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# FIELD MAINTENANCE PRINT SET

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B-TC-RD54-0	FIELD MAINTENANCE PRINT SET
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K-RM-RD54-0-0	159 MBYTE 5 1/4 DISK DRIVE
C-UA-RD54-0-0	159 MBYTE 5 1/4 DISK DRIVE

VARIATIONS COVERED BY THIS PRINT SET	
RD54-A	
RD54-EA	

RD54  
Field Maintenance  
Print Set

Digital Equipment  
Corporation

Print Set Part Number **MP-02291**

REVISION HISTORY		
REV.	ECO NUMBER	DATE
A	RD INIT.	3/87
B	RD54-SH001	6/87
R. Koppental 18 JUN 87		
JIM LUCAS		
<i>Jim Lucas</i>		

DRAWN	R. KOPPENTAL	DATE	19-MARCH-87	TITLE	digital		
CHK'D.	R. KOPPENTAL	DATE	19-MARCH-87				
DES. ENG.	JIM LUCAS	DATE	19-MARCH-87				
RESP. ENG.	DEAN HOWELL	DATE	19-MARCH-87				
FIELD SERVICE	R. MINISANDRAM	DATE	19-MARCH-87				
TOP DOC. NO.				DOCUMENT NUMBER			
						SIZE	CODE
				B	TC	RD54-0	B
				SHEET 1 OF 1			

REV B  
RD54-0  
SIZE B  
CODE TC

LINE	ITEM	TOP DOCUMENT	PART NUMBER	MIN REV	DESCRIPTION	A C4	EA C4	QUANTITY PER VARIATION/REVISION
1	1		30-26245-01		DISK DRIVE,W/SLD PLATE,MT SCREW,GR	1	-	
2	2		29-26103-00		B1DEVICE PCB (RD54)	1	1	
3	3		90-00049-66		SCREW,SEMS PAN PHIL EXT WSH 4-40	4	4	
4	4		90-09414-02		SCREW,MACH FLAT PHIL 4-40	4	4	
5	5	D-MD-7425652-0-DBU	74-25652-01		PLATE,SKID	1	-	
6	6	D-MD-7428201-0-DBU	74-28201-01		CLIP,GROUNDING	1	-	
7	7		12-14314-00		CONN,P+S 02SKT(1X02).100CC JUMPE	1	1	
8	8		90-06021-01		SCREW,MACH PAN PHIL 6-32	4	-	
9	9		30-26245-02		DISK DRIVE,W0/SLD PLATE SCREW,GRN	-	1	

REVISION HISTORY		KPL MATRIX FORMAT		SECTION A OF A		DRN: R. KOPPENAL		DIGITAL	
ENG	ECO NUMBER	REV	SECTION/VARIATION INDEX	DATE	CHK'D	DATE	TITLE	NUMBER	REV
---	INITIAL	A	[[A] A ,EA	23-OCT-86	R. KOPPENAL	19-MAR-87	159 MBYTE 5 1/4"		
J.L	RD54-SH001	B	[[B]	19-MAR-87	R. KOPPENAL	19-MAR-87	DISK DRIVE		
D.H	RD54-SH002	C	[[C]		JAMES LUCAS				
			[[D]						
			[[E]						
			[[F]						
			[[H]						
			[[J]						
BASIC PART NUMBER:		ASSEMBLY NUMBER:		TOP DOCUMENT NUMBER:		EDIT #			
RD54				B-TC-RD54-0		2			
FILE NAME: SH414C.PLS									

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DRAWING NO.	NO. OF SHTS.	PART NO.	DESCRIPTION	REVISIONS																
				A1	-	B1	C1	C2	C3	C4	C4									
		RD54-A	159 MBYTE 5 1/4" DISK DRIVE	A1	-	B1	C1	C2	C3	C4	C4									
		RD54-EA	159 MBYTE 5 1/4" DISK DRIVE	-	A1	B1	C1	C2	C3	C4	C4									
B-TC-RD54-0	1		FIELD MAINTENANCE PRINT SET	B	B	C	C	C	C	C	C									
K-PL-RD54-0-DBP	1		PARTS LIST (SH414)	B	B	C	C	C	C	C	C									
D-MD-7428201-0-DBU	1	7428201-01	CLIP, GROUND	REF	REF	REF	REF	REF	REF	REF	REF									
D-MD-7425652-0-DBU	1	7425652-01	PLATE, SKID	REF	REF	REF	REF	REF	REF	REF	REF									
C-UA-RD54-0-0	1		159 MBYTE 5 1/4" DISK DRIVE	B	B	B	B	B	B	B	B									
K-RM-RD54-0-0	4		REVISION MATRIX	B	B	C	C	C	C	C	D									

**NOTES:**

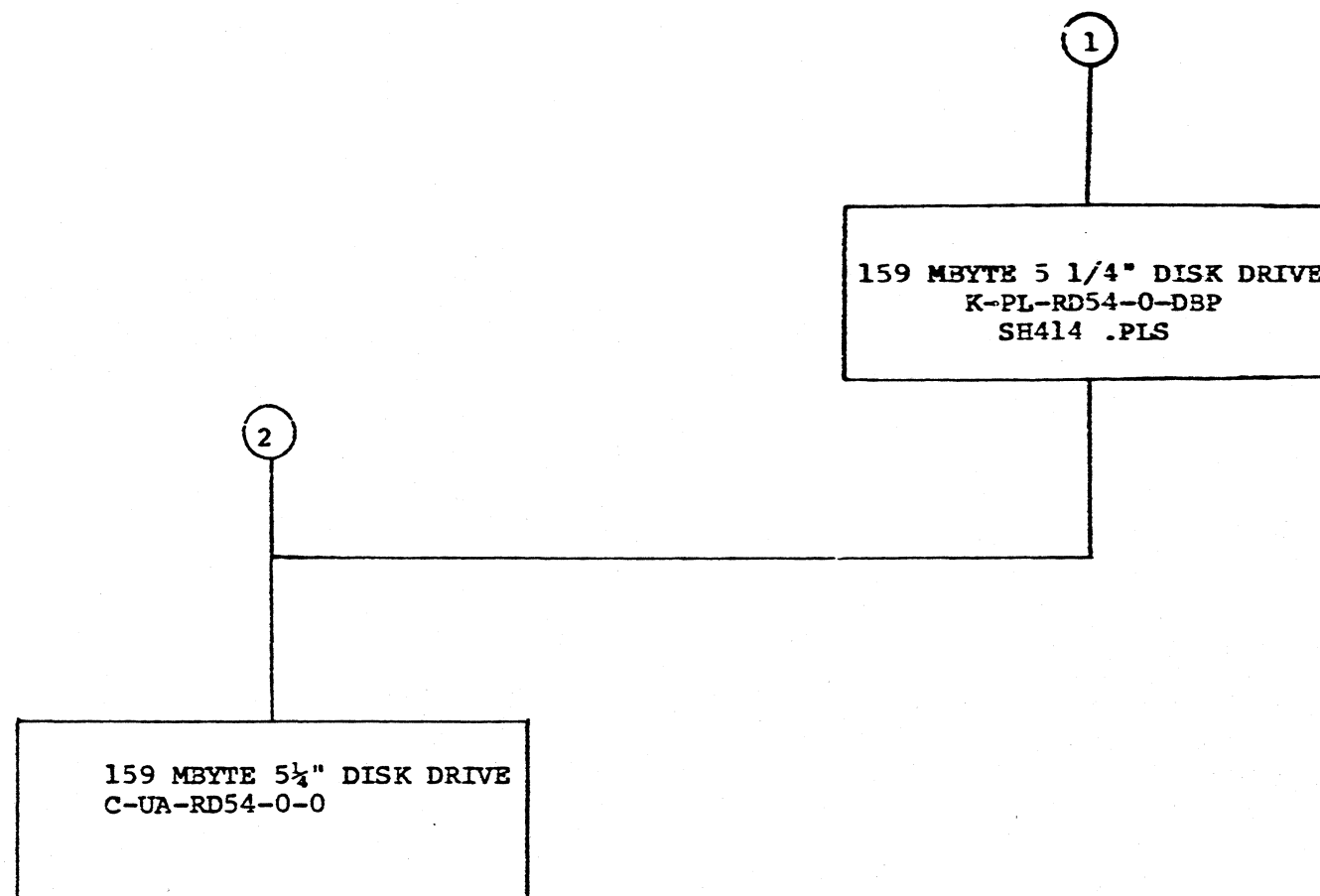
REVISION HISTORY		DATE	ECO NO.	REV.
	B	6/87	SH001	B
	B	6/87	SH001	B
	C	7/88	SH002	C
	C	7/88	SH002	C
	C	7/88	SH002	C
	C	7/88	SH002	C
	C	7/88	SH002	C
	D	11/88	SH003	D

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1987



DRN. C. ASSADOURIAN	DATE 17-JUN-87	TITLE 159 MBYTE 5 1/4" DISK DRIVE	
CHK'D R. KOPPENAL	DATE 17-JUN-87	DOCUMENT NUMBER	
DES. ENG. JIM LUCAS	DATE 17-JUN-87	SIZE B	CODE DD
RESP. ENG. D. HOWELL	DATE 17-JUN-87	NUMBER RD54-0	REV D
MFG. ENG. BOB BARBOUR	DATE 17-JUN-87	SHEET 1 OF 3	

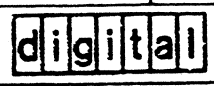


TITLE	SIZE	CODE	NUMBER	REV.
159 MBYTE 5 1/4" DISK DRIVE	B	DD	RD54-0	D

SHEET 2 OF 3

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE	FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
	MP-02291	FIELD MAINTENANCE PRINT SET (MP)					
	B-TC-RD54-0	FIELD MAINTENANCE PRINT SET (TC)					
1	K-PL-RD54-0-DBP	PARTS LIST (SH414)					
	D-MD-7428201-0-DBU	CLIP, GROUND	M				
	D-MD-7425652-0-DBU	PLATE, SKID	M				
2	C-UA-RD54-0-0	159 MBYTE 5 1/4" DISK DRIVE					

TYPE: E ELECTRICAL  
M MECHANICAL  
E/M ELECTRO/MECHANICAL



TITLE  
159 MBYTE 5 1/4" DISK DRIVE

SHEET 3 OF 3

SIZE CODE  
**B DD**

NUMBER  
RD54-0

REV  
D

OPTION NAME:

RDS4-A  
159 MB (FORMATTED) 5 1/4" INCH  
WINCHESTER DISK DRIVE

INFORMATION SHEET

RM ECO #

NOTES:

RDS4-SH001

1. CREATED EA VARIATION (WITHOUT SKID PLATE/GROUND CLIP 4-87).
2. THE USE OF P/N 74-25652-02 (SKID PLATE) IS OPTIONAL.

RDS4-SH002

- UPDATED THIS REVISION MATRIX AND DOCUMENTED MINIMUM SHIPPABLE REVISIONS OF THE DRIVE AND DEVICE PCB.  
SEE NOTES 3 THROUGH 7.
3. USE CAUTION WHEN ANALYZING DRIVE REVISION LEVELS. IN ORDER TO BRING RDS4 AND THIS REVISION MATRIX INTO CONFORMANCE WITH THE CURRENT DEC STANDARD 12 MANY DRIVE REVISION LEVELS HAVE BEEN REASSIGNED AND SHOWN ON THE TOP LINE AS TO WHAT THEY SHOULD BE. AS A RESULT REVISION LEVELS MARKED ON THE DRIVE MAY OR MAY NOT REFLECT THE ACTUAL HARDWARE REVISION AS DEFINED BY THIS DOCUMENT. TO ASSIST IN ANALYZING DRIVE REVISION LEVELS, REVISION LEVELS WHICH WERE ORIGINALLY MARKED ON THE DRIVE ARE INCLUDED IN PARENTHESES UNDERNEATH WHAT SHOULD HAVE BEEN THE CORRECT REVISION LEVELS FOR RDS4. THE REVISION LEVEL IN PARENTHESES IS THE REVISION LEVEL YOU WILL FIND ON THE RDS4 BAR CODE LABEL UNLESS THE DRIVE HAS BEEN REMARKED DURING REPAIR.
4. THE CHANGE IN RDS4 REVISION LEVEL FROM A1 TO B1 REFLECTS A CHANGE IN THE COATING ON THE HDA BASE CASTING FROM ZINC CHROMATE TO ELECTROLESS NICKEL. DRIVE REVISIONS A1 AND B1 ARE FUNCTIONALLY EQUIVALENT. THE ALPHA CHARACTER SHOULD NOT HAVE BEEN INCREMENTED WHEN THIS CHANGE WAS MADE. SINCE BOTH HDA'S HAVE A SIMILAR APPEARANCE, THE EASIEST WAY TO IDENTIFY HDA'S WITH THE OLD ZINC CHROMATE COATING IS BY THE DRIVE REVISION MARKING. DRIVES WITH THE "OLD" HDA (ZINC CHROMATE COATING) WERE ORIGINALLY MARKED A1 AND MAY HAVE BEEN REMARKED WITH C1 OR C3 PER THIS DOCUMENT DURING REPAIR.
5. THE CHANGE IN 29-26103 ALPHA REVISION FROM A TO B ADDS A 2.32 K 1% RESISTOR AT R61 IN PARALLEL WITH THE EXISTING RESISTOR AT R61. THE RESISTOR ADD IS REFLECTED FOR VENDOR PART NUMBER 1059085 BY A -22 FOLLOWING THE VENDOR ALPHA REV. LEVEL. POSSIBLE REVISIONS FOR VENDOR PART NUMBER 1059085 WITH THE RESISTOR ADD ARE C-22, D-22, F-22, AND H-22. SIMILARLY, THE CHANGE IN 29-81306-00 ALPHA REVISION FROM A TO B ADDS A 2.32 K 1% RESISTOR AT R61 IN PARALLEL WITH THE EXISTING RESISTOR AT R61. FOR VENDOR PART NUMBER 1059055 THE RESISTOR ADD IS INDICATED BY A -23 FOLLOWING THE VENDOR ALPHA REV. LEVEL. POSSIBLE VENDOR REVISIONS FOR VENDOR PART NUMBER 1059055 ARE J-23, K-23, L-23 AND M-23. THE -22 OR -23 WILL BE MARKED ON THE J3 POWER CONNECTOR OR THE U43 (40 PIN DIP) CHIP. THIS RESISTOR ADD ADDRESSES A PROBLEM WHERE RDS4 INTERMITTENTLY FAILS TO SIZE CORRECTLY DURING A FORMAT OPERATION ON VAXSTATION 2000 AND MICROVAX 2000.

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digital

DRN.	R. KOPPENAL	DATE	3/19/87	TITLE: REVISION MATRIX			
CHKD.	R. KOPPENAL	DATE	3/19/87	DOCUMENT			
DES. ENG.	DEAN HOWELL	DATE	3/19/87	DOCUMENTATION NUMBER			
RESP. ENG.	DEAN HOWELL	DATE	3/19/87	SIZE	CODE	NUMBER	REV.
MFG. ENG.	JOHN MURRY	DATE	3/19/87	K	RM	RDS4-0-0	D
				SHEET 1 OF 4			

<b>OPTION NAME:</b> RDS4-A 159 MB (FORMATTED) 5 1/4" INCH WINCHESTER DISK DRIVE	<b>INFORMATION SHEET</b>
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**RM ECO #**

**NOTES:**

RDS4-SH003

6. THERE ARE TWO PART NUMBERS FOR THE RDS4 DEVICE PCB, 29-26103 (VENDOR PART 1059085) AND 29-81306 (VENDOR PART 1059055). ALL VENDOR PART NUMBER 1059085 (DEC 29-26103) WITH A -22 FOLLOWING THE VENDOR ALPHA REV. LEVEL AND ALL VENDOR PART NUMBER 1059055 (DEC 29-81306) WITH A -23 FOLLOWING THE VENDOR ALPHA REV. LEVEL ARE FUNCTIONALLY EQUIVALENT AND BOTH ARE AT DEC REVISION LEVEL B. THE VARIOUS DEC NUMERICAL REVISIONS OF THESE TWO PART NUMBERS REFLECT VENDOR ECO'S WHICH HAVE NO FUNCTIONAL IMPACT ON RDS4. THE DEC NUMERICAL REVISION LEVELS (A01 THROUGH A08 AND B01 THROUGH B08) WERE INCREMENTED IN THESE CASES FOR TRACKING PURPOSES ONLY AND ARE NOT MARKED ON THE MODULE. ONLY THE ALPHA REVISION LEVEL CHARACTER IMPACTS FUNCTIONALITY.

7. THE CHANGE IN 29-26103 REVISION TO B09 INCORPORATED THE RESISTOR ADD AT R61 INTO A SINGLE RESISTOR AND ADDED HEAT SINKS TO THE SPINDLE MOTOR FETS PER MAXTOR EC 886. VENDOR PART NUMBER 1059085 TOP REVISION WENT FROM REV. H-22 TO REV. J TO REFLECT THIS CHANGE. THESE CHANGES WERE NOT IMPLEMENTED ON VENDOR PART NUMBER 1059055 (DEC PART 29-81306).

THE MINIMUM SHIPPABLE REVISION OF DEC PART 29-26103 IS B01. NO DEC REVISION LEVELS ARE MARKED ON THIS BOARD. THE DEC B01 REVISION LEVEL MUST BE IDENTIFIED BY LOOKING FOR A -22 FOLLOWING THE VENDOR ALPHA REVISION LEVEL. (SEE NOTES 5 AND 6)

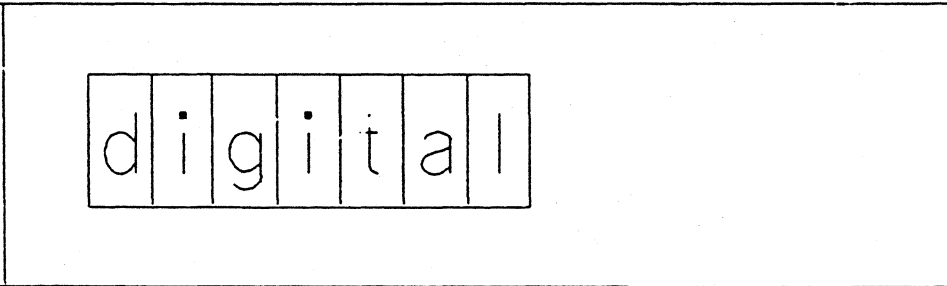
THE MINIMUM SHIPPABLE REVISION OF DEC PART 29-81306 IS B05. NO DEC REVISION LEVELS ARE MARKED ON THIS BOARD. THE DEC B05 REVISION LEVEL MUST BE IDENTIFIED BY LOOKING FOR A -23 FOLLOWING THE VENDOR ALPHA REVISION LEVEL. (SEE NOTES 5 AND 6)

THE MINIMUM SHIPPABLE REVISION OF THE RDS4-EA AND RDS4-A DRIVE IS C1. (SEE NOTE 3)

8. THE CHANGE TO DEC P/N 29-26103 TO A B10 INCORPORATED A RESISTOR VALUE CHANGE (R44 FROM 681 OHMS TO 3.01K OHMS). THE REMOVAL OF C17 AND ADDITION OF A 47uh COIL PER VENDOR ECO #1067. THIS CHANGE IS AN ENHANCEMENT TO THE SERVO READ CIRCUIT AND POWER LINES TO IMPROVE COMMON-MODE REJECTION OF SYSTEM NOISE. THESE CHANGES WERE NOT IMPLEMENTED ON VENDOR P/N 1059055 (DEC PART NUMBER 29-81306).

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DRN.	R.KOPPENAL	DATE	3/19/87	TITLE : REVISION MATRIX DOCUMENT			
CHKD.	R.KOPPENAL	DATE	3/19/87				
DES. ENG.	DEAN HOWELL	DATE	3/19/87	DOCUMENTATION NUMBER			
RESP. ENG.	DEAN HOWELL	DATE	3/19/87	SIZE	CODE	NUMBER	REV.
MFG. ENG.	JOHN MURRY	DATE	3/19/87	K	RM	RDS4-0-0	0
						SHEET	2 OF 4

OPTION NAME: R054-A 159 MB (FORMATTED) 5 1/4" INCH (ORIGINALLY MARKED / SEE NOTE 3)		REVISIONS											
PART NO.	DESCRIPTION	A1 (A1)	B1 (B1)	C1 (A1)	C2 (B1)	C3 (A1)	C4 (B2)	C3 (A1)	C4 (B2)				
30-26245-01 2190	190 MB WINCHESTER DISK DRIVE MAXTOR P/N (VENDOR P/N)	A1	B1	C1	C2	C3	C4	C3	C4				
NO DEC PART # VPN 1050454 or VPN 1011549	MAXTOR HDA ASSY. (SEE NOTE 4)	OLD	NEW	OLD	NEW	OLD	NEW	OLD	NEW				
29-26103-00 1059085 29-81306-00 (1059055)	DEVICE PCB (SEE NOTE 5,6,7) MAXTOR P/N (VENDOR P/N) DEVICE PCB (ALTERNATE PART) * ALTERNATE VENDOR P/N 1059085	A01,A02 A03,A04 C,D,F,H A05,A06 A07,A08 J,K,L,M	A01,A02 A03,A04 C,D,F,H A05,A06 A07,A08 J,K,L,M	B01,B02 B03,B04 -22 B05,B06 B07,B08 -23	B01,B02 B03,B04 -22 B05,B06 B07,B08 -23	B09 J ---	B09 J ---	B09, B10 J,K ---	B09, B10 J,K ---				
12-14314-00	JUMPER PLUG	A1	A1	A1	A1	A1	A1	A1	A1				
74-28201-01	GROUND CLIP	A4	A4	A4	A4	A4	A4	A4	A4				
74-25652-02	SKID PLATE	A2	A2	A2	A2	A2	A2	A2	A2				
90-06021-01	SCREW PHL PAN HD 6-32 X .312	A1	A1	A1	A1	A1	A1	A1	A1				
37-00916-01	SINGLE PACKAGE	A1	A1	A1	A1	A1	A1	A1	A1				
90-00049-66	SCREW SEMS PAN HD 4-40 X .250	A1	A1	A1	A1	A1	A1	A1	A1				
90-09414-03	SCREW PHL FLAT HD 4-40 X .187	A1	A1	A1	A1	A1	A1	A1	A1				

NOTES:

REVISION HISTORY	ECO NO	DATE	INIT	SH001	SH002	SH002	SH002	SH002	SH002	SH003	SH003				
			31/19 87		6/18 87	7/88	7/88	7/88	7/88	7/88	11/88	11/88			

digital



OPTION NAME: RDS4-EA 159 MB (FORMATTED) 5 1/4" INCH (ORIGINALLY MARKED / SEE NOTE 3)		REVISIONS											
		A1 (A1)	B1 (B1)	C1 (A1)	C2 (B1)	C3 (A1)	C4 (B2)	C3 (A1)	C4 (B2)				

PART NO.	DESCRIPTION	A1 (A1)	B1 (B1)	C1 (A1)	C2 (B1)	C3 (A1)	C4 (B2)	C3 (A1)	C4 (B2)				
30-26245-01 2190	190 MB WINCHESTER DISK DRIVE MAXTOR P/N (VENDOR P/N)	A1	B1	C1	C2	C3	C4	C3	C4				
NO DEC PART * VPN 1050454 or VPN 1011549	MAXTOR HDA ASSY. (SEE NOTE 4)	OLD	NEW	OLD	NEW	OLD	NEW	OLD	NEW				
29-26103-00 1059085 29-81306-00 (1059055)	DEVICE PCB (SEE NOTE 5,6,7) MAXTOR P/N (VENDOR P/N) DEVICE PCB (ALTERNATE PART) * ALTERNATE VENDOR P/N 1059085	A01,A02 A03,A04 C,D,F,H A05,A06 A07,A08 J,K,L,M	A01,A02 A03,A04 C,D,F,H A05,A06 A07,A08 J,K,L,M	B01,B02 B03,B04 -22 B05,B06 B07,B08 -23	B01,B02 B03,B04 -22 B05,B06 B07,B08 -23	B09 J ---	B09 J ---	B09, B10 J,K ---	B09, B10 J,K ---				
12-14314-00	JUMPER PLUG	A1	A1	A1	A1	A1	A1	A1	A1				
37-00916-01	SINGLE PACKAGE	A1	A1	A1	A1	A1	A1	A1	A1				
90-00049-66	SCREW SEMS PAN HD 4-40 X .250	A1	A1	A1	A1	A1	A1	A1	A1				
90-09414-03	SCREW PHL FLAT HD 4-40 X 3/16	A1	A1	A1	A1	A1	A1	A1	A1				

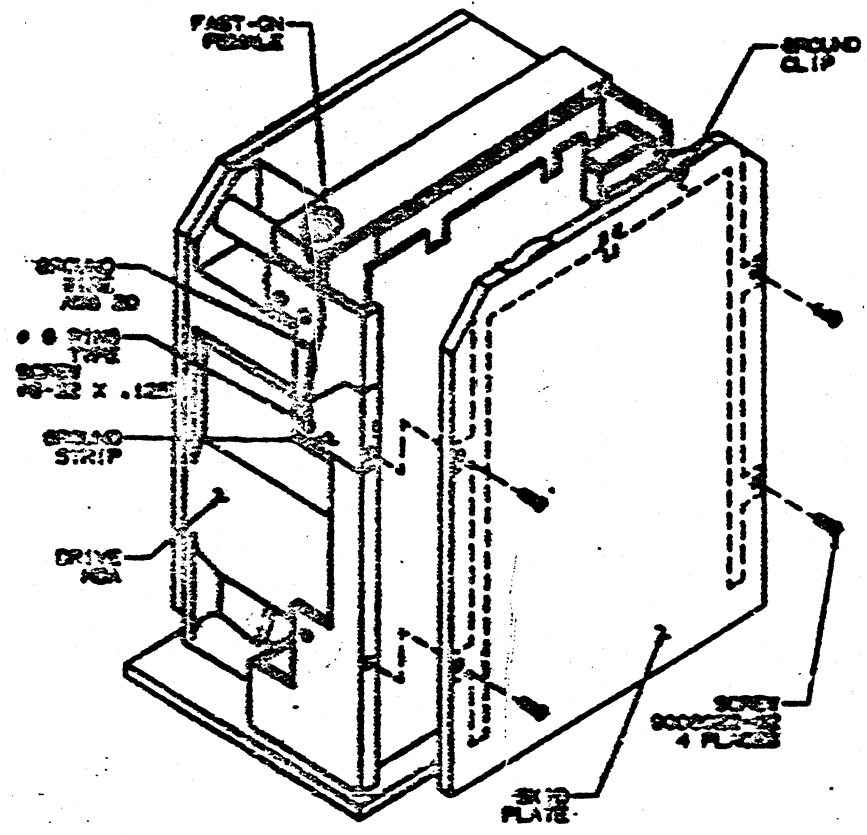
NOTES:

REVISION HISTORY	ECO NO	SH002	SH002	SH002	SH002	SH002	SH002	SH003	SH003				
	DATE	7/88	7/88	7/88	7/88	7/88	7/88	11/88	11/88				

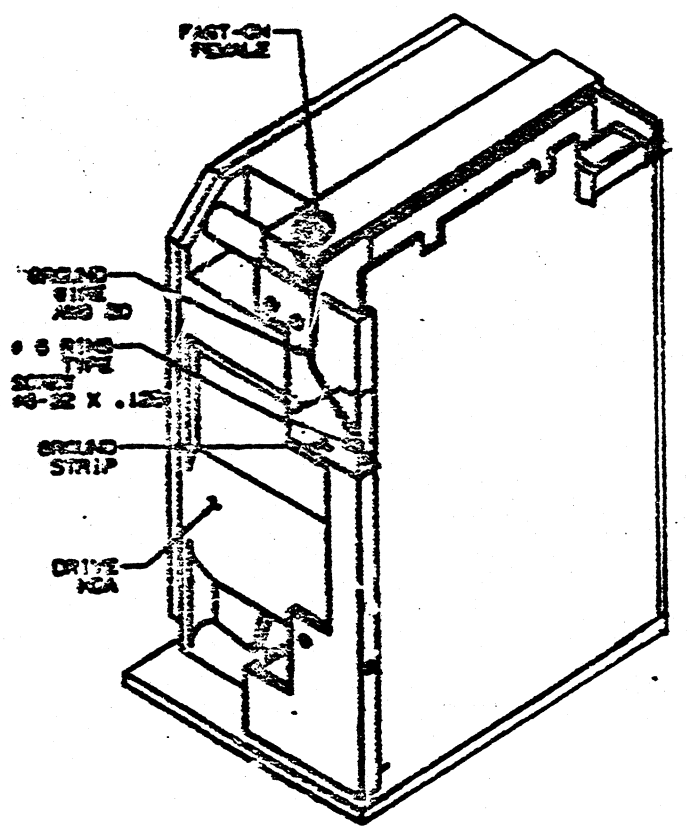
REVISION MATRIX  
(TOP LEVEL AND COMPATIBILITY)

SIZE CODE  
C UA  
RD54-0-0  
REV A

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RD54-A



RD54-EA

REV	ECO NUMBER	DATE
A	INIT	4/1/88

DPC 200F  
EN-01295-16-REVA(396)

DESCRIPTION	DRAWING NO	PART NO	ITEM NO						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND THE FOLLOWING TOLERANCES APPLY (PER DEC STD 114)									
INCHES TOLERANCES	ANGLES ± 30°	DIMENSIONS RANGE IN INCHES							
		APPLICABLE DIMENSION RANGE	OVER 0 TO .32	OVER .32 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 90.0	
QUANTITY & VARIATION	SURFACE QUALITY	CHECK LINE	± .02	± .03	± .05	± .10	± .15	± .20	± .25
			± .004	± .008	± .012	± .018	± .024	± .030	± .036
THIRD ANGLE PROJECTION	DRG R. KOPPENAL	DATE 17 JUN 87	TITLE						
DO NOT SCALE DRAWING	CHKD R. KOPPENAL	DATE 17 JUN 87	159 MBYTE 5 1/4" DISK DRIVE						
REMOVE BURRS AND BREAK SHARP CORNERS	DES ENG JIM LUCAS	DATE 17 JUN 87	DOCUMENT NUMBER						
MATERIAL	RESP ENG D. HOWELL	DATE 17 JUN 87	C UA RD54-0-0						
FINISH	MFG ENG B. BARBOUR	DATE 17 JUN 87	REV A						
	TOP DOC. NO. B-DD-RD54-0		SHEET 1						

A B C D

A B C D

4 3 2 1