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30321

TABLE OF CONTENTS

UNIT VARIATIONS COVERED BY THIS PRINT SET
FP11-AU

FP11-AU

Field Maintenance Print Set

Digital Equipment Corporation

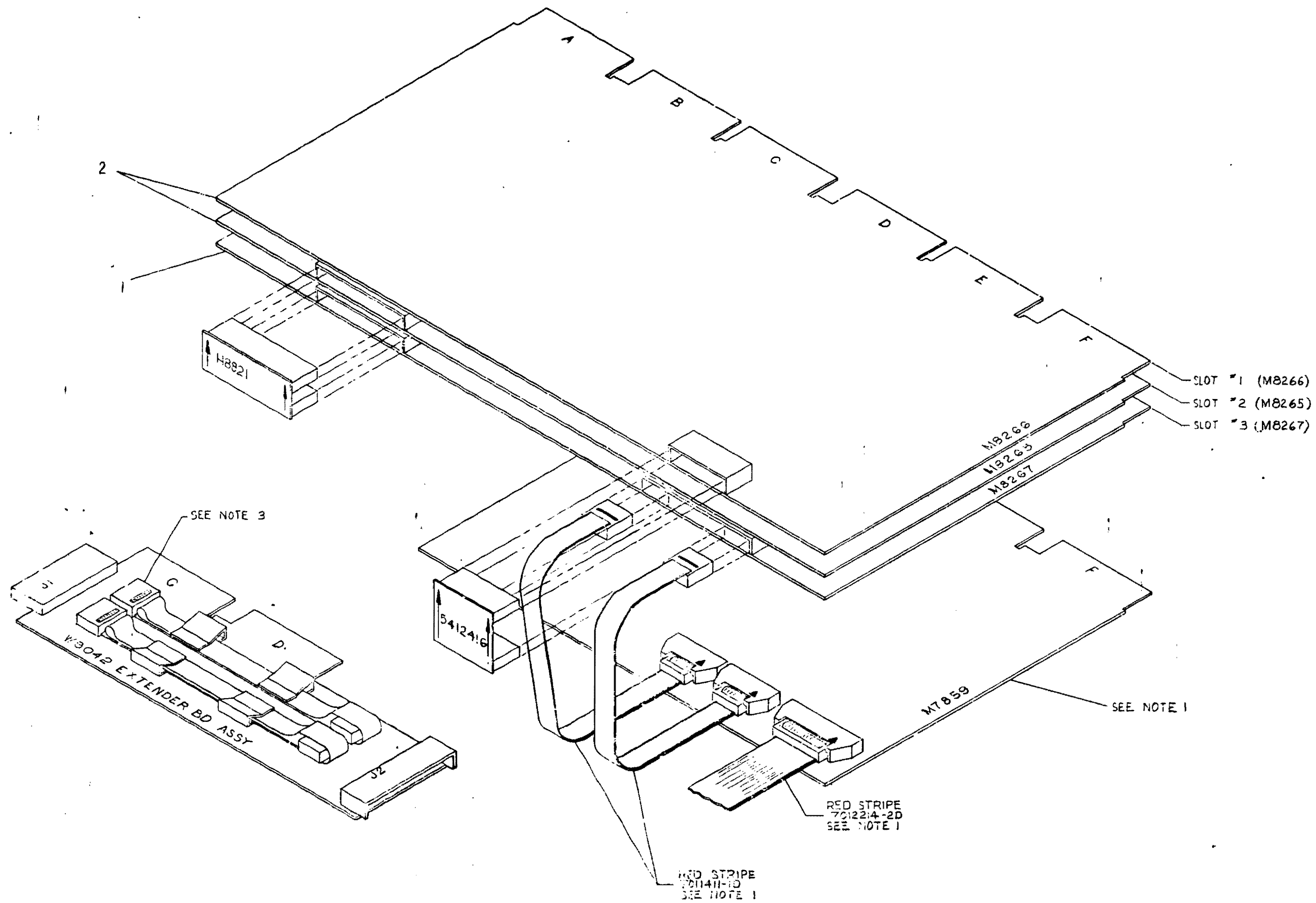
PRINT SET ORDER NO.
MPØØ188

REVISIONS	REV.		USED ON OPTION/MODEL		DRN.	DATE	TITLE: digital
	CHG. NO.		1134A		D. HEALY	OCT 76	FLOATING POINT OPTION UPGRADE KIT
	DATE				CHK'D D. HEALY	DATE OCT 76	
					PROJ. ENG.	DATE 20 DEC 76	SIZE B / CODE TC / NUMBER FP11-AU-2 / REV.
			SHEET 1 OF 1		FIELD SERV	DATE 12-22-76	DIST.

D13 124

NOTES:

1. THE CABLES AND M7859 CONTROL BD. ARE PART OF THE KY11-LB OPTION AND MAY NOT BE PRESENT IN SOME 11/34 CONFIGURATIONS.
2. THE W9042 EXTENDER BD. ASSEMBLY IS STORED IN THE BACKPLANE AND IS USED FOR SOME MAINTENANCE OPERATIONS: SEE D-UA-FP11-A-0.
3. THE CABLES ARE INSTALLED DURING MAINTENANCE ONLY AND ARE CLIPPED TO THE W9042 FOR STORAGE.
4. ITEMS #3 & 4 NOT SHOWN ON THIS ASSY.



QTY	DESCRIPTION	DWG./PART NO.	ITEM NO.
REF	MODULE UTILIZATION	D-MU-FP11-AU-1	5
1	POWER DISTRIBUTION BOARD	D-CS-5411086-YAH	4
1	+5V REGULATOR	D-UA-H744-0-0	3
1	11/34 PROCESSOR	A-PL-KD11-EA-0	2
1	FLOATING POINT OPTION	D-UA-FP11-A-0	1

FLOATING POINT OPTION UPGRADE KIT

PARTS LIST

FP11-AU-0

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NOTE:

THIS MODULE UTILIZATION DRAWING SHOULD BE USED AS A CONFIGURATION GUIDE ONLY FOR 11/34 SYSTEMS THAT REQUIRE THE FP11-AU (eg. 10.50 BOX 11/34 SYSTEMS) WITH A KD11-E PROCESSOR (M7265 AND M7266) THAT CAN SUPPLY ONLY 25A @+5VDC TO THE DD11-P BACKPLANE). THE M8266 (WHICH REPLACES THE M7266), M8265 (WHICH REPLACES THE M7265), AND THE M8267 (FP11-A), MUST OCCUPY THE FIRST THREE HEX SLOTS, WHILE THE M9301 MUST OCCUPY AN ADJACENT MODIFIED UNIBUS SLOT. THESE MODULES CONSUME 20.5 @+5VDC LEAVING ONLY 4.5A @+5VDC FOR OTHER SYSTEM AND USER OPTIONS. IT IS FOR THIS REASON THAT AN H7441 REGULATOR 32A @+5VDC AND 5410864-YA POWER DISTRIBUTION BOARD ARE INCLUDED IN THE FP11-AU. THE INCREASED AVAILABILITY OF CURRENT DUE TO THE H7441 REGULATOR ONLY PARTIALLY MITIGATES THE INCREASED CONSUMPTION OF CURRENT BY M8265, M8266, AND M8267 MODULES.

THE EXISTANCE OF ADDITIONAL MODULES MAY REQUIRE THAT THE MEMORIES, M9302, AND M7850 MODULES BE MOVED TO AN ADDITIONAL BACKPLANE.

NOTES:

1. NO VARIATION OF THE FP11-AU IS AVAILABLE FOR USE WITH 5.25" BOX 11/34 SYSTEMS.
2. CONSULT D-MU-DD11-P-2 TO DETERMINE HOW THE DD11-P SLOTS ARE WIRED.
3. THE CURRENTS LISTED ARE FOR REFERENCE ONLY. ACTUAL CURRENT CONSUMPTION MAY VARY.
4. NO MAJOR CONFIGURATION CHANGES ARE NECESSARY. ADDITIONAL MODULES MAY REQUIRE ANOTHER BACKPLANE.
5. THE W9042 EXTENDER BOARD SHOULD BE STORED IN THE BACKPLANE IN PLACE OF ONE OF THE G727 GRANT CONTINUITY CARDS.
6. BA11-K'S THAT USE THE 5410854-YA-1 POWER DISTRIBUTION (I.E. 1134A, 11/34 WITH FP11-AU, AND SOME 11/04'S) AND HAVE ONE DD11-DK (OR AN ADDITIONAL DD11-CK) CAN ONLY HAVE THE +5 TO +5B JUMPER IN ONE OF THE BACK PANELS. IF TWO OF THE BACK PANELS HAVE THE JUMPER IN, THE +5V REGULATORS MAY BE CONNECTED TOGETHER. TYPICALLY THIS JUMPER IS IN THE FIRST BACK PANEL, BUT IT MAY BE PLACED IN ONE OF THE OTHER BACK PANELS IF DEEMED NECESSARY FOR POWER REQUIREMENTS.
7. EITHER M9301 OR M9312 MAY BE USED BUT NOT BOTH.

Box	System	M7265/M7266 (10.5 A)	M8265/M8266 (11.5 A)	M8267 (7.0 A)	M9301 (2.0 A) SEE NOTE 7	M9302 (1.2 A)	M7850 (1.0 A)	DL11-W (2.0 A)	KY11-LB (3.0 A)	MS11-E (2.0 A)	MM11-D (3.0 A)	G727 (0.0 A)	TOTAL +5VDC CURRENT WITH M7265, M7266	TOTAL +5VDC CURRENT WITH M8265, M8266, M8267		NOTE: TOTAL +5VDC CURRENT WITH M9302, M7850, AND MEMORIES MOVED TO ANOTHER BACKPLANE.
5.25" BOX	11/34-DC(D)	1	-	-	1	1	1	-	-	1	-	6	16.7	-	1	-
	11/34-HC(D)	1	-	-	1	1	1	-	-	-	1	6	17.7	-	1	-
	11/34-LC(D)	1	-	-	1	1	1	-	-	2	-	5	18.7	-	1	-
	11/34-MC(D)	1	-	-	1	1	1	-	-	-	2	5	20.7	-	1	-
10.5" BOX	11/34-LH(J)	1	-	-	1	1	1	-	-	2	-	5	18.7	26.7	4	20.5
	11/34-DH(J)	1	-	-	1	1	1	-	-	1	-	6	16.7	24.7	4	20.5
	11/34-MH(J)	1	-	-	1	1	1	-	-	-	2	5	20.7	28.7	4	20.5
	11/34-HH(J)	1	-	-	1	1	1	-	-	-	1	6	17.7	25.7	4	20.5
	11/34-LM(N)	1	-	-	1	1	1	1	-	2	-	4	20.7	28.7	4	22.5
	11/34-DM(N)	1	-	-	1	1	1	1	-	1	-	5	18.7	26.7	4	22.5
	11/34-MM(N)	1	-	-	1	1	1	1	-	-	2	4	22.7	30.7	4	22.5
	11/34-HM(N)	1	-	-	1	1	1	1	-	-	1	5	19.7	27.7	4	22.5

Slot	A	B	C	D	E	F
SLOT 1	M8266					
2	M8265					
3	M8267					
4 (SEE NOTE 7)	M9301		← SPC →			
5	← MUD →		← SPC →			
6	← MUD →		← SPC →			
7	← MUD →		← SPC →			
8	← MUD →		← SPC →			
SLOT 9	STD	UNIBUS	← SPC →			

DD11-P BACKPLANE

DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

FIRST USED ON 1134

TITLE MODULE UTILIZATION FP11-AU

SIZE D | CODE MU | NUMBER FP11-AU-1 | REV. B

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FLOATING POINT

FP11-AU FLOATING POINT OPTION UPGRADE KIT
POWER SUPPLY COMPONENTS INSTALLATION PROCEDURE

THE FP11-AU FLOATING POINT OPTION UPGRADE KIT PROVIDES AN H7441 REGULATOR AND 5410089-YA POWER DISTRIBUTION BOARD IN ORDER TO INCREASE THE AMOUNT OF CURRENT AT +5VDC AVAILABLE FROM THE 10.5" BOX. THE FOLLOWING IS AN INSTALLATION PROCEDURE FOR THESE COMPONENTS.

TOOLS REQUIRED
LARGE PHILLIPS SCREWDRIVER
LARGE STANDARD SCREWDRIVER
MEDIUM PHILLIPS SCREWDRIVER
90° OFFSET PHILLIPS SCREWDRIVER

DEFINITIONS

BOX	BA11-K BOX
CHASSIS	MODULE ENCLOSURE PORTION OF A BA11 K BOX
P/S	H765 POWER SUPPLY ASSEMBLY PORTION OF A BA11-K BOX
TOP OF BOX	MODULE HANDLES SIDE OF A BA11-K BOX
BOTTOM OF BOX	BACKPLANE PINS SIDE OF A BA11-K BOX
SIDE OF BOX	WHERE CHASSIS SLIDES MOUNT TO A BA11-K BOX
BACK OF P/S	SURFACE OF P/S WHERE THE LINE CORD ENTERS
FRONT OF P/S	SURFACE OF P/S WHERE THE OUTPUT MATE-N-LOKS ARE LOCATED

WARNING: TURN OFF COMPUTER SYSTEM AND DISCONNECT IT FROM POWER LINE BEFORE ATTEMPTING TO WORK ON THE SYSTEM.

1. EXTEND THE BOX OUT OF THE CABINET TO THE LIMITS OF THE CHASSIS SLIDES
2. REMOVE THE CHASSIS TOP COVER TO GAIN ACCESS TO THE P/S TOP COVER.
3. LOOSEN THE CLAMP HOLDING THE CABLES THAT RUN ACROSS THE P/S AND THEN REMOVE THE P/S TOP COVER.
4. ROTATE THE BOX 90° SO THAT THE BOTTOM OF THE BOX NOW FACES AWAY FROM THE CABINET.
5. REMOVE THE CHASSIS BOTTOM COVER. THIS WILL REVEAL THE POWER DISTRIBUTION BOARD LOCATED OVER THE FAN AND BETWEEN THE P/S AND BACKPLANES.

WARNING: DO NOT REMOVE THE TWO HINGE SCREWS (ONE ON EACH SIDE OF THE BOX LOCATED NEAR TOP OF THE BOX AT JUNCTION OF THE P/S AND CHASSIS).

6. REMOVE FOUR FLATHEAD SCREWS (NO WASHERS) LOCATED (TWO ON EACH SIDE OF THE BOX) APPROXIMATELY FOUR INCHES FROM THE BOTTOM EDGE OF THE BOX AT THE JUNCTION OF THE P/S AND CHASSIS. THIS WILL ALLOW THE P/S TO SWING AWAY FROM THE CHASSIS.
7. LOCATE THE H744 +5VDC REGULATOR THAT POWERS THE CPU BACKPLANE. THIS REGULATOR (SHOWN AS REGULATOR #2 ON THE E-UA-11/34-0-0 DRAWING) IS THE SECOND ONE FROM THE RIGHT WHEN FACING THE UPTURNED BOX FROM THW WIRE-WRAP SIDE OF THE BACKPLANE.
8. REMOVE THE TWO MOUNTING SCREWS (AND WASHERS) LOCATED JUST TO THE LEFT OF MATE-N-LOK CONNECTOR FOR THAT H744. THERE WILL BE A GREEN SAFETY GROUND WIRE UNDER ONE OF THEM. THE 90° OFFSET PHILLIPS SCREWDRIVER WILL BE NEEDED FOR THIS OPERATION.
9. REMOVE THE MATE-N-LOK FOR THE H744 AND THE ONE REMAINING HOLDING SCREW (AND WASHER) LOCATED ON THE BACK OF THE P/S TO THE LEFT OF THE H744 DECAL.
10. REMOVE THE H744 BY SLIDING IT OUT THROUGH THE TOP OF THE P/S (YOU MAY HAVE TO ROTATE THE BOX FOR THIS OPERATION).
11. REPLACE THE H744 WITH THE H7441 INCLUDED IN THE FP11-AU.
12. RETURN THE BOX TO THE POSITION OF STEP #3 IF NECESSARY.
13. REPLACE THE MOUNTING SCREWS, WASHERS, AND GREEN SAFETY GROUND WIRE THAT ARE COMMON TO THE H7441 REGULATOR, BUT DO NOT RECONNECT THE MATE-N-LOK.
14. REMOVE THE THREE REMAINING MATE-N-LOKS CONNECTING THE REGULATORS TO THE POWER DISTRIBUTION BOARD FLYING LEADS.
15. LOCATE THE BLACK GROUND WIRE SOLDERED TO THE POWER DISTRIBUTION BOARD NEAR J10. REMOVE THIS CONNECTION FROM THE P/S (NO WASHER) AND THE CHASSIS (WASHER).
16. REMOVE THE +5V AND GND FASTONS FROM THE POWER DISTRIBUTION BOARD THAT ARE LOCATED NEAR J14.
17. REMOVE THE SIX PIN MATE-N-LOK FROM THE POWER DISTRIBUTION BOARD AT J8.
18. LOCATE AND REMOVE THE FOUR FLATHEAD MOUNTING SCREWS (NO WASHERS) HOLDING THE POWER DISTRIBUTION BOARD TO THE CHASSIS. THEY ARE LOCATED (TWO ON EACH SIDE OF BOX) 2" UP FROM THE BOTTOM OF THE BOX NEAR THE JUNCTION OF THE P/S AND CHASSIS. THIS WILL ALLOW THE POWER DISTRIBUTION BOARD TO BE MOVED TO FACILITATE REMOVAL OF ALL BACKPLANE MATE-N-LOK CONNECTORS.
19. REMOVE ALL BACKPLANE MATE-N-LOK CONNECTORS.
20. REMOVE THE TWO REMAINING MATE-N-LOKS CONNECTING THE POWER DISTRIBUTION BOARD TO THE P/S.
21. REMOVE THE POWER DISTRIBUTION BOARD FROM THE CHASSIS.
22. REVERSE PROCEDURE (STEPS #21 TO #14, #8 TO #1) TO INSTALL THE NEW POWER DISTRIBUTION BOARD. CAUTION: SEE NOTE #1

DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL

FINISH

DRN.	
CHK'D.	
ENG.	
PROJ. ENG.	
NEXT HIGHER ASSY.	B-DD-FP11-AU
SCALE	NONE
SHEET	2 OF 2

FIRST USED ON

digital

TITLE
MODULE UTILIZATION FP11-AU

SIZE	CODE	NUMBER	REV.
D	MU	FP11-AU-1	B

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TABLE OF CONTENTS

UNIT VARIATIONS COVERED BY THIS PRINT SET
KD11-EA

KD11-EA
Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.
MPØØ192

REVISIONS	REV.	CHG. NO.	DATE

USED ON OPTION/MODEL	
1134A	

SHEET 1 OF 1

DRN.	DATE
D. HEALY	OCT 76
CHK'D	DATE
D. HEALY	OCT 76
PROJ. ENG.	DATE
J W Mitchell	12-20-76
FIELD SERV.	DATE
[signature]	12-20-76

digital

TITLE: 1134A PROCESSOR

SIZE	CODE	NUMBER	REV.
B	TC	KD11-EA-3	

DIST.

EN-01124-16-N675-(327)

DRB 124

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I.R. (K2-6)
LOAD I.R
FP11-A LOAD IR
FP11-A ATTACHED
IR DECODE (K2-6)
AUX ALU CONTROL (K2-5)
ALU S <3:0>
μBRANCH CONTROL (K2-6)
BUT DECODE (K2-3, K2-7)
FP11-A MPC INTERFACE
CLOCK K1-5
PROC CLK
REG CLK
CONTROL STORE ROM (K2-8, K2-9)
CONTROL STORE REGISTER (K2-8, K2-9)
CONTROL SIGNALS
BUS CONTROL (K2-1, K2-2)
D/R
TO FP11-A
SERVICE BR
P FAIL
P FAIL BR
PENDING
1134 CLK
PROC INIT

BX MODE <1:0>
B MODE <1:0>
BX REG (K1-1 → K1-4)
B REG (K1-1 → K1-4)
CC DATA
+1
+16
PSW MUX (K1-1, K1-4)
B MUX (K1-1 → K1-4)
AUX CONTROL
BLEG<1,0>
LOAD PSW
PSW (K1-1, K1-2, K1-4)
SPAM (K2-4)
PBA IRS IRD ROM
SPM (K1-1 → K1-4)
B ALU A (K1-1 → K1-4)
MODE
ALUS (3:0)
CIN
CONSTANTS
TRI STATE AMUX H
AMUXS(1:0)
A MUX (K1-1 → K1-4) 74S253
FP11-A AMUX INTERFACE
CC LOGIC (K1-10, K2-5)
CC DATA
SWAP
SEX
SS MUX (K1-1 → K1-4)
D/R

PDR (K1-7)
PSW VBA
ERROR LOGIC K1-8
VBA
SR2 (K1-9)
SR0 (K1-8)
PAR (K1-7)
KT SR0
PAR*PDR
MUX ENAB
KT MUX (K1-9)
VBA (K1-6)
+
H BA
L (K1-6)
S
RELOCATE
D/A
PBA

UNIBUS

DRN. B. Blodgett	19 DEC 76	FIRST USED ON: digital
CHK'D D. Young	20 DEC 76	TITLE: BLOCK DIAGRAM KD11-EA
ENG.	20 DEC 76	
PROJ. ENGR.		
PROD.		
NEXT HIGHER ASSY.	B-DD-KD11-EA	
SCALE	—	SIZE D, CODE BD, NUMBER KD11-EA-2, REV.
SHEET 1 OF 1		DIST.

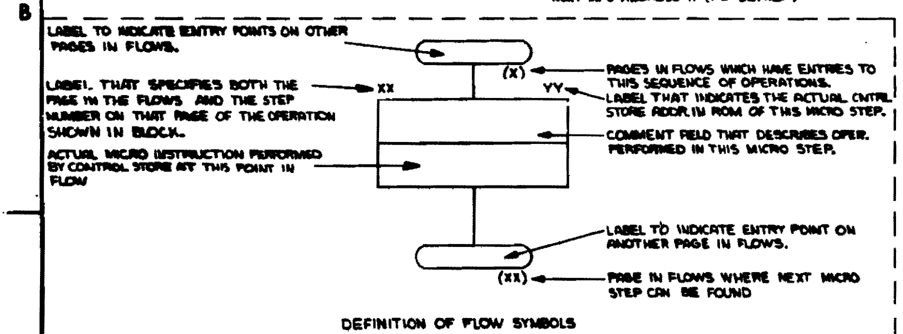
REVISIONS: REV. | CHANGE NO. | CHK.

NOTE:
THIS SET OF FLOW DIAGRAMS ONLY DOCUMENTS MICROWORD LOCATIONS FROM ØØØØ TO Ø51 (DECIMAL). MICROWORD LOCATIONS FROM Ø512 TO 1Ø23 (DECIMAL) ARE DOCUMENTED AS PART OF THE FP11-A FLOW DIAGRAMS (SEE D-FD-FP11-A-1)

KD11-1 CONTROL WORD

INTEGRATED CIRCUIT DESIGNATION	E11Ø				E1Ø9				E1Ø8				E1Ø7				E1Ø6				E99				E97				E98				E1ØØ				E1Ø4				E1Ø3				E1Ø5			
Bit	Ø	1	2	3	4	5	6	7	8	9	1Ø	11	12	13	14	15	16	17	18	19	2Ø	21	22	23	24	25	26	27	28	29	3Ø	31	32	33	34	35	36	37	38	39	4Ø	41	42	43	44	45	46	47
NORMAL CONDITION OF EACH BIT	X	X	X	X	X	X	X	X	X	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	1	Ø	Ø	Ø	1	Ø	1	Ø	Ø	Ø	Ø	Ø	Ø	Ø	1	Ø	Ø	Ø	Ø	Ø	Ø	1	1	1	1	Ø	Ø	Ø	Ø	Ø	Ø

- NEXT MPC ADDRESS H (NO DEFALT)
- MISCELLANEOUS CONTROL H (NOP)
- DATA TRAN H (NO TRANS)
- BUS CONTROL H (DATI)
- ENAB MAINT H (NOP)
- LOAD BAR (NOP)
- LONG CYCLE L (SHORT)
- AUX CONTROL H (NOP)
- ALU,BLEG CONTROL H (A)
- B,BX,OVX,DBE CONTROL H (HOLD)
- SSMUX CONTROL H (STRT)
- AMUX CONTROL H (ALU)
- BUT BITS (NOP)
- SPA SRC SEL H (ROM)
- SPA DST SEL H (RBA)
- FORCE RS V I L (NOP)
- PREVIOUS MODE L (NOP)
- BUT SERVICE H (NOP)
- FORCE KERNEL H (NOP)
- ROM SPA H (R17)



DEFINITION OF FLOW SYMBOLS

MISC. CONTROL

OPERATION	MISC 9	1Ø	11
NOP	Ø	Ø	Ø
LOAD IR	Ø	Ø	1
LOAD PSW	Ø	1	Ø
LOAD CC	Ø	1	1
BUT DEST	1	Ø	Ø
ENAB STOV	1	Ø	1
LOAD CNT	1	1	Ø
COUNT	1	1	1

BUS CONTROL

OPERATION	CNTRL 13	14
DATI	Ø	Ø
DATIP	Ø	1
DATO	1	Ø
DATOB	1	1

ALU/BLEG CONTROL

ALU FUNCTION	ALU/BLEG CNTRL 19	2Ø	21	22	23
ZERO	Ø	Ø	Ø	Ø	Ø
ABAR	Ø	Ø	Ø	Ø	1
A+1	Ø	Ø	Ø	1	Ø
A-1	Ø	Ø	Ø	1	1
A-B	Ø	Ø	1	Ø	Ø
A	Ø	Ø	1	Ø	1
B	Ø	Ø	1	1	Ø
ONE BAR	Ø	Ø	1	1	1
A+B	Ø	1	Ø	Ø	Ø
A·B	Ø	1	Ø	Ø	1
ABAR·B	Ø	1	Ø	1	Ø
AVB	Ø	1	Ø	1	1
A⊕B	Ø	1	1	Ø	Ø
A·BBAR	Ø	1	1	Ø	1
K16	Ø	1	1	1	Ø
A+B+1	1	Ø	Ø	Ø	Ø
A+BX	1	Ø	Ø	Ø	1
A-BX	1	Ø	Ø	1	Ø
A+BX+1	1	Ø	Ø	1	1
A+2	1	Ø	1	Ø	Ø
A-2	1	Ø	1	Ø	1
A+A	1	Ø	1	1	Ø
BX	1	Ø	1	1	1
BBAR	1	1	Ø	Ø	Ø
BX BAR	1	1	Ø	Ø	1
A+A+1	1	1	Ø	1	Ø

B,BX,OVX,DBE CONTROL

OPERATION	B,BX CNTRL 24	25	26	27
HOLD	Ø	Ø	Ø	Ø
LOAD B	Ø	Ø	Ø	1
LOAD BX	Ø	Ø	1	Ø
SL(BX-Ø),LDB	Ø	Ø	1	1
SL(BX-COUT),LDB	Ø	1	Ø	Ø
SL(BX-1),LDB	Ø	1	Ø	1
SL(B-Ø)	Ø	1	1	Ø
SL(B-Ø),LDBX	Ø	1	1	1
SL(B-BX15)	1	Ø	Ø	Ø
SL(BX-Ø)	1	Ø	Ø	1
SL(BX-1)	1	Ø	1	Ø
SL(BX-OVX)	1	Ø	1	1
SL(BX-COUT)	1	1	Ø	Ø
SL(B-BX-Ø)	1	1	Ø	1
SR(B15-B-BX)	1	1	1	Ø
ENAB DBE	1	1	1	1

AMUX CONTROL

SELECT	AMUX 3Ø	31
PSW	Ø	Ø
ALU	Ø	1
VECT	1	Ø
UBUS	1	1

SS MUX CONTROL

SELECT	SS 28	29
STRT	Ø	Ø
SEX	Ø	1
SWAB	1	Ø
EXTRNL	1	1

BUT BITS

BRANCH COND.	BITS 32	33	34	35
NOP	Ø	Ø	Ø	Ø
N BIT	Ø	Ø	Ø	1
Z BIT	Ø	Ø	1	Ø
CØ5	Ø	Ø	1	1
IR9	Ø	1	Ø	Ø
BXØØ	Ø	1	Ø	1
BXØ1	Ø	1	1	Ø
COUT	Ø	1	1	1
SP15	1	Ø	Ø	Ø
NBIT + ZBIT	1	Ø	Ø	1
BXØØ + SP15	1	Ø	1	Ø
BXØ1 + BXØØ	1	Ø	1	1
CØ5 + BXØ1 + BXØØ	1	1	Ø	Ø
NBIT + CØ5	1	1	Ø	1
BXØØ + CØ5	1	1	1	Ø
ALL	1	1	1	1

SPA SRC SEL

FIELD SEL.	SPA SRC SEL. 36	37
ROM	Ø	Ø
RS	Ø	1
RD	1	Ø
RBA	1	1

SPA DST SEL

FIELD SEL.	SPA DST SEL 38	39
ROM	Ø	Ø
RS	Ø	1
RD	1	Ø
RBA	1	1

ROM SPA LINES

REG. SELECTED	ROM SPA 44	45	46	47
R5	1	Ø	1	Ø
R6 (SP)	1	Ø	Ø	1
R7 (PC)	1	Ø	Ø	Ø
R1Ø	Ø	1	1	1
R11	Ø	1	1	Ø
R12	Ø	1	Ø	1
R13	Ø	1	Ø	Ø
R14	Ø	Ø	1	1
R15	Ø	Ø	1	Ø
R16	Ø	Ø	Ø	1
R17	Ø	Ø	Ø	Ø

A "1" IN THE TABLES SHOWN INDICATES A LOGIC "1" ROM OUTPUT BETWEEN +2.4 VOLTS AND +5.Ø VOLTS.
A "Ø" IN THE TABLES SHOWN INDICATES A LOGIC "Ø" ROM OUTPUT BETWEEN Ø.Ø VOLTS AND +Ø.4 VOLTS.
NOTE THAT ALL LEVELS SHOWN REPRESENT ACTUAL CONTROL STORE ROM OUTPUTS.

FIRST USED ON OPTION/MODEL: 1134A

TITLE: KD11-EA FLOW DIAGRAMS

NEXT HIGHER ASSY.: B-DD-KD11-EA

SIZE: D | CODE: FD | NUMBER: KD11-EA-1

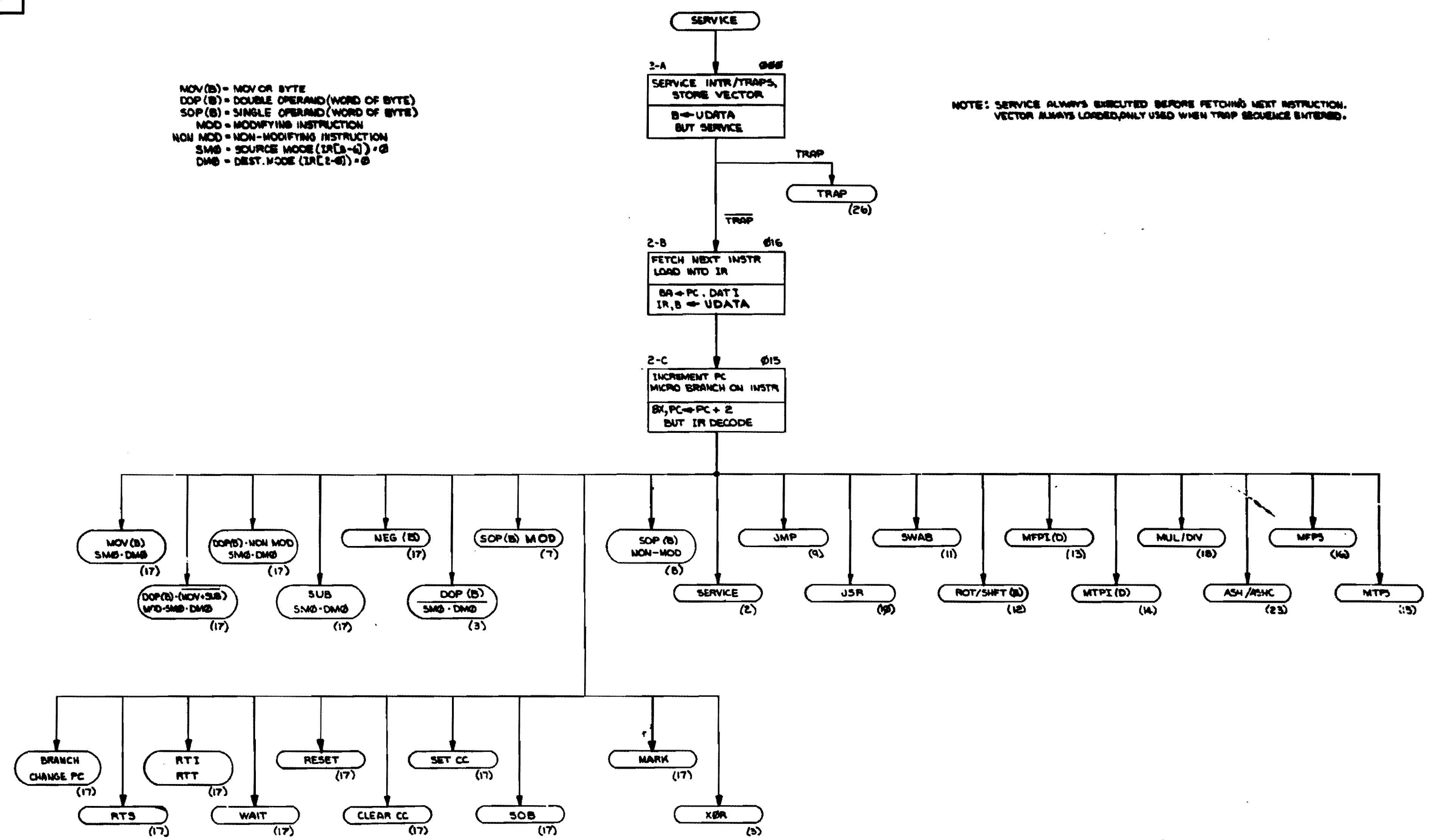
SHEET 1 OF 26

digital

D FD KD11-EA-1 2

MOV (B) = MOV OR BYTE
DOP (B) = DOUBLE OPERAND (WORD OF BYTE)
SOP (B) = SINGLE OPERAND (WORD OF BYTE)
MOD = MODIFYING INSTRUCTION
NON MOD = NON-MODIFYING INSTRUCTION
SMØ = SOURCE MODE (IR[8-6]) = Ø
DMØ = DEST. MODE (IR[2-Ø]) = Ø

NOTE: SERVICE ALWAYS EXECUTED BEFORE FETCHING NEXT INSTRUCTION.
VECTOR ALWAYS LOADED, ONLY USED WHEN TRAP SEQUENCE ENTERED.



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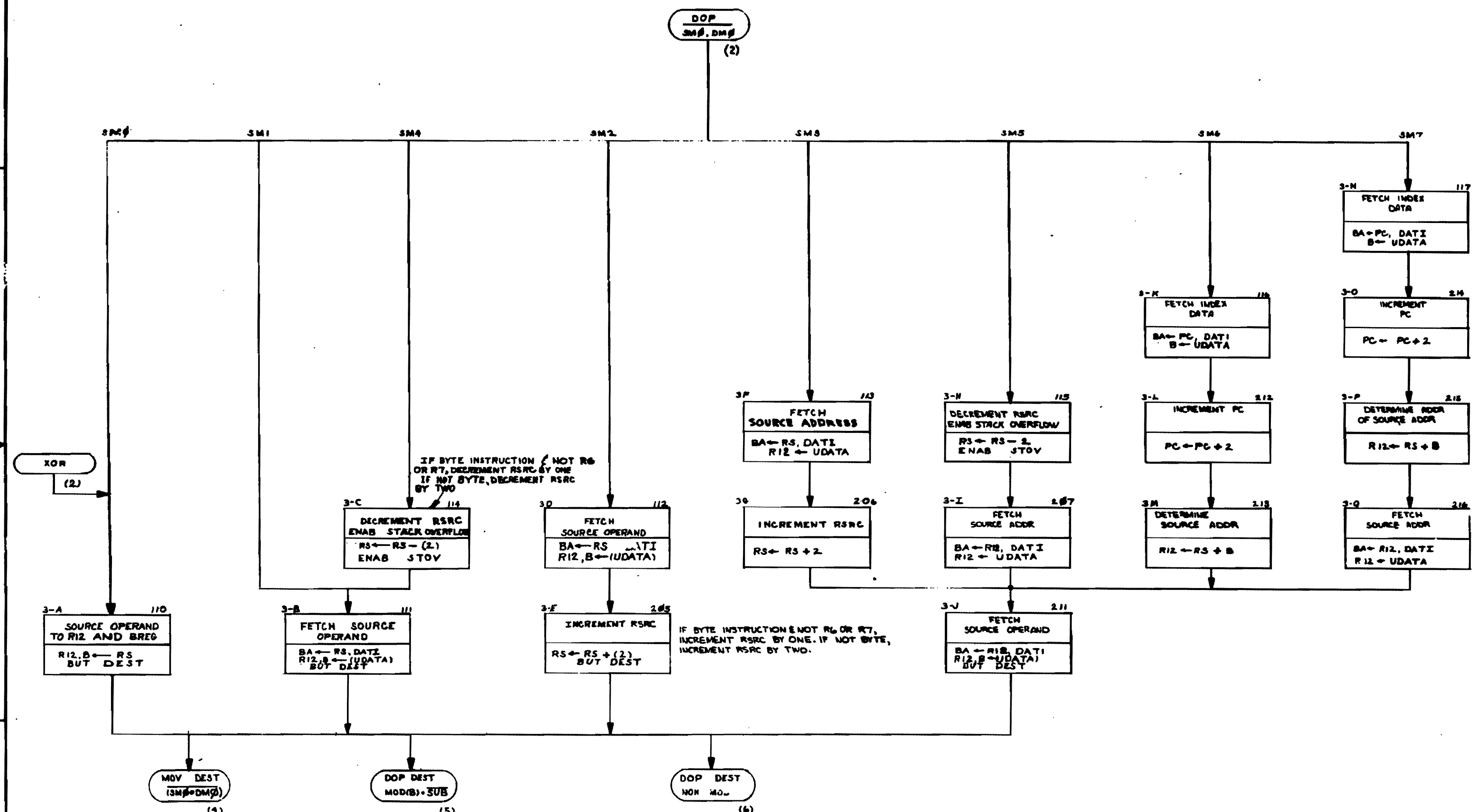
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KD11-EA FLOW DIAGRAMS	D	FD	KD11-EA-1	
SCALE	SHEET 2 OF 26		DIST.	


DOP
SMØ, DMØ
(2)
SMØ
SM1
SM4
SM2
SM3
SM5
SM6
SM7
FETCH INDEX DATA
BA←PC, DATI
B← UDATA
INCREMENT PC
PC← PC+2
DETERMINE ADDR OF SOURCE ADDR
R12← RS+B
FETCH SOURCE ADDR
BA← R12, DATI
R12 ← UDATA
INCREMENT PC
PC←PC+2
DETERMINE SOURCE ADDR
R12 ←RS+B
FETCH SOURCE ADDRESS
BA← RS, DATI
R12 ← UDATA
INCREMENT RSRC
RS← RS+2
DECREMENT RSRC
ENAB STACK OVERFLOW
RS← RS−2
ENAB STOV
FETCH SOURCE OPERAND
BA←R12, DATI
R12,B←UDATA
BUT DEST
XOR
(2)
IF BYTE INSTRUCTION & NOT R6 OR R7, DECREMENT RSRC BY ONE IF NOT BYTE, DECREMENT RSRC BY TWO
DECREMENT RSRC
ENAB STACK OVERFLOW
RS←RS−(2)
ENAB STOV
FETCH SOURCE OPERAND
BA←RS DATI
R12,B←(UDATA)
SOURCE OPERAND TO R12 AND BREG
R12,B← RS
BUT DEST
FETCH SOURCE OPERAND
BA← RS, DATI
R12,B←(UDATA)
BUT DEST
INCREMENT RSRC
RS← RS+(2)
BUT DEST
IF BYTE INSTRUCTION & NOT R6 OR R7, INCREMENT RSRC BY ONE. IF NOT BYTE, INCREMENT RSRC BY TWO.
MOV DEST
(SMØ+DMØ)
(4)
DOP DEST
MOD(B)+SUB
(5)
DOP DEST
NON MOD
(6)

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TITLE	SIZE	CODE	NUMBER	REV.
KD11-EA FLOW DIAGRAMS	D	FD	KD11-EA-1	
SCALE	SHEET 3 OF 26		DIST.	

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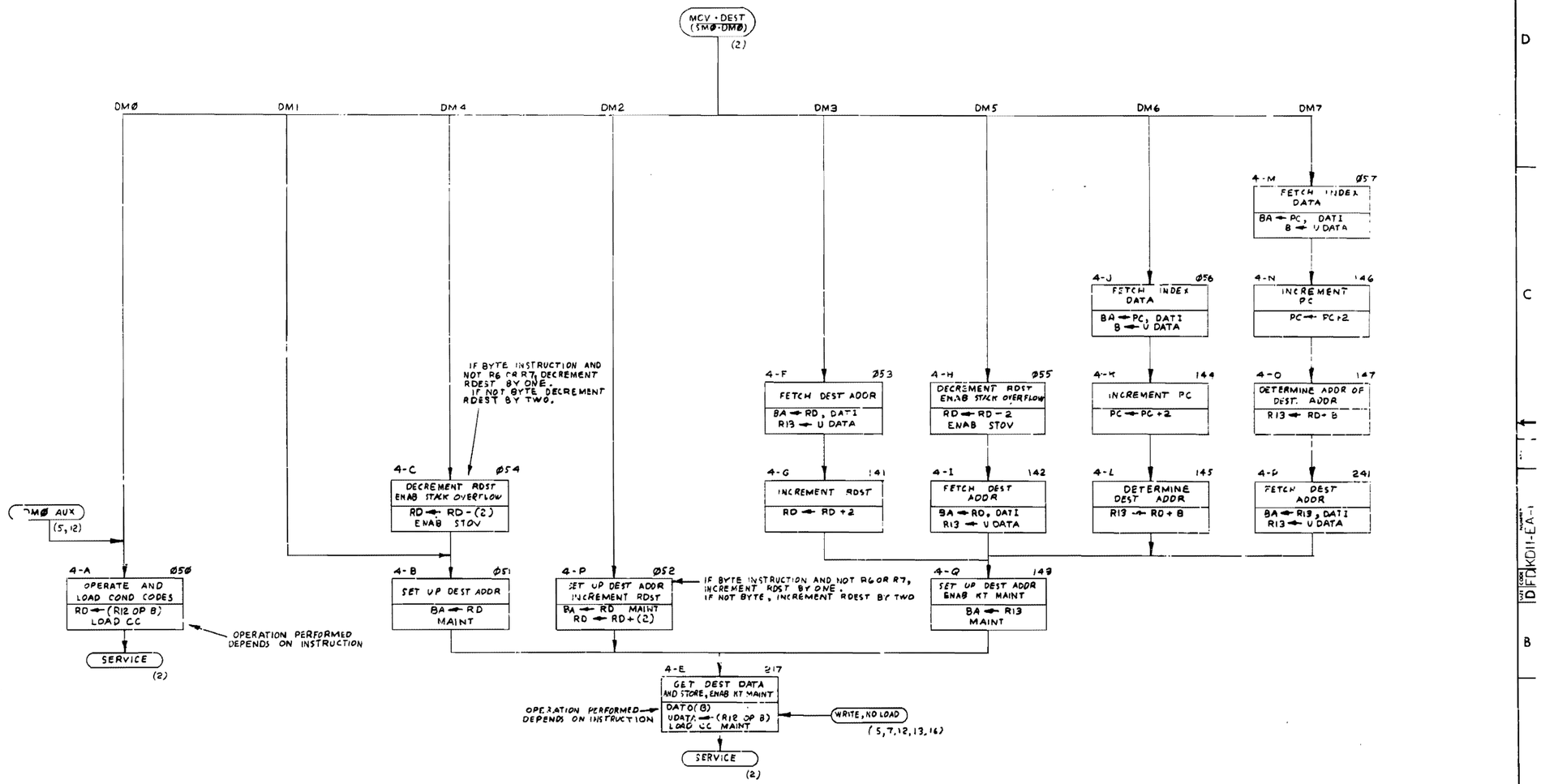

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV
KDI1-EA FLOW DIAGRAMS	D	FD	KDI1-EA--	
SCALE —	SHEET 4 OF 26	DIST.		

DEC FORM NO. 1MD 13A

DFD KDI1-EA-1

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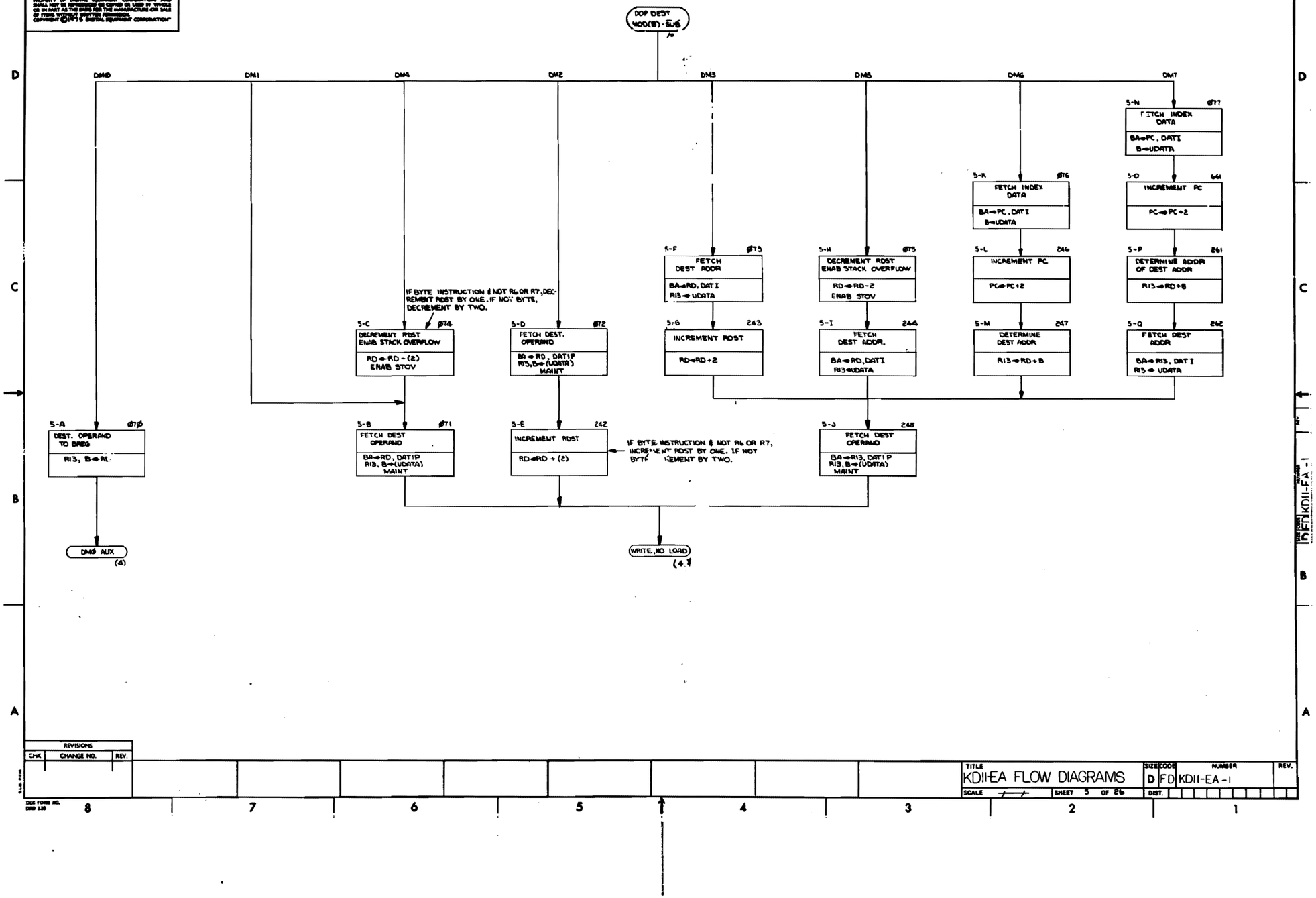

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDII-EA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE —	SHEET 5 OF 26	DIST.		

DEC FORM NO. DMD 120

DFN KDII-EA-1

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DOP DEST NON MOD (3)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

IF BYTE INSTRUCTION AND NOT R6 OR R7, DECREMENT RDST BY ONE.
IF NOT BYTE, DECREMENT BY TWO

6-A #60
DEST. OPERAND TO BREG
R13, B ← RD

6-B #61
FETCH DEST OPERAND
BA ← RD, DATI
R13, B ← (U DATA), MAINT

6-C #64
DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD-(2) ENAB STOV

6-D #62
FETCH DEST OPERAND
BA ← RD, DATI
R13 ← (U DATA), MAINT

6-E 263
INCREMENT RDST
RD ← RD+(2)

IF BYTE INSTRUCTION AND NOT R6 OR R7, INCREMENT RDST BY ONE.
IF NOT BYTE, INCREMENT BY TWO.

6-F #63
FETCH DEST ADDR
BA ← RD, DATI
R13 ← U DATA

6-G 264
INCREMENT RDST
RD ← RD+2

6-H 265
OPERATE AND LOAD COND CODES
R12 OP B LOAD CC

OPERATION PERFORMED DEPENDS ON INSTRUCTION

NON MOD AUX (8)

SERVICE (2)

6-I #65
DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD-2 ENAB STOV

6-J 266
FETCH DEST ADDR
BA ← RD, DATI
R13 ← U DATA

6-K 267
FETCH DEST. OPERAND
BA ← R13, DATI
R13, B ← (U DATA), MAINT

6-L #66
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA

6-M 662
INCREMENT PC
PC ← PC+2

6-N 271
DETERMINE DEST. ADDR
R13 ← RD+B

6-O #67
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA

6-P 272
INCREMENT PC
PC ← PC+2

6-Q 273
DETERMINE ADDR OF DEST ADDR
R13 ← RD+B

6-R 274
FETCH DEST ADDR.
BA ← R13, DATI
R13 ← U DATA

REVISIONS

CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDII-EA FLOW DIAGRAMS	D	FD	KDII-EA-1	

SCALE — SHEET 6 OF 26 DIST.

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SOP MOD (2)

DM0 | DM1 | DM4 | DM2 | DM3 | DM5 | DM6 | DM7

7-A #40 OPERATE AND LOAD COND CODES
RD ← (RD OP B) LOAD CC
→ SERVICE (2)
OPERATION PERFORMED DEPENDS ON INSTRUCTION

7-B #41 FETCH DEST OPERAND
BA ← RD, DATI
R12 ← (U DATA) MAINT

7-C #44 DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD - (2)
ENAB STOV

IF BYTE INSTRUCTION AND NOT R6 OR R7, DECREMENT RDST BY ONE.
IF NOT BYTE, DECREMENT BY TWO.

7-D #42 FETCH DEST OPERAND
BA ← RD, DATIP
R12 ← (U DATA), MAINT

7-E 275 INCREMENT RDST
RD ← RD + (2)
IF BYTE INSTRUCTION AND NOT R6 OR R7, INCREMENT RDST BY ONE
IF NOT BYTE, INCREMENT BY TWO

7-F #43 FETCH DEST ADDR
BA ← RD, DATI
R12 ← U DATA

7-G 276 INCREMENT RDST
RD ← RD + 2

7-H #45 DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV

7-I 277 FETCH DEST ADDR
BA ← RD, DATI
R12 ← U DATA

7-J 300 FETCH DEST OPERAND
BA ← R12, DATIP
R12 ← (U DATA), MAINT

WRITE, NO LOAD (4)

7-K #46 FETCH INDEX DATA
BA ← PC, DATI
BX ← U DATA

7-L 361 INCREMENT PC
PC ← PC + 2

7-M 362 DETERMINE DEST ADDR
R12 ← RD + BX

7-M #47 FETCH INDEX DATA
BA ← PC, DATI
BX ← U DATA

7-O 363 INCREMENT PC
PC ← PC + 2

7-P 364 DETERMINE ADDR OF DEST. ADDR
R12 ← RD + BX

7-Q 365 FETCH DEST ADDR,
BA ← R12, DATI
R12 ← U DATA

REVISIONS
CHK | CHANGE NO. | REV.

TITLE: KDII-EAFLOW DIAGRAMS
SIZE: D | CODE: FD | NUMBER: KDII-EA-1 | REV.
SCALE | SHEET 7 OF 26 | DIST.

DEC FORM 45-23766

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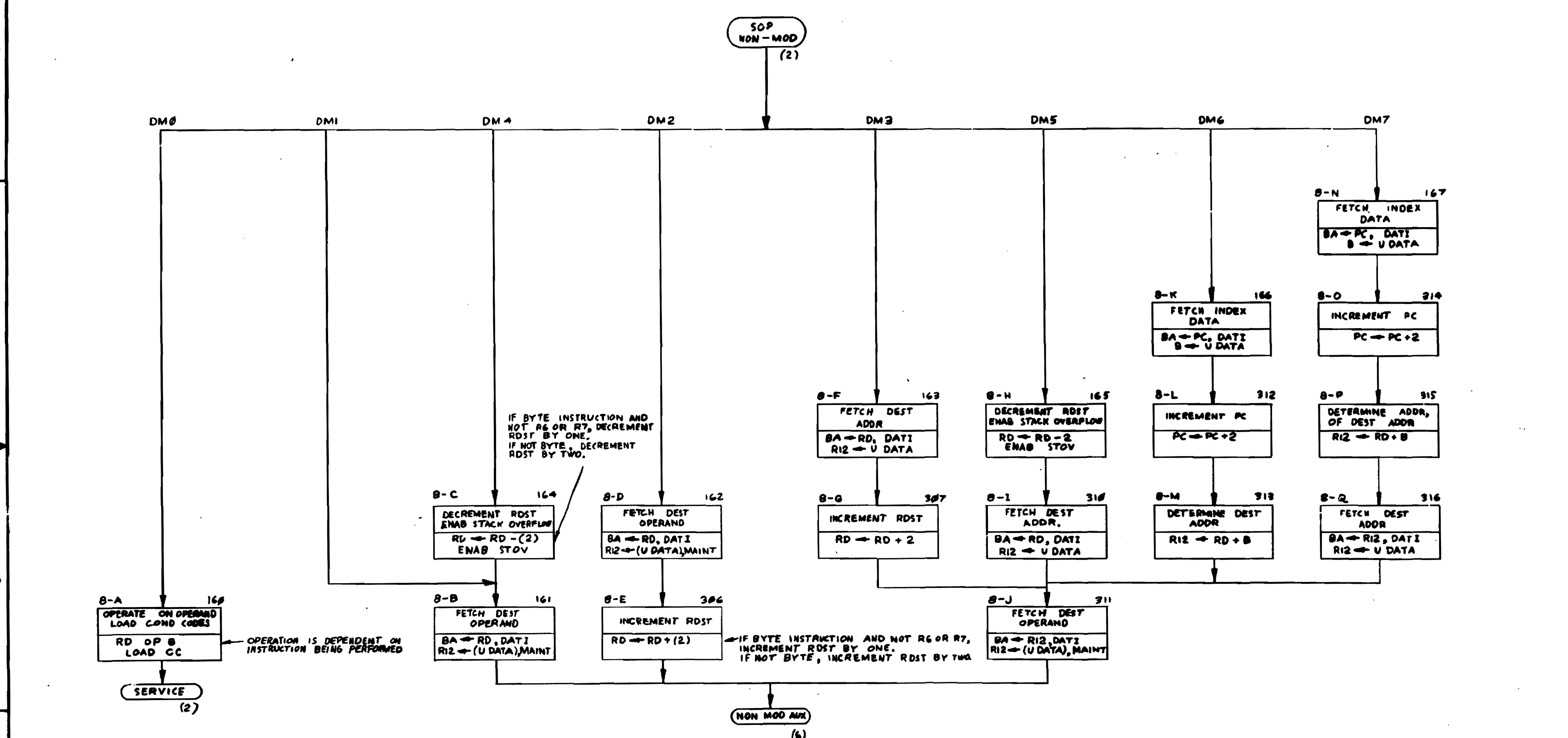

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE KDII-EA FLOW DIAGRAM

SIZE D | CODE FD | NUMBER KDII-EA-I | REV.

SCALE — | SHEET 8 OF 26 | DIST.

DEC FORM NO. DRD 130

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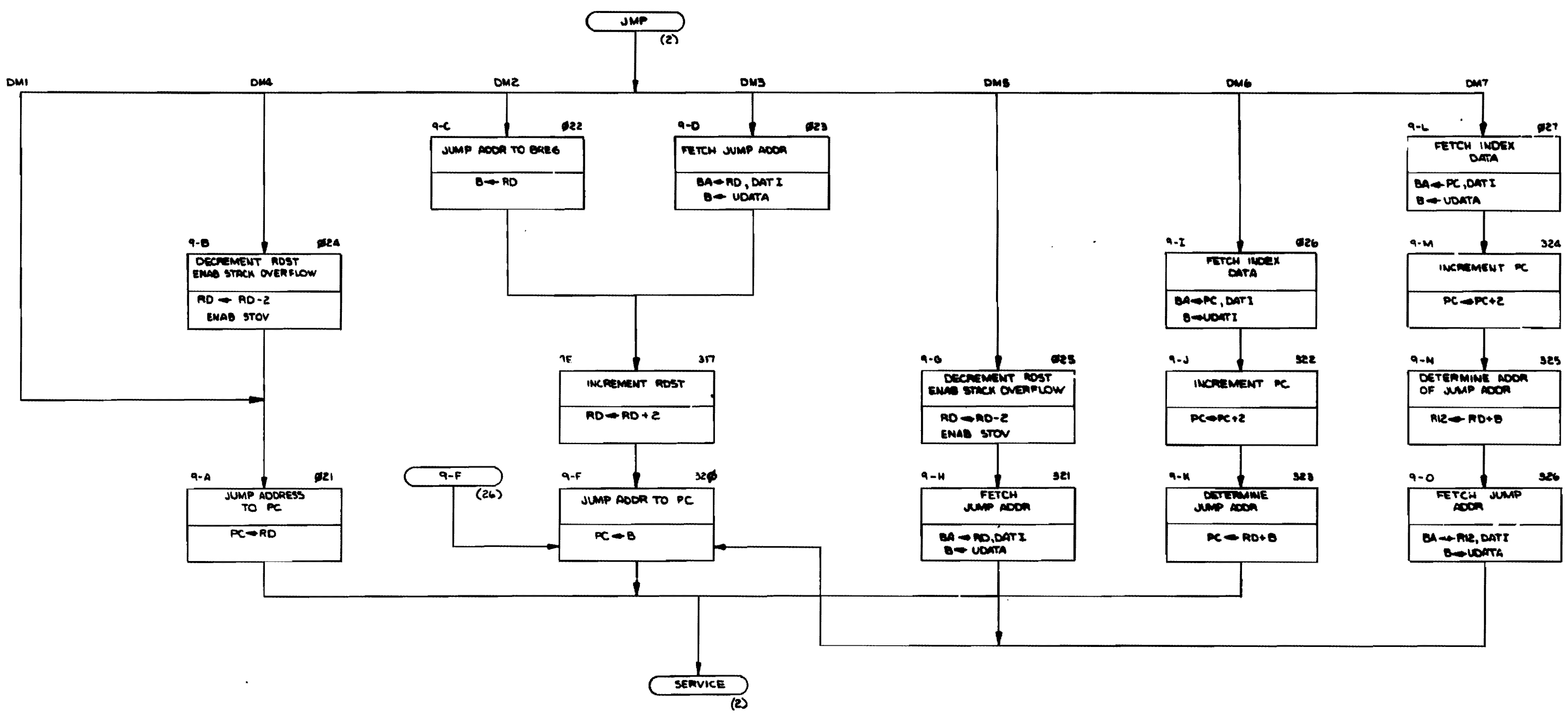

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: KD11-EA FLOW DIAGRAMS

SIZE: D | CODE: FD | NUMBER: KD11-EA-1 | REV.

SCALE: — | SHEET 9 OF 26 | DIST.

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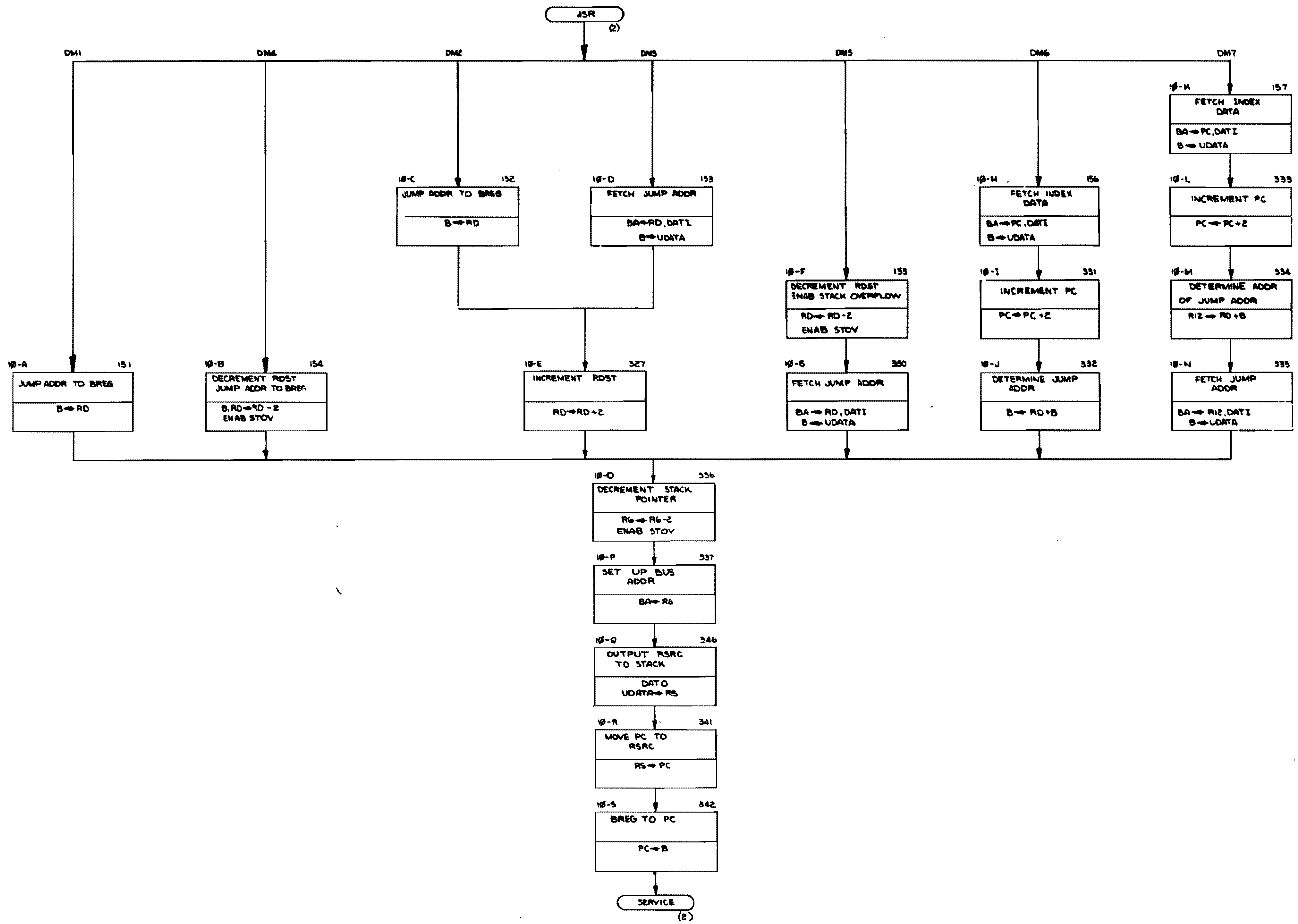
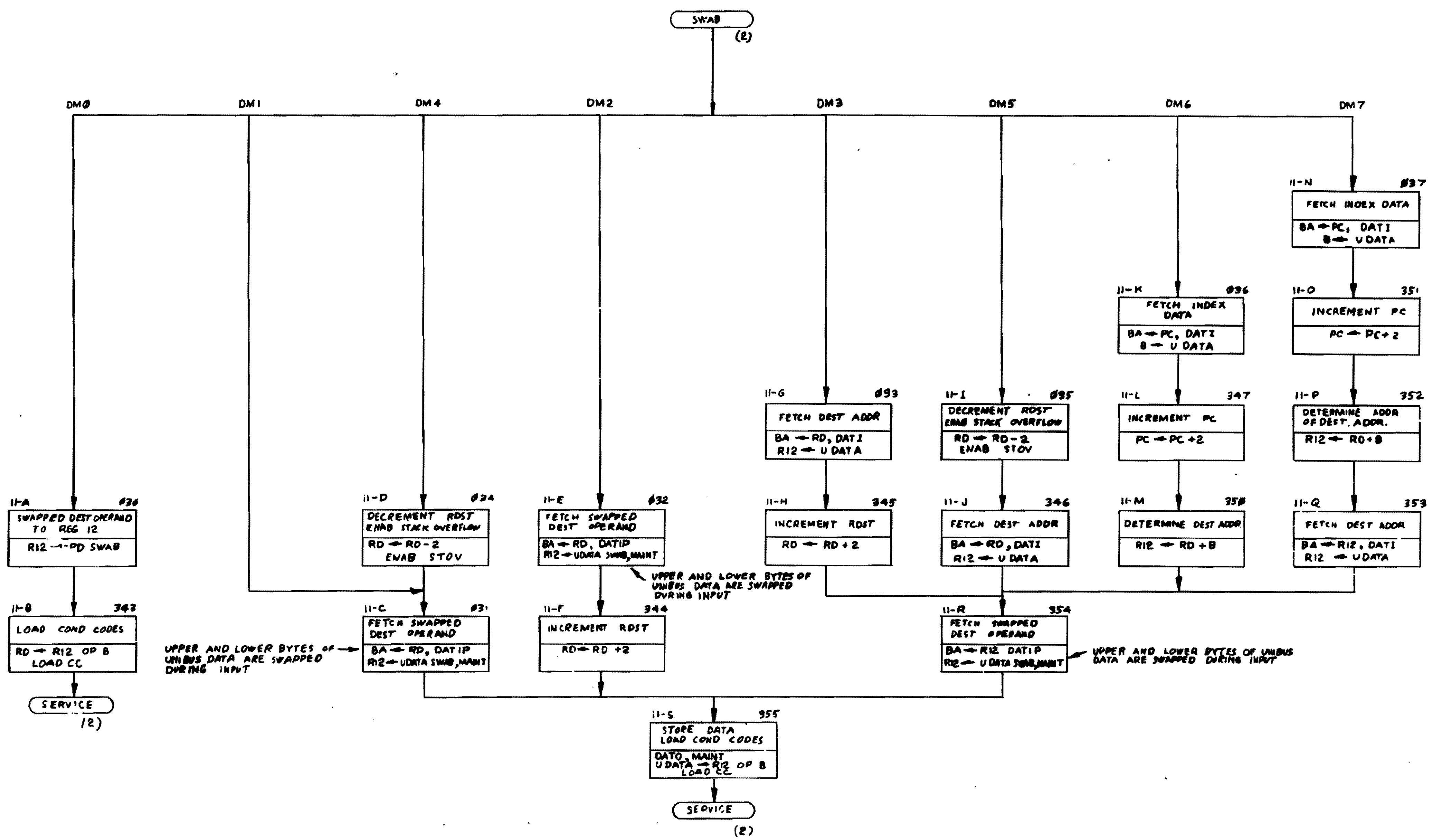


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KD11-EA FLOW DIAGRAMS	D	FD	KD11-EA-1	
SCALE —— SHEET 10 OF 26	DIST.			

DEC FORM NO. DRD 1.3D


SWAB
(2)
DM0
DM1
DM4
DM2
DM3
DM5
DM6
DM7
11-A 036
SWAPPED DEST OPERAND TO REG 12
R12 ← PD SWAB
11-B 343
LOAD COND CODES
RD ← R12 OP B
LOAD CC
SERVICE
(2)
11-D 034
DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV
11-C 031
FETCH SWAPPED DEST OPERAND
BA ← RD, DATIP
R12 ← UDATA SWAB, MAINT
UPPER AND LOWER BYTES OF UNIBUS DATA ARE SWAPPED DURING INPUT
11-E 032
FETCH SWAPPED DEST OPERAND
BA ← RD, DATIP
R12 ← UDATA SWAB, MAINT
UPPER AND LOWER BYTES OF UNIBUS DATA ARE SWAPPED DURING INPUT
11-F 344
INCREMENT RDST
RD ← RD +2
11-G 033
FETCH DEST ADDR
BA ← RD, DATI
R12 ← U DATA
11-H 345
INCREMENT RDST
RD ← RD + 2
11-I 035
DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV
11-J 346
FETCH DEST ADDR
BA ← RD, DATI
R12 ← U DATA
11-K 036
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA
11-L 347
INCREMENT PC
PC ← PC +2
11-M 350
DETERMINE DEST ADDR
R12 ← RD + B
11-N 037
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA
11-O 351
INCREMENT PC
PC ← PC+ 2
11-P 352
DETERMINE ADDR OF DEST. ADDR.
R12 ← RD+B
11-Q 353
FETCH DEST ADDR
BA ← R12, DATI
R12 ← UDATA
11-R 354
FETCH SWAPPED DEST OPERAND
BA ← R12 DATIP
R12 ← U DATA SWAB, MAINT
UPPER AND LOWER BYTES OF UNIBUS DATA ARE SWAPPED DURING INPUT
11-S 355
STORE DATA LOAD COND CODES
DATO, MAINT
U DATA ← R12 OP B
LOAD CC
SERVICE
(2)

TITLE: KD11-EA FLOW DIAGRAMS

SIZE: D | CODE: FD | NUMBER: KD11-EA-1

SCALE: — | SHEET 11 OF 26

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ROT SHIFT (2)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

12-A 178
DEST OPERAND TO BREG
: → RD

12-B 356
SHIFT OPERAND
B → B

DM0 AUX (4)

IF BYTE INSTRUCTION AND NOT R6 OR R7 DECREMENT RDST BY ONE IF NOT BYTE, DECREMENT BY TWO

12-D 174
DECREMENT RDST ENAB STACK OVERFLOW
RD → RD -(2) ENAB STOV

12-C 171
FETCH DEST OPERAND
BA → RD, DATIP
RHB,B → (U DATA), MAINT

12-E 172
FETCH DEST OPERAND
BA → RD, DATIP
RHB,B → (U DATA) MAINT

12-F 875
INCREMENT RDST
RD → RD + (2)

IF BYTE INSTRUCTION AND NOT R6 OR R7, INCREMENT RDST BY ONE IF NOT BYTE, INCREMENT BY TWO

12-S 378
SHIFT OPERAND
B → B

WRITE, NO LOAD (4)

12-G 173
FETCH DEST, ADDR
BA → RD, DATI
R11 → U DATA

12-H 360
INCREMENT RDST
RD → RD + 2

12-I 175
DECREMENT RDST ENAB STACK OVER FLOW
RD → RD - 2 ENAB STOV

12-J 361
FETCH DEST ADDR
BA → RD, DATI
R12 → U DATA

12-K 362
FETCH DEST OPERAND
BA → R12, DATIP
RHB,B → (U DATA) MAINT

12-L 176
FETCH INDEX DATA
BA → PC, DATI
B → U DATA

12-M 363
INCREMENT PC
PC → PC + 2

12-N 364
DETERMINE DEST ADDR
R12 → RD + B

12-O 177
FETCH INDEX DATA
BA → PC, DATI
B → U DATA

12-P 365
INCREMENT PC
PC → PC + 2

12-Q 366
DETERMINE ADDR OF DEST ADDR
R12 → RD + B

12-R 367
FETCH DEST ADDR
BA → R12, DATI
R12 → U DATA

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDII-EA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE — SHEET 12 OF 26	DIST.			

DEC FORM NO. 2150 3/69

PAGE FORM DFD KDII-EA-1 REV

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MFPI (D)
(2)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

13-A 100
DEST DATA TO R12
ENAB PREVIOUS MODE
R12 ← RD
PREVIOUS

13-B 101
MOVE DEST ADDR TO R12
R12 ← RD

13-C 104
DECREMENT RDST
ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV

13-D 102
MOVE DEST ADDR TO R12
R12 ← RD

13-E 005
FETCH DEST DATA
ENAB PREVIOUS MODE
BA ← R12, DATI
R0,8 ← U DATA PREVIOUS

13-F 371
INCREMENT RDST
RD ← RD + 2

13-G 103
FETCH DEST ADDR
BA ← RD, DATI
R12 ← U DATA

13-H 378
INCREMENT RDST
RD ← RD + 2

13-I 105
DECREMENT RDST
ENAB STACK OVERLIMIT
RD ← RD - 2
ENAB STOV

13-J 379
FETCH DEST ADDR
BA ← RD, DATI
R12 ← U DATA

13-K 106
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA

13-L 374
INCREMENT PC
PC ← PC + 2

13-M 375
DETERMINE DEST ADDR
R12 ← RD + B

13-N 107
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA

13-O 376
INCREMENT PC
PC ← PC + 2

13-P 377
DETERMINE ADDR OF DEST ADDR
R12 ← RD + B

13-Q 640
FETCH DEST ADDR
BA ← R12, DATI
R12 ← U DATA

13-R 455
FETCH DEST DATA
ENAB PREVIOUS MODE
BA ← R12, DATI
R0,8 ← U DATA, PREVIOUS

17-S 460
DECREMENT STACK POINTER
RG ← RG - 2
ENAB STOV

13-T 472
SET UP BUS ADDR
BA ← RG
MAINT

WRITE, NOLOAD
(4)

NOTE: PREVIOUS INDICATES THAT THE PREVIOUS (PSW < 13-12>) MEMORY MANAGEMENT MODE IS FORCED.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDII-EA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE —/—/— SHEET 13 OF 26	DIST.			

DFD KDII-EA-1

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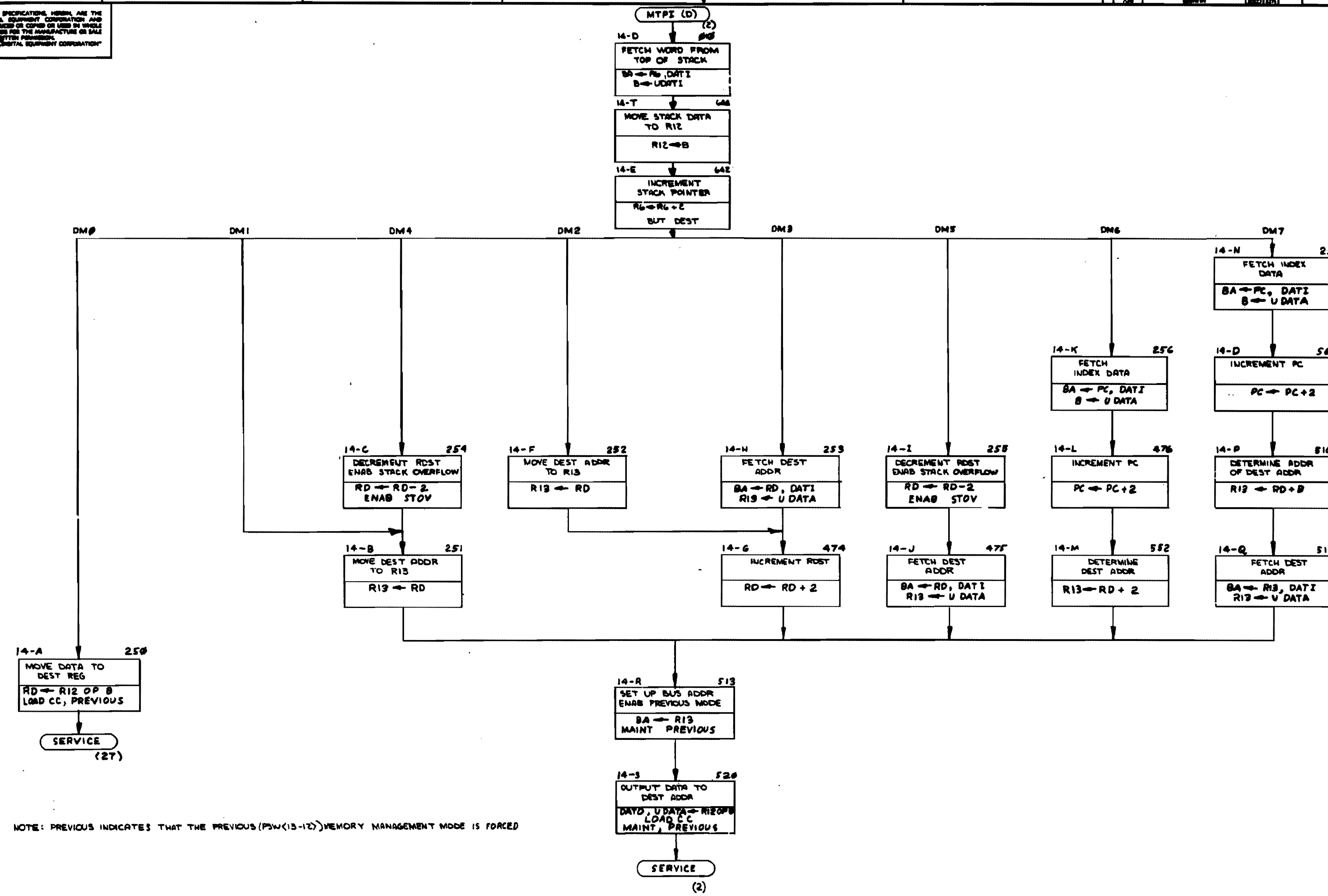
MTPI (D)
(2)
14-D 8Ø
FETCH WORD FROM TOP OF STACK
BA ← R6, DATI
B ← UDATI
14-T 641
MOVE STACK DATA TO R12
R12 ← B
14-E 642
INCREMENT STACK POINTER
R6 ← R6 + 2
BUT DEST
DMØ
DM1
DM4
DM2
DM3
DM5
DM6
DM7
14-N 257
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA
14-K 256
FETCH INDEX DATA
BA ← PC, DATI
B ← U DATA
14-D 5Ø6
INCREMENT PC
PC ← PC + 2
14-C 254
DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV
14-F 252
MOVE DEST ADDR TO R13
R13 ← RD
14-H 253
FETCH DEST ADDR
BA ← RD, DATI
R13 ← U DATA
14-I 255
DECREMENT RDST ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV
14-L 476
INCREMENT PC
PC ← PC + 2
14-P 510
DETERMINE ADDR OF DEST ADDR
R13 ← RD + B
14-B 251
MOVE DEST ADDR TO R13
R13 ← RD
14-G 474
INCREMENT RDST
RD ← RD + 2
14-J 475
FETCH DEST ADDR
BA ← RD, DATI
R13 ← U DATA
14-M 552
DETERMINE DEST ADDR
R13 ← RD + 2
14-Q 514
FETCH DEST ADDR
BA ← R13, DATI
R13 ← U DATA
14-A 25Ø
MOVE DATA TO DEST REG
RD ← R12 OP B
LOAD CC, PREVIOUS
SERVICE
(27)
14-R 513
SET UP BUS ADDR ENAB PREVIOUS MODE
BA ← R13
MAINT PREVIOUS
14-S 52Ø
OUTPUT DATA TO DEST ADDR
DATO, U DATA ← R12 OP B
LOAD CC
MAINT, PREVIOUS
SERVICE
(2)

NOTE: PREVIOUS INDICATES THAT THE PREVIOUS (PSW<13-12>) MEMORY MANAGEMENT MODE IS FORCED

REVISIONS		
CHK.	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KD11-EA FLOW DIAGRAMS	D	FD	KD11-EA-1	
SCALE	SHEET 14 OF 26	DIST.		

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MTPS (2)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

15-A 120 DEST OPERAND TO RI2 AND BREG
R12, BA←RD

15-F 121 FETCH DEST OPERAND
BA←RD, DATI
R12, BA←(UDATA)

15-G 124 DECREMENT RDST ENAB STACK OVERFLOW
RD←RD-(2) ENAB STOV

IF BYTE INST & NOT R6 OR R7, DECREMENT RDST BY ONE, IF NOT BYTE, DECREMENT BY TWO

15-H 122 FETCH DEST OPERAND
BA←RD, DATI
R12, BA←(UDATA)

15-I 663 INCREMENT RDST
RD←RD + (2)

15-J 123 FETCH DEST ADDR
BA←RD, DATI
R12←UDATA

15-K 664 INCREMENT RDST
RD←RD + 2

15-L 666 FETCH DEST OPERAND
BA←R12, DATI
R12, BA←(UDATA)

IF BYTE INSTRUCTION & NOT R6 OR R7, INCREMENT RDST BY ONE.
IF NOT BYTE, INCREMENT RDST BY TWO

15-M 125 DECREMENT RDST ENAB STACK OVERFLOW
RD←RD-2 ENAB STOV

15-N 665 FETCH DEST ADDR
BA←RD, DATI
R12←UDATA

15-O 126 FETCH INDEX DATA
BA←PC, DATI
B←UDATA

15-P 667 INCREMENT PC
PC←PC+2

15-Q 671 DETERMINE DEST ADDR
R12←RD+B

15-R 127 FETCH INDEX DATA
BA←PC, DATI
B←UDATA

15-S 672 INCREMENT PC
PC←PC+2

15-T 673 DETERMINE ADDR OF DEST ADDR
R12←RD+B

15-U 674 FETCH DEST ADDR
BA←R12, DATI
R12←UDATA

15-B 675 SET RI7 TO ALL ONES
R17←-1

15-C 676 SET RI7 EQUAL TO PSW ADDR
R17←R17-1

15-D 677 PLACE PSW ADDR ON BUS ADDR LINES
BA←R17 MAINT

15-E 784 OUTPUT DEST OPERAND TO PSW
DATOB
UDATA←R12 MAINT

SERVICE (2)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDII-EA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE —	SHEET 15 OF 26	DIST.		

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MFPS (2)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

16-A 130
PSW DATA TO R12
R12 ← PSW

16-B 705
MOVE R12 TO RDST
RD ← R12 OP B
LOAD CC

SERVICE (2)

16-E 134
DECREMENT RDST
ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV

16-C 131
PLACE DEST ADDR
ON BUS ADDR. LINES
BA ← RD
(MAINT)

16-D 706
MOVE PSW DATA
TO R12
R12 ← PSW

WRITE, NOLOAD (4)

16-F 132
DEST ADDR. TO BUS
INCREMENT RDST
BA ← RD, (MAINT)
RD ← RD+2

16-6 139
FETCH DEST
ADDR
BA ← RD, DATI
R13 ← U DATA

16-H 710
INCREMENT RDST
RD ← RD + 2

16-I 717
PLACE DEST ADDR
ON BUS ADDR LINES
BA ← R13
(MAINT)

16-J 135
DECREMENT RDST
ENAB STACK OVERFLOW
RD ← RD-2
ENAB STOV

16-K 711
FETCH DEST
ADDR
BA ← RD, DATI
R13 ← U DATA

16-L 136
FETCH INDEX
DATA
BA ← PC, DATI
B ← U DATA

16-M 712
INCREMENT PC
PC ← PC+2

16-N 713
DETERMINE
DEST ADDR
R13 ← RD + B

16-O 137
FETCH
INDEX DATA
BA ← PC, DATI
B ← U DATA

16-P 714
INCREMENT PC
PC ← PC+2

16-Q 715
DETERMINE ADDR
OF DEST ADDR
R13 ← RD+B

16-R 716
FETCH DEST
ADDR
BA ← R13, DATI
R13 ← U DATA

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDII-EA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE —	SHEET 16 OF 26	DIST.		

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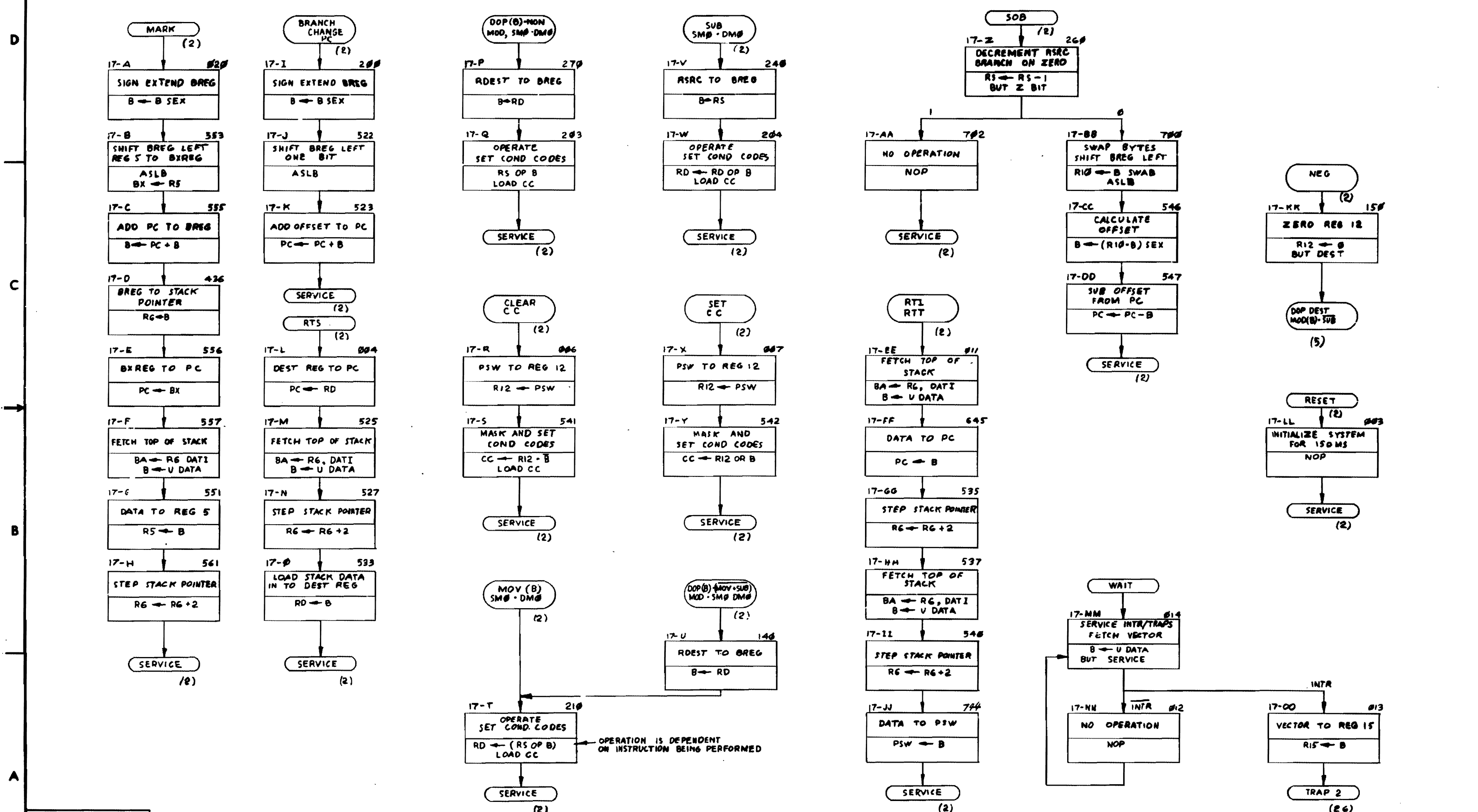

MARK
17-A SIGN EXTEND BREG B ← B SEX
17-B SHIFT BREG LEFT REG 5 TO BXREG ASLB BX ← R5
17-C ADD PC TO BREG B ← PC + B
17-D BREG TO STACK POINTER R6 ← B
17-E BXREG TO PC PC ← BX
17-F FETCH TOP OF STACK BA ← R6 DATI B ← U DATA
17-G DATA TO REG 5 R5 ← B
17-H STEP STACK POINTER R6 ← R6 + 2
SERVICE
BRANCH CHANGE PC
17-I SIGN EXTEND BREG B ← B SEX
17-J SHIFT BREG LEFT ONE BIT ASLB
17-K ADD OFFSET TO PC PC ← PC + B
SERVICE
RTS
17-L DEST REG TO PC PC ← RD
17-M FETCH TOP OF STACK BA ← R6, DATI B ← U DATA
17-N STEP STACK POINTER R6 ← R6 + 2
17-O LOAD STACK DATA IN TO DEST REG RD ← B
SERVICE
DOP (B) - NON MOD, SMØ · DMØ
17-P RDEST TO BREG B ← RD
17-Q OPERATE SET COND CODES RS OP B LOAD CC
SERVICE
CLEAR CC
17-R PSW TO REG 12 R12 ← PSW
17-S MASK AND SET COND CODES CC ← R12 · B LOAD CC
SERVICE
MOV (B) SMØ · DMØ
17-T OPERATE SET COND. CODES RD ← (RS OP B) LOAD CC
OPERATION IS DEPENDENT ON INSTRUCTION BEING PERFORMED
SERVICE
SUB SMØ · DMØ
17-V RSRC TO BREG B ← RS
17-W OPERATE SET COND CODES RD ← RD OP B LOAD CC
SERVICE
SET CC
17-X PSW TO REG 12 R12 ← PSW
17-Y MASK AND SET COND CODES CC ← R12 OR B
SERVICE
DOP (B) (MOV + SUB) MOD · SMØ DMØ
17-U RDEST TO BREG B ← RD
SOB
17-Z DECREMENT RSRC BRANCH ON ZERO RS ← RS - 1 BUT Z BIT
17-AA NO OPERATION NOP
SERVICE
17-BB SWAP BYTES SHIFT BREG LEFT R10 ← B SWAB ASLB
17-CC CALCULATE OFFSET B ← (R10 · B) SEX
17-DD SUB OFFSET FROM PC PC ← PC - B
SERVICE
RTI RTT
17-EE FETCH TOP OF STACK BA ← R6, DATI B ← U DATA
17-FF DATA TO PC PC ← B
17-GG STEP STACK POINTER R6 ← R6 + 2
17-HH FETCH TOP OF STACK BA ← R6, DATI B ← U DATA
17-II STEP STACK POINTER R6 ← R6 + 2
17-JJ DATA TO PSW PSW ← B
SERVICE
NEG
17-KK ZERO REG 12 R12 ← 0 BUT DEST
DOP DEST MOD(B) · SUB
RESET
17-LL INITIALIZE SYSTEM FOR 150 MS NOP
SERVICE
WAIT
17-MM SERVICE INTR/TRAPS FETCH VECTOR B ← U DATA BUT SERVICE
INTR
17-NN NO OPERATION NOP
17-OO VECTOR TO REG 15 R15 ← B
TRAP 2

REVISIONS		
CHK	CHANGE NO	REV

TITLE: KD11-EA FLOW DIAGRAMS

SIZE: D CODE: FD NUMBER: KD11-EA-1 REV.

SCALE — SHEET 17 OF 26 DIST.

DEC FORM NO. DRD 120

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MUL - DIV (2)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

18-A 220 FETCH MULTIPLICAND/DIVISOR
R12, BX ← RD

18-B 221 FETCH MULTIPLICAND/DIVISOR
BA ← RD, DATI
R12, BX ← UDATA

18-C 224 DECREMENT RDST
ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV

18-D 222 FETCH MULTIPLICAND/DIVISOR
BA ← RD, DATI
R12, BX ← UDATA

18-E 563 INCREMENT RDST
RD ← RD + 2

18-F 223 FETCH DEST ADDR
BA ← RD, DATI
R12 ← UDATA

18-G 565 INCREMENT RDST
RD ← RD + 2

18-H 225 DECREMENT RDST
ENAB STACK OVERFLOW
RD ← RD - 2
ENAB STOV

18-I 567 FETCH DEST ADDR
BA ← RD, DATI
R12 ← UDATA

18-J 226 FETCH INDEX DATA
BA ← PC, DATI
B ← UDATA

18-K 571 INCREMENT PC
PC ← PC + 2

18-L 574 DETERMINE DEST ADDR
R12 ← RD + B

18-M 227 FETCH INDEX DATA
BA ← PC, DATI
B ← UDATA

18-N 575 INCREMENT PC
PC ← PC + 2

18-O 576 DETERMINE ADDR OF DEST ADDRESS
R12 ← RD + B

18-P 600 FETCH DEST ADDRESS
BA ← R12, DATI
R12 ← UDATA

18-Q 601 FETCH MULTIPLICAND/DIVISOR
BA ← R12, DATI
R12, BX ← UDATA

18-R 602 LOAD STEP COUNTER
TEST IR9 FOR MUL/DIV
C ← 16₈
BUT IR9

MUL

18-S 400 COMPLEMENT & TEST SIGN OF MULTIPLICAND
R13 ← $\overline{BX}$
BUT CCN

0 → MUL N (19)

1 → MUL P (A)

DIV

18-T 401 TEST DIVISOR FOR ZERO
R17 ← Ø; T ← BX
BUT CCZ

1 (DIVISOR ZERO) → DIV QUIT 1 (22)

(DIVISOR NOT ZERO)Ø → DIV GO (21)

DIVISION BY ZERO IS UNDEFINED

REVISIONS

CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEAFLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE — SHEET 18 OF 26	DIST.			

DEC FORM NO. 1139

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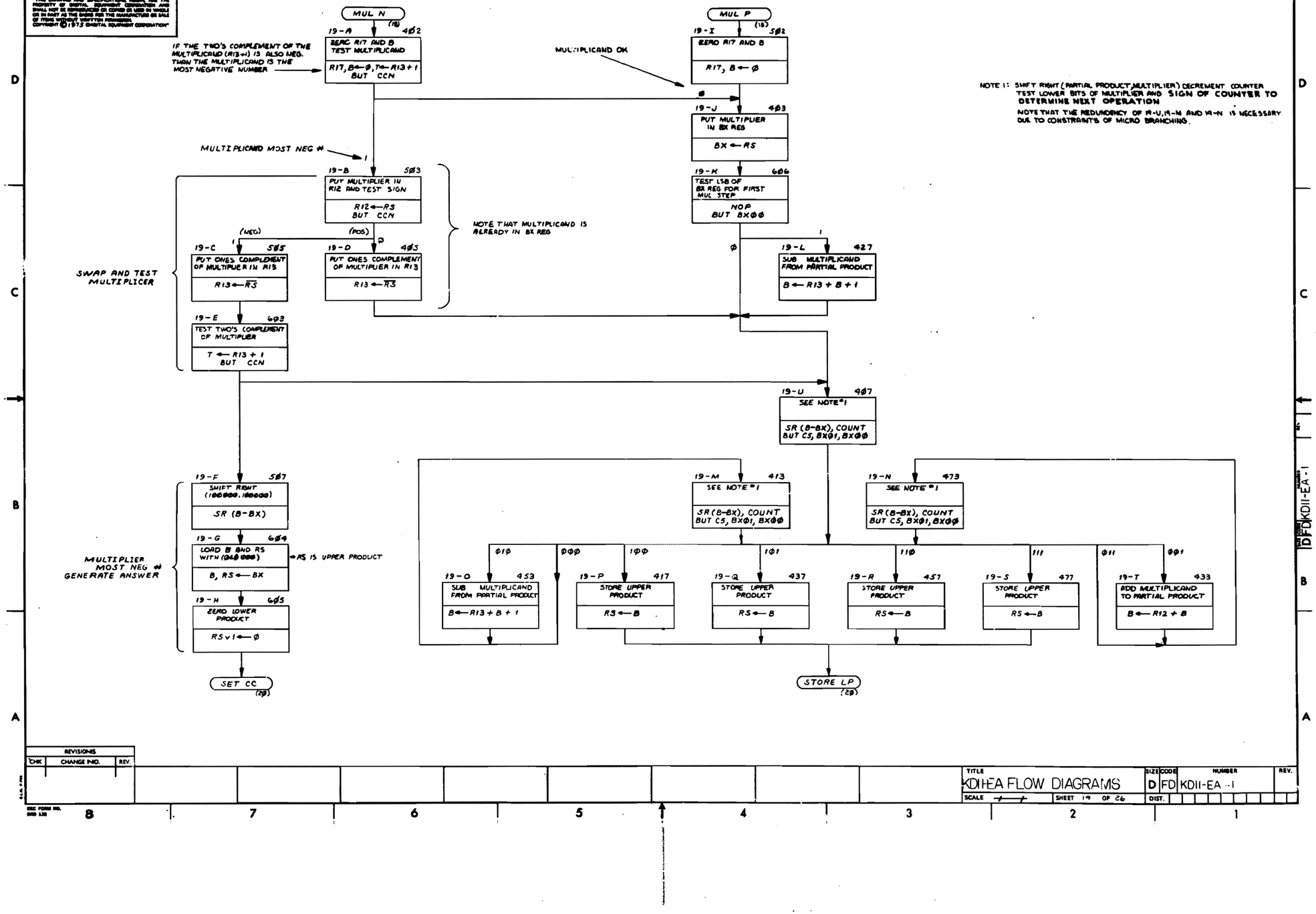

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE —	SHEET 19 OF 26	DIST.		

DEC FORM NO. BMD 130

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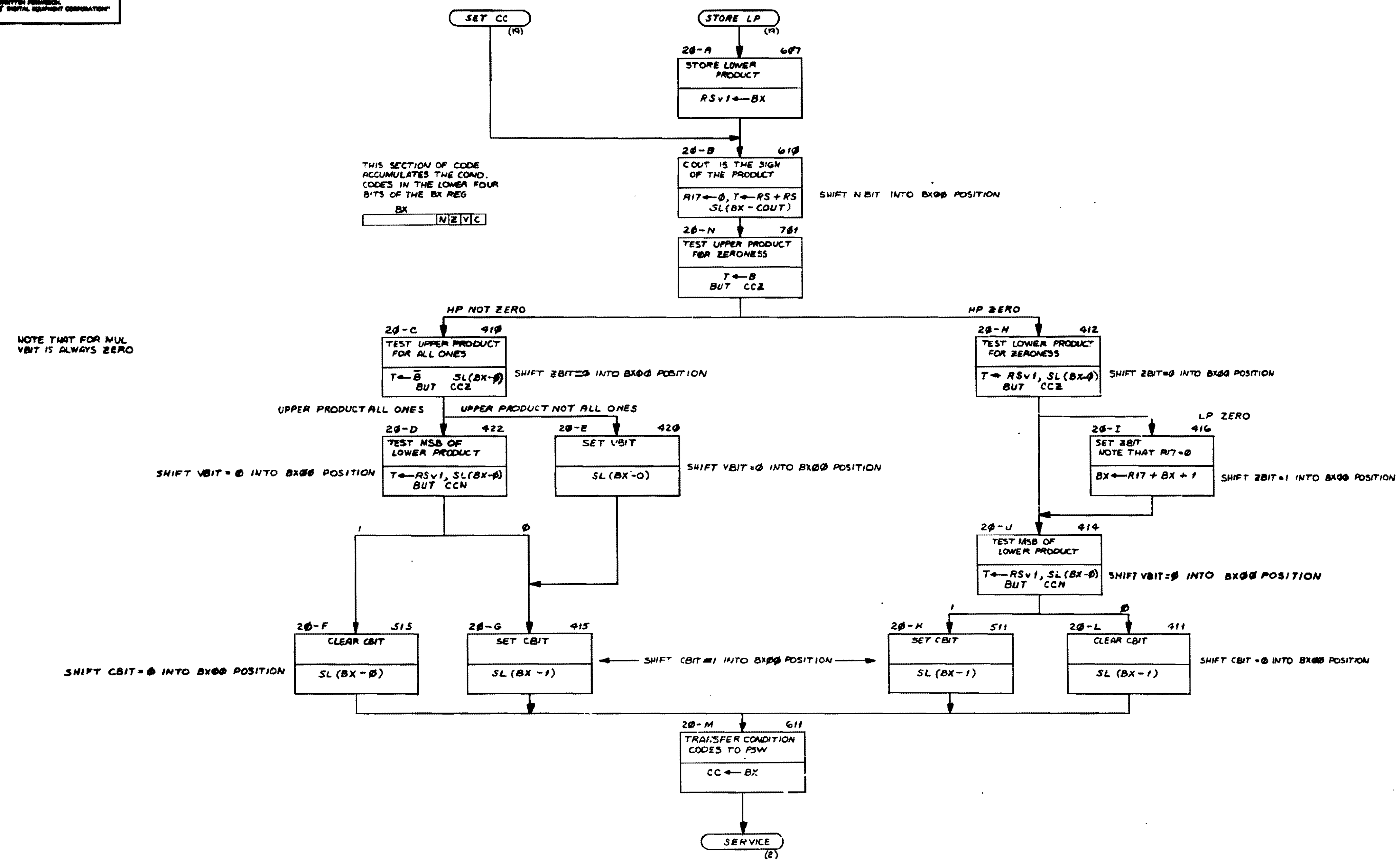

TITLE	SIZE	CODE	NUMBER	REV.
KD11-EA FLOW DIAGRAMS	D	FD	KD11-EA-1	
SCALE	SHEET 20 OF 26	DIST.		

REVISIONS: CHK | CHANGE NO. | REV.

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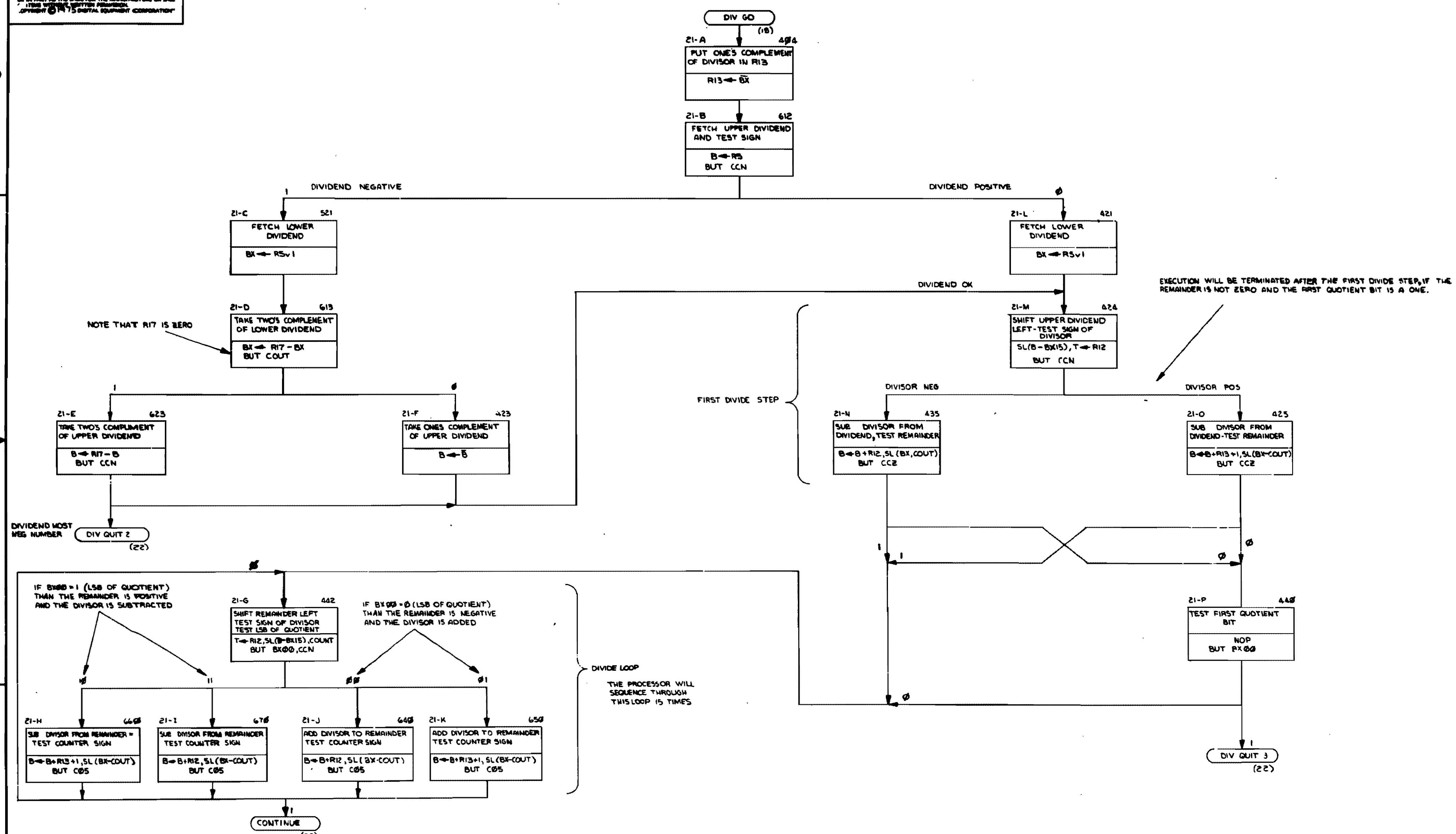
DIV GO
(18)
21-A 4Ø4
PUT ONE'S COMPLEMENT OF DIVISOR IN R13
R13 ← B̄X
21-B 612
FETCH UPPER DIVIDEND AND TEST SIGN
B ← R5
BUT CCN
DIVIDEND NEGATIVE
DIVIDEND POSITIVE
21-C 521
FETCH LOWER DIVIDEND
BX ← R5v1
21-D 613
TAKE TWO'S COMPLEMENT OF LOWER DIVIDEND
BX ← R17 − BX
BUT COUT
NOTE THAT R17 IS ZERO
21-E 623
TAKE TWO'S COMPLIMENT OF UPPER DIVIDEND
B ← R17 − B
BUT CCN
21-F 423
TAKE ONES COMPLEMENT OF UPPER DIVIDEND
B ← B̄
DIVIDEND MOST NEG NUMBER
DIV QUIT 2
(22)
21-L 421
FETCH LOWER DIVIDEND
BX ← R5v1
DIVIDEND OK
21-M 424
SHIFT UPPER DIVIDEND LEFT-TEST SIGN OF DIVISOR
SL(B − BX15), T ← R12
BUT CCN
EXECUTION WILL BE TERMINATED AFTER THE FIRST DIVIDE STEP, IF THE REMAINDER IS NOT ZERO AND THE FIRST QUOTIENT BIT IS A ONE.
FIRST DIVIDE STEP
DIVISOR NEG
DIVISOR POS
21-N 435
SUB DIVISOR FROM DIVIDEND, TEST REMAINDER
B ← B + R12, SL (BX, COUT)
BUT CCZ
21-O 425
SUB DIVISOR FROM DIVIDEND-TEST REMAINDER
B ← B + R13 + 1, SL(BX-COUT)
BUT CCZ
21-P 44Ø
TEST FIRST QUOTIENT BIT
NOP
BUT BXØØ
DIV QUIT 3
(22)
IF BXØØ = 1 (LSB OF QUOTIENT) THAN THE REMAINDER IS POSITIVE AND THE DIVISOR IS SUBTRACTED
21-G 442
SHIFT REMAINDER LEFT TEST SIGN OF DIVISOR TEST LSB OF QUOTIENT
T ← R12, SL(B-BX15), COUNT
BUT BXØØ, CCN
IF BXØØ = Ø (LSB OF QUOTIENT) THAN THE REMAINDER IS NEGATIVE AND THE DIVISOR IS ADDED
DIVIDE LOOP
THE PROCESSOR WILL SEQUENCE THROUGH THIS LOOP 15 TIMES
21-H 66Ø
SUB DIVISOR FROM REMAINDER = TEST COUNTER SIGN
B ← B + R13 + 1, SL (BX-COUT)
BUT CØ5
21-I 67Ø
SUB DIVISOR FROM REMAINDER TEST COUNTER SIGN
B ← B + R12, SL (BX-COUT)
BUT CØ5
21-J 64Ø
ADD DIVISOR TO REMAINDER TEST COUNTER SIGN
B ← B + R12, SL (BX-COUT)
BUT CØ5
21-K 65Ø
ADD DIVISOR TO REMAINDER TEST COUNTER SIGN
B ← B + R13 + 1, SL (BX-COUT)
BUT CØ5
CONTINUE
(22)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: KD11-EA FLOW DIAGRAMS

SIZE: D | CODE: FD | NUMBER: KD11-EA-1 | REV.

SCALE: —— | SHEET 21 OF 26 | DIST.

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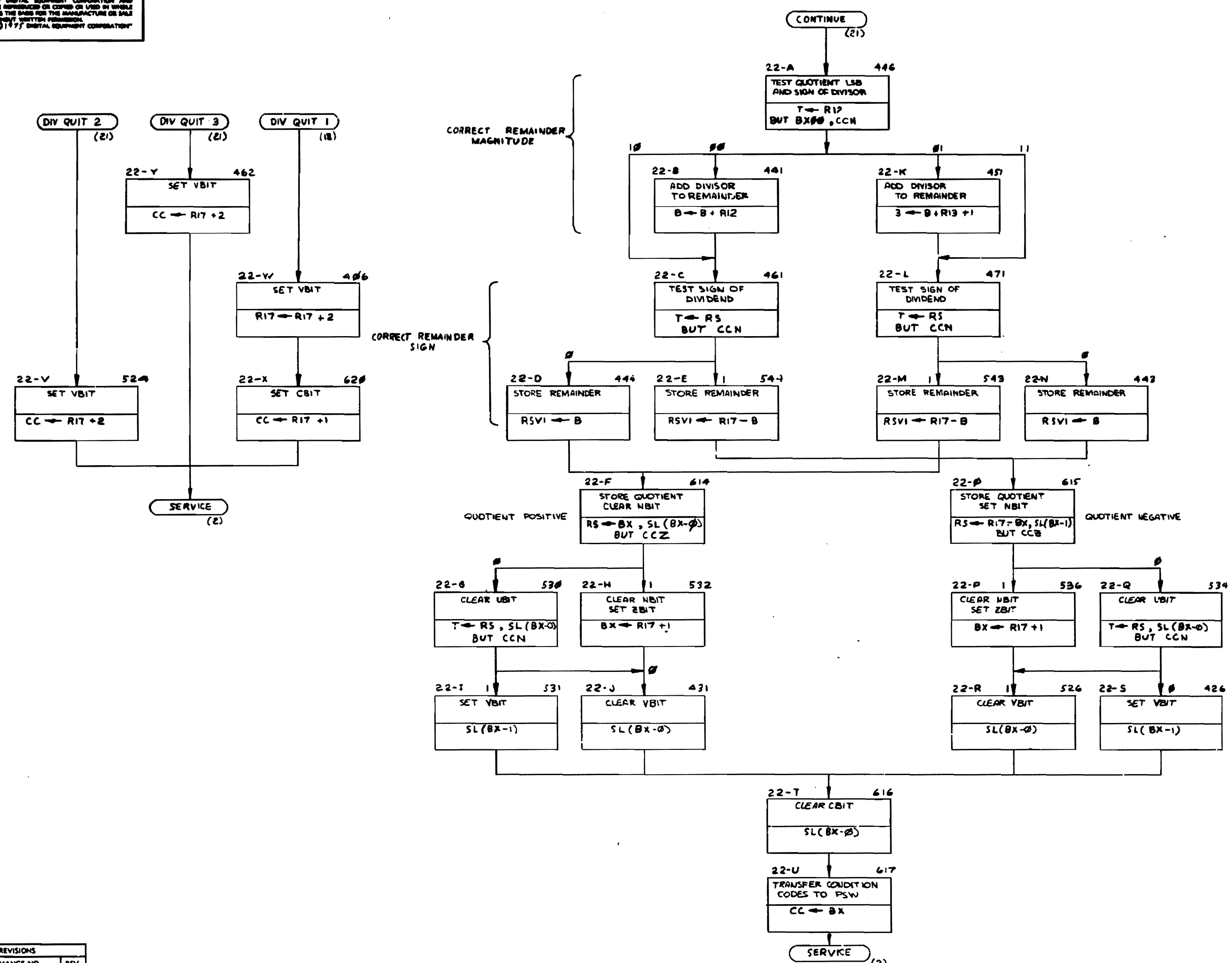

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO.

TITLE KD11-EA FLOW DIAGRAMS	SIZE D	CODE FD	NUMBER KD11-EA-1	REV.
SCALE	SHEET 22 OF 26	DIST.		

D FD KD11-EA-1

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ASH - ASMC (22)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

23-A 230 FETCH SHIFT COUNT — C ← RD

23-B 231 FETCH SHIFT COUNT — BA ← RB, DATI; C ← U DATA

23-C 234 DECREMENT RDST ENAB STACK OVERFLOW — RD ← RD − 2; ENAB STOV

23-D 232 FETCH SHIFT COUNT — BA ← RD DATI; C ← U DATA

23-E 621 INCREMENT RDST — RD ← RD + 2

23-F 233 FETCH DEST ADDR — BA ← RD, DATI; R12 ← U DATA

23-G 622 INCREMENT RDST — RD ← RD + 2

23-H 235 DECREMENT RDST ENAB STACK OVERFLOW — RD ← RD − 2; ENAB STOV

23-I 624 FETCH DEST ADDR — BA ← RD, DATI; R12 ← U DATA

23-J 236 FETCH INDEX DATA — BA ← PC, DATI; B ← U DATA

23-K 625 INCREMENT PC — PC ← PC + 2

23-L 626 DETERMINE DEST ADDR — R12 ← RD + B

23-M 237 FETCH INDEX DATA — BA ← PC, DATI; B ← U DATA

23-N 627 INCREMENT PC — PC ← PC + 2

23-O 630 DETERMINE ADDR OF DEST ADDR — R12 ← RD + B

23-P 631 FETCH DEST ADDR — BA ← R12, DATI; R12 ← U DATA

23-Q 632 FETCH SHIFT COUNT — BA ← R12, DATI; C ← U DATA

23-R 633 TEST SIGN OF COUNTER; COUNT BUT C@5

(NEG) → SHIFT RIGHT (24)

(POS) Ø → SHIFT LEFT (26)

NOTE THAT IF C@5 = Ø THE "COUNT" MICRO INSTRUCTION WILL DECREMENT THE COUNTER AND IF C@5 = 1 THE COUNT MICRO INSTRUCTION WILL INCREMENT THE COUNTER.

THE EFFECT OF THE "COUNT" MICRO DEPENDS ON C@5 AS FOLLOWS

C@5 = Ø	DECREMENT COUNTER
C@5 = 1	INCREMENT COUNTER

THIS OPERATION TAKES PLACE AT THE BEGINNING OF THE NEXT CYCLE.

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
KDII-EA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE — SHEET 23 OF 26	DIST.			

DEC FORM NO. DRD 120

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SHIFT RIGHT (23)

24-A 434
TEST IR9 TO DETERMINE ASH/ASHC
B ← RS BUT IR9

FETCH UPPER PART OF OPERAND

ASH

1

24-B 516
SHIFT UPPER PART OF OPERAND
SR(BS-B-BX), COUNT BUT CØS

STORE ASH (25)

Ø

24-C 512
STORE UPPER RESULT TEST SIGN ZBIT
RS ← B BUT CCN CCZ

ØI | ØØ | 1Ø

24-D 447
SAVE BX IN B CLEAR NBIT
B ← BX, SL (BX-Ø)
N=Ø

24-E ØØ 445
SAVE BX IN B CLEAR NBIT
B ← BX, SL (BX-Ø)
N=Ø

24-F 545
SAVE BX IN B SET NBIT
B ← BX, SL (BX-1)
N=1

24-G 634
SET ZBIT
SL (BX-1)
Z=1

24-H 635
CLEAR ZBIT
SL (BX-Ø)
Z=Ø

24-I 636
VBIT ← OVX
MTX ← B, SL (BX-OVX) BUT CCN

24-J 637
VBIT ← OVX
SL (BX-OVX) BUT CØS

Ø | 1 | 1 | Ø

24-K 454
CLEAR CBIT
SL (BX-Ø)
C=Ø

24-L 554
SET CBIT
SL (BX-1)
C=1

24-M 55Ø
CLEAR CBIT
SL (BX-Ø)
C=Ø

24-N 641
TRANSFER CONDITION CODES TO PSW
CC ← BX

SERVICE (2)

ASHC

24-O 517
FETCH LOWER PART OF OPERAND
BX ← RSv1

ØI

11

24-P 727
SHIFT DOUBLE OPERAND RIGHT-INCREMENT COUNTER
SR (B15-B-BX), COUNT BUT BXØØ CØS

24-Q 7Ø7
SHIFT DOUBLE OPERAND RIGHT-INCREMENT COUNTER
SR (B15-B-BX), COUNT BUT BXØØ CØS

AFTER LEAVING THIS LOOP, THE COUNTER WILL CONTAIN MINUS ONE

ØØ

24-R 7Ø3
CLEAR COUNTER TO INDICATE CBIT=Ø
COUNT

1Ø

24-S 723
STORE UPPER RESULT TEST SIGN ZBIT
RS ← B BUT CCN, CCZ

STORE ASHC (25)

ØI | ØØ | 1Ø

24-T 466
STORE LOWER RESULT CLEAR NBIT TEST FOR ZERO
RSv1 ← BX, SL (BX-Ø) BUT CCZ

24-U ØØ 464
STORE LOWER RESULT CLEAR NBIT
RSv1 ← BX, SL (BX-Ø)

24-V 564
STORE LOWER RESULT SET NBIT
RSv1 ← BX SL (BX-1)

Ø

24-W 467
SET ZBIT
SL (BX-1)

24-X 465
CLEAR ZBIT
SL (BX-Ø)

REVISIONS

CHK	CHANGE NO.	REV.

TITLE: KDII-EA FLOW DIAGRAMS
SCALE — SHEET 24 OF 26
SIZE D | CODE FD | NUMBER KDII-EA-1 | REV.
DIST.

DEC FORM NO. DRD 128

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SHIFT LEFT (26)

25-A 438
TEST COUNTER FOR ZERONESS
B ← RS, COUNT BUT C@5

FETCH UPPER PART OF OPERAND

COUNTER ZERO - NO SHIFT

25-B 456
TEST IR9 TO DETERMINE ASH/ASHC
BX ← RSV1 BUT IR9

FETCH LOWER PART OF OPERAND

ASH

25-C 540
CLEAR BX TO INDICATE CBIT =@
BX ← @

STORE ASH (24)

ASHC

25-N 501
NO OPERATION GO TO 25-N
NOP

{ COUNTER IS ZERO WHICH INDICATES CBIT =@ WHEN ENTERING STORE ASHC }

25-D 452
TEST IR9 TO DETERMINE ASH/ASHC
BX ← RSV1 BUT IR9

FETCH LOWER PART OF OPERAND

ASHC 1

@

25-E 653
SHIFT DOUBLE OPERAND LEFT-DECREMENT COUNTER
R17 ← B,SL(B-BX-@),COUNT BUT C@5

AFTER LEAVING THIS LOOP THE COUNTER WILL BE ZERO AND R17 BIT IS CONTAINS THE CARRY OUT OF THE LAST SHIFT

25-F 657
TEST R17 TO DETERMINE CBIT
T ← R17 BUT CCN

25-G 751
SET COUNTER TO INDICATE CBIT = 1
COUNT

25-N 651
STORE UPPER RESULT TEST SIGN @BIT
RS ← B BUT CCN, CCZ

STORE ASHC (24)

@ ASH

25-H 652
ZERO BX SO THAT ZERO'S SHIFT INTO B
BX ← @

@

25-I 753
SHIFT SINGLE OPERAND LEFT-DECREMENT COUNTER
R17 ← B,SL(B-BX-@),COUNT BUT C@5

25-J 757
TEST R17 TO DETERMINE CBIT
T ← R17 BUT CCN

25-K 655
CLEAR BX TO INDICATE CBIT =@
BX ← @

25-L 755
SET BX TO INDICATE CBIT = 1
BX ← MINUS 1

STORE ASH (24)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDII EA FLOW DIAGRAMS	D	FD	KDII-EA-1	
SCALE	SHEET 25 OF 26	DIST.		

DEC-KDII-EA-1

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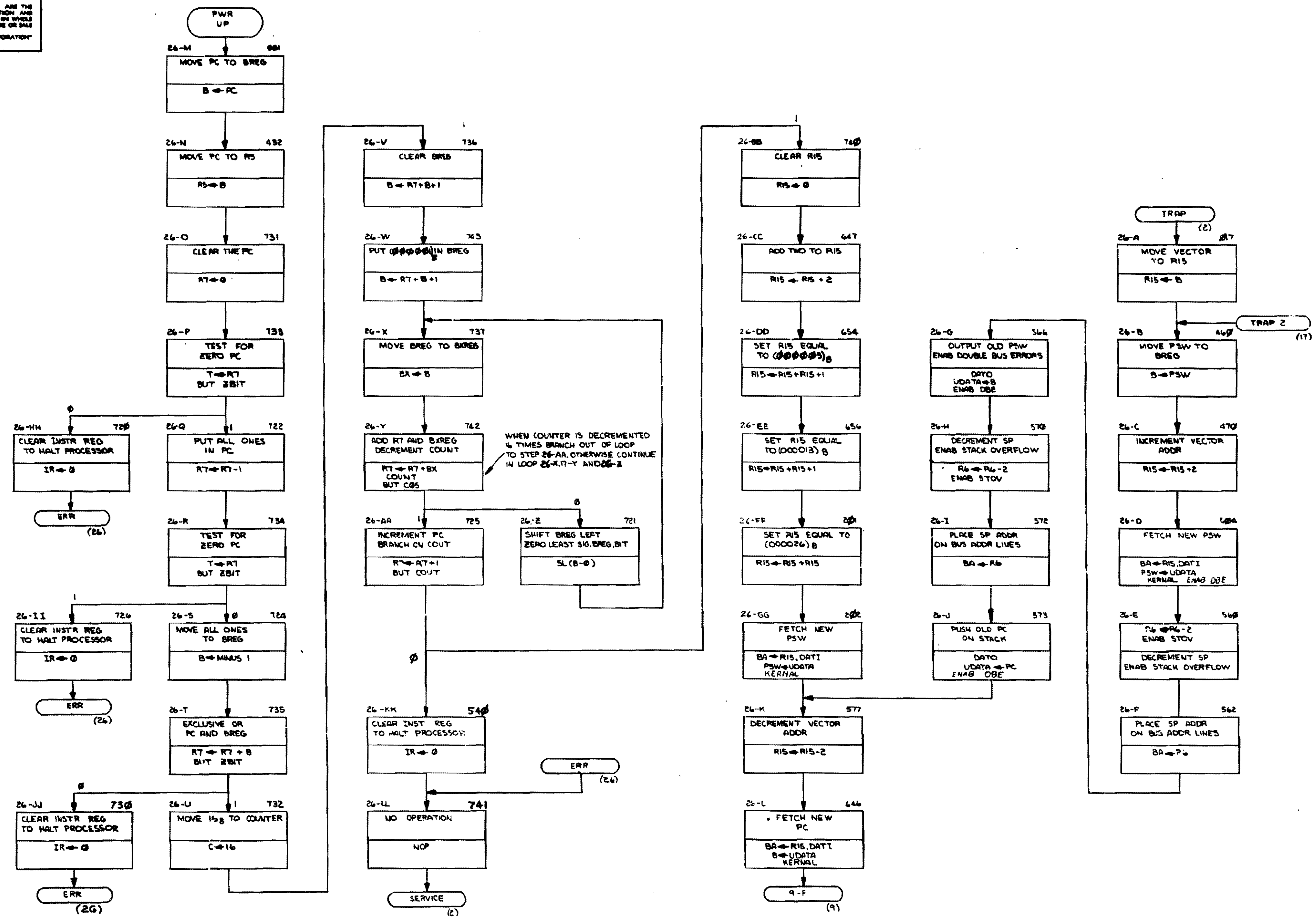


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE KD11-EA FLOW DIAGRAMS

SIZE	CODE	NUMBER	REV.
D	FD	KD11-EA-1	

SCALE — SHEET 26 OF 26 DIST.

COMPONENT SIDE VIEW

5-2

5-3

NOTES:

CHG	CHANGE NO	REV
	M8266-5	D
	REVISED CREDRAWN	
	M. SULLIVAN	

SIGNATURES	DATE
DRN. L GIAMMARINO	8-18-77
CHK'D. L GIAMMARINO	8-18-77
ENG. M SULLIVAN	19DEC77
PROJ. ENG. D BARRY	19DEC77
PROD. D BARRY	19DEC77
SCALE 2-1	
SHT. 1 OF 4	
NEXT HIGHER ASSY. B-DD-M8266-0	

ETCH REV. B

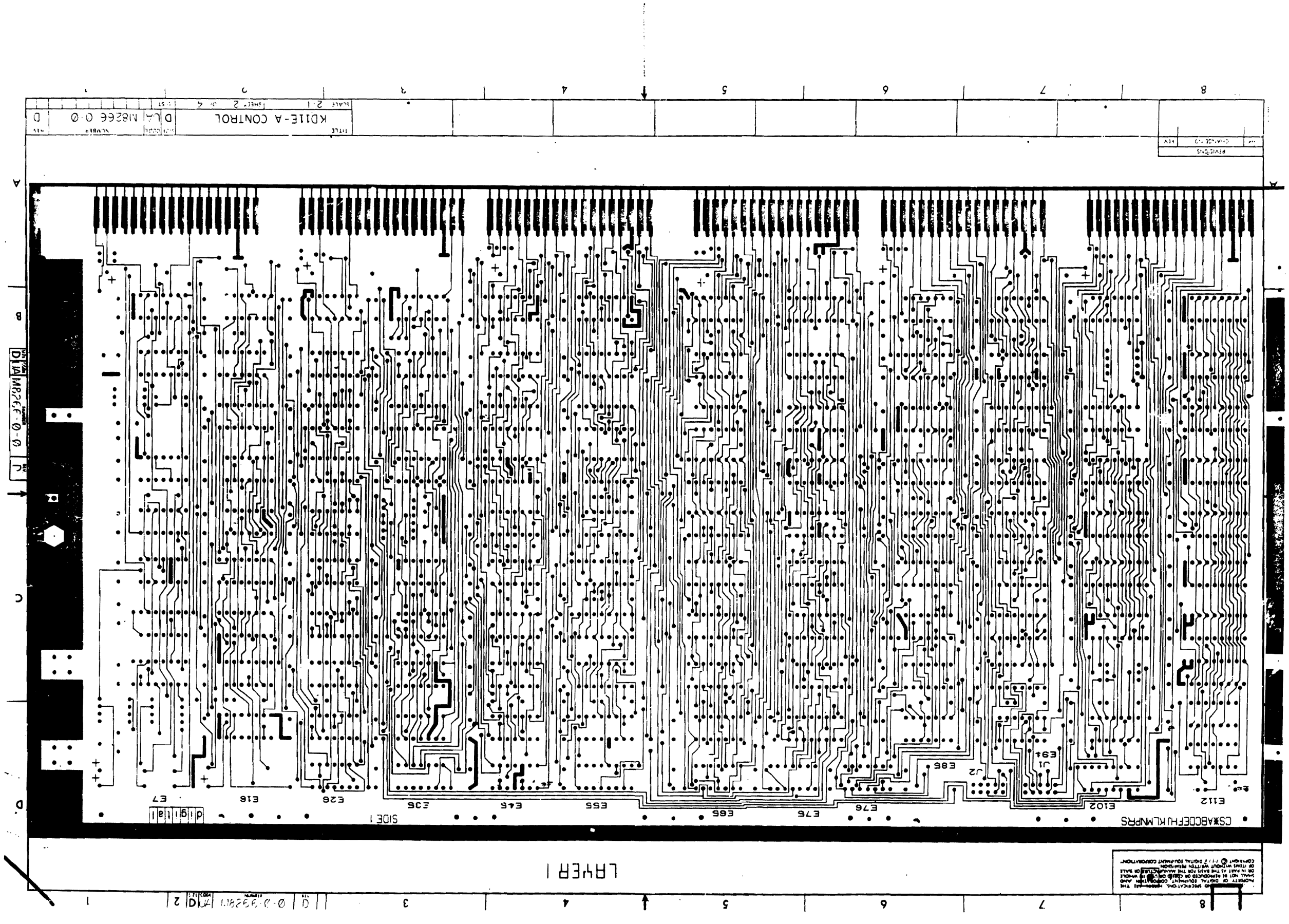
P.C. DESIGN DATA BASE REV. C

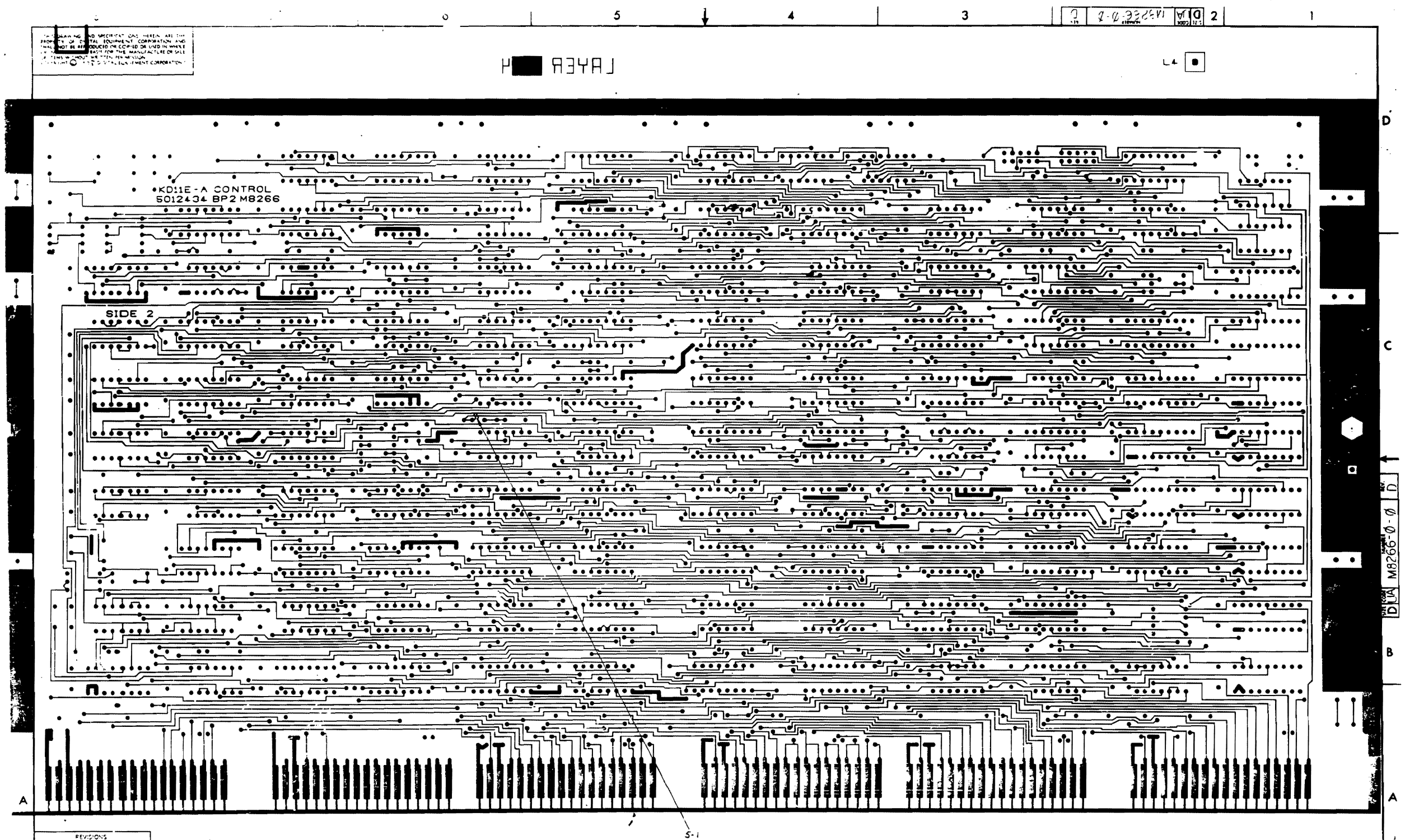
digital

TITLE: KDIE A CONTROL

SIZE	CODE	NUMBER	REV
D	UA	M8266-0-0	D

MS#116,441


KDJIE-A CONTROL
M8266 0-0
SIDE 1
LAYER 1
CSXABCDEFHJKLMNPRS



REVISIONS		
LTR	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
KD11E-A CONTROL	D	UA	M8266-0-0	D
SCALE 2:1 SHEET 3 OF 4	DIST.			

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REWORK INSTRUCTIONS
ECO #5
ETCH CUTS SIDE 2:
5-1. THE SLANTED ETCH RUN ABOVE AND TO THE LEFT OF E9Ø-14
WIRE ADDS SIDE 1:
5-2. FROM R63 AT C117 END TO PIN LOCATED ABOVE E6Ø-9
5-3. REMOVE E13(P/N 1910651) AND REPLACE WITH E13 (P/N 1910957)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	KDIIE-A CONTROL	
SIZE / CODE	D / UA	
NUMBER	M8266-Ø-Ø	
REV.	D	
SCALE	-/-	SHEET 4 OF 4
DIST.		

M8266-Ø-Ø D

AUTOMATED BY PRTLST 1D(11) P A R T S L I S T

LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
1	1	D-MD-5012434-0-0	5012434-00	M8266	1	
2	2		1000016-00	100.0 MMF 100V 5%200PPM DM15S (10-00	3	C58,C67,C68
3	3		1000024-00	470.0 MMF 100V 5%200PPM DM15S (10-00	6	C56,C57,C65,C66,C71,C116
4	4		1000055-00	2200. MMF 250V 20% Y5S DISC *	2	C69,C115
5	5		1001476-00	10 MFD 35V10% 150D S.TA (10-00	1	C60
6	6		1001610-01	.01 MFD 100V OR 50V Z5U DISC/800PF MIN	93	C1-C43,C45-C54,C63,C64,
					CONT	C73-C110
7	7		1004812-00	15 MFD 20V 10% 150D S.TA (10-00	1	C59
8	8		1005306-00	6.8MFD 35V 10% 150D S.TA (10-00	6	C72,C111-C114,C61
9	9		1009964-00	.68 MFD 35V 10% 150D S.TA *	2	C44,C55
10	10		1000021-00	220.0 MMF 100V 5%200PPM DM15S (10-00	3	C62,C70,C117
11	11		1100114-00	D 664 QS\Z5PCB PIV= 25V SP	4	D1-D4
12	12		1300202-00	47 1/4W 5% CC (13-00	6	R3,R4,R7,R11,R21,R63
13	13		1300250-00	150 1/4W 5% CC (13-00	5	R10,R17,R18,R52,R1
14	14		1300271-00	220 1/4W 5% CC (13-00	1	R62
15	15		1300309-00	390 1/4W 5% CC (13-00	12	R40-R48,R60,R54,R61
16	16		1300316-00	470 1/4W 5% CC (13-00	20	R26-R31,R33-R39,R49-R51,R53,
					CONT	R56,R55,R9
17	17		1300365-00	1 K 1/4W 5% CC (13-00	5	R12,R32,R20,R59,R58
18	18		1300479-00	10 K 1/4W 5% CC (13-00	1	R24
19	19		1302394-00	30 K 1/4W 5% CC (13-00	5	R8,R19,R23,R25,R5
20	20		1311422-00	178 1/4W 1% RN55D-F 100PPM (13-00	5	R13-R16,R22
21	21		1301401-00	750 1/4W 5% CC (13-00	1	R6
22	22		1213506-00	HEADER 24POS RT ANGLE W/3 SIDED HOOD	2	J1,J2
23	23		1905547-00	DEC 7474 FF-D DUAL,EDGE TRIGGER,15MHZ	5	E5,E12,E31,E32,E34
24	24		1905575-00	7400 NAND GATE-QUAD 2IN	5	E3,E15,E19,E29,E36
25	25		1905587-00	DEC 7473 FF-JK DUAL,MASTER SLAVE,10MHZ	2	E24,E45
26	26		1909004-00	DEC 7402 NOR GATE-QUAD 2IN	3	E22,E23,E43
27	27		1909705-00	DEC 8831-INAND GATE-QUAD 2IN,OPN COLL.	2	E8,E77
28	28		1909713-00	DEC 8815 NOR GATE-DUAL 4IN 14	2	E4,E30

REVISION HISTORY			VARIATIONS FOR THIS ASSY.	FIRST USED ON:		DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				
CHK	ECO NO	REV	00							
PG	00005	D		MADE BY: R.BARILONE	DATE: 24-MAR-78	TITLE PARTS LIST				
				CHECKED: L.DIAMMARINO	DATE: 24-MAR-78	KD11E-A CONTROL				
				DGN.ENG.: M.SULLIVAN	DATE: 24-MAR-78					
				PROD.: D.KING	DATE: 24-MAR-78	SIZE: K	CODE: PL	DOCUMENT NUMBER: M8266-0-0SP	REV: D	
				ENGR.ENG.: L.SULLIVAN	DATE: 24-MAR-78	SOFT.NO.: D-MD-M8266-0-0			EDIT: 5	

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MOORE BUSINESS FORMS, INC. HIO PRINTED IN U.S.A. 22"

LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
29	29		1910533-00	74S03 NAND GATE-QUAD 2IN,OPN COLLECT	5	E41,E64,E65,E76,E94
30	30		1909930-00	7405 INVERTER GATE-HEX 1IN,OPEN COL	2	E91,E101
31	31		1910018-00	DEC 74193 COUNTER,SYNCHR. UP/DOWN	2	E78,E79
32	32		1911675-00	74S138 DECODER-THREE INPUT	1	E89
33	33		1910091-00	DEC 7437 NAND GATE-QUAD 2IN,BUFFER 14	1	E81
34	34		1910155-00	DEC 7408 AND GATE,POS.QUAD 2IN 14	2	E11,E50
35	35		1910436-00	DEC 74123 ONE SHOT-DUAL,RETRIGGERABLE	3	E16,E7,E14
36	36		1910532-00	74S00 NAND GATE-QUAD 2IN	6	E25,E37,E47,E84,E6,E35
37	37		1910534-00	74S04 INVERTER GATE-HEX 1IN	2	E111,E112
38	38		1910539-00	74S20 NAND GATE-DUAL 4INPUT	2	E57,E58
39	39		1910547-00	74S153 MUX 1 OF 4 (DUAL)	2	E46,E36
40	40		1910548-00	74S157 MUX 1 OF 2 (QUAD)	2	E10,E39
41	41		1910550-00	74S174 FF-D HEX	10	E19,E38,E66,E93,E71,E88,E90,
					CONT	E92,E96,E56
42	42		1910651-00	******** THIS ITEM IS NOT USED *********	0	
43	43		1910870-00	7427 NOR GATE-TRIPLE 3IN	1	E75
44	44		1910957-00	74S175 FF-D QUAD COMMON CLOCK	4	E48,E55,E67,E13
45	45		1911116-00	DEC 8837 RECEIVER,BUS,HEX,UNIBUS	2	E1,E17
46	46		1911324-00	7414 NAND GATE-HEX 1IN SCHMITT TRIG	1	E21
47	47		1911469-00	DEC 8640 RECEIVER,BUS,QUAD,UNIBUS,Q-BU	1	E9
48	48		1911579-00	8641 TRANSCEIVER,BUS,QUAD,UNIBUS	1	E27
49	49		1911637-00	74132 NAND GATE-QUAD 2 IN SCHMITT TR	2	E2,E42
50	50		1912388-00	74S02 NOR GATE-QUAD 2IN,POS	3	E20,E73,E95
51	51		1912746-00	DEC 74S37 NAND GATE-QUAD 2IN	1	E26
52	52		1910544-00	74S74 FF-D DUAL,EDGE TRIGGER	2	E33,E49
53	53		1910536-00	74S10 NAND GATE-TRIPLE 3IN	2	E40,E85
54	54		1913340-00	74S32 OR GATE QUAD 2IN	1	E44
55	55		23106A1-00	A1-07 PROM,	1	E51
56	56		23160A2-00	A2-05 $	1	E29
57	57		23175A2-00	A2-02,A2-03,A2-04 $	1	E53
58	58		23162A2-00	A2-05	1	E54
59	59		23174A2-00	A2-02,A2-03,A2-04	1	E59
60	60		23173A2-00	A2-02,A2-03,A2-04	1	E60
61	61		23161A2-00	A2-05	1	E61
62	62		23170A2-00	A2-02,A2-03,A2-04	1	E62
63	63		23176A2-00	A2-02,A2-03,A2-04	1	E63
64	64		23014A9-00	A9-01	1	E68
65	65		23172A2-00	A2-02,A2-03,A2-04	1	E69
66	66		23349A9-00	A9-04	1	E70
67	67		23A22A2-00	A2-02,A2-03	1	E72
68	68		23110A1-00	A1-03,A1-05 PROM,	1	E74
69	69		23163A2-00	A2-05 $	1	E80
70	70		23108A1-00	A1-07 PROM,	1	E82
71	71		23107A1-00	A1-07 PROM,	1	E83
72	72		23109A1-00	A1-07 PROM,	1	E87
73	73		23022F1-00	F1-01 $	1	E97
74	74		23023F1-00	F1-01 $	1	E98
75	75		23021F1-00	F1-01 $	1	E99

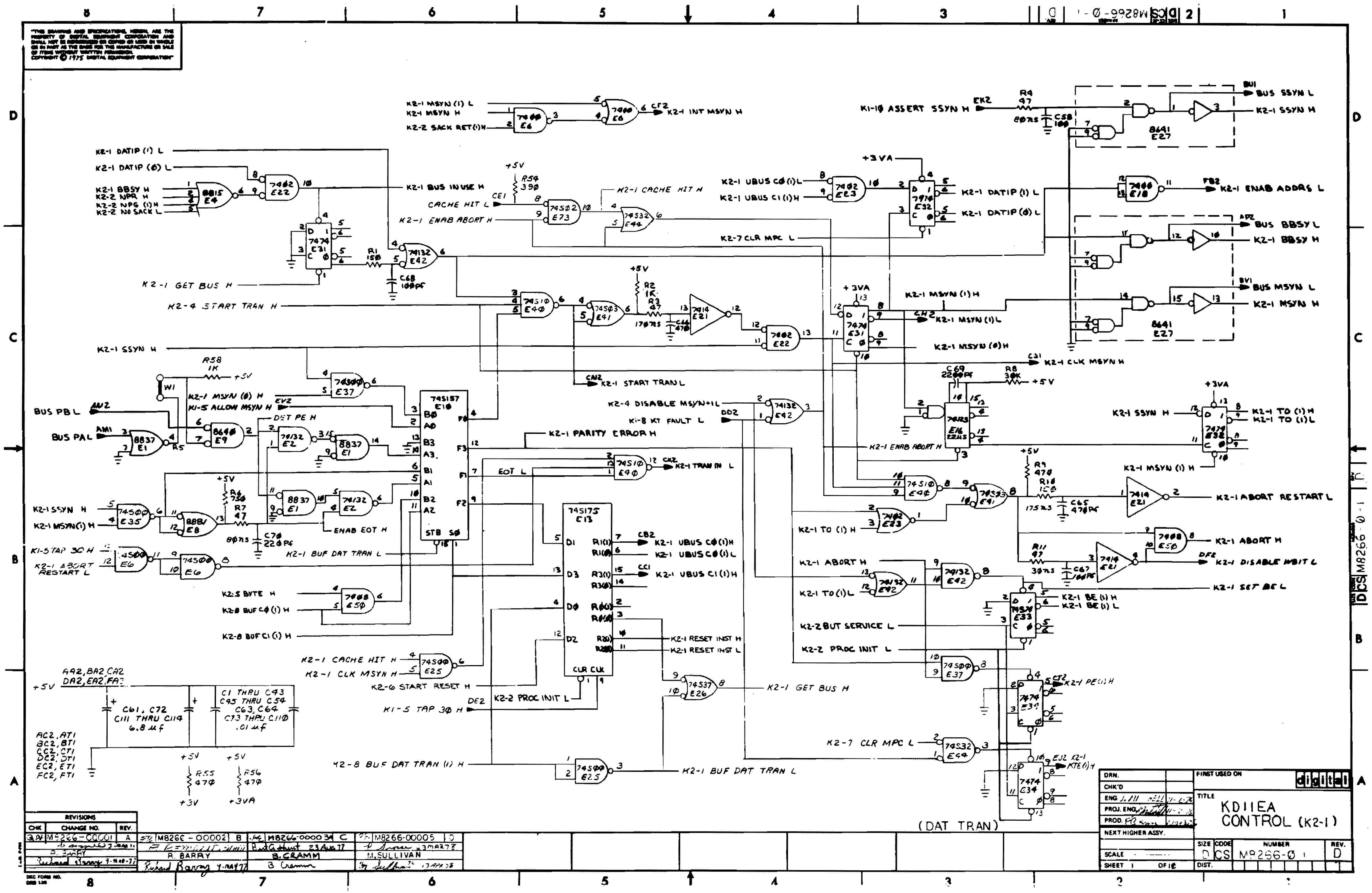
	TITLE	SIZE	CODE	DOCUMENT NUMBER	REV
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	PARTS LIST KD11E-A CONTROL	K	PL	M8266-0-D8P	D

MCKINE BUSINESS FORMS, INC. HO
PRINTED IN U.S.A.

LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
76	76		23024F1-00	F1-01 $	1	E100
77	77		23011F1-00	F1-01 $	1	E103
78	78		23025F1-00	F1-01 $	1	E104
79	79		23027F1-00	F1-01 $	1	E105
80	80		23020F1-00	F1-01 $	1	E106
81	81		23019F1-00	F1-01 $	1	E107
82	82		23018F1-00	F1-01 $	1	E108
83	83		23017F1-00	F1-01 $	1	E109
84	84		23016F1-00	F1-01 $	1	E110
85	85		23177A1-00	A1-07 PROM,	1	E102
86	86		23013F1-00	F1-01 $	1	E52
87	87		9009185-00	JUMPER, WIRE, INSULATED, BLACK BAND	1	W1
88	88		9006732-00	EYELET, ROLLED FLANGE, .121 OD X .219 LG	12	
89	89		7417214-00	MODULE HANDLE REWORK	1	
90	90		1303114-00	1.0 K 1/4W 1% RN55D-F 100PPM (13-00	1	R2
91	91		9105740-55	WIRE(WRAP)30AWG UL1423 (91-00	A/R	
92	92		9009157-00	ADHESIVE, PERMABOND #101 $	A/R	

93 NOTE: 1001610-01 MAY BE SUBSTITUED BY 1001610-00.

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE: PARTS LIST XD11E-A CONTROL	SIZE: X	CODE: PL	DOCUMENT NUMBER: M3266-0-DDP	REV: D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(DAT TRAN)
REVISIONS
M8266-00002 B
M8266-00003 C
M8266-00005 D
R. BARRY
B. CRAMM
M. SULLIVAN
FIRST USED ON
digital
TITLE
KD11EA
CONTROL (K2-1)
SIZE D
CODE CS
NUMBER M8266-0
REV. D
DCS M8266-0-1

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BUS BR7 L
BUS BR6 L
BUS BR5 L
BUS BR4 L
HLT RQST L
K2-3 PFAIL H
K2-2 SACK RET(I) L
K2-5 PROC CLK L
K2-9 BUT SERVICE (I) H
K2-2 PROC INIT H
K2-2 RCD INIT H
BUS NPR L
K2-1 RESET INST H
K2-3 START/DWN L
K2-1 RESET INST L
K2-3 PWR CLR L
K2-2 HLT RQST H
K2-3 PWR CLR L
BUS SACK L
K2-2 PFAIL (I) H
K1-2 PSW @70(1) H
K1-2 PSW @68(1) H
K1-2 PSW @5(1) H
HLT RQST (I) H
K2-2 PFAIL (I) H
K2-2 HLT RQST H
K2-2 NPG (Φ) H
K2-2 NPR H
K2-2 RCD INIT L
K2-2 RESET (I) H
BG7 H
BG6 H
BG5 H
BG4 H
BG ENAB H
NPG ENAB H
K2-2 BUT SERVICE L
CLK BG H
K2-3 ENAB GRANTS H
K2-2 HALT PEND L
ALLOW BG H
K2-2 BG(I) H
K2-2 NPG(I) L
NO SACK H
K2-2 RCD INIT L
BUS INIT L
R2-2 RCD INIT H
K2-2 RESET(I) H
J2-J
K2-2 PFAIL BR PEND H
DK2, DL2
DM2, DN2
DP2, DR2
DS2, DT2
BUS BG7 H
BUS BG6 H
BUS BG5 H
BUS BG4 H
CR1
K2-2 HLT GRANT H
FR2
K2-2 BG IN H L
CB2
K2-2 SACK RET(I) H
K2-2 SACK RET(I) L
CA1, CB1
BUS NPG H
K2-2 NPG(I) H
K2-2 NO SACK L
K2-2 PROC INIT L
K2-2 PROC INIT H
8837 E17
8837 E1
8641 E27
7498 E19
25-160A2 2.5K X 4 T.S. E29
7400 E18
74S32 E44
7408 E50
8640 E9
8496 E9
7403 E16
7414 E21
7419 E21
7474 E5
8881 E8
8881 E77
7402 E22
8881 E36
7408 E18
7400 E18
7408 E11
7474 E12
7474 E5
8881 E9
8881 E77
7400 E28
7400 E28
7400 E28
7400 E28
74S32 E2
7408 E11
8640 E9
7400 E15
74S37 E26
74S37 E26
74S00 E25
74S32 E49
+5V
+3V
R12 1K
R17 180
R18 180
R13 178
RM 178
R15 178
R16 178
R22 178
R14 1K ADJ
R19 330
C66 10pf
C67 470
C66 470
C24 470
D1 1N914
100 ms
180 ms
200 ns
(PRIORIDY ARB)

REVISIONS
CHK | CHANGE NO. | REV.

TITLE KDIIEA CONTROL (K2-2)
SIZE D | CODE CS | NUMBER M8266-0-1 | REV. D
SCALE — | SHEET 2 OF 10 | DIST.

DEC FORM NO. 880 120

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AC POWER
+5 VOLTS
BUS DC LO L
BUS AC LO L

BUS AC LO L — BF1 — 8837 E17
BUS DC LO L — BF2 — 8837 E17
C59 15.4f R23 30K +5V 150 ms D2
+3V
C44 .68mf R24 10K +5V D3 2.2 ms
C55 68.4f R25 30K +5V D4 6.6 ms
K1-3 PROC CLK H — FP2
K2-3 START PDWN(1) L
K2-3 PFAIL H
K2-3 PWR CLR L
K2-7 MPC 00 L

K1-2 TBIT (1) H — DF1
K2-6 ENAB TBIT H
K1-5 PROC CLK L — FP2
K2-3 USER MODE H
K2-4 SPA 02 H
K2-4 SPA 01 H
K2-3 R647 L
K2-4 SPA 00 H
K2-7 ENAB STOV L
K1-10 B-15=0 L
K2-9 BUT SERVICE(1) H
K1-5 PROC CLK H — FP2
K2-3 STOV SERV H
K2-2 PROC INIT L
+5V
R61 390
FPT SERVICE BR PFAIL L — J2-D

K1-8 PROC CLK H — FP2
K2-2 PROC INIT L
K2-1 SET BE L
K2-8 ENAB DBE L
K2-3 DBE H
K2-1 BE (1) H
K1-4 PSW 15 (1) L
K2-3 USER MODE H

+5V
R26 470 R27 470 R28 470 R29 470
K2-1 BE (1) H
K2-1 PE (1) H
K2-4 KTE (1) H
K2-2 PFAIL (1) H
K2-6 IR CODE 02 L
K2-6 IR CODE 01 L
K2-6 IR CODE 00 L
K2-2 BUT SERVICE L
23-013F1 1024 x 4 ES2
23-106A1 32 x 8 T.S. ES1
K2-9 BUT SERVICE(1) H
K2-9 BUT SERVICE(1) H
K2-2 PROC INIT H
R52 150Ω C62 2200pf
K2-3 SERV IR H
K2-3 SERV IR 01 L
K2-3 PFAIL SERV H
K2-3 STOV SERV H
CU1 K2-3 C4 H
CV1 K2-3 C3 H
DB2 K2-3 C2 H
K2-3 ENAB GRANTS H

BUS INTR L — AB1 — 8837 E1
CV2 K2-3 INTR H
DK1 K2-3 INT VECTOR L
K2-7 MPC 00 L

(PFAIL/AUTO REST BUT SERV)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: KDIIEA CONTROL (K2-3)
SIZE D | CODE CS | NUMBER M8266-0-1 | REV. D
SCALE — | SHEET 3 OF 10 | DIST.

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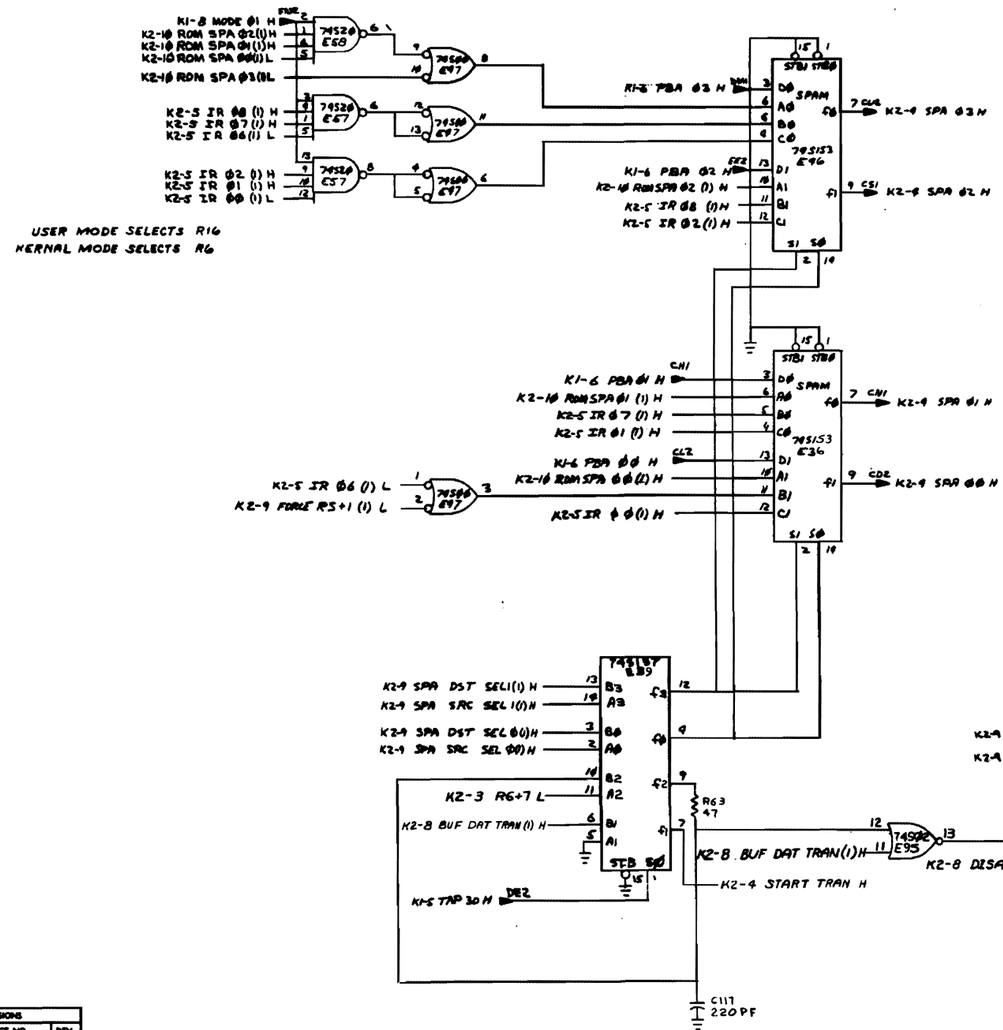

(SPA MUX)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA CONTROL (K2-4)	D	CS	M8266-Ø-1	D
SCALE —	SHEET 4 OF 10		DIST.	

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K2-3 SERV IR(1) L
K1-4 SS MUX 15 H
CD1
74S74 E33
K2-5 IR 15 (1) H
7402 E43
74S174 E66
K1-4 SS MUX 14 H
K1-4 SS MUX 13 H
K1-4 SS MUX 12 H
K1-4 SS MUX 10 H
K1-4 SS MUX 09 H
K2-5 IR 14 (1) H
K2-5 IR 13 (1) H
K2-5 IR 12 (1) H
K2-5 IR 10 (1) H
K2-5 IR 09 (1) H
K2-3 DBE H
K2-3 SERV IR H
74S02 E73
74S174 E56
K1-2 SS MUX 07 H
K1-2 SS MUX 05 H
K1-2 SS MUX 04 H
K1-2 SS MUX 03 H
K1-2 SS MUX 02 H
K1-2 SS MUX 01 H
K2-5 IR 07 (1) H
K2-5 IR 05 (1) H
K2-5 IR 04 (1) H
K2-5 IR 03 (1) H
K2-5 IR 02 (1) H
K2-5 IR 01 (1) H
74S175 E67
K1-2 SS MUX 11 H
K1-2 SS MUX 08 H
K1-2 SS MUX 06 H
K1-2 SS MUX 00 H
K2-5 IR 11 (1) H
K2-5 IR 11 (1) L
K2-5 IR 08 (1) H
K2-5 IR 08 (1) L N/C
K2-5 IR 06 (1) H
K2-5 IR 06 (1) L
K2-5 IR 00 (1) H
K2-5 IR 00 (1) L
K2-7 LOAD IR L
K1-5 PROC CLK L
74S02 E73
K2-5 LOAD IR H
J2-5

K2-6 IR DECODE (1) L
74S23 E64
+5V
R53 470Ω
K2-5 BYTE H
K2-5 IR 15 (1) H
K2-5 IR 14 (1) H
K2-5 IR 13 (1) H
K2-5 IR 12 (1) H
K2-5 IR 10 (1) H
K2-5 IR 09 (1) H
K2-5 IR 08 (1) H
K2-5 IR 07 (1) H
K2-5 IR 06 (1) H
512 x 4 E68
23-018A9
K2-5 BYTE L
K2-5 CC CODE 02 H
K2-5 CC CODE 01 H
K2-5 CC CODE 00 H
23-107A1
32 x 8 T.S. DOP E83
K2-8 FUNC CODE 03 H
K2-8 FUNC CODE 02 H
K2-8 FUNC CODE 01 H
K2-8 FUNC CODE 00 H
K2-5 IR 15 (1) H
K2-5 IR 14 (1) H
K2-5 IR 13 (1) H
K2-5 IR 12 (1) H
K2-8 AUX SETUP H
K2-6 IR 12-14 = 0 L
74S00 E84
23-161A2
SOP 256 x 4 T.S. E61
K2-5 IR 10 (1) H
K2-5 IR 09 (1) H
K2-5 IR 08 (1) H
K2-5 IR 07 (1) H
K2-5 IR 06 (1) H
K1-1 CBIT (1) H
K1-1 NBIT (1) H
K2-5 IR 15 (1) H
K2-8 AUX SETUP H
K2-5 IR 14 (1) H
K2-5 IR 13 (1) H
K2-5 IR 12 (1) H
7427 E75
74S00 E84
K2-5 IR 12-14=0 H
23-174A2
ROT 256 x 4 O.C. E62
K2-5 IR 10 (1) H
K2-5 IR 09 (1) H
K2-5 IR 08 (1) H
K2-5 IR 07 (1) H
K2-5 IR 06 (1) H
K1-1 BREG 00 (1) H
K1-1 CBIT (1) H
K1-10 CC N H
+5V
R30 470Ω
R31 470Ω
K2-8 B MODE 01 L
K2-8 B MODE 00 L
K2-5 SERIAL SHIFT H
K2-5 ROT CBIT (1) H
74S175 E55
K1-5 PROC CLK L
K1-2 PROC INIT L
(IR, AUX CNTRL, CC CODE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA CONTROL (K2-5)	D	CS	M8266-0-1	D
SCALE	SHEET 5 OF 10	DIST.		

DEC FORM NO. DRD 138

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23-110A1 DOP 32 x 8 OC E74
R33 470 +5V
K2-6 DEST L
K2-6 IR CODE Ø0
K2-7 MPC Ø7 L
K2-7 MPC Ø6 L
K2-7 MPC Ø5 L
K2-7 MPC Ø4 L
K2-7 MPC Ø3 L
K2-5 IR11 (1) H
K2-5 IR10(1) H
K2-5 IR09(1) H

R32 1K +5V
K2-7 LOAD IR L
74S03 E45
K2-6 IR DECODE (1) H
K2-6 IR DECODE(1) L
74S175 E55
K1-5 PROC CLK L
K2-2 PROC INIT L
74S20 E56
K2-5 IR 10 (1) H
K2-5 IR 11 (1) H
K2-5 IR 12 (1) H

+5V
R59 1K
FP11-A ATTACHED L
J2-C
K2-5 IR15(1)H

23-369A3 DOP 512 x 4 OC E70
K2-5 IR 14 (1) H
K2-5 IR 13 (1) H
K2-5 IR 12 (1) H
K2-7 BUT DEST L
K2-6 IR DECODE(1) H

K2-5 IR 11 (1) H
K2-5 IR 10 (1) H
K2-5 IR 09 (1) H
7427 E75
K2-6 SM Ø H

K2-5 IR 08 (1) H
K2-5 IR 07 (1) H
K2-5 IR 06 (1) H
7427 E75
K2-6 DM Ø H

23-172A2 DOP 256 x 4 OC E69
R34 470 +5V
K2-6 MOV L
R35 470 +5V
K2-6 SRC H

K1-N BIT (1) H
K1-Z BIT (1) H
K1-V BIT (1) H
K1-C BIT (1) H
K2-5 IR 15 (1) H
K2-5 IR 10 (1) H
K2-5 IR 09 (1) H
K2-5 IR 08 (1) H
DLI
FF2
EDI
DU2
BRANCH 256 x 4 O.C. E72
23-122A2

K2-5 IR 12-14=Ø H
K2-5 IR 11 (1) L
74S00 E94
K2-6 IR DECODE (1) L

23-173A2 256 x 4 OC E60
K2-5 IR 11 (1) H
K2-5 IR 10 (1) H
K2-5 IR 09 (1) H
K2-5 IR 08 (1) H
K2-5 IR 07 (1) H
K2-5 IR 06 (1) H
K2-5 IR DECODE (1) L

23-174A2 256 x 4 OC E59
R36 470 +5V
K2-6 IR CODE Ø2 L
R37 470 +5V
K2-6 IR CODE Ø1 L
R38 470 +5V
K2-6 IR CODE Ø0 L
R39 470 +5V

K2-5 IR 12-14=Ø H
74S00 E84
K2-6 IR12-14=Ø L
74S10 E85
K2-6 IR DECODE(1)H
K2-6 DEST L
K2-7 BUT DEST L
74S10 E85
K2-5 IR Ø4 (1) H

K2-5 IR 12-14=Ø H
K2-6 SM Ø H
74S10 E85
K2-5 IR Ø8 (1) H
K2-5 IR 15 (1) H
74S02 E73

23-162A2 256 x 4 T.S. E54
K1-4 PSW 15 (1) L
DJI
K2-5 IR Ø7 (1) H
K2-6 DM Ø H
K2-5 IR Ø2 (1) H
K2-5 IR Ø1 (1) H
K2-5 IR ØØ (1) H
K2-5 IR Ø6 (1) H
K2-6 START RESET H
K2-6 ENAB TBIT H (RTT H)
DCI
K2-6 DISABLE LOAD PSW H

23-175A2 256 x 4 O.C. E53
K2-5 IR Ø7 (1) H
K2-5 IR Ø5(1) H
K2-3 USER MODE H
K2-5 IR Ø4 (1) H
K2-5 IR Ø3 (1) H
CPI
HALT RQST L
K2-6 IR CODE Ø2 L
K2-6 IR CODE Ø1 L
K2-6 IR CODE ØØ L

23-176A2 256 x 4 O.C. E63
K2-5 IR Ø6 (1) H
74S03 E65
K2-5 IR Ø5 (1) H
74S03 E65
K2-5 IR Ø4 (1) H
74S03 E65
K2-5 IR Ø3 (1) H
74S03 E65
K2-5 IR 11 (1) H
74S03 E64
K2-5 IR 10 (1) H
74S03 E64
K2-5 IR Ø9 (1) H
74S03 E64
K2-6 IR DECODE (1 L
K2-7 MPC Ø2 L
K2-7 MPC Ø1 L
K2-7 MPC ØØ L

(IR DECODE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIIF CONTROL (K2-6)	D	DCS	M8266-Ø-1	D
SCALE	SHEET 6 OF 10	DIST.		

DEC FORM NO. DRD 139

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+5V
R40 330
74S04 E112
K2-7 MPC Ø9 H
J2-1
K2-7

K2-7 MPC Ø9 H
K2-7 MPC Ø8 H
K2-7 MPC Ø7 H
K2-7 MPC Ø6 H
K2-7 MPC Ø5 H
K2-7 MPC Ø4 H
K2-7 MPC Ø3 H
K2-7 MPC Ø2 H
K2-7 MPC Ø1 H
K2-7 MPC ØØ H

23-016F1 4 E118
23-017F1 4 E119
23-018F1 4 E118

74S174 E92
74S174 E90

7405 E101
7405 E91

R40 330 K2-7 MPC Ø8 L
R41 330 K2-7 MPC Ø7 L
R42 330 K2-7 MPC Ø6 L
R43 330 K2-7 MPC Ø5 L
R44 330 K2-7 MPC Ø4 L
R45 330 K2-7 MPC Ø3 L
R46 330 K2-7 MPC Ø2 L
R47 330 K2-7 MPC Ø1 L
R48 330 K2-7 MPC ØØ L

74S04 E111
74S04 E112

K2-7 MPC Ø8 H
K2-7 MPC Ø7 H
K2-7 MPC Ø6 H
K2-7 MPC Ø5 H
K2-7 MPC Ø4 H
K2-7 MPC Ø3 H
K2-7 MPC Ø2 H
K2-7 MPC Ø1 H
K2-7 MPC ØØ H

74S138 E89

J2-F
FM2 K2-7 LOAD IR L
FM3 K2-7 LOAD PSW L
FM1 K2-7 LOAD CC L
K2-7 BUT DEST L
K2-7 ENAB STOV L
K2-7 LOAD COUNT L
K2-7 CLK COUNT L
+3VA

K2-2 PROC INIT H
K2-1 ABORT H
7402 E93
K2-7 CLR MPC L
K1-5 PROC CLK L
ER1

J1
K2-7 MPC Ø9 L
K2-7 MPC Ø1 L
K2-7 MPC Ø2 L
K2-7 MPC Ø3 L
MAN CLK ENAB L
K2-7 MPC ØØ L
K2-7 MPC Ø5 L
K2-7 MPC Ø6 L
K2-7 MPC Ø7 L
MAN CLK L
FP1

J2
K2-7 MPC ØB L
FP11-A ATTACHED L
K2-7 MPC Ø9 L
SERVICE BR PFAIL L
K2-7 LOAD IR L
K2-2 PFAIL BR PEND H

(MPC BUT FIELD)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIII A CONTROL (K2-7)	D	CS	M8266-Ø-1	D
SCALE	SHEET 7 OF 10	DIST.		

M8266-Ø-1

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K2-7 MPC Ø9 H
K2-7 MPC Ø8 H
K2-7 MPC Ø7 H
K2-7 MPC Ø6 H
K2-7 MPC Ø5 H
K2-7 MPC Ø4 H
K2-7 MPC Ø3 H
K2-7 MPC Ø2 H
K2-7 MPC Ø1 H
K2-7 MPC Ø0 H

23-040F1 E107
23-020F1 E106
23-021F1 E99
23-022F1 E97

745174 E96
K2-8 BUF DAT TRAN Ø) H
K2-8 BUF C1 (1) H
K2-8 BUF CØ (1) H
FSB K2-8 ENAB MAINT() H
FDH K2-8 LOAD BA () H
FV1 K2-8 LONG CYCLE Ø) L

K2-8 AUX SETUP H
745175 E55
DDH K2-8 AUX CONTROL () H
K2-8 AUX CONTROL () L

745174 E71
K2-8 FUNC CODE Ø3 H
K2-8 FUNC CODE Ø2 H
K2-8 FUNC CODE Ø1 H
K2-8 FUNC CODE ØØ H

23-108A1 32 x 8 T.S. E82

7437 E81
EB2 K2-8 ALU S3 H
EF1 K2-8 ALU S2 H
EH1 K2-8 ALU S1 H
FB1 K2-8 ALU S0 H
FJH K2-8 ALU MODE H
FE2 K2-8 ALU CIN L
FH2 K2-8 BLEG Ø1 H
FCI K2-8 BLEG ØØ H

745174 E89
K2-9 SS Ø1 H
K2-9 SS ØØ H

23-109A1 32 x 8 T.S. E87
FL1 K2-8 BX MODE Ø1 L
FJ2 K2-8 BX MODE ØØ L
FJ1 K2-8 SHIFT MUX Ø1 L
FH2 K2-8 SHIFT MUX ØØ L
FCH K2-8 ENAB OVR L
K2-8 ENAB DBE L

7405 E91
R99 470 +5V FU2 K2-8 B MODE Ø1 L
R58 470 +5V FL2 K2-8 B MODE ØØ L

K2-2 PROC INIT L
K1-5 PROC CLK L
ER1

K1-6 VBAØØ (1) H
K2-8 BUF DAT TRAN01H
7400 E86 ET2

7405 E112

23-163A2 256 x 4 E50
K2-8 BUF DAT TRAN)H
K2-8 AUX CONTROL()H
K2-5 BYTE H
K2-6 WOV L
ES2 K2-8 SWAP H
E+1 K2-8 SEX H
K2-8 DISAB MSYN L
EP1 K2-8 DISABLE UPPER BYTE WRITE H

(MICRO STORE)

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA CONTROL (K2-8)	D	DCS	M8266-Ø-1	D
SCALE	SHEET 8 OF 10	DIST.		

DEC FORM NO. DRD 128

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K2-7 MPC Ø9 H
K2-7 MPC Ø8 H
K2-7 MPC Ø7 H
K2-7 MPC Ø6 H
K2-7 MPC Ø5 H
K2-7 MPC Ø4 H
K2-7 MPC Ø3 H
K2-7 MPC Ø2 H
K2-7 MPC Ø1 H
K2-7 MPC ØØ H

23-023F1 E98
23-024F1 E1ØØ
23-025F1 E1Ø4
23-011F1 E1Ø3

K2-9 SS Ø1 H
K2-9 SS ØØ H

74S174 E93
DS D4 D3 D2 D1 D0 CLR CLK
RS(1) R4(1) R3(1) R2(1) R1(1) R0(1)

FH1 K2-9 AMUX S1 (1) L
FD2 K2-9 AMUX S0 (1) L

23-177A1 E/Ø2
32 x 8 T.S.
+3VA

K1-4 ALU COUT H
K1-1Ø CC N H
K1-1 BX REG Ø1 (1) H
K1-1 BX REG ØØ (1) H
K1-4 SP15 (1) H
K2-1Ø COUNT Ø5 (1) H
K1-1Ø CC Z H
K2-5 IR Ø9 (1) H

74S03 E94
74S03 E76

K2-7 MPC Ø7 L
K2-7 MPC Ø6 L
K2-7 MPC Ø5 L
K2-7 MPC Ø4 L
K2-7 MPC Ø3 L
K2-7 MPC Ø2 L
K2-7 MPC Ø1 L
K2-7 MPC ØØ L

+3VA
74S37 E49

K2-9 SPA SRC SEL 1 (1) H
K2-9 SPA SRC SEL Ø (1) H

74S174 E38
D4 D0 D5 D1 D2 D3 CLR CLK
R4(0) R0(0) R5(0) R1(0) R2(0) R3(0)

K2-9 SPA DST SEL 1 (1) H
K2-9 SPA DST SEL Ø (1) H
K2-9 FORCE RS=1 (1) L
CS2 K2-9 PREVIOUS MODE (1) L
K2-9 BUT SERVICE (1) H
CLI K2-9 FORCE KERNEL (1) H

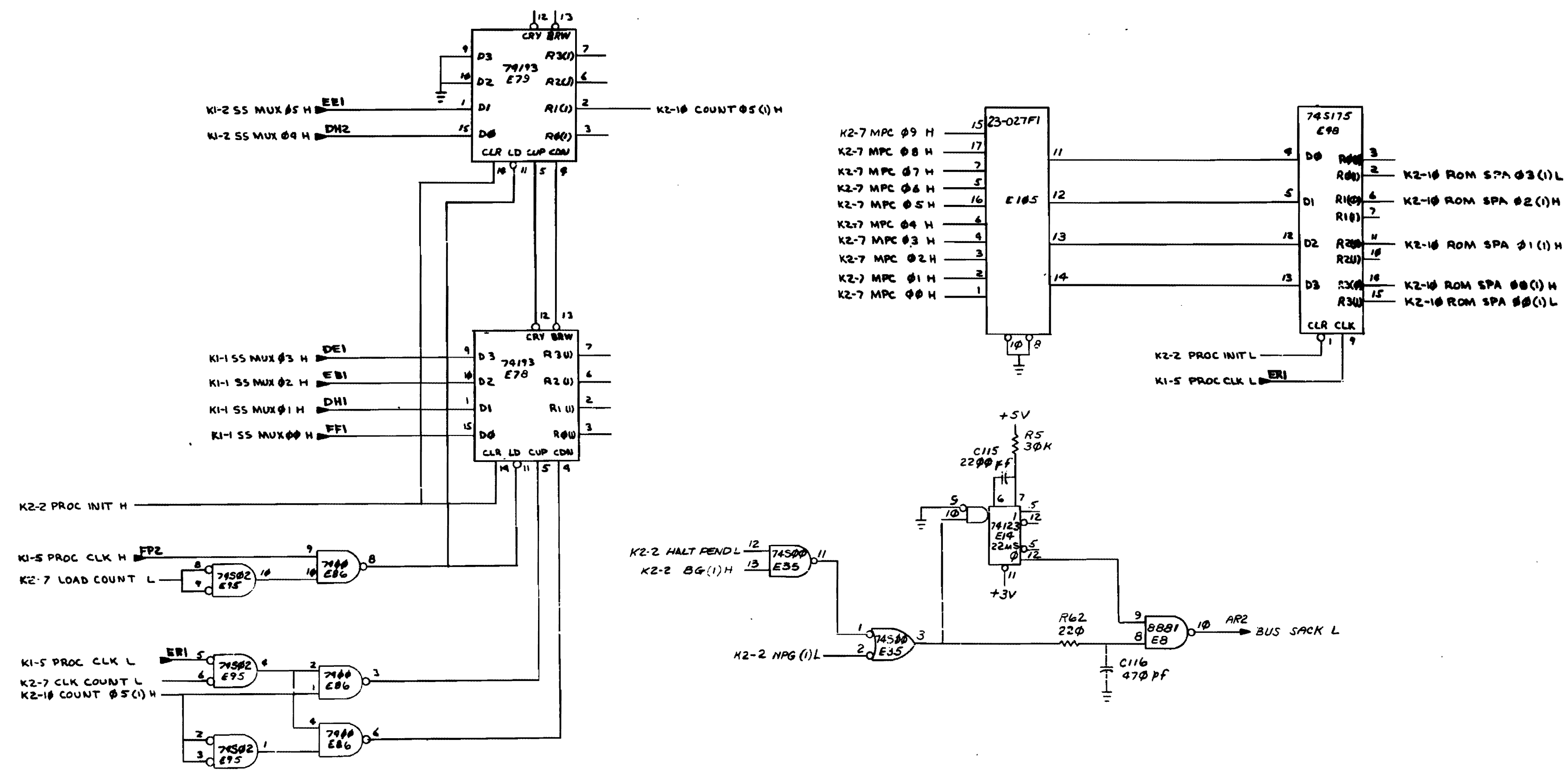
K2-2 PROCINIT L
K1-5 PROC CLK L
ER1

(MICRO CODE)

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA CONTROL (K2-9)	D	CS	M8266-0-1	D
SCALE —	SHEET 9 OF 10	DIST.		

DEC FORM NO. DRD 138



(ROM SPA COUNTER)

TITLE	SIZE	CODE	NUMBER	REV.
KD11-EA CONTROL (K2-1Ø)	D	CS	M8266-Ø-1	D

SCALE — SHEET 1Ø OF 1Ø

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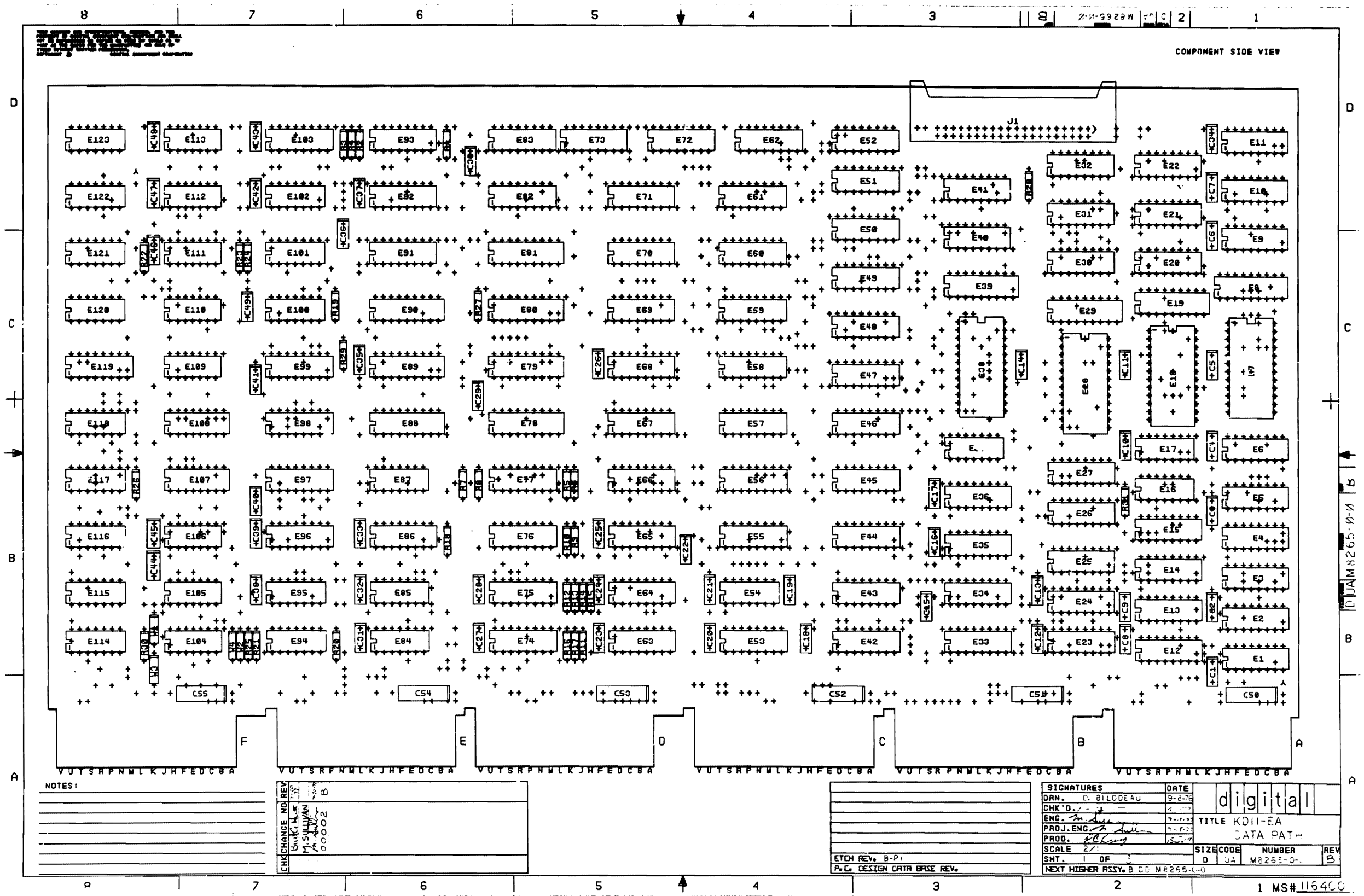
COMPONENT SIDE VIEW



NOTES:

CH	CHANGE NO	REV
		B

ETCH REV. B-P1
P.C. DESIGN DATA BASE REV.

SIGNATURES	DATE
DRN. D. BILODEAU	9-6-78
CHK'D.	
ENG.	
PROJ.ENG.	
PROD.	
SCALE 2/1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. B 00 M8265-0-0	

digital

TITLE KDII-EA
DATA PAT-

SIZE	CODE	NUMBER	REV
D	JA	M8265-0-	5

M8265-0-0 D JA

MS# 116400

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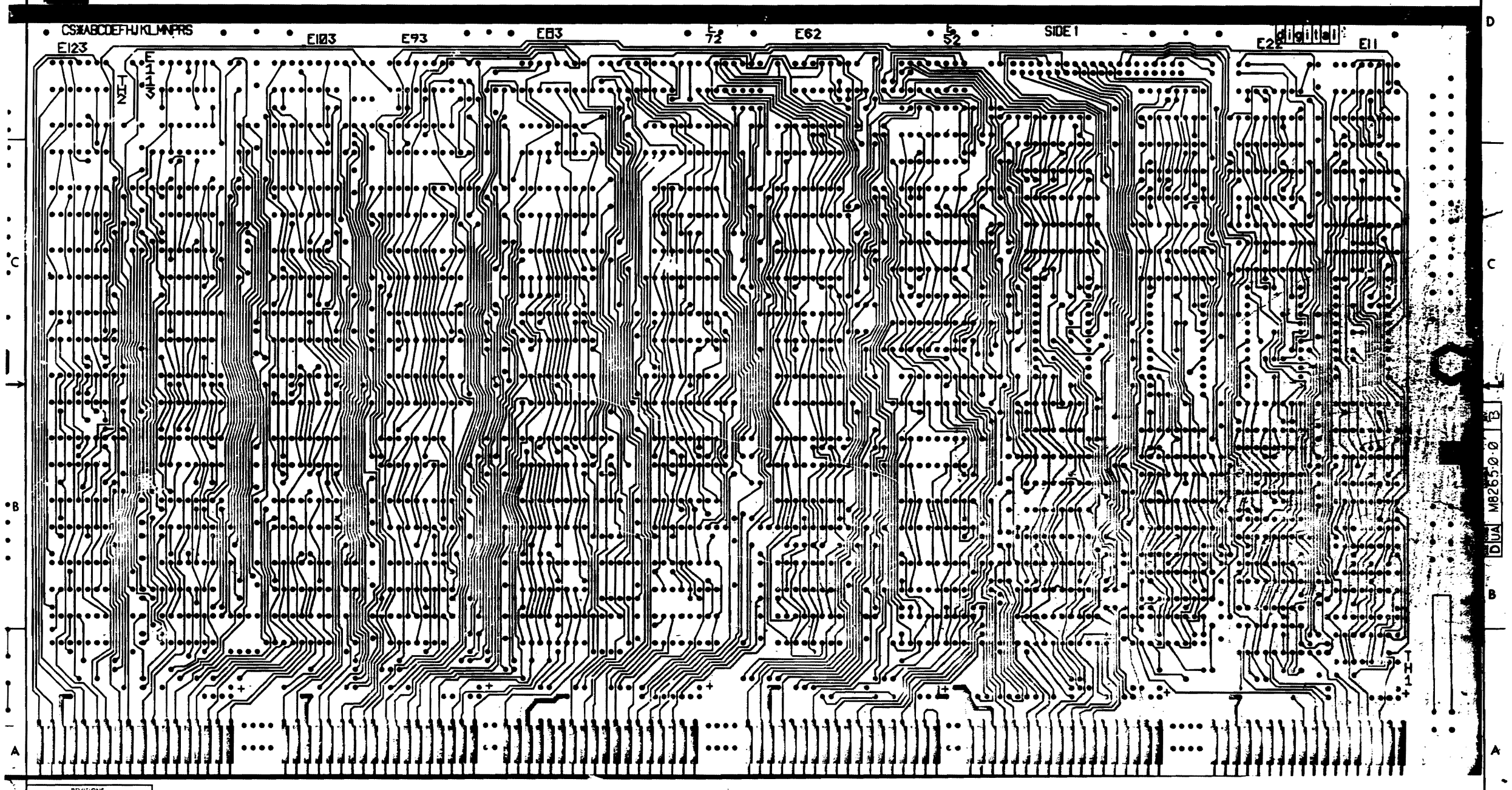
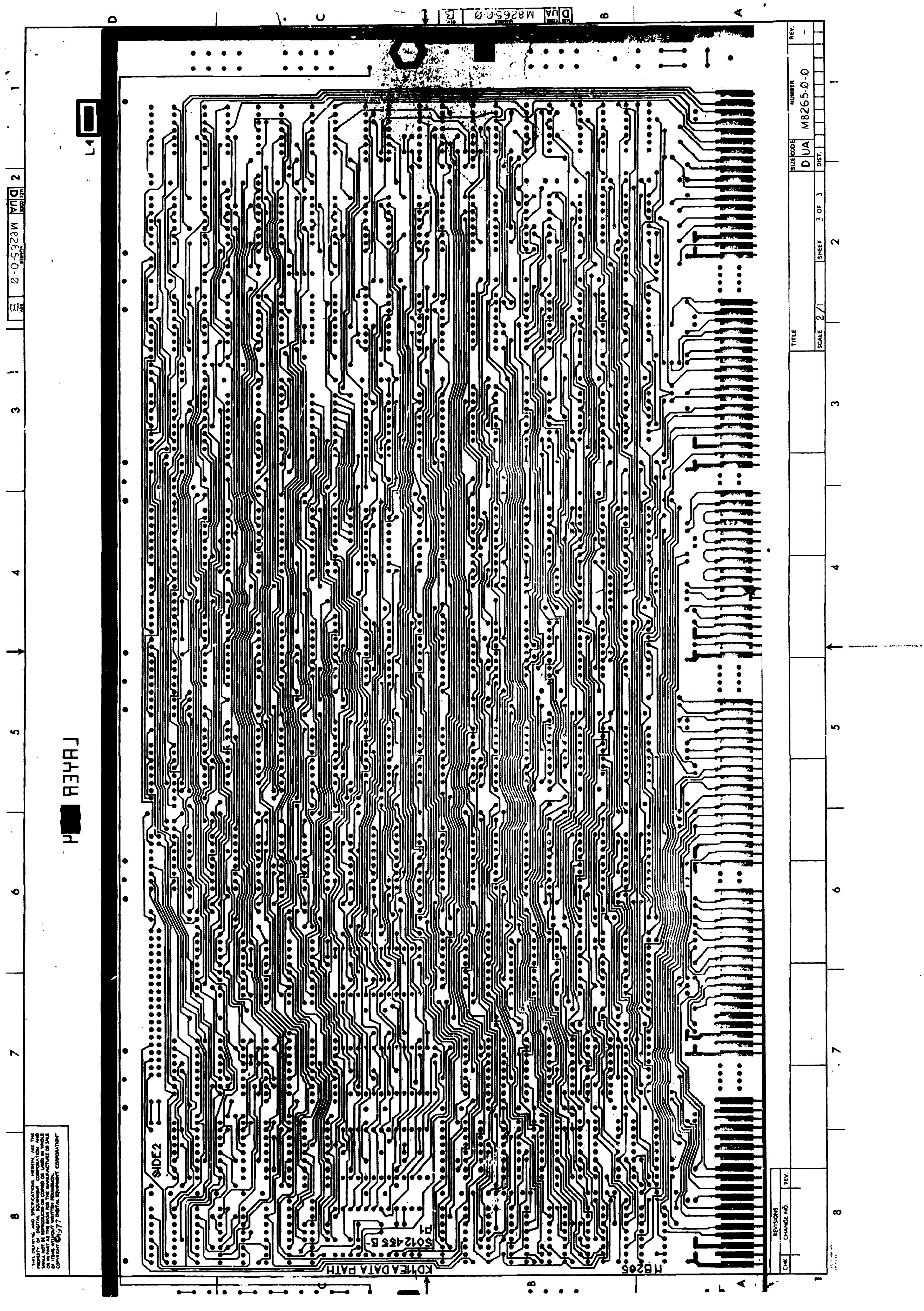
LAYER 1



REVISIONS		
CHK	CHANGE NO	REV

TITLE	KDII-EA DATA PATH	SIZE / CODE	D / UA
		NUMBER	M8265-0-0
SCALE	2/1	SHEET 2 OF 3	DIST.
REV.	1		

D UA M8265-0-0 B



D UA M8265-0-0
SHEET 3 OF 3
SCALE 2/1
REVISIONS
KD11EA DATA PATH
5012455B
P1
M8265
SIDE2
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DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY F. GAROFALO DATE 7 SEPT 76	CHECKED RON FONTAINE DATE 7 SEPT 76	SECTION
ENG M. Sullivan DATE 7-18-77	PROD R. B. KING DATE 15-JUL-77	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION M8265-Ø-Ø	REF DESIGNATION
1	D-MD-5012433-0-0	5012433	ETCHED BOARD	1	
2		1001610-00	CAPACITOR, .01 uf, 50V, 20% CER	48	C1 thru C48
3		1005306	CAPACITOR, 6.8 uf, 35V, 10%	6	C50 thru C55
4		1000021	CAPACITOR, 220 pf, 100V, 5%	1	C49
5		1300316	RESISTOR, 470 OHM, 1/4W, 5% CC	19	R1 thru R19
6		1300365	RESISTOR, 1K, 1/4W, 5% CC	8	R20 thru R23,R26 thru R29
7		1300202	RESISTOR, 47 OHM, 1/4W, 5% CC	1	R24
8		1300271	RESISTOR, 220 OHM, 1/4W, 5% CC	2	R25,R30
9		1300309	RESISTOR, 390 OHM 1/4W, 5% CC	1	R31
10		1210711-09	HANDLE, HEX MODULE	1	
11		1213506-01	RIGHT ANGLE HEADER	1	J1
12		1612463	DELAY LINE, 150 NS	1	E104
13		1911521	I.C. DEC 7432	1	E122
14		1905576	I.C. DEC 7410	1	E123
15		1909004	I.C. DEC 7402	3	E101,E102,E114
16		1909686	I.C. DEC 7404	1	E117
17		1910155	I.C. DEC 7408	1	E112
18		1905575	I.C. DEC 7400	1	E110
19		1911637	I.C. DEC 74132	1	E120
20		1905578	I.C. DEC 7430	2	E54 E87
21		1910091	I.C. DEC 7437	1	E116

NOTES:

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
KD11E-A DATA PATH	D-UA-M8265-Ø-Ø	B	PL	M8265-Ø-Ø	B
	SHEET 1 OF 3	INSERTION PARTS LIST DATA BASE REV			

DRB 125

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY F. GAROFALO DATE 7 SEPT 76	CHECKED RON FONTAINE DATE 7 SEPT 76	SECTION
ENG M. Sullivan DATE 7-18-77	PROD R. B. KING DATE 15 JUL 77	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION M8265-Ø-Ø	NOTES: REF DESIGNATION
22		1910544	I.C. DEC 74S74	2	E100,E109
23		1910224	I.C. DEC 7485	2	E61,E72
24		1910011	I.C. DEC 7486	1	E115
25		1911579	I.C. DEC 8641	9	E1 E12,E23,E42,E43,E53,E63 E64,E33
26		1909713	I.C. DEC 8815	2	E17,E37
27		1909937	I.C. DEC 74153	3	E6,E9,E119
28		1912389	I.C. DEC 74SØ8	1	E106
29		1910655	I.C. DEC 74157	5	E20,E30,E40,E92 E93
30		1910652	I.C. DEC 74174	4	E50,E51,E62,E73
31		1910651	I.C. DEC 74175	3	E82,E99.E103
32		1910623	I.C. DEC 74194	8	E10,E11.E21.E31,E22,E32,E41,E52
33		1909932-01	I.C. DEC 7483A	3	E45,E56,E66
34		1911271	I.C. DEC 74298	3	E44,E55,E65
35		1909649	I.C. DEC 74HØ1	1	E111
36		1910532	I.C. DEC 74SØØ	3	E95,E113,E118
37		1910534	I.C. DEC 74SØ4	2	E105,E16
38		1910547	I.C. DEC 74S153	4	E13,E14 E34,E35
39		1910548	I.C. DEC 74S157	7	E2,E24,E71,E91,E96,E98,E108
40		1910550	I.C. DEC 74S174	3	E47,E48,E49
41		1910531	I.C. DEC 74S181	4	E7,E18,E28,E38
42		1912097	I.C. DEC 74S182	1	E27

E.C.O. NO.

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
KD11E-A DATA PATH	D-UA-M8265-Ø-Ø	B	PL	M8265-Ø-Ø	B
	SHEET 2 OF 3	INSERTION PARTS LIST DATA BASE REV			

DRB 125

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY F. GAROFALO DATE 7 SEPT 76	CHECKED RON FONTAINE DATE 7 SEPT 76	SECTION
ENG m. fulin DATE 7-18-77	PROD R. B. KING DATE 15 JUL 77	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION M8265-0-0	NOTES: REF DESIGNATION
43		1912646	I.C. DEC 74LS253	8	E57 thru E60,E67 thru E70
44		1912586	I.C. DEC 85S68	11	E8,E19,E29,E39,E78 thru E81,E88,E89,E90
45		1910536	I.C. DEC 74S10	1	E94
46		1910957	I.C. DEC 74S175	1	E97
47		1910537	I.C. DEC 74S11	1	E121
48		23169A2	I.C. DEC 256 x 4 BIT ROM OC	2	E74,E75
49		23168A2	I.C. DEC 256 x 4 BIT ROM OC	1	E76
50		23167A2	I.C. DEC 256 x 4 BIT ROM OC	1	E77
51		23165A2	I.C. DEC 256 x 4 BIT ROM OC	1	E83
52		23166A2	I.C. DEC 256 x 4 BIT ROM OC	1	E86
53		23164A2	I.C. DEC 256 x 4 ROM TS	1	E107
54		1912746	I.C. DEC 74S37	2	E84,E85
55		1912660	I.C. DEC 74S253	8	E3,E4 E5 E15,E25,E26,E36.E46
56		9000024-01	EYELET (HANDLE)	11	
57		9009185	WIRE, JUMPER (INSULATED)	2	W1,W2,

E.C.O. NO.

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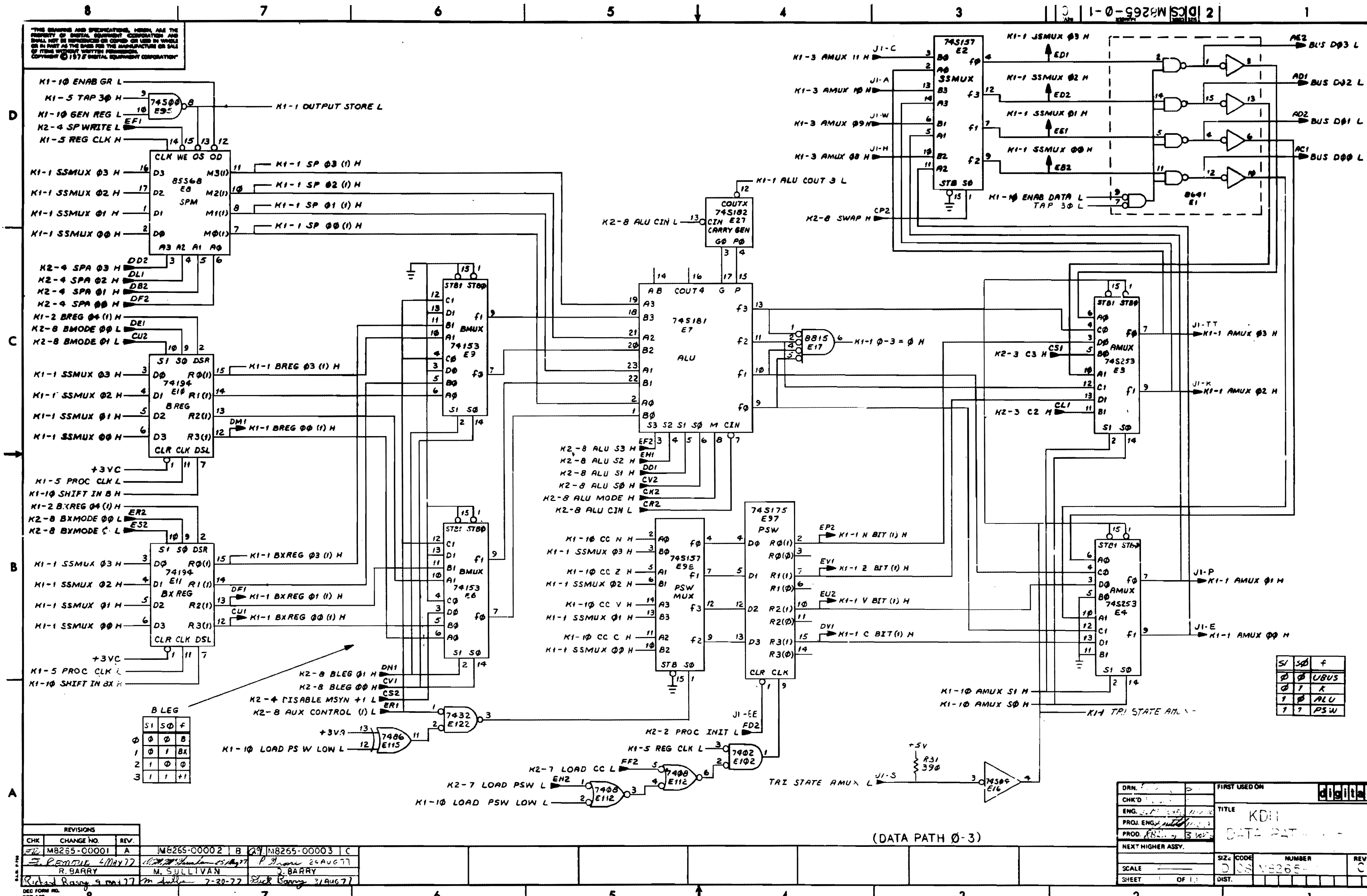
TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
KD11E-A DATA PATH	D-UA-M8265-0-0	B	PL	M8265-0-0	B
	SHEET 3 OF 3	INSERTION PARTS LIST DATA BASE REV			

DRB 125


(DATA PATH Ø-3)
KD11
D CS M8265-Ø-1 C
74S157 E2 SSMUX
85S68 E8 SPM
74194 E10 BREG
74194 E11 BX REG
74153 E9 BMUX
74153 E6 BMUX
74S181 E7 ALU
74S182 E27 CARRY GEN
74S157 E98 PSW MUX
74S175 E97 PSW
74S253 E3 AMUX
74S253 E4 AMUX
8815 E17
8641 E1
K1-1 OUTPUT STORE L
K1-1 ALU COUT 3 L
K1-1 Ø-3 = Ø H
BUS DØ3 L
BUS DØ2 L
BUS DØ1 L
BUS DØØ L
K1-1 AMUX Ø3 H
K1-1 AMUX Ø2 H
K1-1 AMUX Ø1 H
K1-1 AMUX ØØ H
K1-1 N BIT (1) H
K1-1 Z BIT (1) H
K1-1 V BIT (1) H
K1-1 C BIT (1) H
TRI STATE AMUX L
REVISIONS
M8265-00001 A
M8265-00002 B
M8265-00003 C
R. BARRY
M. SULLIVAN
J. BARRY

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K1-10 ENAB GR L
K1-1 OUTPUT STORE L
K2-4 SPWRITE L
K1-5 REG CLK H
85568 E29 SPM
K1-2 SSMUX Ø7 H
K1-2 SSMUX Ø6 H
K1-2 SSMUX Ø5 H
K1-2 SSMUX Ø4 H
K1-2 SP Ø7 (1) H
K1-2 SP Ø6 (1) H
K1-2 SP Ø5 (1) H
K1-2 SP Ø4 (1) H
K2-4 SPA Ø3 H
K2-4 SPA Ø2 H
K2-4 SPA Ø1 H
K2-4 SPA ØØ H
K1-10 SHIFT IN Ø7 H
K2-8 BMODE ØØ L
K2-8 BMODE Ø1 L
74194 E31 BREG
K1-2 BREG Ø7 (1) H
K1-2 BREG Ø6 (1) H
K1-2 BREG Ø5 (1) H
K1-2 BREG Ø4 (1) H
+3VC
K1-5 PROC CLK L
K1-1 BREG Ø3 (1) H
K1-3 BXREG ØØ (1) H
K2-8 BXMODE ØØ L
K2-8 BXMODE Ø1 L
74194 E32 BX REG
K1-2 BXREG Ø7 (1) H
K1-2 BXREG Ø6 (1) H
K1-2 BXREG Ø5 (1) H
K1-2 BXREG Ø4 (1) H
+3VC
K1-5 PROC CLK L
K1-1 BXREG Ø3 (1) H
74157 E30 BMUX
K2-8 BLEG Ø1 H
K2-8 BLEG ØØ H
K1-2 BLEG Ø7 H
74S181 E26 ALU
K2-8 ALU S3 H
K2-8 ALU S2 H
K2-8 ALU S1 H
K2-8 ALU SØ H
K2-8 ALU MODE H
K1-1 ALU COUT 3 L
K1-2 ALU COUT 7 L
74S182 E27 CARRY GEN
8815 E37
K1-2 4-7=Ø H
K1-2 ALU Ø7 H
74157 E29 SSMUX
K1-4 AMUX 15 H
K1-4 AMUX 14 H
K1-4 AMUX 13 H
K1-4 AMUX 12 H
K1-2 SSMUX Ø7 H
K1-2 SSMUX Ø6 H
K1-2 SSMUX Ø5 H
K1-2 SSMUX Ø4 H
8641 E23
K1-10 ENAB DATA L
TAP 3Ø L
K2-8 SWAP H
74175 E99 PSW
K1-2 PSW Ø7 (1) H
K1-2 PSW Ø6 (1) H
K1-2 PSW Ø5 (1) H
K1-1 TAI STATE AMUX H
74S253 E25 AMUX
K2-1 KTE (1) H
K2-1 PE (1) H
K1-2 AMUX Ø7 H
K1-2 AMUX Ø6 H
74S253 E26 AMUX
K1-2 AMUX Ø5 H
K1-2 AMUX Ø4 H
K2-3 C4 H
K1-10 AMUX S1 H
K1-10 AMUX SØ H
K2-2 PROC INIT L
K1-5 REG CLK L
74ØØ E112
K1-10 LOAD PSW LOW L
K2-6 DISABLE LOAD PSW H
K2-7 LOAD PSW L
7432 E122
K1-2 LOAD PSW 12-15 L
74Ø2 E102
74Ø2 E101
74S74 E109
+3VD
K1-2 SSMUX Ø4 H
K1-5 REG CLK L
K2-7 LOAD PSW L
K2-2 PROC INIT L
DK1
K1-2 TBIT (1) H
AH2 BUS DØ7 L
AF1 BUS DØ6 L
AF2 BUS DØ5 L
AE1 BUS DØ4 L
J1-LL
J1-AA
J1-U
J1-Y
J1-KK
J1-CC
J1-JJ
J1-HH

(DATA PATH 4-7)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA DATA PATH (K1-2)	D	CS	M8265-Ø-1	C
SCALE	SHEET 2 OF 10	DIST.		

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K1-10 ENAB GR L
K1-1 OUTPUT STORE L
K2-4 SP WRITE L
K2-8 DISABLE UPPER BYTE WRITE H
K1-5 REG CLK H
7432 E122 FR1
K1-3 WRITE HIGH L

85S68 E19 SPA1
CLK WE OS OD
K1-3 SSMUX 11 H
K1-3 SSMUX 10 H
K1-3 SSMUX 09 H
K1-3 SSMUX 08 H
A3 A2 A1 A0
K1-3 SP 11 (1) H
K1-3 SP 10 (1) H
K1-3 SP 09 (1) H
K1-3 SP 08 (1) H
K2-4 SPA 03 H
K2-4 SPA 02 H
K2-4 SPA 01 H
K2-4 SPA 00 H
DDZ
DLI
DBZ
DFZ

K1-4 BREG 12 (1) H
K2-8 BMODE 00 L
K2-8 BMODE 01 L
DEI
CU2

74194 E21 BREG
S1 S0 DSR
D0 R0(1)
D1 R1(1)
D2 R2(1)
D3 R3(1)
CLR CLK DSL
K1-3 BREG 11 (1) H
K1-3 BREG 08 (1) H
+3VC
K1-5 PROC CLK L
K1-2 BREG 07 (1) H

74194 E22 BXREG
K1-4 BXREG 12 (1) H
K2-8 BXMODE 00 L
K2-8 BXMODE 01 L
EZ2
K1-3 BXREG 11 (1) H
K1-3 BXREG 08 (1) H

74157 E26 BMUX
B2 A2 B1 A1 B3 A3 B0 A0
STB S0
DNI
CVI
K2-8 BLEG 01 H
K2-8 BLEG 00 H

74S181 E18 ALU
AB COUT G P
A3 B3 A2 B2 A1 B1 A0 B0
F3 F2 F1 F0
S3 S2 S1 S0 M CIN
EF2 EN1 DD1 CV2 CK2
K2-8 ALU S3 H
K2-8 ALU S2 H
K2-8 ALU S1 H
K2-8 ALU S0 H
K2-8 ALU MODE H
K1-2 ALU COUT 7 L

74S182 E27 CARRY GEN G2 P2
COUTZ
K1-3 ALU COUT 11 L

74S04 E16
TAI STATE AMUX L
K1-3 TAI STATE AMUX H

74S253 E15 AMUX
STB1 STB2
D0 C0 B0 A0 D1 C1 B1 A1
S1 S0
K1-3 AMUX 11 H
K1-3 AMUX 10 H

8641 E12
K1-10 ENAB DATA L
TAF 30 L
AH2 BUS D11 L
AH1 BUS D10 L
AL2 BUS D09 L
AH1 BUS D08 L

8815 E17
K1-3 B-11=0 H
K1-1 AMUX 03 H
K1-1 AMUX 02 H
K1-3 AMUX 03 H
K1-10 AMUX S1 H
K1-10 AMUX S0 H
K1-3 AMUX 06 H
K1-1 AMUX 01 H
K1-4 AMUX 15 H
K1-2 AMUX 07 H
K1-1 AMUX 00 H

74S153 E13 SSMUX
STB1 STB0
D0 C0 B0 A0 D1 C1 B1 A1
S1 S0
CF2 K1-3 SSMUX 11 H
CH2 K1-3 SSMUX 10 H
CU2 K1-3 SSMUX 09 H
EN1 K1-3 SSMUX 08 H

74S153 E14
K2-8 SEX H
K2-8 SWAP H
CL2
CP2

7408 E112
K1-10 LOAD PSW HIGH L
K1-2 LOAD PSW 12-15 L

7402 E131
K1-5 REG CLK L
K1-3 LOAD HPSW H

S1	S0	f
0	0	AMUX
0	1	AMUX SWAP
1	0	AMUX SEX
1	1	AMUX SWAP + SEX

(DATA PATH 8-11)

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA DATA PATH (K1-3)	D	DCS	M-265-0-1	
SCALE —	SHEET 3 OF 10	DIST.		

DEC FORM NO. DRD 136

DCS M-265-0-1

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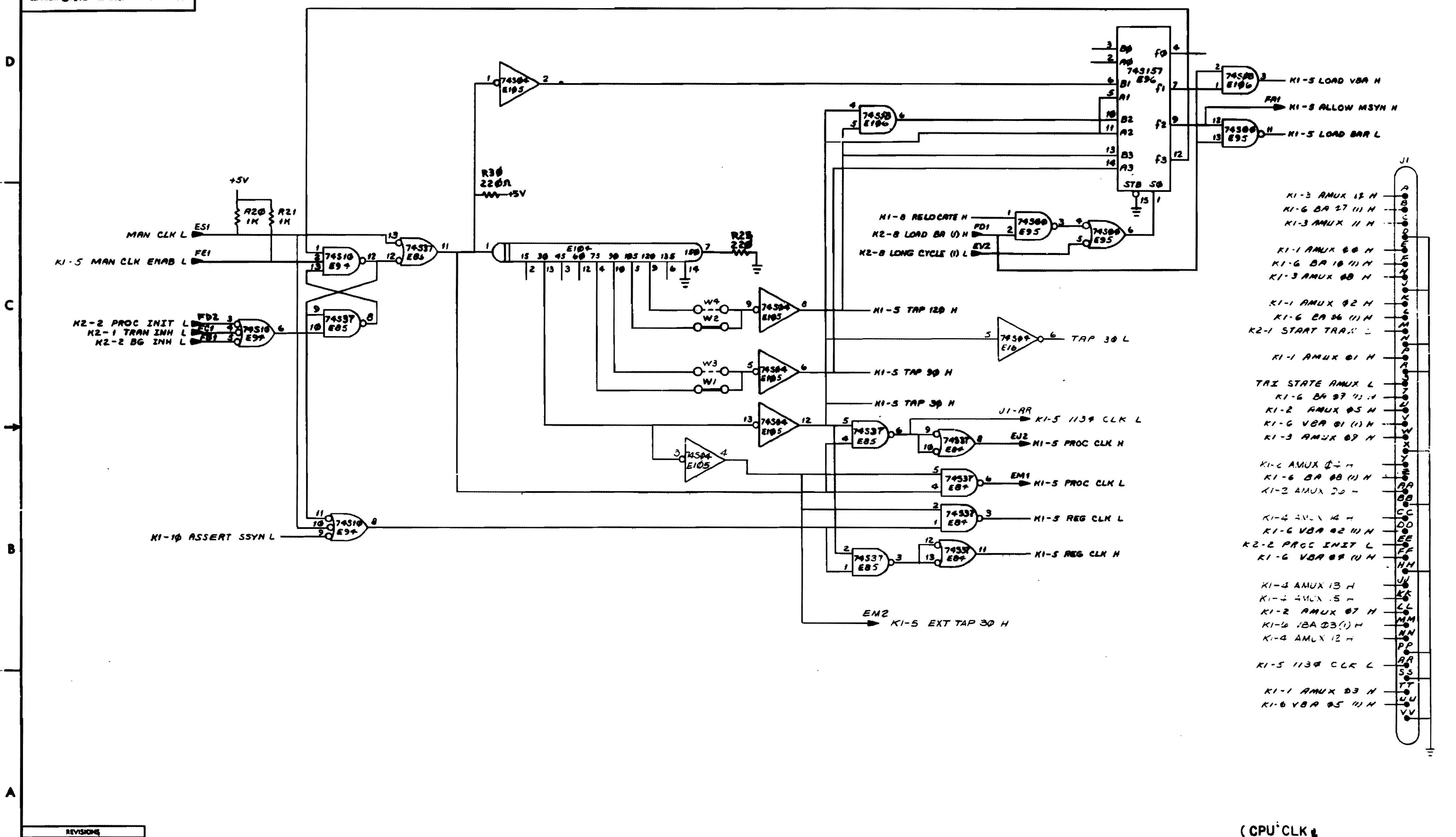
K1-10 ENAB GR L
K1-7 OUTPUT STORE L
K1-3 WRITE HIGH L
K1-5 REG CLK H
CLK WE OS OD
85S68 E39 SPM
D3 D2 D1 D0
M3(1) M2(1) M1(1) M0(1)
CN1
K1-4 SP 15 (1) H
K1-4 SP 14 (1) H
K1-4 SP 13 (1) H
K1-4 SP 12 (1) H
K1-4 SSMUX 15 H
K1-4 SSMUX 14 H
K1-4 SSMUX 13 H
K1-4 SSMUX 12 H
A3 A2 A1 A0
K2-4 SPA 03 H
K2-4 SPA 02 H
K2-4 SPA 01 H
K2-4 SPA 00 H
DD2 DL1 DB2 DF2
K1-10 SHIFT IN B H
K2-8 BMODE 00 L
K2-8 BMODE 01 L
DE1 CU2
S1 S0 DSR
74194 E41 B REG
D0 D1 D2 D3
R0(1) R1(1) R2(1) R3(1)
K1-4 BREG 15 (1) H
K1-4 BREG 14 (1) H
K1-4 BREG 12 (1) H
CLR CLK DSL
+3VC
K1-5 PROC CLK L
K1-3 BREG 11 (1) H
K1-1 BREG 00 (1) H
K2-8 BX MODE 00 L
K2-8 BX MODE 01 L
ER2 ES2
74194 E52 BX REG
K1-4 BX REG 15 (1) H
K1-4 BX REG 12 (1) H
K1-4 BLEG 15 H
74157 E40 BMUX
B2 A2 B1 A1 B3 A3 B0 A0
f2 f1 f3 f0
STB S0
CN11 CV1
K2-8 BLEG 01 H
K2-8 BLEG 00 H
+3VA
74S00 E118
FL2
K1-4 ALU COUT H
74S181 E38 ALU
AB COUT G P
A3 B3 A2 B2 A1 B1 A0 B0
S3 S2 S1 S0 M CIN
f3 f2 f1 f0
K1-4 ALU 15 H
8815 E37
K1-4 12-15=0 H
EP2 EH1 DD1 CV2 CK2
K2-8 ALU S3 H
K2-8 ALU S2 H
K2-8 ALU S1 H
K2-8 ALU S0 H
K2-8 ALU MODE H
K1-3 ALU COUT 11 L
74175 E82 PSW
D0 D1 D2 D3
R0(1) R0(0) R1(1) R1(0) R2(1) R2(0) R3(1) R3(0)
CLR CLK
EE2
K1-4 PSW 15 (1) H
K1-4 PSW 15 (1) L
K1-4 PSW 14 (1) H
K1-4 PSW 13 (1) H
K1-4 PSW 12 (1) H
K1-4 SSMUX 15 H
K1-4 SSMUX 14 H
74157 E92 PSW MUX
B3 A3 B2 A2 B1 A1 B0 A0
f3 f2 f1 f0
STB S0
EK1
K1-4 PSW 15 (1) H
K1-4 SSMUX 13 H
K1-4 PSW 14 (1) H
K1-4 SSMUX 12 H
K2-9 FORCE KERNEL (1) H
K2-2 PROC INIT L
FD2
K1-3 LOAD HPSW H
K1-3 TRI STATE AMUX H
STB1 STB0 AMUX
D0 D1 C0 C1 B0 B1 A0 A1
f0 f1
74S253 E36
S1 S0
K1-4 AMUX 15 H
K1-4 AMUX 14 H
K1-2 AMUX 07 H
K1-2 AMUX 06 H
K1-4 AMUX 13 H
K1-4 AMUX 12 H
K1-10 AMUX 01 H
K1-10 AMUX 00 H
K1-2 AMUX 05 H
K1-2 AMUX 04 H
K2-8 SEX H
K2-8 SWAP H
CL2 CP2
K1-10 ENAB DATA L
TAP 30 L
8641 E33
AM2 AL1 AL2 AK1
BUS D15 L
BUS D14 L
BUS D13 L
BUS D12 L
74S153 E34 SSMUX
CB2 CA1
K1-4 SSMUX 15 H
K1-4 SSMUX M H
74S153 E35 SSMUX
CD2 CU1
K1-4 SSMUX 13 H
K1-4 SSMUX 12 H

(DATA PATH 12-15)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE KDIEA DATA PATH (K1-4)		SIZE D	CODE CS	NUMBER M8265-0-1 REV. C
SCALE —	SHEET 4 OF 10	DIST.		

DEC FORM NO. 2000 1/20



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TITLE KD11EA DATA PATH (K1-5)

SIZE D CODE CS NUMBER M8265-0-1 REV. C

SHEET 5 OF 10

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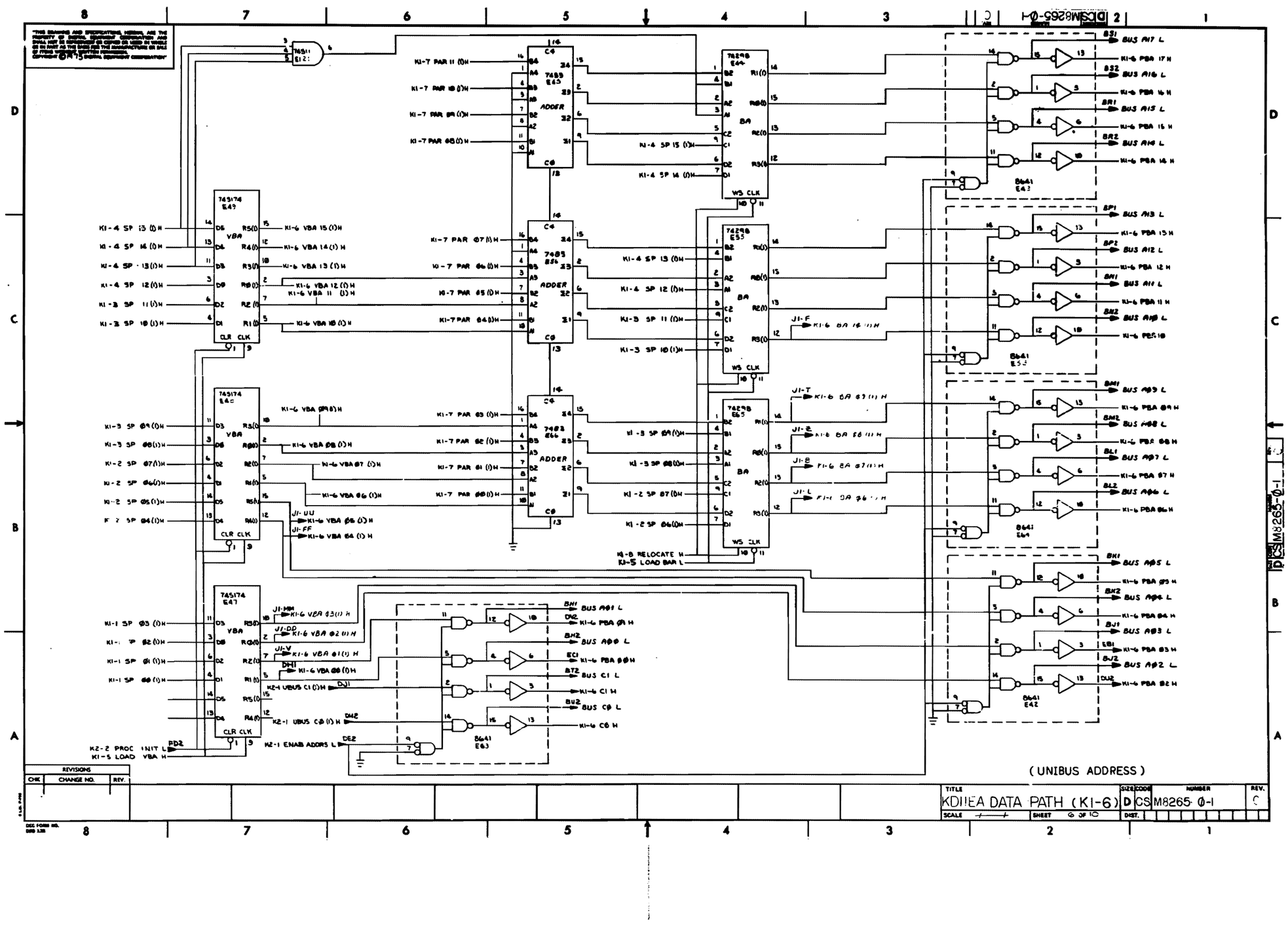

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA DATA PATH (KI-6)	D	CS	M8265-0-1	C
SCALE	SHEET 6 OF 10	DIST.		

DCS M8265-0-1

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K1-10 LOAD PAR HIGH L
K1-5 REG CLK H
+3V8
85568 E80 PAR
CLK WE O3 OD
D3 D2 D1 D0
M3(0) M2(0) M1(0) M0(0)
A3 A2 A1 A0
K1-3 SSMUX 11 H
K1-3 SSMUX 10 H
K1-3 SSMUX 09 H
K1-3 SSMUX 08 H
K1-7 PAR 11 (1) H
K1-7 PAR 10 (1) H
K1-7 PAR 09 (1) H
K1-7 PAR 08 (1) H

K1-10 LOAD PDR HIGH L
K1-5 REG CLK H
+3V8
85568 E89 PDR
K1-4 SSMUX 14 H
K1-4 SSMUX 13 H
K1-4 SSMUX 12 H
K1-7 PDR 14 (1) H
K1-7 PDR 13 (1) H
K1-7 PDR 12 (1) H

K1-10 LOAD PAR LOW L
+3V8
85568 E79 PAR
K1-2 SSMUX 07 H
K1-2 SSMUX 06 H
K1-2 SSMUX 05 H
K1-2 SSMUX 04 H
K1-7 PAR 07 (1) H
K1-7 PAR 06 (1) H
K1-7 PAR 05 (1) H
K1-7 PAR 04 (1) H

+3V8
85568 E90 PDR
K1-3 SSMUX 11 H
K1-3 SSMUX 10 H
K1-3 SSMUX 09 H
K1-3 SSMUX 08 H
K1-7 PDR 11 (1) H
K1-7 PDR 10 (1) H
K1-7 PDR 09 (1) H
K1-7 PDR 08 (1) H

+3V8
85568 E78 PAR
K1-1 SSMUX 03 H
K1-1 SSMUX 02 H
K1-1 SSMUX 01 H
K1-1 SSMUX 00 H
K1-7 PAR 03 (1) H
K1-7 PAR 02 (1) H
K1-7 PAR 01 (1) H
K1-7 PAR 00 (1) H

K1-10 LOAD PDR LOW L
+3V8
85568 E88 PDR
K1-1 SSMUX 03 H
K1-1 SSMUX 02 H
K1-1 SSMUX 01 H
K1-7 ED (1) H
K1-7 ACF2 (1) H
K1-7 ACF1 (1) H

ED	DIRECTION
0	UP
1	DOWN

ACF2	ACF1	DESCRIPTION
0	0	NONRESIDENT
0	1	RESIDENT READ ONLY
1	0	ABORT ALL ACCESSES
1	1	RESIDENT READ/WRITE

74S157 E91
K1-8 MODE 01 H
K1-6 PBA 08 H
K1-6 VBA 15 (1) H
K1-6 PBA 03 H
K1-6 VBA 14 (1) H
K1-6 PBA 02 H
K1-6 VBA 13 (1) H
K1-6 PBA 01 H
PAR/PDR ADRS MUX
STB S0
K1-10 PAR + PDR L

K1-10 PAR + PDR L
K2-1 MSYN (1) L
7400 E116
7400 E106
K1-6 CI H
LOAD WBIT L

PAGE ADDRESS FIELD
PAR
PLF W ED ACF
PDR

85568 E81 WBIT
ENAB W L
7404 E117
K1-7 WBIT H
K1-8 RELOCATE H
K2-1 DISABLE WBIT L
K1-10 KT MUX S0 L
7410 E123
7400 E112
7400 E113
K1-10 PAR + PDR L

(PAR + PDR)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE KDIIEA DATA PATH (K1-7)
SIZE D CODE DCS NUMBER M8265-0-1 REV. C
SCALE — SHEET 7 OF 10 DIST.

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+3VD

K1-1 SS MUX ØØ H
K1-Ø LOAD SRØ LOW L
K1-5 REG CLK L
K2-2 RCD INIT L
K1-8 RELOCATE ENB (1) H (SRØ ØØ)
K2-8 ENAB MAINT (1) H
K1-8 RELOCATE H

+5V

R1 R2 R3 R4 470Ω

K1-8 MODE Ø1 H
K1-8 MODE ØØ H
K2-1 UBUS C1 (1) H
K2-1 UBUS CØ (1) H
K2-8 DISABLE MSYN H
K1-7 ACF2 (1) H
K1-7 ACF1 (1) H
K2-1 START TRANS
K1-8 RELOCATE H
K2-1 MSYN (1) L

256 x 4 Q.C. E83 23-165A2

K1-9 SS MUX ØØ H
K1-4 SS MUX 15 H
K1-4 SS MUX 14 H
K1-4 SS MUX 13 H

74157 E93 SRØ MUX #1

74175 E103 SRØ

K1-8 MAINT (1) H (SRØ ØØ)
K1-8 NR (1) H (SRØ 15)
K1-8 PL (1) H (SRØ 14)
K1-8 RO (1) H (SRØ 13)

K2-2 RCD INIT L
K1-5 REG CLK H
K1-Ø LOAD SRØ HIGH L
FT2
K1-8 KT FAULT L
K1-8 ERROR H

K1-7 PDR 14 (1) H
K1-6 VBA 12 (1) H
K1-7 PDR 13 (1) H
K1-6 VBA 11 (1) H
K1-7 PDR 12 (1) H
K1-6 VBA 1Ø (1) H
K1-7 PDR 11 (1) H
K1-6 VBA Ø9 (1) H

7485 E72

K1-7 PDR 1Ø (1) H
K1-6 VBA Ø8 (1) H
K1-7 PDR Ø9 (1) H
K1-6 VBA Ø7 (1) H
K1-7 PDR Ø8 (1) H
K1-6 VBA Ø6 (1) H

7485 E61

K1-7 ED (1) H

K1-4 PSW 15 (1) H
K1-4 PSW 13 (1) H
K1-4 PSW 14 (1) H
K1-4 PSW 12 (1) H

74S157 E71 SRØ MUX

K1-8 MODE Ø1 H
K1-8 MODE ØØ H
K1-6 VBA 15 (1) H
K1-6 VBA 14 (1) H
K1-6 VBA 13 (1) H

74174 E73 SRØ

K1-8 SRØ Ø6 (1) H
K1-8 SRØ Ø5 (1) H
K1-8 SRØ Ø3 (1) H
K1-8 SRØ Ø2 (1) H
K1-8 SRØ Ø1 (1) H

K2-9 FORCE KERNEL (1) H
K2-9 PREVIOUS MODE (1) L
K1-8 RELOCATE H
K2-1 CLK MSYN H
K2-2 RCD INIT L

15	13 12	9	8	7	6	5	4	3	2	1	Ø
ERROR				MODE			PAGE M				ERR

SRØ

(SRØ AND KT ERROR)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: KDIEA DATA PATH (K1-8)
SIZE: D | CODE: DCS | NUMBER: M8265-Ø-1 | REV: C
SCALE | SHEET 8 OF 10 | DIST.

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S1	S0	F
H	H	SR3
H	L	SR2
L	H	PAR
L	L	PDR

74174 E62 SR2
KI-6 VBA 15 (1) H
KI-6 VBA 14 (1) H
KI-6 VBA 13 (1) H
KI-6 VBA 12 (1) H
KI-6 VBA 11 (1) H
KI-6 VBA 10 (1) H
CLR CLK

74174 E51 SR2
KI-6 VBA Ø9 (1) H
KI-6 VBA Ø8 (1) H
KI-6 VBA Ø7 (1) H
KI-6 VBA Ø6 (1) H
KI-6 VBA Ø5 (1) H
KI-6 VBA Ø4 (1) H
KI-9 SR2 Ø7 (1) H
KI-9 SR2 Ø6 (1) H
KI-9 SR2 Ø5 (1) H
KI-9 SR2 Ø4 (1) H
CLR CLK

74174 E50 SR2
KI-6 VBA Ø3 (1) H
KI-6 VBA Ø2 (1) H
KI-6 VBA Ø1 (1) H
KI-6 VBA Ø0 (1) H
KI-9 SR2 Ø3 (1) H
KI-9 SR2 Ø2 (1) H
KI-9 SR2 Ø1 (1) H
KI-9 SR2 Ø0 (1) H
CLR CLK

FE2
K2-2 RCD INIT L
K2-5 LOAD IR H FP2
74S64 E117
74S02 E101
KI-8 ERROR H
LOAD SR2 H

KI-10 SW-8 KT MUX L
KI-8 NR (1) H
KI-8 PL (1) H
KI-7 PDR 14 (1) H
KI-8 RD (1) H
KI-7 PDR 13 (1) H
KI-7 PDR 12 (1) H
KI-7 PAR 11 (1) H
KI-7 PDR 11 (1) H
KI-7 PAR 10 (1) H
KI-7 PDR 10 (1) H
KI-7 PAR Ø9 (1) H
KI-7 PDR Ø9 (1) H
KI-8 MAINT (1) H
KI-7 PAR Ø8 (1) H
KI-7 PDR Ø8 (1) H
KI-10 PAR & PDR L
KI-10 KT MUX S0 L

74LS253 E70 KT MUX
KI-4 SP 15 (1) H
KI-4 SP 14 (1) H
74LS253 E69 KT MUX
KI-4 SP 13 (1) H
KI-4 SP 12 (1) H
74LS253 E68 KT MUX
KI-3 SP 11 (1) H
KI-3 SP 10 (1) H
74LS253 E59 KT MUX
KI-3 SP Ø9 (1) H
KI-3 SP Ø8 (1) H

KI-9 SR2 Ø7 (1) H
KI-7 PAR Ø7 (1) H
KI-8 SR2 Ø6 (1) H
KI-9 SR2 Ø6 (1) H
KI-7 PAR Ø6 (1) H
KI-7 W BIT H
KI-8 SR2 Ø5 (1) H
KI-9 SR2 Ø5 (1) H
KI-7 PAR Ø5 (1) H
KI-9 SR2 Ø4 (1) H
KI-9 PAR Ø4 (1) H
KI-8 SR2 Ø3 (1) H
KI-9 SR2 Ø3 (1) H
KI-7 PAR Ø3 (1) H
KI-7 ED '(1) H
KI-8 SR2 Ø2 (1) H
KI-9 SR2 Ø2 (1) H
KI-7 PAR Ø2 (1) H
KI-7 ACF 2 (1) H
KI-8 SR2 Ø1 (1) H
KI-9 SR2 Ø1 (1) H
KI-7 PAR Ø1 (1) H
KI-7 ACF1 (1) H
KI-8 RELOCATE END (1) H
KI-9 SR2 Ø0 (1) H
KI-7 PAR Ø0 (1) H

74LS253 E70 KT MUX
KI-2 SP 7 (1) H
KI-2 SP 6 (1) H
74LS253 E68 KT MUX
KI-2 SP 5 (1) H
KI-2 SP 4 (1) H
74LS253 E67 KT MUX
KI-1 SP 3 (1) H
KI-1 SP 2 (1) H
74LS253 E57 KT MUX
KI-1 SP 1 (1) H
KI-1 SP 0 (1) H

S1	S0	F
0	0	PDR
0	1	PAR
1	0	SR2
1	1	SR3

(SR2 AND KT MUX)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: KDIIEA DATA PATH(KI-9)
SIZE: D | CODE: CS | NUMBER: M8265-Ø-1 | REV: C
SCALE | SHEET 9 OF 10

DEC FORM NO. DRD 138

DCS M8265-Ø-1 C

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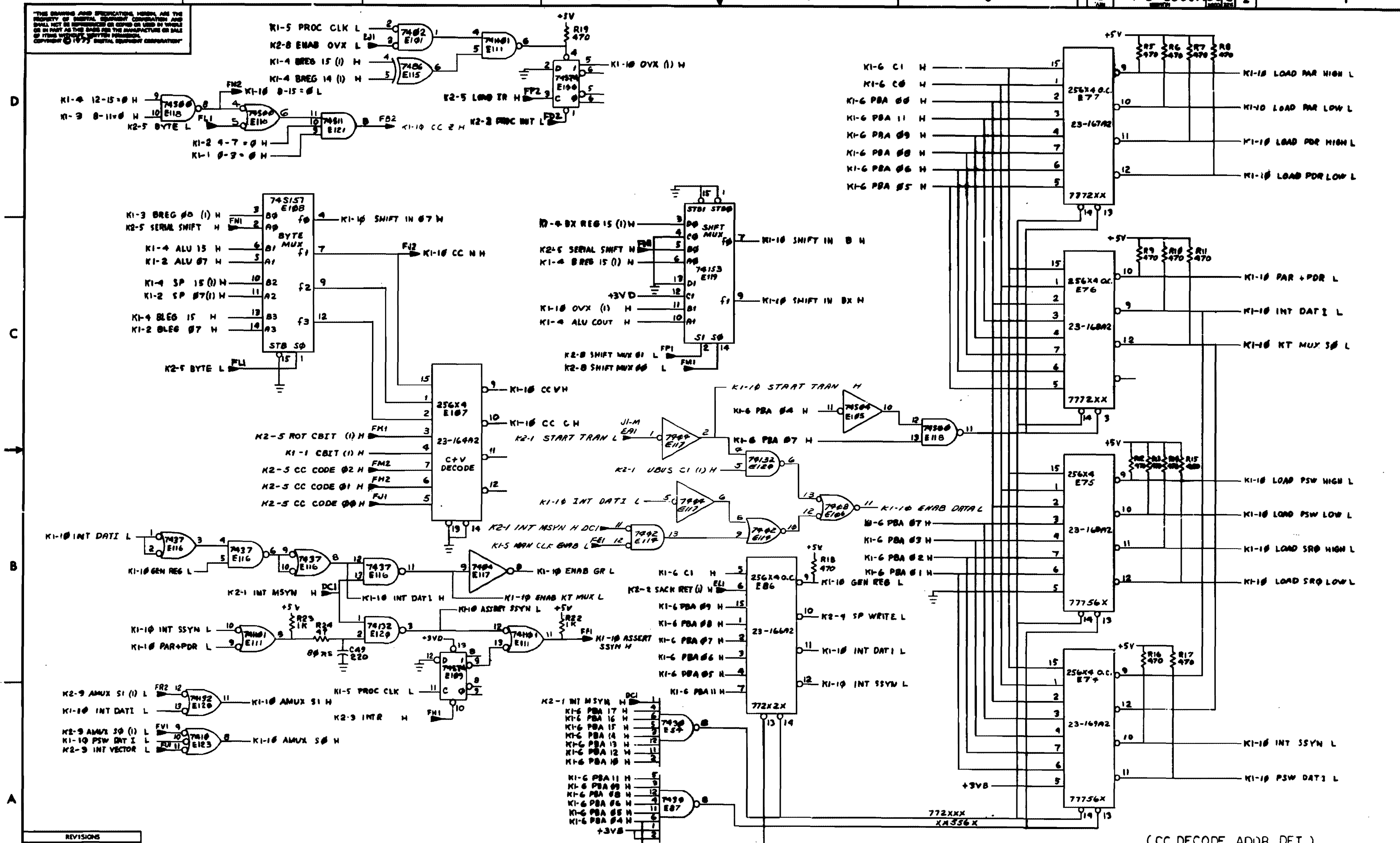

(CC DECODE, ADDR DET.)

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
KDIIEA DATA PATH(KI-10)	D	CS	M8265-0-1	C

SCALE —— SHEET 10 OF 10 DIST.

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FIELD MAINTENANCE PRINT SET

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TABLE OF CONTENTS

UNIT VARIATIONS COVERED BY THIS PRINT SET
FP11-A

FP11-A
Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.
MPØØ189

REV.	CHG. NO.	DATE
A	FP11-A-1	7-77
B	FP11-A-3	5-78

USED ON OPTION/MODEL	
1134A	

SHEET 1 OF 1

DRN.	DATE	CHK'D	DATE	PROJ. ENG.	DATE	FIELD SERV.	DATE
D. HEALY	OCT 76	D. HEALY	OCT 76	J W [signature]	12-13-76	JRS [signature]	12-21-76

digital

TITLE: FLOATING POINT OPTION

SIZE	CODE	NUMBER	REV.
B	TC	FP11-A-4	B

DIST.

EN-01124-16-N675 (32)

DR3 124

1

digital EQUIPMENT CORPORATION

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

SEQUENCE SEQUENCE

THIS IS PRINT SET

UNIT VARIATIONS		PRINT SET
VAR	TITLE	
FP11-A	FLOATING POINT OPTION	

REVISIONS		
DATE	CHG. NO.	REV
7-77	FP11-A-1	A
9-77	FP11-A-2	B
5-78	FP11-A-3	C

EN-01062-1A-16-R972-(329)

DRB 106

USED ON OPTION/MODEL		DRN.	DATE	TITLE
1134A		D. HEALY	OCT 76	FLOATING POINT OPTION
		CHK'D. D. HEALY	DATE OCT 76	
		PROJ ENG. J.W. Mitchell	DATE 12-20-76	
		~~PROD.~~	DATE	SIZE B / CODE DD / NUMBER FP11-A / REV C
		~~FIELD SERV.~~	~~DATE~~	DIST
SHEET 1 OF 2				

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
1	B-TC-FP11-A-4	FLOATING POINT OPTION (FIELD MAINT. PR. SET)	-
	MPØØ189	FLOATING POINT OPTION (PR SET ORDER NO.)	-
	D-UA-FP11-A-Ø	FLOATING POINT OPTION	M/E
	A-PL-FP11-A-Ø	FLOATING POINT OPTION (PL)	M/E
	D-BD-FP11-A-1	BLOCK DIAGRAM	E
	D-FD-FP11-A-2	FLOW DIAGRAM	
	D-FD-FP11-A-5	FLOW DIAGRAM	
	A-PL-FP11-A-3	SHIPPING LIST	M/E
2	B-DD-M8267-Ø	FLOATING POINT PROCESSOR	M/E
	B-PL-M8267-0-8	ROM LISTING	
3	B-DD-H8221-Ø	BOARD INTERCONNECT 4Ø Pin	M/E
4	B-DD-5412416-0	BOARD INTERCONNECT 2Ø Pin	M/E
5	B-DD-W9Ø42-Ø	EXTENDER BOARD ASSY.	M/E

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

digital

TITLE	SHEET	SIZE	CODE	NUMBER	REV
FLOATING POINT OPTION	2 OF 2	B	DD	FP11-A	C

DRB 108A

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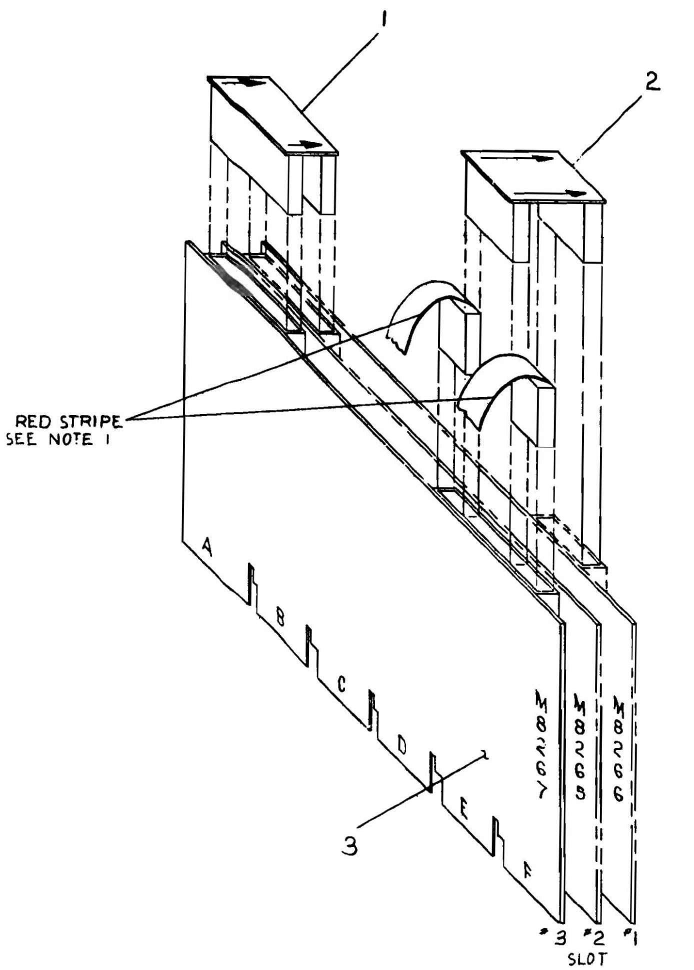
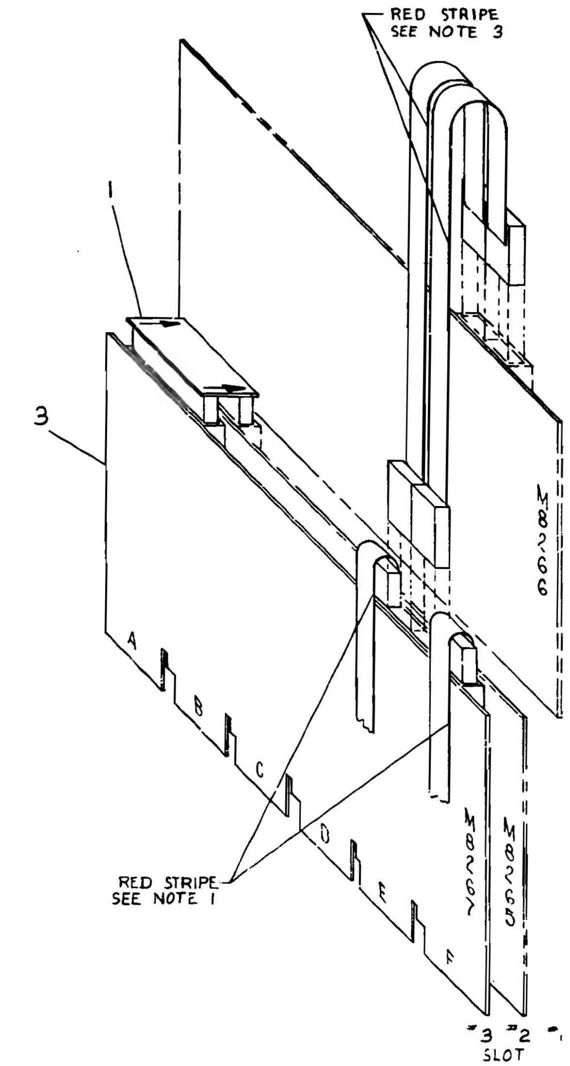
NOTES:
1. THESE CABLES #7011411-1D ARE PART OF KY11-LB OPTION AND MAY NOT BE PRESENT IN SOME CONFIGURATIONS.
2. THE W9042 EXTENDER BD. ASSY. IS STORED IN THE BACKPLANE AND IS USED FOR SOME MAINTENANCE OPERATIONS.
3. THESE CABLES ARE INSTALLED DURING MAINTENANCE ONLY, AND ARE CLIPPED TO THE W9042 FOR STORAGE. THESE CABLES #7011411-7D ARE PART OF W9042.
4. MODULES M8265 & M8266 ARE PART OF KD11-EA & SHOWN FOR REF ONLY.



CONFIGURATION "A"



CONFIGURATION "B"

1	EXTENDER BD. ASSY.	D-UA-W9042-0-0	4
1	FLOATING POINT (FP11-A)	D-UA-M3267-0-0	3
1	BOARD, INTERCONN 20 PIN	D-UA-5412416-0-0	2
1	BOARD, INTERCONN 40 PIN	D-UA-H8821-0-0	1
QUANTITY & VARIATION	DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL	SEE PARTS LIST
FINISH	
DRN.	11 OCT 76
NEXT HIGHER ASSY.	B-DD-FP11-A
SCALE	NONE
SHEET	1 OF 2
FIRST USED ON	1134
TITLE	FLOATING POINT OPTION
SIZE	D
CODE	UA
NUMBER	FP11-A-0

digital

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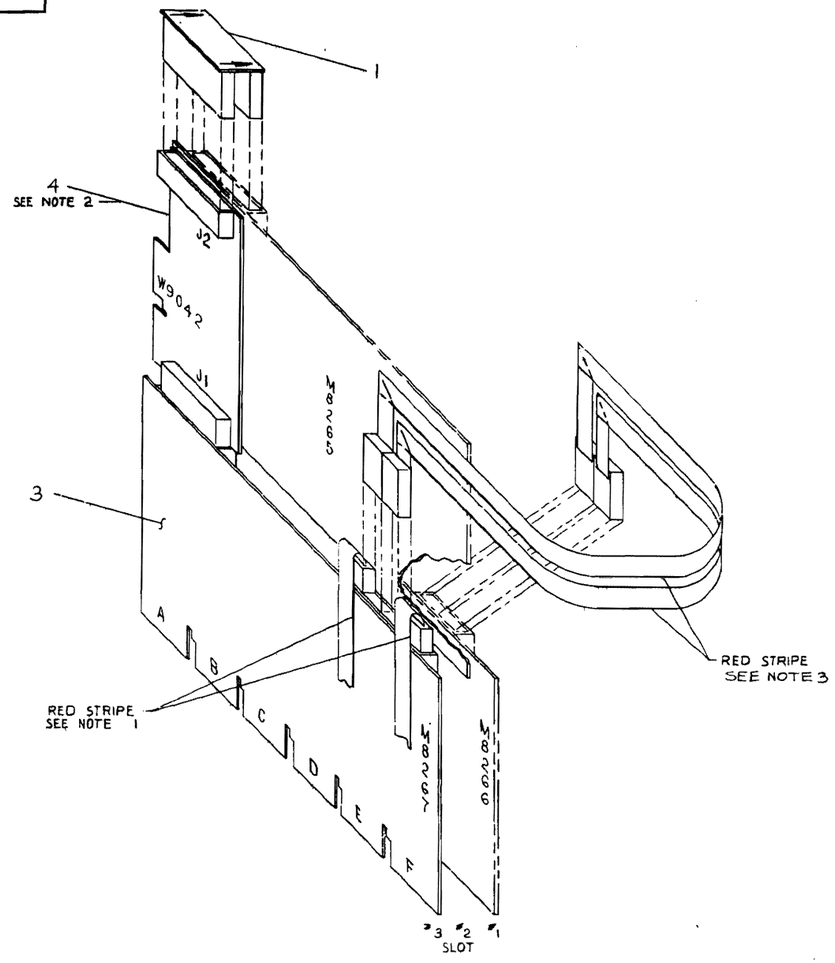
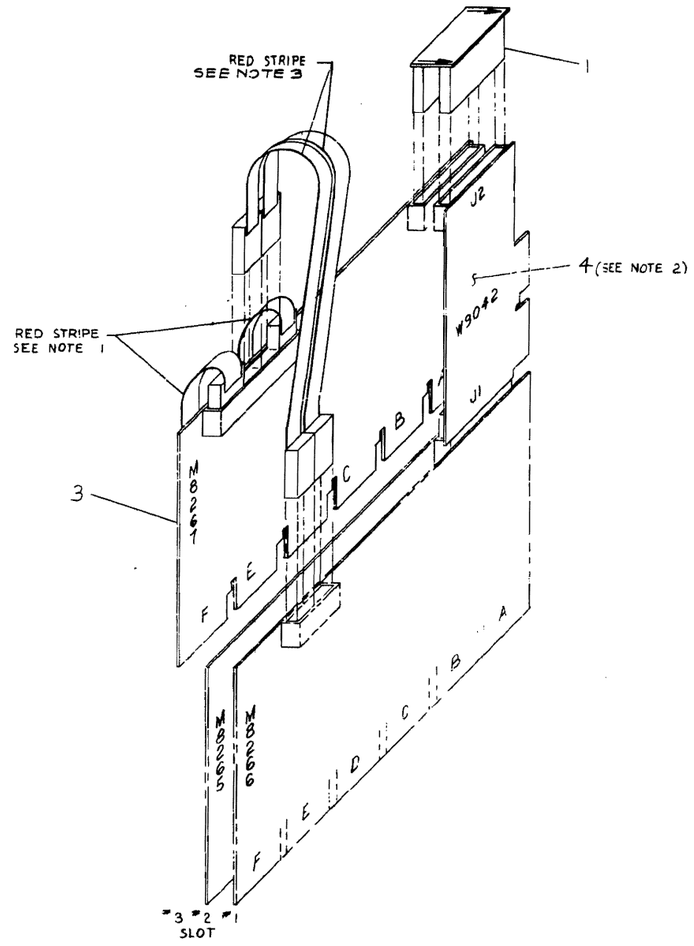


CONFIGURATION "C"



CONFIGURATION "D"

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT OPTION	D	UA	FP11-A-0	
SCALE NONE	SHEET 2 OF 2		DIST.	

FP11-A-0 D

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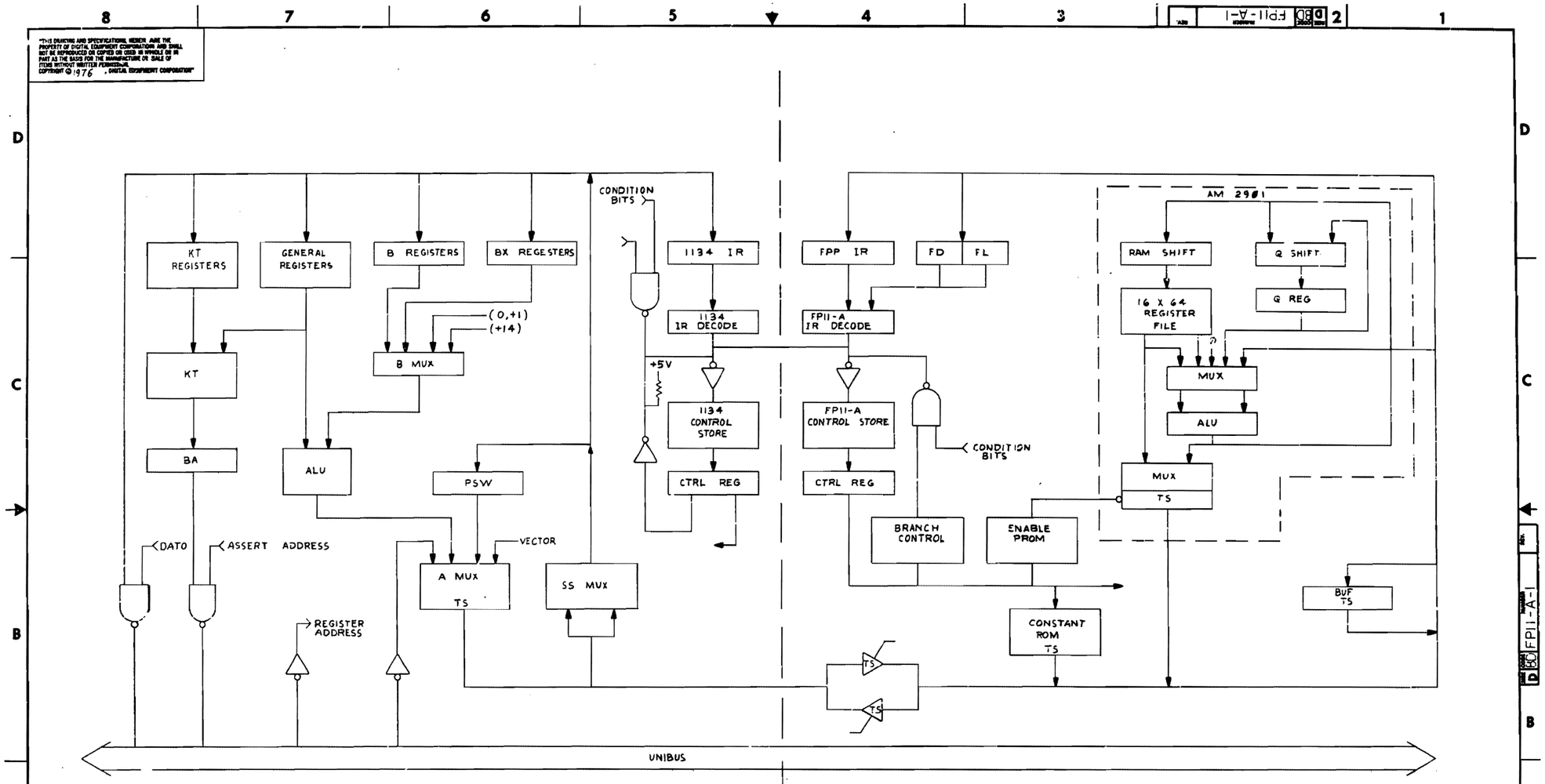
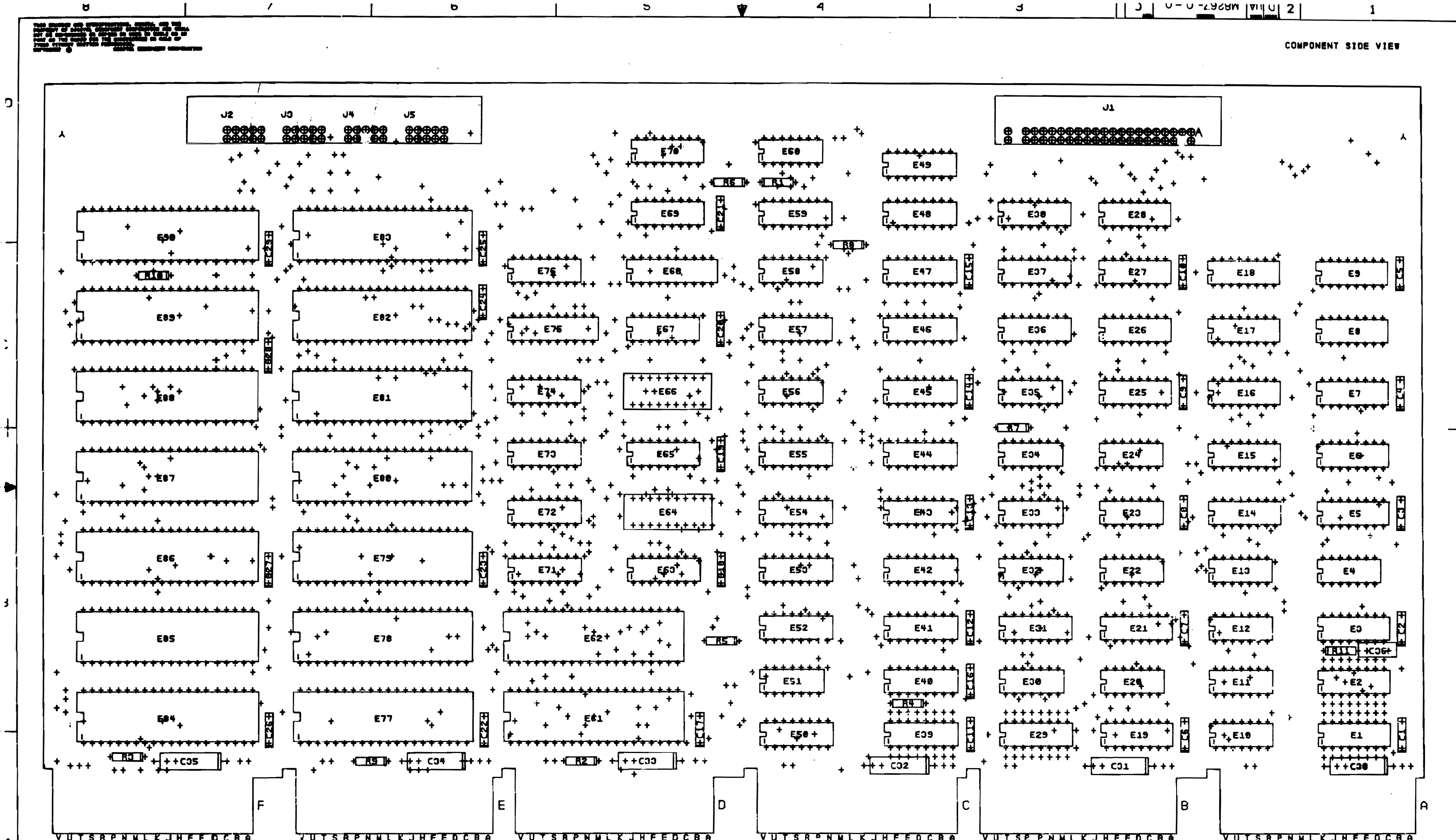


DRN.			FIRST USED ON 1134 A
CHK'D			TITLE 1134 FLOATING POINT PROCESSOR FPII-A
ENG.		20 APR 76	
PROJ. ENG.			
PROG.			
NEXT HIGHER ASSY.			
B-DD-FPII-A			SIZE D CODE BD NUMBER FPII-A-1 REV.
SCALE			
SHEET 1 OF 1			DIST.

REVISIONS			
CHK	CHANGE NO		REV.



NOTES:

CHK	CHANGE NO	REV

ETCH REV.
P.C. DESIGN DATA BASE REV.

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ.ENG.	
PROD.	
SCALE 2/1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. B-DD-M8267-0	

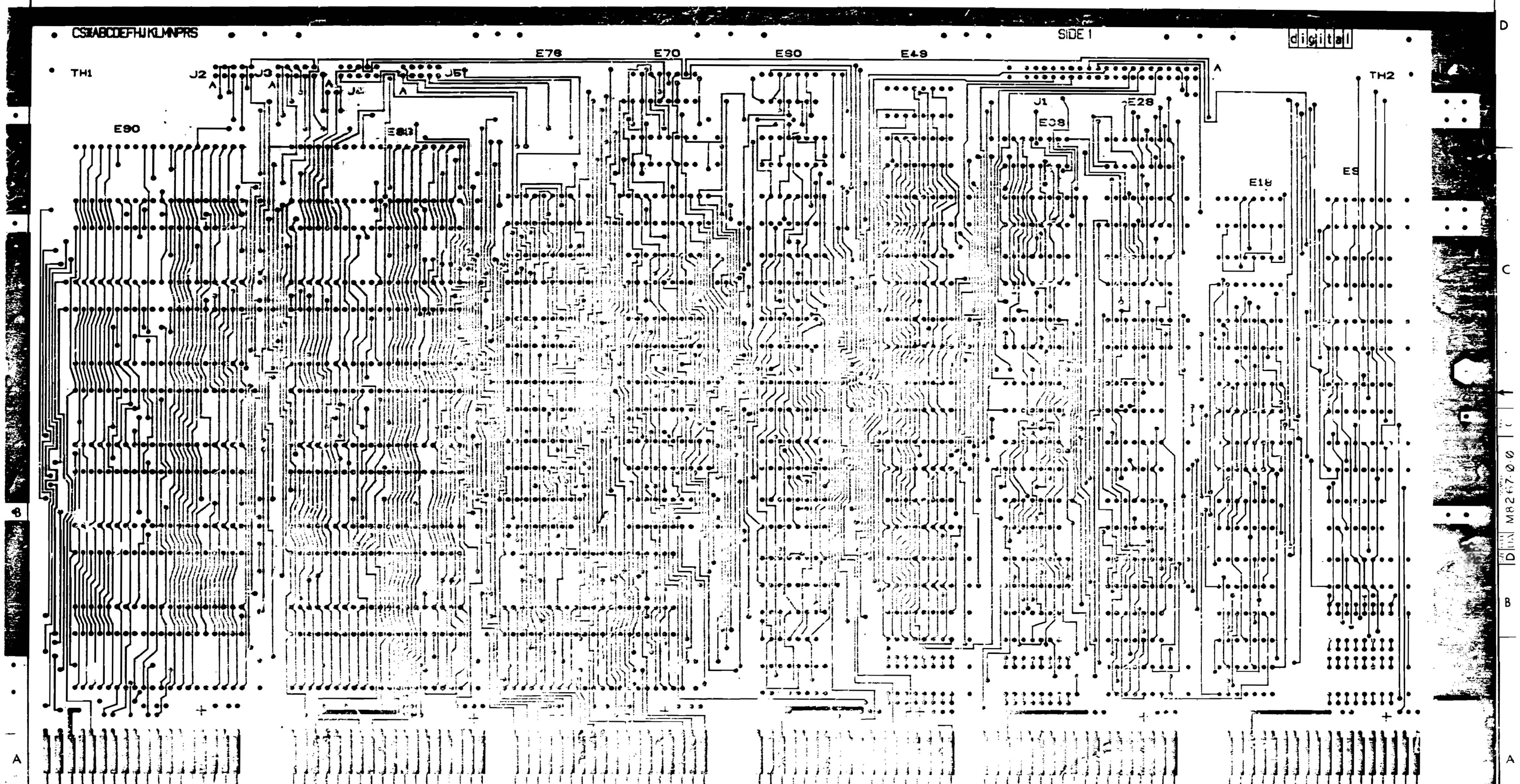
digital

TITLE 11/34 FLOATING PT OPTION

SIZE	CODE	NUMBER	REV
D	UA	M8267-0-0	C

1 MS# 116365

LAYER 1



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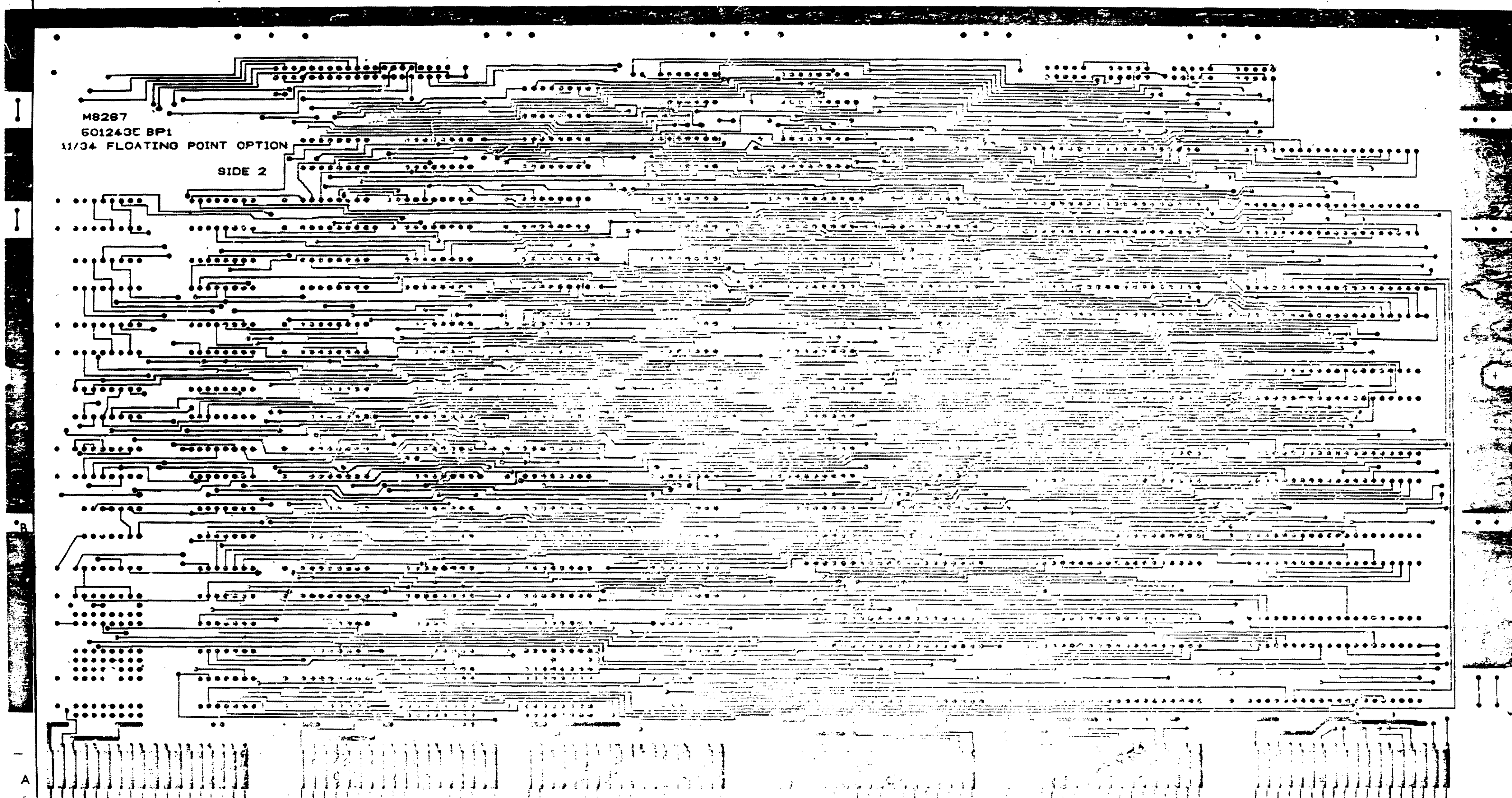
TITLE	SIZE	CODE	NUMBER	REV
11/34 FLOATING PT. OPTION	D	IA	M8267-0-0	C

SHEET 2 OF 3



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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
11/34 FLOATING PT OPTION	D	UA	M8267-0-0	C
SCALE 2/1	SHEET 3 OF 3			

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY	D. J. SIREEN	CHECKED	F. SEIDMAN	SECTION
DATE	12 JULY 76	DATE	18 AUG 76	
ENG		PROD	R. B. KING	ISSUED SECTION
DATE	7/19/77	DATE	15 JUL 77	

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION M8267-Ø-Ø	REF DESIGNATION
1	D-MD-5012435-O-0	5012435	ETCHED BOARD	1	
2		1005306	CAPACITOR, 6.8 uf, 35V, 10% TANT	6	C30 thru C35
3		1012784	CAPACITOR, .047 uf 50V, CER	29	C1 thru C29
4		1213506-01	RT.ANGLE HEADER 40 POS.	1	J1
5		1213506-02	RT.ANGLE HEADER 52 POS.	1	J2 thru J5 (ONE CONNECTOR)
6					
7		1300271	RESISTOR, 220, 1/4W, 5%	1	R1
8		1300295	RESISTOR, 330, 1/4W, 5%	2	R7,R8
9		1300316	RESISTOR, 470, 1/4W, 5%	5	R2,R3,R9,R10,R4
10		1300229	RESISTOR, 100, 1/4W, 5%	1	R11
11		1301401	RESISTOR, 750, 1/4W, 5%	1	R6
12		1910533	I.C. DEC 74SØ3	4	E11,E20,E23 E32
13		1910535	I.C. DEC 74SØ5	1	E33
14		1910532	I.C. DEC 74SØØ	2	E22,E60
15		1910534	I.C. DEC 74SØ4	2	E35,E34
16		1910536	I.C. DEC 74S1Ø	1	E30
17		1910539	I.C. DEC 74S2Ø	1	E10
18		1910544	I.C. DEC 74S74	1	E13
19		1910547	I.C. DEC 74S153	2	E59,E69
20		1910548	I.C. DEC 74S157	1	E70
21		1910550	I.C. DEC 74S174	9	E27,E31,E28,E49,E52,E53,E57,E65.E67

NOTES:

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
11/34 FLOATING POINT OPTION	D-UA-M8267-Ø-Ø	B	PL	M8267-Ø-Ø	C
	SHEET 1 OF 3	INSERTION PARTS LIST DATA BASE REV			

DRB 125

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY D. J. SIREEN DATE 12 JULY 76	CHECKED F. SEIDMAN DATE 18 AUG 76	SECTION
ENG [signature] DATE 7/18/77	PROD R. B. KING DATE 15 Jul 77	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION M8267-Ø-Ø	REF DESIGNATION
22		1910837	I.C. DEC 8Ø93	3	E51 E56,E58
23		1910957	I.C. DEC 74S175	2	E18,E26
24		1911527	I.C. DEC 8Ø97	6	E5 thru E9,E16
25		1912097	I.C. DEC 74S182	6	E50,E63,E71 thru E74
26		1912388	I.C. DEC 74SØ2	1	E24
27		1912746	I.C. DEC 74S37	1	E12
28		1911330	I.C. DEC 74173	4	E3,E14,E15,E25
29		1913245	I.C. DEC AM 29Ø1	16	E61 E62,E77 thru E90
30		1911637	I.C. DEC 74132	1	E4
31		1212385	40 PIN SOCKET	16	E61,E62 E77 thru E90
32		1000015	CAPACITOR, 82 pf, 5%	1	C36
33		7417214	HANDLE, MODIFIED	1	
34			I.C. SPARES	4	E1,E2,E29,E39
35		9000024-01	EYELET	9	
36		23157A1	I.C. DEC PROM 32 x 8 T.S.	1	E17
37		23153A1	I.C. DEC PROM 32 x 8 T.S.	1	E19
38		23154A1	I.C. DEC PROM 32 x 8 T.S.	1	E21
39		23155A1	I.C. DEC PROM 32 x 8 T.S.	1	E54
40		23158A1	I.C. DEC PROM 32 x 8 T.S.	1	E55
41		23156A1	I.C. DEC PROM 32 x 8 T.S.	1	E76
42		23Ø14F1	I.C. DEC PROM 1K x 4 O.C.	1	E64

NOTES:

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
11/34 FLOATING POINT OPTION	D-UA-M8267-Ø-Ø	B	PL	M8267-Ø-Ø	C
	SHEET 2 OF 3	INSERTION PARTS LIST DATA BASE REV			

DAB 125

DIGITAL EQUIPMENT CORPORATION
PARTS LIST

MADE BY / DATE	D. J. SIREEN 12 JULY 76	CHECKED / DATE	F. SEIDMAN 18 AUG 76	SECTION
ENG / DATE	[signature] 7/18/77	PROD / DATE	R.B. KING 15 JUL 77	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION M8267-Ø-Ø	NOTES: REF DESIGNATION
43		23Ø15F1	I.C. DEC PROM 1K x 4 O.C.	1	E66
44		23435A9	I.C. DEC PROM 512 x 4 T.S.	1	E45
45		23436A9	I.C. DEC PROM 512 x 4 T.S.	1	E44
46		23437A9	I.C. DEC PROM 512 x 4 T.S.	1	E43
47		23438A9	I.C. DEC PROM 512 x 4 T.S.	1	E38
48		23439A9	I.C. DEC PROM 512 x 4 T.S.	1	E42
49		2344ØA9	I.C. DEC PROM 512 x 4 T.S.	1	E41
50		23441A9	I.C. DEC PROM 512 x 4 T.S.	1	E40
51		23442A9	I.C. DEC PROM 512 x 4 T.S.	1	E37
52		23443A9	I.C. DEC PROM 512 x 4 T.S.	1	E36
53		23444A9	I.C. DEC PROM 512 x 4 T.S.	1	E48
54		23445A9	I.C. DEC PROM 512 x 4 T.S.	1	E47
55		23446A9	I.C. DEC PROM 512 x 4 T.S.	1	E46
56		23Ø1ØB1	I.C. DEC PROM 256 x 8 T.S.	1	E75
57		23Ø11B1	I.C. DEC PROM 256 x 8 T.S.	1	E68
58		1300365	RESISTOR, 1K, 1/4W, 5%	1	R5

E.C.O. NO.

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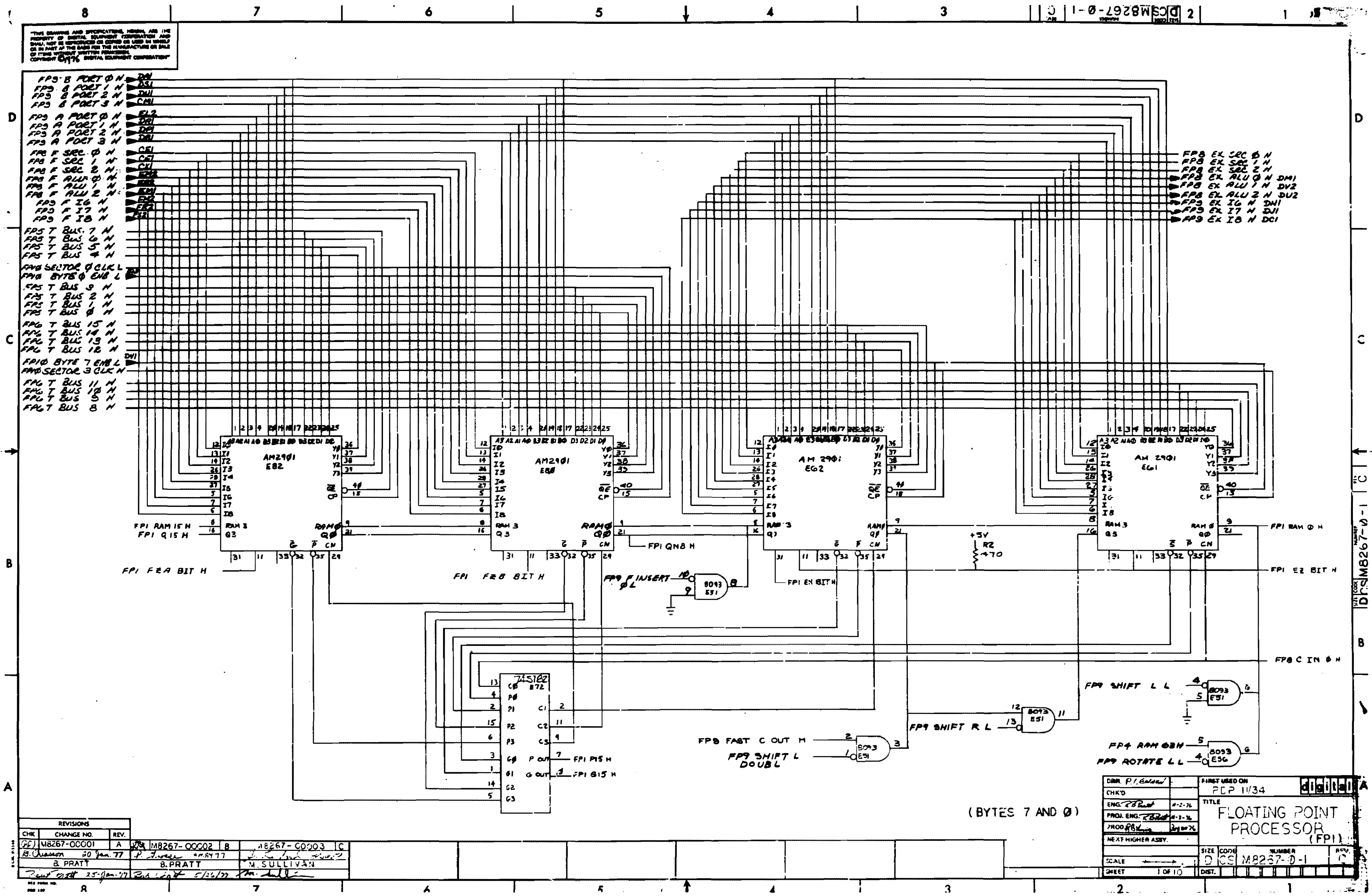
TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
11/34 FLOATING POINT OPTION	D-UA-M8267-Ø-Ø	B	PL	M8267-Ø-Ø	C
	SHEET 3 OF 3	INSERTION PARTS LIST DATA BASE REV			

DAB 125



AM2901 E82
AM2901 E68
AM 2901 E62
AM 2901 E61
74S182 E72
8093 E51
8093 E56
FPI RAM 15 H
FPI Q15 H
FPI F2A BIT H
FPI F2B BIT H
FPI QN8 H
FPI EX BIT H
FPI RAM Ø H
FPI EZ BIT H
FP8 C IN Ø H
FP9 SHIFT L L
FP9 SHIFT R L
FP8 FAST C OUT H
FP4 RAM Ø3H
FP9 ROTATE L L
FPI P15 H
FPI G15 H
+5V
R2 470
(BYTES 7 AND Ø)
FIRST USED ON FCP 11/34
TITLE FLOATING POINT PROCESSOR (FP1)
D CS M8267-Ø-1
M8267-00001
M8267-00002
M8267-00003
B. PRATT
M. SULLIVAN
digital

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FPB B PORT Ø N
FPB B PORT 1 N
FPB B PORT 2 N
FPB B PORT 3 N
FPB A PORT Ø N
FPB A PORT 1 N
FPB A PORT 2 N
FPB A PORT 3 N
FPB F SEQ Ø N
FPB F SEQ 1 N
FPB F SEQ 2 N
FPB F ALU Ø N
FPB F ALU 1 N
FPB F ALU 2 N
FPB F I6 N
FPB F I7 N
FPB F I8 N
FPB T BUS 7 N
FPB T BUS 6 N
FPB T BUS 5 N
FPB T BUS 4 N
FP10 BYTE 2 ENB L
FP10 SECTOR 1 CLK L
FPB T BUS 3 N
FPB T BUS 2 N
FPB T BUS 1 N
FPB T BUS Ø N
FP6 T BUS 15 N
FP6 T BUS 14 N
FP6 T BUS 13 N
FP6 T BUS 12 N
FP10 BYTE 1 ENB L
FP10 SECTOR Ø CLK N
FP6 T BUS 11 N
FP6 T BUS 10 N
FP6 T BUS 9 N
FP6 T BUS 8 N

AM 29Ø1 E89
AM 29Ø1 E87
AM 29Ø1 E78
AM 29Ø1 E77

FP2 RAM 31 N
FP2 Q 31 N
FP1 F2A BIT N
FP1 F2B BIT N
+5V
R9 470
FP2 F2C BIT N
FP9 CIN 15 N
FP1 RAM 15 N
FP1 Q 15 N

74S162 E71
FP2 G 31 N
FP2 P 31 N

(BYTES 1 AND 2)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT PROCESSOR (FP2)	D	CS	M8267-Ø-1	C
SCALE	SHEET 2 OF 11	DIST.		

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FP3 Q PORT 0 N
FP3 Q PORT 1 N
FP3 Q PORT 2 N
FP3 Q PORT 3 N
FP3 A PORT 0 N
FP3 A PORT 1 N
FP3 A PORT 2 N
FP3 A PORT 3 N
FP3 F SEC 0 N
FP3 F SEC 1 N
FP3 F SEC 2 N
FP3 F ALU 0 N
FP3 F ALU 1 N
FP3 F ALU 2 N
FP3 F IC N
FP3 F I7 N
FP3 F I8 N
FP5 T BUS 7 N
FP5 T BUS 6 N
FP5 T BUS 5 N
FP5 T BUS 4 N
FP0 BYTE 4 ENB L
FP0 SECTOR 2 CLK L
FP5 T BUS 3 N
FP5 T BUS 2 N
FP5 T BUS 1 N
FP5 T BUS 0 N
FP6 T BUS 15 N
FP6 T BUS 14 N
FP6 T BUS 13 N
FP6 T BUS 12 N
FP0 BYTE 3 ENB L
FP0 SECTOR 1 CLK H
FP6 T BUS 11 N
FP6 T BUS 10 N
FP6 T BUS 9 N
FP6 T BUS 8 N

AM 2901 E83
AM 2901 E82
AM 2901 E75
AM 2901 E84

FP3 RAM 47 N
FP3 Q 47 N
FP3 RAM 3
FP3 Q 3
RAM 0
Q 0
G
P
CN
FP3 CN4 N
FP1 F2A BIT N
FP1 F2C BIT N
FP1 F2B BIT N
FP3 CIN 31 N
FP2 RAM 31 N
FP2 Q 31 N

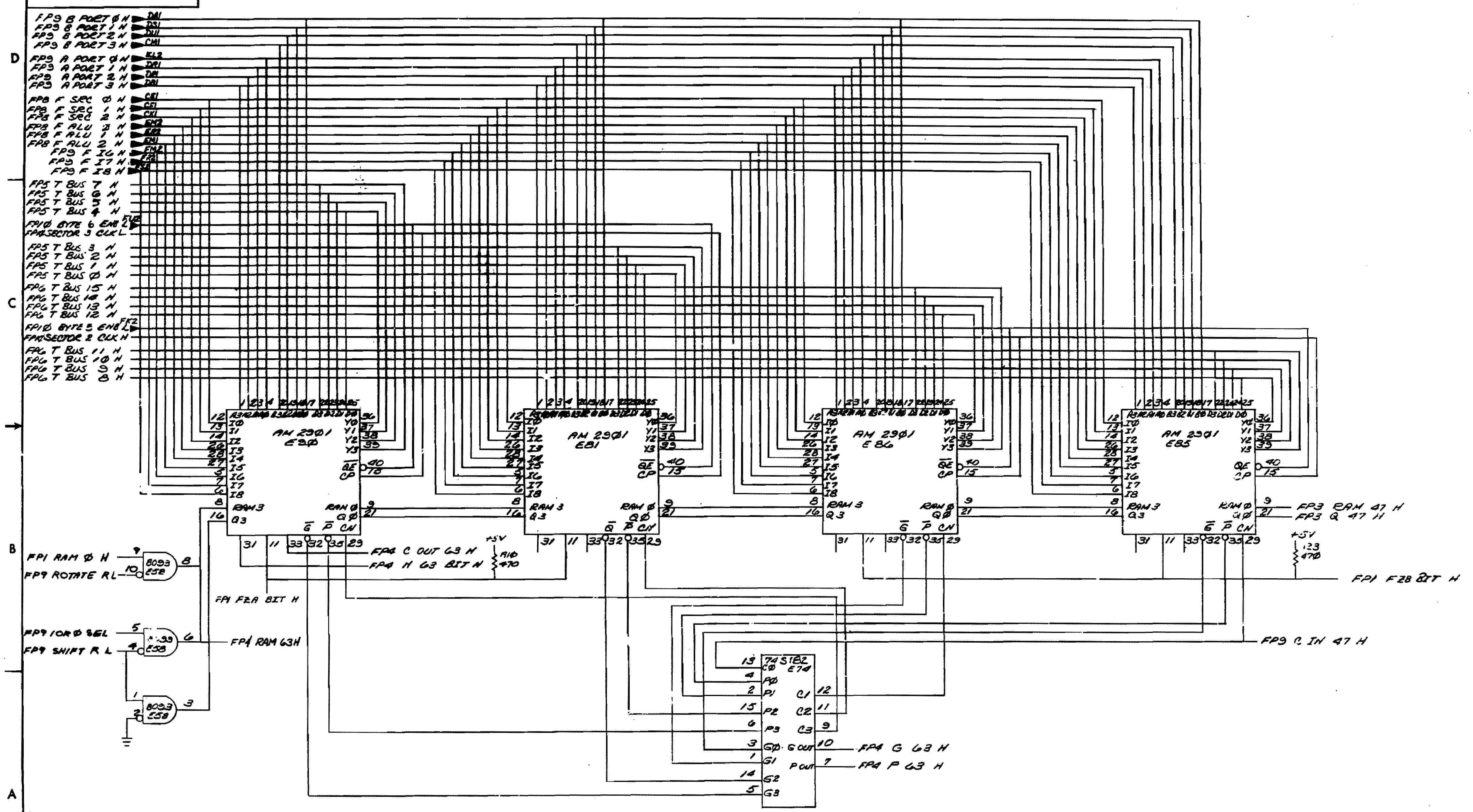
25S182 E79
CP
P0
P1
P2
P3
G0
G1
G2
G3
C1
C2
C3
COUT
FP3 G 47 N
FP3 P 47 N

FP3 SHIFT R L
FP3 SHIFT L DOUB L
FP3 FAST C OUT H
FP3 SHIFT L SING L
8033 E56

(BYTES 3 AND 4)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT PROCESSOR (FP3)	D	DCS	M8267-0-1	C
SCALE	SHEET 3 OF 10	DIST.		



FP9 B PORT Ø H
FP9 B PORT 1 H
FP9 B PORT 2 H
FP9 B PORT 3 H
FP9 A PORT Ø H
FP9 A PORT 1 H
FP9 A PORT 2 H
FP9 A PORT 3 H
FP8 F SRC Ø H
FP8 F SRC 1 H
FP8 F SRC 2 H
FP8 F ALU Ø H
FP8 F ALU 1 H
FP8 F ALU 2 H
FP9 F I6 H
FP9 F I7 H
FP9 F I8 H
FP5 T BUS 7 H
FP5 T BUS 6 H
FP5 T BUS 5 H
FP5 T BUS 4 H
FP1Ø BYTE 6 ENB L
FP4 SECTOR 3 CLK L
FP5 T BUS 3 H
FP5 T BUS 2 H
FP5 T BUS 1 H
FP5 T BUS Ø H
FP6 T BUS 15 H
FP6 T BUS 14 H
FP6 T BUS 13 H
FP6 T BUS 12 H
FP1Ø BYTE 5 ENB L
FP4 SECTOR 2 CLK H
FP6 T BUS 11 H
FP6 T BUS 1Ø H
FP6 T BUS 9 H
FP6 T BUS 8 H
AM 29Ø1 E9Ø
AM 29Ø1 E81
AM 29Ø1 E86
AM 29Ø1 E85
FP3 RAM 47 H
FP3 Q 47 H
FP1 RAM Ø H
FP9 ROTATE RL
8093 E58
FP9 1ORØ SEL
FP9 SHIFT R L
FP4 RAM 63H
FP1 F2A BIT H
FP4 C OUT 63 H
FP4 H 63 BIT H
R16 470
+5V
R23 470
FP1 F28 BIT H
FP9 C IN 47 H
74S182 E74
FP4 G 63 H
FP4 P 63 H

(BYTES 5 AND 6)

TITLE FLOATING POINT PROCESSOR (FP4)

SIZE	CODE	NUMBER	REV.
D	CS	M8267-Ø-1	C

SCALE — SHEET 4 OF 1Ø

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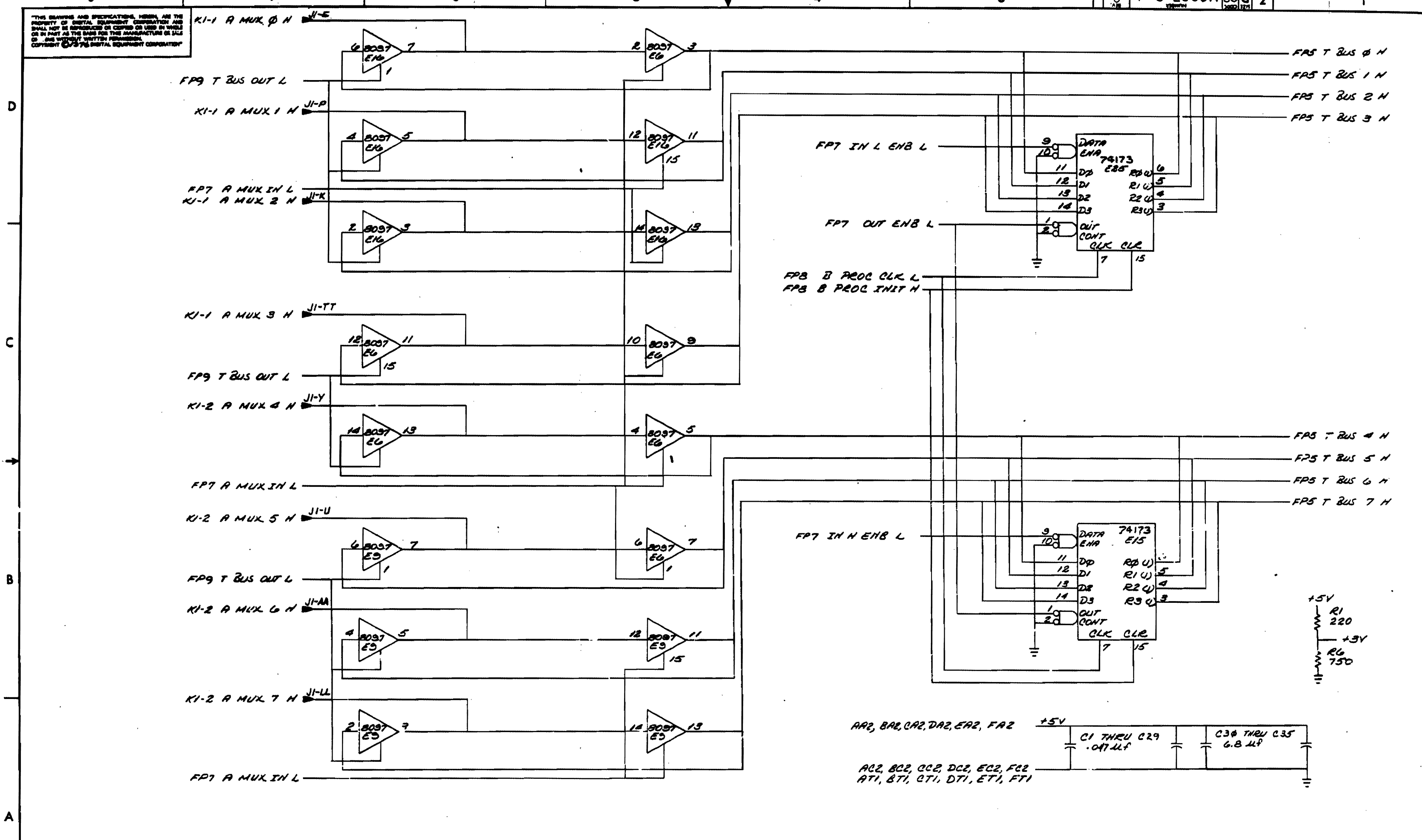
KI-1 A MUX Ø H
J1-E
FP9 T BUS OUT L
KI-1 A MUX 1 H
J1-P
FP7 A MUX IN L
KI-1 A MUX 2 H
J1-K
KI-1 A MUX 3 H
J1-TT
KI-2 A MUX 4 H
J1-Y
KI-2 A MUX 5 H
J1-U
KI-2 A MUX 6 H
J1-AA
KI-2 A MUX 7 H
J1-LL
8097
E16
E6
E3
FP5 T BUS Ø H
FP5 T BUS 1 H
FP5 T BUS 2 H
FP5 T BUS 3 H
FP5 T BUS 4 H
FP5 T BUS 5 H
FP5 T BUS 6 H
FP5 T BUS 7 H
FP7 IN L ENB L
FP7 OUT ENB L
FP8 B PROC CLK L
FP8 B PROC INIT H
FP7 IN H ENB L
74173
E25
E15
DATA ENA
OUT CONT
CLK
CLR
+5V
R1 220
+3V
R6 750
AA2, BA2, CA2, DA2, EA2, FA2
AC2, BC2, CC2, DC2, EC2, FC2
AT1, BT1, CT1, DT1, ET1, FT1
C1 THRU C29 .047 µf
C3Ø THRU C35 6.8 µf

(LOW BYTE BUFFER)

TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT PROCESSOR (FP5)	D	CS	M8267-Ø -1	C

SCALE — SHEET 5 OF 18

REVISIONS: CHK | CHANGE NO. | REV.

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K1-3 A MUX 8 N J1-H
FP9 T BUS OUT L
K1-3 A MUX 9 N J1-W
FP7 A MUX IN L
K1-3 A MUX 10 N J1-A
K1-3 A MUX 11 N J1-C
FP9 T BUS OUT L
K1-4 A MUX 12 N J1-NN
FP7 A MUX IN L
K1-4 A MUX 13 N J1-JJ
FP9 T BUS OUT L
K1-4 A MUX 14 N J1-CC
K1-4 A MUX 15 N J1-KK
FP7 A MUX IN L

8097 E7
8097 E5
8097 E8

FP7 IH H ENB L
FP7 OUT ENB L
FP8 8 PROC CLK L
FP8 8 PROC INIT H

74173 (DATA, CLR, D0–D3, OUT, CONT, CLK, CLR; R0(U)–R3(U))

FPG T BUS 8 N
FPG T BUS 9 N
FPG T BUS 10 N
FPG T BUS 11 N
FPG T BUS 12 N
FPG T BUS 13 N
FPG T BUS 14 N
FPG T BUS 15 N

J2 * — J3 *
K2-7 MPC Ø L
K2-7 MPC 1 L
K2-7 MPC 2 L
K2-7 MPC 3 L
K2-7 MPC 4 L
K2-7 MPC 5 L
K2-7 MPC 6 L
K2-7 MPC 7 L

* NOTE: J2-J5 ARE PHYSICALLY ONE CONNECTOR WITH 4 SECTIONS.

J4 * — J5 *
K2-7 MPC 8 L
K2-7 MPC 9 L
(FP11A ATTACHED L)
FP7 SERVICE BR PFAIL L
K2-7 LOAD IR L
K2-2 PFAIL BR PEND H
+5V

(HIGH BYTE BUFFER)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT PROCESSOR (FP8)	D	CS	M8267-Ø-1	C
SCALE —	SHEET 5 OF 10	DIST.		

DCS M8267-Ø-1 REV C

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FP8 B PROC CLK N → 74S74 E22 → FP7 FRS CLK L

FP1Ø MISC 1-N
FP1Ø MISC 2 N
FP1Ø MISC 3 N
FP1Ø MISC 4 N
→ 23S37A1 E17 → FP7 A MUX IN L, FP7 IN L ENB L, FP7 IN N ENB L, FP7 OUT ENB L, FP7 SERVICE BR PFAIL L

FP5 T BUS 5 N
FP5 T BUS 4 N
FP5 T BUS 3 N
FP5 T BUS 2 N
FP5 T BUS 1 N
FP5 T BUS Ø N
→ 74S174 EG5 → FP7 IR 5 N, FP7 IR 4 N, FP7 IR 3 N, FP7 IR 2 N, FP7 IR 1 N, FP7 IR Ø N

FP8 B PROC INIT L → 74S174 EG5 CLR; 74S174 EG7 CLR

FP6 T BUS 11 N
FP6 T BUS 1Ø N
FP6 T BUS 9 N
FP6 T BUS 8 N
FP5 T BUS 7 N
FP5 T BUS 6 N
→ 74S174 EG7 → FP7 IR 11 N, FP7 IR 1Ø N, FP7 IR 9 N, FP7 IR 8 H, FP7 IR 7 H, FP7 IR 6 H

K2-7 LOAD IR L
FP-8.7 PROC CLK L
→ 74S02 E24

FP9 BUT 4 N
FP9 BUT 3 N
FP9 BUT 2 N
FP9 BUT 1 N
FP9 BUT Ø N
→ 23S37A1 E21 → K2-7 MPC 8 L, K2-7 MPC 7 L, K2-7 MPC 6 L, K2-7 MPC 5 L

FP1 EN 8IT N
FP1 E2 8IT N
K2-2 PRBL BR REND H
FP4 N G3 8IT N
FP8 Z 8IT N
FP8 G/I 8-Ø1 N
FP9 FAST COUT H
FP5 T BUS 6 N
FP5 T BUS 5 N
FP6 T BUS 11 N
FP6 T BUS 1Ø N
FP6 T BUS 9 N
FP6 T BUS 8 N
FP5 T BUS 1 N
FP5 T BUS Ø N
FP6 T BUS 14 N
→ 74S03 E32, E23, E25, E11, E20, E37

23S37A1 E19 → K2-7 MPC 4 L, K2-7 MPC 3 L, K2-7 MPC 2 L

23S15F1 EG4 → K2-7 MPC 1 L

FP8 FL (1) H
FP8 FD (1) H
→ 74S10 E30

23S15F1 EG6 → K2-7 MPC Ø L

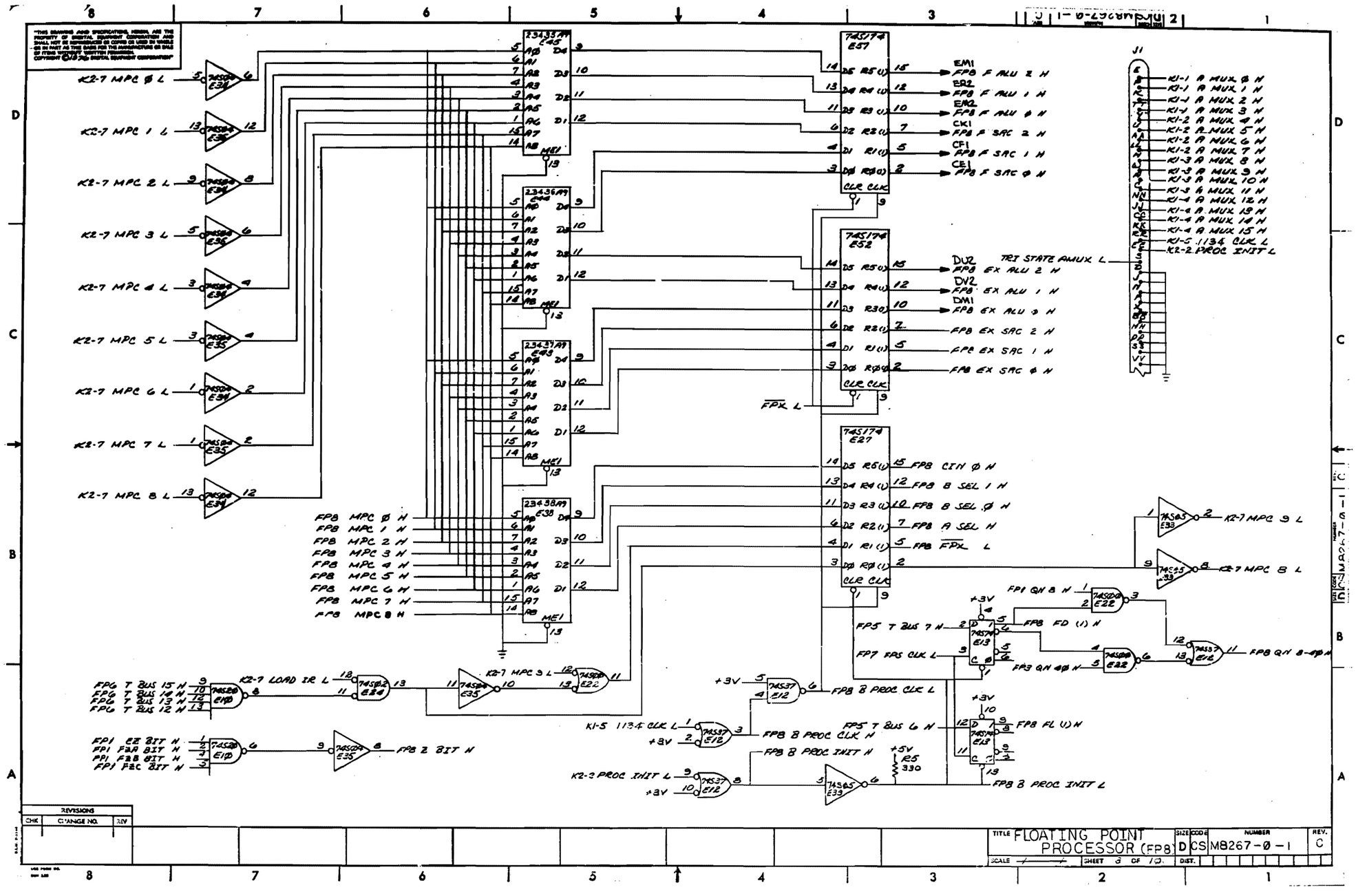
FP9 BUT 5 N

(IR REGISTER & DECODE, BRANCH LOGIC)

REVISIONS		
CHK	CHANGE NO.	REV.

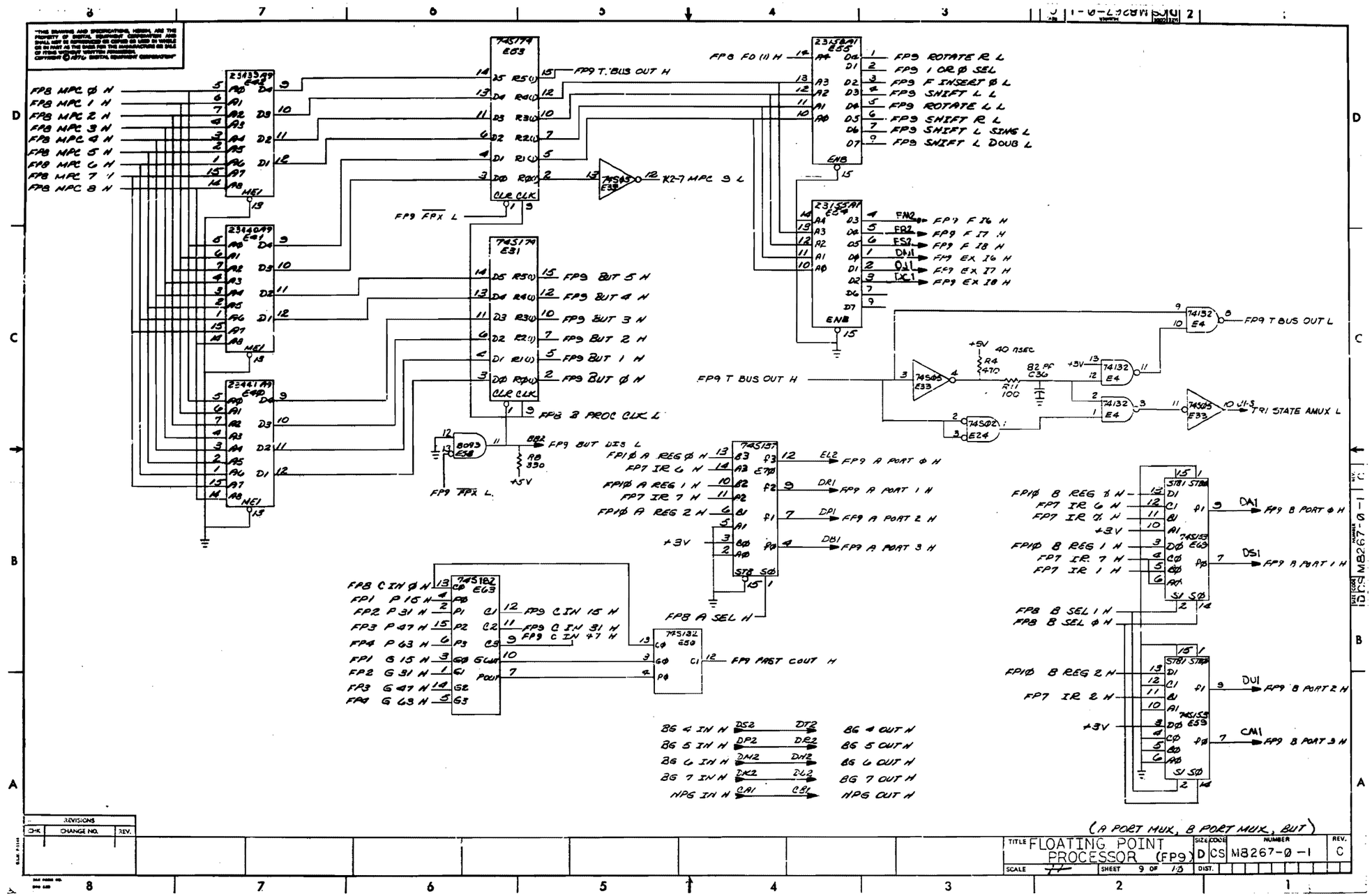
TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT PROCESSOR (FP7)	D	CS	M8267-Ø-1	C
SCALE	SHEET 7 OF 1Ø	DIST.		

DCS M8267-Ø-1 C



REVISIONS		
CHK	CHANGE NO.	REV

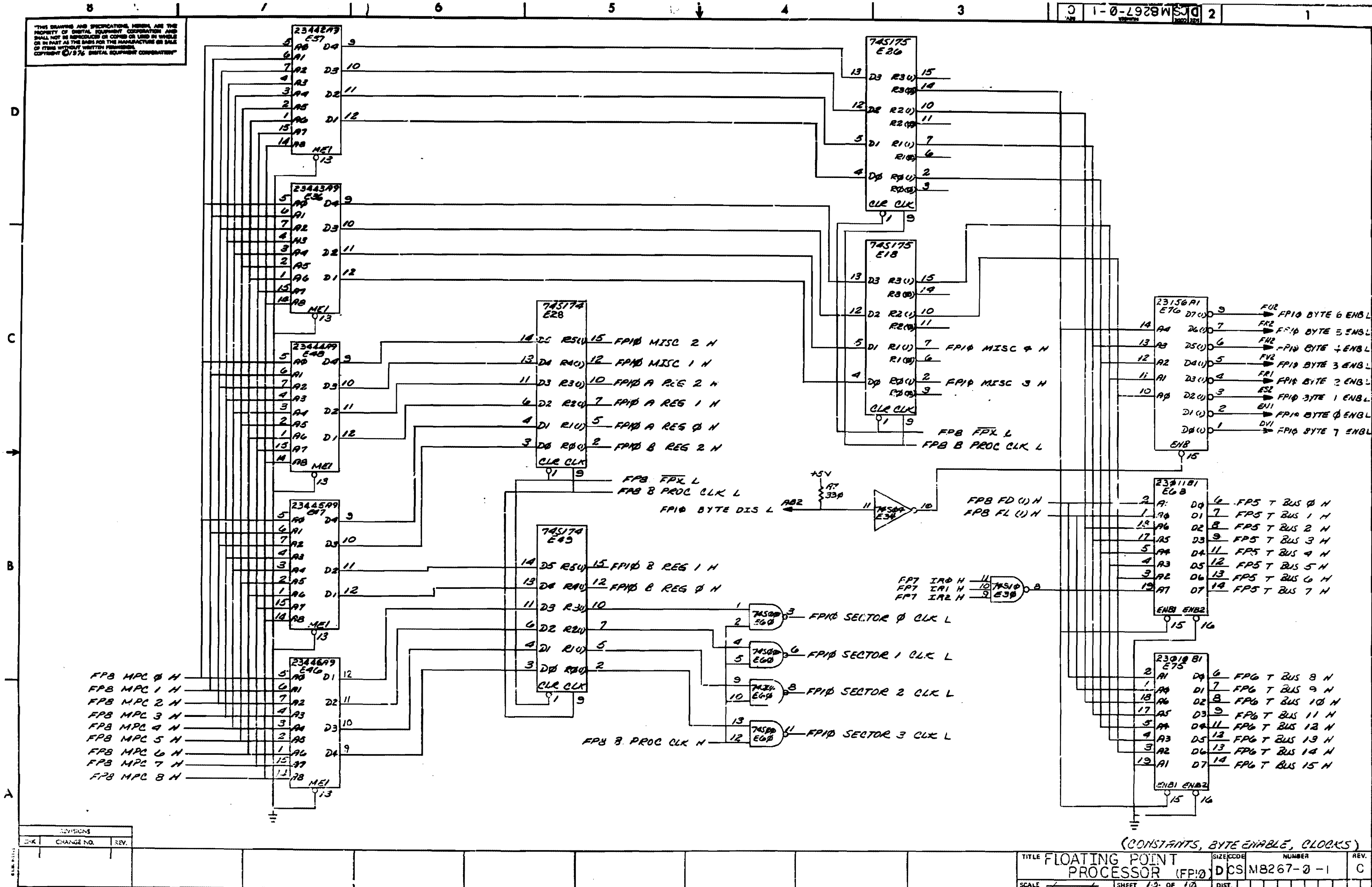
TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT PROCESSOR (FPB)	D	CS	M8267-Ø-1	C
SCALE	SHEET 3 OF 10	DIST.		



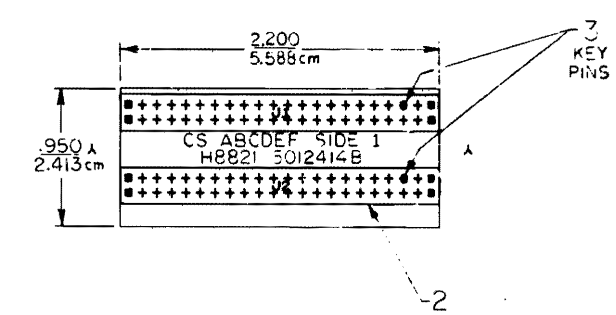
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOATING POINT PROCESSOR (FP9)	D	CS	M8267-Ø-1	C

SCALE — SHEET 9 OF 13 — DIST.



FLOATING POINT PROCESSOR (FP10)
(CONSTANTS, BYTE ENABLE, CLOCKS)
D CS M8267-0-1 C
SHEET 13 OF 10
23442A9 E57
23443A9 E56
23444A9 E48
23445A9 E47
23446A9 E46
74S175 E26
74S175 E18
74S174 E28
74S174 E45
23156A1 E76
23011B1 E68
23012B1 E75
FP8 MPC 0 H
FP8 MPC 1 H
FP8 MPC 2 H
FP8 MPC 3 H
FP8 MPC 4 H
FP8 MPC 5 H
FP8 MPC 6 H
FP8 MPC 7 H
FP8 MPC 8 H
FP10 MISC 2 H
FP10 MISC 1 H
FP10 A REG 2 H
FP10 A REG 1 H
FP10 A REG 0 H
FP10 B REG 2 H
FP10 MISC 0 H
FP10 MISC 3 H
FP8 FPX L
FP8 B PROC CLK L
FP10 BYTE DIS L
FP10 B REG 1 H
FP10 B REG 0 H
FP10 SECTOR 0 CLK L
FP10 SECTOR 1 CLK L
FP10 SECTOR 2 CLK L
FP10 SECTOR 3 CLK L
FP8 B PROC CLK H
FP7 IR0 H
FP7 IR1 H
FP7 IR2 H
FP8 FD (1) H
FP8 FL (1) H
FP10 BYTE 6 ENBL
FP10 BYTE 5 ENBL
FP10 BYTE 4 ENBL
FP10 BYTE 3 ENBL
FP10 BYTE 2 ENBL
FP10 BYTE 1 ENBL
FP10 BYTE 0 ENBL
FP10 BYTE 7 ENBL
FP5 T BUS 0 H
FP5 T BUS 1 H
FP5 T BUS 2 H
FP5 T BUS 3 H
FP5 T BUS 4 H
FP5 T BUS 5 H
FP5 T BUS 6 H
FP5 T BUS 7 H
FP6 T BUS 8 H
FP6 T BUS 9 H
FP6 T BUS 10 H
FP6 T BUS 11 H
FP6 T BUS 12 H
FP6 T BUS 13 H
FP6 T BUS 14 H
FP6 T BUS 15 H



NOTES:

SIGNATURES	DATE
DRN.	
CHK'D. F [illegible]MAN	
ENG. R Barry	3DEC76
PROJ.ENG. R Barry	3DEC76
PROD. [illegible]	[illegible]
SCALE 2/1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. [illegible]-21-0	

digital

TITLE

SIZE	CODE	NUMBER	REV
D			A

ETCH REV. B

P.C. DESIGN DATA BASE REV. B

1 MS#

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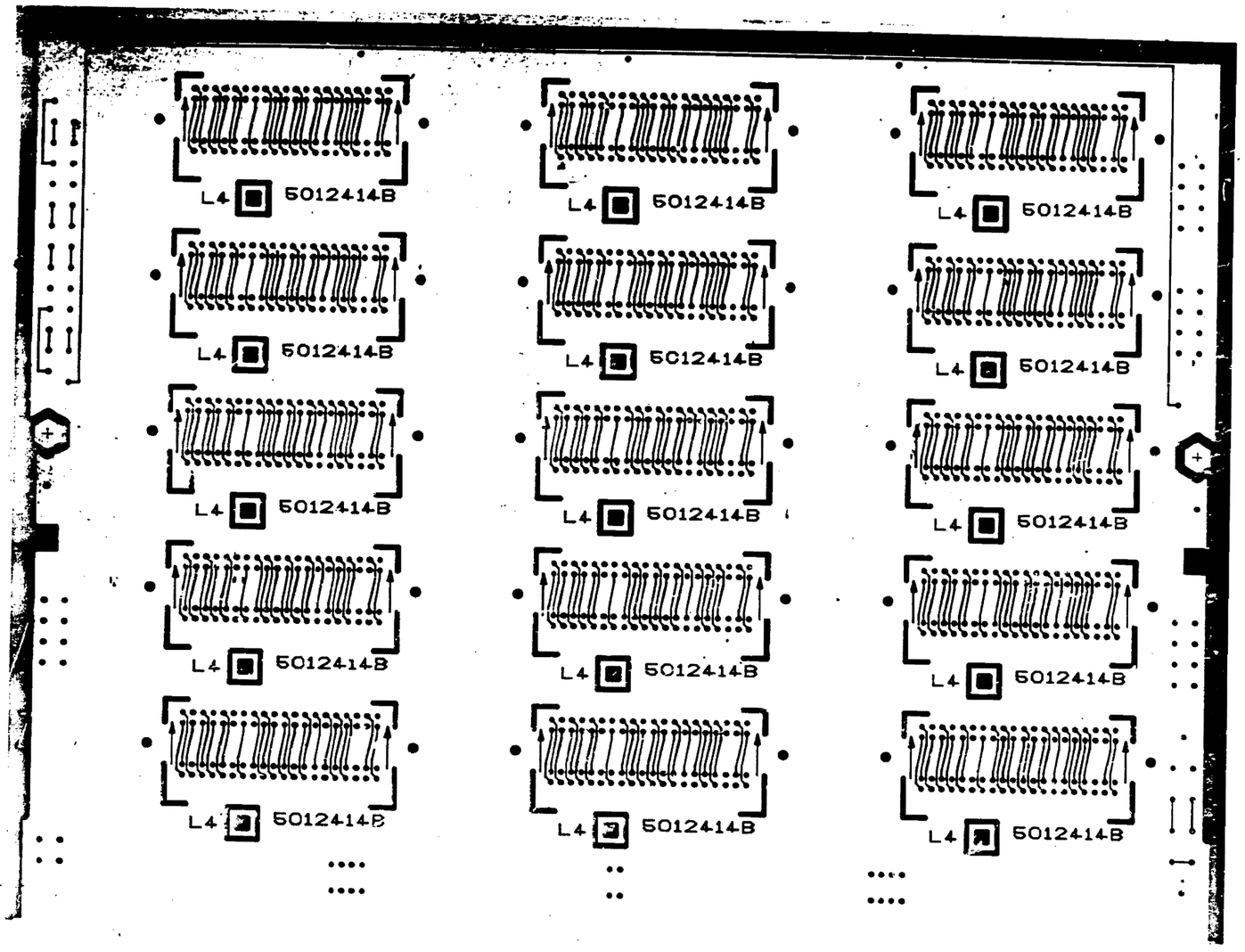
CS ABCDEF SIDE 1
H8821 5012414B
L1

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
40 PIN INTERCONNECT BOARD	D	UA	H8821-Ø-Ø	A
SCALE 2/1 SHEET 2 OF 3	DIST.			

H8821-Ø-Ø A DUA



REVISIONS		
ZONE	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
40 PIN INTERCONNECT BOARD	D	UA	H8821-Ø-Ø	A
SCALE 2/1 SHEET 3 OF 3	DIST.			

DIGITAL EQUIPMENT CORPORATION

PARTS LIST

MADE BY DATE	CHECKED DATE	SECTION
ENG R Carey 3DEC76 DATE	PROD DATE	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION H8821-0-0	REF DESIGNATION
1	D-MD-5012414-0-0	5012414	ETCH BOARD	1	
2		12-13508-01	CONNECTOR 44 PIN REWORKED	2	J1-J2
3		12-13508-03	KEY PINS	2	

NOTES:

E.C.O. NO.

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TITLE

ASSY NO.

SIZE B | SCALE NONE | NUMBER | REV A

SHEET OF

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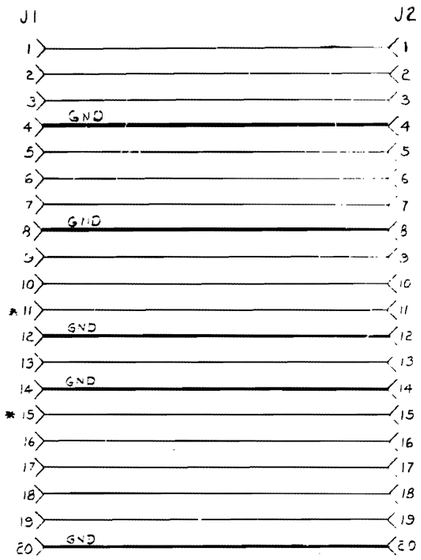

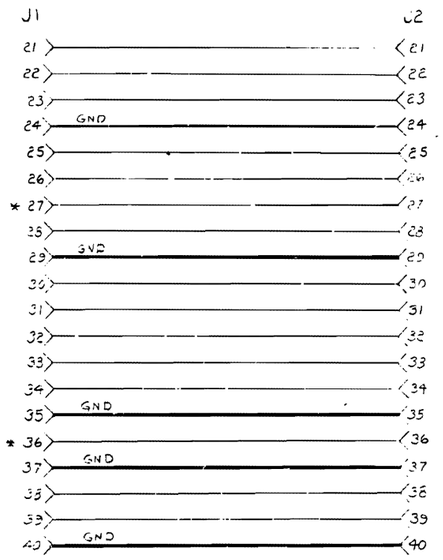

NOTES:
1. * DESIGNATES CONDUCTORS TO BE LOCATED ON LAYER 2
2. GND WILL BE ON LAYER 3 & REMAINING ETCH ON LAYER 4
3. LAYER 1 (SIDE 1) WILL BE FREE OF ALL CIRCUITRY

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx = .005, .xx = .02, .x = .1 | ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √

DRN. E MULLIGAN	DATE 5/5/76	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D. L. Sanderson	DATE 8/19/76	
ENG. R Barry	DATE 3 DEC 76	
PROJ. ENG. R Barry	DATE 3 DEC 76	TITLE: 40 PIN INTERCONNECT BOARD
PROD. R Barry	DATE 6 DEC 76	

MATERIAL
FINISH
NEXT HIGHER ASSY.
SCALE NF
SHEET 1 OF 1

SIZE	CODE	NUMBER	REV.
C	CS	H8821-Ø-1	A

DIST.

REVISIONS	REV
CHANGE NO.	
CHK	

SIZE C CODE CS NUMBER H8821-Ø-1 REV A

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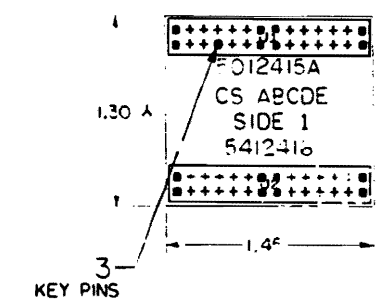

NOTES:

REV	CHG NO	CHANCE

ETCH REV. A
P.C. DESIGN DATA BASE REV. A

SIGNATURES	DATE
DRN.	
CHK'D. F. SCHMAN	
ENG. R Barry	
PROJ.ENG. R Barry	
PROD.	

digital

TITLE MODULE INTERCONNECT BOARD

SCALE 2/1
SHT. 1 OF 3

SIZE	CODE	NUMBER	REV
D		5412...	

NEXT HIGHER ASSY. B-CD-5412416-Ø

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D

C

B

A

5012415A
CS ABCDE
SIDE 1
5412416

L1

REVISIONS		
ECO#	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
MODULE INTERCONNECT BOARD	D	UA	5412416-Ø-Ø	*

SCALE 2/1 SHEET 2 OF 3 DIST.

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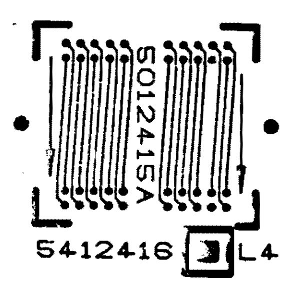

REVISIONS		
CHK	CHANGE NO. *	REV.

TITLE	SIZE	CODE	NUMBER	REV.
MODULE INTERCONNECT BOARD	D	UA	5412416-Ø-Ø	*
SCALE 2/1	SHEET 3 OF 3			

DIGITAL EQUIPMENT CORPORATION

PARTS LIST

MADE BY F. MULLIGAN	CHECKED F SEIDMAN	SECTION
DATE 8 AUG 76	DATE 9 AUG 76	
ENG R.Barry 3 DEC 76	PROD R B King	ISSUED SECTION
DATE	DATE 6 Dec 76	

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY/VARIATION 5412416-0-0	NOTES: / REF DESIGNATION
1	D-MD-5Ø12415-Ø-Ø	5012415	ETCH BOARD	1	
2		12-13508-00	CONNECTOR. 28 PIN REWORKED	2	J!-J2
3		12-13508-03	KEY PINS	1	

E.C.O. NO.

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.
MODULE INTERCONNECT BOARD	D-UA-5412416-Ø Ø	B	PL	5412416-Ø-Ø	*
	SHEET 1 OF 1	INSERTION PARTS LIST DATA BASE REV -//			

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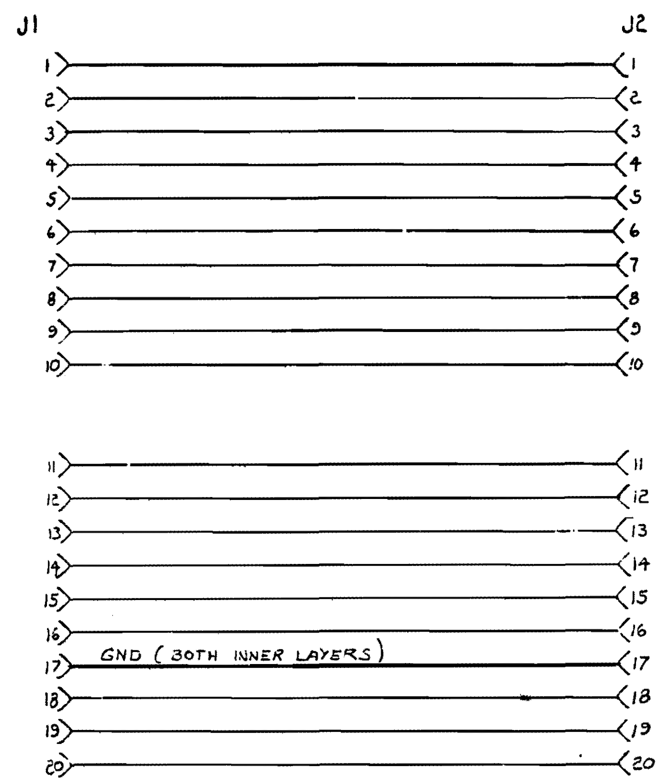

NOTE:
1 — ALL ETCH ON SIDE 2 ONLY EXCEPT GND PLANES.

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST			

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS: .xxx ±.005, .xx ±.02, .x ±.1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

DRN. F. MULLIGAN — DATE 3/2/76

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: MODULE INTERCONNECT BOARD

SIZE C — CODE CS — NUMBER 5412416-0-0 — REV. *

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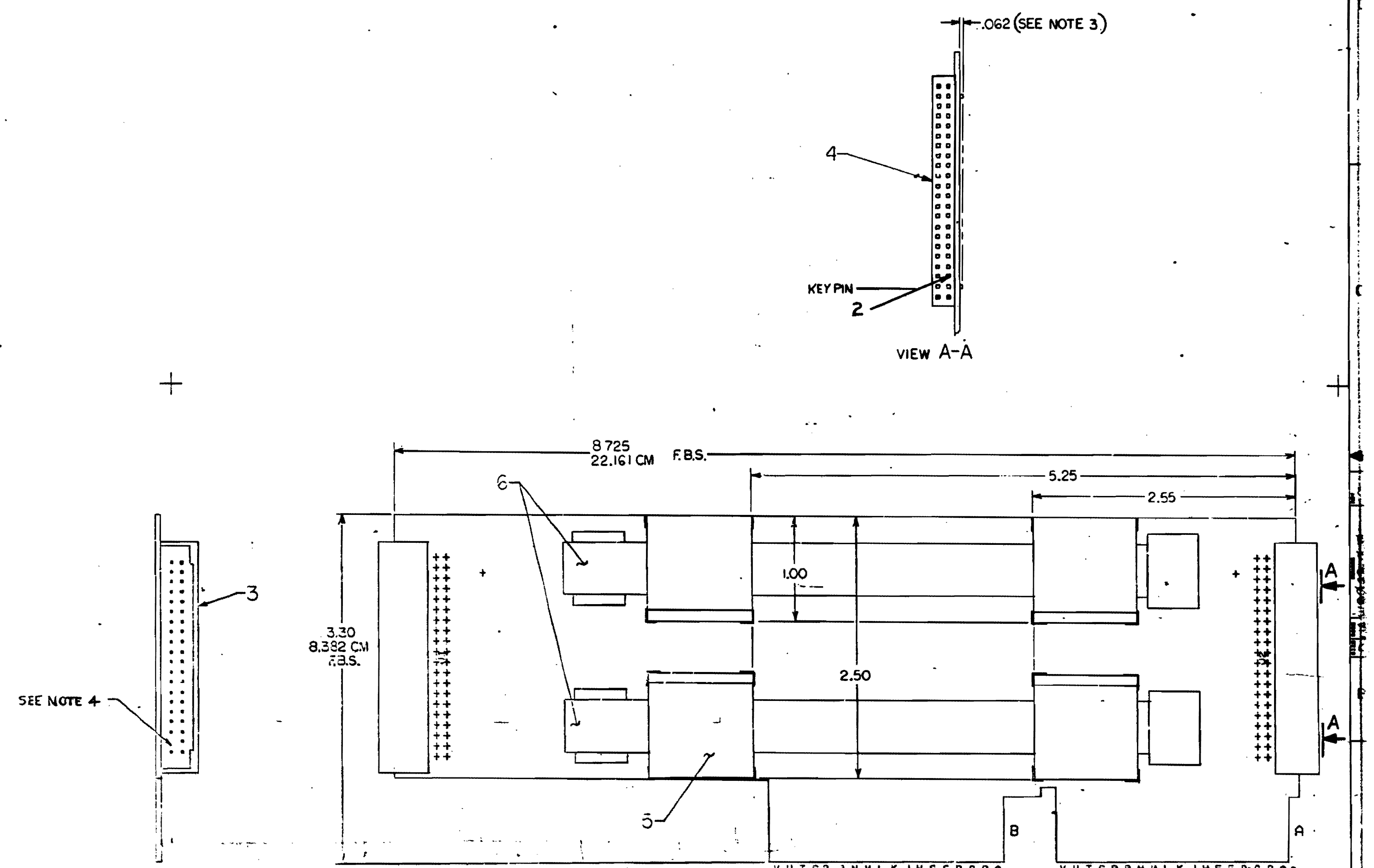
D UA W9642-0-0 C

COMPONENT SIDE VIEW



NOTES:
1. THIS MODULE CAN BE USED AS A JUMPER CONTINUITY CARD.
2. [illegible] USED FOR MAIN- [illegible]

SIGNATURES	DATE
DRN. [illegible]	[illegible]
CHK'D. [illegible] PUZZO	[illegible]
ENG. [illegible]	[illegible]
PROJ. ENG. [illegible]	[illegible]
PROD. [illegible]	[illegible]
SCALE [illegible]	

digital

TITLE
EXTENDER BOARD ASSEMBLY

SIZE CODE | NUMBER | REV
[illegible] W9642-0-0 | C

1 MS#

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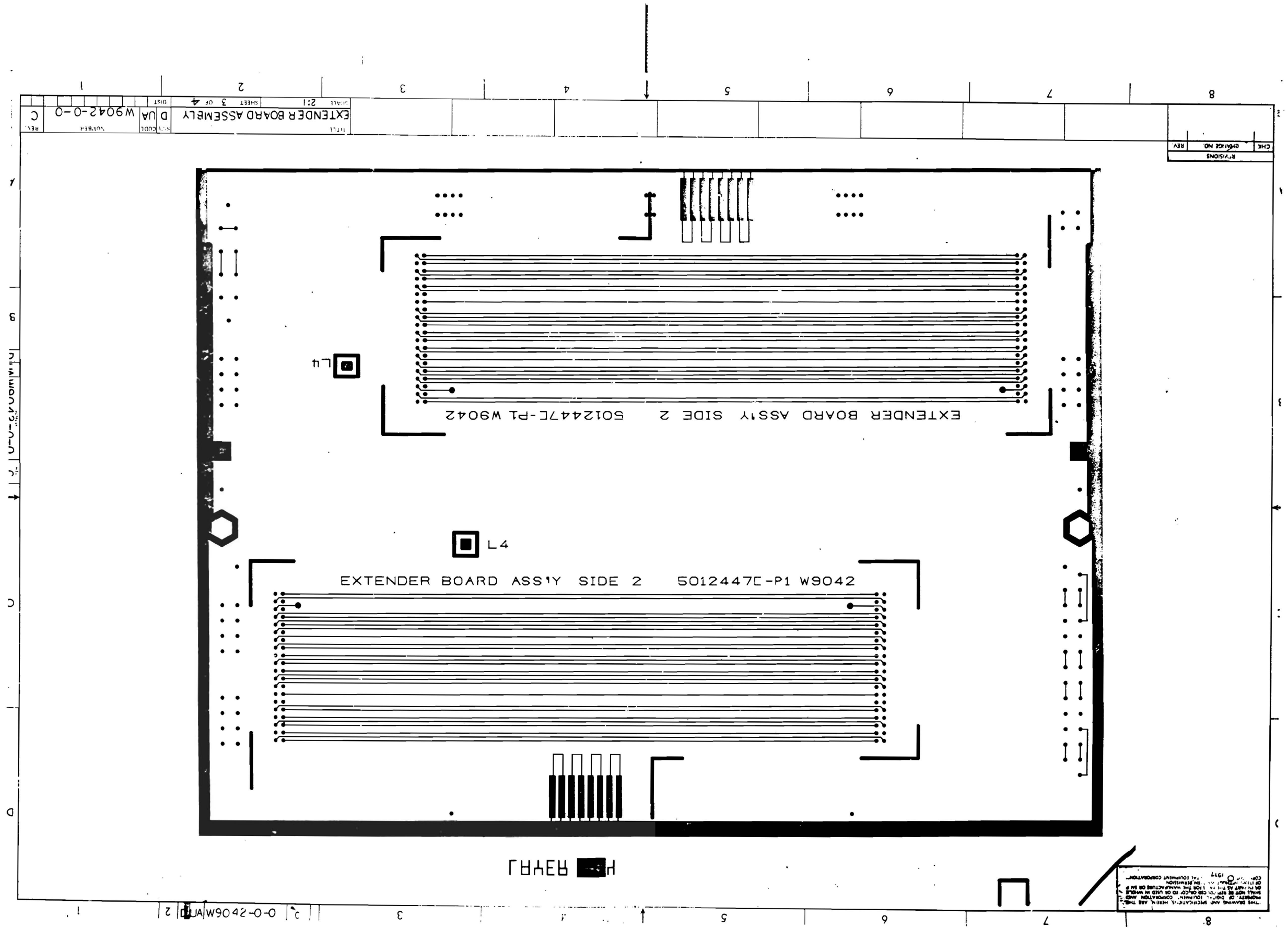
REVISIONS		
LTR	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
EXTENDER BOARD ASSEMBLY	D	UA	W9042-0-0	C
SCALE 2:1 SHEET 2 OF 4	DIST			


EXTENDER BOARD ASSY SIDE 2 5012447C-P1 W9042
L4
EXTENDER BOARD ASSY SIDE 2 5012447C-P1 W9042
L4

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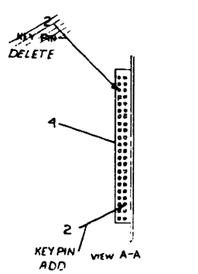
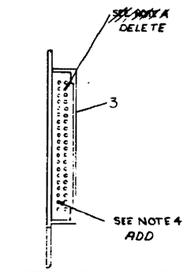
REWORK INSTRUCTIONS

ECO #2



MOVE KEY PIN AS SHOWN



NOTE 4: REMOVE THIS PIN.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
EXTENDER BOARD ASSY.	D	UA	W9Ø42-Ø-Ø	C
SCALE — SHEET 4 OF 4	DIST.			

DIGITAL EQUIPMENT CORPORATION

PARTS LIST

MADE BY F. MULLIGAN	CHECKED F. MALANSON	SECTION
DATE 12 AUG. 76	DATE 15 SEPT. 76	
ENG R. Barry	PROD RBKing	ISSUED SECTION
DATE 1 DEC 76	DATE 1 Dec 76	

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QUANTITY / VARIATION W9042-0-0	NOTES: / REF DESIGNATION
1	D-MD-5012447-0-0	5012447	ETCH BOARD	1	
2		1213508-03	KEY FOR SOCKET CONN., 40 PIN	1	
3		1213506-01	CONNECTOR, AMP, 40POS 39 PIN	1	J2
4		1213947-00	CONNECTOR, WINCHESTER, 44POS	1	J1
5		9009636-00	3M CABLE CLAMP	4	
6		7011411-1D	10POS FLAT CABLE	2	

E.C.O. NO. 00001

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TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV
EXTENDER BOARD ASSY	D-UA-W9042-0-0	B	PL	W9042-0-0	
	SHEET 1 OF 1	INSERTION PARTS LIST DATA BASE REV A			

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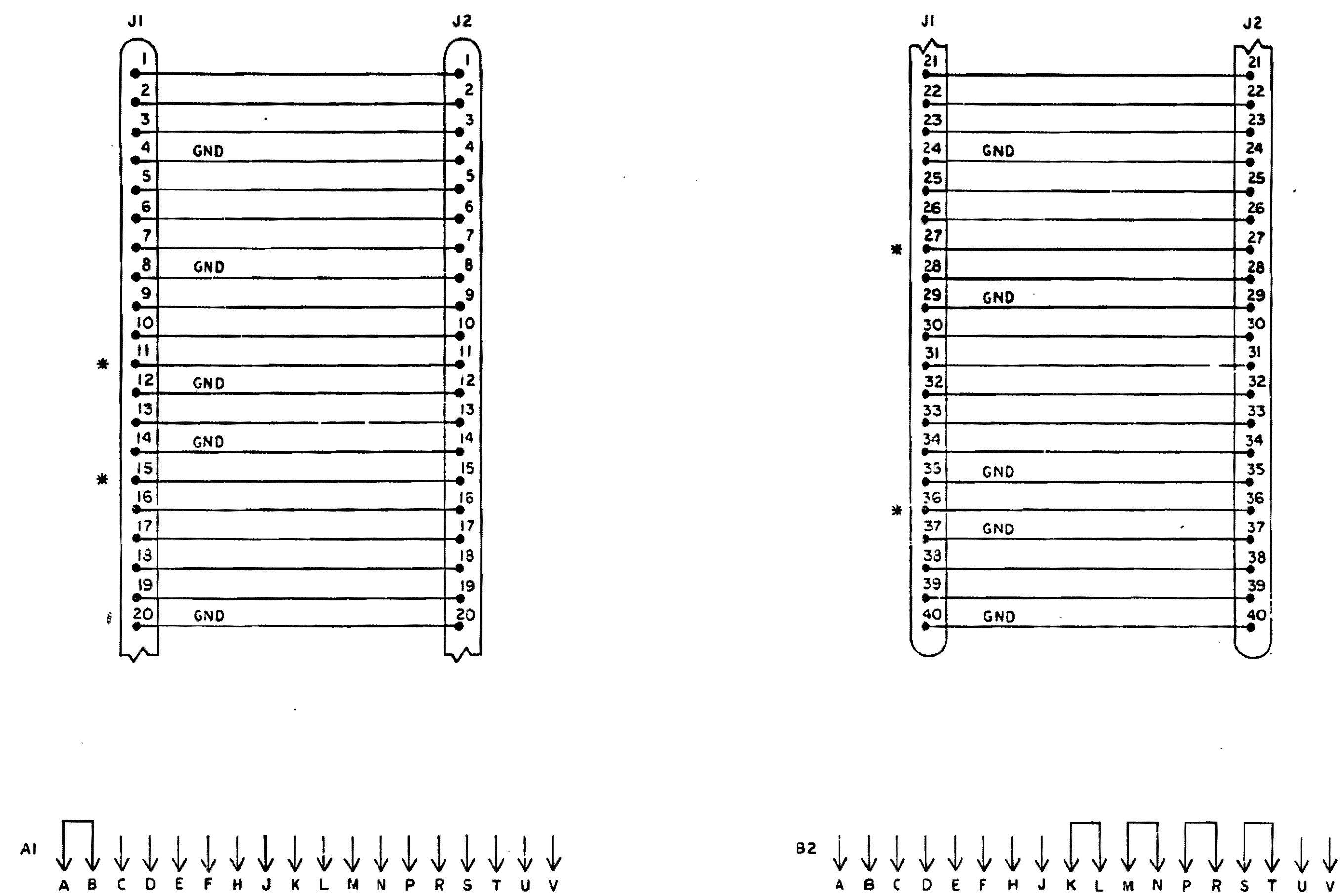

NOTE: 1. (*) DESIGNATES ETCH CONNECTION ON LAYER 2

EXTENDER BOARD ASSEMBLY

D CS W9042-0-1 REV. C

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY D. HEALY	CHECKED D. HEALY	SECTION 1
DATE 10 NOV. 76	DATE 10 NOV. 76	
ENG [signature] DATE 12-20-76	PROD [signature] DATE 12-21-76	ISSUED SECT. 1.

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION FP11-A
	MPØØ189	FP11-A FIELD MAINTENANCE PRINT SET	1
	EK-FP11-A-TM-PRE	FP11-A FLOATING POINT MANUAL	1
	ZJ232-RB	SOFTWARE LIBRARY KIT (PAPER TAPE)	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
FP11-A SHIPPING LIST	NONE	A	PL	FP11-A-3		
	SHEET 1 OF 1	DIST.				

DEC FORM DEC 16-(325)-1031-N870
DRA 1'0

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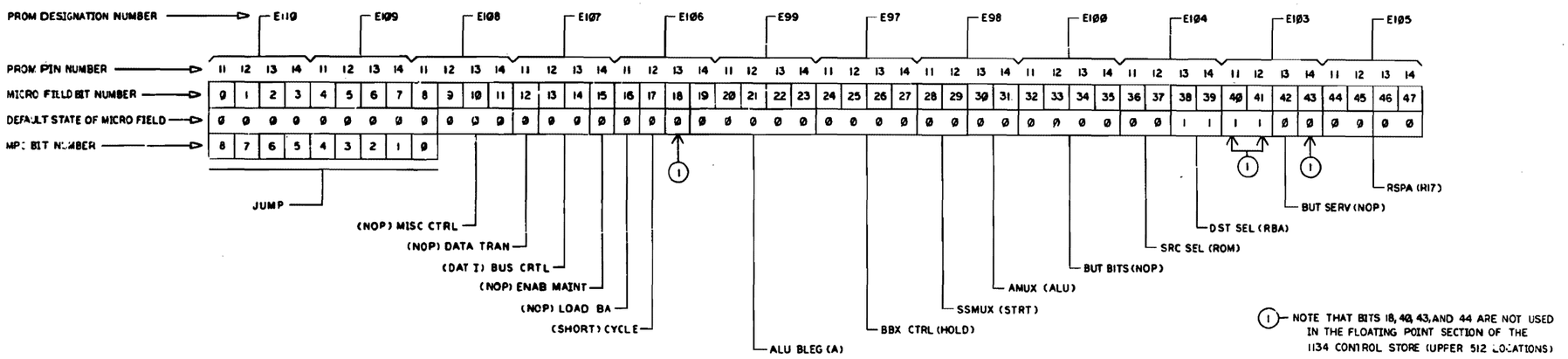
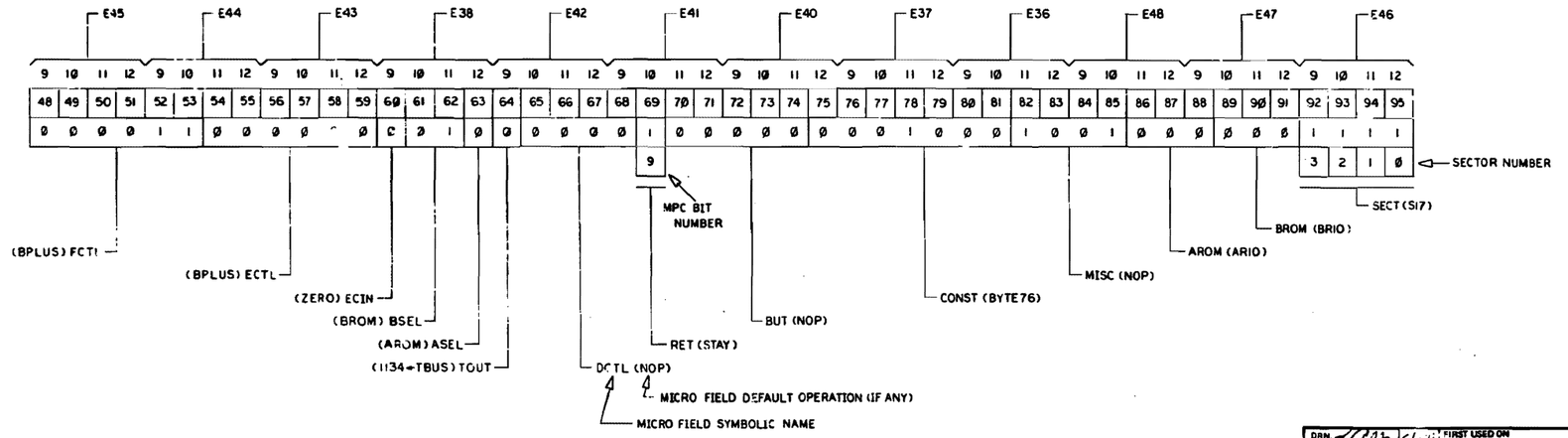
FPII-A CONTROL WORD (WITHIN M8266)



FPII-A CONTROL WORD (WITHIN M8267)



DRN.		FIRST USED ON	digital
CHK'D		FPII-A	
ENG.		TITLE	FPII-A FLOW DIAGRAMS
PROJ. ENG.			
PROD.			
NEXT HIGHER ASSY.			
3-00-FPII-A		SIZE D	CODE FD
SCALE		NUMBER	FPII-A-2
SHEET 1 OF 40		DIST.	REV.

REVISIONS: REV. / CHK / CHANGE NO.

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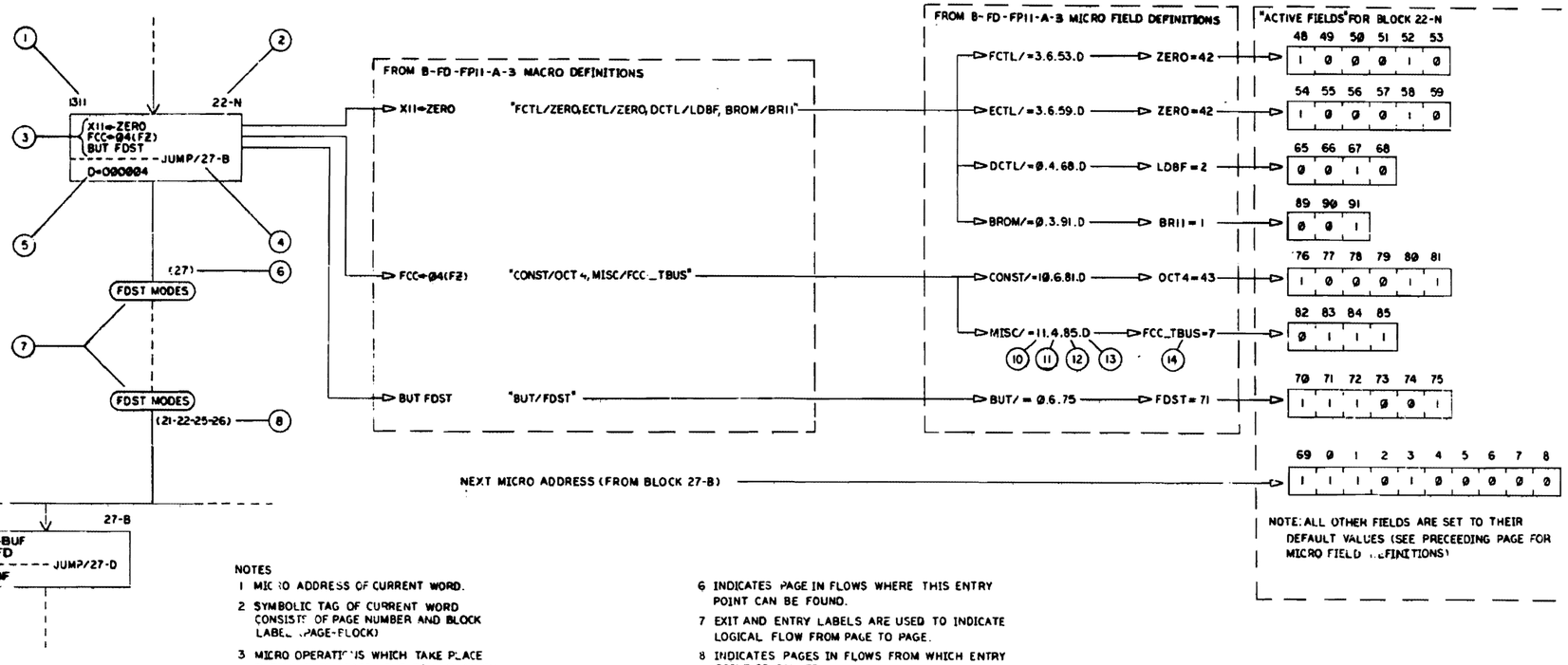
KEY TO MICRO FLOW SYMBOLOGY



NOTES

1 MICRO ADDRESS OF CURRENT WORD.

2 SYMBOLIC TAG OF CURRENT WORD CONSISTS OF PAGE NUMBER AND BLOCK LABEL (PAGE-BLOCK)

3 MICRO OPERATIONS WHICH TAKE PLACE DURING THIS STATE. THE FIELDS WHICH ARE INVOLVED IN CARRYING OUT THESE OPERATIONS CAN BE DETERMINED USING:
FPII-A MACRO DEFINITIONS
FPII-A MICRO FIELD DEFINITIONS

4 27-B IS THE SYMBOLIC TAG OF THE NEXT MICRO WORD (TARGET) ASSUMING NO BRANCHING (DESTINATION MODE Ø) THIS CAN BE USED TO DETERMINE THE NEXT ADDRESS FIELD OF THE CURRENT MICRO WORD.

5 "D" STANDS FOR DISPLAY. IN THIS CASE, 000004 WILL APPEAR ON THE CONSOLE DISPLAY IF OPERATING IN MAINTENANCE MODE.

6 INDICATES PAGE IN FLOWS WHERE THIS ENTRY POINT CAN BE FOUND.

7 EXIT AND ENTRY LABELS ARE USED TO INDICATE LOGICAL FLOW FROM PAGE TO PAGE.

8 INDICATES PAGES IN FLOWS FROM WHICH ENTRY POINT IS CALLED.

9 THIS ADDRESS IS THE TARGET OF THE JUMP FIELD OF BLOCK 22-N

10 DEFAULT VALUE OF THIS FIELD

11 NUMBER OF BITS IN THIS FIELD

12 LOCATION OF RIGHT MOST BIT OF THIS FIELD WITHIN MICRO WORD.

13 INDICATES THAT THE DEFAULT IS TAKEN IF NOTHING ELSE IS SPECIFIED

14 OCTAL VALUE OF MICRO FIELD LITERAL

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS	D	FD	FPII-A-2	
SCALE →	SHEET 2 OF 40	DIST.		

FPII-A-2 D FD

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FPII-A TYPICAL REGISTER USAGE

17								FPS								
16												FCCR				
15												FEC				
14											ZERO		EFSRC			
13											ZERO		EAC			
12							FSRC					S	E			
11							AC					S	E			
10	E						FSRC (BECOMES SIGN)					S	E			
7																
6																
5	E						AC5					S	E			
4	E						AC4					S	E			
3	E						AC3					S	E			
2	E						AC2					S	E			
1	E						AC1					S	E			
0	E						AC0					S	E			

SECTOR3	SECTOR 2		SECTOR 1		SECTOR 0		SECTOR 3
BYTE 6	BYTE 5	BYTE 4	BYTE 3	BYTE 2	BYTE 1	BYTE 0	BYTE 7
F-REG							E-REG
X-REG							

FPII-A TS BUS ASSIGNMENT

TS0		Y8
TS1		Y9
TS5	FT	Y61
TS6		Y62
TS8	FIC	
TS9	FIV	
TS10	[illegible]	
TS11	FII	
TS14	FID	

FPII-A MPC BUTOFF BITS

MPC	1134	FPX TS BUT	FPX CONDITIONS	FPX BUT OP1	FPX BUT OP2
0	IR09	—	—	OP10	OP20
1	ZBIT	TS0	TS14	OP11	OP21
2	C05	TS1	XOUT	OP12	OP22
3	SP15	TS8	QB-Q [illegible]	OP13	OP23
4	BX00	TS9	XZBT	—	—
5	BX01	TS10	XNBT	—	—
6	NBIT	TS11	BUSRQ	—	—
7	COUT	TS5	EZBT	—	—
8		TS6	ENBT	—	—

FLOATING POINT STATUS REGISTER

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
FER	FID	X	X	FIUV	FIU	FIV	FIC	FD	FL	FT	X	FN	FZ	FV	FC

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS	D	FD	FPII-A-2	
SCALE	SHEET 3 OF 40	DIST.		

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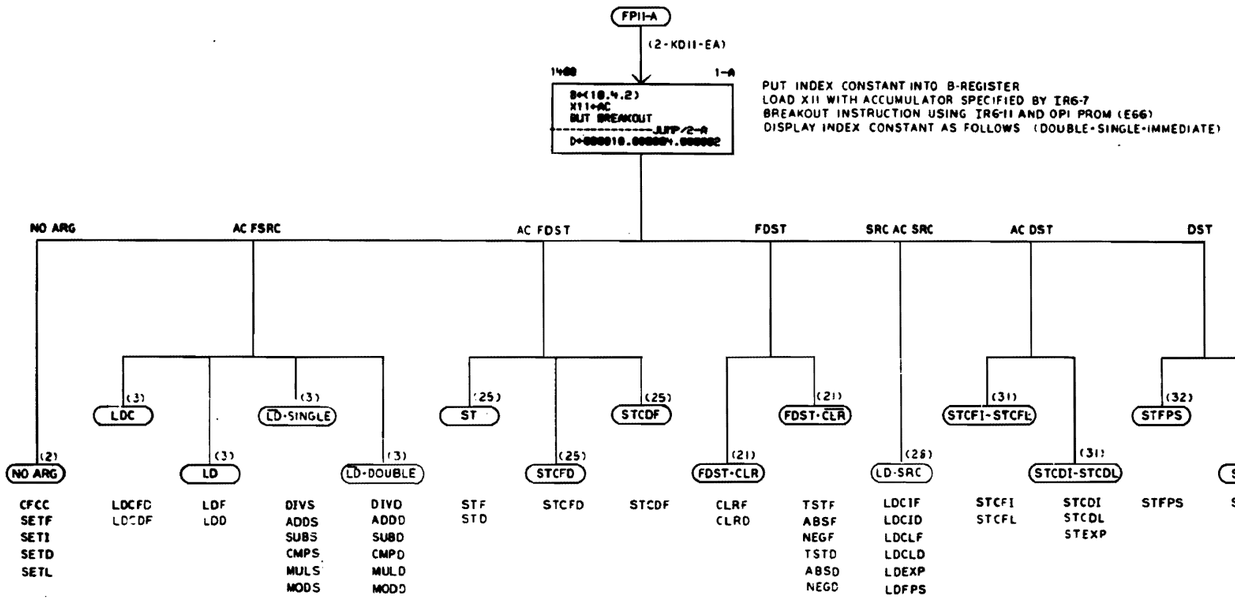

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (1)	D	FD	FPII-A-2	
SCALE ← → SHEET 4 OF 40	DIST.			

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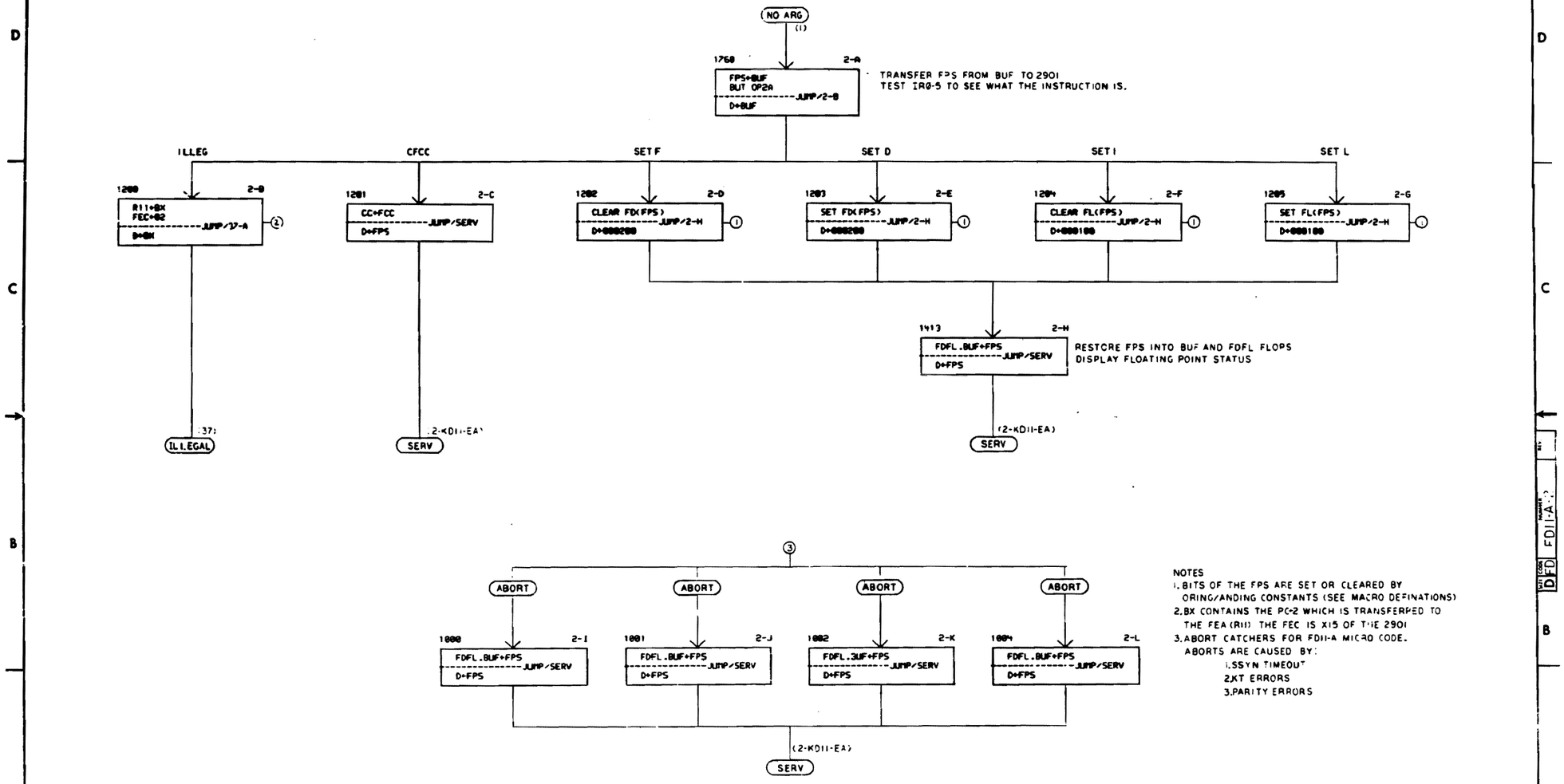

NOTES
1. BITS OF THE FPS ARE SET OR CLEARED BY ORING/ANDING CONSTANTS (SEE MACRO DEFINATIONS)
2. BX CONTAINS THE PC+2 WHICH IS TRANSFERRED TO THE FEA(R11) THE FEC IS X15 OF THE 2901
3. ABORT CATCHERS FOR FDII-A MICRO CODE.
   ABORTS ARE CAUSED BY:
   1. SSYN TIMEOUT
   2. XT ERRORS
   3. PARITY ERRORS

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (2)	SIZE D	CODE FD
SCALE	SHEET OF 40	DIST.	NUMBER FPII-A-2

REV.

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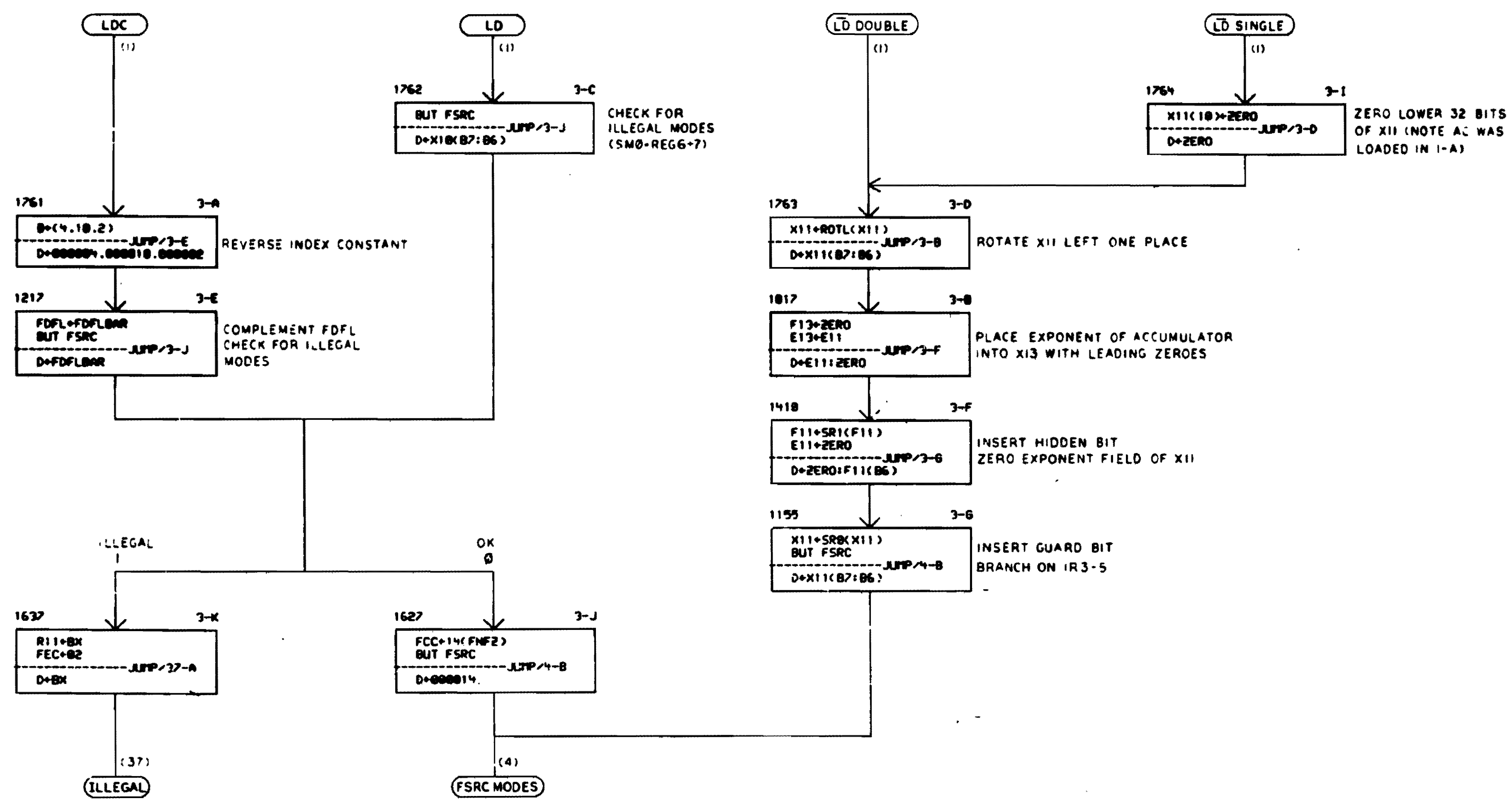
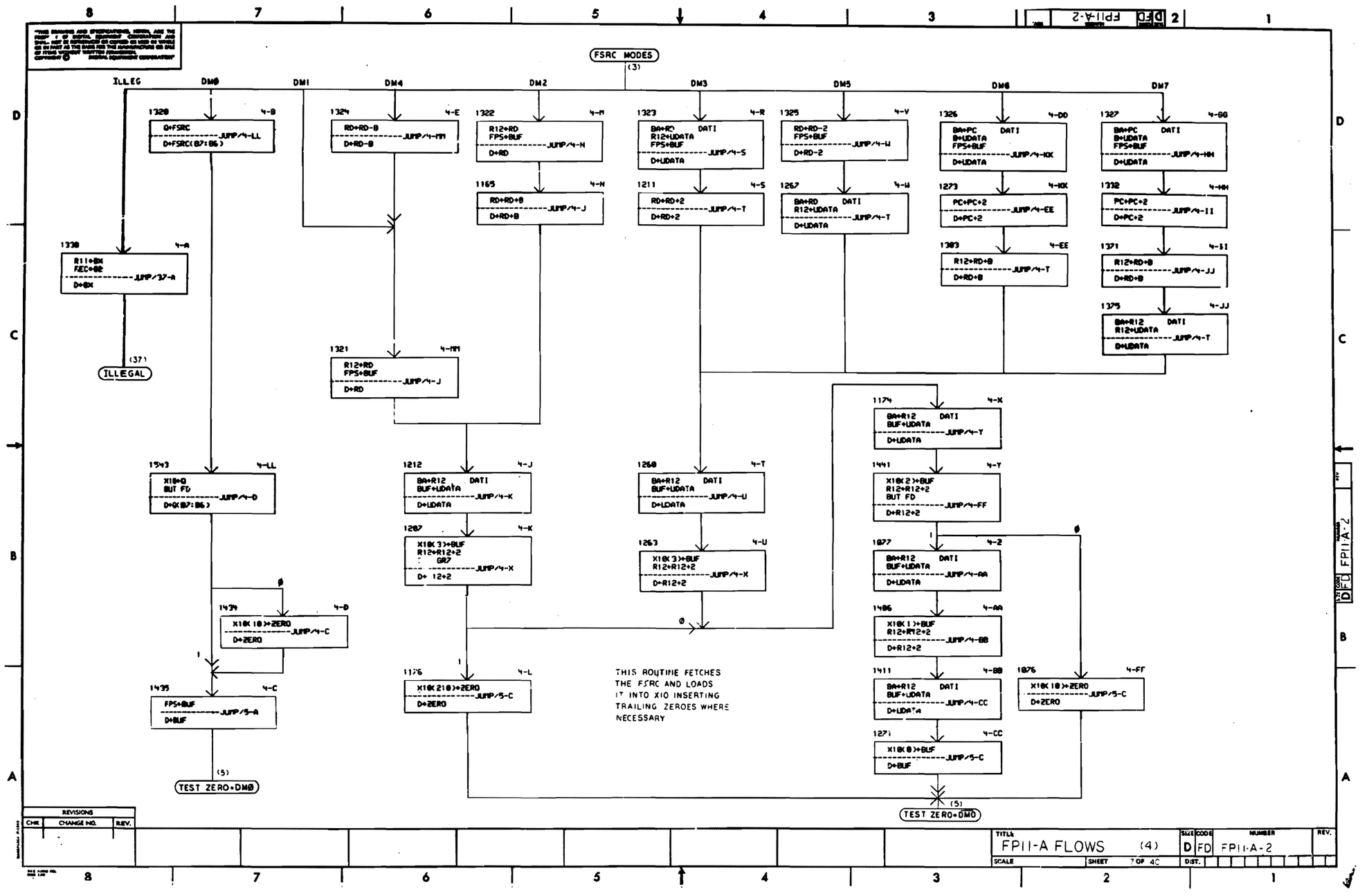

LDC
(1)
1761 3-A
B←(4.10.2)
JUMP/3-E
D←000004.000010.000002
REVERSE INDEX CONSTANT
1217 3-E
FDFL←FDFLBAR
BUT FSRC
JUMP/3-J
D←FDFLBAR
COMPLEMENT FDFL
CHECK FOR ILLEGAL
MODES
LD
(1)
1762 3-C
BUT FSRC
JUMP/3-J
D←X10(B7:B6)
CHECK FOR
ILLEGAL MODES
(SMØ-REG6+7)
ILLEGAL
1
OK
Ø
1637 3-K
R11←BX
FEC←02
JUMP/37-A
D←BX
(37)
ILLEGAL
1627 3-J
FCC←14(FNF2)
BUT FSRC
JUMP/4-B
D←000014
(4)
FSRC MODES
LD DOUBLE
(1)
LD SINGLE
(1)
1764 3-I
X11(10)←ZERO
JUMP/3-D
D←ZERO
ZERO LOWER 32 BITS
OF X11 (NOTE AC WAS
LOADED IN 1-A)
1763 3-D
X11←ROTL(X11)
JUMP/3-B
D←X11(B7:B6)
ROTATE X11 LEFT ONE PLACE
1017 3-B
F13←ZERO
E13←E11
JUMP/3-F
D←E11:ZERO
PLACE EXPONENT OF ACCUMULATOR
INTO X13 WITH LEADING ZEROES
1418 3-F
F11←SR1(F11)
E11←ZERO
JUMP/3-G
D←ZERO:F11(B6)
INSERT HIDDEN BIT
ZERO EXPONENT FIELD OF X11
1155 3-G
X11←SR8(X11)
BUT FSRC
JUMP/4-B
D←X11(B7:B6)
INSERT GUARD BIT
BRANCH ON IR3-5

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FP11-A FLOWS (3)

SIZE: D | CODE: FD | NUMBER: FP11-A-2 | REV.:

SCALE: | SHEET: 6 OF 40 | DIST.:



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (4)	D	FD	FPII-A-2	
SCALE	SHEET 7 OF 40	DIST.		

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TEST ZERO DMØ (4)

1276 5-A
X12←ROTL(X10)
JUMP/5-B
D←X10(07:00)

1478 5-B
F14←ZERO
E14←E12
BUT E2BT
JUMP/5-F
D←E12:ZERO

TEST ZERO DMØ (4)

1437 5-C
X12←ROTL(X10)
JUMP/5-D
D←X10(07:00)

ROTATE X10 LEFT ONE PLACE
AND LOAD IT INTO X12

1443 5-D
F14←ZERO
E14←E12
T←F12
BUT E2BT Y8
JUMP/5-F
D←X12(07:00)

PLACE EXPONENT OF FSRC IN X14
WITH LEADING ZEROES.
TEST FOR UNDEFINED VARIABLE (MINUS ZERO)

FSRC≠Ø

Ø1 ØØ

FSRC=Ø

1Ø 11

1296 5-H
FDFL.BUF←FPS
BUT F1UV
JUMP/5-G
D←FPS

Ø 1

1056 5-E
FDFL.BUF←FPS
F←E13
BUT E2BT OP1A
JUMP/16-D
D←FPS

1054 5-F
FDFL.BUF←FPS
F←E13
BUT E2BT OP1A
JUMP/16-D
D←FPS

1254 5-G
FDFL.BUF←FPS
F←E13
BUT E2BT OP1A
JUMP/16-B
D←FPS

1354 5-I
R11←BX
FEC←14
JUMP/37-B
D←BX

(37)
TRAP-TEST

AC=Ø 1
MUL AC=Ø (16) (15) MOD AC=Ø
DIV AC=Ø (10) (8) CMP AC=Ø
ADD AC=Ø (12) (6) LD AC=Ø
SUB AC=Ø (12) (7) LDC AC=Ø

AC≠Ø Ø
MUL (16) (15) MOD
DIV (10) (8) CMP
ADD (12) (6) LD
SUB (12) (7) LDC

AC=Ø 1
MUL FSRC=AC=Ø (16) (15) MOD FSRC=AC=Ø
DIV FSRC=AC=Ø (10) (8) CMP FSRC=AC-2
ADD FSRC=AC=Ø (12) (6) LD FSRC=AC=Ø
SUB FSRC=AC=Ø (12) (7) LDC FSRC=AC=Ø

AC=0 Ø
MUL FSRC=Ø (16) (15) MOD FSRC=Ø
DIV FSRC=Ø (10) (8) CMP FSRC=Ø
ADD FSRC=Ø (12) (6) LD FSRC=Ø
SUB FSRC=Ø (12) (7) LDC FSRC=Ø

REVISIONS
CHK | CHANGE NO | REV.

TITLE: FPII-A FLOWS (5)
SIZE: D | CODE: FD | NUMBER: FPII-A-2 | REV.
SCALE | SHEET 2 OF 4[illegible] | DIST.

FPII-A-2

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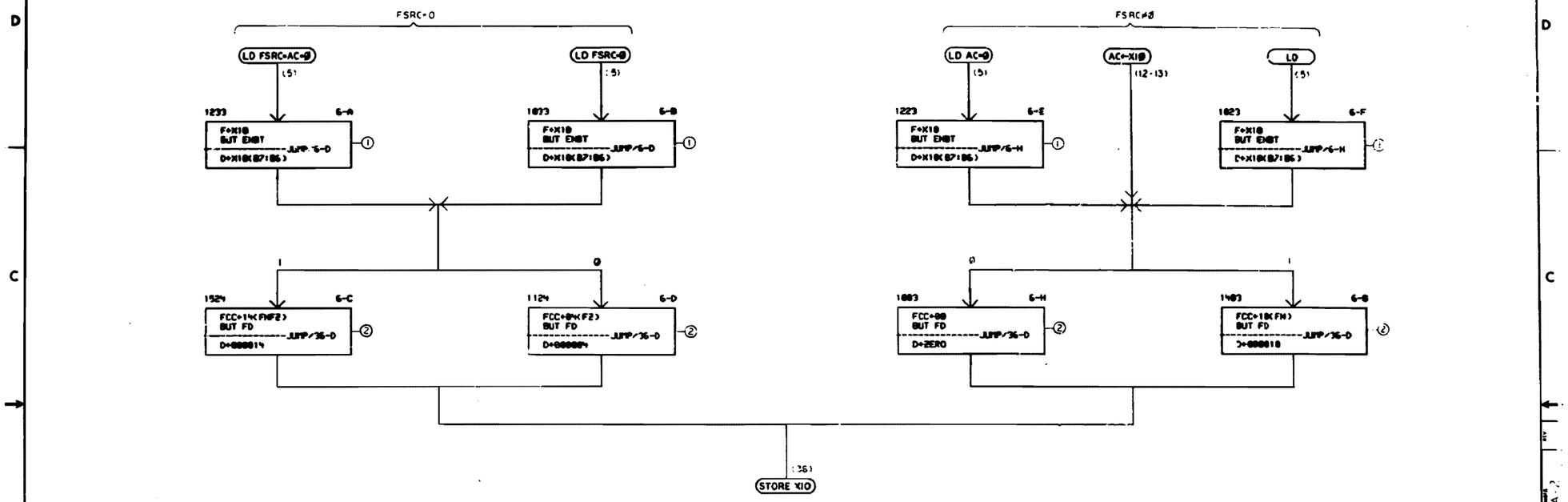

NOTES
1. TEST SIGN OF FSRC (X1@:BIT 7)
2. SET FLOATING CONDITION CODES (FCC) USING THE APPROPRIATE CONSTANT. NOTE THAT THE FCC IS CONTAINED IN THE LOWER FOUR BITS OF THE BUFFER (BUF).

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (6)	D	FD	FPII-A-2	
SCALE	SHEET 3 OF 10	DIST.		

FPII-A-2

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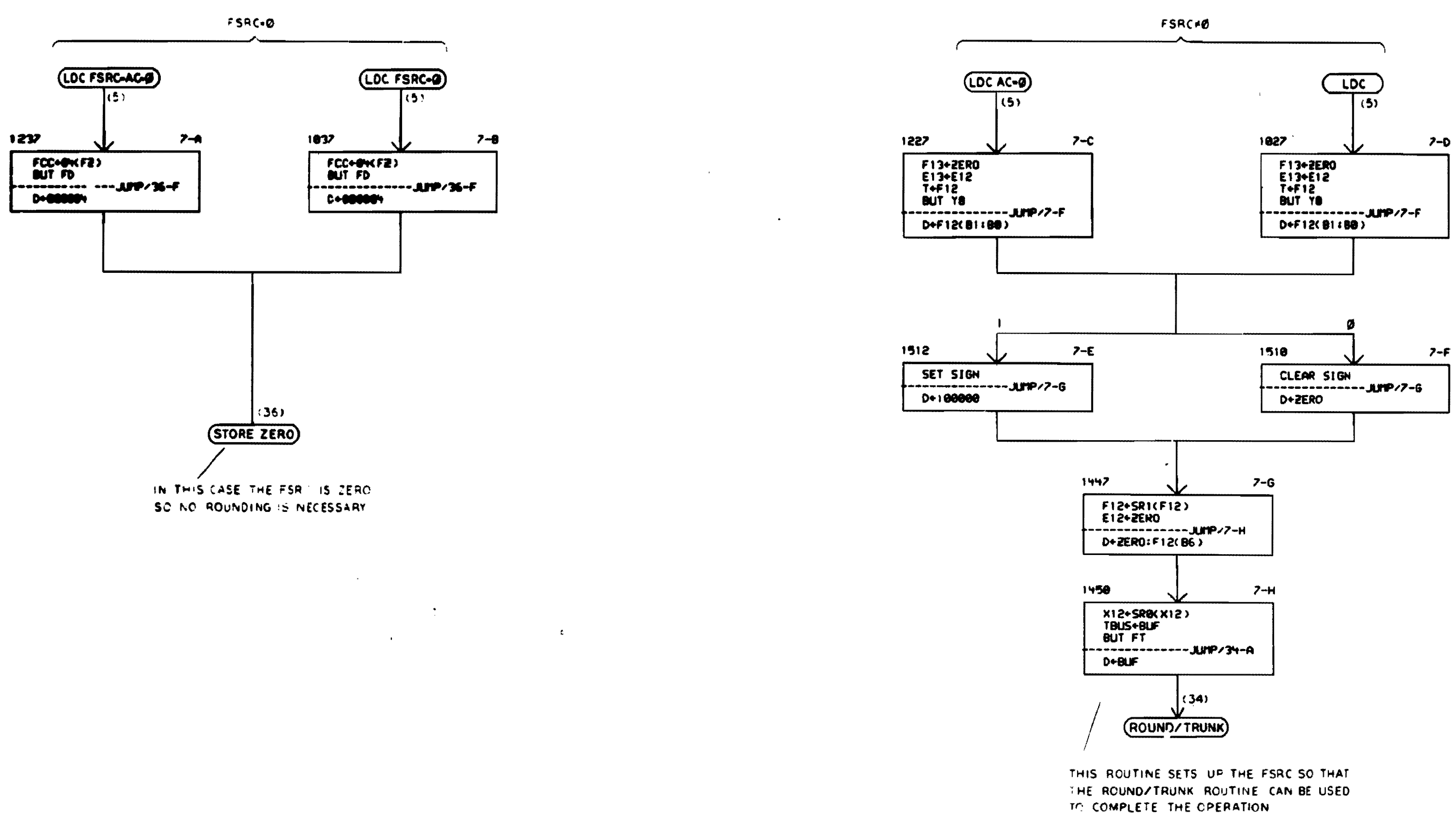
FSRC=Ø
LDC FSRC-AC-Ø
(5)
1237
7-A
FCC←0↑(F2)
BUT FD
JUMP/36-F
D←000004
LDC FSRC=Ø
(5)
1037
7-B
FCC←0↑(F2)
BUT FD
JUMP/36-F
D←000004
(36)
STORE ZERO
IN THIS CASE THE FSR IS ZERO
SO NO ROUNDING IS NECESSARY
FSRC≠Ø
LDC AC=Ø
(5)
1227
7-C
F13←ZERO
E13←E12
T←F12
BUT Y8
JUMP/7-F
D←F12(B1:B0)
LDC
(5)
1027
7-D
F13←ZERO
E13←E12
T←F12
BUT Y8
JUMP/7-F
D←F12(B1:B0)
1
Ø
1512
7-E
SET SIGN
JUMP/7-G
D←100000
1510
7-F
CLEAR SIGN
JUMP/7-G
D←ZERO
1447
7-G
F12←SR1(F12)
E12←ZERO
JUMP/7-H
D←ZERO:F12(B6)
1450
7-H
X12←SR0(X12)
TBUS←BUF
BUT FT
JUMP/34-A
D←BUF
(34)
ROUND/TRUNK
THIS ROUTINE SETS UP THE FSRC SO THAT
THE ROUND/TRUNK ROUTINE CAN BE USED
TO COMPLETE THE OPERATION

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (7)	D	FD	FP11-A-2	
SCALE / SHEET 10 OF 40	DIST.			

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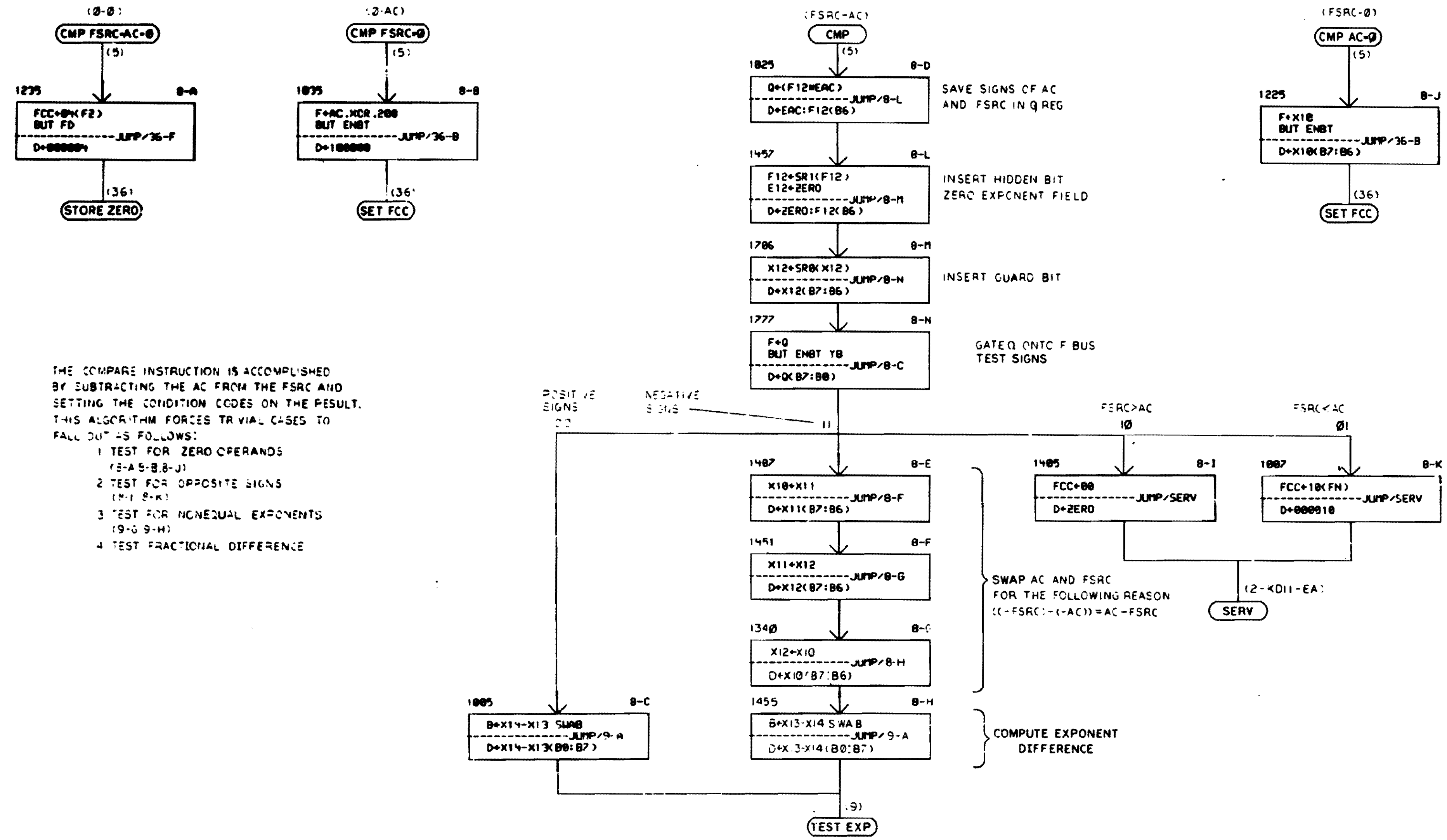
(0-0)
CMP FSRC-AC-0
(5)
1235 8-A
FCC+0K(F2)
BUT FD
JUMP/36-F
STORE ZERO
(0-AC)
CMP FSRC-0
1035 8-B
F+AC.XOR.200
BUT ENBT
JUMP/36-B
D+100000
SET FCC
(FSRC-AC)
CMP
1025 8-D
Q+(F12#EAC)
JUMP/8-L
D+EAC:F12(B6)
SAVE SIGNS OF AC AND FSRC IN Q REG
1457 8-L
F12+SR1(F12)
E12+ZERO
JUMP/8-M
D+ZERO:F12(B6)
INSERT HIDDEN BIT
ZERO EXPONENT FIELD
1706 8-M
X12+SR0(X12)
JUMP/8-N
D+X12(B7:B6)
INSERT GUARD BIT
1777 8-N
F+Q
BUT ENBT TB
JUMP/8-C
D+Q(B7:B0)
GATE Q ONTO F BUS
TEST SIGNS
(FSRC-0)
CMP AC-0
1225 8-J
F+X10
BUT ENBT
JUMP/36-B
D+X10(B7:B6)
SET FCC
THE COMPARE INSTRUCTION IS ACCOMPLISHED BY SUBTRACTING THE AC FROM THE FSRC AND SETTING THE CONDITION CODES ON THE RESULT. THIS ALGORITHM FORCES TRIVIAL CASES TO FALL OUT AS FOLLOWS:
1 TEST FOR ZERO OPERANDS (8-A,8-B,8-J)
2 TEST FOR OPPOSITE SIGNS (8-I, 8-K)
3 TEST FOR NONEQUAL EXPONENTS (9-G, 9-H)
4 TEST FRACTIONAL DIFFERENCE
POSITIVE SIGNS
NEGATIVE SIGNS
11
FSRC>AC
10
FSRC<AC
01
1467 8-E
X10+X11
JUMP/8-F
D+X11(B7:B6)
1451 8-F
X11+X12
JUMP/8-G
D+X12(B7:B6)
1340 8-G
X12+X10
JUMP/8-H
D+X10(B7:B6)
SWAP AC AND FSRC FOR THE FOLLOWING REASON ((-FSRC)-(-AC))=AC-FSRC
1405 8-I
FCC+00
JUMP/SERV
D+ZERO
1007 8-K
FCC+10(FN)
JUMP/SERV
D+000010
(2-K011-EA)
SERV
1005 8-C
B+X14-X13 SWAB
JUMP/9-A
D+X14-X13(B0:B7)
1455 8-H
B+X13-X14 SWAB
JUMP/9-A
D+X13-X14(B0:B7)
COMPUTE EXPONENT DIFFERENCE
(9)
TEST EXP

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FP11-A FLOWS (8)
SIZE D CODE FD NUMBER FP11-A-2
SHEET 11

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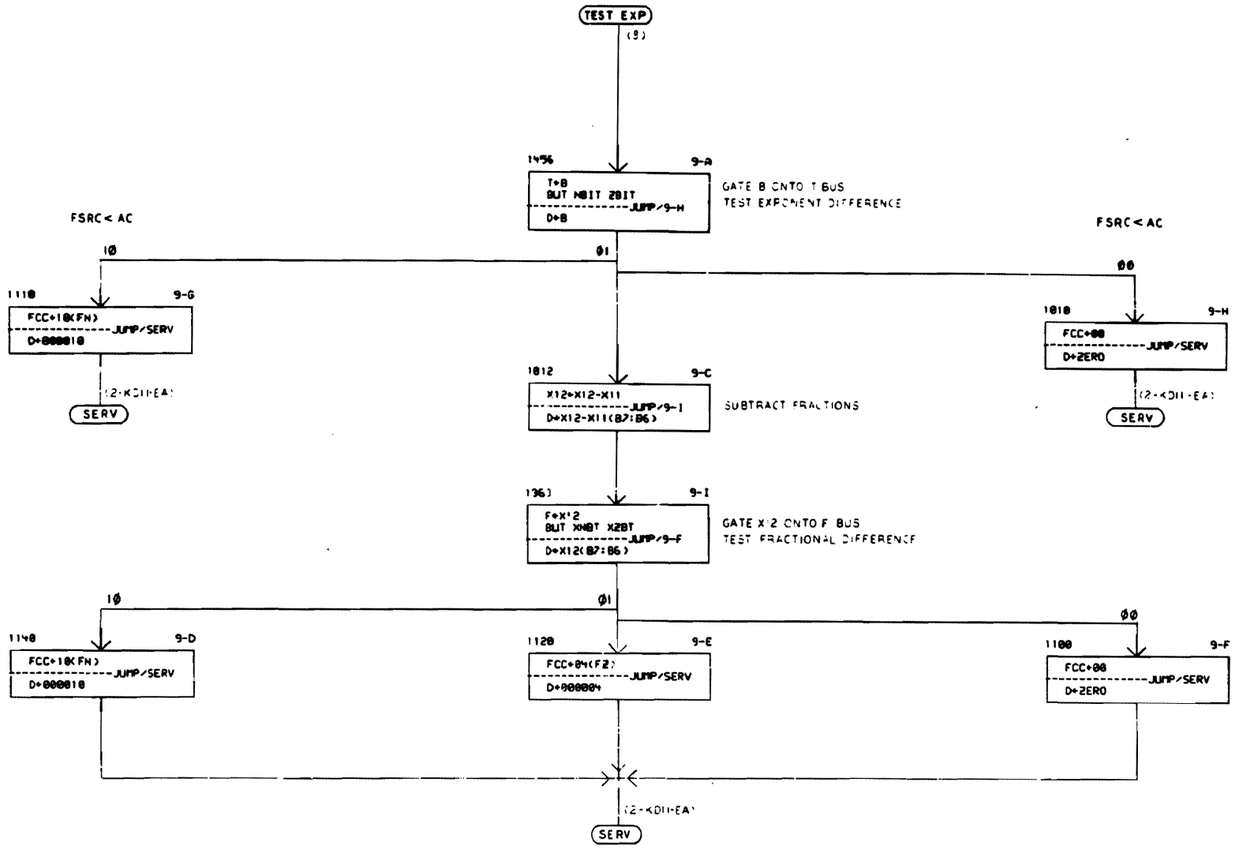

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (9)	D	FD	FP11-A-	
SCALE ⟷ SHEET 2 OF 4	DIST.			

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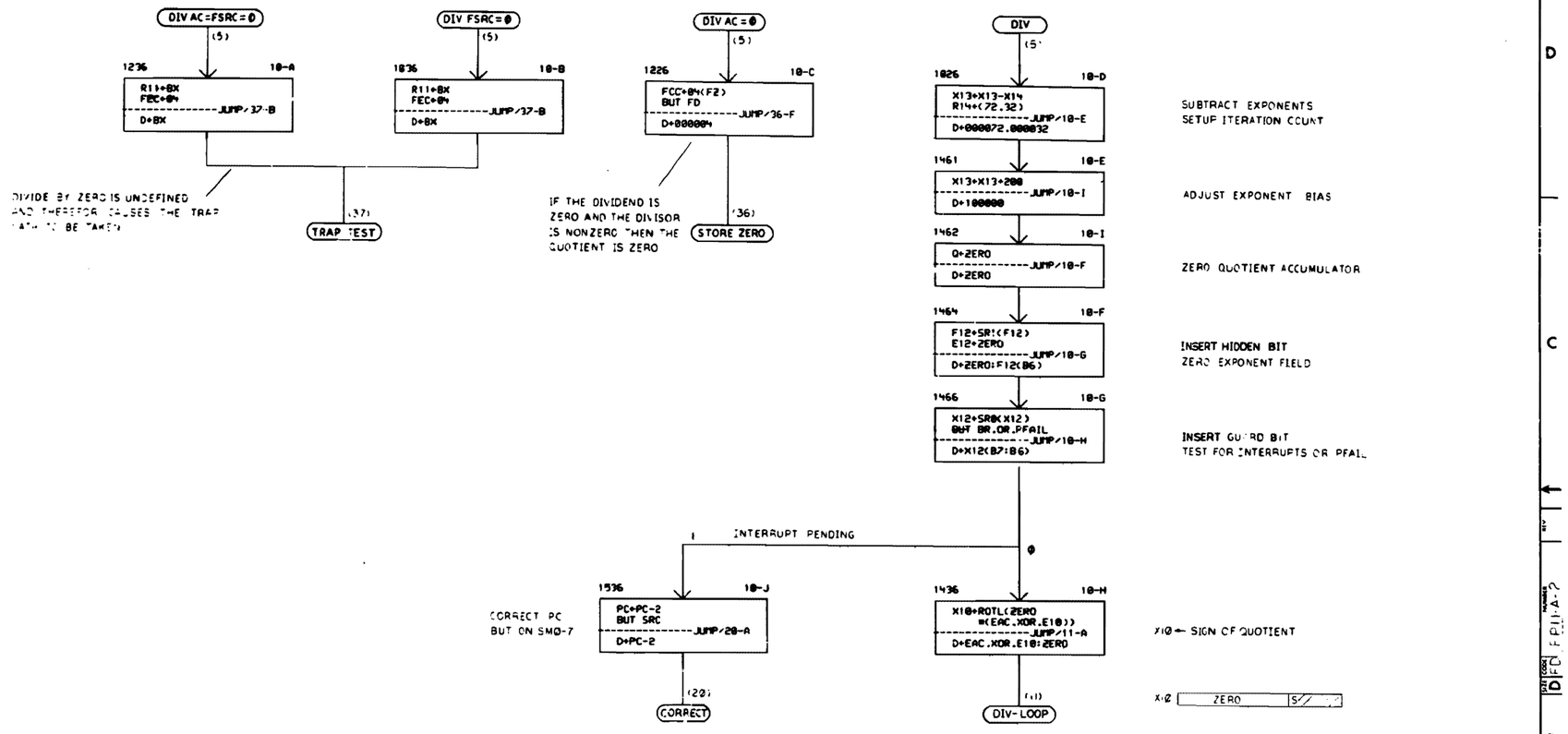

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (10)	D	FD	FP11-A-	
SCALE — SHEET 13 OF 30	DIST.			

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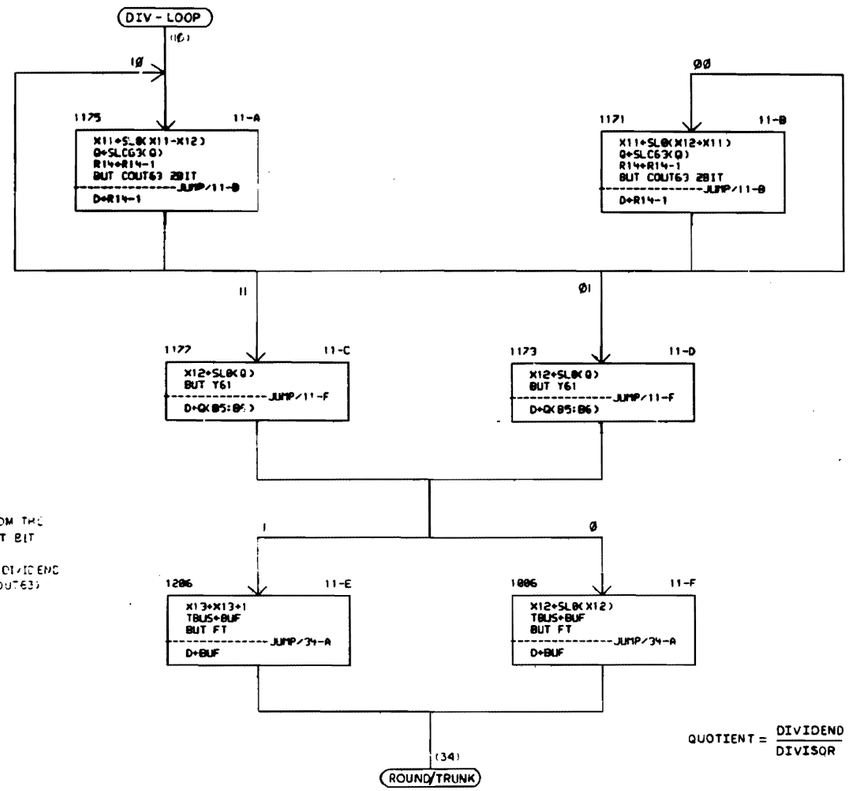

THIS IS A NONRESTORING
DIVISION ALGORITHM IN WHICH:
1 THE DIVISOR IS SUBTRACTED FROM THE DIVIDEND IF THE LAST QUOTIENT BIT (COUT63) WAS ONE.
2 THE DIVISOR IS ADDED TO THE DIVIDEND IF THE LAST QUOTIENT BIT (COUT63) WAS ZERO

$$\text{QUOTIENT} = \frac{\text{DIVIDEND}}{\text{DIVISOR}} = \frac{\text{AC}}{\text{FSRC}} = \frac{\text{X11}}{\text{X12}}$$

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (11)	D	FD	FP11-A-	
SCALE — SHEET 14 OF 20	DIST.			

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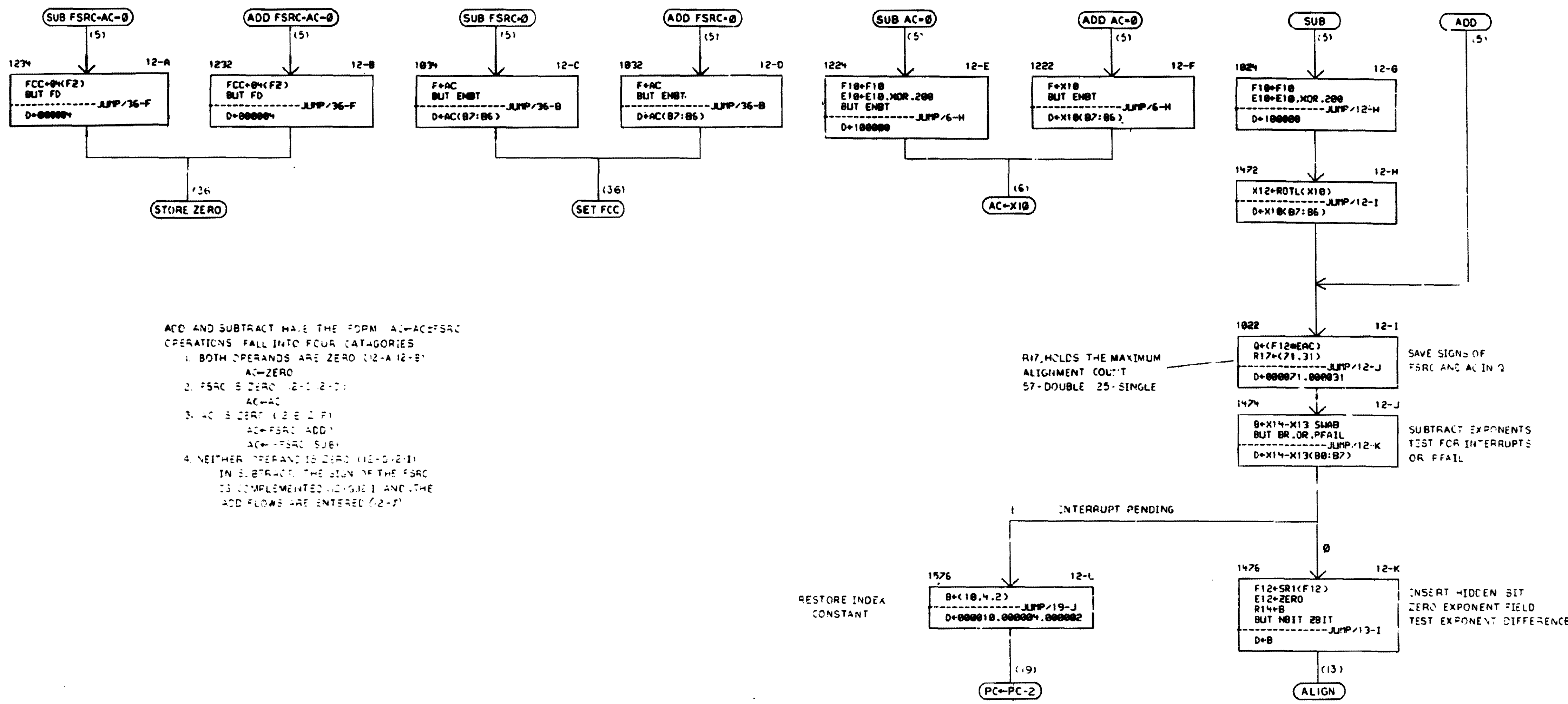
SUB FSRC-AC-0
(5)
1234
12-A
FCC+04(F2)
BUT FD
JUMP/36-F
D+000004
ADD FSRC-AC-0
(5)
1232
12-B
FCC+04(F2)
BUT FD
JUMP/36-F
D+000004
(36)
STORE ZERO
SUB FSRC-0
(5)
1034
12-C
F+AC
BUT ENBT
JUMP/36-B
D+AC(B7:B6)
ADD FSRC-0
(5)
1032
12-D
F+AC
BUT ENBT
JUMP/36-B
D+AC(B7:B6)
(36)
SET FCC
SUB AC=0
(5)
1224
12-E
F10+F10
E10+E10.XOR.200
BUT ENBT
JUMP/6-H
D+100000
ADD AC=0
(5)
1222
12-F
F+X10
BUT ENBT
JUMP/6-H
D+X10(B7:B6)
(6)
AC←X10
SUB
(5)
1024
12-G
F10+F10
E10+E10.XOR.200
JUMP/12-H
D+100000
1472
12-H
X12+ROTL(X10)
JUMP/12-I
D+X10(B7:B6)
ADD
(5)
ADD AND SUBTRACT HAVE THE FORM AC←AC±FSRC
OPERATIONS FALL INTO FOUR CATAGORIES
1. BOTH OPERANDS ARE ZERO (12-A 12-B)
AC←ZERO
2. FSRC IS ZERO (12-C 12-D)
AC←AC
3. AC IS ZERO (12-E 12-F)
AC←FSRC (ADD)
AC← -FSRC (SUB)
4. NEITHER OPERAND IS ZERO (12-G 12-I)
IN SUBTRACT, THE SIGN OF THE FSRC
IS COMPLEMENTED (12-G SUB) AND THE
ADD FLOWS ARE ENTERED (12-I)
1022
12-I
Q+(F12#EAC)
R17+(71.31)
JUMP/12-J
D+000071.000031
R17 HOLDS THE MAXIMUM
ALIGNMENT COUNT
57-DOUBLE 25-SINGLE
SAVE SIGNS OF
FSRC AND AC IN Q
1474
12-J
B+X14-X13 SWAB
BUT BR.OR.PFAIL
JUMP/12-K
D+X14-X13(B0:B7)
SUBTRACT EXPONENTS
TEST FOR INTERRUPTS
OR PFAIL
1
INTERRUPT PENDING
0
1576
12-L
B+(10.4.2)
JUMP/19-J
D+000010.000004.000002
RESTORE INDEX
CONSTANT
(19)
PC←PC-2
1476
12-K
F12+SR1(F12)
E12+ZERO
R14+B
BUT NBIT 2BIT
JUMP/13-I
D+B
INSERT HIDDEN BIT
ZERO EXPONENT FIELD
TEST EXPONENT DIFFERENCE
(13)
ALIGN

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (12)	D	FD	FP11-A-2	
SCALE — SHEET 12 OF 40	DIST.			

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E(AC)=E(FSRC)
NO ALIGNMENT

E(AC)>E(FSRC)
ALIGN FSRC

ALIGN
(12)

E(AC)<E(FSRC)
ALIGN AC

01

10

00

1013 13-A
X12←SR0(X12)
D←X12(B7:B6)
JUMP/13-F

INSERT GUARD BIT

1111 13-D
X12←SR0(X12)
T←R17-B
BUT NBIT 2BIT
JUMP/13-E
D←R17-B

INSERT GUARD BIT
TEST ALIGNMENT
MAGNITUDE

PUT EXPONENT INTO X13
B←ALIGNMENT COUNT

1011 13-I
X13←R14
B←R17
JUMP/13-L
D←R17

1316 13-L
X12←SR0(X12)
T←R14-B
BUT NBIT
JUMP/13-H
D←R14-B

INSERT GUARD BIT
TEST ALIGNMENT
MAGNITUDE

10 01 00

1114 13-B
F←AC
BUT ENBT
JUMP/36-B
D←AC(B7:B6)
(36)
SET FCC

1016 13-C
JUMP/13-H
D←X10(B7:B6)

1556 13-M
F←AC
BUT ENBT
JUMP/36-B
D←AC(B7:B6)
(36)
SET FCC

1014 13-E
X12←SR0(X12)
R14←R14+1
BUT 2BIT
JUMP/13-G
D←R14+1

0 1

1015 13-H
F←X10
BUT ENBT
JUMP/6-H
D←X10(B7:B6)
(6)
AC←X10

0 1

1214 13-G
X12←SR0(X12)
R14←R14+1
BUT 2BIT
JUMP/13-G
D←R14+1

0 1

1115 13-J
X11←SR0(X11)
R14←R14-1
BUT 2BIT
JUMP/13-J
D←R14-1

1216 13-F
F←Q
BUT ENBT YB
JUMP/14-K
D←Q(B7:B0)

1117 13-K
F←Q
BUT ENBT YB
JUMP/14-K
D←Q(B7:B0)

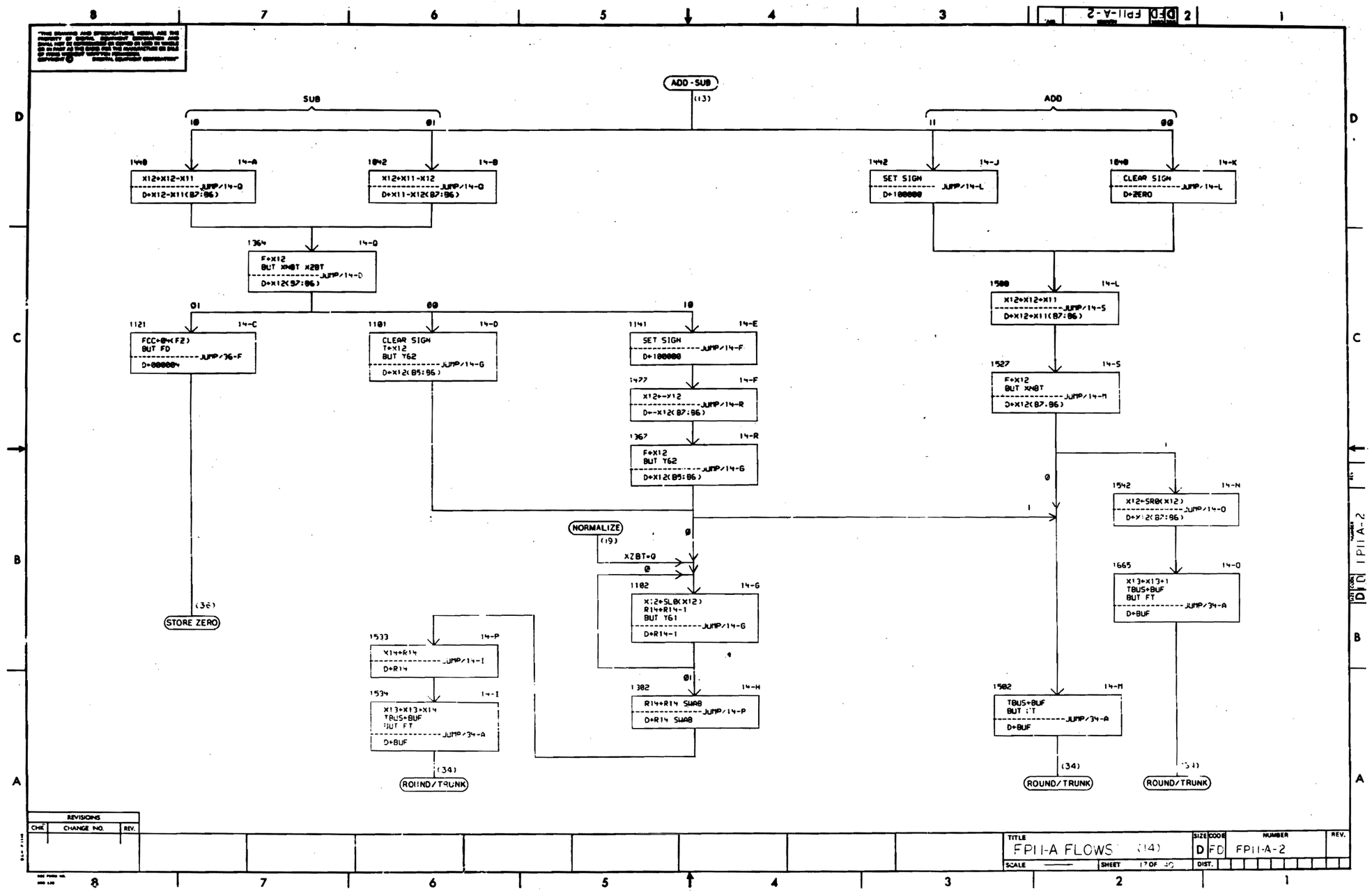
IN BLOCKS 13-D AND 13-L, THE EXPONENT DIFFERENCE (B OR R14) IS COMPARED TO THE MAXIMUM ALIGNMENT COUNTER (17) TO SEE IF THE ALIGNMENT IS WITHIN BOUNDS. AN ALIGNMENT OF MORE THAN 57/25 MEANS THAT THE CORRESPONDING OPERAND VANISHES (13-B,13-C OR 13-H). ALIGNMENT OF FSRC TAKES PLACE IN (13-E,13-G) ALIGNMENT OF AC TAKES PLACE IN (13-J)

NOTE. Y8=SIGN OF FSRC
ENBT=SIGN OF AC

(14)
ADD-SUB

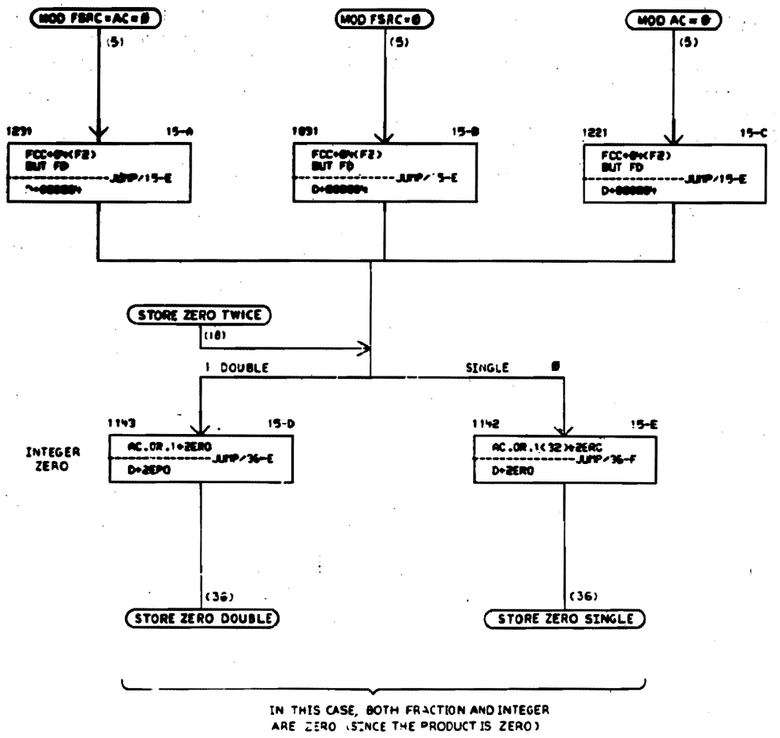
REVISIONS		
CHK	CHANGE NO. _	REV.

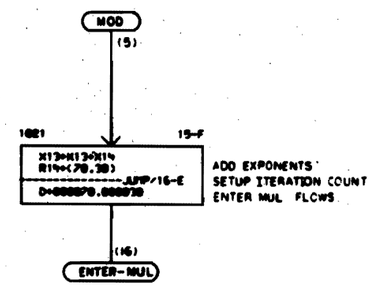
TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (3)	D	FD	FPII-A-2	
SCALE → SHEET 15 OF 30	DIST.			



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (14)	D	FD	FPII-A-2	
SCALE —— SHEET 17 OF 30	DIST.			





THIS INSTRUCTION GENERATES THE PRODUCT OF ITS TWO FLOATING POINT OPERANDS, SEPARATES THE PRODUCT INTO INTEGER AND FRACTIONAL PARTS AND THEN STORES BOTH PARTS AS NORMALIZED FLOATING POINT NUMBERS.

FOR EXAMPLE, IF

PRODUCT = .1111000111 X 2^4

THEN

INTEGER = .1111C00000 X 2^{-1}

FRACTION = .0000000111 X 2^4

THE INTEGER IS STORED IN THE AC+1. THE FRACTION, AFTER BEING NORMALIZED, IS STORED IN THE AC. NOTE THAT IF THE AC IS AN ODD REGISTER, THE INTEGER IS OVER-WRITTEN BY THE FRACTION.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (15)	D	FD	FPII-A-2	
SCALE — SHEET 18 OF 40	DIST.			

DEC FPII-A-2

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MUL FSRC=AC=0 (5)

1230 16-A
FCC←@M(F2)
BUT FD
D←000004
------JUMP/16-F

MUL FSRC=0 (5)

1030 16-B
FCC←@M(F2)
BUT FD
D←000004
------JUMP/16-F

MUL AC=0 (5)

1220 16-C
FCC←@M(F2)
BUT FD
D←000004
------JUMP/16-F

PRODUCT IS ZERO

(36)
STORE ZERO

MUL (5)

1020 16-D
X13←X13+X14
R14←(78.38)
------JUMP/16-E
D←000078.000038

ENTER-MUL (15)

ACC EXPONENTS
SET UP ITERATION COUNT

1586 16-E
X13←X13-200
------JUMP/16-F
D←100000

ADJUST EXPONENT BIAS

1587 16-F
F12←SB1(F12)
E12←ZERO
------JUMP/16-G
D←ZERO:F12(86)

INSERT HIDDEN BIT
ZERO EXPONENT FIELD

1154 16-G
Q←X12
------JUMP/16-H
D←X12(87:86)

PUT MULTIPLIER INTO Q REG

1511 16-H
X10←ROTL(ZERO
←(EAC.XOR.E10))
BUT BR.OR.PFAIL
------JUMP/16-I
D←EAC.XOR.E10:ZERO)

X10 ← SIGN OF PRODUCT
TEST FOR INTERRUPTS OR PFAIL

1 INTERRUPT PENDING

1370 16-J
PC←PC-2
BUT SRC
------JUMP/20-A
D←PC-2

CORRECT PC
BUT OK SM@-7

(20)
CORRECT

0

1270 16-I
X12←ZERO
------JUMP/17-K
D←ZERO

ZERO PARTIAL PRODUCT

(17)
MUL-LOOP

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (16)	D	FD	FP11-A-2	
SCALE	SHEET 5 OF 40	DIST.		

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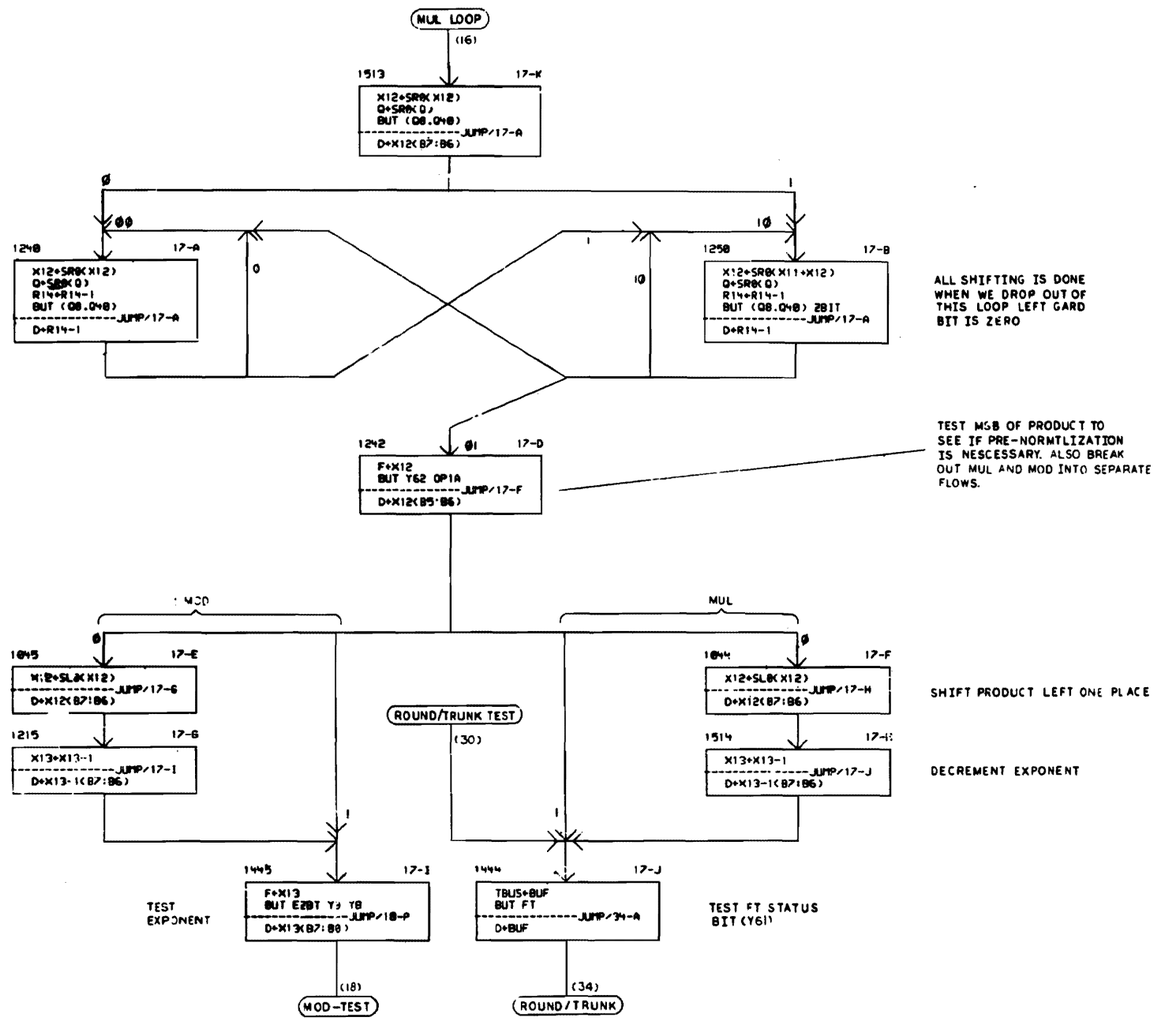

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (17)	D	FD	FPII-A-2	
SCALE — SHEET 20 OF 40	DIST.			

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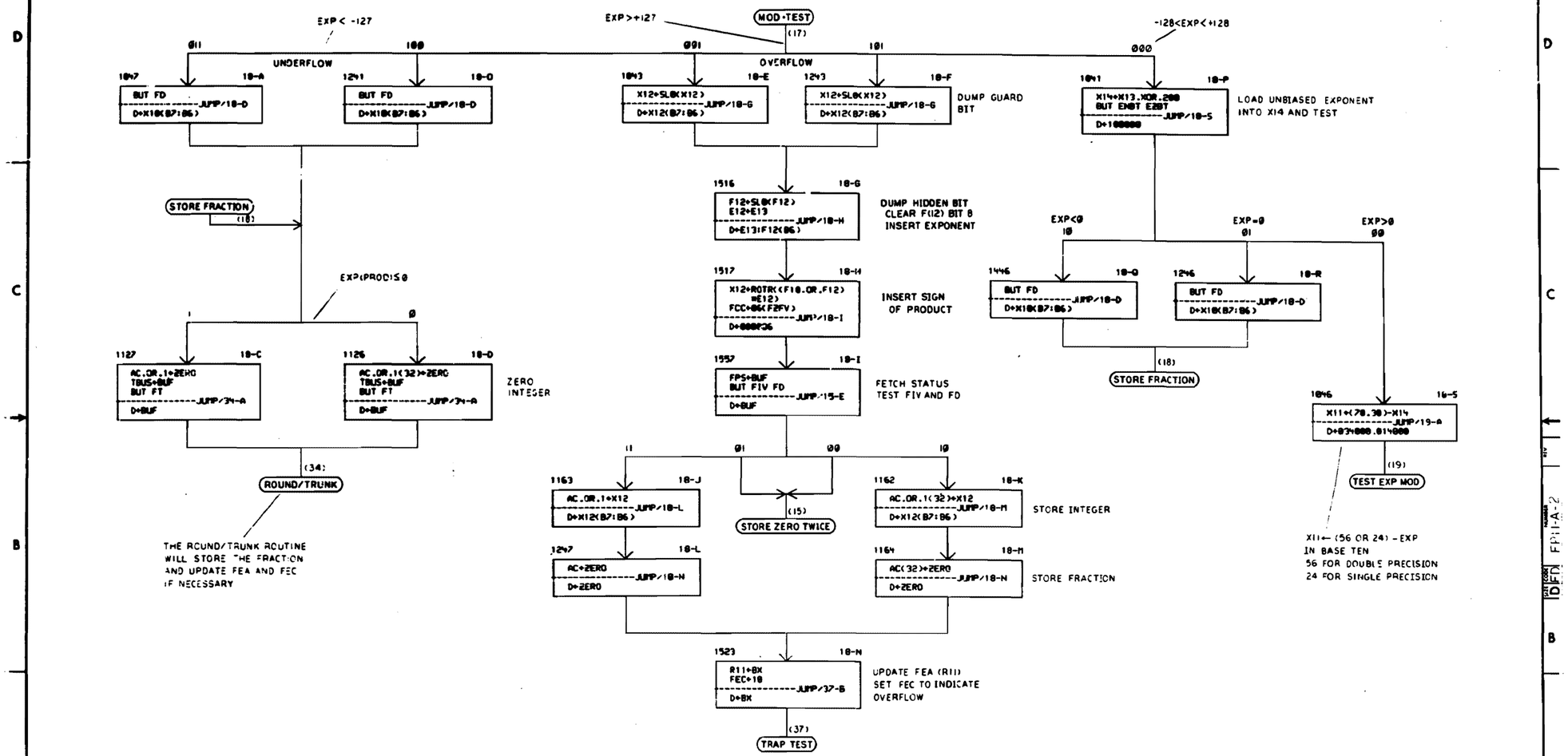

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (18)	D	FD	FPII-A-2	
SCALE ———	SHEET 21 OF 40	DIST.		

DFD FPII-A-2

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TEST EXP MOD
(18)

1481 19-A
R14←X11 SWAB
JUMP/19-C
D←X11(B0:B7)

GET LOWER SIXTEEN BITS OF X11 INTO R14

1525 19-C
X12←SLO(X12)
T←R14
BUT NBIT
JUMP/19-H
D←R14

DUMP GUARD BIT
TEST EXPONENT

HERE WE FINALLY GET TO A NON-TRIVIAL CASE. A MASK IS GENERATED IN X11 WHICH WILL ALLOW THE INTEGER AND FRACTION TO BE SEPARATED.

INDICATES THAT FRACTION IS ZERO

EXP>(24 / 56)

1 0

1150 19-D
F12←SLO(F12)
E12←E13
JUMP/19-E
D←E13:F12(B6)

DUMP HIDDEN BIT
INSERT EXPONENT

1526 19-E
X12←ROTR((F10.OR.F12) ≡E12)
FCC←BY:F2)
BUT FD
JUMP/19-G
D←000004

INSERT SIGN AND ROTATE RIGHT
SET CONDITION CODES

1 0

1135 19-F
AC.OR.1←X12
JUMP/36-E
D←X12(B7:B6)
(36)
STORE ZERO DOUBLE

1134 19-G
AC.OR.1(32)←X12
JUMP/36-F
D←X12(B7:B6)
(36)
STORE ZERO SINGLE

STORE INTEGER

1132 19-L
X14←X12
JUMP/19-M
D←X12(B7:B6)

1210 19-M
X14←X11.AND.X14
JUMP/19-N
D←X11.AND.X12(B7:B6)

1530 19-N
F14←SLO(F14)
E14←E13
BUT BR.OR.PFAIL
JUMP/19-O
D←E13:F14(B6)

1 INTERRUPT PENDING
0

1733 19-T
PC←PC-2
BUT SRC
JUMP/28-A
D←PC-2
(20)
CORRECT

1633 19-O
X14←ROTR((F10.OR.F14) ≡E14)
BUT FD
JUMP/19-Q
D←E14:F10.OR.F14(B6)

1 0

1152 19-P
AC.OR.1←X14
JUMP/19-R
D←X14(B7:B6)

1156 19-Q
AC.OR.1(32)←X14
JUMP/19-R
D←X14(B7:B6)

STORE INTEGER

1050 19-H
X11←ZERO
BUT BR.OR.PFAIL
JUMP/19-I
D←ZERO

INITILIZE X11

INTERRUPT PENDING
1 PC←PC-2 (12)
0

1051 19-I
R14←X14 SWAB
JUMP/19-K
D←X14(B0:B7)

R14 GETS EXP

1151 19-J
PC←PC-2
BUT SRC
JUMP/28-A
D←PC-2

CORRECT PC

(20)
CORRECT

0

1130 19-K
X11←SR1(X11)
R14←R14-1
BUT ZBIT
JUMP/19-K
D←R14-1

IN THIS LOOP 2^EXP ONES ARE PUSHED INTO X11

1532 19-R
X12←SR0(X11BAR.AND.X12)
JUMP/19-U
D←X11BAR.AND.X12(B7:B6)

GENERATE FRACTION AND INSERT GUARD BIT

1433 19-U
F12←F12
E12←E12.AND.360
BUT X20T
JUMP/14-G
D←170000

MASK OF IRRELEVANT BITS
TEST FOR ZERONESS

1 0

1122 19-S
FCC←BY(F2)
BUT FD
JUMP/36-F
D←000004

(14)
NORMALIZE

STORE ZERO

THIS IS HOW THE MASK (X11) IS USED TO SEPARATE THE FRACTION AND INTEGER

	ONES	ZEROS
X11		
	AND	
X14	PRODUCT	
X14	I	ZEROS

	ONES	ZEROS
X11		
	AND	
X12	PRODUCT	
X12	ZEROS	

WHERE: I = INTEGER PART
F = FRACTION PART

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII-A FLOWS (19)
SIZE: D | CODE: FD | NUMBER: FPII-A-2 | REV.
SCALE | SHEET 22 OF 40 | DIST.

FPII-A-2 D FD

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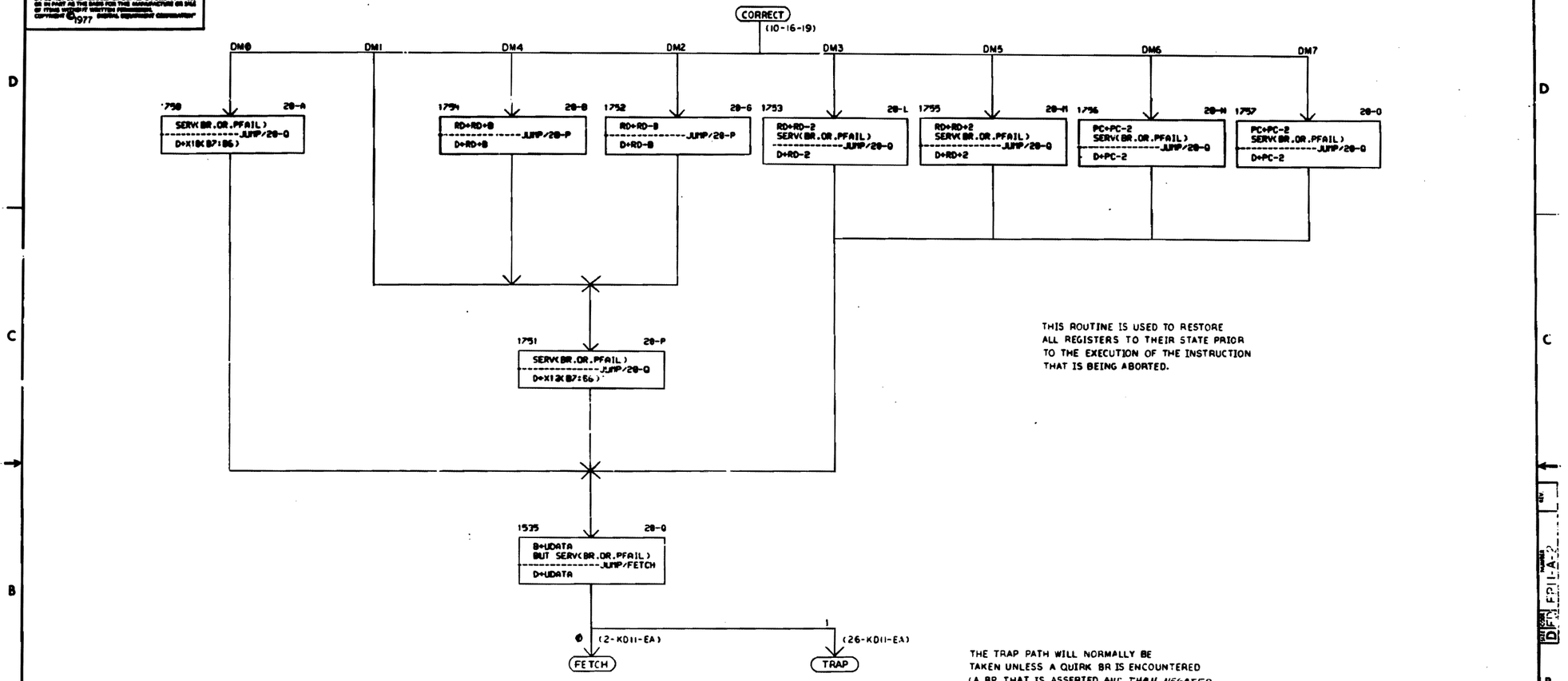

THIS ROUTINE IS USED TO RESTORE ALL REGISTERS TO THEIR STATE PRIOR TO THE EXECUTION OF THE INSTRUCTION THAT IS BEING ABORTED.

THE TRAP PATH WILL NORMALLY BE TAKEN UNLESS A QUIRK BR IS ENCOUNTERED (A BR THAT IS ASSERTED AND THAN NEGATED BEFORE THE PROCESSOR ISSUES A BG)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11 A FLOWS (20)	D	FD	FP11-A-2	
SCALE	SHEET 23 OF 40	DIST.		

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FDST-CLR (1)

1770 21-A
X11+ZERO
CLEAR FLAG
BUT FDST
D+ZERO
JUMP/21-T

HERE THE NEXT ADDRESS WAS PICKED TO INHIBIT THE NORMAL OPERATION OF BUT FDST

0 1

1687 21-T
FCC+BX(F2)
BUT FDST
D+000004
JUMP/27-B

1917 21-P
R11+BX
FEC+02
D+BX
JUMP/37-A

(27) FDST MODES

(37) ILLEGAL

FDST-CLR (1)

1771 21-B
R17+2
BUT FDST
D+000002
JUMP/21-+

THIS ROUTINE FETCHES THE UPPER SIXTEEN BITS OF THE FLOATING DESTINATION WITHOUT INCREMENTING/ DECREMENTING ANY INDEX POINTERS. THE INDEX UPDATE IS DONE BY FDST MODES OR SPECIAL DEST.

ILLG DM0 DM1 DM2 DM4 DM3 DM5 DM7 DM6

1730 21-C
R11+BX
FEC+02
D+BX
JUMP/37-A

1721 21-D
R12+RD
FPS+BUF
D+RD
JUMP/21-L

1722 21-E
R12+RD
FPS+BUF
D+RD
JUMP/21-L

1724 21-G
R12+RD-B
FPS+BUF
D+RD-B
JUMP/21-L

1723 21-N
BA+RD DATI
R12+UDATA
FPS+BUF
D+UDATA
JUMP/21-L

1725 21-O
R12+RD-2
FPS+BUF
D+RD-2
JUMP/21-U

1727 21-S
BA+PC DATI
B+UDATA
FPS+BUF
BUT GR7
D+UDATA
JUMP/21-T

1726 21-Q
BA+PC DATI
B+UDATA
FPS+BUF
BUT GR7
D+UDATA
JUMP/21-R

1547 21-X
B+B+R17
D+B+R17
JUMP/21-T

1736 21-W
B+B+R17
D+B+R17
JUMP/21-R

1545 21-T
R12+RD+B
D+RD+B
JUMP/21-U

1734 21-R
R12+RD+B
D+RD+B
JUMP/21-L

1546 21-U
BA+R12 DATI
R12+UDATA
D+UDATA
JUMP/21-L

1728 21-F
FPS+BUF
D+BUF
JUMP/21-2

(37) ILLEGAL

1167 21-Z
D+FDST
D+FDST(B7:B6)
JUMP/21-V

1337 21-V
X10+Q
D+Q(B7:B6)
JUMP/22-A

(22) TEST ZERO

1362 21-L
BA+R12 DATI
BUF+UDATA
MAINT
D+UDATA
JUMP/21-M

1541 21-H
X10(3)+BUF
D+BUF
JUMP/22-C

(22) FLAG-ZERO

REVISIONS
CHK | CHANGE NO. | REV.

TITLE FP11-A FLOWS (21)
SCALE SHEET 24 OF 40
SIZE D CODE FD NUMBER FP11-A-2 REV.
DIST.

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TEST ZERO (21)

1550 22-A
B←(10,4,2)
X12←ROTL(X10)
JUMP/22-B
D←000010.000004.000002

1551 22-B
F←X12
CLEAR FLAG
BUT E2BT
JUMP/22-F
D←ZERO

FLAG-ZERO (21)

1552 22-C
B←(10,4,2)
X12←ROTL(X10)
JUMP/22-D
D←000010.000004.000002

SET UP INDEX CONSTANT
LOAD X12 WITH FDST
ROTATED LEFT ONE PLACE

1402 22-D
F←X12
CLEAR FLAG
BUT E2BT Y8
JUMP/22-F
D←ZERO

TEST FDST FOR ZERONESS AND SIGN
INITILIZE FLAG

FDST≠ Ø
01 00

FDST= Ø
10 11

1257 22-H
BUF←FPS
BUT F1UV
JUMP/22-G
D←FPS

0 1 Ø

1057 22-E
BUF←FPS
BUT OP1B
JUMP/23-F
D←FPS

1055 22-F
BUF←FPS
BUT OP1B
JUMP/23-F
D←FPS

1255 22-G
BUF←FPS
BUT OP1B
JUMP/22-K
D←FPS

1355 22-I
R11←BX
FEC←14
SET FLAG
JUMP/22-G
D←BX

NEG ABS TST

1312 22-J
X11←ZERO
FCC←Ø←(F2)
BUT FDST
JUMP/27-B
D←000004

1311 22-N
X11←ZERO
FCC←Ø←(F2)
BUT FDST
JUMP/27-B
D←000004

1310 22-K
F←X10
BUT ENBT
JUMP/22-M
D←X10(B7:B6)

1553 22-L
FCC←14←(FNF2)
BUT FDST
JUMP/24-A
D←000014

1153 22-M
FCC←Ø←(F2)
BUT FDST
JUMP/24-A
D←000004

(23) OPERATE

(27) FDST MODES

(24) SPECIAL DEST

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII A FLOWS (22)	D	FD	FPII-A-2	
SCALE — SHEET 25 OF 40	DIST.			

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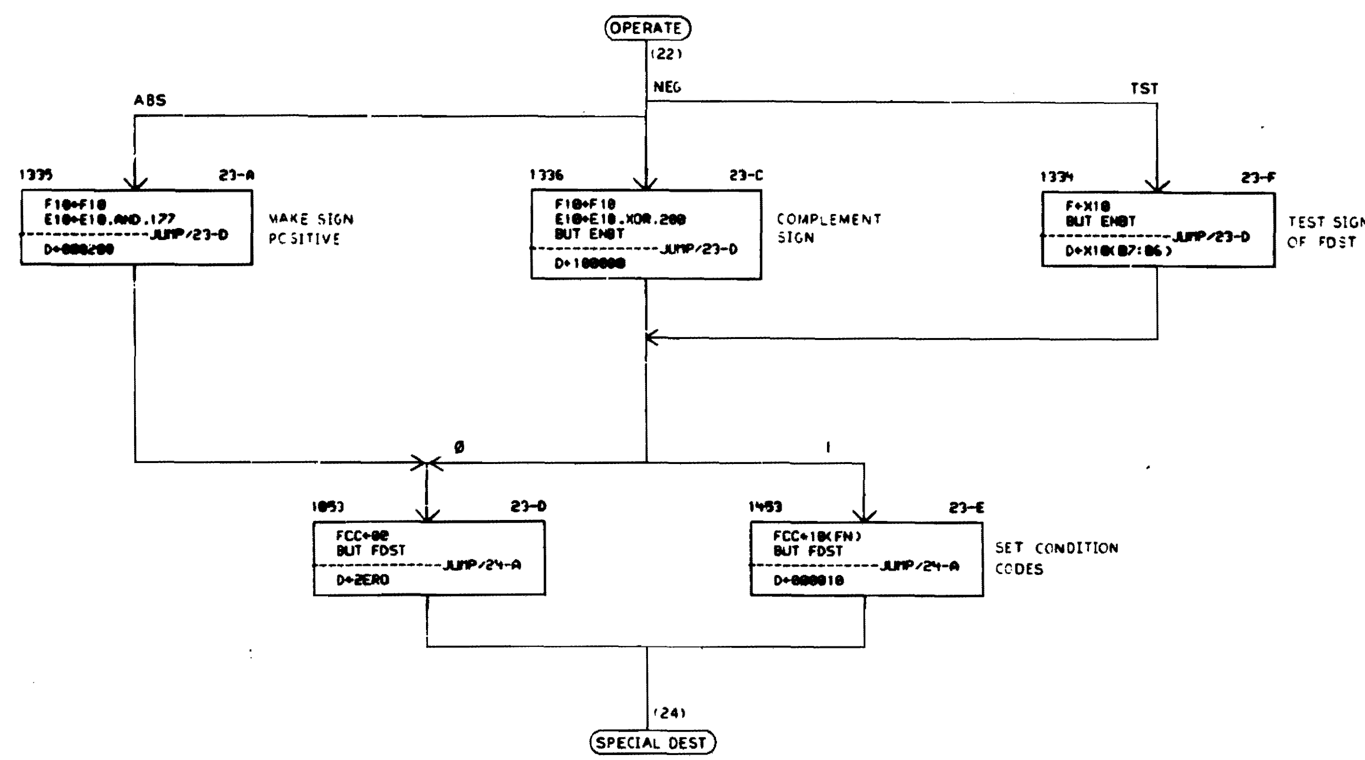

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (23)	D	FD	FP11-A-2	

SHEET 26 OF 40

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THIS ROUTINE UPDATES THE INDEX REGISTERS AND THEN LOADS THE UPPER SIXTEEN BITS OF THE FDST INTO MEMORY OR AN ACCUMULATOR AS THE CASE MAY BE. NOTE THAT THE TEST INSTRUCTION AVOIDS DOING A MEMORY CYCLE SINCE IT IS UNNECESSARY AND UNLAWFUL

SPECIAL DEST (22-23)

DM0 DM1 DM4 DM2 DM3 DM5 DM6 DM7

1740 24-A
FDST(3)=>X10
D=>X10(B7:B6)
JUMP/SERV

1741 24-C
BUT OP10
D=>X10(B7:B6)
JUMP/24-U

1744 24-B
RD=RD-8
BUT OP10
D=RD-8
JUMP/24-U

1742 24-8
RD=RD+8
BUT OP10
D=RD+8
JUMP/24-U

1743 24-D
RD=RD+2
BUT OP10
D=RD+2
JUMP/24-U

1745 24-P
RD=RD-2
BUT OP10
D=RD-2
JUMP/24-U

1746 24-9
PC=PC+2
BUT OP10
D=PC+2
JUMP/24-U

1747 24-R
PC=PC+2
BUT OP10
D=PC+2
JUMP/24-U

NEG ABS TST

1522 24-S
FPS=BUF
BA=R12
MAINT
BUT FLAG
D=BUF
JUMP/24-H

1521 24-T
BA=R12
MAINT
FPS=BUF
BUT FLAG
D=BUF
JUMP/24-H

1520 24-U
FPS=BUF
BUT FLAG
D=BUF
JUMP/37-H

0 1

1341 24-N
DATO MAINT
LDATA=X10(3)
D=X10(B7:B6)
JUMP/SERV

1345 24-N
DATO MAINT
LDATA=X10(3)
D=X10(B7:B6)
JUMP/37-8

(1-KCII-EA)
SERV

(1-KCII-EA)
SERV

(37)
TRAP-TEST

(37)
TRAP/SERV

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (24)		D	FD	FPII-A-2	
SCALE	SHEET 27 OF 40	DIST.			

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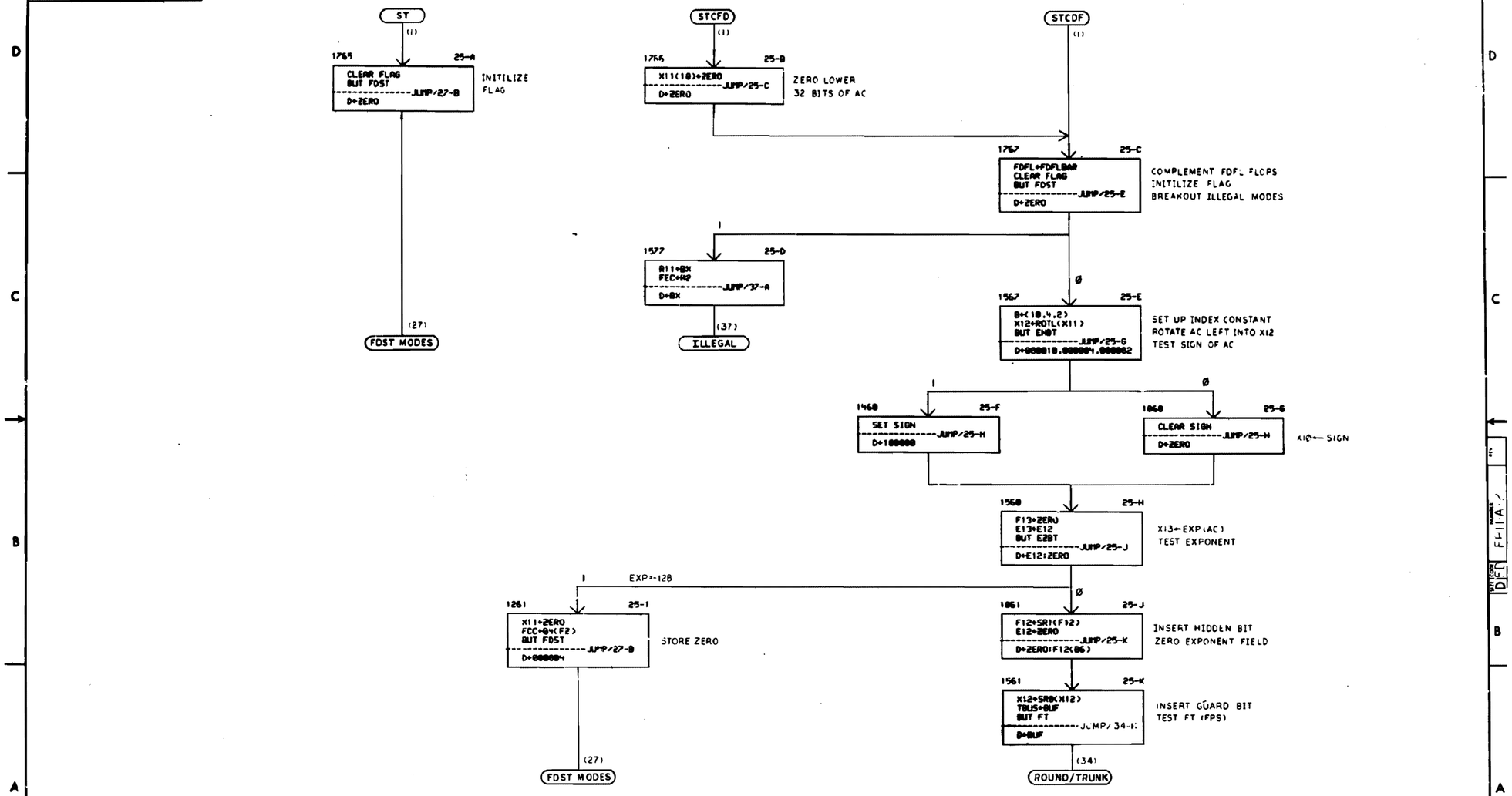

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (25)	D	FD	FPII-A-2	
SCALE ——— SHEET 28 OF 40	DIST.			

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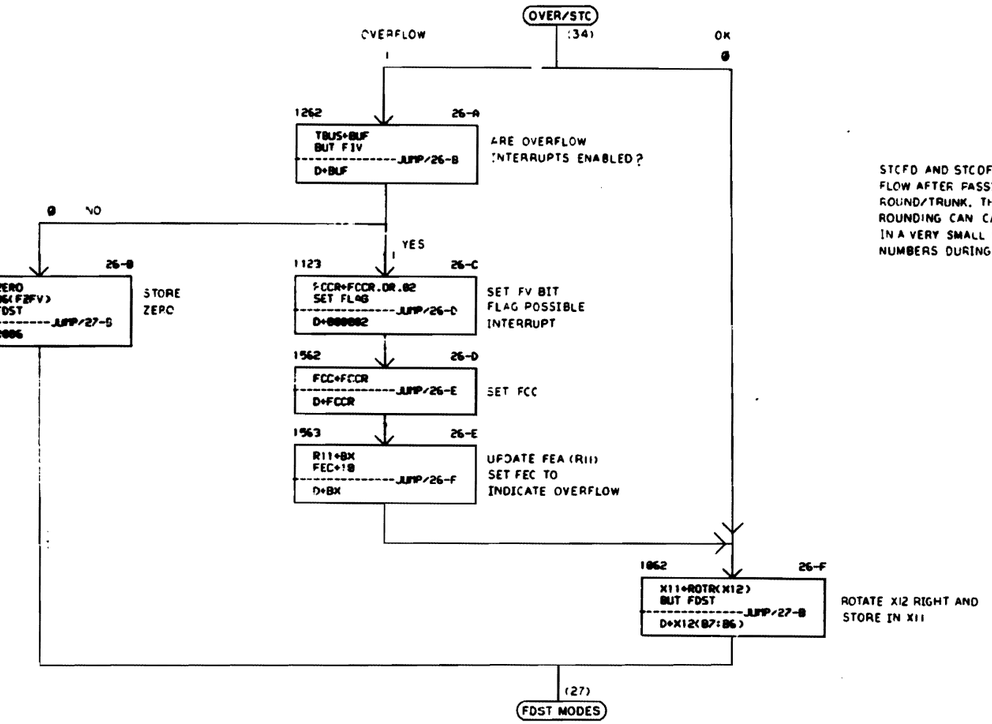

STCFD AND STCOF ENTER THIS FLOW AFTER PASSING THROUGH ROUND/TRUNK. THE PROCESS OF ROUNDING CAN CAUSE AN OVERFLOW IN A VERY SMALL CLASS OF VERY LARGE NUMBERS DURING STCDF (PROBABILITY = $\frac{1}{\infty}$)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (26)	D	FD	FPII-A-2	
SCALE	SHEET 25 OF 40	DIST.		

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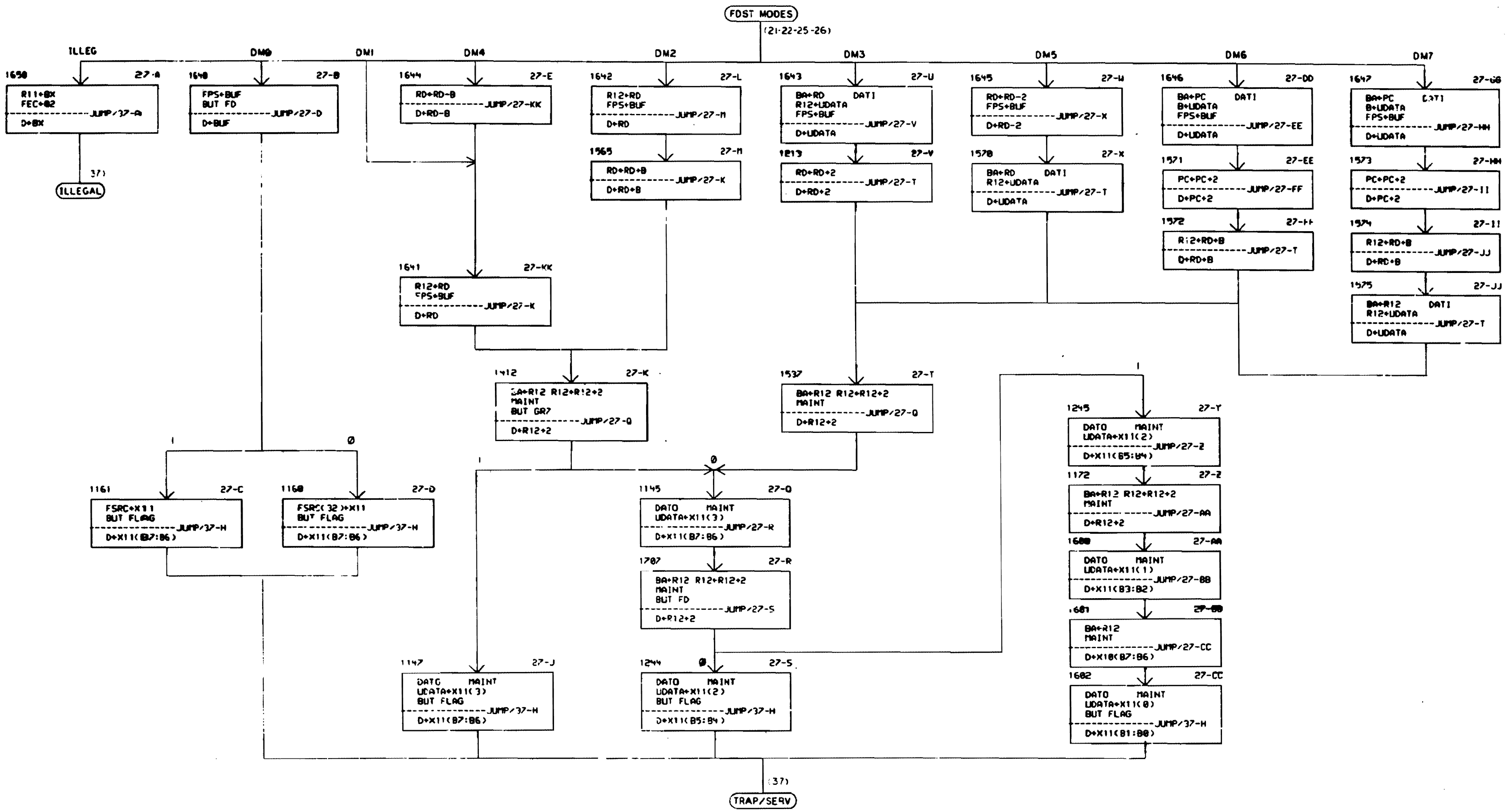
FDST MODES
(21-22-25-26)
ILLEG
DM0
DM1
DM4
DM2
DM3
DM5
DM6
DM7
1650 27-A
R11←BX
FEC←02
JUMP/37-A
D←BX
(37)
ILLEGAL
1640 27-B
FPS←BUF
BUT FD
JUMP/27-D
D←BUF
1644 27-E
RD←RD-8
JUMP/27-KK
D←RD-8
1642 27-L
R12←RD
FPS←BUF
JUMP/27-M
D←RD
1565 27-M
RD←RD+8
JUMP/27-K
D←RD+8
1643 27-U
BA←RD DATI
R12←UDATA
FPS←BUF
JUMP/27-V
D←UDATA
1213 27-V
RD←RD+2
JUMP/27-T
D←RD+2
1645 27-W
RD←RD-2
FPS←BUF
JUMP/27-X
D←RD-2
1570 27-X
BA←RD DATI
R12←UDATA
JUMP/27-T
D←UDATA
1646 27-DD
BA←PC DATI
B←UDATA
FPS←BUF
JUMP/27-EE
D←UDATA
1571 27-EE
PC←PC+2
JUMP/27-FF
D←PC+2
1572 27-FF
R12←RD+B
JUMP/27-T
D←RD+B
1647 27-GG
BA←PC DATI
B←UDATA
FPS←BUF
JUMP/27-HH
D←UDATA
1573 27-HH
PC←PC+2
JUMP/27-II
D←PC+2
1574 27-II
R12←RD+B
JUMP/27-JJ
D←RD+B
1575 27-JJ
BA←R12 DATI
R12←UDATA
JUMP/27-T
D←UDATA
1641 27-KK
R12←RD
FPS←BUF
JUMP/27-K
D←RD
1412 27-K
BA←R12 R12←R12+2
MAINT
BUT GR7
JUMP/27-Q
D←R12+2
1537 27-T
BA←R12 R12←R12+2
MAINT
JUMP/27-Q
D←R12+2
1161 27-C
FSRC←X11
BUT FLAG
JUMP/37-H
D←X11(B7:B6)
1160 27-D
FSRC(32)←X11
BUT FLAG
JUMP/37-H
D←X11(B7:B6)
1145 27-Q
DATO MAINT
UDATA←X11(3)
JUMP/27-R
D←X11(B7:B6)
1707 27-R
BA←R12 R12←R12+2
MAINT
BUT FD
JUMP/27-S
D←R12+2
1147 27-J
DATO MAINT
UDATA←X11(3)
BUT FLAG
JUMP/37-H
D←X11(B7:B6)
1244 27-S
DATO MAINT
UDATA←X11(2)
BUT FLAG
JUMP/37-H
D←X11(B5:B4)
1245 27-Y
DATO MAINT
UDATA←X11(2)
JUMP/27-Z
D←X11(B5:B4)
1172 27-Z
BA←R12 R12←R12+2
MAINT
JUMP/27-AA
D←R12+2
1600 27-AA
DATO MAINT
UDATA←X11(1)
JUMP/27-BB
D←X11(B3:B2)
1601 27-BB
BA←R12
MAINT
JUMP/27-CC
D←X10(B7:B6)
1602 27-CC
DATO MAINT
UDATA←X11(0)
BUT FLAG
JUMP/37-H
D←X11(B1:B0)
(37)
TRAP/SERV

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FP11-A FLOWS (27)

SIZE: D | CODE: FD | NUMBER: FP11-A-2 | REV.

SCALE —— | SHEET 30 OF 4?

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SOURCE MODES (28)

DM0

1678 28-A
X12←ZERO
BUF←RD B←RD
JUMP/28-G
D←RD

DM1

DM4

1674 28-C
RD←RD-B
JUMP/28-BB
D←RD-B

1671 28-BB
X12←ZERO
R12←RD
JUMP/28-F
D←RD

DM2

1672 28-I
X12←ZERO
R12←RD
JUMP/28-J
D←RD

1683 28-J
RD←RD+B
JUMP/28-F
D←RD+B

DM3

1673 28-L
BA←RD DATI
R12←UDATA
JUMP/28-M
D←UDATA

1314 28-M
RD←RD+2
X12←ZERO
JUMP/28-N
D←RD+2

1277 28-F
BA←R12 DATI
B←UDATA BUF←UDATA
BUT GR7.OR.FLBAR
JUMP/28-O
D←UDATA

LOAD B AND BUF
WITH DATA

1616 28-N
BA←R12 DATI
B←UDATA BUF←UDATA
BUT FLBAR
JUMP/28-O
D←UDATA

LOAD B AND BUF
WITH DATA

1381 28-G
X12(2)←BUF
BUT OP1E
JUMP/28-B
D←BUF

1380 28-O
X12(2)←BUF
R12←R12+2
JUMP/28-P
D←R12+2

1620 28-P
BA←R12 DATI
BUF←UDATA
JUMP/28-Q
D←UDATA

1621 28-Q
X12(1)←BUF
BUT OP1E
JUMP/28-B
D←BUF

DM5

1675 28-R
X12←ZERO
RD←RD-2
JUMP/28-S
D←RD-2

1610 28-S
BA←RD DATI
R12←UDATA
JUMP/28-N
D←UDATA

DM6

1676 28-T
BA←PC DATI
B←UDATA
JUMP/28-U
D←UDATA

1611 28-U
X12←ZERO
PC←PC+2
JUMP/28-V
D←PC+2

1612 28-V
R12←RD+B
JUMP/28-N
D←RD+B

DM7

1677 28-W
BA←PC DATI
B←UDATA
JUMP/28-X
D←UDATA

1613 28-X
X12←ZERO
PC←PC+2
JUMP/28-Y
D←PC+2

1614 28-Y
R12←RD+B
JUMP/28-Z
D←RD+B

1615 28-Z
BA←R12 DATI
R12←UDATA
JUMP/28-N
D←UDATA

LD-SRC
(1)

1772 28-AA
FPS←BUF
BUT OP12
JUMP/28-CC
D←BUF

LDFPS

1684 28-CC
B←2 CLEAR FDFL
BUT DST
JUMP/28-A
D←000002

LDEXP

1685 28-DD
B←2 CLEAR FDFL
BUT DST
JUMP/28-A
D←000002

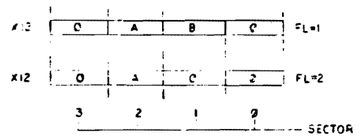
LDC

1686 28-EE
B←(4,2)
BUT DST
JUMP/28-A
D←000004,000002

(28)
SOURCE MODES

SET UP INDEX CONSTANT
AND FORCE A ONE WORD
FETCH FOR LDFPS AND LDEXP
BY CLEARING FDFL FLOPS.

UPON EXITING THIS FLOW
X12 LOOKS LIKE THIS:



A=FIRST WORD
B=SECOND WORD

LDFPS

1350 28-B
FDFL←BUF
JUMP/SERV
D←BUF

UPDATE FDFL FLOPS
BUF IS THE NEW FPS

(1-KD11-EA)
SERV

(29)
LDEXP

BUF AND B
CONTAIN THE
NEW EXPONENT

(30)
LDC

X12 CONTAINS
THE INTEGER TO
BE CONVERTED

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (28)	D	FD	FPII-A-2	
SCALE	SHEET 31 OF 40	DIST.		

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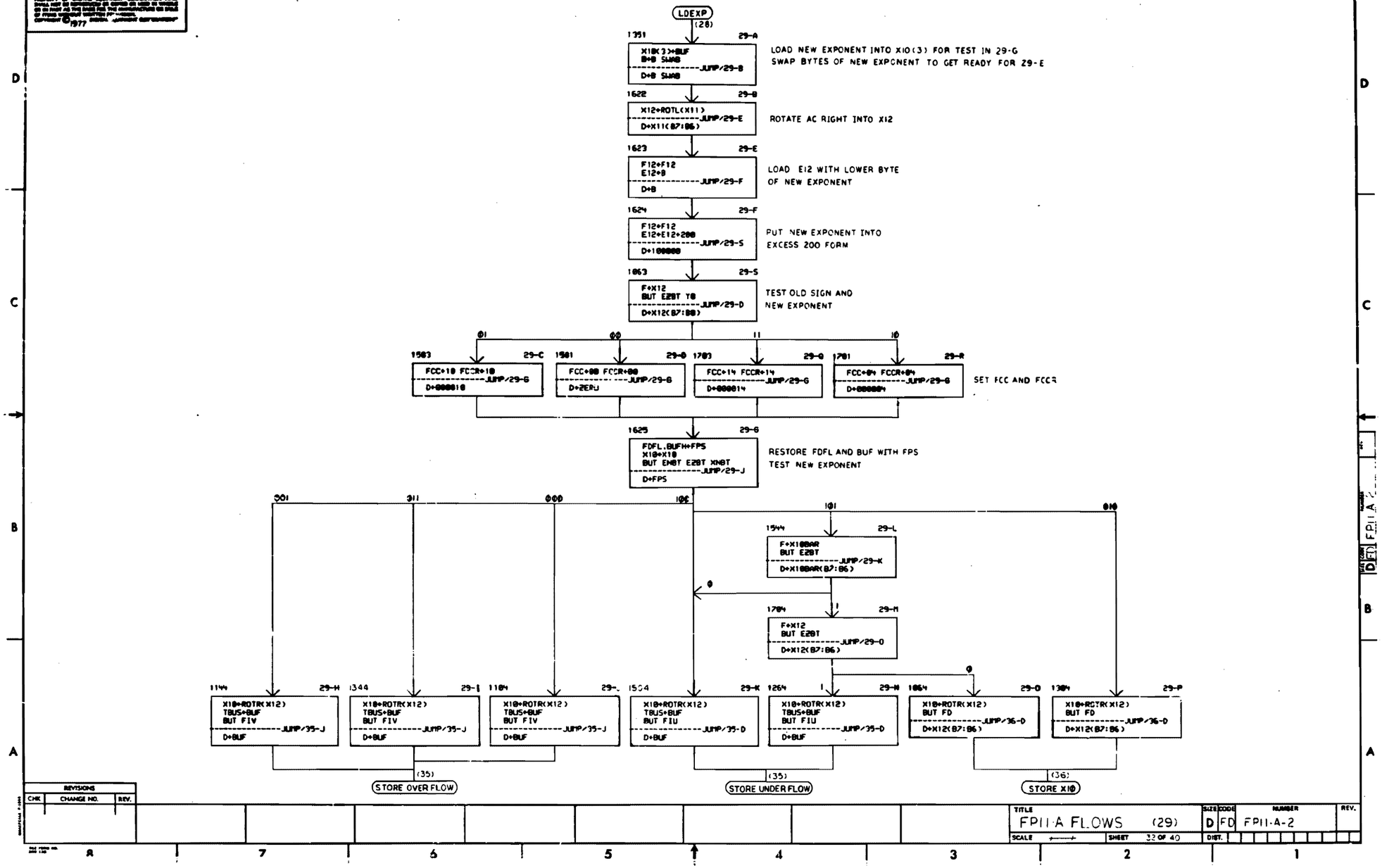

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (29)	D	FD	FP11-A-2	
SCALE ⟷ SHEET 32 OF 40	DIST.			

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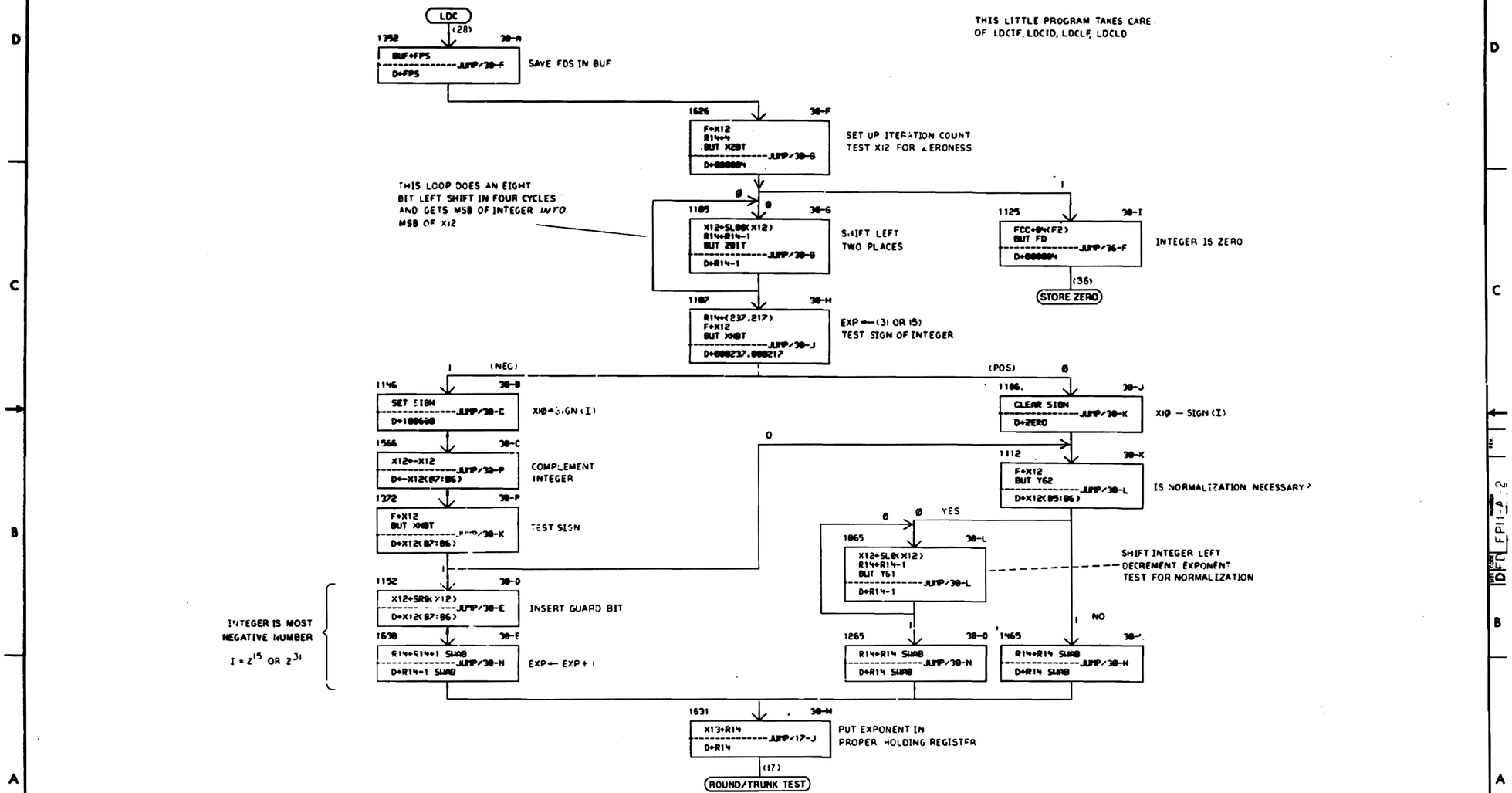

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FPII-A FLOWS (30)	D	FD	FPII-A-2	
SCALE	SHEET 33 OF 40	DIST.		

DEC FPII-A-2 REV. B

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STCDI-STCDL

STCFI-STCFL

1773 31-N
X11(10)←ZERO
JUMP/31-G
D←ZERO

1774 31-G
X11←ROTL(X11)
FCC←10(FN)
R17←ZERO
CLEAR FLAG
BUT OP1D
JUMP/31-H
D←ZERO

INTEGER OVERFLOW EXCEPT
FOR MOST NEGATIVE INTEGER

EXP > 31/15

1467 31-0
B←X11(H) SWAB
F←EAC
BUT ENBT
JUMP/31-BB
D←X11(B6:B5)

STORE HIGH PART OF INTEGER
TEST SIGN OF INTEGER

INTEGER POSITIVE

1452 31-U
X13←X13+1
JUMP/31-FF
D←X13+1(B7:B6)

1052 31-BB
TBUS+BUF
BUT F1C
JUMP/32-N
D←BUF

1377 31-FF
F←X13
BUT E2BT
JUMP/31-AA
D←X13(B7:B6)

EXP > 32/16

1366 31-V
R14←BX
BUT FL
JUMP/31-2
D←BX

SAVE BX
IN R14

1166 31-AA
TBUS+BUF
BUT F1C
JUMP/32-N
D←BUF

(32)
CONVT TEST

1655 31-W
BX←X11(L) SWAB
JUMP/31-X
D←X11(B4:B3)

1360 31-X
BX←R17-BX
BUT COUT15
JUMP/31-Y
D←R17-BX

1654 31-Z
R17←R17-B
BUT NBIT
JUMP/31-Y
D←R17-B

THIS CODE TESTS FOR
MOST NEGATIVE INTEGER.
NOTE THAT R17 IS INITIALLY
ZERO.

1454 31-Y
BX←R14
TBUS←BUF
BUT F1C
JUMP/32-N
D←R14

RESTORE
BX

(32)
CONVT TEST

(33)
CC←FCC

STEXP

1747 31-A
F13←ZERO
E13←E11
CLEAR FDFL
JUMP/31-B
D←ZERO

1317 31-B
X13←X13-200
JUMP/31-EE
D←100000

1376 31-EE
F←X13
BUT ENBT
JUMP/31-D
D←X13(B7:B6)

1471 31-C
R17←X13 SWAB
JUMP/33-K
D←X13(B0:B7)

1871 31-D
R17←X13 SWAB
BUT E2ST
JUMP/31-E
D←X13(B0:B7)

1872 31-E
FCC←00
JUMP/33-K
D←ZERO

1272 31-R
FCC←04(F2)
JUMP/33-K
D←000004

1266 31-F
BX←ZERO
FCC←04(F2)
JUMP/33-K
D←ZERO

(33)
CC←FCC

EXP < 0

1346 31-H
F11←SR1(F11)
E11←E11
BUT ENBT
JUMP/31-F
D←E11:F11(B6)

1666 31-I
F13←ZERO
E13←E11.XOR.200
BUT E2BT
JUMP/31-J
D←100000

EXP=0

1066 0 31-J
X13←(37,17)-X13
JUMP/31-DD
D←017100.007100

1374 31-DD
F←X13
BUT ENBT
JUMP/31-S
D←X13(B7:B6)

1067 0 31-S
R14←X13 SWAB
JUMP/31-K
D←X13(B0:B7)

1070 0 31-K
X11←SR0(X11)
R14←R14-1
BUT NBIT
JUMP/31-K
D←R14-1

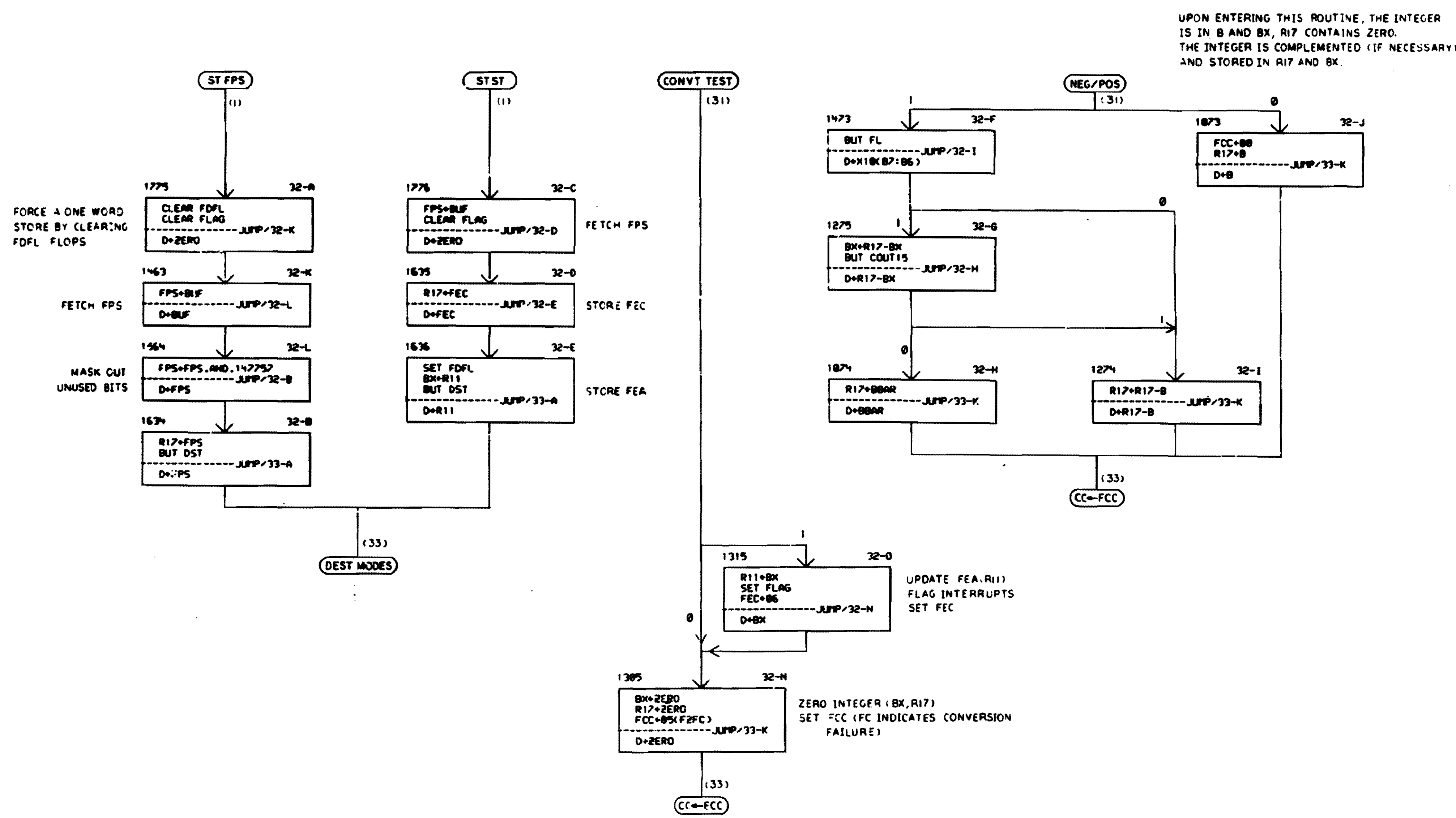
1170 1 31-L
B←X11(H) SWAB
JUMP/31-M
D←X11(B6:B5)

1632 31-M
BX←X11(L) SWAB
F←EAC
BUT ENBT
JUMP/32-J
D←X11(B4:B3)

(32)
NEG/POS

REVISIONS
CHK | CHANGE NO. | REV.

TITLE: FP11-A FLOWS (31)
SIZE: D | CODE: FD | NUMBER: FP11-A-2 | REV.
SCALE | SHEET 34 OF 40 | DIST.


UPON ENTERING THIS ROUTINE, THE INTEGER IS IN B AND BX, RI7 CONTAINS ZERO. THE INTEGER IS COMPLEMENTED (IF NECESSARY) AND STORED IN RI7 AND BX.
ST FPS
(1)
1775 32-A
CLEAR FDFL
CLEAR FLAG
JUMP/32-K
D+ZERO
FORCE A ONE WORD STORE BY CLEARING FDFL FLOPS
1463 32-K
FPS+BUF
JUMP/32-L
D+BUF
FETCH FPS
1564 32-L
FPS+FPS.AND.147757
JUMP/32-B
D+FPS
MASK OUT UNUSED BITS
1634 32-B
R17+FPS
BUT DST
JUMP/33-A
D+FPS
STST
(1)
1776 32-C
FPS+BUF
CLEAR FLAG
JUMP/32-D
D+ZERO
FETCH FPS
1635 32-D
R17+FEC
JUMP/32-E
D+FEC
STORE FEC
1636 32-E
SET FDFL
BX+R11
BUT DST
JUMP/33-A
D+R11
STORE FEA
(33)
DEST MODES
CONVT TEST
(31)
1
1315 32-O
R11+BX
SET FLAG
FEC+06
JUMP/32-N
D+BX
UPDATE FEA(R11)
FLAG INTERRUPTS
SET FEC
0
1305 32-N
BX+ZERO
R17+ZERO
FCC+05(F2FC)
JUMP/33-K
D+ZERO
ZERO INTEGER (BX,R17)
SET FCC (FC INDICATES CONVERSION FAILURE)
(33)
CC←FCC
NEG/POS
(31)
1
0
1473 32-F
BUT FL
JUMP/32-I
D+X10(B7:B6)
1073 32-J
FCC+00
R17+B
JUMP/33-K
D+B
0
1275 1 32-G
BX+R17-BX
BUT COUT15
JUMP/32-H
D+R17-BX
1
0
1074 32-H
R17+BBAR
JUMP/33-K
D+BBAR
1274 32-I
R17+R17-B
JUMP/33-K
D+R17-B
(33)
CC←FCC

TITLE: FP11-A FLOWS (32)

SIZE: D | CODE: FD | NUMBER: FP11-A-2

SHEET 35 OF 40

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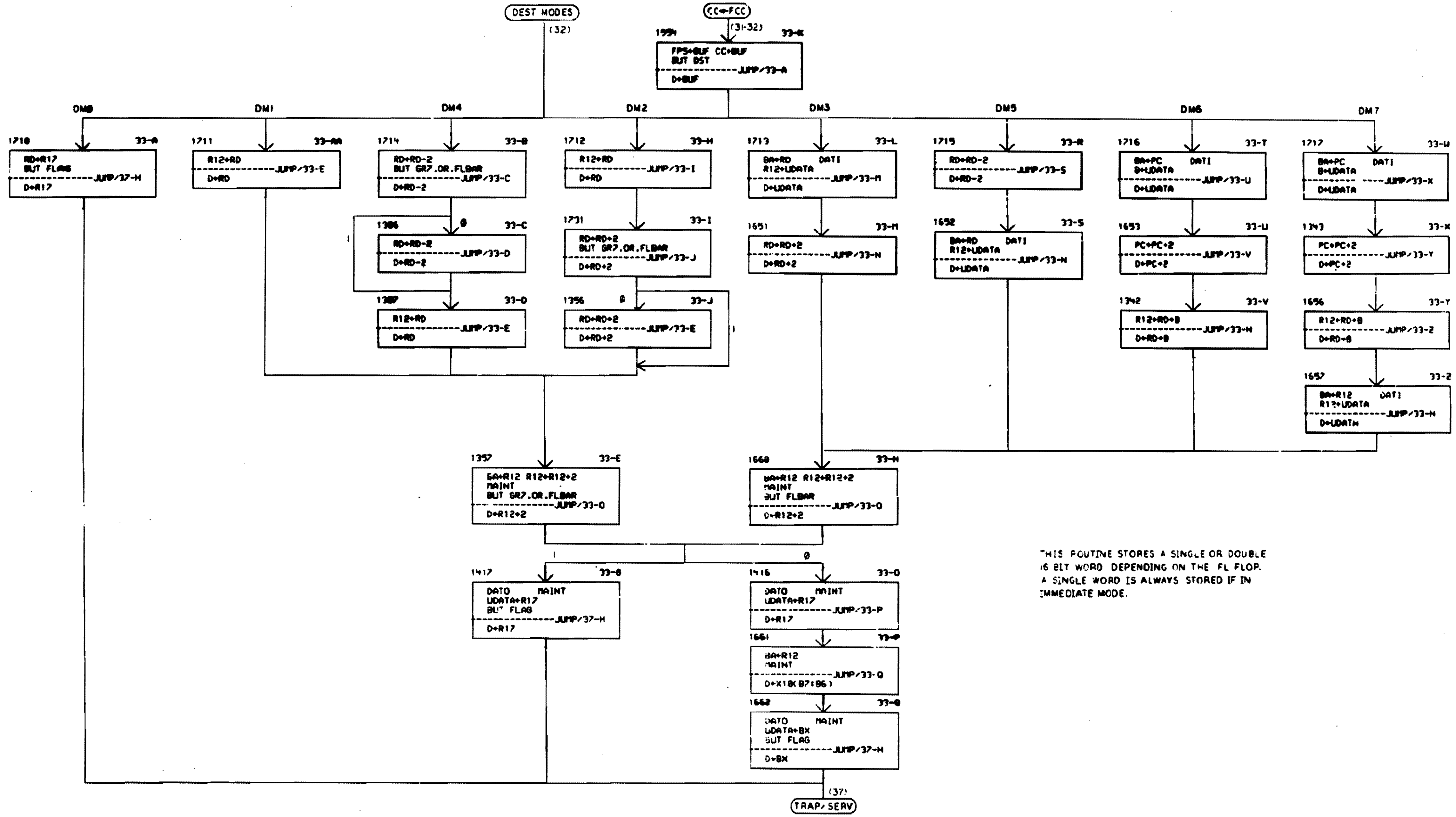
DEST MODES
(32)
CC←FCC
(31-32)
1994 33-K
FPS←BUF CC←BUF
BUT DST
JUMP/33-A
D←BUF
DM0
DM1
DM4
DM2
DM3
DM5
DM6
DM7
1710 33-A
RD←R17
BUT FLAG
JUMP/37-H
D←R17
1711 33-AA
R12←RD
JUMP/33-E
D←RD
1714 33-B
RD←RD-2
BUT GR7.OR.FLBAR
JUMP/33-C
D←RD-2
1712 33-H
R12←RD
JUMP/33-I
D←RD
1713 33-L
BA←RD DATI
R12←UDATA
JUMP/33-M
D←UDATA
1715 33-R
RD←RD-2
JUMP/33-S
D←RD-2
1716 33-T
BA←PC DATI
B←UDATA
JUMP/33-U
D←UDATA
1717 33-W
BA←PC DATI
B←UDATA
JUMP/33-X
D←UDATA
1386 33-C
RD←RD-2
JUMP/33-D
D←RD-2
1387 33-D
R12←RD
JUMP/33-E
D←RD
1731 33-I
RD←RD+2
BUT GR7.OR.FLBAR
JUMP/33-J
D←RD+2
1356 33-J
RD←RD+2
JUMP/33-E
D←RD+2
1651 33-M
RD←RD+2
JUMP/33-N
D←RD+2
1652 33-S
BA←RD DATI
R12←UDATA
JUMP/33-N
D←UDATA
1653 33-U
PC←PC+2
JUMP/33-V
D←PC+2
1342 33-V
R12←RD+B
JUMP/33-N
D←RD+B
1343 33-X
PC←PC+2
JUMP/33-Y
D←PC+2
1656 33-Y
R12←RD+B
JUMP/33-Z
D←RD+B
1657 33-Z
BA←R12 DATI
R12←UDATA
JUMP/33-N
D←UDATA
1357 33-E
BA←R12 R12←R12+2
MAINT
BUT GR7.OR.FLBAR
JUMP/33-O
D←R12+2
1660 33-N
BA←R12 R12←R12+2
MAINT
BUT FLBAR
JUMP/33-O
D←R12+2
1417 33-O
DATO MAINT
UDATA←R17
BUT FLAG
JUMP/37-H
D←R17
1416 33-O
DATO MAINT
UDATA←R17
JUMP/33-P
D←R17
1661 33-P
BA←R12
MAINT
JUMP/33-Q
D←X18(07:06)
1662 33-Q
DATO MAINT
UDATA←BX
BUT FLAG
JUMP/37-H
D←BX
(37)
TRAP/SERV

THIS ROUTINE STORES A SINGLE OR DOUBLE 16 BIT WORD DEPENDING ON THE FL FLOP. A SINGLE WORD IS ALWAYS STORED IF IN IMMEDIATE MODE.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FP11-A FLOWS (33)

SIZE: D CODE: FD NUMBER: FP11-A-2

SHEET 36 OF 40

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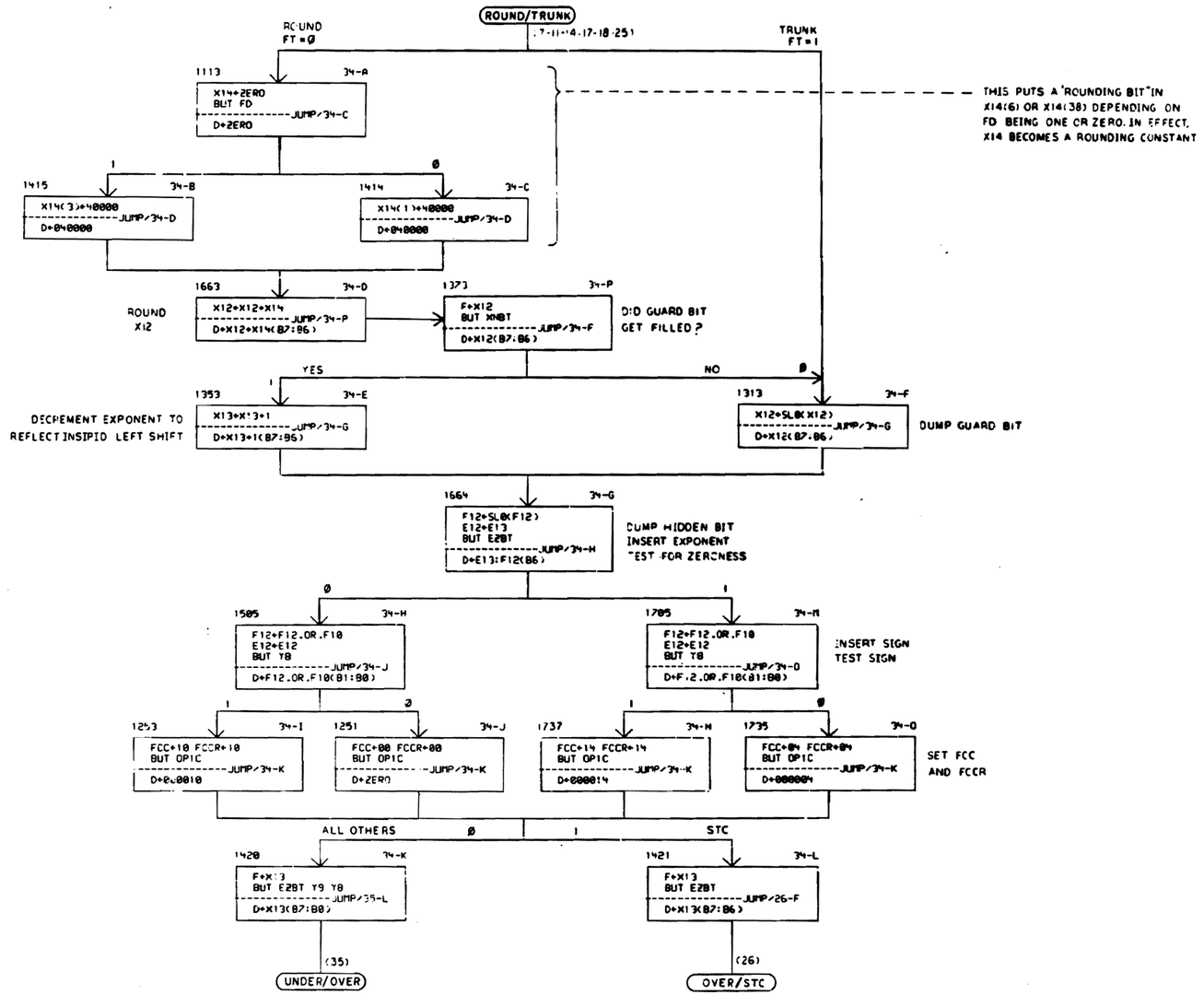
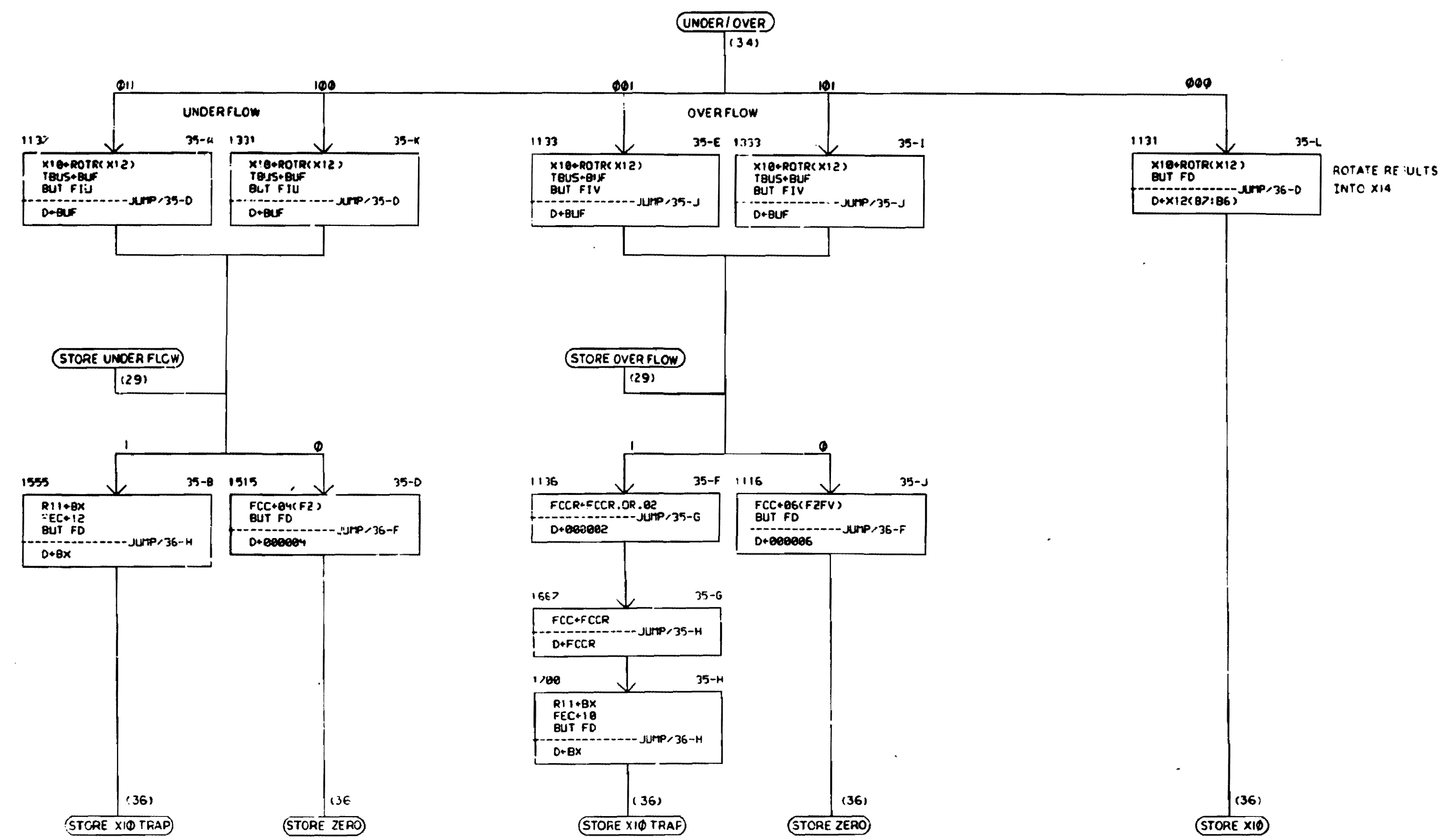


REVISIONS		
CHK	CHANGE NO	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (34)	D	FD	FP11-A-2	
SCALE — SHEET 37 OF 40	DIST.			

FP11-A-2



UNDER/OVER
(34)
Ø11
100
ØØ1
1Ø1
ØØØ
UNDERFLOW
OVERFLOW
1132 35-A
X10+ROTR(X12)
TBUS+BUF
BUT FIU
JUMP/35-D
D+BUF
1331 35-K
X10+ROTR(X12)
TBUS+BUF
BUT FIU
JUMP/35-D
D+BUF
1133 35-E
X10+ROTR(X12)
TBUS+BUF
BUT FIV
JUMP/35-J
D+BUF
1333 35-I
X10+ROTR(X12)
TBUS+BUF
BUT FIV
JUMP/35-J
D+BUF
1131 35-L
X10+ROTR(X12)
BUT FD
JUMP/36-D
D+X12(87:86)
ROTATE RESULTS INTO X14
STORE UNDER FLOW
(29)
STORE OVER FLOW
(29)
1
Ø
1555 35-B
R11+BX
FEC+12
BUT FD
JUMP/36-H
D+BX
1515 35-D
FCC+04(F2)
BUT FD
JUMP/36-F
D+000004
1136 35-F
FCCR+FCCR.OR.02
JUMP/35-G
D+000002
1116 35-J
FCC+06(F2FV)
BUT FD
JUMP/36-F
D+000006
1667 35-G
FCC+FCCR
JUMP/35-H
D+FCCR
1700 35-H
R11+BX
FEC+10
BUT FD
JUMP/36-H
D+BX
(36)
STORE XIØ TRAP
(36)
STORE ZERO
(36)
STORE XIØ TRAP
(36)
STORE ZERO
(36)
STORE XIØ

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REVISIONS | CHK | CHANGE NO. | REV.

TITLE: FP11-A FLOWS (35)

SIZE: D CODE: FD NUMBER: FP11-A-2 REV.

SCALE SHEET 38 OF 40

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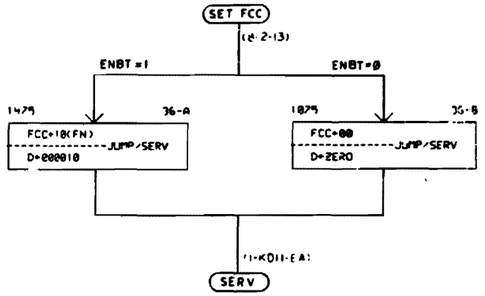

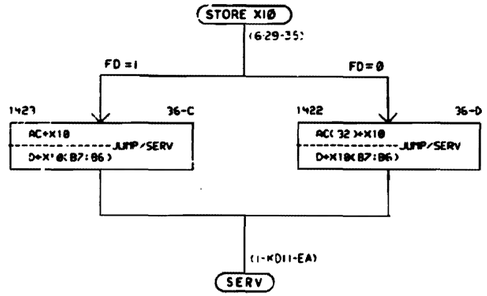

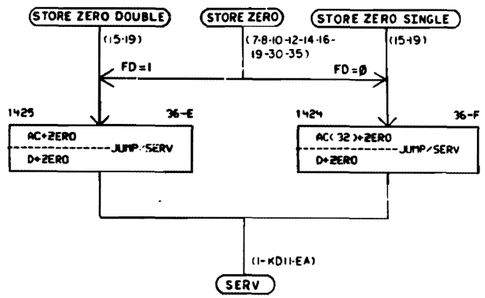

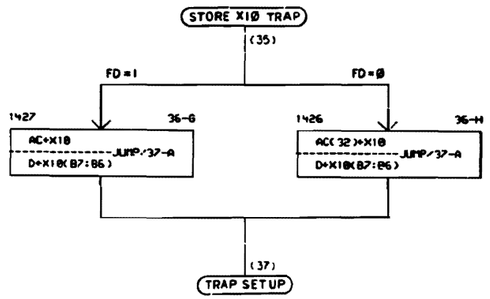

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII A FLOWS (36)			SIZE: D	CODE: FD
SCALE:	SHEET: 39 OF 45		DIST:	NUMBER: FPII-A-2

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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FP11-A FLOWS (37)	D	FD	FP11-A-2	
SCALE	SHEET 40 OF 40	DIST.		

FP11-A-2

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UNIT VARIATIONS COVERED BY THIS PRINT SET

REVISIONS			
REV.			
CHG. NO.			
DATE			

USED ON OPTION/MODEL	

SHEET 1 OF 3

DRN.	B.B Lodgson	DATE 27 OCT 77
CHK'D		DATE 4 NOV 77
PROJ. ENG.		DATE 4 NOV 77
FIELD SERV.		DATE 4 NOV 77

digital

TITLE: FPII-A

FLOW DIAGRAMS

SIZE	CODE	NUMBER	REV.
B	70	FPII-A-5	
DIST.			

CS-3 124

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MICRO FIELD DEFINITIONS

```
FCTL/=3,6,53,D

        A.AND.B=41
        D.AND.A=45
        A.OR.B=31
        D.OR.A=35
        D.XOR.A=65
        BBAR=73
        QPASS=62
        BPASS=63
        APASS=64
        DPASS=67
        ZERO=42
        ABAR.AND.B=51
        DBAR.AND.A=55
        A+B=1
        D+A=5
        BPLUS=3
        B-1=13
        -B-1=23
        B-A-1=11
        A-D-1=15
        A-B-1=21
        D-A-1=25

ECTL/=3,6,59,D

        A.AND.B=41
        D.AND.A=45
        D.OR.A=35
        A.XOR.B=61
        D.XOR.A=65
        BBAR=73
        QPASS=62
        BPASS=63
        APASS=64
        DPASS=67
        ZERO=42
        ABAR.AND.B=51
        DBAR.AND.A=55
        A+B=1
        D+A=5
        BPLUS=3
        B-1=13
        -B-1=23
        B-A-1=11
        A-D-1=15
        A-B-1=21
        D-A-1=25

ECIN/=0,1,60,D

        ZERO=0
        ONE=1

BSEL/=3,2,62,D

        AC.OR.1=0
        FDST=1
        FSRC=1
        AC=2
        BROM=3

ASEL/=1,1,63,D

        AC=0
        AROM=1

TOUT/=1,1,64,D

        NOP=0
        1134_TBUS=1

DCTL/=0,4,68,D

        NOP=0
        LDBT=1
        LDBF=2
        LDQF=3
        ROTL=4
        ROTR=5
        SLALU0=6
        SR0ALU=7
        SR1ALU=10
        SLALU0.LDBF=11
        SR1ALU.LDBF=12
        SR0ALUQ=14
        SLALU0Q=15

RET/=1,1,69,D

        RETURN=0
        STAY=1

BUT/=0,6,75,D

        NOP=0
        ENBT=54
        EZBT=52
        BUSRQ=55
        FNBT=56
        XZBT=57
        Q8.Q40=60
        COUT63=61
        EZBT.OP1A=13
        FID=41
        EZBT.Y8.Y9=62
        EZBT.Y8=63
        ENBT.Y8=64
        ENBT.EZBT.FNBT=65
        FNBT.XZBT=66
        FIV=42
        Y62=43
        FIU=45
        FIUV=46
        FIC=47
        FT=44
        ENBT.EZBT=67
        Y8=50
        Y61=44
        FD.FIV=2
        Y62.OP1A=3
        BREAKOUT=31
        FD=32
        OP1B=34
        OP1C=35
        OP1D=36
        OP1E=37
        FDST=71
        FSRC=71
        DST=72
        SRC=72
        GR7=73
        GR7.FLBAR=74
        FL=75
        FLBAR=76
        OP2A=77

CONST/=10,6,81,D

        NOP=0
        ZERO=53
        ONES=40
        OCT2=41
        OCT5=42
        OCT4=43
        OCT6=44
        OCT10=45
        OCT12=46
        OCT14=47
        OCT100=50
        OCT200=51
        OCT100000=60
        OCT40000=61
        OCT147757=63
        (143.159)=62
        OCT10.4.2=64
        OCT4.2=65
        FDFLBAR=66
        OCT4.10.2=67
        (56.24)=55
        (57.25)=56
        (58.26)=57
        OCT244=52
        (31.15)=54
        (56.24)*=70
        OCT170000=71
        BYTE10=3
        BYTE32=4
        BYTE43=5
        BYTE54=6
        BYTE65=7
        BYTE76=10
        BYTE07=11

MISC/=11,4,85,D

        TBUS_1134=0
        TBUS_BUF=1
        BUF_TBUS=4
        BUF_1134=5
        FDFL_TBUS=6
        FCC_TBUS=7
        SERV.BR=10
        NOP=11
        FDFL_BUF=12
        FDFL.BUF_TBUS=13
        FDFL.BUFH_TBUS=15
```

TITLE		SIZE	CODE	NUMBER	REV
FPII-A FLOW DIAGRAMS	SHEET 2 OF 8	B	FD	FPII-A-5	

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```
AROM/=0,3,88,D

        AR10=0
        AR11=1
        AR12=2
        AR13=3
        AR14=4
        FCCR=6
        FPS=7

BROM/=0,3,91,D

        BR10=0
        BR11=1
        BR12=2
        BR13=3
        BR14=4
        FEC=5
        FCCR=6
        FPS=7

SECT/=17,4,95,D

        S1=1
        S2=2
        S3=3
        S4=4
        S7=7
        S10=10
        S14=14
        S17=17

RSPA/=0,4,47,D

        PC=10
        R11=6
        R12=5
        R14=3
        R17=0

FORCE KER/=0,1,43,D

        KER=1

BUT SERV/=0,1,42,D

        SERV=1

PREVIOUS MODE/=1,1,41,D

        ASSERT=0

FORCE RS+1/=1,1,40,D

        RS+1=0

DST SEL/=3,2,39,D

        RD=2
        ROM=0

SRC SEL/=0,2,37,D

        RD=2
        ROM=0
        RBA=3

BUT BITS/=0,4,35,D

        NOP=0
        NBIT=1
        ZBIT=2
        COS=3
        COUT=7
        NBITZBIT=11
        NOSERV=17

AMUX/=1,2,31,D

        UBUS=3
        ALU=1

SSMUX/=0,2,29,D

        STRT=0
        SWAB=2

BBX CTRL/=0,4,27,D

        HOLD=0
        LOADB=1
        LOADBX=2

ALU BLEG/=5,5,23,D

        ZERO=0
        A+1=2
        A-1=3
        A-B=4
        A=5
        B=6
        A+B=10
        A-BX=22
        A+2=24
        A-2=25
        BX=27
        BBAR=30

AUX CTRL/=0,1,18,D

        AUX=1

CYCLE/=1,1,17,D

        SHORT=1
        LONG=0

LOAD BA/=0,1,16,D

        BA=1

ENAB MAINT/=0,1,15,D

        MAINT=1

BUS CTRL/=0,2,14,D

        DATI=0
        DATO=2

DATA TRAN/=0,1,12,D

        TRAN=1

MISC CTRL/=0,3,11,D

        NOP=0
        LOADCC=3
        LOADC=6
        COUNT=7

J/=0,9,8,+
```

TITLE			SIZE	CODE	NUMBER	REV
FLOW DIAGRAMS	FPII-A	SHEET 3 OF 8	B	FD	FPII-A-5	

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FP11A MACRO DEFINITIONS

```
AC(32)_X10          'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC,AROM/AR10,SECT/S14'
AC(32)_ZERO         'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC,SECT/S14'
AC.OR.1(32)_X12     'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR12,SECT/S14'
AC.OR.1(32)_X14     'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR14,SECT/S14'
AC.OR.1(32)_ZERO    'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC.OR.1,SECT/S14'
AC.OR.1_X12         'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR12'
AC.OR.1_X14         'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR14'
AC.OR.1_ZERO        'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC.OR.1'
AC_X10              'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC,AROM/AR10'
AC_ZERO             'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC'
BA_PC               'LOAD BA/BA,RSPA/PC'
BA_R12              'LOAD BA/BA,RSPA/R12'
BA_R12 R12_R12+2    'LOAD BA/BA,DST SEL/ROM,RSPA/R12,ALU BLEG/A+2,TOUT/NOP'
BA_RD               'LOAD BA/BA,SRC SEL/RD'
BUF_FPS             'FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,MISC/BUF_TBUS,BROM/FPS'
BUF_RD B_RD         'MISC/BUF_1134,BBX CTRL/LOADB,SRC SEL/RD,TOUT/NOP,CONST/NOP'
BUF_UDATA           'MISC/BUF_1134,AMUX/UBUS,TOUT/NOP,CONST/NOP'
BUT (Q8.Q40)        'BUT/Q8.Q40,CYCLE/LONG'
BUT (Q8.Q40) ZBIT   'BUT/Q8.Q40,BUT BITS/ZBIT,CYCLE/LONG'
BUT BR.OR.PFAIL     'BUT/BUSRQ,CYCLE/LONG'
BUT BREAKOUT        'BUT/BREAKOUT'
BUT COUT15          'BUT BITS/COUT,CYCLE/LONG'
BUT COUT63 ZBIT     'BUT/COUT63,BUT BITS/ZBIT,CYCLE/LONG'
BUT DST             'BUT/DST'
BUT ENBT            'BUT/ENBT,CYCLE/LONG'
BUT ENBT EZBT       'BUT/ENBT.EZBT,CYCLE/LONG'
BUT ENBT EZBT XNBT  'BUT/ENBT.EZBT.FNBT,CYCLE/LONG'
BUT ENBT Y8         'BUT/ENBT.Y8,CONST/BYTE07,CYCLE/LONG'
BUT EZBT            'BUT/EZBT,CYCLE/LONG'
BUT EZBT OP1A       'BUT/EZBT.OP1A,CYCLE/LONG'
BUT EZBT Y8         'BUT/EZBT.Y8,CONST/BYTE07,CYCLE/LONG'
BUT EZBT Y9 Y8      'BUT/EZBT.Y8.Y9,CONST/BYTE07,CYCLE/LONG'
BUT FD              'BUT/FD'
BUT FDST            'BUT/FDST'
BUT FIC             'BUT/FIC,CYCLE/LONG'
BUT FID             'BUT/FID,CYCLE/LONG'
BUT FIU             'BUT/FIU,CYCLE/LONG'
BUT FIUV            'BUT/FIUV,CYCLE/LONG'
BUT FIV             'BUT/FIV,CYCLE/LONG'
BUT FIV FD          'BUT/FD.FIV,CYCLE/LONG'
BUT FL              'BUT/FL'
BUT FLAG            'BUT BITS/C05'
BUT FLBAR           'BUT/FLBAR'
BUT FSRC            'BUT/FSRC'
BUT FT              'BUT/FT,CYCLE/LONG'
BUT GR7             'BUT/GR7'
BUT GR7.OR.FLBAR    'BUT/GR7.FLBAR'
BUT NBIT            'BUT BITS/NBIT,CYCLE/LONG'
BUT NBIT ZBIT       'BUT BITS/NBITZBIT,CYCLE/LONG'
BUT NOSERV          'BUT BITS/NOSERV'
BUT OP1B            'BUT/OP1B'
BUT OP1C            'BUT/OP1C'
BUT OP1D            'BUT/OP1D'
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TITLE		SIZE	CODE	NUMBER	REV
FP11-A FLOWS	SHEET 4 OF 8	B	FD	FP11-A-5	

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BUT OP1E                "BUT/OP1E"
BUT OP2A                "BUT/OP2A"
BUT SERV(PR.OR.PFAIL)   "BUT SERV/SERV,MISC/SERV.BR"
BUT SRC                 "BUT/SRC"
BUT XNBT                "BUT/FNBT,CYCLE/LONG"
BUT XNBT XZBT           "BUT/FNBT.XZBT,CYCLE/LONG"
BUT XZBT                "BUT/XZBT,CYCLE/LONG"
BUT Y61                 "BUT/Y61,CONST/BYTE65,CYCLE/LONG"
BUT Y62                 "BUT/Y62,CONST/BYTE65,CYCLE/LONG"
BUT Y62 OP1A            "BUT/Y62.OP1A,CONST/BYTE65,CYCLE/LONG"
BUT Y8                  "BUT/Y8,CONST/BYTE10,CYCLE/LONG"
BUT ZBIT                "BUT BITS/ZBIT,CYCLE/LONG"
BX_R11                  "BBX CTRL/LOADBX,RSPA/R11,TOUT/NOP"
BX_R14                  "BBX CTRL/LOADBX,RSPA/R14,TOUT/NOP"
BX_R17-BX               "BBX CTRL/LOADBX,RSPA/R17,ALU BLEG/A-BX,TOUT/NOP"
BX_X11(L) SWAB          "FCTL/BPASS,ECTL/BPASS,CONST/BYTE43,BROM/BR11,BBX CTRL/LOADBX,SSMUX/SWAB"
BX_X11(L) SWAB F_EAC    "FCTL/BPASS,ECTL/APASS,ASEL/AC,CONST/BYTE43,BROM/BR11,BBX CTRL/LOADBX,SSMUX/SWAB"
BX_ZERO                 "BBX CTRL/LOADBX,ALU BLEG/ZERO,TOUT/NOP"
B_(10.4.2)              "CONST/OCT10.4.2,BBX CTRL/LOADB"
B_(4.10.2)              "CONST/OCT4.10.2,BBX CTRL/LOADB"
B_(4.2)                 "CONST/OCT4.2,BBX CTRL/LOADB"
B_2 CLEAR FDFL          "CONST/OCT2,MISC/FDFL_TBUS,BBX CTRL/LOADB"
B_244                   "CONST/OCT244,BBX CTRL/LOADB"
B_B SWAB                "BBX CTRL/LOADB,ALU BLEG/B,SSMUX/SWAB,TOUT/NOP"
B_B+R17                 "DST SEL/ROM,RSPA/R17,ALU BLEG/A+B,BBX CTRL/LOADB,TOUT/NOP"
B_R17                   "BBX CTRL/LOADB,RSPA/R17,TOUT/NOP"
B_UDATA                 "BBX CTRL/LOADB,AMUX/UBUS,TOUT/NOP"
B_UDATA BUF_UDATA       "BBX CTRL/LOADB,AMUX/UBUS,MISC/BUF_1134,TOUT/NOP,CONST/NOP"
B_X11(H) SWAB           "FCTL/BPASS,ECTL/BPASS,CONST/BYTE65,BROM/BR11,BBX CTRL/LOADB,SSMUX/SWAB"
B_X11(H) SWAB F_EAC     "FCTL/BPASS,ECTL/APASS,ASEL/AC,CONST/BYTE65,BROM/BR11,BBX CTRL/LOADB,SSMUX/SWAB"
B_X13-X14 SWAB          "BBX CTRL/LOADB,FCTL/A-B-1,ECTL/A-B-1,ECIN/ONE,CONST/BYTE07,AROM/AR13,BROM/BR14,SSMUX/SWAB,CYCLE/LONG"
B_X14-X13 SWAB          "BBX CTRL/LOADB,FCTL/B-A-1,ECTL/B-A-1,ECIN/ONE,CONST/BYTE07,AROM/AR13,BROM/BR14,SSMUX/SWAB,CYCLE/LONG"
CC_FCC                  "MISC/TBUS_BUF,MISC CTRL/LOADCC,CONST/NOP"
CLEAR FD(FPS)           "FCTL/DBAR.AND.A,ECTL/DBAR.AND.A,DCTL/LDBF,CONST/OCT200,AROM/FPS,BROM/FPS"
CLEAR FDFL              "CONST/ZERO,MISC/FDFL_TBUS"
CLEAR FL(FPS)           "FCTL/DBAR.AND.A,ECTL/DBAR.AND.A,DCTL/LDBF,CONST/OCT100,AROM/FPS,BROM/FPS"
CLEAR FLAG              "MISC CTRL/LOADC,ALU BLEG/ZERO,TOUT/NOP"
CLEAR SIGN              "FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR10"
CLEAR SIGN T_X12        "FCTL/ZERO,ECTL/ZERO,DCTL/LDBT,AROM/AR12,BROM/BR10"
DATI                    "DATA TRAN/TRAN"
DATO                    "DATA TRAN/TRAN,BUS CTRL/DATO,CYCLE/LONG"
F10_F10 E10_E10.AND.177 "FCTL/BPASS,ECTL/DBAR.AND.A,DCTL/LDBF,CONST/OCT100000,AROM/AR10,BROM/BR10"
F10_F10 E10_E10.XOR.200 "FCTL/BPASS,ECTL/D.XOR.A,DCTL/LDBF,CONST/OCT100000,AROM/AR10,BROM/BR10"
F11_SR1(F11) E11_E11    "FCTL/BPASS,ECTL/BPASS,DCTL/SR1ALU.LDBF,BROM/BR11"
F11_SR1(F11) E11_ZERO   "FCTL/BPASS,ECTL/ZERO,DCTL/SR1ALU.LDBF,BROM/BR11"
F12_F12 E12_B           "FCTL/BPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_1134,BROM/BR12,ALU BLEG/B,TOUT/NOP,CONST/NOP"
F12_F12 E12_E12+200     "FCTL/BPASS,ECTL/D+A,DCTL/LDBF,CONST/OCT100000,AROM/AR12,BROM/BR12,CYCLE/LONG"
F12_F12 E12_E12.AND.360 "FCTL/BPASS,ECTL/D.AND.A,DCTL/LDBF,CONST/OCT170000,AROM/AR12,BROM/BR12"
F12_F12.OR.F10 E12_E12  "FCTL/A.OR.B,ECTL/BPASS,DCTL/LDBF,AROM/AR10,BROM/BR12"
F12_SL0(F12) E12_E13    "FCTL/BPASS,ECTL/APASS,DCTL/SLALU0.LDBF,AROM/AR13,BROM/BR12"
F12_SR1(F12) E12_ZERO   "FCTL/BPASS,ECTL/ZERO,DCTL/SR1ALU.LDBF,BROM/BR12"
F13_ZERO E13_E11        "FCTL/ZERO,ECTL/APASS,DCTL/LDBF,AROM/AR11,BROM/BR13"
F13_ZERO E13_E11.XOR.200        "FCTL/ZERO,ECTL/D.XOR.A,DCTL/LDBF,CONST/OCT100000,AROM/AR11,BROM/BR13"
F13_ZERO E13_E12        "FCTL/ZERO,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR13"
F13_ZERO E13_E12 T_X12  "FCTL/ZERO,ECTL/APASS,DCTL/LDBT,AROM/AR12,BROM/BR13"
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F14_SL0(F14) E14_E13    'FCTL/BPASS,ECTL/APASS,DCTL/SLALU0,LDBF,AROM/AR13,BROM/BR14'
F14_ZERO E14_E12        'FCTL/ZERO,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR14'
F14_ZERO E14_E12 T_X12  'FCTL/ZERO,ECTL/APASS,DCTL/LDBT,AROM/AR12,BROM/BR14'
FCCR_FCCR.OR.02         'FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT2,AROM/FCCR,BROM/FCCR'
FCC_00                  'CONST/ZERO,MISC/FCC_TBUS'
FCC_00 FCCR_00          'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/ZERO,MISC/FCC_TBUS,BROM/FCCR'
FCC_04 FCCR_04          'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT4,MISC/FCC_TBUS,BROM/FCCR'
FCC_04(FZ)              'CONST/OCT4,MISC/FCC_TBUS'
FCC_05(FZFC)            'CONST/OCT5,MISC/FCC_TBUS'
FCC_06(FZFV)            'CONST/OCT6,MISC/FCC_TBUS'
FCC_10 FCCR_10          'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT10,MISC/FCC_TBUS,BROM/FCCR'
FCC_10(FN)              'CONST/OCT10,MISC/FCC_TBUS'
FCC_14 FCCR_14          'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT14,MISC/FCC_TBUS,BROM/FCCR'
FCC_14(FNFZ)            'CONST/OCT14,MISC/FCC_TBUS'
FCC_FCCR                'FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,MISC/FCC_TBUS,BROM/FCCR'
FDFL.BUFH_FPS X10_X10   'FCTL/BPASS,ECTL/BPASS,DCTL/LDBT,CONST/BYTE10,MISC/FDFL.BUFH_TBUS,AROM/FPS,BROM/BR10'
FDFL.BUF_FPS            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,MISC/FDFL.BUF_TBUS,BROM/FPS'
FDFL.BUF_FPS F_E13      'FCTL/BPASS,ECTL/APASS,CONST/BYTE10,MISC/FDFL.BUF_TBUS,AROM/AR13,BROM/FPS'
FDFL_BUF                'MISC/FDFL_BUF,CONST/NOP'
FDFL_FDFLBAR            'CONST/FDFLBAR,MISC/FDFL_TBUS'
FDST(3)_X10             'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/FDST,AROM/AR10,SECT/S10'
FEC_02                  'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT2,BROM/FEC'
FEC_04                  'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT4,BROM/FEC'
FEC_06                  'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT6,BROM/FEC'
FEC_10                  'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT10,BROM/FEC'
FEC_12                  'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT12,BROM/FEC'
FEC_14                  'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT14,BROM/FEC'
FPS_BUF                 'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/FPS,CONST/NOP'
FPS_BUF CC_BUF          'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/FPS,MISC CTRL/LOADCC,CONST/NOP'
FPS_FPS.AND.147757      'FCTL/D.AND.A,ECTL/D.AND.A,DCTL/LDBF,CONST/OCT147757,AROM/FPS,BROM/FPS'
FPS_FPS.OR.100000       'FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT100000,AROM/FPS,BROM/FPS'
FSRC(32)_X11            'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/FSRC,AROM/AR11,SECT/S14'
FSRC_X11                'FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/FSRC,AROM/AR11'
F_AC                    'FCTL/BPASS,ECTL/BPASS,BSEL/AC'
F_AC.XOR.200            'FCTL/D.XOR.A,ECTL/D.XOR.A,ASEL/AC,CONST/OCT100000'
F_Q                     'FCTL/QPASS,ECTL/QPASS'
F_X10                   'FCTL/BPASS,ECTL/BPASS,BROM/BR10'
F_X10BAR                'FCTL/BBAR,ECTL/BBAR,BROM/BR10'
F_X12                   'FCTL/BPASS,ECTL/BPASS,BROM/BR12'
F_X13                   'FCTL/BPASS,ECTL/BPASS,BROM/BR13'
MAINT                    ENAB MAINT/MAINT'
PC_PC+2                 'DST SEL/ROM,RSPA/PC,ALU BLEG/A+2,TOUT/NOP'
PC_PC-2                 'DST SEL/ROM,RSPA/PC,ALU BLEG/A-2,TOUT/NOP'
Q_(F12*EAC)             'FCTL/APASS,ECTL/BPASS,DCTL/LDQF,BSEL/AC,AROM/AR12'
Q_FDST                  'FCTL/BPASS,ECTL/BPASS,DCTL/LDQF,BSEL/FDST'
Q_FSRC                  'FCTL/BPASS,ECTL/BPASS,DCTL/LDQF,BSEL/FSRC'
Q_X12                   'FCTL/BPASS,ECTL/BPASS,DCTL/LDQF,BROM/BR12'
Q_ZERO                  'FCTL/ZERO,ECTL/ZERO,DCTL/LDQF'
R11_BX                  'DST SEL/ROM,RSPA/R11,ALU BLEG/BX,TOUT/NOP'
R11_R11-2               'DST SEL/ROM,RSPA/R11,ALU BLEG/A-2,TOUT/NOP'
R12_R12+2               'DST SEL/ROM,RSPA/R12,ALU BLEG/A+2,TOUT/NOP'
R12_RD                  'DST SEL/ROM,RSPA/R12,SRC SEL/RD,TOUT/NOP'
R12_RD+B                'DST SEL/ROM,RSPA/R12,SRC SEL/RD,ALU BLEG/A+B,TOUT/NOP'
R12_RD-2                'DST SEL/ROM,RSPA/R12,SRC SEL/RD,ALU BLEG/A-2,TOUT/NOP'
R12_RD-B                'DST SEL/ROM,RSPA/R12,SRC SEL/RD,ALU BLEG/A-B,TOUT/NOP'
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R12_UDATA               'DST SEL/ROM,RSPA/R12,AMUX/UBUS,TOUT/NOP'
R14_(237.217)           'CONST/(143.159),DST SEL/ROM,RSPA/R14'
R14_(70.30)             'CONST/(56.24),DST SEL/ROM,RSPA/R14'
R14_(72.32)             'CONST/(58.26),DST SEL/ROM,RSPA/R14'
R14_4                   'CONST/OCT4,DST SEL/ROM,RSPA/R14'
R14_B                   'DST SEL/ROM,RSPA/R14,ALU BLEG/B,TOUT/NOP'
R14_BX                  'DST SEL/ROM,RSPA/R14,ALU BLEG/BX,TOUT/NOP'
R14_R14 SWAB            'DST SEL/ROM,RSPA/R14,SSMUX/SWAB,TOUT/NOP'
R14_R14+1               'DST SEL/ROM,RSPA/R14,ALU BLEG/A+1,TOUT/NOP'
R14_R14+1 SWAB          'DST SEL/ROM,RSPA/R14,ALU BLEG/A+1,SSMUX/SWAB,TOUT/NOP'
R14_R14-1               'DST SEL/ROM,RSPA/R14,ALU BLEG/A-1,TOUT/NOP'
R14_X11 SWAB            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR11,DST SEL/ROM,RSPA/R14,SSMUX/SWAB,CYCLE/LONG'
R14_X13 SWAB            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR13,DST SEL/ROM,RSPA/R14,SSMUX/SWAB,CYCLE/LONG'
R14_X14 SWAB            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR14,DST SEL/ROM,RSPA/R14,SSMUX/SWAB,CYCLE/LONG'
R17_(71.31)             'DST SEL/ROM,RSPA/R17,CONST/(57.25)'
R17_2                   'CONST/OCT2,DST SEL/ROM,RSPA/R17'
R17_B                   'DST SEL/ROM,RSPA/R17,ALU BLEG/B,TOUT/NOP'
R17_BBAR                'DST SEL/ROM,RSPA/R17,ALU BLEG/BBAR,TOUT/NOP'
R17_FEC                 'FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,BROM/FEC,DST SEL/ROM,RSPA/R17,CYCLE/LONG'
R17_FPS                 'FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,BROM/FPS,DST SEL/ROM,RSPA/R17,CYCLE/LONG'
R17_R17-B               'DST SEL/ROM,RSPA/R17,ALU BLEG/A-B,TOUT/NOP'
R17_X13 SWAB            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR13,DST SEL/ROM,RSPA/R17,SSMUX/SWAB,CYCLE/LONG'
R17_ZERO                'DST SEL/ROM,RSPA/R17,ALU BLEG/ZERO,TOUT/NOP'
RD_R17                  'DST SEL/RD,SRC SEL/ROM,RSPA/R17,TOUT/NOP'
RD_RD+2                 'DST SEL/RD,SRC SEL/RD,ALU BLEG/A+2,TOUT/NOP'
RD_RD+B                 'DST SEL/RD,SRC SEL/RD,ALU BLEG/A+B,TOUT/NOP'
RD_RD-2                 'DST SEL/RD,SRC SEL/RD,ALU BLEG/A-2,TOUT/NOP'
RD_RD-B                 'DST SEL/RD,SRC SEL/RD,ALU BLEG/A-B,TOUT/NOP'
RETURN                  'RET/RETURN'
SERV(BR.OR.PFAIL)       'MISC/SERV.BR'
SET FD(FPS)             'FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT200,AROM/FPS,BROM/FPS'
SET FDFL                'CONST/ONES,MISC/FDFL,TBUS'
SET FL(FPS)             'FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT100,AROM/FPS,BROM/FPS'
SET FLAG                'MISC CTRL/COUNT'
SET SIGN                'FCTL/ZERO,ECTL/DPASS,DCTL/SLALU0,CONST/OCT100000,BROM/BR10'
TBUS_BUF                'MISC/TBUS_BUF,CONST/NOP'
T_B                     'ALU BLEG/B,TOUT/NOP'
T_R14                   'RSPA/R14,TOUT/NOP'
T_R14-B                 'RSPA/R14,ALU BLEG/A-B,TOUT/NOP'
T_R17+B                 'RSPA/R17,ALU BLEG/A+B,TOUT/NOP'
UDATA_BX                'ALU BLEG/BX,TOUT/NOP'
UDATA_R17               'SRC SEL/ROM,RSPA/R17,TOUT/NOP'
UDATA_X10(3)            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE76,BROM/BR10'
UDATA_X11(0)            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,BROM/BR11'
UDATA_X11(1)            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE32,BROM/BR11'
UDATA_X11(2)            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE54,BROM/BR11'
UDATA_X11(3)            'FCTL/BPASS,ECTL/BPASS,CONST/BYTE76,BROM/BR11'
X10(0)_BUF              'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S1,CONST/NOP'
X10(1)_BUF              'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S2,CONST/NOP'
X10(10)_ZERO            'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR10,SECT/S3'
X10(2)_BUF              'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S4,CONST/NOP'
X10(210)_ZERO           'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR10,SECT/S7'
X10(3)_BUF              'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S10,CONST/NOP'
X10_Q                   'FCTL/QPASS,ECTL/QPASS,DCTL/LDBF,BROM/BR10'
X10_ROTL(ZERO#(EAC.XOR.E10)     'FCTL/ZERO,ECTL/A.XOR.B,DCTL/ROTL,ASEL/AC,BROM/BR10'
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TITLE		SIZE	CODE	NUMBER	REV
FPII-A FLOWS	SHEET 7 OF 8	B	FD	FPII-A-5	

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X10_ROTR(X12)              'FCTL/APASS,ECTL/APASS,DCTL/ROTR,AROM/AR12,BROM/BR10'
X10_X11                    'FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR11,BROM/BR10'
X11(10)_ZERO               'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR11,SECT/S3'
X11_(70.30)-X14            'FCTL/D-A-1,ECTL/D-A-1,DCTL/LDBF,ECIN/ONE,CONST/(56.24)*,AROM/AR14,BROM/BR11,CYCLE/LONG'
X11_AC                     'FCTL/APASS,ECTL/APASS,DCTL/LDBF,ASEL/AC,BROM/BR11'
X11_ROTL(X12)              'FCTL/BPASS,ECTL/BPASS,DCTL/ROTL,BROM/BR11'
X11_ROTR(X12)              'FCTL/APASS,ECTL/APASS,DCTL/ROTR,AROM/AR12,BROM/BR11'
X11_SL0(X11-X12) Q_SLC63(Q)      'FCTL/B-A-1,ECTL/B-A-1,DCTL/SLALUOQ,ECIN/ONE,AROM/AR12,BROM/BR11'
X11_SL0(X12+X11) Q_SLC63(Q)      'FCTL/A+B,ECTL/A+B,DCTL/SLALUOQ,AROM/AR12,BROM/BR11'
X11_SR0(X11)               'FCTL/BPASS,ECTL/BPASS,DCTL/SROALU,BROM/BR11'
X11_SR1(X11)               'FCTL/BPASS,ECTL/BPASS,DCTL/SR1ALU,BROM/BR11'
X11_X12                    'FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR11'
X11_ZERO                   'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR11'
X12(1)_BUF                 'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR12,SECT/S2,CONST/NOP'
X12(2)_BUF                 'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR12,SECT/S4,CONST/NOP'
X12_-X12                   'FCTL/-B-1,ECTL/-B-1,ECIN/ONE,DCTL/LDBF,BROM/BR12,CYCLE/LONG'
X12_ROTL(X10)              'FCTL/APASS,ECTL/APASS,DCTL/ROTL,AROM/AR10,BROM/BR12'
X12_ROTL(X11)              'FCTL/APASS,ECTL/APASS,DCTL/ROTL,AROM/AR11,BROM/BR12'
X12_ROTR(F10.OR.F12)*E12)        'FCTL/A.OR.B,ECTL/BPASS,DCTL/ROTR,AROM/AR10,BROM/BR12'
X12_SL0(Q)                 'FCTL/QPASS,ECTL/QPASS,DCTL/SLALUO,BROM/BR12'
X12_SL0(X12)               'FCTL/BPASS,ECTL/BPASS,DCTL/SLALUO,BROM/BR12'
X12_SL00(X12)              'FCTL/A+B,ECTL/A+B,DCTL/SLALUO,AROM/AR12,BROM/BR12,CYCLE/LONG'
X12_SR0(X11+X12) Q_SR0(Q)        'FCTL/A+B,ECTL/A+B,DCTL/SROALUQ,AROM/AR11,BROM/BR12'
X12_SR0(X11BAR.AND.X12) 'FCTL/ABAR.AND.B,ECTL/ABAR.AND.B,DCTL/SROALU,AROM/AR11,BROM/BR12'
X12_SR0(X12)               'FCTL/BPASS,ECTL/BPASS,DCTL/SROALU,BROM/BR12'
X12_SR0(X12) Q_SR0(Q)      'FCTL/BPASS,ECTL/BPASS,DCTL/SROALUQ,BROM/BR12'
X12_X10                    'FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR10,BROM/BR12'
X12_X11-X12                'FCTL/A-B-1,ECTL/A-B-1,DCTL/LDBF,ECIN/ONE,AROM/AR11,BROM/BR12,CYCLE/LONG'
X12_X12+X11                'FCTL/A+B,ECTL/A+B,DCTL/LDBF,AROM/AR11,BROM/BR12,CYCLE/LONG'
X12_X12+X14                'FCTL/A+B,ECTL/A+B,DCTL/LDBF,AROM/AR14,BROM/BR12,CYCLE/LONG'
X12_X12-X11                'FCTL/B-A-1,ECTL/B-A-1,DCTL/LDBF,ECIN/ONE,AROM/AR11,BROM/BR12,CYCLE/LONG'
X12_ZERO                   'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR12'
X13_(37.17)-X13            'FCTL/D-A-1,ECTL/D-A-1,DCTL/LDBF,ECIN/ONE,CONST/(31.15),AROM/AR13,BROM/BR13,CYCLE/LONG'
X13_R14                    'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_1134,BROM/BR13,RSPA/R14,CYCLE/LONG,TOUT/NOP,CONST/NOP'
X13_X13+1                  'FCTL/BPLUS,ECTL/BPLUS,DCTL/LDBF,ECIN/ONE,BROM/BR13'
X13_X13+200                'FCTL/D+A,ECTL/D+A,DCTL/LDBF,CONST/OCT100000,AROM/AR13,BROM/BR13,CYCLE/LONG'
X13_X13+X14                'FCTL/A+B,ECTL/A+B,DCTL/LDBF,AROM/AR14,BROM/BR13'
X13_X13-1                  'FCTL/B-1,ECTL/B-1,DCTL/LDBF,BROM/BR13'
X13_X13-200                'FCTL/A-D-1,ECTL/A-D-1,DCTL/LDBF,ECIN/ONE,CONST/OCT100000,AROM/AR13,BROM/BR13,CYCLE/LONG'
X13_X13-X14                'FCTL/B-A-1,ECTL/B-A-1,ECIN/ONE,DCTL/LDBF,AROM/AR14,BROM/BR13'
X13_X14                    'FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR14,BROM/BR13'
X14(1)_40000               'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT40000,BROM/BR14,SECT/S2'
X14(3)_40000               'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT40000,BROM/BR14,SECT/S10'
X14_R14                    'FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_1134,BROM/BR14,RSPA/R14,CYCLE/LONG,TOUT/NOP,CONST/NOP'
X14_ROTR(F10.GR.F14)*E14)        'FCTL/A.OR.B,ECTL/BPASS,DCTL/ROTR,AROM/AR10,BROM/BR14'
X14_X11.AND.X14            'FCTL/A.AND.B,ECTL/A.AND.B,DCTL/LDBF,AROM/AR11,BROM/BR14'
X14_X12                    'FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR14'
X14_X13.XOR.200            'FCTL/D.XOR.A,ECTL/D.XOR.A,DCTL/LDBF,CONST/OCT100000,AROM/AR13,BROM/BR14'
X14_ZERO                   'FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR14'
```

TITLE		SIZE	CODE	NUMBER	REV
FPII-A FLOWS	SHEET 8 OF 8	3	FD	FPII-A-5	

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FIELD MAINTENANCE PRINT SET

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TABLE OF CONTENTS

UNIT VARIATIONS COVERED BY THIS PRINT SET
H7441-Ø

H7441
Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.
MPØØ271

REVISIONS	REV.	CHG. NO.	DATE

USED ON OPTION/MODEL	
7013323	
1134A	
SHEET 1 OF 1	

DRN. D. Healy	DATE NOV 76	TITLE: H7441 UNIT ASSY
CHK'D D. Healy	DATE NOV 76	
PROJ. ENG.	DATE 20DEC76	
FIELD SERV.	DATE 12-20-76	

digital

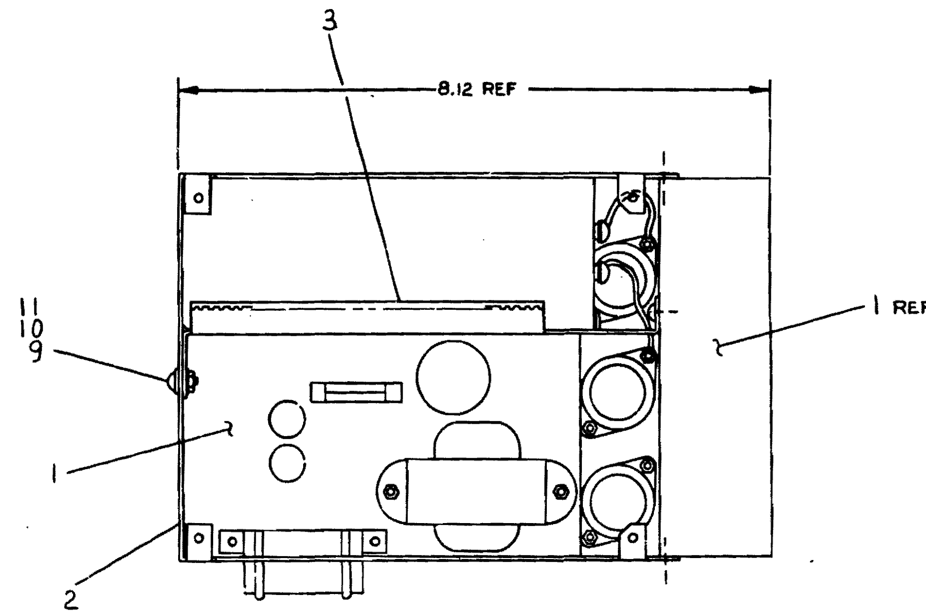
SIZE	CODE	NUMBER	REV.
B	TC	H7441-Ø-1	
DIST.			

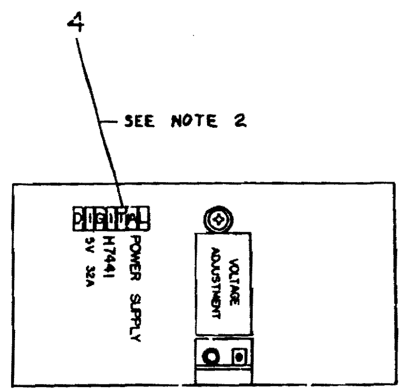
EN-01124-16-N675-(32)

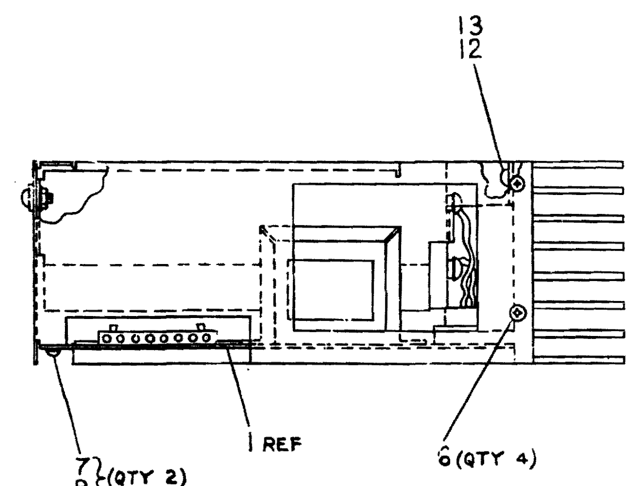
NOTES:

~~1. ATTACH (RED) WIRE FROM ITEM (1) [illegible] TO POSITIVE (+) TERM. OF CAPACITOR ITEM (5). ATTACH REMAINING (BLK) WIRE TO THE (−) TERMINAL OF THE CAP (ITEM 5).~~

2. PEEL AND ATTACH ITEM 4 TO ITEM 2 AS SHOWN.







QTY	DESCRIPTION	DWG./PART NO.	ITEM NO.
1	WASHER, LOCK INT. TOOTH #6	9006833	13
1	SCR, PHL PAN HD. #6-32X.38	9006022-01	12
1	NUT, KEPS #6-32X.31	9006560	11
1	WASHER, FLAT #6	9006659	10
1	SCR, PHL PAN HD. #6-32X.31	9006021-01	9
2	WASHER FLAT #4	9008172	8
2	SCR, PHL, PAN HD #4-40X.25	9008301-01	7
4	SCR, SELF TAPPING #4-40X.31	9009142-2	6
~~1~~	~~CAPACITOR, 24K µF, 30 VDC~~	~~1010708-00~~	~~5~~
1	DECAL	B-IA-7416945-10	4
1	BRACKET, CAPACITOR	D-IA-7417543-0-0	3
1	BRACKET, REGULATOR	D-IA-5309756-09	2
1	REGULATOR, +5V, 32 A	D-UA-5412441-0-0	1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL: SEE PARTS LIST

FINISH: —

QUANTITY & VARIATION

FIRST USED ON: 113A

NEXT HIGHER ASSY.: B-DD-H7441-0

SCALE NONE — SHEET 1 OF 1

TITLE: H7441 UNIT ASSY

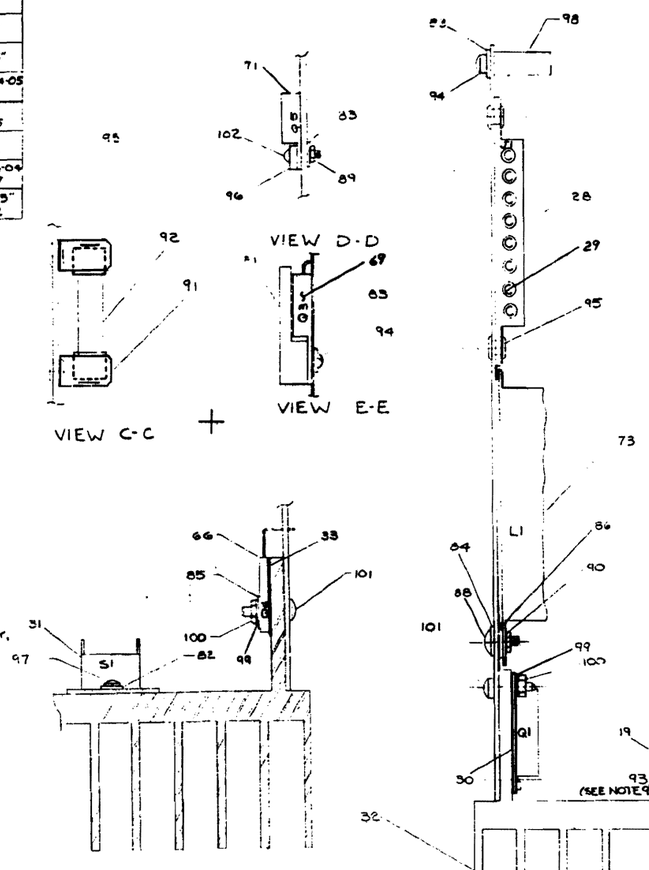
digital

SIZE	CODE	NUMBER	REV.
D	UA	H7441-Ø-Ø	C

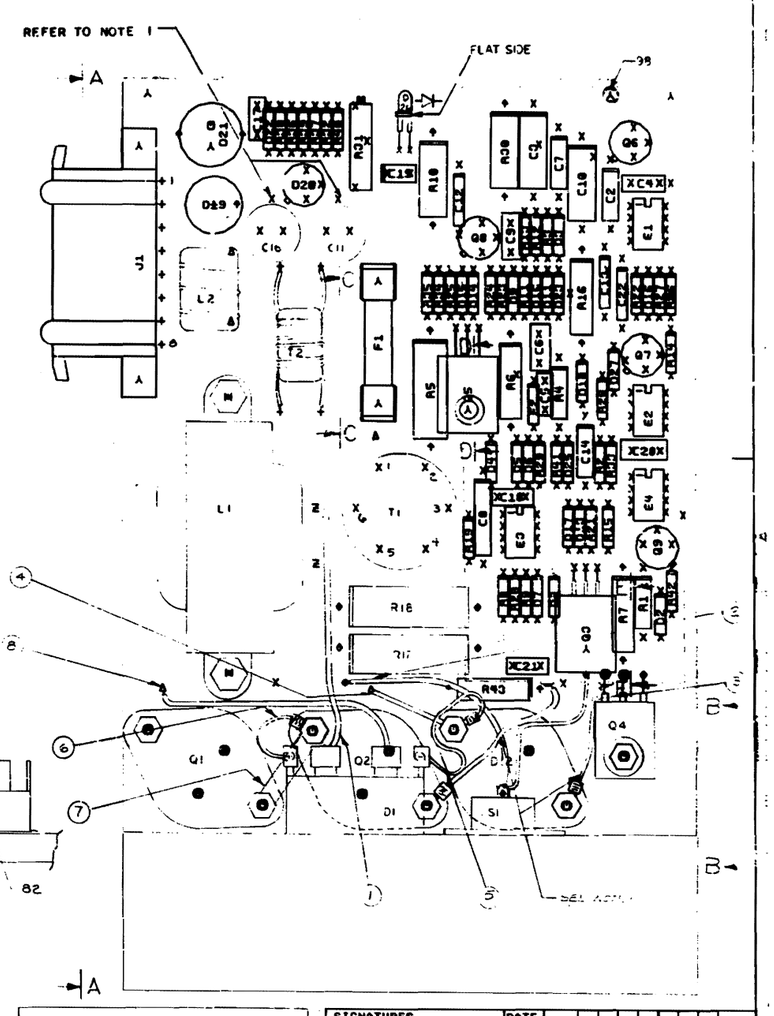
WIRE & BUS STRAP RUNS

NO	FROM	TO	WIRE OR BUS LENGTH
①	FEEDTHRU AT F1	TERMINAL D1	#14 AWG 4" SEE NOTE 3
②	S1	FEEDTHRU SHOWN	#18 AWG 3"
③	S1	FEEDTHRU SHOWN	#18 AWG 2.5"
④	D12	FEEDTHRU SHOWN	DEC PT #:12140-05 SEE NOTE 4
⑤	TERMINAL D1	D12	#14 AWG 5" SEE NOTE 5
⑥	TERMINAL D1	Q2	#14 AWG 2" SEE NOTE 6
⑦	Q2	Q1	DEC PT #:12140-04 SEE NOTE 7
⑧	TERMINAL D1	FEEDTHRU SHOWN	#14 AWG 2.75" SEE NOTE 2

NOTES: 1. MOUNT WIRES PER IA DRAWING NO. IA 7013274. RED WIRE TO CASE Q2 AND POSITIVE TERMINAL C1 & BLACK WIRE TO CASE D12 AND NEGATIVE TERMINAL C1.
2. WIRE RUN ⑧ IS SOLDERED AT D1
3. WIRE RUN ① IS SOLDERED AT D1
4. STRAP ④ (ITEM #26) IS SOLDERED AT FEEDTHROUGH SHOWN AND MOUNTED UNDER RING LUG OF D12.
5. WIRE RUN ⑤ IS SOLDERED AT D1 AND CRIMPED TO F.ING LUG ITEM #87 OF D12.
6. WIRE RUN ⑥ IS SOLDERED AT D1 AND CRIMPED TO RING LUG ITEM #87 OF Q2.
7. BUS STRAP ⑦ (ITEM #25) IS MOUNTED UNDER RING LUG OF Q2 AND ON CASE OF Q1.
8. TORQUE HARDWARE ON Q1, Q2, Q4 AND D12 TO 5 IN.-LBS. FROM NUT SIDE ONLY. TORQUE OTHER HARDWARE TO DEC STD VALUES
9. APPLY THERMAL COMPOUND TO D1 (ITEM 18) ONLY.



COMPONENT SIDE VIEW



NOTES:
1. INDICATED DRILL POINTS AT C11 AND C16 SHOULD NOT BE USED FOR DRILL ALIGNMENT DURING MANUFACTURE. THESE OVERSIZED PADS WILL NOT CENTER WITH DRILL BORING.

CHG#	CHANGE NO	REV
	5412441-0007	H
		J

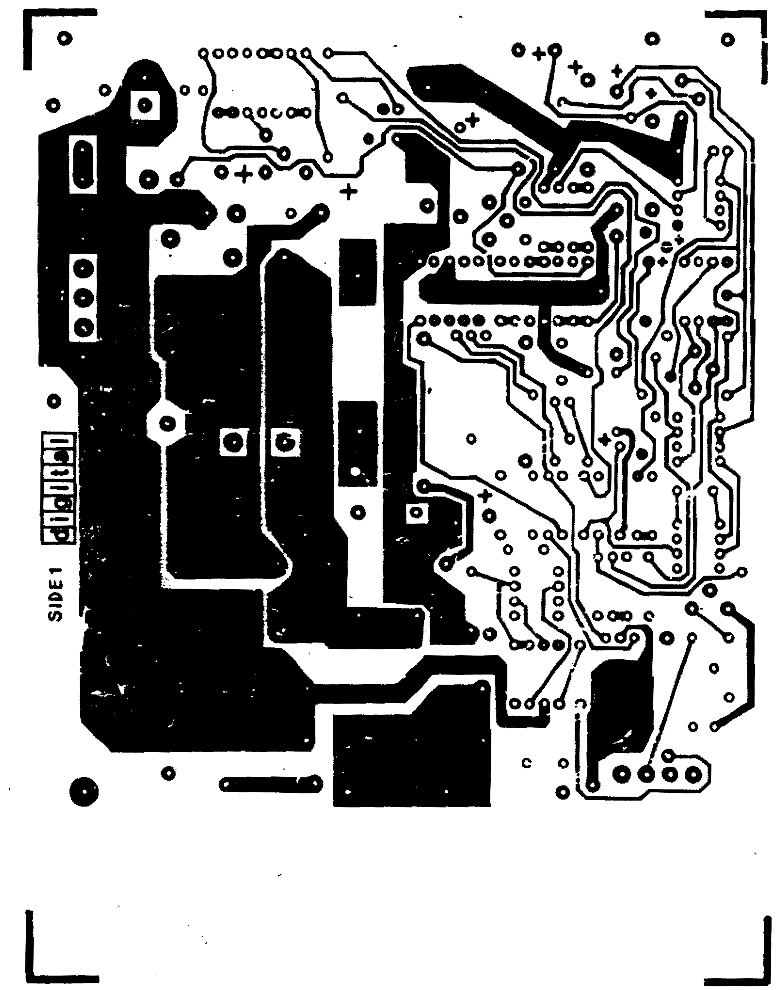
ETCH REV. E
P.C. DESIGN DATA BASE REV. B-P4

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ.ENG.	
PROD.	
SCALE 2/1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. B-DD-5412441-0	

digital

TITLE +5V, 32 AMP REGULATOR

SIZE	CODE	NUMBER	REV
D	UA	5412441-0-0	J

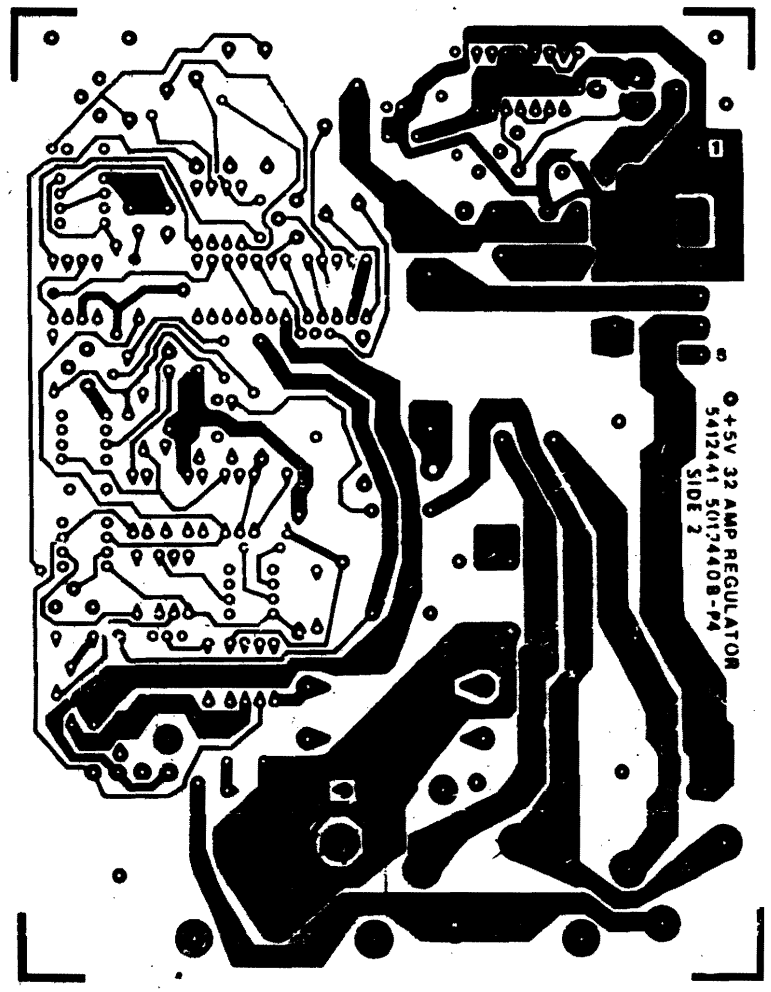


CHK	CHANGE NO	REV

Title block (first heading row): REVISIONS

+5V, 32AMP. REGULATOR   BUA 5412441-0-0   J

2/1   Z   3



REVISIONS		
CHK	CHANGE NO	REV

+5V, 32AMP REGULATOR DWG 5912441-0-0 J

3 OF 3

LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
1	1	D-MD-5012440-0-0	5012440-00	5412441	1	
2	2		1000009-00	33.0 MMF 100V 5%200PPM DM15S (10-00	1	C20
3	3		1000021-00	220.0 MMF 100V 5%200PPM DM15S (10-00	1	C9
4	4		1001610-01	.01 MFD 100V OR 50V Z5U DISC/800PF MIN	5	C4,C5,C17,C18,C21
5	5		1002627-00	2.2MFD 20V 10% 150D S.TA (10	2	C2,C7
6	6		1004813-00	10 MFD 20V 10% 150D S.TA (10-00	1	C8
7	7		1010279-00	.47 MFD 25V 20% 2C023 CER.	1	C19
8	8		1010646-00	.015 MFD 50V 2% M.POLYCARB	2	C3,C10
9	9		1010702-00	24,000 MFD 50V GX 36D AL EL	1	C1
10	10		1012607-00	560 MFD 20V HX 672D AL EL	1	C11
11	11		1012607-01	1200 MFD 6.3V HX 672D AL EL	1	C16
12	12		1009964-00	.68 MFD 35V 10% 150D S.TA	1	C12
13	13		1001776-00	1 MFD 35V 10% 150D S.TA (10-00	3	C13,C14,C22
14	14		1000024-00	470.0 MMF 100V 5%200PPM DM15S (10-00	1	C6
15	15		1105508-00	1N 823 VZ= 6.2 5% .40W Y	1	D18
16	16		1102808-00	1N 752A VZ= 5.6 5% .40W P	1	D22
17	17		1103341-00	MR1033B PIV=300 I= 3A Z44 SM	1	D19
18	18		1105275-00	D 672 TR= 15NS PIV= 60V SP	15	D3-D6,D9-D11,D13-D17,D23,D25,
					CONT	D27
19	19		1110051-00	DM 16 ASSY@200V & 25A #990-3	1	D1
20	20		1110324-00	LED 1MCD@10MA #MV5054-1#HP4882	1	D26
21	21		1110836-00	1N 759A VZ= 12.0 5% .40W P	1	D2
22	22		1110968-00	2N 5062 SCR@100V I=.8A T092	1	D20
23	23		1112595-01	A114B PIV=200 I= 1A	2	D7,D8
24	24		1113496-00	UES602R PIV=100 I=30A T03	1	D12
25	25		1214074-04	STRAP,THERMAL 2 HOLE	1	
26	26		1214074-05	STRAP,THERMAL LUG .815	1	
27	27		1209070-00	FUSE, SUB-MINI, 5.000A, 125V, RADIAL LEAD	1	F2
28	28		1209340-00	MATE-N-LOK 8PIN,HOUSING,SKT	1	J1
29	29		1209456-01	MATE-N-LOK SKT PCB TAB LOOSE	8	

REVISION HISTORY			VARIATIONS FOR THIS ASSY.	FIRST USED ON:		DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			
CHK	ECO NO	REV							
SC	00008	J	QQ	MADE BY: D.SIREEN	DATE: 10-MAR-78	TITLE: PARTS LIST +5V 32 AMP REGULATOR			
				CHECKED: F.GAROFALO	DATE: 10-MAR-78				
				DSN.ENG.: R.DAY	DATE: 10-MAR-78				
				PROD.: R.B.KING	DATE: 10-MAR-78	SIZE: K	CODE: FL	DOCUMENT NUMBER: 5412441-0-0	REV: J
				RESP.ENG.: R.DAY	DATE: 10-MAR-78	ASSY.NO.: D-UA-5412441-0-0			EDIT#: 6

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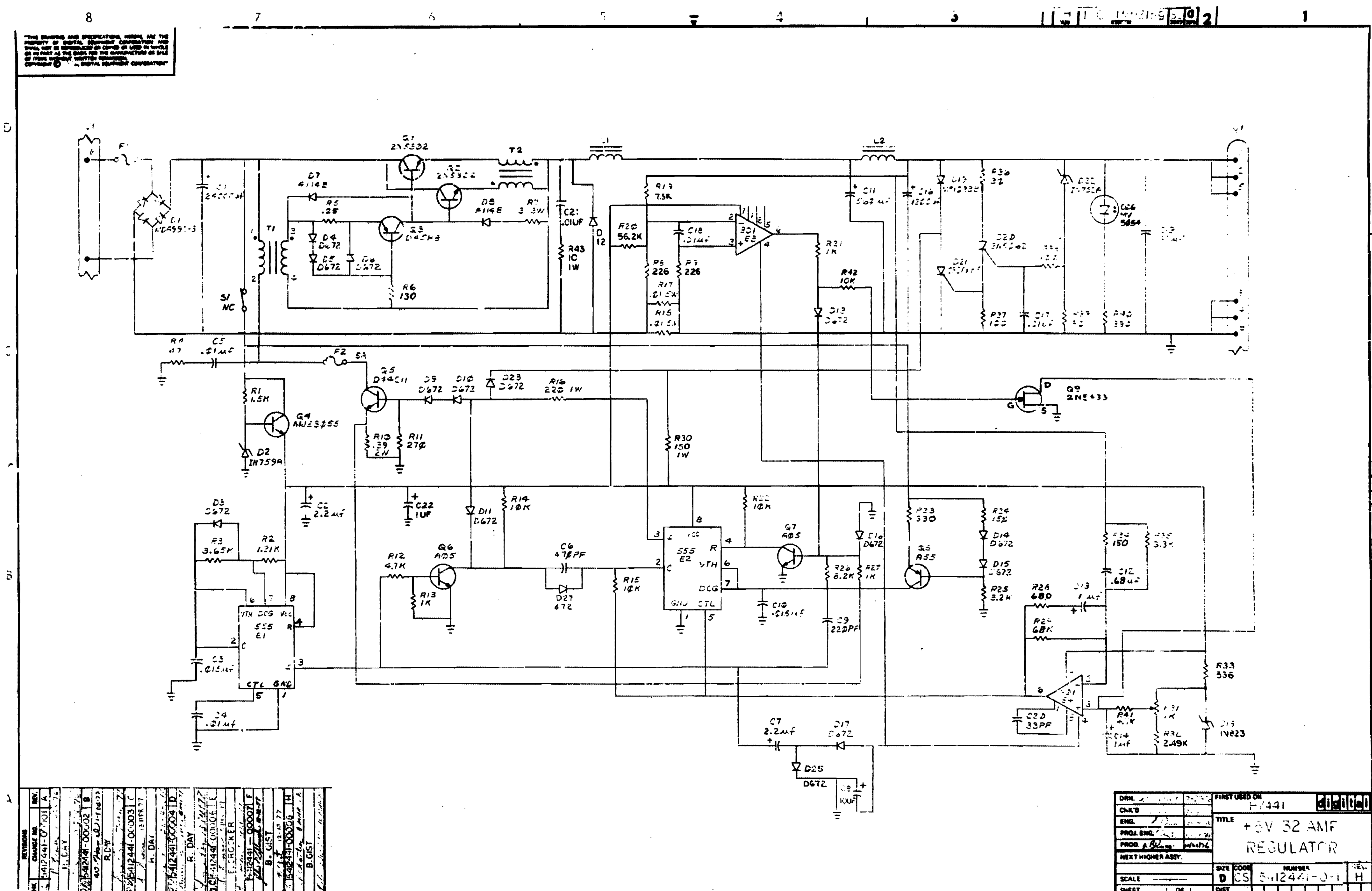
LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
30	30		1213071-02	INSULATOR,RUBBER SILICONE SM	3	
31	31		1212787-00	THERMOSTAT,O@212,C@182,NC	1	S1
32	32		1210737-02	HEAT SINK,REGULATOR	1	
33	33		1213071-06	INSULATOR,RUBBER SILICONE	1	
34	34		1312626-00	2.49 K 1/4W 1% RN55D-F 100PPM (13-00	1	R32
35	35		1300229-00	100 1/4W 5% CC (13-00	2	R37,R38
36	36		1300250-00	150 1/4W 5% CC (13-00	2	R24,R34
37	37		1305322-00	7.5 K 1/4W 1% RN55D-F 100PPM (13-00	1	R19
38	38		1300295-00	330 1/4W 5% CC (13-00	1	R23
39	39		1301424-00	680 1/4W 5% CC (13-00	1	R28
40	40		1301327-00	68 K 1/4W 5% CC (13-00	1	R29
41	41		1300439-00	3.3 K 1/4W 5% CC (13-00	1	R35
42	42		1310219-00	.25 3W 1% WW (13-00	1	R5
43	43		1300248-00	130 1W 5% CC (13-00	1	R6
44	44		1302644-00	226 1/4W 1% RN55D-F 100PPM (13-00	2	R8,R9
45	45		1300277-00	220 1W 10% CC (13-00	1	R16
46	46		1300309-00	390 1/4W 5% CC (13-00	1	R40
47	47		1312922-00	536 1/4W 1% RN55D-F 100PPM (13-00	1	R33
48	48		1300365-00	1 K 1/4W 5% CC (13-00	3	R13,R21,R27
49	49		1300394-00	1.5 K 1/2W 5% CC (13-00	1	R1
50	50		1300447-00	4.7 K 1/4W 5% CC (13-00	2	R12,R41
51	51		1300479-00	10 K 1/4W 5% CC (13-00	4	R14,R15,R22,R42
52	52		1301695-00	47 1/2W 5% CC (13-00	1	R4
53	53		1301972-00	270 1/4W 5% CC (13-00	1	R11
54	54		1312747-00	56.2 K 1/4W 1% RN55D-F 100PPM (13-00	1	R20
55	55		1302751-00	30 1/4W 5% CC (13-00	2	R36,R39
56	56		1302871-00	1.21 K 1/4W 1% RN55D-F 100PPM (13-00	1	R2
57	57		1303179-00	8.2 K 1/4W 5% CC (13-00	2	R25,R26
58	58		1305337-00	3.65 K 1/4W 1% RN55D-F 100PPM (13-00	1	R3
59	59		1309143-07	1 K 3/4W10% POT 100PPM	1	R31
60	60		1310868-00	.39 2W 5% WW (13-00	1	R10
61	61		1313712-00	.01 5W 3% WW (13-00	2	R17,R18
62	62		1312682-00	3 3W 5% (13-00	1	R7
63	63		1300256-00	150 1W 10% CC (13-00	1	R30
64	64		1300171-00	10 1W 5% CC (13-00	1	R43
65	65		1510196-00	2N 5302/HSNPN 200WC SI 60 40 M	2	Q1,Q2
66	66		1510555-00	MJE3055 NPN 90WC SI 60 20 Y	1	Q4
67	67		1510705-00	XA 05 NPN 500MW SI 60 50 P	2	Q6,Q7
68	68		1510706-00	XA 55 PNP 500MW SI 60 50 P	1	Q8
69	69		1510708-00	D 45H8 PNP 50WT SI 60 60 Y	1	Q3
70	70		1510928-00	C32AX135 SCR@100V I=25A	1	D21
71	71		1512790-00	D 44C11 NPN 30W SI 80 40	1	Q5
72	72		1511686-00	DEC5433 FET N 350MW 10 25 1A 20U	1	Q9
73	73		1612584-00	50 UH 30A	1	L1
74	74		1612592-00	PULSE XFMR,RATIO 4:1	1	T1
75	75		1613713-00	CHOKE, 5 UH 32A	1	L2
76	76		1613714-00	2 UH 20A	1	T2
77	77		1910282-00	301AN OP AMP	2	E3,E4

	TITLE	SIZE	CODE	DOCUMENT NUMBER	REV
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	PARTS LIST +5V 32 AMP REGULATOR	K	PL	5412441-0-0	J

LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
78	78		1911944-00	555CN TIMER,FUNCT.BLOCK	2	E1,E2
79	79		7013274-00	JUMPER CAP TRAWS	1	
80	80		7013274-01	JUMPER CAP TRAWS	1	
81	81		7414765-00	HEATSINK	1	
82	82		9006633-00	WASHER,LOCK,INT,.280OD X .146ID X .018 THK	3	
83	83		9008172-00	WASHER, FLAT,SS .250 OD X .125 ID X .022 T	3	
84	84		9006660-00	WASHER, FLAT, .375 O.D. X .187 I.D. X .036	2	
85	85		9006653-00	WASHER, FLAT, .375 O.D. X .156 I.D. X .036	1	
86	86		9008082-00	WASHER, FLAT, FIBER OD. 1/2	2	
87	87		9007927-00	TERM RING 1POS INSULATED,16-14AWG,ROLL	2	
88	88		9006037-03	SCREW,TRUS,PHIL, 8-32X 3/8 SS/PAS	2	
89	89		9006557-00	NUT,KEP , 4-40X 1/4 AF CS	1	
90	90		9006563-00	NUT,KEP , 8-32 X11/32AF CS	2	
91	91		9007203-00	CLIP, FUSE, WITH STOP, SCREW MOUNTED	2	
92	92		9007226-00	FUSE, REG BLOW, 15.000A, 32V, GLASS	1	F1
93	93		9008268-00	COMPOUND, THERMAL JOINT	A/R	
94	94		9006012-01	SCREW,PAN ,PHIL, 4-40X 7/16 SS/PAS	2	
95	95		9009000-00	EYELET, ROLLED FLANGE, .121 OD X .156 LG	4	
96	96		9009769-00	WASHER, RECTANGULAR .405X.225X.060	1	
97	97		9006021-01	SCREW,PAN ,PHIL, 6-32X 5/16 SS/PAS	2	
98	98		9007660-00	SPACER, FIBER, RND, 4-40 .250 X .500 LG	1	
99	99		9007801-00	WASHER, LOCK, S.S. #6	7	
100	100		9008957-00	NUT,HEX , 6-32X 1/4 AF X 3/32 THK SS	7	
101	101		9007793-01	SCREW,PAN ,PHIL, 6-32X 9/16 SS/PAS	8	
102	102		9006010-01	SCREW,PAN ,PHIL, 4-40X 5/16 SS/PAS	1	
103	103		9107360-99	WIRE,STRND,18AWG,IPVC UL1429	(91-00 A/R	
104	104		9107370-00	WIRE,STRND,14AWG,IPVC UL1534	(91-00 A/R	

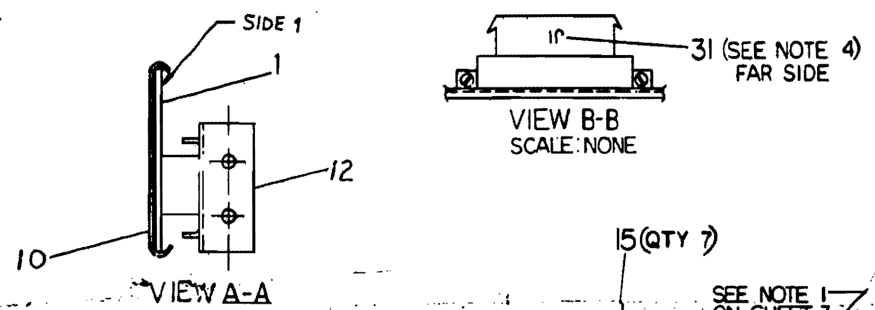
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE: PARTS LIST +5V 32 AMP REGULATOR	SIZE: K	CODE: PL	DOCUMENT NUMBER: 5412441-0-0 / REV: J

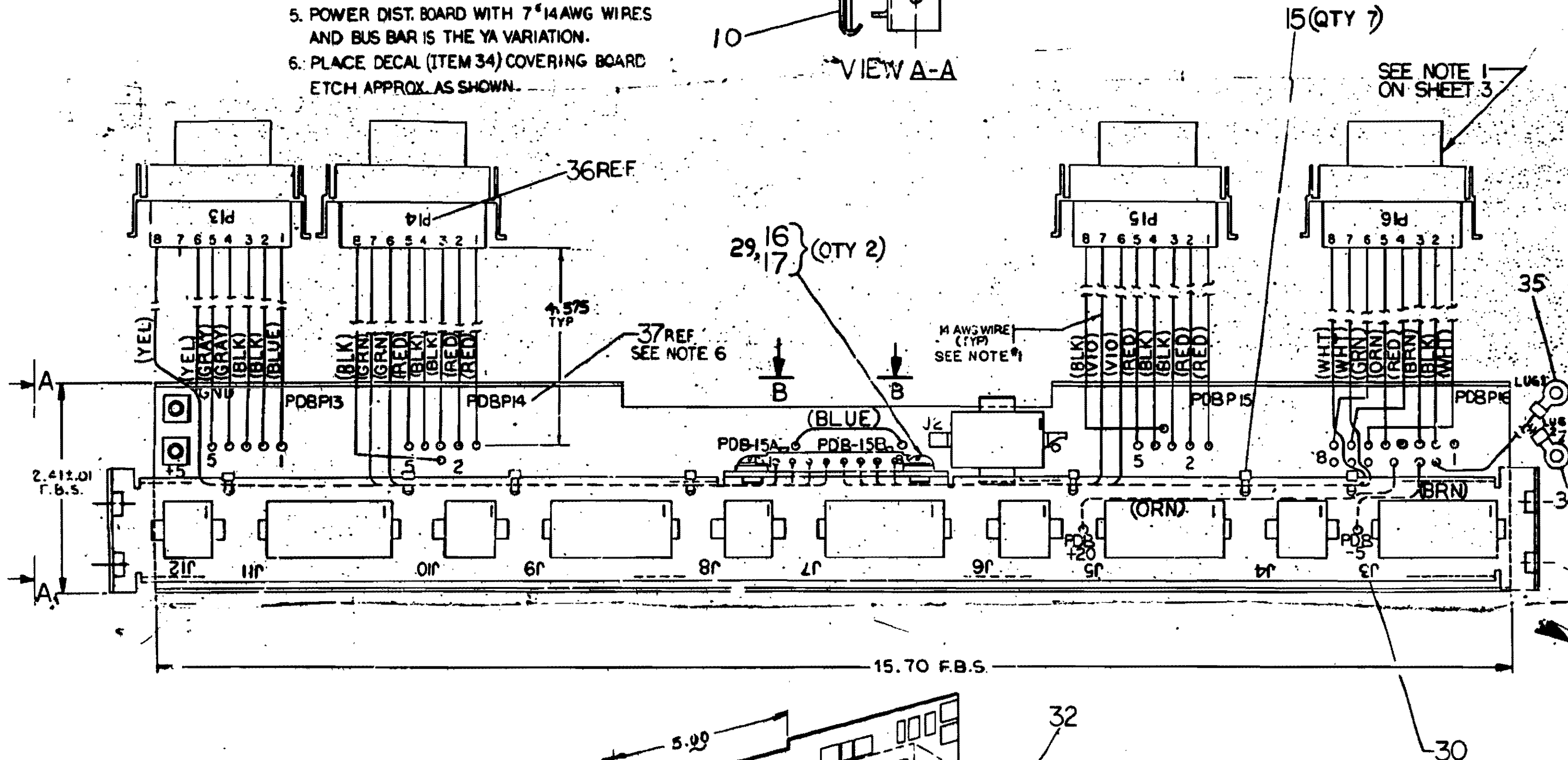


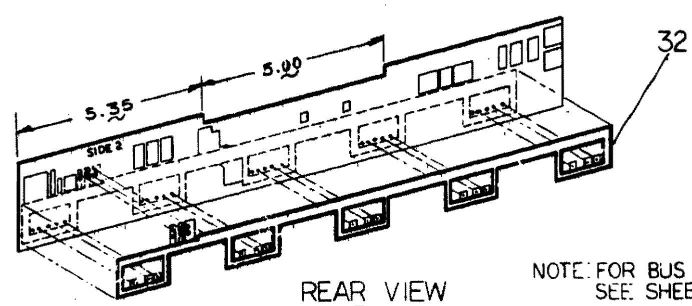
Q1 2N5302
Q2 2N5302
T2
T1
Q3 D42C8
R5 .25
D7 A114E
D4 D672
D5 D672
D6 D672
R6 130
D8 A114E
R7 3 3W
C21 .01UF
R43 10 1W
S1 NC
L1
L2
R13 7.5K
R20 56.2K
C18 .01uf
R5 226
R9 226
R17 .215K
R16 .215K
301 E3
R21 1K
R42 10K
D13 D672
C11
C16
R36 33
D26 5654
R37 150
R39
R40
Q9 2N5433
R4 47
C5 .01uf
F2 5A
Q5 D44C11
D9 D672
D10 D672
D23 D672
R16 220 1W
R1 1.5K
Q4 MJE3055
D2 1N759A
R10 .39 2W
R11 270
R30 150 1W
C22 1UF
D11 D672
R14 10K
D3 D672
R3 3.65K
R2 1.21K
555 E1
C3 .015uf
C4 .01uf
R12 4.7K
Q6 A05
R13 1K
C6 470PF
D27 672
R15 10K
555 E2
R22 10K
Q7 A05
C10 .015uf
R26 8.2K
R27 1K
C9 220PF
R23 330
Q8 A55
R24 150
D14 D672
D15 D672
R25 8.2K
R34 150
R35 3.3K
C12 .68uf
R28 680
C13 1uf
R29 68K
C20 33PF
R41 4.7K
R31 1K
R32 2.49K
C14 1uf
R33 336
D18 1N823
C7 2.2uf
D17 D672
D25 D672
C8 10UF
FIRST USED ON
H7441
digital
TITLE
+5V 32 AMP
REGULATOR
SIZE D
CODE CS
NUMBER 5412441-0-1
REV. H
SCALE
SHEET 1 OF 1
DRN.
CHK'D
ENG.
PROJ. ENG.
PROD.
NEXT HIGHER ASSY.
DIST.
REVISIONS
CHANGE NO.
REV.

NOTES:

1. FOR HAND WIRING INFORMATION SEE WIRE TABLE ON SHEET 3.
2. MATE-N-LOK FIXTURES (ITEM 28) MUST BE USED DURING WAVE SOLDERING OF J2, J3-J12
3. WIRE JUMPERS ON CIRCUIT BOARD ARE PART OF SIGNAL PATHS. THEY ARE NOT FOR OPTIONS
4. PLACE DECALS (ITEM 30, 31 & 36) APPROX. AS SHOWN.
5. POWER DIST. BOARD WITH 7 # 14 AWG WIRES AND BUS BAR IS THE YA VARIATION.
6. PLACE DECAL (ITEM 34) COVERING BOARD ETCH APPROX. AS SHOWN.







REAR VIEW
SCALE: NONE

NOTE: FOR BUS BAR CONNECTIONS SEE SHEET 3 OF 3

QTY 5410864-YA	QTY 5410864	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1	1		ETCHED CIRCUIT BOARD	D-IA-5010963-0-0	1
5	5	J4, J6, J8, J10, J12	CONN, 6 PIN MATE-N-LOK (FEMALE)	1209350-06	2
1	1	J1	CONN, 8 PIN MATE-N-LOK (FEMALE)	1209340-00	3
5	5	J3, J5, J7, J9, J11	CONN, 15 PIN MATE-N-LOK (FEMALE)	1209350-15	4
1	1	J2	CONN, 12 PIN MATE-N-LOK (FEMALE)	1209350-12	5
4	4	P13 THRU P16	CONN, 8 PIN MATE-N-LOK (MALE)	1209340-01	6
31	24	(P13 THRU P16)	PIN, MATE-N-LOK	1209378-01	7
8	8	(J1)	PIN, MATE-N-LOK	1209379-01	8
117	117		PIN, MATE-N-LOK PC MOUNT	1209456	9
1	1		SHIELD	C-MD-7412112-0-0	10
~~2~~	~~2~~		[illegible]	[illegible]	11
1	1		BRACKET, CONN MTG	D-MD-7411706-0-0	12
2	2		EYELET	9009000	13
2	2		FASTON TAB	9008219-0	14
7	7		CABLE TIE .12 WIDE	9007880	15
2	2		SCREW, PHNQ TRUSS 6-32 x 3/8	9006021-05	16
2	2		WASHER, INT TOOTH #6	9006633	17
A/R	A/R		WIRE # 14 AWG STRD (ORN)	9107370-33	18
A/R	A/R		WIRE # 14 AWG STRD (BRN)	9107370-11	19
A/R	A/R		WIRE # 14 AWG STRD (RED)	9107370-22	20
A/R	A/R		WIRE # 14 AWG STRD (GRY)	9107370-88	21
A/R	A/R		WIRE # 14 AWG STRD (BLK)	9107370-00	22
A/R	A/R		WIRE # 14 AWG STRD (BLU)	9107370-66	23
A/R	A/R		WIRE # 14 AWG STRD (YEL)	9107370-44	24
A/R	A/R		WIRE # 14 AWG STRD (GRN)	9107370-55	25
A/R	A/R		WIRE # 14 AWG STRD (VIO)	9107370-77	26
A/R	A/R		WIRE # 14 AWG STRD (WHT)	9107370-99	27
REF	REF		MATE-N-LOK FIXTURES	C-IA-9305937-0-0	28
2	2		FLAT WASHER #6	9006646	29
A/R	A/R	J3 THRU J12	DECAL, PWR CONN.	A-DC-7409873-01	30
A/R	A/R	J1	DECAL, PWR CONN.	A-DC-7409873-02	31
1	—		BAR, BUS, BATTERY BACKUP	1213437	32
A/R	A/R		WIRE #14 AWG GRN/YEL	9107777-54	33
1	1		TERMINAL, RING BLU	9007928	34
1	1		TERMINAL, RING YEL	9007926-01	35
A/R	A/R	P13 THRU P16	DECAL, PWR CONN.	A-DC-7409872-2	36
A/R	A/R	P13 THRU P16	DECAL, PWR BOARD	A-DC-7417531-0-0	37

PARTS LIST

FIRST USED ON OPTION MODEL: BA11-K

ETCH BOARD REV. D

IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REVISIONS: 5410864-1 ORIGINATED (REV. C); 5410864-00002 (D); 5410864-00003 (E); B. MINOR; 5410864-00004 (H); 5410864-00006; G. POTTER; 5410864-00007 (K); R. WOLF; 5410864-00008 (L); J. MERCURI

DRN. R. Beasley, DATE 6/14/74
CHKD. DATE 7/1
ENG. M. Carrafiello, DATE 7/25/74
PROJ. ENG. DATE 7/30/74
PROD. DATE

NEXT HIGHER ASSY: D-UA-BA11-K-Ø

SCALE: NONE
SHEET 1 OF 3

digital

TITLE: POWER DISTRIBUTION BOARD

SIZE: D | CODE: CS | NUMBER: 5410864-0-1 | REV. L

DIST.

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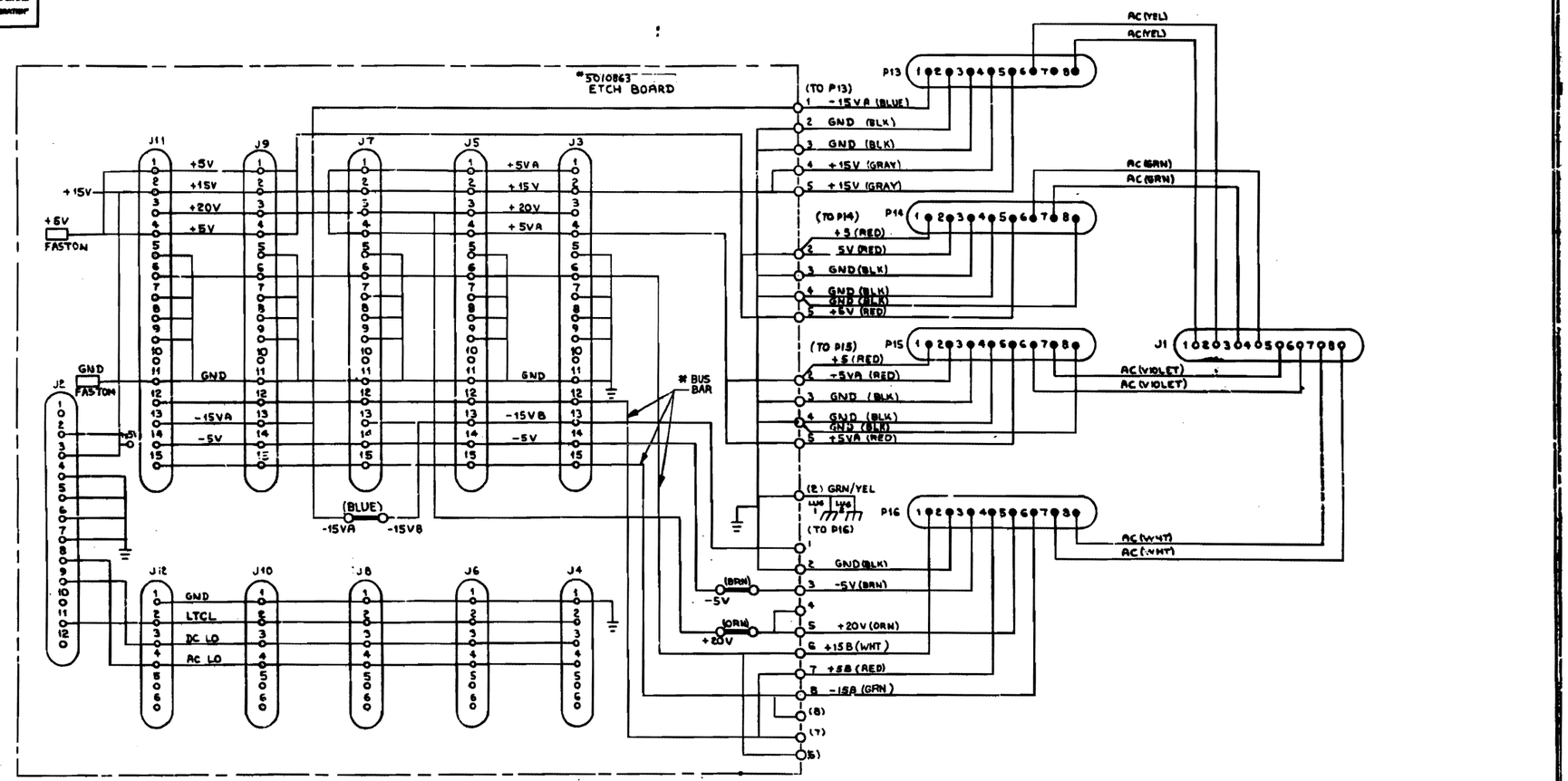

* BUS BAR USED IN THE YA VARIATION ONLY

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
PWR DIST BOARD	D	CS	5410864-0-1	L
SCALE NONE SHEET 2 OF 3	DIST.			

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WIRE TABLE

ITEM NO	DESCRIPTION AWG	DESCRIPTION COLOR	FROM CONNECTION	FROM WITH	TO CONNECTION	TO WITH	LENGTH	SIGNAL NAME
24	14	YEL	J1-1	8	P13-8	7	12.5"	AC/H745
24	↓	YEL	J1-2	↓	P13-6	↓	12.5"	AC/H745
25		GRN	J1-3		P14-7		11"	AC/H744-1
25		GRN	J1-4		P14-6		11"	AC/H744-1
26		VIO	J1-5		P15-7		8.75"	AC/H744-2
26		VIO	J1-6		P15-6		8.75"	AC/H744-2
27		WHT	J1-7		P16-8		11.25"	AC/H754
27		WHT	J1-8	8	P16-7		11.25"	AC/H754
23		BLU	PDBP13-1	SOLDER	P13-1		5"	-15V
22		BLK	PDBP13-2		P13-2		↑	GND
22		BLK	PDBP13-3		P13-3			GND
21		GRY	PDBP13-4		P13-4			+15V
21		GRY	PDBP13-5		P13-5			+15V
20		RED	PDBP14-2		P14-2			+5V
22		BLK	PDBP14-3		P14-3			GND
22		BLK	PDBP14-4		P14-4			GND
20		RED	PDBP14-5		P14-5			+5V
20		RED	PDBP15-2		P15-2			+5V
22		BLK	PDBP15-3		P15-3			GND
22		BLK	PDBP15-4		P15-4			GND
20		RED	PDBP15-5		P15-5			+5V
22		BLK	PDBP16-2		P16-2			GND
19		BRN	PDBP16-3		P16-3			-5V
18		ORN	PDBP16-5		P16-5	7	5"	+20V
23		BLU	PDP-15A		PDB-15B	SOLDER	1.75	-15V
18		ORN	PDBP16-5	↓	PDB +20V	↑	5"	+20V
19		BRN	PDBP16-3	SOLDER	PDB -5V	↓	2"	-5V
33		GRN/YEL	LUG 1	35	PDBP16-2	SOLDER	11"	SAFETY GND
33					LUG 2	34	15"	SAFETY GND
20		RED	PDBP16-7	SOLDER	P16-4	7	5.5"	+5B
20		RED	PDBP15-1	↑	P15-1	↑	5"	+5V
20		RED	PDBP14-1		P14-1		5"	+5V
22		BLK	PDBP15-4		P15-8		5.5"	GND
22		BLK	PDBP14-4		P14-8		↓	GND
27	↓	WHT	PDBP16-6	↓	P16-1	↓		+15B
25	14	GRN	PDBP16-8	SOLDER	P16-6	7	5.5"	-15B

YA VARIATION ONLY.

SEE NOTE 1

BUS BAR CONNECTIONS FOR YA VARIATION

LEVEL A	PDBP16-6 J11,J9,J7,J5,J3 ALL PIN #6	+15V.B
LEVEL B	PDBP16-7 J11,J9,J7,J5,J3 ALL PIN #12	+5V
LEVEL C	PDBP16-8 J11,J9,J7,J5,J3 ALL PIN #15	-15V.B

NOTES:

1. CS REV. K AND EARLIER PWR DISTRIBUTION BOARDS HAD THE GREEN AND WHITE WIRES REVERSED IN COLOR ONLY. THE POINT-TO-POINT CONNECTIONS REMAIN THE SAME.

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
PWR DIST BOARD	D	CS	5410864-0-1	L
SCALE NONE	SHEET 3 OF 3	DIST.		

DCS 5410864-0-1 L

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DIGITAL EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

PACKAGING INSTRUCTION

REV:	DATE:
A	2/77
B	10/77

TITLE FP11-AU FLOATING POINT UPGRADE KIT

MATERIAL REQUIREMENTS

Quantity	Purchase Specification No.	Description
3	9905241-00	Hex-Module Book Pack
2	9905880	Die-Cut Sheet
1	9905212	Die-Cut Sheet
1	9905375-01	Die-Cut Carton
1	9905374-01	Taped Tube
1	9905622	Module Box
1	9906009-00	Pad, Laminated
1	9906009-01	Pad, Laminated
1	9906010	Pad, Laminated
1	9906011	Pad, Laminated
1	9906012	Pad, Laminated
1	9906008	Tube, Taped
1	9906007	Carton, Regular Slotted
12 ft.	9905729	Tape, Carton Sealing

PACKAGING INSTRUCTIONS

Step	Procedure

NOTE

See Figure 1 for Steps 1 thru 4

1. Fold and place one Die-Cut Sheet (9905880) into bottom of Die-Cut Carton (9905375-01)
2. Place Power Supply into Die-Cut Sheet (9905212) and then into the Die-Cut Sheet (9905880). Used in Step 1.
3. Place the remaining Die-Cut Sheet (9905880) on top of the Fower Supply and then close the cover and seal with one strip of Carton Sealing Tape.
4. Place Die-Cut Carton into Taped Tube and seal with Carton Sealing Tape.

NOTE

See Figure 2 for Steps 5 thru 19

5. Seal bottom of Regular Slotted Carton 1 piece along length and each edge.
6. Place Prepackaged H7441 in Regular Slotted Carton (9906007).

ENG	APPD	SIZE	CODE	NUMBER	REV
R. Howard 12/24/76	R. E. Palmer 28 DEC 76	A	SP	3700270-0-0	B

DEC 8-(551)-1031-1-R671
DRA - 129

SHEET 1 OF 4

PACKAGING INSTRUCTION — CONTINUATION SHEET

TITLE FP11-AU FLOATING POINT UPGRADE KIT

Step	Procedure
7.	Place Laminated Pad (9906012) in carton with recess in vertical position.
8.	Insert Extender Board W9042 with Cables into Module Box (9905622).
9.	Place Module Box into rectangular recess in Laminated Pad (9906012).
10.	Place Laminated Pad on top of packaged H7441.
11.	Place Laminated Pad (9906010) in carton with recess vertical.
12.	Place Hex Module (3) (M8265, M8266, M8267) into Module Book Packs (9905241-00) with etch side up and seal with Carton Sealing Tape (9905729).
13.	Insert the (3) Book Packs into recesses of Laminated Pads.
14.	Insert Power Distr. Strip (5410864-YA) into Taped Tube (9906008).
15.	Insert Pads (9906009-00 and 9906009-01) into ends of Taped Tube (9906008) with recesses facing out.
16.	Insert Connector Blocks ((1)M5412416, (1) H8821) into recesses of pads with etch side out.
17.	Place Taped Tube (9906008) on top of Module Book Packs between Laminated Pads.
18.	Insert Manuals and Print Set on either side of Book Packs.
19.	Seal Carton with Carton Sealing Tape (9905729).

ENG	APPD	SIZE	CODE	NUMBER	REV
R. Howard 12/24/76	R. E. Palmer 28 DEC 76	A	SP	3700270-0-0	B

DEC8-1031

SHEET 2 OF 4

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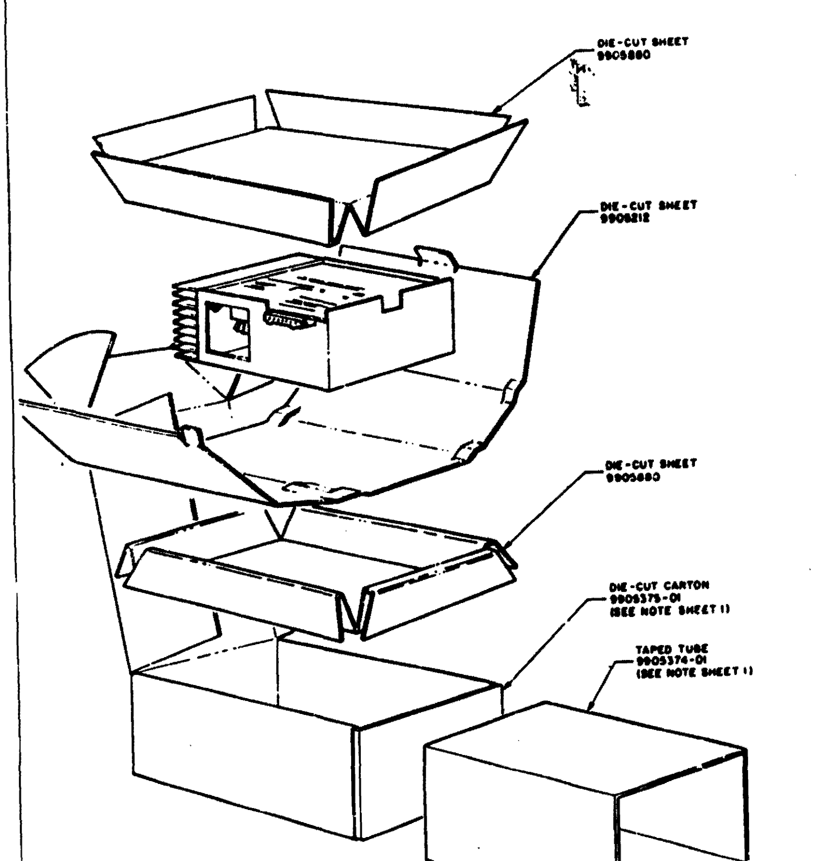
PACKAGING INSTRUCTION

REV:	DATE:
A	2/77
B	10/77

TITLE FP11-AU FLOATING POINT UPGRADE KIT



NOTE:
Make changes to "C" size origal only and rephotograph.

ENG.	APPD.	SIZE	CODE	NUMBER	REV
Ken Murray 7/22/76	7/22/76	A	SP	3700270-0-0	B

DEC-108

SHEET 3 OF 4

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PACKAGING INSTRUCTION

REV:	DATE:
A	2/77
B	10/77

TITLE FP11-AU FLOATING POINT UPGRADE KIT

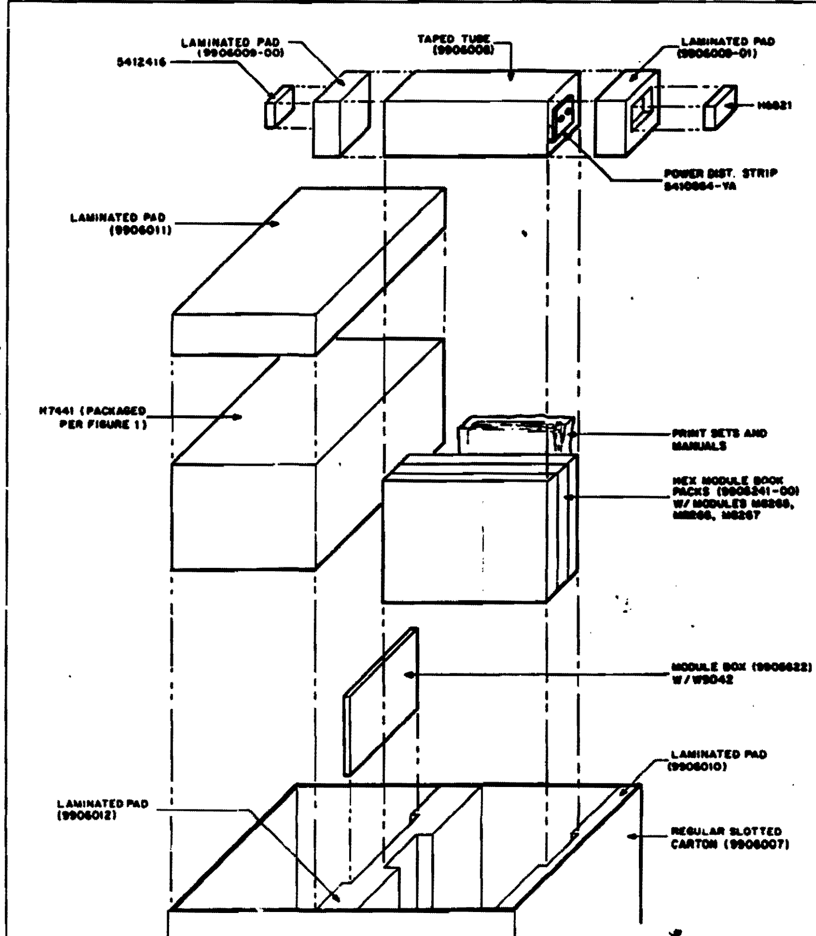

FIGURE 2

ENG.	APPD.	SIZE	CODE	NUMBER	REV
R. Howard 12/24/76	R. E. Palmer 28 DEC 76	A	SP	3700270-0-0	B

DEC-107

SHEET 4 OF 4

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY D. HEALY	CHECKED D. HEALY	SECTION 1
DATE 10 NOV 76	DATE 10 NOV. 76	
ENG [signature]	PROD [signature]	ISSUED SECT. 1
DATE 12-20-76	DATE 12-21-76	

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION FP11-AU
1	MPØØ188	FP11-AU FIELD MAINTENANCE PRINT SET	1
2	EK-KD-EA-TM-PRE	KD11-EA PROCESSOR MANUAL	1
3	EK-FP11-A-TM-PRE	FP11-A FLOATING POINT MANUAL	1
4	ZJ233-RB	SOFTWARE LIBRARY KIT (PAPER TAPE)	1

TITLE: FP11-AU SHIPPING LIST	ASSY NO.: NONE	SIZE: A	CODE: PL	NUMBER: FP11-AU-3	REV.: A	ECO NO.: FP11AU-00001
	SHEET 1 OF 1	DIST.				

DEC FORM DEC 16-(325)-1031-N870
DRA 110