CALIBRATION AND SERVICING HANDBOOK

Volume 2

4705

datron
INSTRUMENTS

AUTOCAL MULTIFUNCTION CALIBRATOR

CALIBRATION AND SERVICING HANDBOOK

for

THE DATRON 4705

AUTOCAL MULTIFUNCTION CALIBRATOR

Volume 2

Part 3 Reference

850065 Issue 1 (December 1986)

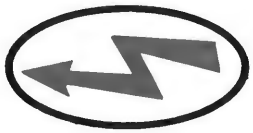
For any assistance contact your nearest Datron Sales and Service Center.
Addresses can be found at the back of this handbook.

Due to our policy of continuously updating our products, this handbook may contain minor differences in specification, components and circuit design to the instrument actually supplied. Amendment sheets precisely matched to your instrument serial number are available on request.

DANGER
HIGH VOLTAGE

THIS INSTRUMENT IS CAPABLE OF DELIVERING

A LETHAL ELECTRIC SHOCK!



FRONT or REAR terminals carry the Full Output Voltage.

THIS CAN KILL!

Guard terminal is sensitive to over-voltage

It can damage your instrument!

Unless **you** are **sure** that it is **safe** to do so,
DO NOT TOUCH the **I+ I− Hi** or **Lo leads** and **terminals**

DANGER

PART 3

REFERENCE

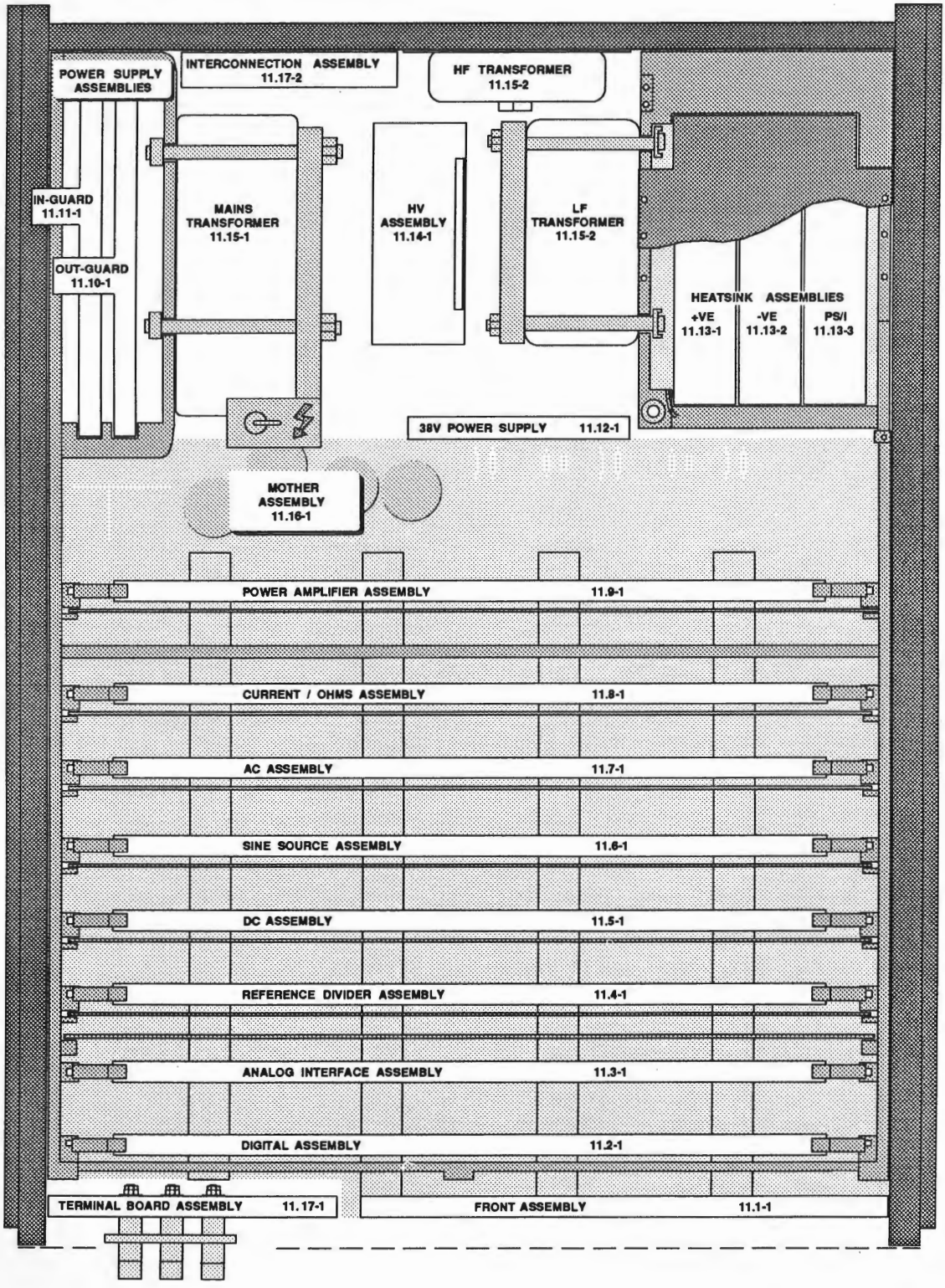


FIG. 11.1 ASSEMBLY LOCATIONS WITH PAGE INDEX

SECTION 11 CONTENTS

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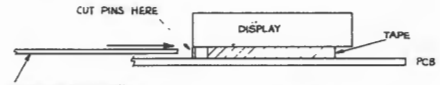
FRONT ASSEMBLY

PINS OF THE DISPLAYS MUST BE CUT ALONG THE LINE SHOWN 'X-X', THEN THE PINS MUST BE BENT FROM 'A' TO 'B' BEFORE INSERTION INTO PCB.

MOUNTING ICs.
FIT M1 INTO 14 WAY DIL. SOCKET 605060
FIT M3 INTO 24 WAY DIL. SOCKET 605097
FIT M4 & M5 INTO 16 WAY DIL. SOCKETS 605061
FIT M6 INTO 40 WAY DIL. SOCKET 605098

EACH DISPLAY TO HAVE 3 PIECES OF PRESSURE SENSITIVE TAPE 630029 25mm LONG STUCK TO THE REVERSE OF THE DISPLAY IN POSITIONS SHOWN. LINE UP & PRESS DISPLAY FIRMLY INTO PLACE. THEN SOLDER THE 24 PINS ONLY WHICH ARE SHOWN BELOW. (THERE ARE ONLY SOLDER PADS FOR THESE PINS).



TO REMOVE DISPLAY

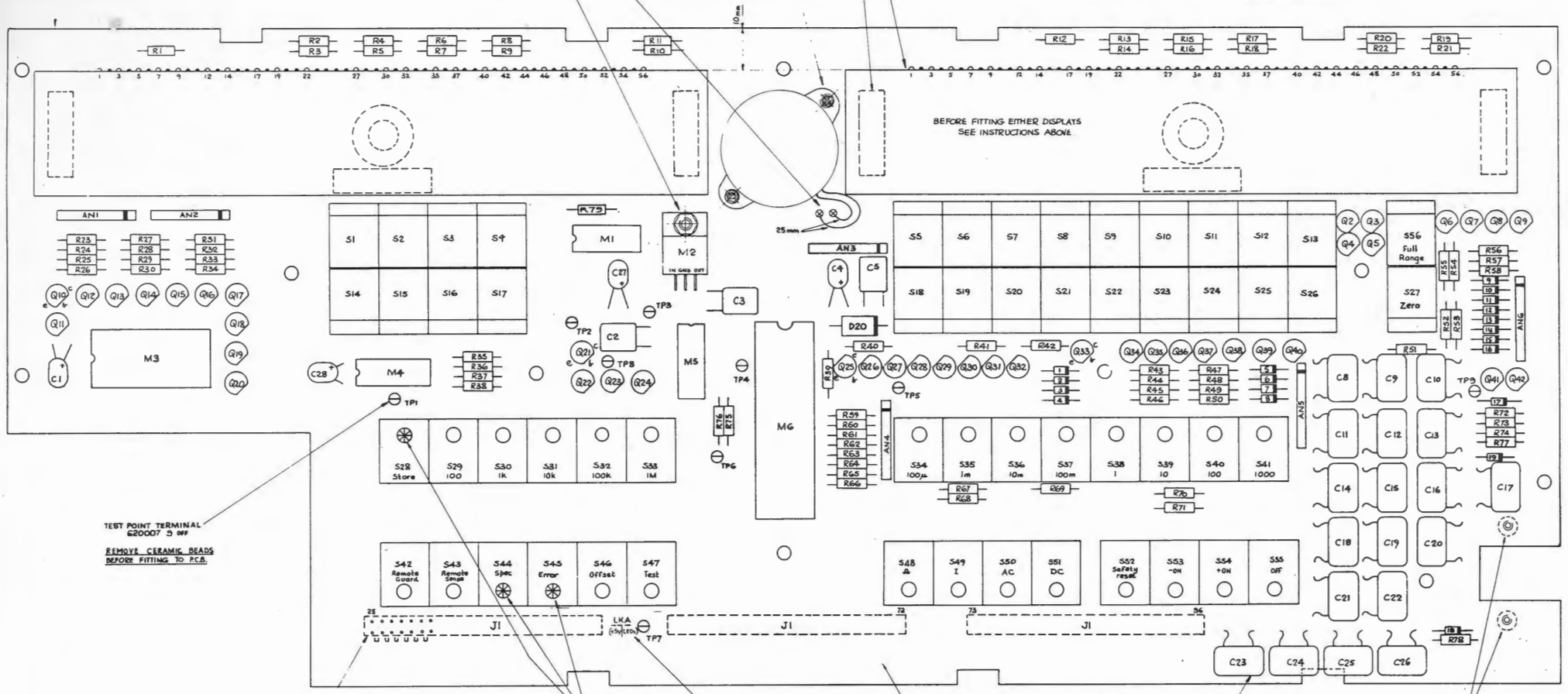
PCB 410144-10

2 off SOLDER TERMINAL 620003

TO SECURE M2 SEE FIXING DETAIL AT BOTTOM OF SHEET

SECURE BUZZER (PART Nº 920096) WITH
2 off M2 x 6mm SLOT CSK SCREW 611054
2 off M2 WASHER 613026
2 off M2 INT SHAKEPROOF 613027
2 off M2 FULL NUT 615016

2 off 8½ DIGIT DISPLAY 800017



TEST POINT TERMINAL 620007 9 off

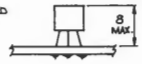
REMOVE CERAMIC BEADS BEFORE FITTING TO P.C.B.

FIT 3 off 24+24 WAY "I" P.C.B. PLUG 604060 TO UNDERSIDE OF P.C.B. ENSURE THAT BODY IS TIGHT & SQUARE TO P.C.B. WITH MOULDED PIPS POINTING TOWARDS LOWER EDGE OF P.C.B.

GREEN L.E.Ds. 3 off ALL OTHERS RED

LINK SHOWN DOTTED, NOT FITTED AT ASSY. STAGE

NOTE ! ALL PINS ON SOLDER SIDE OF P.C.B. MUST BE CROPPED TO 2·5mm OR LESS.

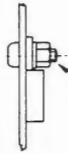


NOTE : NO COMPONENTS TO STAND HIGHER THAN 8mm. (EXCEPT SWITCHES)

ENSURE THAT C8 TO C26 LEADS ARE FORMED WITH THE LEADS SPACED AWAY FROM THE P.C.B.

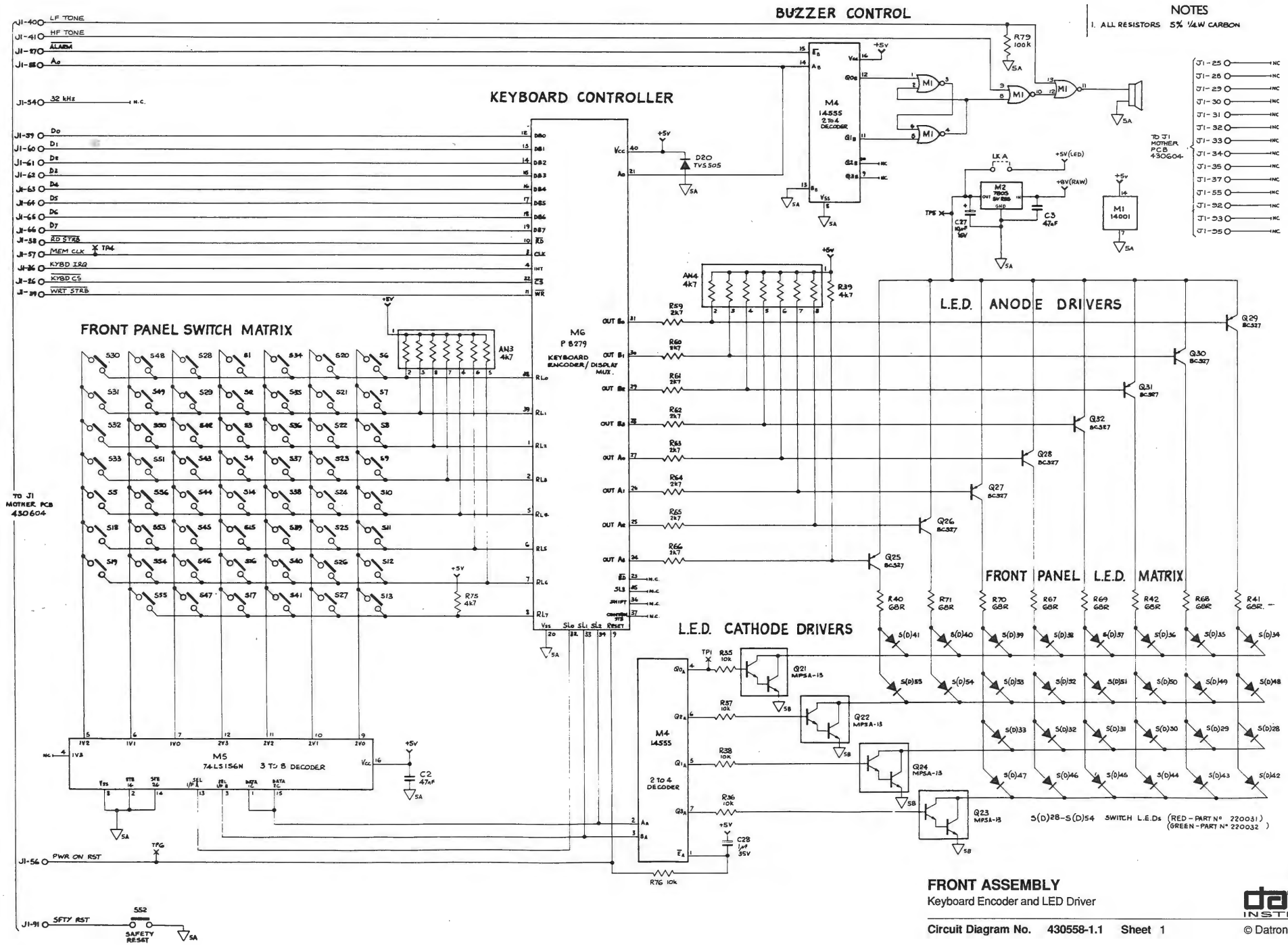
2 off STANDOFF M2·5 x 4mm G12023. FIT UNDERSIDE OF P.C.B.

N.B. : "ALL VIA HOLES AND SPARE COMPONENT HOLES MUST BE SOLDERED."



SCREW M3 x 6mm SLOTTED PAN HD G11076
WASHER M3 SHAKEPROOF 613005
NUT M3 HEX FULL 615002

VIEW TO SHOW FIXING OF M2



FRONT ASSEMBLY
Keyboard Encoder and LED Driver

Circuit Diagram No. 430558-1.1 Sheet 1

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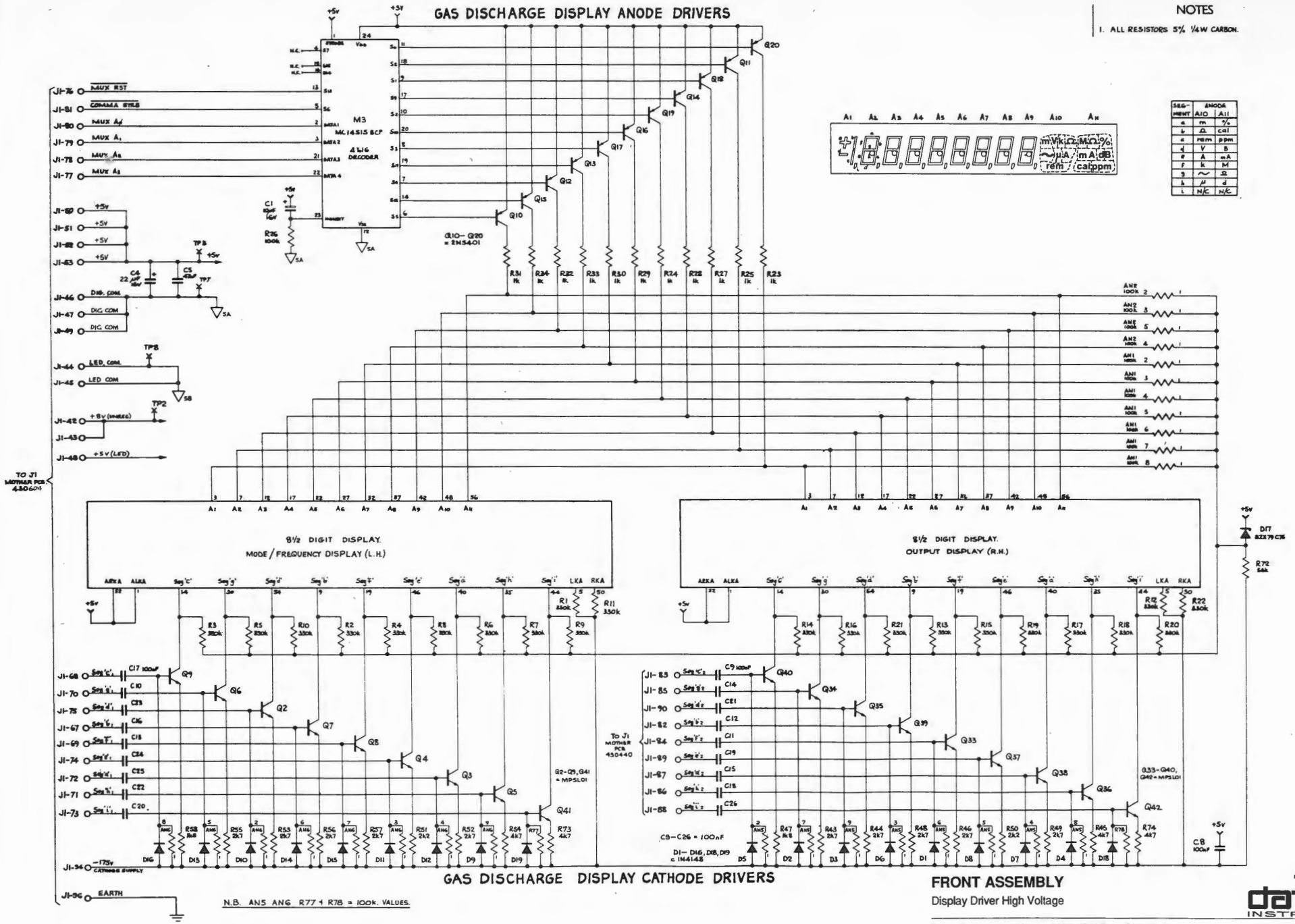
GAS DISCHARGE DISPLAY ANODE DRIVERS
NOTES
1. ALL RESISTORS 5% ¼W CARBON.
M3
MC14515 BCP
4 to 16 DECODER
Q10–Q20 = 2N5401
8½ DIGIT DISPLAY.
MODE / FREQUENCY DISPLAY (L.H.)
8½ DIGIT DISPLAY.
OUTPUT DISPLAY (R.H.)
GAS DISCHARGE DISPLAY CATHODE DRIVERS
Q2–Q9, Q41 = MPSL01
Q33–Q40, Q42 = MPSL01
C9–C26 = 100nF
D1–D16, D18, D19 = 1N4148
N.B. AN5 ANG R77 & R78 = 100k. VALUES.
TO J1 MOTHER PCB 430604
To J1 MOTHER PCB 430440
MUX RST
COMMA STRB
MUX A0
MUX A1
MUX A2
MUX A3
DIG. COM
LED. COM
+8V (UNREG)
+5V (LED)
–175V CATHODE SUPPLY
EARTH
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FRONT ASSEMBLY
Display Driver High Voltage
Circuit Diagram No. 430558-1.0 Sheet 2
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11.1-2

DIGITAL ASSEMBLY

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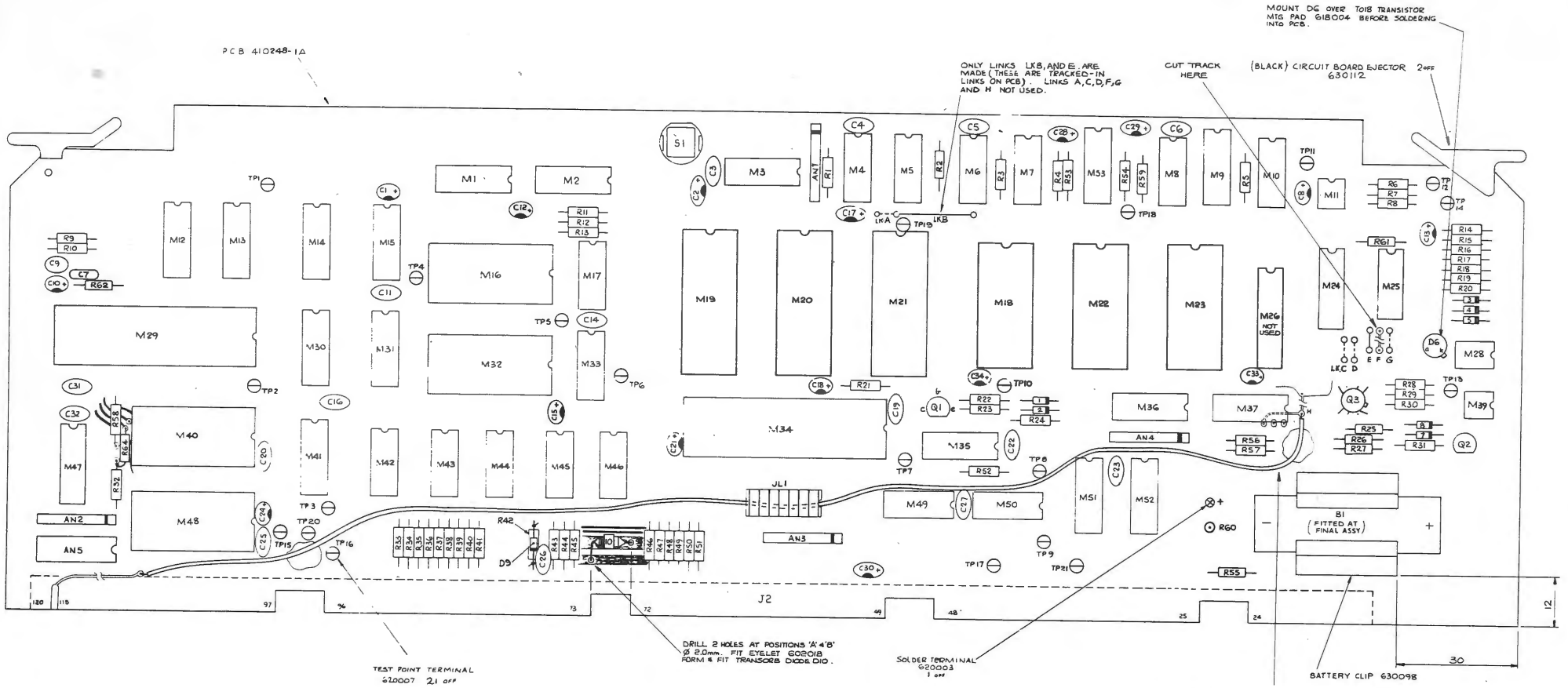
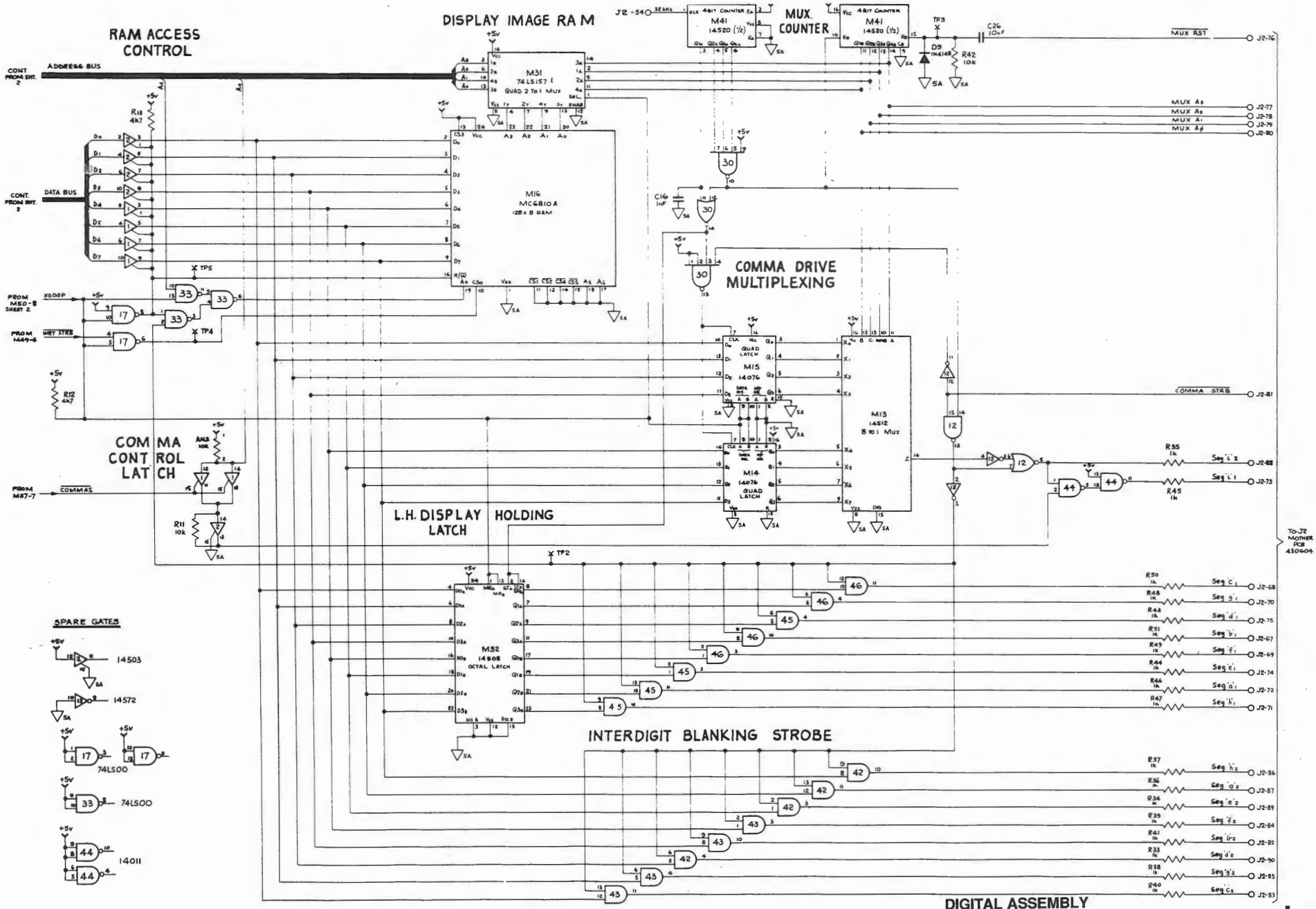


MOUNTING ICs

FIT M11 & M39 INTO 6-WAY DIL SOCKET 605066 2 off
FIT M28 INTO 8-WAY DIL SOCKET 605059 1 off
FIT M4-M8 M10 M17 M25 M33 M42-M46 M49 & M50 INTO 14 WAY DIL SOCKET 605060 16 off
FIT M1-M3 M9 M12-M15 M24 M30 M31 M35-M37 M41 M47 M51-M53 & JL1 INTO 16 WAY DIL SOCKET 605061 20 off

FIT M19 - M21 INTO 28-WAY DIL SOCKET 605065 3 off
FIT M16, M18, M22, M23, M32, M40 & M48 INTO 24-WAY DIL SOCKET 605064 7 off
FIT M29 & M34 INTO 40-WAY DIL SOCKET 605050 2 off

CUT TRACKS IN 2 POSITIONS AND LINK WITH 330mm OF WHITE PTFE WIRE 512999. FEED WIRE BETWEEN JL1 AND ITS SOCKET AND SUPPORT THE WIRE AT EACH END WITH SILICONE RUBBER. 900004.



DIGITAL ASSEMBLY

Display Multiplexing Logic

Circuit Diagram No. 430559-1.0 Sheet 1

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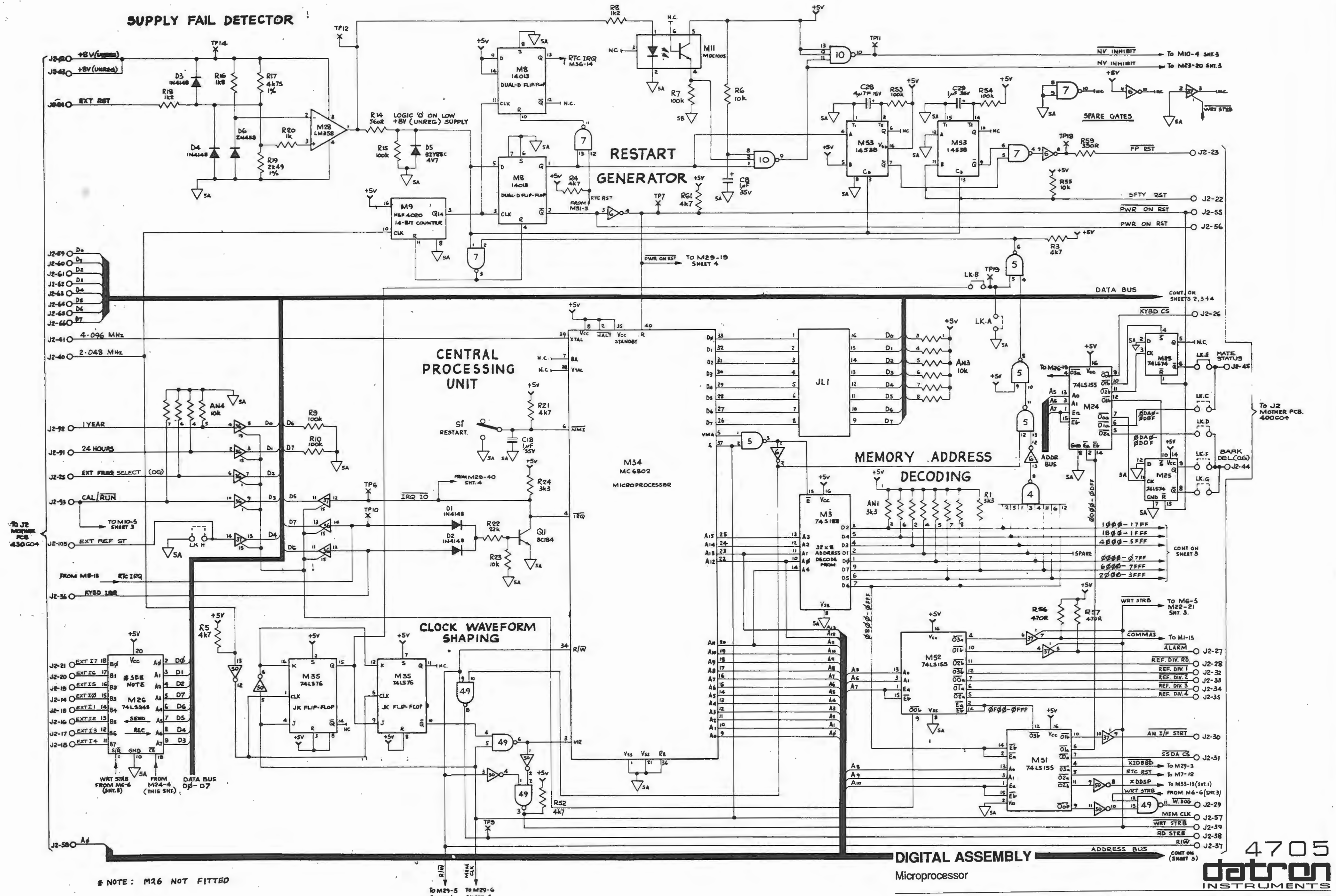

DIGITAL ASSEMBLY

Microprocessor

Circuit Diagram No. 430559-1.0 **Sheet 2**

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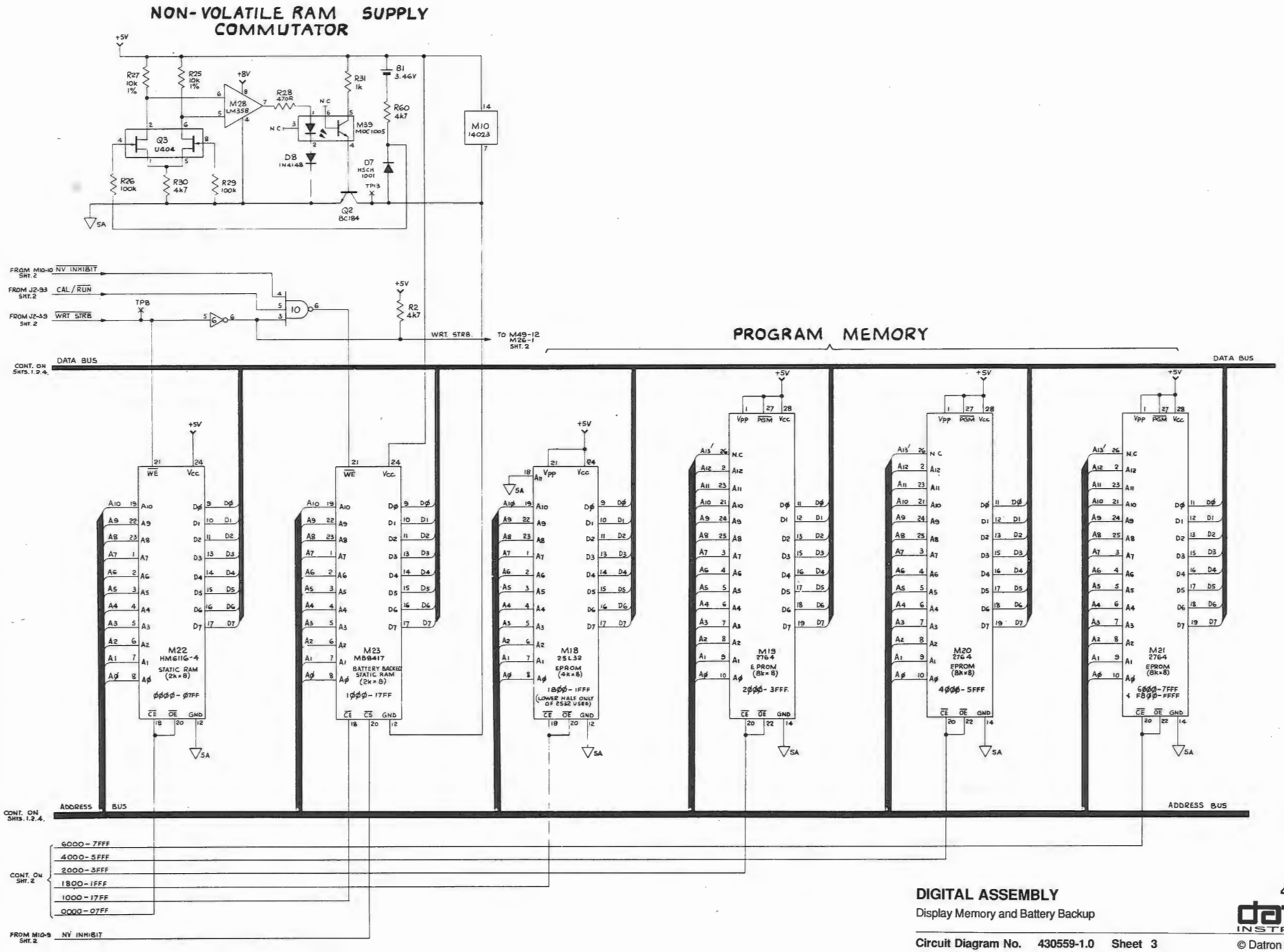

DIGITAL ASSEMBLY

Display Memory and Battery Backup

Circuit Diagram No. 430559-1.0 Sheet 3

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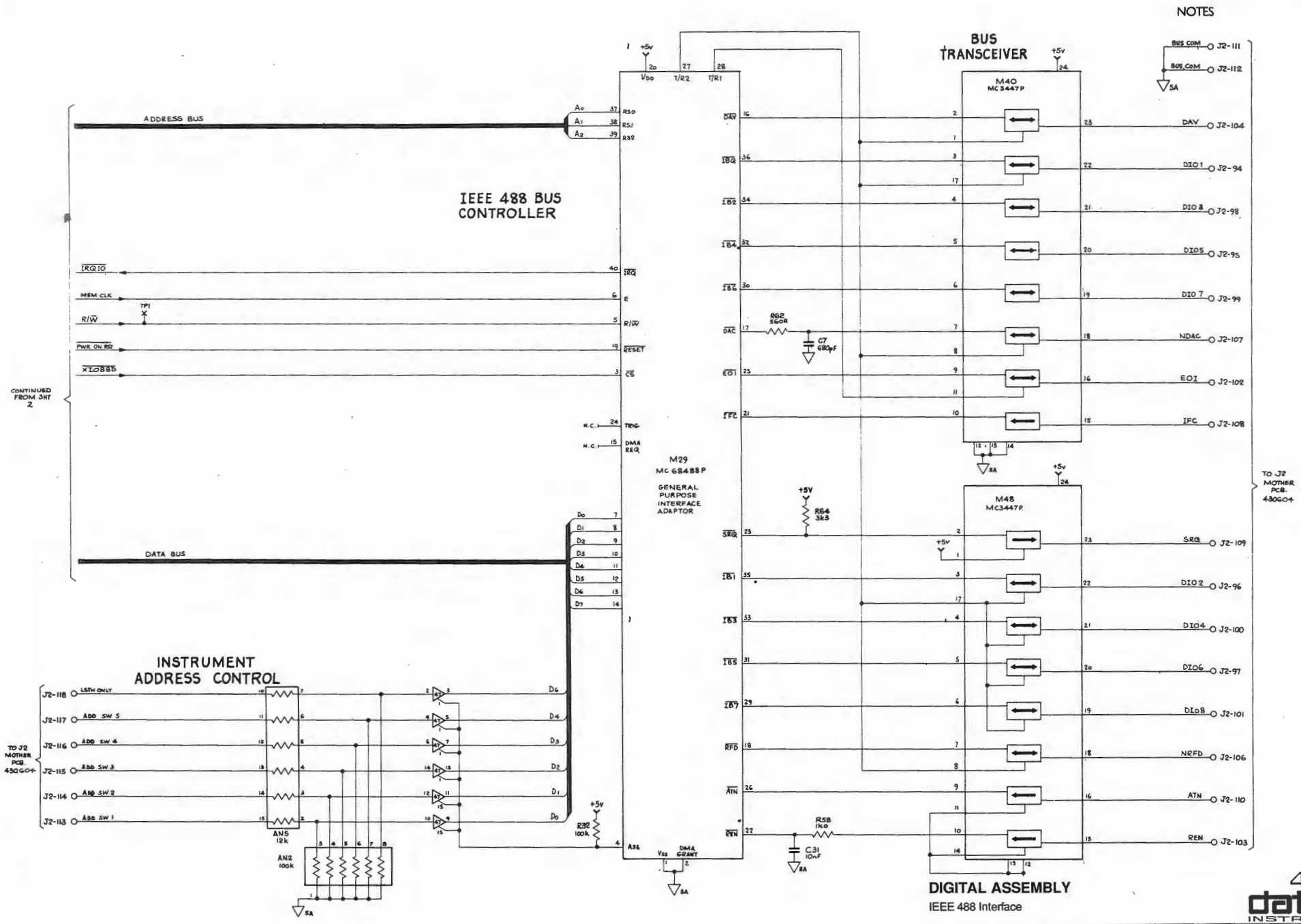

DIGITAL ASSEMBLY

IEEE 488 Interface

Circuit Diagram No. 430559-1.0 Sheet 4

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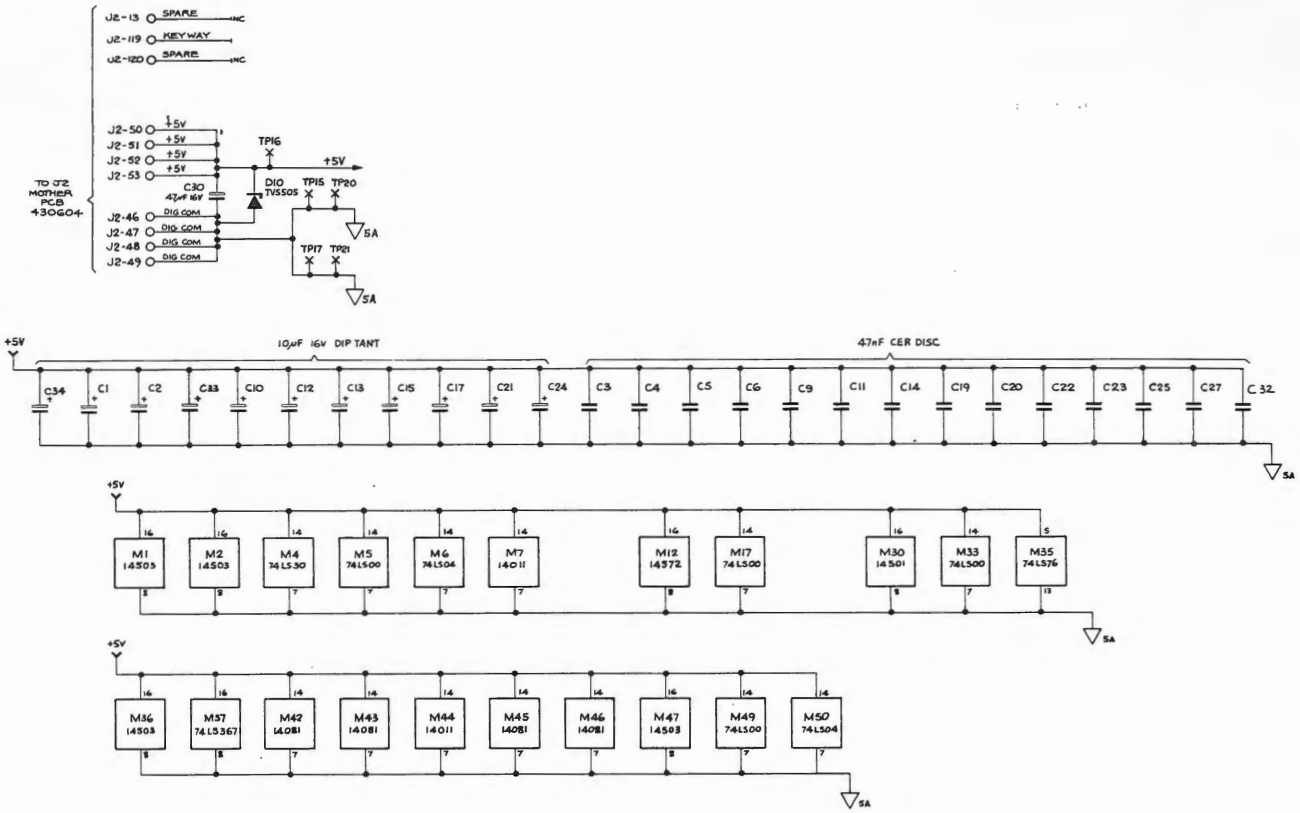

DIGITAL ASSEMBLY

I/C Power Supplies

Circuit Diagram No. 430559-1.0 Sheet 5

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ANALOG INTERFACE ASSEMBLY

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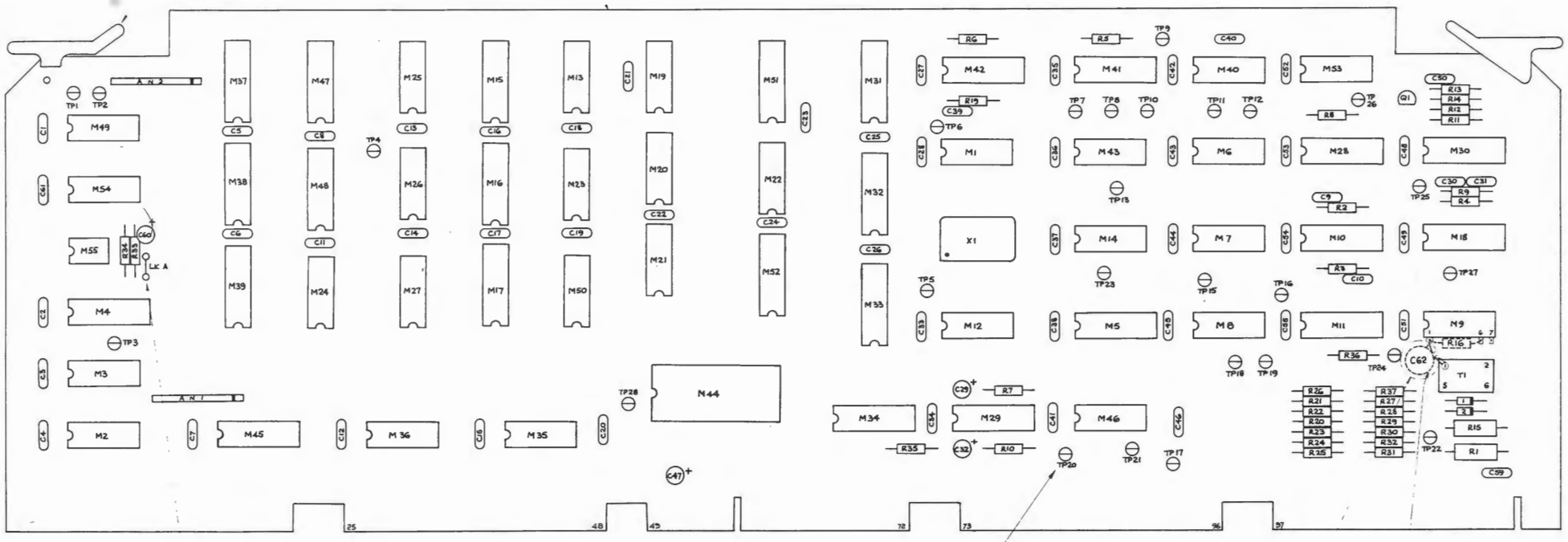
(BROWN) CIRCUIT BOARD EJECTOR
630117. 2 OFF

P.C.B. 4-10264-1



MAKE LINK FROM 22 SWG B.T.C. WIRE 540002. LINK TO FORM 6mm HIGH LOOP.

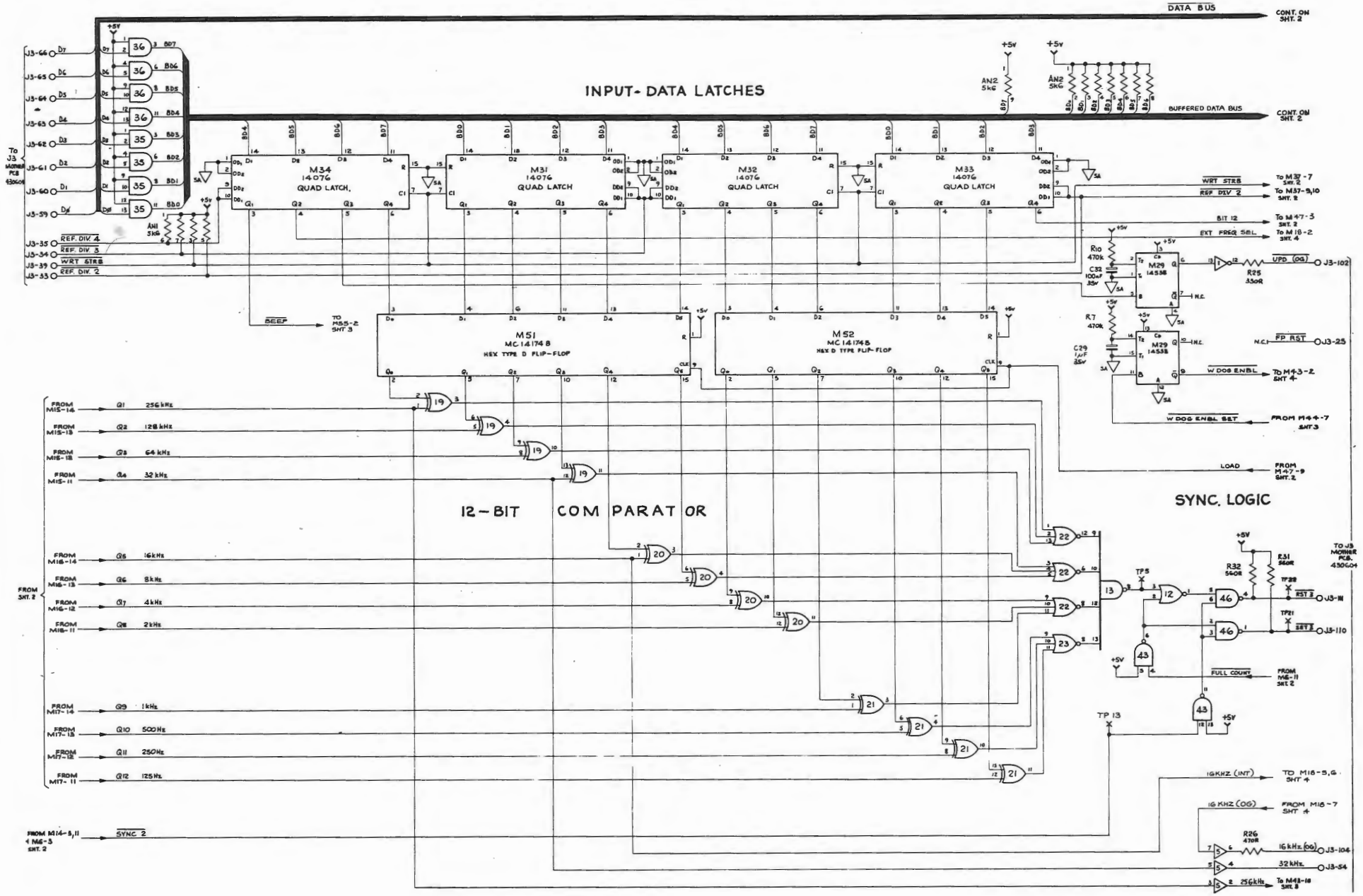
TEST POINT TERMINAL 620007 27 OFF

CUT TRACK ON COMP. SIDE OF P.C.B. BETWEEN M9-1 & T1 PIN 1.

BED C62 IN SILICONE RUBBER COMPOUND 900004.

MOUNTING I.C's.

Nº WAYS	PART Nº	USED TO MOUNT	Nº OFF
8	605059	55	1
14	605060	1-3, 6-9, 12-14, 19-27, 35, 36, 40, 43, 46, 49, 50, 53, 54	28
16	605061	4-5, 15, 16, 17, 29, 31-34, 37-39, 41, 42, 45, 47, 48, 51, 52, 10, 11, 18 28, 30,	25
24	605064	44	1



ANALOG INTERFACE ASSEMBLY

Lower Reference Divider Counter

Circuit Diagram No. 430648-1.0 Sheet 1

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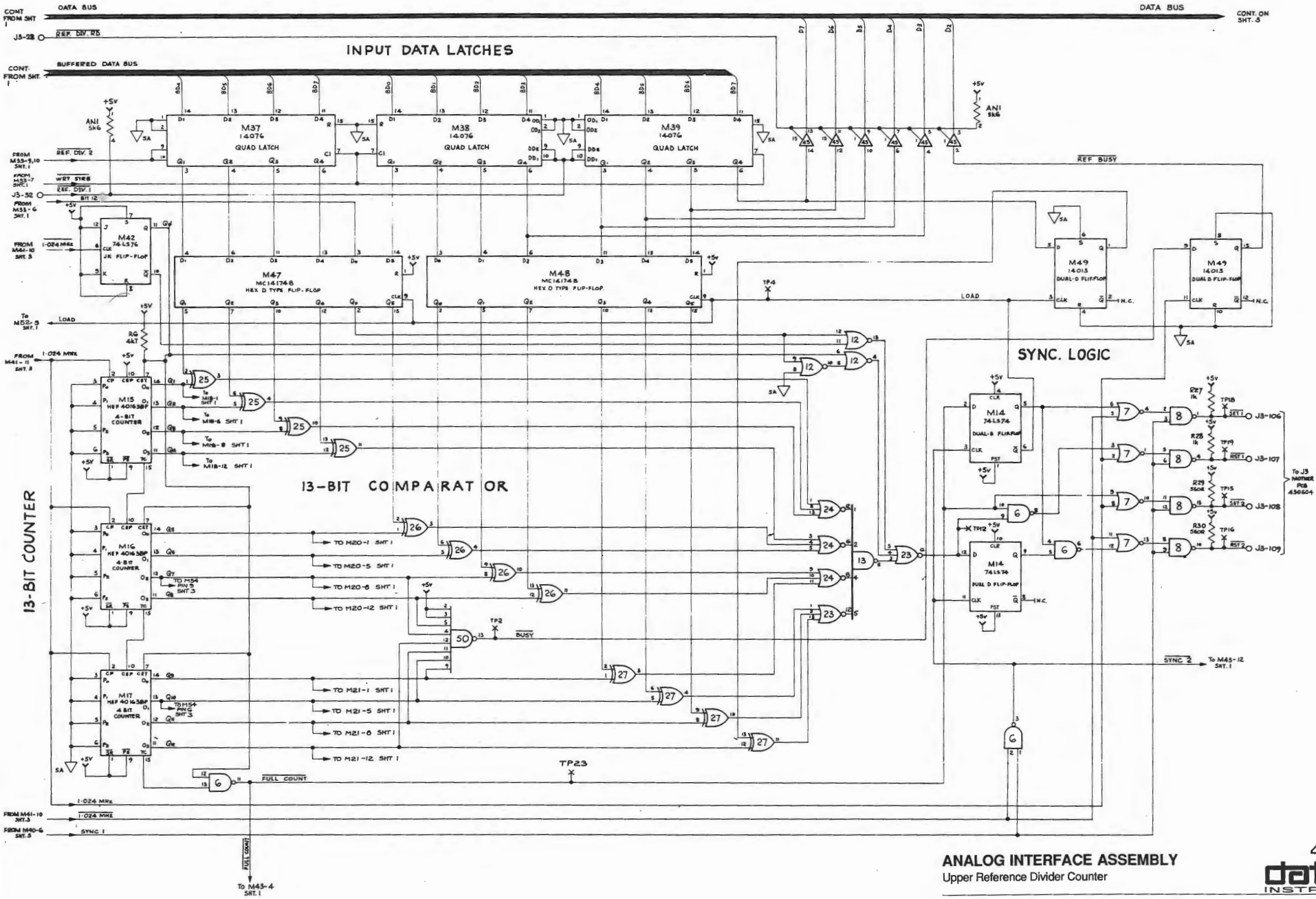

ANALOG INTERFACE ASSEMBLY
Upper Reference Divider Counter

Circuit Diagram No. 430648-1.1 Sheet 2

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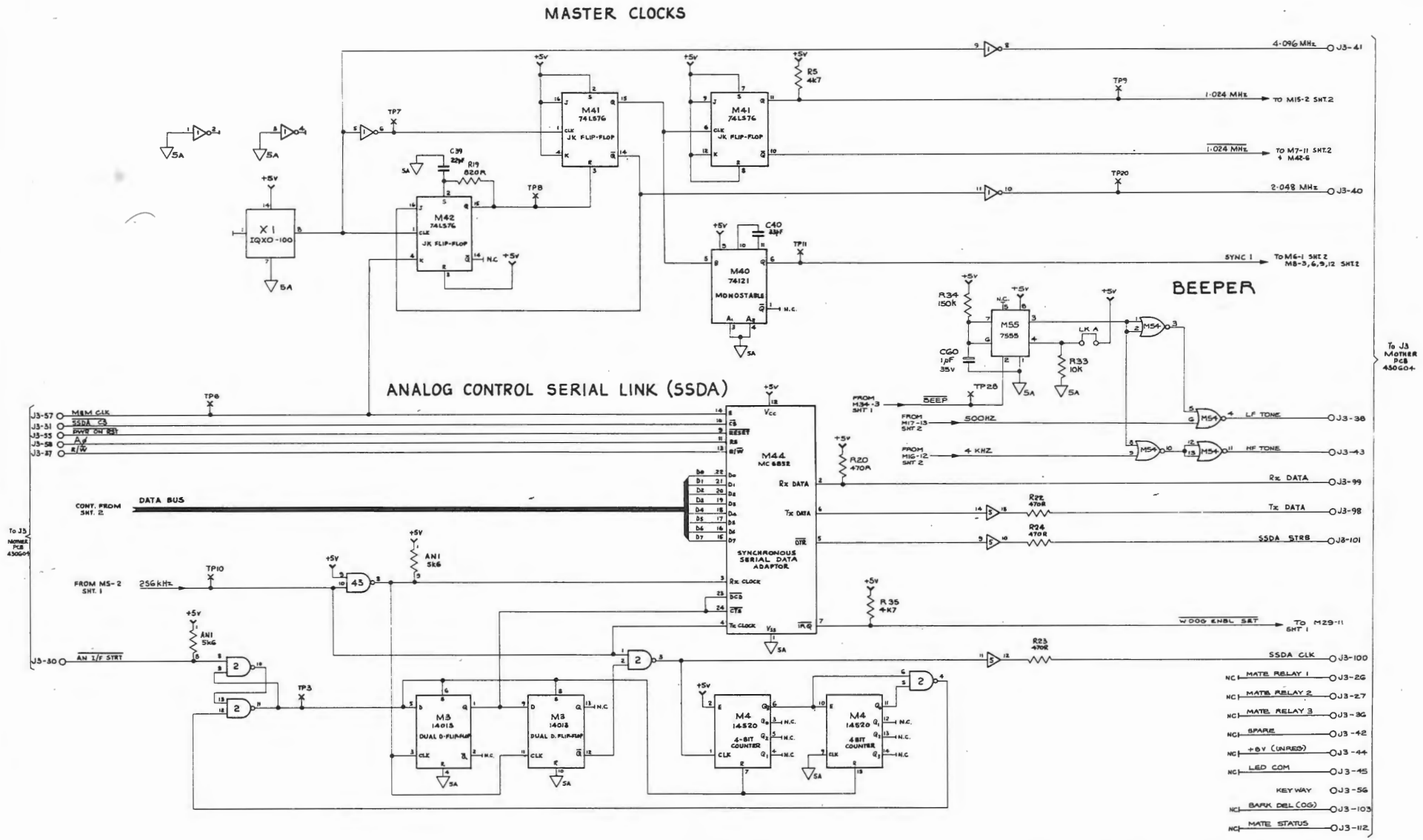

ANALOG INTERFACE ASSEMBLY
Master Clocks and Analog Serial Link

Circuit Diagram No. 430648-1.1 Sheet 3

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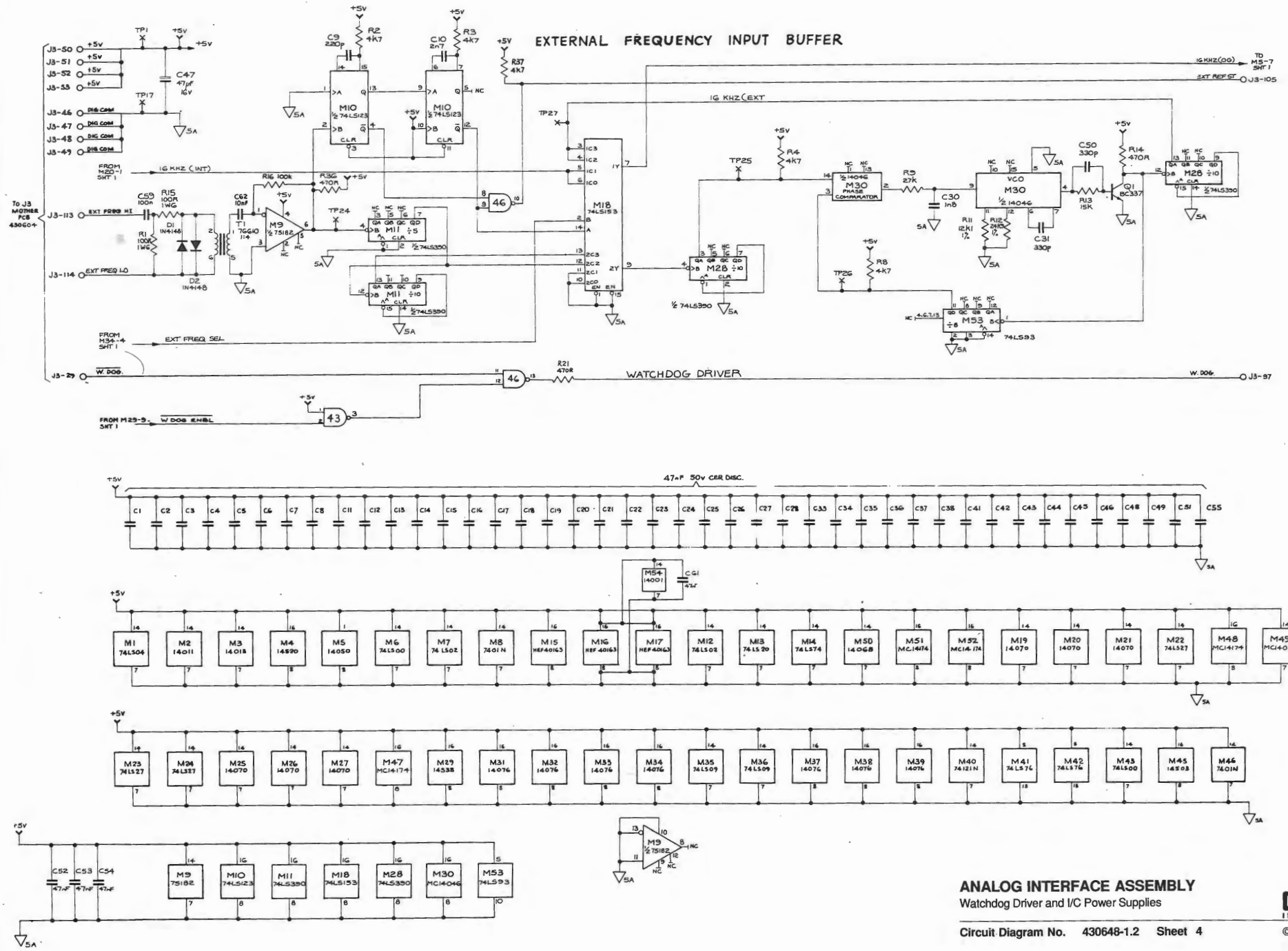
EXTERNAL FREQUENCY INPUT BUFFER
WATCHDOG DRIVER
47nF 50v CER DISC.
ANALOG INTERFACE ASSEMBLY
Watchdog Driver and I/C Power Supplies
Circuit Diagram No. 430648-1.2 Sheet 4
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Layout Drawing No. 480652-2.1 Sheet 1

REFERENCE DIVIDER ASSEMBLY

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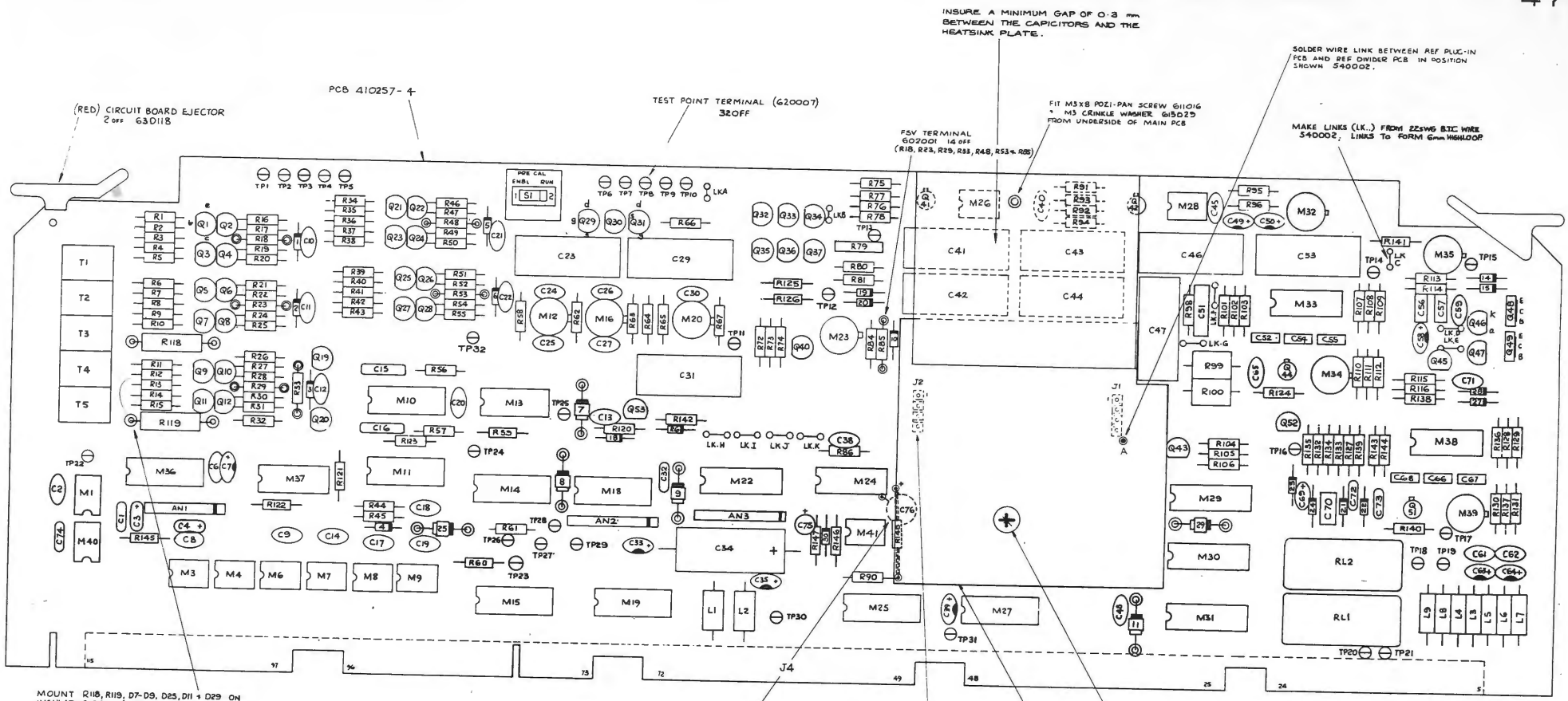


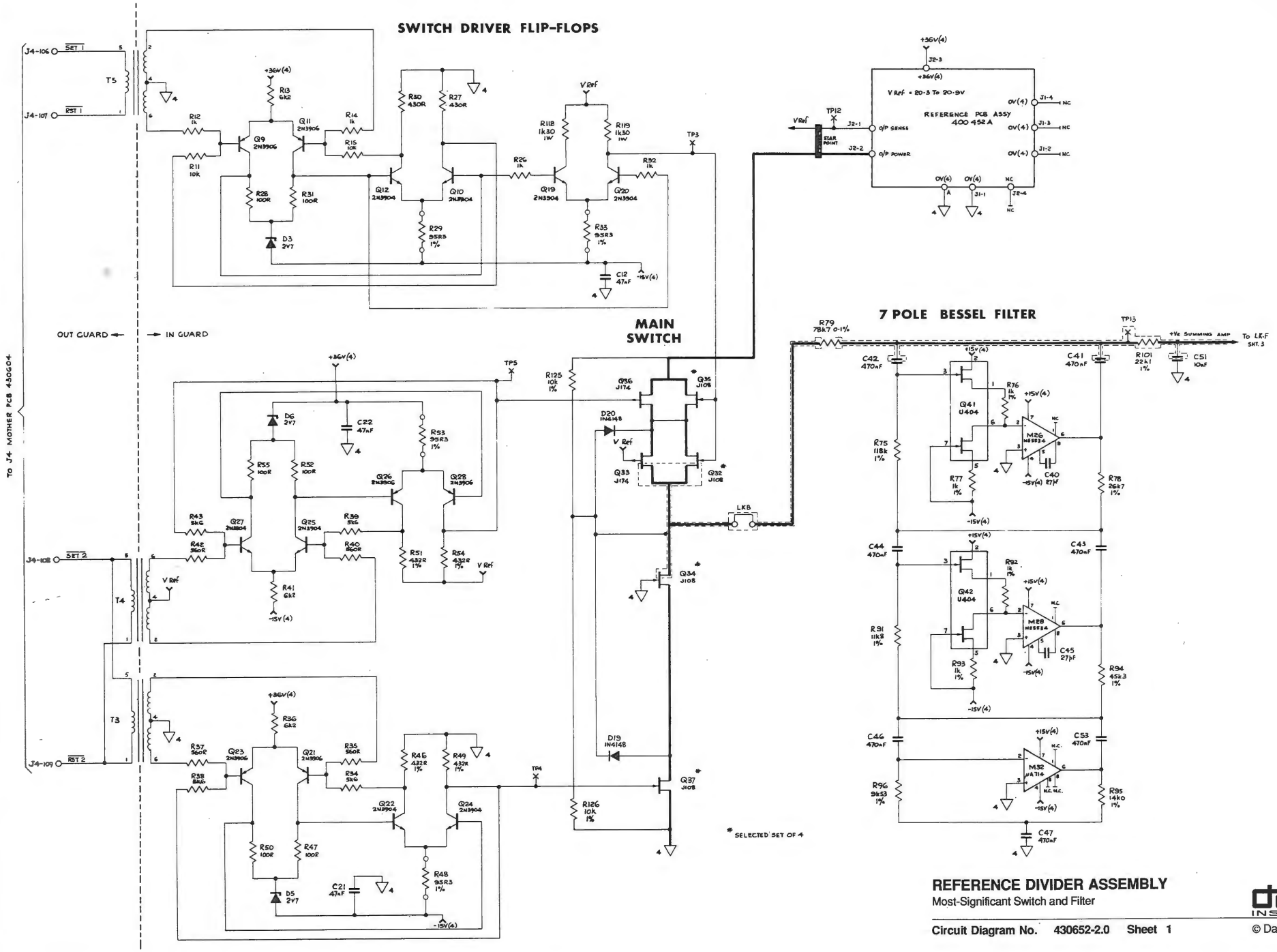
MOUNTING ICs

FIT M1, M3 M4, M6–M9, M40, M26, M28, M41 ON 8 WAY DIL SOCKET 605059 11 off

FIT M13, M24, M33, M37, M38 ON 14 WAY DIL SOCKET 605060 5 off

FIT M10, M11, M14, M15, , M18, M19, M22, M25, M27 M29, M30, M31, M36 ON 16 WAY DIL SOCKET 605061 13 off

N.B. CLASS BEAD 630243 FITTED TO EACH LEG OF THE FOLLOWING COMPONENTS :- C1, C2, C6, C8-C12, C14, C17-C22, C25, C27, C32, C48, C59, C61, C62, C74



REFERENCE DIVIDER ASSEMBLY

Most-Significant Switch and Filter

Circuit Diagram No. 430652-2.0 Sheet 1

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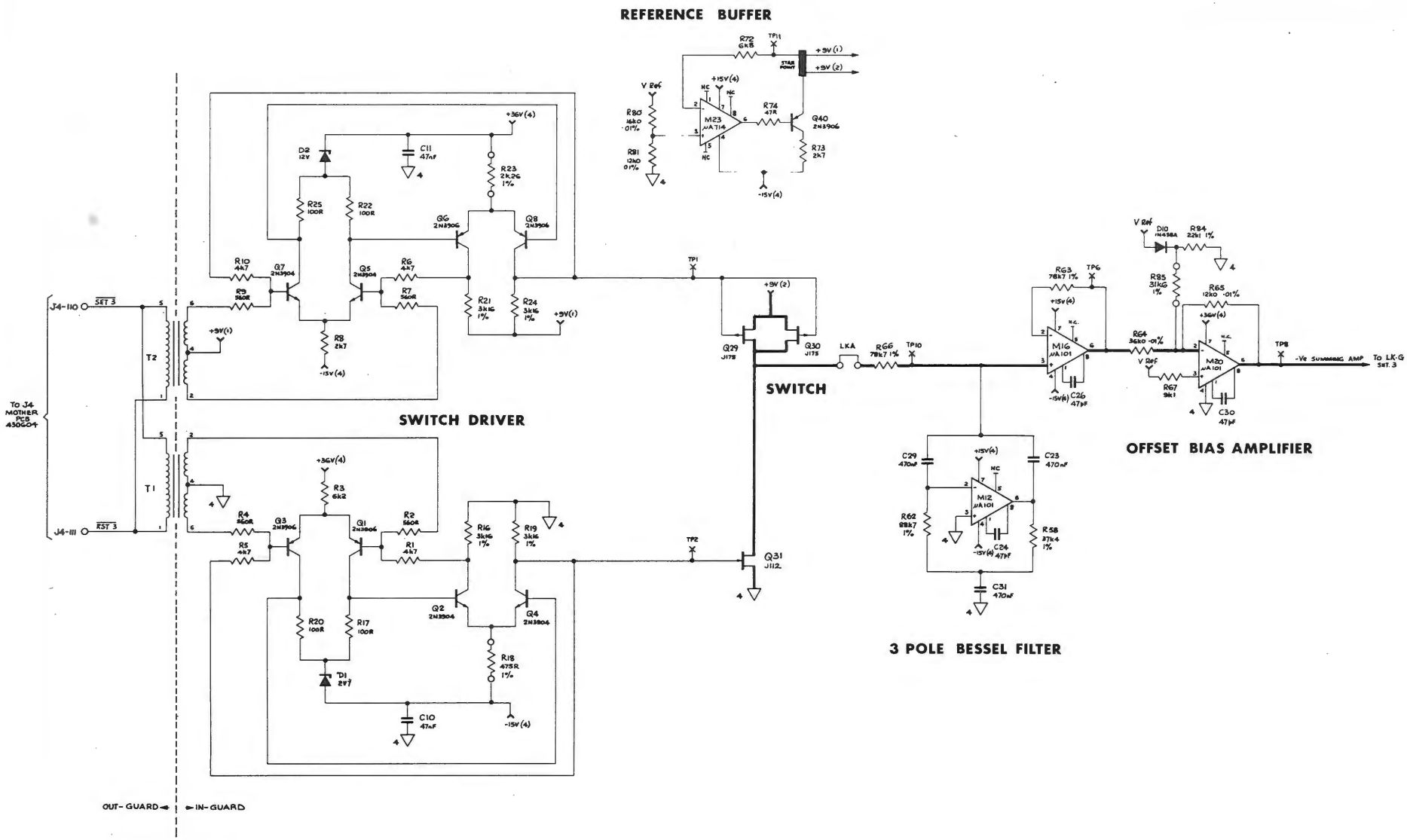

REFERENCE DIVIDER ASSEMBLY
Least-Significant Switch and Filter

Circuit Diagram No. 430652-2.0 Sheet 2

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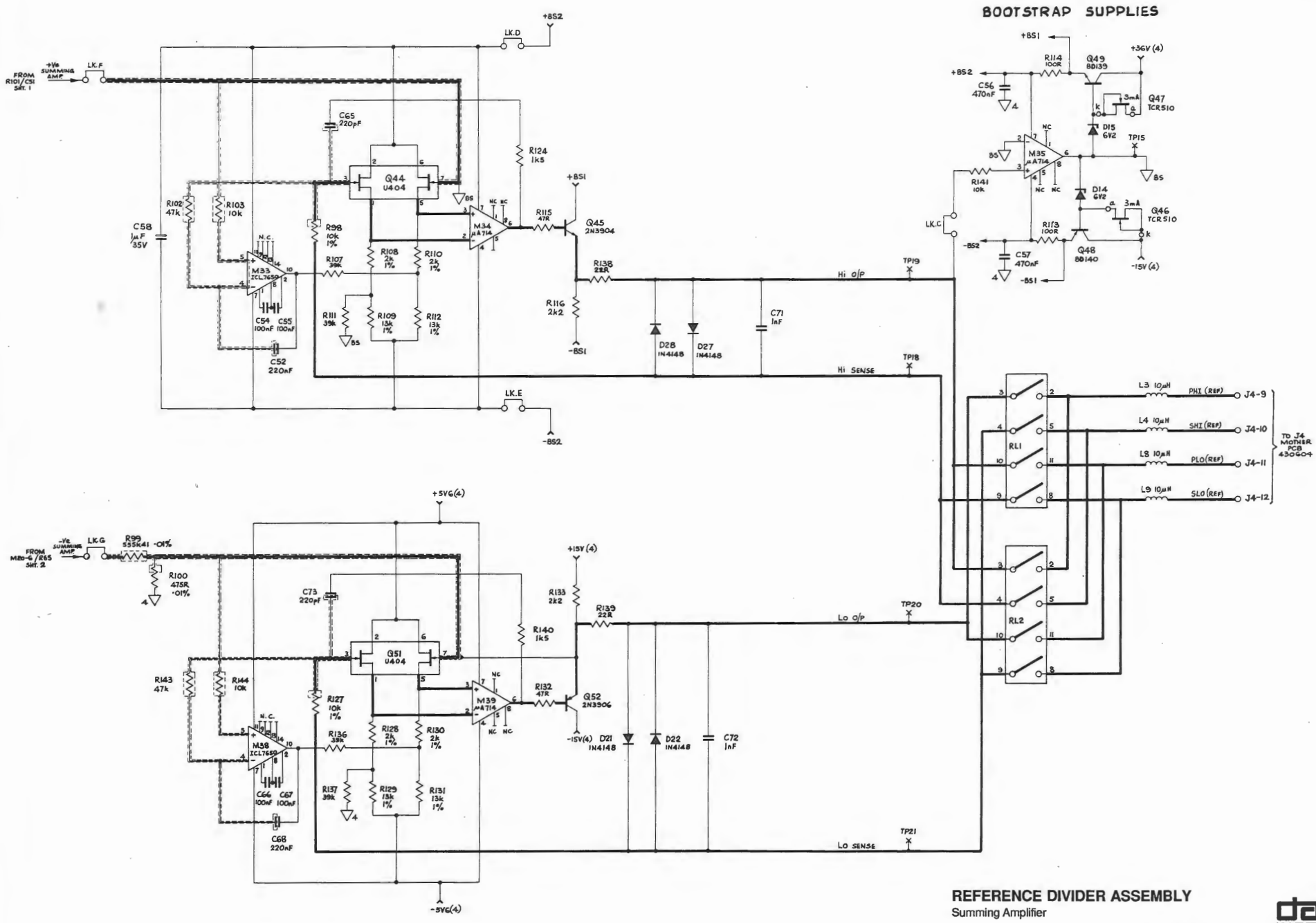

REFERENCE DIVIDER ASSEMBLY

Summing Amplifier

Circuit Diagram No. 430652-2.0 Sheet 3

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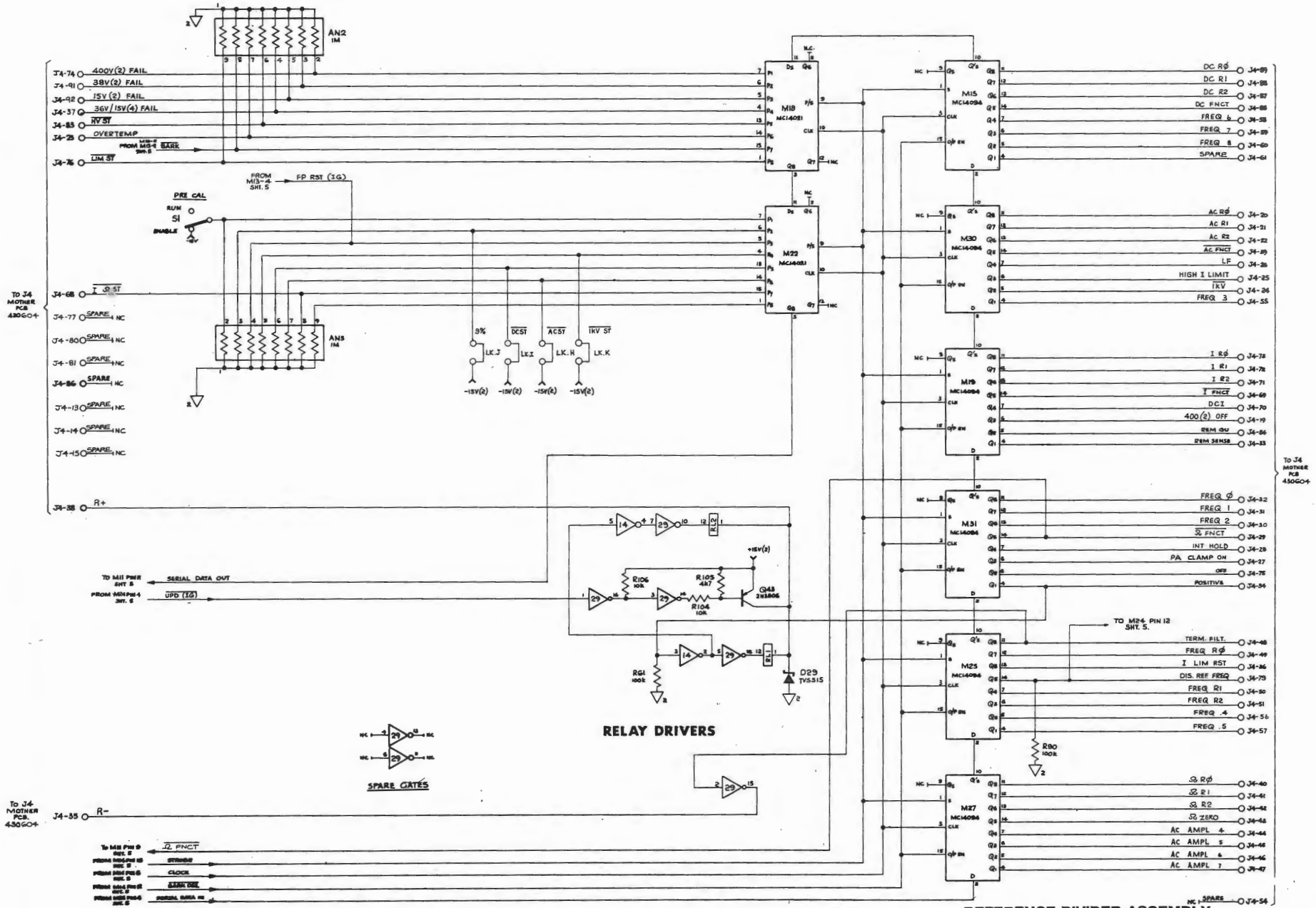

REFERENCE DIVIDER ASSEMBLY

Serial / Parallel Data Converter

Circuit Diagram No. 430652-2.0 Sheet 4

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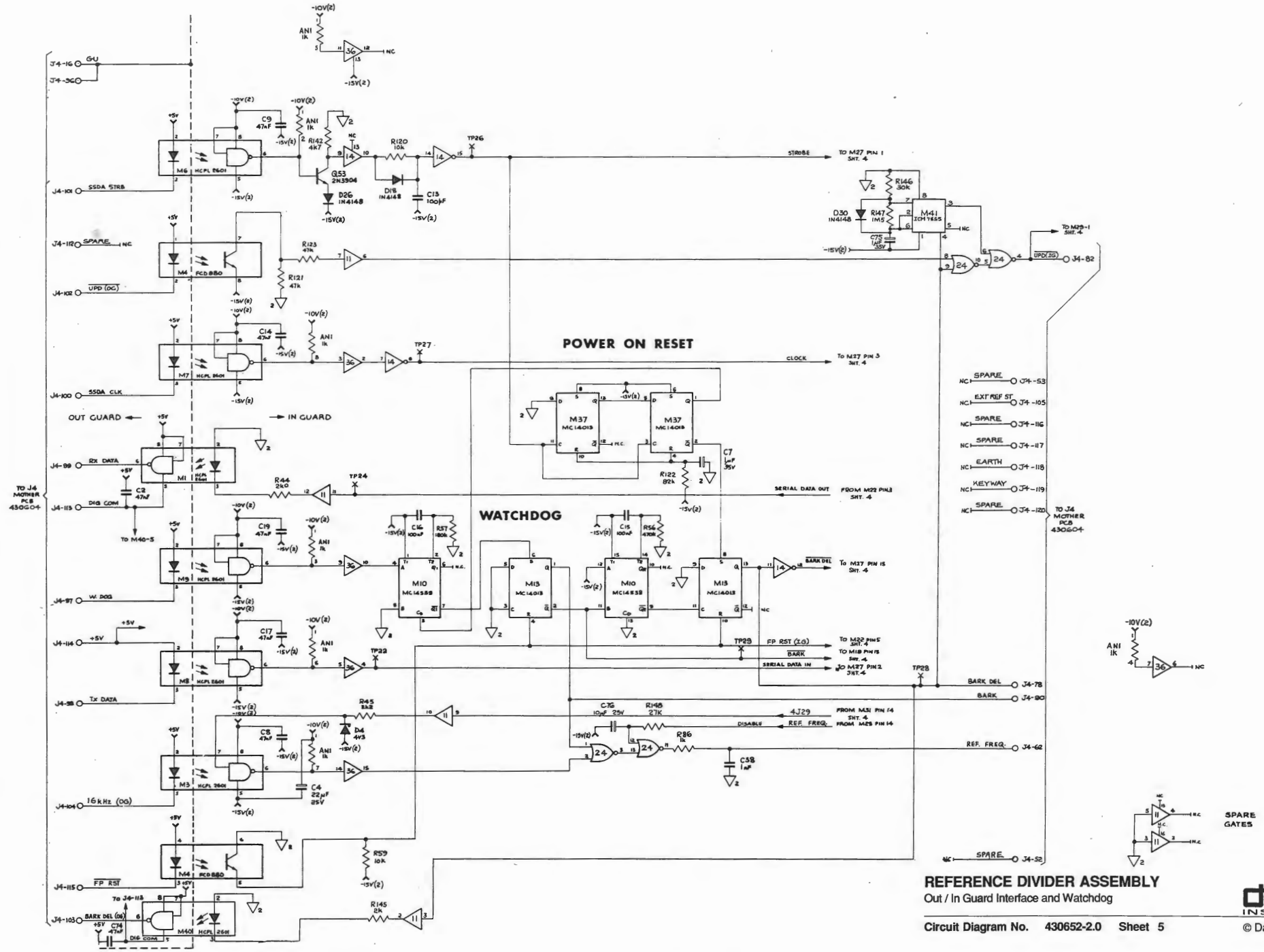

REFERENCE DIVIDER ASSEMBLY

Out / In Guard Interface and Watchdog

Circuit Diagram No. 430652-2.0 Sheet 5

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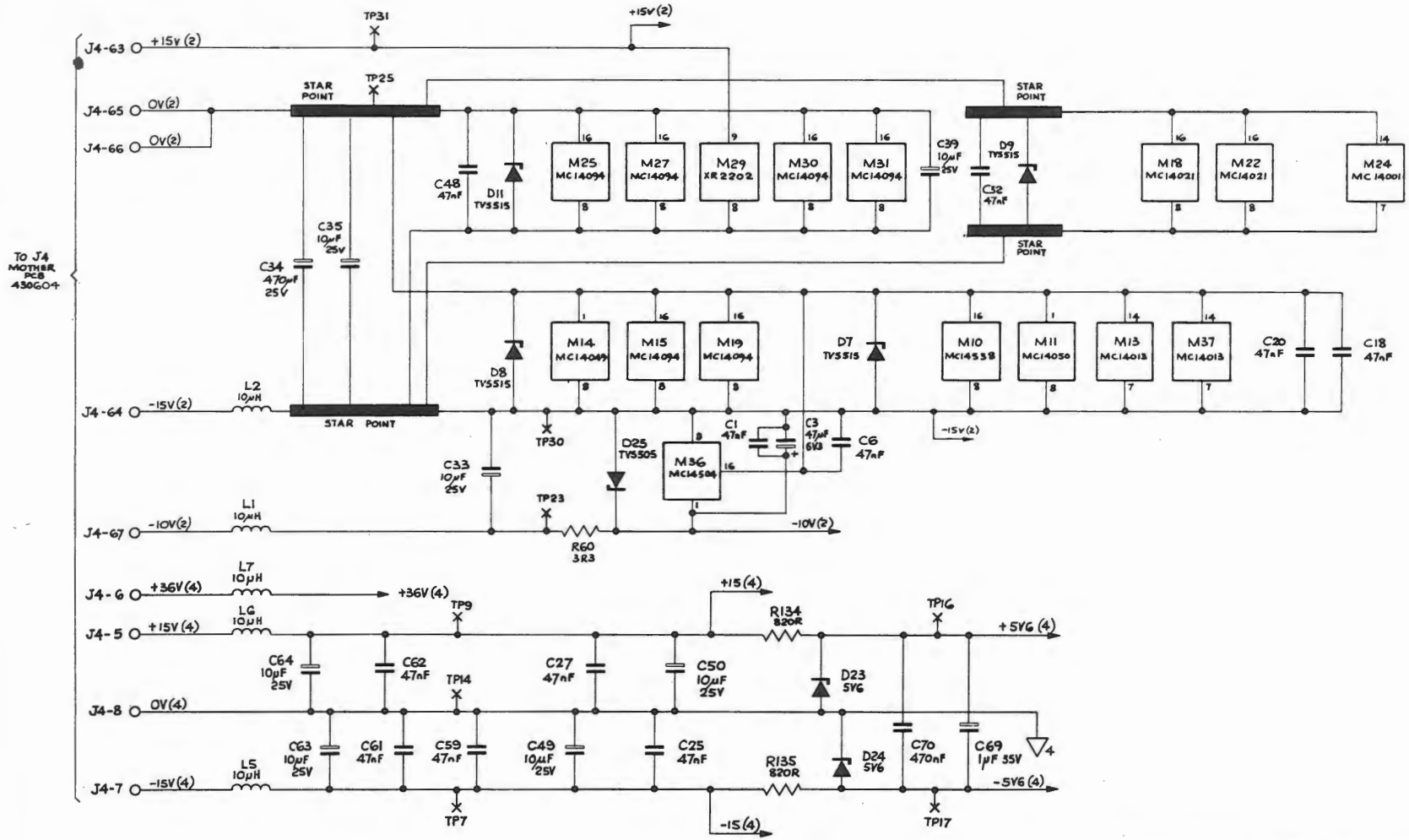

REFERENCE DIVIDER ASSEMBLY

Power Supplies

Circuit Diagram No. 430652-2.0 Sheet 6

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REFERENCE ASSEMBLY

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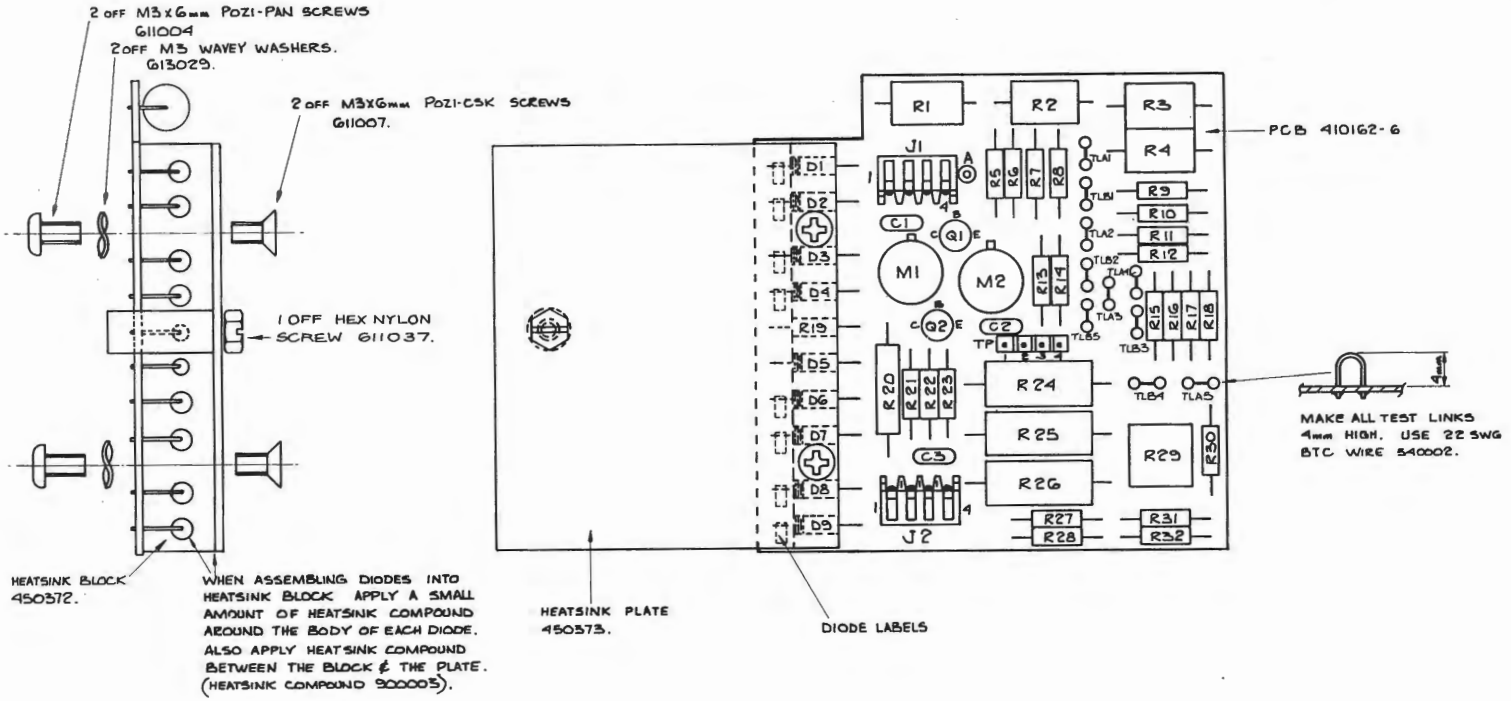
ZENER DIODE KIT 219015 FITTING INSTRUCTIONS.

CARE MUST BE TAKEN THAT EACH DIODE IS FITTED TO ITS CORRECT POSITION ON THE BLOCK. DO NOT REMOVE DIODE SERIAL Nº LABELS. FIT DIODES TO THE CORRECT POSITION AS INDICATED ON THE RECORD SHEET IF ANY COMPONENT IS LOST OR DAMAGED REFER TO QA.

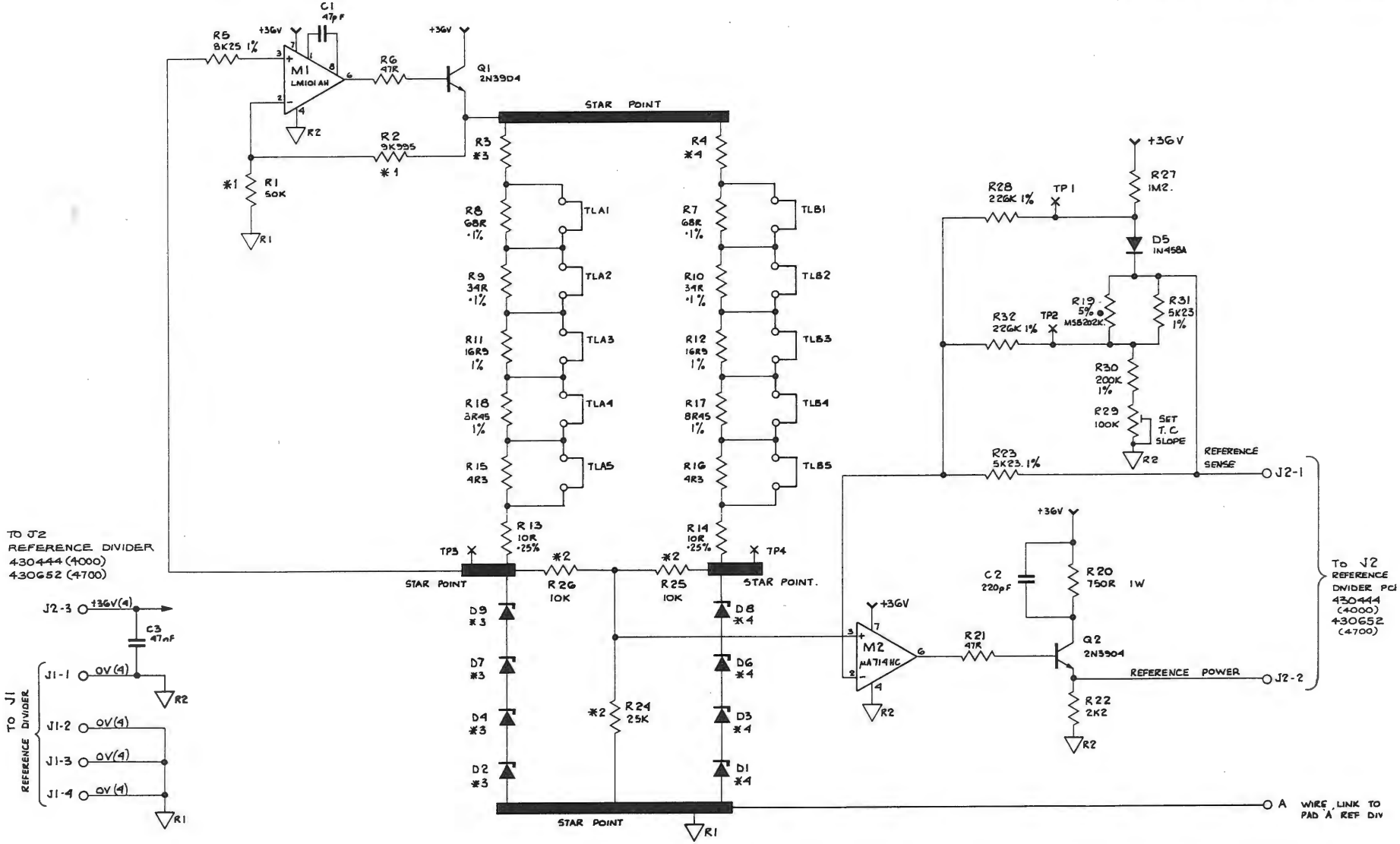
1. FIT CONTENTS OF BAG 'A' TO D2, D4, D7, D9 & R3.
2. FIT CONTENTS OF BAG 'B' TO D1, D3, D6, D8 & R4.
3. FILL IN REFERENCE RECORD SHEET :-
   - (I). ASSEMBLY SERIAL No.
   - (II). ASSEMBLY ISSUE NO.
   - (III). ASSEMBLY DATE.
4. CUT TEST LINKS INDICATED ON THE RECORD SHEET.
5. THE RECORD SHEET MUST ACCOMPANY THE FINISHED ASSEMBLY.



NOTES

1/ R3 & R4 ARE SELECTED WITH THEIR DIODE SETS. PART OF KIT 219015. VALUES ARE :- 475, 611, 747 & 883 Ω SEE DRAWING Nº 219015.

2/ * INDICATES A MATCHED SET OF COMPONENTS.



REFERENCE ASSEMBLY

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Circuit Diagram No. 430452-7.0 Sheet 1

DC ASSEMBLY

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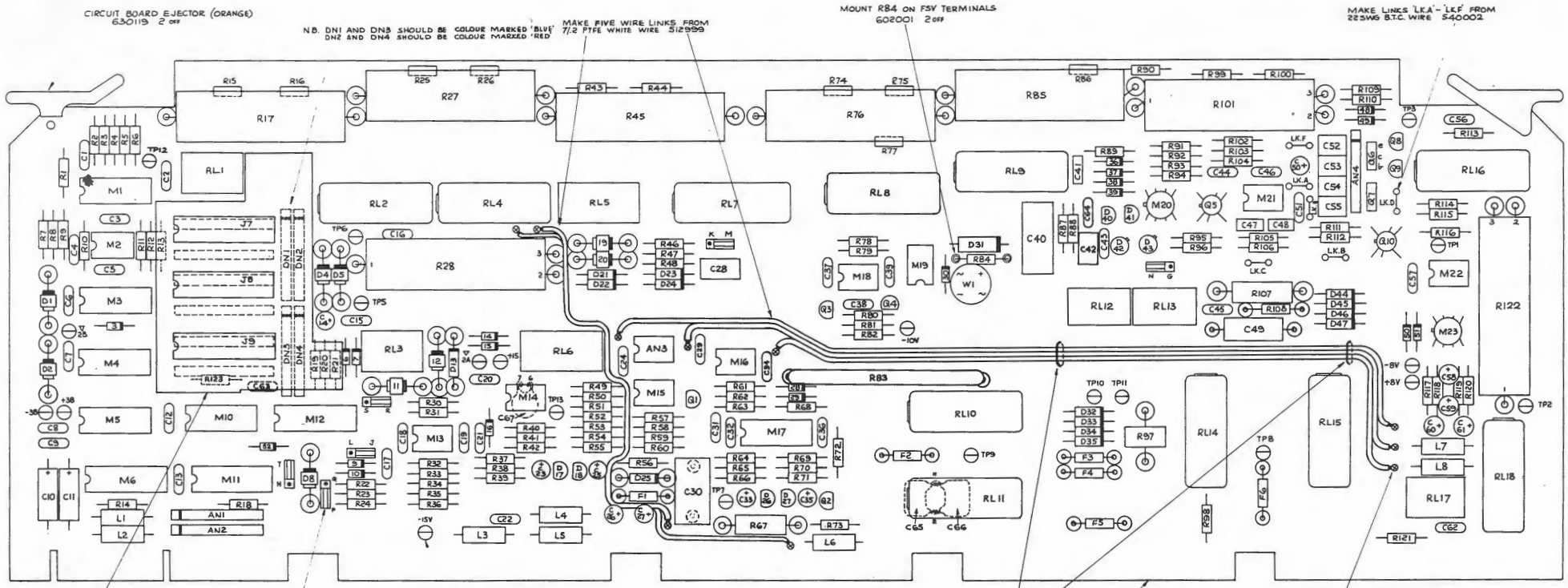
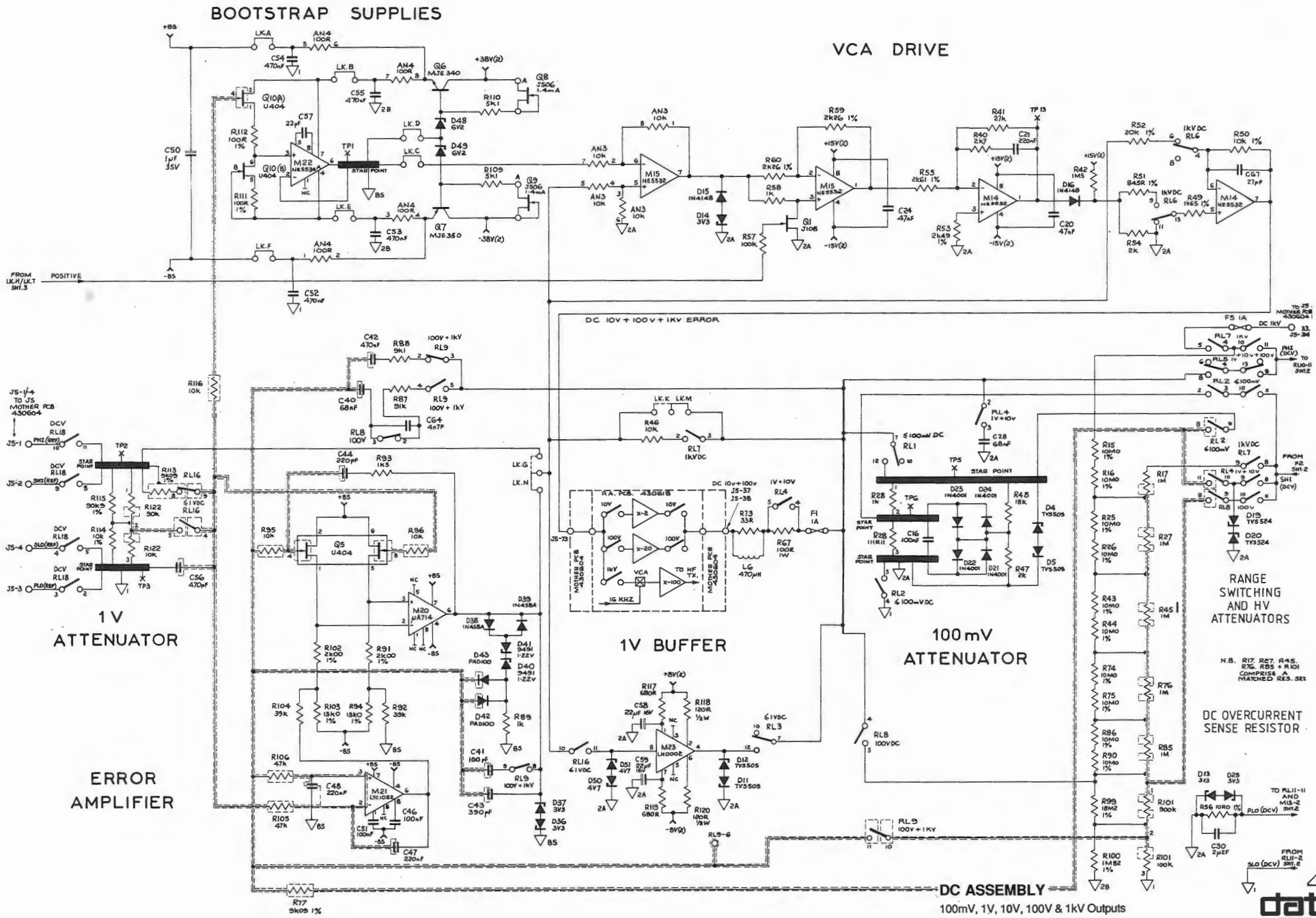
MOUNTING I.C.s.			
Nº WAYS	PART Nº	Nº OFF	USED TO MOUNT
8	605059	9	M2. 13. 14. 15. 16. 18. 19. 21. 22
14	605060	6	M1. 3. 4. 5. 10. 17
16	605061	3	M6. 11. 12
20	605070	3	M7. 8. 9

MOUNT THE FOLLOWING COMPONENTS ON LARGE CERAMIC BEADS 650024, 2 PER LEAD:- R17. R27. R28. R45. R76. R85. R101. R107. & R122

THE FOLLOWING COMPONENTS TO BE MOUNTED ALSO ON LARGE BEADS, 1 PER LEAD :- D1. D2. D4. D5. D8. D11. D12. D13. D19. D20. D25. R67 R97.

THE FOLLOWING COMPONENTS TO BE MOUNTED ON SMALL CERAMIC BEADS 650036:- F1-F6, C30 1 PER LEAD. R83, R108, C49, 2 PER LEAD.




BOOTSTRAP SUPPLIES
VCA DRIVE
1V ATTENUATOR
ERROR AMPLIFIER
1V BUFFER
100mV ATTENUATOR
RANGE SWITCHING AND HV ATTENUATORS
DC OVERCURRENT SENSE RESISTOR
DC ASSEMBLY
100mV, 1V, 10V, 100V & 1kV Outputs
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Circuit Diagram No. 430536-3.0 Sheet 1
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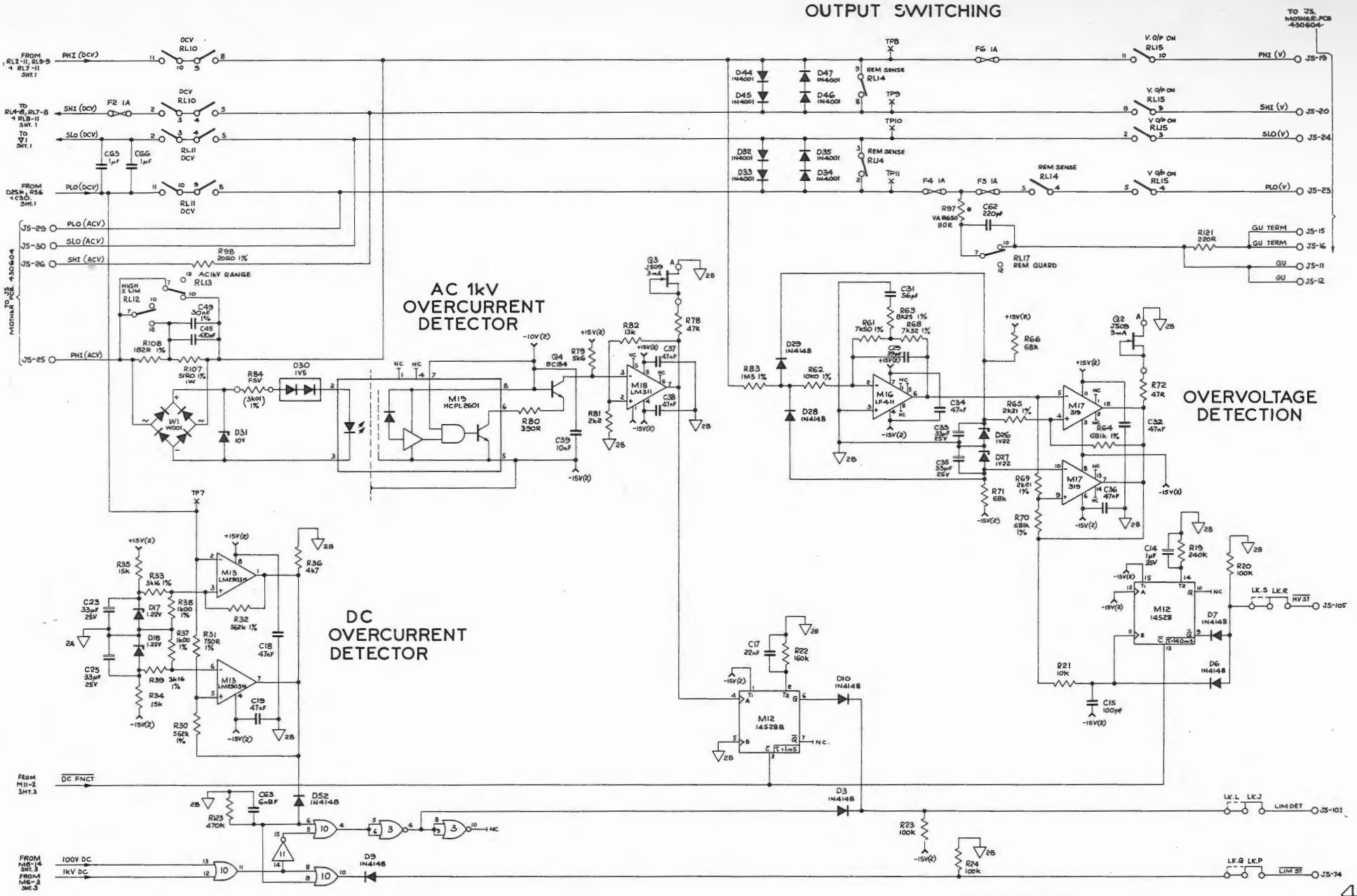
115-1



DC ASSEMBLY

Output Switching and Overload Sense

Circuit Diagram No. 430536-3.0 Sheet 2

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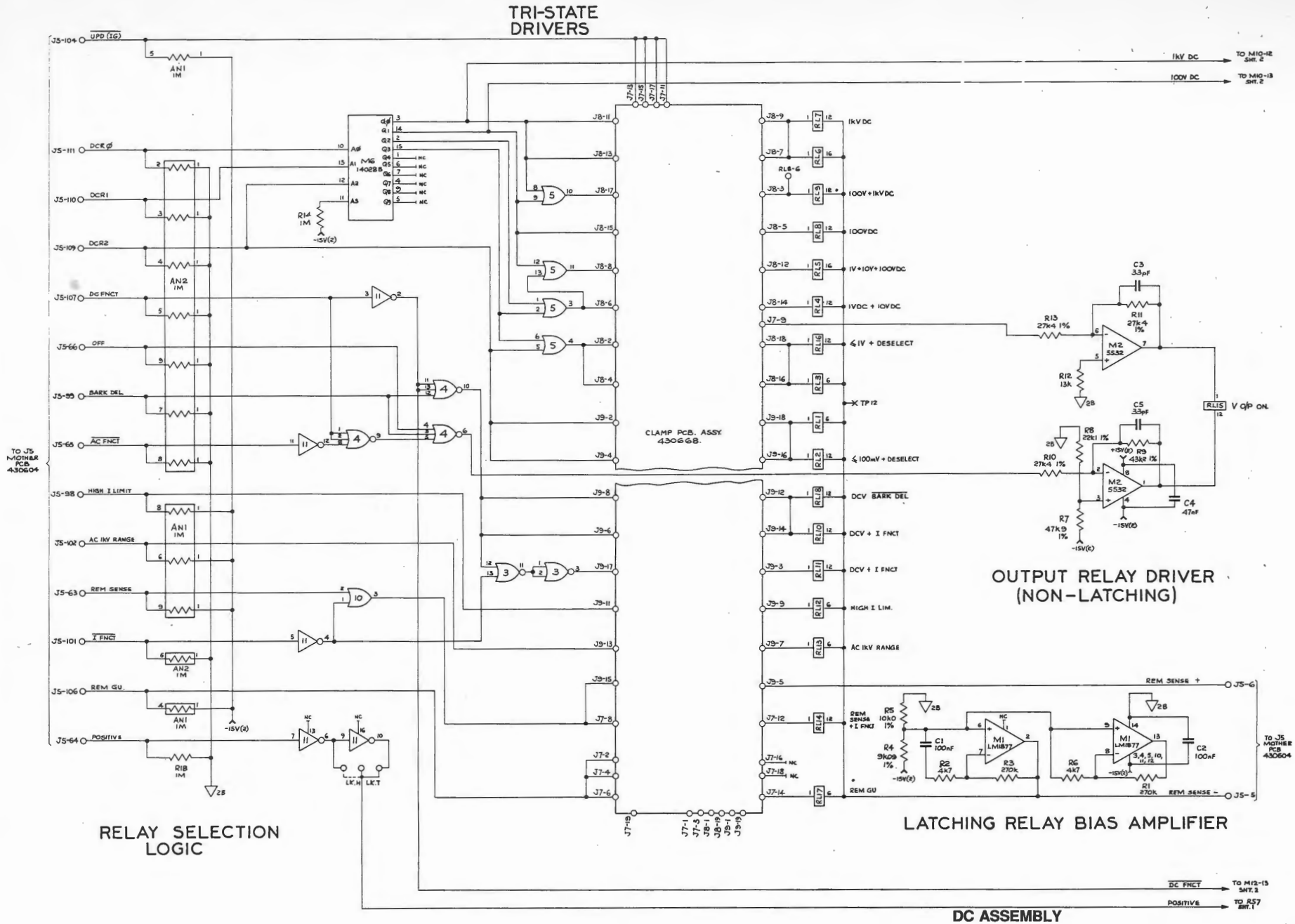

DC ASSEMBLY

Relay Drive Logic

Circuit Diagram No. 430536-3.0 Sheet 3

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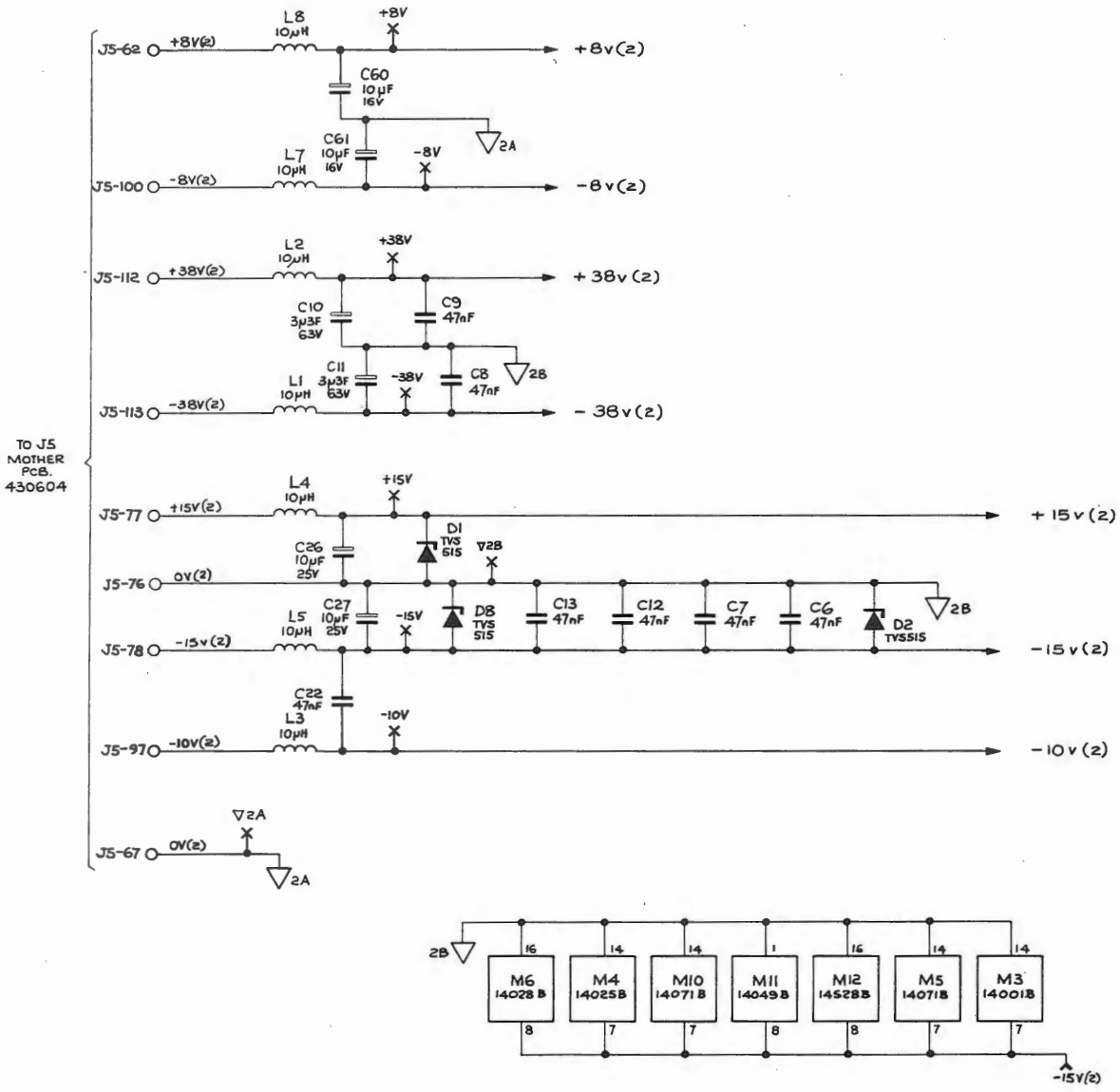
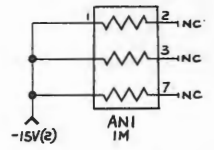
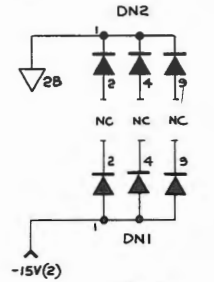
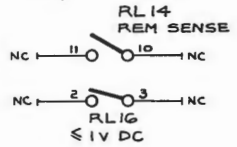
THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

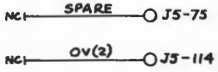








SPARES



DC ASSEMBLY

Power Supplies

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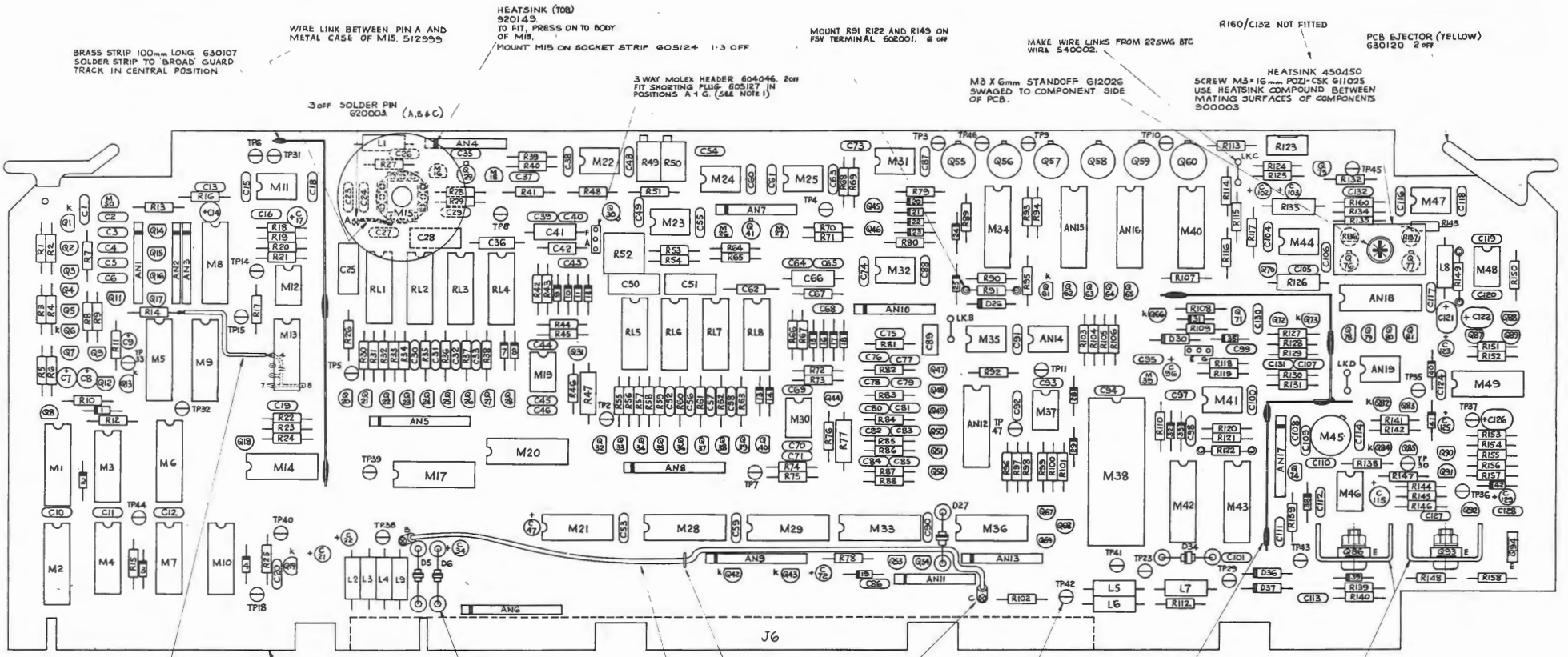
Circuit Diagram No. 430536-3.0 Sheet 4

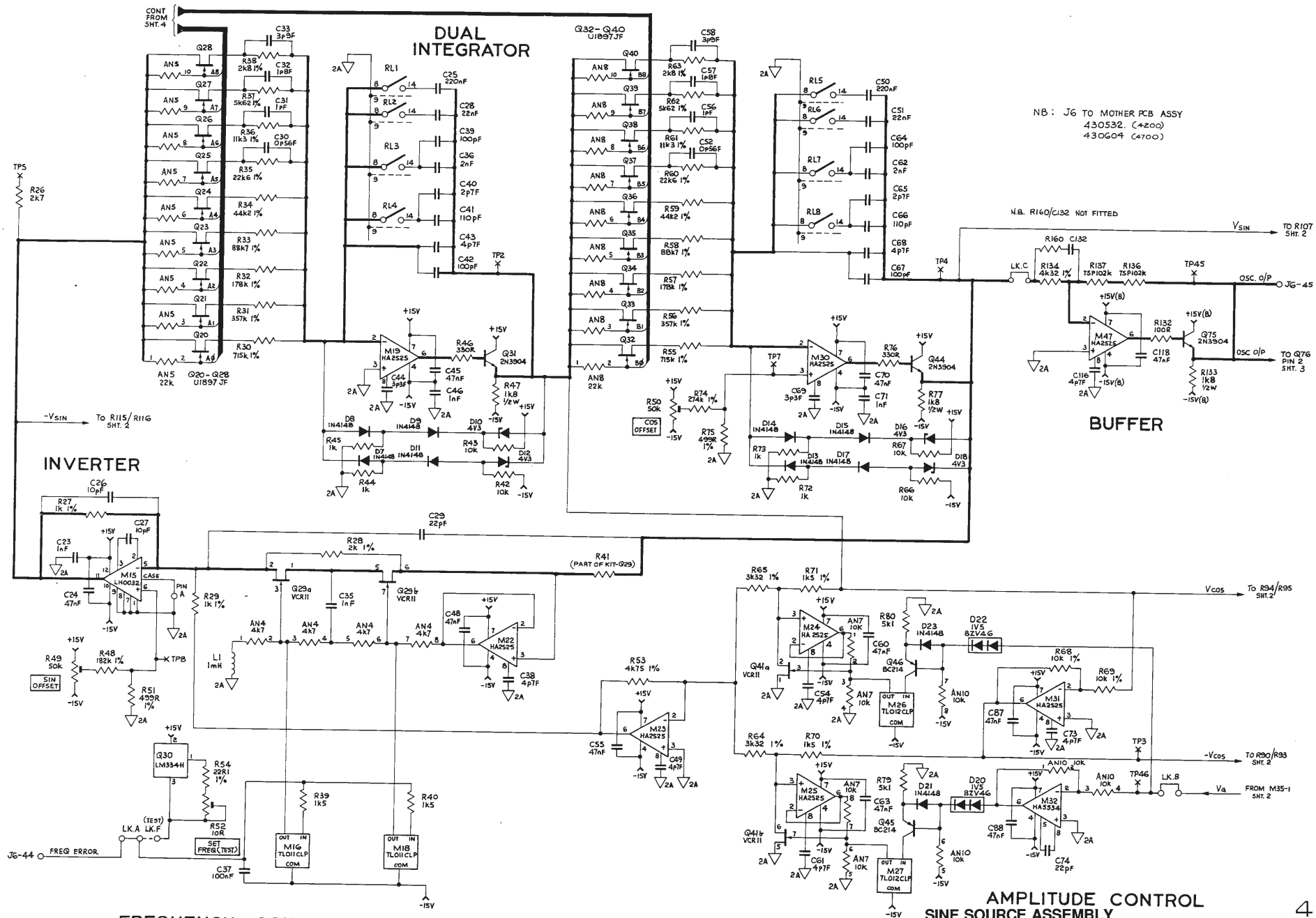
SINE SOURCE ASSEMBLY

datron INSTRUMENTS 4705

NOTE 1. FIT LINK 'E' AND LINK 'F' IN PLACE OF LINK 'A' AND LINK 'G' FOR TEST.



MOUNTING IC's			
Nº OF WAYS	PART Nº	Nº OFF	WHERE USED
8	605059	17	MII, MI9, M22-25, M30, M31, M32 M35, M37, M41, M44, M46, M47, M48, M12
14	605060	9	M3, M4, M7, M10, MI3, MI4, M21, M36, M49.
16	605061	15	MI, M2, M5, M6, MI8, MI9, MI7, M20, M28, M29, M33, M34, M40, M42, M43.
28	605065	1	M38



SINE SOURCE ASSEMBLY

Sine Oscillator

Circuit Diagram No. 430446-9.0 Sheet 1

4705

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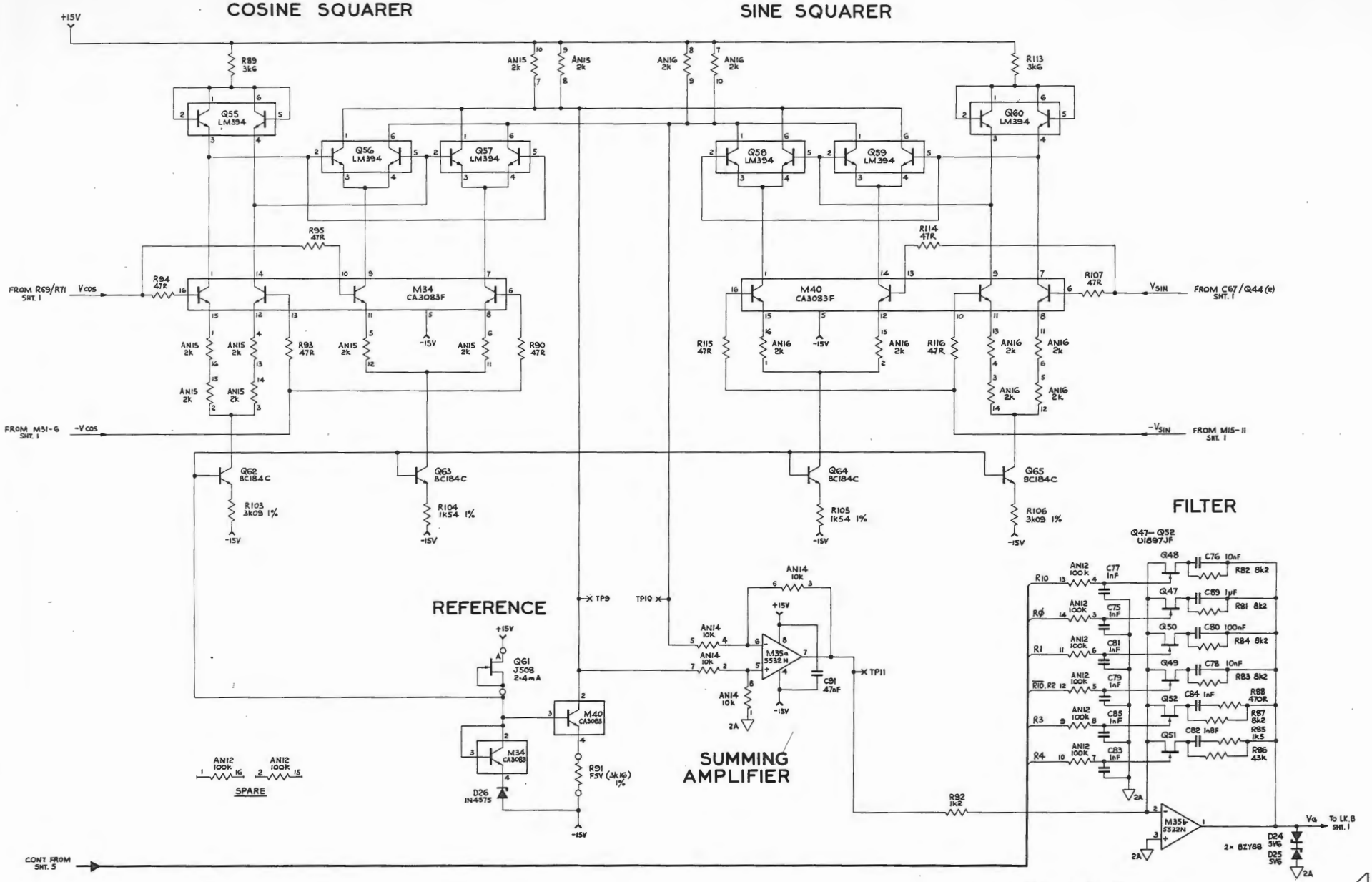

SINE SOURCE ASSEMBLY

Oscillator Amplitude Detector and Reference

Circuit Diagram No. 430446-9.0 Sheet 2

4705

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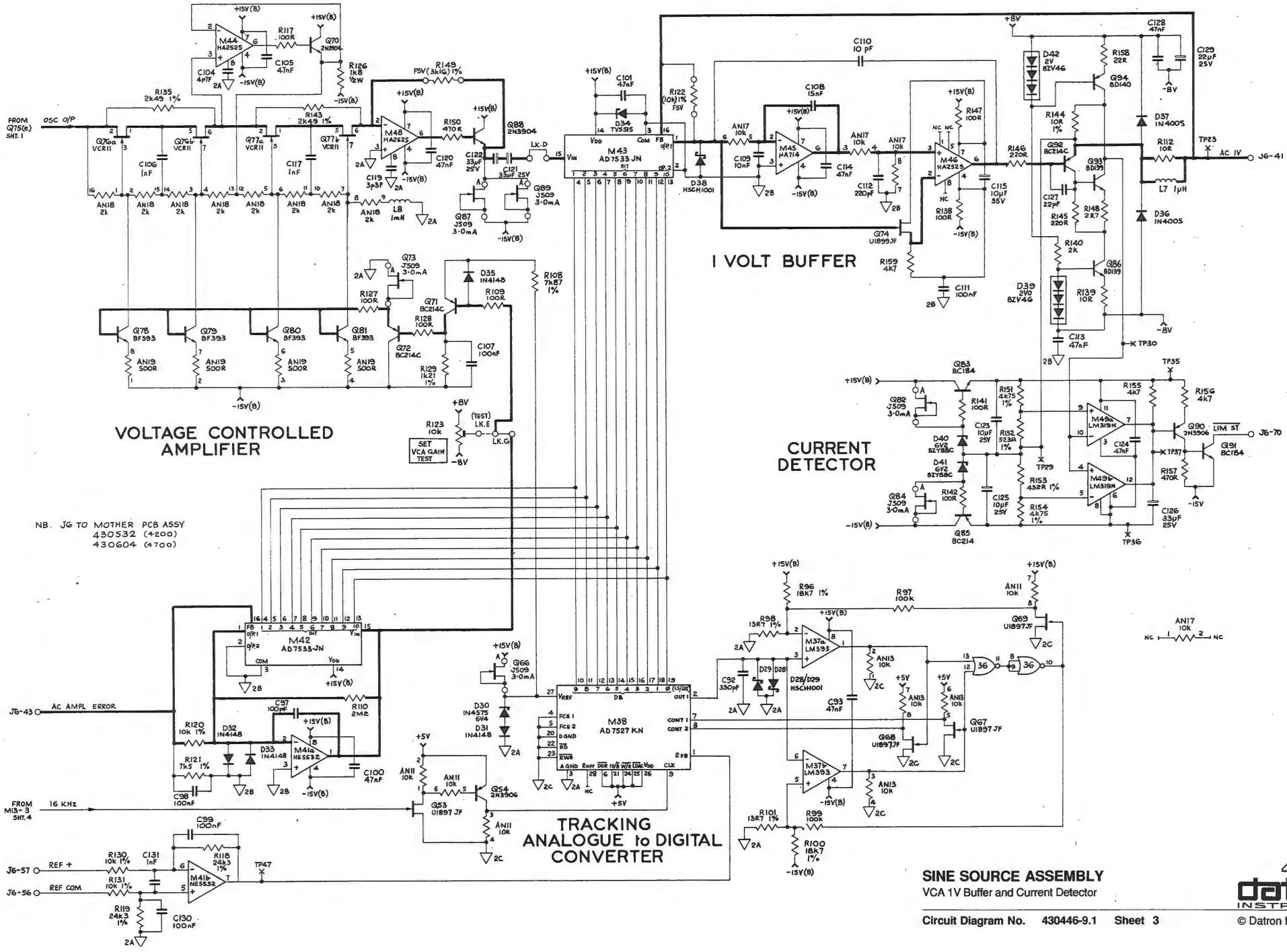
VOLTAGE CONTROLLED AMPLIFIER
I VOLT BUFFER
CURRENT DETECTOR
TRACKING ANALOGUE to DIGITAL CONVERTER
NB. J6 TO MOTHER PCB ASSY
430532 (4200)
430604 (4700)
FROM OSC O/P
FROM Q75(E) SHT. 1
AC AMPL ERROR
J6-43
FROM M13-3 SHT. 4
16 KHz
REF +
REF COM
J6-57
J6-56
SET VCA GAIN TEST
LK.D
LK.E
LK.G
J6-41
J6-70
TP23
TP29
TP30
TP35
TP36
TP37
TP47
M43 AD7533 JN
M42 AD7533-JN
M38 AD7527 KN
M44 HA2525
M48 HA2525
M45 μA714
M46 HA2525
M49a LM319N
M49b LM319N
M41a NE5532
M41b NE5532
M37a LM393
M37b LM393
Q70 2N3904
Q88 2N3904
Q87 J509 3·0mA
Q89 J509 3·0mA
Q73 J509 3·0mA
Q82 J509 3·0mA
Q84 J509 3·0mA
Q66 J509 3·0mA
Q54 2N3906
Q53 U1897 JF
Q67 U1897 JF
Q68 U1897 JF
Q69 U1897 JF
Q74 U1899 JF
Q71 BC214C
Q72 BC214C
Q75 BF393
Q79 BF393
Q80 BF393
Q81 BF393
Q83 BC184
Q85 BC214
Q86 BD139
Q90 2N3906
Q91 BC184
Q92 BC214C
Q93 BD139
Q94 BD140
D34 TVS15
D38 HSCH1001
D28/D29 HSCH1001
D30 IN4575 6V4
D31 IN4148
D32 IN4148
D33 IN4148
D35 IN4148
D36 IN4005
D37 IN4005
D40 6V2 BZY88C
D41 6V2 BZY88C
D42 2V BZV46
D39 2V0 BZV46
R117 100R
R126 1k8 ½W
R135 2k49 1%
R143 2k49 1%
R149 FSV(3k1G) 1%
R150 470R
R122 (10k) 1% FSV
R108 7k87 1%
R123 10k
R127 100R
R128 100R
R129 1k21 1%
R109 100R
R110 2M2
R120 10k 1%
R121 7k5 1%
R130 10k 1%
R131 10k 1%
R118 24k3 1%
R119 24k3 1%
R96 18k7 1%
R97 100k
R98 13k7 1%
R99 100k
R100 18k7 1%
R101 13k7 1%
R147 100R
R146 220R
R158 22R
R144 10R 1%
R145 220R
R148 2k7
R140 2k
R139 10R
R112 10R
R138 100R
R159 4k7
R141 100R
R142 100R
R151 4k75 1%
R152 523R 1%
R153 432R 1%
R154 4k75 1%
R155 4k7
R156 4k7
R157 470R
C104 4p7F
C105 47nF
C106 1nF
C117 1nF
C119 3p3F
C120 47nF
C122 33μF 25V
C121 33μF 25V
C101 47nF
C110 10 pF
C108 15nF
C109 10nF
C112 220pF
C114 47nF
C111 100nF
C115 10μF 35V
C128 47nF
C129 22μF 25V
C127 22pF
C113 47nF
C123 10μF 25V
C125 10μF 25V
C124 47nF
C126 33μF 25V
C107 100nF
C97 100pF
C98 100nF
C100 47nF
C99 100nF
C130 100nF
C131 1nF
C32 330pF
C93 47nF
L8 1mH
L7 1μH
AN18 2k
AN19 500R
AN17 10k
AN13 10k
AN11 10k
SINE SOURCE ASSEMBLY
VCA 1V Buffer and Current Detector
Circuit Diagram No. 430446-9.1 Sheet 3
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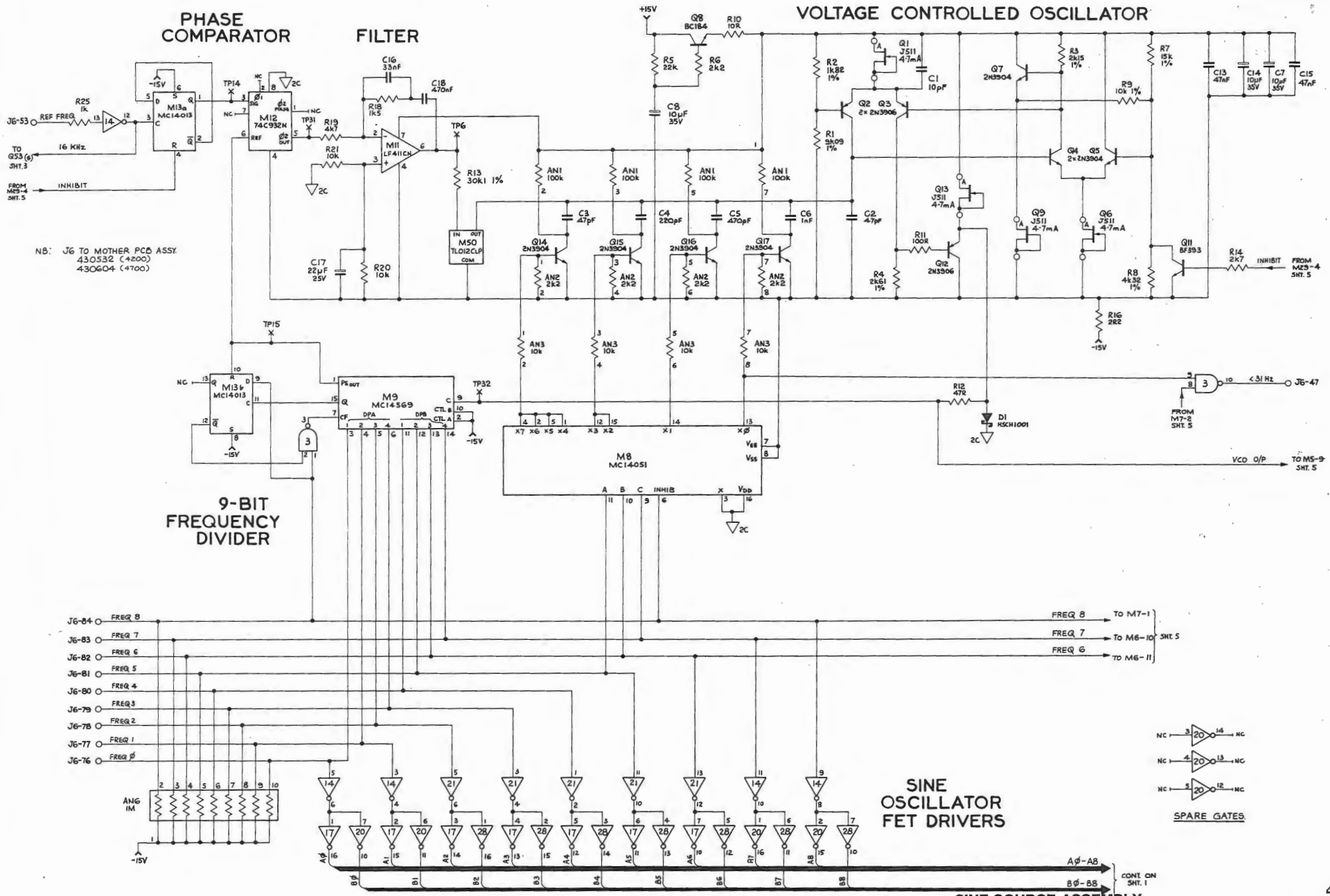
PHASE COMPARATOR
FILTER
VOLTAGE CONTROLLED OSCILLATOR
9-BIT FREQUENCY DIVIDER
SINE OSCILLATOR FET DRIVERS
SPARE GATES
NB: J6 TO MOTHER PCB ASSY. 430532 (4200) 430604 (4700)
REF FREQ
16 KHz
INHIBIT
VCO O/P
< 31 Hz
FREQ 8
FREQ 7
FREQ 6
FREQ 5
FREQ 4
FREQ 3
FREQ 2
FREQ 1
FREQ Ø
A Ø - A 8
B Ø - B 8
M13a MC14013
M12 74C932N
M11 LF411CN
M50 TL012CLP
M13b MC14013
M9 MC14569
M8 MC14051
Q1 J511 4-7mA
Q2 Q3 2x 2N3906
Q4 Q5 2x 2N3904
Q7 2N3904
Q8 BC184
Q9 J511 4-7mA
Q11 BF393
Q12 2N3906
Q13 J511 4-7mA
Q14 2N3904
Q15 2N3904
Q16 2N3904
Q17 2N3904
D1 HSCH1001
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SINE SOURCE ASSEMBLY
Master Clocks and Analog Serial Link
Circuit Diagram No. 430446-9.0 Sheet 4
© Datron Instruments 1986
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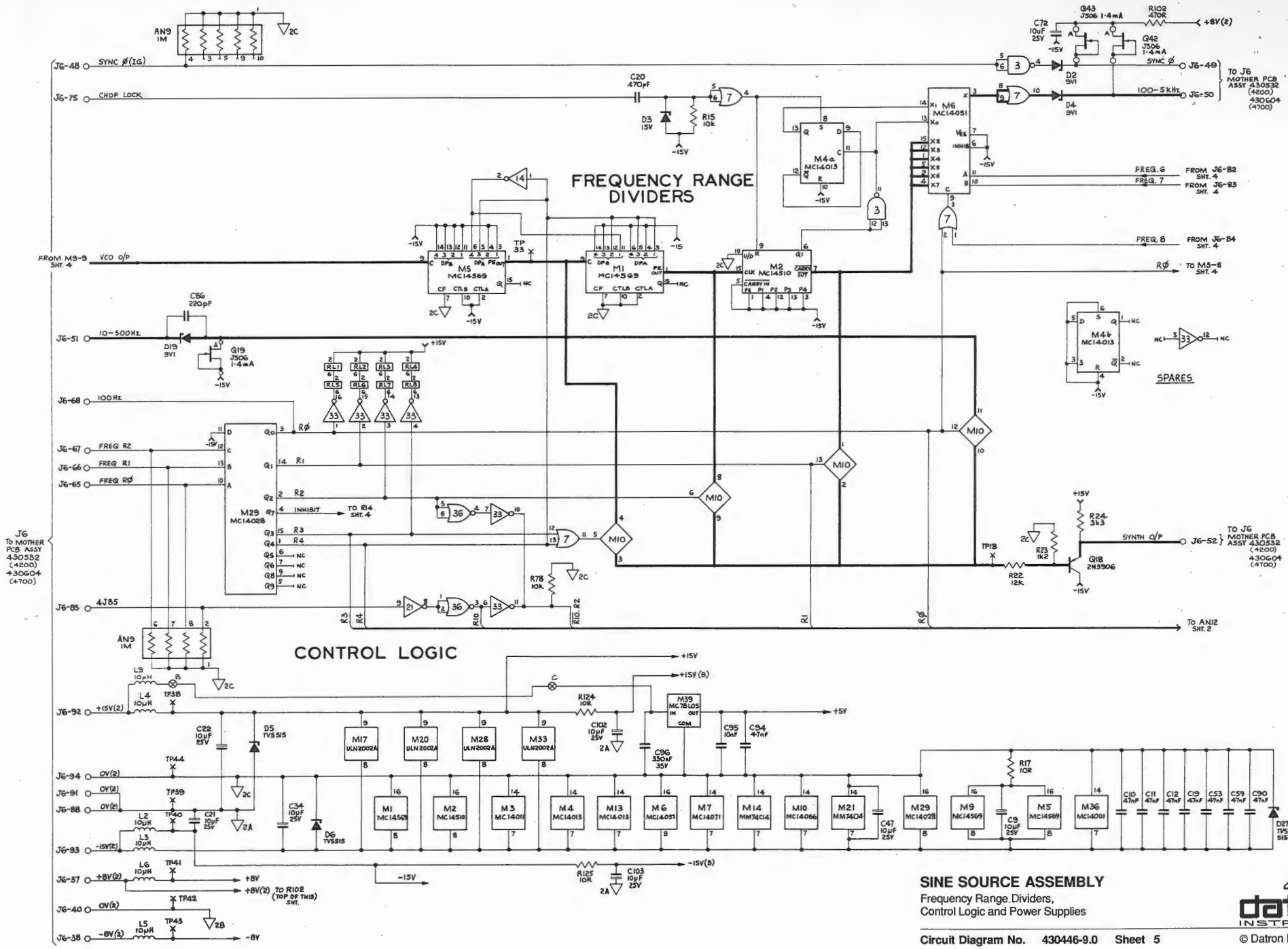
FREQUENCY RANGE DIVIDERS
CONTROL LOGIC
SPARES
SINE SOURCE ASSEMBLY
Frequency Range Dividers,
Control Logic and Power Supplies
Circuit Diagram No. 430446-9.0 Sheet 5
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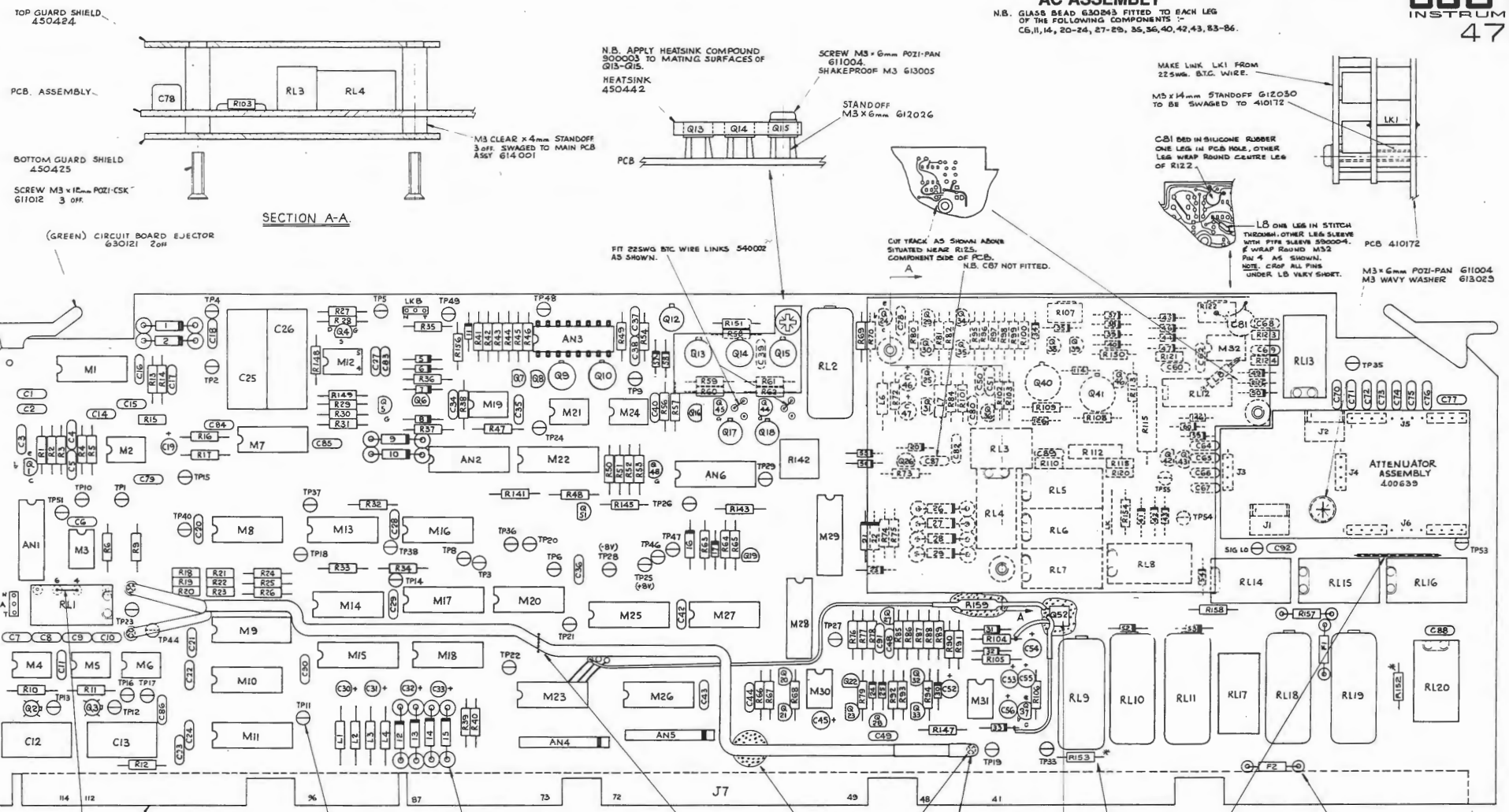
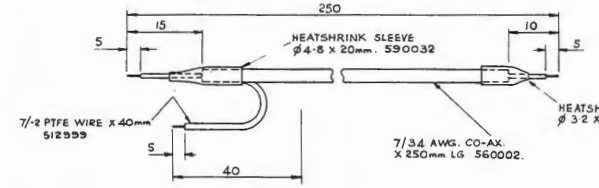
AC ASSEMBLY

N.B. GLASS BEAD 630243 FITTED TO EACH LEG OF THE FOLLOWING COMPONENTS :-
C6,11,14, 20-24, 27-29, 35,36,40,42,43,83-86.

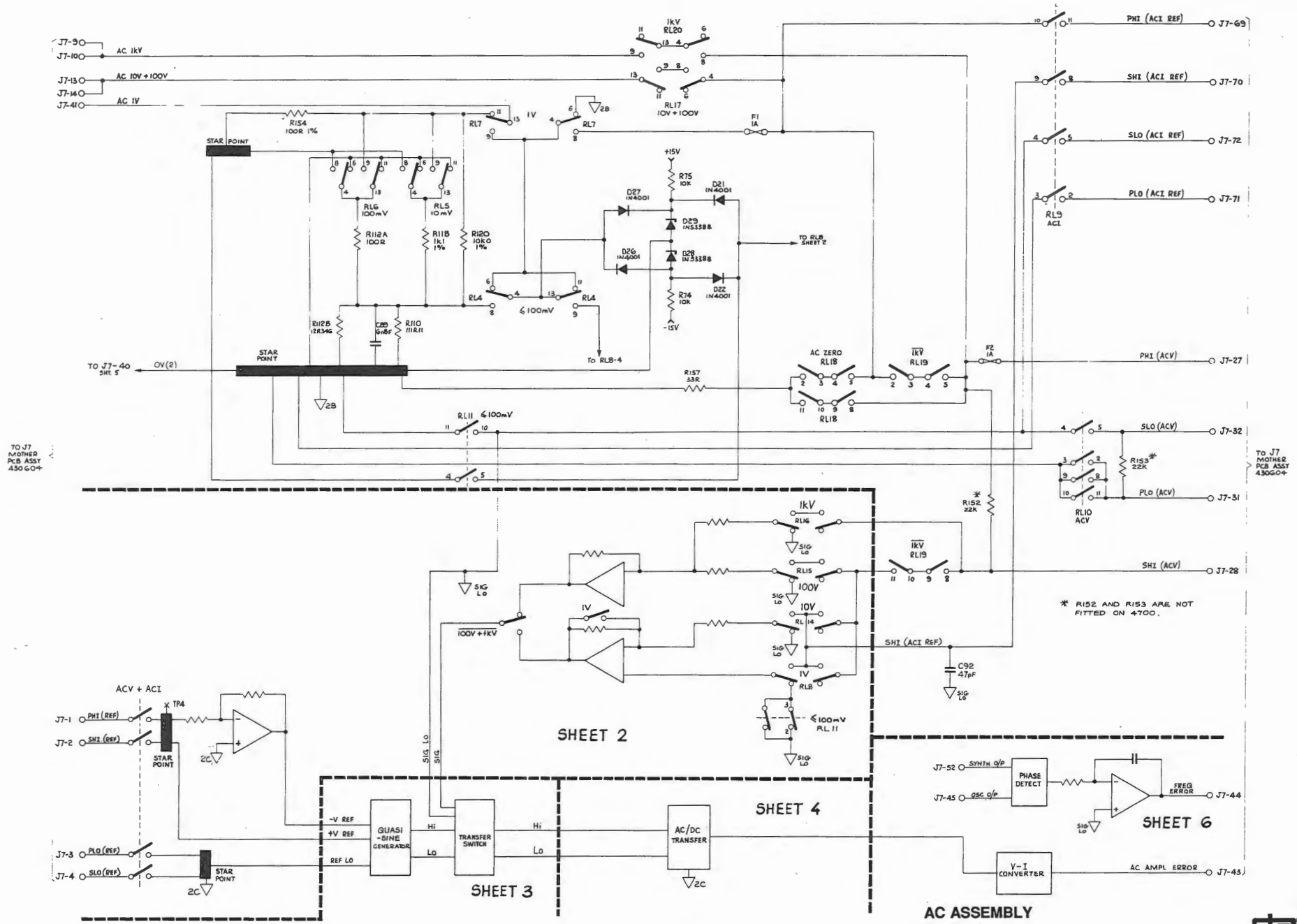




MOUNT THE FOLLOWING COMPONENTS ON (LARGE) CERAMIC BEADS 630024 24 off :-
D1, D2, D9, D10, D12-D15, D26-D29.
ONE PER LEAD.

MOUNTING I.C.s

No OF WAY	PART No	No OFF	WHERE USED.
8	605059	12	M2-M6, M12, M19, M21, M24, M30, M31, M32
14	605060	12	M1, M7, M8, M10, M13, M14, M16, M18, M20 M23, M26, 27
16	605061	8	M9, M11, M15, M17, M22, M25, M28, M29



AC ASSEMBLY
Switching Overview

Circuit Diagram No. 430663-4.0 Sheet 1

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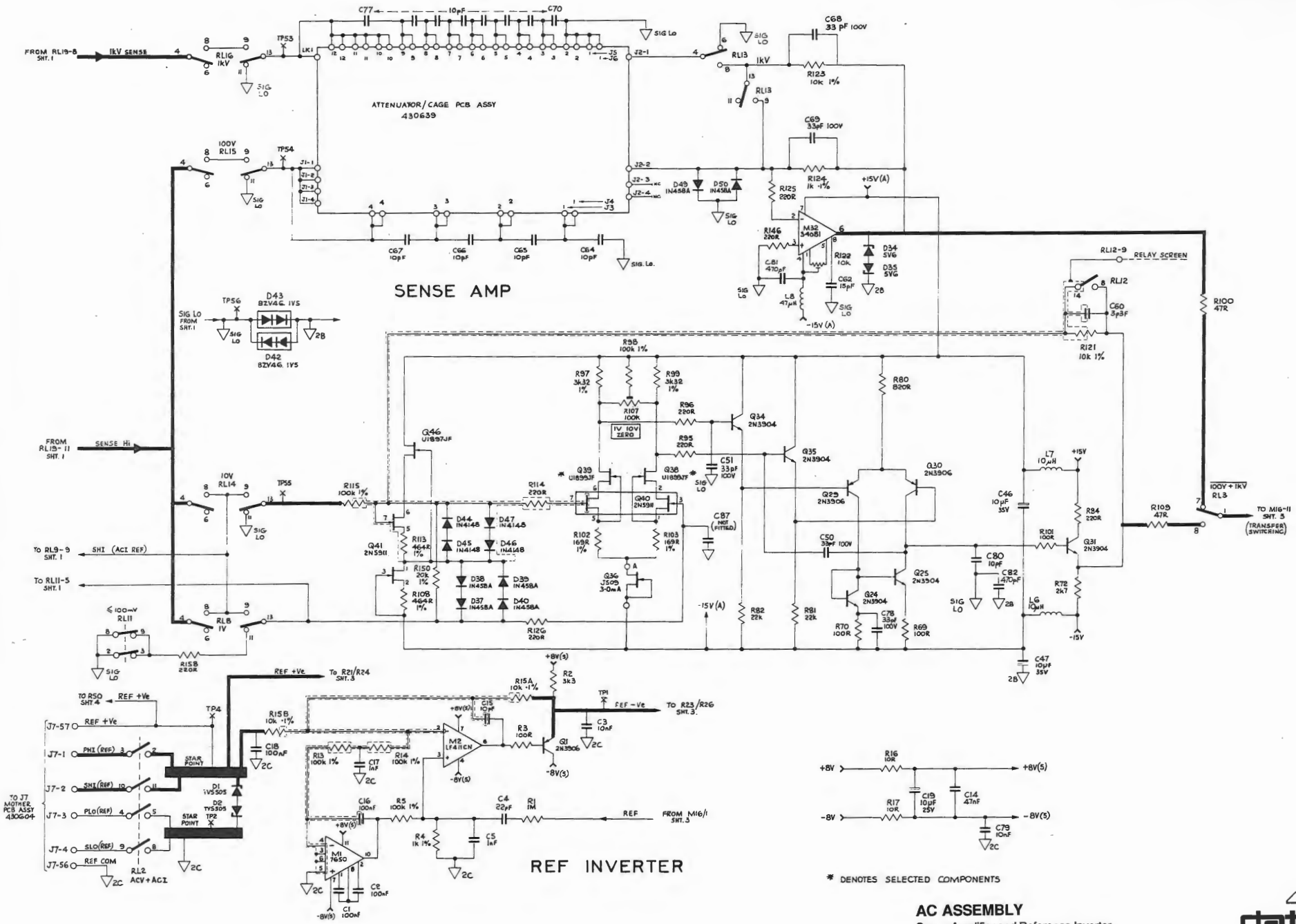

AC ASSEMBLY
Sense Amplifier and Reference Inverter

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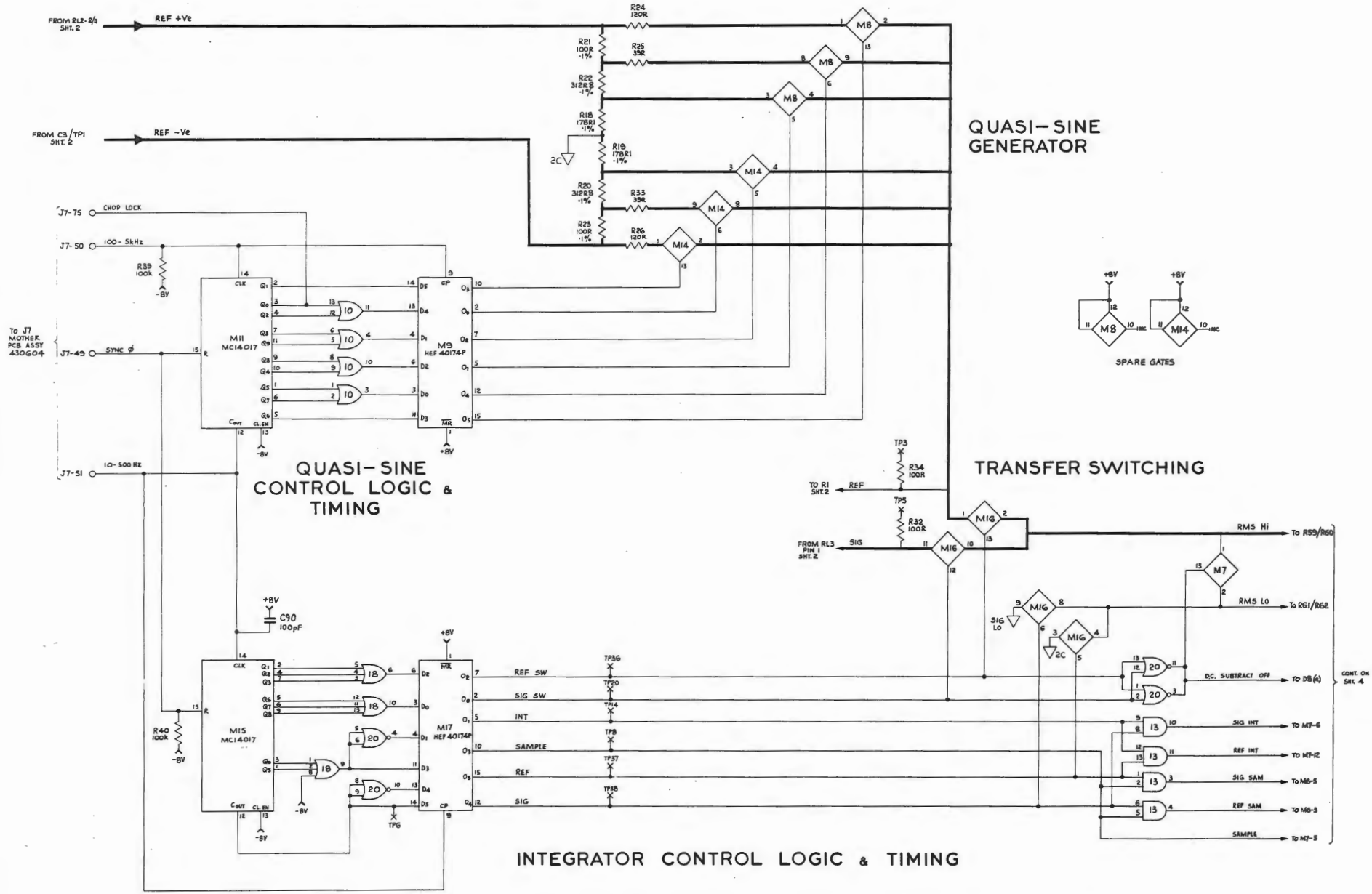
Circuit Diagram No. 430663-4.0 Sheet 2



AC ASSEMBLY
Quasi-Sine Generator and Timing Logic

Circuit Diagram No. 430663-4.0 Sheet 3

4705
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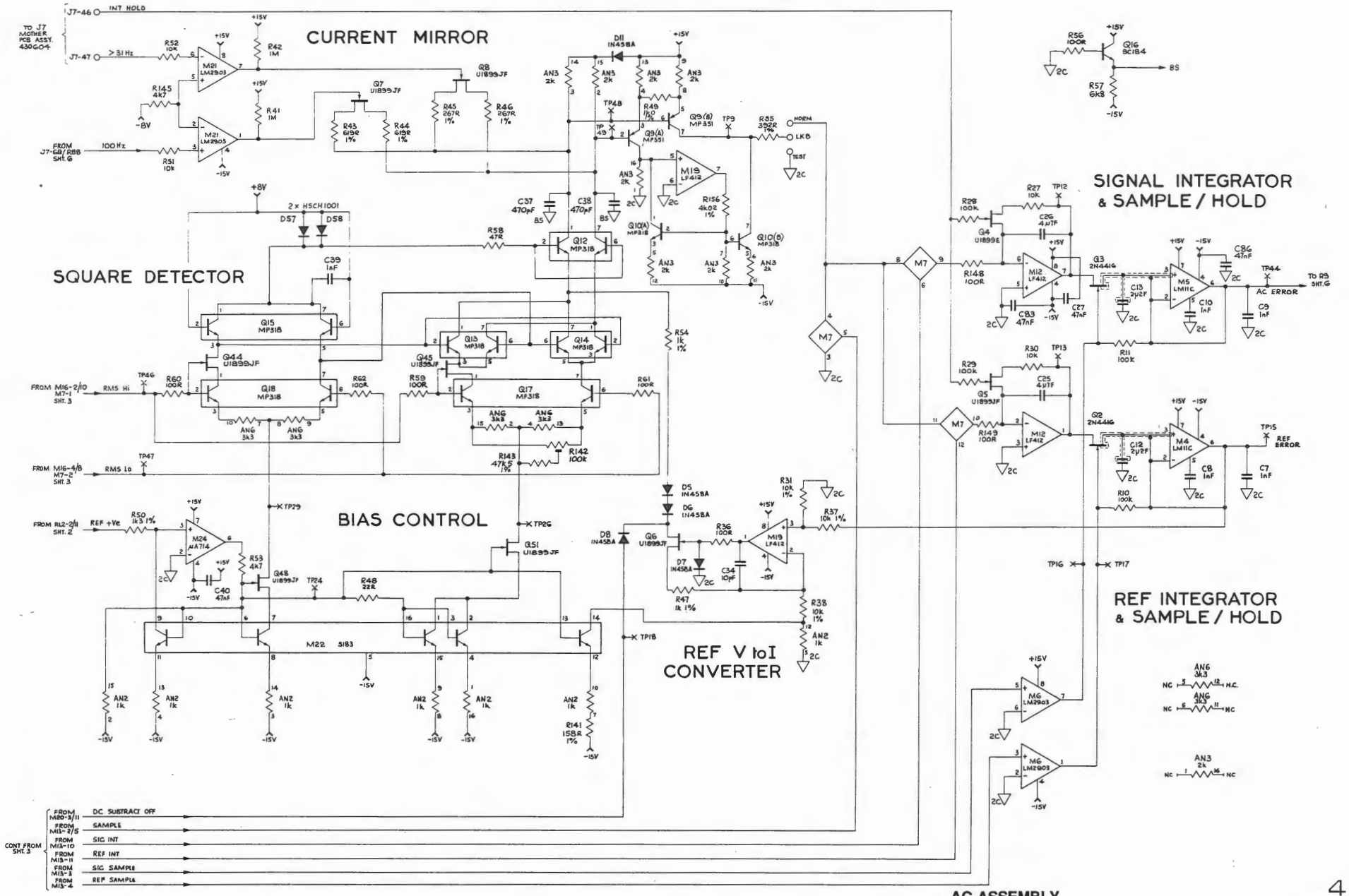

AC ASSEMBLY

AC/DC Transfer Detector and Integrators

Circuit Diagram No. 430663-4.0 Sheet 4

4705

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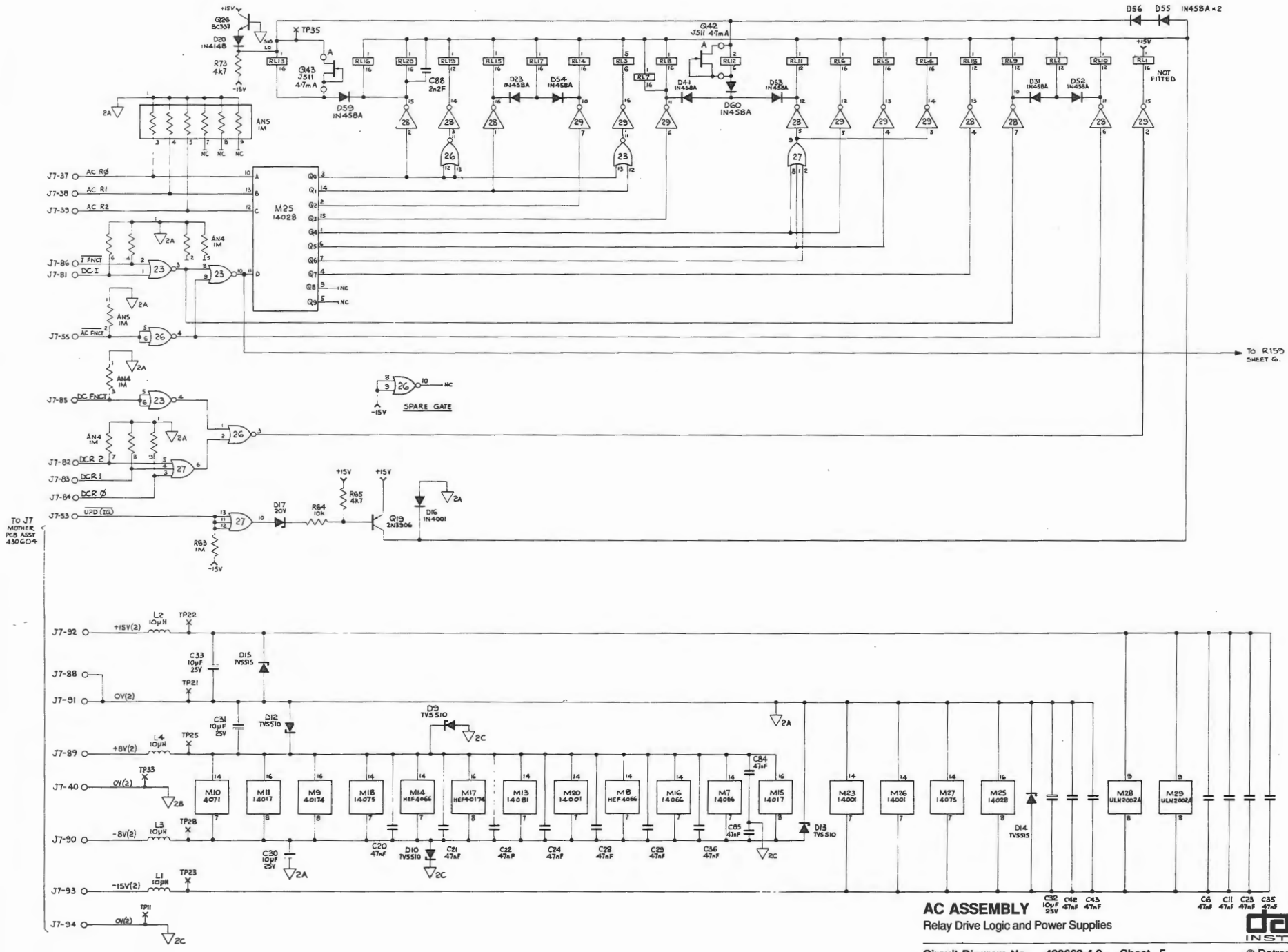

AC ASSEMBLY

Relay Drive Logic and Power Supplies

Circuit Diagram No. 430663-4.0 Sheet 5

4705

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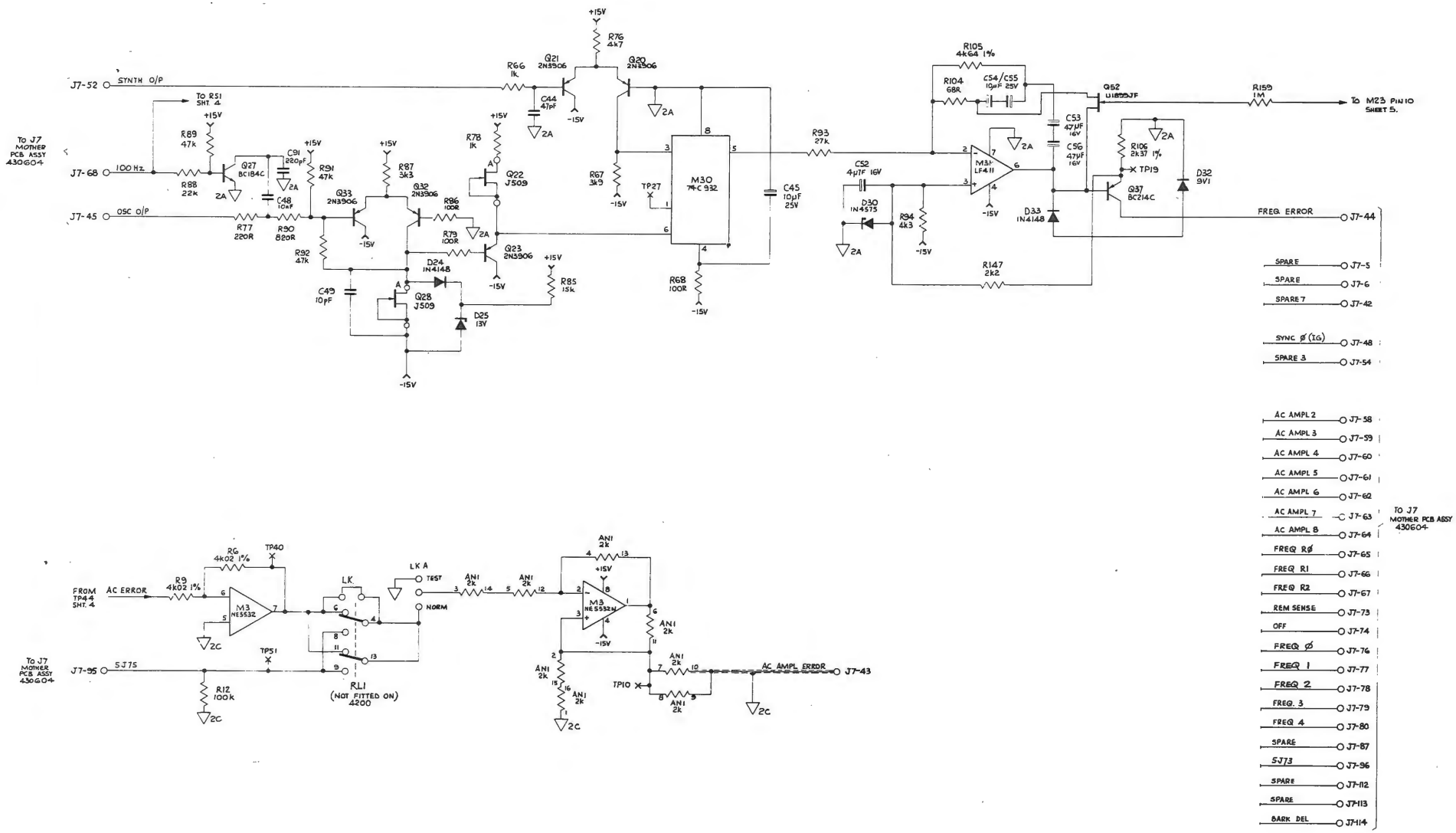

C41, R7, R8 — NOT FITTED.

AC ASSEMBLY

Phase Detector and Integrator; Power Supplies

Circuit Diagram No. 430663-4.0 Sheet 6

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CURRENT / OHMS ASSEMBLY

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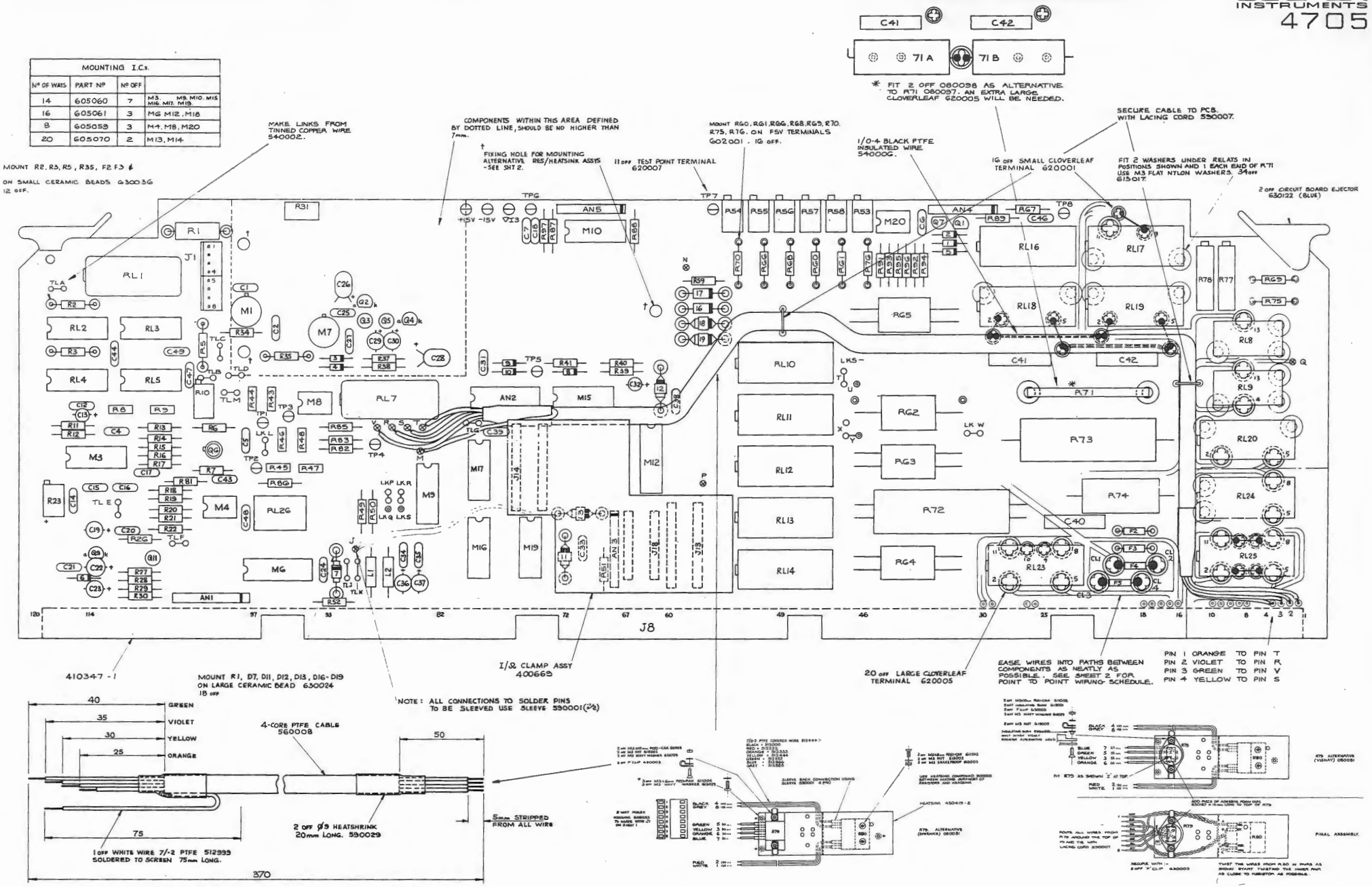
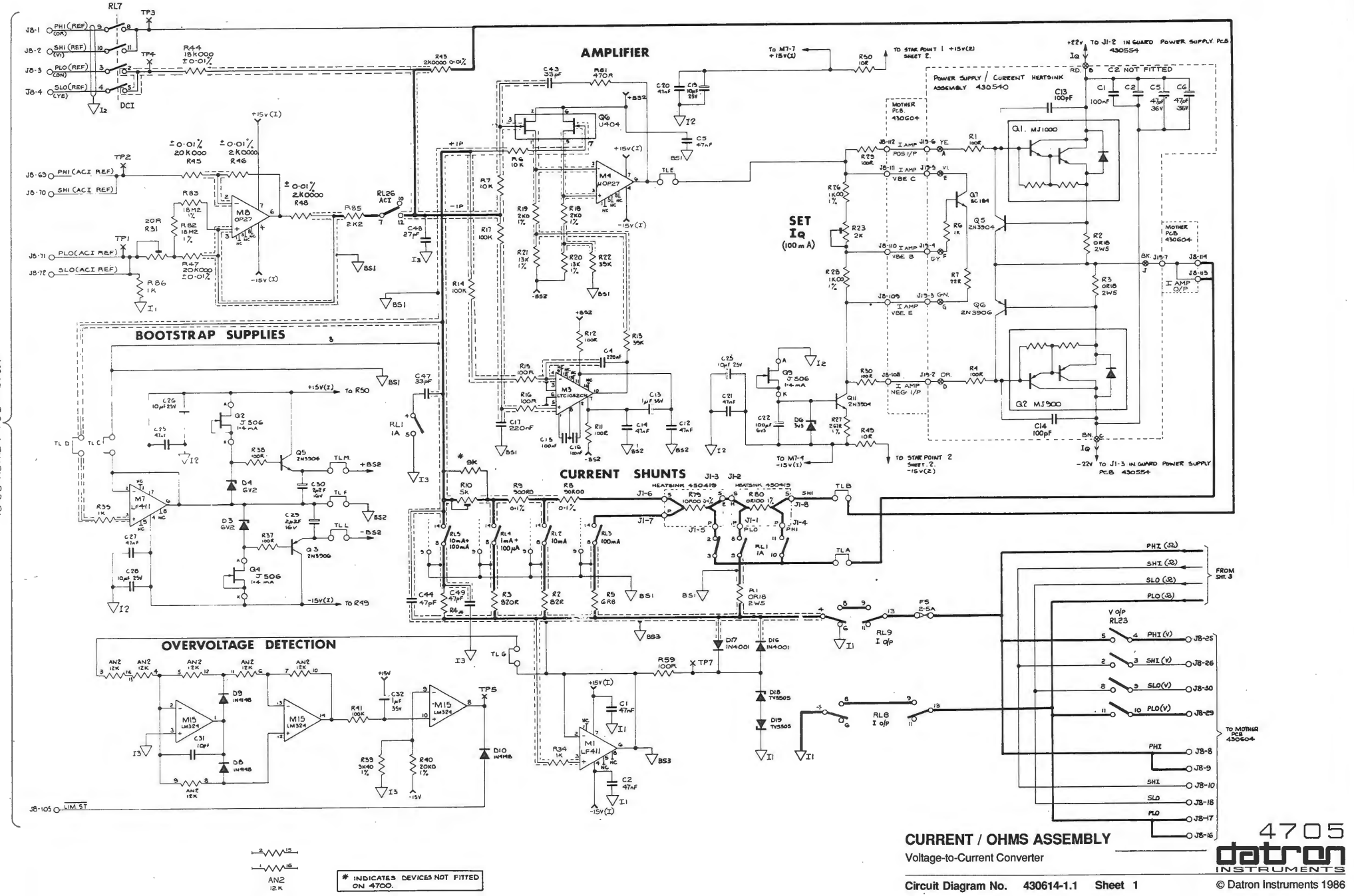
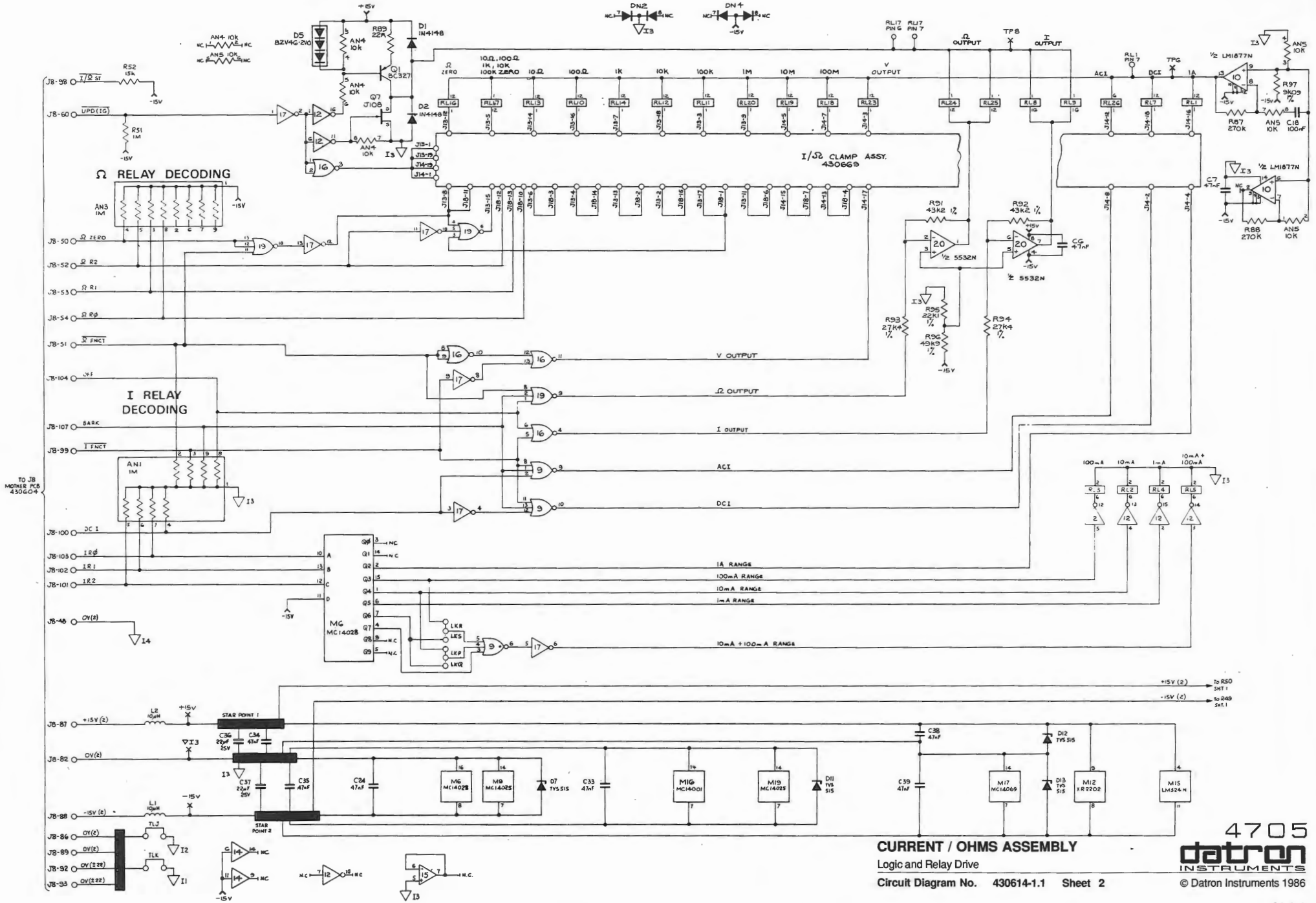
MOUNTING I.C.s.			
Nº OF WAYS	PART Nº	Nº OFF	
14	605060	7	M3. M9. M10. M15. M16. M17. M19.
16	605061	3	M6. M12. M18.
8	605058	3	M4. M8. M20.
20	605070	2	M13. M14.




AMPLIFIER
SET Iq (100 mA)
BOOTSTRAP SUPPLIES
CURRENT SHUNTS
OVERVOLTAGE DETECTION
TO J8 MOTHER PCB 430604
CURRENT / OHMS ASSEMBLY
Voltage-to-Current Converter
Circuit Diagram No. 430614-1.1 Sheet 1
4705
datron INSTRUMENTS
© Datron Instruments 1986
* INDICATES DEVICES NOT FITTED ON 4700.



CURRENT / OHMS ASSEMBLY

Logic and Relay Drive

Circuit Diagram No. 430614-1.1 Sheet 2

4705

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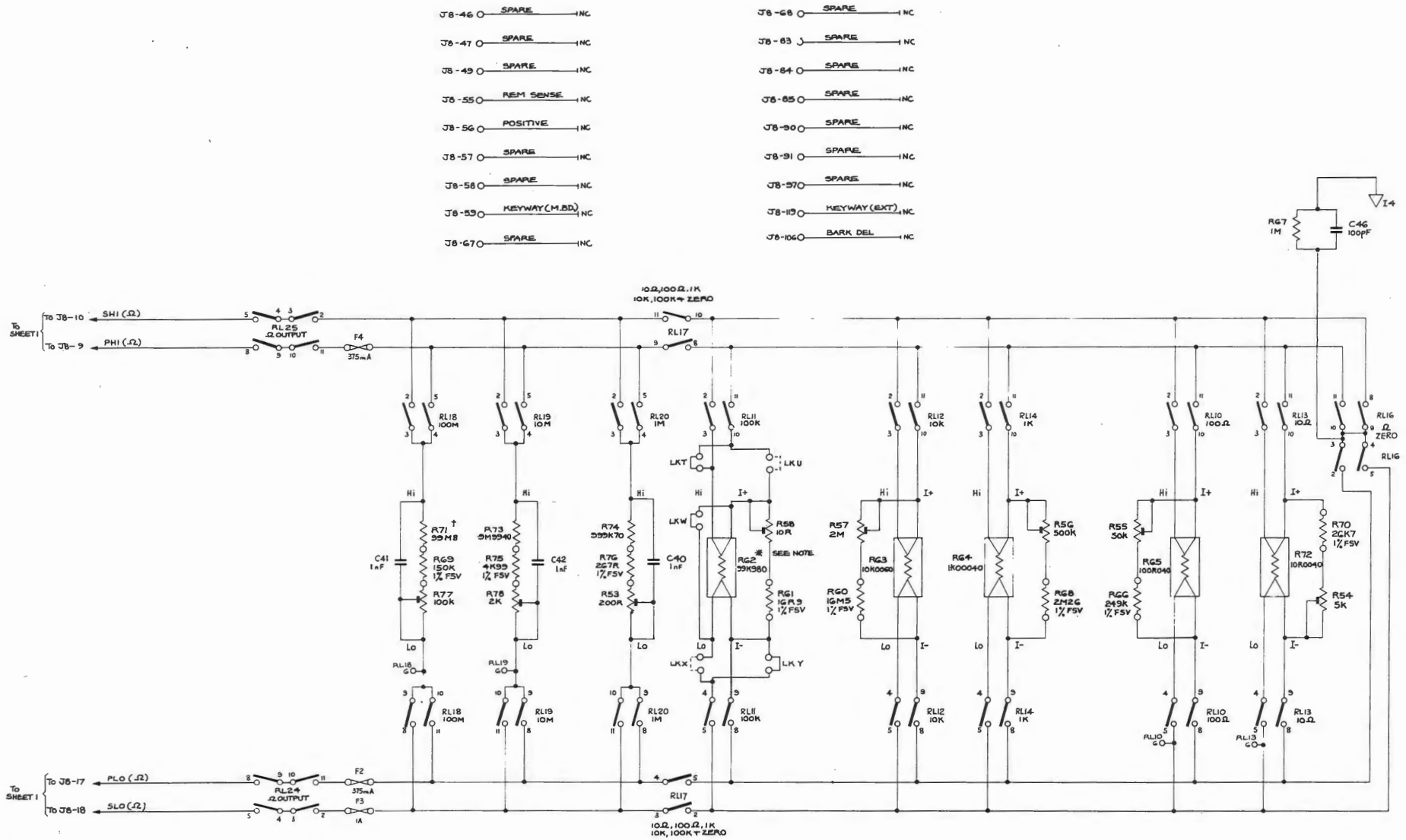

* NOTE RG2 IS A 2-WIRE RESISTOR ON THE 4700.

† ALTERNATIVE RESISTOR SET COMPRISES TWO 49M9 IN SERIES.

CURRENT / OHMS ASSEMBLY

Standard Resistors and Switching

Circuit Diagram No. 430614-1.1 Sheet 3

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POWER AMPLIFIER ASSEMBLY

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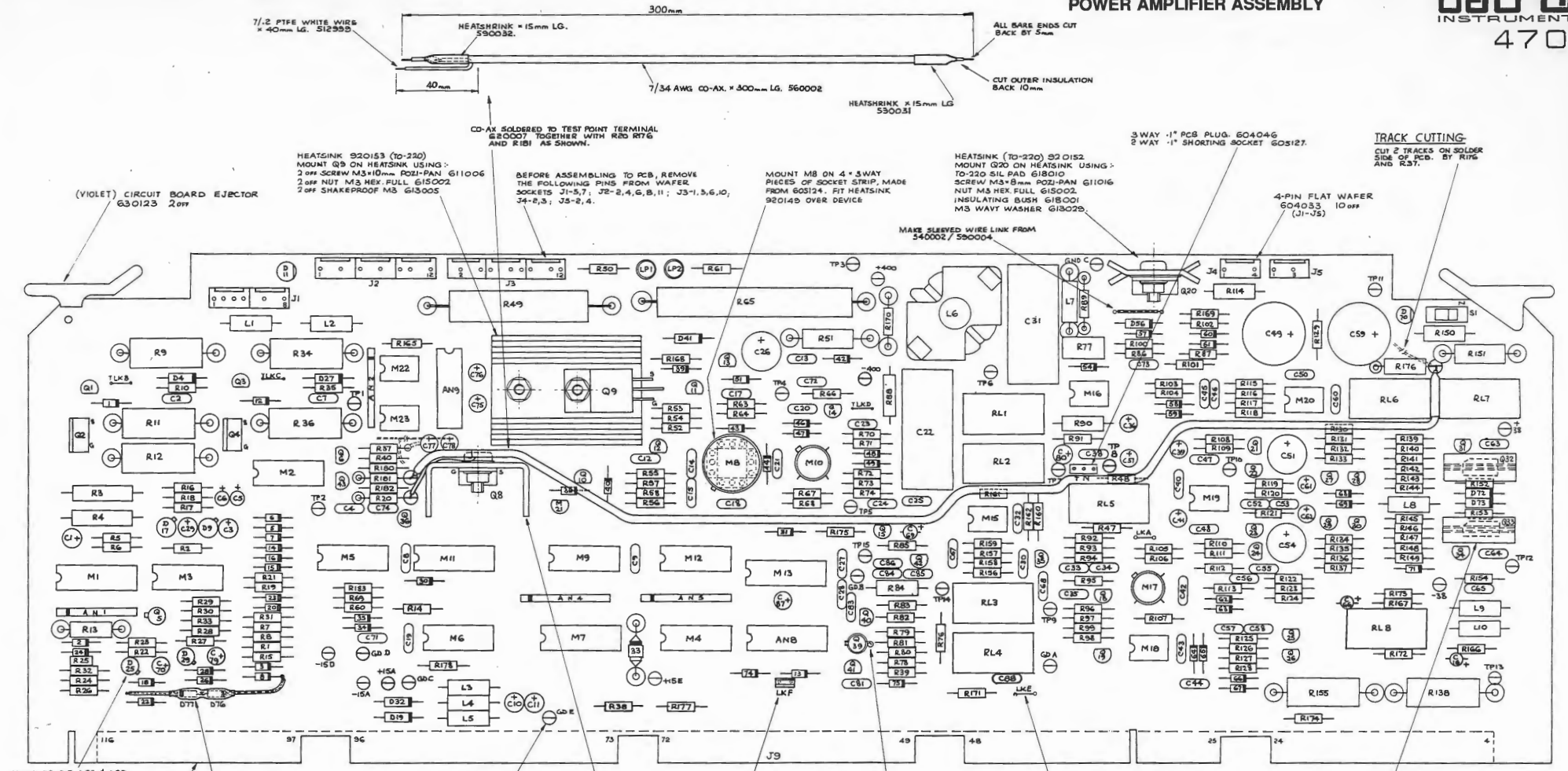


MOUNT D9, D17, D25 & D29 ON TO18 MOUNTING PADS 618004. 4off.

PCB 410339-1

MOUNT D76 & D77 AS SHOWN SLEEVE LEADS WITH PTFE SLEEVE 590004. SLEEVE COMPONENT BODIES WITH 25mm HEATSHRINK SLEEVE 590051.

TEST POINT TERMINAL 620007 32 off (N.B INCLUDES 3 FOR CO-AX CONNECTIONS)

HEATSINK (TO-220) 920091 MOUNT Q8 ON HEATSINK USING :- SCREW M3×8mm POZI-PAN 611016 NUT M3 HEX FULL 615002 M3 SHAKEPROOF 613005 M3 PLAIN WASHER 613007

FIT 3-WAY ·1" PCB PLUG 604046 BUT WITH ONE LEG REMOVED BEFORE FITTING. ADD 2-WAY ·1" SHORTING LINK 605127.

SPRING IS NOT TO BE REMOVED FROM Q33 UNTIL BOARD IS TESTED

MAKE WIRE LINKS FROM 22 SWG. BTC WIRE 540002

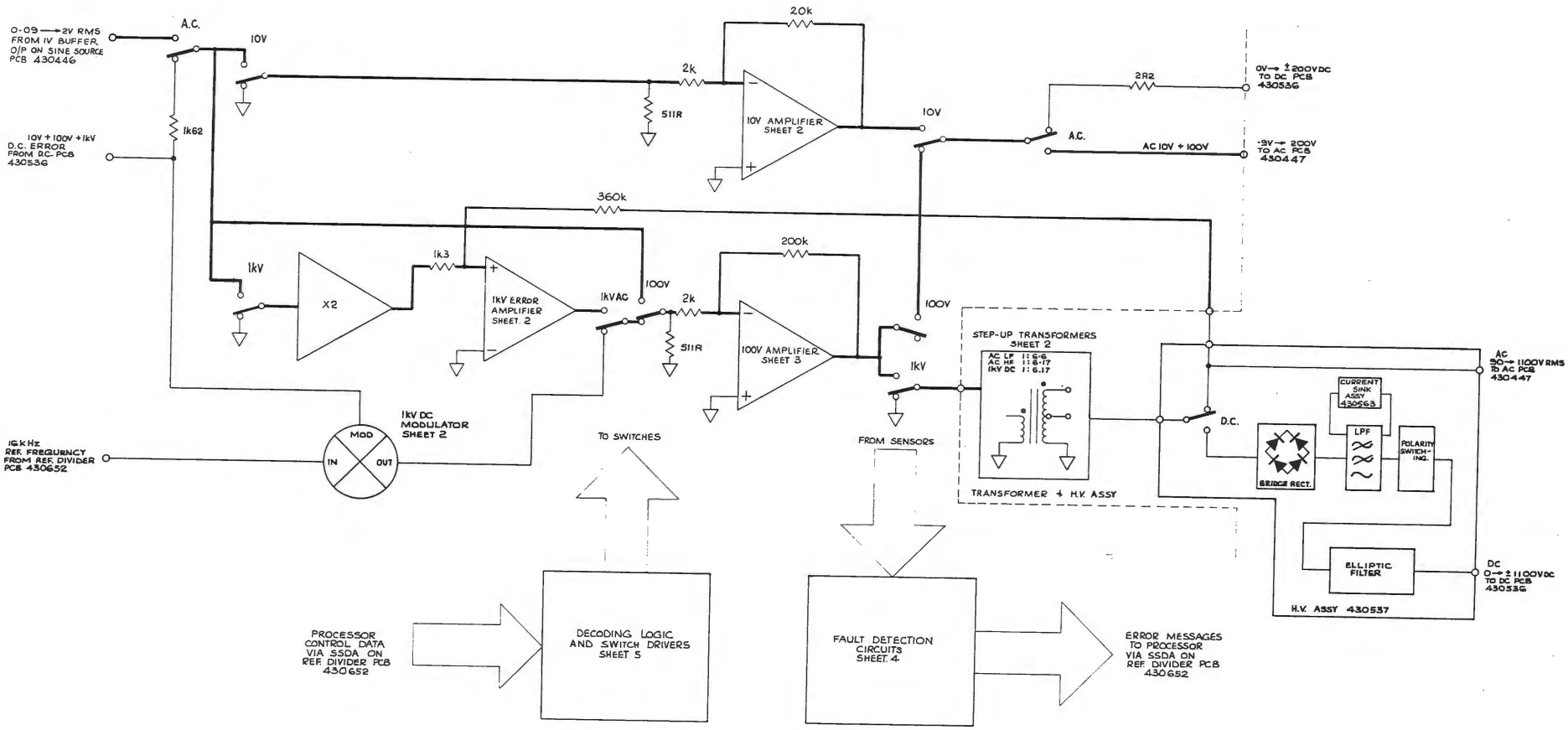
CLIP HEATSINK 920151 ON TO Q32 & Q33. 2off

MOUNTING I.C.'s			
No OF PINS	PART No	No OFF	WHERE USED
8	605059	7	M15, M16, M18, M19, M20, M22, M23
14	605060	7	M2, M3, M4, M5, M6, M9, M12
16	605061	4	M1, M7, M11, M13.

MOUNTING BEADS 630024 (52 off)	
BEADS PER LEAD	COMPONENTS.
1	R13, R51, R151, R170, D33, L7.
2	R9, R11, R12, R34, R36, R138, R155
3	R49, R65.

N.B. R89 IS TO BE MOUNTED ON BEAD 630036 2off. ONE END OF R20 R176 & R181 TO BE MOUNTED ON SMALL BEAD 630036. 3 off (OPPOSITE ENDS TO CABLE CONNECTIONS)

NB. THE FOLLOWING COMPONENTS TO HAVE 1off GLASS BEAD 630243 ON EACH LEG. (TOTAL 26 BEADS) C8, C9, C13, C14, C19, C21, C27, C28, C32, C42, C43, C60 & C85.



POWER AMPLIFIER ASSEMBLY

Block Diagram

Circuit Diagram No. 430618-3.0 Sheet 1

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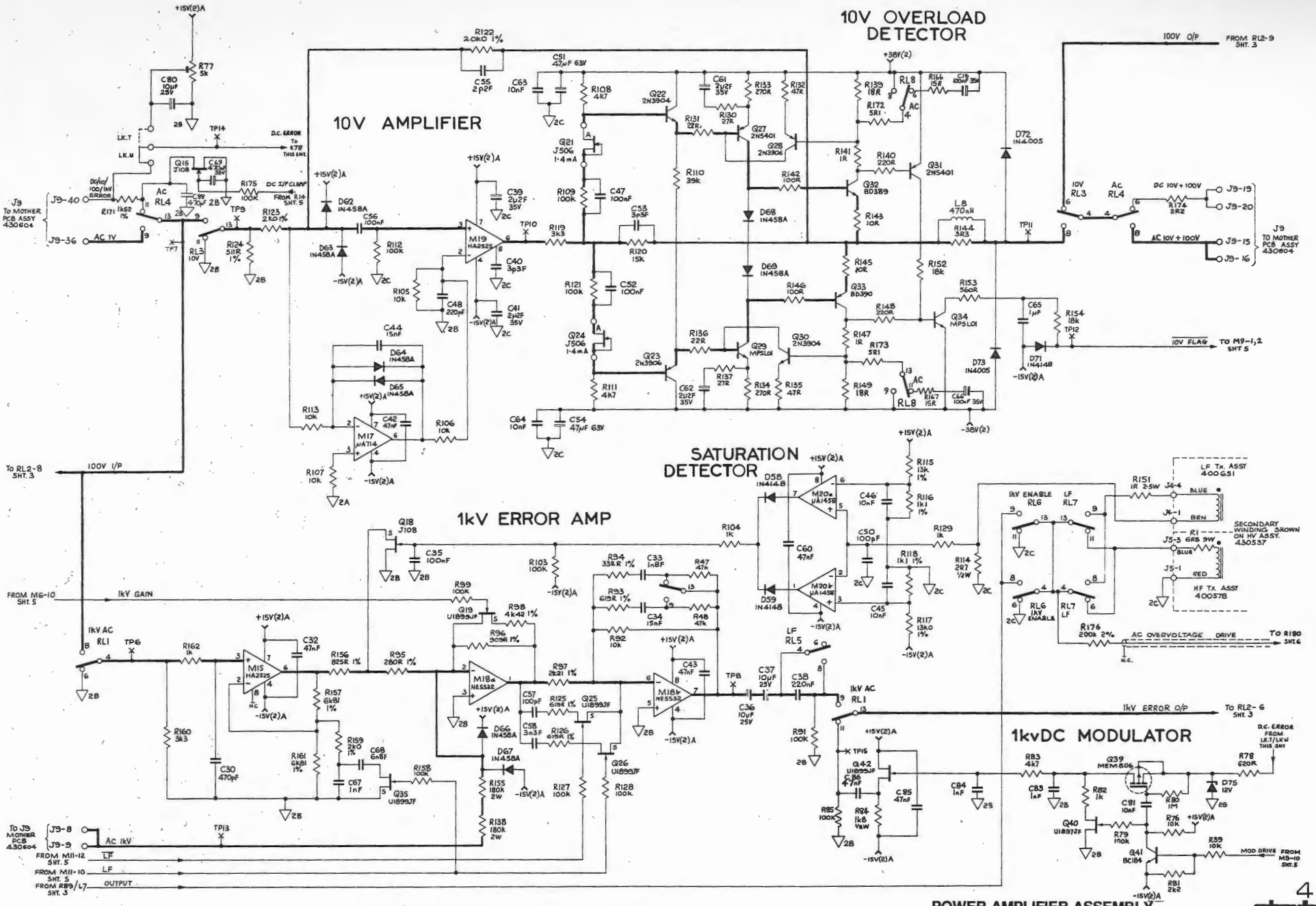

POWER AMPLIFIER ASSEMBLY
10V and 1kV Amplifiers

Circuit Diagram No. 430618-3.0 Sheet 2

4705
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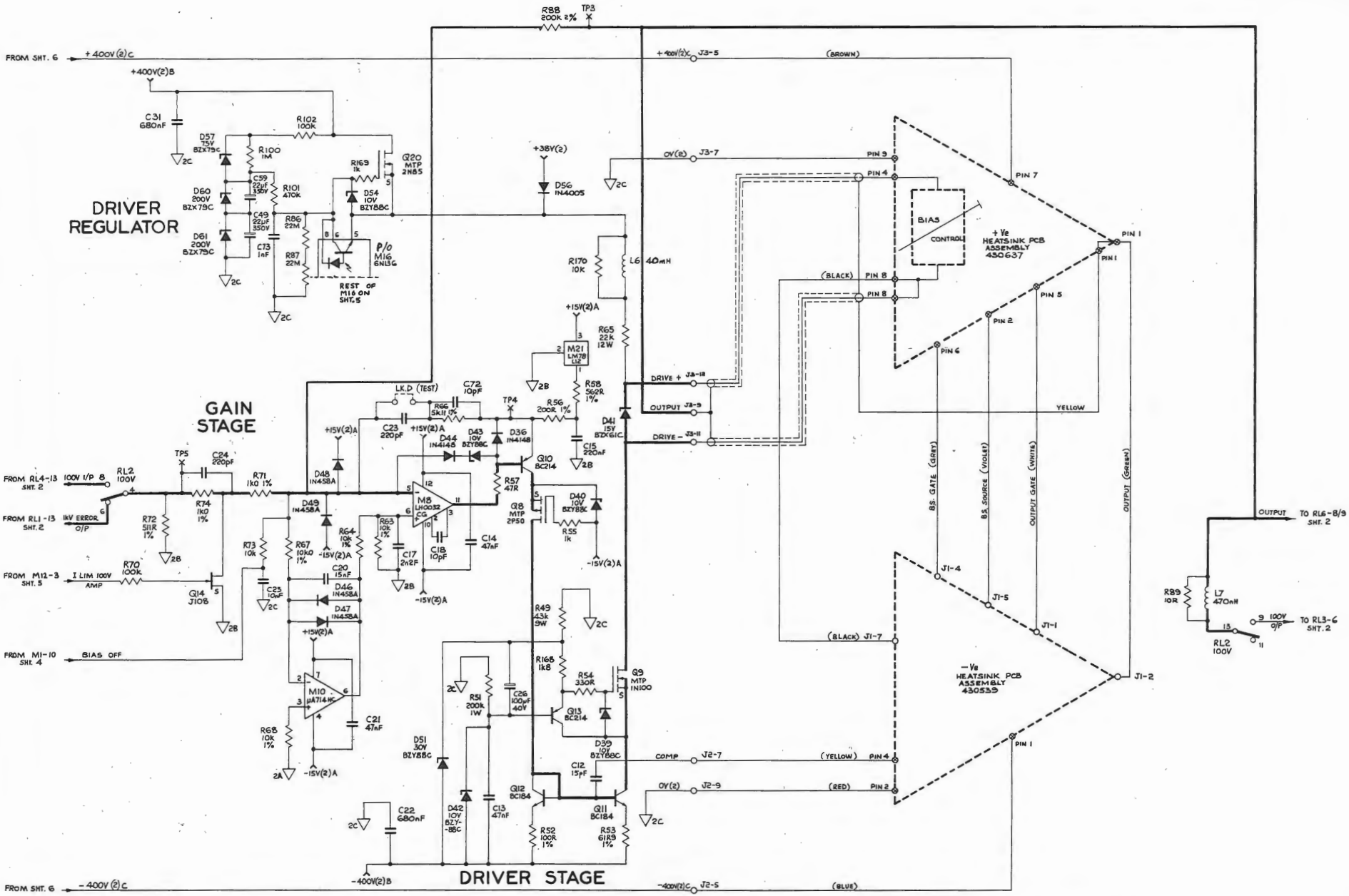
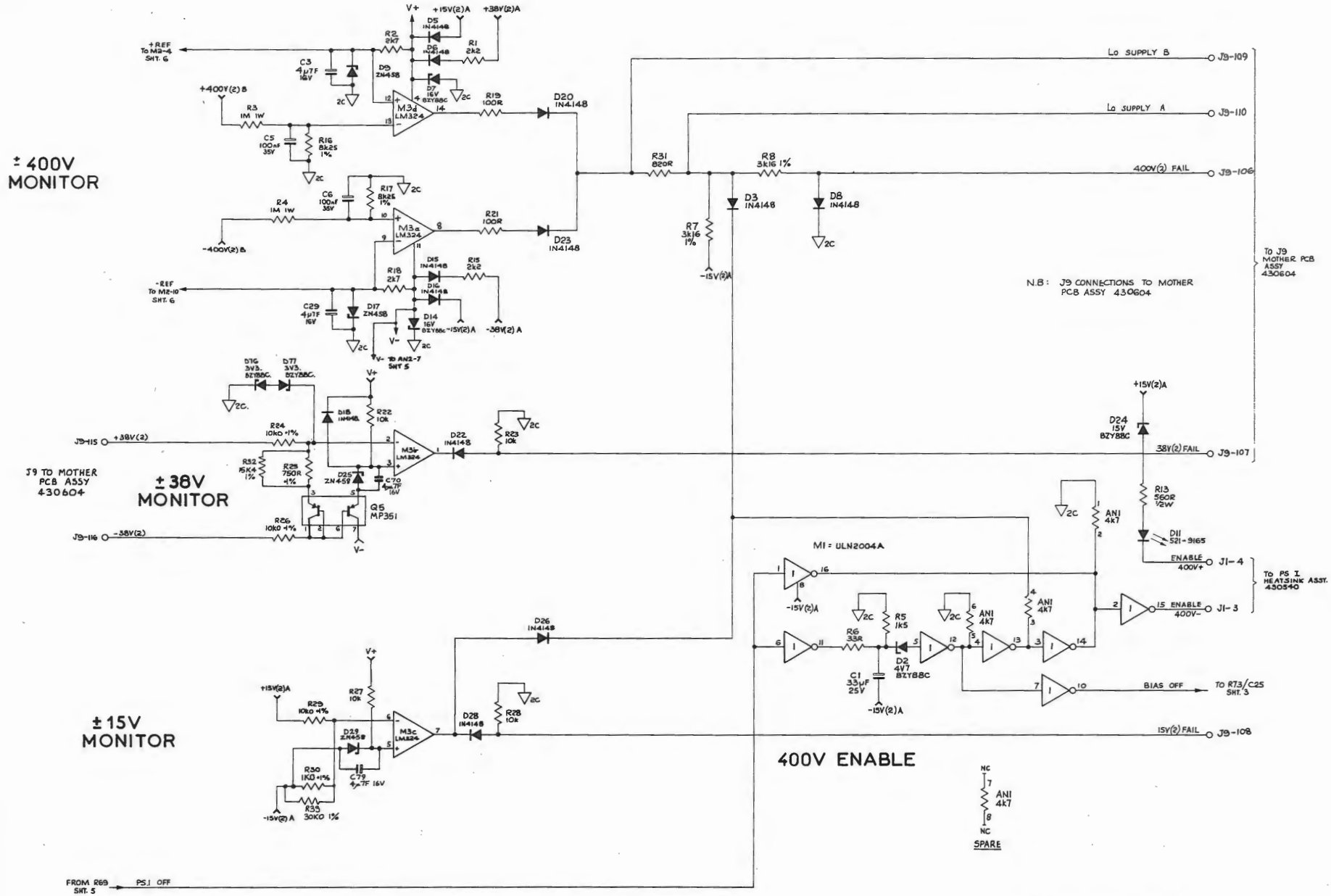


POWER AMPLIFIER ASSEMBLY

100V Amplifier

Circuit Diagram No. 430618-3.0 Sheet 3



POWER AMPLIFIER ASSEMBLY
Power Supply Monitors

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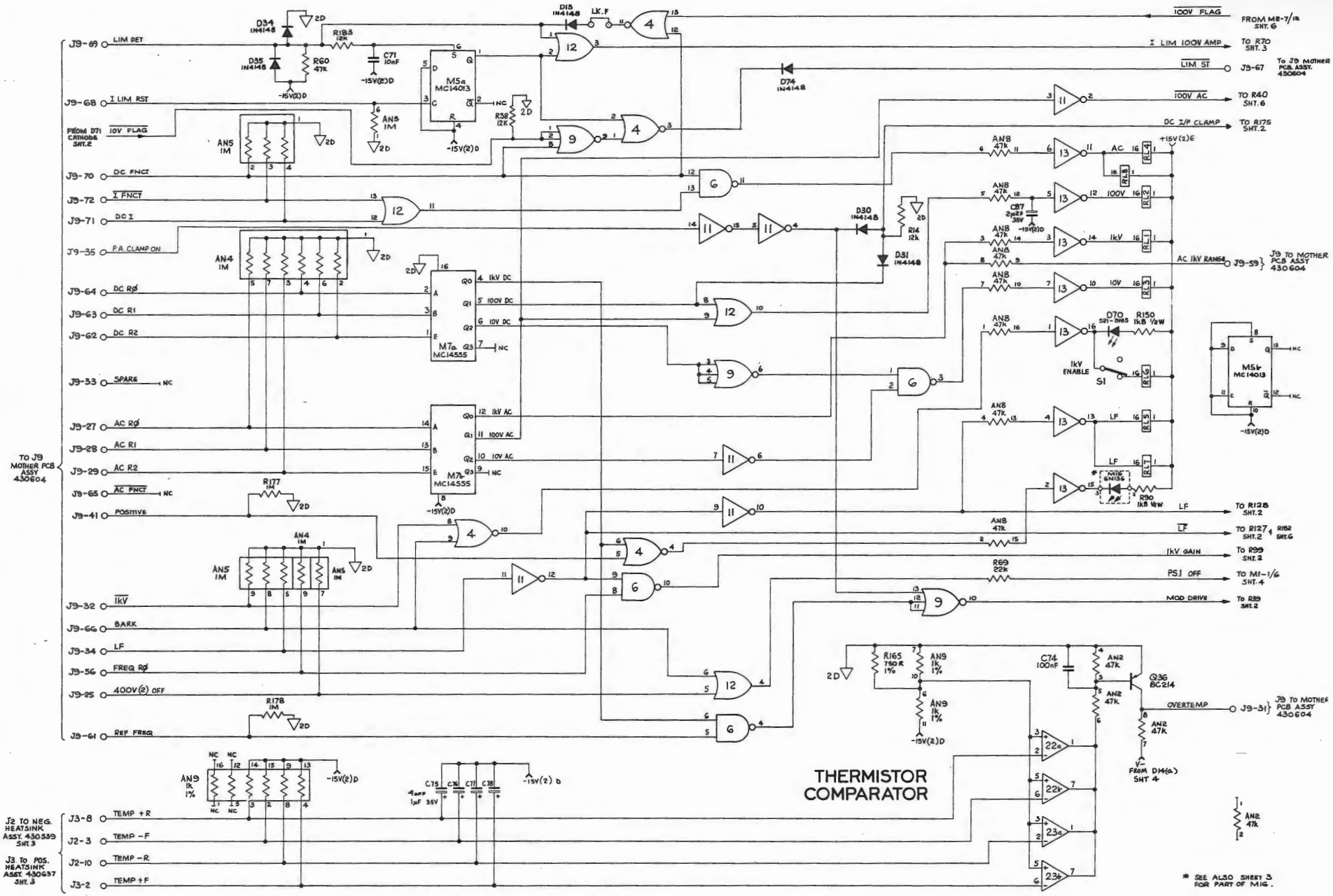
Circuit Diagram No. 430618-3.0 Sheet 4



POWER AMPLIFIER ASSEMBLY

Logic and Relay Drives

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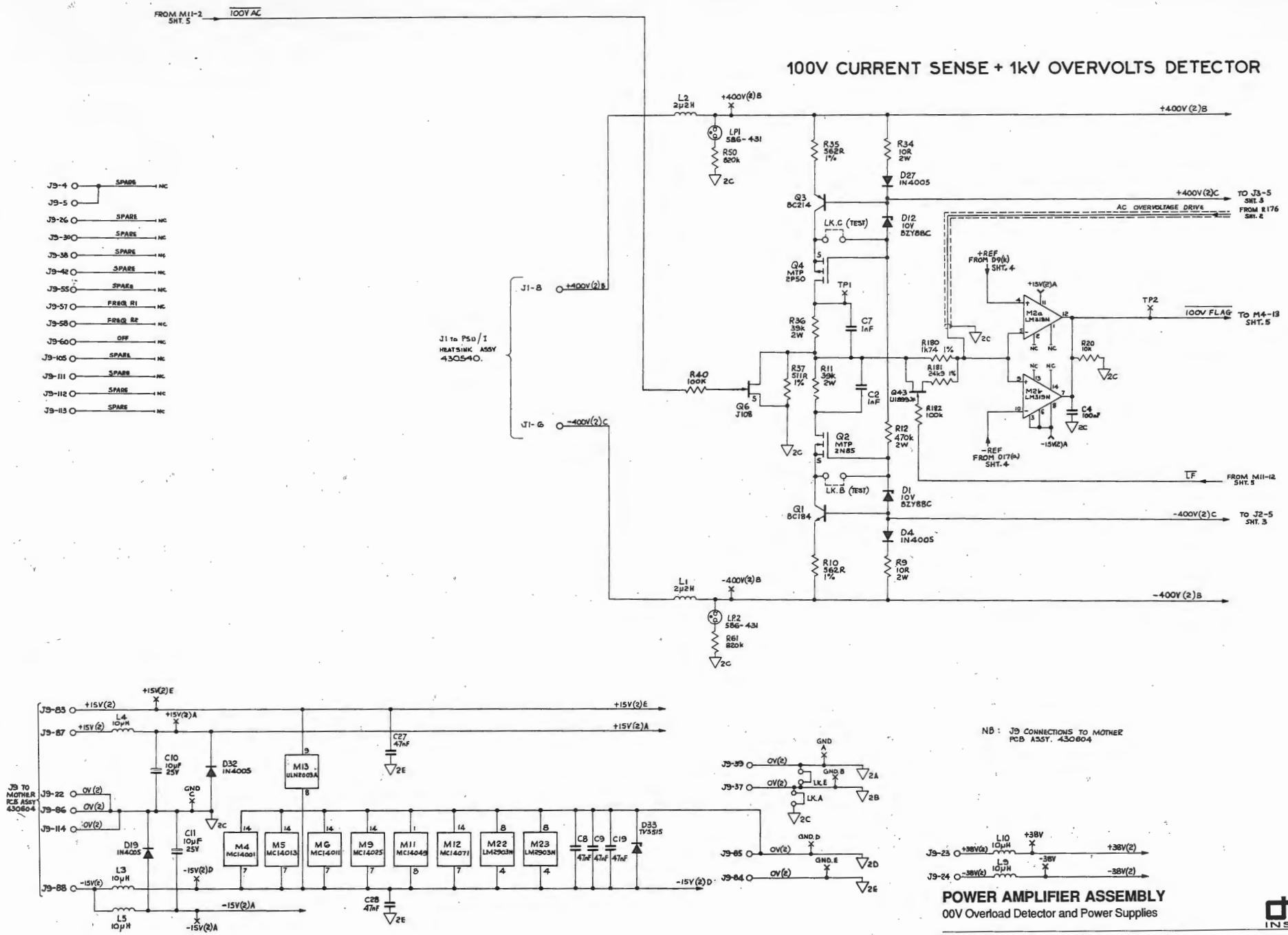
Circuit Diagram No. 430618-3.0 Sheet 5



POWER AMPLIFIER ASSEMBLY

00V Overload Detector and Power Supplies

Circuit Diagram No. 430618-3.0 Sheet 6

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OUT-GUARD POWER SUPPLY ASSEMBLY

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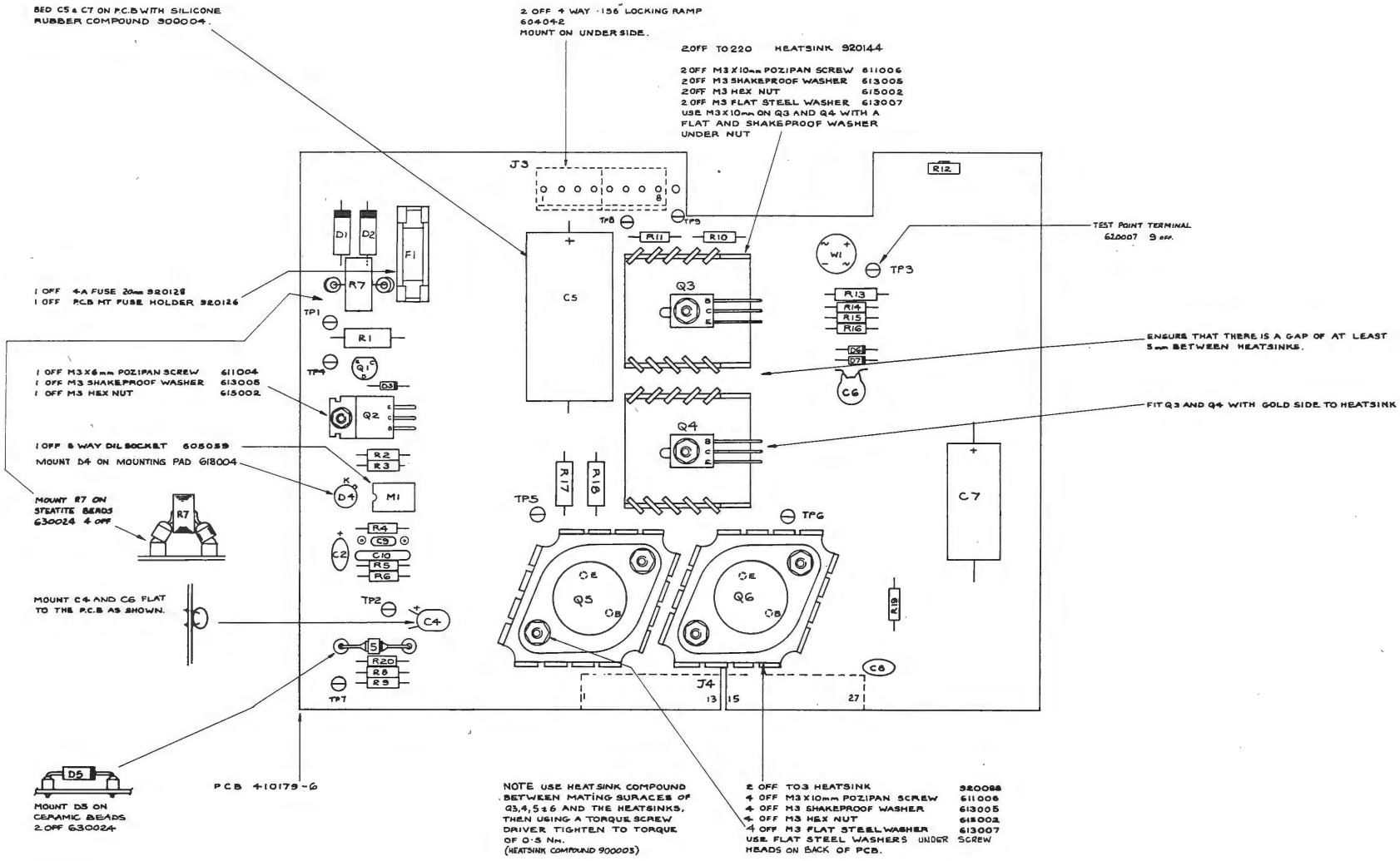

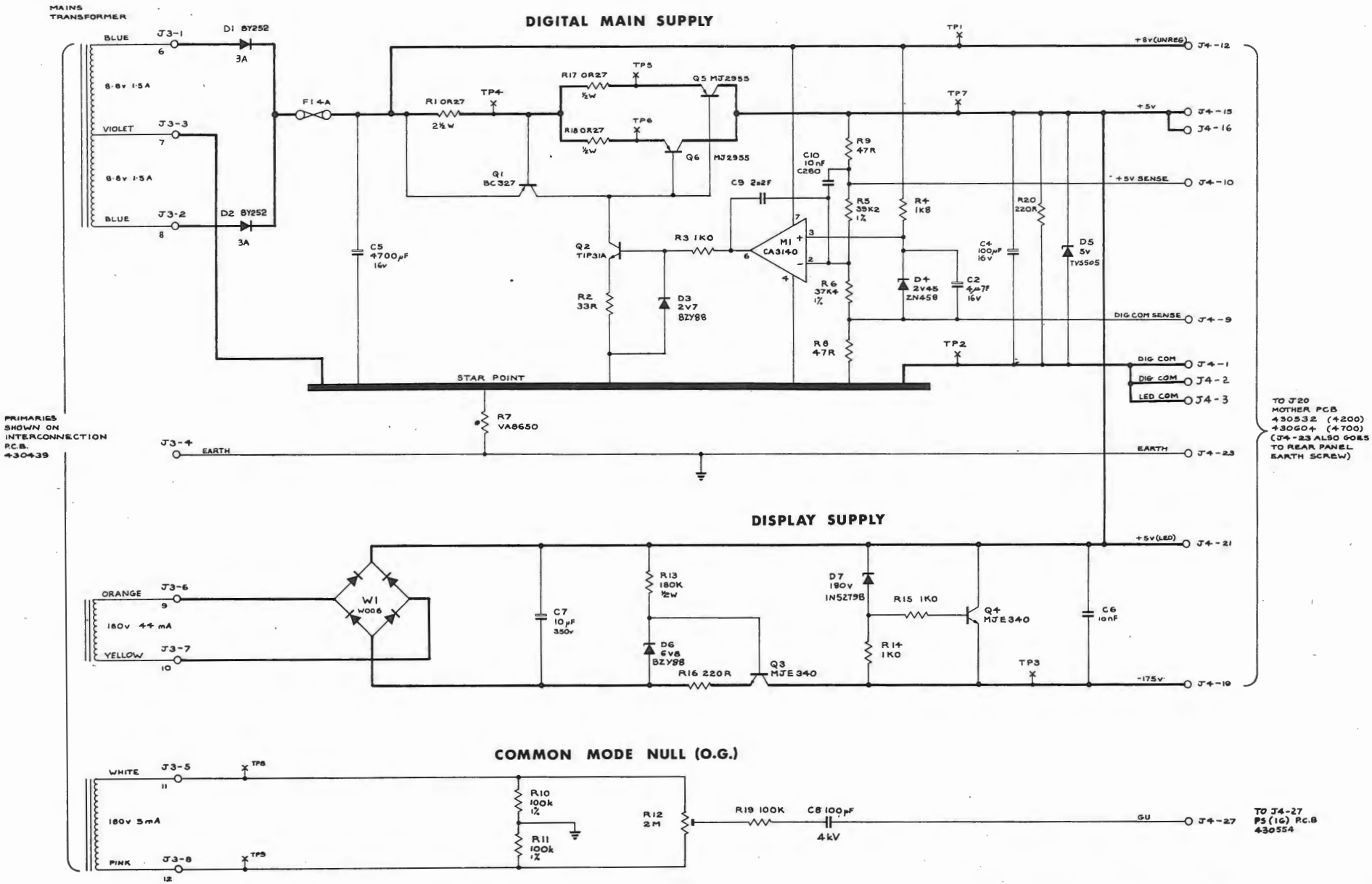

OUT-GUARD POWER SUPPLY ASSEMBLY

Main Digital Supply, Display Supply and Common Mode Null

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Circuit Diagram No. 430561-2.0 Sheet 1

IN-GUARD POWER SUPPLY ASSEMBLY

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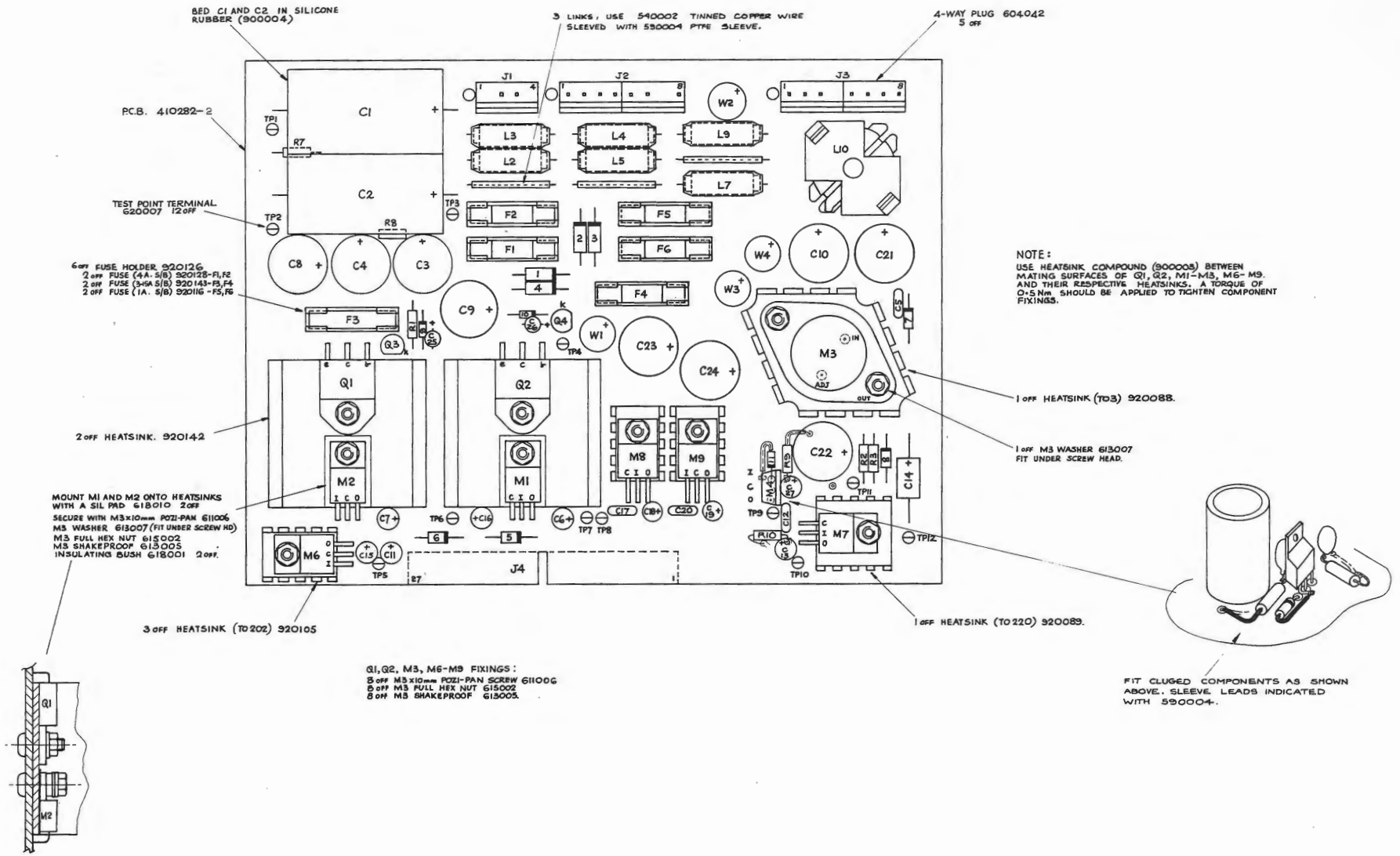

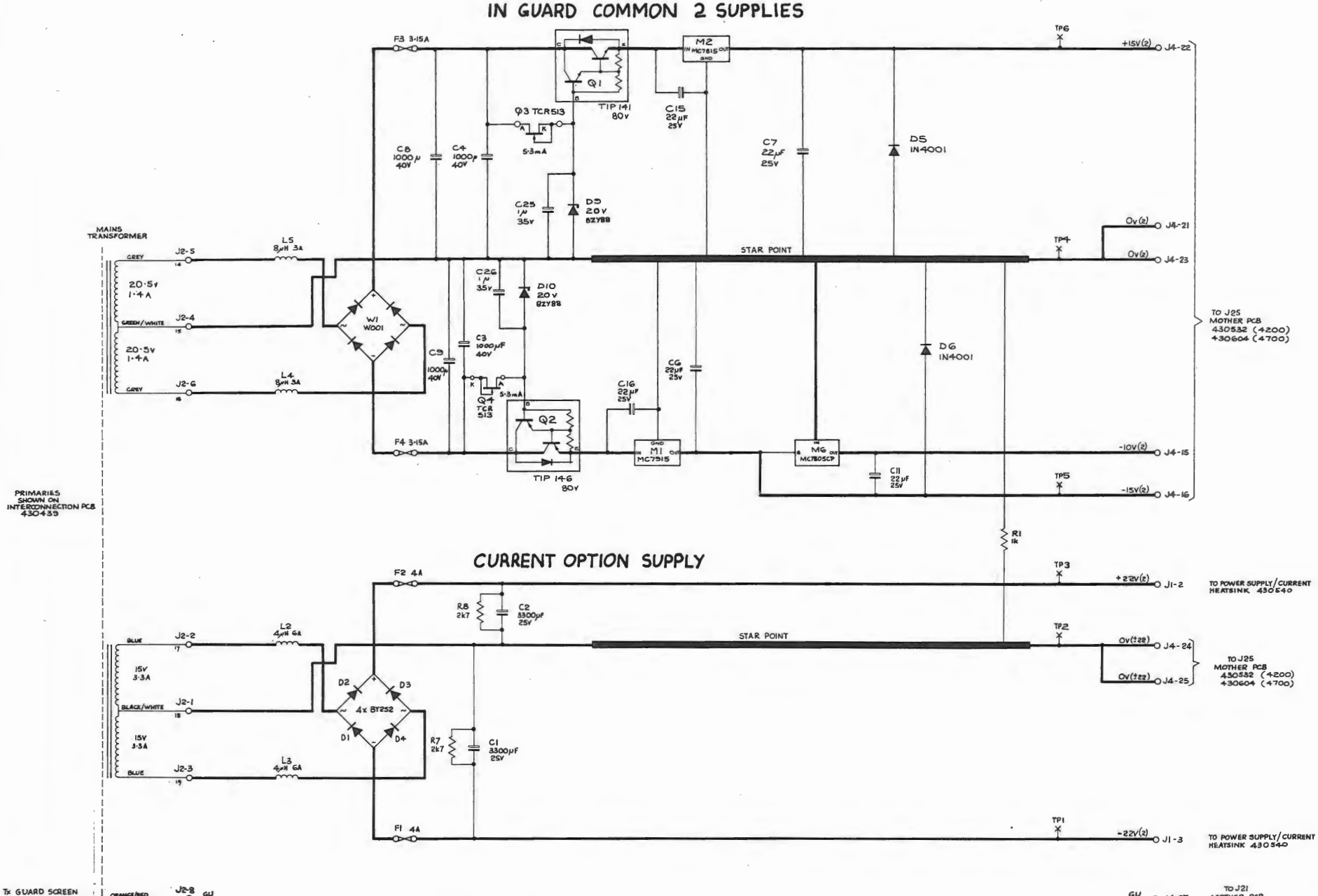

IN-GUARD POWER SUPPLY ASSEMBLY
Common-2 and Current Option Supplies

Circuit Diagram No. 430554-4.1 Sheet 1

4705

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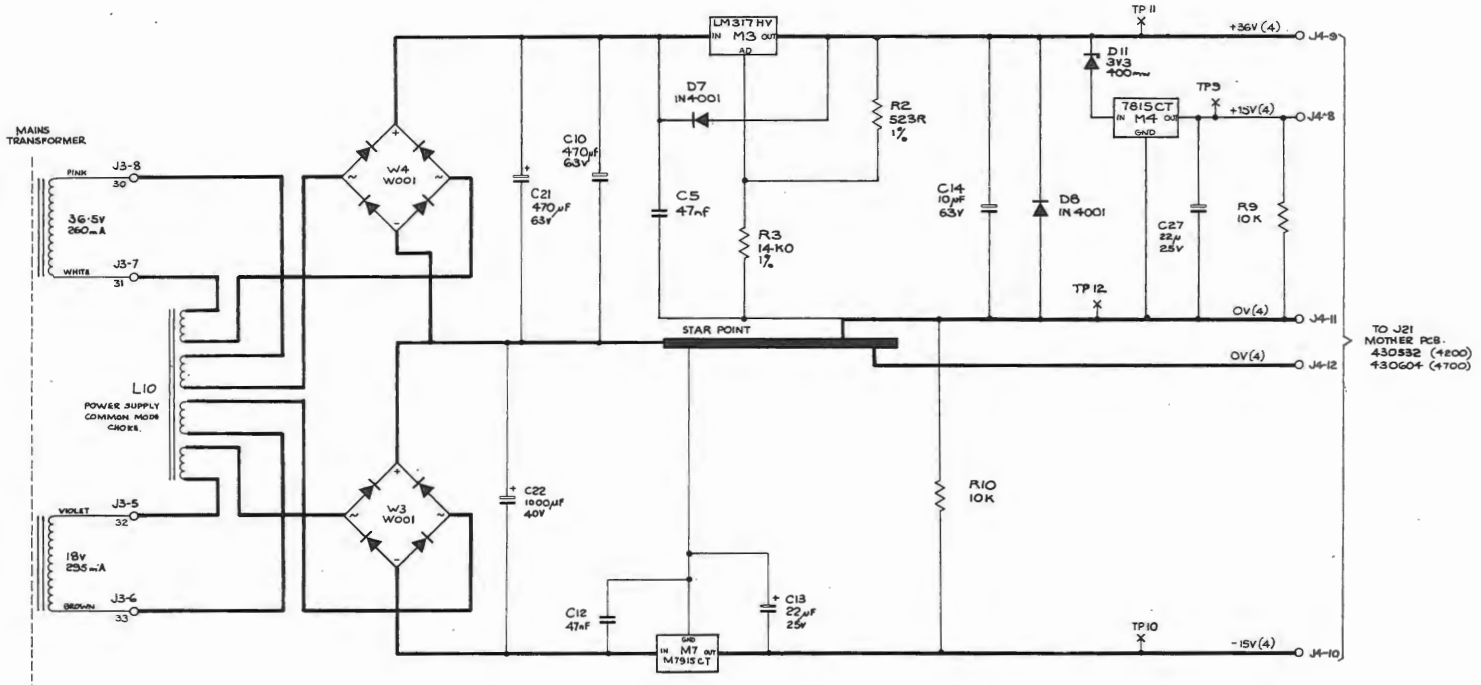
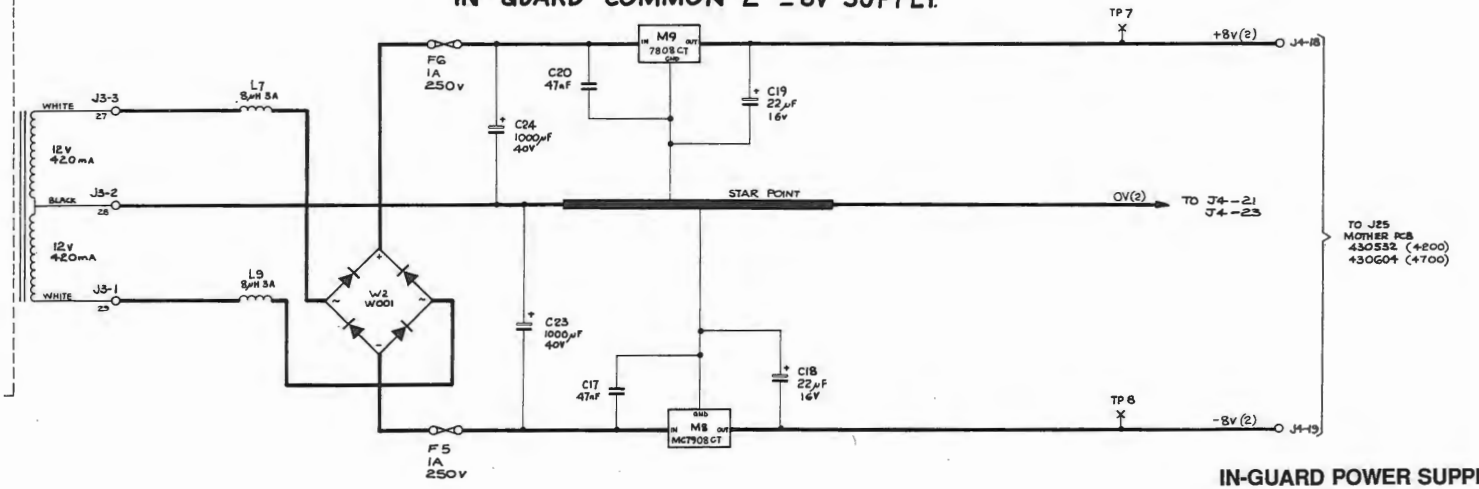
REFERENCE DIVIDER COMMON 4 SUPPLIES



PRIMARIES SHOWN ON INTERCONNECTION PCB 430435

IN GUARD COMMON 2 ±8V SUPPLY.



IN-GUARD POWER SUPPLY ASSEMBLY

Reference Divider Common-4 and ±8V Common-2 Supplies

4705

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Circuit Diagram No. 430554-4.0 Sheet 2

±38V POWER SUPPLY ASSEMBLY

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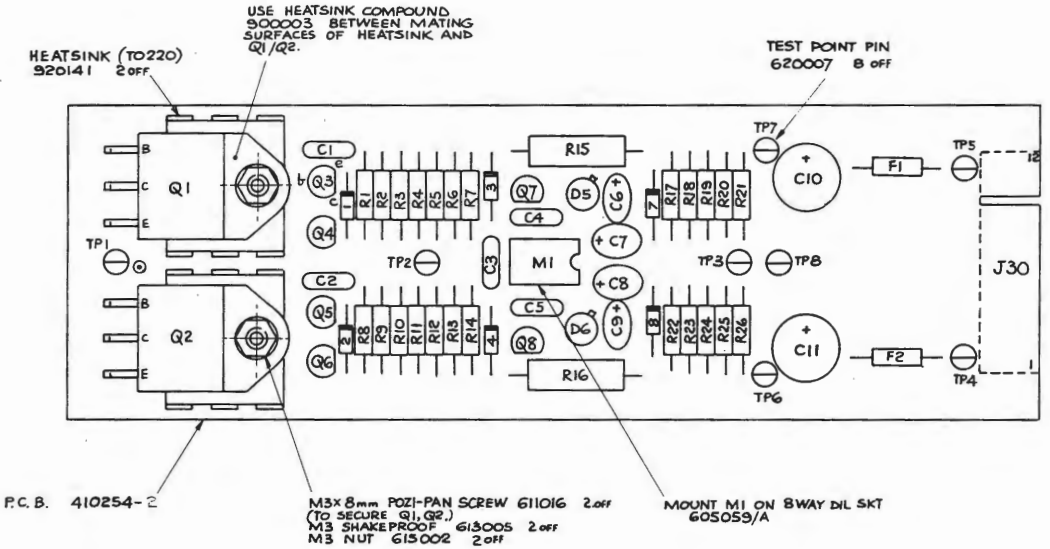

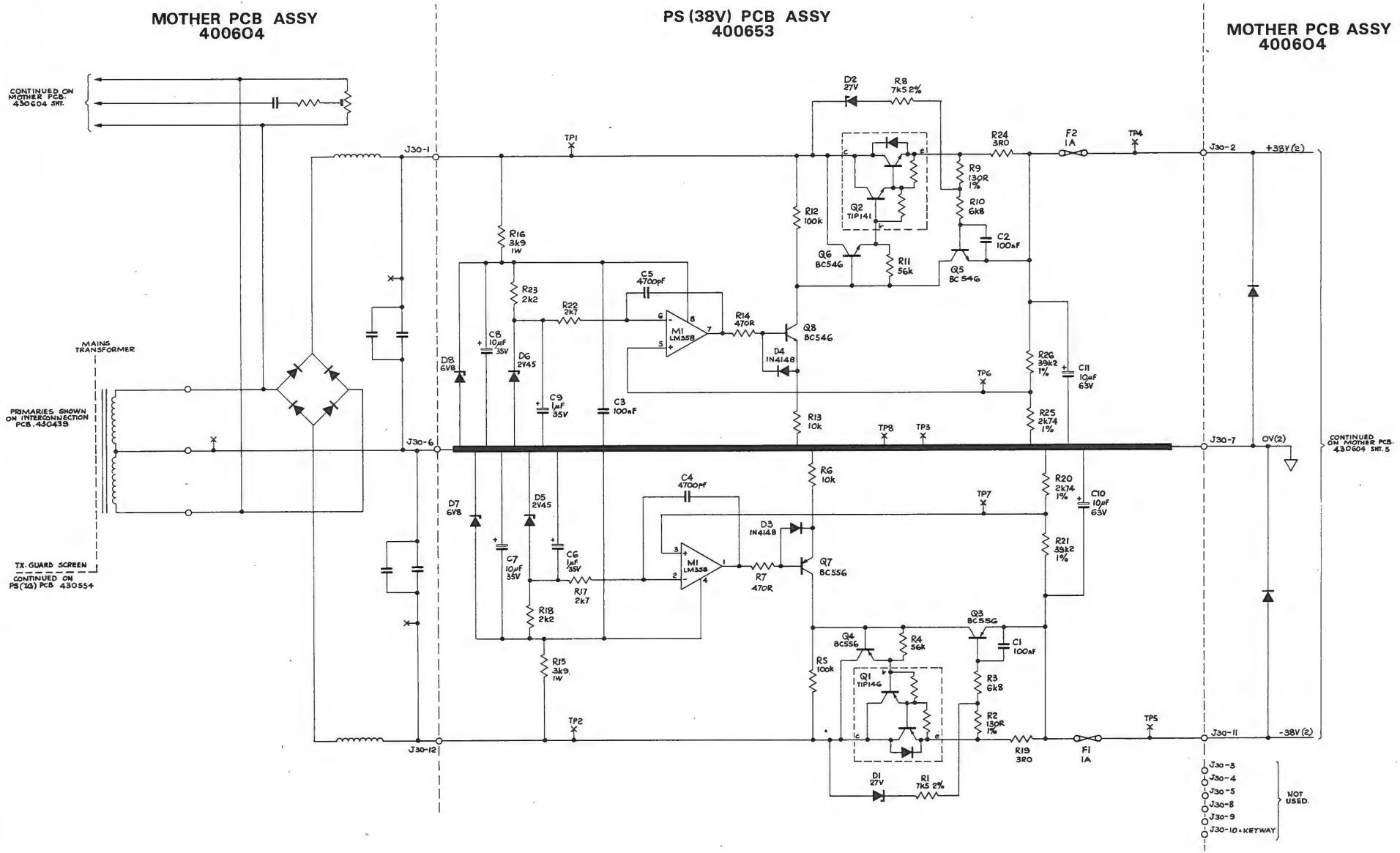

±38V POWER SUPPLY ASSEMBLY

±38V Power Supply with Mother Assembly Components

4705

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Circuit Diagram No. 430653-1.0 Sheet 1

POSITIVE HEATSINK ASSEMBLY

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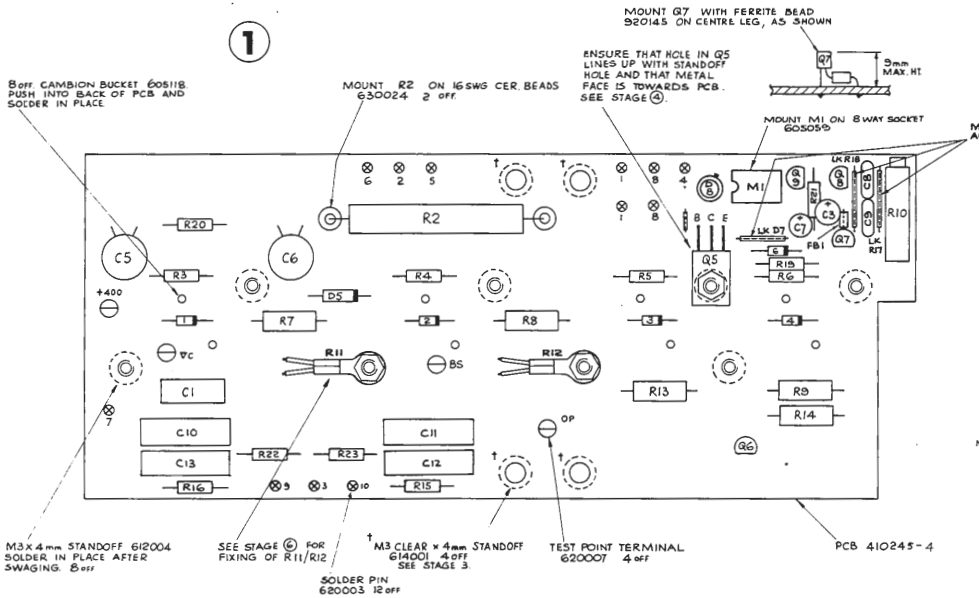
ASSEMBLY NOTES :

1. ASSEMBLY PCB TO STAGE ① EXCEPT SCREW FIXING FOR Q5 (SEE STAGE ④)
2. COMPLETE PCB ASSY BY FITTING WIRING LOOMS. DO NOT FIT 'P' CLIP (SEE STAGE ②)
3. ASSEMBLE P.C.B ASSY TO HEATSINKS, FITTED BY 4 MIDDLE SCREWS (SEE STAGE ⑦)
4. MOUNT Q1–Q4 TO STAGE ③ ASSEMBLE IN THE POSITION SHOWN (STAGE ⑦); APPLY HEATSINK COMPOUND 900003 BETWEEN MATING SURFACES. USE A TORQUE SCREWDRIVER TO TIGHTEN ALL TRANSISTOR FIXING SCREWS TO A TORQUE OF 0·5Nm.
5. SECURE Q5 (STAGE ④). TIGHTEN NUT TO A TORQUE OF 0·5 Nm.
6. SECURE WIRING WITH 'P' CLIP (STAGE ⑤)

①



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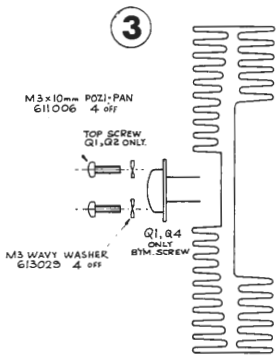

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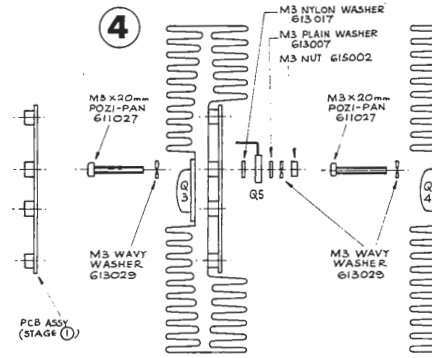

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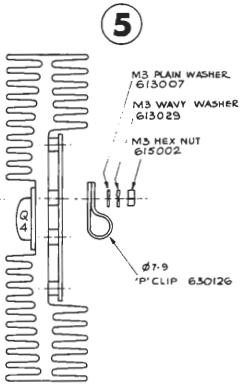

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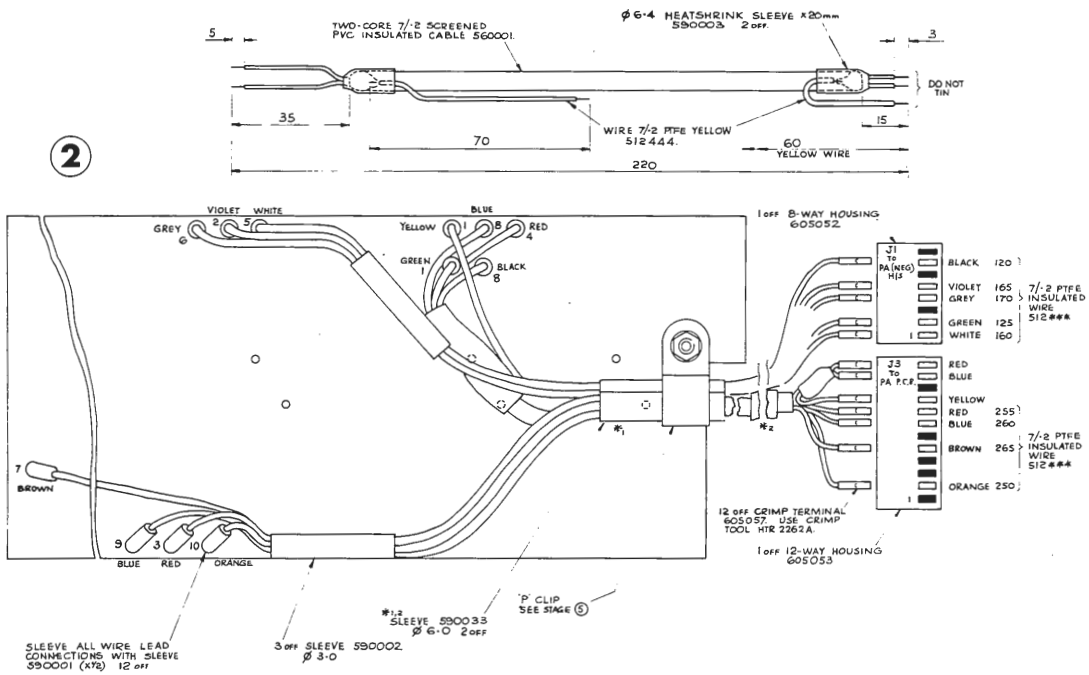

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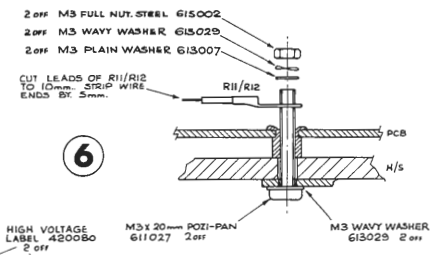
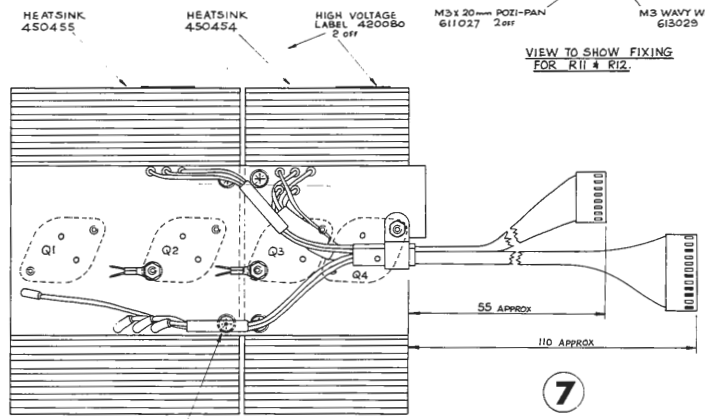


VIEW TO SHOW FIXING FOR R11 & R12.

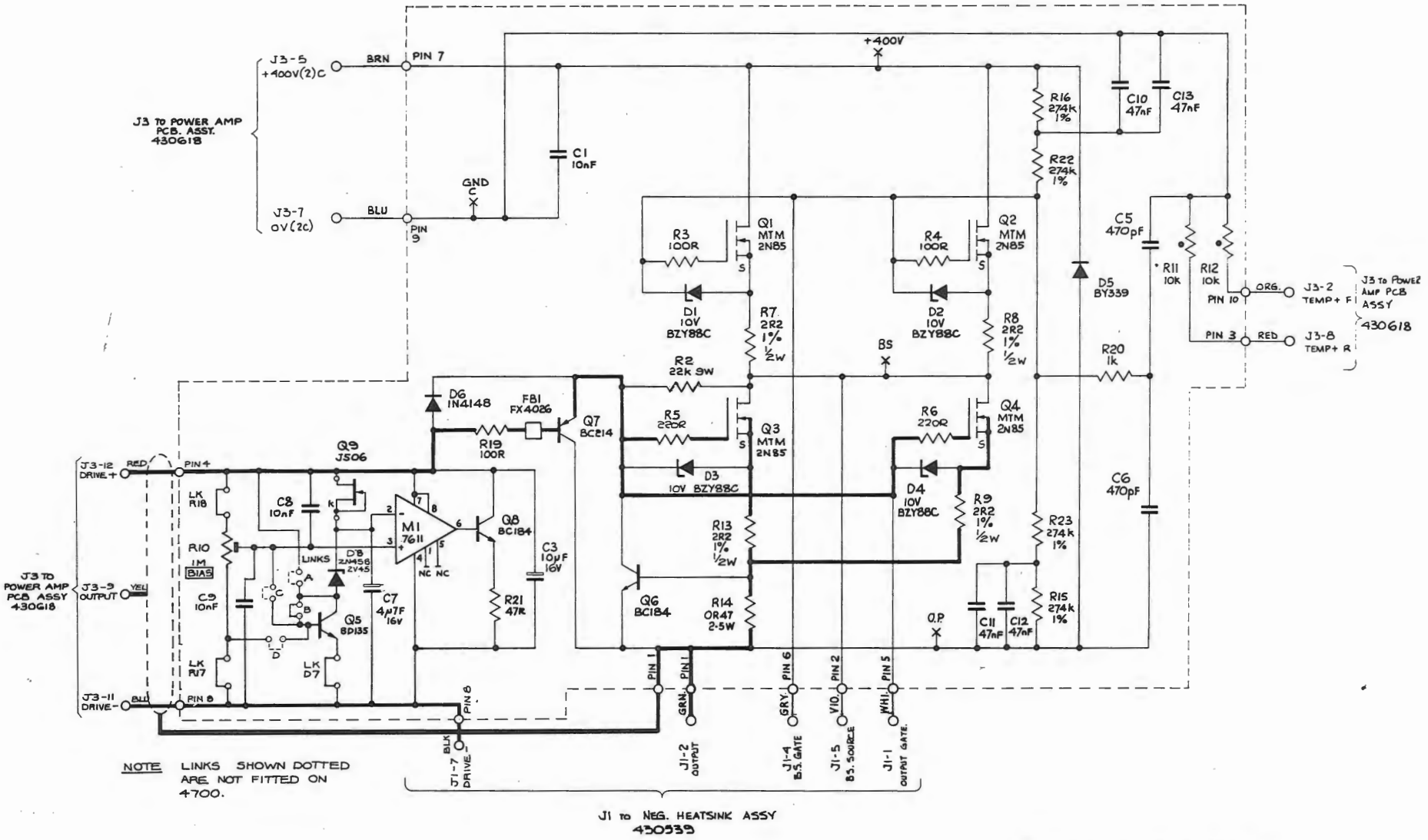
⑦



THIRD ANGLE PROJECTION
DRAWN IN ACCORDANCE WITH BS 308

ALL BURRS TO BE REMOVED

NOTES



NOTE LINKS SHOWN DOTTED ARE NOT FITTED ON 4700.

POSITIVE HEATSINK ASSEMBLY

Output Power Amplifier (Positive Half)

4705

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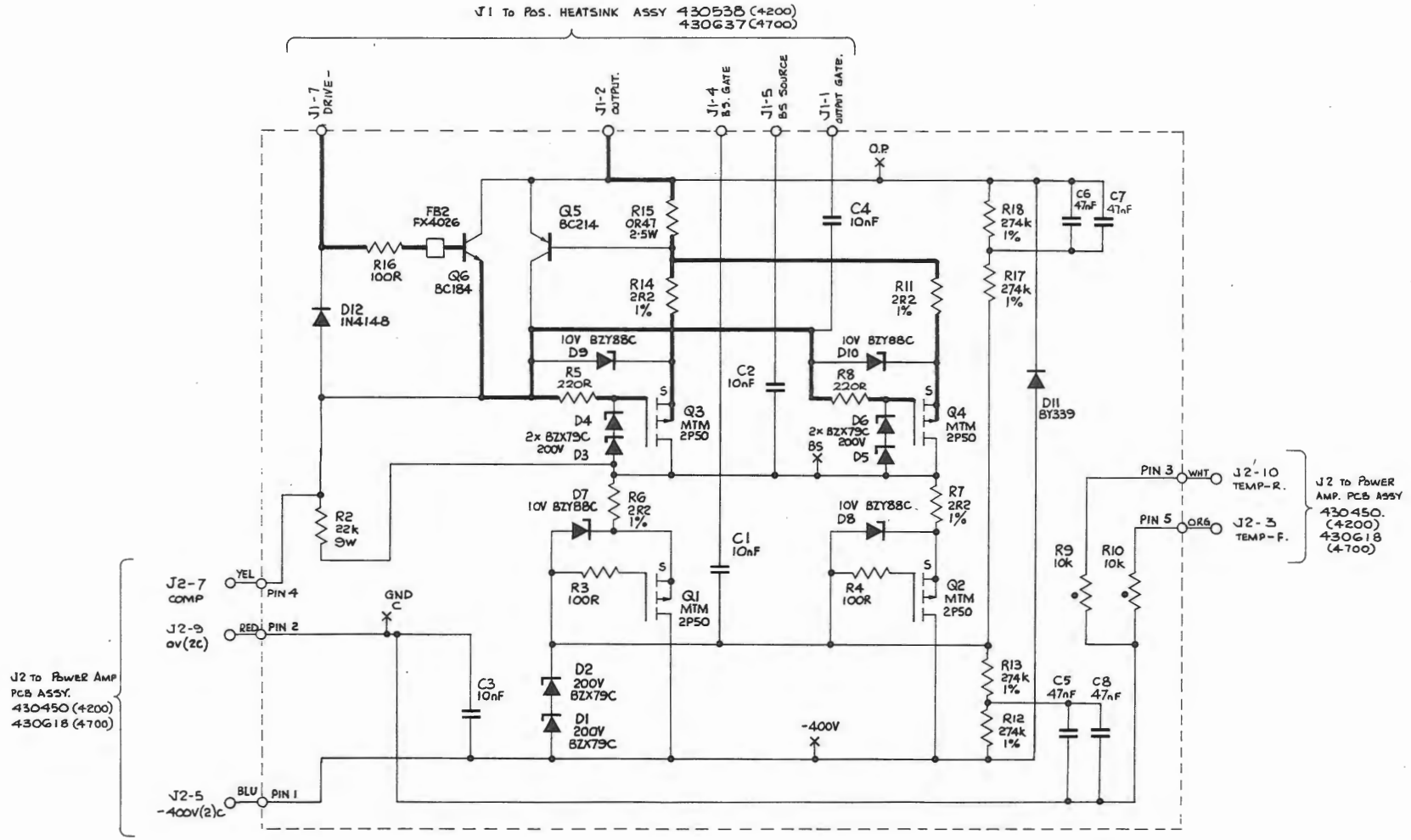
Circuit Diagram No. 430637-1.1 Sheet 1

THIRD ANGLE PROJECTION
DRAWN IN ACCORDANCE WITH BS 308

ALL BURRS TO BE REMOVED

NOTES



NEGATIVE HEATSINK ASSEMBLY

Output Power Amplifier (Negative Half)

Circuit Diagram No. 430539-7.3 Sheet 1

4705

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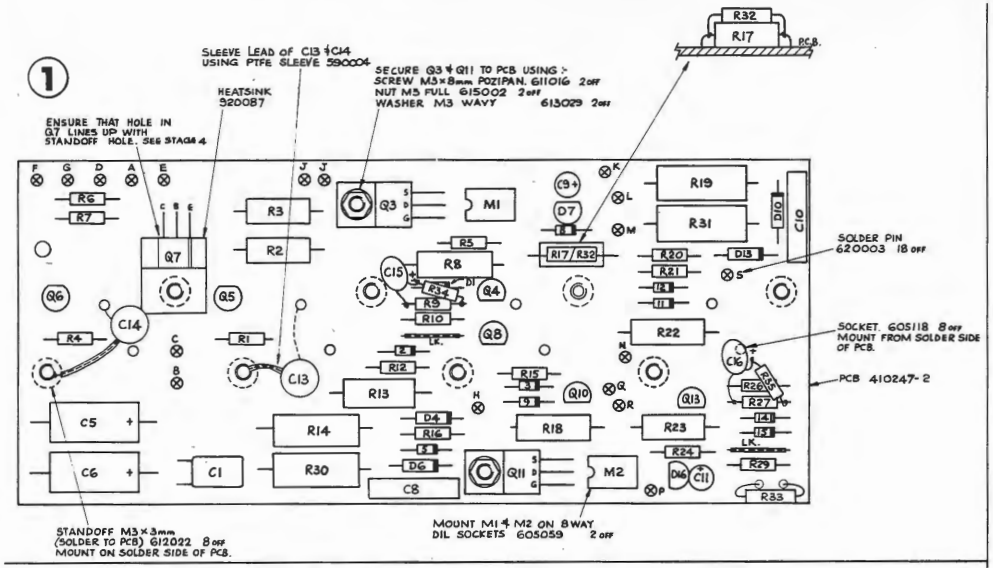
PS / I HEATSINK ASSEMBLY

datron INSTRUMENTS 4705

ASSEMBLY NOTES :
1. ASSEMBLE PCB TO STAGE ① EXCEPT SCREW FOR SECURING Q7 (SEE STAGE ④)
2. COMPLETE PCB ASSY BY FITTING WIRING LOOMS. DO NOT FIT 'P' CLIPS (SEE STAGE ⑤)
3. ASSEMBLE PCB ASSY TO HEATSINK BY FITTING Q1,2,9 & 12 (SEE STAGE ③). ASSEMBLE IN THE POSITIONS SHOWN AT STAGE ⑥; APPLY HEATSINK COMPOUND 900003 BETWEEN MATING SURFACES. USE A TORQUE SCREWDRIVER TO TIGHTEN ALL TRANSISTOR FIXING SCREWS TO A TORQUE OF 0·5 Nm.
4. SECURE Q7 (STAGE ④). TIGHTEN NUT TO A TORQUE OF 0·5 Nm.
5. SECURE WIRING WITH 'P' CLIPS (SEE STAGES ② AND ⑤)

①



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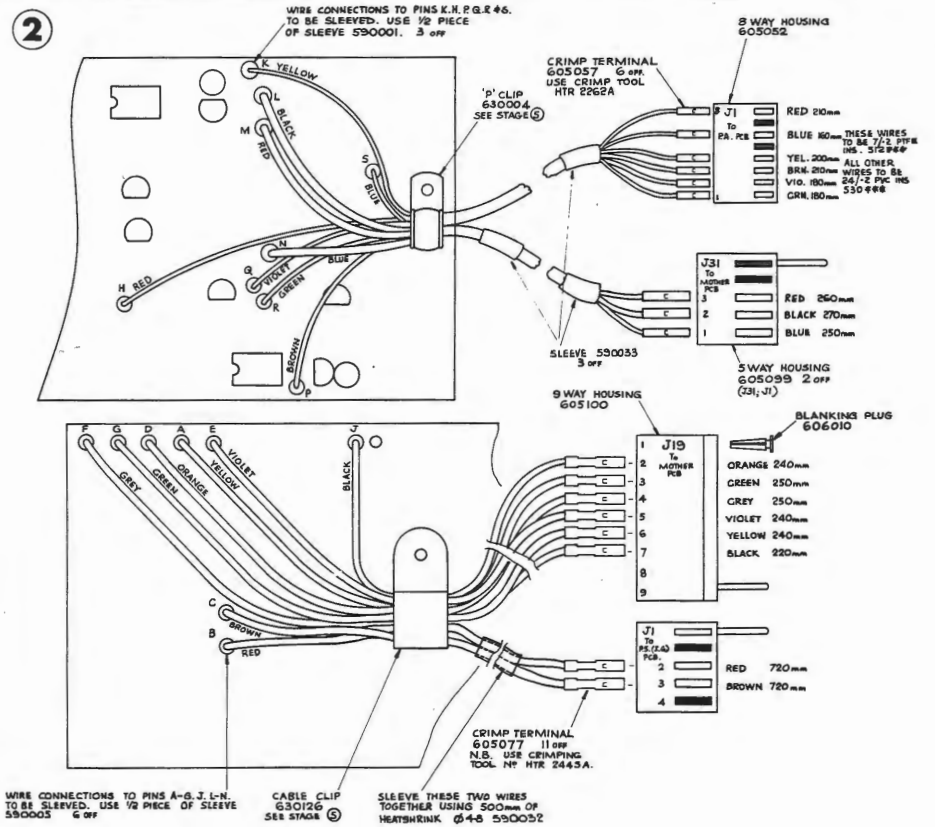
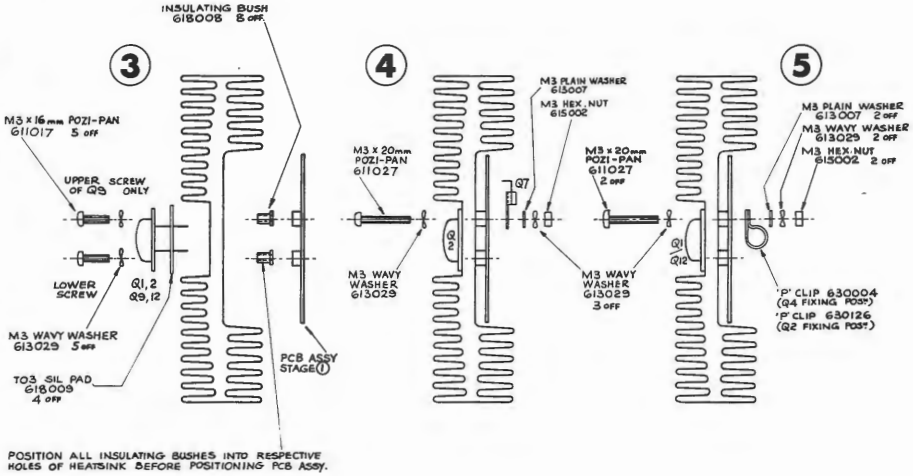


③ ④ ⑤



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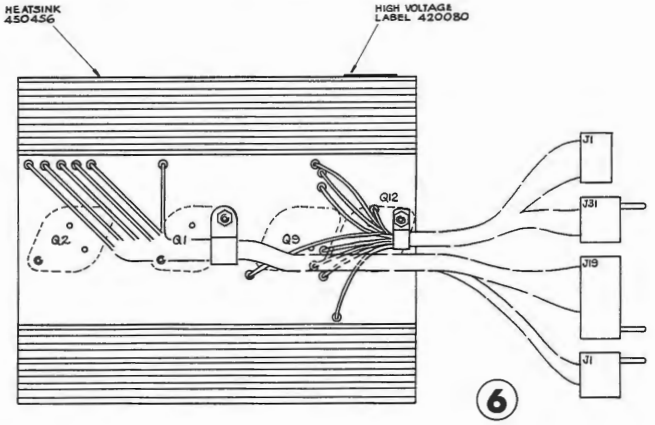

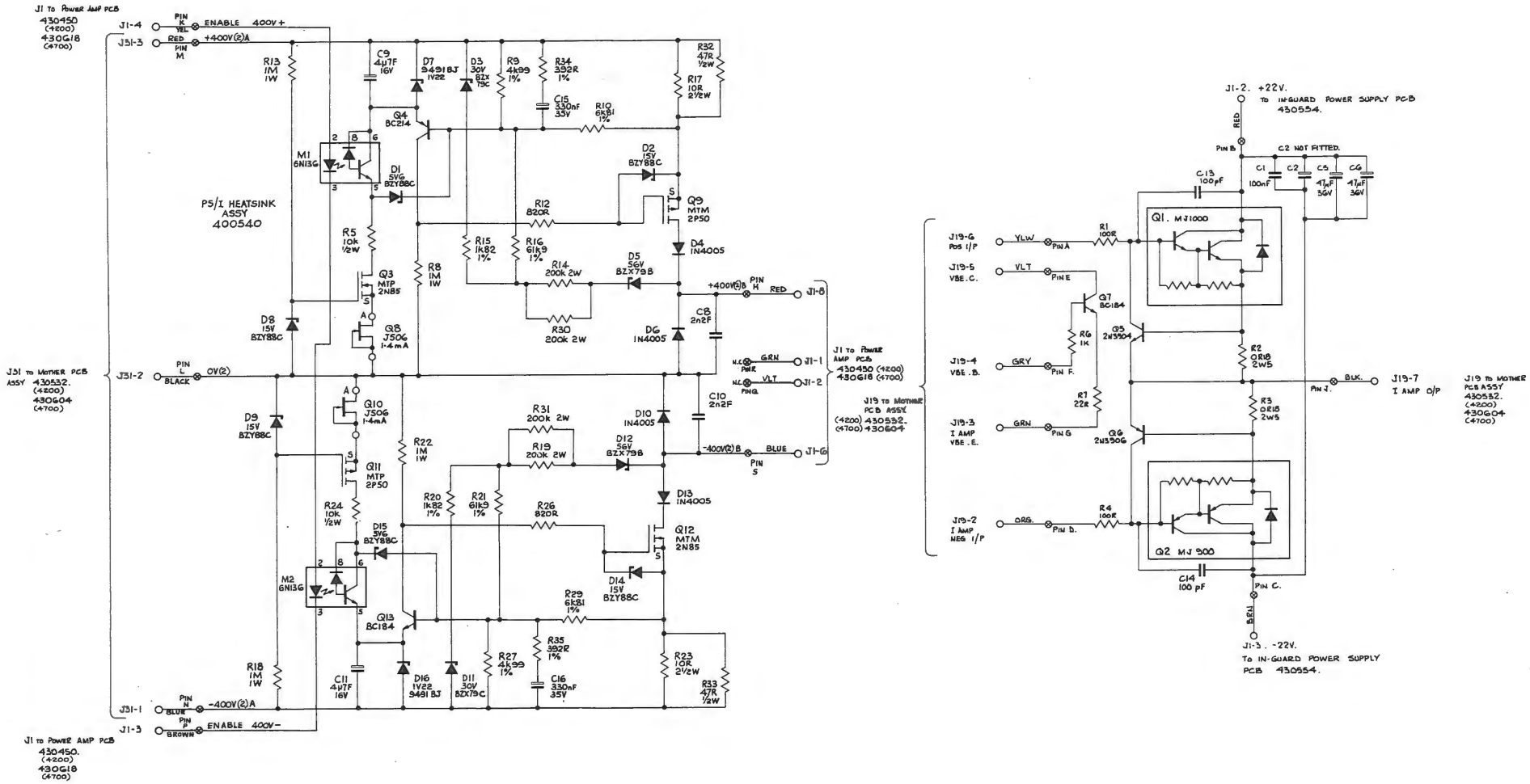

PS / I HEATSINK ASSEMBLY

±400V(2)B Regulator and Current Option Output Stage

Circuit Diagram No. 430540-6.0 Sheet 1

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HIGH VOLTAGE ASSEMBLY

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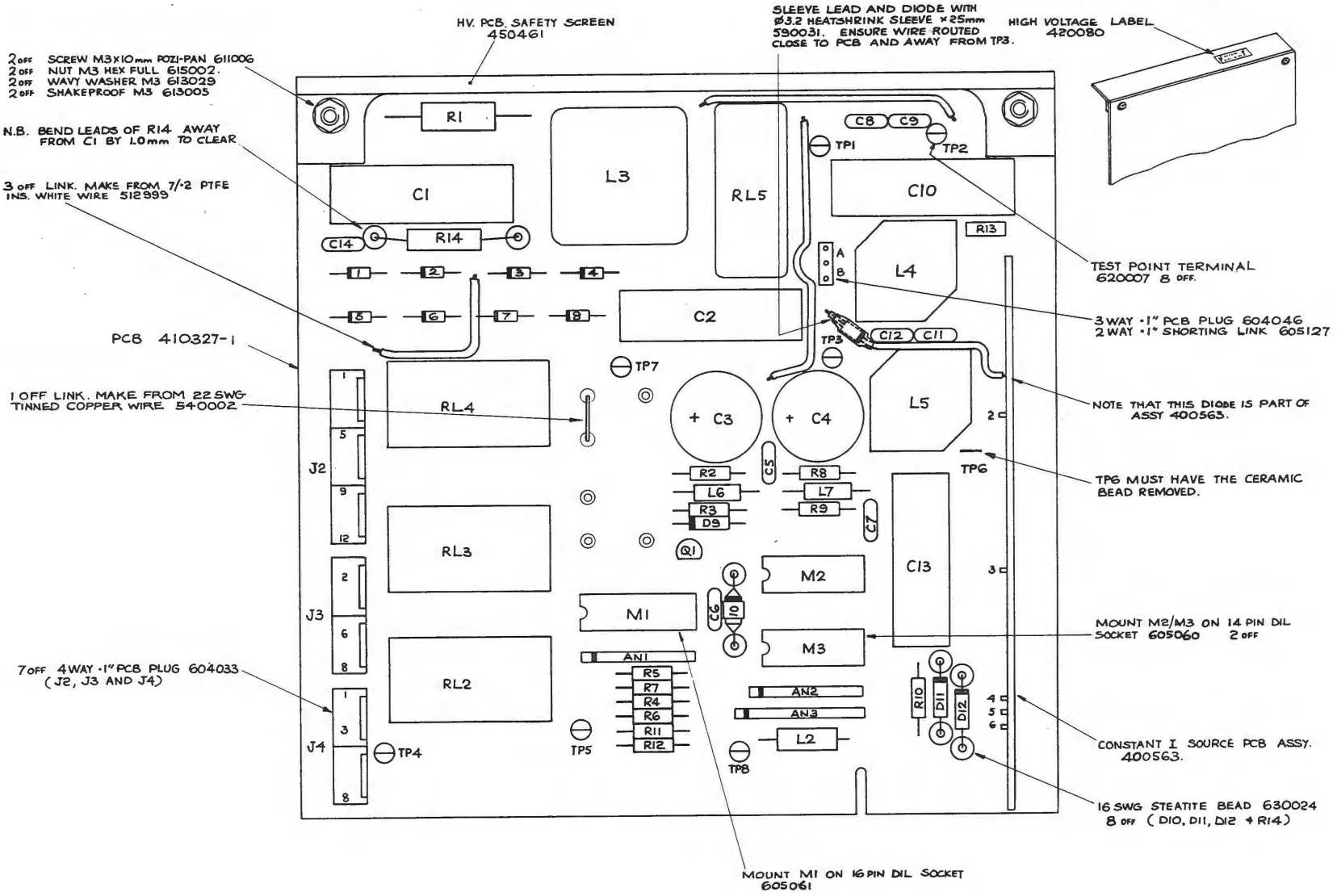

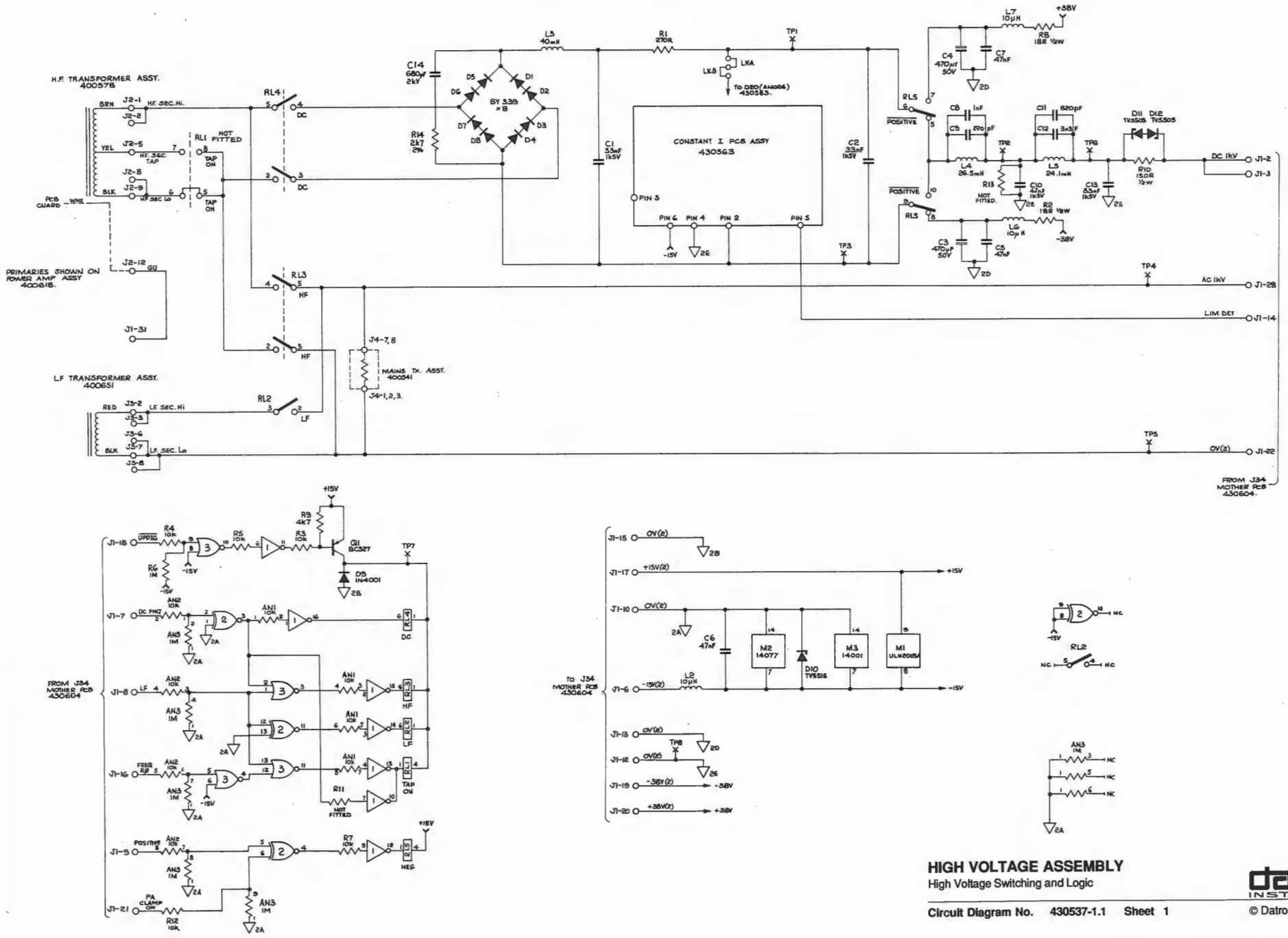
H.F. TRANSFORMER ASSY. 400578
LF TRANSFORMER ASSY. 400651
PRIMARIES SHOWN ON POWER AMP ASSY 400618.
CONSTANT I PCB ASSY 430563
MAINS TX. ASSY. 400541
TO DEO (AN004) 430563.
DC 1kV
AC 1kV
LIM DET
OV(z)
FROM J34 MOTHER PCB 430604.
TO J34 MOTHER PCB 430604
HIGH VOLTAGE ASSEMBLY
High Voltage Switching and Logic
Circuit Diagram No. 430537-1.1 Sheet 1
4705
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CONSTANT CURRENT SOURCE ASSEMBLY

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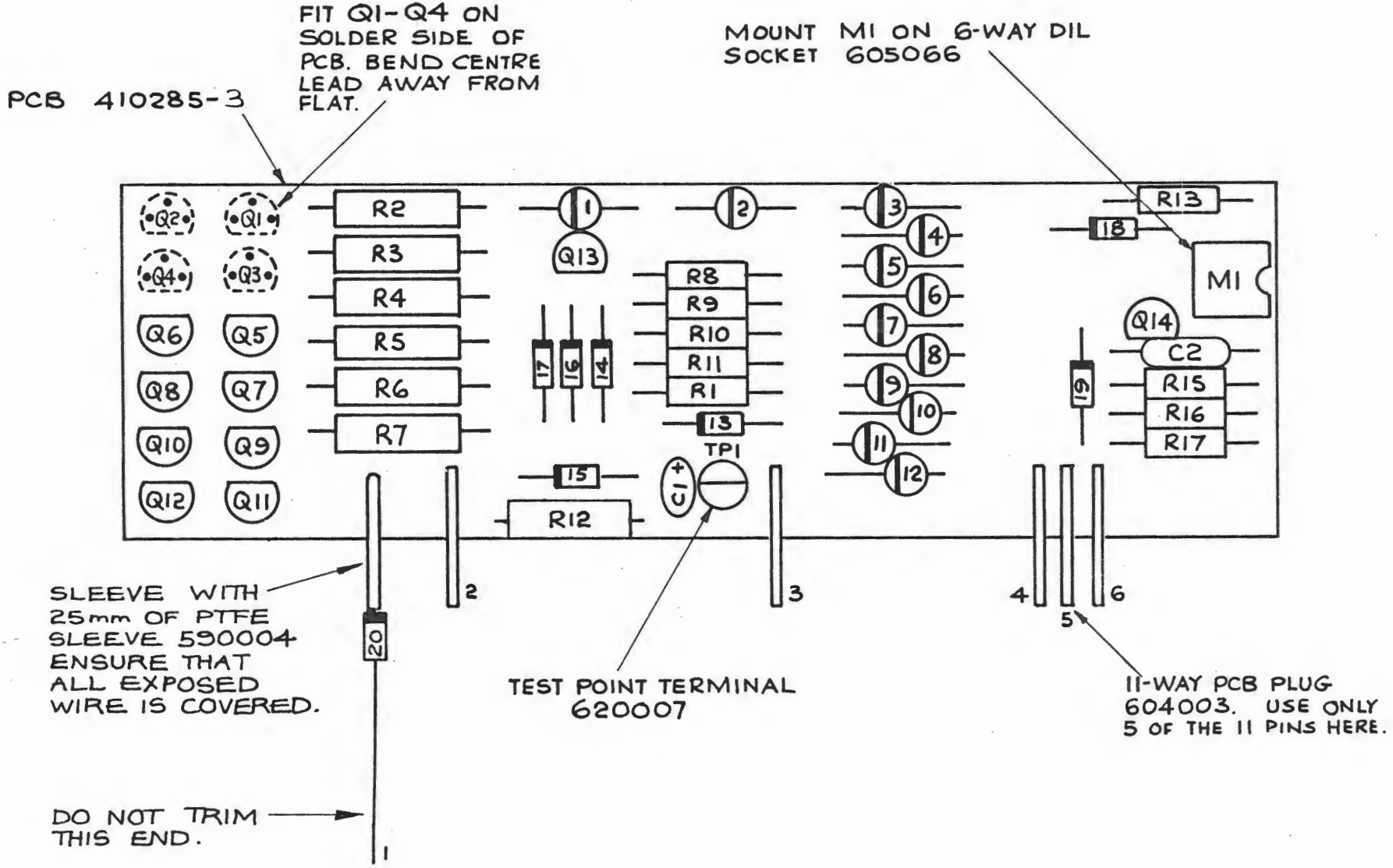

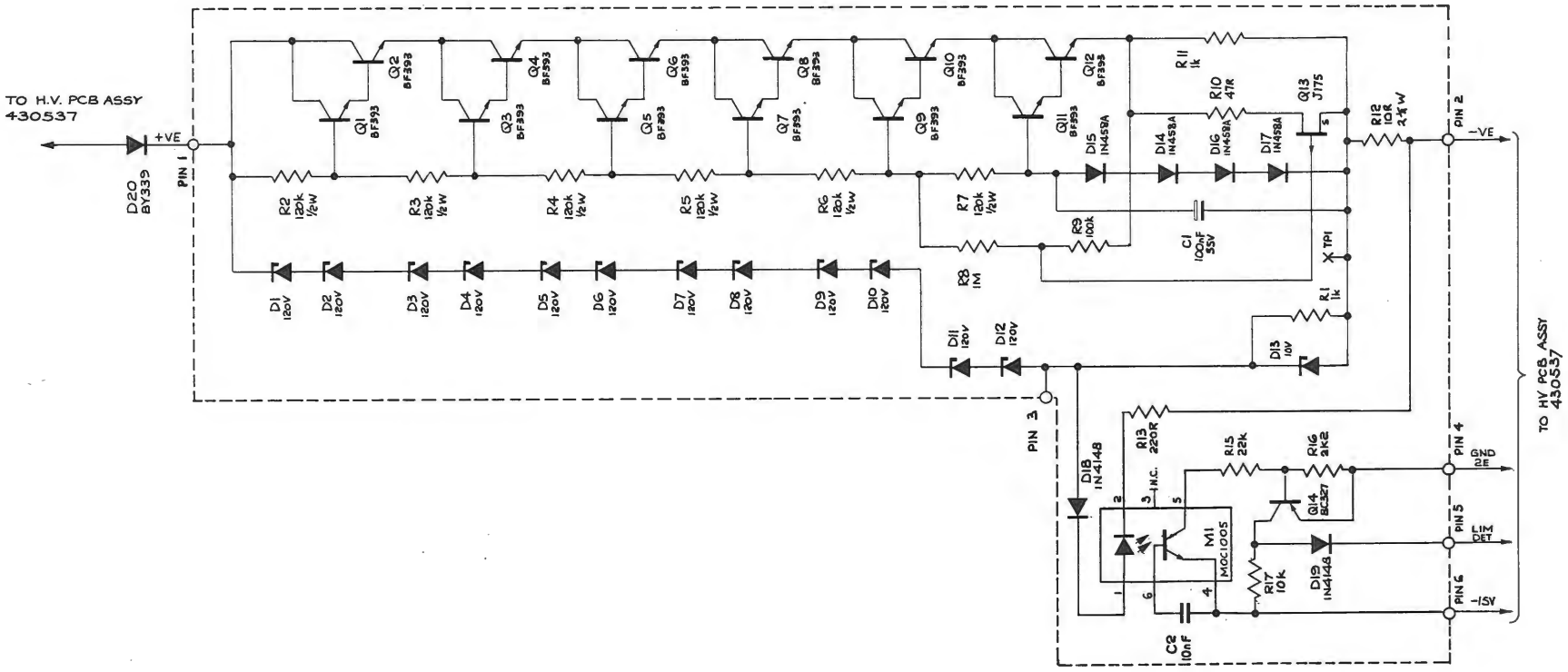

CONSTANT CURRENT SOURCE ASSEMBLY

High Voltage Rectifier Bleed Chain

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Circuit Diagram No. 430563-2.0 Sheet 1

MAINS (LINE) TRANSFORMER

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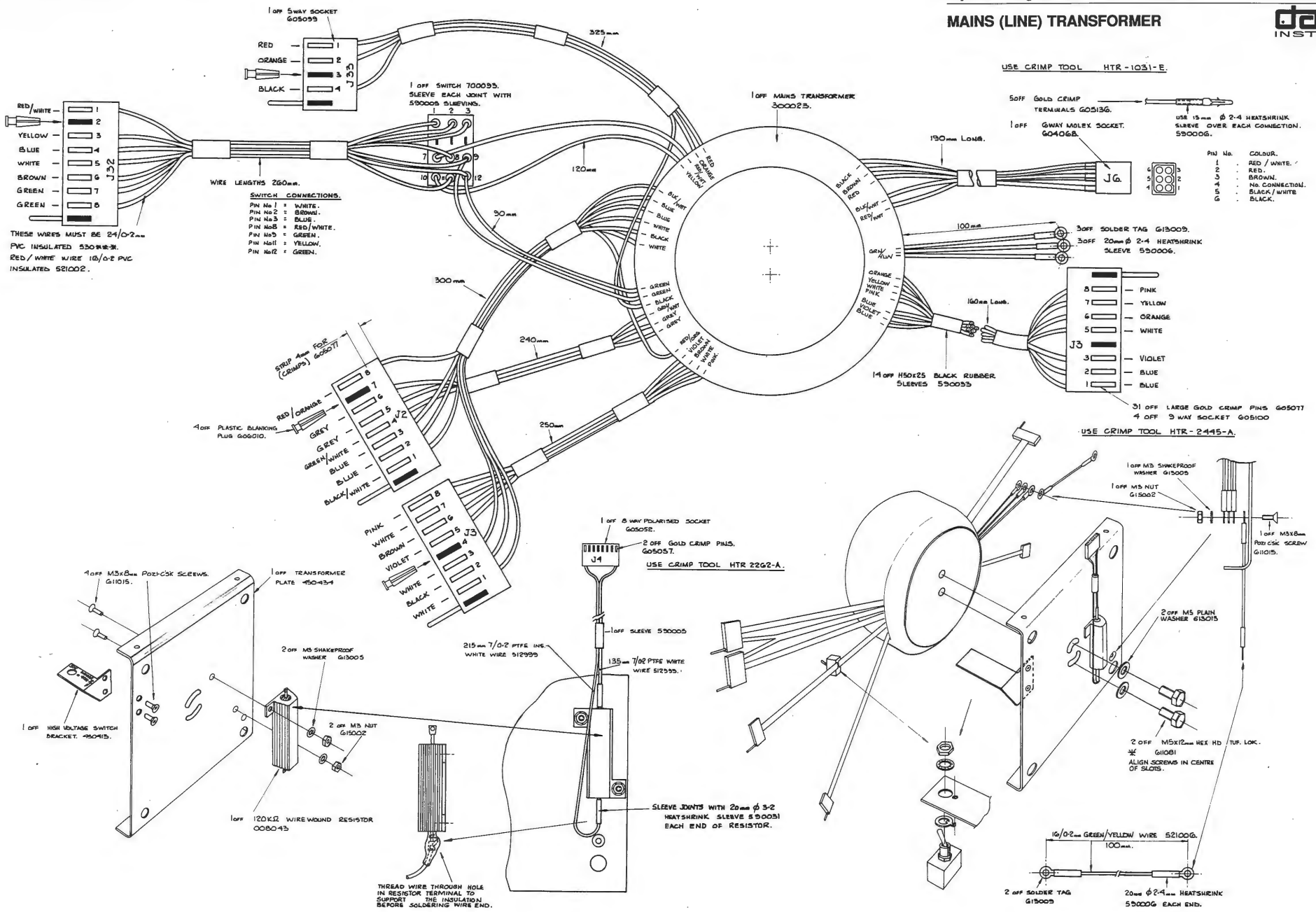

For mains (line) transformer circuits refer to the following pages:

L.F. TRANSFORMER ASSEMBLY

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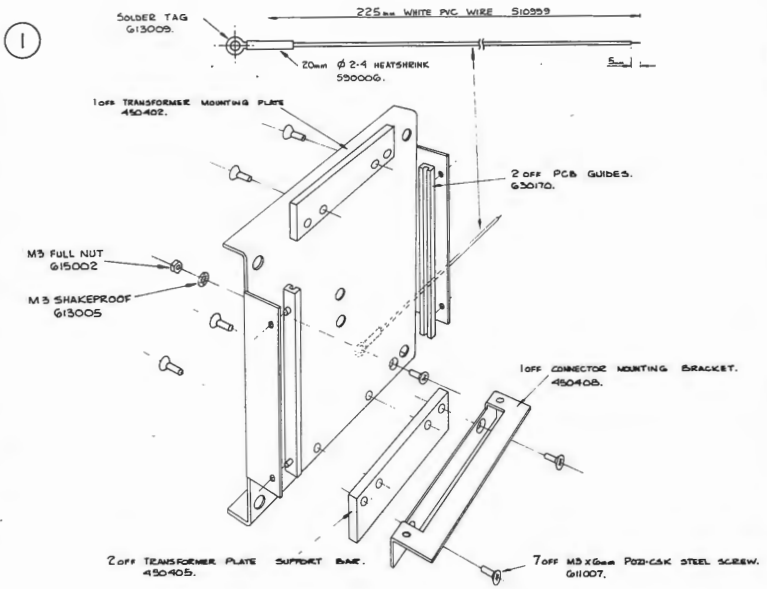
1



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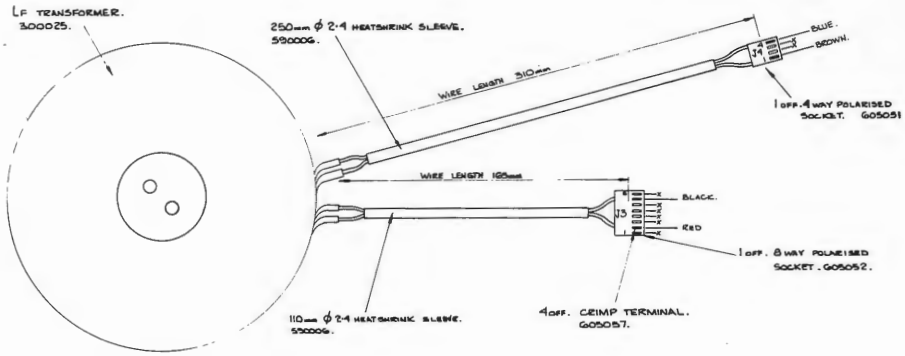

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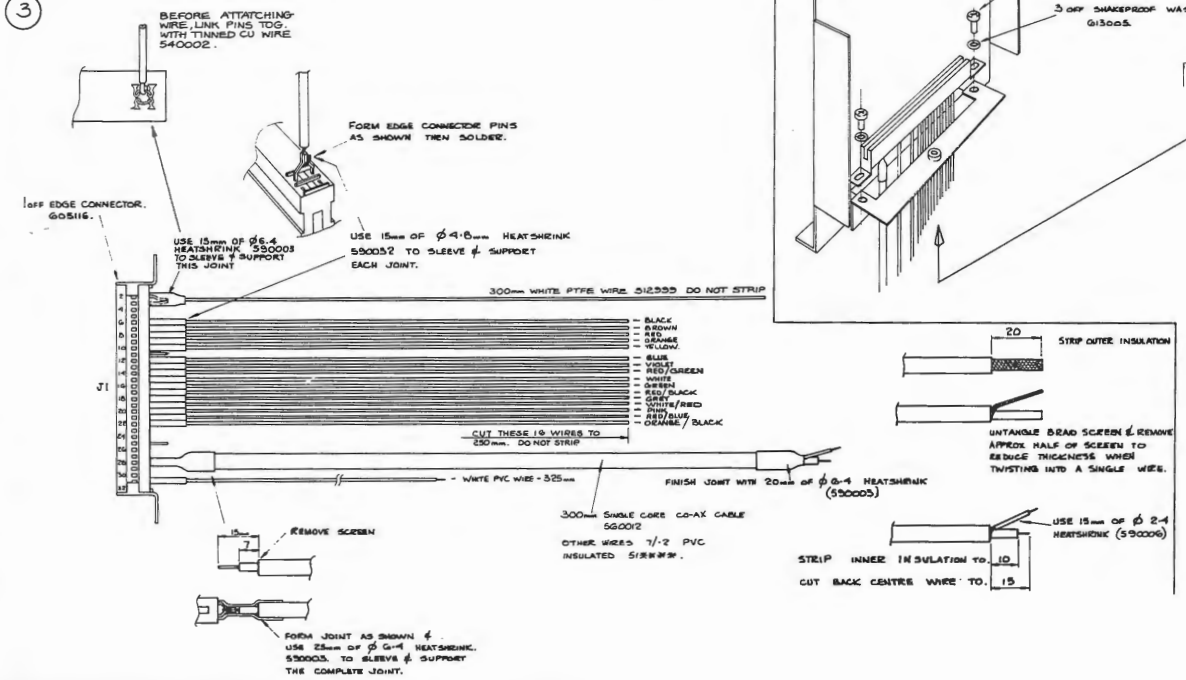

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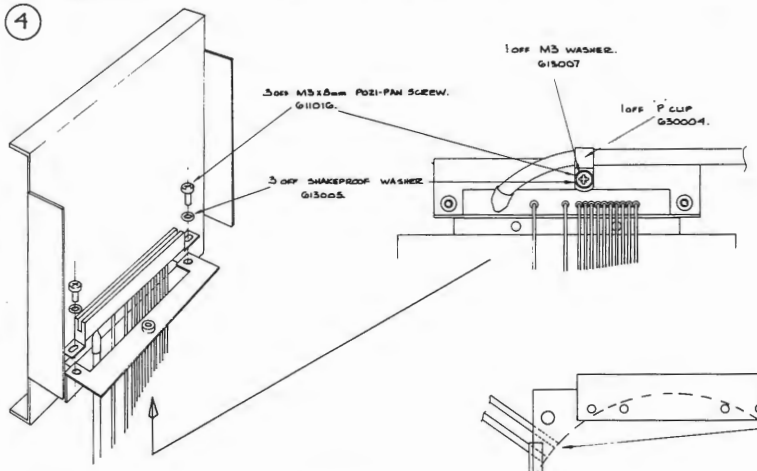

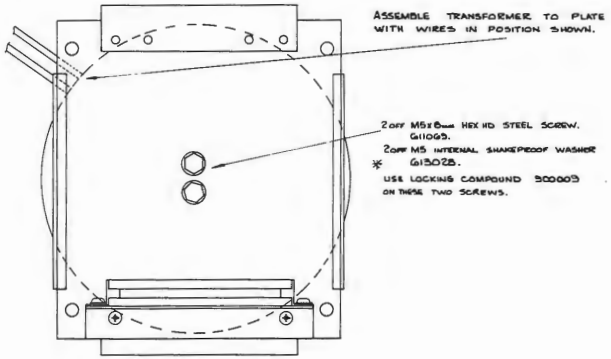

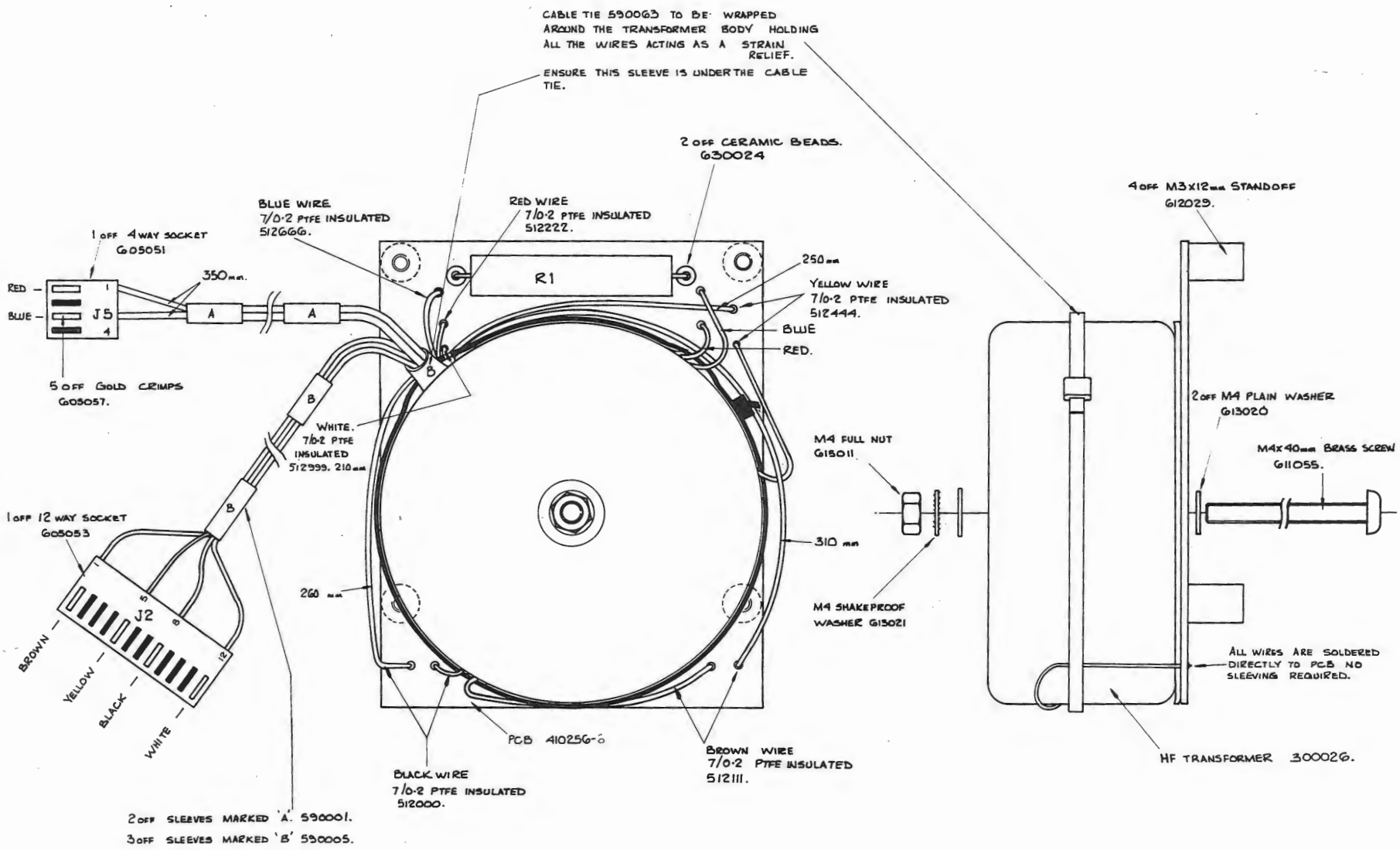

H.F. TRANSFORMER ASSEMBLY

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Layout Drawing No. 480578-4.1 Sheet 1

MOTHER ASSEMBLY

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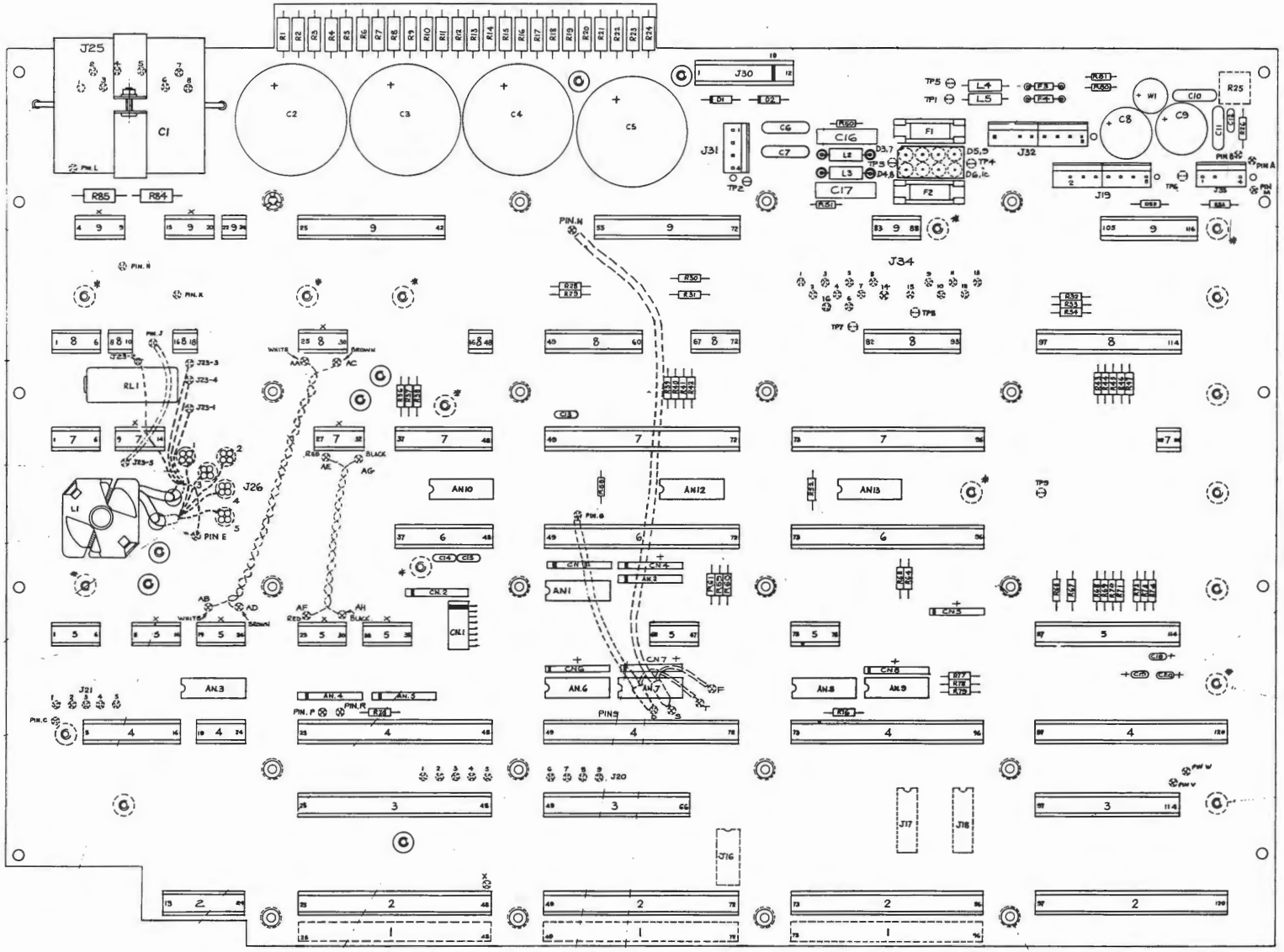
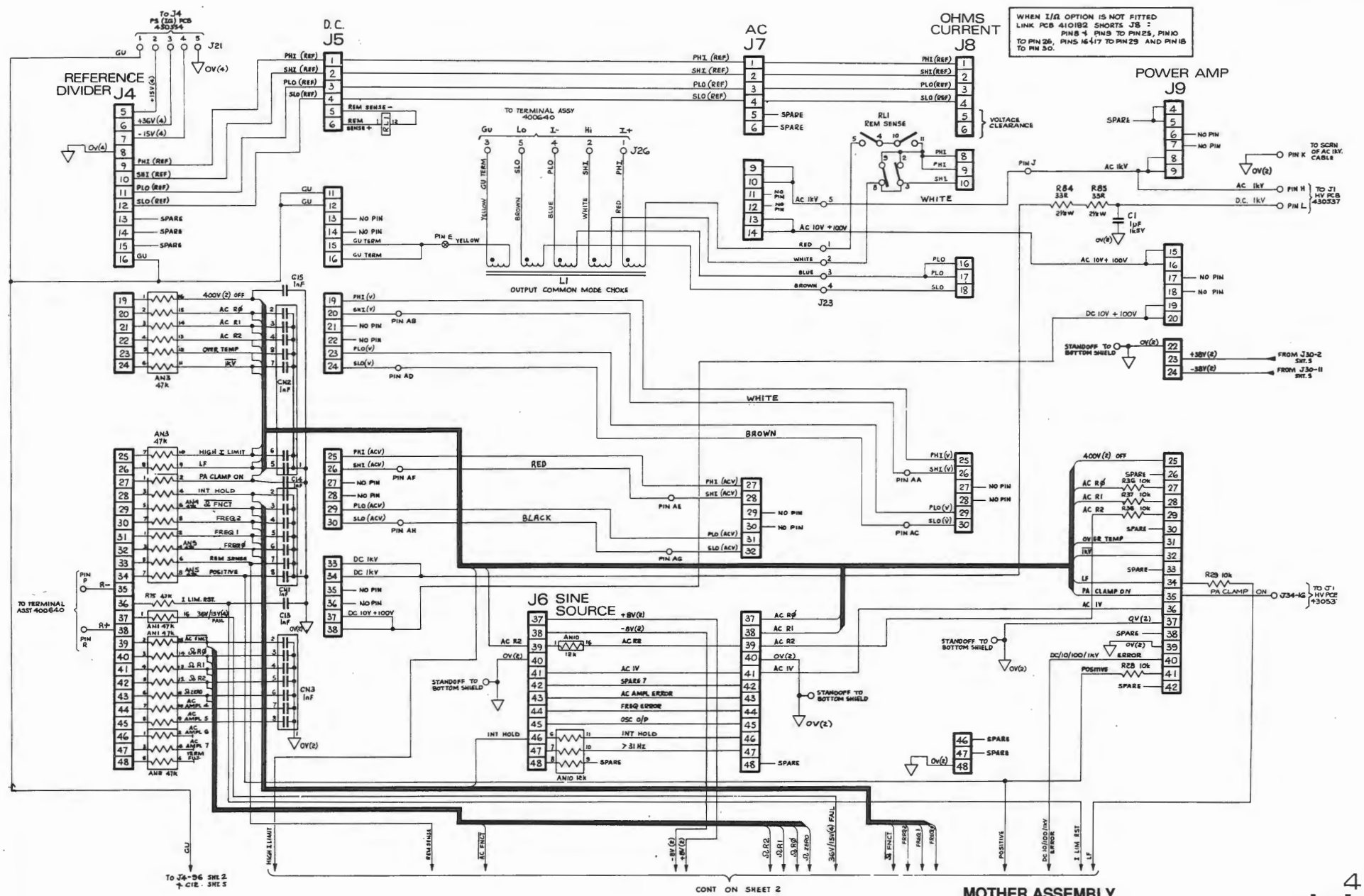


Connectors and Pin Numbers						Page
J1	25-96					*11.16-4*
J2	13-120					*11.16-4*
J3	25-66	97-114				*11.16-4*
J4	5-16 49-96 97-120	19-48				*11.16-1* *11.16-2* *11.16-4*
J5	1-6 62-67 97-114	11-16 73-78	19-30	33-38		*11.16-1* *11.16-2* *11.16-3*
J6	37-48 49-96					*11.16-1* *11.16-2*
J7	1-6 49-96 112-114	9-14	27-32	37-48		*11.16-1* *11.16-2* *11.16-3*
J8	1-6 49-60 97-114	8-10 67-72	16-18 82-93	25-30	46-48	*11.16-1* *11.16-2* *11.16-3*
J9	4-9 55-72 105-116	15-20 83-88	22-42			*11.16-1* *11.16-2* *11.16-3*
J16/J17/J18		1-16				*11.16-4*
J19	1-8					*11.16-3*
J20	1-9					*11.16-4*
J21/J23/J26		1-5				*11.16-1*
J25	1-8					*11.16-2*
J30	1-2	6-7	11-12			*11.16-5*
J31/33	1-4					*11.16-5*
J32	1-8					*11.16-5*
J34	1-2 3-15 16					*11.16-5* *11.16-2* *11.16-1*
Pins	A; B; C; M D; F; G; N; S; T E; H; J; K; L; P; R V; W					*11.16-5* *11.16-2* *11.16-1* *11.16.4*

MOTHER ASSEMBLY
EDGE CONNECTOR PIN INDEX


REFERENCE DIVIDER J4
D.C. J5
AC J7
OHMS CURRENT J8
POWER AMP J9
J6 SINE SOURCE
WHEN I/Ω OPTION IS NOT FITTED LINK PCB 410182 SHORTS J8 : PIN8 TO PIN9, PIN10 TO PIN26, PINS 16&17 TO PIN29 AND PIN18 TO PIN30.
TO TERMINAL ASSY 400640
OUTPUT COMMON MODE CHOKE
WHITE
BROWN
RED
BLACK
CONT ON SHEET 2
MOTHER ASSEMBLY
4705
datron INSTRUMENTS
Circuit Diagram No. 430604-1.0 Sheet 1
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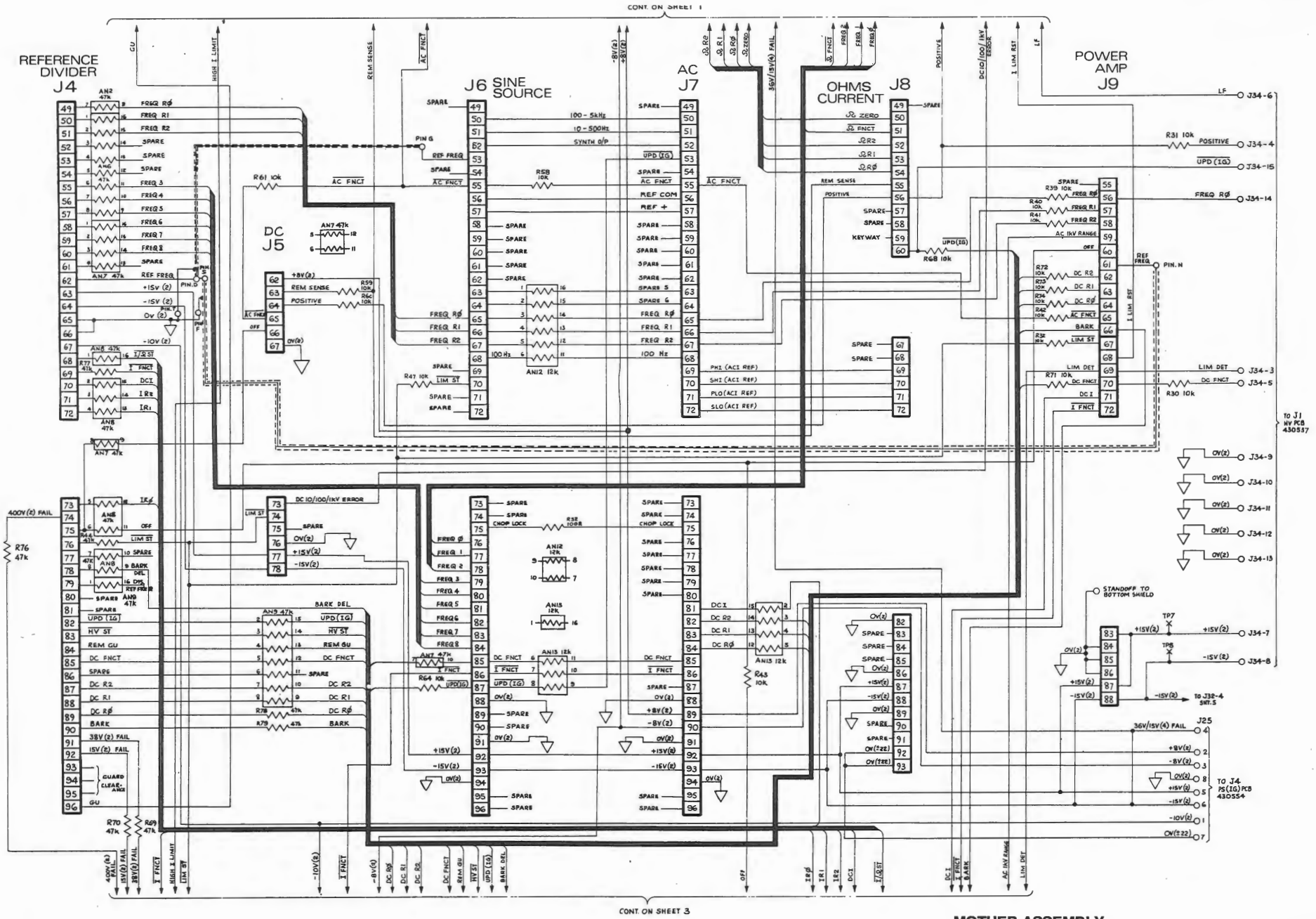

MOTHER ASSEMBLY

Circuit Diagram No. 430604-1.0 Sheet 2

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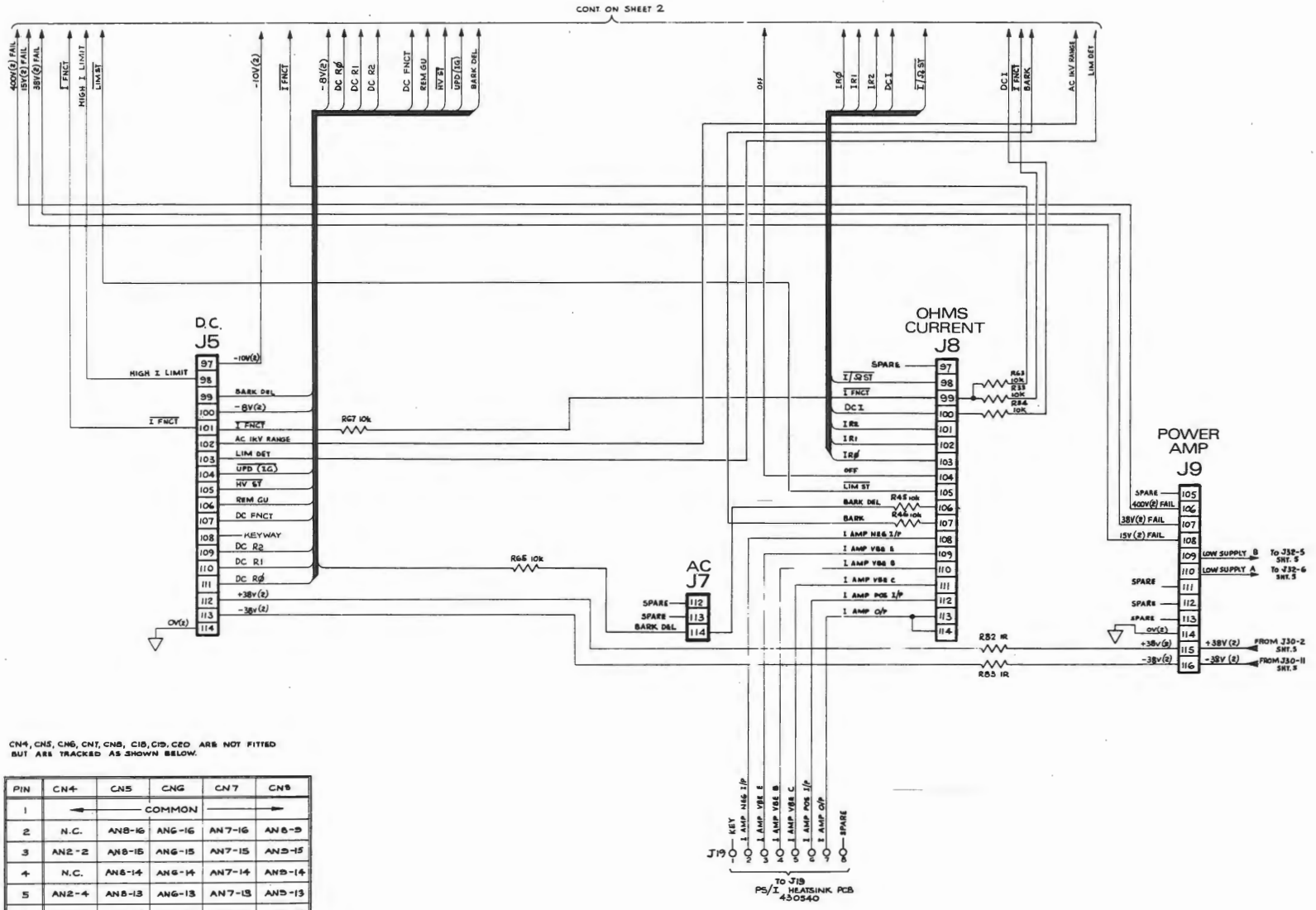

CN4, CN5, CN6, CN7, CN8, C18, C19, C20 ARE NOT FITTED BUT ARE TRACKED AS SHOWN BELOW.

PIN	CN4	CN5	CN6	CN7	CN8
1	← COMMON →				
2	N.C.	AN8-16	AN6-16	AN7-16	AN8-9
3	AN2-2	AN8-15	AN6-15	AN7-15	AN8-15
4	N.C.	AN8-14	AN6-14	AN7-14	AN8-14
5	AN2-4	AN8-13	AN6-13	AN7-13	AN8-13
6	AN2-6	AN8-12	AN6-12	AN6-5	AN8-12
7	N.C.	AN8-11	AN6-11	AN7-10	AN8-10
8	AN2-8 (JG-65)	N.C.	AN6-10	AN8-16	AN8-5

C18 - R77
C19 - R76
C20 - R75

MOTHER ASSEMBLY

4705

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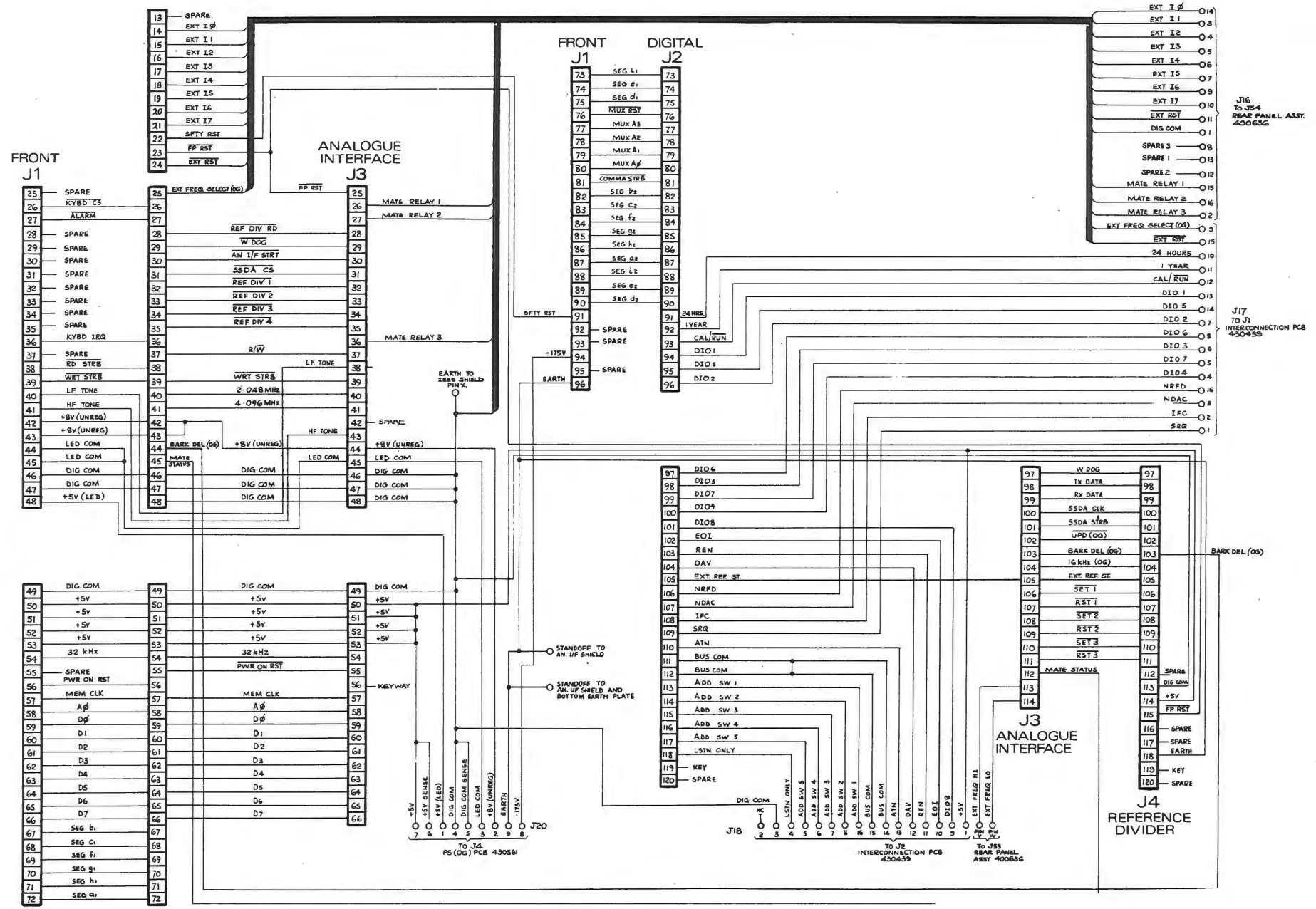
Circuit Diagram No. 430604-1.0 Sheet 3

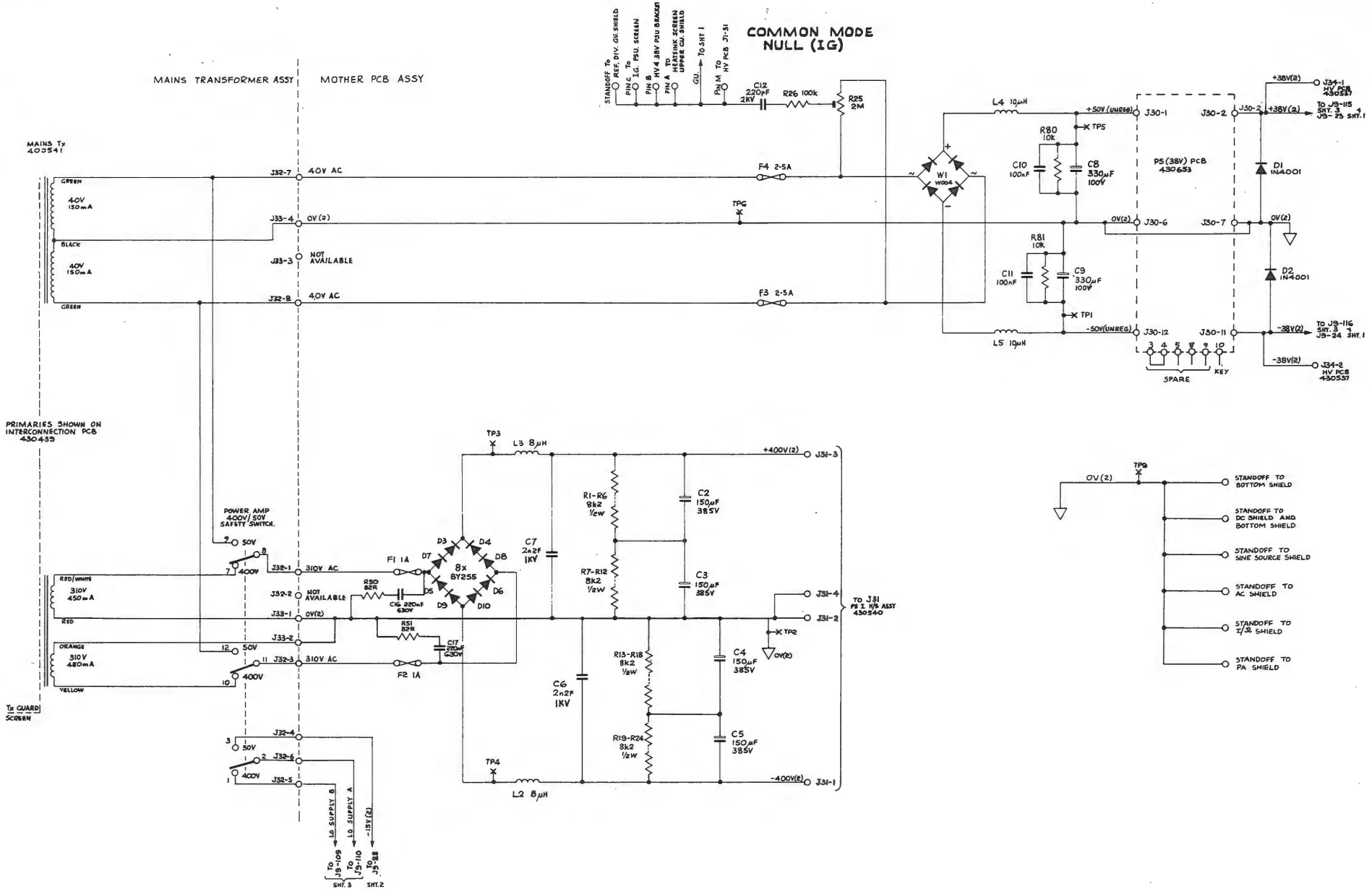


MOTHER ASSEMBLY

Circuit Diagram No. 430604-1.0 Sheet 4

4705

datron INSTRUMENTS



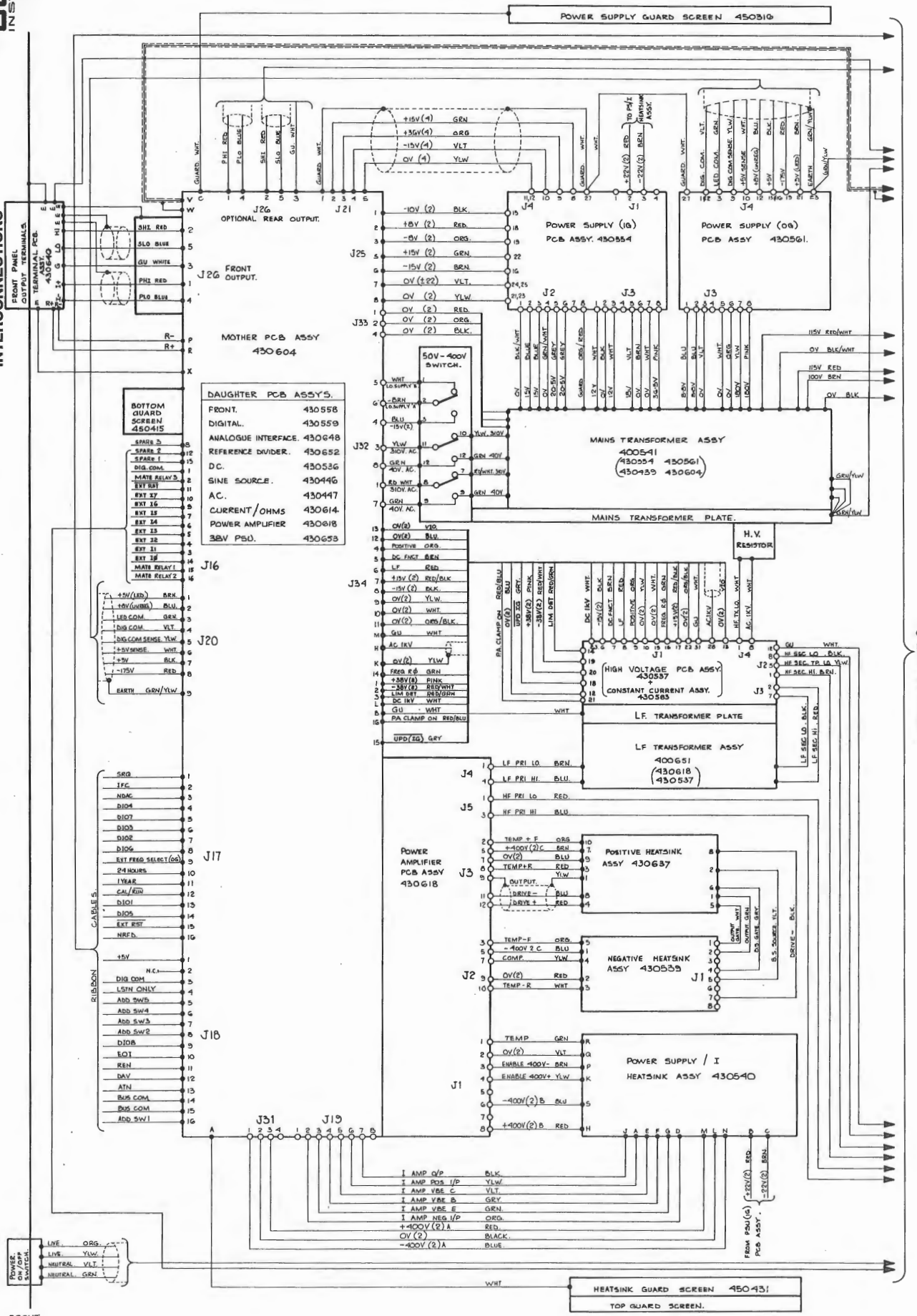
MOTHER ASSEMBLY

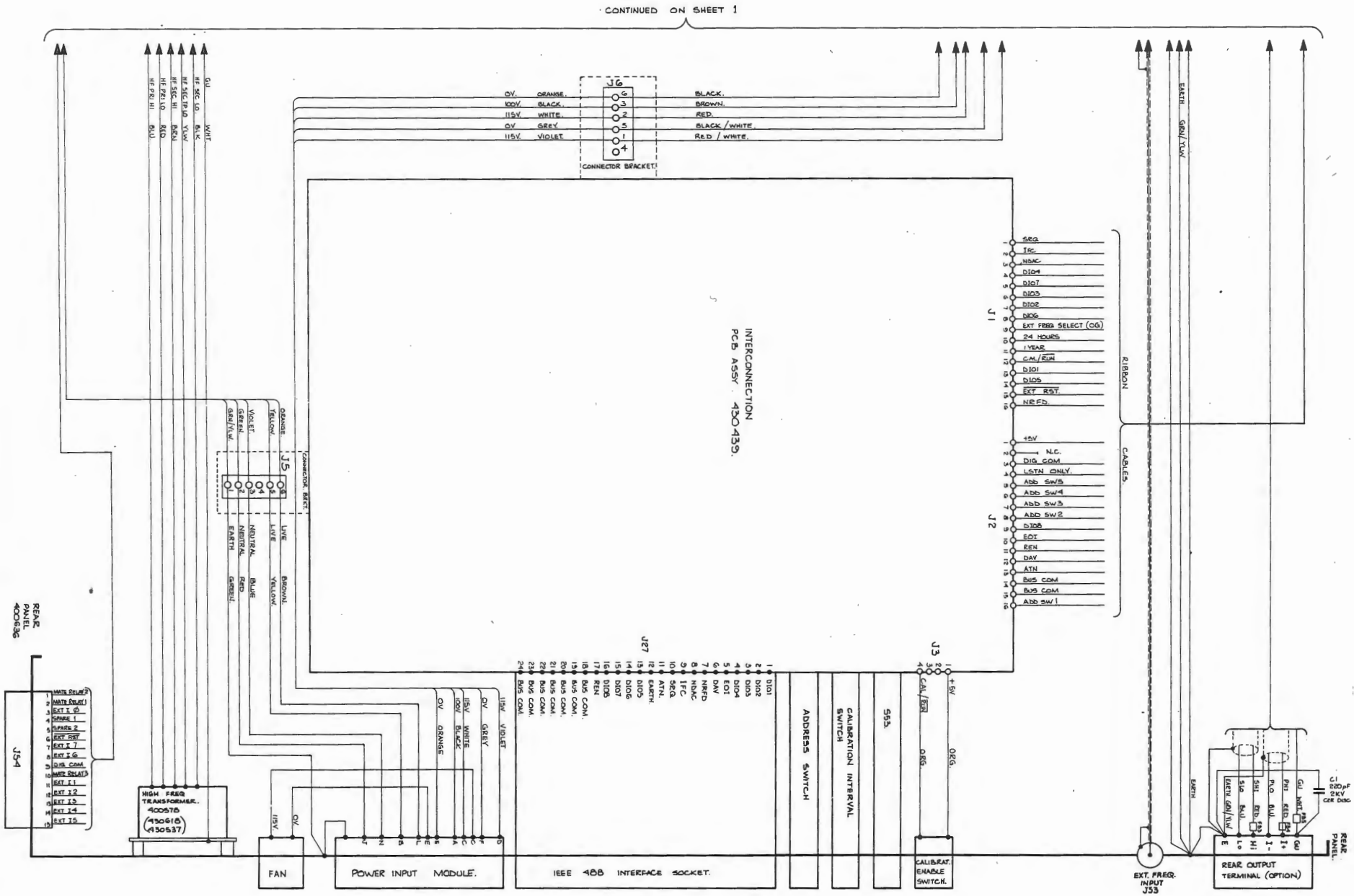
4705

datron INSTRUMENTS

Circuit Diagram No. 430604-1.0 Sheet 5

INTERCONNECTIONS





INTERCONNECTIONS

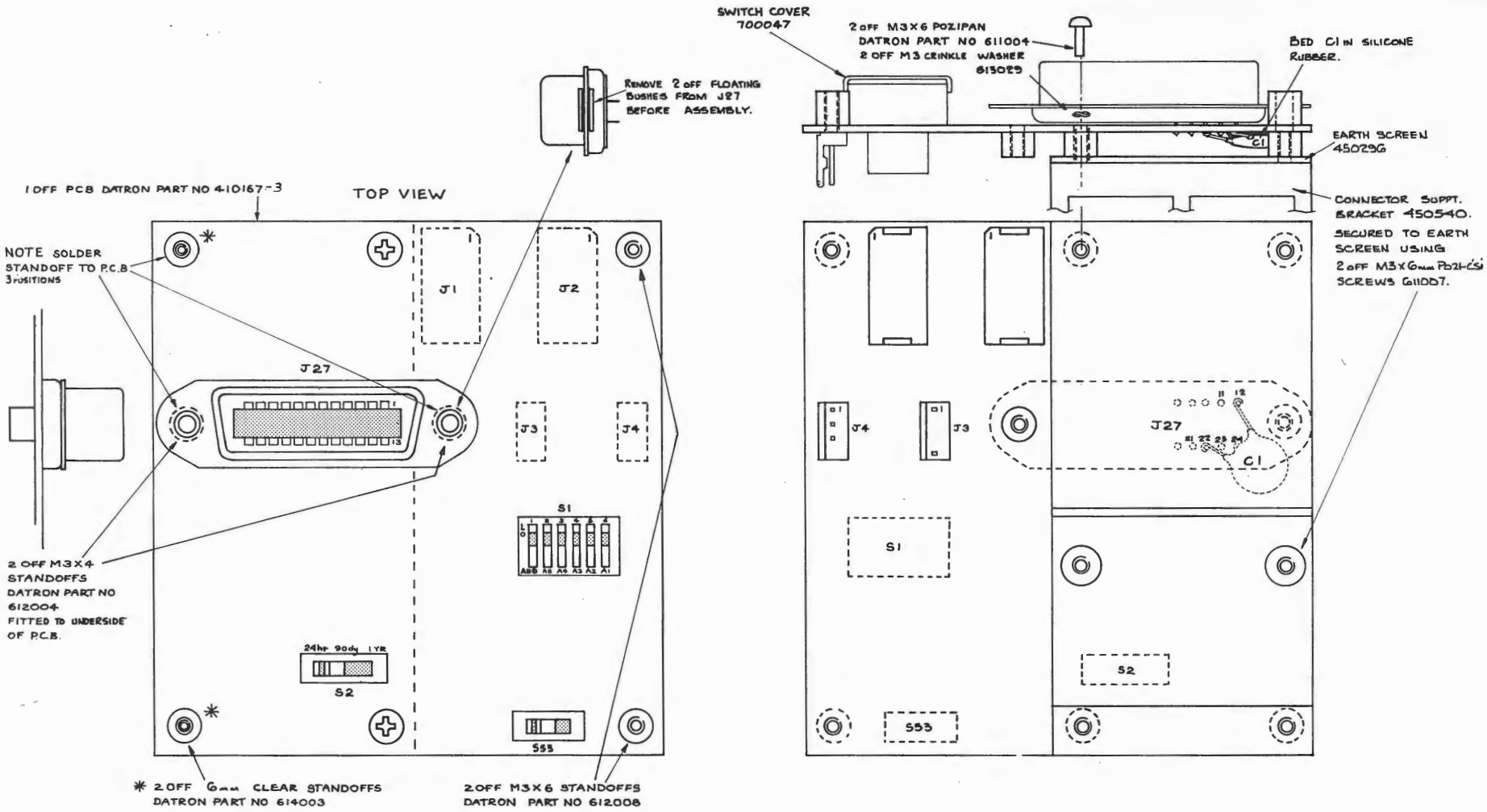
4705

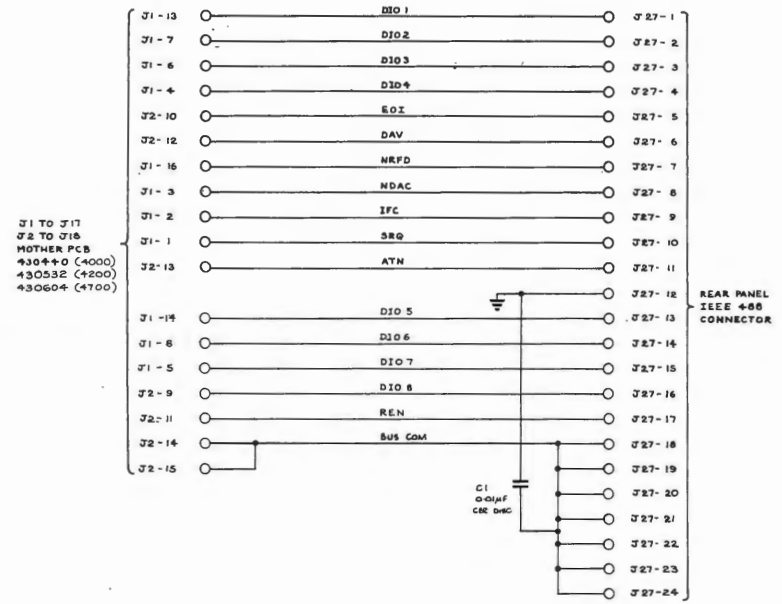
datron INSTRUMENTS

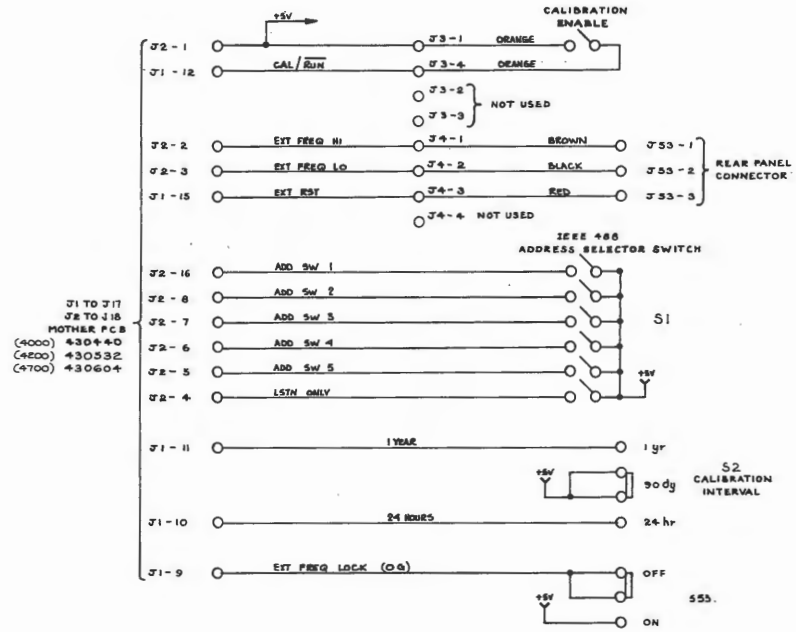
Circuit Diagram No. 430557-1.0 Sheet 2

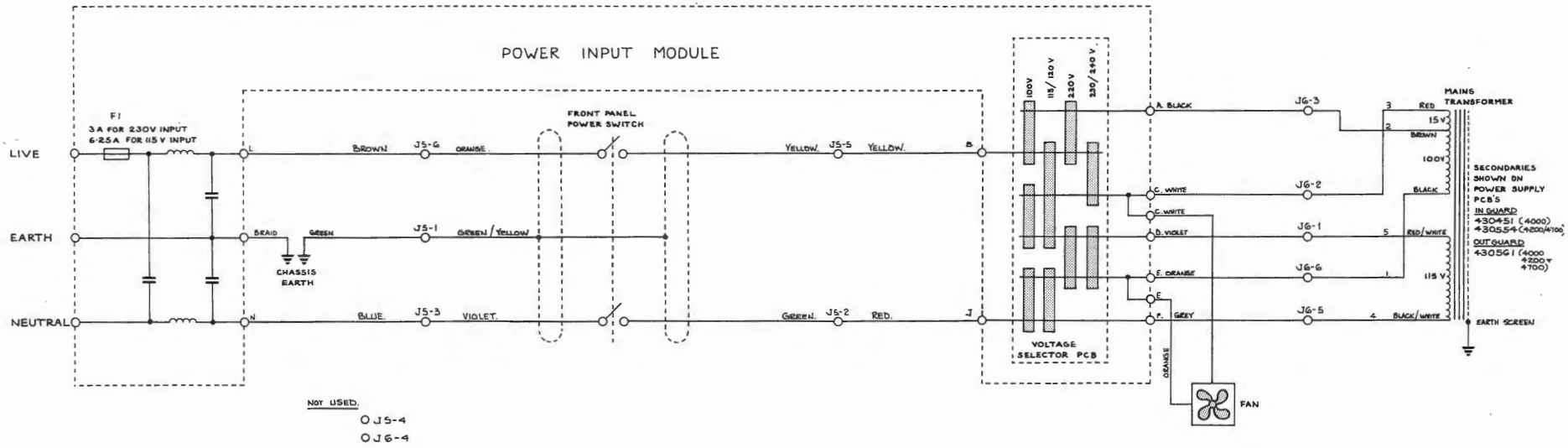
INTERCONNECTION ASSEMBLY

datron INSTRUMENTS 4705









INTERCONNECTION ASSEMBLY

4705

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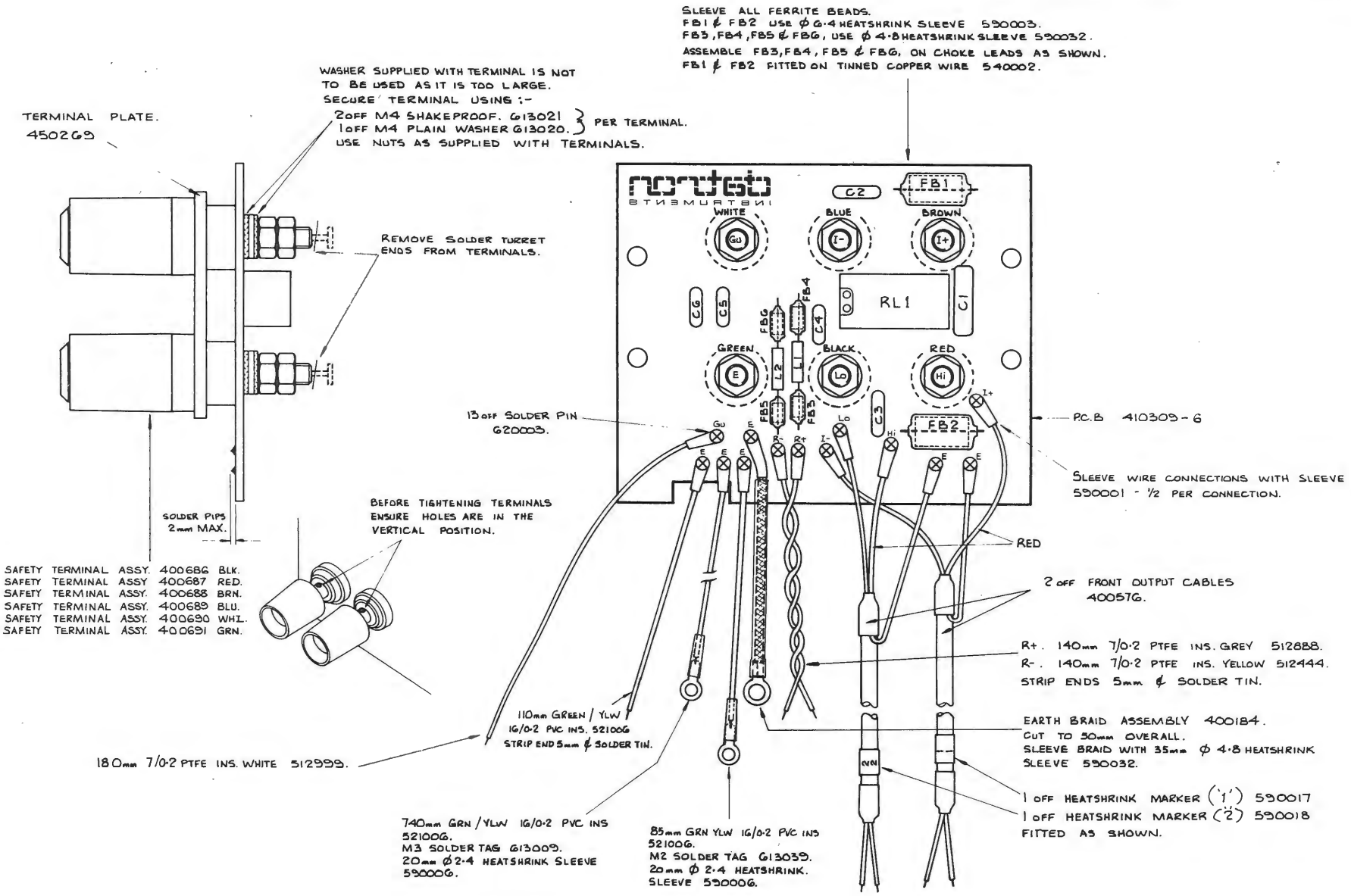
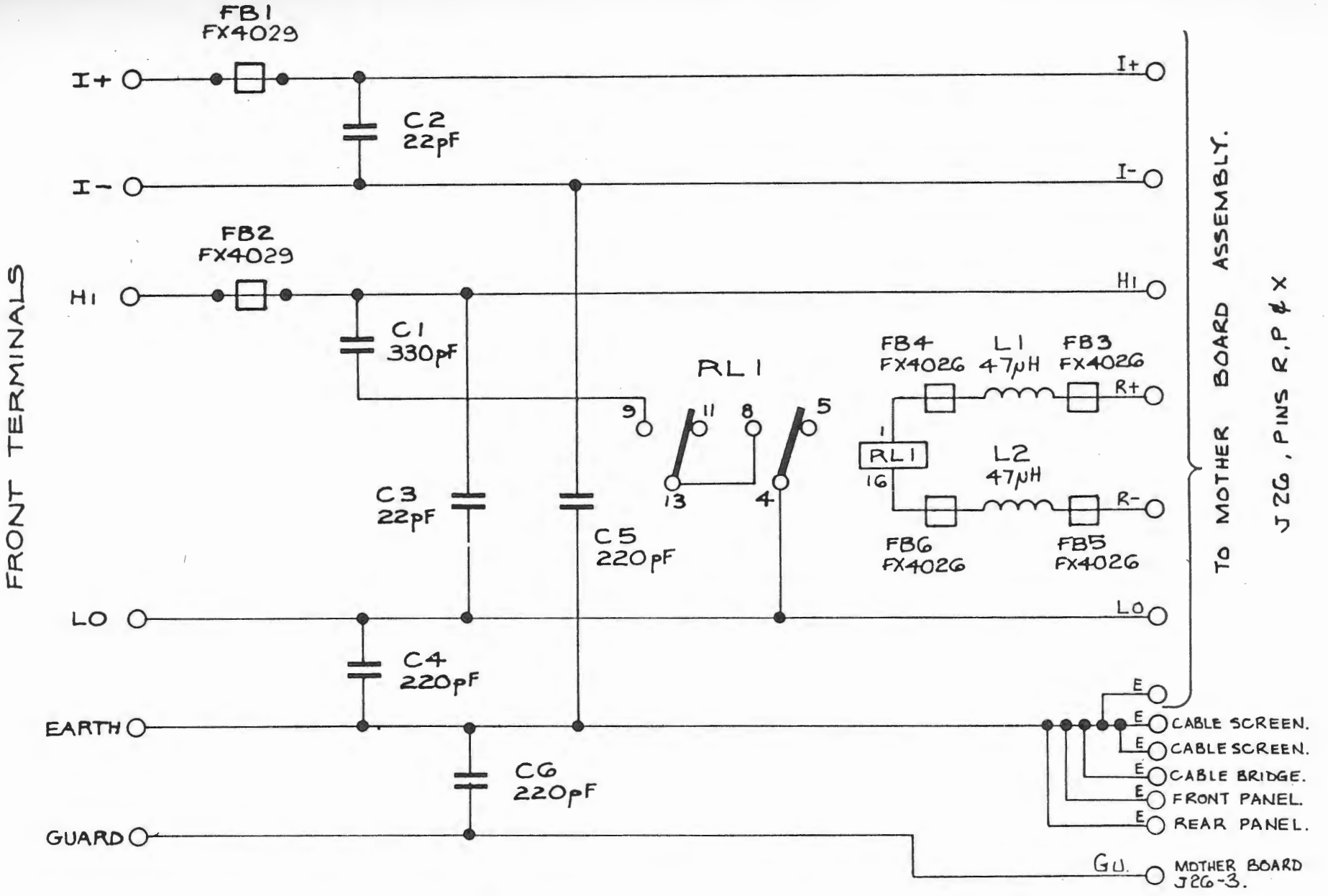
Circuit Diagram No. 430439-3.0 Sheet 1


SLEEVE ALL FERRITE BEADS.
FB1 & FB2 USE Ø 6·4 HEATSHRINK SLEEVE 590003.
FB3, FB4, FB5 & FB6, USE Ø 4·8 HEATSHRINK SLEEVE 590032.
ASSEMBLE FB3, FB4, FB5 & FB6, ON CHOKE LEADS AS SHOWN.
FB1 & FB2 FITTED ON TINNED COPPER WIRE 540002.
WASHER SUPPLIED WITH TERMINAL IS NOT TO BE USED AS IT IS TOO LARGE.
SECURE TERMINAL USING :-
2 OFF M4 SHAKEPROOF. 613021
1 OFF M4 PLAIN WASHER 613020.
PER TERMINAL.
USE NUTS AS SUPPLIED WITH TERMINALS.
TERMINAL PLATE.
450269
REMOVE SOLDER TURRET ENDS FROM TERMINALS.
SOLDER PIPS 2mm MAX.
BEFORE TIGHTENING TERMINALS ENSURE HOLES ARE IN THE VERTICAL POSITION.
1 OFF SAFETY TERMINAL ASSY. 400686 BLK.
1 OFF SAFETY TERMINAL ASSY. 400687 RED.
1 OFF SAFETY TERMINAL ASSY. 400688 BRN.
1 OFF SAFETY TERMINAL ASSY. 400689 BLU.
1 OFF SAFETY TERMINAL ASSY. 400690 WHI.
1 OFF SAFETY TERMINAL ASSY. 400691 GRN.
WHITE
BLUE
BROWN
GREEN
BLACK
RED
FB1
FB2
RL1
13 OFF SOLDER PIN G20003.
P.C.B 410309-6
SLEEVE WIRE CONNECTIONS WITH SLEEVE 590001 - ½ PER CONNECTION.
RED
2 OFF FRONT OUTPUT CABLES 400576.
R+. 140mm 7/0·2 PTFE INS. GREY 512888.
R-. 140mm 7/0·2 PTFE INS. YELLOW 512444.
STRIP ENDS 5mm & SOLDER TIN.
EARTH BRAID ASSEMBLY 400184.
CUT TO 50mm OVERALL.
SLEEVE BRAID WITH 35mm Ø 4·8 HEATSHRINK SLEEVE 590032.
1 OFF HEATSHRINK MARKER ('1') 590017
1 OFF HEATSHRINK MARKER ('2') 590018
FITTED AS SHOWN.
110mm GREEN / YLW 16/0·2 PVC INS. 521006
STRIP END 5mm & SOLDER TIN.
180mm 7/0·2 PTFE INS. WHITE 512999.
740mm GRN / YLW 16/0·2 PVC INS 521006.
M3 SOLDER TAG 613009.
20mm Ø 2·4 HEATSHRINK SLEEVE 590006.
85mm GRN YLW 16/0·2 PVC INS 521006.
M2 SOLDER TAG 613039.
20mm Ø 2·4 HEATSHRINK. SLEEVE 590006.



TERMINAL BOARD ASSEMBLY

4705

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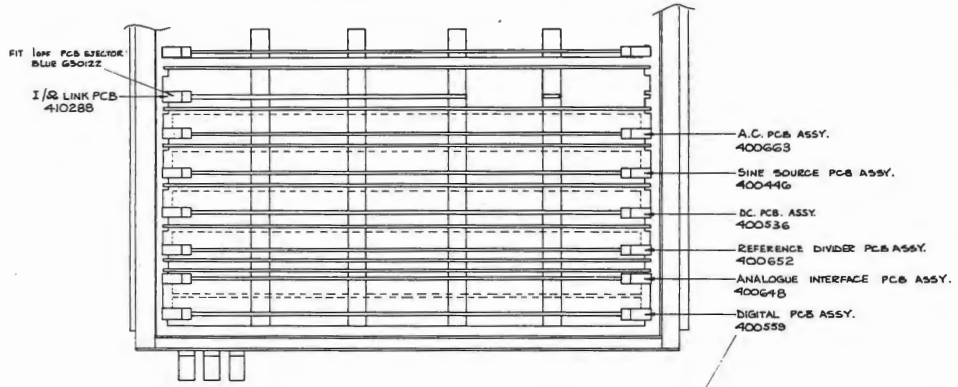
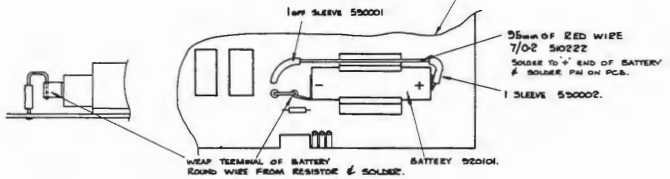
Circuit Diagram No. 430640-1.0 Sheet 1

6

NOTE
CLEAN ALL PCB EDGE CONTACTS WITH CLEANING FLUID 900016 BOTH BEFORE INITIAL ASSEMBLY AND AT FINAL INSTRUMENT FINISHING.





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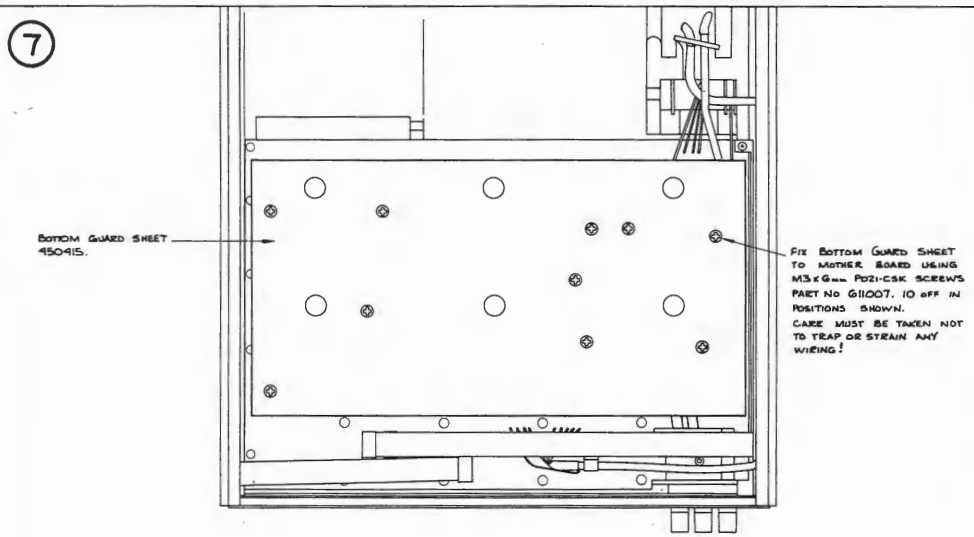

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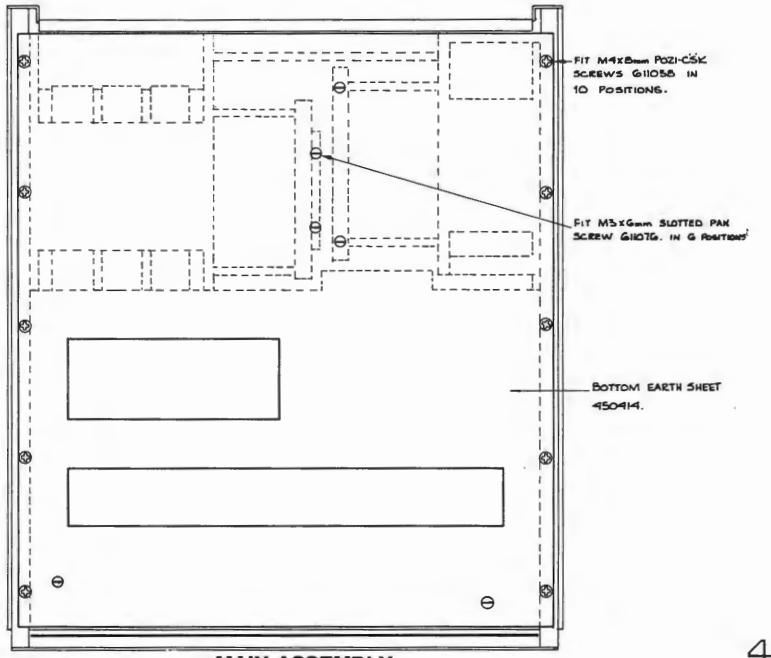

MAIN ASSEMBLY

4705
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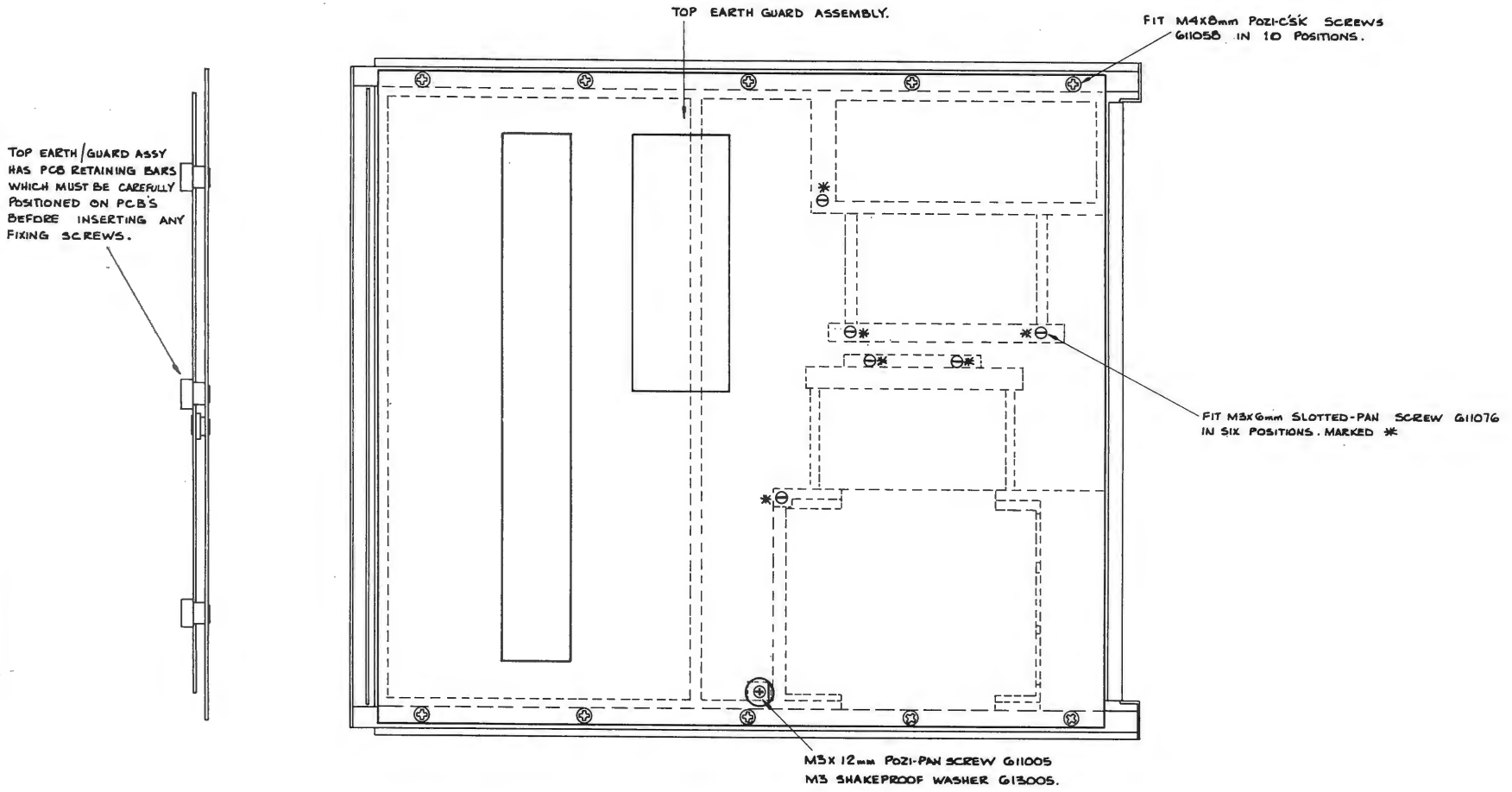
Layout Drawing No. 480556-1.1 Sheet 2

MAIN ASSEMBLY

datron INSTRUMENTS 4705

(9)



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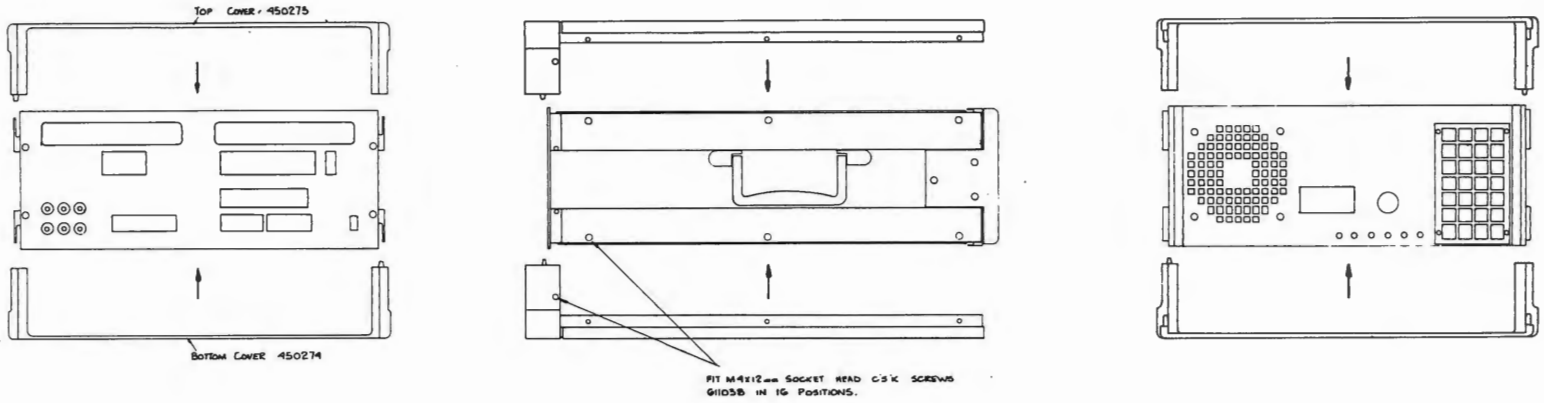

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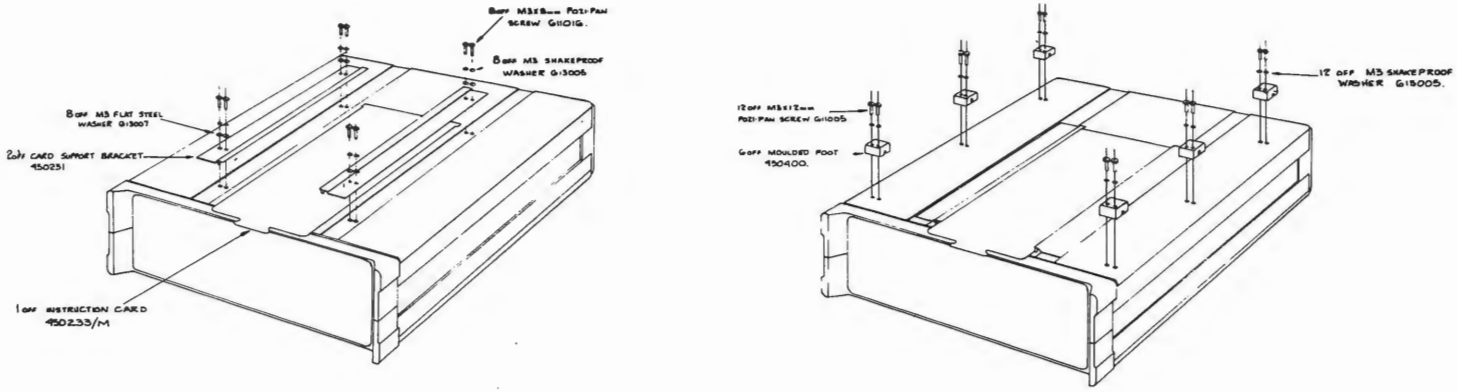


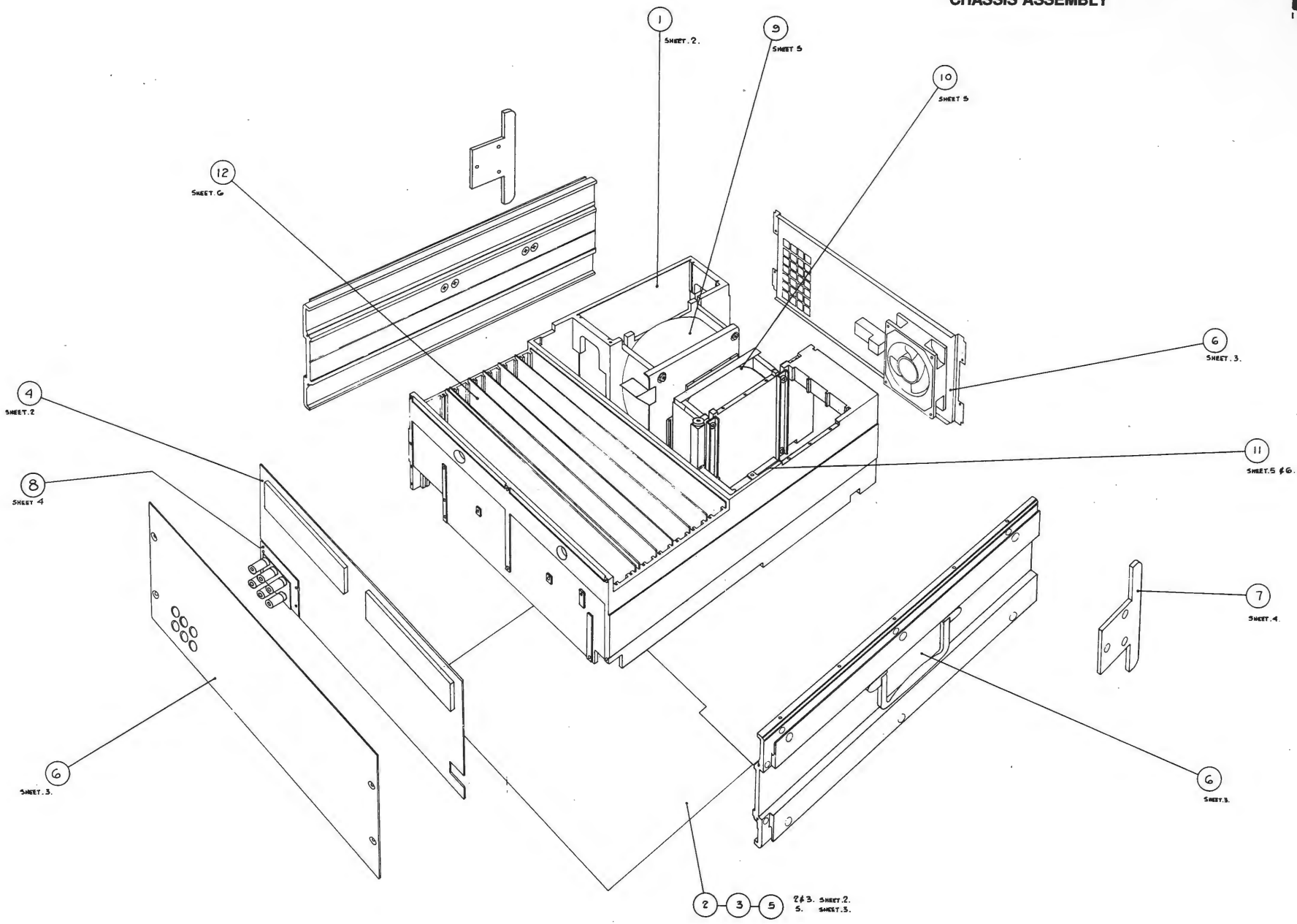
MAIN ASSEMBLY

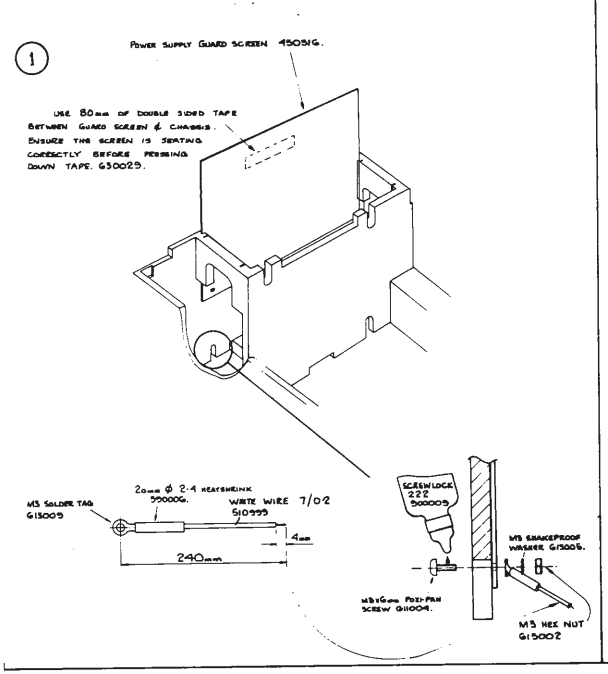
4705 datron INSTRUMENTS

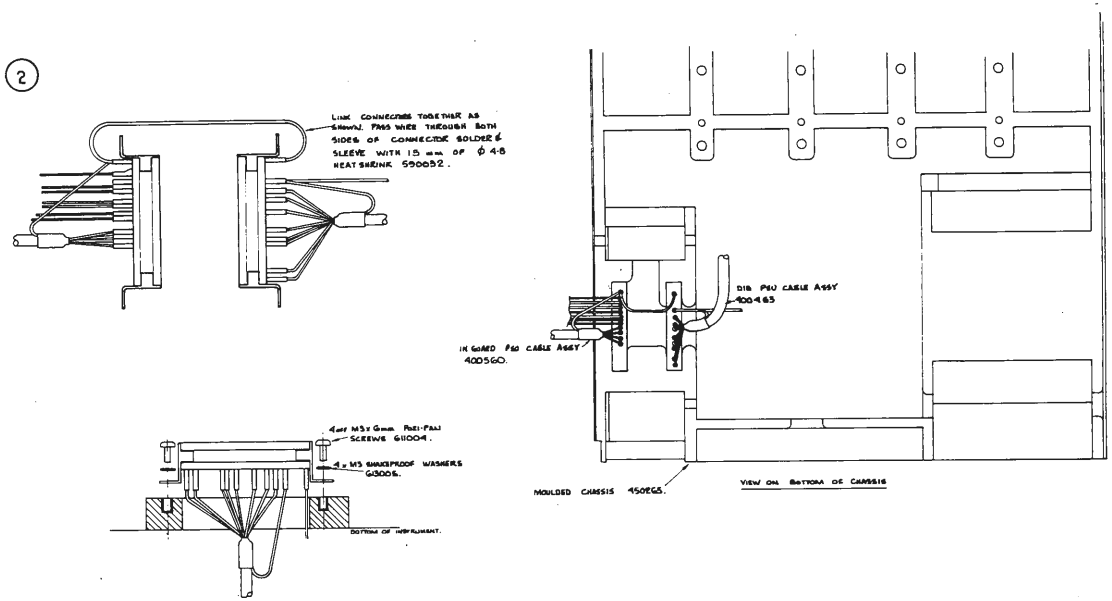
Layout Drawing No. 480556-1.1 Sheet 4

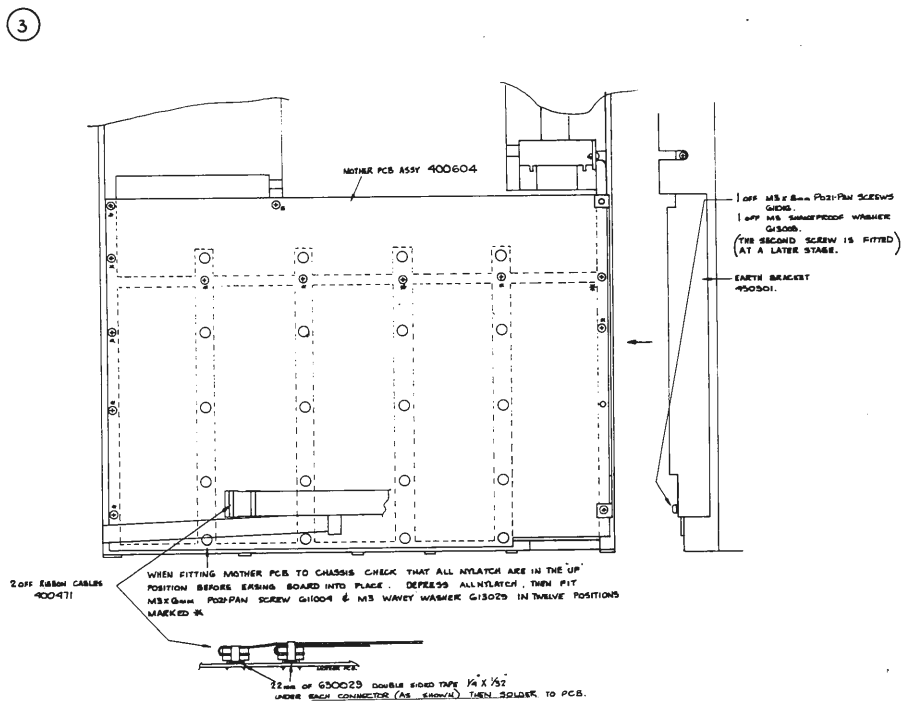
CHASSIS ASSEMBLY

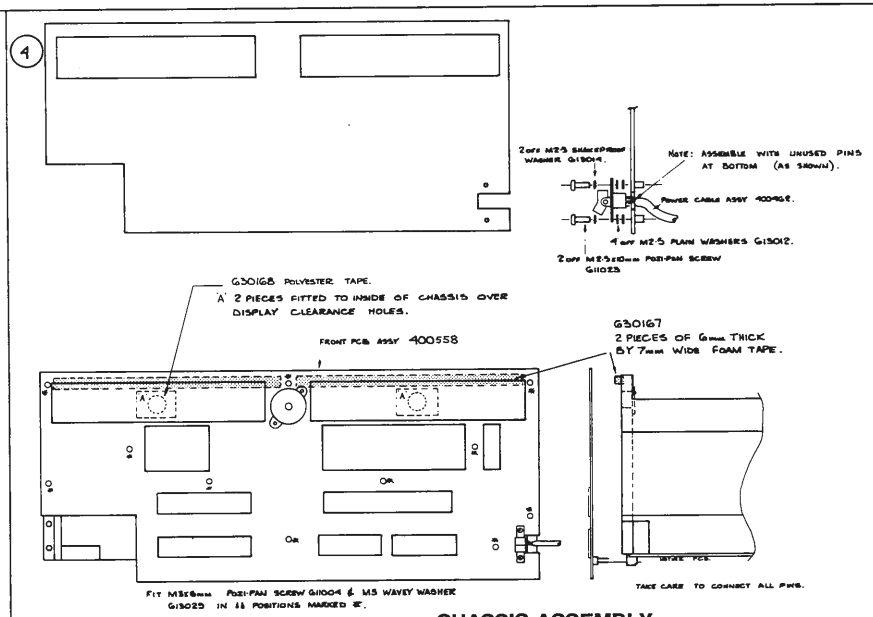
datron INSTRUMENTS
4705











CHASSIS ASSEMBLY

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Layout Drawing No. 480557-1.0 Sheet 2

CHASSIS ASSEMBLY

datron INSTRUMENTS 4705

(5)

DOUBLE FOLD IN RIBBON CABLE, AT THIS POINT.

CABLE CLIP G30042

USE TYRAP CABLE TIE, ROUND PLASTIC CHASSIS & POWER SUPPLY CABLES TO HOLD FIRMLY IN POSITION. 530013

FIT THIS CLIP TO ROUTE CABLE AWAY FROM THE GAP BETWEEN THE MAINS TRANSFORMER PLATE AND THE CHASSIS.

J25.

M3 10mm POZI-PAN SCREW G11006.

USE DOUBLE SIDED TAPE G30028 TO PROTECT CABLES FROM SHARP PWB.

¼" P CLIP G30004

J21

J20

CO-AX CABLE FROM REAR PANEL J53. SOLDER TO MOTHER PCB. (SEE STEP 6.)

FOLD & LAY RIBBON CABLES TOGETHER AT THESE POINTS.

IT MAY BE EASIER TO HOLD CABLES TO CHASSIS USING A SMALL PIECE OF MASKING TAPE. SEE SKETCH BOTTOM LEFT OF DRAWING.

FOLD & LAY RIBBON CABLES SEPERATELY AT THIS POINT

CABLE BRIDGE 450452 (DO NOT SECURE BRIDGE TO PCB YET)

USE TYRAP CABLE TIE 530013, ROUND CABLE BRIDGE & RIBBON CABLES (AS SHOWN)

PIN No	COLOUR	CABLE ASSY No
J25-1	BLACK	400560
J25-2	RED	"
J25-3	ORANGE	"
J25-4	NO CONNECTION	
J25-5	GREEN	400560
J25-6	BROWN	"
J25-7	VIOLET	"
J25-8	YELLOW	"
J21-1	WHITE	"
J21-2	GREEN	"
J21-3	ORANGE	"
J21-4	VIOLET	"
J21-5	YELLOW	"
PIN 'C'	WHITE FROM STEP 1	
	NOT FITTED	
J20-9	GREEN/YEL.	400562
J20-8	RED	"
J20-7	BLACK	"
J20-6	WHITE	"
J20-5	YELLOW	"
J20-4	VIOLET	"
J20-3	GREEN	"
J20-2	BLUE	"
J20-1	BROWN	"

ALL WIRES AS ABOVE WRAP WIRE ROUND PIN & SOLDER.

M3 SHAKEPROOF WASHER G13005

M3 FLAT WASHER G13007

FIT ALL 'P' CLIPS AS ABOVE. EXCEPT 'P' CLIP NE USE A 10mm POZI-PAN SCREW G11006. (5 IN TOTAL 3 IN STEP 5, 2 IN STEP 8)

SOLDER ONE END OF CO-AX CABLE TO BNC SOCKET J53 USE Ø 4·8 HEATSHRINK SLEEVE TO COVER JOINT & SUPPORT CONNECTION AS SHOWN. 530032

NOTE! SOLDER OTHER END OF CABLE TO MOTHER PCB SHOWN IN STEP (5).

SOLDER WHITE WIRE TO SOLDER TAG & SLEEVE WITH 15mm Ø 3·2 HEATSHRINK SLEEVE. 530031

800mm CO-AX CABLE 560002.

40mm WIRE PTFE INSULATED 7/0·2 WIRE 512355 SOLDERED TO SCREEN AT EACH END.

15mm Ø 3·2 HEATSHRINK SLEEVE 530031 TO COVER SCREEN CONNECTIONS.

1 OFF 'MADE IN ENGLAND' BADGE. 430542 FITTED USING :- 2 OFF Ø 2·4 POP RIVET 617013. REMOVE BREAK HEAD PART OF RIVET WHEN FINISHED.

8 OFF M4x12mm TAPTITE SCREW G11078 ENSURE THAT THESE SCREWS ARE FITTED SQUARELY.

REAR PANEL ASSY 400636

R.H. SIDE EXTRUSION 450310.

2 OFF M3 x 6mm POZI-PAN SCREW G11004

2 OFF M3 SHAKEPROOF WASHER G13005.

NOTE! WHEN FITTING REAR PANEL CARE MUST BE TAKEN NOT TO TRAP ANY WIRES, ESPECIALLY RIBBON CABLE & FAN WIRES. POSITIONS OF WHICH ARE SHOWN BELOW.

L.H. SIDE EXTRUSION 450311.

FOAM GASKET 450467 STUCK TO FRONT PANEL ON INSIDE TO SEAL AGAINST FRONT PCB.

FRONT PANEL 450478

WIRES FROM FAN TO BE POSITIONED AS SHOWN THROUGH CUT OUT IN PLASTIC CHASSIS.

RIBBON CABLES LAY IN RECESS IN PLASTIC CHASSIS.

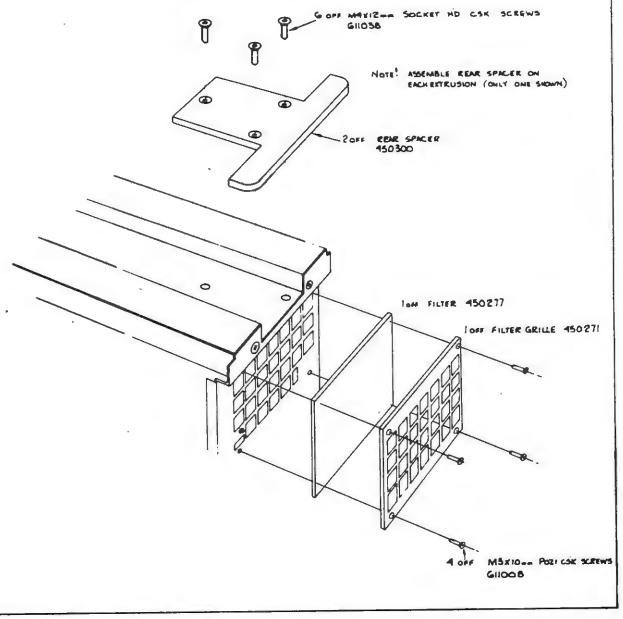
(6)

8 OFF M3x12mm POZI-CSK SCREW G11047

2 OFF HANDLE 460280

POSITION OF WIRING IN SIDE EXTRUSION SHOULD BE AS SHOWN SO AS TO AVOID TRAPPING & DAMAGING THE CABLES. CARE TAKEN AT THIS STAGE WILL HELP THE ALIGNMENT & EASY FITTING OF FRONT & REAR PANELS.

(7)



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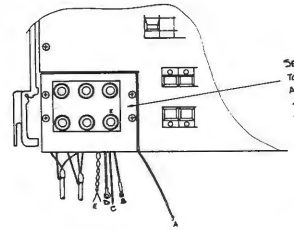
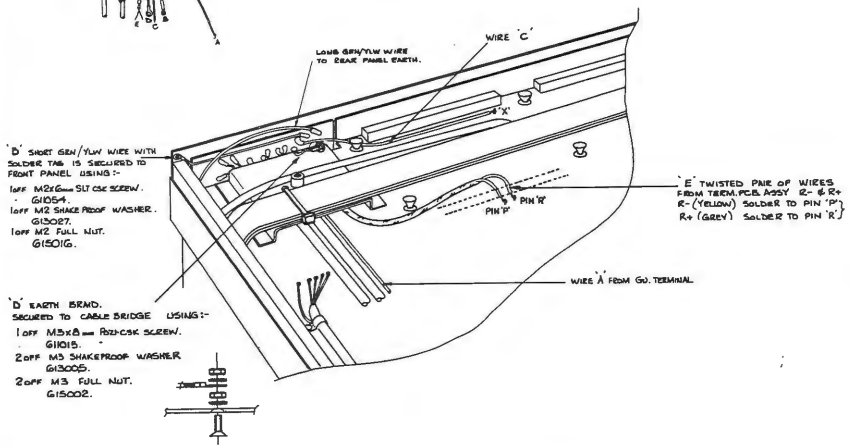
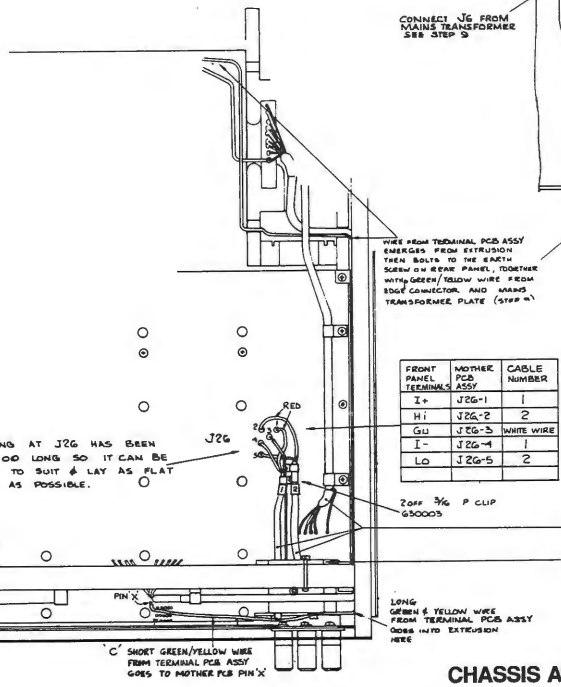
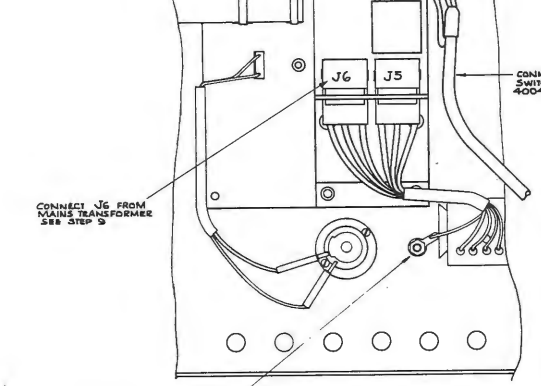






FRONT PANEL TERMINALS	MOTHER PCB ASSY	CABLE NUMBER
I+	J2G-1	1
Hi	J2G-2	2
Gu	J2G-3	WHITE WIRE
I-	J2G-4	1
Lo	J2G-5	2



Note! IT IS IMPORTANT TO KEEP ALL WIRING ON MOTHER BOARD TO A MAXIMUM HEIGHT OF 8mm AFTER ASSEMBLY AN EASY CHECK IS TO PLACE THE BOTTOM GUARD SCREEN ON & THIS SCREEN SHOULD LAY ON THE STANDOFFS WITHOUT CRUSHING ANY WIRING. (AS BELOW).

CHASSIS ASSEMBLY

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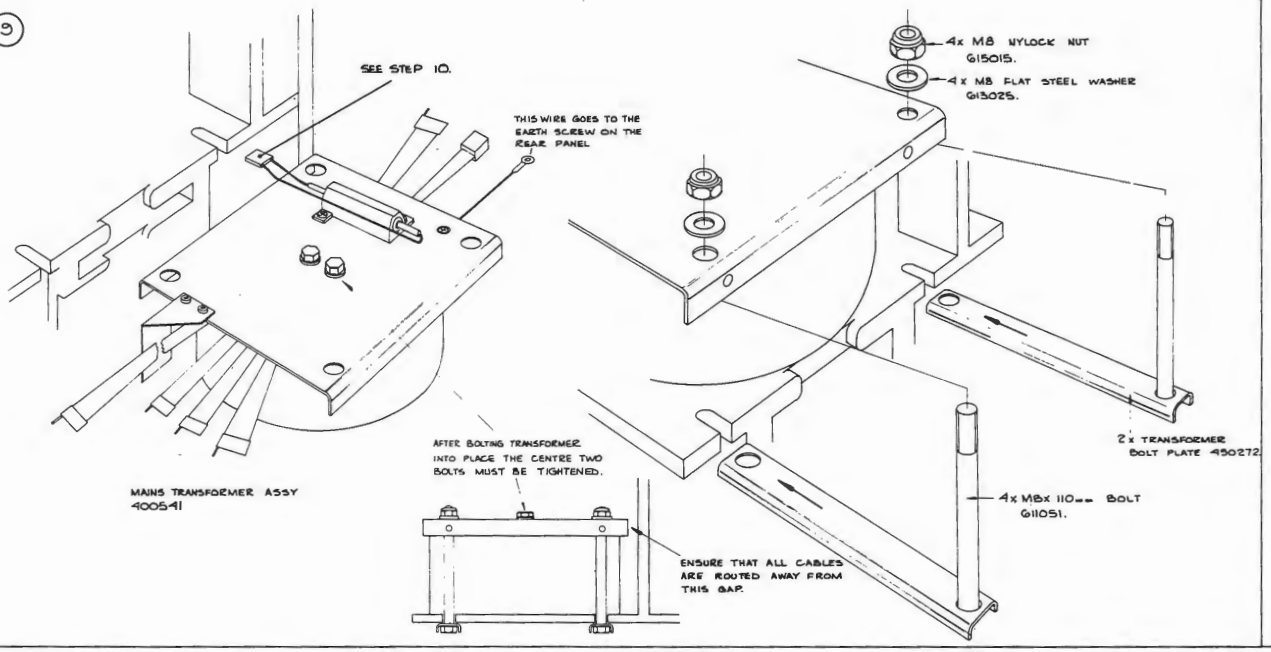
Layout Drawing No. 480557-1.1 Sheet 4

(9)



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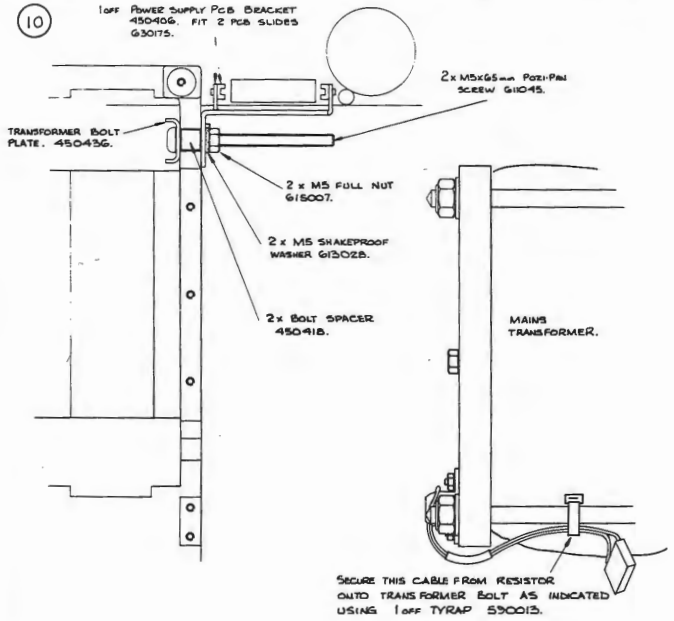
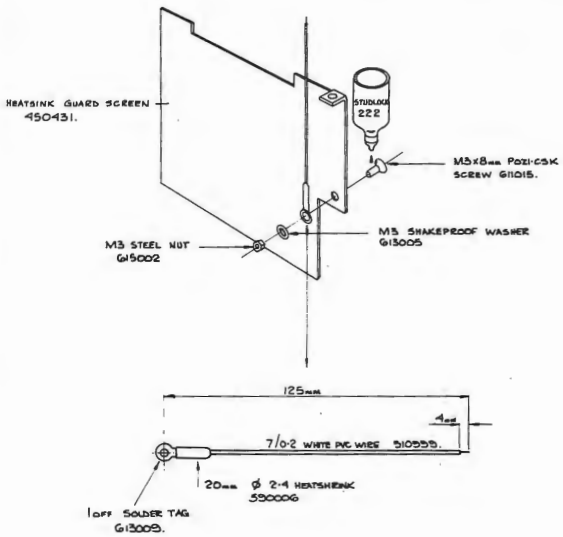


(11) **CHASSIS ASSEMBLY**



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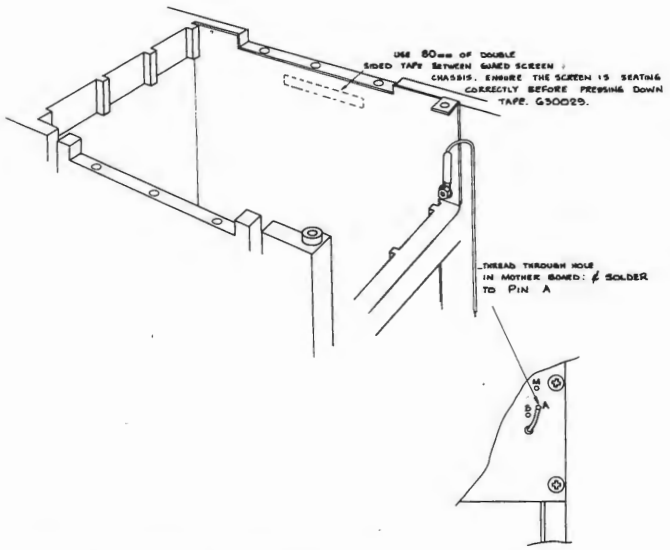

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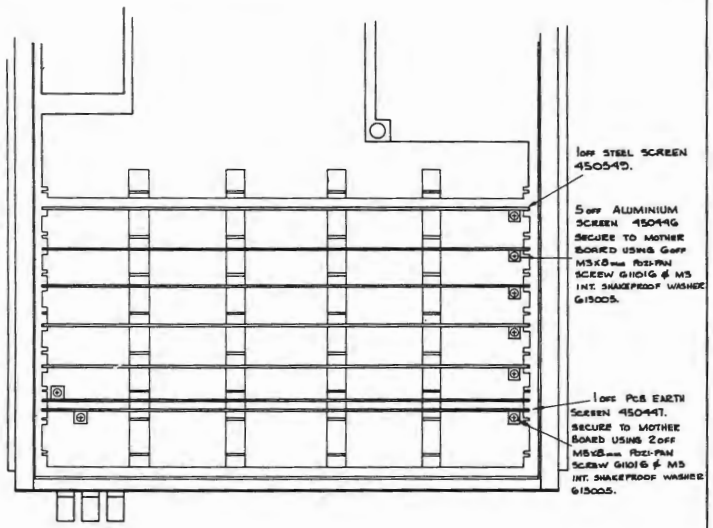
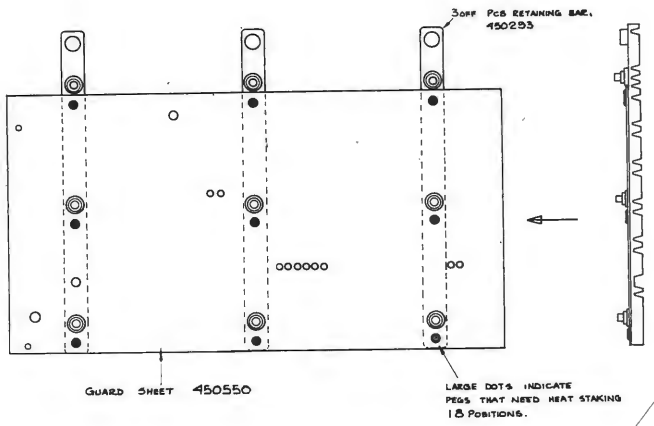


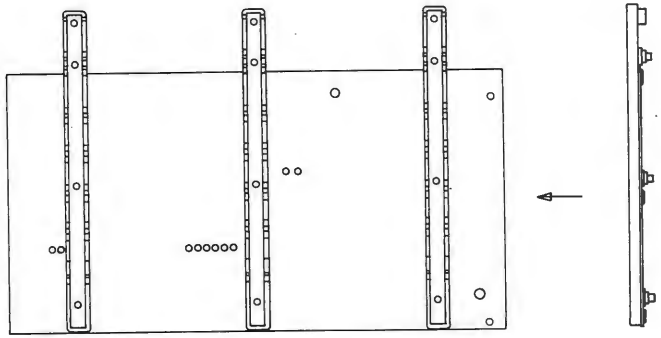
CHASSIS ASSEMBLY

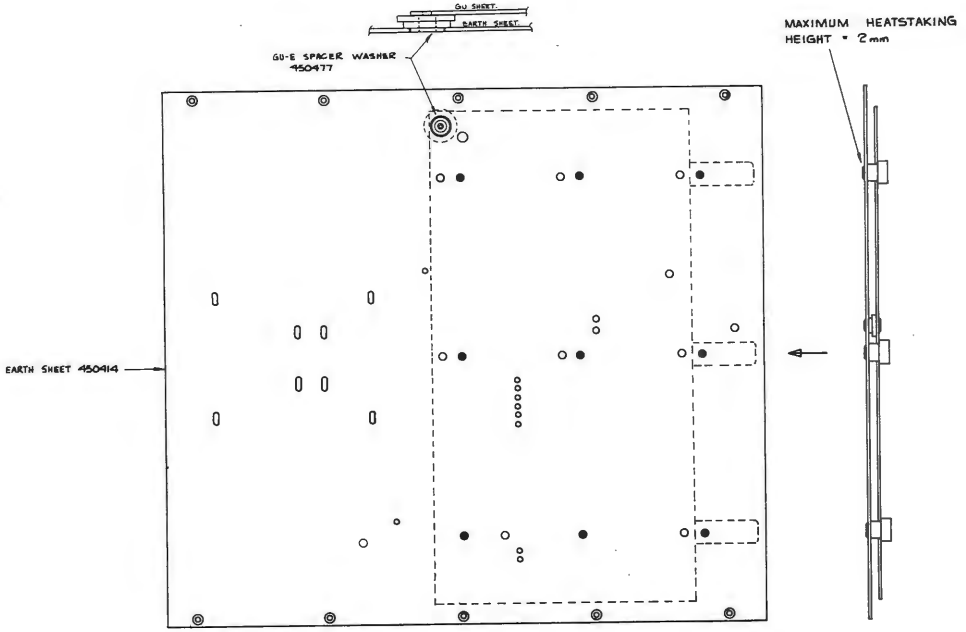
4705 datron INSTRUMENTS

Layout Drawing No. 480557-1.1 Sheet 6

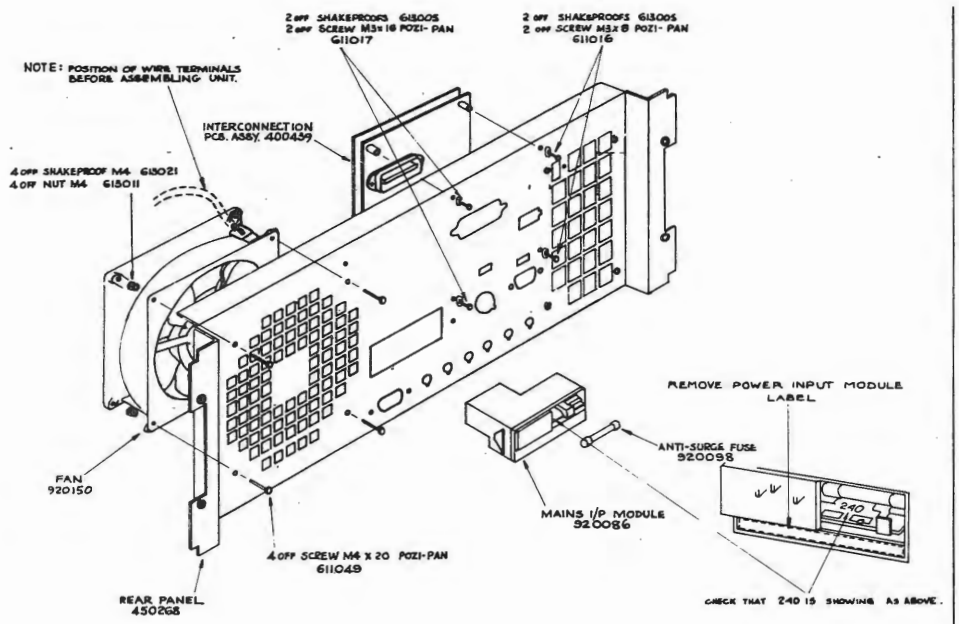
(13)

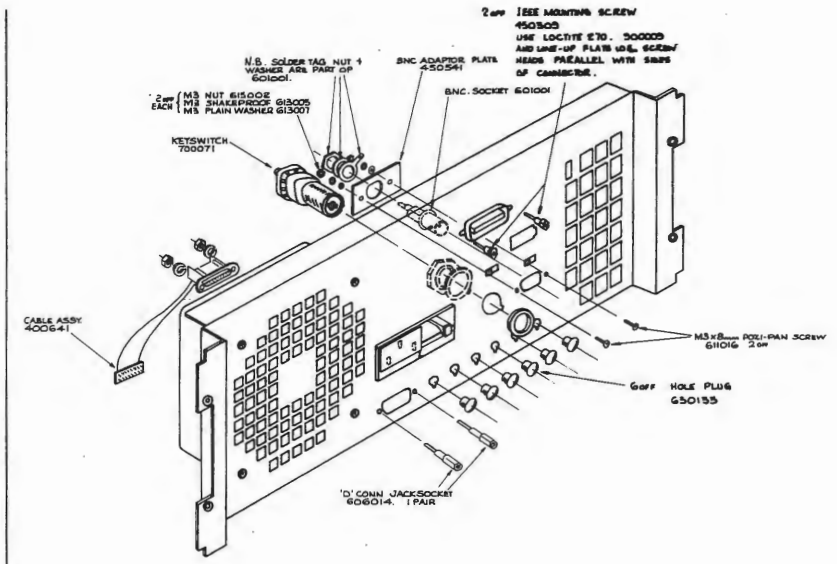






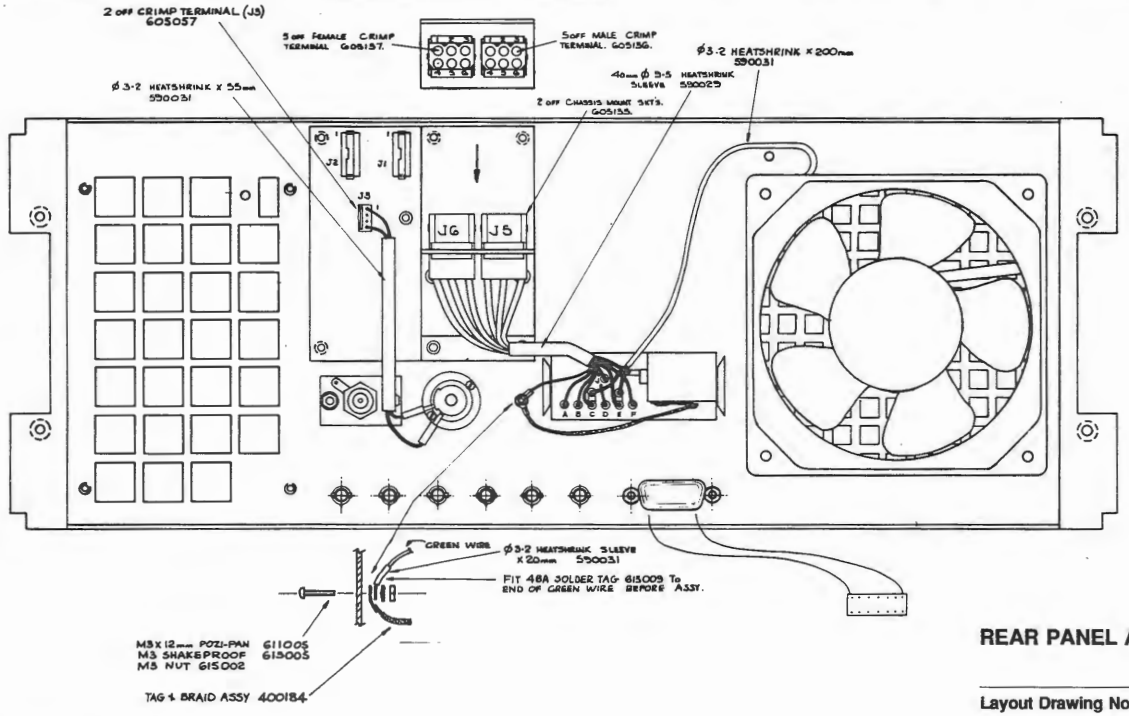
WHEN THE CHASSIS ASSY IS COMPLETE CHECK THAT THE TOP EARTH GUARD SHEET ASSEMBLY, BOTTOM GUARD & EARTH SHEETS FIT.





CONNECTOR PIN (INTERCONNECT PCB)	WIRE COLOUR/LENGTH	DESTINATION (REAR PANEL)	WIRE PART No
J6 PIN 1	VIOLET / 115mm	POWER INPUT MODULE PIN D	530777
2	WHITE / 110mm	" PIN C	530999
3	BLACK / 100mm	" PIN A	530000
4	N/C.		
5	GREY / 120mm	" PIN F	530888
6	ORANGE / 120mm	" PIN E	530333
J5 PIN 1	GREEN / 130mm	TO REAR PANEL	530555
2	RED / 120mm	POWER INPUT MODULE PIN J	530222
3	BLUE / 110mm	" PIN N	530666
4	N/C.		
5	YELLOW / 110mm	" PIN B	530444
6	BROWN / 110mm	" PIN L	530111
J3 PIN 1	ORANGE 120	CAL. SWITCH	510333
2			
3			
4	ORANGE 120	CAL. SWITCH	510333
FAN *	ORANGE 250	POWER I/P MODULE PIN E	510333
FAN *	WHITE 250	PIN C	510999

* CONNECT WIRES EITHER WAY ROUND.



CRIMP CONNECTIONS.

605057, USE CRIMP TOOL HTR-2262-A
605136 & 137 USE CRIMP TOOL HTR-1031-E

N.B. ALL EXPOSED WIRE TERMINATIONS TO BE SLEEVED. USED HALF PIECE OF SLEEVE:-
590001 = 3off.
590005 = 5off.

REAR PANEL ASSEMBLY

Layout Drawing No. 480636-1.0 Sheet 1

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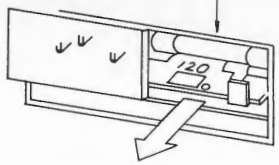
OPTION 80 115V 60 Hz. KIT OF PARTS 440096.

CHANGE MAINS FUSE TO:
920114 6·25A 250V 1¼" SLO-B FUSE.

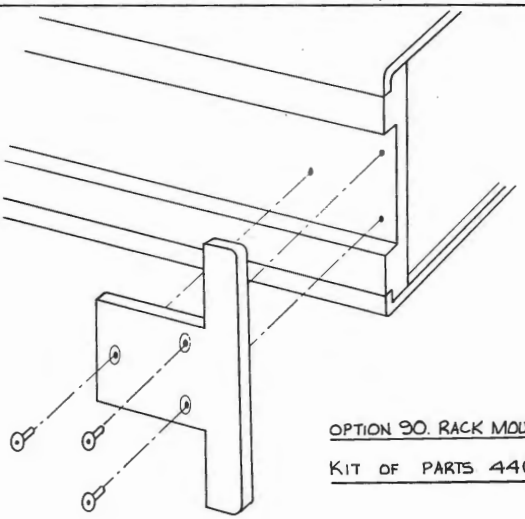
DETAIL FROM REAR PANEL



SLIDE P.C.B FORWARD AND REMOVE FROM MAINS FILTER, INSERT SO THAT 120 IS VISIBLE AS ABOVE.

PROCEDURE :-

1. CHANGE MAINS FUSE
2. CHANGE VOLTAGE P.C.B
3. ENSURE THAT CORRECT VOLTAGE AND FREQUENCY ARE STATED ON THE RATING LABEL.
4. ON FINAL CHECK, USE THE INST. INC. CERTIFICATE OF QUALITY CONFORMANCE. FORM 93
5. REPLACE FUSE IN SERVICING MANUAL ACCESSORY WALLET WITH 6·25A 250V 1¼" SLO-B FUSE.



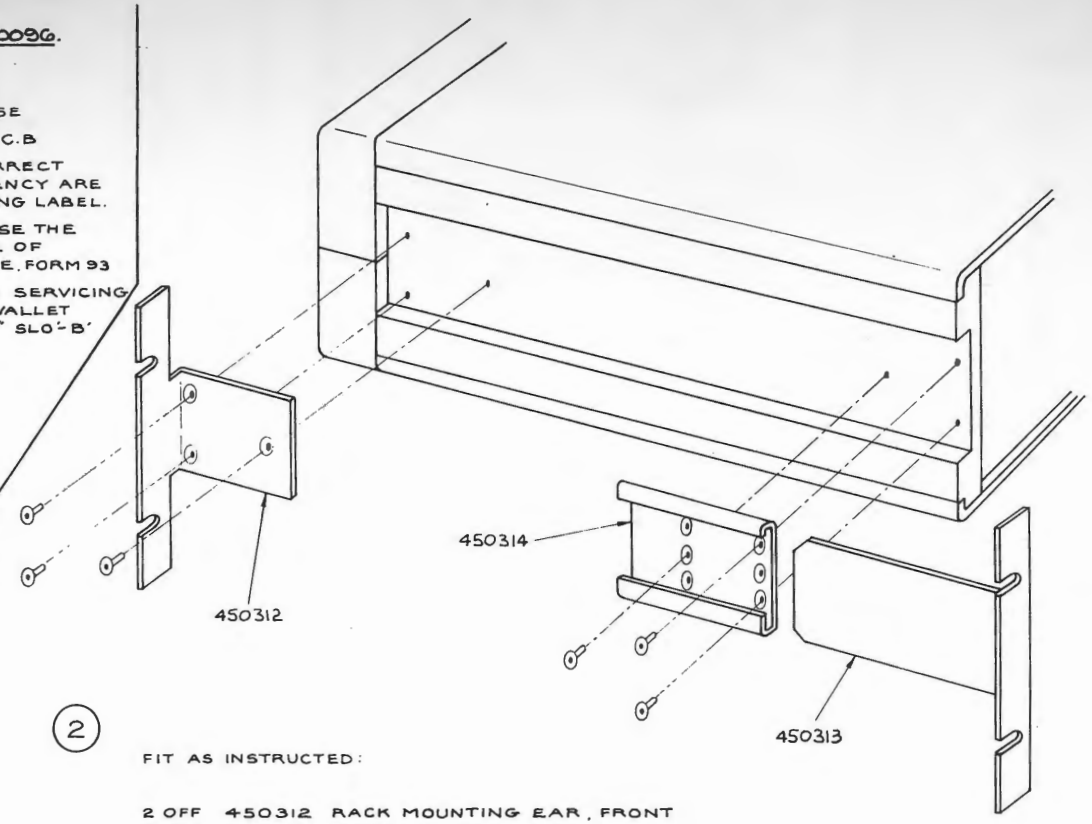
OPTION 90. RACK MOUNTING.

KIT OF PARTS 440094

(1)

REMOVE :-

2 OFF	450300	REAR SPACERS.
6 OFF	611038	M4 x 12mm SOCKET H'D C'SK SCREWS.



(2)

FIT AS INSTRUCTED:

2 OFF	450312	RACK MOUNTING EAR, FRONT
2 OFF	450313	RACK MOUNTING EAR, REAR
2 OFF	450314	RACK MOUNTING SLIDE
12 OFF	611062	M4 x 8mm SOCKET H'D C'SK SCREWS

SUITABLE RACK DEPTHS

DEPTH mm.	DEPTH INCHES	NOTES
<635	<25	SHORTEN REAR RACK MOUNTING EARS.
635 TO 735	25 TO 29	FIT AS SHOWN BY DRAWING.
735 TO 800	29 TO 31½	REVERSE RACK MOUNTING SLIDES TO EXTEND PAST REAR PANEL.

OPTION FITTING INSTRUCTIONS
Option 80: 115V 60Hz
Option 90: Rack Mounting

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Layout Drawing No. 480603-3.2 Sheet 2

OPTION FITTING INSTRUMENTS

Option 42: Rear Output

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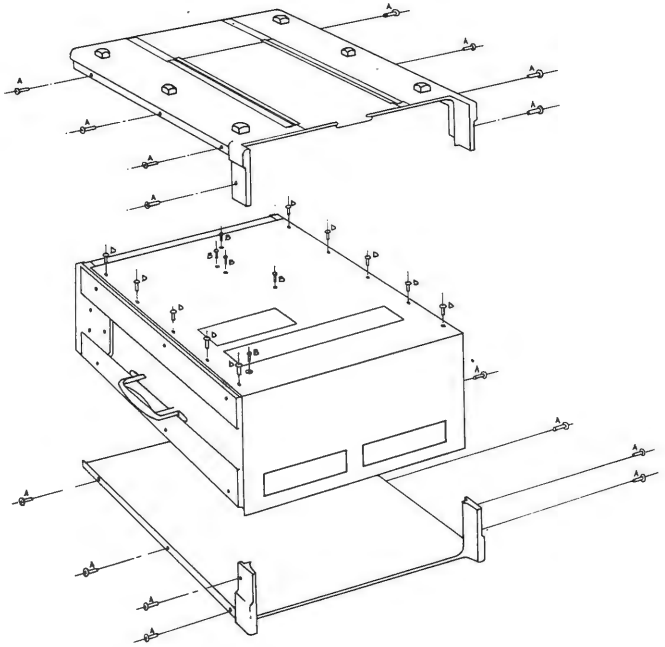
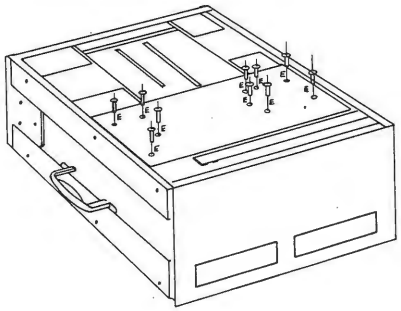
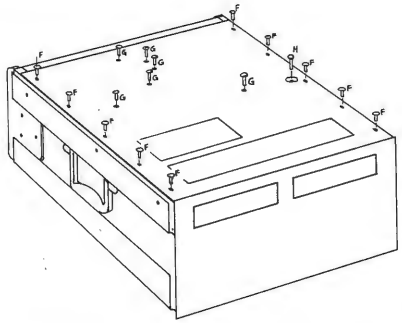


REMOVE TOP & BOTTOM COVERS BY REMOVING :-
'A' 10 OFF M4 X 12 mm SKT HD CSK SCREWS G11030.
REMOVE BOTTOM EARTH SHEET & THEN BOTTOM GUARD SHEET. REMOVE FOLLOWING SCREWS.
'B' 5 OFF M3 X 6mm SLOTTED - PAN HD SCREWS. G1107G
'D' 10 OFF M4 X 8 mm POZI-CSK SCREWS G11058
'E' 10 OFF M3 X 6mm POZI-CSK SCREWS G11007.





REMOVE TOP EARTH SHEET ASSEMBLY BY UNDOING :-
'F' 10 OFF M4 X 8mm POZI-CSK SCREWS G11058.
'G' 6 OFF M3 X 6mm SLOTTED-PAN HD SCREWS G1107G
'H' 1 OFF M3 X 12mm POZI-PAN SCREW G11005
1 OFF M3 SHAKEPROOF WASHER G13005.
ON SCREW 'H' ONLY.

M2 SOLDER TAG G13039

16/.2 PVC. INS. WIRE GRN/YLW. × 30mm. 521006

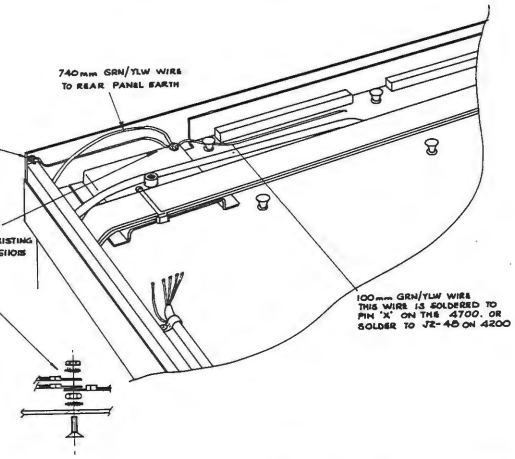
"48A SOLDER TAG G13009 4 OFF

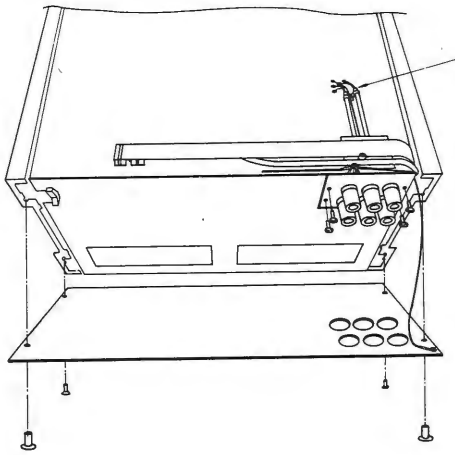
16/.2 PVC. INS. WIRE GRN/YLW × 70mm 521006

16/.2 PVC. INS. WIRE GRN/YLW × 100mm 521006

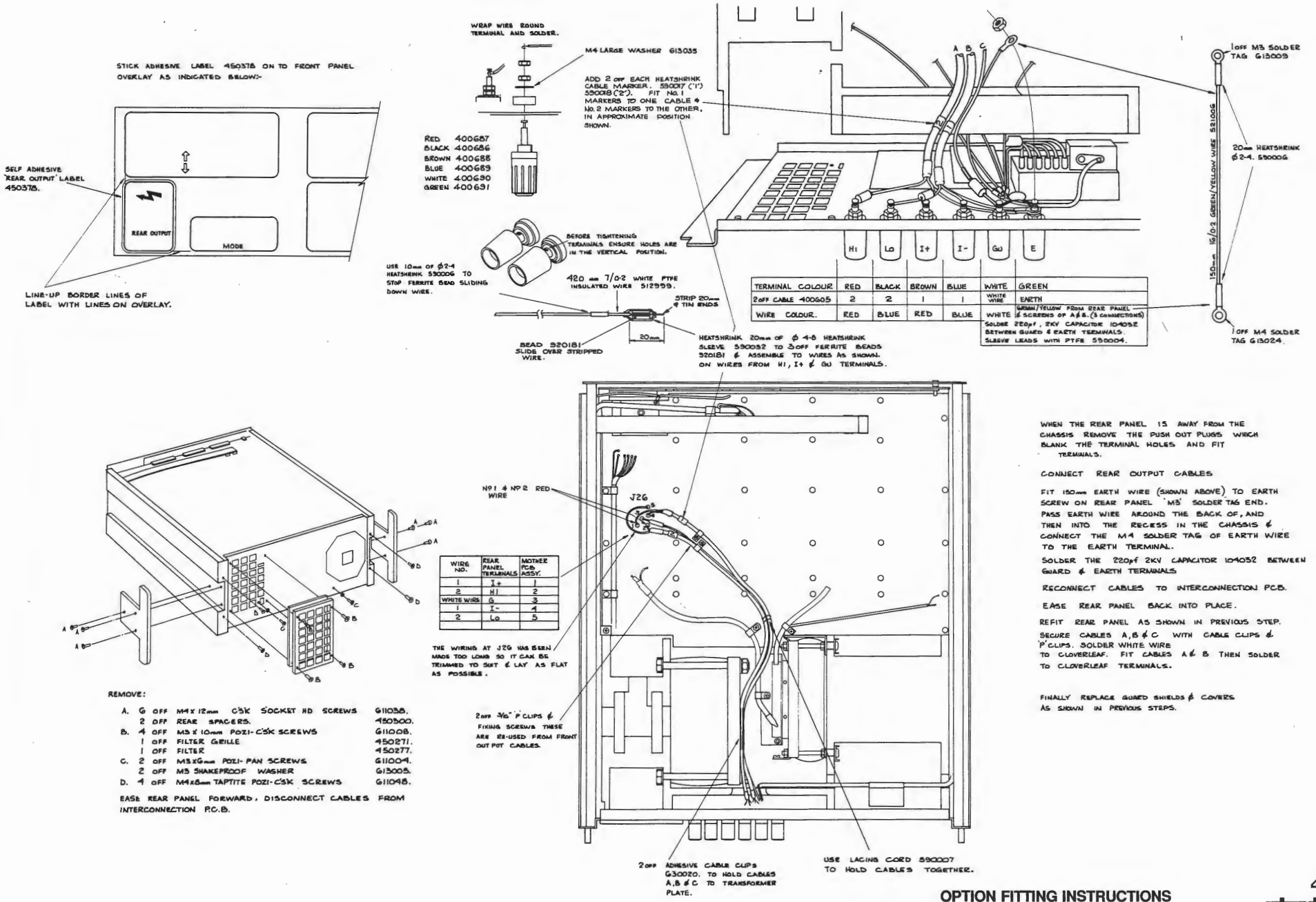
STRIP WIRE END 5mm

SLEEVE ALL SOLDER TAG CONNECTIONS WITH 20mm SLEEVE ϕ2.4 530006





WITH CALIBRATOR UPSIDE-DOWN FACING FORWARD UNSOLDER THE CABLES GOING FROM TERMINALS TO THE CLOVERLEAVES ON THE MOTHER PCB. ALSO REMOVE THE 2 'P' CLIPS & FIXING SCREWS. REMOVE THE FRONT PANEL FIXING SCREWS. REMOVE TERMINAL PCB. ASSY. WITH ALL ITS WIRES. REPLACE FRONT PANEL.



OPTION FITTING INSTRUCTIONS

Option 42: Rear Output

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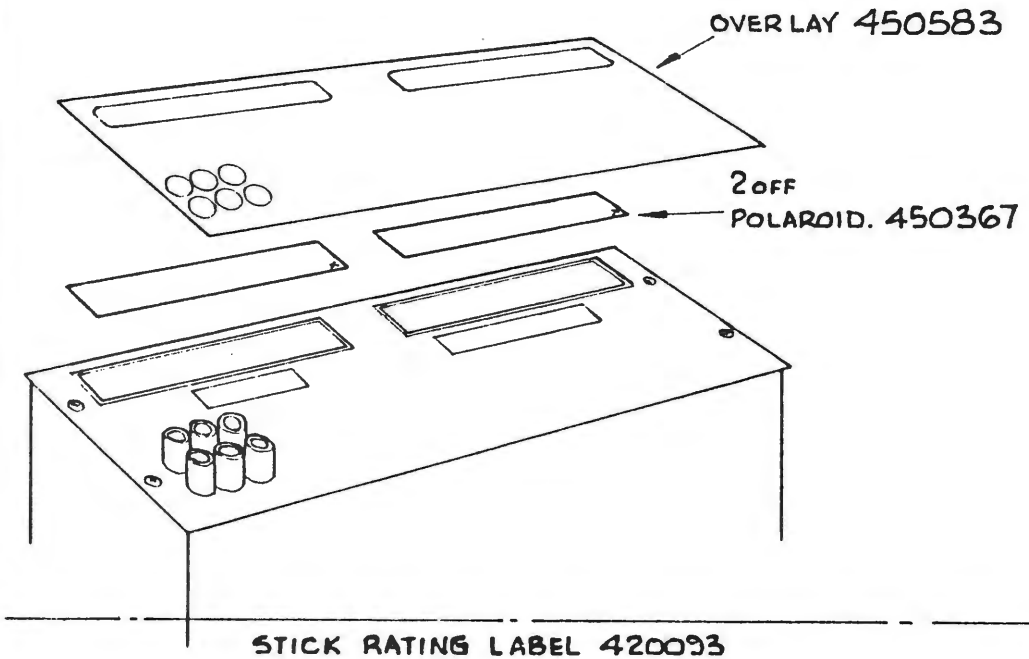
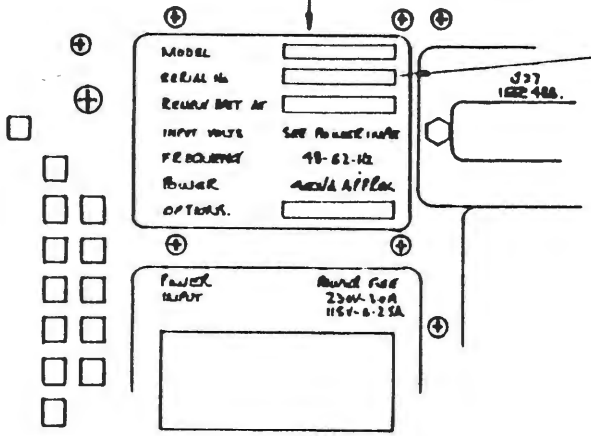
Layout Drawing No. 480603-3.4 Sheet 4

DO NOT SCALE THIS DRAWING



STICK RATING LABEL 420093
TO REAR PANEL IN POSITION SHOWN.



SERIAL N° TO INCLUDE MOD LEVEL STATUS AS A DASH [-] NUMBER ON THE RATING LABEL.

ALL BURRS TO BE REMOVED

NOTES.

1/ PROGRAMMED E PROMS
M18 No 290151
M19 " 290152
M20 " 290153
M21 " 290154
TO BE FITTED TO DIGITAL PCB ASSY. SEE DRAWING 480559.

2/ FIT INTO CAL & SERV. HANDBOOK:-
1 OFF 920098 3A 1¼" ANTISURGE FUSE
1 OFF 630109 2·5mm A/F HEX KEY.
2 OFF CAL SWITCH KEYS (FROM REAR PANEL ASSEMBLY).

3/ FITTING INSTRUCTIONS FOR CURRENT/OHMS & HIGH VOLTAGE ARE SHOWN ON DRAWING No. 480603.

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INSTRUMENT ASSEMBLY

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Layout Drawing No. 480716-1.0 Sheet 1