● WITH KEYS

BYTES PER RECORD		RECORDS PER				TRANSMISSION TIME IN MS PER RECORD	
MINIMUM	MAXIMUM	TRACK	CYLINDER	MODULE	FACILITY	MINIMUM	MAXIMUM
3477	7249	1	20	4000	32000	11.14	23.23
2255	3476	2	40	8000	64000	7.23	11.14
1650	2254	3	60	12000	96000	5.29	7.22
1289	1649	4	80	16000	128000	4.13	5.29
1050	1288	5	100	20000	160000	3.37	4.13
878	1049	6	120	24000	192000	2.81	3.36
751	877	7	140	28000	224000	2.41	2.81
651	750	8	160	32000	256000	2.09	2.40
572	650	9	180	36000	288000	1.83	2.08
507	571	10	200	40000	320000	1.62	1.83
453	506	11	220	44000	352000	1.45	1.62
408	452	12	240	48000	384000	1.31	1.45
369	407	13	260	52000	416000	1.18	1.30
334	368	14	280	56000	448000	1.07	1.18
305	333	15	300	60000	480000	0.98	1.07
278	304	16	320	64000	512000	0.89	0.97
255	277	17	340	68000	544000	0.82	0.89
234	254	18	360	72000	576000	0.75	0.81
216	233	19	380	76000	608000	0.69	0.75
199	215	20	400	80000	640000	0.64	0.69
184	198	21	420	84000	672000	0.59	0.63
169	183	22	440	88000	704000	0.54	0.59
157	168	23	460	92000	736000	0.50	0.54
145	156	24	480	96000	768000	0.46	0.50
134	144	25	500	100000	800000	0.43	0.46
124	133	26	520	104000	832000	0.40	0.43
115	123	27	540	108000	864000	0.37	0.39
106	114	28	560	112000	896000	0.34	0.37
97	105	29	580	116000	928000	0.31	0.34
90	96	30	600	120000	960000	0.29	0.31
83	89	31	620	124000	992000	0.27	0.29
76	82	32	640	128000	1024000	0.24	0.26
70	75	33	660	132000	1056000	0.22	0.24
64	69	34	680	136000	1088000	0.21	0.22
58	63	35	700	140000	1120000	0.19	0.20
52	57	36	720	144000	1152000	0.17	0.18
47	51	37	740	148000	1184000	0.15	0.16
43	46	38	760	152000	1216000	0.14	0.15
38	42	39	780	156000	1248000	0.12	0.13
34	37	40	800	160000	1280000	0.11	0.12
30	33	41	820	164000	1312000	0.10	0.11
26	29	42	840	168000	1344000	0.08	0.09
23	25	43	860	172000	1376000	0.07	0.08
19	22	44	880	176000	1408000	0.06	0.07
15	18	45	900	180000	1440000	0.05	0.06
12	14	46	920	184000	1472000	0.04	0.04
9	11	47	940	188000	1504000	0.03	0.04
5	8	48	960	192000	1536000	0.02	0.03

● WITH KEYS

IBM System/360 Reference Data

DASD Capacity and Transmission Time

2314 Direct Access Storage Facility

Models:	1	A1
Average Access Time	75 ms	60 ms
Average Rotational Delay	12.5 ms	12.5 ms

The formulas used to determine capacity and transmission time assume the use of programming systems developed and supported by IBM and are in agreement with Systems Reference Library A26-3599-2, N26-0203 and N26-0230.

These systems use eight bytes of the first record on each track. The formulas are:

a. Bytes per record, except last record on track:
$$[2137\ (KL+DL)/2048]\ ^{*} + C+101$$

b. Bytes per record, last record on track only:
$$KL+DL+C$$

c. Capacity per track in bytes: 7294

d. Records per track:
$$\left[\frac{c-b}{a}\right]^{*} +1$$

e. Data rate (ms per byte): 0.0032051

f. Transmission time (ms per record):
(bytes per record) x (data rate)

KL = Key Length
DL = Data Length
C = 0 when KL = 0
C = 45 when KL ≠ 0

*Truncate any fraction

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Models:	1		A1	
Average Access Time	75	ms	60	ms
Average Rotational Delay	12.5	ms	12.5	ms

Some examples of how this card may be used follow. A record is considered to be the information recorded between two gaps.

Example 1. Determining the effect of the record length on the number of records that can be stored on the device

Assuming that 73-byte records, without keys, are required, the table indicates that 41 records can be placed on each track. Reducing the record length by one byte permits 42 records per track, an increase of 4000 records per module. Alternatively, the record length can be increased by three bytes without decreasing the number of records on the module.

Example 2. Determining read/write time

Assuming that the data length (DL) is equal to 80 bytes, without key (KL = 0), the table indicates that 40 records can be stored on each track using unblocked records (that is, a gap after each 80 byte record). The chart also indicates a transmission time of 0.26 ms per record. Average read/write time is the sum (87.76 ms) of the average access time (75 ms) plus average rotational delay time (12.5 ms) plus record transmission time (0.26 ms).

Example 3. Effect of blocked records

Assuming 2400 storage locations available for a common input/output area, no keys, and a data length of 80 bytes, a maximum blocking factor of 30 can be established using 2400-byte records. The table indicates that two records of this length can be written on each track for a total of sixty 80-byte logical records. The transmission time for each disk record of thirty logical records is 10.3 ms (by interpolation).

● WITHOUT KEYS

BYTES PER RECORD		RECORDS PER				TRANSMISSION TIME IN MS PER RECORD	
MINIMUM	MAXIMUM	TRACK	CYLINDER	MODULE	FACILITY	MINIMUM	MAXIMUM
3521	7294	1	20	4000	32000	11.29	23.38
2299	3520	2	40	8000	64000	7.37	11.28
1694	2298	3	60	12000	96000	5.43	7.37
1333	1693	4	80	16000	128000	4.27	5.43
1093	1332	5	100	20000	160000	3.50	4.27
922	1092	6	120	24000	192000	2.96	3.50
794	921	7	140	28000	224000	2.54	2.95
695	793	8	160	32000	256000	2.23	2.54
616	694	9	180	36000	288000	1.97	2.22
551	615	10	200	40000	320000	1.77	1.97
497	550	11	220	44000	352000	1.59	1.76
451	496	12	240	48000	384000	1.45	1.59
412	450	13	260	52000	416000	1.32	1.44
378	411	14	280	56000	448000	1.21	1.32
348	377	15	300	60000	480000	1.12	1.21
322	347	16	320	64000	512000	1.03	1.11
299	321	17	340	68000	544000	0.96	1.03
277	298	18	360	72000	576000	0.89	0.96
259	276	19	380	76000	608000	0.83	0.88
242	258	20	400	80000	640000	0.78	0.83
227	241	21	420	84000	672000	0.73	0.77
212	226	22	440	88000	704000	0.68	0.72
200	211	23	460	92000	736000	0.64	0.68
188	199	24	480	96000	768000	0.60	0.64
177	187	25	500	100000	800000	0.57	0.60
167	176	26	520	104000	832000	0.54	0.56
158	166	27	540	108000	864000	0.51	0.53
149	157	28	560	112000	896000	0.48	0.50
140	148	29	580	116000	928000	0.45	0.47
133	139	30	600	120000	960000	0.43	0.45
126	132	31	620	124000	992000	0.40	0.42
119	125	32	640	128000	1024000	0.38	0.40
113	118	33	660	132000	1056000	0.36	0.38
107	112	34	680	136000	1088000	0.34	0.36
101	106	35	700	140000	1120000	0.32	0.34
95	100	36	720	144000	1152000	0.30	0.32
91	94	37	740	148000	1184000	0.29	0.30
86	90	38	760	152000	1216000	0.28	0.29
81	85	39	780	156000	1248000	0.26	0.27
77	80	40	800	160000	1280000	0.25	0.26
73	76	41	820	164000	1312000	0.23	0.24
70	72	42	840	168000	1344000	0.22	0.23
66	69	43	860	172000	1376000	0.21	0.22
62	65	44	880	176000	1408000	0.20	0.21
58	61	45	900	180000	1440000	0.19	0.20
55	57	46	920	184000	1472000	0.18	0.18
52	54	47	940	188000	1504000	0.17	0.17
48	51	48	960	192000	1536000	0.15	0.16
46	47	49	980	196000	1568000	0.15	0.15
44	45	50	1000	200000	1600000	0.14	0.14
41	43	51	1020	204000	1632000	0.13	0.14
38	40	52	1040	208000	1664000	0.12	0.13
35	37	53	1060	212000	1696000	0.11	0.12
33	34	54	1080	216000	1728000	0.11	0.11
31	32	55	1100	220000	1760000	0.10	0.10
28	30	56	1120	224000	1792000	0.09	0.10
26	27	57	1140	228000	1824000	0.08	0.09
24	25	58	1160	232000	1856000	0.08	0.08
23	23	59	1180	236000	1888000	0.07	0.07
21	22	60	1200	240000	1920000	0.07	0.07
19	20	61	1220	244000	1952000	0.06	0.06
17	18	62	1240	248000	1984000	0.05	0.06
15	16	63	1260	252000	2016000	0.05	0.05
13	14	64	1280	256000	2048000	0.04	0.04
12	12	65	1300	260000	2080000	0.04	0.04
10	11	66	1320	264000	2112000	0.03	0.04
8	9	67	1340	268000	2144000	0.03	0.03
7	7	68	1360	272000	2176000	0.02	0.02
5	6	69	1380	276000	2208000	0.02	0.02

● WITHOUT KEYS