

REV. C		REVISIONS				
DWG. NO.	SHEET	SYM.	SHEET	DESCRIPTION	APPROV.	DATE
02049	1 OF 13	A		Released to Production	G.Y.W.	12-5-75
		B		Revised to include Five-Wide and Parity Option	G.Y.W.	3-16-76
		C		ECN 895	G.Y.W.	9-21-76

DRAWN MAS	DATE 12-3-75	TITLE  PRODUCT SPECIFICATION FIVE-WIDE & NINE-WIDE CONNECTOR ASSEMBLIES	 <b>DATARAM CORPORATION</b> PRINCETON NEW JERSEY	DWG. NO.	REV.
CHK'D B.H.	DATE 12-4-75			02049	C
ENGR. G.Y.W.	DATE 12-4-75			SHEET 1 OF 13	
APPROVED G.Y.W.	DATE 12-4-75				

## 1.0 INTRODUCTION

The specification defines the electrical and mechanical characteristics of the Five-Wide and Nine-Wide connector assemblies produced by Dataram Corporation, Cranbury, New Jersey.

## 2.0 GENERAL

The Five-Wide and Nine-Wide connector assemblies are designed to operate in the following Digital Equipment Corporation (DEC\*) computers and expander boxes:

	<u>Models</u>
1. PDP-11/05*-11/10 (10½ inch box)	NC, ND, SC, SD
2. PDP-11/35 (10½ inch box)	JC, JD, JE, JF
3. PDP-11/35-11/40 (21 inch expander box) Serial No. 0001 through 5999	
4. PDP-11/35-11/40 (21 inch expander box) Serial No. 6000 and Up	FC, FL, FM
5. PDP-11/45 Mainframe	

## 3.0 VERSIONS

### 3.1 Nine-Wide Connector Assembly with No Parity DRC 61105 and DRC 61114

The Nine-Wide connector assembly can be supplied in two basic versions. The first (DRC P/N 61105) consists of 54 connectors and can be configured with different combinations of DRC DR-111 memory systems, DEC MM11-L memory systems and DEC Peripheral Controller assemblies. The second version (DRC P/N 61114) consists of 32 connectors and can be configured with DRC DR-111 memory systems only.

### 3.2 Nine-Wide Connector Assembly with Parity - DRC 61125

Parity core memory is similar to non-parity. It is available to check the integrity of stored data. All of the extra control logic is contained on a module called Parity Control (DRC 61122) which is installed in a pre-assigned slot.

The Nine-Wide connector assembly with parity (DRC 61125) consists of 32 connectors and can be configured with DRC DR-111P parity memory systems only.

\*DEC and PDP-11 are registered trademarks of Digital Equipment Corporation.



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3.3 Five-Wide Connector Assembly with No Parity - DRC 61123

The Five-Wide connector assembly with no parity (DRC 61123) consists of 20 connectors and can be configured with DR-111 memory systems only.

3.4 Five-Wide Connector Assembly with Parity - DRC 61124

The Five-Wide connector assembly with parity (DRC 61124) consists of 20 connectors and can be configured with DRC DR-111P parity memory systems only.

3.5 All Versions - Power Connections

All connector assemblies connect to the PDP-11 power bus via a nine pin AMP MATE-N-LOK connector. Certain configurations of the PDP-11 computer require different styles of the AMP MATE-N-LOK connectors for power connections. An adapter power cable is supplied with the Nine-Wide Connector Block to accommodate these configurations.

The following is a list of computer configurations and required power cable assemblies:

<u>Computer Configuration</u>	<u>Adapter Power Cable Required</u>
A. PDP-11/05, 11/10 (10½" Box) Models NC,ND,SC,SD	None
B. PDP-11/35 (10½" Box) Models JC,JD,JE,JF	None
C. PDP-11/35, 11/40 (21" Expander Box) Serial No. 0001 through 5999	None
D. PDP-11/35, 11/40 (21" Expander Box) Serial No. 6000 and Up Models FC,FL,FM	P/N 61117
E. PDP-11/45 Mainframe	P/N 61118

4.0 ELECTRICAL

All electrical interconnections are made using a printed wiring board and wirewrap jumpers. A cable is used to connect the power supplies to the printed wiring board.

4.1 Nine-Wide Connector Assembly

The printed wiring board can contain up to fifty-four (54) printed circuit connectors containing thirty-six (36) contacts each. These are laid out in nine (9) rows of six (6) connectors each. Each row of six (6) connectors is identified as connectors A,B,C,D,E and F with connectors A and B in each row carrying the UNIBUS\* signals. Connectors C,D,E and F in Rows 1,2 and 3 are pre-wired to accept DEC MM11-L/MM11-K memory modules or the Dataram DR-111.

\*UNIBUS is a registered trademark of Digital Equipment Corporation.



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Connectors C, D, E and F in Rows 4, 5 and 6 are also pre-wired to accept the MM11-L/MM11-K or the DR-111 memory module.

Connectors C, D, E and F in Rows 1, 2 and 3 and C, D, E and F in Rows 4, 5 and 6 are not interconnected.

Connectors C, D, E and F in Rows 7 and 8 are pre-wired to accept a small peripheral controller in each row.

Connectors C, D, E and F in Row 9 are pre-wired to accept the Dataram 61122 Parity Control module. Different wirewrap jumper arrangements are used for parity and non-parity operation.

*HG: SLOT 9  
WILL ALSO CARRY  
AN SRC.*

UNIBUS signals MUST enter the Nine-Wide connector assembly in Row 1, Connectors A and B. If the connector assembly represents the end of the UNIBUS chain, a bus terminator card must be installed in Row 9, Connectors A and B. If the chain is to be continued, the UNIBUS cable exiting the connector assembly must be installed in Row 9, Connectors A and B.

#### 4.2 Five-Wide Connector Assembly

The Five-Wide printed wiring board contains twenty (20) printed circuit connectors. These are laid out in five (5) rows with a maximum of six (6) connectors each. Each row of six (6) connectors is identified as Connector A, B, C, D, E and F with connectors A and B in each row carrying the UNIBUS signals. Connectors C, D, E and F in Row 1 are prewired to accept the Dataram 61122 Parity Control module. Different wirewrap jumper arrangements are used for parity and non-parity operation.

UNIBUS signals MUST enter the Five-Wide connector assembly in Row 1, Connectors A and B. If the connector assembly represents the end of the UNIBUS chain, a bus terminator card must be installed in Row 5, Connectors A and B. If the chain is to be continued, the UNIBUS cable exiting the connector assembly must be installed in Row 5, Connectors A and B.

#### 4.3 Bus Grant Continuity for Nine-Wide Connector Assembly

Continuity of Bus Grant signals between Row 1, Connectors A and B and Row 9, Connectors A and B must be provided. This is accomplished for the two basic versions as follows.



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#### 4.3.1 Fully Loaded Version (54 Connectors)

In this version, continuity is provided by installing one of the following (in any combination) in Connector D, Rows 7, 8 and 9.

- A) Bus Grant Continuity Card, Dataram Corporation  
Part Number 61115 (DEC G727)
- B) Memory Module, Dataram Corporation Model DR-111  
(uses all 6 connectors)
- C) Small Peripheral Controller (SPC)

#### 4.3.2 Partially Loaded Version (32 Connectors)

In this version, Bus Grant continuity is pre-wired.

#### 4.4 Power Connection to Connector Assembly

Power for the Nine-Wide Connector Assembly is connected via AMP MATE-N-LOK 9 pin connectors which are hardwired to the pin side of the printed wiring board. Further versatility is accomplished (as shown in installation drawings) with an adapter power cable assembly.

### 5.0 CONFIGURATIONS

#### 5.1 Nine-Wide Connector Assembly Configuration

Sheets 7, 8 and 9 explain the different possibilities of configuring the Nine-Wide Connector Assembly.

NOTE: When installing the DEC MM11-K or MM11-L memory modules, care must be taken to ensure the proper order as shown in configurations 4 and 5.

#### 5.2 Five-Wide Connector Assembly Configuration

Sheet 9 explains the different possibilities of configuring the Five-Wide Connector Assembly.

### 6.0 MECHANICAL AND INSTALLATIONS

The Connector Assembly utilizes a standard thickness (.062) printed wiring board. This board is mounted to aluminum cross members which are, in turn, interconnected to form a rigid module measuring 1.65 x 4.84 x 16.50 inches for the Nine-Wide and 1.65 x 2.84 x 16.50 inches for the Five-Wide.

The printed circuit connectors used in the Connector Assembly are compatible with Digital Equipment Corporation's family of connectors.



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Care should be taken to insure proper installation of UNIBUS cable and terminator card (when required) when the connector assembly is installed into its appropriate housing.

Utilization of the connector assembly is shown on Pages 7 through 9. Typical installation within the various types of mounting assemblies are shown on Pages 10 through 12.

## 7.0 ORDERING INFORMATION

The following list specifies the DRC part numbers and DEC equivalents for the Connector Assembly and accessories.

<u>Description</u>	<u>DRC P/N</u>	<u>DEC P/N</u>
Nine-Wide Conn Assy, 54 conn.	61105	None
Nine-Wide Conn Assy, 32 conn.	61114	MF11-L or MF11-U
Nine-Wide Conn Assy w/Parity, 32 conn.	61125	MF11-LP or MF11-UP
Five-Wide Conn Assy, 20 conn.	61123	None
Five-Wide Conn Assy w/Parity, 20 conn.	61124	None
UNIBUS Terminator Module (Standard)	61119	M930
UNIBUS Terminator Module (Offset)	61106	None
UNIBUS Jumper Module w/o Terminators	61107	M920
UNIBUS Jumper Module w/Terminators	61110	M981
Adapter Power Cable, Version 1	61117	N/A
Adapter Power Cable, Version 2	61118	N/A
Bus Grant Continuity Card	61115	G727
UNIBUS Cable 5 ft.	61111	BC11A-5
DR-111, 16K x 16 Core Memory	61101	MM11-L
DR-111, 16K x 18 Parity Memory	61113	MM11-LP
Parity Control	61112	None



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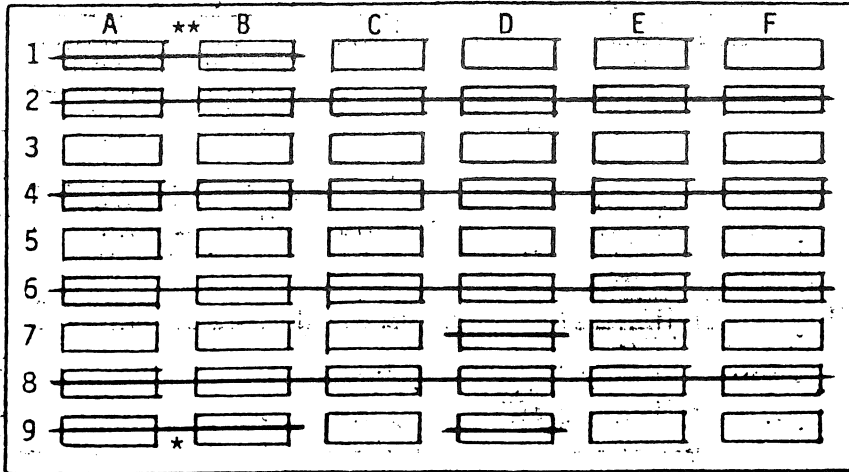
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NINE-WIDE DRC 61105

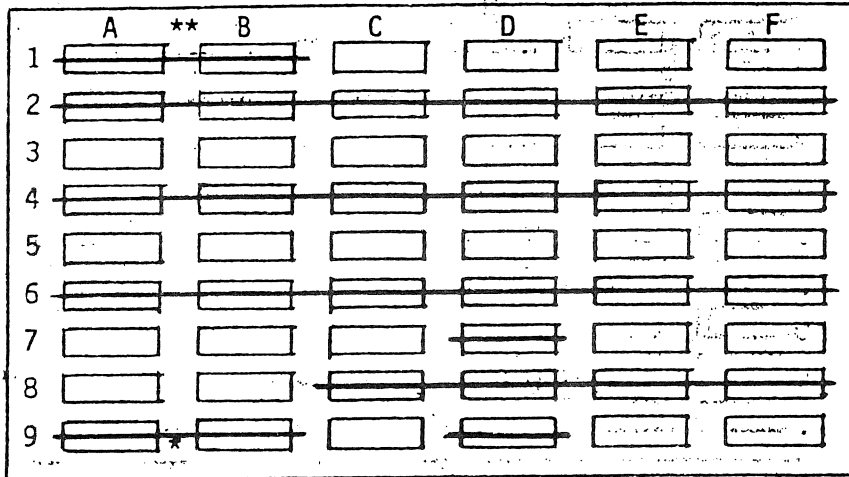
Configuration 1



- DR-111/61101
- DR-111/61101
- DR-111/61101
- BUS GRANT/61115
- DR-111/61101

NINE-WIDE DRC 61105

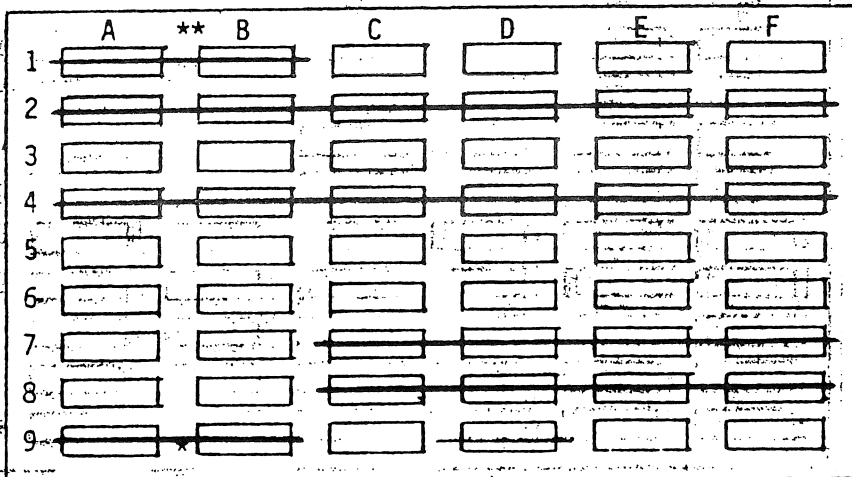
Configuration 2



- DR-111/61101
- DR-111/61101
- DR-111/61101
- BUS GRANT/61115
- SPC

NINE-WIDE DRC 61105

Configuration 3



- DR-111/61101
- DR-111/61101
- SPC
- SPC

\*\* UNIBUS IN, Row 1, A & B

\* UNIBUS OUT, Row 9, A & B. When DR-111 system is plugged into Slot 8, DRC 61101 Terminator Module must be used in place of M930.



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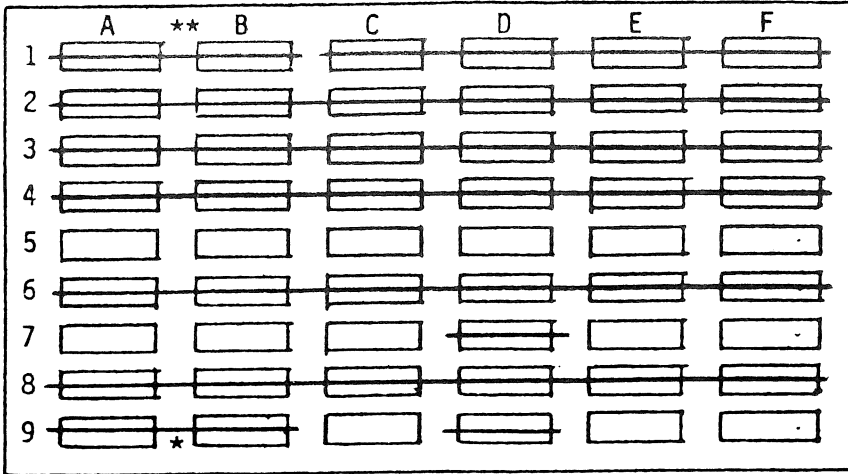
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NINE-WIDE DRC 61105

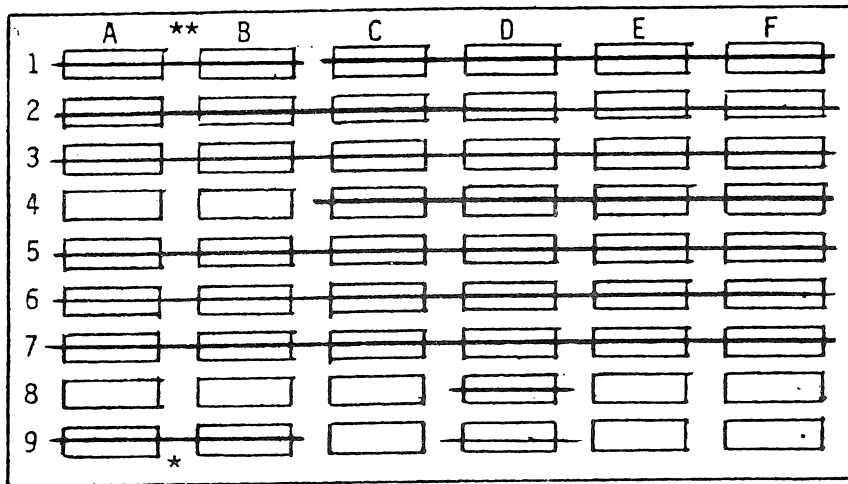
Configuration 4



- H214
- G231
- G110
- DR-111/61101
- DR-111/61101
- Bus Grant/61115
- DR-111/61101

NINE-WIDE DRC 61105

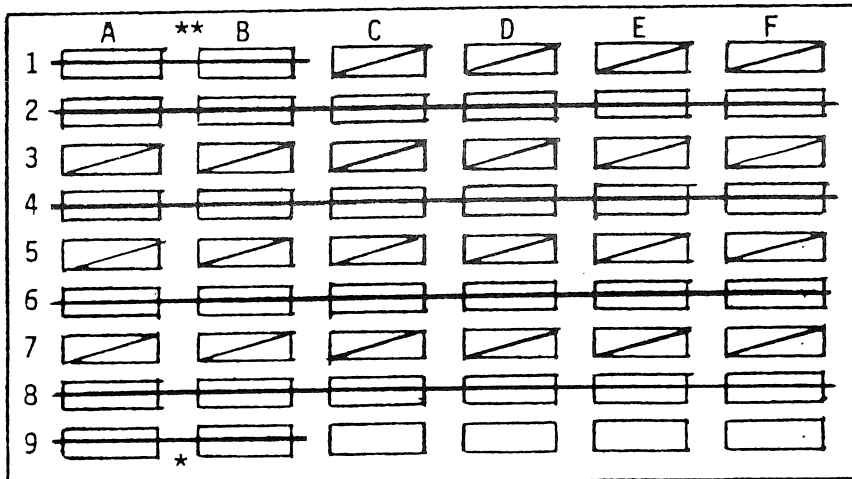
Configuration 5



- H214
- G231
- G110
- H214
- G231
- G110
- DR-111/61101
- Bus Grant/61115

NINE-WIDE DRC 61114

Configuration 6  
(32 Connectors)



- DR-111/61101
- DR-111/61101
- DR-111/61101
- DR-111/61101

\*\* UNIBUS IN, Row 1, A & B

\* UNIBUS OUT, Row 9, A & B. When DR-111 system is plugged into Slot 8, DRC 61106 Terminator Module must be used in place of M930.



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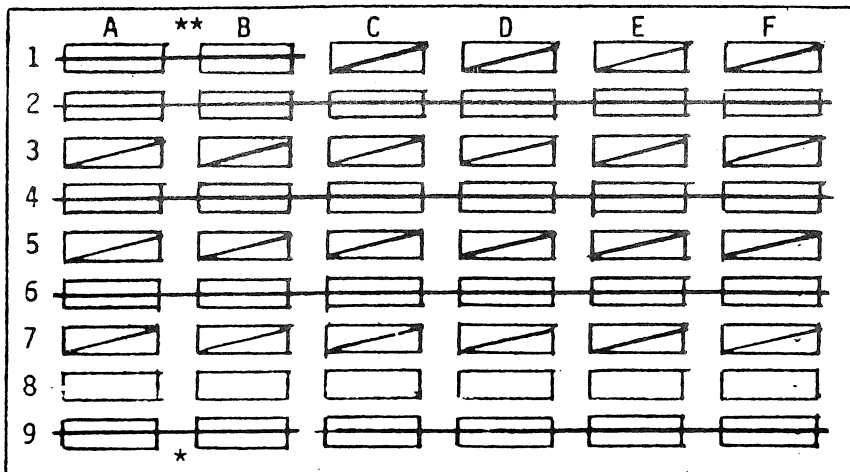
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NINE-WIDE DRC 61125

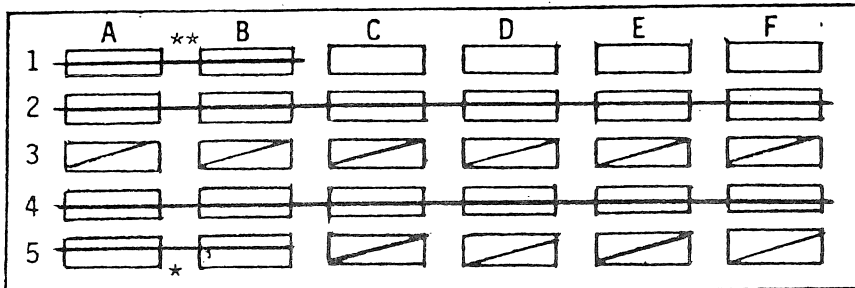
Configuration 7  
(32 Connectors)



- DR-111P/61113
- DR-111P/61113
- DR-111P/61113
- Parity Control/61122

FIVE-WIDE DRC 61123

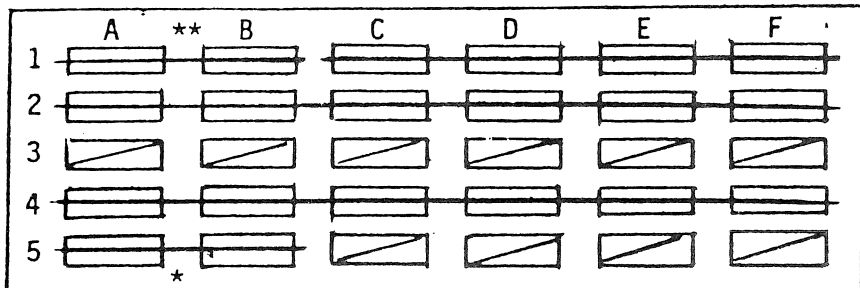
Configuration 8  
(20 Connectors)



- DR-111/61101
- DR-111/61101

FIVE-WIDE DRC 61124

Configuration 9  
(20 Connectors)



- Parity Control/61122
- DR-111P/61113
- DR-111P/61113

\*\* UNIBUS IN, Row 1, A & B

\* UNIBUS OUT, Row 9 or 5, A & B



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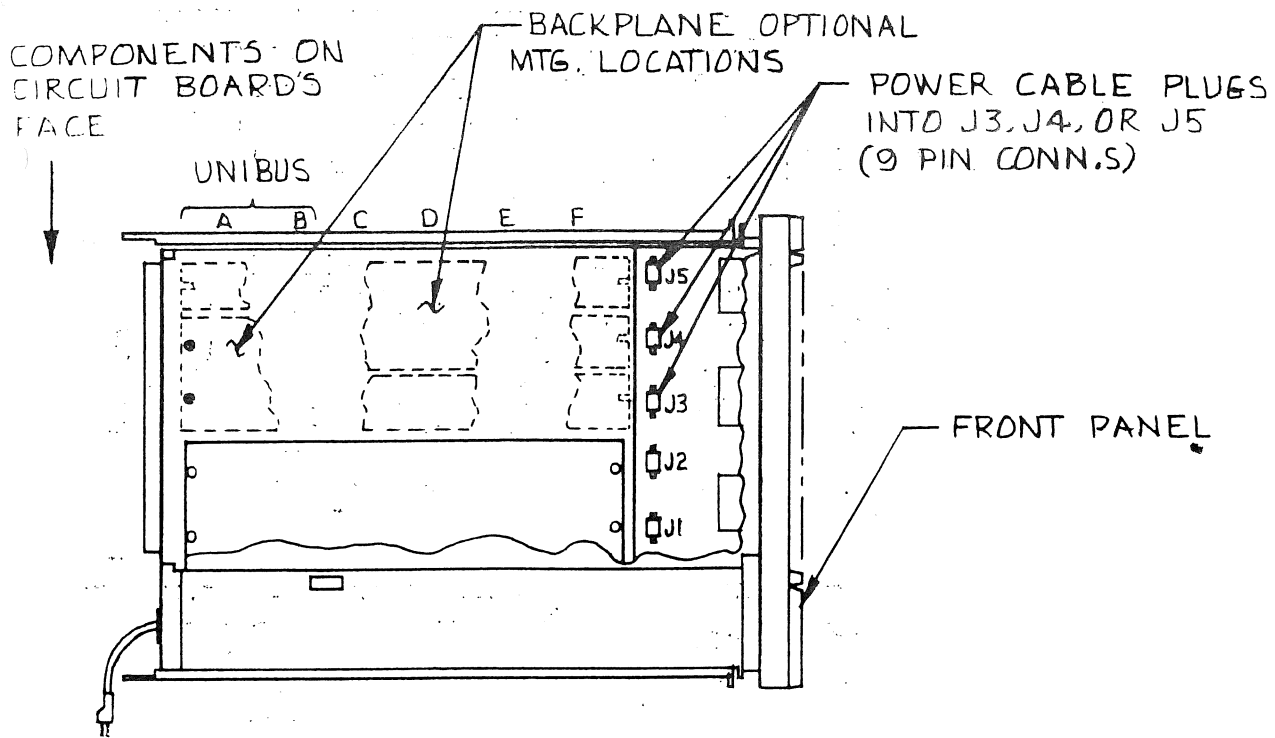
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THIS VIEW IS LOOKING AT PIN  
SIDE OF CONNECTOR BACKPLANE

USE IN PDP 11/05 (10 1/2 INCH BOX) MODELS NC, ND, SC, & SD  
PDP 11/35 (10 1/2 INCH BOX) MODELS JC, JD, JE, & JF

NOTE: 1. FOR THESE INSTALLATIONS, THE POWER CABLE MUST  
EXIT THE CONNECTOR ASSEMBLY AT THE "F"  
CONNECTOR END (END OPPOSITE UNIBUS).

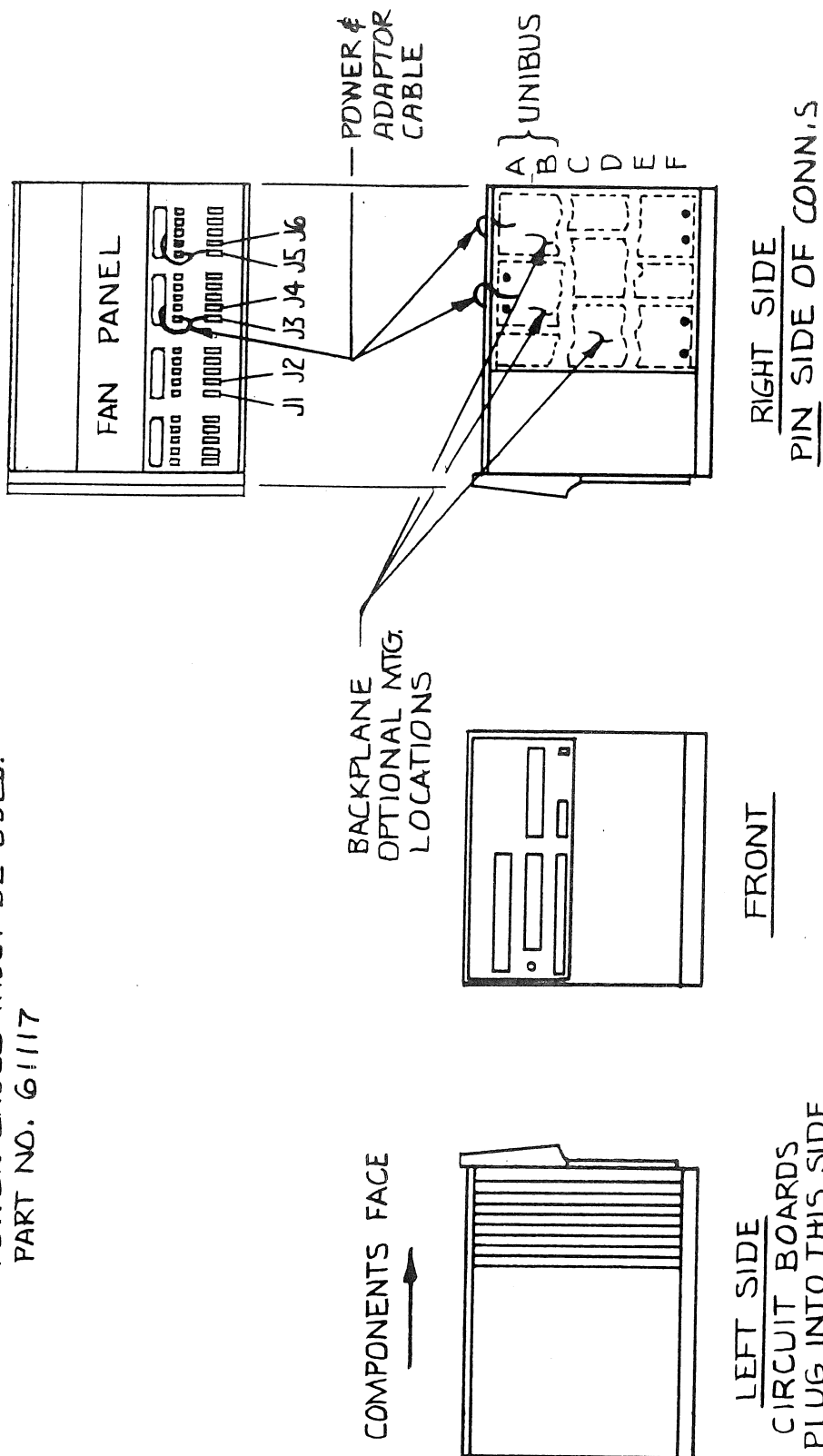


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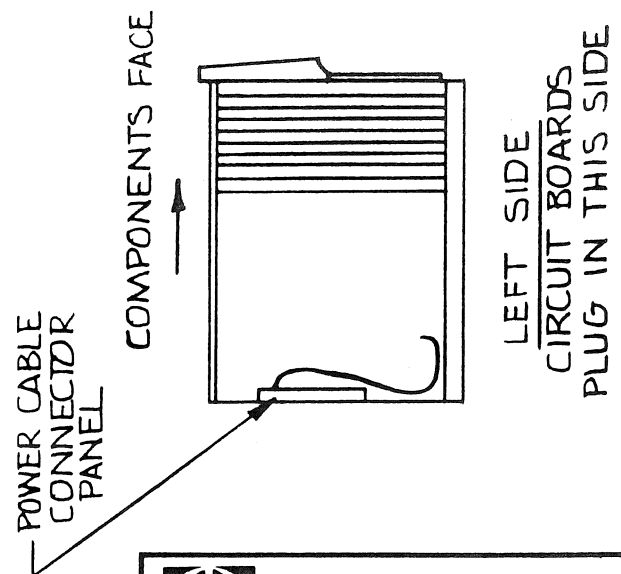
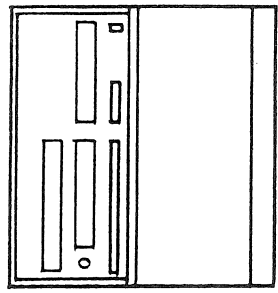
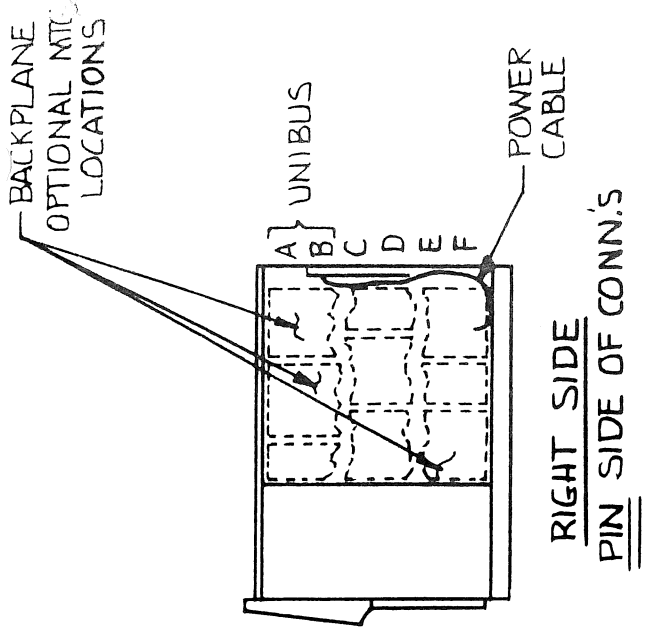
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NOTE: 1. FOR THESE INSTALLATIONS THE POWER CABLE MUST EXIT THE CONNECTOR ASSY AT THE "A" CONNECTOR END (UNIBUS).  
 2. FOR THESE INSTALLATIONS AN ADAPTOR POWER CABLE MUST BE USED.  
 PART NO. 61117



USE IN PDP 11/35-11/40 21 INCH EXPANDER BOXES  
 S/N 6000 AND UP  
 MODELS FC, FL, FM



NOTE: 1. FOR THESE INSTALLATIONS  
THE POWER CABLE MUST EXIT  
THE CONNECTOR ASSY AT THE  
"F" CONNECTOR END (OPPOSITE  
THE UNIBUS).

USE IN PDP 11/35-11/40 21 INCH EXPANDER  
BOXES S/N 0001 THRU 5999

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