

digital

FP11-C

Engineering Drawings

Digital Equipment Corporation

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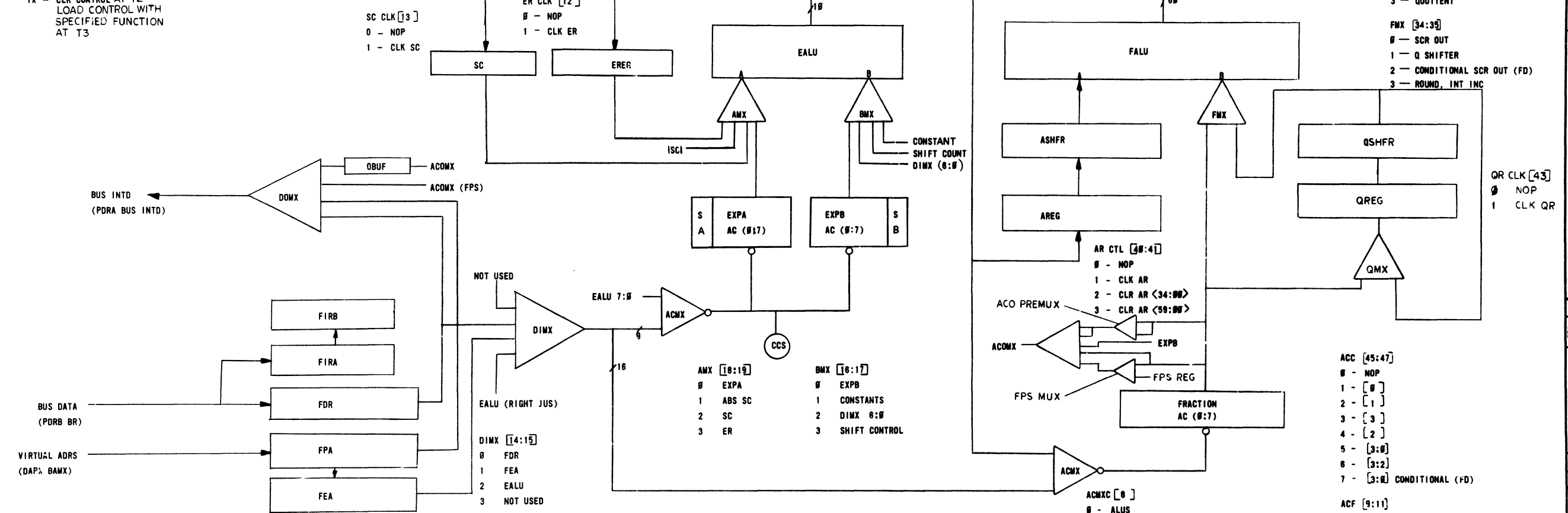
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- SHIFT CONTROL [8:5]**
- 0 - EALU
 - 1 - DIV
 - 2 - MUL
 - 3 - NORM
 - 4 - ALIGN
 - 5 - NOT USED
 - 6 - NOT USED
 - 7 - 8 SHIFT
 - IX - CLR CONTROL AT T2 LOAD CONTROL WITH SPECIFIED FUNCTION AT T3
- MISCELLANEOUS CONTROL [25:27]**
- 0 - NOP
 - 1 - FPS CLK
 - 2 - UBRK CLK
 - 3 - DOMX MOD
 - 4 - OBUF CLK
 - 5 - CLR QR
 - 6 - LDFP REQ
 - 7 - FP CLASS

- EALUC [3:5]**
- 0 - A PLUS B
 - 1 - A PLUS B PLUS 1
 - 2 - A MINUS B MINUS 1
 - 3 - A MINUS B
 - 4 - A
 - 5 - B
 - 6 - NOT USED
 - 7 - NOT USED

- FALUC [58:59]**
- 0 - A + B
 - 1 - ~A
 - 2 - B
 - 3 - A ~ B
 - 4 - A PLUS B
 - 5 - A PLUS B PLUS 1
 - 6 - A MINUS 1
 - 7 - A MINUS B
- 10 - ZERO
11 - NOT USED
12 - NOT USED
13 - NOT USED
14 - A PLUS B CONDITIONAL (SWR)
15 - NOT USED
16 - MUL/DIV CONDITIONAL (SWR)
17 - A

- QMX [2:3]**
- 0 - SCR OUT
 - 1 - Q SHIFTER
 - 2 - CONDITIONAL SCR OUT (FD)
 - 3 - QUOTIENT
- FMX [34:35]**
- 0 - SCR OUT
 - 1 - Q SHIFTER
 - 2 - CONDITIONAL SCR OUT (FD)
 - 3 - ROUND, INT INC



- NEXT ADR [60:75]**
- SEE FLOWS
- UBR [65:67]**
- 0 - NO BRANCH
 - 1 - BRANCH ENABLE (SEE FLOWS)
- UAF [60:61]**
- 0 - BRANCH ENABLE
 - 1 - BRANCH ENABLE 3:2
 - 2 - BRANCH ENABLE 1:0
 - 3 - BRANCH ENABLE 3:0
- UJMP [84]**
- 0 - NOP
 - 1 - TRAP TO 3 IF NA (1:0)=3

- LONG CYCLE [44]**
- 0 - 180 NS STATE
 - 1 - 240 NS STATE
- ATTN WAIT [62]**
- 0 - NOP
 - 1 - WAIT FOR FPATTN
- ACKN WAIT [63]**
- 0 - NOP
 - 1 - WAIT FOR FPACKN
- CNST [0:7]**
- 0 - 377 CONSTANTS

- SIGN CONTROL [28:29:42]**
- 0 - SD ← SD
 - 1 - SD ← SC09
 - 2 - SD ← SS
 - 3 - SD ← ~SS
 - 4 - SD ← SD XOR SS
 - 5 - SD ← SD XOR SUBTRACT
 - 6 - SD ← 0
 - 7 - SD ← SCR OUT
- FIR CLK [24]**
- 0 - NOP
 - 1 - LOAD FIRB
- FPC1 [21]**
- 0 - DAT1
 - 1 - DAT0

- ACOMX [38:39]**
- 0 - ACX [0] / FPS
 - 1 - ACX [1]
 - 2 - ACX [2]
 - 3 - ACX [3]
- EN FMB [22]**
- 0 - DISABLE FMB TRAP
 - 1 - ENABLE FMB TRAP
- FP SYNC [23]**
- 0 - NOP
 - 1 - FP SYNC
- DISABLE INTR [52]**
- 0 - ALLOW INTR CLR
 - 1 - DISABLE INTR CLR

- FLOATING CONDITION CODES [30:31]**
- 0 - FN, FZ, FV ← CONDITIONS, FC, FV ← 0
 - 1 - FN, FZ, FV ← CONDITIONS FC ← 0
 - 2 - FC ← 1
 - 3 - NOP

FEC IS AC7 [1]
FEA IS AC7 [2]

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|--|-------------------|----------|----------|
| FPII-C | | | | |
| PARTS LIST | | | | |
| DIMENSIONAL TOLERANCE | | | | |
| DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED | | | | |
| MILLIMETERS | INCHES | ANGLES | | |
| X,XX ±0.10 | XXX ±.006 | ±0° 30' | | |
| X.X ±0.5 | XX ±.02 | | | |
| X ±2 | .X ±.1 | | | |
| THIRD ANGLE PROJECTION | REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY | NEXT HIGHER ASSY. | | |
| FINISH | SCALE | SHEET 1 OF 15 | | |

DATE 11/2/75
DATE 11/18/75
DATE 12-9-75
DATE 11/9/75

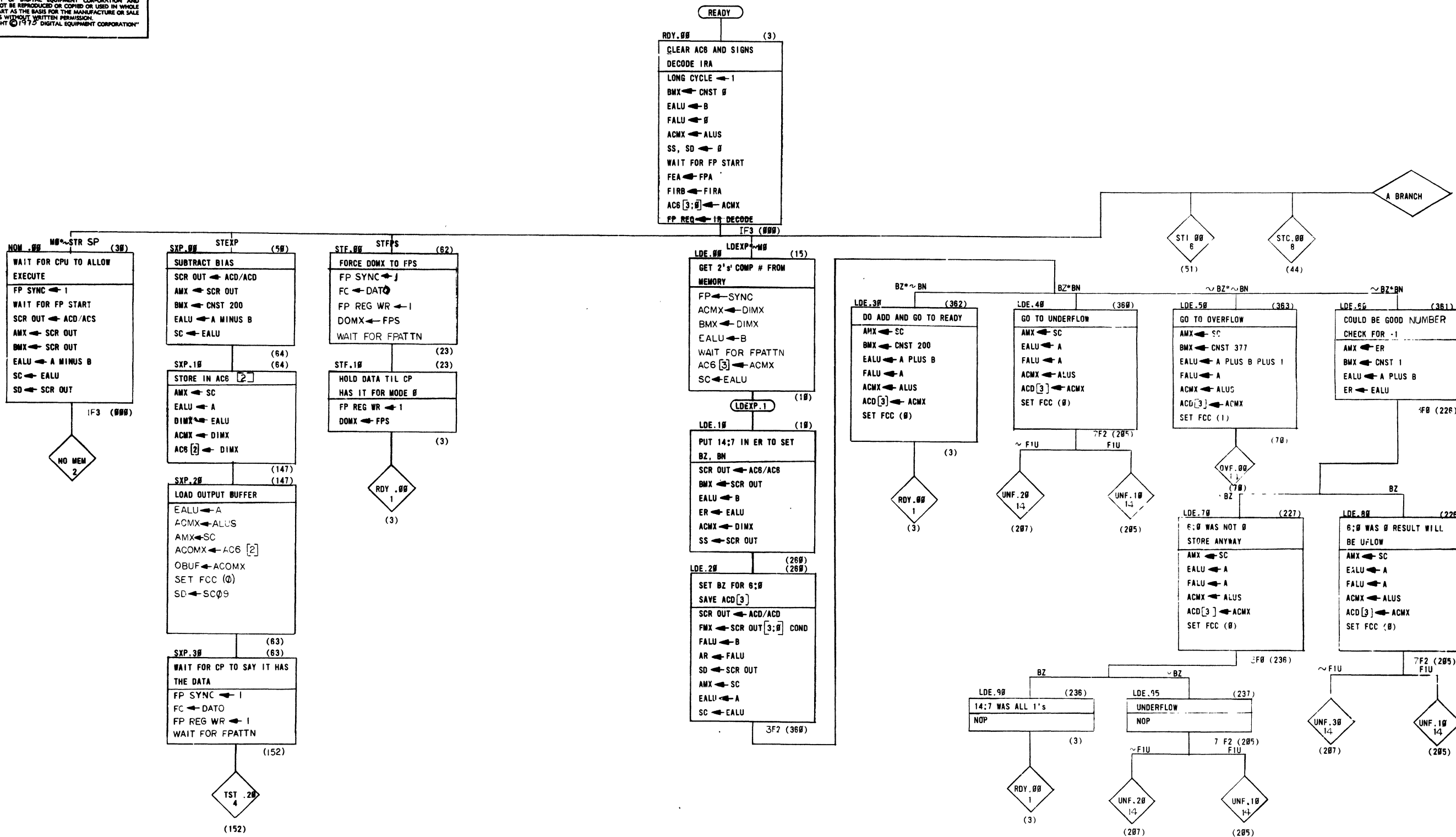
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CHKD [Signature]
ENG [Signature]
PROJ. ENG [Signature]
PROD. [Signature]

TITLE
digital
FLOW DIAGRAM
FPII-C

SIZE CODE NUMBER REV.
DFD FPII-C-1

| REV. | CHANGE NO. |
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| | |

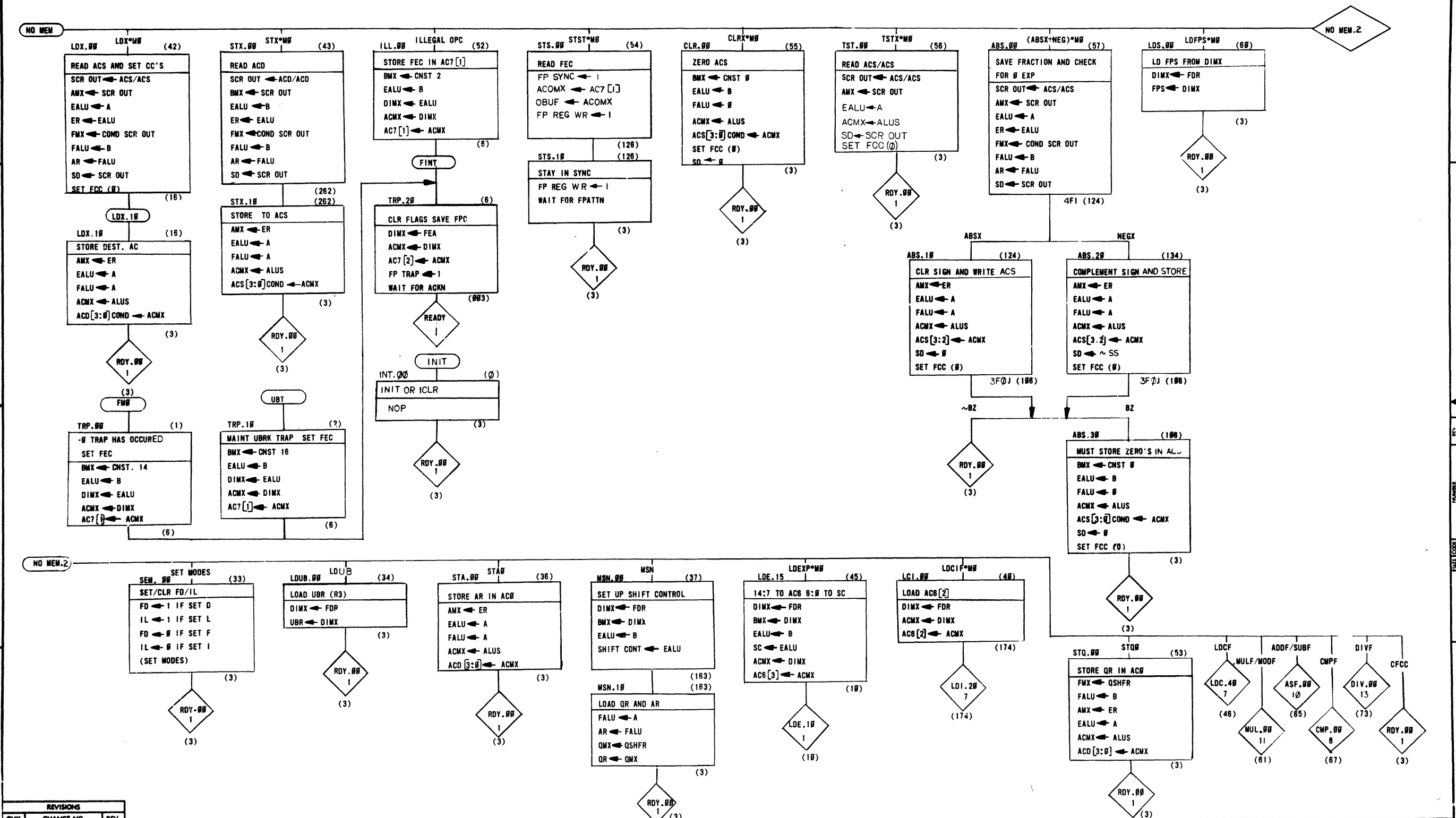
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STR SP = STFFS + STEXP + STCI + STCF + STST

| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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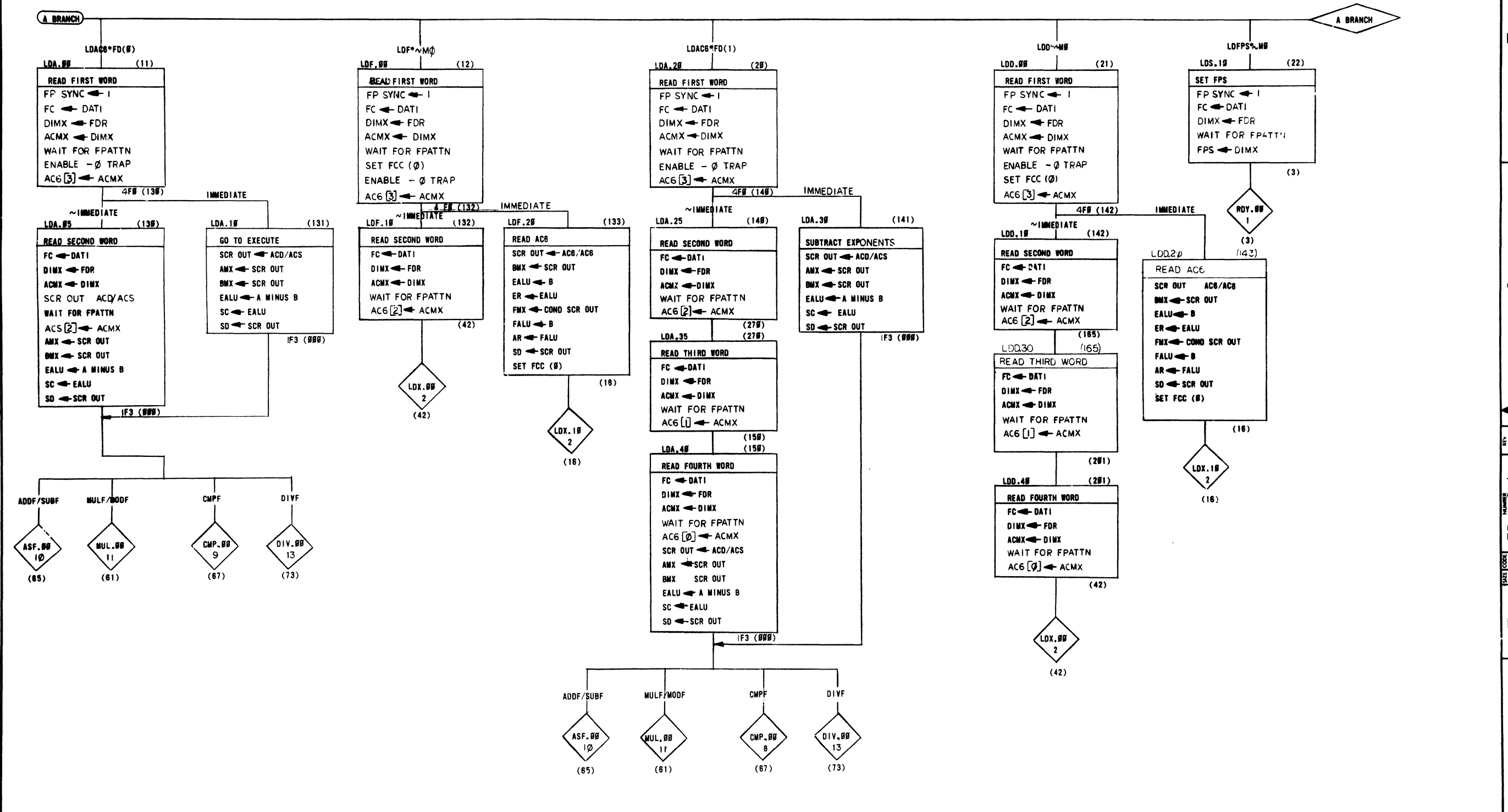
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| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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|-------|----------------------------------|-----------|---------|--------|----------|------|--|
| TITLE | FLOW DIAGRAM FPII-C (FLOWS 2) | SIZE CODE | D FD | NUMBER | FPII-C-1 | REV. | |
| SCALE | | SHEET | 3 OF 15 | DIST. | | | |

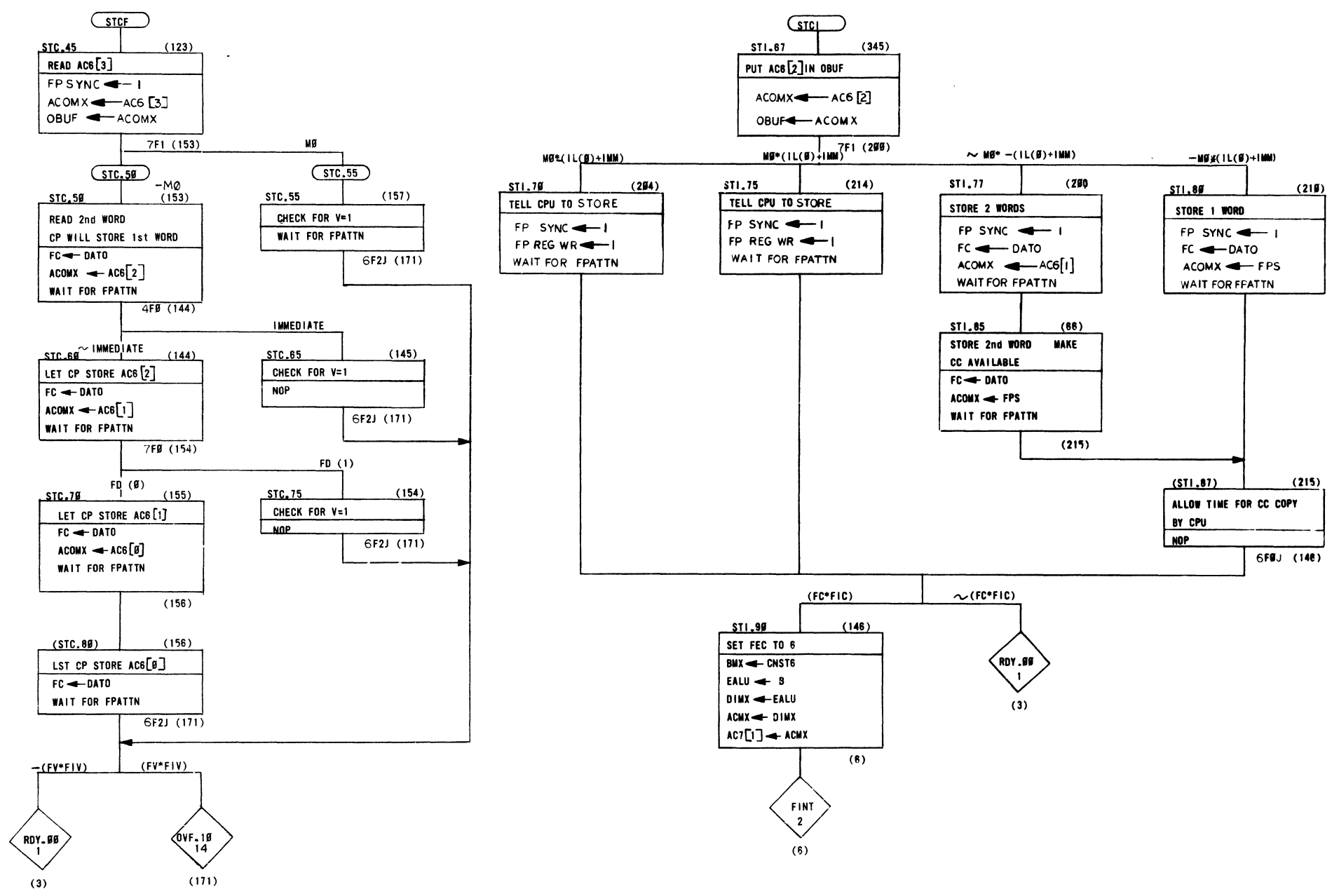
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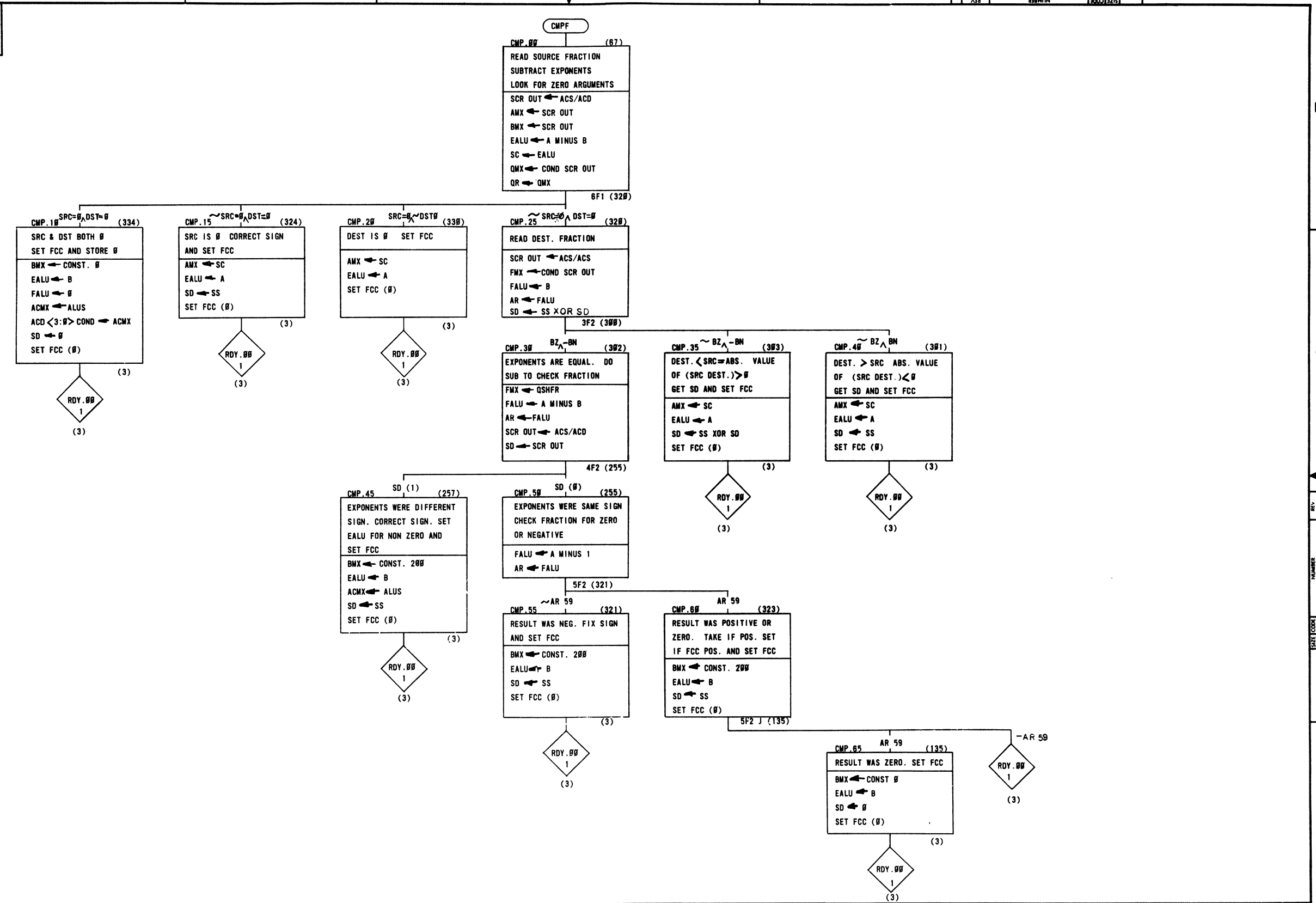
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|-------|----------------------------------|-----------|---------|--------|----------|------|--|
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| SCALE | | SHEET | 4 OF 15 | DIST. | | | |

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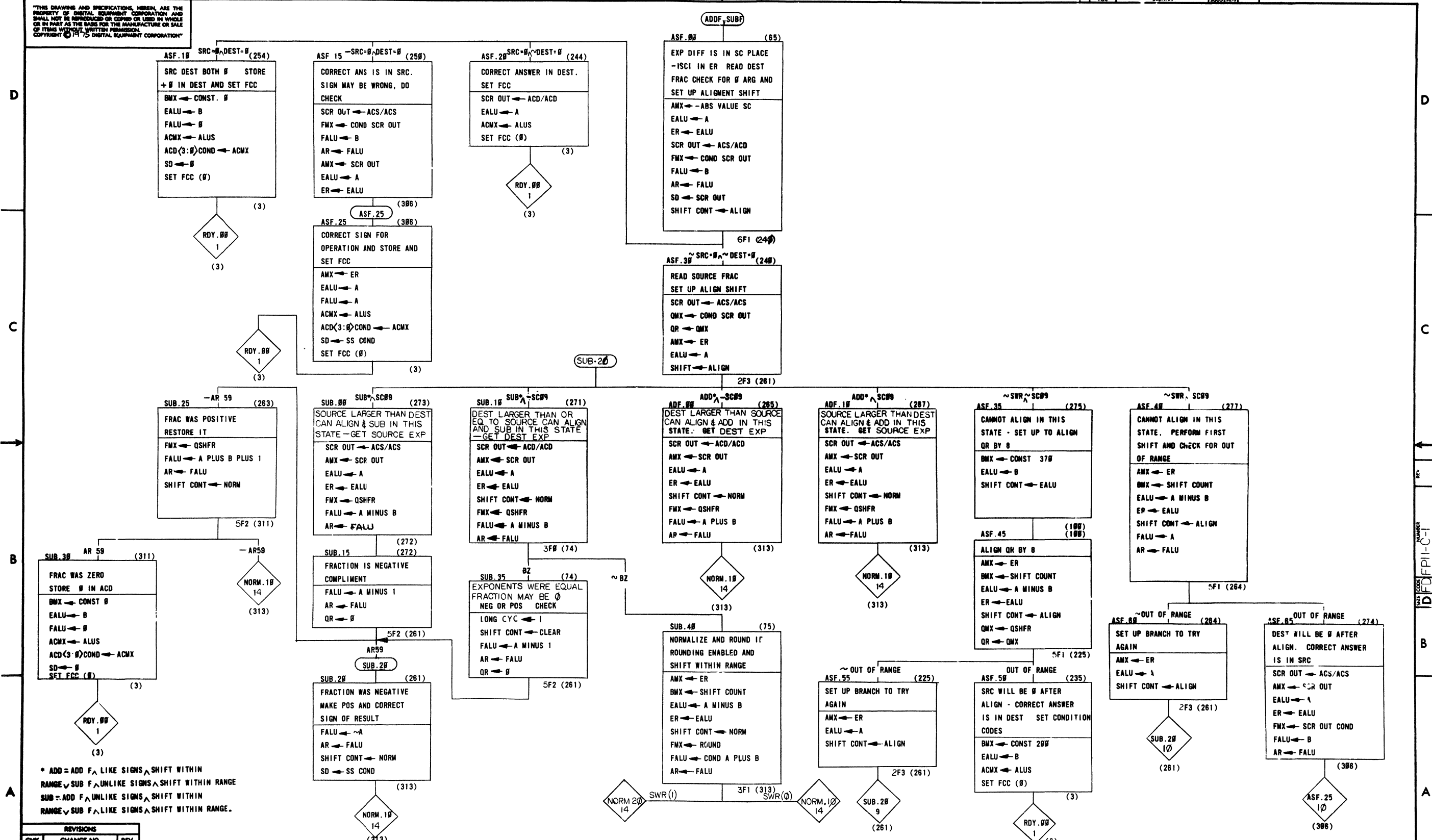
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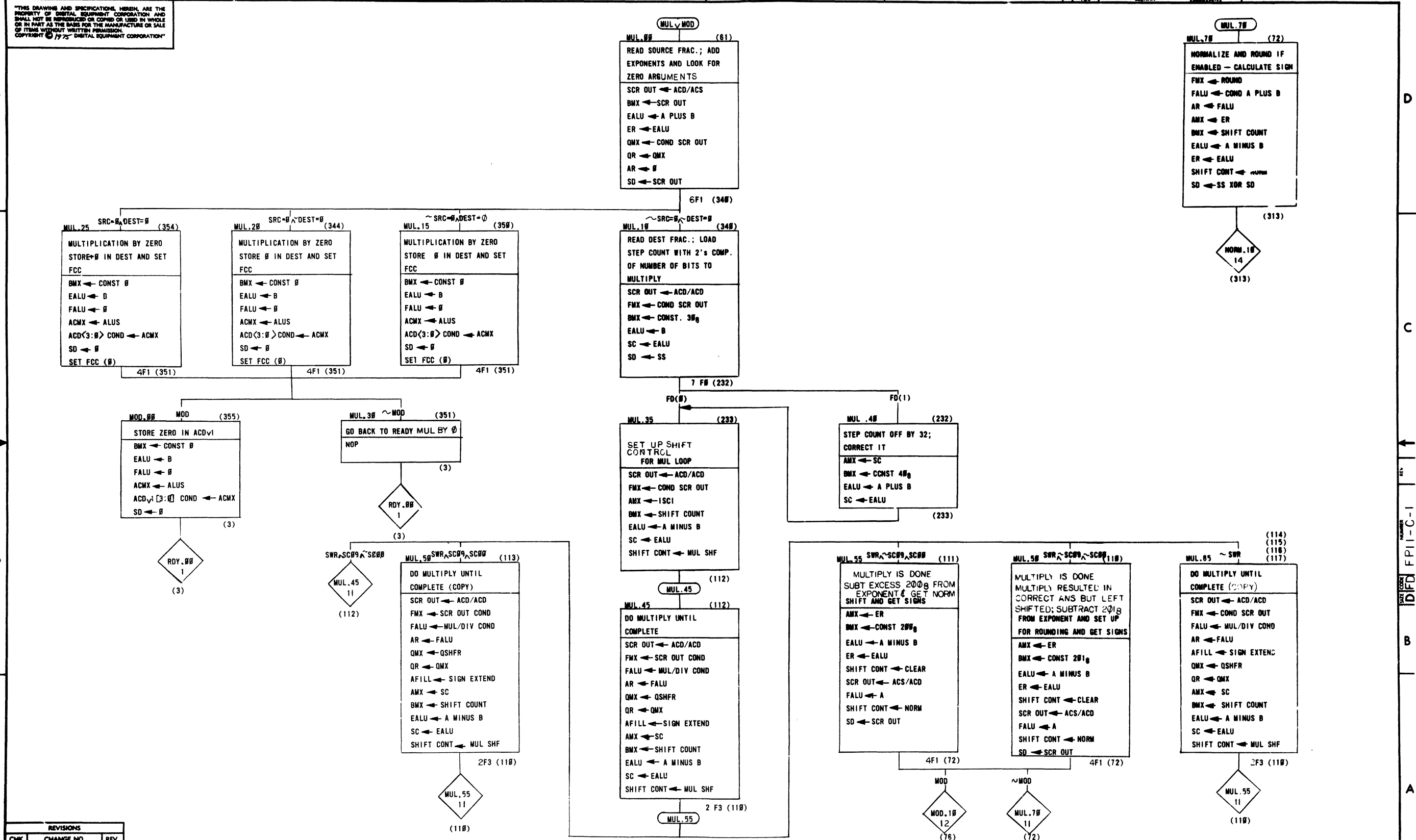
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* ADD = ADD F_A LIKE SIGNS, SHIFT WITHIN RANGE
 RANGE √ SUB F_A UNLIKE SIGNS, SHIFT WITHIN RANGE
 SUB = ADD F_A UNLIKE SIGNS, SHIFT WITHIN RANGE
 RANGE √ SUB F_A LIKE SIGNS, SHIFT WITHIN RANGE.

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| CHK | CHANGE NO. | REV. |
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|-------|-----------------------------------|-----------|----------|--------|----------|------|--|
| TITLE | FLOW DIAGRAM FPII-C (FLOWS II) | SIZE CODE | D FD | NUMBER | FPII-C-1 | REV. | |
| SCALE | | SHEET | 12 OF 15 | DIST. | | | |

D

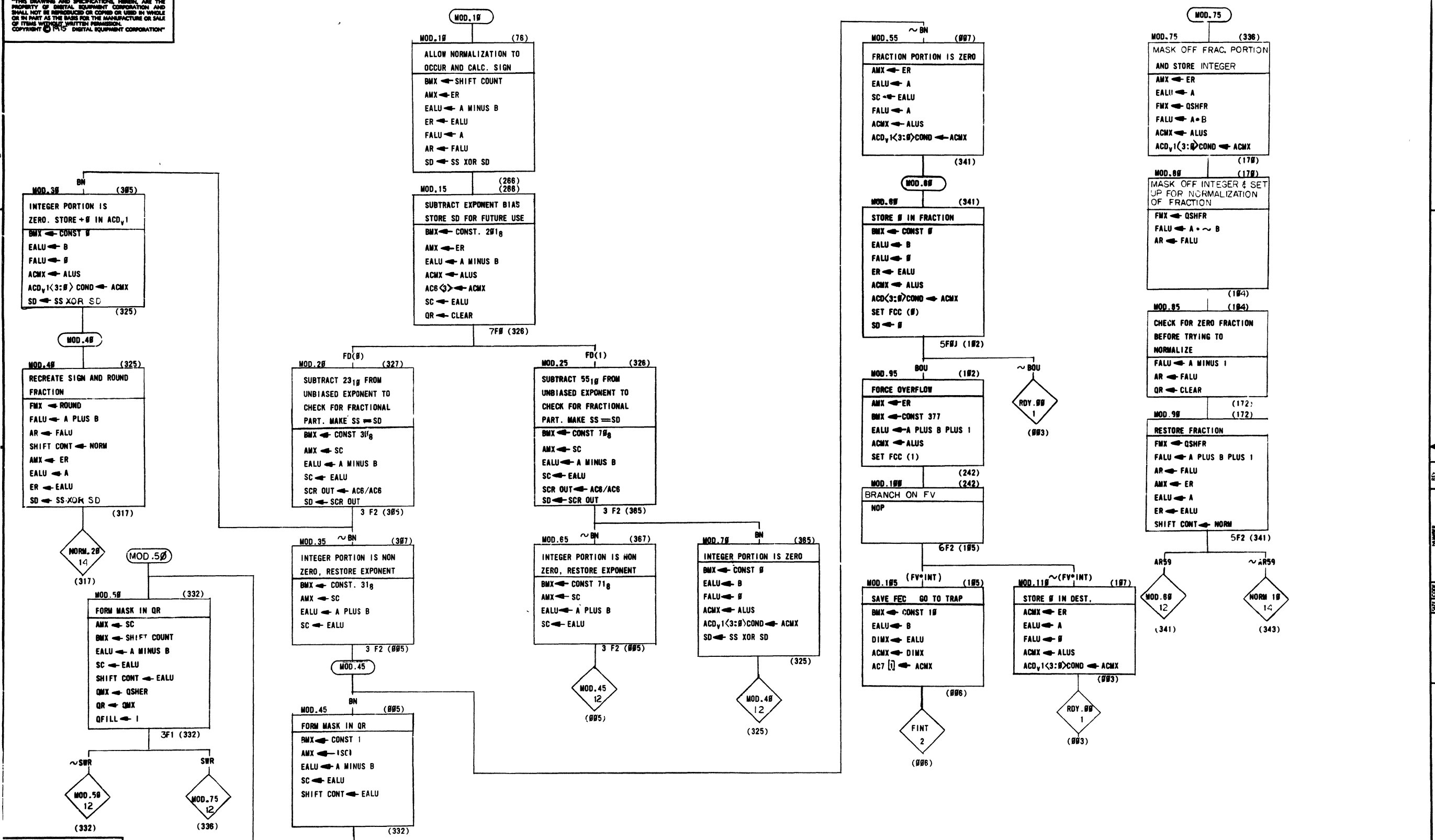
C

B

A

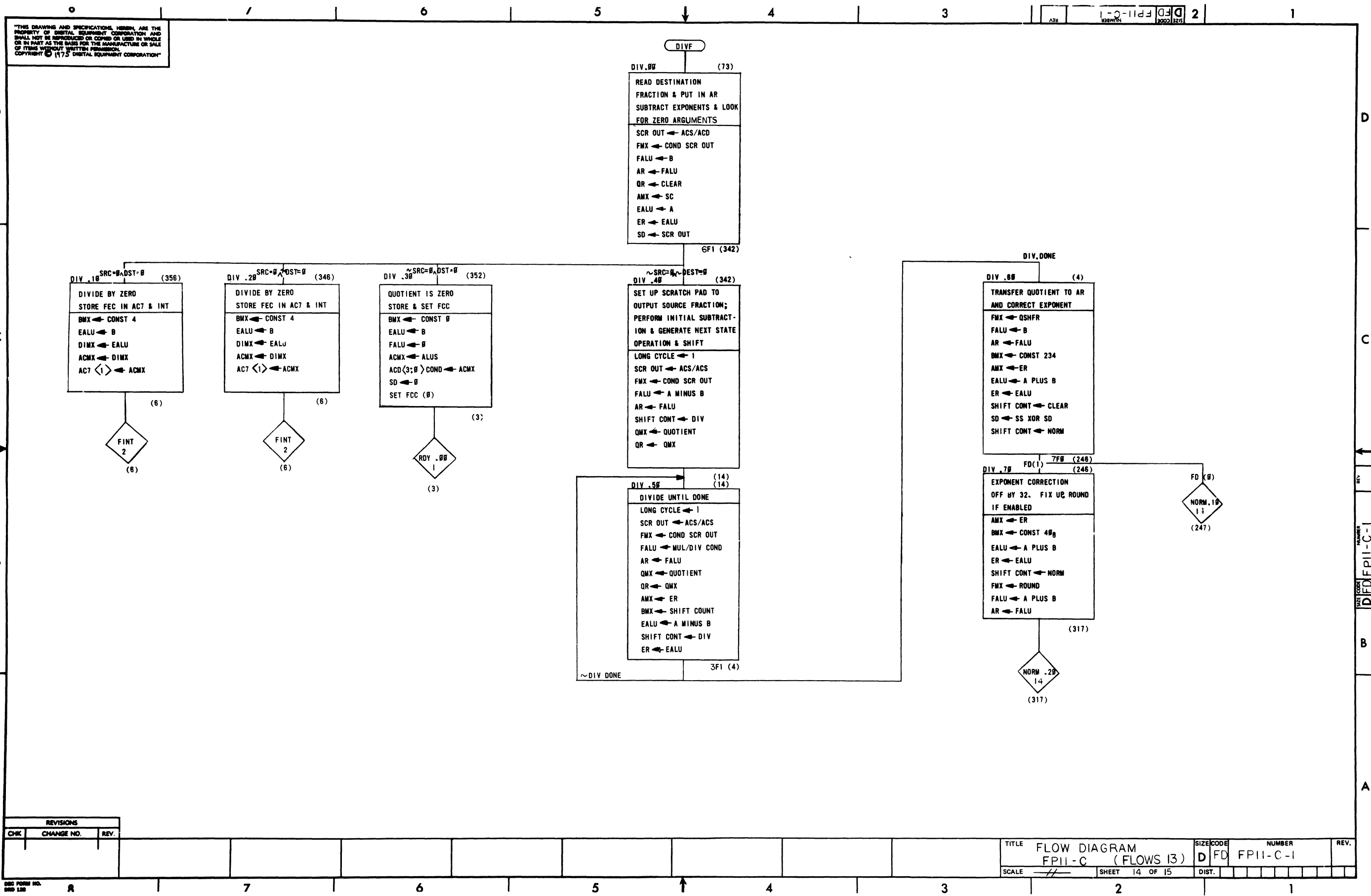
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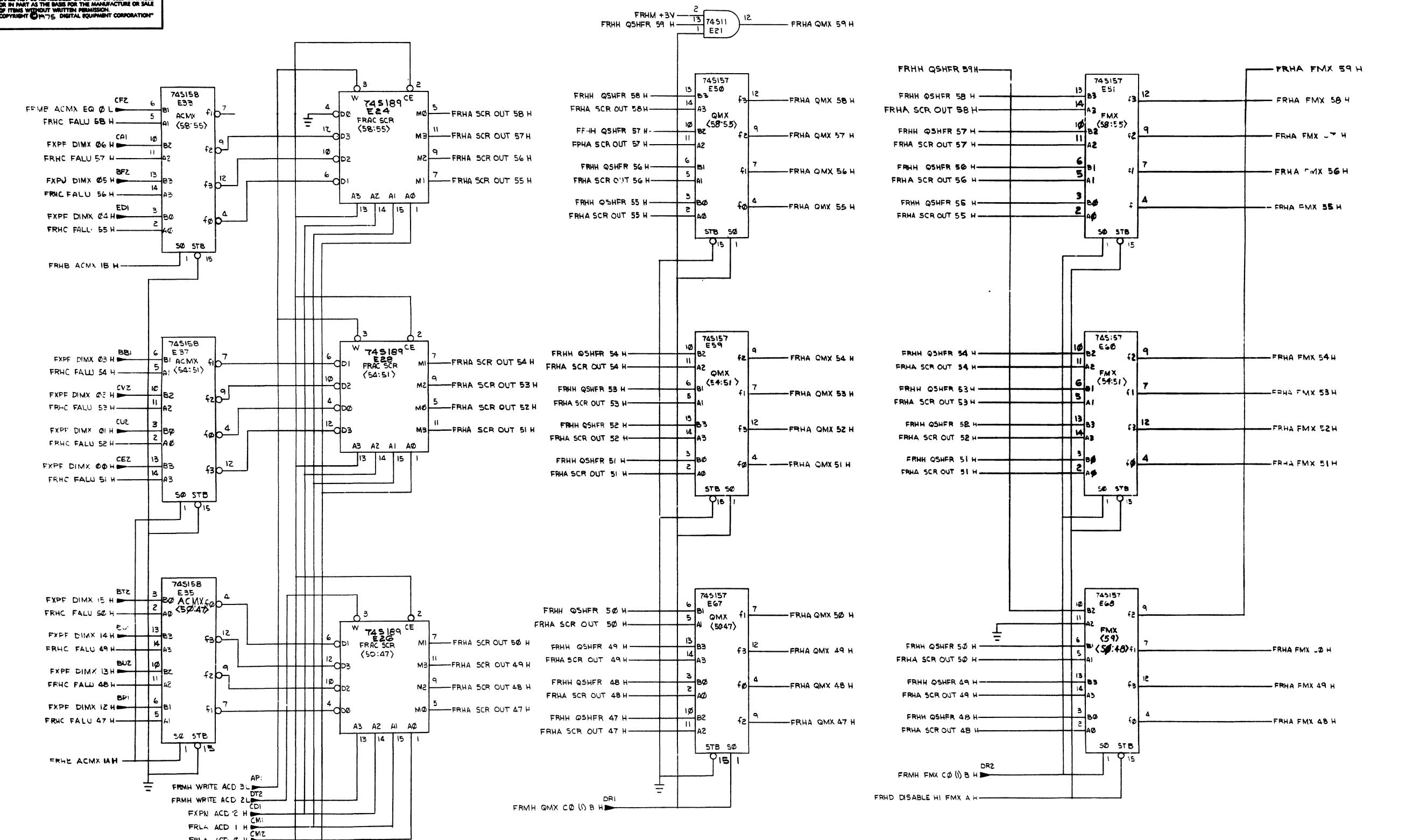
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| CHK | CHANGE NO. | REV. |
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REV. NUMBER EDITOR



| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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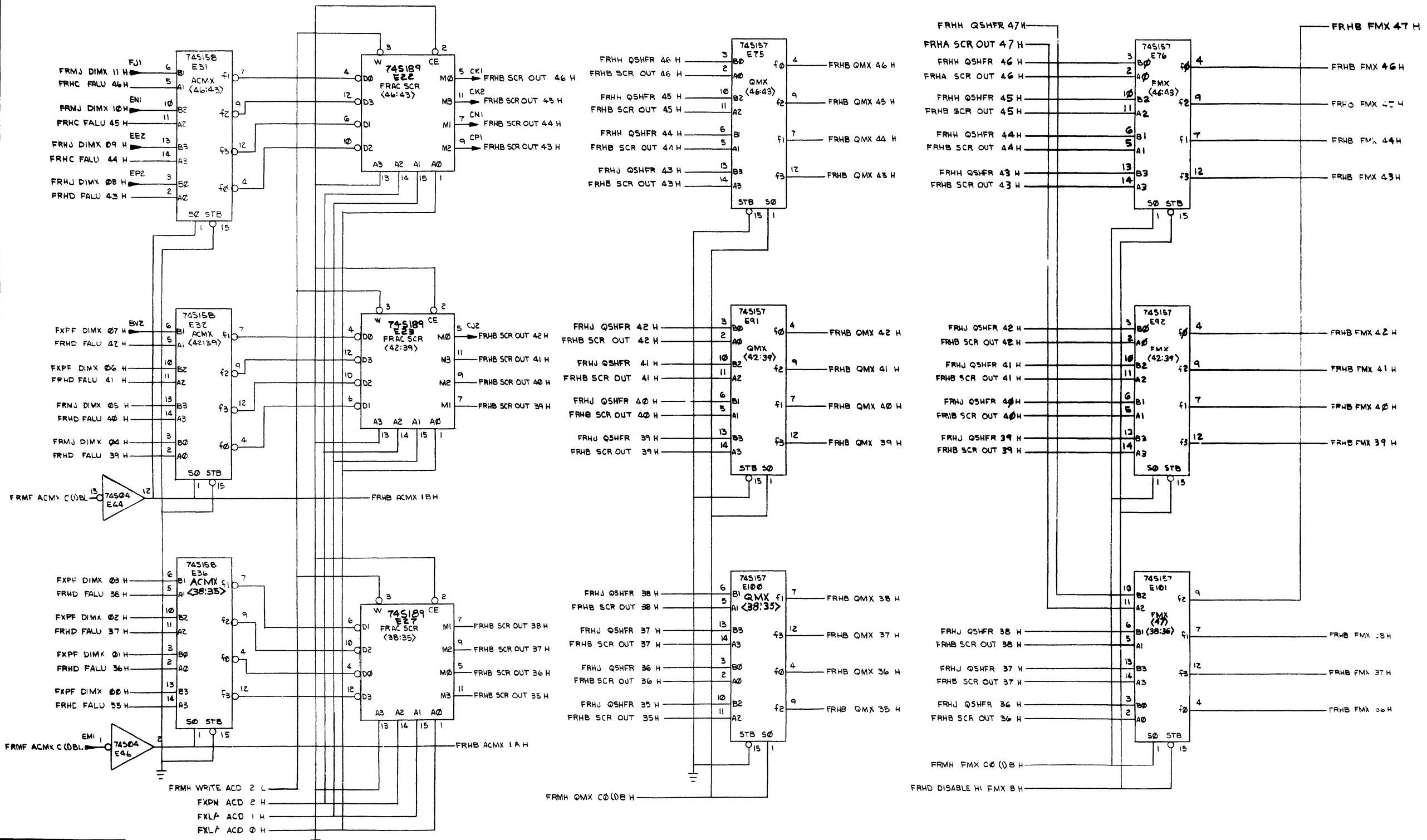
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| CHK | CHANGE NO. | REV. |
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|---------------------------------------|---------|---------------|------------------|--------|
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| SCALE 1/1 | SHEET 2 | OF 13 | DIST. | |

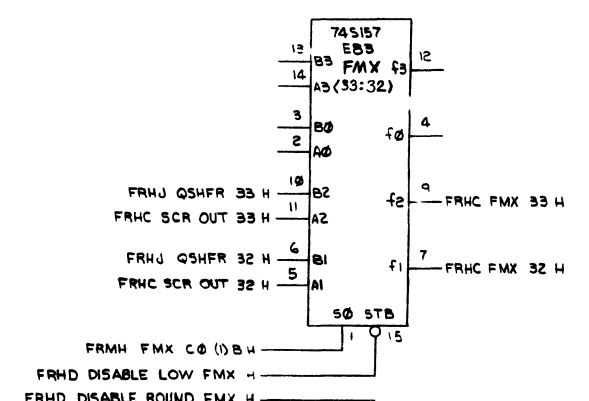
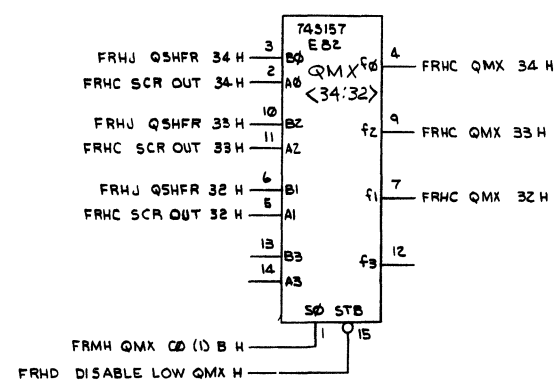
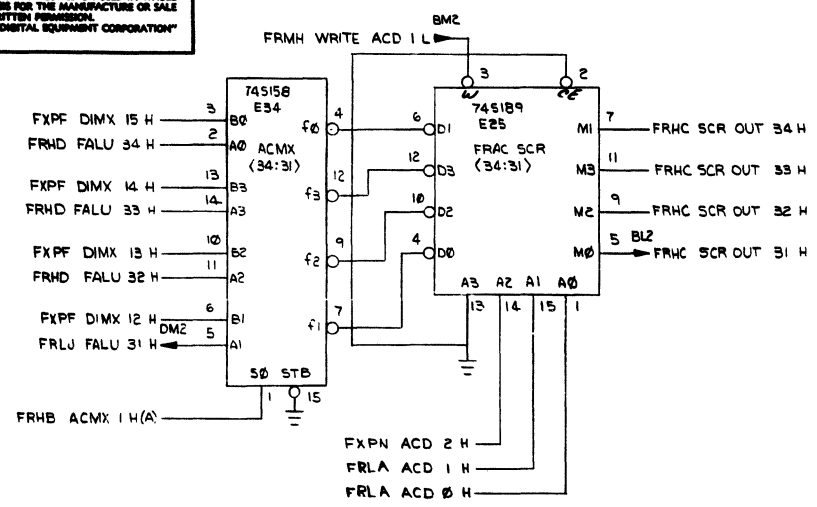
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| REV. | CHANGE NO. | REV. |
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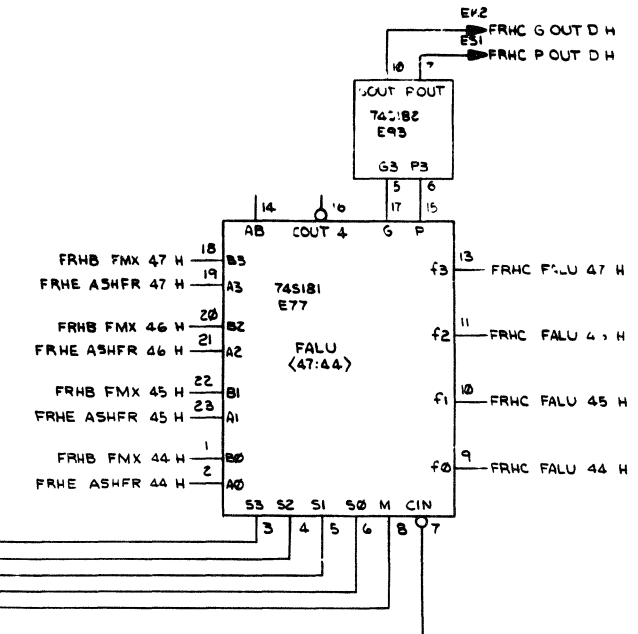
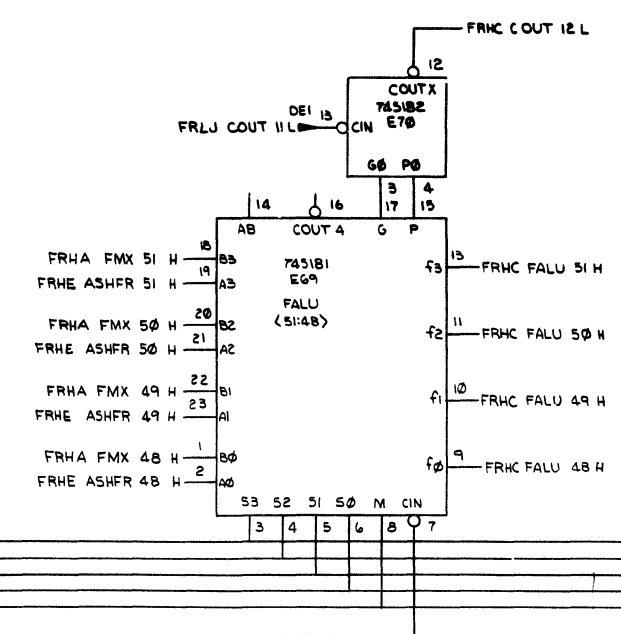
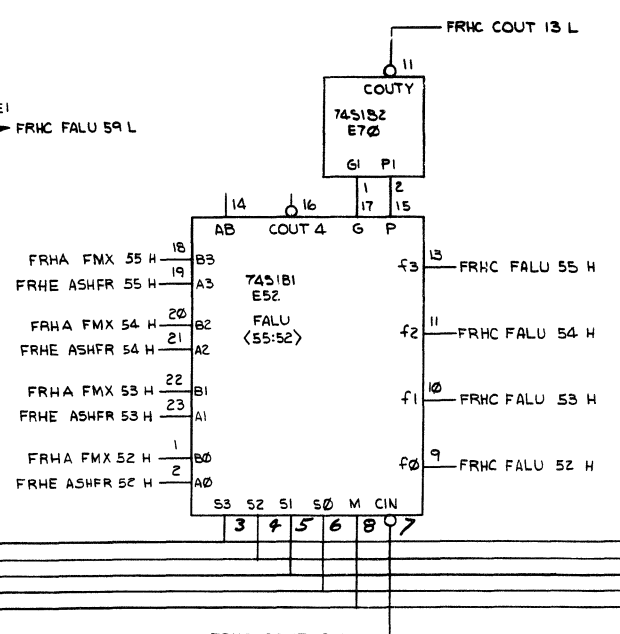
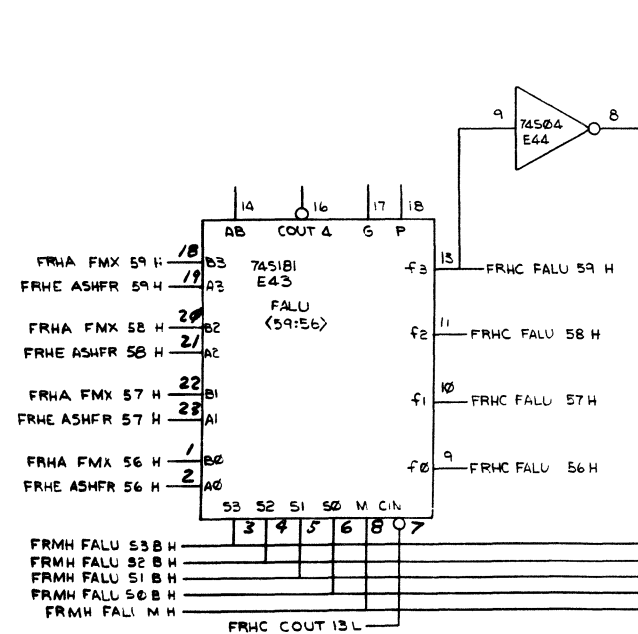
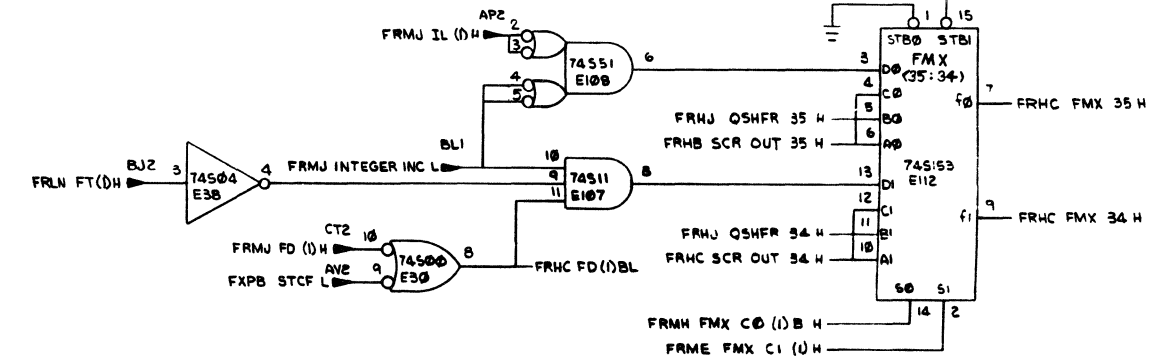
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| FMXC1 | FMXC0 | FMX FUNCTION |
|-------|-------|---|
| 0 | 0 | FMX (59:00) ← SCR OUT (59:00) |
| 0 | 1 | FMX (59:00) ← QSHFR (59:00) |
| 1 | 0 | FMX (59:35) ← SCR OUT (59:35) IF FD(1) FMX(34:00) → SCR OUT (34:00) ELSE FMX (34:00) ← 0 |
| 1 | 1 | FMX (59:36) ← 0; FMX (33:20) (18:0) ← 0; FMX (1:0) ← 0; FMX (34) ← FT (0), FD (0), INTEGER INCR FMX (1/2) ← FT (0) (A/FD); FMX (35) ← INTEGER INCR L (0); FMX (19) ← INTEGER INCR L (1) |

| QMXC1 | QMXC0 | QMX FUNCTION |
|-------|-------|---|
| 0 | 0 | QMX (59:00) ← SCR OUT (59:00) |
| 0 | 1 | QMX (59:00) ← QSHFR (59:00) |
| 1 | 0 | QMX (59:35) ← SCR OUT (59:35) IF FD(1) QMX (34:00) → SCR OUT (34:00) ELSE QMX (34:00) ← 0 |
| 1 | 1 | QMX (59:00) ← QSHFR (59:00) IF FD(0) QSHFR (31:24) → QUOT |

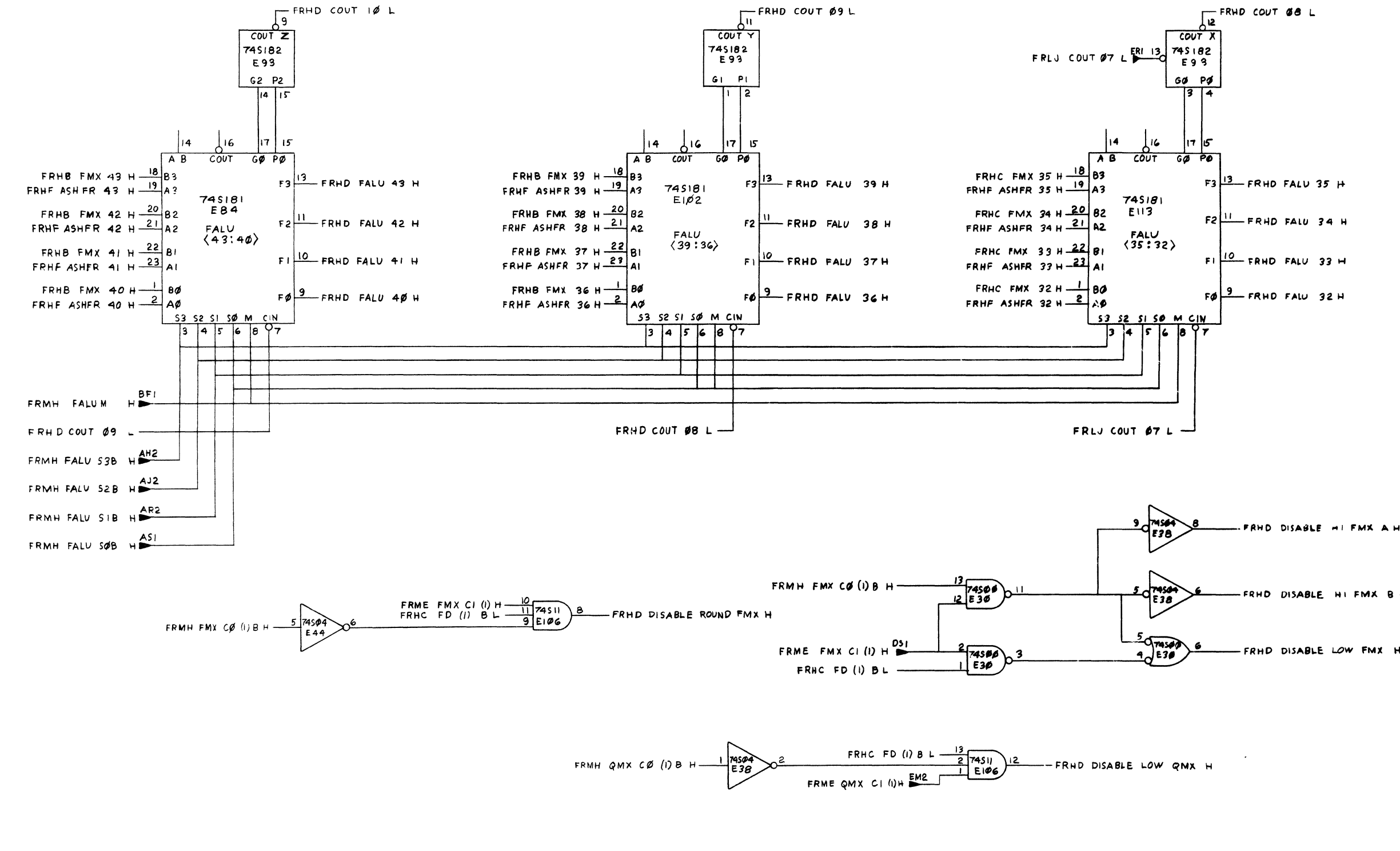


| CHK | CHANGE NO. | REV. |
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(SLOT 02)
 TITLE FRACTION (FRHC)
 PROC HIGH ORDER
 SIZE CODE D CS M8126-0-1
 NUMBER
 SHEET 4 OF 18
 DIST.

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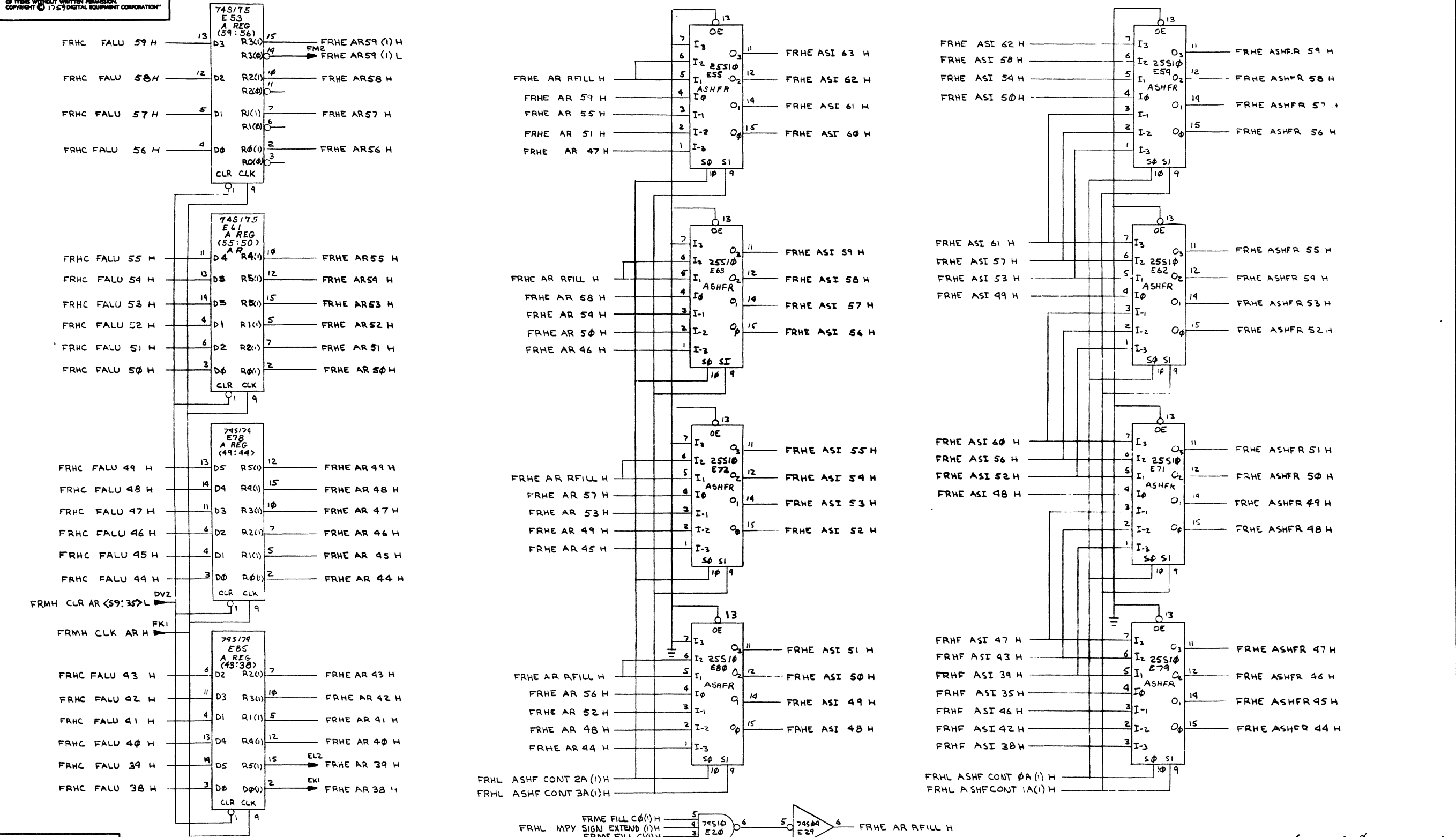
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| REVISIONS | | |
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(SLOT 02)
 TITLE FRACTION PROC. HIGH ORDER (FRHD) DCS M812G-0-1
 SCALE 1:1 SHEET 5 OF 13 DIST. REV. C

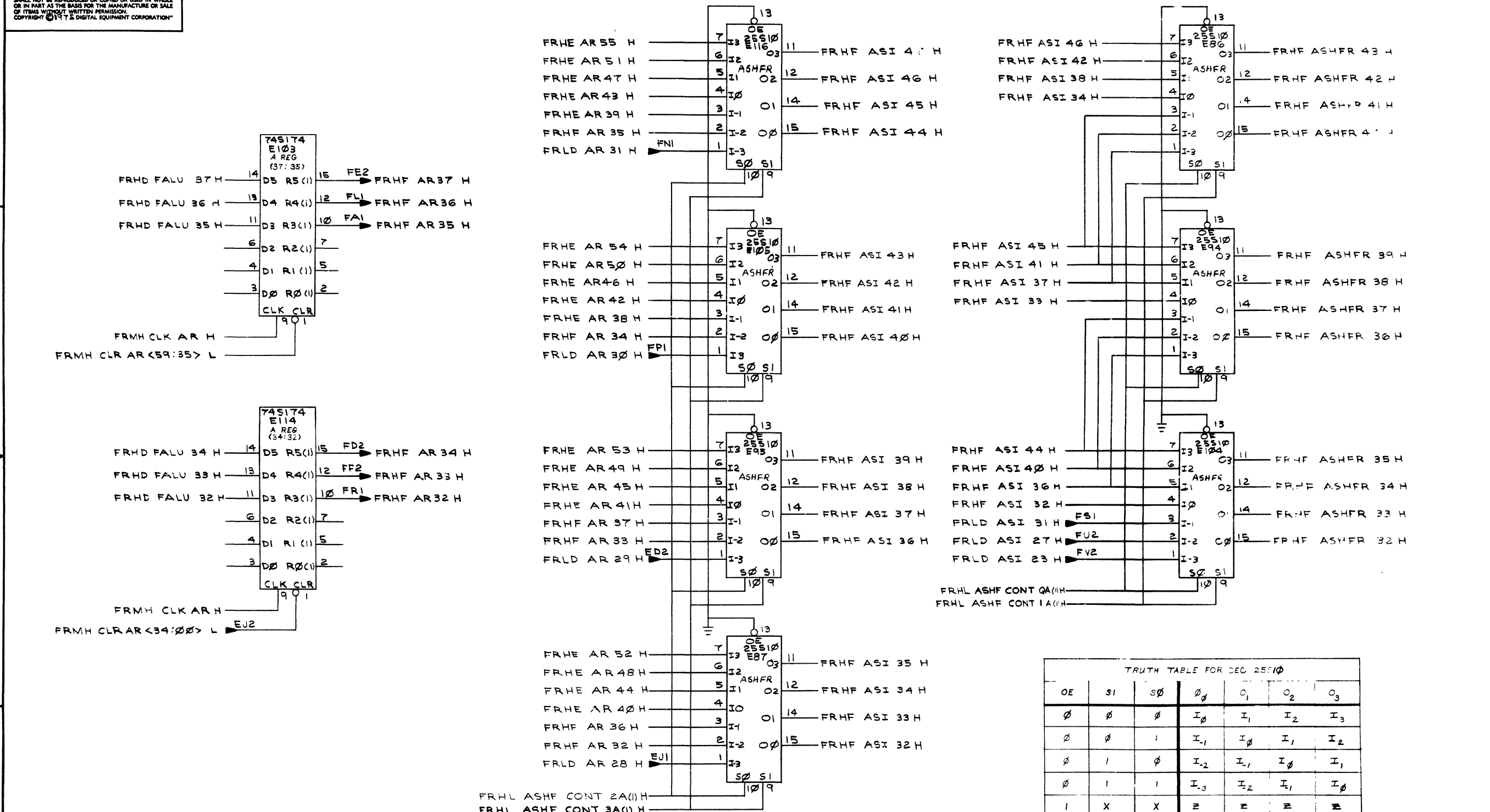
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| CHK | CHANGE NO. | REV. |
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|---------------------------------------|---------------|--------------------------------|----------|
| (SLOT 02) | | (A REGISTER <59:35> A SHIFTER) | |
| TITLE FRACTION PROC HIGH ORDER (FRHE) | | SIZE CODE DCSM8126-0-1 | NUMBER 1 |
| SCALE | SHEET 6 OF 13 | DIST. | REV. C |

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TRUTH TABLE FOR DEC 25510

| OE | S1 | S0 | 00 | 01 | 02 | 03 |
|----|----|----|----|----|----|----|
| 0 | 0 | 0 | I0 | I1 | I2 | I3 |
| 0 | 0 | 1 | I1 | I0 | I1 | I2 |
| 0 | 1 | 0 | I2 | I1 | I0 | I1 |
| 0 | 1 | 1 | I3 | I2 | I1 | I0 |
| 1 | X | X | Z | Z | Z | Z |

NOTES: X = DON'T CARE
Z = OUTPUT "OFF" i.e. IN HIGH IMPEDANCE STATE

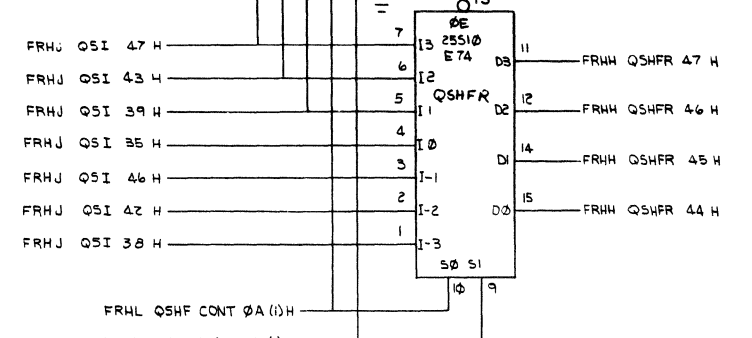
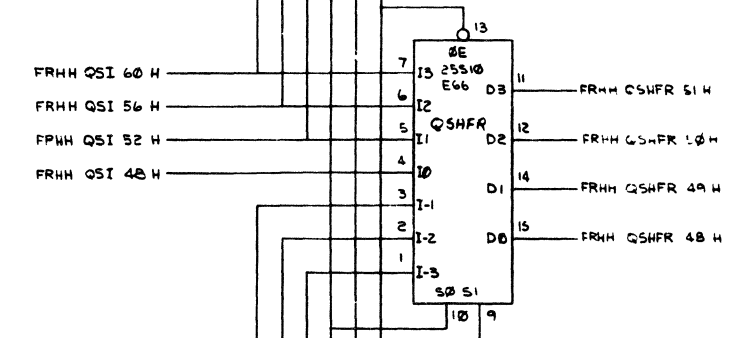
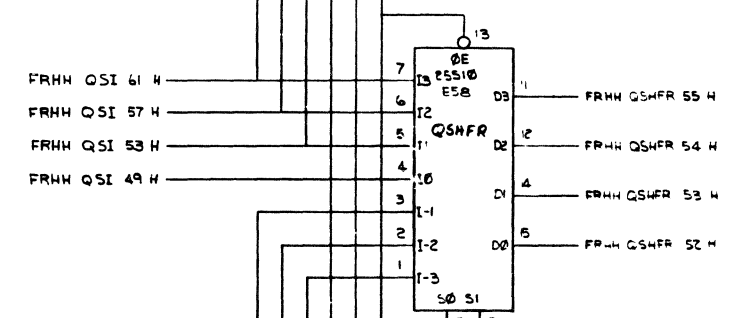
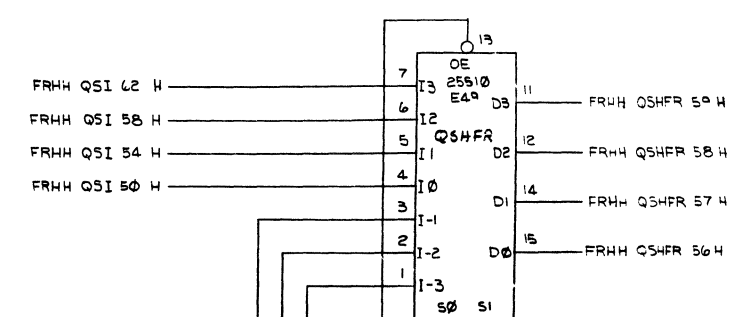
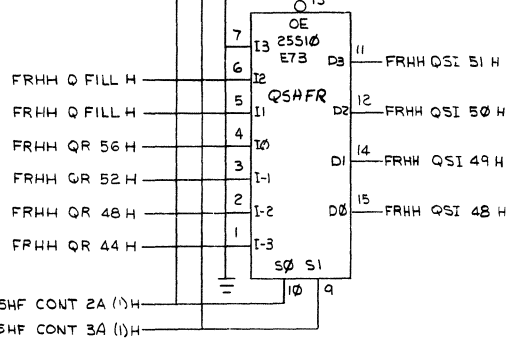
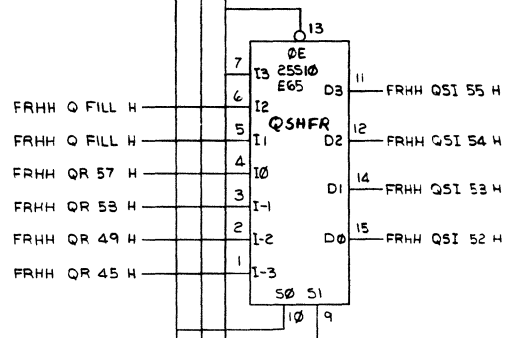
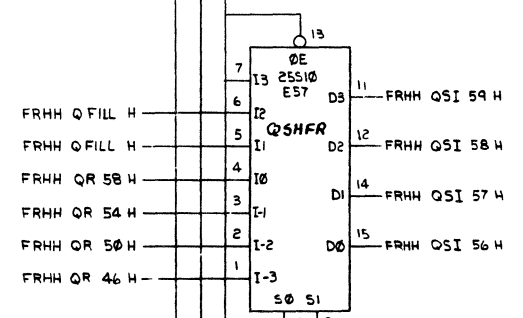
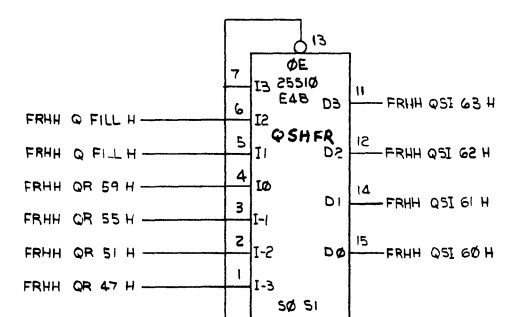
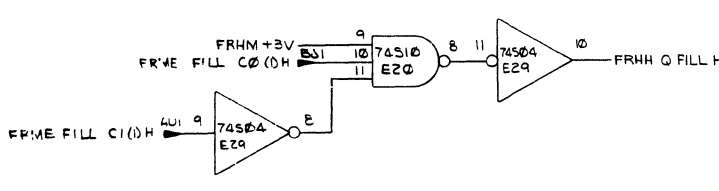
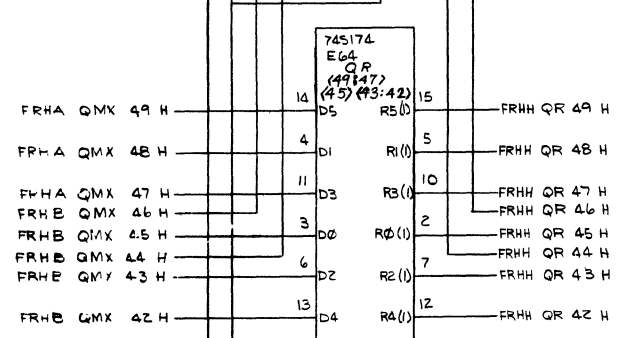
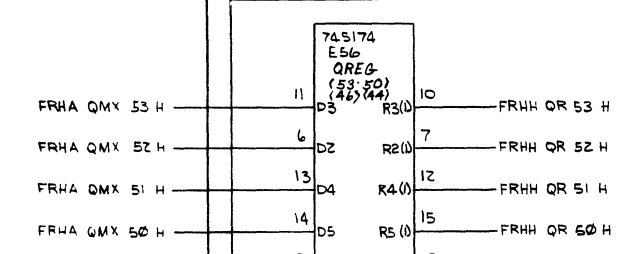
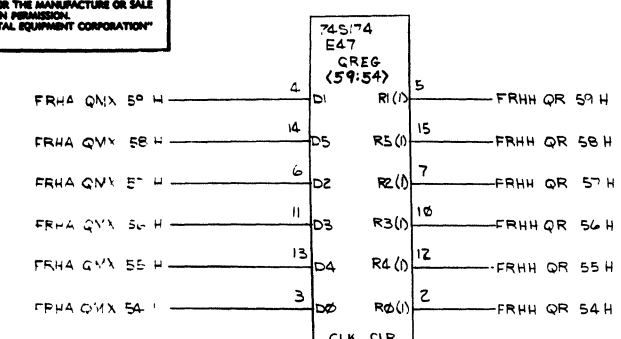
REVISIONS

| CHK | CHANGE NO | REV |
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(SLOT 02)

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|---------------------------|---------------|-----------|--------|------|
| TITLE | (FRHF) | SIZE CODE | NUMBER | REV. |
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| SCALE | SHEET 7 OF 13 | DIST. | | |

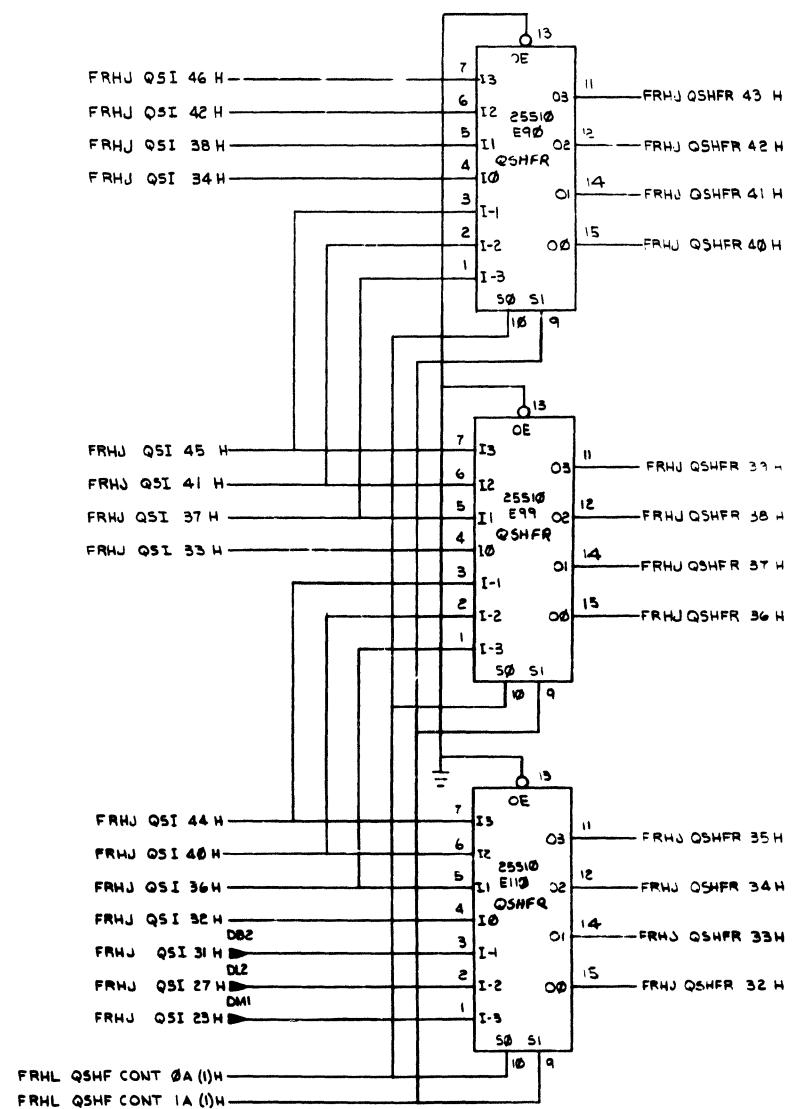
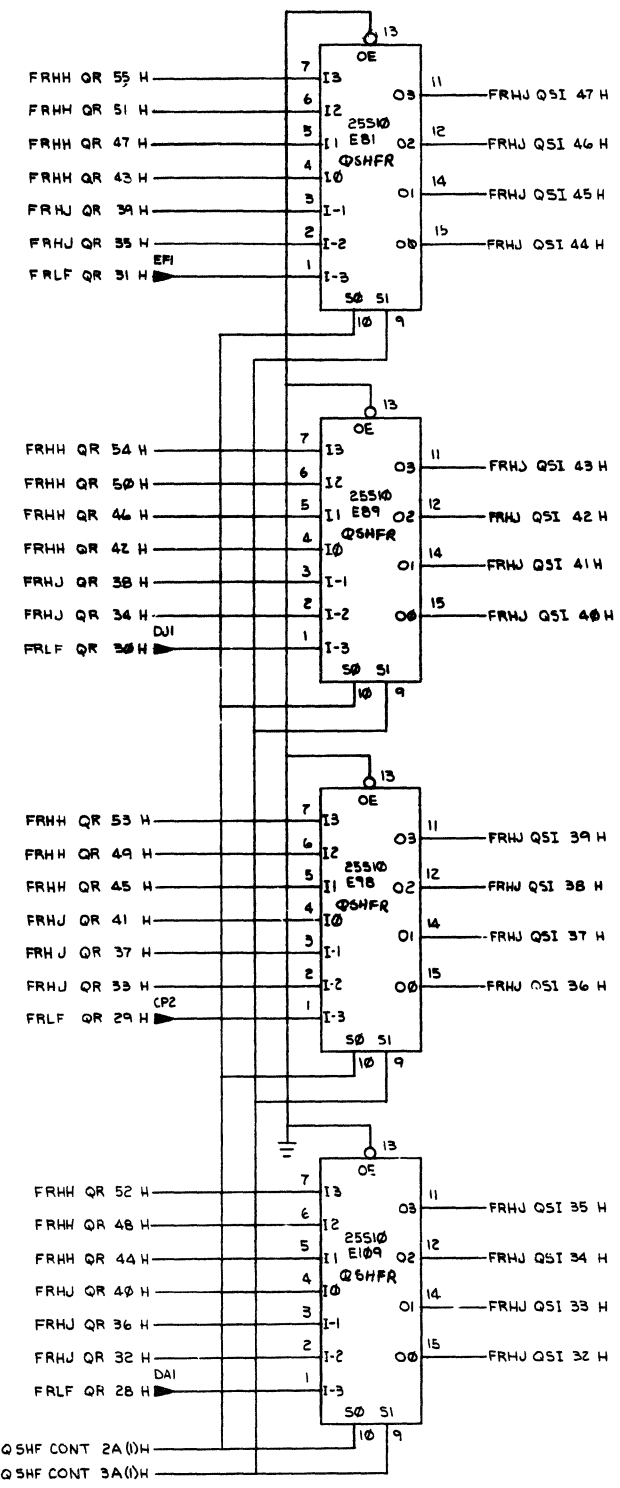
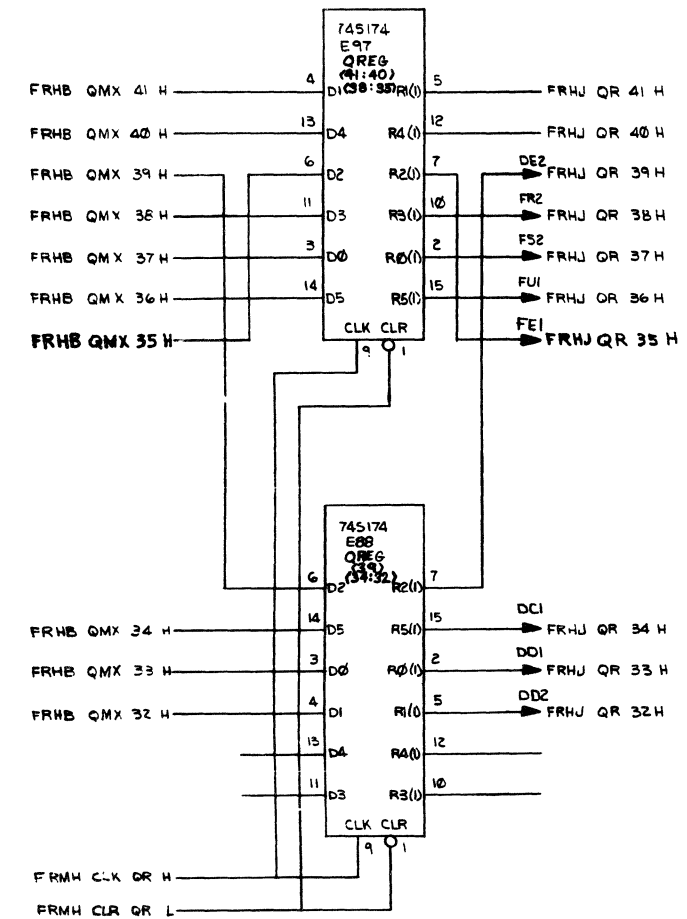
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| REVISIONS | | |
|-----------|------------|-----|
| CHK | CHANGE NO. | REV |
| | | |

| | | | | |
|-----------------------|--|---------------|---------------------|--------|
| TITLE FRACTION (FRHH) | | SIZE CODE D | NUMBER CS M8126-0-1 | REV. C |
| SCALE 1/1 | | SHEET 8 OF 15 | | DIST. |

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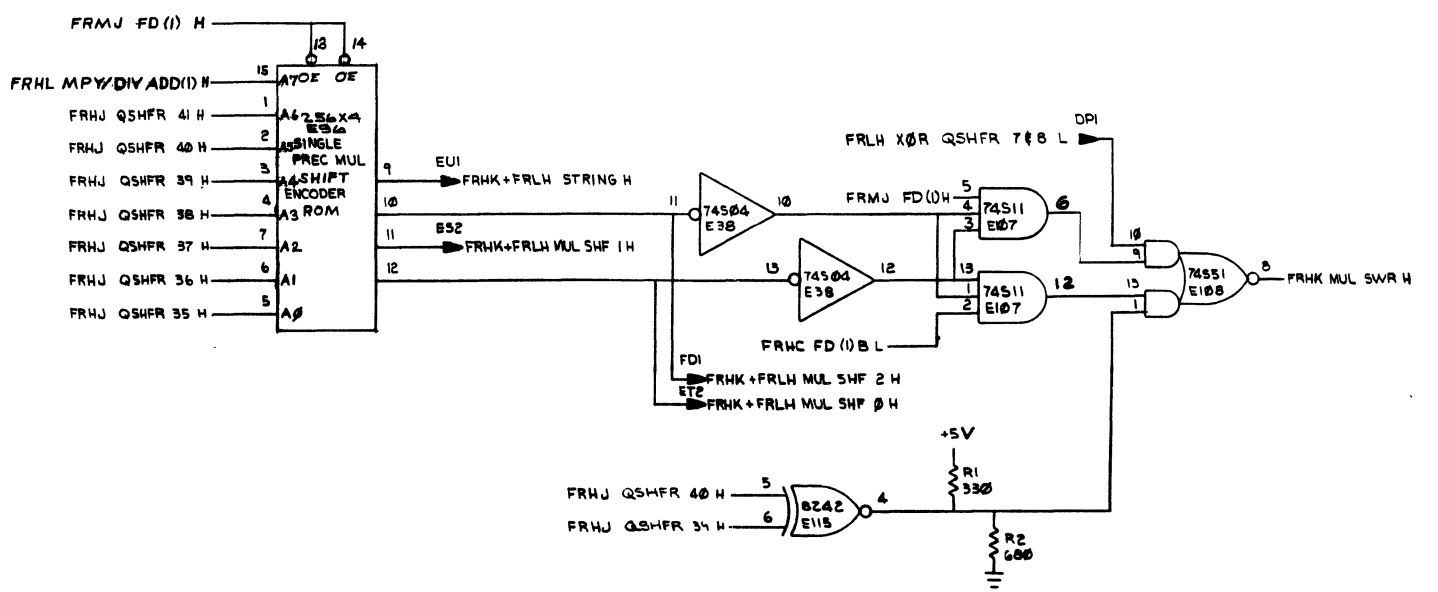
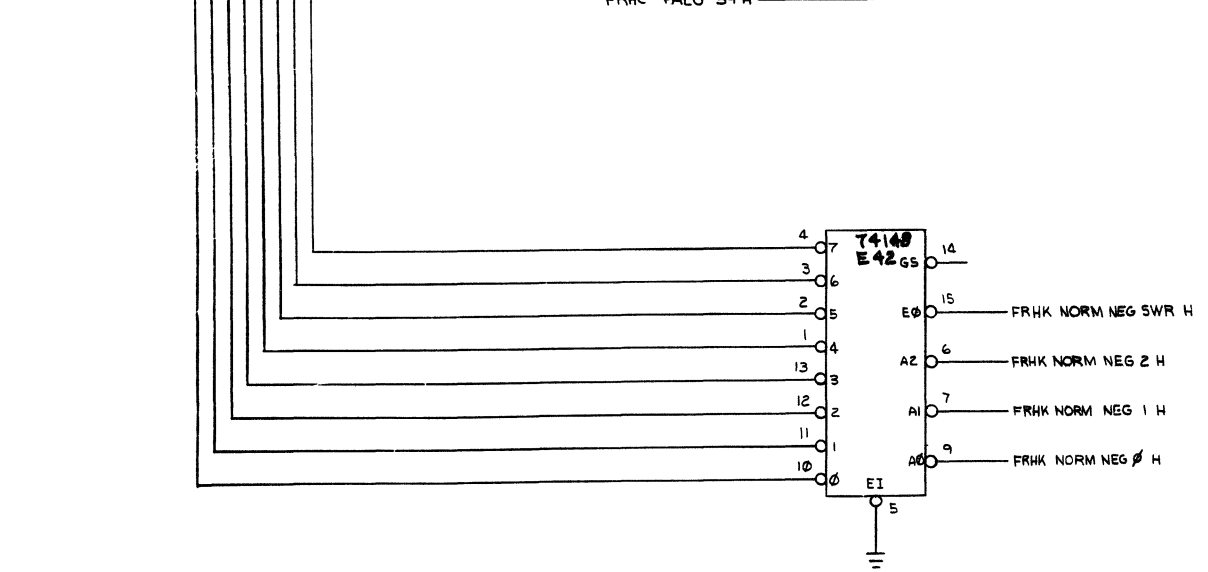
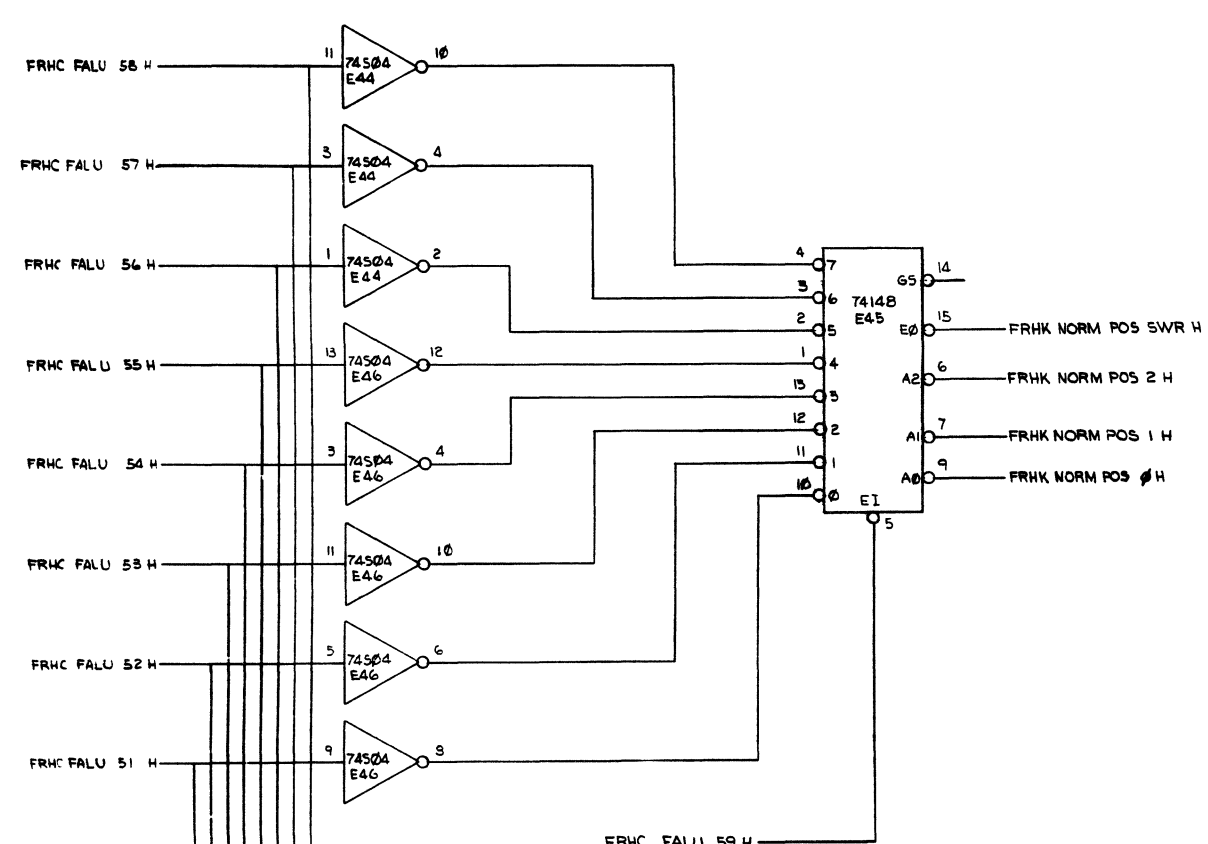


| A/Q SHF CONT 3 2 1 0 | ASHFR/QSHFR FUNCTION |
|-------------------------|----------------------|
| 0 0 0 0 | SHIFT RIGHT 8 PLACES |
| 0 0 0 1 | " " 7 " |
| 0 0 1 0 | " " 6 " |
| 0 0 1 1 | " " 5 " |
| 0 1 0 0 | " " 4 " |
| 0 1 0 1 | " " 3 " |
| 0 1 1 0 | " " 2 " |
| 0 1 1 1 | " " 1 " |
| 1 0 0 0 | NO SHIFT |
| 1 0 0 1 | SHIFT LEFT 1 PLACE |
| 1 0 1 0 | " " 2 " |
| 1 0 1 1 | " " 3 " |
| 1 1 0 0 | " " 4 " |
| 1 1 0 1 | " " 5 " |
| 1 1 1 0 | " " 6 " |
| 1 1 1 1 | " " 7 " |

| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
| | | |

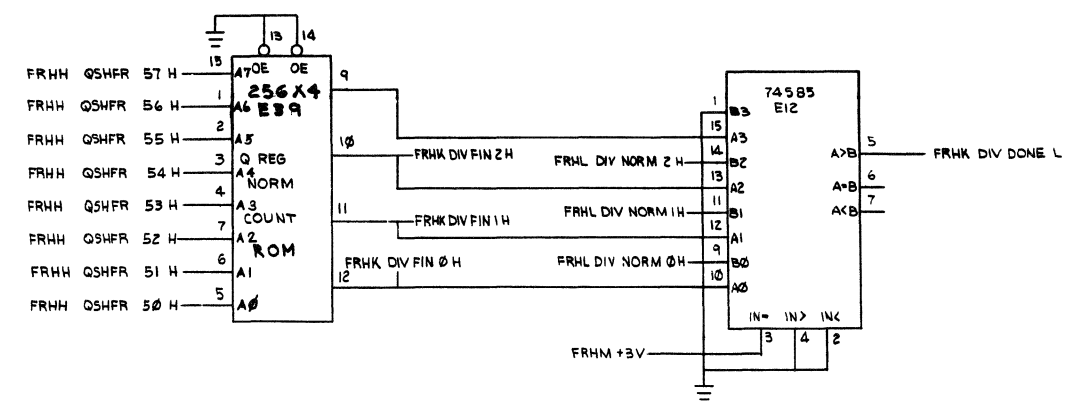
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CS M8126-0-1



Q REG NORM SHIFT COUNT LOOKUP ROM

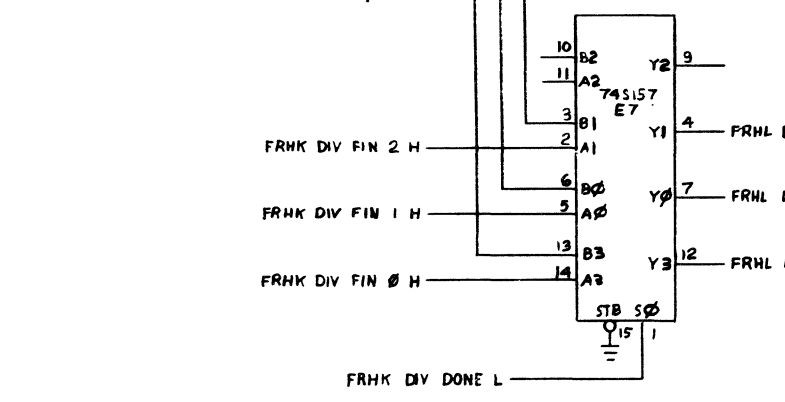
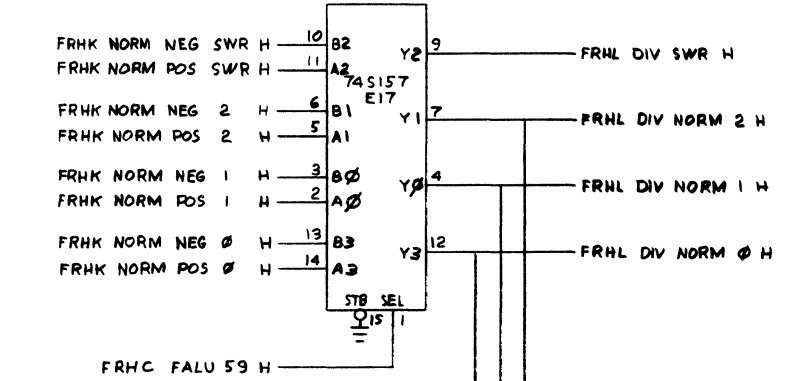
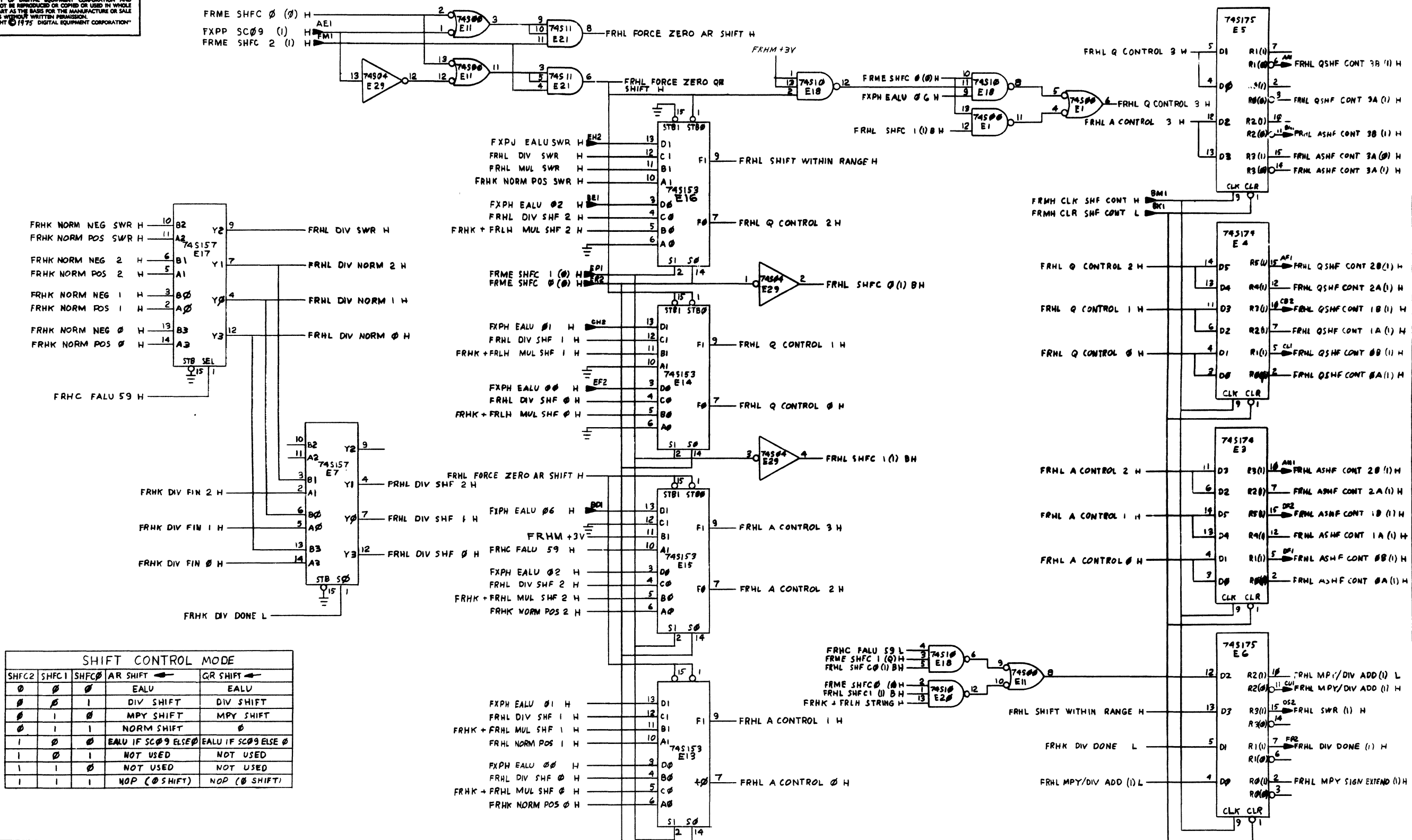
| ADDRESS | CONTENTS |
|-----------|----------|
| 000 → 001 | 10 |
| 002 → 003 | 07 |
| 004 → 007 | 06 |
| 010 → 017 | 05 |
| 020 → 027 | 04 |
| 030 → 037 | 03 |
| 040 → 047 | 02 |
| 050 → 057 | 01 |



| REV. | CHANGE NO. | REV. |
|------|------------|------|
| | | |

(SLOT 02)
 TITLE: (FRHK) FRACTION PROC. HIGH ORDER
 SIZE CODE: DCS
 NUMBER: M8126-0-1
 SCALE: 1/10
 SHEET 10 OF 11
 DIST.:

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| SHIFT CONTROL MODE | | | | |
|--------------------|-------|-------|---------------------|---------------------|
| SHFC2 | SHFC1 | SHFC0 | AR SHIFT ← | QR SHIFT ← |
| 0 | 0 | 0 | EALU | EALU |
| 0 | 0 | 1 | DIV SHIFT | DIV SHIFT |
| 0 | 1 | 0 | MPY SHIFT | MPY SHIFT |
| 0 | 1 | 1 | NORM SHIFT | 0 |
| 1 | 0 | 0 | EALU IF SC09 ELSE 0 | EALU IF SC09 ELSE 0 |
| 1 | 0 | 1 | NOT USED | NOT USED |
| 1 | 1 | 0 | NOT USED | NOT USED |
| 1 | 1 | 1 | NOP (0 SHIFT) | NOP (0 SHIFT) |

| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
| | | |

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MULTIPLY CONTROL LOOKUP ROM

| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 000 | 07 | 1 | ADD |
| 001 | 06 | 2 | ADD |
| 002 | 17 | 1 | SUB |
| 003 | 05 | 3 | ADD |
| 004 | 07 | 1 | ADD |
| 005 | 16 | 2 | SUB |
| 006 | 17 | 1 | SUB |
| 007 | 04 | 4 | ADD |
| 010 | 07 | 1 | ADD |
| 011 | 06 | 2 | ADD |
| 012 | 17 | 1 | SUB |
| 013 | 15 | 3 | SUB |
| 014 | 07 | 1 | ADD |
| 015 | 16 | 2 | SUB |
| 016 | 17 | 1 | SUB |
| 017 | 03 | 5 | ADD |
| 020 | 07 | 1 | ADD |
| 021 | 06 | 2 | ADD |
| 022 | 17 | 1 | SUB |
| 023 | 15 | 3 | SUB |
| 024 | 07 | 1 | ADD |
| 025 | 16 | 2 | SUB |
| 026 | 17 | 1 | SUB |
| 027 | 14 | 4 | SUB |
| 030 | 07 | 1 | ADD |
| 031 | 06 | 2 | ADD |
| 032 | 17 | 1 | SUB |
| 033 | 15 | 3 | SUB |
| 034 | 07 | 1 | ADD |
| 035 | 16 | 2 | SUB |
| 036 | 17 | 1 | SUB |
| 037 | 02 | 6 | ADD |
| 040 | 07 | 1 | ADD |
| 041 | 06 | 2 | ADD |
| 042 | 17 | 1 | SUB |
| 043 | 05 | 3 | ADD |
| 044 | 07 | 1 | ADD |
| 045 | 16 | 2 | SUB |
| 046 | 17 | 1 | SUB |
| 047 | 04 | 4 | ADD |
| 050 | 07 | 1 | ADD |
| 051 | 06 | 2 | ADD |
| 052 | 17 | 1 | SUB |
| 053 | 15 | 3 | SUB |
| 054 | 07 | 1 | ADD |
| 055 | 16 | 2 | SUB |
| 056 | 17 | 1 | SUB |
| 057 | 13 | 5 | SUB |
| 060 | 07 | 1 | ADD |
| 061 | 06 | 2 | ADD |
| 062 | 17 | 1 | SUB |
| 063 | 05 | 3 | ADD |
| 064 | 07 | 1 | ADD |
| 065 | 16 | 2 | SUB |
| 066 | 17 | 1 | SUB |
| 067 | 14 | 4 | SUB |
| 070 | 07 | 1 | ADD |
| 071 | 06 | 2 | ADD |
| 072 | 17 | 1 | SUB |
| 073 | 15 | 3 | SUB |
| 074 | 07 | 1 | ADD |
| 075 | 16 | 2 | SUB |
| 076 | 17 | 1 | SUB |
| 077 | 12 | 6 | SUB |

| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 100 | 07 | 1 | ADD |
| 101 | 06 | 2 | ADD |
| 102 | 17 | 1 | SUB |
| 103 | 05 | 3 | ADD |
| 104 | 07 | 1 | ADD |
| 105 | 16 | 2 | SUB |
| 106 | 17 | 1 | SUB |
| 107 | 04 | 4 | ADD |
| 110 | 07 | 1 | ADD |
| 111 | 06 | 2 | ADD |
| 112 | 17 | 1 | SUB |
| 113 | 15 | 3 | SUB |
| 114 | 07 | 1 | ADD |
| 115 | 16 | 2 | SUB |
| 116 | 17 | 1 | SUB |
| 117 | 03 | 5 | ADD |
| 120 | 07 | 1 | ADD |
| 121 | 06 | 2 | ADD |
| 122 | 17 | 1 | SUB |
| 123 | 05 | 3 | ADD |
| 124 | 07 | 1 | ADD |
| 125 | 16 | 2 | SUB |
| 126 | 17 | 1 | SUB |
| 127 | 14 | 4 | SUB |
| 130 | 07 | 1 | ADD |
| 131 | 06 | 2 | ADD |
| 132 | 17 | 1 | SUB |
| 133 | 15 | 3 | SUB |
| 134 | 07 | 1 | ADD |
| 135 | 16 | 2 | SUB |
| 136 | 17 | 1 | SUB |
| 137 | 12 | 6 | SUB |
| 140 | 07 | 1 | ADD |
| 141 | 06 | 2 | ADD |
| 142 | 17 | 1 | SUB |
| 143 | 05 | 3 | ADD |
| 144 | 07 | 1 | ADD |
| 145 | 16 | 2 | SUB |
| 146 | 17 | 1 | SUB |
| 147 | 04 | 4 | ADD |
| 150 | 07 | 1 | ADD |
| 151 | 06 | 2 | ADD |
| 152 | 17 | 1 | SUB |
| 153 | 15 | 3 | SUB |
| 154 | 07 | 1 | ADD |
| 155 | 16 | 2 | SUB |
| 156 | 17 | 1 | SUB |
| 157 | 13 | 5 | SUB |
| 160 | 07 | 1 | ADD |
| 161 | 06 | 2 | ADD |
| 162 | 17 | 1 | SUB |
| 163 | 05 | 3 | ADD |
| 164 | 07 | 1 | ADD |
| 165 | 16 | 2 | SUB |
| 166 | 17 | 1 | SUB |
| 167 | 14 | 4 | SUB |
| 170 | 07 | 1 | ADD |
| 171 | 06 | 2 | ADD |
| 172 | 17 | 1 | SUB |
| 173 | 15 | 3 | SUB |
| 174 | 07 | 1 | ADD |
| 175 | 16 | 2 | SUB |
| 176 | 17 | 1 | SUB |
| 177 | 12 | 6 | SUB |

| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 200 | 02 | 6 | ADD |
| 201 | 07 | 1 | ADD |
| 202 | 06 | 2 | ADD |
| 203 | 17 | 1 | SUB |
| 204 | 05 | 3 | ADD |
| 205 | 07 | 1 | ADD |
| 206 | 16 | 2 | SUB |
| 207 | 17 | 1 | SUB |
| 210 | 04 | 4 | ADD |
| 211 | 07 | 1 | ADD |
| 212 | 06 | 2 | ADD |
| 213 | 17 | 1 | SUB |
| 214 | 15 | 3 | SUB |
| 215 | 07 | 1 | ADD |
| 216 | 16 | 2 | SUB |
| 217 | 17 | 1 | SUB |
| 220 | 03 | 5 | ADD |
| 221 | 07 | 1 | ADD |
| 222 | 06 | 2 | ADD |
| 223 | 17 | 1 | SUB |
| 224 | 05 | 3 | ADD |
| 225 | 07 | 1 | ADD |
| 226 | 16 | 2 | SUB |
| 227 | 17 | 1 | SUB |
| 230 | 14 | 4 | SUB |
| 231 | 07 | 1 | ADD |
| 232 | 06 | 2 | ADD |
| 233 | 17 | 1 | SUB |
| 234 | 15 | 3 | SUB |
| 235 | 07 | 1 | ADD |
| 236 | 16 | 2 | SUB |
| 237 | 17 | 1 | SUB |
| 240 | 02 | 6 | ADD |
| 241 | 07 | 1 | ADD |
| 242 | 06 | 2 | ADD |
| 243 | 17 | 1 | SUB |
| 244 | 05 | 3 | ADD |
| 245 | 07 | 1 | ADD |
| 246 | 16 | 2 | SUB |
| 247 | 17 | 1 | SUB |
| 250 | 04 | 4 | ADD |
| 251 | 07 | 1 | ADD |
| 252 | 06 | 2 | ADD |
| 253 | 17 | 1 | SUB |
| 254 | 15 | 3 | SUB |
| 255 | 07 | 1 | ADD |
| 256 | 16 | 2 | SUB |
| 257 | 17 | 1 | SUB |
| 260 | 13 | 5 | SUB |
| 261 | 07 | 1 | ADD |
| 262 | 06 | 2 | ADD |
| 263 | 17 | 1 | SUB |
| 264 | 05 | 3 | ADD |
| 265 | 07 | 1 | ADD |
| 266 | 16 | 2 | SUB |
| 267 | 17 | 1 | SUB |
| 270 | 14 | 4 | SUB |
| 271 | 07 | 1 | ADD |
| 272 | 06 | 2 | ADD |
| 273 | 17 | 1 | SUB |
| 274 | 15 | 3 | SUB |
| 275 | 07 | 1 | ADD |
| 276 | 16 | 2 | SUB |
| 277 | 17 | 1 | SUB |

| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 300 | 02 | 6 | ADD |
| 301 | 07 | 1 | ADD |
| 302 | 06 | 2 | ADD |
| 303 | 17 | 1 | SUB |
| 304 | 05 | 3 | ADD |
| 305 | 07 | 1 | ADD |
| 306 | 16 | 2 | SUB |
| 307 | 17 | 1 | SUB |
| 310 | 04 | 4 | ADD |
| 311 | 07 | 1 | ADD |
| 312 | 06 | 2 | ADD |
| 313 | 17 | 1 | SUB |
| 314 | 15 | 3 | SUB |
| 315 | 07 | 1 | ADD |
| 316 | 16 | 2 | SUB |
| 317 | 17 | 1 | SUB |
| 320 | 03 | 5 | ADD |
| 321 | 07 | 1 | ADD |
| 322 | 06 | 2 | ADD |
| 323 | 17 | 1 | SUB |
| 324 | 05 | 3 | ADD |
| 325 | 07 | 1 | ADD |
| 326 | 16 | 2 | SUB |
| 327 | 17 | 1 | SUB |
| 330 | 14 | 4 | SUB |
| 331 | 07 | 1 | ADD |
| 332 | 06 | 2 | ADD |
| 333 | 17 | 1 | SUB |
| 334 | 15 | 3 | SUB |
| 335 | 07 | 1 | ADD |
| 336 | 16 | 2 | SUB |
| 337 | 17 | 1 | SUB |
| 340 | 02 | 6 | ADD |
| 341 | 07 | 1 | ADD |
| 342 | 06 | 2 | ADD |
| 343 | 17 | 1 | SUB |
| 344 | 05 | 3 | ADD |
| 345 | 07 | 1 | ADD |
| 346 | 16 | 2 | SUB |
| 347 | 17 | 1 | SUB |
| 350 | 04 | 4 | ADD |
| 351 | 07 | 1 | ADD |
| 352 | 06 | 2 | ADD |
| 353 | 17 | 1 | SUB |
| 354 | 15 | 3 | SUB |
| 355 | 07 | 1 | ADD |
| 356 | 16 | 2 | SUB |
| 357 | 17 | 1 | SUB |
| 360 | 13 | 5 | SUB |
| 361 | 07 | 1 | ADD |
| 362 | 06 | 2 | ADD |
| 363 | 17 | 1 | SUB |
| 364 | 05 | 3 | ADD |
| 365 | 07 | 1 | ADD |
| 366 | 16 | 2 | SUB |
| 367 | 17 | 1 | SUB |
| 370 | 14 | 4 | SUB |
| 371 | 07 | 1 | ADD |
| 372 | 06 | 2 | ADD |
| 373 | 17 | 1 | SUB |
| 374 | 15 | 3 | SUB |
| 375 | 07 | 1 | ADD |
| 376 | 16 | 2 | SUB |
| 377 | 17 | 1 | SUB |

| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
| | | |

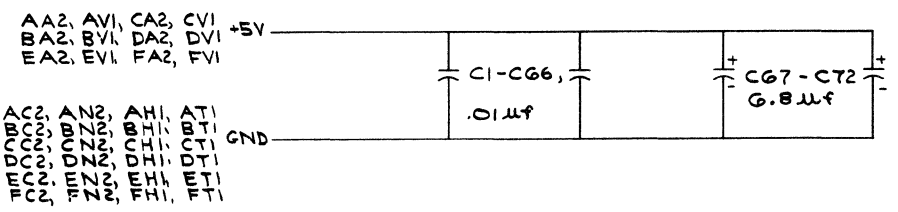
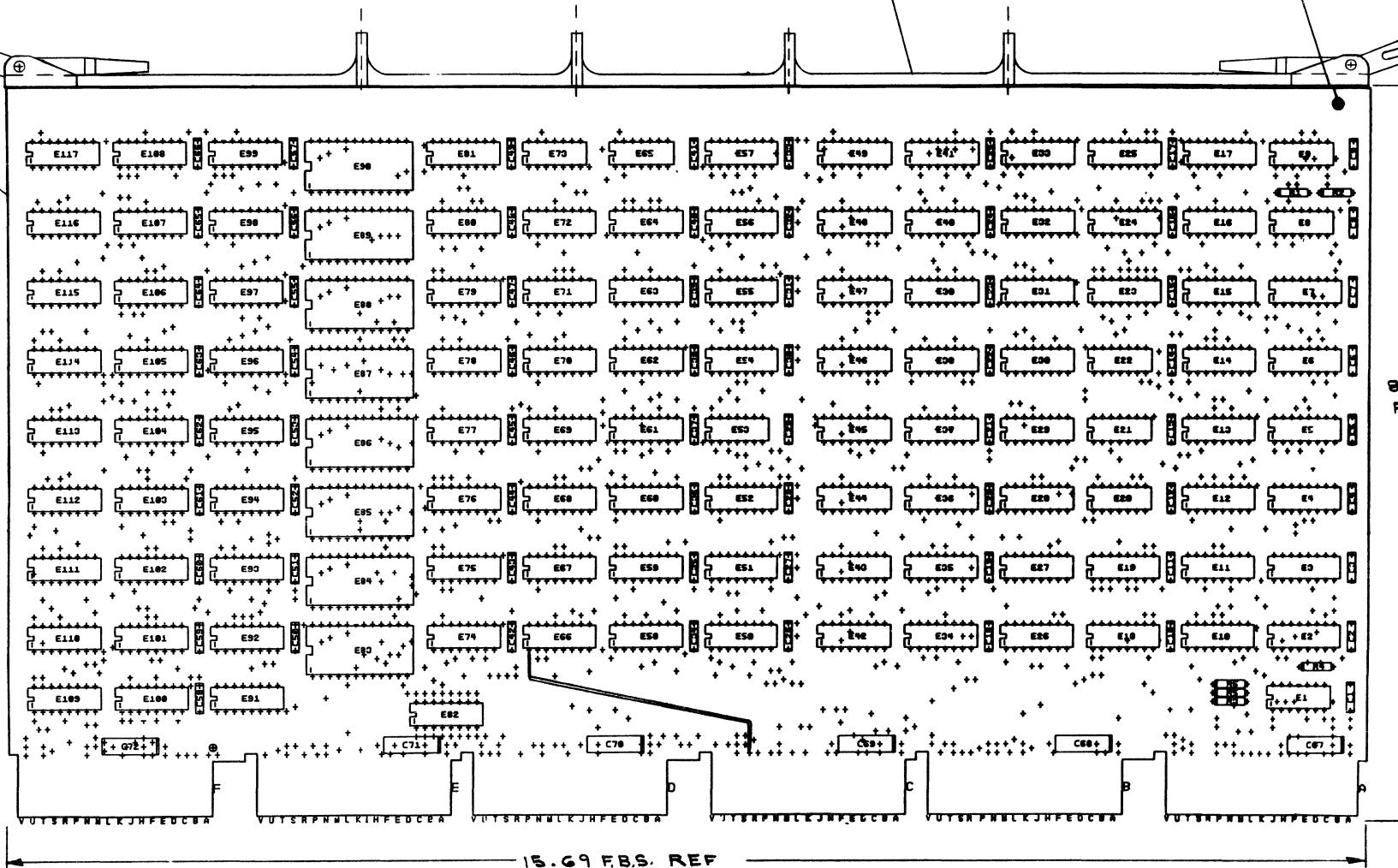
(SLOT 02)

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| TITLE | FRACTION PROC. HIGH ORDER | SIZE CODE | D | NUMBER | CS M8126-0-1 | REV. | C |
| SCALE | 1/16" | SHEET | 13 OF 13 | DIST. | | | |

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NOTES:

4
3
2



| | | |
|-----------|-----|-----|
| IC 74S182 | 8 | 16 |
| IC 74S175 | 8 | 16 |
| IC 74157 | 8 | 16 |
| IC 74174 | 8 | 16 |
| IC 74175 | 8 | 16 |
| IC 74S174 | 8 | 16 |
| IC 74S158 | 8 | 16 |
| IC 74S157 | 8 | 16 |
| IC 74S153 | 8 | 16 |
| IC 74S181 | 12 | 24 |
| IC 74153 | 8 | 16 |
| IC TYPE | GND | +5V |

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

IC PIN LOCATIONS

| REF | X-Y COORDINATE HOLE LOCATION | QTY | REF. DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|-----|---|-----|-----------------------------|-------------|------------|----------|
| REF | ASSY/DRILLING HOLE LAYOUT | | D-AH-M8127-B-5 | | | 2 |
| REF | MODULE ECO HISTORY | | B-MH-M8127-B-8 | | | 3 |
| 1 | ETCHED CIRCUIT BOARD | | 5011871 | | | 4 |
| 86 | C1 THRU C66 | | CAPACITOR, .01µF | | 1001610-00 | 5 |
| 6 | C67 THRU C72 | | CAPACITOR, 6.8µF | | 1005308 | 6 |
| 1 | HANDLE HEX MODULE | | | | 1210711-2 | 7 |
| 3 | R1, R3, R5 | | RESISTOR, 330 OHM, 1/4W, 5% | | 1300295 | 8 |
| 3 | R2, R4, R6 | | RESISTOR, 800 OHM, 1/4W, 5% | | 1301424 | 9 |
| 1 | E1 | | I.C. DEC 8242 | | 1909712 | 10 |
| 8 | E50, E51, E52, E58, E60, E100, E105, E109 | | I.C. DEC 74153 | | 1909937 | 11 |
| 8 | E83 THRU E90 | | I.C. DEC 74S181 | | 1910531 | 12 |
| 2 | E9, E53 | | I.C. DEC 74S187 | | 1910532 | 13 |
| 2 | E20, E73 | | I.C. DEC 74S184 | | 1910534 | 14 |
| 1 | E21 | | I.C. DEC 74S187 | | 1910536 | 15 |
| 3 | E8, E22, E85 | | I.C. DEC 74S111 | | 1910537 | 16 |
| 3 | E23, E25, E57 | | I.C. DEC 74S153 | | 1910547 | 17 |
| 5 | E81 THRU E84, E55 | | I.C. DEC 74157 | | 1910655 | 18 |
| 7 | E74 THRU E80 | | I.C. DEC 74S158 | | 1910548 | 19 |
| 10 | E2-E6, E92, E94, E95, E97, E98 | | I.C. DEC 74S174 | | 1910550 | 20 |
| 1 | E56 | | I.C. DEC 74175 | | 1910651 | 21 |
| 1 | E54 | | I.C. DEC 74174 | | 1910652 | 22 |
| 17 | E34 THRU E43, E93 | | I.C. DEC 74S157 | | 1910546 | 23 |
| 2 | E7, E81 | | I.C. DEC 74S175 | | 1910457 | 24 |
| 3 | E91, E93, E86 | | I.C. DEC 74S182 | | 1912097 | 25 |
| 7 | E86 THRU E72 | | I.C. DEC 74S189 | | 1912681 | 26 |
| 34 | E10 THRU E19, E26 THRU E33, E101 THRU E108, E110-E117 | | I.C. DEC 25S18 | | 1912693 | 27 |
| 1 | E24 | | ROM | | 23086A2 | 28 |
| 12 | EYELET | | | | 9006732 | 29 |
| 1 | #30 AWG WIRE | | | | 9105740-55 | 30 |

8.44
F.B.S.
REF

15.69 F.B.S. REF

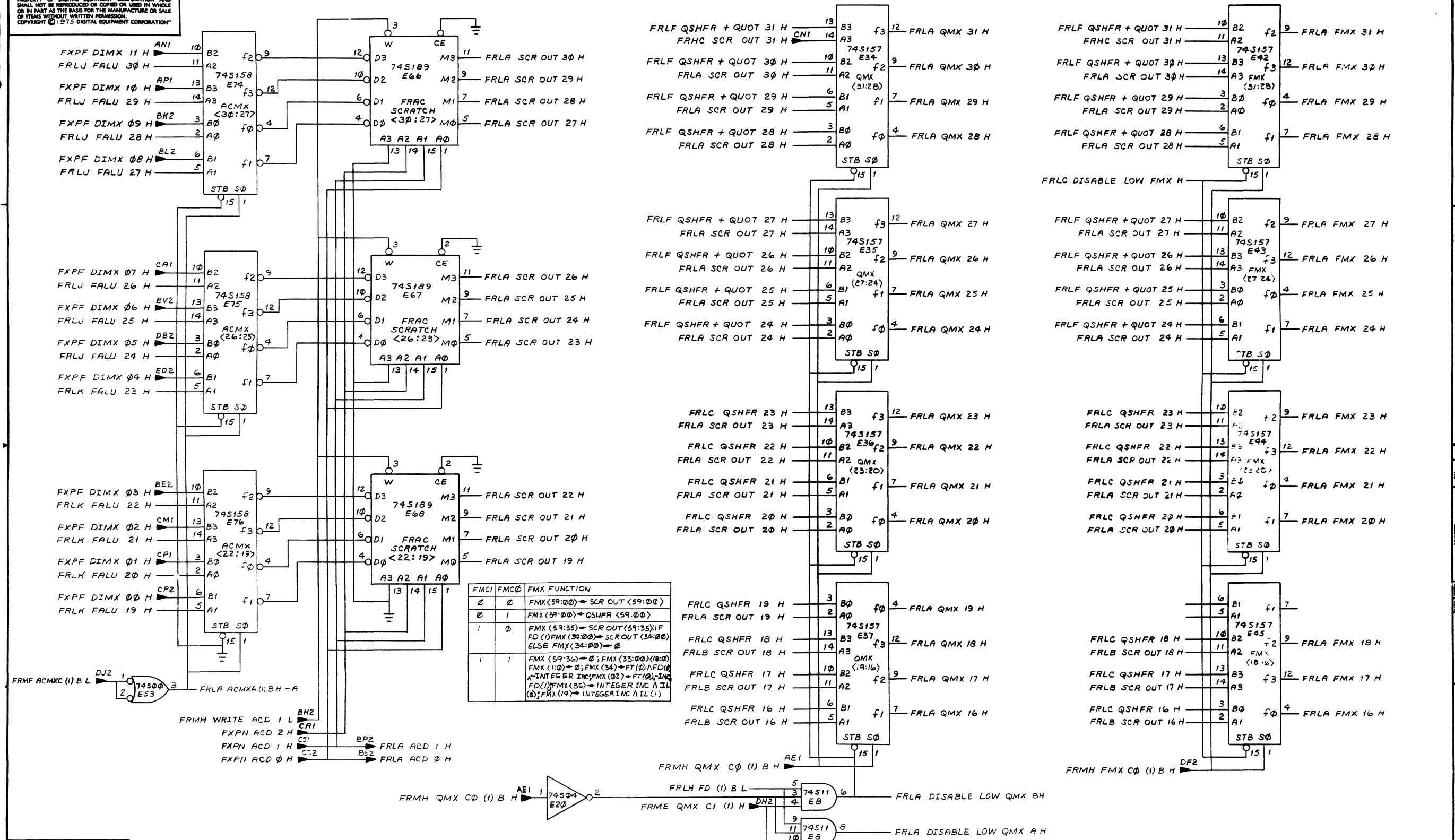
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|--------------------------------|------|---|--|------------|--|
| FIRST USED ON OPTION MODEL | | ETCH BOARD REV. | | PARTS LIST | |
| FP11-C | | C | | | |
| DRN | DATE | <p>TITLE FRACTION PROC. LOW ORDER</p> <p>SIZE CODE DCS M8127-0-1</p> <p>NUMBER REV. B</p> | | | |
| CHKD | DATE | | | | |
| ENG | DATE | | | | |
| PROJ. ENG. | DATE | | | | |
| PROD. ENG. | DATE | | | | |
| NEXT HIGHER ASSY | | SCALE | | SHEET | |
| B-DD-FP11-C | | + | | 1 OF 14 | |
| SEMICONDUCTOR CONVERSION CHART | | | | | |

| | |
|------------|------|
| ORIGINATED | REV. |
| CHANGE NO. | |
| CHK | |

DCS M8127-0-1 B

A

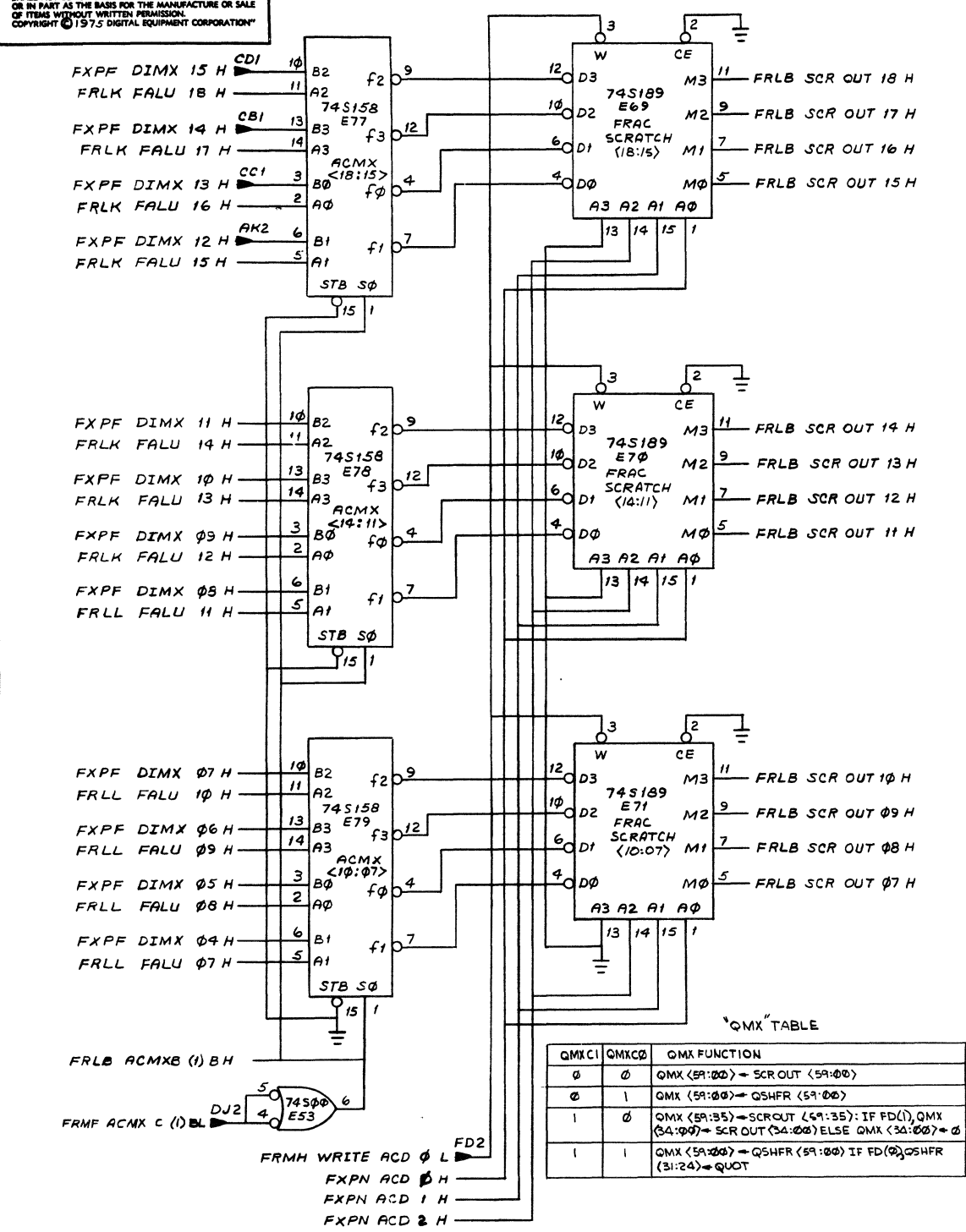
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| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
| | | |

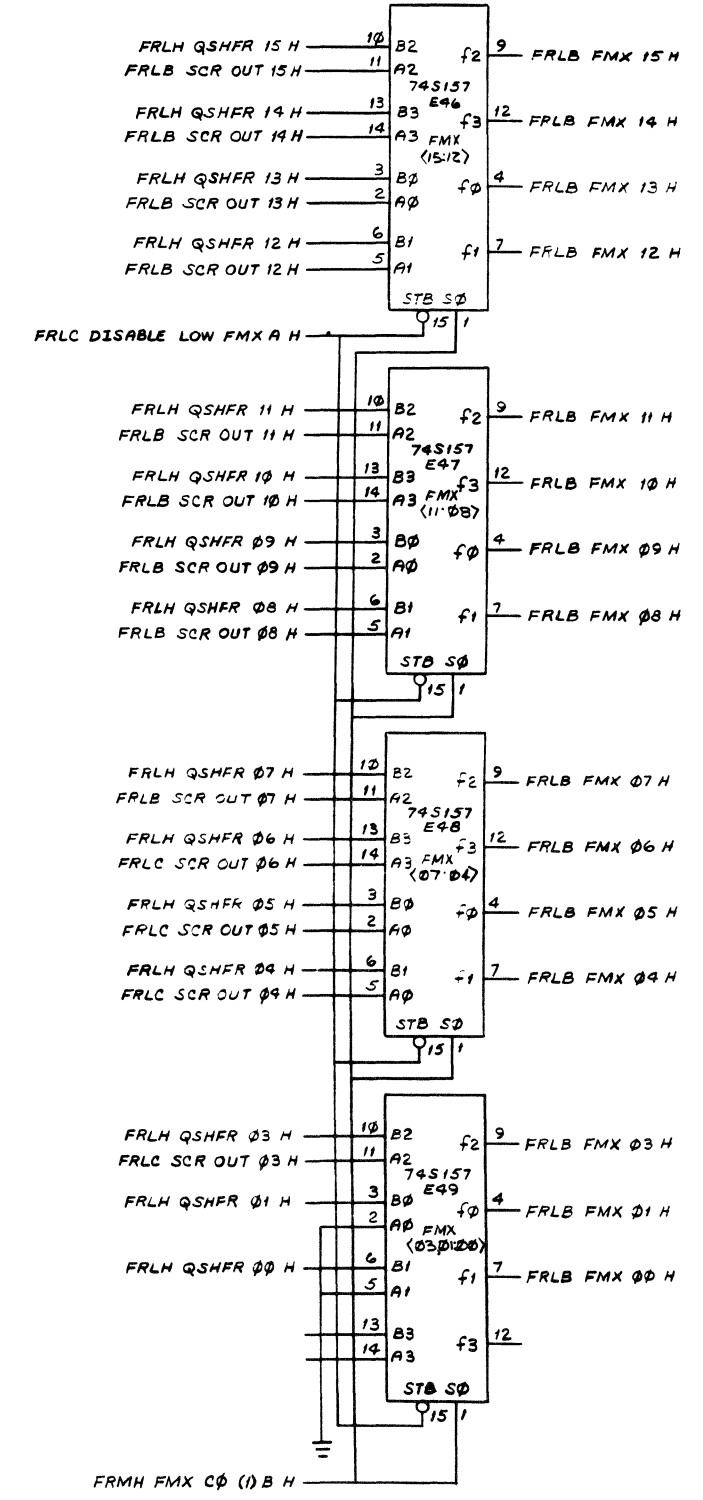
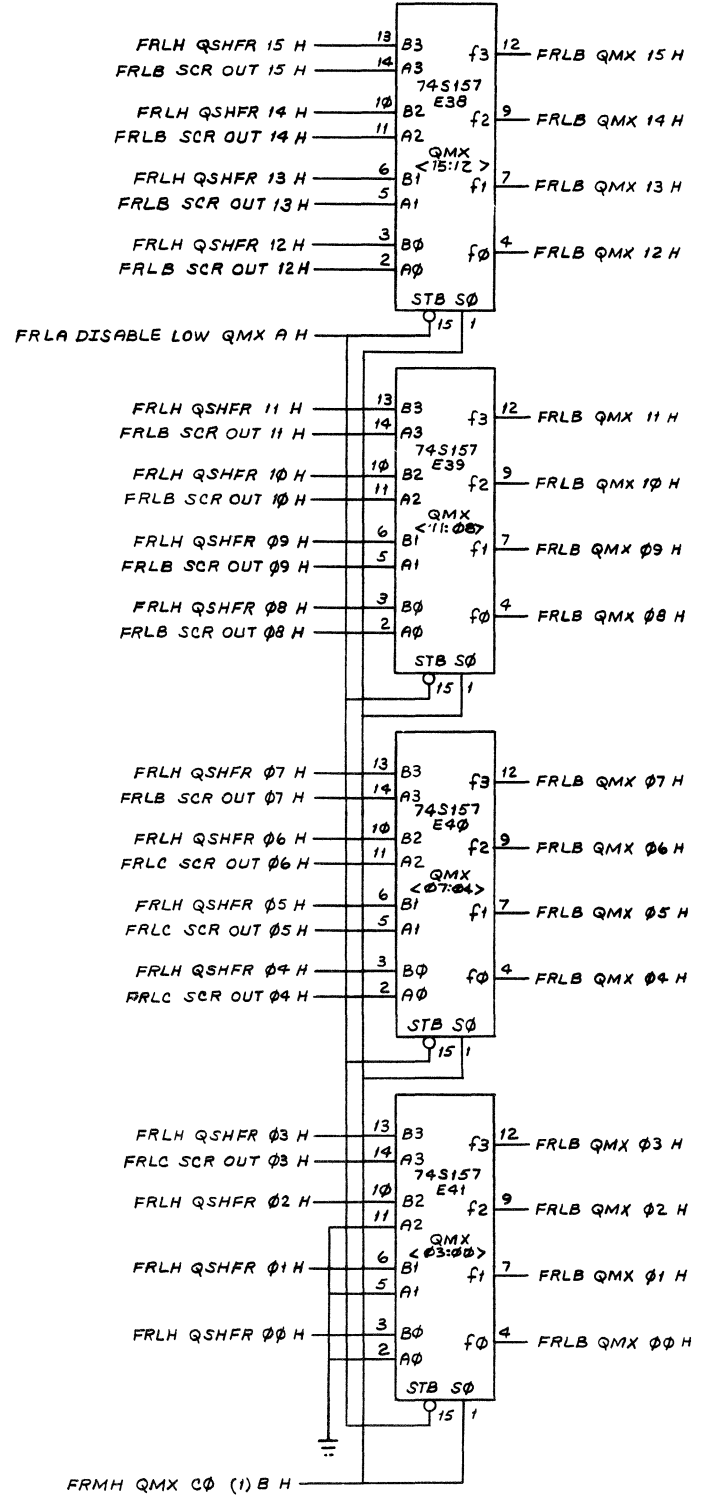
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| TITLE | | FRACTION PROC. LOW ORDER (FRLA) | | SIZE CODE | NUMBER | | REV. |
| SCALE | | SHEET 2 OF 14 | | D | CS M8127-0-1 | | B |

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"QMX" TABLE

| QMX C1 | QMX C0 | QMX FUNCTION |
|--------|--------|---|
| 0 | 0 | QMX (59:00) = SCR OUT (59:00) |
| 0 | 1 | QMX (59:00) = QSHFR (59:00) |
| 1 | 0 | QMX (59:05) = SCR OUT (59:35); IF FD(1), QMX (54:00) = SCR OUT (54:00) ELSE QMX (34:00) = 0 |
| 1 | 1 | QMX (59:00) = QSHFR (59:00) IF FD(0), QSHFR (31:24) = QUOT |

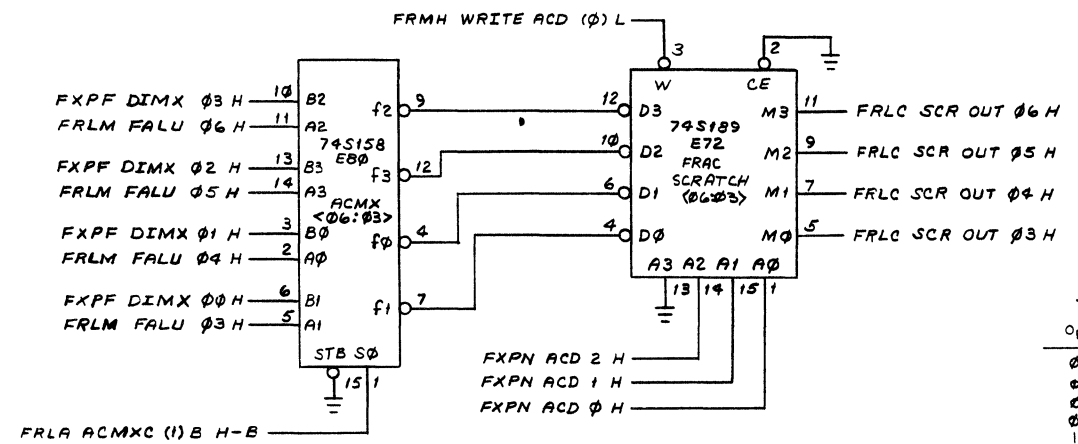


REVISIONS

| CHK | CHANGE NO. | REV. |
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| | | |

(SLOT 3)

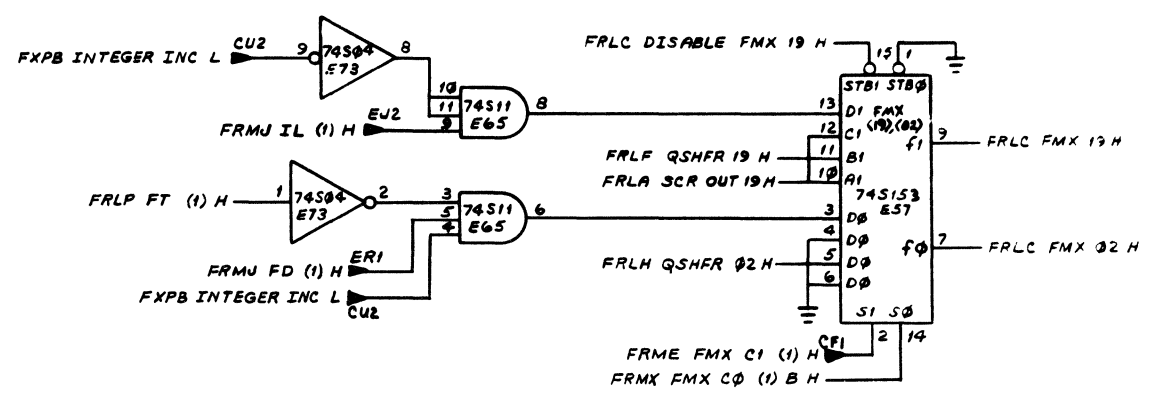
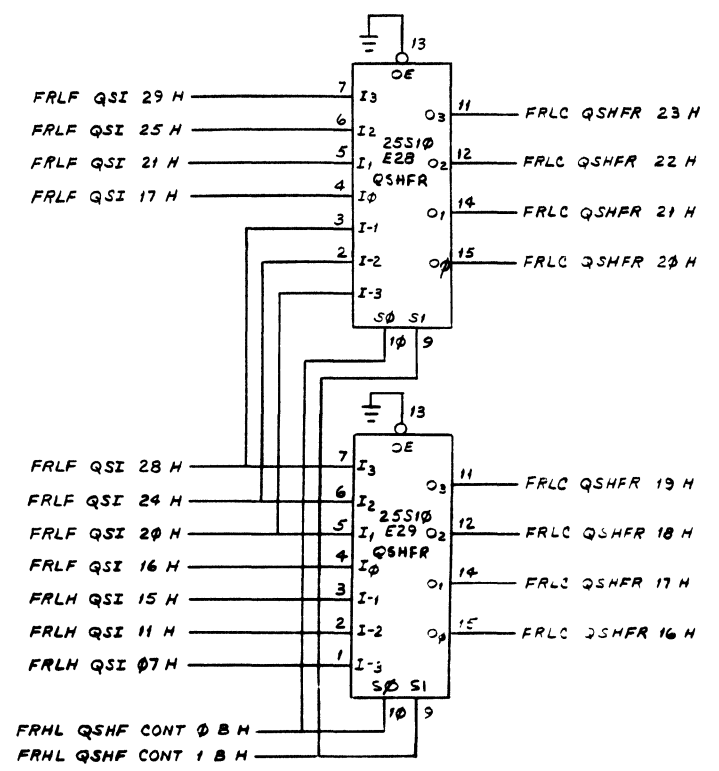
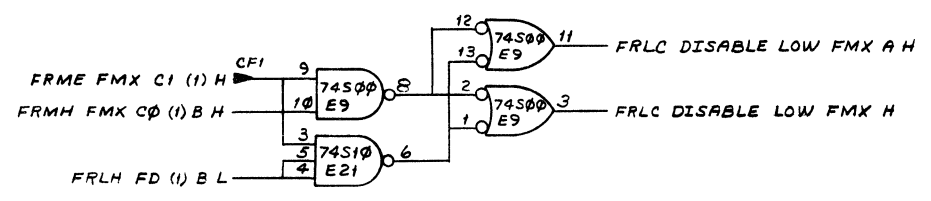
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TRUTH TABLE FOR DEC 25510

| O _E | S ₁ | S ₀ | O ₀ | O ₁ | O ₂ | O ₃ |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 0 | 0 | 0 | I ₀ | I ₁ | I ₂ | I ₃ |
| 0 | 0 | 1 | I-1 | I ₀ | I ₁ | I ₂ |
| 0 | 1 | 0 | I-2 | I-1 | I ₀ | I ₁ |
| 0 | 1 | 1 | I-3 | I-2 | I-1 | I ₀ |
| 1 | X | X | Z | Z | Z | Z |

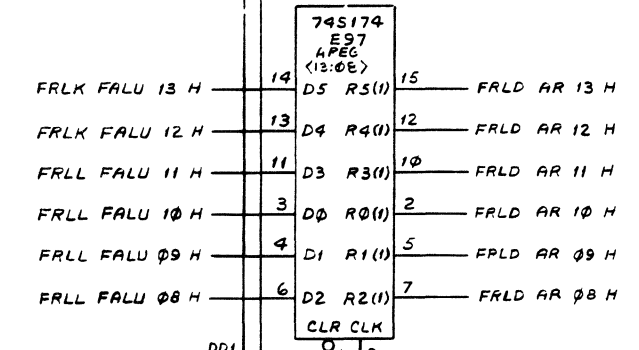
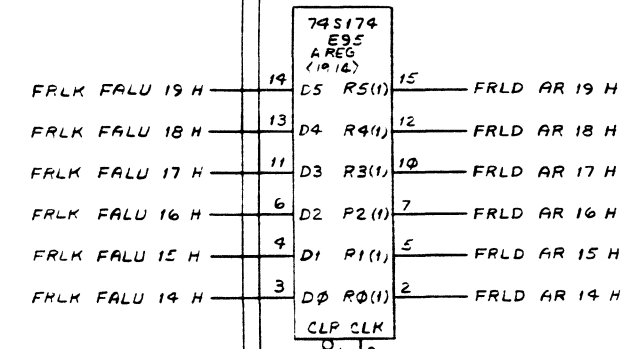
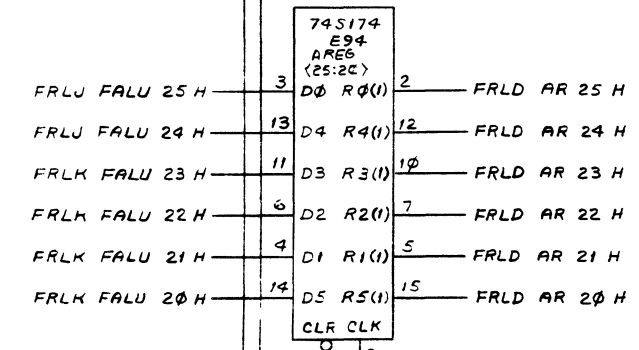
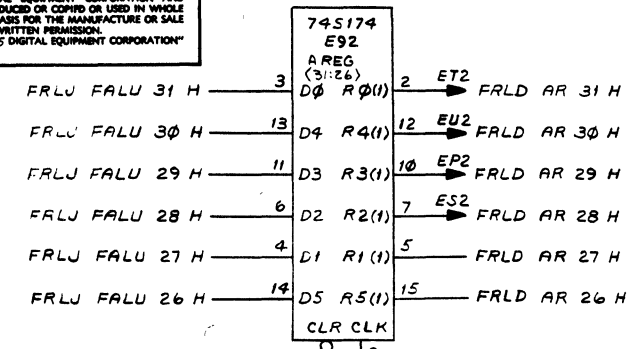
NOTES: X=DONT CARE
Z=OUTPUT OFF, I.E. IN HIGH IMPEDANCE STATE



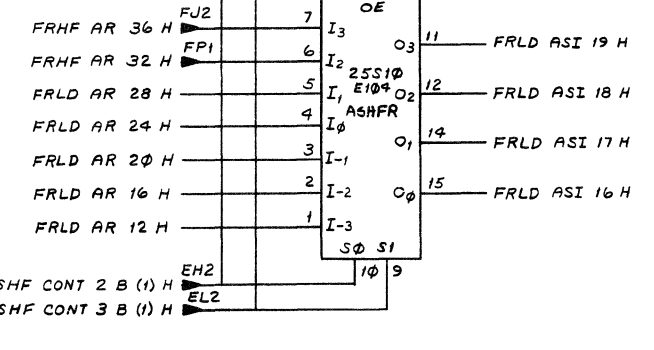
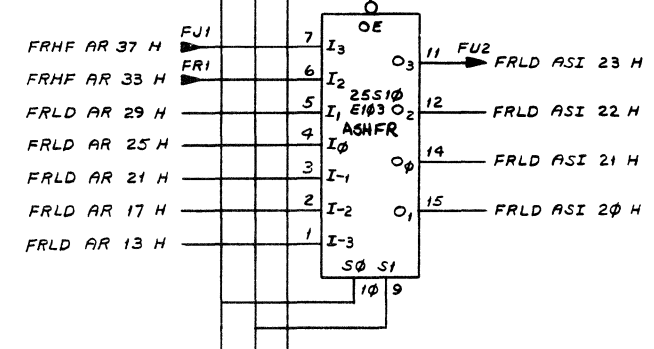
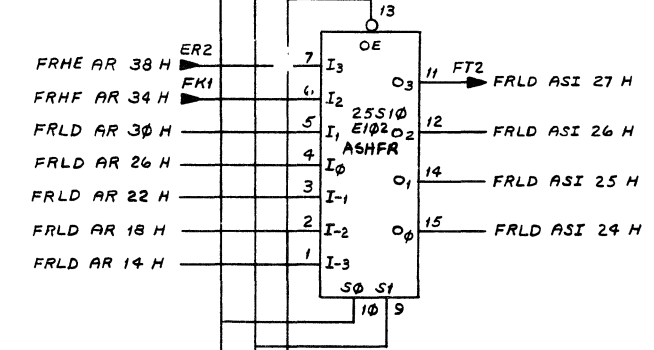
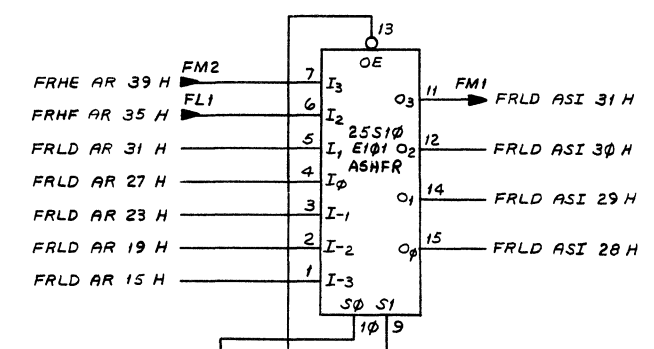
(SLOT 3)

| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
| | | |

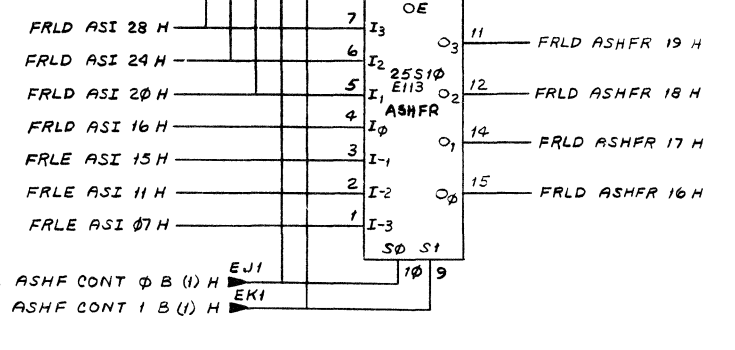
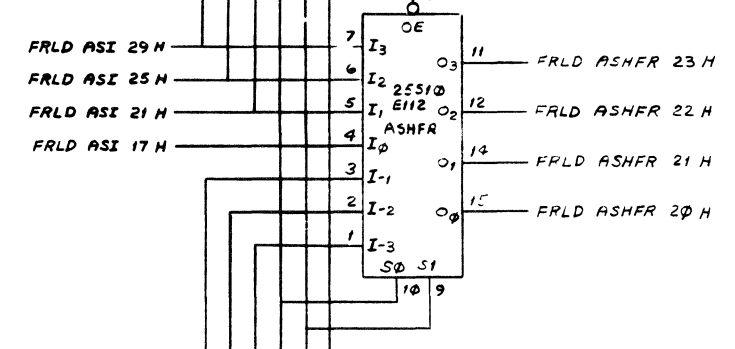
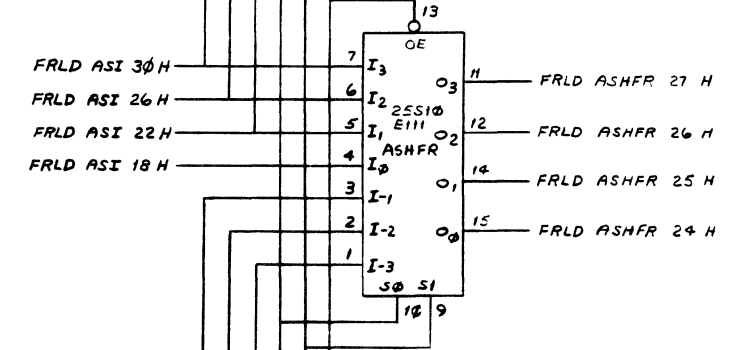
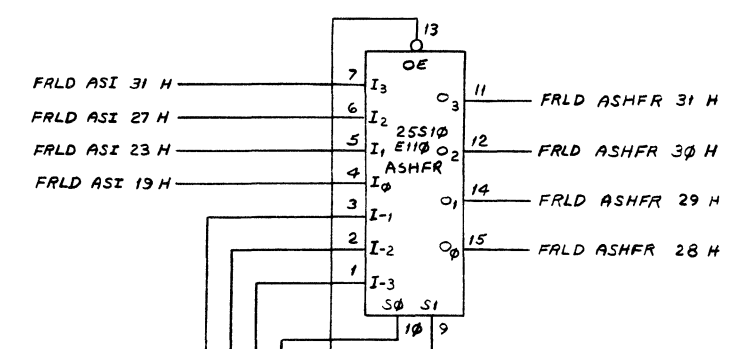
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FRMH CLR AR <34:00> L DD1
 FRMH CLK AR H DE1



FRHL ASHF CONT 2 B (1) H EH2
 FRHL ASHF CONT 3 B (1) H EL2



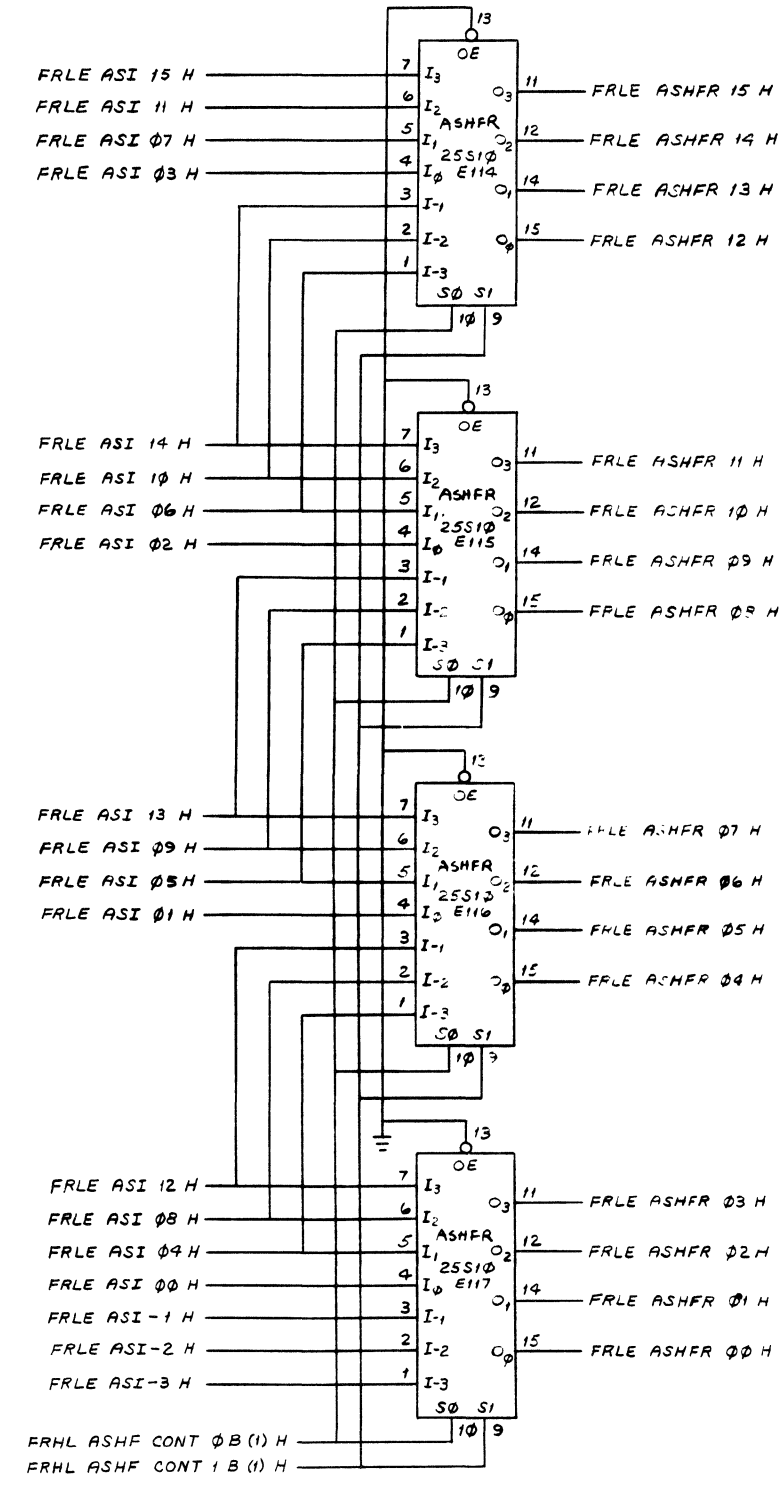
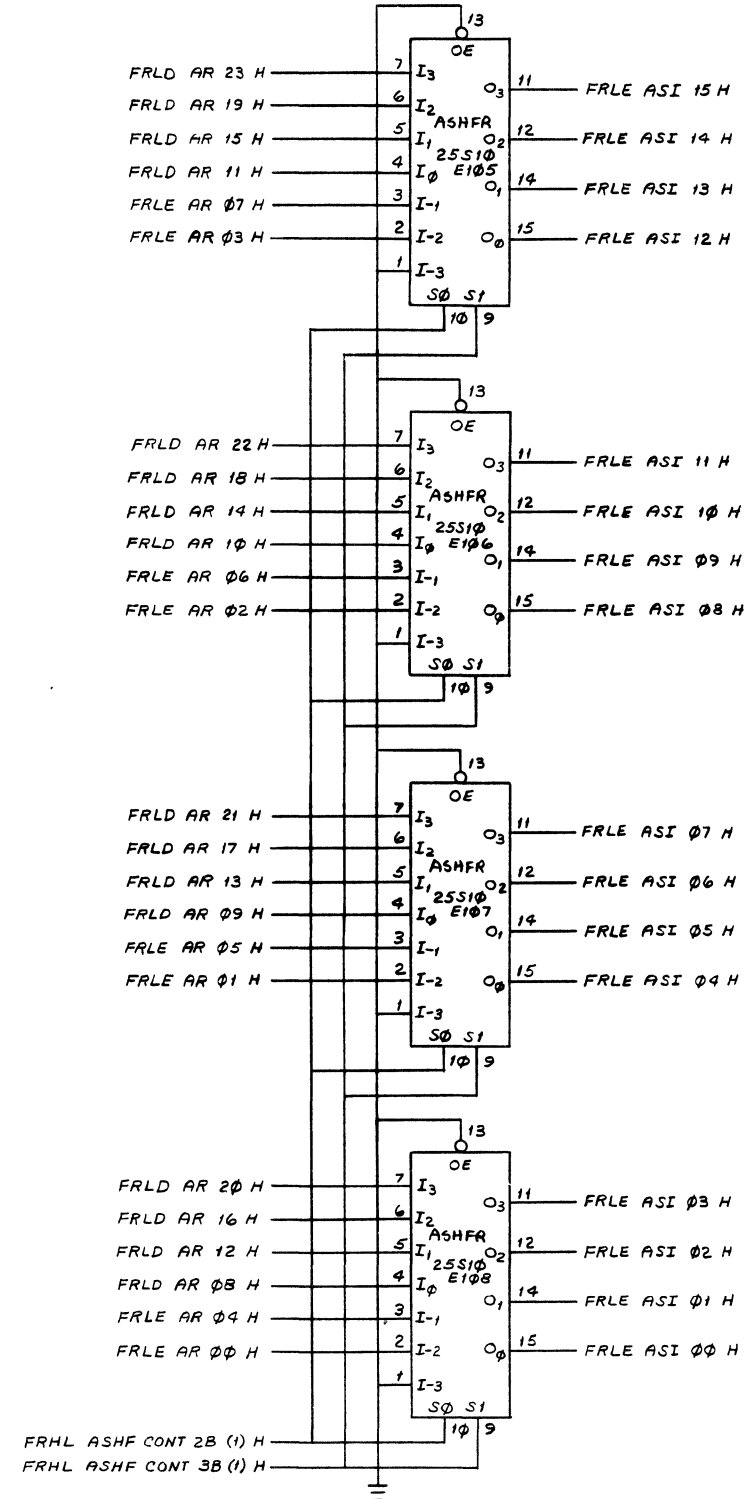
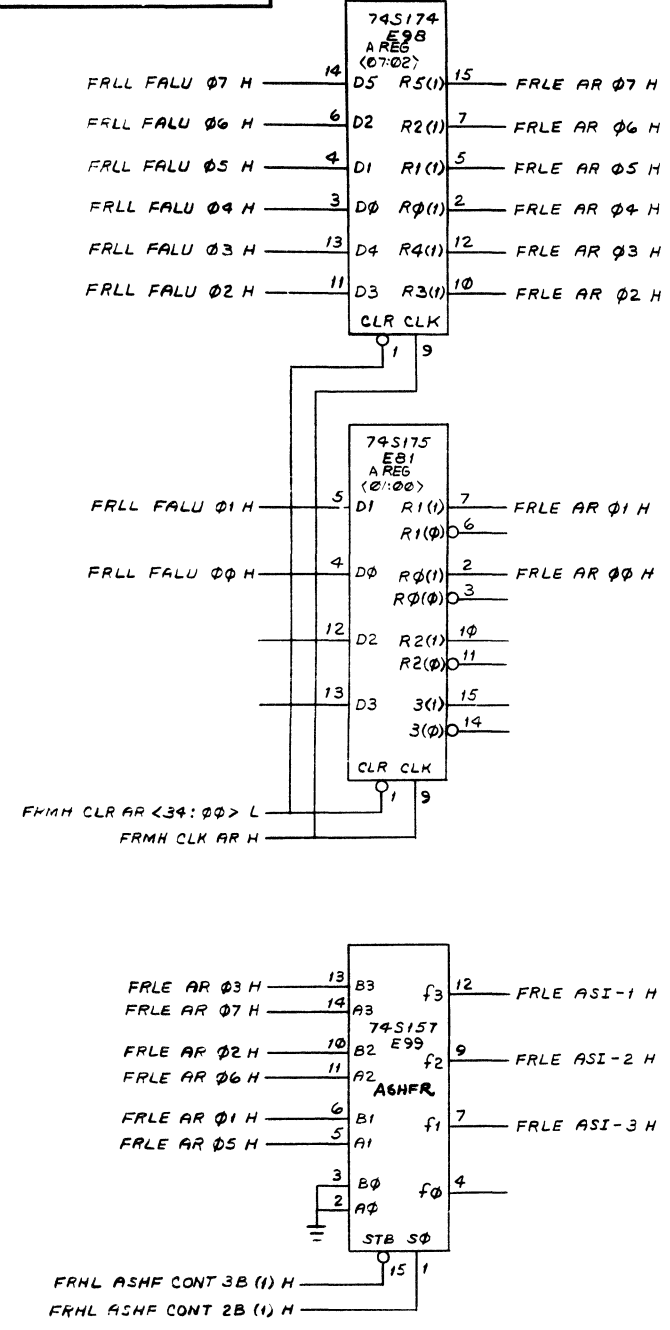
FRHL ASHF CONT 0 B (1) H EJ1
 FRHL ASHF CONT 1 B (1) H EK1

(SLOT 3)

| CHK | CHANGE NO. | REV. |
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|---------------|------------------------------------|-----------|---------|-------|
| TITLE | FRACTION PROC. LOW ORDER (FRLD) | SIZE CODE | NUMBER | REV. |
| SCALE | 1/1 | SHEET | 5 OF 14 | DIST. |
| DCS M8127-0-1 | | B | | |

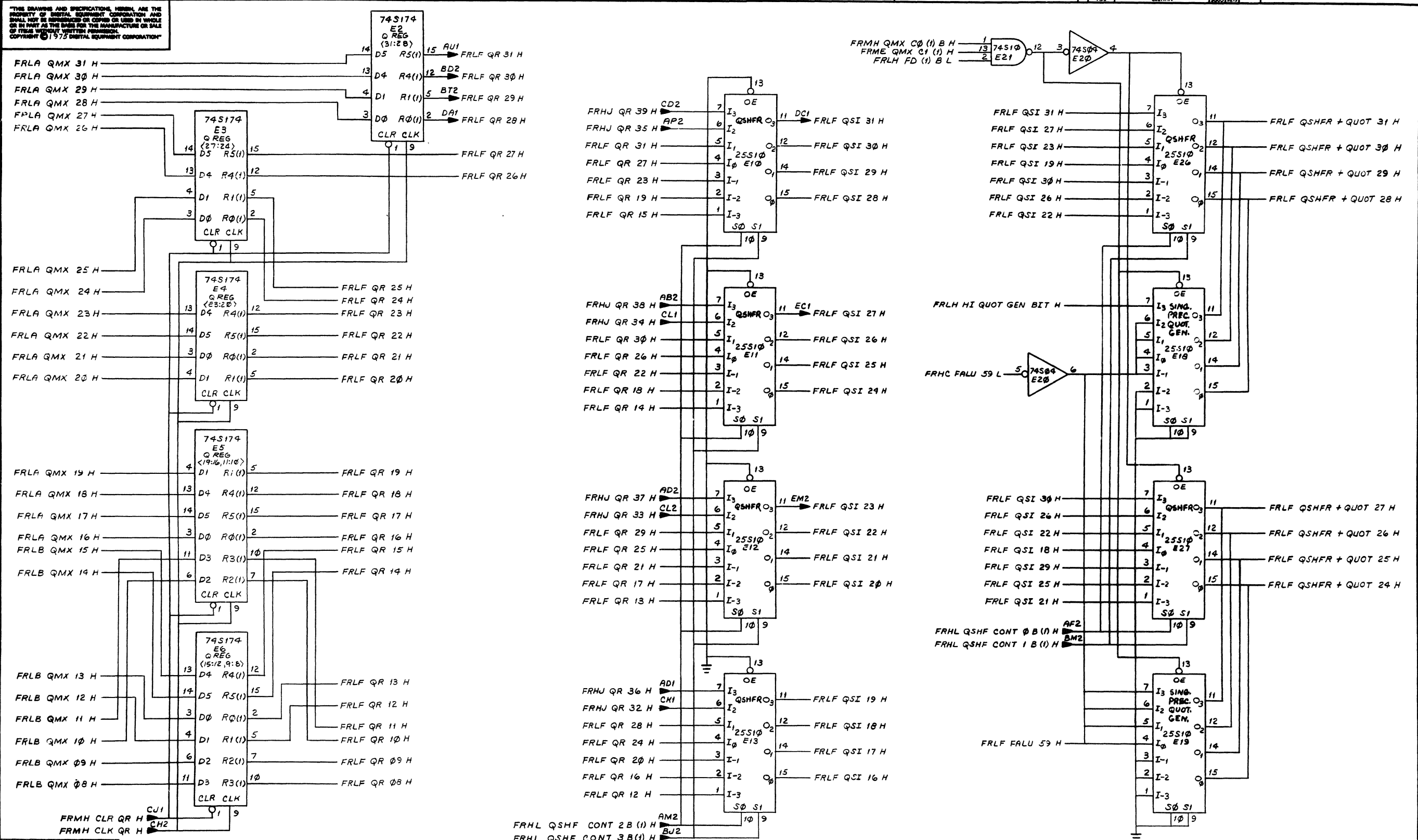
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(SLOT 3)

| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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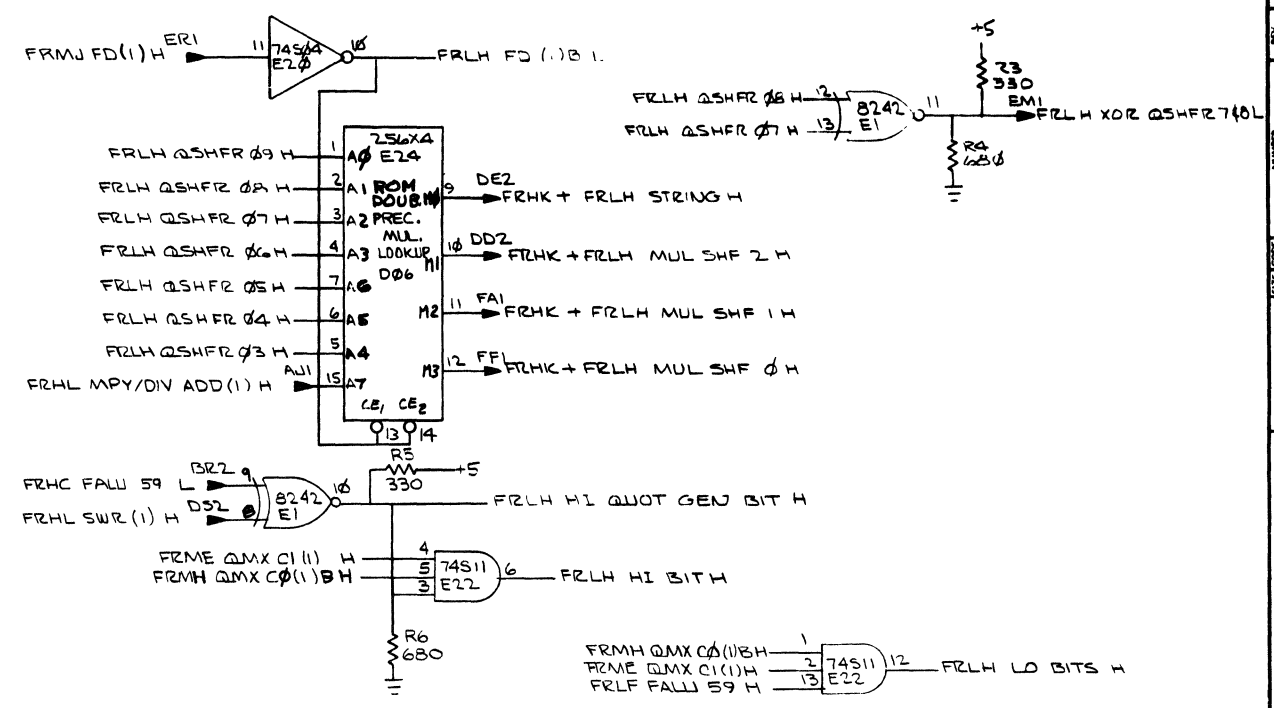
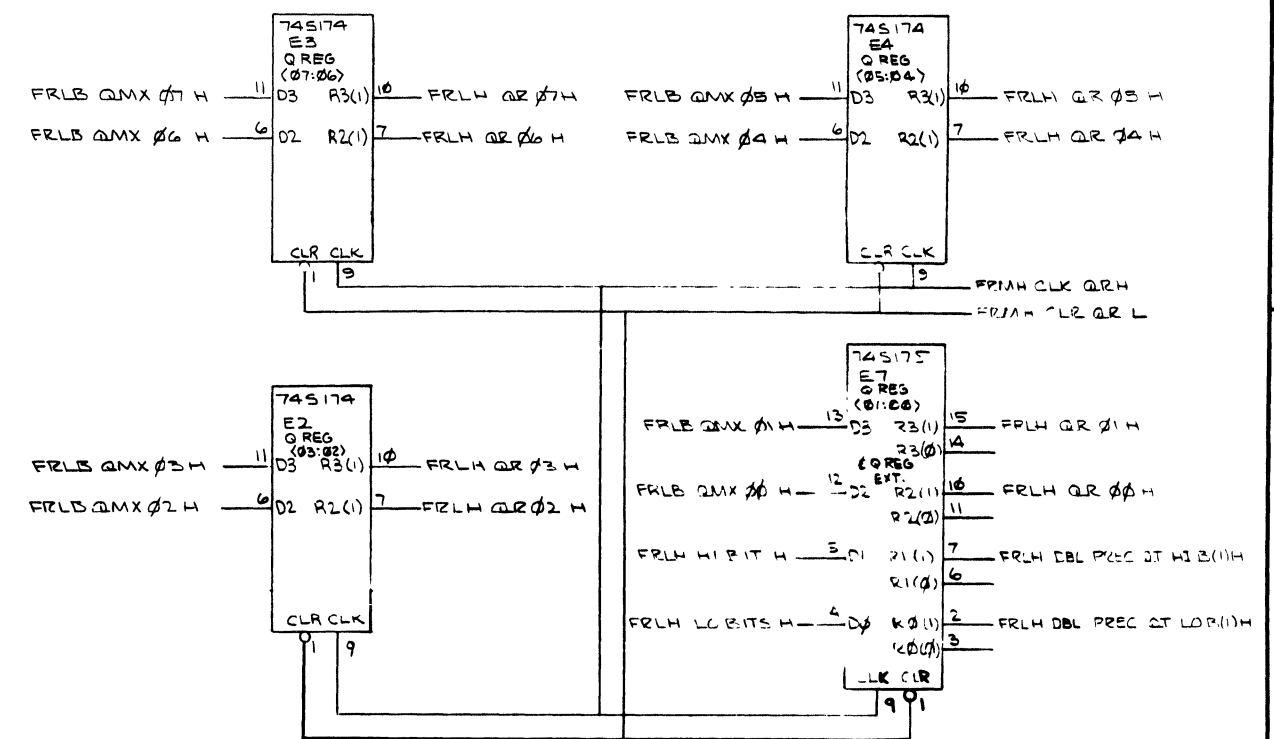
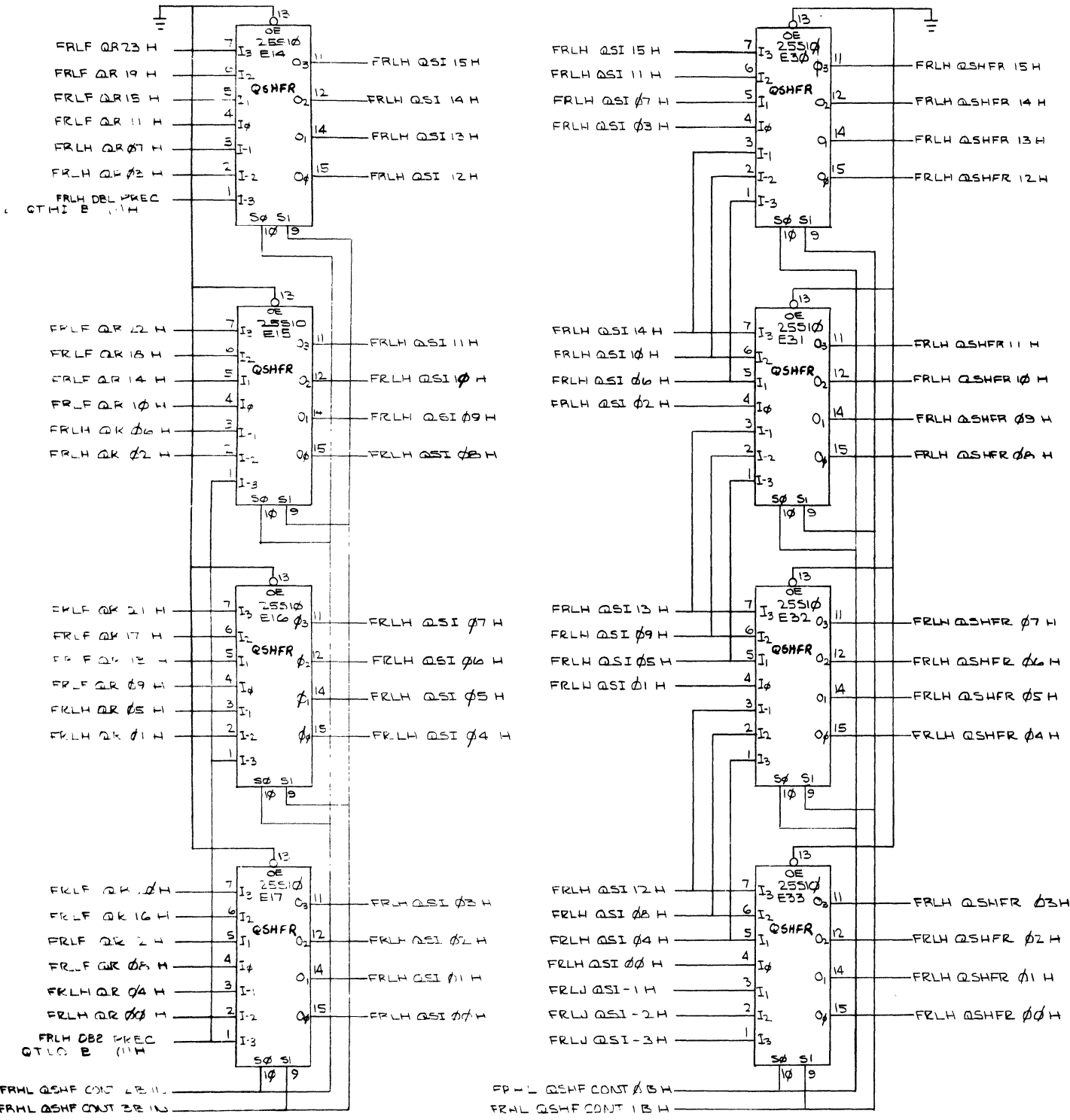


| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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| TITLE | FRACTION PROC. LOW ORDER (FRLF) | SIZE CODE | DCS | NUMBER | M8127-0-1 | REV. | |
| SCALE | | SHEET | 7 OF 14 | DIST. | | | |

(SLOT 3)

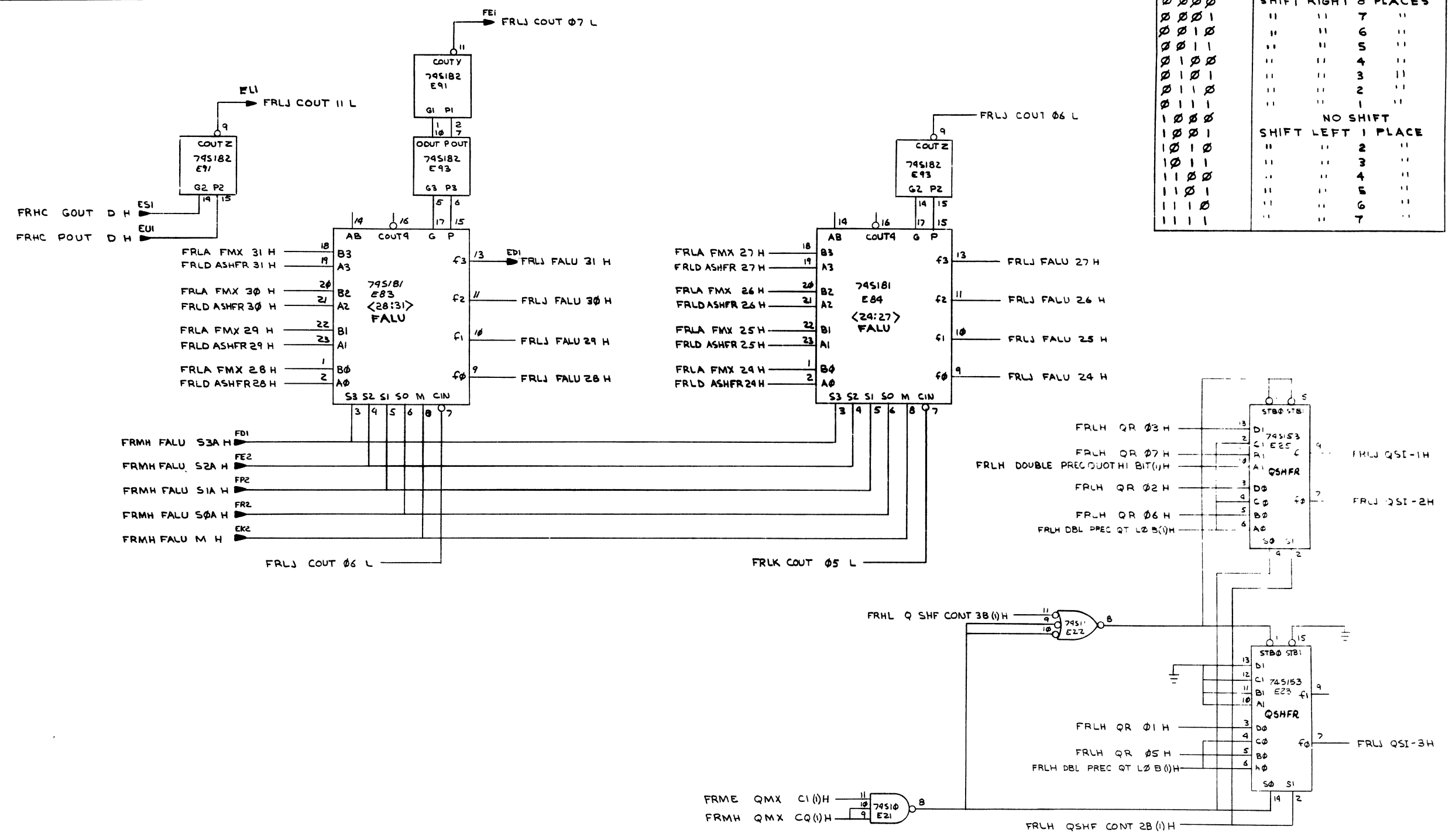
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| | | |

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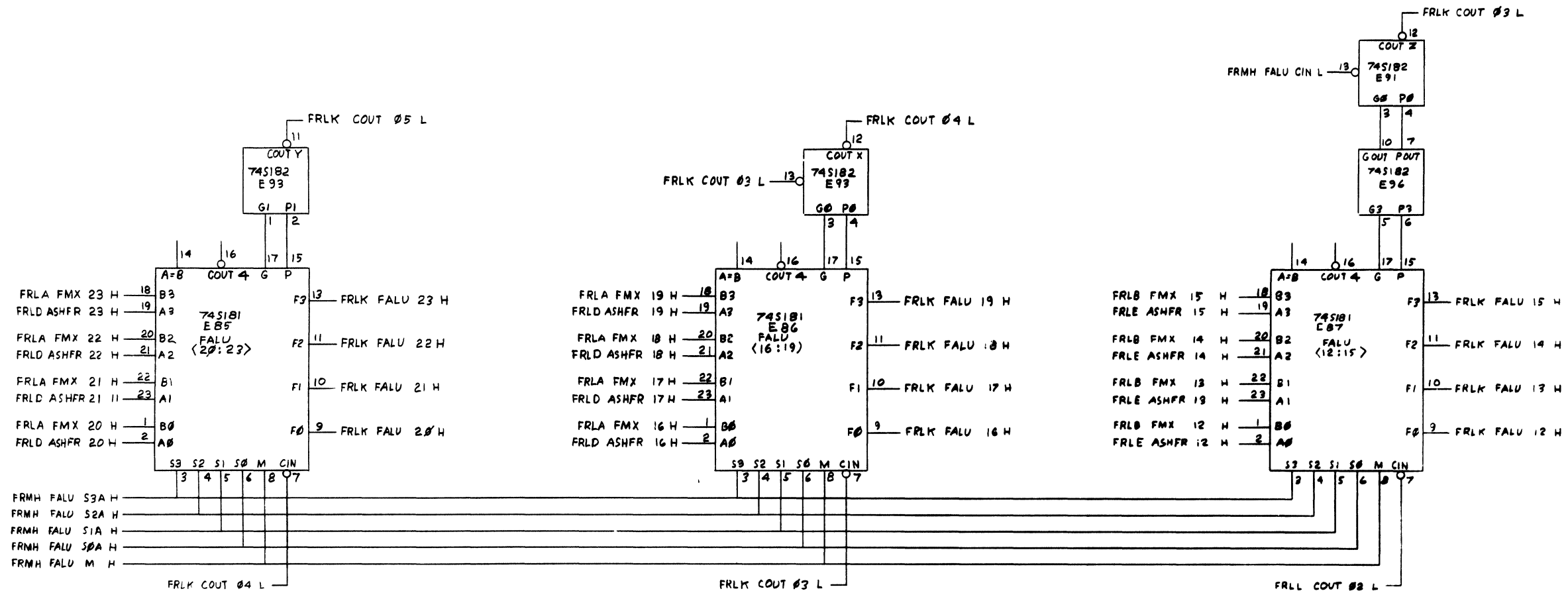
| A/Q SHF CONT | ASHFR/QSHFR FUNCTION | |
|--------------|----------------------|---|
| 3 2 1 0 | | |
| 0 0 0 0 | SHIFT RIGHT 8 PLACES | |
| 0 0 0 1 | " " 7 | " |
| 0 0 1 0 | " " 6 | " |
| 0 0 1 1 | " " 5 | " |
| 0 1 0 0 | " " 4 | " |
| 0 1 0 1 | " " 3 | " |
| 0 1 1 0 | " " 2 | " |
| 0 1 1 1 | " " 1 | " |
| 1 0 0 0 | NO SHIFT | |
| 1 0 0 1 | SHIFT LEFT 1 PLACE | |
| 1 0 1 0 | " " 2 | " |
| 1 0 1 1 | " " 3 | " |
| 1 1 0 0 | " " 4 | " |
| 1 1 0 1 | " " 5 | " |
| 1 1 1 0 | " " 6 | " |
| 1 1 1 1 | " " 7 | " |



| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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(SLOT 3)

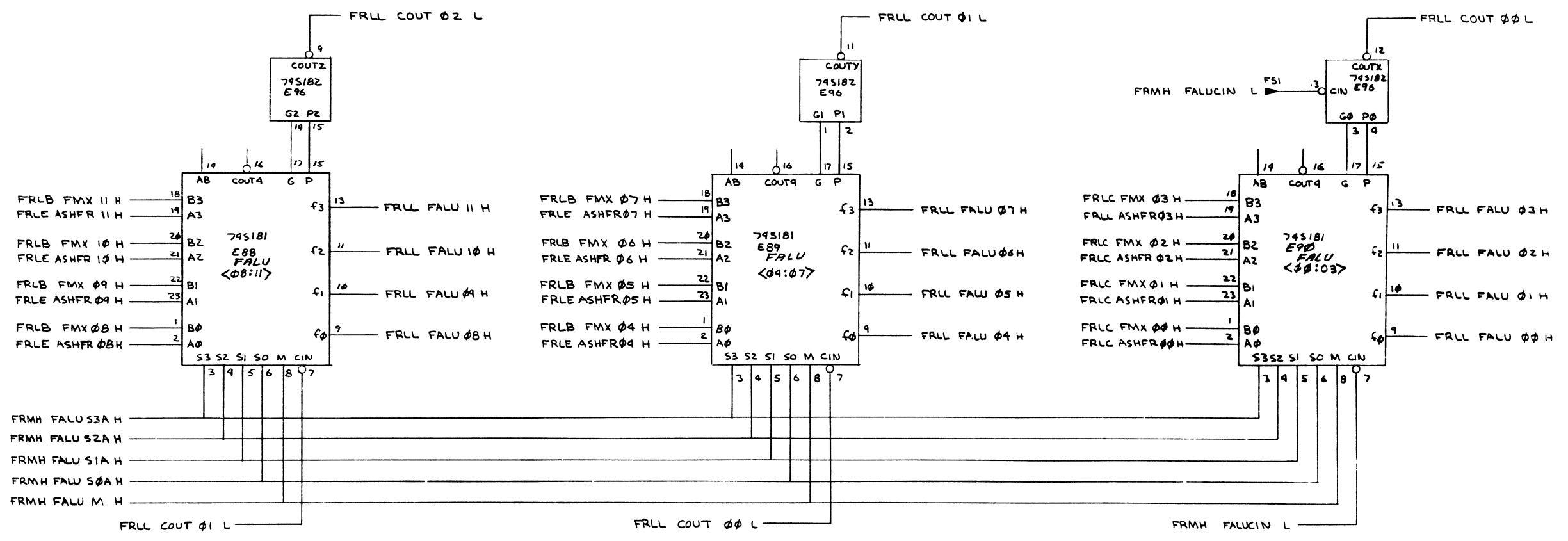
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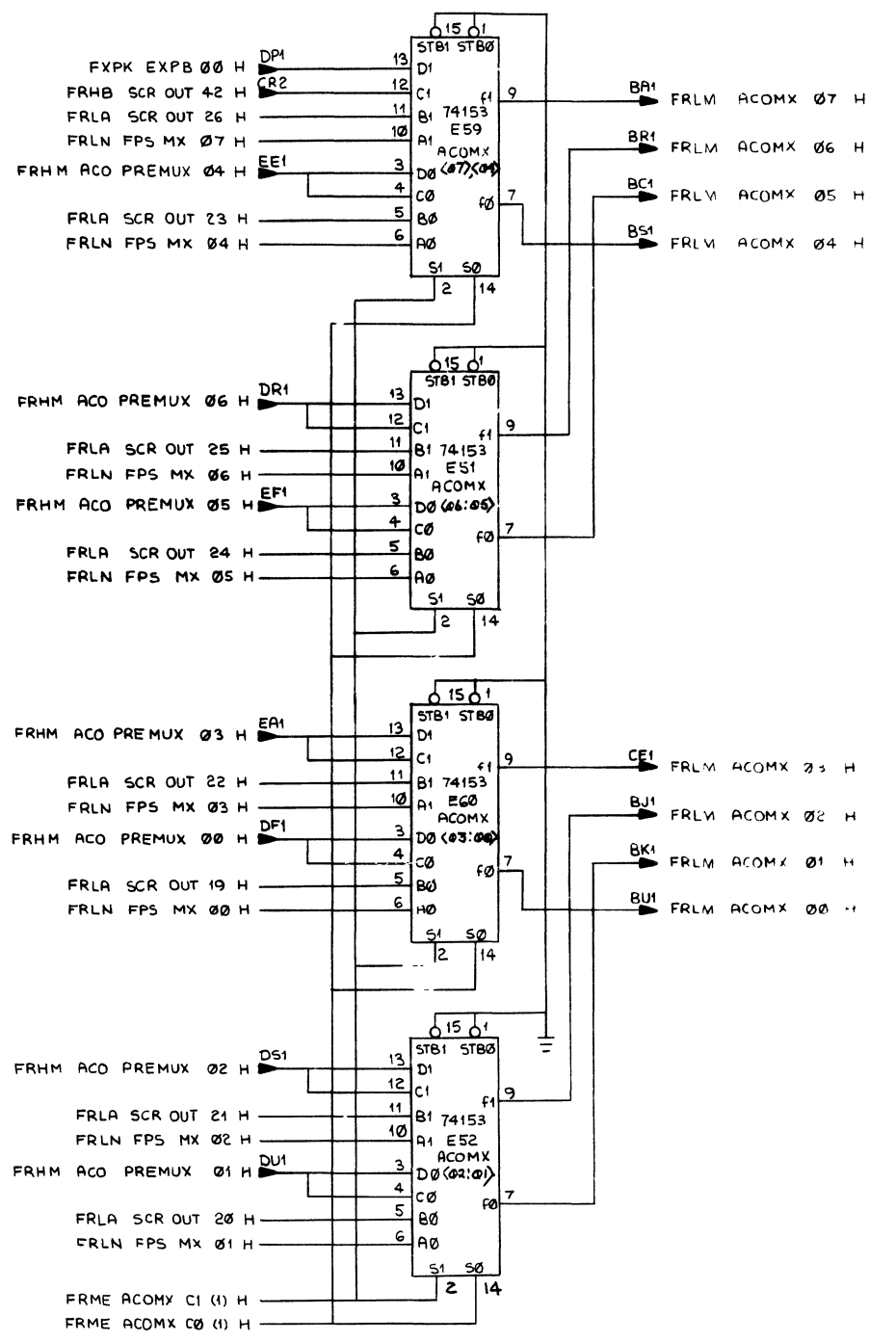
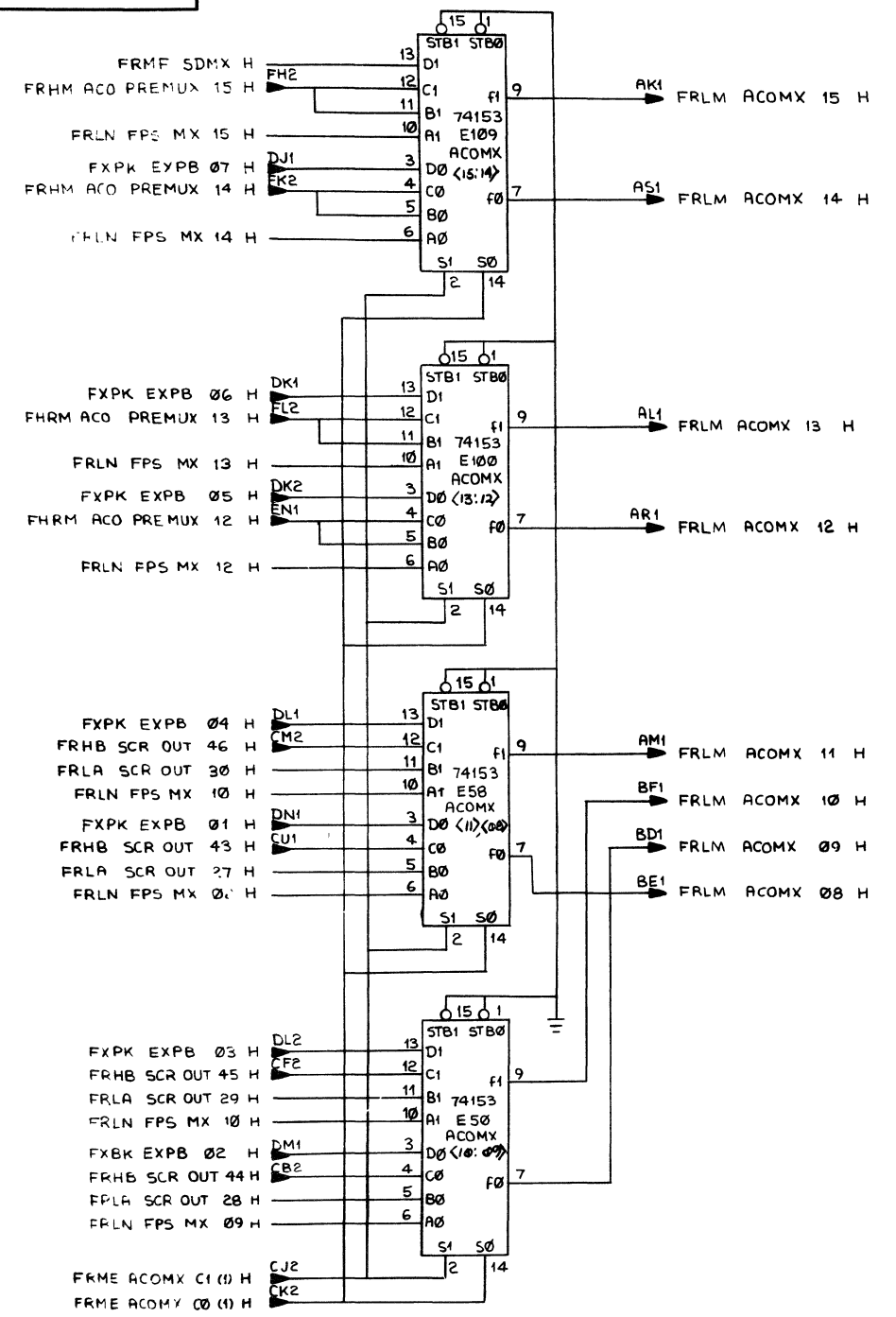
(SLOT 3)

| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
| | | |

| | | | | | | | |
|-------|--------------------------------|-----------|----|--------|-------------|-------|---|
| TITLE | FRACTION (FRLK) PROC LOW ORDER | SIZE CODE | D | NUMBER | CSM8127-0-1 | REV. | B |
| SCALE | 1/1 | SHEET | 10 | OF | 14 | DIST. | |



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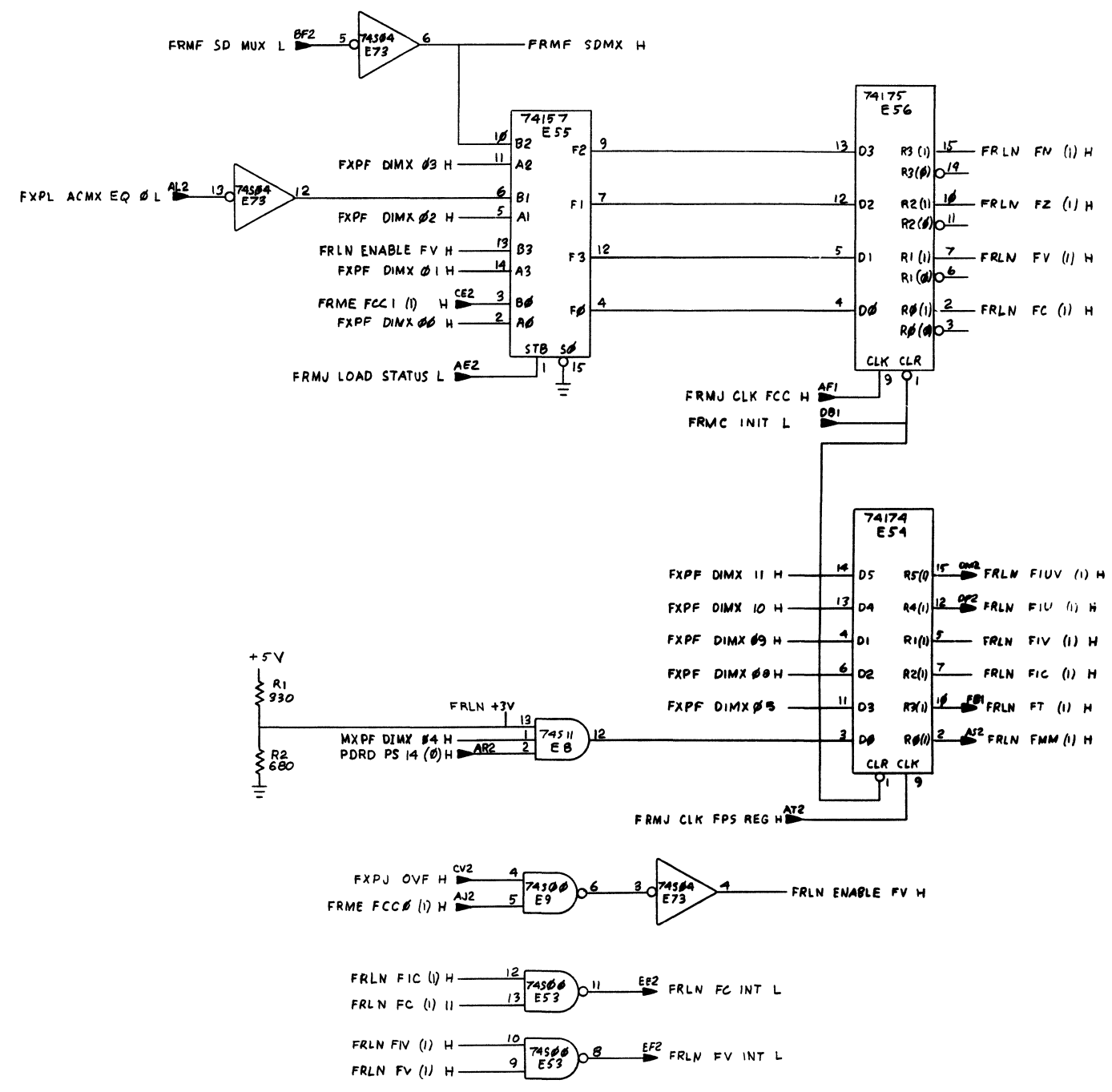
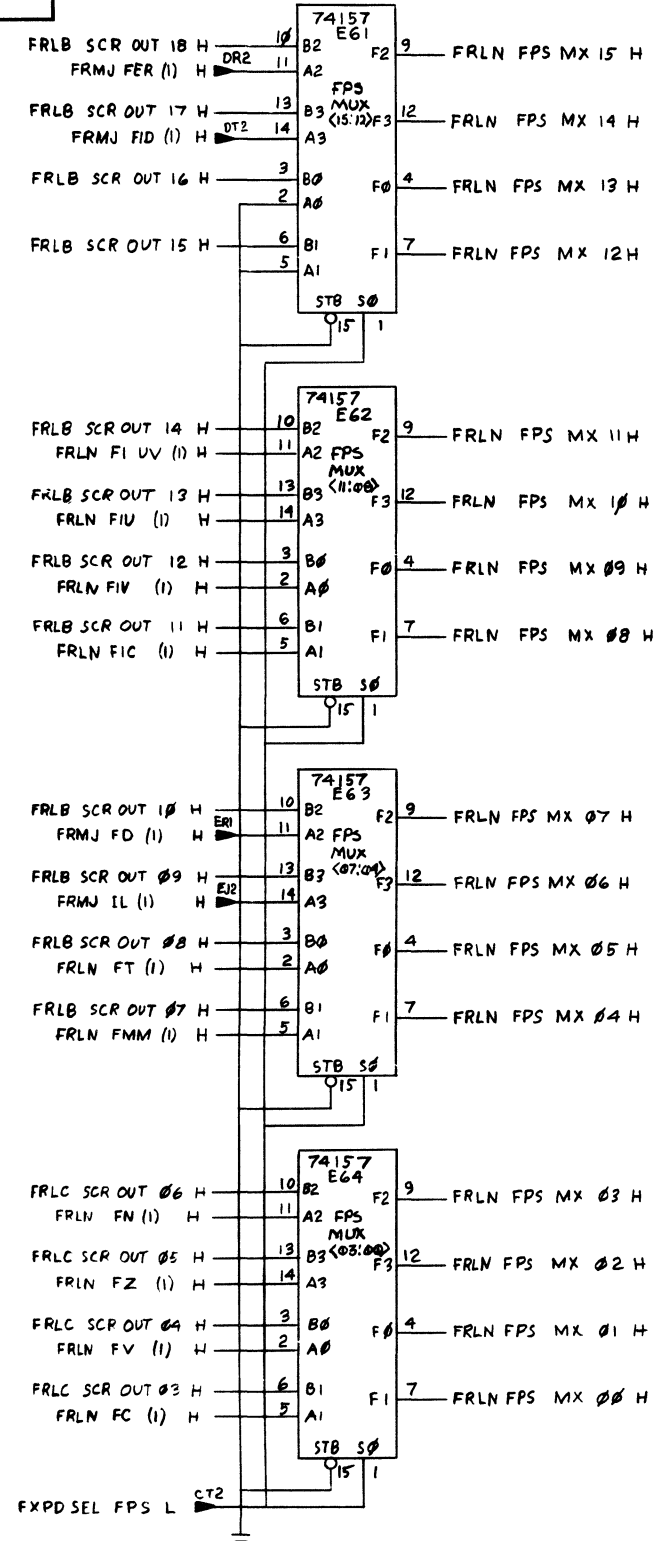


| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
| | | |

(SLOT 3)

| | | | | | | | |
|-------|------------------------------------|-----------|------|--------|-----------|-------|---|
| TITLE | FRACTION (FRLM) PROC. LOW ORDER | SIZE CODE | D CS | NUMBER | M8127-0-1 | REV. | 5 |
| SCALE | —#— | SHEET | 12 | OF | 14 | DIST. | |

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(SLOT 3)

| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
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| | | | | | | | |
|-------|--------------------------------|-----------|----|--------|--------------|-------|---|
| TITLE | FRACTION (FRLN) PROC LOW ORDER | SIZE CODE | D | NUMBER | DCSM8127-0-1 | REV. | B |
| SCALE | 1/4 | SHEET | 13 | OF | 14 | DIST. | |

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MULTIPLY CONTROL LOGIC ROM

| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 000 | 07 | 1 | ADD |
| 001 | 06 | 2 | ADD |
| 002 | 17 | 1 | SUB |
| 003 | 05 | 3 | ADD |
| 004 | 03 | 1 | ADD |
| 005 | 16 | 2 | SUB |
| 006 | 17 | 4 | SUB |
| 007 | 04 | 4 | ADD |
| 010 | 06 | 2 | ADD |
| 011 | 17 | 1 | SUB |
| 012 | 14 | 3 | SUB |
| 013 | 07 | 1 | ADD |
| 015 | 16 | 2 | SUB |
| 016 | 17 | 1 | SUB |
| 017 | 43 | 5 | ADD |
| 018 | 07 | 1 | ADD |
| 021 | 06 | 2 | ADD |
| 022 | 17 | 1 | SUB |
| 023 | 15 | 3 | SUB |
| 024 | 07 | 1 | ADD |
| 025 | 16 | 2 | SUB |
| 026 | 17 | 1 | SUB |
| 027 | 14 | 4 | SUB |
| 030 | 07 | 1 | ADD |
| 031 | 06 | 2 | ADD |
| 032 | 17 | 1 | SUB |
| 033 | 15 | 3 | SUB |
| 034 | 07 | 1 | ADD |
| 035 | 16 | 2 | SUB |
| 036 | 17 | 1 | SUB |
| 037 | 02 | 6 | ADD |
| 040 | 07 | 1 | ADD |
| 041 | 06 | 2 | ADD |
| 042 | 17 | 1 | SUB |
| 043 | 45 | 3 | ADD |
| 044 | 07 | 1 | ADD |
| 045 | 16 | 2 | SUB |
| 046 | 17 | 1 | SUB |
| 047 | 04 | 4 | ADD |
| 050 | 07 | 1 | ADD |
| 051 | 06 | 2 | ADD |
| 052 | 17 | 1 | SUB |
| 053 | 15 | 3 | SUB |
| 054 | 07 | 1 | ADD |
| 055 | 16 | 2 | SUB |
| 056 | 17 | 1 | SUB |
| 057 | 13 | 5 | SUB |
| 060 | 07 | 1 | ADD |
| 061 | 06 | 2 | ADD |
| 062 | 17 | 1 | SUB |
| 063 | 45 | 3 | ADD |
| 064 | 07 | 1 | ADD |
| 065 | 16 | 2 | SUB |
| 066 | 17 | 1 | SUB |
| 067 | 14 | 4 | SUB |
| 070 | 07 | 1 | ADD |
| 071 | 06 | 2 | ADD |
| 072 | 17 | 1 | SUB |
| 073 | 15 | 3 | SUB |
| 074 | 07 | 1 | ADD |
| 075 | 16 | 2 | SUB |
| 076 | 17 | 1 | SUB |
| 077 | 12 | 6 | SUB |

| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 100 | 07 | 1 | ADD |
| 101 | 06 | 2 | ADD |
| 102 | 17 | 1 | SUB |
| 103 | 05 | 3 | ADD |
| 104 | 03 | 1 | ADD |
| 105 | 16 | 2 | SUB |
| 106 | 17 | 1 | SUB |
| 107 | 04 | 4 | ADD |
| 110 | 06 | 2 | ADD |
| 111 | 17 | 1 | SUB |
| 112 | 14 | 3 | SUB |
| 113 | 07 | 1 | ADD |
| 114 | 16 | 2 | SUB |
| 115 | 17 | 1 | SUB |
| 116 | 07 | 1 | ADD |
| 117 | 03 | 5 | ADD |
| 120 | 06 | 2 | ADD |
| 121 | 17 | 1 | SUB |
| 122 | 15 | 3 | SUB |
| 123 | 07 | 1 | ADD |
| 124 | 16 | 2 | SUB |
| 125 | 17 | 1 | SUB |
| 126 | 14 | 4 | SUB |
| 127 | 07 | 1 | ADD |
| 130 | 06 | 2 | ADD |
| 131 | 17 | 1 | SUB |
| 132 | 15 | 3 | SUB |
| 133 | 07 | 1 | ADD |
| 134 | 16 | 2 | SUB |
| 135 | 17 | 1 | SUB |
| 136 | 17 | 1 | SUB |
| 137 | 12 | 6 | SUB |
| 140 | 07 | 1 | ADD |
| 141 | 06 | 2 | ADD |
| 142 | 17 | 1 | SUB |
| 143 | 07 | 1 | ADD |
| 144 | 16 | 2 | SUB |
| 145 | 17 | 1 | SUB |
| 146 | 04 | 4 | ADD |
| 147 | 07 | 1 | ADD |
| 150 | 06 | 2 | ADD |
| 151 | 17 | 1 | SUB |
| 152 | 15 | 3 | SUB |
| 153 | 07 | 1 | ADD |
| 154 | 16 | 2 | SUB |
| 155 | 17 | 1 | SUB |
| 156 | 17 | 1 | SUB |
| 157 | 13 | 5 | SUB |
| 160 | 07 | 1 | ADD |
| 161 | 06 | 2 | ADD |
| 162 | 17 | 1 | SUB |
| 163 | 05 | 3 | ADD |
| 164 | 07 | 1 | ADD |
| 165 | 16 | 2 | SUB |
| 166 | 17 | 1 | SUB |
| 167 | 14 | 4 | SUB |
| 170 | 07 | 1 | ADD |
| 171 | 06 | 2 | ADD |
| 172 | 17 | 1 | SUB |
| 173 | 15 | 3 | SUB |
| 174 | 07 | 1 | ADD |
| 175 | 16 | 2 | SUB |
| 176 | 17 | 1 | SUB |
| 177 | 12 | 6 | SUB |

| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 200 | 02 | 6 | ADD |
| 201 | 07 | 1 | ADD |
| 202 | 06 | 2 | ADD |
| 203 | 17 | 1 | SUB |
| 204 | 05 | 3 | ADD |
| 205 | 07 | 1 | ADD |
| 206 | 16 | 2 | SUB |
| 207 | 17 | 1 | SUB |
| 210 | 04 | 4 | ADD |
| 211 | 07 | 1 | ADD |
| 212 | 06 | 2 | ADD |
| 213 | 15 | 3 | SUB |
| 214 | 07 | 1 | ADD |
| 215 | 16 | 2 | SUB |
| 216 | 17 | 1 | SUB |
| 217 | 03 | 5 | ADD |
| 220 | 06 | 2 | ADD |
| 221 | 17 | 1 | SUB |
| 222 | 15 | 3 | SUB |
| 223 | 07 | 1 | ADD |
| 224 | 16 | 2 | SUB |
| 225 | 17 | 1 | SUB |
| 226 | 14 | 4 | SUB |
| 227 | 07 | 1 | ADD |
| 230 | 06 | 2 | ADD |
| 231 | 17 | 1 | SUB |
| 232 | 15 | 3 | SUB |
| 233 | 07 | 1 | ADD |
| 234 | 16 | 2 | SUB |
| 235 | 17 | 1 | SUB |
| 236 | 07 | 1 | ADD |
| 237 | 16 | 2 | SUB |
| 240 | 07 | 1 | ADD |
| 241 | 06 | 2 | ADD |
| 242 | 17 | 1 | SUB |
| 243 | 17 | 1 | SUB |
| 244 | 05 | 3 | ADD |
| 245 | 07 | 1 | ADD |
| 246 | 16 | 2 | SUB |
| 247 | 17 | 1 | SUB |
| 250 | 04 | 4 | ADD |
| 251 | 07 | 1 | ADD |
| 252 | 06 | 2 | ADD |
| 253 | 17 | 1 | SUB |
| 254 | 15 | 3 | SUB |
| 255 | 07 | 1 | ADD |
| 256 | 16 | 2 | SUB |
| 257 | 17 | 1 | SUB |
| 260 | 13 | 5 | SUB |
| 261 | 07 | 1 | ADD |
| 262 | 06 | 2 | ADD |
| 263 | 17 | 1 | SUB |
| 264 | 05 | 3 | ADD |
| 265 | 07 | 1 | ADD |
| 266 | 16 | 2 | SUB |
| 267 | 17 | 1 | SUB |
| 270 | 14 | 4 | SUB |
| 271 | 06 | 2 | ADD |
| 272 | 17 | 1 | SUB |
| 273 | 15 | 3 | SUB |
| 274 | 07 | 1 | ADD |
| 275 | 16 | 2 | SUB |
| 276 | 17 | 1 | SUB |
| 277 | 17 | 1 | SUB |

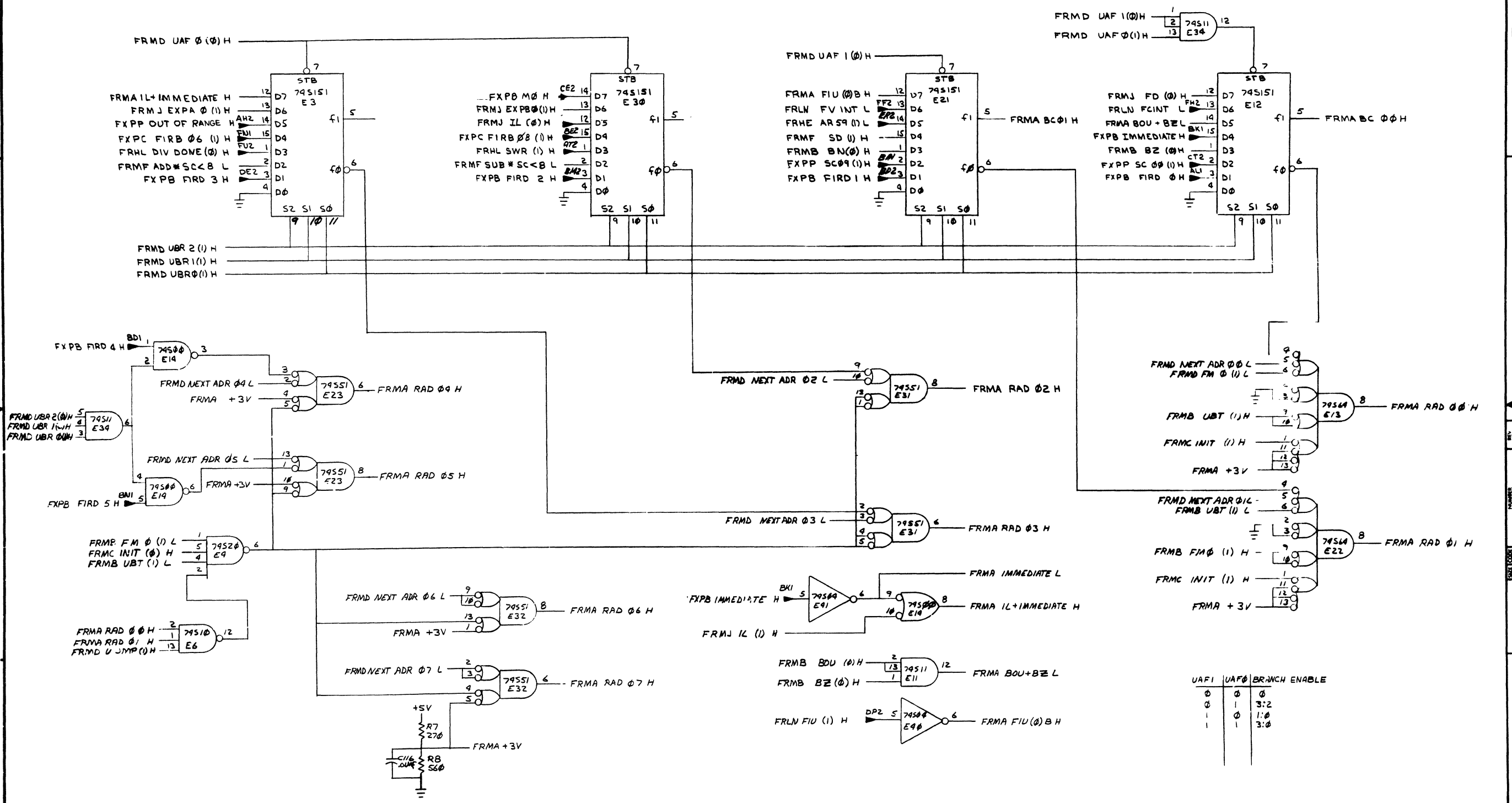
| ADDRESS (OCTAL) | CONTENTS (OCTAL) | FUNCTION | |
|-----------------|------------------|----------|-----------|
| | | SHIFT BY | OPERATION |
| 300 | 02 | 6 | ADD |
| 301 | 17 | 1 | SUB |
| 302 | 06 | 2 | ADD |
| 303 | 17 | 1 | SUB |
| 304 | 04 | 4 | ADD |
| 305 | 07 | 1 | ADD |
| 306 | 16 | 2 | SUB |
| 307 | 17 | 1 | SUB |
| 310 | 06 | 2 | ADD |
| 311 | 17 | 1 | SUB |
| 312 | 14 | 3 | SUB |
| 313 | 07 | 1 | ADD |
| 314 | 16 | 2 | SUB |
| 315 | 17 | 1 | SUB |
| 316 | 17 | 1 | SUB |
| 317 | 03 | 5 | ADD |
| 320 | 06 | 2 | ADD |
| 321 | 17 | 1 | SUB |
| 322 | 15 | 3 | SUB |
| 323 | 07 | 1 | ADD |
| 324 | 16 | 2 | SUB |
| 325 | 17 | 1 | SUB |
| 326 | 14 | 4 | SUB |
| 327 | 07 | 1 | ADD |
| 330 | 06 | 2 | ADD |
| 331 | 17 | 1 | SUB |
| 332 | 15 | 3 | SUB |
| 333 | 07 | 1 | ADD |
| 334 | 16 | 2 | SUB |
| 335 | 17 | 1 | SUB |
| 336 | 07 | 1 | ADD |
| 337 | 16 | 2 | SUB |
| 340 | 07 | 1 | ADD |
| 341 | 06 | 2 | ADD |
| 342 | 17 | 1 | SUB |
| 343 | 17 | 1 | SUB |
| 344 | 05 | 3 | ADD |
| 345 | 07 | 1 | ADD |
| 346 | 16 | 2 | SUB |
| 347 | 17 | 1 | SUB |
| 350 | 04 | 4 | ADD |
| 351 | 07 | 1 | ADD |
| 352 | 06 | 2 | ADD |
| 353 | 17 | 1 | SUB |
| 354 | 15 | 3 | SUB |
| 355 | 07 | 1 | ADD |
| 356 | 16 | 2 | SUB |
| 357 | 17 | 1 | SUB |
| 360 | 13 | 5 | SUB |
| 361 | 07 | 1 | ADD |
| 362 | 06 | 2 | ADD |
| 363 | 17 | 1 | SUB |
| 364 | 05 | 3 | ADD |
| 365 | 07 | 1 | ADD |
| 366 | 16 | 2 | SUB |
| 367 | 17 | 1 | SUB |
| 370 | 14 | 4 | SUB |
| 371 | 06 | 2 | ADD |
| 372 | 17 | 1 | SUB |
| 373 | 15 | 3 | SUB |
| 374 | 07 | 1 | ADD |
| 375 | 16 | 2 | SUB |
| 376 | 17 | 1 | SUB |
| 377 | 17 | 1 | SUB |

| REVISIONS | | |
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| CHK | CHANGE NO | REV |
| | | |
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(SLOT 3)

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|-------|---------------------------------|-----------|----------------|--------|---|------|---|
| TITLE | FRACTION PROC. LOW ORDER (FRLP) | SIZE CODE | D CS M8127-0-1 | NUMBER | B | REV. | B |
| SCALE | | SHEET | 14 OF 14 | DIST. | | | |

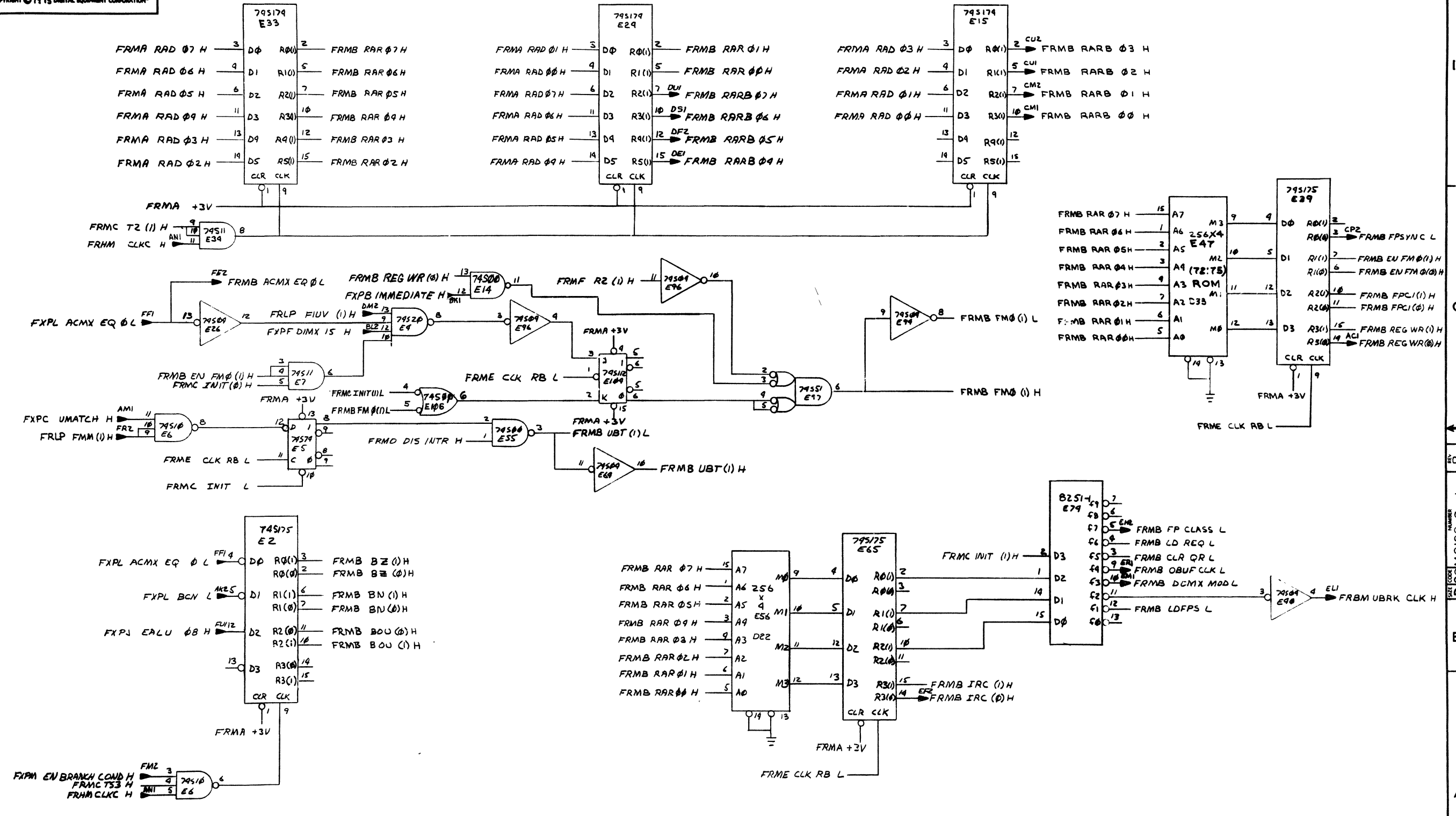
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| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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| TITLE | | FRMA | | SIZE CODE | | NUMBER | | REV. | |
| FP ROM CONTROL | | DCS M8128-0-1 | | 2 OF 11 | | B | | | |
| SCALE | | SHEET | | DIST. | | | | | |

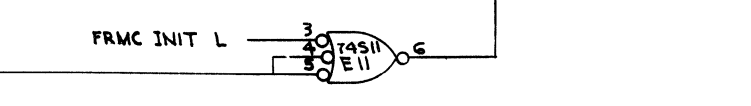
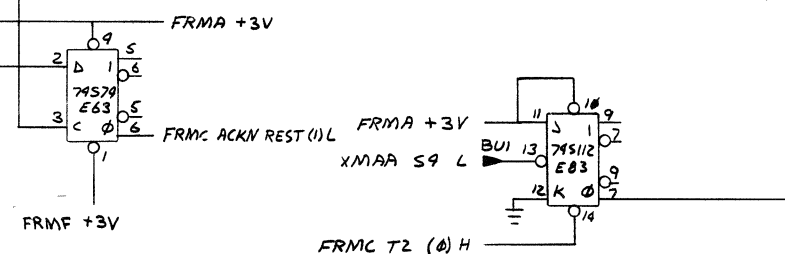
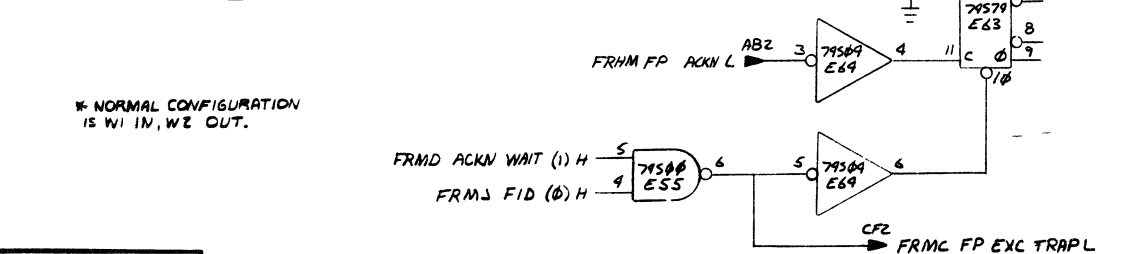
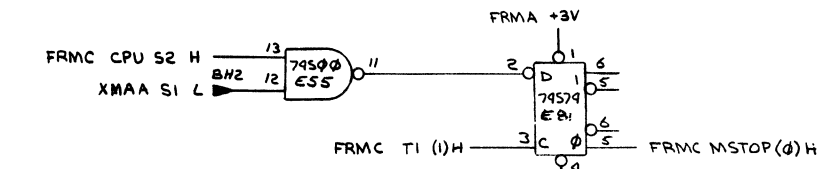
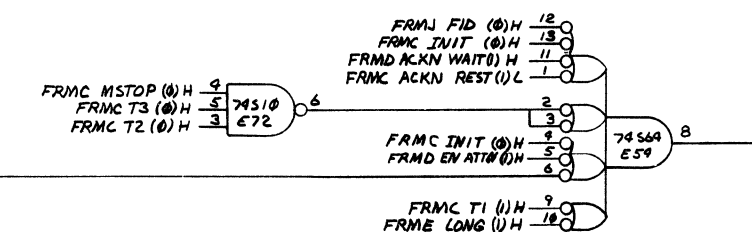
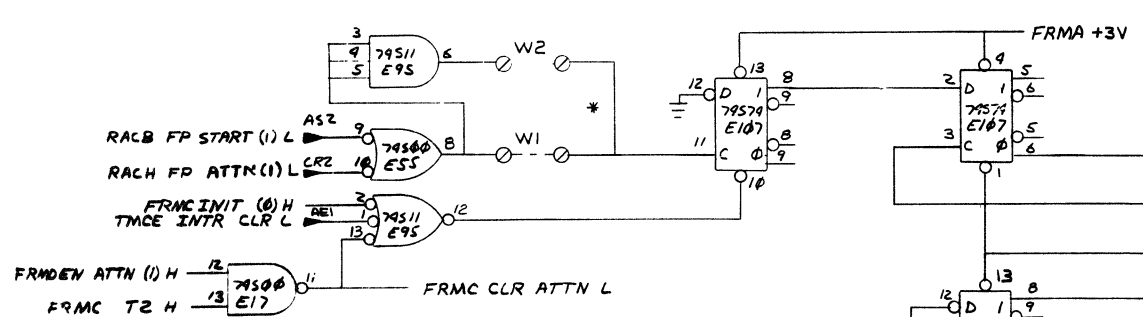
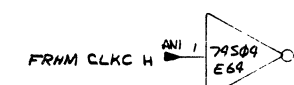
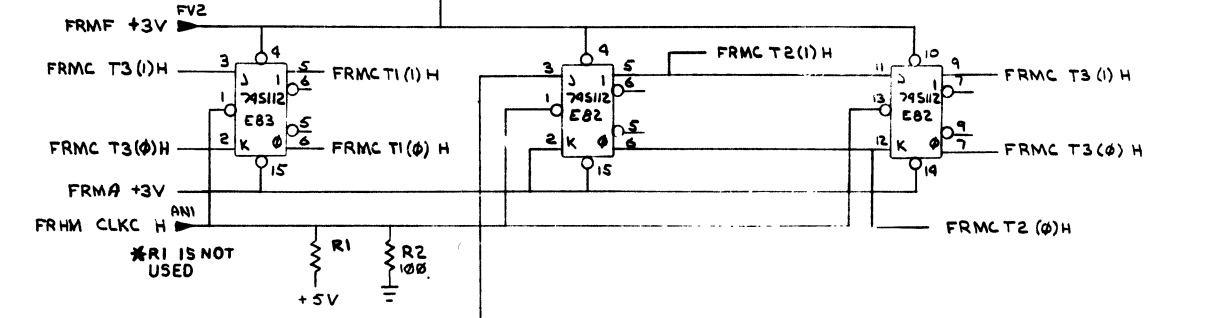
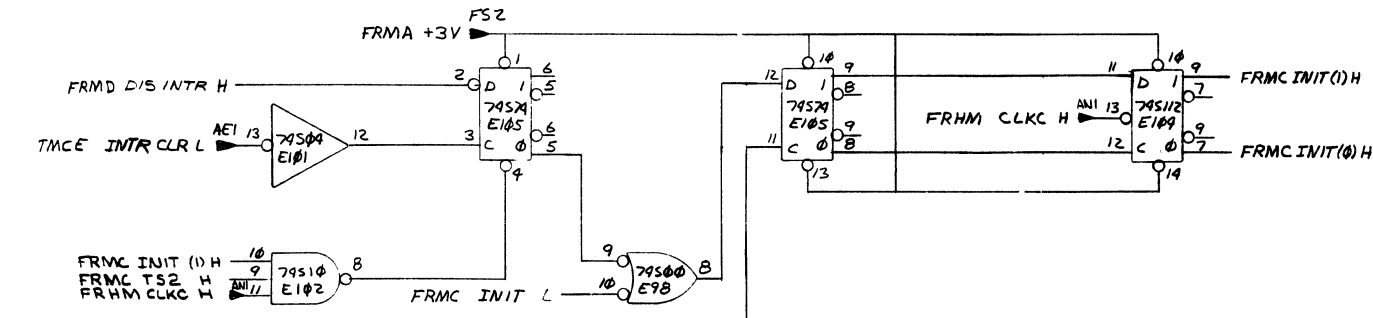
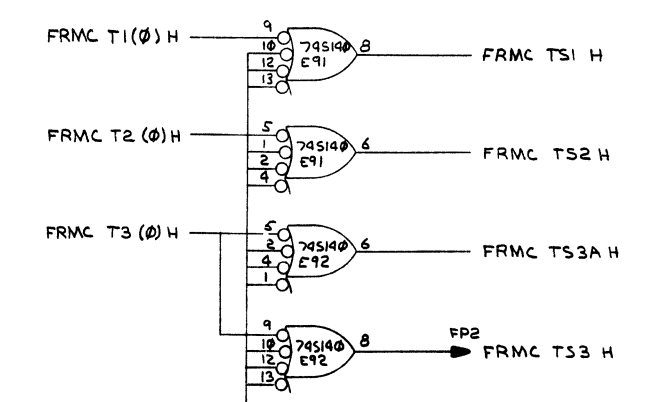
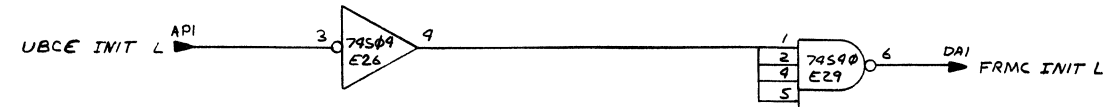
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(UTRAP + ROM ADDRESS (SLOT 4))

| REVISIONS | | | TITLE | SIZE CODE | NUMBER | REV. |
|-----------|------------|------|-----------------------|-----------|-----------|------|
| CHK | CHANGE NO. | REV. | FP ROM CONTROL (FRMB) | D CS | M8128-0-1 | B |
| | | | SCALE | SHEET | OF | |
| | | | | 3 | 11 | |

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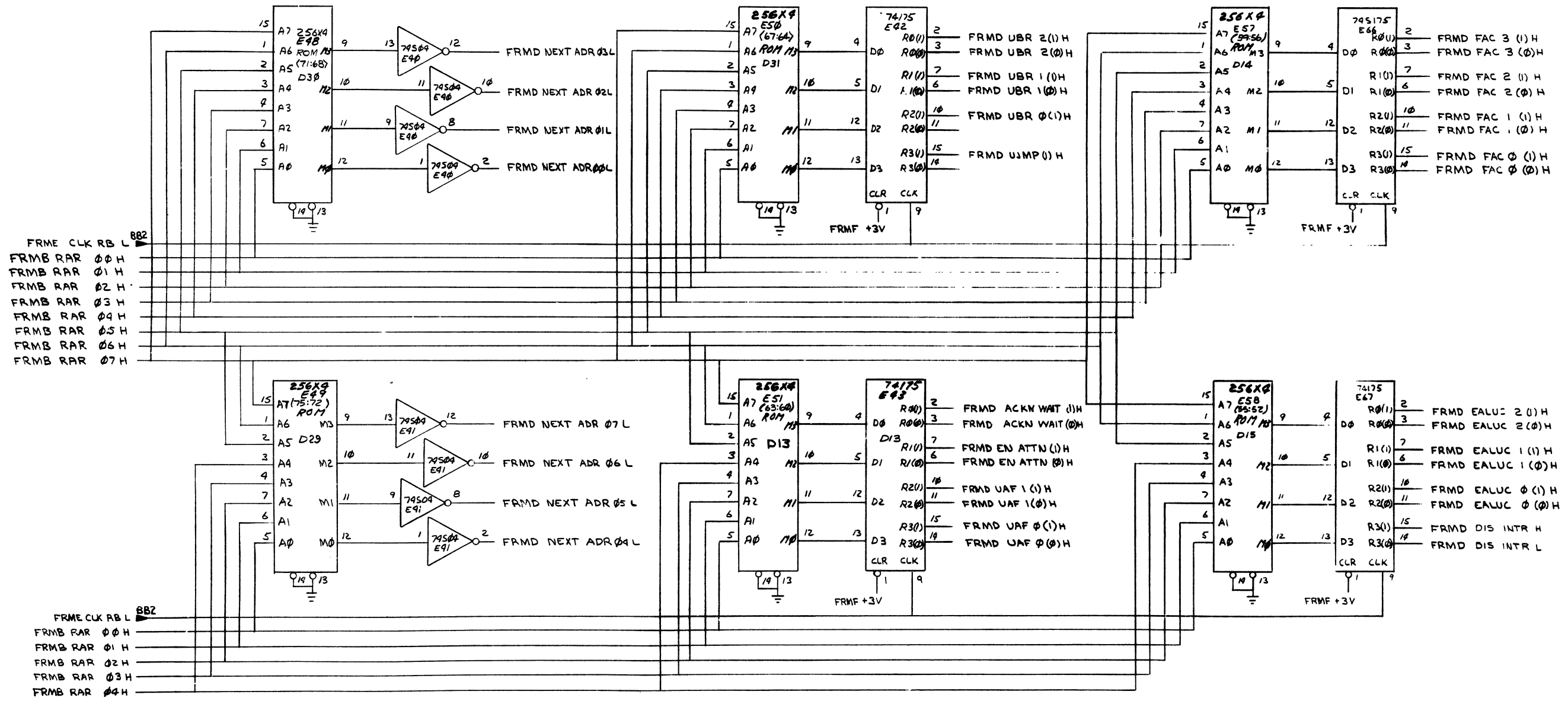
* NORMAL CONFIGURATION IS W1 IN, W2 OUT.

(TIMING AND SYNCHRONIZER) (SLOT 4)

| CHK | CHANGE NO. | REV. |
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|-----------------------|----------------|--------|-------|
| TITLE | SIZE CODE | NUMBER | REV. |
| FP ROM CONTROL (FRMC) | D CS M8128-0-1 | | |
| SCALE | SHEET | OF | DIST. |
| | 4 | 11 | |

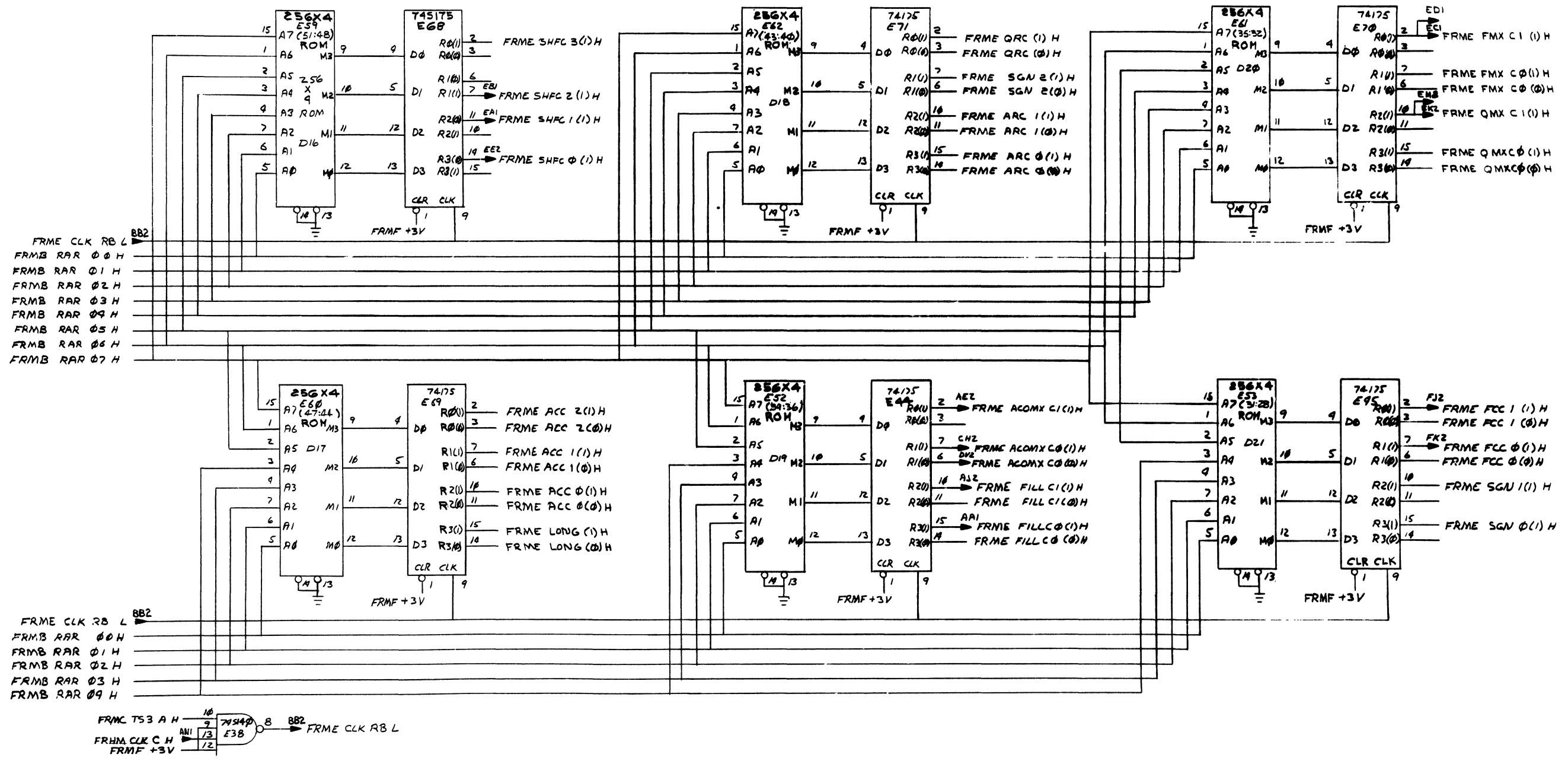
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| CHK | CHANGE NO. | REV. |
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|----------------|--|-----------------------|--|-----------|--|-----------|--|------|--|
| TITLE | | (CONTROL ROM)(SLOT 4) | | SIZE CODE | | NUMBER | | REV. | |
| FP ROM CONTROL | | (FRMD) | | DCS | | M8128-0-1 | | B | |
| SCALE | | SHEET 5 OF 11 | | DIST. | | | | | |

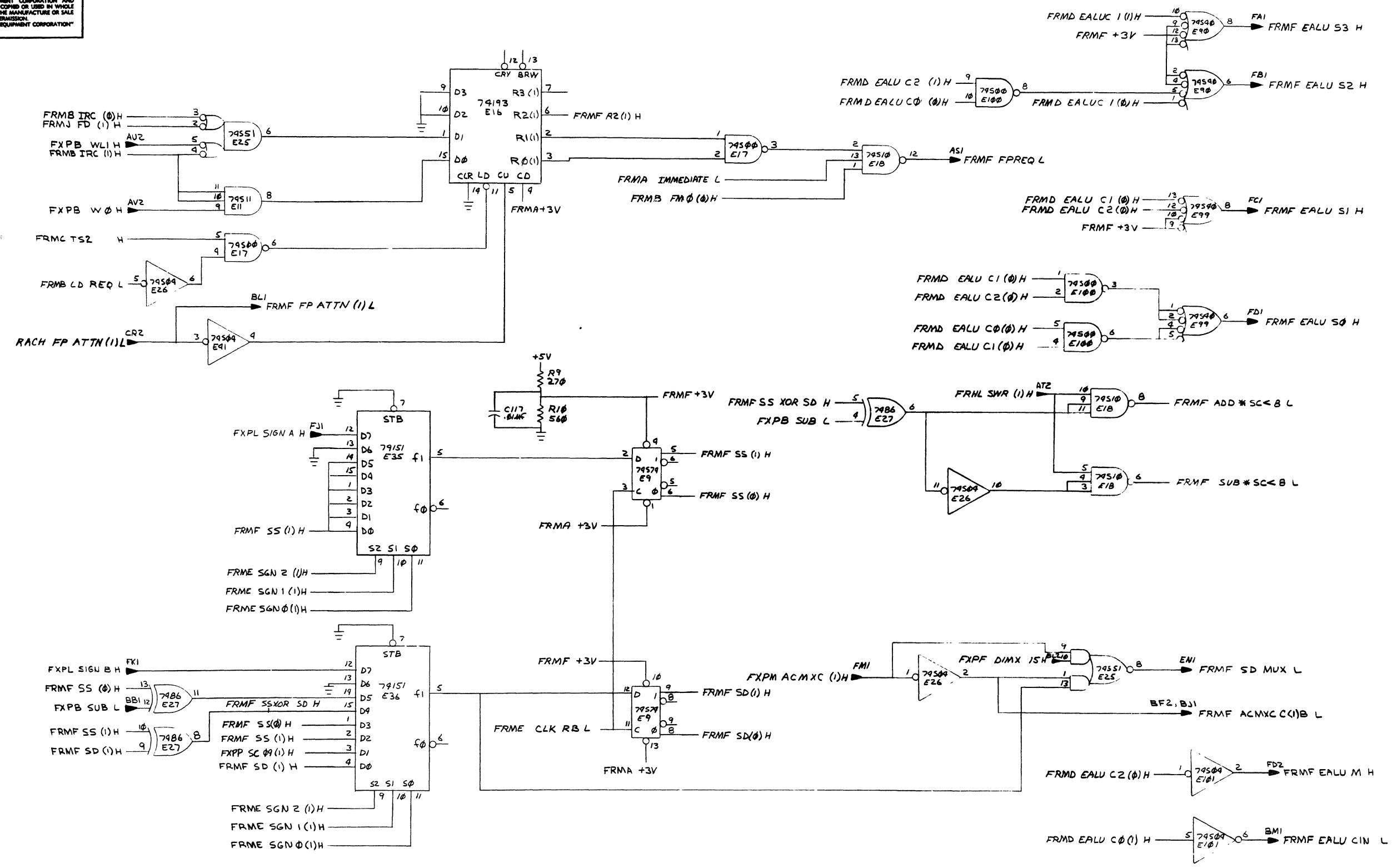
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| CHK | CHANGE NO. | REV. |
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|----------------|--|------------------------|--------|
| TITLE | | (CONTROL ROM (SLOT 4)) | |
| TITLE | | (FRME) | |
| FP ROM CONTROL | | SIZE CODE | NUMBER |
| SCALE | | DCS M8128-0-1 | REV. B |
| SHEET 6 OF 11 | | DIST. | |

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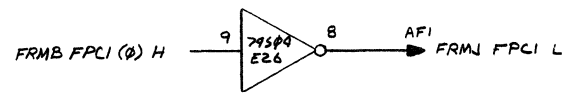
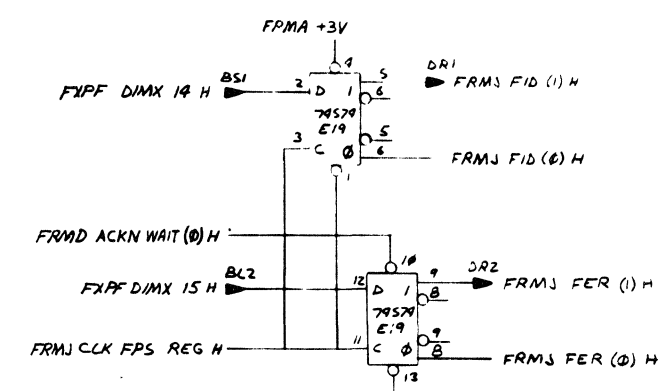
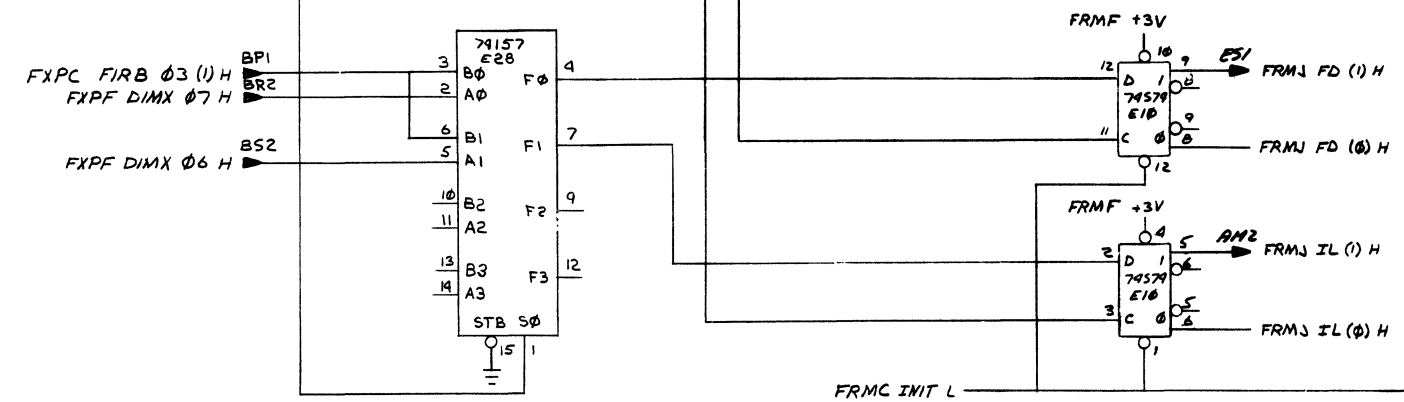
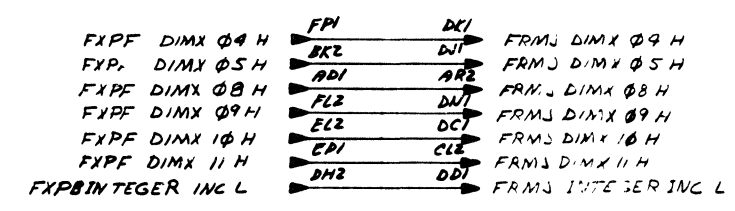
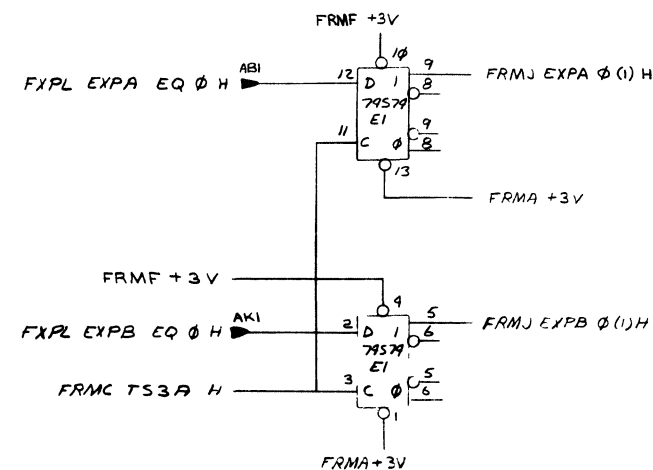
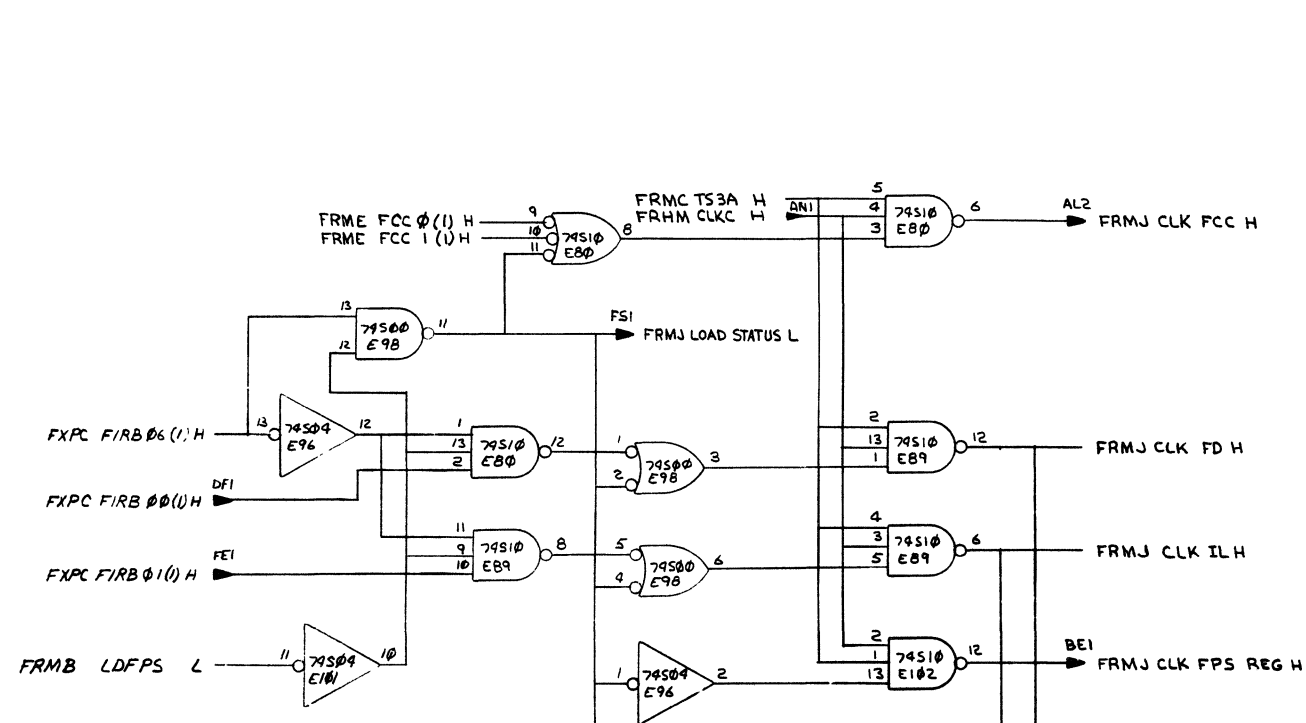
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| CHK | CHANGE NO. | REV |
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|---------------------------------------|-----------|-----------|-------|
| (SIGN CONTROL, EALU CONTROL) (SLOT 4) | | | |
| TITLE | SIZE CODE | NUMBER | REV. |
| FP ROM CONTROL (FRMF) | D CS | M8128-0-1 | 8 |
| SCALE | SHEET | OF | DIST. |
| | 7 | 11 | |

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NOTE:

SIGNAL NEW ORIGIN
FRMJ FP SYNC L FRMB FP SYNC L



* THESE GNDS ARE GENERATED ON THE ETCH BOARD

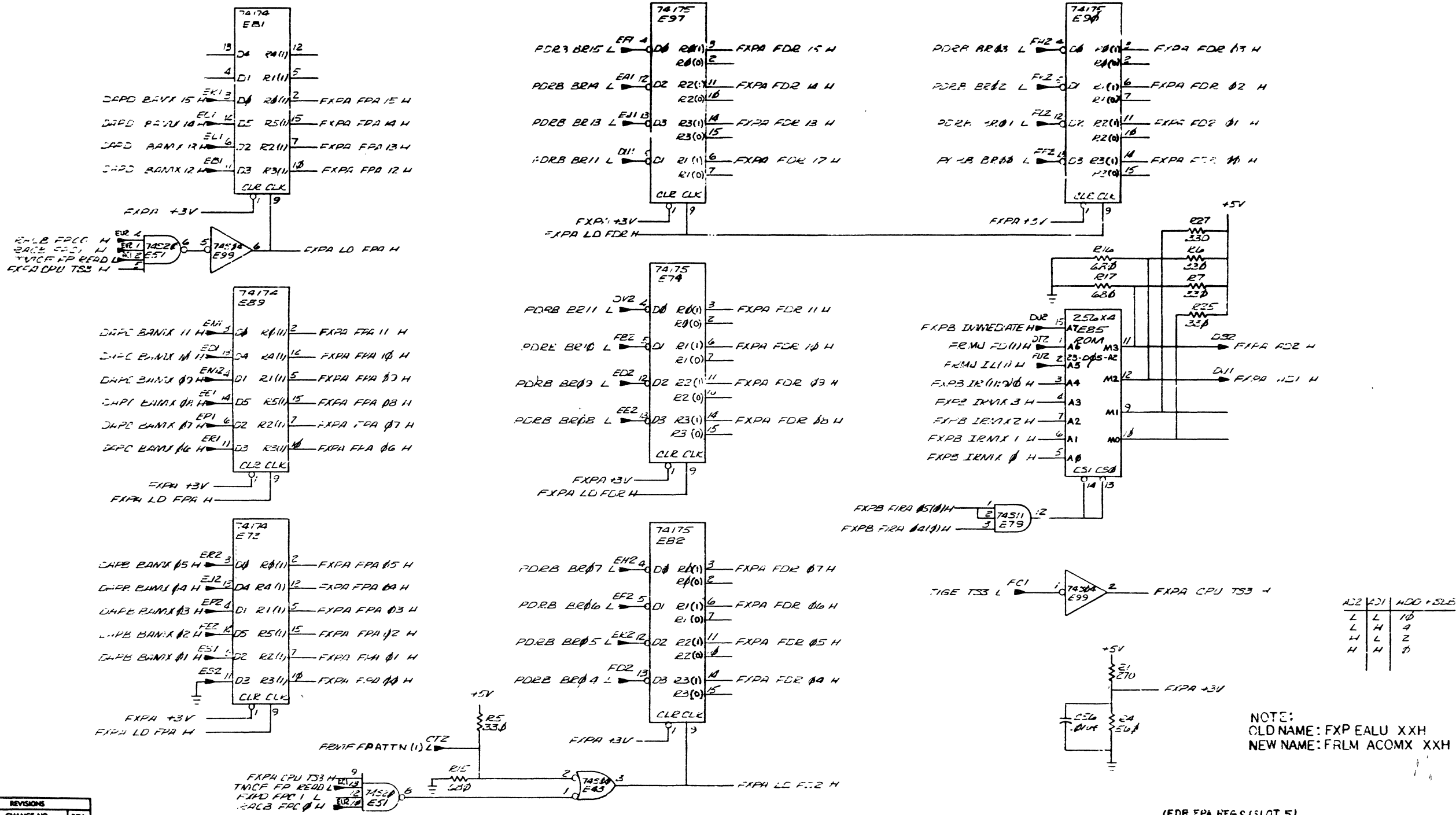
* DPI FRMJ FP PRESENT L
 * ANI FRMJ FPADR INC L

| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
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(FPS CONTROL (SLOT 4))

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|-------|-----------------------|-----------|---|--------|--------------|-------|---|
| TITLE | FP ROM CONTROL (FRMJ) | SIZE CODE | D | NUMBER | CS M8128 0 1 | REV. | 1 |
| SCALE | --- | SHEET | 9 | OF | 11 | DIST. | |

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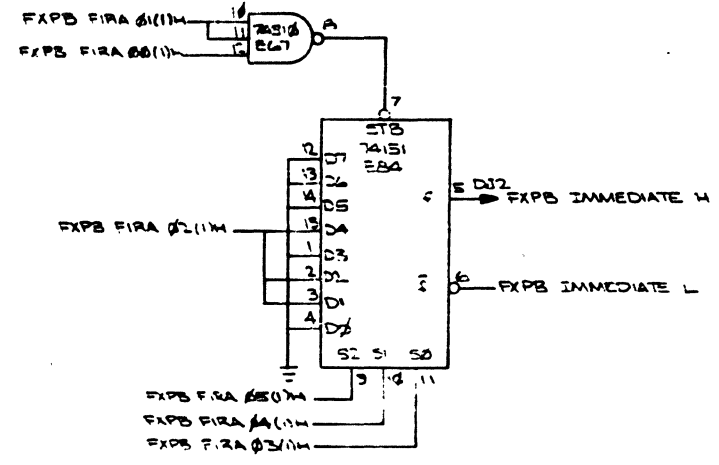
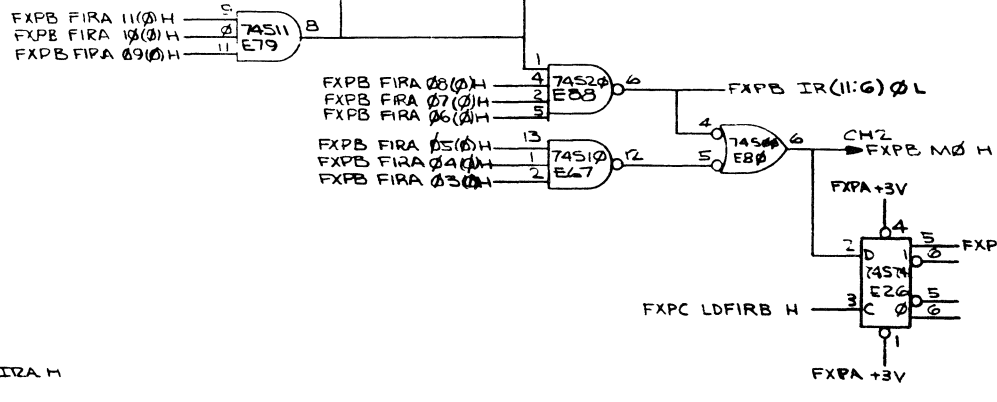
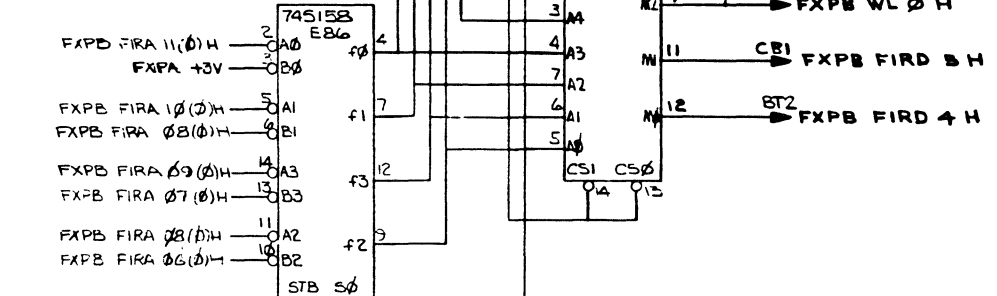
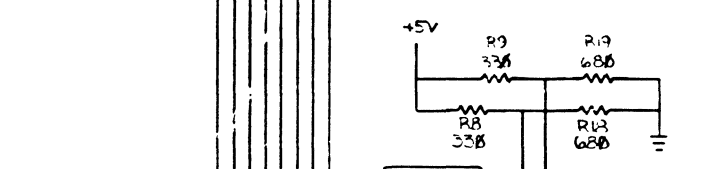
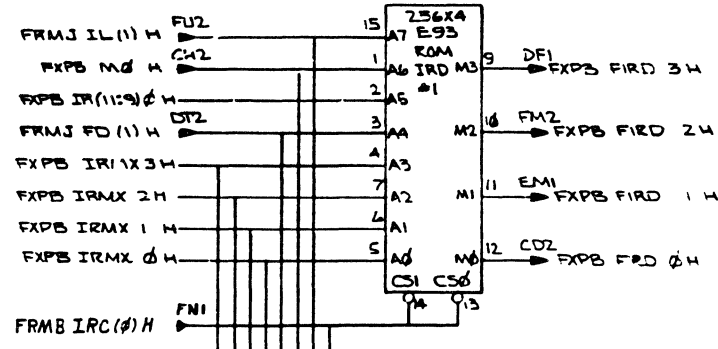
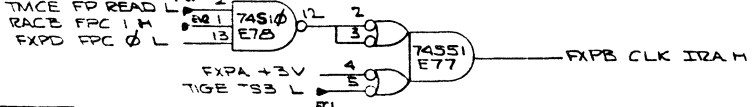
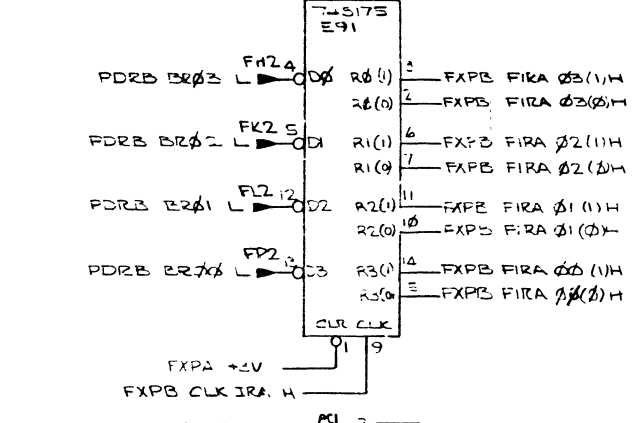
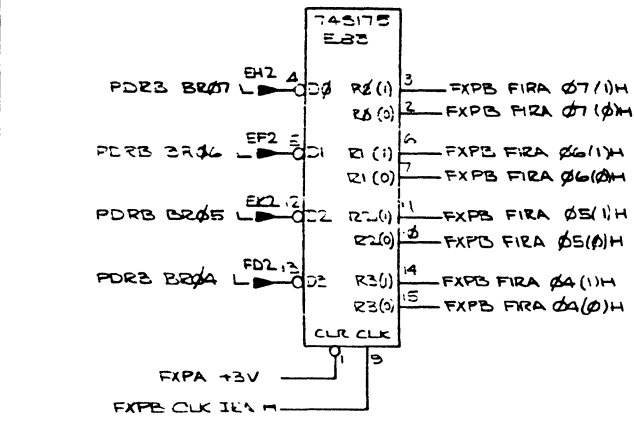
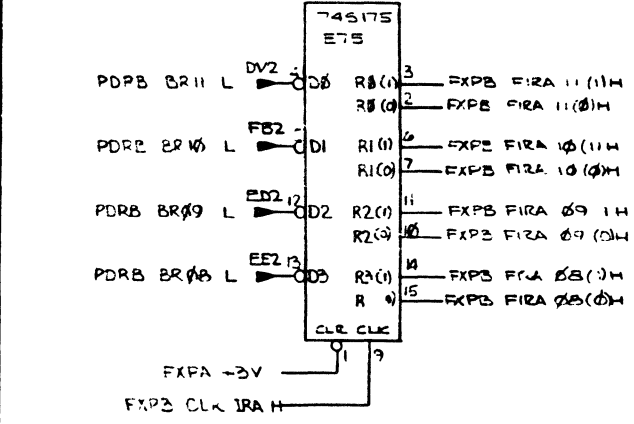


NOTE:
 OLD NAME: FXP EALU XXH
 NEW NAME: FRLM ACOMX XXH

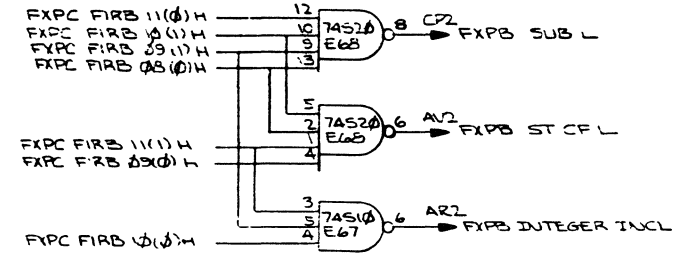
| REV. | CHANGE NO. | DATE |
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| TITLE | SIZE CODE | NUMBER | REV. |
|--------------------------------------|-----------|-----------|------|
| FRACTION PROC. EXPN. PATH. (FXPA) | D CS | ME129-2-1 | B |

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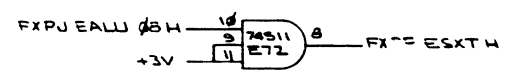
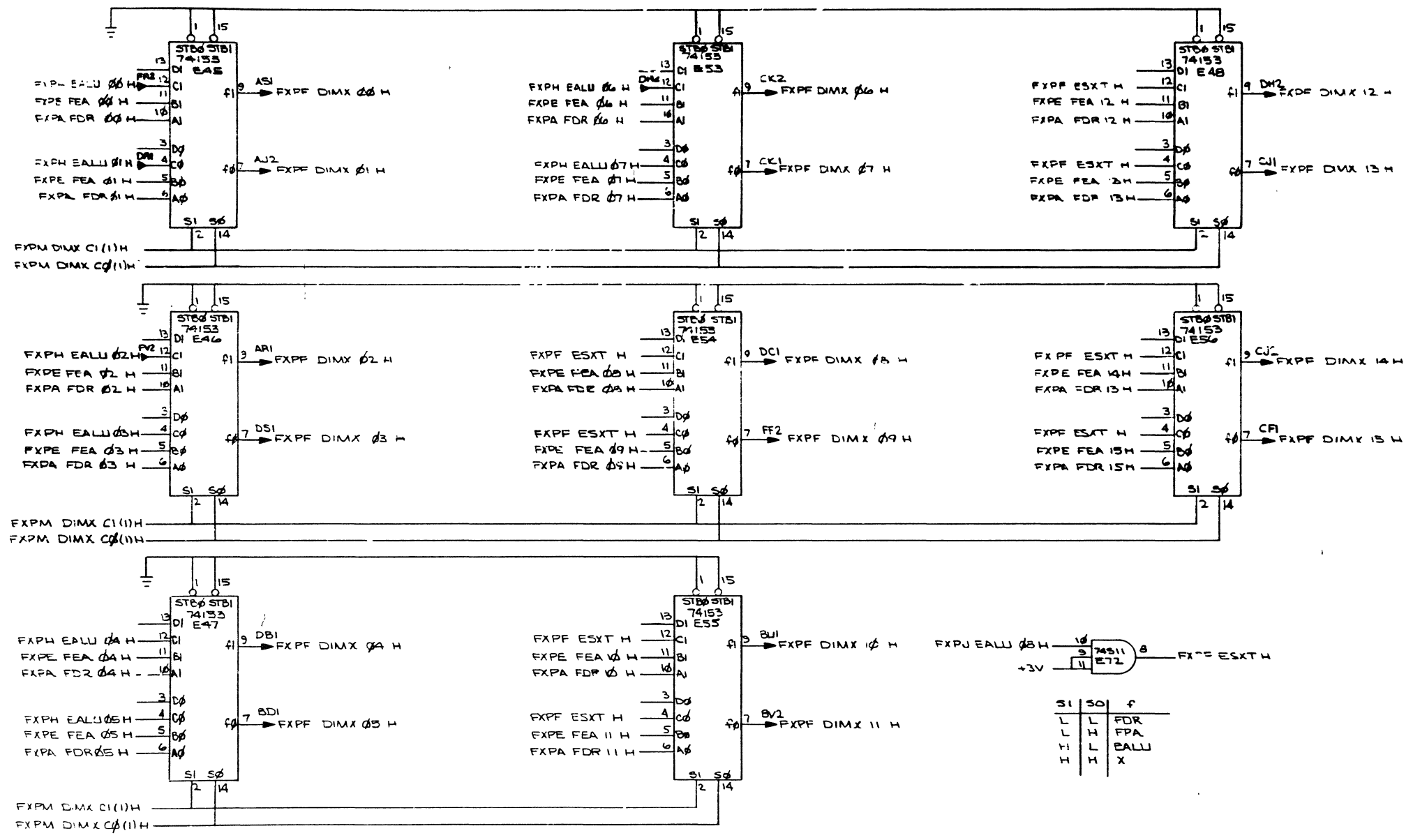


| W/L | W/B | # OF WORDS |
|-----|-----|------------|
| I | L | 2 |
| I | I | 4 |
| I | L | 4 |



| REVISIONS | | |
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| CHK | CHANGE NO | REV. |
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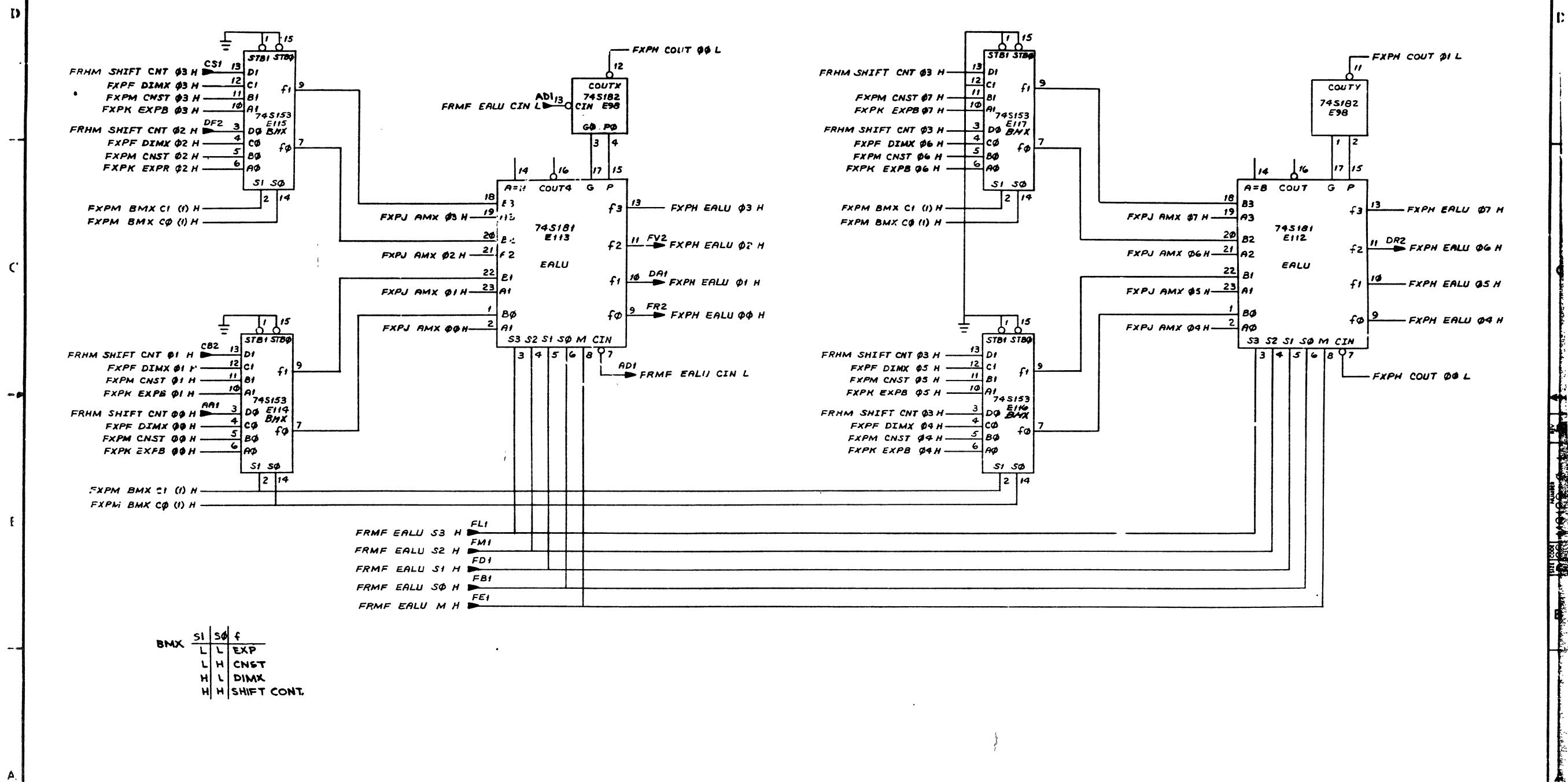
| S1 | S0 | f |
|----|----|------|
| L | L | FDR |
| L | H | FPA |
| H | L | EALL |
| H | H | X |

| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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(DATA IN MUX (SLOT 5))

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|-------|---------------------------------------|-----------|----------------|--------|----|-------|---|
| TITLE | FRACTION PROC. EXPON. PATH. (FXPF) | SIZE CODE | D CS M8129-0-1 | NUMBER | | REV. | B |
| SCALE | | SHEET | 7 | OF | 15 | DIST. | |

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| BMX | SI | S0 | f |
|-----|----|----|-------------|
| L | L | | EXP |
| L | H | | CNST |
| H | L | | DIMX |
| H | H | | SHIFT CONT. |

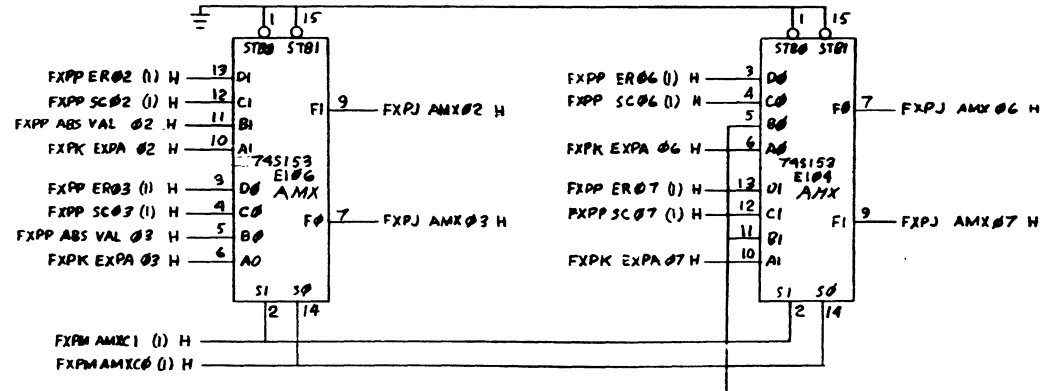
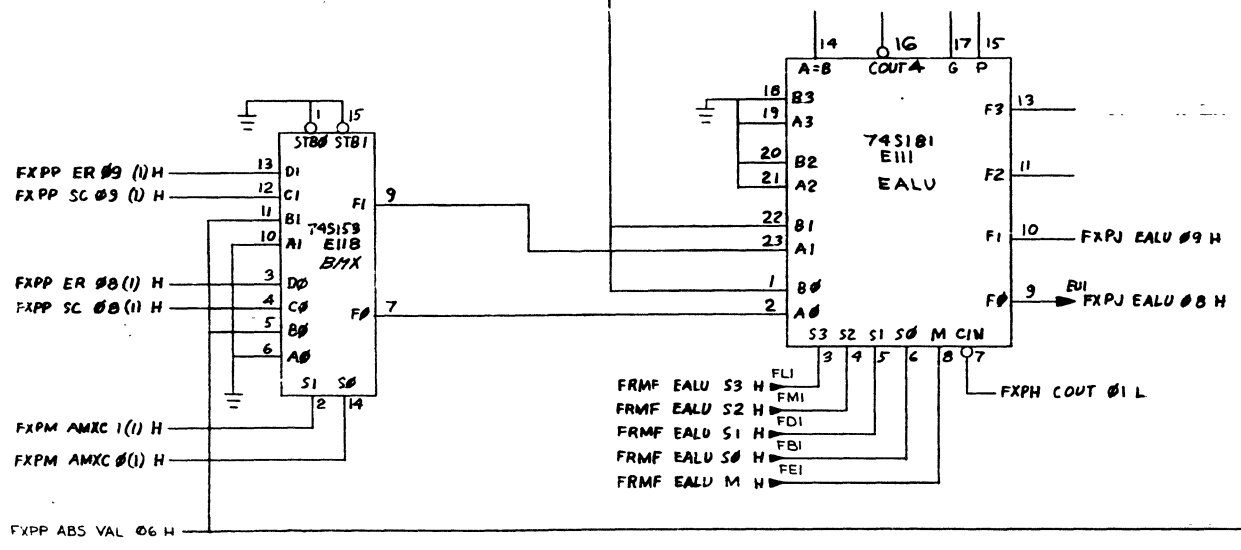
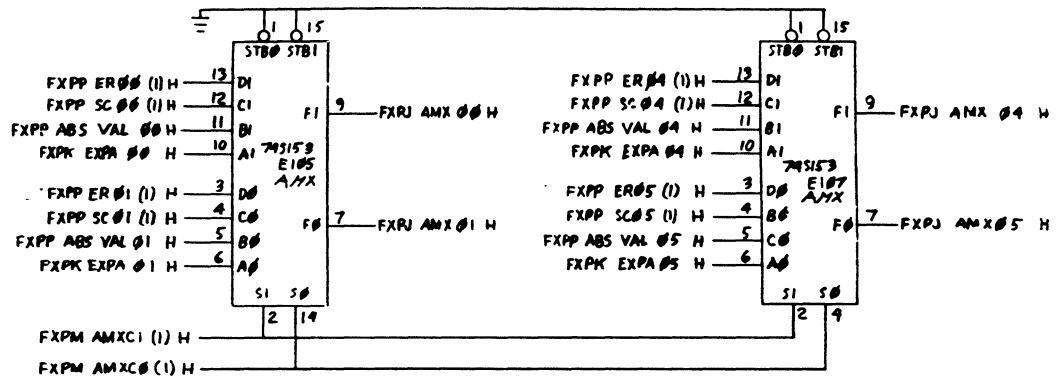
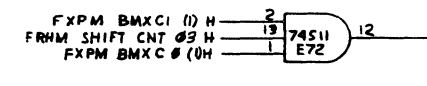
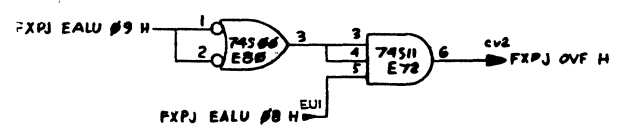
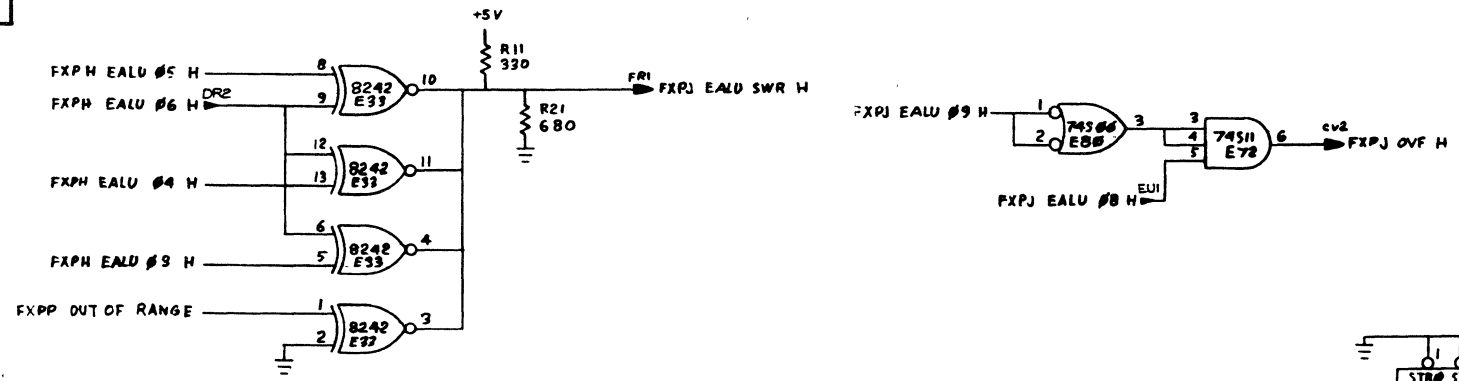
- FRMF EALU S3 H FL1
- FRMF EALU S2 H FM1
- FRMF EALU S1 H FD1
- FRMF EALU S0 H FB1
- FRMF EALU M H FE1

(EALU LOW (SLOT 5))

| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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|-------|--------------------------------------|-----------|---------|--------|-----------|------|---|
| TITLE | FRACTION PROC. EXPON. PATH (FXPH) | SIZE CODE | D CS | NUMBER | M8129-0-1 | REV. | B |
| SCALE | | SHEET | 8 OF 15 | DIST. | | | |

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| AMX | S1 | S0 | F |
|-----|----|----|--------|
| L | L | L | EXP |
| L | H | L | ABS SC |
| H | L | L | SC |
| H | H | L | ER |

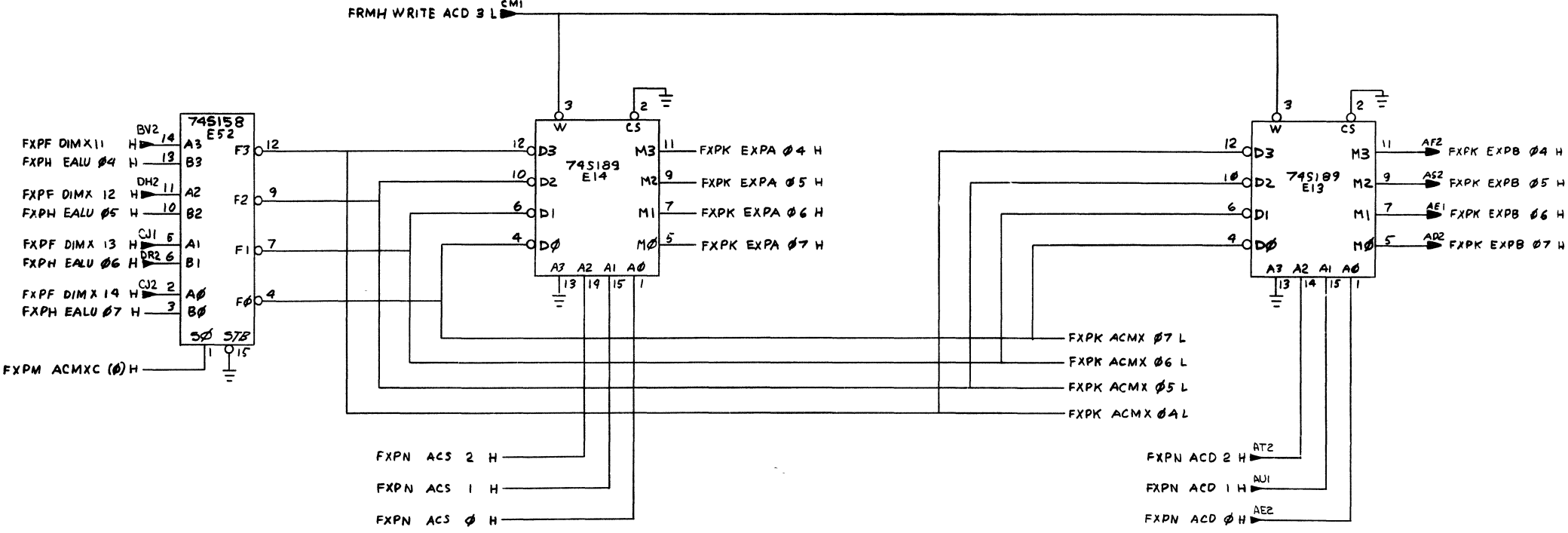
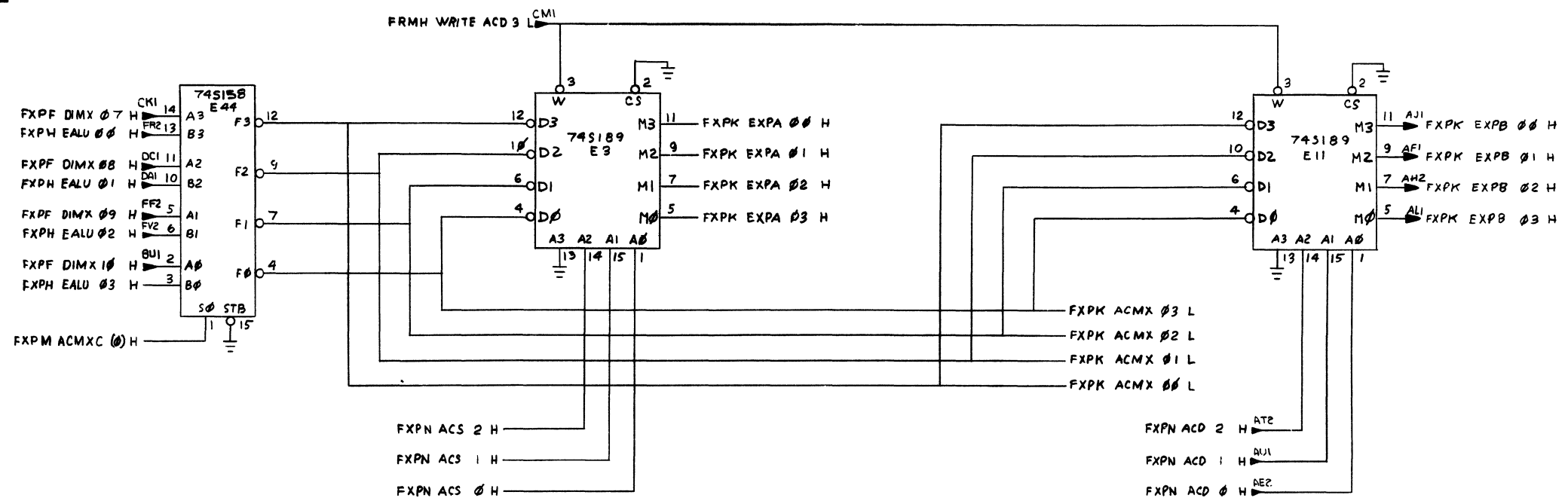
| REVISIONS | | |
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| CHK | CHANGE NO. | REV |
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(AMX, EALU HI (SLOT 5))

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|-------|---------------------------------|-----------|------|--------|-----------|-------|---|
| TITLE | FRACTION (FXPJ) PROC EXPON PATH | SIZE CODE | D CS | NUMBER | M8129-0-1 | REV. | B |
| SCALE | 1:1 | SHEET | 9 | OF | 15 | DIST. | |

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17-0018V15U 2
 898W1N 80021326

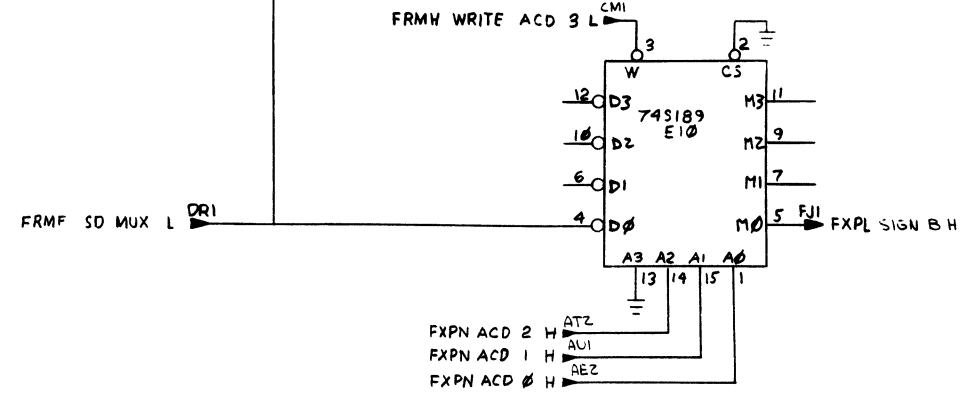
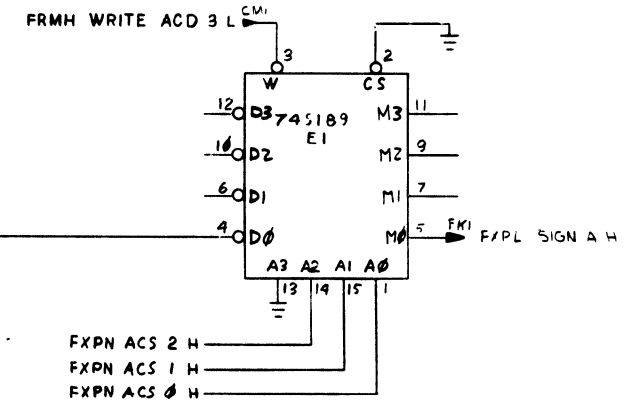
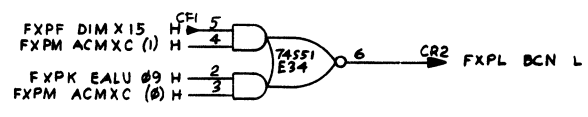
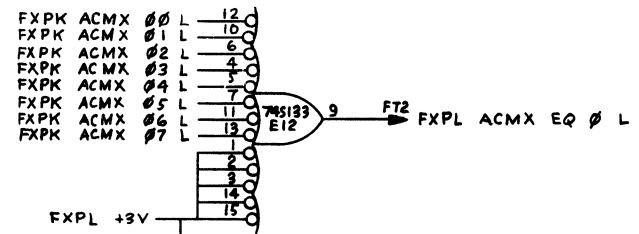
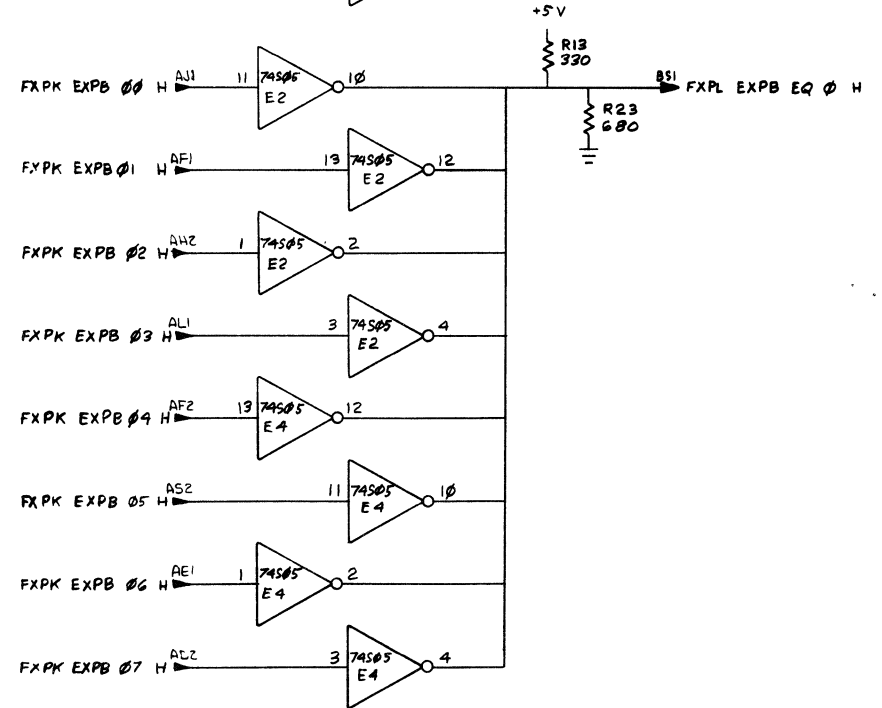
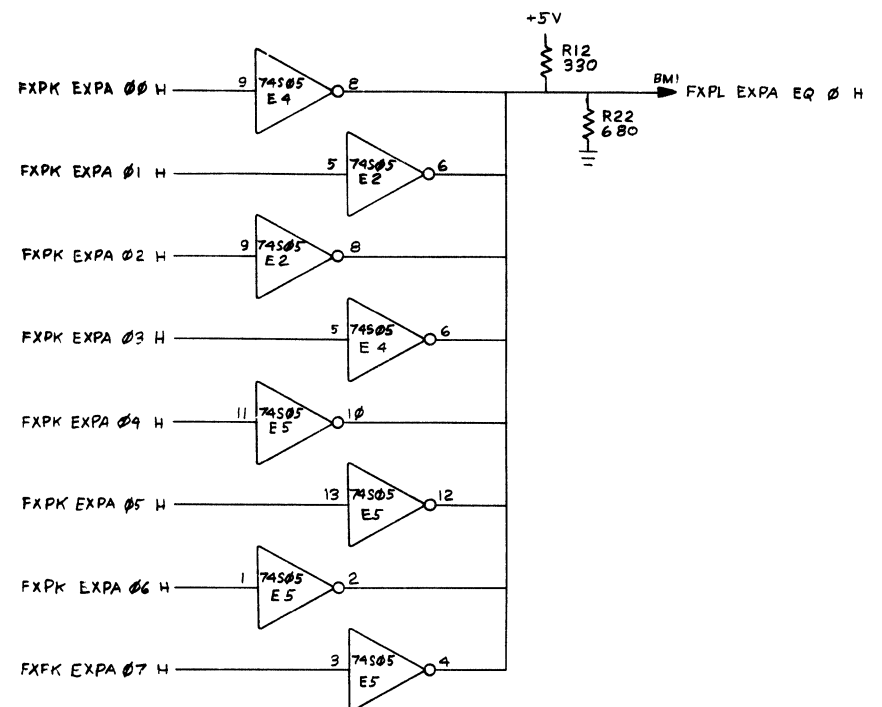


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| CHK | CHANGE NO. | REV. |
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|---|----------------|---------------|------------------|--------|
| TITLE FRACTION PROC (FXPK) EXPON. PATH | | SIZE CODE DCS | NUMBER M8129-0-1 | REV. 0 |
| SCALE 1/1 | SHEET 10 OF 15 | | DIST. | |

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REV. 1 10018VMSJUN 72 3001371



| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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(ZERO CHECKERS, SIGNS) (SLOT 5)

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|-------|----------------------------------|-----------|---------------|------|
| TITLE | FRACTION (FXPL) PROC. EXPON PATH | SIZE CODE | NUMBER | REV. |
| SCALE | SHEET 11 OF 15 | DIST. | DCS M8129-0-1 | B |

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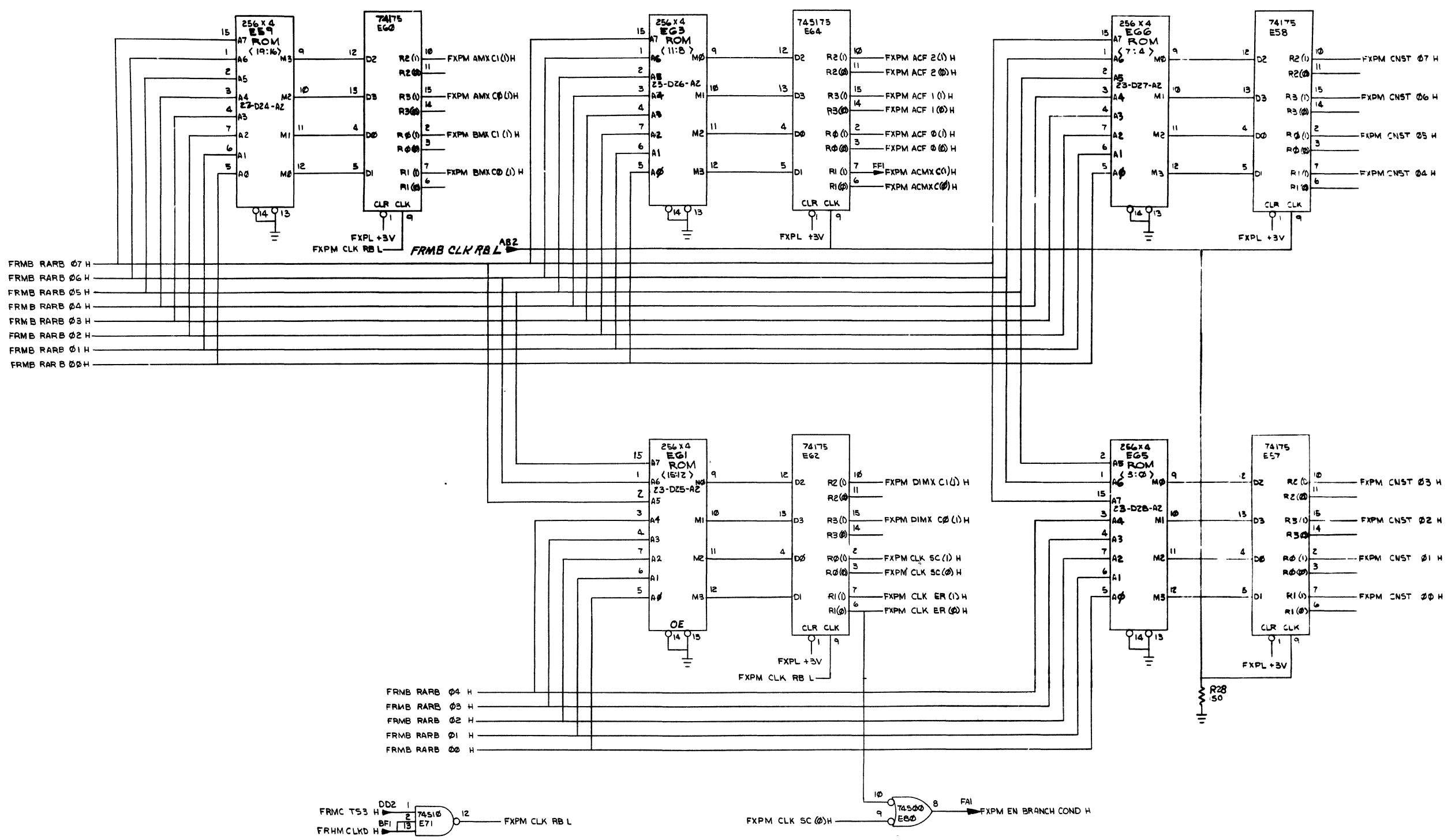
6

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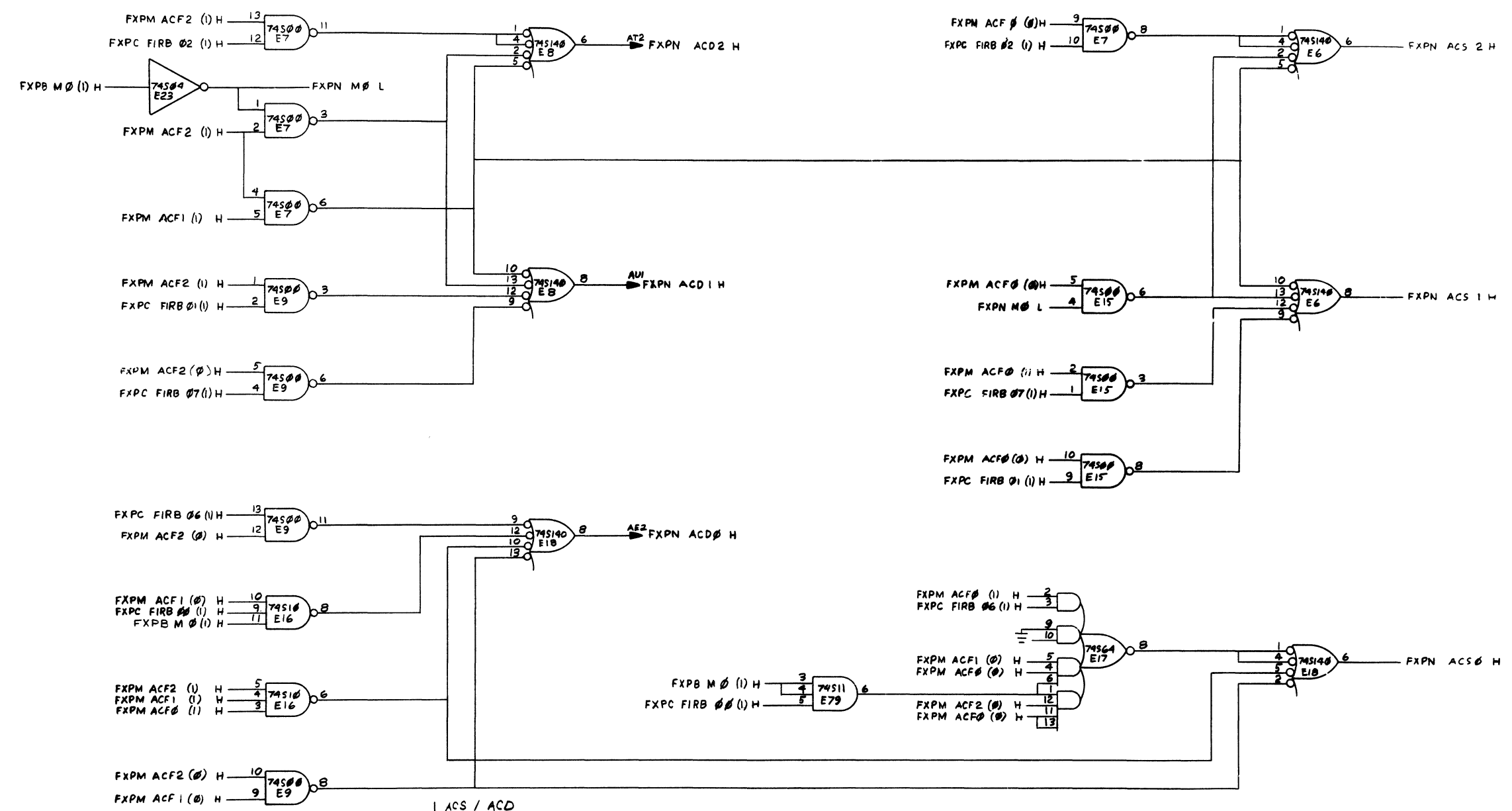
REV. 1 10018VMSJUN 72 3001371

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| REVISIONS | | |
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| CHK | CHANGE NO. | REV. |
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| ACF | ACS / ACD | EXPA / EXPB |
|-----|---------------|-------------|
| 0 | X | |
| 1 | ACDV1 / ACDV1 | |
| 2 | ACS / ACD | |
| 3 | ACD / ACD | |
| 4 | ACS / ACS | |
| 5 | ACD / ACS | |
| 6 | AC6 / AC6 | |
| 7 | AC7 / AC7 | |

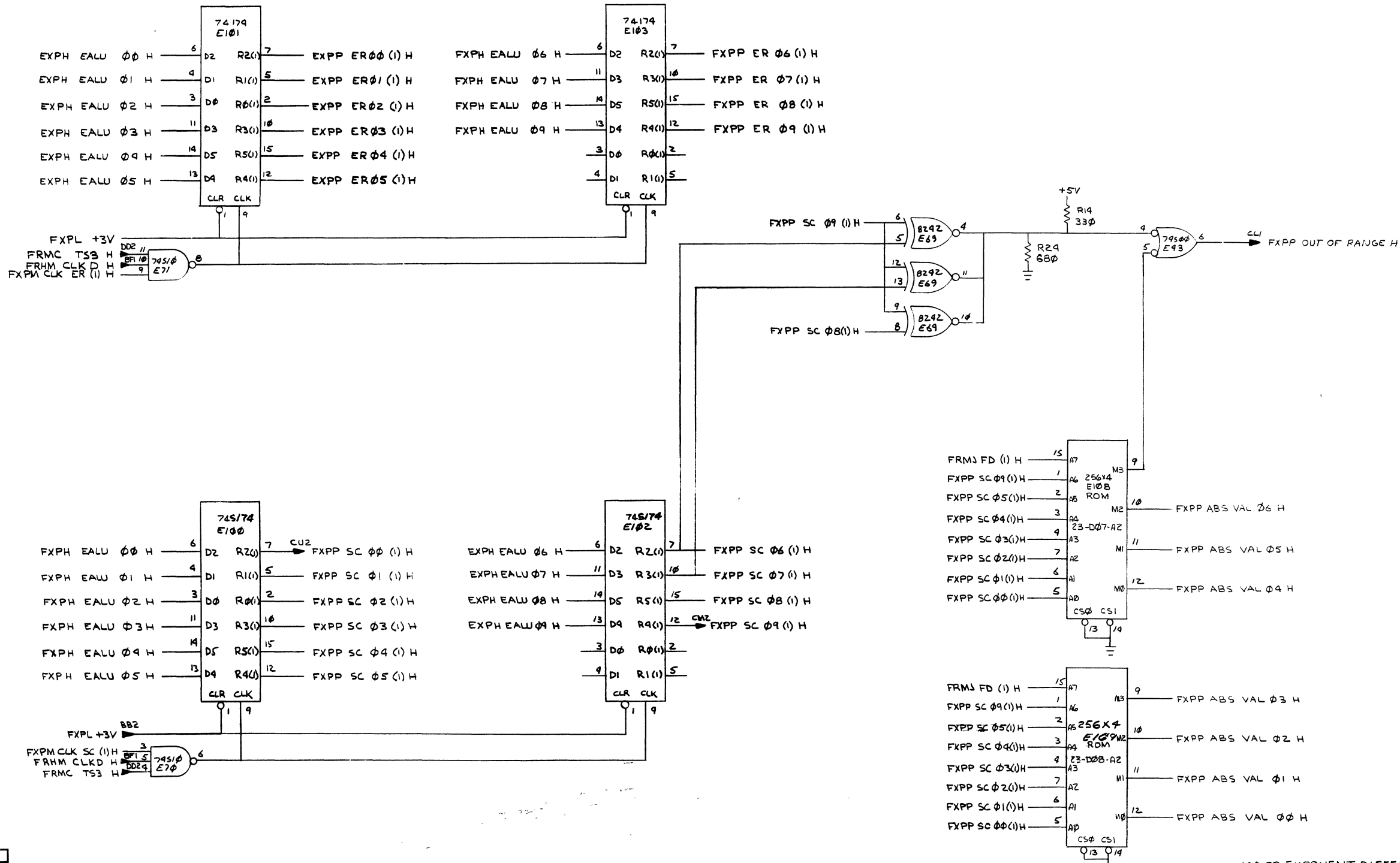
ACD = FIR07, FIR06
 ACS = FIRB(2:0) IF M0
 AC6 IF ~M0

| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
| | | |

(ACCUMULATOR ADDRESS (SLOT 5))

| | | | | | | | |
|-------|---------------------------------|-----------|---------------|--------|----|-------|---|
| TITLE | FRACTION (FXPN) PROC EXPON PATH | SIZE CODE | DCS M8129-0-1 | NUMBER | | REV. | B |
| SCALE | ++ | SHEET | 13 | OF | 15 | DIST. | |

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| REVISIONS | | |
|-----------|------------|------|
| CHK | CHANGE NO. | REV. |
| | | |

| | | | | | |
|-------|------------------------------------|----------------|-----------|--------------|------|
| TITLE | FRACTION PROC EXPON PATH (FXPP) | | SIZE CODE | NUMBER | REV. |
| SCALE | 1/1 | SHEET 14 OF 15 | DIST. | DCSM8129-0-1 | |

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IR DECODE = 1

| | IL*MO*FD | | | IL*MO*FD | | | IL*MO*FD | | | IL*MO*FD | | | IL*MO*FD | | | IL*MO*FD | | | IL*MO*FD | | | | |
|--------------|----------|------|----|----------|------|----|----------|------|----|----------|------|----|----------|------|----|----------|------|----|----------|------|----|-----|----|
| | ADRS | DATA | WL | ADRS | DATA | WL | ADRS | DATA | WL | ADRS | DATA | WL | ADRS | DATA | WL | ADRS | DATA | WL | ADRS | DATA | WL | | |
| MUL | 2 | 11 | 2 | 22 | 20 | 4 | 102 | 30 | | 122 | 30 | | 202 | 11 | 2 | 222 | 20 | 4 | 302 | 30 | | 322 | 30 |
| MOD | 3 | 11 | 2 | 23 | 20 | 4 | 103 | 30 | | 123 | 30 | | 203 | 11 | 2 | 223 | 20 | 4 | 303 | 30 | | 323 | 30 |
| ADD | 4 | 11 | 2 | 24 | 20 | 4 | 104 | 30 | | 124 | 30 | | 204 | 11 | 2 | 224 | 20 | 4 | 304 | 30 | | 324 | 30 |
| LOAD | 5 | 12 | 2 | 25 | 21 | 4 | 105 | 30 | | 125 | 30 | | 205 | 12 | 2 | 225 | 21 | 4 | 305 | 30 | | 325 | 30 |
| SUB | 6 | 11 | 2 | 26 | 20 | 4 | 106 | 30 | | 126 | 30 | | 206 | 11 | 2 | 226 | 20 | 4 | 306 | 30 | | 326 | 30 |
| CMP | 7 | 11 | 2 | 27 | 20 | 4 | 107 | 30 | | 127 | 30 | | 207 | 11 | 2 | 227 | 20 | 4 | 307 | 30 | | 327 | 30 |
| STOPE | 10 | 13 | 2 | 30 | 13 | 4 | 110 | 30 | | 130 | 30 | | 210 | 13 | 2 | 230 | 13 | 4 | 310 | 30 | | 330 | 30 |
| DIV | 11 | 11 | 2 | 31 | 20 | 4 | 111 | 30 | | 131 | 30 | | 211 | 11 | 2 | 231 | 20 | 4 | 311 | 30 | | 331 | 30 |
| STEXP | 12 | 50 | 1 | 32 | 50 | 1 | 112 | 50 | | 132 | 50 | | 212 | 50 | 1 | 232 | 50 | 1 | 312 | 50 | | 332 | 50 |
| STCI | 13 | 51 | 1 | 33 | 51 | 1 | 113 | 51 | | 133 | 51 | | 213 | 51 | 2 | 233 | 51 | 2 | 313 | 51 | | 333 | 51 |
| STCF | 14 | 44 | 4 | 34 | 44 | 2 | 114 | 44 | | 134 | 44 | | 214 | 44 | 4 | 234 | 44 | 2 | 314 | 44 | | 334 | 44 |
| LDEXP | 15 | 15 | 1 | 35 | 15 | 1 | 115 | 30 | | 135 | 30 | | 215 | 15 | 1 | 235 | 15 | 1 | 315 | 30 | | 335 | 30 |
| LDCI | 16 | 41 | 1 | 36 | 41 | 1 | 116 | 30 | | 136 | 30 | | 216 | 41 | 2 | 236 | 41 | 2 | 316 | 30 | | 336 | 30 |
| LDCF | 17 | 17 | 3 | 37 | 17 | 2 | 117 | 30 | | 137 | 30 | | 217 | 17 | 3 | 237 | 17 | 3 | 317 | 30 | | 337 | 30 |
| LDFPS | 41 | 22 | 1 | 61 | 22 | 1 | 141 | 30 | | 161 | 30 | | 241 | 22 | 1 | 261 | 22 | 1 | 341 | 30 | | 361 | 30 |
| STFPS | 42 | 62 | 1 | 62 | 62 | 1 | 142 | 62 | | 162 | 62 | | 242 | 62 | 1 | 262 | 62 | 1 | 342 | 62 | | 362 | 62 |
| STST | 43 | 24 | 2 | 63 | 24 | 2 | 143 | 54 | | 163 | 54 | | 243 | 24 | 2 | 263 | 24 | 2 | 343 | 54 | | 363 | 54 |
| CLR | 44 | 25 | 2 | 64 | 25 | 4 | 144 | 30 | | 164 | 30 | | 244 | 25 | 2 | 264 | 25 | 4 | 344 | 30 | | 364 | 30 |
| TST | 45 | 26 | 1 | 65 | 26 | 1 | 145 | 30 | | 165 | 30 | | 245 | 26 | 1 | 265 | 26 | 1 | 345 | 30 | | 365 | 30 |
| ABS | 46 | 27 | 2 | 66 | 27 | 2 | 146 | 30 | | 166 | 30 | | 246 | 27 | 2 | 266 | 27 | 2 | 346 | 30 | | 366 | 30 |
| NEG | 47 | 27 | 2 | 67 | 27 | 2 | 147 | 30 | | 167 | 30 | | 247 | 27 | 2 | 267 | 27 | 2 | 347 | 30 | | 367 | 30 |
| NO MEM CLASS | - | - | - | - | - | - | 140 | 30 | | 150 | 30 | | - | - | - | - | - | - | 340 | 30 | | 350 | 30 |

ADY SOM

| | IM*FD*IL | | IM*FD*IL | | IM*FD*IL | | IM*FD*IL | | IM*FD*IL | | IM*FD*IL | | IM*FD*IL | | | |
|-------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|-----|---|
| | ADRS | DATA | ADRS | DATA | ADRS | DATA | ADRS | DATA | ADRS | DATA | ADRS | DATA | ADRS | DATA | | |
| MUL | 2 | 4 | 42 | 4 | 102 | 10 | 142 | 10 | 202 | 2 | 242 | 2 | 302 | 2 | 342 | 2 |
| MOD | 3 | 4 | 43 | 4 | 103 | 10 | 143 | 10 | 203 | 2 | 243 | 2 | 303 | 2 | 343 | 2 |
| ADD | 4 | 4 | 44 | 4 | 104 | 10 | 144 | 10 | 204 | 2 | 244 | 2 | 304 | 2 | 344 | 2 |
| LOAD | 5 | 4 | 45 | 4 | 105 | 10 | 145 | 10 | 205 | 2 | 245 | 2 | 305 | 2 | 345 | 2 |
| SUB | 6 | 4 | 46 | 4 | 106 | 10 | 146 | 10 | 206 | 2 | 246 | 2 | 306 | 2 | 346 | 2 |
| CMP | 7 | 4 | 47 | 4 | 107 | 10 | 147 | 10 | 207 | 2 | 247 | 2 | 307 | 2 | 347 | 2 |
| STORE | 10 | 4 | 50 | 4 | 110 | 10 | 150 | 10 | 210 | 2 | 250 | 2 | 310 | 2 | 350 | 2 |
| DIV | 11 | 4 | 51 | 4 | 111 | 10 | 151 | 10 | 211 | 2 | 251 | 2 | 311 | 2 | 351 | 2 |
| STEXP | 12 | 2 | 52 | 2 | 112 | 2 | 152 | 2 | 212 | 2 | 252 | 2 | 312 | 2 | 352 | 2 |
| STCI | 13 | 2 | 53 | 4 | 113 | 2 | 153 | 4 | 213 | 2 | 253 | 2 | 313 | 2 | 353 | 2 |
| STCF | 14 | 10 | 54 | 10 | 114 | 4 | 154 | 4 | 214 | 2 | 254 | 2 | 314 | 2 | 354 | 2 |
| LDEXP | 15 | 2 | 55 | 2 | 115 | 2 | 155 | 2 | 215 | 2 | 255 | 2 | 315 | 2 | 355 | 2 |
| LDCI | 16 | 2 | 56 | 4 | 116 | 2 | 156 | 4 | 216 | 2 | 256 | 2 | 316 | 2 | 356 | 2 |
| LDCF | 17 | 10 | 57 | 10 | 117 | 4 | 157 | 4 | 217 | 2 | 257 | 2 | 317 | 2 | 357 | 2 |
| LDFPS | 21 | 2 | 61 | 2 | 121 | 2 | 161 | 2 | 221 | 2 | 261 | 2 | 321 | 2 | 361 | 2 |
| STFPS | 22 | 2 | 62 | 2 | 122 | 2 | 162 | 2 | 222 | 2 | 262 | 2 | 322 | 2 | 362 | 2 |
| STST | 23 | 4 | 63 | 4 | 123 | 4 | 163 | 4 | 223 | 2 | 263 | 2 | 323 | 2 | 363 | 2 |
| CLR | 24 | 4 | 64 | 4 | 124 | 10 | 164 | 4 | 224 | 2 | 264 | 2 | 324 | 2 | 364 | 2 |
| TST | 25 | 4 | 65 | 4 | 125 | 10 | 165 | 4 | 225 | 2 | 265 | 2 | 325 | 2 | 365 | 2 |
| ABS | 26 | 4 | 66 | 4 | 126 | 10 | 166 | 4 | 226 | 2 | 266 | 2 | 326 | 2 | 366 | 2 |
| NEG | 27 | 4 | 67 | 4 | 127 | 10 | 167 | 4 | 227 | 2 | 267 | 2 | 327 | 2 | 367 | 2 |

Note: For Mode 1 the chip select is disabled for constant of 0

NO MEM DECODE

| | MO*ILL AC | | | MO*ILL AC | | | MO*ILL AC | | |
|-------|-----------|------|----|-----------|------|----|-----------|------|----|
| | ADRS | DATA | WL | ADRS | DATA | WL | ADRS | DATA | WL |
| MUL | 322 | 61 | | 122 | 61 | | 22 | 52 | |
| MOD | 323 | 61 | | 123 | 61 | | 23 | 52 | |
| ADD | 324 | 65 | | 124 | 65 | | 24 | 52 | |
| LOAD | 325 | 42 | | 125 | 42 | | 25 | 52 | |
| SUB | 326 | 65 | | 126 | 65 | | 26 | 52 | |
| CMP | 327 | 67 | | 127 | 67 | | 27 | 52 | |
| STORE | 330 | 43 | | 130 | 43 | | 30 | 52 | |
| DIV | 331 | 73 | | 131 | 73 | | 31 | 52 | |
| STEXP | 332 | | | 132 | | | 32 | | |
| STCI | 333 | | | 133 | | | 33 | | |
| STCF | 334 | 35 | | 134 | 35 | | 34 | 32 | |
| LDEXP | 335 | 45 | | 135 | 45 | | 35 | 45 | |
| LDCI | 336 | 40 | | 136 | 40 | | 36 | 40 | |
| LDCF | 337 | 46 | | 137 | 46 | | 37 | 52 | |
| LDFPS | 361 | 60 | | 161 | 60 | | 61 | 60 | |
| STFPS | 362 | | | 162 | | | 62 | | |
| STST | 363 | | | 163 | | | 63 | | |
| CLR | 364 | 55 | | 164 | 55 | | 64 | | |
| TST | 365 | 56 | | 165 | 56 | | 65 | | |
| ABS | 366 | 57 | | 166 | 57 | | 66 | | |
| NEG | 367 | 57 | | 167 | 57 | | 67 | | |
| CFCC | | | | 140 | 3 | | | | |
| SETF | | | | 141 | 33 | | | | |
| SETI | | | | 142 | 33 | | | | |
| LDUB | | | | 143 | 34 | | | | |
| MSN | | | | 144 | 37 | | | | |
| STAO | | | | 145 | 36 | | | | |
| STOO | | | | 147 | | | 47 | 53 | |
| SETD | | | | 151 | 33 | | | | |
| SETL | | | | 152 | 33 | | | | |

A B C D

