

ALIGNMENT PROCEDURES

NOTE: Unless otherwise specified, all electrical adjustments should be made under the following test conditions.

- FRONT PANEL:**
1. Power switch ON at appropriate AC line voltage.
 2. Mute switch in the OFF position.
 3. Function switch in the AUTO position.
 4. Monitor level at FULL CCW position.
 5. External processor switch in the OUT position.
 6. 25 microseconds switch in the OUT position.
 7. Noise filter switch in the OUT position.

- REAR PANEL:**
1. Level adjust at FULL CCW position.
 2. Muting threshold at FULL CCW position.
 3. Stereo threshold at FULL CCW position.

FRONT END

65 dBf (1000 μ V) No Modulation

STEP	ALIGNMENT	TEST SIGNAL	ADJUST	ADJUST FOR
1	Dial Scale Calibration	None	Tuning Wheel	Mechanical Stop at Low End of FM Band
2			Dial Scale Pointer	"0" on Logic Scale
3			Tuning Wheel	106MHz
4		106MHz	Oscillator Trimmer	Reception at Center of IF Bandwidth Using Method of FM/IF Alignment in Step 2
5	Match IF Coil To Ceramic IF Filter	106MHz	IF Slug	Maximum Voltage at TP1, FM/IF P.C. BD.
6	RF Alignment	90MHz	Tuning Wheel	See Step 4 Above
7			Slug L2/L3	Maximum Voltage at TP1, FM/IF P.C. BD.
8			Slug L4	
9			Slug L5	
10		106MHz	Antenna Trimmer	
11			1st Ref Trimmer	
12			2nd RF Trimmer	
13			Mixer Trimmer	
14	Repeat Steps 5 through 11 Until No Further Improvements			

ALIGNMENT PROCEDURES (Cont)

FM/IF ADJUSTMENTS

NOTE: Set VR1 on FM/IF P.C. Board to Full CCW Rotation

STEP	ALIGNMENT	TEST SIGNAL	ADJUST	ADJUST FOR
1	Freedom of Interference	None	Tuning Wheel	No Broadcast Interference That Would Cause Quieting
2	Tune to Center of IF Bandpass	12dBf (2 μ V), 1kHz, Mono, 100% Modulation FM	Generator Frequency	Noise Interference that is Equally Distributed at Both Top and Bottom of 1kHz Detected Waveform
3	Quadrature Circuit Frequency Offset	65dBf (1000 μ V), 1kHz, Mono, 100% Modulation FM	Lower Slug of T1 on FM/IF P.C. Bd.	0 VDC Between TP2 and TP3 on FM/IF P.C. Bd.
4	Minimum Distortion	65dBf (1000 μ V), 1kHz, Mono, 100% Modulation FM	Upper Slug of T1 on FM/IF P.C. Bd.	Minimum THD of 1kHz Sinewave
5	Repeat Steps 3 and 4 until No Further Improvement			
6	In-Tune Light Defeat	12dBf (2 μ V) no Modulation	VR1 on FM/IF P.C. Bd.	Very Dim Glow of In-Tune Light

MULTIPLEX ADJUSTMENT

STEP	ALIGNMENT	TEST SIGNAL	ADJUST	ADJUST FOR
1	PLL Free-Running Oscillator Frequency	None	VR2 on MPX P.C. Bd.	19kHz \pm 50Hz at TP1 on MPX P.C. Bd.
2	Right Separation	Left Only, 1kHz, 9% Pilot, 100% FM Modulation 65dBf (1000 μ V)	VR1 on MPX P.C. Bd.	Best Separation
3	Left Separation	Right Only, 1kHz, 9% Pilot, 100% FM Modulation 65dBf (1000 μ V)	VR1 on MPX P.C. Bd.	Halfway Between Current Reading and Reading in Step 2

ALIGNMENT PROCEDURES (Cont)

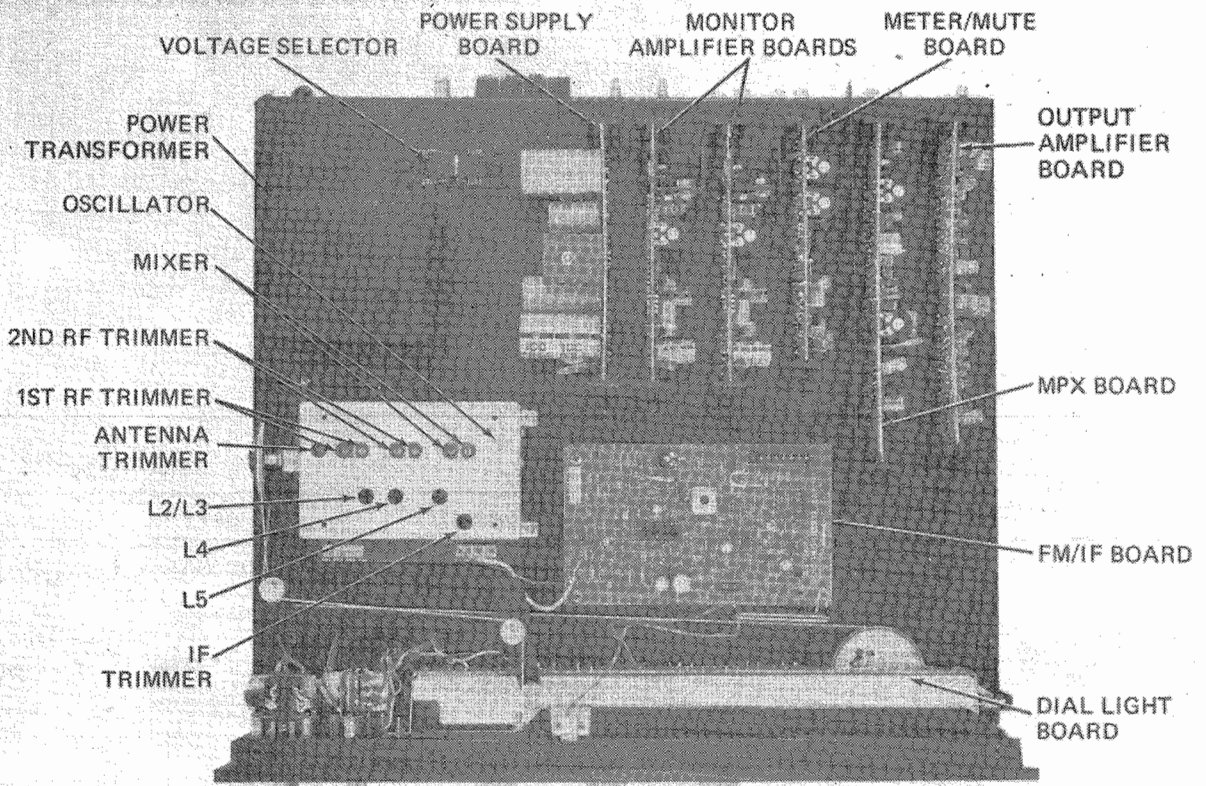
MONITOR AMPLIFIER

STEP	ALIGNMENT	TEST SIGNAL	ADJUST	ADJUST FOR
1	Output Stage Idle Current Left	None	VR1 on Left Channel Monitor Amp. P.C. Bd.	20mVDC Between TP1 and TP2
2	Output Stage Idle Current Right	None	VR1 on Right Channel Monitor Amp. P.C. Bd.	20mVDC Between TP1 and TP2

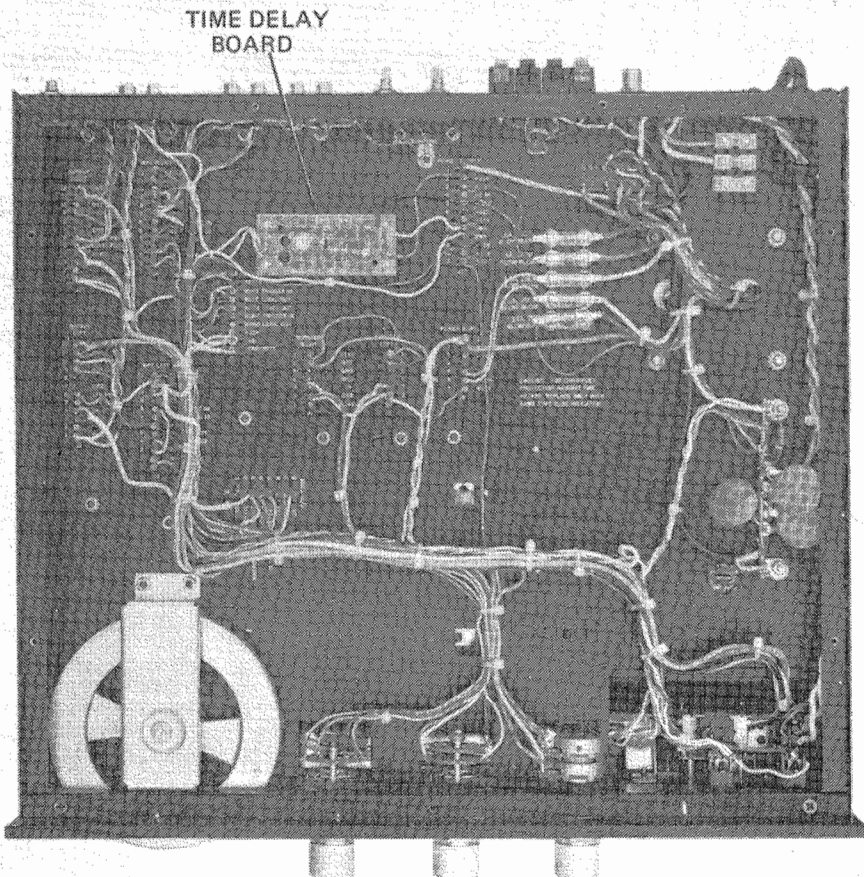
NOISE METER

STEP	ALIGNMENT	TEST SIGNAL	ADJUST	ADJUST FOR
1	Freedom of Interference	None	Tuning Wheel	No Broadcast Interference That Would Cause Quieting
2	Meter Sensitivity	Noise Only	VR2 on Meter/MUTE P.C. Bd.	Full Right Hand Deflection of Meter
3	Meter Calibration	25dBf (10 μ V) into 300 Ω Ant. Terminals at Freq. to be Received By Tuning in Step 1 Generated by Sound Technology 1000A FM Alignment Gen. Coupled Thru 50 Ω to 300 Ω Matching Transformer, (Sound Tech 100) 30% Modulation, 1kHz, Mono.	VR1 on Meter/Mute P.C. Bd.	Half Scale Deflection

COMPONENT LOCATION

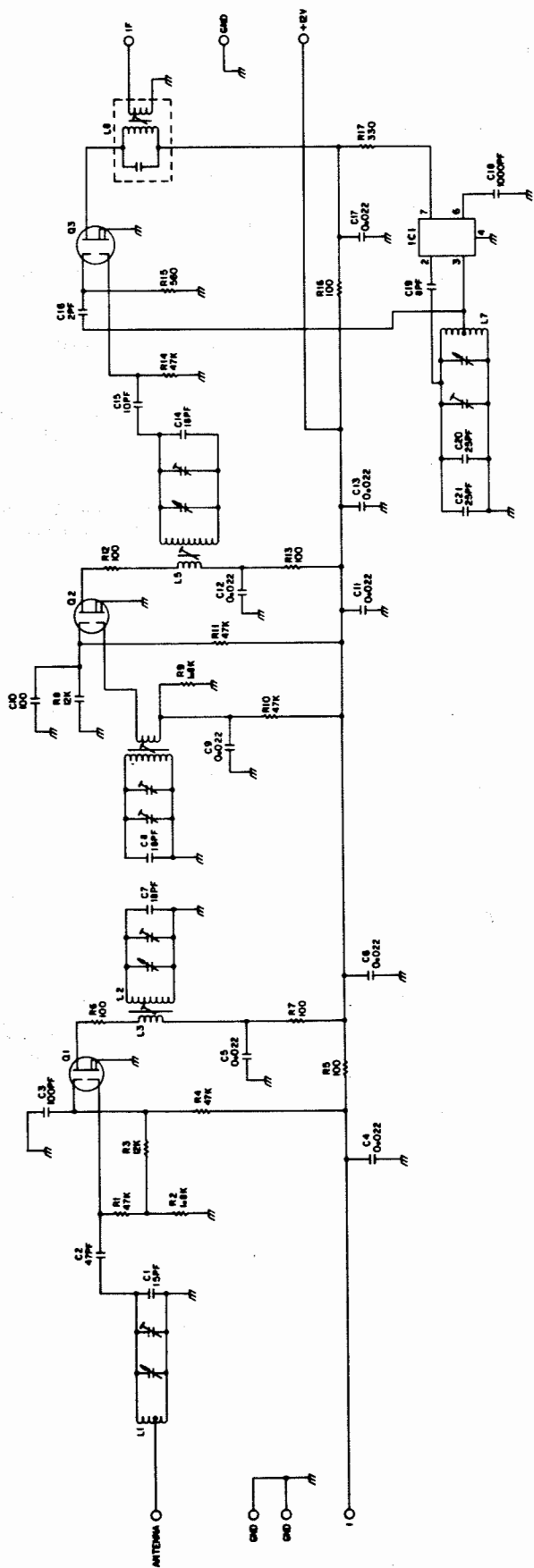


TOP VIEW

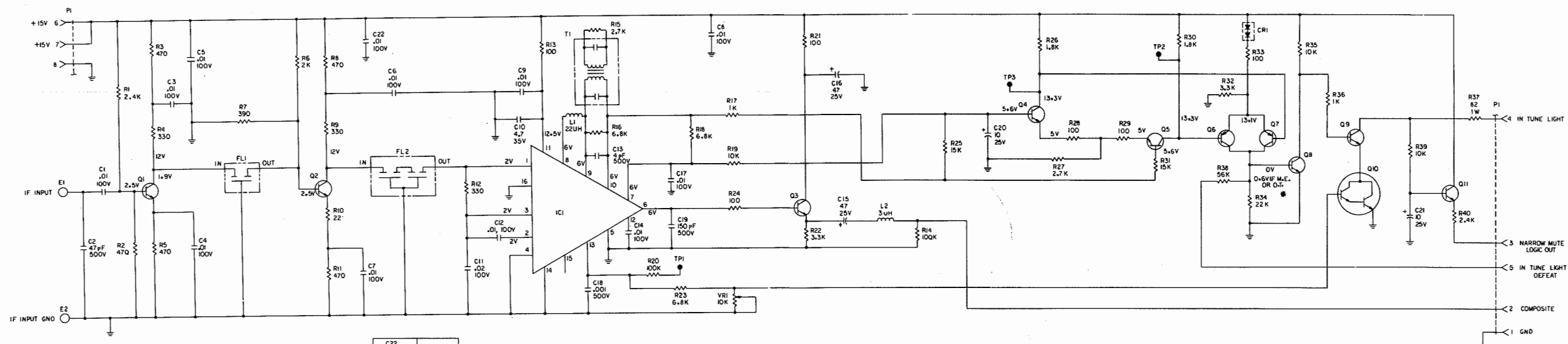


BOTTOM VIEW

FRONT END SCHEMATIC DIAGRAM

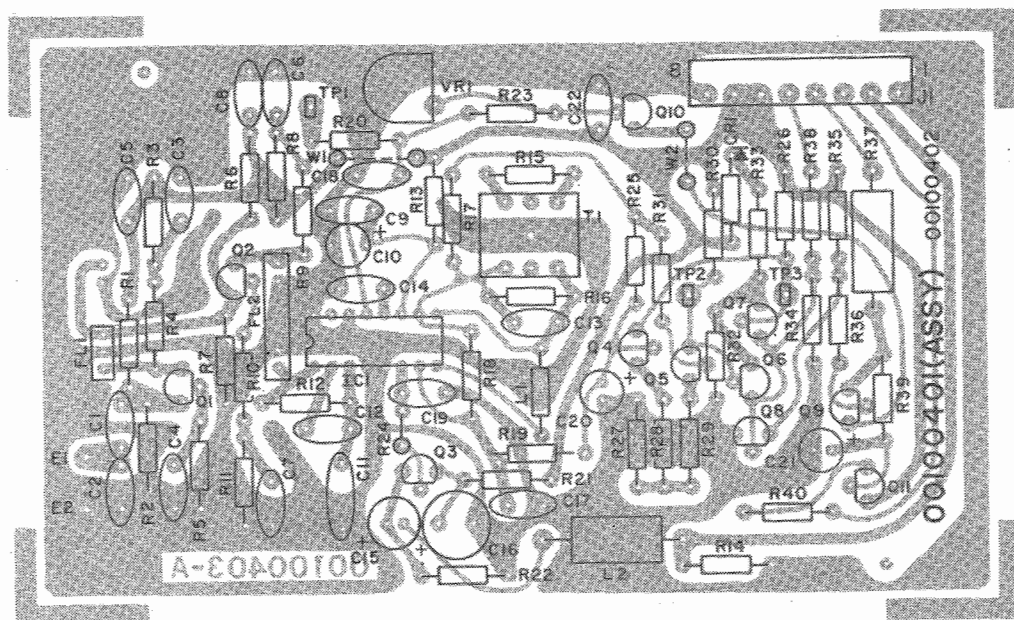


NOTES: UNLESS OTHERWISE SPECIFIED
 1. ALL CAPACITOR VALUES ARE IN MICROFARADS.
 2. ALL RESISTOR VALUES ARE IN OHMS, ±5%, 1/4W.
 3. WHEN ORDERING PARTS, REFER TO PARTS LIST FOR H/K PART NUMBERS. IF H/K PART NUMBER IS NOT AVAILABLE, USE DESIGNATION AND ASSEMBLY USED ON I.E. R1, FM/IF BD., ASSY NO. 00100401.



* NOTES:
 1. ME=MUTE EMITTED
 2. OT=OUT OF TUNE

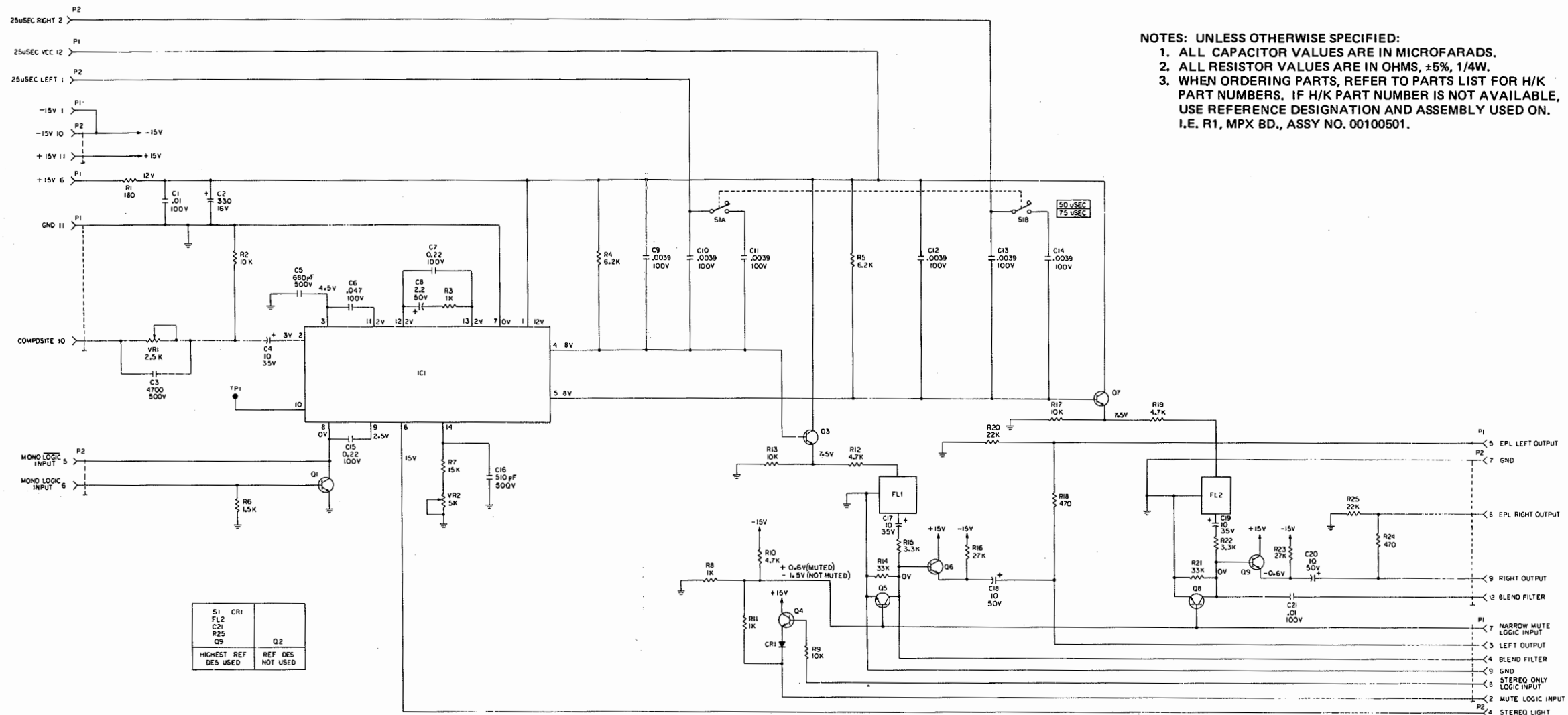
C22	CR1
FL2	L2
Q11	Q1
R41	T1
VR1	IC1
HIGHEST REF DES USED	REF DES NOT USED



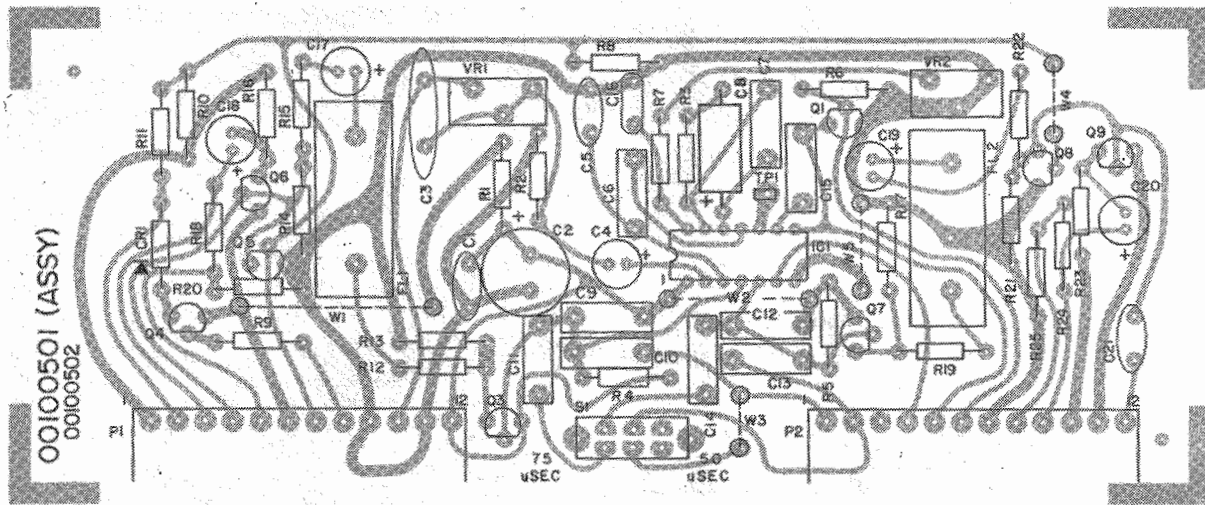
CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00100401	P.C. Board Assy, FM/IF
DIODE		
CR1	41624214*	Stabistor
TRANSISTOR		
Q3, 4, 5, 8, 9, 11	43025972*	NPN, GP
Q1, 2	43029701*	NPN, RF
Q6, 7	43027722*	PNP, GP
Q10	43029832*	NPN, MPS-A13
RESISTOR, VARIABLE		
VR1	21729324	10K
INDUCTOR		
L1	12029342	22μH
L2	12029678	3μH
INTEGRATED CIRCUIT		
IC1	43129341*	FM/IF
TRANSFORMER		
T1	11029332	FM Detector
MISCELLANEOUS		
FL1	12034521	Ceramic Filter
FL2	12034522	Ceramic Filter
		FL1 & FL2 Installed in Matched Pairs

Harman/Kardon Citation Eighteen

MPX PC BOARD AND SCHEMATIC DIAGRAM

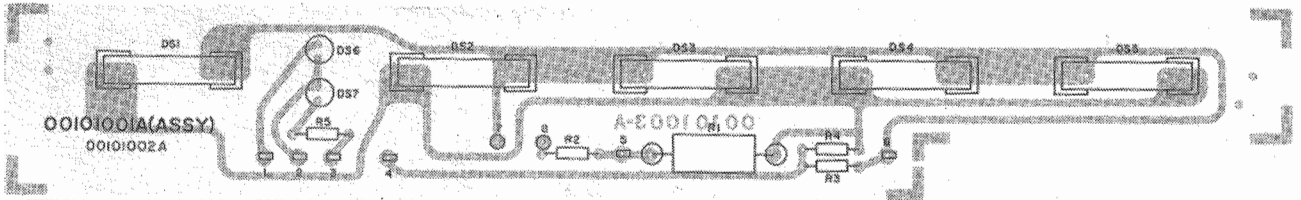


NOTES: UNLESS OTHERWISE SPECIFIED:
 1. ALL CAPACITOR VALUES ARE IN MICROFARADS.
 2. ALL RESISTOR VALUES ARE IN OHMS, ±5%, 1/4W.
 3. WHEN ORDERING PARTS, REFER TO PARTS LIST FOR H/K PART NUMBERS. IF H/K PART NUMBER IS NOT AVAILABLE, USE REFERENCE DESIGNATION AND ASSEMBLY USED ON. I.E. R1, MPX BD., ASSY NO. 00100501.



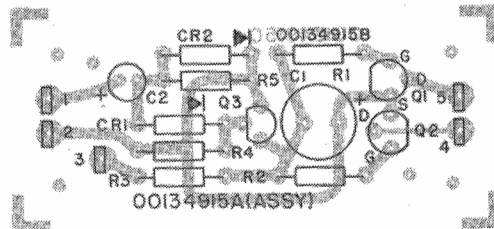
CIRCUIT REF. NO.	H/K PART NO	DESCRIPTION
	00100501	P.C. Board Assy, MPX
DIODE		
CR1	41629338*	Silicon, Signal 1N914
TRANSISTOR		
Q1, Q3-9	43025972*	NPN, GP
RESISTOR, VARIABLE		
VR1	21634318	2.5K
VR2	21631812	5K
INTEGRATED CIRCUIT		
IC1	43128017	FM Stereo Demodulator
MISCELLANEOUS		
FL1, FL2	12028102	Filter, RL-37
S1	26534519	Switch, DPDT, PC Mount

DIAL LIGHT
PC BOARD



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00101001	P.C. Board Assy, Dial Light
RESISTOR, WIREWOUND		
R1	36611071	10ohm, 3W
LAMP		
DS1-DS5	46529212*	Dial and Meter, 12V, 150mA
DS6, 7	46534359*	Stereo/In-Tune, 12V, 35mA

TIME DELAY
PC BOARD

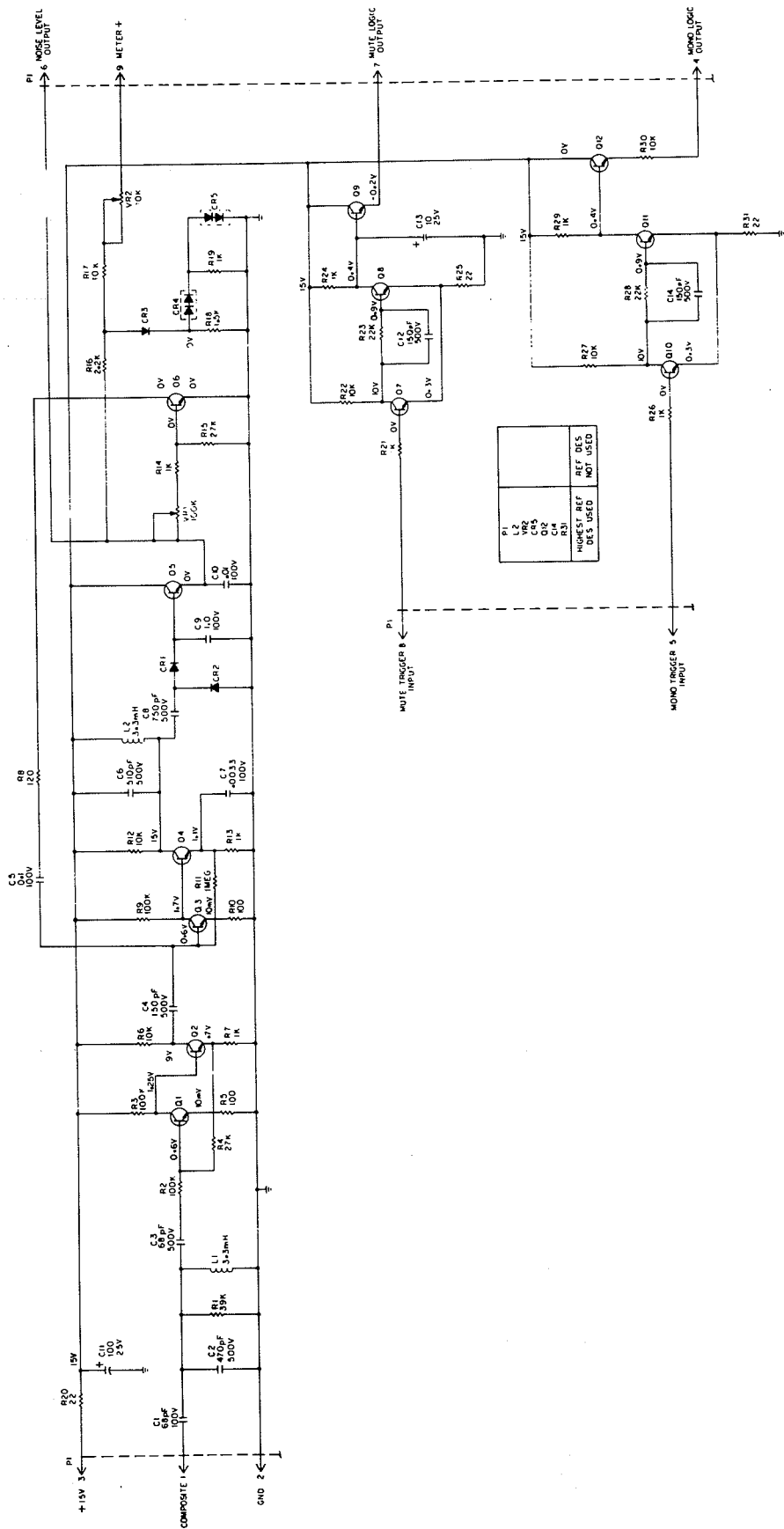


CIRCUIT REF.	H/K PART NO.	DESCRIPTION
	00134915A	PC Bd Assy Time Delay
TRANSISTOR		
Q1, 2	43031244*	FET
Q3	43027722*	NPN, GP
DIODE		
CR1	42030498*	Zener, 5.1V, 10%, 0.4W
CR2	41629338*	Silicon, 1N914

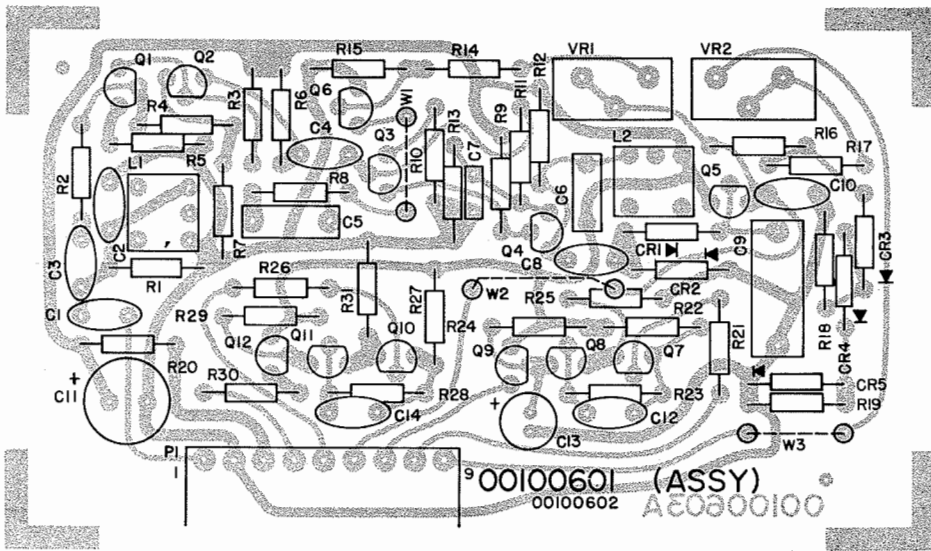
METER/MUTE SCHEMATIC DIAGRAM

NOTES: UNLESS OTHERWISE SPECIFIED:

1. ALL CAPACITOR VALUES ARE IN MICROFARADS.
2. ALL RESISTOR VALUES ARE IN OHMS, $\pm 5\%$, 1/4W.
3. WHEN ORDERING PARTS, REFER TO PARTS LIST FOR H/K PART NUMBERS. IF H/K PART NUMBER IS NOT AVAILABLE, USE REFERENCE DESIGNATION AND ASSEMBLY USED ON. I.E. R1, METER MUTE BD., ASSY NO. 001T00601.



METER/MUTE
PC BOARD

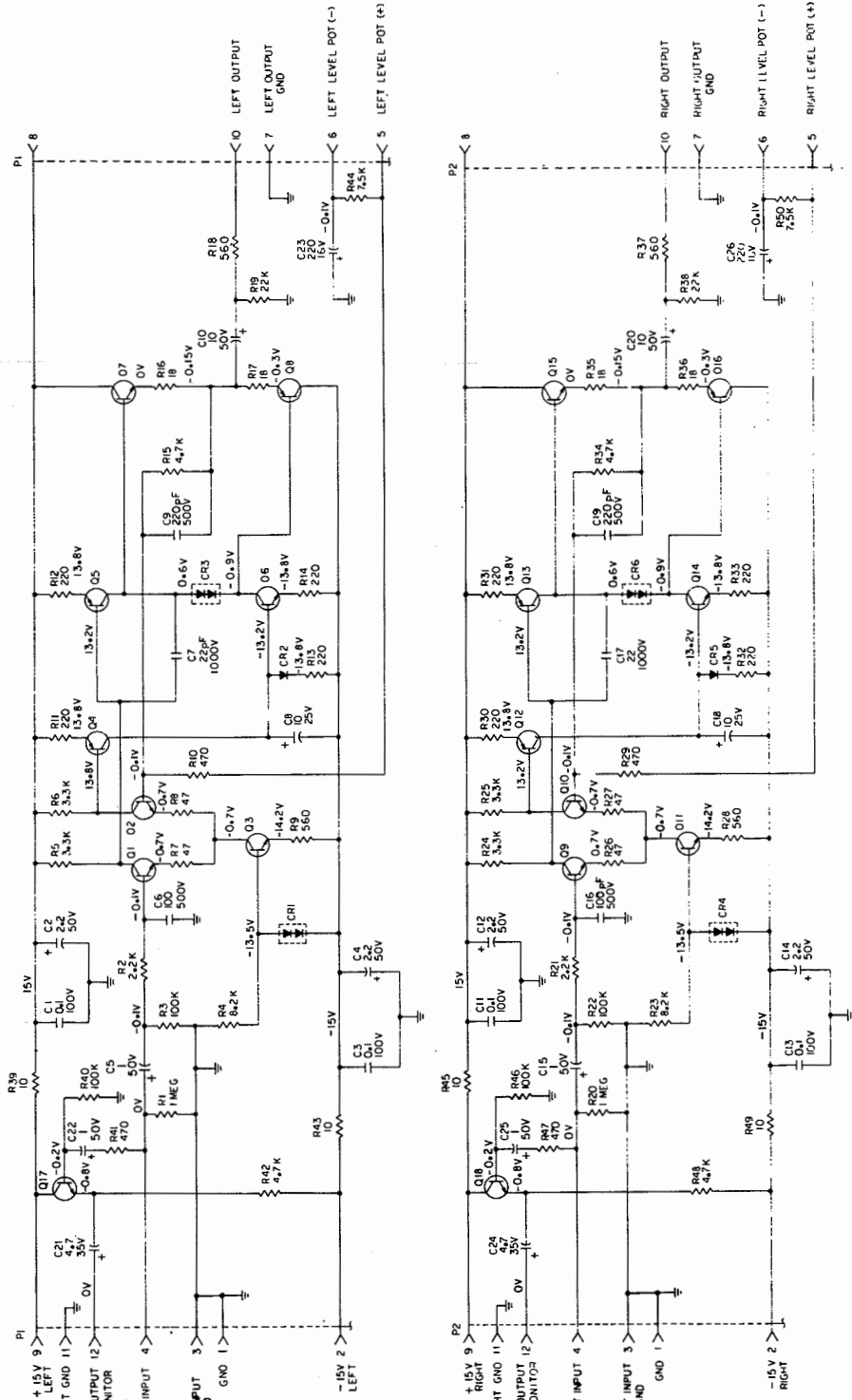


CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00100601	P.C. Board Assy, Meter/Mute
DIODE		
CR1-CR3	41629338*	Silicon, Signal 1N914
CR4, 5	41624214*	Stabistor
TRANSISTOR		
Q1-Q12	43025972*	NPN, GP
RESISTOR, VARIABLE		
VR1	21634520	100K
VR2	21632932	10K
INDUCTOR		
L1, 2	12029052	3.3mH, 10%

OUTPUT AMPLIFIER SCHEMATIC DIAGRAM

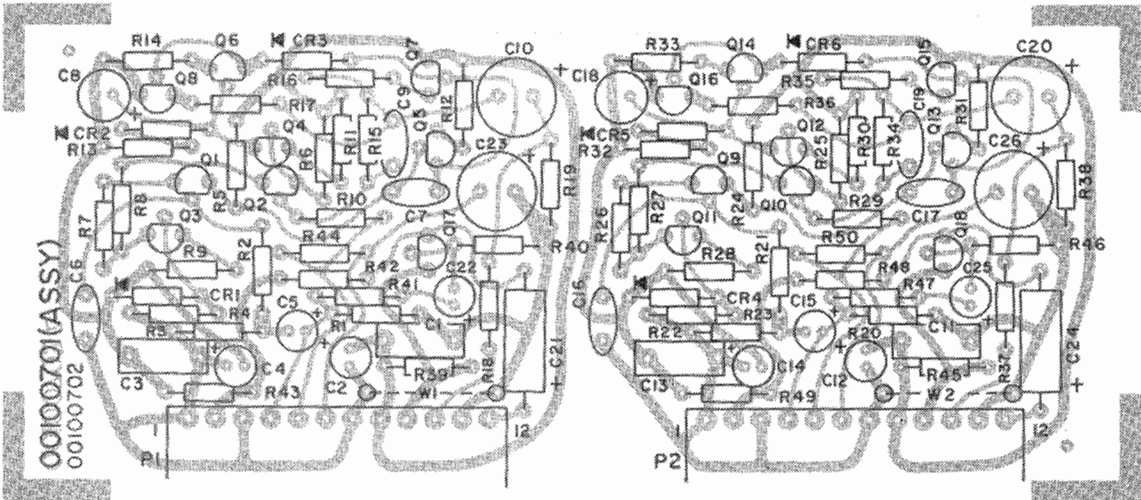
NOTES: UNLESS OTHERWISE SPECIFIED:

1. ALL CAPACITOR VALUES ARE IN MICROFARADS.
2. ALL RESISTOR VALUES ARE IN OHMS, $\pm 5\%$, 1/4W.
3. WHEN ORDERING PARTS, REFER TO PARTS LIST FOR H/K PART NUMBERS. IF H/K PART NUMBER IS NOT AVAILABLE, USE REFERENCE DESIGNATION AND ASSEMBLY USED ON. I.E. R1, OUTPUT AMPLIFIER BD., ASSY NO. 00100701.



C86	REF DES
C26	NOT USED
R50	NOT USED
O18	NOT USED
HIGHEST REF DES USED	

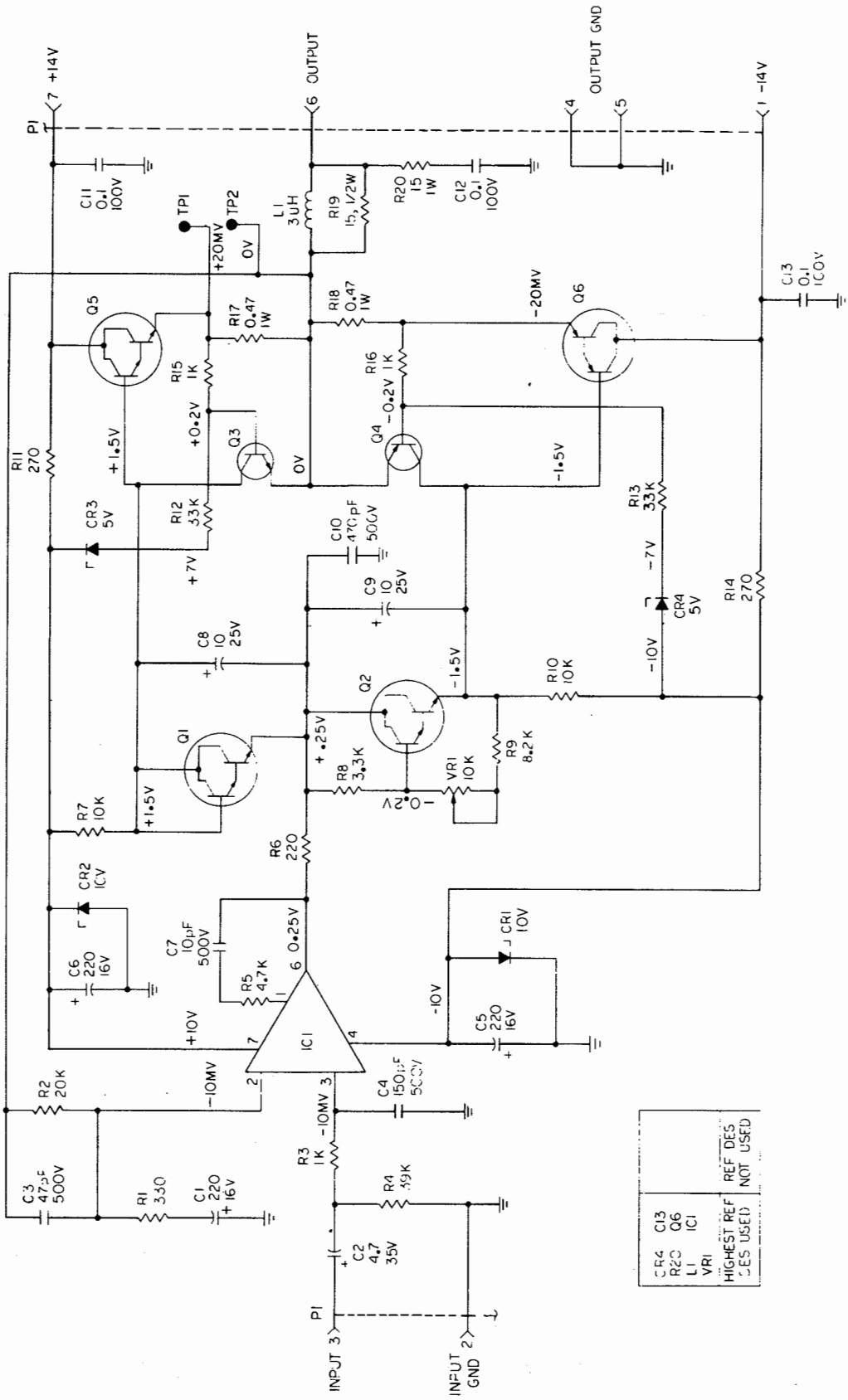
OUTPUT AMPLIFIER PC BOARD



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00100701	P.C. Board Assy, Output Amplifier
DIODE		
CR2, 5	41629338*	Silicon, Signal 1N914
CR1, 3, 4, 6	41624214*	Stabistor
TRANSISTOR		
Q3, 6, 7, 11, 14, 15	43025972*	NPN, GP
Q4, 5, 8, 12, 13, 16	43027722*	PNP, GP
Q1, 2, 9, 10, 17, 18	43027170*	Low Noise, MPS-A18

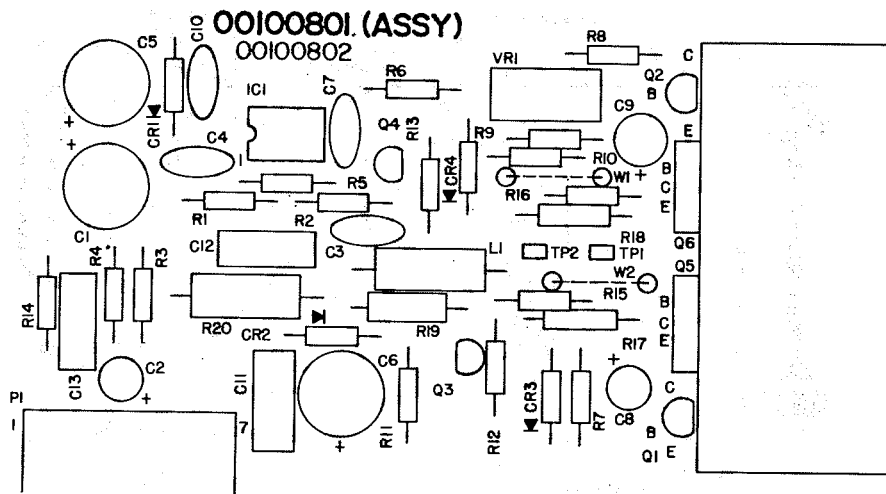
MONITOR AMPLIFIER SCHEMATIC DIAGRAM

- NOTES: UNLESS OTHERWISE SPECIFIED:**
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 2. ALL RESISTOR VALUES ARE IN OHMS, ±5%, 1/4W.
 3. WHEN ORDERING PARTS, REFER TO PARTS LIST FOR H/K PART NUMBERS. IF H/K PART NUMBER IS NOT AVAILABLE, USE REFERENCE DESIGNATION AND ASSEMBLY USED ON. I.E. R1, MONITOR AMPLIFIER BD., ASSY NO. 00100801.



CR4	C13	HIGHEST REF	REF DES
R2C	Q6	DES USED	NOT USED
L1	IC1		
VRI			

MONITOR AMPLIFIER PC BOARD

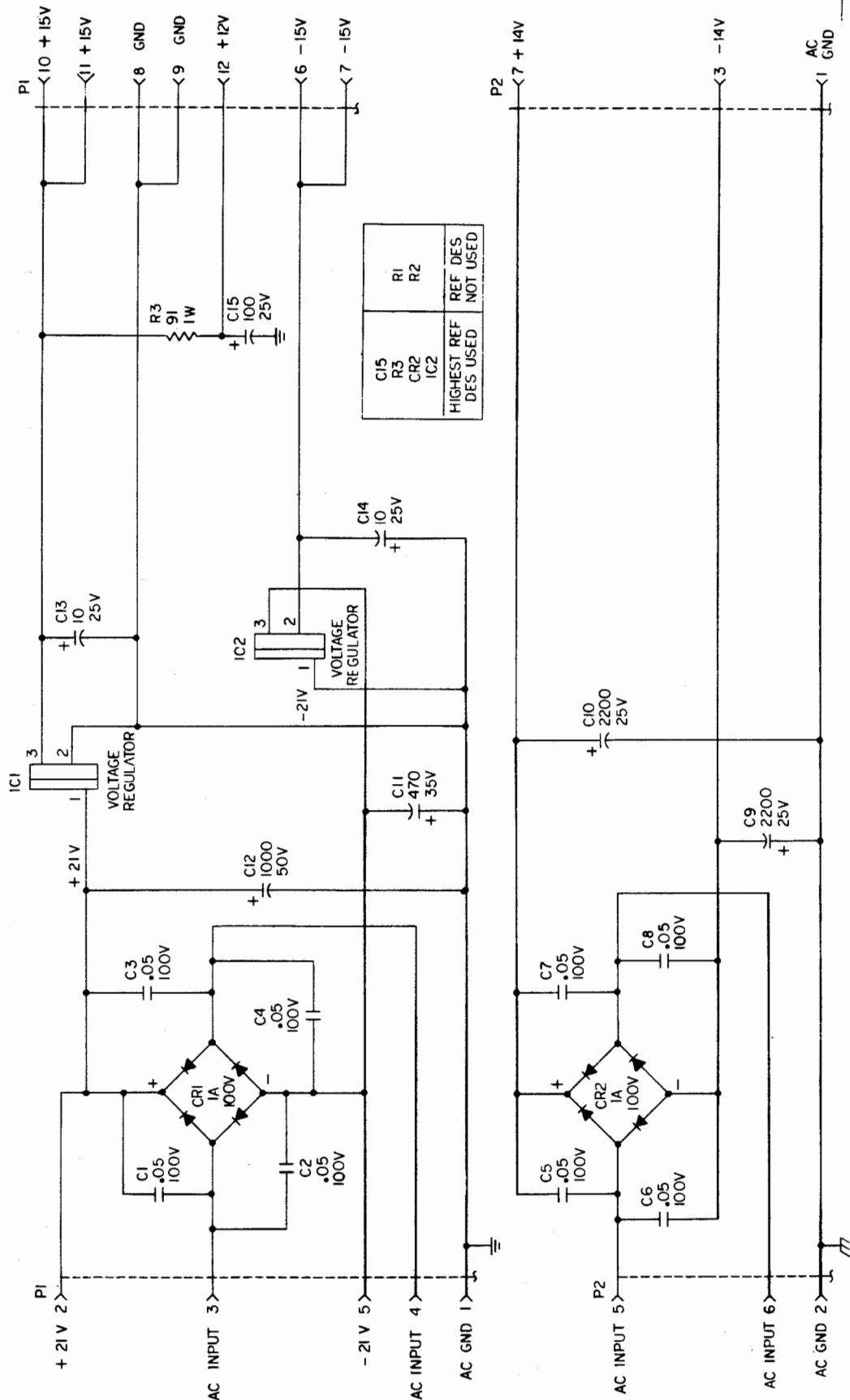


CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00100801	P.C. Board Assy, Monitor Amplifier
RESISTOR, WIREWOUND		
R17, 18	36414785	0.47 ohm, 1W, BW20
RESISTOR, VARIABLE		
VR1	21632932	10K
DIODE		
CR1, 2	42034531*	Zener, 1N961B
CR3, 4	42030498*	Zener, 5.1V
TRANSISTOR		
Q1, 2	43029832*	NPN, MPS-A13
Q3	43025972*	NPN, GP
Q4	43027722*	PNP, GP
Q5	43029037*	NPN, Darlington
Q6	43029038*	PNP, Darlington
INTEGRATED CIRCUIT		
IC1	43134532*	OP AMP, LM318N
MISCELLANEOUS		
L1	12029678	Inductor, 3 μ H

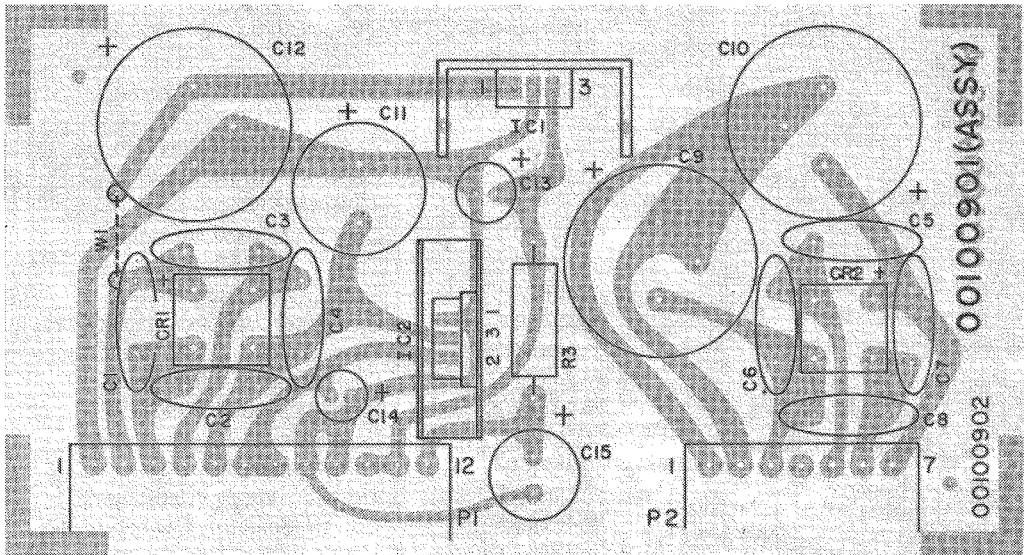
POWER SUPPLY SCHEMATIC DIAGRAM

NOTES: UNLESS OTHERWISE SPECIFIED:

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2. ALL RESISTOR VALUES ARE IN OHMS, \pm 5%, 1/4W.
3. WHEN ORDERING PARTS, REFER TO PARTS LIST FOR H/K PART NUMBERS. IF H/K PART NUMBER IS NOT AVAILABLE, USE REFERENCE DESIGNATION AND ASSEMBLY USED ON. I.E. R1, POWER SUPPLY BD., ASSY NO. 00100901



POWER SUPPLY
PC BOARD



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00100901	P.C. Board Assy, Power Supply
CAPACITOR		
C12	31832952	1000 μ F, 50V
C9, 10	31834329	2200 μ F, 25V
DIODE		
CR1, 2	42132947*	Bridge, 1 Amp, 100V
INTEGRATED CIRCUIT		
IC1	43134253*	Voltage Regulator, Positive, μ A78M15UC
IC2	43134271*	Voltage Regulator, Negative, μ A7915UC

CHASSIS PARTS LIST

CHASSIS DECORATIVE

63034526	Front Panel, Dress (Black)
63034074	Front Panel, Dress (Silver)
64634313	Cover, Top
63234432	Knob, Pushbutton, Power
0023356	Knob Assy, Pushbutton, Ext
	Proc/25 μ sec/noise filter
00233528	Knob Assy, Monitor/Function/Mute

FRONT PANEL

S3, S6, S2	25026151	Switch, Pushbutton, 2 PDT, Ext Proc/25 μ sec/Noise Filter
S5	25034488	Switch, Pushbutton, Power
	22034483	Control, Monitor Level
S4	24034484	Switch, 3 Position, Function
S1	24034486	Switch, 3 Position, Mute
	65428021	Jack, Headphone
	12534197	Meter
	61633960	Dial Scale
	63034088	Mask, Dial Scale
	61633959	Clear Window, Dial Scale
	53234095	Tuning Wheel
	00234347	Pointer Assy With Lamp

ELECTRICAL

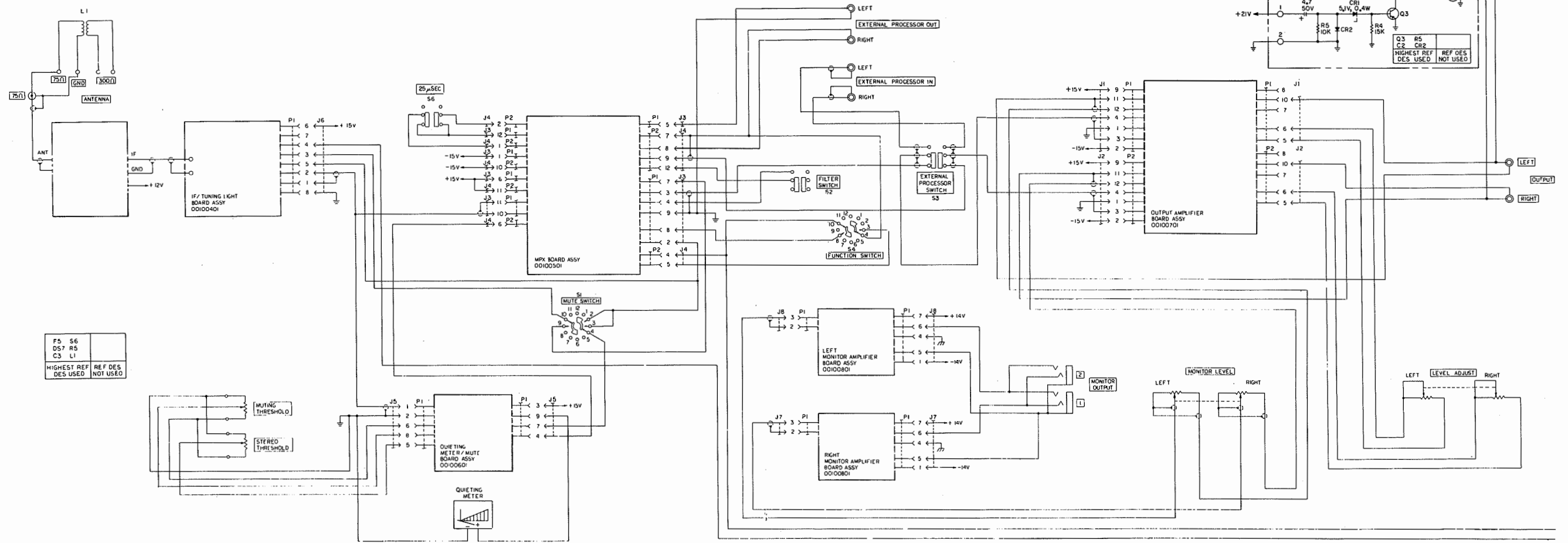
	22034487	Control, Level Adjust (Rear)
	21534485	Control, Muting/Stereo Threshold (Rear)
	65434479	Connector Assy, Antenna
	65423483	Connector, 750 ohm Ant
	65426318	Output Jack Assy (Rear)
	65434311	Ext. Proc. Jack Assy (Rear)
F1, 2	45234420M*	Fuse, Slo-Blo, 0.5A, 250V
F3, 4	45244420R*	Fuse, Slo-Blo, 1.0A, 250V
F5	45234420S*	Fuse, Slo-Blo, 1.25A, 250V
	65431677	Fuse Holder, 20mm
T2	12031333	Transformer, Balun
T1	10134065	Transformer, Multivoltage
	65427580	Voltage Selector, Connector Set
	00234339	FM Tuner Assy (Please Return All Defective FM Tuner Assy's to Factory)
Q1	43034949A*	Transistor, FM Tuner
Q2	43034950A*	Transistor, FM Tuner
Q3	43034951A*	Transistor, FM Tuner
IC1	43134745*	Integrated Circuit, FM Tuner

MISCELLANEOUS

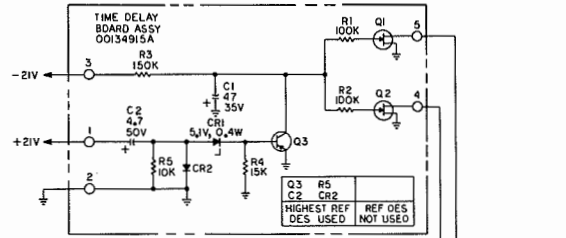
60431098	Drive Pulley, Tuner
60822954	Drive Pulley, Tuning Wheel
61634275	Holder/Guide, P.C. Board
53029083	Line Cord

NOTE TO WARRANTY STATIONS: Items marked by asterisk (*) are recommended spare parts stock. Printed circuit board assembly numbers are shown for reference only. Harman/Kardon does not normally supply assembled printed circuit boards.

NOTE: To speed handling of your order be sure to include both the model and serial numbers, in addition to the quantity, part number and part description of the items ordered. Orders from independent dealers, independent servicemen, and retail customers will be shipped on a cash in advance basis. Harman/Kardon reserves the right to substitute equivalent parts for those originally installed in this chassis. All parts should be ordered from Harman/Kardon, 55 Ames Court, Plainview, L.I., N.Y. 11803 Att: Parts Department.



F5	S6	
D57	R5	
C3	L1	
HIGHEST REF DES USED	REF DES NOT USED	



Harman/Kardon Citation Eighteen

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1. ALL CAPACITOR VALUES ARE IN MICROFARADS.
 2. ALL RESISTOR VALUES ARE IN OHMS, $\pm 5\%$, 1/4W.
 3. ALL PUSHBUTTON SWITCHES ARE SHOWN IN THE "OUT" POSITION.
 4. ALL ROTARY SWITCHES ARE SHOWN IN THE "CCW" POSITION.
 5. WHEN ORDERING PARTS, REFER TO PARTS LIST FOR H/K PART NO. IF NOT AVAILABLE, USE REFERENCE DESIGNATION AND ASSY OR LOCATION USED.

