

Table 8. Data and Control Lines (Continued)

1311 Terminals

Cable Number 2178583 (C Suffix)

1441 Terminals

Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
DO4 - A	491349	22	+Q Set TAR 2	C18 - B (A)	595978
B	↓	↓	+Q Set TAR 4	C18 - D (C)	↓
C	↓	↓	+Q Set TAR 8	C18 - F (E)	↓
D	↓	↓	+Q Set TAR 10	C18 - H (G)	↓
E	↓	↓	+Q Set TAR 20	C18 - K (J)	↓
F	↓	↓	+Q Set TAR 40	C18 - M (L)	↓
G	↓	↓	+Q Set TAR 80	C18 - P (N)	↓
H	↓	↓	+Q Set TAR 100	C18 - R (Q)	↓
J	↓	↓	-Q Seld Stop	C21 - B (A)	595978
K	↓	↓	+Q Seek Addr Xfer	C21 - D (C)	↓
L	↓	↓	-Q Begin Op Reset	C21 - F (E)	↓
(R)	↓	↓	Ground for TW Groups Above Designated By ()		

23036.2

IBM 1311 DISK STORAGE DRIVE, MODEL 2

GENERAL INFORMATION

The 1311 Model 2 (Figure 4) is an additional Disk Storage Drive for any system which uses 1311s. The Model 2 is a satellite unit that is powered and controlled from a master unit. Up to four Model 2 units can be added to each master 1311 Model 1, 4, or 5. Up to three Model 2 units may be added to the 1311 Model 3.

The Model 2 contains a disk drive mechanism, accessing assembly, and basic electronic components. Stored programs within the processor determine the commands for the 1311 Disk Storage Drive.

Power Requirements

The external system must supply the 1311 Model 2 with the voltages and current specifications listed in Table 9. The relay power supply is generated and used within the Model 2 (Table 10).

Cables

The power and signal cables that connect the Model 2 and the master unit or another satellite are listed in Table 11. Note that multiple cables are listed as they apply to a particular suffix level of the Model 2.

Cable lengths between 1311 units are mostly of a fixed length that conforms to the physical placement requirements illustrated in Figure 1. Additional information about cable lengths and routing can be obtained from physical planning and installation manuals for the particular system using 1311 Disk Storage Drives.

Data and Control Lines

Tables 12 through 19 provide interface information for each inter-unit cable between a 1311 Model 2 and



Figure 4. 1311 Disk Storage Drive, Model 2

other 1311 Disk Storage Drives. Refer to the Cable Connectors and Terminals section of this manual for information about the connectors and terminals used with a specific cable.

Table 9. Power Requirements - 1311 Model 2 (Supplied by external system)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
Line Voltage	208 or 230 vac ±10% Single or Three Phase	0.7 amp 3.7 amp 4.4 amp	TS4-7 & 8 TS3-1 & 2 TS4-5 & 7 *	C2.06.03.1 C2.06.03.1
SMS Power Supply	- 12 vdc ±4%	1.0 amp	TS5-9 TS5-6 *	C2.06.03.3 C2.06.03.3
SMS Power Supply	- 6 vdc ±4%	0.6 amp	TS5-13 TS5-9 *	C2.06.03.3 C2.06.03.3
SMS Bias Power Supply	+12 vdc ±2%	0.4 amp	TS5-11 TS5-8 *	C2.06.03.3 C2.06.03.3
Sequence Voltage	- 36 vdc	0.1 amp	TS5-20 TS6-6 *	C2.06.03.3 C2.06.03.3
Read/Write Power Supply	36 vdc ± 2%	0.13 amp	TS5-5 TS5-5	C2.06.03.3 C2.06.03.3

* D suffix and later. For suffix level refer to system diagram index.

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Table 10. 1311 Model 2 Internal Power Supply (Generated and used within the 1311)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
Relay Power Supply	- 36 vdc ±8%	1.8 amp	B1D14F PSTB1-7 *	C2.12.02.1

* D suffix and later. For suffix level refer to system diagram index.

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Table 11. Inter-Unit Cables 1311 Model 2 and 1311 Satellite or Master

Special Info. Key	Ref. Table No.	Cable Function	1311 Suffix	Length (Approx. Feet)	Cable O.D. Maximum (Inches)	Number of Conductors	Cable Number	Cable Cover		
								Color	Material	Shield
① ②	12	Signal (1)	B-C	5.5	0.578	32	2154877	Black	PVC	None
① ②	13	Signal (2)	B-C	5.5	0.578	32	2154877	Black	PVC	None
	14	Signal SOV *	B-C	5.5	0.578	32	2154877	Black	PVC	None
① ②	15	Signal	D	3.5	0.690	64	2178580	Gray	PVC	None
	14	Signal SOV *	D	3.5	0.578	32	2178496	Black	PVC	None
① ②	16	Pre-amp Signal	B-C	10.5	.456X.300	2	2154901	Gray	PVC	94%
	16	Pre-amp Signal	D	10.0	.456X.300	2	2178585	Gray	PVC	94%
	18	MAC Power	B-C	5.5	0.410	2	2154936	Gray	PVC	94%
	18	MAC-FAC Power	D	5.5	0.410	2	2178579	Gray	PVC	94%
	18	FAC Power	B-C	5.5	0.410	2	2157519	Gray	PVC	94%
	19	DC Power	B-C	4.5	0.970	20	2154686	Gray	PVC	None
	19	DC Power	D	4.5	0.970	20	2178578	Gray	PVC	None
	18	Grounding Bond	B-C-D	5.0	1.0 flat	1	2160822	Tinned Copper Strap		

Key: ① Furnished with assembly.

② Length as stated. No X length.

* SOV (Seek Overlap) Optional Feature.

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Table 12. Data and Control Lines

1311 Satellite

(1) Cable Number 2154877 (B and C Suffix)

Satellite or Master Terminals

Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
C01 - A	595978	24	-Y Select Head Y0	Pin - 01	546013
B			-Y Select Head Y1	02	
C			-Y Select Head Y2	03	
D			-Y Select Head Y3	04	
E			-Y Select Head Y4	05	
F			-Y Select Head Y5	06	
G			-Y Select Head Y6	07	
H			-Y Select Head Y7	08	
J			-Y Select Head Y8	09	
K			-Y Select Head Y9	10	
L			Spare	11	
M			Spare	12	
N			TW Intermediate Switch	13	
P			+Y Intermediate Switch	14	
Q			TW CPU Meter On	15	
R			-Q CPU Meter On	16	
C02 - A	595978	24	TW Erase Safety	17	
B			Erase Safety	18	
C			TW Write Safety	19	
D			Write Safety	20	
E			TW Sel Safety	21	
F			Sel Safety	22	
G			TW Selected and Ready	23	
H			+Y Selected and Ready	24	
J			TW Busy	25	
K			+Y Busy	26	
L			TW Satellite A Selected	27	
M			+Y Satellite A Selected	28	
N			TW Satellite B Selected	29	
P			+Y Satellite B Selected	30	
Q			TW Deselect	31	
R			-Y Deselect	32	

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Table 13. Data and Control Lines

1311 Satellite

(2) Cable Number 2154877 (B and C Suffix)

Satellite or Master Terminals

Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
E01 - A	595978	24	Spare	Pin - 01	546013
B			Spare	02	
C			TW Write Data	03	
D			-Q Write Data	04	
E			TW Satellite A Select	05	
F			-Q Satellite A Select	06	
G			TW Satellite B Select	07	
H			-Q Satellite B Select	08	
J			Spare	09	
K			Spare	10	
L			TW Direct Seek	11	
M			-Q Direct Seek	12	
N			TW Reverse	13	
P			-Q Reverse	14	
Q			TW Seek	15	
R			-Q Seek	16	
E02 - A			595978	24	
B	-Q Slow	18			
C	TW Ready to Stop	19			
D	-Q Ready to Stop	20			
E	TW Gated Track Pulses	21			
F	-Q Gated Track Pulses	22			
G	TW Sel On Line	23			
H	-Q Sel On Line	24			
J	TW Presector Pulse	25			
K	-Q Presector Pulse	26			
L	TW Sector Pulse	27			
M	-Q Sector Pulse	28			
N	TW Write Gate	29			
P	-Q Write Gate	30			
Q	TW Signal Gate	31			
R	-Q Signal Gate	32			

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Table 14. Data and Control Lines

1311 Satellite			SOV Cable Number 2154877 (B and C Suffix)	Satellite or Master Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
D03 - A	595978	24	TW Set TAR 2	Pin - 01	546013
B			+Q Set TAR 2	02	
C			TW Set TAR 4	03	
D			+Q Set TAR 4	04	
E			TW Set TAR 8	05	
F			+Q Set TAR 8	06	
G			TW Set TAR 10	07	
H			+Q Set TAR 10	08	
J			TW Set TAR 20	09	
K			+Q Set TAR 20	10	
L			TW Set TAR 40	11	
M			+Q Set TAR 40	12	
N			TW Set TAR 80	13	
P			+Q Set TAR 80	14	
Q			TW Set TAR 100	15	
R			+Q Set TAR 100	16	
D04 - A	595978	24	TW Begin Op Reset	17	
B			-Q Begin Op Reset	18	
C			TW Seld Stop	19	
D			-Q Seld Stop	20	
E			Spare	21	
F			Spare	22	
G			TW Seek Addr Xfer	23	
H			+Q Seek Addr Xfer	24	
J			TW Seek Comp Satellite A	25	
K			+Y Seek Comp Satellite A	26	
L			TW Seek Comp Satellite B	27	
M			+Y Seek Comp Satellite B	28	
N			TW R-W or Test	29	
P			-Y R-W or Test	30	
Q			TW Comp Reset	31	
R			+Y Comp Reset	32	

SOV Cable Number 2178496 (D Suffix)					
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
C04 - A	491349	24	+Q Set TAR 2	Pins 01 - 02	546013
B			+Q Set TAR 4	03 - 04	
C			+Q Set TAR 8	05 - 06	
D			+Q Set TAR 10	07 - 08	
E			+Q Set TAR 20	09 - 10	
F			+Q Set TAR 40	11 - 12	
G			+Q Set TAR 80	13 - 14	
H			+Q Set TAR 100	15 - 16	
J			-Q Seld Stop	19 - 20	
K			+Q Seek Addr Xfer	23 - 24	
L			-Q Begin Op Reset	17 - 18	
M			+Y Comp Reset	31 - 32	
N			-Y R-W or Test	29 - 30	
P			+Y Seek Comp Satellite A	25 - 26	
Q			+Y Seek Comp Satellite B	27 - 28	

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Table 15. Data and Control Lines

1311 Satellite			Cable Number 2178580 (D Suffix)	Satellite or Master Terminals				
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.			
B03 - A	491349	22	-Y Select Head Y0	Pin - 01	546013			
B			-Y Select Head Y1	02				
C			-Y Select Head Y2	03				
D			-Y Select Head Y3	04				
E			-Y Select Head Y4	05				
F			-Y Select Head Y5	06				
G			-Y Select Head Y6	07				
H			-Y Select Head Y7	08				
J			-Y Select Head Y8	09				
K			-Y Select Head Y9	10				
L			-Q Satellite A Select	Pins 05 - 06	546013			
M			-Q Satellite B Select	07 - 08				
B04 - A			491349	22	Write Safety	Pins 19 - 20	546013	
B	Erase Safety	17 - 18						
C	Sel Safety	21 - 22						
D	+Y Satellite A Selected	27 - 28						
E	+Y Satellite B Selected	29 - 30						
F	+Y Selected and Ready	23 - 24						
G	+Y Busy	25 - 26						
H	-Y Deselect	31 - 32						
J	+Y Intermediate Switch	13 - 14						
K	Spare	11 - 12						
D04 - A	491349	22			-Q Direct Seek	Pins 11 - 12		546013
B					-Q Reverse	13 - 14		
C					-Q Seek	15 - 16		
D			-Q Slow	17 - 18				
E			-Q Ready to Stop	19 - 20				
F			-Q Write Data	03 - 04				
G			-Q Write Gate	29 - 30				
H			-Q Signal Gate	31 - 32				
J			-Q Gated Track Pulses	21 - 22				
K			-Q Sel On Line	23 - 24				
L			-Q Presector Pulse	25 - 26				
M			-Q Sector Pulse	27 - 28				
N			-Q CPU Meter On	Pins 15 - 16	546013			
P	Spare	Pins 01 - 02						
Q	Spare	09 - 10	546013					

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Table 16. Data and Control Lines, Pre-Amp

1311 Satellite			Cable Number 2154901 (B and C Suffix)		Master Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name		Connector Location	Connector Part No.
(B Gate)	596255	26	Pre-Amp Output (1)		(B Gate)	596255
A06C	↓	22	Shield (X1)		Refer to Table 17	↓
A06J		26	Pre-Amp Output (2)			
A06R		22	Shield (X2)			
A06U		Shield	R/W Ground			
R/W Gnd	334910					

Cable Number 2178585 (D Suffix)						
Machine Location	Connector Part No.	Wire Size AWG	Line Name		Connector Location	Connector Part No.
(B Gate)	595978	26	Pre-Amp Output (1)		(B Gate)	596255
A04	↓	22	Shield (X1)		Refer to Table 17	↓
A04		26	Pre-Amp Output (2)			
A04		22	Shield (X2)			
A04		Shield	R/W Ground			

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Table 17. Pre-Amp Master Pin Connections

Cable From Satellite	Master Location					
	Lead 1		Leads X1 and X2		Lead 2	
No. 1	A07D	A10D	A08J	A10J	A07A	A10A
2	A07E	A10E	A09J	A11J	A07H	A10H
3	A07F	A10F	A10J	A13J	A07Q	A10Q
4	A07G	A10G	A11J	A14J	A07R	A10R
	X	Y	X	Y	X	Y

1311 Model 2;
Suffix B, C, D.

1. Use column "X" for Model 1 Master suffix C.
2. Use column "Y" for connections to all other level Masters: Model 1 (B), Model 3 (B and C), Models 4 and 5 (A and B).

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Table 18. Motor AC (MAC) and Filtered AC (FAC) Cables

1311 Satellite			MAC Cable Number 2154936 (B and C Suffix)	Satellite or Master Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
TS 3 - 1	360370	16	208 vac Motor	Pin A	2160792
TS 3 - 2	360370	16	208 vac Motor	Pin B	2160792
Frame	2101326		Shield	Frame	253740

(MAC and FAC Combined)
Cable Number 2178579 (D Suffix)

TS 4 - 5	368222	16	208 vac	Pin A	2160792
TS 4 - 7	↓	16	208 vac	Pin B	2160792
Frame			Shield	Frame	253740

FAC Cable Number 2157519 (B and C Suffix)

TS 4 - 7	334910	16	208 vac Filtered	Pin A	2157516
TS 4 - 8	334910	16	208 vac Filtered	Pin B	2157516
Panel	186968		Shield	Frame	253740

Grounding Cable
Cable Number 2160822

Seq Panel	4 Holes	1.00"	Ground Strap	Seq Panel	4 Holes
Gnd	0.219 Dia.	Flat Braid		Gnd	0.219 Dia.

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Table 19. DC Power Cables

1311 Satellite			Cable Number 2154686 (B and C Suffix)	Satellite or Master Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
TS 5 - 3	334910	16	DC Ground	DC - A	2122255
3	↓	↓	DC Ground	B	
4	↓	↓	DC Ground	C	
4	↓	↓	DC Ground	D	
5	↓	↓	-36 vdc R/W	E	
6	↓	↓	TW -36 vdc R/W	F	
7	334921	20	-W Sequence Hold Loop	H	
8	334921	20	-W Sequence Pick Loop	J	
9	334910	16	-12 vdc	K	
10	↓	↓	TW -12 vdc	L	
11	↓	↓	+12 vdc	M	
12	↓	↓	TW +12 vdc	N	
13	↓	↓	-6 vdc	P	
14	↓	↓	TW -6 vdc	R	
16	↓	↓	Spare	T	
17	↓	↓	Spare	U	
18	334921	20	+W Heads Extended Ground	V	
TS 6 - 5	↓	↓	-W Sequence Hold	W	
TS 6 - 6	↓	↓	-W Sequence Pick	X	

Cable Number 2178578 (D Suffix)					
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
TS 5 - 2	255994	16	DC Ground	DC - A	2122255
2	↓	↓	DC Ground	B	
3	↓	↓	DC Ground	C	
3	↓	↓	DC Ground	D	
5	↓	↓	-36 vdc R/W	E	
7	↓	↓	-12 vdc	K	
8	↓	↓	+12 vdc	M	
9	↓	↓	-6 vdc	P	
TS 6 - 4	186967	20	+W Heads Extended Ground	V	
5	↓	↓	-W Sequence Hold	W	
6	↓	↓	-W Sequence Pick	X	
7	↓	↓	-W Sequence Hold Loop	H	
8	↓	↓	-W Sequence Pick Loop	J	
DC Isol Buss	186965	16	TW -36 vdc R/W	F	
↓	↓	↓	TW -12 vdc	L	
			TW +12 vdc	N	
			TW -6 vdc	R	

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IBM 1311 DISK STORAGE DRIVE, MODEL 3

GENERAL INFORMATION

A 1311 Model 3 (Figure 5) is the first Disk Storage Drive on an IBM 1620/1710 Data Processing System. The Model 3 is a master unit and contains a disk drive mechanism, and the electronic circuitry for controlling the accessing assembly and read/write functions.

The stored program within the 1620/1710 System determines the commands for the 1311 Disk Storage Drive.

One Model 3 and three Model 2 satellites can be attached to the 1620/1710 System. A special feature known as the Disk Storage Drive Adapter (#3339) on the 1620 Model 1 (serial number 10701 or higher, or serial number 11550 or higher when connected to a 1710), or a Disk Storage Drive Adapter #3340 on the 1620 Model 2 is a prerequisite for attaching the 1311 Model 3.



Figure 5. 1311 Disk Storage Drive, Model 3

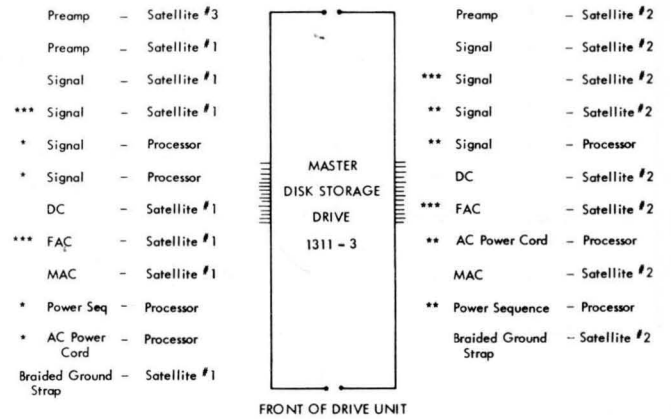
Power Requirements

Voltage and current requirements of the 1311 Model 3 that must be supplied by the external system are found in Table 20. Specifications, terminal points, and system diagram pages are listed for each line function. Similar information for the internal power supply of the Model 3 is found in Table 21.

Cables

Inter-unit cables used between the 1311 Model 3 and the 1620 System are listed in Table 22. The quantity and type of cable used for a particular function differs with the model and/or suffix level of the 1620 System and suffix level of the 1311 Model 3. Table 22 also contains the necessary information to determine the cables needed for attachment to a particular system. The Special Information Key column and the associated Key explanations at the bottom of Table 22 define supplied cables and special cable ordering information.

Cable orientation for the Model 3 is shown in Figure 6.



- * These cables present only if processor is oriented to left of Drive Unit.
 - ** These cables present only if processor is oriented to right of Drive Unit.
 - *** Not present from "D" suffix satellites.
- Note: If raised floor is used, * and ** cables may be oriented as required.
- MAC Motor AC
FAC Filtered AC

Figure 6. Cable Orientation for Model 3

Data and Control Lines

Tables 23 through 25 provide interface information for each inter-unit cable listed in Table 22. Table 26 is a cross-reference for cable sections that apply

to connectors for a particular system attachment. Refer to the Cable Connectors and Terminals section of this manual for information about the connectors and terminals used with a specific cable.

Table 20. Power Requirements - 1311 Model 3 (Supplied by external system)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
Line Voltage	208 or 230 vac ±10%, single phase	6.5 amp	Switch L1 & L2	05.40.01.1

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Table 21. 1311 Model 3 Internal Power Supply (Generated and used within the 1311)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
SMS Power Supply	- 12 vdc ±4%	6.5 amp	PSTB1-7	05.40.03.1
SMS Power Supply	- 6 vdc ±4%	2.7 amp	PSTB1-7	05.40.03.1
SMS Bias Power Supply	+12 vdc ±2%	2.0 amp	TS7-5	05.40.04.1
Read/Write Power Supply	- 36 vdc ±2%	0.25 amp	TS7-3	05.40.04.1
Relay Power Supply	- 36 vdc ±8%	2.0 amp	TS7-1	05.40.04.1
Sequence Voltage	24 vac	0.1 amp	TS6-24	05.40.01.1
SMS Supply	133 vac ±10%	2.0 amp	T3-8	05.40.01.1

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Table 22. Inter-Unit Cables 1311 Model 3 and System

Special Info. Key	Ref. Table No.	Cable Function	1311 Suffix	Length (Approx. Feet)	Cable O.D. Maximum (Inches)	Number of Conductors	Cable Number	Cable Cover		
								Color	Material	Shield
	1620 Model 1									
	23	AC Power	B	25	0.800	3	2162604	Gray	PVC	90%
	23	AC Power	C	25	0.800	3	2162604	Gray	PVC	90%
	24	DC Power Seq.	B-C	25	0.760	10	2154890	Gray	PVC	None
	25	Signal (1620 G-H)	B-C	20	1.090	150	2161838	Gray	PVC	90%
	25	Signal (1620 F)	B-C	20	1.090	150	2161845	Gray	PVC	90%
	25	Signal (1620 G-H-F)	B-C	20	1.090	150	2161837	Gray	PVC	90%
	25	Signal (1623 only)	B-C	20	0.830	40	2125563	Gray	PVC	None
25	Signal (1623 only)	B-C	20	0.830	40	2125563	Gray	PVC	None	
	1620 Model 2									
	23	AC Power	B	25	0.800	3	2162604	Gray	PVC	90%
	23	AC Power	C	25	0.800	3	2162604	Gray	PVC	90%
	24	Power Sequence	B-C	20	0.760	10	2158847	Gray	PVC	None
	25	Signal	B-C	20	1.240	182	2158841	Gray	PVC	90%
	25	Signal	B-C	40	1.090	150	2158843	Gray	PVC	90%

- Key: ① Furnished in 1620 File Attachment.
 ② Length as stated. No X length.
 ③ Specify X length cable.

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Table 23. AC Power Cables

1311 Terminals			Cable Number 2162604 or 2162605 (B Suffix)	1620 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
CB - 1	2101326	10	208 - 230 vac (Blk)	Pin C	2162628 Quick Disconnect
CB - 3	2101326	10	208 - 230 vac (Wht)	Pin B	
Gnd Buss	2101326	10	AC Ground (Green)	Pin A	
Gnd			Shield		

			Cable Number 2162604 or 2162605 (C Suffix)		
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
Pwr Sw 1L	2101326	10	208 - 230 vac (Blk)	Pin C	2162628 Quick Disconnect
Pwr Sw 2L	2101326	10	208 - 230 vac (Wht)	Pin B	
Gnd Buss	2101326	10	AC Gnd (Grn)	Pin A	
Gnd			Shield		

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Table 24. DC Power Sequence Cable, Model 3 (Suffix B and C)

1311 Terminals			Cable Number 2154890 (1620 Model 1) Cable Number 2158847 (1620 Model 2)	1620 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
DC Gnd	186968	10	DC Gnd	Pin 1	2157381 Quick Disconnect
TS 6 - 7	334921	20	Thermal Chain	Pin 2	
Seq Pnl Stud	186968	10	AC Gnd	Pin 3	
TS 6 - 23	334921	20	DC On	Pin 4	
TS 6 - 24	334921	20	DC On	Pin 5	
TS 6 - 18	334921	16	+12 Marginal DC	Pin 6	
TS 6 - 7	334921	20	Thermal Chain	Pin 7	
K1 - A	334921	20	24 vac	Pin 8	
K1 - B	334921	20	24 vac	Pin 9	
Frame	334932	18	Shield 24 vac		
Seq Pnl Stud	92784	18	Shield DC On		
Seq Pnl Stud	92784	18	Shield +12 M DC		
TS 6 - 9	334921	18	Shield Thermal Chain		

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Table 25. Data and Control Lines

1311 Terminals			1620 Terminals		
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
AXA - 01	546013	22	+Y I Cycle Reset	Connector group AXA represents lines within cables numbered 2161838, 2161845, and 2158841. See Table 26 for system-end cable and connector information.	
02			+Y Switch Thousands		
03			+Y Op 34 C		
04			+Y Op 36 RN		
05			+Y Manual Reset		
06			+Y Op 38 WN		
07			TW MBR 8 Bit Odd		
08			-C MBR 8 Bit Odd		
09			+S TR 30		
10			+Y M/Q 4 Bit		
11			TW File Op E Entry Advance		
12			-C File Op E Entry Advance		
13			TW Not C9P		
14			-C Not C9P		
15			TW MBR 4 Bit Odd		
16			-C MBR 4 Bit Odd		
17			TW W2D3 - T14D3 (1620-2)		
18			-C W2D3 - T14D3 (1620-2)		
19			TW C7P - T14D10 (1620-2)		
20			-C C7P - T14D10 (1620-2)		
21			TW C3P/FC Cycle, T9D10 (1620-2)		
22			-C C3P/FC Cycle, T910 (1620-2)		
23			TW FCU Clock Control		
24			-C FCU Clock Control		
25			TW B Advance W6D2/RAM AA TOD2		
26			-C B Advance W6D2/RAM AA TOD2		
27			TW E Cycle Advance		
28			-C E Cycle Advance		
29			TW MBR 2 Bit Odd		
30			-C MBR 2 Bit Odd		
31			TW MBR 1 Bit Odd		
32			-C MBR 1 Bit Odd		
AXB - 01	546013	22	TW MAR C Bit Units	Connector group AXB represents lines within cables numbered 2161838, 2161845, and 2158843. See Table 26 .	
02			-C MAR C Bit Units		
03			TW MAR C Bit Tens		
04			-C MAR C Bit Tens		
05			TW MAR C Bit Hundreds		
06			-C MAR C Bit Hundreds		
07			TW MAR C Bit Thousands		
08			-C MAR C Bit Thousands		
09			TW MAR C Bit 10 Thousands		
10			-C MAR C Bit 10 Thousands		
11			TW MAR 4 Bit 10 Thousands		
12			-C MAR 4 Bit 10 Thousands		
13			TW MAR 2 Bit 10 Thousands		
14			-C MAR 2 Bit 10 Thousands		
15			TW MAR 1 Bit Units		
16			-C MAR 1 Bit Units		

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Table 25. Data and Control Lines (Continued)

1311 Terminals			1620 Terminals						
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.				
AXB - 17	546013	22	TW MBR F Bit Even						
18			-C MBR F Bit Even						
19			TW MBR C Bit Even						
20			-C MBR C Bit Even						
21			TW MBR 8 Bit Even						
22			-C MBR 8 Bit Even						
23			TW MBR 4 Bit Even						
24			-C MBR 4 Bit Even						
25			TW MBR 2 Bit Even						
26			-C MBR 2 Bit Even						
27			TW MBR 1 Bit Even						
28			-C MBR 1 Bit Even						
29			TW MBR F Bit Odd						
30			-C MBR F Bit Odd						
31			TW MBR C Bit Odd						
32			-C MBR C Bit Odd						
AXC -01			546013			22	+S Access Ready	Connector group AXC represents lines within cables numbered 2161838, 2161845, and 2158841. See Table 26.	
02							+Y 1620-2 Intlk		
03							TW RD OR-1 File		
04							-C RD OR-1 File		
05							+Y M/Q 8 Bit		
06							+Y M/Q 2 Bit		
07							+Y M/Q 1 Bit		
08							+S File Op		
09							+S WLR/RBC OFF File Extender		
10							+S Addr Ck OFF File Extender		
11							+S Cycle Overflow OFF File Ext		
12							-S File Units		
13							Not Used		
14							+S File Load File Extender		
15							TW File Ctrl Cycle		
16							-C File Ctrl Cycle		
17	TW File MAR 8 Bit 10 Thousand								
18	-C File MAR 8 Bit 10 Thousand								
19	TW File Sector Cycle								
20	-C File Sector Cycle								
21	TW File Read Reset								
22	-C File Read Reset								
23	TW RD OR-2 File								
24	-C RD OR-2 File								
25	TW RD PR-3 File								
26	-C RD PR-3 File								
27	+S A Trig								
28	File OR-1 Lamp 049								
29	File PR-3 Lamp 087								
30	File OR-2 Lamp 125								
31	File Hund Lamp 162								
32	File Units Lamp 163								

23053.2

Table 25. Data and Control Lines (Continued)

1311 Terminals			1620 Terminals		
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
AXD - 01	546013	22	TW MAR 4 Bit Thousands	Connector group AXD represents lines within cables numbered 2161837 and 2158843. See Table 26.	
02			-C MAR 4 Bit Thousands		
03			TW MAR 8 Bit Thousands		
04			-C MAR 8 Bit Thousands		
05			TW MAR 1 Bit 10 Thousands		
06			-C MAR 1 Bit 10 Thousands		
07			TW MAR 2 Bit Units		
08			-C MAR 2 Bit Units		
09			TW MAR 4 Bit Units		
10			-C MAR 4 Bit Units		
11			TW MAR 8 Bit Units		
12			-C MAR 8 Bit Units		
13			TW MAR 1 Bit Tens		
14			-C MAR 1 Bit Tens		
15			TW MAR 2 Bit Tens		
16			-C MAR 2 Bit Tens		
17			TW MAR 4 Bit Tens		
18			-C MAR 4 Bit Tens		
19			TW MAR 8 Bit Tens		
20			-C MAR 8 Bit Tens		
21			TW MAR 1 Bit Hundreds		
22			-C MAR 1 Bit Hundreds		
23			TW MAR 2 Bit Hundreds		
24			-C MAR 2 Bit Hundreds		
25			TW MAR 4 Bit Hundreds		
26			-C MAR 4 Bit Hundreds		
27			TW MAR 8 Bit Hundreds		
28			-C MAR 8 Bit Hundreds		
29			TW MAR 1 Bit Thousands		
30			-C MAR 1 Bit Thousands		
31			TW MAR 2 Bit Thousands		
32			-C MAR 2 Bit Thousands		
AXE - 01	546013	22	TW Not FBR C Bit Odd	Connector group AXE represents lines within cables numbered 2161837 and 2158843. NOTE: This portion of cable 2161837 is not used with 1623 (AXE-01-32).	
02			-C Not FBR C Bit Odd		
03			TW not FBR F Bit Odd		
04			-C Not FBR F Bit Odd		
05			TW Not FBR 8 Bit Odd		
06			-C Not FBR 8 Bit Odd		
07			TW Not FBR 4 Bit Odd		
08			-C Not FBR 4 Bit Odd		
09			TW Not FBR 2 Bit Odd		
10			-C Not FBR 2 Bit Odd		
11			TW Not FBR 1 Bit Odd		
12			-C Not FBR 1 Bit Odd		
13			TW Not FBR C Bit Even		
14			-C Not FBR C Bit Even		
15			TW Not FBR F Bit Even		
16			-C Not FBR F Bit Even		

23053.3

Table 25. Data and Control Lines (Continued)

1311 Terminals			1620 Terminals				
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.		
AXE - 17	546013	22	TW Not FBR 8 Bit Even	See NOTE on preceding page opposite AXE - 01.			
18			-C Not FBR 8 Bit Even				
19			TW Not FBR 4 Bit Even				
20			-C Not FBR 4 Bit Even				
21			TW Not FBR 2 Bit Even				
22			-C Not FBR 2 Bit Even				
23			TW Not FBR 1 Bit Even				
24			-C Not FBR 1 Bit Even				
25 - 32			Not Used				
AXE - 01			546013			20	TW Not FBR C Bit Odd
02	-C Not FBR C Bit Odd						
03	TW Not FBR F Bit Odd						
04	-C Not FBR F Bit Odd						
05	TW Not FBR 8 Bit Odd						
06	-C Not FBR 8 Bit Odd						
07	TW Not FBR 4 Bit Odd						
08	-C Not FBR 4 Bit Odd						
09	TW Not FBR 2 Bit Odd						
10	-C Not FBR 2 Bit Odd						
11	TW Not FBR 1 Bit Odd						
12	-C Not FBR 1 Bit Odd						
13	TW Not FBR C Bit Even						
14	-C Not FBR C Bit Even						
15	TW Not FBR F Bit Even						
16	-C Not FBR F Bit Even						
17	TW Not FBR 8 Bit Even						
18	-C Not FBR 8 Bit Even						
19	TW Not FBR 4 Bit Even						
20	-C Not FBR 4 Bit Even						
21	TW Not FBR 2 Bit Even						
22	-C Not FBR 2 Bit Even						
23	TW Not FBR 1 Bit Even						
24	-C Not FBR 1 Bit Even						
25	Not Used						
26	Not Used						
27	Not Used						
28	-S Ctl Power						
29 - 32	Not Used						

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Table 25. Data and Control Lines (Continued)

1311 Terminals			1620 Terminals		
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
AXF - 01	546013	22	+S Bypass File Extender		Connector group AXF represents lines within cables numbered 2161837 and 2158841. See Table 26.
02			+S WR OR-1 File Extender		
03			+S WR OR-2 File Extender		
04			+S WR PR-3 File Extender		
05			+S File W Cycle Extender		
06			+S File Sync Extender		
07			+S WR Units File Extender		
08			+S TR 30 File Extender		
09			+S WR Tens File Extender		
10			-S File Z Cycle Extender		
11			+S Incr -2 File Extender		
12			+S Blk MBR/MDR Reset File Ext		
13			+S Read Check File Extender		
14			+S Write Check File Extender		
15			+S I Cycle Entry		
16			+S WR Hundred File Extender		
17			+S WR Thousand File Extender		
18			+S WR 10 Thousand File Extender		
19			TW Bit Ring S2		
20			-C Bit Ring S2		
21			Not Used		
22			+S Decrement File Extender		
23			+S Increment File Extender		
24			+S Set DBT Odd File Extender		
25			+S Set DBT Even File Extender		
26			+S Freeze A-B File Extender		
27			+S File Hold Extender		
28			+S Set 00XXX File Extender		
29			+S Clock Stop File Extender		
30			+Y CPU Meter On		
31			Not Used		
32			Not Used		
AXG -01	546013	20	TW MAR 4 Bit Thousands		NOTE: This is the second Cable No. 2125563 that is used with 1623 (AXG-01-32).
02			-C MAR 4 Bit Thousands		
03			TW MAR 8 Bit Thousands		
04			-C MAR 8 Bit Thousands		
05			TW MAR 1 Bit 10 Thousands		
06			-C MAR 1 Bit 10 Thousands		
07			TW MAR 2 Bit Units		
08			-C MAR 2 Bit Units		
09			TW MAR 4 Bit Units		
10			-C MAR 4 Bit Units		
11			TW MAR 8 Bit Units		
12			-C MAR 8 Bit Units		
13			TW MAR 1 Bit Tens		
14			-C MAR 1 Bit Tens		
15			TW MAR 2 Bit Tens		
16			-C MAR 2 Bit Tens		

Table 25. Data and Control Lines (Continued)

1311 Terminals			1620 Terminals		
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
AXG - 17	546013	20	TW MAR 4 Bit Tens	See NOTE opposite AXG - 01.	
18			-C MAR 4 Bit Tens		
19			TW MAR 8 Bit Tens		
20			-C MAR 8 Bit Tens		
21			TW MAR 1 Bit Hundreds		
22			-C MAR 1 Bit Hundreds		
23			TW MAR 2 Bit Hundreds		
24			-C MAR 2 Bit Hundreds		
25			TW MAR 4 Bit Hundreds		
26			-C MAR 4 Bit Hundreds		
27			TW MAR 8 Bit Hundreds		
28			-C MAR 8 Bit Hundreds		
29			TW MAR 1 Bit Thousands		
30			-C MAR 1 Bit Thousands		
31			TW MAR 2 Bit Thousands		
32			-C MAR 2 Bit Thousands		

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Table 26. Signal Cable and Connector Designation

Cable Number	32-Term. Connectors No. 546013 using 1311 Positions	Connector Part No.	Connects To
2161838	AXA-01-32 AXB-01-32 AXC-01-32	(3) 546013	1620-1 (Suffix G, H) AVJ, BVJ, and BVB
2161845	AXA-01-32 AXB-01-32 AXC-01-32	(6) 491349	1620-1 (Suffix F) (D2) A-05 and B-05 (D3) A-04, A-05, B-04 and B-05
2161837	AXD-01-32 AXE-01-32* AXF-01-32	(3) 546013	1620-1 (Suffix F, G, H) AXD, AXJ, BVK
2125563	AXE-01-32	(1) 546013	1623
2125563	AXG-01-32	(1) 546013	1623
2158841	AXA-01-32 AXC-01-32 AXF-01-32	(5) 491349 (1) 595978	1620-2 11DS-35, 36 37, 38, 39, 40.
2158843	AXB-01-32 AXD-01-32 AXE-01-32	(6) 595978	1625 12DS-29, 30, 31 32, 33, 34.

* Not used with 1623.

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IBM 1311 DISK STORAGE DRIVE, MODEL 4

GENERAL INFORMATION

A 1311 Model 4 (Figure 7) is the first Disk Storage Drive on an IBM 1401 Data Processing System. The Model 4 is a master unit and contains a disk drive mechanism and the electronic circuitry for controlling the accessing assembly and read/write functions.

The stored program within the 1401 System determines the commands for the 1311 Disk Storage Drive.

One Model 4 and four Model 2 satellites can be attached to the 1401 System. A Disk Storage Drive Adapter, Special Feature #3339, is a prerequisite for attaching the 1311 Model 4 to the 1401 Processing Unit.

Power Requirements

Specifications for voltage and current supplied to the 1311 Model 4 are found in Table 27. The internal



Figure 7. 1311 Disk Storage Drive, Model 4

power supplies of the Model 4 are listed in Table 28. The internal power supplies are generated for use within the Model 4.

Cables

Table 29 provides inter-unit cable information for the 1311 Model 4 and the 1401. Cable orientation for the Model 4 is shown in Figure 8.

Data and Control Lines

Power cord connection information is provided in Table 30.

Connector and machine location information for the signal and interlock cable is shown in Table 31. Refer to the Cable Connectors and Terminals section of this manual for information about the connectors and terminals used with a specific cable.

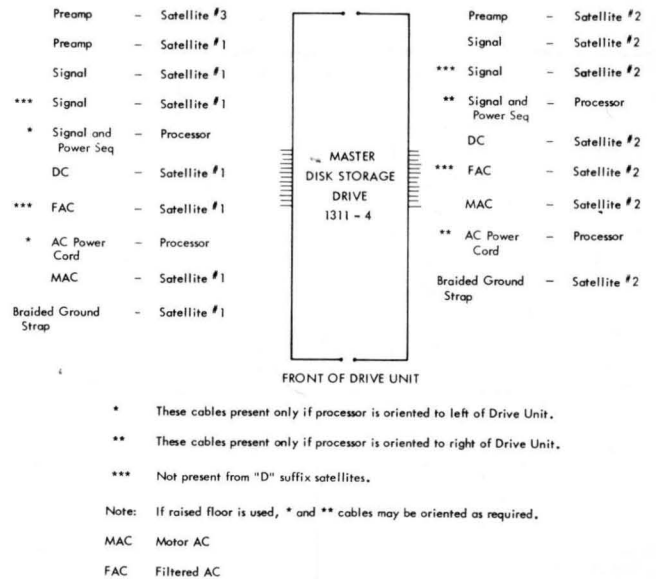


Figure 8. Cable Orientation for Model 4

Table 27. Power Requirements - 1311 Model 4 (Supplied by external system)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
Line Voltage	208 or 230 vac ±10%, single phase	6.5 amp	Switch L1 & L2	75.80.01.1

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Table 28. 1311 Model 4 Internal Power Supply (Generated and used within the 1311)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
SMS Power Supply	- 12 vdc ±4%	7.0 amp	PSTB1-7	75.80.03.1
SMS Power Supply	- 6 vdc ±4%	3.5 amp	PSTB1-7	75.80.03.1
SMS Bias Power Supply	+12 vdc ±2%	2.0 amp	TS7-5	75.80.04.1
Read/Write Power Supply	- 36 vdc ±2%	0.25 amp	TS7-3	75.80.04.1
Relay Power Supply	- 36 vdc ±8%	2.0 amp	TS7-1	75.80.04.1
Sequence Voltage	24 vac	0.1 amp	TS6-24	75.80.01.1
SMS Supply	133 vac ±10%	2.0 amp	T3-8	75.80.01.1

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Table 29. Inter-Unit Cables 1311 Model 4 and System

Special Info. Key	Ref. Table No.	Cable Function	1311 Suffix	Length (Approx. Feet)	Cable O.D. Maximum (Inches)	Number of Conductors	Cable Number	Cable Cover		
								Color	Material	Shield
① ② ↓ ↓	30	AC Power	A	40	0.800	3	2162605	Gray	PVC	90%
	30	AC Power	B	40	0.800	3	2162605	Gray	PVC	90%
	31	Signal & Intlk.	A-B	25	1.350	157	2157514	Gray	PVC	90%

Key: ① Furnished with assembly.

② Specify X length.

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Table 30. AC Power Cables

1311 Terminals			Cable Number 2162605 (A Suffix)	1401 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
CB - 1	2101326	10	208 - 230 vac (Black)	Pin C	2162628
CB - 3	2101326	10	208 - 230 vac (White)	B	Quick Disconnect
Gnd Buss	2101326	10	AC Ground (Green)	A	
Gnd			Shield		

Cable Number 2162605 (B Suffix)					
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
Pwr Sw 1L	2101326	10	208 - 230 vac (Black)	Pin C	2162628
Pwr Sw 2L	2101326	10	208 - 230 vac (White)	B	Quick Disconnect
Gnd Buss	2101326	10	AC Ground (Green)	A	
			Shield		

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Table 31. Data and Control Lines

1311 Terminals			Cable Number 2157514 (A and B suffix)	1401 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
13A1XA-01	546013	22	-C Time 045 - 105, Input	C1 - 16	2127854
13A1XA-02	↓	↓	TW Time 045 - 105	C1 - 20	↓
13A1XA-03	↓	↓	-C Time 015 - 075, Input	C1 - 23	↓
13A1XA-04	↓	↓	TW Time 015 - 075	C1 - 26	↓
13A1XA-05	↓	↓	-C File On-Line Interlock Output	C1 - 46	↓
13A1XA-06	↓	↓	Spare	C1 - 73	↓
13A1XA-07	↓	↓	-C File Transfer Star, Output	C2 - 40	2127854
13A1XA-08	↓	↓	-C A Register WM	C2 - 46	↓
13A1XA-09	↓	↓	Spare	C2 - 65	↓
13A1XA-10	↓	↓	TW File On-Line Interlock	C1 - 49	2127854
13A1XA-11	↓	↓	TW Spare	C1 - 76	↓
13A1XA-12	↓	↓	TW File Transfer Star	C2 - 43	2127854
13A1XA-13	↓	↓	TW A Reg WM	C2 - 49	↓
13A1XA-14	↓	↓	TW Spare	C2 - 70	↓
13A1XA-15	↓	↓	Spare	C2 - 73	↓
13A1XA-17	↓	↓	TW Spare	C2 - 76	↓
13A1XB-01	546013	↓	-C B Register 1, Input	C1 - 03	2127854
13A1XB-02	↓	↓	TW B Register 1	C1 - 07	↓
13A1XB-03	↓	↓	-C B Register WM, Input	C1 - 48	↓
13A1XB-04	↓	↓	TW B Register WM	C1 - 51	↓
13A1XB-05	↓	↓	-C Load OPR, Input	C1 - 34	↓
13A1XB-06	↓	↓	+C Start Reset, Input	C1 - 74	↓
13A1XB-07	↓	↓	-C B Cycle, Input	C1 - 01	↓
13A1XB-08	↓	↓	-C I Cycle, Input	C1 - 15	↓
13A1XB-09	↓	↓	-C Delta I Cycle Latch, Input	C1 - 75	↓
13A1XB-10	↓	↓	TW Load OPR	C1 - 37	↓
13A1XB-11	↓	↓	TW Start Reset	C1 - 77	↓
13A1XB-12	↓	↓	TW B Cycle	C1 - 04	↓
13A1XB-13	↓	↓	TW I Cycle	C1 - 18	↓
13A1XB-14	↓	↓	TW Delta I Cycle Latch	C1 - 78	↓
13A1XB-15	↓	↓	-C File Op, Input	C1 - 28	↓
13A1XB-16	↓	↓	-C Delta B Cycle, Input	C1 - 29	↓
13A1XB-17	↓	↓	TW File Op	C1 - 31	↓
13A1XB-18	↓	↓	TW Delta B Cycle	C1 - 32	↓
13A1XB-19	↓	↓	-C I Ring Op, Input	C1 - 66	↓
13A1XB-20	↓	↓	-C I Ring 3, Input	C1 - 41	↓
13A1XB-21	↓	↓	-C B less than A, Input	C1 - 54	↓
13A1XB-22	↓	↓	-C A Cycle, Input	C1 - 08	↓
13A1XB-23	↓	↓	-C I Ring 7, Input	C1 - 59	↓
13A1XB-24	↓	↓	TW I Ring Op	C1 - 71	↓
13A1XB-25	↓	↓	TW I Ring 3	C1 - 44	↓
13A1XB-26	↓	↓	TW B less than A	C1 - 57	↓
13A1XB-27	↓	↓	TW A Cycle	C1 - 12	↓
13A1XB-28	↓	↓	TW I Ring 7	C1 - 63	↓
13A1XB-29	↓	↓	-C Time 000 - 060, Input	C1 - 02	↓
13A1XB-30	↓	↓	TW Time 000 - 060	C1 - 05	↓
13A1XB-31	↓	↓	-C Time 030 - 090, Input	C1 - 10	↓
13A1XB-32	↓	↓	TW Time 030 - 090	C1 - 13	↓
13A1XC-01	546013	↓	-C Wrong-Length Record, Output	C2 - 08	2127854
13A1XC-02	↓	↓	TW Wrong-Length Record	C2 - 12	↓

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Table 31. Data and Control Lines (Continued)

1311 Terminals			Cable Number 2157514 (A and B suffix)	1401 Terminals			
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.		
13A1XC-03	546013	22	-C Not Start Gate, Output	C2 - 41	2127854		
13A1XC-04			TW Not Start Gate	C2 - 44	↓		
13A1XC-05			-C Process, Input	C1 - 67	2127854		
13A1XC-06			-C Equal Character, Input	C1 - 35	↓		
13A1XC-07			-C B greater than A, Input	C1 - 60	↓		
13A1XC-08			-C Write Normal, Input	C1 - 65	↓		
13A1XC-09			-C Write, Input	C2 - 60	2127854		
13A1XC-10			TW Process	C1 - 72	2127854		
13A1XC-11			TW Equal Character	C1 - 38	↓		
13A1XC-12			TW B Greater than A	C1 - 64	↓		
13A1XC-13			TW Write Normal	C1 - 70	↓		
13A1XC-14			TW Write	C2 - 64	2127854		
13A1XC-15			-C Adder Carry, Input	C1 - 47	2127854		
13A1XC-16			-C B0 Q0, Input	C1 - 40	↓		
13A1XC-17			TW Adder Carry	C1 - 50	↓		
13A1XC-18			TW B0 Q0	C1 - 43	↓		
13A1XC-19			-C Gated WM, Input	C1 - 53	↓		
13A1XC-20			-C B Register C, Input	C1 - 42	↓		
13A1XC-21			-C B Register B, Input	C1 - 36	↓		
13A1XC-22			-C B Register A, Input	C1 - 30	↓		
13A1XC-23			-C B Register B, Input	C1 - 24	↓		
13A1XC-24			TW Gated WM	C1 - 56	↓		
13A1XC-25			TW B Register C	C1 - 45	↓		
13A1XC-26			TW B Register B	C1 - 39	↓		
13A1XC-27			TW B Register A	C1 - 33	↓		
13A1XC-28			TW B Register B	C1 - 27	↓		
13A1XC-29			-C B Register 4, Input	C1 - 17	↓		
13A1XC-30			TW B Register 4	C1 - 21	↓		
13A1XC-31			-C B Register 2, Input	C1 - 11	↓		
13A1XC-32			TW B Register 2	C1 - 14	↓		
13A1XD-01			546013	22	-C Set A Register 4, Output	C2 - 17	2127854
13A1XD-02					TW Set A Register 4	C2 - 21	↓
13A1XD-03	-C Set A Register 2, Output	C2 - 11			↓		
13A1XD-04	TW Set A Register 2	C2 - 14			↓		
13A1XD-05	-C Set A Register 1, Output	C2 - 03			↓		
13A1XD-06	-C Set A Register WM, Output	C2 - 48			↓		
13A1XD-07	-C Set A Register 0, Output	C2 - 10			↓		
13A1XD-08	-C File High, Output	C2 - 23			↓		
13A1XD-09	-C A for B Sub, Output	C2 - 35			↓		
13A1XD-10	TW Set A Register 1	C2 - 07			↓		
13A1XD-11	TW Set A Register WM	C2 - 51			↓		
13A1XD-12	TW Set A Register 0	C2 - 13			↓		
13A1XD-13	TW File High	C2 - 26			↓		
13A1XD-14	TW A for B Sub	C2 - 38			↓		
13A1XD-15	-C Busy, Output	C2 - 53			↓		
13A1XD-16	-C Hold Delta A, Output	C2 - 34			↓		
13A1XD-17	TW Busy	C2 - 56			↓		
13A1XD-18	TW Hold Delta A	C2 - 37			↓		
13A1XD-19	-C A Cycle Eliminate Output	C1 - 52	2127854				
13A1XD-20	-C Transfer B Register, Output	C2 - 67	2127854				

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Table 31. Data and Control Lines (Continued)

1311 Terminals			Cable Number 2157514 (A and B Suffix)	1401 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
13A IXD-21	546013	22	+C File Allow A Register Check, Output	C2 - 16	2127854
13A IXD-22			-C File Op + 1 Mod, Output	C1 - 22	2127854
13A IXD-23			+C Clock Control File, Output	C2 - 52	2127854
13A IXD-24			TW A Cycle Eliminate	C1 - 55	2127854
13A IXD-25			TW Transfer B Register	C2 - 72	2127854
13A IXD-26			TW File Allow A Register Check	C2 - 20	
13A IXD-27			TW File Op + 1 Mod	C1 - 25	2127854
13A IXD-28			TW Clock Control File	C2 - 55	2127854
13A IXD-29			-C Store A Register, Output	C2 - 28	
13A IXD-30			TW Store A Register	C2 - 31	
13A IXD-31			-C Any File Check, Output	C2 - 15	
13A IXD-32			TW Any File Check	C2 - 18	
13A IXE-01	546013		-C Validity Check, Output	C2 - 01	
13A IXE-02			TW Validity Check	C2 - 04	
13A IXE-03			-C No Address CMR, Output	C2 - 54	
13A IXE-04			TW No Address CMR	C2 - 57	
13A IXE-05			-C Set Equal, Output	C2 - 47	
13A IXE-06			-C Ready, Output	C2 - 59	
13A IXE-07			-C Delta Process ON Output	C2 - 75	
13A IXE-08			-C IE Change, Output	C2 - 58	
13A IXE-09			-C Change Delta A to Delta I, Output	C2 - 02	
13A IXE-10			TW Set Equal	C2 - 50	
13A IXE-11			TW Ready	C2 - 63	
13A IXE-12			TW Delta Process ON	C2 - 78	
13A IXE-13			TW IE Change	C2 - 62	
13A IXE-14			TW Change Delta A to Delta I	C2 - 05	
13A IXE-15			-C Arithmetic Digit Inh, Output	C2 - 74	
13A IXE-16			-C Unequal CMR, Output	C2 - 66	
13A IXE-17			TW Arithmetic Digit Inh	C2 - 77	
13A IXE-18			TW Unequal CMR	C2 - 71	
13A IXE-19			-C Reset Adder Carry, Output	C2 - 29	
13A IXE-20			-C File Compare Gate, Output	C2 - 22	
13A IXE-21			-C Set Adder Carry, Output	C1 - 58	2127854
13A IXE-22			-C Set A Register C, Output	C2 - 42	2127854
13A IXE-23			-C Set A Register B, Output	C2 - 36	
13A IXE-24			TW Reset Adder Carry	C2 - 32	
13A IXE-25			TW File Compare Gate	C2 - 25	
13A IXE-26			TW Set Adder Carry	C1 - 62	2127854
13A IXE-27			TW Set A Register C	C2 - 45	
13A IXE-28			TW Set A Register B	C2 - 39	
13A IXE-29			-C Set A Register A, Output	C2 - 30	
13A IXE-30			TW Set A Register A	C2 - 33	
13A IXE-31			-C Set A Register 8, Output	C2 - 24	
13A IXE-32			TW Set A Register 8	C2 - 27	
Frame Gnd	360370	14	Frame Bond	Frame	359695
K1 - A	334921	18	24-vac Emergency Power OFF	C2 - 80	2127854
K1 - B	334921	18	24-vac Emergency Power OFF	C2 - 82	2127854
K1 - Gnd	186968		Frame bond	Frame	2101326
Frame Gnd	186968		Shield	Frame	2101326
TS 6 - 23	334921	18	24-vac System Ready Interlock	C1 - 82	2127854

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Table 31. Data and Control Lines (Continued)

1311 Terminals		Cable Number 2157514 (A and B Suffix)		1401 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Machine Location	Connector Part No.
TS 6 - 24 SMS TUB Gnd	334921	18	24-vac System Ready Interlock Shield	C1 - 80	2127854

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GENERAL INFORMATION

A 1311 Model 5 (Figure 9) is the first Disk Storage Drive on each channel of a 1410/7010 System. The Model 5 is a master unit and contains a disk drive mechanism, electronic circuitry for controlling the accessing assembly and for controlling reading or writing on the disk.

The stored program within the 1410/7010 Data Processing System determines the commands for the 1311 Disk Storage Drive.

One Model 5 and four Model 2 satellites can be attached to each channel of the 1410/7010 System.

A Disk Storage Adapter, Special Feature #3341 for channel 1 and #3343 for channel 2, are prerequisites on the 1411 Processing Unit for attaching the 1311 Model 5.

A Disk Storage Adapter, Special Feature #3301 for channel 1 and #3302 for channel 2, is a prerequisite on the 7114 Processing Unit for attaching the 1311 Model 5.

Power Requirements

Specifications for the power requirements of the 1311 Model 5 are located in Table 32.



Figure 9. 1311 Disk Storage Drive Model 5

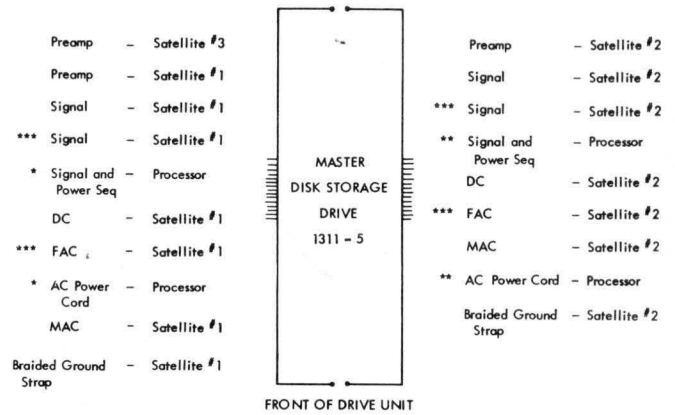
Table 33 lists the power supplies located within and for use by the Model 5.

Cables

There are four cables plus the a-c power cord between the 1311 and the 1411/7114 Processing Unit. Table 34 lists the power cord and inter-unit cables between the Model 5 and the 1411/7114 Processing Unit. Cable Orientation for the Model 5 is shown in Figure 10.

Data and Control Lines

Tables 35 through 39 provide the necessary interface information for the interlock cable, three signal cables, and the a-c power cord as used between the 1311 Model 5 and the 1411/7114. Refer to the Cable Connectors and Terminals section of this manual for information about the connectors and terminals used with a specific cable.



- * These cables present only if processor is oriented to left of Drive Unit.
 - ** These cables present only if processor is oriented to right of Drive Unit.
 - *** Not present from "D" suffix satellites.
- Note: If raised floor is used, * and ** cables may be oriented as required.
- MAC Motor AC
FAC Filtered AC

Figure 10. Cable Orientation for Model 5

Table 32. Power Requirements - 1311 Model 5 (Supplied by external system)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
Line Voltage	208 or 230 vac ±10%, single phase	6.5 amp	Switch L1 & L2	75.80.01.1

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Table 33. 1311 Model 5 Internal Power Supply (Generated and used within the 1311)

Line Function	Voltage	Maximum Current	Terminal Location	System Diagram Page
SMS Power Supply	- 12 vdc ±4%	7.0 amp	PSTB1-7	75.80.03.1
SMS Power Supply	- 6 vdc ±4%	3.5 amp	PSTB1-7	75.80.03.1
SMS Bias Power Supply	+12 vdc ±2%	2.0 amp	TS7-5	75.80.04.1
Read/Write Power Supply	- 36 vdc ±2%	0.25 amp	TS7-3	75.80.04.1
Relay Power Supply	- 36 vdc ±8%	2.0 amp	TS7-1	75.80.04.1
Sequence Voltage	24 vac	0.1 amp	TS6-24	75.80.01.1
SMS Supply	133 vac ±10%	2.0 amp	T3-8	75.80.01.1

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Table 34. Inter-Unit Cables 1311 Model 5 and System

Special Info. Key	Ref. Table No.	Cable Function	1311 Suffix	Length (Approx. Feet)	Cable O.D. Maximum (Inches)	Number of Conductors	Cable Number	Cable Cover			
								Color	Material	Shield	
① ② ↓ ↓	35	Interlock	A-B	55	0.550	4	2157542	Gray	PVC	85%	
	36	Signal	A-B	35	0.682	32	553343	Gray	PVC	None	
	37	Signal	A-B	35	0.682	32	553343	Gray	PVC	None	
	38	Signal	A-B	35	0.682	32	553343	Gray	PVC	None	
	39	AC Power	A		40	0.800	3	2162605	Gray	PVC	90%
	39	AC Power	B		40	0.800	3	2162605	Gray	PVC	90%

Key: ① Furnished with assembly.

② Specify X length cable.

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Table 35. Interlock cable

1311 Terminals			Cable Number 2157542 (A and B Suffix)	1411 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
TS 6 - 23	334932	18	24-vac Sequence	Housing 6	523268
TS 6 - 24	334932	18	System Ready Point	Housing 1	523268
TS 6 - Shield	359695	Shield	Shield Ground	Not Conn.	
K1 - 3	334932	18	Emergency Power OFF - Requires 24 vac from System Emergency OFF to energize	Housing 3	523268
K1 - 4	334932	18	Emergency Power OFF	Housing 5	523268
K1 - Shield	359695	Shield	Shield Ground	Not Conn.	

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Table 36. Data and Control Lines

1311 Terminals			(1) Cable Number 553343 (A and B Suffix)	1411 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
XB - 01	546013	20	TW UNR C	A	491349
XB - 02			-C UNR C-Bit, Input, from Op Code Register	B	
XB - 03			TW UNR 8	C	
XB - 04			-C UNR 8-Bit, Input, from Op Code Register	D	
XB - 05			TW UNR 4	E	
XB - 06			-C UNR 4-Bit, Input, from Op Code Register	F	
XB - 07			TW UNR 2	G	
XB - 08			-C UNR 2-Bit, Input, from Op Code Register	H	
XB - 09			TW UNR 1	J	
XB - 10			-C UNR 1-Bit, Input, from Op Code Register	K	
XB - 11			TW Read	L	
XB - 12			-C Read, Input Controlled by CPU Read Op	M	
XB - 13			TW Write	N	
XB - 14			-C Write, Input Controlled by CPU Write Op	P	
XB - 15			TW Load	Q	
XB - 16			-C Load, Input Controlled by "Load Mode" in CPU	R	
XB - 17			TW File Op	A	
XB - 18			-C File Op, Input Generated by CPU	B	
XB - 19			TW End Addr	C	
XB - 20			-C End of Addr Transfer, Output, Signal at end of Address Transfer	D	
XB - 21			TW End Op	E	
XB - 22			-C End Op, Output, Signal at end of Operation	F	
XB - 23			TW Disc	G	
XB - 24			-C Disc, Input, Answer Back to End Op	H	
XB - 25			TW Ready	J	
XB - 26			-C Ready, Output, File Ready	K	
XB - 27			TW Busy	L	
XB - 28			-C Busy, Output, File Busy	M	
XB - 29			TW Data Check	N	
XB - 30			-C Data Check Output, Parity Error	P	
XB - 31			TW Condition	Q	
XB - 32			-C Condition, Output, No Record Found Error	R	

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Table 37. Data and Control Lines

1311 Terminals			(2) Cable Number 553343 (A and B Suffix)	1411 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
XC - 01	546013	20	TW Seek Test	A	491349
XC - 02			-C Seek Test, Input, Seek Test from CPU for Busy File	B	
XC - 03			TW Data Strobe	C	
XC - 04			-C Data Strobe, Output, Request to CPU to Send Data	D	
XC - 05			TW Seek Complete	E	
XC - 06			-C Seek, Complete Output, Access Arm is at Seek Address and Ready	F	
XC - 07			TW File Start	G	
XC - 08			-C File Start, Input, Start of File Op	H	
XC - 09			Not Used	J	
XC - 10			Not Used	K	
XC - 11			TW Computer Reset	L	
XC - 12			-C Computer Reset, Input, Computer Reset	M	
XC - 13			Not Used	N	
XC - 14			+Y Write Inhibit, Output, Signal Returned to CPU when write inhibit is ON at CPU Console	P	
XC - 15			TW Process	Q	
XC - 16			-C Process	R	
XC - 17			TW 1401 Mode	A	
XC - 18			-C 1401 Mode, Input, Controlled by System Console Switch	B	
XC - 19			TW Addr to CPU	C	
XC - 20			-C Addr to CPU, Output, Signal Up during address transfer	D	
XC - 21			TW Sim GM-WM	E	
XC - 22			-C Sim GM-WM, Output, required at end of address transfer to prevent Wrong Length Address Condition	F	
XC - 23			TW Scan Repeat	G	
XC - 24			-C Scan Repeat, Output, Scan requirements not satisfied, continue scanning	H	
XC - 25			TW 1311 to CPU Scan RST Eq	J	
XC - 26			-C 1311 to CPU Scan RST Eq, Output, during scan signal present except when an Equal Cond is detected	K	
XC - 27			TW 1311 to CPU Scan RST Lo	L	
XC - 28			-C 1311 to CPU Scan RST Lo, Output, During scan, signal present except when a Low Cond is detected	M	
XC - 29			TW 1311 to CPU Scan RST High	N	
XC - 30			-C 1311 to CPU Scan RST High, Output, during scan signal present except when a High condition is detected.	P	
XC - 31			Not Used	Q	
XC - 32			-C Write Normal Switch	R	

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Table 38. Data and Control Lines

1311 Terminals			(3) Cable Number 553343 (A and B Suffix)	1411 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
XD - 01	546013	20	TW CPU WM Bit	A	491349
XD - 02			-C CPU WM Bit, Input, Write data from CPU	B	
XD - 03			TW CPU C Bit	C	
XD - 04			-C CPU C Bit, Input, Write data from CPU	D	
XD - 05			TW CPU B Bit	E	
XD - 06			-C CPU B Bit, Input, Write data from CPU	F	
XD - 07			TW CPU A Bit	G	
XD - 08			-C CPU A Bit, Input, Write data from CPU	H	
XD - 09			TW CPU 8 Bit	J	
XD - 10			-C CPU 8 Bit, Input, Write data from CPU	K	
XD - 11			TW CPU 4 Bit	L	
XD - 12			-C CPU 4 Bit, Input, Write data from CPU	M	
XD - 13			TW CPU 2 Bit	N	
XD - 14			-C CPU 2 Bit, Input, Write data from CPU	P	
XD - 15			TW CPU 1 Bit	Q	
XD - 16			-C CPU 1 Bit, Input, Write data from CPU	R	
XD - 17			TW 1311 to CPU WM Bit	A	491349
XD - 18			-C 1311 to CPU WM Bit, Output, Read data bits	B	
XD - 19			TW 1311 to CPU C Bit	C	
XD - 20			-C 1311 to CPU C Bit, Output, Read data bits	D	
XD - 21			TW 1311 to CPU B Bit	E	
XD - 22			-C 1311 to CPU B Bit, Output, Read data bits	F	
XD - 23			TW 1311 to CPU A Bit	G	
XD - 24			-C 1311 to CPU A Bit, Output, Read data bits	H	
XD - 25			TW 1311 to CPU 8 Bit	J	
XD - 26			-C 1311 to CPU 8 Bit, Output, Read data bits	K	
XD - 27			TW 1311 to CPU 4 bit	L	
XD - 28			-C 1311 to CPU 4 bit, Output, Read data bits	M	
XD - 29			TW 1311 to CPU 2 bit	N	
XD - 30			-C 1311 to CPU 2 bit, Output, Read data bits	P	
XD - 31			TW 1311 to CPU 1 bit	Q	
XD - 32			-C 1311 to CPU 1 bit, Output, Read data bits	R	

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Table 39. AC Power Cables

1311 Terminals		Cable Number 2162605 (A Suffix)			1441 Terminals	
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.	
CB - 1	2101326	10	208 - 230 vac (Black)	Pin C	2162628 Quick Disconnect	
CB - 3	2101326	10	208 - 230 vac (White)	B		
Gnd Buss	2101326	10	AC Ground (Green)	A		
Gnd			Shield			

Cable Number 2162605 (B Suffix)					
Machine Location	Connector Part No.	Wire Size AWG	Line Name	Connector Location	Connector Part No.
Pwr Sw 1L	2101326	10	208 - 230 vac (Black)	Pin C	2162628 Quick Disconnect
Pwr Sw 2L	2101326	10	208 - 230 vac (White)	B	
Gnd Buss	2101326	10	AC Ground (Green)	A	
			Shield		

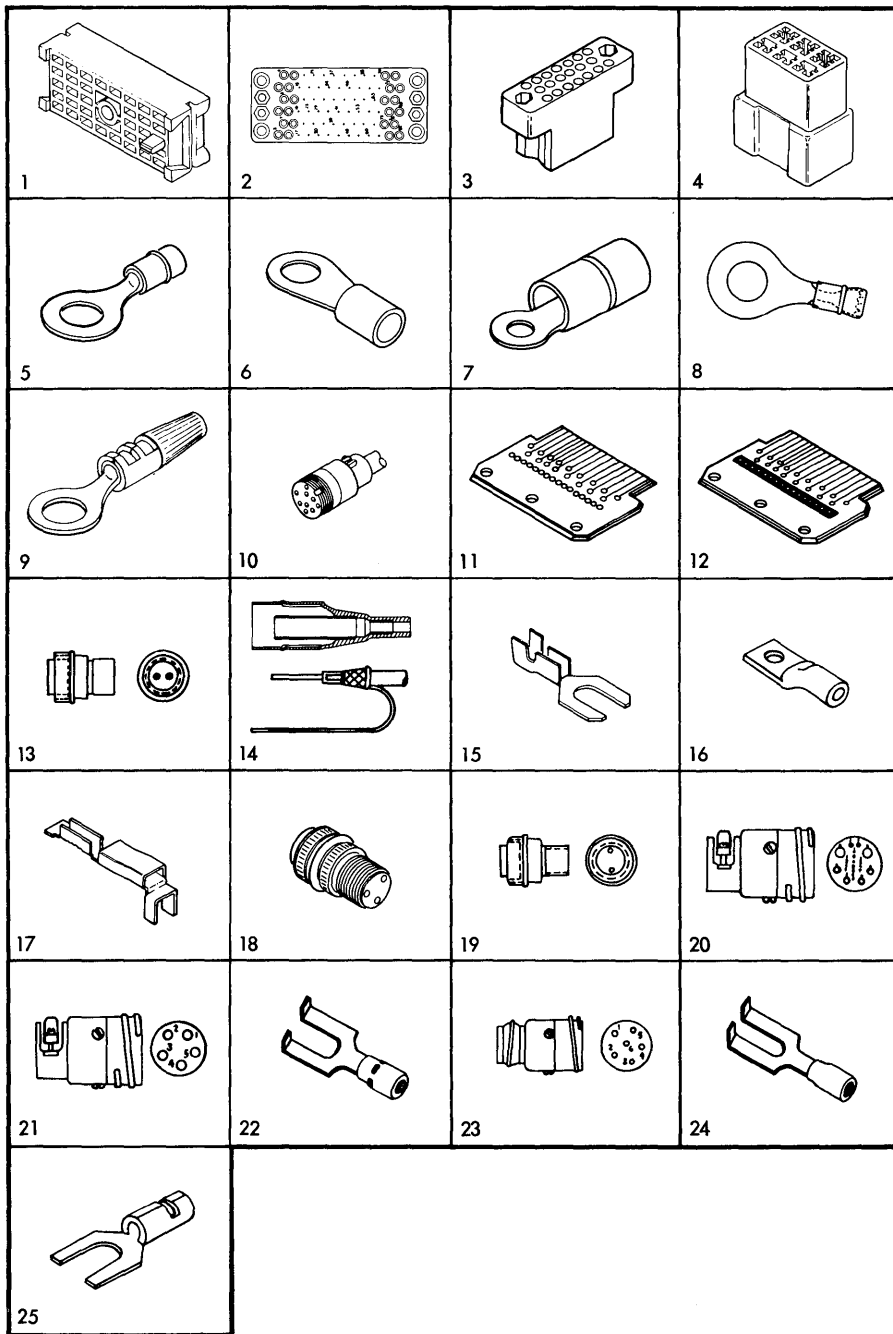
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CABLE CONNECTORS AND TERMINALS

Cable connectors and terminals used with the 1311 Disk Storage Drives are included in this section. The index number in the following list refers to the associated illustration in Figure 11.

Information pertaining to matching receptacles or plugs can be obtained from the IBM Parts Catalogs for the 1311 and its associated system.

<u>Index No.</u>	<u>Part Number</u>	<u>Description</u>
1	546013	Block, 32 position
2	2127854	Block, 75 position, male
3	2122255	Connector, 20 position, male
4	523268	Housing, Tab
5	334910	Terminal, Lug -- 16-14 AWG
5	334921	Terminal, Lug -- 16-22 AWG, No. 6 Mtg. Hole
5	186968	Terminal, Lug -- 10-12 AWG
5	334932	Terminal, Lug -- 16-22 AWG, No. 10 Mtg. Hole
5	360370	Terminal, Lug -- 14-16 AWG, No. 8 Mtg. Hole
6	2101326	Terminal, Lug -- 10-12 AWG, No. 10 Mtg. Hole
6	92784	Terminal, Lug -- 18-20 AWG, No. 8 Mtg. Hole
7	253740	Terminal, Lug -- 10-12 AWG, (Stranded)
8	504879	Terminal, Lug -- 6-8 AWG, No. 10 Mtg. Hole
9	359695	Terminal, Lug -- 14-16 (Stranded) No. 10 Mtg. Hole
10	2157381	Plug, 10 Wire, 2 #10 AWG, 8 #16 AWG
11	595978	Card, Cable Entry Terminator
12	491349	Card, Cable Entry Terminator
13	2160792	Plug, MS Connector, #16 AWG
14	591649	Terminal, Coaxial Splice
15	186967	Terminal, Lug -- 20-26 AWG, No. 6 Mtg. Hole
16	323596	Terminal, Lug
17	596255	Terminal, Slip on
18	2162628	Plug
19	2157516	Plug, MS Connector
20	2162820	Connector, 17 position, male
21	2162819	Connector, 5 position, male
22	368222	Terminal, Lug -- 12-14 AWG, No. 5 Stud
23	2162818	Connector, 6 position, male
24	1119009	Terminal, Lug -- 16-22 AWG
25	186965	Terminal, Spade, No. 8 Stud
25	255994	Terminal, Spade, #18 AWG



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Figure 11. Cable Connector and Terminal Illustrations

SHIPPING GROUPS

A Bill of Material (B/M) is included in the shipment of any 1311 Disk Storage Drive. Each B/M contains cable diagrams, parts catalogs, system diagrams, and reference literature pertaining to the particular model of IBM 1311. In addition to the above, the B/M for Models 1, 3, 4, and 5

contain the following items:

Paddle, Head Cleaning
Tool, Track Pulse Adjusting
Key, Head Assembly Adjusting
Alcohol, Isopropyl
Wipers, Disk

This section lists and describes manuals, diagrams, and other reference material related to individual or multiple models of the IBM 1311 Disk Storage Drives. Copies can be ordered through the nearest IBM Branch office.

IBM CUSTOMER ENGINEERING MANUALS OF INSTRUCTION

The following manuals of instruction explain the detailed theory of operation of the feature.

1311 Disk Storage Drive (Form 227-5703).

1311 Disk Storage Drive, Model 3 Controls (Form 227-5705).

1311 Disk Storage Drive Operation with 1620 Models 1 and 2 (Form 227-5820).

1311 Disk Storage Drive, Model 4 (Form 225-3061).

1311 Disk Storage Drive, Model 5 (Form 225-3137).

IBM CUSTOMER ENGINEERING REFERENCE MANUALS

1311 Disk Storage Drive (Form 227-5649). This manual contains information regarding maintenance and servicing procedures, service aids, and a special tool and supply list.

IBM INTERMEDIATE LEVEL DIAGRAM PACKAGES AND ILLUSTRATED PARTS CATALOGS

The Intermediate Level Diagrams (ILD) packages contain functional diagrams, timing charts, flow charts, interface descriptions, and installation procedures.

IBM 1311 Model 1 ILD Package (Part No. 2108761).

IBM 1311 Model 2, ILD Package (Part No. 2108762).

IBM 1311 Model 3, ILD Package (Part No. 2108772).

IBM 1311 Model 4, ILD Package (Part No. 2108764).

IBM 1311 Model 5, ILD Package (Part No. 2108765).

Parts Catalog, IBM 1311 Disk Storage Drive Models 1 and 2 (Form 127-0765).

Parts Catalog, IBM 1311 Disk Storage Drive Models 3, 4, and 5 (Form 127-0766).

SYSTEM REFERENCE LIBRARY BIBLIOGRAPHY

The SRL Bibliographies contain listings of reference literature applicable to the installation and operation of a particular system. The listings contain the form number and a brief abstract about the publication. From the bibliography a system user can pick the applicable publication that will best serve his needs. The following Bibliographies contain abstracts for publications that apply to 1311 Disk Storage Drives.

IBM 1401/1460 Bibliography (Form A24-1495).

IBM 1410 Bibliography (Form A22-0523).

IBM 1440 Bibliography (Form A24-3005).

IBM 1620/1710 Bibliography (Form A26-5970).

IBM 7010 Bibliography (Form A22-6720).

ALTERATIONS AND ATTACHMENTS

If lessees are considering the special application of IBM leased machines in conjunction with associated equipment, they should review the Alterations and Attachments clause of the Agreement for IBM Machine Service. Under this clause, IBM must receive written notice prior to any alterations or attachments to the machines or units. If the alteration or attachment interferes with the normal operation or maintenance of any of the IBM machines or units and substantially increases the cost of maintenance, the customer must remove the alteration or attachment and restore the machines and units to their normal condition upon notice from IBM.

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