The Harman Kardon Model hk 3500

Stereo Cassette Deck

Technical Manual

harman/kardon

ELECTRICAL ADJUSTMENTS

EQUIPMENT REQUIRED

1. Audio Signal Generator
2. Frequency Counter
3. V. T. V. M.
4. Distortion Meter
5. Oscilloscope

NOTE: All adjustments should be made under the following conditions unless otherwise noted.

1. Power Supply Voltage is AC120V for RV units (220V for MV units).
2. Dolby NR Switch is at OFF position.
3. Test Tone Switch is at OFF position.
4. EQ Selector Switch is at LOW NOISE position.
5. Bias Selector Switch is at LOW NOISE position.
6. Record Mute Switch is at OFF position.
7. Tape Mon Switch is at TAPE position.
8. Subsonic Filter Switch is at OFF position.
9. Power Switch is at ON position.
10. Bias Trim is at NORMAL position.
11. Microphone Level is 0.
12. Output Level is 10.
13. Signal Source is connected to INPUT LOW.

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
DOLBY	5kHz 200mV	V. T. V. M. to TP1 and Gnd.	Rec.	Line Level	1. Adj. for 23.5mV on V. T. V. M.
		V. T. V. M. to TP2 and Gnd.			
		V. T. V. M. to neg. side of C47 and Gnd.		VR11 (L)	2. Adjust so that output at Dolby on is +8dB than output at Dolby off.
		V. T. V. M. to neg. side of C247 and Gnd.		VR211 (R)	
	5kHz to TP5 and Gnd.	V. T. V. M. to TP7 and Gnd.	Play		3. Adjust input for 59mV on V. T. V. M.
				VR10 (L)	4. Adj. output so that output at Dolby on is –8dB than output at Dolby off.
	5kHz to TP6 and Gnd.	V. T. V. M. and TP8			5. Adj. input for 59mV on V. T. V. M.
				VR210 (R)	6. Adj. output so that output at Dolby on is –8dB than output at Dolby off.
AUTO SHUTOFF		Frequency Counter to TM905 (On Auto Shutoff Bd.) and Gnd.	Play		1. Frequency reading on counter should be between 154Hz to 232Hz. (If not within spec. change C907 to higher or lower value. 2. Confirm stopping within 2.5 sec. after the tape stops.

ALIGNMENT PROCEDURES

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
MPX FILTER	1kHz 200mV to Line In	V. T. V. M. and Frequency Counter to Line Out	Source Play Dolby On w/Filter	Line Level	1. Adj. for 0 vu on meters.
	19kHz mv to (Low) Line			L2 (L)	2. Adj. for minimum output.
				L202 (R)	
	1kHz 200mV (Low) Line			Line Level	3. Adj. for 0 vu on meters.
	16kHz 200mV (Low) Line				4. Confirm that 16kHz output is more than −1dB of 1kHz output.
	19kHz 200mV (Low) Line				5. Confirm that 19kHz output is less than −30dB of the 1kHz output.

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
PLAYBACK LEVEL	400Hz Dolby Test Tape (MTT-150)	V. T. V. M. to TP7 and Gnd.	Play/ Tape Mon.	VR8 (L) (on rear panel)	1. Adj. output for 775mV on V. T. V. M.
		V. T. V. M. to TP8 and Gnd.		VR208 (R) (on rear panel)	
		V. T. V. M. to (L) and (R) line			2. Confirm that output is 1.5V ± 1.5dB.
METER LEVEL	400Hz Dolby Test Tape (MTT-150)	V. T. V. M. to TP9 and Gnd.	Play/Tape Mon.	VR502 (L)	1. Adj. for 1.2V on V. T. V. M.
		V. T. V. M. to TP10 and Gnd.		VR602 (R)	
				VR504 (L) VR604 (R)	2. Adj. for 0 vu on meter.
	1kHz 200mV		Source	Line Level	3. Adj. for 0 vu on meter.
	200mv −20dB			VR504 (L)	4. Adj. for −20 vu on meter.
	1kHz 200mV			VR502 (L)	5. Adj. for 0 vu on meter. (Repeat steps 4 and 5 to obtain correct meter readings).
	1kHz 200mV			Line Level	6. Adj. for 0 vu on meter.
	200mV −20dB			VR604 (R)	7. Adj. for −20 vu on meter.
	1kHz 200mV			VR602 (R)	8. Adj. for 0 vu on meter. (Repeat steps 7 and 8 to obtain correct meter readings).

ALIGNMENT PROCEDURES

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
TEST TONE			Source Test Tone Sw. 400Hz	VR3 (L)	1. Adj. for 0 vu on meter.
				VR5 (R)	
			Source Test Tone Sw. 8kHz	VR4 (L)	2. Adj. for −20 vu on meter.
				VR6 (R)	
PEAK INDICATOR	1kHz 200mV		Source	Line Level	1. Adj. for 0 vu on meters.
	1kHz 200mV +2dB			VR503 (L)	2. So that peak LED is on at input level +2.5dB and off at +1.5dB.
				VR603 (R)	
PLAYBACK FREQUENCY CHARAC-TERISTIC	MTT216, MTT116U or MTT217C	V. T. V. M. to Line Outputs	Play Tape Mon. Bias - LN EQ - LN	VR7 (L) High VR9 (L) Middle	Adj. to meet specifications. (Fig. A)
				VR207 (L) High VR209 (R) Middle	
PLAYBACK FREQUENCY CHARAC-TERISTIC (Cr02)	MTT116K	V. T. V. M. to Line Outputs	PlayTape Mon. Bias - Cr02 EQ - Cr02		Confirm that the curve meets specification. (Fig. A).
BIAS FREQUENCY AND TRAP		Frequency counter to PT13 and Gnd.	Rec.	T2	1. Set variable resistors (VR19, 20, 22, 23) for bias adj. to center. 2. Adj. for 105kHz on Frequency Counter.
					3. Confirm 105kHz ±3kHz when switch is at any position.
		V. T. V. M. to Line Output	Rec/Play Tape Mon.	L3 (L)	4. Adj. for minimum output.
				L203 (R)	

ALIGNMENT PROCEDURES

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
BIAS TRAP (REC.)		V. T. V. M. to TP13 and Gnd.	Rec.	L4 (L)	1. Adj. for maximum output.
		V. T. V. M. to TP15 and Gnd.		L204 (R)	
		V. T. V. M. to TP11 and Gnd.		L5 (L)	2. Adj. for minimum output.
		V. T. V. M. to TP12 and Gnd.		L205 (R)	
BIAS LEVEL		V. T. V. M. to TP13 and Gnd.	Rec.	VR22 (L)	1. Adj. for 10mV on V. T. V. M.
		V. T. V. M. to TP15 and Gnd.		VR23 (R)	
	Test Tone 400Hz (Maxell UDXLI)	V. T. V. M. to Line Output	Rec/Play Bias - LN EQ - LN Test Tone Sw. 400Hz	VR17 (L) (on front panel)	2. Adj. for same level at both source and tape mon. positions.
				VR217 (R) (on front panel)	
LN	6.3kHz 200mV	V. T. V. M. to Line Output	Rec/Play Tape Mon. Bias - LN	Line Level	3. Adj. for –20 vu on meters.
				Bias Trim	4. Note the line output level when obtaining maximum output. (Return bias trim pot. to center detent).
				VR23 (L) VR22 (R)	5. Increase bias level so that the line level output drops 2.5dB below the maximum line output level from step 4.
FeCr		V. T. V. M. to TP13 and Gnd.	Rec. Bias-FeCr	VR19	6. Adj. bias level for +2dB than the bias level at Low noise position.
Cr02			Rec. Bias-Cr02	VR20	7. Adj. bias level for +4dB than the bias at low noise position.
BIAS FREQUENCY AND TRAP					Confirm bias frequency and bias trap adjustment.
BIAS TRIM		V. T. V. M. to TP13 and Gnd.	Rec.	Bias Trim	Confirm that bias level changes from –30% (max. –45%) to +30% (max. +45%).
		V. T. V. M. to TP15 and Gnd.			

ALIGNMENT PROCEDURES

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
REC LEVEL (LN)	1kHz 200mV	V. T. V. M. to Line Out.	Source	Line Level	1. Adj. for 0 vu on meters.
			Rec/Play Mon.	VR17 (L) (on front panel)	2. Adj. for 0 vu on meters.
				VR217 (R) (on front panel)	
(FeCr)				VR14 (L)	3. Adj. for 0 vu on meters.
				VR214 (R)	
(Cr02)				VR16 (L)	4. Adj. for 0 vu on meters.
				VR216 (R)	
SQUARE WAVE	1kHz 200mV		Source	Line Level	1. Adj. for 0 vu on meters.
	1kHz 20mV (square wave)	Oscilloscope to Line Output	Rec/Play	VR18 (L) VR218 (R)	2. Adj. for obtaining minimum tilt and maximum rise time.  Acceptable Unacceptable
REC/PLAY FREQUENCY CHARAC-TERISTIC (LN)	1kHz 200mV to Line In (Low)	V. T. V. M. to Line Out	Source	Line Level	1. Adj. for 0 vu on meters.
	20Hz - 17 kHz 200mV - 30dB		Rec/Play Mon. EQ - LN Bias - LN	VR12 (L)	2. Adj. to meet specifications (Fig. 2)
				VR212 (R)	
(FeCr)			Rec/Play Mon. EQ - FeCr Bias - FeCr	VR13 (L) VR213 (R)	3. Same as above (Fig. 3)
(Cr02)			Rec/Play Mon EQ - Cr02 Bias-Cr02	VR15 (L) VR215 (R)	4. Same as above (Fig. 4).
SQUARE WAVE					Confirm square wave test. When adjusting again, confirm Rec/Play frequency characteristic.

MECHANICAL ADJUSTMENTS

1. REC/PLAY READ ADJUSTMENT

(1) Adjust screw (A) so that the chip of the head gauge (M-300) does not touch the tape guide as shown in figure 2.

(2) Make the mechanical assembly stand and adjust screw (B) as shown in figure 3.

NOTE: Never fail to confirm the above adjustment (1) when adjusting screw (B).

(3) Connect VTVM to line output jacks and play back 10 kHz test tape (TEAC MTT114). Adjust screw (C) so that the output on the VTVM will be maximum and have a little level change (less than 1 dB) at both channels.

NOTE: Never fail to confirm the above adjustments (1) (2) when adjusting screw (C).

(4) Repeat steps 1 through 3 until being able to confirm above all adjustment without adjustment.

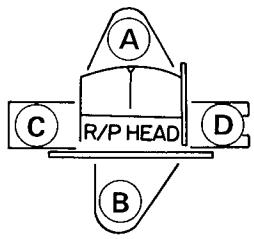


FIGURE 1

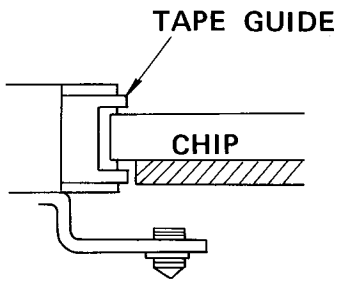


FIGURE 2

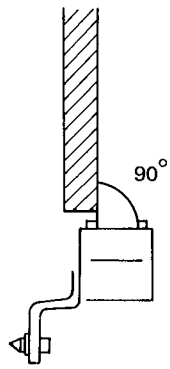


FIGURE 3

2. ERASE HEAD TENSION ADJUSTMENT

Adjust location (1, 2 or 3) hooked by coil spring so that the tension by erase head may be 30g ± 5g when keeping apart erase head from special boss. (Figure 4 and 5).

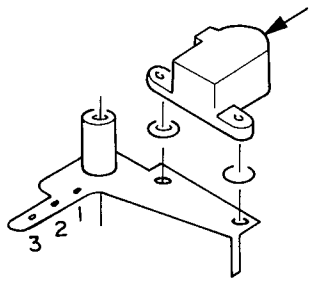


FIGURE 4

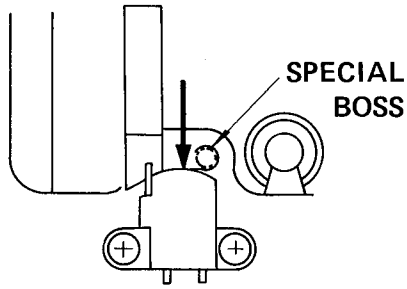


FIGURE 5

3. PINCH ROLLER TENSION ADJUSTMENT

Bend the adjustment point hooked by coil spring in the arrow directions so that the tension by pinch roller may be 400g ± 40g when keeping apart pinch roller from capstan (about 0.5mm) and returning it to rotate. (Figure 6).

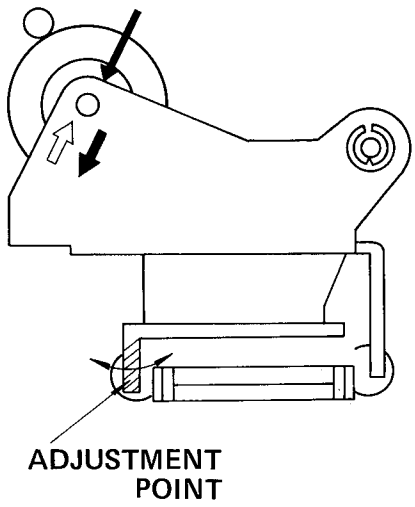


FIGURE 6

ALIGNMENT POINTS

FIG A – PLAY FREQUENCY CHARACTERISTIC

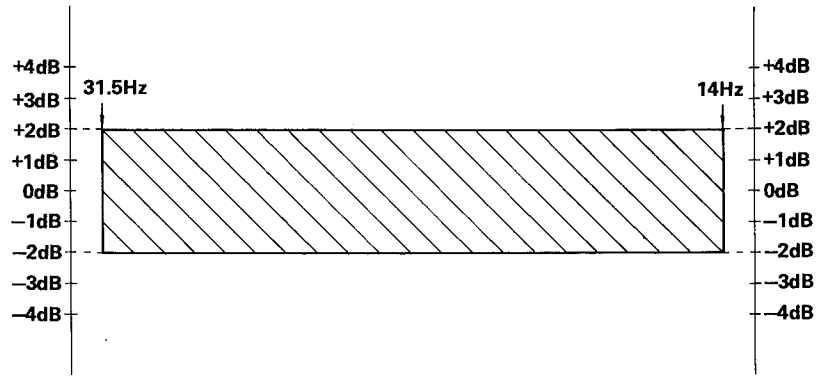


FIG B – PLAY/REC FREQUENCY CHARACTERISTIC

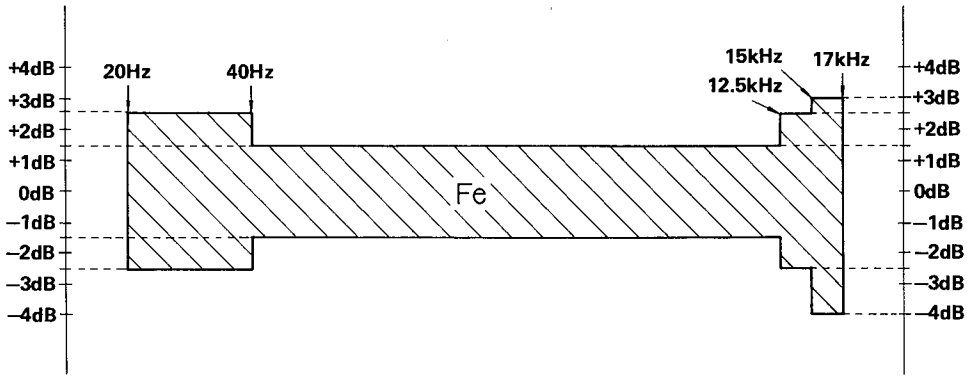


FIG C – PLAY/REC FREQUENCY CHARACTERISTIC

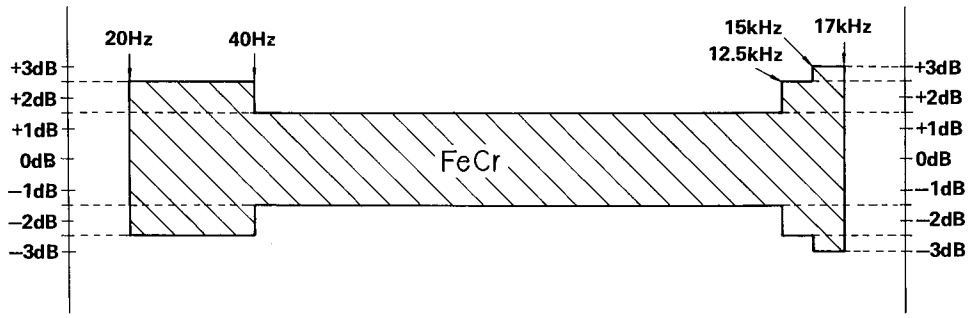
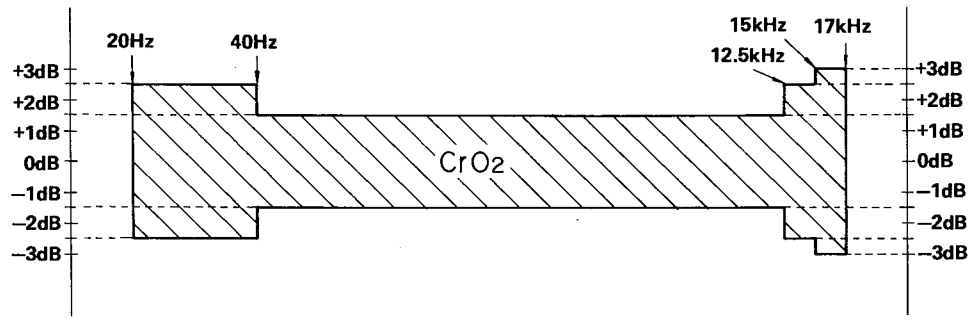
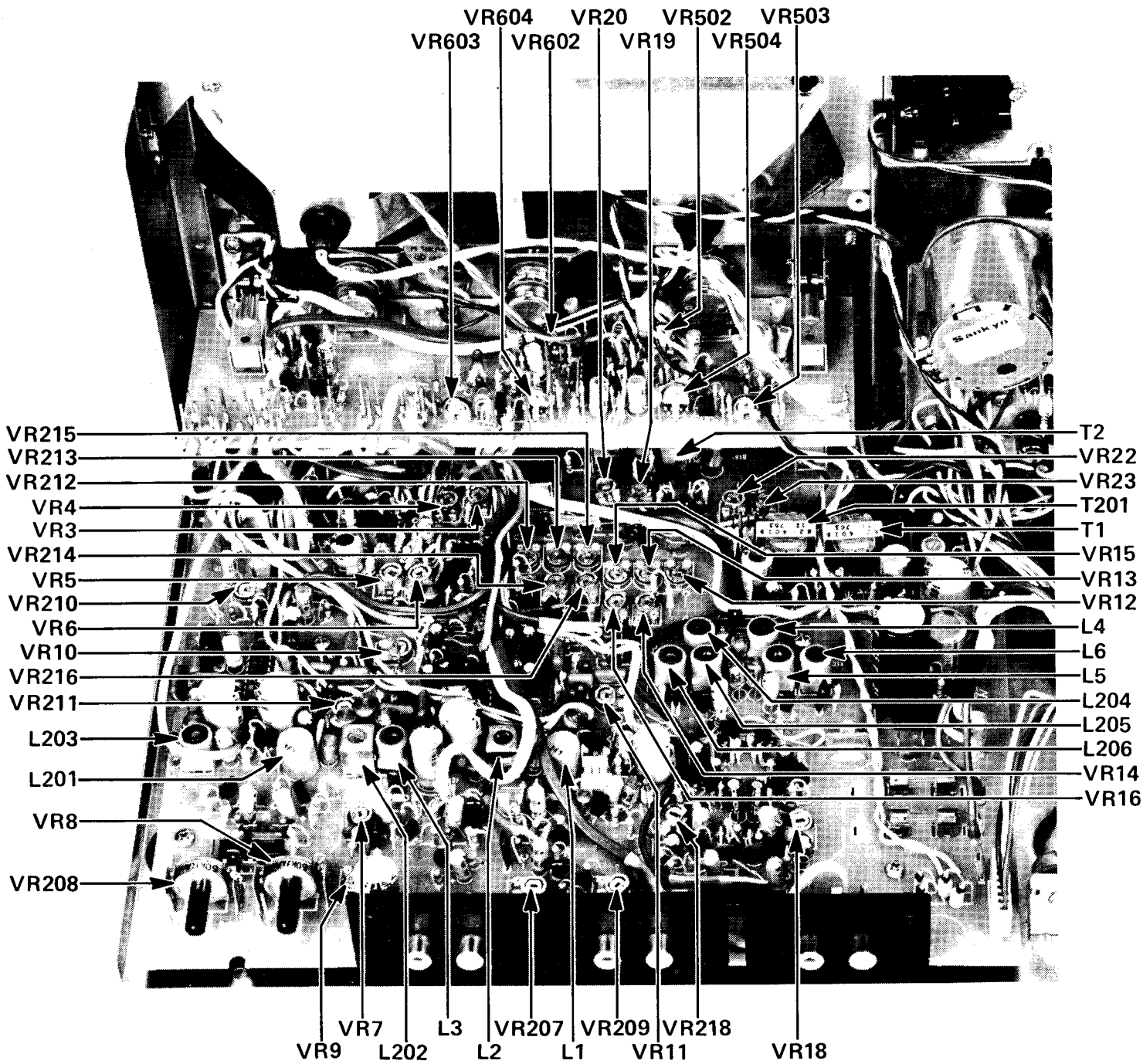


FIG D – PLAY/REC FREQUENCY CHARACTERISTIC



ALIGNMENT POINTS



1. All resistors are 1/4 watt, ± 5%, unless otherwise noted.
   Values are in ohms. k = 1000 M = 1000 k
2. All capacitor values are in MF unless otherwise noted. pF = MMF
3. DOLBY NR switch is in off position.
4. TEST TONE switch is in off position.
5. EQ switch is in low noise position.
6. BIAS switch is in low noise position.
7. RECORD MUTE switch is in off position.
8. TAPE MON switch is in source position.
9. SUBSONIC FILTER switch is in off position.

VOLTAGE CHART

AC 120V	Volume Control at Minimum
No Signal	Chassis Ground

IC ELEMENTS VOLTAGE CHART

IC1

PIN NO.	PLAY	REC
1	0V	0V
2	0V	0V
3	0V	0V
4	0V	0V
5	5.0V	0V
6	0V	5.0V
7	0V	0V
8	0V	0V
9	0V	0V
10	0V	0V
11	0V	0V
12	0V	5.0V
13	4.9V	0V
14	8.8V	8.8V

IC2, 202

PIN NO.	PLAY	REC
1	0.4V	0.4V
2	6.4V	6.4V
3	0.2V	0.2V
4	6.0V	6.0V
5	6.4V	6.4V
6	6.1V	6.0V
7	2.4V	2.4V
8	6.5V	6.5V
9	6.5V	6.4V
10	2.4V	2.4V
11	6.0V	6.0V
12	6.4V	6.4V
13	6.1V	6.0V
14	0.2V	0.2V
15	6.5V	6.4V
16	6.5V	6.5V
17	12.7V	12.7V
18	0V	0V

IC3

PIN NO.	PLAY	REC
1	0V	0V
2	0V	0V
3	0V	0V
4	0V	0V
5	0V	6.7V
6	0V	0V
7	0V	0V
8	0V	0V
9	0V	0V
10	0V	0V
11	0V	0V
12	0V	6.7V
13	0V	6.7V
14	15.2V	15.2V

IC501

PIN NO.	PLAY	REC
1	7.2V	7.2V
2	7.3V	7.2V
3	7.2V	7.2V
4	14.3V	14.2V
5	0.5V	0.5V
6	0V	0V
7	13.0V	13.0V
8	13.0V	13.0V
9	0V	0V
10	0.5V	0.5V
11	0V	0V
12	7.1V	7.0V
13	7.0V	7.1V
14	7.0V	7.0V

IC901

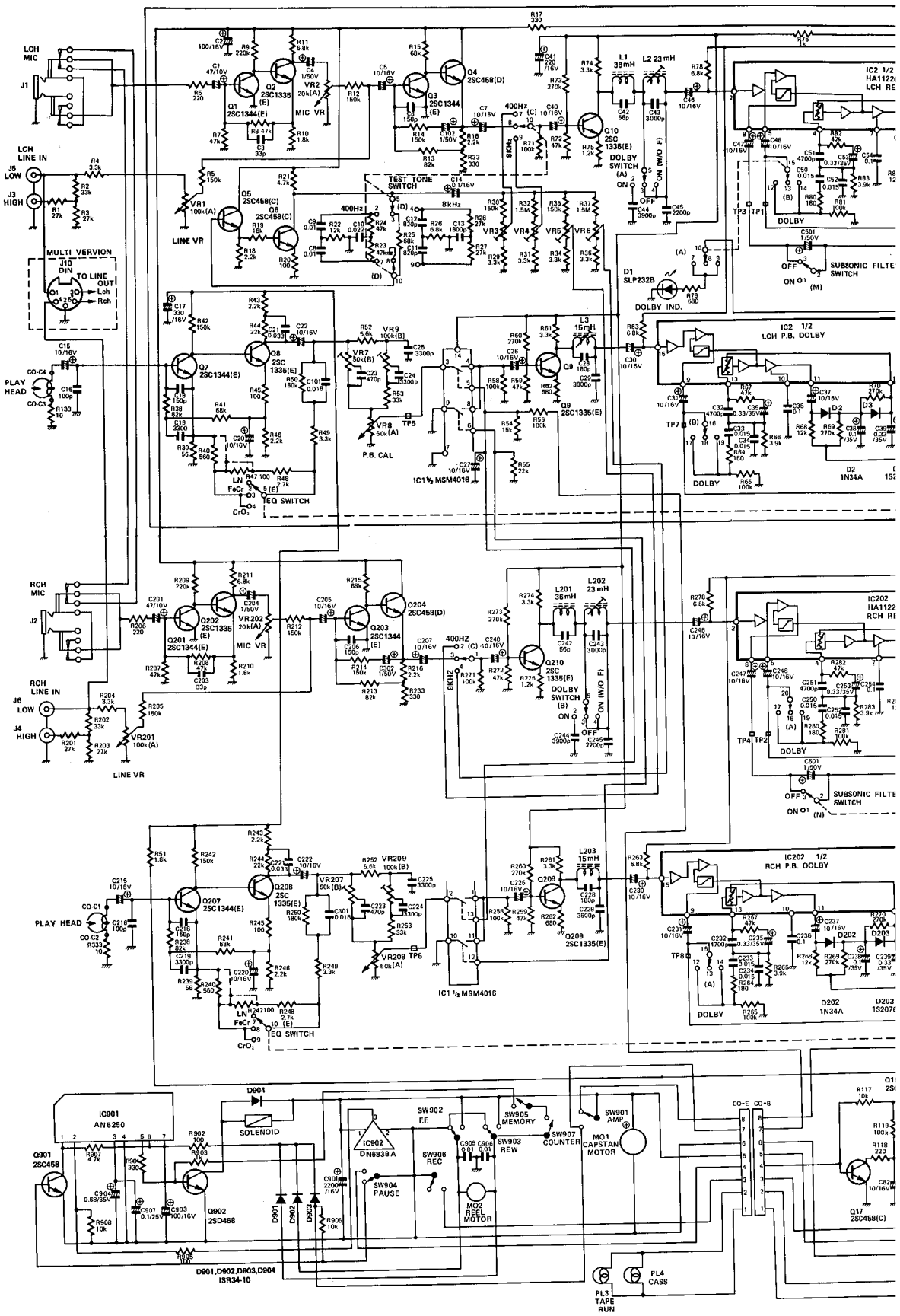
PIN NO.	PLAY	STOP
1	14V	0V
2	—	—
3	—	—
4	0V	0V
5	0V	0V
6	14V	0V
7	14V	0V

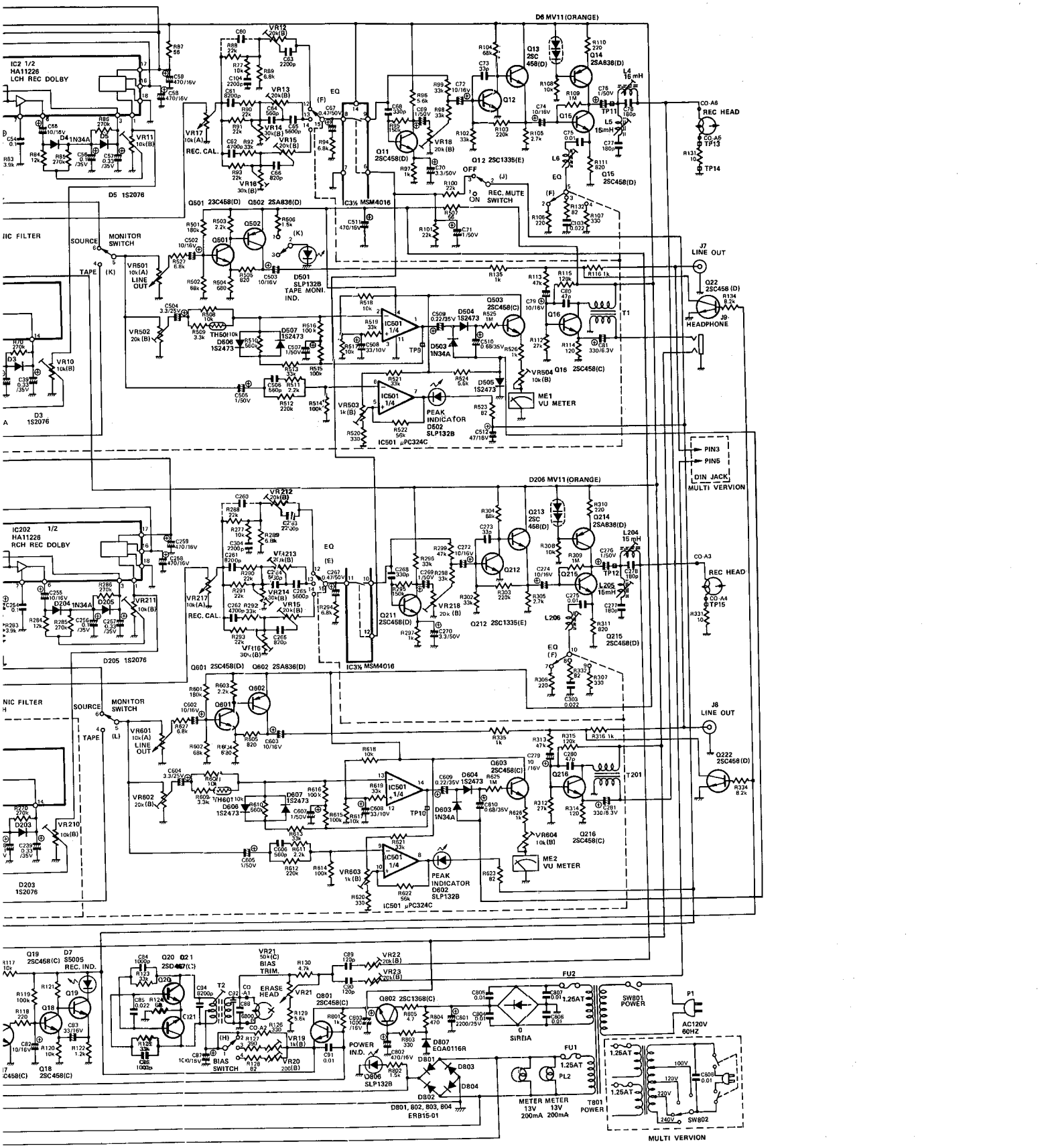
TRANSISTOR ELEMENTS VOLTAGE CHART

	BASE		COLLECTOR		EMITTER	
	PLAY	REC	PLAY	REC	PLAY	REC
Q1, 201	0.5V	0.5V	2.0V	2.0V	0V	0V
Q2, 202	2.0V	2.0V	7.2V	7.2V	1.3V	1.3V
Q3, 203	0.6V	0.6V	5.0V	5.0V	0V	0V
Q4, 204	5.0V	5.0V	12.4V	12.3V	4.3V	4.3V
Q5	1.7V	1.7V	12.4V	12.3V	1.1V	1.1V
Q6	0.9V	0.9V	1.9V	1.9V	0.2V	0.2V
Q7, 207	0.6V	0.6V	1.2V	1.2V	0.004V	0.004V
Q8, 208	1.2V	1.2V	7.0V	7.9V	0.6V	0.6V
Q9, 209	1.1V	1.1V	5.9V	5.9V	0.6V	0.6V
Q10, 210	1.1V	1.1V	5.9V	5.9V	0.6V	0.6V
Q11, 211	2.5V	2.5V	3.6V	3.6V	2.0V	2.0V
Q12, 212	0.6V	0.6V	5.1V	5.1V	0V	0V
Q13, 213	5.1V	5.1V	15.0V	14.9V	4.4V	4.4V
Q14, 214	13.9V	13.8V	9.8V	9.8V	14.5V	14.4V
Q15, 215	2.5V	2.5V	9.8V	9.8V	1.9V	1.9V
Q16, 216	2.0V	2.0V	14.5V	14.4V	1.4V	1.4V
Q17	0V	0.7V	0V	0.006V	0V	0V
Q18	0V	0.3V	0V	10.3V	0V	0V
Q19	0V	10.3V	0V	11.8V	0V	9.8V
Q20	0V	2.4V	0V	5.9V	0V	1.7V
Q21	0V	2.4V	0V	5.9V	0V	1.7V
Q501, 601	3.7V	3.6V	13.1V	13.0V	3.3V	3.3V
Q502, 602	13.1V	13.0V	6.7V	6.7V	13.8V	13.7V
Q503, 603	0.1V	0.1V	13.8V	13.7V	0.03V	0.03V
Q801	0V	14.1V	14.9V	14.9V	0V	13.3V
Q802	15.5V	15.4V	20.3V	19.8V	14.9V	14.9V

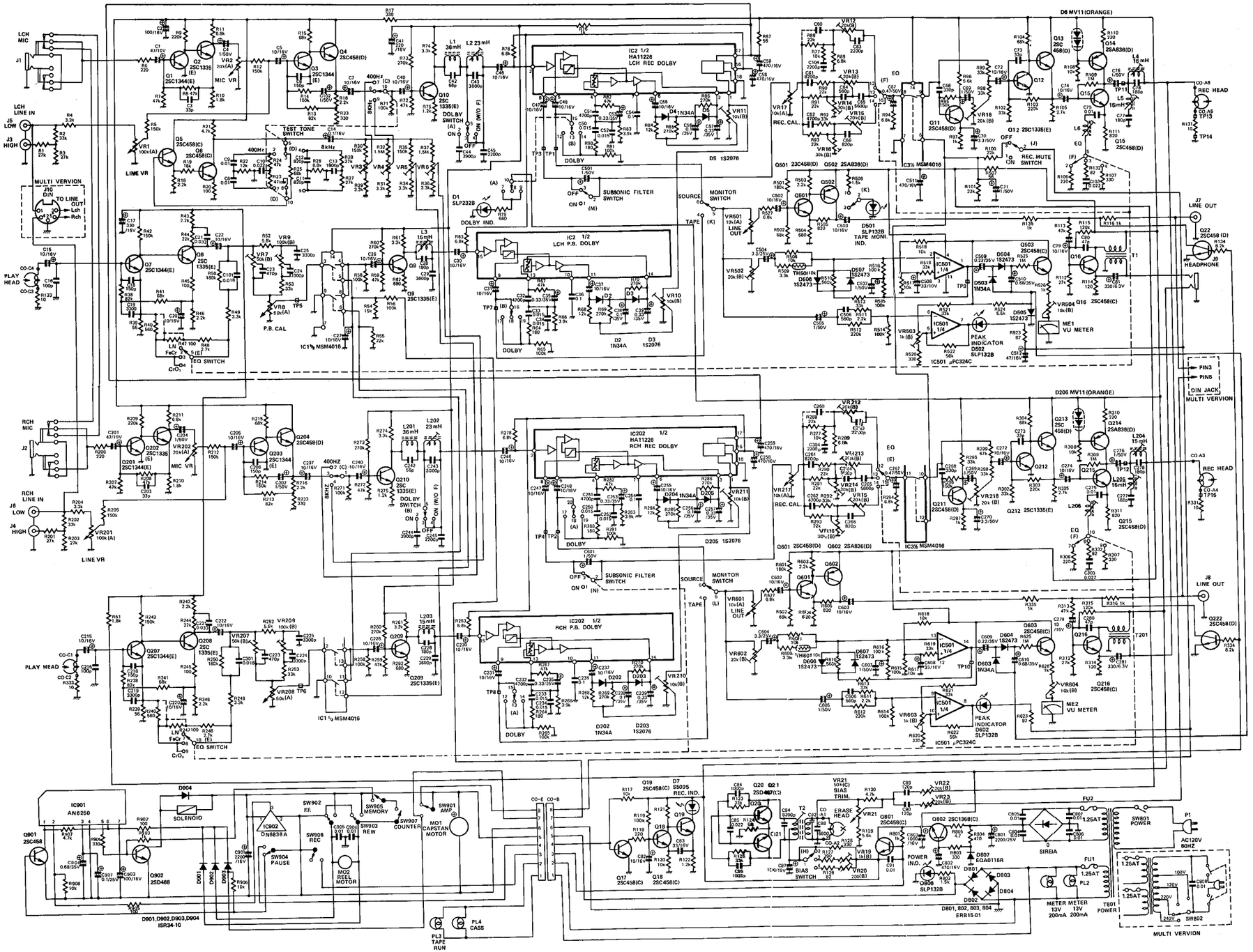
	BASE		COLLECTOR		EMITTER	
	PLAY	STOP	PLAY	STOP	PLAY	STOP
Q901	0V	0V	14V	0V	0V	0V
Q902	0V	0V	14V	14V	0V	0V

SCHEMATIC DIAGRAM



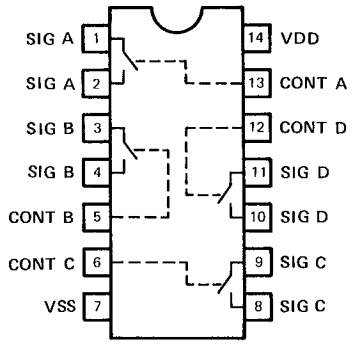

D6 MV11(ORANGE)
IC2 1/2 HA11226 LCH REC DOLBY
EQ (F)
IC3½ MSM4016
Q501 2SC458(D) Q502 2SA838(D)
SOURCE MONITOR SWITCH
TAPE (K)
LINE OUT
REC. CAL.
REC. MUTE SWITCH
ON OFF
D5 1S2076
IC501 μPC324C
PEAK INDICATOR D602 SLP132B
ME1 VU METER
J7 LINE OUT
J9 HEADPHONE
REC HEAD
PIN3
PIN5
DIN JACK
MULTI VERVION
D206 MV11(ORANGE)
IC202 1/2 HA11226 RCH REC DOLBY
D205 1S2076
Q601 2SC458(D) Q602 2SA836(D)
IC3½ MSM4016
IC501 μPC324C
PEAK INDICATOR D602 SLP132B
ME2 VU METER
J8 LINE OUT
D203 1S2076
Q19 2SC458(C) D7 S5005 REC. IND.
Q18 2SC458(C)
Q20 Q21 2SD467(K)
BIAS TRIM.
ERASE HEAD
BIAS SWITCH
POWER IND.
Q806 SLP132B
D801, 802, 803, 804 ERB15-01
FU2 1.25AT
FU1 1.25AT
SW801 POWER
AC120V 60HZ
SIRE/A
PL2
METER 13V 200mA
METER 13V 200mA
T801 POWER
100V
120V
220V
240V
SW802
MULTI VERVION

SCHEMATIC DIAGRAM



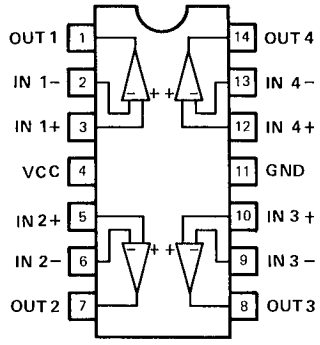
IC CONNECTION VIEW/BLOCK DIAGRAM

IC1 IC3
MSM 4016



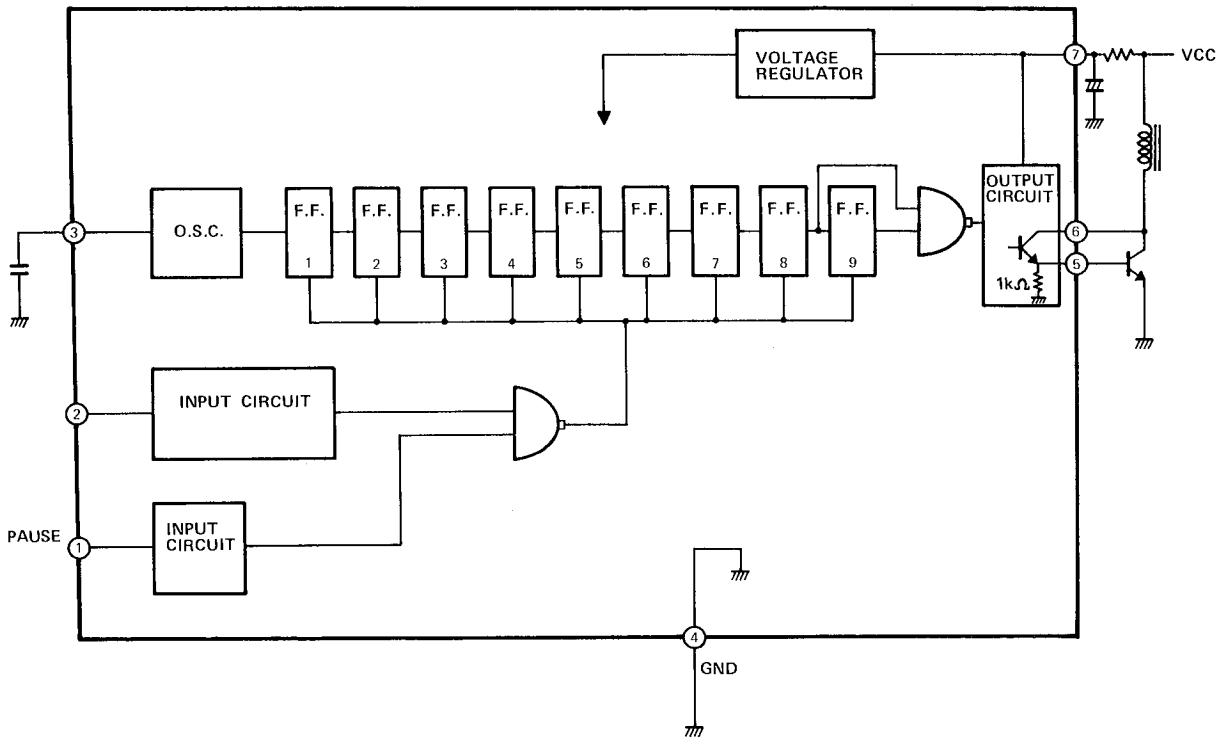
(TOP VIEW)

IC 501
μPC 324C



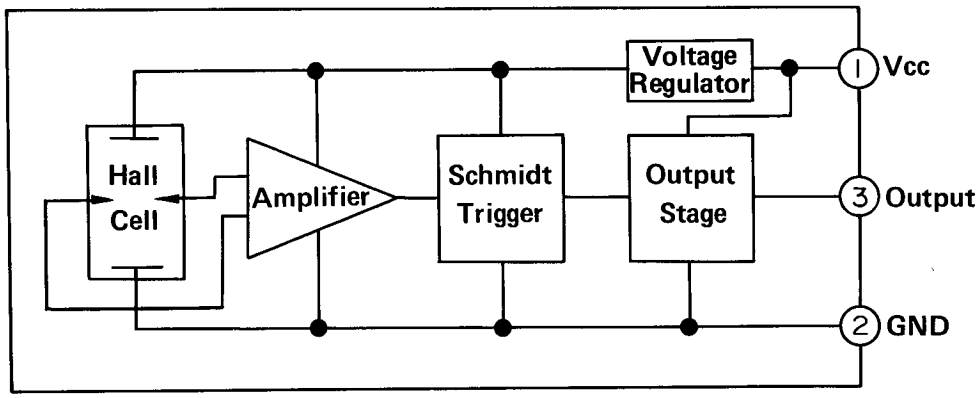
(TOP VIEW)

IC901
AN6250

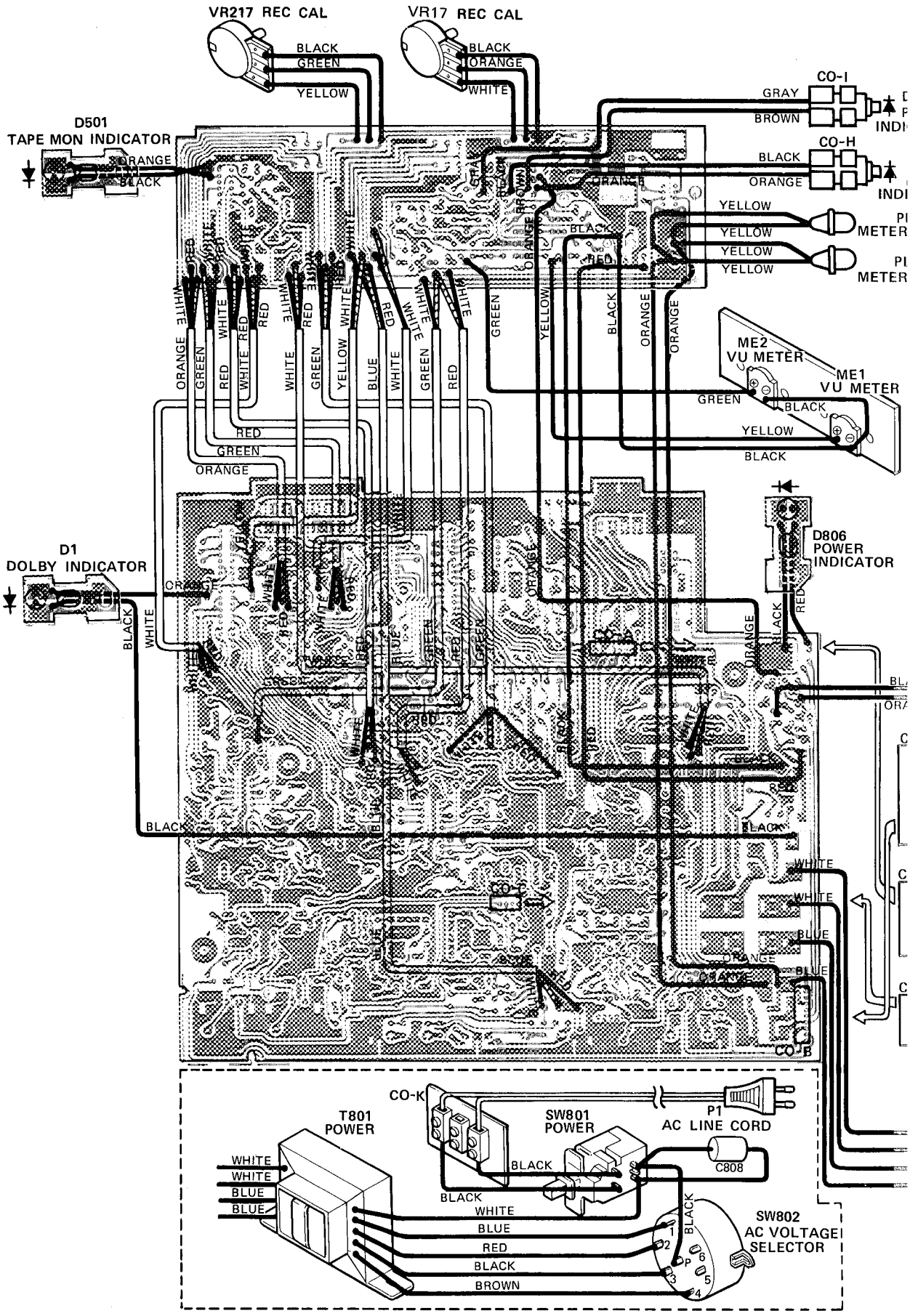


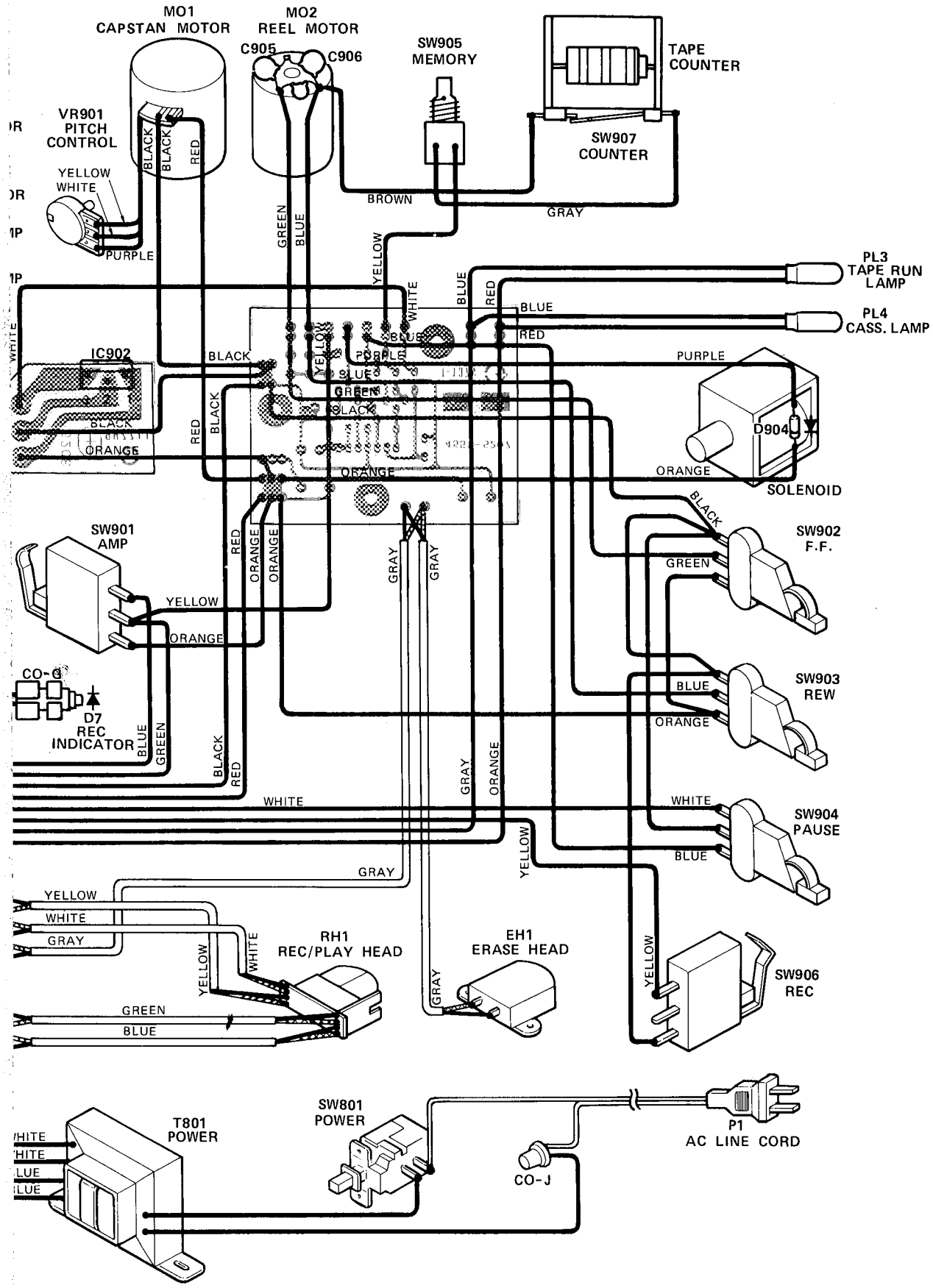
IC 902

DN6838

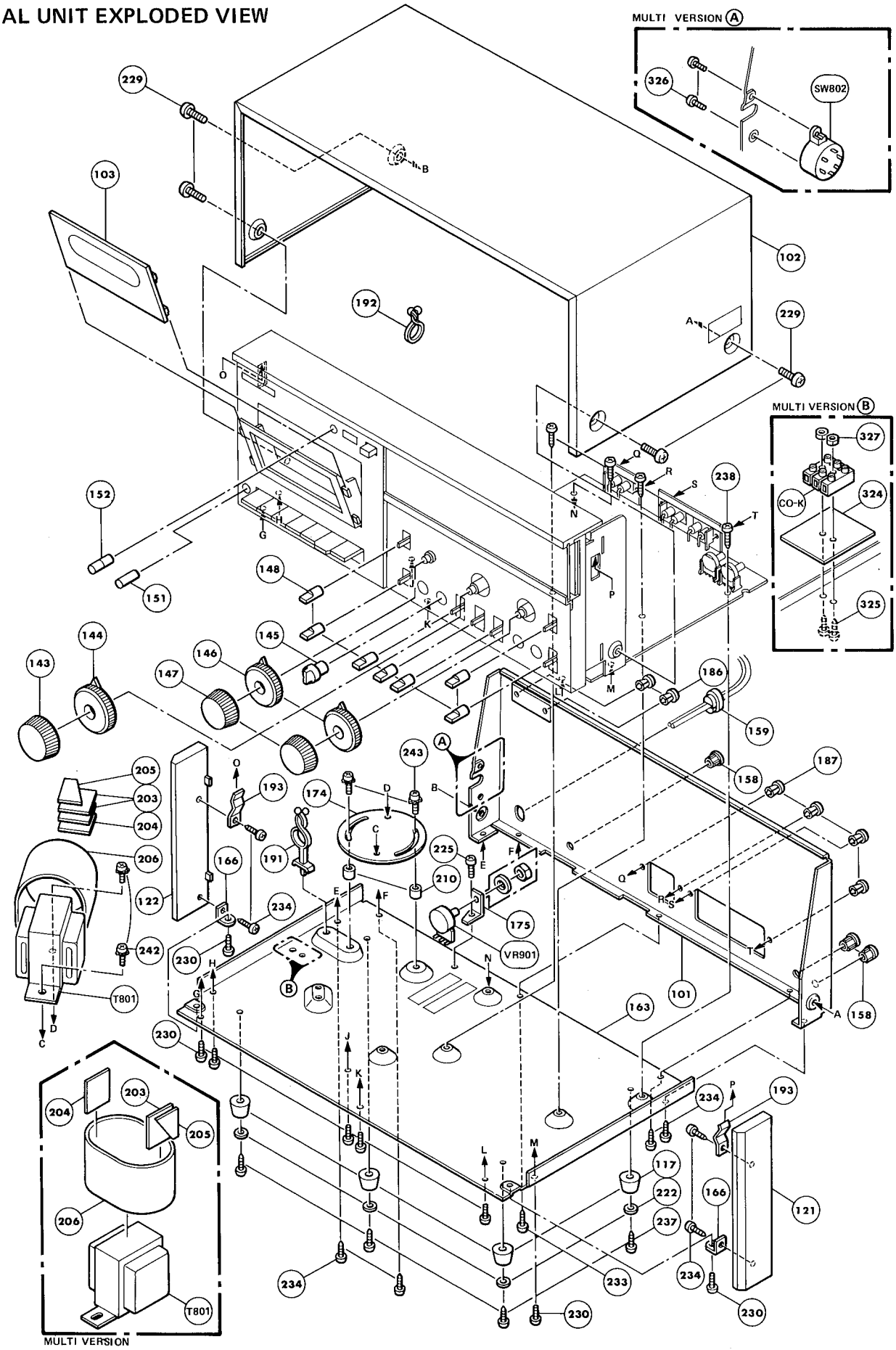


WIRING DIAGRAM

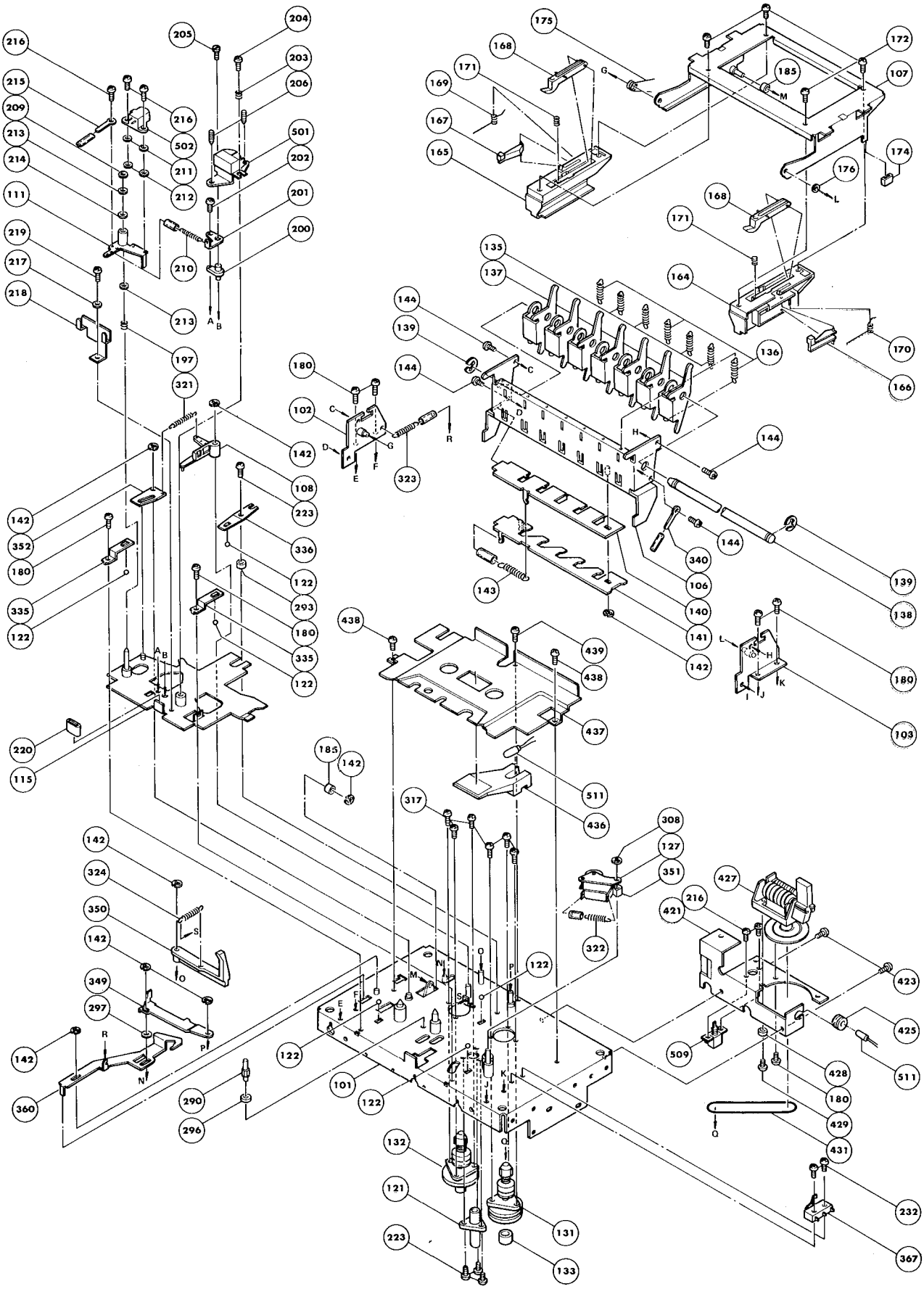



MO1
CAPSTAN MOTOR
MO2
REEL MOTOR
C905
C906
SW905
MEMORY
TAPE
COUNTER
SW907
COUNTER
VR901
PITCH
CONTROL
YELLOW
WHITE
PURPLE
BLACK
BLACK
RED
GREEN
BLUE
BROWN
GRAY
YELLOW
PL3
TAPE RUN
LAMP
PL4
CASS. LAMP
BLUE
RED
WHITE
IC902
BLACK
ORANGE
PURPLE
D904
SOLENOID
SW901
AMP
SW902
F.F.
SW903
REW
SW904
PAUSE
CO-G
D7
REC
INDICATOR
RH1
REC/PLAY HEAD
EH1
ERASE HEAD
SW906
REC
T801
POWER
SW801
POWER
CO-J
P1
AC LINE CORD

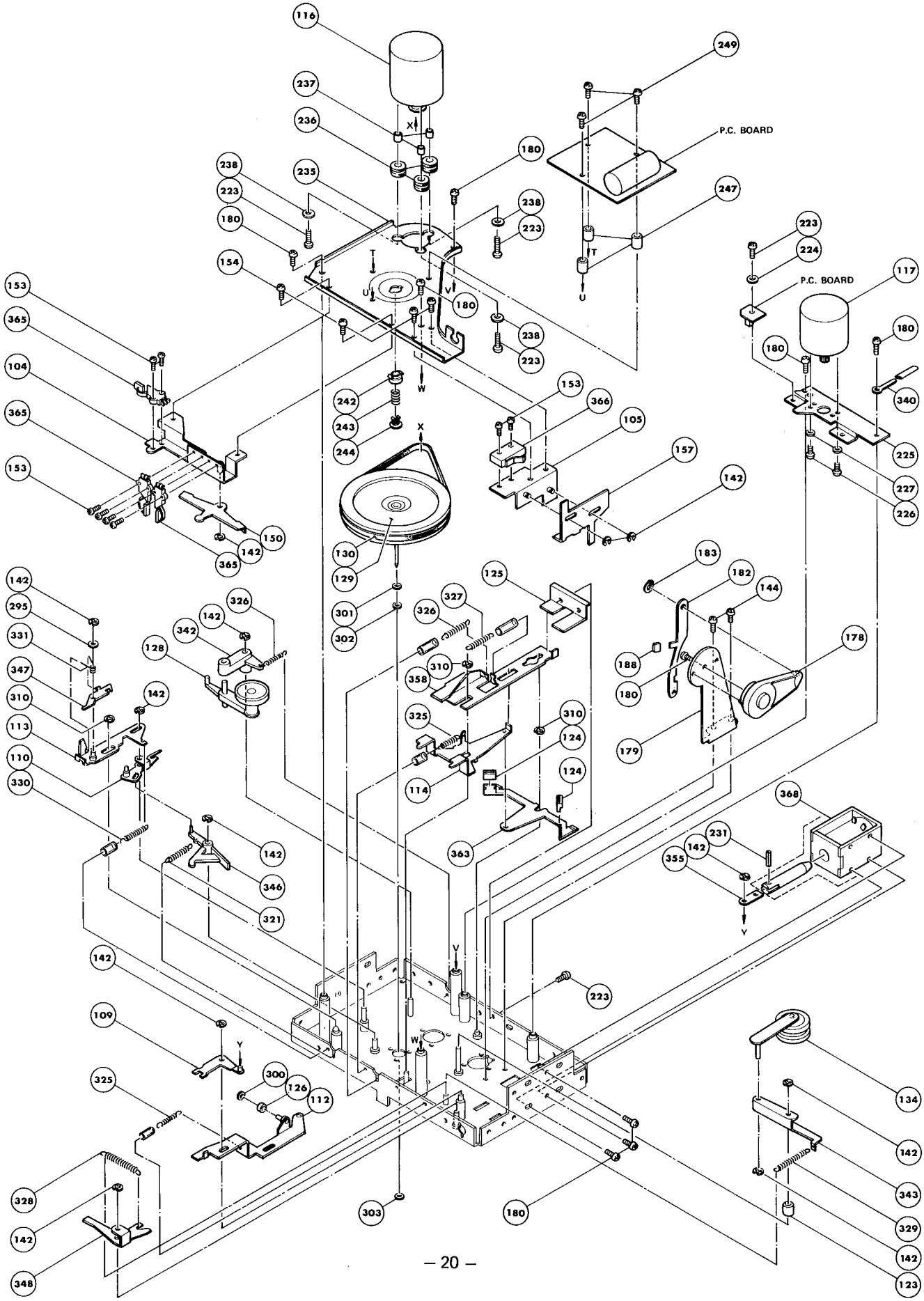
GENERAL UNIT EXPLODED VIEW



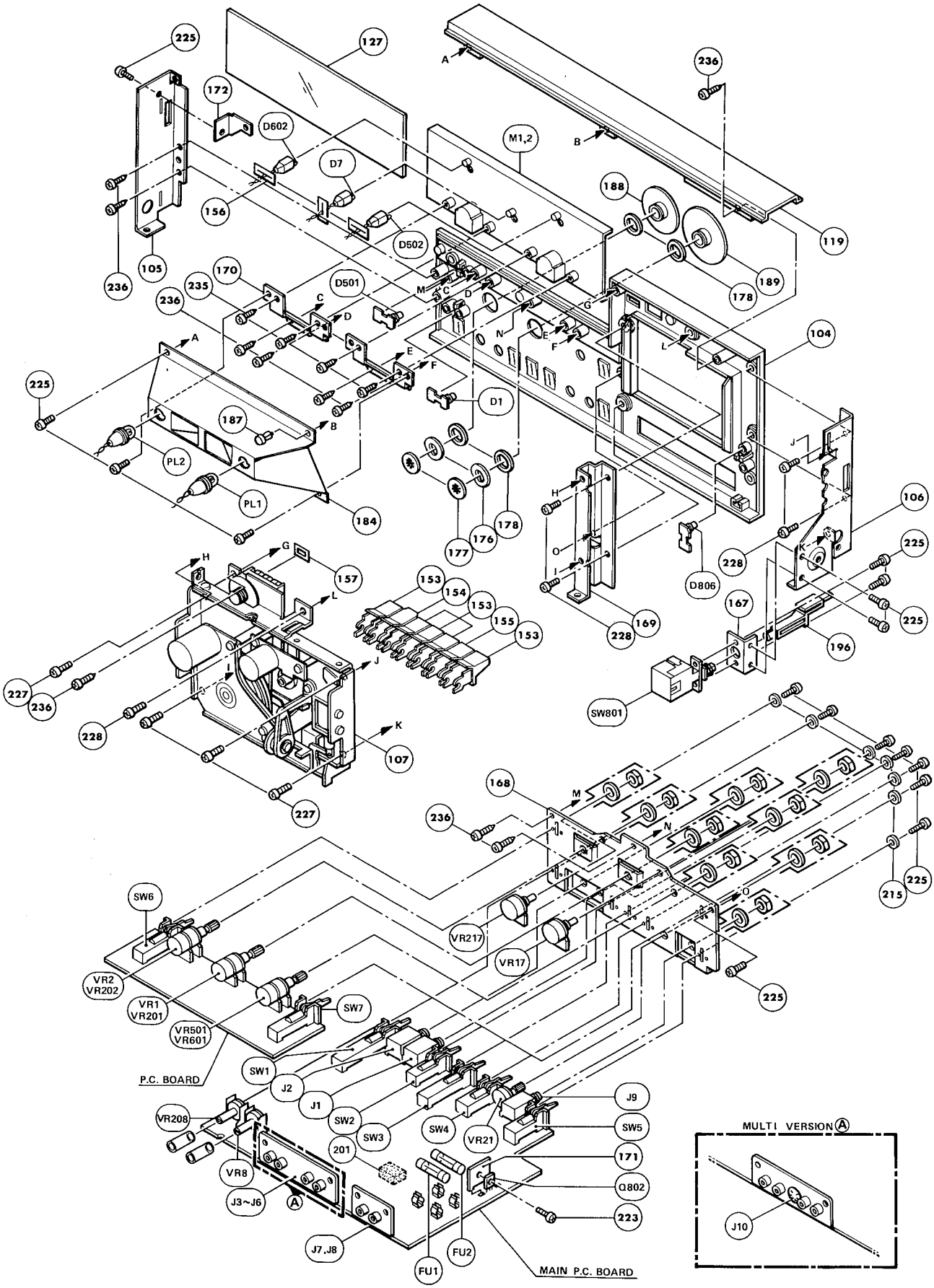
CASSETTE TAPE DECK MECHANICAL EXPLODED VIEW



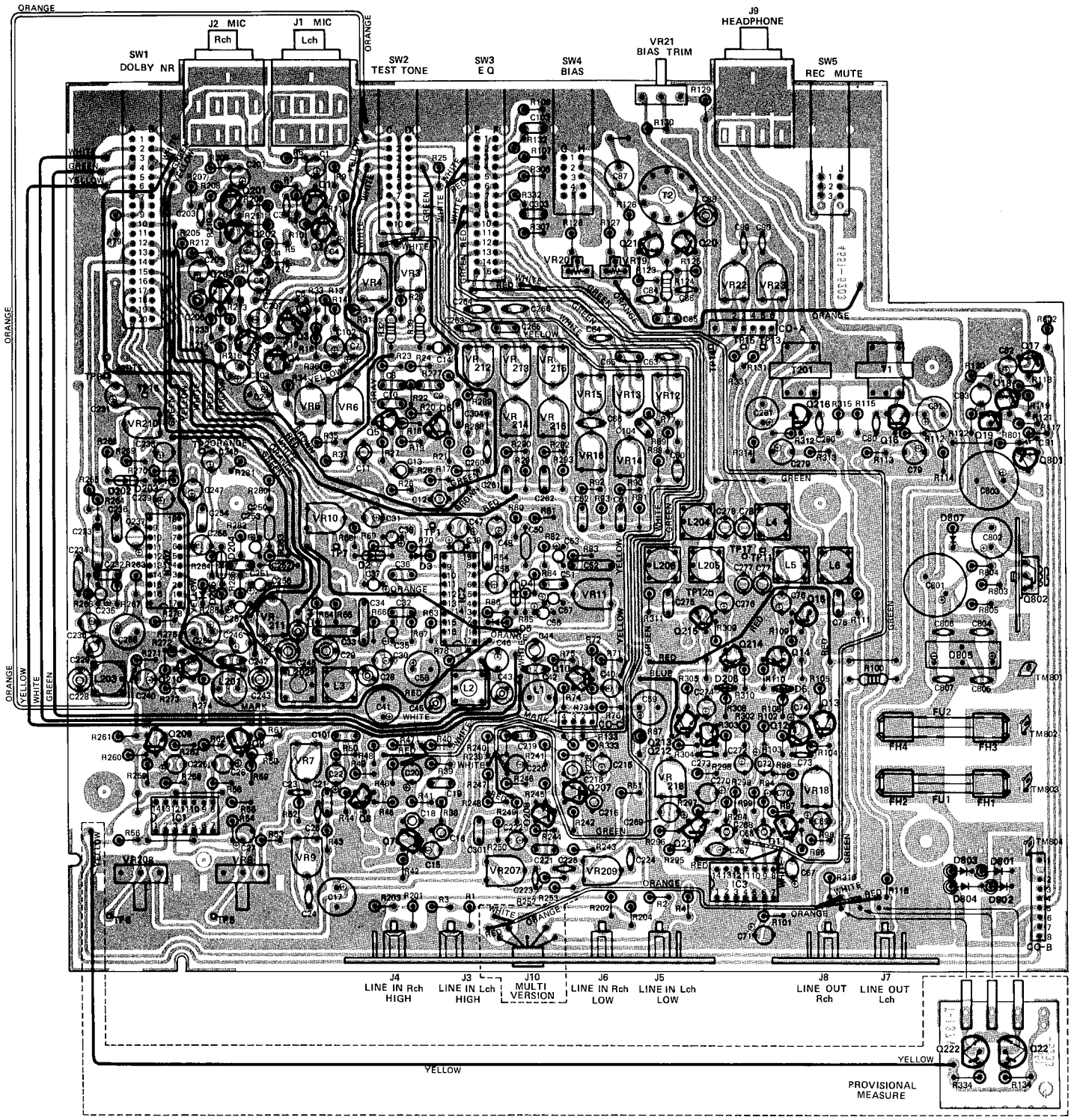
CASSETTE TAPE DECK MECHANICAL EXPLODED VIEW



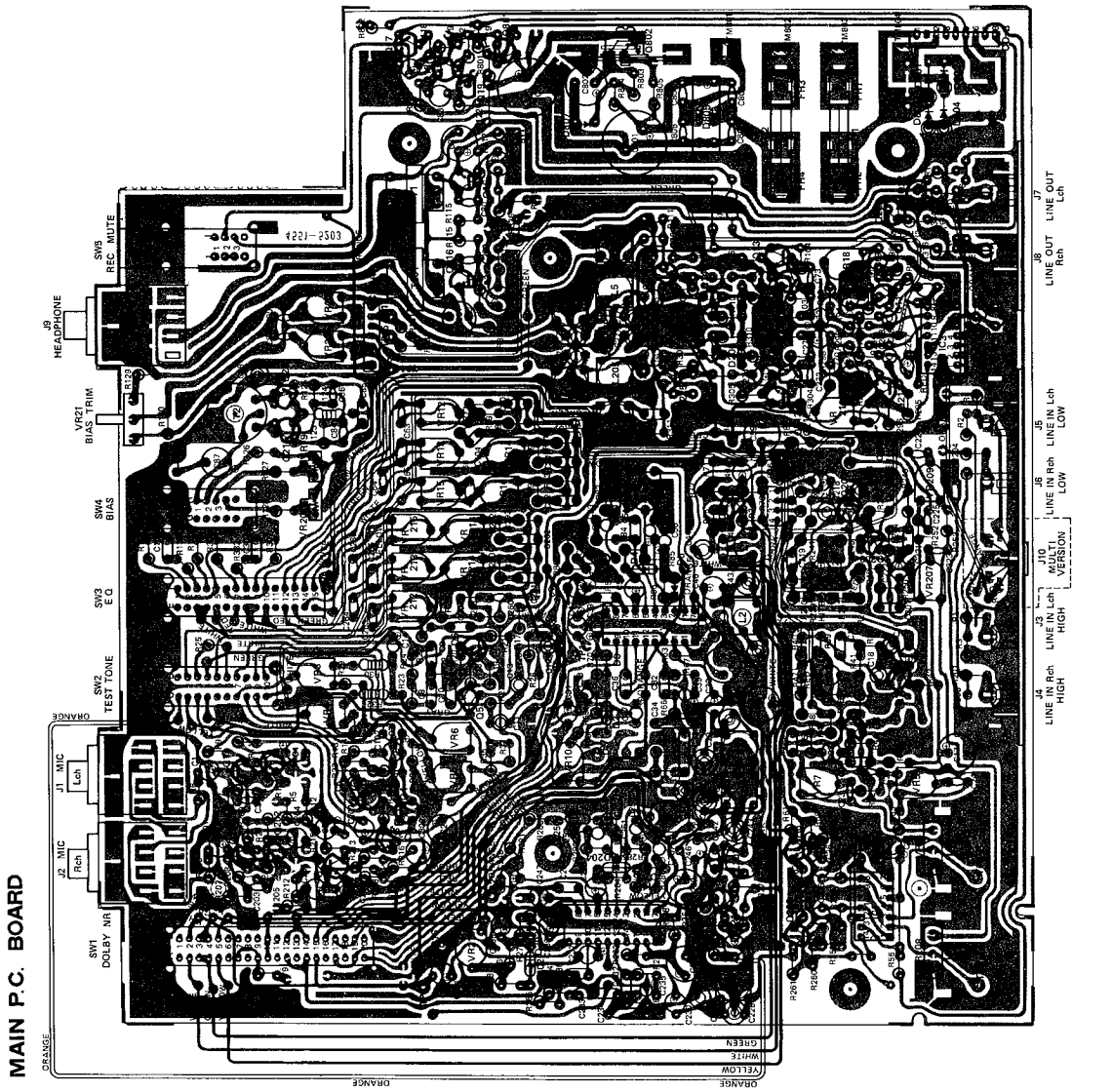
CASSETTE TAPE DECK MECHANICAL EXPLODED VIEW



PROVISIONAL MAIN PC BOARD



MAIN PC BOARD



MAIN PC BOARD

REF. NO.	H/K PART NO.	DESCRIPTION
VARIABLE RESISTORS		
VR3, 4, 5, 6, 10 11, 210, 211	23535566	10 k ohm, Test Tone, Playback Dolby Level, Rec. Dolby Level
VR7, 207	23535568	50 k ohm, Playback EQ. High
VR8, 208	23536091A	50 k ohm, Playback Cal.
VR9, 209	23536092A	100 k ohm, Playback EQ. Middle
VR12, 13, 15, 18 22, 23, 212, 213, 215, 218	23535654	20 k ohm, Fe/FeCr/Cr02 Rec. EQ. High, Phase Compensation, Rec. Bias Level
VR14, 16, 214, 216	23535938	30 k ohm, FeCr/Cr02 Rec. Level
VR19	23536093A	1 k ohm, FeCr Rec. Bias Level
VR20	23536094A	200 ohm, Cr02 Rec. Bias Level
VR21	23536095A	50 k ohm, Bias Trim
CAPACITORS, ELECTROLYTIC		
C1, 201	31835662	47MF ± 20% 10V
C2, 87	31835718	100MF + 50% −10% 16V
C4, 69, 71, 76, 102 204, 269, 276, 302	31835574	1MF + 50% −10% 50V
C5, 14, 30, 46, 205 214, 230, 246	31835584	10MF ± 20% 16V
C7, 20, 22, 26, 27, 31, 37, 40, 47, 48, 55, 72, 74, 79, 82, 207, 220, 222, 226, 231, 237, 240, 247, 248, 255, 272, 274, 279	31835573	10MF + 50% −10% 16V
C17	31835571	330MF + 50% −10% 16V
C35, 39, 53, 57, 235, 239, 253, 257	30735719	0.33MF ± 20% 35V Tantalum
C38, 56, 238, 256	30735719	0.1 MF ± 20% 35V Tantalum
C41	31835577	220MF + 50% −10% 16V
C58, 59, 258, 259 802	31835720	470MF + 50% −10% 16V
C67, 267	30731309	0.47MF ± 20% 35V Tantalum
C70, 270	31836096A	3.3 MF + 50% −10% 50V
C81, 281	31835587	330MF + 50% −10% 6.3V
C83	31835914	33MF ± 20% 16V
C801	31835723	2200MF + 50% −10% 25V
C803	31835618	1000MF + 50% −10% 16V
TRANSISTORS		
IC1, 3	43136097A	Integrated Circuit, MSM4016 Muting
IC2, 202	43135724	Integrated Circuit, HA11226 Rec./Play Dolby
Q1, 3, 7, 201, 203	43028535	2SC1344(E) Mic. Amp., Mix Amp., Playback EQ. Amp.
Q2, 8, 9, 10, 12, 202, 208, 209, 210, 212	43025972	2SC1335(F) Mic. Amp., Playback EQ. Amp., Playback Dolby Pre Amp., Rec. Dolby Pre Amp., Rec. Amp.

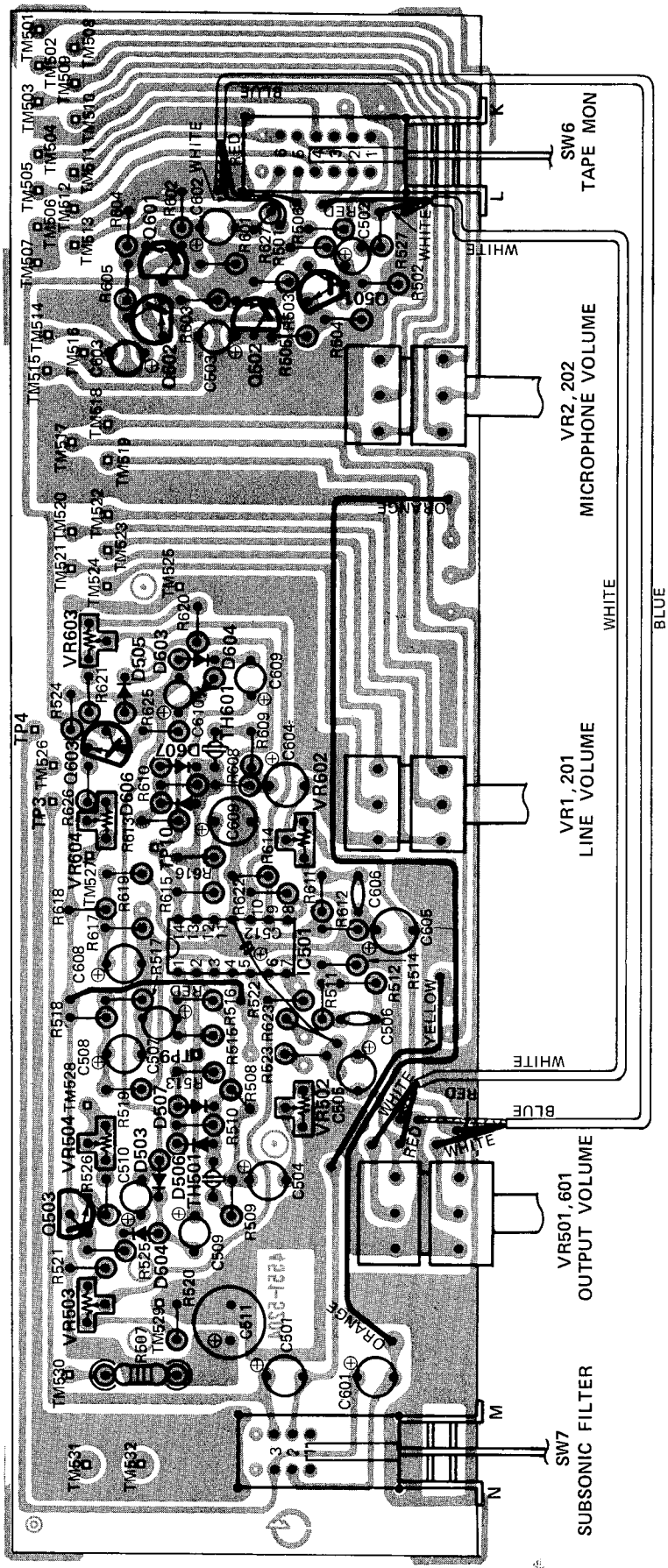
MAIN PC BOARD

REF. NO.	H/K PART NO.	DESCRIPTION
TRANSISTORS (Cont)		
Q4, 11, 13, 15, 16 22, 204, 211, 213, 215, 216, 222	43028518	2SC458(D) Mix Amp., Headphone Amp., Muting
Q5, 6, 17, 18, 19, 801	43031872	2SC458(C) Test Tone Osc., Rec. Indicator, Voltage Regulator
Q14, 214	43036098A	2SA836(D) Current Regulator
Q20, 21	43035725	2SD467(C) Rec. Bias Osc.
Q802	43035727	2SC1368(C) Voltage Regulator
DIODES		
D2, 4, 202, 204	41528591	1N34A Rectifier
D3, 5, 203, 205	41028593	1S2076 Rectifier
D6, 206	38128541	Varistor, MV11 Bias Compensation
D801, 802, 803, 804	41035729	ERB15-01 Rectifier
D805	42136099A	Silicon Bridge, SIRBA Rectifier
D807	42036100A	Zener, EQA0116R 16.0 ± 0.8V
COILS		
L1, 201	12035731	MPX Filter
L2, 202	12035732	MPX Filter
L3, 4, 5, 203, 204, 205	12035734	Rec. Bias Trap
L6, 206	12035733	Rec. Peaking
TRANSFORMERS		
T1, 201	10528554	Output
T2	11036101A	Rec. Bias Osc.
MISCELLANEOUS		
SW1	26536102A	Lever Switch, Dolby NR
SW2	26536103A	Lever Switch, Test Tone
SW3	26536104A	Lever Switch, EQ.
SW4	26535918	Lever Switch, Bias
SW5	26536105A	Lever Switch, Rec. Mute
J1, 2	65436106A	Jack, Mic.
J3, 4, 5, 6	65436107A	4-Pin Jack, Line In (High, Low)
J7, 8	65436108A	2-Pin Jack, Line Out
J9	65433684	Jack, Headphone
FU1, 2	25036109A	Fuse, 1.25AT

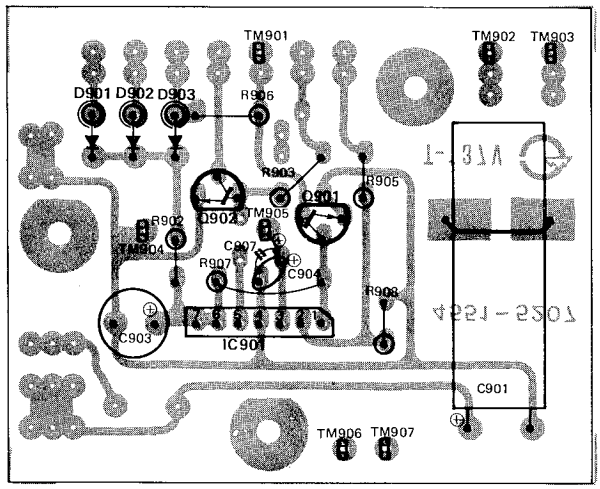
MAIN PC BOARD – MULTI VOLTAGE VERSION

J10	65436122A	5-Pin DIN Jack, Rec./Play
FU1, 2	25036123A	Fuse, 1.25AT

BOOST/METER/PEAK INDICATOR AMP PC BOARD



MAIN P.C. BOARD



BOOST/METER/PEAK INDICATOR AMP PC BOARD

REF. NO.	H/K PART NO.	DESCRIPTION
VARIABLE RESISTORS	(All resistors ± 5%, 1/4W carbon unless otherwise noted)	
VR1, 201	23536110A	100 k ohm, Line Volume
VR2, 202	23536111A	20 k ohm, Mic. Volume
VR501, 601	23536112A	10 k ohm, Output Volume
VR502, 602	23636113A	20 k ohm, Meter Level
VR503, 603	23536114A	1 k ohm, Peak Indicator
VR504, 604	23536115A	10 k ohm, Meter Level
CAPACITORS, ELECTROLYTIC		
C501, 505, 507 601, 605, 607	31835574	1MF +50% –10% 50V
C502, 503, 602, 603	31835573	10MF +50% –10% 16V
C504, 604	31835578	3.3MF +50% –10% 25V
C508, 608	31835941	33MF +50% –10% 10V
C509, 609	31835774	0.22MF ± 20% 35V Tantalum
C510, 610	30735721	0.68MF ± 20% 35V Tantalum
C511	31835720	470MF +50% –10% 16V
C512	31835582	47MF +50% –10% 16V
SEMICONDUCTORS		
Q501, 601	43028518	Transistor, 2SC458(D) Boost Amp.
Q502, 602	43036098A	Transistor, 2SA836(D) Boost Amp.
Q503, 603	43031872	Transistor, 2SC458(C) Meter Amp.
D503, 603	41528591	Diode, 1N34A Meter Current Rectifier
D504, 505, 506, 507 604, 606, 607	41035728	Diode, 1S2473 Meter Current Rectifier Voltage Shifter, Rectifier
TH501, 601	38036116A	Thermister, 41D26
MISCELLANEOUS		
SW6	26536117A	Lever Switch, Tape Monitor
SW7	26535737	Lever Switch, Subsonic Filter

MOTOR PC BOARD – AUTO STOP

REF. NO.	H/K PART NO.	DESCRIPTION
CAPACITORS, ELECTROLYTIC		
C901	31836015	2200MF +50% –10% 16V
C903	31835718	100MF +50% –10% 16V
SEMICONDUCTORS		
IC901	43136118A	Integrated Circuit, AN6250 Auto Stop
Q901	43028518	Transistor, 2SC458(D) Pause ON/Off
Q902	43036119A	Transistor, 2SD468(C) Solenoid Driver
D901, 902, 903	41036120A	Diode, 1SR34-10

CHASSIS PARTS LIST

REF NO.	H/K PART NO.	DESCRIPTION
GENERAL		
101	00136050A	Cabinet Back Assembly
102	00136051A	Cabinet Top Assembly
103	00136052A	Cassette Front Panel Assembly
104	00136053A	Cabinet Front Assembly
105	00136054A	Bracket Assembly, Cabinet Front Right
106	00136055A	Bracket Assembly, Cabinet Front Left
107	00136056A	Tape Deck Mechanical Assembly
117	62035544	Foot, Cabinet Bottom (X4)
119	60135684	Metal Strip, Cabinet Front Top
121	60135685	Metal Strip, Cabinet Front Right Side
127	60135687	Clear Panel, Meter Front
143	63235688	Knob, Line Level (R ch)
144	63235689	Knob, Line Level (L ch)
145	63235863	Knob, Bias Trim
146	63236057A	Knob, Output/Mic. (R ch) (X2)
147	63236058A	Knob, Output/Mic. (L ch) (X2)
148	63235552	Knob, Dolby, Test Tone, EQ, Bias, Rec. Mute, Tape Monitor, Subsonic Filter (X7)
151	63233663	Push Button, Power
152	25035909	Push Button, Memory
153	63236059A	Push Button, Play, Eject, F. F., Rew. Pause (X5)
154	63236060A	Push Button, Stop
155	63236061A	Push Button, Rec.
188	60736062A	Indicator, Mic.
189	60736063A	Indicator, Line
CASSETTE TAPE DECK		
107	00236064A	Cassette Compartment Cover Bracket Assembly
116	00236065A	Motor Assembly, Capstan
117	00236066A	Motor Assembly, Reel
121	01536067A	Bearing, Flywheel Capstan
126	01536068A	Pulley, Eject
127	01536069A	Pinch Roller
128	01536070A	Idler, Play
129	01536071A	Flywheel
130	01536072A	Belt, Flywheel
131	01536073A	Take-Up Reel Spindle
132	01536074A	Supply Reel Spindle
133	01536075A	Magnet, Auto Stop
134	01536076A	Clutch, F. F. and Rew.
178	01536077A	Clutch, Cassette Damper
365	01531839	Spring Switch, F. F., Rew., Pause (X3)
366	01528448	Push Switch, Rec.
367	01536078A	Push Switch, Muting
368	13036079A	DC Solenoid
427	01535896	Tape Counter
431	01535700	Belt, Tape Counter
501	01536080A	Rec./Play Head
502	01535703	Erase Head
509	25035910	Push Switch, Memory
511	46535715	Small Lamp, Tape Run, Cassette Light (X2)

CHASSIS PARTS LIST

REF. NO.	H/K PART NO.	DESCRIPTION
ELECTRICAL		
VR17, 217	23536085A	Variable Resistor, 10 k ohm, Rec. Cal.
VR901	23536086A	Variable Resistor, 500 ohm, Pitch Control
IC902	43136087A	Integrated Circuit, DN6838A Auto Stop Sensor
D1	46735749	Light Emitting Diode, SLP232B Dolby Indicator (Green)
D7	46735748	Light Emitting Diode, S5005 Rec. Indicator (Red)
D501, 502, 602 806	46735560	Light Emitting Diode, SLP132B Tape Monitor Indicator, Peak Indicator, Power Indicator (Red)
D904	41035705	Diode, Spark Killer
T801	10136088A	Transformer, Power
SW801	25035709	Push Switch, Power
SW901	01536089A	Push Switch, Amp.
SW902, 903, 904	01531839	Spring Switch, F. F., Rew., Pause
SW905	25035910	Push Switch, Memory
SW906	01528448	Push Switch, Rec.
MO1	00236065A	DC Motor Assembly, Capstan
MO2	00236066A	DC Motor Assembly, Reel
	13036079A	DC Solenoid
RH1	01536080A	Rec./Play Head
EH1	01535703	Erase Head
ME1, 2	46535714	Small Lamp, Meter 13V 200mA
PL3, 4	46535715	Small Lamp, Tape Run, Cass. 14V 50mA

CHASSIS PARTS LIST – MUTLI VOLTAGE VERSION

REF. NO.	H/K PART NO.	DESCRIPTION
MISCELLANEOUS		
T801	10136121A	Transformer, Power
SW801	25035635	Push Switch, Power
SW802	24031338	Rotary Switch, AC Voltage Selector

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.

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