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It is my hope that you find the file of use to you personally – I know that I would have liked to have found some of these files years ago – they would have saved me a lot of time !

Colin Hinson

In the village of Blunham, Bedfordshire.

DECCA RADAR

R32
AR1

RESTRICTED

AIR PUBLICATION

115H-0607-10

(Formerly 4950 Vol I Cover 7 Diagrams)

CONSOLE CONTROL INDICATOR

(CAT. No. 5840-99-953-4116)

AND CONSOLE, CONTROL INDICATOR

(CAT. No. 5840-99-953-4115)

PART OF FGRI 23154 AND

PART OF TGRI (AT) 26038

Decca Radar Limited

9 ALBERT EMBANKMENT LONDON S.E.1

DECCA RADAR LIMITED

PUBLICATIONS

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Tolworth,
Surbiton,
Surrey.

L. 8

R.A.F. LOCKING

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Type AR1
Diagrams and Components

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115H—0607—10

(Formerly 4950 Vol I Cover 7 Diagrams)

CONSOLE CONTROL INDICATOR

(CAT. No. 5840-99-953-4116)

AND CONSOLE, CONTROL INDICATOR
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PART OF FGRI 23154 AND
PART OF TGR(AT) 26038

BY COMMAND OF THE DEFENCE COUNCIL



(Ministry of Defence)

FOR USE IN THE
ROYAL AIR FORCE

(Prepared by the Ministry of Technology)

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Each leaf, except the original issue of the publication and preliminaries, bears the date of issue and the number of the Amendment List with which it was issued. New or amended technical information, or new leaves which are inserted when this publication is amended, will be indicated by a vertical line in the margin. This line merely denotes a change and is not a mark of emphasis. When a Section or Chapter is issued in a completely revised form, the line will not appear.

AMENDMENT RECORD SHEET

To record the incorporation of an Amendment List in this publication, sign against the appropriate A. L. No. and insert the date of incorporation.

A. L. No.	AMENDED BY	DATE
1	<i>V. Page</i>	18/12/67
2		
3		
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A. L. No.	AMENDED BY	DATE
15		
16		
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21		
22		
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24		
25		
26		
27		
28		

PUBLICATIONS FOR
FGRI.23154 CENTRE (PLESSEY AR-1 STATIC)

<u>Old</u>	<u>A.P. Number</u>	<u>New</u>	<u>Title</u>
4950 Vol. 1 Cover 1	115H-0601-1		Planning and preparation for FGRI.23154
4950 Vol. 1 Cover 2	115H-0602-1		System assembly for FGRI.23154
4950 Vol. 1 Cover 3	115H-0603-1		Commissioning FGRI.23154
4950 Vol. 1 Cover 4	115H-0604-1		System Manual FGRI.23154 and TGRI.(AT)26038/1
4950 Vol. 1 Cover 5	115H-0605-1		Transmitter/receiver radar (Cat.No.5840-99-953-0754) Part of FGRI.23154 and Part of TGRI.(AT)26038/1
4950 Vol. 1 Cover 6	115H-0606-1		Moving target indicator equipment (Cat.No.5840-99-953-5078) Part of FGRI.23154 and Part of TGRI.(AT)26038/1
4950 Vol. 1 Cover 7	115H-0607-1		Console, control indicator (Cat.No.5840-99-953-4116) and console, control indicator (Cat.No.5840-99-953-4115) Part of FGRI.23154 and Part of TGRI.(AT)26038/1
4950 Vol. 1 Cover 7/ Diagrams	115H-0607-10		Console, control indicator (Cat.No.5840-99-953-4116) and console, control indicator (Cat.No.5840-99-953-4115) Part of FGRI.23154 and Part of TGRI.(AT)26038/1

DECCA RADAR

DECCA AUTONOMOUS P. P. I. DISPLAY SYSTEM
FOR USE WITH AIRFIELD SURVEILLANCE
RADARS TYPE AR1
TECHNICAL MANUAL
ILLUSTRATIONS

JULY, 1964

DECCA RADAR LIMITED
9, Albert Embankment, London, S. E. 1.

AUTONOMOUS P. P I. DISPLAY SYSTEM FOR USE

WITH RADAR TYPE A. R 1

ILLUSTRATIONS

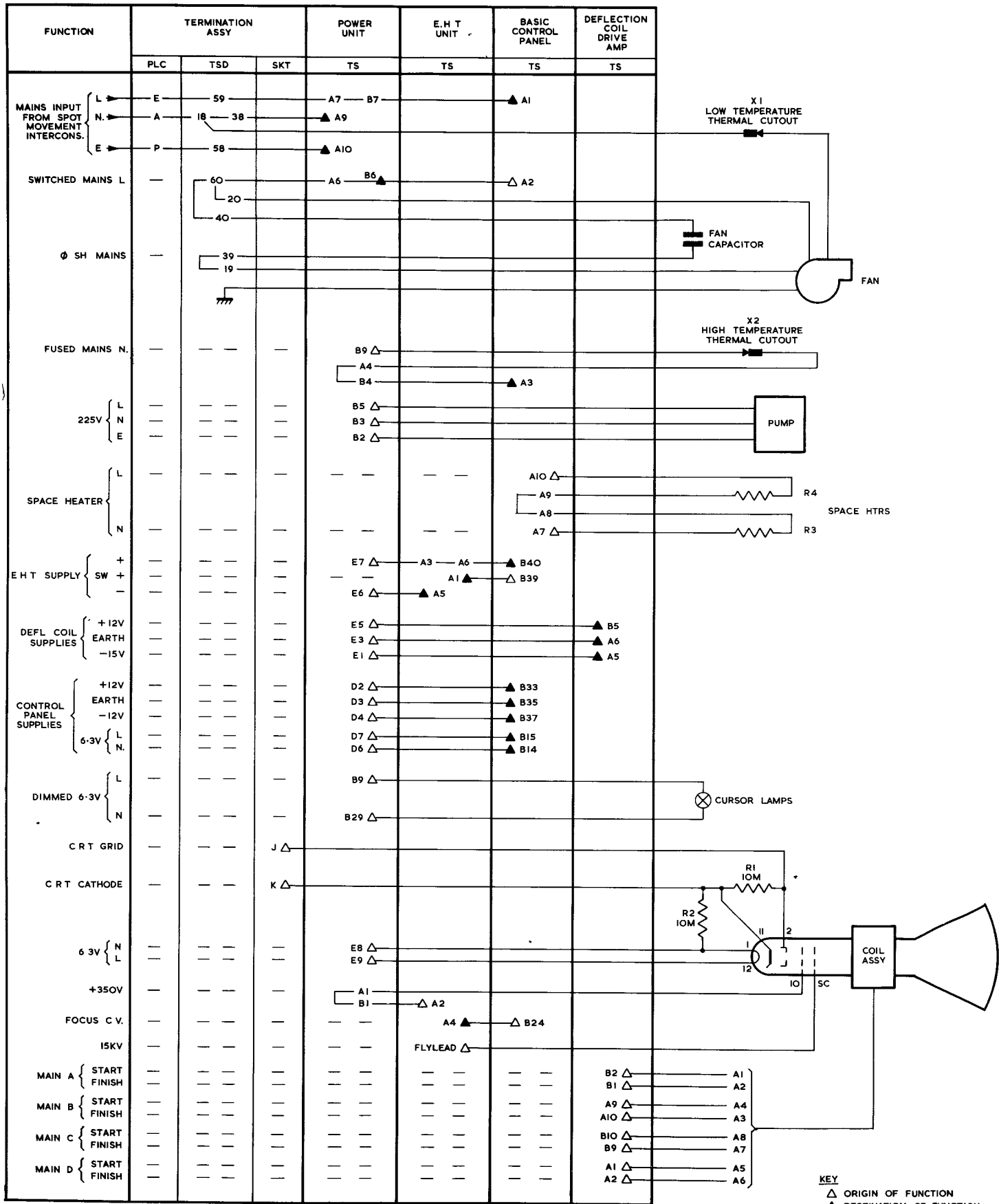
LIST OF SECTIONS

SECTION 1	THE COMPLETE SYSTEM	
SECTION 2	/	UNIT

SECTION 1

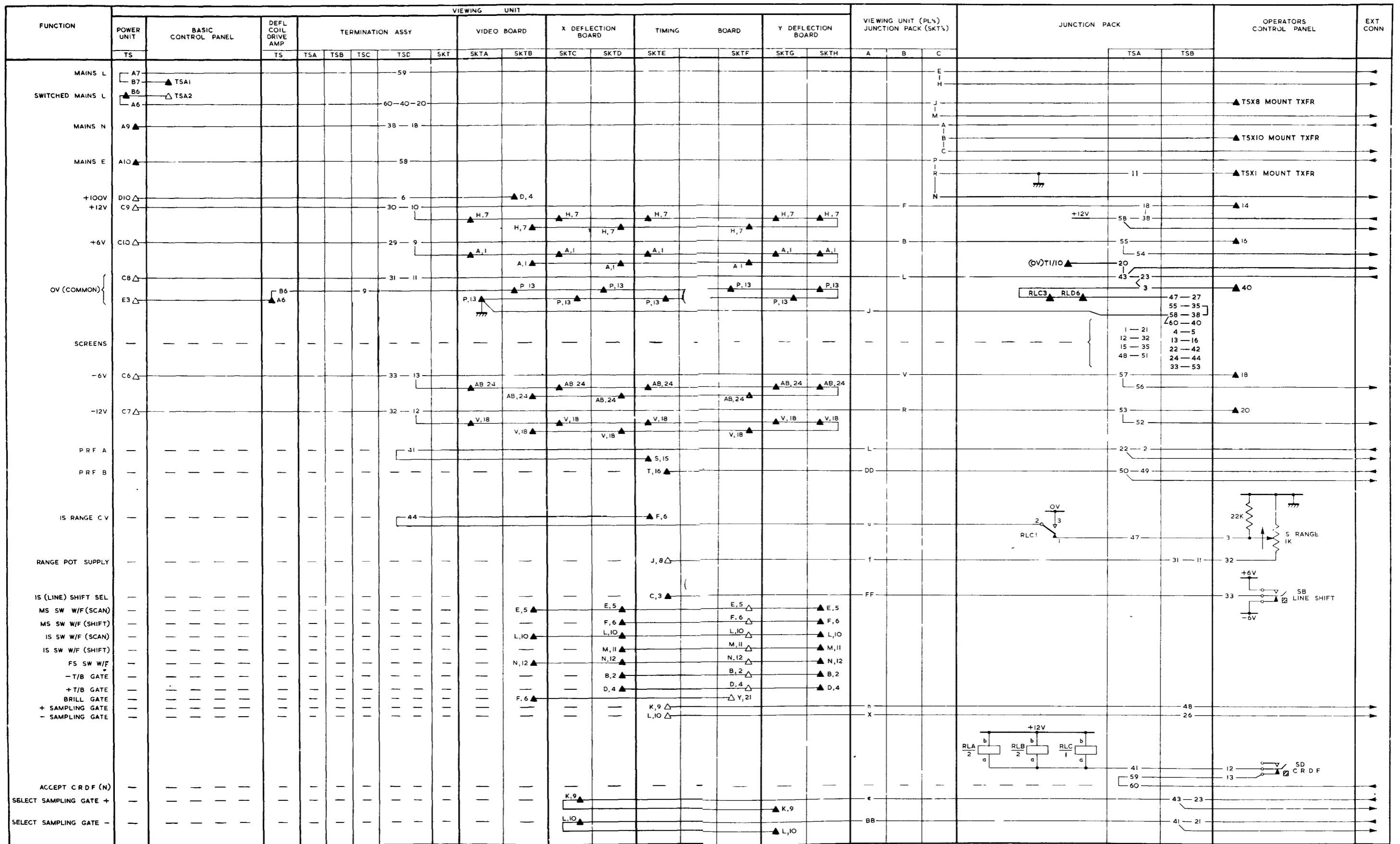
THE COMPLETE SYSTEM

DISPLAY UNIT INTERCONNECTIONS



KEY
 △ ORIGIN OF FUNCTION
 ▲ DESTINATION OF FUNCTION

SPOT PRODUCTION INTERCONNECTIONS



KEY
 ▲ ORIGIN OF FUNCTION
 ▲ DESTINATION OF FUNCTION

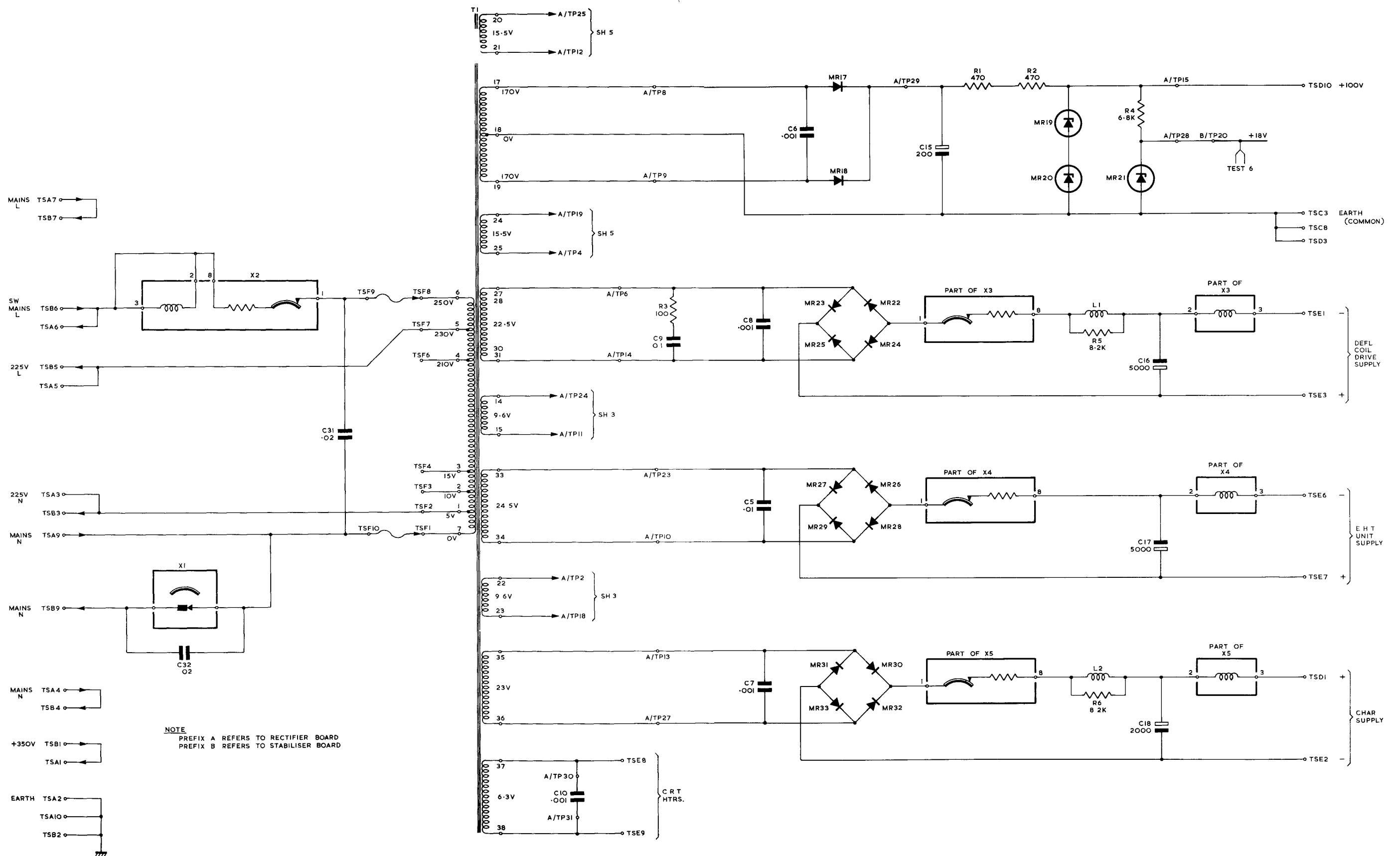
SPOT MOVEMENT INTERCONNECTIONS

SH 1 OF 8 T381D/TPI
 SH 2 OF 8 T381D/TPI

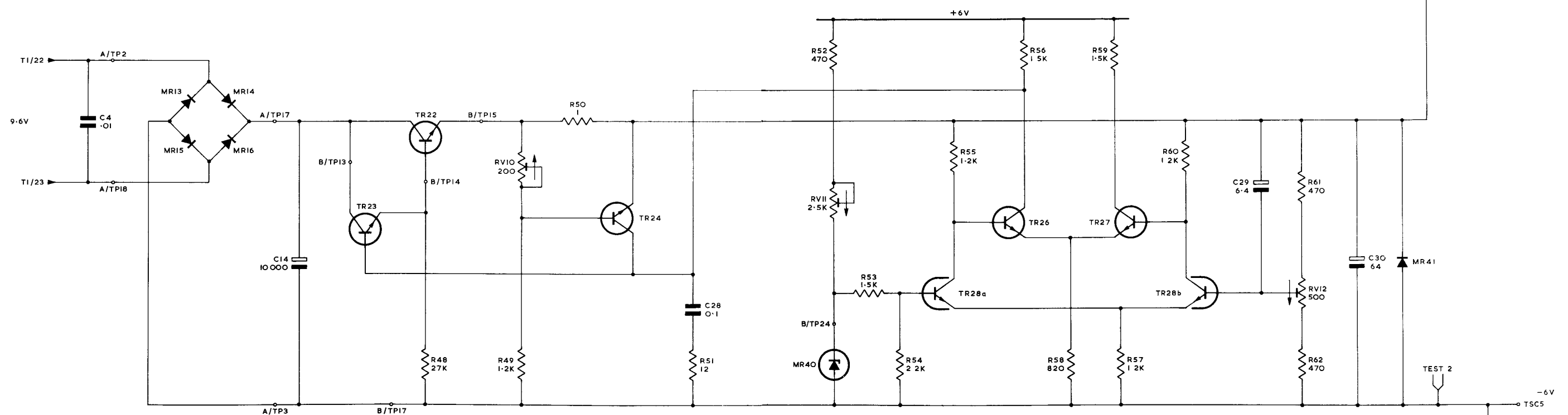
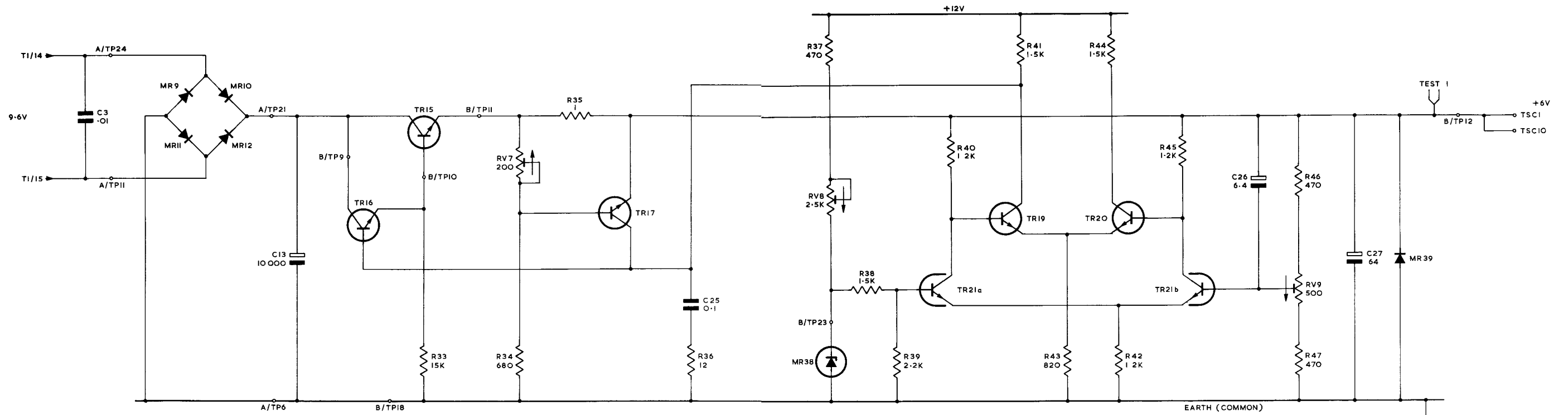
SPOT MOVEMENT INTERCONNECTIONS

SECTION 2

Power Unit Type 11600	Circuit
E H T. Power Unit Type 11601	Circuit
Deflection Coil Drive Amplifier Assembly	Circuit
Viewing Unit Control Panel Type 11210	Circuit
Operator's Control Panel Type 11250/T	Circuit
Deflection Board Type MRGZ (Type No. 11203)	Circuit
Deflection Board Type MRGZ (Type No. 11203)	Layout
Timing Board Type MJEZ (Type No. 12002)	Circuit
Timing Board Type MJEZ (Type No. 12002)	Layout
Video Board Type MFDZ (Type No. 12005)	Circuit
Video Board Type MFDZ (Type No. 12005)	Layout



NOTE
 PREFIX A REFERS TO RECTIFIER BOARD
 PREFIX B REFERS TO STABILISER BOARD



NOTE
 PREFIX A REFERS TO RECTIFIER BOARD
 PREFIX B REFERS TO STABILISER BOARD

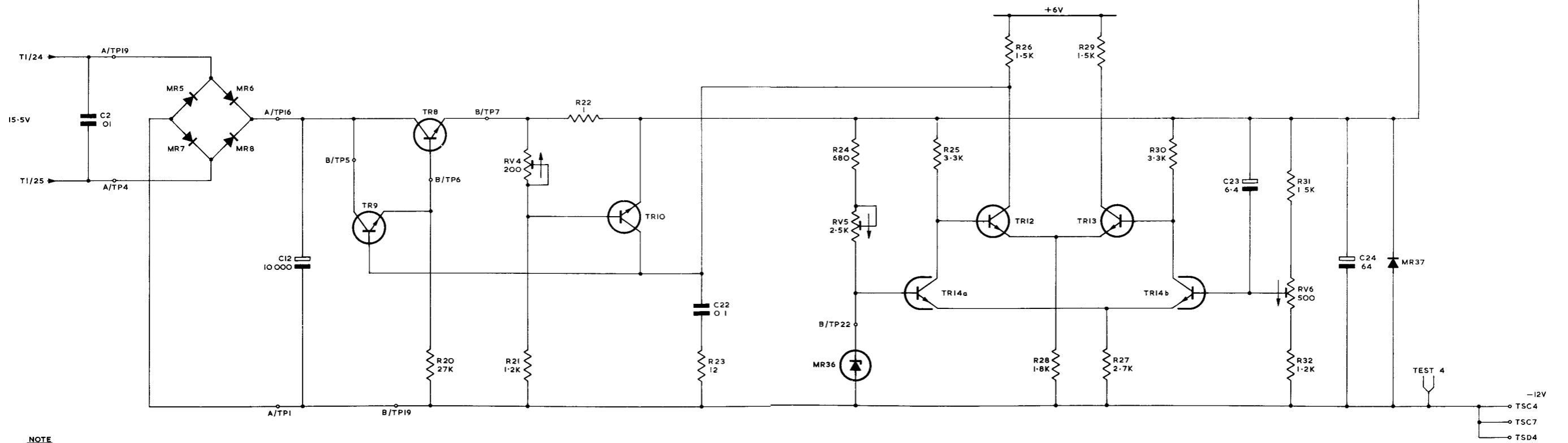
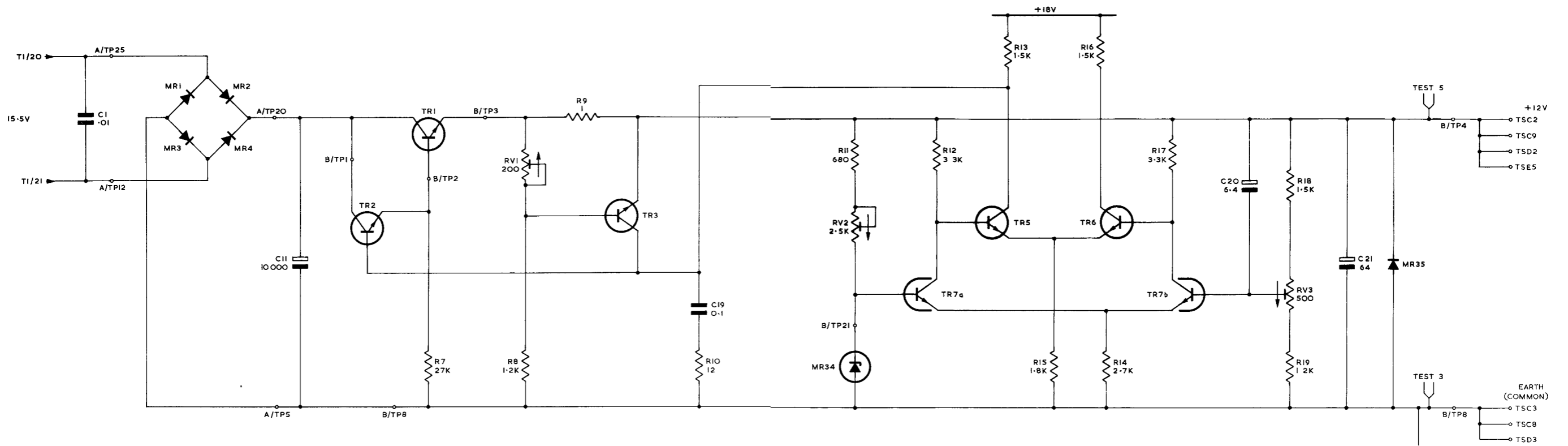
POWER UNIT
 TYPE 11600

SH 3 OF
 11600/TP1

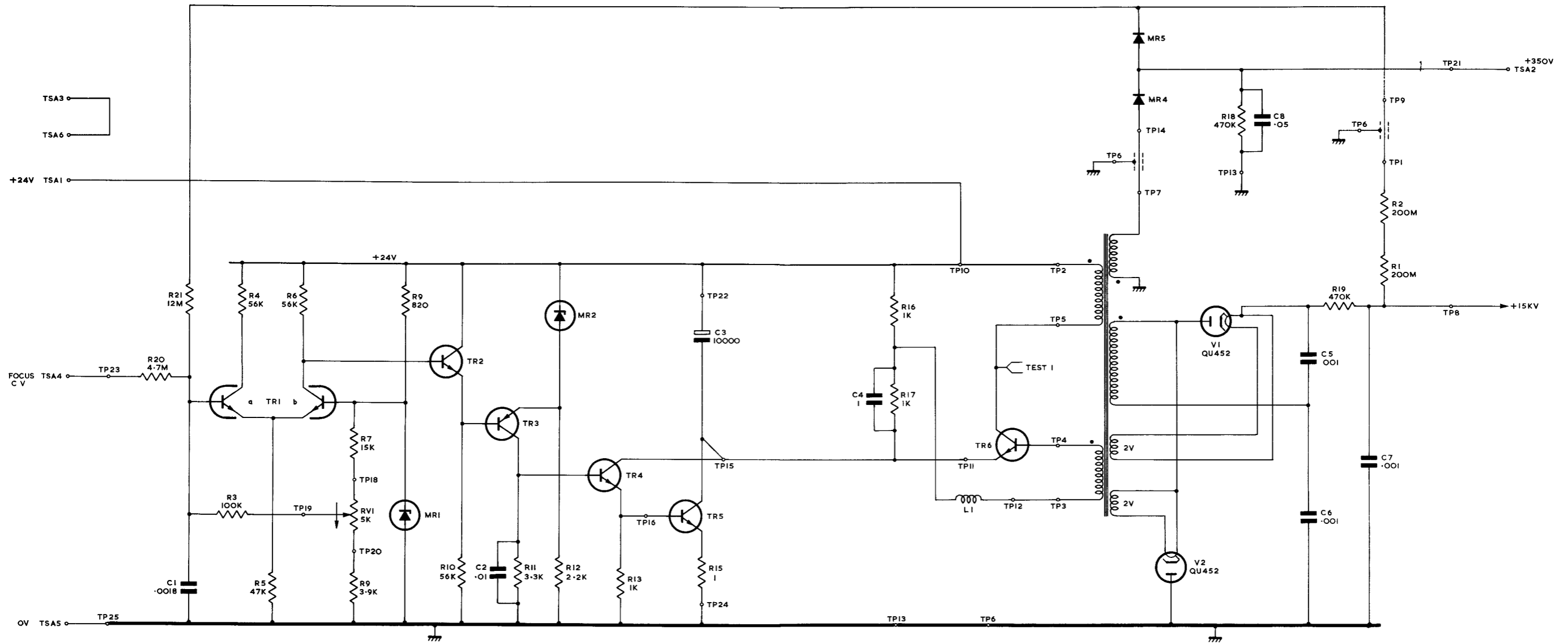
SH 4 OF 6
 11600/TP1

POWER UNIT
 TYPE 11600

+6V
 TSC1
 TSC10
 -6V
 TSC5
 TSC6
 TSD5



NOTE
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 PREFIX B REFERS TO STABILISER BOARD

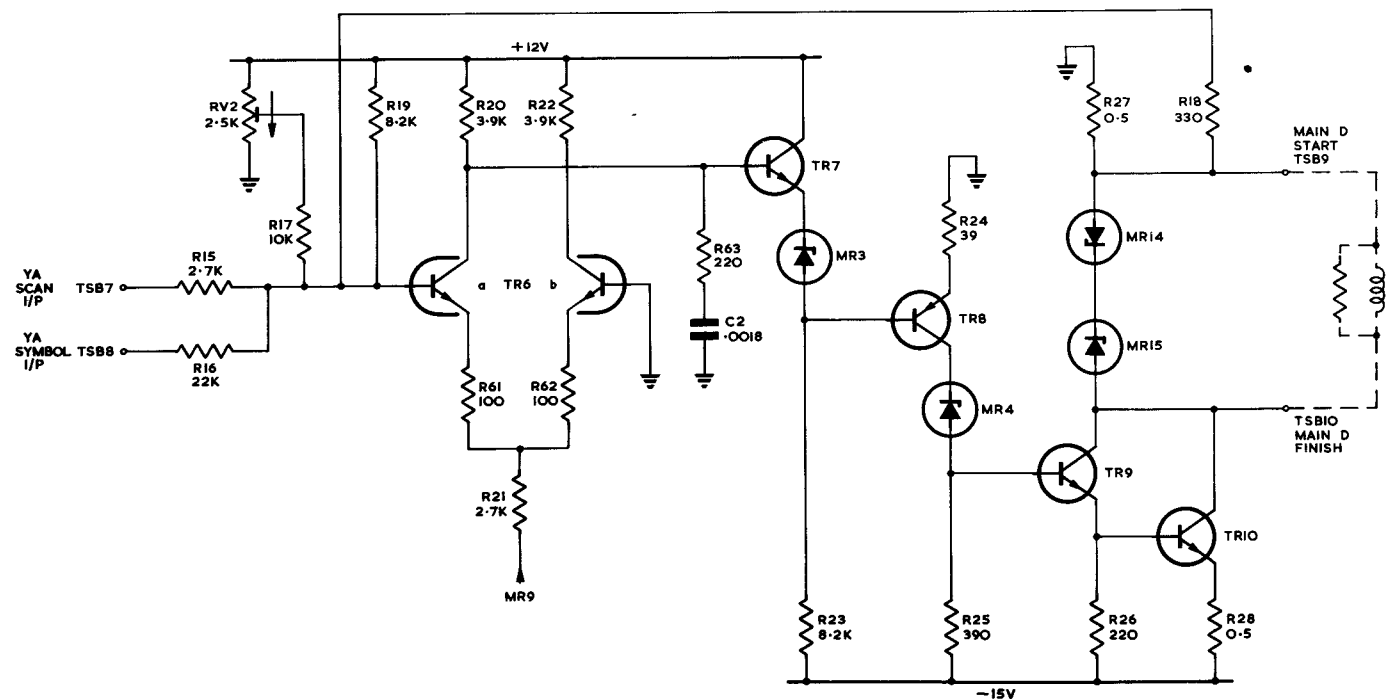
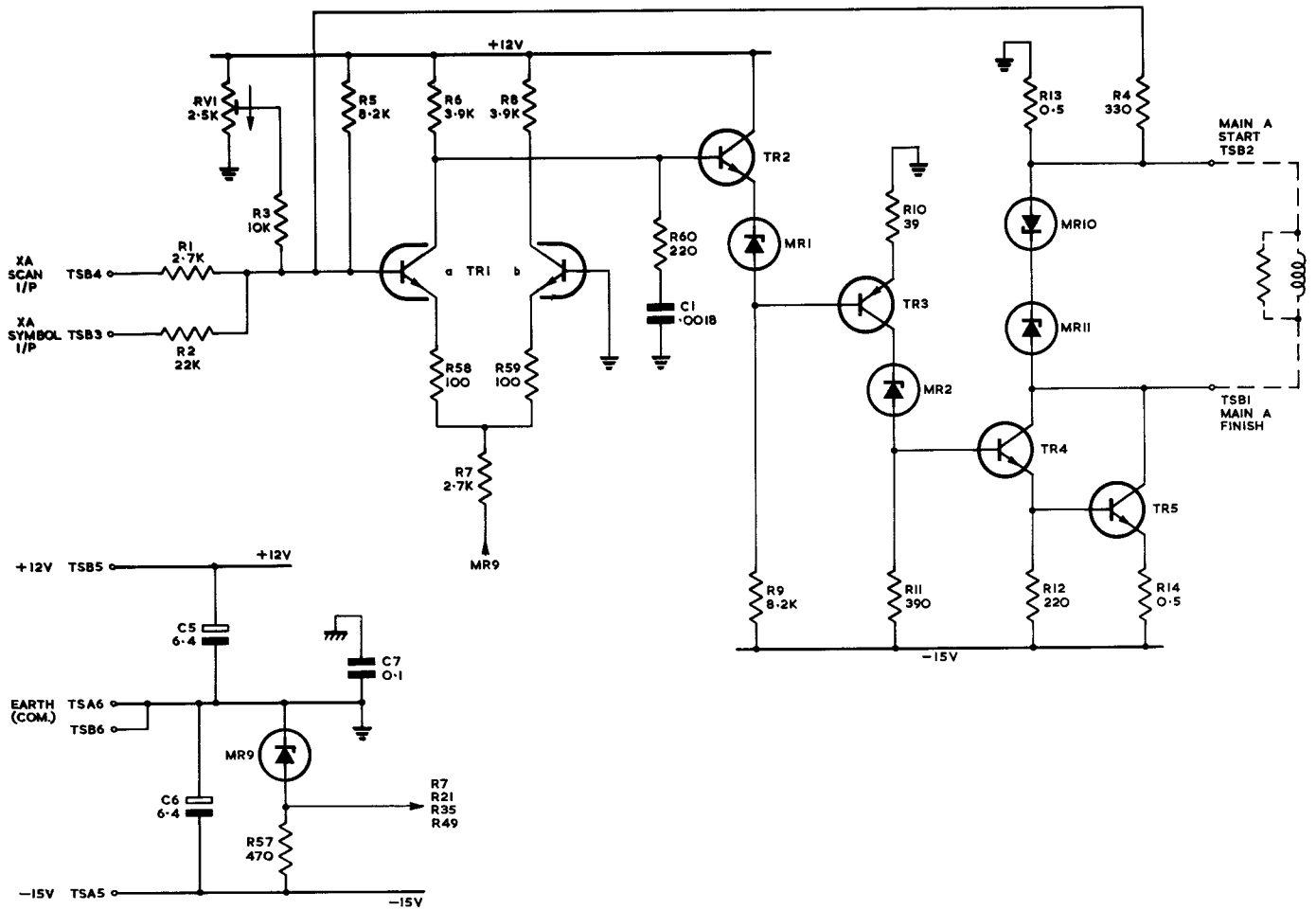


E.H.T. UNIT
TYPE 11601

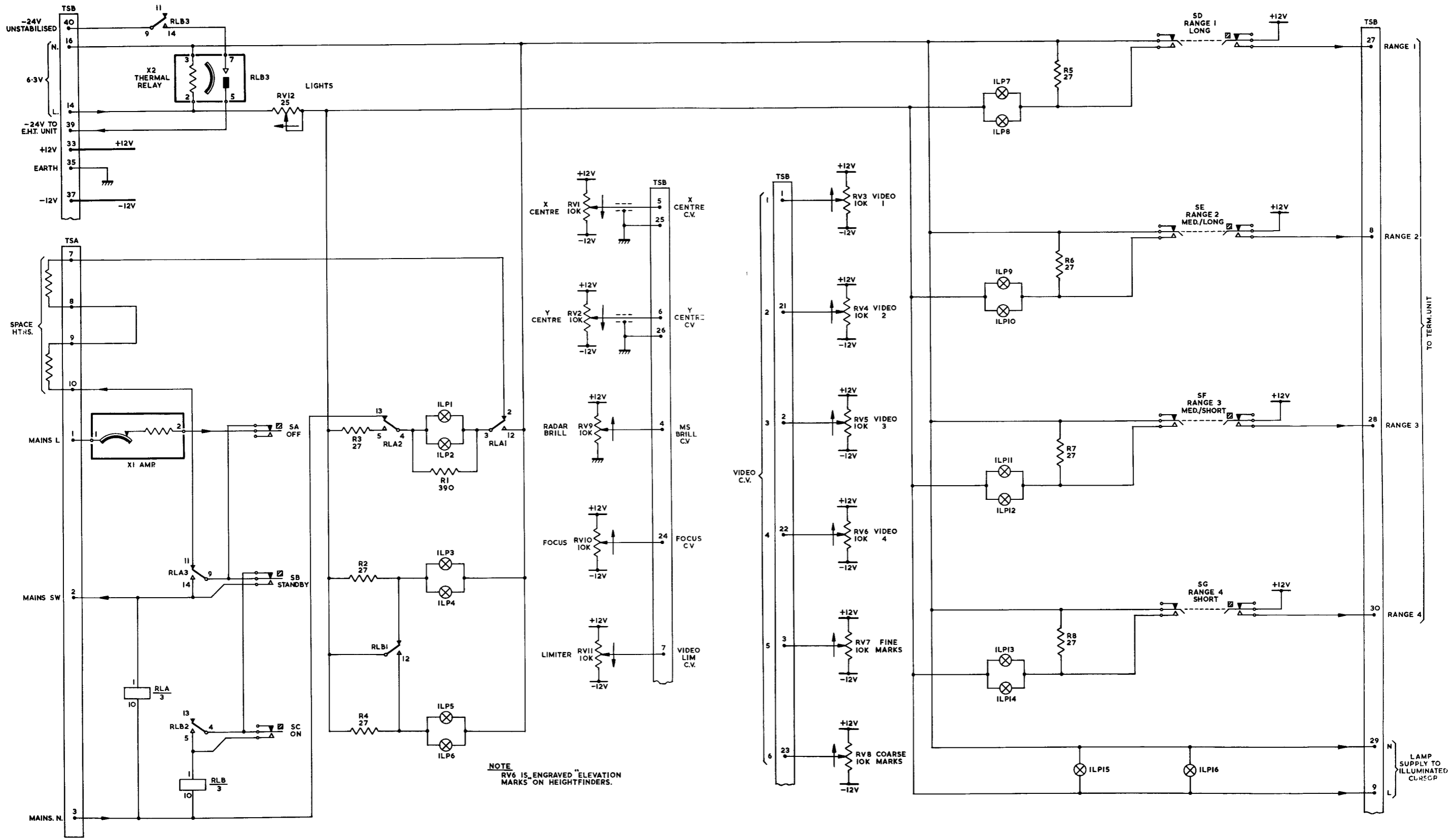
SH 1
11601/TP1

SH 2
11601/TP1

E.H.T. UNIT
TYPE 11601



DEFLECTION COIL DRIVE AMPLIFIER
TYPE 12502

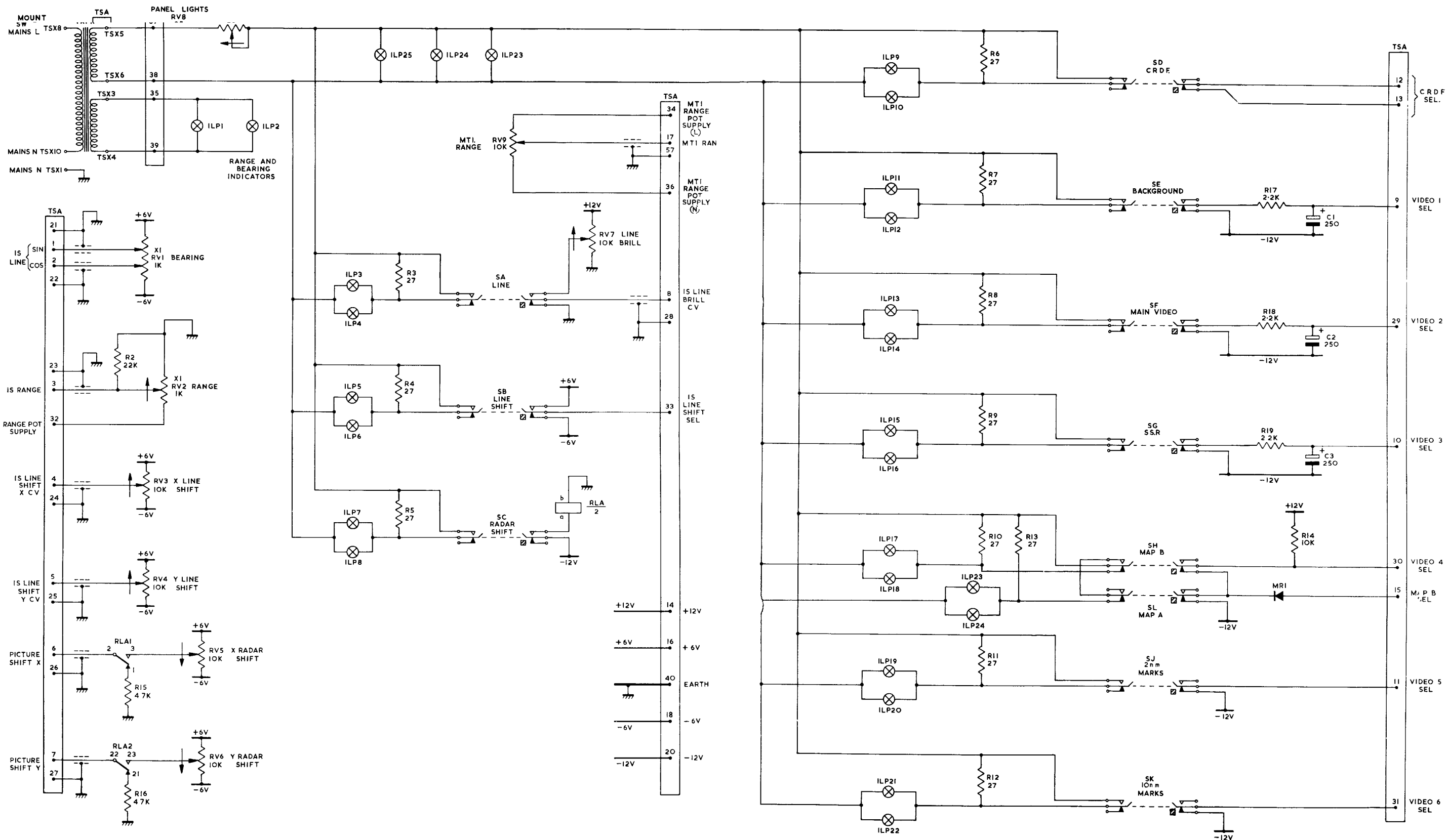


BASIC CONTROL PANEL
TYPE 11210

SH.1
11210/TPI

SH.2
11210/TPI

BASIC CONTROL PANEL
TYPE 11210



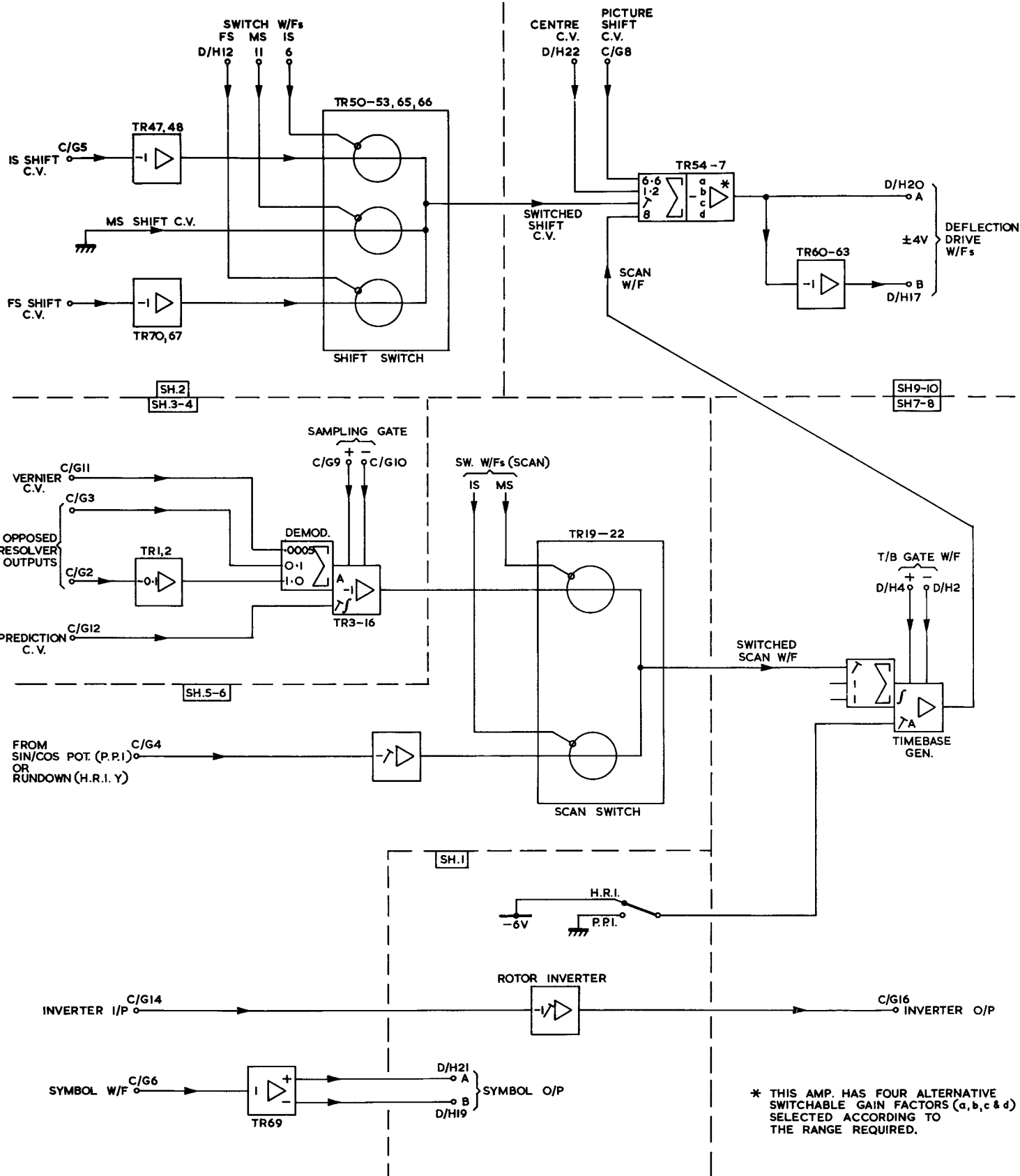
OPERATORS CONTROL PANEL
TYPE 11250T

SH1 11250T/TPI (SH2 11250T/TPI

OPERATORS CONTROL PANEL
TYPE 11250T

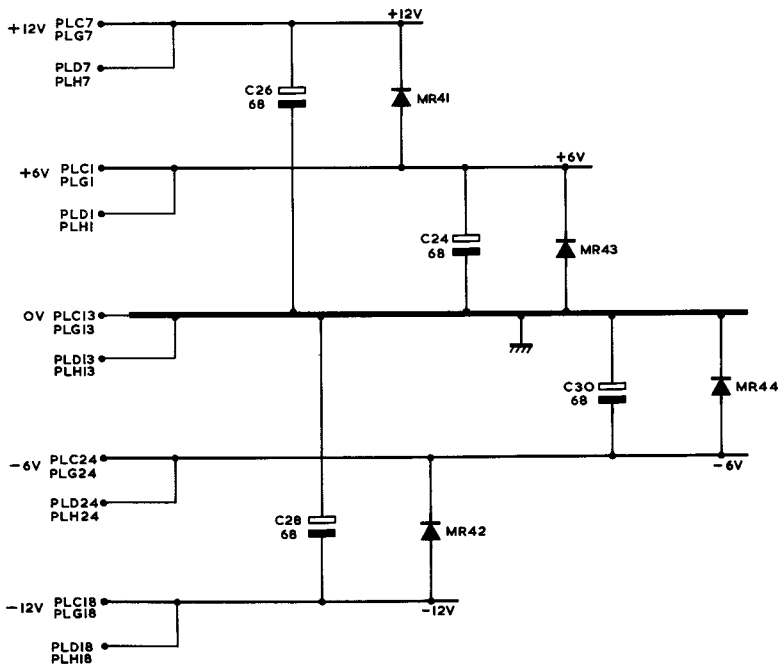
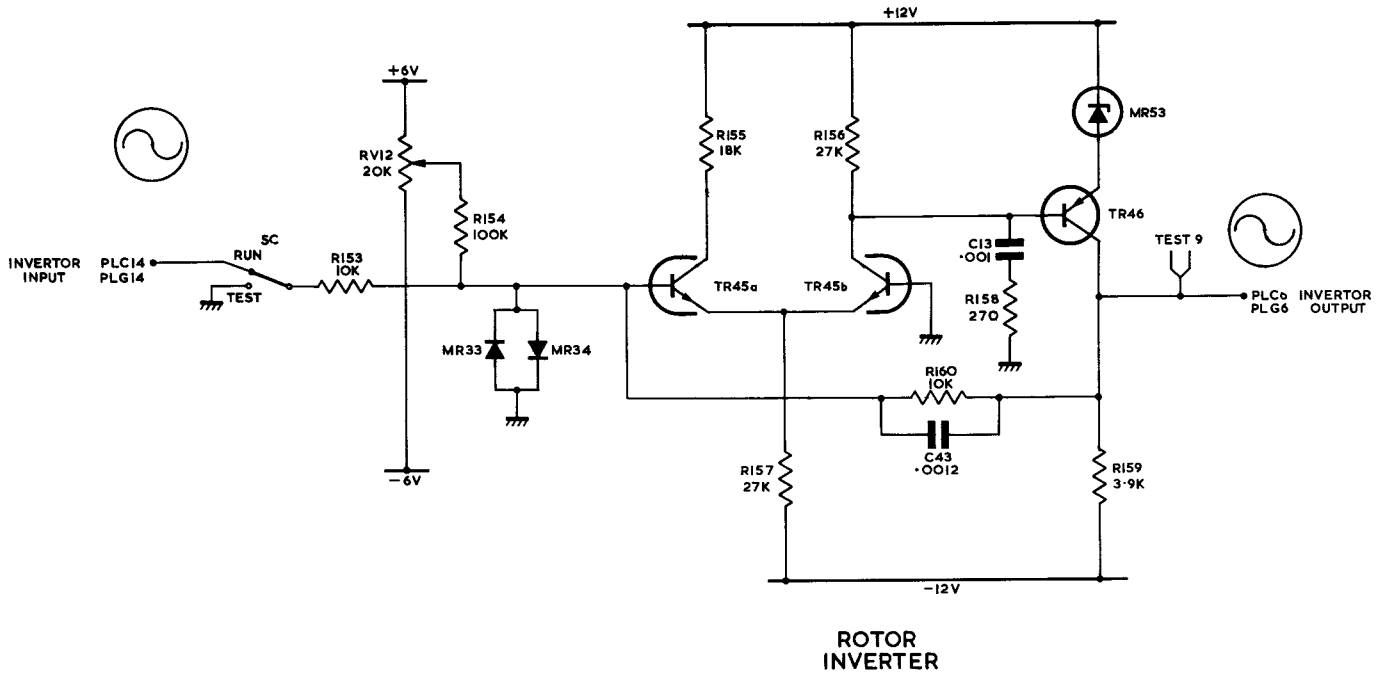
BASIC DEFLECTION BOARD

MRGZ



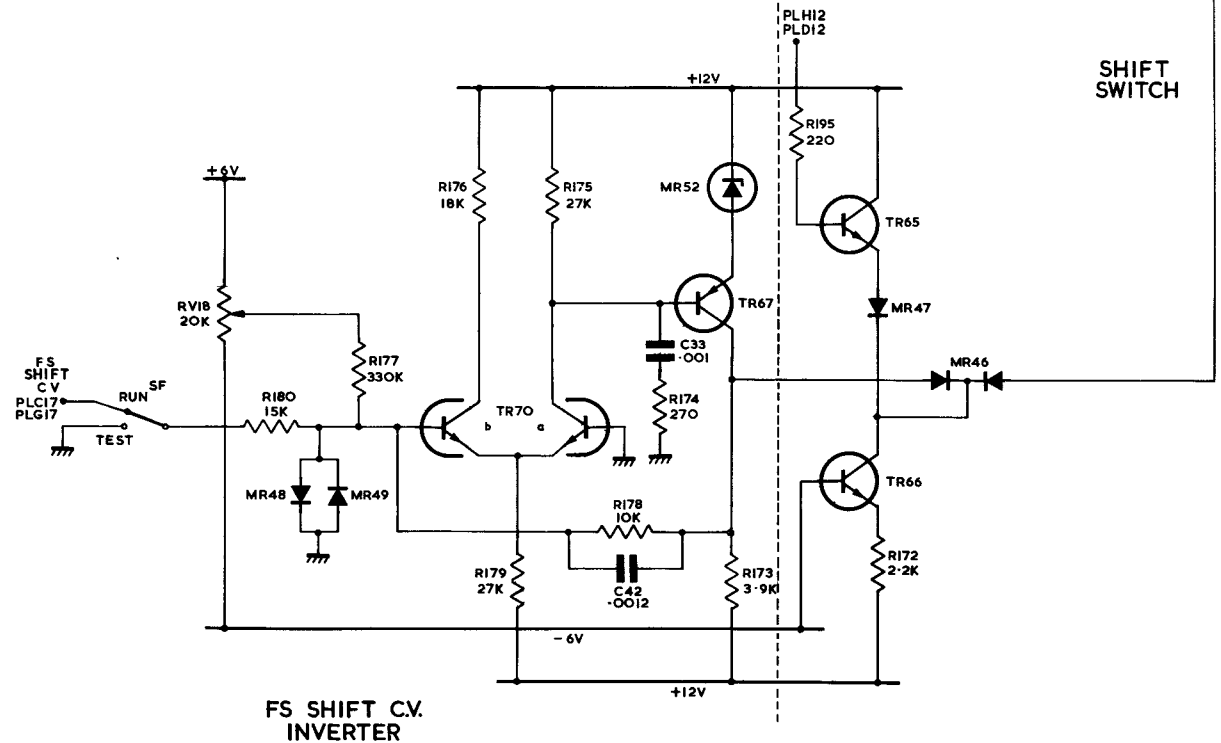
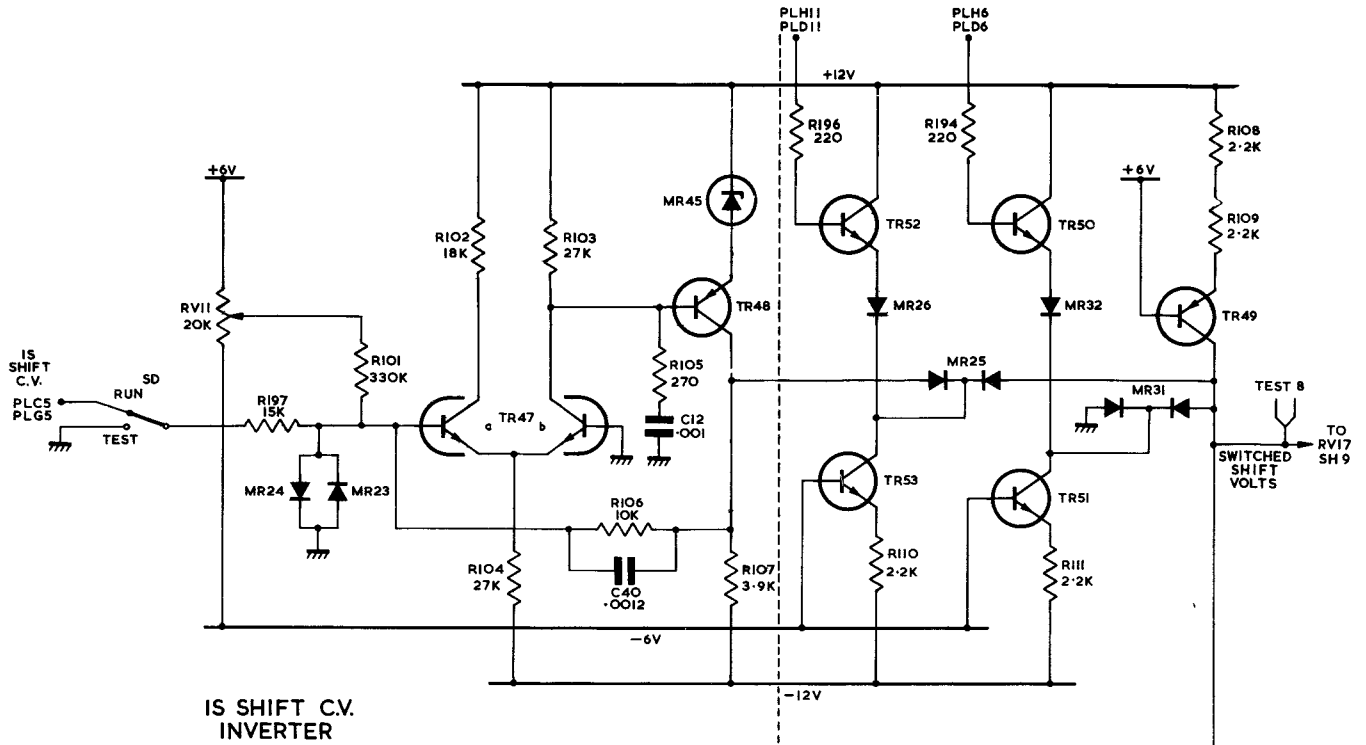
* THIS AMP HAS FOUR ALTERNATIVE SWITCHABLE GAIN FACTORS (a, b, c & d) SELECTED ACCORDING TO THE RANGE REQUIRED.

DEFLECTION BOARD MRGZ

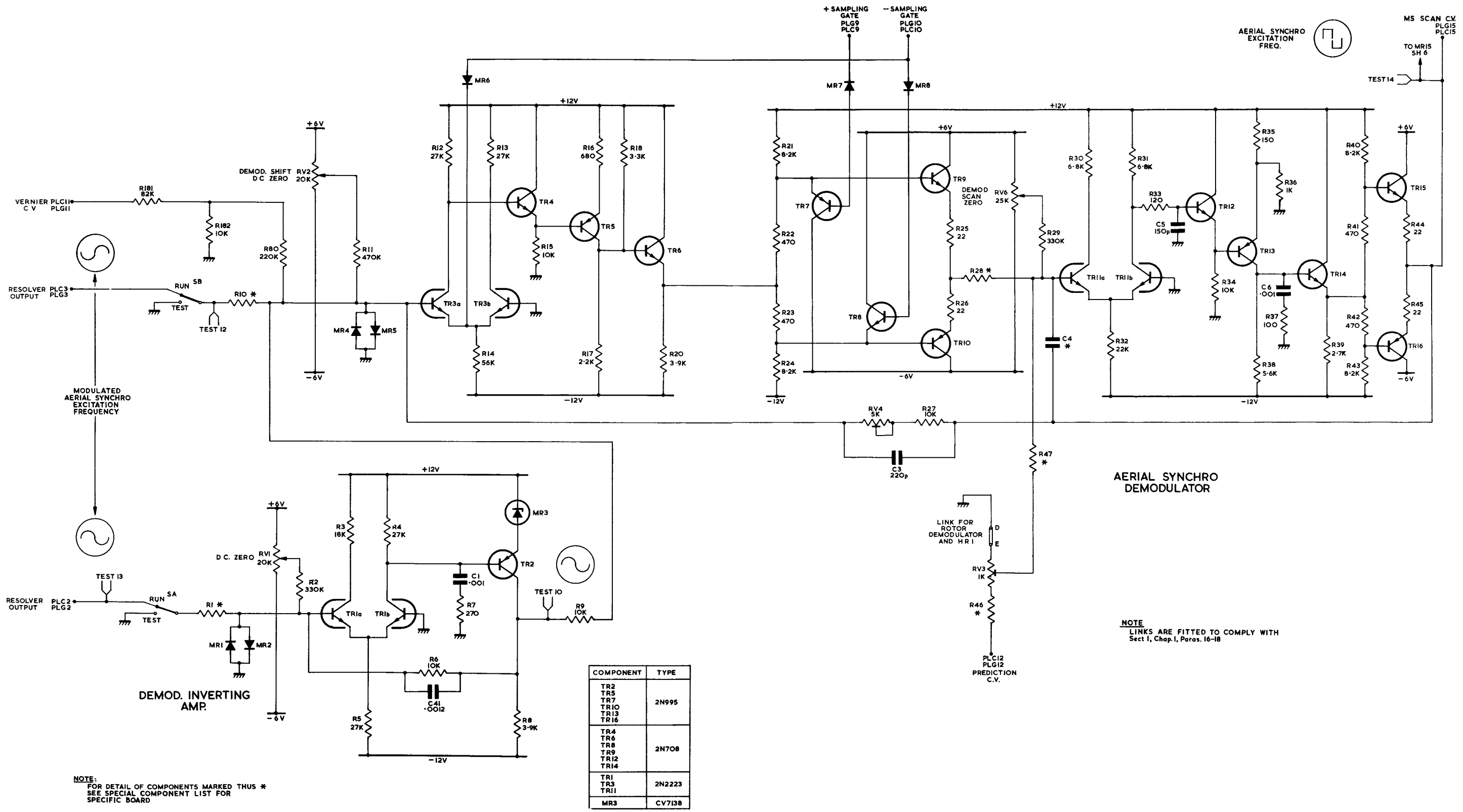


COMPONENT	TYPE
TR45 TR47 TR70	2N2223
TR46 TR48 TR49 TR67	2N995
TR50 TR51 TR52 TR53 TR65 TR66	2N708
MR45 MR52 MR53	CV7138

**BASIC DEFLECTION BOARD
MRGZ**



BASIC DEFLECTION BOARD
MRGZ

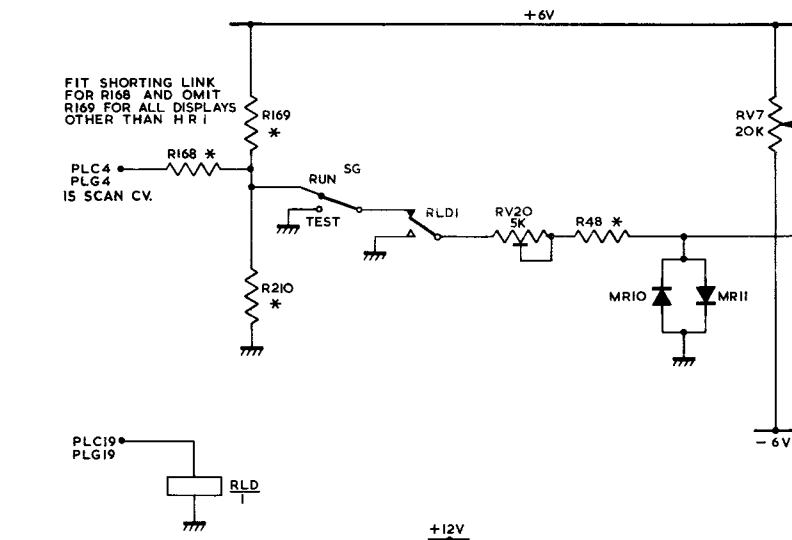


AERIAL SYNCHRO DEMODULATOR

NOTE
LINKS ARE FITTED TO COMPLY WITH
Sect 1, Chap. 1, Paras. 16-18

COMPONENT	TYPE
TR2 TR5 TR7 TR10 TR13 TR16	2N995
TR4 TR6 TR8 TR9 TR12 TR14	2N708
TR1 TR3 TR11	2N2223
MR3	CV7138

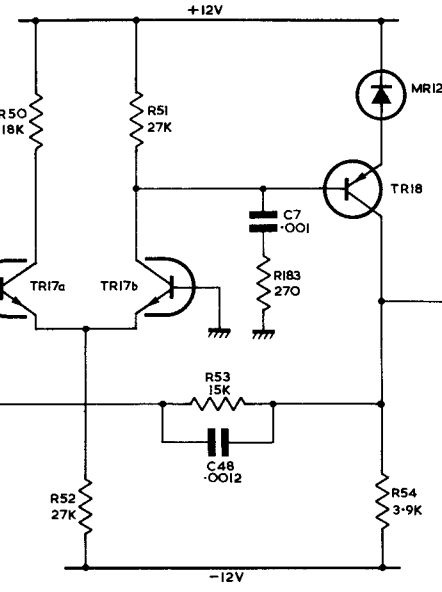
NOTE:
FOR DETAIL OF COMPONENTS MARKED THUS *
SEE SPECIAL COMPONENT LIST FOR
SPECIFIC BOARD



SYMBOL PHASE SPLITTER

NOTE
FOR DETAIL OF COMPONENTS MARKED THUS *
SEE SPECIAL COMPONENT LIST FOR
SPECIFIC BOARD

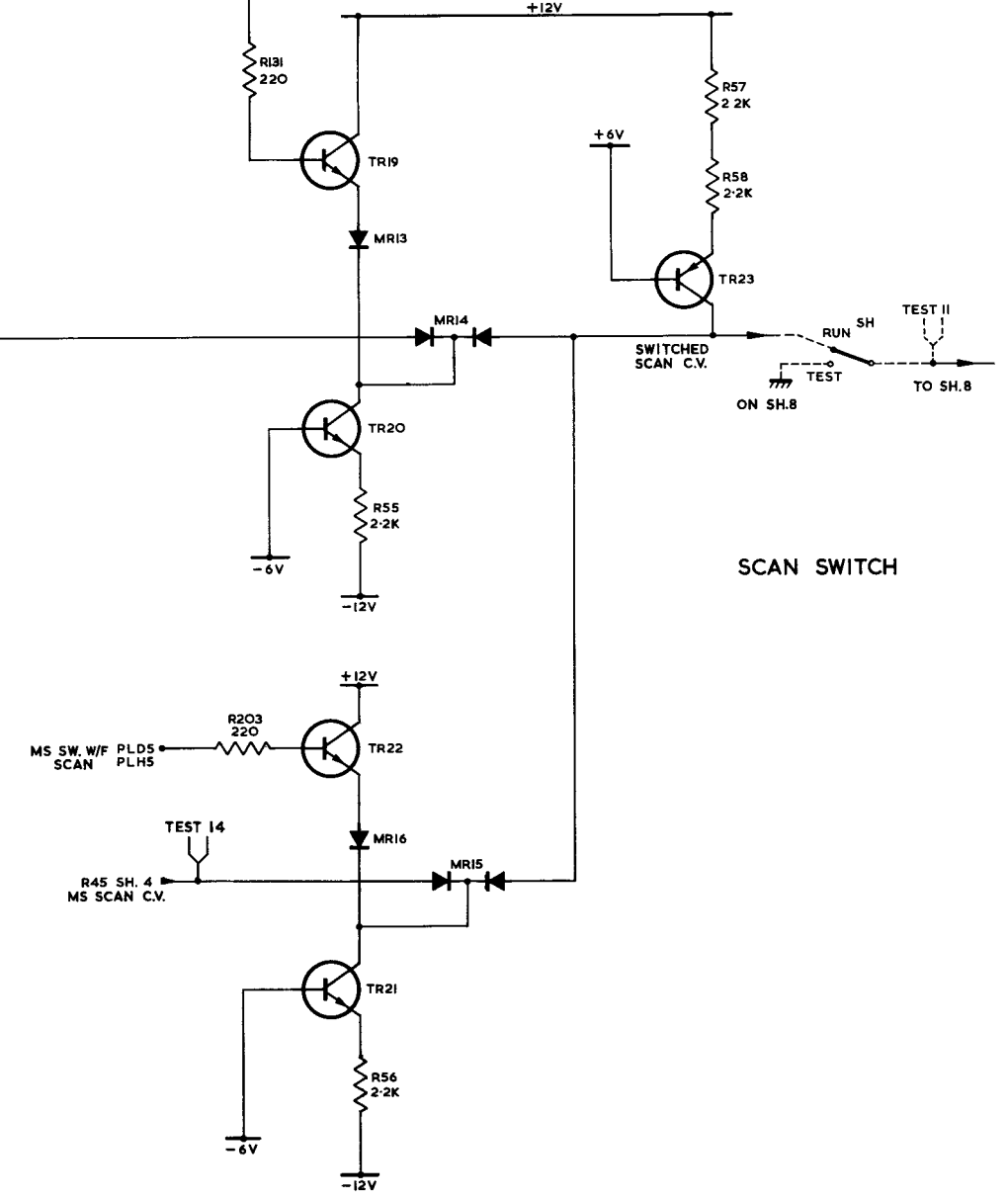
**BASIC DEFLECTION BOARD
MRGZ**



**IS SCAN SWITCH
BUFFER AMPLIFIER**

**SH.5 OF 10
12003/TP1**

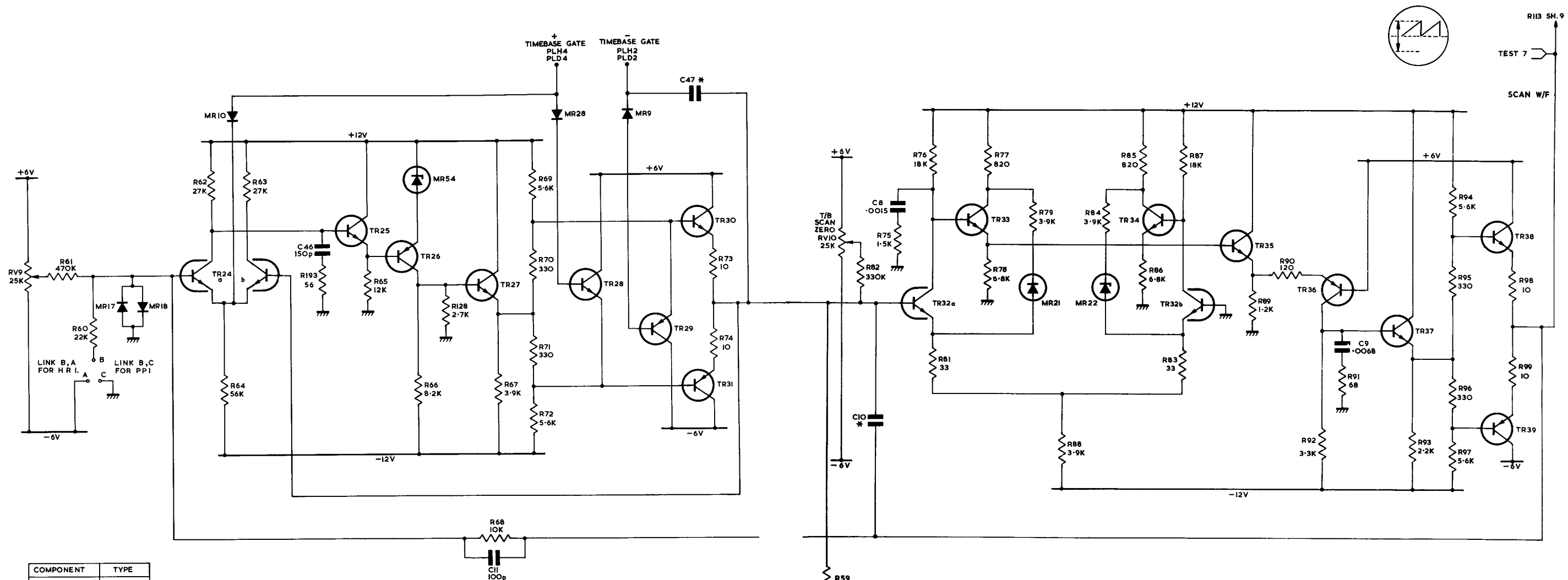
COMPONENT	TYPE
TR19	2N708
TR20	
TR21	
TR22	
TR64	
TR18	2N995
TR23	2N2223
MR12	CV7138



SCAN SWITCH

**SH.6 OF 10
12003/TP1**

**BASIC DEFLECTION BOARD
MRGZ**

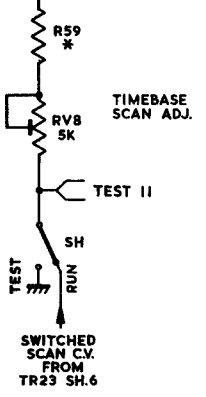


COMPONENT	TYPE
TR25 TR27 TR28 TR30 TR33 TR34 TR35 TR37 TR38	2N708
TR26 TR29 TR31 TR36 TR39	2N995
TR24 TR32	2N2223
MR21 MR22	CV7101
MR54	CV7138

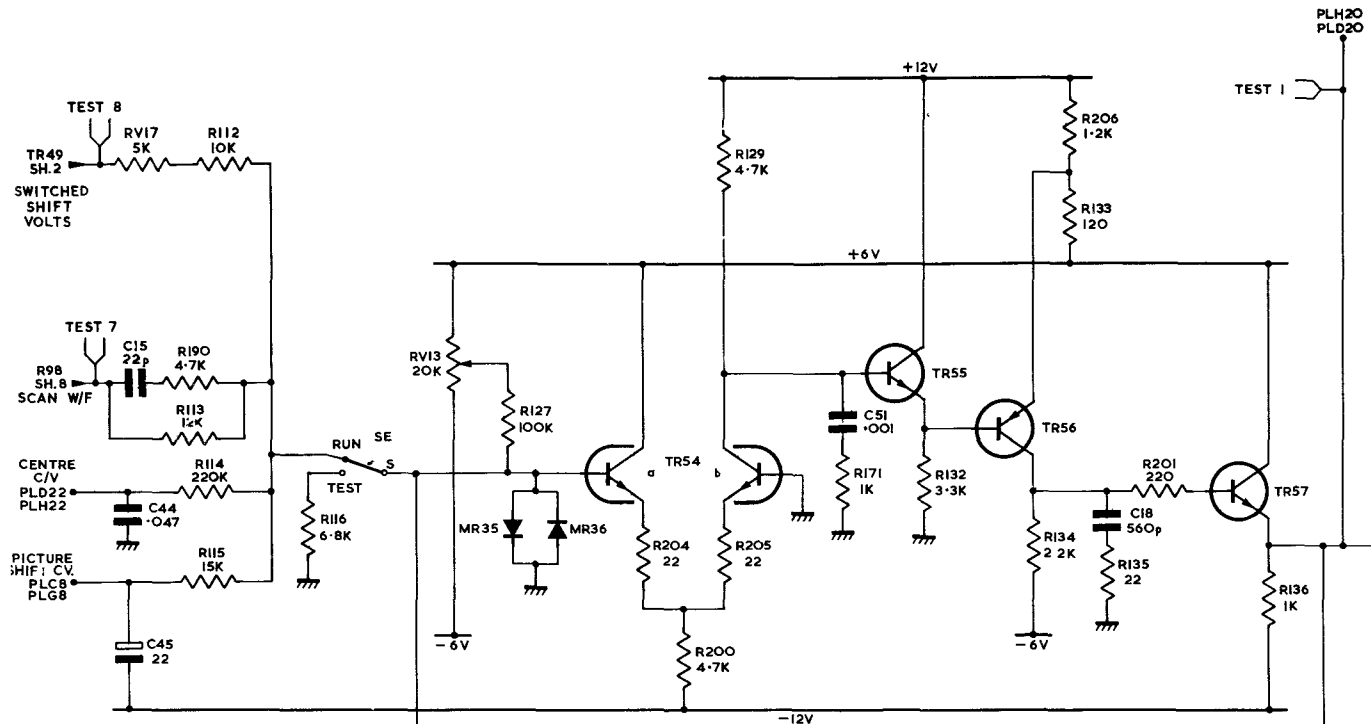
TIMEBASE

GENERATOR

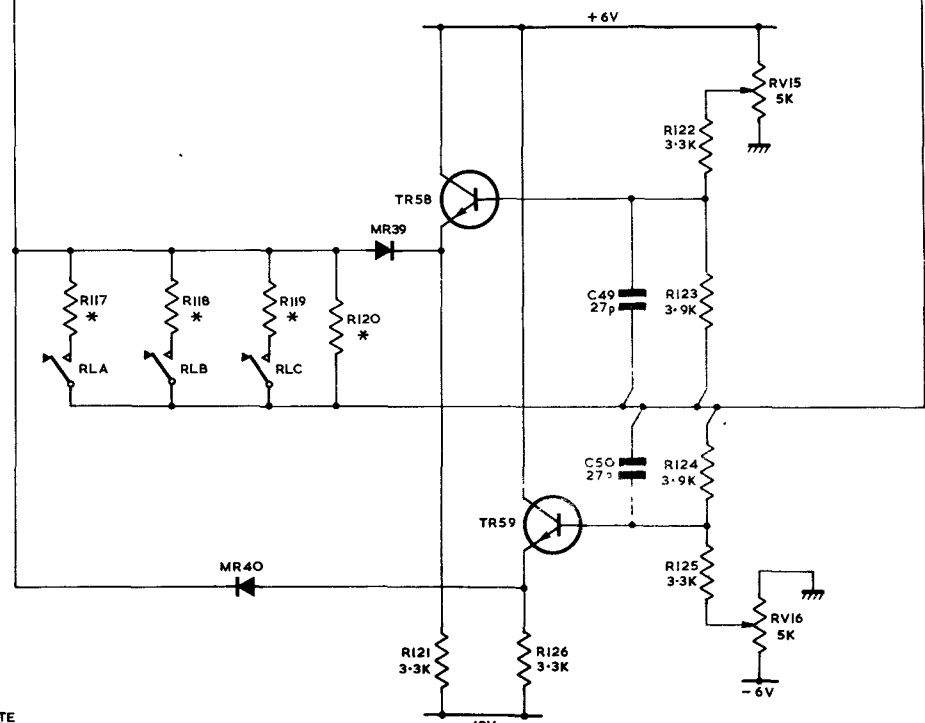
NOTES
 FOR DETAILS OF COMPONENTS
 MARKED * SEE SPECIAL
 COMPONENT LIST
 FOR SPECIFIC BOARD
 LINKS ARE FITTED TO
 COMPLY WITH Sect.1,
 Chap.1, Paras.16-18.



A DEFLECTION DRIVE W/F



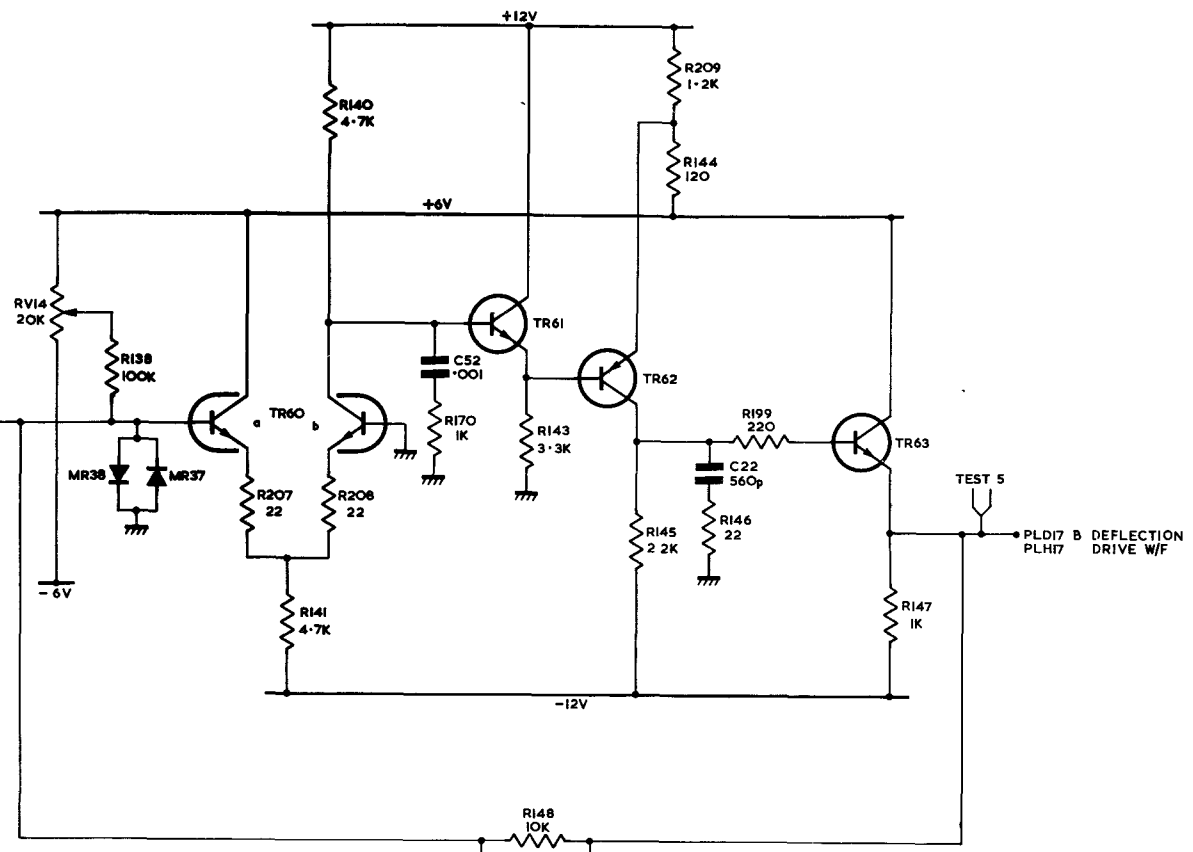
RANGE CHANGE AMPLIFIER

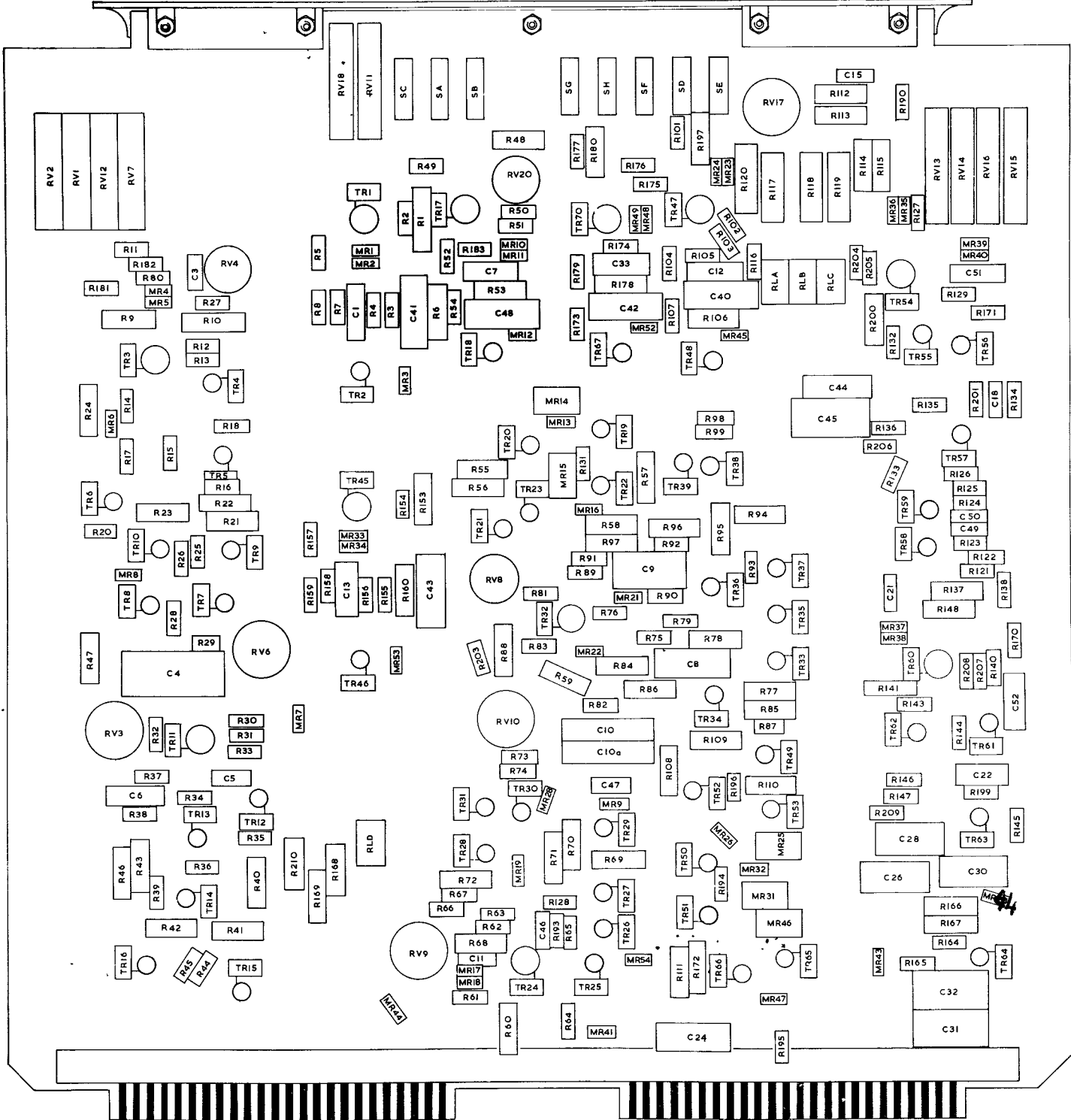


LIMITER

COMPONENT	TYPE
TR54 TR60	2N2223
TR55 TR57 TR58 TR59 TR61 TR63	2N708
TR56 TR62	2N995

NOTE
FOR DETAILS OF COMPONENTS
MARKED THUS * SEE SPECIAL
COMPONENT LIST FOR
SPECIFIC BOARD



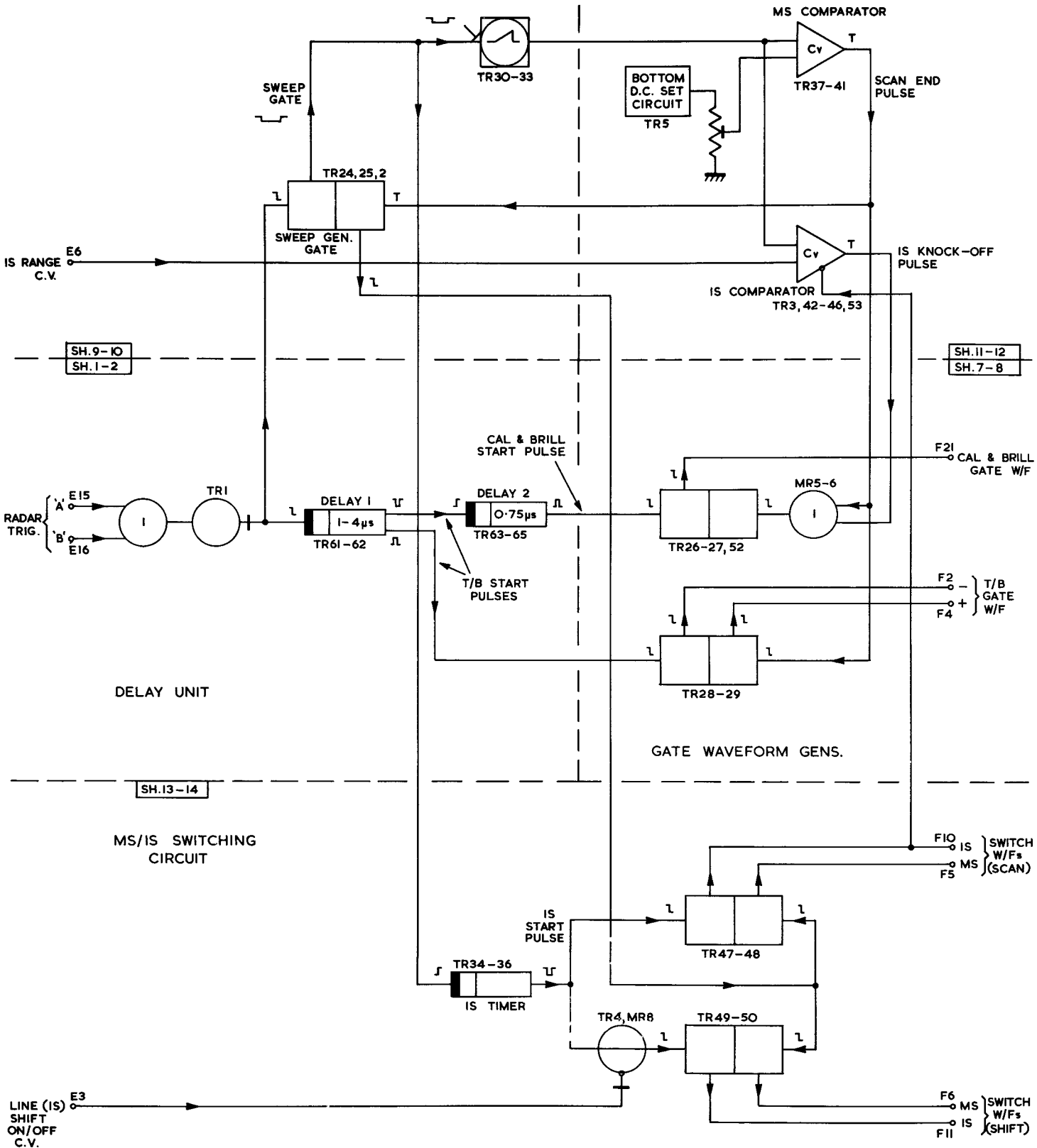


COMPONENT LAYOUT ON
BASIC DEFLECTION BOARD
MRGZ

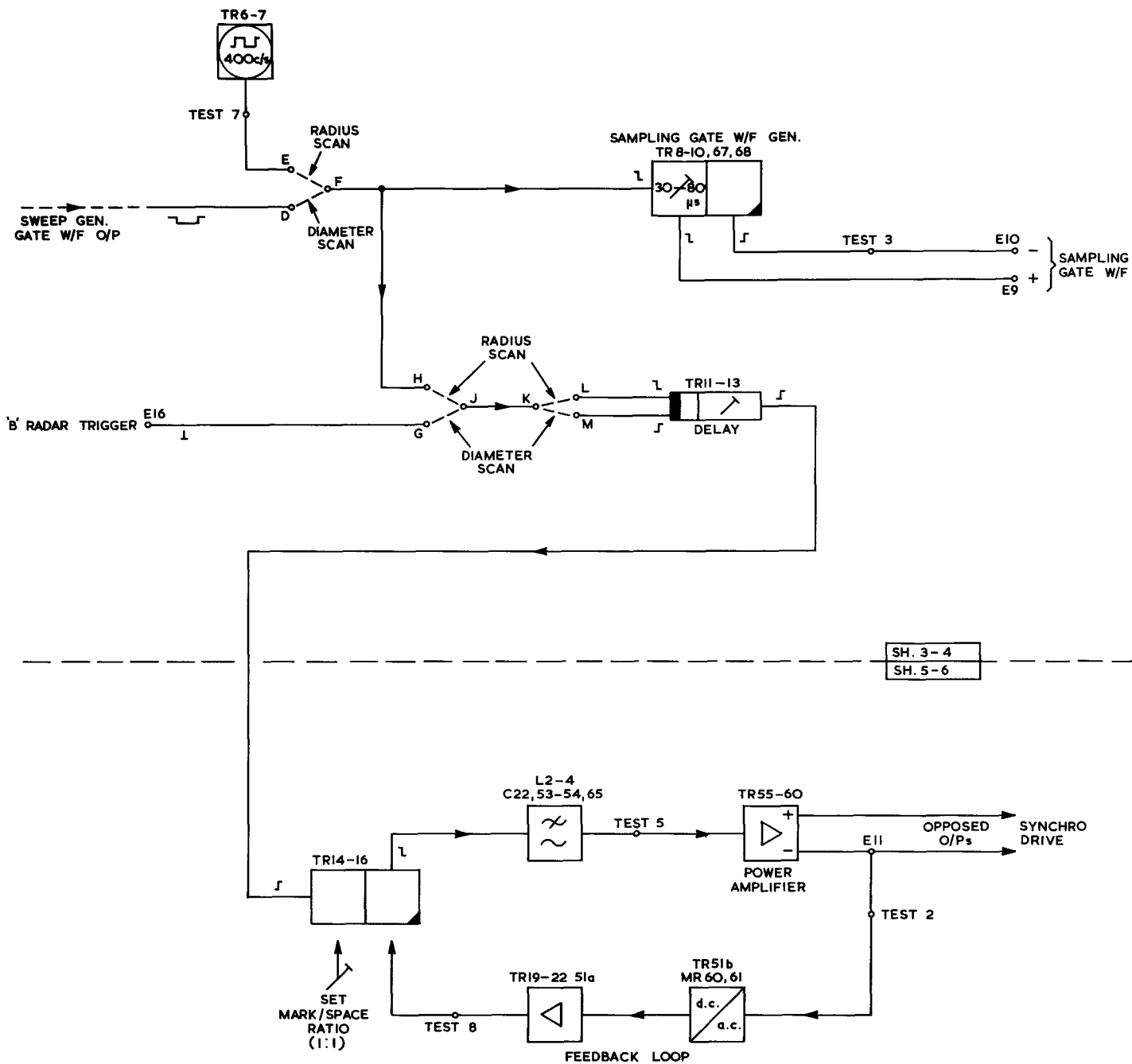
BASIC TIMING BOARD

MJEZ

SCAN TIMING

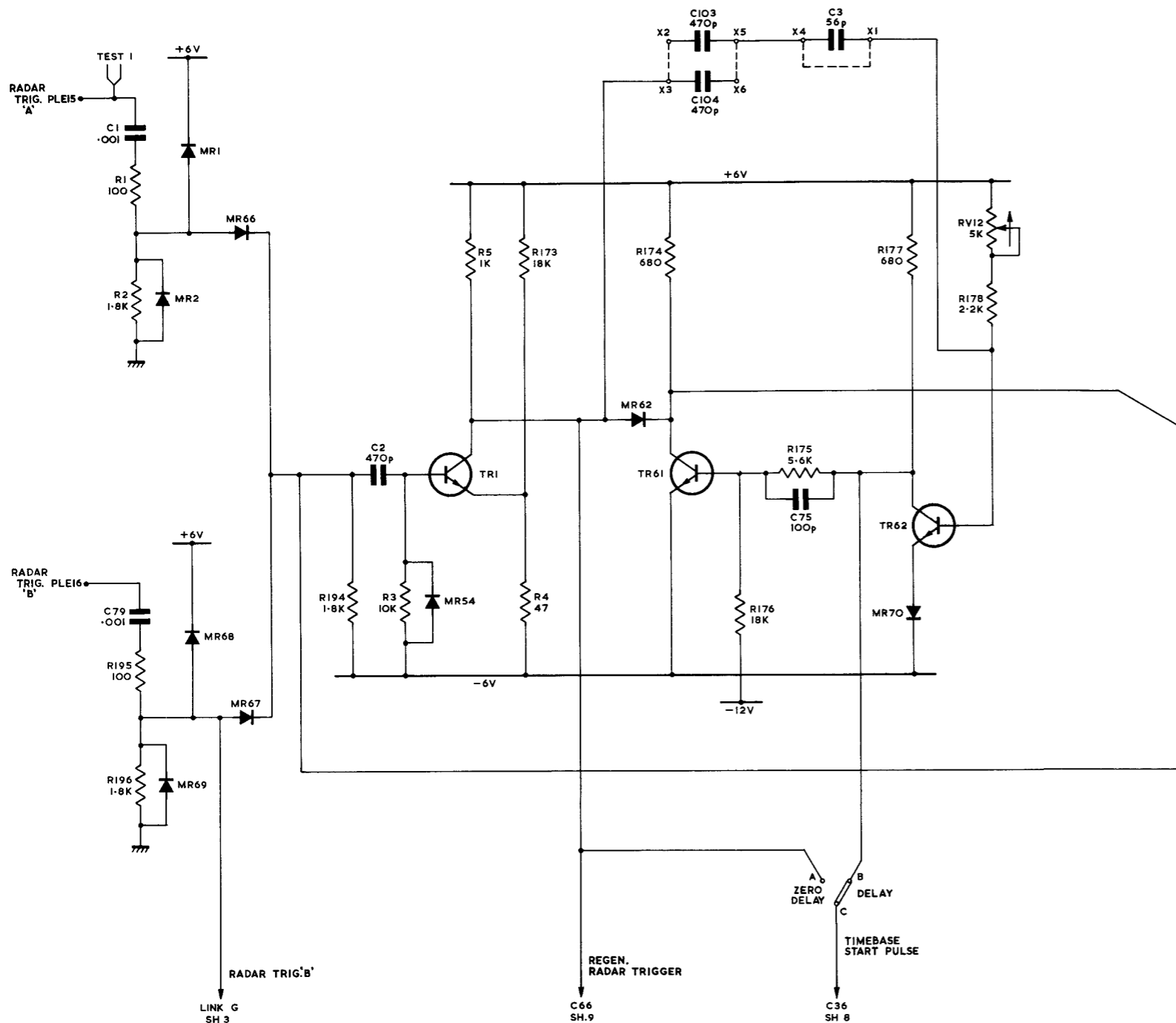


SWITCH & GATE WAVEFORM GENERATING CIRCUITS

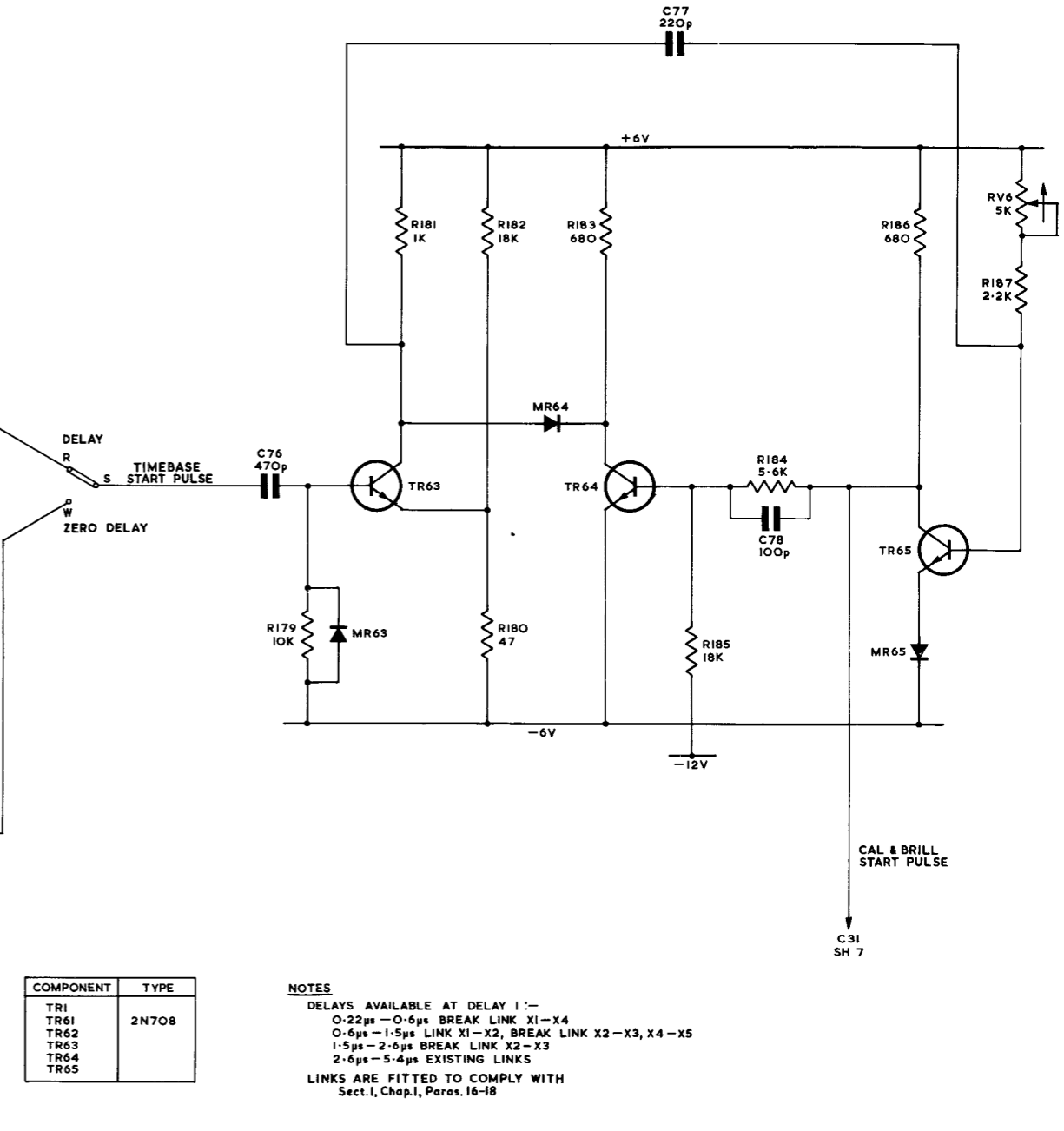


SYNCHRO EXCITATION SUPPLY AND SAMPLING GATE WAVEFORM GENERATOR CIRCUITS

DELAY 1



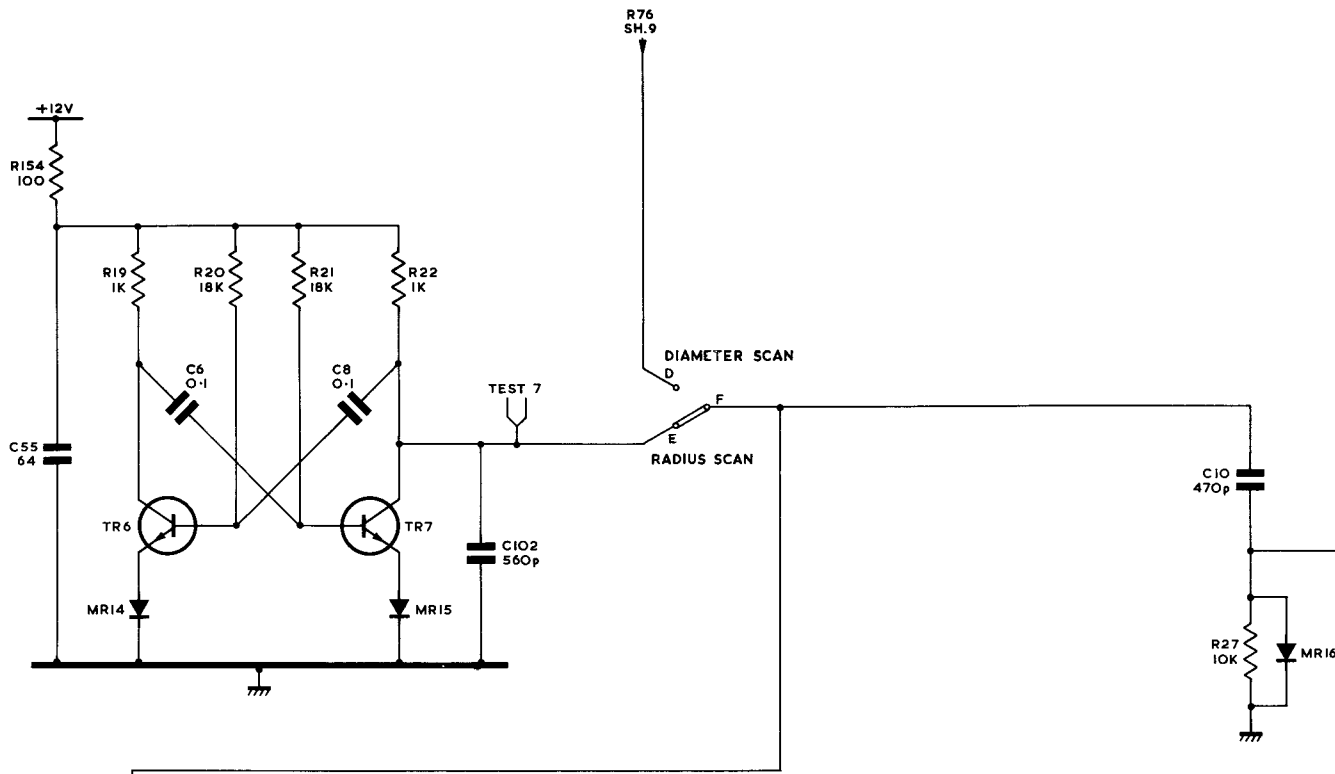
DELAY 2



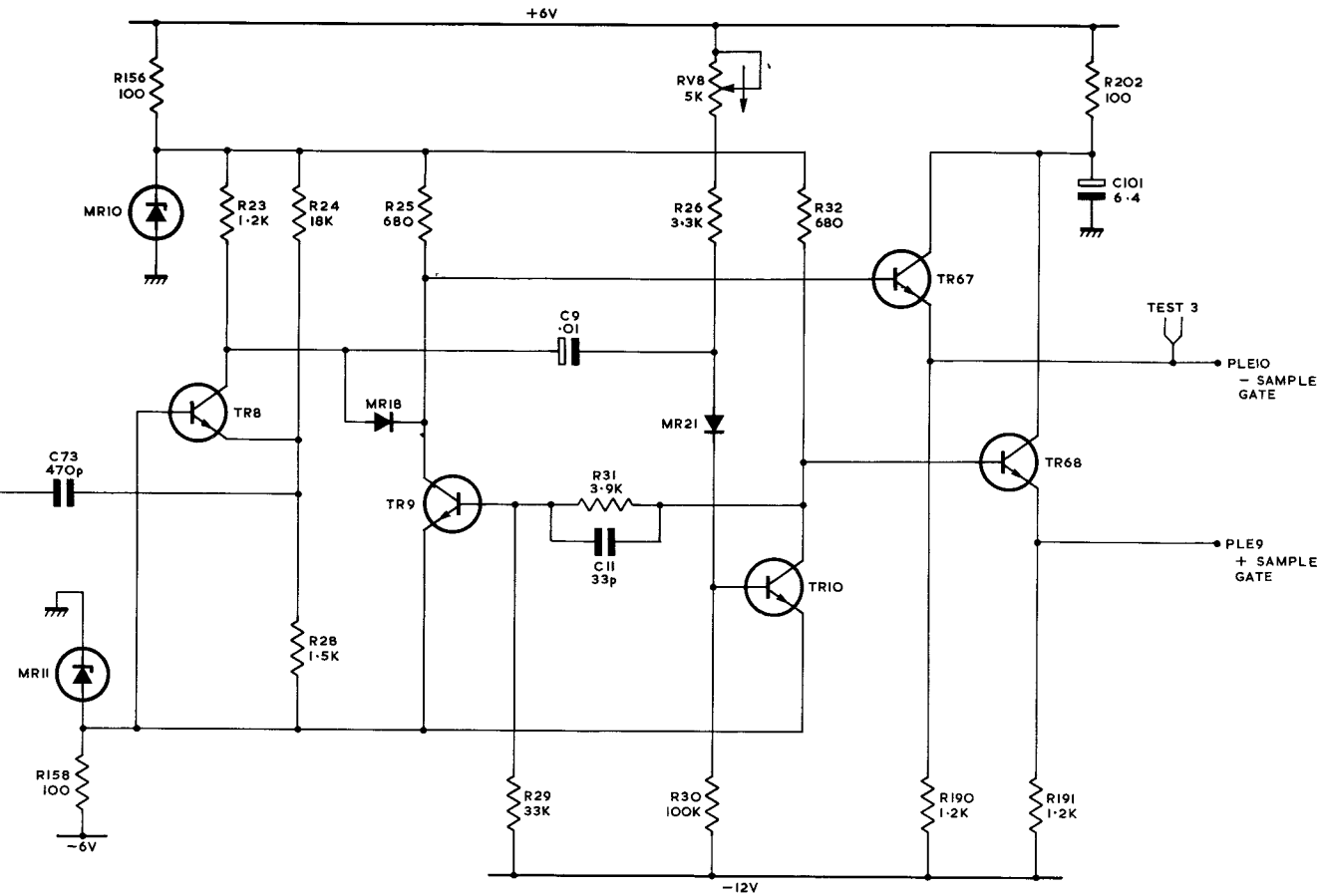
COMPONENT	TYPE
TR1	2N708
TR61	
TR62	
TR63	
TR64	
TR65	

NOTES
 DELAYS AVAILABLE AT DELAY 1 :-
 0.22µs - 0.6µs BREAK LINK X1-X4
 0.6µs - 1.5µs LINK X1-X2, BREAK LINK X2-X3, X4-X5
 1.5µs - 2.6µs BREAK LINK X2-X3
 2.6µs - 5.4µs EXISTING LINKS
 LINKS ARE FITTED TO COMPLY WITH
 Sect.1, Chap.1, Paras. 16-18

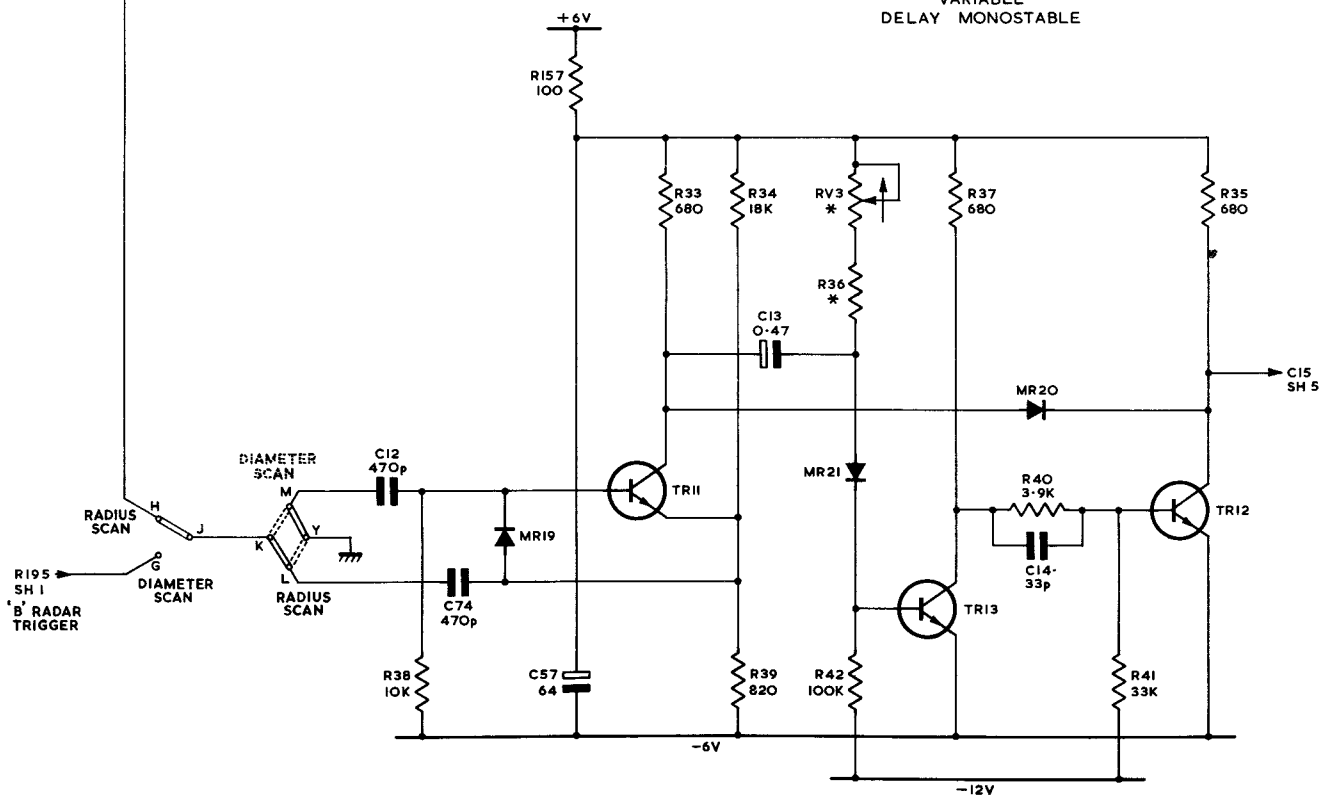
SYMMETRICAL
MULTIVIBRATOR



SAMPLING GATE WAVEFORM GENERATOR



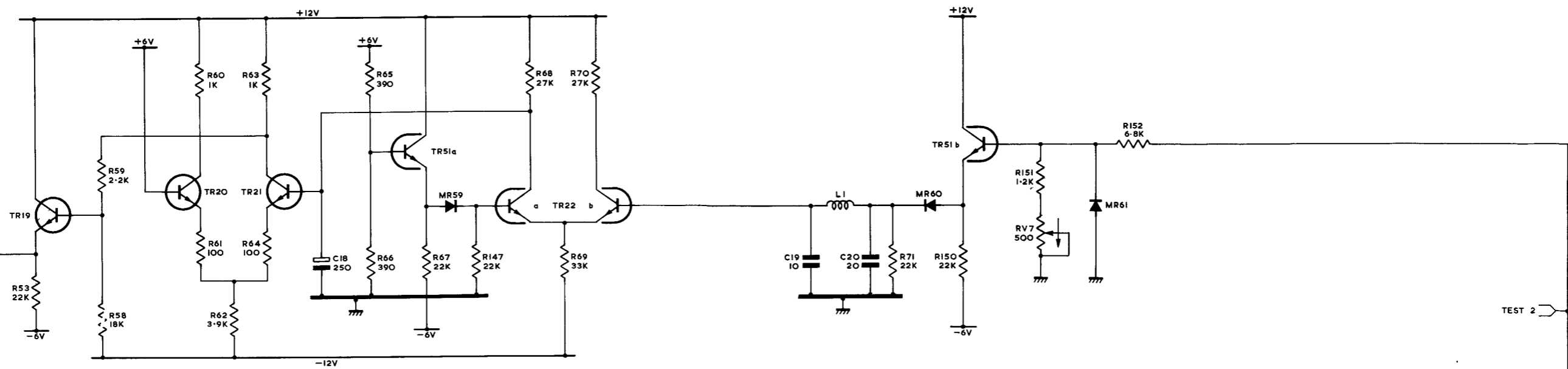
VARIABLE
DELAY MONOSTABLE



COMPONENT	TYPE
TR6	2N708
TR7	
TR8	
TR9	
TR10	
TR12	
TR13	
TR67	
TR68	
MR10		CV7138
MR11	

NOTES
FOR DETAILS OF COMPONENTS MARKED THUS *
SEE SPECIAL COMPONENT LIST FOR SPECIFIC BOARD
LINKS ARE FITTED TO COMPLY WITH
Sect 1, Chap. I, Paras. 16-18

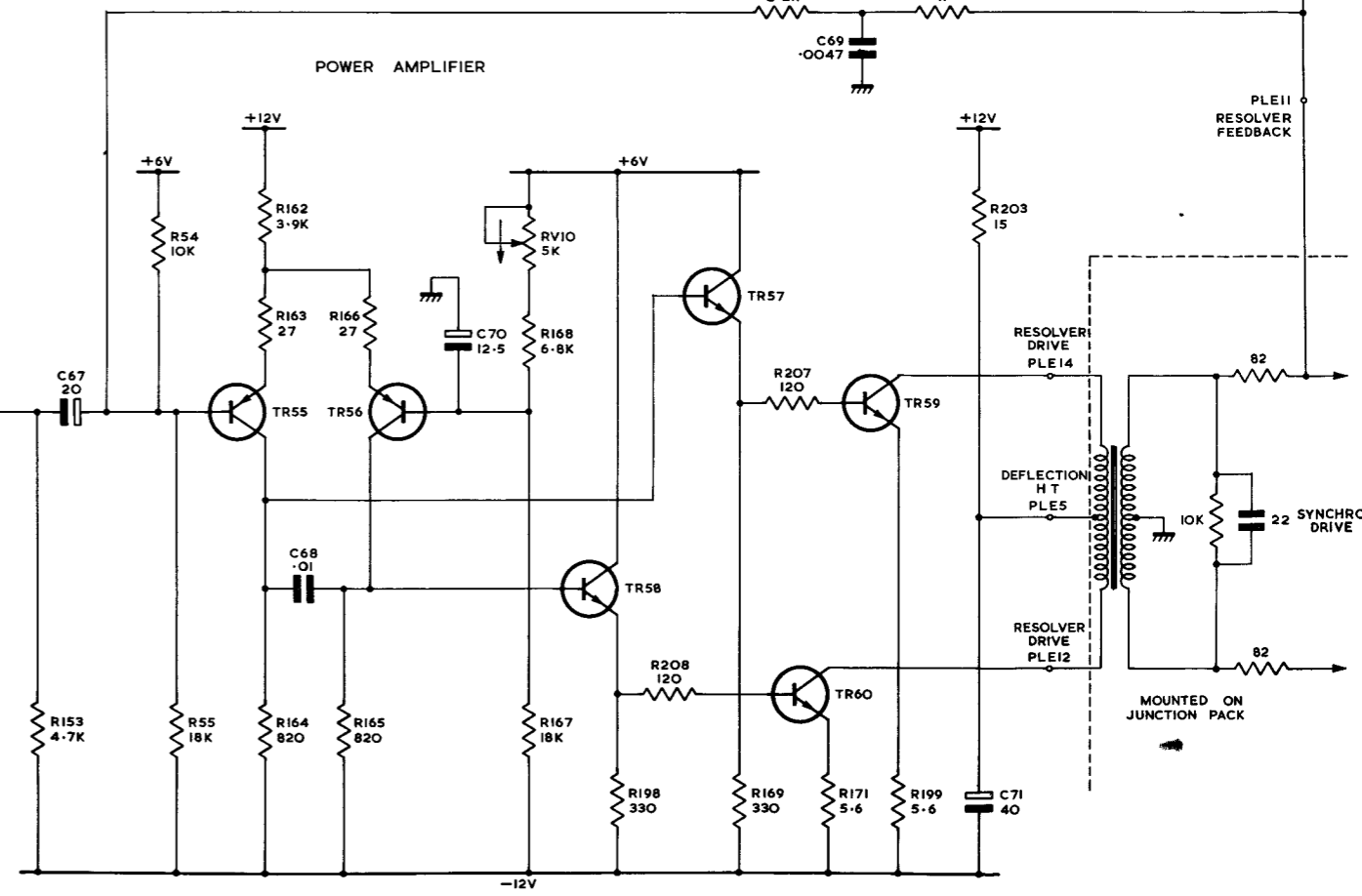
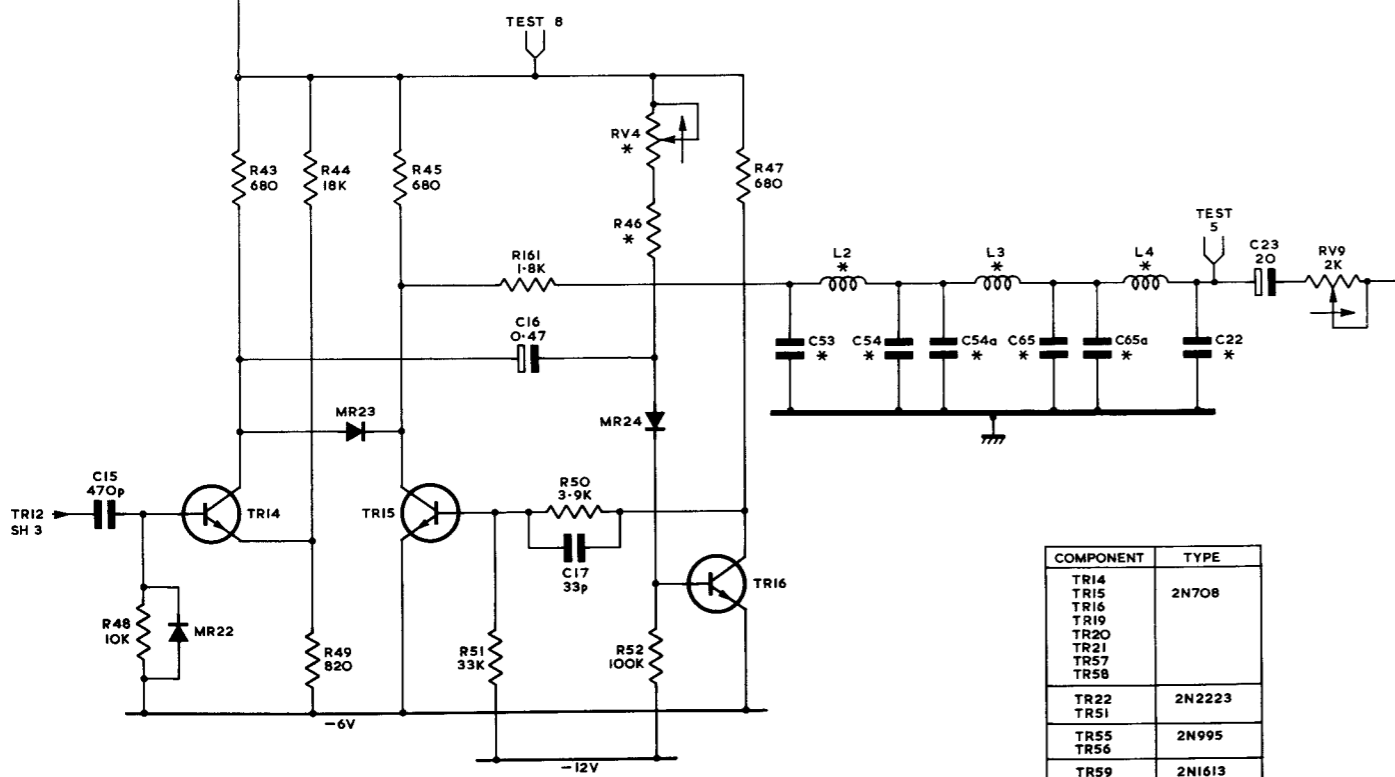
FEEDBACK LOOP



SQUARE WAVE GENERATOR

LOW PASS FILTER

POWER AMPLIFIER



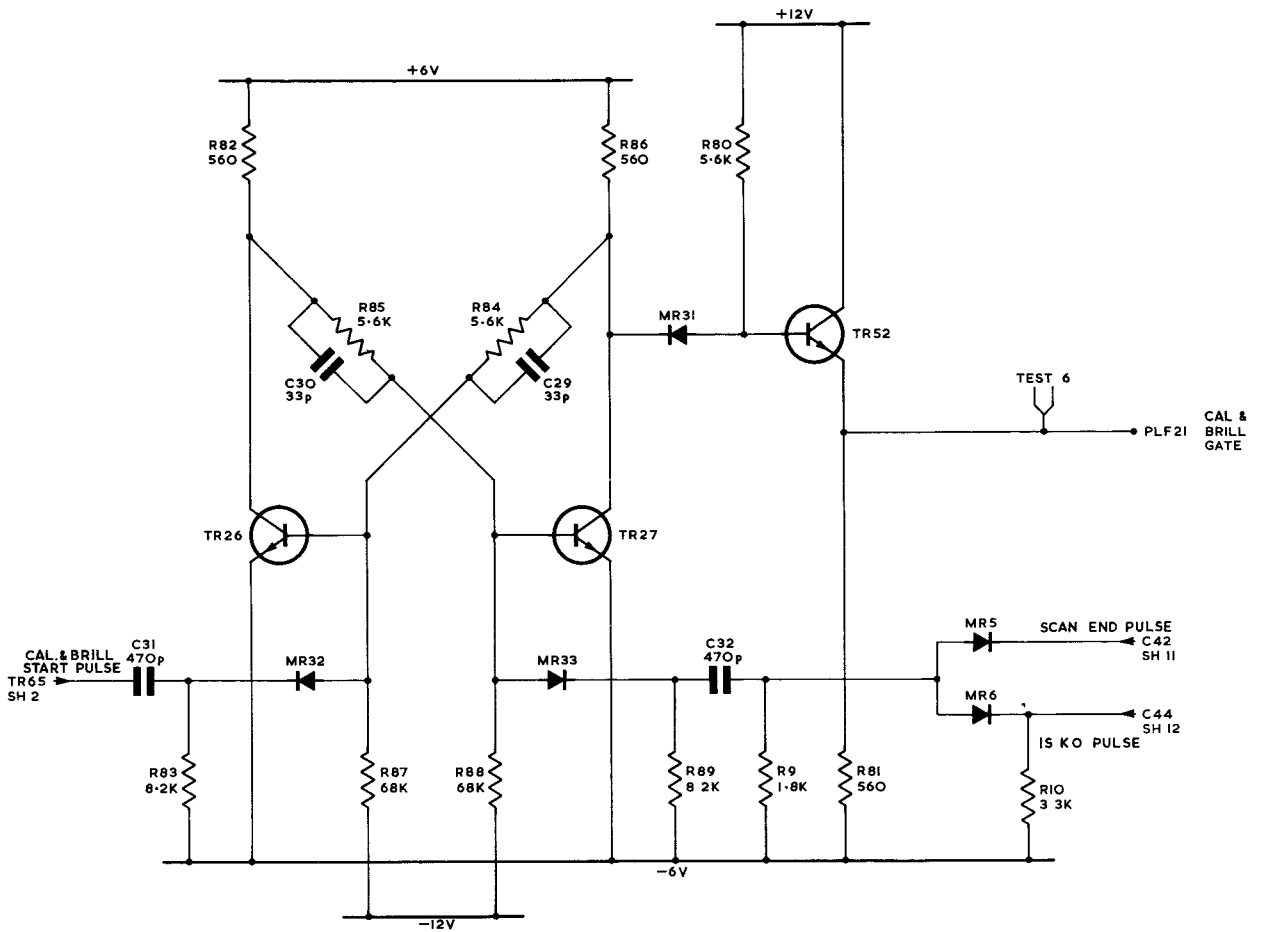
COMPONENT	TYPE
TR14	2N708
TR15	
TR16	
TR19	
TR20	
TR21	
TR22	2N2223
TR51	2N995
TR55	
TR56	
TR59	2N1613
TR60	

NOTE
FOR DETAILS OF COMPONENTS MARKED THIS *
SEE SPECIAL COMPONENT LIST FOR
SPECIFIED BOARD

BASIC TIMING BOARD
MJEZ

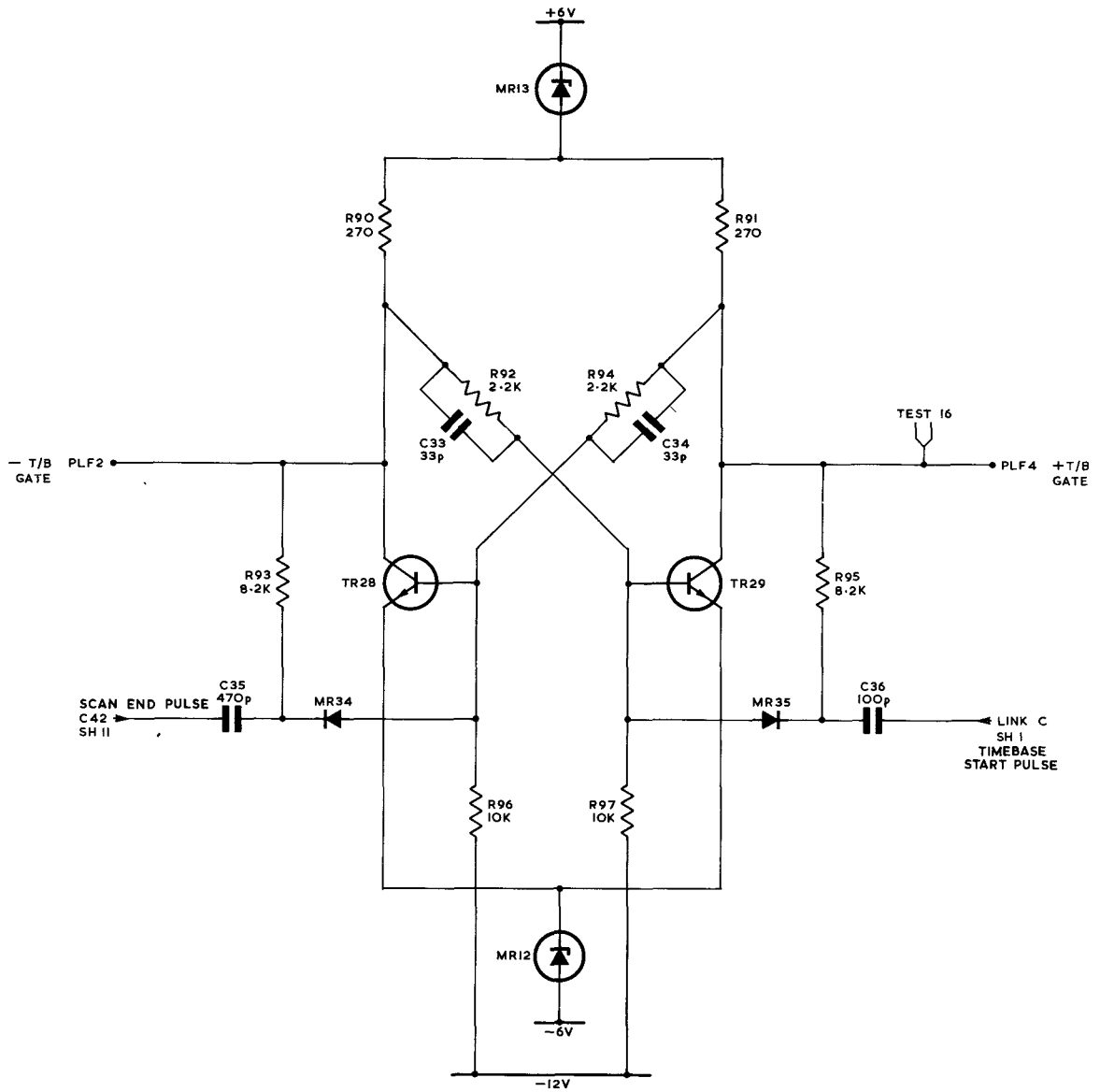
BASIC TIMING BOARD
MJEZ

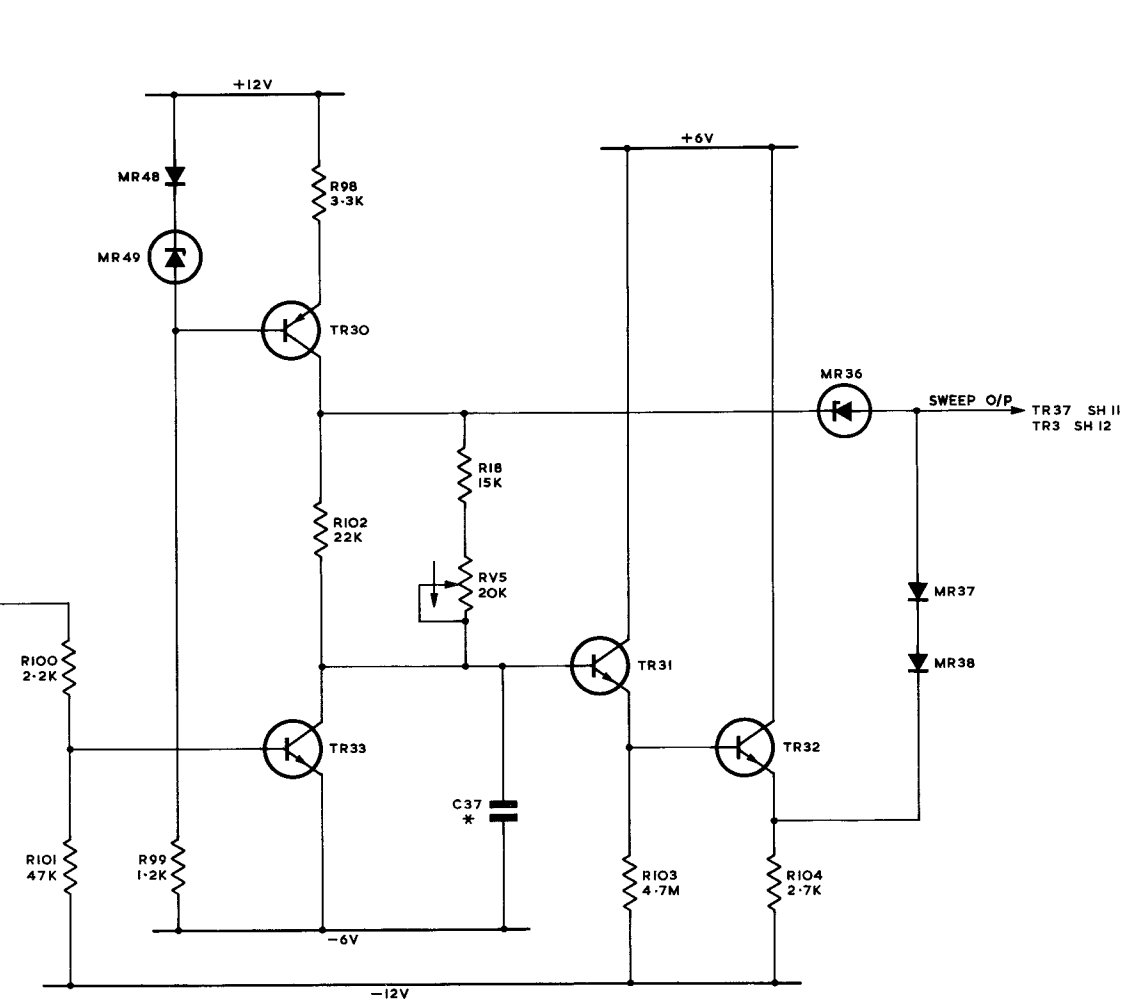
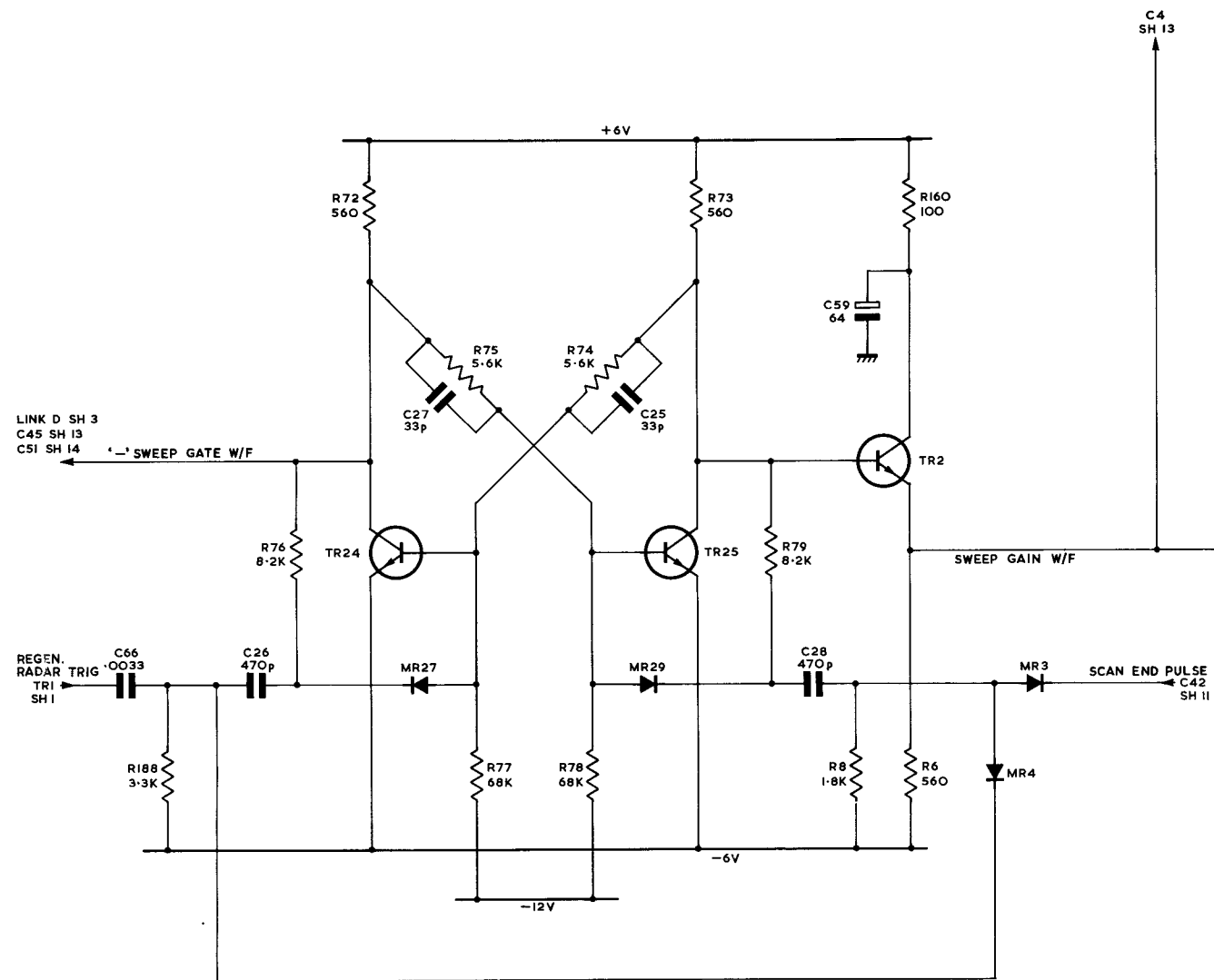
BRILL & CAL GATE WAVEFORM GENERATOR



COMPONENT	TYPE
TR26	2N708
TR27	
TR28	
TR29	
TR52	
MR13	CV7138

TIMEBASE GATE WAVEFORM GENERATOR

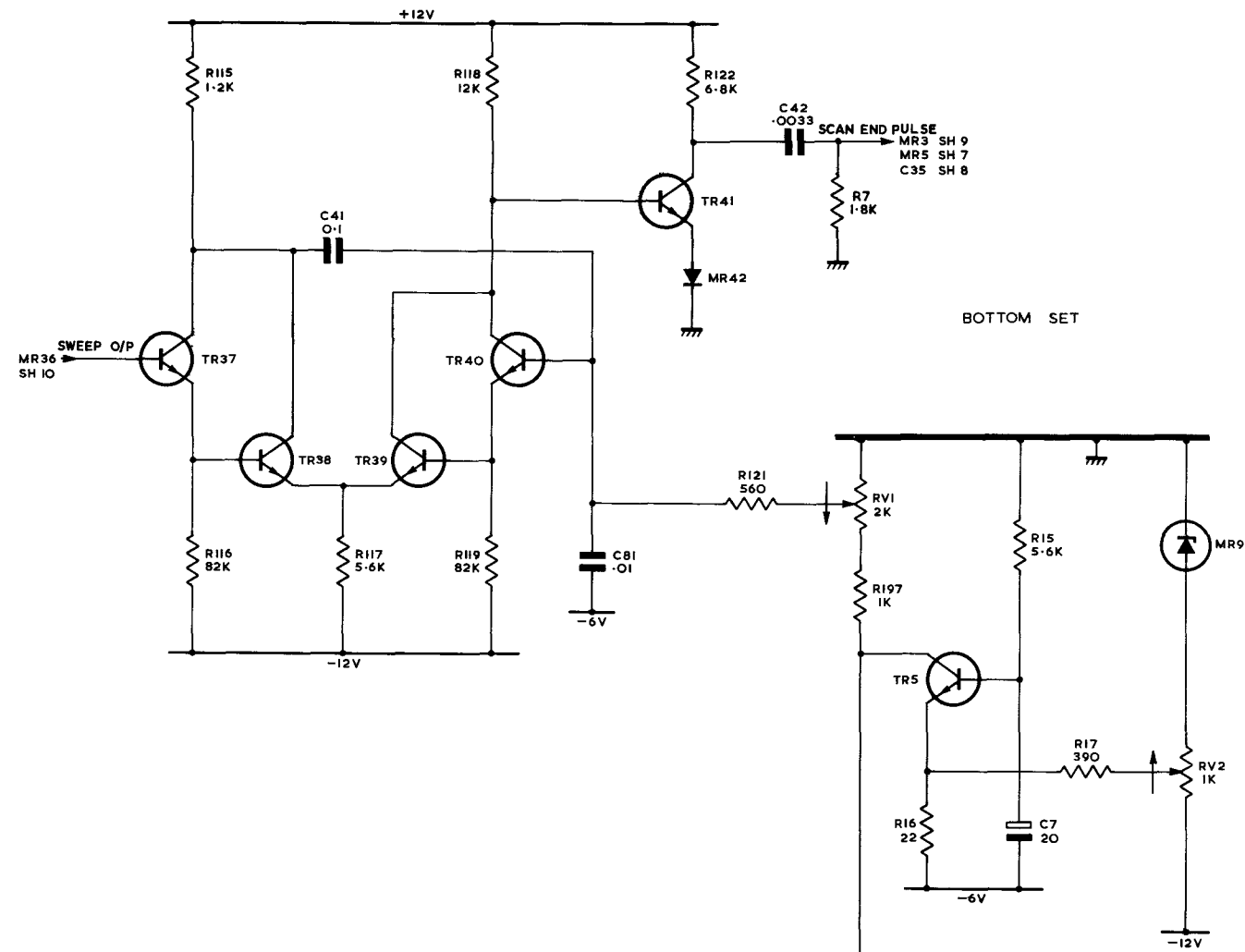




COMPONENT	TYPE
TR2	2N708
TR24	
TR25	
TR31	
TR32	
TR30	2N995
TR33	2N1613
MR36	CV7099
MR49	

NOTE
FOR DETAILS OF COMPONENTS MARKED THUS *
SEE SPECIAL COMPONENT LIST FOR
SPECIFIC BOARD.

MS COMPARATOR

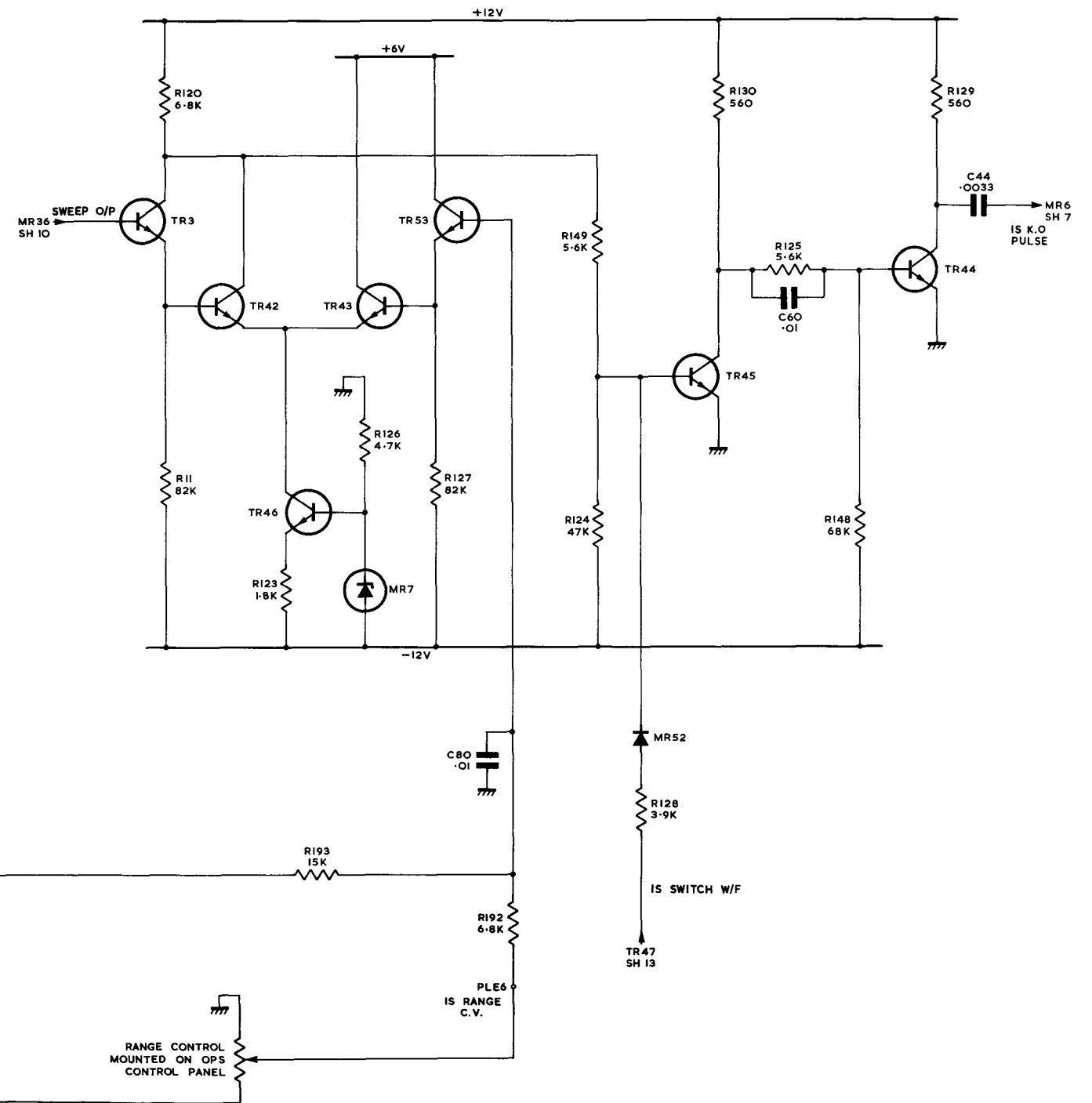


BOTTOM SET

COMPONENT	TYPE
TR3	2N708
TR37	
TR38	
TR39	
TR40	
TR41	
TR42	2N1613
TR43	
TR44	
TR45	
TR46	CV7138
TR53	
MR7	CV7138
MR9	

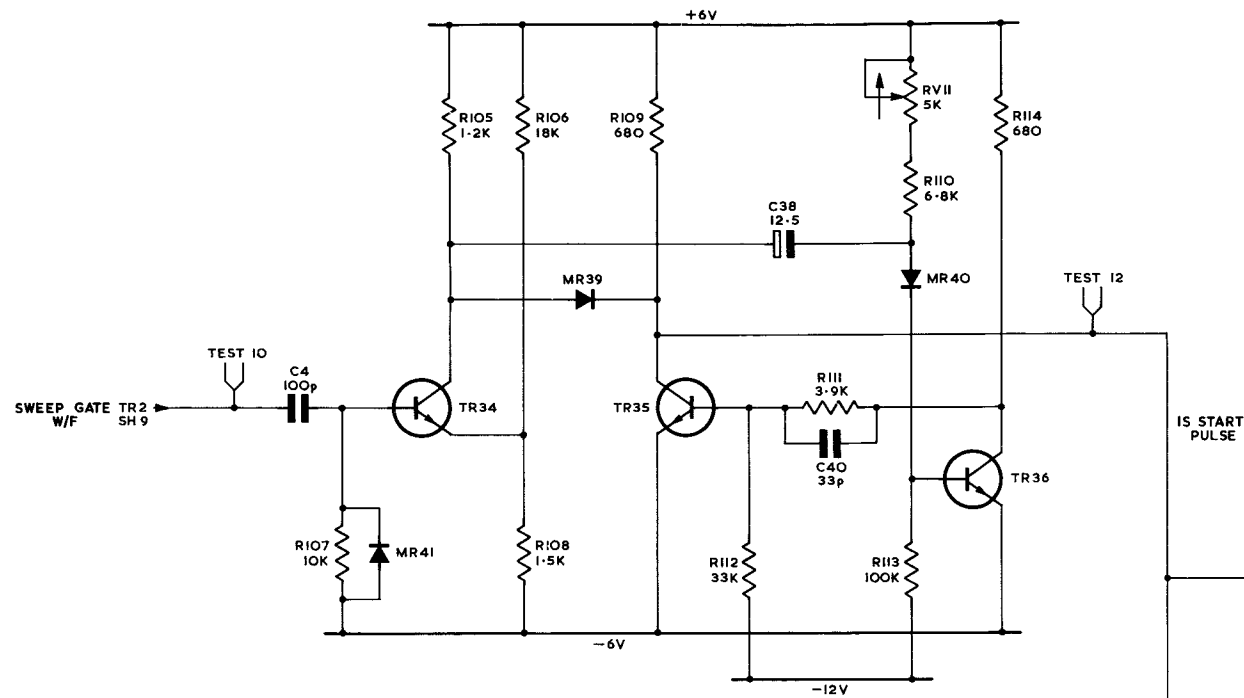
BASIC TIMING BOARD
MJEZ

IS COMPARATOR

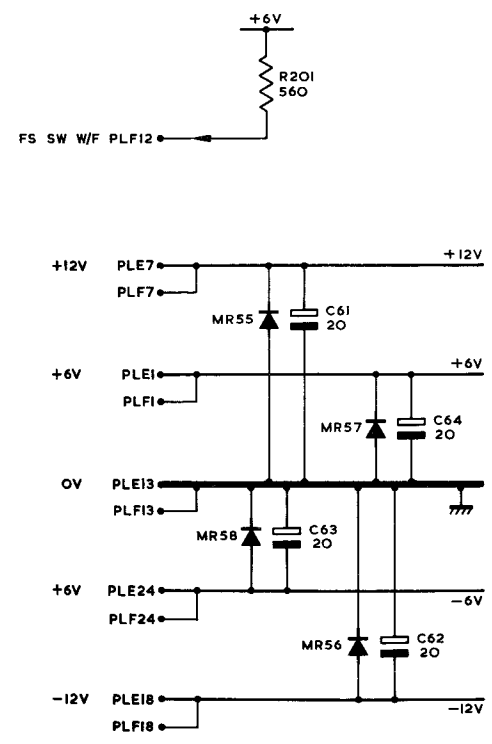


BASIC TIMING BOARD
MJEZ

IS TIMER

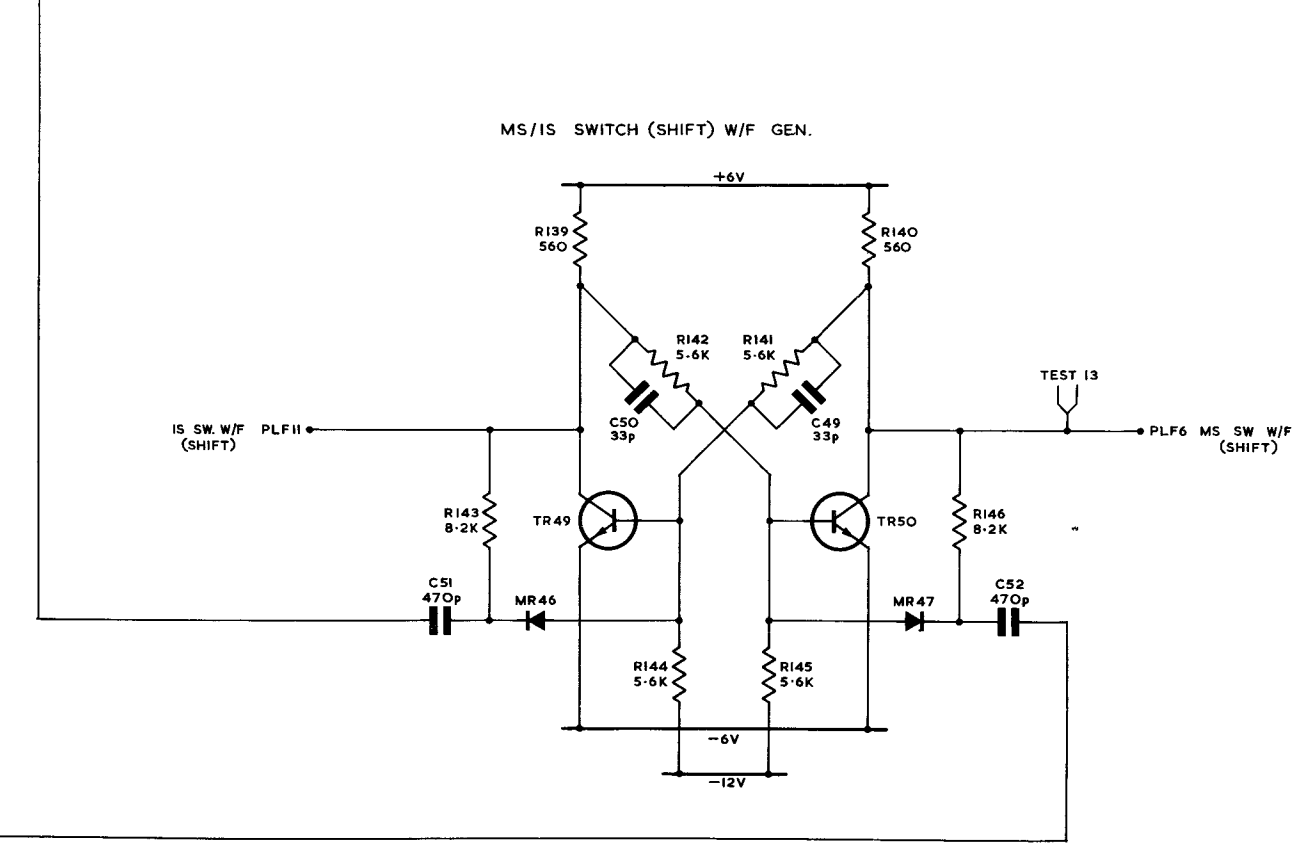
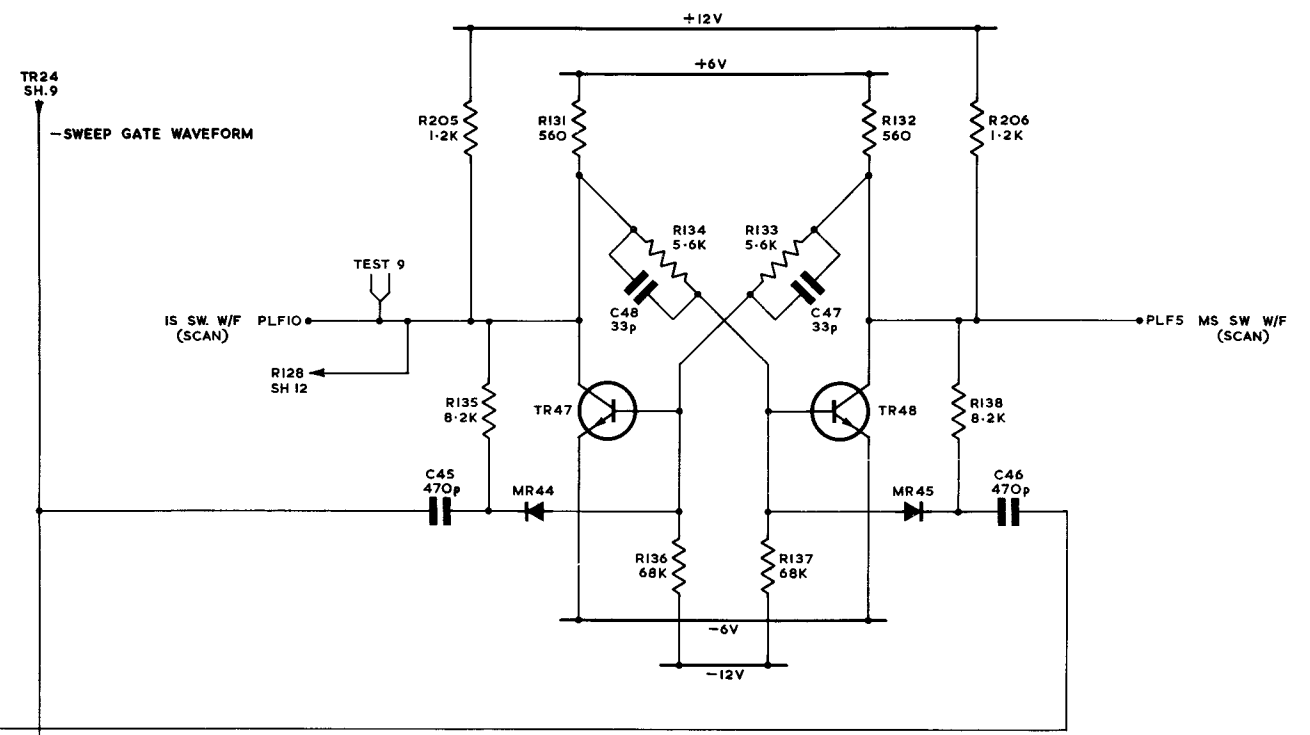


COMPONENT	TYPE
TR4	2N708
TR34	
TR35	
TR36	
TR47	
TR48	
TR49	
TR50	

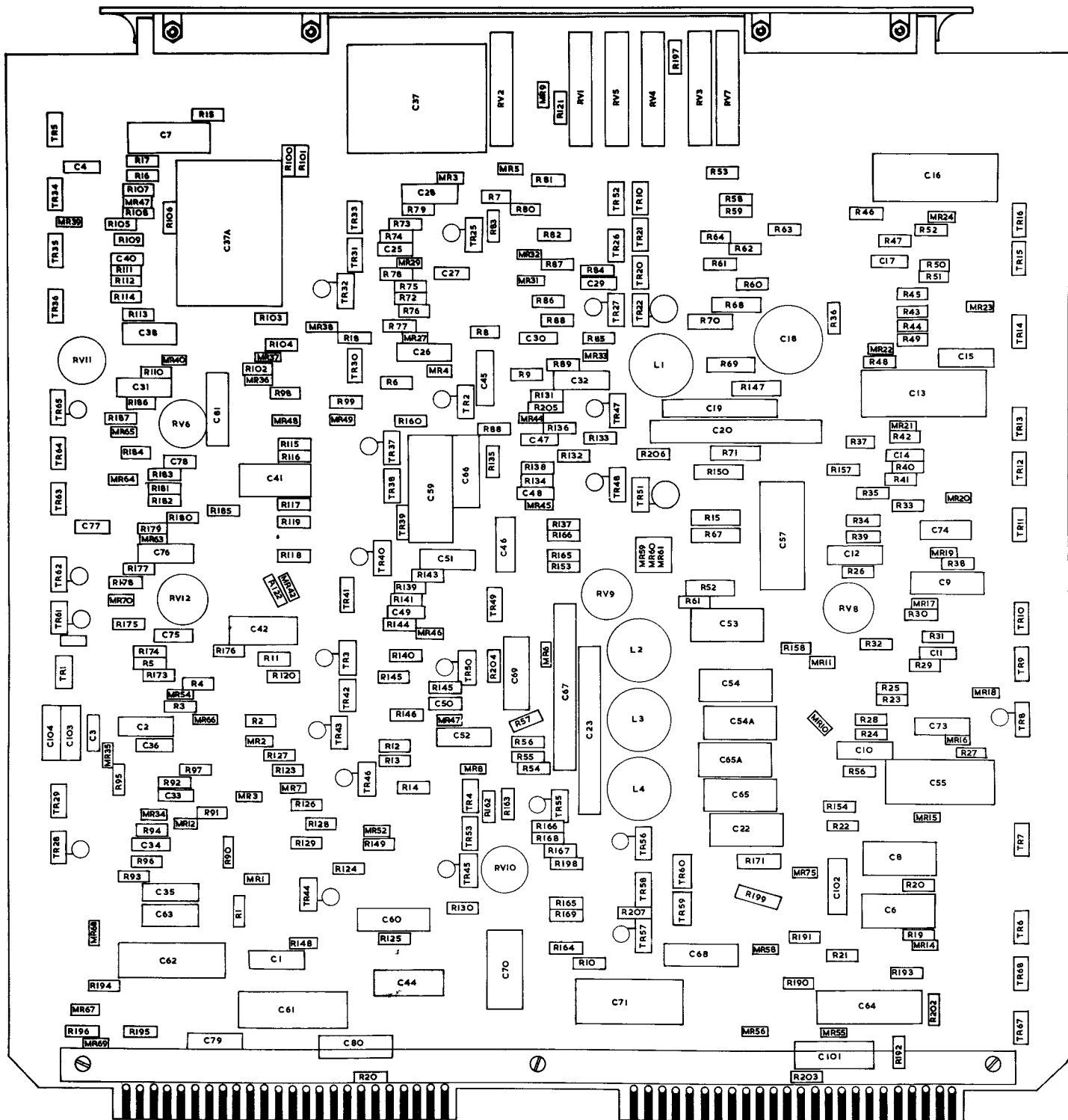


BASIC TIMING BOARD MJEZ

MS/IS SWITCH (SCAN) W/F GEN.



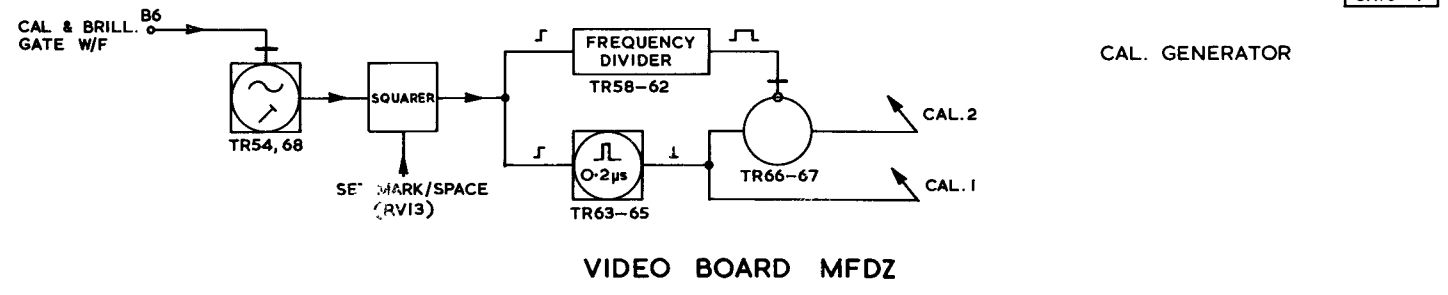
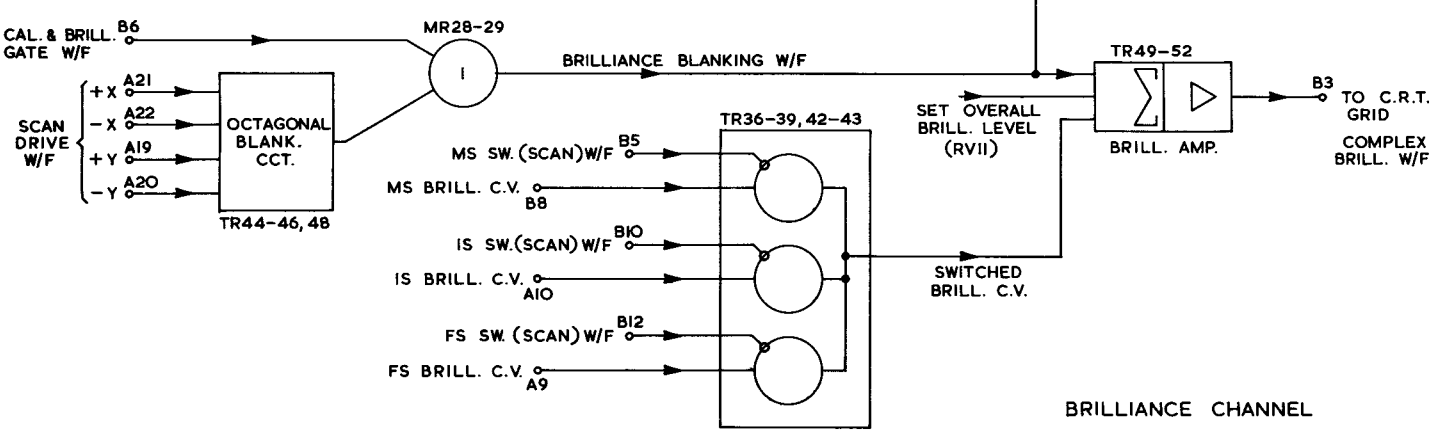
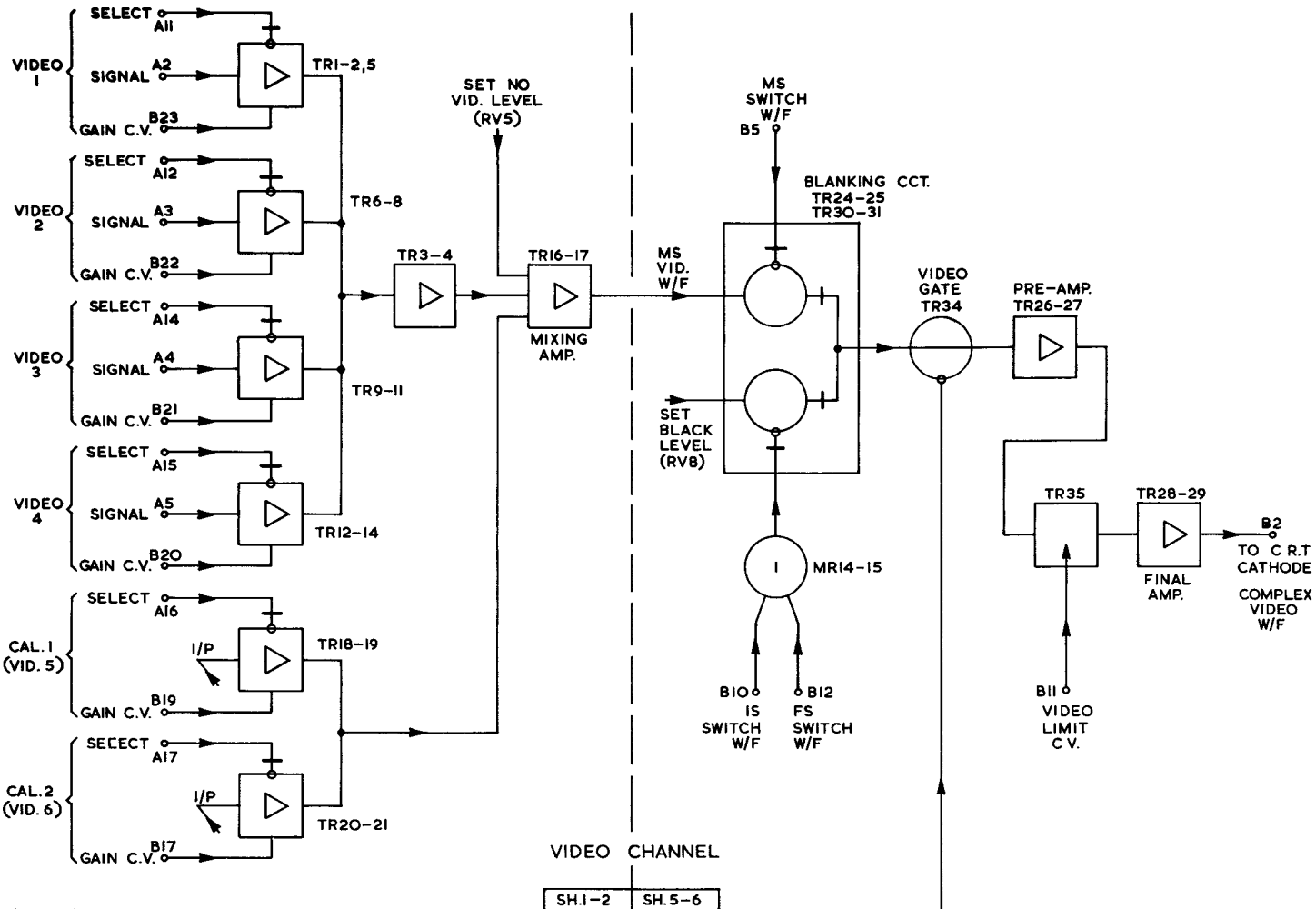
BASIC TIMING BOARD MJEZ

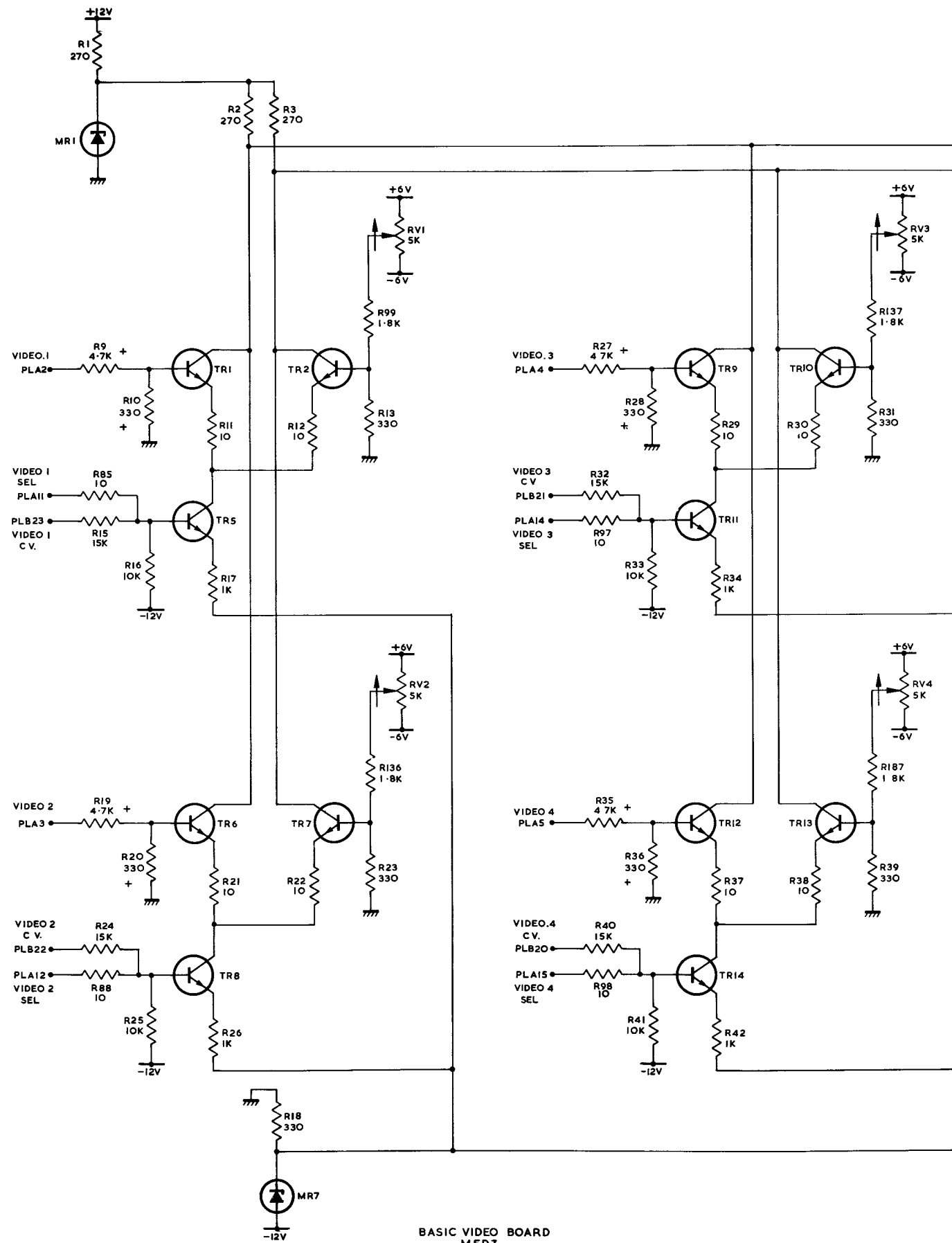


COMPONENT LAYOUT ON
 BASIC TIMING BOARD
 MJEZ

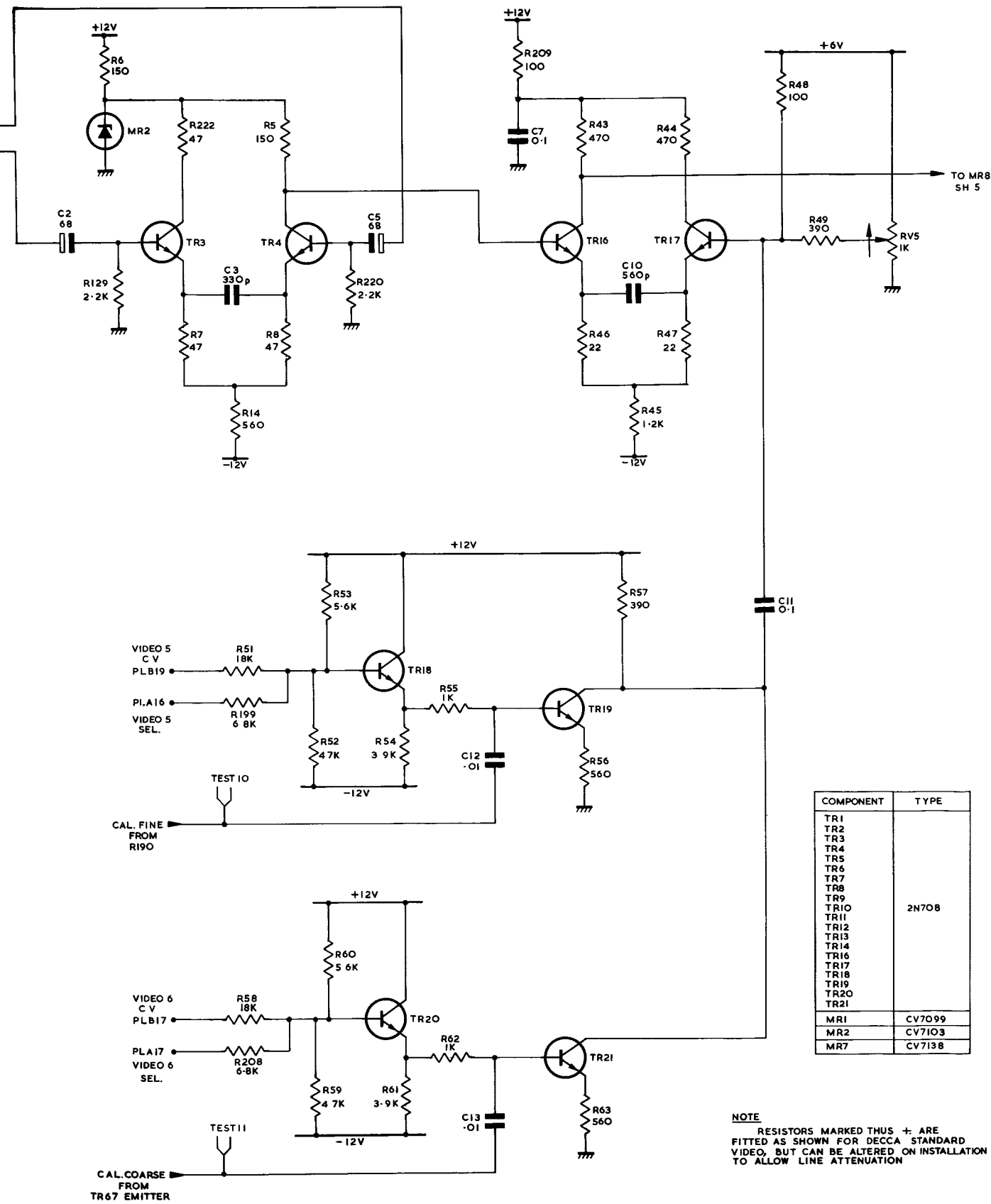
BASIC VIDEO BOARD

MFDZ





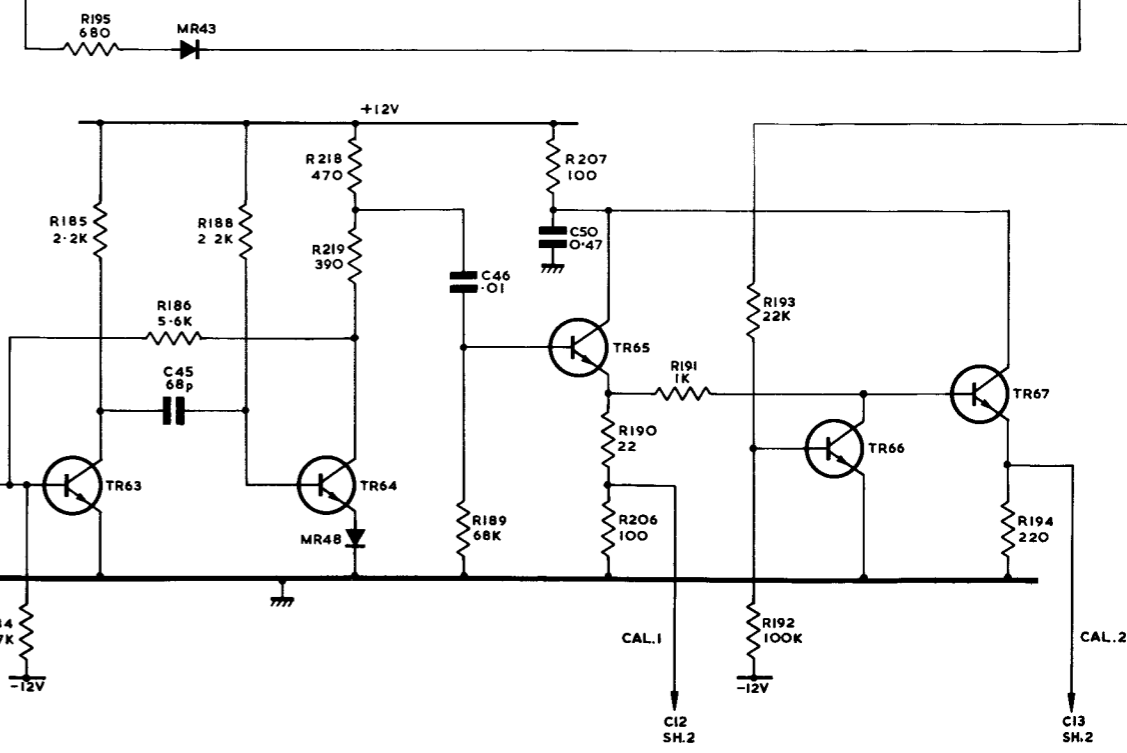
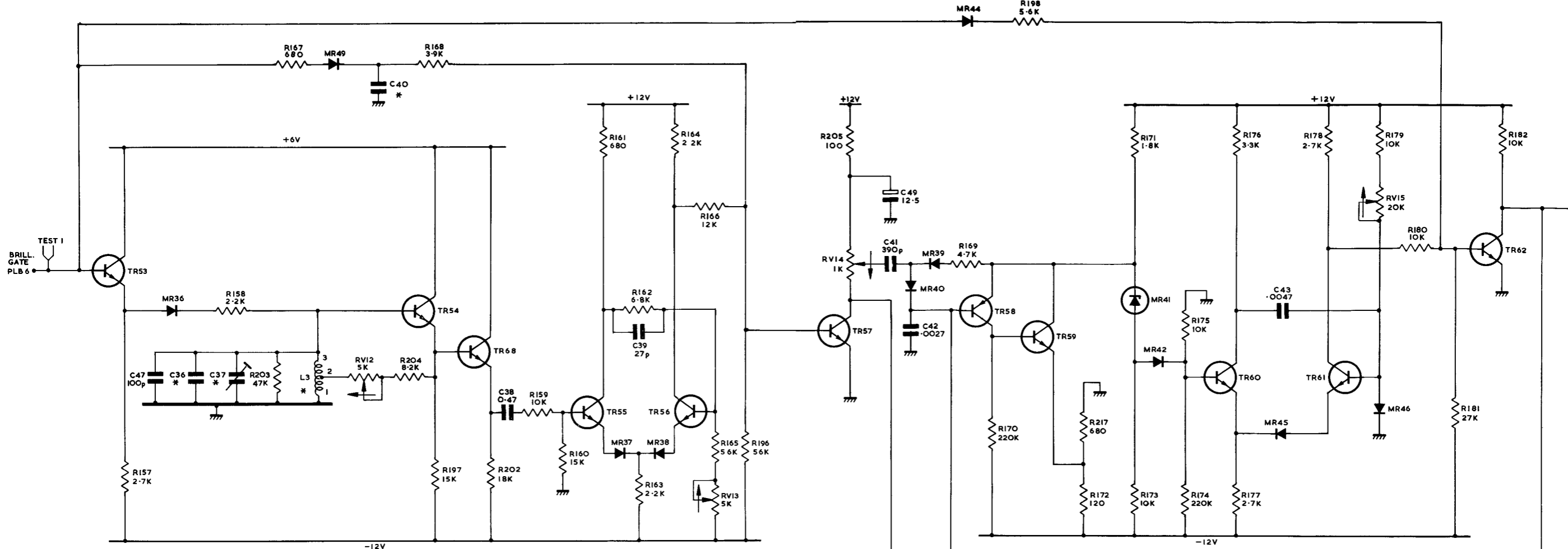
BASIC VIDEO BOARD MFDZ



BASIC VIDEO BOARD MFDZ

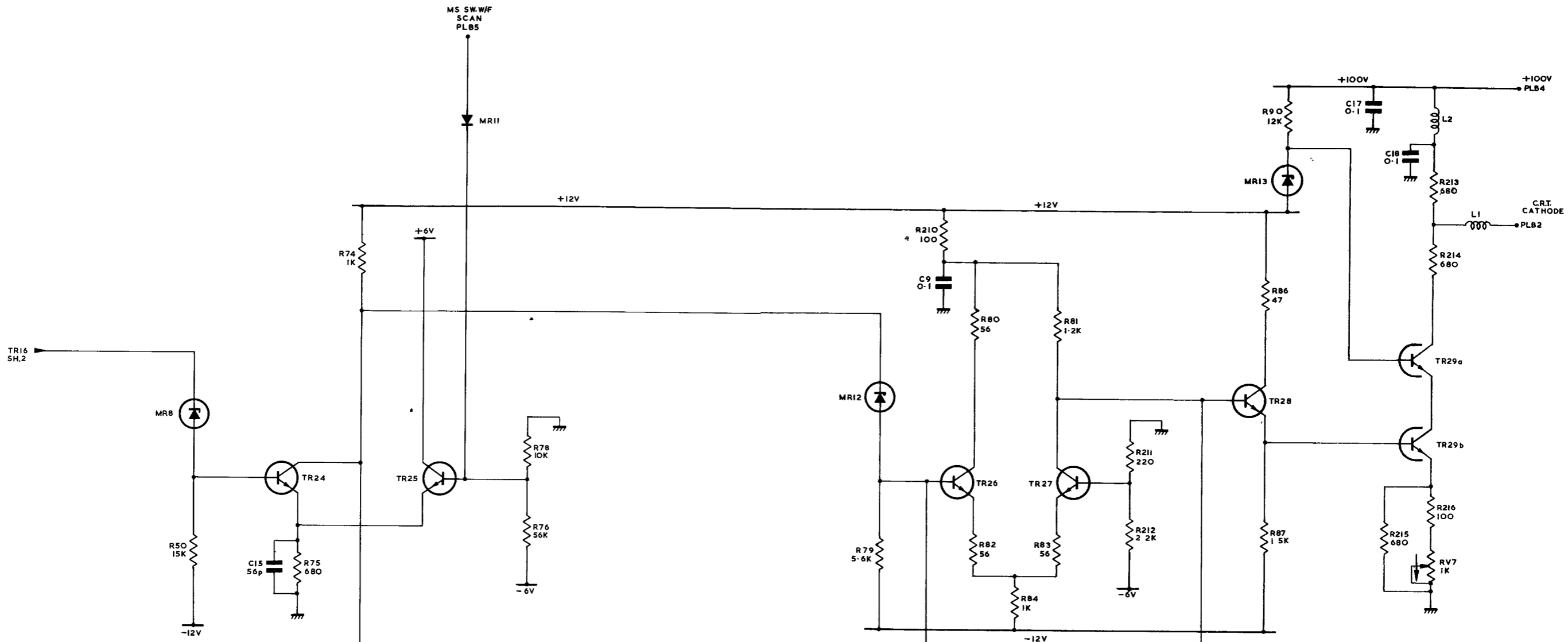
COMPONENT	TYPE	
TR1	2N70B	
TR2		
TR3		
TR4		
TR5		
TR6		
TR7		
TR8		
TR9		
TR10		
TR11		
TR12		
TR13		
TR14		
TR16		
TR17		
TR18		
TR19		
TR20		
TR21		
MR1		CV7099
MR2		CV7103
MR7	CV713B	

NOTE
 RESISTORS MARKED THUS + ARE FITTED AS SHOWN FOR DECCA STANDARD VIDEO, BUT CAN BE ALTERED ON INSTALLATION TO ALLOW LINE ATTENUATION



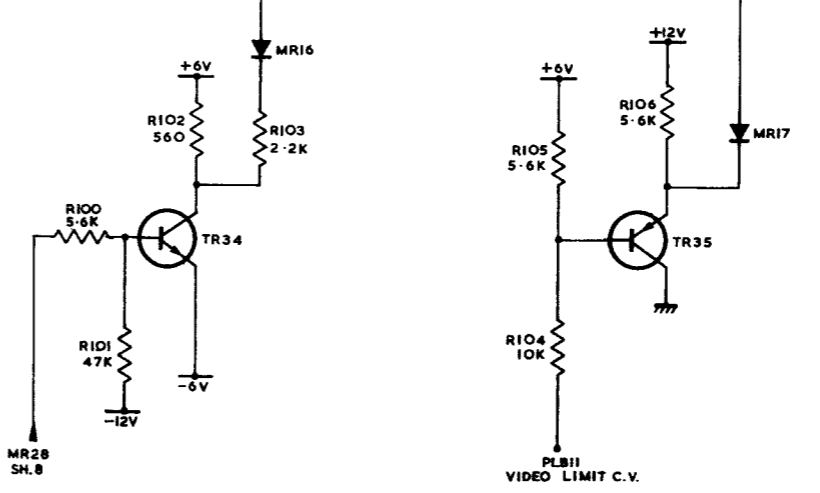
COMPONENT	TYPE
TR53	
TR54	
TR55	
TR56	
TR57	
TR59	
TR60	
TR61	
TR62	
TR63	
TR64	
TR65	
TR66	
TR67	
TR68	
TR58	2N995
MR41	CV7105

NOTE
FOR DETAILS OF COMPONENTS MARKED *
SEE SPECIAL COMPONENT LIST FOR
SPECIFIC BOARD.

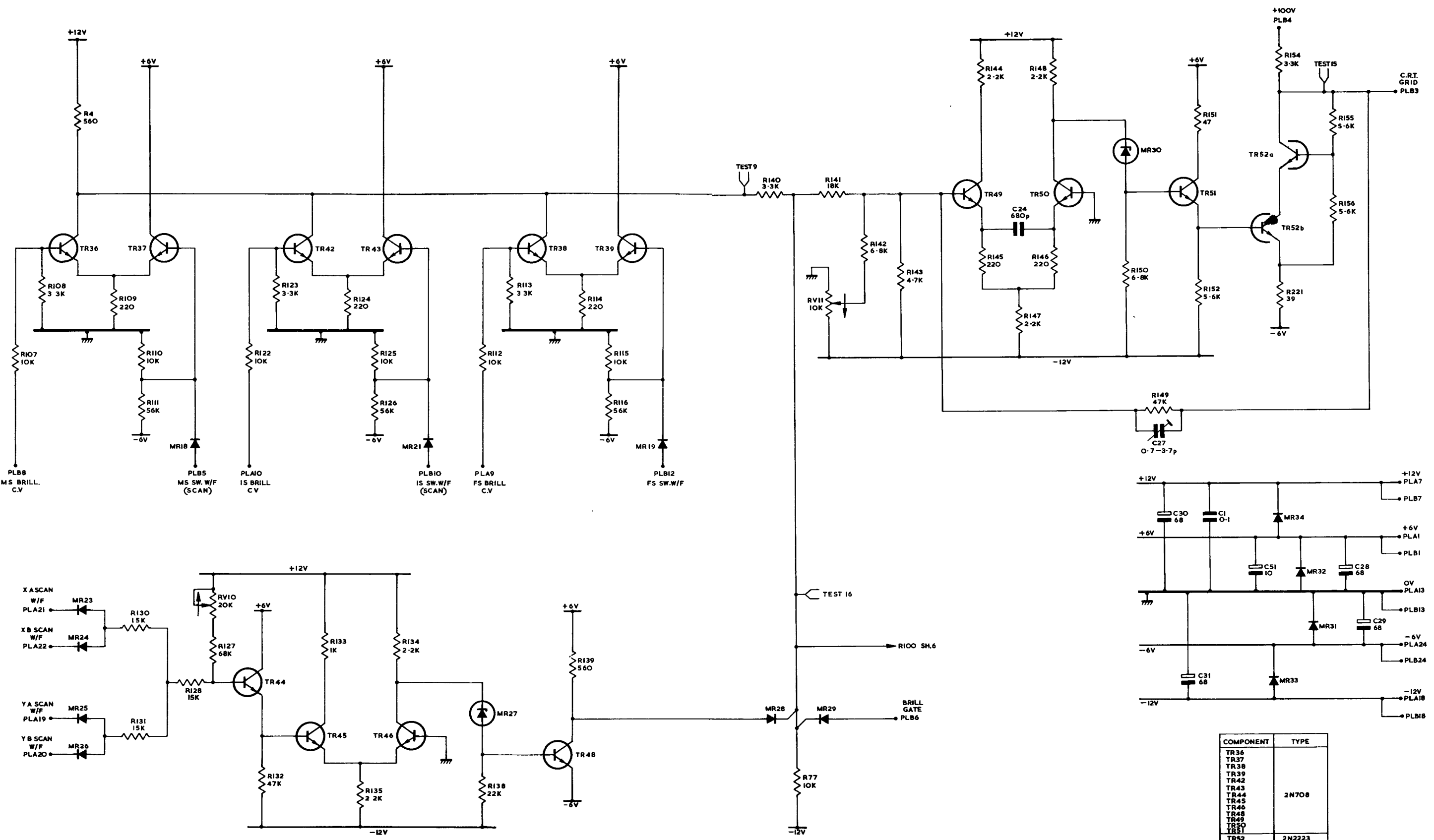


COMPONENT	TYPE
TR24	2N708
TR25	
TR26	
TR27	
TR28	
TR30	
TR31	
TR34	2N2223
TR35	2N995
MR8	CV7101
MR12	CV7105
MR13	CV7106

BASIC VIDEO BOARD
MFDZ



BASIC VIDEO BOARD
MFDZ

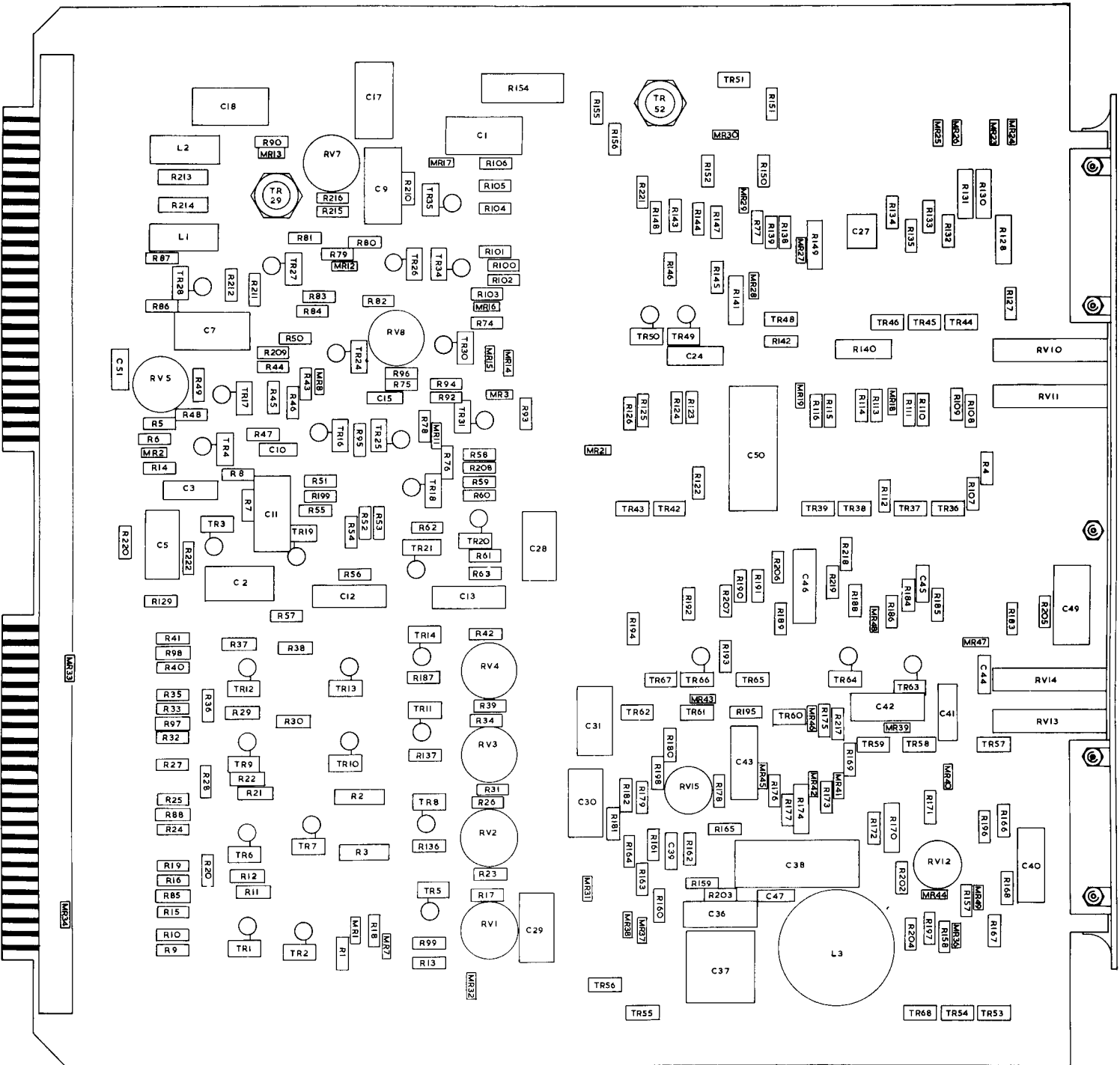


BASIC VIDEO BOARD
MFDZ

BASIC VIDEO BOARD
MFDZ

COMPONENT	TYPE
TR36	2N708
TR37	
TR38	
TR39	
TR42	
TR43	
TR44	
TR45	
TR46	
TR48	
TR49	
TR50	
TR51	
TR52		2N2223
MR27	CV7143
MR30	CV7105

COMPONENT LAYOUT ON
BASIC VIDEO BOARD
MFDZ



COMPONENTS LISTS FOR AUTONOMOUS
DISPLAY TYPE 12600N

ORDER OF LISTS

Power Unit Type 11600

E.H. T. Power Unit Type 11601

Deflection Coil Drive Amplifier Assembly Type 12502

Viewing Unit Control Panel Type 11210R (as Type 11200)

Operator's Control Panel Type 11250T

Viewing Unit Junction Unit Type 12790J

Basic Printed Wiring Board Type 12002 (MJEZ)

Specific Printed Wiring Board Type 12137 (MJEG)

Basic Printed Wiring Board Type 12003 (MRGZ)

Specific Printed Wiring Board Type 12012 (MRGE)

Basic Printed Wiring Board Type 12005 (MFDZ)

Specific Printed Wiring Board Type 12139 (MFDD)

Board Connectors and Termination Assembly Type D/DDDL/12551E

Ancillary components for Viewing Unit Type 12600N

COMPONENTS LIST FOR POWER UNIT TYPE 11600

RESISTORS

Ref	Value	Type	Ref	Value	Type	Ref	Value	Type
R1-2	*		R23	12	16	R43	820	CJ20
R3	100	CJ20	R24	680	CJ20	R44	1.5k	CJ20
R4	φ		R25	3.3k	CJ20	R45	1.2k	CJ20
R5-6	8.2k	CJ20	R26	1.5k	CJ20	R46-47	470	CJ20
R7	27k	CJ20	R27	2.7k	CJ20	R48	15k	CJ20
R8	1.2k	CJ20	R28	1.8k	CJ20	R49	680	CJ20
R9	1	MV1A	R29	1.5k	CJ20	R50	1	MV1A
R10	12	16	R30	3.3k	CJ20	R51	12	16
R11	680	CJ20	R31	1.5k	CJ20	R52	470	CJ20
R12	3.3k	CJ20	R32	1.2k	CJ20	R53	1.5k	CJ20
R13	1.5k	CJ20	R33	15k	CJ20	R54	2.2k	CJ20
R14	2.7k	CJ20	R34	680	CJ20	R55	1.2k	CJ20
R15	1.8k	CJ20	R35	1	MV1A	R56	1.5k	CJ20
R16	1.5k	CJ20	R36	12	16	R57	1.2k	CJ20
R17	3.3k	CJ20	R37	470	CJ20	R58	820	CJ20
R18	1.5k	CJ20	R38	1.5k	CJ20	R59	1.5k	CJ20
R19	1.2k	CJ20	R39	2.2k	CJ20	R60	1.2k	CJ20
R20	27k	CJ20	R40	1.2k	CJ20	R61-62	470	CJ20
R21	1.2k	CJ20	R41	1.5k	CJ20			
R22	1	MV1A	R42	1.2k	CJ20			

* R1-2 are conduction cooled resistors, 470Ω Decca Type A/DDDL/7370/785.

φ R4 is a conduction cooled resistor, 6.8k Decca Type A/DDDL/7370/786.

Type	Manuftr.	Rtg.	Tol. %
16	Erie	$\frac{1}{4}$ W	10
CJ20	Electrosil	$\frac{1}{2}$ W	5
MV1A	Painton	$2\frac{1}{2}$ W	5

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV1	200	1	10	M. E. C. 040
RV2	2.5k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV3	500	1	10	M. E. C. 040
RV4	200	1	10	M. E. C. 040
RV5	2.5k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV6	500	1	10	M. E. C. 040
RV7	200	1	10	M. E. C. 040

RESISTORS VARIABLE (Contd.)

Ref	Value	Watt	%	Type
RV8	2.5k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV9	500	1	10	M. E. C. 040
RV10	200	1	10	M. E. C. 040
RV11	2.5k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV12	500	1	10	M. E. C. 040

CAPACITORS

Ref	Value	Volt	%	Type
C1-5	.01	125	10	Mullard C296AA/A10K
C6	1000p	300	25	Dubilier 460B
C7-8	1000p	125	10	Suflex HS15D
C9	0.1	125	10	Mullard C296AA/A100K
C10	1000p	125	10	Suflex HS15D
C11-14	10,000	25	-20 +50	Plessey CE1259/9
C15	200	350	-20 +50	T. C. C. CE20LE (sleeved)
C16-17	5000	50	-20 +50	Plessey CE1369/9
C18	2000	50	-20 +50	T. C. C. CE37D (sleeved)
C19	0.1	125	10	Mullard C296AA/A100K
C20	6.4	25	-10 +50	Mullard C427AR/F6.4
C21	64	16	-10 +50	Mullard C427AR/E64
C22	0.1	125	10	Mullard C296AA/A100K
C23	6.4	25	-10 +50	Mullard C427AR/F6.4
C24	64	16	-10 +50	Mullard C427AR/E64
C25	0.1	125	10	Mullard C296AA/A100K
C26	6.4	25	-10 +50	Mullard C427AR/F6.4
C27	64	16	-10 +50	Mullard C427AR/E64
C28	0.1	125	10	Mullard C296AA/A100K
C29	6.4	25	-10 +50	Mullard C427AR/F6.4
C30	64	16	-10 +50	Mullard C427AR/E64
C31	.02	d. c. 750 a. c. 300	10	Dubilier 660/17896

TRANSISTORS

Ref	Type	Ref	Type	Ref	Type
TR1	2S025	TR10	2N708	TR21	2N2223
TR2	2N1613	TR12-13	2N708	TR22	2S025
TR3	2N708	TR14	2N2223	TR23	2N1613
TR5-6	2N708	TR15	2S025	TR24	2N708
TR7	2N2223	TR16	2N1613	TR26-27	2N708
TR8	2S025	TR17	2N708	TR28	2N2223
TR9	2N1613	TR19-20	2N708		

For details of Types see overleaf.

TRANSISTORS (Contd.)

Type	Manuftr.
2N708	Fairchild or Texas
2N1613	Fairchild, Texas or R. C. A.
2N2223	Fairchild
2S025	Texas

DIODES

Ref	Type	Manuftr.	Ref	Type	Manuftr.
MR1-16	1S020	Texas	MR35	1S020	Texas
	ZR10	Ferranti		ZR10	Ferranti
MR17-18	1S025	Texas	MR36	SZT20 or	Mullard
	ZR15	Ferranti		SZT18-22	
MR19-20	1S5051A Zener 51V	Texas	MR37	1S020	Texas
MR21	1S5018A Zener 18V	Texas		ZR10	Ferranti
MR22-25	1S420	Texas	MR38	SZT20 or	Mullard
	ZR20	Ferranti		SZT18-22	
MR26-29	1S020	Texas	MR39	1S020	Texas
	ZR10	Ferranti		ZR10	Ferranti
MR30-33	1S420	Texas	MR40	SZT20 or	Mullard
	ZR20	Ferranti		SZT18-22	
MR34	SZT20 or	Mullard	MR41	1S020	Texas
	SZT18-22			ZR10	Ferranti

NOTE: All Zener diodes are $1\frac{1}{2}W$, 5% tolerance.

MISCELLANEOUS

Ref	Item	Type
L1	Inductor Decca 7.5mH	B/DDDL/7370/752
L2	Inductor Decca 20mH	B/DDDL/7370/751
T1	Transformer Decca	B/DDDL/7370/665
Test points 1-8	Test point connector Continental 8-way	1C 7000 IM8
TSA-F	Taper pin socket Continental 10-way	2B 60 000 A1P10
X1	Thermal switch Gravinette	TCS 3150
X2	Magnetic cut-out E. T. A.	3502.5/2.5/2095/Trop
X3	Magnetic cut-out E. T. A.	3508/8/2095/Trop
X4	Magnetic cut-out E. T. A.	3502/2/2095/Trop
X5	Magnetic cut-out E. T. A.	3504/4/2095/Trop

COMPONENTS LIST FOR E. H. T. POWER UNIT

TYPE 11601

RESISTORS

Ref	Value	Watt	%	Type
R1-2	200M	$\frac{3}{4}$	5	Welwyn F44D
R3	100k	$\frac{1}{4}$	2	Electrosil NJ65
R4	56k	$\frac{1}{4}$	2	Electrosil NJ65
R5	47k	$\frac{1}{4}$	2	Electrosil NJ65
R6	56k	$\frac{1}{4}$	2	Electrosil NJ65
R7	15k	$\frac{1}{2}$	5	Electrosil CJ20
R8	3.9k	$\frac{1}{2}$	5	Electrosil CJ20
R9	820	$\frac{1}{2}$	5	Electrosil CJ20
R10	56k	$\frac{1}{2}$	5	Electrosil CJ20
R11	3.3k	$\frac{1}{2}$	5	Electrosil CJ20
R12	2.2k	$\frac{1}{2}$	5	Electrosil CJ20
R13-14	1k	$\frac{1}{2}$	5	Electrosil CJ20
R15	1	3	1	Decca B/DDDL/7370/702 (Printed)
R16-17	1k	$\frac{1}{2}$	5	Electrosil CJ20
R18	470k	$\frac{1}{4}$	10	Erie 16
R19	470k	$\frac{1}{2}$	10	Erie 8
R20	4.7M	$\frac{3}{4}$	5	Welwyn C23
R21	12M	$\frac{3}{4}$	5	Welwyn C23

RESISTOR VARIABLE

Ref	Value	Watt	%	Type
RV1	5k	$\frac{1}{2}$	10	Colvern CLR1501/263

CAPACITORS

Ref	Value	Volt	%	Type
C1	1800p	125	10	Suflex HS20D
C2	.01	125	10	Mullard C296AA/A10K
C3	.01	25	-20 +50	Dubilier CT4235
C4	1	125	10	Mullard C296AA/A1M
C5-7	.001	20k	20	Dubilier 500HT
C8	.05	600	20	Hunts AF502
C9	0.1	50	20	S. T. C. 489/LWA/44BA

VALVES AND RECTIFIERS

Ref	CV No.	Type	Manuftr.
V1-2		QU452	G. E. C.
MR1		SZT20 Zener 5.6V $\frac{1}{4}$ W 5% at 5mA	Mullard
MR2	7138	1S7033A Zener 3.3V $\frac{1}{4}$ W 5% at 5mA	Texas
MR3	7143	1S7100A Zener 10V $\frac{1}{4}$ W 5% at 5mA	Texas
MR4		1S109	Texas
MR5		1S141	Texas

TRANSISTORS

Ref	Type	Manuftr.	Ref	Type	Manuftr.
TR1	2N2223	Fairchild	TR4	2N1613	Fairchild, Texas or R. C. A.
TR2	2N708	Fairchild or Texas	TR5-6	2S025	Texas
TR3	2N995	Fairchild or Texas			

MISCELLANEOUS

Ref	Item	Type
	E.H. T. coil assembly Decca	B/DDDL/11601/Z
L1	Inductor Decca 22 μ H	A/DDDL/7370/783
Test point 1	Test point socket Sealectro	SKT400/Grey
TSA	Taper pin block Continental 6-way	2B60 000 A1P6

COMPONENTS LIST FOR DEFLECTION COIL

DRIVE AMPLIFIER ASSEMBLY TYPE 12502

RESISTORS

Ref	Value	Type	Ref	Value	Type	Ref	Value	Type
R1	2.7k	NJ65	R23	8.2k	CJ20	R46	330	NJ65
R2	22k	NJ65	R24	39	CJ20	R47	8.2k	NJ65
R3	10k	CJ20	R25	390	CJ20	R48	3.9k	NJ65
R4	330	NJ65	R26	220	CJ20	R49	2.7k	NJ65
R5	8.2k	NJ65	R27-28	0.5	Printed	R50	3.9k	NJ65
R6	3.9k	NJ65	R29	2.7k	NJ65	R51	8.2k	CJ20
R7	2.7k	NJ65	R30	22k	NJ65	R52	39	CJ20
R8	3.9k	NJ65	R31	10k	CJ20	R53	390	CJ20
R9	8.2k	CJ20	R32	330	NJ65	R54	220	CJ20
R10	39	CJ20	R33	8.2k	NJ65	R55-56	0.5	Printed
R11	390	CJ20	R34	3.9k	NJ65	R57	470	CJ20
R12	220	CJ20	R35	2.7k	NJ65	R58-59	100	CJ20
R13-14	0.5	Printed	R36	3.9k	NJ65	R60	220	CJ20
R15	2.7k	NJ65	R37	8.2k	CJ20	R61-62	100	CJ20
R16	22k	NJ65	R38	39	CJ20	R63	220	CJ20
R17	10k	CJ20	R39	390	CJ20	R64-65	100	CJ20
R18	330	NJ65	R40	220	CJ20	R66	220	CJ20
R19	8.2k	NJ65	R41-42	0.5	Printed	R67-68	100	CJ20
R20	3.9k	NJ65	R43	2.7k	NJ65	R69	220	CJ20
R21	2.7k	NJ65	R44	22k	NJ65			
R22	3.9k	NJ65	R45	10k	CJ20			

Type	Manuftr.	Rtg.	Tol. %
CJ20	Electrosil	$\frac{1}{2}$ W	5
NJ65	Electrosil	$\frac{1}{4}$ W	2
Printed	Mills and Rockley	6W	1

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV1-4	2.5k	$\frac{1}{4}$	20	Plessey G Mk. Va

CAPACITORS

Ref	Value	Volt	%	Type
C1-4	1800p	125	10	Suflex HS20D
C5-6	6.4	25	-10 +50	Mullard C427AR/F6.4
C7	0.1	100	20	S. T. C. 489/LWA/44BA

TRANSISTORS

Ref	Type	Ref	Type	Ref	Type
TR1	2N2223	TR8	2N869	TR15	2S024
TR2	2N708	TR9	BUY11	TR16	2N2223
TR3	2N869	TR10	2S024	TR17	2N708
TR4	BUY11	TR11	2N2223	TR18	2N869
TR5	2S024	TR12	2N708	TR19	BUY11
TR6	2N2223	TR13	2N869	TR20	2S024
TR7	2N708	TR14	BUY11		

Type	Manuftr.
BUY11	S. T. C.
2N708	Fairchild or Texas
2N869	Fairchild or Texas
2N2223	Fairchild
2S024	Texas

DIODES

Ref	Type	Ref	Type
MR1	1S7056A Zener 5.6V	MR9	1S7082A Zener 8.2V
MR2	1S7082A Zener 8.2V	MR10	1S7150A Zener 15V
MR3	1S7056A Zener 5.6V	MR11	1S7110A Zener 11V
MR4	1S7082A Zener 8.2V	MR12	1S7150A Zener 15V
MR5	1S7056A Zener 5.6V	MR13	1S7110A Zener 11V
MR6	1S7082A Zener 8.2V	MR14	1S7150A Zener 15V
MR7	1S7056A Zener 5.6V	MR15	1S7110A Zener 11V
MR8	1S7082A Zener 8.2V	MR16	1S7150A Zener 15V
		MR17	1S7110A Zener 11V

NOTE: All diodes are $\frac{1}{4}$ W, 5% at 5mA, and manufactured by Texas.

MISCELLANEOUS

Ref	Item	Type
TSA-B	Taper pin block Continental 10-way	2B 60 000 A3P10

COMPONENTS LIST FOR BASIC VIEWING UNIT

CONTROL PANEL TYPE 11200

RESISTORS

Ref	Value	Watt	%	Type
R1	390	$\frac{1}{2}$	5	Electrosil CJ20
R2-8	27	$\frac{1}{2}$	5	Electrosil CJ20

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV1-11	10k	$\frac{1}{2}$	10	Colvern CLR1501/264
RV12	25	25		Berco L25

MISCELLANEOUS

Ref	Item	Type
ILP1-14	Lamp Vitality 6V .36W	673
ILP15-16	Lamp Thorn 6V .1A	X959119
RLA-B	Relay Magnetic Devices	590 H14H/4700/CG2/230
SA-C	Switch Decca (Push-button)	B/DDDL/7370/629
SD-G	Switch Decca (Push-button) 4-gang interlocking	B/DDDL/7370/630
TSA	Taper pin block Continental 10-way	B60000 A1P10
TSB	Taper pin block Continental 40-way	B60000 A1P10
X1	Mains cut-out Techna E. T. A.	6001.5/Trop.
X2	Thermal delay switch Coventry Control	KOF-3D-No. 6.3

COMPONENTS LIST FOR OPERATOR'S CONTROL

PANEL TYPE 11250/T

RESISTORS

Ref	Value	Watt	%	Type
R2	22k	$\frac{1}{4}$	2	Electrosil NJ65
R3-13	27	$\frac{1}{2}$	5	Electrosil CJ20
R14	10k	$\frac{1}{2}$	5	Electrosil CJ20
R15-16	5k	$\frac{1}{2}$	5	Electrosil CJ20
R17-19	2.2k	$\frac{1}{2}$	5	Electrosil CJ20

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV3-6	10k	2	5	Reliance Helipot Decca A/DDDL/7370/803
RV7	10k	$\frac{1}{2}$	10	Colvern CLR1501/264
RV8	25	20		Berco L25
RV9	10k	$\frac{1}{2}$	10	Colvern CLR1501/264

CAPACITORS

Ref	Value	Volt	%	Type
C1-3	250	15	20	Plessey CE51104

MISCELLANEOUS

Ref	Item	Type
ILP3-24	Lamp Vitality 6V .36W	673
ILP25-27	Lamp Thorn 6V .1A	X959119
MR1	Diode Texas	1N914
RLA	Relay S. T. C. 12V	60 LAA 1B
SA-L	Switch Decca Push-on, Push-off	B/DDDL/7370/650
X1	Indicator unit Decca	D/DDDL/11690/D/A

COMPONENTS LIST FOR VIEWING UNIT JUNCTION

UNIT TYPE 12790J

Ref	Item	Type
C1	Capacitor Mullard .22 μ F 125V 10%	C296AA/A220K
R1	Resistor Electrosil 10k $\frac{1}{2}$ W 5%	CJ20
R2-3	Resistor Electrosil 82 Ω $\frac{1}{2}$ W 5%	CJ20
RLA-D	Relay sub-miniature S. T. C. 12V 2c/o	60 LAA 1B
SKTA-B	Socket BICC Burndy 50-way	HYF60 MS50R
SKTC	Socket BICC Burndy 14-way	HYF60 MS14R
T1	Transformer Decca	B/DDDL/7370/642
TSA-B	Taper pin block Continental 60-way	2B 60000A 1P 60

COMPONENTS LIST FOR BASIC PRINTED WIRING

BOARD TYPE 12002 (MJEZ)

RESISTORS

Ref	Value	Type	Ref	Value	Type	Ref	Value	Type
R1	100	CJ20	R44	18k	CJ20	R89	8.2k	CJ20
R2	1.8k	CJ20	R45	680	CJ20	R90-91	270	CJ20
R3	10k	CJ20	R46	*		R92	2.2k	CJ20
R4	47	CJ20	R47	680	CJ20	R93	8.2k	CJ20
R5	1k	CJ20	R48	10k	CJ20	R94	2.2k	CJ20
R6	560	CJ20	R49	820	CJ20	R95	8.2k	CJ20
R7-9	1.8k	CJ20	R50	3.9k	CJ20	R96-97	10k	CJ20
R10	3.3k	CJ20	R51	33k	CJ20	R98	3.3k	CJ20
R11	82k	CJ20	R52	100k	CJ20	R99	1.2k	CJ20
R12	3.3k	CJ20	R53	22k	CJ20	R100	2.2k	CJ20
R13-14	3.7k	CJ20	R54	10k	CJ20	R101	47k	CJ20
R15	5.6k	CJ20	R55	18k	CJ20	R102	22k	CJ20
R16	22	CJ20	R56	2.2k	CJ20	R103	4.7M	16
R17	390	CJ20	R57	*		R104	2.7k	CJ20
R18	15k	CJ20	R58	18k	CJ20	R105	1.2k	CJ20
R19	1k	CJ20	R59	2.2k	CJ20	R106	18k	CJ20
R20-21	18k	CJ20	R60	1k	CJ20	R107	10k	CJ20
R22	1k	CJ20	R61	100	CJ20	R108	1.5k	CJ20
R23	1.2k	CJ20	R62	3.9k	CJ20	R109	680	CJ20
R24	18k	CJ20	R63	1k	CJ20	R110	6.8k	CJ20
R25	680	CJ20	R64	100	CJ20	R111	3.9k	CJ20
R26	3.3k	CJ20	R65-66	390	CJ20	R112	33k	CJ20
R27	10k	CJ20	R67	22k	NJ65	R113	100k	CJ20
R28	1.5k	CJ20	R68	27k	NJ65	R114	680	CJ20
R29	33k	CJ20	R69	33k	NJ65	R115	1.2k	CJ20
R30	100k	CJ20	R70	27k	NJ65	R116	82k	CJ20
R31	3.9k	CJ20	R71	22k	NJ65	R117	5.6k	CJ20
R32-33	680	CJ20	R72-73	560	CJ20	R118	12k	CJ20
R34	18k	CJ20	R74-75	5.6k	CJ20	R119	8.2k	CJ20
R35	680	CJ20	R76	8.2k	CJ20	R120	6.8k	CJ20
R36	*		R77-78	68k	CJ20	R121	560	CJ20
R37	680	CJ20	R79	8.2k	CJ20	R122	6.8k	CJ20
R38	10k	CJ20	R80	5.6k	CJ20	R123	1.8k	CJ20
R39	820	CJ20	R81-82	560	CJ20	R124	47k	CJ20
R40	3.9k	CJ20	R83	8.2k	CJ20	R125	5.6k	CJ20
R41	33k	CJ20	R84-85	5.6k	CJ20	R126	4.7k	CJ20
R42	100k	CJ20	R86	560	CJ20	R127	82k	CJ20
R43	680	CJ20	R87-88	68k	CJ20	R128	3.9k	CJ20

* See Specific Components List.

RESISTORS (Contd.)

Ref	Value	Type	Ref	Value	Type	Ref	Value	Type
R129-132	560	CJ20	R162	3.9k	CJ20	R186	680	CJ20
R133-134	5.6k	CJ20	R163	27	CJ20	R187	2.2k	CJ20
R135	8.2k	CJ20	R164-165	820	CJ20	R188	3.3k	CJ20
R136-137	68k	CJ20	R166	27	CJ20	R190-191	1.2k	CJ20
R138	8.2k	CJ20	R167	18k	CJ20	R192	6.8k	CJ20
R139-140	560	CJ20	R168	6.8k	CJ20	R193	15k	CJ20
R141-142	5.6k	CJ20	R169	330	CJ20	R194	1.8k	CJ20
R143	8.2k	CJ20	R171	5.6	MV1A	R195	100	CJ20
R144-145	5.6k	CJ20	R173	18k	CJ20	R196	1.8k	CJ20
R146	8.2k	CJ20	R174	680	CJ20	R197	1k	CJ20
R147	22k	NJ65	R175	5.6k	CJ20	R198	330	CJ20
R148	68k	CJ20	R176	18k	CJ20	R199	5.6	MV1A
R149	5.6k	CJ20	R177	680	CJ20	R201	560	CJ20
R150	22k	NJ65	R178	2.2k	CJ20	R202	100	CJ20
R151	1.2k	NJ65	R179	10k	CJ20	R203	15	MV1A
R152	6.8k	NJ65	R180	47	CJ20	R204	3.9k	CJ20
R153	4.7k	CJ20	R181	1k	CJ20	R205	1.2k	CJ20
R154	100	CJ20	R182	18k	CJ20	R206	1.8k	CJ20
R156-158	100	CJ20	R183	680	CJ20	R207-208	120	CJ20
R160	100	CJ20	R184	5.6k	CJ20			
R161	1.8k	CJ20	R185	18k	CJ20			

Type	Manuftr.	Rtg.	Tol. %	Type	Manuftr.	Rtg.	Tol. %
16	Erie	$\frac{1}{4}$ W	10	MV1A	Painton	$2\frac{1}{2}$ W	5
CJ20	Electrosil	$\frac{1}{2}$ W	5	NJ65	Electrosil	$\frac{1}{4}$ W	2

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV1	2k	$\frac{1}{2}$	10	Painton Bourne 224P
RV2	1k	$\frac{1}{2}$	10	Painton Bourne 224P
RV3-4	See Specific Components List.			
RV5	20k	$\frac{1}{2}$	10	Painton Bourne 224P
RV6	5k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV7	500	$\frac{1}{2}$	10	Painton Bourne 224P
RV8	10k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV9	2k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV10	5k	$\frac{1}{4}$	20	Painton Bourne 3367P
RV11-12	5k	$\frac{1}{4}$	20	Plessey G Mk. Va

CAPACITORS

Ref	Value	Volt	Type	Ref	Value	Volt	Type
C1	1000p	125	HS15D	C41	0.1	125	C296AA/A100K
C2	470p	125	HS15D	C42	3300p	125	HS20D
C3	56p	125	HS10D	C44	3300p	125	HS20D
C6	0.1	125	C296AA/A100K	C45	470p	125	HS15D
C7	12.5	25	C427AR/F12.5	C46	470p	125	HS15D
C8	0.1	125	C296AA/A100K	C47-50	33p	125	HS10D
C9	.01	125	C296AA/A10K	C51-52	470p	125	HS15D
C10	470p	125	HS15D	C53-54	See Specific Components List.		
C11	33p	125	HS10D	C55	64	16	C427AR/E64
C12	470p	125	HS15D	C57	64	16	C427AR/E64
C13	.47	125	C296AA/A470K	C59	64	16	C427AR/E64
C14	33p	125	HS10D	C60	.01	125	C296AA/A10K
C15	470p	125	HS15D	C61-62	20	25	C427AR/F20
C16	.47	125	C296AA/A470K	C63	22	20	TS20322/DP
C17	33p	125	HS10D	C64	20	25	C427AR/F20
C18	250	15	CE51104	C65	See Specific Components List.		
C19	10	16	472/LWA/4CA	C66	3300p	125	HS20D
C20	20	16	472/LWA/5CA	C67	20	16	472/LWA/5CA
C22	See Specific Components List.			C68	.01	125	C296AA/A10K
C23	20	16	472/LWA/5CA	C69	4700p	125	HS20D
C25	33p	125	HS10D	C70	12.5	25	C427AR/F12.5
C26	470p	125	HS15D	C71	40	25	C427AR/F40
C27	33p	125	HS10D	C73-74	470p	125	HS15D
C28	470p	125	HS15D	C75	100p	125	HS10D
C29-30	33p	125	HS10D	C76	470p	125	HS15D
C31	470p	125	HS15D	C77	220p	125	HS10D
C32	.01	100	489/LWA/43CF	C78	100p	125	HS10D
C33-34	33p	125	HS10D	C79	1000p	125	HS15D
C35	470p	125	HS15D	C80-81	.01	125	C296AA/A10K
C36	100p	125	HS10D	C101	6.4	25	C427AR/F6.4
C37	See Specific Components List.			C102	560p	125	HS15D
C38	12.5	25	C427AR/F12.5	C103-104	470p	125	HS15D
C40	33p	125	HS10D				

Type	Manuftr.	Tol. %	Type	Manuftr.	Tol. %
HS10D	Suflex	10	472/LWA/4CA	S. T. C.	20
HS15D	Suflex	10	472/LWA/5CA	S. T. C.	20
HS20D	Suflex	10	489/LWA/43CF	S. T. C.	10
C427AR/E	Mullard	-10 +50	CE51104	Plessey	20
C427AR/F	Mullard	-10 +50	TS20322/DP	Dubilier	10
C296AA/A	Mullard	10			

TRANSISTORS

Ref	Type	Ref	Type	Ref	Type
TR1-4	2N708	TR30	2N995	TR55-56	2N995
TR5	2N1613	TR31-32	2N708	TR57-58	2N708
TR6-16	2N708	TR33	2N1613	TR59-60	2N1613
TR19-21	2N708	TR34-50	2N708	TR61-65	2N708
TR22	2N2223	TR51	2N2223	TR67-68	2N708
TR24-29	2N708	TR52-53	2N708		

Type	Manuftr.
2N708	Fairchild or Texas
2N995	Fairchild or Texas
2N1613	Fairchild, Texas or R. C. A.
2N2223	Fairchild

DIODES

Ref	Type	Ref	Type
MR1-6	1N914	MR36	1S7047A Zener 4.7V
MR7	1S7033A Zener 3.3V	MR37-42	1N914
MR8	1N914	MR44-48	1N914
MR9-13	1S7033A Zener 3.3V	MR49	1S7047A Zener 4.7V
MR14-24	1N914	MR52	1N914
MR27	1N914	MR54-58	1N914
MR29	1N914	MR59-61	FA4003
MR31-35	1N914	MR62-70	1N914

NOTE: All diodes are manufactured by Texas except MR59-61 which are manufactured by Fairchild; all Zener diodes are $\frac{1}{4}W$, 5% at 5mA.

MISCELLANEOUS

Ref	Item	Type
L1-4	Inductors (See Specific Components List)	
Test 1-8	Test point connector 8-way Continental	IB73720 D8
Test 9-16	Test point connector 8-way Continental	IB73721 D8

COMPONENTS LIST FOR COMPONENTS SPECIFIC
TO PRINTED WIRING BOARD TYPE 12137 (MJEG)
(BASED ON TYPE 12002)

LINKS

Links connected:- B-C, R-S, E-F, H-J, K-L, M-Y.

RESISTORS

Ref	Value	Watt	%	Type
R36	1.5k	$\frac{1}{2}$	5	Electrosil CJ20
R46	2.7k	$\frac{1}{2}$	5	Electrosil CJ20
R57	12k	$\frac{1}{2}$	5	Electrosil CJ20

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV3-4	5k	1	10	Painton 224P

CAPACITORS

Ref	Value	Volt	%	Type
C22	0.1	160	10	Mullard C281AA/A100K
C37	.085	200	2	Johnson Matthey C55R
C53-54	0.1	160	10	Mullard C281AA/A100K
C54a	0.1	160	10	Mullard C281AA/A100K
C65-65a	0.1	160	10	Mullard C281AA/A100K

MISCELLANEOUS

Ref	Item	Type
L2-4	Fitted coil Decca	B/DDDL/7370/AE

COMPONENTS LIST FOR BASIC PRINTED WIRING

BOARD TYPE 12003 (MRGZ)

RESISTORS

Ref	Value	Type	Ref	Value	Type	Ref	Value	Type
R1	*		R46-48	*		R92	3. 3k	CJ20
R2	330k	CJ20	R49	330k	CJ20	R93	2. 2k	CJ20
R3	18k	CJ20	R50	18k	CJ20	R94	5. 6k	NJ65
R4-5	27k	CJ20	R51-52	27k	CJ20	R95-96	330	NJ65
R6	10k	FM02	R53	15k	NJ65	R97	5. 6k	NJ65
R7	270	CJ20	R54	3. 9k	CJ20	R98-99	10	16
R8	3. 9k	CJ20	R55-58	2. 2k	NJ65	R101	330k	CJ20
R9	10k	CJ20	R59	*		R102	18k	CJ20
R10	*		R60	2. 2k	NJ65	R103-104	27k	CJ20
R11	470k	CJ20	R61	470k	CJ20	R105	270	CJ20
R12-13	27k	CJ20	R62-63	27k	CJ20	R106	10k	NJ65
R14	56k	CJ20	R64	56k	CJ20	R107	3. 9k	CJ20
R15	10k	CJ20	R65	12k	CJ20	R108-111	2. 2k	NJ65
R16	680	CJ20	R66	8. 2k	CJ20	R112	10k	NJ65
R17	2. 2k	CJ20	R67	3. 9k	CJ20	R113	12k	NJ65
R18	3. 3k	CJ20	R68	10k	NJ65	R114	220k	NJ65
R20	3. 9k	CJ20	R69	5. 6k	NJ65	R115	15k	NJ65
R21	8. 2k	NJ65	R70-71	330	NJ65	R116	6. 8k	CJ20
R22-23	470	NJ65	R72	5. 6k	NJ65	R117-120	*	
R24	8. 2k	NJ65	R73-74	10	16	R121-122	3. 3k	CJ20
R25-26	22	CJ20	R75	1. 5k	CJ20	R123-124	3. 9k	CJ20
R27	10k	CJ20	R76	18k	NJ65	R125-126	3. 3k	CJ20
R28	*		R77	820	NJ65	R127	100k	CJ20
R29	330k	CJ20	R78	6. 8k	NJ65	R128	2. 7k	CJ20
R30-31	6. 8k	CJ20	R79	3. 9k	NJ65	R129	4. 7k	CJ20
R32	22k	CJ20	R80	220k	CJ20	R131	220	CJ20
R33	120	CJ20	R81	33	CJ20	R132	3. 3k	CJ20
R34	10k	CJ20	R82	330k	CJ20	R133	120	CJ20
R35	150	CJ20	R83	33	CJ20	R134	2. 2k	CJ20
R36	1k	CJ20	R84	3. 9k	NJ65	R135	22	CJ20
R37	100	CJ20	R85	820	NJ65	R136	1k	CJ20
R38	5. 6k	CJ20	R86	6. 8k	NJ65	R137	10k	NJ65
R39	2. 7k	CJ20	R87	18k	NJ65	R138	100k	CJ20
R40	8. 2k	NJ65	R88	3. 9k	NJ65	R140	4. 7k	CJ20
R41-42	470	NJ65	R89	1. 2k	CJ20	R141	4. 7k	NJ65
R43	8. 2k	NJ65	R90	120	CJ20	R143	3. 3k	CJ20
R44-45	22	CJ20	R91	68	CJ20	R144	120	CJ20

* See Specific Components List.

RESISTORS (Contd.)

Ref	Value	Type	Ref	Value	Type	Ref	Value	Type
R145	2.2k	CJ20	R168	*		R193	56	CJ20
R146	22	CJ20	R169	*		R194	220	CJ20
R147	1k	CJ20	R170	1k	CJ20	R195	220	CJ20
R148	10k	NJ65	R171	1k	CJ20	R196	220	CJ20
R153	10k	NJ65	R172	2, 2k	NJ65	R197	15k	NJ65
R154	100k	CJ20	R173	3, 9k	CJ20	R199	220	CJ20
R155	18k	CJ20	R174	270	CJ20	R200	4, 7k	NJ65
R156	27k	CJ20	R175	27k	CJ20	R201	220	CJ20
R157	27k	CJ20	R176	18k	CJ20	R203	220	CJ20
R158	270	CJ20	R177	330k	CJ20	R204	22	CJ20
R159	3, 9k	CJ20	R178	10k	NJ65	R205	22	CJ20
R160	10k	NJ65	R179	27k	CJ20	R206	1, 2k	CJ20
R162	100k	CJ20	R180	15k	NJ65	R207	22	CJ20
R164	12k	CJ20	R181	82k	CJ20	R208	22	CJ20
R165	1k	CJ20	R182	10k	CJ20	R209	1, 2k	CJ20
R166	3, 9k	NJ65	R183	270	CJ20	R210	*	
R167	3, 9k	NJ65	R190	4, 7k	CJ20			

* See Specific Components List.

Type	Manuftr.	Rtg.	Tol. %	Type	Manuftr.	Rtg.	Tol. %
16	Erie	$\frac{1}{4}$ W	10	CJ20	Electrosil	$\frac{1}{2}$ W	5
FM02	Morganite	$\frac{1}{4}$ W	.2	NJ65	Electrosil	$\frac{1}{4}$ W	2

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV1-2	20k	1	10	M. E. C. 040
RV3	1k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV4	5k	$\frac{1}{2}$	5	Painton Bourne 3367P
RV6	25k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV7	20k	1	10	M. E. C. 040
RV8	5k	$\frac{1}{2}$	5	Painton Bourne 3367P
RV9-10	25k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV11-14	20k	1	10	M. E. C. 040
RV15-16	5k	1	10	M. E. C. 040
RV17	5k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV18	20k	1	10	M. E. C. 040
RV20	5k	$\frac{1}{2}$	5	Painton Bourne 3367P

CAPACITORS

Ref	Value	Volt	Type	Ref	Value	Volt	Type
C1	1000p	125	HS15D	C24	68	20	TS20468DP
C3	220p	125	HS10D	C26	68	20	TS20468DP
C4	*			C28	68	20	TS20468DP
C5	150p	125	HS10D	C30	68	20	TS20468DP
C6-7	1000p	125	HS15D	C31-32	0.1	125	C296AA/A100K
C8	1500p	125	HS20D	C33	1000p	125	HS15D
C9	6800p	125	HS20E	C40-43	1200p	125	HS15E
C10	*			C44	.047	50	489/LWA/43BA
C11	100p	125	HS10D	C45	22	20	TS20322DP
C12-13	1000p	125	HS15D	C46	150p	125	HS10D
C15	22p	125	HS10D	C47 +	47-120p	125	HS10D
C18	560p	125	HS10D	C48	1200p	125	HS15E
C21	15p	125	HS10D	C49-50	27p	125	HS10D
C22	560p	125	HS15D	C51-52	1000p	125	HS15D

* See Specific Components List.
 + Selected on test.

Type	Manuftr.	Tol. %	Type	Manuftr.	Tol. %
HS10D	Suflex	10	TS20468DP	Dubilier	20
HS15D	Suflex	10	TS20322DP	Dubilier	20
HS20D	Suflex	10	C296AA/A100K	Mullard	10
HS15E	Suflex	10	489/LWA/43BA	S. T. C.	20
HS20E	Suflex	10			

TRANSISTORS

Ref	Type	Ref	Type	Ref	Type	Ref	Type
TR1	2N2223	TR14-15	2N708	TR31	2N995	TR55	2N708
TR2	2N995	TR16	2N995	TR32	2N2223	TR56	2N995
TR3	2N2223	TR17	2N2223	TR33-35	2N708	TR57-59	2N708
TR4	2N708	TR18	2N995	TR36	2N995	TR60	2N2223
TR5	2N995	TR19-22	2N708	TR37-38	2N708	TR61	2N708
TR6	2N708	TR23	2N995	TR39	2N995	TR62	2N995
TR7	2N995	TR24	2N2223	TR45	2N2223	TR63-66	2N708
TR8-9	2N708	TR25	2N708	TR46	2N995	TR67	2N995
TR10	2N995	TR26	2N995	TR47	2N2223	TR70	2N2223
TR11	2N2223	TR27-28	2N708	TR48-49	2N995		
TR12	2N708	TR29	2N995	TR50-53	2N708		
TR13	2N995	TR30	2N708	TR54	2N2223		

NOTE: Transistors Types 2N708 and 2N995 are manufactured by both Texas and Fairchild; Type 2N2223 is manufactured by Fairchild only.

DIODES

Ref	Type	Manuftr.	Ref	Type	Manuftr.
MR1-2	1N914	Texas	MR25	FA2003	Fairchild
MR3	1S7033A	Texas	MR26	1N914	Texas
MR4-11	1N914	Texas	MR28	1N914	Texas
MR12	1S7033A	Texas	MR31	FA2003	Fairchild
MR13	1N914	Texas	MR32-44	1N914	Texas
MR14-15	FA2003	Fairchild	MR45	1S7033A	Texas
MR16-19	1N914	Texas	MR45	FA2003	Fairchild
MR21-22	1S7056A	Texas	MR47-49	1N914	Texas
MR23-24	1N914	Texas	MR52-54	1S7033A	Texas

NOTE: MR3, 12, 45, 52-54 are Zener type diodes, 3.3V, $\frac{1}{4}$ W, 5% tolerance at 5mA.

MR21-22 are Zener type diodes, 5.6V, $\frac{1}{4}$ W, 5% tolerance at 5mA.

MISCELLANEOUS

Ref	Item	Type
RLA-D	Relay Smith	14PCR6
SA-H	Switch M. E. C.	TS71

COMPONENTS LIST FOR COMPONENTS SPECIFIC
 TO PRINTED WIRING BOARD TYPE 12012 (MRGE)
 (BASED ON TYPE 12003)

LINK

Link connected:- B-C

RESISTORS

Ref	Value	Watt	%	Type
R1	100k	$\frac{1}{4}$	.2	Morganite FM02
R10	100k	$\frac{1}{4}$	.2	Morganite FM02
R28	1k	$\frac{1}{2}$	5	Electrosil CJ20
R46	56k	$\frac{1}{4}$	2	Electrosil NJ65
R47	10k	$\frac{1}{4}$	2	Electrosil NJ65
R48	18k	$\frac{1}{4}$	2	Electrosil NJ65
R59	6.8k	$\frac{1}{4}$	2	Electrosil NJ65
R112	10k	$\frac{1}{4}$	2	Electrosil NJ65
R117	11.1k	$\frac{1}{4}$	.2	Morganite FM02
R118	25k	$\frac{1}{4}$	.2	Morganite FM02
R119	66.6k	$\frac{1}{4}$	.2	Morganite FM02
R120	100k	$\frac{1}{4}$	.2	Morganite FM02
R168	Shorting Link 22 s. w. g.			

CAPACITORS

Ref	Value	Volt	%	Type
C4	.47	125	10	Mullard C296AA/A
C10	.1	160	10	Mullard C281AB/A
C10a	3300p	500	10	Erie N5600

COMPONENTS LIST FOR BASIC PRINTED WIRING

BOARD TYPE 12005 (MFDZ)

RESISTORS

Ref	Value	Type	Ref	Value	Type	Ref	Value	Type
R1	270	CJ20	R49	390	CJ20	R103	2.2k	CJ20
R2-3	270	NJ65	R50	15k	CJ20	R104	10k	CJ20
R4	560	CJ20	R51	18k	CJ20	R105-106	5.6k	CJ20
R5-6	150	CJ20	R52	4.7k	CJ20	R107	10k	CJ20
R7-8	47	CJ20	R53	5.6k	CJ20	R108	3.3k	CJ20
R9	4.7k	CJ20	R54	3.9k	CJ20	R109	220	CJ20
R10	330	CJ20	R55	1k	CJ20	R110	10k	CJ20
R11-12	10	16	R56	560	CJ20	R111	56k	CJ20
R13	330	CJ20	R57	390	CJ20	R112	10k	CJ20
R14	560	CJ20	R58	18k	CJ20	R113	3.3k	CJ20
R15	15k	CJ20	R59	4.7k	CJ20	R114	220	CJ20
R16	10k	CJ20	R60	5.6k	CJ20	R115	10k	CJ20
R17	1k	CJ20	R61	3.9k	CJ20	R116	56k	CJ20
R18	330	CJ20	R62	1k	CJ20	R122	10k	CJ20
R19	4.7k	CJ20	R63	560	CJ20	R123	3.3k	CJ20
R20	330	CJ20	R74	1k	CJ20	R124	220	CJ20
R21-22	10	16	R75	680	CJ20	R125	10k	CJ20
R23	330	CJ20	R76	56k	CJ20	R126	56k	CJ20
R24	15k	CJ20	R77-78	10k	CJ20	R127	68k	CJ20
R25	10k	CJ20	R79	5.6k	CJ20	R128	15k	NJ65
R26	1k	CJ20	R80	56	CJ20	R129	2.2k	CJ20
R27	4.7k	CJ20	R81	680	CJ20	R130-131	15k	NJ65
R28	330	CJ20	R82-83	56	CJ20	R132	47k	CJ20
R29-30	10	16	R84	680	CJ20	R133	1k	CJ20
R31	330	CJ20	R85	10	16	R134-135	2.2k	CJ20
R32	15k	CJ20	R86	47	CJ20	R136-137	1.8k	CJ20
R33	10k	CJ20	R87	1.5k	CJ20	R138	22k	CJ20
R34	1k	CJ20	R88	10	16	R139	560	CJ20
R35	4.7k	CJ20	R90	12k	CJ20	R140	3.3k	NJ65
R36	330	CJ20	R92	680	CJ20	R141	18k	NJ65
R37-38	10	16	R93	2.2k	CJ20	R142	6.8k	CJ20
R39	330	CJ20	R94	10k	CJ20	R143	4.7k	CJ20
R40	15k	CJ20	R95	1k	CJ20	R144	2.2k	CJ20
R41	10k	CJ20	R96	470	CJ20	R145-146	220	CJ20
R42	1k	CJ20	R97-98	10	16	R147-148	2.2k	CJ20
R43-44	470	CJ20	R99	1.8k	CJ20	R149	47k	NJ65
R45	1.2k	CJ20	R100	5.6k	CJ20	R150	6.8k	CJ20
R46-47	22	CJ20	R101	47k	CJ20	R151	47	CJ20
R48	100	CJ20	R102	560	CJ20	R152	5.6k	CJ20

RESISTORS (Contd.)

Ref	Value	Type	Ref	Value	Type
R154	3. 3k	306A	R189	68k	CJ20
R155-156	5. 6k	CJ20	R190	22	CJ20
R157-158	2. 7k	CJ20	R191	1k	CJ20
R159	10k	CJ20	R192	100k	CJ20
R160	15k	CJ20	R193	22k	CJ20
R161	680	CJ20	R194	220	CJ20
R162	6. 8k	CJ20	R195	680	CJ20
R163-164	2. 2k	CJ20	R196	56k	CJ20
R165	5. 6k	CJ20	R197	15k	CJ20
R166	12k	CJ20	R198	5. 6k	CJ20
R167	680	CJ20	R199	6. 8k	CJ20
R168	3. 9k	CJ20	R202	18k	CJ20
R169	4. 7k	CJ20	R203	47k	CJ20
R170	220k	NJ65	R204	8. 2k	CJ20
R171	1. 8k	CJ20	R205-207	100	CJ20
R172	120	CJ20	R208	6. 8k	CJ20
R173	10k	CJ20	R209-210	100	CJ20
R174	220k	NJ65	R211	220	CJ20
R175	10k	CJ20	R212	2. 2k	CJ20
R176	3. 3k	CJ20	R213	680	NJ65
R177-178	2. 7k	CJ20	R214	820	NJ65
R179-180	10k	CJ20	R215	680	CJ20
R181	27k	CJ20	R216	100	CJ20
R182-183	10k	CJ20	R217	680	CJ20
R184	47k	CJ20	R218	470	CJ20
R185	2. 2k	CJ20	R219	390	CJ20
R186	5. 6k	CJ20	R220	2. 2k	CJ20
R187	1. 8k	CJ20	R221	39	CJ20
R188	2. 2k	CJ20	R222	47	CJ20

Type	Manuftr.	Rtg.	Tol. %	Type	Manuftr.	Rtg.	Tol %
16	Erie	$\frac{1}{4}$ W	10	CJ20	Electrosil	$\frac{1}{2}$ W	5
306A	Painton	6W	5	NJ65	Electrosil	$\frac{1}{4}$ W	2

RESISTORS VARIABLE

Ref	Value	Watt	%	Type
RV1-4	5k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV5	1k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV7-8	1k	$\frac{1}{4}$	20	Plessey G Mk. Va
RV10	20k	1	10	Painton 224P
RV11	10k	1	10	Painton 224P
RV12	5k	$\frac{1}{2}$	5	Painton Bourne 3367P
RV13	5k	1	10	Painton 224P
RV14	1k	1	10	Painton 224P
RV15	20k	$\frac{1}{2}$	5	Painton Bourne 3367P

CAPACITORS

Ref	Value	Volt	Type	Ref	Value	Volt	Type
C1	0.1	125	C296AA/A100K	C37	42-260p		AC1033
C2	68	20	TS20468DP	C38	.47	125	C296AA/A470K
C3	330p	125	HS15D	C39	27p	125	HS10D
C5	68	20	TS20468DP	C40	*		
C7	0.1	125	C296AA/A100K	C41	390p	125	HS10D
C9	0.1	125	C296AA/A100K	C42	2700p	125	HS20D
C10	560p	125	HS15D	C43	4700p	125	HS20D
C11	0.1	125	C296AA/A100K	C44	220p	125	HS10D
C12-13	.01	125	C296AA/A10K	C45	68p	125	HS10D
C15	56p	125	HS10D	C46	.01	125	C296AA/A10K
C17-18	0.1	125	C296AA/A100K	C47	100p	125	HS10D
C24	680p	125	HS15D	C49	12.5	25	C427AR/F12.5
C27	0.7-3.7p		004EA-3E	C50	.47	125	C296AA/A470K
C28-31	68	20	TS20468DP	C51	10	20	TS20210DP
C36	*						

* See Specific Components List.

Type	Manuftr.	Tol. %	Type	Manuftr.	Tol. %
HS10D	Suflex	10	004EA-3E	Mullard	Trimmer
HS15D	Suflex	10	AC1033	Mullard	Trimmer
HS20D	Suflex	10	C296AA/A	Mullard	10
TS20210DP	Dubilier	10	C427AR/F	Mullard	-10
TS20468DP	Dubilier	10			+50

TRANSISTORS

Ref	Type	Ref	Type	Ref	Type
TR1-14	2N708	TR34	2N708	TR52	2N2223
TR16-21	2N708	TR35	2N995	TR53-57	2N708
TR24-28	2N708	TR36-39	2N708	TR58	2N995
TR29	2N2223	TR42-46	2N708	TR59-68	2N708
TR30-31	2N708	TR48-51	2N708		

NOTE: Transistors Types 2N708 and 2N995 are manufactured by both Texas and Fairchild; Type 2N2223 is manufactured by Fairchild only.

DIODES

Ref	Type	Ref	Type
MR1	IS7047A Zener 4.7V	MR21	IN914
MR2	IS7068A Zener 6.8V	MR23-26	IN914
MR3	IN914	MR27	IS7100A Zener 10V
MR7	IS7033A Zener 3.3V	MR28-29	IN914
MR8	IS7056A Zener 5.6V	MR30	IS7082A Zener 8.2V
MR11	IN914	MR31-34	IN914
MR12	IS7082A Zener 8.2V	MR36-40	IN914
MR13	IS7150A Zener 15V	MR41	IS7082A Zener 8.2V
MR14-19	IN914	MR42-49	IN914

NOTE: All diodes are manufactured by Texas; all Zener diodes are $\frac{1}{4}$ W, 5% at 5mA.

MISCELLANEOUS

Ref	Item	Type
L1-2	Inductor 10 μ H $\frac{1}{3}$ W 10% Painton	C1
L3	Inductor (See Specific Components List)	
Test points 1-8	Test point connector 8-way Continental	IB73720 D8
Test points 9-16	Test point connector 8-way Continental	IB73721 D8

COMPONENTS LIST FOR COMPONENTS SPECIFIC
TO PRINTED WIRING BOARD TYPE 12139 (MFDD)
(BASED ON TYPE 12005)

CAPACITORS

Ref	Value	Volt	%	Type
C36	820p	125	10	Suflex HS15D
C40	4700p	125	10	Suflex HS20D
C41	680p	125	10	Suflex HS15D

INDUCTOR

Ref	Type
L3	Decca A/DDDL/7370/AB

COMPONENTS LIST FOR BOARD CONNECTORS AND
TERMINATION ASSEMBLY TYPE D/DDDL/12551/E

Ref	Item	Type
PLA-B	Plug BICC Burndy 50-way	HYF60 MS50P
PLC	Plug BICC Burndy 14-way	HYF60 MS14F
SKTA-H	Socket Continental 24-way	IP55601 DD24/24
SKTJ-K	Socket Belling Lee	L1417/CS/AU
TSA-C	Taper pin block Continental 10-way	2B 60000 A1P10
TSD	Taper pin block Continental 60-way	2B 60000 A1P60

ANCILLARY COMPONENTS FOR VIEWING

UNIT TYPE 12600N

Ref	Item	Type
	Cathode ray tube Ferranti	12/08 HM
	Deflector coil assembly Decca	B/DDDL/11700/A
	Pump assembly Decca	D/DDDL/12551/C
	Fan and motor assembly Decca	C/DDDL/11950/D
ILP1-4	Lamp for compass rose Otter 6V 0.1A	995-9919
R1-2	Resistor Erie 10M $\frac{1}{4}$ W 10%	16
R3-4	Resistor (space heater) Berco 1k 30W 5%	V040