

MANUAL - ID 1369/3

**FACIT** ÖRSÄTTER

NR. 5880

# CALIBRATION AND SERVICING HANDBOOK

Volume 2

  
**PARTNERTECH**  
SE-597 80 Åtvidaberg, Sweden

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.

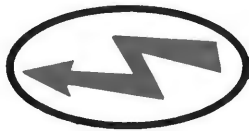
© 1986 Datron Instruments



# 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**

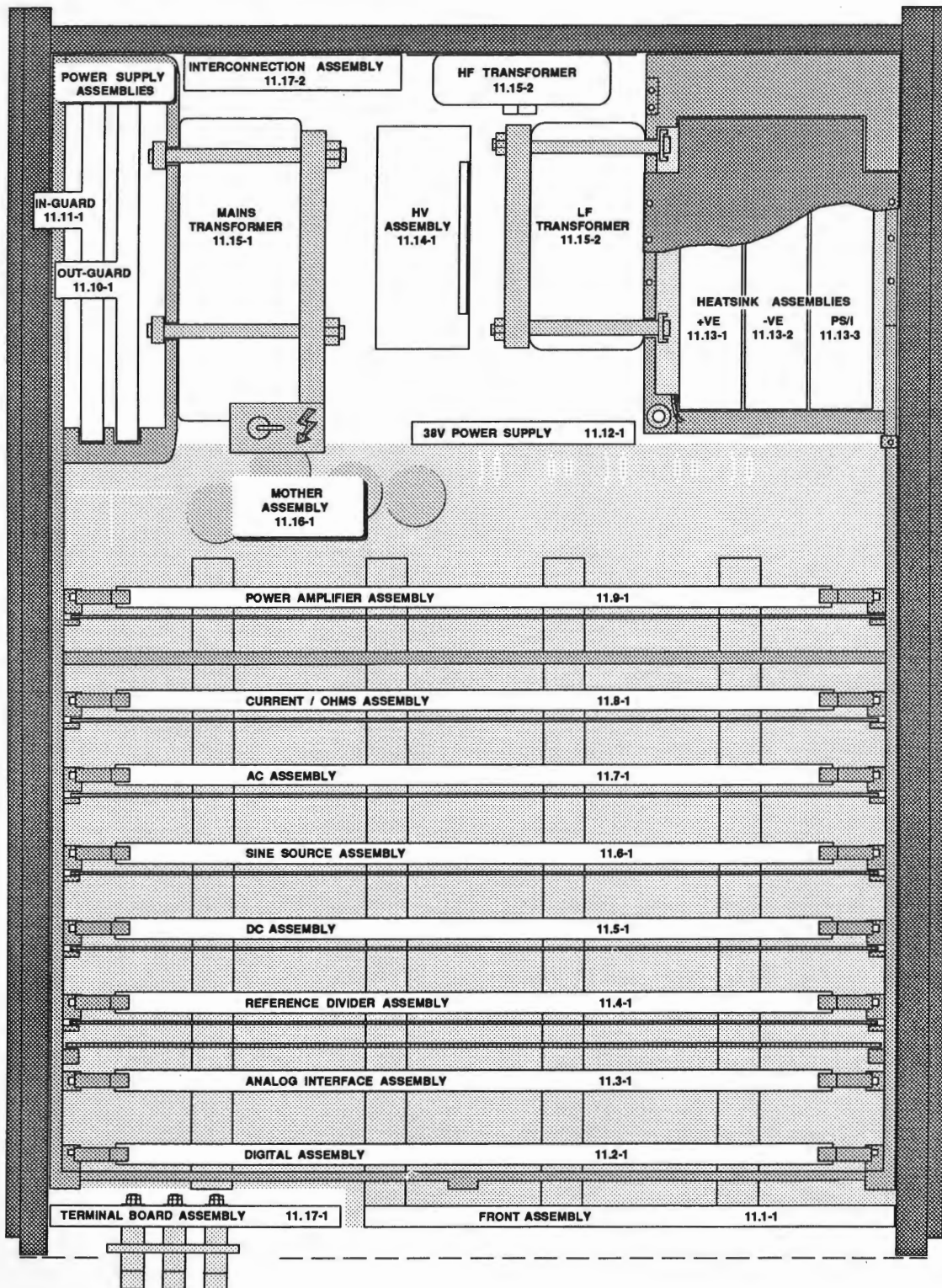
**SECTION 11**

**Servicing Diagrams**

**SECTION 12**

**Component Lists**

# SECTION 11 SERVICING DIAGRAMS



**FIG. 11.1 ASSEMBLY LOCATIONS WITH PAGE INDEX**

## SECTION 11 CONTENTS

<b>Front Assembly</b>	
Keyboard Encoder and LED Driver .....	11.1-1
Display Driver High Voltage .....	11.1-2
<b>Digital Assembly</b>	
Display Multiplexing Logic .....	11.2-1
Microprocessor .....	11.2-2
Memory and Battery Backup .....	11.2-3
IEEE 488 Interface .....	11.2-4
I-C Power Supplies .....	11.2-5
<b>Analog Interface Assembly</b>	
Lower Reference Divider Counter .....	11.3-1
Upper Reference Divider Counter .....	11.3-2
Master Clocks and Analog Control Serial Link .....	11.3-3
Watchdog Driver and I-C Power Supplies .....	11.3-4
<b>Reference Divider Assembly</b>	
Most-Significant Switch and Filter .....	11.4-1
Least-Significant Switch and Filter .....	11.4-2
Summing Amplifier .....	11.4-3
Serial/Parallel Data Converter .....	11.4-4
Out/In Guard Interface and Watchdog .....	11.4-5
Power Supplies .....	11.4-6
<b>Reference Assembly</b>	
Reference Assembly .....	11.4-7
<b>DC Assembly</b>	
100mV, 1V, 10V, 100V and 1kV Outputs .....	11.5-1
Output Switching and Overload Sense .....	11.5-2
Relay Drive Logic .....	11.5-3
Power Supplies .....	11.5-4
<b>Sine Source Assembly</b>	
Sine Oscillator .....	11.6-1
Oscillator Amplitude-Detector and Reference .....	11.6-2
VCA, 1V Buffer and Current Detector .....	11.6-3
Digital Synthesizer .....	11.6-4
Frequency Range Dividers, Control Logic and Power Supplies .....	11.6-5
<b>AC Assembly</b>	
Switching Overview .....	11.7-1
Sense Amplifier and Reference Inverter .....	11.7-2
Quasi-Sine Generator and Timing Logic .....	11.7-3
AC/DC Transfer Detector and Integrators .....	11.7-4
Relay Drive Logic and Power Supplies .....	11.7-5
Phase Detector & Integrator and Power Supplies .....	11.7-6
<b>Current / Ohms Assembly</b>	
Voltage-to-Current Converter .....	11.8-1
Logic and Relay Drive .....	11.8-2
Standard Resistors and Switching .....	11.8-3
<b>Power Amplifier Assembly</b>	
Block Diagram .....	11.9-1
10V and 1kV Amplifiers .....	11.9-2
100V Amplifier .....	11.9-3
Power Supply Monitors .....	11.9-4
Logic and Relay Drives .....	11.9-5
100V Overload Detector and Power Supplies .....	11.9-6

<b>Out-guard Power Supply Assembly</b>	
Main Digital Supply, Display Supply and Common Mode Null .....	11.10-1
<b>In-guard Power Supply Assembly</b>	
Common-2 Supplies and Current Option Supply .....	11.11-1
Reference Common-4 and $\pm 8V$ Common-2 Supplies .....	11.11-2
<b><math>\pm 38V</math> Power Supply Assembly</b>	
$\pm 38V$ Power Supply with Mother Assembly Components .....	11.12-1
<b>Heatsink Assemblies</b>	
Output Power Amplifier (Positive Half) .....	11.13-1
Output Power Amplifier (Negative Half) .....	11.13-2
$\pm 400V(2)B$ Regulator; Current Option Output Stage .....	11.13-3
<b>High Voltage Assembly</b>	
High Voltage Switching and Logic .....	11.14-1
Constant Current Source Assembly .....	11.14-2
<b>Transformer Assemblies</b>	
Mains (Line) Transformer .....	11.15-1
L.F. and H.F. Transformer Assemblies .....	11.15-2
<b>Mother Assembly (Edge Connector Pin Index with each Layout Drawing)</b>	
Sheet 1 .....	11.16-1
Sheet 2 .....	11.16-2
Sheet 3 .....	11.16-3
Sheet 4 .....	11.16-4
Sheet 5 .....	11.16-5
<b>Interconnections</b>	
Circuit Diagrams Sheets 1 and 2 .....	11.17-1
<b>Interconnection Assembly</b>	
Connections with Power Input Module and Mains Transformer .....	11.17-2
<b>Terminal Board Assembly</b>	
Sheet 1 .....	11.17-3
<b>Main Assembly Layout Drawings</b>	
Sheets 1 and 2 .....	11.18-1
Sheets 3 and 4 .....	11.18-2
<b>Chassis Assembly Layout Drawings</b>	
Sheets 1 and 2 .....	11.18-3
Sheets 3 and 4 .....	11.18-4
Sheets 5 and 6 .....	11.18-5
Sheet 7 .....	11.18-6
<b>Rear Panel Assembly</b>	
Rear Panel Assembly .....	11.18-6
<b>Option Fitting Instructions</b>	
Option 80: 115V 60Hz .....	11.19-1
Option 90: Rack Mounting .....	11.19-1
Option 42: Rear Output .....	11.19-2
<b>Instrument Assembly</b>	
4705 .....	11.20-1

**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

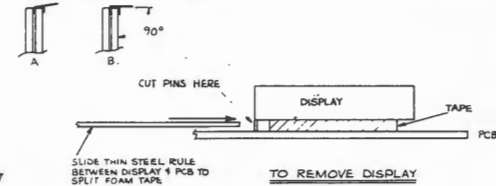
EACH DISPLAY TO HAVE 3 PIECES OF PRESSURE SENSITIVE TAPE 630029  
25mm LONG STUCK TO THE REVERSE OF THE  
DISPLAY IN POSITIONS SHOWING LINE UP + PRESS DISPLAY  
FIRMLY INTO PLACE, THEN SOLDER THE 24 PINS ONLY WHICH  
ARE SHOWN BELOW. (THERE ARE ONLY SOLDER PADS FOR  
THESE PINS).

2 OFF SOLDER TERMINAL 620003  
TO SECURE M2 SEE FIXING  
DETAIL AT BOTTOM OF SHEET

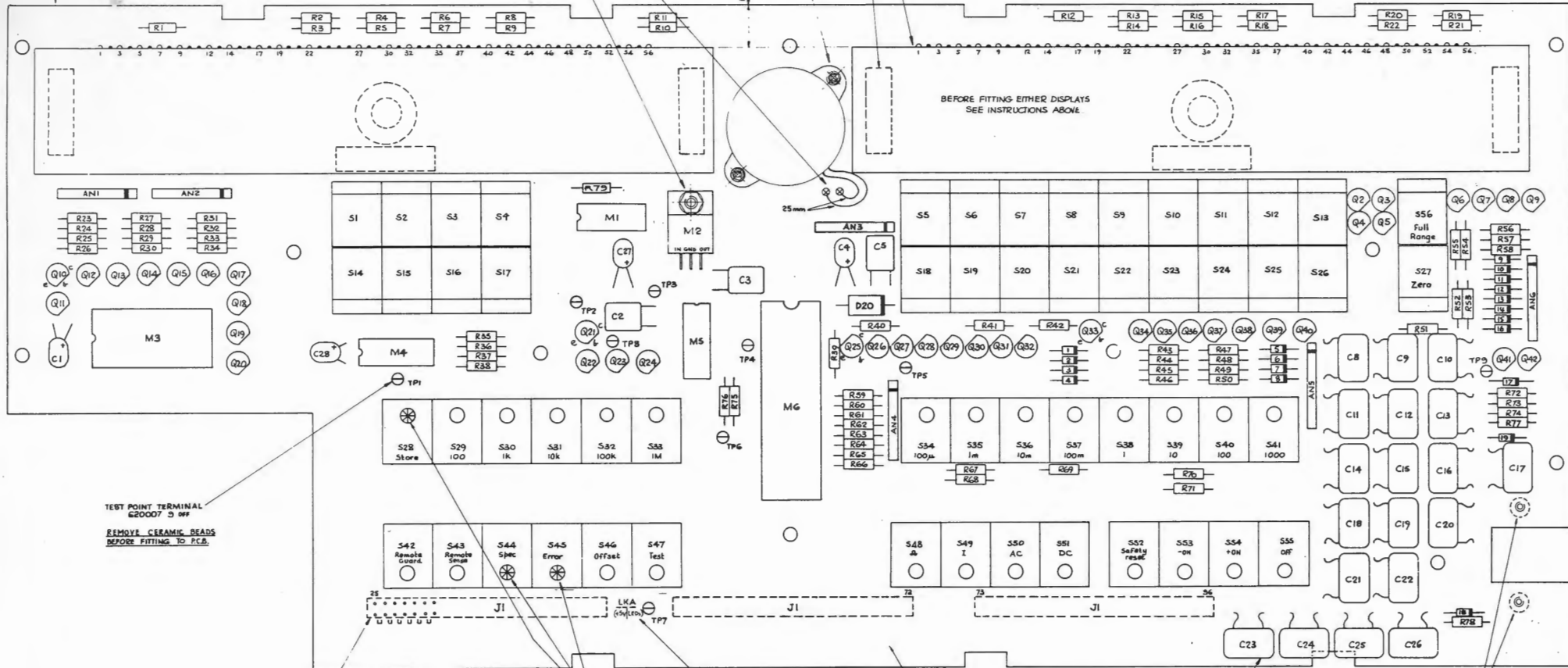
SECURE BUZZER (PART NO 920096) WITH  
2 OFF M2x6mm SLOT CSK SCREW 611054  
2 OFF M2 WASHER 613026  
2 OFF M2 INT SHAKEPROOF 613027  
2 OFF M2 FULL NUT 615016

2 OFF 8 1/2 DIGIT DISPLAY 800017

**FRONT ASSEMBLY**



PCB 410144-10



TEST POINT TERMINAL  
620007 3 OFF

REMOVE CERAMIC BEADS  
BEFORE FITTING TO PCB.

FIT 3 OFF 24x24 WAY 1" PCB PLUG 604060  
TO UNDERSIDE OF PCB. ENSURE THAT BODY IS  
TIGHT + SQUARE TO PCB. WITH Moulded PIPS  
POINTING TOWARDS LOWER EDGE OF PCB.

GREEN L.E.Ds 3 OFF  
ALL OTHERS RED

LINK SHOWN DOTTED, NOT  
FITTED AT ASSY STAGE

NOTE: ALL PINS ON SOLDER SIDE  
OF PCB MUST BE CROPPED  
TO 2-5mm OR LESS.

ENSURE THAT C8 TO C26 LEADS ARE FORMED  
WITH THE LEADS SPACED AWAY FROM THE PCB.

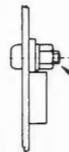
NOTE:  
NO COMPONENTS TO STAND HIGHER THAN 8mm.  
(EXCEPT SWITCHES)

2 OFF STANDOFF M2.5x4mm  
613023. FIT UNDERSIDE OF  
PCB.

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

SCREW M3x6mm SLotted PANHD 611076  
WASHER M3 SHAKEPROOF 613005  
NUT M3 HEX FULL 615002

VIEW TO SHOW FIXING  
OF M2

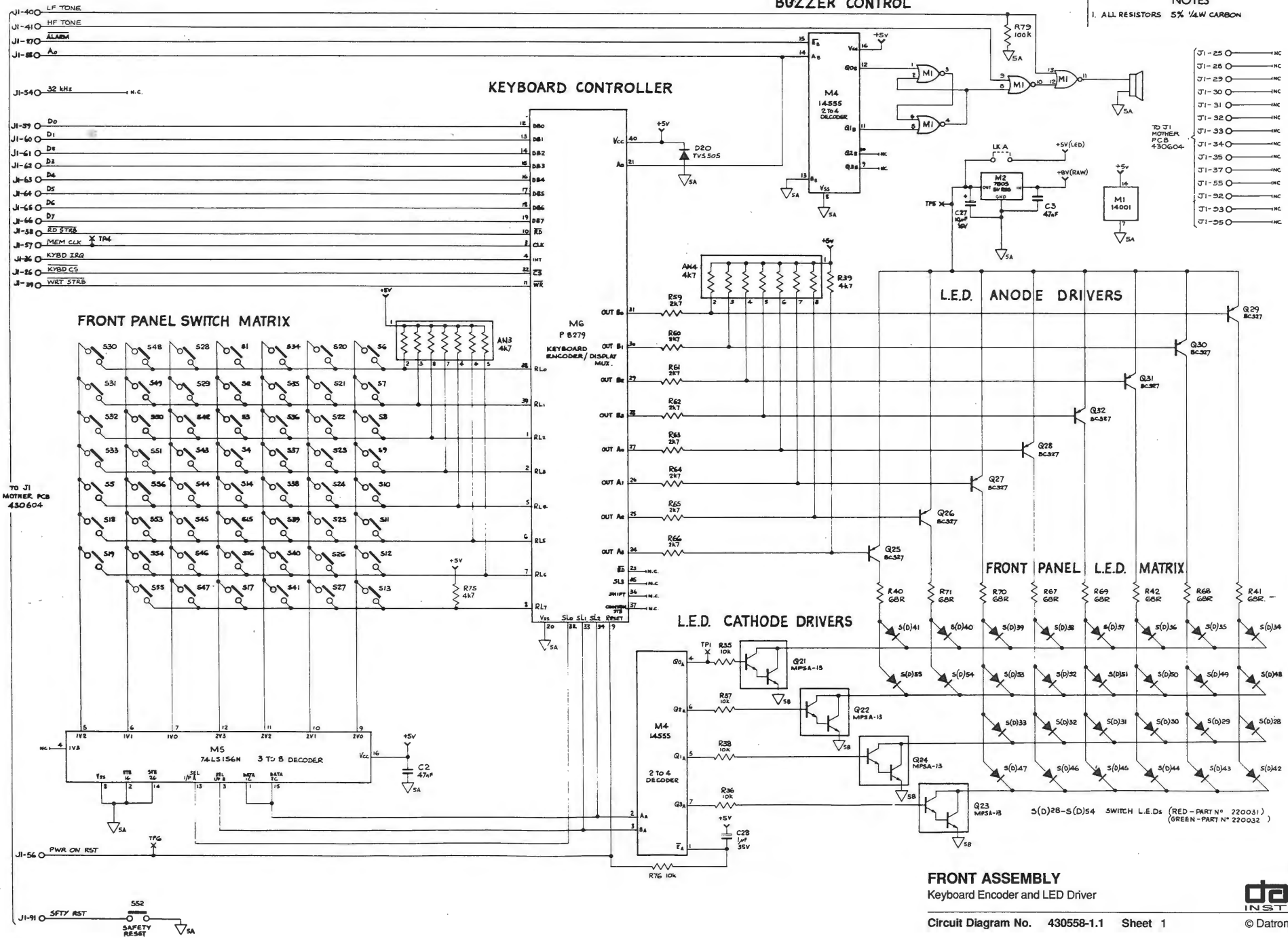




# BUZZER CONTROL

## NOTES

1. ALL RESISTORS 5% 1/4W CARBON



- J1-25 ○ -INC
- J1-26 ○ -INC
- J1-29 ○ -INC
- J1-30 ○ -INC
- J1-31 ○ -INC
- J1-32 ○ -INC
- J1-33 ○ -INC
- J1-34 ○ -INC
- J1-35 ○ -INC
- J1-37 ○ -INC
- J1-55 ○ -INC
- J1-52 ○ -INC
- J1-53 ○ -INC
- J1-55 ○ -INC

### FRONT ASSEMBLY Keyboard Encoder and LED Driver

Circuit Diagram No. 430558-1.1 Sheet 1

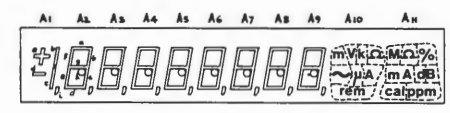
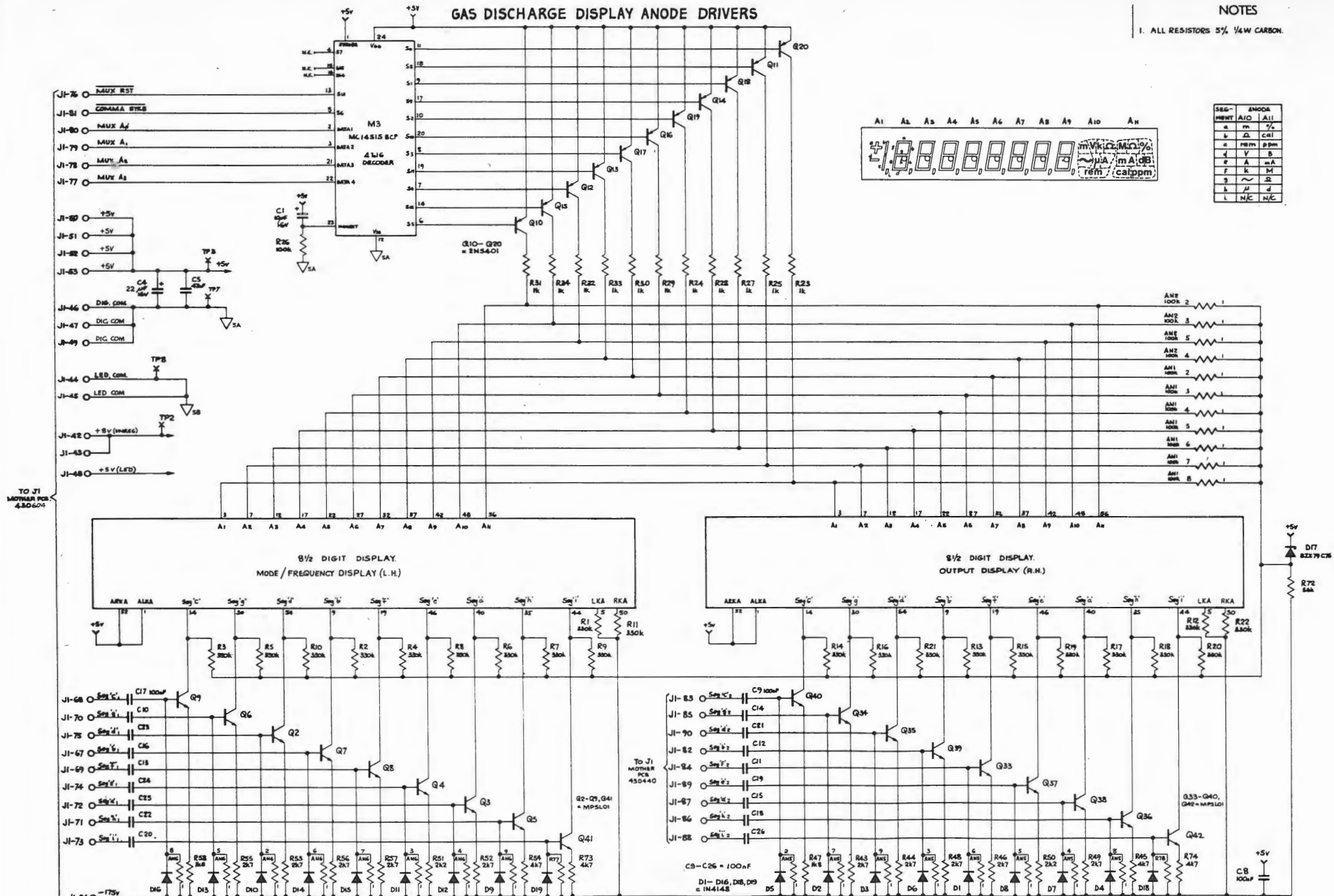


© Datron Instruments 1986

# GAS DISCHARGE DISPLAY ANODE DRIVERS

## NOTES

1. ALL RESISTORS 5% 1/4W CARBON.



RES.	ANODE	A10	A11
a	m	%	
b	Δ	cat	
c	rem	ppm	
d	A	m	A
e	k	M	
f	~	Δ	
g	M	d	
h	M/C	M/C	

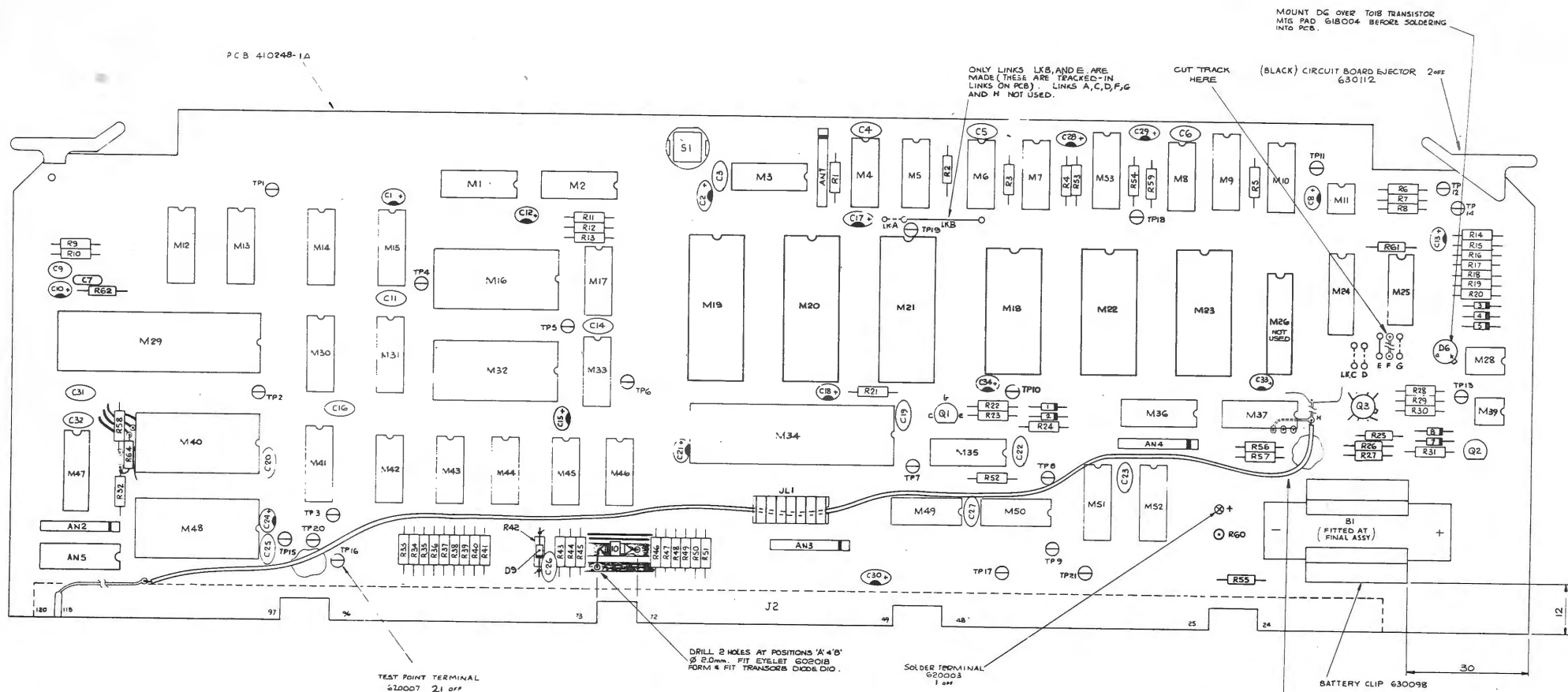
# GAS DISCHARGE DISPLAY CATHODE DRIVERS

# FRONT ASSEMBLY

Display Driver High Voltage

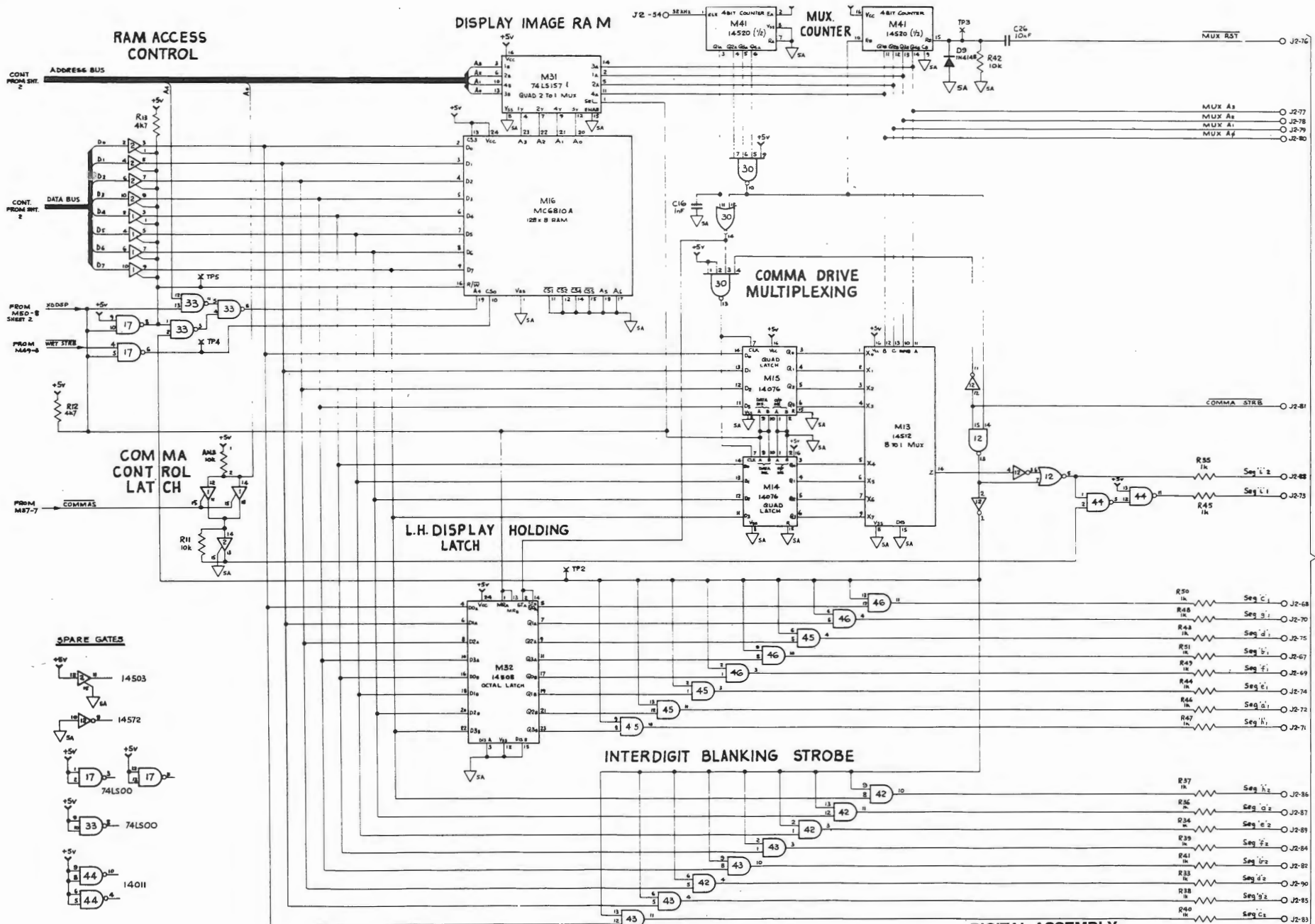
Circuit Diagram No. 430558-1.0 Sheet 2

4705  
**datron**  
 INSTRUMENTS  
 © Datron Instruments 1986



MOUNTING ICs

- FIT M11 + M39 INTO 6-WAY DIL SOCKET G05066 2 off
- FIT M28 INTO 8-WAY DIL SOCKET G05059 1 off
- FIT M4-M8 M10 M17 M25 M33 M42-M46 M49 + M50 INTO 14-WAY DIL SOCKET G05060 16 off
- FIT M1-M3 M9 M12-M16 M24 M30 M31 M35-M37 M41 M47 M51-M53 + J1 INTO 16-WAY DIL SOCKET G05061 20 off
- FIT M19 - M21 INTO 28-WAY DIL SOCKET G05065 3 off
- FIT M16, M18, M22, M23, M32, M40 + M48 INTO 24-WAY DIL SOCKET G05064 7 off
- FIT M29 + M34 INTO 40-WAY DIL SOCKET G05050 2 off



TO J2  
MONITOR  
PCB  
4306049

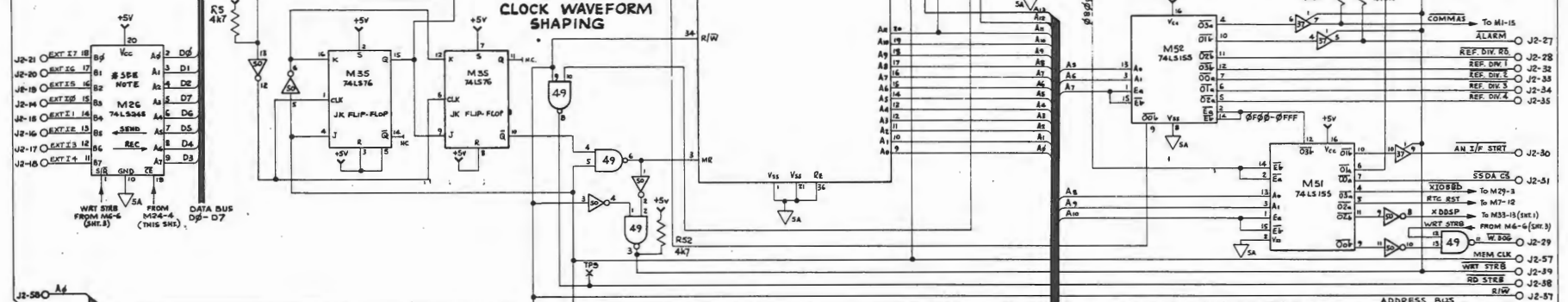
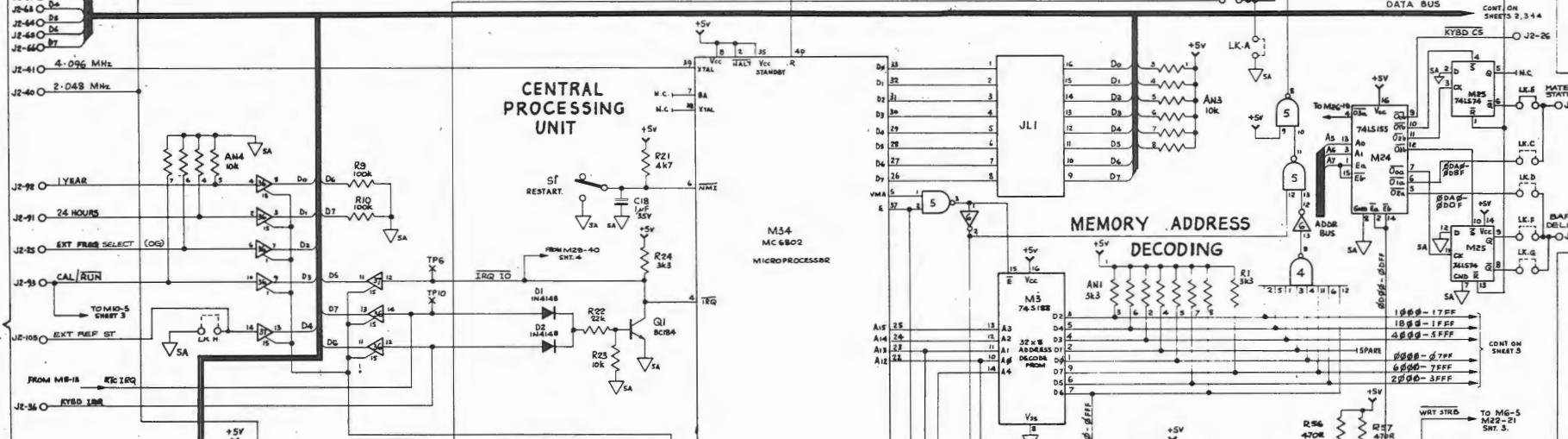
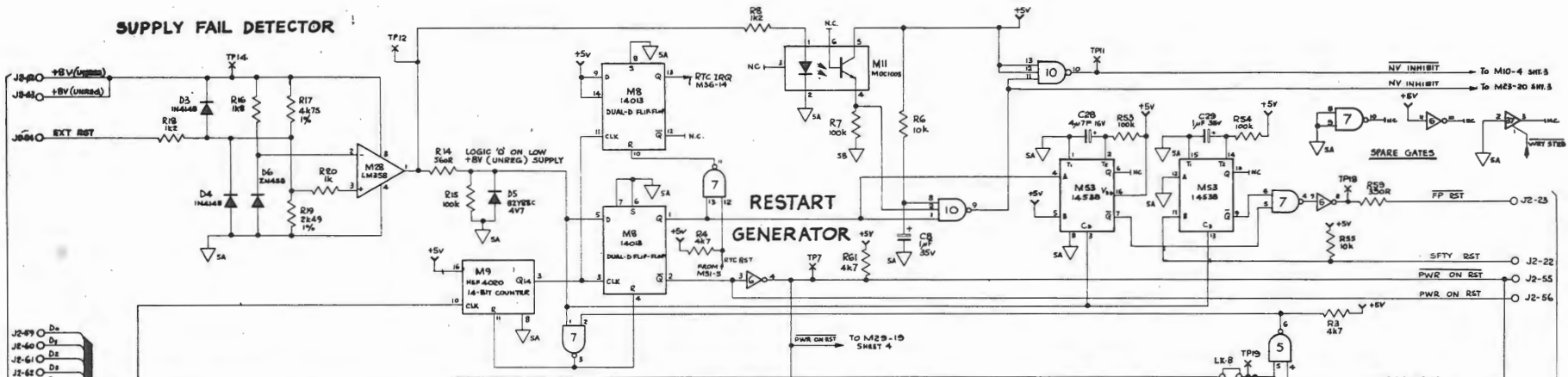
**DIGITAL ASSEMBLY**  
Display Multiplexing Logic

Circuit Diagram No. 430559-1.0 Sheet 1

**4705**  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

**SUPPLY FAIL DETECTOR**



NOTE: M26 NOT FITTED

TO M29-5 SHEET 4

TO M29-6 SHEET 4

**DIGITAL ASSEMBLY**

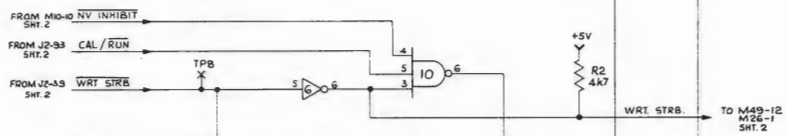
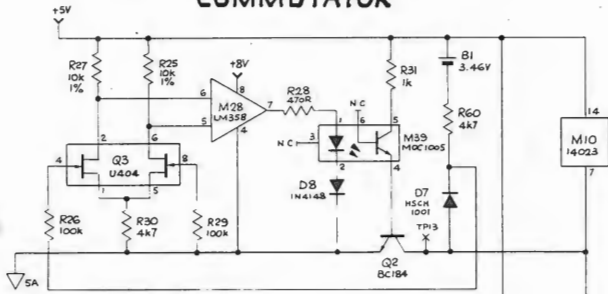
Microprocessor

Circuit Diagram No. 430559-1.0 Sheet 2

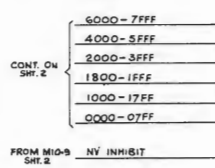
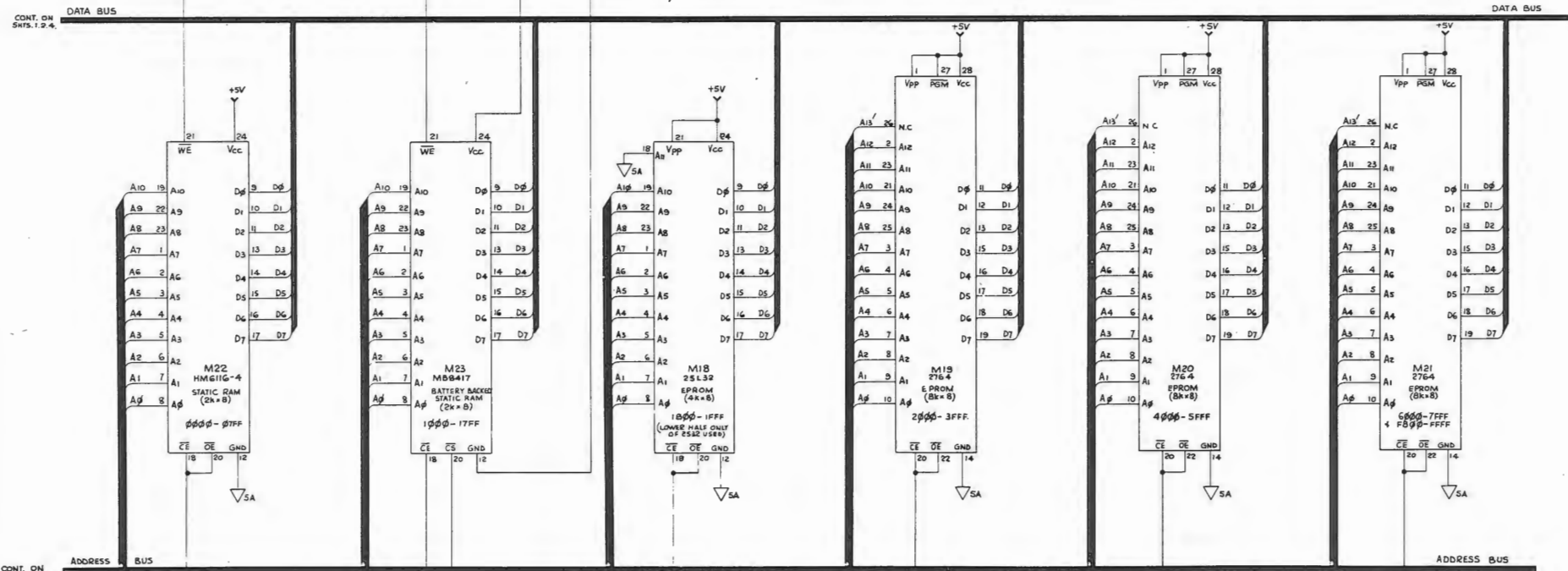
**4705**  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

# NON-VOLATILE RAM SUPPLY COMMUTATOR



# PROGRAM MEMORY

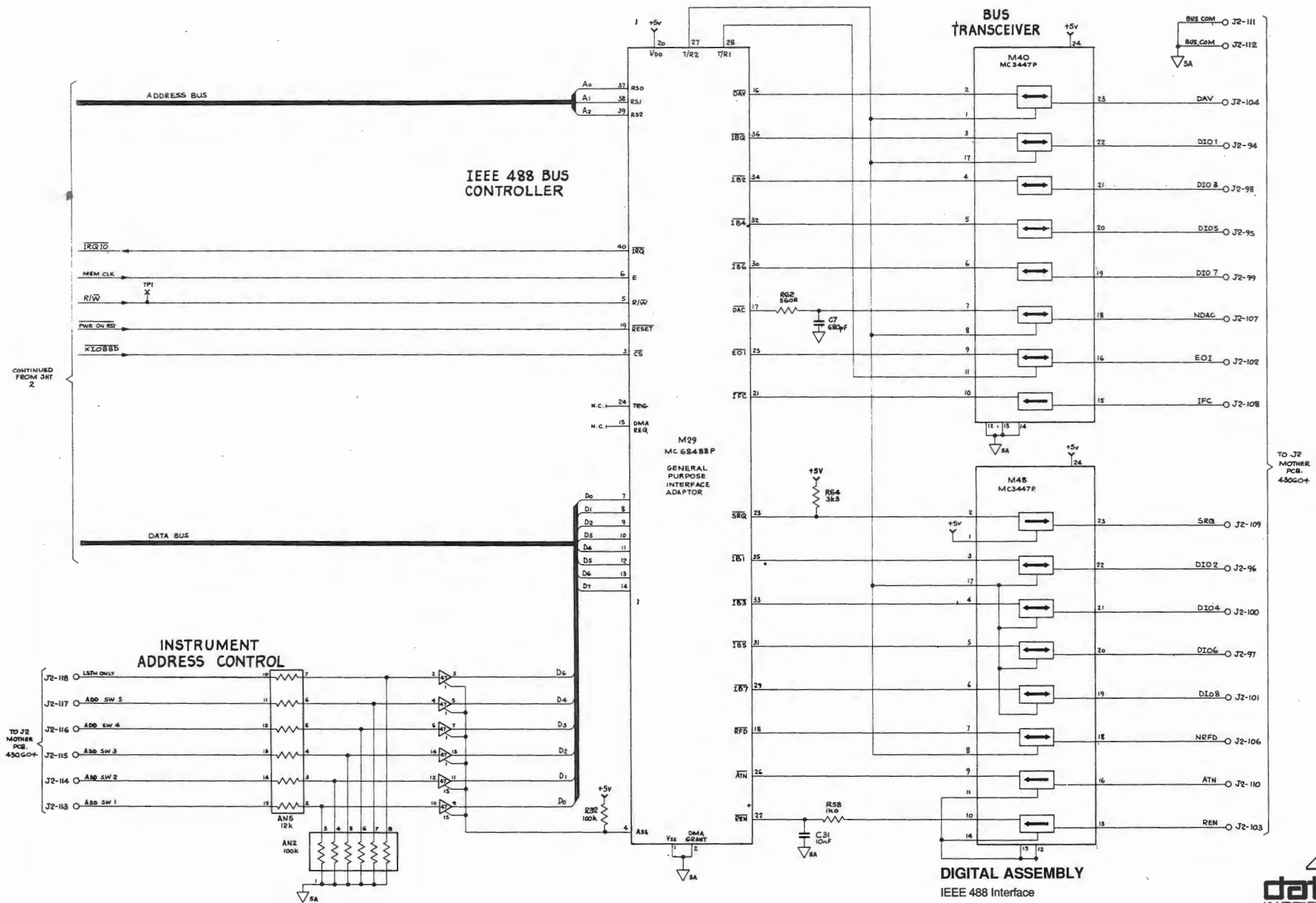


DIGITAL ASSEMBLY  
Display Memory and Battery Backup

Circuit Diagram No. 430559-1.0 Sheet 3



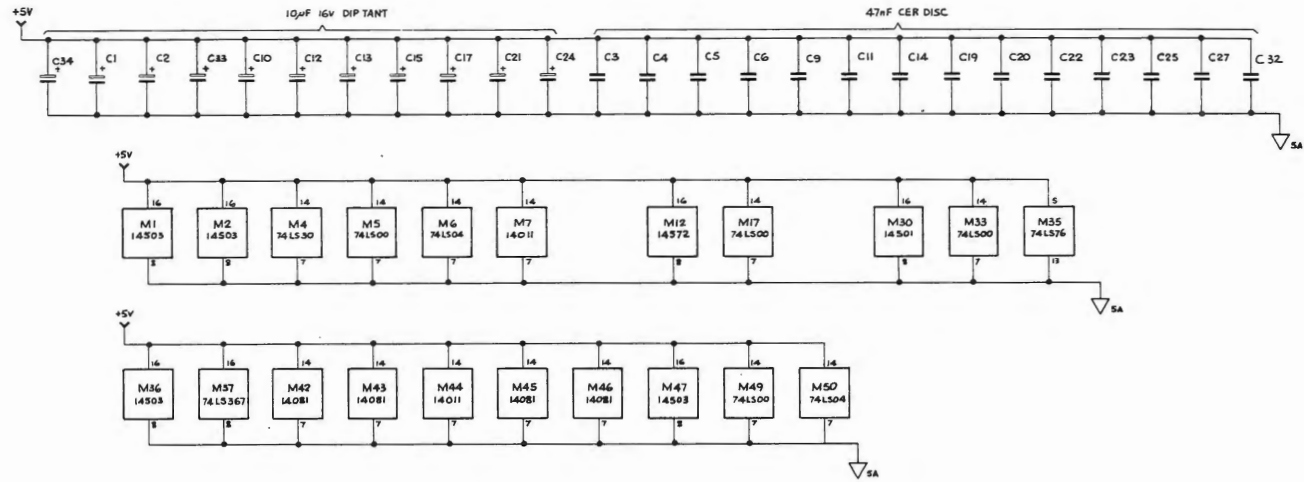
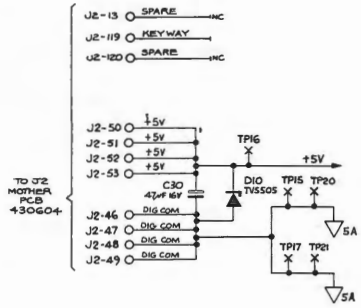
© Datron Instruments 1986



CONTINUED FROM JHT 2

TO J2 MOTHER PCB 430G04

DIGITAL ASSEMBLY  
IEEE 488 Interface



DIGITAL ASSEMBLY  
 I/C Power Supplies

Circuit Diagram No. 430559-1.0 Sheet 5

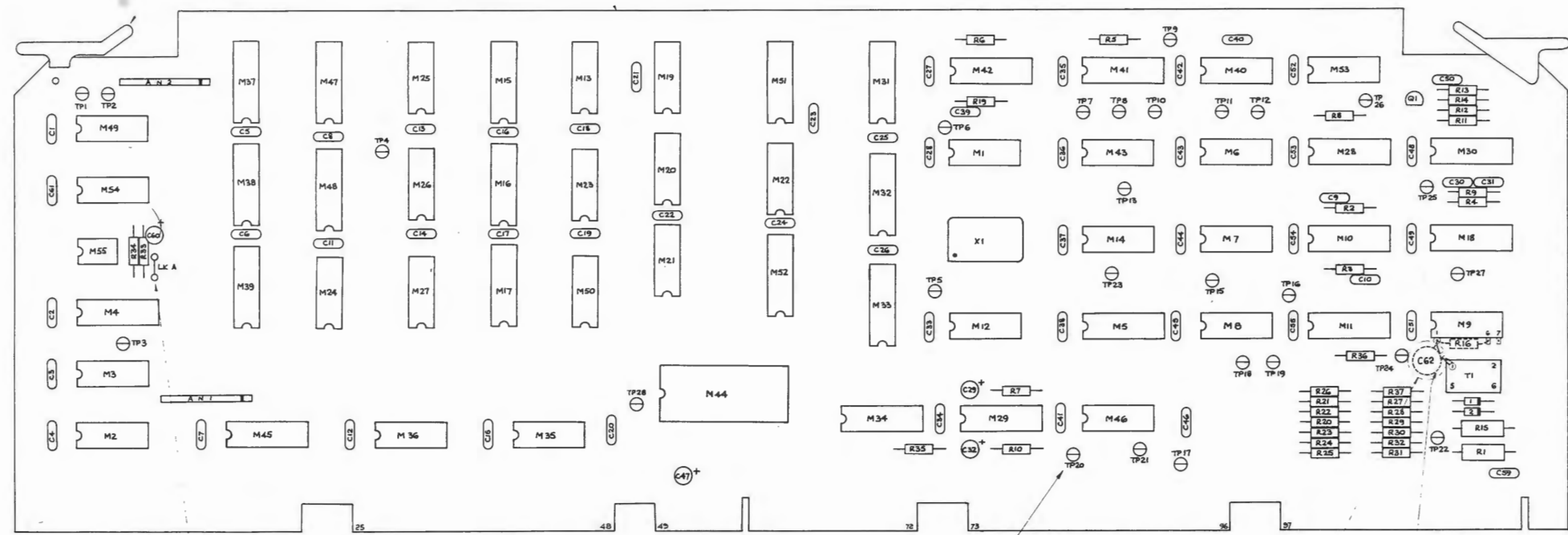
4705  
**datron**  
 INSTRUMENTS  
 © Datron Instruments 1986



ANALOG INTERFACE ASSEMBLY

(BROWN) CIRCUIT BOARD EJECTOR  
G30117, 2 off

PCB, 410264-1



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

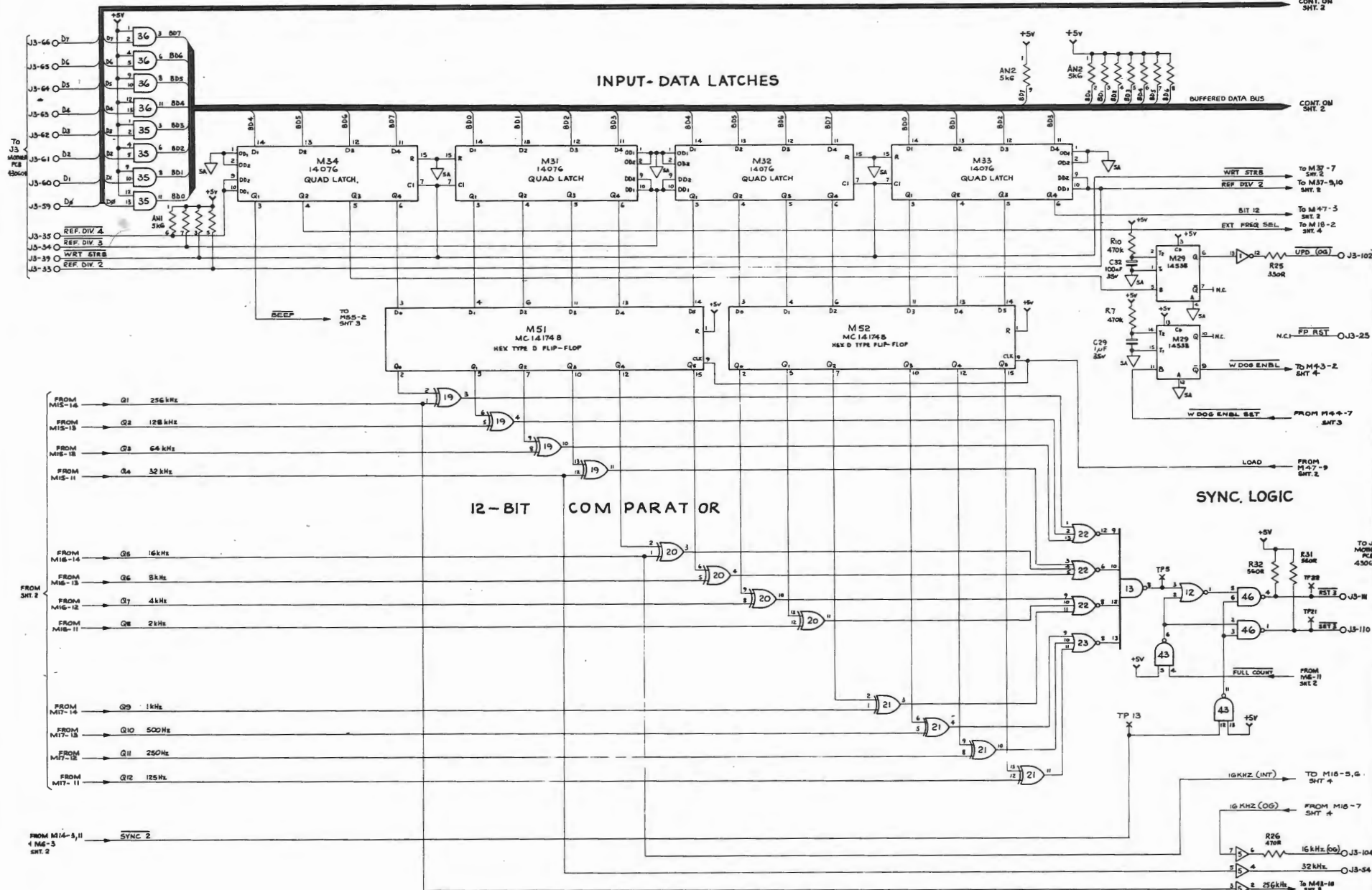
TEST POINT TERMINAL  
620007 27 off

CUT TRACK ON COMP. SIDE OF  
PC.B. BETWEEN M19-1 & TP11.  
BED C62 IN SILICONE RUBBER  
COMPOUND 300004.

MOUNTING I.C.'s.

N° WAYS	PART N°	USED TO MOUNT	N° 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

### INPUT-DATA LATCHES

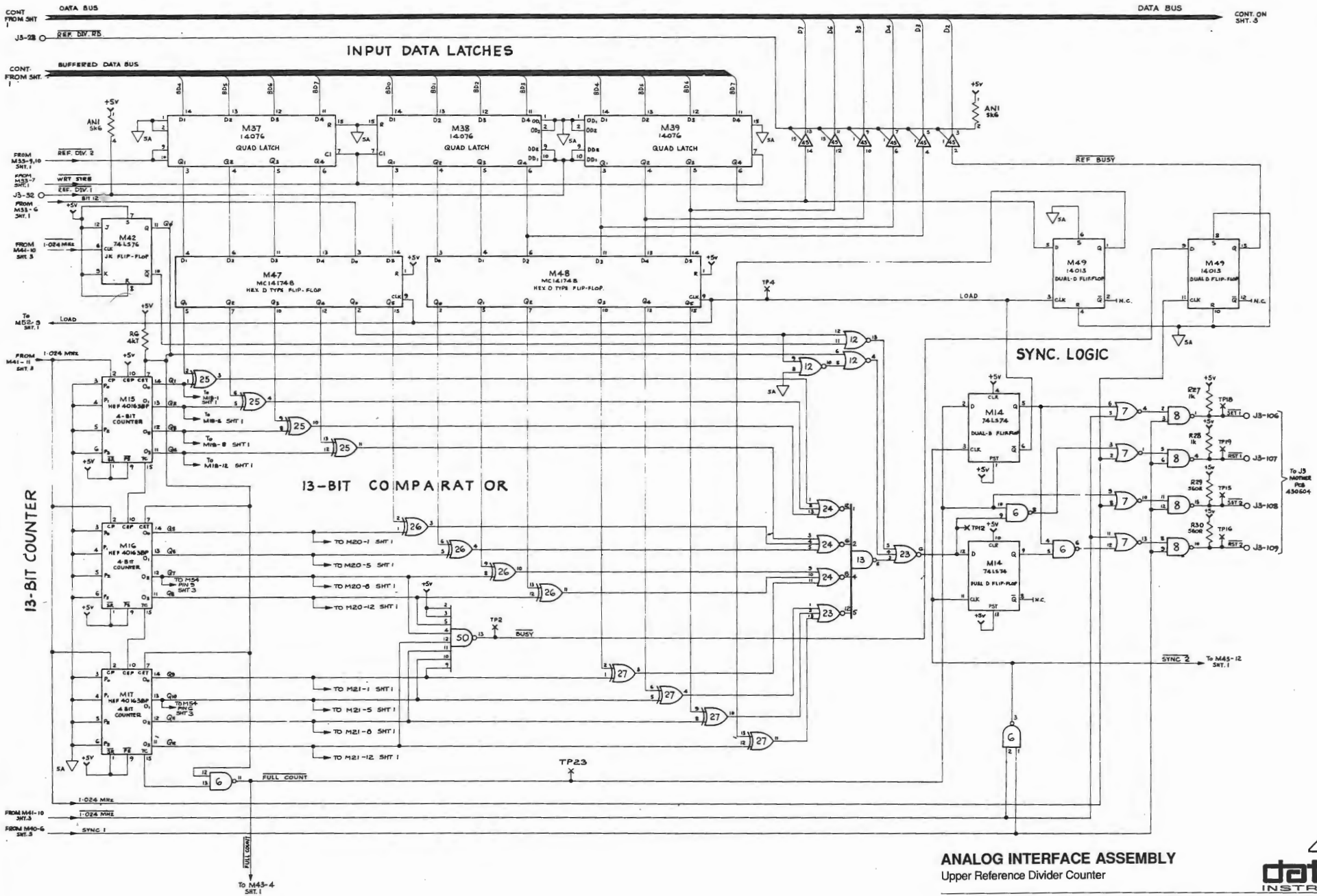


**ANALOG INTERFACE ASSEMBLY**  
Lower Reference Divider Counter

Circuit Diagram No. 430648-1.0 Sheet 1

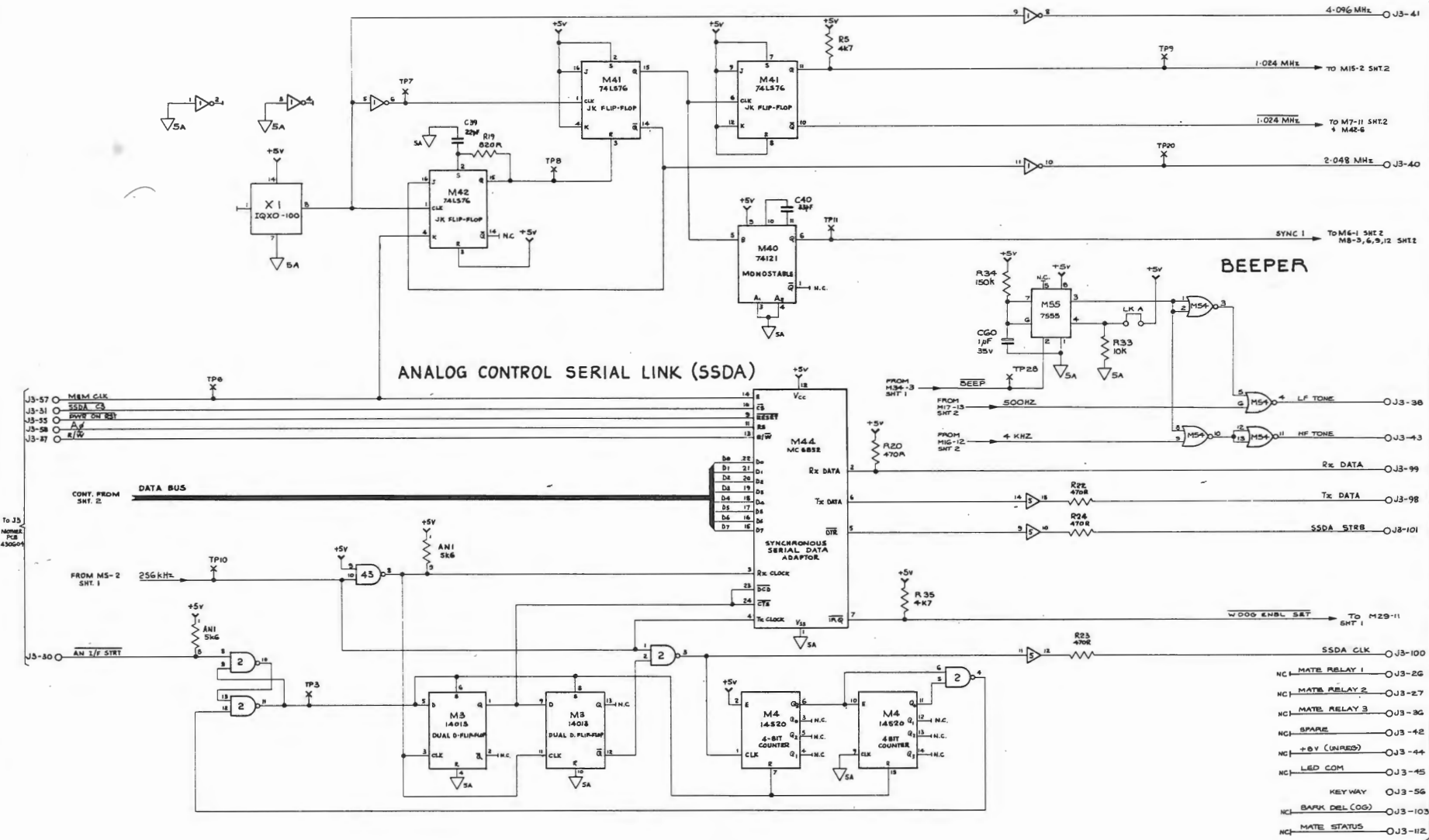


© Datron Instruments 1986



**ANALOG INTERFACE ASSEMBLY**  
 Upper Reference Divider Counter  
 Circuit Diagram No. 430648-1.1 Sheet 2

### MASTER CLOCKS



To J3  
MOTHER  
PCB  
430604

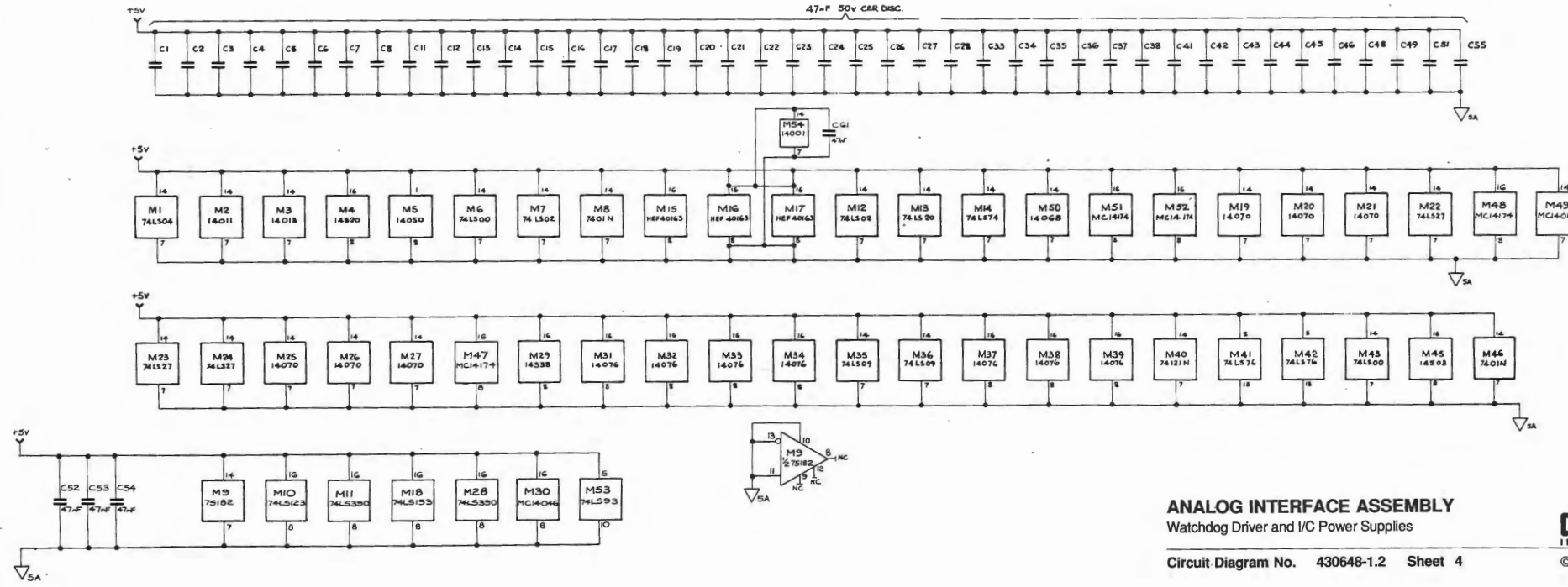
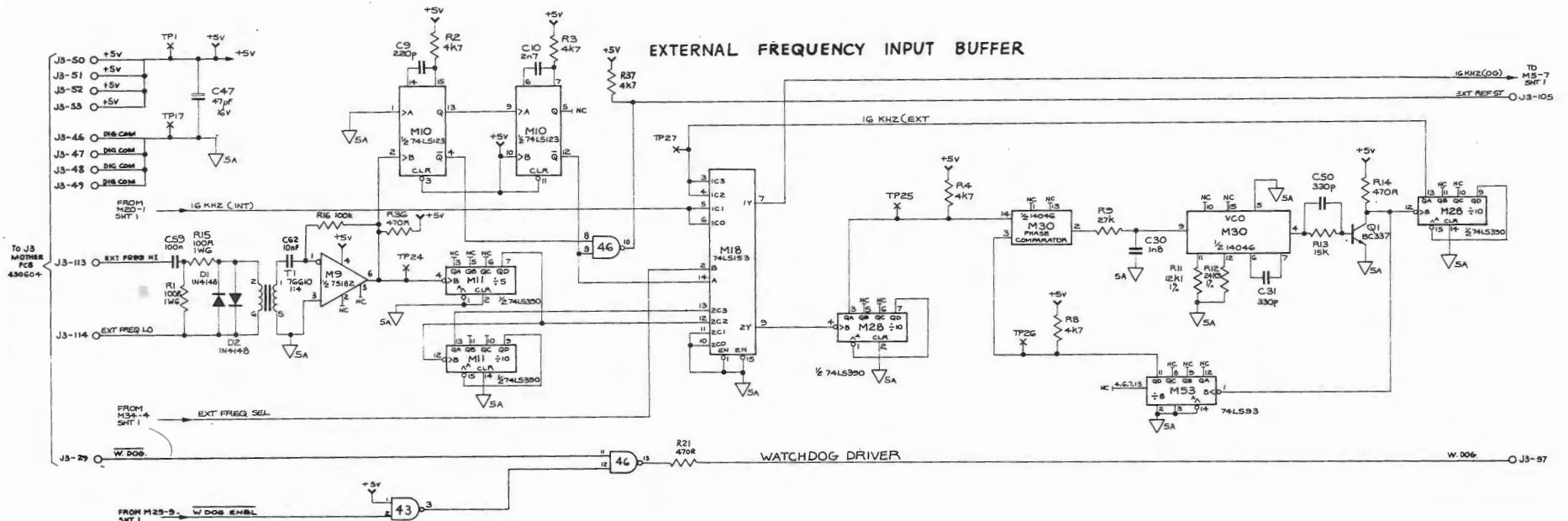
To J3  
MOTHER  
PCB  
430604

### ANALOG INTERFACE ASSEMBLY Master Clocks and Analog Serial Link

Circuit Diagram No. 430648-1.1 Sheet 3



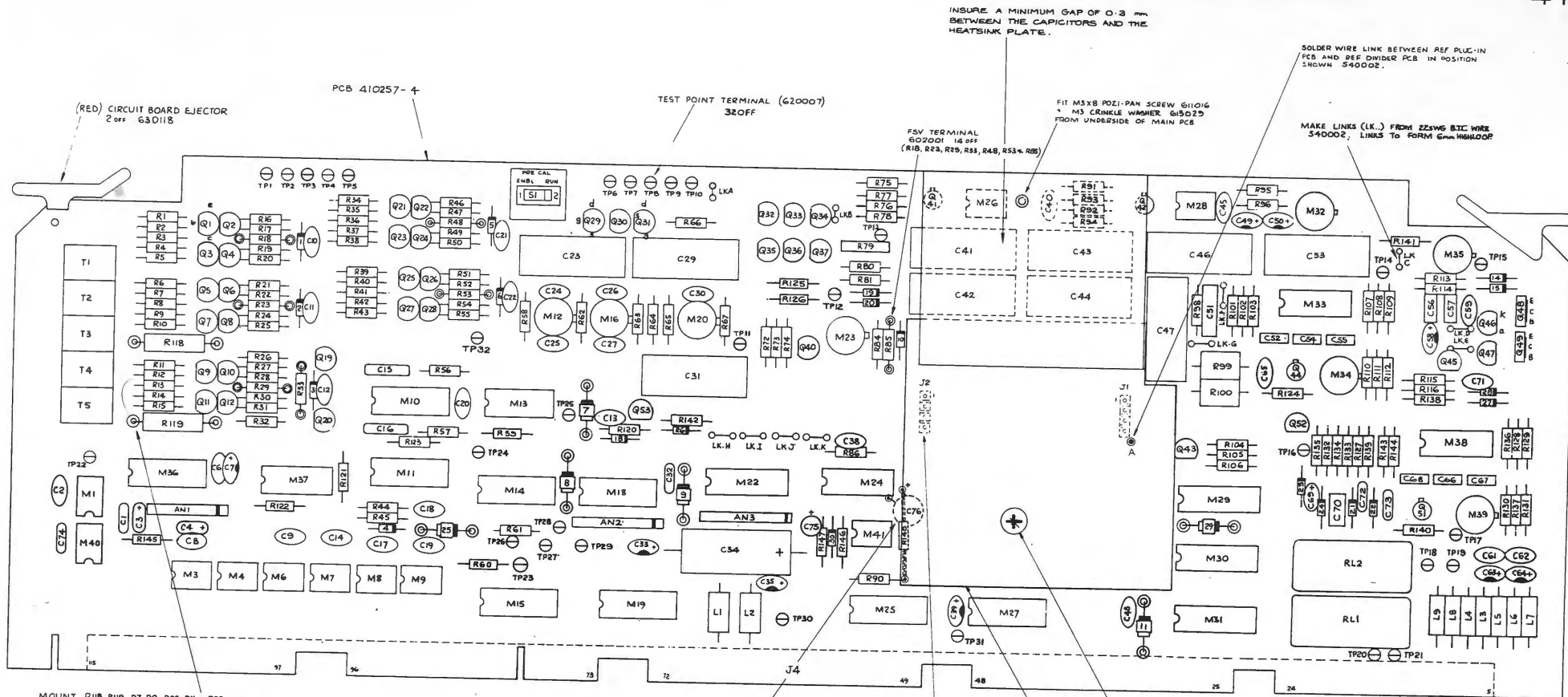
© Datron Instruments 1986



**4705**  
**datron**  
 INSTRUMENTS  
 ANALOG INTERFACE ASSEMBLY  
 Watchdog Driver and I/C Power Supplies  
 Circuit Diagram No. 430648-1.2 Sheet 4  
 © Datron Instruments 1986

REFERENCE DIVIDER ASSEMBLY

**datron**  
INSTRUMENTS  
4705



INSURE A MINIMUM GAP OF 0.3 mm BETWEEN THE CAPACITORS AND THE HEATSINK PLATE.

SOLDER WIRE LINK BETWEEN REF. PLUG-IN PCB AND REF. DIVIDER PCB IN POSITION SHOWN 340002.

MAKE LINKS (L.K.) FROM 22SWG BTC WIRE 340002; LINKS TO FORM 6mm HIGH LOOP

FIT M3X8 POZI-PAN SCREW G11016 \* M3 CRINKLE WASHER G15025 FROM UNDERSIDE OF MAIN PCB

FSV TERMINAL G02001 14 OFF (R18, R23, R29, R31, R48, R53 & R88)

PCB 410257-4

TEST POINT TERMINAL (G20007) 32 OFF

(RED) CIRCUIT BOARD EJECTOR 2 OFF G3D118

MOUNT R18, R19, D7-D9, D25, D11 & D29 ON INSULATING BEAD (1 PER LEAD) G30024 16 OFF

**MOUNTING I.C.s**  
FIT M1, M3, M4, M6-M9, M40, M26, M28, M41 ON 8WAY DIL SOCKET G05059 11 OFF

FIT M13, M24, M35, M37, M38 ON 14WAY DIL SOCKET G05060 5 OFF

FIT M10, M11, M14, M15, M18, M19, M22, M25, M27, M29, M30, M31, M36 ON 16WAY DIL SOCKET G05061 13 OFF

BED C76 IN SILICONE RUBBER 300004; KEEP SILICONE RUBBER AWAY FROM I.C. LEGS. (SOLDER SIDE OF BOARD) SLEEVE R148 LEADS 530004 4 WRAP LEAD AROUND R50. CUT TRACK ON COMP SIDE OF BOARD UNDER R148 POSITION.

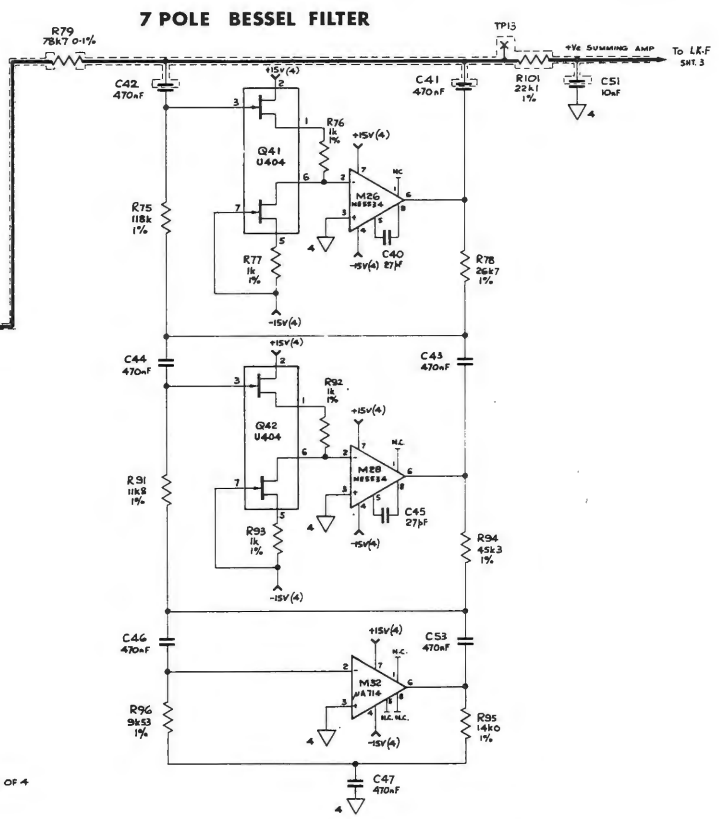
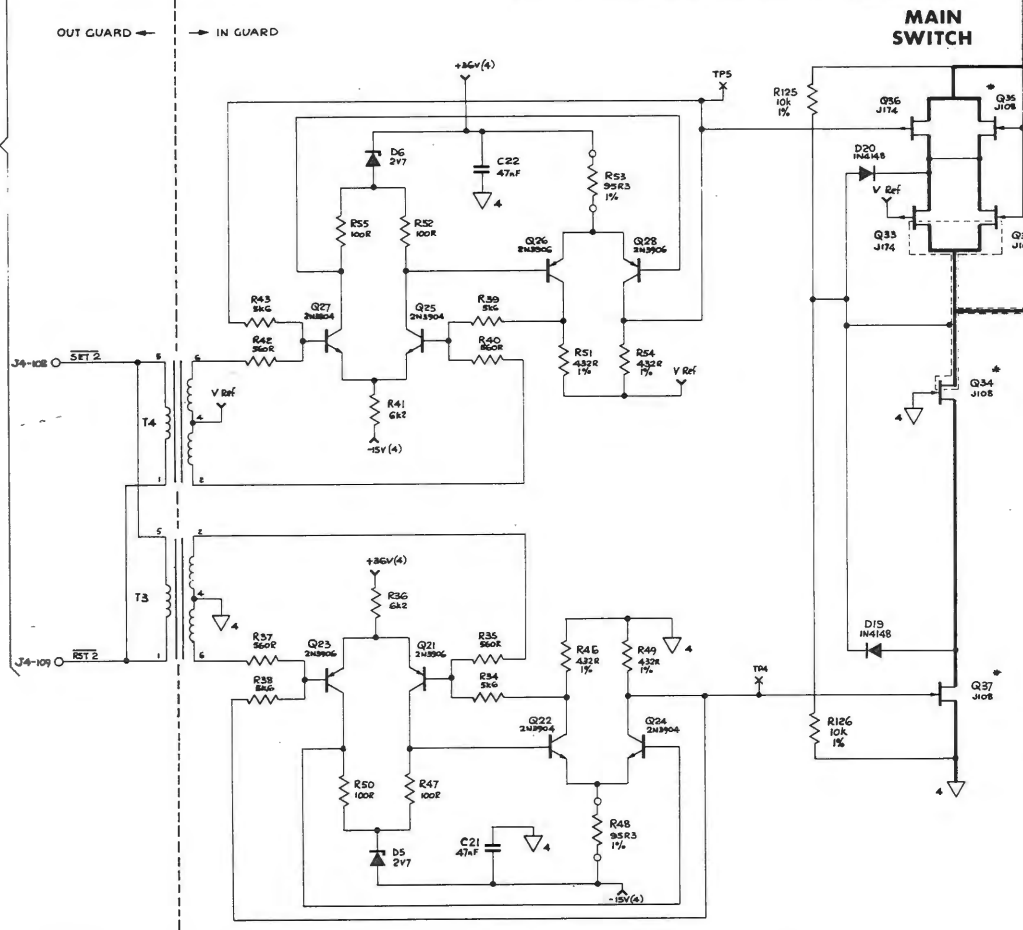
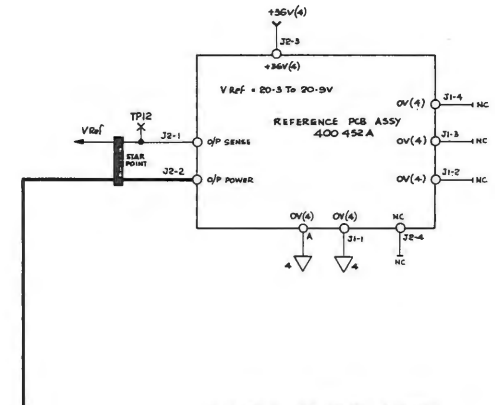
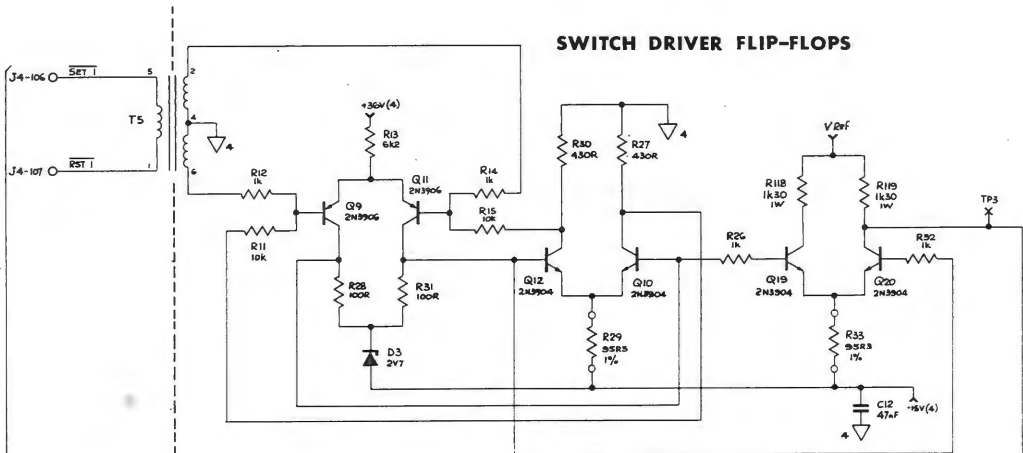
4 WAY .1" PCB PLUG G04053 2mm SOLDERED INTO MAIN PCB. IN B. SOCKETS ON REF PCB ASSY TO PLUG BOARD ONTO PINS, NOT SHOWN.

REFERENCE PCB ASSY 400452A

M33 5mm SWAGED STANDOFF G12025 SECURED TO REV. DIV. PCB ON COMP. SIDE M3X8 POZI-PAN SCREW G11016 M3 CRINKLE WASHER G15025

N.B. CLASS BEAD G30243 FITTED TO EACH LEG OF THE FOLLOWING COMPONENTS - C1, C2, C6, C8-C12, C14, C17-C22, C25, C27, C32, C45, C59, C61, C62, C74

TO J4 MOTHER PCB 4530C04



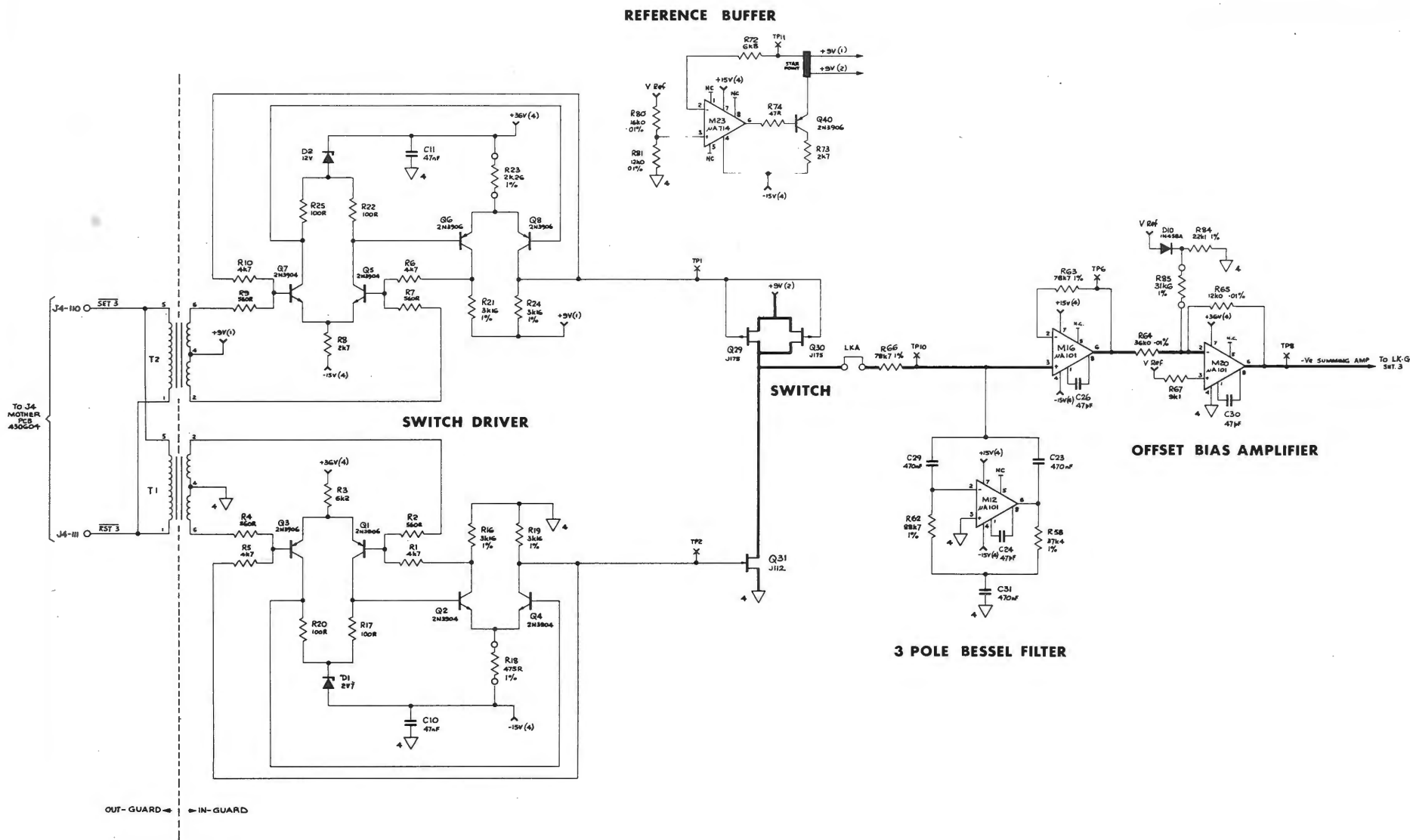
\* SELECTED SET OF 4

REFERENCE DIVIDER ASSEMBLY  
Most-Significant Switch and Filter

Circuit Diagram No. 430652-2.0 Sheet 1

4705  
**datron**  
INSTRUMENTS

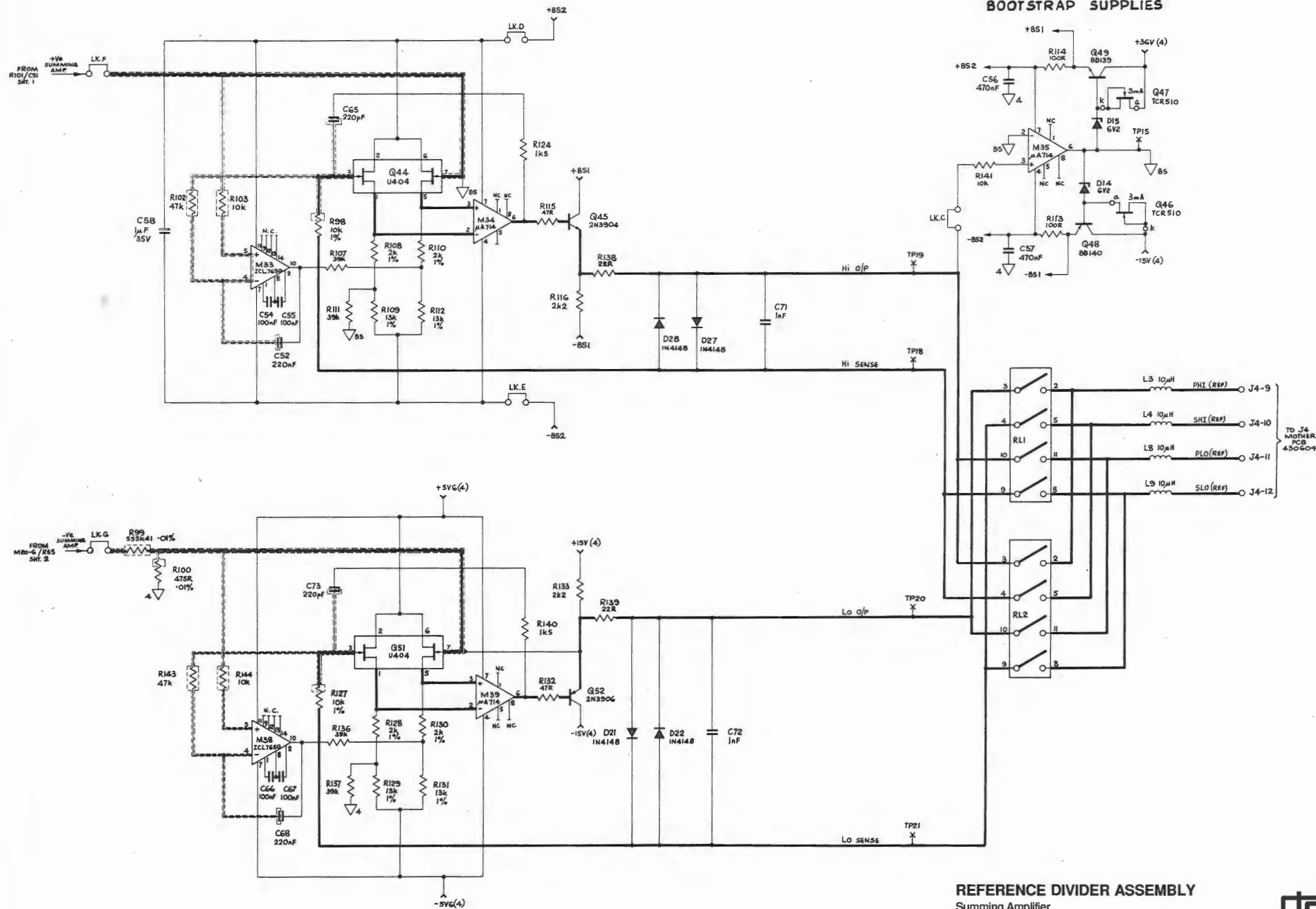
© Datron Instruments 1986



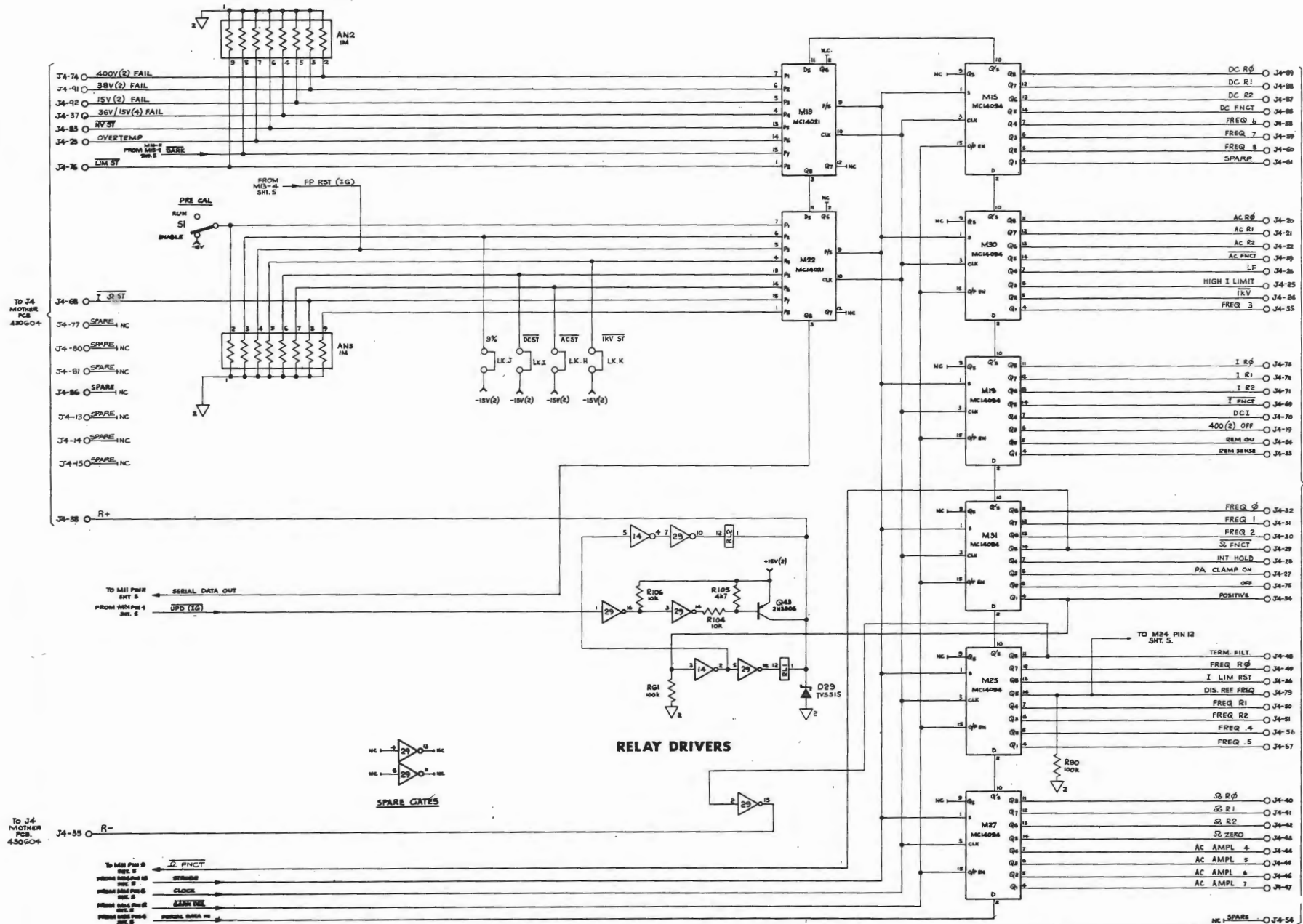
REFERENCE DIVIDER ASSEMBLY  
Least-Significant Switch and Filter







REFERENCE DIVIDER ASSEMBLY  
Summing Amplifier

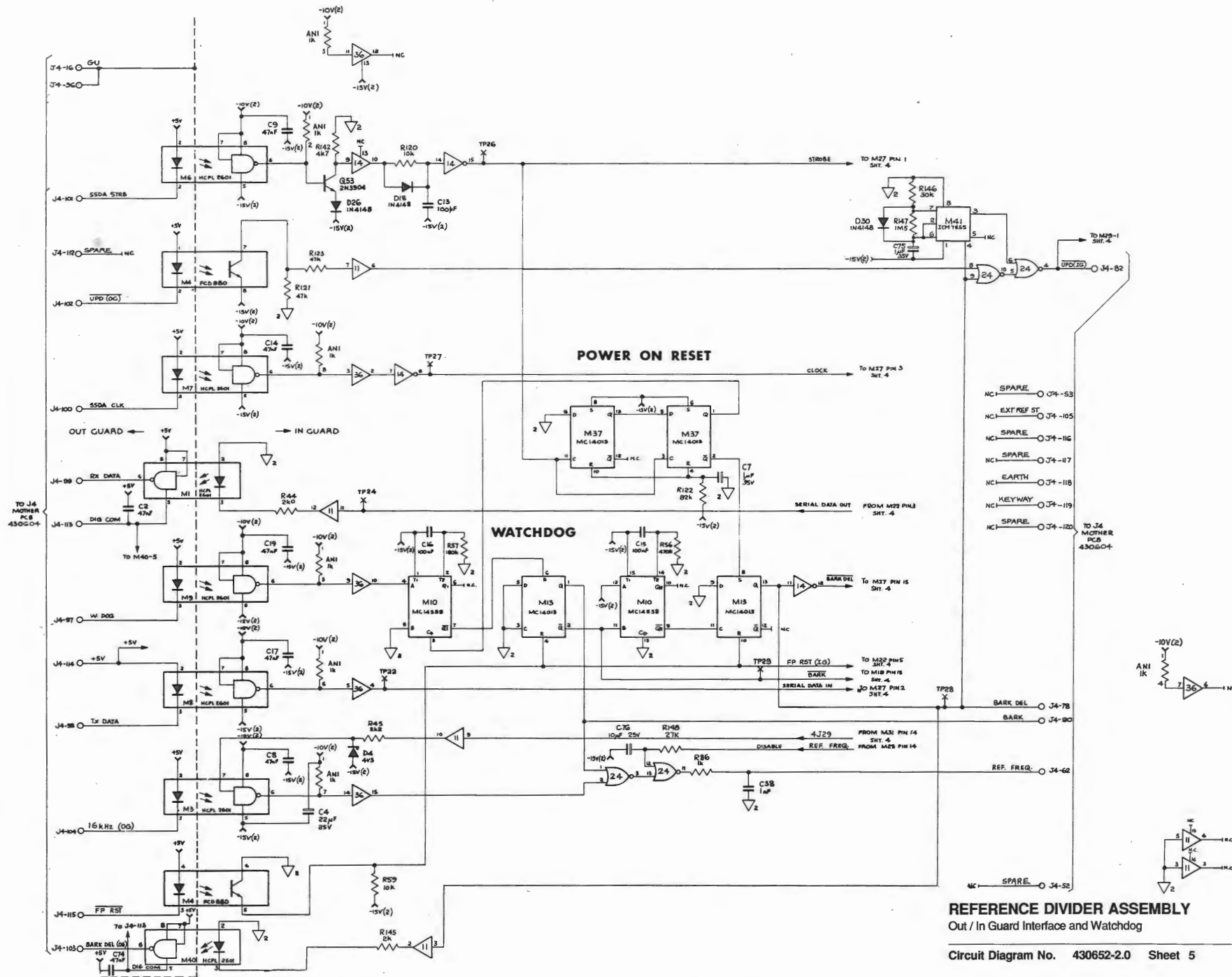


**REFERENCE DIVIDER ASSEMBLY**  
Serial / Parallel Data Converter

Circuit Diagram No. 430652-2.0 Sheet 4



© Datron Instruments 1986



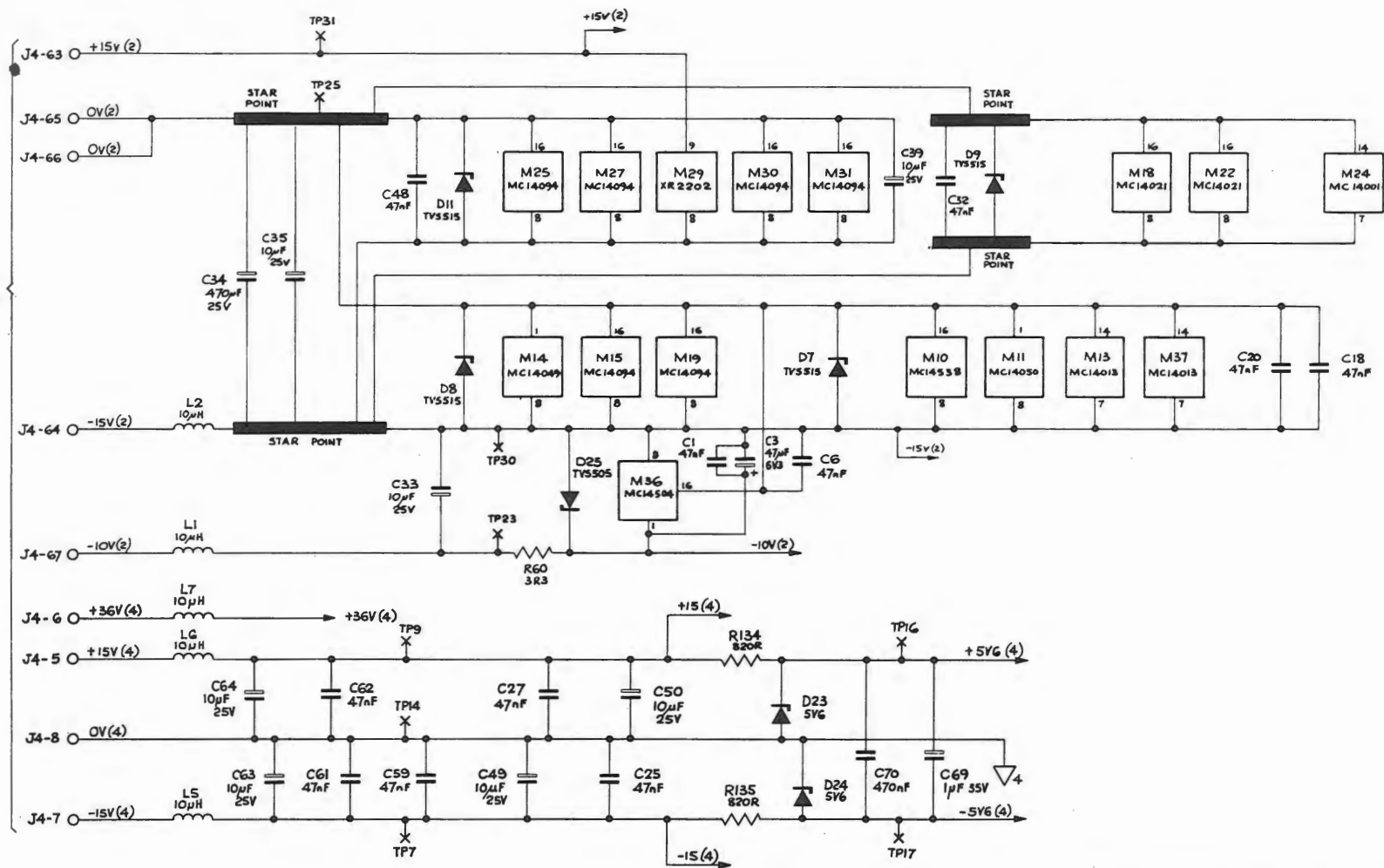
REFERENCE DIVIDER ASSEMBLY  
Out / In Guard Interface and Watchdog

Circuit Diagram No. 430652-2.0 Sheet 5

4705  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

TO J4  
MOTHER  
PC8  
430604



REFERENCE DIVIDER ASSEMBLY

Power Supplies

Circuit Diagram No. 430652-2.0 Sheet 6

4705  
**datron**  
INSTRUMENTS  
© Datron Instruments 1986

REFERENCE ASSEMBLY

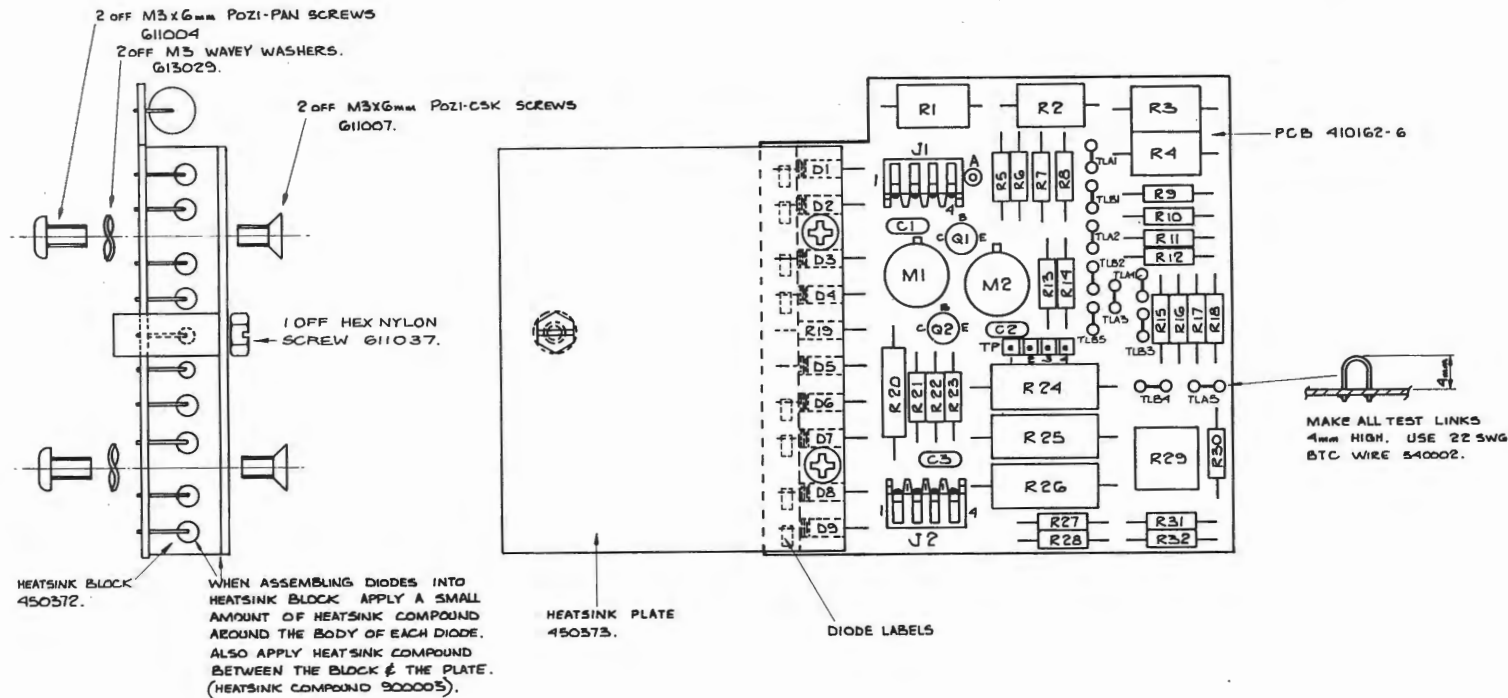
**datron**  
INSTRUMENTS

4705

ZENER DIODE KIT 219015 FITTING INSTRUCTIONS

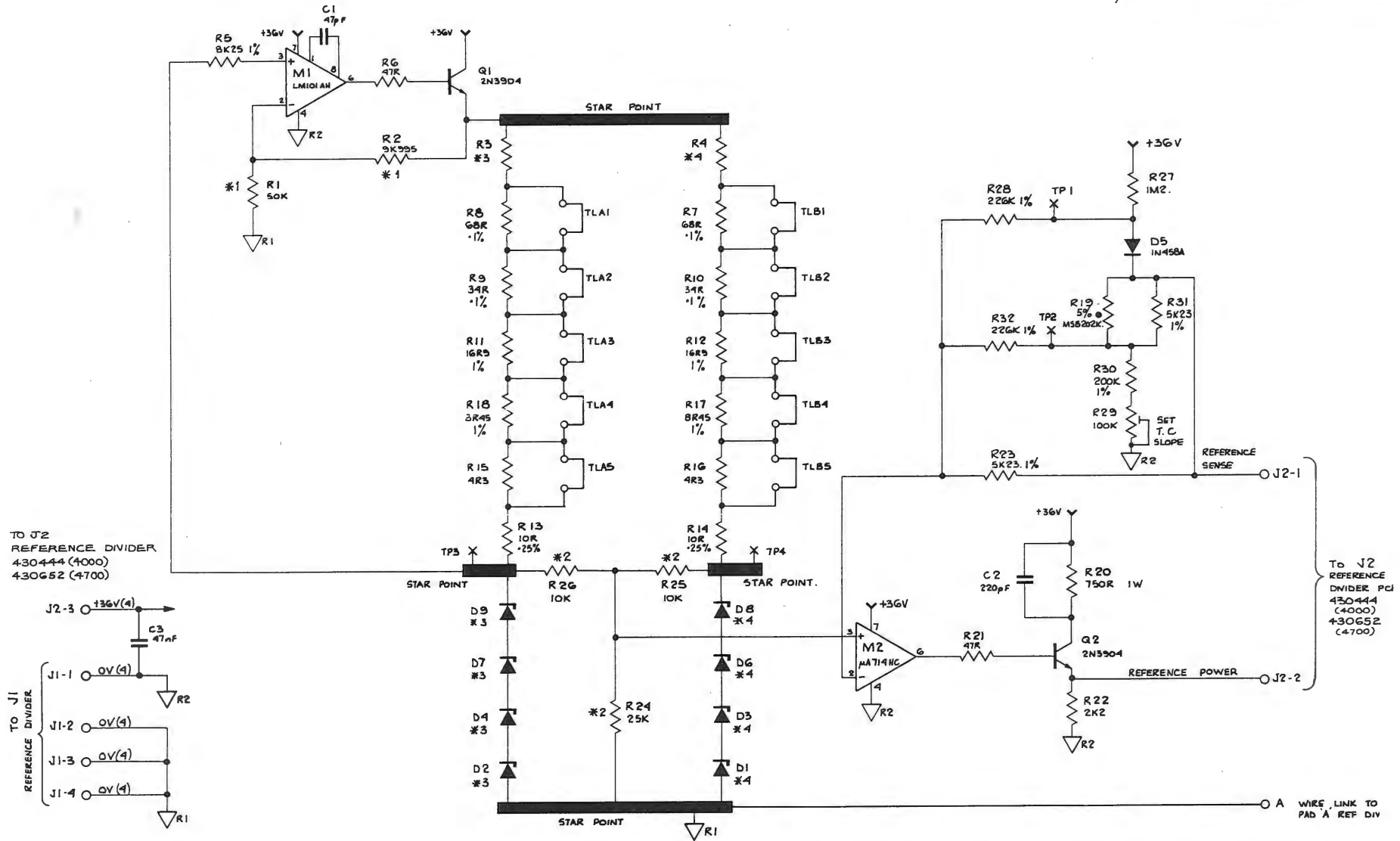
CARE MUST BE TAKEN THAT EACH DIODE IS FITTED TO ITS CORRECT POSITION ON THE BLOCK. DO NOT REMOVE DIODE SERIAL NO LABELS. FIT DIODES TO THE CORRECT POSITION AS INDICATED ON THE RECORD SHEET IF ANY COMPONENT IS LOST OR DAMAGED REFER TO Q.A.

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 DRAWINGS N° 219015.  
 2/ \* INDICATES A MATCHED SET OF COMPONENTS.



REFERENCE ASSEMBLY

4705  
**datron**  
 INSTRUMENTS

DC ASSEMBLY

**datron**  
INSTRUMENTS  
4705

MOUNTING I.C.s.			
N° WAYS	PART N°	N° OFF	USED TO MOUNT
8	605059	3	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, 5

MOUNT THE FOLLOWING COMPONENTS ON LARGE CERAMIC BEADS 650024, 2 PER LEAD:  
R17, R27, R28, R43, 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, D15, D20, D25, R07, R09

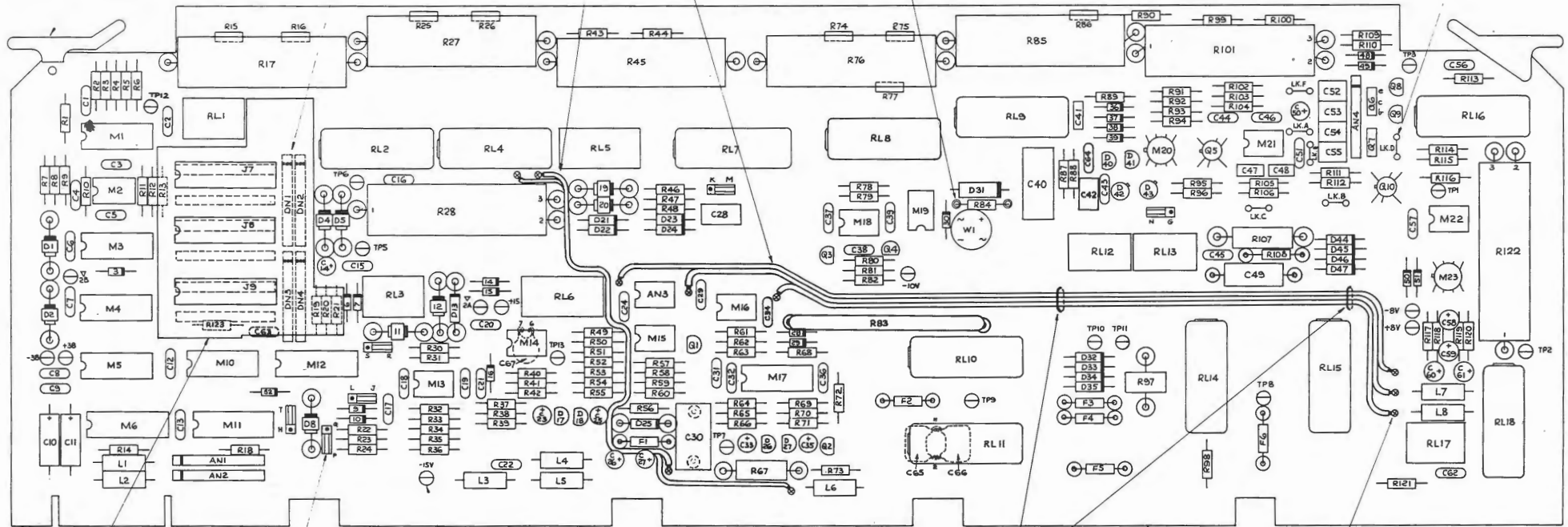
THE FOLLOWING COMPONENTS TO BE MOUNTED ON SMALL CERAMIC BEADS 650036: F1-F6, C30 1 PER LEAD.  
R83, R108, C49, 2 PER LEAD.

CIRCUIT BOARD EJECTOR (ORANGE)  
650119 2 off

NB. DN1 AND DN3 SHOULD BE COLOUR MARKED 'BLUE'  
DN2 AND DN4 SHOULD BE COLOUR MARKED 'RED'  
MAKE FIVE WIRE LINKS FROM 7/2 TFE WHITE WIRE SIZE 28

MOUNT R84 ON FSY TERMINALS  
602001 2 off

MAKE LINES LKA - LKF FROM 235W6 B.T.C. WIRE 540002



DC CLAMP ASSY.  
400668.

3-WAY 1/4" PCB PLUG 604046 6 off  
FIT 2-WAY 1/4" SHORTING SKT 605127  
IN POSITIONS J, M, N, P AND T. 6 off

TEST POINT TERMINAL  
620007 21 off.

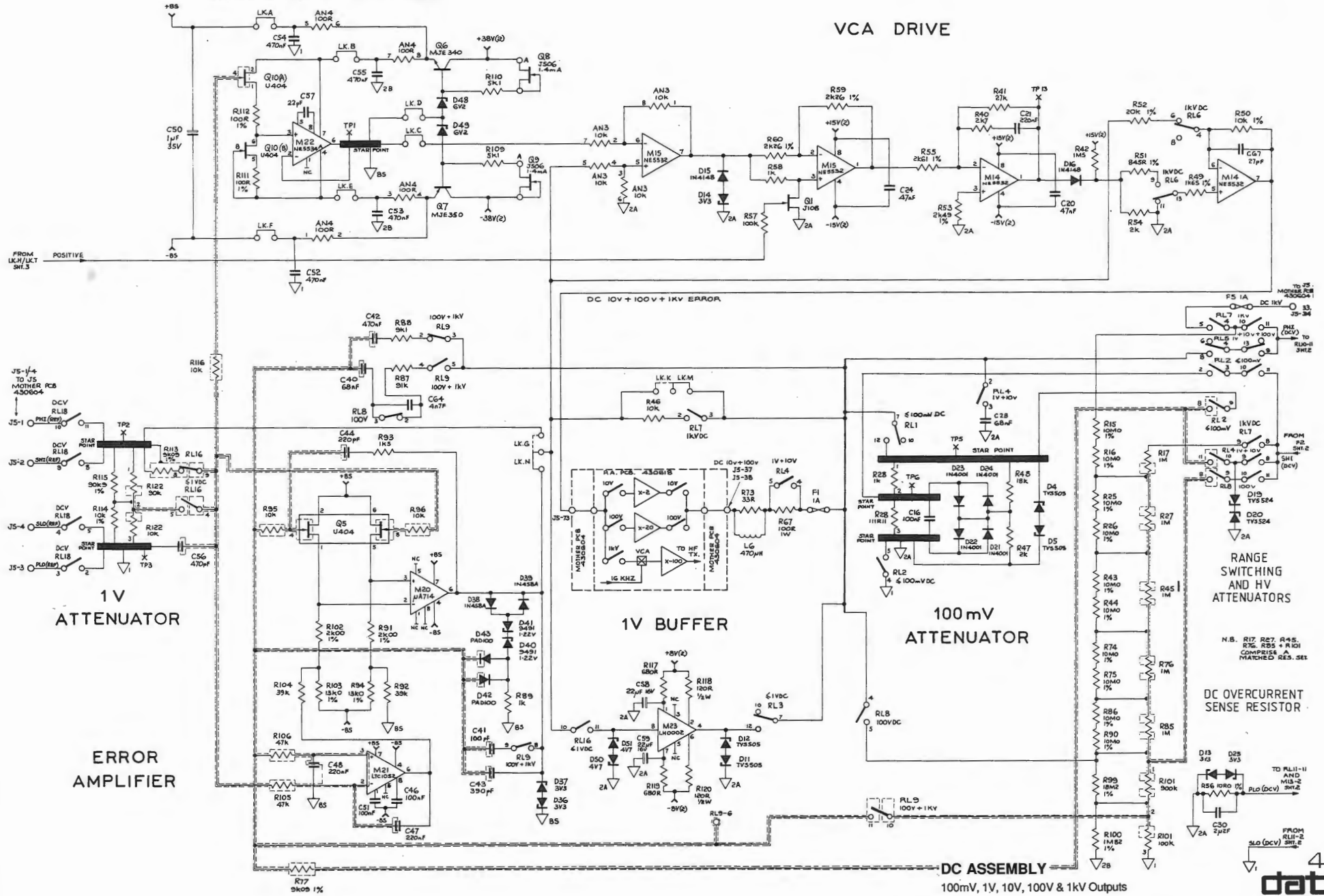
SECURE WIRES TO PCB  
USING LACING CORD  
590007

PCB  
410258-2

SOLDER TURRET  
620006 10 off

**BOOTSTRAP SUPPLIES**

**VCA DRIVE**



**RANGE SWITCHING AND HV ATTENUATORS**

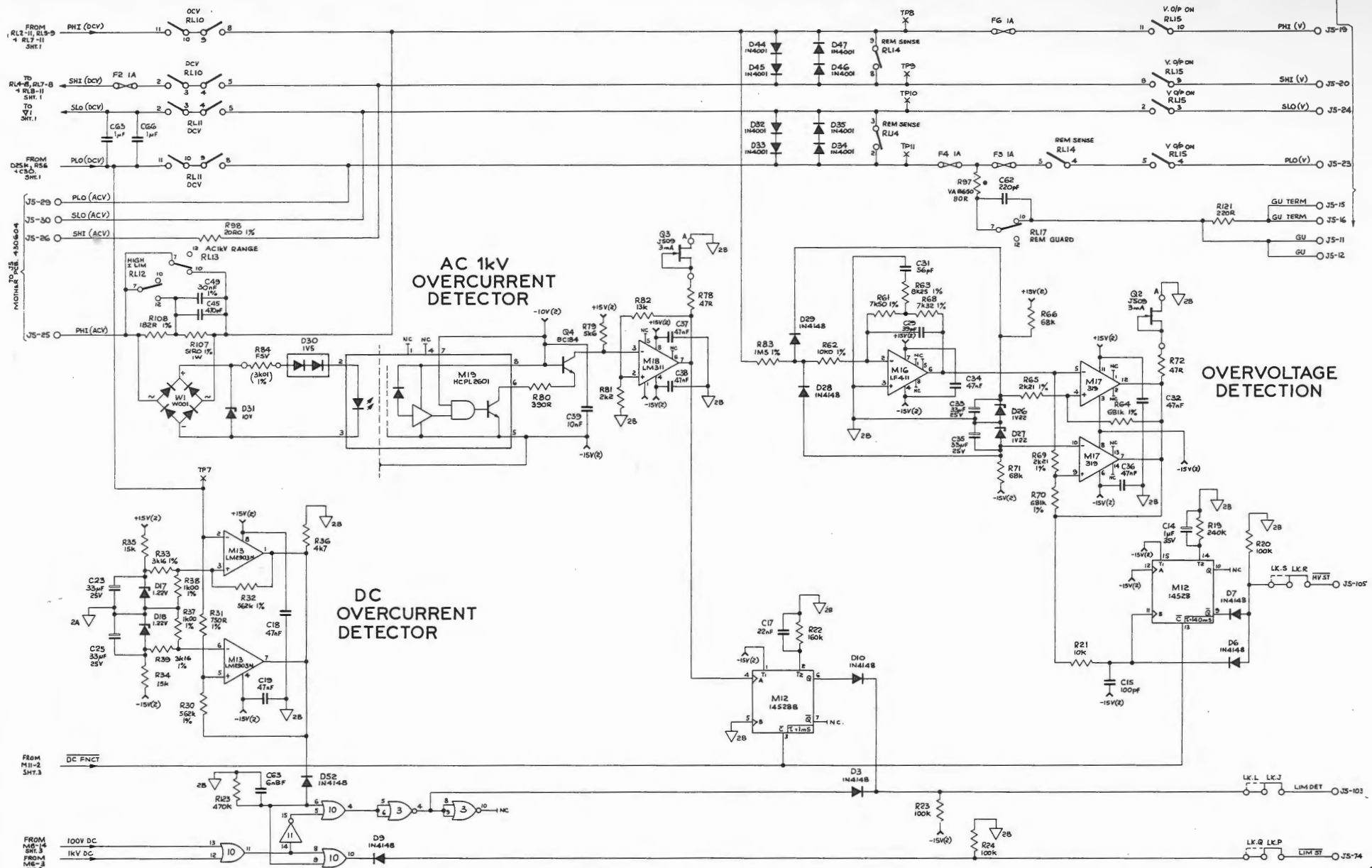
**DC OVERCURRENT SENSE RESISTOR**

**DC ASSEMBLY**  
100mV, 1V, 10V, 100V & 1kV Outputs

**4705**  
**Datron**  
**INSTRUMENTS**



# OUTPUT SWITCHING



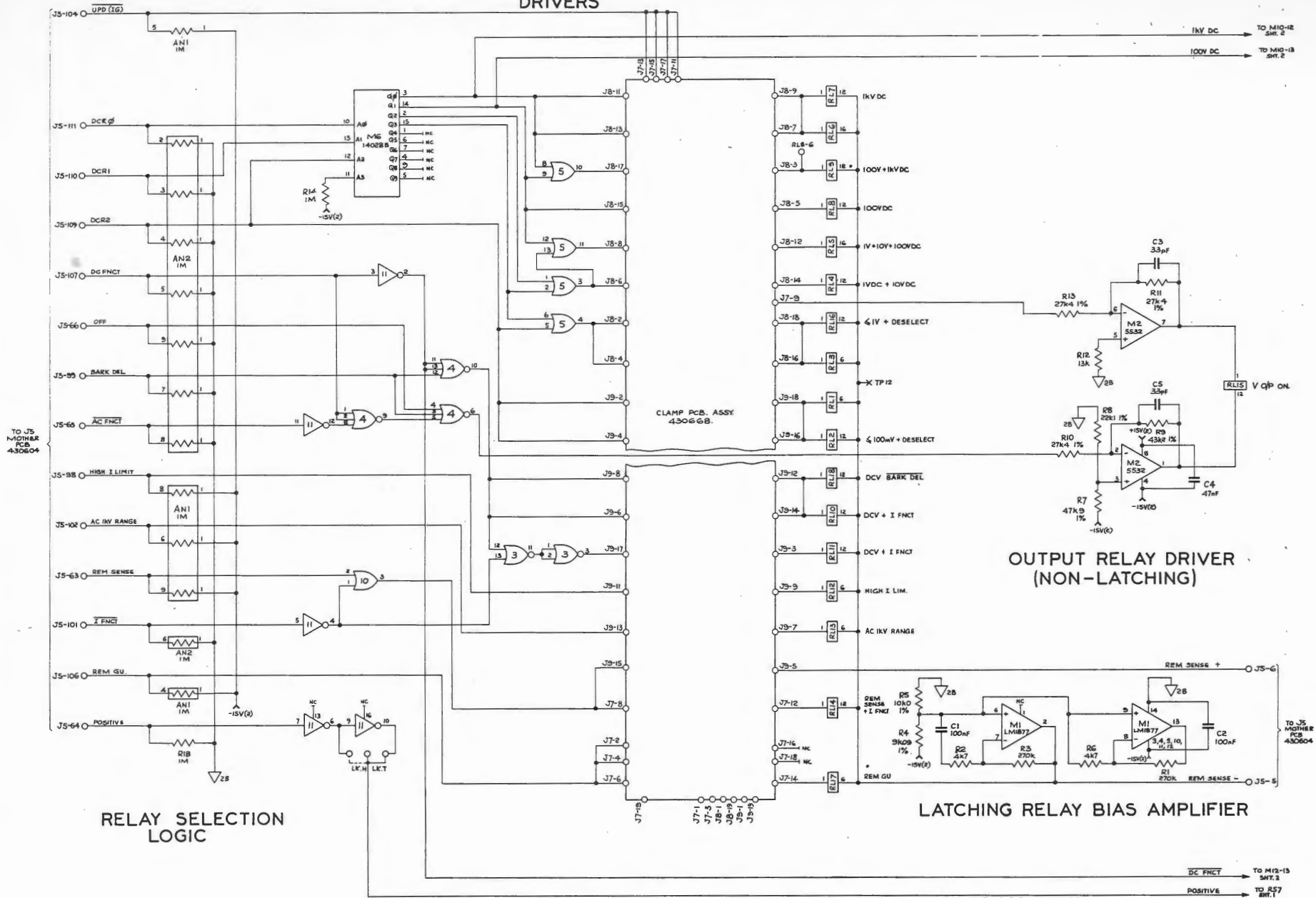
**DC ASSEMBLY**  
Output Switching and Overload Sense

Circuit Diagram No. 430536-3.0 Sheet 2

**4705**  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

# TRI-STATE DRIVERS



DC ASSEMBLY  
Relay Drive Logic

Circuit Diagram No. 430536-3.0 Sheet 3

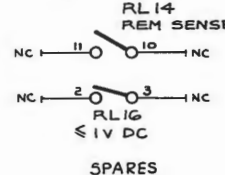
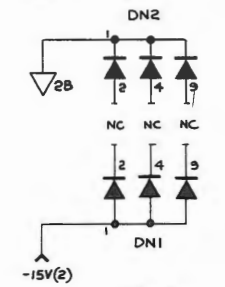
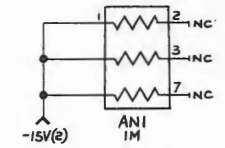
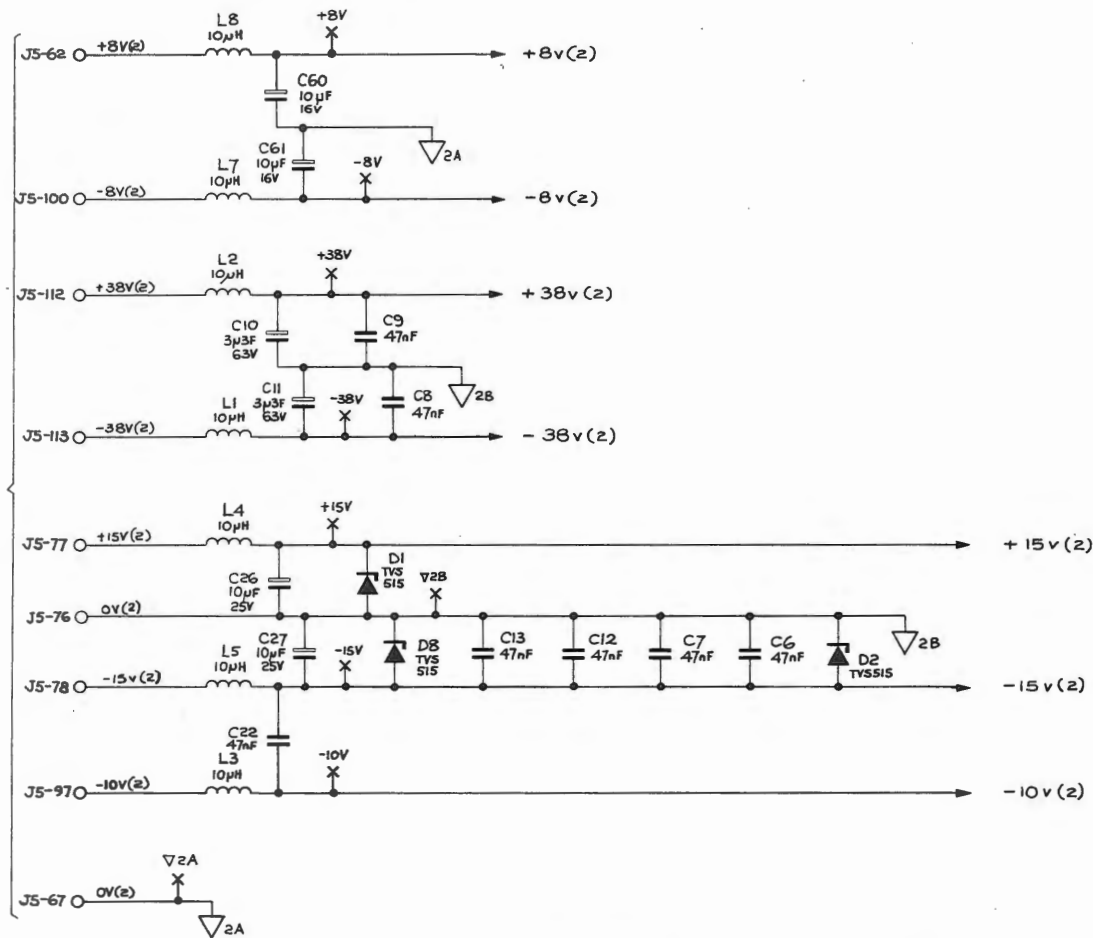
4705  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

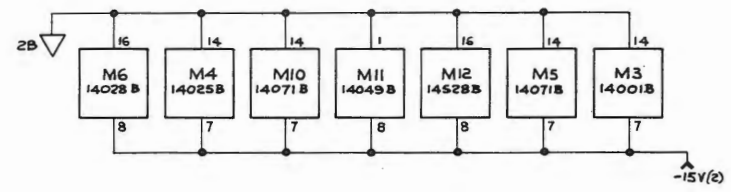
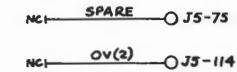
# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

TO JS  
MOTHER  
PCB.  
430604



SPARES



DC ASSEMBLY  
Power Supplies

Circuit Diagram No. 430536-3.0 Sheet 4

4705  
**datron**  
INSTRUMENTS

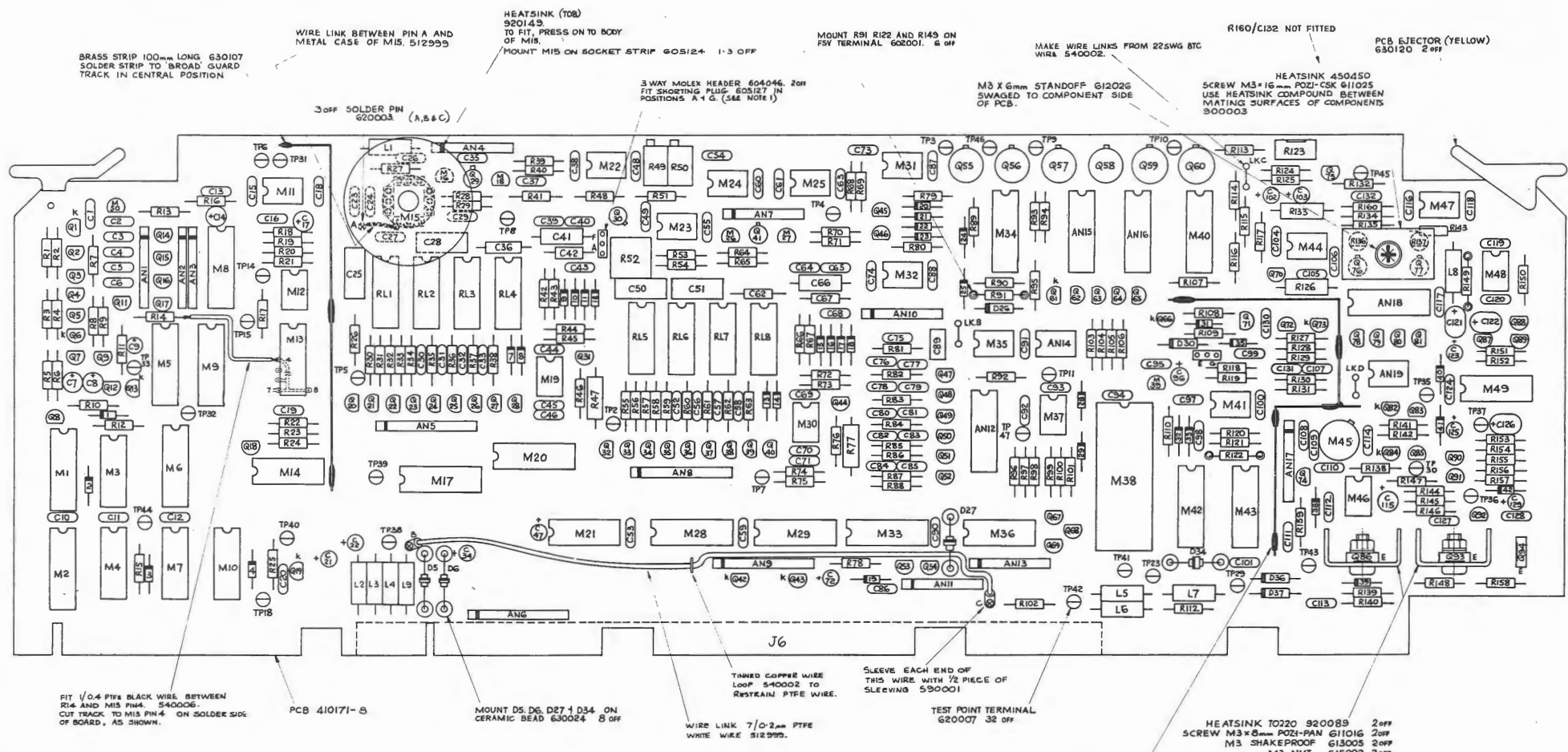
© Datron Instruments 1986

SINE SOURCE ASSEMBLY

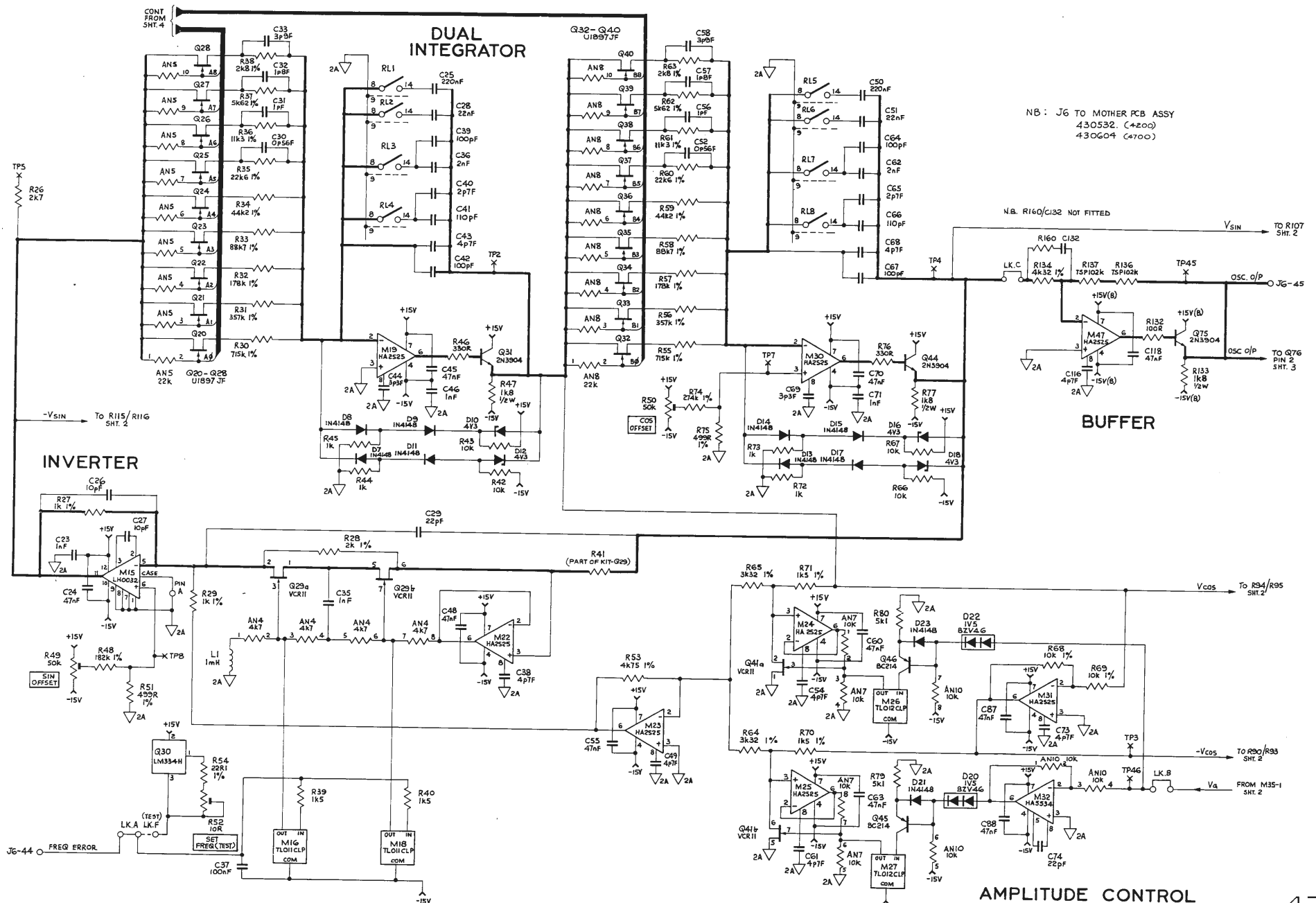
**datron**  
INSTRUMENTS

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	M11, M19, M22-25, M30, M31, M32, M35, M37, M41, M44, M46, M47, M48, M12
14	605060	9	M3, M4, M7, M10, M13, M14, M21, M36, M49
16	605061	15	M1, M2, M5, M6, M8, M9, M17, M20, M28, M33, M34, M40, M42, M43
28	605065	1	M38



NB: J6 TO MOTHER PCB ASSY  
430532 (4200)  
430604 (4700)

N.B. R160/C132 NOT FITTED

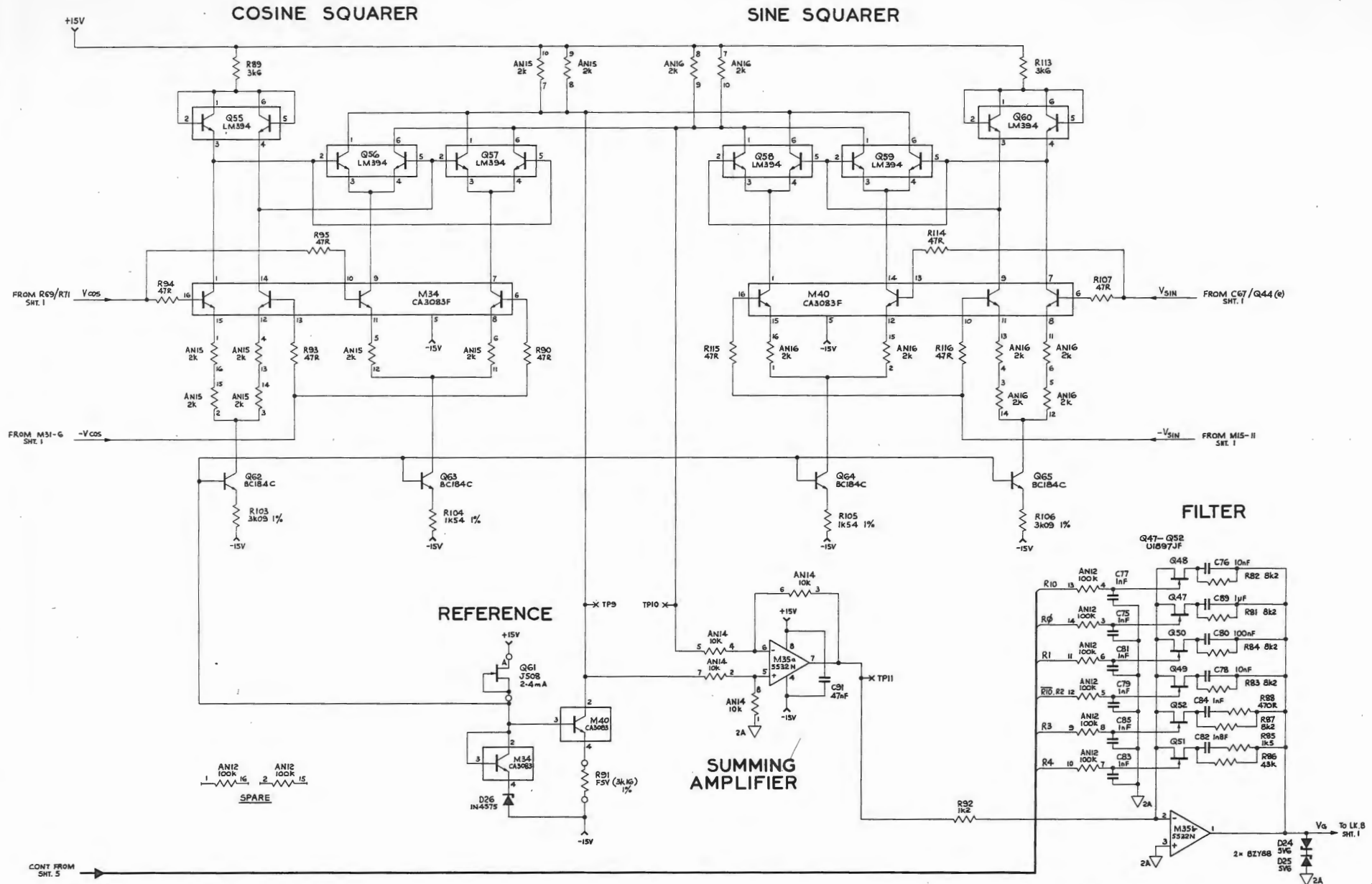
**BUFFER**

**AMPLITUDE CONTROL  
SINE SOURCE ASSEMBLY**

Sine Oscillator  
Circuit Diagram No. 430446-9.0 Sheet 1



© Datron Instruments 1986

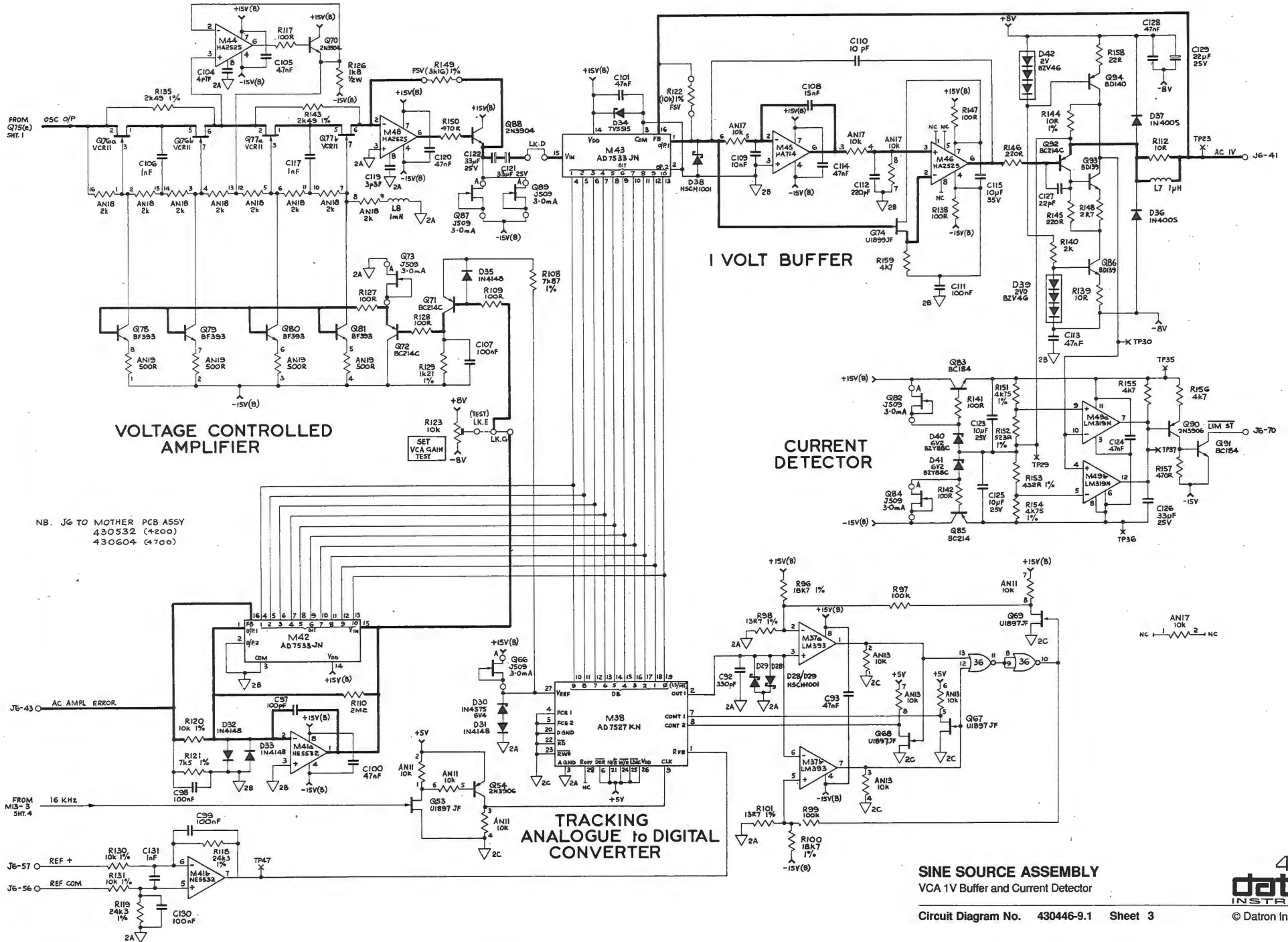


**SINE SOURCE ASSEMBLY**  
Oscillator Amplitude Detector and Reference

Circuit Diagram No. 430446-9.0 Sheet 2



© Datron Instruments 1986



**VOLTAGE CONTROLLED AMPLIFIER**

**I VOLT BUFFER**

**CURRENT DETECTOR**

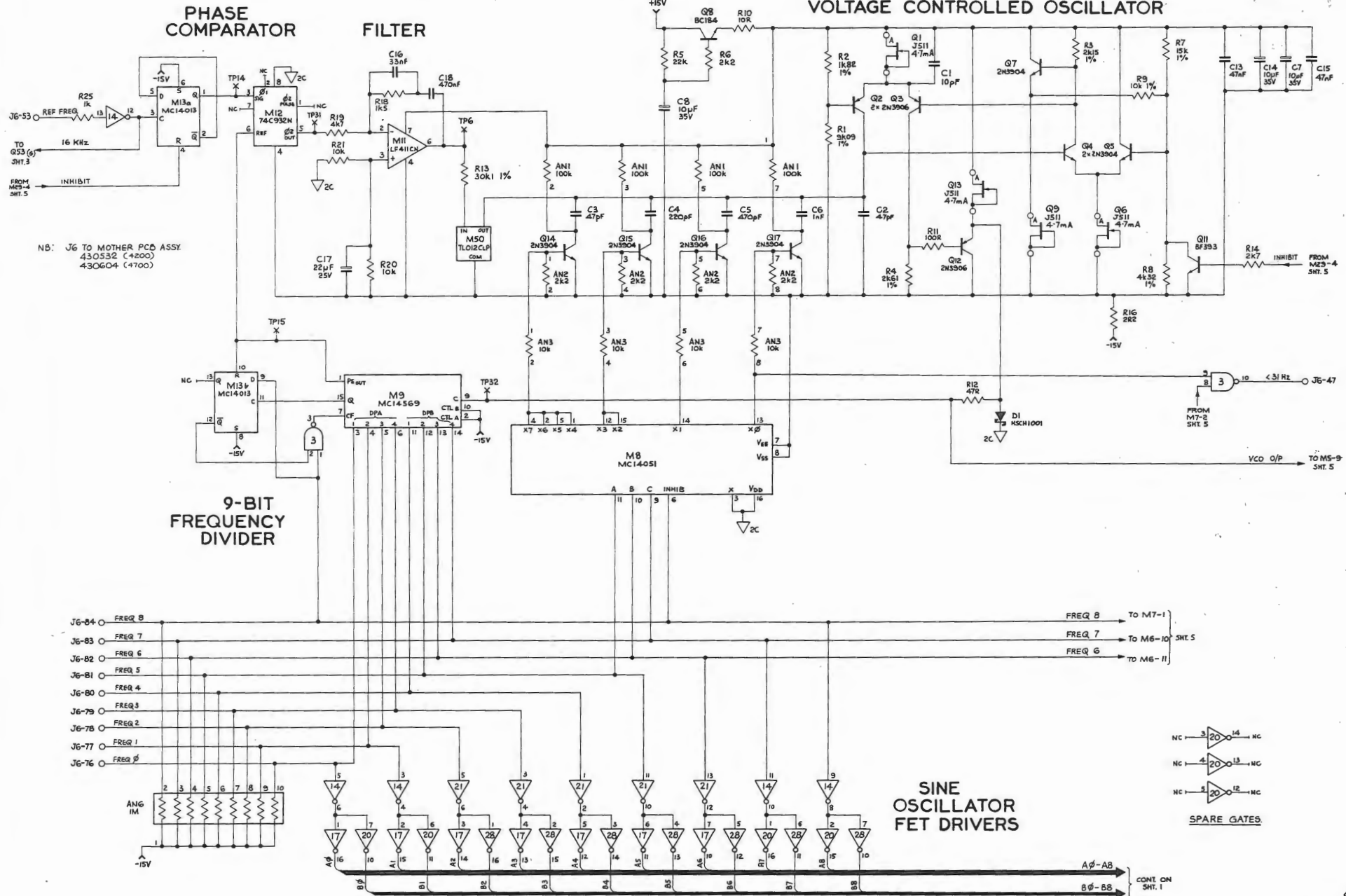
**TRACKING ANALOGUE TO DIGITAL CONVERTER**

**SINE SOURCE ASSEMBLY**  
VCA 1V Buffer and Current Detector

**4705**  
**datron**  
INSTRUMENTS

Circuit Diagram No. 430446-9.1 Sheet 3

© Datron Instruments 1986



NB: J6 TO MOTHER PCB ASSY  
430532 (4200)  
430604 (4700)

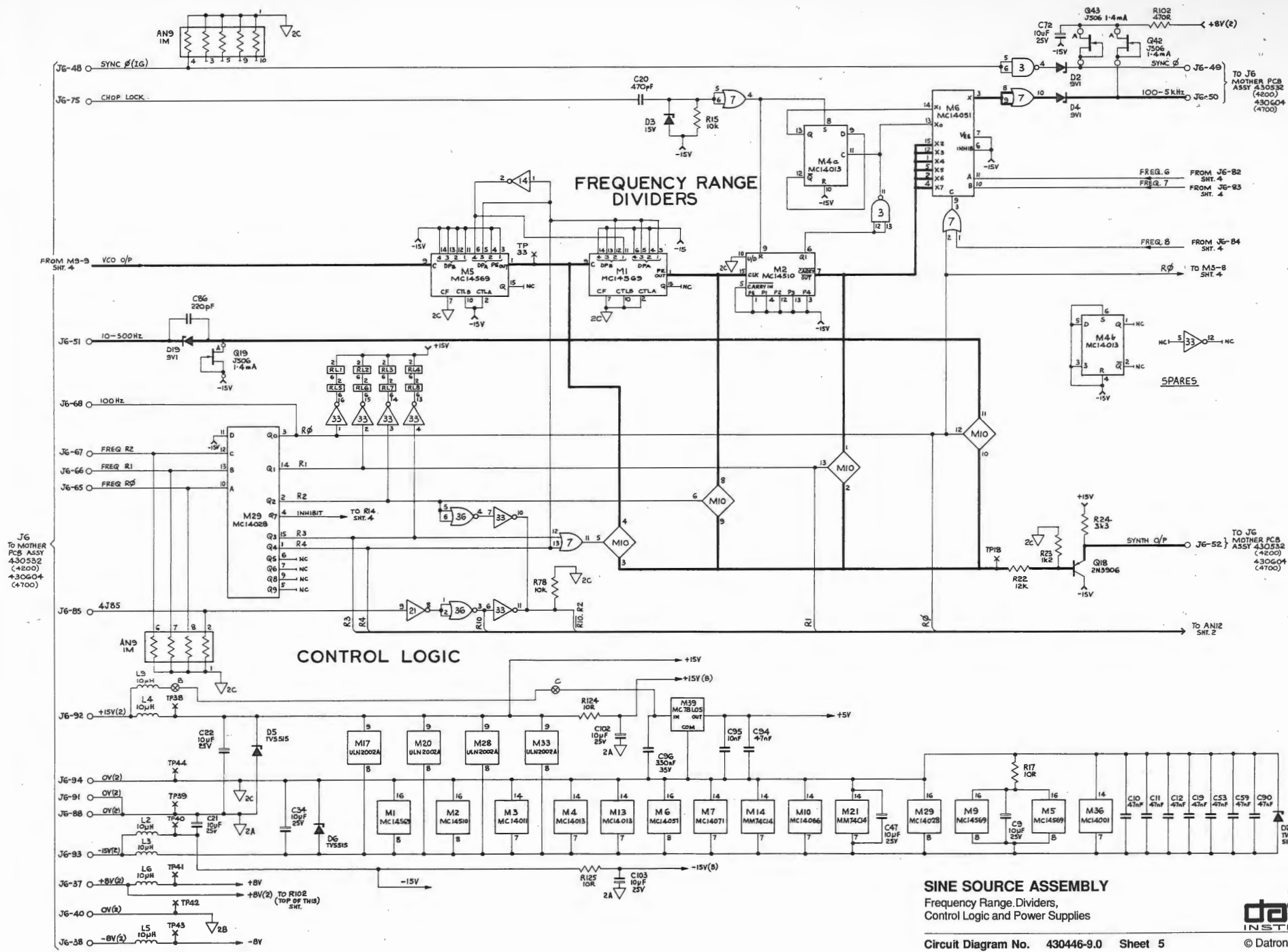
**SINE SOURCE ASSEMBLY**  
Master Clocks and Analog Serial Link

Circuit Diagram No. 430446-9.0 Sheet 4



© Datron Instruments 1986





**SINE SOURCE ASSEMBLY**  
 Frequency Range Dividers,  
 Control Logic and Power Supplies

**AC ASSEMBLY**

N.B. GLASS BEAD 63003<sup>1</sup> FITTED TO EACH LEG OF THE FOLLOWING COMPONENTS:  
C6, 11, 14, 20-24, 27-29, 35, 36, 40, 42, 43, 83-86.

TOP GUARD SHIELD  
450424

PCB ASSEMBLY

BOTTOM GUARD SHIELD  
450425

SCREW M3 x 1.6mm POZI-CSK<sup>1</sup>  
611012 3 OFF

(GREEN) CIRCUIT BOARD EJECTOR  
630121 2OH

**SECTION A-A**

N.B. APPLY HEATSINK COMPOUND  
300003 TO MATING SURFACES OF  
Q13-Q15.  
HEATSINK  
450442

SCREW M3 x 6mm POZI-PAN  
611004  
SHAKEPROOF M3 613005

STANDOFF  
M3 x 6mm 612026

MAKE LINK LK1 FROM  
22 SWG. BTG. WIRE.

M3 x 14mm STANDOFF 612030  
TO BE SWAGED TO 410172

C61 BED IN SILICONE RUBBER  
ONE LEG IN PCB HOLE, OTHER  
LEG WRAP ROUND CENTRE LEG  
OF R122

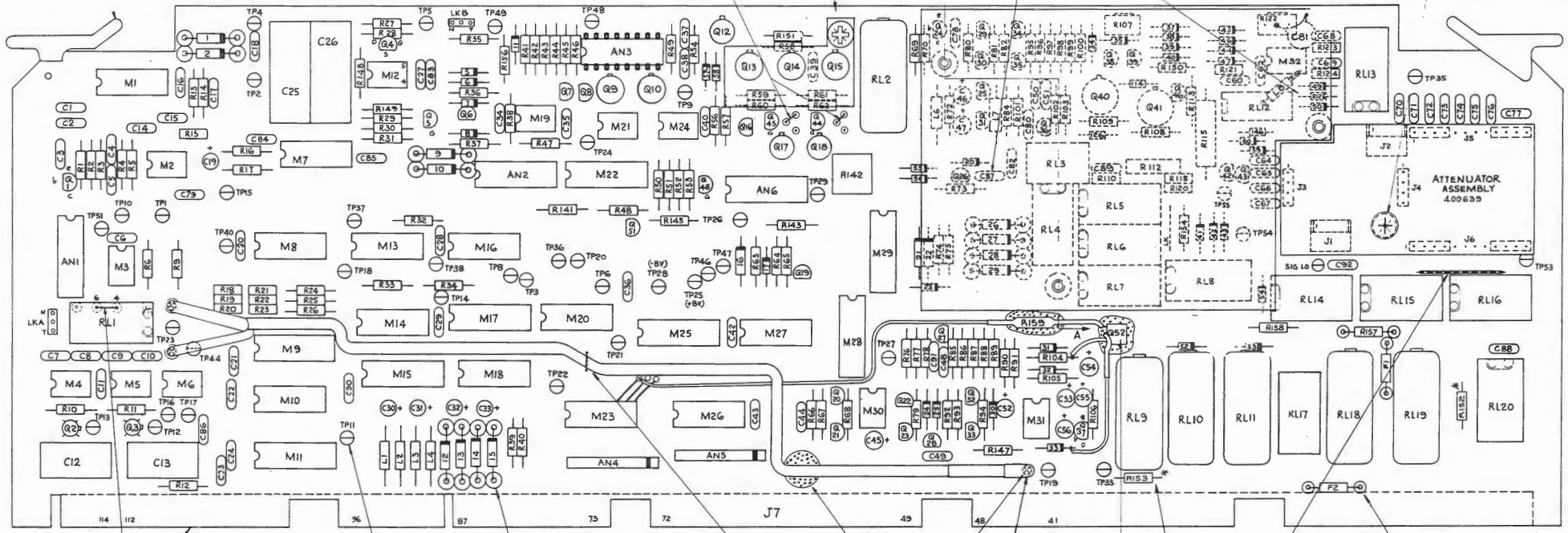
L8 ONE LEG IN STITCH  
THROUGH OTHER LEG SLEEVE  
WITH PTFE SLEEVE 590004.  
IF WRAP ROUND M32  
PIN 4 AS SHOWN.  
NOTE: CRIP ALL PINS  
UNDER L8 VERY SHIRT.

PCB 410172

M3 x 6mm POZI-PAN 611004  
M3 WAVY WASHER 613023

FIT 22SWG BIC WIRE LINKS 540002  
AS SHOWN.

CUT TRACK AS SHOWN ABOVE  
SITUATED NEAR R155.  
COMPONENT SIDE OF PCB.  
N.B. C67 NOT FITTED.



LINK RLI PIN 4 TO PIN 6  
ON COMPONENT SIDE OF PCB  
USING WIRE 540002

PCB 410172-11

TEST POINT TERMINAL  
620007 44 OFF

SECURE CABLE TO PCB WITH  
LACING CORD 590007

SECURE CABLE, R199, Q52 & C61  
WITH SILICONE RUBBER  
COMPOUND 300004

SOLDER PIN  
620003, 3 OFF

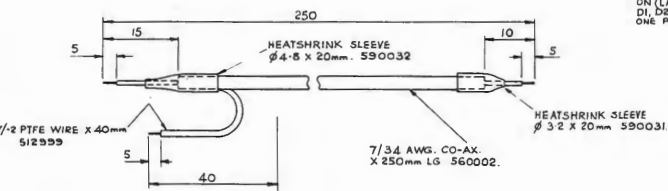
SLEEVE 3 CONNECTIONS OF THIS  
CABLE WITH 1/2 PIECE OF 590001  
SLEEVE.

7/2 PTFE WIRE LINK  
x 25mm. 512959.

MOUNT 1/2 R15, R16, R17 ON  
CERAMIC BEADS 630036 10 OFF  
(2 PER LEAD FOR R15)

\* R152 AND R153 ARE NOT  
FITTED ON 4700

MOUNT THE FOLLOWING COMPONENTS  
ON (LARGE) CERAMIC BEADS 630024 24 OFF:  
D1, D2, D3, D10, D12-D15, D26-D29.  
ONE PER LEAD.



MOUNTING I.C.s			
N <sup>o</sup> OF WAT	PART N <sup>o</sup>	N <sup>o</sup> 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

R159, one end connected to STITCH THROUGH  
AS SHOWN. Via. BLACK 7/02 WIRE 510000  
OTHER END TO Q52, SLEEVE WITH 30mm OF  
HEATSHRINK 590006 & BED IN SILICONE RUBBER.  
Q52, BED IN SILICONE RUBBER WITH FLAT  
TO PCB. CENTRE LEG CONNECT TO D33  
Via. BLACK 7/02 WIRE 510000 USE 20mm OF  
HEATSHRINK SLEEVE 590006 AT LEG JOINT.  
BOTTOM LEG CONNECT TO R104 SLEEVE LEG  
WITH 1mm DIAMETER PTFE SLEEVE 590004.

ATTENUATOR  
ASSEMBLY  
400639

SIG 10 - C92

J1

J2

J3

J4

J5

J6

J7

J8

J9

J10

J11

J12

J13

J14

J15

J16

J17

J18

J19

J20

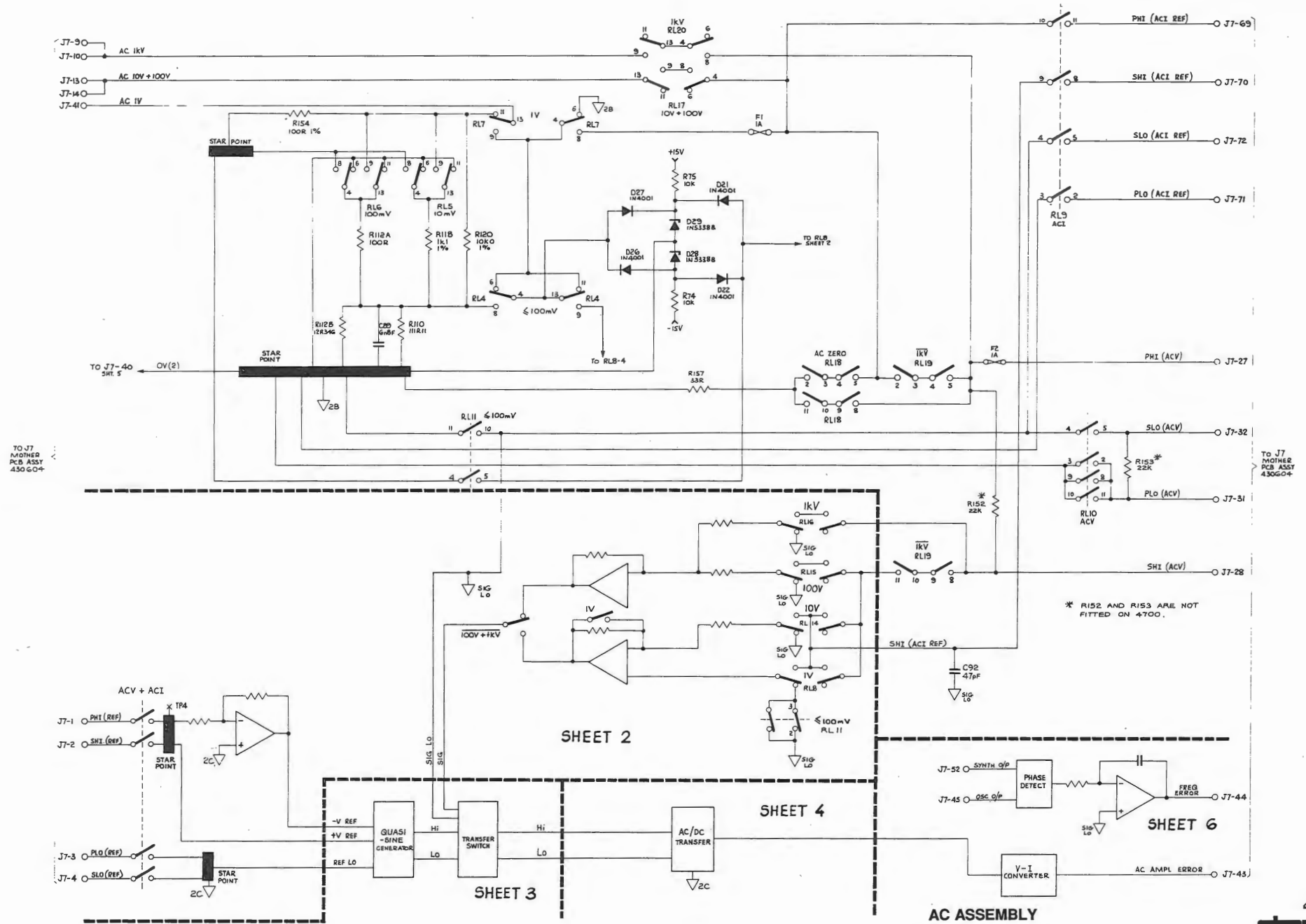
J21

J22

J23

J24

J25



TO J7 MOTHER PCB ASSY 430G04

TO J7 MOTHER PCB ASSY 430G04

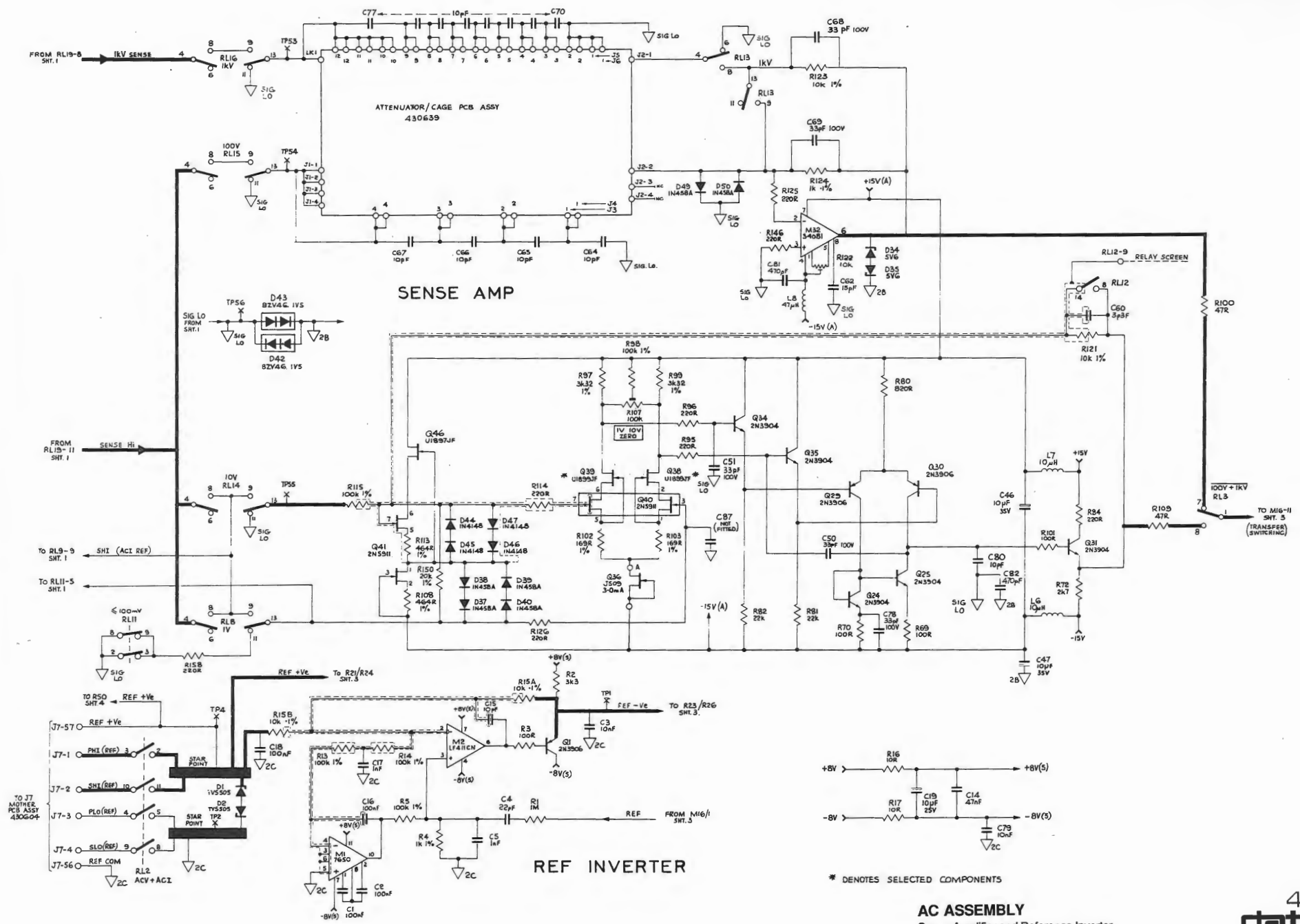
\* R152 AND R153 ARE NOT FITTED ON 4-700.

**AC ASSEMBLY**  
Switching Overview

Circuit Diagram No. 430663-4.0 Sheet 1



© Datron Instruments 1986



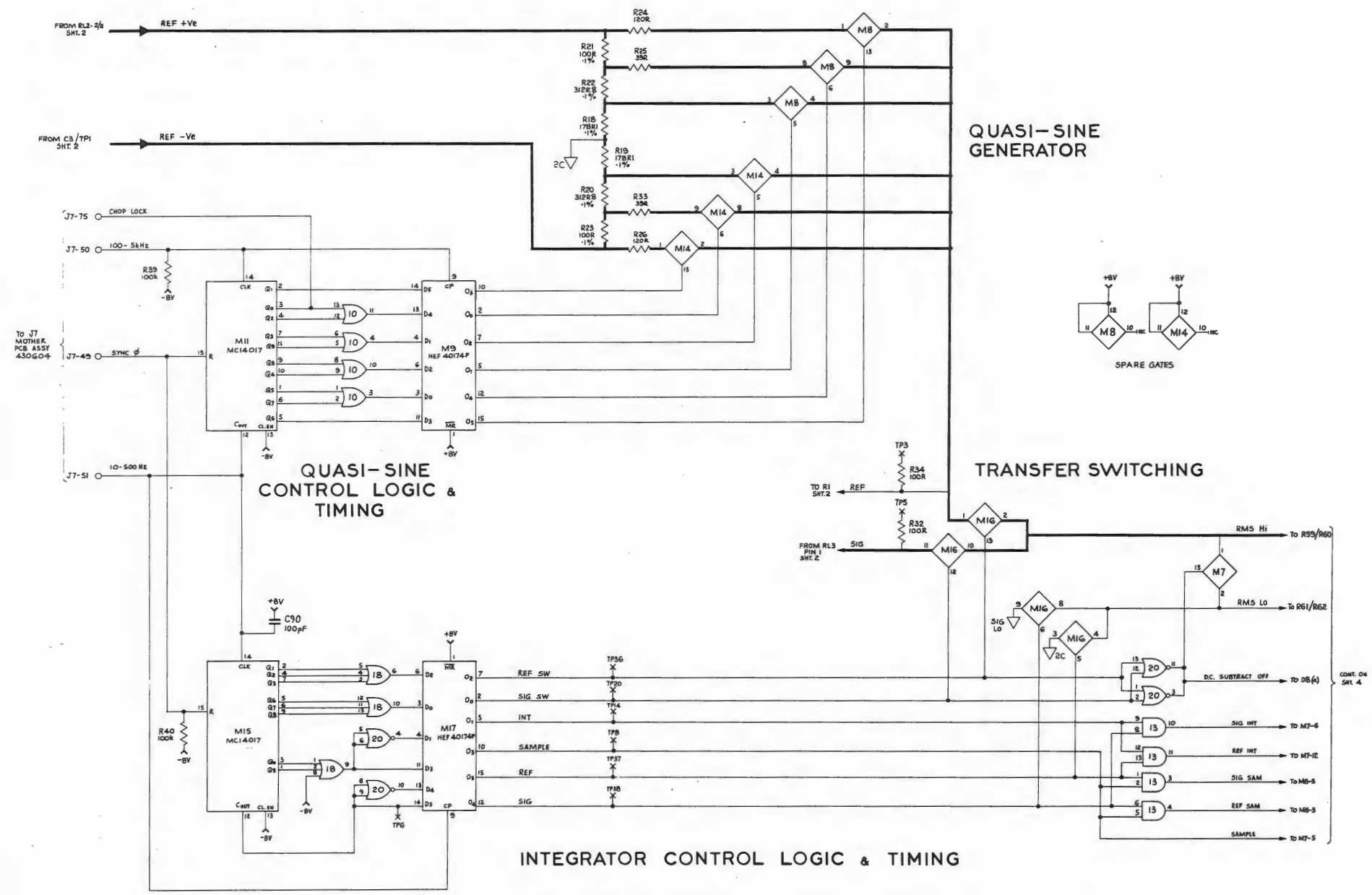
\* DENOTES SELECTED COMPONENTS

**AC ASSEMBLY**  
Sense Amplifier and Reference Inverter

Circuit Diagram No. 430663-4.0 Sheet 2



© Datron Instruments 1986

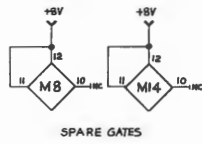


QUASI-SINE GENERATOR

QUASI-SINE CONTROL LOGIC & TIMING

TRANSFER SWITCHING

INTEGRATOR CONTROL LOGIC & TIMING

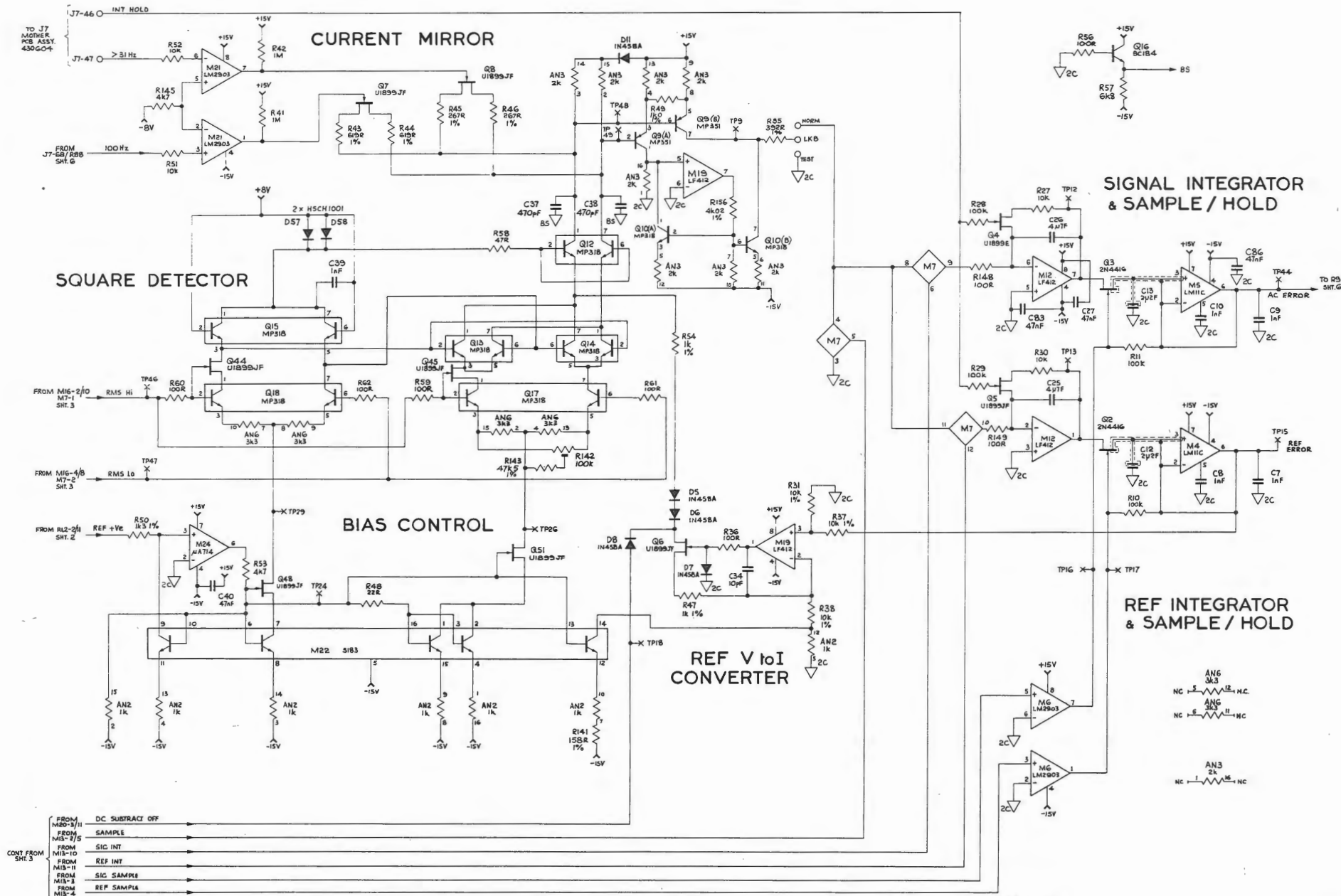


AC ASSEMBLY  
Quasi-Sine Generator and Timing Logic

4705  
**datron**  
INSTRUMENTS

Circuit Diagram No. 430663-4.0 Sheet 3

© Datron Instruments 1986

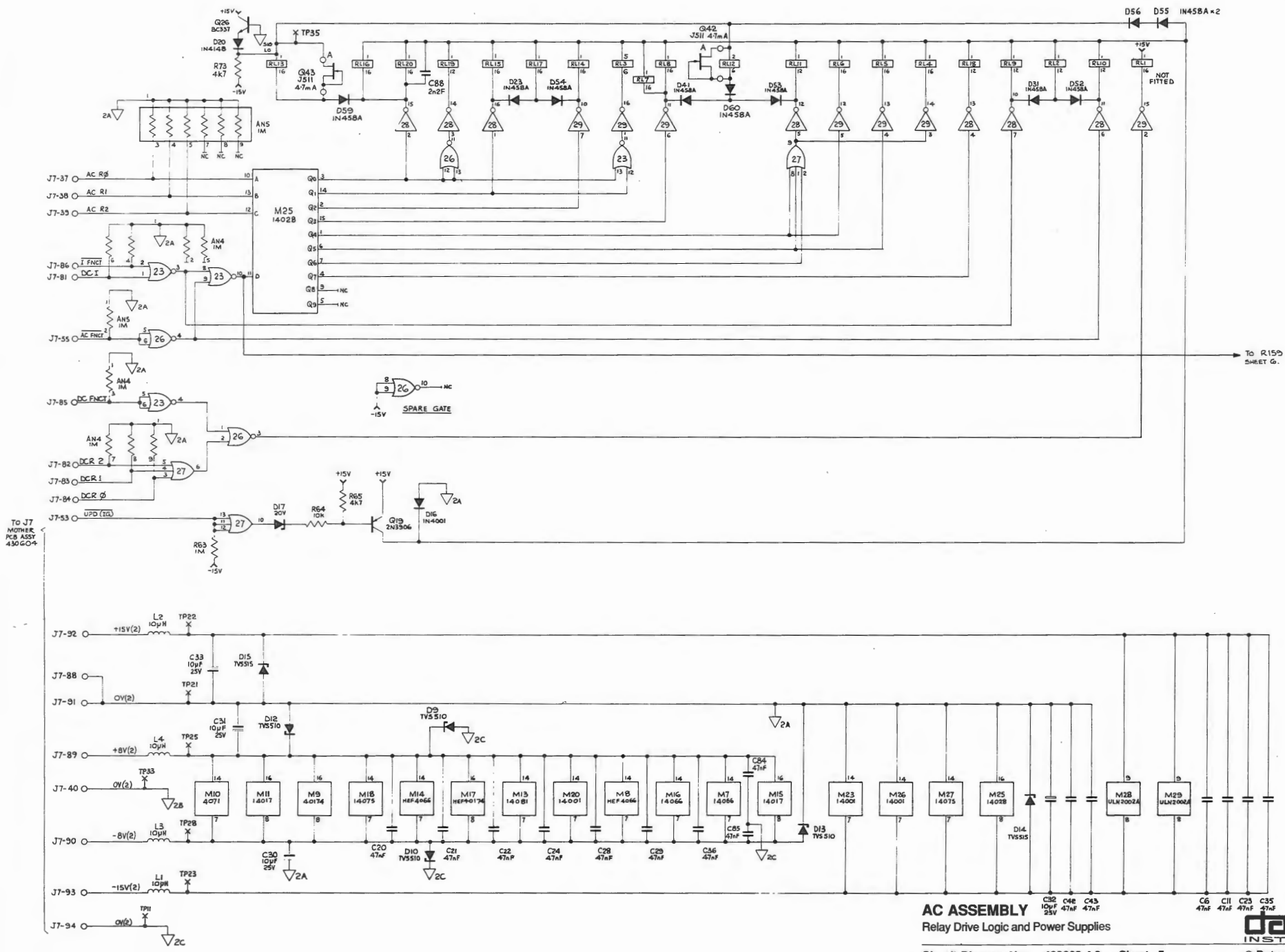


AC ASSEMBLY  
AC/DC Transfer Detector and Integrators

Circuit Diagram No. 430663-4.0 Sheet 4

4705  
**datron**  
INSTRUMENTS

© Datron Instruments 1986



TO J7  
MOTHER  
PCB ASSY  
43060+

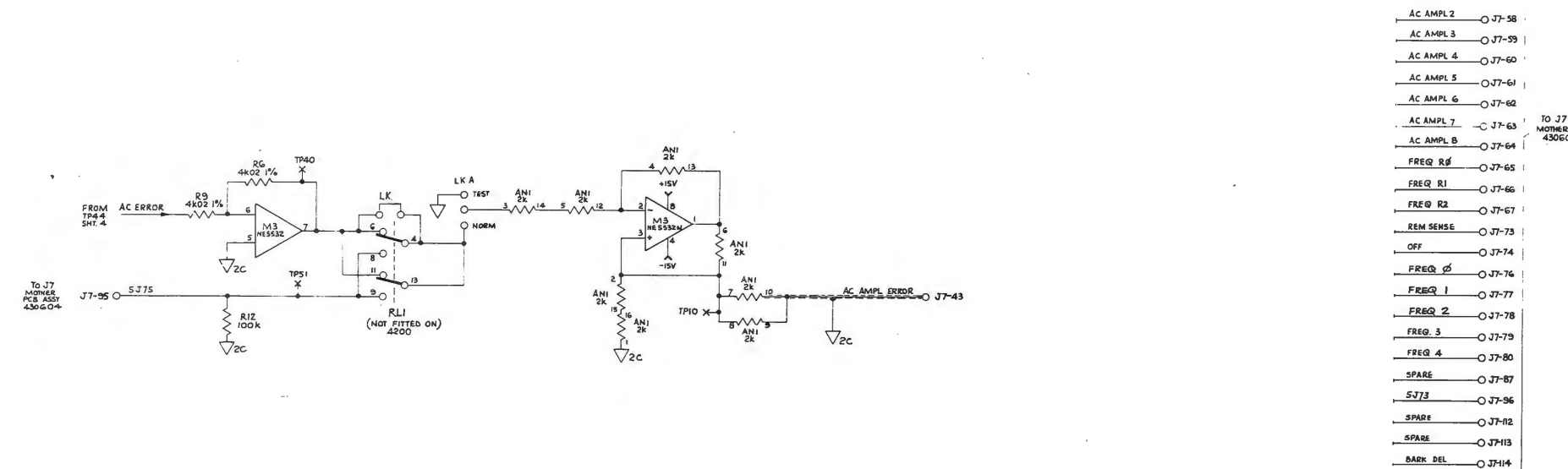
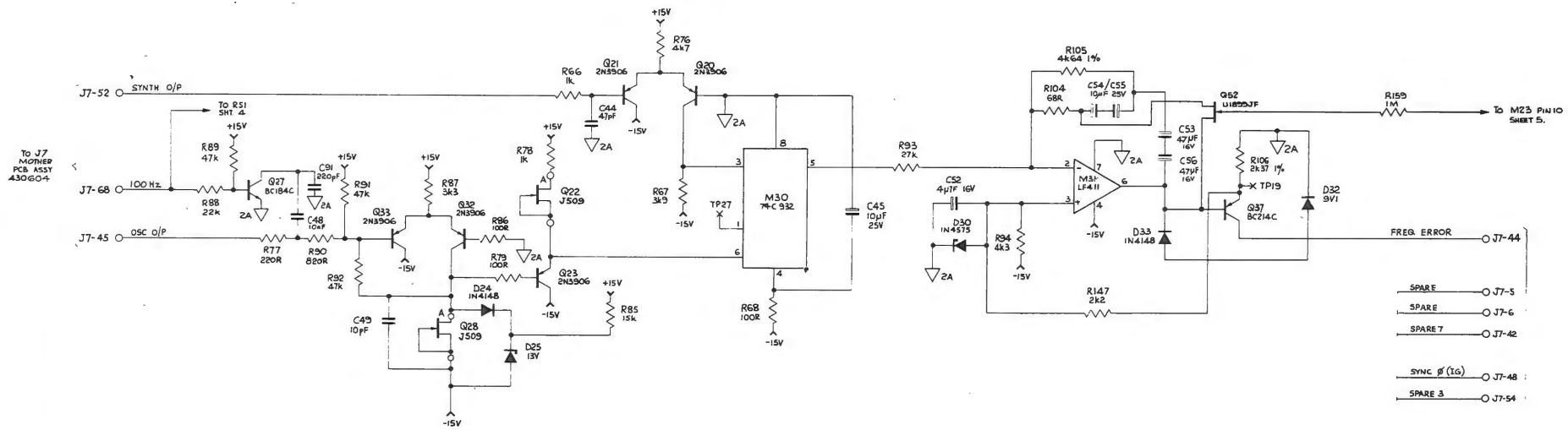
TO R15  
SHEET G.

**AC ASSEMBLY**  
Relay Drive Logic and Power Supplies

Circuit Diagram No. 430663-4.0 Sheet 5



© Datron Instruments 1986



C41, R7, R8 — NOT FITTED.

- SPARE — J7-5
- SPARE — J7-6
- SPARE 7 — J7-42
- SYNC (IG) — J7-48
- SPARE 3 — J7-54
- AC AMPL 2 — J7-58
- AC AMPL 3 — J7-59
- AC AMPL 4 — J7-60
- AC AMPL 5 — J7-61
- AC AMPL 6 — J7-62
- AC AMPL 7 — J7-63
- AC AMPL B — J7-64
- FREQ R $\phi$  — J7-65
- FREQ R1 — J7-66
- FREQ R2 — J7-67
- REM SENSE — J7-73
- OFF — J7-74
- FREQ  $\phi$  — J7-76
- FREQ 1 — J7-77
- FREQ 2 — J7-78
- FREQ 3 — J7-79
- FREQ 4 — J7-80
- SPARE — J7-87
- SJ73 — J7-96
- SPARE — J7-112
- SPARE — J7-113
- BAR DEL — J7-114

TO J7 MOTHER PCB ASSY 430604

**AC ASSEMBLY**  
Phase Detector and Integrator; Power Supplies  
Circuit Diagram No. 430663-4.0 Sheet 6

**4705**  
**datron**  
INSTRUMENTS  
© Datron Instruments 1986



CURRENT / OHMS ASSEMBLY

**datron**  
INSTRUMENTS  
4705

MOUNTING I.C.s.			
Nº OF WAYS	PART Nº	Nº OFF	M3, M8, M10, M16, M18, M12, M18, M14, M18, M20
14	605060	7	M3, M8, M10, M16, M18, M12, M18, M14, M18, M20
16	605061	3	M6, M12, M18
B	605059	3	M4, M8, M20
20	605070	2	M13, M14

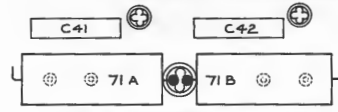
MOUNT R8, R3, R5, R35, F2, F3 & ON SMALL CERAMIC BEADS 630036 12 OFF.

MAKE LINKS FROM TINNED COPPER WIRE 540002.

COMPONENTS WITHIN THIS AREA DEFINED BY DOTTED LINE, SHOULD BE NO HIGHER THAN 7mm.

FIXING HOLE FOR MOUNTING ALTERNATIVE RES/HEATSINK ASSYS - SEE SH2.  
11 OFF TEST POINT TERMINAL 620007

MOUNT R60, R61, R66, R68, R69, R70, R75, R76. ON FSV TERMINALS 602001 - 1G OFF.



\* FIT 2 OFF 080008 AS ALTERNATIVE TO R71 080007. AN EXTRA LARGE CLOVERLEAF 620005 WILL BE NEEDED.

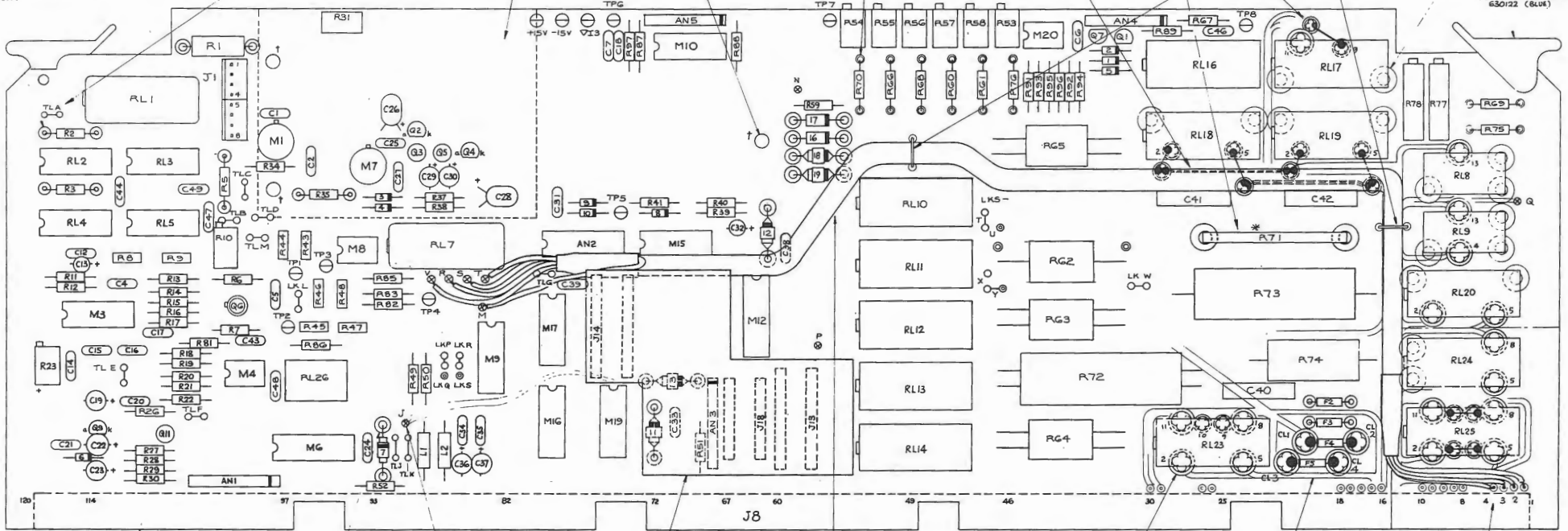
SECURE CABLE TO PCB WITH LACING CORD 530007.

1/0-4 BLACK PTFE INSULATED WIRE 54000G.

1G OFF SMALL CLOVERLEAF TERMINAL 620001

FIT 2 WASHERS UNDER RELAYS IN POSITIONS SHOWN AND 1 EACH END OF R71 USE M3 FLAT NYLON WASHERS 34000 615-017

2 OFF CIRCUIT BOARD EJECTOR 630122 (BLUE)



410347 - 1

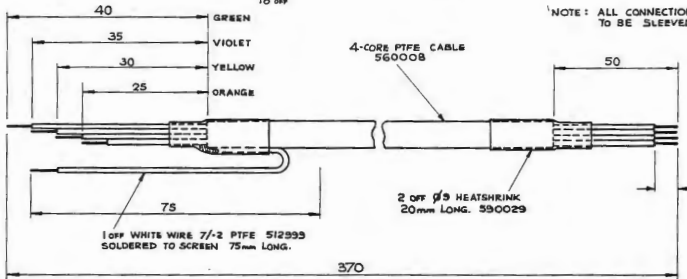
MOUNT R1, D7, D11, D12, D13, D16-D19 ON LARGE CERAMIC BEAD 630024 18 OFF

1/2 CLAMP ASSY 400665

20 OFF LARGE CLOVERLEAF TERMINAL 620005

EASE WIRES INTO PATHS BETWEEN COMPONENTS AS NEATLY AS POSSIBLE - SEE SHEET 2 FOR POINT TO POINT WIRING SCHEDULE.

PIN 1 ORANGE TO PIN T  
PIN 2 VIOLET TO PIN R  
PIN 3 GREEN TO PIN V  
PIN 4 YELLOW TO PIN S



2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS

2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS

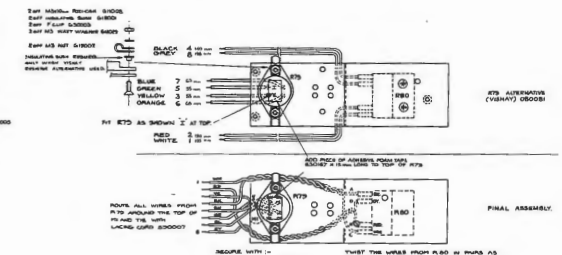
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS

2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS

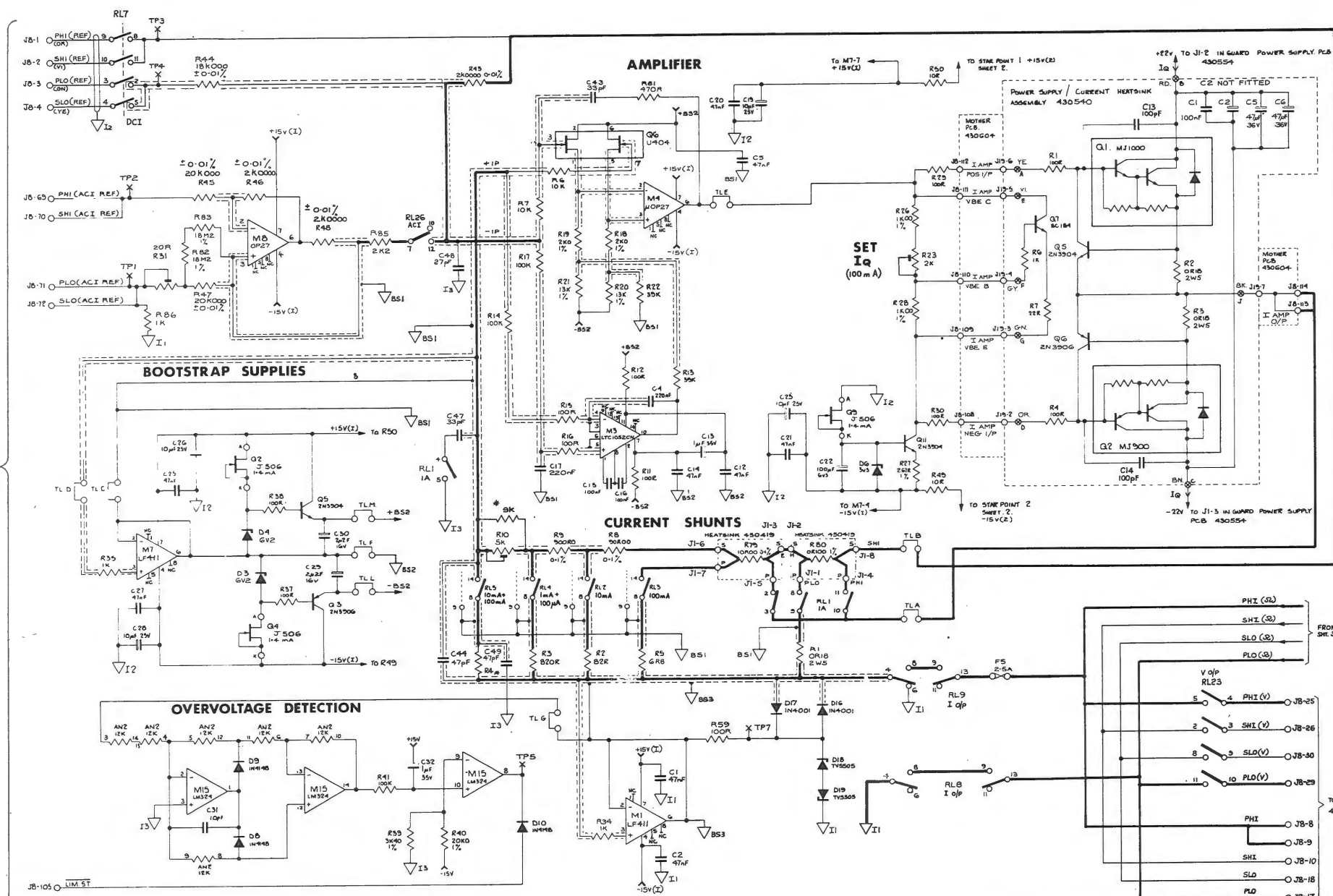
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS

2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS

2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS  
2mm 0.025mm 700-024 BEAMS



TO J7B MOTHER PCB 430604



J8-105 LIM 5T



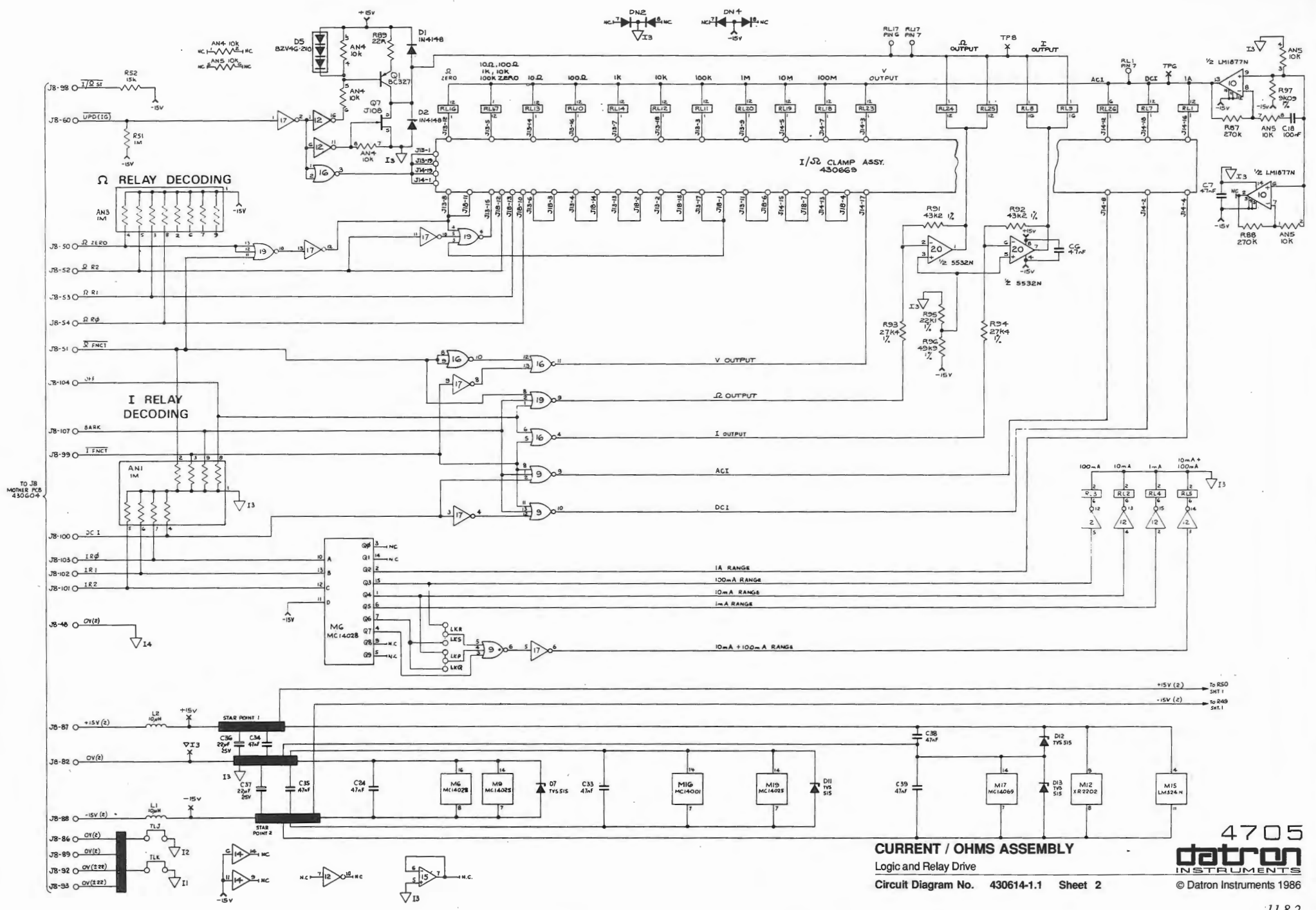
\* INDICATES DEVICES NOT FITTED ON 4700.

**CURRENT / OHMS ASSEMBLY**  
Voltage-to-Current Converter

Circuit Diagram No. 430614-1.1 Sheet 1



© Datron Instruments 1986



**4705 CURRENT / OHMS ASSEMBLY**

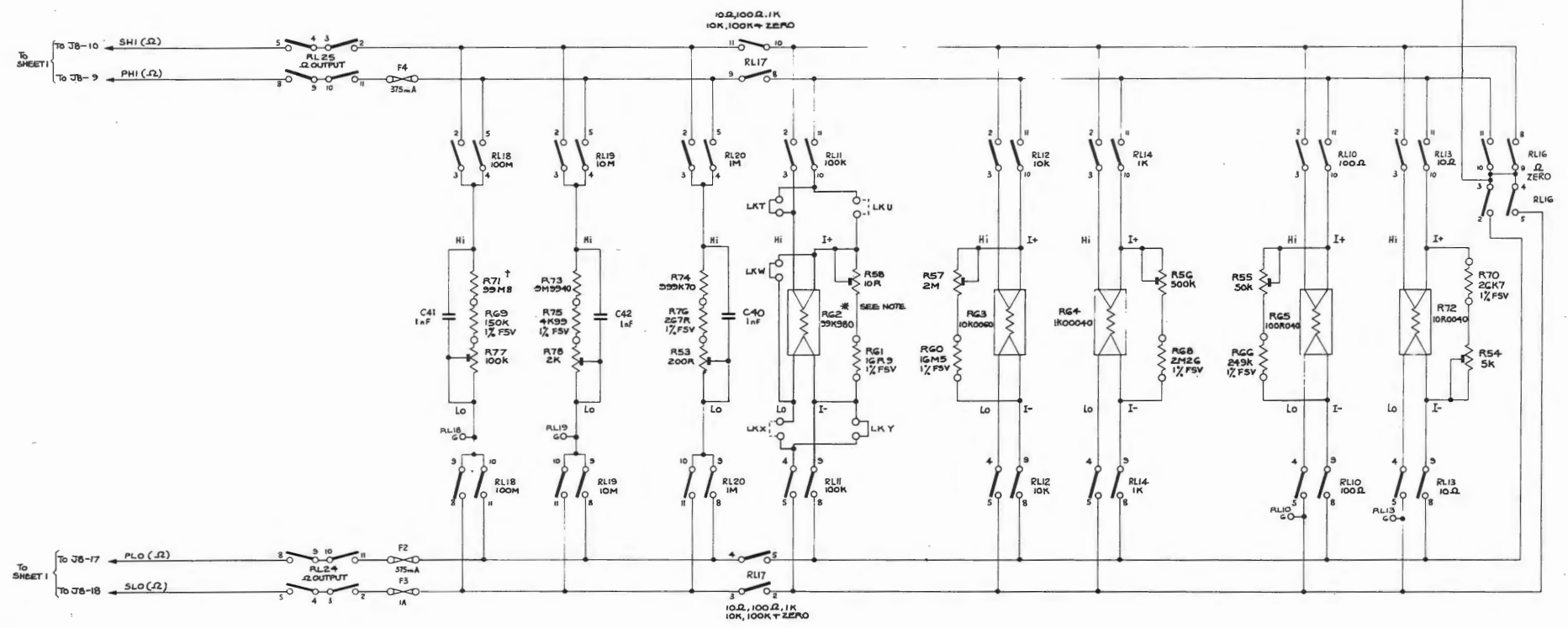
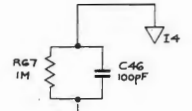
Logic and Relay Drive

Circuit Diagram No. 430614-1.1 Sheet 2



© Datron Instruments 1986

J8-46	SPARE	INC	J8-66	SPARE	INC
J8-47	SPARE	INC	J8-63	SPARE	INC
J8-49	SPARE	INC	J8-64	SPARE	INC
J8-55	REM SENSE	INC	J8-65	SPARE	INC
J8-56	POSITIVE	INC	J8-90	SPARE	INC
J8-57	SPARE	INC	J8-91	SPARE	INC
J8-58	SPARE	INC	J8-97	SPARE	INC
J8-59	KEYWAY (M.B.D.)	INC	J8-103	KEYWAY (EXT.)	INC
J8-67	SPARE	INC	J8-106	BARK DEL	INC



\* NOTE R62 IS A 2-WIRE RESISTOR ON THE 4700.  
 † ALTERNATIVE RESISTOR SET COMPRISES TWO 49MΩ IN SERIES.

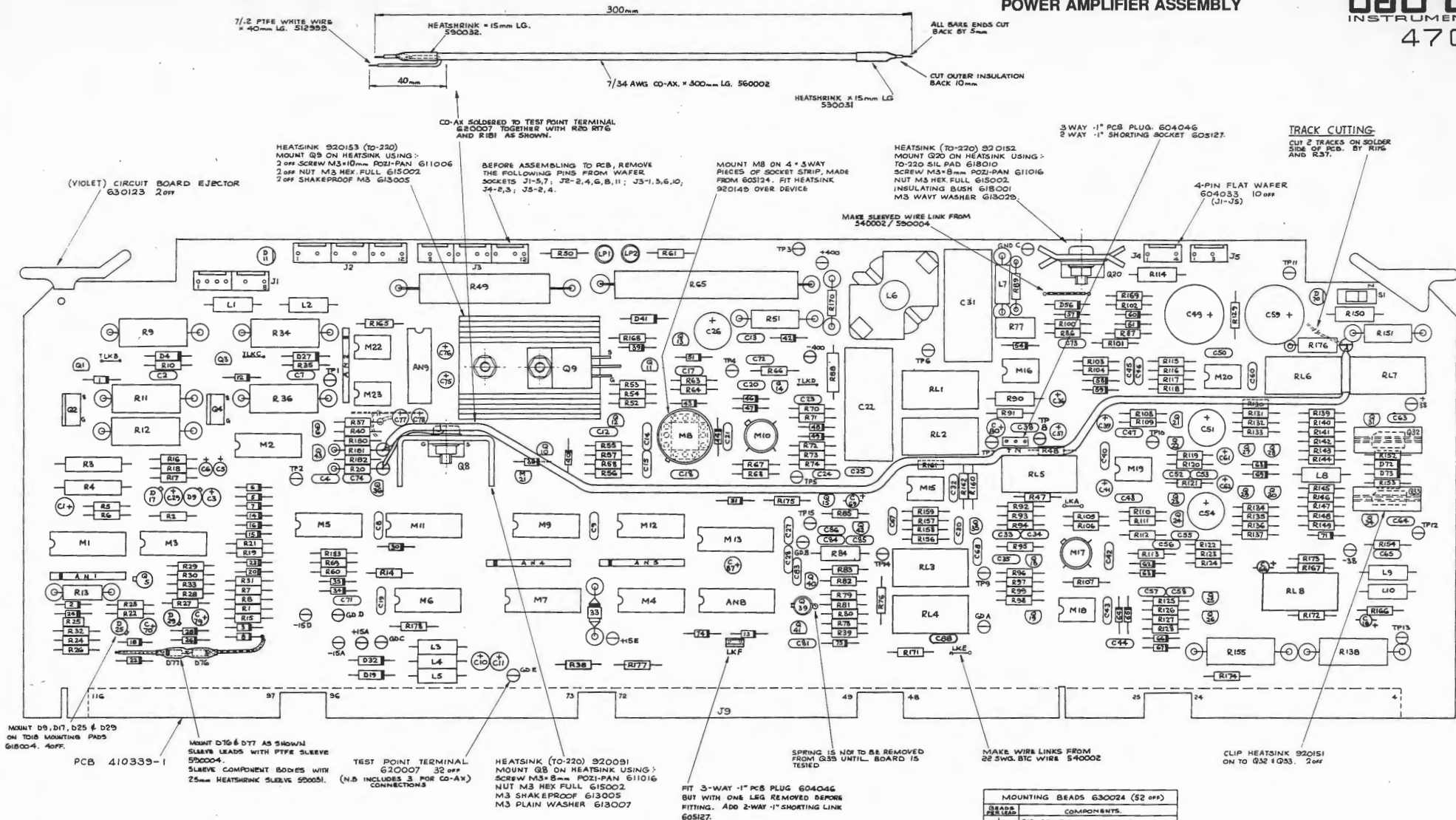
**CURRENT / OHMS ASSEMBLY**  
 Standard Resistors and Switching

Circuit Diagram No. 430614-1.1 Sheet 3

**4705**  
**Datron**  
 INSTRUMENTS  
 © Datron Instruments 1986

POWER AMPLIFIER ASSEMBLY

**datron**  
INSTRUMENTS  
4705



(VIOLET) CIRCUIT BOARD EJECTOR  
630123 2 off

HEATSHINK 920153 (TO-220)  
MOUNT Q9 ON HEATSHINK USING:  
2 off SCREW M3x10mm POZI-PAN 611006  
2 off NUT M3 HEX FULL 615002  
2 off SHAKEPROOF M3 613005

BEFORE ASSEMBLING TO PCB, REMOVE  
THE FOLLOWING PINS FROM WAFER  
SOCKETS J1-5,7; J2-2,4,6,8,11; J3-1,3,6,10,  
J4-2,3; J5-2,4.

MOUNT M8 ON 4 x 3 WAY  
PIECES OF SOCKET STRIP, MADE  
FROM 605124. FIT HEATSHINK  
920148 OVER DEVICE

HEATSHINK (TO-220) 920152  
MOUNT Q20 ON HEATSHINK USING:  
TO-220 SIL PAD 618010  
SCREW M3x8mm POZI-PAN 611016  
NUT M3 HEX FULL 615002  
INSULATING BUSH 618001  
M3 WAY WASHER 613005

3 WAY .1" PCB PLUG 604046  
2 WAY .1" SHORTING SOCKET 605127.

TRACK CUTTING  
CUT 2 TRACKS ON SOLDER  
SIDE OF PCB. BY R176  
AND R37.

MOUNT D5, D7, D25 & D29  
ON TOP MOUNTING PADS  
618004. 4 off.

PCB 410339-1

MOUNT D16 & D17 AS SHOWN  
SLEEVE LEADS WITH PTFE SLEEVE  
619004. 2 off.  
SLEEVE COMPONENT BODIES WITH  
25mm HEATSHINK SLEEVE 590051.

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

HEATSHINK (TO-220) 920081  
MOUNT Q8 ON HEATSHINK USING:  
SCREW M3x8mm POZI-PAN 611016  
NUT M3 HEX FULL 615002  
M3 SHAKEPROOF 613005  
M3 PLAIN WASHER 613007

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

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

MAKE WIRE LINKS FROM  
32 SWG. BIC WIRE 540002

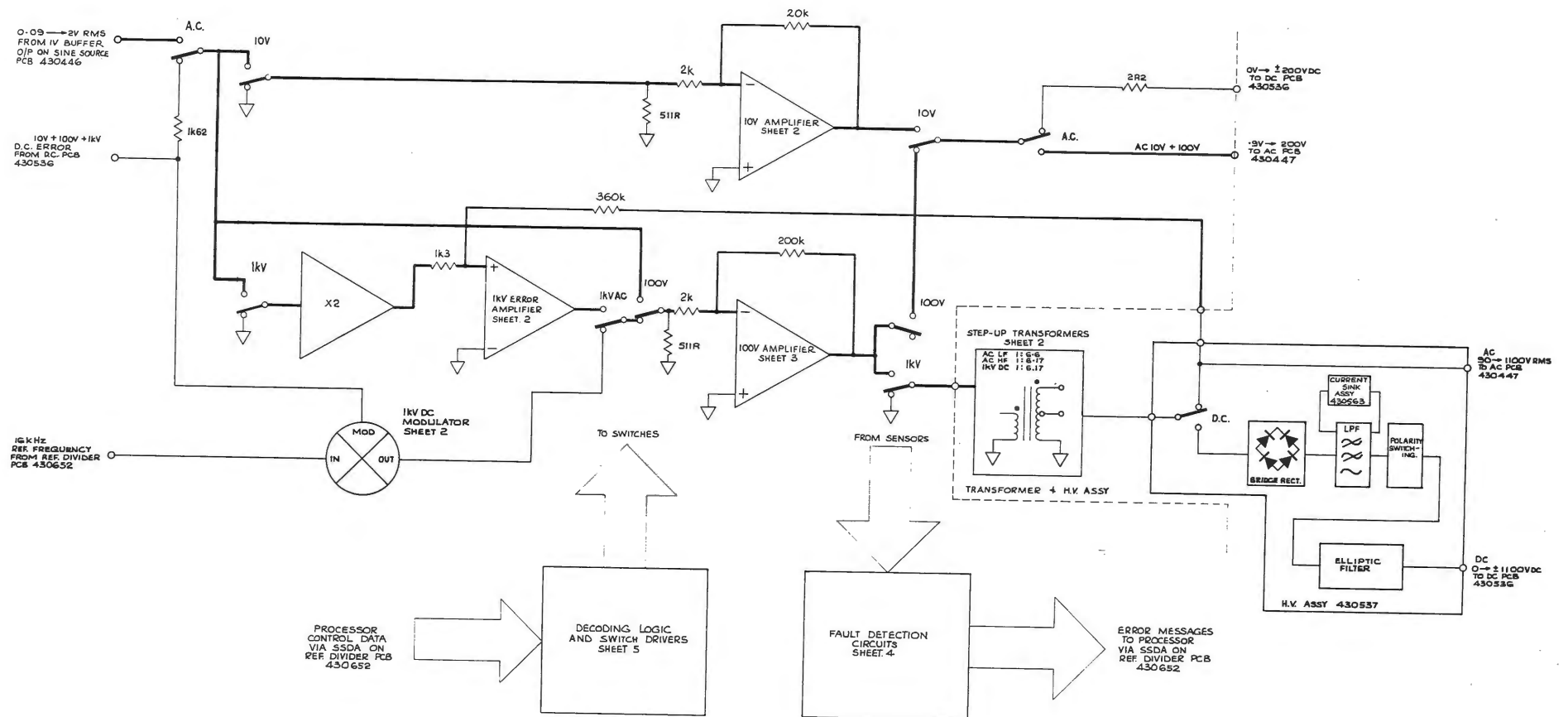
CLIP HEATSHINK 920151  
ON TO Q32 & Q33. 2 off

BEAD #	COMPONENTS
1	R18, RE1, R151, R170, D33, L7.
2	R9, R11, R12, R34, R36, R138, R155
3	R45, R65.

MOUNTING I.C.S			
NO OF PINS	PART 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.

N.B. R29 IS TO BE MOUNTED ON BEAD 630036 2 off.  
ONE END OF R27 & R181 TO BE  
MOUNTED ON SMALL BEAD 630036. 3 off  
(OPPOSITE ENDS TO CABLE CONNECTIONS)

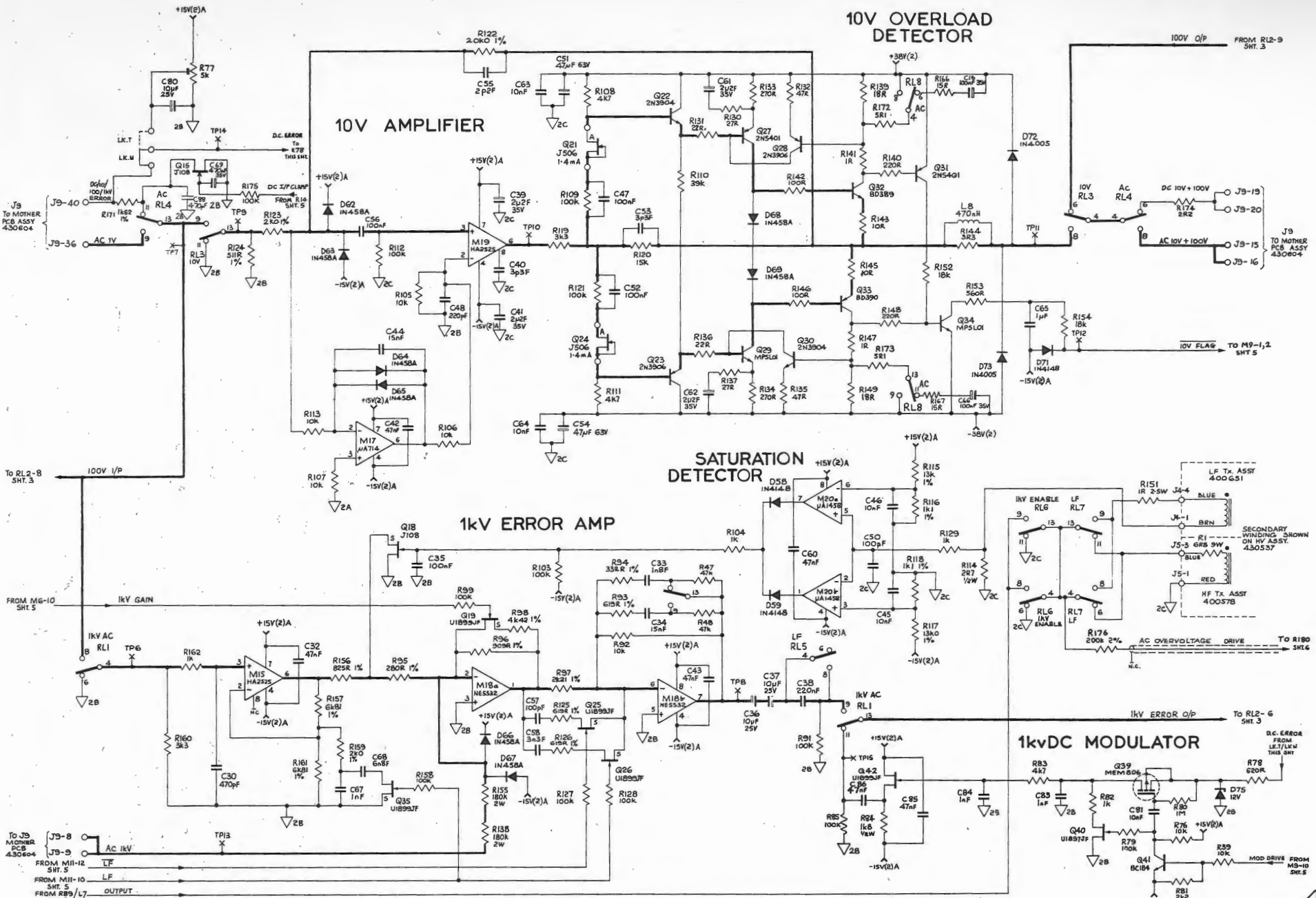
N.B. THE FOLLOWING COMPONENTS TO HAVE 1 off  
GLASS BEAD 630245 ON EACH LEG. (TOTAL 26 BEADS)  
C8, C9, C13, C14, C19, C21, C27, C28, C32,  
C42, C43, C60 & C85.



**POWER AMPLIFIER ASSEMBLY**  
Block Diagram

Circuit Diagram No. 430618-3.0 Sheet 1

4705  
**datron**  
INSTRUMENTS  
© Datron Instruments 1986



**10V OVERLOAD DETECTOR**

**10V AMPLIFIER**

**SATURATION DETECTOR**

**1kV ERROR AMP**

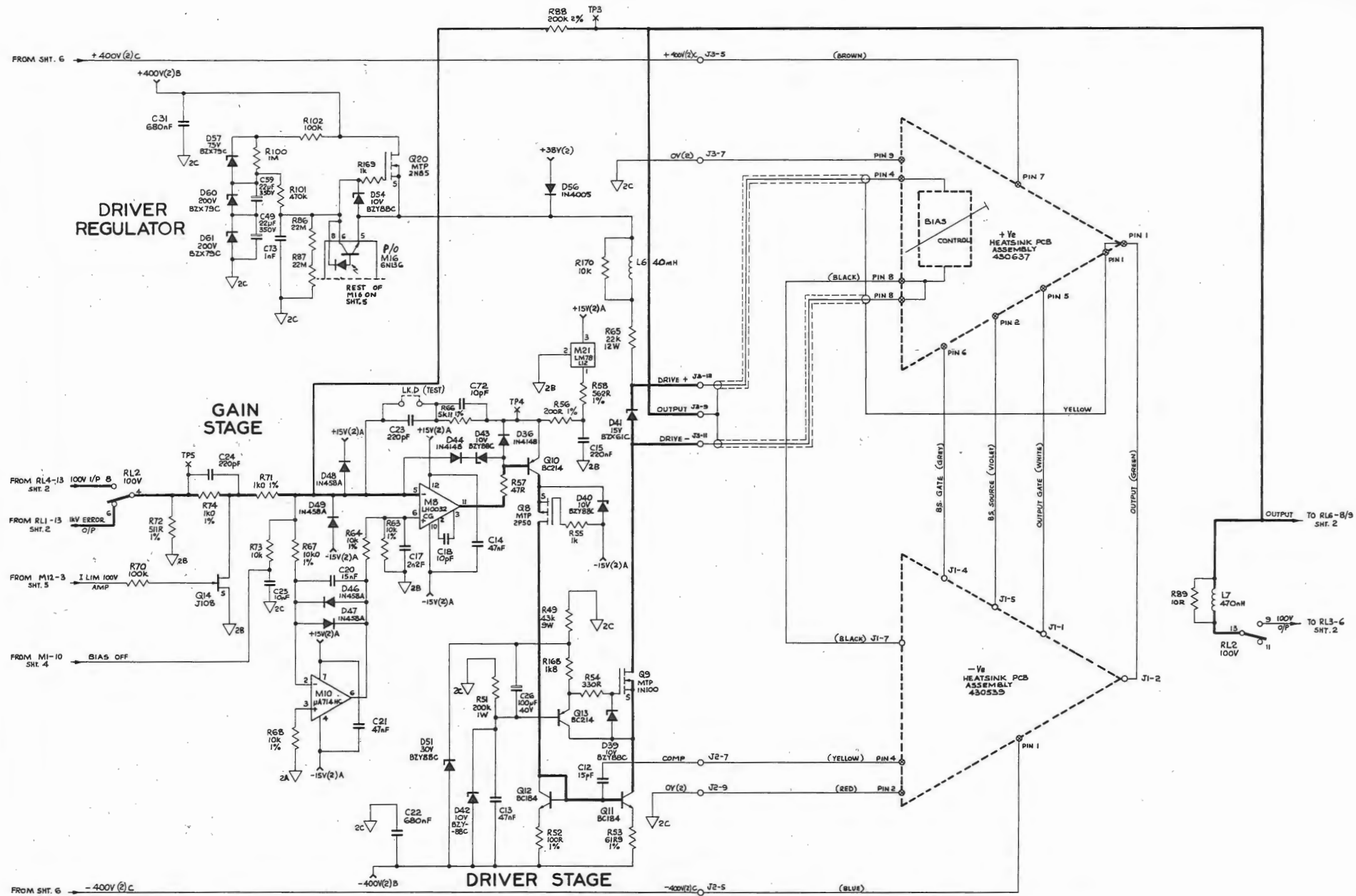
**1kVDC MODULATOR**

**POWER AMPLIFIER ASSEMBLY**  
10V and 1kV Amplifiers



Circuit Diagram No. 430618-3.0 Sheet 2

© Datron Instruments 1986

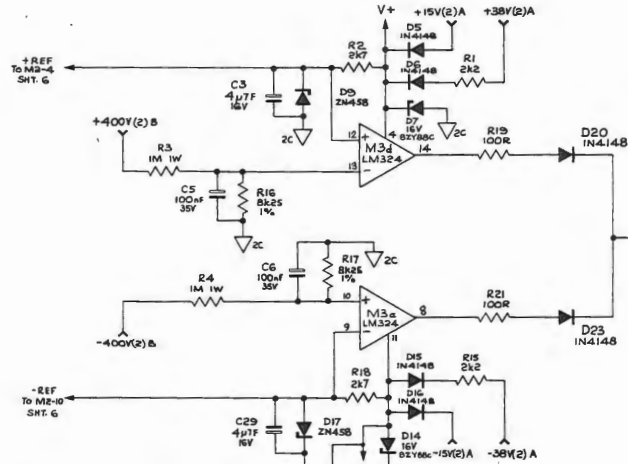


**POWER AMPLIFIER ASSEMBLY**  
100V Amplifier

Circuit Diagram No. 430618-3.0 Sheet 3

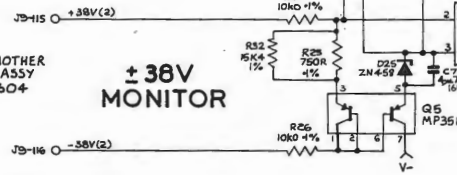


± 400V  
MONITOR

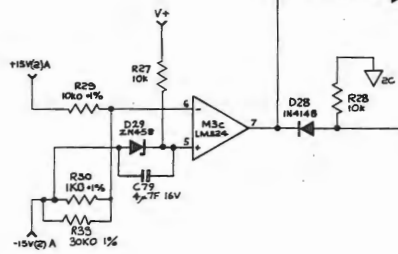


± 38V  
MONITOR

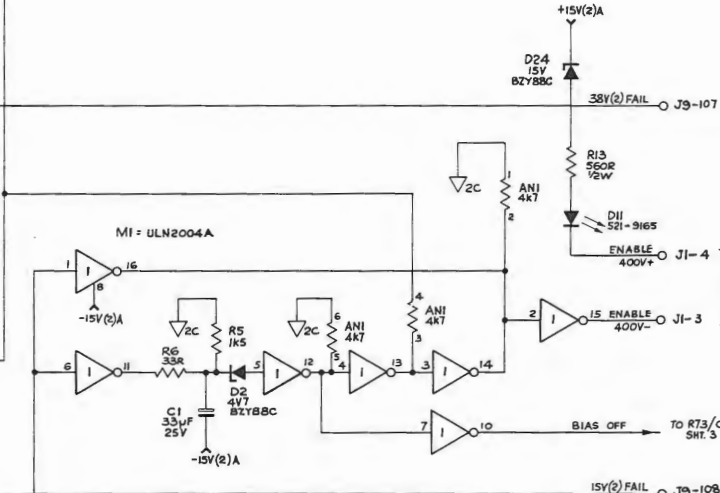
J9 TO MOTHER  
PCB ASSY  
430604



± 15V  
MONITOR



400V ENABLE



N.B: J9 CONNECTIONS TO MOTHER  
PCB ASSY 430604

TO J9  
MOTHER PCB  
ASSY  
430604

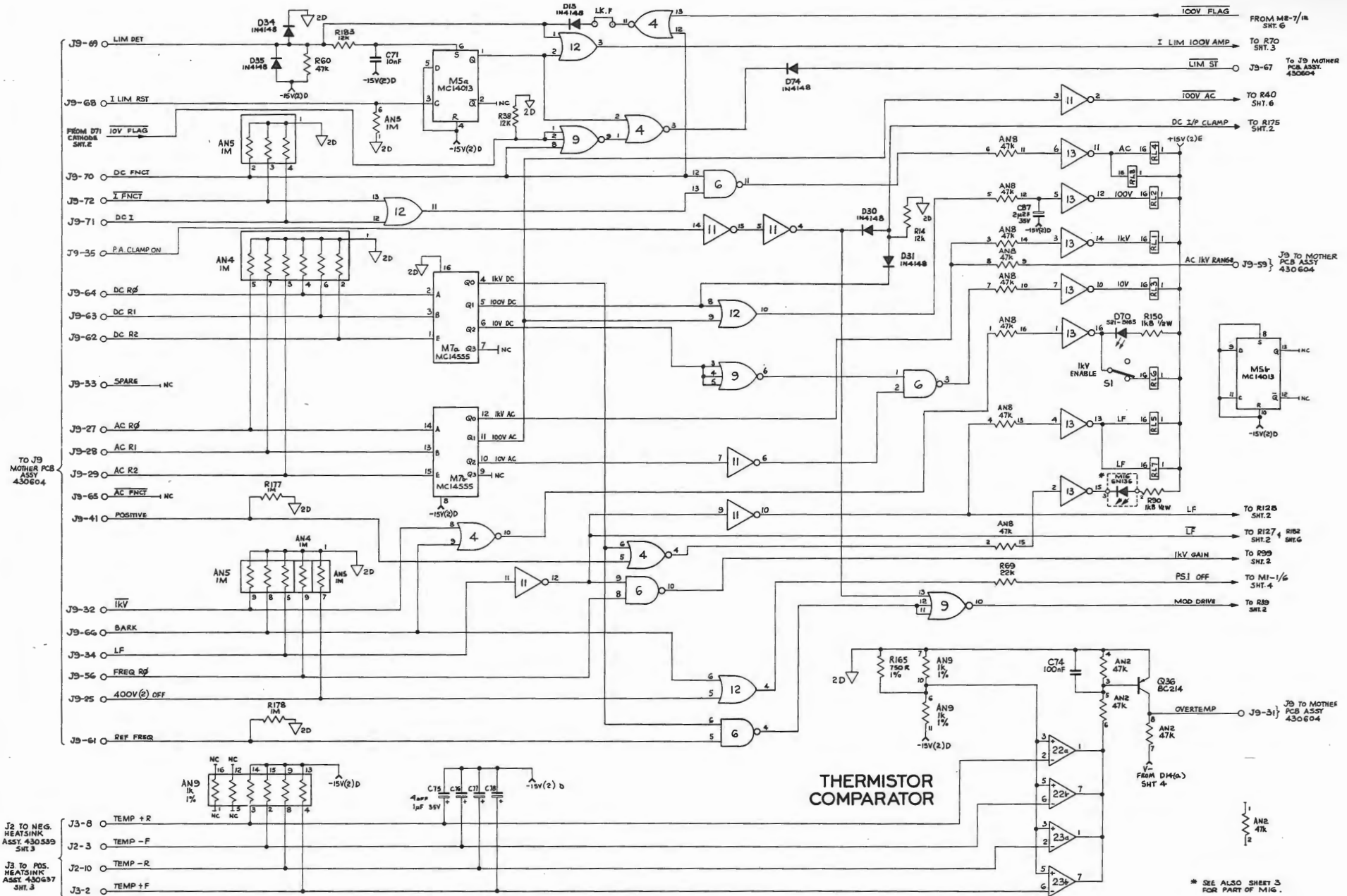
TO PS 1  
HEAT-SINK ASSY  
430540

FROM R69 PS1 OFF  
SHT. 5

POWER AMPLIFIER ASSEMBLY  
Power Supply Monitors

Circuit Diagram No. 430618-3.0 Sheet 4

4705  
**datron**  
INSTRUMENTS  
© Datron Instruments 1986



\* SEE ALSO SHEET 3 FOR PART OF M16.

**POWER AMPLIFIER ASSEMBLY**  
Logic and Relay Drives

Circuit Diagram No. 430618-3.0 Sheet 5



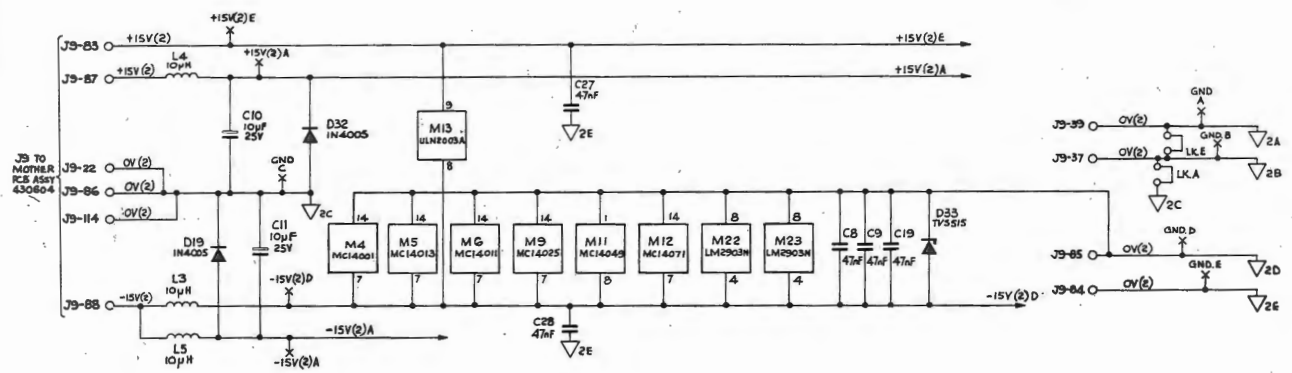
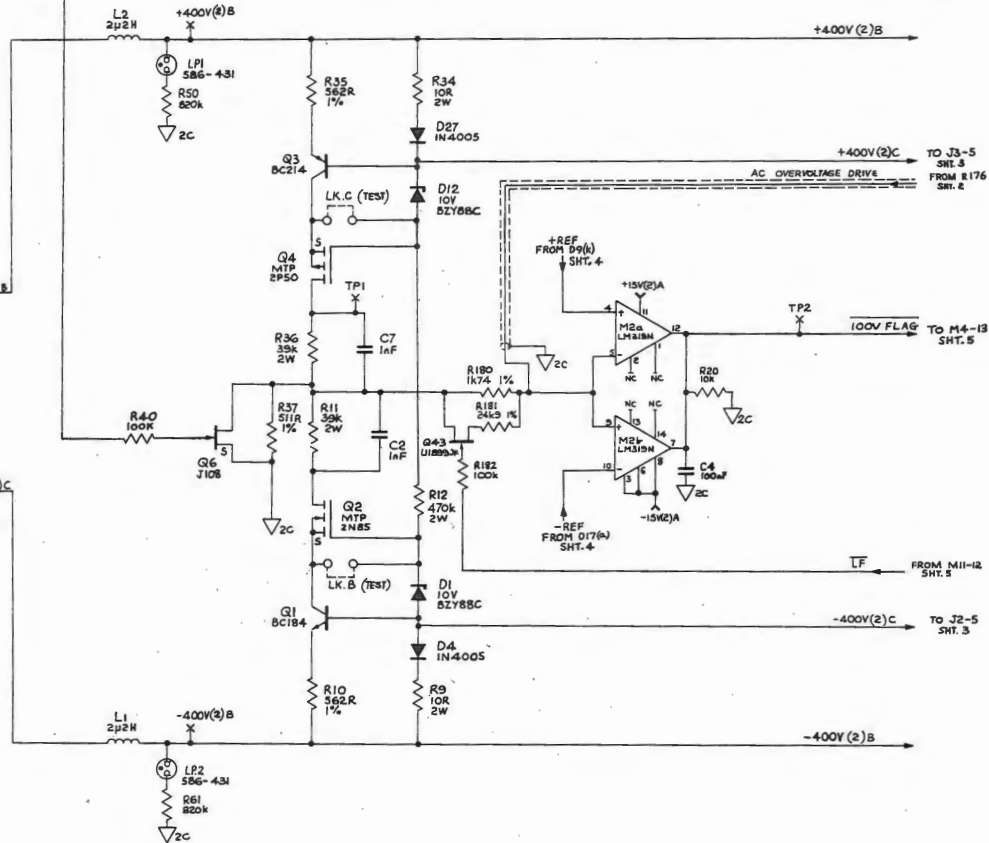
© Datron Instruments 1986

FROM M11-2  
SHT. 5 → 100V AC

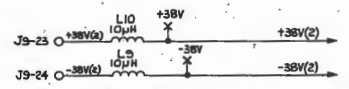
### 100V CURRENT SENSE + 1kV OVERVOLTS DETECTOR

- J9-4 ○ SPARE → NC
- J9-5 ○ SPARE → NC
- J9-26 ○ SPARE → NC
- J9-30 ○ SPARE → NC
- J9-38 ○ SPARE → NC
- J9-42 ○ SPARE → NC
- J9-55 ○ SPARE → NC
- J9-57 ○ PRES. RI → NC
- J9-58 ○ PRES. R2 → NC
- J9-60 ○ OFF → NC
- J9-105 ○ SPARE → NC
- J9-111 ○ SPARE → NC
- J9-112 ○ SPARE → NC
- J9-113 ○ SPARE → NC

J1 to P50/I  
HEAT SINK ASSY  
430540.



NB: J9 CONNECTIONS TO MOTHER  
PCB ASSY. 430604



**POWER AMPLIFIER ASSEMBLY**  
00V Overload Detector and Power Supplies

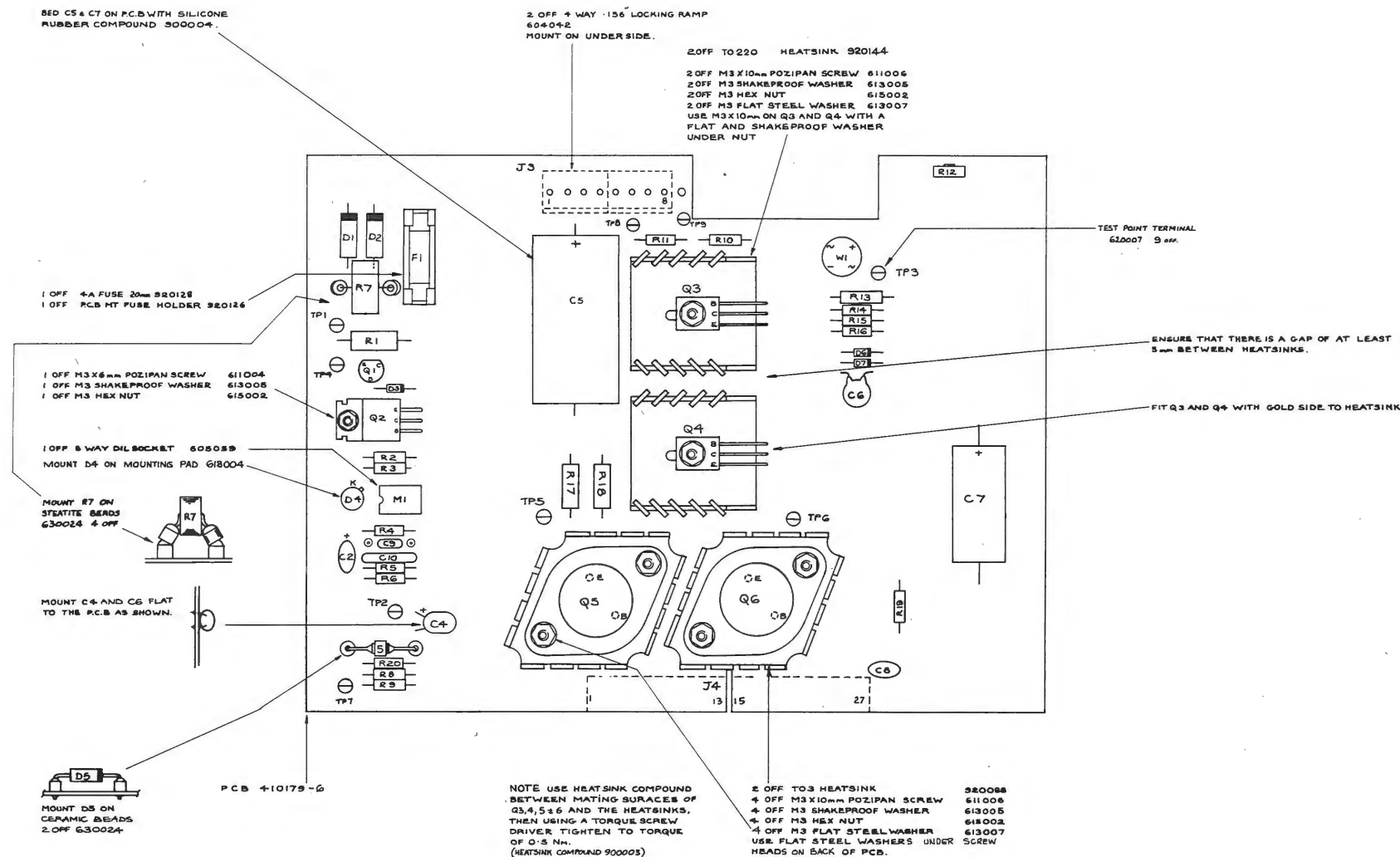
Circuit Diagram No. 430618-3.0 Sheet 6



OUT-GUARD POWER SUPPLY ASSEMBLY

**datron**  
INSTRUMENTS

4705



SED C5 & C7 ON P.C.B WITH SILICONE RUBBER COMPOUND 900004.

2 OFF 4 WAY 156 LOCKING RAMP 604042 MOUNT ON UNDER SIDE.

2 OFF TO220 HEATSINK 920144  
2 OFF M3X10mm POZIPAN SCREW 611006  
2 OFF M3 SHAKEPROOF WASHER 613005  
2 OFF M3 HEX NUT 615002  
2 OFF M3 FLAT STEEL WASHER 613007  
USE M3X10mm ON Q3 AND Q4 WITH A FLAT AND SHAKEPROOF WASHER UNDER NUT

1 OFF 4-A FUSE 20mm 920126  
1 OFF PCB HT FUSE HOLDER 920126

1 OFF M3X6mm POZIPAN SCREW 611004  
1 OFF M3 SHAKEPROOF WASHER 613005  
1 OFF M3 HEX NUT 615002

1 OFF 8 WAY DIL SOCKET 605059 MOUNT D4 ON MOUNTING PAD 618004

MOUNT R7 ON STEATITE BEADS 630024 4 OFF

MOUNT C4 AND C6 FLAT TO THE P.C.B AS SHOWN.

MOUNT D5 ON CERAMIC BEADS 2 OFF 630024

PCB 410179-G

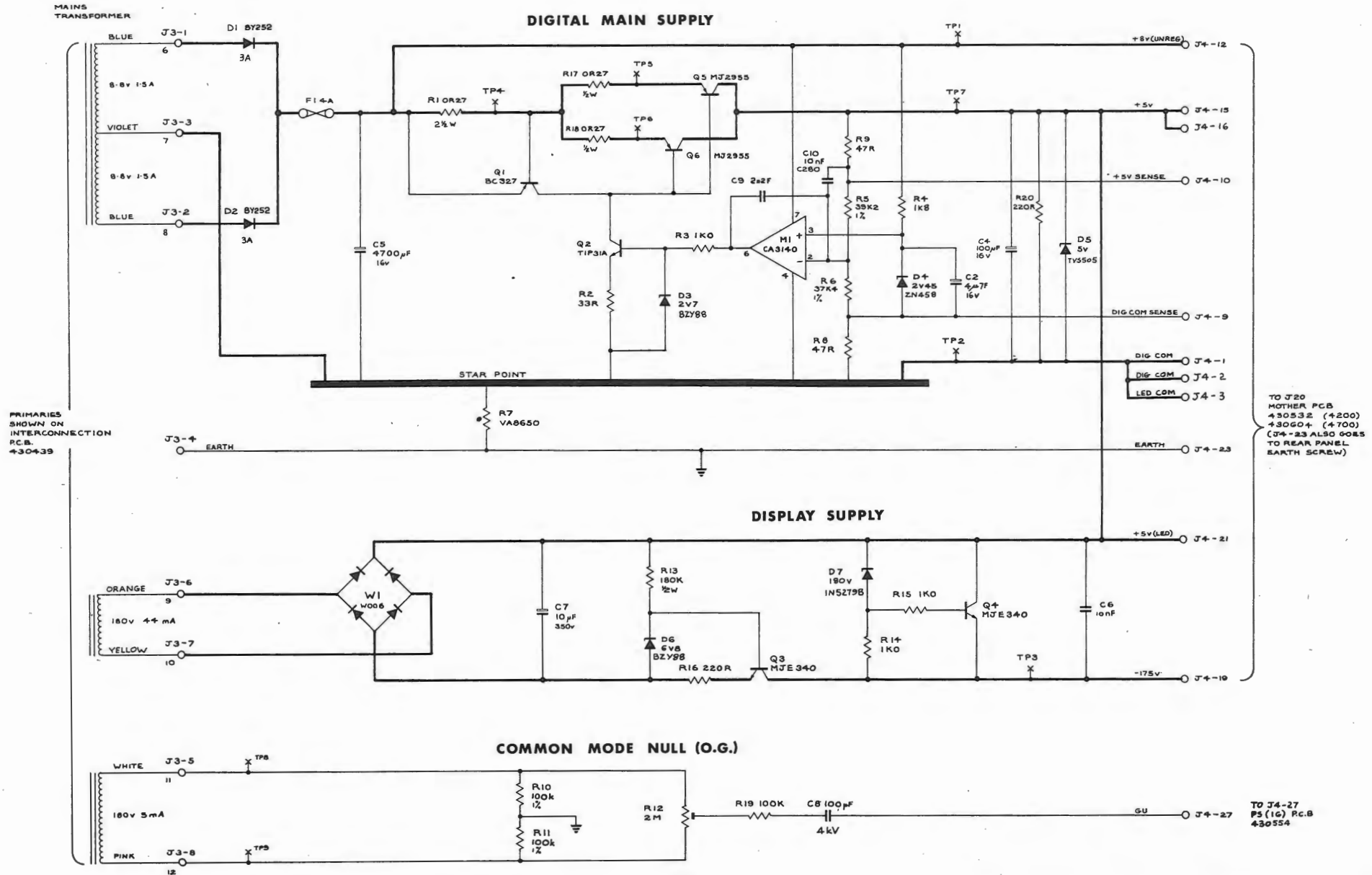
NOTE USE HEATSINK COMPOUND BETWEEN MATING SURACES OF Q3,4,5 & 6 AND THE HEATSINKS. THEN USING A TORQUE SCREW DRIVER TIGHTEN TO TORQUE OF 0.5 Nm. (HEATSINK COMPOUND 900005)

2 OFF TO3 HEATSINK 920088  
4 OFF M3X10mm POZIPAN SCREW 611006  
4 OFF M3 SHAKEPROOF WASHER 613005  
4 OFF M3 HEX NUT 615002  
4 OFF M3 FLAT STEEL WASHER 613007  
USE FLAT STEEL WASHERS UNDER SCREW HEADS ON BACK OF PCB.

TEST POINT TERMINAL 620007 9 OFF.

ENSURE THAT THERE IS A GAP OF AT LEAST 3mm BETWEEN HEATSINKS.

FIT Q3 AND Q4 WITH GOLD SIDE TO HEATSINK



**OUT-GUARD POWER SUPPLY ASSEMBLY**  
Main Digital Supply, Display Supply and Common Mode Null

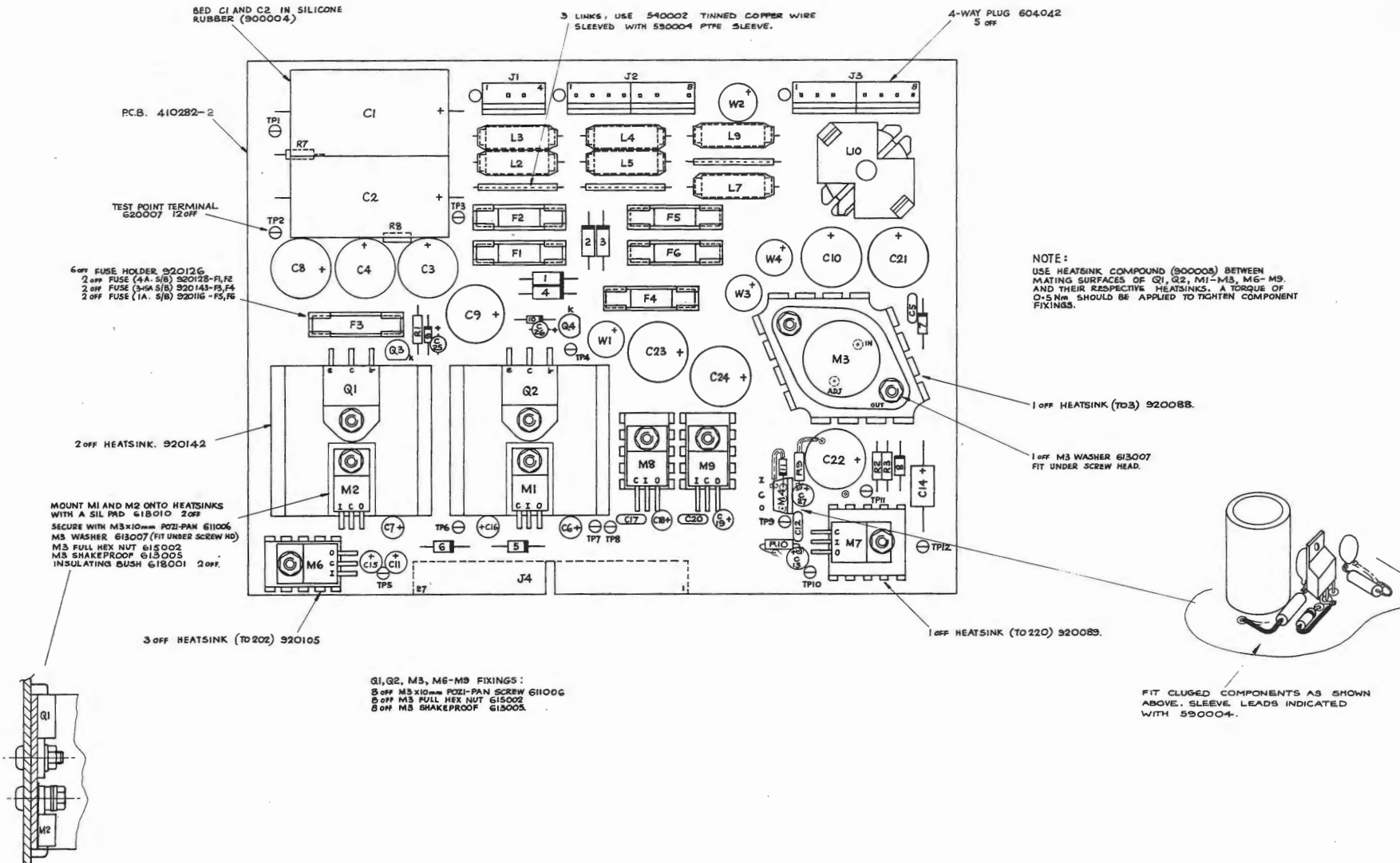
Circuit Diagram No. 430561-2.0 Sheet 1

4705  
**datron**  
INSTRUMENTS

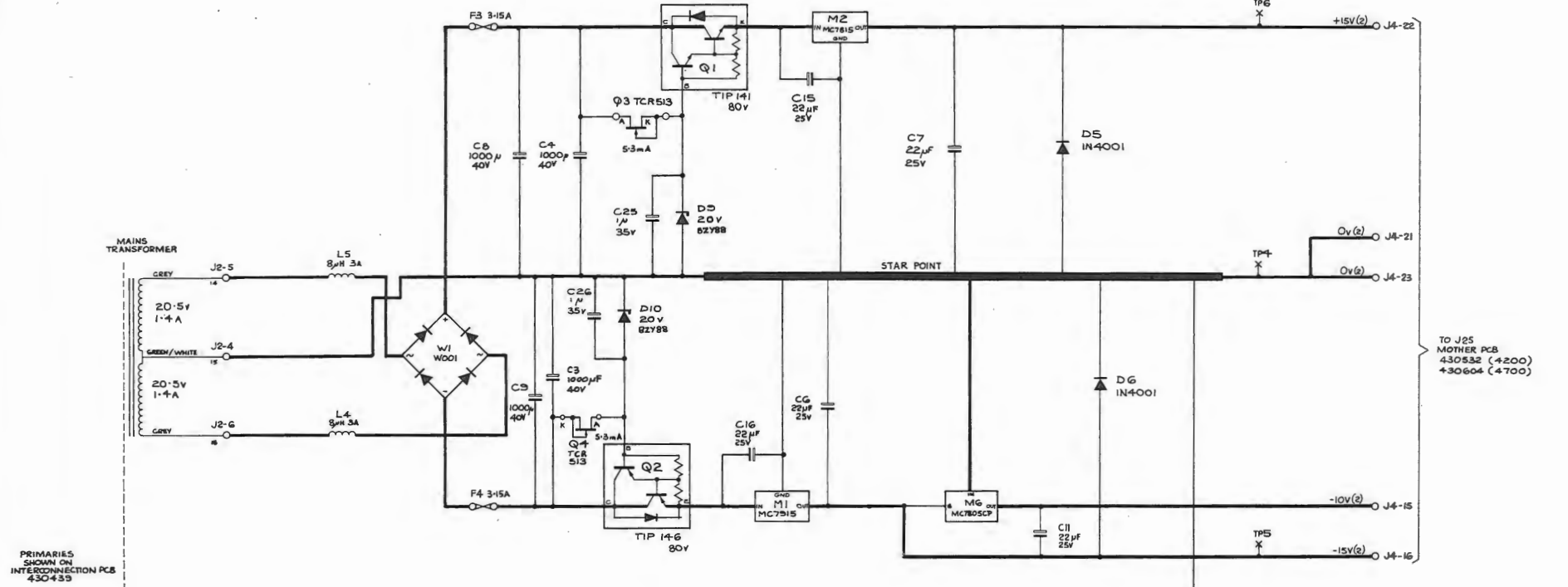
© Datron Instruments 1986

IN-GUARD POWER SUPPLY ASSEMBLY

**datron**  
INSTRUMENTS  
4705



# IN GUARD COMMON 2 SUPPLIES



PRIMARYS SHOWN ON INTERCONNECTION PCB 430433

TO J25 MOTHER PCB 430532 (4200) 430604 (4700)

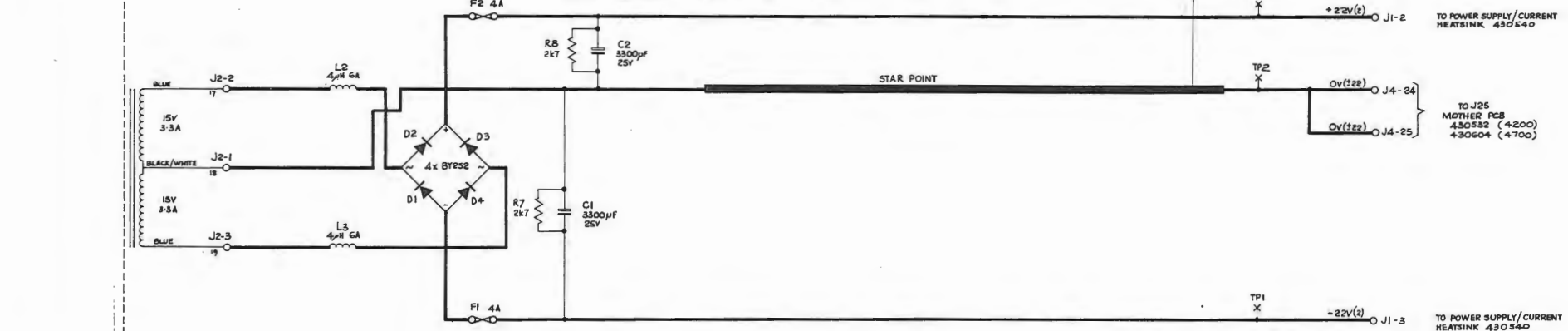
TO POWER SUPPLY/CURRENT HEATSINK 430540

TO J25 MOTHER PCB 430532 (4200) 430604 (4700)

TO POWER SUPPLY/CURRENT HEATSINK 430540

TO J21 MOTHER PCB 430532 (4200) 430604 (4700)

# CURRENT OPTION SUPPLY



TX GUARD SCREEN CONT. ON SHT. 2

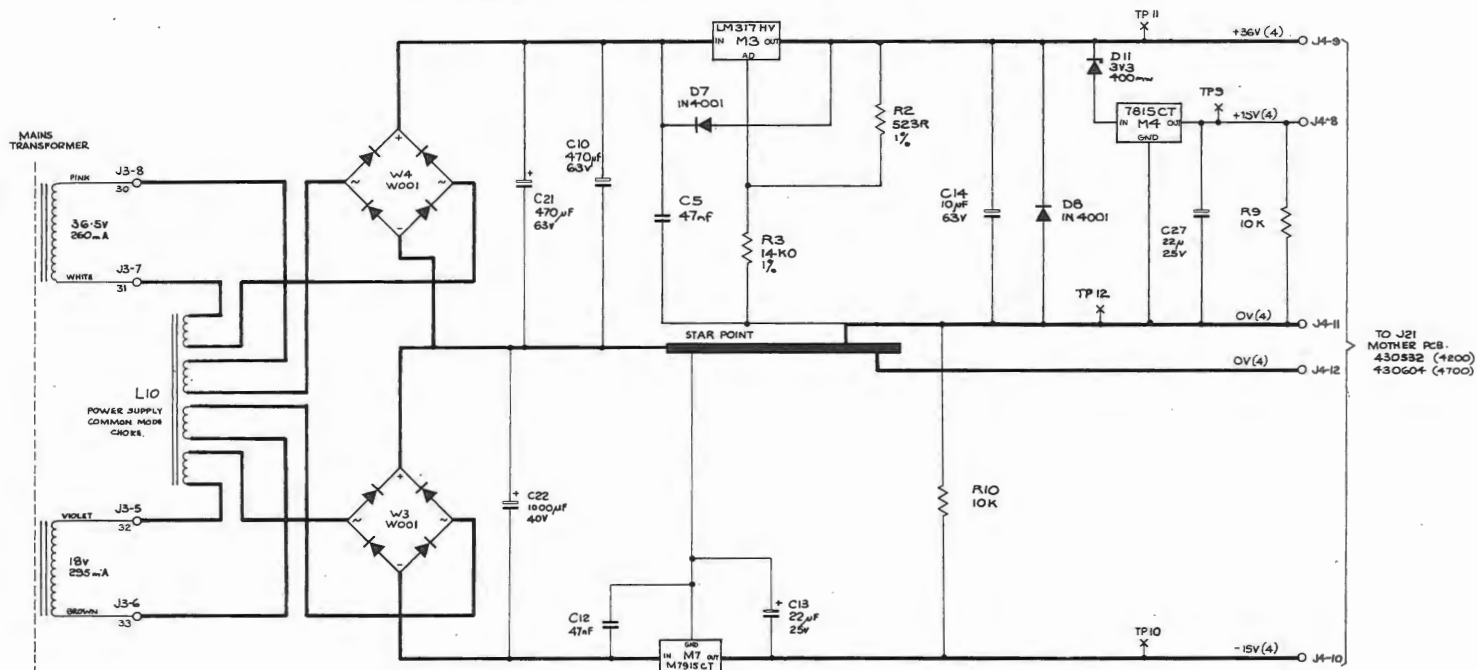
IN-GUARD POWER SUPPLY ASSEMBLY  
Common-2 and Current Option Supplies

Circuit Diagram No. 430554-4.1 Sheet 1

4705  
**datron**  
INSTRUMENTS

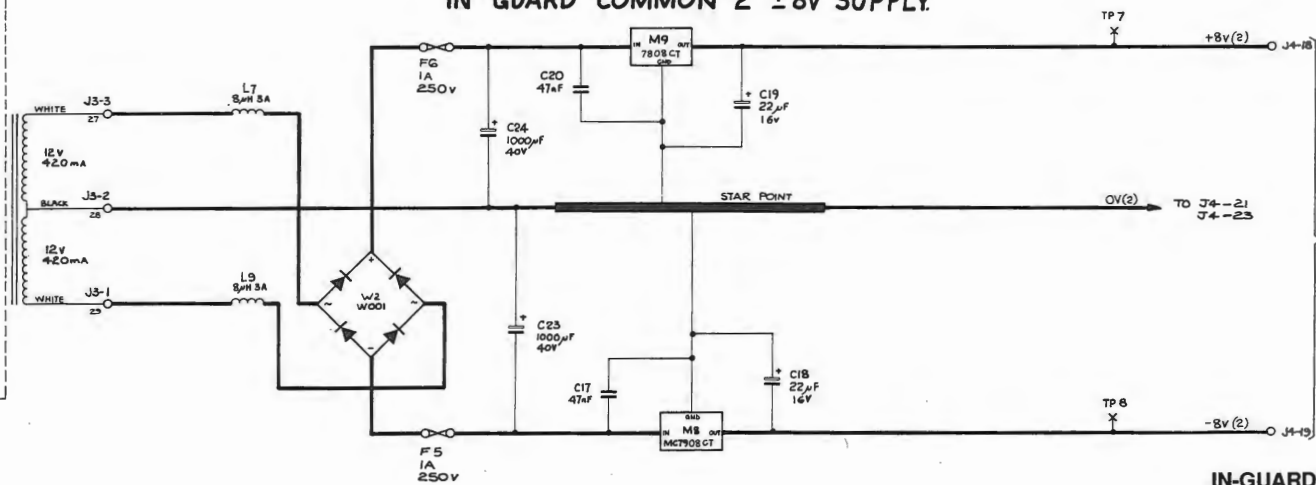
© Datron Instruments 1986

### REFERENCE DIVIDER COMMON 4 SUPPLIES



TO J21  
MOTHER PCB:  
430532 (+200)  
430604 (+700)

### IN GUARD COMMON 2 ±8V SUPPLY



TO J25  
MOTHER PCB:  
430532 (+200)  
430604 (+700)

PRIMARYS  
SHOWN ON  
INTERCONNECTION PCS  
430433

TO GUARD SCREEN  
CONT. FROM SHT. 1

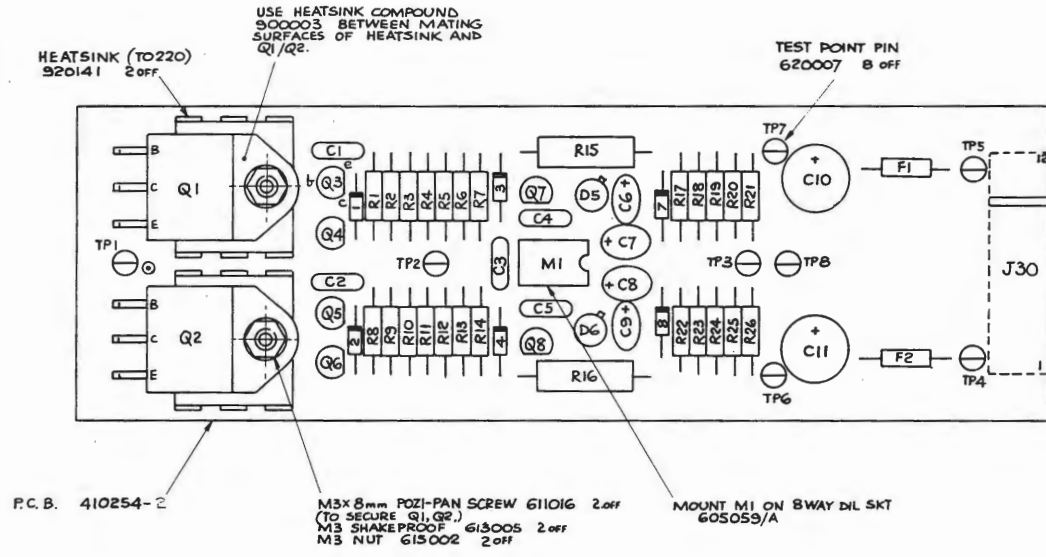
**IN-GUARD POWER SUPPLY ASSEMBLY**  
Reference Divider Common-4 and ±8V Common-2 Supplies

Circuit Diagram No. 430554-4.0 Sheet 2

**4705**  
**datron**  
INSTRUMENTS

© Datron Instruments 1986





MOTHER PCB ASSY  
400604

PS (38V) PCB ASSY  
400653

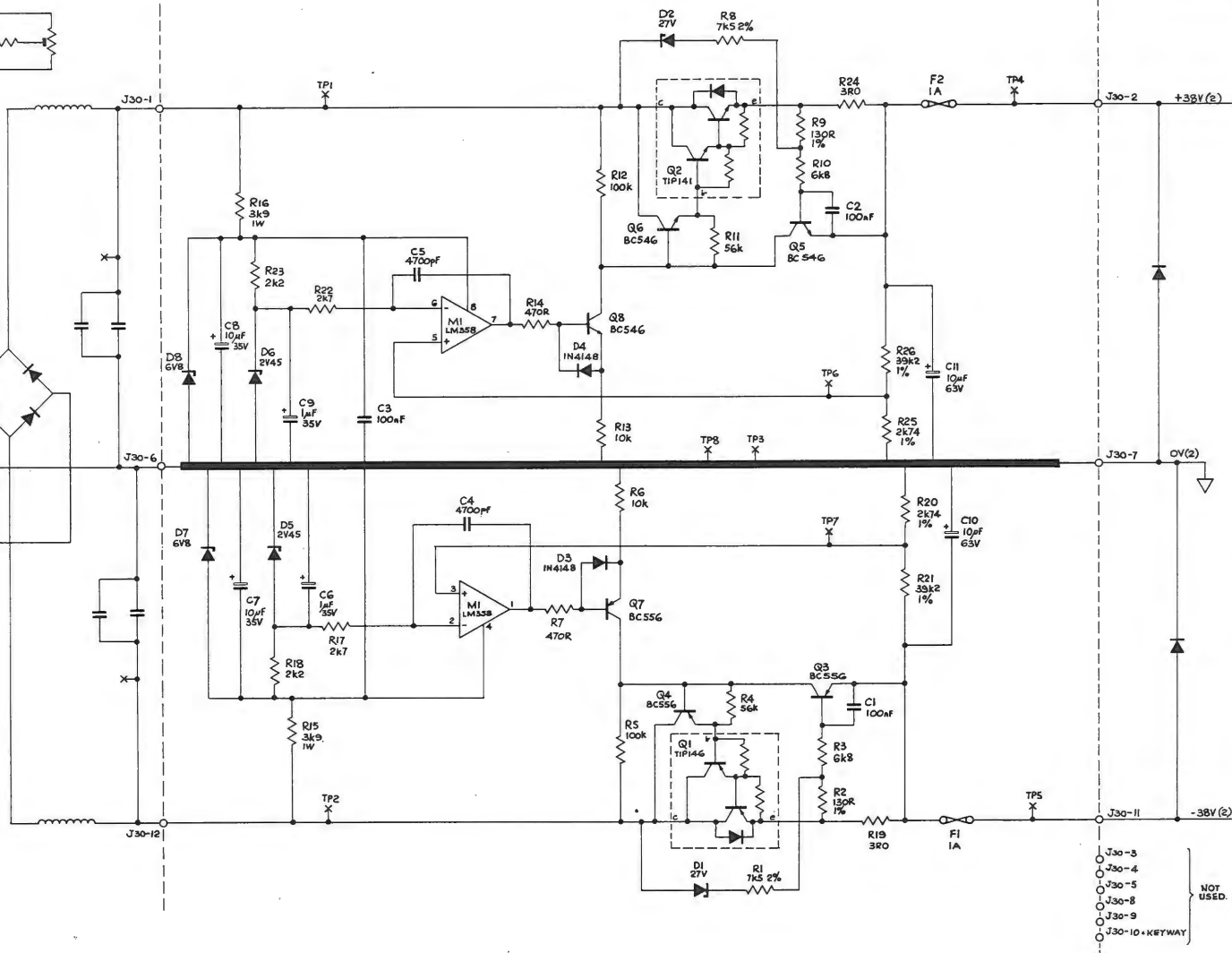
MOTHER PCB ASSY  
400604

CONTINUED ON  
MOTHER PCB  
430604 SH. 5

MAINS TRANSFORMER  
PRIMARYS SHOWN  
ON INTERCONNECTION  
PCB 430433

TX GUARD SCREEN  
CONTINUED ON  
PS (38V) PCB 430554

CONTINUED  
ON MOTHER PCB  
430604 SH. 5



- J30-3
  - J30-4
  - J30-5
  - J30-8
  - J30-9
  - J30-10 + KEYWAY
- NOT USED.

±38V POWER SUPPLY ASSEMBLY  
±38V Power Supply with Mother Assembly Components

4705  
**datron**  
INSTRUMENTS

Circuit Diagram No. 430653-1.0 Sheet 1

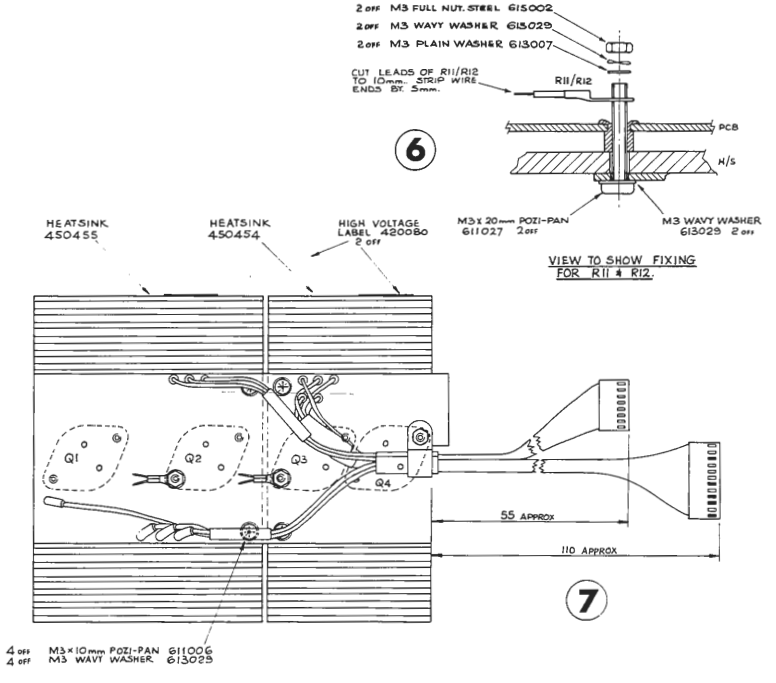
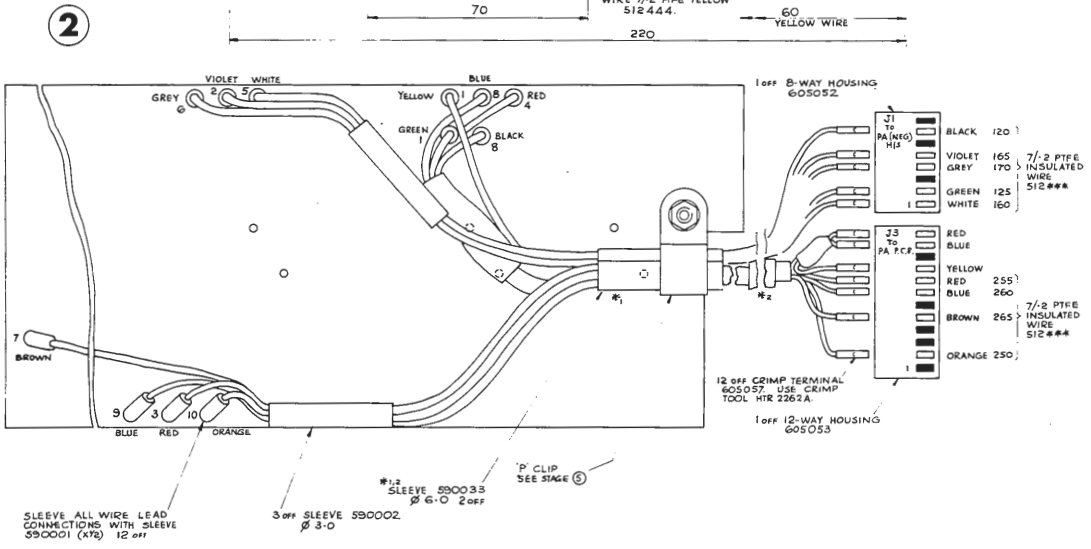
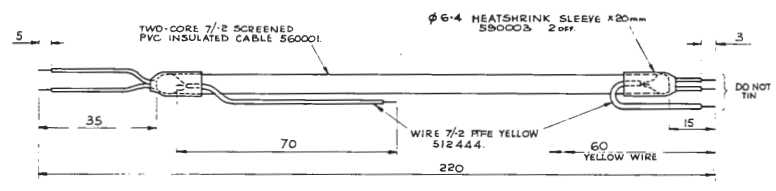
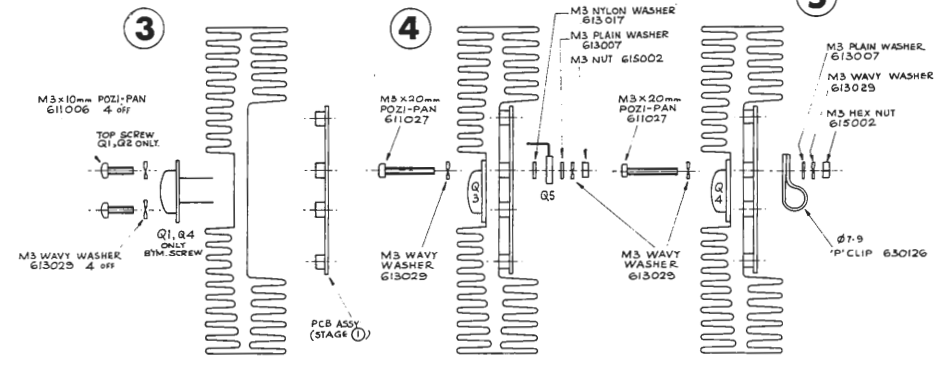
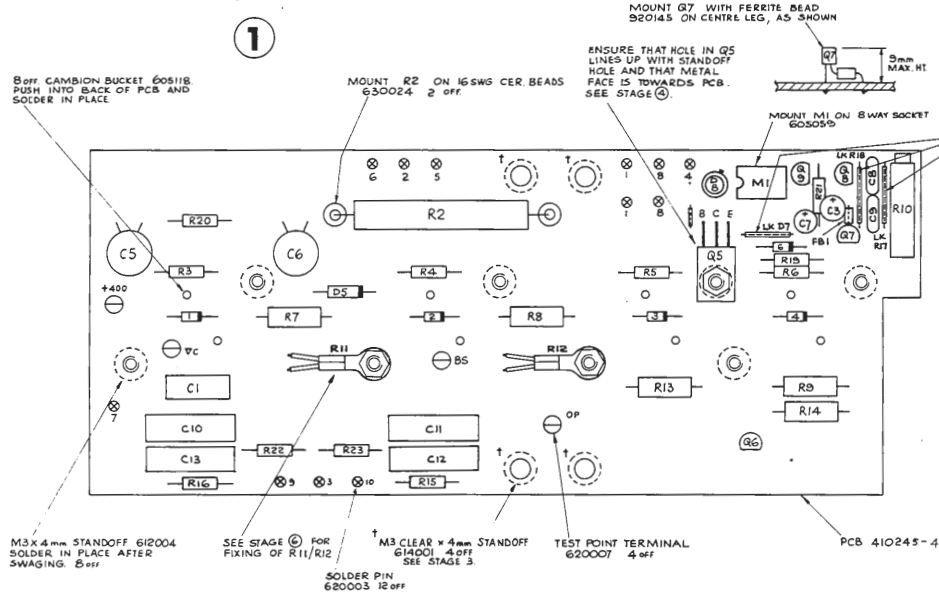
© Datron Instruments 1986

**POSITIVE HEATSINK ASSEMBLY**



**ASSEMBLY NOTES:**

- ASSEMBLY PCB TO STAGE ① EXCEPT SCREW FIXING FOR Q5 (SEE STAGE ④)
- COMPLETE PCB ASSY BY FITTING WIRING LOOMS. DO NOT FIT 'P' CLIP (SEE STAGE ⑦)
- ASSEMBLE PCB ASSY TO HEATSINKS, FITTED BY 4 MIDDLE SCREWS (SEE STAGE ④)
- MOUNT Q1-Q4 TO STAGE ③ ASSEMBLY 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 0.5 Nm.
- SECURE Q5 (STAGE ④). TIGHTEN NUT TO A TORQUE OF 0.5 Nm.
- SECURE WIRING WITH 'P' CLIP (STAGE ⑦)

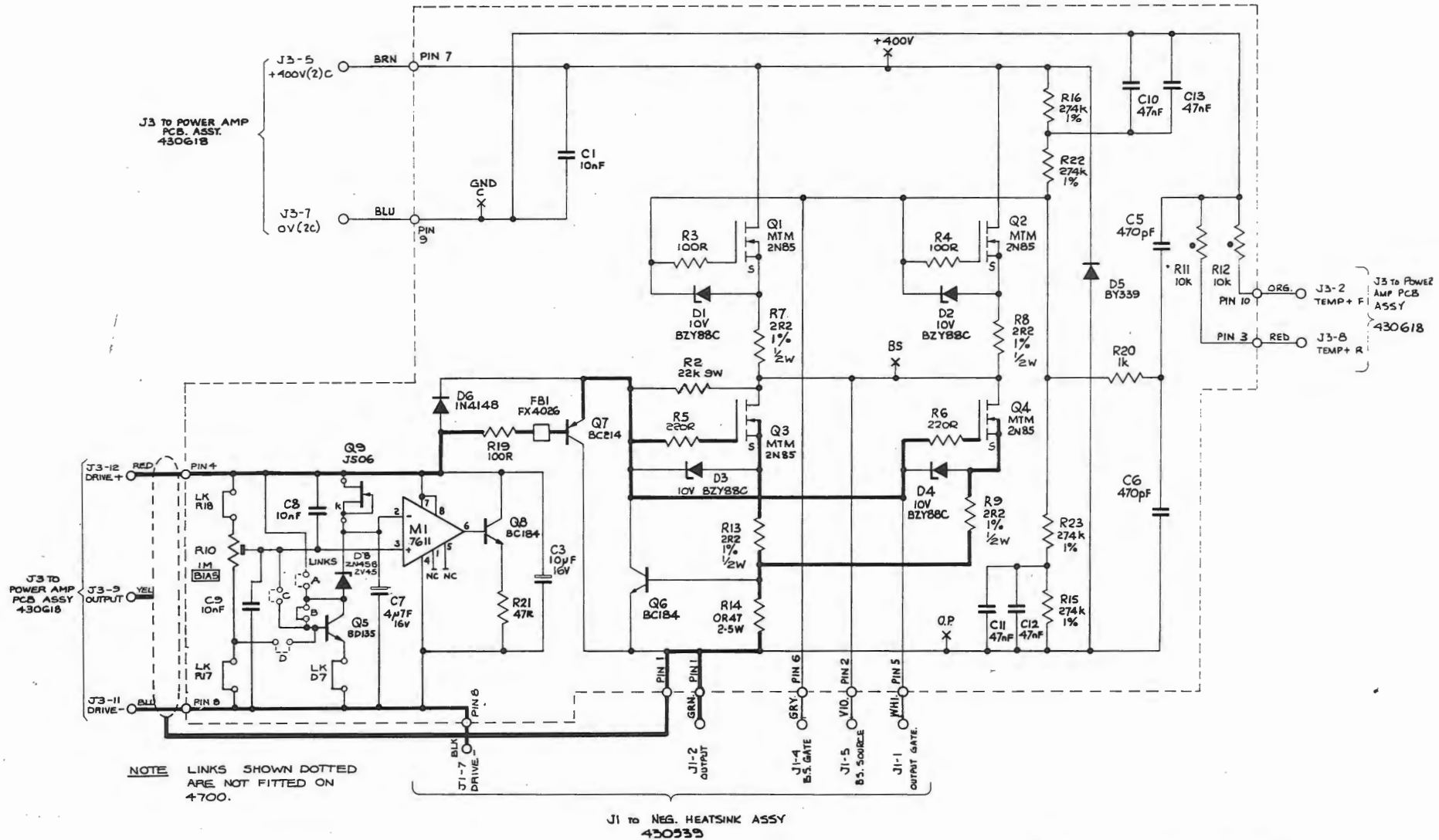


# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

ALL BURRS TO BE REMOVED

NOTES



## POSITIVE HEATSINK ASSEMBLY

Output Power Amplifier (Positive Half)

Circuit Diagram No. 430637-1.1 Sheet 1

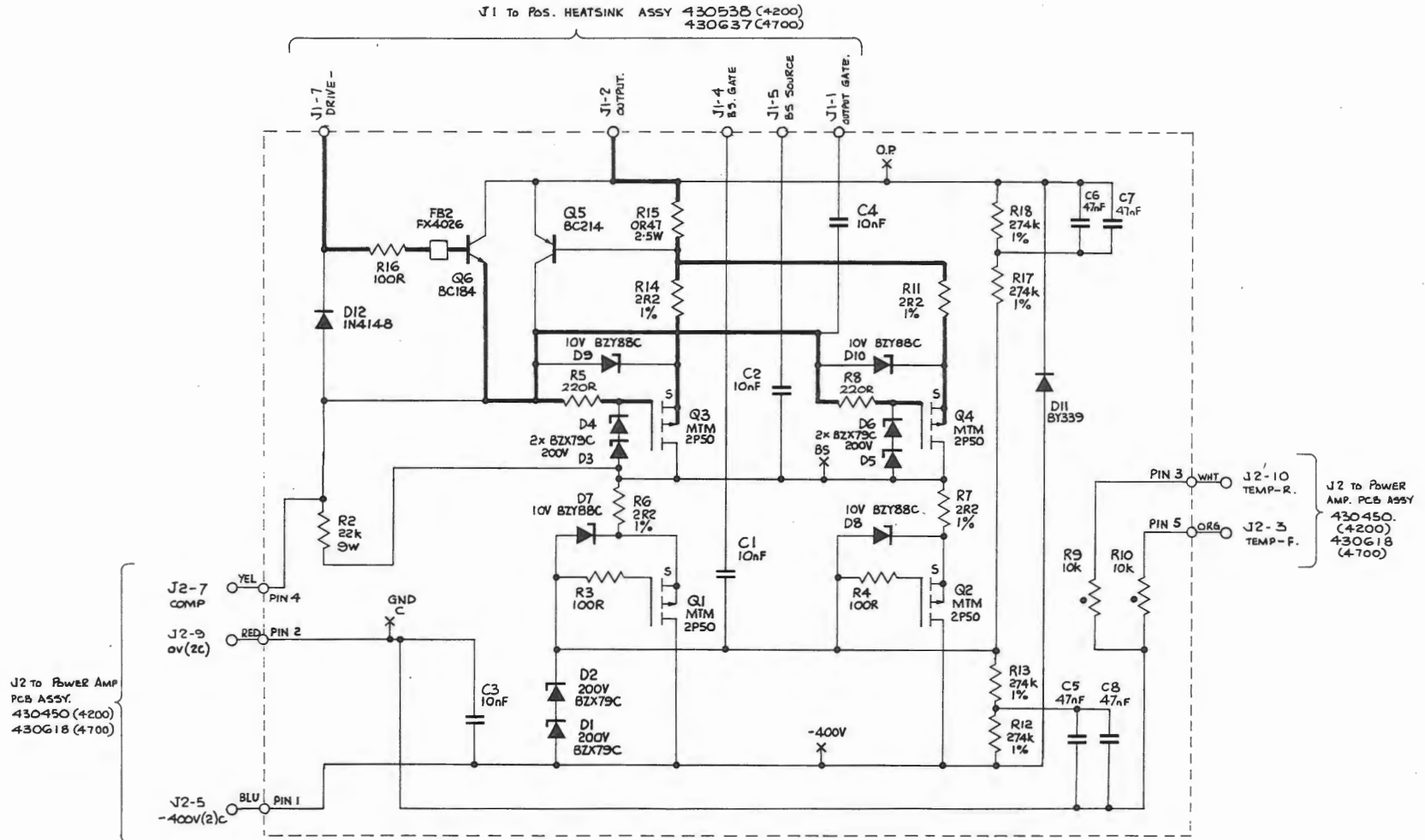
4705  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

THIRD ANGLE PROJECTION  
DRAWN IN ACCORDANCE WITH BS 308

ALL BURRS TO BE REMOVED

NOTES



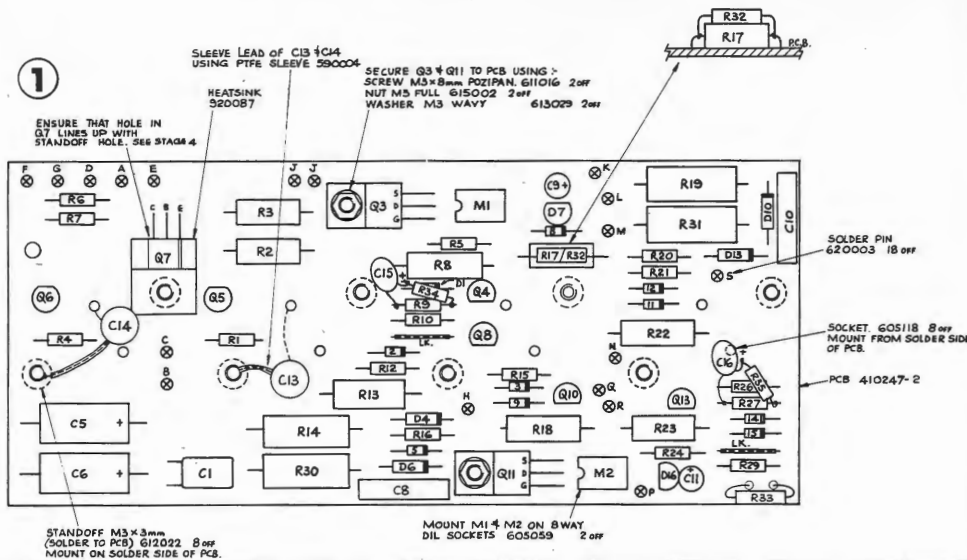
NEGATIVE HEATSINK ASSEMBLY  
Output Power Amplifier (Negative Half)

Circuit Diagram No. 430539-7.3 Sheet 1

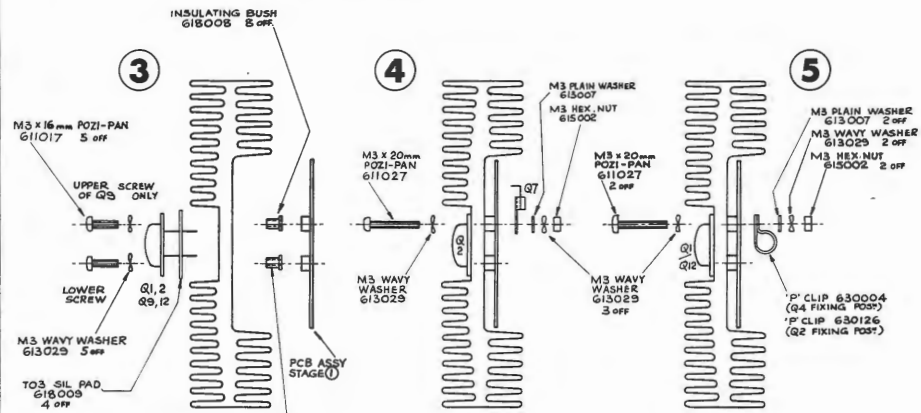
4705  
**datron**  
INSTRUMENTS  
© Datron Instruments 1986

PS / I HEATSINK ASSEMBLY

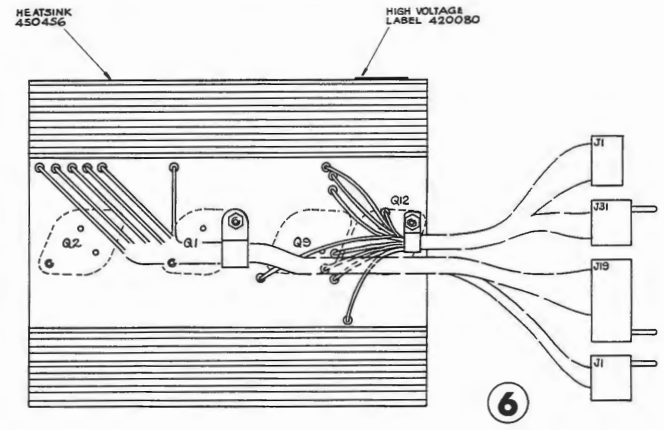
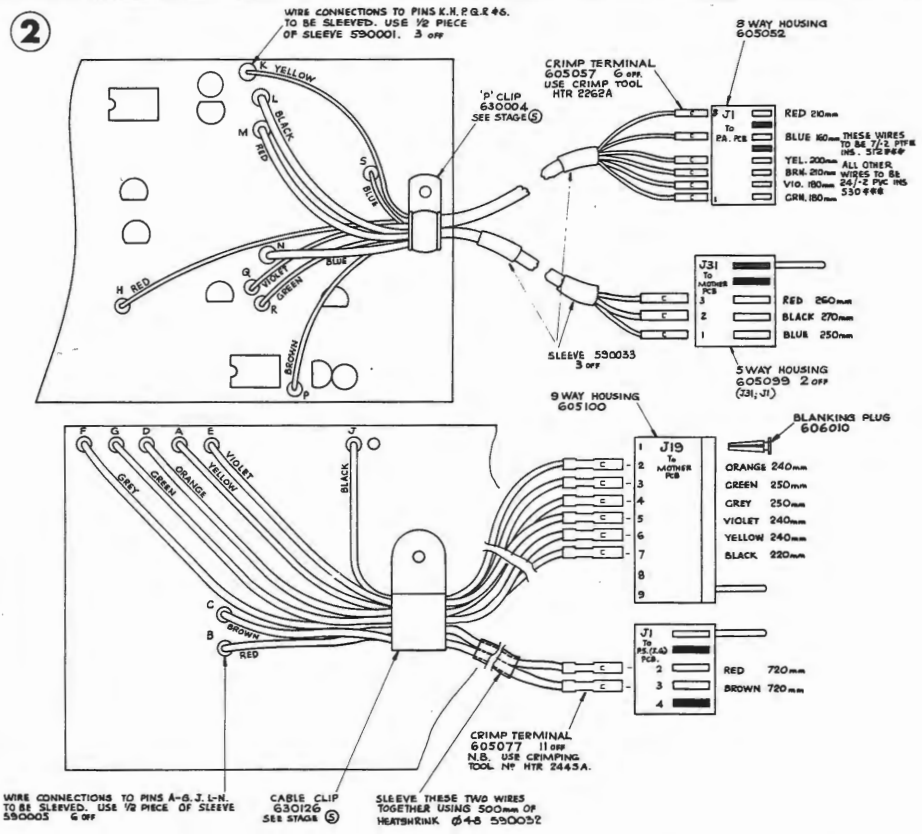
**datron**  
INSTRUMENTS  
4705

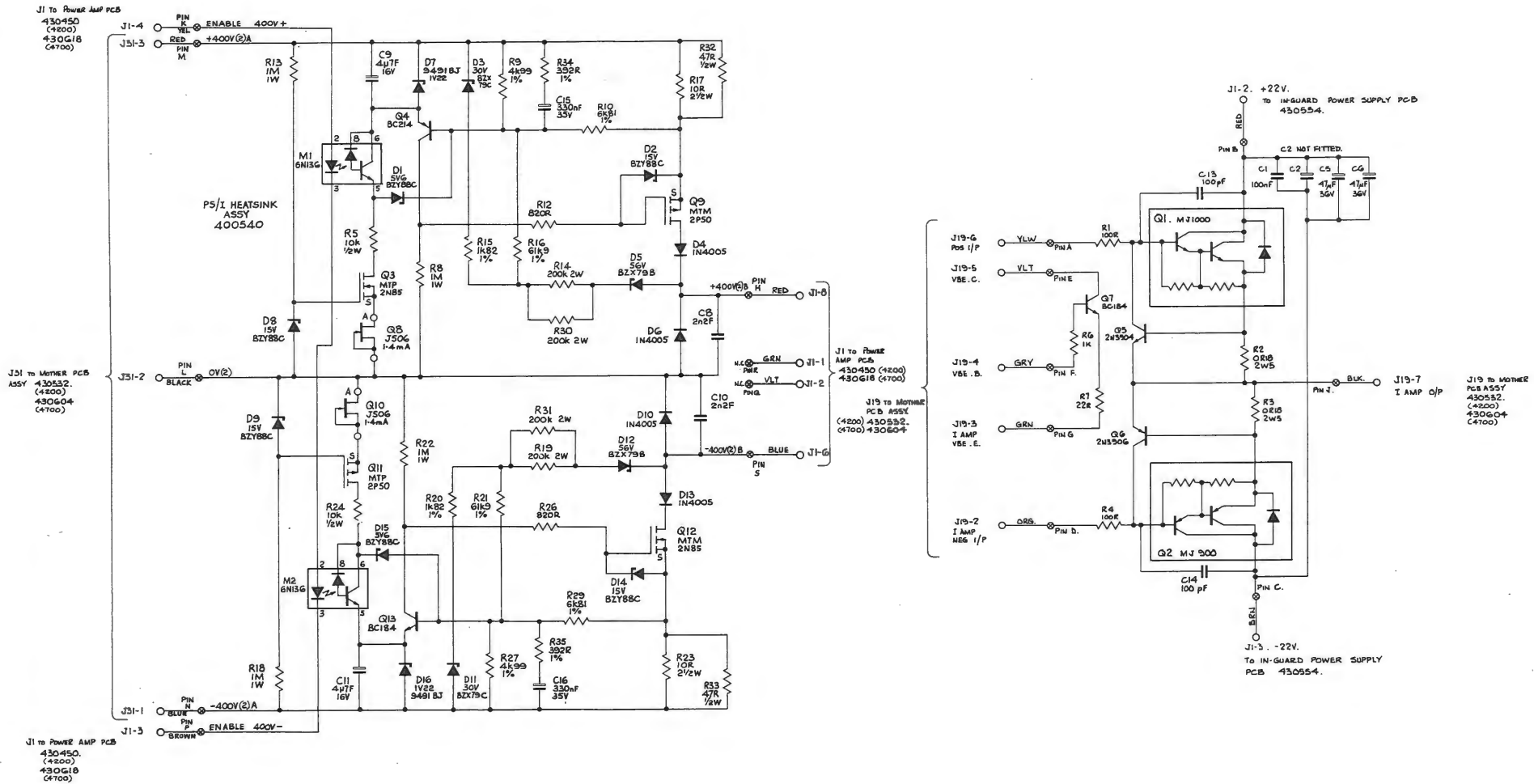


- ASSEMBLY NOTES :
1. ASSEMBLE PCB TO STAGE ① EXCEPT SCREW FOR SECURING Q7 (SEE STAGE ④)
  2. COMPLETE PCB ASSY BY FITTING WIRING LOOMS. DO NOT FIT 'P' CLIPS (SEE STAGE ⑤)
  3. ASSEMBLE PCB ASSY TO HEATSINK BY FITTING Q1,2,9,12 (SEE STAGE ③). ASSEMBLE IN THE POSITIONS SHOWN AT STAGE ③; APPLY HEATSINK COMPOUND 800003 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)



POSITION ALL INSULATING BUSHES INTO RESPECTIVE HOLES OF HEATSINK BEFORE POSITIONING PCB ASSY.





**P5 / I HEATSINK ASSEMBLY**  
 ±400V(2)B Regulator and Current Option Output Stage  
 Circuit Diagram No. 430540-6.0 Sheet 1

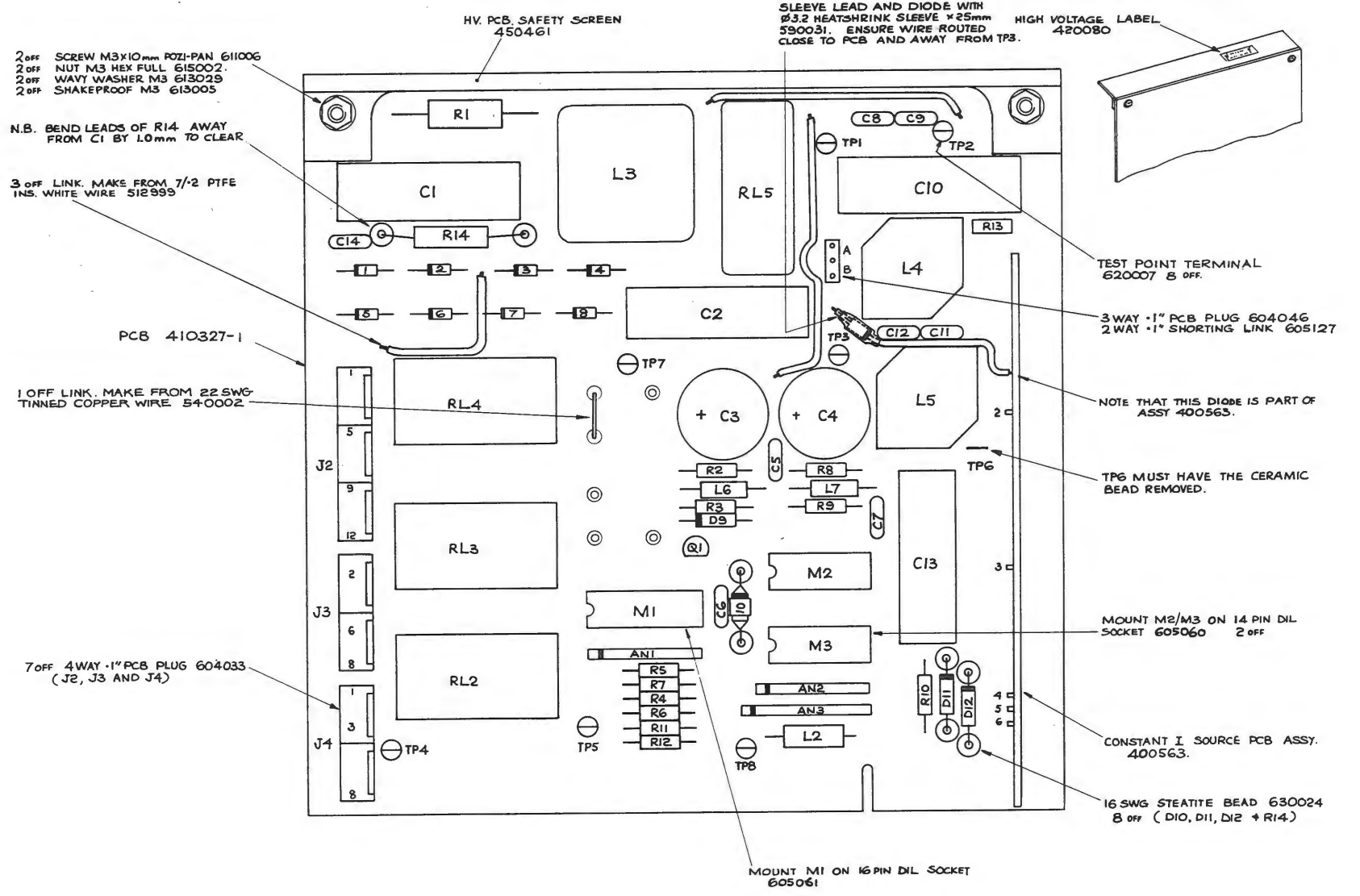


© Datron Instruments 1986

HIGH VOLTAGE ASSEMBLY

Datron  
INSTRUMENTS

4705



2 OFF SCREW M3X10mm POZI-PAN 61100G  
2 OFF NUT M3 HEX FULL 615002  
2 OFF WAVY WASHER M3 613029  
2 OFF SHAKEPROOF M3 613005

N.B. BEND LEADS OF R14 AWAY FROM C1 BY 1.0mm TO CLEAR

3 OFF LINK. MAKE FROM 7/2 PTFE INS. WHITE WIRE 512999

PCB 410327-1

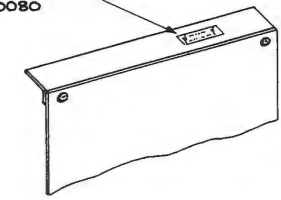
1 OFF LINK. MAKE FROM 22 SWG TINNED COPPER WIRE 54-0002

7 OFF 4WAY .1" PCB PLUG 604033 (J2, J3 AND J4)

HV. PCB. SAFETY SCREEN 450461

SLEEVE LEAD AND DIODE WITH Ø3.2 HEATSHRINK SLEEVE \*25mm 590031. ENSURE WIRE ROUTED CLOSE TO PCB AND AWAY FROM TP3.

HIGH VOLTAGE LABEL 420080



TEST POINT TERMINAL 620007 8 OFF.

3 WAY .1" PCB PLUG 604046  
2 WAY .1" SHORTING LINK 605127

NOTE THAT THIS DIODE IS PART OF ASSY 400563.

TP6 MUST HAVE THE CERAMIC BEAD REMOVED.

MOUNT M2/M3 ON 14 PIN DIL SOCKET 605060 2 OFF

CONSTANT I SOURCE PCB ASSY. 400563.

16 SWG STEATITE BEAD 630024 8 OFF (D10, D11, D12 + R14)

MOUNT M1 ON 16 PIN DIL SOCKET 605061





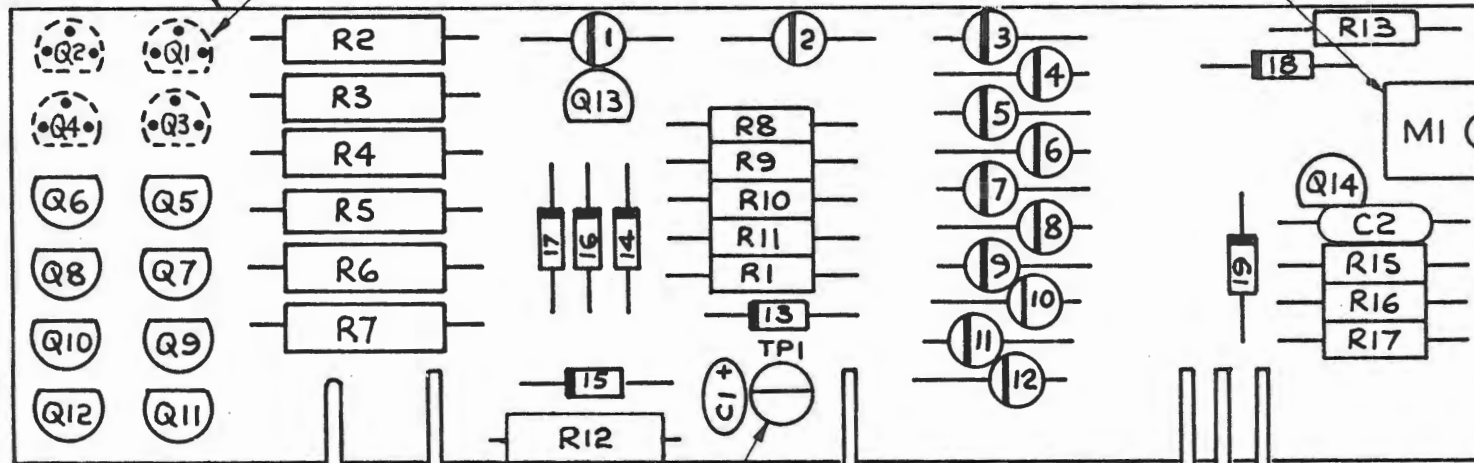
CONSTANT CURRENT SOURCE ASSEMBLY



PCB 410285-3

FIT Q1-Q4 ON SOLDER SIDE OF PCB. BEND CENTRE LEAD AWAY FROM FLAT.

MOUNT MI ON 6-WAY DIL SOCKET 605066

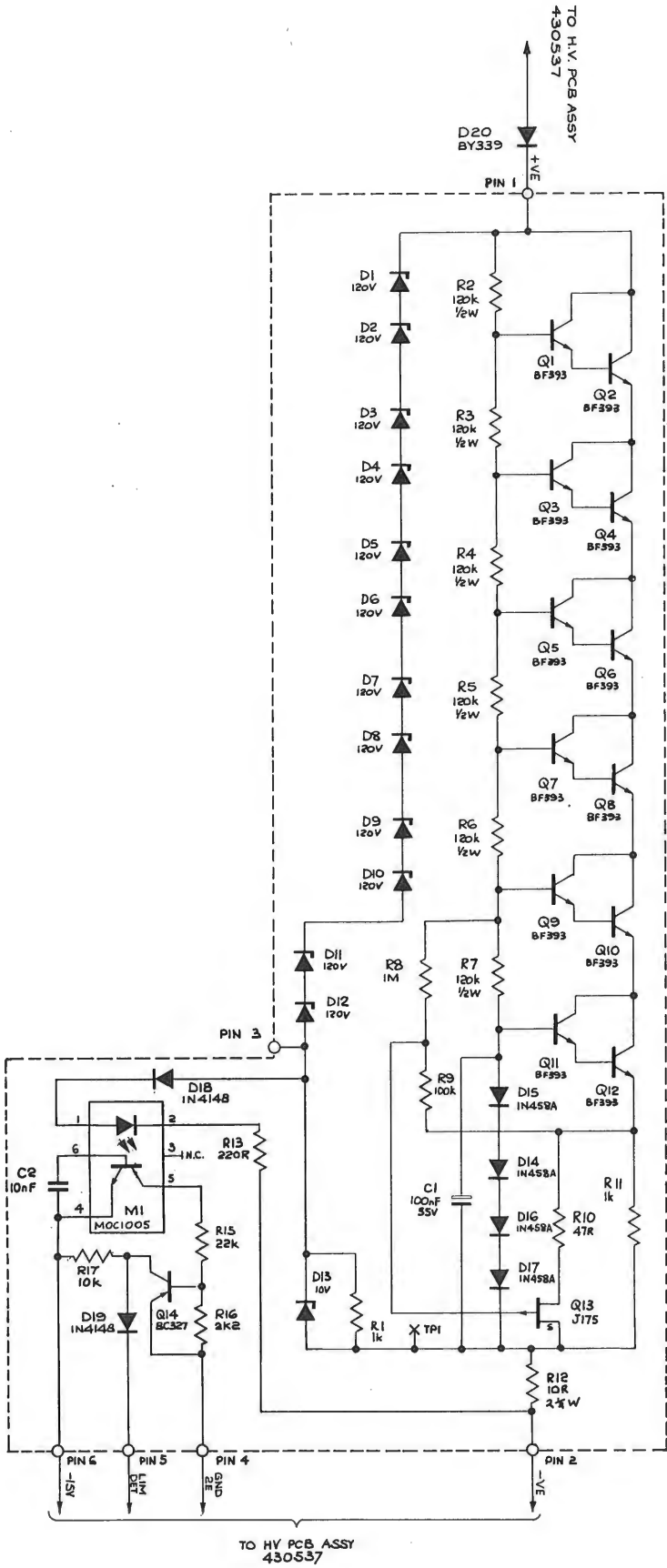


SLEEVE WITH 25mm OF PTFE SLEEVE 590004 ENSURE THAT ALL EXPOSED WIRE IS COVERED.

TEST POINT TERMINAL 620007

11-WAY PCB PLUG 604003. USE ONLY 5 OF THE 11 PINS HERE.

DO NOT TRIM THIS END.



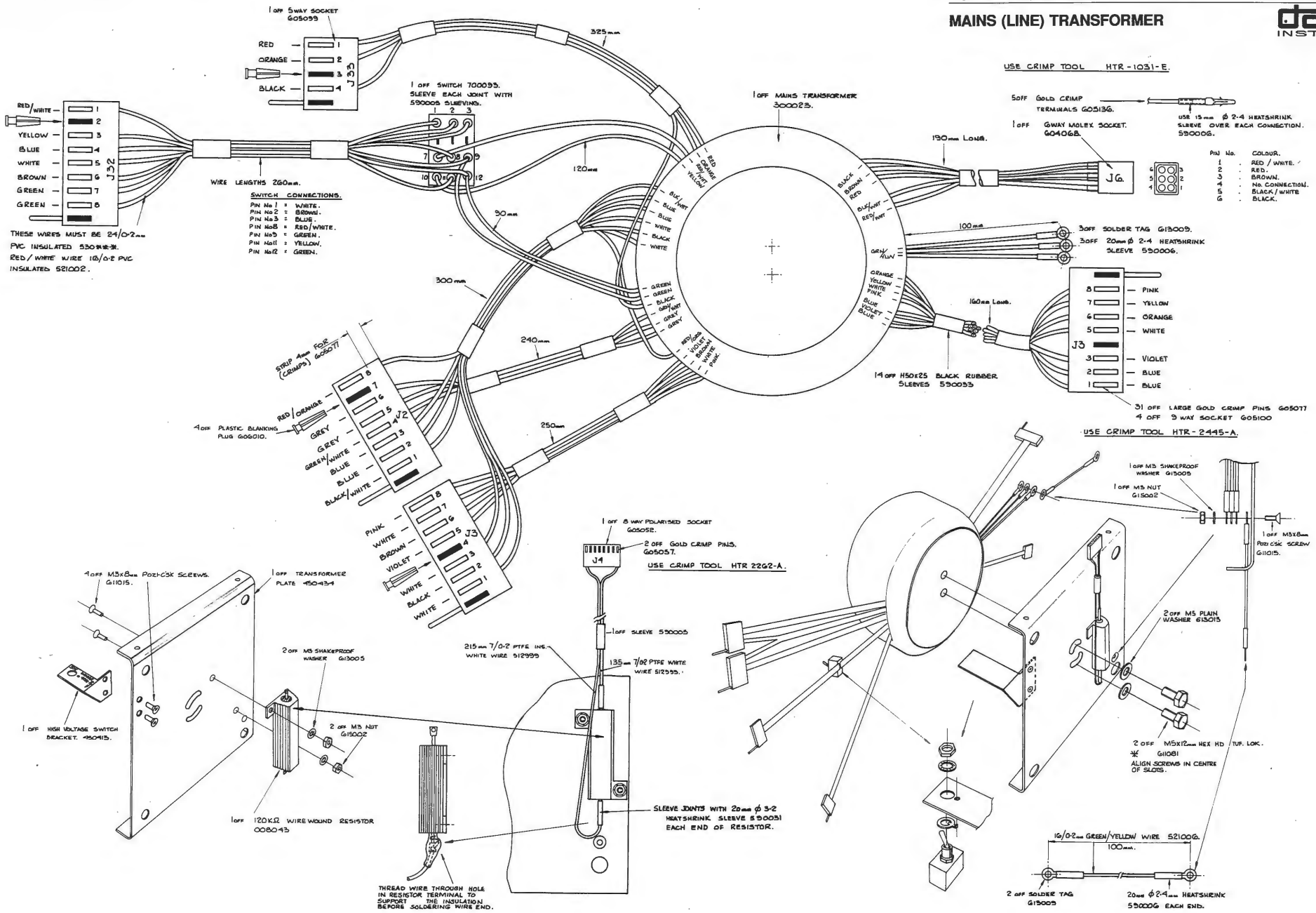
**CONSTANT CURRENT SOURCE ASSEMBLY**

High Voltage Rectifier Bleed Chain

**MAINS (LINE) TRANSFORMER**

**datron**  
INSTRUMENTS  
4705

USE CRIMP TOOL HTR-1031-E.



- RED / WHITE — 1  
YELLOW — 2  
BLUE — 3  
WHITE — 4  
BROWN — 5  
GREEN — 6  
GREEN — 7
- THESE WIRES MUST BE 24/0-2mm  
PVC INSULATED 530006.  
RED / WHITE WIRE 10/0-2 PVC  
INSULATED 521002.

- 1 OFF 5WAY SOCKET  
G05095
- RED — 1  
ORANGE — 2  
BLACK — 3  
BLACK — 4

1 OFF SWITCH 700035.  
SLEEVE EACH JOINT WITH  
530005 SLEEVINGS.

WIRE LENGTHS 260mm.

**SWITCH CONNECTIONS.**

PIN No 1 : WHITE.  
PIN No 2 : BROWN.  
PIN No 3 : BLUE.  
PIN No 5 : RED / WHITE.  
PIN No 5 : GREEN.  
PIN No 11 : YELLOW.  
PIN No 12 : GREEN.

1 OFF MAINS TRANSFORMER  
300025.

5 OFF GOLD CRIMP  
TERMINALS G05136.

1 OFF 6WAY MADEX SOCKET.  
G04068.

USE 15mm Ø 2-4 HEATSHRINK  
SLEEVE OVER EACH CONNECTION.  
530006.

PIN No.	COLOR.
2	RED / WHITE.
3	RED.
4	BROWN.
5	NO CONNECTION.
6	BLACK / WHITE.
6	BLACK.

3 OFF SOLDER TAG G13009.  
3 OFF 20mm Ø 2-4 HEATSHRINK  
SLEEVE 530006.

- J3
- 8 — PINK  
7 — YELLOW  
6 — ORANGE  
5 — WHITE  
3 — VIOLET  
2 — BLUE  
1 — BLUE

14 OFF H50X25 BLACK RUBBER  
SLEEVES 530035

31 OFF LARGE GOLD CRIMP PINS G05077  
4 OFF 3 WAY SOCKET G06100

USE CRIMP TOOL HTR-2445-A.

1 OFF PLASTIC BLANKING  
PLUG G06010.

STRIP AWG FOR  
(CRIMPS) G06077

- J2
- 8 — RED / ORANGE  
7 — GREY  
6 — GREEN / WHITE  
5 — BLUE  
4 — BLACK / WHITE

- J4
- 8 — PINK  
7 — WHITE  
6 — BROWN  
5 — VIOLET  
4 — WHITE  
3 — BLACK  
2 — WHITE

1 OFF 8WAY POLARISED SOCKET  
G05052.

2 OFF GOLD CRIMP PINS.  
G05057.  
USE CRIMP TOOL HTR 2262-A.

1 OFF SLEEVE 530005

215mm 7/0-2 PTFE INS.  
WHITE WIRE 512995

135mm 7/62 PTFE WHITE  
WIRE 512995.

SLEEVE JOINTS WITH 20mm Ø 3-2  
HEATSHRINK SLEEVE 530005  
EACH END OF RESISTOR.

THREAD WIRE THROUGH HOLE  
IN RESISTOR TERMINAL TO  
SUPPORT THE INSULATION  
BEFORE SOLDERING WIRE END.

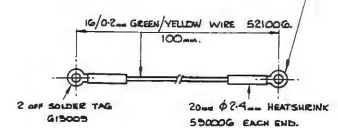
1 OFF M5 SHAKEPROOF  
WASHER G13005

1 OFF M5 NUT  
G15002

1 OFF M5x6mm  
POZICRICK SCREW  
G1015.

2 OFF M5 PLAIN  
WASHER G13015

2 OFF M5x12mm HEX HD  
TOP LOC.  
¼ G1001  
ALIGN SCREWS IN CENTRE  
OF SLOTS.



2 OFF SOLDER TAG  
G15009

20mm Ø 2-4 HEATSHRINK  
530006 EACH END.

4 OFF M5x6mm POZICRICK SCREWS.  
G1015.

1 OFF TRANSFORMER  
PLATE 450434

2 OFF M5 SHAKEPROOF  
WASHER G13005

2 OFF M5 NUT  
G15002

1 OFF 120KΩ WIRE WOUND RESISTOR  
008043

1 OFF HIGH VOLTAGE SWITCH  
BRACKET 490415.

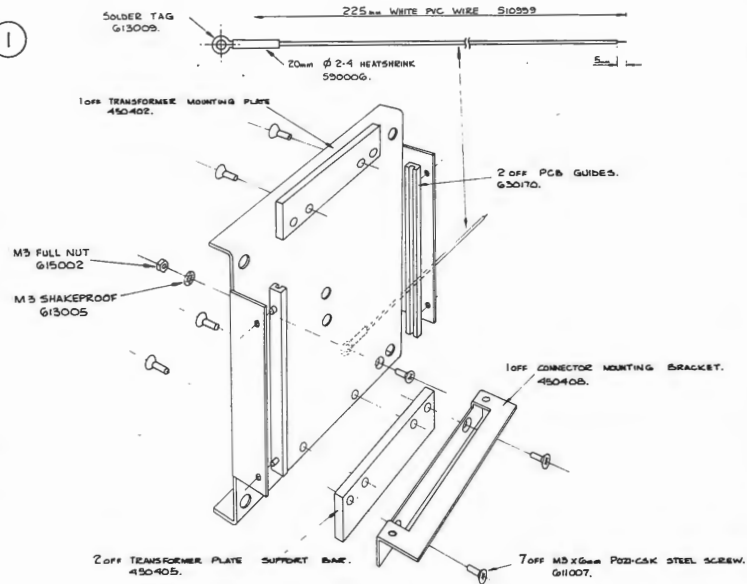
**For mains (line) transformer circuits refer to the following pages:**

- 11.10-1      Main Digital Supply, Display Supply and Common Mode Null
  
- 11.11-1      Common-2 Supplies and Current Option Supply
  
- 11.11-2      Reference Divider Common-4 and 8V Common-2 Supplies
  
- 11.16-5      400V Power Supply, 38V Power Supply and Common Mode Null
  
- 11.17-2      Interconnections, Power Input Module and Mains Transformer Primary

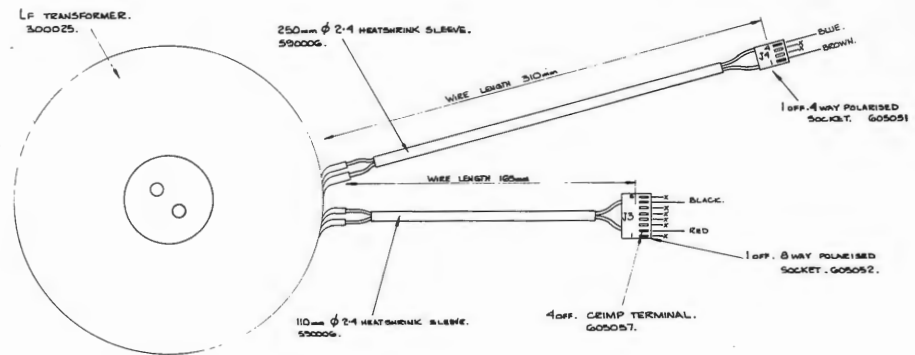
L.F. TRANSFORMER ASSEMBLY

**datron**  
INSTRUMENTS  
4705

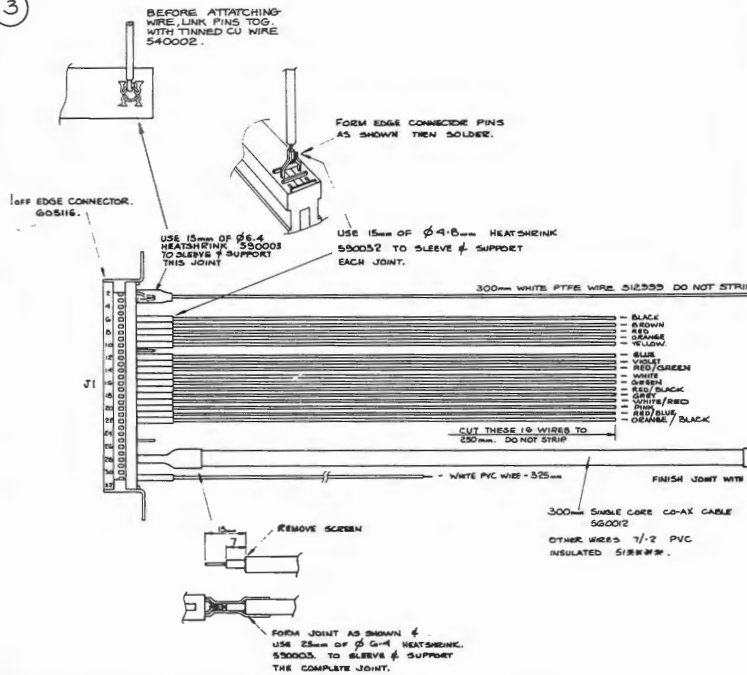
1



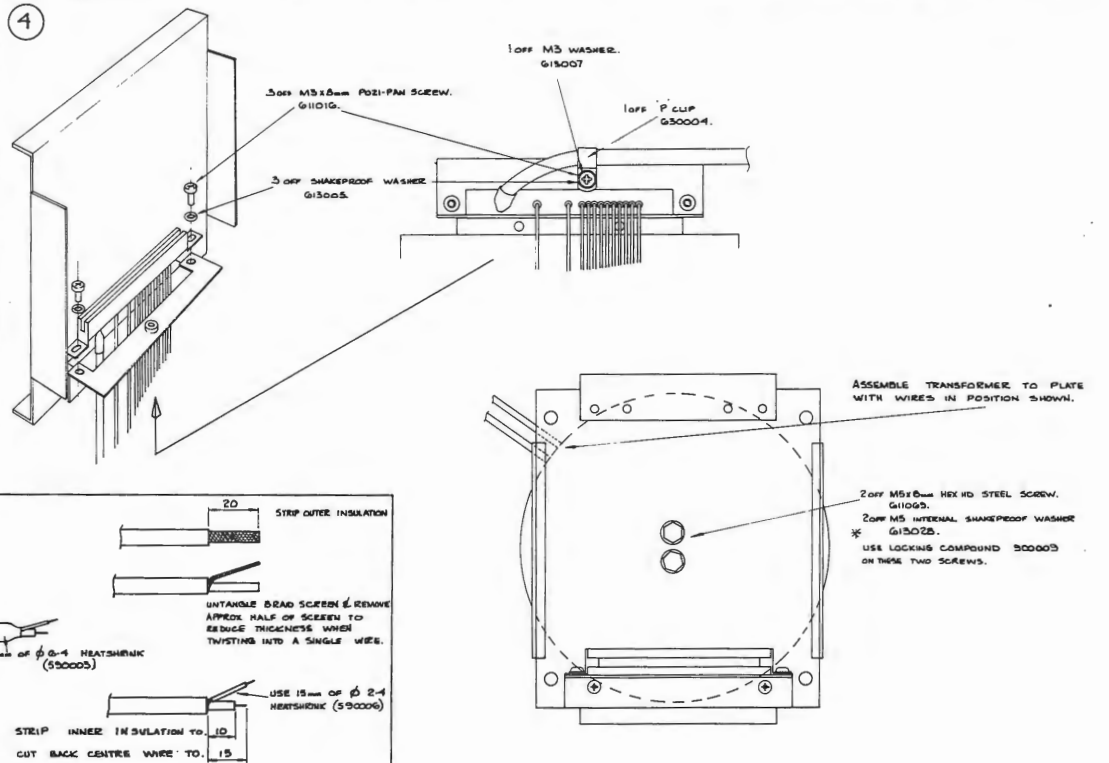
2

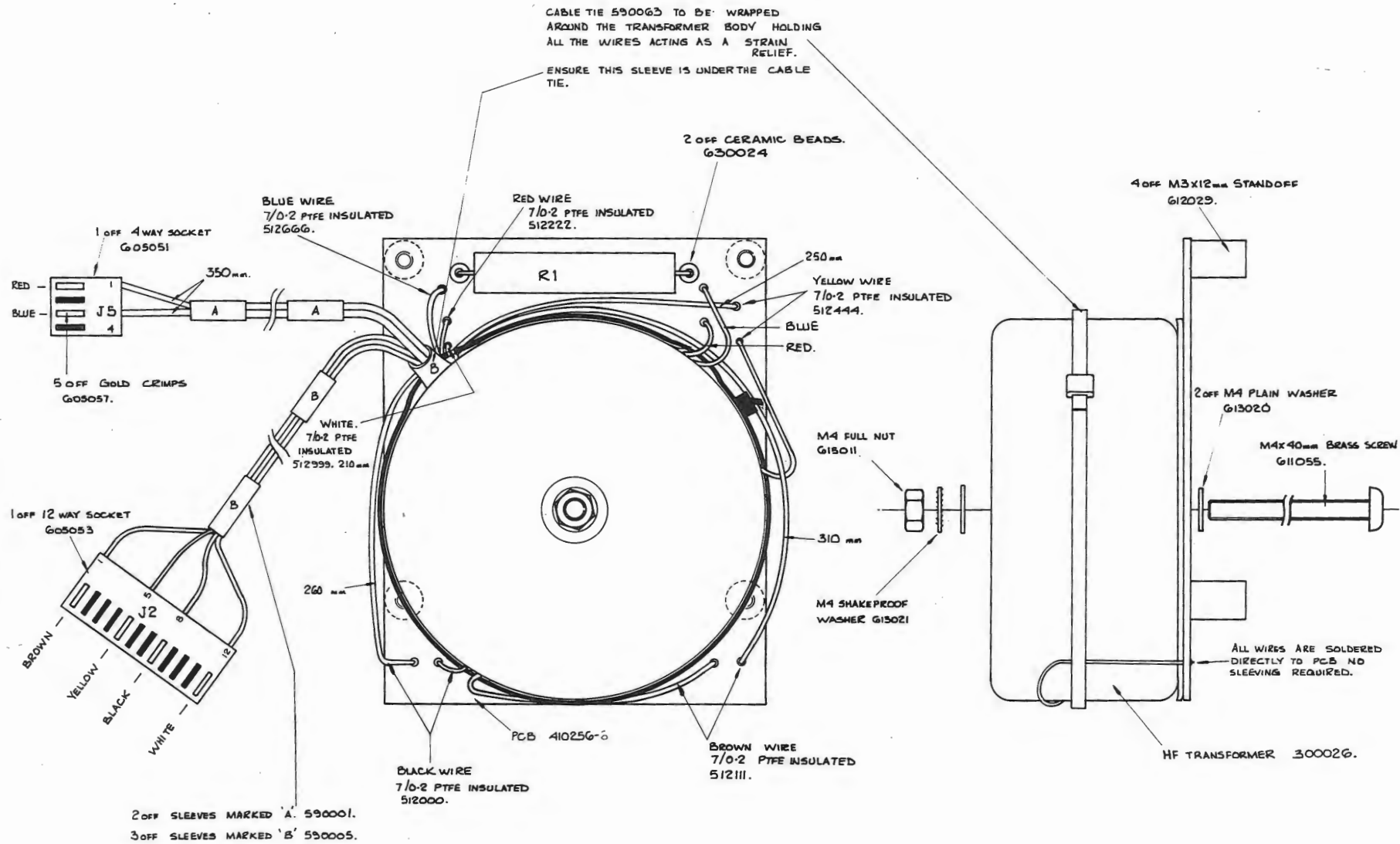


3



4



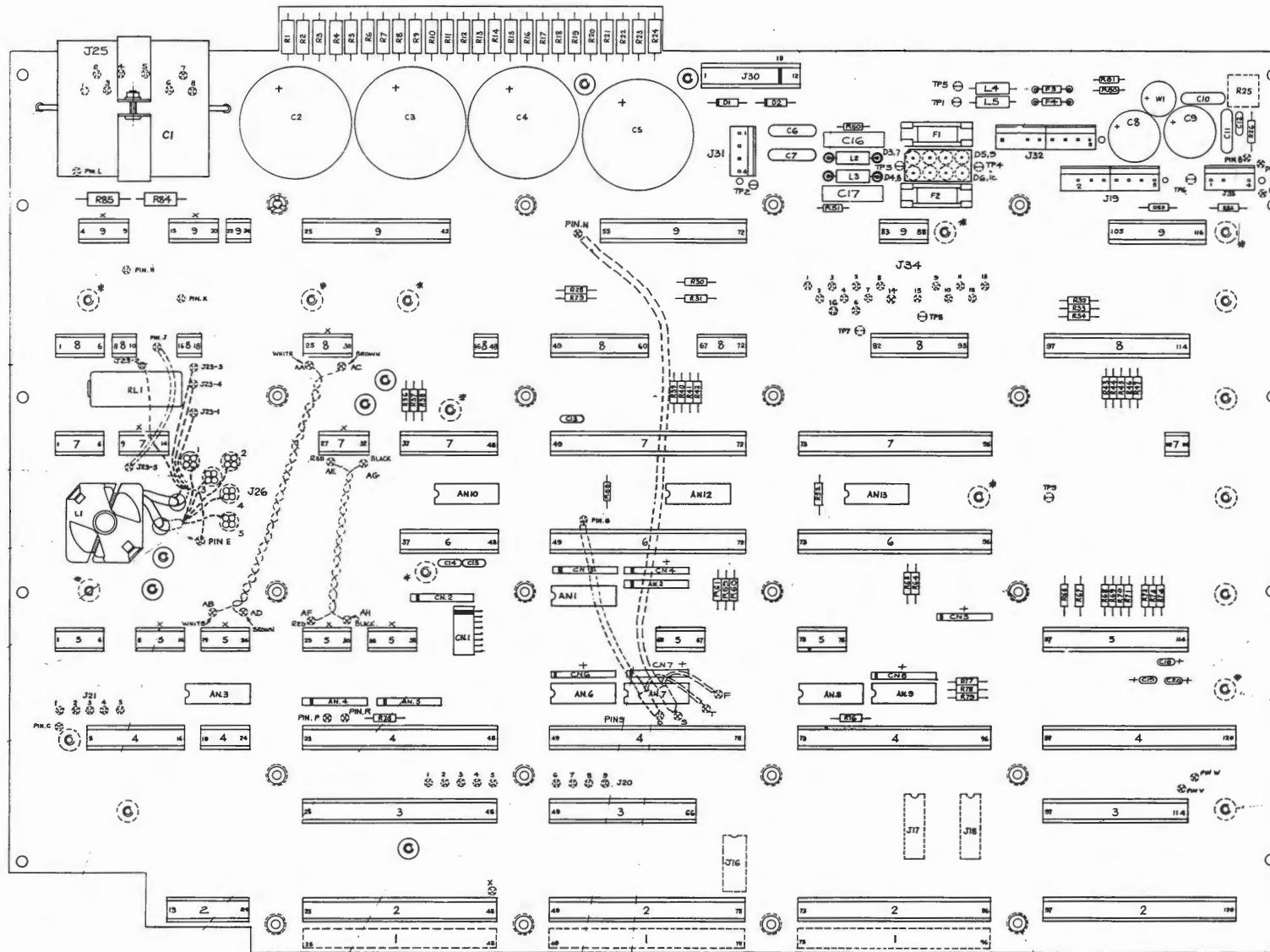


H.F. TRANSFORMER ASSEMBLY

Layout Drawing No. 480578-4.1 Sheet 1

4705  
**datron**  
 INSTRUMENTS  
 © Datron Instruments 1986

MOTHER ASSEMBLY

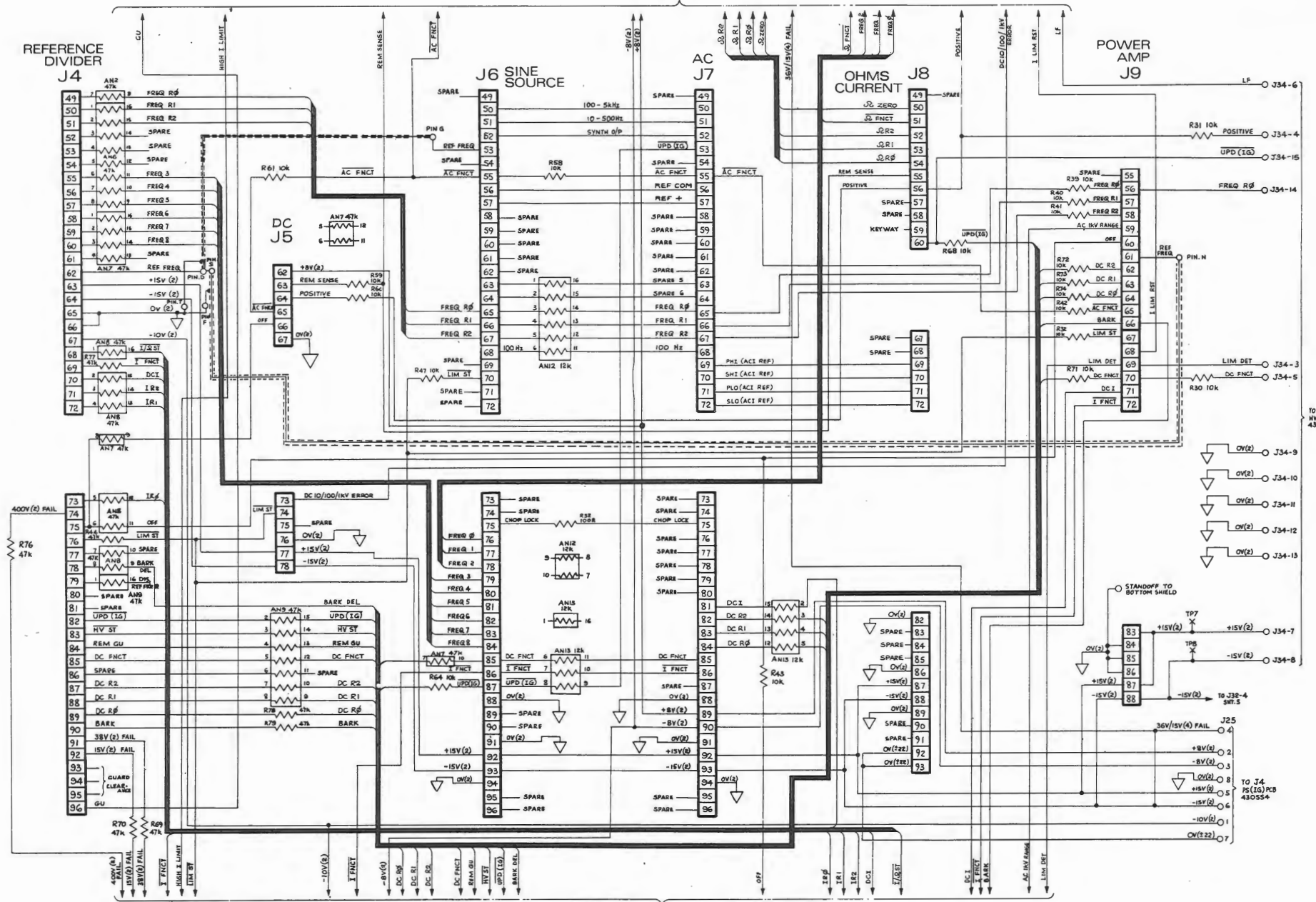


Connectors and Pin Numbers	Page
J1 25-96	11.16-4
J2 13-120	11.16-4
J3 25-66 97-114	11.16-4
J4 5-16 19-48 49-96 97-120	11.16-1 11.16-2 11.16-4
J5 1-6 11-16 19-30 33-38 62-67 73-78 97-114	11.16-1 11.16-2 11.16-3
J6 37-48 49-96	11.16-1 11.16-2
J7 1-6 9-14 27-32 37-48 49-96 112-114	11.16-1 11.16-2 11.16-3
J8 1-6 8-10 16-18 25-30 46-48 49-60 67-72 82-93 97-114	11.16-1 11.16-2 11.16-3
J9 4-9 15-20 22-42 55-72 83-88 105-116	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



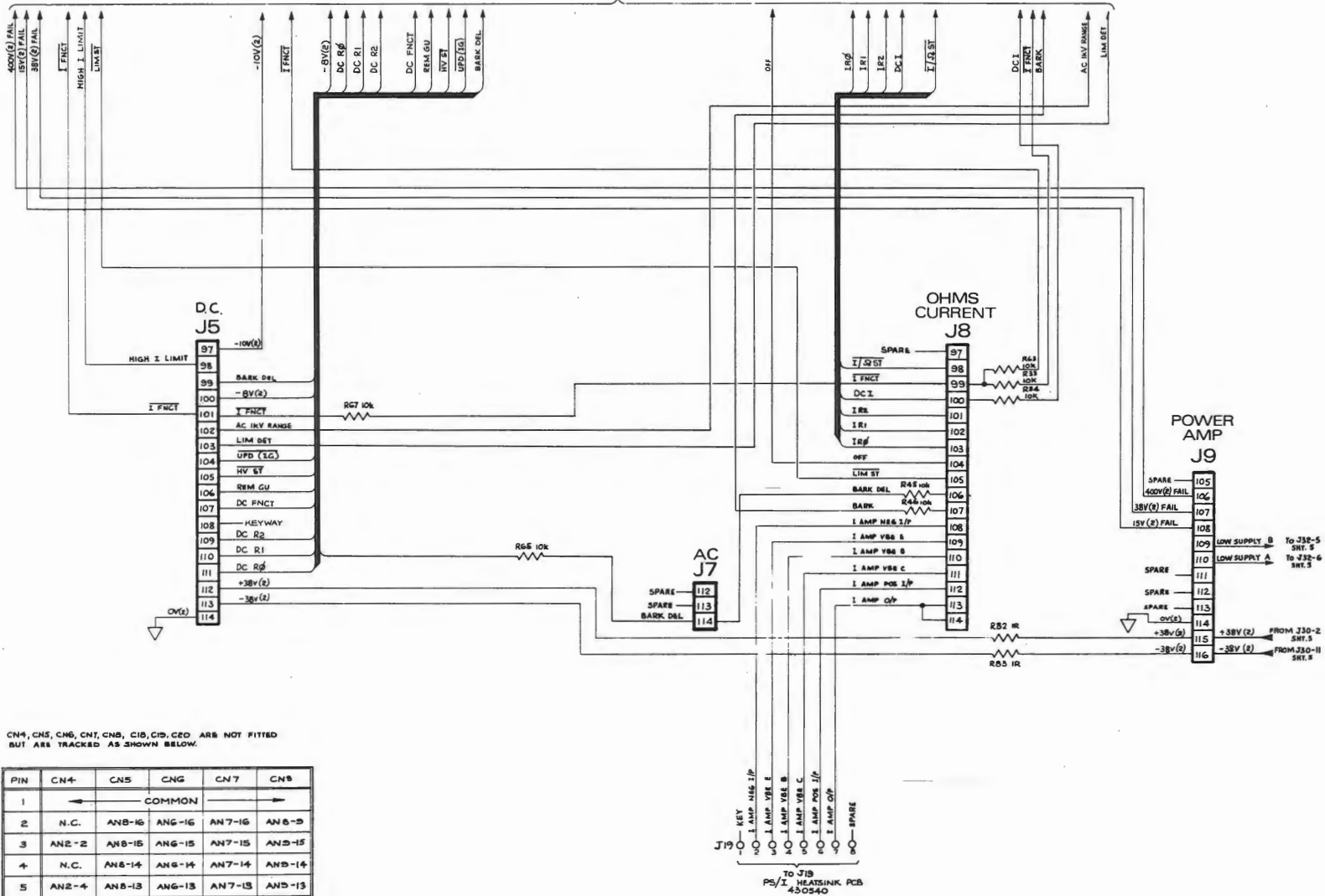




MOTHER ASSEMBLY



CONT ON SHEET 2



CN4, CN5, CN6, CN7, CN8, CN9, CN10, CN11, CN12 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	AN8-5
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	AN7-12	AN8-12
7	N.C.	AN8-11	AN6-11	AN7-11	AN8-11
8	AN2-8 (75-65)	N.C.	AN6-10	AN7-10	AN8-10

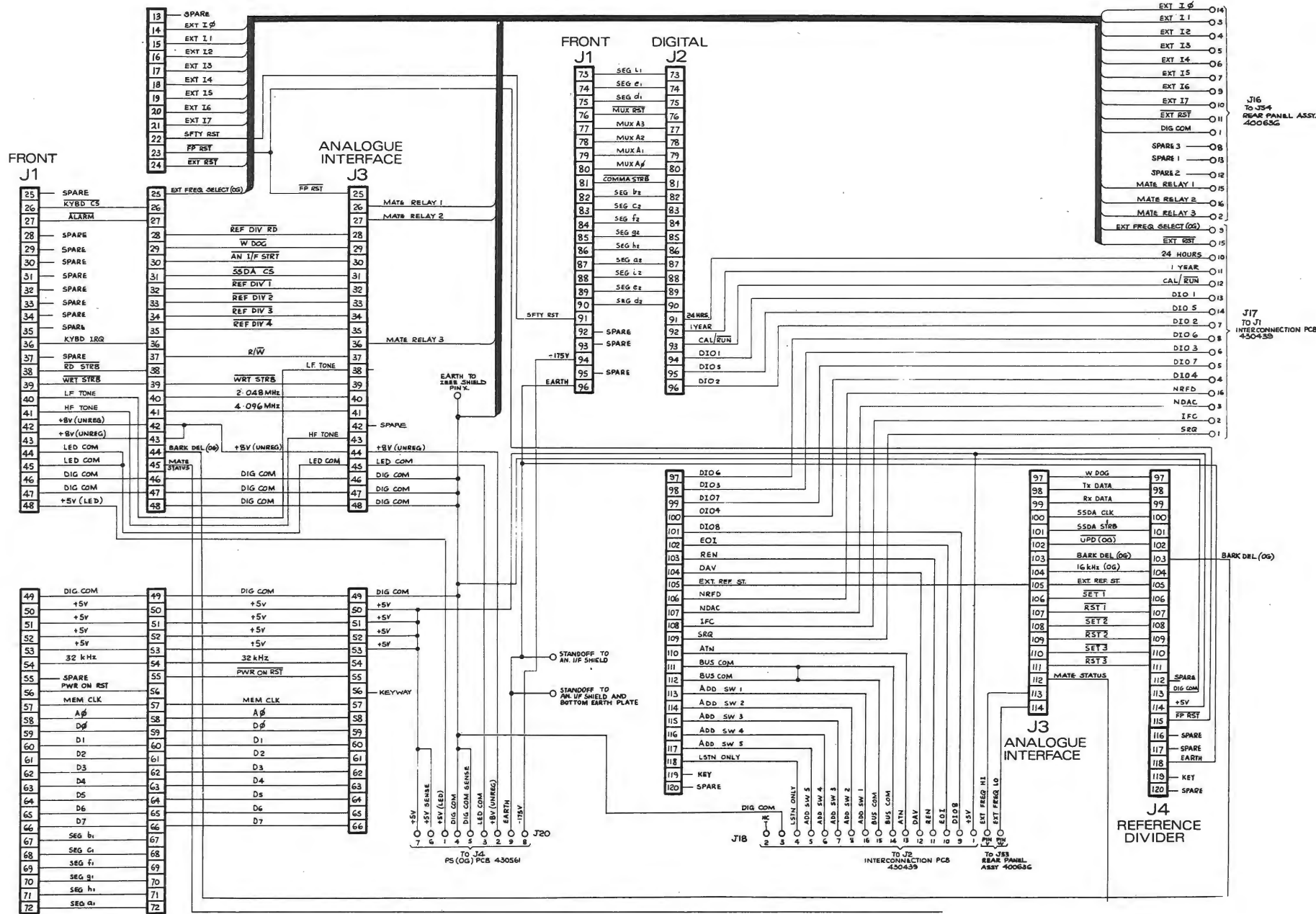
C18 - R77  
C19 - R76  
C20 - R75

MOTHER ASSEMBLY

Circuit Diagram No. 430604-1.0 Sheet 3

4705  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

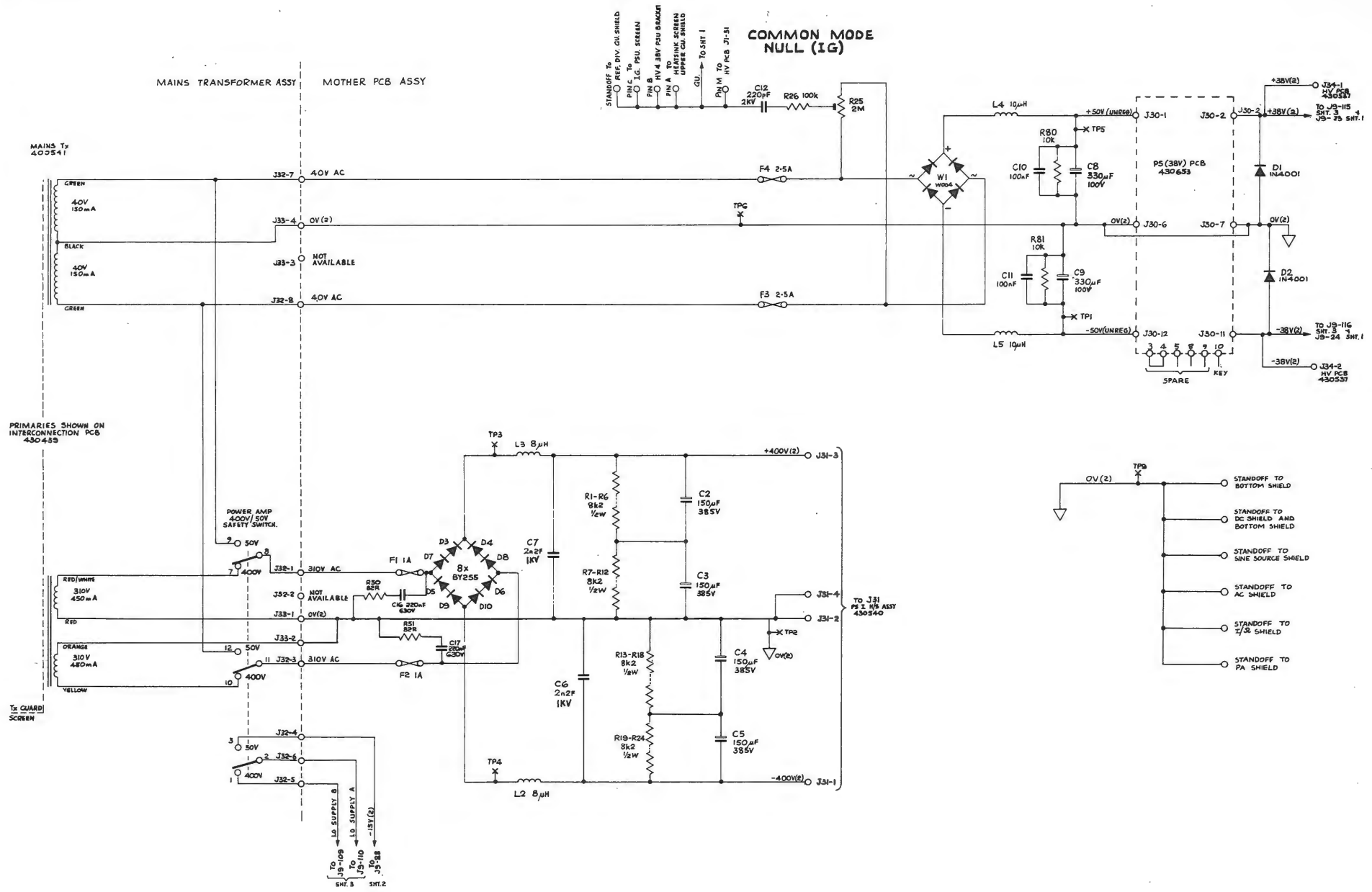


MOTHER ASSEMBLY

Circuit Diagram No. 430604-1.0 Sheet 4

4705  
datron  
INSTRUMENTS

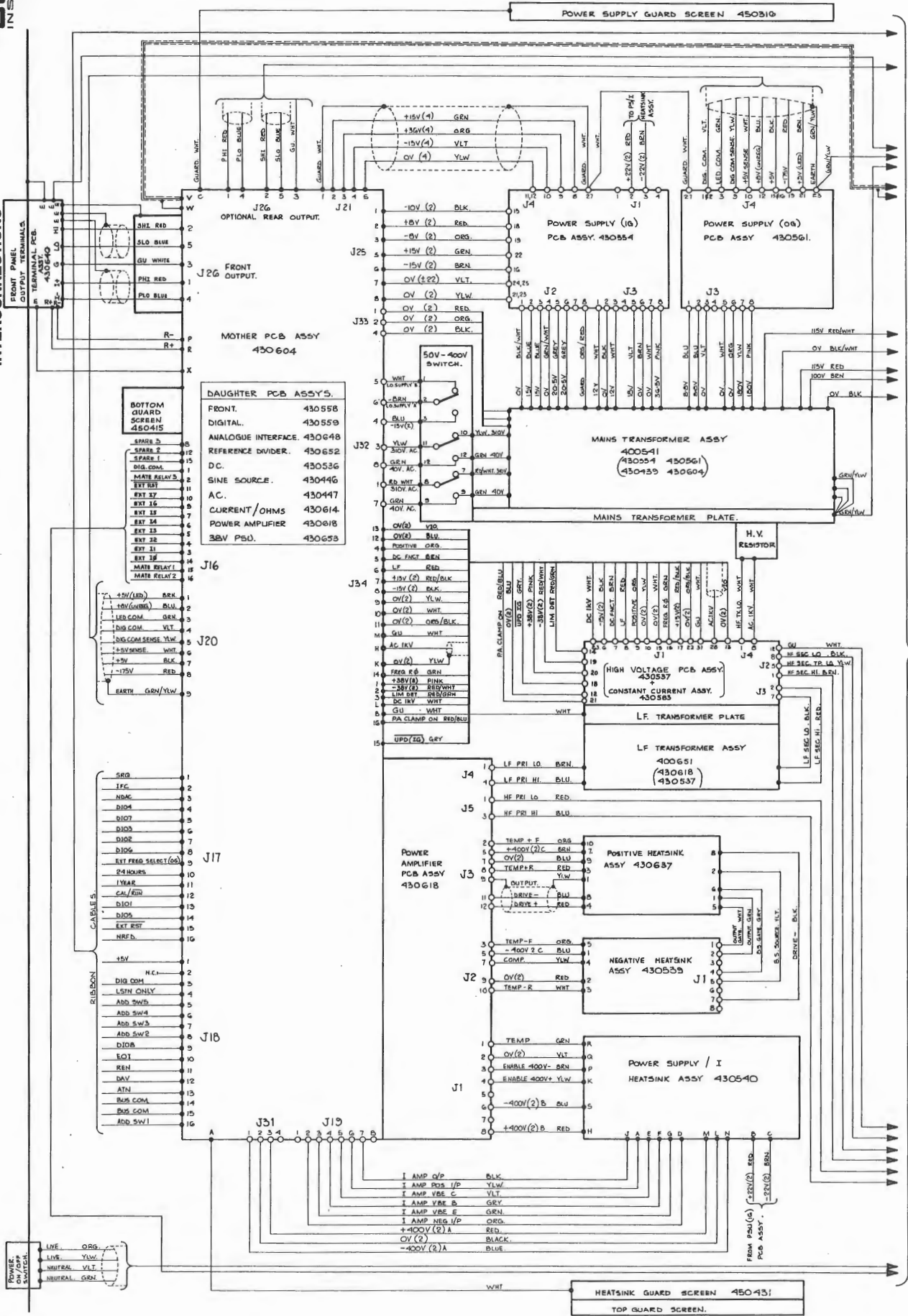
© Datron Instruments 1986



MOTHER ASSEMBLY



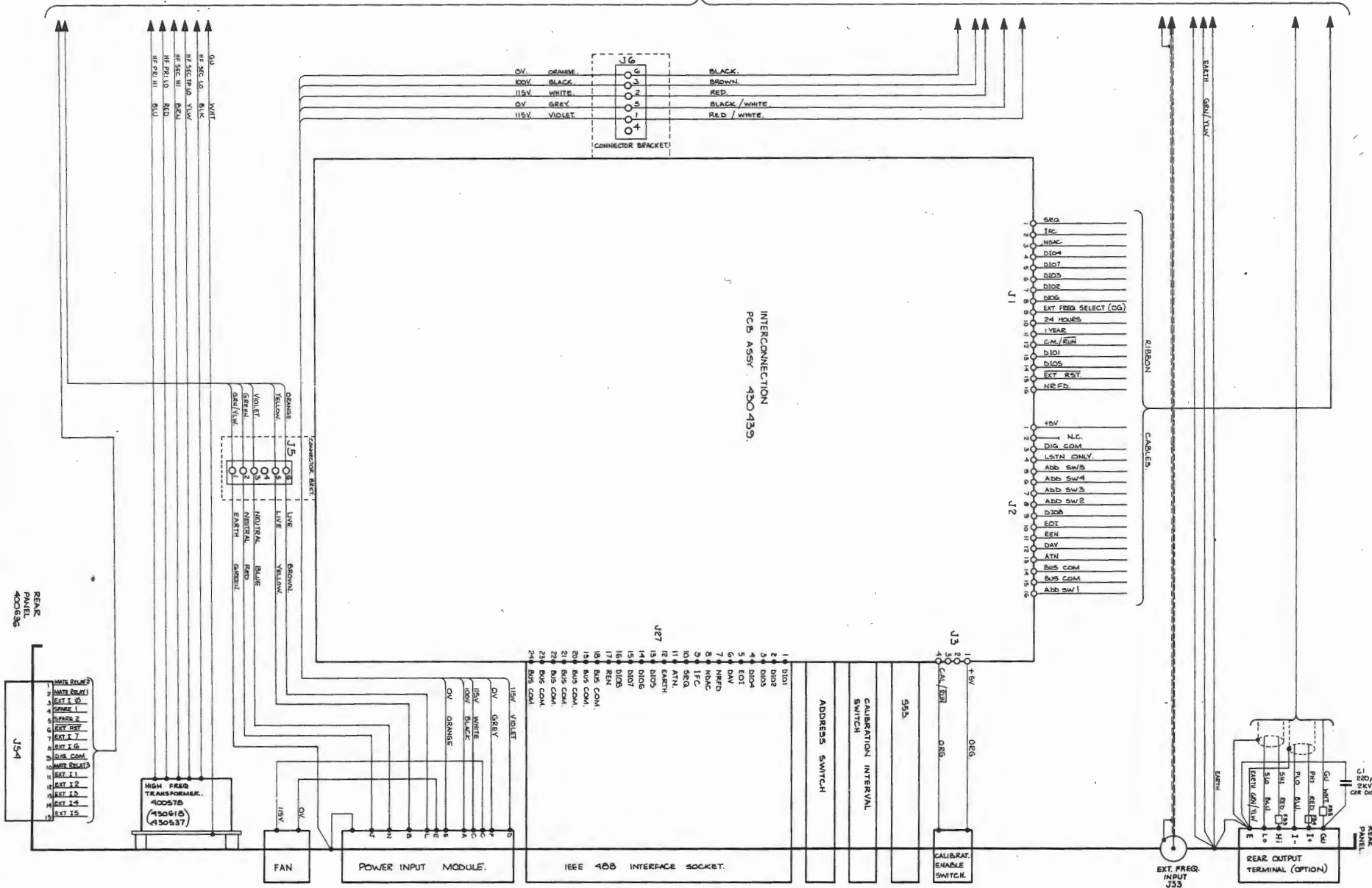
**INTERCONNECTIONS**



CONTINUED ON SHEET 2.

FRONT PANEL

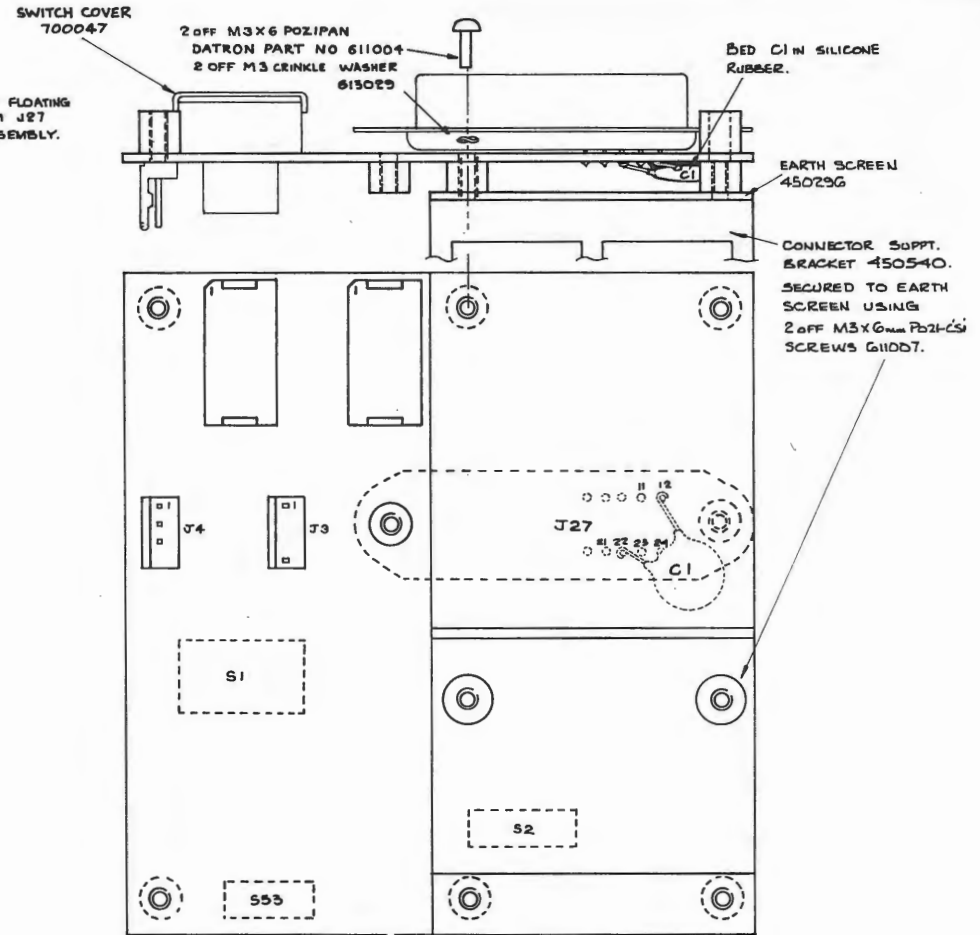
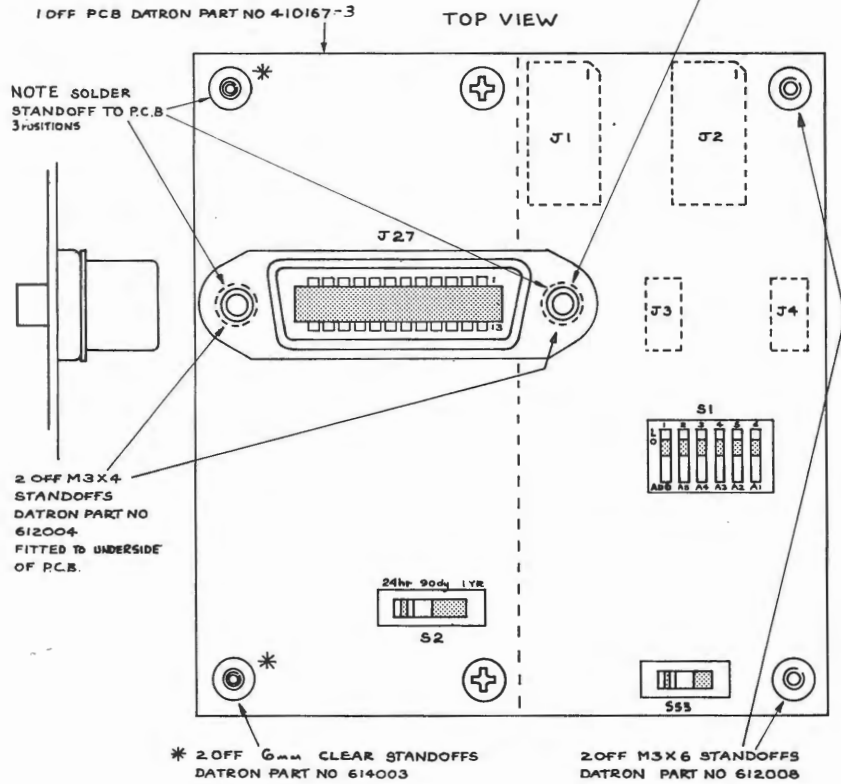
HEATSINK GUARD SCREEN 450431  
TOP GUARD SCREEN.



INTERCONNECTIONS

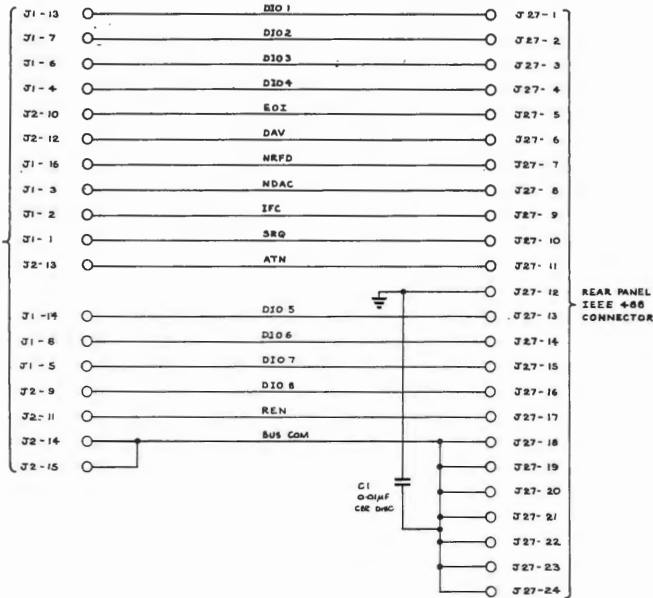
INTERCONNECTION ASSEMBLY

**datron**  
INSTRUMENTS  
4705

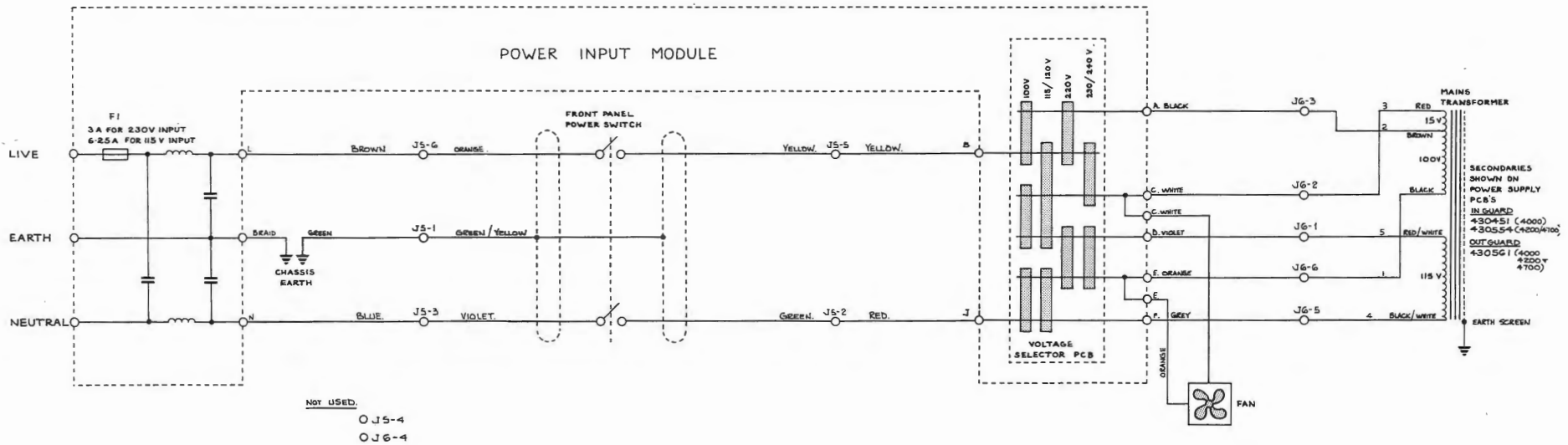
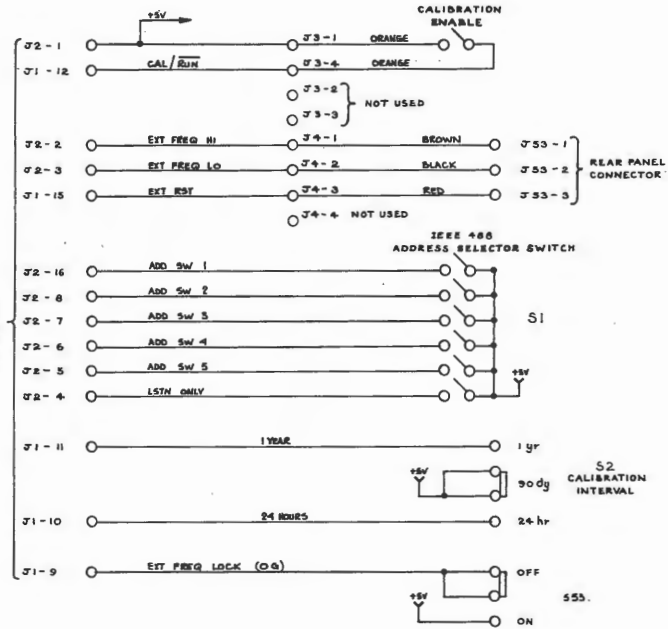




J1 TO J17  
J2 TO J18  
MOTHER PCB  
430440 (4000)  
430532 (4200)  
430604 (4700)



J1 TO J17  
J2 TO J18  
MOTHER PCB  
(4000) 430440  
(4200) 430532  
(4700) 430604



### INTERCONNECTION ASSEMBLY

Circuit Diagram No. 430439-3.0 Sheet 1

4705  
**datron**  
INSTRUMENTS

© Datron Instruments 1986

SLEEVE ALL FERRITE BEADS.  
 FB1 & FB2 USE  $\phi$  4 HEATSHRINK SLEEVE 590003.  
 FB3, FB4, FB5 & FB6, USE  $\phi$  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. G13021 } PER TERMINAL.  
 1 OFF M4 PLAIN WASHER G13020 }  
 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.

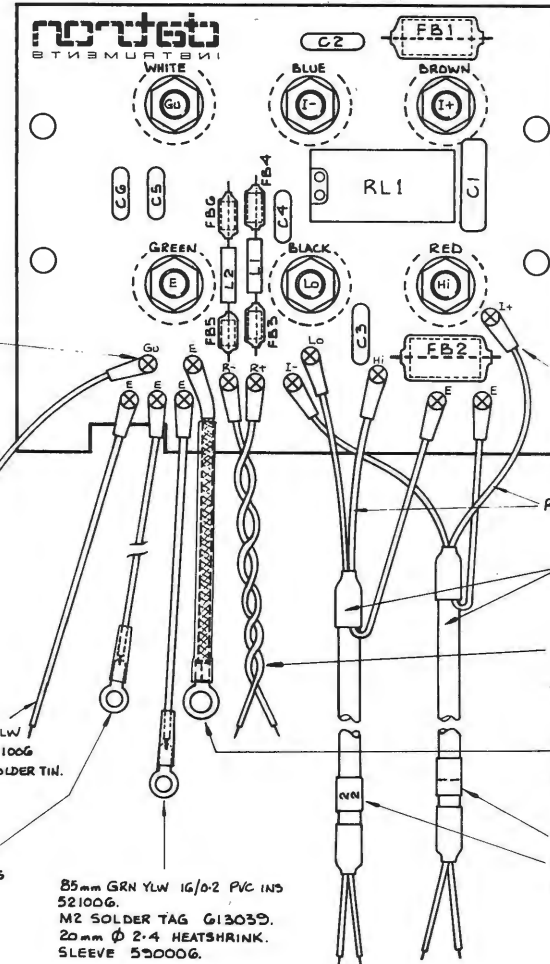
- 1 OFF SAFETY TERMINAL ASSY. 400686 BLK.
- 1 OFF SAFETY TERMINAL ASSY. 400687 RED.
- 1 OFF SAFETY TERMINAL ASSY. 400688 BRN.
- 1 OFF SAFETY TERMINAL ASSY. 400689 BLU.
- 1 OFF SAFETY TERMINAL ASSY. 400690 WHI.
- 1 OFF SAFETY TERMINAL ASSY. 400691 GRN.

180mm 7/0-2 PTFE INS. WHITE 512999.

740mm GRN/YLW 16/0-2 PVC INS 521006.  
 M3 SOLDER TAG G13009.  
 20mm  $\phi$  2.4 HEATSHRINK SLEEVE 590006.

85mm GRN YLW 16/0-2 PVC INS 521006.  
 M2 SOLDER TAG G13039.  
 20mm  $\phi$  2.4 HEATSHRINK SLEEVE 590006.

13 OFF SOLDER PIN  
 G20003.



PC.B 410309-6

SLEEVE WIRE CONNECTIONS WITH SLEEVE 590001 - 1/2 PER CONNECTION.

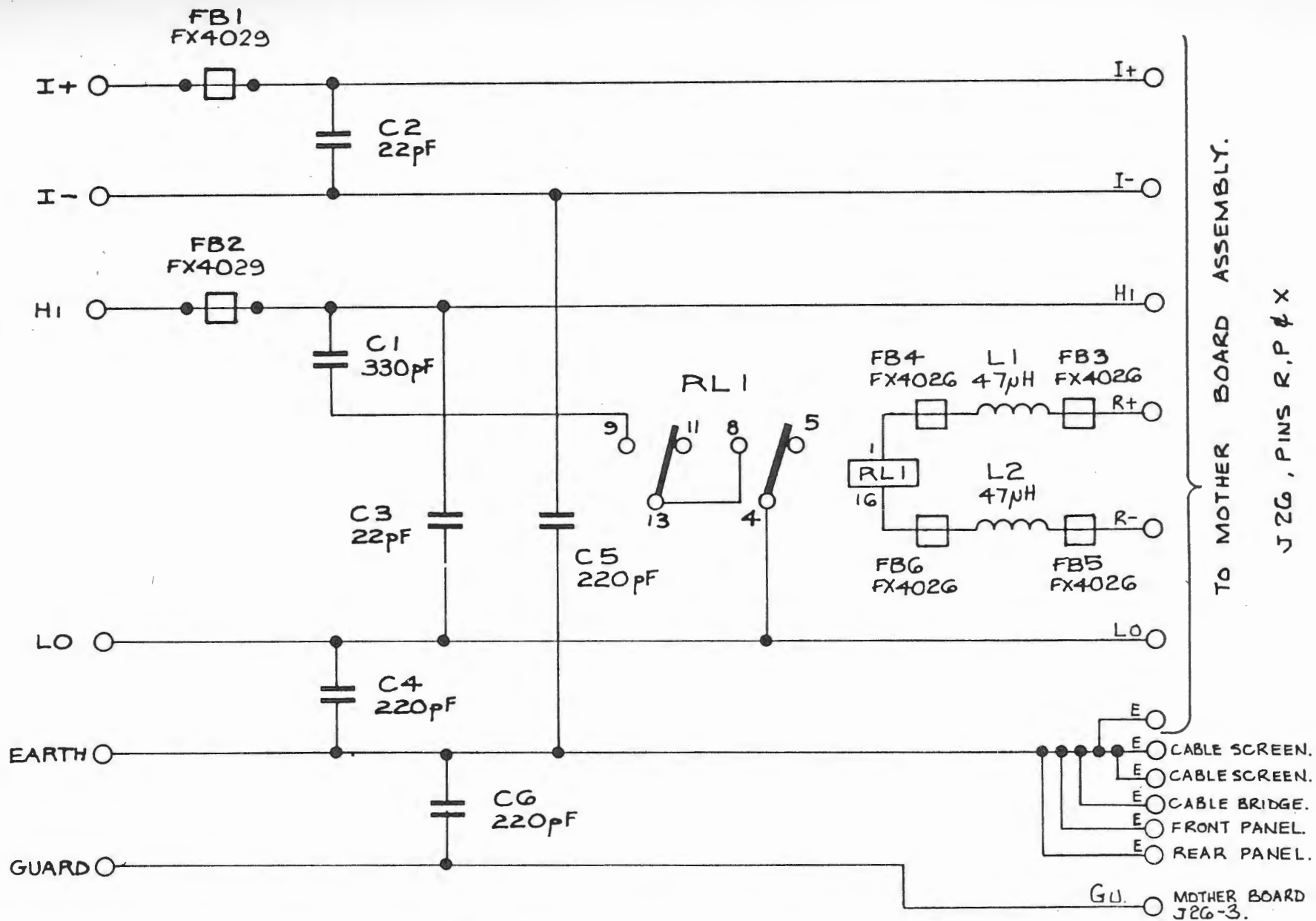
2 OFF FRONT OUTPUT CABLES  
 400576.

R+. 140mm 7/0-2 PTFE INS. GREY 512888.  
 R-. 140mm 7/0-2 PTFE INS. YELLOW 512444.  
 STRIP ENDS 5mm  $\phi$  SOLDER TIN.

EARTH BRAID ASSEMBLY 400184.  
 CUT TO 50mm OVERALL.  
 SLEEVE BRAID WITH 35mm  $\phi$  4.8 HEATSHRINK SLEEVE 590032.

1 OFF HEATSHRINK MARKER (1) 590017  
 1 OFF HEATSHRINK MARKER (2) 590018  
 FITTED AS SHOWN.

FRONT TERMINALS



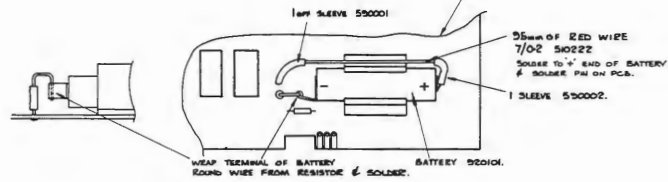
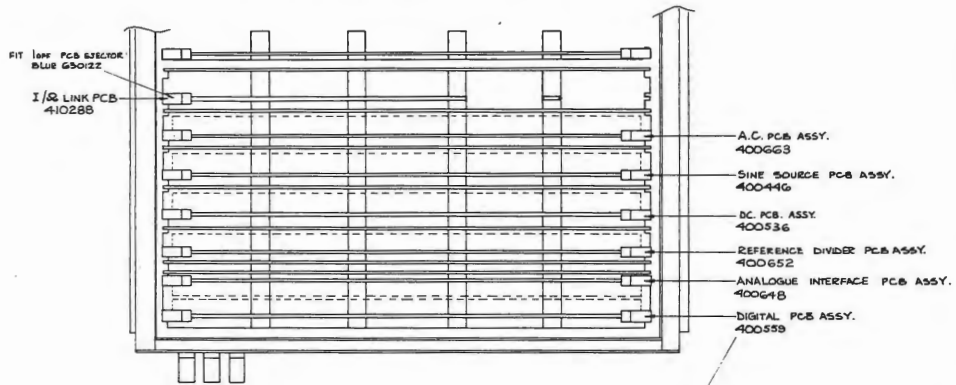
TO MOTHER BOARD ASSEMBLY.

J26, PINS R,P,X

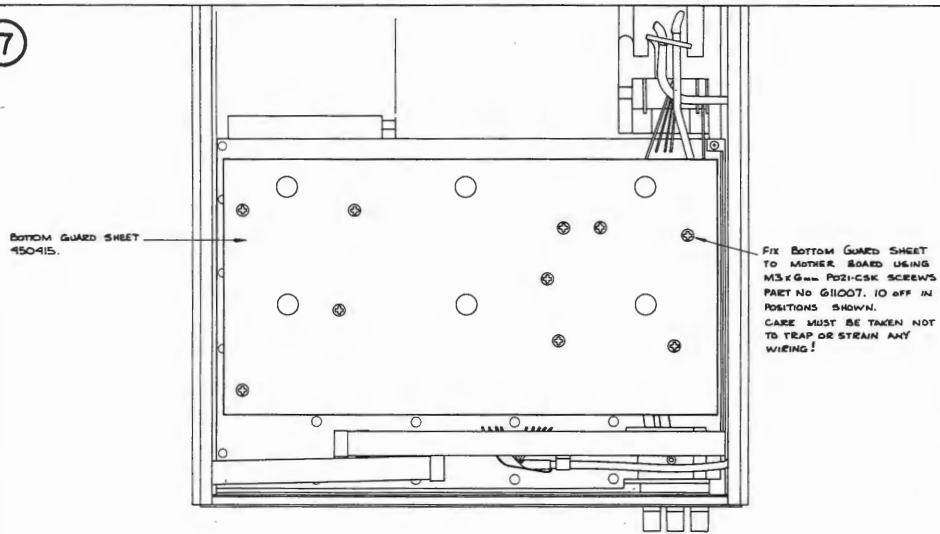
TERMINAL BOARD ASSEMBLY

6

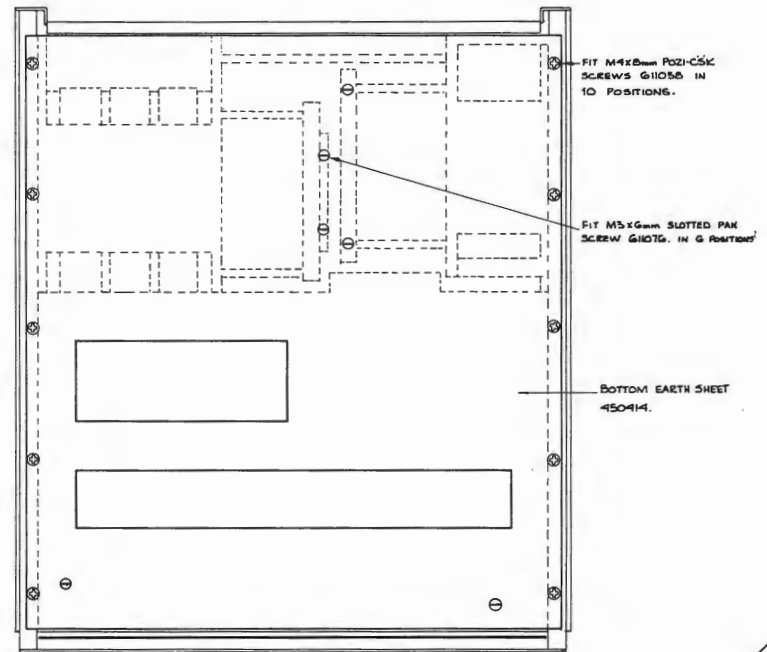
**NOTE**  
 CLEAN ALL PCB EDGE CONTACTS WITH CLEANING  
 FLUID 500010 BOTH BEFORE INITIAL ASSEMBLY  
 AND AT FINAL INSTRUMENT FINISHING.



7



8



MAIN ASSEMBLY

MAIN ASSEMBLY

**datron**  
INSTRUMENTS  
4705

9

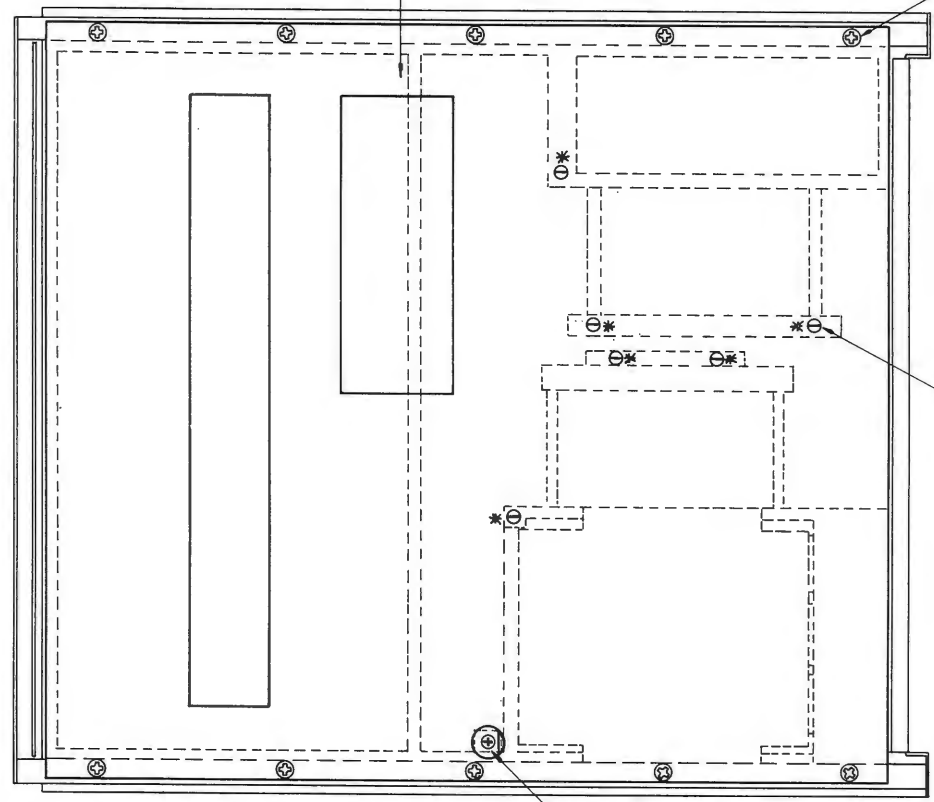
TOP EARTH GUARD ASSEMBLY.

FIT M4X8mm POZI-ČSK SCREWS  
G11050 IN 10 POSITIONS.

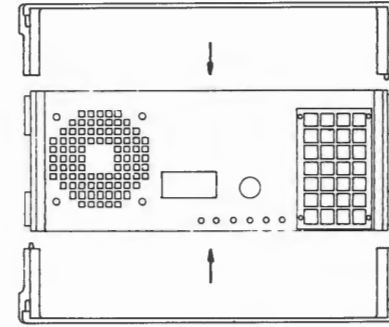
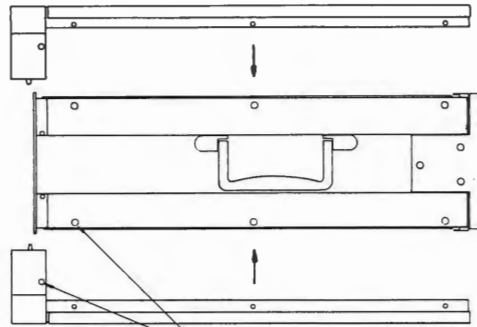
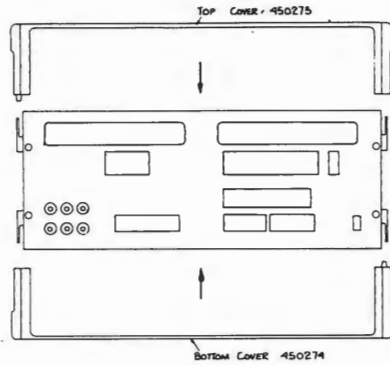
TOP EARTH/GUARD ASSY  
HAS PCB RETAINING BARS  
WHICH MUST BE CAREFULLY  
POSITIONED ON PCB'S  
BEFORE INSERTING ANY  
FIXING SCREWS.

FIT M3X6mm SLOTTED-PAN SCREW G11076  
IN SIX POSITIONS. MARKED \*

M3X12mm POZI-PAN SCREW G11005  
M3 SHAKEPROOF WASHER G13005.

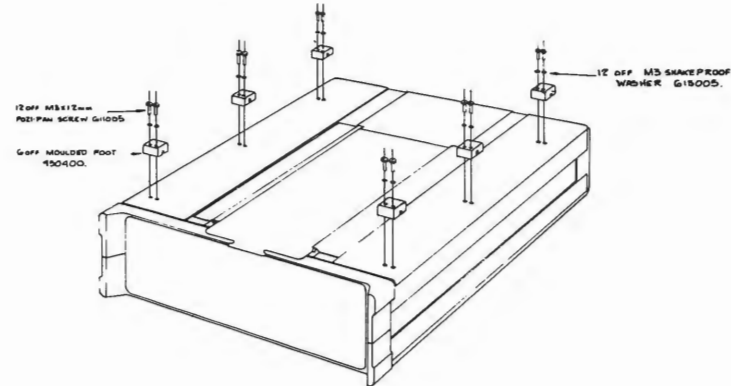
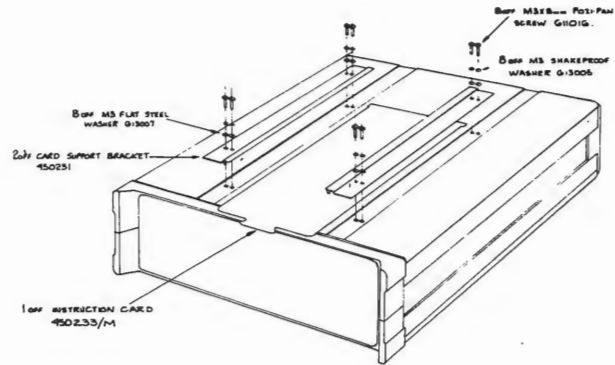


10



FIT M4X12mm SOCKET HEAD CSK SCREWS G1005B IN 16 POSITIONS.

11



MAIN ASSEMBLY

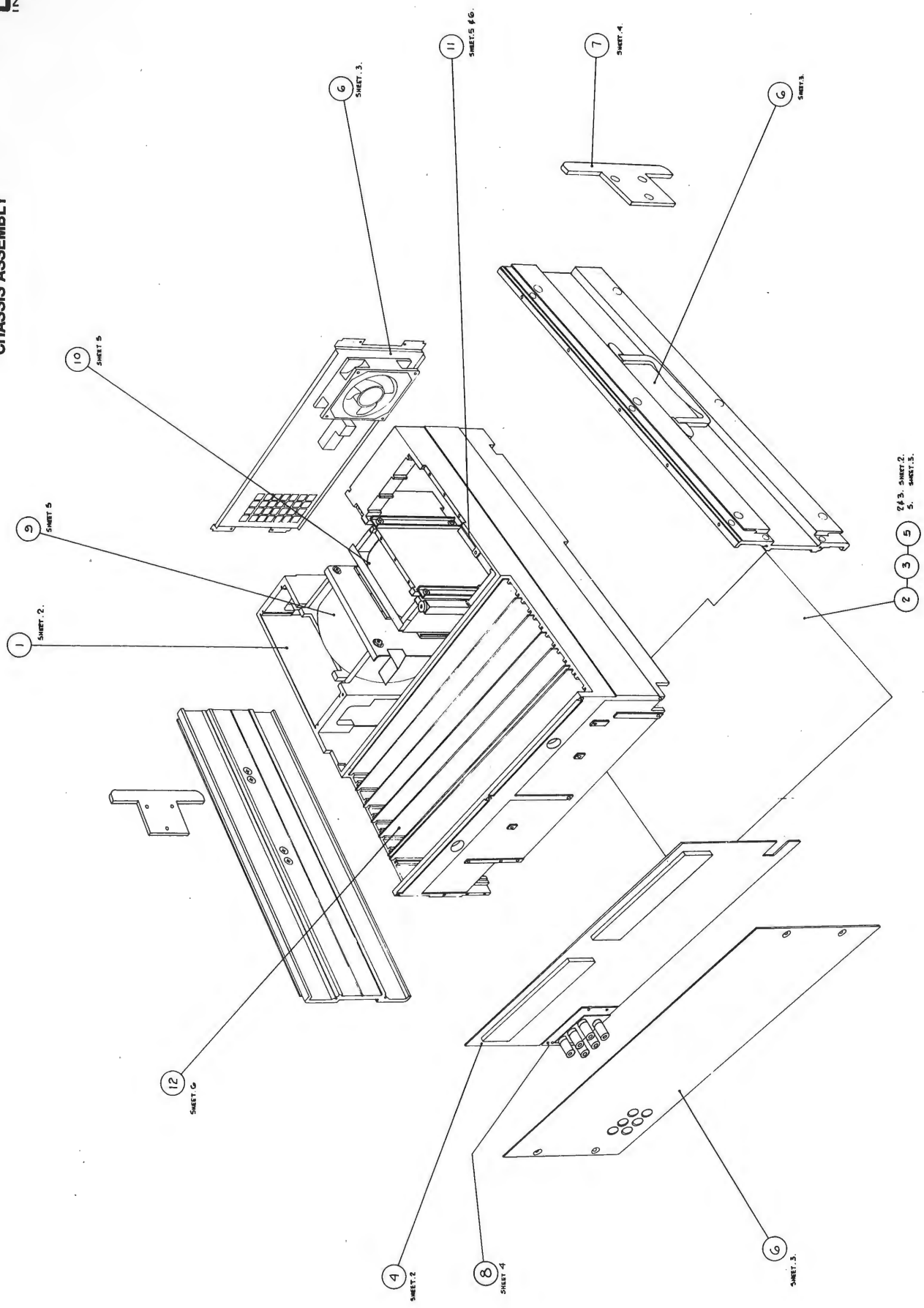
Layout Drawing No. 480556-1.1 Sheet 4

4705  
datron  
INSTRUMENTS

© Datron Instruments 1986

11.18-2

**CHASSIS ASSEMBLY**

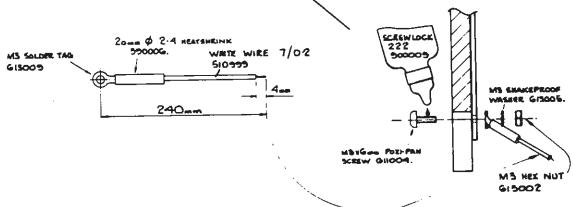
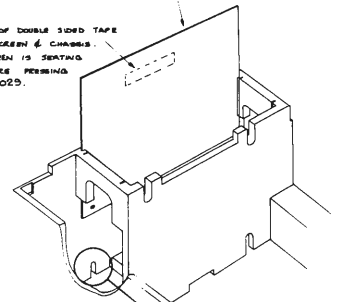


2 3 5  
2 & 3. SHEET 2.  
5. SHEET 5.

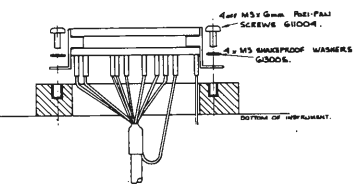
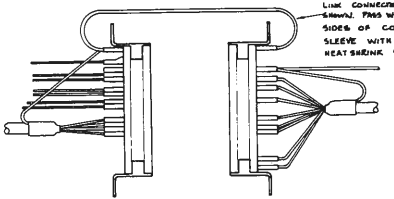
1

POWER SUPPLY GUARD SCREEN 45031G.

USE 80mm OF DOUBLE SIDED TAPE BETWEEN GUARD SCREEN & CHASSIS. ENSURE THE SCREEN IS SEATED CORRECTLY BEFORE PRESSING DOWN TAPE. G30023.



2



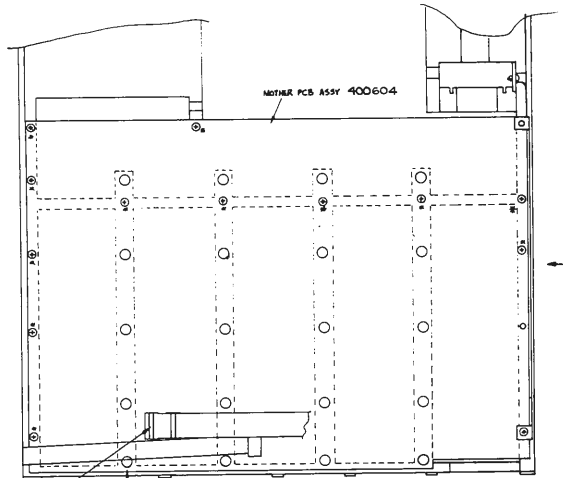
18 GAUGE P20 CABLE ASSY 400560.

D18 P20 CABLE ASSY 400485

MOLDED CHASSIS 45066G.

VIEW ON BOTTOM OF CHASSIS

3



1 OFF M3x6mm POST-PAN SCREWS G11004  
1 OFF M3 SHAKESHOOT WASHER G15005  
(THE SECOND SCREW IS FITTED AT A LATER STAGE)

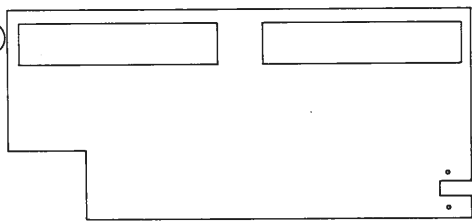
EARTH BRACKET 450501

2 OFF FIBRE CABLES 400471

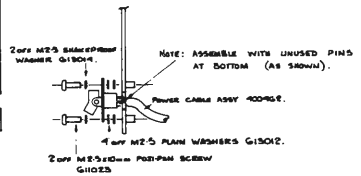
WHEN FITTING MOTHER PCB TO CHASSIS CHECK THAT ALL NYLATCH ARE IN THE 'UP' POSITION BEFORE SLIDING BOARD INTO PLACE. DEPRESS ALL NYLATCH, THEN FIT M3x6mm POST-PAN SCREW G11004 & M3 WAVY WASHER G15005 IN TWELVE POSITIONS MARKED 'A'



4



G30168 POLYESTER TAPE. 2 PIECES FITTED TO INSIDE OF CHASSIS OVER DISPLAY CLEARANCE HOLES.



G30167 2 PIECES OF 6mm THICK BY 7mm WIDE FOAM TAPE.

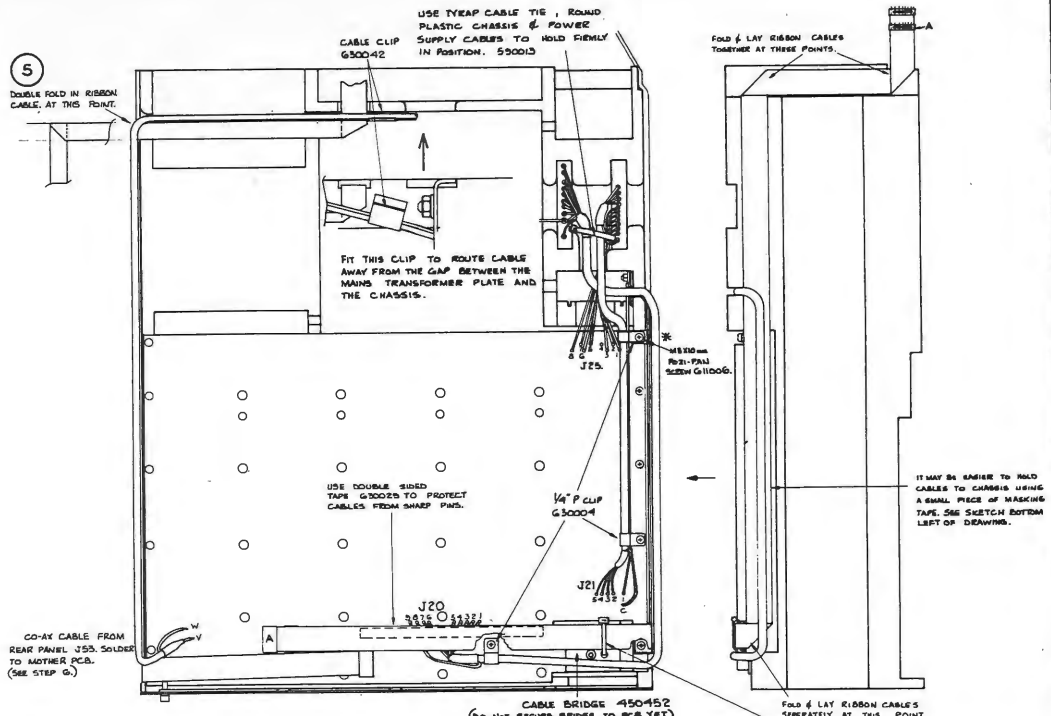
FIT M3x6mm POST-PAN SCREW G11004 & M3 WAVY WASHER G15005 IN 12 POSITIONS MARKED 'A'.

TAKE CARE TO CONNECT ALL PINS.

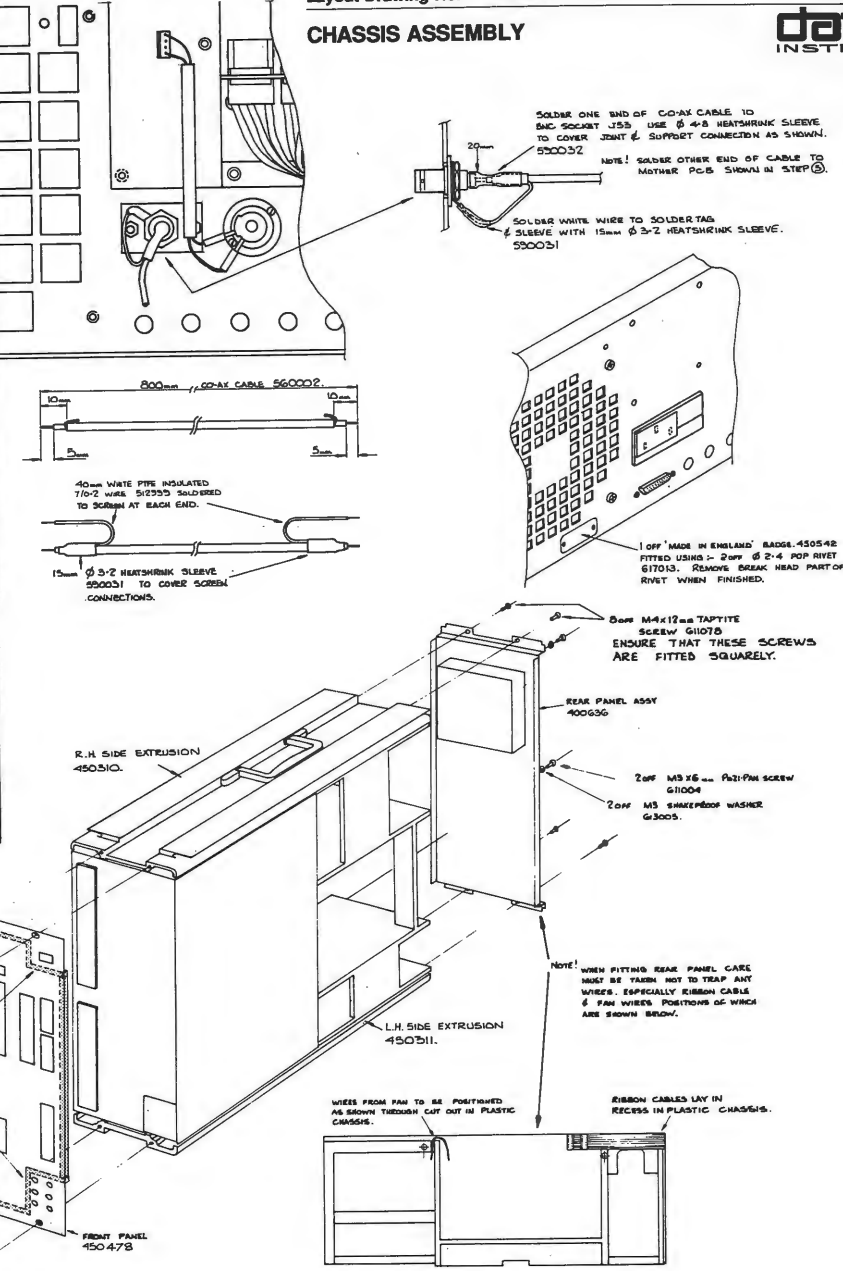
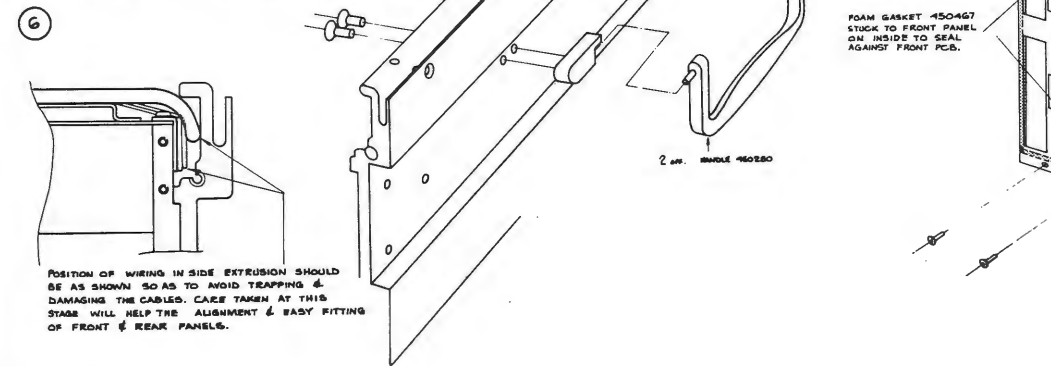
CHASSIS ASSEMBLY



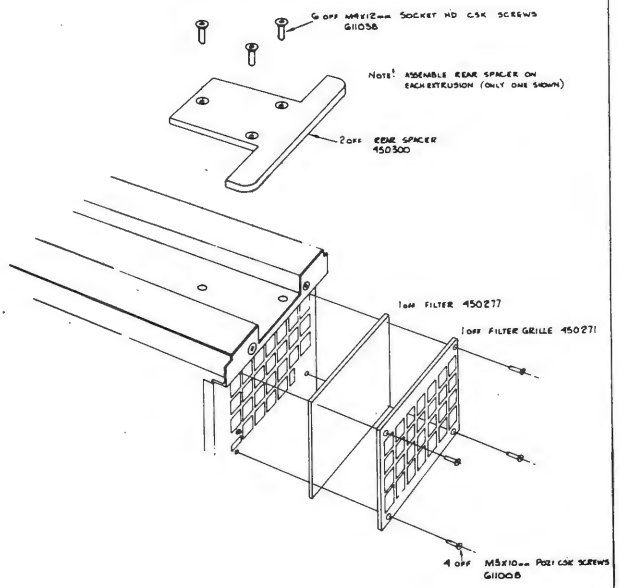
**CHASSIS ASSEMBLY**



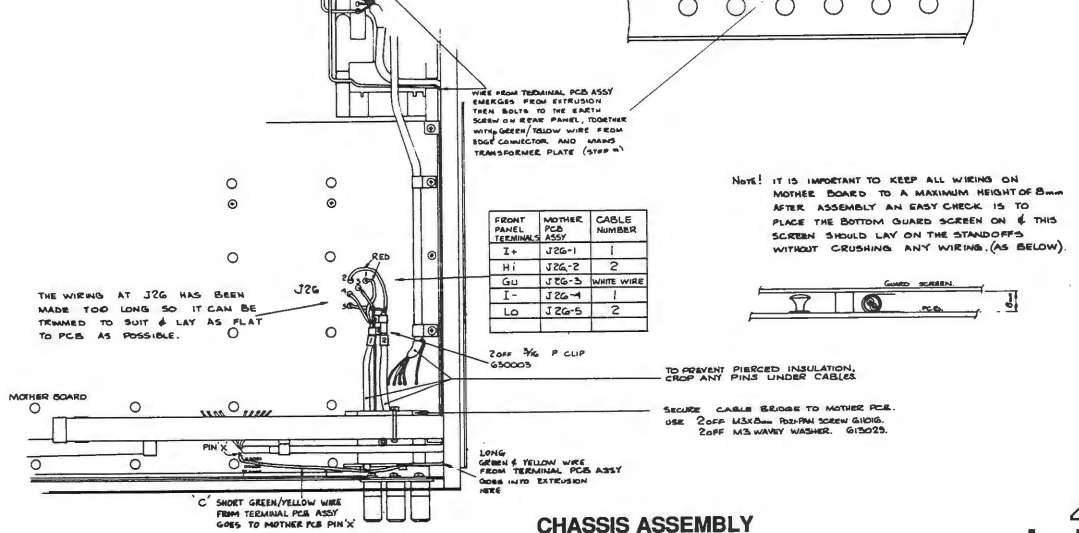
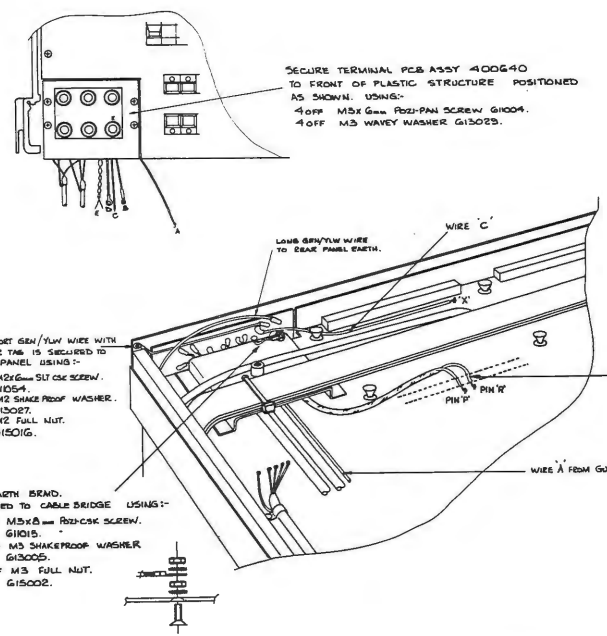
PIN No.	COLOR	CABLE ASSY No.
J20-1	BLACK	400560
J20-2	RED	-
J20-3	ORANGE	-
J20-4	NO CONNECTION	-
J20-5	GREEN	400560
J20-6	BROWN	-
J20-7	VIOLET	-
J20-8	YELLOW	-
J21-1	WHITE	-
J21-2	GREEN	-
J21-3	ORANGE	-
J21-4	VIOLET	-
J21-5	YELLOW	-
PIN 6	WHITE FROM STEP 1	-
NOT FITTED		
J20-9	GREEN/YEL	400560
J20-8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



7



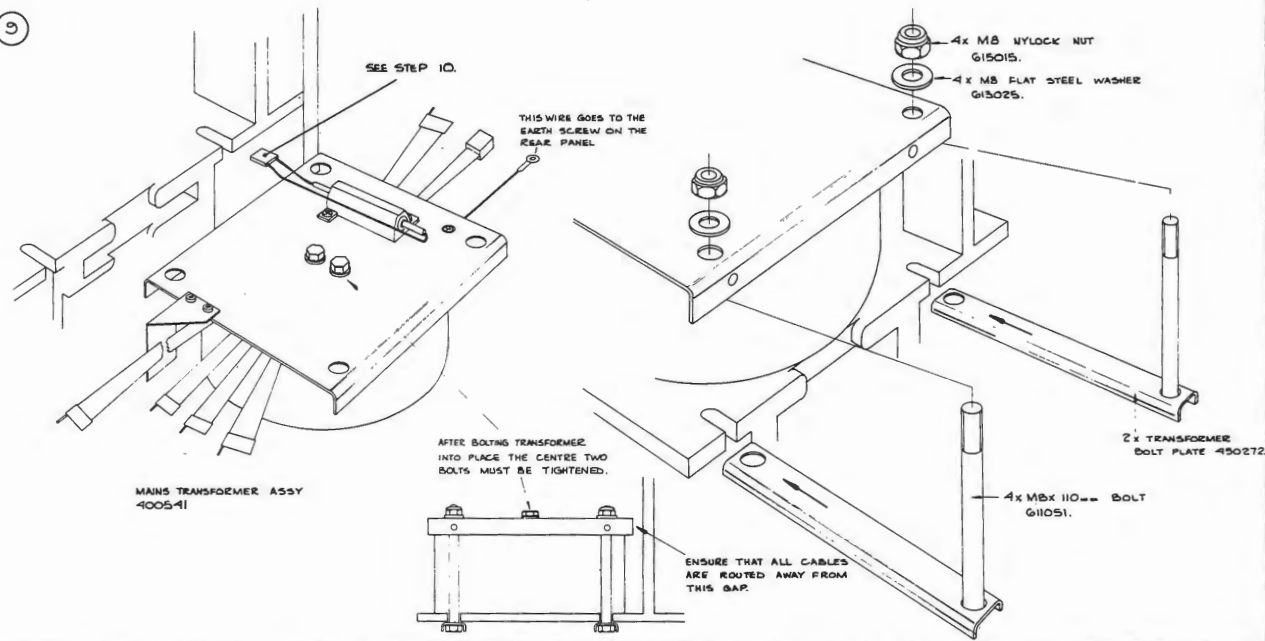
8



FRONT PANEL PCB TERMINAL ASSY	MOTHER PCB	CABLE NUMBER
I-	J26-1	1
H-	J26-2	2
GU	J26-3	WHITE WIRE
I-	J26-4	1
LO	J26-5	2

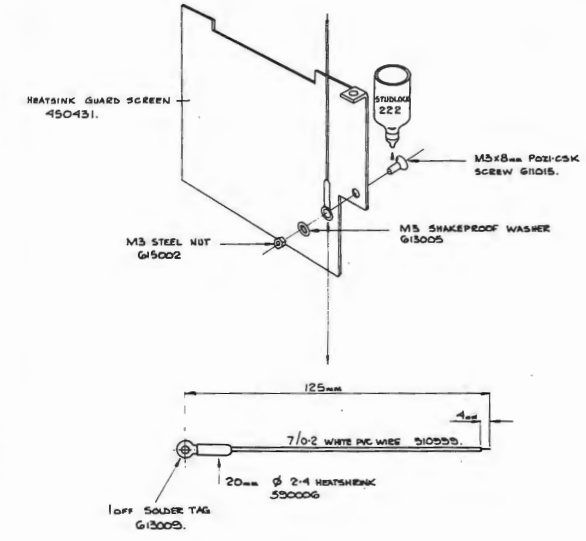
CHASSIS ASSEMBLY

9

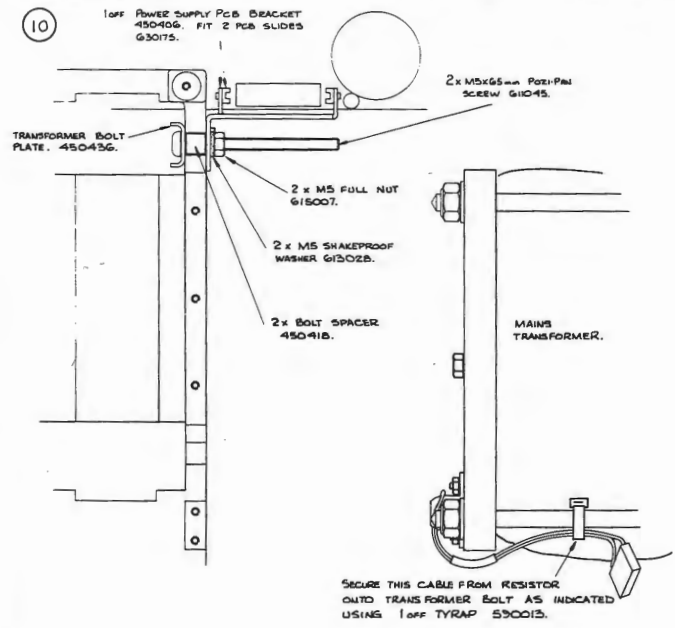


11

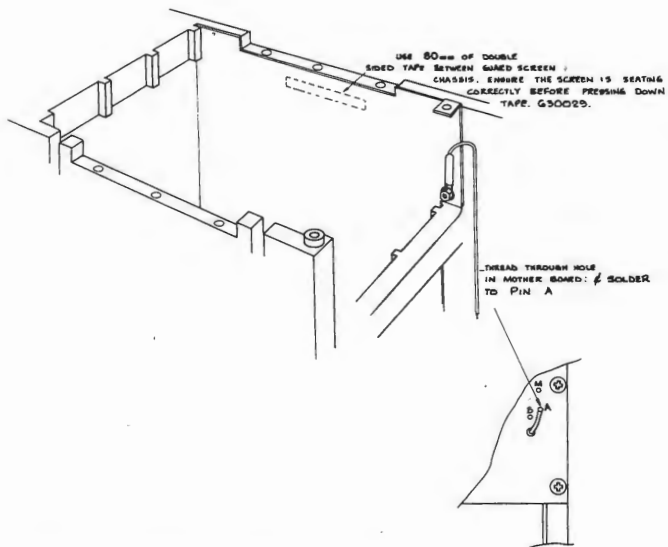
### CHASSIS ASSEMBLY



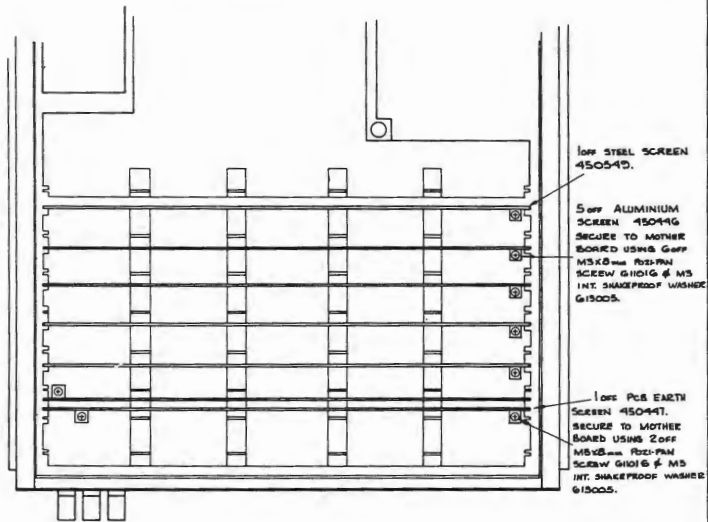
10



11

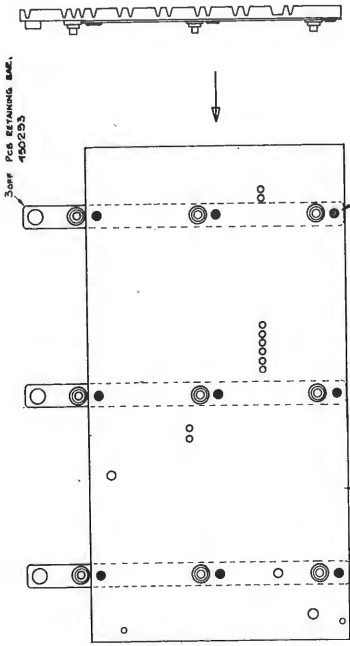
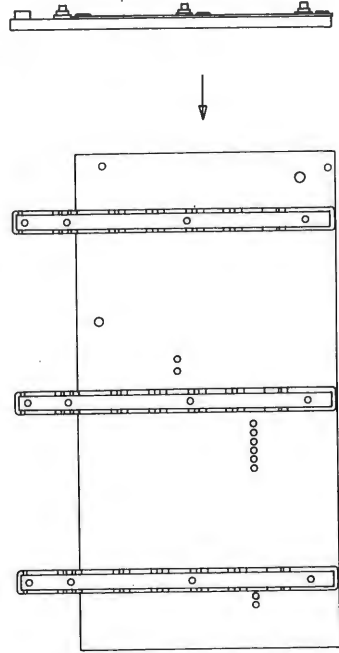


12



CHASSIS ASSEMBLY

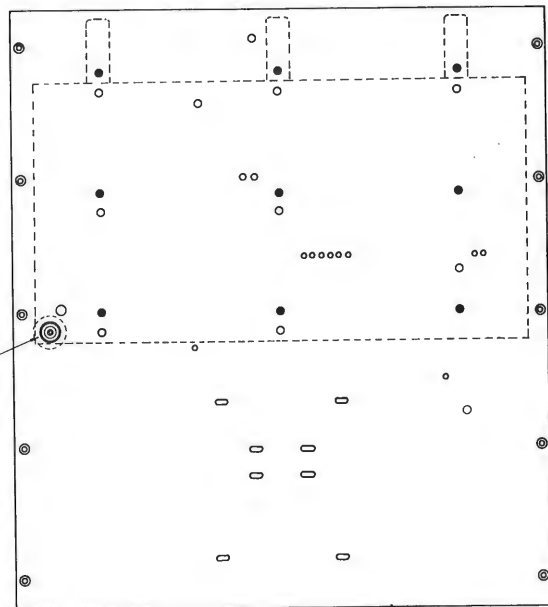
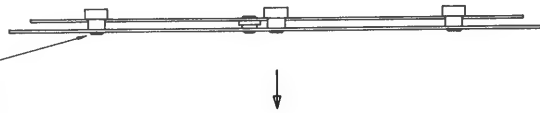
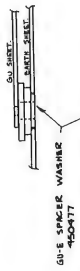
**CHASSIS ASSEMBLY**



LARGE DOTS INDICATE PEGS THAT NEED HEAT STAKING IN 25 PORTIONS.

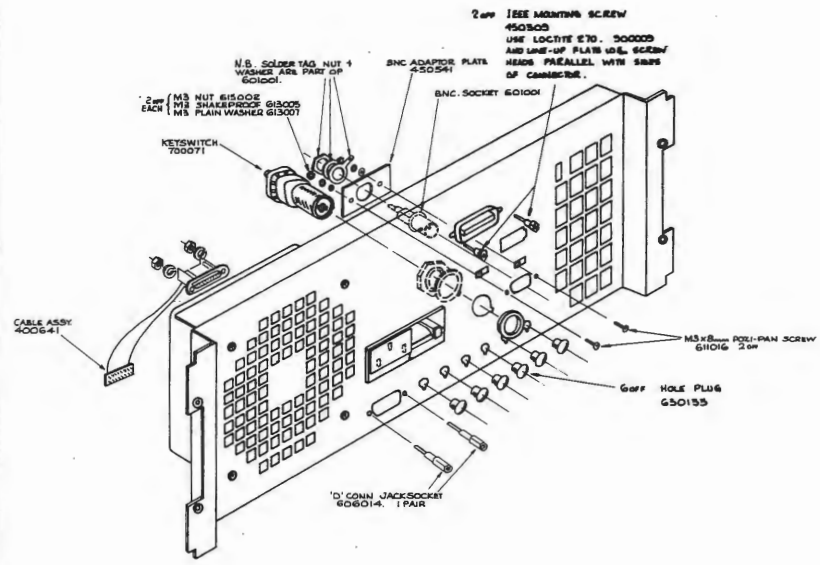
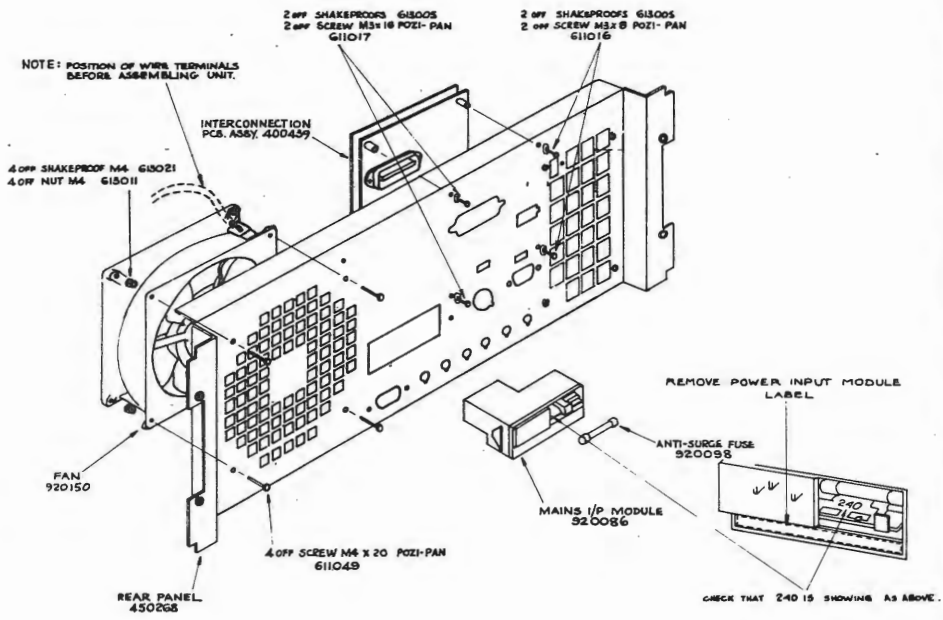
GUARD SHEET 4150150

MAXIMUM HEATSTAKING HEIGHT = 2mm

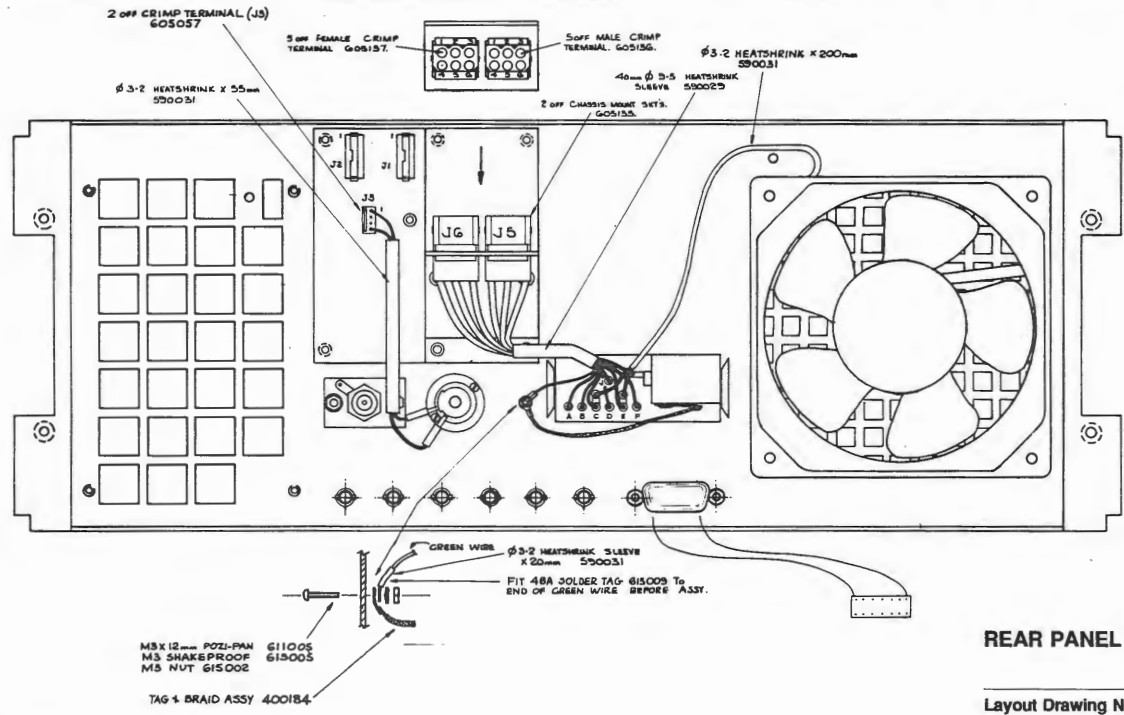


EARTH SHEET 4150414

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



CONNECTOR PIN (INTERCONNECTION)	WIRE COLOUR/LENGTH	DESTINATION (REAR PANEL)	WIRE PART NO.
J6 PIN 1	VIOLET / 115mm	POWER INPUT MODULE PIN 10	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	530355
J5 PIN 1	GREEN / 130mm	TO REAR PANEL	530555
2	RED / 120mm	POWER INPUT MODULE PIN 1	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



**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:-  
530001 = 3 OFF.  
530005 = 5 OFF.

**REAR PANEL ASSEMBLY**

Layout Drawing No. 480636-1.0 Sheet 1



© Datron Instruments 1986

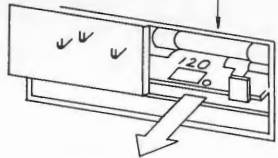
**OPTION 80 115V 60HZ. KIT OF PARTS 440096.**

**PROCEDURE :-**

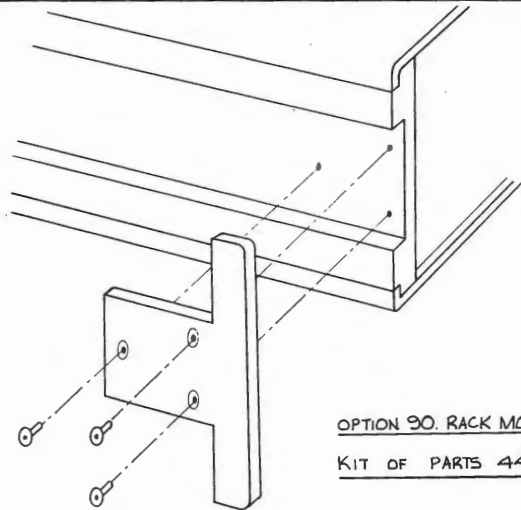
CHANGE MAINS FUSE TO:  
920114 6.25A 250V 1/4" SLO-B' FUSE.

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 1/4" 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.

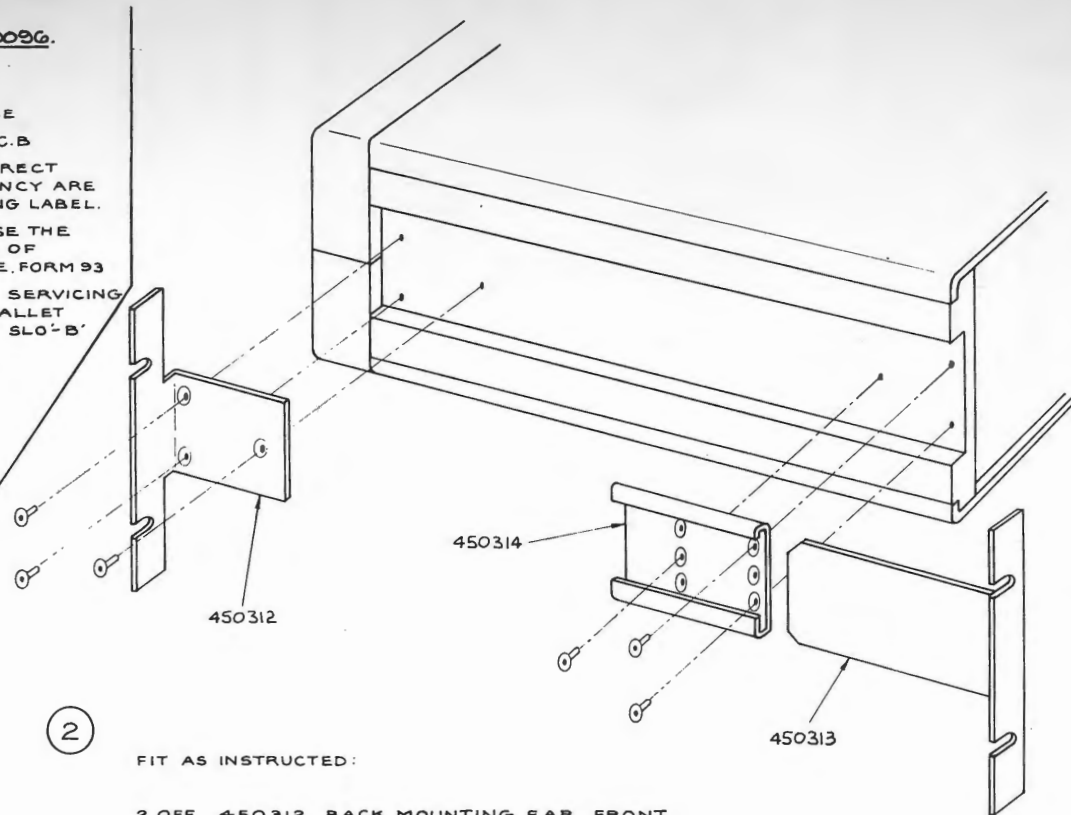


1

REMOVE :-

- 2 OFF 450300 REAR SPACERS.
- 6 OFF 611038 M4X12mm SOCKET H'D C'SK SCREWS.

**OPTION 90. RACK MOUNTING.**  
**KIT OF PARTS 440094**



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 M4X8mm SOCKET HD C'SK SCREWS

**SUITABLE RACK DEPTHS**

DEPTH		NOTES
mm.	INCHES	
<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

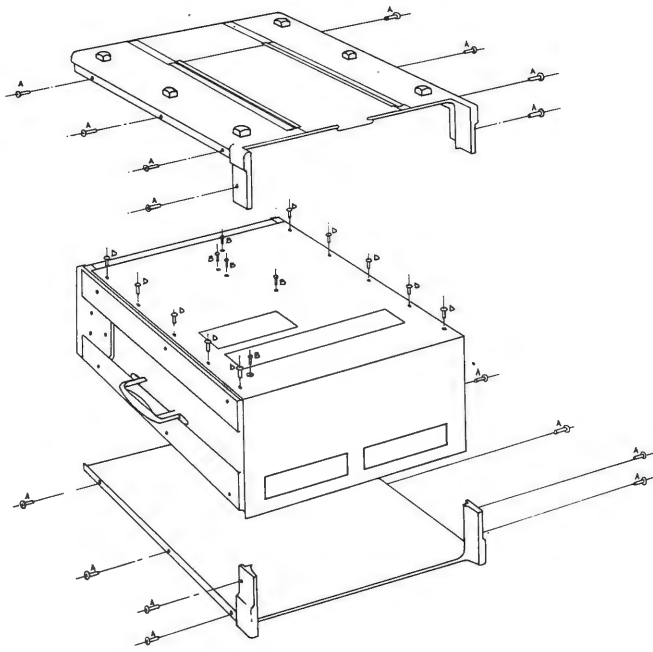
Layout Drawing No. 480603-3.2 Sheet 2

4705  
**datron**  
INSTRUMENTS

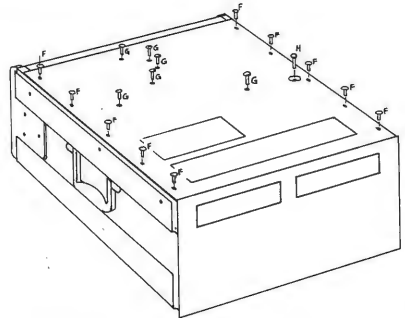
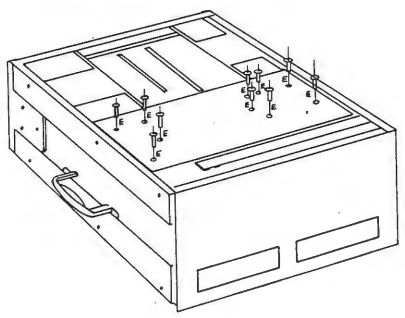
© Datron Instruments 1986

OPTION FITTING INSTRUCTIONS  
Option 42: Rear Output

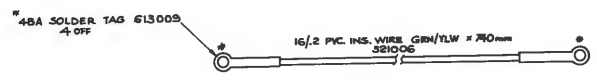
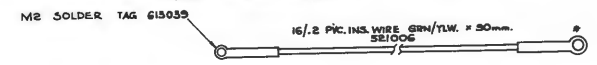
4705



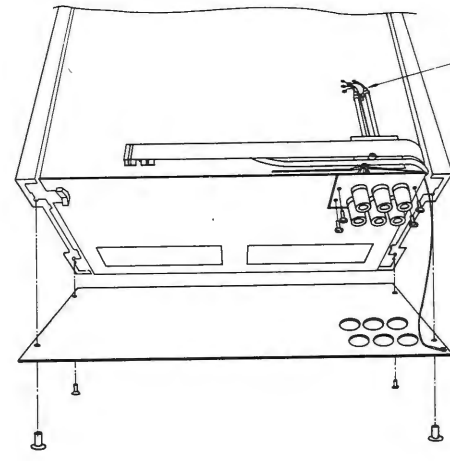
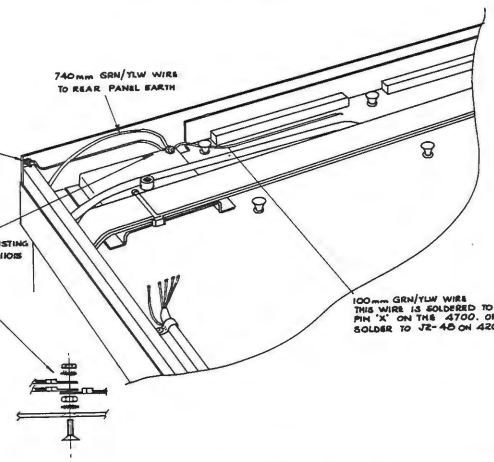
REMOVE TOP & BOTTOM COVERS BY REMOVING:-  
 A. 16 OFF M4X12mm SKT HD CSK SCREWS G103D.  
 REMOVE BOTTOM EARTH SHEET & THEN BOTTOM GUARD SHEET. REMOVE FOLLOWING SCREWS.  
 B. 5 OFF M3X6mm SLOTTED-PAN HD SCREWS. G1107G  
 D. 10 OFF M4X8mm POZI-CSK SCREWS G1105B  
 E. 10 OFF M3X6mm POZI-CSK SCREWS G11007.



REMOVE TOP EARTH SHEET ASSEMBLY BY UNDOING:-  
 F. 10 OFF M4X8mm POZI-CSK SCREWS G1105B.  
 G. 6 OFF M3X6mm SLOTTED-PAN HD SCREWS G1107G  
 H. 1 OFF M3X12mm POZI-PAN SCREW G11005  
 I. 1 OFF M3 SHAKEPROOF WASHER G13005.  
 ON SCREW 'H' ONLY.



SLEEVE ALL SOLDER TAG CONNECTIONS WITH 20mm SLEEVE Ø 2.4 35000G

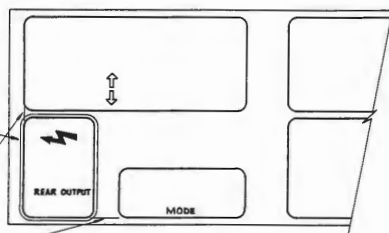


WITH CALIBRATOR UPSIDE-DOWN FACING FORWARD UNSOLDER THE CABLES GOING FROM TERMINALS TO THE CLOVERLEAVES ON THE MOTHER PCB. ALSO REMOVE THE 2 'P' CLIPS & FIXING SCREWS. REMOVE THE FRONT PANEL FIXING SCREWS. REMOVE TERMINAL PCB ASSY. WITH ALL ITS WIRES. REPLACE FRONT PANEL.



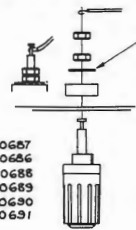
STICK ADHESIVE LABEL 45037A ON TO FRONT PANEL OVERLAY AS INDICATED BELOW:-

SELF ADHESIVE 'REAR OUTPUT' LABEL 45037A.



LINE-UP BORDER LINES OF LABEL WITH LINES ON OVERLAY.

WRAP WIRE ROUND TERMINAL AND SOLDER.

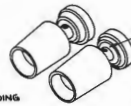


M4 LARGE WASHER G13035

RED 400657  
BLACK 400656  
BROWN 400688  
BLUE 400689  
WHITE 400690  
GREEN 400691

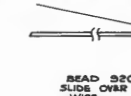
ADD 2 OFF EACH HEATSHRINK CABLE MARKER, 59007 (1) 59008 (2). FIT NO.1 MARKERS TO ONE CABLE & NO.2 MARKERS TO THE OTHER, IN APPROXIMATE POSITION SHOWN.

USE 10mm OF Ø2.4 HEATSHRINK 59006 TO STOP FERRITE BEAD SLIDING DOWN WIRE.



BEFORE TIGHTENING TERMINALS ENSURE HOLES ARE IN THE VERTICAL POSITION.

420mm 7/0.2 WHITE PTFE INSULATED WIRE 512959.



BEAD 320181 SLIDE OVER STRIPPED WIRE.

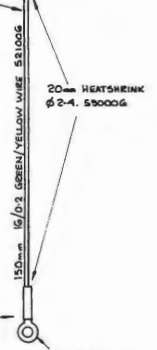
STRIP 20mm FROM ENDS

HEATSHRINK 20mm OF Ø 4.6 HEATSHRINK SLEEVE 590052 TO 3 OFF FERRITE BEADS 320181 & ASSEMBLE TO WIRES AS SHOWN ON WIRES FROM HI, I+ & GU TERMINALS.

TERMINAL COLOUR	RED	BLACK	BROWN	BLUE	WHITE	GREEN
2 OFF CABLE 400605	2	2	1	1	WHITE WIRE	WHITE WIRE
WIRE COLOUR.	RED	BLUE	RED	BLUE	WHITE	GREEN/YELLOW FROM REAR PANEL & SCREENS OF A.F. (A CONNECTION)

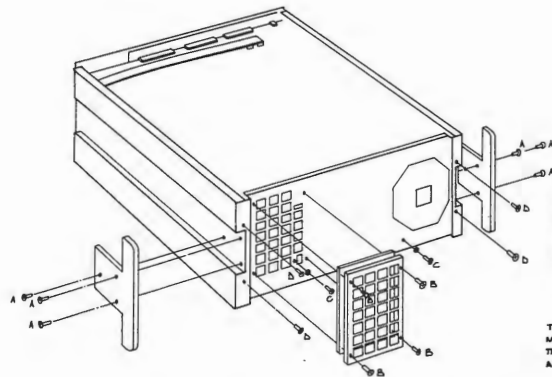
SOLDER 220pf, 2KV CAPACITOR 104052 BETWEEN GUARD & EARTH TERMINALS. SLEEVE LEADS WITH PTFE 590004.

1 OFF M3 SOLDER TAG G15005



20mm HEATSHRINK Ø 2.4. 590006

1 OFF M4 SOLDER TAG G15024.



REMOVE:

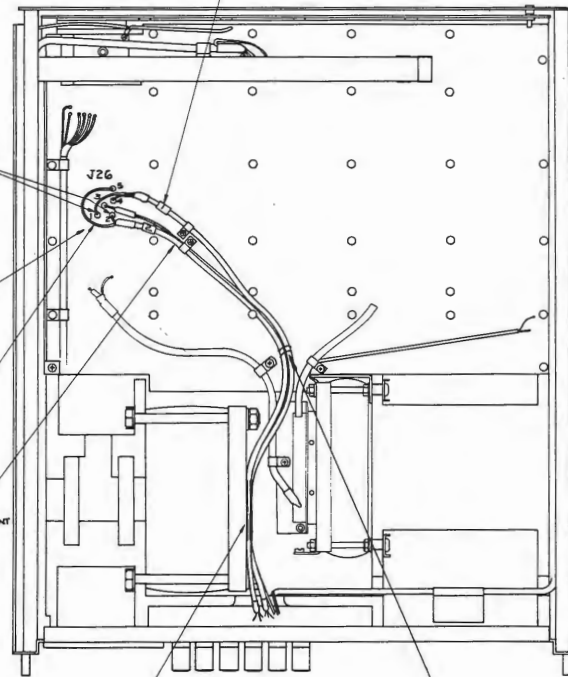
- A. 6 OFF M4 X 12mm C&K SOCKET HD SCREWS G11035.  
2 OFF REAR SPACERS. 450300.  
B. 4 OFF M3 X 10mm POZI-C&K SCREWS G11008.  
1 OFF FILTER GELLS 450271.  
1 OFF FILTER 450277.  
C. 2 OFF M3 X 6mm POZI-PAN SCREWS G11004.  
2 OFF M3 SHAKEPROOF WASHER G13005.  
D. 4 OFF M4 X 6mm TAPTITE POZI-C&K SCREWS G11045.

EASE REAR PANEL FORWARD, DISCONNECT CABLES FROM INTERCONNECTION P.C.B.

WIRE NO.	REAR PANEL TERMINALS	MOTHER PCB ASSY.
1	I+	1
2	HI	2
WHITE WIRE	0	3
1	I-	4
2	LO	5

THE WIRES AT J26 HAS BEEN MADE TOO LONG SO IT CAN BE TRIMMED TO SIZE & LAY AS FLAT AS POSSIBLE.

2 OFF 3/16" P CLIPS & FIXING SCREWS THESE ARE RE-USED FROM FRONT OUTPUT CABLES.



2 OFF ADHESIVE CABLE CLIPS G30020. TO HOLD CABLES A, B & C TO TRANSFORMER PLATE.

USE LACING CORD 590007 TO HOLD CABLES TOGETHER.

WHEN THE REAR PANEL IS AWAY FROM THE CHASSIS REMOVE THE PUSH OUT PLUGS WHICH BLANK THE TERMINAL HOLES AND FIT TERMINALS.

CONNECT REAR OUTPUT CABLES

FIT 150mm EARTH WIRE (SHOWN ABOVE) TO EARTH SCREW ON REAR PANEL 'M3' SOLDER TAG END. PASS EARTH WIRE AROUND THE BACK OF, AND THEN INTO THE RECESS IN THE CHASSIS & CONNECT THE M4 SOLDER TAG OF EARTH WIRE TO THE EARTH TERMINAL.

SOLDER THE 220pf 2KV CAPACITOR 104052 BETWEEN GUARD & EARTH TERMINALS

RECONNECT CABLES TO INTERCONNECTION P.C.B.

EASE REAR PANEL BACK INTO PLACE.

REFIT REAR PANEL AS SHOWN IN PREVIOUS STEP. SECURE CABLES A, B & C WITH CABLE CLIPS & P CLIPS. SOLDER WHITE WIRE TO CLOVERLEAF. FIT CABLES A & B THEN SOLDER TO CLOVERLEAF TERMINALS.

FINALLY REPLACE GUARD SHIELDS & COVERS AS SHOWN IN PREVIOUS STEPS.

OPTION FITTING INSTRUCTIONS  
Option 42: Rear Output

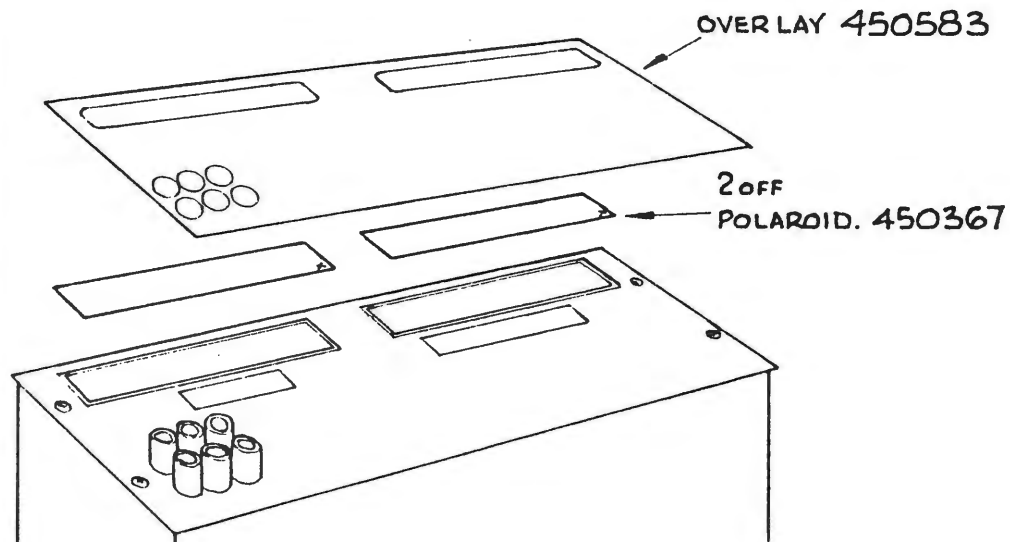
Layout Drawing No. 480603-3.4 Sheet 4

4705  
datron  
INSTRUMENTS

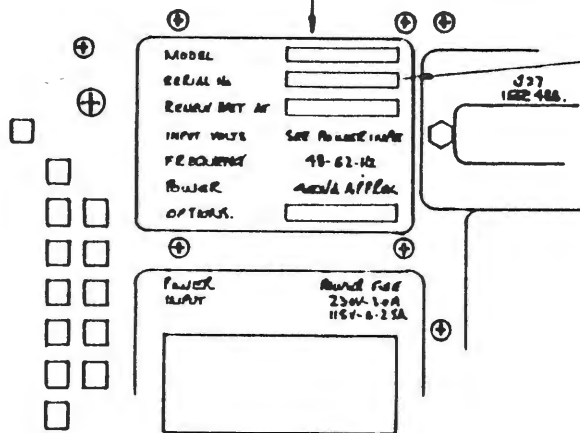
© Datron Instruments 1986

11.19-2

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:-  
1off 920098 3A 1 1/4" ANTISURGE FUSE  
1off 630109 2.5mm A/F HEX KEY.  
2off CALSWITCH KEYS (FROM REAR  
PANEL ASSEMBLY).
- 3/ FITTING INSTRUCTIONS FOR  
CURRENT / OHMS & HIGH  
VOLTAGE ARE SHOWN ON  
DRAWING No. 480603.

INSTRUMENT ASSEMBLY

Layout Drawing No. 480716-1.0 Sheet 1

4705  
**datron**  
INSTRUMENTS  
© Datron Instruments 1986

11.20-1