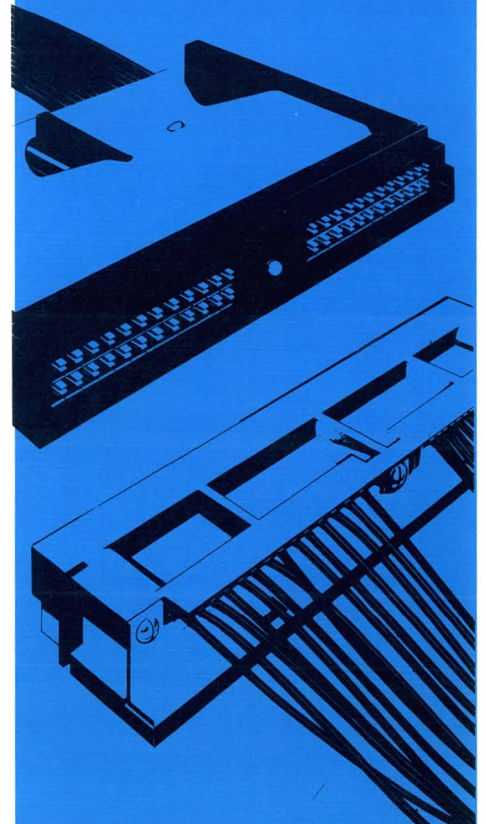


HERMAPHRODITIC CONTACT CONNECTORS

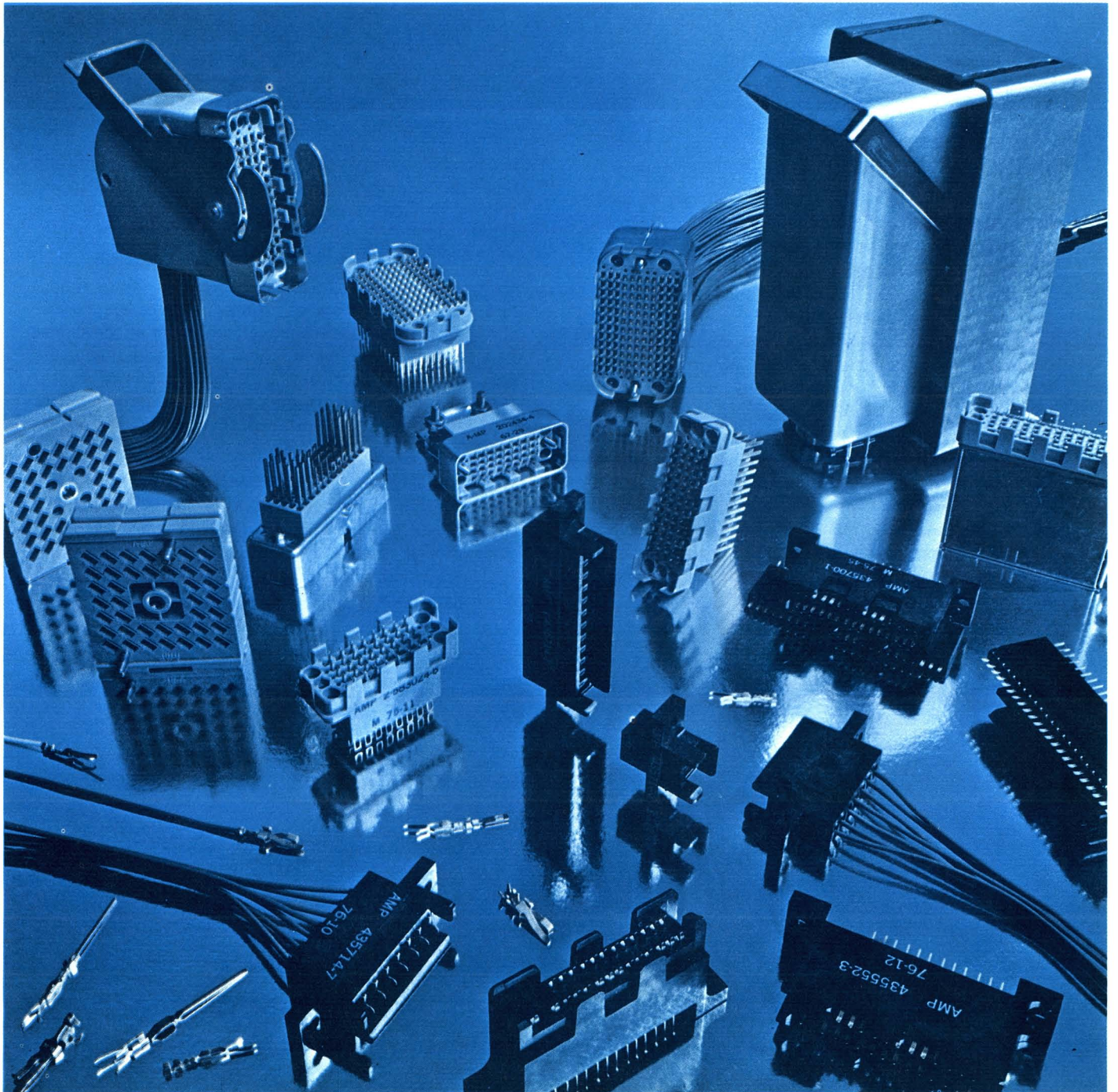
Hermaphroditic contact design simplifies connector assembly, assures self-cleaning wiping action of contact surfaces for positive conductivity. Available in a wide range of compact housing types, sizes and configurations.

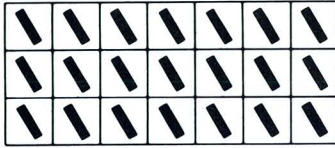
Connectors with standard or miniature hermaphroditic contacts 11-3
DUALATCH Connectors

Cross-reference — other hermaphroditic connectors 11-33



DUALATCH CONNECTORS





DUALATCH

INTRODUCTION

In the race to supply the creative demands of modern electronics, all too often manufacturers find themselves hamstrung by rising production costs and tedious assembly and installation procedures.

Recognizing this, our engineers constantly seek to aid the manufacturer by providing total planning in the development of product — not only to develop more compact and more reliable methods of grouping circuit terminations, but also more efficient and more economical methods of applying them.

The results of this approach are nowhere more evident than in the DUALATCH connector line. Though they were designed primarily to meet the requirements of computers and data processing systems, DUALATCH connectors have been found ideal for use in many other types of equipment because of the distinct advantages they offer to both design and production engineers.

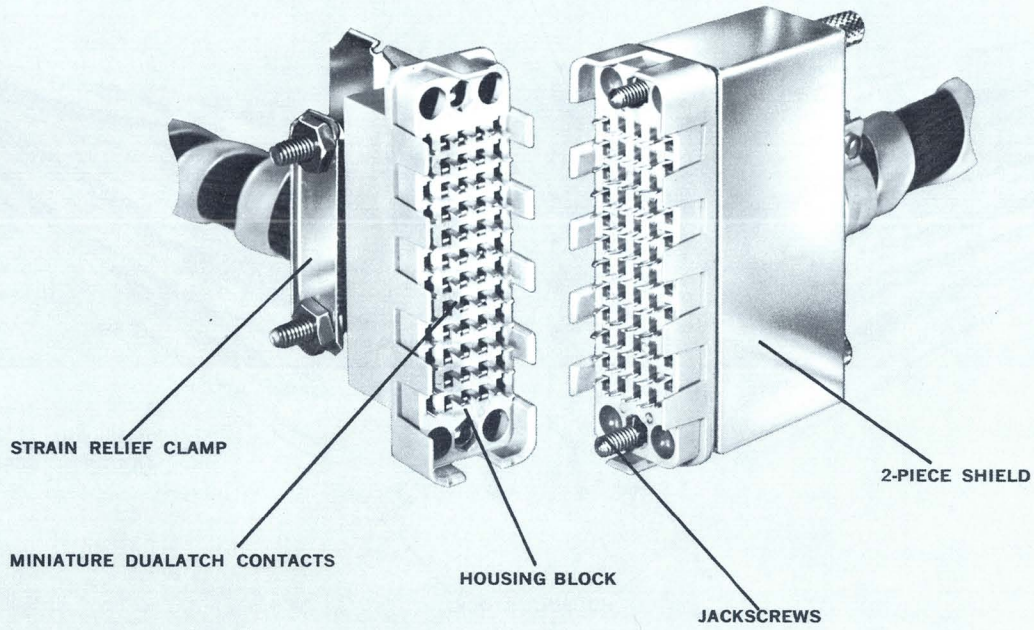
To the design engineer, they bring greater versatility

because of their compactness, wide range of housing types, sizes and configurations. He also profits by increased confidence in their proper functioning because of the superior crimp and a contact design which provides positive wiping action.

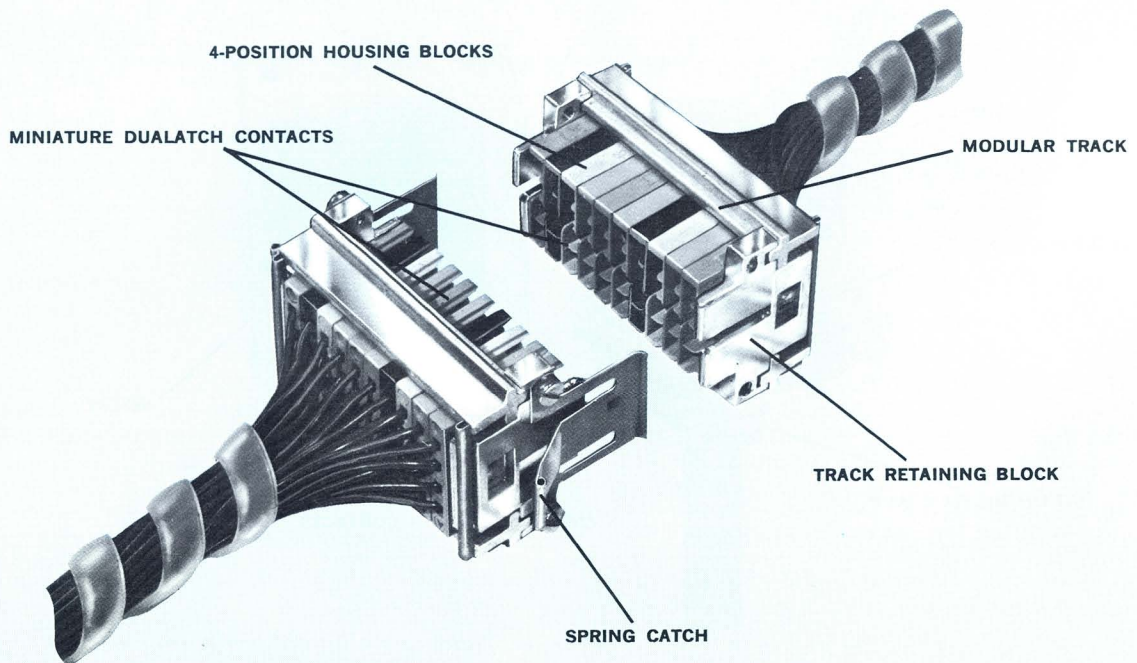
To the production engineer, they provide a more simplified method of application. Since contacts are hermaphroditic, substantial economies are made at the outset in inventory requirements. And because the contacts are applied automatically by AMP's industry-proven, compression-crimp technique, production time is cut to a minimum and total installed costs are subsequently lower.

In this catalog you will find the pertinent facts related to the various types of DUALATCH connectors. If in considering them you feel your requirements call for some special treatment of the elements involved, AMP engineers stand ready to help you by creating a connector designed specifically to do the job you have in mind.

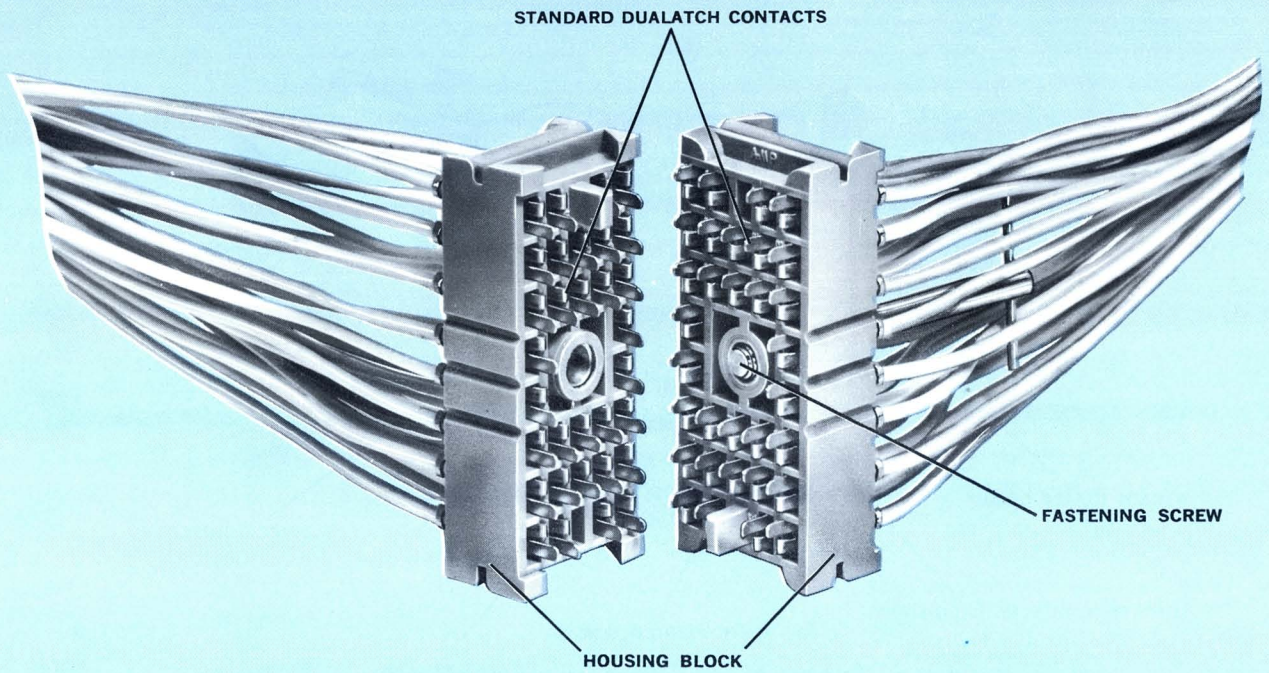
A TYPICAL DUALATCH CONNECTOR (MINIATURE)



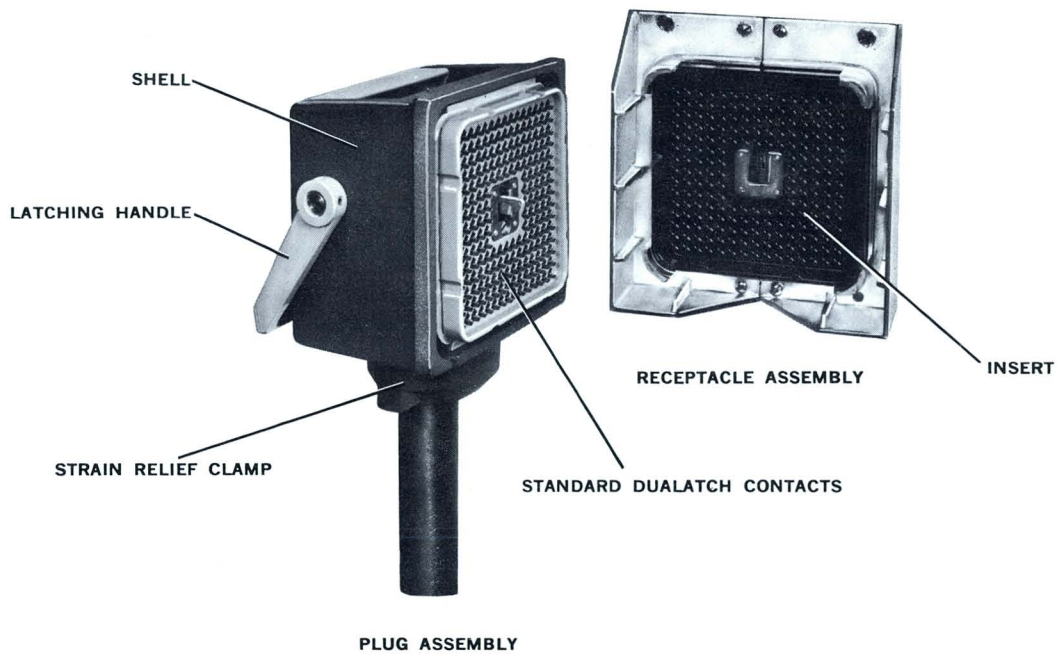
A TYPICAL DUALATCH CONNECTOR (MODULAR MINIATURE)

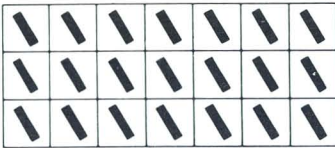


A TYPICAL DUALATCH CONNECTOR (STANDARD)



A TYPICAL DUALATCH CABLE CONNECTOR (STANDARD)





CONTACTS

DUALATCH

CRIMPING

Terminations produced with the AMP crimping method are virtually voidless, effectively bar contaminants and approach the strength of the conductor itself. In the manual tooling, steel-alloy dies must always close fully, exerting precisely calibrated pressure during the crimping operation. In the machine tooling, crimping pressure is precision-controlled and automatically released only when the crimping cycle is completed. Therefore, crimping, whether done with AMP's manual or automatic tooling, results in identical, uniform, high-conductivity terminations.

This type of termination technique is superior to thermal and other binding methods because: there is no danger of insulation burns or wire embrittlement; both solid wire and stranded wire are more readily and quickly crimped than soldered; crimping with AMP automatic tooling is faster — resulting in lower installed costs; and the AMP crimping method permits the ultimate flexibility in production procedures.

AMP compression crimping produces connections that are identical in appearance and performance. Consistent testing also indicates that these crimp terminations possess high tensile strength, low millivolt drop, high resistance to corrosion, and relative immunity to vibration.



MINIATURE

Miniature DUALATCH contacts are available in strip form for application by AMP's automatic machines or in loose piece form for use in AMP hand crimping tools. These contacts are also supplied with post backs, instead of crimp backs, for use with AMP's new, fast TERMI-POINT tooling.



STANDARD

Standard DUALATCH contacts are also available in loose piece or in strip form for automatic application of up to 3,000 wires per hour. AMP's CERTI-CRIMP hand tools are especially made for prototype and small production runs.

TYPES

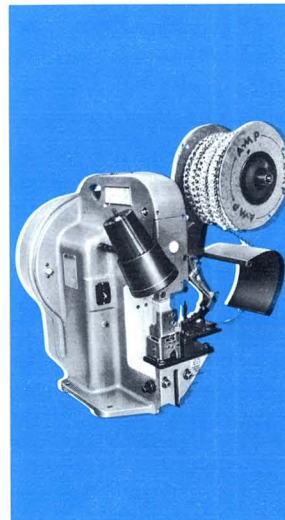
Miniature DUALATCH contacts are also available with posts for use with TERMI-POINT clips, wrap type wiring and soldering.

PLATING

DUALATCH Contacts are available with selective gold plating over nickel. This exclusive AMP process provides quality contacts with a high degree of reliability at a low cost. Contacts with AMP's standard selective gold plating offer customers a cycle life of 10,000 insertions and extractions. This type of durability satisfies most normal connector applications.

However, for the critical, ultra high cycle connector applications DUALATCH contacts are available with graphite coating. This unique process provides a permanent lubrication surface that extends the cycle life to a minimum of 20,000 insertions and extractions. The graphite coating not only doubles the contact cycle life but lowers the insertion force to three ounces per contact.

With this exclusive feature, DUALATCH connectors outperform pin and socket and zero entry force connectors.



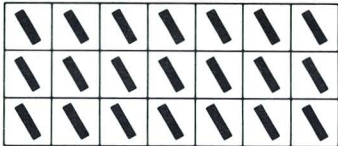
TOOLING

AMP automatic machines are safety-engineered, designed for operator comfort and a minimum of maintenance. While speed of application depends largely on operator dexterity, each uniform crimping action is completely independent of human control.

DESIGN

The contacts used in all DUALATCH connectors are of snap-in, hermaphroditic design. Wiping action assures self-cleaning of the two electrical contact arms, which provide multiple contact surfaces for positive conductivity.

Because of their flat design and unique construction, DUALATCH contacts permit 70% lower engagement and disengagement forces between connector halves than conventional connectors. In assembly the shorter contact arm also serves as a "snap-in" spring locking device, providing high retention force in the housing. In the standard contact, the two electrical arms lie side by side in the same plane and are designed to equalize forces. In the miniature contact, the arms are aligned with flat surfaces parallel to each other to achieve a higher density of terminations.



DUALATCH

CONNECTOR SELECTION INFORMATION

GUIDE TO PROPER SELECTION OF HARDWARE ACCESSORIES AND APPLICATION OF MINIATURE DUALATCH CONNECTORS

RACK AND PANEL APPLICATIONS

Proper installation requires that connectors be properly aligned when the rack closes; that the connector halves bottom when mated; that the rack be locked into position; and that all wires be relieved of strain to prevent the transmission of stresses to the contacts. The rack and panel should close in a straight line motion and properly align with each other with some means provided to lock them in this position. The use of AMP kit #582983-2 and 582983-1 will ensure that the required connector interface and alignment tolerances are met provided the rack and panel align within .100 inch and the mating face of each when closed is between 1.250 and 1.350 inches apart.

Strain relief must be provided for both halves of the assembly by fastening the wiring cable to the equipment, leaving an adequate service loop between the connector and the fastening point.

INTERNAL MACHINE CONNECTIONS

Internal connections are usually necessary because of manufacturing techniques or for servicing or testing of the equipment. When miniature DUALATCH connectors are used for this type of connection, the following hardware is required.

Strain Relief—Cable strain may be relieved by clamping the wires or cable directly to the equipment, provided this is done close to the connector and an adequate service loop is provided. A long or short strain relief clamp may be used as an alternate method.

Coupling Hardware—Miniature DUALATCH connectors have very low mating and unmating forces and may be easily mated by hand; however, some positive means of locking the two halves together is required. For internal machine connections, short one-piece jackscrews are recommended. They take up the least space and provide positive locking. They do not have finger grips and therefore require the use of a screwdriver or socket wrench for mating and unmating the connector. Long one-piece jackscrews are recommended if it is desirable to mate and unmate the connector without tools. Fixed jackscrews are not needed when using one-piece jackscrews.

Aligning Hardware—Unless the connector is easily accessible and will always be used by trained technicians, the use of corner guide pins and socket assemblies is recommended instead of long guide pins. If the connector is in a location where it must mate "blind" or where it is difficult to reach, internal and external pin hoods are recommended. Guide pins are not a necessity when both external and internal pin hoods are used.

CABLE-TO-CABLE CONNECTIONS

Cable-to-cable connectors should be assembled with one half having a two-piece shield and an external pin hood, and the other half having a two-piece shield, two one-piece long jackscrews and an internal pin hood.

EXTERNAL MACHINE CONNECTIONS OR CABLE TO PANEL CONNECTIONS

In these applications, AMP's 200-position DUALATCH cable connector is recommended, especially where quick disconnect of many circuits is desired. It is available with a handle actuated cam or a screw latch device and a 45° to 90° strain relief clamp for one or two cables. Also recommended is the high density 396 position miniature DUALATCH connector. It is available with a handle actuated cam and has 90° or 180° cable outlets. For applications requiring less lines, the standard 40, 60 or 132 position miniature DUALATCH connectors are recommended with the following hardware.

Strain Relief—Cable strain relief is accomplished as in internal machine applications, however, the removable half of the connector must have either a strain relief clamp or a shield with a built-in cable clamp.

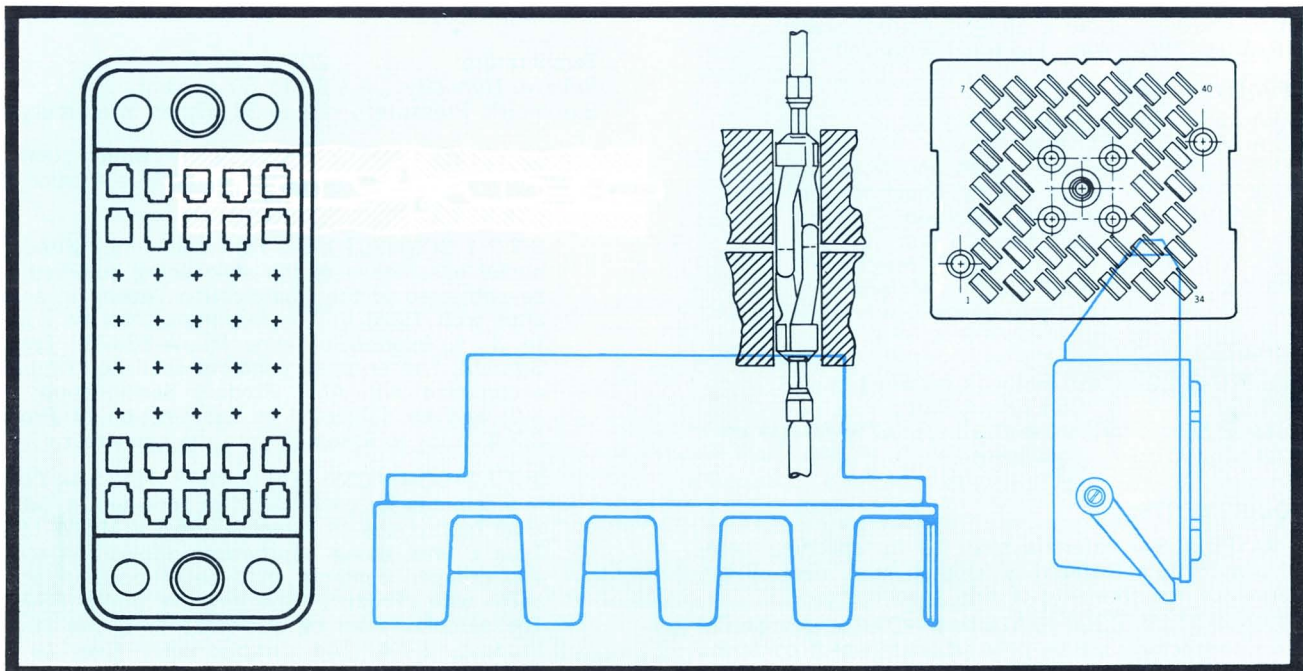
Shield Hardware—A shield helps prevent the entrance of dust and dirt into the connector and improves the appearance of external connections. The two-piece shield may be assembled after the connector is wired and can be used with either jackscrews or spring clips; the one-piece shield must be slipped over the cable or wires before the connector is wired and can only be used with spring clips.

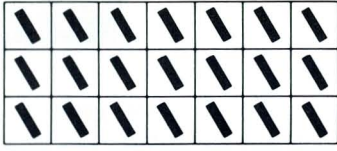
Coupling Hardware — One-piece jackscrews are generally recommended for use in most applications. The long jackscrew may be used with either shields or strain relief clamps; the short jackscrew cannot be used with shields. Spring clips are usually limited to use with the 40- and 60-position DUALATCH connector and to applications where little or no cable strain exists, where connectors are easily accessible, and where a quick connect or disconnect is desired. Pin hoods cannot be used with spring clips. Two male and two female clips are required for each connector assembly.

Pin Hoods — These are recommended as the primary means of alignment for most connector applications, especially where blind mating is required. They also help to prevent accidental damage to the connector. Where both internal and external pin hoods are used, guide pins are not required. Pin hoods must be assembled to the connector before it is wired and cannot be used with spring clips.

Guide Pins—These should be used on all applications where two pin hoods are not used. Normally, two corner guide pin assemblies are used in one half of the connector and two corner sockets in the other half.

Keying — Miniature DUALATCH connectors are automatically polarized and may be keyed by the proper arrangement of guide pins and sockets. If guide pins are not used, the connector can be keyed by cutting off a "dragon tooth" of one of the blocks and inserting keying plug, AMP part #582365-1, into the corresponding location of the mating block.





DUALATCH

PRODUCT SPECIFICATION

(No. 108-10,008)

STANDARD DUALATCH CONNECTORS AND CONTACTS

ELECTRICAL, RECTANGULAR, GENERAL PURPOSE -65°C. to $+125^{\circ}\text{C.}$

1. SCOPE:

1.1 SCOPE—This specification covers the general performance requirements for multi-contact DUALATCH connectors.

1.2 STYLE—This connector is available in three styles listed below.

1.2.1 STYLE 1—This is a rectangular 32 and 40 position connector which uses a center fastener for joining and separating the connector. These inserts have an integral polarizing key to prevent incorrect mating. This connector accommodates the DUALATCH contacts.

1.2.2 STYLE 2—This connector is known as the Cable Connector. It has an insert that will accommodate 200 of the DUALATCH Contacts. The cable portion of this connector is equipped with a die-cast shield. The connector is engaged and separated with the aid of a cam.

1.2.3 STYLE 3—This connector is similar to the cable connector except that the cable portion is equipped with a plastic shield. This connector, known as the screw latch connector, is engaged and separated with the aid of a large center jackscrew.

1.3 WIRE RANGE—The contacts used in these connectors will accommodate the wire range shown in Table II.

2. APPLICABLE DOCUMENTS: The following documents form a part of this specification to the extent specified herein:

MILITARY:

MIL-G-45204 Gold Plating; Electrodeposited
MIL-W-16878D Wire; Electrical, 600 Volt

FEDERAL:

QQ-A-365C Aluminum Alloy
QQ-A-750 Phosphor Bronze
QQ-B-613B Brass; Leaded and Non-Leaded
QQ-N-290 Nickel Plating; Electrodeposited
QQ-S-633A Steel Bars; Carbon
QQ-S-640 Steel Plate; Carbon
QQ-S-763C Steel; Corrosion Resisting
LP393A Plastic Molding Materials,
Polycarbonate

STANDARDS:

MIL-STD-202C Test Methods for Electronic
Component Parts
ASTM-B-86 Zinc Die Castings, Alloy AG40A or
Equivalent

3. REQUIREMENTS:

3.1 MATERIALS—Materials shall be as specified herein. If a substitute material is used it must meet all the performance requirements of this specification.

3.2 CONNECTOR BODY MATERIAL—Dielectric material for this connector shall be polycarbonate which conforms to Federal Specification LP-393.

3.3 CONTACTS —

3.3.1 CONTACT MATERIAL — Contacts shall be made of a copper alloy which conforms to Federal Specification QQ-B-613 or QQ-B-750.

3.3.2 CONTACT PLATING — Contacts shall be plated to the type and thickness specified on the product drawing. Gold plating shall conform to MIL-G-45204, nickel plating shall conform to Federal Specification QQ-N-290.

3.4 OPERATING TEMPERATURE — This connector shall have a maximum operating temperature of plus 125°C. and a minimum operating temperature of minus 65°C.

3.5 CONTACT CURRENT RATING — The maximum current rating for one (1) contact shall be 15 amps, provided the maximum current rating of the wire is not exceeded.

3.6 POLARIZATION — These connectors are polarized in such a manner that it is impossible to mate the connector in any other than the correct manner.

3.7 PERFORMANCE AND TEST — When subjected to the environmental tests specified, the connectors shall perform satisfactorily to meet the requirements of this specification.

3.7.1 TEST CONDITIONS — Unless otherwise specified, tests and examinations shall be conducted under any combination of conditions within the following ranges. Any specified conditions shall not affect the other two ambient ranges.

Temperature: 20° to 30°C.
Relative Humidity: 30 to 80 percent
Barometric Pressure: 24 to 31 inches of mercury

3.7.2 TEST SAMPLE — Completely wired connector assemblies shall be subjected to the Qualification testing in accordance with Table V.

3.7.2.1 CONNECTORS — Four completely wired connector assemblies of the style being qualified shall be subjected to the Qualification Testing in accordance with Table V. The terminals shall be crimped to 3 ft. lengths of wire MIL-W-16878, Type E, Size 22. The crimped contacts shall be crimped in accordance with AMP Product Specification ES-8-6-2, and be subjected to Examination of Product, 3.7.4, prior to assembly into the connector.

3.7.2.2 CONTACTS FOR CRIMP TESTS — Twenty-five contacts for each wire size specified in Table IV shall be crimped to 3 foot lengths of MIL-W-16878, Type B wire using appropriate application tooling. The crimped contacts shall be crimped in accordance with Product Specification AMP ES-8-6-2. The samples shall be subjected to Examination of Product, 3.7.4. The samples shall then be subjected to the tests specified in Table VI.

3.7.3 TEST REPORTS—All testing results shall be recorded in the form of actual measured values when possible, to provide the basis for statistical evaluation and summary of product performance. A formal report containing test data analysis and the product performance summary shall be issued at the completion of the qualification test program.

3.7.4 EXAMINATION OF PRODUCT—Connectors shall meet the requirements of applicable product drawings and performance requirements for individual styles in this specification.

3.7.5 INSULATION RESISTANCE—When tested in accordance with 3.7.5.1, the insulation resistance shall not be less than 10,000 megohms.

3.7.5.1 INSULATION RESISTANCE—The unmated connector assembly shall be tested in accordance with Method 302, Test Condition B of MIL-STD-202. The insulation resistance shall be measured separately between adjacent contacts, and between any external mounting hardware and the closest contacts. A minimum of 30 readings shall be taken. The measured values must meet the requirements of 3.7.5.

3.7.6 TEMPERATURE CYCLING—After testing in accordance with 3.7.6.1 connectors shall show no evidence of cracking, fracture, or other damage detrimental to the operation of the connector. The connector shall be capable of being mated and unmated at the temperature extremes.

3.7.6.1 TEMPERATURE CYCLING—The unmated connector assembly shall be subjected to temperature cycling in accordance with MIL-STD-202, Method 102, Test Condition C. The connectors shall be mated and unmated at both temperature extremes during the fifth cycle and meet the requirements of 3.7.6.

3.7.7 DIELECTRIC STRENGTH—When tested in accordance with Paragraph 3.7.7.1 there shall be no evidence of flashover or failure. Voltages for the altitudes shall be as specified in Table I.

TABLE I

Altitude	Voltage RMS
Sea Level	1,000
25,000	750
50,000	600
70,000	400
100,000	250

3.7.7.1 DIELECTRIC STRENGTH—The mated connectors shall be tested in accordance with MIL-STD-202, Method 301. Test voltage shall be applied between all adjacent contacts, and between any external mounting hardware and the closest contacts. The test voltage shall be applied at the rate of approximately 500 volts per second until the voltage specified in 3.7.7 is reached. The voltage shall be held for 60 seconds.

3.7.8 CORROSION—

(A) When tested in accordance with 3.7.8.1 (A), exposure to corrosive atmosphere shall not prevent the connector assembly from meeting the requirements of 3.7.13 "After Test" termination resistance.

(B) Crimped contacts after being subjected to the corrosion conditioning specified in 3.7.8.1 (B) shall meet the "After Test" crimp resistance specified in Paragraph 3.7.18.

3.7.8.1 CORROSION—Parts specified in A and B below shall be subjected to the corrosion test as specified in Method 101, Condition B of MIL-STD-202, including cleaning as specified after conditioning.

(A) **CONNECTOR ASSEMBLY**: After completion of the above conditioning and upon the first mating of the connector the connector assemblies shall meet the requirements of 3.7.8 (A).

(B) **Crimped Contacts**: Upon completion of conditioning the crimped contacts shall meet the "After Test" requirements of 3.7.8 (B).

3.7.9 DURABILITY—When tested in accordance with Paragraph 3.7.9.1, the connector shall show no evidence of damage. The contacts shall be checked for exposure of sub-plating and/or base metal.

3.7.9.1 DURABILITY—Connector assemblies shall be subjected to a durability test of 10,000 cycles. The mating and unmating shall be conducted at a rate of 400 to 600 cycles per hour. The test for exposure of sub-plating and/or base metal shall be checked by the nitric acid test only on the contact area. Ten percent of samples shall be tested in this manner and shall not be used for other testing. The connector after test shall meet the requirements of 3.7.9.

3.7.10 HUMIDITY—When tested in accordance with Paragraph 3.7.10.1, connectors shall meet the requirements of 3.7.5 and 3.7.7 at sea level.

3.7.10.1 HUMIDITY—The unmated connector assemblies shall be subjected to humidity testing in accordance with Method 106 of MIL-STD-202, except that Step 7b is not required. After drying 1½ to 3½ hours at room temperature the samples shall meet the requirements of Paragraph 3.7.10.

3.7.11 VIBRATION—When tested in accordance with 3.7.11.1, connectors shall not crack or break and there shall be no loosening of parts. Interruption of electrical continuity shall not be greater than 1 microsecond.

3.7.11.1 VIBRATION—The mated connector assembly shall be vibrated in accordance with Method 201, of MIL-STD-202. All contacts shall be series wired and shall be connected to a suitable testing circuit with 0.1 ampere flowing through the contacts. The connectors shall be held together by normal means. Contacts shall be monitored for continuity during and after the test and meet the requirements of 3.7.11.

3.7.12 SHOCK—During and after testing in accordance with 3.7.12.1 connectors shall show no sign of damage. Interruption of electrical continuity shall not be greater than 1 microsecond.

3.7.12.1 SHOCK—Mated connector assembly shall be tested in accordance with MIL-STD-202C, Method 205C, Condition C. The tested connectors shall meet the requirements of 3.7.12.

3.7.13 TERMINATION RESISTANCE—When tested in accordance with 3.7.13.1 the maximum millivolt drop listed in Table II shall not be exceeded.

3.7.13.1 TERMINATION RESISTANCE—The resistance shall be tested in accordance with Method 307 of MIL-STD-202, except that alternating current may be used. The test current shall be as specified in Table II. The resistance shall be measured as shown on Figure I. Ten percent, or 30 contacts, whichever is greater shall be measured and meet the requirements of 3.7.13.

TABLE II
TERMINATION RESISTANCE

Wire Size	Test Current (Amps)	Max. Potential Drop Across Y-Y—Fig. 1 (Millivolts)	
		Initial	After Test
30	1	8	15
28	1	8	15
26	3.0	13	20
24	3.0	12.0	25.0
22	5.0	13.5	30.0
20	7.5	15.0	36.0
18	10.0	20.0	38.0
16	15.0	30.0	40.0

3.7.14 CRIMP TENSILE—When tested in accordance with 3.7.14.1 the minimum tensile values shall not be less than those specified in Table III.

TABLE III
CRIMP TENSILE MIL-W-16878

Wire Size	Pounds (Minimum)
30	2
28	3
26	5
24	8
22	12.5
20	19
18	30
16	45

3.7.14.1 CRIMP TENSILE—Samples of each wire size shall be crimped to the applicable contact. Samples shall then be tested in accordance with the tensile section of MIL-T-7928. The testing device shall have a head speed of approximately one inch per minute. Ten percent of samples that have

undergone environmental tests shall be tensile tested. The measured values shall meet the requirement of 3.7.14.

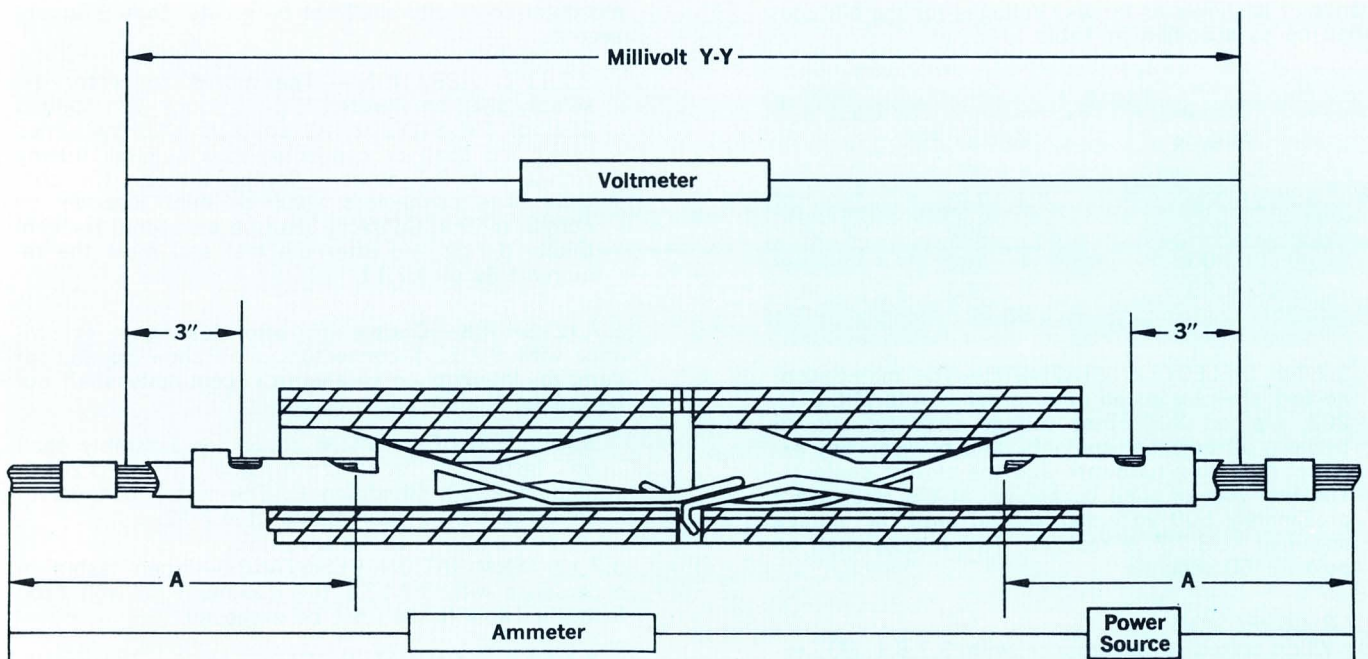
3.7.15 CONTACT RETENTION—When tested in accordance with Paragraph 3.7.15.1 the contact retention shall not be less than 8 pounds. Bending of the insulation barrel or wire barrel shall not be construed as failures.

3.7.15.1 CONTACT RETENTION—Individual contacts retained in connectors shall withstand axial loads in either direction as specified in 3.7.15. Tests shall be performed on individual contacts with all other contacts in place. The loads shall be applied uniformly at approximately one pound per second. The load shall be applied from the crimp side only, both axially and at 30° to the contact axis and passed through 360° so as to generate a 60° cone. A minimum of 25 contacts shall be tested.

3.7.16 CAPACITANCE—When tested in accordance with 3.7.16.1, the average capacitance between contacts shall be no more than 5 micro-micro-farads.

3.7.16.1 CAPACITANCE (See NOTE, Page 13)—The contacts shall be attached to the center conductor of shielded coaxial leads. The bridge shall be zero-balanced to minimize the effects of test lead capacitance. All contacts except those which are being measured shall be grounded so that the measured capacitance represents only the capacitance between two adjacent contacts. The capacitance shall then be measured at a test frequency of one megacycle (1 mc.) by the direct measurement technique. A minimum of 5 separate samples shall be tested in an unmatred block and meet the requirements of 3.7.16.

3.7.17 CURRENT CYCLING—Crimped terminals when tested in accordance with 3.7.17.1 shall not have a resistance that exceeds the "After Test Resistance" specified in Table IV.



A = 3 foot minimum length of continuous lead (for heat dissipation).
 Y-Y = Measure across the contact wire crimp. Insulation may be cut back for making this measurement.
 NOTE: The resistance of 3" of wire shall be measured and that amount deducted from the total value obtained so as to show only the resistance of 2 crimps and a friction contact.

FIGURE 1 — MEASURING TERMINATION RESISTANCE

3.7.17.1 CURRENT CYCLING — Contacts specified in 3.7.2.2 shall be subjected to 50 current cycles. Each cycle shall consist of 30 minutes at 125 percent of the test current specified in Table IV, followed by 15 minutes at no load. Voltage drop across each crimped terminal shall be measured after the terminals have returned to ambient temperature using the test current specified in Table IV. The resistance shall be measured at the points shown in Figure 2 and meet the requirements of 3.7.17.

TABLE IV
CRIMP RESISTANCE
(Milliohms)

Wire Size	Test Current (Amp)	Maximum Milliohms (Excluding 3" Wire)	
		Initial	After Test
30	1	5.8	9.3
28	1	5.5	9.0
26	3	5	8.5
24	3	4	6.0
22	5	3	5.0
20	7.5	2	3.0
18	10	1.5	2.2
16	10	1.0	1.6

3.7.18 CRIMP RESISTANCE—When crimped terminals are tested in accordance with 3.7.18.1, the crimp resistance shall not exceed the values specified in Table IV.

3.7.18.1 CRIMP RESISTANCE — The voltage drop across each crimped terminal (See 3.7.2.2) shall be measured using the test current shown in Table IV. Voltage drop readings shall be measured at the points shown in Figure 2. The measurements shall be taken after the temperature of the wire has stabilized and the readings shall meet the requirements of 3.7.18.

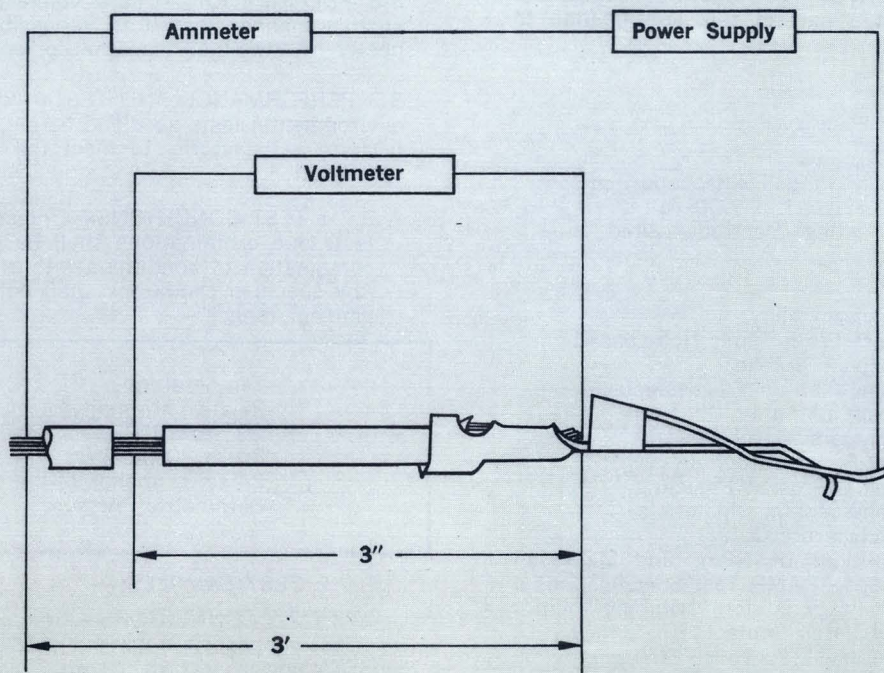
TABLE V

Requirement	Requirement Paragraph	Group (2 Samples Each Group)	
		A	B
Examination of Product	3.7.4	X	X
Insulation Resistance	3.7.5	X	X
Temperature Cycling	3.7.6	X	
Dielectric Strength	3.7.7	X	
Termination Resistance	3.7.13	X	
Humidity	3.7.10	X	X
Vibration	3.7.11	X	
Shock	3.7.12	X	
Durability	3.7.9		X
Corrosion	3.7.8 (A)		X
Contact Retention	3.7.15	X	X

NOTE: This connector can be used where capacitance is a prime concern. To verify the requirements of Paragraph 3.7.16 would require special wiring of the test sample and therefore is not included in the Qualification Test. For documentary test data contact Product Engineering, AMP Incorporated.

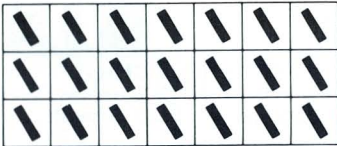
TABLE VI
CONTACT CRIMP

Test Sequence	Requirement Para.	Qualification Testing 25 Each Wire Size
Examination of Product	3.7.4	X
Initial Crimp Resistance	3.7.18	X
Current Cycling	3.7.17	X
Corrosion	3.7.8 (B)	X
Crimp Tensile	3.7.14	X



NOTE: The resistance of 3" of wire shall be measured and that amount deducted from the total value of crimp resistance. This is to show only the crimp resistance.

FIGURE 2 — CRIMP RESISTANCE QUALIFICATION TESTING



DUALATCH

PRODUCT SPECIFICATION

(No. 108-10,006)

MINIATURE DUALATCH CONNECTORS AND CONTACTS

ELECTRICAL, RECTANGULAR, GENERAL PURPOSE —65°C. to +125°C. AMBIENT TEMPERATURE

1. SCOPE:

1.1 SCOPE—This specification covers the general performance requirements for miniature multi-contact DUALATCH connectors.

1.2 STYLE—This connector is available in the styles listed below.

1.2.1 STYLE 1—This is a rectangular connector which has lugs on the sides of the inserts. These lugs prevent damaging the contacts through handling. Polarizing of the mating blocks offer numerous keying arrangements.

1.2.2 STYLE 2—This is a modular connector which can be furnished with the Miniature DUALATCH inserts. The inserts are racked together by means of a side rail.

1.2.3 STYLE 3—This is a rectangular connector equipped with a die cast frame and drawn aluminum hood. The connector is engaged and separated by use of eccentric latches.

1.3 WIRE RANGE—This connector and contacts will accommodate the wire ranges shown in Table III.

2. APPLICABLE DOCUMENTS: The following documents and/or specifications form a part of this specification to the extent specified herein:

MILITARY:

MIL-G-45204	Gold Plating; Electrodeposited
MIL-W-16878D	Wire; Electrical, 600 volt
MIL-T-10727A	Tin Plating; Electrodeposited

FEDERAL:

QQ-A-365C	Aluminum Alloy
QQ-B-613B	Brass; Leaded and Non-Leaded
QQ-B-750	Phosphor Bronze
QQ-N-290	Nickel Plating; Electrodeposited
QQ-P-416	Plating, Cadmium (Electrodeposited)
QQ-S-633A	Steel Bars; Carbon
QQ-S-640	Steel Plate; Carbon
QQ-S-763C	Steel; Corrosion Resisting
LP 393A	Plastic Molding Materials, Polycarbonate

AMP 109-1	Definitions of Terms and Methods used in AMP Test Specifications
AMP E.S. 8-6-3	Specifications for Crimping Mini- Dualatch Contacts

STANDARDS:

MIL-STD-202C	Test Methods for Electronic Component Parts
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3. REQUIREMENTS:

3.1 MATERIALS—Materials shall be as specified herein. If a substitute material is used it must meet all the performance requirements of this specification.

3.2 CONNECTOR BODY MATERIAL—Dielectric material for this connector shall be polycarbonate resin which conforms to LP-393A.

3.3 CONTACTS —

3.3.1 CONTACT MATERIAL—Contacts shall be made of a copper alloy which conforms to QQ-B-613B or QQ-B-750.

3.3.2 CONTACT PLATING—Contacts shall be plated to the type and thickness specified on the product drawing. Gold plating shall conform to MIL-G-45204, nickel plating shall conform to QQ-N-290, and tin plating shall conform to MIL-T-10727A.

3.4 OPERATING TEMPERATURE — This connector shall have a maximum operating temperature of plus 125°C. and a minimum operating temperature of minus 65°C. to include current heating effect.

3.5 CONTACT CURRENT RATING — The maximum current rating for one contact shall be 7.5 amps.

3.6 POLARIZATION—These connectors are polarized in such a manner that it is impossible to mate the connector in any other than the correct manner.

3.7 PERFORMANCE AND TEST—When subjected to the environmental tests specified herein, the connectors shall perform satisfactorily to meet the requirements of this specification.

3.7.1 TEST CONDITIONS—Unless otherwise specified, tests and examinations shall be conducted under any combination of conditions within the following ranges. Any specified conditions shall not affect the other two ambient ranges.

Temperature:
Relative Humidity:
20° to 30°C.
30 to 80 per cent
24 to 31 inches of mercury
Barometric Pressure

3.7.2 TEST SAMPLES —

3.7.2.1 CONNECTORS—Completely wired connector assemblies shall be subjected to the Qualification Testing in accordance with Table VII. The terminals shall be crimped to wire conforming to MIL-W-16878, Type E, Size 20. The crimped contacts shall be crimped in accordance with Product Specification E.S. 8-6-3, and subjected to Examination of Product, 3.7.4, prior to assembly into the connector.

3.7.2.2 CONTACTS FOR CRIMP TESTS—Twenty-five contacts for each wire size specified in Table III shall be crimped to 3 foot lengths of MIL-W-16878, Type B wire using appropriate application tooling. The crimped contacts shall be crimped in accordance with Product Specification E.S. 8-6-3. The samples shall be subjected to Examination of Product, 3.7.4. The samples shall then be subjected to the tests specified in Table VIII.

3.7.3 TEST REPORTS—All testing results shall be recorded in the form of actual measured values when possible, to provide the basis for statistical evaluation and summary of product performance. A formal report containing test data analysis and the product performance summary shall be issued at the completion of the qualification test program.

3.7.4 EXAMINATION OF PRODUCT—Connectors shall meet the requirements of the applicable product drawings and performance requirements for the individual styles specified in this specification. There shall be no evidence of poor molding or fabricating, damaged or improperly assembled contacts, peeling or chipping of the plating and finish, parting lines of mold which would indicate flash and improper molding techniques, nicks and burrs of metal part surfaces and no post molding warpage of connectors.

3.7.5 INSULATION RESISTANCE—When tested in accordance with 3.7.5.1 the insulation resistance shall not be less than 10,000 megohms.

3.7.5.1 INSULATION RESISTANCE—The unmated connectors shall be tested in accordance with Method 302, Test Condition B of MIL-STD-202. The insulation resistance shall be measured separately between adjacent contacts, and between the body and any external hardware and the contact closest to the hardware. Five readings minimum shall be taken and meet the requirements of 3.7.5.

3.7.6 TEMPERATURE CYCLING—After testing in accordance with 3.7.6.1 connectors shall show no evidence of cracking, fracture, or other damage detrimental to the operation of the connector and the connector shall be capable of being mated and unmated at the temperature extremes.

3.7.6.1 TEMPERATURE CYCLING—The unmated connector assembly shall be subjected to temperature cycling in accordance with MIL-STD-202, Method 102, Test Condition C. The connectors shall be mated and unmated at both temperature extremes during the fifth cycle and meet the requirements of 3.7.6.

3.7.7 DIELECTRIC STRENGTH—When tested in accordance with Paragraph 3.7.7.1 there shall be no evidence of flashover, corona, or breakdown when the voltages specified in Table I (below) are applied for one minute.

TABLE I

Altitude	Voltage RMS
Sea Level	1,000
25,000	750
50,000	600
70,000	400
100,000	250

3.7.7.1 DIELECTRIC STRENGTH—The mated connectors shall be tested in accordance with MIL-STD-202, Method 301. Test voltage shall be applied between all adjacent contacts, and between the external mounting hardware and the contacts closest

to it. The test voltage shall be applied at the rate of approximately 500 volts per second until the voltage specified in 3.7.7 is reached.

3.7.8 CORROSION —

(A) When tested in accordance with 3.7.8.1 (A), exposure to corrosive atmosphere shall not prevent the connector assembly from meeting the requirements of 3.7.18 (Low Level Resistance) and 3.7.13 (After Test Contact Resistance) and 3.7.17 (Connector Mating and Unmating Forces) respectively.

(B) Crimped contacts after being subjected to the corrosion conditioning specified in 3.7.8.1 (B) shall meet the "After Test" termination resistance specified in Paragraph 3.7.19.

NOTE: These tests apply only to standard gold plated parts; no selective plated parts or tin plated parts.

3.7.8.1 CORROSION—Parts specified in A and B below shall be subjected to the corrosion test as specified in Method 101, Condition B of MIL-STD-202. (A) Unmated Connector Assembly: Upon completion of conditioning and upon the first mating of the connector, the connector assemblies shall meet the requirements of 3.7.8 (A).

(B) Crimped Contacts: Upon completion of conditioning the crimped contacts shall meet the "After Test" requirements of 3.7.8 (B) when measured as shown in Figure 2.

3.7.9 DURABILITY—When tested in accordance with 3.7.9.1 the contacts shall meet the resistance requirements of 3.7.13. There shall be no exposure of sub-plating and/or base metal.

3.7.9.1 DURABILITY—Connector assemblies shall be subjected to the number of cycles for mating and unmating specified in Table II. The cycling shall be performed at a rate of 7-10 cycles per minute. After completion of the cycling a random sample of ten percent of the gold plated contacts shall be tested for exposure of sub-plating and/or base metal in the contact area. Concentrated nitric acid diluted to a 1:1 ratio of water shall be used. When the contact area of the terminal is exposed to the nitric acid there shall be no bubbling when observed under 10× magnification. The parts shall also meet the electrical requirements of 3.7.9. Tin plated parts shall have no base metal visible when examined under a 10× magnification. The tin plated parts shall also meet the electrical requirements of 3.7.9.

TABLE II

Contact Plating	No. Cycles
Tin	500
Std. Gold	10,000
Commercial Gold	2,000

3.7.10 HUMIDITY—Upon completion of testing in accordance with Paragraph 3.7.10.1, connectors shall meet the requirements of 3.7.5 and 3.7.7 at sea level.

3.7.10.1 HUMIDITY—The unmated connector assemblies shall be subjected to humidity testing in accordance with Method 106 of MIL-STD-202, except that Step 7b is not required. Upon completion of humidity exposure the samples shall be removed from the chamber and dried at room temperature for a period of 1 to 3 hours. Upon completion of humidity testing the samples shall meet the requirements of Paragraph 3.7.10.

3.7.11 VIBRATION—When tested in accordance with 3.7.11.1, connectors shall not crack or break and there shall be no loosening of parts. Interruption of electrical continuity shall not be greater than 1 microsecond.

3.7.11.1 VIBRATION — The mated connector assembly shall be vibrated in accordance with Method 204, Condition B of MIL-STD-202. All contacts shall be series wired and shall be connected to a suitable testing circuit with 0.1 ampere flowing through the contacts. The connectors shall be held together by normal locking means. Contacts shall be monitored for continuity during and after the test. Following this test, the contacts shall meet the requirements of 3.7.11.

3.7.12 SHOCK — When tested in accordance with 3.7.12.1, connectors shall not crack, break nor exhibit loosening of parts. Interruption of electrical continuity shall not be greater than 1 microsecond.

3.7.12.1 SHOCK—The mated connector assembly shall be subjected to the shock test in accordance with Method 205, Condition C of MIL-STD-202. All contacts shall be series wired and shall be connected to a suitable testing circuit with 0.1 ampere flowing through the contacts. Following this test the contacts shall meet the requirements of 3.7.12.

3.7.13 TERMINATION RESISTANCE—When tested in accordance with 3.7.13.1 the maximum millivolt drop listed in Table III shall not be exceeded.

3.7.13.1 TERMINATION RESISTANCE — The resistance shall be measured in accordance with Method 307 of MIL-STD-202 except that alternating current may be used. The test current used shall be as specified in Table III. The resistance shall be measured at points shown on Figure 1 and meet the requirements of 3.7.13.

TABLE III

TERMINATION RESISTANCE					
Wire Size	Test Current Amps	Max. Millivolt Drop Across Y-Y Fig. 1			
		Brass		Phos. Bronze	
		Initial	After Test	Initial	After Test
32	1	8	15	9	17
30	1	8	15	9	17
28	1	8	15	9	17
26	3	13	20	15	23
24	3	13	20	15	23
22	5	18	25	21	30
20	7.5	22.5	30	26	35
18	7.5	22.5	30	26	35
Solder Tab	7.5	22.5	30	26	35

3.7.14 CRIMP TENSILE—When tested in accordance with 3.7.14.1 the minimum tensile values shall not be less than those specified in Table IV.

3.7.14.1 CRIMP TENSILE — Samples of each wire size shall be crimped to the applicable contact. Samples shall then be tested in accordance with the tensile section of MIL-T-7928. The testing device shall have a head speed of approximately one inch per minute. Ten percent of samples that have undergone environmental tests shall be tensile tested and measured values obtained for these tests shall not be less than those specified in Table IV.

TABLE IV
CRIMP TENSILE

Wire Size	Pounds (Minimum)
32	1
30	2
28	3
26	5
24	8
22	12.5
20	19
18	30

3.7.15 CONTACT RETENTION — When tested in accordance with Paragraph 3.7.15.1 the contact retention shall not be less than 5 pounds.

3.7.15.1 CONTACT RETENTION — Individual contacts retained in connectors shall withstand axial loads in either direction as specified in 3.7.15. Tests shall be performed on individual contacts with all other contacts in place. The loads shall be applied uniformly at approximately 1 pound per second. The load shall then be applied from the crimp side only both axially and at 30° to the contact axis and passed through 360° so as to generate a 60° cone. A minimum of 25 contacts shall be tested.

3.7.16 CAPACITANCE (See NOTE Page 10) — When tested in accordance with 3.7.16.1 the average capacitance between contacts shall be no more than 1.0 micro-micro-farad.

3.7.16.1 CAPACITANCE — The contacts shall be attached to the center conductor of shielded coaxial leads. The bridge shall be zero-balanced to minimize the effects of test lead capacitance. All contacts except those which are being measured shall be grounded so that the measured capacitance represents only the capacitance between two adjacent contacts. The capacitance shall then be measured at a test frequency of one megacycle by the direct measurement technique. A minimum of 5 separate samples shall be tested in an unmated block. The capacitance shall not exceed the value specified in 3.7.16.

3.7.17 CONNECTOR MATING AND UNMATING FORCE—When tested in accordance with Paragraph 3.7.17.1 the maximum mating and unmating force per contact shall be as specified in Table V. The force per contact is determined by dividing the total mating force of the loaded connector by the total number of contacts in the connector.

TABLE V

CONNECTOR MATING AND UNMATING FORCE MAXIMUM FORCE PER CONTACT IN POUNDS	
Brass	Phos. Bronze
.2	.4

3.7.17.1 CONNECTOR MATING AND UNMATING FORCES — Completely wired connectors shall be tested for mating and unmating forces. The connectors shall be mounted in a suitable fixture without locking hardware in effect and the force required to mate and unmate the connectors recorded. The force required to mate and unmate the complete connector shall not exceed the values specified in contact in 3.7.17.

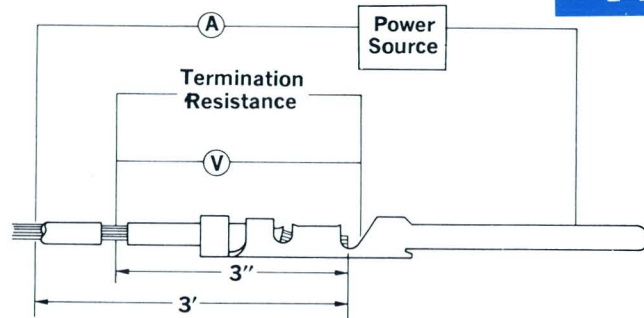
3.7.18 LOW LEVEL CONTACT RESISTANCE — When tested in accordance with Paragraph 3.7.18.1 the resistance values obtained shall meet the following dry circuits requirements. The resistance measured at 10 milliamps shall not differ more than $\pm 25\%$ when compared to resistance at rated current.

3.7.18.1 LOW LEVEL CONTACT RESISTANCE — When tested in accordance with AMP Test Specification 109-6 the measured resistance shall meet the requirements of 3.7.18. The resistance shall be measured with an open circuit voltage of 5 millivolts (10 milliamps).

3.7.19 CRIMP RESISTANCE — When crimped contacts are tested in accordance with 3.7.19.1, the crimp resistance shall not exceed the values specified in Table VI.

3.7.19.1 CRIMP RESISTANCE — The voltage drop across each crimped terminal (See 3.7.2.2) shall be measured at the test current shown in Table VI. Voltage drop readings shall be taken as shown in Figure 2. The measurements shall be taken after the temperature of the wire has stabilized and the readings shall meet the requirements of 3.7.19.

3.7.20 CURRENT CYCLING — Crimped contacts when tested in accordance with 3.7.20.1 shall not have a resistance that exceeds the "After Test Resistance" specified in Table VI.



NOTE: The resistance of 3 inches of wire shall be measured and that amount deducted from the total value, so as to show only the crimp resistance.

FIGURE 2 — CRIMP RESISTANCE

3.7.20.1 CURRENT CYCLING — Contacts specified in 3.7.2.2 shall be subjected to 50 current cycles. Each cycle shall consist of 30 minutes at 125 percent of the test current specified in Table VI, followed by 15 minutes at no load. Voltage drop across each crimped terminal shall be measured at the test current specified in Table I, after the contacts have returned to ambient temperature. The resistance values shall be measured as shown in Figure 2 and meet the requirements of 3.7.20.

TABLE VI

CRIMP RESISTANCE Milliohms			
Wire Size	Test Current (Amp)	Maximum Milliohms (Excluding 2" Wire)	
		Initial	After Test
32	1	6	9.5
30	1	5.8	9.3
28	1	5.5	9.0
26	3	5	8.5
24	3	4	6.0
22	5	3	5.0
20	7.5	2	3.0
18	7.5	1.5	2.2

TABLE VII

CONNECTOR QUALIFICATION TESTING			
Test Sequence	Requirement Paragraph	Group (2 Samples Each)	
		A	B
Examination of Product	3.7.4	X	X
Insulation Resistance	3.7.5	X	
Temperature Cycling	3.7.6	X	
Dielectric	3.7.7	X	
Termination Resistance	3.7.13	X	
**Connector Mating and Unmating Force	3.7.17	X	
Humidity	3.7.10	X	X*
Vibration	3.7.11	X	
Shock	3.7.12	X	
Durability	3.7.9	X	
***Corrosion	3.7.8(A)	X	X
**Connector Mating and Unmating Force	3.7.17	X	X
Contact Retention	3.7.15	X	X

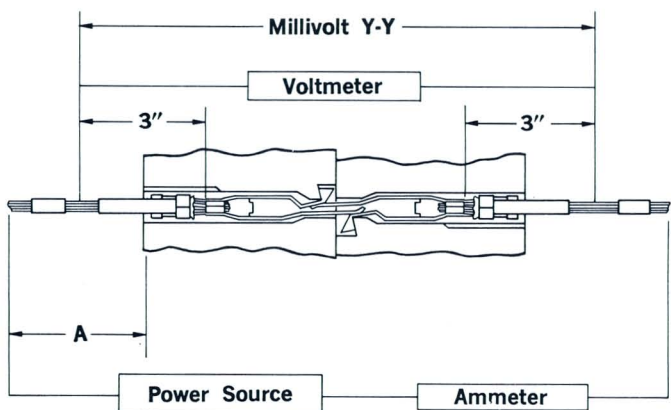
NOTE: This connector can be used where capacitance is a prime concern. To verify the requirements of Paragraph 3.7.16 would require special wiring of the test sample and therefore is not included in the Qualification Test. For documentary test data contact Product Engineering, AMP Incorporated.

*This humidity conditioning is required to evaluate any affects, e.g., the growth of films or corrosion products. Do not perform Dielectric or Insulation Resistance measurements specified in Paragraph 3.7.10. Applying voltages greater than 50 Millivolts will destroy films that would appear as high resistance or opens in millivolt or lower ranges.

**Does not apply to Style III connectors.
***See note under Paragraph 3.7.8.

TABLE VIII

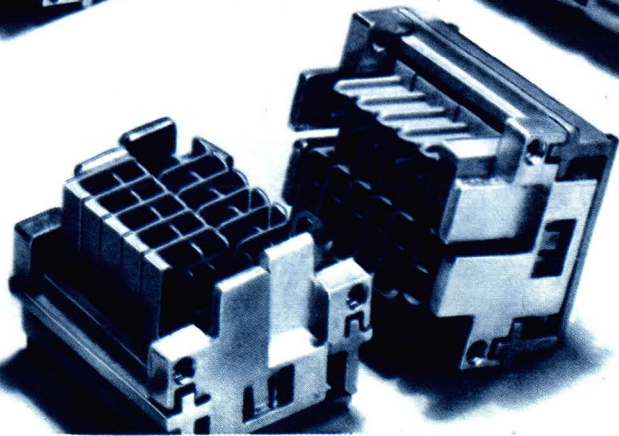
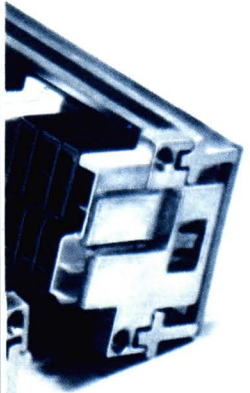
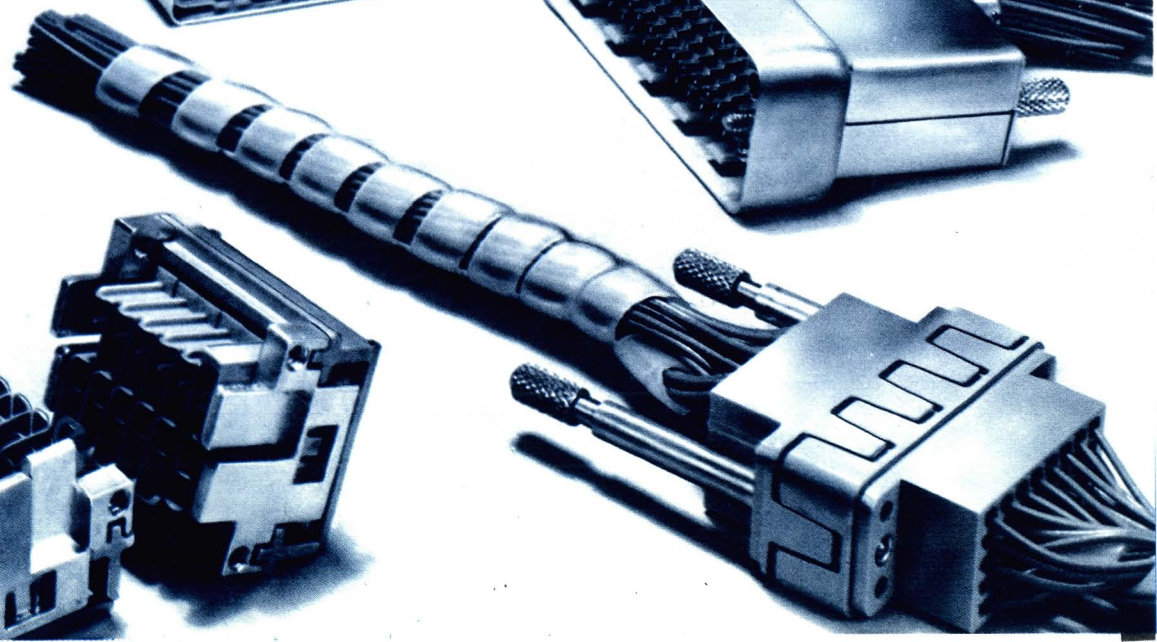
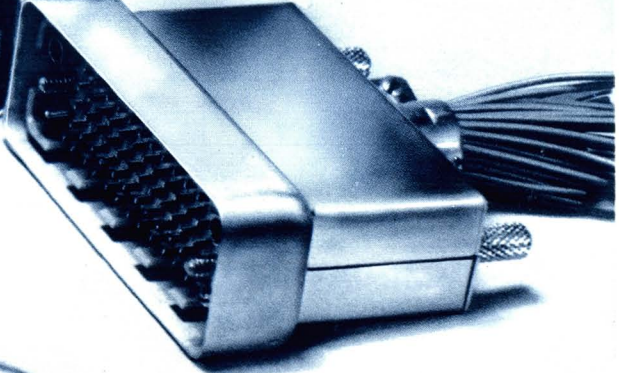
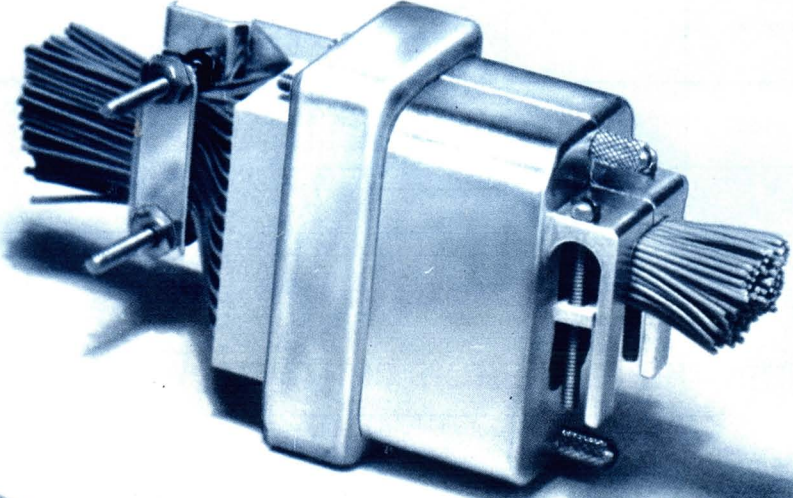
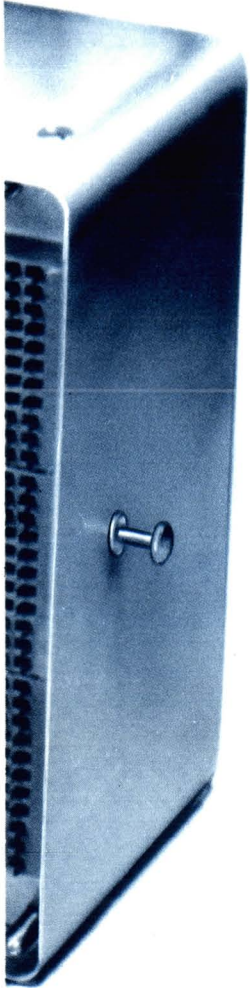
CONTACT CRIMP QUALIFICATION TESTING		
Test Sequence	Requirement Paragraph	25 Each Wire Size
Examination of Product	3.7.4	X
Termination Resistance	3.7.19	X
Current Cycling	3.7.20	X
Corrosion	3.7.8 (B)	X
Crimp Tensile	3.7.14	X

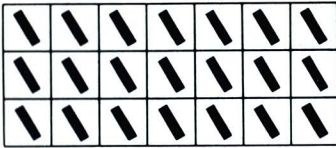


A = 3 foot minimum length of continuous lead (for heat dissipation).
Y-Y = Measure across the contact wire crimp. Insulation may be cut back for making this measurement.

NOTE: The resistance of 6 inches of wire shall be measured and that amount deducted from the total value obtained so as to show only the resistance of 2 crimps and a friction contact.

FIGURE 1 — MEASURING TERMINATION RESISTANCE

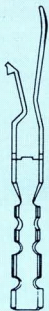




MINIATURE DUALATCH CONTACTS

DUALATCH

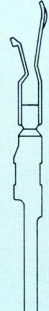
CRIMP TYPE



WIRE SIZE RANGE	INS. DIA. RANGE	PART NUMBERS				PLATING	HAND TOOL
		BRASS MATERIAL		PHOSPHOR BRONZE MATERIAL			
		LOOSE PIECE	STRIP	LOOSE PIECE	STRIP		
40-28	.040-.060	66146-2	66121-2	66278-2	66274-2	Gold ¹	90071 90100
		66146-3	66121-3	66278-3	66274-3	Tin	
		66146-5	66121-5	66278-5	66274-5	Gold ²	
		66146-6	66121-6	66278-6	66274-6	Gold ³	
26-24	.040-.060	66068-2	66061-2	66277-2	66273-2	Gold ¹	90071 90039-2
		66068-3	66061-3	66277-3	66273-3	Tin	
		66068-5	66061-5	66277-5	66273-5	Gold ²	
		66068-6	66061-6	66277-6	66273-6	Gold ³	
		—	—	66277-9	66273-9	Gold ⁴	
24-20	.048-.071	66135-2	66134-2	66276-2	66272-2	Gold ¹	90071 90100
		66135-3	66134-3	66276-3	66272-3	Tin	
		66135-5	66134-5	66276-5	66272-5	Gold ²	
		66135-6	66134-6	66276-6	66272-6	Gold ³	
18	.090 Max.	66142-2	66138-2	66275-2	66271-2	Gold ¹	90100
		66142-3	66138-3	66275-3	66271-3	Tin	
		66142-5	66138-5	66275-5	66271-5	Gold ²	
		66142-6	66138-6	66275-6	66271-6	Gold ³	

- ¹.000030 gold over nickel.
².000020 gold on critical areas. Gold flash on remainder of part.
³.000030 gold on critical areas. Gold flash on remainder of part.
⁴.000030 gold with graphite coating on contact areas.


MINIATURE DUALATCH CONTACTS WITH .031 x .062 POST



PART NUMBERS		PLATING	POST LENGTH EXTENDING BEYOND BLOCK	NUMBER OF CONNECTIONS PER POST*
BRASS MATERIAL	PHOSPHOR BRONZE MATERIAL			
66234-1	2-66234-1	Gold ¹	.375	1
66234-2	2-66234-2	Gold ¹	.575	2
66234-3	2-66234-3	Gold ¹	.775	3
66234-7	2-66234-7	Gold ²	.375	1
66234-8	2-66234-8	Gold ²	.575	2
66234-9	2-66234-9	Gold ²	.775	3

- *This is the maximum number of TERMI-POINT clips with insulation support to be applied per post. When using TERMI-POINT clips without insulation support or wrap type connections, this figure can usually be increased by one.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.
².00003 gold over nickel.

MINIATURE DUALATCH CONTACTS WITH .025 x .025 POST



PART NUMBERS		PLATING	POST LENGTH EXTENDING BEYOND BLOCK	NUMBER OF CONNECTIONS PER POST*
BRASS MATERIAL	PHOSPHOR BRONZE MATERIAL			
66292-3	2-66292-3	Gold ¹	.465	3
66292-6	2-66292-6	Tin	.465	3
66292-9	2-66292-9	Gold ²	.465	3
—	4-66292-8	Gold ³	.280	1

- *The Miniature AMPMODU Contact may be used if a rear extractable or temporary connection to the post is desired.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.
².00003 gold over nickel.
³.00003 gold over nickel with graphite coating on contact areas.

MINIATURE DUALATCH CONTACTS WITH .045 x .045 POST



PART NUMBERS BRASS MATERIAL	PLATING	POST LENGTH EXTENDING BEYOND BLOCK	NUMBER OF CONNECTIONS PER POST
582468-2	Gold ¹ †	.600	2
582468-3	Gold ¹ †	.750	3
582468-4	Gold ¹ †	1.000	4
582468-5	Gold ² †	.300	1
582468-6	Gold ² †	.600	2
582468-7	Gold ² †	.750	3
582468-8	Gold ² †	1.000	4
582468-9	Tin †	.300	1
1-582468-0	Tin †	.600	2
1-582468-1	Tin †	.750	3
1-582468-2	Tin †	1.000	4

¹.00003 gold on critical areas—gold flash on remainder of part. All gold over nickel.
².00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.
 †Post Material: Tin Plated Brass.

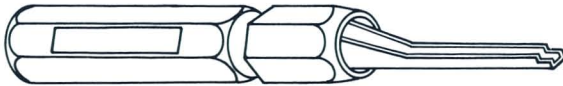
MINIATURE DUALATCH CONTACTS WITH SOLDER TAB



DESCRIPTION	PART NUMBER	MATERIAL	PLATING	LENGTH— EXTENDING BEYOND BLOCK
EYELET TAB	582467-1	Brass	Gold ¹	.300
	582467-2		Gold ²	

¹.00003 gold over nickel (Tab on 582467 is gold flash over nickel).
².00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.

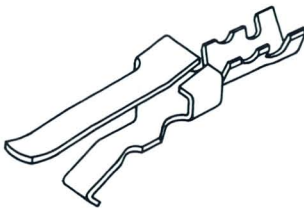
TOOLS FOR ALL MINIATURE DUALATCH CONTACTS



INSERTION TOOL 91022-1



EXTRACTION TOOL 91003-1

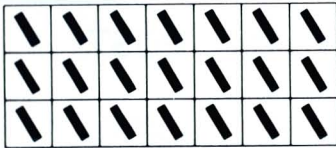


STANDARD DUALATCH CONTACTS

CRIMP TYPE

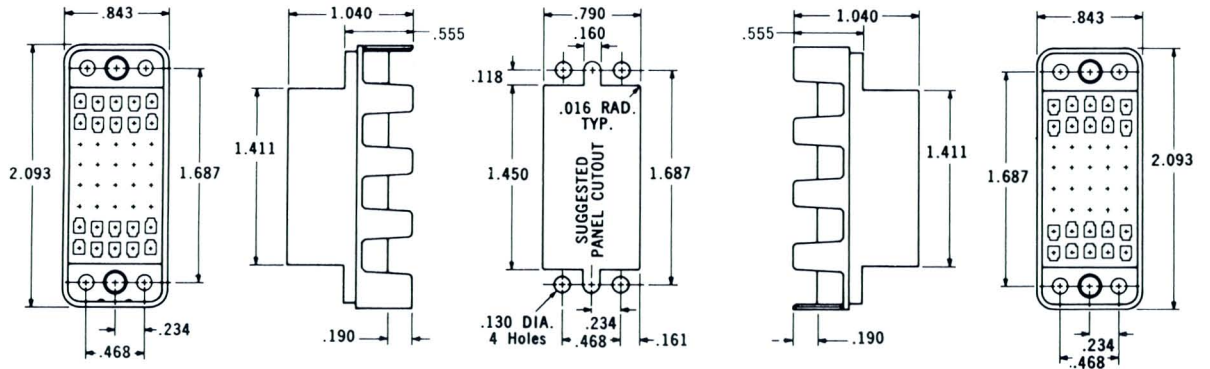
WIRE SIZE RANGE	INS. DIA. RANGE	PART NUMBERS		PLATING	HAND TOOL
		BRASS MATERIAL			
		STRIP	LOOSE PIECE		
30-26	.028-.103	66338-4	66339-4	Gold ¹	90213-1
24-20	.048-.071	42561-4	42798-4	Gold ¹	90109
18-16	.080-.110	42928-4	60065-2	Gold ¹	90109

¹.00003 gold on critical areas—gold flash on remainder of part. All gold over nickel.

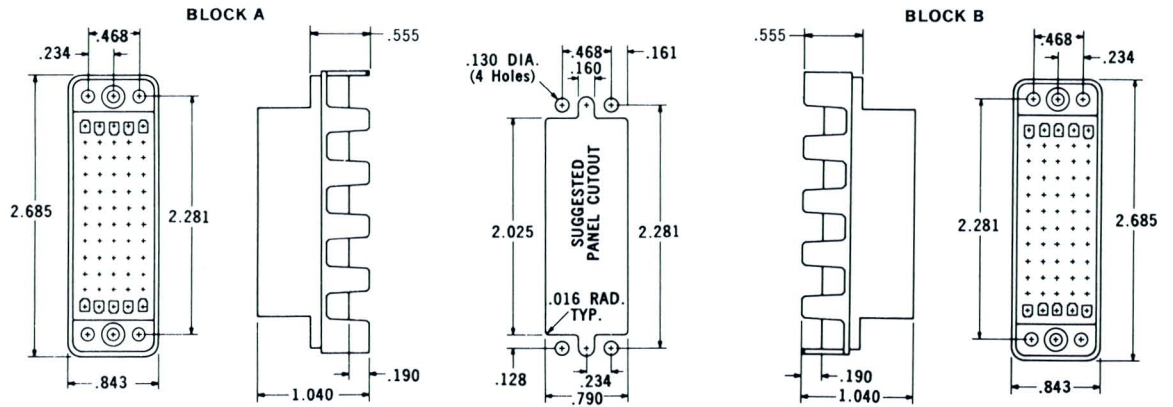


DUALATCH MINIATURE DUALATCH CONNECTORS

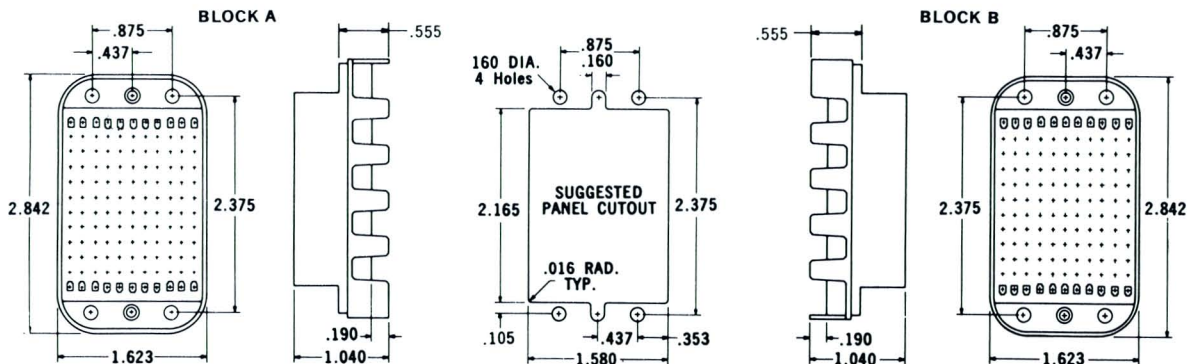
40



60



132



NO. OF CONTACTS	BLOCK WILL ACCOMMODATE THESE VARIATIONS OF CONTACTS	FASTENING DEVICE ACCOMMODATION	BLOCK A		BLOCK B	
			GREY POLYCARBONATE	BLACK POLYCARBONATE	GREY POLYCARBONATE	BLACK POLYCARBONATE
40	Miniature Contacts—Crimp, Eyelet, and Post Types	With Insert Bushings	582271-1	582271-5	582272-1	582272-5
		Without Insert Bushings	582271-2	582271-6	582272-2	582272-6
60	Miniature Contacts—Crimp, Eyelet, and Post Types	With Insert Bushings	582458-1	582458-7	582459-1	582459-7
		Without Insert Bushings	582458-2	582458-8	582459-2	582459-8
132	Miniature Contacts—Crimp, Eyelet, and Post Types	With Insert Bushings	582435-1	582435-6	582436-1	582436-6
		Without Insert Bushings	582435-2	582435-7	582436-2	582436-7

PRE-ASSEMBLED MINIATURE DUALATCH CONNECTORS

40
POSITION
BLOCK
.031 x .062
POSTS
(Block Material—
Grey Polycarbonate)

PRE-ASSEMBLED PART NO.		ASSEMBLED FROM		CONTACT MATERIAL & PLATING	POST LENGTH EXTENDING BEYOND BLOCK*	MATES WITH ANY ASSEMBLY USING BLOCK NO.
40 CONTACTS INSERTED	24 CONTACTS INSERTED**	BLOCK NO.	CONTACT NO.			
583024-1	1-583024-3	582271-1	2-66234-1	Phosphor Bronze Gold ¹	.375 (1)	582272-1
583024-2	1-583024-4	582271-1	2-66234-2		.575 (2)	582272-1
583024-3	1-583024-5	582271-1	2-66234-3		.775 (3)	582272-1
583024-4	1-583024-6	582272-1	2-66234-1		.375 (1)	582271-1
583024-5	1-583024-7	582272-1	2-66234-2		.575 (2)	582271-1
583024-6	1-583024-8	582272-1	2-66234-3		.775 (3)	582271-1

*Numbers in parentheses indicate the maximum number of TERMI-POINT clips with insulation support accommodated by a post. When using TERMI-POINT clips without insulation support or wrap-type connections, this figure can usually be increased by one.
 **Contacts in every other row—This is the recommended approach to allow room for termination tooling and wire dressing.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.

40
POSITION
BLOCK
.025 x .025
POSTS
(Block Material—
Grey Polycarbonate)

PRE-ASSEMBLED PART NO.		ASSEMBLED FROM		CONTACT MATERIAL & PLATING	POST LENGTH EXTENDING BEYOND BLOCK*	MATES WITH ANY ASSEMBLY USING BLOCK NO.
40 CONTACTS INSERTED		BLOCK NO.	CONTACT NO.			
583047-3		582271-1	2-66292-3	Phosphor Bronze Gold ¹	.465	582272-1
583047-6		582272-1	2-66292-3		.465	582271-1
583047-9		582271-1	2-66292-6	Phosphor Bronze Tin	.465	582272-1
1-583047-2		582272-1	2-66292-6		.465	582271-1

*The miniature AMPMODU contact may be used if a rear disconnect or temporary connection to the post is desired.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.

60
POSITION
BLOCK
.031 x .062
POSTS
(Block Material—
Grey Polycarbonate)

PRE-ASSEMBLED PART NO.		ASSEMBLED FROM		CONTACT MATERIAL & PLATING	POST LENGTH EXTENDING BEYOND BLOCK*	MATES WITH ANY ASSEMBLY USING BLOCK NO.
60 CONTACTS INSERTED	36 CONTACTS INSERTED**	BLOCK NO.	CONTACT NO.			
583025-1	1-583025-3	582458-1	2-66234-1	Phosphor Bronze Gold ¹	.375 (1)	582459-1
583025-2	1-583025-4	582458-1	2-66234-2		.575 (2)	582459-1
583025-3	1-583025-5	582458-1	2-66234-3		.775 (3)	582459-1
583025-4	1-583025-6	582459-1	2-66234-1		.375 (1)	582458-1
583025-5	1-583025-7	582459-1	2-66234-2		.575 (2)	582458-1
583025-6	1-583025-8	582459-1	2-66234-3		.775 (3)	582458-1

*Numbers in parentheses indicate the maximum number of TERMI-POINT clips with insulation support accommodated by a post. When using TERMI-POINT clips without insulation support or wrap-type connections, this figure can usually be increased by one.
 **Contacts in every other row—This is the recommended approach to allow room for termination tooling and wire dressing.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.

60
POSITION
BLOCK
.025 x .025
POSTS
(Block Material—
Grey Polycarbonate)

PRE-ASSEMBLED PART NO.		ASSEMBLED FROM		CONTACT MATERIAL & PLATING	POST LENGTH EXTENDING BEYOND BLOCK*	MATES WITH ANY ASSEMBLY USING BLOCK NO.
60 CONTACTS INSERTED		BLOCK NO.	CONTACT NO.			
583048-3		582458-1	2-66292-3	Phosphor Bronze Gold ¹	.465	582459-1
583048-6		582459-1	2-66292-3		.465	582458-1
583048-9		582458-1	2-66292-6	Phosphor Bronze Tin	.465	582459-1
1-583048-2		582459-1	2-66292-6		.465	582458-1

*The miniature AMPMODU contact may be used if a rear disconnect or temporary connection to the post is desired.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.

132
POSITION
BLOCK
.031 x .062
POSTS
(Block Material—
Grey Polycarbonate)

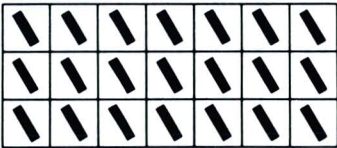
PRE-ASSEMBLED PART NO.		ASSEMBLED FROM		CONTACT MATERIAL & PLATING	POST LENGTH EXTENDING BEYOND BLOCK*	MATES WITH ANY ASSEMBLY USING BLOCK NO.
132 CONTACTS INSERTED	72 CONTACTS INSERTED**	BLOCK NO.	CONTACT NO.			
583026-1	1-583026-3	582435-1	2-66234-1	Phosphor Bronze Gold ¹	.375 (1)	582436-1
583026-2	1-583026-4	582435-1	2-66234-2		.575 (2)	582436-1
583026-3	1-583026-5	582435-1	2-66234-3		.775 (3)	582436-1
583026-4	1-583026-6	582436-1	2-66234-1		.375 (1)	582435-1
583026-5	1-583026-7	582436-1	2-66234-2		.575 (2)	582435-1
583026-6	1-583026-8	582436-1	2-66234-3		.775 (3)	582435-1

*Numbers in parentheses indicate the maximum number of TERMI-POINT clips with insulation support accommodated by a post. When using TERMI-POINT clips without insulation support or wrap-type connections, this figure can usually be increased by one.
 **Contacts in every other row—This is the recommended approach to allow room for termination tooling and wire dressing.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.

132
POSITION
BLOCK
.025 x .025
POSTS
(Block Material—
Grey Polycarbonate)

PRE-ASSEMBLED PART NO.		ASSEMBLED FROM		CONTACT MATERIAL & PLATING	POST LENGTH EXTENDING BEYOND BLOCK*	MATES WITH ANY ASSEMBLY USING BLOCK NO.
132 CONTACTS INSERTED		BLOCK NO.	CONTACT NO.			
583049-3		582435-1	2-66292-3	Phosphor Bronze Gold ¹	.465	582436-1
583049-6		582436-1	2-66292-3		.465	582435-1
583049-9		582435-1	2-66292-6	Phosphor Bronze Tin	.465	582436-1
1-583049-2		582436-1	2-66292-6		.465	582435-1

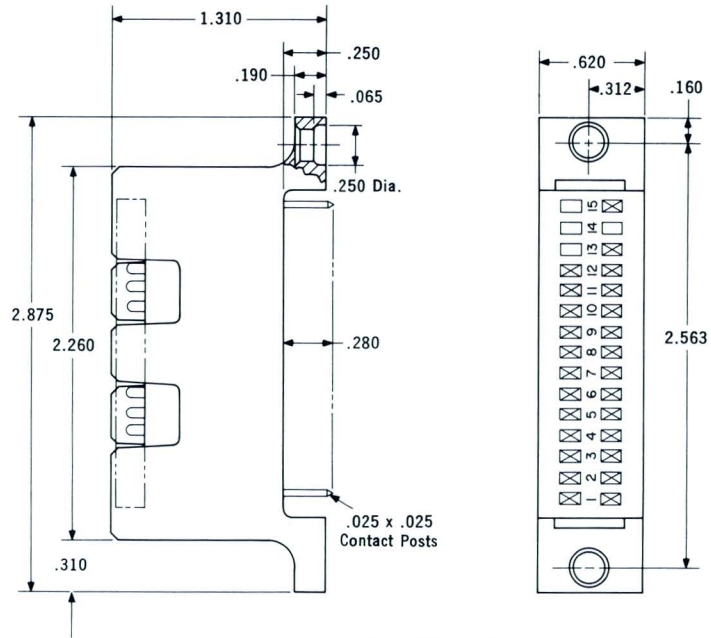
*The miniature AMPMODU contact may be used if a rear disconnect or temporary connection to the post is desired.
¹.00002 gold on critical areas—gold flash on remainder of part. All gold over nickel.



DUALATCH

30

MINIATURE DUALATCH CONNECTORS

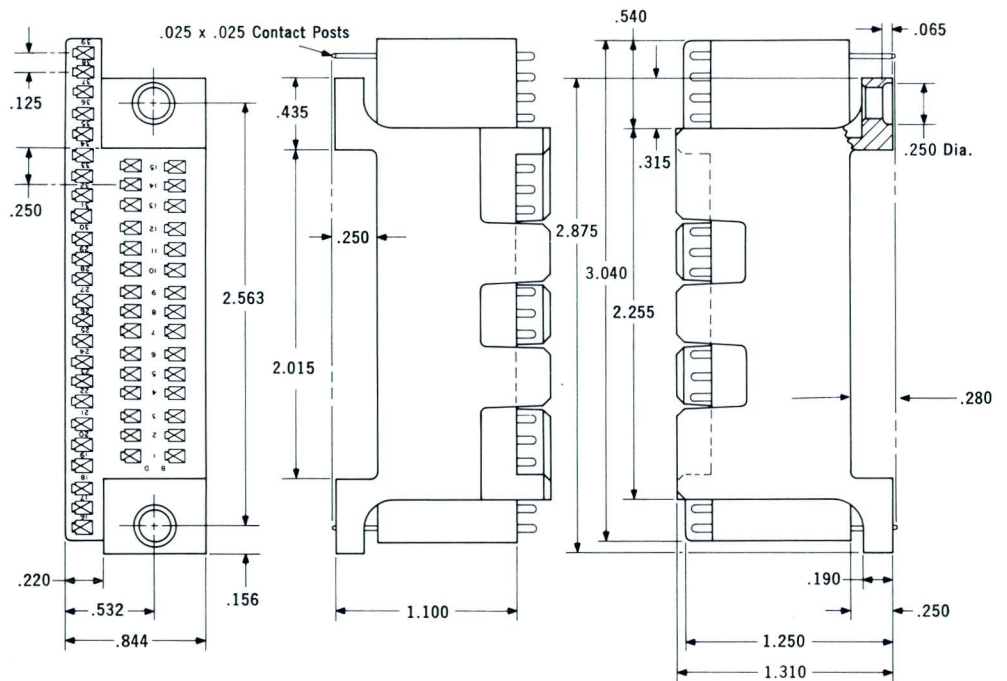


HOUSINGS ARE HERMAPHRODITIC

PART NUMBER	DESCRIPTION
435552-1	Fully Loaded — 30 Contacts
435552-2	Partially Loaded — 20 Contacts
435552-3	Partially Loaded — 26 Contacts

Material: Black Polycarbonate

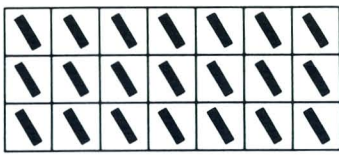
54



FEMALE BLOCK
Part No. 435700-2
(Fully Loaded)

MALE BLOCK
Part No. 435700-1
(Fully Loaded)

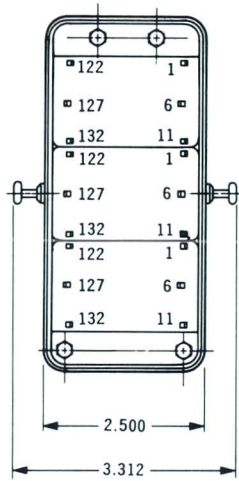
Material: Black Polycarbonate



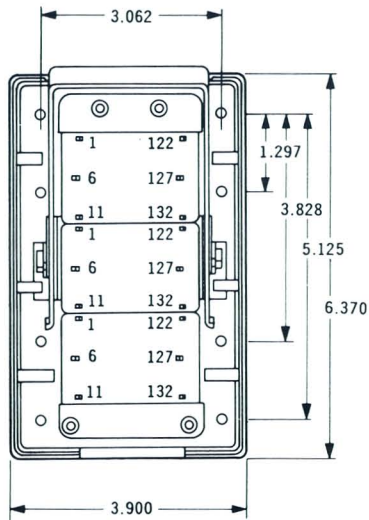
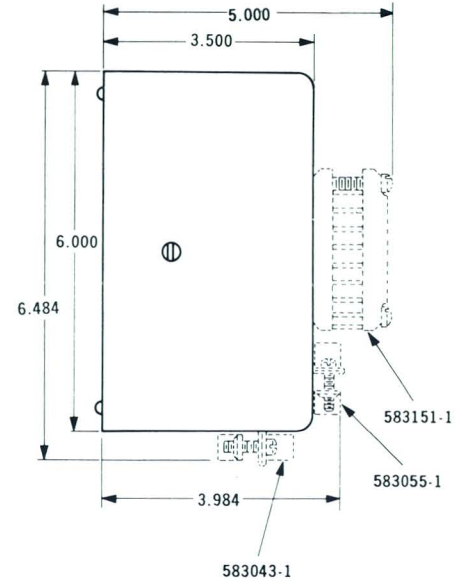
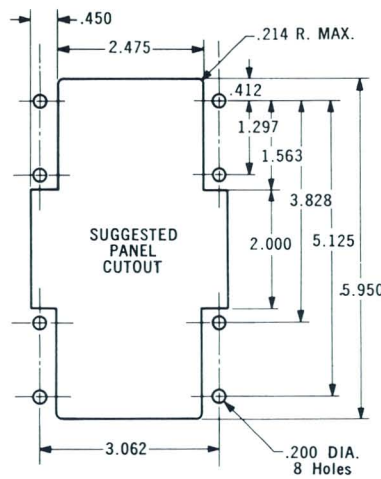
MINIATURE DUALATCH CONNECTORS

DUALATCH

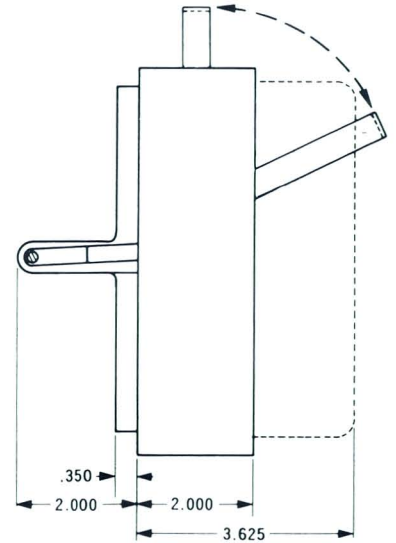
396



PLUG ASSEMBLY



RECEPTACLE ASSEMBLY



NUMBER OF CONTACTS	BLOCK WILL ACCOMMODATE THESE VARIATIONS OF CONTACTS	PART NUMBER ¹	DESCRIPTION
396	All Miniature DUALATCH Contacts—Crimp, Eyelet and Post Type	583004-1	Panel Mounted Receptacle Assembly with Latching Mechanism.
		583005-2	Removable Plug Assembly. No strain relief or cable entry.
		583043-1	Removable Plug Assembly with 90° outlet and strain relief. Accepts cables .800 to 1.125 dia. with adapter bushings #202050 accepts cables .250 to .930 dia.
		583055-1	Removable Plug Assembly with 180° outlet and strain relief. Accepts cables .800 to 1.125 dia. with adapter bushings #202050 accepts cables .250 to .930 dia.
		583151-1	Removable Plug Assembly with 180° outlet and strain relief. Accepts cables .625 to 1.750 dia.

¹583005-2, 583043-1, 583055-1 and 583151-1 all mate with 583004-1.
Material: Block—Grey Polycarbonate.
Shell—Aluminum.

MODULAR MINIATURE DUALATCH CONNECTOR

ASSEMBLY PROCEDURE

The following procedure applies to one-half of the modular DUALATCH connector. All steps must be repeated to complete the connector assembly.

Selection. For each half of the modular connector, select:

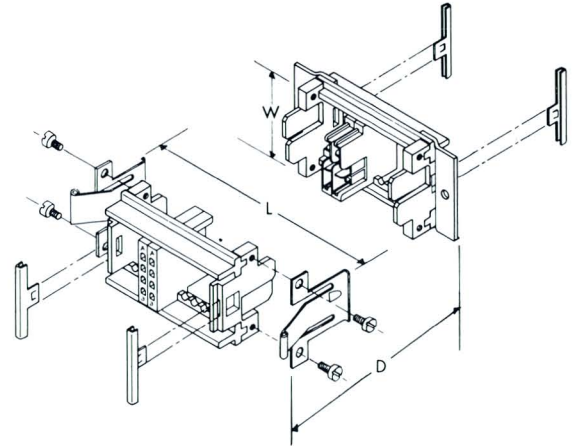
1. Desired number of 4-position housing modules (each half must contain same quantity of modules).
2. Two metal track retaining blocks.
3. Two modular tracks ordered or cut to length that will accommodate required number of housing modules plus the two track retaining blocks.
4. Two retaining clips.
5. Two mounting brackets (for panel mounting); and two spring catches on removable half and four screws.

Assembly. For each half of the modular connectors:

1. Stack modules with front and side slots aligned.*
2. Fit modular track along each side of the modules.
3. Slide track retaining blocks into end slots of track ("AMP" embossing should face outward).
4. Slide retaining clips into slots at rear of track retaining blocks on each end and snap in place.
5. Crimp and snap in required number of miniature DUALATCH contacts (four in each housing module).

*Any housing module or number of modules may be reversed to provide numerous keying arrangements.

NOTE: Rack and panel applications must be designed so that the connector bottoms when the rack is closed and so that there is a means of locking it in a fully closed position. All other applications require cable strain relief so that stresses are not transmitted to the contacts.



TYPICAL 10 MODULE ASSEMBLY
 L = 2.208"
 D (MATED) = 1.700"
 W = 1.430"

HARDWARE (TRACK ASSEMBLY)

PART NUMBER	DESCRIPTION	MATERIAL
582397-1	Modular Track†	Aluminum
582399-1	Track Retaining Block	Cadmium Plated Zinc
582400-2	Retaining Clip	Nickel Plated Steel
582402-1	Spring Catch	Stainless Steel
582403-1	Mounting Bracket	Cadmium Plated Steel
7-21103-8	Screw	Stainless Steel

†This length track accommodates 28 Modules; track may be cut to shorter lengths by customer.

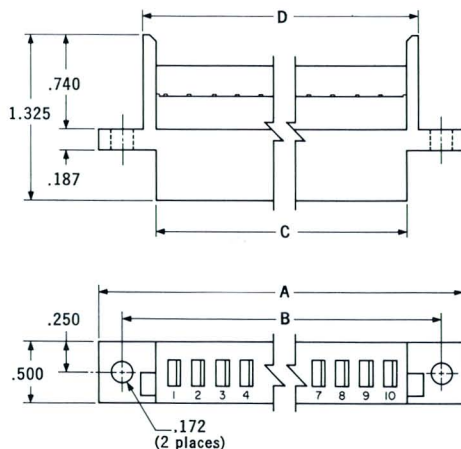
4 POSITION MODULAR HOUSING BLOCKS*

PART NUMBER	COLOR
1-582396-1	Brown
1-582396-2	Red
1-582396-3	Orange
1-582396-4	Yellow
1-582396-5	Green
1-582396-6	Blue
1-582396-7	Violet
1-582396-8	Grey
1-582396-9	White
1-582396-0	Black
2-582396-1	Beige

*Block Material is Polycarbonate

STANDARD DUALATCH CONNECTORS

2
to
12



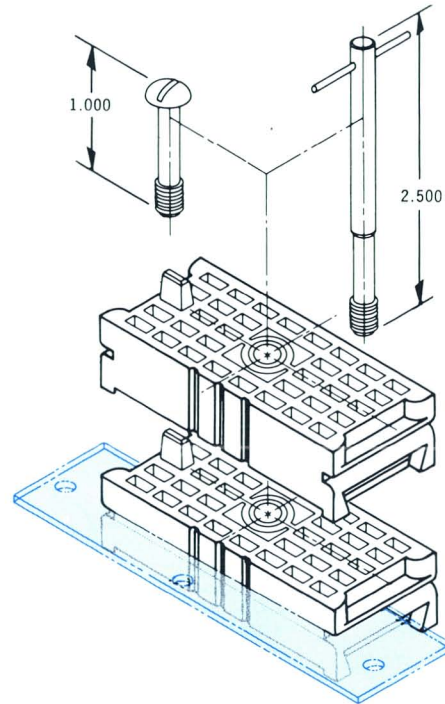
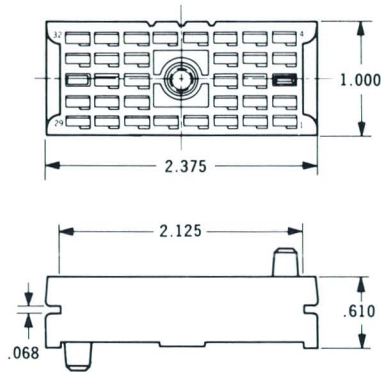
HOUSINGS ARE HERMAPHRODITIC

NO. OF POSITIONS	PART NO.	A	B	C	D
2	435714-2	1.424	1.049	.481	.681
3	435714-3	1.621	1.246	.678	.878
4	435715-4	1.818	1.443	.875	1.075
5	435714-5	2.015	1.640	1.072	1.272
6	435714-6	2.212	1.837	1.269	1.469
7	435714-7	2.409	2.034	1.466	1.666
8	435714-8	2.606	2.231	1.663	1.863
9	435714-9	2.803	2.428	1.860	2.060
10	435714-1	3.000	2.625	2.057	2.257
11	1-435714-0	3.197	2.822	2.254	2.454
12	1-435714-1	3.394	3.019	2.451	2.651

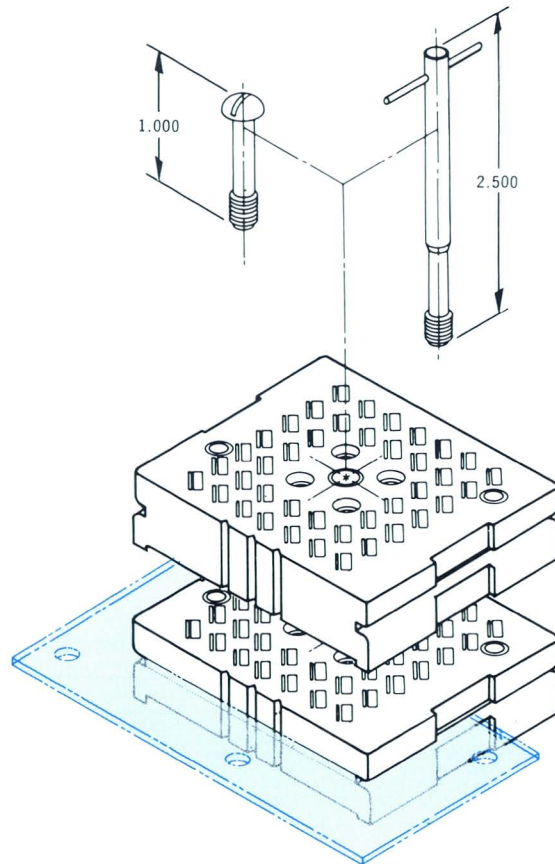
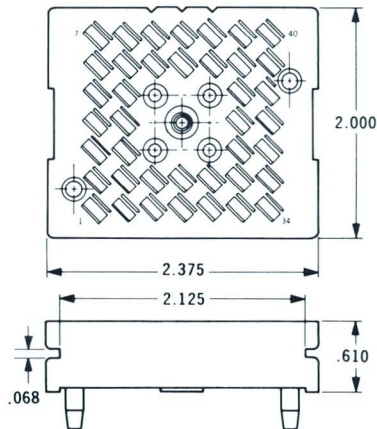
Material: Black polycarbonate.

STANDARD DUALATCH CONNECTORS

32



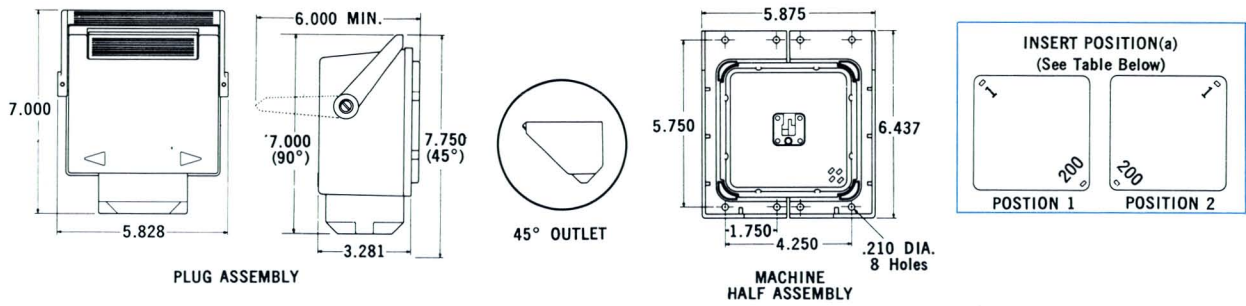
40



NO. OF CONTACTS	BLOCK WILL ACCOMMODATE THESE CONTACTS	FASTENING DEVICE ACCOMMODATION	BLOCK PART NO.	JACKSCREW PART NO.
32	Standard Contacts	With Insert Bushings for Jackscrews	582101-1 *	1-582228-1 Long
				1-582231-2 Short
40	Standard Contacts	With Insert Bushings for Jackscrews	581877-2 *	1-582230-1 Long
				1-582232-2 Short

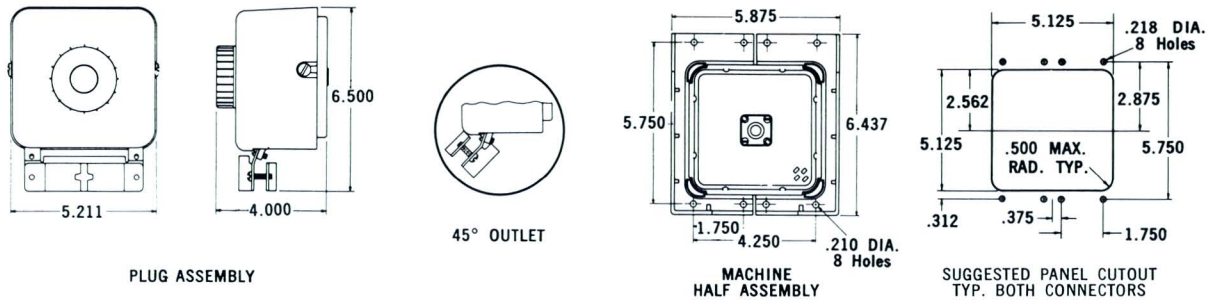
Material: Grey polycarbonate (other colors can be supplied for special applications).
 *Mating Blocks are identical. (For a mating pair order two of the indicated Part No.)

HANDLE ACTUATED CAM CONNECTOR



200

SCREW LATCHING CONNECTOR



200

NO. OF CONTACTS	BLOCK WILL ACCOMMODATE THESE CONTACTS	LATCHING SYSTEM	PLUG ASSEMBLY**		MACHINE HALF ASSEMBLY**		STRAIN RELIEF CLAMP	MATERIAL	
			PART NO.	INSERT(a) POSITION	PART NO.	INSERT(a) POSITION		SHELL	INSERT
200	Standard DUALATCH Contacts	Handle actuated cam	582314-1	2	582316-1	1	90 outlet	Zinc painted grey	grey poly-carbonate
			582314-2	1	582316-2	2			
			582315-1	2	582316-1	1	45 outlet		
			582315-2	1	582316-2	2			
			582335-1	2	582316-1	1	none		
		582335-2	1	582316-2	2				
		Screw type	582492-2*	(M) 1	582491-1*	(F) 2	45 or 90 outlet for 2 cables	grey poly-carbonate	
			582493-2*	(F) 2	582490-1*	(M) 1			
			582889-1*	(F) 2	582490-1*	(M) 1	45 or 90 outlet for 1 cable		
			582888-1*	(M) 1	582491-1*	(F) 2			

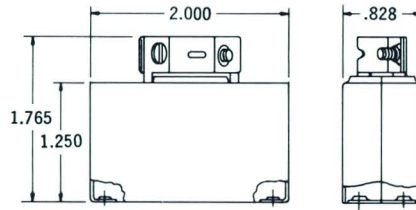
*Without Dust Covers.
 **Keying arrangement information available upon request.
 (F) Female
 (M) Male

HARDWARE TABULAR DATA FOR

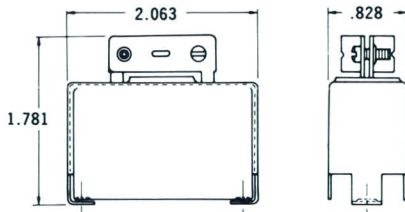
NO. OF POS. IN BLOCK	180° TWO PIECE SHIELD	180° ONE PIECE SHIELD ***	90° ONE PIECE SHIELD ***	CLOSED END PIN HOOD EXTERNAL	CLOSED END PIN HOOD INTERNAL	SHORT STRAIN RELIEF CLAMP	LONG STRAIN RELIEF CLAMP	LONG° CENTER ALIGNMENT PIN ASSEMBLY***
40	200517-1 AL. ANOD.	201165-2 ZN. PL. STEEL	201469-2 ZN. PL. STEEL	201350-2 AL. IRIDITE	202434-2 AL. IRIDITE	201224-1 ZN. PL. STEEL	201846-1 ZN. PL. STEEL	582622-1 ZN. PL. STEEL
	200517-2 ZN. PL. STEEL			201350-4 ZN. PL. STEEL	202434-4 ZN. PL. STEEL			582812-2** ZN. PL. STEEL
60	200532-1 AL. ANOD.	201173-2 ZN. PL. STEEL	201470-2 ZN. PL. STEEL	201390-2 AL. IRIDITE	202394-1 AL. IRIDITE	201182-1 ZN. PL. STEEL	201847-1 ZN. PL. STEEL	582622-1 ZN. PL. STEEL
	200532-2 ZN. PL. STEEL			201390-5 ZN. PL. STEEL	202394-2 ZN. PL. STEEL			582812-2** ZN. PL. STEEL
132	201131-1 ZN. PL. AL. (Cast)			201346-4 ZN. PL. STEEL	201364-4 ZN. PL. STEEL	201221-1 ZN. PL. STEEL	201849-1 ZN. PL. STEEL	582622-1 ZN. PL. STEEL
				201346-2 AL. IRIDITE	201364-2 AL. IRIDITE			582812-2** ZN. PL. STEEL

*Requires no mating socket.
 **Used in blocks with insert bushings.
 ***Cannot be used with jack screws.

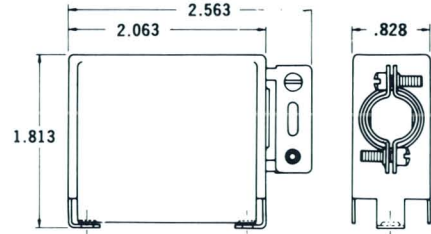
SHIELD AND CABLE CLAMPS DIMENSIONAL DATA



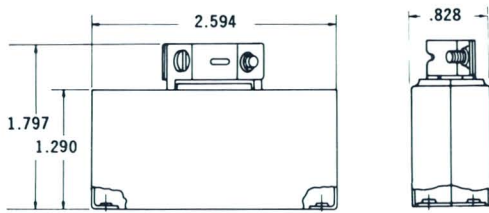
200517—40 POSITION—180°



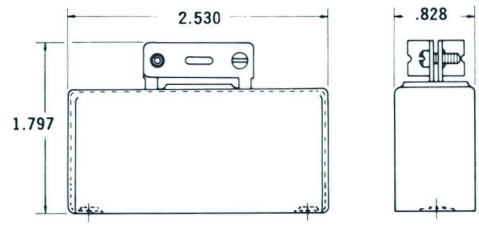
201165—40 POSITION—180°



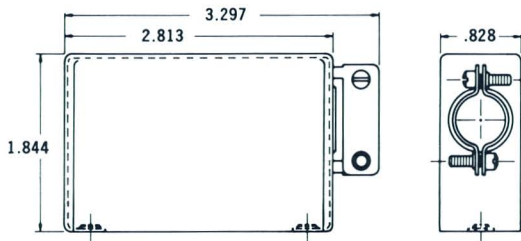
201469—40 POSITION—90°



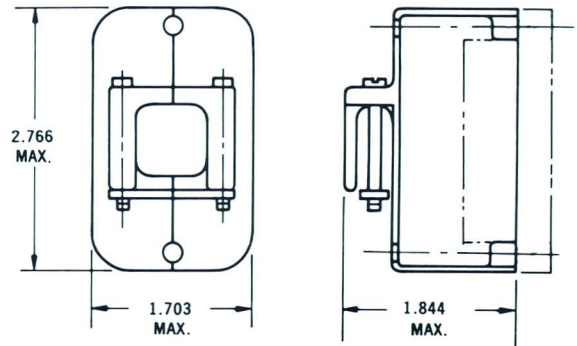
200532—60 POSITION—180°



201173—60 POSITION—180°



201470—60 POSITION—90°

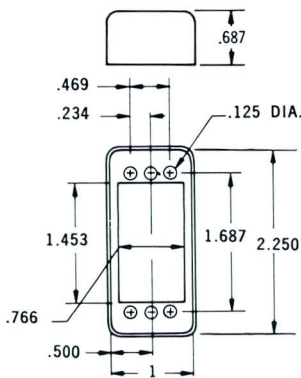


201131—132 POSITION—180°

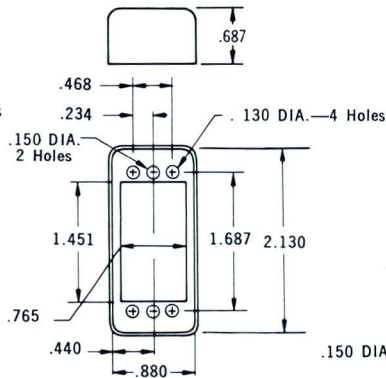
MINIATURE DUALATCH CONNECTORS

CENTER GUIDE ASSEMBLY***		LONG° CORNER ALIGNMENT PIN ASSEMBLY	CORNER GUIDE ASSEMBLY		ONE PIECE JACKSCREWS**		LOCKING SPRING SETS MALE	LOCKING SPRING SETS FEMALE
PIN	SOCKET		PIN	SOCKET	LONG	SHORT HEX		
200389-2 STAIN. STEEL	200390-2 STAIN. STEEL	582621-1 ZN. PL. STEEL	200833-2 STAIN. STEEL	200835-2 STAIN. STEEL	582360-2 ZN. PL. STEEL	582463-1 STAIN. STEEL	201925-1 NICKEL PLATE SPRING STEEL	201926-1 STAIN. STEEL
200389-4 ZN. PL. BRASS	200390-4 ZN. PL. BRASS		200833-4 ZN. PL. BRASS	200835-4 ZN. PL. BRASS	582360-3 STAIN. STEEL			
200389-2 STAIN. STEEL	200390-2 STAIN. STEEL	582621-1 ZN. PL. STEEL	200833-2 STAIN. STEEL	200835-2 STAIN. STEEL	582360-2 ZN. PL. STEEL	582463-1 STAIN. STEEL	201925-1 NICKEL PLATE SPRING STEEL	201926-1 STAIN. STEEL
200389-4 ZN. PL. BRASS	200390-4 ZN. PL. BRASS		200833-4 ZN. PL. BRASS	200835-4 ZN. PL. BRASS	582360-3 STAIN. STEEL			
200389-2 STAIN. STEEL	200390-2 STAIN. STEEL	582621-2 ZN. PL. STEEL	201046-2 STAIN. STEEL	201047-2 STAIN. STEEL	582360-2 ZN. PL. STEEL	582463-1 STAIN. STEEL		
200389-4 ZN. PL. BRASS	200390-4 ZN. PL. BRASS		201046-4 ZN. PL. BRASS	201047-4 ZN. PL. BRASS				

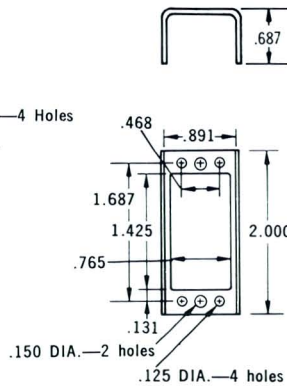
PIN HOODS DIMENSIONAL DATA



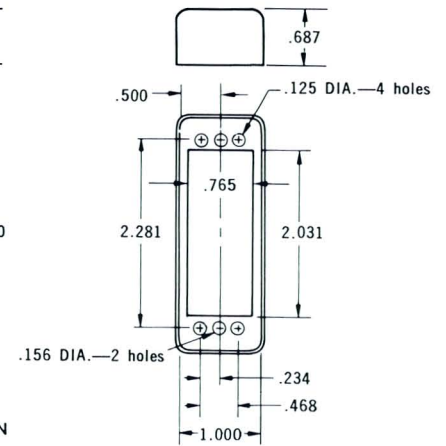
201350—40 POSITION EXTERNAL



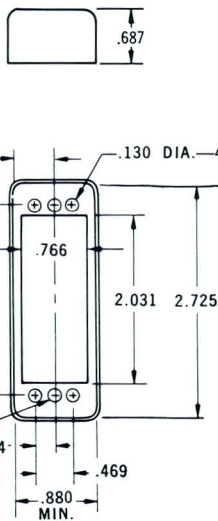
202434—40 POSITION INTERNAL



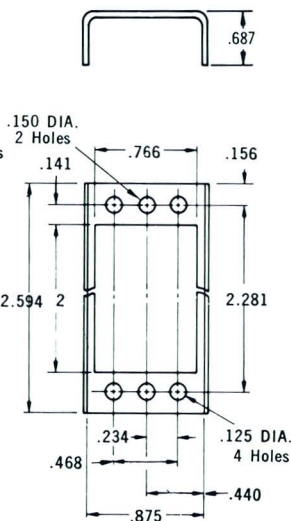
202587—40 POSITION



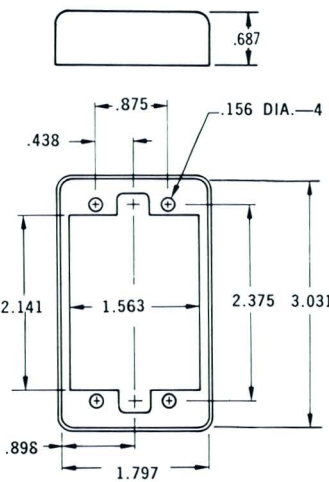
201390—60 POSITION EXTERNAL



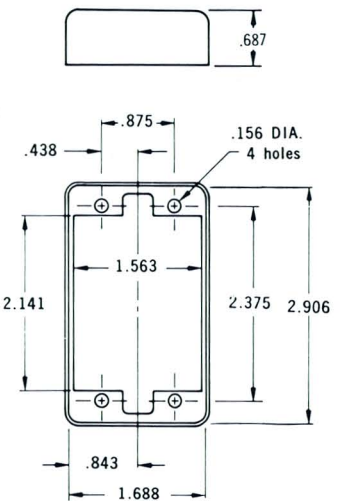
202394—60 POSITION INTERNAL



201317—60 POSITION

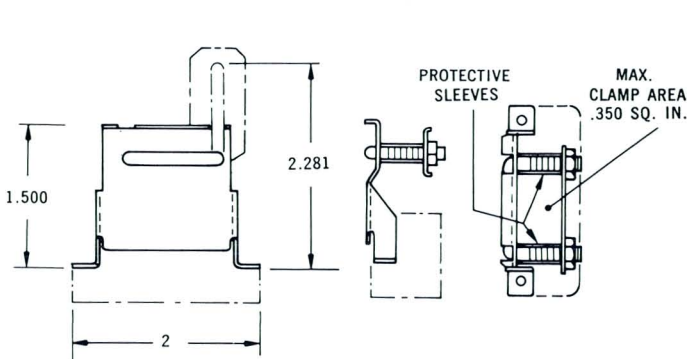


201346—132 POSITION EXTERNAL

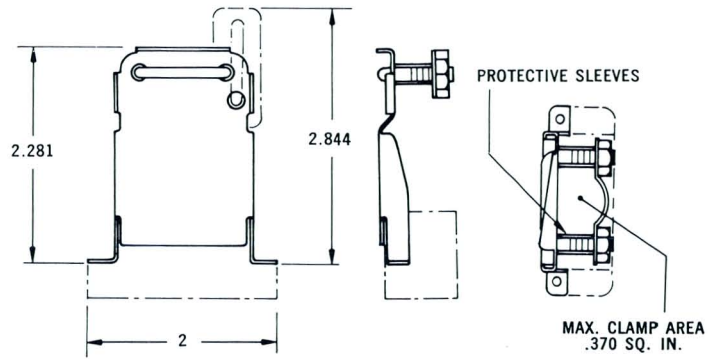


201364—132 POSITION INTERNAL

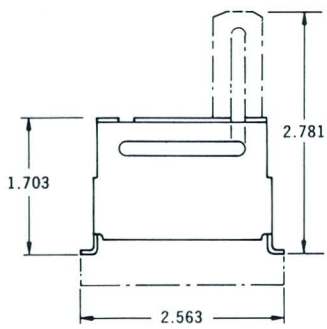
STRAIN RELIEF CLAMPS DIMENSIONAL DATA



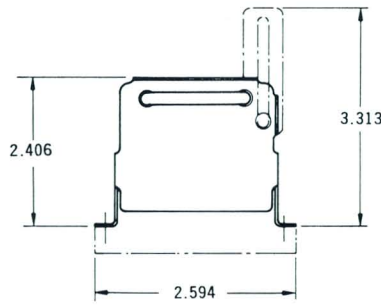
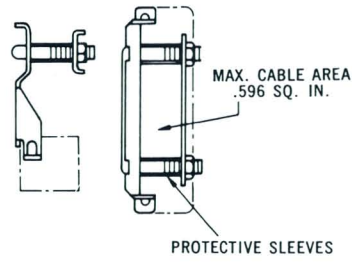
201224—40 POSITION—SHORT



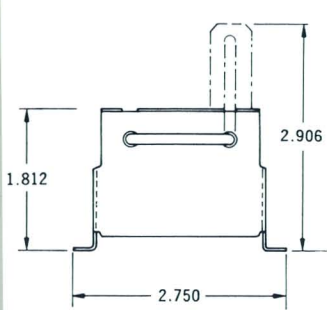
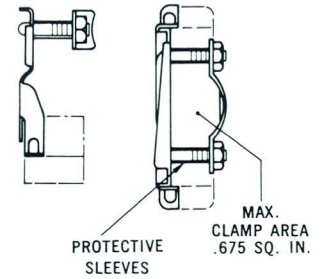
201846—40 POSITION LONG



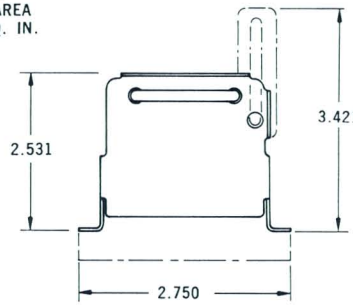
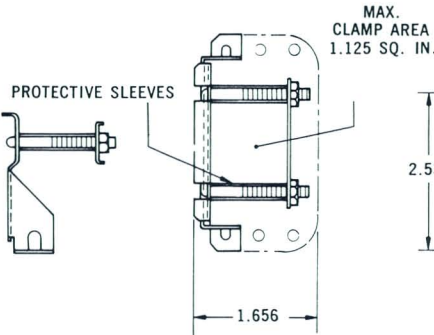
201182—60 POSITION SHORT



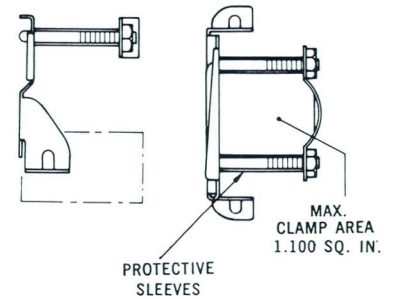
201847—60 POSITION LONG



201221—132 POSITION SHORT

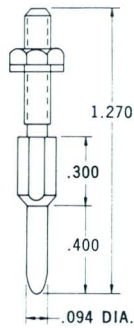


201849—132 POSITION LONG

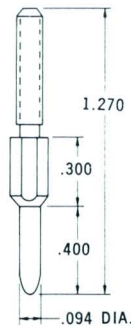


GUIDE PINS AND SOCKETS DIMENSIONAL DATA

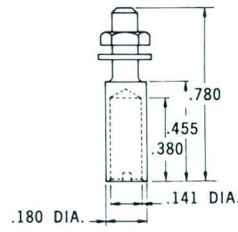
Secured with Guide Pin And/Or Socket or Screw and Nut or Screw in Bushing in Block.



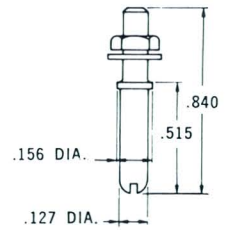
582622—CENTER ALIGNING PIN ASSEMBLY



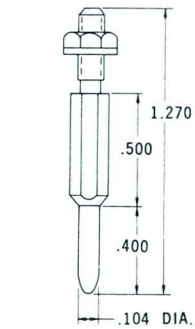
582812 CENTER ALIGNMENT PIN



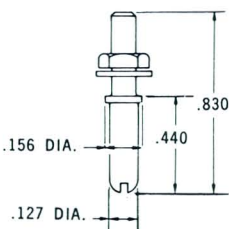
200390 CENTER GUIDE SOCKET



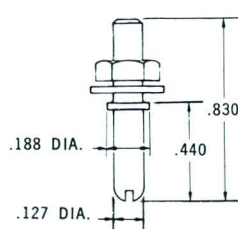
200389 CENTER GUIDE PIN



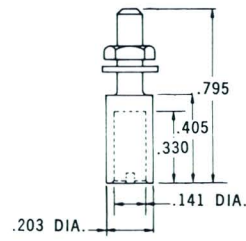
582621 ALIGNMENT PIN ASSEMBLY CORNER



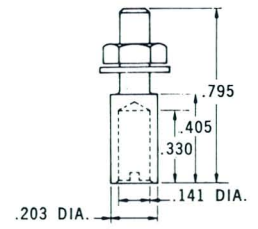
200833 CORNER GUIDE PIN



201046 CORNER GUIDE PIN



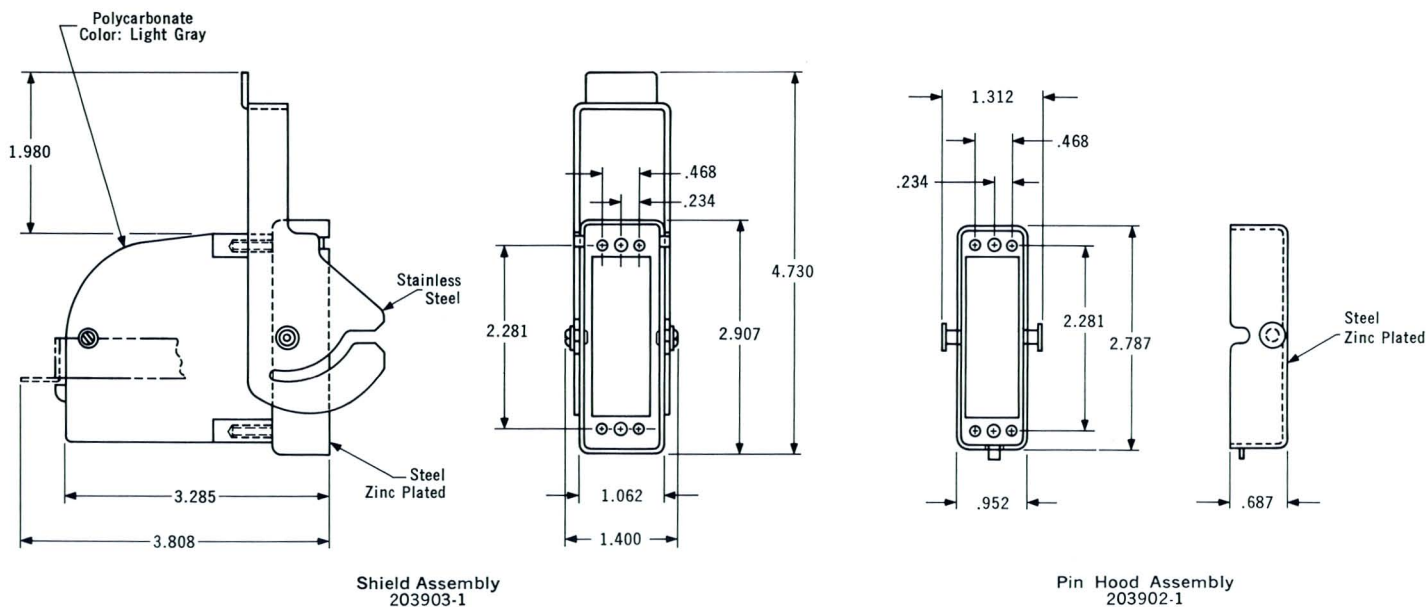
200835 CORNER GUIDE SOCKET



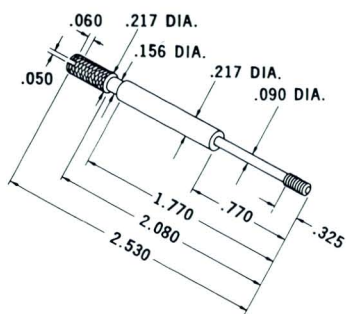
201047 CORNER GUIDE SOCKET

LATCHING AND SHIELD ASSEMBLY DIMENSIONAL DATA

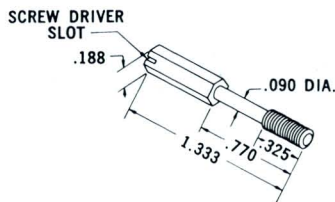
For 60 Position Miniature Connector



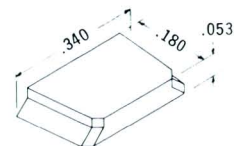
JACKSCREWS AND KEYING PLUG DIMENSIONAL DATA



582360—ONE PIECE LONG



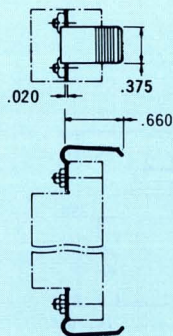
582463—ONE PIECE SHORT HEX



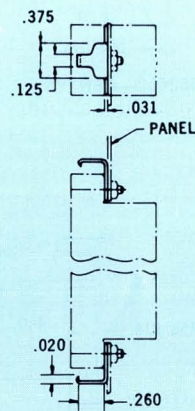
582365-1—KEYING PLUG
(For Miniature DUALATCH Connectors 40, 60 & 132 Positions only)

LOCKING SPRINGS DIMENSIONAL DATA

Secured with Guide Pin And/Or Socket or Screw and Nut or Screw in Bushing in Block.



201925—LOCKING SPRING



201926—LOCKING SPRING CATCH

Other Hermaphroditic Contact Connectors

AMP-LOK General Purpose Connectors-Section 6, Page 6-3 - 6-5 . Choice of 3, 4, 6, 9 and 12 circuit configurations. U.L. approved nylon housing up to 105° C. Crimp snap-in contacts feature built-in anti-overstress ridge for maximum contact life. Accept wire sizes 22-18 and 20-14 AWG.

AMP-UNYT General Purpose Connectors-Section 6, Pages 6-8 and 6-9 . Designed to accept conductors with heavy insulation. Choice of 2 or 4 configurations. Wire sizes 20-16 and 16-14 AWG, Wire Insulation .190 to .090 or two .125 max. Current carrying capability up to 15 amps.

