N and C forward as far as possible as the error key is depressed - without a bind or a false downward limit for the error key.

To adjust, turn eccentric O.

7. Index a full date (month, days, and year) on the keyboard and move the date repeat lever to repeat position. Index any amount key and a live result key for a partial drive trip. As the error key is depressed to release the amount and the result keys, the formed ear of the blank on the left end of bail assembly AS (Plate 56) should have approximately the same reset lead over the end of the finger on trip shaft AW (Plate 56) as the formed ear of the blank on the right end of bail AS has over the center finger of trip shaft AW.

To adjust, weave the left blank above the formed ear for more reset clearance.

8. Depress small motor bar Y (Plate 59) and operate the machine manually. Toward the end of the machine cycle, the stud in arm AE should drive lock slide AB forward for minimum releasing clearance for the small motor bars.

To adjust, weave the rear ear of lock slide AB toward or away from the stud in arm AE.

SERVICE DIVISION

# Burroughs

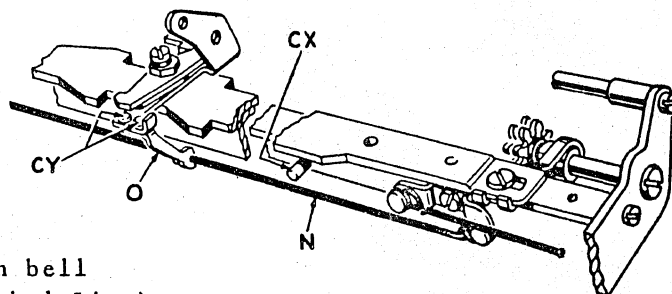
## MECANOGRAM

No. 520

August 20, 1954

### SERIES M MACHINES

**1-STRAIGHT TRAVEL AND LONGER LIFE OF DRAW CORD N** (illustrated) will be afforded by removing stud CX in all except Style M222 machines and adjusting guide O to align with the cord.



In Style M222 machines, which require contact of the stud with bell crank Y (Plate 9-1, Printing Symbol List), the stud may be shortened sufficiently to permit aligning the guide and installing a new bell crank 1-706231B that has been redimensioned to compensate for the shorter stud. Protect rivets CY when adjusting guide O.

Symbol List reference, Plate 19-1, Power.

**2-ELECTRICAL SHOCK TO AN OPERATOR** which may be caused by inadvertent contact with one of the terminals of switch assembly CG (Plate 6F, Keyboard Symbol List) will be avoided by installing protective shield 701901Z.

The shield is retained by screw E and abuts against dust shield AD (Plate 14, Power Symbol List). Order only for immediate use.

**3-WRONG TOTALS, BENDING OF SHAFT C (PLATE 19-1, KEYBOARD SYMBOL LIST) OR BENDING OF INDEX ARMS BX** may result from simultaneous use of the First Product key and the Add Crossfooter-Clear Multiplier key with an add cross-footer cam active on the control bar.

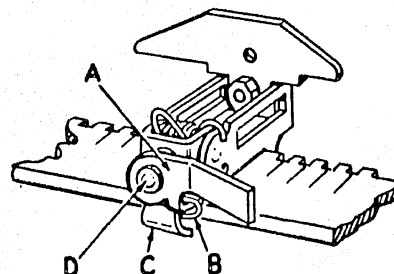
The extra load resulting from the functions set up by the two keys tends to temporarily stretch link K (Plate 6D) thereby reducing latching lead and causing premature restoring of the linkages. Adjustment of eccentric S (Plate 6F) for latching lead when the two linkages are indexed may result in overthrow of the twin cams by an individually indexed linkage.

Improved linkage assembly 1B-702171 No. 14, with stronger front link K (Plate 6D), should be installed to eliminate the above condition.

#### **4-ACCIDENTAL DISLODGE- MENT OF BRACKETS**

1A-73214A and 1-73214C No. 2 (P and Q, Plate 26-1B, Carriage Symbol List) from the control bar on currently manufactured machines is prevented by a newly designed retaining clamp C.

The improved retaining clamp contains release lever A that pivots freely on rivet D. Lever A is held inactive (horizontal) by spring B and must be manually raised to vertical position to release the retaining clamp.



SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 519

Aug. 2, 1954

### SERIES M MACHINES

1-REGISTER DRAW CORDS N, K, CF, AND BQ (Plate 19-1, Power Symbol List) will last longer on machines subject to heavy use by installing the following parts:

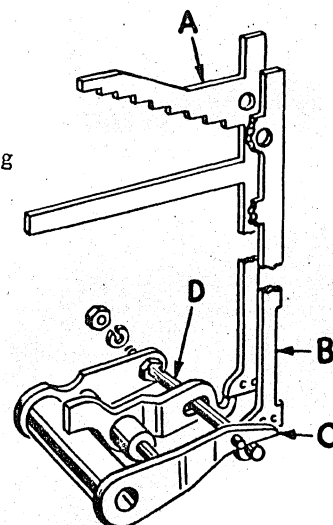
- Clutch arm assembly CE (1A-701208 1/2 No. 2), (11A-701208 1/2 for Sterling) has a larger diameter pulley CD which is pivoted on shaft AI. The larger pulley reduces flexing of the cord.
  - Guide CC (701244) has stock removed for clearance of the new pulley CD.
  - Draw cord drum CH (1-705362B) has the central slot for the cords replaced by individual holes, one at each rim. Cord N is attached in the front hole and cord CF in the rearward hole.
  - Pulley bracket assembly Y(1-709273 1/2A No. 3) is made of heavier stock and pulley AD is wider to improve the reeling of the cord.
  - Pulley guard AE (709274 3/4B No. 3) has its offset changed to compensate for thicker bracket Y.
  - Screws X (79543) are longer because of the thicker bracket Y.
  - Clock spring in BU(83 No. 20) is stronger to increase tautness of take up cord BQ.
  - Draw cord N (709902 No. 4), 100 pinion 21" long  
(709902 No. 6), 60 pinion 18" long
  - Draw cord K (709902 No. 1), 100 pinion 24" long  
(709902 No. 2), 60 pinion 13" long
  - Draw cord CF (709902 No. 4), 100 pinion 21" long  
(709902 No. 5), 60 pinion 16" long
  - Draw cord BQ (709902 No. 2), 100 and 60 pinion 13" long
- All draw cords are made of a new material having improved wearing qualities.

This cancels Item 2, Mecanogram 440; Item 3, Mecanogram 454; and Item 2 Mecanogram 468.

2-INCORRECTLY PRINTED MULTIPLYING FACTORS in Series M200 machines may be caused by improper lift of index plate A.

The riveted shaft in assembly AF (Plate 22-3, Accumulation Symbol List) has been replaced by eccentric shaft D (illustrated) to provide a range of adjustment of the index plate. The eccentric shaft should be located to insure central positioning of the formed lip of the adding rack on the active step of the index plate.

Machines having the multiplying factor to print controlled from a lever on the front writer panel require assembly C (1C-704305A) and new raise bail 1-704914A No. 6 which has an additional milled surface for clearance of the new assembly.



SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 518

July 23, 1954

### SERIES M MACHINES

**1-MOTOR FAILURE OR ERRATIC MOTOR SPEED** may be caused by a binding centrifugal arm, a burned contact point or a burned brush surface of the governor assembly.

The present governor is replaced by new style centrifugal governor with self-contained condenser and speed control adjusting screw. The new arrangement may be installed in Field machines as follows:

#### Remove:

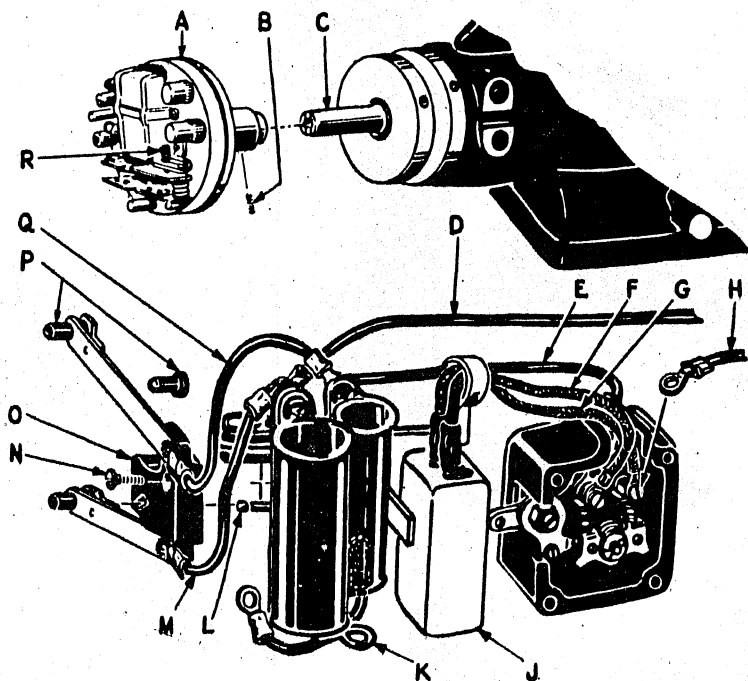
- Front end of wire Y (Plate 1, Power Symbol List) from binding screw CG.
- Parts B, BT, BU, BV, CE, CF, CG and CJ.
- The black wire CI from condenser BF.

#### Assemble:

- Brush assembly O (illustrated) over spring stud L and retain with screw N in the hole from which screw BU (Plate 1) was removed.
- Brush wires Q and M (illustrated) - one to each upper resistor coil terminal post.
- The bracket for the resistors and brush arms far enough forward on its slots so the brush arms are parallel with the face of the governor.
- The two remaining wires BI (Red) and BJ (Green) (Plate 1) - one to each switch point post.

**Note:** -Currently manufactured machines will be equipped with two wire condenser J (1-4694D No.2) (illustrated) which will also be furnished for replacement in Field machines when required.

- Governor A on shaft C. The assembly is retained by two set-screws B - one with a cup end (X60-176) and one with a cone end (X60-177). With the governor placed to the limit shoulder on shaft C, tighten one screw to mark the shaft. Using a Kit 270 No.31 drill, bore a cone-shaped hole at the mark to the depth of the cutting surface of the drill. Tighten the cone-ended screw in the hole and lock the assembly with the cup-ended screw.



An alternate method is to mark shaft C as above and file a small flat area on the shaft. When this method is used, two cup-ended screws (X60-176) are required.

- Front end of wire D (Y, Plate 1) to the upper front resistor terminal post.

Motor speed may be regulated to provide 125-135 machine strokes per minute by turning self-locking adjusting screw R.

Parts required:

A	1-71181A	- Governor
B	X60-176	- Bristol screw, cup end
	X60-177	- Bristol screw, cone end
N	79505	- Screw to retain brush assembly O (use 46 nut)
O	1-71908B	- Brush assembly
P	81990	- Carbon brush (Part of O. Required for replacement only).

SERVICE DIVISION

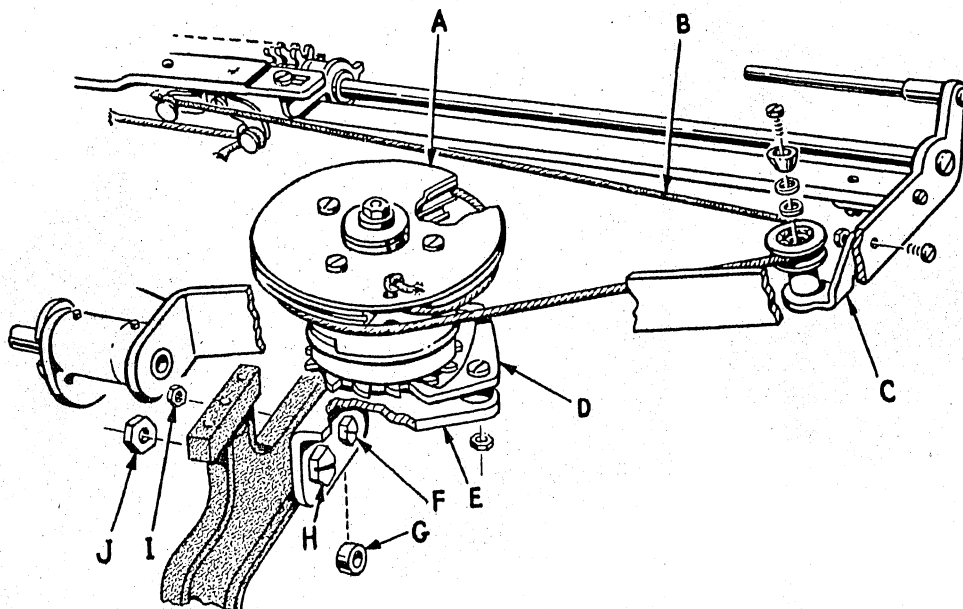
# Burroughs

## MECANOGRAM

No. 517

July 19, 1954

### SERIES M MACHINES



**1-WRONG REGISTER SELECTION, INCORRECT ADDITION, OR LOCKS IN THE REGISTER SECTION** may result from sluggish escapement of the register pinion assembly and vibration of shafts AN and W and blade V (Plate 8A, Accumulation Symbol List). These conditions will be minimized with new style spring barrel assembly A (illustrated).

The new assembly provides uniform spring tension on the register pinion assembly in all positions, and reduces vibration because weight has been shifted from the register assembly to the machine side frame. It may be installed in older machines as follows:

#### Remove:

- Power spring assembly BE (Plate 8A).
- Draw cord pulley BC.
- Counterbalance springs P from brackets B and N.
- Stock from the machine case, sufficient for clearance of the new spring barrel assembly.

Use the support bracket E (illustrated) of assembly A as a template (located with screw H through the existing hole in the side frame) to drill a new hole in the machine side frame for screw F. Use drill, Kit 260 No.11.

#### Install:

- Spring barrel assembly A using screws F and H, collar G, and nuts I and J.
- Pulley assembly C using screws BB and AZ (Plate 8A).

(Over)

- Lighter springs 8084A from bracket N and 83838 from bracket B to the register assembly.

Adjust spring tension by placing register No.1 in active position, wind assembly to capacity and unwind ratchet five full turns.

This cancels Item 3, Mecanogram 482.

Parts required:

A	2-709041	Spring barrel assembly (includes D and E)	
B	709902 No.1	Draw cord, 100 pinion	
	709902 No.2	Draw cord, 60 pinion	
C	1-709190	Pulley assembly for B	
F	3660 3/4	Screw for bracket E	
G	89312A Sty.10	Space collar, .115" long)	
	73333	Space collar, .122" long)	Select one
	9044	Space collar, .125" long)	
	38 Fte.69	Space collar, .138" long)	
H	70500	Screw for bracket E	
I	45 3/4	Nut for screw F	
J	393	Nut for screw H	
P (Plate 8A)	8084A	Spring for bracket N	
P (Plate 8A)	83838	Spring for bracket B	

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 516

July 9, 1954

### SERIES P MACHINES

**1-DAMAGED TEETH OF GEAR BB** (Plate 132, Symbol List) may result from improper setting of eccentric BY. Proper setting may be accomplished as follows:

**Test 1:** With power off, cause a handle break by depressing a listing and result key and manually turn the motor until the drive is restored to normal. Driver BU should engage latch BT with .005" to .010" lead.

**To adjust:** Turn eccentric BY with the high point of the eccentric downward and toward the front of the machine.

**Test 2:** With the drive tripped, turn the motor manually for full throw of link BX. There should be perceptible additional forward movement of the handle when pressure is applied thereto. No movement of the handle on this test indicates excessive driving movement which could place an undesirable strain on the worm and bronze gear of the drive.

**To adjust:** Turn eccentric BY and recheck Test 1.

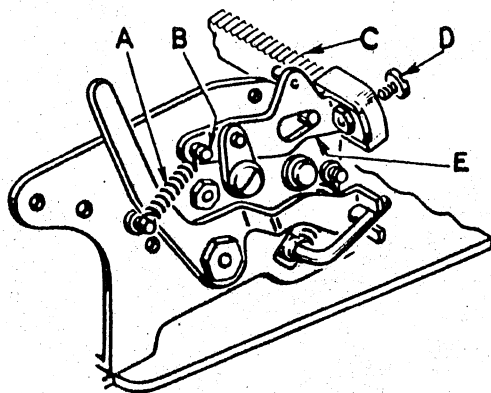
When it becomes necessary to replace a bronze gear, worm assembly AE which includes bearing assemblies, should also be changed to insure that no bronze particles from the damaged gear remain in the drive assembly to cause damage to gears and bearings. Assembly 2Z-81367A, which includes gear BB (fiber replaces bronze) and worm gear AE (includes bearing assemblies), is available for Field replacement.

**2-PLASTIC TEAR OFF BLADE C FAILING TO RESTORE IN NA-2 CARRIAGES** after being moved forward for insertion of paper may be caused by stud B and spring A contacting the machine case.

The stud is now shorter and the spring has smaller diameter coils to insure clearance with the case and free action of the blade assembly. The condition may be remedied in earlier machines by either filing the stud or replacing slide E (1-903205L - 3 7/8) and installing smaller diameter spring A (X80-88).

**3-CHANGE PART NUMBER 2-83165** (3 7/8) No.20 and code letter ND under 3 7/8" carriages (Plate 1, Carriage Parts Catalogue) to read: 2-83165 (3 7/8) No.23, code letter NA-2.

**4-INSERTION OF HEAVY OR MULTIPLE FORMS** in NA-2 carriage may require installation of guide 1-83152 1/8 No.2 (No.10, Plate 41, Carriage Parts Catalogue) to prevent contact with the ribbon. Remove the ribbon feed arm limit screw or stud from the carriage bottom plate and install the guide using two screws 7356 1/2.



Servco 533  
SERVICE DIVISION

# Burroughs

## MECANOGRAM

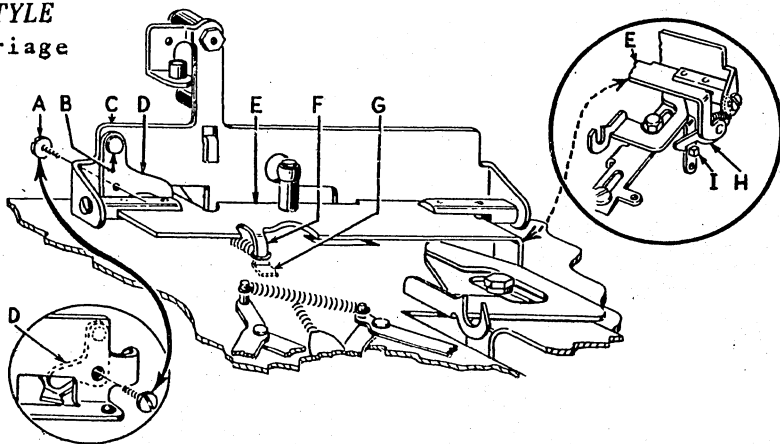
No. 515

June 30, 1954

### SERIES P MACHINES

**1-FAILURE TO TABULATE, STYLE B CARRIAGES** (Plate 27, Carriage Parts Catalogue), may be caused by a broken extension (illustrated dotted line at G) of spring anchor F which positions tabulating bail E at normal.

Bail E is now constructed without the extension (solid line of F), and a new adjustable limit D is assembled as shown.



Limit D may be installed when the extension is broken by removing a spring stud in plate C to permit use of rivet B.

The new limit is positioned with screw A to allow square stud I to reposition under latch H with latching lead at the end of the return machine stroke following a carriage tabulation.

#### Parts required:

A	8054 3/4	Screw
B	702632	Rivet
D	903199	Limit

~~2-BREAKING OF TEAR OFF BLADE O~~ (Plate 3-1, Carriage Parts Catalogue is eliminated by a change to material that is more flexible. The new blade, 903158A (3 7/8) is attached with two screws 7357 1/2 and two nuts 46 1/4.

**3-NOISE CAUSED BY CARRIAGE TABULATION** will be reduced by installing compression spring 81816 on bail BD (Plate 32, Symbol List) between the right carriage end plate and the rearward link of assembly BB. This remedy also pertains to carriages illustrated on Plates 27 and 28, Carriage Parts Catalogue.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 514

June 29, 1954

### SERIES F MACHINES

1-NEW CLUTCH DOG 1FD12, in currently manufactured machines, has an under cut tooth to prevent premature disengagement thereby reducing the possibility of wrong directional subtract carries.

If, after an initial subtract carry has been set up, the clutch dog without an undercut tooth momentarily disengages at about  $100^{\circ}$  in the machine cycle, the main camshaft, actuating shaft, adding rack and accumulator pinion reverse their movement. The long tooth of the accumulator pinion nudges the carry pawl and directional finger to the add side.

The following procedure is recommended for installation:

- Remove the motor.
- Remove the pin from clutch dog assembly B (Plate 56, Symbol List). Removal of this pin makes it possible to slide the clutch dog assembly to the left for working clearance and to permit assembling the new dog to the camshaft blank without riveting.

Note: The camshaft should be well supported when driving the pin from the clutch dog assembly to prevent damage to the ball bearing in the left side frame.

- Use a hand grinder to remove the pivot stud in the worn clutch dog.
- Insert the stud of the replacement dog in the camshaft assembly and reassemble the remaining parts in the reverse order.

This cancels Item 1, Mekanogram 507.

2-FAILURE TO PRINT caused by a broken hammer B (Plate 31, Symbol List) will be remedied by installing hammer 1A-407115 which receives a new hardening process for added strength.

The new hammer should be used for all Field replacements and may be identified by its blue color.

C 1 # 15  
SERVICE DIVISION

# Burroughs MECANOGRAM

No. 513

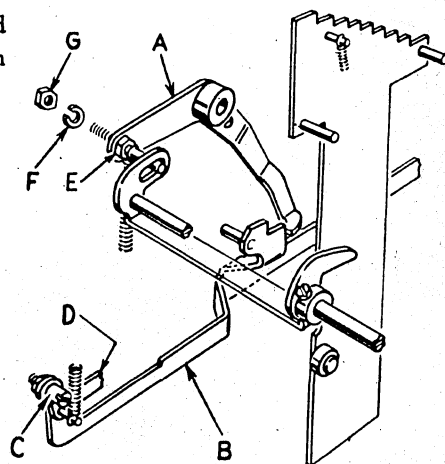
June 25, 1954

## SERIES M MACHINES

**1-CONTINUOUS CYCLING OF A CLASS 72 OR M200 MACHINE AFTER A SUBTRACT OPERATION** may be caused by failure to latch eccentric stud C (702662) in back of latch D during the subtract operation.

Rocker arm A (1-704124B No.3) - in currently manufactured machines - contains eccentric stud E (1503A Fte. 717), lock washer F (1097 3/4) and nut G (46). The eccentric stud provides a ready means of adjusting the restoring of slide B, during a subtract operation.

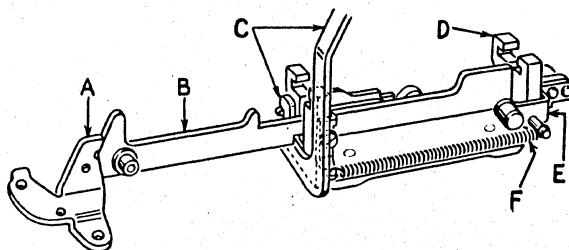
The eccentric stud, lock washer, and nut should be used to replace the riveted stud in rocker arm A in Field machines that have the above condition.



**2-BREAKING OF SCREW A** (Plate 19-1, Keyboard Symbol List) is prevented by using a different grade of steel.

Scrap all Field stock and replenish with new screws 74535 from the factory.

**3-BREAKING OF ERROR KEY SLIDE SPRING ANCHOR E** caused by contact with casting D has been corrected by extending limit plate A (702227) upward. The new limit maintains clearance of the spring anchor and casting D and should be installed in wide base machines during the next regular inspection.



**Test:** Register interlock slide C should move freely in the cutout of the error key slide.

To adjust, bump limit plate A forward or backward to align the cutout in the error key slide with the register interlock slide.

**Test:** With the error key normal, spring anchor E should clear casting D.

To adjust, remove stock from casting D.

The above parts are also illustrated in Plate 5-1, Keyboard Symbol List.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

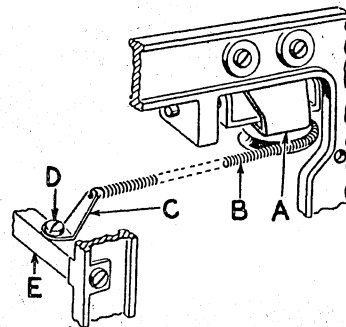
No. 512

May 28, 1954

### SERIES M MACHINES

**1-PREATURE RESET** of the Pence intermediate keyboard stop in machines of Sterling construction having the Repeat of Items Mechanism will be avoided by installing longer spring 706804 in place of spring AU1 (Plate 3, Keyboard Symbol List). The new spring reduces overthrow of the intermediate keyboard during the machine operation.

Pulley assembly A (illustrated) replaces the spring anchor originally used on the left side frame of the machine. The outer end of the spring is attached as shown to spring anchor C on square bar E at the rear of the machine.



This arrangement will also improve escapement of the intermediate keyboard when indexing amounts. It may be installed in any 14 digit capacity machine where either of the above troubles is experienced, providing no other mechanisms are contained that would cause mechanical conflict.

#### Parts required:

A	1-20 No. 155	Pulley assembly
B	706804	Spring to replace AU1 (Plate 3 Keyboard)
C	20 No. 152	Spring anchor
D	71517	Screw for 20 No. 152

**2-SCREW 704513** (H, Plate S-50-1, Accumulation Symbol List) in machines of Sterling construction is now made with a hexagon head to enable tightening it with a wrench.

**3-BREAKING OF END BRACKET W** (Plate S-8-1A, Accumulation Symbol List) in machines of Sterling construction which results from flexing of the bracket by tension of spring BK when the pinion assembly limits against escapement stop will be corrected by changing the spring anchor.

Remove spring anchor screw AE and replace screw F in rightmost location with new spring anchor screw 79596B during the next attention.

**4-ESCAPEMENT OF TWO OR MORE REGISTERS** from one register trip pawl in machines of Sterling construction may be caused by worn register escapement fork N (Plate S-14-1, Accumulation Symbol List). Register escapement fork 1-709104A is now made with an improved hardening process to reduce wear.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 511

33-1  
Keyboard

SERIES M MACHINES

May 10, 1954

1-FAILURE TO INDEX THE SECOND OPERATION OF AN AUTOMATIC SUBTRACT IN CONJUNCTION WITH A CARRIAGE CONTROLLED TOTAL (Series M800 Machines) will result when the palm tabulator lever is held depressed during the machine cycle.

The drive is tripped for the first operation of the cycle from the carriage controlled total. However, when tabulator lever D (Plate 44-1, Keyboard Symbol List) is held depressed, it prevents movement of the typewriter keylock mechanism. This results in bending of bail T (Plate 20, Keyboard Symbol List) by the extend plate and failure to trip the drive for the second operation.

Machines beginning with Serial No. M6340D contain interlock slide A (illustrated) with yielding pawl B which prevents depression of the tabulator lever during a machine operation but permits function of the typewriter keylock with the tabulator lever held depressed at the start of a machine operation. The new mechanism may be installed in Field machines where needed.

### Parts required:

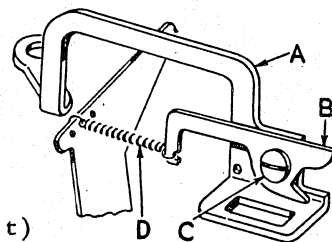
A	702145 1/4 No.2	Tabulator interlock slide
B	702147	Yielding pawl for 702145 1/4 No.2
C	1361 1/2	Screw for 702147 - Use 46 1/4 nut
D	72830	Spring for 702147

2-REPLACEMENT OF CASTING BT (Plate 40, Accumulation Symbol List) in Field machines will be facilitated by using repair casting 1A-701671Z which has had the bushings line reamed for shaft assemblies BS and BP. Order for immediate need only.

3-FAILURE TO PRINT, OR PRINTING OF THE INCORRECT FACTOR, by machines having the feature "Multiplier Factor to Print - Extension of One or Five" (Plate 22-5 Accumulation Symbol List) may be caused by restoring movement of indexing lever BL and vertical index arm BK beyond the normal position.

Limit plate 20 No.89 is now attached to the upper left corner of the multiplier side frame, by using screw 504 Fte. 138 in place of the regular screw in that location, to hold lever BL sufficiently forward to avoid binding either vertical or horizontal movement of index arm BK.

The limit should be installed in field machines on the next regular attention.



SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 510

May 7, 1954

### SERIES F MACHINES

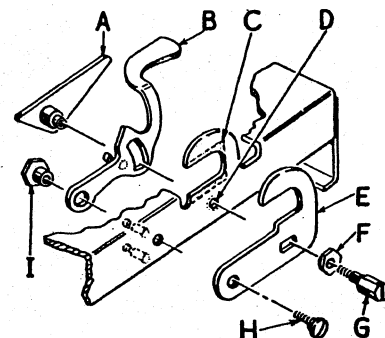
1-ADJUSTABLE CONTROL UNIT HOOKS E have been added to all control units now being manufactured to provide uniform .047" to .053" clearance between tappets and No.5 control pins in multiple control unit installations.

To modify extra control units in multiple installations in the Field, install the parts illustrated. Before installing the parts, the extra control units should be altered by enlarging hole D for screw G with a No.29 drill and filing out the inside of hook C .020" to .030" as indicated by the dotted line. Adjust the first control unit - without adjustable hooks - with the third rail removed and the weight of the unit supported by posts BP (Plate 4, Symbol List). Raise or lower the posts to provide the proper clearance between No.5 control pins in lanes 6 through 21 and their respective tappets. Then adjust the extra control units for proper clearance between the pins and tappets by turning eccentrics F.

To adjust for proper clearance - where all the control units have adjustable hooks: Adjust the first unit by setting eccentrics F at the midpoint of their throw - with the high side toward the rear of the control unit. Then obtain the proper clearance between the pins and tappets by raising or lowering posts BP (Plate 4). Adjust extra control units by turning eccentrics F.

Parts required are:

	<u>Part Number</u>	<u>Quantity</u>
A	1-403227R	1
	1-403227L	1
B	1-403132AR	1
	1-403132AL	1
E	403228	2
F	79333A No.2	2
G	709562	2
H	94523	2
I	X10-98	2



SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 509

April 30, 1954

### SERIES F MACHINES

*1-WRONG REGISTER SELECTION DUE TO REBOUND OF REGISTER INDEX STEP PLATE K* (Plate 40-5, Symbol List) should be corrected by making the following part changes and revised adjustments:

Replace cam F with cam 1-405104A No.11, which has a new roll added, and replace lever B with lever 1-405127A, which has a radius cut in its upper arm. The cutout in the lever works in conjunction with the new roll on the cam to retard the downward movement of step plate K, synchronizing it with the forward movement of the register indexing rack O.

Replace spring EG with stronger spring 984, and spring BR with stronger spring 10784.

Remove booster arm BZ and spring EE since they are not required with the improved mechanism.

Adjustments 1 through 6, as given in Plate 40-5 of the Instruction Book for the positioning of step plate K, remain unchanged.

Adjustments 7 and 8 should be made as follows:

7. With tappet A limited against a No.3 control pin in lane 25, the formed ear of rack O should clear the No.2 step of plate K by .030" to .040".

To adjust, turn eccentric BW.

8. Latch J should permit the No.2 step of plate K to clear the ear of rack O by .005" to .010" when plate K is manually held upward against latch J.

To adjust, turn pivot eccentric for detent J.

*2-LOOSENING OF RUBBER FEET* is prevented on machines above Serial No. F13216P by using longer screws X60-91 with a lock nut 45 3/4 inside the base.

The longer screws should be installed on older machines that are moved frequently.

SERVICE DIVISION

# adformant

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains.

2501-10 35-Y630

# Burroughs

## M E C A N O G R A M

No. 508

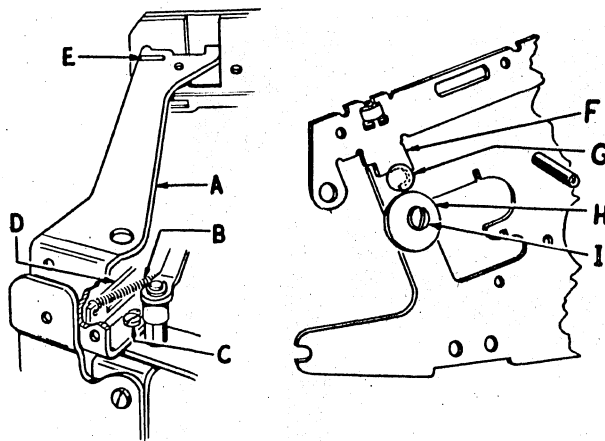
April 19, 1954

### SERIES P MACHINES

**1-EXCESSIVE NOISE OF THE KEY RELEASE FUNCTION** is prevented in most early P200 machines by support bracket A, as illustrated. The bracket maintains upward pressure of keyboard hook F against stud G in the right side frame.

Machines of current manufacture have eccentric disk H and screw I to serve the same purpose as the bracket.

Machines without either arrangement should be equipped with the support brackets.



**Method:** Remove spring clip Q (Plate 110-2, Symbol List) and assemble the support bracket using screw 12055 3/8 in place of screw R. Open adjusting slot E (illustrated), if necessary, to remove all play between the keyboard assembly and the stud in the right side frame. Hook spring O (Plate 110-2) in guide bracket D (illustrated).

#### Parts required:

A	84109 No.4	Keyboard support bracket
C	12055 3/8	Screw for bracket 84109 No.4

**2-AUTOMATIC SHIFTING OF THE REGISTER CONTROL MECHANISM** (Plate 100-2, Symbol List) may be lost because of stud AG disengaging from the slot of arm N. The disengagement may also result in a locked machine or bent parts in the shift mechanism.

Assembly AF (1-900123A) now has a longer stud AG (X50-133). Replacement of the assembly for hold of the stud is advocated rather than bending arm N - in order to maintain passing clearance of arm N with the right side frame.

**3-BREAKAGE OF THE SPRING ANCHOR STUD** in carriage end plate V (Plate 3-1, Carriage Parts Catalogue) for spring U may be caused by interference when removing or replacing the machine case, or during shipment.

Shorter stud X51-152 is available for Field machines where breakage occurs.

SERVICE DIVISION

# Burroughs

No. 507

## MECANOGRAM

April 7, 1954

### SERIES F MACHINES

*See 11-5*

1-REPAIR DRIVE CLUTCH DOG 1-401107Z (B, Plate 56, Symbol List) is now available to facilitate field replacement.

The following procedure is recommended for installation:

- Remove the motor.
- Remove the pins from clutch dog assembly B (Plate 56) and adding rack actuating cam D (Plate 28). Removal of these pins makes it possible to slide the clutch dog cam to the left and to turn the adding rack cam on the shaft for working clearance.
- Remove drive bracket C (Plate 53).
- Use a hand grinder to remove the head of the pivot stud holding the worn clutch dog on the camshaft assembly.
- Install the repair clutch dog and reassemble the removed parts in reverse order.

Note: The space washer on the pivot stud between the clutch dog and the camshaft blank is not used with repair part 1-401107Z.

A slight radius has been added to the outer tooth edges of clutch wheel BI (Plate 56) and the hardening process for the clutch dog has been improved to reduce wear.

2-CONTROL UNIT CENTER BRACE W (Plate 4, Symbol List) for the stop dog shaft has been trimmed at the corners to clear the upper projections of new brake control arm E (Fig. 1, Mecanogram 497).

On older machines in the Field in which the new 5/8" tabulator parts are installed, the front corner of the brace should be trimmed 1/8" x 45° to prevent interference with the brake control arm.

The stock may be removed with either a handy grinder or by nibbling with the points of the jaws of cutting pliers and finishing with a file.

3-BREAKAGE OF THE SLOT IN HEADLESS SCREW N (Plate 57, Symbol List) will be prevented by installing headed screw 401509B. This supplements Item 2, Mecanogram 453.

4-CORRECT ITEM 5, MECANOGRAM 497, to read:

H Fig. 3 (1) 2-408111A Top plate

5-MOTOR BAR LOCKS caused by forcible depression of the No. 3 or 4 motor bar before completion of a machine cycle with a motor bar repeat pin active may be eliminated by installing improved slides 404188 No. 1 and 3, (C Plate 59, Symbol List).

The hook projection of slide C has been redesigned to present a flat surface to the lip of arm B until the latter restores at the end of the cycle.

6-SKIP AND RETURN DISK BLANKS 403334AZ BLANK with four sides cut to the length of a short projection are now available. Considerable time may be saved by using these new disks in positions of the control unit where only indexing controls are required.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

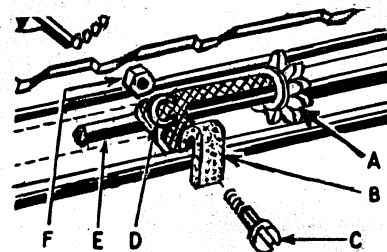
No. 506

April 2, 1954

### SERIES M MACHINES

1-REGISTER LIMIT B (709181), screw C (709543), lock washer D (1097 3/4) and nut F (46) replace the limit combinations shown in Charts 1 and 2 (Plate 17-1, Accumulation Symbol List).

With the last desired register in active position, the limit is assembled as illustrated to prevent further escapement of the register pinion assembly.



2-BREAKING OF CARRIAGE RETURN SHAFT O (Plate 21, Power Symbol List) will be reduced by using a new shaft assembly that is redesigned where the two sections are joined together.

Part number 1AZ-701010 No.1 has been established for field replacement and includes shafts P and O, gears W and X, and collar Y.

Only redesigned parts should be used for field replacement. They were first used in manufacture beginning with Serial No. M5725D.

3-FAILURE TO REPEAT ITEMS from depression of the repeat bar may be caused by a worn stud in slide CE (Plate 47-1, Keyboard Symbol List). The stud now receives a new hardening process to reduce wear. There is no change in the symbol number.

4-ADDING RACKS AN (Plate 3, Printing Symbol List), of current manufacture, for all numbers now have their identification number stamped on the rear end of the bar to permit easy identification while the racks are in the machine.

5-REPLACEMENT OF SPRING BEAM AI (Plate 11, Carriage Symbol List) when the threads for screw AR in the square block are stripped will not be necessary if the following procedure is used:

Clear the hole having the stripped threads with a No.35 drill and use screw 705664 and nut 705373 to retain latch pawl I.

SERVICE DIVISION

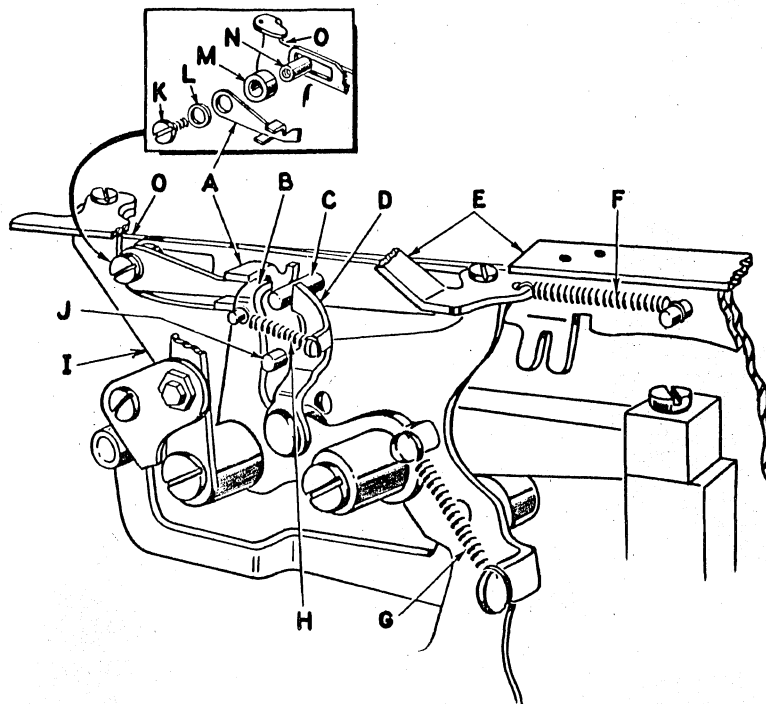
# Burroughs

## MECANOGRAM

No. 505

March 25, 1954

SERIES M MACHINES



1-A CONTINUOUS RUNNING MOTOR caused by accidental movement of register return slide E which closes the motor switch without engaging the register return clutch will be prevented by installing detent A.

The new detent controls the movement of slide E so that it may be moved only by key depression or carriage control.

The upper end of arm B has a formed lip added to control the new detent. As arm B is lowered, detent A is also lowered to release stud C of slide E at approximately the time latch D is in position to move under stud J. Springs G and H are lighter than formerly used to lighten register return key depression and to reduce resistance to spring F.

### Parts required:

A	79105 1/2	Detent to control slide E
B	1-79268C No.2	Actuating arm assembly
G	3882A	Spring for latch D
H	3480 1/2	Spring for assembly B
I	2A-79266B	Supporting plate, includes B, G and H
K	2850 3/8	Screw to retain detent A
L	160A Fte. 217	Collar to position detent A
M	12041 1/8	Collar to position detent A
O	1-709105A No.2	Supporting plate, contains stud N (100 Pinion)
	1-79105C No.13	Supporting plate, contains stud N (60 Pinion, Not Sterling)

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

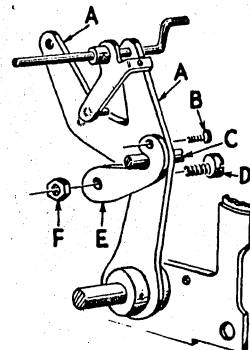
No. 504

March 19, 1954

### SERIES P MACHINES

**1-FAILURE TO CARRY IN CLASS 9 MACHINES** may be caused by an enlarged hole in arm A permitting excess play of pinion assembly shaft C. This condition results in loss of driving action of the wide teeth of the adding pinions against the carry pawls.

Repair part E (99131 1/2Z) is designed to remove excess play from the pinion assembly shaft. It is retained by screw B (79582) in the scoring hole of end plate A just above shaft C. To install repair part E hold it against shaft C and tighten screw B. Turn the head of eccentric screw D (533 Fte. 217) against arm A to lock the repair part in position without binding the shaft. Tighten nut F (46 1/4).



The repair part may be required in Class 9 machines with "B" serial numbers.

**2-EXCESSIVE BURNING OF GOVERNOR CONTACT POINTS** may be caused by a broken shoulder stud for roll J (Plate 132-1, Symbol List) resulting in failure to oscillate the switch assembly.

Shoulder stud 81533C, which has a wider flange and increased diameter of its spindle end, and roll X10-176, which has a larger hole to fit the larger spindle of the stud, may be used to repair driving arm L in field machines.

A new clip I (21 No.16) should be used to retain the roll if the old clip indicates any loss in spring tension.

**3-LUBRICATING OF MACHINES DURING MANUFACTURE** has been further improved by using a new oiling formula which provides freer action of closely fitted moving parts.

The new formula has been used in all Series P machines beginning with Serial No. P73500D, Detroit manufacture, Serial No. P8131C, Canadian manufacture and Serial No. P18607S, Strathleven manufacture. Parts which become sluggish, in machines with an earlier serial number, should be thoroughly flushed with Platen Restorer, after which a generous amount of machine oil (Kit 131A) should be applied in the same manner.

This cancels Item 2, Mekanogram 406.

SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 503

March 15, 1954

### SERIES P400 MACHINES

**1-IMPROVED ALIGNMENT BETWEEN CARRY PAWLS AND ADDING PINIONS** will be afforded by installing guides B and F (illustrated) in both "A" and "B" registers.

The width of the formed bearings in both upper and lower carry pawls C and E is reduced because close tolerance of side play is not required since the guides hold the pawls in proper alignment with the pinions. Collars are no longer required on either side of the carry pawls to retain the pawls in position. Carry racks J have had stock removed from the original outline (indicated by the dotted line) to avoid possible interference with the redimensioned formed bearings of the carry pawls.

The new guides should be installed in early machines where free action of the carry pawls cannot be maintained when aligning the pawls with the adding pinions.

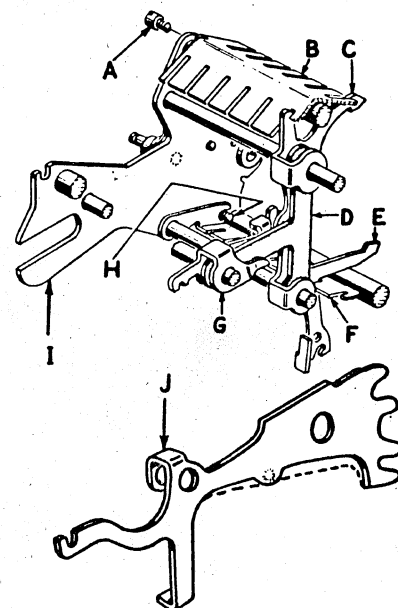
The following parts are required:

#### Style P401    Style P402

A	(2)	(2)	909535	Screw (right side)
	(2)	(2)	909528	Screw (left side)
B	(2)	(2)	909119A Style 13 No.2	Guide
C	(18)	(24)	1-909101A No.2	Upper carry pawl
D	(2)	(2)	909201	Brace to support shaft S (Plate 123-3)
E	(18)	(24)	909101A No.1	Lower carry pawl
F	(2)	(2)	909119A Style 13 No.1	Guide
G	(18)	(24)	909102	Carry pawl latch
H	(4)	(4)	909535	Screw (right and left) in guide F
I	(2)	(2)	1-909100 Style 13	Frame (required on machines prior to P29582D approximately)
J	(18)	(24)	1-909103A No.1	Carry rack

Carry pawls 909101 No.1 and 1-909101 No.2 are available for replacement of worn or broken parts in individual columns.

This cancels Item 2, Mecanogram 476.



SERVICE DIVISION

## No. 502

March 1, 1954

## SERIES H MACHINES

This diagram shows an exploded view of a mechanical assembly. The components are labeled as follows:

- A:** A small circular pin or bolt.
- B:** A curved, hook-like component.
- C:** A long, threaded bolt or screw.
- D:** A small rectangular plate or washer.
- E:** A larger rectangular plate or bracket.

The diagram illustrates how these parts fit together to form a complete assembly.

With repair part B and screw C in place as shown, tighten eccentric screw A before tightening screw C. Parts required are repair part B (1-205215Z No.2) and screw C (205533Z No.5). Order only for immediate need.

Stud Q is now case hardened to avoid wear. Replace assembly I (1-69111 1/2) when wear of stud Q is found.

## SERIES M MACHINES

The improved hook (705103 1/2) has all sharp edges removed and is being assembled in all currently manufactured machines.

This information supplements Item 2, Mecanogram 463.

SERIES P MACHINES

The shoulder of the improved stud has been shortened and the groove for retaining clip L (Plate 77, Symbol List) widened. These changes result in the spring M holding the type bar firmly against the adding sector without interfering with free indexing or alignment.

SERVICE DIVISION

March 10, 1954

Mecanograms

To: All Service Personnel  
GREAT LAKES REGION

SUPPLEMENTARY LIST OF MECANOGRAM ANNOUNCEMENTS

The attached list of material represents improved parts and adjustments covered by Mecanograms 471 to 501 inclusive, also BH8 to BH 10 inclusive. These improvements for the most part are the result of information furnished to the Field Research Department through the media of Mechanical Repair Form 980. Thank you for your splendid activity and clearly written reports.

The ease of reference by symbol, name and/or associated trouble may help you to secure more benefits from these mecanogram announcements.

You may find use for this list in one or more of the following ways:

1. Self education.
2. Use of selected improved parts on regular inspections.
3. Planning and maintaining grip stock.
4. Guidance and assistance in analysis of problems.
5. Use as ready reference for parts ordering.
6. Reduce time in making permanent repairs.

Customers who receive good inspections, including new improved parts, become satisfied customers. They are more receptive to your supply message and are not frequently found on your delinquent account list.

J. R. Kunath  
Regional Service Representative

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
91A & 92 Stands	To be shipped knocked down	479-1
Kit 34-13	Clutch head bit for assembling stands	479-1
Kit 729-1)	Improved lubricating oils	487
Kit 730-1)	Bristle Wrench Holders	488
Kit 66A #1 & #2	Light weight benders to replace Kits 66 #3 & 51 1/8 #2	495-1
Kit 174-7	Touch up lacquer for P400 machines	498-3

SERIES B&H

BH 11521	Longer setcrew to prevent slippage of drive sleeve on Acro Feeder	BH9-1
BH 25450)	Improved glass flat assembly	BH9-2
BH 08021)	Method of cleaning endorser dies	BH9-3
BH 08020)	Stacking Aids	BH10
	Cutting of improperly loaded film	BH11-1
	Film loading guides	BH11-2

SERIES C

1Z-4567 #2	Stripped type 5 motor for replacement of 21-4567 #2 motor	472-1
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SERIES H

1B-200911	Register to reduce burning of governor points	473-2
1-101Fte.217#3	Now has larger rivet in studs	473-3
202400A)	Repair roll for 21-202007 assembly	474-1
202503 )	For positive carriage closing	474-2
1-203824#3	Register pinion frame assembly for field replacement	477-1
1Z-69002 #10	Replacement stud for 43-60000 assembly	477-2
60578Z	Neoprene oil seals for drive assembly	477-4
1-3639 $\frac{1}{2}$ B	Washers to reduce end play of armatures	482-4
4615 $\frac{1}{2}$	Passby pawl to prevent drive chatter	491-1
1-3612 $\frac{1}{4}$ #5	Repair pin for 21-69000 Sty. 17 assembly	495-2
82501Z-	Washer to improve alignment of ribbon feed pawls	495-3
75210		

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
	Adjustment for the full restoring of adding racks	471-1
404809	Kicker arm spring	472-2
X10-98	Eccentric for adjusting 1-403132 latches	472-3
X60-53	Hex headed case screws	472-4
58801	New style bumper spring	472-5
1Z-408013	Carriage drive clutch with chrome plated discs	472-6
407806 #6	Spring to prevent premature disengagement of carriage clutches	475-1
1A-403115 R&L	New platen spacing ratchets	475-2
X80-24	Full restoring of Lane 21 Repeat Bellcrank	475-3
1B-408305)	Improved cutting on bevel gears	475-4
408303)	New spring suspension for hammer block camshaft to prevent bending of 1-404168 bellcrank	478
1Z-408013	Improved angle clutch	480-1
401146	Support bracket for clutch angle shaft	485-1
401147Z	Stabilizing bracket for 1-401118 assembly	485-1
1-409128A	Re-designed crossfooter meshing hook	485-2
3891 )	New spring suspension for interlocks	486-1
20 #91)	Spring to prevent motor running after a carriage opening operation	486-2
72816	Non-printing dummy type	486-3
406118#39	Extension legs	486-4
11-404183B #8	Improved DSR mechanism for Lane 15	492
403203	Plastic guides (All styles)	493-1
Kit 406	Guage for aligning stops	493-2
1-401140)	Scissors and detent cam for main camshaft	494-1
401160Y )		
3683 )		
94803 #2)	New springs for latchplates	494-2
406127Z	Brace for wrong register selection (300-500)	496-1
406804A	Type spring made of new wire	496-2
1-405127 #7	Lane 25 tappet shortened .033"	496-3
404244A	Prevent adding of Cr. Bal. into B register	496-4
Gear Box	Tests and adjustments for new style gear box.	497-1
3-408110	Spring to prevent accidental engagement of either carriage clutch	497-9
72833	Washer to prevent erratic carriage travel	497-10
X1-21	Hold down cam and hardened washer now standard	497-11

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
11-408002) X1-18 )	Spindle and washer for loose mesh of driving gears	497-12
8888	Heavier spring for total link to prevent printing of balck complimentary totals	501-1
1-401348Z	Split collar to brace 1-401009 shaft	501-2
X30-20	Stud to reduce end play of stop bars	501-3

SERIES M

1-709137 #2	Retaining clip slotted for easier removal	473-4
709108 $\frac{1}{2}$	Improved ring prevents wear of roll in 1A-709037A	473-5
1-705158 $\frac{1}{2}$	Improved extend column control indicator	473-6
1-3639 $\frac{1}{2}$ B	Neoprene oil seals for drive assembly	477-4
2-703216A	Index cams have new style retaining clamp	482-1
705153	Improved link for carriage or register return interlock	482-2
53801 ) 700802 ) 4615 $\frac{1}{2}$ 703148 $\frac{1}{2}$	New springs for 100 pinion sections	482-3
	To reduce end play of armatures	482-4
	To prevent failure of register or crossfooter functions.	483-1
	Twisting of extend clearing bail bracket	484-1
	Minus balance printing from a balance or sub-balance operation	489-1
79362	Reduce bending of carry reset arms	489-2
72143 $\frac{1}{2}$	Interlock to prevent continous cycling of the machine	490-1
701257	Improved pawl to prevent sticking	491-2
705195 3/4	Prevents accidental turning of pawls on front operation control arms.	491-3
1-709299 #2	Improved printing operation arm	491-4
	Improved register escapement mechanism	499-1
	New packing method for 100 pinion sections	500-1
406320	Hardened roll preventing partial product	500-2
1-79706Z	Repair assembly for broken overdraft wires	500-3

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
87900	Ball bearing for dashpot to reduce excessive machine speed on P400	474-3
681	Stronger springs for carry section P400	476-1
909119ASty.13#1 909119ASty.13#2	Guides to improve alignment of carry pawls	476-2
	Platen shaft countersunk to prevent screws loosening	477-3
900915	Support bar to keep accumulator section rigid. P400	479-2
1-900129	Bracket to prevent lockup from snap depression of result keys. P400	
Kit 115 $\frac{1}{2}$	Extension feet used when servicing P400	481-3
1-903922ZT) 1-903922ZR)	Lock plates for P400 carriage back cover	481-4
21 #15	Clip to hold on switch points	488-2
	Adjustment to prevent accidental carries. P400	488-3
1-900111B	Limit to prevent operating noise on P400.	488-4
89302	Hardened roll to prevent trapped carries on Class 8 and 10 machines	495-4

# Burroughs

## MECANOGRAM

No. 501

February 15, 1954

### SERIES F MACHINES

*1-PRINTING OF BLACK COMPLEMENTARY BALANCES FROM CROSSFOOTER "A"* may be attributed to a combination of weak springs AE (Plate 44, Symbol List) and a weak spring W (Plate 42).

Since only about ten degrees of time are available to lower pawl X (Plate 42) into the path of stud Z before minus balance slide AB is moved forward, any loss of time due to expansion of springs AE (Plate 44) - on the total or sub-total indexing links - or failure of pawl X (Plate 42) to drop immediately will result in failure to shift the minus balance wheels into active position.

The heavier spring for total and sub-total links mentioned in Mecanogram 464, Item 3, could not always be used in manufacture because of inadequate space between levers for the diameter of the spring coils.

A new heavier spring 8888 with smaller diameter coils is now being used on total link AJ (Plate 44) and sub-total link AK, and should be installed to correct printing of black complementary balances. Spring 3480 1/2 should continue to be used on pawl X (Plate 42).

This cancels Item 3, Mecanogram 464.

*2-FAILURE OF DRIVE CLUTCH ARM J* (Plate 56, Symbol List) to release from the step of latch E may result from loss of movement of latch E caused by upward bowing of shaft AT. Installation of split collar 1-401348Z on shaft AS with the flat side of the collar directly above the hub of arm Q will prevent the upward bowing of shaft AT.

A shorter spring AA, now made with 39 coils, should be installed to further insure release of arm J by insuring full rearward travel of bail AD when released by small motor bars or result keys.

*3-END PLAY OF THE STOP BAR IN SERIES F CONTROL UNITS* has been reduced to maintain alignment of stop dogs and control pins. This was accomplished by redesigning the reinforcement blank around the stop bar spiral to include a shorter and heavier bracket for the locating roll. Also, the roll was replaced with a fixed stud.

The new stud, X30-20, is fastened to the blank with screw 75615.

**Note:** If stud X30-20 is used to replace a worn roll on older panels, use a screw 79624 No.2 and place two space washers 407149 between the stud and the supporting projection of the panel to extend the stud for proper depth with the stop bar spiral.

SERVICE DIVISION



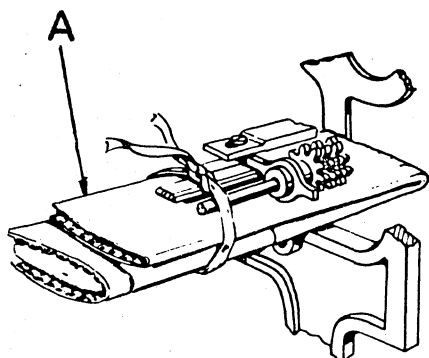
# Burroughs

## M E C A N O G R A M

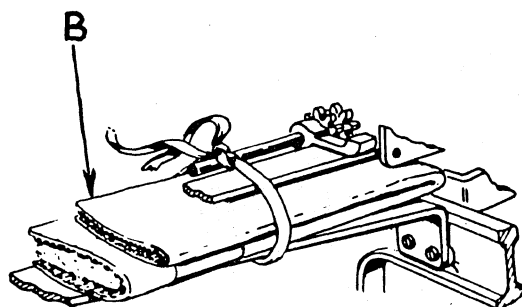
No. 500

January 25, 1954

### SERIES M MACHINES



LEFT SIDE-FRONT VIEW



RIGHT SIDE-REAR VIEW

**1-PROTECTION OF THE 100 PINION SECTION** of Series M machines while being transported, either boxed or unboxed, requires the use of two Coroflex pads (30031) as illustrated.

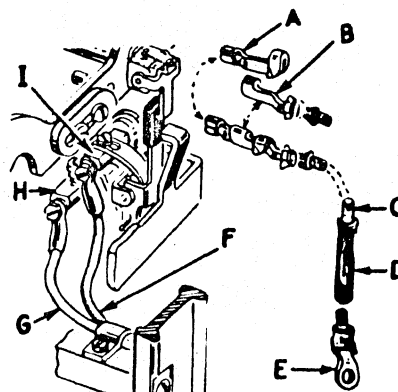
One Coroflex pad A is inserted between the left side frame and the register pinion cob. A second Coroflex pad B is inserted between the right side frame and register pinion cob.

**2-A PARTIAL PRODUCT DURING MULTIPLICATION** or failure to accumulate complements during subtraction may be caused by worn roll AJ (Plate 22-5, Accumulation Symbol List).

Roll AJ (406320) with an improved hardened surface to reduce wear is used in machines beginning with Serial No. M5701D.

**3-BROKEN OVERDRAFT WIRES F OR G** near terminals I or H may be repaired using repair assembly C (1-79706Z) which includes parts A, B, C, D and E, thus eliminating replacement of the complete assembly AG (Plate 38, Accumulation Symbol List).

To install, clean the broken end of wire F or G and insert it in the tubular end of knife connector A, flatten the tubular end until the wire is held firmly. Then position plastic tube D over the joint formed by knife connectors A and B and connect terminal E to terminal H or I.



SERVICE DIVISION

# Burroughs

## MECANOGRAM

No. 499

January 18, 1954

### SERIES M MACHINES

1-ADDITION IN A WRONG REGISTER caused by a sluggish register escapement mechanism in Series M200 and M800 machines after Serial No. M5669D has been corrected by installation of improved parts illustrated.

Hub C is shortened slightly and counterbored to permit part G to limit firmly against limit F without impairing free action on screw L regardless of the adjustment of limit F. Part G has a formed angle at point I which cams on limit F when part G is actuated thus aiding the restoration of part G. Limit F is now rounded to reduce its contact surface against G and minimize resistance to the movement of part G. Part K is chamfered at point J to aid it in restoring to normal. Part G is milled at point H to compensate for the chamfer on part K.

Spring B is stronger than the spring used formerly and is anchored to screw N to provide a direct pull on part G.

The complete series of improvements is designed to be used together and should be installed in Field machines containing the register escapement shown on Plate 17-1, Accumulation Symbol List when register escapement trouble is encountered. The following parts are required:

- A - 20 No.154
- B - 3284 1/2
- D - 1B-79200A No.2 (Includes E and F)
- K - 709108 3/4
- M - 1A-709108 No.3 (Includes G and N)

- Notes: (1) Part G (1-709104A No.2) may be used to replace part T (Plate 17-1) instead of using assembly M as illustrated.
- (2) Part F (79247A No.1) may be used in assembly V (Plate 17-1) instead of using assembly D as illustrated.

This cancels Item 3, Mecanogram 457.

ALL CLASSES

2-EACH SERVICE ATTENTION RENDERED TO SERIES F500, SERIES K AND SERIES B & H EQUIPMENT ~~during the guarantee period~~ should be reported by the Service Representative on Mechanical Report, Form 980. *also P 400*

Reports should be prepared completely, accurately and legibly - listing the mechanical conditions, analysis and adjustments - and should be processed according to Service Letter 106.

SERVICE DIVISION

# Burroughs

## M E C A N O G R A M

No. 498

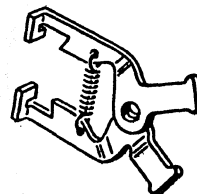
December 28, 1953

### SERIES P MACHINES

1-LATCHES 99158 BR AND BL (L AND AM, PLATE 110, SYMBOL LIST) now have extensions rearward of their pivot on tumbling section Y.

The extension affords a convenient means of holding the latch with pliers or a bender while adjusting for proper length.

This supplements Item 4, Mecanogram 368.



### SERIES P400 MACHINES

2-A CUSHIONED EFFECT AT THE END OF A HANDLE TOTAL OPERATION ON EARLY SERIES P400 MACHINES is caused by a premature limit of roll AZ (Plate 123-3) in the bottom of the cam slot of BD (A and B registers). Although this condition causes no mechanical trouble, it has been corrected by the following changes.

Beginning with Serial No. P49790D, the cam slots of assemblies BF and BV are lengthened and temporary limits provided as follows:

a. Register A

- Collar 306A Ftc. 200 No.2 is assembled on the stud in arm BF (Plate 123-7) to limit against side frame J.

b. Register B

- Collar 71338 and shoulder screw 10763 1/2 replace screw BI (Plate 123-3) to limit cam BD.

When replacing cam assembly BF or BV (Plate 123-3) in machines prior to Serial No. P49790D, a new detent (CD, Plate 123-4) is also required. Both old and new detents are illustrated for easy identification. There is no change in symbol number.

Beginning with Serial No. P64910D, machines are equipped with the re-designed detent, and the temporary limits are no longer required.

3-AMBER GRAY TOUCH UP LACQUER, Kit 174-7, is available in 1/2 pint cans for touching up the finish on P400 machines.

NEW STYLE



OBSOLETE



SERVICE DIVISION

# Burroughs

No. 497

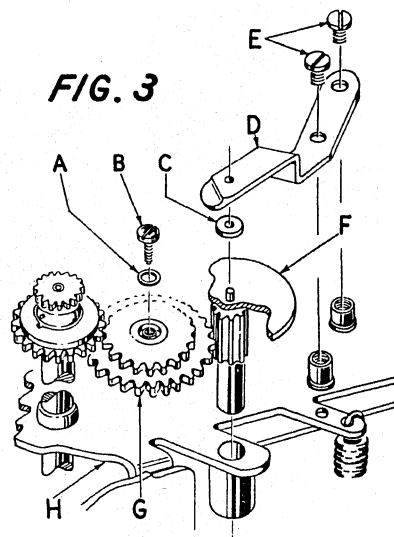
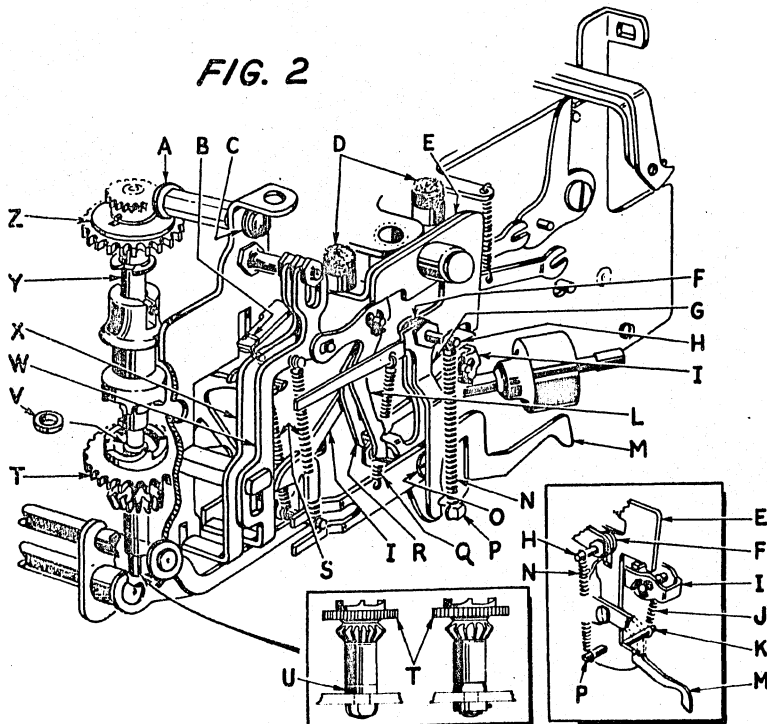
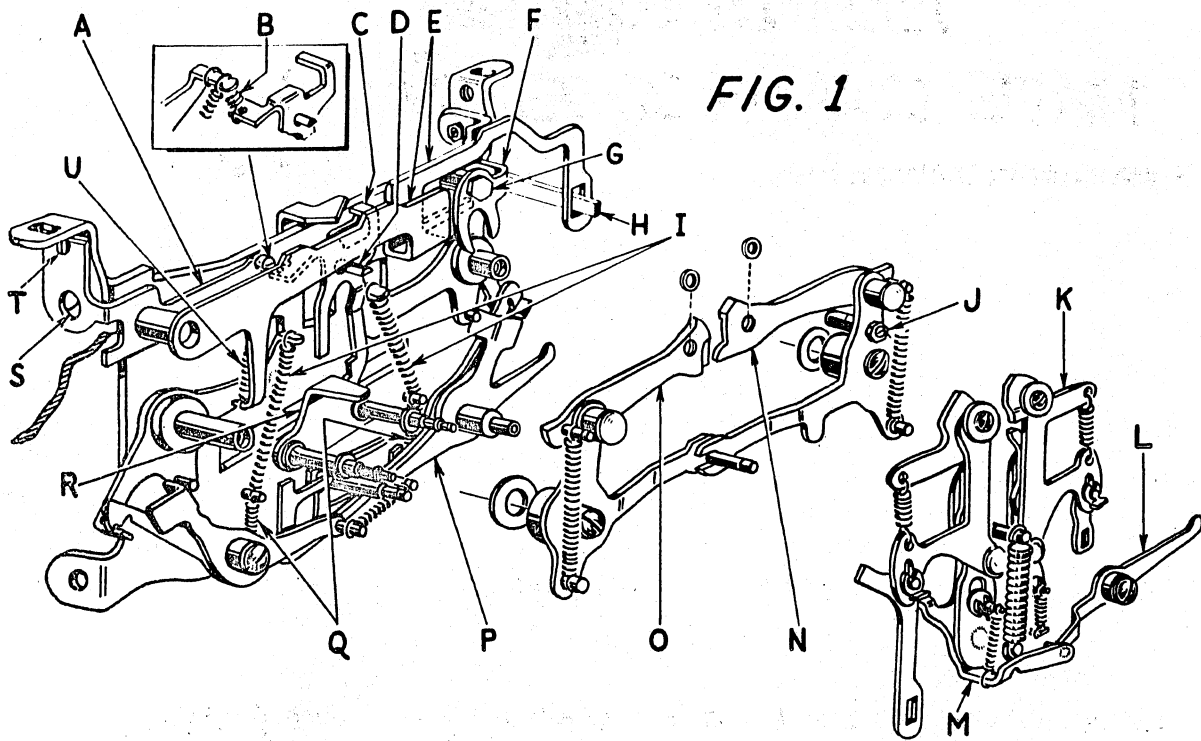
## M E C A N O G R A M

**MANAGERS AND SERVICEMEN:**

December 1, 1953

### SERIES F MACHINES

*CONTROL OF CARRIAGE TRAVEL WILL BE IMPROVED AND SELECTION OF CARRIAGE POSITIONS WILL BE MORE POSITIVE THROUGH INSTALLATION OF ONE OR MORE NEW AND REDESIGNED PARTS —*



**1-ALIGNMENT OF CONTROL PINS OVER THE SENSING TAPPETS** before the drive is tripped will be provided by auxiliary delay timer C (Fig.1) which pivots on flat bottomed stud D. Timer C lengthens the time between settling of a tabulator stop and releasing of the drive trip bail by the interlock mechanism.

Interlock actuating arm F is now connected with eccentric stud J by a fork to enforce synchronizing of its action with the movement of bumpers N and O. The upper edge of the interlock arm has been raised for contact with the lip of auxiliary timer C.

As an incoming tabulator stop contacts either bumper and drives the bumper from its normal position, arm F drives the flat bottomed stud downward, latching the auxiliary timer under bracket R. The auxiliary timer is held latched by spring B.

When the bumpers restore to normal, the interlock arm contacts the lip of the auxiliary timer unlatching it from the bracket.

**Test:** Manually spread the bumpers to latch auxiliary timer C on bracket R. The timer should release when the bumpers are returned to within .010" to .015" of their normal position.

**To adjust:** Bend the uppermost formed ear of the timer.

Parts required follow subject 2.

**2-CONTROLLED TABULATION OF SHORT AND LONG CARRIAGE MOVEMENTS** in either direction will be provided by the following new brake timing mechanism:

Bracket A (Fig.1) is located over screw S and retained by screw and nut T to support brake control lever E.

Brake control lever E is constructed with two dwell areas along its upper edge. It is under tension of spring U which restores it to normal position against screw G. When either dwell is contacted by a tabulator stop, the lever is lowered placing auxiliary brake latch H in position to block brake action.

When tabulator stops are spaced at  $5/8"$ , the outgoing stop by its contact with one of the dwells on the brake control lever places the auxiliary brake latch over square stud P (Fig.2) of the brake slide, and continues to hold the brake inactive after it is released by latch L or R.

As the incoming stop nears its location between the bumpers (Fig.1) the outgoing stop leaves the outgoing dwell thus releasing the auxiliary latch and permitting brake engagement.

When the distance between stops is  $3/4"$ , the incoming stop is on the dwell of the brake control lever - on the incoming side - before the outgoing stop leaves the other dwell. Therefore, since the outgoing stop leaves its dwell first, the incoming stop controls the release of the brake slide as it travels down the decline of the dwell on the incoming side.

When the distance between stops exceeds  $3/4"$ , the outgoing stop leaves its dwell on the brake control lever before the incoming stop reaches the dwell on the incoming side. However, the incoming stop contacts the dwell on the incoming side and again activates the auxiliary latch before regular release of the brake mechanism.

As the incoming stop progresses to its location between the bumpers, it travels down the decline of the dwell on the incoming side, releasing the brake in the same manner as on a  $3/4"$  travel of the carriage.

It will be noted that control of the brake application is always from a tabulator stop leaving a dwell surface of the brake control lever. When the carriage travel is  $5/8"$ , the outgoing stop controls the timing. When the carriage travel is  $3/4"$  or longer, the incoming stop is the controlling factor. The brake control lever is so designed that brake application is earlier on the longer tabulations than on the  $5/8"$  movement, where very little braking action is required.

It will also be noted that the regular latches L and R (Fig.2) are still necessary so that when the brake slide is reset, it will be held low enough to permit free movement of the auxiliary brake latch over the square stud P.

The auxiliary brake latch is pivoted on shoulder washer F. Spring anchor screw H retains the washer and acts as an anchor for spring N.

Screw AP (Plate 9, Symbol List) is again being used in eccentric AO to provide clearance for the brake control slide.

Test 1: With the machine normal and brake slide E (Fig.2) latched on either latch L or R, auxiliary brake latch G should have .010" clearance over square stud P.

To adjust: Bend the lower arm of the auxiliary latch at its offset to lengthen or shorten the latch.

Test 2: With the machine normal and the brake slide released from both latches L and R, and with brake control lever E (Fig.1) limiting against eccentric G, there should be .010" to .015" passing clearance of square stud P (Fig.2) with the step of auxiliary latch G.

To adjust: Bend the upper arm of the brake control lever up or down.

Parts required for Subjects 1 and 2.

A	Fig. 1	(1)	1-408159	Bracket for 1-408162 and 408158
B	Fig. 1	(1)	709803	Spring for 408158
C	Fig. 1	(1)	408158	Auxiliary timer latch
E	Fig. 1	(1)	1-408162	Brake control lever
F	Fig. 1	(1)	408216A	Interlock actuating arm
H	Fig. 1	(1)	408161	Auxiliary brake latch
T	Fig. 1	(1)	404501	Screw for 1-408159
T	Fig. 1	(1)	46 1/4	Nut for 404501
U	Fig. 1	(1)	404805	Spring for 1-408162
F	Fig. 2	(1)	12241	Shoulder washer for 408161
H	Fig. 2	(1)	12350 5/8	Screw for 408161

Q	Fig. 2	(1)	69808	Spring for 408161 and 408157
AP Plate 9, Symbol				
List		(1)	79505	Screw through eccentric collar and right side bumper.

3-POSITIVE RESETTING OF THE BRAKE SLIDE will be provided by new reset lever M (Fig.2).

As restoring shaft AG (Plate 28, Symbol List) moves to its advanced position, it contacts the cam-shaped foot at the forward end of the reset lever, resetting the brake slide by driving restoring bail I (Fig.2) downward. Spring Q actuates both the auxiliary brake latch and the reset lever which pivots on shoulder screw O.

Test: Manually cycle the machine until restoring shaft AG (Plate 28, Symbol List) has caused full movement of resetting lever M (Fig.2). There should be .015" to .020" latching lead of the formed lip of the brake slide over the steps of latches L and R.

To adjust: Weave restoring bail I.

Parts required:

M	Fig. 2	(1)	408157	Brake resetting lever
O	Fig. 2	(1)	200582 1/2	Screw for 408157
Q	Fig. 2	(1)	69808	Spring for 408161 and 408157

4-UNIFORM AND EFFECTIVE BRAKE ACTION will be provided by re-designed brake slide assembly E (Fig.2).

The assembly now has a broken-jointed construction at its upper end to permit the brake pellets to equalize their pressure against the brake disk.

Square stud P replaces the spring stud in the lower end of the brake slide. It acts as a contact for the auxiliary brake latch and as an anchor for spring N which replaces spring AE (Plate 9, Symbol List).

A new spring stud K (Fig.2) has been added to the inside lower end of the brake slide for spring J whose upper end is hooked to the post for bail I.

Shoulder washer X10-93 is used as a bearing in the upper guide slot of the brake slide, replacing a previously used flat washer.

The new spring arrangement provides additional and equalized force to the brake slide without cramping the slide on its bearings.

Test: The brake tension on the carriage should be 5 to 6 1/2 pounds with the carriage closed and spacing completed.

To adjust: Free action of the brake slide and/or replace springs if necessary.

Parts required:

E	Fig. 2	(1)	2A-408183B	Brake slide
J	Fig. 2	(1)	84813 #2	Spring for 2A-408183B
N	Fig. 2	(1)	9283 1/2	Spring for 2A-408183B
Not Illustrated		(1)	X10-93	Shoulder washer for 2A-408183B

5-THE THRUST BEARING FOR BRAKE DISK F (Fig.3) has been removed from the bottom end of the gear stem and thrust is now taken by washer C and bracket D.

Parts required:

C	Fig. 3	(1)	913 3/8	Thrust washer
D	Fig. 3	(1)	408142	Bracket
E	Fig. 3	(2)	403575	Screws for D
H	Fig. 3	(1)	2-408111A	Top plate
I	Fig. 3	(1)	1-408532A	Brake disk

6-PROGRAM SELECTOR INTERLOCK 1-403211L NO.2 replaces interlock BV (Plate 4, Symbol List) at the left end of the carriage for clearance of brake control lever E (Fig.1).

Parts required:

BV Plate 4, Symbol List (1) 1-403211L No.2 Program selector interlock

7-BUMPER DEPRESSING BRACKETS BI (Plate 4, Symbol List) have been redesigned to depress brake control lever E (Fig.1) to lock the brake mechanism out of action when changing programs with tabulator stops located near either end of the carriage.

A clearance cut should be made in the rear case panel to clear the left end of the brake control lever.

Parts required:

BI Plate 4, Symbol List (1) 403146AR Bumper depressing bracket  
BI Plate 4, Symbol List (1) 403146AL Bumper depressing bracket

8-BRAKE RELEASE will be equalized and adjustments simplified by installing redesigned release assembly M (Fig.1).

The assembly has an extended arm at its lower end which by its changed contact with lever L affords the same relative fulcrum action to release latch R (Fig.2) as is provided to release latch L. The right end of lever L (Fig.1) may be shortened approximately 1/2" by breaking, or a new lever may be installed. Springs S (Fig.2) are now used on slides W and X to restore the brake latches.

Test 1: With the machine normal and the brake slide latched on latch L (Fig.2) there should be .015" to .025" clearance between the formed lip of release slide W and the extension of lever P (Fig.1).

Test 2: With the machine normal and the brake slide latched on latch R (Fig.2) there should be .015" to .025" clearance between the formed lip of release slide X and lever L (Fig.1).

To adjust: Bend the formed lip of slide W and/or X (Fig.2).

Parts required:

L	Fig. 1	(1)	1-408175A	Brake release control lever
M	Fig. 1	(1)	1A-408151AR	Brake release control assembly
S	Fig. 2	(2)	84801	Spring for slides W and X

9-ACCIDENTAL ENGAGEMENT OF EITHER CARRIAGE CLUTCH will be minimized by installing heavier springs Q (Fig.1) on the carriage drive clutch latches.

Parts required:

Q	Fig. 1	(2)	72833	Springs on carriage drive clutch latches
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10-ERRATIC CARRIAGE TRAVEL may be caused by excessive play of gear G (Fig.3) (1A-408339) resulting in a bind of the gear or interference with adjacent gears.

Play may be reduced by inserting one or more washers A under screw B. Vertical play of the gear should not exceed .005".

Parts required:

A	Fig. 3	(1 or more)	X1-21	Washer under screw 10750 3/16 Style 9
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11-HOLD DOWN CAM ASSEMBLY A (Fig.2) AND HARDENED THRUST WASHER Z are now standard in machines of current manufacture.

The thrust washer is placed on top of spindle assembly Y. The post of the hold down cam is located at the scoring hole of the left side frame of the gear box. The eccentric cam of the hold down assembly should have its high side fixed toward the front and held in place with screw and lock washer C. There should be minimum clearance between the eccentric cam and the thrust washer.

The above arrangement should be installed on the next attention to any machine not so equipped.

This cancels Item 2, Mecanogram 480.

Parts required:

A	Fig. 2	(1)	1-408559	Hold down cam
C	Fig. 2	(1)	79505	Screw for 1-408559
C	Fig. 2	(1)	1097 7/16	Lock washer for 79505
Z	Fig. 2	(1)	408163	Thrust collar

12-LOOSE MESH OF CARRIAGE DRIVING GEARS AA AND AC (Plate 2, Symbol List) may be caused by wear of the shoulder on spindle shaft Y (Fig.2).

The spindle is altered by raising the shoulder location to permit addition of thrust washer V.

Parts required:

V	Fig. 2	(1)	X1-18	Thrust washer for 11-408002A
Y	Fig. 2	(1)	11-408002A	Carriage clutch spindle assembly

Other related alterations that will provide additional assistance toward improved control of carriage travel will be found in the following previously published Mecanograms:

<u>Mecanogram</u>	<u>Item</u>	<u>Subject</u>
449	2	Free Running Carriages
450	1	Kicker Arm D (Plate 9, Symbol List)
453	2	Faster Action of Interlock K (Plate 57, Symbol List)
472	2	Spring for Kicker Arm (Mecanogram 450-1)
472	5	Bumper Spring M (Plate 9, Symbol List)
475	1	Premature Disengagement of Clutch BC and BD (Plate 9, Symbol List)
475	4	Bevel Gears AC and AA (Plate 2, Symbol List)
480	1	Carriage Drive Clutch 1Z-408013
485	1	Repair Plates for Bracket I (Illustrated)
486	1	Improved Control of Carriage and Drive Trip Interlocks.

When an analysis of a machine indicates need for all of the announced changes to provide a satisfactory performance, it may be advisable to install a complete gear box assembly. The replacement of a complete assembly will require extensive readjustment of other major sections.

Parts required:

	3-408110	Complete gear box
BY Plate 4, Symbol List	1-403211	L No.2 Program selector interlock
BI Plate 4, Symbol List	403146AR	Bumper depressing bracket
BI Plate 4, Symbol List	403146AL	Bumper depressing bracket

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 496

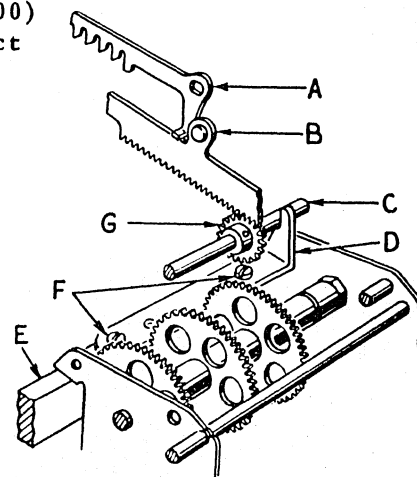
MANAGERS AND SERVICEMEN:

November 20, 1953

### SERIES F MACHINES

**1-WRONG REGISTER SELECTION** (Series F300 and F500) resulting from failure of gear G to retain correct mesh with rack B may be caused by insufficient support of the lip on index plate A. The lip may be bent downward for minimum clearance of rack B to insure safe meshing of the teeth.

Where the journal on shaft C has worn the right side frame, brace D (406127Z) should be installed on bar E under screws F (72584). Washers 187 Fte. 207 may be used to position brace D upward if necessary. Order for actual need only.



**2-TYPE SPRING 406804A** is now made of valve spring wire to reduce breakage. This wire is tougher than the discarded music wire and has a higher resistance to fatigue and crystalization.

The new spring may be identified by the khaki color of the wire.

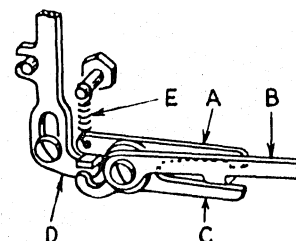
The shiny silver-colored music wire springs in stock should be destroyed.

**3-LANE 25 TAPPET** (A, Plate 40-5, Symbol List) has been shortened .033" to utilize the full range of adjustment of eccentric BW when adjusting the alignment of step plate K and the ear of rack O with the tappet limited on a control pin. Also, the enclosed guide slot in the tappet has been lengthened downward .063" to prevent a possible false limit of the tappet's upward travel when selecting register number 9.

The new shortened tappet 1-405120 No.7 should be used for replacement when breakage occurs; and eccentric BW should be readjusted for proper alignment of step plate K.

**4-ADDING OF CREDIT BALANCES FROM CROSSFOOTER "A" INTO CROSSFOOTER "B"** may be caused by rebound of latch AI (Plate 47, Symbol List) after being driven by the lip of link AM. The rebound may cause a restoring action of link AM sufficient to allow latch AI to trap link AD.

The illustrated latch A (404244A) has an added extension C to prevent excessive movement of the latch when driven by link D. The added weight of the extension permits use of lighter spring E (X80-22).



Install the improved latch on all machines using the "Net Accumulation Proof" feature.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 495

MANAGERS AND SERVICEMEN:

November 2, 1953

### SERIES A PRODUCTS

1-NEW BENDERS Kits 66A No.1 and No.2 are available to replace (benders) Kits 66 No.3 and 51 1/8 No.2 (E and F, Plate 2-6, Tool Equipment Symbol List). The new benders are made of lighter material and are furnished in the tool equipment of new tool bags.

Bender No.1 has a .094" slot in the square end and a .072" in the "L" shaped end; bender No.2 has the same size slots but on the reverse end of the bender.

### SERIES H MACHINES

2-SHEARING OF PINS 82501 in the crossfooter frame 21-69000 Style 17 (Mecanogram 451, Item 2) will be prevented by a change in the material and hardening process of the pins.

An oversize pin 82501Z (.068) is available for replacement of sheared pins. Use broach Kit 277 No.3 for reaming the tapered hole to fit the new pin. Order broaches for immediate need only.

3-IMPROVED ALIGNMENT AND REDUCED WEAR OF RIBBON FEED PAWLS (Y and J, Plate 38-1, Printing Symbol List) will be obtained by installing a washer 75210 under bushings AA. Longer screws 703590 are used in place of screws AC to compensate for the thickness of washers 75210.

### SERIES P- MACHINES

4-TRAPPED CARRIES in Classes 8 and 10 machines may be the result of a tight mesh between the adding pinions and carry racks caused by worn roll K (Plate 95, Symbol List).

The roll 89302 now receives an improved hardening to prevent wear.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

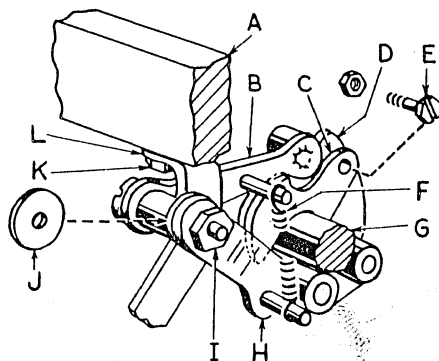
No. 494

MANAGERS AND SERVICEMEN:

October 27, 1953

### SERIES F MACHINES

**1-FAILURE OF THE DRIVE TO TRIP FROM A MOTOR BAR DEPRESSION** may be caused by an incomplete machine cycle that results in failure of the roll of assembly Z (Plate 56, Symbol List) to drop off the high dwell of cam AE. Shaft assembly AD is thereby prevented from restoring to normal to permit movement of trip shaft assembly AT. Drive trip failure may also be caused by an overthrow of the machine cycle setting up a severe bite between bail J and clutch dog B - with the result that bail J fails to release clutch dog B when the latch bail is dislodged from the lip of bail J.



The detent action of arm BD (B, in illustration) has been improved by the following changes:

1. Spring anchor arm H (1-401140), pivoted on shoulder nut I (3434) has been added to permit use of heavier spring F (73816). Washer J (613 1/2) provides proper spacing of arm H for clearance with adjacent parts. The new spring anchoring arrangement, by applying pressure to opposite sides of shaft G, avoids distortion of the shaft assembly from the tension of spring F.
2. Auxiliary cam C (401160Y) provides detention of the machine against overthrow and is attached to cam D with screw E (404616) and nut 46.
3. Spring F should be aligned on the stud of detent B with the spring groove on the stud of spring anchor arm H.

Hexagon-headed screw K should be tight and should hold bracket L firmly against cross member A.

Install the new arrangement on machines where motor bar depression fails to trip the drive.

**2-LOSS OF CARRIAGE INDEXED FUNCTIONS** due to failure of latch plates A and F (Plate 7, Symbol Book) to hold the indexed bell crank has been corrected by using independent and uniform spring tension in both their raised and lowered positions through the following new spring hookup:

Spring J is replaced by spring 3683 - one end of which is hooked to latch Plate F and the other end to a 20 No.86A clip on the pivot post K supporting latch Plate A.

In addition to the change in spring J, spring L on latch plate E has been replaced by stronger spring 94803 No.2.

These springs and clip should be installed on field machines where the above condition is experienced.

**C. A. BAKER**  
General Service Manager

# Burroughs

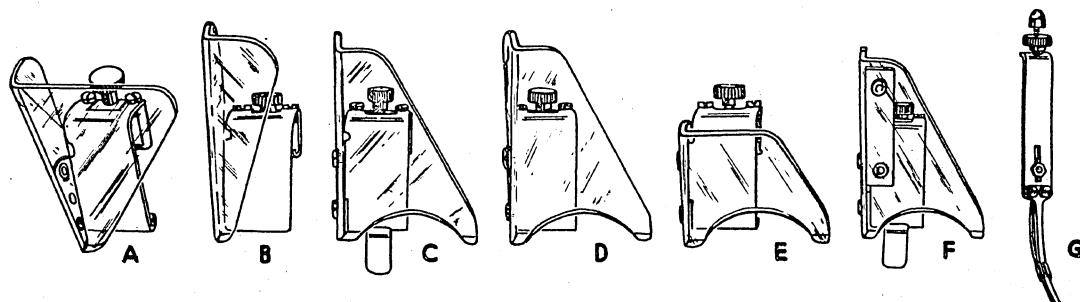
## MECANOGRAM

No. 493

MANAGERS AND SERVICEMEN:

October 22, 1953

### SERIES F MACHINES



1-THE VARIOUS STYLES OF FRONT FEED FORM GUIDES available for Series F Machines are illustrated and symbolized to clarify the style numbers and to facilitate ordering.

Figure	Style No.	Description	Complete Symbol
A	1	Use for forms 7" wide or more.	2-403203 R & L
B	2	Use for forms less than 7" wide.	2-403203 R & L No. 2
C	3	Use for Pass Books. Standard on Styles F104 and F204.	2-403203 R & L No. 3
D	4	Use for collated forms 7" wide or more. Standard on all Styles except F104, F204, F402, F302 and F502.	12-403203 R & L No. 3
E	5	Use for short cards. Standard on F402.	2-403203 R & L No. 5
F	6	Use for payroll card and check. Standard on F302 and F502.	2-403203 R & L No. 6
G	---	Adjustable rear form limit - used with Style 6 front guides.	1-403157

#### Notes:

1. The plastic only may be ordered by using the one dash symbol; eg., 1-403203R No. 3.

2. Refer to Plate 1, Symbol List for the metal hanger symbols.

2-ACCURATE ALIGNMENT OF CONTROL PIN MAGAZINES AND TABULATOR STOPS will be afforded by using a redesigned gauge, Kit 406.

After the magazine is located in its proper position by reference to scale A (Plate 4, Symbol List), the gauge is placed over control pins C and stop E. The setscrews are then tightened in the tabulator stop.

Make a notation of the revised procedure under the subject "Assembly of Sensimatic Control Units" pages 8 and 9, Construction and Operation booklet 100-1/F.

This cancels Item 3, Mecanogram 366.

C. A. BAKER  
General Service Manager

# Burroughs

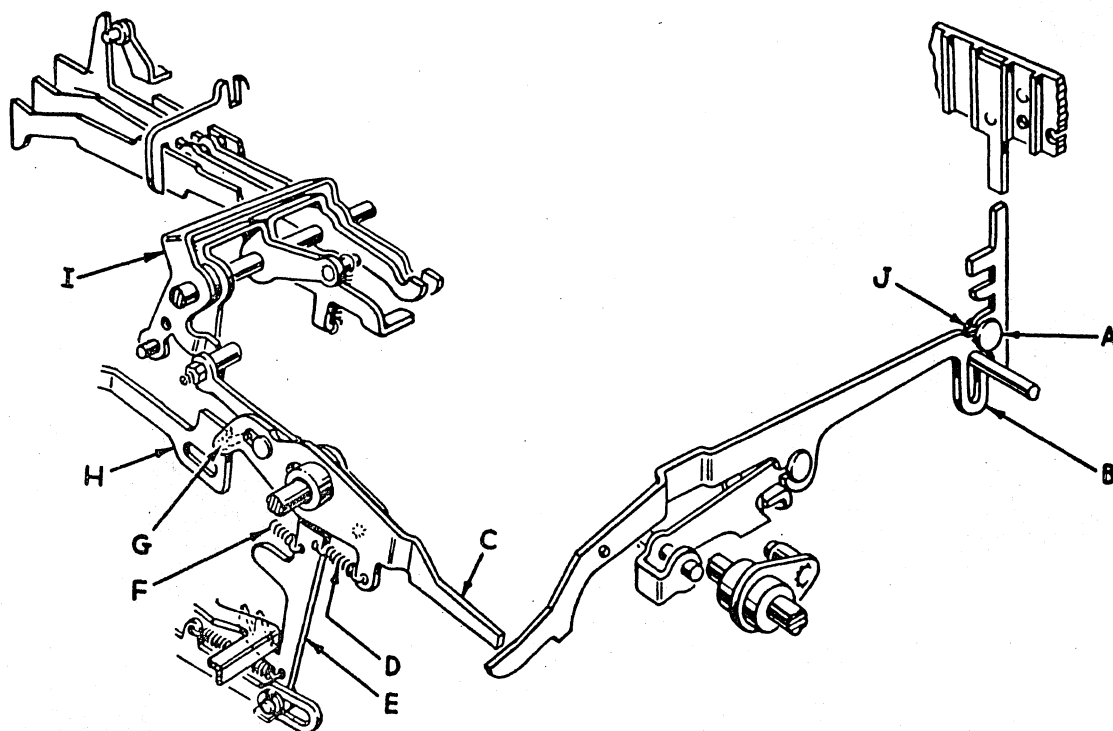
## MECANOGRAM

No. 492

MANAGERS AND SERVICEMEN:

October 19, 1953

### SERIES F MACHINES



1-BREAKAGE OF BELL CRANK ASSEMBLY AJ (Plate 18-1, Symbol List) or the illustrated flanged rivet A (405521) and its washer J (405115 No.1) in sensing lever B may be caused by heavy tension of broken joint spring AK (Plate 18-1).

The illustrated bell crank assembly E (11-404183B No.8) and link H (404265B) are designed as follows to overcome the above condition:

The rearward extension C of the bell crank assembly is constructed as a slide and when normal is held retracted from locating over sensing lever B by spring D (72820).

Link H has stock added to the upper surface of its rearward end for contact with stud G in slide C.

Depression of bar No.1 or No.4 drives link H against stud G to position slide C over sensing lever B to enable the Disable Space and Return Mechanism. During the machine cycle, sensing lever B rocks bell crank E to actuate bail I in the usual manner.

Bell crank E is restored to normal by spring F (205806).

Install the new arrangement on any machine where breakage of the bell crank or sensing lever is experienced.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 491

MANAGERS AND SERVICEMEN:

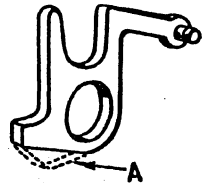
October 8, 1953

### SERIES H MACHINES

**1-DRIVE CHATTER IN 22 TO 1 RATIO DRIVES** caused by failure of pawl G (Plate 5-1, Power Symbol List) to fully latch over the pass-by pawl stud will be eliminated by installing a new pawl 1-3612 1/4 No.5.

The new pawl has stock added to its lower surface as illustrated by the dotted line. The chamfered corner of the added portion at "A" will prevent the drive arm from falling back if the pawl fails to fully pass the limit stud.

Install in machines where drive chatter is experienced. Scrap all stock parts made the old way.



### SERIES M MACHINES

**2-LOCKED MACHINE, SHORT STROKE, RUNAWAY OPERATION, OR LOSS OF A CYCLE IN A TWO CYCLE OPERATION** may be caused by pawl 701257 (B, Item 1, Mecanogram 353) sticking in a disabled position.

The above conditions are reduced in currently manufactured machines by an improved pawl which has a projection added to prevent overthrow of the pawl as the clutch members are completing their engagement.

The new pawl may be obtained under its present symbol number and should be used for Field replacement.

This information supplements Item 3, Mecanogram 380.

**3-INDEX PAWLS ON FRONT CONTROL ARMS AL, V, W, X** (Plate 6G, Keyboard Symbol List) could be accidentally turned to an inactive position while changing a front control bar. This condition will be eliminated - on Series M200 machines beginning with serial No. M4594D and Series M800 machines beginning with serial No. M4685D - by a new limit 705195 3/4 which is assembled on the rear side of bracket AJ to the two innermost holes. The two innermost screws AH are replaced by two screws 75621 and two nuts 49 1/4. The new limit should be installed in field machines equipped with crossfooter and register totals, carriage controlled, when frequent changing of front control bars is required.

**4-FOUR POSITION PRINTING CONTROL ARM D** (Plate 6-1, Printing Symbol List) missing the control rail during a machine operation has been eliminated through the use of improved control arm 1-709299 No.2 equipped with a flanged stud for its connection to the fork of arm F. The flanged stud fits snugly in the fork of arm F providing stability and reducing side play of the control arm.

The improved control arm may be used only in machines containing the Four Position Printing Control Mechanism with Positive Normalizing, as shown on Plate 6-1, Printing Instruction Book.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 490

MANAGERS AND SERVICEMEN:

October 6, 1953

### SERIES M MACHINES

**1-CONTINUOUS CYCLING OF THE MACHINE**, or cycling four times instead of three when an automatic subtract control is active, may be caused by inadvertently depressing non-subtract key A instead of the non-add key prior to depressing the minus balance key.

This condition is possible in all Series M800 and Class 78 machines after Serial Number B135750 equipped

with Crossfooter Subtract Mechanism - Indexed by Carriage and Main Operating Section (Plate 33-1, Keyboard Instruction Book). These machines do not contain link AD (Plate 37) which prevented depression of the minus balance key with the Non-subtract Mechanism latched forward.

A new interlock I is now being installed in currently manufactured Series M800 machines - beginning with serial number M5066D - to prevent depression of the minus balance key should the Non-subtract Mechanism be indexed. Depression of non-subtract key A positions the step of interlock I in line with lip C through bail M, wire J, and the stud in turnbuckle B to prevent depression of the minus balance key. Depression of the error key releases bail M and permits depression of the minus balance key.

Interlock I should be installed in machines prior to Serial Number M5066D when this condition is repeatedly encountered.

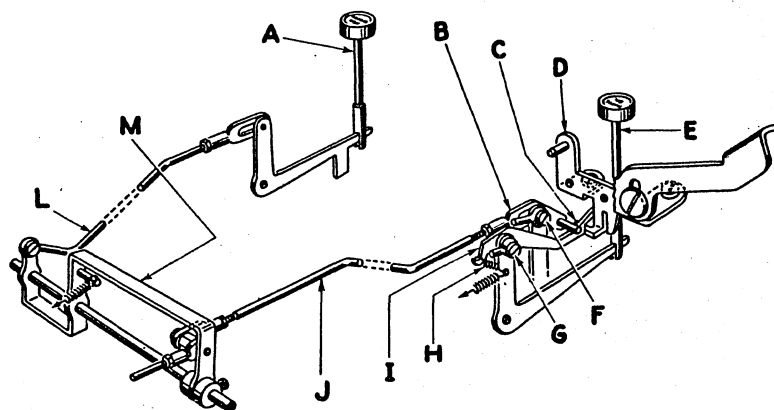
The following parts are required:

B	1-72110 No. 8	Turnbuckle
D	1-72123 1/2A No. 2	Bracket
I	72143 1/2	Interlock
G	75631	Screw
	702320	Nut for screw G
H	7282 1/4	Spring

The following tests and adjustment should be applied:

1. With an overdraft in the crossfooter and the Non-subtract Mechanism indexed, interlock I should have at least 3/4 hold on lip C when slight pressure is applied on the minus balance key.
2. With overdraft in crossfooter and Non-subtract Mechanism normal, interlock I should have safe clearance over lip C when the minus balance key is depressed slowly.

To adjust, tip the forward end of turnbuckle B to secure proper clearance and hold of lip C.



C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 489

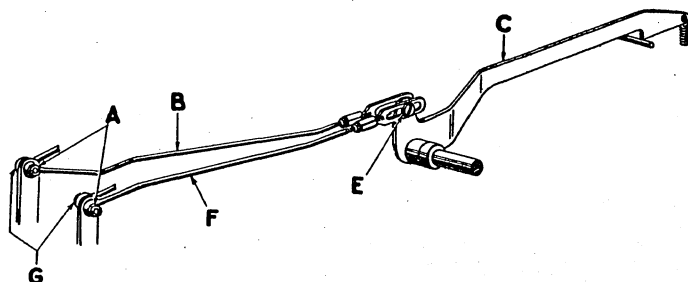
MANAGERS AND SERVICEMEN:

October 5, 1953

### SERIES M MACHINES

#### 1-MINUS BALANCE SYMBOL PRINTING FROM A BALANCE OR SUB-BALANCE

OPERATION on M700 machines containing symbol bail latch N (Plate 33, Printing Symbol List) may be caused by inadvertently depressing the minus balance key and failing to use the error key prior to depressing the balance or sub-balance key. If the above takes place, symbol bail V (Plate 33) will be latched in an indexed position by latch N (Plate 33) causing the minus balance to print.



Machines beginning with serial number M4490D contain newly designed symbol bail latch C which is inactivated when a balance or sub-balance key is depressed thus eliminating the above condition.

Installation on machines prior to serial number M4490D will require the following parts:

A	72324 (2 required)	Nuts
B	1-702791	Balance key wire
C	1-702159 1/4A	Symbol bail latch
E	79511	Screw
	71366	Nut (For assembling wire B to latch C)
F	1-702792	Sub-balance wire
G	75631 (2 required)	Screws

2-BENDING OF CARRY RESET ARM Z (Plate 15, Accumulation Symbol List) may be caused by its excessive side play on eccentric M.

During a non-add operation, excessive side play of the carry reset arm may allow its bottom end to shift sideways and be cammed upward by cam X. Should this happen and should any carry rack be in a carried position and its pinion at cipher, the wide tooth of the pinion would lock against the carry pawl causing the carry reset arm to bend.

Carry reset arms I and Z, all styles except the narrow base crossfooter carry reset arm 1-79207 No.1, are now faced to a uniform thickness at the point where they are assembled to the carry reset shafts. Eccentrics 79362 are used to reduce excessive side play.

Excessive side play of crossfooter carry reset arm 1-79207 No.1 can be reduced by stoning the shoulder of eccentric M.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 488

MANAGERS AND SERVICEMEN:

October 1, 1953

### SERIES A PRODUCTS

*Large*  
1-BRISTO KEY WRENCHES with screw driver type handles Kit 729 and Kit 730 are now available for use with Bristo screws used with skip and return disks and stops on Series F control panels.

Extra key wrenches may be ordered under part numbers Kit 729-1 (skip and return disk) and Kit 730-1 (stops).

### SERIES P MACHINES

2-SWITCH POINTS Q (Plate 131-1) are now being retained on the pivotal stud in the switch arm of Type 3 motors by clip 21 No.15. The new clip should reduce Field complaints caused by the old clip (21 No.7) working loose and falling off the stud. The new clip should be installed in Field machines on the next regular attention.

### SERIES P400 MACHINES

3-ACCIDENTAL CARRIES in register A or B of Series P400 machines may be caused by insufficient clearance between pawl Q and latch M at point P (Plate 123-3, Instruction Book) with the machine normal.

Clearance at point P should be adjusted for .008" to .012" clearance in machines where accidental carries are experienced.

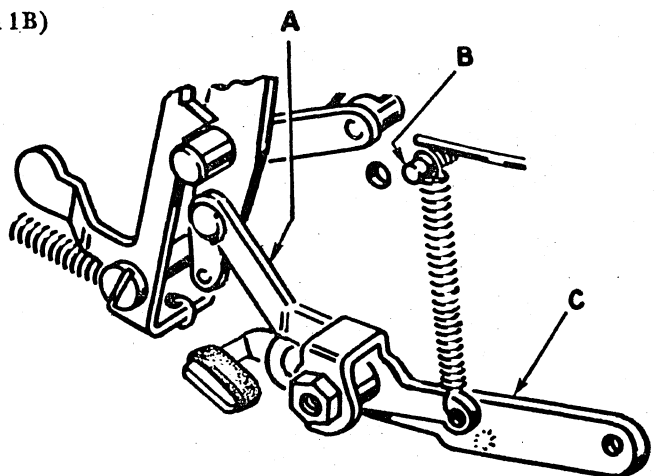
Correct Adjustment No.7, page 108-5, Instruction Book, accordingly.

4-OPERATING NOISE may be reduced by installing a new limit C (1-900111B) for link A and trimming off the arm of link A which formerly limited on spring stud B.

The lug carrying the neoprene cushion should be adjusted by loosening the screws in the right end of forward tie brace S (Plate 126-1A, Symbol List) and positioning limit A to provide .010" clearance of the roll on flipper pawl E (Plate 100-2) with register shifter O when the machine is at the end of the forward stroke.

The new limit is in machines after Serial No. P39975D. Field installation should be made when operating noise is a complaint.

Reference to this item should be noted on link U (Plate 100-2).



C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 487

MANAGERS AND SERVICEMEN:

September 30, 1953

### ALL CLASSES

**1-IMPROVED LUBRICATING OILS AND GREASES** developed in recent years have greatly increased the stability and range of application through the use of suitable additives. This permits reduction in the number of lubricants required by servicemen to obtain maximum lubrication efficiency.

New highest quality stable oils compounded to prevent premature breakdown and protected against harmful chemical reactions are now being used after thorough investigation by our Engineering Laboratory. Reddish brown deposits indicating breakdown are caused by vibration under certain conditions. While these are not directly harmful they promote chemical reaction in the oil resulting in formation of sticky resinous films and acids which may interfere with machine functioning.

Additives used to retard oxidation and formation of other harmful compounds such as acids, tars, scale are expendable. It is, therefore, important for machines to be cleaned and relubricated periodically, using the correct oil or grease specified below.

The new lubricants will be available approximately October 1, 1953. They should be used as soon as present stocks are exhausted. This cancels information on Item 3; Mekanogram 333.

#### MACHINE OIL (KIT 131A)

Used for dashpots, shaft bearings, bearings with oil holes, light sliding parts, links, arms, small spring eyelets and other light working parts.

#### CLUTCH CASE OIL (KIT 165 1/2B)

Used in enclosed clutch and gear cases (Series H, V, M, P).

#### M.R.C. OIL (KIT 168 1/2)

Used in enclosed gear cases.

#### MACHINE GREASE (KIT 167 1/4A)

Used for open cams and contacts, open gears, teeth on ratchets and racks, pressure roll bearings, cam studs, large spring eyelets, rotary calendar and numbering device, split platen bearings, sleeve bearings for M.R.C., other heavy working parts.

#### MOTOR SLEEVE BEARING GREASE (KIT 167 1/2E)

Used in grease cups on early style motors.

#### WHEEL BEARING GREASE (MEDIUM) (KIT 168 3/4)

Used on open drive gears in Series C machines.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 486

MANAGERS AND SERVICEMEN:

September 28, 1953

SERIES F MACHINES

*Memo 543*

1-IMPROVED CONTROL OF CARRIAGE AND DRIVE TRIP INTERLOCKS is obtained by making the following new spring hook-up on interlock bail Q (Plate 57, Symbol Book):

- Discard the spring between lever R and the ear on the carriage drive unit top plate.
- Unhook spring M from screw stud N.
- Hook one end of new spring 3981 to the small hole of new clip 20 No.91.
- Place the large hole of clip 20 No.91 over screw stud N and rehook spring M in the spring groove of stud N.
- Unhook the lower end of spring AJ (Plate 34) from the ear of ribbon shift normalizing bail AH (Plate 34).
- Hook the lower end of new spring 3981 over the ear of bail AH (Plate 34) and then rehook spring AJ (Plate 34) on the ear.

The adjustments for the interlocks are the same as those given in Item 2, Mecanogram 453.

2-A CONTINUOUS RUNNING MOTOR AND FAILURE TO TRIP THE DRIVE following a carriage opening operation may be prevented by replacing the present spring on detent arm BN (Plate 19, Symbol List) with stronger spring 72816. The stronger spring insures the positioning of the roll on detent arm BN in the pocket of clutch drum BK.

This stronger spring, which is now being used in currently manufactured machines, should be installed in Field machines when the gear box is removed for the replacement of other parts.

3-NON-PRINTING DUMMY TYPE 406118 No.39 is now available and should be used in place of type removed, shaved or plain, to effect permanent non-print of symbols or characters.

This type reduces hammer breakage resulting from the additional travel and collision of hammers with the hammer restoring bail. Also, it prevents the type in the adjacent magazine spaces from sticking as a result of the peening effect of the hammer striking the magazine.

4-EXTENSION LEGS are now available for raising Series F machines approximately 1 1/2" to permit the use of "lap posting trays".

The following parts are required for installation:

Symbol	Description	Quantity
400502 No.2	Longer shoulder screw	4
400200 No.2	Steel cap	4
X10-96	Shoulder collar	4
X10-95	Extension tube	4
X60-64	Screws from stand to machine	2

C. A. BAKER  
General Service Manager

# MEMORANDUM

DATE: 10/10/54

TO: THE DIRECTOR

FROM: [illegible]

SUBJECT: [illegible]

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# Burroughs

## M E C A N O G R A M

No. 485

MANAGERS AND SERVICEMEN:

September 25, 1953

### SERIES F MACHINES

**1-REPLACEMENT OF BRACKET I** because of wear of the bearing for angle shaft M will not be required and breakage of the splines of gear E (Plate 2, Symbol List) will be avoided by making the following changes:

- Install bracket J (401146) as illustrated and retain with screw L (400501) and washer K (9028 1/2).
- Replace round head screw C (Plate 2) with headless screw C (572 Fte. 203) to provide a free pivotal action of brace D when locating bracket J.

#### Adjustment:

- Back off screw B until eccentric A can be moved out of the elongated slot in brace D.
- Locate bracket J so shaft M will be held in its original location in the bearing of bracket I and tighten screw L.
- Replace eccentric A in the slot of brace D to take up all play against the upper side and tighten screw B.
- Position the retaining collar on the right side of gear E (Plate 2) so there will be a full and frictionless mesh between gears E and F (Plate 2).

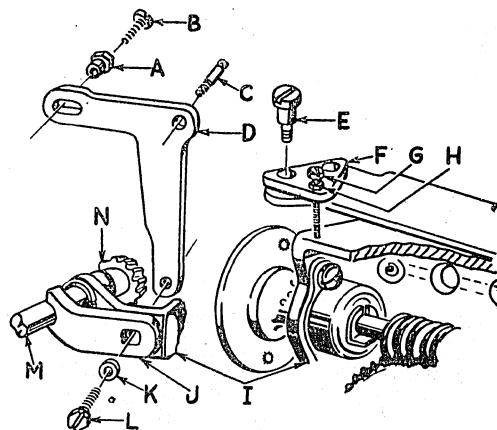
**Caution:** Locate the setscrew in the retaining collar for gear E (Plate 2) to be as near in line as possible with stud C (Plate 56) to avoid sensing of bail J (Plate 56) by the setscrew.

Additional stabilizing of bracket I will be afforded by installing plate F (401147Z), screw G (71543), and lock nut H (47 1/4) under screws E as illustrated. Screw G should extend through plate F to bracket I but should not exert pressure against the bracket. Use .003" feeler gauge (Kit 124 3/4) to test.

It is suggested the above arrangement be installed on the next attention.

**2-CROSSFOOTER MESHING HOOK 1-409128A** (AT, Plate 44, Symbol List) now has stock removed from its upper surface where contacted by bell crank AW for add and non-add positions. The change provides sufficient tolerance to permit adjusting the hook for (1) safe hold of the pocket in its upper arm over the square stud in the control slide during a subtract function without jeopardizing the safe hold of the lower arm during an add function; or for (2) clearance of the square stud by both arms during a non-add function.

Use only the new hook for replacement.



C. A. BAKER  
General Service Manager

CONFIDENTIAL

MEMORANDUM FOR THE DIRECTOR

1. The purpose of this memorandum is to provide a summary of the information received from the [redacted] regarding the [redacted] activities in the [redacted] area.

2. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area.

3. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area.

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8. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area.

9. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area.

10. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area. The [redacted] has been identified as a [redacted] and is currently [redacted] in the [redacted] area.

# Burroughs

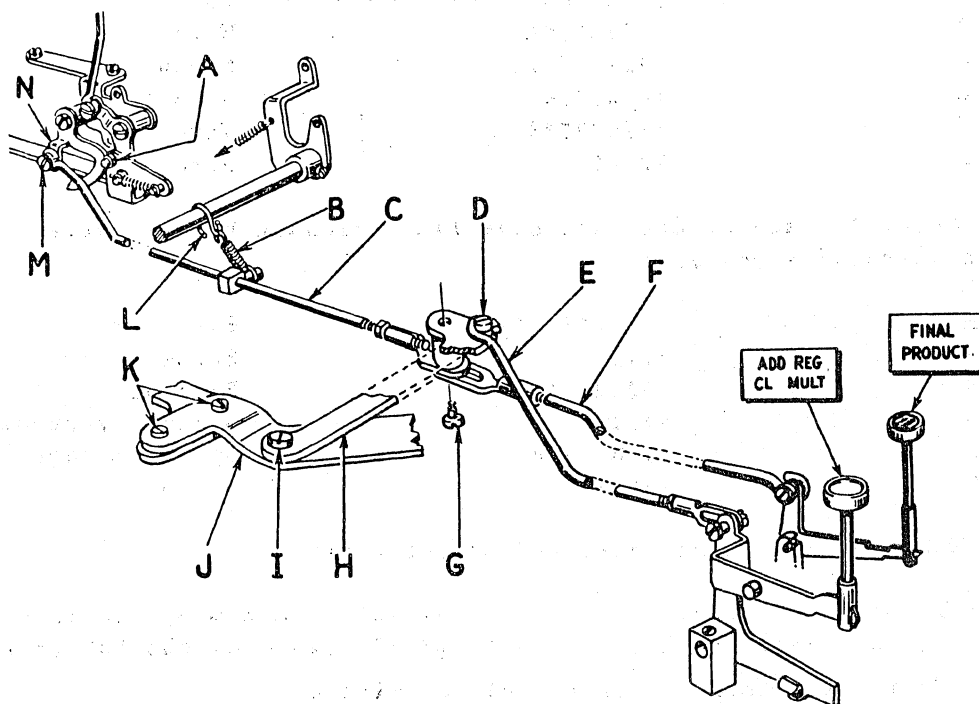
## M E C A N O G R A M

No. 484

MANAGERS AND SERVICEMEN:

September 10, 1953

SERIES M MACHINES



**1-TWISTING OF EXTEND CLEARING BAIL BRACKET B** (Plate 19-1, Keyboard Symbol List) - on new wide base Class 72 machines containing the Non-extend of Specified Columns Mechanism (Plate 18-2) - may be caused by failure to reset channel bail assembly BQ (Plate 18-2) to the right far enough to insure safe hold on the feet of vertical extend arms A (Plate 18-2) when an extend clearing key is depressed.

Depression of an extend clearing key should reset the channel bail assembly to the right, through wire E or wire F, before it is rocked upward. When the bail is not reset before it is rocked upward, some of the detent arms of the vertical extend arms may remain seated in their respective retaining racks CF (Plate 19-1) thus causing the extend clearing bail bracket to twist as the bail is driven rearward during the forward stroke of an extend clearing operation.

An improved normalizing mechanism which provides a more positive resetting of the channel bail is available for installation on machines that do not contain easy depression power result keys and should be installed when this trouble occurs.

(Over)

The following parts are required:

Part	Symbol	Description
B	75804 No. 2	Spring
C	1-702760A	Wire
D	72572 No. 1	Screw
E	1-702780	Wire
F	1-702779A	Wire
G	72542	Screw

Note: If machine does not have final product key use screw 75638 in place of screw 72542.

H	1-702119 3/4	Pivot Arm
I	74529	Screw
J	702128 3/4Z	Bracket
K	8451	Screws (2 required)
L	20 No. 73A	Spring Anchor
M	72501 1/2	Screw

Make the following tests and adjustments:

1. With the turnbuckle of wire C assembled to arm H, the threaded end of the wire should have 1/16" clearance of the hub on arm H.  
To adjust; turn the turnbuckle on wire H.
2. With the carriage control rail located on the carriage control roll and the clear multiplier and final product keys normal, there should be minimum clearance between lever N and roll A.  
To adjust; shorten or lengthen wires E or F.

**C. A. BAKER**  
General Service Manager

*Lowrey*

# Burroughs

## M E C A N O G R A M

No. 483

MANAGERS AND SERVICEMEN:

September 9, 1953

### SERIES M MACHINES

**1-EASY DEPRESSION POWER RESULT MECHANISM** failing to produce either a crossfooter or register total may be caused by tabulating bail B limiting against a finger A - on any of the horizontal links. This condition could prevent the horizontal link from dropping to engage stud H.

Limit G (702148 1/2) is now used in currently manufactured machines to limit bail B. This arrangement prevents bail B from limiting on a finger of any of the result linkages when both the bail and the result linkages are normal.

When this trouble exists in Field machines the new limit should be installed in the following manner:

For Class 72 and Series M 200 machines -

Unhook spring F from anchor screw DK (Plate 13-1, Keyboard Symbol List).

Remove screw DK and spring anchor DJ (Plate 13-1).

Assemble limit G to the base, using screw C (72567). (Note the elongated hole in the limit.)

Assemble spring anchor E (20 No.116) under screw D (73659).

Hook spring F to spring anchor E.

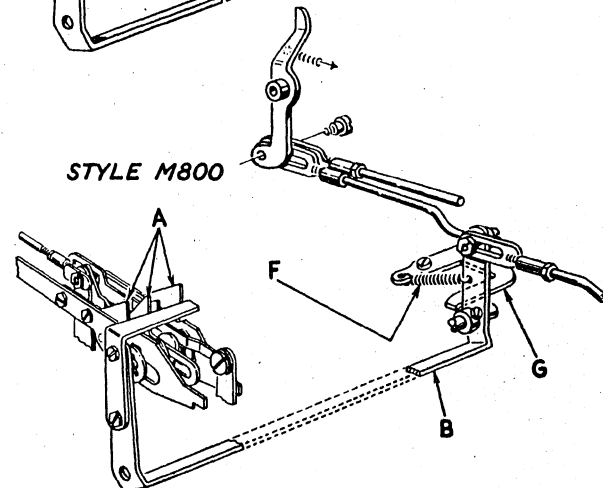
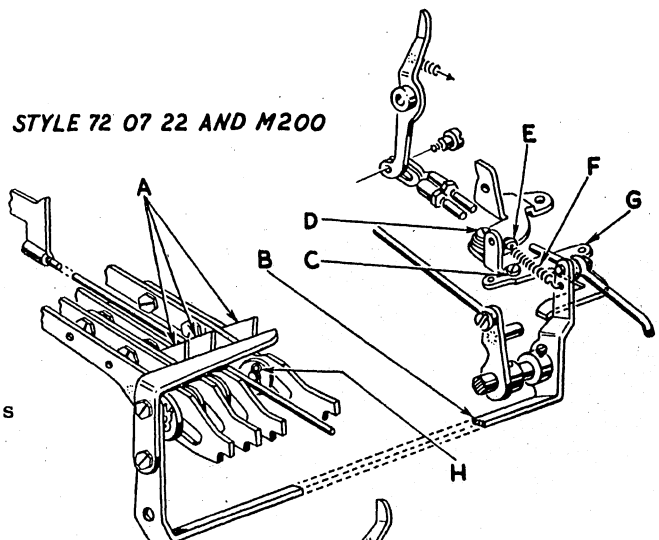
For Series M 800 machines -

Unhook spring F.

Remove anchor BH (Plate 13A, Keyboard Symbol List) and assemble limit G to the base using the original screw. (Note the elongated hole in the limit.)

Hook spring F to the hole in the left end of limit G.

To adjust - all styles: With the machine normal, position limit G so that bail B has slight clearance in front of fingers A.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 482

MANAGERS AND SERVICEMEN:

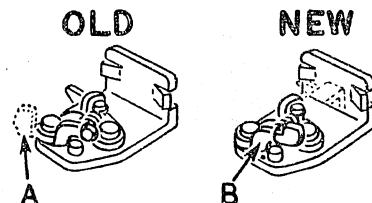
September 8, 1953

### SERIES M MACHINES

**1-ACCIDENTAL DISLODGING OF INDEX CAMS 2-703216A** all Nos. (Plate 26-1B, Carriage Symbol List) from the front control bar while it is in storage is reduced by newly designed retaining clamp B.

The improved retaining clamp must be pulled forward to remove an index cam from the front control bar. Thus accidental bumping of the release clamp will not dislodge the index cam.

Index cams on Field machines may be modified by removing the dotted line portion of retaining clamp A.



**2-CARRIAGE OR REGISTER RETURN KEYS** failing to lock the selective column tabulation keys against depression on Class 77 or Series M 700 machines may be caused by link AP (Plate 18-1, Accumulation Symbol List) slipping off carriage or register return key levers AN and AO.

This condition will be prevented by installing improved link AP (705153) which is recessed at its points of contact with both key levers to provide a more secure hold.

**3-LOST CARRIES DURING ADDITION OR MACHINE LOCKED DURING REGISTER TOTAL OPERATIONS** - in machines containing 100 pinion register construction - may be caused by balance springs P (Plate 8A, Accumulation Symbol List) being too weak and causing a bounce of the register section as it meshes with the carry racks.

Spring 53801 No.2 is now used on the right side of the register section and spring 700802 on the left side in currently manufactured machines to overcome this condition.

The new springs should be used in Field machines when encountering the above condition. It is also recommended that springs AD (79812A No.2) be replaced to insure best results.

This information cancels Item 3, Mecanogram 468.

### MOTORS

**4-ARMATURE END PLAY IN TYPES 6 AND 6A MOTORS** having ball bearing construction should not be less than .005" or more than .010". One or more space washers 4615 1/2 (.020" thickness) and 4615 1/2 No.2 (.010" thickness) are used between the ball bearing assembly and the motor end cap to obtain the proper end play.

When reassembling a motor, observe that washers of proper thickness are in place, if required.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 481

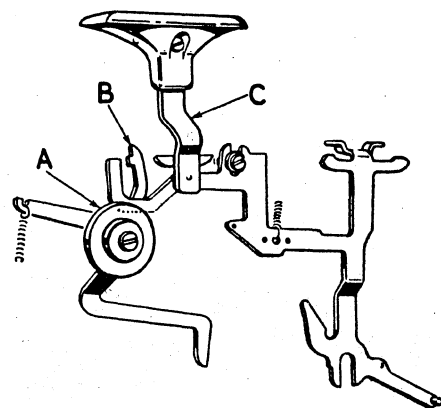
MANAGERS AND SERVICEMEN:

September 7, 1953

### SERIES P MACHINES

**1-BENDING OF THE MOTOR BAR ASSEMBLY** (CE, Plate 108-2, Symbol List) is prevented and alignment of the minus keystone (B, Plate 108-2) with the forward end of the motor is insured on Class 9, not minus balance machines, by installing flanged guide roll A (X10-72). New latch B (1A-94140 1/2A), with the outer hub removed, is also required.

The forward projection of the motor bar should be adjusted to trip the drive with additional depression of the minus key after the minus key has been latched down. Field installation should be made when bending of the motor bar assembly is encountered, or when the minus keystone misses the forward projection of the motor bar.



**2-LOOSE OR DAMAGED BUSHINGS** in machine bases O (Plate 126, Symbol List) may be replaced with removable bushings 84305A or 84305A Style 13 used for Styles 10 and 13 machines, respectively. These same bushings, held in place by 21 No.6 clips, are currently used in new machine bases to receive the front case screw G (Plate 125-2).

### SERIES P400 MACHINES

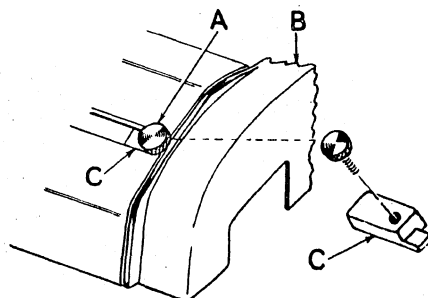
**3-EXTENSION FEET KIT 115 1/2** are now available for raising Series P400 machines when work is done with the base removed. These feet will protect register "B" carry mechanism and permit testing and operation of all machine functions.

Reference to this item should be noted on Plate 126-1A.

**4-CARRIAGE BACK COVER** (Y, Plate 32-5, Symbol List) will be held in position more securely by installing locking plates C, as illustrated, on all machines equipped with "B" carriages.

To install, place the locking plates in the channel with the cover open. Then close the cover and slide the projections of the locking plates under end covers B. Tighten the locking plates in position by turning thumb screws A (903560).

Assembled locking plates and thumb screws may be ordered by part numbers 1-903922ZL and 1-903922ZR.



C. A. BAKER  
General Service Manager

# Burroughs

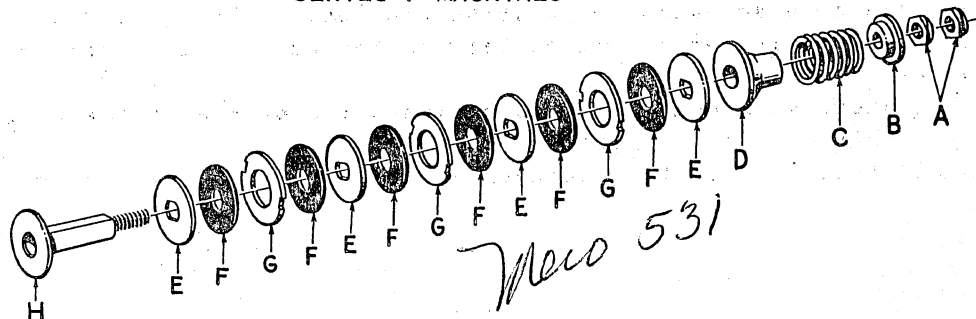
## MECANOGRAM

No. 480

MANAGERS AND SERVICEMEN:

September 4, 1953

SERIES F MACHINES



**1-CARRIAGE DRIVE CLUTCH 1Z-408013** - equipped with chrome-plated steel and carbon disks to prevent rusting and provide improved clutch performance - is assembled as illustrated.

- When installing the improved clutch, the following should be observed:
- Clutch drum W (Plate 2, Symbol List) should be changed if the keys for the driven disks show wear.
  - The outer surface of the flange on illustrated collar D should be flush with the end of clutch drum W (Plate 2) to provide engagement of illustrated disks G with the keys of the drum.
  - When necessary, use washer 707302 No.1 (.025" thick) on shaft J (Plate 2) between clip I and shaft support bracket H to maintain the above alignment.
  - The tension of the clutch should be tested by hooking the spring scale (Kit 408) to the right end of the carriage, depressing the directional key for tabulation, and turning the motor manually.
  - The clutch should deliver minimum pull of 5 1/2 lbs. and maximum of 6 lbs. Preferably the complete clutch should be installed as a unit when making a replacement because of unsatisfactory performance of an earlier style clutch.

The complete assembly is comprised of the following parts:

A	79350	Lock nut
B	408344A	Flanged washer
C	408803B	Pressure spring
D	408320	Pressure collar
E	408187	Chromed steel driving disk (4 required)
F	408904	Carbon friction disk (6 required)
G	408186	Chromed steel driven disk (3 required)
H	1-408013	Spindle

This cancels Item 1, Mecanogram 443, and Item 6, Mecanogram 472.

**2-HOLD DOWN CAM ASSEMBLY 1-408559** (formerly 1-408559Z, Item 1, Mecanogram 420) and thrust washer 408163 (a new part which replaces the improvised washer mentioned in Item 2, Mecanogram 450) are now standard construction in machines of current manufacture.

(Over)

The thrust washer is placed on top of assembly BL (Plate 9, Symbol List) with the post of the hold down cam assembled in the scoring hole in the left side frame of the gear box assembly. The eccentric cam of the hold down assembly should have its high side fixed toward the front and held in place with screw 79505 and lock washer 1097 7/16. There should be a minimum clearance between the eccentric cam and the thrust washer.

The above arrangement should be installed on the next attention to any machine not so equipped.

This cancels Item 1 of Mekanogram 420 and Item 2 of Mekanogram 450.

**C. A. BAKER**  
General Service Manager

# Burroughs

## MECANOGRAM

No. 479

MANAGERS AND SERVICEMEN:

July 15, 1953

### SERIES A PRODUCTS

1-SERIES F MACHINE STANDS, STYLES 91A AND 92A, (Plates 13-2 and 13-4, Symbol List) will be shipped from the factory "knocked down" to facilitate handling and shipping and to conserve storage space.

An assembly diagram and instructions will be packed in each carton to simplify setting up the stand at its destination.

A new "clutch head" bit, Kit 30-13, will be sent to each branch for use with ratchet wrench F (Plate 2-3, Tool Equipment Symbol List) to aid in rigid assembling of the stand. Regular screw driver C (Plate 2-1, Tool Equipment Symbol List) can be used on "clutch head" screws provided the bit is altered to fit into the opening.

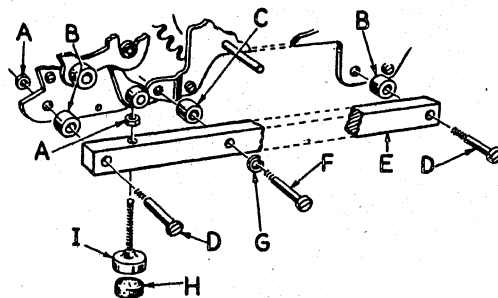
### SERIES P400 MACHINES

2-SUPPORT BAR E (900915) is now assembled along the lower left side frames of all Series P400 machines - beginning with Serial No. P49013D - to rigidly support the accumulator section. This reduces the possibility of the accumulator section shifting during handling.

Installation should be made in Field machines that are moved frequently.

#### Parts Required:

A	45 (2 req.)
B	X10-85 (2 req.)
C	X10-86
D	X60-57 (2 req.)
E	900915
F	X60-58
G	1097 15/16
H	900901
I	900556



Reference to this item should be noted on Plate 126-1A.

3-MACHINE LOCK-UP OF ARM T (Plate 123-7, Symbol List) on the peak of spearpoint U may result from premature tripping of the drive clutch. When either register is in minus balance position, snap depression of the total or sub-total keys-not sufficient to latch the key-partially indexes assemblies AT and may trip the drive.

Bracket 1-900129 (AR, Plate 133-1) now contains a larger diameter stud to limit arm AV. This holds intermediate motor bar assembly S (Plate 45-3) in a lower normal position which requires nearly full result key depression to release the drive. Easier depression of all live result keys is also noticeable with this change.

The new bracket should be installed whenever this type of lock-up occurs or easier depression of the result keys is desired. When making this installation, remove the projection from the forward end of interlock AH (Plate 45-3) thus insuring a handle break on partial depression of the repeat key.

C. A. BAKER

General Service Manager

# MEMORANDUM

DATE: 10/10/54

TO: Mr. Tolson

FROM: Mr. Clegg

SUBJECT: [Illegible]

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[Illegible text]

[Illegible text]

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# Burroughs

## M E C A N O G R A M

No. 478

MANAGERS AND SERVICEMEN:

July 13, 1953

### SERIES F MACHINES

*1-BENDING OF THE SYMBOL SECTOR RESTORING BELL CRANK Q* (Plate 36 Symbol List) may be caused by a point to point lock between detent AQ and ratchet A (Plate 38). The lock results in a bind in the printing assembly which delays the restoring action of the hammers. Delayed restoring permits the symbol hammer to be trapped (usually on a clear machine operation where only a symbol is printed) under the type in the symbol sector.

Damage to the bell crank will be avoided and improved selection of hammer block positions will be provided by the following changes:

- Roll AM is removed and eccentric AN is turned with its high side downward to avoid contact with detent arm AQ.
- Spring AO is removed.
- Detent AQ (1-407143A) has a spring hole added to its forward portion and spring 404806 is hooked from the new spring hole over the hub of shaft AT to the stud for spring H (Plate 33). This arrangement holds detent AQ (Plate 38) in constant contact with ratchet A to control and stabilize hammer block shaft assembly J.
- A stronger spring 87800 No.2 replaces spring AH on control arm AG to compensate for the continuous contact of detent AQ against ratchet A.
- Cam AE (1-401152B for F100, F200 and F400 machines, and 11-401152B for F300 and F500 machines) has stock added to its lobe to delay the contact of the lip of the upper arm of selector assembly AF with the limit steps of index sector AD until the latter has had time to be fully positioned.
- The lower dwell area of cam AE (closest to its center) has stock removed to allow sector assembly AF to travel full distance to the number one or lowest step of index sector AD.
- Index sector AD (1-404204) (no change in symbol number) has its upper five steps redimensioned to provide a safer contacting area for the lip of selector AF when the latter is allowed to drop by the action of cam AE.

**Test:** When sector AD is indexed to the first or lowest step, the lip of assembly AF should pass the edge of the second step with .005" clearance.

To adjust, turn eccentric X.

Install the improved parts on machines where bent sector restoring bell crank Q (Plate 36) or wrong hammer block selection has been experienced. Parts required are detent 1-407143A, spring 404806, spring 87800 No.2, cam 1-401152B or 11-401152B, and sector 1-404204.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 477

MANAGERS AND SERVICEMEN:

July 3, 1953

### SERIES H MACHINES

1-REGISTER PINION FRAME ASSEMBLY 1Z-69002 STYLE (13) (17) No.10 which contains detent contact arm BS (Plate 29, Accumulation Symbol List) is available for repair of Field machines. Specify machine style and serial number when ordering.

2-REPAIR SCREW 60578Z is available for replacement of the welded stud in arm BP (Plate 74-5, Accumulation Symbol List) when the stud becomes broken on assemblies 43-60000 Style 17 No.1 (Bank) or 43-60000 Style 17 No.2 (Commercial) in wide base machines.

The counterbore in arm BP may be filled with washer 3819 1/8.

The repair screw may be retained in arm BP of Bank machines and Commercial machines without H903 (Style 2) totals with lock washer 1097 7/16 and nut 46.

The repair screw on Commercial machines with Style 2 total may be retained by nut 46 1/4. After carefully tightening the nut, excessive stock of the threaded end of the screw should be removed for clearance of link AV. The end of the screw may then be riveted to prevent loosening of the nut.

This cancels Item 1, Mekanogram 473.

### SERIES P MACHINES

3-FAILURE OF MANUAL SPACE UP OF THE N OR NA CARRIAGE due to loosening of setscrew B (Plate 1-A Symbol List) in the platen twirler has been eliminated by using an improved method of spot countersinking the platen shaft. The new countersink retains the setscrew securely after tightening.

Correction of this condition in Field machines requires a new platen and shaft of current manufacture.

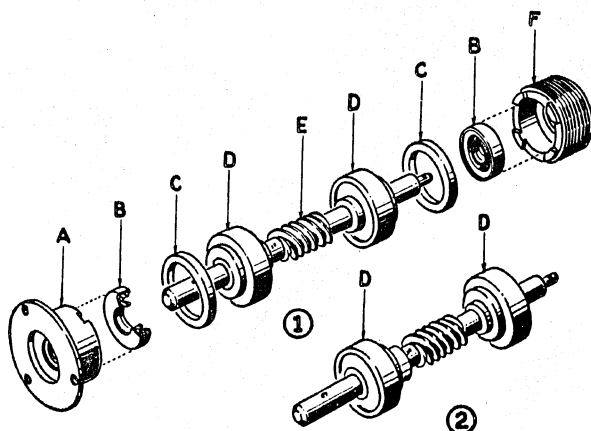
### MOTORS-SERIES H, M & V

4-OIL SEALS R AND V (Plate 6, Series H Power Symbol List) which contain leather washer P (Plate 6) are replaced by assembly A (1-3639 1/2B) and assembly F (1-3639B No.2) equipped with "Neoprene" seals.

Drives having bearings D assembled as shown in illustration No.1 require space collar C (71399Z). When bearings are assembled as in illustration No.2, only seal assembly A or F is required.

Seal assemblies A or F may be repaired by driving seal B (1-3691 3/8A) out of the assembly and pressing a new seal into position. The old seal B may be used as a driver (to avoid damage to the new seal) when pressing the new seal into place.

The above conditions also apply to Series M machines (AV and AF, Plate 3, Series M Power Symbol List) except that seal B is replaced by 1-71910B.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 476

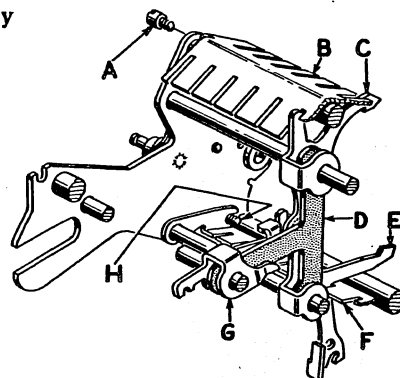
MANAGERS AND SERVICEMEN:

June 19, 1953

### SERIES P400 MACHINES

**1-COMPLETION OF THE RELAY CARRY IN REGISTERS "A" AND "B"** in currently manufactured Series P400 machines is assured by using stronger springs 681 in place of springs 83883 (I, Plate 123-3; Symbol List) on carry racks H. A weaker spring 71806 is used in place of 10085 in the last adding column. This change in the last adding column requires a lighter spring 44808 (G) on the last carry pawl latch F.

The use of stronger springs, 681, on the carry racks makes it necessary to support shaft S (Plate 123-3), to insure raising carry rack latch M sufficiently to release the carry rack on a direct carry. As shown in the accompanying sketch, brace D is installed inside the formed bearing of upper and lower carry pawls C and E, and carry pawl latch G. It is installed in column 6 of 10 column machines or column 7 of 13 column machines.



The heavy springs on the carry racks require stronger springs A on register detents C (Plate 96-1A) to prevent rebound of the registers when the carry racks are reset on total operations. Use spring 69804 for 10 columns or less adding capacity or spring 703819 for 11 to 13 columns capacity.

Springs 789 are used on the carry rack latch (referred to in Mecanogram 463, Item 3) and the automatic one bail (P, Plate 123-8) in machines of less than 13 columns adding capacity. These two springs, which are expanded by the carry rack in the adjacent column to the right of the last adding column, offer approximately the same load as the one spring N1 used on full 13 columns adding capacity.

These changes should be incorporated into Field machines when failure of the relay carry is encountered.

**2-CARRY PAWL GUIDES F AND B** (909119A Style 13 No.1 and 909119A Style 13 No.2), see illustration above, are now used in currently manufactured machines to improve alignment of the carry pawls and the adding pinions. The width of the formed bearings of both upper and lower carry pawls B and Q (Plate 123-3, Symbol List) is reduced because close tolerance for side play is not required since the guides hold the pawls in proper position.

These guides should be installed in Field machines when it is necessary to replace a carry pawl. Installation requires all new carry pawls B and Q (Plate 123-3) and new carry racks H which are cut out to clear the narrower bearing of the carry pawls.

(Over)

503

The following parts are illustrated:

A	909534	Screw (right side)
	909528	Screw (left side)
B	909119A Style 13 No. 2	Guide
C	1-909101 No. 2	Upper carry pawl
D	909201	Brace to support shaft S (Plate 123-3)
E	909101 No. 1	Lower carry pawl
F	909119A Style 13 No. 1	Guide
G	909102	Carry pawl latch
H	909535 (2 req.)	Screw in each side of guide F

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 475

MANAGERS AND SERVICEMEN:

June 5, 1953

### SERIES F MACHINES

1-PREATURE DISENGAGEMENT OF CLUTCH BC AND BD (Plate 9, Symbol List) or BE and BF (Plate 10) resulting in partial or no carriage movement may be overcome by installing heavier springs 407806 No.6 in place of spring BF (Plate 9) and BD (Plate 10).

2-PLATEN SPACE RATCHET ASSEMBLIES 1A-403115R AND 1A-403115L (C and M, Plate 18-2, Symbol List) have had the teeth redimensioned to insure spacing of the platen. Install on machines that do not respond to normal adjustments.

3-FULL RESTORING OF BELL CRANK Q (Plate 58, Symbol List) to its home position will be assured by replacing spring I with stronger spring X80-24.

This change will insure latching of bail U over the projection of slide AC to disable repeat of machine operation if a small motor bar is depressed.

4-BEVEL GEARS 1B-408305 AND 408303A <sup>AS AU 3</sup> (~~AC and AA~~, Plate 2, Symbol List) are now made with an improved cutting process and may be ordered and replaced separately.

Gear boxes with the bushing for the return clutch spindle on the under side of plate AB require space collar 99331 (43) between gear AC and plate AB.

Set screw G in bevel gear AA has been relocated to bear against the convex surface of shaft assembly W instead of against one of the flat milled surfaces of the shaft. The change in screw location permits bevel gear AA to align properly on shaft W.

The flat milled surfaces of shaft W (1-408011A) have been lengthened to permit the shaft to extend farther through bevel gear AA.

When either gear AA or AC is found to be worn, both gears and shaft assembly W should be replaced after which the following test and adjustments should be made:

With the machine normal there should be .005" clearance between the end of clutch shaft W and the hub portion of gear AC.

To adjust -

- a. Loosen screw AB3 in bearing block AB2.
- b. Loosen set screw G in bevel gear AA.
- c. Locate bevel gear AA against the shoulder end of the milled flats on shaft assembly W and tighten set screw G.
- d. Set bearing AB2 for .005" (use Kit 124 3/4) end movement of shaft assembly W and tighten screw AB3.  
- Recheck shaft assembly W for being free after tightening screw AB3.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 474

MANAGERS AND SERVICEMEN:

May 27, 1953

### SERIES H MACHINES

**1-FAILURE OF KEYS ON THE KEYBOARD TO RESTORE** from machine operation or failure of a machine repeat function to release may be caused by worn roll AG (Plate 62-1 Keyboard Symbol List).

An improved hardened roll 202400A may be installed - without removing the key restoring assembly - by using shoulder stud 202503A.

**2-POSITIVE CARRIAGE CLOSING AND UNIFORM PRINTING** will be provided by installing springs D (1-203824 No.3) in place of bracket AJ and spring AK

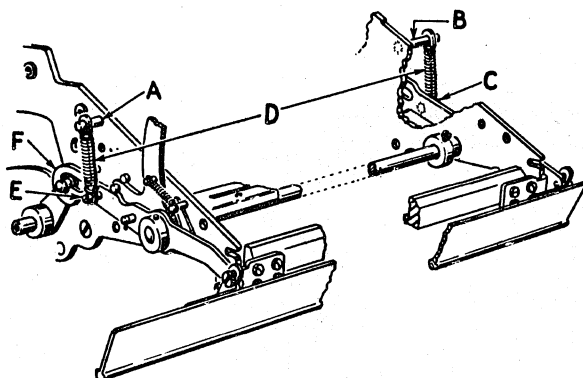
(Plate 54-2, Carriage Symbol List) on carriages having toggle opening construction (Plate 81-1) - except those having any of the following features: Bill Ejector, Pressure Roll Non-Opening on Left, or Pressure Roll Non-Opening on Right, Manual.

Spring stud B (12354 7/8) is riveted into the same hole from which rivet A1 (Plate 54-2) is taken when the old spring bracket AJ (Plate 54-2) is removed. One spring D is attached between studs B and C.

Spring stud A (203567 1/2) is riveted in the right side frame in an opposite position to stud B in the left side frame. On carriages constructed with the feature Pressure Roll Non-Opening on the Right, Carriage Controlled, threaded eccentric spring stud 203567 1/2 No.2 is required in position A.

Spring stud E (9061 3/4) may be used for Field replacement and retained in arm F with nut 46 1/4 as illustrated. The other spring D is attached between studs A and E as illustrated.

Make the above change on machines where printing results have been affected by failure of proper carriage closing.



### SERIES P400 MACHINES

**3-EXCESSIVE MACHINE SPEED** on the return stroke is prevented in machines beginning with serial number P39460D through the use of a larger diameter ball bearing 87900 (AC, Plate 129-1, Symbol List) in the dash pot plunger.

The larger ball bearing should be installed in Field machines on the first attention if correct machine speed does not result from proper crank speed adjustments. Care should be taken to preserve the seal of the dash pot cover during its removal and replacement.

Machine speeds for Classes 8, 9, and 10 as shown in the Speed Chart apply to Series P400 machines.

Crank speed - 144 to 147 strokes per minute. (Refer to Plate 132, Tests and Adjustments, Classes 8, 9, and 10 Instruction Book.)

Machine speed - 115 to 130 strokes per minute.

**C. A. BAKER**  
General Service Manager



# Burroughs

## MECANOGRAM

No. 473

MANAGERS AND SERVICEMEN:

May 20, 1953

### SERIES H MACHINES

**1-REPAIR SCREW 60578Z** is available for replacement of the welded stud in arm BP (Plate 74-5 Accumulation Symbol List) when the stud becomes broken on assembly 43-60000 Style 17 No.1 in No Space Stroke Total (Style 3) Bank Posting Machines, and Commercial Machines without H903 (Style 2) totals.

The counterbore in arm BP may be filled with washer 3819 1/8 and the repair screw retained with lock washer 1097 7/16 and nut 46.

For machines having Style 2 totals (requiring two ball bearing assemblies BQ) use assembly 43-60000 Style 17 No.2 when the stud breaks out of the arm.

**2-EXCESSIVE BURNING OF GOVERNOR POINTS P AND R** (Plate 4, Power Symbol List) in machines with 6A motors used on 110 volt circuits will be reduced by replacing resistors T of 65 ohm capacity with resistors 1B-200911 35 ohm (2 required).

Machines leaving the factory in the past have had their brush holders fully advanced. This practice has been discontinued and the instructions given in paragraphs 5, 6, and 7 of "Speed Regulation of Type 6A Motors" (Plate 4, Power Instruction Book) will be followed.

Where governor points are found burned, 35 ohm resistors should be installed and the machine adjusted as outlined in the instruction book.

**3-BREAKAGE OF EITHER STUD IN ASSEMBLY 1-101 Fte. 217 No.3 (Y1, Plate 34, Printing Symbol List)** will be reduced by the increased size of the rivet end of the studs.

Destroy all present stock and use the improved assemblies for replacement when breakage occurs.

### SERIES M MACHINES

**4-RETAINING LINK 1-709137 No.2 (B, Plate 10, Printing Symbol List)** now has a slot instead of a hole - where it is fastened to the carry section - to permit easier removal.

In Field machines, the hole may be changed to an open slot by removing stock from the lower edge of the hole to the edge of the lip.

**5-WEAR OF THE ROLL IN PART 1** (Plate 45, Accumulation Symbol List) will be reduced by installing an improved ring M that has all rough edges removed where it contacts the roll.

The improved ring may be obtained under the present symbol 709108 1/2 and should be installed in Field machines when encountering this trouble.

**6-EXTEND COLUMN CONTROL INDICATOR FOR MULTIPLIER FACTOR TO PRINT MECHANISM (C1, Plate 51, Keyboard Symbol List)** in currently manufactured machines includes a convenient knob on the left side for the operator to hold and make column selection easier.

The improved indicator 1-705158 1/2 should be installed in Field machines where the operation requires frequent column selection.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 472

MANAGERS AND SERVICEMEN:

May 15, 1953

### SERIES C MACHINES

1-STRIPPED TYPE 5 MOTOR 1Z-4567 NO.2 is available for replacement of Type 5 Motor 21-4567 No.2 (AN, Plate 25, Series C Symbol List) which is no longer available as a complete unit. Make the necessary change in the Symbol List.

End plate hangers 51103 No.2 are not available and should be transferred from the old motor to the new one. Other accessories such as switch assembly, governor, governor brush holder, etc., may also be transferred to the new motor if in serviceable condition.

### SERIES F MACHINES

2-KICKER ARM 1-408103A No.1 - announced in Mekanogram 450, Item 1 - requires spring 404809 for the pass-by pawl. The spring is not furnished as part of the kicker arm because in handling it might drop off or be damaged.

3-ADJUSTMENT OF LATCHES L AND AL (Plate 4, Symbol List) for non binding hold on shaft BP will be provided by using eccentric nut X10-98 in place of nut O.

This supplements Item 1, Mekanogram 465.

4-ROUNDED HEXAGON HEAD CASE SCREWS X60-53 are now available for Field use to replace screws M (Plate 60, Symbol List) to prevent possible snagging of the operators clothing.

5-BUMPER SPRING 58801 now replaces spring M (Plate 9, Symbol List). The new spring is stronger than the replacement mentioned in Mekanogram 433 and will assist in locating control pins over tappets. Correct Mekanogram 433 and Symbol List accordingly.

6-CARRIAGE DRIVE CLUTCH 1Z-408013 (Mekanogram 443, Item 1) is now equipped with chrome-plated steel disks to prevent rusting and provide improved clutch performance. Machines above F9412P are equipped with the new assemblies.

Branch stock should be examined. Steel disks showing rust should be replaced with new chrome disks 408186 and 408187.

C. A. BAKER  
General Service Manager

# GREAT LAKES



## DISPATCH

MECANOGRAMS

MAY 11, 1953

DISPATCH NO. 1

### SUPPLEMENTARY LIST OF MECANOGRAM ANNOUNCEMENTS OCTOBER 1, 1952 to MAY 15, 1953

The attached list of material represents improved parts and adjustments covered by Mecanograms 455 to 470 inclusive, also BH 4 to BH 8 inclusive. These improvements for the most part are the result of information given to the Field Research Department through the media of Mechanical Report, Form 980. Thank you for your splendid activity and clearly written reports.

The ease of reference by symbol, name and/or associated trouble may help you to secure more benefits from these mecanogram announcements.

You may find use for this list in one or more of the following ways:

1. Self education
2. Use of selected improved parts on regular inspections.
3. Planning and maintaining grip stock.
4. Guidance and assistance in analysis of problems.
5. Use as ready reference for parts ordering.
6. Reduce time in making permanent repairs.

Customers who receive good inspections, including new improved parts, make satisfied customers. They are more receptive to your supply sales message and are not frequently found on your delinquent account list.

PLAN YOUR WORK AND WORK YOUR PLAN

*H.O. Cordts*

H. O. Cordts  
Regional Service Representative  
Mechanical

# SERIES A

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
Kit 20 1/8	3/8" open end wrench	457-1
Kit 96B	Redesigned Punch set	458-1
Kit 96B-1 to 96B-12 Inclusive		
8 Penny nails	Series F Rubber Mount Shipping Boxes	459-1
20946	Stand cups, machine shifting shearing rubber feet	464-1
Kit 43B	Type stud extractor, light weight	466-1
Kit 19 #2	New thin open end wrench (45 & 46 nuts)	466-2
30032	Wood block brace for M.R.C. (shipping)	467-1

# SERIES B&H

Burning & pitting of contact points on double document relay AD, plate 14 (mimeo pages)	B&H 4-1
See also	B&H 8-1
Film drive roller Ax Plate 3 (mimeo. pages)	
counter bore enlarged	B&H 4-2
Light printing of endorser die	B&H 5-1
Endorser ink remove for shipping	B&H 5-2
Taping ink roller solenoid for shipping	B&H 5-3
Cleaning endorser printing die	B&H 5-4
Heavy duty preheat M.S. BH 70171	B&H 6-1
G.V.T. failure	B&H 6-2
Repair of Reader foot switches	B&H 6-3
Improper actuation of 8-16 MM. Microswitch assembly	B&H 6-4
Improved tandem Rheostat	B&H 7-1
Endorser installation note	B&H 8-2

# SERIES C

1A-56101 )	To correct over addition when a key is flicked	460-1
1A-56115A#1 )		
3480 1/ )		
69806 )		

# SERIES F

404265A	Hardened and smoothed DSR slide	456-2
407518A	Maximum ribbon life adjustment	460-2
1-404255A#1 )	Improved register total link for positive hold of acc. mesh. hook	464-2
200824 )		
X85-2 )	Stronger flexible joint spring and minus balance pawl spring	464-3
404805 )		
3480 1/2 )		

PART SYMBOLNAME OR ASSOCIATED TROUBLEMECANOGRAM NO.

1-403132 R&L	Improved control unit latches	465-1
10020 3/8 )	Lower keyboard plate wear around small motor bar	465-2
402106 #1 )		
1-96305 (2 req.))		
72826 )		
1A-409153A)	Improved restoration of register pinion assembly	465-3
1A-409016A)		
4551 1/2 )		
1A-404126 #1 or #2	Worn roll, failure to reset carries	469-1
4595 1/4 (.85 amp.)	Use with 150 Volt current (Fusetrons)	469-2
4595 1/4 (.60 amp.)	Use with 220 or 250 Volt current	
40996 (.95 amp.)	Use with 110 Volt current (no change)	
X 60-38	New screws for 3rd rail to prevent loss of Magazines	469-3
79598	New screw (Hex head) for ease of replacement of register tappet	469-4
71517	Replacement screw for carriage end panels	469-5
75608	New screw, easier motor bar assembly	469-6
409532A)		
409511 )	Overthrow of register pinion assembly	469-7
409314 )		
409145 )		

## SERIES H

1-202148	Positive release of sector bar lock mechanism	459-2
1A-204142	Copper plated, hardened toggle (C.F. Carries)	461-1
30032	Wood block brace for MRC (shipping)	467-1
1-201123#2	Heavy resistance to index of register total lever	467-2
273	Method for replacing type 618	467-3
1-223 1/8 )	Count in no count position in register Bank machines	470-1
264 3/8 )		
264 7/8 #2)		
47 )		
1097 7/8 )		

## SERIES M

21-704129#3	Hold of Mult. Plate Pawl	457-2
709108 3/4 )	Improved register trip escapement	457-3
1-709104 #2)		
3284 1/2 )		
20#154 )		
1-72188 etc.	Improved result key latches	457-4
503B Fte 717	Improved control bar screw	461-2
950 3/4Z )		
46 3/4 )	Screw for roll on segment gear	463-1
1097 7/16)		
1-75015A#2)	Improved tabulator shaft (loosening of studs)	463-2
1-75015B#2)		

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
1-70903.	Improved terminal block mounting	466-3
2-703216#15	Subtotal index cam	468-1
1-71373B	Ball bearing motor register return clutch	468-2
53801 #2)	100 pinion const. register restoring	468-3
700802 )	springs improved tension	
1A-703101#2 22" or 30"	Improved larger oval anchor studs	468-4

#### SERIES P

81555A	Improved clutch dog	457-5
84109B )		
1-84109A#1 )	Cipher stop adjustment maintained left	458-2
79582 )	side of side frame Cl. 9 Style 10	
49 3/4 )		
1-84109 1/4)		
1097 7/16	Opening lever cash drawers Styl. 13, 15 or 15A	459-3
909009 Sty. 13#2 (2 req.)	Improved spring anchor shift	461-3
21#20 (4 req.)	) (Lockups-wrong add) Pl400	
1-900105	Bending of register selection lever Pl400	461-4
1-83224#3 )		
11-83158 (3 7/8) #7 )	Improved spacing parts for	462-1
83883 )	Validators and Receipters	
1-83109 1/2 (3 7/8) #2)		
44808 )		
909104#6	Pl400 carry rack latch last col.	463-3
1A-900100)	Segment arm for field replacement	466-4
1A-909120)		
900900)	Reduction of noise Pl400	467-4
900553)		

#### ALL CLASSES

New parts numbering plan	455-1
New machine serial numbers	456-1

# Burroughs

## MECANOGRAM

No. 471

MANAGERS AND SERVICEMEN:

May 13, 1953

### SERIES F MACHINES

*1-FULL RESTORING OF ADDING RACKS BE* (Plate 28, Instruction Book) will be assured by applying the following tests and adjustments in sequence:

1. Studs AD should seat in the tooth spaces of lock plates Y - positions "0" through "9" - with a slight clearance between the top of the stud and the tooth space when located by movement of shaft AG. The clearance should be uniform in each position of racks Y.

To adjust, turn eccentrics N and/or AP.

2. With no keys depressed, manually operate the machine to approximately  $115^{\circ}$  on Series F100, F200, and F400 machines, or to  $122^{\circ}$  on Series F300 and F500 machines. In this position the "0" step of limit arm BG will be in front of the formed ear on adding rack BE. A slight contact should be evident when limit arm BG is actuated manually.

To adjust, weave the projection of adding rack BE to move the formed ear forward or rearward.

3. With no keys depressed, manually operate the machine to  $85^{\circ}$  on Series F100, F200, and F400 machines, or to  $92^{\circ}$  on Series F300 and F500 machines. The formed ear of adding rack BE should have been driven by shaft AG to be not more than .010" and not less than .005" from limiting on the "0" step of limit arm BG.

To adjust, position shaft AG by turning eccentrics Q (R and L).

4. With the machine tilted upright, index a clear plus total and advance the machine cycle to  $115^{\circ}$  on Series F100, F200, and F400 machines, or to  $122^{\circ}$  on Series F300 and F500 machines - at which position the long teeth of the accumulator wheels are limiting on total limit bail AQ (Plate 46). Using a .003" feeler gauge, you should feel equal resistance between studs AD (Plate 28) and the teeth of lock plates Y when you insert the gauge in front or in back of studs AD.

To adjust, move the accumulator section forward or rearward.

5. With the machine tilted upright, index a clear minus total and advance the machine cycle to  $115^{\circ}$  on Series F100, F200, and F400 machines, or to  $122^{\circ}$  on Series F300 and F500 machines - at which position the long teeth of the accumulator wheels are limiting on minus total limit bail G (Plate 42). Using a .003" feeler gauge, you should feel equal resistance between studs AD (Plate 28) and the teeth of lock plates Y when you insert the gauge in front or in back of studs AD.

(OVER)

To adjust, bend minus total limit bail G (Plate 42) toward or away from the long teeth of the accumulation wheels.

- Apply benders at the extreme ends of minus total limit bail G to avoid losing a parallel condition of the bail.
- Turn support screws 409507 in bearing H (Plate 40A, Symbol List) to maintain a parallel condition of the minus total limit bail.
- Overadjustment of the minus total limit bail may result in the short teeth of the accumulator wheels being limited by the bail.
- Overadjustment of the support screws in bearing H (Plate 40A) may result in hard shifting of the accumulator wheels from side to side.

**C. A. BAKER**  
General Service Manager

# Burroughs

## MECANOGRAM

No. 470

MANAGERS AND SERVICEMEN:

May 1, 1953

### SERIES H MACHINES

**1-AUTOMATIC COUNTING IN THE REGISTER** of a No Space Stroke Total Bank Posting Machine - in a normally "No Count" position - may be caused by failure of slide C (Plate 69-1, Accumulation Symbol List) to fully restore after a preceding count operation.

Lost restoring motion of the slide may be caused by distortion of the keyboard plates from combined thrust of all 680 springs as the springs are placed under tension with the machine normal.

Installation of new brace J prevents this distortion.

New parts required are brace J (1-223 1/8), eccentric screw G (264 3/8), eccentric screw I (264 7/8 No.2), nut F (47), and lock washer 1097 7/8.

The following procedure assures improved printing alignment, more uniform and stable positioning of accumulator parts, and full restoring of the Count Mechanism.

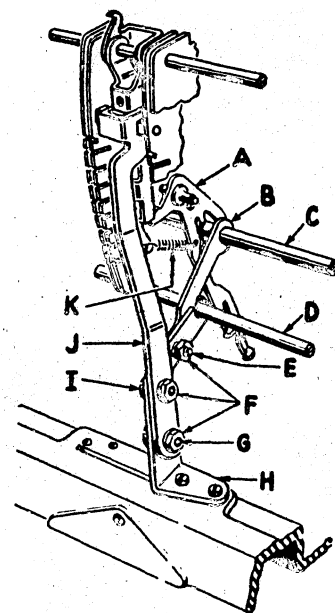
- a. Assemble brace H so that it fits up against the under side of shaft D without a bind.

To Adjust, remove brace H and shorten or lengthen it by bumping the forward or rearward edge.

Note: This is a basic factory adjustment and seldom requires attention except when it becomes necessary to install a new brace.

- b. With the handle at the first stop, release all adding racks.
- c. Trip off all carry pawls A except the one nearest brace H.
- d. Assemble brace B as shown, with its rear pocket over shaft C and its lower edge resting on shaft D.
- e. Assemble brace J as shown, with the trunnions at its upper end pocketed in the scoring holes of guides 210 and 211.
- f. Adjust lower eccentric screw G downward to remove all play from brace J without distorting the keyboard assembly downward. The results of installing new brace J depend on this adjustment.
- g. Adjust eccentric screws E and I to have minimum rearward movement of pawl A. This insures shaft C against bowing from the combined tensions of springs K.

The arrangement given in Mecanogram No. 425 will continue to be used for Commercial Machines.



C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 469

MANAGERS AND SERVICEMEN:

April 7, 1953

### SERIES F MACHINES

**1-FAILURE TO RESET CARRIES IN CROSSFOOTERS "A" OR "B"** may be caused by a worn roll on the forward arm of bell crank W or AB (Plate 39, Symbol List).

The rolls have had the hardening process changed to avoid wear. A new bell crank assembly 1A-404126 No.1 or No.2 should be installed when wear of a roll is found. Parts received prior to this announcement should be destroyed.

**2-BURNING OF FUSETRONS AS** (Plate 50, Symbol List) during normal machine operation will be reduced by using fusetron 4595 1/4 (.85 Amp) with 150 volts and fusetron 4595 1/4 (.60 Amp) with 220 or 250 volts. Fusetron 40996 (.95 Amp) remains unchanged for 110 volts. *One new part 50*

This cancels Item 2, Mekanogram 382.

**3-DISPLACEMENT OF MAGAZINES B** (Plate 4, Symbol List) in the control unit will be avoided by replacing screws CH with longer screws X60-38. The longer screws extend through to contact and support retaining strip BM.

Any panel that is to be shipped via public transportation must have the longer screws installed prior to shipment.

**4-REMOVAL AND REPLACEMENT OF REGISTER SELECTION TAPPET A** (Plate 40-5, Symbol List) will be made easier by replacing screw EF with hexagon-headed screw 79598. The new screw should be installed the first time it is necessary to remove tappet A.

**5-REMOVAL AND REPLACEMENT OF CARRIAGE END PANELS O AND AQ** (Plate 1, Symbol List) will be made easier by replacing screws BG (Plate 4) with larger headed screws 71517.

**6-MOTOR BAR SCREW 75608** replaces screw AP (Plate 56, Symbol List). The new screw has a longer threaded end and will facilitate assembly.

**7-OVERTHROW OF THE PINION ASSEMBLY** and interference of the pinions with aligning shaft AR (Plate 40-3, Symbol List) during register selection could be caused by play between register shift block Z and bracket AI.

Register shift block Z (409532A) is now drilled and tapped for setscrew 409511. The setscrew is turned in against bracket AI to reduce play between the register shift block and bracket and is held in place with lock nut 409314. A new blank AE (409145) with outline changed to clear the projecting end of the setscrew when the registers are shifted to number nine position, is also required.

This cancels Item 4, Mekanogram 464.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 468

MANAGERS AND SERVICEMEN:

March 19, 1953

### SERIES M MACHINES

**1-SUB-TOTAL INDEX CAM 2-703216 No.15** is now available for Series M200 machines containing carriage controlled power totals.

The new index cam has only one camming surface which is in the sub-total indexing line (Line 13 as shown for Series M200, Plate 26-2A, Carriage Symbol List).

The new index cam may be used to index the Sub-total Index Mechanism from the carriage at any given position thus permitting the operator to depress only the total or product key in this position to secure a manual sub-total or sub-product.

**2-MOTOR REGISTER RETURN CLUTCH ASSEMBLY 1-71373B (BJ, Plate 19-1, Power Symbol List)** now has ball bearings between the flange of the bronze bushing and the drum to eliminate friction at this point. This arrangement provides more accurate control of the drum by the spring-controlled pressure plate, thus assuring proper return of the register and still permitting the assembly to yield should the register section be prevented from restoring.

The complete improved assembly 1-71373B should be used for Field replacement.

This information supplements that contained in Items 2 and 3, Mecanograms 440 and 454, respectively.

**3-LOST CARRIES DURING ADDITION OR MACHINE LOCKED DURING REGISTER TOTAL OPERATIONS** - in machines containing 100 pinion register construction - may be caused by counterbalance springs P (Plate 8A, Accumulation Symbol List) being too strong. This condition causes a bounce of the register section as it meshes with the carry racks. Weaker spring 53801 No.2 is used on the right side of the register section and spring 700802 on the left side in currently manufactured machines to correct the condition.

The new springs should be used in Field machines when encountering the above condition.

**4-LOOSE CONDITION OF SELECTIVE COLUMN FORM HEADING HOLDER 1A-703101 No.2, 22" and 30" (AI, Plate 8, Carriage Symbol List)** caused by wear of the anchor brackets may be reduced by using an improved form heading holder which has larger anchor studs with oval heads.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 467

MANAGERS AND SERVICEMEN:

March 17, 1953

### SERIES H MACHINES

1-THE M.R.C. UNIT on Class 20 machines is now being protected during shipment by a wooden block 30032 which is placed between the top of the motor and the machine base. This block protects the M.R.C. adjustments by relieving the excessive strain which may be placed on the unit should the machine be jarred during shipment. Remove the block before operating the machine.

Install the block when re-shipping Class 20 machines in the Field; and place the block in the shipping box when returning the latter to the factory.

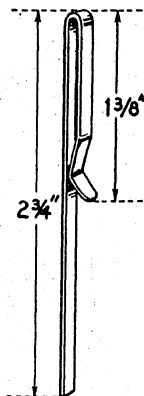
2-HEAVY RESISTANCE TO INDEXING OF THE REGISTER TOTAL LEVER ON NO SPACE STROKE TOTAL BANK MACHINES may be caused by overadjustment of lever B (Plate 88-1, Accumulation Symbol List) in order to get an interlocking of bars 101, 102, and 103 from the indexed lever A.

Stud G now has a groove milled lengthwise on its undersurface to prevent its camming by hammer head H.

Installation of a new rocker beam F (1-201123 No.2) will permit re-adjustment of lever B to a normal condition.

### 3-METHOD FOR REPLACING TYPE 618.

- (1) Bend a section of retaining strip 273 (AV, Plate 2, Keyboard Symbol List) as illustrated. (It may be stored in Kit 96B-3 for future use.)
- (2) Remove springs K and L (Plate 50, Printing Symbol List) from the type magazine.
- (3) Raise the sector.
- (4) Remove screw 652 7/8 No.2 from the center of the magazine.
- (5) Loosen screw I and insert the retaining strip between the type and the sector with the short formed portion looped over the outside of the magazine.
- (6) Remove screw I.
- (7) Remove the magazine; replace the type; and reassemble in reverse order.



See Mecanogram 300, Item 1, for other methods.

### SERIES P400 MACHINES

4-MACHINE OPERATING NOISE may be reduced by installing redesigned grommets 900900 and screws 900553 (M and R, Plate 125-4, Symbol List) which provide more cushion between the base and machine.

Machines above Serial No. P29600D have these new parts installed during manufacture. The new parts should be installed in all consignment machines and Field machines where a need is indicated.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 466

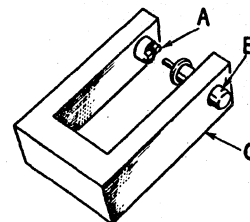
MANAGERS AND SERVICEMEN:

March 13, 1953

### SERIES A PRODUCTS

1-TYPE STUD EXTRACTOR C (Kit 43B) is now available for replacement of extractor pliers, Kit 43A (0, Plate 3, Tool Equipment Symbol List). The new extractor is made smaller and lighter to lighten the weight of the tool bag.

To remove a type stud with the new extractor, place anvil A over the stud in a manner similar to that of Kit 43A; then hold a bench block (X, Plate 23) against the right side of the extractor while tapping drift plunger B to drive out the stud.



2-A NEW THIN OPEN-END WRENCH, Kit 19 NO.2, is now available for use on 45 and 46 nuts.

### SERIES M MACHINES

3-TERMINAL BLOCK AE (PLATE 1, POWER SYMBOL LIST) is now mounted by the factory on Series M machines leaving the two upper holes without any wires and the next two holes with only one wire each. This arrangement provides for easier installation of wires when additional light features are added. The terminal block should be inverted on Field machines to obtain this arrangement when additional light features are installed.

### SERIES P400 MACHINES

4-SEGMENT ARM U (Plate 123-5) having studs L and S with the one flat surface is no longer available. For Field replacement use 1A-900100 having round studs in the place of flatted studs L and S. This replacement requires the installation of the redesigned listing pawls 1A-909120, similar to B and R.

Should it be necessary to replace the listing pawls only, pawls 1-909120 (B and R) are still available for use with the segment arm having flatted studs L and S.

Machines above serial number P29100D have the new segment arm and redesigned listing pawls incorporated during manufacture.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 465

MANAGERS AND SERVICEMEN:

February 4, 1953

### SERIES F MACHINES

1-CONTROL UNIT LATCHES L AND AL (Plate 4, Series F Symbol Book) have been changed in outline at their point of contact with shaft BP to hold the control panels tightly forward in the hooks of the carriage end plates. This will better maintain alignment of the projections of the skip and return disks and the sensing tappets and stabilize contact of the stop dogs on interlock B (Plate 57) and bumpers Y.

2-LOWER KEYBOARD PLATE WEAR around the small motor bars may be reduced by installing hardened blanks 10020 3/8 and 402106 No.1.

Blank 10020 3/8 is placed to the right of the No.1 motor bar between the motor bar keystem and the keyboard separator strip and is held in place by shaft AE (Plate 22, Symbol Book).

Blank 402106 No.1 is placed to the left of the small motor bar keystems on shafts AE and V and is held in place with two set collars 1-96305 placed to the left of blank 402106 No.1 on shafts AE and V.

The above parts in addition to a guide strip AC1 (402149) are now being installed at the factory.

Note: Because of interference between guide strip AC1 and the locked-on result key cover, the guide strip is not used on Styles F104 and F204 machines.

3-MOVEMENT OF THE REGISTER PINION ASSEMBLY to its No.1 (or normal) position may be improved by installing the following new parts:

Stronger spring 72826 (AP, Plate 40-1, Symbol List) used on hammer AW, in machines after Serial No. B301691, provides more force to drive register detent pawls AI and AJ from step plate AH.

Note: Check pawls AI and AJ for free movement in their slots and smooth contact surface with step plate AH.

Hammer 1A-409153A (AM, Plate 40-1) has stock removed from the upper surface of the right end of its rear arm so that the arm will contact detent pawl AJ before pawl AI to reduce possibility of the register failing to restore as follows:

If inside detent pawl AI is holding register 4, 6 or 8 in active position, the old style hammer arm may expend most of its force in driving pawl AI from the step. The register pinion assembly will start to restore and step 3, 5 or 7 may contact outer pawl AJ before it is moved far enough forward to clear the step. The register pinion assembly could then fail to restore since the hammer may not have enough remaining force to drive pawl AJ from the step.

Shaft 1A-409016A and screw 4551 1/2 are also required to install the new hammer.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 464

MANAGERS AND SERVICEMEN:

February 4, 1953

### SERIES A MACHINES

1-STAND CUPS 20946 R and L (D and L, Plate 7-1, Series A Symbol List) have been increased in depth from  $1/4"$  to  $11/32"$ . This increased cup depth prevents the machine from shifting and shearing off the rubber feet on the machine base.

### SERIES F MACHINES

2-POSITIVE HOLD OF THE ACCUMULATOR MESHING HOOK over the square stud of the subtract total control slide when indexing a register C total will be assured by using a No.5 control pin in register subtract lane 17- as announced in Item 2, Mecanogram 422 - and a new spring hookup.

Register "C" total link 1-404255A No.1 (BB, Plate 40-7, Series F Symbol Book) has a spring stud added to provide a direct pull of broken-joint spring 200824. The rear end of the new broken-joint spring is hooked to spring clip X85-2, which replaces clip O on bell crank AL.

3-PRINTING OF BLACK COMPLEMENTARY BALANCES FROM CROSSFOOTER "A" may be attributed to a combination of weak springs AE (Plate 44, Symbol Book) and a weak spring W (Plate 42). *See Memo 501*

Since only about ten degrees of time are available to lower pawl X (Plate 42) into the path of stud Z before minus balance slide AB is moved forward, any loss of time due to expansion of springs AE (Plate 44) - on the total or sub-total indexing links - or failure of pawl Y (Plate 42) to drop immediately will result in failure to shift the minus balance wheels into active position.

New spring 3480  $1/2$  on pawl X (Plate 42) and heavier spring 404805 (now has 27 coils) on total link AJ (Plate 44) and sub-total link AK should be installed at the first opportunity.

Note: Spring 404805 is also being used in place of spring S (Plate 43).

4-OVERTHROW OF THE PINION ASSEMBLY and interference of the pinions with aligning shaft AS (Plate 40-3, Symbol Book) during register selection could be caused by play between register shift block Z and bracket AI.

Register shift block Z (409532A) is now drilled and tapped for setscrew 409511. The setscrew is turned in against bracket AI to reduce play between the register shift block and bracket and is held in place with lock nut 409314. A new blank AE (409145) with outline changed to clear the projecting end of the setscrew when the registers are in the normal - number one - position, is also required.

*See 469*

C. A. BAKER  
General Service Manager

# Burroughs

# MECANOGRAM

No. 463

January 15, 1953

## MANAGERS AND SERVICEMEN:

### SERIES M MACHINES

*See 502*  
1-A HARDENED SHOULDER SCREW 950 3/4Z is now available for use in place of the hardened stud that supports the roll on all styles of segment gear L (Plate 26, Accumulation Symbol List).

Installation requires screw 950 3/4Z, nut 46 3/4, and washer 1097 7/16.

This information supplements Item 3, Mecanogram 440.

2-INCORRECT TABULATION caused by loosening of hardened studs in tabulator shafts 1-75015A No.2 (T, Plate 19, Carriage Symbol List) and 1-75015B No.2 (Q, Plate 19-2) should be eliminated by installing improved tabulator shafts that now have the studs riveted on.

Shaft 1-75015A No.2 is used in machines that require a clearance cut for escapement link M (Plate 15); and shaft 1-75015B No.2 is used in machines that do not require a clearance cut.

This information cancels Item 2, Mecanogram 377.

### SERIES P400 MACHINES

3-CARRY RACK LATCH 909104 No.6 (P, Plate 123-8 Symbol List) is used in the last adding column in Registers A and B of machines having less than thirteen columns accumulating capacity. This latch has a projection to raise automatic one bail P, thereby permitting one common bail to be used for any accumulating capacity.

The latch has on occasion been assembled in other than the last adding column. It is now copper-plated for easy identification.

### SERIES GENERAL MACHINES

4-Mecanograms 200A through 299 are no longer of current value and may be discarded.

C. A. BAKER  
General Service Manager

Carriage - Plate 13

# Burroughs

## M E C A N O G R A M

No. 462

January 14, 1953

### MANAGERS AND SERVICEMEN: SERIES P MACHINES

**1-ROLL PAPER FEED OF VALIDATING OR RECEIPTING MACHINES USING DOUBLE OR TRIPLE WOUND PAPER** may be improved by installing control arm A (1-83224 No.3) and release arm F (1-83109 1/2 (3-7/8) No.2).

Arm F releases the pressure rolls on all machine operations except when arm A is active from O.C.K. 6-0, which controls non-spacing. Non-opening of the pressure rolls from O.C.K. 6-0 prevents a shift of the paper which could result in a shadow imprint of the printed amount from the sequence operation of O.C.K. 6-0, O.C.K. 5-0, and/or O.C.K. 4-0.

Arm B, Item 3, Mecanogram 309, provides the same result for improved paper feed. However, it opens the pressure rolls on every machine operation; therefore, on machines with O.C.K. 6-0, to non-space, an unsatisfactory shadow imprint could result. Arm B, Mecanogram 309, will still be used on machines not containing O.C.K. 6-0 to non-space.

The following parts should be installed when erratic paper feed is experienced on Validating and Receipting Machines:

A	1-83224 No.3	Platen non-space control arm
D	11-83158 (3-7/8) No.7	Tear-off blade assembly
E	83883	Spring
F	1-83109 1/2 (3-7/8) No.2	Pressure roll release arm
G	44808	Spring

Part numbers of other parts shown in the illustration are as follows:

B	83213 1/2	Platen non-turn-back lock
C	1-83213A No.2	Platen detent with groove for lock B

The following tests and adjustments apply:

1. There should be approximately  $\frac{5}{32}$ " clearance between the foremost end of arm F and the carriage bottom plate with the machine handle held all the way forward.

To adjust, bend the rear right angle lip of arm F which contacts feed pawl M (Plate 1, Symbol list).

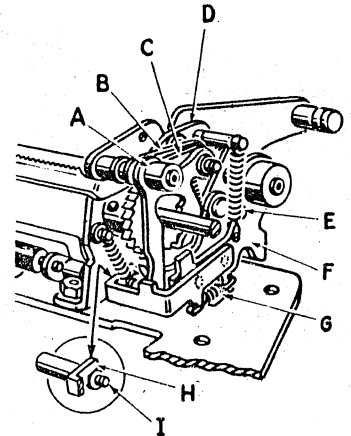
2. Projection H of arm F should have full hold on the end of pressure roll shaft I with the machine normal.

To adjust, bend the foremost "U" bend of arm F. Recheck for flush lateral hold on the large diameter of shaft I.

3. Projection H of arm F should have minimum clearance in front of shaft I with O.C.K. 6-0 depressed.

To adjust, peen the foremost finger of arm A near the top.

This item should be noted on Plate 3-1, Series P Symbol List.



C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 461

December 2, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

1-FAILURE OF TOGGLE 1A-204142 (Item 1, Mekanogram 452) to restore may be caused by a burred condition of the extended limit projection. Full restoration is imperative to avoid interference with crossfooter carries that may be set up on the next add or subtract machine operation.

Hardening of the extended limit projection has been changed to prevent wear. Toggle assemblies with the improved projection are copper plated temporarily for identification.

Replace any assembly at the first indication of wear.

#### SERIES M MACHINES

2-CONTROL BAR SCREW 503B Fte. 717 now replaces screws H (Plate 26-1, Carriage Symbol List). The head of the new screw is slotted so that it may be securely tightened with a new flat wrench 703108 which accompanies all currently manufactured machines.

#### SERIES P 400 MACHINES

3-NEW SPRING ANCHOR SHAFT 909009 Style 13 No.2 is now being used in place of shaft N (Plate 123-3, Symbol List).

The new shaft has grooves near each end to accommodate two retaining clips 21 No.20 that prevent dislodging the shaft during shipping or handling of the machine. Wrong addition or machine lockup may result when the shaft is dislodged. The new shaft should be installed in both registers A and B in all machines on the next attention.

4-BENDING OF REGISTER SELECTION LEVER, O.C.K. 60 (AF, Plate 100-2, Symbol List) - when caused by manually forcing the lever to the opposite register position between machine operations with the normalizing key, O.C.K. 7-0 released - may be prevented by installing improved lever shifter 1-900105 (K, Plate 100-3).

Improved shifter K has the outline of the pockets changed to permit roll F to ride out of the pockets if the lever is manually shifted as described above. Install the improved shifter on the next attention. At the same time, check the stud in lever AF (Plate 100-2) for full hold in the fork of shifter N.

Machines above serial number P19450D have received the improved shifter in their manufacture.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 460

November 10, 1952

### MANAGERS AND SERVICEMEN:

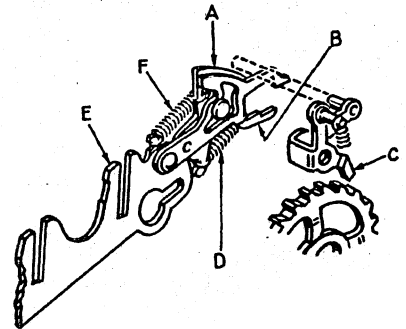
#### SERIES C MACHINES

✓ 1-OVER ADDITION resulting when a key is flicked and only partially depressed is caused by failure of the latch (M, Plate 4, Series C Symbol List) to remain locked on the tie strip. Should the drive pawl make contact on the high point of a tooth in the drive gear it would allow the latch (M, Plate 4) to raise prematurely and release the indexed key during the machine operation.

This condition may be overcome by replacing the indexing slide and drive pawl (C and P, Plate 4) with the following improved parts: drive pawl C (1A-56101), index slide E (1A-56115A No.1), springs F (3480 1/2) and D (69806).

The new index slide contains cam A which is riveted to latch B and held in its raised position by springs F and D. Cam A when depressed by actuation of the drive pawl, increases the spring tension on latch B sufficiently to hold the latter fully indexed on the tie strip regardless of the drive pawl's position on the drive gear teeth.

A longer stud has been added to the drive pawl to actuate the cam of the new index slide. Check for safe clearance between the stud in the new drive pawls and the motor brackets (AM, Plate 22) when installing.



#### SERIES F MACHINES

✓ 2-TO OBTAIN MAXIMUM RIBBON LIFE, the following test and adjustment should be carefully followed when installing ribbon guide post 407518A announced in Item 1, Mecanogram 413.

On a blank operation, advance the machine to 150°. In this position, 1/64" to 1/32" of ribbon should be visible above the type in the amount columns.

To adjust, turn the guide posts up or down and tighten the lock nuts.

Note: If the ribbon is set too high, the edge of the ribbon will curl; if set too low the edge of the ribbon may be cut and frayed.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 459

November 6, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES A MACHINES

*1-SERIES F RUBBER MOUNT SHIPPING BOXES* are being reinforced at various points on the cradle to reduce damage to carriages and control keys during shipment. The two plywood boards that support the rear crossarm are now bolted to the cradle in addition to being nailed; and corner braces L (Fig.13, Print 14-1/A) are attached with longer nails which are crimped at the ends to hold the braces rigid. Other points on the cradle are also reinforced.

These new reinforcements will be installed by the factory in Series F shipping boxes as they are returned from the Field.

Shipping boxes that do not contain the above reinforcements and are used to reship Series F machines should have extra nails (8 penny) placed in the lower rear portion of the plywood boards to help hold the crossarm more securely and reduce carriage damage.

Containers for ledger guides and panels in Series F Shipping Boxes, should not be pried loose. This damages boxes. Avoid damage by unscrewing wing nuts C (Fig.13) which have been provided for easy removal of the container cover and contents.

#### SERIES H MACHINES

✓ *2-RELEASE OF THE SECTOR BAR LOCK MECHANISM* (Plate 54-1, Accumulation Symbol List) has been made more positive by removal of .010" stock from the corner of the step on pawl P.

When pawl P fails to latch over stud O on depression of the total or sub-total keys, remove stock as described by stoning-or replace assembly G (1-202148) that has stock removed.

#### SERIES P MACHINES

✓ *3-OPENING LEVER G* (Plate 141, Series P Symbol List) on Style 13, 15 or 15A cash drawers may become inactive because of loosening of screw F.

A lock washer, 1097 7/16, should be placed under the head of screw F, on the next attention, to prevent its loosening.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 458

October 24, 1952

### MANAGERS AND SERVICEMEN: SERIES A MACHINES

**1-SERVICEMEN'S PUNCH SET** Kit 96B (N through W, Plate 2-1, Tool Equipment List) has been redesigned to increase its durability and adaptability. The improved tools are made of stronger material and the set includes two additional small punches that may be used on small pins in Series F machines. The new punches have a larger shank and cannot be used with the previous punch holder Kit 96A-1.

<u>Symbol</u>	<u>Description</u>
Kit 96B	Complete set, holder and punches, includes the following:
Kit 96B-1	Punch and drift holder 3 3/4" long, .128" opening.
Kit 96B-2	End cap for Kit 96B-1.
Kit 96B-3	Plastic vial with metal screw cap.
Kit 96B-4	Drift 1 17/32" long, tip .053" by 7/16" long.
Kit 96B-5	Drift 1 37/64" long, tip .072" by 7/16" long.
Kit 96B-6	Center punch 1 37/64" long, tip .093" by 11/16" long.
Kit 96B-7	Drift 1 9/16" long, tip .078" by 1/2" long.
Kit 96B-8	Drift 1 9/16" long, tip .096" by 11/16" long.
Kit 96B-9	Drift 1 1/2" long, tip .089" by 7/16" long.
Kit 96B-10	Drift 1 17/32" long, tip .106" by 1/4" long.
Kit 96B-11	Drift 1 33/64" long, tip .035" by 9/16" long.
Kit 96B-12	Drift 1 13/32" long, tip .028" by 7/32" long.

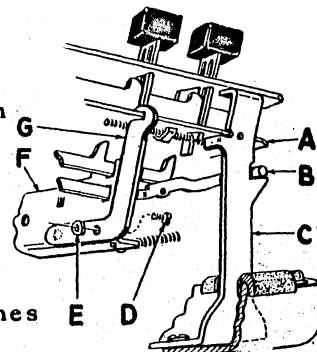
### SERIES P MACHINES

**2-CIPHER STOP ADJUSTMENT** in columns to the left of the machine side frame in Class 9 machines, Style 10, will be maintained by installing tie support G (1-84109 1/4) and redesigned keyboard brace C (84109B).

Tie support G provides a constant relation between the keyboard, which supports the cipher stops, and guide F, which carries the index strips.

The following parts are required for Field installation:

- |               |  |
|---------------|--|
| C 84109B      | - Keyboard support, regular                      |
| 1-84109A #1   | - Keyboard support for cash machines (not shown) |
| D 79582       | - Screw  |
| E 49 3/4      | - Nut  |
| G 1-84109 1/4 | - Tie support                                    |



Reference to this item should be made on Plate 40, Series P Symbol List.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 457

October 22, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES A MACHINES

1-A NEW 3/8" OPEN END WRENCH, Kit 20 1/8, is now available for use on 3/8" outside diameter nuts now being used in some Burroughs products.

#### SERIES M MACHINES

✓ 2-FAILURE OF MULTIPLIER PLATE PAWL AV (Plate 25-1, Keyboard Symbol List) to retain its hold over raise bail CJ may be caused by wear in the lower end of the slot of vertical link AQ. Wear at this point neutralizes the effect of adjusting eccentric AP (Plate 22-1, Accumulation Symbol List) for minimum vertical play of plate B with pawl C about to release from raise bar AM. Vertical link 21-704129 No.3 (AQ, Plate 25-1, Keyboard Symbol List) is now hardened to prevent wear.

✓ 3-REGISTER TRIP ESCAPEMENT has been improved by adding a chamfering operation to arms 709108 3/4 and 1-709104 No.2 (R and T, Plate 17-1 Accumulation Symbol List) at their points of contact with escapement rack E and by replacing spring Q on arm T with stronger spring 3284 1/2. Spring anchor 20 No.154 used with the new spring is placed over the collar to the left of spring anchor N for direct pull of arm T. Escapement arms R and T also receive improved hardening. *See memo 499*

The improved parts should be installed when register trip failure is experienced.

✓ 4-RESULT KEYS FAILING TO RELEASE may be due to a broken stud in the pass by cam on result latches AE, AN, etc., (Plate 6-1, Keyboard Symbol List).

These latches now contain studs made from improved material and with a new hardening process to reduce breakage.

#### SERIES P MACHINES

✓ 5-DRIVE CLUTCH NOISE OR FAILURE OF THE DRIVE TO OPERATE THE MACHINE could be caused by wear of clutch dog 81555A (AV, Plate 132). The clutch dog now receives improved hardening to reduce wear and should be installed in machines with the above condition. Machines above serial number P7818D are equipped with the improved clutch dog.

C. A. BAKER

General Service Manager

BURROUGHS ADDING MACHINE COMPANY

Mecanogram

Great Lakes Region  
October 1, 1952

All Service Personnel  
GREAT LAKES REGION

This list of Mecanogram announcements supplements  
our original list dated January 7, 1952.

The attached material covers releases from January 1,  
to October 1, 1952.

H. O. Cordts  
Regional Service Representative  
Mechanical

HOC:pl

# SERIES H

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
223 1/4 #3	Method for adjusting acc. brace	425-1
1-201107 #3	To insure full carriage opening	427-1
2-203230 BR #21	Intermediate form chute	427-2
200509 1/4	Eccentric stud, hardened	428-2
569 Fte. 203	(Spring anchors for MRC)	438-1
52 Fte. 86 Env 3246)	(Rack brackets)	438-1
1-202165 )	Limit for Keyboard Slide to prevent)	441-2
9251 13/16)	non index of mach. operation )	441-2
1-200297 3/4	Hardened guide. Lockkeys, carry losses	445-1
172 Fte. 217	Constant motor speed	445-2
Kit 164 7/8	Permatex sealer (oil seepage)	445-3
	Breakage of Hammer block control parts	446-1
1-205102 R #8	Guide roll idler for ribbon	448-1
	Parts for more positive adjustment of auto count	451-1
21-69000 Sty. 17	Breakage of limit extension	451-2
31Z - 69000		
1-202110 #2 etc.	Incorrect selection of symbols	451-3
1A-204142 etc.	Improved toggle (Loss of carry in C.F.)	452-1
	Loss of auto count. Improvement to back plate com. lever	452-2
Kit 124 1/2	Adjusting tool for register carry reset shaft	454-1
1A-200006 B Sty. 17	Improved against breakage	454-2

# SERIES C

1B-200911 (465 ohms)	Excessive Machine speed	437-1
2-16913 A	.030 added stock on cam of dial wheel	441-1
50555Z #1	For stripped threads in case	444-1

# SERIES M

702145 1/4 etc.	Interlock for palm tab	434-1
71334 #2	Improved roll for printing lever	436-1
71532 #2	Stud for above	436-1
1-704914 #1 & #6	Improved raise bars	436-2
704914 #3 & #4	Improved raise bars	436-2

1002

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
1A-703285A Sty. 12 thru 30	Improved wear	436-3
1-703285A Style 12 thru 30	Improved wear	436-3
79543 )	Prevent loosening end plate AM Plate 20	436-4
1097 5/8)	Series M, Keyboard, symbol list	436-4
703291A #1 etc.	Selective Co. Key, Improved	438-2
1-709100 )	Improved point off limit plate	439-1
709102 #1)	and bracket	439-1
11-707110 R #3 etc.	Improved side plates, faulty printing	439-2
1-707000 #1 etc.	Improved shafts, faulty printing	439-2
1-732114A	Improved	440-1
1-732114 B #2	"	440-1
763	Draw Cord Breakage, 100 pinion const.	440-2
76882 B	Hardened roll in segment gear	440-3
1-72101 1/2	Redesigned type spring	447-1
	Hardened pawl, cam shifter	447-1
	Twisted main operating shaft (D Section)	447-3
73216A #1 1/2, 2 1/2, 3 1/2	Improved	447-4
	Crossfooter pinion limit rack loosening	449-3
	Sub-total index key released by error	452-3
1B-74137 #1	Improved index arms (M32's)	452-4
1A-704137 1/2	" " "	452-4
1-705362 A etc.	Draw cord breakage 100 pinion const.	454-3

#### SERIES P

1-99165	For correct minus balance lock operation	430-1
82003 #3	Printing and adding nines	437-2
82003 Sty. 13 #3	" " " "	437-2
203508 #3 Use 46 Nut	Trapping ribbon feed arm	438-3
84550A etc.	Eccentric limit shaft to prevent over	
	carry	442-1
1-99179 1/4 B Style 13	Lockeep on listing (new limit)	445-4

#### SERIES F

1-406110	Improved adding racks	426-1
9580	Wrong addition, trapped carries	426-2
1-408183A etc.	Improved brake parts	428-1
403223	Carriage shims	431-1
403224	Gear box shims	431-1
409809	Flat spring on carry reset shaft	431-2
404811	Stronger spring for DSR #2	432-1
408804 A	Improved bumper spring	433-1
1A-403005 etc.	Improved carriage opening shaft	435-1
403156Z etc.	Repair parts for opening shaft	435-2

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM NO.</u>
1Z-408013	Improved angle clutch	443-1
	Cipher split control discs. (1708 ordering)	443-2
403226 etc.	Pass book support	443-2
	Improved locked result key cover parts	444-2
2Y - 403134	Added slots for braces	444-3
1-4523 B #2	Improved contact point	444-4
	Carriage rail adjustment method	449-1
1-408103A #1 etc.	Pass by pawl kicker arm	449-2
	Brake driving gear worn from 1-408559Z	450-1
409331	Register overthrow limit collar F200-F400	450-2
		450-3
84813	Insure full carriage opening (Motor runs)	453-1
404206 L & Z etc.	Improved interlock adjustments	453-2

#### SERIES B & H

See Mecanogram BH 1 for index of previous subjects

B & H 080556 etc.	Improved film take up	
B & H 080552	Longer wire for installation of lamp failure hold relay	B&H2-2
B & H 81519	Lamp failure relay. DC Recorders	B&H2-3
	Heat filter lens	B&H2-4
	Tandem Rheostat Installation procedure	B&H2-5
	Exposure Lamp reflection	B&H2-6
Kit 728	Soldering tip for trouble light	B&H3-1
B & H 81536	Improve clutch microswitch	B&H3-2
	Proper alignment of improved camera alarm contacts	B&H3-3
B & H 81432	Bristo screws for turret head	B&H3-4
	Recorder aperture opening guage	B&H3-5
B & H 22289	Improved camera film guard screw	B&H3-6
B & H 080637	Symbol correction gear guard assembly	B&H3-7
B & H 080539 etc.	Improved feeder drive gears	B&H3-8
B & H 080541 etc.		B&H3-8
B & H 70097	Screw for ground pig tail	B&H3-9
B & H 70148	Timer microswitch	B&H3-10

#### MISCELLANEOUS

3693 1/8 B	Wall Plugs	431-3
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# Burroughs

## MECANOGRAM

No. 456  
Sept. 19, 1952

### MANAGERS AND SERVICEMEN:

#### ALL CLASSES

*1-NEW MACHINE SERIAL NUMBERS* have been assigned to all machines manufactured in the various factories. The new numbers contain a prefixed letter indicating the class of machine and a suffixed letter indicating the location of the factory where the machine was manufactured.

Example: Serial Number M1005D indicates the following:

1. Prefix letter M indicates a Series M machine.
2. Suffix letter D indicates the machine was manufactured at Detroit.

Following is a list of prefix letters assigned to machine classification and suffix letters assigned to factory location.

#### Prefix Machine Classification

H - Class 2, 20 and 30  
C - Class 5  
M - Series M  
P - Class 8, 9 and 10  
F - Series F  
V - Series 4 and 41  
K - Ticketeer

#### Suffix Assembly Plant

C - Canada (Windsor)  
D - Detroit  
E - England (Nottingham)  
F - France (Pantin)  
P - Plymouth  
S - Scotland (Strathleven)

#### SERIES F MACHINES

*2-FAILURE OF THE CARRIAGE TO RETURN IN LANE 5 FROM MOTOR BAR NO.2 INDEX* may be corrected by installing a new disabling space and return control slide 404265A (AQ, Plate 18-1, Symbol List).

Slide AQ now has a smoother surface and deeper hardening to reduce wear at its point of contact with the ear of arm AO.

Make this change on the next attention if the machine set up calls for a lane 5 return and a lane 15 (DSR - Style 2) control in the same carriage position.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 455

Sept. 17, 1952

### MANAGERS AND SERVICEMEN:

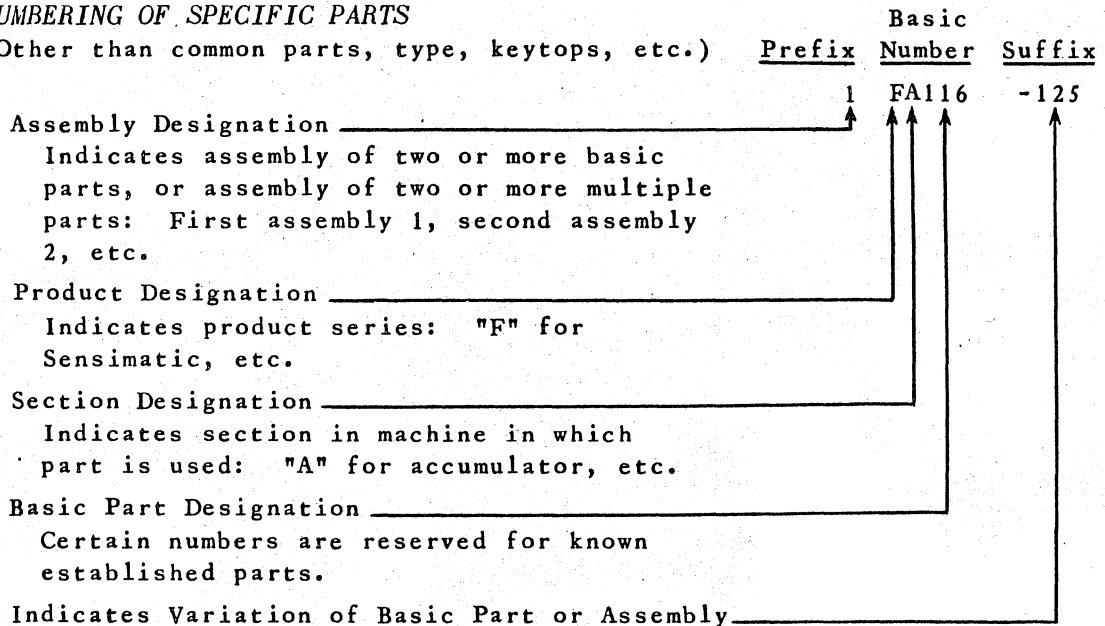
#### ALL CLASSES

A NEW PARTS NUMBERING PLAN has been adopted and will eventually be applied to most current Burroughs products.

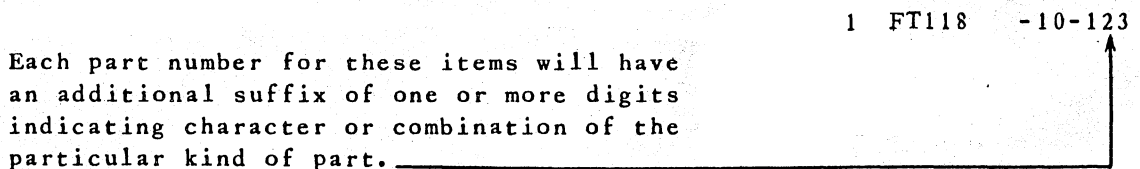
Common parts such as washers, clips, bearings, etc., and parts for Series K (Ticketeer) machines are now being symbolized under the new plan. The following chart explains the new numbering plan:

#### NUMBERING OF SPECIFIC PARTS

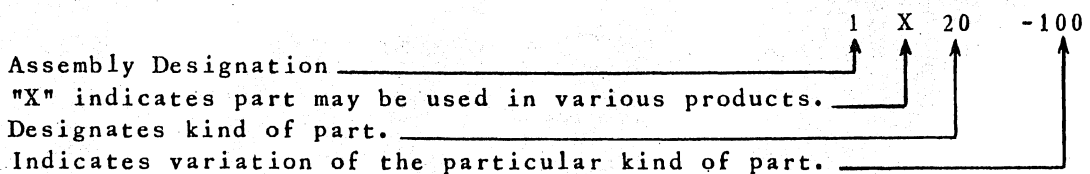
(Other than common parts, type, keytops, etc.)



#### NUMBERING OF TYPE, KEYTOPS, LOCKS



#### NUMBERING OF COMMON PARTS



C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 454

Sept. 9, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

**1-ADJUSTMENTS FOR THE REGISTER CARRY RESET SHAFT** in currently manufactured machines have been changed to increase the tolerance between its release and non-release limits.

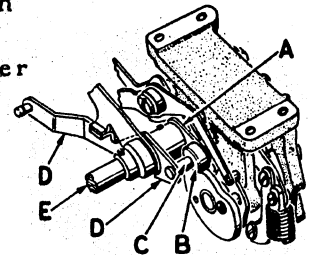
The test gauge, Kit 124 1/2A (A, Plate 11, Tool Equipment Symbol List) has been altered to provide this increased tolerance. The thin end of the gauge has been changed from .025" to .015" and the thick end remains the same, .050". All gauges that have release and non-release limits of .025" and .050" should be destroyed.

This cancels Item 1, Mekanogram No. 295.

**2-FAILURE OF DRIVING POWER FOR AUTOMATIC CROSSFOOTER TOTALS AND PRINTING CONTROL MECHANISMS** may be caused by breakage of arm A which supports ball bearing roller B (K, Plate 81-1, Carriage Symbol Book).

Arm D has been extended toward the front to provide additional support of shaft C to prevent breakage of arm A.

When breakage of arm A occurs, install improved shaft assembly E (1A-200006B Style 17).



#### SERIES M MACHINES

**3-DRAW CORD BREAKAGE IN 100 PINION CONSTRUCTION** register return mechanism will be reduced by the following additional changes made in parts:

Drum 1-705362A should be used to replace drum CH (Plate 19-1, Power Symbol List) in all machines containing the above construction. The new drum has one centrally located slot into which both cords N and CF are fastened. This arrangement reduces the possibility of the cords rubbing each other and wearing.

The flanges on the drum are higher to better retain the cords on the drum.

Installation of the improved drum also requires installation of new cord guide AE (709274 3/4A No. 3).

**THIS INFORMATION SUPPLEMENTS THAT CONTAINED IN ITEM 2, MECANOGRAM 440.**

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 453

Sept. 8, 1952

### MANAGERS AND SERVICEMEN: SERIES F MACHINES

*See Mee 486*

1-A CONTINUOUS RUNNING MOTOR and failure to trip the drive after a carriage opening operation may be prevented by installing weaker cushion spring 84813 (BI, Plate 19, Symbol List). The weaker spring provides for a later release of the clutch members and insures positioning of arm BN in the pocket of the clutch drum BK.

The weaker spring, which is now being used in currently manufactured machines, should be installed in Field machines when the gear box is removed for replacement of other parts.

*See Mee 486 + 543*

2-FASTER ACTION OF SECONDARY INTERLOCK K (Plate 57, Symbol List) to prevent machine operation when sensing pins are not aligned with tappets as the stop bumpers are spread because of carriage overthrow will be obtained by making the following changes in parts and adjustments:

Use stronger spring 12085 1/2 in place of spring M (Plate 57, Symbol List).

Use smaller diameter screw 401509A in place of screw N to reduce clearance between interlock K and clutch release arm L.

Install spring 2887 1/2 in place of spring P as announced in Mecanogram 398, Item 4.

Use brace 404206L (404206Z for machines with old style cases) over the end of shaft D (Plate 56) which carries interlock K (Plate 57) to stabilize the end of the shaft and maintain the adjusted passing clearance between the step of interlock K and the formed ear of arm L.

Balance the settings of eccentrics AO (Plate 9) and AL (Plate 10) - in clutch release slides AV (Plate 9) and AM (Plate 10) on bumpers M and O - and eccentric U (Plate 57) for simultaneous contact of the bumpers and lever T on the stud in lever A.

Bend the upward projection of interlock K away from the cross member of the machine frame so that it does not limit on the cross member or adjust the setscrew (contained in newer machines) when making the following adjustments:

Bend the rearward projection of lever R to provide not more than .010" passing clearance between the formed ear of arm G and the rearward edge of interlock E.

Bend the formed ear of interlock K at its point of contact with screw N for .010" to .015" passing clearance between the formed ear of arm L and the step of interlock K as the drive is tripped.

Bend the upward projection of interlock K toward the cross member of the frame for .010" to .015" clearance with the cross member.

- Notes:
- (1) The function of the upward projection of interlock K is to prevent excessive overthrow of the interlock only and should not limit against the cross member as the drive is tripped.
  - (2) Check the above three adjustments as they are made by slowly lowering lever R to its normal position.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 452

August 22, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

*See 461*  
**1-LOSS OF A CARRY IN THE CROSSFOOTER**, resulting from toggle BK (Plate 43-1, Accumulation Symbol List) being locked past center and failing to restore between machine operations, may now be prevented by installing toggle 1A-204142 in place of toggle BK.

The new toggle has an extended limit projection on its upper portion to prevent its being locked beyond center.

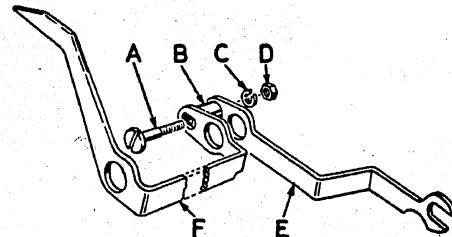
Installation of the new toggle requires hardened collar 204327Z on the hub of latch BM. And depending upon the side frame construction, space washer 12121 (thick) or 12026 3/8 (thin) should be used to align the hardened collar with the limit projection.

Washer 200204 is required on screw B (Item 1, Mecanogram 352).

Currently manufactured machines contain hardened collar 304 Fte. 217 instead of 204327Z.

*69-1  
acc*  
**2-LOSS OF THE AUTOMATIC COUNT**-in Styles 301707 and 261709 machines-due to loosening of lever F has prompted alteration of hub B (by drilling the hole of the hub all the way through) so screw A (52519), washer C (1097 3/4), and nut D (46) may be used to more securely hold the levers in position.

*82  
corr*  
When difficulty is experienced in maintaining adjustment of the levers in earlier machines, the same result may be secured by drilling through hub B, using a No. 29 drill.



#### SERIES M MACHINES

**3-SUB-TOTAL INDEX KEY DEPRESSION** is normalized by error key in all currently manufactured Series M800 machines.

Rocker arm 72293 No. 2 (X, Plate 37, Keyboard Symbol List) has an added projection that extends under the forward horizontal part of sub-total index key result linkage CK (Plate 40A). When the rocker arm is actuated by the error key, the added projection lifts the forward end of the result linkage permitting the stud in part AR to reposition under the result linkage.

The sub-total index key release by the error key may be added to Series M800 machines in the Field by installing new rocker arm 72293 No. 2.

*CP*  
**4-INDEX ARMS** 1B-74137 No. 1 and 1A-704137 1/2 (L, Plate 23, and AP, Plate 22-3, Accumulation Symbol List) are now grooved at their point of contact with arm AY (Plate 23) to insure safe hold during multiplying operations thereby preventing wrong multiplication and bending of the index arms.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 451

August 18, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

**1-MORE POSITIVE ADJUSTMENT OF THE AUTOMATIC COUNT MECHANISM** (Plate 69-1, Accumulation Symbol List) and more assurance of free action of carry reset shaft BH (Plate 43-1) have been provided by redimensioning parts and relocating the spring anchorage. The new parts should be installed at the next attention if either of the foregoing conditions has been difficult to obtain.

Bell crank 1-202164 (U, Plate 69-1) has a spring stud added to its upper arm. Spring 202802 is used instead of spring V from the new stud to spring anchor 20 No. 85 over shaft CI.

Restoring bail 1-617 Style 17 No. 2 (BB, Plate 69-1) has been redimensioned and its limit plate BU relocated to provide more definite positioning of detent BE.

Use the adjustments given in Plate 69-1, Accumulation Instruction Book.

*See 495*  
**2-BREAKAGE OF THE LIMIT EXTENSION OF ARM AR** (Plate 43, Accumulation Symbol List) allows enough excessive movement of the accumulator assembly to trip off carry pawls in one or more columns and results in wrong addition.

The accumulator framework is now constructed with an additional limit in the center section (four in all) to reduce breakage.

When breakage occurs a new style assembly may be obtained under symbol 21-69000 Style 17 for No Space Stroke Total Bank Machines or 31Z-69000 (specify Machine Serial Number) for other styles.

**3-INCORRECT SELECTION OF SYMBOLS** resulting from wear of the enclosed cam slot in arm 1-202110 No. 2, 1-202110 No. 4 or 1-202110 No. 3 Env. 1926 (AI, Plate 8-1, Printing Symbol List) may be eliminated by installing a new part that has been hardened to prevent wear.

Shoulder screw 259 1/2 and nut 46 may be used in place of rivet AK, except on machines having the feature "Characters Print From Symbol Sector" which requires eccentric screw 202530.

C. A. BAKER  
General Service Manager

*Loring*

# Burroughs

## M E C A N O G R A M

No. 450

August 7, 1952

*404809 registered  
Nov 172*

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

**1-SKIPPING OF 5/8" CARRIAGE STOP POSITIONS** may be corrected by installing the following improved parts and making the following changes:

Kicker arm 1-408103A #1, (D, Plate 9, Symbol List) includes a pass-by pawl to gain approximately 15° of machine cycle time for restoring clutch release pawls AQ (Plate 9) and AS (Plate 10) under their eccentrics before the following stop contacts the bumper;

Springs 409802 - installed between the studs in new bell cranks 1-408115A (BN, Plate 9) and 1-408114A (BI, Plate 10) and shaft J (Plate 8) using clips 20 No. 86A - provide a faster restoring action of shaft assemblies AY (Plate 9) and AX (Plate 10);

Spring 84813 - hooked rearward and downward to the guide post for slide AJ, using clip 20 No. 73A - replaces spring T (Plate 9) on brake latch release slide AJ.

The improved kicker arm should be installed at the first opportunity on all machines having 5/8" stop positions in their set up.

In the majority of cases satisfactory results may be obtained by installing only the improved kicker arm.

*See 480*  
**2-A HARDENED SURFACE FOR THE BRAKE DRIVING GEAR OF RETURN CLUTCH ASSEMBLY** BL (Plate 9, Symbol List) may be provided by placing a carriage drive clutch disk P (Plate 2) between eccentric hold down cam 1-408559Z (Mecanogram 420, Item 1) and the gear.

A clutch disk should be installed on the next attention to prevent wear of gears AA and AC (Plate 2).

**3-REGISTER OVERTHROW LIMIT COLLAR 409331** is now being used in Series F200 and F400 machines to prevent the pinion assembly from failing to restore because of cramping of support bracket L (Plate 40-3, Symbol List) as register No. 4 is selected.

The collar should be installed at the first opportunity on the left end of shaft AS between block Z and plate AE with the counterbored end over the projecting threads of sleeve K.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 449

July 31, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

**1-SWITCH POINTS** 1-4523B No.2 (AV, Plate 50, Series F Symbol List) have a clearance cut added to prevent limiting on shaft E with the points closed.

When installing new points the following adjustments should be made:

Arm A should be bent toward its normal limit finger on plastic terminal plate N to provide normal clearance of  $1/32"$  between the points.

Note: The normal limit finger should be straight since bending the limit finger rearward would result in insufficient closing action of the points from the carriage tabulation and return clutches.

Post F should be rotated to increase or decrease the tension of the spring on the point so that with the motor standing upright on the twirler, the switch points will fully close with the weight of 6 carriage clutch driving disks (408187) and remain open with 2 disks placed over arm A.

**2-FREE RUNNING CARRIAGES** on Series F machines may be assured by making the following adjustments:

Clean and oil the raceways with Kit 131 machine oil.

Loosen screws in tie strips AH. (Plate 1, Symbol List).

Loosen the screws in front rail AM just enough for rail to be moved.

With the carriage in a central position, move the front rail rearward as far as possible to remove all clearance from the bearings.

Loosen setscrews U; adjust screws T to  $.003"$  clearance with the front rail (use Kit 124  $3/4$  feeler gauge) and retighten setscrews U.

Move the rail forward firmly against adjustment screws T and retighten the screws in the rail.

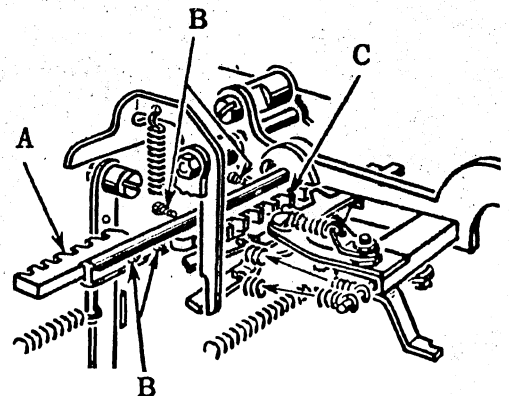
Retighten screws in tie strips AH.

The above adjustments should also be checked as a preliminary step to any tests and/or adjustments on the carriage brake or the carriage friction drive assemblies.

#### SERIES M MACHINES

**3-CROSSFOOTER PINION LIMIT RACKS A AND C** in currently manufactured machines are attached with two screws B in place of one to insure permanent tightness.

In machines of earlier construction when difficulty is experienced in maintaining tightness of racks A and C, a new cross-footer assembly may be installed.



C. A. BAKER

General Service Manager

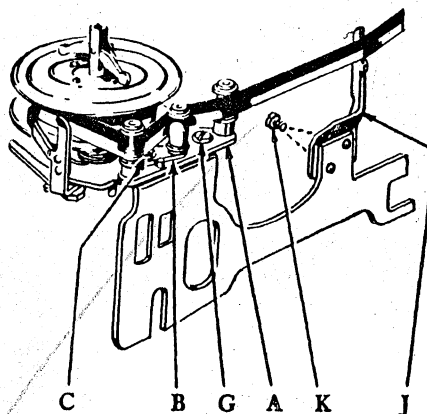
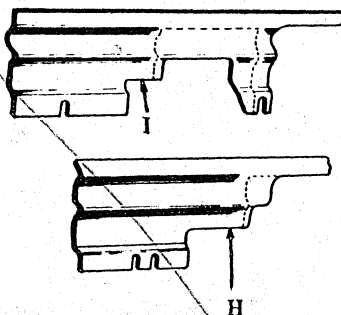
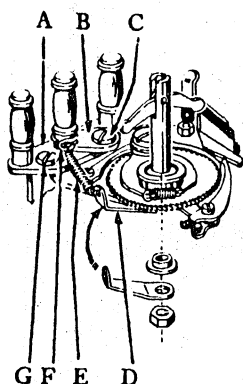
# Burroughs

## M E C A N O G R A M

No. 448

July 18, 1952

### MANAGERS AND SERVICEMEN:



### SERIES H MACHINES

1-FAULTY PRINTING ALIGNMENT, WRONG ADDITION AND MACHINE LOCK-UPS resulting from type catching on slack ribbon during raising and lowering of sectors may be reduced in machines containing the Crossfeed Ribbon Mechanisms shown in Plates 38 and 38-1, Printing Symbol List.

New idler roll B along with guide roll assembly A holds the ribbon taut through spring E and assures proper clearance between the type and the ribbon at all times.

Parts required are guide roll assembly A (1-205102R No.8), idler roll assembly B (1-205102 3/4), shoulder screw C (99579), anchor D (20 No.101), spring E (3480 1/2), anchor F (20 No.85), guide J (205118 1/2 AR No.1) and two screws K (74533). In addition, for the mechanism shown in Plate 38, use screw 3256 1/16 and nut 46 1/4 in place of screw G. Guide J cannot be used on slide plate (B, Plate 38).

Before installing the parts in the mechanism shown in Plate 38-1, remove brackets (F and D, Plate 38-1), and trim line finder H or I within the dotted line, as illustrated.

Before installing the parts in the mechanism shown in Plate 38, remove guide (D, Plate 38) and roll (AF, Plate 38) and its post from the right end of slide plate (B, Plate 38) and trim line finder H or I within the dotted lines, as illustrated.

After the new parts are installed, a new ribbon installation guide (Form 3080) should be glued to the under side of the ribbon cover (M, Plate 30, Power Symbol List). Some machines containing the new construction still have the earlier installation guide. Where this condition is apparent, a new guide should be glued in place of the old one.

C. A. BAKER

General Service Manager

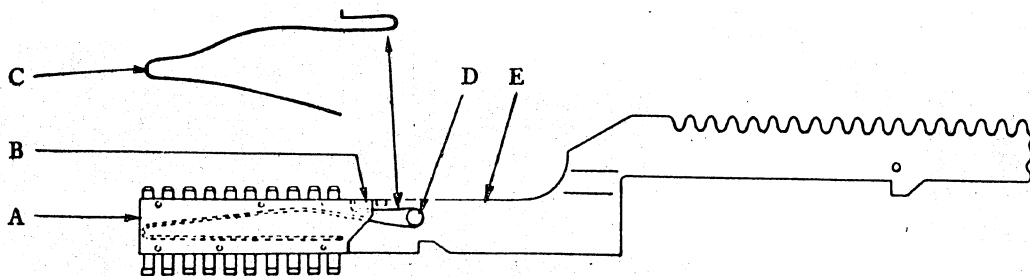
# Burroughs

## MECANOGRAM

No. 447

July 17, 1952

### MANAGERS AND SERVICEMEN:



### SERIES M MACHINES

**1-REDESIGNED TYPE SPRINGS** are being used in currently manufactured machines. The new type spring arrangement consists of a new spring, adding rack, and magazine.

Spring C (76882B) has been redesigned to reduce breakage.

Adding racks E (76111 and 706111 all Nos.) now contain stud D which serves as an anchor for the new spring.

Magazine A (76211) has additional stock removed from cutout B to eliminate twisting of the type spring when assembled in the magazine.

Former style spring 76882A may, in an emergency, be used in the new style adding rack. The former style spring may be installed by threading it through the front of the magazine and on top of stud D, hooking the formed lip into the slot of the magazine from the top.

**2-NON-ADDING OF PARTIAL PRODUCTS OR COMPLEMENTS IN THE CROSSFOOTER** may be caused by worn pass-by pawl AG (Plate 25, Accumulation Symbol List). Wear of the pass-by pawl may result in the twin cams failing to shift completely to the crossfooter add position of shaft U (Plate 21, Keyboard Symbol List).

Cam shifter 1-72101 1/2 with an improved hardened pawl should be used for replacement at the first indication of wear.

**3-CROSSFOOTER AND REGISTER SECTIONS FAILING TO MESH PROPERLY WITH ADDING RACKS** may be caused by twisted main operating shaft P (Plate 13, Power Symbol List). An improved main operating shaft (all styles) is now made of a stress proof steel to eliminate twisting and may be identified by a groove around each end.

The improved shaft should be used for replacement when the above condition is encountered in Field machines.

**4-CONTROL RAILS 73216A NOS. 1 1/2, 2 1/2, AND 3 1/2** are now used in place of line 2 control rails 73216 Nos. 1, 2, and 3 (Plate 26, Carriage Symbol List) where there is room on the control bar for only one narrow bracket AK (Plate 26-1). The new rails contain an elongated embossment that limits on the upper rear edge of the bracket to prevent the rail from tilting.

The rails are assembled to the bracket with screw 703592 and nut 49 1/8, with the nut placed inside the bracket.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 446

July 1, 1952

### MANAGERS AND SERVICEMEN: SERIES H MACHINES

**1-BREAKAGE OF HAMMER BLOCK CONTROL PARTS** - particularly teeth on cam-shaft M (Plate 6, Printing Symbol List), rack B (Plate 6-1), and bail C - is traceable to severe action occurring when the Hammer Block Mechanism returns from a No.1 control roll position.

When roll K (Plate 81-1, Carriage Symbol List) leaves the high dwell of cam X, during a return stroke, tension of spring M (Plate 6-1, Printing) causes screw O to strike sharply against the upper end of the slot in turnbuckle N. Shock of the blow travels through rod R, bail C, and rack B to the hammer block cam shaft and may result in breakage of parts when repeated often enough.

The following changes have been made to reduce breakage and should be applied to machines that have the above conditions: The slot in turnbuckle N (200236 1/2) is lengthened and rod R (200700) contains more threads to permit correct adjusting. Racks B (1- or 21-10720 No.1) have stock removed from the forward end of the rear slot to assure limiting of the high step of bail C on the lip of lever E instead of in the slot on rack B when a No.1 roll is positioned on lever F. Lighter spring 12386 replaces spring M. Eccentric 200340 1/2 and screw 203524 No.2 replace screw and collar D.

Make the following adjustments when installing the new parts:

All parts referred to may be found in Plate 6-1, Printing Symbol List.

- a. With no roll on lever F, latch E should restore to a flush position without binding against the forward edge of the lower step of bail C. Lever F should clear the space collars on the control roll hangers that do not have hammer block rolls active.

To adjust, turn eccentric 200340 1/2.

- b. Latch E should have flush hold on its respective step of bail C when indexed from each size of control roll.

To adjust, raise or lower the rearward arm of lever F.

- c. With the machine normal, the shoulder of screw O should have slight clearance of the lower end of the slot in turnbuckle N.

To adjust, turn the turnbuckle until the screw just fits in the lower end of the slot. Then turn the turnbuckle back one turn and tighten the locknut.

- d. With bail C at the high point of its arc of travel, it should not bind against the underside of stud A.

To lower the upper arm of bail C, increase the upper offset.

(Do not bend the arm at the top).

NOTE: The upper fork of the bail should have a full hold on stud A and align freely with it.

This announcement cancels Item 1, Mekanogram 424.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 445

June 30, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

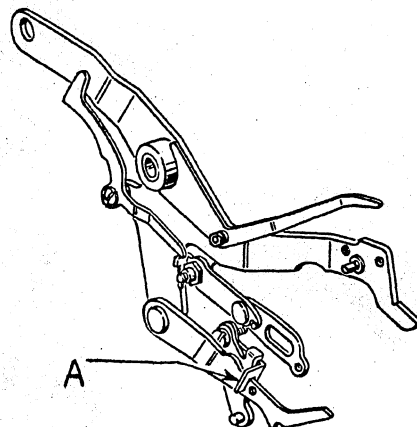
**1-MACHINE LOCK UPS AND/OR LOSS OF CARRIES IN THE CROSSFOOTER** may be caused by wear of guide A (1-200297 3/4) for the pawl of driving lever (CA, Plate 43-1, Accumulation). The guide is now hardened and should be replaced at the first indication of wear.

**2-MAINTAINING CONSTANT MOTOR SPEED AND/OR VERTICAL PRINTING ALIGNMENT** (from the Single Stroke Multiple Print function) depends greatly on uniform functioning of centrifugal assembly AH (Plate 4, Power Symbol List) of the Speed Control Mechanism.

If you have machines giving this trouble, replace the two washers located between assembly AH and retainer AJ with one thin washer 172 Ftc. 217. This permits assembly AH to sit deeper over pin BG and be less inclined to wobble. Then readjust screw AD for proper end clearance of pin BH.

Make this change on the next attention.

**3-IF OIL SEEPAGE** should occur between the splash pan (AR, Plate 4, Series H, Power Symbol List, or AY, Plate 3, Series M, Power Symbol List) and the drive housing, eliminate it by applying a thin layer of Permatex Sealer No.2 (Kit 164 7/8) on both sides of the gasket.



#### SERIES P MACHINES

**4-WEAR OF ROCKER SHAFT Q** (Plate 112-2) at point of contact with limit N may result in machine lock on listing operations.

Wear at this point may prevent limit N from contacting stud I as the adding wheels move into mesh with the adding racks. Failure of limit N to contact stud I allows it to block the total stop bail which will lock the machine when the wide tooth of the adding wheel cams the carry pawl.

A new limit 1-99179 1/4B Style 13 with a right angle ear added at its point of contact with rocker shaft Q should be installed when wear is detected. Installation of a new rocker shaft assembly is not required.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 444

June 25, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES C MACHINES

1-REPAIR POSTS 50555Z NO.1 which have a larger thread (7/32 x 32) are now available for replacement of retaining posts AG (Plate 29, Series C Symbol List) when threads in plastic cases for Series C machines become stripped.

#### SERIES F MACHINES

2-PASSBOOK SUPPORT 403226 is now available to provide more uniform spacing of passbook and prevent the book from catching during carriage movement.

The following parts are required for installation:

<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
1	2-403117 (15) No.2	Paper shield with passbook support.
2	403151A	Brackets for 1-403117 (15) No.2 on carriage casting. These replace the support brackets for bail BU Plate 19.
2	403590	Screws to hold the 1-403117 (15) No.2 to the 403151A brackets. Use 22 #5 speed nuts.

The support plate should be installed on field machines where spacing trouble or tearing of passbooks is experienced.

3-TO PREVENT REMOVAL OF RESULT KEY COVER D (Plate 23, Symbol List) without using the key, the following improved parts should be installed:

Brackets B (402110 No.1) and K (402110 No.2) - which are now made of heavier stock and are changed in outline to prevent rearward movement of the cover;

Latch H (402111) - which is lengthened to provide more hold under bracket K;

Washer G (402125) - which is redesigned to provide an adjustable normal limit for cylinder I.

These improved parts should be installed in all Pass Book Machines at the earliest opportunity.

4-SENSIMATIC CONTROL UNIT PANELS AB (Plate 4, Symbol List) now have 21 slots (15") and 24 slots (18") to permit variable location of support braces W and H (Plate 4). When placing the braces on the skip and stop shafts, not more than 9" of the shafts should be unsupported.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 443

June 24, 1952

### MANAGERS AND SERVICEMEN: SERIES F MACHINES

*See 472*  
1-CARRIAGE DRIVE CLUTCH 1Z-408013 (AN, Plate 2 Series F Symbol List) has been redesigned to reduce the build-up of power output. The following material changes have been made:

Steel driving disks 408187 (4 now used) and steel driven disks P (3 now used) are made of harder stock and are manufactured to provide the smoothest possible friction surface. The edges of the disks are copper plated for identification.

Hard carbon disk O (408904) with a round hole in its center, is again being used. It replaces the soft carbon disk that was keyed to the spindle.

Pressure spring M (408803B) has 6 1/2 coils instead of 7 1/2 because of the additional steel driving disk 408187 in the clutch assembly. The improved assembly may be identified by copper-plated flanged washer L.

When installing the improved clutch, the following points should be noted:

Clutch drum W should be checked and changed if the keys for the driven disks show wear.

The outer surface of the flange on collar N should be flush with the end of clutch drum W to prevent the outer steel driven disk from becoming disengaged with the keys in the drum. When necessary, a washer 707302 #1 (.025) should be placed on shaft J between clip I and shaft support bracket H to maintain this alignment.

The tension of the clutch should be adjusted by hooking Kit 408 spring scale to the right end of the carriage, depressing the directional key for tabulation, and turning the motor manually.

The clutch should deliver a minimum pull of 5 1/2 lbs. and a maximum of 6 lbs.

The improved clutch should be installed as a complete assembly in all machines in which difficulty is being experienced with carriage movement due to excessive build-up or loss of power from the clutch.

This announcement cancels Item 2, Mecanogram 415.

2-CIPHER SPLIT CONTROL DISKS A (Plate 38-1, Series F Symbol List) are required in machines containing the Cipher Split Feature, Carriage Controlled, even though the Form Layout does not indicate a split position. Omission of a control disk permits a split to be active during each machine operation.

When ordering setup parts for machines equipped with the C.C.C.S. feature, use the new Series "F" Form Setup Parts Order (Form 1708) that provides for both printing control disks and cipher split control disks. The old Form 1708 may be used when ordering setup parts for machines not equipped with the C.C.C.S. feature.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 442

June 17, 1952

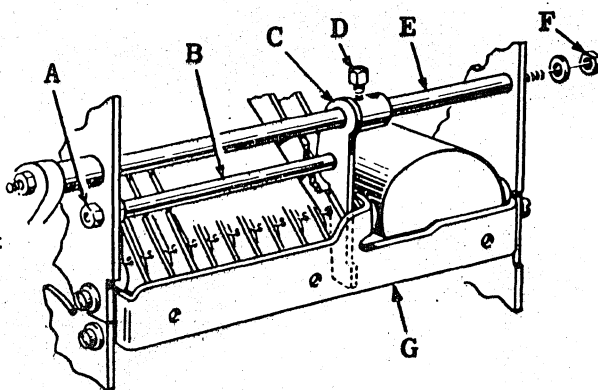
### MANAGERS AND SERVICEMEN:

#### SERIES P MACHINES

1-A POSSIBLE OVERCARRY in Class 9 machines, Styles 8 and 10, is prevented by eccentric shaft B (84550A). When increasing the amount on an adding pinion to 9, overthrow of the adding sector (J, Plate 94, Symbol List) at the end of the machine's return stroke can cause the carry tooth to flick the carry pawl rearward and latch on the carry detent.

Note: See Mecanogram 423 when a similar condition exists in Class 9, Style 13, machines.

Machines containing 12 pitch adding sectors also require installation of flat-sided set collar 1-84364 on shaft B since 12 pitch sectors have a different lower outline than 10 pitch sectors. This information should be added to Mecanogram 423.



Parts required to install shaft B are as follows:

	Symbol	Description	Amount Required
A....	45	Nut	1
B....	84550A	Eccentric Shaft	1
C....	1-84103 1/2	Bracket	1
D....	69535	Screw	1
	1-84364 (required for 12 pitch adding sector only)	Collar	1

Installation of shaft B may be made as follows:

Remove auxiliary cam 81116 3/4 (B, Item 2, Mecanogram 389), if previously installed.

Remove the motor and drive and tie shaft E.

Place shaft B in the hole provided in the left side frame, and install nut A loosely.

(OVER)

Place bracket C over tie strap G and in between the adding sectors in column 0 and column 1, as illustrated.

Note: Before installing bracket C, all foreign matter should be removed from the upper surface of tie strap G to prevent a false limit of bracket C.

Place the right end of shaft B in the hole provided in bracket C. (Collar 1-84364 should be on the shaft if machine contains 12 pitch adding sectors).

Reinstall shaft E through the hub of bracket C, and tighten nut F. Replace the motor and drive.

The following adjustments are required after installing the new parts:

Bracket C should be centrally located between the adding sectors in column 0 and column 1, and should be down against the upper surface of tie strap G. Reposition bracket C and tighten setscrew D.

With the machine normal, limit shaft B should have a snug fit against the lower edges of the adding sectors. Rotate shaft B upward; hold the shaft in position with a wrench, and tighten nut A.

Note: If the machine contains a 12 pitch month sector, sufficient stock should be removed from the lower flat portion of the sector to permit making this adjustment.

Note: Also, if a 12 pitch adding sector is contained, set collar 1-84364 should be placed on shaft B so that its flat side is presented to the sector. When adjusting shaft B, the setscrew in the collar should be loosened. After adjusting and tightening shaft B, the collar should be aligned centrally with the 12 pitch sector and the setscrew tightened.

C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

No. 441

June 6, 1952

## MANAGERS AND SERVICEMEN:

### SERIES C MACHINES

1-DIAL WHEEL 2-16913A (E, Plate 6) has .030" stock added to the length of the high point of its cam to reduce the tendency of the roll on rack U (Plate 6) to lock over the point of the cam in nine position. When this happens, the figure on the dial wheel is held out of reading position in the case opening. Machines above serial number B251220 were manufactured with dial wheels having this longer cam.

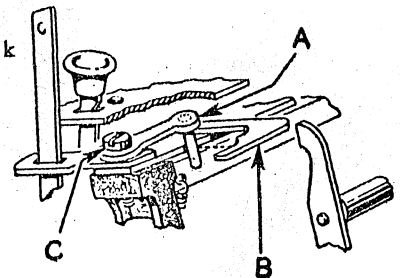
The need of replacing dial wheels in Field machines may be eliminated, in most cases, by adjusting the adding sector for closer mesh with the pawl gear. (See Plate 6, Series C Instruction Book, second adjustment.

Note: This may result in raising the dial wheel alignment, in which case the dial wheel should be realigned as outlined under "Dial Wheel Alignment" Plate 6, Instruction Book.

Dial wheels 2-16913A may be used in conjunction with older style wheels and should be installed in Field machines as required.

### SERIES H MACHINES

2-NON-INDEXING OF A MACHINE OPERATION, with a motor bar depressed in No Space Stroke Total Bank Posting Machines, may be due to locking of slide B under the cam (J, Plate 62-1, Keyboard Symbol List) at the end of the previous return stroke. This condition may be corrected by installing limit A (1-202165). Use screw C (9251 13/16).



Install limit A at the next attention.

THIS INFORMATION SUPPLEMENTS THAT CONTAINED IN ITEM 5, MECANOGRAM 355.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 440

June 4, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

1-CONTROL RAIL BRACKETS 1-73214A AND 1-73214B NO.2 now replace brackets AJ and AK (Plate 26-1, Carriage Symbol List). The shaft in the new brackets is riveted flush with the outer surface. This permits setting carriage controls closer together on control bars.

Register trips 73227AR No.2 and 73227AL No.2 (similar to trip AV, Plate 26-1) are used along with the new brackets. These trips fit flush with the sides of the bracket and contain an embossment that fits into a hole in the bracket to help retain the trip in position.

*See 454*  
2-DRAW CORD BREAKAGE IN 100 PINION CONSTRUCTION register return mechanism will be reduced by the following changes made in parts:

Draw cords K, BQ, CF and N respectively (Plate 19-1, Power Symbol List) are made of improved cable material.

Register tabulating trip arm 1-705204A #2 (A, Plate 46-1, Accumulation Symbol List) has a hub and set screw on its lower end to guide and retain the register trip rod, thus eliminating set collar J which interfered with free travel of the draw cord I.

Roller CD (Plate 19-1, Power Symbol List) of guide bracket CE has its radius increased at the juncture of the hub and flange. The hub has a smoother surface to reduce wear on the cord CF.

Guide bracket Y is made of heavier stock to reduce whipping of cord N.

Bracket CG, cord guide bracket CC and register trip blocking arm N (Plate 49, Accumulation Symbol List) have edges smoothly rounded to prevent fraying of cord.

Drum CH (Plate 19-1, Power Symbol List) has sharp corners removed from the slot where the cord fastens.

Fraction control bellcrank 1-706231A (AF, Plate 4, Printing Symbol List) for machines with fractions also has smooth round edges.

The improved parts should be installed where repeated draw cord breakage is experienced. Improvement also can be secured by smoothly rounding the parts in the machine using triangle stone (Kit 141 1/2) or a fine file.

3-LOSS OF MOVEMENT OF SUBTRACTOR POWER SHAFT ASSEMBLY T (Plate 26, Accumulation Symbol List) caused by wear of the stud supporting the roll in all styles of segment gear L may now be reduced by installing an improved hardened stud 763. Use a new roll 749 when replacing the stud.

*See 463*  
C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 439

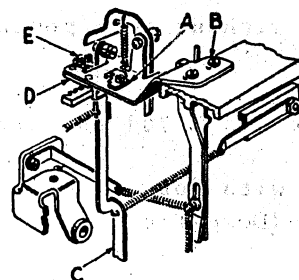
May 23, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

**1-CROSSFOOTER STEP-OVER FAILURE DURING MULTIPLICATION** may be caused by wear in the right end of the slot in bracket B (1-709100).

When wear occurs in the right end of the slot, link C fails to restore to normal after a step-back of three places operation. This causes the feed and check pawls (AS and AT, Plate 23, Keyboard Symbol List) to be held out of mesh with the step-over comb on the crossfooter pinion shaft.



Bracket B (1-709100) now contains redesigned, hardened limit plate retaining strap D which extends across the right end of the slot in bracket B and acts as the limit for link C.

Limit Plates E (709102 No. 1, stamped 2 and 3) and A (709102 No. 2, stamped 0 and 1) also have been hardened.

The above parts may be used for replacement in machines after Serial No. A696950 only.

**2-FAULTY PRINTING** - none, light, wrong columns, etc. - may be caused by worn bushings in printing section side plates C (Plate 2, Printing Symbol List) and J (Plate 1).

New side plates are now available with longer bushings that provide more bearing surface for shaft assembly W (Plate 2) and thereby reduce wear. The shaft of assembly W (Plate 2) is made longer so that it bears fully on the longer bushing in the right side plate; and the hub of arm G (Plate 2) is made narrower to provide room for the longer bushing in the left side plate.

Use the improved side plates and the longer shaft assembly for all replacements.

Replacement parts for machines most likely to require them are as follows:

(OVER)

## MACHINE DESCRIPTION

## SIDE PLATES

## SHAFT ASSEMBLY

## Series M 200 and Class 72 New Wide Base

with four position printing and 1/10 fractions	11-707110R No.3 1-707110L No.3	1-707000 No.10
with four position printing and whole numbers	1-707110R No.3 1-707110L No.3	1-707000 No.9
without four position print- ing, with 1/8 fractions	11A-707110R No.1 11-77110AL	1-707000 No.11
without four position printing	11A-707110R No.1 11-77110AL	1-707000 No.10

## Series M 700 and Class 77

with four position printing (Domestic)	1-707110R No.3 1-707110L No.3	1-707000 No.2
with four position printing (Sterling)	1-707110R No.3 1-707110L No.3	1-707000 No.8

## Series M 800 and Class 78 New Wide Base

with four position printing (Domestic)	1-707110R No.3 1-707110L No.3	1-707000 No.1
with four position printing (Sterling)	1-707110R No.3 1-707110L No.3	1-707000 No.7
without four position printing (Domestic)	1A-77110R No.2 11-77110AL	1-707000 No.1
without four position printing (Sterling)	1A-77110R No.2 11-77110AL	1-707000 No.7

Note: Machines not having the above specifications require parts ordered from the Home Office Service Division. Include the Machine Style and Serial Number with all orders.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 438

May 15, 1952

### MANAGERS AND SERVICEMEN: SERIES H MACHINES

1-M.R.C. RACK BRACKETS A THROUGH I (Plate 51-7, Carriage Symbol List) are currently constructed without the long stud which formerly was located on the same side of the bracket as the hub.

When installing a new bracket in a Field machine, use spring anchor stud 569 Fte. 203 and nut 46 in place of the omitted stud, except in those machines having one inch spacing on the right, use stud 52 Fte. 86 Env. 3246 (shown on brackets D, E, G and H, Plate 51-7) which contains two spring anchor slots.

Order stud 52 Fte. 86 Env. 3246 for actual needs only.

### SERIES M MACHINES

2-SELECTIVE COLUMN TABULATION KEYS, ALL DASHES - 703291A NO.1 (AQ, Plate 8, Carriage Symbol List - F, in illustration) are now made narrower at the point of contact with bail D to avoid interference with brackets A. This permits placing the keys directly opposite brackets A when required by operational specifications.

Keys 1-703291 No.3 (round, white, blank button) and 1A-703291 No.3 (square, gray, blank button), which permit tabulation to the extreme right end of the carriage, also contain the above change.

Limit plate C (703297 1/4) is used to prevent the narrowed portion of the key leaving the bail during key depression. The key, if permitted to leave bail D, would be forced off bar E by the bail's rocking to normal.

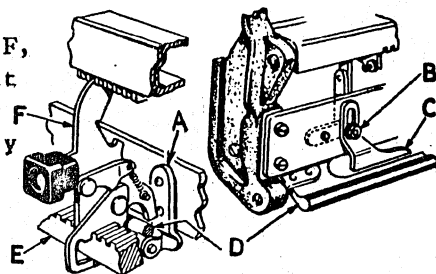
The improved keys may be installed only in those Field machines that contain square bar E. They may be used along with the earlier style keys.

Installation requires limit plate C (703297 1/4), screw B (10057 5/8), washer B (1097 7/16), and nut B (46 1/4).

Adjustment: There should be minimum movement of bail D when key F is depressed.

To adjust, position limit plate C.

Note: Be sure that limit plate C does not collide with the rolls (U, Plate 20) when tabulating to the extreme right end of the carriage.



### SERIES P MACHINES

3-TRAPPING OF RIBBON FEED ARM (Z) (Plate 1-A, Symbol List) against the forward edge of the carriage bottom plate when a ribbon reverse occurs - in 3 7/8" restyled carriages - may now be overcome.

Install screw 203508 No.3 and nut 46 in the bottom plate in the hole provided to the right of the front foot of the right carriage side frame. The screw prevents the feed arm moving far enough to get off the bottom plate.

Install the new screw and nut at the next attention.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 437

May 13, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES C MACHINES

**1-EXCESSIVE MACHINE SPEED** (more than the normal 120 operations per minute) in numerous machines containing Type C motors (Plate 20-1, Symbol List) and 250 Ohm resistors, may be caused by too much current entering the motor through the resistor circuit. This condition may be corrected by replacing the 250 Ohm resistor with one of greater value.

Resistor 1B-200911 (465 Ohms) should be installed in all machines with Type C motors.

The following test may be used to determine the efficiency of the resistor: Operate the machine with brush P (Plate 20-1) held disengaged from governor drum T (Plate 20-1). If the machine speed doesn't drop below the normal 120 operations per minute, more resistance is required.

#### SERIES P MACHINES

**2-PRINTING AND ADDING OF NINES** following a total or sub-total operation may be prevented by using new shafts 82003 No.3 and 82003 Style 13 No.3 (BL, Plate 40, Symbol List) which are now hardened to prevent wear at their points of contact with links BM (Plate 40) and cipher stop control strip BG (Plate 40).

Wear of shafts BL (Plate 40) may result in failure to move cipher stop control strips BG (Plate 40) far enough rearward, during total operations, to clear the cutout portions of total strip I (Plate 40), thereby preventing full restoration of the total strip to normal listing position.

Shafts BL (Plate 40), in Field machines, should be replaced at the first indication of wear.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 436

May 2, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

1-PRINTING FAILURE caused by worn roll AJ (Plate 3, Printing Symbol List) may now be reduced by installing an improved roll 71334 No.2. The new roll has an improved hardened surface and should be used for all replacements. Also, use a new stud 71532 No.2.

2-RAISE BARS 1-704914 NOS. 1 AND 6 AND 704914 NOS. 3 AND 4 (similar to AI, Plate 22-3, Accumulation Symbol List), used in wide base machines, now have an improved hardened surface. The improved surface reduces wear caused by contact with flipper pawls on the various subtractor and multiplier plates contained in the different classes of machines.

Use the improved raise bars for Field replacement. They may be ordered as follows:

SYMBOL	CLASS OF MACHINE
1-704914 No.1	72 and M 200 without Multiplier Factor to Print
1-704914 No.6	72 and M 200 with Multiplier Factor to Print
1-704914 No.1	77 and M 700 Domestic
704914 No.4	77 and M 700 Sterling
704914 No.3	78 and M 800 Domestic
704914 No.4	78 and M 800 Sterling

3-ROLL PAPER TABLES 1A-703285A STYLES 12, 18, 22, AND 30 (GRAY) AND 1-703285A STYLES 12, 18, 22, AND 30 (BLACK) now replace roll paper tables H (Plate 32, Carriage Symbol List). The new tables have a reinforcing strip welded to the inside of the rearward edge to provide a greater bearing surface on the rolls of paper table brace BA (Plate 32-1). This reduces wear of the bearing surface and provides a freer movement of the carriage.

A new roll paper table should be installed at the first sign of wear.

4-SCREW 79543 AND LOCK WASHER 1097 5/8 now replace screw AMI (Plate 20, Keyboard Symbol List) in all currently manufactured machines and may be used in Field machines to prevent loosening of end plate AM (Plate 20).

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 435

April 24, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

*1-IMPROVED CARRIAGE OPENING SHAFT 1A-403005 (15) (18) AND BAIL 403912A NO.1 (15) (18) replace shaft AQ and bail AS (Plate 19, Series F Symbol Book) and are being used in currently manufactured machines.*

Arm AO on the new shaft has an additional arm extending downward to engage with an extension of the new bail. Thus the drive of eccentrics CM is applied through bail AS directly to arm AO, thereby relieving the strain on the screw connections between the bail and shaft and reducing the breakage of the shaft at the screw holes.

Carriage end cap 1-403160R has a clearance cut added for the lower arm of arm AO.

*2-BROKEN CARRIAGE OPENING SHAFTS AQ (Plate 19, Symbol List) may be repaired by installing repair part 403156Z over the shaft at the break.*

Installation requires screw 73618, lockwasher 1097 3/4, and 46 1/4 nut. Screw 73618 replaces short screw 950 5/8 for fastening bail AS (Plate 19) to the shaft at the break.

To prevent the shaft from breaking in early Field machines that have a carriage opening operation at either end position of the carriage, it is good practice to fasten that end of bail AS (Plate 19) to shaft AQ (Plate 19) with a brace 403156Z.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 434

April 18, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

1-INDEXING OF MORE THAN ONE CARRIAGE CONTROLLED TOTAL OPERATION, OR INTERFERENCE OF CONTROL RAILS WITH CARRIAGE CONTROL ARMS during machine operations - in Class 72 machines that contain carriage controlled totals - may now be prevented by installing interlock G (Plate 44-1, Keyboard Symbol List).

This interlock prevents depression of the palm tabulator during machine operations; consequently, the possibility of manually indexing one carriage controlled total operation (from palm tabulation) while indexing another from carriage control (automatic tabulation) is reduced. Also reduced is the possibility of the carriage moving during machine operation which could permit control rails to be improperly aligned or interfere with control arms.

Interlock G (Plate 44-1) also provides a more effective safeguard between the palm tabulator and the motor bar than the previously used interlock BP (Plate 13-1). This prevents a partial tabulation (if palm tabulator is depressed during a machine operation indexed by the motor bar) which could also permit control rails to be improperly aligned or interfere with control arms.

Parts required for installing the interlock are as follows:

SYMBOL	AMOUNT	DESCRIPTION	REFERENCE
1A-702246 1/2	1	Swivel assembly	AB, Plate 44-1
73611	2	Screws	Z, Plate 44-1
11-702203CL No. 4	1	Plate	V, Plate 44-1
73610	1	Screw	W, Plate 44-1
72591	1	Screw	Y, Plate 19-1
702145 1/4	1	Interlock	G, Plate 44-1
3259 1/8A	1	Screw	H, Plate 44-1
203495	1	Eccentric	U, Plate 44-1
79510	1	Screw	U, Plate 44-1
705829	1	Spring	N, Plate 44-1
20 No. 105 (Use only if machine does not contain anchor plate L, Plate 44-1)	1	Spring anchor	Placed under BX, Plate 6G

Order the above parts for actual needs only.

Adjustment: There should be minimum clearance between slide G, Plate 44-1, and the tabulator arm when the latter is depressed.

To adjust, turn eccentric U (Plate 44-1).

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 433

April 11, 1952

MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

*1-FASTER AND MORE POSITIVE RESTORATION OF THE STOP BUMPERS*, after they are spread by carriage tabulation or return overthrow, is now provided by heavier and stronger bumper spring 408804A which replaces spring M (Plate 9, Symbol List).

Note: A weak bumper spring is one of the contributing factors which cause a machine "to operate off the pins."

The new spring should be used to replace any bumper spring which fails to meet the following test: With the carriage brake delivering its proper tension (not less than 5 pounds or more than 6 pounds), the bumper spring should positively restore the carriage after the bumpers are spread, when the carriage is pushed to either side and then slowly released.

The new spring should also be installed whenever the Improved Carriage Brake Mechanism (Item 1, Mekanogram 428) is installed.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 432

March 28, 1952

MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

*1-SPRING 404811*, which is stronger and smaller in diameter, is now being used in place of spring AK (Plate 18-1, Series F Symbol List) in currently manufactured machines. The new spring assures positive indexing of the Form Space and Return Disabling Mechanism when the latter is used in conjunction with Form Space (Lane 13) and Selective Return (Lane 5).

The 404811 spring should be installed in those Field machines in which motor bar No.1 occasionally fails to index a skip tabulation with active pins in lanes 5, 13, and 15.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 431

Revised April 7, 1952

MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

1-SHIM 403223 (between the carriage rails and the machine side frame), and SHIM 403224 (between the rear carriage rail and the carriage drive unit) are now being used in some currently manufactured Series F machines and may be installed in Field machines to obtain the proper .050" clearance between the No.5 pins and tappets in the forward lanes of control. The shims, which are .006" thick, also provide a wider adjustment of eccentrics AO (Plate 9) and AL (Plate 10) by bringing the column stop dogs to their proper height with respect to the bumpers.

2-SPRING 409809 is now available for installation in Field machines to hold carry reset shaft AR (Plate 40, Symbol List) forward thus preventing interference of the shaft with initial carries.

One spring is required for each crossfooter and register. The spring fits under shaft AU (Plate 40) and over shaft AS (Plate 40) with the lower end clamping behind shaft AR (Plate 40).

### ALL CLASSES

3-WALL PLUGS 3693 1/8B are available for modification of two conductor line cords on machines received from Strathleven, and for replacements on two conductor cords of all machines.

C. A. BAKER  
General Service Manager

429 B+H

# Burroughs

## MECANOGRAM

No. 430  
February 15, 1952

MANAGERS AND SERVICEMEN:

### SERIES P MACHINES

1-PAWL 1-99165 (AR, Plate 114, Symbol List) has two notches added to its lower portion to facilitate adjustment for correctly positioning pawl (AQ, Plate 114) thus assuring correct minus balance lock functioning.

**Test:** Add 9's to a clear machine. Depress the subtract bar and operate the machine. With bail U (Plate 110) manually held into engagement with the upper wheels, the camming tooth on the last lower wheel should have no more than .005" clearance under the spear point of pawl AQ (Plate 114).

**Adjustment:** Bend pawl AR (Plate 114) forward to reduce the clearance, or rearward to eliminate a bind. Check pawl AQ (Plate 114) for being free and for alignment with the camming tooth of the last lower wheel.

Improved pawl 1-99165 should be used for replacement as required.

MECANOGRAM 429 NOT GENERALLY DISTRIBUTED EXCEPT IN U. S. AMERICA.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 428

January 30, 1952

See 433

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

1-AN IMPROVED CARRIAGE BRAKE MECHANISM, with increased braking surface and stronger construction, is now being used in currently manufactured machines and is available for installation in Field machines.

Brake arm AG (Plate 9, Symbol List) is redesigned and stronger; felt pellets Z (Plate 9) are 1/8" larger in diameter, and disk Y (Plate 9) is 1/8" larger in diameter. Spring AE (Plate 9) is stronger, and brake reset bail AI (Plate 9) is redesigned to contact the formed ear of brake arm AG. Hexagon post W (Plate 9) has a larger flanged surface to support brake arm AG. Two washers are used to stabilize reset latches AH (Plate 9) and AG (Plate 10). The small washer fits between the reset latches and the larger on the outside of the latches in back of the clip.

When replacing earlier brake arm AG (Plate 9) or reset bail AI (Plate 9), which have been discarded, the following parts should be installed:

SYMBOL	DESCRIPTION	AMOUNT REQUIRED
1-408183A	Brake arm	1
408903A	Felt pellets	2
10782	Brake arm spring	1
1-408145A	Brake reset bail	1
408523A	Hexagon post	1
74587	Screw for hexagon post	1
201351	Washer (small)	1
203139 1/2	Washer (larger)	1

- Notes:
- (1) It is not necessary to replace disk Y (Plate 9) 1A-408532.
  - (2) To facilitate installation of the above parts, remove the motor and the Carriage Control Sensing Unit.
  - (3) When installing reset bail AI (Plate 9), remove screws AA (Plate 9) and AC (Plate 10), clips AL (Plate 9) and AU (Plate 10), and slide shafts AY (Plate 9) and AX (Plate 10) to the left. It may be necessary to swing arms AK (Plate 9) and AJ (Plate 10) to the left for clearance.
  - (4) The improved parts should be installed only when necessary for replacement.

This announcement cancels Item 1, Mecanogram 388.

#### SERIES H MACHINES

2-ECCENTRIC STUD 200509 1/4 (H, Item 1, Mecanogram 400) is now hardened to reduce wear caused by latch I (Item 1, Mecanogram 400).

C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

No. 427

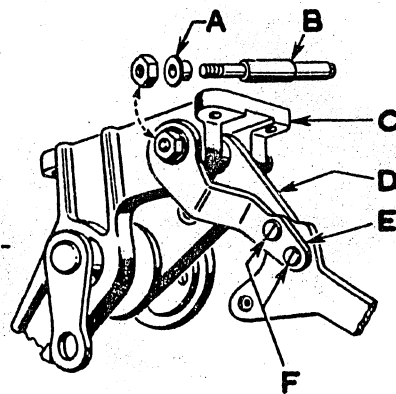
January 25, 1952

## MANAGERS AND SERVICEMEN:

### SERIES H MACHINES

*1-CARRIAGE OPENING LEVER 1-201107 NO.3* (BD, Plate 81-1, Carriage Symbol List) now has bracket 1-201107 1/8 (E) added to its upper forward end to insure full carriage opening.

Installation of the improved construction requires replacement of the following parts: casting C (1-201665 No.5) which has the countersink deepened at the hole for shaft B; lever D (1-201107 No.3) which has threaded holes added for attaching bracket E; bracket E (1-201107 1/8), as described; two screws F (3361 1/4A); bushing A (201341) which fits into the deepened countersink of casting G to provide a bearing for bracket E; and shaft B (201504 No.3) which has added length because of bushing A being added to the assembly.



The improved parts should be used where proper adjustments of the carriage opening mechanism cannot be secured by ordinary means, or where the adjustments do not remain permanent.

*2-INTERMEDIATE FORM CHUTE 2-203230BR NO.21* (P, Plate 53-6, Carriage Symbol List) may be installed on bank machines, Style 24 17 32 1/2 (Australia and New Zealand) and Styles 26 14 09, 26 17 09, and 30 17 07 (United States) to guide the right side of a narrow form when forms of two different widths are used in the same position.

Installation also requires bracket 1-203142C and screw 203657A (U and V, respectively, Plate 53-6).

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 426

January 7, 1952

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

*1-IMPROVED ADDING RACKS 1-406110 (ALL NUMBERS)* (BE, Plate 28, Symbol List) are now being used in currently manufactured machines and may be installed in Field machines to reduce adding rack breakage. The new racks may be identified by the following changes:

1. Small rack AF (Plate 28) is now secured to main rack BE with three studs instead of two.
2. Latch AE (Plate 28) has the radius of the inside corners of the surface around actuating shaft AG (Plate 28) increased from  $1/32"$  to  $7/64"$ , and stock is added to the latch around stud AD (Plate 28).

In addition to these changes, the hardening process for the front end of latch AE has been changed to eliminate the peening operation during manufacture.

When replacing a worn or broken rack in a machine containing earlier style racks, it is good practice to replace the complete set.

*2-MACHINE LOCKS CAUSED BY TRAPPED CARRIES IN THE REGISTER SECTION* may occur when transferring minus balances from crossfooter "A" to the register section.

During subtract operations indexed by the Net Accumulation Proof Mechanism, meshing hook AZ (Plate 46, Symbol List) is released early from the square stud on subtract-total slide AY (Plate 46), and the accumulator, if sluggish, may move out of mesh late. The carries then start late and are not completed before timer slide E (Plate 40-1) releases aligning bail AG (Plate 40-1), thereby trapping the carries. The trapped carries prevent the register from restoring to normal and result in a machine lock which is caused by interlock C-1 (Plate 40-1) blocking the drive trip.

To remedy the above condition, check the adjustments for the Net Accumulation Proof Mechanism (Plate 47) and replace spring AX (Plate 41) with heavier spring 9580. The heavier spring 9580, which gives more positive control of the accumulator wheels when moving out of mesh with the adding racks, is used in all currently manufactured register sections and should be installed in all register machines below serial number B199041 on the next attention.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 425

January 3, 1952

MANAGERS AND SERVICEMEN:

*See 470*

### SERIES H MACHINES

**1-IMPROVED METHOD OF ASSEMBLING AND ADJUSTING FRONT BRACES B AND F TO SUPPORT THE CENTER OF THE 200 SECTION** by holding shaft D parallel to the base and supporting shaft C against bowing. This procedure should be followed whenever the brace assembly has been removed from the machine, and should account not only for better printing alignment but also should correct wrong addition that has been caused by tripping of carries in the crossfooter.

Tripping of carries in the crossfooter usually occurs in columns where the crossfooter dial wheels are in cipher position when amounts are being transferred from the register to the crossfooter and the brace is improperly set.

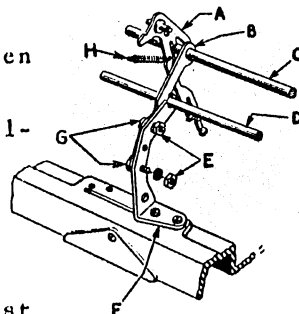
The following procedure should be performed in the sequence given:

- Keyboard*
- a. Assemble brace F so that it fits up against the under side of shaft D without a bind.

To adjust, remove brace F and shorten or lengthen it by bumping the forward or rearward edge.

Note: This is a basic factory adjustment and seldom requires attention except when it becomes necessary to install a new brace.

- 3*
- b. With the handle at the first stop, release all adding racks.
- c. Trip off all carry pawls A except the one nearest the position of brace F.
- d. Assemble brace B, as shown, with its rear pocket over shaft C and its lower edge resting on shaft D.
- e. Adjust eccentric screws G to have minimum rearward movement of pawl A, then secure the brace in this position with nuts E. This insures shaft C against bowing, which is caused from the combined tensions of springs H.



### SYMBOLS

- |  |   |
|--|---|
| A. 1-10413   | F. 223 1/4 No. 3                          |
| B. 419 1/4 No. 3   | 220B Fte. 216 for counter dial            |
| C. 204000 Refer to Q, Plate 6,<br>Keyboard Symbol List, for Style. | G. 264 7/8 screw, 1097 7/8 lock<br>washer |
| D. 205 Style 17  | H. 480 1/4                                |
| E. 47<br>99447 for lower screw with<br>counter dial                |   |

**C. A. BAKER**  
General Service Manager

BURROUGHS ADDING MACHINE COMPANY

Mecanogram

Great Lakes Region  
January 7, 1952

All Service Personnel  
Great Lakes Region

The following list of material represents parts improved and shown on mecanograms issued during 1951. These improvements for the most part are the result of complaints registered to the Service Research Department through the media of Form 980, mechanical report. The part numbers have been tabulated by machines series with identifying mecanogram number for ready reference. You may find use for this list in one or more of the following ways.

1. Use for educational program.
2. Branch service managers may guide servicemen to use certain specified parts for installation during regular inspections. The needs of the locality may vary the parts required.
3. Use as ready reference for parts ordering.
4. Parts Distribution Centers may check their stock to determine stock set-up, also removing parts from stock as indicated.
5. Use as consistency of parts for bringing machines up to date.

*H. O. Cordts*

H. O. Cordts  
Regional Service Representative  
Mechanical

# SERIES H

PART SYMBOL	NAME OR ASSOCIATED TROUBLE	MECANOGRAM
1-200187 B	Breakage (Carry timer)	381
1-2886 1/4 D	Improvement of C. F. Tumbling	392
1-200237 1/2 Z	Repair part - Hammer block	393
200537 1/4 Z	Repair part - Hammer block	393
1-201801 #4	Cgge. opening spring (lighter)	394
7480 B	Cgge. opening spring (lighter)	400
1-200284 3/4	Interlock (protective bar 101-102)	400
1A-200297	Positive adjustment C. F. Section	404
1-200158 1/2 A #2	Positive adjustment C. F. Section	404
1-200299 A	Positive adjustment C. F. Section	404
1-200237 1/2 Z #2	Repair part-Hammer block	409
200537 1/4 Z #2	Repair part-Hammer block	409
1-108 A Fte200	Safeguard Keyboard lock link	411
200578 1/2	C. F. Screw deeper slot	412
200517 #3	Lower Motor bar screw (longer)	416
200627 Z #2	Replacement Screw	420
1097 13/16	Lock washer for above screw	420
12034 B	(order only as needed) Bearing	421
Other items	383-2, 386-1, 392-1, 395-1, 402-2, 409-1-3, 420-2	

# SERIES M

1B-74137 #1	New extend fingers	380
1A-704137 1/2	New extend fingers	380
704300 1/2 No. 2	Eccentrics for raise bail	397
704589	" " " "	397
702589	" " " "	397
406320	" " " "	397
704588	" " " "	397
74501	" " " "	397
71156 A	Longer drive link	401
83 #14	Spiral rewind spring barrel spring	407
1-707107 #2	Improved printing section parts	410
1-707148 A	" " " "	410
71361	" " " "	410
74502	" " " "	410
1-707148 1/4	" " " "	410
1-707122 A	" " " "	410
74533	" " " "	410
706907 #2	Int. Keyboard rack (strengthened)	419
1-12 D Fte 134	Improved subproduct deduction mech.	419
1-11 C Fte 134 #1	" " " "	419
79503	" " " "	419
1-75197 A	Tabulator link (hardened)	421
Other items	389-1, 399-1-2, 401-1, 402-2, 406-2, 413-2	

## SERIES P

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM</u>
1-83158 13/16	Paper guide roll-split platen	383
81116 3/4	(Remove from stock) See Mecano. 418	389
81345 1/2 Y	" " " " " "	389
1-94124 Elec. #2	Studs Hardened	400
1-99007 #2	Support for tumbling section(relay carries)	402
99004B #2	" " " " " "	402
77880 #1	" " " " " "	402
1-99165	" " " " " "	402
1-86105 1/2 AR Sty. 13	Brace for weave of add racks	407
86105 1/2 R Sty. 13	(Remove from stock)	407
1A-87115 1/2	Improved hammer (rotary date etc.)	407
1-94140 1/2 A	Lock of Tumbling sect. during subtract	408
81810	" " " " " "	408
84518	" " " " " "	408
1-84275 A	Hardened (Handle break)	415
11-84275 A	" " " "	415
86105 C	Index bars (cipher stop adjustment)	418
Other items	383-2, 395-1, 402-2, 406-2	

## SERIES F

404809	Net. acc. Proof.	382
40996 .95 and .75 amp.	Fusetrons	382
407806 #4	Printing trouble, carbon copies	384
407806 #5	" " " "	384
407806 #6	" " " "	384
69553	Replacement case screw	384
40882	Governor spring	384
404246 Z	Brace for post inside right side frame	385
1-408183	Tabulation and return correction	388
1-408151 AL	" " " "	388
1-408151 AR	" " " "	388
408350 A	" " " "	388
408546	" " " "	388
2-401118	Improved drive gear	391
408303	Gear in gear box	393
407126 AR	Reduce curling and fraying of ribbon	398
407126 AL	" " " "	398
Form 3085	Schedule form identification	398
2887 1/2	New interlock spring to prevent lockup	398
406804 A	Redesigned type spring	398
1-404259 A	Brace for post outside right side frame	400
404554	Screw for brace	400
1-407122	Hardened ribbon feed pawls	412
1A-407012	Hardened printing control arm	412
407518 A	Improved ribbon guide post	413
1Z-408013	New clutch (refer to mecanogram)	415

## SERIES F. (continued)

<u>PART SYMBOL</u>	<u>NAME OR ASSOCIATED TROUBLE</u>	<u>MECANOGRAM</u>
1-408559 Z)	Hex: Post and cam to stabilize gear in	420
1097 7/16 )	gear box	420
79505 )		420
Other items	382-2, 384-2, 385-1-3, 391-2-3, 394-1-2, 395-1, 398-6, 402-2, 404-2, 406-2, 409-4, 411-1, 422-1-2	

## SERIES B and H

B & H 81385	Guides for feeder	387
B & H 81387	" " "	387
B & H 81270	Stripper plate screws (easy adjustment)	387
B & H 080326	Improved feed rolls	396
B & H 080094	Camera alarm contacts	405
B & H 81520	" " "	405
B & H 81547	Stronger line switch	414
Tandem Rheostat Parts		417
Conveyor roller assembly		421
Other items	387-3, 390-1-2, 402-2, 414-2	

## A PRODUCTS

20954 1/2 B	Long shouldered check table series	386
Other items	Mecanogram 386, 400, 412, 413, 416	

# Burroughs

## MECANOGRAM

No. 424

December 27, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

*7111 746*  
1-ECCENTRIC 200340 1/2 AND SCREW 203524 NO.2 replace collar and screw D (Plate 6-1, Printing Symbol List) for limit arm E (Plate 6-1) in currently constructed machines. The new parts afford proper positioning of rack B (Plate 6-1) over detent Q (Plate 5) instead of having to bend the index arm C (Plate 6-1).

To locate the eccentric in its correct position, have the machine normal and the hammerblock in the no roll position. With the wide portion of the eccentric facing upward and toward the front of the machine, arm E (Plate 6-1) should just clear the forward step on bail C (Plate 6-1) so as to restore freely. When turnbuckle N (Plate 6-1) is lowered manually, there should be no movement of rack B (Plate 6-1).

For other adjustments pertaining to this mechanism, refer to Plate 6-1, Printing Instruction Book.

2-PLUNGER T, SCREW AG, AND BUFFER ARM AH (Plate 9, Power Symbol List), in currently manufactured machines, since Serial No. B237436 (approximately), have been redimensioned to give clearance between the screw in yoke R (Plate 9) and plunger T (Plate 9) when the machine is normal, and still retain the maximum cushion of spring U (Plate 9).

If adjustment is required, use the following procedure:

- a. With the machine normal, turn eccentric AH (Plate 65, Accumulation Symbol List) to give 1/16" passing clearance between the full stroke pawl and the lower step on cam Q (Plate 18, Accumulation Symbol List).
- b. With the handle held all the way forward and the motor turned manually by means of the crank until the buffer arm has reached its maximum point of throw, turn the adjusting screw in yoke R (Plate 9, Power Symbol List) until only minimum play of the handle is allowed with spring U (Plate 9) compressed. At this point, secure the screw by tightening nut S (Plate 9).

As a further test, with the handle still in the machine and starting from normal, trip the drive and operate the machine with the crank. This operation should restore the machine to normal without its locking on the full stroke pawl or the toggle.

Note: In machines prior to Serial No. B237436 (approximately), if plunger T falsely limits complete restoring of the machine after the adjusting screw in yoke R (Plate 9) has been set for the correct forward limit, an earlier normal limit for the plunger may be obtained by inserting a washer 510 1/2 in the buffer arm ahead of the plunger.

3-RIBBON FEED PAWL 1A-205115 1/2 is now available for use in Field machines in place of pawl Y (Plate 38-1, Printing Symbol List). The improved pawl has an added flange which insures its proper alignment with ratchet wheel G (Plate 38-1).

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 423

December 20, 1951

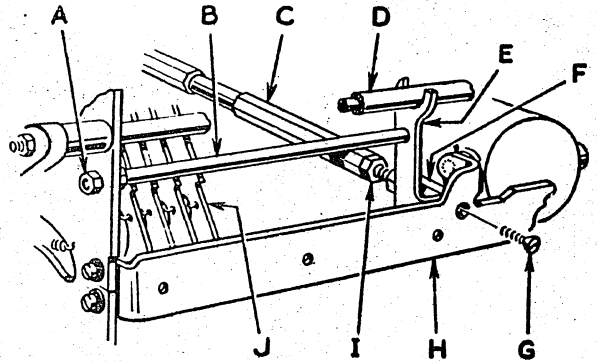
### MANAGERS AND SERVICEMEN:

#### SERIES P MACHINES

1-ECCENTRIC LIMIT SHAFT B (84550 STYLE 13) is now assembled in currently manufactured Class 9, Style 13 machines, and may also be installed in Class 9 Field machines of the same construction. The new eccentric shaft prevents a possible overthrow of the adding sectors at the end of the return stroke when accumulating 9's, thus preventing turning the adding wheels beyond 9 position and initiating a carry.

The following method for installing shaft B in Field machines is suggested:

1. Remove auxiliary cam 81116 3/4 (B, Item 2, Mecanogram 389) if previously installed.
2. Place shaft B in the hole provided in the left side frame, and install nut A loosely.
3. Loosen lock nut I.
4. Remove screw G.
5. Screw part F into post C far enough to permit the installation of bracket E.
6. Place bracket E between bushing D and brace H, as illustrated.
7. Place the right end of shaft B in the hole provided in bracket E.
8. Install longer screw G loosely.
9. Screw part F downward to a snug fit against bracket E.
10. Tighten screw G.



Installation requires the following parts: eccentric shaft B (84550 Style 13), nut A (45), bracket E (84103 1/2 Style 13), and longer screw G (89568 1/4 Style 13).

**Adjustment:** With the machine normal, rotate shaft B to a snug fit against sectors J. Hold shaft B in this position with a wrench, and tighten nut A.

**Note:** If the machine contains a 12 pitch sector, a sufficient amount of stock should be removed from the lower flat portion of the sector to permit making this adjustment.

Screws 89568 1/4 Style 13 in present stock should be scrapped to avoid their being mixed with the new screws 89568 1/4 Style 13 which are 1/16" longer.

C. A. BAKER  
General Service Manager

# Burroughs

# MECANOGRAM

No. 422

December 17, 1951

## MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

1-REGISTER NO. 1 should be used to accumulate new balances in Style F 202 machines to assure the correct functioning of the Overdraft Interlock Mechanism (Plate 48-1, Series F Instruction and Symbol books).

48-1  
This practice should be followed when building Control Units for the above style of machines, because of the possibility of the drag of interlock latch BQ (Plate 48-1) and register drive trip interlock latch C-1 (Plate 40-1) on the formed ear of drive trip bail C-3 (Plate 40-1) preventing the reset of the drive trip bail, thereby permitting the machine to operate and print the overdraft.

2-A NO. 5 CONTROL PIN should be used in register subtract lane 17 in conjunction with a No. 5 control pin in lane 20 to index a register "C" total.

This practice should be followed when building Control Units for Series F 300 machines in order to assure a more positive hold of the accumulator meshing hook over the square stud of the subtract/total control slide.

### SERIES H MACHINES

3-BEARING 12034B for shaft assembly AO (Plate 15, Power Symbol List) is now available for the repair of obsolete assemblies C (Plate 81, Carriage Symbol List). The bearings are in very limited supply. Order for actual needs only.

### SERIES M MACHINES

4-TABULATOR LINK 1-75197A (M, Plate 23, Carriage Symbol List) is now hardened to reduce wear caused by contact with the trip arm (R, Plate 23).

MECANOGRAM 421 NOT GENERALLY DISTRIBUTED EXCEPT IN U. S. AMERICA

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 420

November 30, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

*See 480*

~~1-REPAIR PART 1-408559Z, a hexagon post with an eccentric cam, is now available for installation in Field machines to eliminate the upward thrust of gear assembly BL (Plate 9, Symbol List), thus maintaining the proper mesh of gears AA and AC (Plate 2) and reducing their wear.~~

~~The new post should be installed in the scoring hole in the left side frame of the gear box assembly, with the eccentric cam over gear BL (Plate 9), and held there with a washer 1097-7/16 and a screw 79505.~~

~~There should be minimum clearance between the eccentric cam and gear BL (Plate 9) with the high side of the eccentric forward.~~

#### SERIES H MACHINES

2-BILLIARD CLOTH STRIPS 200992 NO.1 (front or back) and NO.2 (either side) (two each required) should be cemented to the underside of the machine case when enamel finished steel keyboard plates are used to replace former billiard cloth covered plates (Plate 64, Keyboard Symbol Book). For machines other than those of wide base construction, use strips 1092 1/2 No.1 (specify style) and 1092 1/2 No.2. Use Kit 164-1/4 cement.

The above replacement of keyboards requires use of rivets 252A.

3-LIMIT SCREW 200627Z NO.2 AND LOCK WASHER 1097 13/16 may be used to replace screw BG (Plate 74-4, Accumulation Symbol List) - or any other style screw used in the same location - when the threads in the side frame are stripped.

When replacing the screw that is constructed with the small nipple, replace arm BG (Plate 74-3) with arm 1-200131 1/2A.

Installation of the replacement screw requires that the side frame be redrilled and retapped with a No.29 drill and 5/32-40 tap.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 419

November 26, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

1-LINK D (1-12D FTE. 134), SHAFT ASSEMBLY A (1-11G FTE. 134 NO. 1), AND SCREW C (79503) replace the link assembly (A, Plate 30, Accumulation Symbol List) in wide base Class 72 machines in the Field, and are used in all currently manufactured machines beginning with Serial No. B134940.

The new parts make it possible to use a common link D in the various styles of machines, irrespective of the varying capacities of the crossfooters, and permits positioning detent B in any one of columns ten through fifteen.

2-RACK 706907 NO. 2, which now replaces rack 706907A No. 1 (D, Plate 5, Keyboard Symbol List) in all wide and new wide base machines, has the first nine teeth on the left strengthened to reduce breakage.

To install in Field machines, observe the following requirements:

Style 72 07 22

Class 72 (1/10 fractions), Class 78 (domestic), Class 78 (Sterling, Pence Construction), Class 75 (without register designation), Class 77 (all styles without register designation) and Class 79 (all styles)

Class 72 (1/4 fractions), Class 78 (Sterling, Farthing Construction), Class 75 (with one bar designation), and Class 77 (all styles with one bar designation)

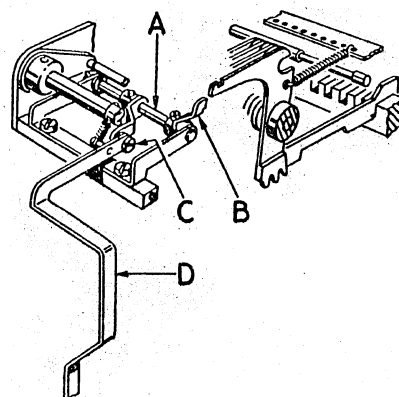
Class 72 (1/8 fractions), Class 75 (with two bar designation) and Class 77 (all styles with two bar designation)

Use as made.

Remove one tooth from left end.

Remove two teeth from left end.

Remove three teeth from left end.



C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

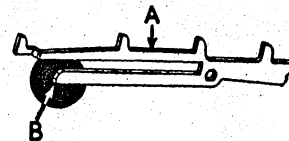
No. 418

November 15, 1951

## MANAGERS AND SERVICEMEN:

### SERIES P MACHINES

1-INDEX BARS A (86105C, ALL NUMBERS) now have stock removed from point B to permit closer adjusting of the cipher stops, thereby preventing possible under-addition when 9 is on a plus wheel and an amount with a cipher in the same column as the 9 is then subtracted.



The following adjustments should be made after installing new index bars A:

1. The braces (A, Plate 112-3, Instruction Book 1947, and A, Item 1, Mecanogram 375) should be adjusted as outlined in Plate 112-3, and Item 1, Mecanogram 375.

2. The cipher stops should meet the following conditions:

- a. With the roll of the restoring frame located on the dwell of the cam (I, Plate 128, Symbol List) just off the high point, and with the roll (A, Plate 39) located in the upper pocket of the slide (K, Plate 39), the feet of the cipher stops should have a slight drag against the forward end of index bars A when the index strips (D, Plate 40-1) are moved rearward and forward.

Note: The roll of the restoring frame may be held on the dwell of the cam (I, Plate 128) by depressing the total key and then pulling the handle forward sufficiently to permit placing the handle (which should be 5/16" thick) of brush, Kit 156, under the shaft (AC, Plate 128) and up between the shaft (X, Plate 128) and the bail of the cam assembly (I, Plate 128).

- b. With the total key depressed and the handle pulled slowly forward, the cipher stops should move up to limit against the lugs on the tie strip (CH, Plate 40, Symbol List).
- c. With the machine normal and the error key slowly depressed and released, the cipher stops should move up to block the index bars.

To adjust, bend the foot of the cipher stop.

Note: This item cancels Item 2, Mecanogram 389. The parts described therein should be removed from Field machines.

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C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

MANAGERS AND SERVICEMEN:

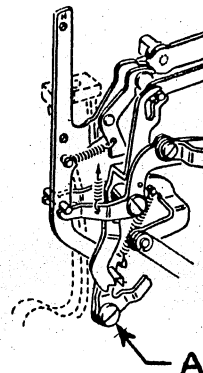
No. 416

October 29, 1951

62-1 *Hand*

## SERIES H MACHINES

1-SHOULDER SCREW A (200517 No. 3), which holds the lower motor bar to the right sideframe, has been lengthened to insure proper thread hold in shoulder nut 200357A when another part is used in conjunction with the lower motor bar.



## SERIES P MACHINES

2-HOOK E (Plate 96-1, Symbol List) which is part of assembly 11A-94100 (similar to S, Plate 96) now has stock removed from its foremost portion to prevent its interference with post B (Plate 45-1, Symbol List).

Interference of the hook with the post may cause the machine to lock up during the return stroke of a listing or subtotal operation.

## SERIES A PRODUCTS

3-CLIP HOLDER KIT 66 1/4 is now available (primarily for shop use) as an aid in installing circular clips 21 which have a flanged projection opposite the opening.

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

414 B+H

# Burroughs MECANOGRAM

No. 415

October 24, 1951

## MANAGERS AND SERVICEMEN:

### SERIES P MACHINES

1--DETENTS 1-84275A (R, Plate 40, Symbol List) and 11-84275A (similar to R, Plate 40) now have a hardening process added to reduce wear at the point of contact with rocker arm U (Plate 40). X

### SERIES F MACHINES

2-1Z-408013 is the symbol number for Clutch Assembly AN (Plate 2, Symbol List) which is used in current production. See 443

The consistency of parts now differs from that shown in Plate 2 and is listed below. Original steel disk 408187, which is keyed to the spindle, is being used again for driving the carbon disks. Use of this steel disk reduces wear at the center of the carbon disks, thus insuring carriage movement. Pressure spring 408803B is constructed of .006" heavier wire stock.

Individual parts and their order within the assembly are as follows:

See 443

1-408013	spindle	408187	steel disk Sp
408904A	carbon disk	408904A	carbon disk
	(keyed to spindle)	408186	steel disk OB
408186	steel disk	408904A	carbon disk
	(keyed to outside barrel)	408187	steel disk -B
408904A	carbon disk	408320	pressure collar
408187	steel disk	408803B	pressure spring
	(keyed to spindle)	408344A	washer
408904A	carbon disk	79350 (2)	nuts
408186	steel disk OB		
408904A	carbon disk		

For replacement in machines equipped with the new style clutch, as covered in Mecanogram 398, order (3) steel disks 408187 and (6) carbon disks 408904A and (1) new heavier pressure spring 408803B; for machines equipped with the old style clutch, order (1) washer 408344A, (1) pressure spring 408803B, and (1) pressure collar 408320.

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Mr M R Lovejoy

Buffalo N Y Branch

10-5

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 413

October 8, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

**1-IMPROVED RIBBON GUIDE POST 407518A** replaces post 1-407302 (K, Plate 33, Symbol List) on all currently manufactured machines and may be installed in Field machines. The new post is of the stationary type and has larger flanges to assist ribbon tracking. The rectangular flange should be locked in place with the longer side parallel to the platen surface, and the ribbon should travel centrally between the flanges.

Adjust the new post by loosening the lock nut (removed from the old post) and raising or lowering the post.

#### SERIES A PRODUCTS

**2-CARRIAGE ANCHORING DEVICES** are now being installed on all Series M machines, except those containing split platens, when they are shipped from the factory. The new devices secure the carriage against bouncing and moving sideways while the machine is in transit, and should be removed when the machine is unpacked.

Side movement of the carriage is eliminated on all machines except those containing Selective Column Tabulation by using two dowel screws 30756 (one screw on 12" carriages) which pass through stationary rail CF (Plate 2, Carriage Symbol List) and project into holes provided in sliding rail AQ-1 (Plate 2). On machines containing Selective Column Tabulation, two brackets 30729 1/2 No. 1 are used. One is fastened to the right front typewriter leg and plate Z (Plate 9) with four screws 79510, and the other to the left front typewriter leg and plate Z (Plate 9) with the same screws that hold air cushion bracket Z (Plate 10), and two screws 79510.

Bouncing of the inner carriage is eliminated on all machines except those containing Selective Column Tabulation by holding the platen rearward under platen locks AR (Plate 2) through the use of two hooks 30757, one each of which is placed over an end of the platen shaft and fastened to the carriage side plate with screw 510 Fte. 141. On machines containing Selective Column Tabulation, two screws 20960 1/2 and two nuts 73380 are fastened, one of each, to a vertical projection on the carriage side plate with the screw head projecting outward through the opening of casting U or G (Plate 8). A piece of "Kimpack" is wedged between the screw head and the casting.

The carriages of machines containing Selective Column Tabulation are further protected against bouncing by using two brackets 30729 1/2 No. 2 which are inserted from the rear over the long round carriage support bar, and are held by two screws 72568 which are inserted downward through rail J (Plate 9).

Instructions pertaining to these carriage anchoring devices are being prepared and will accompany all machines shipped from the factory.

**C. A. BAKER**  
General Service Manager

# Burroughs

## MECANOGRAM

No. 412  
October 1, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

1-SCREW 200578 1/2 is now available for Field replacement of screw X (Plate 75, Accumulation Symbol List). The new screw has a deeper screw driver slot to facilitate tightening, and the head is larger to reduce the side play of part AB (Plate 75, Accumulation Symbol List).

#### SERIES F MACHINES

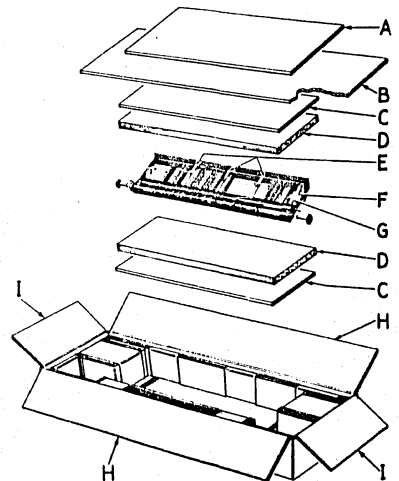
2-RIBBON FEED PAWLS T (Plate 33, Symbol List) of assembly 1-407122 (AA, Plate 33) are now being made harder to reduce wear.

3-PRINTING CONTROL ASSEMBLY 1A-407012 (AF, Plate 38, Symbol List) is now being made harder on its rearmost arm to reduce wear at the point of contact with rack AD (Plate 38).

#### SERIES A PRODUCTS

4-REINFORCED SHIPPING CARTONS 99 NO. 145A (15) (18), complete with fittings are now used for shipping Sensimatic Control Units from the factory and are also available for Field use.

To prepare a Control Unit for shipping, install three clamps E (1-30911) across retaining strips F and G in the approximate positions illustrated. Fasten the clamps while holding strips F and G snugly against the control pin magazines to secure the magazines from slipping out of position. Place a strip of "Tufflex" D on the upper and lower sides of the Control Unit with a piece of strawboard C next to the "Tufflex." Wrap them together in Kraft paper and place the package in the carton. Install fitting B then fitting A, and close covers I before covers H. Secure all open edges of the covers with masking tape.



Retaining strip clamps E shipped to points within the U.S.A. should be returned to "Burroughs Adding Machine Co., Dept. 14, Detroit 32, Michigan" in regular freight shipments.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 411

September 25, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

*1-LINK 1-108A FTE. 200* is now available for use in place of link R (Plate 30, Keyboard Symbol List). The new link is reinforced at its offset with a spot-welded strip which prevents excessive weaving thus assuring a more positive adjustment.

#### SERIES F MACHINES

*2-EXCESSIVE MOVEMENT OF THE ADDING PINIONS* when they are being meshed with the adding racks, and the subsequent wrong totals due to the long teeth of the adding pinions trapping the total stop bail, have been traced to improper adjustment of actuating shaft AG (Plate 28, Symbol List).

This condition may be remedied by adjusting actuating shaft AG (Plate 28) to retain the adding racks rearward with minimum play when the machine is normal.

To adjust, turn eccentrics Q (Plate 28).

Caution: The Accumulating Sections should not be repositioned to correct the preceding trouble.

The correct placement of the Accumulating Sections is as follows: During total operations, studs AD (Plate 28) should locate in the tooth spaces of lock plates Y (Plate 28) without bind.

To adjust, loosen screws P, BK, and BJ (Plate 39) and shift the Accumulating Sections forward or rearward.

Mr M R Lovejoy  
Buffalo N Y Branch

10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 410

September 18, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES C MACHINES

**1-WHEN ORDERING REPLACEMENT BASES** for Field machines which have the serial number stamped in the base, the portion (of the old base) which contains the serial number need not be sent immediately with the Service Parts Order. This permits the machine to remain in service, in many instances, until the replacement base is received. However, when the replacement is installed, the portion containing the serial number must be returned to the Home Office Mechanical Service Section.

For machines containing detachable serial number plates, refer to Item 5, Mecanogram 336.

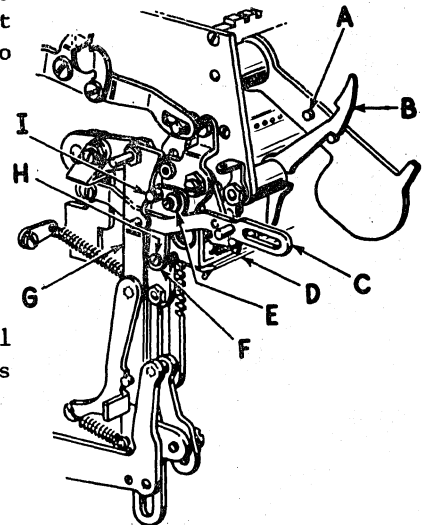
#### SERIES M MACHINES

**2-FOUR POSITION PRINTING BAIL ASSEMBLY D (1-707148A) AND HAMMER FIRING LINK G (1-707122A)** now replace the bail assembly (L, Plate 6, Printing Symbol List) and the link (AF, Plate 6), respectively, in all currently manufactured machines containing the Four Position Printing Mechanism. Bracket F, containing roll I, and eccentric E are also used. The new parts are being installed in machines beginning with the following serial numbers: Class 72, Serial No. B196123; Class 77, Serial No. B135000; and Class 78, Serial No. B196246.

Eccentric E permits adjusting bracket F so that the throw of bail D, through the cams on the bail, actuates hammer latches B for a full hold without bind on studs A when link G moves downward.

Link C, of the Rotary Calendar Disabling Mechanism, is redesigned to clear bracket F.

Replacement of either the bail (L, Plate 6) or the link (AF, Plate 6) in Wide Base machines in the Field requires installation of the following parts: link C (1-707107 No. 2), bail D (1-707148A), eccentric and screw E (71361 and 74502, respectively), bracket F (1-707148 1/4), link G (1-707122A), and screw H (74533).



**C. A. BAKER**  
General Service Manager

# Burroughs MECANOGRAM

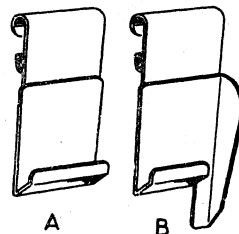
No. 409

September 5, 1951

## MANAGERS AND SERVICEMEN:

### SERIES H MACHINES

1-AUXILIARY FORM MAGAZINES A AND B (21A-130 Fte. 213 No. 3 and 21A-130R and L Fte. 213 No. 3, respectively) are available for use on all payroll machines, Style 301761-62.

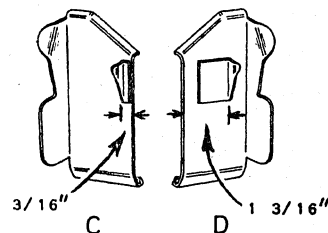


The magazines, A in the center and B at the right and left, are used to hold narrow checks slightly above the magazine back to assist the operator in selecting one check at a time.

2-REPAIR PARTS AA AND AE (Plate 6-1, Printing Symbol List) should now be ordered under symbols 1- 200237 1/2Z No. 2 and 200537 1/4Z No. 2, respectively. These parts are required for use in Early Classes 20 thru 30 machines containing bail assembly N (Plate 44, Printing Symbol List). Order for immediate needs only.

Parts announced in Item 1, Mecanogram 393, will continue to be used in all other Classes 20 thru 30 machines.

3-FRONT ALIGNING TABLE GUIDES C AND D for use on payroll machines, Style 301761-62, are symbolized 1-125R Fte. 213 No. 2 and 11-125L Fte. 213 No. 2, respectively.



### SERIES F MACHINES

4-EACH SERVICE ATTENTION RENDERED TO SERIES F 200 AND F 300 MACHINES should be reported by the Service Representative, starting immediately, on Service Report, Form 224. The report should describe the condition, analysis, and adjustment. The quadruplicate copy should be mailed weekly by the Branch Office to the Home Office Mechanical Service Section.

Mr M R Lovejoy  
Buffalo N Y Branch

10-5

C. A. BAKER  
General Service Manager

# Burroughs

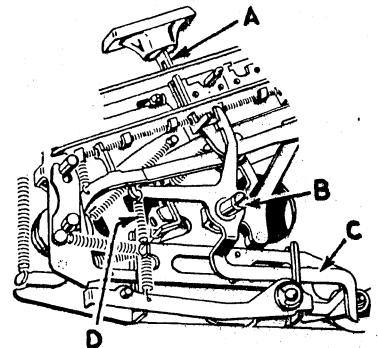
## MECANOGRAM

No. 408  
July 28, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES P MACHINES

1-LATCH C (1-94140 1/2A) is now used in currently manufactured Class 9 machines having the minus key in position 3-0, and may also be installed in Class 9 Field machines of the same construction. The new latch holds the minus key A depressed to prevent the arm (AL, Plate 108-2, Symbol List) from prematurely lifting the latch (AC, Plate 108-2).



Premature lifting of the latch (AC, Plate 108-2) may permit partial rocking of the tumbling section during a minus operation. This action may result in forward movement of the lower wheels and subsequent failure to move the carry pawls (N, Plate 111, Symbol List) far enough to lift the latches (C, Plate 111) during a mixed relay and power (direct) carry.

Installation of latch C (electric machines requires the removal of latch CH, Plate 108-2, Symbol List) in Field machines requires the following parts: latch C (1-94140 1/2A), spring D (81810), and screw B (84518 Style E).

Adjustment: With the machine at normal, the lowermost portion of keystem A should have minimum clearance in front of the projection on the uppermost portion of latch C as the key is slowly depressed.

To adjust, bend the rearmost portion of latch C.

#### SERIES F MACHINES

2-NEW SIDE FRAME RUBBER MOUNT 1-404906B AND NEW PILOT-END BASE SCREW 400565 NO. 2 are now being used in all currently manufactured machines and eliminate the need of the side-sway limiting screws that were formerly used in the front and rear positions. The upper metal part of the new mount has a flange (extending downward into the rubber) that functions as a side-sway limit when engaged by the pilot end of the new base screw.

The new mount is secured to the side frame with screw 79544, nut 47, and lock washer 1097 7/8.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 407

August 13, 1951

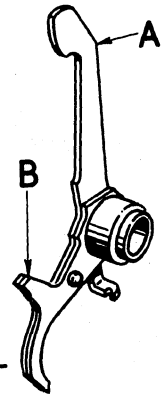
### MANAGERS AND SERVICEMEN:

#### SERIES P MACHINES

1-BRACE 1-86105 1/2AR STYLE 13 (A, Item 1, Mecanogram 375) is now used for both 10 and 12 pitch construction Style 13 machines. Brace 86105 1/2R Style 13 is therefore no longer required.

*Filed*  
2-HAMMER A (1A-87115 1/2), which has stock added at point B to prevent excessive wear, is now assembled in currently manufactured Series P machines containing a Consecutive Numbering Device Rotary, and may also be installed in similarly constructed Field machines.

Excessive wear at point B may permit the release of hammer A before the rotary wheels are fully advanced, thereby resulting in an under addition of the Numbering Device.



#### SERIES M MACHINES

3-SPIRAL REWIND SPRING BARREL 12-75003A - stamped "D" - replaces spring barrel J (Plate 25-1, Carriage Symbol List) in all Class 77 machines containing Selective Column Tabulation; and spiral rewind spring barrel 12A-705003 No. 4 - stamped "F" - replaces spring barrel AE (Plate 25-1) in all Classes 72 and 78 machines containing either a 22" or a 30" carriage.

The new spring barrels contain spring 83 No. 14 which is made of .030" stock in order to provide more strength for more positive tabulation over controls and to reduce spring breakage.

Spring 83 No. 14, which may readily be identified by its red container ring, may be used for Field replacement in the spiral rewind spring barrel in machines with the above construction.

THE INFORMATION CONTAINED IN ITEM 3 ABOVE, SUPERSEDES THAT CONTAINED IN ITEM 5, MECANOGRAM 372.

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

No. 406

August 6, 1951

## MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

1-COMplete REAR FORM GUIDE ASSEMBLIES 1-403903 (15) (18) (S, Plate 3, Symbol List) containing various ledger chute arrangements, may now be ordered by using anyone of the following symbols:

1-403903 (15) (18) complete ledger and statement chute assembly, containing one pair of ledger chutes 2-403118R and L;

11-403903 (15) (18) complete ledger and statement chute assembly, containing two pairs of ledger chutes 2-403118R and L;

21-403903 (15) (18) complete ledger and statement chute assembly, containing three pairs of ledger chutes 2-403118R and L, with center ledger support 1-403128 omitted;

31-403903 (15) (18) complete ledger and statement chute assembly, containing one pair of short ledger chutes 1-403118 No. 2 R and L.

### ALL CLASSES

2-LUBRICATING OF MACHINES DURING MANUFACTURE has been improved by using a new oiling formula which provides freer action of closely fitted moving parts.

Tests conducted, as a result of the recent Field survey of sticking sectors in Series P machines, indicated that the combination of lubricants previously used produced a chemical reaction which formed a gummy deposit some ten or more months after manufacture.

The new formula has been used in all Series P machines beginning with Serial No. B165000. Parts which become sluggish, in machines with an earlier serial number, should be thoroughly flushed with Platen Restorer, after which a generous amount of clock oil (Kit 131) should be applied in the same manner.

MECANOGRAM 405 NOT GENERALLY DISTRIBUTED EXCEPT IN U. S. AMERICA.

C. A. BAKER  
General Service Manager

Mr M R Lovejoy  
Buffalo N Y Branch

10-5

# Burroughs

## MECANOGRAM

No. 404

July 9, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

1-BELL CRANK 1A-200297, LEVER 1-200158 1/2A NO. 2, ARM 1-60160 (INCLUDED IN 1A-200297), AND PART 1-200299A (CA, CJ, BW, and P, respectively, Plate 43-1, Accumulation Symbol List) have been altered to permit more positive adjustment of the Crossfooter Control Mechanism in No Space Stroke Total Bank Machines.

The hole in the rearward arm of bell crank CA (Plate 43-1) has been relocated (forward and upward) to increase the throw of the forward arms of bell crank CA in order to meet the required plug gauge test (Adjustment 1, Plate 43-1, Accumulation Instruction Book). Because of the increased throw of the bell crank, stock has been removed from the pockets in the upper portion of arm BW (Plate 43-1) in order to prevent binding between the counter control lever and the end of the slot in the keyboard. Relocation of the hole in the bell crank has also necessitated removal of stock from the forward end of the slot in lever CJ (Plate 43-1) in order to prevent binding between the lever and the bellcrank when the machine operates.

Part P (Plate 43-1) has also been altered, additional stock having been added to its upper camming surface in order to provide more throw for assemblies BY and BW (Plate 43-1).

#### SERIES F MACHINES

2-SERIES F200 MACHINES may be distinguished, pending some more readily discernible identification to be developed, by the carriage controlled register tappet in lane 25. Lane 25, which is not used in Series F100 machines, is the rearmost position and may be seen with the carriage in the extreme right-hand position

MECANOGRAM 403 NOT GENERALLY DISTRIBUTED EXCEPT IN U. S. AMERICA

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 402

May 31, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES P MACHINES

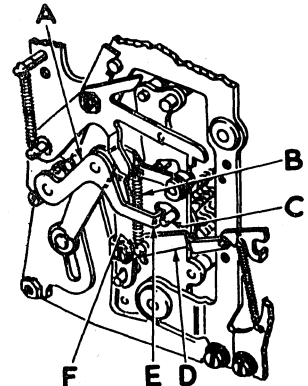
**1-ASSEMBLY A (1-99007 NO.2)** - which contains lip E - and SHAFT C (99004B No.2) - which is .045" longer - are now assembled in currently manufactured Class 9, Style 10 machines and may also be installed in Class 9, Style 10 machines in the Field. The new assembly and the new shaft insure correct functioning of the relay carry action by providing additional support to the tumbling section during a minus operation.

Insufficient support of the tumbling section during a minus operation may permit the lower wheels to rock forward, and may result in failure to move the carry pawls (N, Plate 111, Symbol List) far enough to lift the latches (C, Plate 111) during a mixed relay and power (direct) carry.

Installation of assembly A in Field machines requires the following parts: assembly A (1-99007 No.2), shaft C (99004B No.2), spring B (77880A No.1) - which is smaller in diameter than the spring formerly used, and bell crank D (1-99165) - which now contains a shorter stud F.

**Adjustment:** With the tumbling section in subtract position, lip E should have minimum clearance in front of shaft C.

To adjust, bend lip E.



#### ALL CLASSES

**2-ORDERING OF A PART FOR WHICH THE SYMBOL NUMBER IS NOT CONTAINED IN A CURRENT SYMBOL LIST OR PRINT**, but for which the symbol number is available in an old or obsolete Symbol List or Print, requires that adequate information be included with the parts order. Furnishing of the correct part may be facilitated by inserting the following information in the space entitled "Job Reference" on Service Parts Order, Form 1440 or 1440C; or in the "Description" column of Export Parts Order, Form 2164; or on an attached memorandum if additional space is required:

1. Machine style and number
2. Reference letter (if contained in illustration)
3. Plate number or Print number
4. Form number
5. Date of printing (of the form)

**Note:** In no instance when a symbol number is given, should any information other than the complete symbol be placed in the space designated "Symbol No."

When a part cannot be identified by symbol number in any coverage, a sample part or a sketch of the part should be attached to the parts order with a request for duplication. In such a case, it is necessary that the machine style and serial number be included on the parts order. Also, it is helpful to name the section or the feature of the machine for which the part is required.

Tracing of parts orders previously placed may be facilitated if inquiries addressed to the Home Office specify (1) symbol number, (2) order number, (3) date of order.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 401

May 29, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

1-OVERSCORE TYPE 75118 NO. 5, 75118 NO. 7, AND 75118 NO. 7 1/2 (J, Plate 14, Printing Symbol List) now have stock added to their bases to reduce breakage. Other overscore type will have the same improvement when present stocks are depleted. Following is a complete chart of all available overscore type:

SYMBOL	LENGTH	CLASS OF MACHINE	MACHINE CONSTRUCTION
75118 No. 4	5 whole numbers	72	1/10 fractions
75118 No. 4 1/2	5 whole numbers	72	1/4 fractions
75118 No. 5	5 whole numbers	72	1/8 fractions
75118 No. 6	5 whole numbers	72	whole numbers
		74	whole numbers
		76	whole numbers
		78 narrow base	whole numbers
75118 No. 7	8 whole numbers	72	whole numbers
75118 No. 7 1/2	7 whole numbers	72	1/10 fractions
		77	without Reg. Des.
		78 all wide base	whole numbers
705118 No. 1	8 whole numbers	77	without Reg. Des.
705118 No. 2	8 whole numbers	77	2 bar Reg. Des.
705118 No. 1	2 pound columns, shilling, and pence	78 Sterling, all wide base	farthing
Env. 879			
705118 No. 2	2 pound columns, shilling, and pence	77 Sterling	2 bar Reg. Des.
Env. 879			
705118 No. 3	2 pound columns, shilling, and pence	78 Sterling, all wide base	pence
Env. 879			

2-DRIVE LINK 71156A (AJ, Plate 14, Power Symbol List) has been lengthened .020" to facilitate adjusting the main operating shaft assembly, thereby resulting in full restoration of the adding racks and better adjusting of segment gear L (Plate 14).

The improved link is in all machines beginning with Serial No. B134862.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

Mr. M. R. Lovejoy  
Buffalo N. Y. Branch

10-5

No. 400  
May 28, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

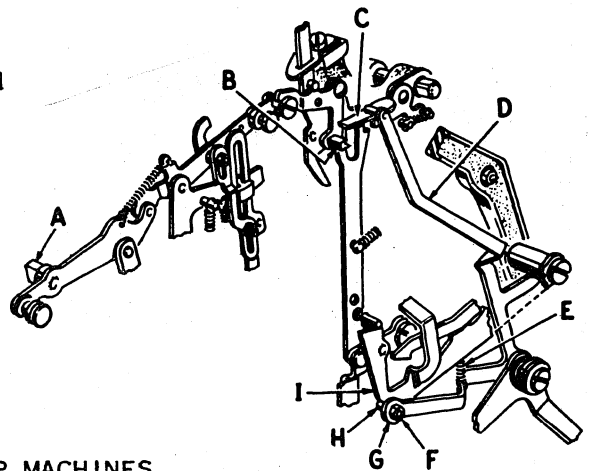
1-INTERLOCK D (1-200284 3/4) is now being installed in currently manufactured No Space Stroke Total Bank Machines which contain latch I, and may be installed in similarly constructed Field machines. The new interlock prevents using motor bar 101 or 102 while latch I is indexed (when motor bar 103 has been depressed and released immediately) to retain the point of throw.

On machines that do not contain the new interlock, it is possible to index motor bar 101 or 102 during the interval of time the carriage skips (when indexed from motor bar 103) from the "old balance" or "check" position to the "total" position. Should either motor bar 101 or 102 be depressed prior to the indexing of the Total Mechanism, stud A would be lowered sufficiently to block the complete indexing of the Total Mechanism, thus resulting in failure of the crossfooter to clear and amounts to print.

To adjust the new interlock, index latch I to retain the point of throw, then turn eccentric stud H until arm C is aligned with the notch in stud B.

When ordering parts for Field installation, order spring E (7480B) and interlock D (1-200284 3/4). The latter includes nut F (46), washer G (1097 3/4), and eccentric stud H (200509 1/4).

Factory analysis is required if it is desired to install the new interlock in machines that do not contain latch I. Furnish the machine serial number.



#### SERIES P MACHINES

2-PART 1-94124 ELEC. NO. 2 (M, Plate 45-1, Symbol List) now has all of its studs hardened to reduce wear caused by the actions of other parts, especially that resulting from the sliding of arm X (Plate 45-1) on the rearward stud.

#### SERIES A MACHINES

3-CLUTCH HEAD SCREW DRIVER, KIT 2 1/2 is now available for use with the clutch head screws used to assemble Styles 91A and 92A stands.

#### SERIES F MACHINES

4-BRACE 1-404259A replaces brace T (Plate 34, Instruction Book, issued 3/1/50), and screw 404554 replaces screw R (Plate 42). The new brace has a drilled projection added to its center vertical member to prevent weaving of the pivot post for lever Q (Plate 42) by supporting the extended head of the new screw.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 399

April 30, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

*1-FORM ALIGNING TABLE 1-703283 NO. 3 (12) (18) (22) (30) (S, Plate 4-1, Carriage Symbol List)* is made to special order when transparent aligning inserts and/or pressure roll clearance cutouts are required.

Orders for special tables should include a sketch showing locations of cutouts and/or inserts on the aligning table, and their dimensions. The right and left ends of the table should be indicated on the sketch, and the following limitations should be observed: Inserts cannot be closer than 1 3/4" to the right end, and 2 3/4" to the left end; cutouts cannot be closer than 1 3/4" to the right end, and 2 1/4" to the left end. Also, space between an insert and a pressure roll cutout cannot be less than 1/2"; and space between inserts cannot be less than 1", otherwise one long insert should be used.

Orders should also include the symbol, color, carriage length, number stamped on space ratchets O and BG (Plate 1), and Machine Style and Serial Number in order to expedite manufacture and delivery.

This information supersedes that contained in Item 3, Mecanogram 325.

*2-TYPE HAMMER SPRINGS T (Plate 2, Printing Symbol List)* are frequently replaced without removing the typewriter or the hammer section, by either of the two methods explained below:

#### 1. Replacement through the opening in the base -

- a. Remove oil shield AD (Plate 14, Power Symbol List).
- b. Remove the front typewriter panel.
- c. Raise arm AO (Plate 3, Keyboard Symbol List) so that it will clear stud AP (Plate 3), and operate the machine manually until the hammers fire and the hammer latches reset.
- d. Manually raise the hammer containing the broken spring to the firing position, and lower and latch down all other hammers.
- e. Push the corresponding driver forward from the rear.
- f. Place the machine on its rear side, and place supports under each side frame so that the machine does not rest on the sub-tractor section.
- g. Place the spring on a spring hook, and insert the hook upward through the opening in the base.

(Over)

- h. Hook the spring first on the stud in the driver, and then to the spring anchor bail. (Note: To facilitate hooking the spring to the spring anchor bail, tilt the bail with a long screw driver.)
2. Replacement through the top of the machine following the removal of obstructing parts -
- a. Remove the case.
  - b. Remove the carriage.
  - c. Remove the platen shift arm B (Plate 21, Printing Symbol List).
  - d. Lift right and left ribbon guides B (Plate 17) and the ribbon out of position.
  - e. Remove shield H (Plate 18).
  - f. Remove the front and side typewriter panels.
  - g. Loosen the screws in front adding rack retaining strap B (Plate 3). (Leave the screws and strap in the machine.)
  - h. Remove tabulator block O (Plate 18, Carriage Symbol List.)
  - i. Remove the rack bar guides.
  - j. Pull forward vertical tab arm AN (Plate 18), thereby disconnecting governor pawl N (Plate 23) from lower clutch member O (Plate 23), and escapement dog release lever R (Plate 23) from the slot in tab arm M (Plate 23).
  - k. Remove guide comb A (Plate 1, Printing Symbol List). (Note: It may be necessary to remove hollow shaft J (Plate 18, Accumulation Symbol List) to facilitate removal of the screw in the right end of the guide comb.)
  - l. Raise arm AO (Plate 3, Keyboard Symbol List) so that it will clear stud AP (Plate 3), and operate the machine manually until the hammers fire and the hammer latches reset.
  - m. Manually raise the hammer containing the broken spring to the firing position, and lower and latch down all other hammers.
  - n. Push the corresponding driver forward from the rear.
  - o. Remove the necessary hammers. (Note: Be sure that the hammers are marked so that they will be installed in the same columns from which they were removed.)
  - p. Place the machine on its rear side, and place supports under each side frame so that the machine does not rest on the subtractor.
  - q. Placing the spring on a spring hook and working straight downward (if the machine were level) through the adding racks and just behind hammer shaft K (Plate 3), hook the spring first to the spring anchor bail and then on the stud in the driver. (Manually spread the adding racks.)
  - r. Restore the machine to normal and replace the parts in reverse order, beginning with the replacement of the hammers.

Mr M R Lovejoy  
Buffalo N Y Branch

10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 398

April 29, 1951

### MANAGERS AND SERVICEMEN:

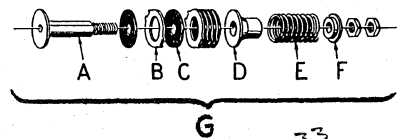
#### SERIES F MACHINES

1-CARRIAGE DRIVE CLUTCH G (2A-408013) is now being used in all currently manufactured machines to improve 5/8" carriage movements, and may be installed in Field machines.

The following changes in design result in a constant output of driving torque, regardless of operating conditions:

Carbon disks C are driven directly by spindle A, and in turn drive disks B which are keyed to the outside cylinder; cone D provides uniform transfer of the pressure of spring E to the disks; spring E has its diameter increased to soften its action, and washer F is enlarged to agree in size with spring E.

The tension of this new clutch should be set as directed in Mecanogram 366, Item 1, Adjustment B-6.



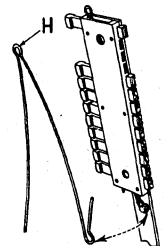
2-RIBBON GUIDE BAILS 407126AR AND AL replace bails B (Plate 28, Instruction Book, issued 3/1/50) in all currently manufactured machines. The new bails have a different design at their points of contact with the ribbon to reduce curling and fraying of ribbons.

3-SCHEDULE IDENTIFYING COUPON, FORM 3085, for the holder on control panels are now available for Field use. They are printed in strip form, nine coupons to the strip.

4-STRONGER SPRING 2887 1/2 now replaces spring I (Plate 50, Instruction Book, issued 3-1-50) to reduce the possibility of arm B (Plate 50) camming past interlock A (Plate 50). This action results in premature releasing of the drive and possible locking of the machine due to misalignment of the sensing tappets with the control pins.

5-TYPE SPRING H (406804A) has been redesigned to provide uniform restoring pressure on the type (in all positions) and to reduce breakage.

6-WRENCHES KIT 403 NOS. 1 AND 2, for adjusting the clutches and the Sensing Unit, have been redesigned for added strength. The No. 2 wrench is also offset to enable easier adjusting of the sensing unit camshaft.



C. A. BAKER  
General Service Manager

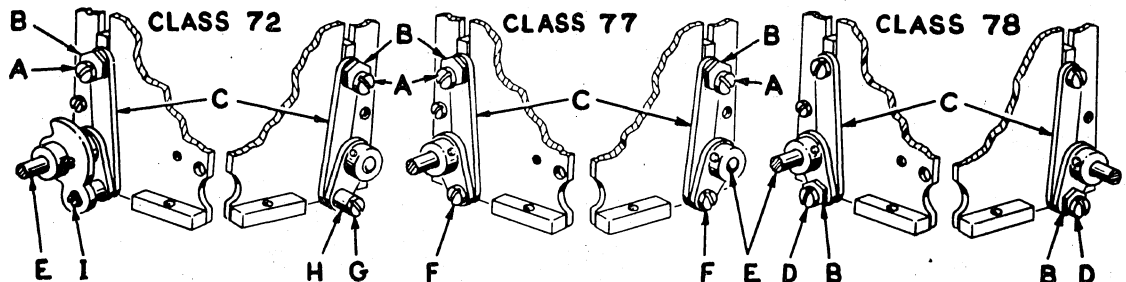
# Burroughs

## MECANOGRAM

No. 397  
April 20, 1951

MANAGERS AND SERVICEMEN:

### SERIES M MACHINES



**ECCENTRIC B** (704300 1/2 NO. 2) now replaces the eccentric (U, Plate 22-1, Accumulation Symbol List) in all currently manufactured Classes 72 and 77 machines, beginning with Serial Nos. B131300 and B97868, respectively, and is placed in the upper end of link C. In Class 78 machines, eccentric B is still being used in the lower end of link C. Screw G (702589) also replaces the screw (AJ, Plate 22-1) in all currently manufactured Class 72 machines.

Use of the eccentrics provides a means of adjusting the throw of the raise bar (AM, Plate 22-1) so that the lugs on the adding racks align centrally with the steps of the limit plates (A, Plate 22). The eccentrics are now placed in the upper ends of links C so that any adjustment which may be made to alter the throw of the raise bar will not change the throw of the cam shifter (W, Plate 25), and also will not change the relation of the clearance cut in links C with power shaft E.

When replacing the eccentrics and the screw (U and AJ, respectively, Plate 22-1) in Class 72 machines prior to Serial No. B131300, the following parts are required: two eccentrics B (704300 1/2 No. 2), two screws A (704589), screw G (702589), roll H (406320), and screw I (704588).

When replacing the eccentrics (U, Plate 22-1) in Class 77 machines prior to Serial No. B97868, the following parts are required: two eccentrics B (704300 1/2 No. 2), two screws A (704589), and two screws F (74501).

The eccentrics may also be installed in Field machines which do not already contain them by using the following parts: For Classes 72 and 77 machines -- two eccentrics B (704300 1/2 No. 2) and two screws A (704589); for Class 78 machines -- two eccentrics B (704300 1/2 No. 2) and two screws D (7062).

THIS INFORMATION SUPERSEDES THAT CONTAINED IN ITEM 5, MECANOGRAM 293.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 395

April 4, 1951

### MANAGERS AND SERVICEMEN:

ALL CLASSES

SPECIAL TYPE AND KEYTOPS

*ORDERING OF TYPE AND KEYTOPS OR KEYPAPERS NOT ORDINARILY CARRIED AS REGULAR REPLACEMENT ITEMS* requires that Special Type and Keytop Chart, Form 2836, be properly filled in (in triplicate) and that the first two copies accompany the service parts order.

List the machine style and the serial number, and show a full keyboard print in the space provided, circling the characters to be replaced. Indicate clearly in the respective plate of the chart the characters required and the positions in which they are to be installed. Also, indicate if keytops or keypapers are required.

Submit complete information - quantity of each, style or pitch, sector position, and the plate number used in the chart - for all type ordered.

Notes: (1) "Style" refers to the design of the type, such as, "No. 06M, Pica Gothic, for Series M machines" or "No. 02, Elite Correspondence, for Series T machines." The style of type for Series T machines is stamped in the side of the type, and the position number is stamped in the side of the type bar.

(2) "Pitch" refers to the number of indexing positions provided on the sector or type bar.

Special care must be used when ordering type bars for symbols in Series P machines as many of these machines are equipped with 12 pitch construction in the symbol column. Refer to General Release Print 409-1/P where the various symbol bars, as well as the positions of the symbols on the type bars, are shown for any style of Series P machine.

(3) Sectors are numbered from the right or handle side of the machine, omitting the symbol sector.

Submit complete information - quantity of each, color, complete symbol, and the plate number used in the chart - for all keytops or keypapers ordered.

(Over)

Note: The correct colors for keytops may be determined by referring to the following keytop color charts:

Series H - Plate 21-1, Keyboard Symbol List

Series V - Plate 28-1, Symbol List

Series C - Plate 2-1, Symbol List

Series P - Plate 40A, Symbol List

Any additional information should be given in the space provided under "Special Instructions."

When applying a new machine on a sale order and the machine is not available for a keyboard print, it is very important that the Branch give the correct style of machine. This detail along with the information already noted, enables the Home Office to determine the heights and offsets required for the type.

Two charts are required since one is used for type and one for keytops and keypapers. A service parts order for type and one for keytops or keypapers must accompany each set of charts. In the case of word type, where bridged keytops and regular keytops are used, one chart for keytops is satisfactory, but two service orders must be attached to the chart, one for the bridge and one for the regular keytops.

Show all service parts order numbers on each copy of the chart, with a line through those numbers which do not apply to the item for which the copy is used. Be sure that the Service Station name on the chart agrees with the Branch name on the related service parts order. This serves to identify the orders and charts with each other in the Home Office.

Staple the charts and the related service parts orders together before mailing them to assure the forwarding of all supporting material.

Export countries should submit charts for type and keytops or keypapers along with Export Supply Order, Form 2164, which may be used to include all material requested on charts.

This information supersedes that contained in Item 1, Mekanogram 253.

Mr M R Lovejoy  
Buffalo N Y Branch

10-5

C. A. BAKER  
General Service Manager

# Burroughs

# MECANOGRAM

No. 394

March 28, 1951

## MANAGERS AND SERVICEMEN:

### SERIES H MACHINES

*1-SPRING 1-201801 NO. 4* is now being used in place of spring AP (Plate 81-1, Carriage Symbol List) in currently manufactured machines containing the New Visible Aligning Bail (Plate 29-1). The new spring, which is of lighter construction, reduces harsh carriage opening.

The anchor in one end of the new spring is painted red to facilitate identification.

### SERIES F MACHINES

*2-CONTROL PIN SETTING JIG, KIT 407*, is now available as an aid when assembling magazines for non-standard panels.

Place the magazine, with the ribbed side down and the screw holes to the right, over the etched side of the jig, with the lugs of the magazine located in the two guide notches of the jig. Slide the proper control pins under the magazine from the right, identifying the various lanes of control by the printing on the jig. Install the screws with a spring screwdriver.

*3-SPRING SCALE, KIT 408*, is now available for use in the Branches to aid in obtaining the proper setting of the carriage drive clutch and checking the tension of the carriage brake.

The carriage drive clutch should pull approximately 9 1/2 pounds. The test may be made as follows:

- a. Hook the scale to the right end of the carriage.
- b. Depress the carriage tabulating directional key, and arrest the travel of the carriage with the scale.
- c. Slowly relax the hold and read the scale as the carriage starts to move.

Note: The clutch tension in the carriage return direction should be approximately 11 pounds.

The carriage brake should test approximately 5 1/2 pounds. The test may be made as follows:

- a. Hook the scale to either end of the carriage.
- b. Pull the carriage along its rails, with the brake set, and read the scale with the carriage moving.

**C. A. BAKER**  
General Service Manager

# Burroughs

## MECANOGRAM

No. 393

March 20, 1951

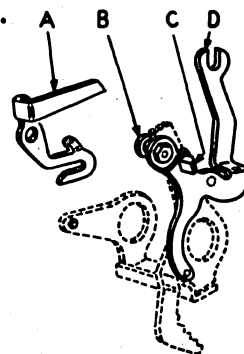
### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

1-REPAIR PART D (1-200237 1/2Z) AND ECCENTRIC SCREW B (200537 1/4Z) have been altered to enable their use in No Space Stroke Total Bank Machines, and also to eliminate interference when used in commercial machines with the Rotary Calendar Feature on the left.

Part A (207104Z), which is used in conjunction with repair part D in No Space Stroke Total Bank Machines, has a larger offset to provide necessary clearances, and should be installed in place of the part (AP, Plate 6-3, Printing Symbol List).

Stud C, which is not required for commercial machines, should be removed prior to the installation of repair part D on commercial machines in order to avoid possible interference with other mechanisms such as the Rotary Calendar Feature.



#### SERIES F MACHINES

2-GEAR 408303 (T, Plate 2, Instruction Book, issued 3/1/50) has had the hardening process discontinued during its manufacture to reduce the wearing of gear U (Plate 2). The softer gear is included in all machines after Serial No. B48000 and may be installed in Field machines.

Mr M R Lovejoy  
Buffalo N Y Branch

10-5

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 392

March 19, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

1-CARRIAGES ON PAYROLL MACHINES, STYLES 30 17 61 AND 30 17 62, may be modified to accommodate an official change (effective January 1, 1951) in the writing of Withholding Statement, Form W-2. (Refer to Sales Operating Instructions, Form 1065, for details.)

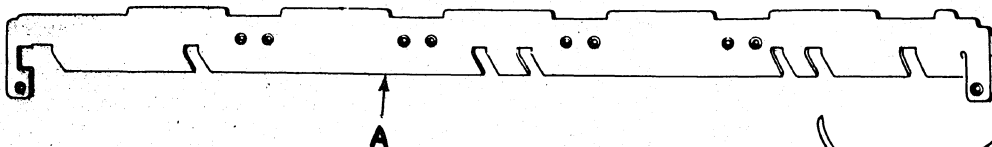
The new writing method necessitates using a new paper table A, which contains additional cutouts, and two extra form limits which include parts B, C, D, and E.

The following method is suggested for making the above change:

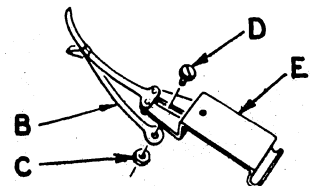
1. Remove the platen and the paper table (similar to S, Plate 51, Carriage Symbol List).
2. Remove the paper table (similar to S, Plate 53-6) and replace it with new paper table A.
3. Replace all parts in reverse sequence.
4. Install the two extra form limits. (Refer to Form 1065.)

The following parts are required:

SYMBOL	DESCRIPTION	AMOUNT REQUIRED
A....203108D No. 7 18"	Paper Table	1
B....184 Fte. 213 No. 13	Limit	2
C....49 1/4	Nut	2
D....70528	Screw	2
E....1-184 Fte. 213 No.12	Bracket	2



2-SPRING 1-2886 1/4D (AM, Plate 43-2, Accumulation Symbol List) now has its tension increased from 23 lbs. 8 ozs. to 26 lbs. 4 ozs. This increased tension eliminates excessive yielding and assures full travel of arm BG (Plate 43-1), thereby causing the crossfooter to be swung sufficiently during a tumbling operation to latch in the position (add or subtract) to which it is being tumbled.



C. A. BAKER

General Service Manager

390 B4H

# Burroughs MECANOGRAM

No. 391

March 12, 1951

## MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

*1-COMplete GEAR ASSEMBLY 2-401118* (Plate 47, Instruction Book, issued 3/1/50) should be changed when replacing worn worm wheel I (Plate 47). The complete assembly includes all the parts illustrated in Plate 47 except screws R and G, coupler P, washer K, shaft J, and gear H.

Bracket A has been re-formed to improve the alignment of worm wheel I (Plate 47) and worm gear C (Plate 47).

*2-FILING TEMPLATE A (KIT 405)* is now available as an aid in cutting printing control disks for minor setup changes.

The blank disk should be placed over the locating stud of the template and both parts held in a vise as stock is removed from the disk within the outline provided by the cutout portion of the template.

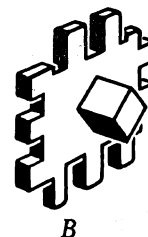


Alternate spaces may be cut by reversing the disk on the stud of the template.

*3-FILING TEMPLATE B (KIT 404)* is now available as an aid in cutting skip and return disks for minor setup changes.

The blank disk should be placed over the locating stud of the template and both parts held in a vise as stock is removed from the disk within the outline provided by the cutout portions of the template.

The right and left sides of the template (as illustrated) are used when cutting short pins, the upper and lower sides when removing the entire pin.



Alternate pins may be cut by rotating the disk on the stud of the template.

**MECANOGRAM 390 NOT GENERALLY DISTRIBUTED EXCEPT IN U. S. AMERICA.**

**C. A. BAKER**  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 389

February 14, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

1-STEP-OVER CAM 74141A, which is assembled to the upper extremity of slide L (Plate 22, Accumulation Symbol List), may now be easily replaced -- in all Class 72 new wide base machines except those containing the Multiplier to Crossfooter Sub-Transfer Mechanism -- without replacing slide L (Plate 22). Use screw 709635 and nut 49 1/4 in place of the rivet for holding the cam to the slide.

In machines manufactured prior to the new wide base machines, replacement of the step-over cam also requires replacement of step-over pawl assembly M (Plate 10) with assembly 1A-79923. The cam and the pawl assembly were redesigned to reduce the possibility of overthrowing the crossfooter adding wheel section during multiplying operations. (See Mecanogram 312, Item 3).

#### SERIES P MACHINES

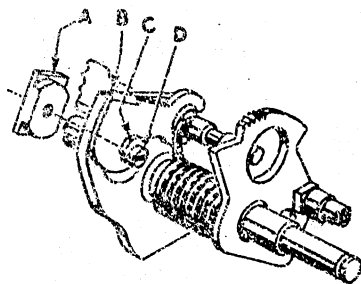
*Cancelled by New 418*  
2-AUXILIARY CAM B (81116 3/4) is now available for installation in Styles 10 and 13, Class 9 Field machines to facilitate a closer adjustment of the cipher stops (as set forth in Plate 109-1, Instruction Book), thereby preventing a possible under-addition when a 9 is on a plus wheel and an amount with a cipher in the same column as the 9 is then subtracted.

Auxiliary cam B, when located in the desired position, rocks the restoring frame a greater distance during the return stroke of a machine operation to lower the normal position of the adding racks (J, Plate 94, Symbol List), thus facilitating the proper adjusting of the cipher stops. Installation requires the following parts: auxiliary cam B (81116 3/4), screw D (1050 1/16), eccentric C (12030 1/16), and nut A (81345 1/2Y).

Adjustment: There should be approximately .003" clearance between the lowermost portions of the adding racks (J, Plate 94) and the brace (L, Plate 126) when the machine is normal.

To adjust, loosen screw D and turn eccentric C (using Kit No. 27).

Note: It may be necessary to remove stock from the shaft (SV, Plate 40) in order to provide radial clearance for auxiliary cam B.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 388

February 9, 1951

MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

1-CARRIAGE BRAKE SLIDE 1-408183 (G, Plate 8, Instruction Book, issued 3/1/50) has been altered to obtain maximum life of felt pellets BO (Plate 8), and is now available for installation in Field machines. The lower end of the slot behind screw F (Plate 8) has been cut out to prevent a false limit for the upward travel of the slide.

When installing the altered part, observe the following precautions. (Parts referred to may be found in Plate 8.)

- Check the pellet cups for being level with the top of the slide and of the same height.
- Be sure that spring D is corrected spring 408806 (see Mecanogram 366, Item 1, Test and Adjustment "1-b").
- Remove the felt pellets and put the slide in place. Then, holding the slide at its upper limit of travel, check for slight clearance between the pellet cups and brake disk BN. If there is no clearance, the stud on restoring lever I should be lowered at its point of contact with brake slide G. If there is too much clearance (due to an early limit on the restoring stud), the stud should be raised.

Note: If it is necessary to raise the stud on arm I, be sure to check the resetting lead of the formed ear on slide G under latches H.

- Replace the pellets and reassemble the machine.

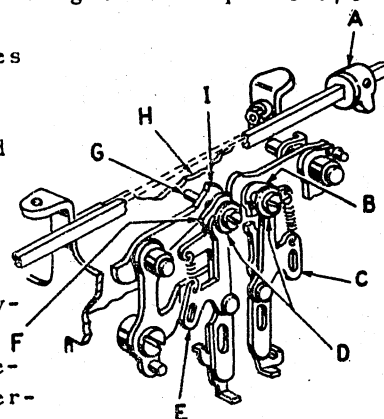
2-SLIDES B AND F (1-408151AL AND 1-408151AR, RESPECTIVELY), ECCENTRICS D (408350A), AND SCREW G (408546) have been redesigned to improve  $5/8"$  carriage movements.

Eccentrics D have longer shoulders, and slides B and F contain formed projections. The new parts, respectively, provide and maintain more space between the flanges of the eccentrics and the slides in order to permit free movement of pawls C and E.

Screw G projects forward through right-hand stop bumper I to the back plate of carriage drive unit H. This screw prevents forward weaving of the stop bumper and maintains alignment of the stop bumper with stops A in order to prevent the stops from contacting slide F and interfering with free movement of pawl E.

These new parts are interchangeable with the earlier parts (L, AA, P, and Q, Plate 8, Instruction Book issued 3/1/50).

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General Service Manager

# Burroughs

## MECANOGRAM

No. 386

February 1, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

1-RESISTANCE COILS 1B-200911 (T, Plate 4, Power Symbol List) used with overdraft and aligning lights, have new ohm values which reduce excessive burning out of lamps.

The new values, indicated in the following chart, supersede the overdraft and aligning light specifications shown in the Resistance Coil Chart (Plate 3-1).

LINE VOLTAGE	OHMS	NO. REQUIRED
110	None	None
125	140	1 per lamp
150	465	1 per lamp
200	1000	1 per lamp
220	1300	1 per lamp
235	1460	1 per lamp
240	1580	1 per lamp
250	1700	1 per lamp

Resistance coil values for line voltages other than those listed above should be referred to the Home Office for analysis by the electrical laboratory.

#### SERIES A PRODUCTS

2-CHECK TABLES A (Plate 13-2, Series A Symbol List) for Styles 91A and 92A stands, are now packed on top of machine rests F and J (Plate 13-2) to prevent damage during shipping. This method of packing also assists in protecting the machine rests from being bent.

3-CHECK TABLE EXTENSION 1-20992 1/8 (AR, Plate 13-2, Series A Symbol List) is now improved to overcome its being loose on Styles 91A and 92A stands. The depth of the countersunk screw hole, through the anchored end of the extension, has been reduced, thus permitting the screw 20952 1/8 (projecting through nut B, Plate 13-2) to be more securely tightened.

4-SCREW 20954 1/2B, with a longer shoulder, may be used to replace screws AW and/or AU (Plate 13-2, Series A Symbol List) in Style 91A and 92A stands to reduce binding when the table is raised or lowered.

The binding is caused by oversize brackets having been welded to some of the tables.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 385

January 30, 1951

Mr. M. R. Lovejoy  
Buffalo N. Y. Branch

10-5

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

1-SERIES F FORM SETUP PARTS ORDER, FORM 1708, should be filled in as follows:

#### 1. Heading

- a. Enter the Invoice Number, the name of the Branch, and the Date.
- b. Enter the Machine Number (or Numbers) - if the parts are being ordered for a consignment machine; or if the parts are to be used to change the setup of a user's machine.
- c. Indicate the disposition of Form 1708 by placing an (X) in the space provided:
  - (1) To Order Division - if accompanied with a machine order.
  - (2) To Service Division - if the parts are for a consignment sale or modification.
- d. Specify shipping directions.

#### 2. Items 1 through 22

- a. Enter only the correct quantities which are needed to complete the machines specified in the order.

#### 3. Items 23 through 31 (Additional Symbols Required)

- a. List the total number of printing control disks (407148) or complete shafts (2-407013) - only when the material is ordered for a consignment machine Field change and specified "Ship to Branch."
- b. List only the additional parts required to complete the non-standard setup of machines specified in the order; e.g., machines shipped from the Factory for non-standard setups are equipped with only one set of ledger guides, front and rear, and only one pair of paper holder brackets. If additional guides or brackets are required, they must be ordered separately.

Note: Special characters must be accompanied with a completed Form 2836, "Special Type and Keytop Chart."

#### 4. Reverse Side

- a. Outline the Skip and Return Disks required by the machines specified in the order, and write in the "Style" and "Quantity."

(OVER)

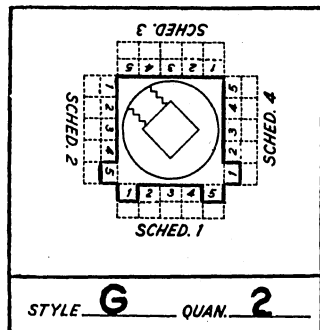
Notes: (1) A pin in lane 5 must be supported by a short pin in lane 1 of the preceding schedule; e.g., see Fig. 1. Also a long pin in lane 1 must be supported by a short pin in lane 2 of the same schedule; e.g., see Fig. 2.

The supporting of pins in lanes 5 and 1 is necessary because of the construction of the disks, and is possible because short pins in lanes 1 and 2 cannot be "sensed." Conversely, short pins in lanes 3, 4, and 5 can be "sensed" and, therefore, cannot be used to support pins in other lanes.

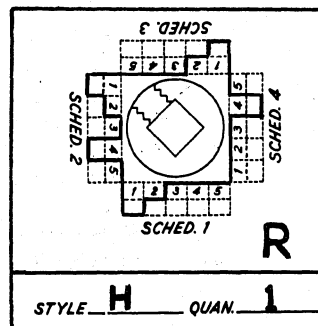
- (2) Reverse disks should be outlined as any other disk. Just place on R within the square as shown in Fig. 2.  
Do not outline them in reverse.

- b. Fill in the Printing Control Unit Order, following the directions given. Also, if completing a non-standard printing control shaft, outline the required disks, from F through R, indicating the number required by writing the quantity below each disk outlined.

**FIG. 1**



**FIG. 2**



2-BRACE 404246Z is now available for installation in Field machines to reduce the breaking of post P (Plate 25, Instruction Book, issued 3/1/50). The new brace is assembled to cross member BP (Plate 49) and takes the place of the anchor plate for springs AU (Plate 8).

For clearance, while installing the new brace, the screws holding bracket AY (Plate 8) should be removed and the bracket moved to the left.

3-THE PRESENT PRACTICE OF PREPARING A SERVICE REPORT, FORM 224, for Home Office information covering each mechanical attention to Series F machines has served its purpose and may be discontinued.

Mechanical Report, Form 980, should continue to be used to report the condition of machines received from the factory and to inform us of recurring and unusual trouble.

Your cooperation in preparing Form 980 will be appreciated.

C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 384

January 22, 1951

MANAGERS AND SERVICEMEN:

### SERIES F MACHINES

1-IMPROVED CARBON COPIES on Series F machines can be obtained by applying the following tests and adjustments. (Parts and plates referred to may be found in the Series F Instruction Book issued 3/1/50).

1. With the carriage closed, there should be  $1/8$ " clearance between the platen and the face of the type.

To adjust, turn eccentrics V (Plate 18).

2. With the machine normal and the roll of lever X (Plate 27) limiting on cam T (Plate 27), there should be safe minimum (.020) re-setting lead of hammers A (Plate 27) over universal bail AA (Plate 27).

To adjust, turn eccentric R (Plate 27).

3. The timing of the hammer release should be set (to avoid any interference with the restoring bail) so that the hammers strike the platen during the interval between the time the restoring bail leaves the hammers prior to printing and contacts the hammers again to restore them after printing.

To adjust, turn eccentric J (Plate 27).

Note (1): Timing of the functioning of the restoring bail may be checked as follows: List amounts in all columns and operate the machine slowly to the point where the type may be pressed against the platen by manually holding the hammers rearward. Note the degrees on the Timing Disk when the restoring bail leaves the hammers and again when the bail contacts the hammers to restore them.

After determining the timing of the functioning of the restoring bail, the timing of the hammer release may be computed in a manner similar to the following example. (The "Time of Hammer Travel," as used in the example, is standard in all Series F machines, and may be used in all computations of this kind):

Example: Restoring bail leaves the hammers at  $170^{\circ}$ .  
Restoring bail begins to restore the hammers at  $185^{\circ}$ .

(Over)

	Hammers Release At	Time of Hammer Travel	Type Strikes Platen At
Regular Hammer Springs {	160°	13° Fastest Hammer	173°
	160°	22° Slowest Hammer	182°
Heavy Hammer Springs {	164°	9° Fastest Hammer	173°
	164°	18° Slowest Hammer	182°

(Because the timing of the restoring bail may vary in different machines, the releasing of the hammers must be varied accordingly.)

Note (2): The heavy springs are standard in F104 machines. They may also be installed in the Field in the improved printing section which is standard in all currently manufactured machines after Serial No. B62250. The new section is constructed with an improved hammer restoring bail that is actuated from both sides of the hammer section.

Caution: Do not use heavy springs in the earlier style of printing section. They tend to twist the restoring bail out of square.

Following is the consistency for heavy hammer springs:

<u>SYMBOL</u>	<u>COLUMNS WHERE USED</u>	<u>AMOUNT REQUIRED</u>
407806 No. 4	1, 2, 3, 5, 6, 7, 9, 10, 12, 13, 16, 17	12
407806 No. 5	4, 8, 11, 14, 15	5
407806 No. 6	18	1

2-ALLEN HEX-SOCKET SETSCREW 403582A (1/8 X 6-40) was temporarily used with stops BF (Plate 4, Instruction Book, issued 3/1/50) in Series F machines until sufficient "Bristo" multiple-spline socket setscrews 403582A were available. Wrench Kit 701 No. 1, which is used with the Allen type screw, is available on service parts orders; or, a 1/16" Allen wrench may be purchased locally.

3-REPLACEMENT CASE SCREW 69553 may be used if the threads in the base casting are stripped. Retap the base with a 3/16-32 tap; and enlarge the slot in the case panel with a file, if necessary.

4-SYMBOL 40882 is the correct symbol for governor spring P (Plate 44, Instruction Book issued 3/1/50).

All symbol lists should be corrected accordingly.

Mr M R Lovejoy  
Buffalo N Y Branch

10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 383

January 16, 1951

MANAGERS AND SERVICEMEN:

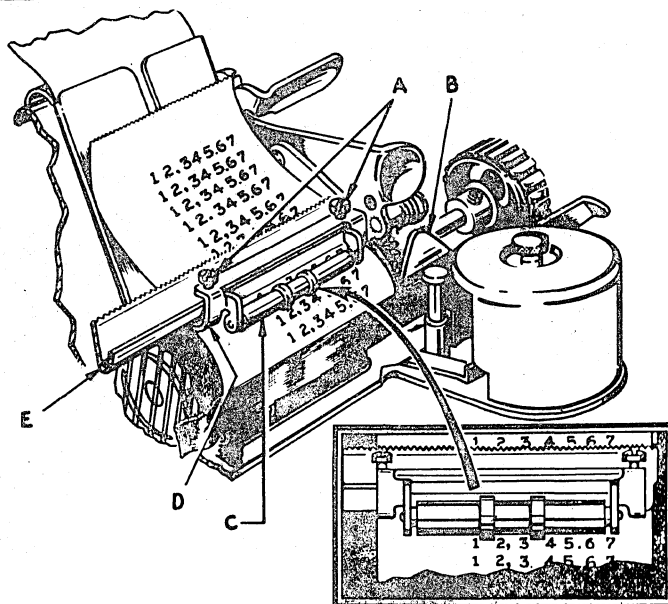
### SERIES P MACHINES

1-AUXILIARY GUIDE ROLL ASSEMBLY D (1-83158 13/16) is now available for installation on Style S carriages in Field machines to reduce bulging and tearing of the roll paper as the carriage tabulates.

Installation of the auxiliary guide roll should be made, as illustrated, on tear off blade E in front of the short member of the split platen.

The following adjustments are required:

1. The raised portion of rolls C should be aligned to run between the columns of figures, as illustrated.  
To adjust, position assembly D in the required location and tighten the two screws A.
2. There should be safe clearance between the two ears B (of the line finder) and rolls C as the carriage tabulates.  
To adjust, bend ears B.



ALL CLASSES

2-MOTOR LINE CORDS for currently manufactured Series H, M, V, P, F, and C machines are reduced in length from 8'6" to 6'6" and are available in black only. Where additional length is required, extension cord 1-3697 7/8 should be used.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 382

January 15, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES F MACHINES

**1-CORRECTING NET ACCUMULATION PROOF TOTALS.** The following tests and adjustments, which should be performed in the sequence given, will aid in overcoming misoperations of the Net Accumulation Proof Mechanism. The plates referred to may be found in the Instruction Book issued 3/1/50.

a. Machine speed should be 108 operations per minute (review Item 2, Mecanogram 346).

b. Check sensing camshaft adjustments Nos. 1, 2, and 3 (Plate 5).

Note: In applying test No. 2, the play of the main camshaft should be held to the rear of the machine.

c. With the machine normal, the Sensimatic Control Unit should be located to provide .050" clearance between No. 5 control pins and the sensing tappets.

To adjust, see adjustment No. 1, Plate 4.

d. With the machine normal, there should be minimum clearance between lever D and bell crank F (Plate 42).<sup>47</sup>

To adjust, see adjustment No. 1, Plate 42.<sup>47</sup>

e. Replace spring 44808 (V, Plate 42) with new weaker spring 404809.

f. With slide W (Plate 42) in its lowered (subtract) position and slide O (Plate 42) manually held rearward, hook T (Plate 42) should have minimum clearance (.005") over the formed ear of slide O.

To adjust, bend the lower formed ear of slide W.

g. With slide W (Plate 42) in its upward (add) position and latch T (Plate 42) latched over the formed ear of slide O (Plate 42), and with pawl I (Plate 42) manually held upward to take up the lost play between parts T, O, and K (Plate 42), pawl I should have minimum clearance under the formed ear of bail G (Plate 42) when bell crank F (Plate 42) is manually raised.

To adjust, weave the connecting bell crank between parts O and K (Plate 42).<sup>47</sup>

h. Slide O (Plate 42) should start to move rearward at 10°.

To adjust, weave bail Q (Plate 42).

i. Pawl I (Plate 42) should contact and move the formed ear of bail G (Plate 42) at 16°.

To adjust, weave bail G.

*See 469*  
**2-NEW FUSETRONS 40996 (.95 and .75 amperes)** replace fusetrans 4595 1/4 (.85 and .6 amperes, respectively) (AJ, Plate 44, Instruction Book issued 3/1/50) for use in all Series F machines having 110 and 150 volt circuits, respectively.

The amperage of the new fusetrans has been increased to reduce burning out during machine operation.

Fusetrans 4595 1/4 (.45 amperes) used with 220 to 250 volt circuits has not been changed.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 381

January 10, 1951

### MANAGERS AND SERVICEMEN:

#### SERIES H MACHINES

1-ESCAPEMENT ARM ASSEMBLY 1-200187B (similar to C, Plate 64, Accumulation Symbol List) of the Carry Timing Mechanism has been altered to reduce breakage. Stock has been added to the pivotal point of the lower arm of the assembly, which is actuated by arm K (Plate 64).

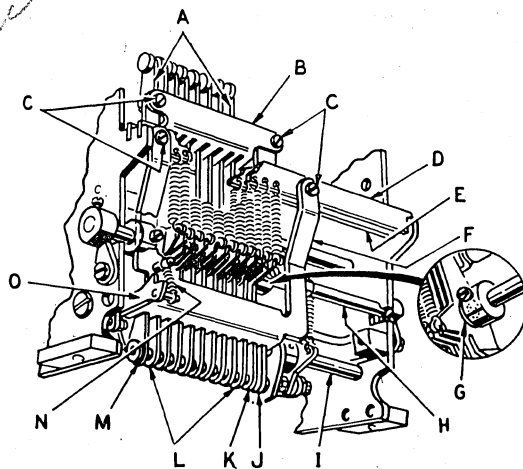
#### SERIES M MACHINES

2-GUIDE COMBS B (704126 1/2 NO. 1) AND F (1-704126 1/2 NO. 2) are now used in all currently manufactured Class 72 machines, beginning with Serial No. B48734, except those containing the Constant Factor Mechanism, and may be installed in new wide base Class 72 machines in the Field.

The guide combs serve to align trip levers A, J, K, L, and M with their respective trip pawls since spacers G are now made to provide more freedom for the trip levers and thus facilitate the assembly of the trip levers on shaft H.

Following is a list of symbols of related parts used along with the new guide combs in currently manufactured machines ( # denotes those parts required when installing guide combs or replacing shaft assembly H in Field machines):

- A....704136 1/2
- #B....704126 1/2 No. 1
- #C....74533
- #D....1-704126 No. 3
- #E....1-704126 No. 2
- #F....1-704126 1/2 No. 2
- G....704305 1/2
- #H....21B-704025 No. 1 includes  
A, G, J, K, L, M
- #I....1-704044A includes O
- J....1-704132 No. 18
- K....1-704132 No. 17
- L....1-704132 No. 16
- M....1-704132 No. 15
- #N....81806
- O....Included in I



C. A. BAKER  
General Service Manager

# Burroughs

# MECANOGRAM

No. 380

January 3, 1951

## MANAGERS AND SERVICEMEN:

### SERIES C MACHINES

1-CLASS 5 MACHINES currently shipped to the branch should be unpacked, checked, and the necessary material furnished to properly prepare the machine for delivery to the customer. Material used should be reported on a Shop Work Order, Form 1026.

### SERIES M MACHINES

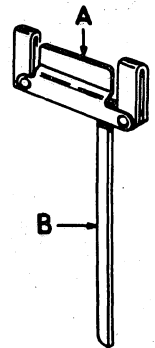
2-FRICTION SPRING A (74180C\*) now replaces the friction spring (E, Plate 22, Accumulation Symbol List) in all Series M machines containing the Extend Mechanism. The new spring, which gives a more uniform and lasting tension on the adding rack limit plates, is riveted to extend index arm B.

*short long*

The new arm and spring assembly may be ordered according to the following specifications: for all domestic machines - except Style 72 XX 22 containing power result keys and the improved multiplier construction - use index arm 1B-74137 No. 1; for Style 72 XX 22 containing power result keys and the improved multiplier construction, use index arm 1A-704137 1/2; for Sterling machines, use index arms 1B-74137 No. 1 in all regular positions, and use index arms 1B-74137 No. 2 in the first position in f.s.d. machines and in the first and second positions in f.s.d.f. machines.

The new arm and spring assembly may be used along with earlier style individual arms and springs which are already in machines. The individual spring is no longer available. *mac 491*

3-PAWL 701257 (B, ITEM 1, ~~MECANOGRAM~~ 353) on drive clutch assembly A (Item 1) is now hardened to reduce wear, and has a chamfer added to better permit the clutch members to engage fully. Also, screw 701573 (D, Item 1) which formerly contained two shoulders, now has one shoulder removed thus permitting greater freedom of pawl B (Item 1).



### SERIES F MACHINES

#### 4-METHOD FOR CLEANING TYPE:

- Close the carriage.
- Remove the wall cord from the outlet.
- Remove the rear case panel.
- Remove the ribbon.
- Depress the keys (in each column) required to index the raising of all type bars to their maximum heights.
- Depress the carriage opening key.
- Depress the motor bar and manually operate the machine to raise the type bars to their maximum heights.
- Swing the line finder bail rearward over the carriage as the carriage opens.
- Brush the type clean with a wire brush.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 379

December 20, 1950

### MANAGERS AND SERVICEMEN:

#### SERIES M MACHINES

1-IMPROVED LIFT ARMS 704150 NO. 7 AND 704150 NO. 8 (SHORT) are now being used in place of lift arms AY (Plate 23, Accumulation Symbol List) in all currently manufactured Classes 72, 77, and 78 machines, except those of Sterling construction, beginning with Serial No. B62810. The improved lift arms have also been in use in Style 72.07 22 machines containing power result keys since Serial No. A915672. These improved lift arms are not to be installed in machines manufactured prior to the above serial numbers.

Note: For other new wide base Class 72 machines prior to Serial No. B62810, see Item 2, Mecanogram 365.

The improved lift arms are made of wider stock to provide a more even raising of the adding rack limit plates when multiplying or subtracting.

Following is a list of other parts that have been correspondingly changed along with the new lift arms.

SYMBOLS	DESCRIPTION	REFERENCE
1A-74129 No. 2	Slide - Class 78	N, Plate 22
11A-704129 No. 3	Slide - Class 77	
21-704129 No. 3	Slide - Class 72	
1-704110L No. 4	Side Plate - Class 72	R, Plate 23
1-15 Fte. 134 No. 2	Bell Crank - Class 72	AF, Plate 30
1A-704137 1/2	Index arm	L, Plate 23
*704147 1/2	Guide	AX, Plate 22
*704114	Retaining rack	AU, Plate 22
*704937 No. 2	Front guide comb	J, Plate 22
*704938A	Rear guide comb	BD, Plate 23
*704100 No. 1	Guide comb - Classes 72 and 78	A, Plate 30
*704100 No. 2	Guide comb - Class 77	
*704139	Guide plate	B, Plate 23
*76559	Screw - right end of front upper guide comb strap	AW, Plate 22
*74536	Screw - left end of front upper guide comb strap	AW, Plate 22
*20 No. 106	Spring anchor - Classes 77 and 78	Placed under C, Plate 32
*780 Two Carbon	Spring - Classes 77 and 78	B, Plate 32

\*These parts are used in Sterling machines also.

#### SERIES P MACHINES

2-NON-SPLIT FIELD ASSEMBLY 1E-4317 (AH, Plate 131-1, Symbol List) is now installed in currently manufactured Type 3 motors and may also be used to replace field coils Z (Plate 131, Symbol List) and AH (Plate 134, Symbol List) in Field machines.

Replacement of field coil Z (Plate 131) with the new field coil assembly requires the installation of jumper wire 1-4375 (AT, Plate 131-1) as illustrated in Plate 131-1.

Replacement of field coil AH (Plate 134) with the new field coil assembly requires the following wire hookup: Attach the upper lead wire of the new field coil to terminal screw AD (Plate 134), and attach the lower lead wire of the new field coil to lower brush terminal AE (Plate 134). Install jumper wire 1-4375 by attaching one end to terminal screw C (Plate 134) and the other end to the retaining screw for the lower forward switch point.

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General Service Manager

# Burroughs

## MECANOGRAM

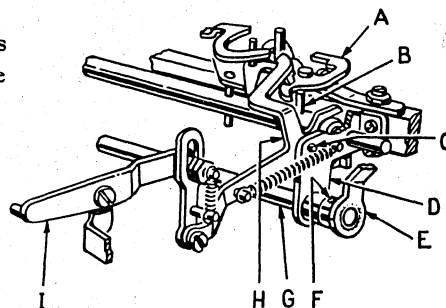
No. 377

December 12, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

1-TABULATING SHAFT LATCH H (1-705237 1/2A) now replaces the latch (BB, Plate 19-2, Carriage Symbol List) in all currently manufactured Class 78 machines and in Style 72 07 22 machines with power result keys, and may also be installed in Field machines of these same classifications. The new latch has a formed projection which prevents pawl A from latching on stud B should a key or motor bar which indexes the Automatic Tabulating Mechanism be used when manual control button No. 51A is set in the non-tabulating position.



This prevents tabulation from a following non-tabulating operation with the manual control shifted to a tabulating position.

Installation of the new latch in Field machines also requires that new lever I (1-705128 1/2 No. 2), screw C (79503), and a new bracket D (1-75217BR) be installed. To install the new bracket, remove shaft assembly G from the machine, and remove arm E by removing pin F. Replace the old bracket with the new bracket and re-pin arm E to the shaft. Install the shaft assembly in the machine.

*See Mee 463*  
2-TABULATING SHAFTS 1-75015A NO. 2 (T, Plate 19, Carriage Symbol List) and 1-75015B NO. 2 (O, Plate 19-2) now contain hardened, knurled studs to better resist wearing and loosening. Shaft 1-75015A No. 2 is used in those machines that do not require a clearance cut for the escapement link (M, Plate 15).

3-TYPE HAMMER SPRINGS 77880A (ALL NOS.) (T, Plate 2, Printing Symbol List) and SYMBOL HAMMER SPRING 77880 NO. 7 have been redesigned to reduce spring breakage and to provide easier assembling. The eye which is placed on the hammer driver spring stud is larger to provide clearance between the head of the spring stud and the body of the spring.

Springs 77880A Nos. 2, 3, 4, and 5 are also reduced in diameter in order to provide more clearance with the hammer drivers.

Spring 77880 No. 7 is used for the symbol hammer driver when the machine contains a minus (-) symbol or minus and CR symbols.

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# MECANOGRAM

No. 376

December 5, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

## SERIES F MACHINES

1-ALIGNING SCALE 403221 (15"), in all currently manufactured Sensimatic Control Units, has had the figures moved 1/4" to the left. This change permits a direct reading from layout Form S2007, when assembling new control units. All references in booklet 100-1/F (Construction and Operation Data for Sensimatic Machines) pertaining to the placement of stops, agree with this new scale.

2-SCREWS 403582 AND 403582Z (BH, Plate 4, Instruction Book, issued 3/1/50) may be dipped in white shellac, before locking stops BF (Plate 4) into place, in order to reduce loosening.

### Mecanogram 380

#### Method for Cleaning Type

- a-Close the carriage
- b-Remove the wallcord from the outlet
- c-Remove the rear case panel
- d-remove the ribbon
- e-Depress the keys (in each column) required to index the raising of all type bars to their maximum heights
- f-depress the carriage opening key
- g-depress the motor bar and manually operate the machine to raise the type bars to their maximum heights
- h-Swing the line finder bail rearward over the carriage as the carriage opens
- i-Brush the type clean with a wire brush

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## MECANOGRAM

Plate 94-1  
Revised 112-3

No. 375

November 27, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES P MACHINES

1-ADDING RACK BRACES A (1-86105 1/2 AR STYLE 13) - for 12 pitch construction - and K (~~86105 1/2R STYLE 13~~) - for 10 pitch construction - are now used in currently constructed Style 13 machines and may also be installed in Style 13 Field machines. The new braces prevent a possible wrong addition that results from excessive movement of adding racks H in columns 1 and 2 during a machine operation in which these adding racks are inactive.

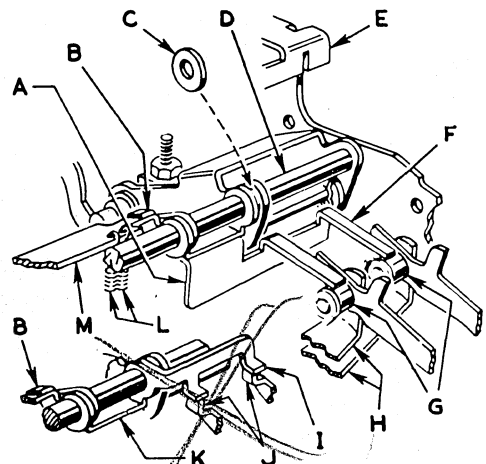
During subtract operations, as the lower wheels move into mesh, the excessive side weave of inactive racks H may cause a counterclockwise turning of the lower wheels. Such movement of the lower wheels (in cipher position) may result in the initiating of a carry through the tripping of one or more carry pawls.

The following procedure is suggested for the installation of brace A or K:

- (a) Remove the carriage, case, and base.
- (b) Remove the keyboard.
- (c) Remove hammerhead E.
- (d) Unhook springs L in all columns.
- (e) Remove the screw and nut holding bail M to the left side frame.
- (f) Raise shaft D and pull to the left.
- (g) Pull the handle halfway forward and install brace A or K and washer C (87121 1/4), as illustrated.

The following adjustments are required after installing the new parts in Field machines:

- (a) Braces A and K should be held in a rigid position.  
To adjust, bend lips B.
- (b) With the machine normal, there should be a snug, non-binding fit between fingers F and rolls G, or between fingers I and the No. 8 projections of index bars J.  
To adjust, bend fingers F and I.



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# Burroughs

## M E C A N O G R A M

No. 373

November 10, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

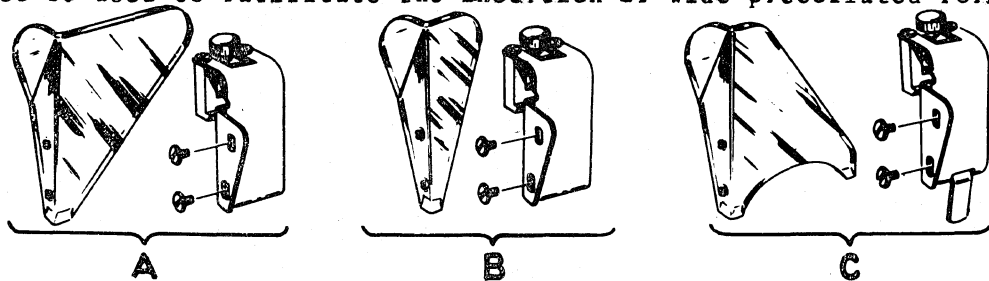
### SERIES F MACHINES

1-BULL GEARS 406105 AND PINION GEARS 406307 (F and BH, respectively, Plate 26, Instruction Book issued 3/1/50) are now hardened to prevent wear. Machines manufactured after Serial No. B31200 are equipped with the hardened gears.

When replacing worn bull and/or pinion gears, the complete cluster gear unit 1-406007 (specify machine style) should be ordered.

This announcement cancels Item 2, Mekanogram 356.

2-COMplete ASSEMBLED LEDGER GUIDES A, B, AND C are now available under the following symbols: A, 2-403203 R and L, for forms 7 inches or more wide; B, 2-403203 R and L No. 2, for forms less than 7 inches wide; and C, 2-403203 R and L No. 3, for pass books. Guides C may also be used to facilitate the insertion of wide precollated forms.



3-CONDITIONING SERIES F MACHINES PRIOR TO SHIPPING. The following operations should be performed on Series F machines to prevent the carry pawls from becoming lodged above the total stop bail:

- a. Move the carriage control disabling lever to the rear.
- b. Clear both accumulators.
- c. Add 1 in column one simultaneously.
- d. Subtract 2 in column one simultaneously.

These operations result in the production of subtract carries in all columns of both accumulators. With the carry pawls tripped in subtract position, each will be prevented from moving above the total stop bail by its respective parts T, X, and R (Plate 36, Instruction Book issued 3/1/50).

All machines, after Serial No. B97349, shipped from the factory will be so conditioned.

(OVER)

9 10  
4-LINKS 1-408198R AND L (W, Plate 8, and M, Plate 9, respectively, Instruction Book issued 3/1/50) have been changed to improve 5/8" carriage movements. The enclosed slot in the lower end of each link has been lengthened downward to give less throw of latches R (Plate 8) and P (Plate 9) during the indexing of tabular or return jumps. This change in the two links reduces the time required for restoring either latch under its respective eccentric (after indexing), thereby reducing the possibility of stops being missed by the carriage during 5/8" tabular or return jumps because of a failure to reset the active clutch.

33  
5-RIBBON GUIDE ROLLER 1-407302 (G, Plate 28, Instruction Book issued 3/1/50) has had its diameter, between the flanges, increased 1/32". This change reduces the possibility of type catching the ribbon by providing an additional 1/64" clearance.

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## MECANOGRAM

No. 372

November 1, 1950

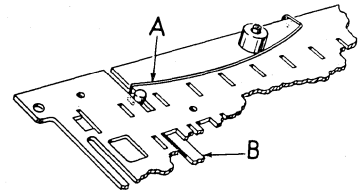
BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

1-ARMATURES FOR TYPES 6 AND 6A MOTORS are now having an extra coat of varnish baked on the face of the commutators during their manufacture. This extra coat of varnish provides better insulation and eliminates excessive burning at the face of the commutator.

2-BELL CRANK 61-62103 (CQ, Plate 43-1, Accumulation Symbol List) and LINK 1-69111 NO. 2 (U, Plate 43-1) for No Space Stroke Total Machines have been altered to prevent excessive wear where the projection of the bell crank contacts the link. The projection on the forward arm of the bell crank has been hardened, and a stoning operation has been added to the link to eliminate rough edges.

3-SPRING A (202801) is now being used in currently manufactured Bank Machines equipped with the Automatic Count Mechanism. The new spring, by applying pressure to count control slide B, prevents an overthrow of the slide and causes it to retain a more uniform position when actuated by the control rolls.



4-THE CURRENT PRACTICE OF PREPARING A SERVICE REPORT, FORM 224, for Home Office information covering each mechanical attention to Public Utility Machines has served its purpose and should be discontinued. Much has been gained to date from these reports, and we appreciate your cooperation in preparing and submitting them for Home Office use.

### SERIES M MACHINES

5-SPIRAL REWIND SPRING BARREL 12-75003A, replaces spring barrel J (Plate 25-1, Carriage Symbol List) in all Class 77 machines containing Selective Column Tabulation. The new spring barrel contains spring 83 No. 14 which is made of .030" stock in order to provide more strength and to reduce spring breakage.

Spring 83 No. 14, which may be readily identified by its red container ring, may be used for Field replacement in the spiral rewind spring barrel in all Class 77 machines containing Selective Column Tabulation.

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# Burroughs

## MECANOGRAM

No. 371

October 31, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

1-ERROR RACKS 702010 (I, Plate 5-1, Keyboard Symbol List) and 702010A No. 2 (similar to I, Plate 5-1) are now hardened at the forward ends to reduce wear resulting from contact with slide H (Plate 5-1). Rack 702010 is used in all wide base machines except Class 77 Sterling machines and Class 77 machines containing the Left Section Listing Mechanism in which rack 702010A No. 2 is used.

2-POST 702616R NO. 3\* (C, Plate 5-1, Keyboard Symbol List) contained in error key wire assembly Q (Plate 5-1) for Classes 72, 78, and 79 new wide base machines, and POST 702616L NO. 3 (similar to J, Plate 30) contained in the subtract key wire assembly for Class 72 new wide base machines, are now changed in design to provide a smoother hole thus reducing wear of the error key and subtract key wires.

Post 702616L No. 3 may be ordered separately for Classes 78 and 79 new wide base machines.

3-SIMULTANEOUS ADDITION SLIDE 702198 1/2 (similar to AU, Plate 12, Accumulation Symbol List) which is contained in Classes 72, 78, and 79 new wide base machines, is now hardened to reduce wear resulting from contact with arm AV (Plate 12).

### ALL CLASSES

#### PLATEN STANDARDS FOR SERIES H, M, V, P, AND F MACHINES

	2 Carbon	5 Carbon	9 Carbon	12 Carbon
SERIES H	Optional	Standard Bank & Commercial		Optional
SERIES M			Standard All Styles	Optional
SERIES V	Standard	Optional		
SERIES P	Standard Except with rewind car- riages, "X" carriages, and 1/12 fractions	Standard With 1/12 fractions including Sterling Construction	Standard With 3 7/8 " and 6" rewind car- riages "X", "XA", "XB", and "XC", carriages. (Also optional and must be speci- fied with .130" high type.)	
SERIES F		Standard	Optional	Optional

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## MECANOGRAM

No. 370

October 20, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

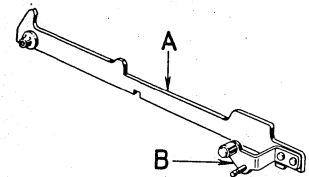
### SERIES H MACHINES

1-CRANK SPEED TESTS on No Space Stroke Total Machines should be made with the carriage located in a crossfooter non-add position. Should this test be made with the carriage located in a crossfooter add position, damage will result to crossfooter pull-in arm 1-10920 1/4 No. 2 (similar to F, Plate 43, Accumulation Symbol List).

If the carriage is located in a crossfooter add position and the handle is held forward to make this test, the pull-in arm is located in a position to lock the crossfooter in mesh with the adding racks. With the pull-in arm so positioned, the crossfooter, which is driven out of mesh by the drive mechanism when the motor operates, places a heavy strain on the pull-in arm, resulting in the latter's being bent and/or lengthened.

### SERIES M MACHINES

2-BRACKET B of slide assemblies 1A-702228B No. 2 and 11-702228B No. 1 (A, illustration; H, Plate 5-1, Keyboard Symbol List) is now hardened to reduce breakage. Slide 1A-702228B No. 2 is used only in new wide base Class 72 machines, and slide 11-702228B No. 1 is used in both new wide base Class 78 machines and in late style Class 77 machines.



3-HEXAGON-HEADED SCREW 702513 1/2 containing a screw driver slot now replaces screw F (Plate 12, Keyboard Symbol List) for easier assembling of bell crank G (Plate 12) - and similar bell cranks - to the square posts in the keyboard bottom plates of all Classes 77, 78, and 79 machines.

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## MECANOGRAM

No. 369

October 19, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES F MACHINES

1-SKIP AND RETURN DISK 403334A BLANK replaces disk <sup>G</sup>(K) (Plate 4, Instruction Book, dated 3/1/50) in currently manufactured machines and may be installed in Field machines. The new disk contains a larger tapped hole which accommodates "Bristo" set screw 403583. The new screw reduces set screw breakage, and may be tightened with "Bristo" wrench Kit 712-1.

2-TYPE 406118, ALL NUMBERS <sup>H</sup>(D, Plate <sup>3)</sup>27, Instruction Book, dated 3-1-50) has a swaging operation added to the center spring lug, rounding off its front side to reduce wear of the type spring.

In cases where replacement type is not available, the edges of the center lug may be stoned to reduce spring breakage.

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## MECANOGRAM

No. 368

Revised 11-15-50

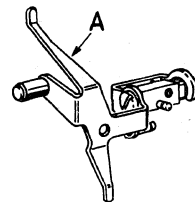
### BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

#### SERIES M MACHINES

**1-BEVELED GEARS 1-709348B AND 709341B** now replace beveled gears BO and BP, respectively (Plate 45, Accumulation Symbol List) in all Class 77 machines containing Selective Column Tabulation. Replacement in Field machines requires that the two new gears be used together.

The teeth on the new gears are shaped for closer meshing, thus reducing backlash and assuring a more positive drive for tripping the registers and for proper positioning of gear T (Plate 45) with its detent BC (Plate 45).

**2-EXTEND LOCK RESTORING ARM 1-72214 NO. 2** (A in illustration; AR, Plate 17, Keyboard Symbol List) now has a form added to its upper finger thereby enabling it to cam on the shaft (H, Plate 17) near the end of the return machine stroke, thus reducing breakage.



The improved restoring arm may be used in narrow base machines containing the Automatic Extend Mechanism, and in wide base machines which do or do not contain the Automatic Extend Mechanism.

**3-EXTEND ROCKER ARM 1-72161 1/2A (Z, Plate 18, Keyboard Symbol List)** is now made of heavier stock to reduce twisting thus assuring latching of the Extend Mechanism from automatic extend operation.

#### SERIES P MACHINES

*See 498*

**4-ASSEMBLIES 1-99177A NO. 1 AND 1-99177A NO. 2** (each of which contains a stud that is ground flat on its forward side) and latches 99158AR and 99158AL (both of which are .020" longer and copper-plated for identification) now replace assemblies M and AN (Plate 110, Symbol List) and latches L and AM (Plate 110), respectively, on currently manufactured Style 13 machines, and may also be installed on Style 13 machines in the Field, to provide greater support to the tumbling section Y (Plate 110) during a minus operation.

Insufficient support of the tumbling section during a minus operation may permit the lower wheels to rock forward, which action may result in a failure to move carry pawls N (Plate 111) far enough to lift latches C (Plate 111) during a relay and power (direct) carry.

The following adjustments are required after installing the new parts in Field machines.

1. Stud M (Plate 110) should have a snug, non-binding fit behind arm AL (Plate 110) when arm X (Plate 45-1) is removed and the handle is held half way between Nos. 3 and 4 positions during the return stroke of a plus listing operation.  
To adjust, reposition stud M (Plate 110).
2. Stud AN (Plate 110) should have a snug, non-binding fit behind arm AL (Plate 110) when arm X (Plate 45-1) is removed and the handle is held half way between Nos. 3 and 4 positions during the return stroke of a second minus listing operation.  
To adjust, reposition stud AN (Plate 110).
3. Latch L (Plate 110) should have a snug, non-binding fit behind stud M (Plate 110) when the machine is in normal plus position.  
To adjust, lengthen or shorten latch L (Plate 110).
4. Latch AM (Plate 110) should have a snug, non-binding fit behind stud AN (Plate 110) when the machine is in normal minus position.  
To adjust, lengthen or shorten latch AM (Plate 110).

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## MECANOGRAM

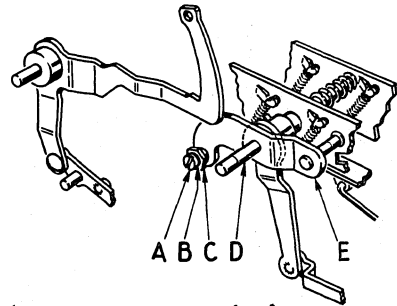
No. 367

October 9, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

1-A NEW LIMIT STOP, which limits the downward travel of the sub-total key, is being installed in currently manufactured machines containing the latest Symbol Indexing Controls (Plate 8-3, Printing Symbol List) and may also be installed in Field machines similarly equipped. This new limit prevents overthrowing of the Symbol Indexing Mechanism and assures printing of the correct symbol, even though excess pressure is applied to the sub-total key during a sub-total operation.



To install - remove the washer on shaft D, and assemble bracket E (62227 1/2), eccentric bushing C (209302), lock washer B (1097 7/16), and screw A (74523), as illustrated.

After the sub-total key has been adjusted in the regular manner, index the sub-total key and turn eccentric bushing C until it has light contact on the keystem.

2-MOTOR BAR 101 (1-12021 1/4 No. 4) for No Space Stroke Total Bank Posting Machines has been altered to prevent its changing the points of throw with motor bar 102 depressed.

Stock has been added to the lower extremity and to the forward vertical surface of interlock 12017 1/8 No. 3 (similar to BT, Plate 62, Keyboard Symbol List) to reduce to a minimum the clearance of the interlock over stud 12053 5/8 No. 2 (similar to BS, Plate 62) when motor bar 102 is depressed.

The new interlock 12017 1/8 No. 3 may be installed on the old motor bar, if desired, by using shoulder rivet 753 1/2 No. 3.

3-SCREWS 202531 are now being used in place of screws B (Plate 43-3, Accumulation Symbol List) in No Space Stroke Total Bank Posting Machines. The new screws are longer to facilitate adjusting the wires indexed through keys 4-14, 5-14, and 6-14.

4-SPRING 200823 ENV. 1753 is now being used in place of spring 10280 1/2 (P, Plate 6-1, Printing Symbol List) on Single Operation Multiple Print Machines. The new spring, which is stronger, assures full restoration of the printing control camshaft and the printing control bails of Multiple Print Machines.

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General Service Manager

# Burroughs

## MECANOGRAM

No. 366

September 20, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES F MACHINES

**1-CORRECTING CARRIAGE MOVEMENTS OF SERIES F MACHINES** - The following complaints are related and may be corrected by applying the accompanying tests and adjustments in the sequence given. (Parts and plates referred to may be found in the Series F Instruction Book dated 3-1-50).

#### A. Complaints

1. The machine operating with control pins and tappets out of alignment.
2. The carriage failing to move into position on short tabular or return jumps.
3. The carriage skipping stops on short tabular or return jumps.

#### B. Tests and Adjustments

1. The following springs should be changed if there is any doubt as to their correct tensions.
  - a. Bumper spring 408804 (BC, Plate 8 or Mecanogram 342, Item 1) -- should pull 3 lbs. 2 5/8 oz. when expanded to 1 3/32".
  - b. Brake spring 408806 (D, Plate 8) -- should pull 1 lb. 2 1/4 oz. when expanded to 27/32".
  - c. Springs BJ (Plate 8) and the spring on part J (Plate 8) - should be spring 480 1/4 (see Mecanogram 363, Item 1).
2. The carriage should be free and snug on rails AP and AJ (Plate 1). To adjust, see the adjustments for Plate 1.
3. The stop bumpers and the drive trip interlocks should be tested and adjusted as follows:

Note: Bend lever <sup>57</sup>L (Plate 50) upward at its point of contact with lever T, enough for free movement of lever T, to prevent a false normal limit of interlocks A and D.

- a. With the uppermost projection of interlock <sup>K</sup>D (Plate 50) against its limit (the rearmost supporting bar of the Worm Gear Assembly), the formed ear of clutch release bail E (Plate 50) should have minimum clearance with interlock D. To adjust, bend the uppermost projection of interlock D. <sup>K</sup>
- b. With the uppermost projection of interlock D (Plate 50) against its limit, and with drive trip arm B (Plate 50) lowered manually, there should be minimum clearance between the rear edge of interlock A (Plate 50) and the formed ear of drive trip arm B. To adjust, bend the formed ear of interlock D at its point

(OVER)

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10-5

of contact with screw G (Plate 50).

- c. There should be minimum lateral movement of the carriage stops between stop bumpers S (Plate 50).

To adjust, bend bracket Q (Plate 50) up or down.

- d. With a stop on the high portion of stop bumper BD (Plate 8), there should be safe latching lead of lever AG (Plate 8) over latch AE (Plate 8).

To adjust, turn eccentric collar P (Plate 8).

Note: Too much latching lead of lever AG over latch AE should be avoided since this adjustment would cause an earlier contact of the stop dog on the higher bumper and would reduce the time allowed for the swinging of pawl R under eccentric P on 5/8" tabular jumps.

- e. Stop bumpers S (Plate 50) and lever N (Plate 50) should simultaneously contact the stud on interlock lever T (Plate 50). 50

To adjust stop bumper AZ (Plate 9), turn eccentric K (Plate 9).

Note: After turning eccentric K, check for safe latching lead of lever AB (Plate 9) over latch Q (Plate 9) with a stop on the high portion of bumper AZ (Plate 9).

To adjust lever N, turn eccentric O (Plate 50).

Note: Lever T should move immediately when either stop bumper is depressed or moved laterally.

- f. When the stop bumpers are depressed or spread laterally, there should be an immediate movement of interlock A (Plate 50).

To adjust, bend lever L (Plate 50) at its point of contact with lever T (Plate 50).

4. The carriage brake should be adjusted as follows:

- a. During carriage tabulation, the brake should be applied approximately 5/16" prior to the positioning of the carriage.

To adjust, bend the formed ear of slide J (Plate 8).

- b. During carriage return, the brake should be applied approximately 3/8" prior to the positioning of the carriage.

To adjust, bend the formed ear of slide G (Plate 9).

Notes: (1) The brake shoes should be oiled with machine oil Kit 131.

(2) Adjustment of the carriage brake may be facilitated by placing pencil marks (from which measurements may be made) on the control unit third rail to indicate the stop position and brake release points.

5. The main friction drive clutch should be adjusted as follows:

With the carriage controls disabled and no keys depressed, depress motor bar No. 2 and turn the motor slowly by hand. The machine should "hang up," with the clutch slipping, at about 100°. Then connect the motor to an electric outlet, and the machine cycle should be completed.

Note: If the clutch is too strong, the machine will not "hang up" when the motor is operated by hand; if too weak, the clutch will continue to slip when the motor is connected to an electric outlet.

To adjust, turn nuts I and J (Plate <sup>52</sup>46).

6. The carriage drive clutch should be adjusted as follows:

There should be expansion of bumper spring BC (Plate 8), due to carriage overthrow, during a minimum tabular or return jump.

To adjust, increase or decrease the tension of spring H (Plate 2) by turning nut F (Plate 2).

- Notes: (1) The amount of overthrow from a  $5/8"$  jump should be limited to  $1/32"$  to prevent excessive tension of the carriage drive clutch. To facilitate measuring the amount of overthrow, insert a ledger card into the carriage and operate the machine while holding the point of a pencil against the card. The pencil will scribe a line across the card as the carriage tabulates and the amount of overthrow may then be measured by measuring the length of the overlapping lines at each stop position.
- (2) The relative tension of the carriage drive clutch and the main drive clutch is important. The load of the carriage pickup should be absorbed in the carriage clutch. The main drive clutch should not slip when the carriage is held and a directional key is depressed.
- (3) If the adjustment of the carriage drive clutch tension proves difficult to make or to maintain, because of fluctuating tension when operating under a load, the clutch should be removed and its carbon and steel disks cleaned with a dry rag.

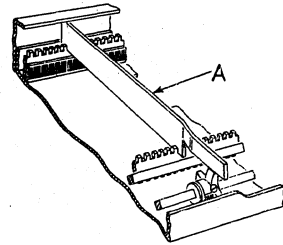
## 2-METHOD FOR REMOVING THE CARRIAGE DRIVE CLUTCH

- a. Remove the motor.
- b. Remove four screws G and R (Plate <sup>53</sup>47).
- c. Remove four screws E and F, and eccentric D (Plate 47).
- d. Loosen two screws C (Plate 2).
- e. Remove brace AF (Plate 2).
- f. Remove clip D (Plate 2).
- g. Break the connection between shafts E and L (Plate 2).
- h. Swing bracket A (Plate 47) to remove shaft E (Plate 2).

- Notes: (1) When replacing brace AF (Plate 2), turn eccentric AH (Plate 2) for maximum meshing and free movement of gears A and B (Plate 2).
- (2) When replacing eccentric D (Plate 47), use the adjustment given in Plate 47.

Rec 493

**3-STOP GAUGE KIT 406 (A IN ILLUSTRATION)** is now available as an aid in aligning stops when assembling control units as outlined in Booklet 100-1/F, "Construction and Operating Data for Sensimatic Machines".



**4-STOP 403909, ALL NUMBERS (BF, Plate 4, Instruction Book dated 3-1-50)** has been redesigned to reduce breaking and slipping, and is now available for installation in all Series F machines.

Installation requires two smaller "Bristo" screws 403582A which are tightened with a "Bristo" wrench Kit 712-3.

**C. A. BAKER**  
General Service Manager

# Burroughs

## MECANOGRAM

No. 365

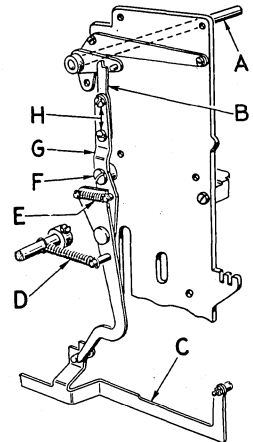
September 15, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1-NORMALIZING SHAFT ASSEMBLY A (11Z-704050) AND NORMALIZING ARM ASSEMBLY G (1-704215)** may be used in place of the shaft assembly (U, Plate 6-1, Accumulation Symbol List) and the cam assembly (BI, Plate 6-1) in Field machines containing the Four Position Printing and Adding Control Mechanism and the Multiplier Factor to Print Mechanism. The new parts safeguard against trapping the adding racks by more effectively holding the non-add bails (AO and CO, Plate 6-1) inactive during multiplying or subtracting operations.

Installation requires the following parts: shaft assembly A (11Z-704050), spring D (74808), spring E (8082A), screw F (704536), and arm assembly G (1-704215) which includes limit B (704215 1/4) and screws H (7356 1/2).



Adjustment requires a minimum clearance between limit B and the stud in the arm of normalizing shaft A when power indexing slide C is released through depression of a multiplier key or the subtract key.

Note: When installing the new normalizing parts, it is also well to install reinforced lift arms 1-704150 No. 1 Env. 1078 (see Item 2).

**2-REINFORCED LIFT ARMS 1-704150 NO. 1 ENV. 1078** may be used in the cipher and one positions in place of lift arms A and B (Plate 22-2, Accumulation Symbol List) in new wide base Class 72 machines containing the Multiplier Factor to Print Mechanism; and in the cipher position in place of lift arm A (Plate 22-2) in new wide base Class 72 machines that do not contain the Multiplier Factor to Print Mechanism - except those machines with power result keys - to provide a more even raising of the adding rack limit plates when multiplying.

When installing the reinforced lift arms in machines that also contain the Four Position Printing and Adding Control Mechanism - with the normalizing mechanism shown in Plate 6-1 - it is suggested that a new normalizing shaft assembly 11Z-704050 and a new normalizing arm assembly 1-704215 (see Item 1) be installed also.

**3-ROCKER ASSEMBLY 1A-71192A**, containing redesigned pawl 1-71192 1/2A and spring 69808, replaces rocker assembly W (Plate 18, Keyboard Symbol List) in all currently manufactured Class 72 machines containing the Automatic Extend Mechanism, and may be used in similarly equipped Field machines, Class 71, 72, and 73.

The redesigned pawl provides clearance between spring O (Plate 18) and restoring arm AR (Plate 17).

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 364

September 1, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

**1-DASHPOT PLUNGERS 1-847A STYLES 25, 44, 47, 50, 57, AND 66** have been redesigned and are now being used in currently manufactured machines to prevent the machine speed from increasing after the temperature of the oil in the dashpot exceeds 115°.

**2-NO SPACE STROKE TOTAL BANK POSTING MACHINES** should not be operated manually (with handle) without first releasing interlock S (Plate 62-1, Keyboard Symbol List) when a minus balance is in the crossfooter and the carriage is located in the first total position.

The interlock, if allowed to remain active during the manual operation, places a strain on link G (Plate 62-1) causing the latter to become lengthened. This lengthening causes a failure of the interlock to disable motor bars 101 and 102 during an overdraft operation with the carriage in the first total position.

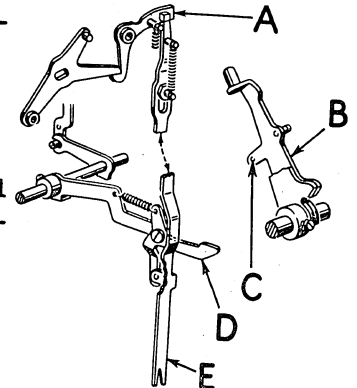
**3-THE CROSSFOOTER IN NO SPACE STROKE TOTAL BANK POSTING MACHINES** should be examined to assure that there is no interference which may prevent full meshing of the adding wheels with the adding sectors.

The pin in the hub of the shaft located directly below tumbling arm BG (Plate 43-1, Accumulation Symbol List) should be ground flush with the hub. If the pin protrudes, it may contact the lower extremity of the tumbling arm causing a false limit which prevents full meshing of the crossfooter.

### SERIES M MACHINES

**4-HOOK PAWL D (705284B)** replaces hook pawl 705284A (AC, Plate 21, Carriage Symbol List) in Class 77 machines containing the Selective Column Tabulating Mechanism, to assure a more positive release of the Register Shuttling - In Mechanism during a selective tabulating operation.

Installation of a new hook pawl D requires the installing of a new latch 1-709127 No. 2 (V, Plate 21 - A, in illustration) and a new arm 1-701150A No. 1 (AK, Plate 42, Accumulation Symbol List - B, in illustration). Latch A has a clearance cut added for increased travel; and arm B contains stud C which releases hook pawl D from under the stud in arm E during a forward machine stroke.



### ALL CLASSES

**5-COMPOSITION KEYTOPS**, for all machines, have been made of cellulose acetate butyrate, a material of low inflammability, since 1940. Prior to that time, cellulose nitrate was used. It is reasonable to believe, considering the elapsed time, that all of the cellulose nitrate keytops have been used.

**MECANOGRAM 363 NOT GENERALLY DISTRIBUTED EXCEPT IN U. S. AMERICA**

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 363

August 16, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES F MACHINES

1-SPRINGS 480 1/4 replace springs 483 (BJ, and spring on part J, Plate 78, Instruction Book, dated 3/1/50) in all Series F machines beginning with Serial No. B48000. The stronger 480 1/4 springs provide faster restoration of shaft assembly AA, link W, and pawl R, thereby reducing the possibility of eccentric P missing pawl R when stop dog BE lowers stop bumper BD.

The 480 1/4 springs may be installed in earlier Field machines as an aid to obtaining correct 5/8" tabulation.

2-PARTIALLY ASSEMBLED SENSIMATIC CONTROL UNITS 2Y-403134 (15") are now available for extra non-standard setups.

These units, when ordered by the symbol given above, will be furnished as shown on Plate 4, Instruction Book, issued 3/1/50, but without the following parts: stops BF and screws BH, moving stop shaft braces L, skip and return discs K, moving disc shaft braces AT and collars AU, control pin magazines BE, and control pins BG and screws A.

The quantity and style of those parts that are required to complete each control unit will be determined by Field analysis of the non-standard setup.

Mr. H R Lovejoy  
Buffalo N Y Branch

10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 362

August 10, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

1-ALIGNING BAIL 1-203247B NO. 5 15" (Y, Plate 29-1, Carriage Symbol List) is now finished with dull white enamel to provide better visibility by reflecting light to the forms.

2-"BRISTO" SPLINE SCREW 536 FTE. 203 NO. 3 is now available to the Field for use on stop dogs when the regular hexagon-headed screw cannot be used. The "Bristo" spline screw permits greater pressure to be applied when tightening, thus causing the stop dogs to retain the positions to which they are set.

3-CORRECT FORM SPACING from the M.R.C. Mechanism may be assured by installing spring D (60808), four washers B (79156 No.1), two limits A (203119 1/2 No.3), two screws F (203539 1/2), and two nuts E (49 3/8) on shaft C.

The new spring assembly applies sufficient friction to hold shaft C and its indexing arms in the proper position during machine operations.

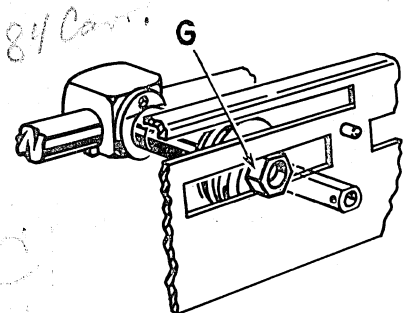
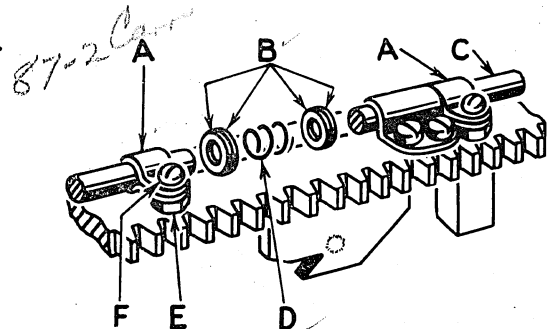
4-ECCENTRIC COLLAR G (10049 1/4 NOS.1, 2, and 3 - in thicknesses of .150", .100", and .073", respectively) is now available to the Field for installation on the sleeve of geared and manual control hangers to stabilize the adjustment of the hangers.

Installation of the eccentric collar should be made, as illustrated, after the hanger (geared or manual) has been adjusted. The additional support from the upper side of the enclosed slot of the register control skid, through the eccentric collar, reduces the shifting of the hangers to a minimum.

5-LATCH 1-69179 NO. 2 (AX, Plate 43-1, Accumulation Symbol List) has been altered, by providing clearance with the spring stud which anchors spring BD (Plate 43-1), to reduce breakage of the spring.

6-SCREW 69577 AND LOCK WASHER 1097 5/16 are now available for Field replacement of screw 9052 1/2 (J, Plate 43-2, Accumulation Symbol List) to guard against loosening of the screw.

7-SPRING 66885 NO. 5 is now being used in place of spring Y (Plate 1, Accumulation Symbol List) in column No. 2 of the No Space Stroke Total Bank Posting Machines. The new spring, being stronger, reduces the bounce of the sector and improves the alignment of the type in column No. 2.



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General Service Manager

# Burroughs

# MECANOGRAM

No. 361

July 28, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

## SERIES H MACHINES

1-ECCENTRIC SCREW 200621 NO. 3 is now being used in place of screw BP (Plate 74-3, Accumulation Symbol List) in currently manufactured machines. The eccentricity of the screw has been changed to provide a larger shoulder which, when tightened, prevents cutting into part BM (Plate 74-3), thus eliminating tightening of pawl BO (Plate 74-3) on the shoulder of the screw.

2-LINK 200276 1/2Z AND SCREW 99539A are now available for Field replacement of link 200276 1/2 and screw 4456 1/2 (L and U, respectively, Plate 68-1, Accumulation Symbol List) to overcome the loosening of screw U. Use of the new link and screw eliminates the need for parts V, W, and X (Plate 68-1).

The new link may be adjusted for length by bending its circular extremity.

## SERIES M MACHINES

3-LEVER 1-705159Z NO. 2 may be used to replace lever AV (Plate 19-2, Carriage Symbol List) in all wide and new wide base Field machines (except those containing Selective Column Tabulation).

The new lever, which contains an open-end slot, may be installed without removing shaft BA (Plate 19-2) after the old lever has been removed from the hub.

## SERIES A PRODUCTS

4-THE FOLLOWING TESTS AND ADJUSTMENTS SHOULD BE APPLIED WHEN INSTALLING SECTIONS OF THE STYLE A301 POSTING DESK GROUP:

1. The center section should first be adjusted to the desired height and should be level.

To Adjust, loosen lock nuts U (Plate 13-3, Series A Products Symbol List) and turn gliders V (Plate 13-3).

2. The right and/or left drawer sections should be leveled, and should have clearance between protective bumpers K (Plate 13-3) and the top of the center section.

To Adjust, loosen lock nuts U (Plate 13-3) and turn gliders V (Plate 13-3) for height and level; turn protective bumpers K (Plate 13-3) for clearance.

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C. A. BAKER

General Service Manager

# Burroughs

## M E C A N O G R A M

No. 359

July 7, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

1-ALIGNING BAIL I (Plate 52, Carriage Symbol List) - for 18" carriages- has been reinforced to reduce excessive weaving, thereby enabling more accurate form alignment. For black machines order 1A-203247B No. 3 18", and for gray machines order 1B-203247B No. 3 18".

2-PRESSURE ROLL 1Z-2891 1/2C STYLE H, with cut away center (9 1/16" over-all length of rubber), is now available for Field replacement of pressure roll 1-2891 1/2C Style H (F, Plate 9, Carriage Symbol List) without cut away center.

3-SPRING 483 AND ANCHOR 20 NO. 86 (2 required) are now being installed on currently manufactured machines in place of spring N (Plate 43-2, Accumulation Symbol List) to prevent the spring becoming unhooked.

4-SPRING 10080 is now being used in place of spring AC (Plate 29-1, Carriage Symbol List) on the right and left ends of the Visible Aligning Bail Assembly for Bank Machines. The new springs are stronger and assure the correct positioning of bail Y (Plate 29-1) during the opening and closing of the carriage to reduce damage to the forms.

### SERIES P MACHINES

5-CONTROL STRIPS 82119 NOS. 19, 21, 34, 59, 60, AND 61 (B, Plate 56, Symbol List) are now embossed on both sides. The embossments on the right side prevent these strips from adhering to and moving forward with the locking strips BF (Plate 40) and disabling the Enforced Designation Feature. The embossments on the left side assure free movement of control strips BG (Plate 40) and cipher stops BR (Plate 40) during a total operation.

This information cancels that contained in Item 7, Mecanogram 308.

6-SQUARE KEYTOP 82991A NO. 1 (BLANK) (GRAY) now replaces keytop C (Plate 114, Symbol List) on currently manufactured Class 9 minus balance machines and may be used in the Field on Class 9 minus balance machines containing square keytops.

The new keytop provides a more direct depression of O.C.K. NO. 7-0, thus lessening the possibility of a partial depression of O.C.K. NO. 6-0 at the same time.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 358  
June 29, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

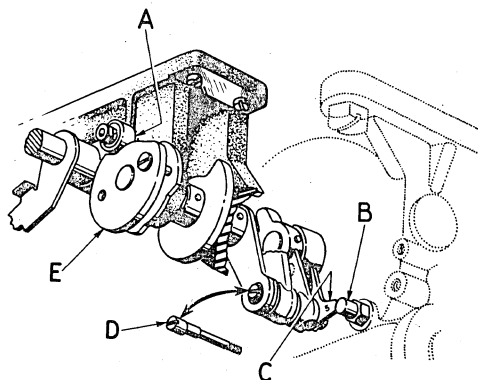
1-CARRIAGE OPENING LEVER 1-203236 NO. 2 (N, Plate 75-1, Carriage Symbol List) now has its tab painted red to assist the operator in locating this lever on the machine.

2-ECCENTRIC SCREW D (201501C) is now being used in currently manufactured machines with 22 to 1 gear ratio drives. The new eccentric screw affords a means of adjusting cam E to provide a minimum of .010" clearance between the incline of the cam and roller A when the machine is normal. This clearance is necessary to assure latching lead of pass-by pawl C (1-3612 1/4 No. 5) on stud B.

3-LOCK WASHER 1097 3/4 is now being installed under the nut of screw 3960 (H, Plate 54-1, Accumulation Symbol List) to guard against loosening of the screw.

This item cancels Item 2, Mecanogram 352.

4-SPRINGS 780 1/8 NO. 2 AND 780 1/4 NO. 2 (P and Q, respectively, Plate 24, Printing Symbol List) now contain full-looped eyes that are formed at a 60° angle to reduce breakage and to prevent their becoming unhooked.



### SERIES A PRODUCTS

(Prices of the supplies listed in Items 5, 6, and 7 may be found in the Business Machine Supplies Price List.)

5-APRON SUPPORT ROD 20972A NO. 2 for apron 20993B Style 17 No. 2 is now available to the Field and is included with stands Styles 43M, 43MN, 44M, and 44MN.

6-NEW STYLE BOX-TYPE APRON 20993B STYLES 13 AND 17 NO. 3 is now available for use on Series 40 stands in the Field. Apron 20993B Style 17 No. 3 is also packaged at the factory with apron support rod set 1-20972A Style 17, and is included with Series 40 square tubular stands for Series H machines having 17 column bases.

7-APRON SUPPORT RODS 20972 Styles 13 and 17, which continue to be available to the Field, are for Series 30 square tubular stands for Series H machines, and 20972A Styles 13 and 17 - for Series 40 stands. The latter may be ordered in sets under symbol 1-20972A Styles 13 and 17.

Note: See Mecanogram 334, Item 2, for installation instructions.

8-WHEN UNPACKING NEW MACHINES, all shipping boxes should be thoroughly inspected to make certain that all supplies and machine parts have been removed. The presence of roll paper, carbon paper, machine hoods, form layouts, and form guides in returned boxes (with their original factory wrappings) indicates that more care is needed to assure customers of complete and prompt delivery.

C. A. BAKER

General Service Manager

# Burroughs

## MECANOGRAM

No. 357

June 27, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

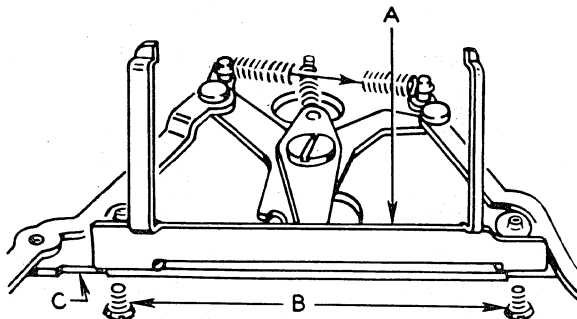
1-NON-GLARE PLASTIC INSERTS 73904 NO. 2 STYLES 12 AND 18, AND 703904A STYLES 22 AND 30 for form heading holder BB (Plate 2, Carriage Symbol List) are now used on all Series M machines and should be installed with the frosted surface facing the operator.

### SERIES P MACHINES

2-GUIDE A (1-83152 1/8 NO. 2), now available for installation on 3 7/8" carriages of Restyled Appearance Field machines, prevents contact of the ribbon with heavy multiple or tagboard forms when the forms are inserted into the carriage.

Installation requires the following parts: guide A (1-83152 1/8 No. 2) and two screws B (7257).

Note: If the bottom plate C is not drilled to accommodate screws B, drill two countersunk holes, using a 1/8" drill -- with plate 83106 (3 7/8) No. 17 as a template.



3-SCREW 72573 AND ROUND NUT 84353 are now available for fastening the restyled appearance touch bars D and E (Plate 125-2, Symbol List) to the older style motor bars containing a hole that is not threaded.

### SERIES A PRODUCTS

4-TOUCH-UP PAINTS are now available under the following symbols for all classes of machines:

Kit 174 No. 5	1/2 Pint	Elephant Gray, ripple
Kit 174 No. 6	Quart	Elephant Gray, ripple
Kit 174 No. 2	1/2 Pint	Elephant Gray, semi-gloss
Kit 174 No. 4	Quart	Elephant Gray, semi-gloss
Kit 174 No. 3	1/2 Pint	Mohave Brown, semi-gloss

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C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 356

June 26, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES F MACHINES

*me 373*  
1-<sup>28</sup>ADDING RACKS 1-406110 NOS. 1 THRU 3 (AE, Plate 25, Instruction Book) have had the hardening process changed to insure uniform hardness of the formed ears. Machines manufactured after Serial No. B30150 are equipped with the improved adding racks.

2-BULL GEARS 406105 AND PINION GEARS 406307 (F and BH respectively, Plate 26, Instruction Book) are now hardened to prevent wear. Machines manufactured after Serial No. B30200 are equipped with the hardened gears.

3-CONTROL UNIT THIRD RAIL 1-403191A STYLE 15 replaces rail V (Plate 4, Instruction and Symbol Book) on all Series F machines beginning with Serial No. B30376. The new rail is made 1/16" narrower to provide increased clearance over the case trim strips during carriage movement.

The two rails (early and improved) are not interchangeable since, in machines constructed prior to Serial No. B30376, the third rail guide rolls are positioned 1/16" lower.

Early style rail 1-403191 Style 15 is still available for repairs and may be installed on new control units that have been ordered for replacement in earlier machines.

4-METHOD FOR REPLACING THE ADDING RACKS (AE, Plate 25, Instruction Book). <sup>28</sup>

Note: Some machines were equipped with "non-standard" adding racks which may be identified by an "L" or "S" scribed toward the rear. When one of these "non-standard" adding racks is to be replaced, a new complete set should be installed.

- B only*
- (a) Remove the Accumulating Units and the Cluster Gear Unit.
  - (b) Remove the adding rack guide comb in the center of the machine.
  - (c) Remove actuating shaft J (Plate 25) through the hole provided in the left side frame.
  - (d) Remove shafts D (Plate 25) front and rear, or if a single adding rack is to be replaced, use a "follow-up" shaft.
  - (e) Remove the adding racks.
  - (f) Replace the adding racks and parts in the reverse order.

Note: Review the adjustments (for the Keyboard Indexing Mechanism) contained in Plate 25. <sup>17</sup>

5-SPACE BAIL SPRING 403806 (D, Plate 16, Instruction Book, dated 3/1/40) is now constructed of heavier stock and is wound in a larger diameter to reduce breakage.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 355

June 1, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

*1-TESTS AND ADJUSTMENTS HEREIN OUTLINED SHOULD BE APPLIED ON NO SPACE STROKE TOTAL MACHINES, to insure proper functioning of the Count Section:*

- a. Check for interference between the upper projection of assembly BK (Plate 69-1, Accumulation Symbol List) and the stud in the lower portion of the adding rack.

*To adjust, remove stock from the stud (655B) in the lower portion of the adding rack.*

- b. Test bell crank Y (Plate 69-1, Accumulation Symbol List) for free movement at all points of travel.

*To adjust, lubricate (with grease) bearing points, and recheck for free movement at all points of travel.*

*2-THE FOLLOWING TESTS AND ADJUSTMENTS SHOULD BE APPLIED ON NO SPACE STROKE TOTAL MACHINES, to insure proper functioning of the Crossfooter Section:*

- a. Test arm BW (Plate 43-1, Accumulation Symbol List) for contacting part BY (Plate 43-1) which may cause a premature limit of lever CA (Plate 43-1).

*To adjust, bend arm BW (Plate 43-1) to clear all adjacent parts.*

- b. Test the stud in the left end of carry reset shaft BH (Plate 43-1) for bind (when actuated) on the dwell of the side frame.

*To adjust, remove stock from the dwell where bind occurs.*

- c. Check the adjustment of lever CA (Plate 43-1).

*To adjust, refer to Adjustment No. 1, Plate 43-1.*

- d. Check for .010" clearance between the crossfooter end plates and the limit stops in the side frames.

*To adjust, refer to Adjustment No. 2, Plate 43-1.*

- e. Test sectors (611s) and adding racks (610s) for free movement at all points of travel (spring unhooked), and test the adding racks for free movement in carried position.

*To adjust, free the sectors and adding racks as need requires.*

- f. Test the crossfooter for free tumbling action, and for proper engagement and disengagement with the adding racks.

*To adjust, lubricate all pivot points.*

- g. Check the indexing of the motor switch points and the drive clutch during a total operation: too early indexing will provide insufficient time for the lower arm of lever CA (Plate 43-1) to be lowered and aligned with stud BQ (Plate 43-1) when the total key is indexed automatically through carriage control.

*To adjust, bend the rear projection of assembly BL (Plate 62-1, Keyboard Symbol List) to provide minimum clearance between stud CU (Plate 62-1) and latch M (Plate 62-1) when the total key is indexed.*

(Over)

3-MOTOR BAR LINK 1-3627 NO. 3 (BN, Plate 62-1, Keyboard Symbol List) has been altered - by removal of the blue steel spring arrangement formerly attached - to eliminate interference with the shifting of the counter control lever.

4-MOTOR BAR LINK BN (Plate 62-1, Keyboard Symbol List) AND MOTOR BAR 101 should be free to function without interference from the screws for Motor bar 102 (in the case).

To adjust, remove stock from the upper rear edge of link BN (to provide clearance with the rear arm of Motor Bar 102, and to permit proper tripping of the motor switch points and the drive clutch); and remove stock from the upper rear projection on Motor Bar 101 (to provide clearance with the forward screw of Motor Bar 102, thus permitting Motor Bar 101 to restore fully and eliminating the possibility of indexing points of throw from Motor Bar 102).

5-CAM 201122 1/2 (J, Plate 62-1, Keyboard Symbol List) now has a larger radius ground in its pocket to provide clearance for the projection on keyboard slide R (Plate 62-1) thereby preventing locking of the slide. Arm 1-201121 No. 3 (CQ, Plate 62-1) which includes cam J, is now available for installation in Field machines.

6-LATCH I (Plate 71-1, Carriage Symbol List) should have a smooth, easy action.

To adjust, stone the upper rear corner of bail F (Plate 71-1) at the point of contact with latch I.

7-THE ROLL ON LEVER E (Plate 81-1, Carriage Symbol List) should be lubricated (with oil), and cam X (Plate 81-1) should be lubricated (with grease) to eliminate excessive wear of the roll.

8-THE TRUNNIONS OF THE PRESSURE ROLLS should be lubricated (with oil) to assure even feeding of the journal sheet and other forms.

9-MACHINE SPEEDS FOR NO SPACE STROKE TOTAL MACHINES are as follows:

Motor Speed.....2450 r.p.m.

Unrestricted Speed (timer inactive)..103 to 105 operations per minute

Restricted Speed (timer active).....81 to 83 operations per minute

NOTE: Springs 986 (light), 981 1/4 (medium), and 780 5/8 (heavy),

(AW, Plate 67-1, Accumulation Symbol List) are available to increase or decrease the interval of time (restricted speed) with the light spring producing the greatest interval of time.

10-ERROR KEY ADJUSTMENT: When the machine is normal, there should be minimum clearance between the stud in assembly P (Plate 7, Keyboard Symbol List) and the forward end of the slot in the link which is attached to the error key.

To adjust, bend the lower arm of the error key.

NOTE: When there is excessive clearance between the end of the slot and the stud, the weight of the operator's finger resting on the error key may cause the latter to be lowered sufficiently to block bell crank 1-622 1/4A (E, Plate 7) in its normal position, thus causing the keys in the keyboard to remain indexed.

11-THE WALL PLUG should always be removed when installing the case on No Space Stroke Total Bank Posting Machines to avoid possible damage to stud AT and cam AS (Plate 62-1, Keyboard Symbol List).

If Motor Bars 101 and 103 are depressed and the machine operates, the lower portion of Motor Bar 103 blocks the actuation of cam AS (Plate 62-1) which then causes stud AT (Plate 62-1) to break and/or damage cam AS (Plate 62-1).

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 354

May 31, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

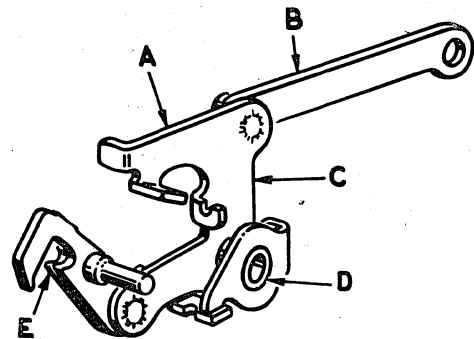
### SERIES P MACHINES

**1-REGISTER B CONTROL PAWL ASSEMBLY 1-84151A NO. 4** (A, in illustration - E, Plate 98, Symbol List) has been modified to further insure resetting the Register B carry racks.

Link B is made of heavier stock and the width at point C is greater; also, hub D and reinforcing plate E have been added.

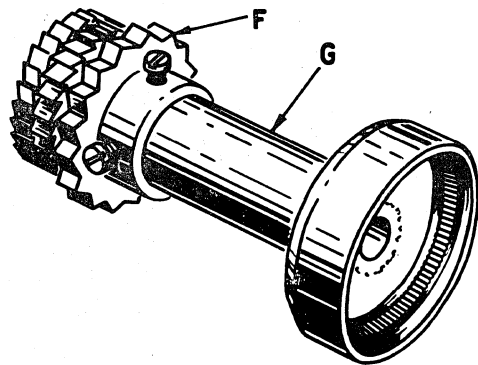
Installation of pawl assembly A on Field machines containing the screw (V, Plate 97, Symbol List) or the clip (D, Plate 97-1, Symbol List) requires the omission of this screw or clip due to the heavier stock in link B, and

an adjustment is also required to link B to provide only a minimum of side play in the rearmost portion of the link.



**2-FORM SPACERS - VARIABLE G (61Z-83364 - FOR RIGHT-HAND 1/6" FORM SPACING - AND 71Z-83364 - FOR LEFT-HAND 1/6" FORM SPACING)** are now available for installation on Field machines.

These new assemblies contain sharp toothed star wheel F which improves the detent action of the detent arm (BB, Plate 29-3, Symbol List) when forms are rapidly inserted or withdrawn from around the carriage platen.



**3-REINFORCED LIMIT STUD 81626** now replaces the limit stud for pawl AG (Plate 133, Symbol List) on currently manufactured machines and may be used in Field machines.

C. A. BAKER  
General Service Manager

# Burroughs

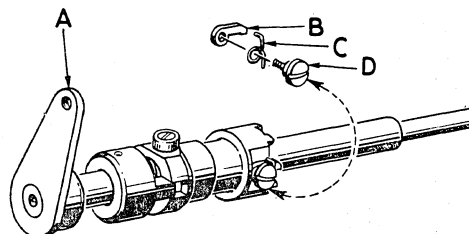
## MECANOGRAM

No. 353  
May 29, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

SERIES M MACHINES

**1-DRIVE CLUTCH SHAFT ASSEMBLY 1A-71007** (J, Plate 3, Power Symbol List - A, in illustration) -- in all Series M machines after Serial No. B 11583 - now contains pawl B (701257), spring C (701808), and screw D (701573), which provide a more secure drive clutch engagement and help to assure that two cycle operations do not lose a stroke. Partial meshing of the teeth of the two clutch members is averted since pawl B, through spring C, yields if the clutch members do not properly mesh and is enabled to move into the next tooth space, thus holding the members to the same speed and permitting them to fully engage.



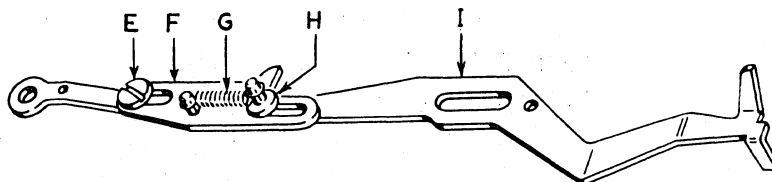
When installing a new clutch shaft, use the improved worm shaft that contains a polished worm (see Mecanogram 320, Item 1) and ascertain that the bronze worm wheel is not worn in any way. The drive should be drained of all old oil and new lubricant added. Also, install pin 71571A in place of plug 71571B which is located in the drive housing toward the right end of the clutch shaft.

This information supersedes that contained in Item 1, Mecanogram 345.

**2-SLIDE ASSEMBLY 1-702223 NO. 4** includes slide 702223 No. 4 (similar to CR, Plate 20, Carriage Symbol List) and also replaces the latter on all Class 77 machines.

The new slide assembly, primarily designed for machines with Selective Column Tabulation, contains a spring joint which reduces the possibility of losing the adjustment of the collar (CQ, Plate 20) should a typewriter key be depressed along with the selective column tabulating key.

Parts included in the new assembly are slide I (702223 No. 4), slide F (1-702224 3/4), spring anchor screw H (253 9/16 No. 2), spring G (200812), and screw E (253 11/16).



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 352

May 24, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

*1-13-1 OK*  
**1-AN IMPROVED SPRING ANCHORAGE** for the toggle assembly in No Space Stroke Total Bank Posting machines is now available for installation in Field machines in order to safeguard against the breaking of part A. - 1-204145

Parts required are screw B (204524A Env. 3411), spring anchor C (20 No. 150), spring anchor E (1-204144 1/2), and spring F (982 1/2 Style 17).

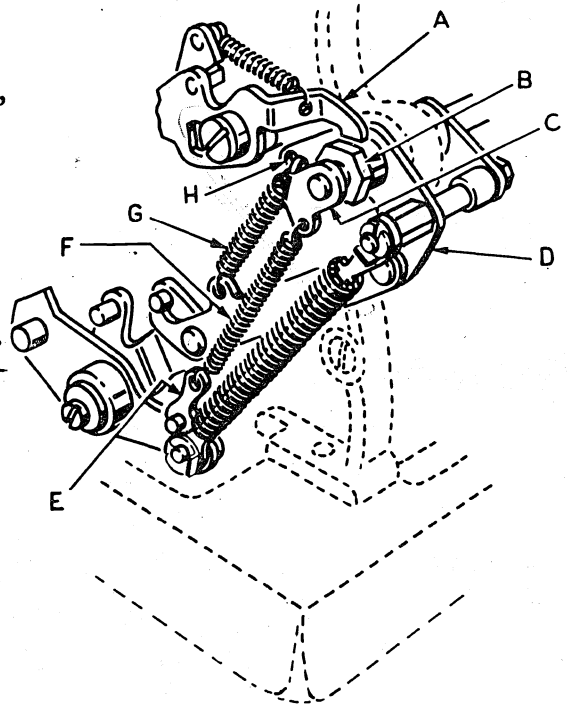
Installation may be accomplished as follows:

- (a) Remove toggle link D and remove the spring stud from position H.
- (b) Replace toggle link D using hexagon-head screw B.
- (c) Assemble spring anchors C and E and springs F and G, as illustrated.

**2-LOCK WASHER 1097 3/4** is now being installed under the nut of screw 3960 (H, Plate 55-2, Accumulation Symbol List) to guard against loosening of the screw.

**3-SCREW 2854 3/16 AND LOCK WASHER 1097 3/4** are now being used in place of screw 12051 3/8 (BU, Plate 62-1, Keyboard Symbol List) to guard against loosening of the screw.

**4-THE CURRENT PRACTICE OF PREPARING A SERVICE REPORT, FORM 224,** for Home Office information covering each mechanical attention to Series H New Style Bank Posting Machines has served its purpose and should be discontinued. Much has been gained to date from these reports, and we appreciate your co-operation in preparing and submitting them for Home Office use.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 351  
May 10, 1950

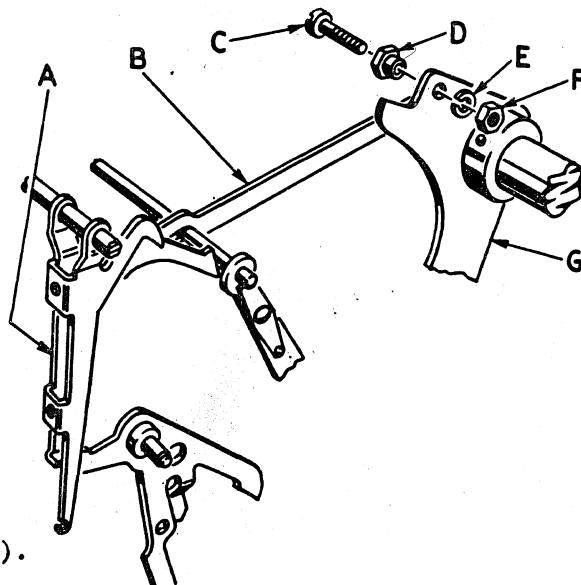
### SERIES H MACHINES

1-THE CARRY RESET MECHANISM (illustrated) is now available for Field replacement of the Carry Reset Mechanism (Plate 85-1, Accumulation Symbol List), contained in No Space Stroke Total Bank Posting Machines, to provide a more positive reset of the crossfooter carry pawls.

Parts required for the replacement are carry pawl resetting link B (200208 1/2Z), eccentric bushing D (209302), screw C (79587), lock washer E (1097 3/4), nut F (46), and latch A (411 1/8R No. 3).

Installation may be accomplished as follows:

- a. Remove the toggle (O, Plate 85-1).
- b. Replace the carry pawl latch in the first column with latch A.
- c. Attach link B to arm G (T; Plate 1), as illustrated.



To adjust the new mechanism, turn eccentric bushing D so that carry pawl latches A have slight clearance with the forward projection on the carry pawls as the crossfooter adding wheels are being meshed with the adding racks; and limit on the projection of the carry pawls prior to the tripping of a 9 to 9 carry.

### SERIES M MACHINES

2-STAR WHEEL ASSEMBLY 1-709348A (BO, Plate 45, Accumulation Symbol List) is changed -- at the points which contact the register trips -- to safeguard against point to point interference during carriage return operations of Class 77 machines containing Selective Column Tabulation and having the register trips set closely together.

When installing a new star wheel, a new bracket 1-709160 (BL, Plate 45) which has been modified to reduce bending, should also be installed.

This information supersedes that contained in Item 3, Mecanogram 343.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 350  
May 9, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

*1-LIMIT 1-200298 3/4 AND SCREW 72617* are now available for Field installation in No Space Stroke Total Bank Posting Machines to reduce breakage of part BL (Plate 43-1, Accumulation Symbol List).

The new limit prevents the lower arm of lever CA (Plate 43-1) from getting under the studs in part BM (Plate 43-1) during a total operation, and is attached to the machine by screw 72617 which is used in place of screw 2856 7/8 (AD, Plate 43-2).

*2-IMPROVED INTERVAL TIMER 2A-200289, SPRING 89811, ACTUATING ARM 1-201120A NO. 2, AND BUSHING 200498 1/2A* are now available for Field replacement of interval timer 1-200289 (AS, Plate 67-1, Accumulation Symbol List), actuating arm 1-201120 No. 2 (BP, Plate 67-1) and collar 200498 1/2 (AA, Plate 67-1), respectively, to reduce wear and breakage.

Bushing 200498 1/2A is now extended both ways from its flange and serves as a bearing for parts Z and AB (Plate 67-1). Bushing AC (Plate 67-1) should be reversed to serve as a bearing for the enlarged fork in the arm of the interval timer. This re-arrangement of the bushings accommodates the enlarged forked opening (if contained) of either the early or the improved interval timer, and prevents cramping the actuating arm to eliminate binding of the Timer Mechanism.

*3-LEVER 1-200299A, BAIL 1A-204140, CLIP 21 NO. 8, AND ARM 1A-10416 NO. 2* are now available for Field replacement of lever 1-200299 (P, Plate 43-1, Accumulation Symbol List), bail 1-204140 (A, Plate 15-1), and the upper arm of the negative total lock (T, Plate 15-1), respectively. The new parts are designed to facilitate a more positive adjustment of the Automatic One Mechanism for No Space Stroke Total Bank Posting Machines.

*4-SCREW 200577 1/2* is now available for Field replacement of screw 709607 (BD, Plate 67-1, Accumulation Symbol List) in the Interval Timer Mechanism on No Space Stroke Total Machines, to eliminate excessive breakage of the screw head.

C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

No. 349

May 5, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

## SERIES M MACHINES

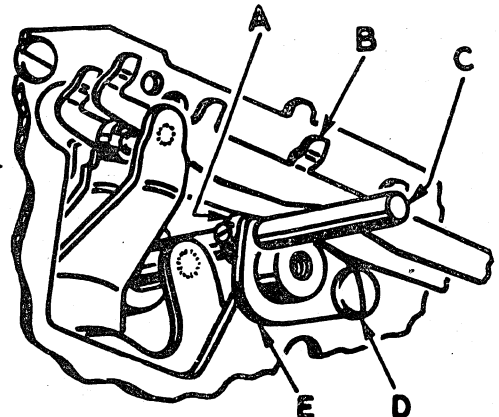
1-CLUTCH MEMBER AND GEAR ASSEMBLY 1-705578B AND CLUTCH MEMBER 705352A, which now replace assembly N and clutch member D, respectively (Plate 22, Carriage Symbol List) in all machines containing the adjustable governor (Plates 22 and 23), are redesigned to reduce wear and breakage of the clutch teeth.

Installation of the new parts requires a new yoke 1-705292A together with washer 3819 1/8, lock washer 1097 3/4, and nut 46.

## SERIES P MACHINES

2-SHAFT C (86020) (BV, Plate 40, Symbol List) has been reinstated in currently manufactured machines containing 8 columns or less and may be installed in Field machines (containing 8 columns or less) to assure printing and accumulating 8 when an 8 key is depressed.

Installation requires the following parts: for hand machines -- shaft C (86020), set collar A (1-73314), bracket E (86143A), and screw D (10056); for electric machines -- shaft C (86020), bracket E (86143A), screw D (10056), and stop 86144 (BE, Plate 40).



## SERIES A PRODUCTS

3-RETAINING NUT 20947 3/4 is now used with screw 20958 1/4 (T, Plate 11, and G, Plate 12, Series A Products Symbol List) on check Tables of Styles 45, 46, 65, and 66 stands as a foot retainer for Series C and P machines. For machines containing rocker type feet, the new nut is used on the upper side of the table; and for machines with round feet, it is used on the under side.

MECANOGRAM 346, 347 AND 348 NOT GENERALLY DISTRIBUTED EXCEPT IN U. S. A.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 347

May 1, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES F MACHINES

**1-LOCKS RESULTING FROM THE MACHINE OPERATING WITH THE CONTROL PINS OUT OF ALIGNMENT WITH THE SENSING TAPPETS** may be attributed to any of the following causes, and may be averted by applying the corresponding corrections. (Parts and plates referred to may be found in the Series F Instruction Book, dated 3/1/50.)

- a. Cause: Incorrect adjustment of the Drive Trip Interlocks.  
Remedy: Adjust the Drive Trip Interlocks as set forth in Plate 50.
- b. Cause: Excessive "rebound" of the carriage.  
Remedy: Application of the following adjustments will provide a more positive positioning of the carriage.  
Note: Spring 408804 (BC, Plate 8) should be of the increased tension, as announced in Mecanogram 342, Item 1.
- (1) During carriage tabulation, the brake should be applied approximately  $5/16"$  prior to the positioning of the carriage.  
*To Adjust*, bend the formed ear of slide J, Plate 8.
  - (2) During carriage return, the brake should be applied approximately  $3/8"$  prior to the positioning of the carriage.  
*To Adjust*, bend the formed ear of slide G, Plate 9.
  - (3) During a  $5/8"$  carriage tabulation or return movement, there should be slight overthrow of the carriage.  
*To Adjust*, increase or decrease the pressure of spring H, Plate 2.
- c. Cause: Excessive radius on the upper rear corner of interlock 1-401181 No. 1 (A, Plate 50) which permits a premature release of drive trip arm B, Plate 50, while the carriage is being positioned.  
Remedy: Install a new interlock 1-401181 No. 1 (A, Plate 50) which now has its upper rear corner held to a minimum radius.
- d. Cause: Carriage stops shifting.  
Remedy: Install screw 403582Z in place of stop screw 403582 (BH, Plate 4). The new screw has a smaller diameter cone point to insure a sharper condition on the working edge.

**2-IN KEEPING WITH THE PUBLICATION OF SERIES F INSTRUCTION BOOK, FORM 3740**, reference letter AZ, Item 1, Mecanogram 342, should be corrected to read BC. The information contained in Items 2 and 3 is now included under "Adjustments," Plates 4 and 50, respectively, of Instruction Book, Form 3740.

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 346

April 27, 1950

### SERIES F MACHINES

1-METHOD FOR REPLACING THE CLUTCH DOG 1-401107 (C, Plate 49, Instruction Book, dated 3/1/50): <sup>56</sup>

- a. Remove the motor and keyboard.
- b. Remove left main-camshaft bearing D (Plate 48) and bearing retainer E (Plate 48). <sup>54</sup>
- c. Drive out the pins in the two cam assemblies immediately inside the left side frame.

Note: When the main-camshaft is in normal position, the pins may be driven out from the rear of the machine, first inserting a "back-up" tool against the main-camshaft from the front of the machine through index strips AH (Plate 25). <sup>28</sup>

- d. Remove the left side frame.

Caution: Support the two crossfooters and the cluster gear unit to prevent the strain on these units.

- e. Remove the two cam assemblies and replace the clutch dog (using rivet 401506).
- f. Replace the parts in reverse order.

Caution: Do not replace the main-camshaft bearing until the cam assemblies have been repinned.

<sup>AG</sup> 2-CAM 1-401129 (AG, Plate 49, Instruction Book, dated 3/1/50) now <sup>56</sup> has a longer dwell surface on its projection (or lobe) to delay the tripping of the drive for repeat operations, thereby insuring disengagement of the clutch dog to "miss a tooth," which in turn provides an adequate interval of delay between machine operations to permit completion of the relay add carry. A failure to complete the relay add carry results in incorrect or complementary totals.

3-SHIPPING CARTON (INCLUDING FITTINGS) 99 No. 145 is now available for shipping Sensimatic Control Units.

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

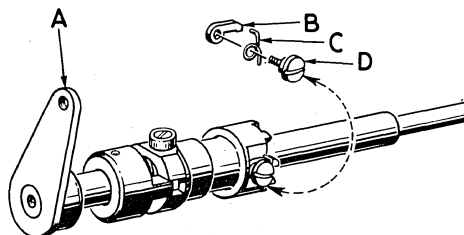
No. 345

April 18, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

*Mec 353*  
SERIES M MACHINES

*Mec 353*  
1-DRIVE CLUTCH SHAFT ASSEMBLY 1A-71007 (J, Plate 3, Power Symbol List - A, in illustration) -- in all Series M machines after Serial No.B - 11583 -- now contains pawl B (701257), spring C (701808), and screw D (701573), which provide a more secure drive clutch engagement and help to assure that two cycle operations do not lose a stroke. Partial meshing of the teeth of the two clutch members is avoided since pawl B, through spring C, yields if the clutch members do not properly mesh and is enabled to move into the next tooth space, thus holding the members to the same speed and permitting them to fully engage.



When installing a new clutch shaft, use the improved worm shaft that contains a polished worm (see Mecanogram 320, Item 1) and ascertain that the bronze worm wheel is not worn in any way. The drive should be drained of all old oil and new lubricant added. Also, use plug 71571B in place of pin 71571A, which is located in the drive housing toward the right end of the clutch shaft.

*Mec 380*  
2-FRICTION SPRING 74180B (E, Plate 22, Accumulation Symbol List) is now redesigned to better retain proper tension on limit plates A and B (Plate 22) in all styles of machines.

3-BRACKET 1-702148 NO. 2 REPLACES BRACKET 72148 NO. 1 (AS, Plate 25-1, Accumulation Symbol List) in Class 72 wide base machines containing the Multiplying Function and Clutch Engagement Indexing Mechanism shown in Plate 25-1, Accumulation Symbol List. The new bracket acts as a limit for and reduces breakage of slide AH (Plate 25-1) when the slide is in its forward position.

Installation of the new bracket in Field machines requires shaft 1A-702036A No. 1 (similar to AC, Plate 3, Keyboard Symbol List) that has a recessed roller in the arm W (Plate 3) to clear the projection of the bracket. This announcement cancels Item 2, Mecanogram 337.

MECANOGRAMS 342 AND 344 NOT GENERALLY  
DISTRIBUTED OTHER THAN IN THE U.S.A.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 343  
March 28, 1950

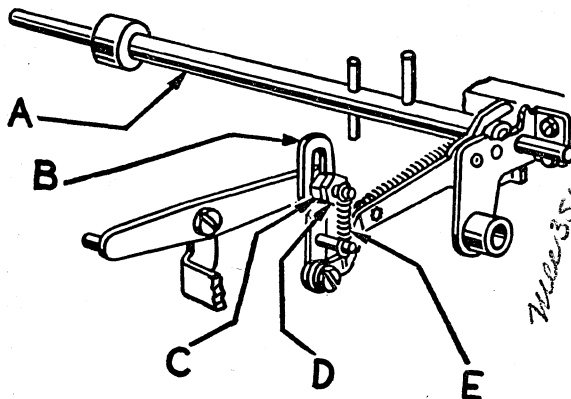
BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

1—**SPRING 205806** replaces spring 4487 (A, Item 1, Mecanogram 336) to improve the ribbon tension in currently manufactured machines containing the new Crossfeed Ribbon Friction Assembly, and may be installed in Field machines so equipped.

### SERIES M MACHINES

2—**LINK 1-705136** $\frac{1}{2}$  (BH, Plate 19-2, Carriage Symbol List—B, in illustration) is now made with a slot in its upper end to provide a broken joint which permits shaft A to restore to normal—at the end of a carriage tabulating operation—if the tabulation control button in position No. 51A is shifted to a non-tabulating position while shaft A is active.



Other parts required for the installation of link B are spring anchor screw D (71614), eccentric C (75342), and spring E (10180).

3—**BRACKET 1-709160** (BL, Plate 45, Accumulation Symbol List) is now changed in outline to reduce bending.

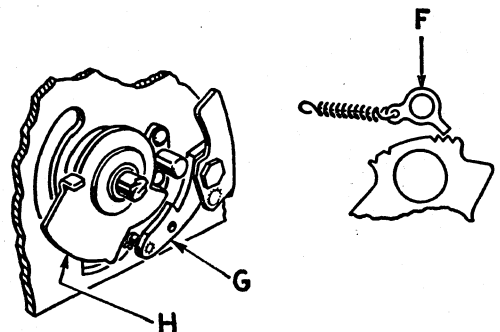
4—**SCREW 702609**, containing a longer thread is now being used instead of screw Y (Plate 25, Accumulation Symbol List) in all new wide base machines, Class 72.

5—**SPRING 79801** (L, Plate 14, Accumulation Symbol List) has been changed in outline to reduce breakage.

6—**SCREW 74535** (AR, Plate 22, Accumulation Symbol List) is now made with a slotted head to permit easier removal and replacement.

### SERIES P MACHINES

7—**FULL STROKE PAWL F (1-84121A NO. 2)** should be replaced—at the earliest opportunity—with pawl 1-84121 No. 2 (B, Plate 128-1, Symbol List) to prevent breakage of the clutch assembly (AX, Plate 132) on Field machines containing parts G and H.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 342  
February 13, 1950

### SERIES F MACHINES

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN: *See 347*

*Mac 347*  
**1—SPRING 408804 (AZ, Plate 8, Instruction and Symbol Book)** now is of greater tension to insure a more positive positioning of the carriage by the stop bumpers.

**②—METHOD FOR ADJUSTING A SENSIMATIC CONTROL UNIT—OR UNITS** (Plate 4, Instruction and Symbol Book) to a machine.

1. With the machine normal, the Sensimatic Control Unit should be located to provide approximately .050" clearance between No. 5 control pins and the Carriage Control Sensing Unit tappets (BL, Plate 5).

*Mac 366*  
**To adjust,** remove third rail V and loosen screws AC. Using wrench Kit 19¼ (C, Plate 3, Tool Equipment List) as a gauge, insert it between the tappets and No. 5 control pins in the end positions, and permit the Sensimatic Control Unit to locate by its own weight. Tighten screws AC.

**Caution:** When installation of additional Sensimatic Control Units is made, careful consideration should be given the preceding adjustment, since a change would affect the adjustments of units already in use on the machine.

2. Third rail V should have slight contact on its upper guide roll in the end positions.

**To adjust,** loosen screws Z and AA and position third rail V.

3. With the Form Guide Assembly (Plate 3) located in the carriage, there should be minimum upward movement of the Sensimatic Control Unit.

**To adjust,** turn screws AF.

4. Selector knobs H and AZ should be free in the carriage side frames.

**To adjust,** loosen screw I and position selector knob H.

**③—METHOD FOR ADJUSTING THE DRIVE TRIP INTERLOCKS** (Plate 49, Instruction and Symbol Book).

1. With stop bumpers S (Fig. 1) normal and the uppermost projection of interlock D against its limit (rearmost supporting bar of the worm gear assembly), the formed ear of clutch release bail E should clear interlock D with non-binding clearance.

**To adjust,** bend the uppermost projection of interlock D.

2. With the uppermost projection of interlock D (Fig. 1) against its limit and drive trip arm B lowered manually, there should be non-binding clearance between the rearmost edge of interlock A and the formed ear of drive trip arm B.

**To adjust,** bend the formed ear of interlock D at its point of contact with screw G.

3. There should be minimum lateral movement of the carriage stops between stop bumpers S (Fig. 1).

**To adjust,** bend bracket Q up or down.

4. When stop bumpers S (Fig. 1) are lowered, there should be an immediate rearward movement of interlock A.

**To adjust,** bend lever L at its point of contact with lever T.

5. When stop bumpers S (Fig. 1) are spread, there should be an immediate rearward movement of interlock A.

**To adjust,** turn eccentric O.

6. With the carriage open and drive trip arm W (Fig. 2) manually lowered, there should be non-binding clearance between the rearmost edge of interlock X and the formed ear of drive trip arm W.

**To adjust,** bend the projection of lever AC.

**4—ADAPTER KIT 594A** is now available for use with crank Kit 116 (Y, Plate 2, Tool Equipment Symbol List) to assist in the manual operation of Series F machines.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 341  
✓ Revised 4-4-50

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

**1—POST 10752½ B AND SHOULDER NUTS 309A FTE. 202, 10739½, 307335, AND 701509 NO. 2** are now available for replacement of post 10752½A (Z, Plate 5, Printing Symbol List) in Field machines and will be installed on all currently manufactured machines after Serial No. A996775. The new post has a longer-threaded shank to prevent its becoming loose and is changed in design to reduce breakage.

When installing the new post in Field machines, it may be necessary to shorten the threaded shank approximately 1/32" to 1/8".

Use the shoulder nuts as specified with the following conditions:

- 309A Fte. 202, used with single detent control
- 10739½, used with double detent control
- 307335, used with single detent control (Multiple Print Machines)
- 701509 No. 2, used with double detent control (Multiple Print Machines)

### SERIES M MACHINES

✓ **2—ECCENTRIC PIVOT PIN 700501½** is available for use in place of pin 70501 (U, Plate 15, Accumulation Symbol List) in the casting K (Plate 7) in all Series M machines in order to adjust the register and the crossfooter adding wheel sections to provide a better printing alignment of listed and totaled amounts. The slotted end of the pin is beveled to indicate the high point.

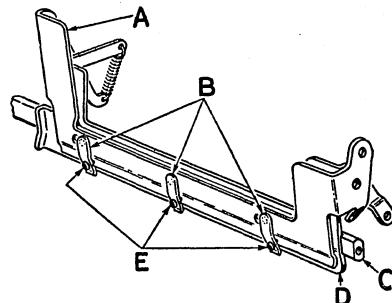
To adjust, turn the pivot pins (keeping the slots and the beveled cuts parallel) so that an amount that is printed when the adding racks are limited by the wide teeth of the adding wheels (totaled amount) aligns with an amount that is printed when the adding racks are limited by the adding rack stops (listed amount).

### SERIES P MACHINES

**3—PASSBOOK RETAINER 1A-83151½B (A) AND SHAFT ASSEMBLY 1-83010A NO. 3 (C)** now replace passbook retainer 1-83151½B (C, Item 5, Mecanogram 304) and shaft assembly 1C-83010 No. 3 (U, Plate 33, Symbol List) on currently manufactured machines, and may also be installed on Field machines.

The new retainer A has been modified by locating friction plugs 93909 (E) in the lowermost portion of fingers B to provide a more secure clamping of the passbook when the latter is located in the lower printing line position; and shaft C has stock removed from behind guide D to provide clearance between the friction plugs E and the type bars.

This announcement cancels item 5, Mecanogram 304.



C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 341  
February 13, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

**1—POST 10752 $\frac{1}{2}$ B AND SHOULDER NUTS 309A FTE. 202, 10739 $\frac{1}{2}$ , 307335, AND 701509 NO. 2** are now available for replacement of post 10752 $\frac{1}{2}$ A (Z, Plate 5, Printing Symbol List) in Field machines and will be installed on all currently manufactured machines after Serial No. A996775. The new post has a longer-threaded shank to prevent its becoming loose and is changed in design to reduce breakage.

When installing the new post in Field machines, it may be necessary to shorten the threaded shank approximately 1/32" to 1/8".

Use the shoulder nuts as specified with the following conditions:

- 309A Fte. 202, used with single detent control
- 10739 $\frac{1}{2}$ , used with double detent control
- 307335, used with single detent control (Multiple Print Machines)
- 701509 No. 2, used with double detent control (Multiple Print Machines)

### SERIES M MACHINES

**2—ECCENTRIC PIVOT PIN 700501 $\frac{1}{2}$  AND 950 $\frac{1}{2}$ A** are available for use in place of pin 70501 and screw 950 $\frac{5}{8}$  (U, Plate 15, Accumulation Symbol List) in the casting K (Plate 7) in all Series M machines in order to adjust the register and the crossfooter adding wheel sections to provide a better printing alignment of listed and totaled amounts. The slotted end of the pin is beveled to indicate the high point.

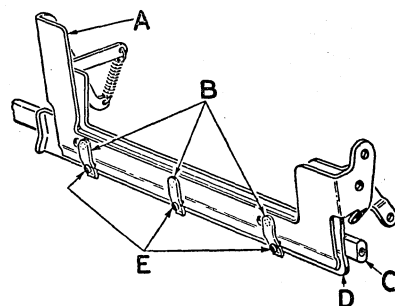
To adjust, turn the pivot pins (keeping the slots and the beveled cuts parallel) so that an amount that is printed when the adding racks are limited by the wide teeth of the adding wheels (totaled amount) aligns with an amount that is printed when the adding racks are limited by the adding rack stops (listed amount).

### SERIES P MACHINES

**3—PASSBOOK RETAINER 1A-83151 $\frac{1}{2}$ B (A) AND SHAFT ASSEMBLY 1-83010A NO. 3 (C)** now replace passbook retainer 1-83151 $\frac{1}{2}$ B (C, Item 5, Mecanogram 304) and shaft assembly 1C-83010 No. 3 (U, Plate 33, Symbol List) on currently manufactured machines, and may also be installed on Field machines.

The new retainer A has been modified by locating friction plugs 83909 (E) in the lowermost portion of fingers B to provide a more secure clamping of the passbook when the latter is located in the lower printing line position; and shaft C has stock removed from behind guide D to provide clearance between the friction plugs E and the type bars.

This announcement cancels Item 5, Mecanogram 304.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 340  
February 6, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

**1—LIMITS B (1-298 ENV. 1753) AND E (1-299½Z ENV. 1753)** are now available for installation on Field machines containing the Multiple Print Mechanism, to block the upward travel of firing cam C—thus preventing damage to the space collars on the control bar.

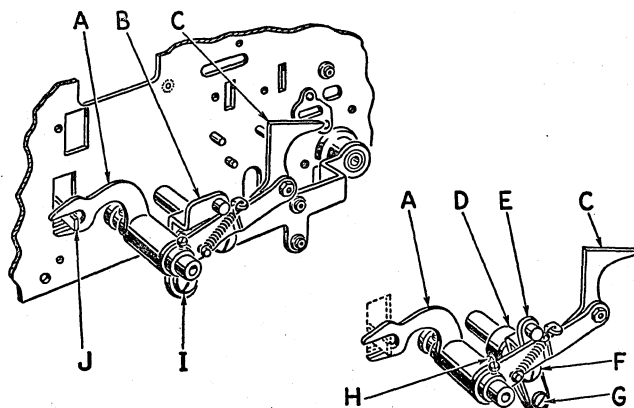
Installation of limit B, for machines containing a crossfooter non-clear motor bar lock, requires two screws I (3450 $\frac{11}{16}$  Style 9) and two washers 1097 $\frac{7}{16}$ .

Installation of limit E for machines **not** containing a crossfooter non-clear motor bar lock, requires arm D (1-299Z Env. 1753), two set screws H (12058 $\frac{3}{8}$ ), screw F (2851 $\frac{5}{8}$ ), and eccentric screw G (12355 $\frac{1}{4}$ ). Use washer 1097 $\frac{3}{4}$  and nut 46 with eccentric screw G.

**Adjustment:** With the machine locked in a half-cycle position and arm J tripped, and with the lower prong of fork A held up to contact arm J, the stud in the limit should hold cam C to slight clearance with the space collars on the control bar.

To adjust limit B, loosen screws I and raise or lower the limit.

To adjust limit E, loosen screw F and turn eccentric screw G.



### SERIES M MACHINES

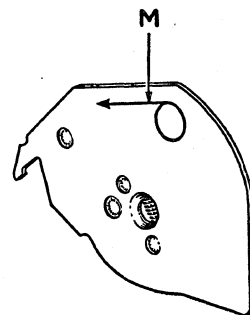
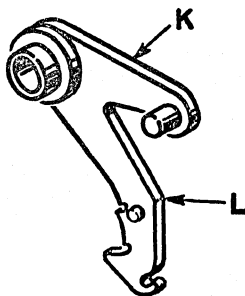
**2—CARRY RESET LINK 1-709207 NO. 1** (R, Plate 12, Accumulation Symbol List) has been redesigned so that clearance cuts for other parts are eliminated, thus strengthening the link to guard against weaving during machine operation.

**3—ALIGNING MIRROR AND LIGHT BRACKETS A, C, S, AE, AND AH** (Plate 38, Carriage Symbol List) now replace brackets Q, R, and P, respectively (Plate 14-1, Power Symbol List) on all new wide base machines. The new brackets are designed to permit raising and lowering check tables which may be assembled to machine stands, Styles 43M and 44M.

### SERIES P MACHINES

**4—LATCH K (1-84283)** (D, Plate 60, Symbol List) has been strengthened at point L to reduce breakage.

**5—GUIDE PLATE 1-83190A NO. 2** (Z, Plate 3-1, Symbol List) now contains engraved indicator M which directs proper installation of roll paper on carriages containing a rewind device, thereby insuring that paper feeds off the top of the roll.



C. A. BAKER  
General Service Manager

# Burroughs

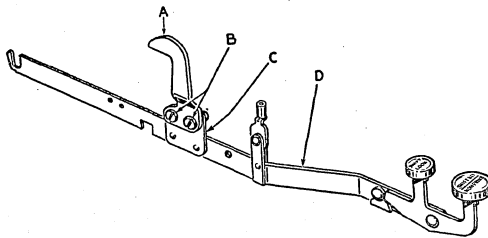
## MECANOGRAM

No. 339  
January 6, 1950

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1—HOOK A (75110 $\frac{1}{4}$ )** may be assembled to bracket C of platen shifting keylever D—when using a non-smudging ribbon—in order to prevent a partial imprint of the upper case type. Use two screws B (73611).

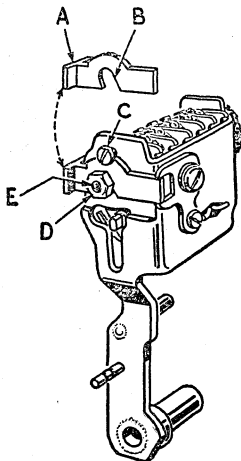


**PLATEN SHIFTING KEYLEVER D (1-75110A NO. 13, BLACK; OR 1B-75110A NO. 13, GRAY)** may be used on any Series M Machine that contains the improved Ribbon Shifting Mechanism (Plate 17, Printing Symbol List).

**2—LEVER 75159Z NO. 2** may be used to replace lever 1-75159 No. 2 (AS, Plate 19-1, Carriage Symbol List) on Class 78 narrow base machines in the Field. The new lever, which contains an open-end slot, may be installed without removing shaft BA (Plate 19-2) after the old lever has been removed from the hub.

**3—CLUTCH MEMBERS 71372A AND 71374A** (AD and AE, respectively, Plate 19, Power Symbol List) are now undergoing different hardening and stoning procedures in order to reduce wear at the clutch points.

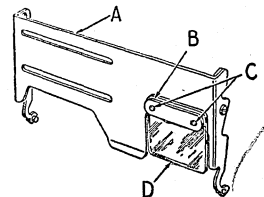
**4—LEVERS 1A-71187 NO. 2** (AB, Plate 29, Keyboard Symbol List) **AND 1A-701187 (L,** Plate 48, Accumulation Symbol List) for narrow and wide base machines, respectively, now contain larger rollers which assure a quicker and more positive action when meshing the cross-footer section with the adding racks during crossfooter total operations.



### SERIES P MACHINES

**5—FORM ALIGNING TABLES A (1-83160A NOS. 4, 7, AND 8)** now contain transparent panel D (83901 $\frac{1}{2}$ ) which is retained by strip B (83160 $\frac{3}{4}$ ) and two screws C (8064 $\frac{5}{8}$ ).

The new panel D provides visibility of the amount previously printed on the form!



**6—LOGOTYPE A (86118 $\frac{3}{4}$  NOS. 3, 4, AND 5)** now contain slot B which permits installation of type A without removing nut D, the removal of which previously resulted in disturbing both the positioning of shaft E and the alignment of the rotary wheel! The new logotype are retained by screw C (4458 $\frac{3}{4}$ ).

C: A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 338  
November 17, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1—ADDING RACK TYPE SPRINGS 76882A** (Item 3, Mecanogram 279) has been strengthened to reduce breakage resulting from the printing of 1's and 0's.

**2—SPRING 707802** is now being used at point H (Plate 2, Printing Symbol List) on all styles of new machines, and may also be used on Field machines to reduce breakage of the spring when restoring the driver pivot shaft W (Plate 2).

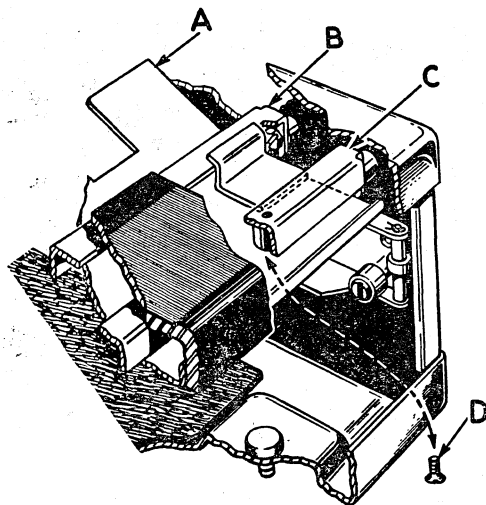
**3—TYPEWRITER SIDE PANELS 1-705102R AND L NO. 5** (N, Plate 14-1, Power Symbol List) on new wide base machines, Classes 72, 78 and 79, have a clearance cut added to the upper edge to provide access to the screws holding the rear carriage rail to the typewriter top-plate, thus facilitating removal of the carriage.

### SERIES P MACHINES

**4—SHIELD 1-15126A (A)**, which is similar to shield AL, Plate 141, Symbol List, is now being installed in currently manufactured Styles 12 and 13 cash drawer assemblies—and may also be installed in Styles 12 and 13 cash drawer assemblies in the Field.

The new shield A prevents the limiting of the bill weights (I, Plate 142, Symbol List) against brace B when the bill compartments become overloaded—which limiting results in failure of the cash drawer to fully open.

Installation requires the following parts: shield 1-15126A (A), brace 11-15120 $\frac{3}{4}$  (C), and two screws 2859 $\frac{7}{8}$  (D).



### SERIES A PRODUCTS

**5—MACHINE SUPPORT RODS 1-20971 NO. 1** (D, Plate 7, Stands—Chairs and Stand Accessories Symbol List)—used on stands Styles 43M and 43MN, **AND 1-20971 NO. 2** (T, Plate 7)—used on stands Styles 41H13, 43H, and 43HE, are now included with the stands when the latter are packed for shipping.

Rods 1-20971 No. 1 contain washer 21 No. 3 (B, Plate 7) and friction plate 20929 $\frac{1}{4}$  (C, Plate 7) for assembling the rods to the right and left side frames of the stands; and rods 1-20971 No. 2 are assembled to the machine support brackets AL and AM (Plate 7), with the assemblies being identified as 11-20967R and L Style 17 No. 1.

This information supersedes that contained in Item 1, News-O-Gram No. 98-S47.

C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

No. 337  
November 7, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

## SERIES H MACHINES

**1—ECCENTRIC BUSHING 12030 $\frac{1}{16}$  AND SCREW 71541** replace screw 4453 $\frac{3}{4}$ —which holds lift pawl F (Plate 14, Carriage Symbol List)—on all currently produced machines and may be installed on Field machines to hold the lift pawl more securely and to facilitate its adjustment.

## SERIES M MACHINES

**2—BRACKET 1-702148 NO. 2 REPLACES BRACKET 72148 NO. 1** (AS, Plate 25-1, Accumulation Symbol List) in Class 72 wide base machines containing the Multiplying Function and Clutch Engagement Indexing Mechanism shown in Plate 25-1, Accumulation Symbol List. The new bracket acts as a limit for and reduces breakage of slide AH (Plate 25-1) when the slide is in its forward position.

When installing the new bracket in Field machines, arm H (Fig. 1, Plate 11, Carriage Symbol List) should be bent slightly to clear the projection of the bracket.

## SERIES P MACHINES

**3—A NEW HAMMERHEAD BRACE**, composed of shaft 89025A Style 13 (A), nut 47 (B) and screw 89568 $\frac{1}{2}$  Style 13 (C) replaces brace 89025 Style 13 (G, Plate 72, Symbol List) on currently manufactured machines and may also be used to replace brace G, Plate 72 on Field machines. The new brace may be adjusted for correct height by raising or lowering screw C, which is then locked in position by nut B.

The following parts are required for installation on Field machines: shaft 89025A Style 13 (A), nut 47 (B), and screw 89568 $\frac{1}{2}$  Style 13 (C).

**4—CORRECT PAPER FEED** may be effected by the application of the following adjustments after the carriage right side frame has first been checked for being straight:

1. (Fig. 1)—With the forward end of paper guide B inserted in the slot of guide E and the rearmost portion of guide B manually held against the roll paper A, there should be approximately .010" clearance at point D.

**To adjust**, bend adjusting plate C.

2. (Fig. 2)—With paper guide B fastened on shaft F, as illustrated, the roll paper should have minimum side play.

**To adjust**, bend the carriage side frame G.

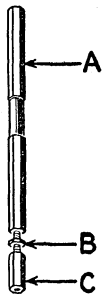


FIG. 1

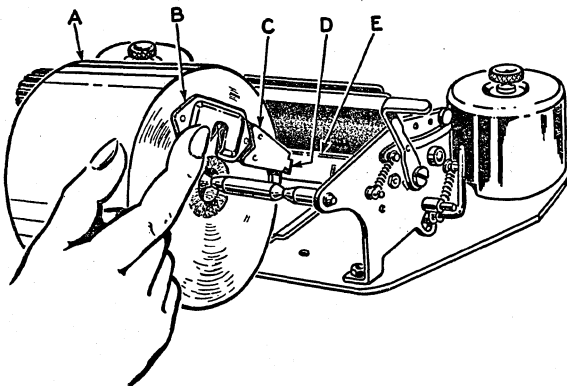
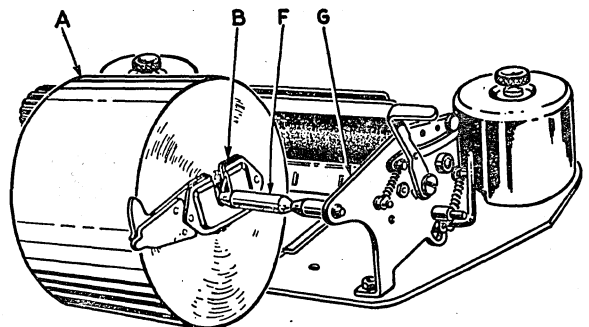


FIG. 2



C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

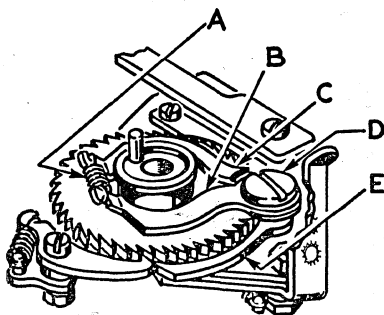
No. 336  
September 23, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

*1—A NEW CROSSFEED RIBBON FRICTION ASSEMBLY*, consisting of arm 205104L (B), arm 205104R (C), spring 4487 (A), and screw 205545 (D), replaces flat friction spring 205104 No. 3 (AG, Plate 38-1, Printing Symbol List) for improved ribbon tension control on machines containing the Crossfeed Ribbon Mechanism, Improved (Plate 38-1).

To install, remove the old friction spring and replace its screw. Replace the outer screw of right and left fingers E with screw D, which also retains the arms B and C, and affix spring A.



### SERIES M MACHINES

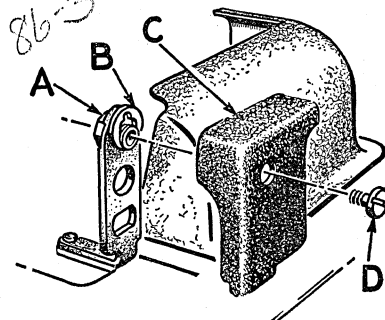
*2—SPRING ANCHOR 1-20 NO. 110A AND SPRING 701805* replace anchor 20 No. 110 and spring 701803 (X and AE, respectively, Plate 14, Power Symbol List) on all wide base machines to reduce spring breakage during the restoring of the drive connecting link (AJ, Plate 14).

### SERIES P MACHINES

*3—ALIGNING SHAFTS G* (Plate 94, Symbol List) used on currently constructed fractional Class 9 machines containing 12 pitch sectors, are now copper plated for ready identification.

*4—CONSECUTIVE NUMBERING DEVICE COVERS 84665 NO. 2 (FOR BLACK MACHINES) AND 84665A NO. 2 (FOR GRAY MACHINES)* (C) have been modified to permit their removal without first removing the carriage and machine case.

Installation of cover C on Field machines requires the following parts: nut 84355 (A), clip 21 No. 6 (B), cover 84665 No. 2 or 84665A No. 2 (C), and screw 957 $\frac{1}{2}$  (D).



### ALL CLASSES

*5—DETACHABLE SERIAL NUMBER PLATES* that have been removed from machine bases that are being replaced, should be retained in the branch for attachment to the new bases. (Use two pins 53 No. 2 for Series H, M, and V bases; and two pins 53 No. 4 for Series P machines.) All bases to be replaced should be scrapped when the replacement bases are received.

Do not forward to the Home Office either the removable plates or the scrapped bases.

When installing a cash drawer on a Series P Machine containing a detachable serial number plate, the number plate should be removed from the machine base and attached in the space provided on the front of the cash drawer housing. Conversely, when a cash drawer having a detachable serial number plate is removed from a Series P Machine, the serial number plate should be removed from the cash drawer housing and attached in the space provided on the machine base.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 335  
September 6, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1—COLOR 38R (ELEPHANT GRAY)** replaces the color "Black" on all Series M machines manufactured since April 1. When ordering painted parts for Field machines, specify "Gray" or "Black" to insure the correct color being sent.

**2—HEXAGON-HEADED SCREW 104506** replaces screw 7357½ (CI, Plate 27, Carriage Symbol List) for easier adjusting of the carriage return clutch with the typewriter assembled to the base.

**3—SPRING 81806** replaces spring 72803 (U, Plate 14, Printing Symbol List) on the typewriter keyboard locking comb; spring 200825 replaces spring 7780 (CF, Plate 8, Keyboard Symbol List) on the register total key bell crank; and spring 681⅛ (2) replaces spring 72834 (BL, Plate 8) on the balance key and the minus balance key bell cranks to give a lighter depression of the result keys on Class 78 machines.

**Note:** All linkages, keys, and the power indexing shaft (BF, Plate 13) should be as free as possible.

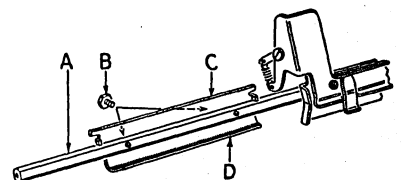
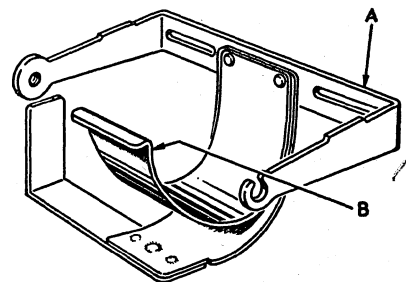
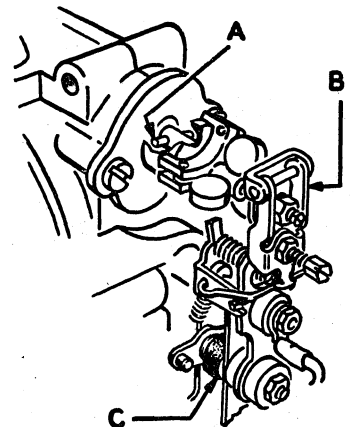
### SERIES P MACHINES

**4—BUMPER STOP 81907 (C)** is now installed on contact point assembly B to hold the latter in place and to prevent the dislodging of pin A during shipment.

**5—ROLL PAPER HOLDER 1A-83127A No. 7 (A)** (CE, Plate 32, Symbol List), now contains pressure finger B to prevent unwinding of the roll paper during carriage tabulation.

**6—TEAR-OFF BLADE 83226⅞ (C)** is now installed on shaft A on currently manufactured Style X carriages, and may also be installed on Style X carriages on Field machines to provide a better means for tearing off roll paper.

New blade C, which is held to shaft A by two screws 12063⅞ No. 3 (B), contains two elongated slots to permit its positioning in a desired location; and also contains lower extension D, which projects over the platen, to prevent bulging and tearing of the paper and a resultant smudging from the type bar.



Mr M R Lovejoy  
Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 334

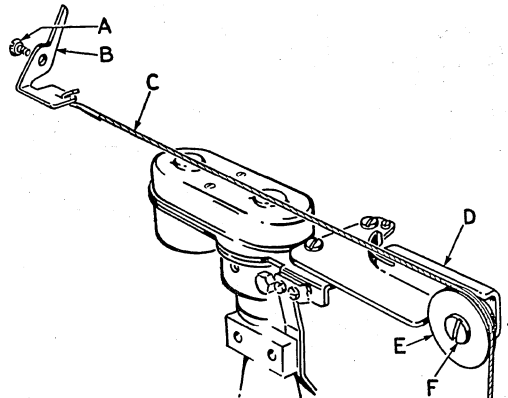
August 31, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES

1—STEEL CABLE 1-203701 (12") (15") (18") (C) is available for use in Field machines containing an exterior spring barrel (G) to reduce drawband breakage.

The following parts are required for installation: screw 2859 $\frac{3}{4}$ " (A)—use nut 46, anchor 203118 $\frac{1}{4}$ " (B), cable 1-203701 (12") (15") (18") (C), bracket 1-203185 $\frac{1}{2}$ " (D), screw 3450 $\frac{1}{16}$ " Style 9 (F), and wheel 203303C (E).



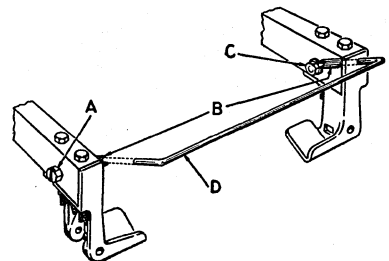
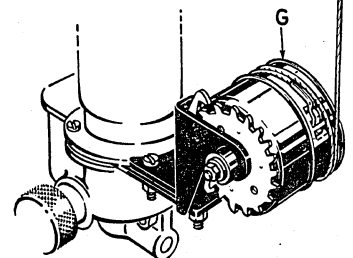
### SERIES A PRODUCTS

2—STAND APRON SUPPORT ROD 20972A STYLE 13 OR 17 (D) replaces support rod 20972 Style 13 or 17 (Mecanogram 326, Item 7) on Styles 41H9, 41H13, 42H9, 43H, 43HE, and 44H stands.

To install support rod D, fasten sockets 20927 $\frac{7}{8}$ " (B) to the horizontal rails of the stand as illustrated, using screw 12051 $\frac{3}{4}$ " (A) and nut 10762 Style 17 (C).

Stand Apron Support Rod 20972 Style 13 or 17 (Mecanogram 326, Item 7) is still available for Styles 33, 34, 35, and 36 stands. This rod is sprung in place and allowed to rest on the front stand brackets with the short ears of the rod under the rails.

This information supersedes that contained in Item 7, Mecanogram 326.



Mr M R Lovejoy

Buffalo N Y Branch 10-5

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 333

Revised February 3, 1950

BRANCH MANAGERS, SERVICE MANAGERS AND SERVICEMEN:

### SERIES H MACHINES

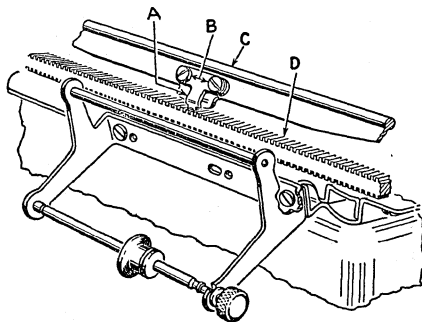
**1—OIL SEEPAGE** between the register oil pan and the machine base may be eliminated by replacing the gasket with a thin layer of Permatex Sealer No. 2, Kit 164 $\frac{7}{8}$ , on the pan.

This information cancels that contained in Item 1, Mecanogram 329.

### SERIES P MACHINES

**2—UNIVERSAL CARRIAGE STOP 83215 $\frac{3}{4}$  (A)** may be installed on bail C to provide a means of limiting the carriage on any tooth of rack bar D.

Installation of stop A requires two 7357 $\frac{1}{2}$  screws B.



### ALL CLASSES

**3—THE FOLLOWING LUBRICANTS** and their uses are recommended for Field machines:

**Note:** Complete lubrication charts for Series C, H, and M machines will be furnished as soon as is practicable. A chart for Series P machines is included in the most recent Symbol List, Form 2983, issued October 1, 1949.

A chart for Series V machines is included in the Series V Symbol List, Form 2967, as supplementary issue, Plate A, Page 3.

Symbol	Description
Kit 131	Machine Oil
Kit 167 $\frac{1}{4}$	Roller Bearing Grease
Kit 168 $\frac{7}{8}$	Light Grease
Kit 168 $\frac{1}{2}$	MRC Drive Oil
Kit 134	Dashpot Oil
Kit 134 $\frac{1}{2}$	Zero Dashpot Oil
Kit 165 $\frac{1}{2}$ B	Drive Oil
Kit 168 $\frac{3}{4}$	Medium Wheel Bearing Grease
Kit 167 $\frac{3}{4}$ E	Extra Light Grease
Kit 167 $\frac{1}{2}$ E	Motor Bearing Grease

### Where Used

Shaft bearings  
 Bearings with oil holes  
 Light sliding parts  
 Links  
 Arms  
 Light working parts  
 Oil cups  
 Small spring eyelets  
 Open contacts  
 Open cams  
 Sliding contacts  
 Pressure roll bearings  
 Teeth on ratchets and racks  
 Open gears  
 Cam studs  
 Rolls  
 Heavy working parts  
 Large spring eyelets  
 Rotary Calendar Feature and Numbering  
   Device bearings and wheels  
 Split platen bearings  
 Enclosed gears  
 Dashpots (Series H and V Machines)  
 Dashpots (Series P Machines)  
 Drives (Series H, V, M, and P Machines)  
 Drive gears (Series C Machines)  
 Rear sleeve bearing for MRC Unit  
 Sleeve bearings on early style motors

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 332  
June 23, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

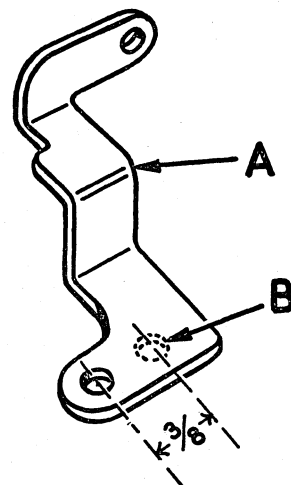
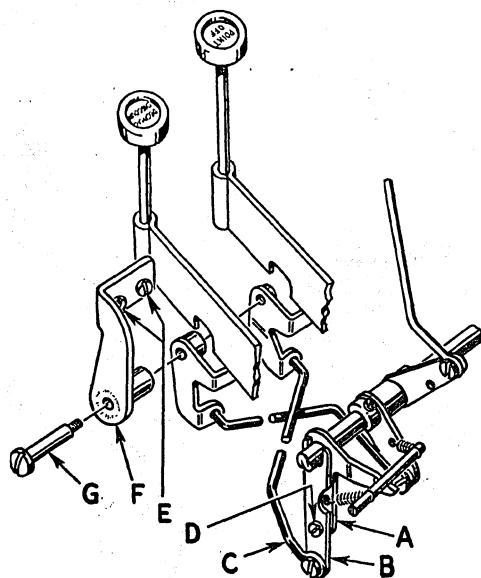
### SERIES C MACHINES

1—**GEAR 4534C**, which is referred to in Item 1, Mecanogram 330, is for use with late style gear K, Item 2, Mecanogram 324.

This information modifies Item 1 of Mecanogram 330 and should be noted therein.

### SERIES M MACHINES

2—**BRACKET 1-702127 $\frac{1}{2}$  (F)**, used on New $\frac{1}{2}$ Wide Base Class 72 Machines, is now made of heavier stock to reduce bending when the point-off key is depressed; and auxiliary arm 72223 $\frac{1}{2}$ Z (B) may be attached to the right side of bellcrank A with screw 74533 (D) to afford a lighter depression of the point-off key.



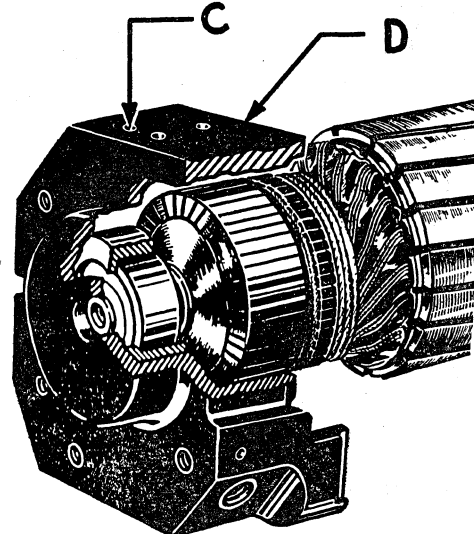
Installation of auxiliary arm B requires the re-forming of wire C in order to clear the shaft (W, Plate 7, Accumulation Symbol List).

The symbol for screws E is 79543, and that for screw G is 72615.

### SERIES P MACHINES

3—**MOTOR END CAP 1AZ-4366 (D)** now contains tapped hole C to permit the installation of condenser bracket A when replacing the motor end cap and the armature (as described in Item 3, Mecanogram 305) on non-split-field motors in Field machines.

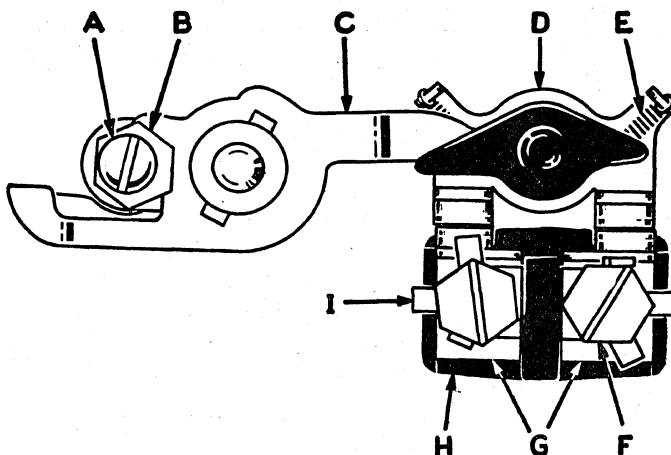
Installation of bracket A requires the drilling of a new hole at point B (as illustrated) using a No. 17 drill.



(OVER)

**4—ALL PRESSURE ROLLS** for Series P Machines including 1-83005 “3 $\frac{7}{8}$ ” (X, Plate 1, Symbol List), 1-83991 (BJ, Plate 29), and 1-83992 (BK, Plate 29) are now manufactured from oil-resistant neoprene tubing. These new rolls, which may be identified by their gray color, prevent improper paper feeding which formerly was caused by the rubber tubing becoming swollen by the lubricant used on the pressure roll hangers.

**5—THE SWITCH ASSEMBLY** used on Type 3 motors (speed controlled) contains the following component parts: (A) screw 12051 $\frac{3}{8}$ , (B) eccentric 81397, (C) switch arm assembly 1-81215C—includes D and E, (D) upper switch point assembly 1A-3842B, (E) spring 3885B, (F) screw 81552 $\frac{1}{2}$ —use brass sleeve 12045, (G) lower switch points 1-81226R and L, (H) fibre block 1-81995, and (I) lock washer 1097 1/32A.



## SERIES A PRODUCTS

**6—ECCENTRIC ADJUSTING SCREW U** (Plate 5) will better retain its adjustment if the high point of the cam surface of the screw is turned from the upper side to the inner side.

C. A. BAKER

General Service Manager

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

# Burroughs

## MECANOGRAM

No. 331

May 4, 1949

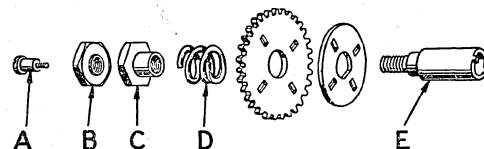
BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1—COMPRESSION SPRING 701804 (D)** replaces spider springs 71117 and 701117 (BH, Plate 3, Power Symbol List) on machines of current manufacture to reduce spring breakage. The new springs may also be used for replacement on Field machines.

The following parts are required in conjunction with the new spring: sleeve 71302B (E), shoulder nut 701397 (C), jam nut 71515 (B), and screw 71617A (A). Also, Classes 72 and 78 machines require wider drive cover 1-71183B (BB, Plate 11).

Spider springs 71117 and 701117 will continue to be available for repairs.



### SERIES P MACHINES

**2—CAM 1-99144 STYLE 13 NO. 2 (A)** now has lip D added to insure the correct functioning of the relay carry action by providing additional support to the tumbling section during a minus operation.

Insufficient support of the tumbling section during a minus operation may permit the lower wheels to rock forward, resulting in a failure to move the carry pawls (N, Plate 111, Symbol List) far enough to lift the latches (C, Plate 111) during a mixed relay and power (direct) carry.

Installation of cam A on Field machines requires the following adjustments:

1. With link F manually held upward, cam A should limit against the bottom of roll B.

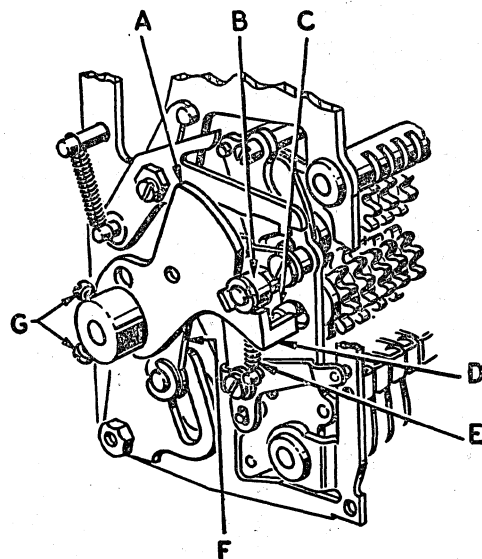
**To adjust,** position cam A and tighten screws G.

2. Lip D should have minimum clearance in front of shaft C.

**To adjust,** bend lip D.

3. Lip D should clear the lower eye of spring E during a machine operation.

**To adjust,** close the eye of spring E.



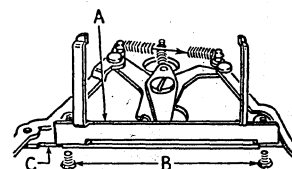
**3—LINE FINDER 11-83101B (12¼) STYLE 13 NO. 5**, which was announced in Item 4, Mecanogram 329, is being installed on currently manufactured Style 13 Machines containing split platen carriages (except passbook carriages)—and may also be installed on such machines in the Field.

This information modifies that contained in Mecanogram 329, Item 4, and should be noted thereon.

**4—GUIDE 1-83152½Z (A)** is now available for installation on 37/8" carriages on Field machines to prevent contact of the ribbon with heavy or multiple forms when the forms are inserted into the carriage.

Installation requires the following: guide 1-83152½Z (A) and two screws 7257 (B).

**Note:** The two holes in the bottom plate C should be countersunk to accommodate the heads of screws B.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

April 11, 1949  
No. 330

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "C" MACHINES

*Notes herein See Mic 332*  
**1—MANUAL OPERATING HANDLE KIT 116½** is available for use in turning the drive of Series C motor driven machines. To use the new handle, remove screw N (Plate 18, Symbol List), place the notch of Kit 116½ around the bearing of gear R (Plate 18), and insert the screw (furnished with the kit) through the drilled hole of the kit and into the hole from which screw N (Plate 18) was removed.

Gear 4534A, furnished as part of the kit, will mesh with old style gear P (Plate 18) but must be replaced by gear 4534C for use with late style gear T (Plate 18-1).

### SERIES "M" MACHINES

**2—BRACES 703289½R AND L ENV. 773** are available for providing additional support for tables BC or Y (Plate 4-1, Carriage Symbol List) on New Wide Base Machines not having Selective Column Tabulation, to prevent interference of the table with lever H (Plate 26-1, Printing Symbol List).

The left brace is installed with its large hole on the boss of the table at screw AB (Plate 4-1 Carriage Symbol List) and with the smaller hole aligned with the hole for screw X (Plate 4-1) using screw 501 Fte. 206 in place of screw X (Plate 4-1).

The right brace is installed in the corresponding position at the right end of the table.

**3—DRIVE ARM 127 FTE. 141 (Z, Plate 24-1, Printing Symbol List)** previously used for additional clearance on machines having the Repeat of Items Mechanism, is now used (with screw 501 Fte. 141) on all Series M Machines in place of drive arm 71108 and screw 10056¾ (AC and AZ, respectively, Plate 28).

**4—PLATE 72156 NO. 1 (M, Plate 38, Keyboard Symbol List)** now receives a hardening operation to reduce wear at its point of contact with typewriter keylock slide F, Plate 20.

**5—TERMINAL SCREWS 71610 (CG, Plate 1, Power Symbol List)** are lengthened (⅜" over-all) to accommodate the new wire terminals (Mecanogram 327, Item 3). The screws also have a hexagonal head to permit the use of a wrench when assembling the governor brush wires to the terminals.

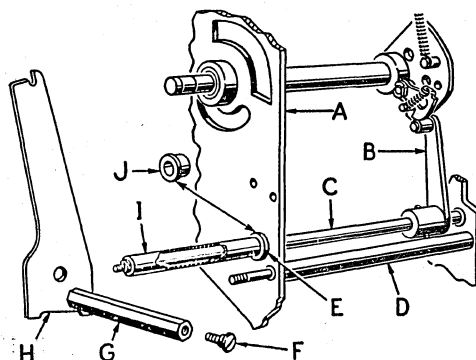
### SERIES "P" MACHINES

*Plate 110*  
**6—SIDE FRAMES 1-84110BL AND 1-84110BL NO. 2 (A)** now contain an enlarged hole at point E to facilitate the installation and the removal of shaft assembly 11-81012 (C) without first removing arm B.

Parts required with the installation of these modified side frames A are bushing 81398 (J) and shorter sleeve 81382A (I).

Brace 84109½ No. 1 (H), used on hand machines, has also been altered by relocating the hole in its lower portion to permit the anchoring of spacer 84604 (G) to side frame A with screw 502 Fte. 400 (F), the latter being inserted through the hole used for shaft D on electric machines.

**7—WASHER 86331** replaces eccentric washer 86131 (included in BA, Plate 86, Symbol List) in currently manufactured machines, and may be installed in Field machines to provide a flush alignment of the rotary type with the regular type.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 329  
March 22, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

*Wesc 333*  
**1—OIL SEEPAGE** through the gasket of the register oil pan can be eliminated by cross-tightening and retightening the screws holding the pan to the base. This should be done on new machines before delivery and on customers' machines whenever the oil pan is replaced.

**2—FORM ALIGNING BAIL 1-203247B STYLE 15 NO. 5** (Y, Plate 29-1, Carriage Symbol List) which is now standard construction on currently manufactured Bank Machines cannot be installed on Field machines having a manually operated aligning bail (V, Plate 29). The following construction must be contained in the machine to permit the installation and the proper functioning of the new aligning bail: Reinforced Carriage, Carriage Opening and Closing Mechanism—Toggle Construction, Wide Base, 22 to 1 Motor, and Multiple Skip and Return Unit No. 2.

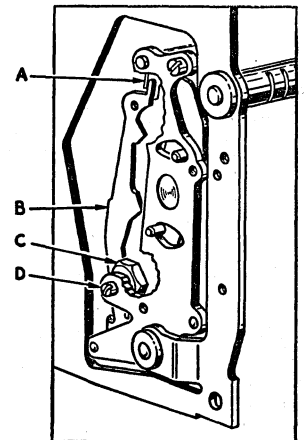
### SERIES P MACHINES

*Wesc 531*  
**3—RETAINING NUT 99345 $\frac{1}{2}$  (C)** with screw 75621 (D) is now used on 10 column Class 9 machines (not Minus Balance) and may be installed on Field machines as a lateral guide to prevent the left carry pawl (B) from moving to the left and to the rear of the total stop bail (A).

**4—LINE FINDER 11-83101B (12 $\frac{1}{4}$ ) STYLE 13 NO. 5**, which is similar to line finder 1Z-83101A (12 $\frac{1}{4}$ ) No. 8 (B, Item 5, Mecanogram No. 299) is now being installed on currently manufactured Style 13 Machines—and may also be installed on Style 13 machines in the Field.

This new line finder prevents the tearing of forms—which are not held rearward by the tear-off blade (CB, Plate 29, Symbol List)—while the carriage is tabulating or being shifted.

Before installing this line finder, the lower right end of the guide (A, Item 5, Mecanogram No. 299) should be bent rearward (against the line finder) to provide clearance between the guide and the left ribbon cap.



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# Burroughs

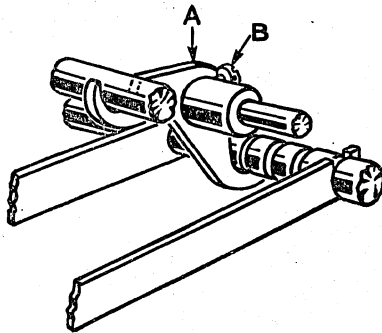
## M E C A N O G R A M

No. 328  
March 11, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1—BRACE 1-705145½ (A)** is now being used on new Wide Base Machines to provide additional support for the shaft (Q, Plate 24-1, Printing Symbol List) in order to reduce weaving of the shaft (when the Rotary Calendar Mechanism or the Four Period Mechanism is machine actuated) which may result in light or non-uniform printing of the date type or the four period type.



To install the brace, loosen the collars on the shaft (Q, Plate 24-1) and move the shaft to the right sufficiently to permit positioning the brace with its lower hook between the "J" and the "U" keylevers. Screw 70512 (B) holds the brace in position.

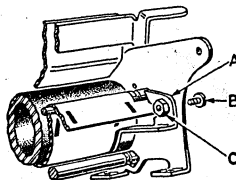
### 2—METHOD FOR REPLACING A VERTICAL EXTEND ARM (AZ, PLATE 51, ACCUMULATION SYMBOL LIST) IN CLASS 78 MACHINES WITHOUT DISCONNECTING THE SUBTRACTOR ASSEMBLY

- (a) Operate the machine to run all adding racks forward.
- (b) Remove the following parts:
  - (1) Casting K (Plate 7, Accumulation Symbol List).  
*Note:* Loosen the register and the crossfooter pivot pins on the left side only.
  - (2) Screws I and H (Plates 39 and 35, respectively).
  - (3) Strap B and guide comb AT (Plate 1).
  - (4) Guide B and support BD (Plate 23) together with the square brace bar between the side frames.
  - (5) Screws AM (Plate 33).
  - (6) Restoring shaft AF (Plate 19, Keyboard Symbol List).
- (c) Loosen the collar to the right of lever AB (Plate 33, Accumulation Symbol List).
- (d) Move shaft assembly AS (Plate 33) to the left out of bracket AV (Plate 33) and to the rear as far as possible.
- (e) Disengage detent arm AU (Plate 51) from its lift arm AT (Plate 51).
- (f) Remove arm AZ (Plate 51) from the machine by moving it forward and then upward and rearward.
- (g) Install the replacement arm and replace the removed parts in the reverse order.
- (h) Adjust restoring shaft AF (Plate 19, Keyboard Symbol List).

*See Memo 304*

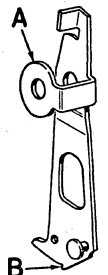
### SERIES P MACHINES

**3—FORM GUIDE 83101 3/16Z (3⅞) (A)**, held in place by screw 73612 (B) and nut 46 (C), may be used to prevent wide forms from catching on the left rear opening of the form guide B (Plate 1, Symbol List) on 3⅞" carriages without a Rewind Device.



**4—RESTORING ROCKER 1-82123AR NO. 5 (A)**, which replaces rocker 1-82123AR No. 2 (Mecanogram 318, Item No. 6) on machines having locked keyboard construction, further assures a handle break taking place should O. C. K. 5-0 be partially depressed at the time O. C. K. 6-0 is depressed. Failure to obtain a handle break in this instance results in erratic accumulation of amounts in register A.

The new rocker, which is copper plated for easy identification, has stock removed at point (B) to facilitate its being blocked by detent R, Plate 40, Symbol List, when a key in column O is partially depressed.



C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 326

February 1, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

1—**CARRY PAWL GUIDE 419 $\frac{1}{8}$ Z (B)**, with clip 419 No. 1 (C) and two screws 952 $\frac{3}{4}$  (D) may be used to maintain lateral alignment of the foot of carry pawl A with the cam of the adding wheel when the carry pawl bearing in the sector guide becomes worn. Align guide B to permit free movement of the carry pawl and to prevent the carry pawl from limiting in the bottom of the slot of the guide.

### SERIES M MACHINES

2—**FORM HEADING HOLDER 1-703101B (ALL STYLES) (V)**, Plate 4-1, Carriage Symbol List) is changed on the left end to include a stud which fits in a hole in the left support bracket (of table Y or BC, Plate 4-1) to prevent incorrect assembly.

To use the new Form Heading Holder on machines not having the hole in the left support bracket, it will be necessary to grind the stud off the form heading holder.

3—**ECCENTRIC COLLAR 709379 AND SCREW 703571** replace screw stud 69555 in the forward left side of casting Z (Plate 40, Accumulation Symbol List) in Class 77 Machines not having Selective Column Tabulation. The eccentric collar affords an adjustable normal limit for the Register Trip Mechanism CP (Plate 40), and compensates for the movement of casting Z (Plate 40) when the position of the register drum is being adjusted.

After the register drum is positioned, eccentric 709379 should be adjusted to provide slight clearance between pawl CQ (Plate 40) and the control bar fittings.

4—**SPRING CLIP 21 NO. 17** replaces wire clip 277 (J, Plate 16, Printing Symbol List) to facilitate the replacement of worn pawls M, F, and P, Plate 16.

5—**SPRING 79801 (L, Plate 14, Accumulation Symbol List)** is now manufactured from .014" wire, instead of .016" wire as previously, to reduce breakage.

### SERIES P MACHINES

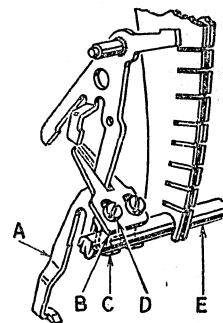
6—**ROLL PAPER GUIDE 1-83119 NO. 1 (G, Plate 1, Symbol List)** is redesigned for improved guiding of a full roll of paper on the 3 $\frac{7}{8}$ " carriage.

### SERIES A PRODUCTS

7—**STAND APRON SUPPORT ROD 20972 STYLE 13 OR 17** is now available to support the front edge of the apron used with Series H machines on square tube stands. To install, thread the support rod through the front hem of the apron between the extreme front edge and the adjacent heat seals which attach the front loops.

On Styles 41, 42, 43, and 44 stands, place two bolts 12051 $\frac{3}{4}$  in the holes toward the front of the horizontal rails to provide support for the rod, using two nuts 10762 Style 17 on the outside of the rails to hold the bolts in place. Wide base machines should be shifted to the left on the stand to almost touch the left bolt head. The left end of the support rod is then inserted between the stand rail and the machine base above the bolt head, and the short ear of the rod is locked under the rail. The right end of the rod is then placed in its corresponding position. The rear loops of the apron then may be placed over the tops of the rear stand legs.

On Styles 33, 34, 35, and 36 stands, the rod is sprung in place and allowed to rest on the front stand brackets with the short ears of the rod under the stand rails.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 325

January 28, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1—BLOCKING ARM 77106A NO. 3, ECCENTRIC 104380. AND SCREW 79543** replace blocking arm 77106 No. 3 and screw 79552 (Z and AB, respectively, Plate 25, Printing Symbol List) to afford vertical adjustment of the blocking arm.

**2—ECCENTRIC 104380 AND SCREW 79565** replace screw 71589 (T, Plate 29, Keyboard Symbol List) in currently manufactured machines, and may be installed in Field machines to provide additional adjustment for the Power Meshing Mechanism.

**3—FORM ALIGNING TABLE 1-703283 NO. 3 (12) (18) (22) (30) (S, Plate 4-1, Carriage Symbol List)** is made to special order when transparent aligning inserts and/or pressure roll clearance cutouts are required.

Orders for these special tables should include a set of the customer's forms together with the table symbol, the carriage length, the number stamped on the space ratchets BG and O, Plate 1, and the Machine Style and Serial Number in order to expedite manufacture and delivery.

### SERIES P MACHINES

**4—COMMUTATOR CLEANING PADDLE KIT 194½** is now available for use in cleaning the commutator of late style Type 3 Motors which have the large opening in the bakelite end cap above the rear bearing.

The abrasive should be held to contact evenly on the commutator surface.

### SERIES A PRODUCTS

**5—SHIPPING CASE INSERTS 30614⅜ NO. 4 AND 30626¼** are available to enable the use of a 17 column Spring Mount Shipping Case (for Series H Machines) for packing and shipping a 13 column Series H Machine.

Insert 30614⅜ No. 4 is placed in the left side of the supporting assembly as a bearing for the left feet of the 13 column machine, and insert 30626¼ is placed in the left side of the cap assembly for clamping the machine to the supporting assembly.

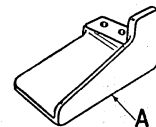
**6—CHECK TABLE BRACKETS 1-20926 NO. 6 (Q, Plate 13)** and check table 51-20995L No. 2 (not shown) which replaces brackets 1-20926 No. 9 (P, Plate 7) and check table 1-20995L No. 2 (A, Plate 7) respectively, on Styles 42H9, 42H13, and 44H stands, are used to raise the level of the check table approximately in line with the first row of adding keys.

Installation of the new parts requires the drilling of a new hole (using a 21/64" drill) for screw AD, Plate 5.

**7—NEW MACHINE BRACKETS 20967R AND L NO. 4, (A)** used to reduce the pitch of the machine keyboard, replace brackets 20967R and L No. 3 (AD and AE, respectively, Plate 7, Stands, Chairs, and Accessories Symbol List) on Styles 42H9, 42H13, and 44H stands of current manufacture.

The new brackets may also be used to replace brackets 20967R and L Style 9 No. 1 (AH and AI, respectively, Plate 7) on Style 42H9 stands and brackets 20967R and L Style 17 No. 1 (AL and AM, respectively, Plate 7) on Styles 42H13 and 44H stands.

Installation of the new brackets requires two rear brackets 20927½A No. 2 (F, Plate 5) and two washers 300151, which are placed, one on each side, between each rear bracket and the stand rail.



C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 324  
January 24, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES C MACHINES

**1—NEW DRIVE LUBRICANT KIT 168 $\frac{3}{4}$**  is available for use in all motor-driven Series C drive gear assemblies to give a quieter running drive mechanism.

Before applying the new lubricant, it is advisable to remove all of the old grease. Should this fail to reduce the noise satisfactorily, the new style gears and the hanger (see Item No. 2) may be installed.

**2—GEARS 51302D (A), 1-51330D (K), AND PINION 4534C (L)** may be used to replace gears 51302C, 1-51330C, and pinion 4534A, respectively, in all motor-driven Series C machines. The newer gears, in the same order, have 60, 60, and 12 teeth, whereas the older style gears contains 50, 49, and 10 teeth, respectively.

Other parts required for the installation of the new gears are hanger 1-51101B (I), floating pin 51505B (H), washer 3325 $\frac{7}{8}$  (B), lock washer 86129 (E), spacer 51346 (G), and screws 79598 (C), 12051 $\frac{3}{8}$  (J), and 73611 (F).

Hanger I is redesigned to accommodate the new gears and floating pin H, which replaces the threaded pin M, Plate 18, Symbol List. Spacer G replaces brace X, Plate 18, to prevent side play of the motor assembly.

Installation of spacer G may be accomplished in the following manner:

1. Drill a hole in the left side frame for screw F, using drill No. 28.

**Note:** Refer to the illustration for drilling specifications.

2. Assemble spacer G to motor bracket D, using screw J.

**Note:** The hole for screw F may be altered with a round file if the hole and the spacer G do not align properly.

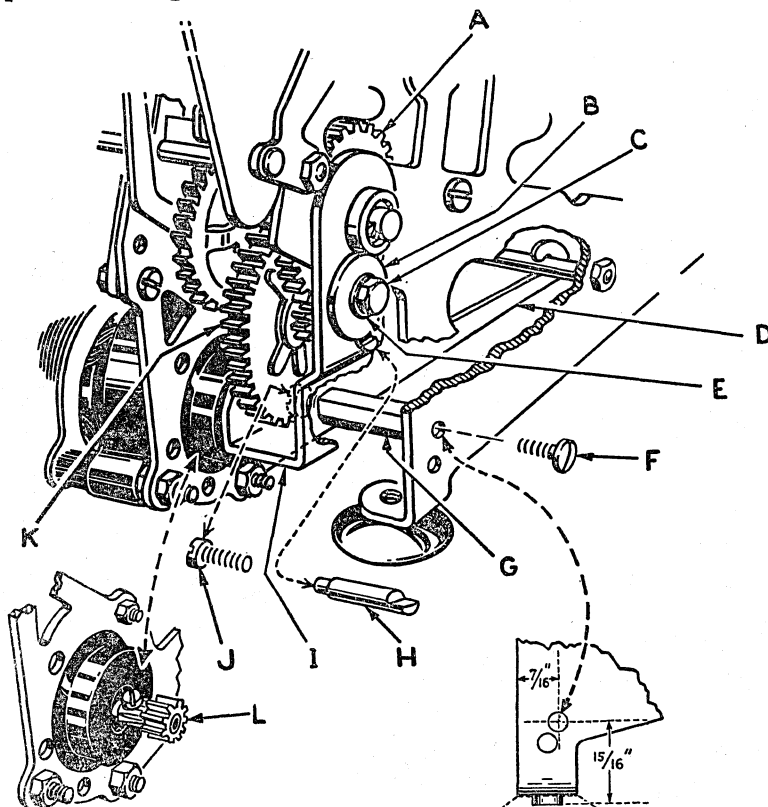
Gear K should mesh with pinion L as deeply as possible without causing noisy operation. To adjust, loosen screw C and swing hanger I.

The older style gears are available for repairs, but they cannot be used in conjunction with any of the newer gears.

### SERIES M MACHINES

**3—SHOULDER SCREW 701570**, with a larger head, replaces shoulder screw 79600 (L, Plate 25, Accumulation Symbol List) on Class 72 Machines to prevent the forward end of the slotted link (K, Plate 25) from camming off the screw during a multiplying operation.

C. A. BAKER  
General Service Manager



# Burroughs

## M E C A N O G R A M

No. 323  
January 18, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES P MACHINES

**SPRING 69801 NO.2** is being used in place of spring 74815 (AZ, Plate 45-1, Symbol List) on Class 9 Electric Machines of current manufacture to further lighten the depression of the plus motor bar.

Spring 87801A, with spring anchor 20 No. 79, is being used in place of spring 74815 on Class 9 Bookkeeping Machines having O.C.K. 4-0 marked OB/NP.

The new springs may be applied on Field machines above Serial No. A796500 (approximately) having the Light Depression Motor Bar Mechanism as shown in Plate 45-1.

C. A. BAKER  
General Service Manager

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

# Burroughs

## MECANOGRAM

No. 322  
January 4, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

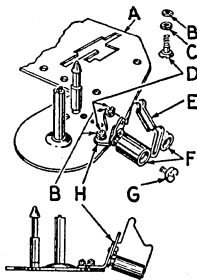
### SERIES "M" MACHINES

**1—FOUR POSITION PRINTING CONTROL DRIVE ARM 1-141B ENV. 1060A** (AS, Plate 6, Printing Symbol List) now receives a grinding and stoning operation on its surface of contact with the 71002 shaft in the twin cam section to reduce wear of the shaft.

**2—MANUAL OPERATING HANDLE KIT 522 $\frac{1}{4}$ A** for Series M machines replaces operating handle Kit 522 $\frac{1}{4}$  (M, Plate 24, Tool Equipment Symbol List). The new handle contacts arm M, Plate 13, Power Symbol List, instead of arm L, Plate 13, to eliminate the possibility of loosening the latter on its hub.

### SERIES "P" MACHINES

**3—LATE STYLE DOUBLE RIBBON GUIDE 1A-83280 $\frac{1}{2}$  (E)** and new rolls 83343 No. 4 (F) are now assembled to bracket 83280 No. 2 (H), the angle of which has been increased. These changes prevent the folding of and the running out of the printing position of the ribbon when feeding on the rear spool.



When installing new bracket H, the two holes in bottom plate A should be countersunk to accommodate the heads of screws D. Before assembling ribbon guide E to bracket H, the two tapered pins should be removed from ribbon guide E.

The following parts are required for installation on Field machines: bracket 83280 No. 2 (Brown) or 83280Z No. 2 (Black) (H), two screws 2859 $\frac{7}{8}$  (D), two nuts 46 (B), two lock washers 1097 $\frac{7}{16}$  (C), two rolls 83343 No. 4 (F), and two screws 957 $\frac{1}{2}$  (G). Rolls F, recessed in each end, are installed with their short recesses toward the machine.

The old style bracket 83280 No. 2 in station stock should be discarded.

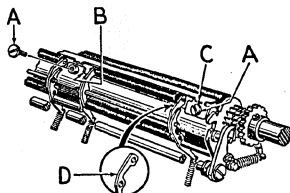
**4—VERTICAL CONTROL SLIDE 1-86145 (B)** now has an added projection (on its rearmost portion) which eliminates the need for stop F, Plate 87, Symbol List. This added projection limits the rearward travel of stud D and prevents an overthrow of the rotary wheels when the latter are advancing and printing or when printing only.

The following adjustment is required by the installation of new slide B: With slide B downward and with the rotary mechanism manually moved forward, stud D should clear the horizontal portion of the slide B .020 of an inch.

To adjust, bend the forked end of arm C up or down.

**5—INSTALLATION OF A LATE STYLE GOVERNOR 1-81667A** (AU, Plate 132, Symbol List) as a replacement for an old style governor requires that worm shaft AE (Plate 132) be drilled through (using a drill No. 52) to accommodate longer pin 66 $\frac{1}{2}$  (AF, Plate 132).

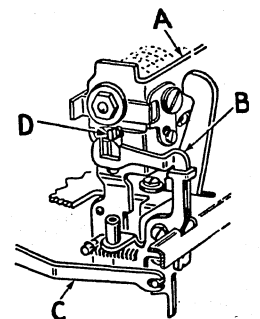
Also required are assembly 1-81239A, spring 81815A (AJ and AR respectively, Plate 132), washer 520 $\frac{1}{4}$ , and flanged collar 233 $\frac{1}{4}$ A (B and C, respectively, Mecanogram 290, Item No. 6).



This information supersedes the information given under AU, Plate 132.

**6—GUIDE STRIP 83102 $\frac{1}{4}$  (C)**, now assembled on all 12 $\frac{1}{4}$ " carriages except those used for passbooks, is available for installation on Field machines to facilitate the insertion of heavy and multiple forms.

Installation requires the following: guide strip 83102 $\frac{1}{4}$  (C), four screws 10750 $\frac{3}{16}$  Style 9 (A), carriage back 1A-83225 No. 3 (Brown) or 1-83225 No. 3 (Black) (B), and six pressure roll hangers 83133 No. 4 (D).



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 321

November 19, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES H MACHINES

**1—NEW AUXILIARY LEVER 1-204141 AND SPRING 7283A STYLE 10** assure an easier and a more positive shifting of the Negative Total Lock by raising the bail Z (Plate 68-1, Accumulation Symbol List) (all styles)—during the crossfooter tumbling operation—thus helping to eliminate complementary totals.

The new lever is assembled in the hub of the intermediate tumbling arm AD (Plate 74-5) and is actuated by the new spring which is assembled from the lever to the stud in the upper part of the left side frame.

### SERIES C MACHINES

**2—INDEXING SLIDE 1-56115A NO. 1** (C, Plate 4, Symbol List) now receives additional hardening to reduce wear in the slots which engage the feet of the keystone.

### SERIES M MACHINES

**3—CREDIT BALANCE KEYWIRE 1-702724A**, which is of heavier stock, replaces wire 1-702724 (W, Plate 38, Keyboard Symbol List) on New Wide Base Class 78 Machines.

The new wire reduces yielding and further assures latching of the Credit Balance Mechanism when the credit balance key is depressed.

**4—WASHER 75257** may be used as a spacer to assure slight clearance between the retaining strip on the carriage back and the tabulator stops. Install as many washers as necessary between the carriage back panel N (Plate 36, Carriage Symbol List) and the brackets L and P (Plate 36) at the screws K (Plate 36).

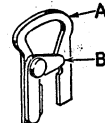
### SERIES P MACHINES

**5—TABULATING STOP 1-83215 NO. 5 (A)** which contains auxiliary limit B is now available for installation on Field machines.

The new stop A limits the carriage at a half-tabulating space to provide an intermediate carriage position which enables the improving of the vertical alignment of the print on vertically lined forms.

Installation of the new stop A requires that a regular stop 83215 No. 4 (C, Plate 32, Symbol List) be placed in the first slot to the right of stop A to provide additional strength.

**6—SYMBOL 99808** identifies the two springs used on the lift arm assembly AN (Plate 114), Symbol List.



### SERIES A PRODUCTS

**7—NEW STYLE CONTROL BAR AND FORM HEADING HOLDER STORAGE RACK 1-28237A**, which replaces storage rack 28237, may be used on all square tube stands for Series M Machines. The new storage rack may be slipped over a top side rail of the stand, or it may be fastened to a wall with wood screws.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 320  
October 22, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

**1—DRIVE WORMS 71997 NOS. 1 THRU 5** (AJ, Plate 11, Power Symbol List) and 71997B (AS, Plate 3) now receive an added polishing operation to reduce wear of the bronze worm wheel.

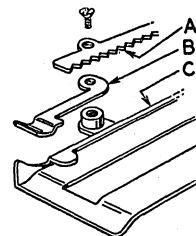
All unpolished drive worms 71997 Nos. 1 thru 5 and 71997B, and worm assemblies 1-71008, 1A-71008A, and 1AZ-71008A (AK, Plate 11) containing unpolished worms now in branch stock, should be replaced with currently manufactured stock.

**2—FORM GUIDE FINGERS 73182 $\frac{1}{8}$ R&L (B)** may be installed on the lower end of the right and left form chutes (C) between the form chute and the form limit index rack (A) to facilitate the insertion of forms.

**3—REGISTER PINION GUIDE BLADE 709931A NO. 2** replaces guide blade 709931 No. 2 (H, Plate 40, Accumulation Symbol List) on Class 77 Machines. The newer style blade has a wider bevel on one side of its guiding edge for improved alignment of the register pinions with intermediate pinion guide J (Plate 41) when a register pinion assembly shuttles between the active position and the drum.

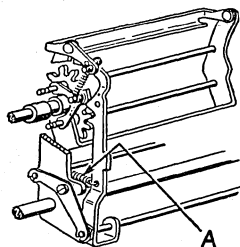
Where poor shuttling alignment is present in older machines, it is permissible to change the full set of guide blades. This change requires that casting Z (Plate 40) be shifted for proper alignment of the register supporting pins with the pilot shaft in the register frame.

Since a different adjustment is required, it is important that the newer style blade not be used in conjunction with the older style which will continue to be available for repairs.



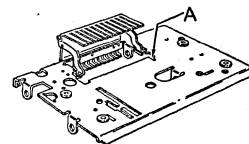
### SERIES P MACHINES

**4—STRONGER SPRING 3883A (A)** replaces spring 83806B to prevent wrong addition on Class 9 Machines when latch L (Plate 110, Symbol List) releases prematurely during the relay carry of a subtract operation.



Use of the new spring permits the removal of limit arm R (Plate 45-1) which necessitates the following changes: screw 701533 replaces screw T, nut U, and eccentric S (Plate 45-1); and spring 87801A replaces spring C Plate 113-1.)

**5—THE REMOVAL OF THE CASE** from a locked machine containing a Rotary Printing Mechanism, may be facilitated by inserting a screw driver (Kit 6) through opening A and disengaging latch C (Plate 86, Symbol List) from hammer P (Plate 86).



**6—SPRING 99812**, which is standard for hammer latches I (Plate 67, Symbol List) in columns 0 through 4, is now manufactured from an alloy wire. Copper plating of the spring, the process of which is conducive to spring breakage, has been discontinued.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 319  
Revised Nov. 17, 1949

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES M MACHINES

✓1—**THE MARGIN CONTROL MECHANISM** is changed to normally select the outer (leftmost) margin instead of the inner margin.

Depression of the inner margin key (AE, Plate 28, Carriage Symbol List) through wire 1-705702A (E) and bellcrank 1-705140½ (H) lowers cam 1-705140A (B) permitting the inner margin block (G, Plate 28) to limit on assembly A when the carriage is returned. Spring 709812 (D) restores cam B upward when the outer margin key is depressed.

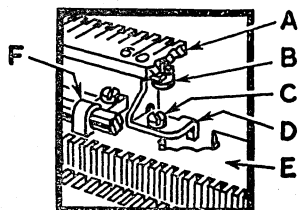
Adjust eccentric 71361 (C) to locate the horizontal surface of cam B flush with the top surface of assembly A.

Bracket 1-705139½ (F) supports the new mechanism through screws 705628 (G) and 703592 (I).

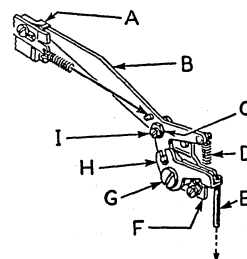
This mechanism is not intended for replacement on Field machines.

✓2—(Information previously contained in this item has been included in the revised Keyboard Symbol List dated April 15, 1949.)

3—**CONTROL BARS 1-73913C AND 1-703913C (ALL STYLES)** (A) containing stud B, with clip 703249 (D) and screw 75621 (C) now replace control bars 1-73913A and 1-703913A (all styles) (V, Plate 2, Carriage Symbol List) with clip attached, and screw 74502 (U, Plate 2) to facilitate removal and replacement of the control bars. New 12" and 18" control bars require one and two clips D, respectively, and screws C, while 22" and 30" control bars each require three clips and screws.



The new clip and screw occupy the same position on rail E as did the screw, (U, Plate 2) with the exception of the left screw on 18" carriages, in which case, it is necessary to move the left bracket F ½" to the left and fasten the new clip in the position formerly occupied by the bracket.



### SERIES P MACHINES

4—**WASHER 3220½** (four required) may be placed between the carriage bottom plate (R, Plate 1, Symbol List) and the carriage side plates (E and J, Plate 1) to elevate the carriage platen .010 inch which will eliminate most of the imprint caused by the .130 inch type.

✓5—**CASH DRAWER ASSEMBLIES, STYLES 12, 13, 14, 14A, 15, AND 15A**, for Series P machines, may be ordered as complete units or as component parts—namely, the housing, the drawer, or the till—by using the following information:

#### Symbol

2-15167C Specify Style  
11AZ-15167C No. 1  
11AZ-15167C No. 2  
1AZ-300100C No. 1  
1Z-15100 No. 8  
1-300925 No. 1  
1-300925 No. 2  
1-300925 No. 3

#### Description

Complete cash drawer assembly (BX, Plate 141)  
Complete assembled housing for Styles 12 and 13  
Complete assembled housing for Styles 14, 14A, 15 and 15A  
Assembled drawer for Styles 12 and 13  
Assembled drawer for Styles 14, 14A, 15 and 15A  
Cash till only (removable) for Styles 12 and 13  
Cash till only (removable) for Styles 14 and 15  
Cash till only (removable) for Styles 14A and 15A

C. A. BAKER  
General Service Manager

✓Changes or additions since last issue

# Burroughs

## MECANOGRAM

No. 318  
August 12, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

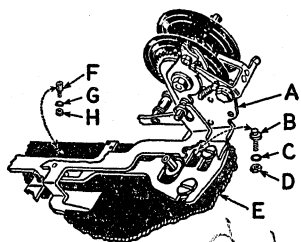
### SERIES "H" MACHINES

**1—M.R.C. CLUTCH MEMBER 1B-12002 AND CLUTCH GEAR 12040A NO. 1** (AA and M, respectively, Plate 19-1, Power Symbol List), which are identified by the cadmium plating and used only with the M.R.C. Clutch Mechanism—Improved, now have an 8° relief angle on the interlocking projections to permit an easier clutch release.

The new member and clutch should be used when installing the M.R.C. Clutch Mechanism—Improved.

**2—SHOULDER SCREW 53503 AND NUT 46**, now being used to assemble the spring barrel latch pawl to the support bracket (R and V, respectively, Plate 19-1, Carriage Symbol List) may also be used to replace the shoulder stud used for the same purpose in earlier machines.

**3—ECCENTRIC SCREWS 12057 $\frac{1}{16}$  (B) AND 705554 (F), LOCK WASHERS 1097 $\frac{13}{16}$  (C) AND 1097 $\frac{1}{16}$  (G), AND NUTS 47 $\frac{1}{8}$  (D) AND 46 $\frac{1}{4}$  (H)** are now being used in the back plate (E) as normal and shifted limits for the ribbon mechanism.



The eccentric screws (B) are used to raise the normal limit of the bracket (A) should the whole figure fail to print. The threaded end of the screw (B), extending through the back plate, has a screw driver slot to enable easy adjustment, with the carriage moved to either side.

The eccentric screw (F) is used as a shifted limit for the bracket (A) should the lower portion of the figure fail to print. If the threaded end of the screw (F) extends beyond the nut (H), it is necessary to remove the extending portion to prevent interference with the ribbon reverse mechanism.

**Note:** The eccentric screws (B) may limit the bracket (A) in a shifted position, if they are not used as a normal limit and the high point is in a downward position.

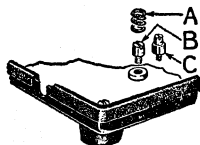
### SERIES "M" MACHINES

**4—INSTRUCTION TAG, FORM 3106**, for setting new Series M Machines to the user's forms, is now tied through one of the control bar clamp screw holes on each new Series M machine shipped from the factory.

This tag explains the factory setting of control bars, form guides, aligning equipment, and carriage stops, and covers the procedure for setting the machine to the user's forms according to the charts attached to each new machine.

### SERIES "P" MACHINES

**5—SCREWS 84533B (B) AND 84533B STYLE 13 (C), AND SPRING 812 FTE. 213 (A)** now replace screws 84533A and 84533A Style 13 and nut 47 (N, Plate 126, Symbol List). These new parts cushion the motor to reduce the sideways movement of the machine as the carriage tabulates.



**6—RESTORING ROCKER 1-82123AR NO. 2 (A)** is now used on all styles of Series P Machines. This restoring rocker requires spring 10085 anchored to its stud (B) except when used on machines containing the locking strip 1-82119 No. 62 (A, Mecanogram 303, Item 6) which requires spring 60807.

This announcement cancels Item 5, Mecanogram 311.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 317  
July 23, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES



**CARRY PAWL RESETTNG CAMS 204109 (A)** have been redesigned and .010" stock has been removed (as illustrated) to reduce breakage of the adding rack latches 415 No. 1 (A, Plate 55, Accumulation Symbol List).

Breakage currently reported is caused by a construction change which allows the adding rack latches to remain normal when the carry pawls are reset during a manual or bank total operation. Overthrow of the adding racks causes a forceful limiting on the foot of the adding rack latches, resulting in occasional fracture of the latches.

C. A. BAKER  
General Service Manager

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

# Burroughs

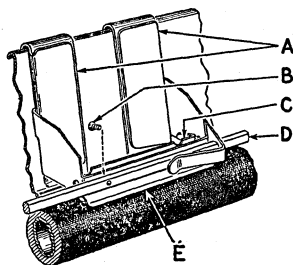
## MECANOGRAM

No. 316  
June 30, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "P" MACHINES

#### 1—PAPER GUIDE BRACKETS 1-83226 $\frac{3}{4}$ A (A) AND SHAFT 1C-83010 NO. 3 (D)



replace the movable brackets and the shaft (B, C, and U, respectively, Plate 33, Symbol List) on Series P, Style 2, passbook carriages. Two screws 8064 $\frac{5}{8}$  (B) hold the brackets to the shaft.

The new brackets are constructed as a unit to prevent the insertion of a passbook and will accommodate roll paper through size BB. A strip (E) projects over the platen to reduce bulging and tearing of the paper and the resultant smudging from the type bar. A shield (C) prevents the rewinding of the paper around the platen.

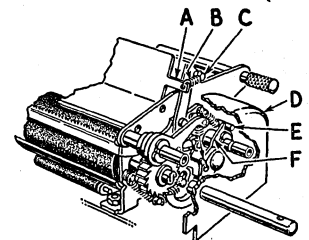
2—KEYBOARD BRACES (AH and AI, Plate 126, Symbol List) are incorrectly listed in Plate 126 of the symbol book as 84109 $\frac{1}{2}$  No. 1 and 84109 $\frac{1}{2}$  No. 2, respectively. These symbol numbers should be reversed: AH referring to brace 84109 $\frac{1}{2}$  No. 2,

and AI to brace 84109 $\frac{1}{2}$  No. 1.

3—CARRIAGES (3 $\frac{7}{8}$ ") FOR SERIES P MACHINES may now be installed more easily without removing cap D due to an improved space pawl 21-83109 (3 $\frac{7}{8}$ "). With the machine normal, projection F, of the improved space pawl, limits on stud E to align the roll on the pawl with the fork of the arm (D, Plate 29-1, Symbol List).

Spring stud C (in tear off blade assembly 1-83158 (3 $\frac{7}{8}$ ") No. 7 has also been increased in diameter, and an anchor hole has been added in the ear of paper deflector 83101 $\frac{1}{2}$ A (3 $\frac{7}{8}$ ") No. 2 (A) (Brown) to prevent the slipping off of spring B.

4—INTERLOCK 84193 $\frac{7}{8}$  (C) AND LEVER 1-84191 $\frac{1}{4}$  (A) replace interlock 111 Env. 1739 and lever 1-106 Env. 1739 (C and A, respectively, Item 4, Mecanogram 286) to prevent the



forcing of lever A rearward during the return stroke of a machine operation. New interlock C is altered at its point of contact with lever A, and square shoulder H has been added to lever A to provide more positive latching. Rearward movement of lever A during a return stroke would cause the bail (O, Plate 77, Symbol List) to be trapped in front of the index arm (I, Plate 77), resulting in the locking of the machine and the bending of the bail (O, Plate 77).

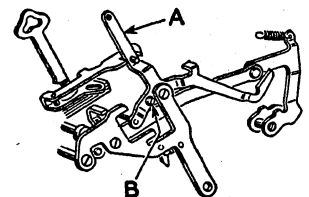
In addition to interlock C and lever A, the following parts are required to complete the installation: screw 2854 $\frac{7}{8}$  (E), collar 103316 (B), stud 84531A (F), and spring 79810 (D).

To install interlock C: remove the screw (X, Plate 97, Symbol List); position interlock C as shown, using screw 2854 $\frac{7}{8}$  (E) and collar 103316 (B), making certain that the interlock's front finger is located under stud G; replace the stud carrying the spring (U, Plate 77) with stud 84531A (F); and attach spring 79810 (D) to the stud F and to the interlock.

The new interlock should have full central alignment with and limit on, square shoulder H, with the handle pulled to the handle-break position. To adjust, bend the forward arm of interlock C.

This announcement cancels Item 4, Mecanogram 286.

5—LEVER 1-84191 NO. 2 (A) now contains a tapped hole to accommodate screw 4463 (B) which, when assembled in lever A, will limit the forward movement of the latter to prevent totaling Register B.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 315  
May 3, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "C" MACHINES

- 1—**SPEED NUTS 22 NO. 4 (A)** (of phosphor bronze) replace speed nuts 22 No. 3 (of spring steel) when installing a new medallion 1-91½ No. 5 (D) on the case of a Class 5 Duplex Machine. The new speed nuts reduce fracturing of the soldered joint between the pins (C) and the medallion.
- Installation of a new medallion also requires two collars 73320 (B).

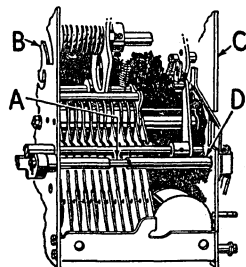


### SERIES "M" MACHINES

- 2—**ANCHOR SCREW 705656½**, located on the right end of the typewriter top plate behind the extreme right rear carriage rail supporting post, is used on all New Wide Base Series M Machines, except Class 77, for holding the carriage drawband when removing the carriage from the typewriter.

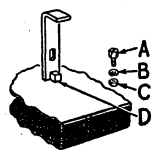
### SERIES "P" MACHINES

- 3—**SHAFTS 81014B AND 81014B STYLE 13 (A), AND SLEEVES 81382½ AND 81382½ STYLE 13 (D)** now assembled in Series P Electric Machines are reduced in circumference to permit their removal through the opening in the left sideframe B, and sleeves D are used to keep the sideframes B and C properly spaced.
- Machines (hand operated) equipped with the detent (BB, Plate 39 Symbol List) require shaft 84014.



### SERIES "R" MACHINES

- 4—**SCREW 69535 (A), LOCK WASHER 1097¾ (B), AND NUT 46 (C)** are used to replace a broken drawer limit stud 307514 (D) in Field machines containing steel bottom plates.



To install, drill a ½" hole through the bottom of the base and directly below the limit stud (D). Through this hole, with a No. 30 drill, enlarge the hole in the former stud position for the screw (A):

### SERIES "A" PRODUCTS

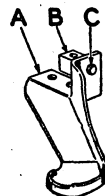
Stands, Chairs and Stand Accessories

- 5—**SPACE COLLAR 71396** may be used under the cushion assembly (J, Plate 15-1—Stands, Chairs, and Stand Accessories Symbol List) to increase the height of Styles 1 and 2 Chairs one inch, thereby changing the range adjustment from 17½"—21½" to 18½"—22½".

Installation of the collar is made between the four corners of the cushion assembly (J, Plate 15-1) and the plate (M, Plate 15-1) by replacing the four screws (P, Plate 15-1) with longer screws 21454Z. Lock washers (O, Plate 15-1) must be placed between the head of the longer screws and the plate (M, Plate 15-1).

- 6—**STAND BRACKETS 11-20967R AND L NO. 2 (A)**, containing a reinforcing block 20943 (B) to prevent bending, now replace brackets 20967R and L No. 2 (AC and AB, Plate 7, Symbol List) on Styles 43MN and 44MN Stands.

To install the new bracket, loosen screw 203597 (C) two or three threads, and place the bracket in position with the reinforcing block entered in the end of the top tubing of the stand sideframe. Place screws 20952⅞B and elastic stop nuts 20945⅛A in position as described in Mecanogram No. 311, Item No. 7. Before tightening screws 20952⅞B and nuts 20945⅛A, screw C should be tightened.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 314  
March 25, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES

1—**ECCENTRIC SCREW 251 $\frac{3}{8}$ A ENV. 1753**, washer 613 $\frac{1}{2}$ , lock washer 1097 $\frac{7}{16}$ , and nut 45 $\frac{1}{4}$  are now available for Field replacement of eccentric screw 251 $\frac{3}{8}$  Env. 1753 (M, Plate 25-1, Printing Symbol List) in multiple print machines.

The new eccentric screw has a large hexagon flange (installed next to the 800 section) which prevents its eccentric shoulder from cutting into the 800 section, and eliminates the loosening of the screw which may result in failure to reset the hammers.

### SERIES "M" MACHINES

2—**CAM ARM 1A-701236** (AN, Plate 14, Power Symbol List), having a shorter hub, is used on all New Wide Base Machines which now contain a right sideframe that has a boss at the cam arm pivot position. Screw 701599 and nut 46 are used with the new arm.

The correct symbol numbers of the roller assembly parts (E, Plate 14), either new or old style, are screw stud 71524B, roller 71394A, screw 8054 $\frac{3}{4}$ , and nut 45 (or nut 315 Fte. 146 if the machine contains the Space and Return Mechanism).

### SERIES "P" MACHINES

3—**THE COLOR DESIRED** should be specified when ordering keytops for Series P Machines.

Keytops are available in the following color combinations—blue with white inlay (W/BL), red with white inlay (W/R), white with black inlay (B/W), black with white inlay (W/B), ivory with brown inlay (BR/I), gray with ivory inlay (I/GR), and brown with ivory inlay (I/BR).

Plain keytops (no inlay) are also available in the above mentioned colors. These should be ordered as Black plain, White plain, etc.

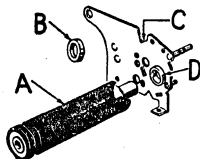
4—**ECCENTRIC STUD 84579** (BZ1, Plate 132, Symbol List) requires the following adjustment on Classes 8 and 10 Machines to prevent a wrong addition resulting from the improper meshing of the adding wheels with the carry racks when a handle break occurs during a total operation.

Position the eccentric stud (BZ1, Plate 132) with its high point down, pull the handle to align the lower edge of the forward portion of the pawl (BT, Plate 132) with the underside of the eccentric stud; then turn the eccentric *clockwise* to provide from .003" to .005" clearance between the pawl and the eccentric stud.

5—**SIDE FRAME 89110L NO. 2** (G, Plate 126, Symbol List) now contains an enlarged opening in its upper rear portion to facilitate the removal of the shaft 89001 No. 4 (H, Plate 126).

Machines containing this modified sideframe may be identified by the milled radius on the left end of the shaft (H, Plate 126).

6—**CARRIAGE SIDE PLATE 1Z-83117CR (3 $\frac{7}{8}$ ) NO. 6 (C)** now contains a bushing (D), and platen assembly 11AZ-83000A (3 $\frac{7}{8}$ ) No. 5 (specify carbon density) (A) has been improved to provide longer life for the platen bearings on carriages with rewind and used for 5/6" spacing.



Installation of an improved platen assembly with the old side plate assembly requires collar 702306 (B) which replaces bearing D of the new side plate assembly.

### ALL STYLES

7—**TOUCH-UP LACQUER**, Kit 170-1 No. 40A (Mohave Brown) and Kit 174 No. 2 (Elephant Gray) is now available for Field service.

This information should be incorporated on Plate 7, Tool Equipment Symbol List, 1944, Form 2978 (under "Cement," "Enamels," "Varnishes," etc).

C. A. BAKER  
General Service Manager

# Burroughs MECANOGRAM

No. 313A  
March 23, 1948

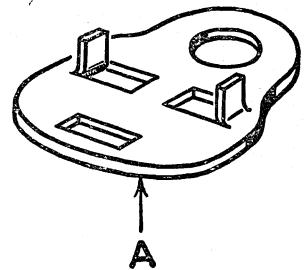
BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

## SERIES "A" PRODUCTS

**AUXILIARY SCUFF PLATES 21420½Z (A)** (four required) are available for installation on Styles 1 and 2 Chairs to prevent scuffing of users' shoes.

The installation may be effected readily by removing the casters (AC, Plate 15-1, Stands, Chairs, and Stand Accessories Symbol List), inserting the plates into position on the casting (with the lugs facing upward), and replacing the casters.

Scuff plates should be installed by branch representatives on all consignment chairs before delivery; and either installed or made available for installation on all sold and company chairs at the earliest opportunity.



C. A. BAKER  
General Service Manager

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

# Burroughs

## M E C A N O G R A M

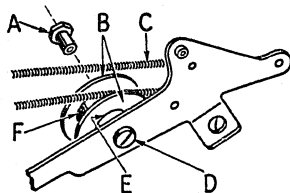
No. 313  
January 21, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "P" MACHINES

1—**BAIL 83008 NO. 2** (R, Plate 29, Symbol List) no longer contains holes for the clips (BR, Plate 29) which anchor the springs (BQ, Plate 29). The clips now simply fasten over the upper radial portion of the bail.

2—**WASHER 3325 $\frac{7}{8}$**  (B), **SPACER 360 FTE. 203** (F), **AND COLLAR 35 FTE. 69** (E), are now used in place of the guide 302124 $\frac{1}{2}$ , pulley 83443 No. 1, and collar 99331 (E, D, and C respectively, Mekanogram 285, Item 6). This new construction eliminates an interference between the head of the screw 7860 (A, Mekanogram 285, Item 6) and the paper holder 1-83240 No. 4 (Y, Plate 14, Symbol List).



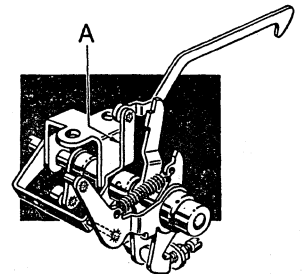
Screw 7357 $\frac{1}{2}$  (D) and nut 346 Fte. 213 (A) are also required for the installation of these parts.

This announcement cancels Mekanogram 285, Item 6.

### SERIES "V" MACHINES

3—**HANDLE 1-7393 $\frac{1}{4}$ A** (AM, Plate 3, Symbol List) now contains a shorter pilot pin to prevent the latter from bending arm 1-9114 $\frac{1}{2}$  (A) when inserting the handle.

This arm A, when bent, will prevent the Return Stroke Timing Mechanism from functioning as described in Plate 53-1, Instruction Book (1937).



### MOTORS

4—**OIL IN DRIVE UNITS** (used with Types 3, 6, and 6A Motors not equipped with drain pipes) should be changed periodically to prevent the oil from becoming congealed through oxidation. Such congealing would result in the failure of the clutch members to function and the consequent failure of the machine to operate. After the clutch members have been rendered inactive by the congealed oil, the addition of new oil without first cleaning the drive will only aggravate the condition.

Oil is drained from the drive assemblies used with Types 6 and 6A Motors by removing the screws (AO, Plate 5, or AN, Plate 4, Power Symbol List for Series H Machines). Drive assemblies (used with Type 6 Motors) not having a drain screw are drained by removal of the plate (AR, Plate 4). When replacing the plate, a new self sealing gasket 3694 $\frac{3}{4}$ A should be installed. Drive assemblies used with Type 3 Motors are drained by removing the screw (W, Plate 132, Symbol List for Series P Machines).

When oil in the drive assemblies has become congealed, the drive assemblies should be thoroughly flushed before refilling with the required two ounces of clutch case oil Kit No. 165 $\frac{1}{2}$ B. The correct procedure for flushing the drive assemblies is as follows: With the machine sitting level to facilitate the proper drainage, and all fluid oil drained off, pour in two ounces of solvent Kit No. 131 $\frac{3}{4}$ , and operate the machine for ten minutes (holding the motor bar depressed) to permit the proper cleansing of the clutch members. Drain and repeat this application until the solvent drains out clear. Pour in two ounces of the approved mineral spirits or solvent being used in the branch for cleaning machines, operate the machine for two minutes, and drain.

Drive assemblies used with Type 3 Motors require only one-half of the specified amounts. This announcement cancels Item 2, Mekanogram 278.

C. A. BAKER  
General Service Manager

# Burroughs

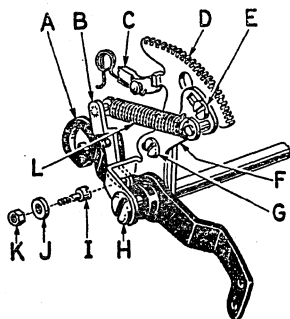
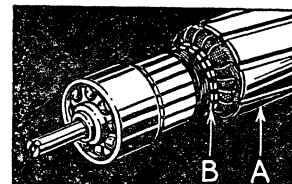
## MECANOGRAM

No. 312  
January 7, 1948

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "C" MACHINES

**1—ARMATURES 1-4500B No. 4** (specify voltage) (A), used with Type 5C Motors, are now assembled by improved manufacturing methods and contain fibre separator B. This separator B provides a direct lead for the magnet lead wires to the commutator, thus insuring positive insulation between adjacent wires.



### SERIES "H" MACHINES

**2—IMPROVED SPRING ANCHORS 1-111 ENV. 3092 (B) and 1-175A FTE. 213 (F)** are available for use on bill ejector carriages to provide easier and more uniform ejection of bills.

Anchor B retains spring L in position to exert a more direct pull on segment D; and the extended arm of anchor F braces segment D, preventing it from becoming cramped.

The following parts are required for installation on Field machines: segment 1-100 Fte. 213 (D), latch 1-136 Fte. 213 (C) spring anchors 1-111 Env. 3092 (B) and 1-175A Fte. 213 (F), screws 8054 $\frac{3}{4}$  (G) and 3455 $\frac{3}{8}$  (E), shoulder screw 516A Fte. 213 (H), screw stud 709558 (I), washer 103182 (J), and two No. 46 nuts (K).

**Note:** Screw stud I replaces the lower stud in arm A.

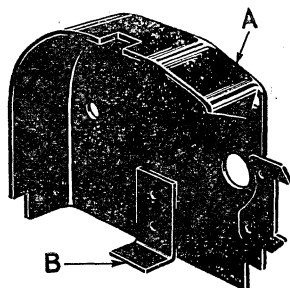
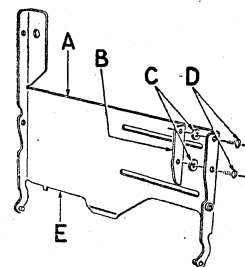
### SERIES "M" MACHINES

**3—SLIDE ASSEMBLY 1A-74140 NO. 3 AND PAWL ASSEMBLY 1A-79923** now replace the assemblies 1-74140A and 1-79923 (L, Plate 22, and M, Plate 10, respectively, Accumulation Symbol List). These new assemblies safeguard against an overthrow of the crossfooter adding wheel section on multiplying operations.

The camming surface on the upper end of the new slide assembly is longer and more gradual; springs 72814 replace 79815 (Q, Plate 10); and the offset in the rearward portion of the feed pawl (O, Plate 10) has been increased to permit the lengthening of the cam described above.

### SERIES "P" MACHINES

**4—FORM ALIGNING TABLES 1-83160 NOS. 4 AND 7 (A), (AA, Plate 12, Symbol List)** have been altered in design. Stock has been removed from point E to provide a larger opening for viewing the print; and holes have been added to the left end to permit the installation of form limit stop 83257L (B). This form limit stop is installed by means of screws 73612 (D) and collars 10044 9/16 No. 2 (C), to accommodate forms which do not permit the use of the form limit stop (AB, Plate 12).



**5—COVER 1A-83147B NO. 8 (A),** now contains guide B to assure a full lateral hold of the lip (B, Mecanogram 298, Item 3) on the ratchet gear (A, Mecanogram 298, Item 3) on the return stroke of a 5/6" spacing operation.

**6—ASSEMBLY 1-82128 (BM, Plate 40, Symbol List)** now has a hardening process applied to its horizontal link. This link, when worn, will not properly position the index strips (BG, Plate 40), permitting the latter to interfere with the total strip (I, Plate 40) as it returns to normal on total operations—resulting in the printing of automatic nines on following listing operations.

C. A. BAKER, General Service Manager

# Burroughs

## MECANOGRAM

No. 311

November 28, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "M" MACHINES

1—**SCREW 703644** now replaces screw 73644 No. 2 (AP, Plate 10, Carriage Symbol List) in Class 77 Machines equipped with Selective Skip Tabulation Mechanism. This new screw is longer to prevent stripping the threads in the end casting (AK, Plate 10).

2—**PLASTIC BUMPER 1-75180A**, bracket assembly 1-75180 $\frac{1}{2}$ , and screw 2854 $\frac{3}{16}$  replace shot bag assembly 1-75180 (all styles) and screw 74523 (A and B, Plate 24, Printing Symbol List) on all Series M Machines. Bracket assembly 1-75180 $\frac{1}{2}$  contains a leather face which is the normal limit for the type bar in position No. 39.

3—**FIBER WASHER 200194 $\frac{1}{4}$**  is now used around the base of the bulb in each aligning light to provide added protection against electric shock.

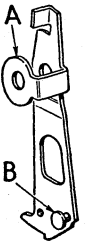
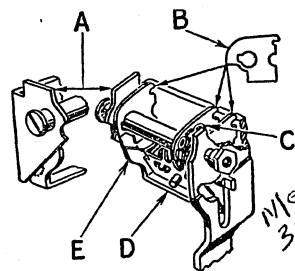
### SERIES "P" MACHINES

4—**ROTARY WHEELS 12A-86311 NO. 2 (.100) (C) AND SEPARATOR PLATES 86116 $\frac{1}{2}$  (B)** are now available for the replacement of rotary wheels 12-86311 No. 2 (.100) (F, Plate 86, Symbol List) to prevent the turning of a rotary wheel by an adjacent wheel when ink and foreign matter becomes accumulated in the rotary device.

Rotary devices used on currently manufactured Series P Machines contain further improvements to help prevent the condition described above. The right side of frame A is cut at a 45° angle, and bail D has stock removed at point E.

5—**RESTORING ROCKER 1-82123AR No. 2 (A)** now replaces the restoring rocker (U, Plate 40, Symbol List) on machines equipped with locking strip 1-82119 No. 62 (A, Mecanogram 303, Item 6).

Restoring Rocker A contains stud B to which spring 60807 is anchored. This spring insures full movement of A, permitting the additional forward movement of the locking strip as described in Mecanogram 303, Item 6.



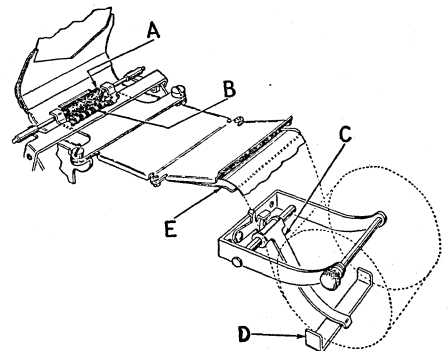
### SERIES "V" MACHINES

6—**RUBBER PRESSURE ROLLS 1-8404D (A) and 1-8405B (B)**, Lower Tally Roll Guide 1-8410C (E), and Pressure Finger 1-8424 $\frac{1}{8}$  (C), are now available for Field installations.

The new rubber pressure rolls, which have replaced earlier styles on currently manufactured machines, prevent shredding of the roll paper, and plugging of the tally roll chute upon manually pulling the roll paper forward with the pressure rolls engaged.

Pressure finger (C) now has a paper guide (D) spot-welded to its rearward extremity to insure the proper alignment of the roll paper as it enters the paper chute.

Installation of the new pressure rolls requires the lower tally roll guide (E) which is specially designed for their accommodation.



### STANDS

7—**HEXAGON-HEADED SCREW 20952 $\frac{7}{8}$ B** and elastic stop nut 20945 $\frac{1}{8}$ A, which now replace screw 20952 $\frac{7}{8}$ A and nut 20945 $\frac{1}{8}$  (G and I respectively, Plate 7, Symbol List), may be tightened by means of wrenches, Kits 20 and 22 $\frac{1}{2}$ , to provide greater rigidity of the front and rear stand brackets.

When installing the brackets (AB and AC, Plate 7) on Style 43MN Stands, or the brackets (AD and AE, Plate 7) on Style 43M Stands, the head of the new screw should be lowermost with the new nut placed on top of plate 20926 $\frac{3}{8}$  (F, Plate 7).

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 310  
November 21, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "M" MACHINES

**THE NEW WIDE BASE SERIES M MACHINES**, Classes 72 and 78, contain a number of changes and innovations. The simpler changes are discussed briefly below; the more detailed will be described in subsequent publications.

**1—PANELS E**, readily removed, enclose the sides of the typewriter.

**2—DOORS D** in the side panels permit the replacement of the Ribbon and the setting of the Ribbon Wear Control.

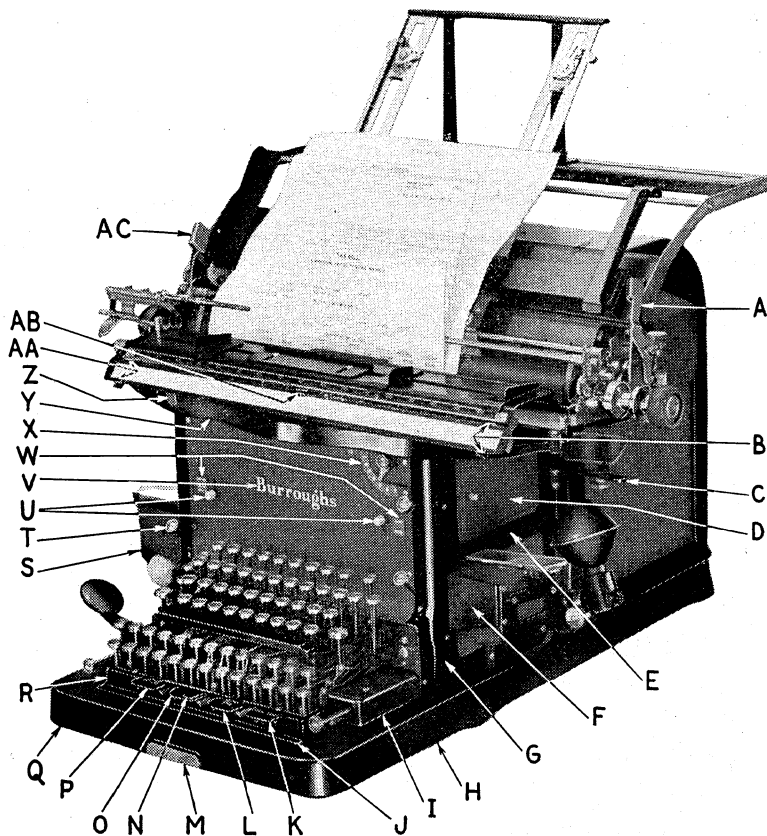
**3—BRACKETS C, F, AND S** (for the Aligning Mirrors and Lights) are mounted on the side panels rather than on the typewriter legs.

**4—CONTROL BUTTONS U** for Simultaneous Addition and Extension on Class 72 Machines, and for Simultaneous Addition and Carriage Tabulation Disabling on Class 78 Machines, are placed on the front typewriter panel.

**5—THE CONTROL INDICATOR PLATES W AND X** have a transparent plastic cover set flush with the panel. The control buttons and the control indicator plates (except for the register indicator plate and keytop) are removed at once with the front panel.

**6—THE RIBBON SHIFT KEY T** both latches and unlatches the manual Ribbon Shift Mechanism, thus eliminating the knurled knob on the typewriter leg.

**7—THE FRONT TYPEWRITER LEGS G** are farther apart, being placed directly in line with the rear typewriter legs.



(OVER)

**8—THE FRONT SUPPORTING FEET H** for the base are placed more directly under the front typewriter legs in order to give a better support for the base.

**9—EXTENDED ARMS A AND AC** on the carriage highback latches provide an easier means of holding the latches disengaged when removing or replacing the highback.

**10—SPRING CLIPS B, AA, AND AB** firmly retain the Form Heading and the Form Heading Holder in position.

**11—THE DATE BAR HOLDER Z** is placed on the left side of the front carriage rail to facilitate the resetting of the Calendar Feature—Rotary.

**12—THE TYPEWRITER TOP PLATE Y**, being extended on both sides, eliminates the carriage side supports and permits the installation of any length carriage (through 22") on the same set of rails.

**13—ALL KEY PAPERS** contain white characters and numerals on a black background except those on the Adding Keys upon which the color combination is reversed.

**14—MOTOR BARS K, L, N, O, AND P** contain extended curved surfaces to permit easier depression.

**15—MULTIPLE MOTOR BAR CONSTRUCTION** is standard.

**16—THE NEW WIDE BASE Q** extends forward beyond the motor bars to provide a means of protection for the bars, and to improve the view of the Adding Keyboard interlocks.

**17—AN ELONGATED EMBOSSMENT J** on the base offers a positive and a uniform limit for the downward stroke of all motor bars.

**18—OIL GUARD R** extends along the front and both sides of the Adding Keyboard.

**19—COVER PLATES I** (one on each side of the machine) protect the error key post and wire, and the exposed portion of the result key interlock.

**20—THE CASE LOCK** is operated by means of a screw driver.

**21—THE MACHINE SERIAL NUMBER PLATE M** is assembled to the front of the base.

**22—DIE-CAST PLATES V** containing the trade name "Burroughs" are assembled to the front typewriter panel and to the rear of the case.

C. A. BAKER  
General Service Manager

Mr M R Lovejoy  
Buffalo N Y Branch 10-5

# Burroughs

## MECANOGRAM

No. 309  
November 19, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES

**1—MULTIPLE PRINT PARTS 1-109E NO. 2** Env. 1753 and 1-201B Env. 1753, and bushing 401 Env. 1753, now replace parts 1-109D No. 2 Env. 1753 and 1-201A Env. 1753 (AC and Z respectively, Plate 23-1, Printing Symbol List) to prevent a possible failure to print on multiple print operations.

The bearing in each of these improved parts is of increased diameter to accommodate the new bushing.

The new bushing permits free and independent movement of the improved parts, thus eliminating the possibility of a bind between the same, which may result in a premature release of the Multiple Print Mechanism.

### SERIES "M" MACHINES

**2—HEAVIER STUD 702577 AND ROLLER 702321** now replace the stud in arm 1-702134 (AT, Plate 20, Carriage Symbol List) to prevent breakage of the stud in Class 77 Machines equipped with Selective Column Tabulation.

Installation of the new stud and roller requires new arm 705285A which replaces arm 705285 (AQ, Plate 20).

Shaft assembly 1A-702037 No. 3 (J, Plate 20), is now equipped with new arm 1-702134A (containing the new stud and roller) which replaces arm 1-702134.

### SERIES "P" MACHINES

**3—PRESSURE ROLL RELEASE ARM 1-83109 $\frac{1}{2}$  (3 $\frac{7}{8}$ ") (A)**, which is now available for installation on 3 $\frac{7}{8}$ " carriages equipped with Double Ribbon Mechanism, Rewind Device, and double wound paper, releases the pressure rolls on the forward stroke of each machine operation—thus preventing the formation of a loop in the outside strip of paper as it is unwound from the paper roll. If formed, such a loop might result in pleating of the paper which would either lift the ribbon out of printing position or prevent proper paper feeding.

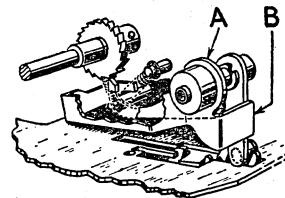
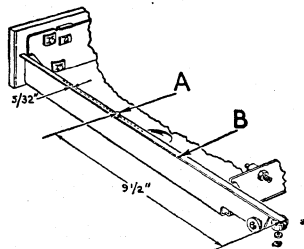
With the machine operated by hand to the end of the forward stroke, there should be approximately  $\frac{5}{32}$ " clearance between the foremost end of arm A and the carriage bottom plate C. To adjust, bend lip B as required.

This announcement cancels Mecanogram No. 298-1 which contained this one subject, and was distributed to some branches.

**4—SHIM 84165 $\frac{1}{2}$** , which is now installed between the rearmost portion of the machine base and the new cash drawer (Style 12), raises the machine from the drawer so that the case and carriage may be properly fitted down onto the machine. The need for the shim, arising from the dimensions of the rubber strip now being used around the machine base, may be eliminated at some future date when rubber strips of different dimensions are procured.

**5—STUDS 203570AR (A)** are now installed in the right and left rails B of the new cash drawers (Style 12). These studs insure the correct position of the retainer and rolls (D and B, Plate 5, Types 100, 200, and 300 Symbol List), preventing a possible sagging of the rearmost portion of the drawer when closed.

To install studs A in Field machines, drill a  $\frac{3}{32}$ " hole (using a No. 42 drill) in the position as illustrated, counter-sink the underside of the hole, and rivet the stud flush on the underside.



### MOTORS

**6—MOTOR BRUSHES 1-4590**, for Type 5 Motors, are now made of a new grade of material to prolong the life of the brush and to prevent an excessive amount of carbon from accumulating in the machine. These new brushes may be identified by the marking G32X or 808 stamped on the side.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 308

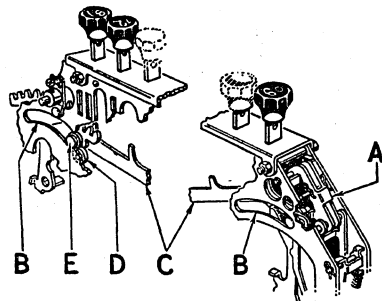
November 14, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "C" MACHINES

**1—LIMIT STOP ASSEMBLIES 1-56112½Z (A)** are available for installation in the columns of electrically operated Class 5 Machines in which the partition plate slots B have become worn. These assemblies provide a normal (rearward) limit for the index links C, thus eliminating the need for replacing the worn partition plates.

The partition plates in machines of current construction contain studs D which limit the rearward movement of shoulder stud E; thereby providing a positive limit for the index links C, and eliminating the wear of the partition plate slots.



### SERIES "H" MACHINES

**2—M.R.C. CLUTCH GEAR 1-12041BZ** is now used for the replacement of gear 1-12041A (D, Plate 15, Power Symbol List) in machines equipped with old style governors. Installation of clutch gear 1-12041BZ also requires clutch member 1A-12002 and gear 12040 No. 1 which conform to the design of the replacement gear.

**3—MOTOR DRIVE TRIP ARM 1Z-3627 NO. 1** is now available for Field replacement of arm 1-3627 No. 1 (F, Plate 68, Accumulation Symbol List), on early style Bank Posting Machines equipped with blank 3627½ (I, Plate 68).

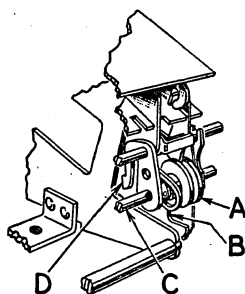
### SERIES "M" MACHINES

**4—THUMB SCREW 73501B**, which is threaded only partially, replaces 73501A (G, Plate 4, Carriage Symbol List) to more securely retain the control bar in position on Series M Machines.

When installing the new screw in carriages with old style end plates (those having the control bar end blocks completely threaded), counterbore the blocks with a No. 20 drill to a depth of approximately ⅛".

### SERIES "P" MACHINES

**5—SHAFT ASSEMBLIES 1-82001 AND 1-82001 STYLE 13 (C)**, (BO, Plate 40, Symbol List) now contain projection D, which, by limiting the rearward movement of shaft assembly C, provides clearance between roll A and the lower forward surface of slide B (in the forward stroke of the machine operation). The clearance between slide B and roll A permits the raising of slide B, in machines not equipped with spring (CA, Plate 40), to release the indexed keys as the machine restores to normal.



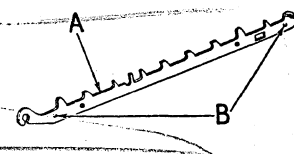
Installation of a new shaft assembly C in Field machines containing a short hook (H, Plate 42) may reduce the required clearance between the hook (H, Plate 42) and the pawl (G, Plate 42) on total operations. To secure this clearance, bend projection D forward as required.

**6—HAMMER LATCH 1-87116B NO. 10** (I, Plate 67, Symbol List) now has stock removed from the lip to permit its use with the new type bar 1-86118¼ (specify type) announced in Mekanogram No. 306,

Subject 4. This altered latch will be used in place of latch 1A-87116B No. 10, and Mekanogram No. 306 should be corrected accordingly.

**7—CONTROL STRIP 82119 NOS. 19, 34, 59, AND 60 (A)** (B, Plate 56, Symbol List) now contain embossments B to prevent these strips from adhering to and moving forward with the locking strips (BF, Plate 40).

When moved forward, the control strips A rock the bail (A, Plate 56), disabling the Enforced Designation Feature.



C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 307  
September 16, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "M" MACHINES

**1—TOGGLE SHAFT ASSEMBLY 21B-72011 (F)**, which is equipped with eccentric 79362 (C) and screw 73611 (D), replaces Toggle Shaft Assembly 21A-72011 (AH, Plate 52, Accumulation Symbol List) in Class 78 Machines of narrow base construction. Eccentric C provides a means for adjusting the throw of the twin cams (in a subtract operation).

Replacement of an earlier style Toggle Shaft Assembly (which does not contain eccentric C and screw D) requires bracket 72148 No. 8 (E), lever 72137½ (B) and screw 72602 No. 2 (A).

The following mechanical procedure is suggested as a means for replacing the toggle shaft in Class 78 Machines.

a. Remove the following parts:

- (1) Vertical toggle leaf (AE, Plate 52, Accumulation Symbol List).
- (2) Control slide (AU, Plate 12, Accumulation Symbol List) and its anchor block which is assembled to the base.
- (3) Bracket (AG, Plate 51, Accumulation Symbol List).
- (4) Screw (BO, Plate 38, Keyboard Symbol List).
- (5) Screw from the upper end of link (BH, Plate 38, Keyboard Symbol List)—to permit the rocking of the upper end of the link forward.
- (6) Springs (AH, Plate 36 and AH, Plate 51, Accumulation Symbol List).

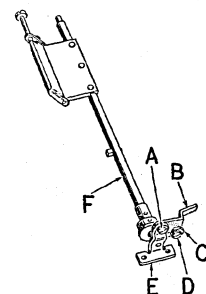
b. Remove the shaft through the left side frame.

c. Replace all parts in the reverse order.

**Note:** A bevel on the top front edge of the lower toggle plate will permit the replacement of the shaft with less difficulty.

**2—LIMIT PAWL ASSEMBLY 1-79121 NO. 2 (F, Plate 23, Keyboard Symbol List)** has been redesigned to accommodate an eccentric bushing, which may be adjusted to securely bind the pawl assembly against the milled block (H, Plate 23), prior to aligning the adding wheels with the adding racks.

Replacement of an earlier style limit pawl assembly (now discarded) requires new pawl 1-79121 No. 2, eccentric 108336, screw 79581, and nut 46¼.



### SERIES "P" MACHINES

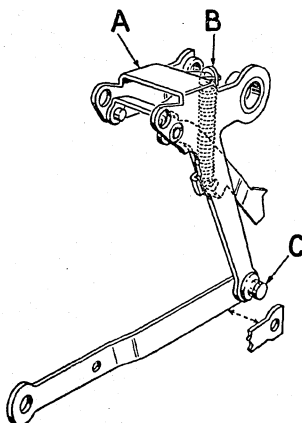
**3—ASSEMBLIES 2B-81165 AND 11AZ-81165 (BN, Plate 132, Symbol List)** are now equipped with a neoprene oil seal washer which is used in place of the packing and packing nut (AV and AU, Plate 134) to prevent oil leakage and binding of shaft 1-81011A (BA, Plate 132).

Assembly 2B-81165 is used with drives equipped with late style clutches of locked pin construction.

Assembly 11AZ-81165, which is stamped "0" for identification, is used with drives equipped with earlier style clutches. Its installation requires part 1-81190AZ and spring 72833.

**4—DASHPOT ARM ASSEMBLY 11-88100B (A) (E, Plate 129, Symbol List)**, which has been altered in design and contains new spring 1-88800B (B), is now available for the replacement of the dashpot arm assemblies (all styles) in Field machines.

Installation of arm A in early machines requires an opening in the right side frame (R, Plate 126, Symbol List) to provide a clearance for the bearing C.



C: A: BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 306

August 22, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES (CLASSES 1, 2, 6, 11-16, 20-30)

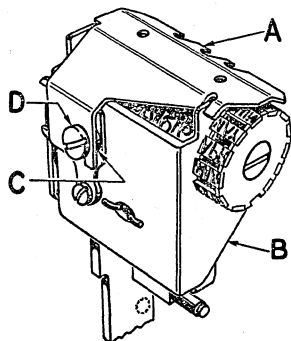
1—**SHAFT 902½A** Styles 9, 13, and 17 (J, Plate 85, Accumulation Symbol List) is now hardened to reduce wear.

### SERIES "M" MACHINES (TYPE 70)

2—**ECCENTRIC SCREW 702662**, which now replaces screw 75631 (AC, Plate 25-1, Accumulation Symbol List), may be adjusted to reduce the possibility of tripping the power indexing slide (AH, Plate 25-1) prior to the positioning of the multiplier plate pawl over the raise bar (V, Plate 32, Accumulation Symbol List).

### SERIES "P" MACHINES (CLASSES 8, 9, 10)

3—**SHIELD 86130¼** (A) is now assembled on the "Consecutive Numbering Device—Rotary" B of Styles 10 10 59, 10 10 60, 10 10 61, and 10 10 261 Machines. The shield safeguards against the turning of the rotary wheels while inserting rigid forms into the carriage form chute.



This new shield A may be installed in Field machines—between washer C and new screw 9052½ (D), as illustrated.

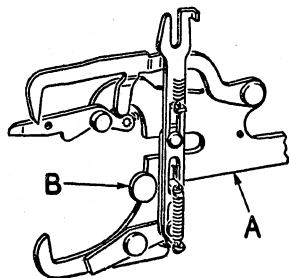
4—**TYPE BAR 1-86118¼** (Specify Type), (D, Plate 117, Symbol List) now has stock added to its rearward surface (opposite the notch) to provide added strength and thus prevent possible breakage.

Installation of the new type bar requires new hammer latch 1A-87116B No. 10 in place of 1-87116B No. 10 (I, Plate 67).



5—**THE SYMBOL NUMBER** of the sleeve illustrated to the left of the gear (A, Mecanogram 298, Item 3) is 83305½.

6—**ACCUMULATOR CONTROL ARM 11A-94100** (A) now has an added projection B which is contacted by the roll (X, Plate 96, Symbol List) on the forward stroke of listing operations. The contact of the roll (X, Plate 96) against projection B moves control arm A rearward to insure a safe lead of the stud (Y, Plate 96) over the pawl (A, Plate 96) when the carry racks are in a carried position, thus safeguarding against the non-adding of indexed amounts.



7—**DASHPOT ASSEMBLY 2-88002D NO. 5** (listed on Pages 96A and 96B, Symbol List Supplement) no longer has the No. 5 stamped on the plunger shaft and dashpot cap since the dashpot is common to all Series P Machines currently manufactured.

Other styles of dashpot assemblies listed on Pages 96A and 96B will continue to carry their respective stampings for identification purposes.

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General Service Manager

# Burroughs

## MECANOGRAM

No. 305

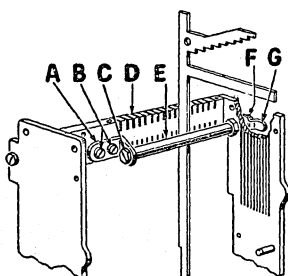
August 14, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES (CLASSES 1, 2, 6, 11-16, 20-30)

**1—SHAFTS 1-202005**, all styles and numbers (D, Plate 23, Keyboard Symbol List), have been altered in design. The journals on the left end of these shafts have been hardened to prevent excessive wear, and are lengthened to insure a full hold on the camming surface of pawl 1-202231A (A, Plate 23).

### SERIES "M" MACHINES (TYPE 70)



**2—ECCENTRIC SHAFT 704037A (E)**, which replaces shaft 704037 in the new wide-base Type 70 Machines, is supported at each end to prevent excessive bending, and to permit easy adjustment.

If necessary, the new shaft 704037A may be installed in wide-base Field machines. The additional parts required for the installation are crossbeam 704937 (D), bracket 704170 (A), two screws 709543 (B), screw 104507 (C), screw 704532 (F), and retaining clip 704108 (G).

The retaining clip (G) serves as a guide for the link (I, Plate 35, Accumulation Symbol List) to reduce the side movement of the same.

### SERIES "P" MACHINES (CLASSES 8, 9, 10)

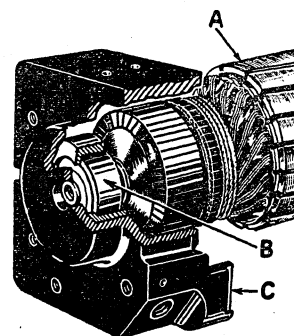
**3—ARMATURE 1-4300B (A) AND MOTOR END CAP 1A-4366 (C)** now replace armature 1-4300A and motor end cap 1A-4366 (AG and D, Plate 134, and E, Plate 131, Symbol List).

The new armature A contains the bearing B which is pressed onto the rear of the armature shaft; and the new motor end cap C is designed to accommodate the bearing.

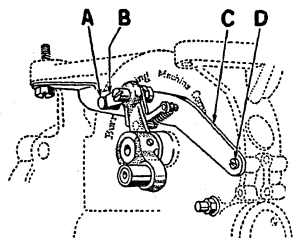
Both the new armature A and motor end cap C are required for the replacement of either the armature 1-4300A or the motor end cap 1A-4366 in Field machines.

**4—MACHINE BASES (O, plate 126, Symbol List)** for electric Series P Machines now have two notches ( $\frac{3}{8}$ " wide by  $\frac{3}{16}$ " deep) in their left sides to permit easier removal and installation of the screws (W and V, Plate 131, Symbol List) without removing the base.

Similar notches may be cut in the bases of existing machines.



### SERIES "V" MACHINES (CLASSES 4, 4D, 41)



**5—BRACKET 129124 1/4 A (C)** now replaces the Bracket Assembly (F, Fig. 53-1, Symbol List) to eliminate chatter noise of the clutch pin (R, Fig. 53-1) at the half stroke position. Elongated slots have been provided in the new bracket, to permit its adjustment, and thus insure a minimum of clearance between the clutch pin (R, and Gear V, Fig. 53-1) when passby pawl B is limited against stud A.

The installation of the new bracket requires screw 12051  $\frac{7}{8}$  (D).

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General Service Manager

# Burroughs

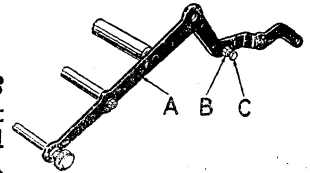
## M E C A N O G R A M

No. 304  
June 30, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

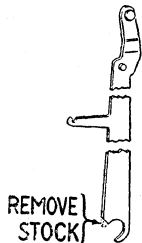
### SERIES "H" MACHINES (CLASSES 1, 2, 6, 11-16, 20-30)

**1—PAPER HOLDER END PLATES 1-146 R AND L FTE. 213**  
NO. 3 (A), Bracing Screw 103514 No. 1 Style E (C), and No. 46 Nut (B), which are now available for installation in machines equipped with form ejectors, eliminate the breakage of paper holder end plates A resulting from excessive side movement of the paper holder. With these parts assembled as illustrated, screw C should be adjusted to contact the carriage sideframe, and locked in position by nut B.



### SERIES "M" MACHINES (TYPE 70)

**2—METHOD FOR REPLACING A VERTICAL ARM 1-71150** (U or T, Plate 7, Accumulation Symbol List).



(a) Remove the old arm.

**Note:** If necessary, break the old arm to permit its removal.

(b) Remove stock from the lower end of the new arm (as illustrated).

(c) Install the new arm by placing the stud (in the upper end of the arm) into the slot of the adding rack, and springing its lower end over the grooved bearing shaft.

**3—METHOD FOR REPLACING A VERTICAL EXTEND ARM 1-74135** (AP, Plate 22, Accumulation Symbol List) from all Series M Machines without removing the Multiplier or Subtractor.

(a) Run the adding racks forward.

(b) Disconnect all parts holding the Multiplier (or Subtractor) to the machine.

(c) Remove the following:

(1) Guide Plate (B, Plate 23).

(2) Bracket (AN, Plate 33).

(3) Restoring Shaft (AS, Plate 27, Keyboard Symbol List).

(d) Disconnect the vertical arm (AT, Plate 51, Accumulation Symbol List) from the horizontal arms (AU, Plate 51).

(e) Disconnect the channel bail (AA, Plate 33) from the tails of the vertical extend arms.

(f) Move the Multiplier (or Subtractor) rearward.

(g) Remove the vertical extend arm by pulling upward and over the Multiplier (or Subtractor).

(h) Replace the vertical extend arm and reinstall the removed parts in reverse order.

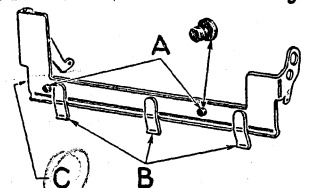
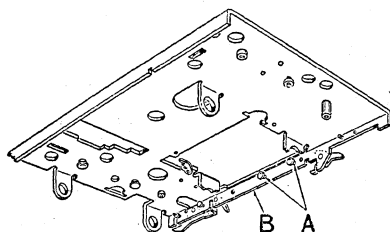
### SERIES "P" MACHINES (CLASSES 8, 9, 10)

**4—SHOULDER RIVETS 89522** (A) are now installed in hammerheads B—on machines equipped with controlled cipher splits. These rivets hold the slide (AH, Plate 79, Symbol List) or the slide (DF, Plate 79) into contact with the hammer couplers (D, Plate 79) when either of the slides is used individually.

When necessary, the rivets A may be installed in Field machines.

**5—PASSBOOK RETAINER**

**1-83151½B** (C) (D, Plate 33, Symbol List), now contains fingers (B) and soft friction plugs 83909 (A). Fingers (B) have been added



to prevent an unwanted smudge or imprint on the passbook; and the soft friction plugs (A) prevent the passbook from slipping.

C. A. BAKER  
General Service Manager

# Burroughs

## MECANOGRAM

No. 303  
June 25, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES (CLASSES 1, 2, 6, 11-16, 20-30)

**1—PART 1-200188 NO. 3** (Q, Plate 64, Accumulation Symbol List) now has stock removed from the upper portion of its enclosed cam to eliminate breakage of part 200190B (M, Plate 64). The breakage was caused by the stud in the rearward arm of part 200190B (M, Plate 64) limiting against the end of the enclosed cam during the machine operation.

**2—SHAFT ASSEMBLY 1-1B ENV. 1753 AND DRIVE HOUSING 1-3666D NO. 1 ENV. 1753** are now available for replacement of Shaft Assembly 1-1A Env. 1753 (BD, Plate 23-1, Printing Symbol List).

The new Shaft Assembly is constructed of heavier material to eliminate breakage, and overcome excessive weaving which results in a possible failure to reset the hammers during a multiple print operation.

The bushing in the new drive housing is larger in diameter to accommodate the larger shaft of the new Shaft Assembly.

### SERIES "M" MACHINES (TYPE 70)

**3—WORM SHAFT ASSEMBLY 1Z-71008C, AND BUSHINGS 1-71350B AND 1-71351B**, now replace the Shaft Assembly and bushings (AO, AF, and AV, respectively, Plate 3, Power Symbol List) for installation on Series M Machines equipped with Type 6 Motor and ball bearing drive.

These new parts make use of improved oil seals (contained in the bushings) to lessen the oil leakage from around the worm shaft.

### SERIES "P" MACHINES (CLASSES 8, 9, 10)

**4—HANDLE SHAFTS 81000 STYLE E AND 81000 (ELEC.) STYLE 13**, (X, Plate 128, Symbol List), used in assemblies 11A-81000 Style E and 11A-81000 (Elec.) Style 13, have been increased in diameter on their right end by .010 to eliminate the possibility of using the 1-81118A hand-machine handle in the place of the 1C-81118 No. 2 handle on electric drive machines.

Kit 599 No. 3 (U, Plate 24, Tool Equipment Symbol List) has also been altered by increasing the handle shaft opening by .010 to permit its use on the larger size handle shafts. This altered handle may be identified by the added milled slot in its cylindrical portion.

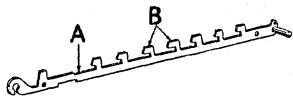
Handle 1A-81118 No. 2, announced in Mecanogram No. 291, is still available for machines equipped with shaft 81000 of smaller diameter.

**5—ASSEMBLIES 1-99177 NO. 1 AND 1-99177 NO. 2** (AN and M, Plate 110, Symbol List) now contain spot welded studs to prevent the studs from becoming loose and out of adjustment.

**6—LOCKING STRIP 1-82119 NO. 62 (A)**, in Styles 10 10 59, 10 10 60, 10 10 61, and 10 10 261 Machines, has been altered in design. The cuts beneath projections B have been extended rearward—permitting further forward movement of the locking strip, in a machine operation with Operation Control Key No. 5 or 6 depressed.

The additional forward movement of the locking strip, with O.C.K. No. 6 depressed, safeguards against a partial depression of O.C.K. No. 5, and vice versa. A partial depression of either of these keys may force the Non-add Mechanism out of position, and permit the adding of indexed amounts into Register A.

**7—DASHPOT ASSEMBLIES** (listed in the chart on pages 96A and 96B, Symbol List) now contain neoprene collar 88903 in place of parts R, I, S, H, and T, Plate 130, Symbol List, to prevent the loss of oil. This notice supersedes Paragraph 1, Item 4, Mecanogram No. 299.



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# Burroughs

## M E C A N O G R A M

No. 302  
May 12, 1947

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "M" MACHINES (TYPE 70)

**1—LONGER SCREW 71502A AND NUT 47** now replace the screw (K, Plate 3, Power Symbol List) to prevent the loosening of the screw and intermediate gear (K and L, Plate 3, respectively).

**2—SHAFT ASSEMBLY 1-705008B**, with a heavier threaded end to reduce breakage, replaces shaft 1-705008A (I, Plate 16, Carriage Symbol List). To install the new assembly, enlarge the hole in the casting (AC, Plate 16) with a No. 29 drill and thread with a 5/32 x 40 tap (Kit 270 No. 3).

**3—DOUBLE-END SCREW STUD 704531** replaces screw 74531 (BB, Plate 23, Accumulation Symbol List) to permit the shifting or removal of the Multiplier-Subtractor Section without disturbing its vertical adjustment.

The screw stud is adjusted to secure minimum clearance between the adding rack limit plates (A, Plate 22) and the cross support (AT, Plate 1); and is locked in this position by means of a No. 46 nut attached to its forward end.

### SERIES "P" MACHINES (CLASSES 8, 9, 10)

**4—CARRIAGE 2-83165 (3 7/8") NO. 1** now contains improved parts to prevent a metallic sound as the type strikes the platen: tear-off assembly 1-83158 (3 7/8") No. 7 (D) is equipped with soft friction plug 83909 (A), and paper deflector 83101 1/2 (3 7/8") No. 2 (B) contains enlarged projections (C).

Metallic sounds of this nature may be overcome on Field machines as follows:

- Drill a 1/8" hole in the tear-off assembly—1/4" to the right of the center embossment.
- Remove a portion of the embossment by filing.
- Insert soft friction plug 83909 (A) in the newly drilled hole.
- Enlarge projections (C) by peening.

**5—ARM 1-81113A ELECTRIC** (which is of improved construction to prevent the loosening of its component parts) now replaces arm 1-81113 Style E (BU, Plate 132, Symbol List).

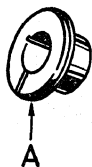


The loosening of the component parts of arm 1-81113 Style E may result in a machine lock or "short stroke" since the Main Operating Section will not be drawn completely forward during the forward stroke of the machine operation; or, the arm may not relatch with the hook (BT, Plate 132, Symbol List) after a "handle break" has occurred.

Installation of the improved arm requires screw 81616Z in place of the screw 4253 (BV, Plate 132, Symbol List).

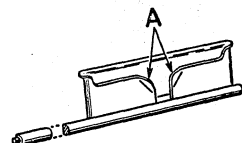
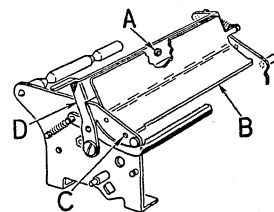
**6—PAPER CHUTES 1A-83037(6) AND 11A-83037(6)** (D, Plate 14, Symbol List) have been altered in design (by the flaring of corners

A) to prevent the tearing of the roll paper. The flaring of corners A on earlier chutes may be performed in the Field when necessary.



**7—OILITE BEARINGS 81334Z (A) AND 81334AZ (B)** are available for replacing

the present bearings in the right side of the drive housing (D, Plate 132, Symbol List) on Field machines. The old bearing should be removed from the drive housing to determine the correct style required for replacement.



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General Service Manager

# Burroughs

## MECANOGRAM

No. 301  
April 8, 1947

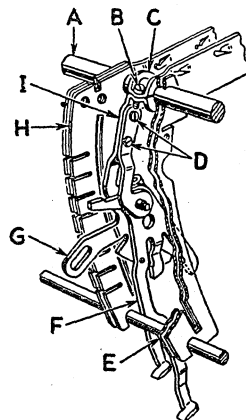
BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES (CLASSES 1, 2, 6, 11-16, 20-30)

**1—CARRY PAWL BRACES 1-10413½Z (I)**, which provide bearing surface below (as well as above) the carry pawls, and shaft 460½Z are used to retain the carry pawls F in their proper positions when the holes in the sector guides H and E become worn.

To install:

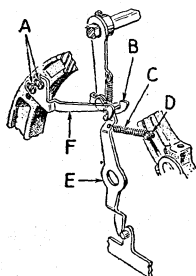
- Remove the keyboard, screw 75633 (AD, Plate 46, Accumulation Symbol List), and the screw in the left end of shaft 1-204003 (AJ, Plate 46).
- Disconnect the resetting cams G from the actuating arms 1-204104 (AI, Plate 46), and swing the latter forward.
- Anchor the shaft A (to prevent its rotation) by installing a carry pawl brace I in a space between non-add columns, using shaft 460½Z in place of a carry pawl.
- Assemble the lower end of a carry pawl brace onto a carry pawl F, and install as illustrated.
- Align the carry pawl brace to clear all parts, and anchor in position with clamp C.



**2—PART 1-13¼ FTE. 124 NO. 2 ENV. 903 (E)**, Limit Blank 153 Env. 903 (F), Screws 73612 (A), Spring 10686½ (C), and Stud 7064¾ (D), are now available for Field installation in machines having the Subtract Mechanism indexed from motor bar 103 or 104, to eliminate possible wrong totals.

Spring C, by holding part E in its normal position against the hook of limit F as illustrated, prevents the relatching of part E on hook B during a repeat operation with motor bar 103 or 104 depressed; and, insures the relatching of part E on hook B when the latter returns to its normal position.

Installation of stud D and screws A on early machines may require the drilling and tapping of the side frame—using a No. 37 drill and a ⅛ x 44 tap.



### SERIES "M" MACHINES (TYPE 70)

**3—ROCKER ARMS 1-74132, AND PAWLS 74154** on the multiplier plates 1-74107 (U, S and R respectively, Plate 25-1, Accumulation Symbol List) now have conforming angles at their points of contact to lessen the possibility of the rocker arm's interfering with the positioning of the pawls over the raise bar when a multiplier key is depressed.

The pawls also have stock added to their rear lower edge to increase the hold on the rocker arms—thus reducing the possibility of a reset of the pawl (of a unit multiplier plate) on the downward stroke of the raise bar.

Installation of the improved rocker arms and pawls requires rocker arm shaft assembly 1-74025A, multiplier plates 1-74107 No. 2 thru No. 18, and 1-16½A Fte. 134; and two each of multiplier plates 1-74107 No. 1.

**4—CARRY LINK 24 FTE. 134 AND CARRY RACK 1-25 FTE. 134** now replace carry link 79221 No. 1 and carry rack 1-79222 No. 1 (D and B respectively, Plate 30, Accumulation Symbol List) for use with the Sub-Product Deduction Mechanism—in machines containing the slotted carry links described in Item No. 2, Mecanogram No. 288.

The carry link has a pivot hole instead of a slot.

The carry rack (which is notched on the upper side of its tail for identification) has stock removed from the under surface of its tail to provide clearance equal to the semicarry clearance provided by the slot in the conventional carry link:

C. A. BAKER  
General Service Manager

- (d) Brace the shaft, and drive the pin (or pins) from its left end.
- (e) Remove the shaft through the right sideframe.
- (f) Remove the corresponding pins and parts—see (d) above—from the new shaft.
- (g) Install the new shaft and replace the removed parts in reverse order.

**Note:** In the event the pins cannot be driven out of the old shaft, cut through the shaft—by means of a hacksaw blade inserted between the subtractor and the machine base, and remove the two pieces (of the shaft assembly) through their respective sideframes.

#### **10—REPLACING THE TOGGLE SHAFT ASSEMBLY 51-72011 (AE, Plate 25, Accumulation Symbol List) in Classes 72 and 77 Machines.**

**On Class 72 Machines—**

- (a) Remove the following parts:
  - (1) Assemblies (AR and AV, Plate 25).
  - (2) Vertical toggle leaf (AI, Plate 25).
  - (3) Control slide (U, Plate 17, Keyboard Symbol List).
  - (4) Anchor block (Y, Plate 17).
  - (5) Springs (AA and N, Plate 25, Accumulation Symbol List and AJ, Plate 27, Keyboard Symbol List).
  - (6) Bracket (AJ, Plate 33, Accumulation Symbol List).
- (b) Depress the extend key.
- (c) Remove the shaft through the left sideframe.
- (d) Install the new shaft, and replace the removed parts in reverse order.

**On Class 77 Machines—**

- (a) Remove the following parts:
  - (1) Vertical toggle leaf (AI, Plate 25, Accumulation Symbol List).
  - (2) Detent (J, Plate 19, Keyboard Symbol List).
  - (3) Springs (AH, Plate 51 and AH, Plate 36, Accumulation Symbol List).
  - (4) Control slides (U, Plate 17, and AU, Plate 12, Keyboard Symbol List).
  - (5) Anchor block (Y, Plate 17).
  - (6) Bracket (AG, Plate 51, Accumulation Symbol List).
  - (7) Rocker arm assembly (AI, Plate 33).
- (b) Depress the Credit Register Key.
- (c) Break off the twin cam shifting arm (O, Plate 52, Accumulation Symbol List), if it has already been damaged and the shaft is being replaced for that reason. If the shaft will be repaired and then replaced, bend the arm to clear the result linkage bellcranks.
- (d) Remove the shaft through the left sideframe.
- (e) Install the new shaft, and replace the other removed parts in reverse order.

**Note:** Before replacing the new shaft, drive the pin and remove the cam shifting arm described in (c) above—and reassemble the parts after the new shaft is in position.

#### **11—REPLACING ADDING RACKS 1-76111 (AE, Plate 9, Accumulation Symbol List) without removing the front casting (M, Plate 9).**

- (a) Remove the Accumulation Section, leaving the front casting (M) attached to the machine.
- (b) Remove any other obstructing parts.
- (c) Turn the adding racks on their sides (as they are lifted out of the guide combs).
- (d) Replace the affected adding rack, and replace the parts in reverse order.

#### **12—REPLACING THE MAIN OPERATING SHAFT (P, Plate 13, Power Symbol List) on Type 70 Machines.**

- (a) Drive the two pins from the left end of the shaft—(only one if the machine does not contain Power Meshing Mechanism).
- (b) Remove the right sideframe and any other parts or assemblies that might obstruct the removal of the Shaft Assembly through the right side.
- (c) Raise the “cipher” adding rack stops.
- (d) Lift the “cipher” and the “one” indexing strips (E, Plate 2, Keyboard Symbol List) out of position and lay them forward—do not unhook the springs.
- (e) Remove the Shaft Assembly through the right side, using a follow-up shaft.
- (f) Replace the parts in the reverse order.

#### **13—EXAMINING AND ADJUSTING THE CARRY PAWLS of all Type 70 Machines.**

- (a) In the Register (Classes 72 and 78) and the Crossfooter (all classes).

- (1) Remove the following:

Carry Rack Restoring Shaft (I, Plate 14, Accumulation Symbol List).

Shaft holding the lower end of the spring (H, Plate 14)—Register only.

Shaft (U, Plate 13, Accumulation Symbol List)—Crossfooter only.

Carry Racks and Links (F and N, Plate 14) in the affected column and the two adjacent columns.

**Note:** Space is now afforded to permit examination and adjustment of the affected pawl.

- (2) Replace the parts in reverse order.

**Note:** Exercise care to prevent the damaging of the springs (L, Plate 14).

- (b) In the Register (Class 77).

- (1) Remove the pilot shaft (H, Plate 41, Accumulation Symbol List).

- (2) Trip all carry racks.

- (3) Manually depress the section chamber.

**Note:** A small mirror may now be lowered into the chamber and a good reflected view of the carry pawls may be obtained. Adjusting may be done through the left end of the chamber.

- (c) In the Register (Classes 72 and 78, 50 and 60 pinion construction).

- (1) Remove the following:

Screw and eccentric from the right support (K1, Plate 8, Accumulation Symbol List).

Screws (BA and BG, Plate 8).

Shaft (Y, Plate 8).

- (2) Trip the carry racks.

- (3) Remove the Pinion Assembly (BF, Plate 8) through the right side.

**Note:** Manually depress the section frame and insert a small mirror downward to the rear of the carry pawls. Adjusting may be done from the side.

- (4) Replace the parts in reverse order.

**14—REPLACING A RESULT KEY LINKAGE 1-72171** (H to L, inclusive) on all Type 70 Machines—(referring to parts shown on Plate 6, Keyboard Symbol List).

- (a) Remove the following:

- (1) Any obstructing parts from the left side of the machine.

- (2) The wire from the result key to the affected linkage.

- (b) Unhook the following:

- (1) The lower end of the springs on the result lock (P).

- (2) The spring from the brace (U) to the affected linkage.

- (c) Drive the pins (AB) from the right side of the machine—using a long punch that will serve as a follow-up shaft.

**Note:** The pins should not be driven from the left side as the holes in the right sides of the castings (AC and BP) are smaller than the shaft, and a cracked casting may result.

- (d) Pull back the follow-up shafts slightly and remove the affected linkage.

- (e) Replace the parts in reverse order.

**15—REPLACING THE RESULT LOCK ASSEMBLY 31-72002** (AL, Plate 40, Keyboard Symbol List).

- (a) Remove the following:

- (1) Pin from the power mesh drive arm (W, Plate 29).

- (2) Arm (AB, Plate 29).

- (3) Screw (D, Plate 40).

- (4) Screw holding the result lock assembly to the sideframe.

- (b) Unhook (at the bottom) all springs on the result lock.

- (c) Manually hold the twin cams in the Add C. F. position.

- (d) Depress the motor bar and turn the crank to position the machine slightly forward.

- (e) Place the bit of a screw driver between the lock and the anchor strap (Q, Plate 6) and snap the lock out of position.

- (f) Remove the assembly through the opening in front of the twin cams and over the horizontal member of the left sideframe.

- (g) Replace the parts in the reverse order.

C. A. BAKER  
General Service Manager

# Burroughs

## M E C A N O G R A M

No. 300  
April 3, 1947

Mr M R Lovejoy  
Buffalo N Y Branch  
10-5

BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

### SERIES "H" MACHINES (CLASSES 1, 2, 6, 11-16, 20-30)

**1—REPLACING TYPE 618**—(referring to parts shown in Plate 50, Printing Symbol List).

- (a) Replacement of One or Several Type in One Magazine.
  - (1) Remove the springs (K and L) from the type magazine.
  - (2) Raise the sector.
  - (3) Install a Class 70 type-bar wire 1-75705 (E, Plate 14, Type 70, Printing Symbol List)—with its nut attached—in place of the screw (I).
  - (4) By means of the type-bar wire, move the magazine away from the sector using the nut as a limit.

**Note:** If necessary, a warding file may be inserted between the type and the sector to prevent the dislocation of the type.

- (5) Install the new type and reassemble in reverse order.
- (b) Replacement of All Type in One Magazine.
  - (1) Remove the springs (K and L) from the type magazine.
  - (2) Raise the sector.
  - (3) Loop an elastic band around all the type in the magazine to prevent their subsequent dislocation.
  - (4) Remove the screw (I).
  - (5) Remove the magazine; replace the type; and reassemble in reverse order.

**2—REPLACING EARLIER LEDGER GUIDES** (equipped with retaining plate and nut) (AE, AE1, and AE2, Plate 51, Carriage Symbol List).

- (a) Remove the nut (AE2) and the retaining plate (AE1).
- (b) Slide the ledger guide toward the center of the carriage; spring the shaft (AV) upward; and raise the guide—pulling the same rearward.
- (c) Spring the shaft (AV) upward and insert the new guide.

**3—REPLACING A HAMMER LATCH 717 (AH)** without lowering the carriage backplate or removing the Printing Section—(referring to parts shown in Plate 4, Printing Symbol List).

- (a) Manually operate the machine to raise all the sectors.
- (b) Remove the hammer in the affected column—(See Mecanogram 272, Item 2).
- (c) Remove the hammer latch retaining shaft and camshaft (AM).
- (d) Unhook springs (AR).
- (e) Remove the shaft (AG) from the arms (O).
- (f) Raise the shaft (AG) and anchor in a raised position to permit the raising and withdrawal of the hammer latch—leaving the springs attached to the parts (AK).
- (g) Replace the hammer latch, and reassemble the machine in reverse order.

**Note:** Recheck the position of the milled shaft (AG).

**4—REMOVING PRINTING SECTION.** The removal of the Printing Section from Classes 20 thru 30 Machines is expedited by loosening the right end of the shaft (R, Plate 1, Power Symbol List)—permitting a slight give of the shaft, and providing more clearance between the printing section sideframes and the shaft.

**5—REPLACING HAMMER DRIVERS 1-716D (R)** from front of machine—(referring to Plate 3, Printing Symbol List).

- (a) Remove the Crossfooter and Register Sections; and trip the adding racks to carried position.
- (b) Remove the screws (M) to permit the driver retainer shaft to fall.
- (c) Remove the broken or worn drivers through the front of the machine.
- (d) Reassemble in reverse order.

**6—REPLACING A HAMMERBLOCK BAIL 1-10718C (S)** on machines in which its removal from the side is difficult—(referring to Plate 3, Printing Symbol List).

- (a) Remove the Crossfooter and (if necessary) the Register Section.
- (b) Trip the adding racks to their carried position.
- (c) Remove the No. 46 nut on the left side of the bail (S), and the nut (Q) and washer on the right.
- (d) Back out the screw which holds nut (Q), and remove the bail through the front of the machine.
- (e) Reinstall the parts in reverse order.

**Note:** On machines equipped with Keyboard Selection of Registers, exercise care when remeshing the pinion gears (G and E, Plate 48, Keyboard Symbol List).

**7—REPLACING THE REGISTER DETENT 11B-60137B (O)** without lowering the carriage backplate—(referring to Plate 27, Accumulation Symbol List).

- (a) If necessary, remove the keyboard.
- (b) If necessary, free the bellcrank (AI) and swing the same to one side.
- (c) Remove the screw (N) through the front of the machine, and lift out the detent.
- (d) Install the new detent, and reassemble the removed parts in reverse order.

**Note:** Before installing the new detent, the screw (N) should be secured in the detent's hole by means of an elastic band.

## SERIES "T" MACHINES (TYPES 50, 60)

**8—REPLACING THE CARRIAGE RETURN AND TABULATING TAPES 1-103990**  
No. 1 Style E and 1-103990 No. 2 Style E (Q and AE, Plate 25, Symbol List).

- (a) Removal of the Carriage Return Tape (Q, Fig. 25).
  - (1) Locate the carriage in its extreme left-hand position.
  - (2) Lift the tabulating tape (AC, Fig. 25) off the pulley (F, Fig. 27).

**Note:** Allow the tape to rest on the tabulating frame (G, Fig. 22).
  - (3) Disconnect the return tape from the stud (AS, Fig. 25).
  - (4) Replace the tabulating tape on the pulley (F, Fig. 27).
  - (5) Disconnect the return tape from the spring barrel and remove.
- (b) Removal of the Carriage Tabulating Tape (AC, Fig. 25).
  - (1) Unwind the spring barrel.
  - (2) Disconnect the tape from the spring barrel.
  - (3) Disconnect the tape from the slide (R, Fig. 25) and remove.
- (c) Installation of the Tabulating Tape.
  - (1) Attach the tabulating tape to the spring barrel.
  - (2) Carefully thread the tape through the sideframe, under the spring barrel and over the pulley (F, Fig. 27).
  - (3) Twist the free end of the tape one-half revolution and thread the tape around the pulley (C, Fig. 26).
  - (4) Attach the tape to the slide (R, Fig. 25).
  - (5) Locate the carriage in the extreme right-hand position.
  - (6) Wind the spring barrel approximately seven full turns, starting with the spring fully unwound.
- (d) Installation of the Carriage Return Tape.
  - (1) Locate the carriage in its extreme left-hand position.
  - (2) Lift the tabulating tape off the pulley (F, Fig. 27) and attach the return tape to the spring barrel.
  - (3) Attach the opposite end of the return tape to the stud (AS, Fig. 25).
  - (4) Replace the tabulating tape on the pulley (F, Fig. 27).

## SERIES "M" MACHINES (TYPE 70)

**9—REPLACING A RAISE BAR SHAFT 1C-74013 (AK, Plate 25, Accumulation Symbol List)** in all Type 70 Machines.

- (a) Disable the segment gear (L, Plate 26, Accumulation Symbol List).
- (b) Remove the following parts:
  - (1) Screws (O, Plate 32, Accumulation Symbol List).
  - (2) Bracket (R, Plate 14, Power Symbol List).
- (c) Remove or disable any other obstructing parts or assemblies.

# Burroughs

## MECANOGRAM

No. 297

January 2, 1947

### BRANCH MANAGERS, SERVICE MANAGERS, AND SERVICEMEN:

In their daily work, servicemen often devise time-saving methods. A number of such methods submitted by the field are outlined below for the information and optional use of all servicemen. Others will be published from time to time as received.

### CLASSES 1, 2, 6, 11-16, 20-30

#### 1—REPLACEMENT OF THE STOP BLOCK (S, Plate 15, Carriage Symbol List).

- (a) Unhook the spring (U, Plate 15), and remove the screw and cam (W and X, Plate 15).
- (b) Remove the ribbon, and unhook the spring (E, Plate 27, Accumulation Symbol List).
- (c) Obtain a long wire, and make a right angle bend  $\frac{1}{4}$ " from one end.
- (d) Loosen the nut on the post of the stop block by tapping the nut with a long punch.
- (e) Place the bent end of the wire in line with the nut, back the nut off the post and onto the wire, and remove the wire with the nut attached.
- (f) Detach the washer and the air cushion link in the same manner—by using the bent wire (to prevent the parts from dropping onto the machine base).
- (g) Remove the old stop block, and install a new one.
- (h) Replace the air cushion lever, the washer, and the nut—tightening the latter by tapping with the long punch.
- (i) Test the stop block for freedom.
- (j) Replace the cam and screw (X and W, Plate 15, Carriage Symbol List), and attach the free ends of the springs previously unhooked.
- (k) Recheck the stop block for freedom, and replace the ribbon.

### CLASSES 3, 4, 4D, 4I

#### 2—METHOD FOR REPLACING THE KEYBOARD BOTTOM PLATE 1-9212B (Z, Fig. 1).

- (a) Depress all the amount keys, and remove the keyboard section from the machine.
- (b) Tie the shaft (K, Fig. 1) to the slide (I, Fig. 1) to lock all keys depressed.
- (c) Invert the keyboard and remove the screws holding the bottom plate.
- (d) Raise the bottom plate until it clears the keystems and slide the plate rearward, carefully disconnecting the springs (H, Fig. 1).
- (e) Check the springs (H, Fig. 1) for having a secure hold on the locking strips (A, Fig. 1).
- (f) Place the new bottom plate over the keyboard.
- (g) Guide the No. 1 keystems through the plate—then the No. 2 keystems, etc., while applying slight downward pressure to the center of the plate.
- (h) Connect the springs (H, Fig. 1) to the new bottom plate.
- (i) Replace the bottom plate screws, free the shaft (K, Fig. 1) from the slide (I, Fig. 1), and reinstall the keyboard in the machine.

### TYPE 70

#### 76567 and 76567 No. 2

#### 3—TIGHTENING THE SCREWS (AG and B, Plate 5, Keyboard Symbol List).

- (a) Swing the segment (E, Plate 5) away from the plate (D, Plate 5).
- (b) Free the rear pivot (M, Plate 3).
- (c) Slide the intermediate keyboard rearward, being careful not to lose the spring (P, Plate 3).

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- (d) Tighten the screws (AG and B, Plate 5), by means of a screw driver inserted through the top of the machine.
- (e) Reinstall and adjust the intermediate keyboard and the shaft assembly (AE, Plate 5).

#### **4—INSTALLING A NEW RIBBON.**

- (a) Cut a slit (crosswise) in the unpinned end of the used ribbon (about 1" from its end): Fold the ribbon lengthwise and cut with diagonal pliers.
- (b) Fold about 4" of the new ribbon's free end—lengthwise.
- (c) Insert the folded portion of the new ribbon (from the bottom) through the slit in the old ribbon, and double the folded portion backward away from the machine.
- (d) Draw the new ribbon through its guides by pulling the old ribbon from the opposite side of the machine.

Note: The old ribbon will automatically detach from the new ribbon at the proper time.

- (e) Complete the installation of the new ribbon in the usual manner.

#### **5—REPLACING THE ADDING RACK LIMIT STOPS 0 THRU 7 (J, Plate 1, Accumulation Symbol List), without Removing the Accumulation Section.**

- (a) Remove the following parts, irrespective of machine class:

Restoring Fork (AG, Plate 1, Accumulation Symbol List).

Comb (AQ, Plate 1).

Lever (K, Plate 23, Keyboard Symbol List).

Comb (A, Plate 23, Accumulation Symbol List).

Shaft (S, Plate 7, Accumulation Symbol List).

Note: The shaft (S, Plate 7) is removed only when stop No. 6 or 7 is to be replaced.

- (b) Remove the following additional parts, from the classes of machines indicated:

- (1) From Class 72 Machines:

Lever (AL, Plate 1, Accumulation Symbol List).

Lever (AK, Plate 1).

Arm (V, Plate 6, Accumulation Symbol List).

- (2) From Class 77 Machines:

Cam slide (S, Plate 36, Accumulation Symbol List).

- (c) Remove the broken adding rack limit stop in the manner described:

- (1) Free the magazine plate containing the broken stop by withdrawing two of the shafts (AB, Plate 1, Accumulation Symbol List) to the right, and two to the left.

Note: Employ at least two follow-up shafts when withdrawing the shafts (AB, Plate 1), and observe the necessary precautions to prevent dislocation of the spacing collars and washers (K and F, Plate 1).

- (2) Slide the free magazine plate rearward, by means of a slender spring hook, until the broken stop (with its associated stop and spring) becomes accessible.

- (3) Remove the broken stop through the right side frame.

- (d) Install a new adding rack limit stop as follows:

- (1) Assemble the new stop with its associated stop and spring (M, Plate 1, Accumulation Symbol List) on a flat surface, with the spring beneath the stops as illustrated in Plate 1.

- (2) Slide the two stops together (along the flat surface), compressing the spring.

- (3) Place a No. 45 nut holder over the stops and allow the spring to move the stops outward until limited against the prongs of the nut holder.

- (4) Place the stops and spring (contained in the nut holder) into their proper position by carefully manipulating the nut holder.

- (5) Hold the stops and spring in place with a demagnetized tool, and carefully remove the nut holder.

- (e) Reinstall and adjust the parts previously removed.

## **6—INSTALLING A NEW DRAWCORD ON THE MOTOR RETURN REGISTER MECHANISM.**

- (a) Attach one end of the cord to the screw (M, Plate 19, Power Symbol List).
- (b) Pierce the cord (at a point about  $\frac{1}{2}$ " from its free end) with a thin strand of wire (piano wire preferred).
- (c) Slide the wire lengthwise through the cord until it becomes embedded in the cord's sealed unattached end.
- (d) Insert the wire and cord, from the left side of the machine, through the eyes of the guide (J, Plate 19) and to the pulley (BF, Plate 19).
- (e) Hold the cord and remove the wire.
- (f) Complete the installation in the usual manner.

## **7—REALIGNING A TWISTED MAIN OPERATING SHAFT, without Removing the Shaft from the Machine—(a temporary expedient).**

- (a) Manually operate the machine to locate the Main Operating Shaft Assembly slightly forward (from its normal position).
- (b) Brace the left end of the main operating shaft by placing a bender, Kit 56 $\frac{3}{4}$ , between the inside rear edge of the machine base and the arm which supports the left end of the shaft (X, Plate 13, Power Symbol List).

Note: If the length of the bender is not sufficient to hold the Main Operating Shaft Assembly in a slightly forward position, a small flat wrench should be inserted between the bender and the machine base—otherwise damage to other parts may result.

- (c) Disconnect the drive link (U, Plate 12, Power Symbol List).
- (d) Spring the shaft into proper alignment by prying with a heavy screw driver placed over the crossmember of the right side frame and under the arm (M, Plate 13, Power Symbol List).

## **8—METHOD FOR REPLACING THE RELEASE PAWL 1-72101 (A, Plate 43; Keyboard Symbol List) on the Single Stroke Motor Bar Mechanism of all Class 70 Machines—(referring to parts shown on Plate 43, Keyboard Symbol List).**

- (a) Raise the pawl (AO) and detach the spring (AS) from the release pawl (A).
- (b) Remove the screw (B) by means of a long screw driver inserted through the left side frame, and remove the release pawl.
- (c) Place the new release pawl in position beside the casting (AR).
- (d) On Classes 72 and 78 Machines, twist a wire from a type brush around the screw (B), lower the screw into alignment with the hole in the casting (AR), and assemble the release pawl and screw to the casting by means of the long screw driver.
- (e) Insert a spring hook through the top of the machine and attach the spring (AS) to the stud in the release pawl.

Note: On Class 77 Machines, the screw (B) may be installed by means of a spring screw driver inserted through the left side frame; and the spring (AS) may be attached to the release pawl by means of a push hook inserted through the rear of the machine.

## **9—METHOD FOR REPLACING AN INDEX SLIDE 1A-74137 NO. 1 AND FRICTION SPRING 74180B (D and E, Plate 22, Accumulation Symbol List) on all Class 70 Machines.**

- (a) Remove the guide plate (C, Plate 22).
- (b) Remove the square crossbar (AL, Plate 38).
- (c) Loosen the straps (J and K, Plate 23).
- (d) Remove the retaining plate (BD, Plate 23).
- (e) By raising the channel bail, lift the horizontal extend arms to clear the teeth of the retaining racks (AU, Plate 22), and pull the defective index slide rearward to its limit.
- (f) Gently spread the guides (G, Plate 23) to free the index slide, and withdraw the latter with its friction spring.
- (g) Replace the removed parts (in reverse order).

## CLASSES 8, 9, 10

**10—REPLACING A PLATEN ON A 12 $\frac{1}{4}$ " CARRIAGE**—(referring to parts shown on Plate 29, Symbol List).

- (a) Locate the platen approximately 3" to the right of center.
- (b) Tie the right end of stop rail (R) to the upper raceway (BD).
- (c) Remove the left platen twirler (A).
- (d) Free the right carriage side plate (E) from the carriage.
- (e) Remove the platen, to the right, with its right side plate attached.
- (f) Install the new platen and its attached side plate.
- (g) Transfer all necessary parts (such as detent C) from the old to the new side plate.

**11—TIGHTENING THE SCREW IN THE 1-96305 COLLAR** (C, Plate 94, Symbol List) without Removing the Keyboard.

- (a) Remove the case and carriage.
- (b) Position the screw in the collar toward the rear of the machine—by means of a spring hook inserted through the opening between the channel bail (P1, Plate 39, Symbol List) and the lower keyboard plate.
- (c) Tighten the screw with a jewelers screw driver, Kit 13, inserting the same through the opening described above.

## CLASSES 200, 300

**12—METHOD FOR REPLACING AN EARLY STYLE SHUTTER 1-300111** (AT, Plate 23, Symbol List) with a late style shutter 1-300111A No. 2 (described in Print 600-1/R).

- (a) Remove the stud (AQ, Plate 23).
- (b) Remove the early style shutter.
- (c) Place the late style shutter in position.
- (d) Install stud 7552 $\frac{3}{4}$  (AE, Fig. 4, Classes 3, 4, 4D, and 41, Symbol List) in place of the stud (AQ, Plate 23, Symbol List).

## STANDS

**13—ASSEMBLING OF LATE STYLE STANDS** may be facilitated by using a homemade wooden jig consisting of a board with holes drilled so as to fit over the top of the stand's rear legs. With the legs supported in this manner, the crosspieces and brackets may readily be attached.

## ALL CLASSES

In addition to time-saving methods which involve manipulative sequence, servicemen have discovered numerous knacks or aids which may be applied to miscellaneous mechanical tasks irrespective of machine classes or styles. Various of these aids are here offered for the general facility they afford.

**14**—Taper pins will loosen more readily if the large end of the pin is struck before attempting to drive the pin out.

**15**—Tweezers wrapped with an elastic band, or inserted into the end of a brush holder (Kit 598, Plate 5, Tool Equipment Symbol List), will hold screws or small parts securely.

**16**—Rubber tubing (such as P, Plate 5-2, Classes 100, 200, 300, Symbol List) is easily installed if the metal tube holder is dampened with water, keytop cement, or alcohol.

**17**—White paper placed under or behind sections in the machine will reflect light to areas where tasks are to be done—thus affording a better view.

**18**—Vaseline, or non-fluid oil when placed in a ball bearing raceway, will hold the ball bearings in place when re-assembling the bearing unit.

**19**—Coil springs should be carefully tested for strength; snapping or excessive spreading of the coil will weaken the spring.

**20**—The replacement of screws into the threaded holes of castings or other parts (after the parts which they retain are removed), will insure the correct later replacement of the screws and will prevent their loss.

**21**—Light tapping on the underside of the base (of large machines) with a hammer, will generally dislodge lost screws or small parts.

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