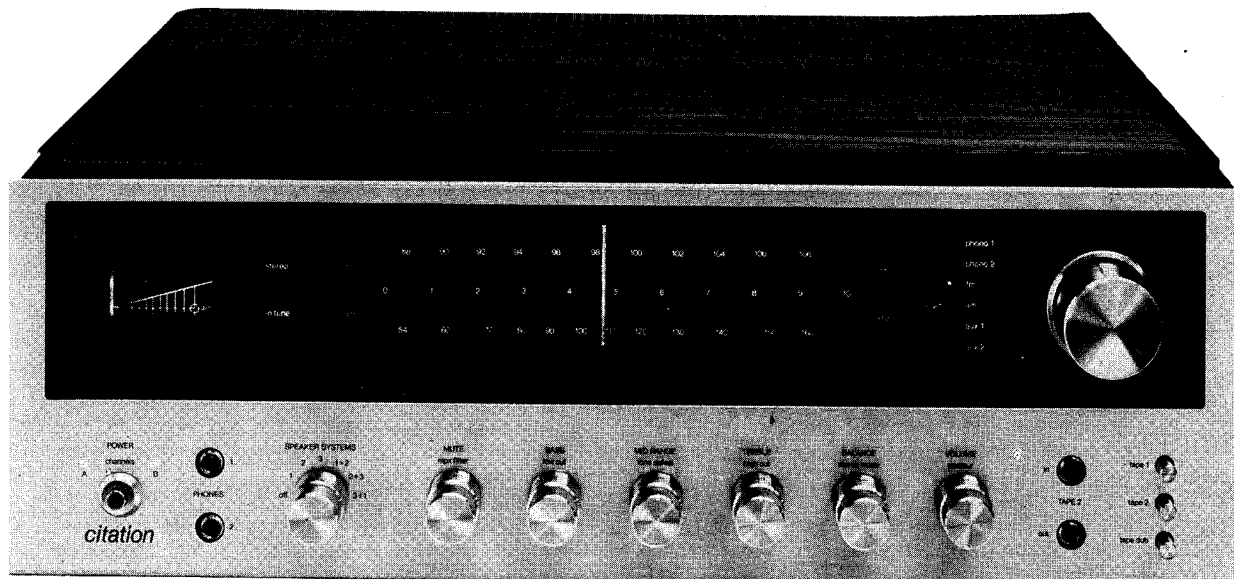


ERIC NELSON — CUSTOMER SERVICE DEPT.

# The Citation Receiver

# Professional Solid State Stereophonic Receiver

# Technical Manual



**harman/kardon**

## PRECAUTIONS

1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors.
2. Never attempt to do any work on the circuits without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary, must be made from the same beta group as the original type.
4. If one output transistor burns out (open or short) always remove all the output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure that the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, for they may cause transistor failure.
6. Silicon grease must be applied between the transistor and the mica insulator, and between the mica insulator and the heat sink for better heat conduction.
7. Fuses must be replaced with size and type indicated. Use of other types can expose components to destructive current levels.
8. Use a non-conductive, non-ferrous tool when making alignment adjustments. Perform all specifications tests with all covers and escutcheon in place.

## TOP COVER REMOVAL

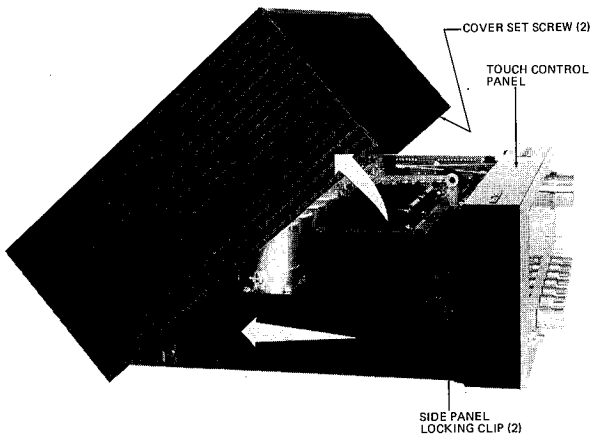


FIGURE 1

1. Remove the two shipping brackets mounted on the underside of the unit and reinstall the four mounting screw in the bottom cover. These brackets must be reinstalled if unit is to be shipped.
2. Slightly loosen the top cover set screws located on the bottom surface at the front of each side panel. (Figure 1)
3. Loosen the three cover locking clips located on the rear panel.
4. Slide top cover firmly to the rear against stops (approx 1/2 inch) and tilt cover up at front. AM antenna must be against rear panel to avoid damage.
5. Top cover may be removed entirely by sliding the cover forward while in the tilted position.

## RF PANEL TILTING

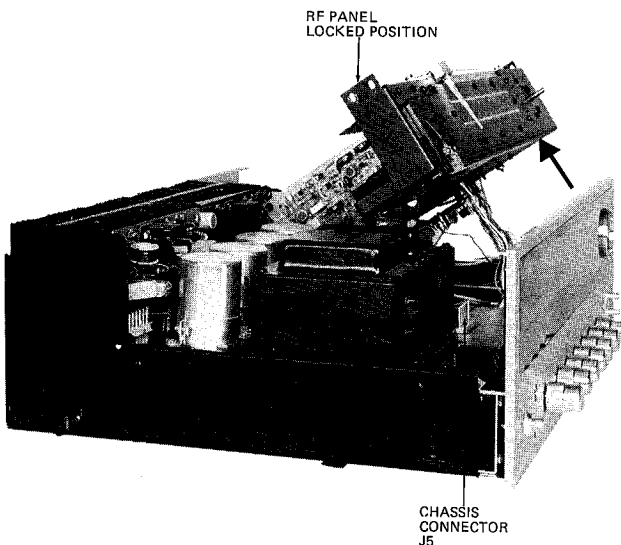
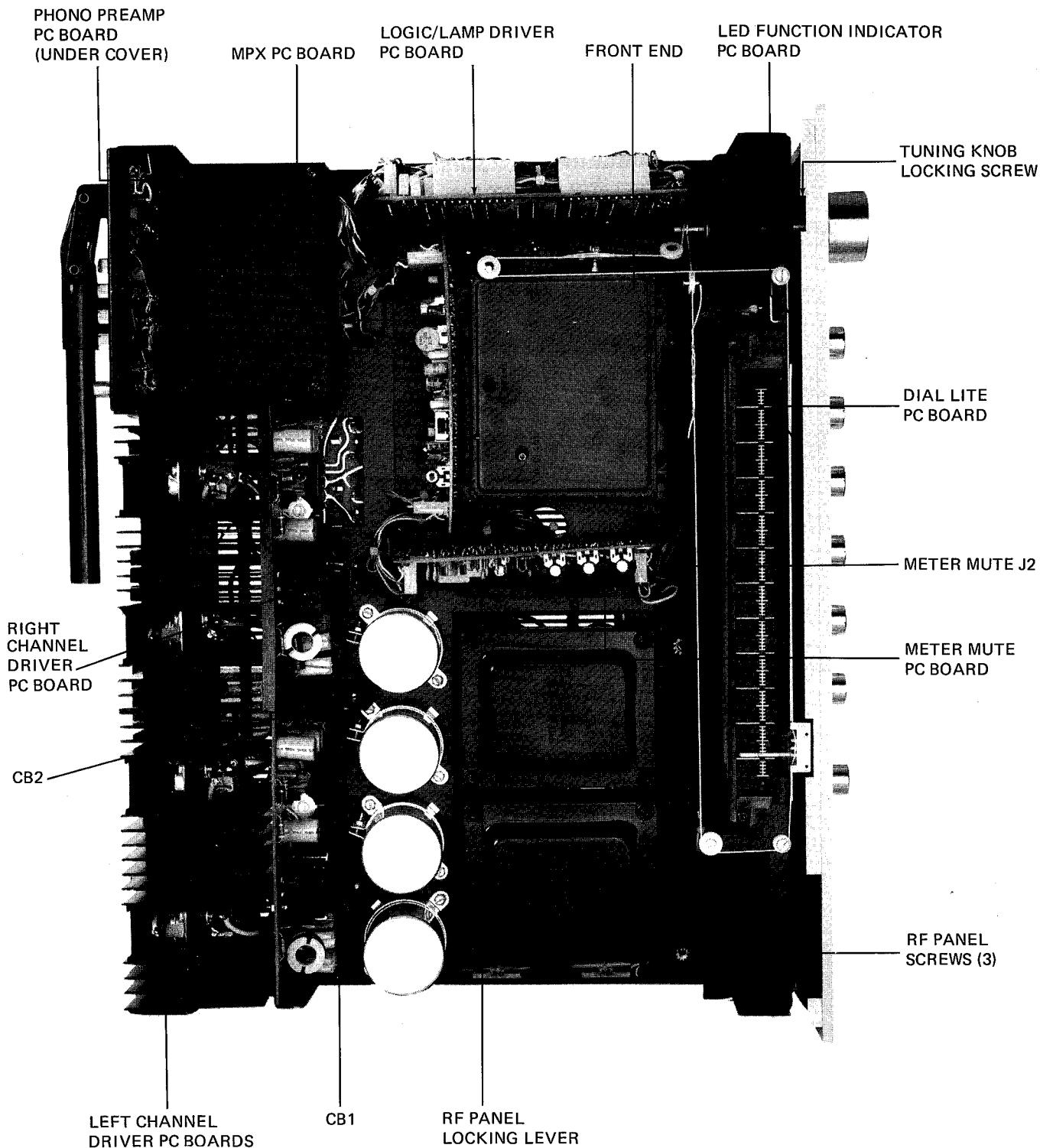


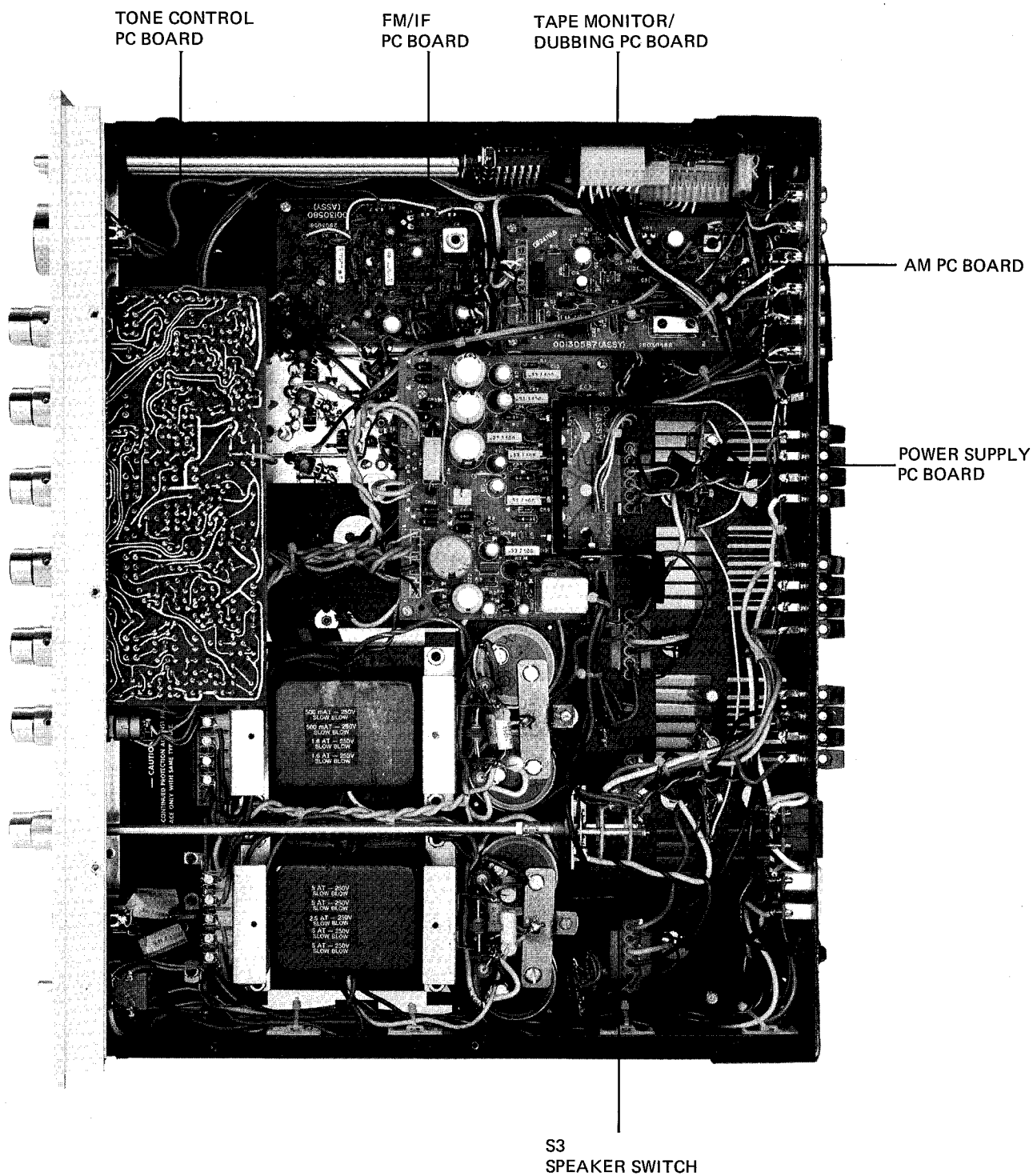
FIGURE 2  
(TOP COVER REMOVED)

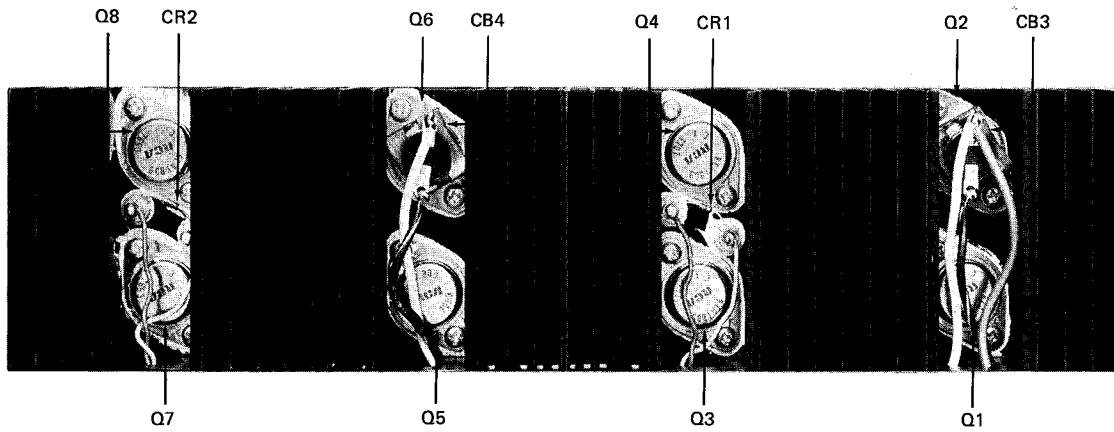
1. After top cover has been tilted backwards or removed, remove small side panels secured against front panel by two locking clips. (Figure 1)
2. Remove touch control panel (Figure 1) secured by 2 screws on each side and lay panel to one side.
3. Remove tuning knob secured by locking screw accessible from behind front panel.
4. Remove 3 screws that hold RF panel to chassis.
5. Disconnect connector J2 from Meter Muting PC board. Disconnect chassis connector J5 located forward of power transformers.
6. Locate dial pointer assy far left to clear front panel cutout and tilt RF panel upwards from front panel, feeding Meter/Muting connector J2 thru panel access hole. Caution should be taken when tilting RF panel to avoid damage to wiring.
7. Lower locking lever located next to Meter/Muting PC board and lock in place into chassis hole provided.

# COMPONENT LOCATION TOP VIEW

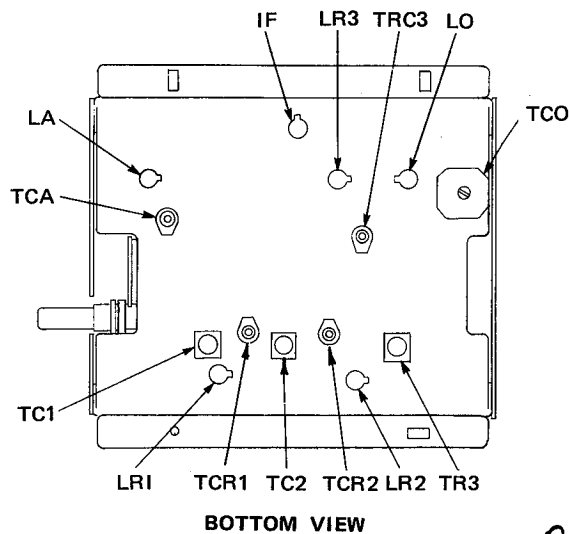


# COMPONENT LOCATION BOTTOM VIEW

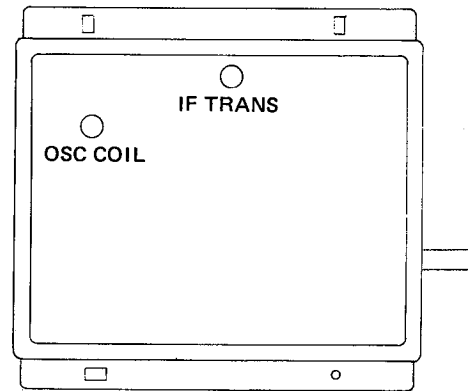




**REAR VIEW – HEATSINK ASSY**  
(HEAT SINK SHOWN WITH PROTECTIVE SCREEN REMOVED)



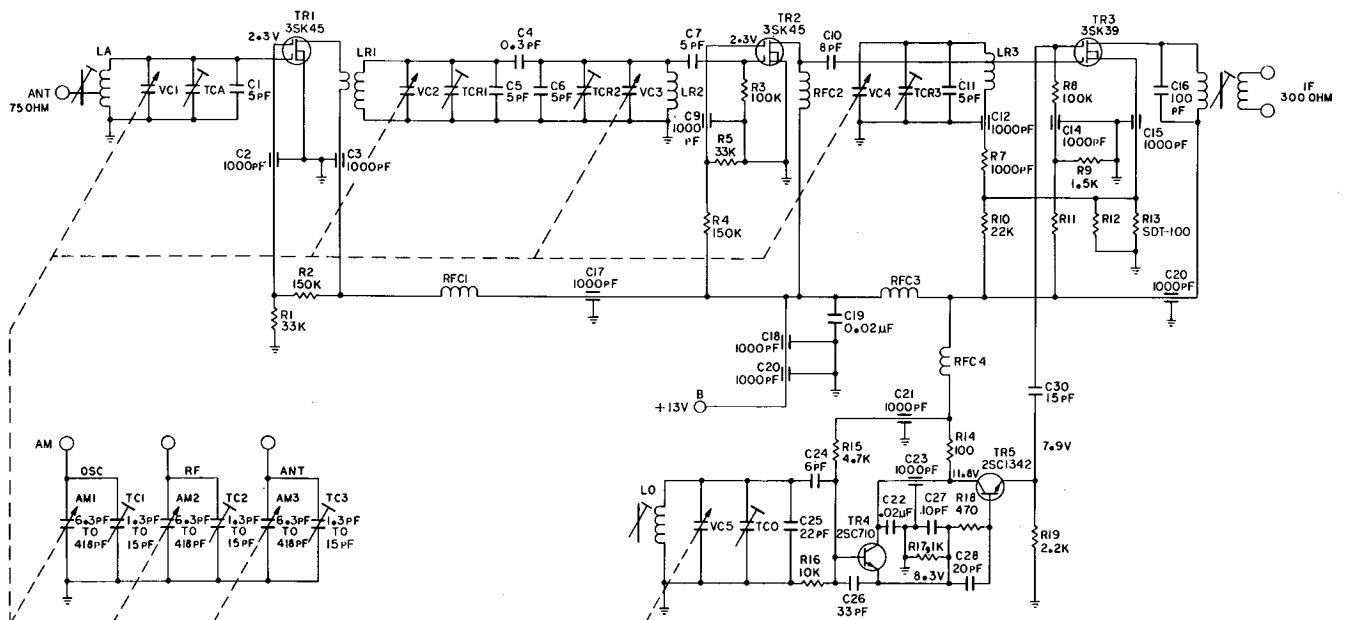
**BOTTOM VIEW**



**TOP VIEW**

H/K #  
00331591

# **FRONT END SCHEMATIC DIAGRAM**



## ALIGNMENT PROCEDURES

### FM FRONT END AND IF ALIGNMENT

(ADJUSTMENT TO BE MADE ON FRONT END AND FM/IF PC BD.)

**INSTRUMENTS:** FM Sig. Gen. modulated with 1000 HZ at 100% (75 KHZ) AC/DC VTVM and oscilloscope, "0" center test meter ( $\pm 100 \mu A$ )

**NOTE:** Touch function selector to activate FM connect signal source to FM antenna terminals.

STEP	FREQUENCY	SIGNAL STRENGTH	DIAL SETTING	INDICATOR	ADJUST	ADJUST FOR
1	90 MHZ	From -1 to -3 dB limiter saturation	90 MHZ	Scope and AC VTVM (conn. to tape out)	Dial setting and LO	Symmetry noise top and bottom
2	90 MHZ	10 $\mu V$	90 MHZ	DC VTVM to pin 8 on FM IF PCB	If top & bottom (on front end) LA, LR1, LR2, LR3	Max. reading on DC VTVM from pin 8
3	90 MHZ	10 $\mu V$	90 MHZ	Pin 9 & 10 zero center meter	T1 bottom	Zero volts
4	106 MHZ	10 $\mu V$	106 MHZ	DC VTVM	TCO, TCA, TCR1, TCR2, TCR3	Max. reading on DC VTVM
5	Repeat Steps 2 & 4 until no further improvement					
6	98 MHZ	-3 dB meter saturation	98 MHZ	Scope and AC VTVM	Dial setting	Symmetry noise top and bottom
7	98 MHZ	1 mV	98 MHZ	Zero center meter	T1 top T1 bottom	Min. distortion zero volts
8	Check output from 4 channel jack					

### IN TUNE LIGHT ADJUSTMENT, (ADJUSTMENT ON METER/MUTE PC BD)

**INSTRUMENT:** FM Sig. Gen.

**NOTE:** Activate FM & connect Sig. to FM antenna Terminals.

STEP	FREQUENCY	SIGNAL STRENGTH	DIAL SETTING	CONNECT OUTPUT TO	ADJUST	ADJUST FOR
1	98 MHZ (stereo mode)	5 $\mu V$	Center of freq. symmetrical pattern	Tape out	VR4 <i>WINDOW POSITION</i>	Lights on
2		< 3 $\mu V$	Center of freq. symmetrical pattern	Tape out	VR3	Lights off
3	Repeat Steps 1 and 2.					

## ALIGNMENT PROCEDURES

### STEREO INDICATOR LAMP ADJUSTMENT

(ADJUSTMENT TO BE MADE ON FM IF PC BD)

**INSTRUMENTS:** Stereo Sig. Gen.

**NOTE:** Touch function selector to activate stereo FM connect Sig. source to FM antenna terminals.

STEP	FREQUENCY	SIGNAL STRENGTH	DIAL SETTING	OUTPUT	ADJUST	ADJUST FOR
1	98 MHZ (stereo mode)	30 $\mu$ V	Tune for zero volts DC at 9 & 10 on FM IF PCB	Stereo ind lamp	VR1 (on FM IF)	Light on
2	Check pilot level that stereo indicator lights at 6% or less of pilot level and that the indicator does not light at 1%					
3	Return pilot level to 9% & check stereo sep. at 1 KHZ, 100 HZ, 10 KHZ					

### QUIETING METER ADJUSTMENT (ADJUSTMENTS TO BE MADE ON METER/MUTE PC BD.)

**INSTRUMENT:** FM Sig. generator

**NOTE:** Touch function selector to activate FM connect sig. source to FM antenna terminals

STEP	FREQUENCY	SIGNAL STRENGTH	DIAL SETTING	OUTPUT	ADJUST	ADJUST FOR
1			Quiet point on band	Quieting meter	VR2	Needle to deflect full scale (left of zero)
2	98 MHZ	20-25 $\mu V$	Tune for zero volts DC at 9 & 10 on FM IF PCB		VR1	Indicate 5
3			Quiet point on band			Needle to deflect full scale to center of zero
4	Repeat Steps 1-3					

### MPX ALIGNMENT PROCEDURES, (ADJUSTMENTS TO BE MADE ON MPX BD.)

**INSTRUMENTS:** Frequency counter, AC voltmeter with set level control, stereo FM generator, oscilloscope.

**NOTE:** Touch function selector to activate stereo FM connect signal source to FM antenna terminals.

STEP	FREQUENCY	SIGNAL STRENGTH	DIAL SETTING	CONNECT OUTPUT TO	ADJUST	ADJUST FOR
1	98 MHZ (mono mode)	1000 $\mu$ V 100 mod 9% pilot signal	Tune to 98 MHZ	Frequency counter to TP2 & GND	L1	76 KHZ
2						
3	98 MHZ right signal (stereo)		Tune for zero volts DC at pins 9 & 10 on FM IF PCB	VTVM to left tape out jack	VR1	Minimum output
4	98 MHZ left signal (stereo)			VTVM to right tape out jack	VR1	Minimum output
5	Obtain best balanced min. output after repetitive check between left & right above. Repeat Steps 3-5.					



## ALIGNMENT PROCEDURES

### AM IF & RF ALIGNMENT PROCEDURE

(ADJUSTMENTS TO BE MADE ON LOOP STICK, AM GANG AND AM PC BD.)

- INSTRUMENTS:**
1. AM signal generator modulated with 400 HZ at 30%.
  2. VTVM
  3. Sweep generator and oscilloscope

**NOTE:** Touch function control to activate AM

STEP	SIGNAL SOURCE	FREQUENCY	INDICATOR	DIAL SETTING	ADJUST	ADJUST FOR
1	AM Sweep Generator Conn. to L2 terminal	455 KHZ	Scope and DC VTVM (Conn. to R8 (1.5K) on AM IF PCB	Quiet point	T1, Pri. & Sec. IF XFMR	Max. & top flat pattern on scope
2	AM Sig. Gen. feed-thru dummy antenna to AM ANT. terminal or Test loop 15" away from AM loopstick antenna	600 KHZ	DC VTVM (Conn. to R8 (1.5K) scope to tape output	600 KHZ	L3 (OSC.) L1 (RF) L13 (Loop-stick)	Maximum output
3		1400 KHZ		1400 KHZ	TC1 (OSC.) trimmer) TC2 (RF trimmer) TC3 (ANT. trimmer)	
4	Gen. output 1 mV	1000 KHZ	Scope and AC VTVM from tape output	1000 KHZ	VR3 (AGC control)	Max. CW Note audio output (Ref. level)
5						CCW to obtain +2 dB above Ref. level
6			Tuning meter		VR2	Tuning meter full scale

**NOTE:** Repeat Steps 2 & 3 until no further improvement. Maintain signal generator as low as possible.

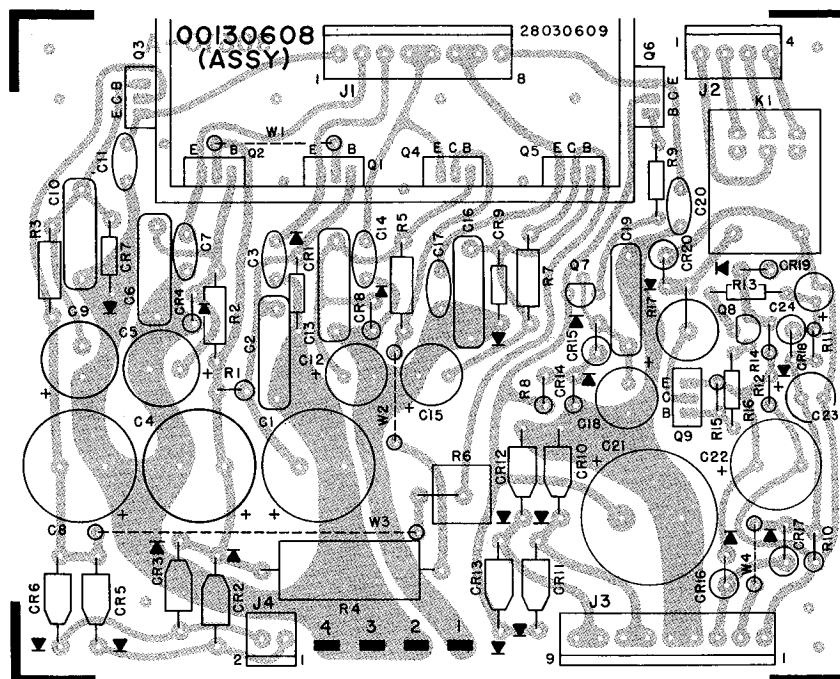
### POWER AMPLIFIER IDLING ADJUSTMENT (ADJUSTMENTS TO BE MADE ON PWR AMP DRIVER PC BD'S.)

**INSTRUMENTS:** DC VTVM

**NOTE:** Touch function selector to activate AUX 1 or AUX 2.  
Set volume control to min. and set tone/balance controls to midposition.  
Set stereo/mono mode switch to stereo.  
Speaker switch on in speaker system 1 position.  
Connect an  $8\Omega$  250W resistor across each pair of speaker terminals in speaker system 1.

STEP	CONNECT OUTPUT TO	ADJUST	ADJUST FOR
1	DC VTVM between TP1 and TP2	VR1	0 mV $\pm$ 100 mV
2	Repeat Step 1 for other channel (both PWR AMP P.C.B. are same)		

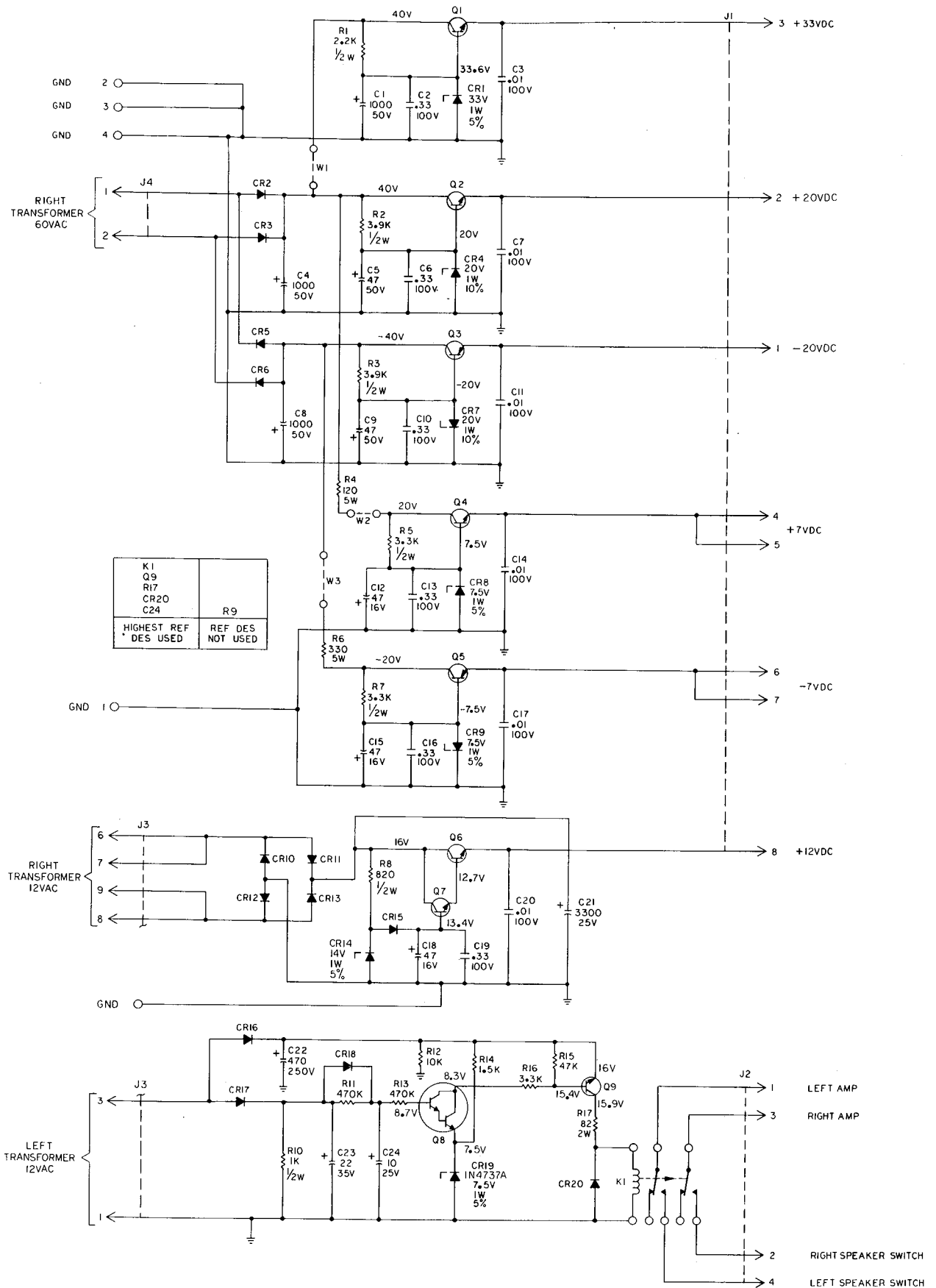
**POWER SUPPLY  
PC BOARD**



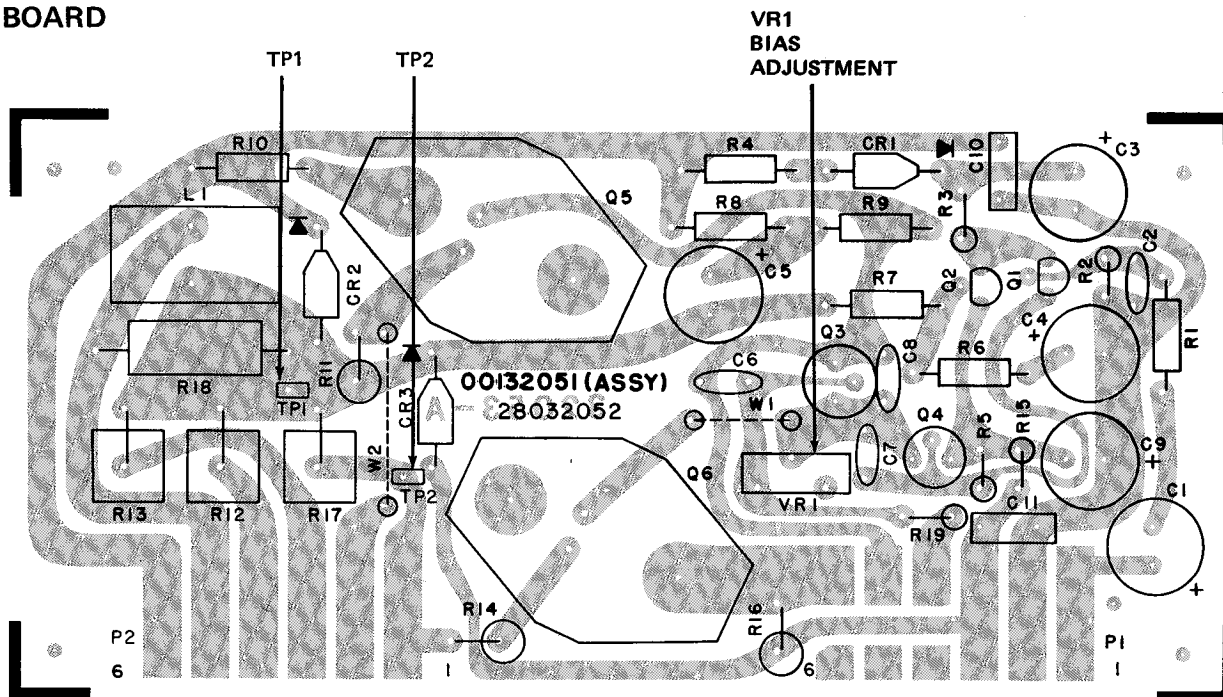
CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00130608	P.C. BD, ASSY, POWER SUPPLY REGULATOR
<b>CAPACITOR, LYTIC</b>		
C24	31832986	10 UF, 25V
C23	31832985	22 UF, 35V
C12,15,18	31833219	47 UF, 16V
C5,9	31833222	47 UF, 50V
C22	31833252	470 UF, 25V
C1,4,8	31831257	1000 UF, 50V
C21	31832450	3300 UF, 25V
<b>DIODE</b>		
CR2,3,5,6,10-13, 15-18,20	41029089*	2A, 200 PIV
CR1	42032820*	ZENER IN4752A, 33V, 1W, 5%
CR8,9,19	42031258*	ZENER IN4737A, 7.5V, 1W, 5%
CR4,7	42031260*	ZENER IN4747, 20V, 1W, 10%
CR14	42028106*	ZENER BZ140, 14V, 1W, 5%
<b>TRANSISTOR</b>		
Q1,2,4,6	43029710*	NPN, REGULATOR, 2N5297
Q3,5,9	43031262*	PNP, 2N6109
Q7	43025972*	NPN, GP
Q8	43029832*	NPN, DARLINGTON, MPS-A13
<b>RELAY</b>		
K1	13031208	DPDT, 10A

# POWER SUPPLY SCHEMATIC DIAGRAM

- NOTES:** Unless otherwise specified
1. All resistor values are in ohms, 5%, 1/4W.
  2. All capacitor values are in microfarads.
  3. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available use ref des and assembly used on I.E. R1, Power Supply Regulator Bd Assy, 00130608.



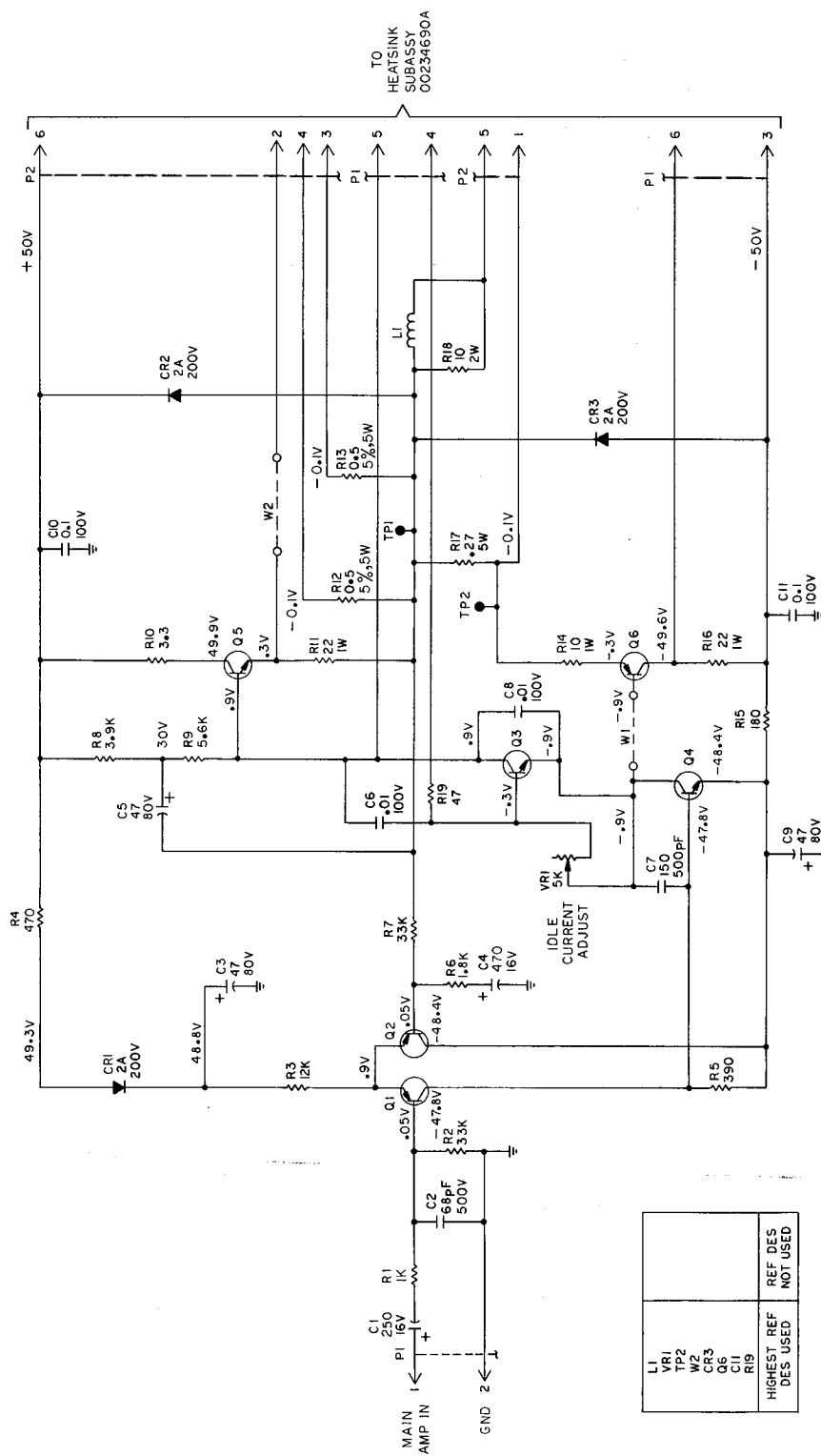
## DRIVER PC BOARD



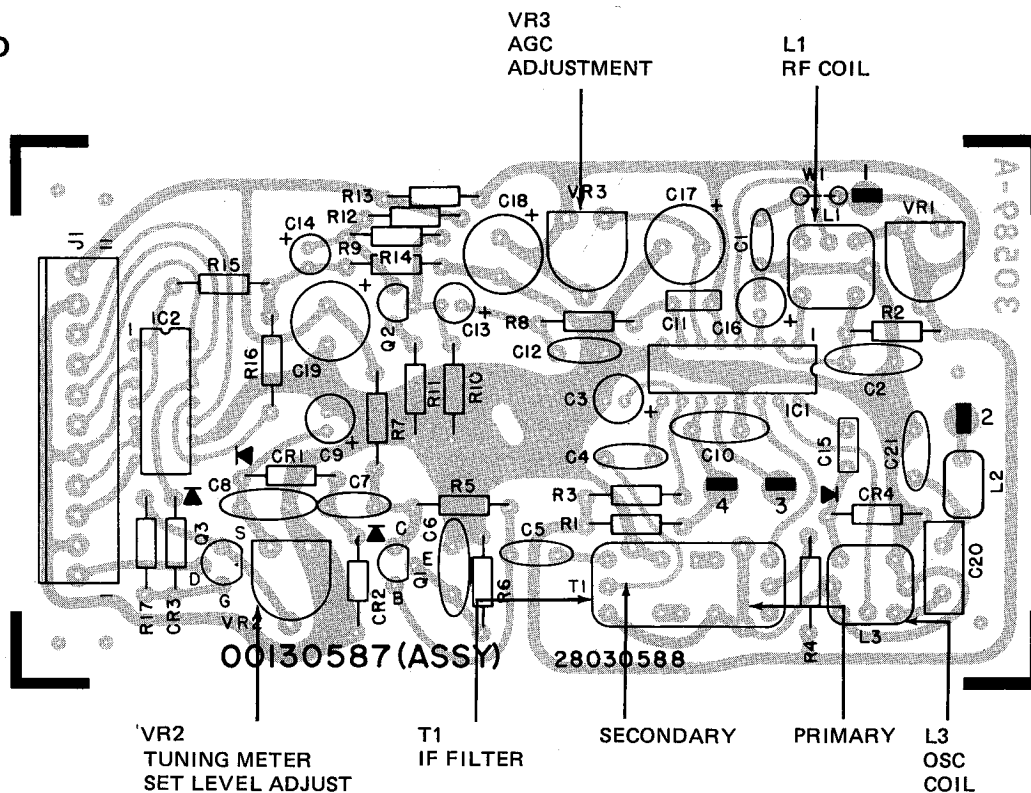
CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00132051	PC BD ASSY, DRIVER
<b>RESISTOR, WIREWOUND</b>		
R12,13	36715085	0.5 OHM, 5W, 5%
R17	36712781	0.27 OHM, 5W, 5%
<b>RESISTOR, VARIABLE</b>		
VR1	21631812	5K
<b>CAPACITOR, LYTIC</b>		
C3,5,9	31832279	47 UF, 80V
C1	31832987	220 UF, 16V
C4	31833251	470 UF, 16V
<b>DIODE</b>		
CR1,2,3	41029089*	2A 200 PIV
<b>TRANSISTOR</b>		
Q1,2	43034747A*	PNP, FS43181
Q3	43023221*	NPN, PREDRIVER
Q4	43032283*	NPN, HIGH VOLTAGE
Q5	42732284*	NPN, HIGH VOLTAGE, MEDIUM POWER
Q6	42732285*	PNP, HIGH VOLTAGE, MEDIUM POWER
<b>INDUCTOR</b>		
L1	12032281	2.9 UH

**NOTES:** Unless otherwise specified

1. All resistor values are in ohms 10%, ½W.
2. All capacitor values are in microfarads.
3. Idle current across TP1 & TP2 to be 45mV ± 5mV with no signal applied. RL = 8 ohms across speaker system 1, 2 or 3.
4. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available, use ref des and assembly used on I. E. R1, Driver Bd Assy 00132051.



AM  
PC BOARD



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
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	00130587	PC BD ASSY, AM
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RESISTOR, VARIABLE

VR2	21727511	25K
VR3	21729322	2K

TRANSISTOR

Q1	43029701*	NPN, RF
Q2	43025972*	NPN, GP
Q3,4	43031244*	FET

DIODE

CR1,2	41529814*	GERMANIUM, IN541
CR3,4	41629338*	SILICON, IN914

INTEGRATED CIRCUIT

IC1	43129354*	NEC UPC30C
IC2	43131243*	MC14016CP

INDUCTOR/COILS

L1	12029048	RF COIL
L2	12029046	2.2 UH
L3	12029049	OSCILLATOR

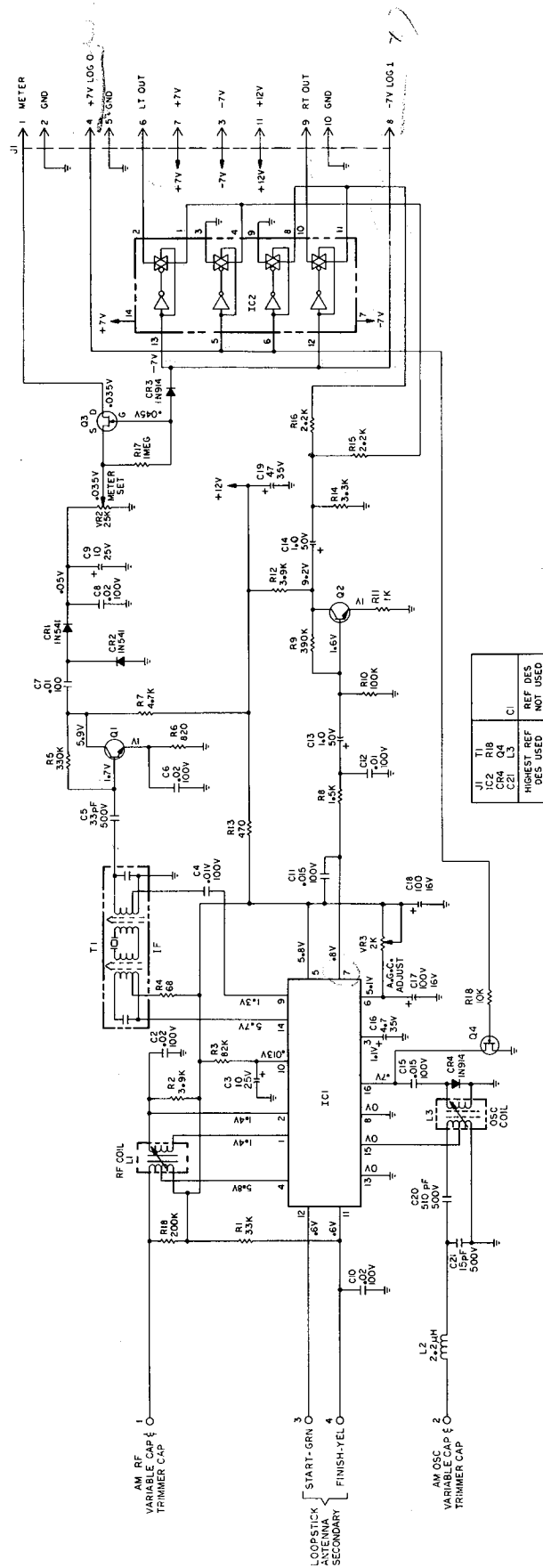
TRANSFORMER

T1	11029040	IF
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# AM SCHEMATIC DIAGRAM

## NOTES: Unless otherwise specified

1. All resistor values are in ohms, 5%, 1/4W.
2. All capacitor values are in microfarads.
3. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available, use ref des and assembly used on I. E. R1, AM Bd Assy 00130587.

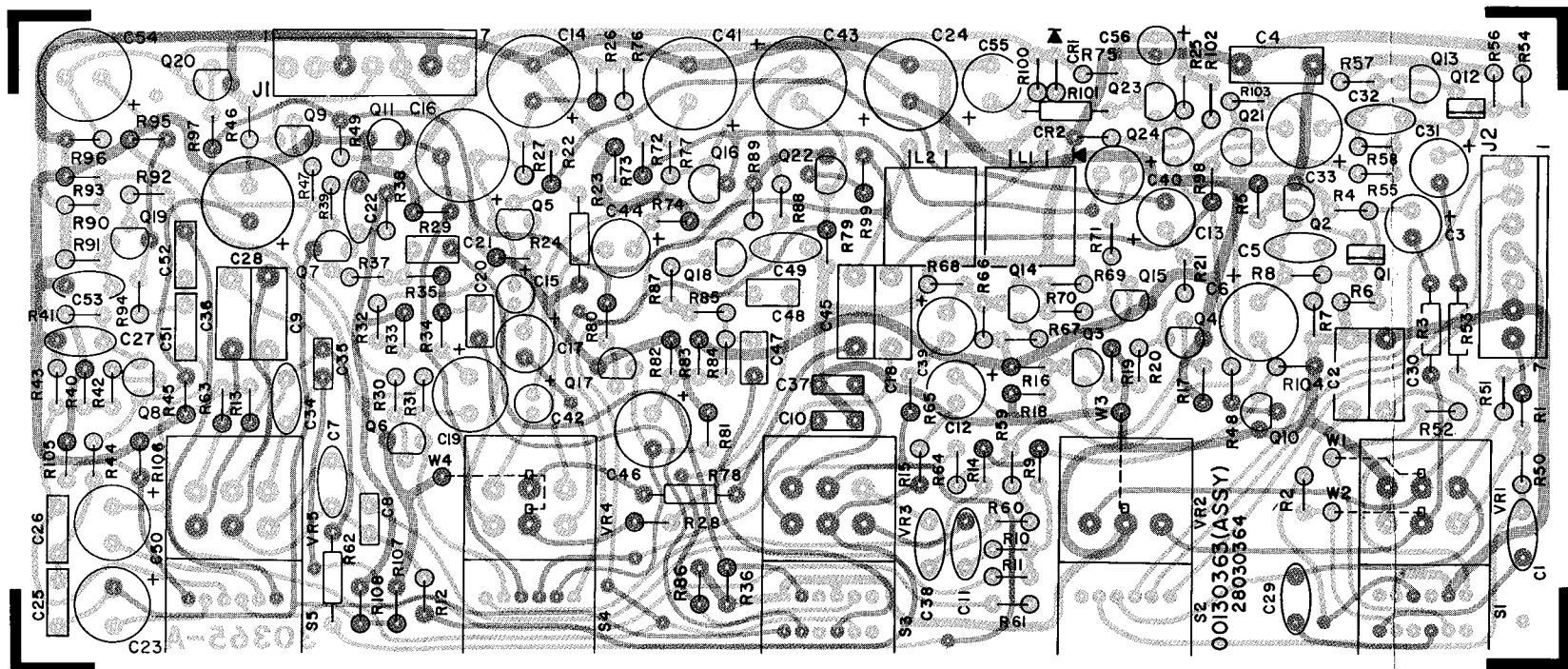


**TONE CONTROL  
PC BOARD**

CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00130363	PC BD ASSY, TONE CONTROL
<b>RESISTOR, FILM</b>		
R7,55	37232622	698 OHM, 1%, 1/4W
R19,69	37233111	1K, 1%, 1/4W
R24,74	37232623	1210 OHM, 1%, 1/4W
R27,77	37234093	1.1K, 1%, 1/4W
R8,58	37232624	8.45K, 1%, 1/4W
R33,83	37232625	36.5K, 1%, 1/4W
R23,32,73,82	37211043	100K, 1%, 1/4W
R6,54	37232627	121K, 1%, 1/4W
R22,72	37232470	182K, 1%, 1/4W
R4,56	37232629	1.54M, 1%, 1/4W
<b>CAPACITOR, TANTALUM</b>		
C55	30732819	47 UF, 15V, 5%
<b>TRANSISTOR</b>		
Q1,12	43033345*	NPN, 2SC1345E
Q2,4,13,15,24	43027722*	PNP, GP
Q3,5-11,14,16-22	43025972*	NPN, GP
Q23	43029832*	NPN, DARLINGTON, MPSA13
<b>DIODE</b>		
CR1	41629338*	SILICON IN914
CR2	41624214*	STABISTOR, GE644
<b>INDUCTOR</b>		
L1,2	12029055	200 mH
<b>CONTROL/SWITCH</b>		
VR1/S1	22031167	VOLUME/CONTOUR
VR2/S2	22031166	BALANCE/STEREO-MONO
VR3/S3	22031163	TREBLE/HI CUT
VR4/S4	22031165	MID RANGE/TONE DEFEAT
VR5/S5	22031162	BASS/LO CUT

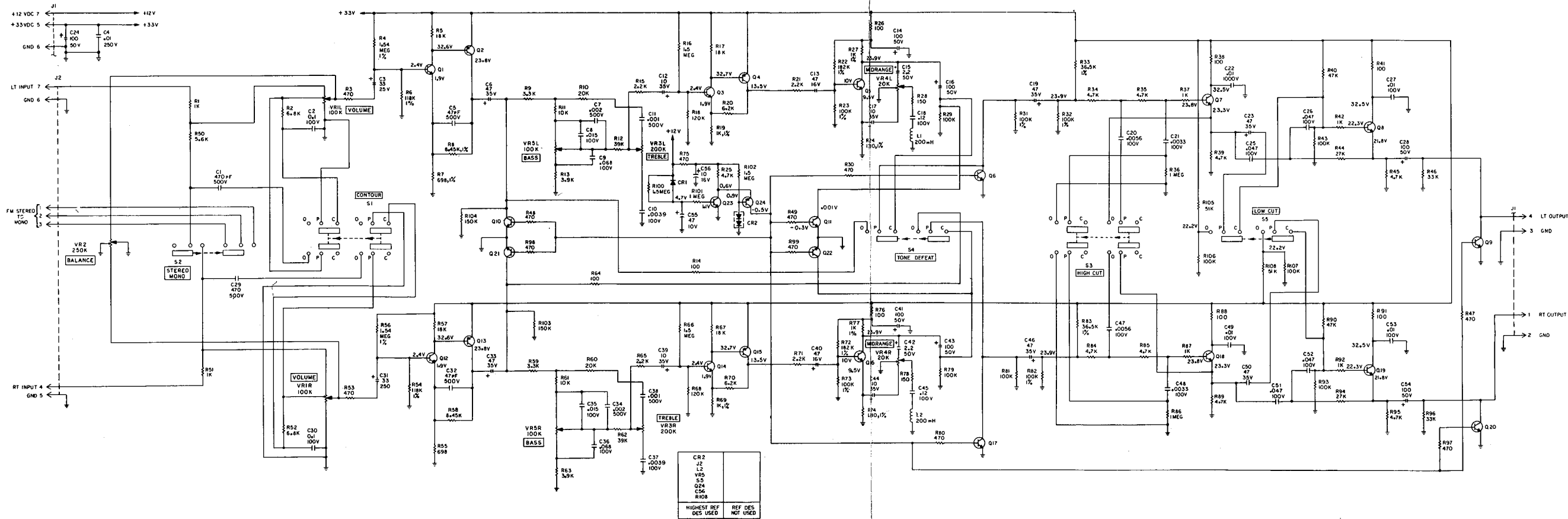


TONE CONTROL PC BOARD  
AND SCHEMATIC DIAGRAM

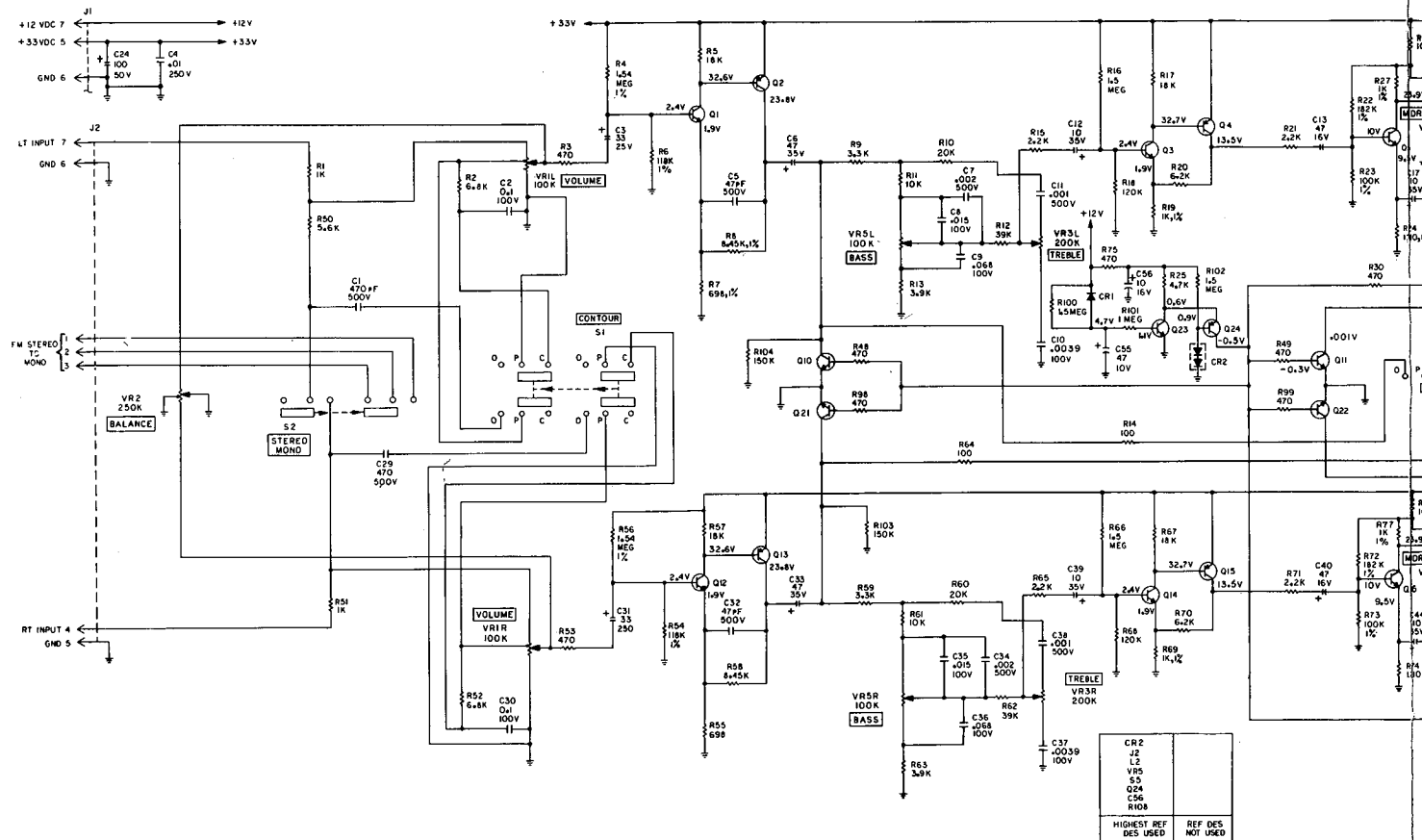
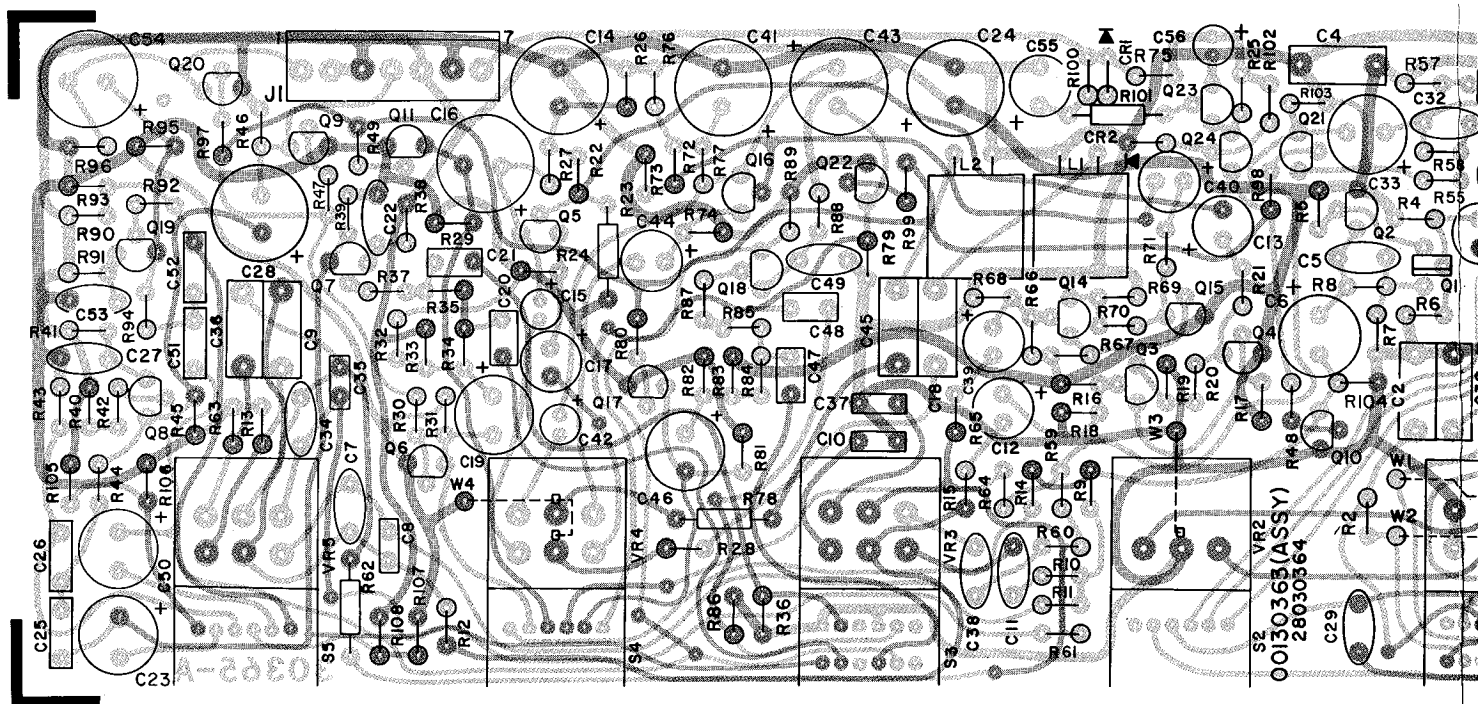


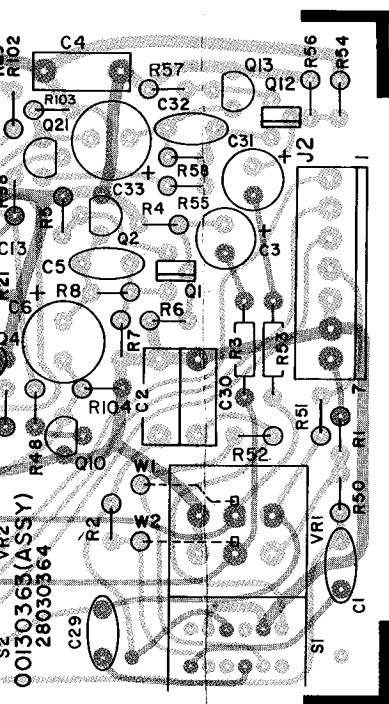
NOTES: Unless otherwise specified

- 1. All resistor values are in ohms, 5%, 1/4W.
- 2. All capacitor values are in microfarads.
- 3. All switches are shown in the counter clockwise position except stereo/mono switch S2.
- 4. Transistors Q6, 9, 10, 11, 17, 20, 21 and 22 are quick capacitor charge shunt transistors operated by timing circuit transistors Q23 and Q24.
- 5. When ordering replacement parts, refer to parts list for H/K part numbers. If H/K part number is not available, use ref designation and assembly used on, I.E. R1, Tone Control Bd Assy 00130363.



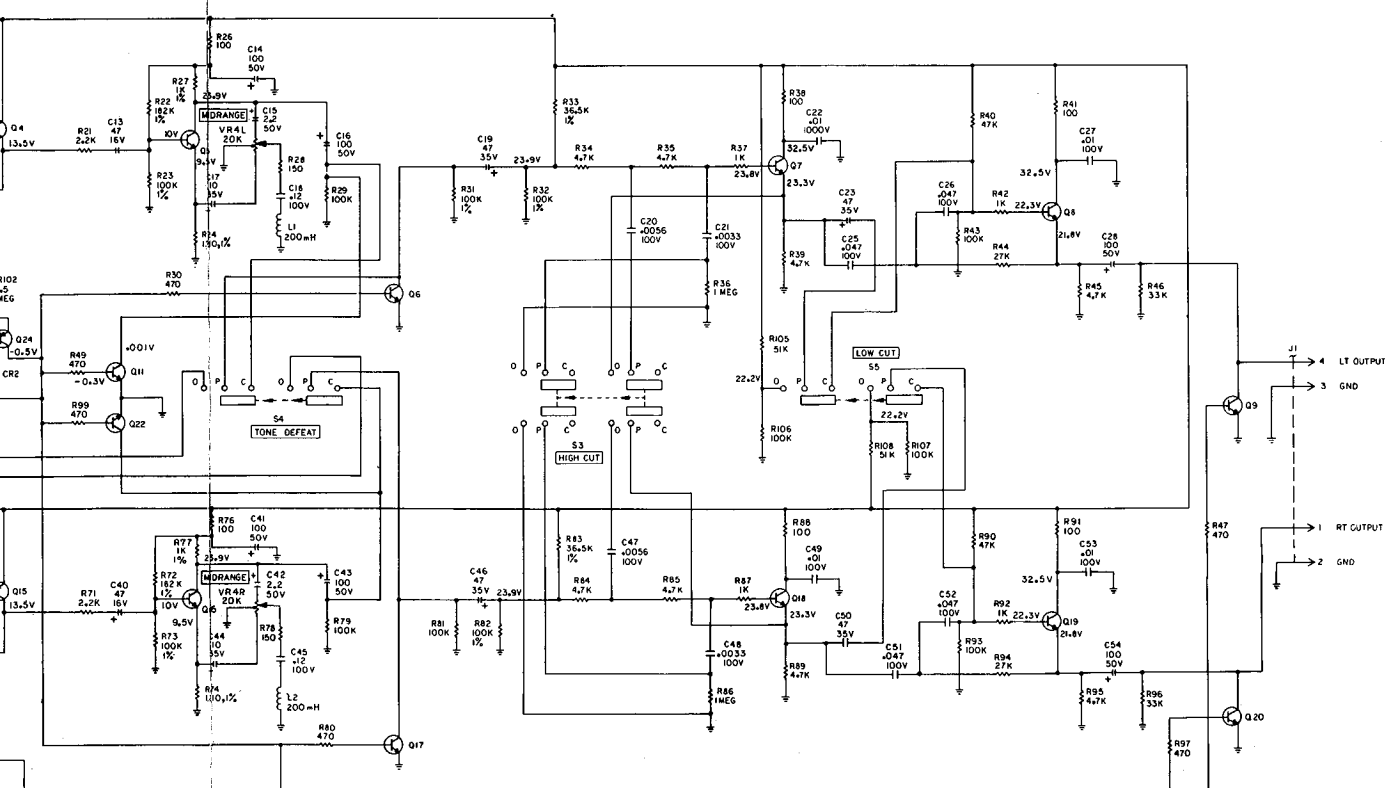
# TONE CONTROL PC BOARD AND SCHEMATIC DIAGRAM



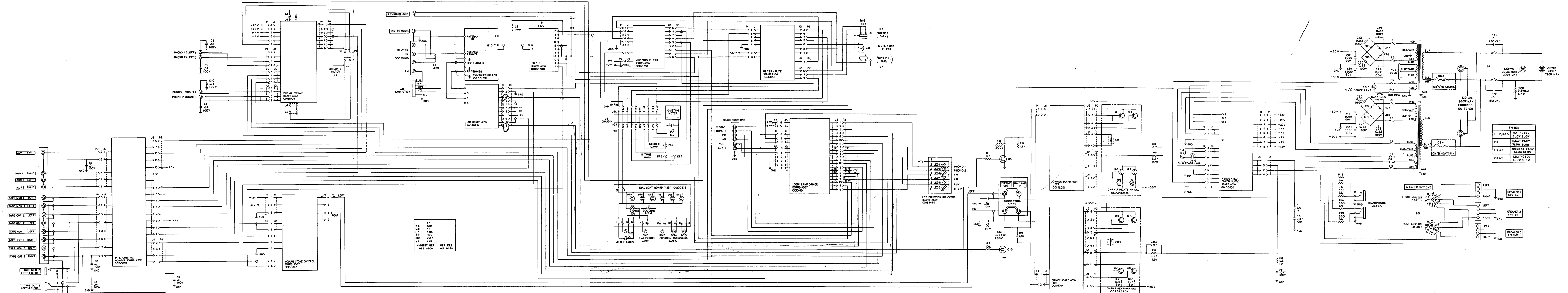


# **NOTES:** Unless otherwise specified

1. All resistor values are in ohms, 5%, 1/4W.
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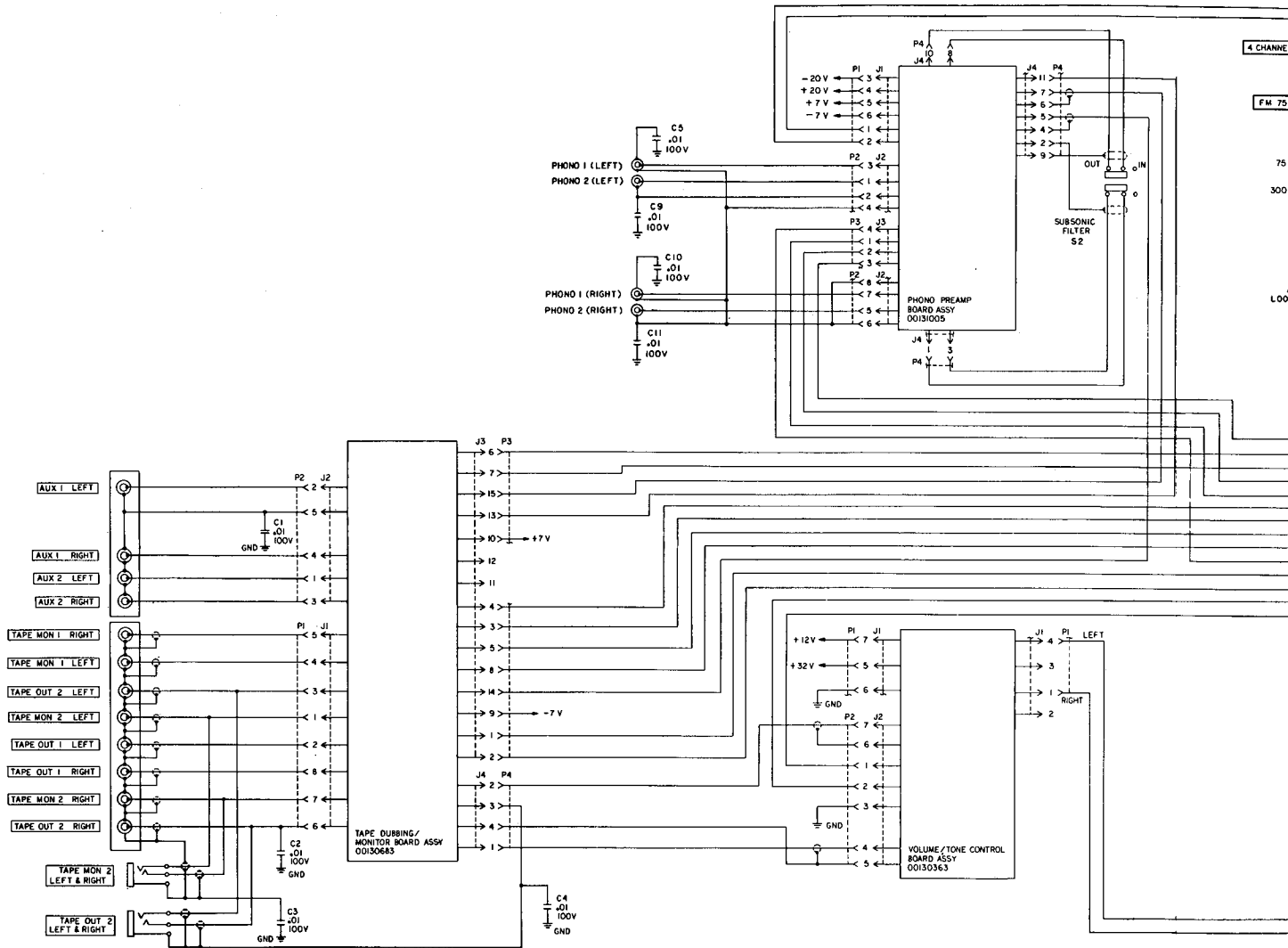


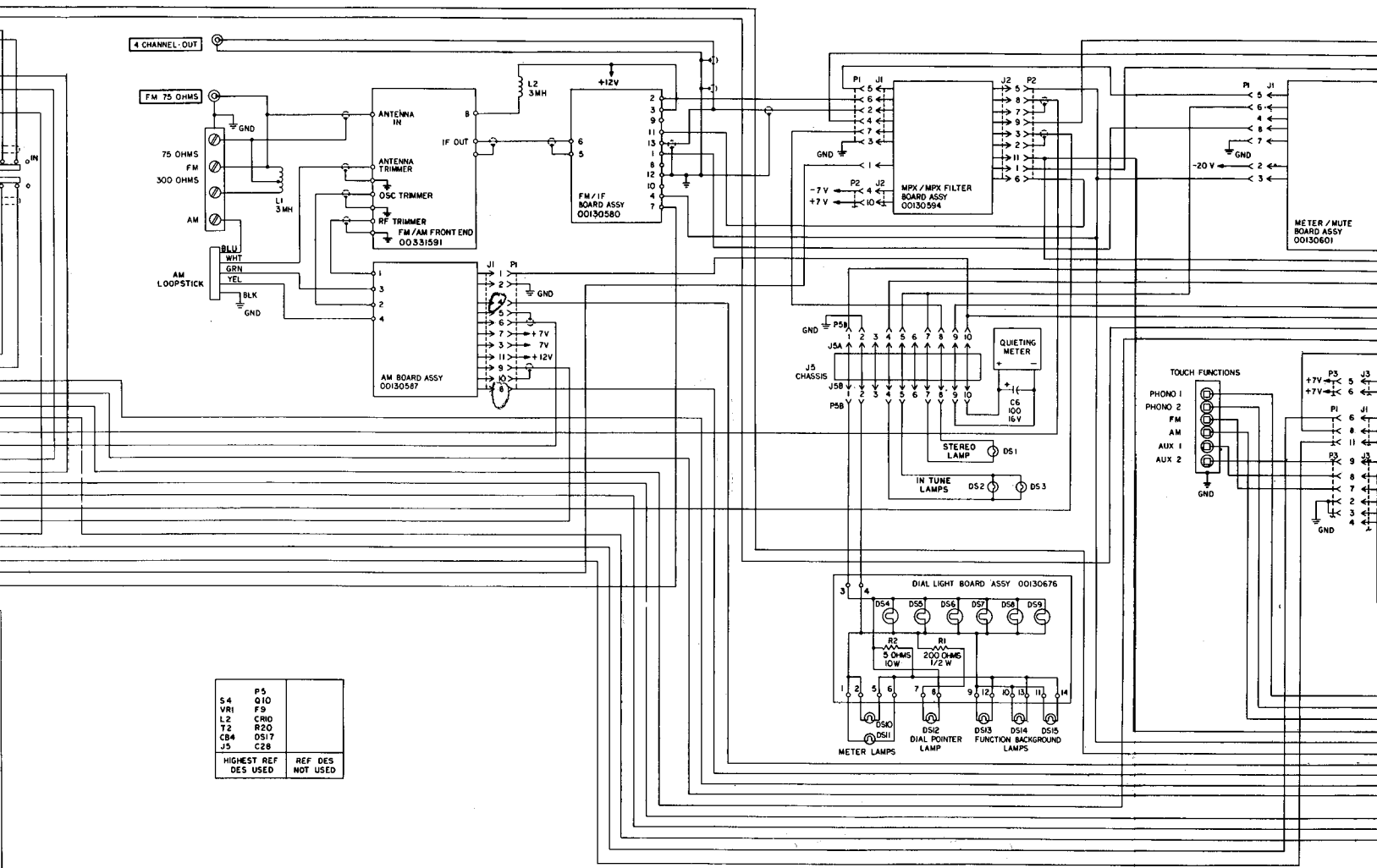
**SCHEMATIC DIAGRAM – CITATION RECEIVER  
SYSTEM INTERCONNECTION**

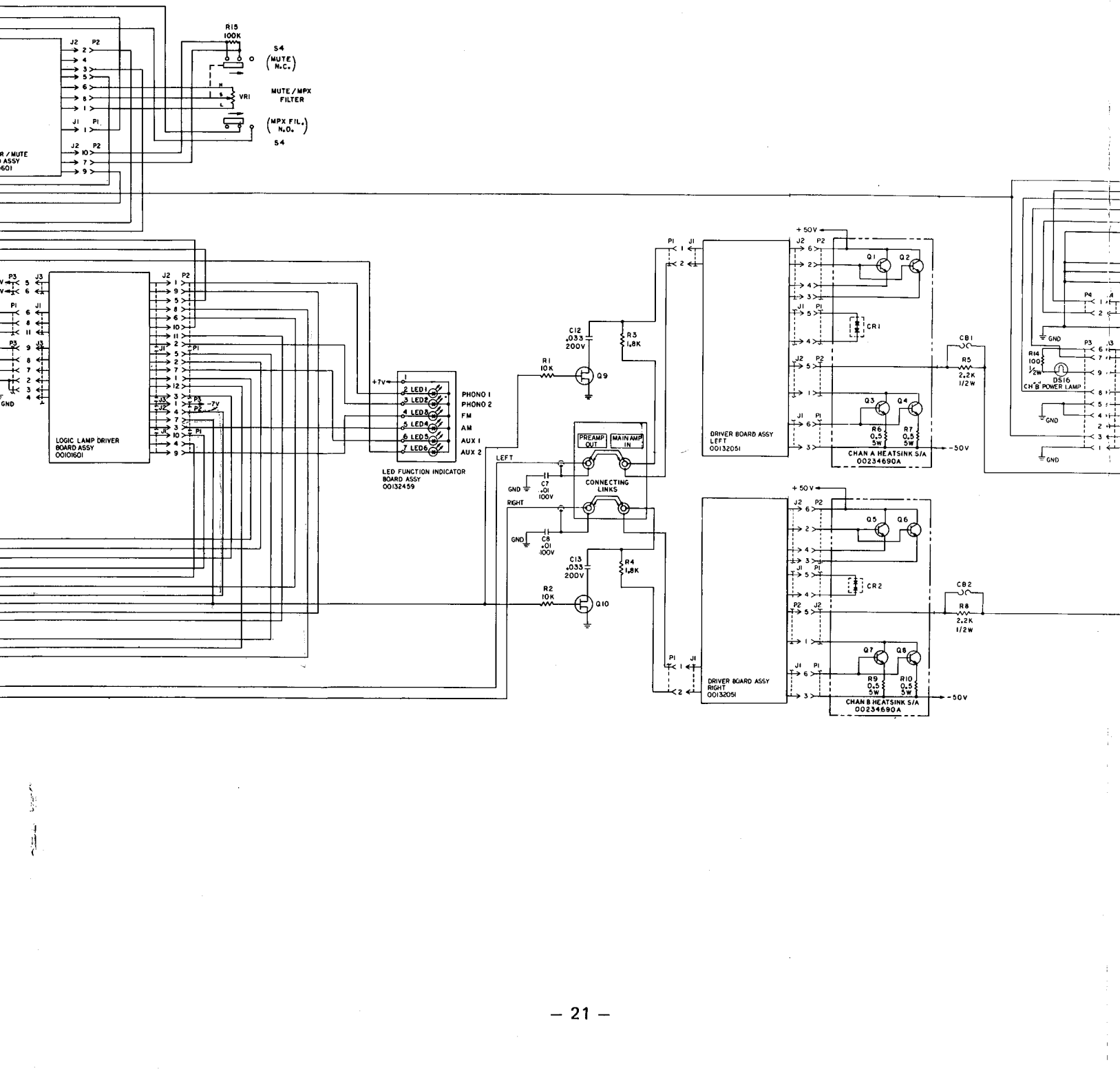


- NOTES:** Unless otherwise specified
1. All capacitor values are in microfarads.
  2. All resistor values are in ohms  $\pm 5\%$ ,  $\frac{1}{4}W$ .
  3. All voltages are taken with 'IN TUNE' light and mute circuit activated.
  4. When ordering parts, refer to parts list for H/K part no. If not available, use reference designation and assy or location used.

# SCHEMATIC DIAGRAM – CITATION RECEIVER SYSTEM INTERCONNECTION

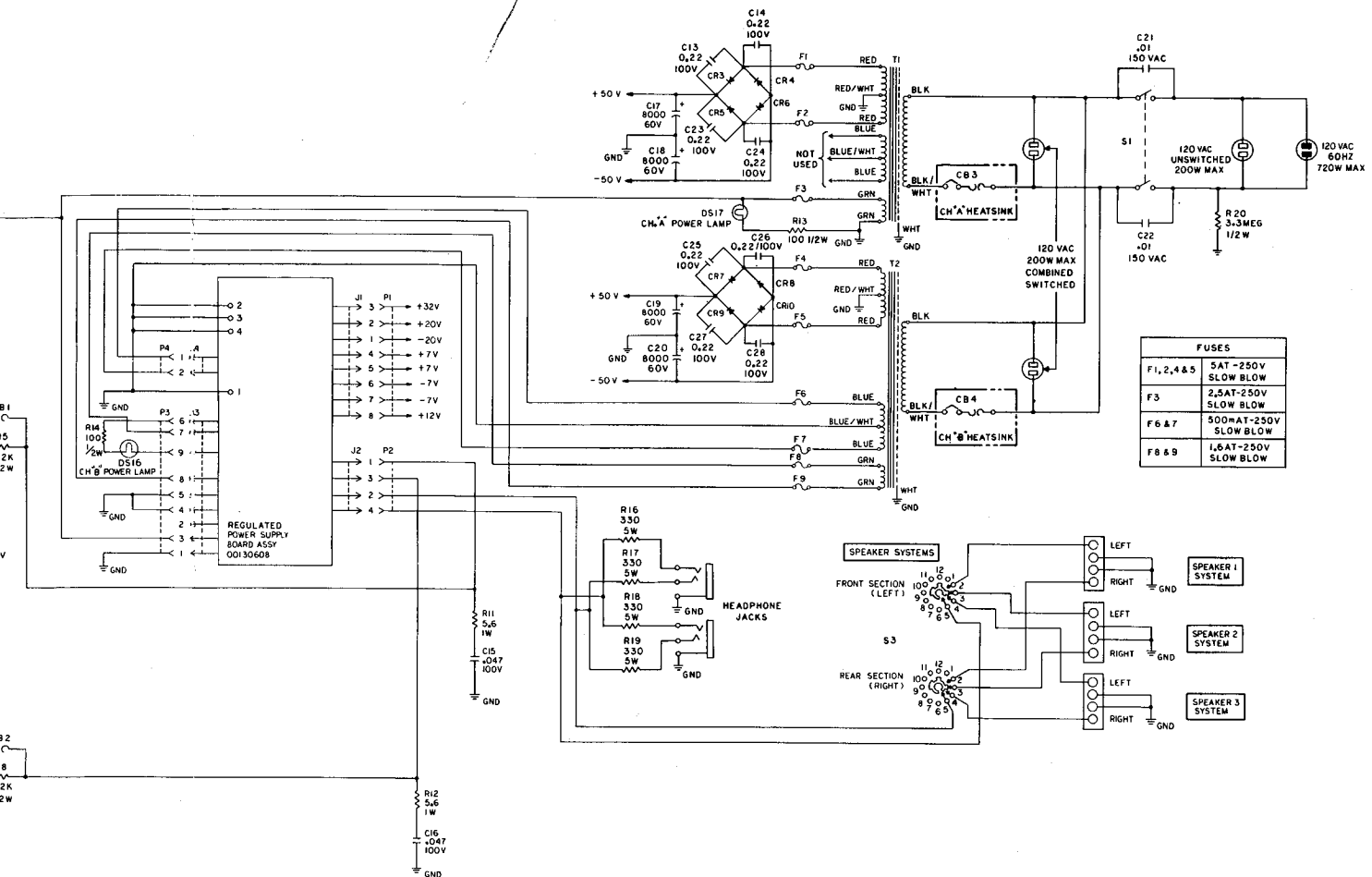






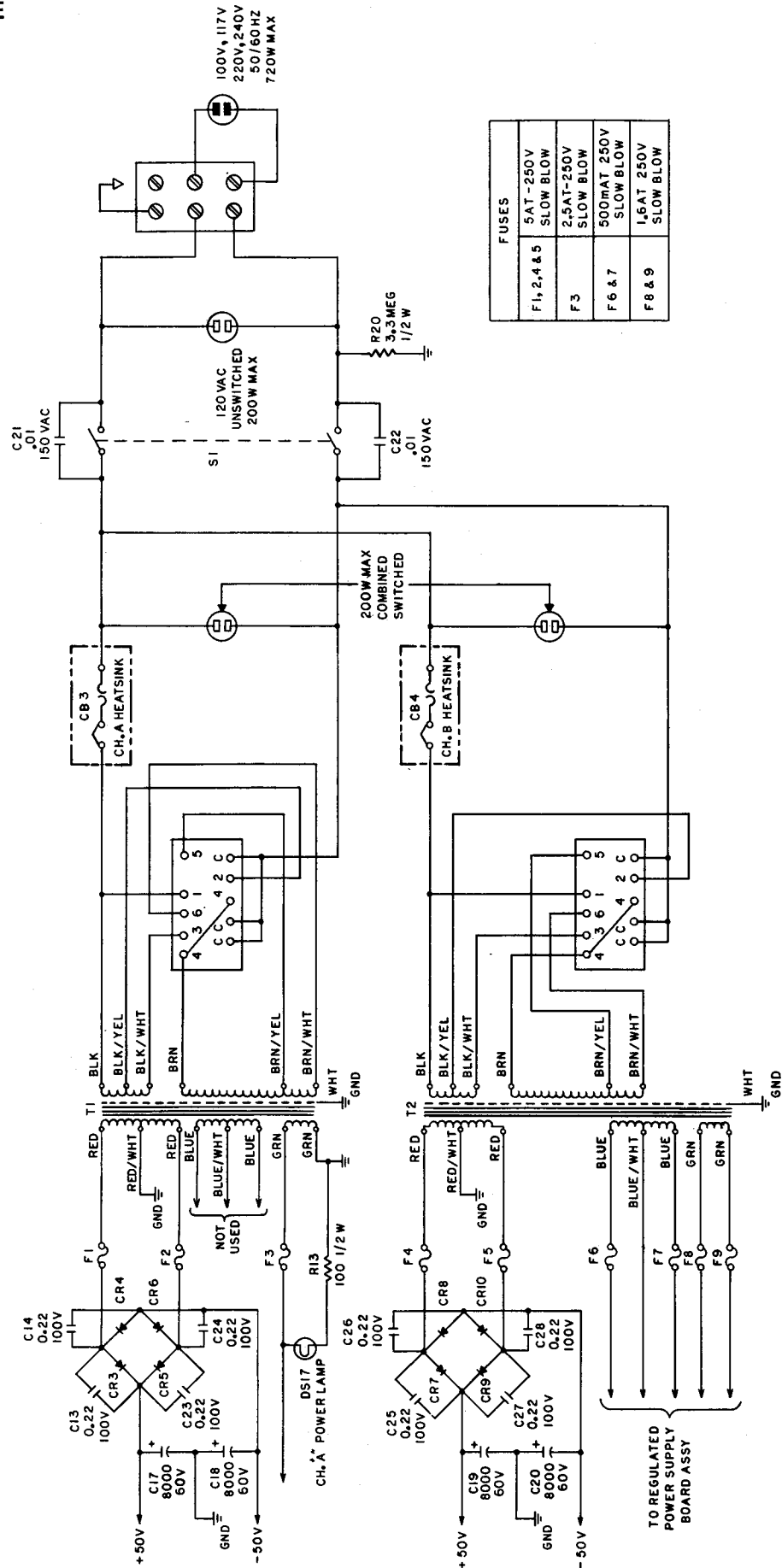
**NOTES:** Unless otherwise specified

1. All capacitor values are in microfarads.
2. All resistor values are in ohms  $\pm 5\%$ ,  $\frac{1}{4}W$ .
3. All voltages are taken with 'IN TUNE' light and mute circuit activated.
4. When ordering parts, refer to parts list for H/K part no. If not available, use reference designation and assy or location used.

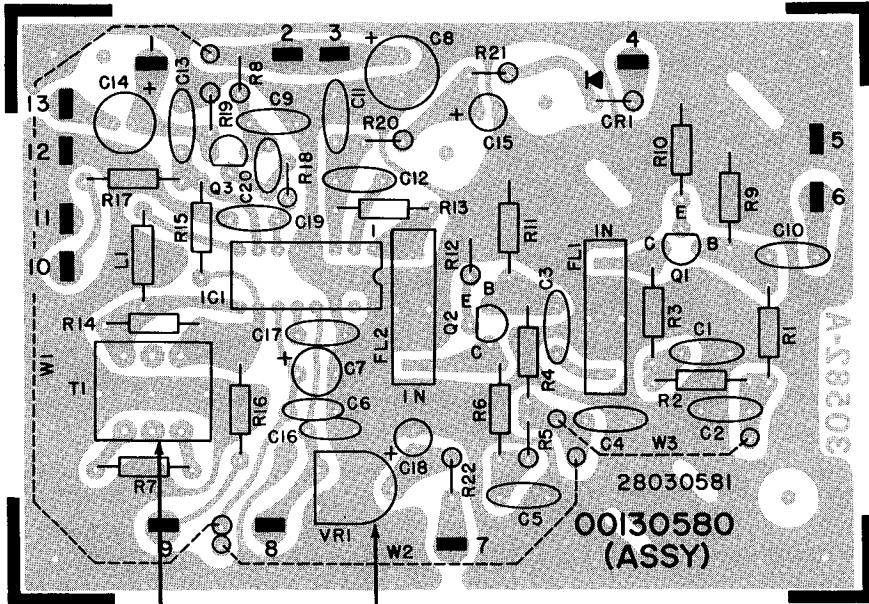




SCHEMATIC DIAGRAM –  
MULTI VOLTAGE



FM/IF  
PC BOARD

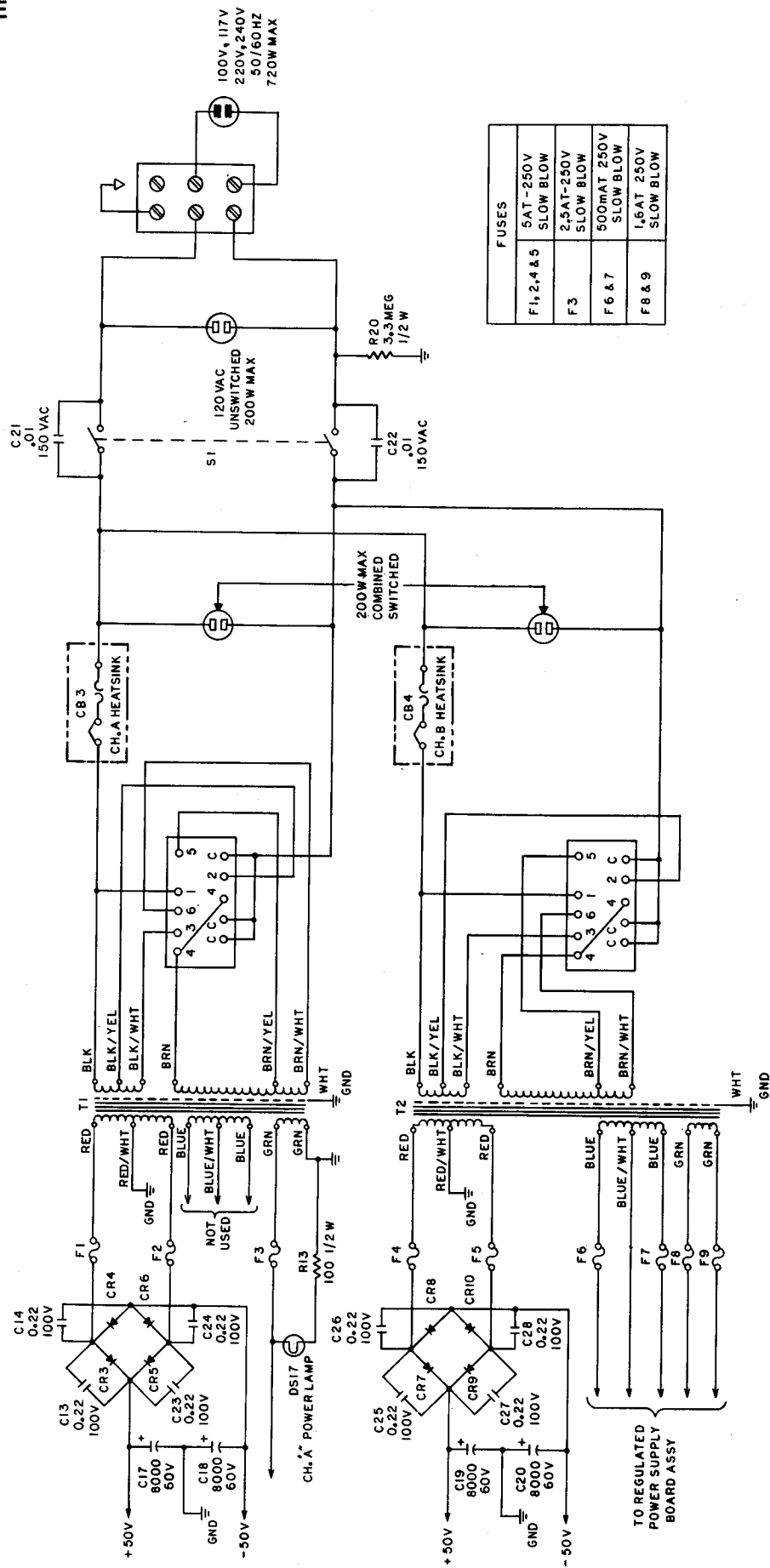


T1  
QUADRATURE  
DETECTOR

VR1  
STEREO THRESHOLD  
ADJUST

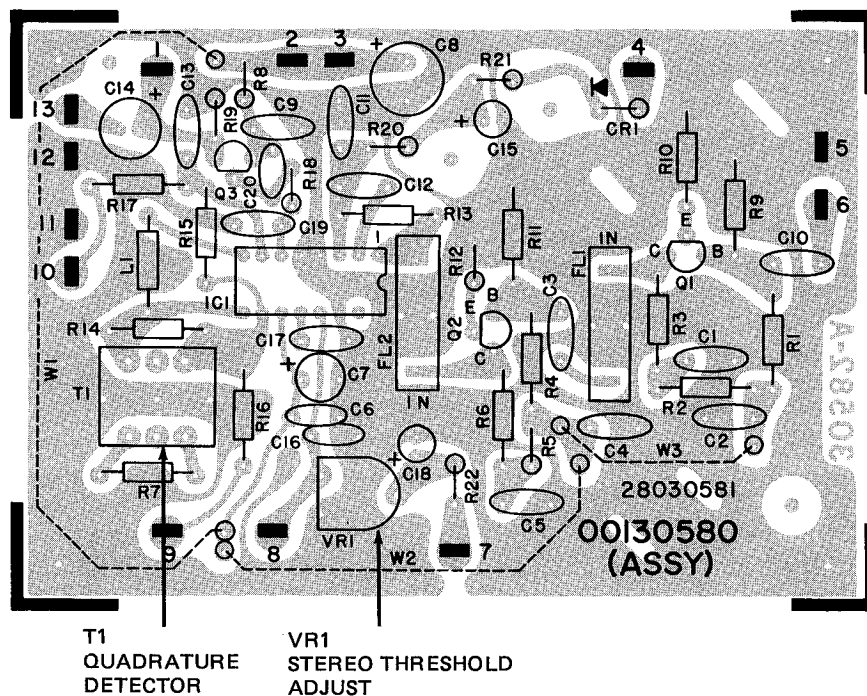
CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00130580	PC BD ASSY, FM-IF
RESISTOR, VARIABLE		
VR1	21729331	50K
DIODE		
CR1	41629338*	SILICON, IN914
TRANSISTOR		
Q1,2	43029701*	NPN, RF
Q3	43025972*	NPN, GP
INTEGRATED CIRCUIT		
IC1	43129341*	RCA CA3089
TRANSFORMER		
T1	11029332	QUADRATURE FM DETECTOR
INDUCTOR		
L1	12029342	22 UH, 5%, 1/4W
FILTER, CERAMIC		
FL1,2	12029386	10.7 mA (WHEN ORDERING, SPECIFY COLOR DOT ON TOP OF FILTER CASE)

### SCHEMATIC DIAGRAM – MULTI VOLTAGE



FUSES	
F1, 2, 4 & 5	5AT-250V SLOW BLOW
F3	2.5AT-250V SLOW BLOW
F6 & 7	500mA 250V SLOW BLOW
F8 & 9	1.6AT 250V SLOW BLOW

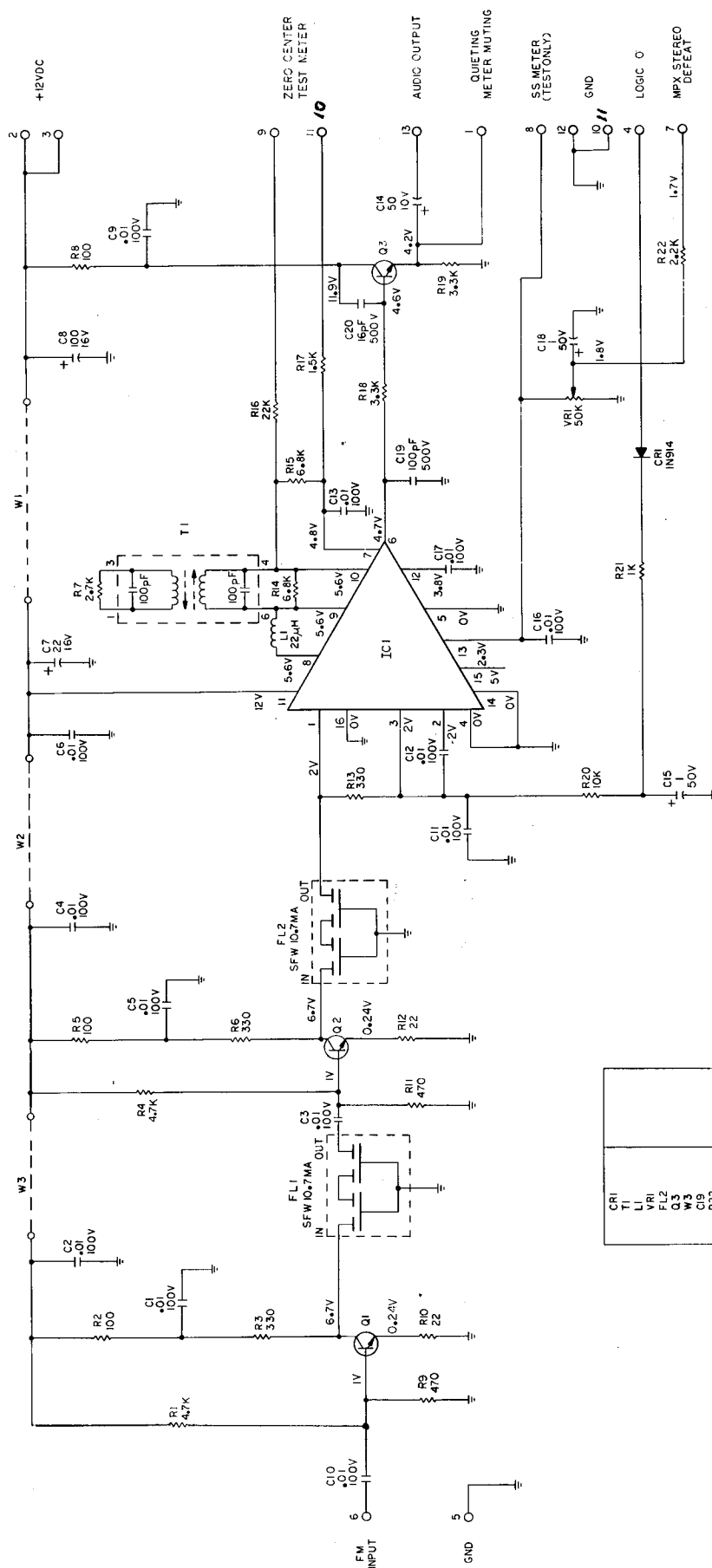
FM/IF  
PC BOARD



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00130580	PC BD ASSY, FM-IF
<b>RESISTOR, VARIABLE</b>		
VR1	21729331	50K
<b>DIODE</b>		
CR1	41629338*	SILICON, IN914
<b>TRANSISTOR</b>		
Q1,2	43029701*	NPN, RF
Q3	43025972*	NPN, GP
<b>INTEGRATED CIRCUIT</b>		
IC1	43129341*	RCA CA3089
<b>TRANSFORMER</b>		
T1	11029332	QUADRATURE FM DETECTOR
<b>INDUCTOR</b>		
L1	12029342	22 UH, 5%, 1/4W
<b>FILTER, CERAMIC</b>		
FL1,2	12029386	10.7 mA (WHEN ORDERING, SPECIFY COLOR DOT ON TOP OF FILTER CASE)

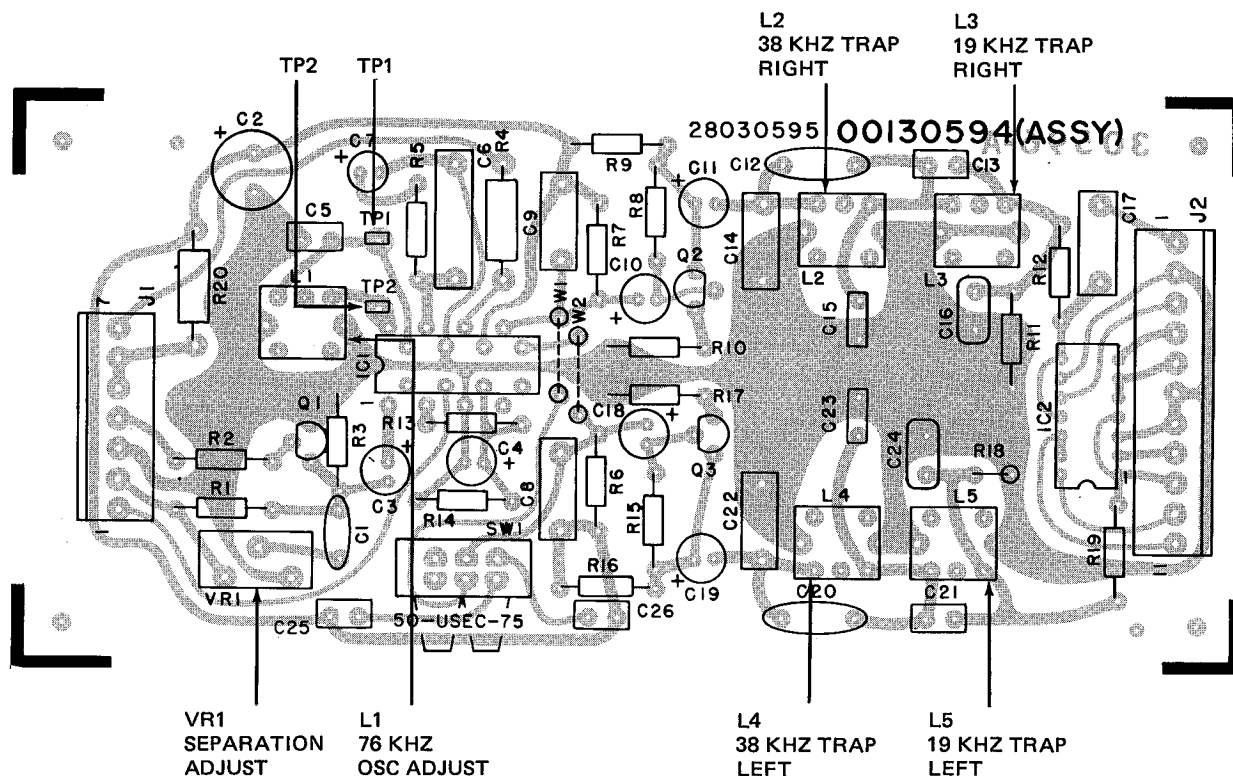
**NOTES:** Unless otherwise specified

1. All resistor values are in ohms, 5%, ¼W.
2. All capacitor values are in microfarads.
3. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available, use ref des and assembly used on, I. E. R1, FM-IF Bd Assy 00130580.



CRI TI LI VRI FL2 Q3 W3 C19 R22	HIGH REF DES. USED	REF DES NOT USED
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**MPX  
PC BOARD**

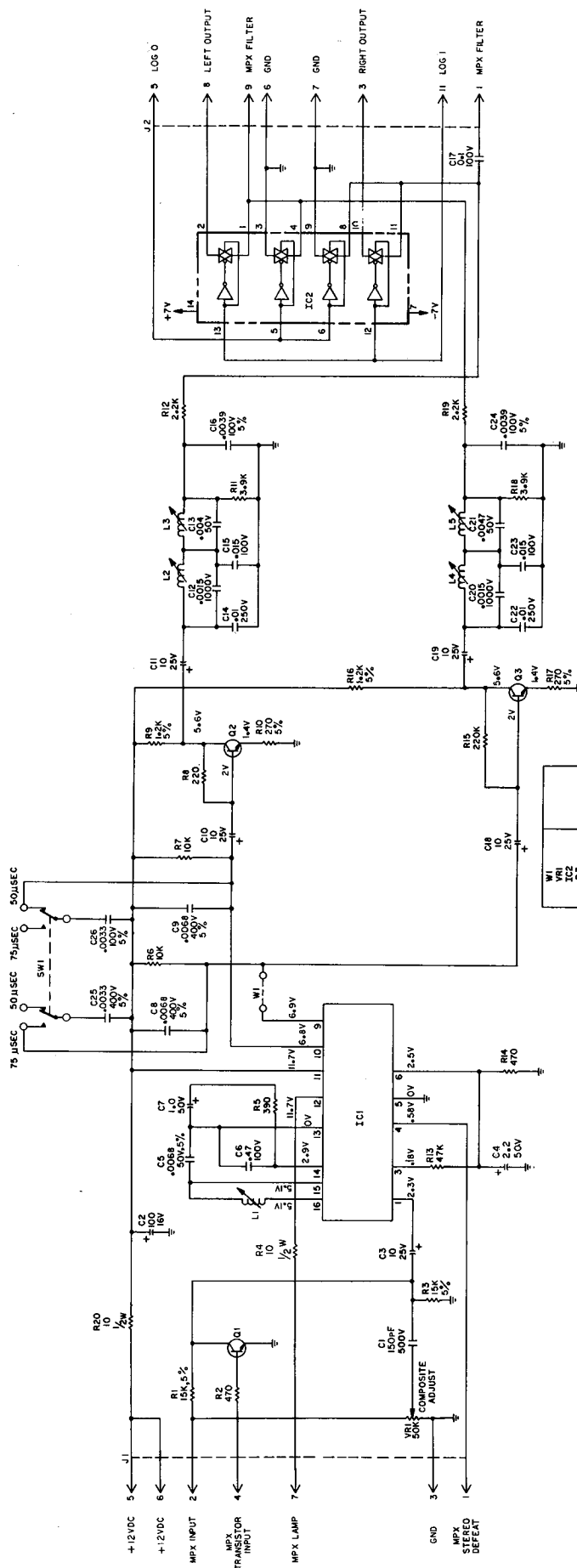


CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00130594	P.C. BD, ASSY, MPX
<b>RESISTOR, VARIABLE</b>		
VR1	21631248	50K
<b>TRANSISTOR</b>		
Q1,2,3	43025972*	NPN, GP
<b>INTEGRATED CIRCUIT</b>		
IC1	43129350*	CA3090A
IC2	43131243*	MC14016CP
<b>INDUCTOR, VARIABLE</b>		
L1	12029349	1-3 mH
L2,3,4,5	12029348	15 mH
<b>SWITCH</b>		
SW1	26532458	DE-EMPHASIS, DPDT

# MPX SCHEMATIC DIAGRAM

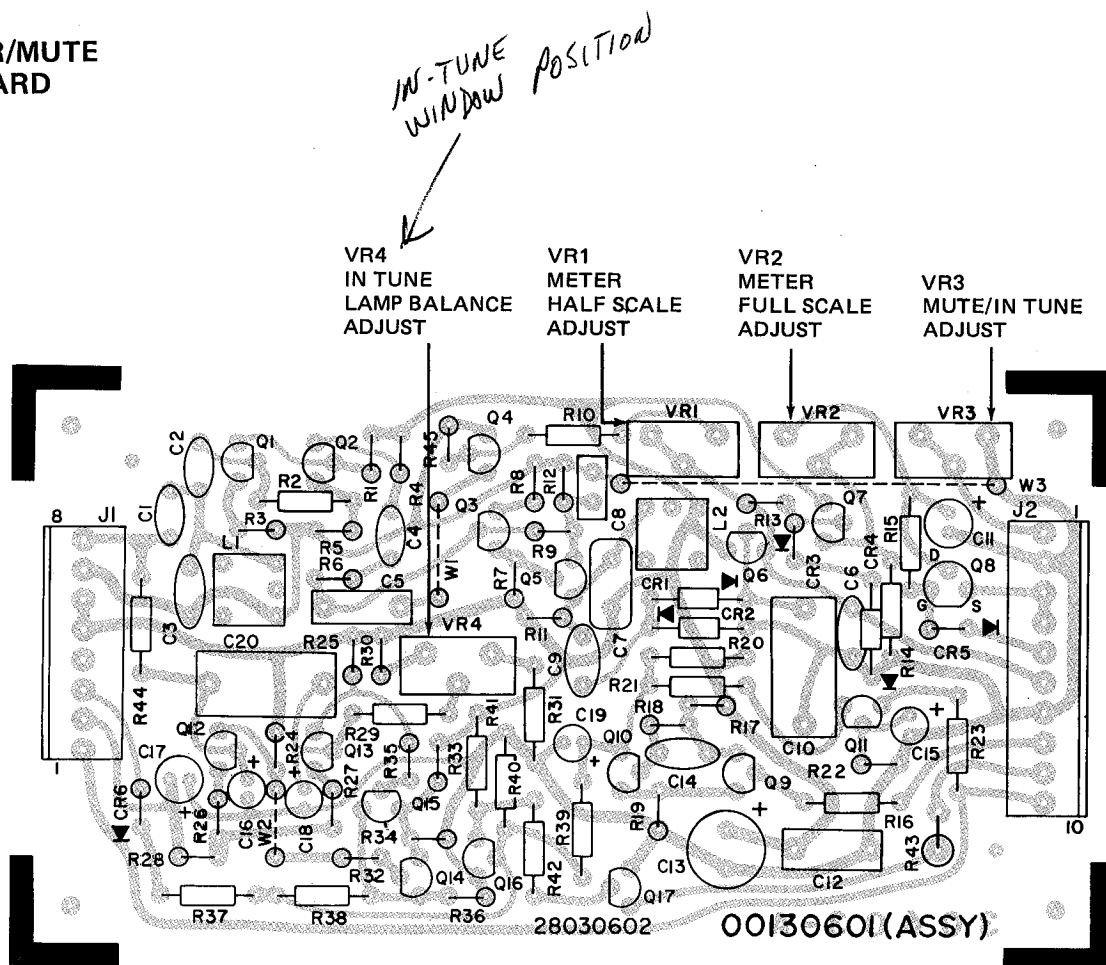
## NOTES: Unless otherwise specified

1. All resistor values are in ohms, 5%, 1/4W.
2. All capacitor values are in microfarads.
3. All voltages taken with 'IN TUNE' light and mute circuit activated.
4. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available, use ref des and assembly used on, I. E. R1, MPX Bd Assy 00130594.



W1	REF DES	NOT USED
R1	REF DES	NOT USED
Q1	REF DES	NOT USED
L1	REF DES	NOT USED
C1	REF DES	NOT USED
C2	REF DES	NOT USED
C3	REF DES	NOT USED
C4	REF DES	NOT USED
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C96	REF DES	NOT USED
C97	REF DES	NOT USED
C98	REF DES	NOT USED
C99	REF DES	NOT USED
C100	REF DES	NOT USED

METER/MUTE  
PC BOARD



CIRCUIT REF. NO.

H/K PART NO.

DESCRIPTION

00130601

P.C. BD ASSY METER/MUTING

DIODE

CR1-6

41629338\*

SILICON, IN914

TRANSISTOR

Q1-7,9-13,16,17

43025972\*

NPN, GP

Q14,15

43027722\*

PNP, GP

Q8

43031244\*

FET

INDUCTOR

L1,2

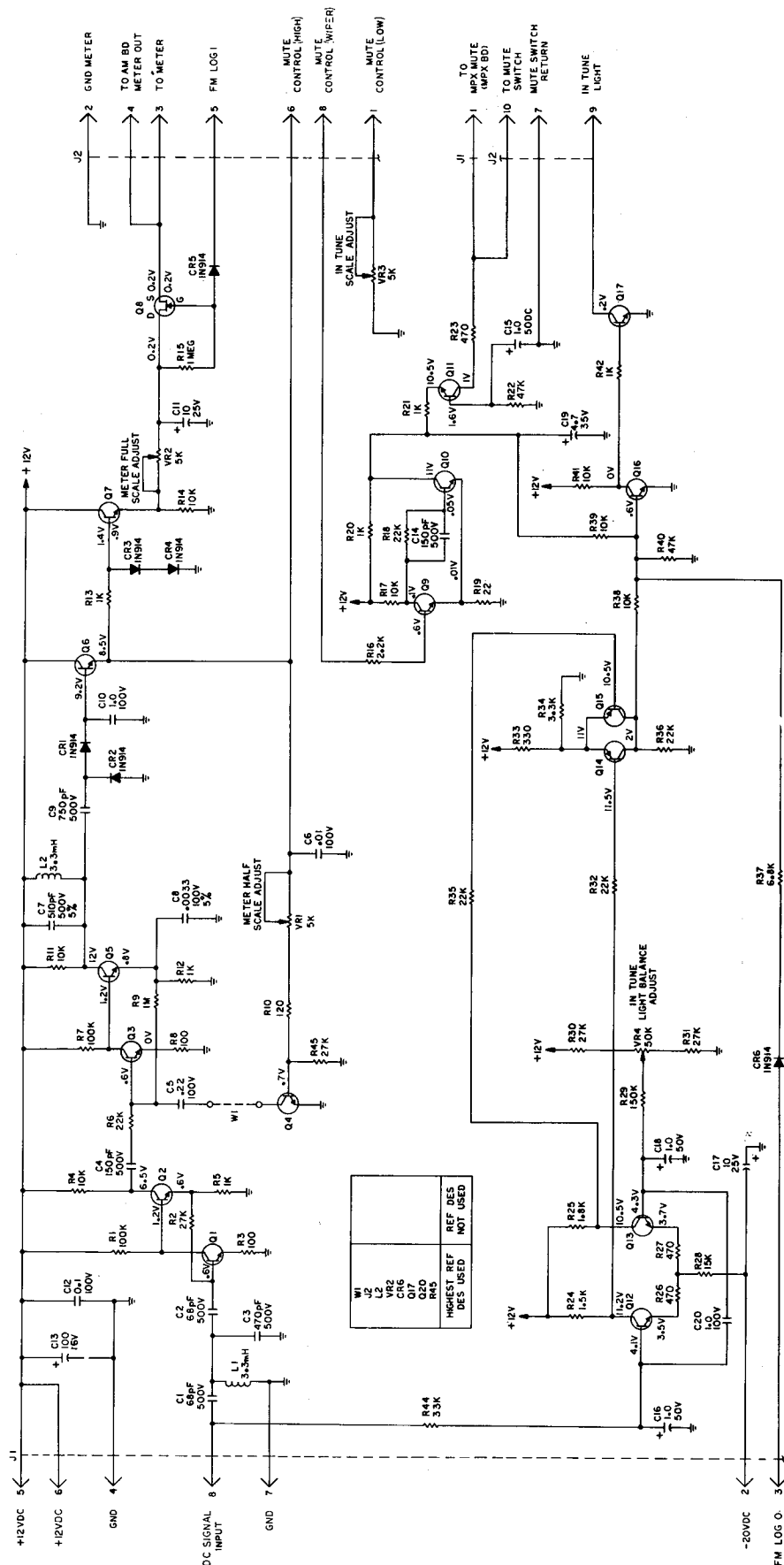
12029052

3.3 mH  $\pm 10\%$

# METER/MUTE SCHEMATIC DIAGRAM

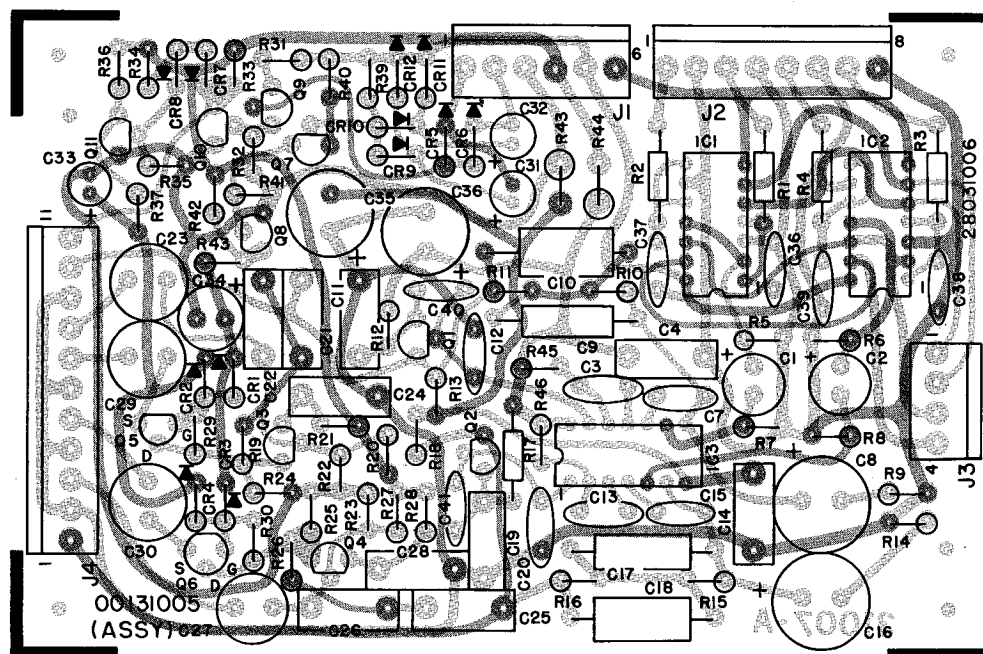
NOTES: Unless otherwise specified

1. All resistor values are in ohms, 5%, 1/4W.
2. All capacitor values are in microfarads.
3. All voltages taken with 'IN TUNE' light and mute circuit activated.
4. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available, use ref des and assembly used on, I. E. R1, Meter/Mute Assy 00130601.





**PHONO PREAMP  
PC BOARD**

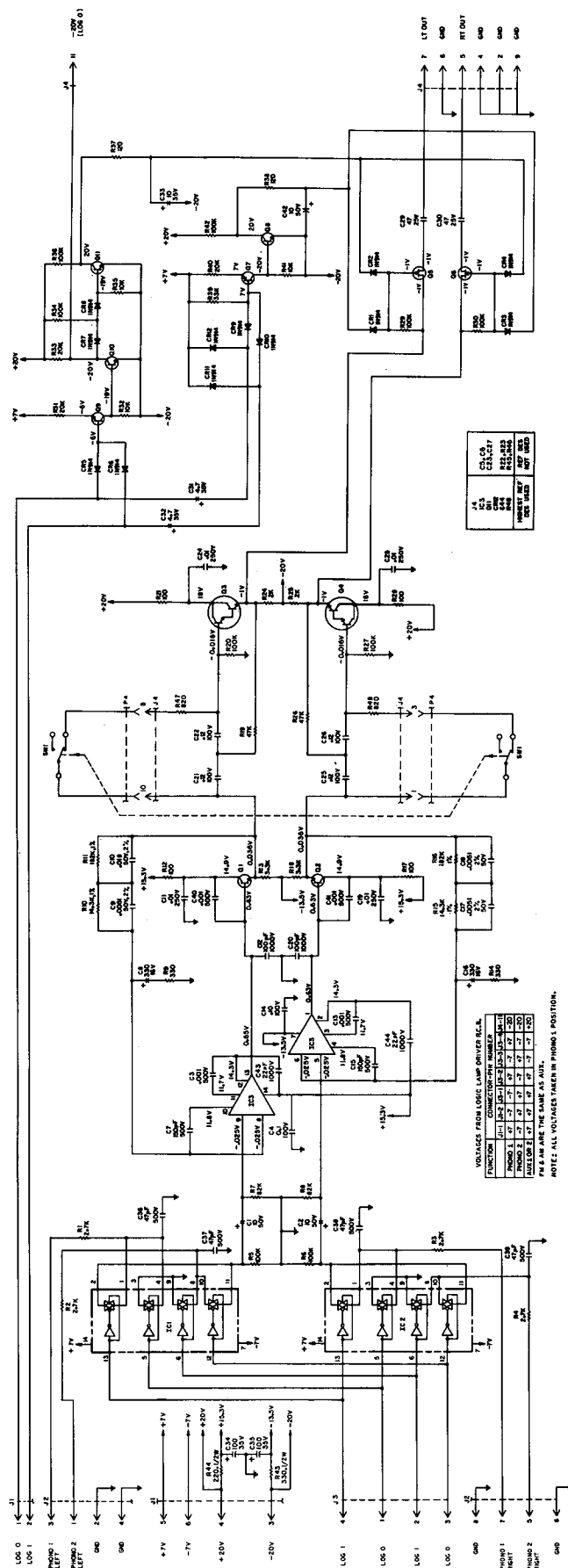


CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00131005	PC BD ASSY, PHONO PREAMP
<b>RESISTOR, FILM</b>		
R10,15	37232469	14.3K, 1%, 1/4W
R11,16	37232470	182K, 1%, 1/4W
<b>CAPACITOR, POLYESTER</b>		
C9,17	30332471	.0051 UF, 2%, 50V
C10,18	30332472	.018 UF, 2%, 50V
<b>TRANSISTOR</b>		
Q1,2,8,10,11	43025972*	NPN, GP
Q7,9	43027722*	PNP, GP
Q3,4	43029832*	DARLINGTON, MPS-A13
Q5,6	43031244*	FET
<b>DIODE</b>		
CR1-12	41629338*	SILICON, IN914
<b>INTEGRATED CIRCUIT</b>		
IC1,2	43134671*	CD4016CN
IC3	43130410*	MA739PC

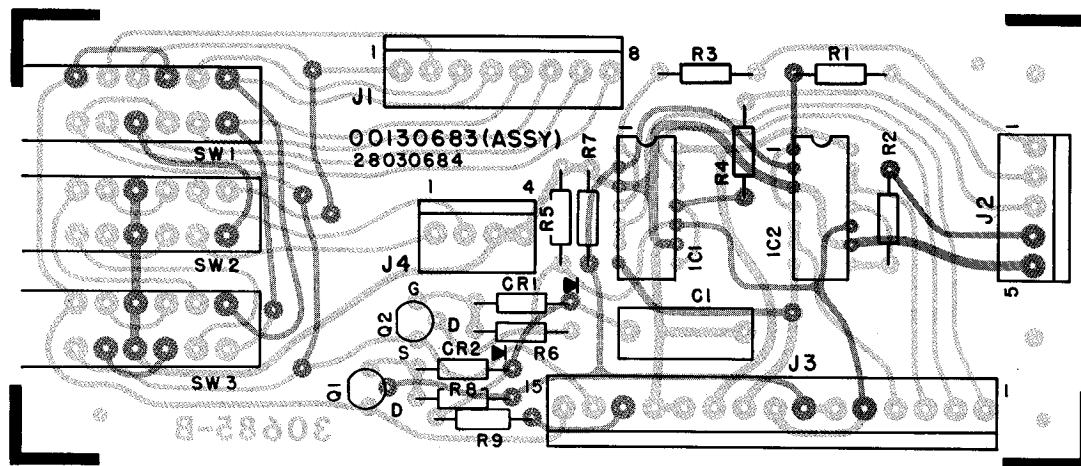
# PHONO PREAMP SCHEMATIC DIAGRAM

## NOTES: Unless otherwise specified

1. All resistor values are in ohms, 5%, 1/4W.
2. All capacitor values are in microfarads.
3. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available, use ref des and assembly used on, I. E. R1, Phono Preamp Bd Assy 00131005.

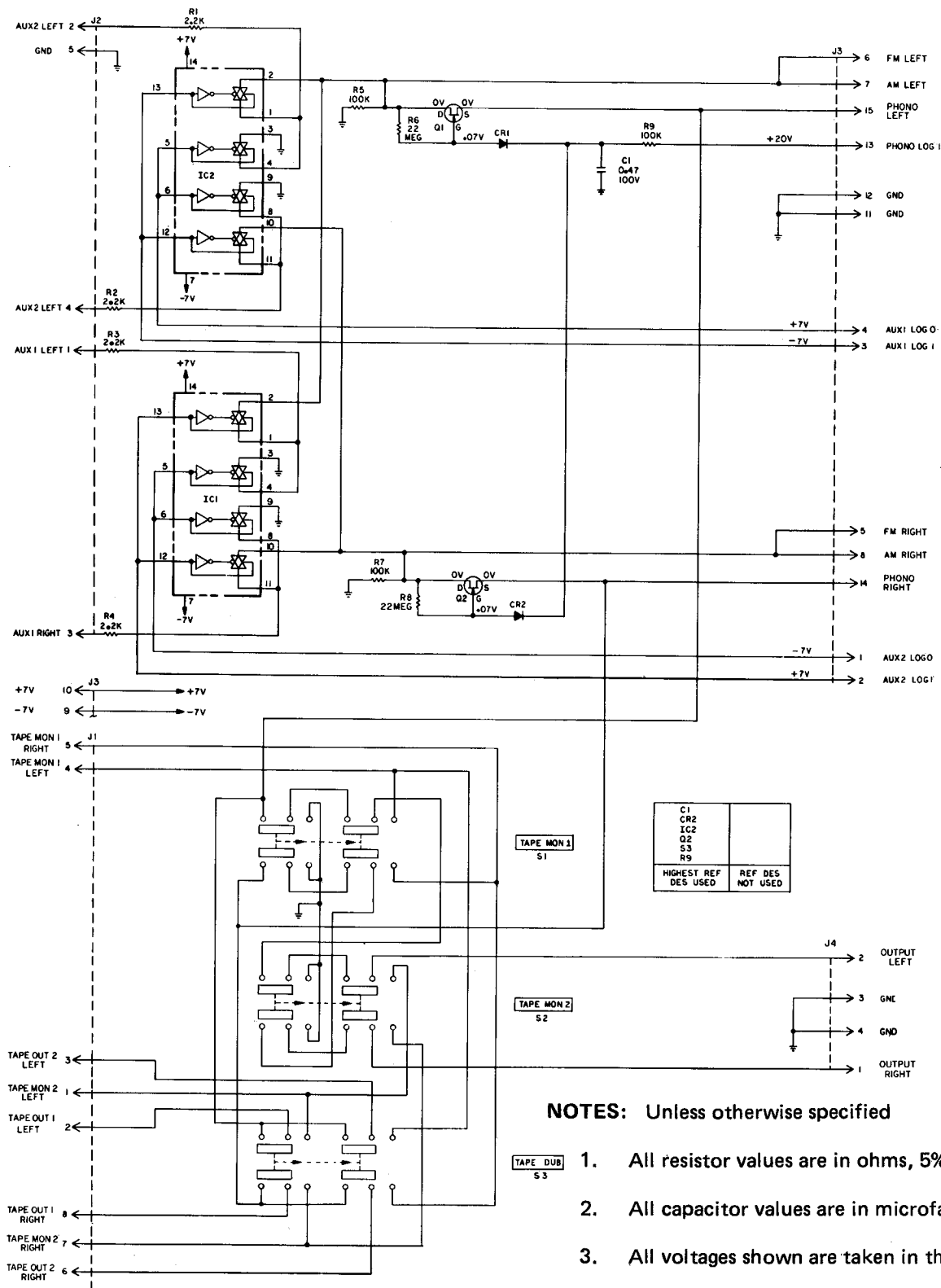


**TAPE MONITOR/DUBBING  
PC BOARD**

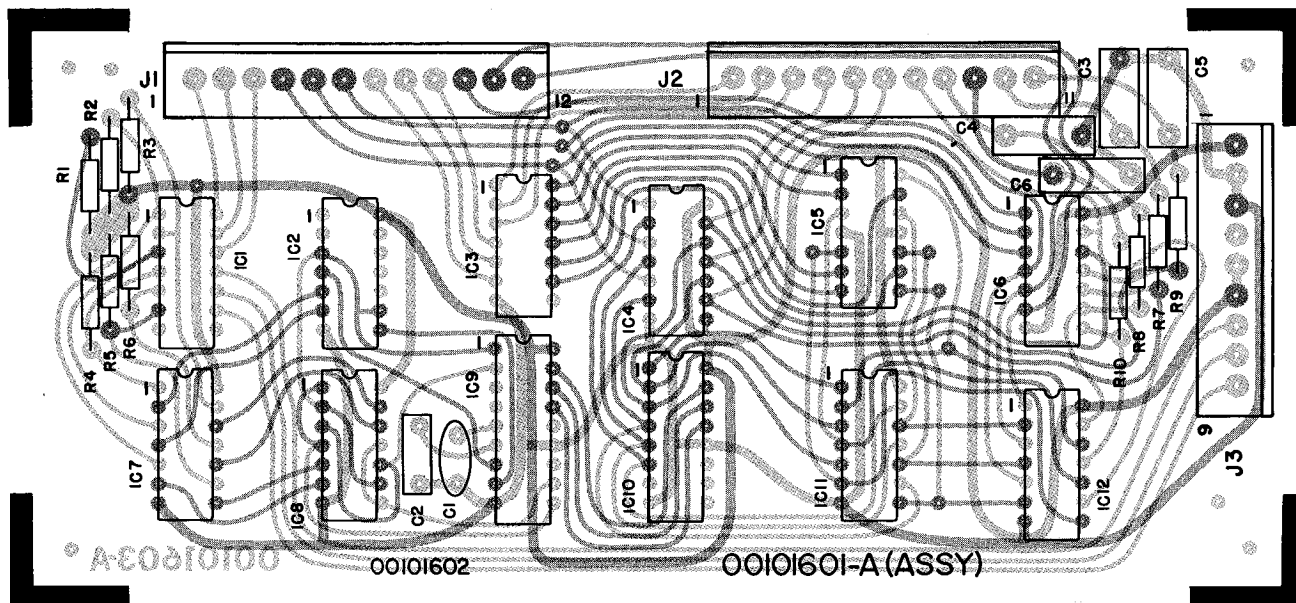


CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00130683	P.C. BD, ASSY, TAPE MONITOR/ DUBBING
<b>TRANSISTOR</b>		
Q1,2	43031244*	FET
<b>DIODE</b>		
CR1,2	41629338*	SILICON, IN914
<b>INTEGRATED CIRCUIT</b>		
IC1,2	43131243*	MC14016CP
<b>SWITCH, PUSHBUTTON</b>		
S1,2,3	25030430	4 PDT

# TAPE MONITOR/DUBBING SCHEMATIC DIAGRAM



LOGIC/LAMP DRIVER  
PC BOARD



CIRCUIT REF. NO.

H/K PART NO.

DESCRIPTION

00101601A

P.C. BD. ASSY, LOGIC/LAMP  
DRIVER

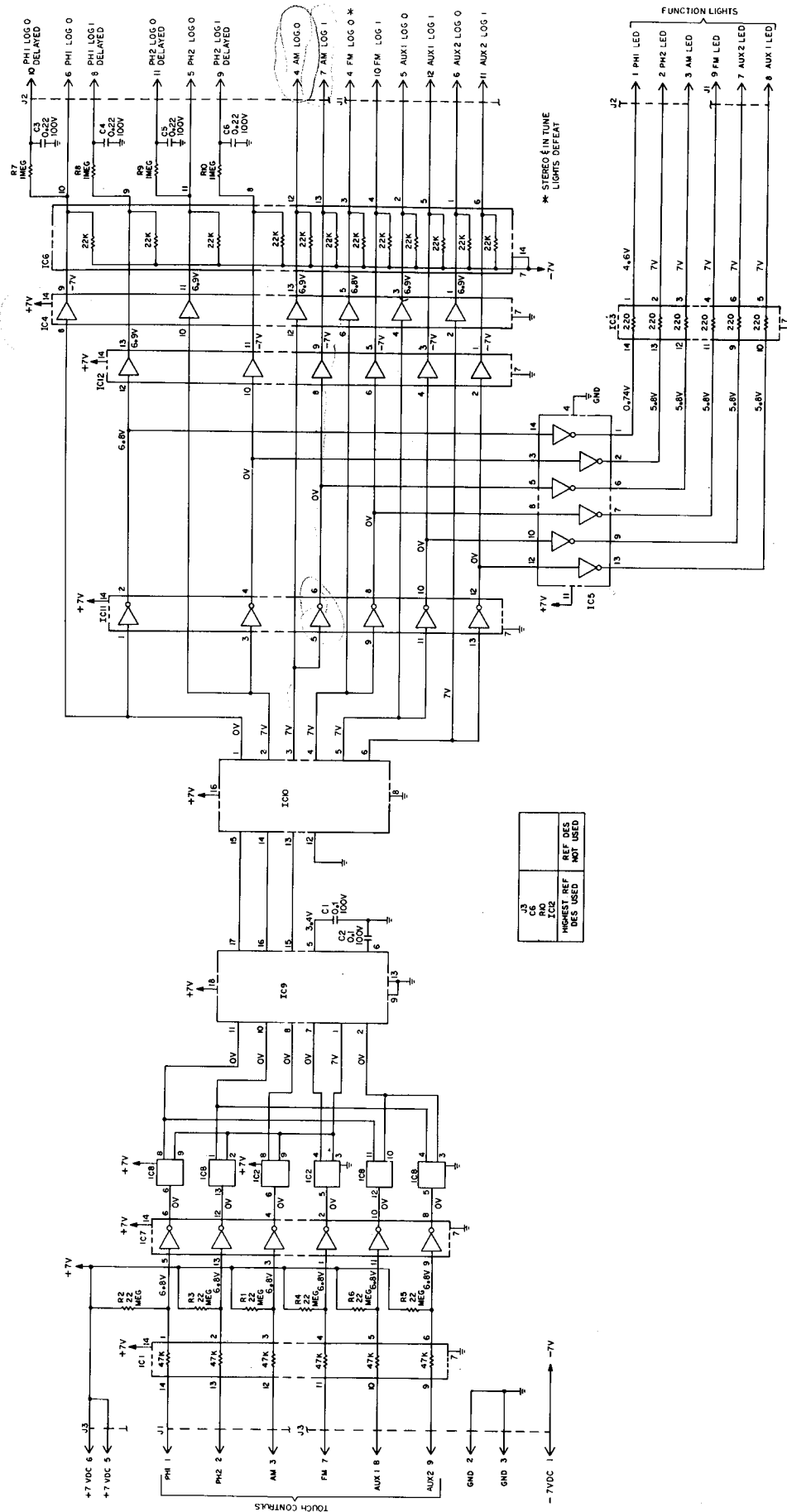
INTEGRATED CIRCUIT

IC1	43134366*	RESISTOR ARRAY, RA07-47KN
IC3	43134367*	RESISTOR ARRAY, RA07-220KN
IC6	43134368*	RESISTOR ARRAY, RA12-22KN
IC5	43134369*	DISPLAY DRIVER, DS75492N
IC9	43134370*	KEY ENCODER, MM74C922N
IC2,8	43134371*	QUAD BILATERAL SWITCH, CD4016CN
IC7,11	43134372*	<del>QUAD 2-INPUT NAND GATE,</del> MM74C04N <i>INVERTER</i>
IC10	43134374*	BCD TO DECIMAL DECODER MM74C42N
IC4,12	43134375*	HEX P-CHAN BUFFER, MM74C907N

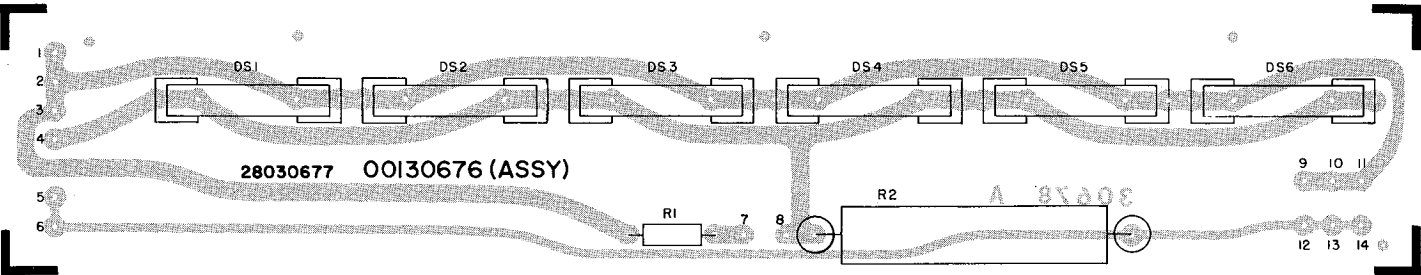
# LOGIC/LAMP DRIVER SCHEMATIC DIAGRAM

## NOTES: Unless otherwise specified

1. All resistor values are in ohms, 5%, 1/4W.
2. All capacitor values are in microfarads.
3. When ordering replacement parts, refer to parts list for H/K part number. If H/K part number is not available, use ref des and assembly used on, I. E. R1, Logic Lamp Driver Bd Assy 00101601A.

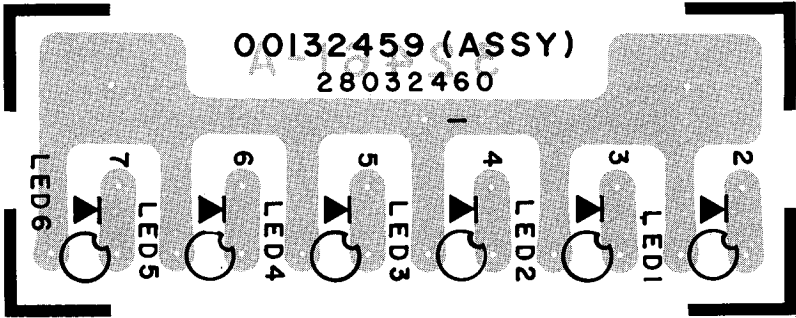


DIAL LIGHT  
PC BOARD



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00130676	PC BD ASSY, DIAL LIGHT
RESISTOR, WIREWOUND		
R2	36911001	10 OHM, 10%, 10W
LAMP		
DS1-6	46529212*	INCANDESCENT, FUSE TYPE, 12V, 150 mA

LED FUNCTION INDICATOR  
PC BOARD



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	00132459	PC BD ASSY, LED FUNCTION INDICATOR
LED		
LED1-6	46732466*	RED

FOR SCHEMATIC DIAGRAMS OF DIAL LIGHT AND LED FUNCTION INDICATOR BOARDS,  
SEE SYSTEM SCHEMATIC ON PAGES 19 THRU 22.

# CHASSIS PARTS LIST

## DECORATIVE

00234953A	Top Cover W/Wood Insert
60131731	Vent Pnl, Top Cover
63032493B	Etched Side Pnl, Right
63D31499B	Etched Side Pnl, Left
60131058	Vertical Side Pnl
60132088E	Perforated Heatsink Cover
62029267	Rubber Feet
63232451	Tuning Knob
63231129	Speaker Select Knob
63230625	Knob, Inner
63230624	Knob, Outer
63232243	Pushbutton Knob, Power
00234697A	Dress Pnl Assy W/Window
63233678	Bushing, Power Switch
00234698A	Top Window W/Touch Control Assy
63031523	Ground Bar, Touch Control
62932068	Touch Contact

## RF PANEL

12532060	Meter, Quieting W/Hdwe
90431142	Dial Scale
90431161	Log Scale
00234683A	Pointer Assy
46532563*	Bulb, Pointer, 6V, 30mA
46528051	Lamp, 12V, 60mA
00331591	FM Tuner
30932973	Capacitor, Variable, Trimmer
12029678	Choke 3.3 $\mu$ H Lamp, 15V 70mA
46528980* - METER?	
00234687A	Tuning Shaft Bracket Assy

## FRONT PANEL

65432209	Jack, Headphone 1 & 2, Tape 2 In/ Tape 2 Out
4431-01027858 — 25032217	Power Switch <span style="border: 1px solid black; padding: 2px;">Lamp 12V, 60mA</span>
46528051*	
61032978	Lens Cap Red
22031164	Mute/MPX Control W/Hdwe

## REAR PANEL

00234693A	Antenna, Loopstick
12031333	Transformer, Balan Match
00234082	Ground Screw Assy
65416751	Receptacle, AC, Black
65427146	Receptacle, AC, White
65423483	Connector, 75 Ohm Jack W/Hdwe
24532084	Slide Switch DPST, Subsonic Filter
51032067	Jumper, Preamp Out - Main Amp In
65428990	Antenna Term Bd
65430916	Phono Term Bd
65431366	Speaker Term Strip
65431560	Input Term Bd
65430829	4 Chan Out Term Bd



## CHASSIS PARTS LIST

### CHASSIS

10130843	Transformer, Power
31132221	Capacitor, Dry Electrolytic 8000 $\mu$ f 60V
45532405	Circuit Breaker MB317
45234420Y*	Fuse 5A, 250V, Slo-Blow
45234420V*	Fuse 2.5A, 250V, Slo-Blow
45234420M*	Fuse 0.5A, 250V, Slo-Blow
45234420T*	Fuse 1.6A, 250V, Slo-Blow
24030578	Speaker System Switch
43031244*	Transistor, Fet
00234689A	Pushbutton Assy Tape Monitor/DUB
41630450*	Diode 6A, 200V

### HEATSINK

41624214*	Bias Diodes (Double)
36715085	Resistor, 0.5 Ohm, 5%, 5W
42832404*	Transistor, Output
45525206	Circuit Breaker, Thermal

### MULTIVOLTAGE

10131092C	Transformer, Pwr
65427580	Voltage Selector Connector Set

**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, H/K 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.

# DIAL CORD STRINGING

