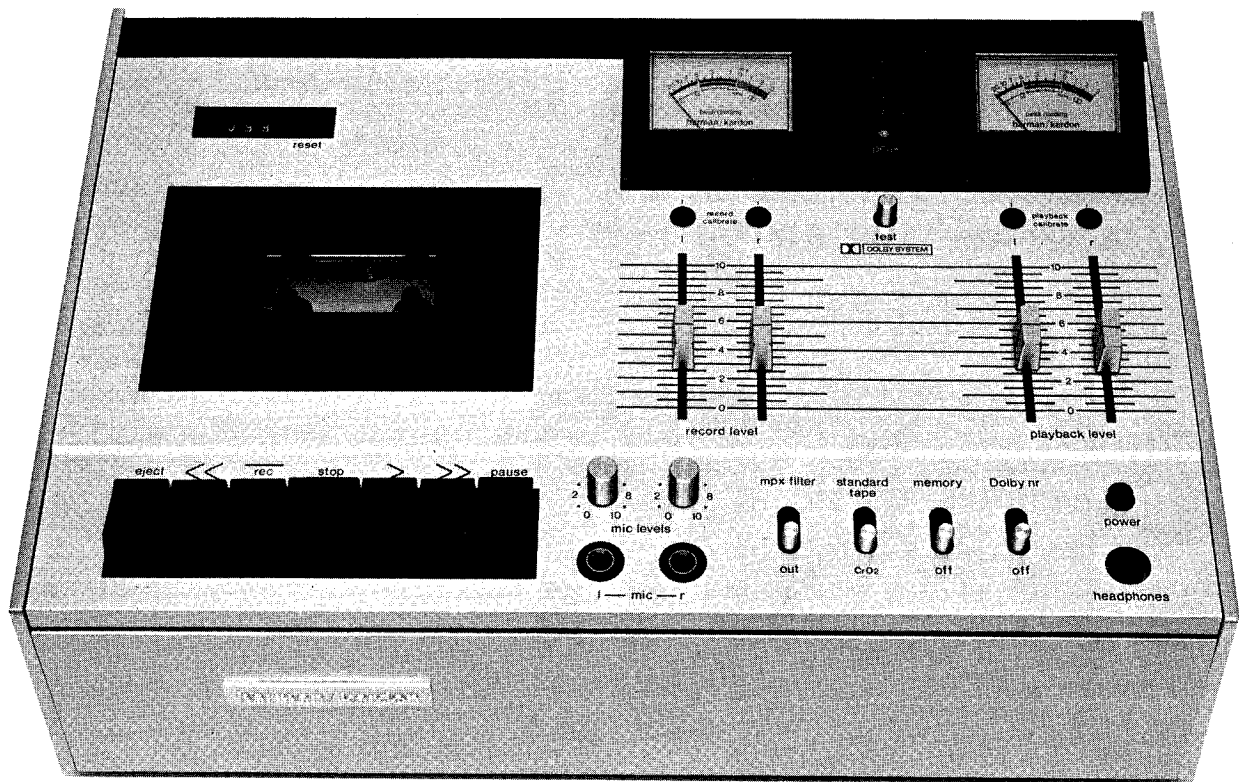


The Harman/Kardon Model **HK2000**

**Professional Stereo Tape
Cassette Deck
with Dolby Noise Reduction
System**

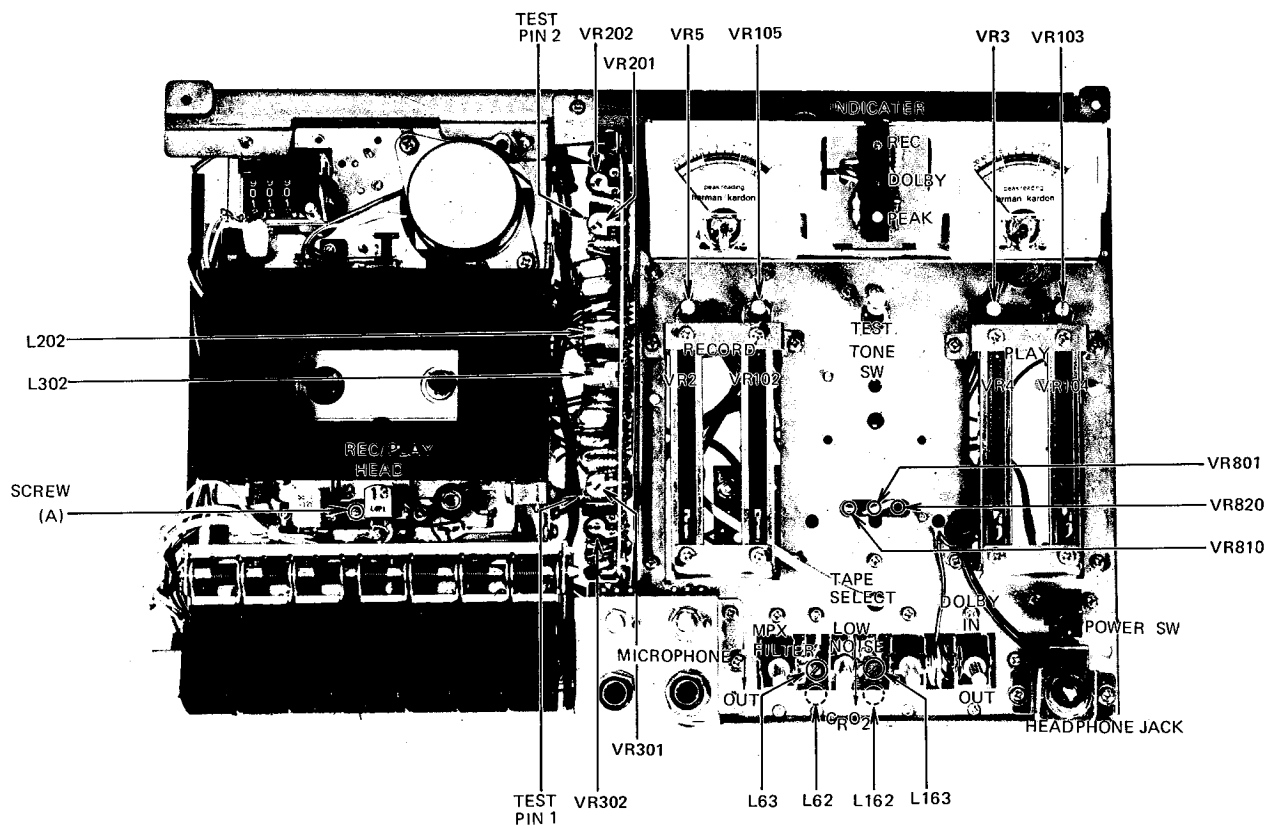
Technical Manual



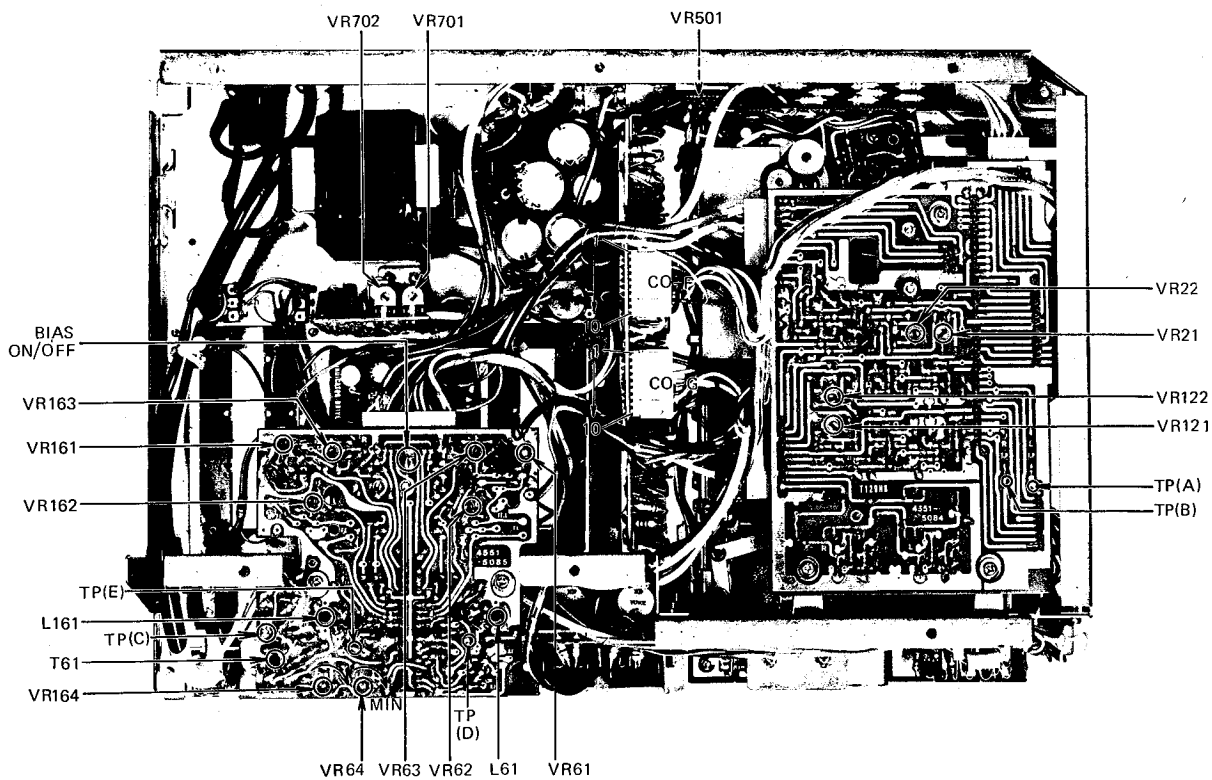
harman/kardon

ALIGNMENT POINTS

TOP VIEW



BOTTOM VIEW



EQUIPMENT REQUIRED

1. Audio Signal Generator 2. Frequency Counter 3. VTVM

Unless otherwise indicated, all electrical adjustments should be made under the following conditions.

1. Power Switch in the ON position. 5. Subsonic Filter Switch in the OUT position.
 2. Dolby NR Switch in the OUT position. 6. Playback Level at maximum position.
 3. Tape Selector Switch in the LOW NOISE position. 7. Power Supply Voltage at AC117V.
 4. MPX Filter Switch in the OUT position.

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
MPX FILTER	19kHz, 20mV to CO-F7 and CO-F10 (ground)	VTVM to CO-F3 and CO-F10 (ground)	<ul style="list-style-type: none"> ▪ Stop ▪ MPX Filter to IN position 	L202	Adjust for minimum reading (Both MPX Filter Switch to IN and OUT position)
	19kHz, 20mV to CO-G4 and CO-G1 (ground)	VTVM to CO-G8 and CO-G1 (ground)		L302	
DOLBY UNIT	5kHz, 0.7mV to CO-F7 and CO-G4 CO-F10 and CO-G1 to ground	VTVM to CO-F3 and CO-G8 CO-F10 and CO-G1 to ground	<ul style="list-style-type: none"> ▪ REC ▪ MPX Filter to IN position 	Level of Audio Signal Generator	1. Short FET Gate (Test Pin 1 and 2 on Dolby NR P.C. Board) 2. Stop Bias (Remove Short of BIAS ON/OFF Pattern on REC Amp P.C. Board) 3. A level of input signal which produces 17.5mV.
				<ul style="list-style-type: none"> ▪ REC ▪ MPX Filter to IN position ▪ Dolby NR to IN position 	VR202 VR302
	VR201 VR301	5. Remove short of FET Gate 6. Adjust for 2dB less (44mV) from Step 4 VTVM reading			
TEST TONE LEVEL	Internal Oscillator (Test Tone Switch to ON position)	VTVM to Output Jack (J4)	RECORD PAUSE	VR701(L)	Adjust for 1920mV on VTVM reading
		VTVM to Output Jack (J104)		VR702(R)	
METER LEVEL	Internal Oscillator (Test Tone Switch to ON position)	VTVM to Output Jack (J4)	RECORD PAUSE	VR810(L)	Adjust to obtain Meter Pointer at double D mark on VU METER (Confirm VTVM reading to 1920mV)
		VTVM to Output Jack (J104)		VR820(R)	
PLAYBACK LEVEL	400Hz DOLBY Test Tape (TEAC MTT-150) or equivalent	VTVM to Output Jack (J4)	PLAYBACK	VR3(L)	Adjust for 1920mV on VTVM reading
		VTVM to Output Jack (J104)		VR103(R)	(Confirm the Meter Pointer at double D mark on VU METER)
PLAYBACK AMPLIFIER EQUALIZATION	Test Tape (TEAC MTT-116U) or equivalent	VTVM to Output Jack (J4)	PLAYBACK	VR22(L) Mid VR21(L) Hi	Deviation of playback levels must not be outside the range of FIG. A in reference to 0dB (0dB = maximum playback level)
		VTVM to Output Jack (J104)		VR122(R) Mid VR121(R) Hi	

ELECTRICAL ADJUSTMENTS

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS	
RECORDING BIAS		FREQUENCY COUNTER to collector of Q63 (TP(C)) and ground	RECORD	T61	Adjust for 105kHz on Frequency Counter reading	
		VTVM to R21(L) (TP(A)) and ground	RECORD	L62(L)	1. Set the VR64,VR164 to minimum 2. Adjust for 8mV on VTVM reading	
		VTVM to R121(R) (TP(B)) and ground		L162(R)		
	6.3kHz, \approx 20mV Signal to Low Input Jack (J102) (0VU -20dB)		RECORD		3. Set the VR2,VR102 (REC LEVEL), VR5,VR105 (REC CALIBRATE) to mechanical center position. 4. Record the signal on LOW NOISE TAPE turning the VR64 from minimum to maximum.	
	Recorded Signal on Low Noise Tape	VTVM to Output Jack (J4)	PLAY-BACK		5. Note the maximum output VTVM reading.	
				VR64	6. Repeat Steps 4 & 5, and continue to increase Bias until output drops off 4.5dB from maximum.	
		VTVM to R21 (TP(A)) and ground	RECORD		7. Note the VTVM reading (This level is left channel optimum bias level)	
	6.3kHz, 20mV Signal to Low Input Jack (J2) (0VU -20dB)		RECORD		8. Set the VR64 to minimum 9. Record the signal on LOW NOISE TAPE turning the VR164 from minimum to maximum .	
	Recorded Signal on Low Noise Tape	VTVM to Output Jack (J104)	PLAY-BACK		10. Note the maximum output VTVM reading	
				VR164	11. Repeat Steps 9 & 10, and continue to increase Bias until output drops off 4.5dB from maximum.	
		VTVM to R121 (TP(B)) and ground	RECORD		12. Note the VTVM reading (This level is right channel optimum bias level)	
	BIAS FREQUENCY CONFIRM		FREQUENCY COUNTER to collector of Q63 (TP(C)) and ground	RECORD	T61	13. Adjust for 105kHz on Frequency Counter reading

ELECTRICAL ADJUSTMENTS

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
BIAS TRAP		VTVM to (-) terminal of C67(TP(D)) and ground	RECORD	L62(L) L63(L)	14. Adjust for minimum reading on VTVM
		VTVM to (-) terminal of C167(TP(E)) and ground		L162(R) L163(R)	
BIAS LEVEL		VTVM to R21(TP(A)) and ground	RECORD	VR64(L)	15. Adjust for VTVM reading of Step 7
		VTVM to R121(TP(B)) and ground		VR164(R)	16. Adjust for VTVM reading of Step 12
RECORDING LEVEL (LOW NOISE)	Internal Oscillator (Test Tone Switch to ON position)		RECORD		1. Record the signal on Low Noise Tape
	Recorded Signal		PLAY-BACK		2. Confirm the output level on VU METERS
				VR5(L) VR105(R)	3. Repeat Steps 1 and 2, and adjust to obtain the VU meter pointer at double D mark during playback
RECORDING LEVEL (CrO ₂)	Internal Oscillator (Test Tone Switch to ON position)		RECORD TAPE SELECTOR SWITCH to CrO ₂ position		1. Record the signal to CrO ₂ TAPE
	Recorded Signal		PLAY-BACK		2. Confirm the output level on VU meters
				VR61(L) VR161(R)	3. Repeat Steps 1 and 2, and adjust to obtain the VU meter pointers at double D mark during playback
RECORDING AMPLIFIER EQUALIZATION (LOW NOISE)	1kHz, 200mV Signal to LOW INPUT JACKS (J2 and J102)	VTVM to Output Jack (J4)	RECORD	VR2(L)	1. Adjust for 0VU on both VU meters
		VTVM to Output Jack (J104)		VR102(R)	
	From 20Hz to 20kHz, 6.3mV (0VU - 30dB) Signal to LOW INPUT JACKS (J2 and J102)		RECORD		2. Record the signal on Low Noise Tape

ELECTRICAL ADJUSTMENTS

ITEM	SIGNAL SOURCE	MEASUREMENT CONNECTION	MODE	ADJUST	INSTRUCTIONS
RECORDING AMPLIFIER EQUALIZATION (LOW NOISE) (continued)	Recorded Signal	VTVM to Output Jacks (J4 and J104)	PLAYBACK		3. Playback the recorded signal and note the VTVM readings
				VR62(L) Mid VR162(R) Hi L61(L) L161(R)	4. Repeat Steps 2 and 3 5. Deviation of playback level must not be outside the range of FIG. B in reference to 0dB (0dB = maximum playback level)
Repeat RECORDING LEVEL (LOW NOISE) Adjustments					
RECORDING AMPLIFIER EQUALIZATION (CrO ₂)	From 20Hz to 20kHz, 6.3 mV (0VU - 30dB) Signal to LOW INPUT JACKS (J2 and J102)		RECORD CrO ₂ position		1. Record the signal to CrO ₂ Tape
	Recorded Signal	VTVM to Output Jacks (J4 and J104)	PLAYBACK		2. Playback the recorded signal and note the VTVM readings
				VR63(L) VR163(R)	3. Repeat Steps 1 and 2 4. Deviation of playback level must not be outside the range of FIG. B in reference to 0dB (0dB = maximum playback level)
Repeat RECORDING LEVEL (CrO ₂) Adjustments					
PEAK LEVEL INDICATOR	1kHz, 200mV (0VU +3.5dB) Signal to LOW INPUT JACKS (J2 and J102)		RECORD	VR801	1. Adjust to light peak indicator at +3.5dB 2. Adjust to not light up when the input level decreases 0.5dB

FIGURE A — PLAYBACK FREQUENCY CHARACTERISTICS

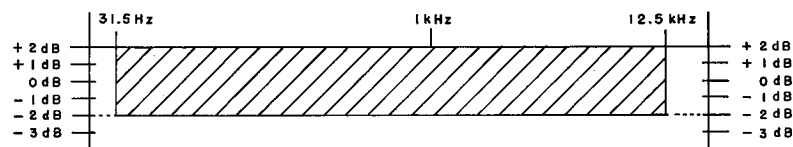
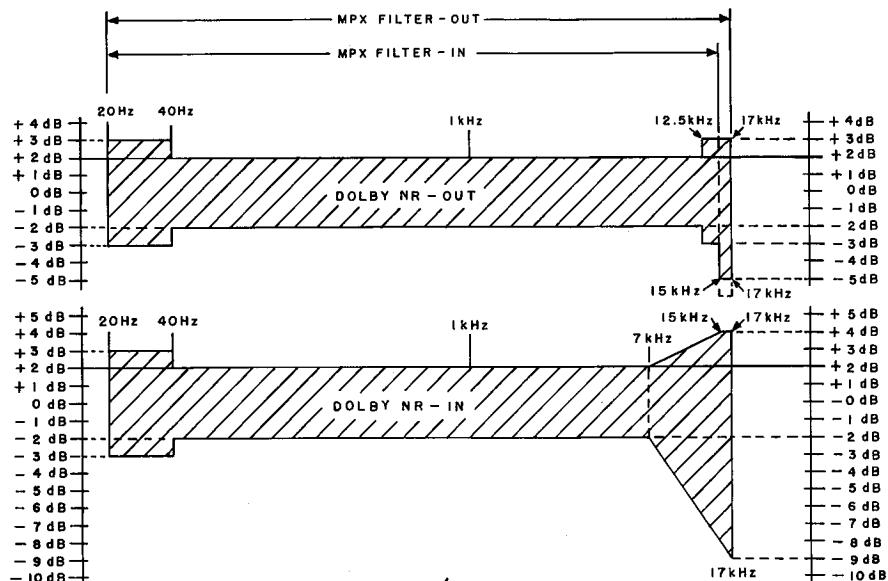


FIGURE B — RECORDING FREQUENCY CHARACTERISTICS



PINCH ROLLER TENSION

Adjust spring (B) so that the tension of the pinch roller (C) against the capstan (D) may be between $300g \pm 40g$ in playback mode.

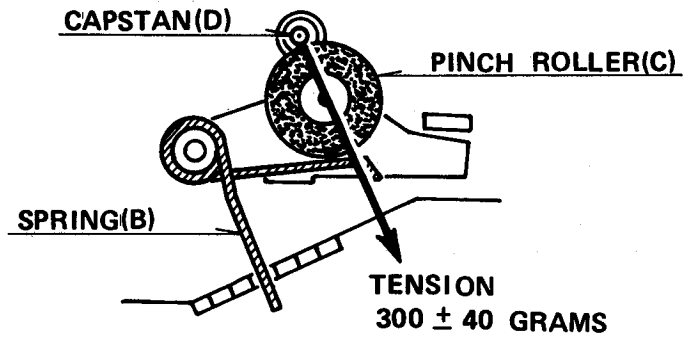


Fig. 1

FLYWHEEL PLAY

Release screw (E) of flywheel bracket (F), and adjust clearance between thrust bearing of flywheel bracket (F) and the flywheel (G) for 0.043–0.059 inch.

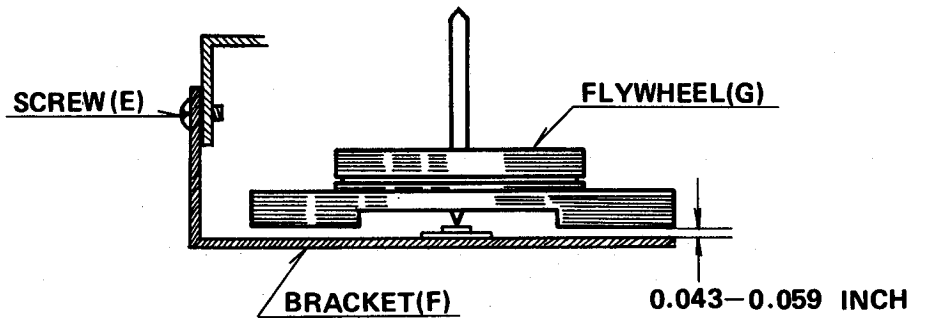


Fig. 2

SIDE PULLEY TENSION

Select hole position for spring (H) so that the tension of the test point of the pulley shaft (J) against reel rest (K) may be between $50g \pm 10g$ in play mode.

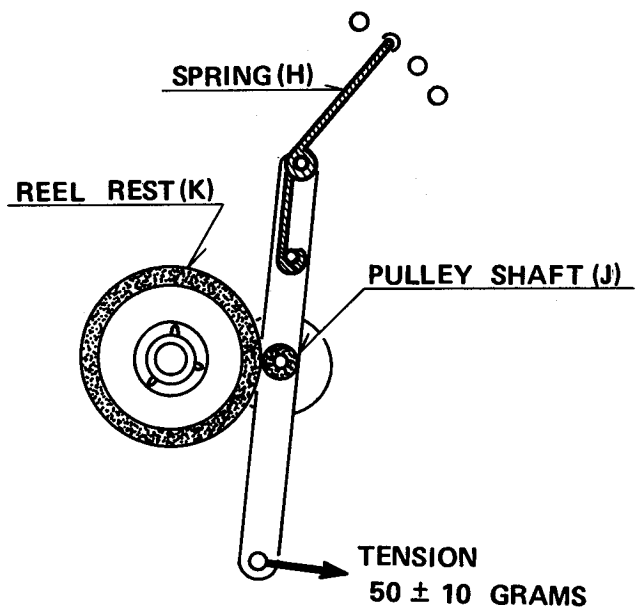


Fig. 3

MECHANICAL ADJUSTMENTS

SOLENOID

Adjust solenoid (L) by screws (M) so that the length of iron core (N) of solenoid (L) may be 0.177 ± 0.019 inch, when the slide lever (P) touches to the pushbuttons lock lever (Q) in stop mode.

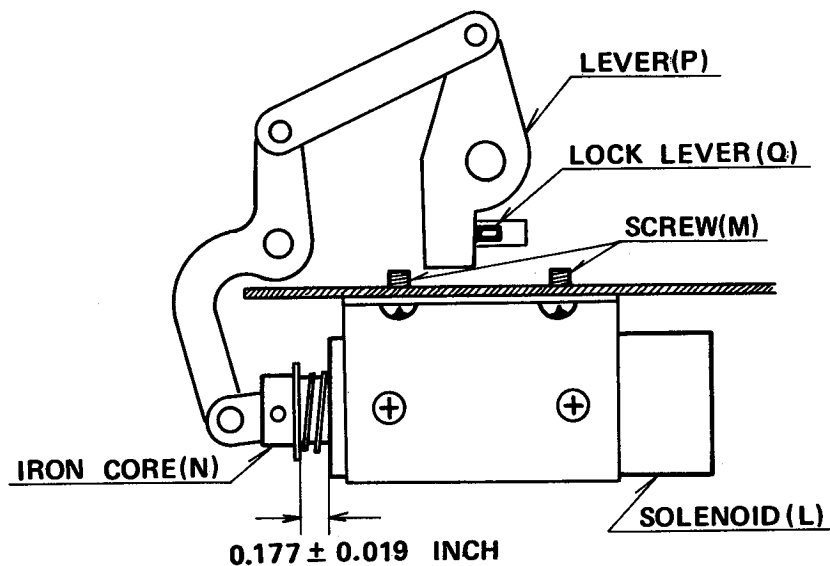


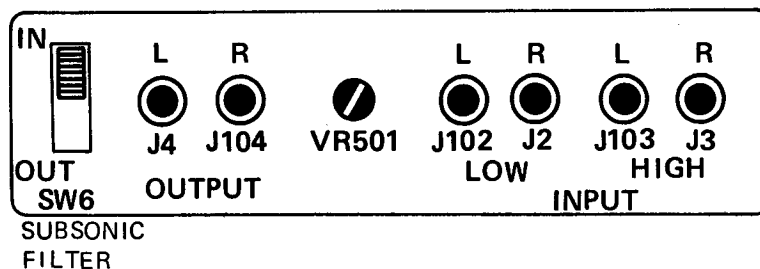
Fig. 4

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT (Refer to ALIGNMENT POINTS TOP VIEW)

SIGNAL SOURCE	CONNECTIONS	MODE	ADJUST	REMARKS
Alignment test tape, 3kHz, TEAC MTT114	VTVM to OUTPUT jacks (J4, J104)	Playback	Azimuth screw (A)	Adjust the screw to obtain maximum reading on VTVM

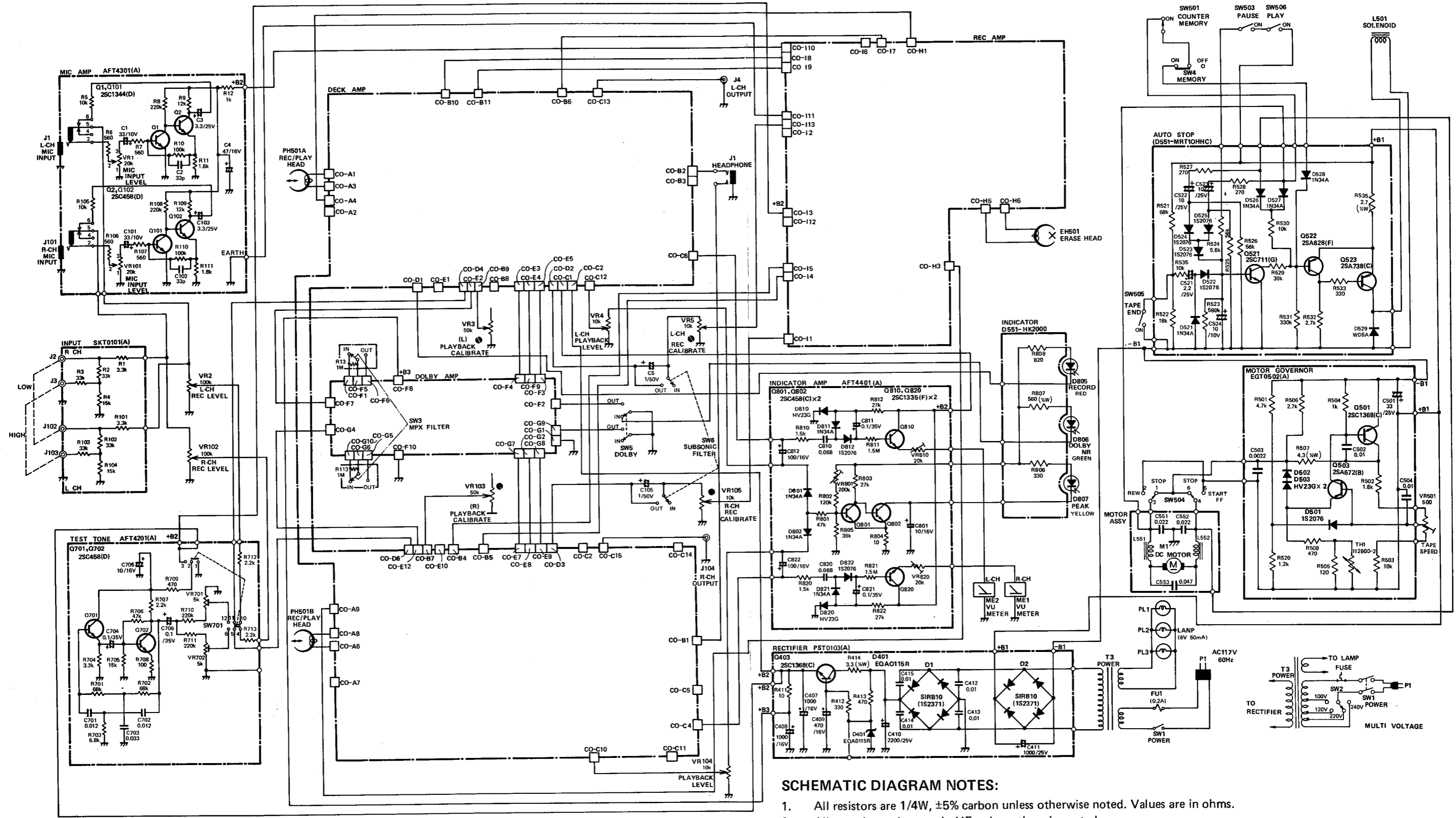
TAPE SPEED ADJUSTMENT AND WOW AND FLUTTER MEASUREMENT

SIGNAL SOURCE	CONNECTIONS	MODE	ADJUST	REMARKS
3kHz test tape TEAC MT111	Standard 3kHz Wow and Flutter Meter to OUTPUT jacks (J4, J104)	Playback	VR501 on rear deck	Adjust VR 501 to obtain the smallest % drift. The wow and flutter meter should read 0.07% (limit) (WEIGHTED NAB)



REAR PANEL

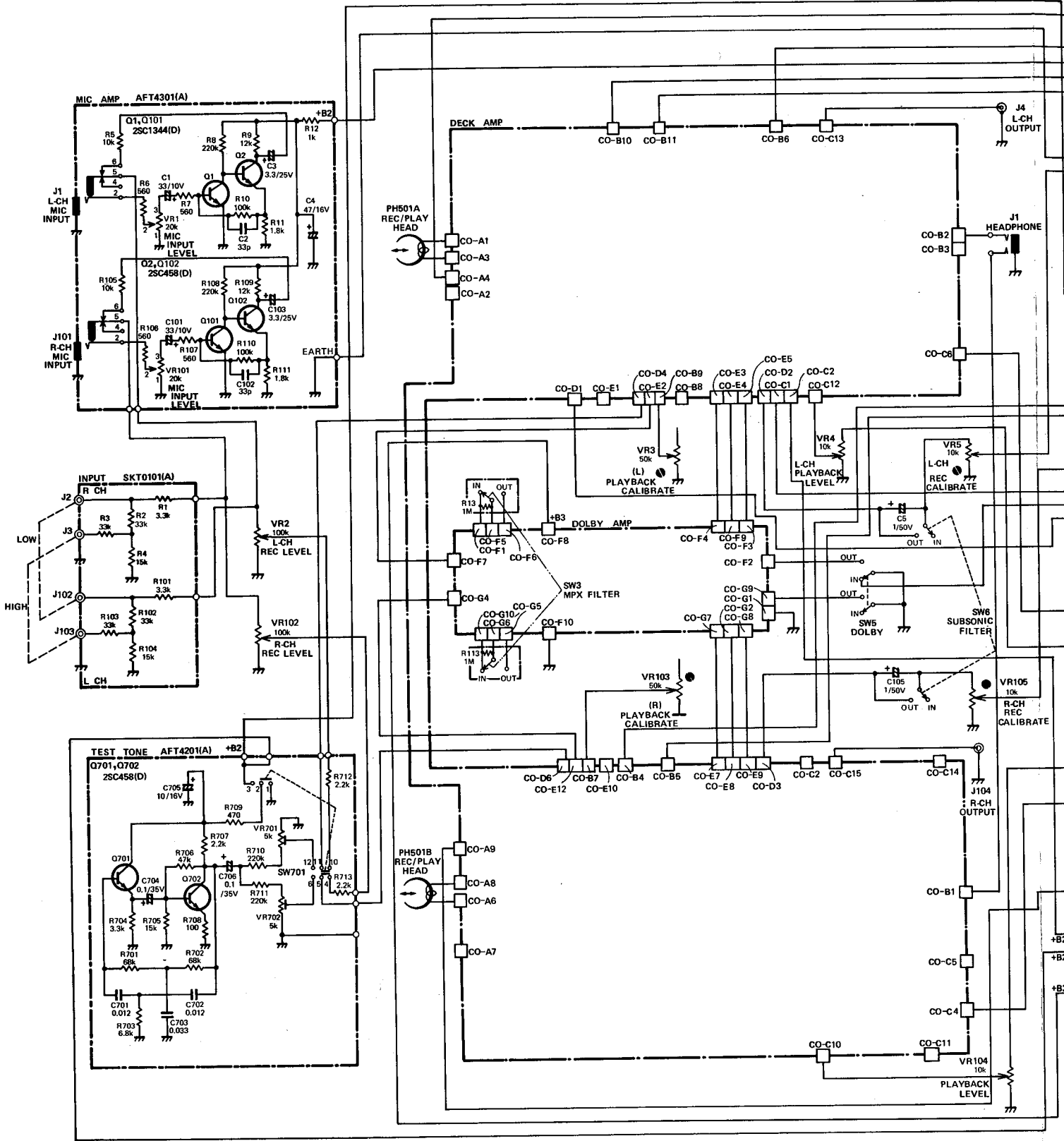
SCHEMATIC DIAGRAM — MODEL HK2000

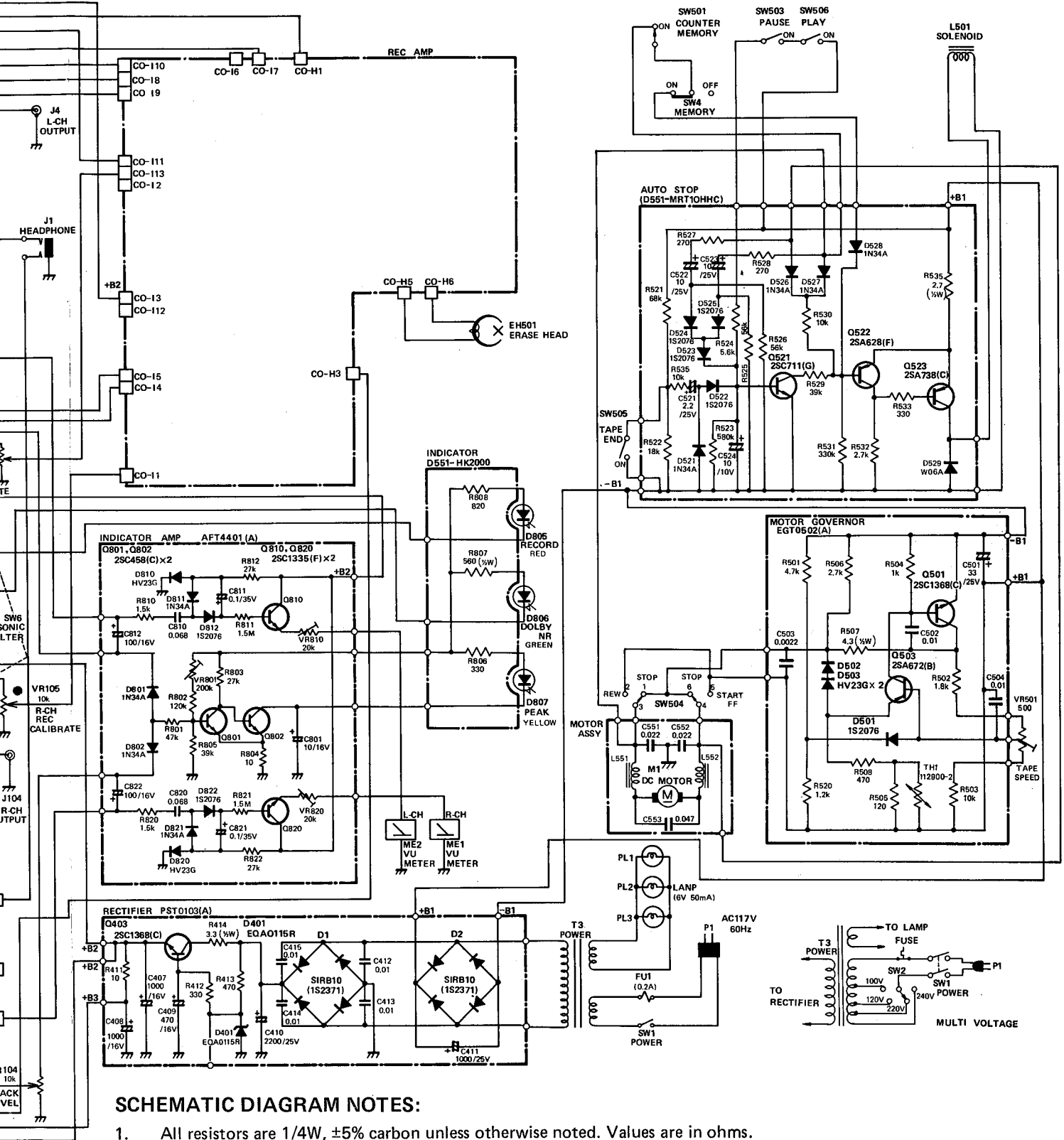


SCHEMATIC DIAGRAM NOTES:

1. All resistors are 1/4W, ±5% carbon unless otherwise noted. Values are in ohms.
2. All capacitor values are in UF unless otherwise noted.
3. Play-Rec Switch (SW11) is in the PLAY position.
4. Tape Selector Switch (SW10) is in the LOW NOISE position.

SCHEMATIC DIAGRAM — MODEL HK2000

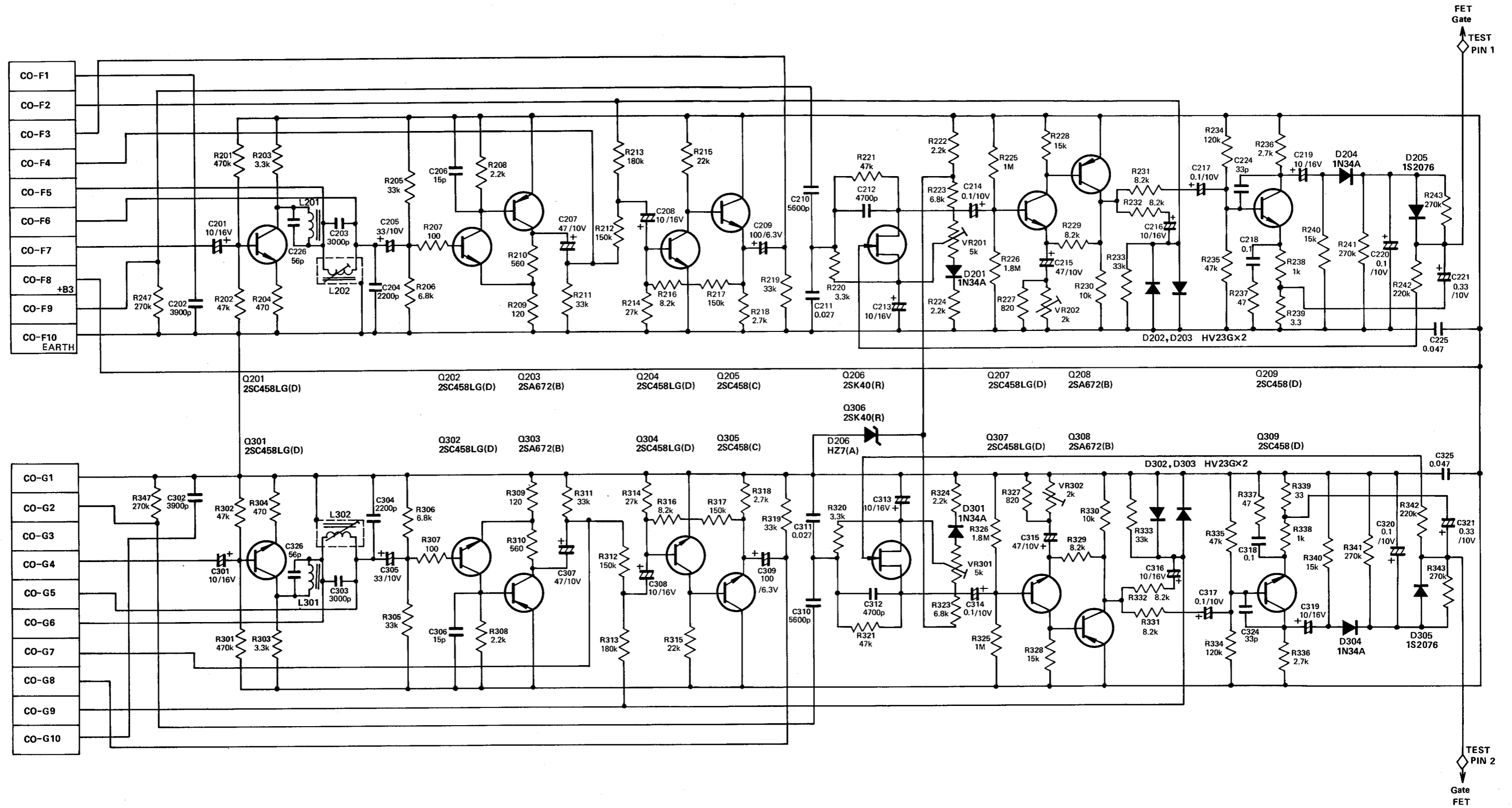




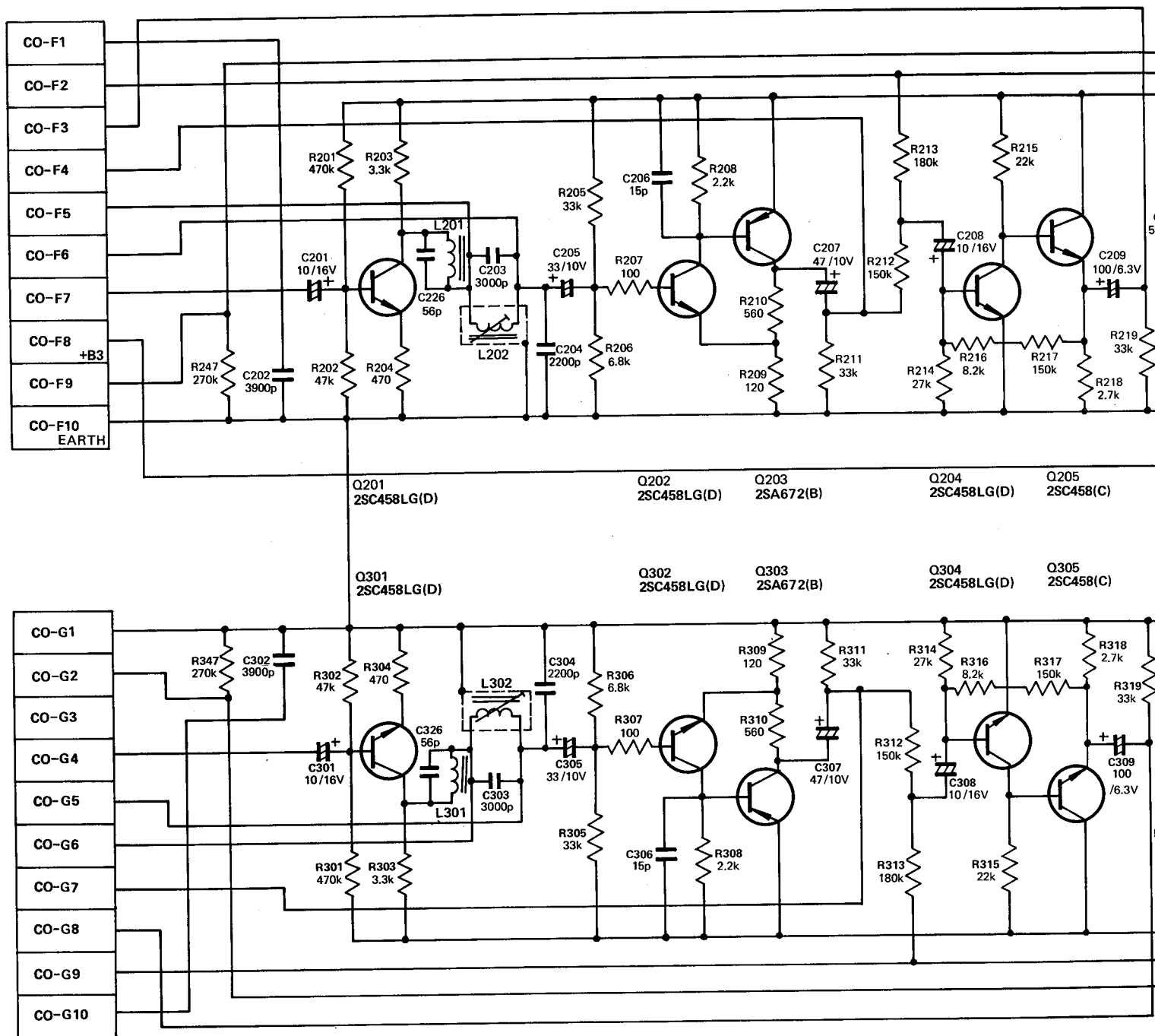
SCHEMATIC DIAGRAM NOTES:

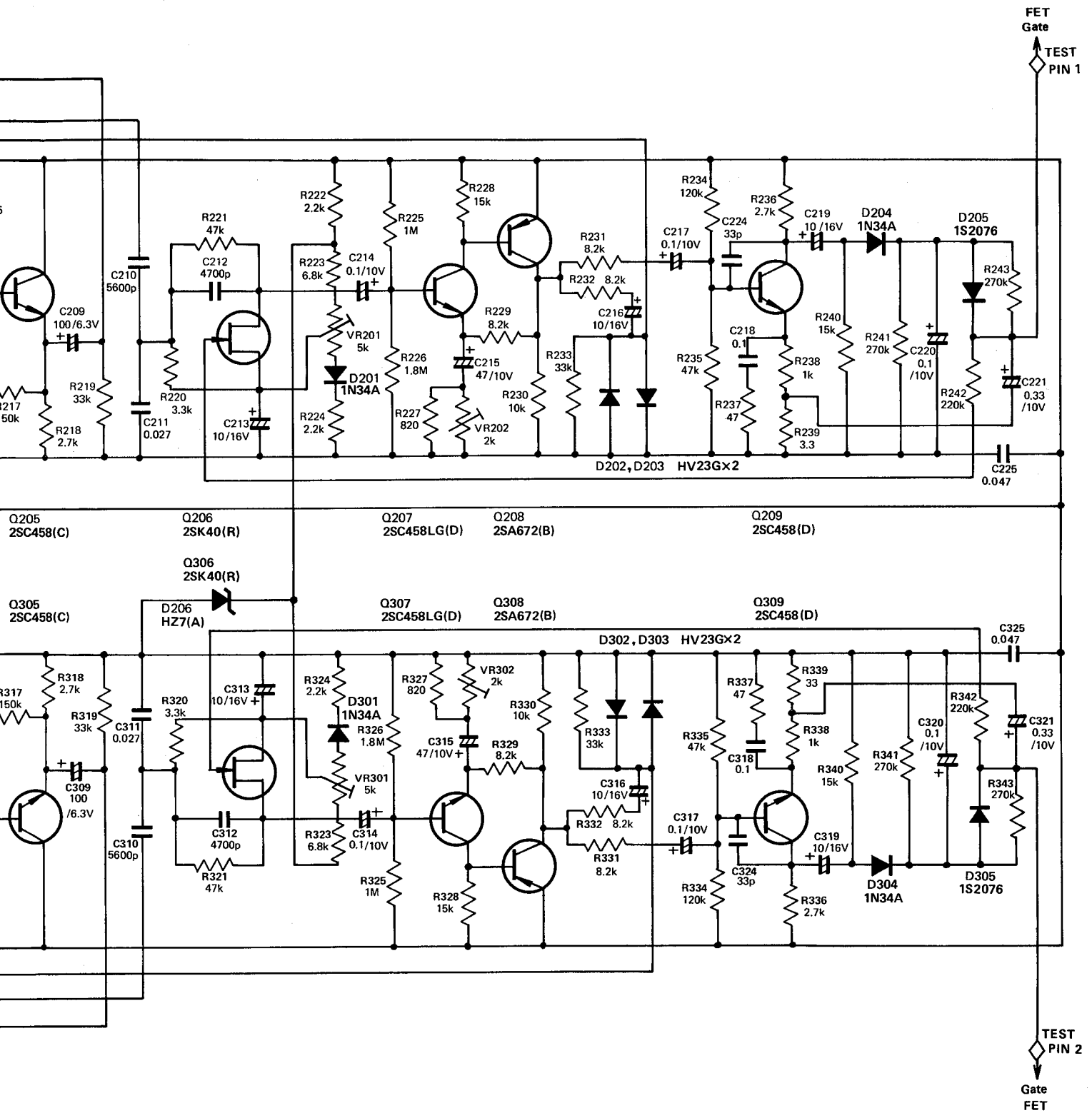
1. All resistors are 1/4W, ±5% carbon unless otherwise noted. Values are in ohms.
2. All capacitor values are in UF unless otherwise noted.
3. Play-Rec Switch (SW11) is in the PLAY position.
4. Tape Selector Switch (SW10) is in the LOW NOISE position.

SCHEMATIC DIAGRAM — DOLBY AMP

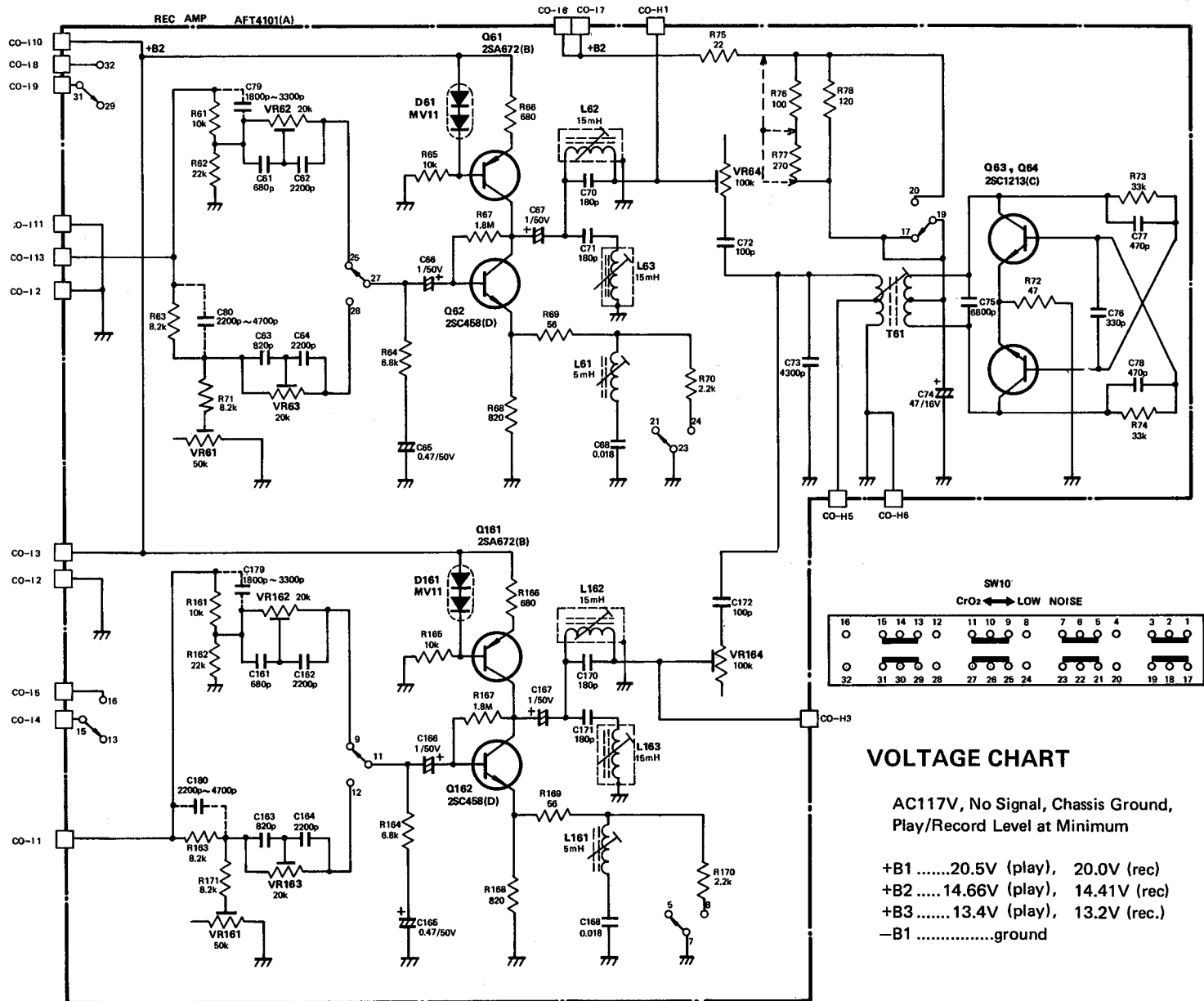


SCHEMATIC DIAGRAM — DOLBY AMP





SCHEMATIC DIAGRAM — REC AMP



VOLTAGE CHART

AC117V, No Signal, Chassis Ground, Play/Record Level at Minimum

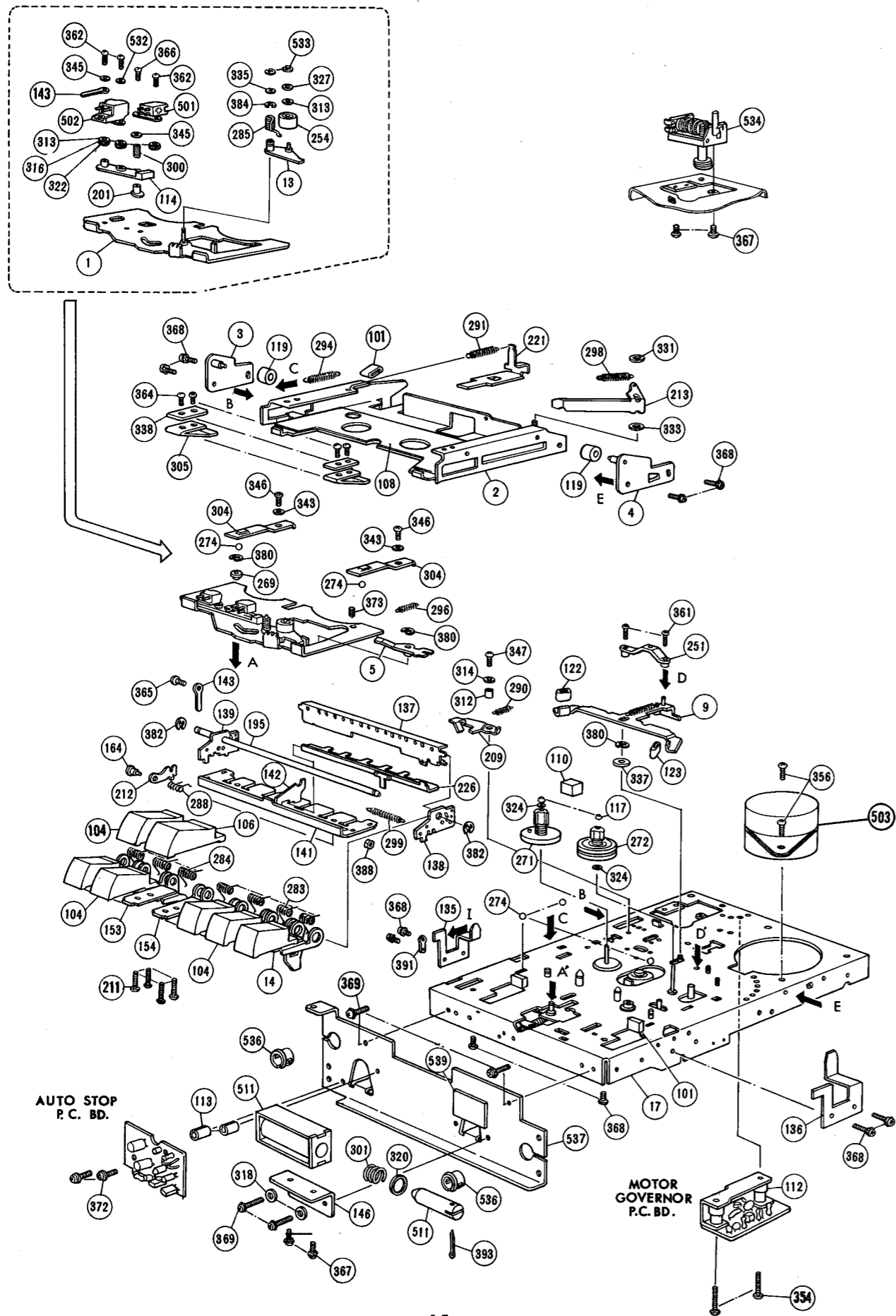
- +B120.5V (play), 20.0V (rec)
- +B214.66V (play), 14.41V (rec)
- +B313.4V (play), 13.2V (rec.)
- B1ground

STANDARD VOLTAGE CHART

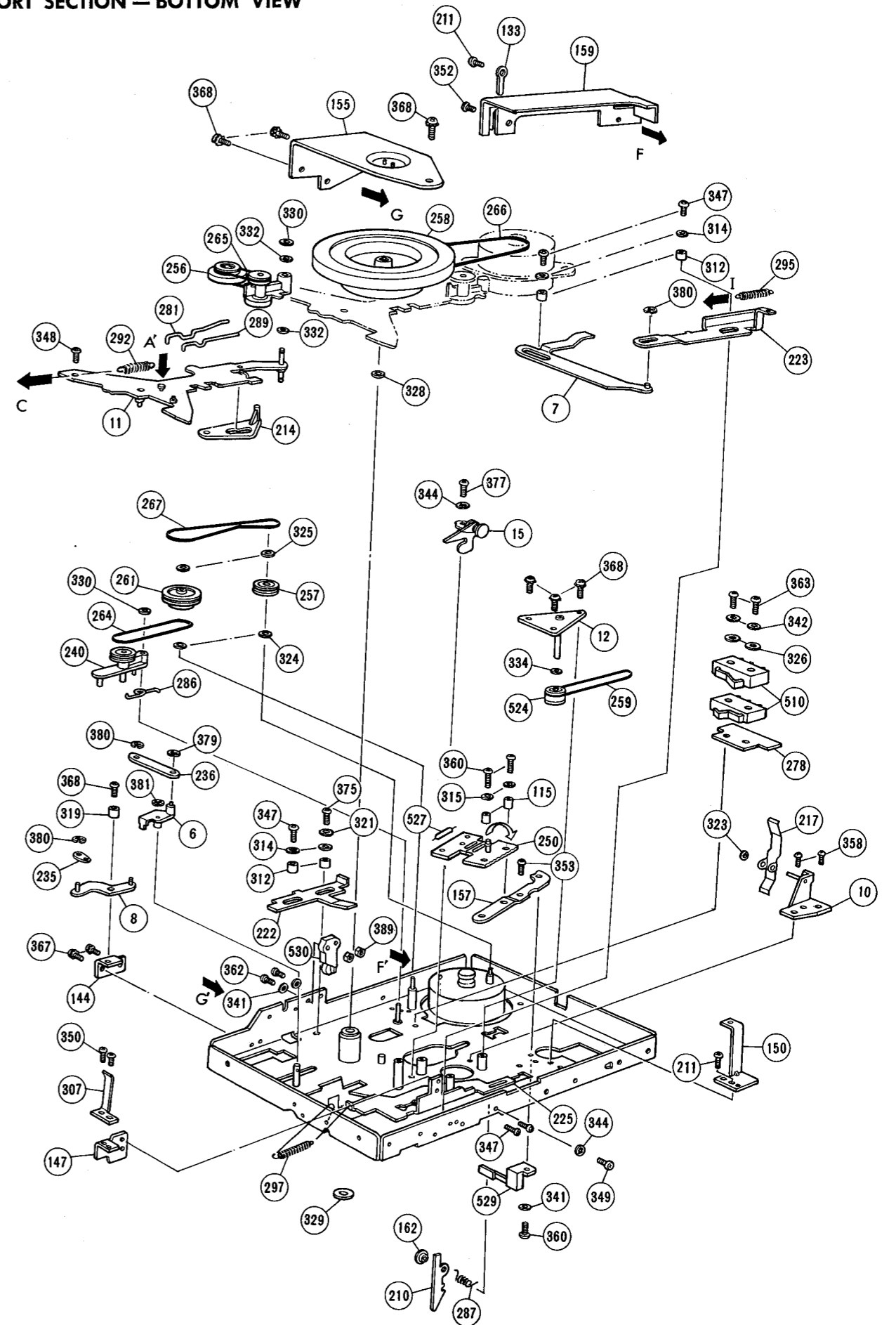
	BASE		EMITTER		COLLECTOR	
	play	rec	play	rec	play	rec
Q1, 101		0.57V		0V		1.22V
Q2, 102		1.22V		0.59V		9.45V
Q21, 121	0.56V		0.004V		1.20V	
Q22, 122	1.20V		0.62V		2.25V	
Q23, 123	1.93V		1.26V		9.48V	
Q24, 124	2.87V		2.26V		13.56V	
Q25, 125	13.56V		14.18V		7.68V	
Q61, 161	13.35V	13.09V	13.94V	13.68V	5.87V	5.84V
Q62, 162	1.16V	1.16V	0.52V	0.52V	5.87V	5.84V
Q63, 163	0V	3.13V	0V	3.50V	0V	12.44V
Q201, 301	1.06V	1.05V	0.46V	0.45V	10.0V	9.9V
Q202, 302	2.25V	2.20V	1.65V	1.60V	12.7V	12.5V
Q203, 303	12.7V	12.5V	13.4V	13.2V	2.8V	2.7V
Q204, 304	0.6V	0.5V	0V	0V	5.2V	5.1V
Q205, 305	5.2V	5.1V	4.5V	4.4V	13.4V	13.2V

	BASE		EMITTER		COLLECTOR	
	play	rec	play	rec	play	rec
Q207, 307	9.4V	9.2V	8.8V	8.6V	12.7V	12.5V
Q208, 308	12.7V	12.5V	13.4V	13.2V	8.8V	8.6V
Q209, 309	6.35V	6.30V	2.75V	2.70V	6.1V	6.0V
Q501	0.6V		0V		15.0V	
Q502	15.8V		16.4V		0.6V	
Q521	0.6V		0V		19V	
Q522	19.2V		19.8V		19.6V	
Q523	19.2V		19.8V			
Q403	15.2V	15.01V	14.66V	14.41V	21.0V	22.0V
Q701		4.54V		4.01V		12.21V
Q702		0.98V		0.31V		5.14V
Q801	0.65V	0.65V	0.005V	0.005V	0.04V	0.04V
Q802	0.04V	0.04V	0.005V	0.005V	13.05V	12.80V
Q810, 820	0.38V	0.37V	0.02V	0.02V	14.66V	14.41V

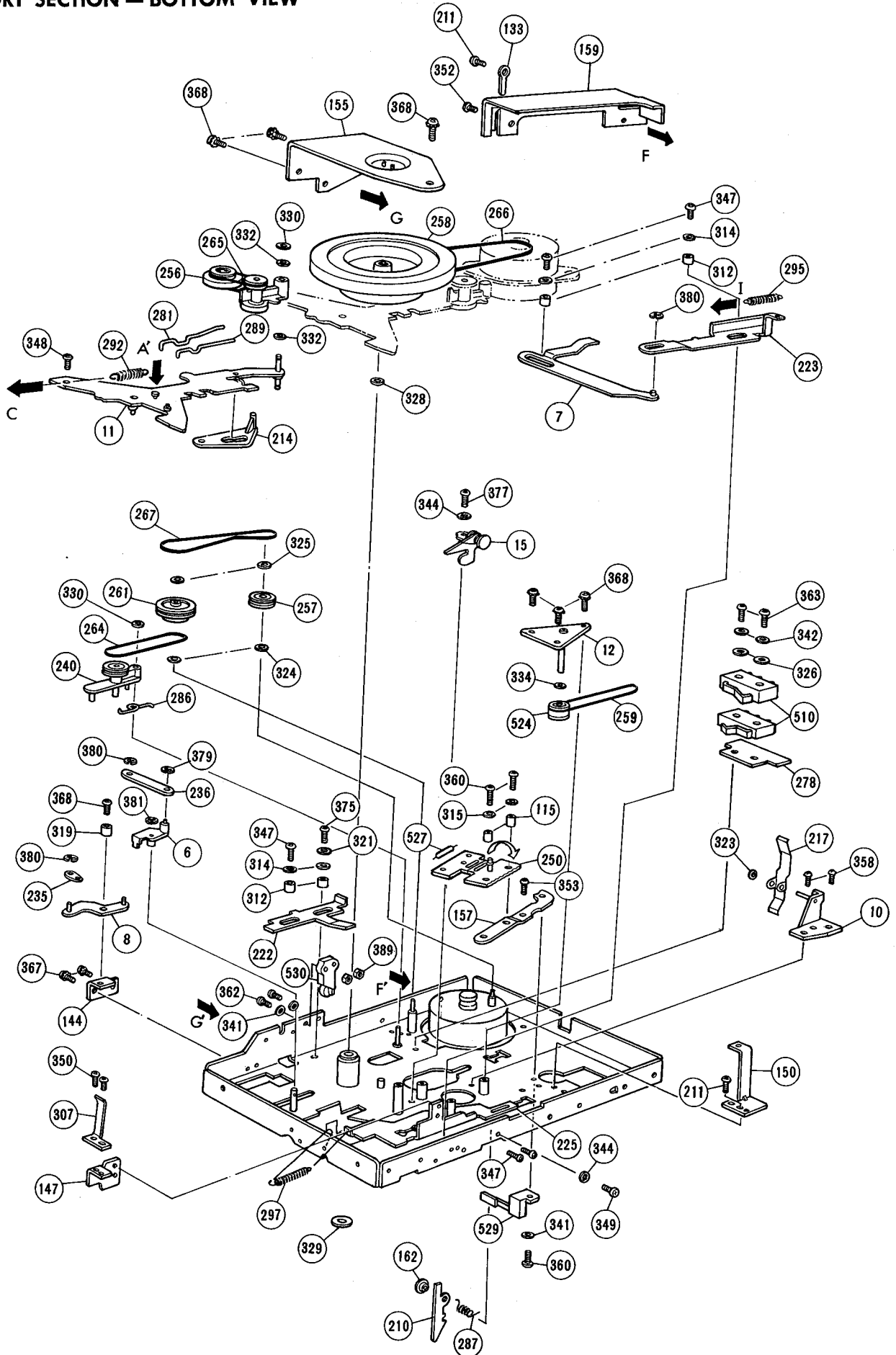
TRANSPORT SECTION — TOP VIEW



TRANSPORT SECTION — BOTTOM VIEW

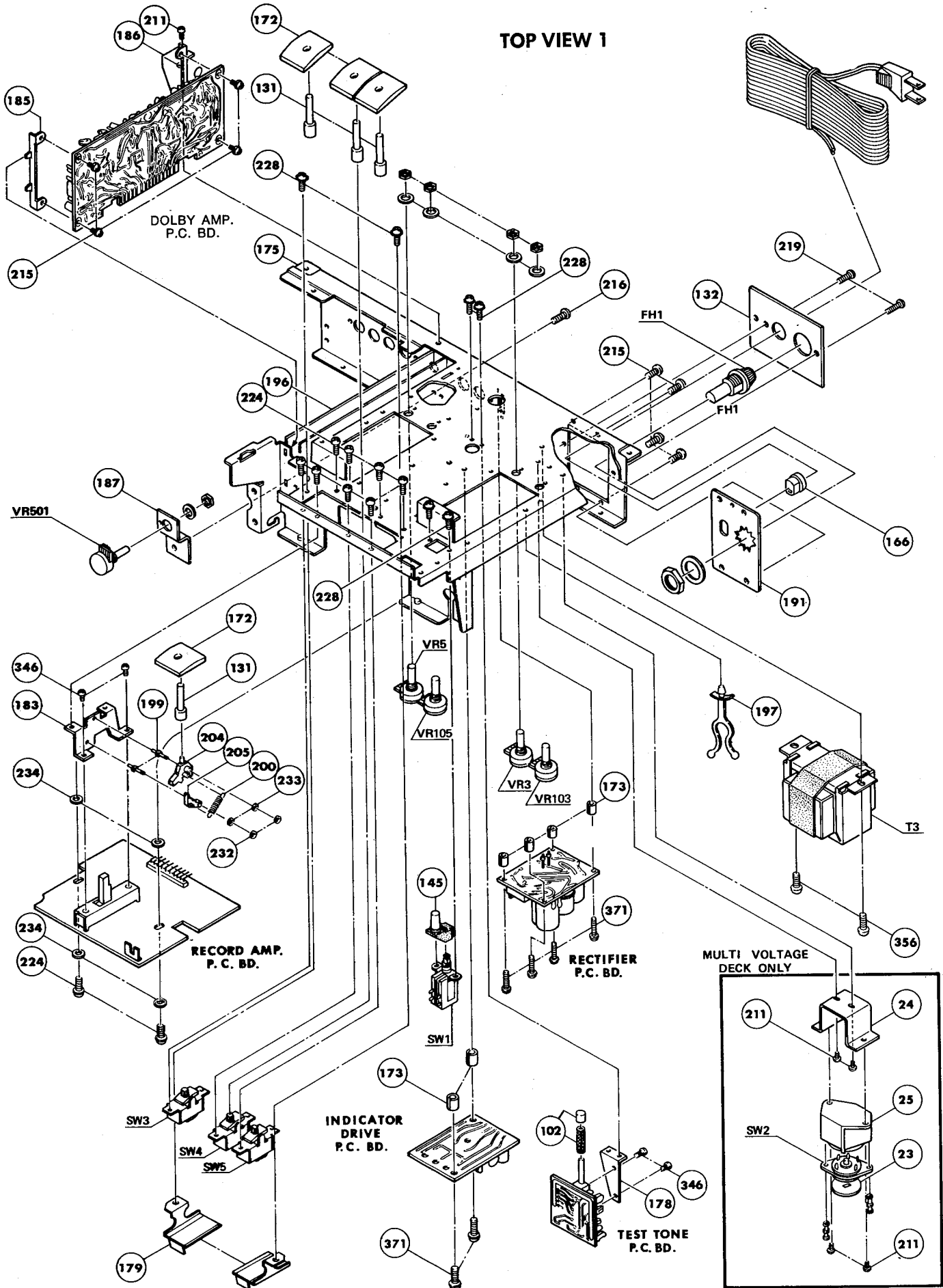


TRANSPORT SECTION — BOTTOM VIEW

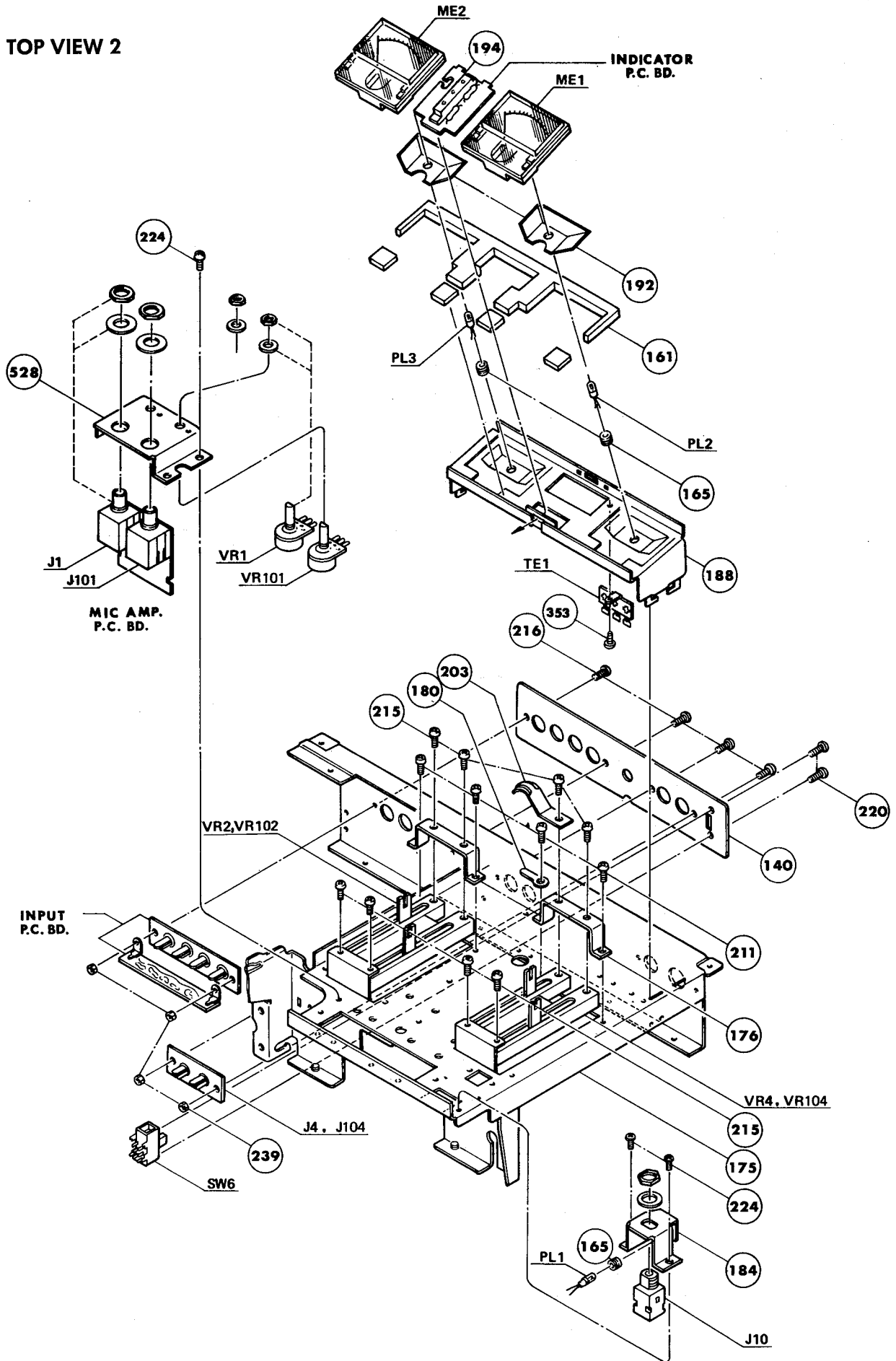


ELECTRICAL AND MISCELLANEOUS

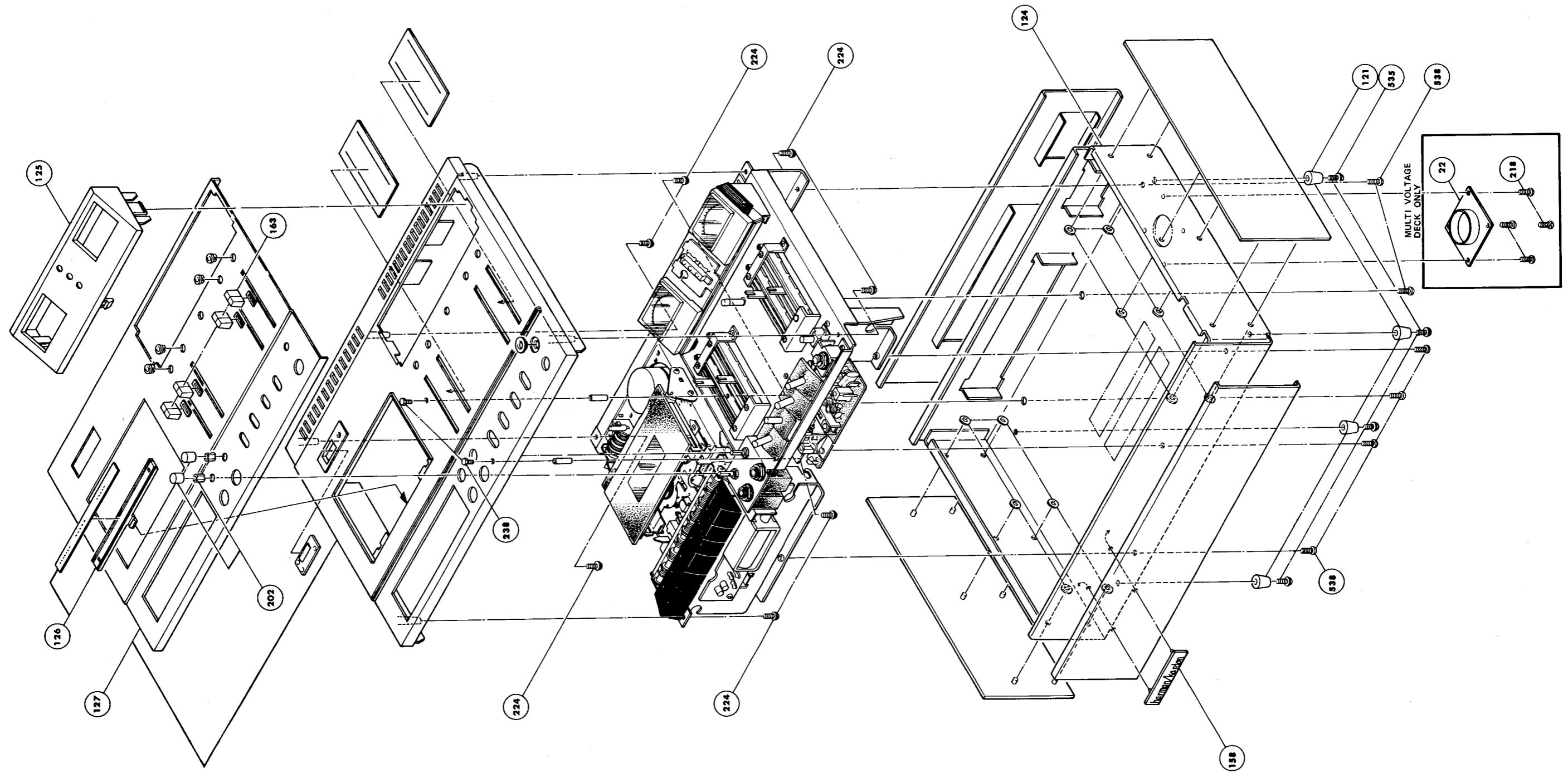
TOP VIEW 1



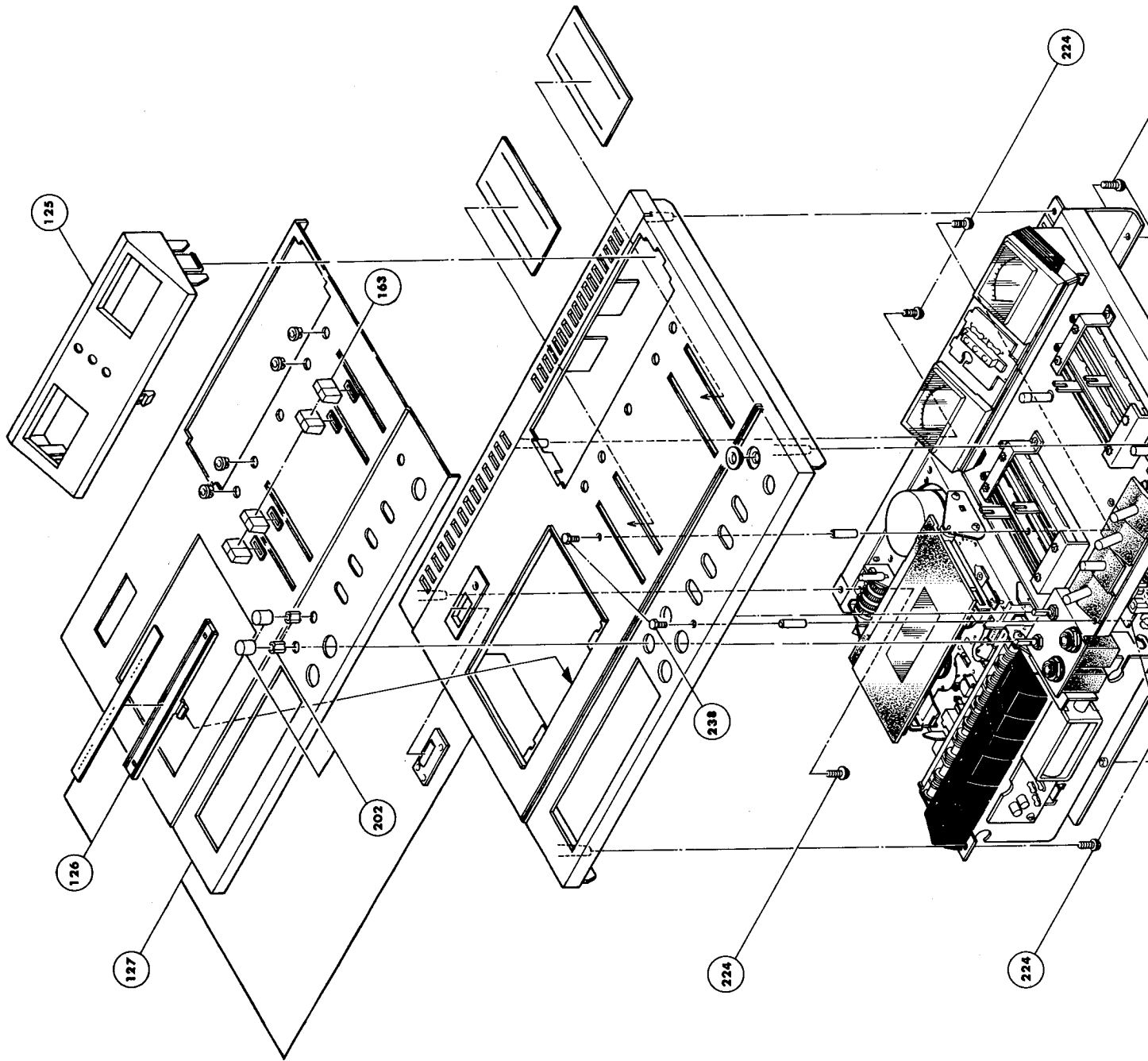
TOP VIEW 2

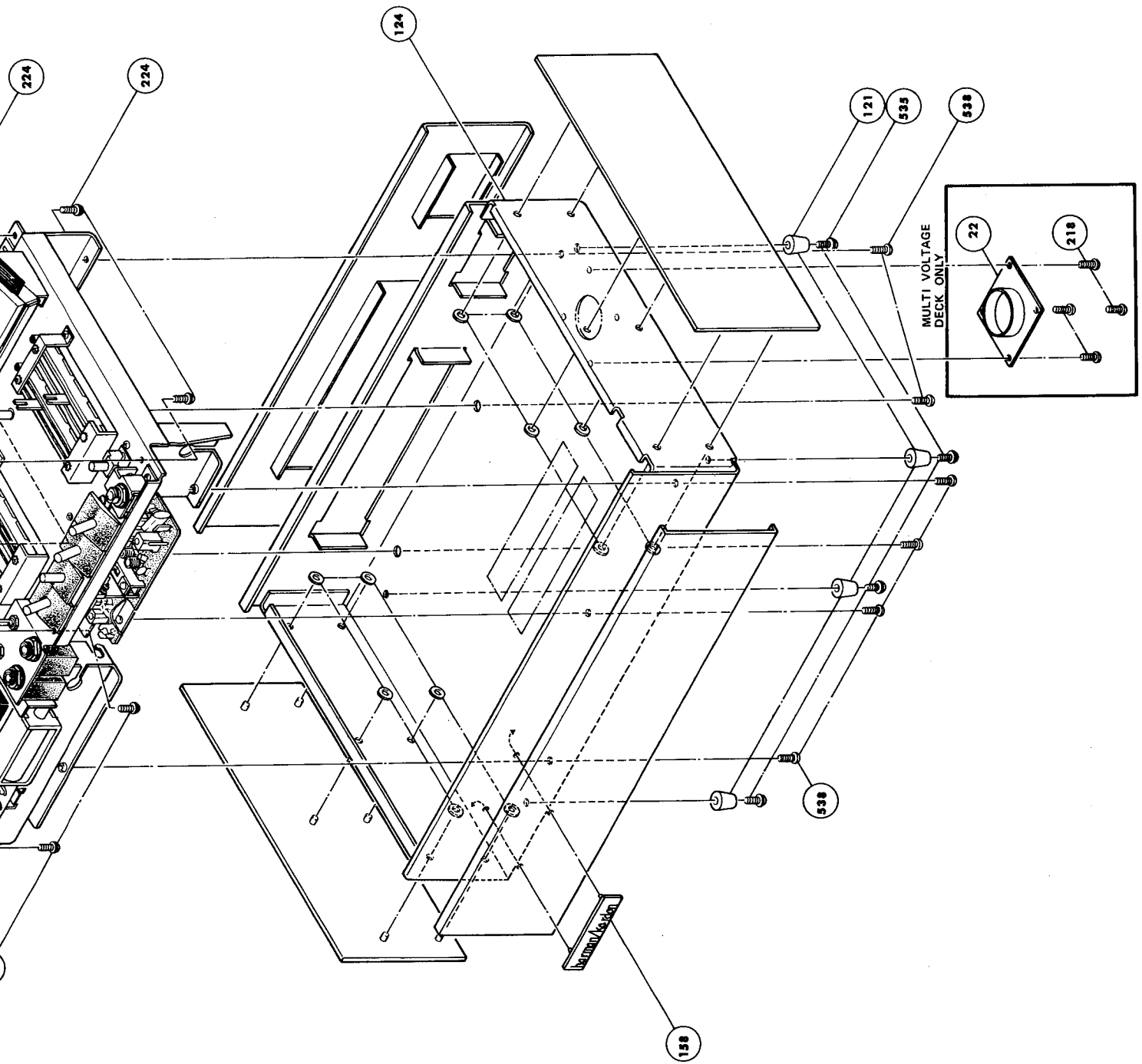


COVER AND CABINET MECHANICAL

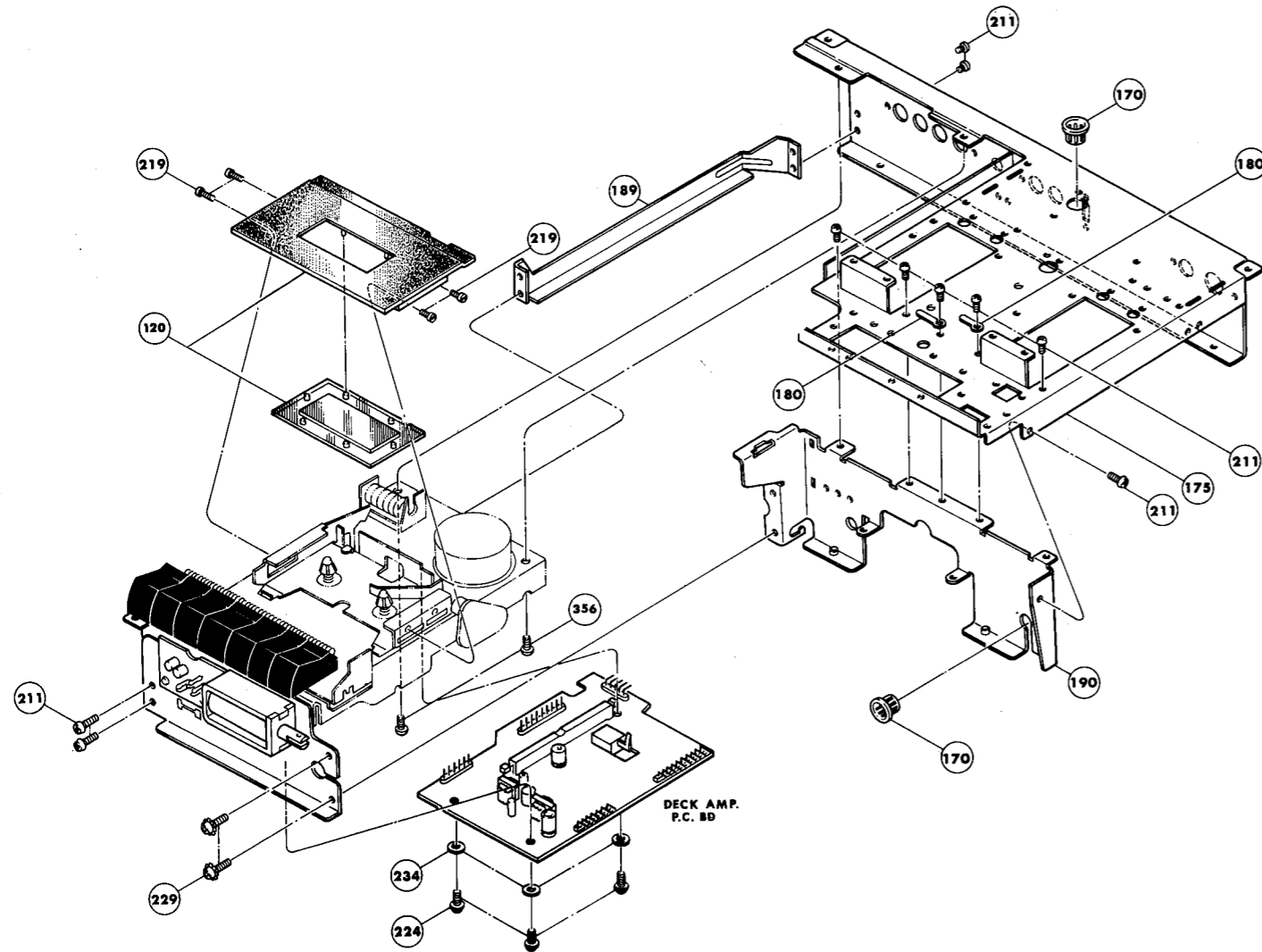


COVER AND CABINET MECHANICAL





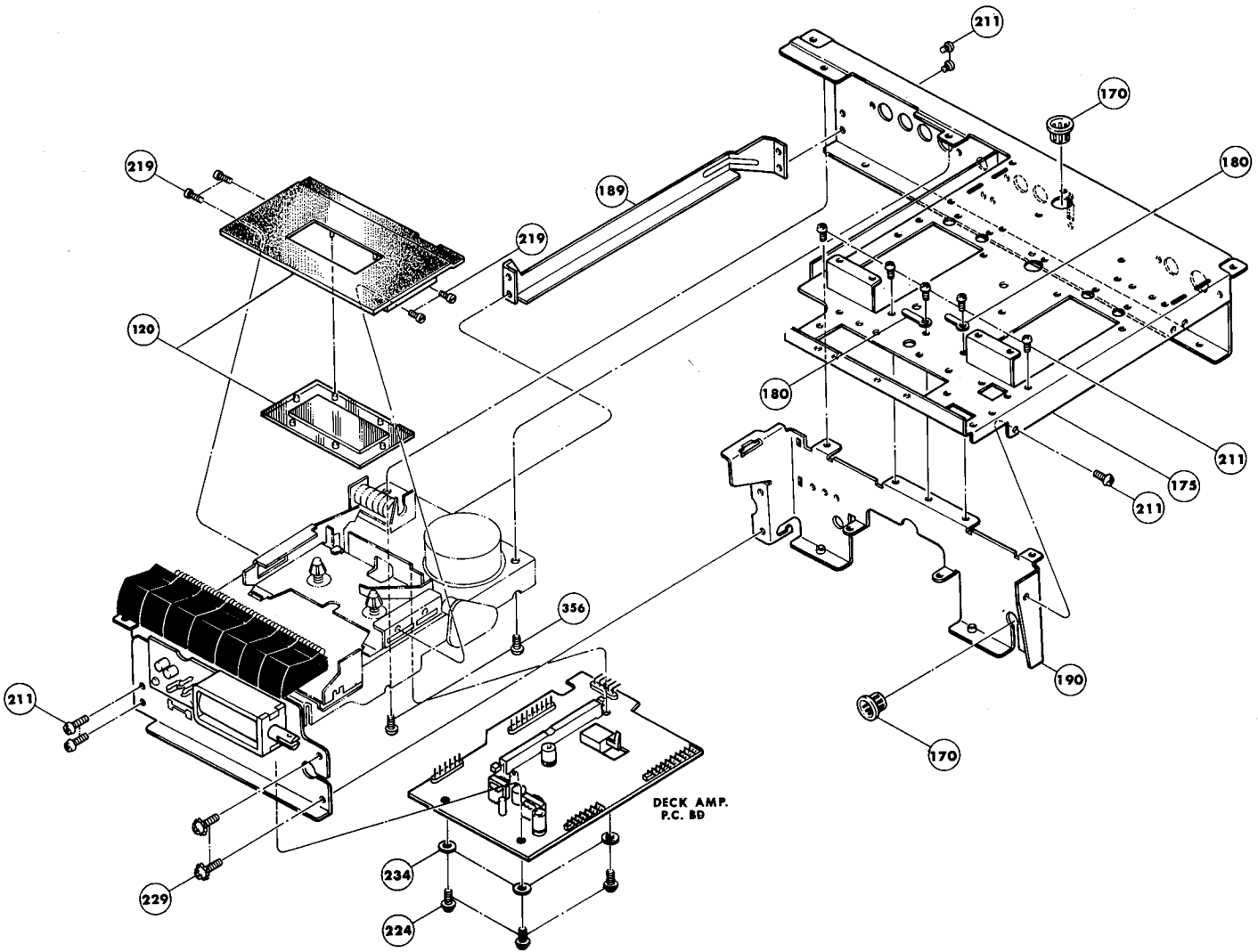
**DECK AND CHASSIS MECHANICAL
TOP VIEW**



MECHANICAL PARTS LIST

REF. NO.	H/K PART NO.	DESCRIPTION	REF. NO.	H/K PART NO.	DESCRIPTION
1	01531901	Slide Plate Assy., Head Base	136	01528380	Bracket Cassette Guide, Right
2	01531902	Cassette Holder Assy.	137	01531924	Bracket Spring Bar, Pushbutton Assy.
3	01531903	Bracket Assy., Right	138	01531925	Bracket, Shaft, Right
4	01531904	Bracket Assy., Left	139	01531926	Bracket, Shaft, Left
5	01531905	Lever Assy., Pause	140	01532015	Plate, Output/Input
6	01531906	Bracket Assy., Auto Stop	141	01531927	Bracket, Base Plate, Pushbuttons
7	01531907	Link Assy., Eject Lever	142	01531928	Bracket, Center Buttons
8	01531908	Lever Assy., Auto Stop	143	01531929	Lug
9	01531909	Bracket Assy., Reel Rest	144	01528385	Bracket, Auto Stop Lever
10	01531910	Bracket Assy., Rec. Switch	145	01531824	Pushbutton, Power
11	01531911	Idler Plate Assy.	146	01528450	Bracket, Solenoid
12	01531912	Bracket Assy., Tape Pulley Counter	147	01528388	Bracket, Slide, Rec. Switch
13	01531913	Lever Assy., Pinch Roller	150	01531931	Bracket, Preamp PC Bd.
14	01531914	Bracket, Pushbutton Assy.	153	01531932	Bracket, Pushbutton
15	01531915	Lever Assy., Play Safety	154	01531933	Bracket, Pushbutton
17	01531916	Chassis Assy.	155	01531934	Bracket Assy., Flywheel
22	01531819	Indicator Mtg. Plate, (Multi-voltage Deck)	157	01531935	Bracket, Tape End
23	01532044	Indicator Plate, (Multi-voltage Deck)	158	01531997	Logo Plate, Harman/Kardon
24	01532045	Bracket, Voltage Selector Switch, (Multi-voltage Deck)	159	01531936	Bracket, Shield
25	01532046	Holder, Voltage Selector Switch, (Multi-voltage Deck)	161	01532017	Sponge, Meter Support
101	01528366	Rubber Collar	162	01528393	Stud, Cassette Lock
102	01531821	Knob, Test Tone	163	01531823	Knob, Playback/Record
104	01531917	Push Button	164	01531937	Stud Boss, Pushbutton Assy.
106	01531918	Push Button, Stop	165	01532018	Bushing, Lamp
108	01531919	Cassette Holder Plate	166	01532020	Bushing, AC Cord
110	01531920	Cushion, Cassette Carrier	170	01532019	Bushing, Lead Wire
112	01528368	Spacer, Motor Governor	172	01528481	Spacer, Toggle Switch
113	01528369	Spacer, Auto Stop	173	01532021	Spacer, P.C. Board
114	01531921	Spacer, Azimuth Adj.	175	01532022	Chassis
115	01531922	Spacer, Tape End Switch	176	01532023	Bracket, Playback/Rec. Level
117	01528370	Bushing, Reel Rest Assy.	178	01532024	Bracket, Test Tone Switch
119	01528371	Bushing, Cassette Holder	179	01532025	Plate, Toggle Switch
120	01531815	Cassette Holder Cover Assy.	180	01532026	Bracket, Lead Wire
121	01531818	Legs, Cabinet Bottom (X4)	183	01532027	Bracket, Tape Selector Lever.
122	01528372	Brake, Reel Rest Left	184	01532028	Bracket, Headphone Jack
123	01531923	Brake, Reel Rest Right	185	01532029	Bracket, Dolby Amp P.C. Board
124	01531816	Cabinet Bottom Assy. (Regular voltage Deck)	186	01532030	Bracket, Dolby Amp P.C. Board
	01531817	Cabinet Bottom Assy. (Multi-voltage Deck)	187	01532031	Bracket, Tape Speed Adjust
125	01531998	Panel, VU Meter Cover	188	01532032	Bracket, Meters Mounting
126	01531820	Panel, Heads Access	189	01532033	Bracket, Chassis and Deck Mechanical Assy.
127	01531814	Cabinet Top Assembly	190	01532034	Bracket, Rec. Amp P.C. Board
131	01531979	Knob	191	01532035	Bracket, AC Cord/Fuse
132	01531987	Plate, AC Cord (Regular voltage Deck)	192	01532036	Reflector, Meter Lamp
	01531989	Plate, AC Cord/Fuse (Multi-voltage Deck)	194	01532037	Holder, L.E.D. Mount
133	01528374	Lug	195	01531938	Shaft, Pushbutton Assy.
135	01528379	Bracket Cassette Guide, Left	196	01532039	Insulator
			197	01532038	Holder, AC Line Cord
			199	01532040	Shaft, Tape Selector Lever
			200	01531980	Spring, Switch Lock
			201	01531939	Shaft, Spring, Azimuth Adjust
			202	01531822	Knob Assy., Mic. Level
			203	01532041	Spring, Playback Level
			204	01531981	Lever, Switch Lock

**DECK AND CHASSIS MECHANICAL
TOP VIEW**



MECHANICAL PARTS LIST

REF. NO.	H/K PART NO.	DESCRIPTION	REF. NO.	H/K PART NO.	DESCRIPTION
1	01531901	Slide Plate Assy., Head Base	136	01528380	Bracket Cassette Guide, Right
2	01531902	Cassette Holder Assy.	137	01531924	Bracket Spring Bar, Pushbutton Assy.
3	01531903	Bracket Assy., Right	138	01531925	Bracket, Shaft, Right
4	01531904	Bracket Assy., Left	139	01531926	Bracket, Shaft, Left
5	01531905	Lever Assy., Pause	140	01532015	Plate, Output/Input
6	01531906	Bracket Assy., Auto Stop	141	01531927	Bracket, Base Plate, Pushbuttons
7	01531907	Link Assy., Eject Lever	142	01531928	Bracket, Center Buttons
8	01531908	Lever Assy., Auto Stop	143	01531929	Lug
9	01531909	Bracket Assy., Reel Rest	144	01528385	Bracket, Auto Stop Lever
10	01531910	Bracket Assy., Rec. Switch	145	01531824	Pushbutton, Power
11	01531911	Idler Plate Assy.	146	01528450	Bracket, Solenoid
12	01531912	Bracket Assy., Tape Pulley Counter	147	01528388	Bracket, Slide, Rec. Switch
13	01531913	Lever Assy., Pinch Roller	150	01531931	Bracket, Preamp PC Bd.
14	01531914	Bracket, Pushbutton Assy.	153	01531932	Bracket, Pushbutton
15	01531915	Lever Assy., Play Safety	154	01531933	Bracket, Pushbutton
17	01531916	Chassis Assy.	155	01531934	Bracket Assy., Flywheel
22	01531819	Indicator Mtg. Plate, (Multi-voltage Deck)	157	01531935	Bracket, Tape End
23	01532044	Indicator Plate, (Multi-voltage Deck)	158	01531997	Logo Plate, Harman/Kardon
24	01532045	Bracket, Voltage Selector Switch, (Multi-voltage Deck)	159	01531936	Bracket, Shield
25	01532046	Holder, Voltage Selector Switch, (Multi-voltage Deck)	161	01532017	Sponge, Meter Support
101	01528366	Rubber Collar	162	01528393	Stud, Cassette Lock
102	01531821	Knob, Test Tone	163	01531823	Knob, Playback/Record
104	01531917	Push Button	164	01531937	Stud Boss, Pushbutton Assy.
106	01531918	Push Button, Stop	165	01532018	Bushing, Lamp
108	01531919	Cassette Holder Plate	166	01532020	Bushing, AC Cord
110	01531920	Cushion, Cassette Carrier	170	01532019	Bushing, Lead Wire
112	01528368	Spacer, Motor Governor	172	01528481	Spacer, Toggle Switch
113	01528369	Spacer, Auto Stop	173	01532021	Spacer, P.C. Board
114	01531921	Spacer, Azimuth Adj.	175	01532022	Chassis
115	01531922	Spacer, Tape End Switch	176	01532023	Bracket, Playback/Rec. Level
117	01528370	Bushing, Reel Rest Assy.	178	01532024	Bracket, Test Tone Switch
119	01528371	Bushing, Cassette Holder	179	01532025	Plate, Toggle Switch
120	01531815	Cassette Holder Cover Assy.	180	01532026	Bracket, Lead Wire
121	01531818	Legs, Cabinet Bottom (X4)	183	01532027	Bracket, Tape Selector Lever.
122	01528372	Brake, Reel Rest Left	184	01532028	Bracket, Headphone Jack
123	01531923	Brake, Reel Rest Right	185	01532029	Bracket, Dolby Amp P.C. Board
124	01531816	Cabinet Bottom Assy. (Regular voltage Deck)	186	01532030	Bracket, Dolby Amp P.C. Board
	01531817	Cabinet Bottom Assy. (Multi-voltage Deck)	187	01532031	Bracket, Tape Speed Adjust
125	01531998	Panel, VU Meter Cover	188	01532032	Bracket, Meters Mounting
126	01531820	Panel, Heads Access	189	01532033	Bracket, Chassis and Deck Mechanical Assy.
127	01531814	Cabinet Top Assembly	190	01532034	Bracket, Rec. Amp P.C. Board
131	01531979	Knob	191	01532035	Bracket, AC Cord/Fuse
132	01531987	Plate, AC Cord (Regular voltage Deck)	192	01532036	Reflector, Meter Lamp
	01531989	Plate, AC Cord/Fuse (Multi-voltage Deck)	194	01532037	Holder, L.E.D. Mount
133	01528374	Lug	195	01531938	Shaft, Pushbutton Assy.
135	01528379	Bracket Cassette Guide, Left	196	01532039	Insulator
			197	01532038	Holder, AC Line Cord
			199	01532040	Shaft, Tape Selector Lever
			200	01531980	Spring, Switch Lock
			201	01531939	Shaft, Spring, Azimuth Adjust
			202	01531822	Knob Assy., Mic. Level
			203	01532041	Spring, Playback Level
			204	01531981	Lever, Switch Lock

REF. NO.	H/K PART NO.	DESCRIPTION	REF. NO.	H/K PART NO.	DESCRIPTION
205	01532042	Lever, Tape Selector Knob Lock	292	01531967	Spring, Idler Plate
209	01528426	Lever, Rec. Safety	294	01528415	Spring, Cassette Holder
210	01528427	Lever, Cassette Holder Lock	295	01528417	Spring, Eject Lever
211		Screw (+), Tapping (3 x 8 mm)	296	01528414	Spring, Pause
212	01531940	Lever, Catch, Pause	297	01531968	Spring, Rec/Play Return
213	01531941	Lever, Cassette Eject	298	01531969	Spring, Cassette Eject
214	01528429	Lever, F.F. & Rew. Switch	299	01531970	Spring, Pushbutton Assy.
215		Screw (+) (3 x 5 mm)	300	01531971	Spring, Azimuth Adj.
216		Screw (+) (3 x 8 mm)	301	01531972	Spring, Solenoid
217	01531942	Lever, Rec. Switch Start	304	01531973	Leaf Spring, Slide Base Assy.
218		Screw (-) (2 x 5 mm)	305	01528421	Leaf Spring, Cassette Retaining
219		Screw (-) (2 x 6 mm)	307	01531974	Leaf Spring, Rec/Start
220		Screw (-) (2.6 x 6 mm)	312	01531975	Spacer
221	01528434	Slide Plate, Rec. Safety	313		Metal Washer
222	01528435	Slide Plate, Pause	314		Metal Washer
223	01531943	Slider, Eject Lever	315		Metal Washer
224		Screw (+) (3 x 8 mm)	316		Metal Washer
225	01531944	Slide Plate, Rec. Play	318		Metal Washer
226	01531945	Slide Bar, Pushbutton Release	319		Metal Washer
228		Screw (+) Outer Tooth	320		Fiber Washer
229		Screw (+) Outer Tooth	321		Metal Washer
232		Nylon Washer	322		Metal Washer
233		Nylon Washer	323		Nylon Washer
234		Nylon Washer	324		Nylon Washer
235	01528431	Link, Auto Stop Lever	325		Nylon Washer
236	01528432	Link, Auto Stop Bracket	326		Nylon Washer
238		Bolt, Hex Pan Hd.	327		Nylon Washer
239		Hexagon Nut	328		Nylon Washer
240	01531946	Clutch Assy.	329		Nylon Washer
250	01531947	Holder, Tape Switch	330		Nylon Washer
251	01531948	Bracket, Cassette Position	331		Nylon Washer
254	01531949*	Pinch Roller	332		Nylon Washer
256	01531950	Idler Assy.	333		Nylon Washer
257	01531951	Pulley	334		Nylon Washer
258	01531952	Flywheel	335		Nylon Washer
259	01528406	Belt, Counter	337		Washer-Special
261	01532176*	Pulley, Idler	338		Washer-Special
264	01531953*	Belt, Clutch Drive, Small	341		Flat Washer
265	01531954*	Belt, Idler	342		Flat Washer
266	01531955*	Belt, Flywheel	343		Flat Washer
267	01531956*	Belt, Clutch Drive, Large	344		Lock Washer
269	01531957	Roller, Slide Base Assy.	345		Metal Washer
271	01528424	Reel Rest, Left Assy.	346		Screw (+) (2.6 x 4 mm)
272	01531958	Reel Rest, Right Assy.	347		Screw (+) (2.6 x 5 mm)
274	01528442	Steel Ball, 2 mm	348		Screw (+) (2.6 x 6 mm)
278	01528390	Insulator, Switch Mtg.	349		Screw (+) (2.6 x 8 mm)
281	01528409	Spring, Tension Idler Plate	350		Screw (+) (3 x 3 mm)
283	01531959	Spring, Pushbutton	352		Tapping Screw (+) (2.6 x 8 mm)
284	01531960	Spring, Pushbutton	353		Tapping Screw (+) (3 x 6 mm)
285	01531961	Spring, Pinch Roller	354		Tapping Screw (+) (3 x 25 mm)
286	01531962	Spring, Clutch Assy.	355		Tapping Screw (+) (4 x 8 mm)
287	01528411	Spring, Cassette Holder Lock	358		Screw (-) (2 x 3 mm)
288	01531963	Spring, Pause Lever	360		Screw (-) (2 x 6 mm)
289	01531964	Spring, Tension, Idler Plate	361		Screw (-) (2.6 x 8 mm)
290	01531965	Spring, Rec. Safety			
291	01531966	Spring, Rec. Safety			

REF. NO.	H/K PART NO.	DESCRIPTION
362		Screw (-) (2.6 x 10 mm)
363		Screw (-) (2 x 20 mm)
364		Screw (-) (2.6 x 3 mm)
365		Screw (-) (2 x 4 mm)
366		Screw (-) (2 x 6 mm)
367		Screw (+) (3 x 5 mm)
368		Screw (+) (3 x 6 mm)
369		Screw (+) (3 x 8 mm)
371		Screw (+) (3 x 16 mm)
372		Screw (+) (3 x 14 mm)
373		Set Screw (3 x 4 mm)
375		Screw-Special (-)
377		Screw-Special (+)
379	01528439	E-Stop Ring (2 mm)
380	01528440	E-Stop Ring (2.3 mm)
381	01528441	E-Stop Ring (3 mm)
382	01531976	E-Stop Ring (4 mm)
384	01531977	Stop Ring
388		Hexagon Nut
389		Hexagon Nut
391	01528443	Lug
393	01528438	Pin, Solenoid
501	01531858	Rec/Play Head
502	01531859	Erase Head
503	01531855	Motor Assy.
510	01528448	Switch, F.F./Rew.
511	01531982	Solenoid Assy.
524	01531983	Pulley, Tape Counter
527	01531840	Switch, Tape End
528	01532043	Bracket, Mic Input Jack
529	01531841	Switch, Play/Start
530	01531839	Switch, Pause
532		Metal Washer
533	01531988	E-Stop Ring (1.4 mm)
534	01531857	Tape Counter
535		Screw (+) (3 x 10 mm)
536	01531990	Bushing, Solenoid Bracket
537	01531991	Bracket, Solenoid
538		Screw (+) (4 x 6 mm)
539	01531992	Insulator, Solenoid

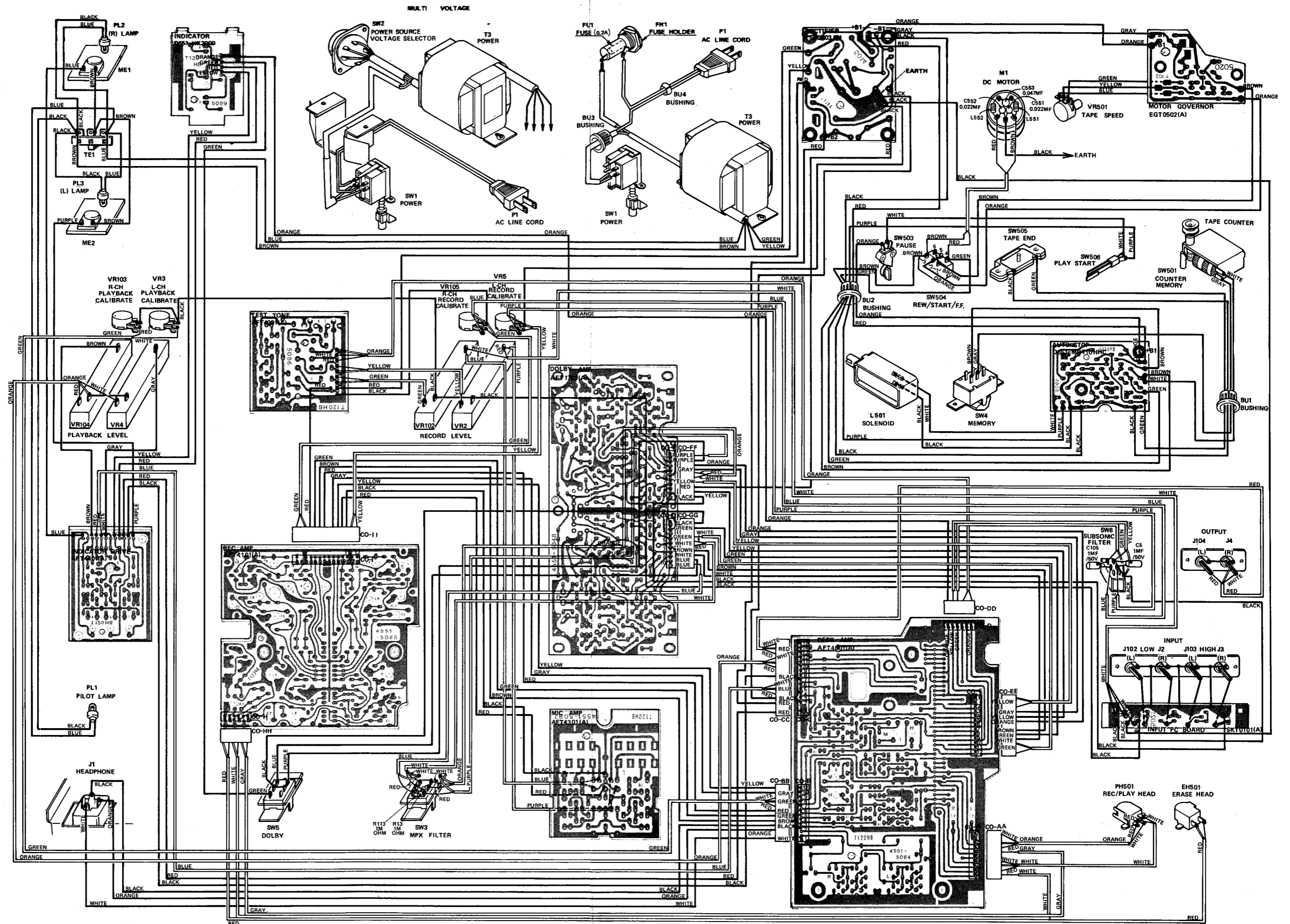
REF. NO.	H/K PART NO.	DESCRIPTION
MISCELLANEOUS		
SW1	01531836	Switch, Power
SW2	01531837	Switch, Power, Voltage Selector (Multi-voltage Deck)
SW3, SW4, SW5	26528531	Switch, MPX Filter/Dolby NR/Memory
SW6	01531838	Switch, Subsonic Filter
PL1, 2, 3	46531842*	Lamp, Pilot and Meter
J1, J101	65431869	Jack, MIC Input
J10	65428573	Jack, Headphone
J2, 3, 102, 103	65428571	Jack, Input, 4 pin
J4, 104	65428572	Jack, Output, 2 pin
FU1	01531843*	Fuse (Regular Voltage Deck) 0.2A
FH1	654285, 3	Fuse Holder
T3	01531844	Power Transformer (Regular Voltage Deck)
T3	01531845	Power Transformer (Multi Voltage Deck)
VR1, 101	23531867	Variable Resistor, 20k ohm
VR2, 102	2, 431846	Variable Resistor, 100 k ohm Record Level
ME1, 2	01531993	VU Meter
VR3, 103	23531847	Variable Resistor, 50 k ohm Playback Calibrate
VR4, 104	21428548	Variable Resistor, 10 k ohm Playback Level
VR5, 105	23531848	Variable Resistor, 10 k ohm Record Calibrate
VR501	23531849	Variable Resistor, 500 ohm Tape Speed
L501	01531856	D.C. Solenoid
TE1	01531860	Lug Terminal

NOTE TO WARRANTY STATIONS: Items marked with 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.

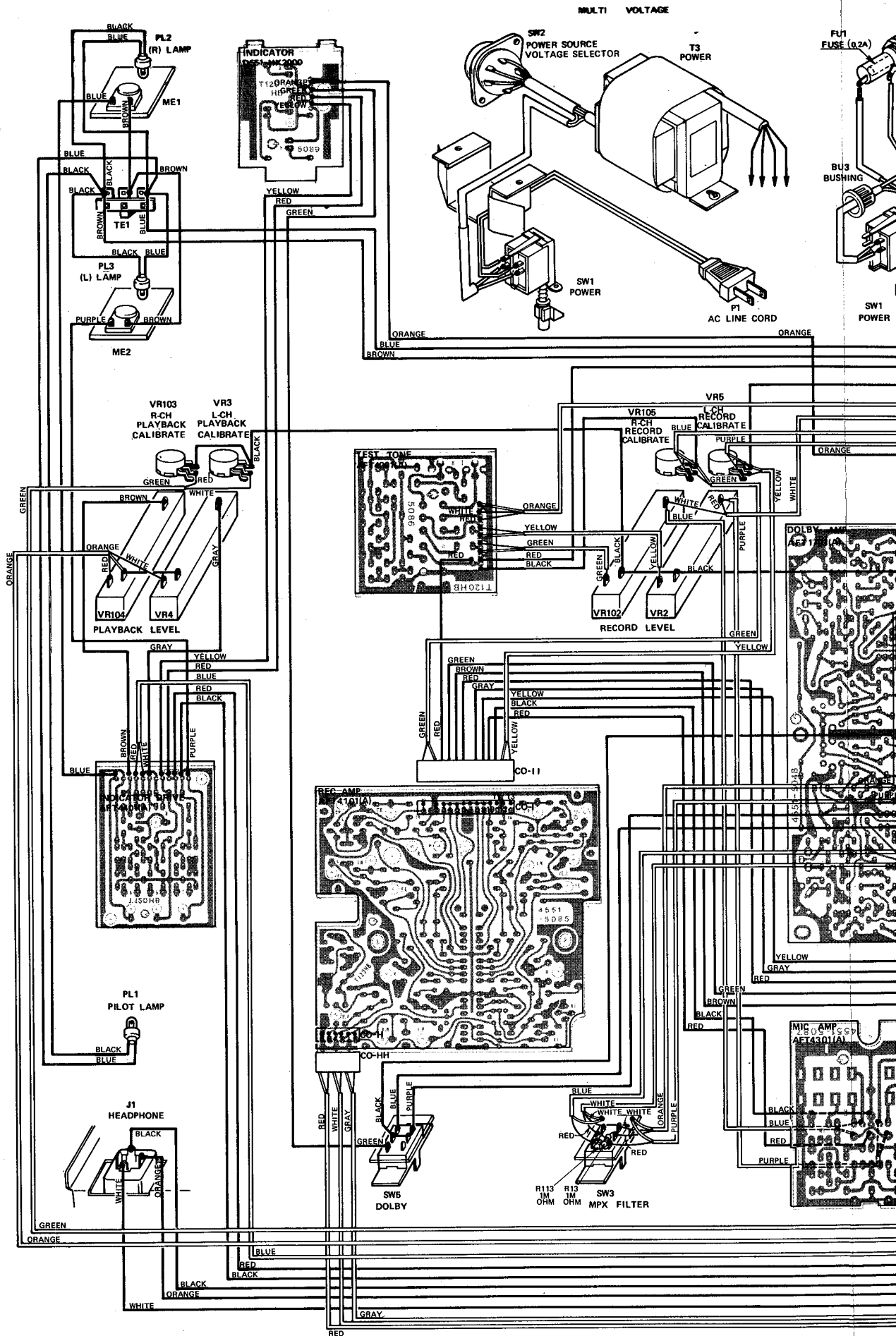
NOTE: To speed handling of your order be sure to include both the model and serial numbers, in addition to the

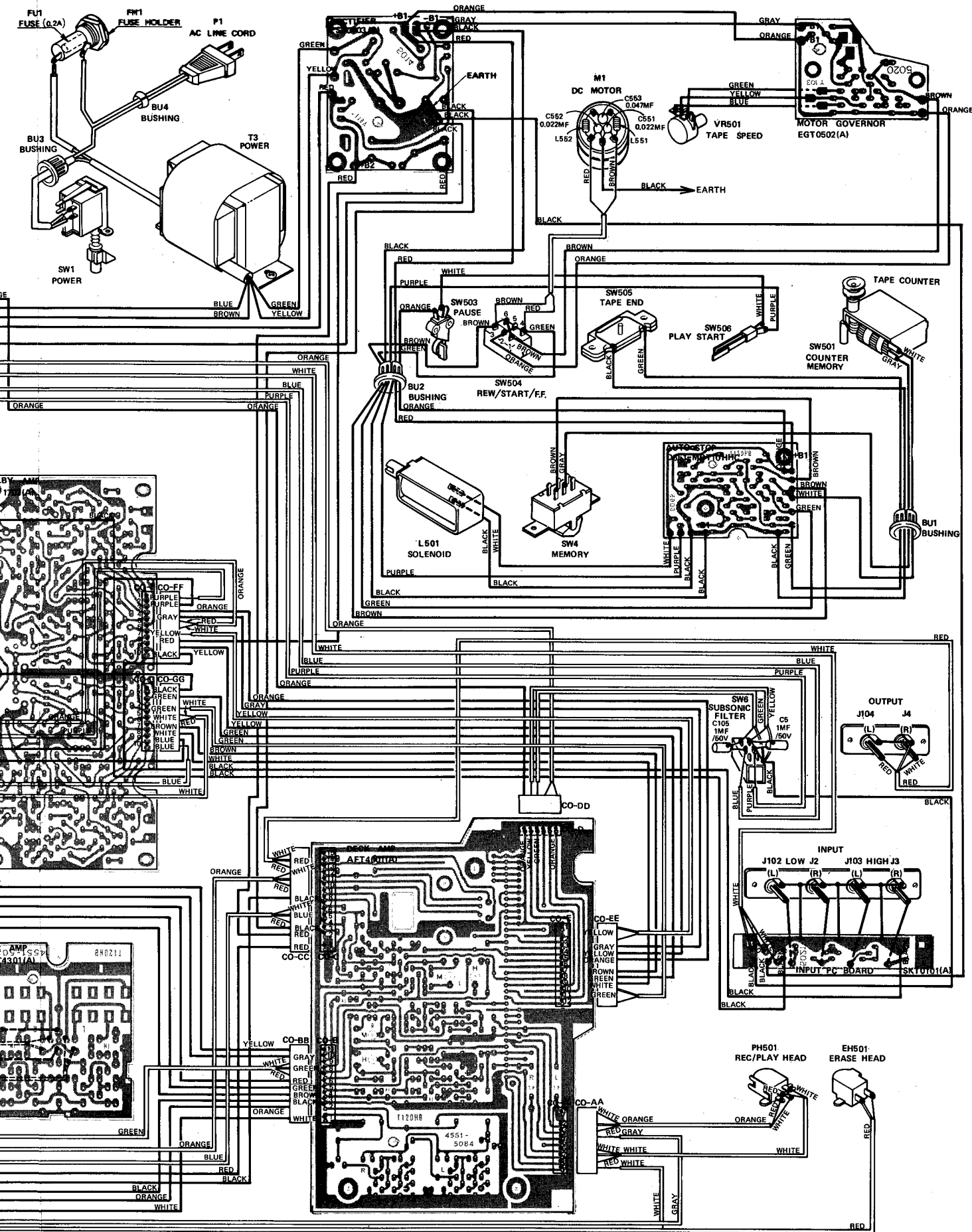
quantity, part number and part description of the items ordered. Orders from independent dealers, independent servicemen, and retail customers will be shipped on a cash in advance basis. Harman/Kardon reserves the right to substitute equivalent parts for those originally installed in this chassis. All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

WIRING DIAGRAM

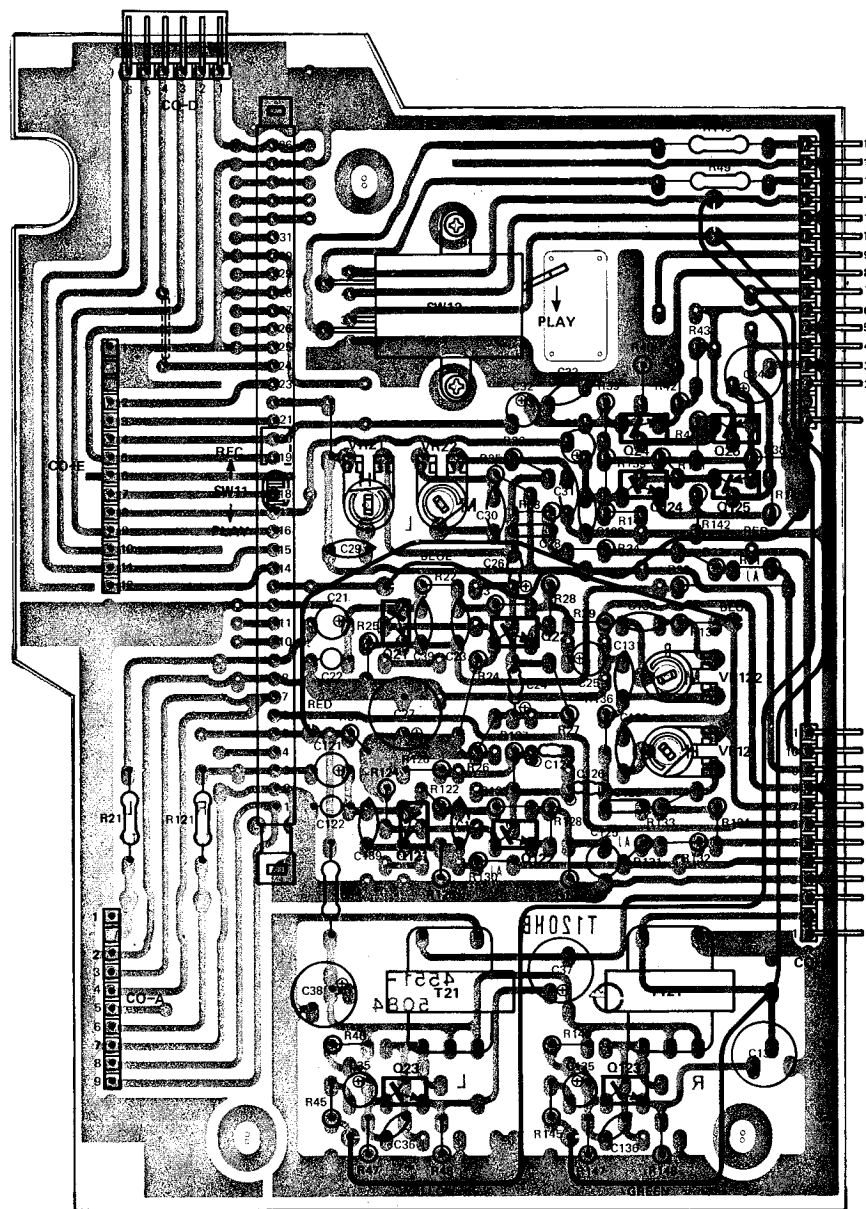


WIRING DIAGRAM





DECK AMPLIFIER



CIRCUIT
REF. NO.

H/K
PART NO.

DESCRIPTION

01531828

P.C. Board Assy.,
Deck Amplifier

RESISTORS

VR21, 121

23531870

Variable Resistor,
50k ohm

VR22, 122

23531871

Variable Resistor,
100k ohm

CIRCUIT
REF. NO.

H/K
PART NO.

DESCRIPTION

TRANSISTORS

Q21, 22, 121, 122

43028535*

2SC1344(E)

Q23, 123

43028518*

2SC458(D)

Q24, 124

43031872*

2SC458(C)

Q25, 125

43028517*

2SA672(B)

TRANSFORMERS

T21, 212

10528554

Output Regulator

MISCELLANEOUS

SW11

24531861

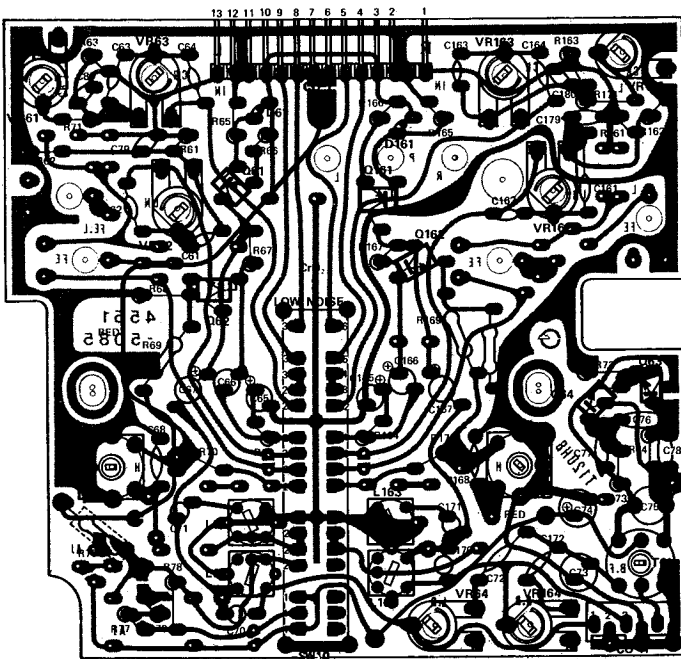
Switch, Play/Rec.

SW12

24528567

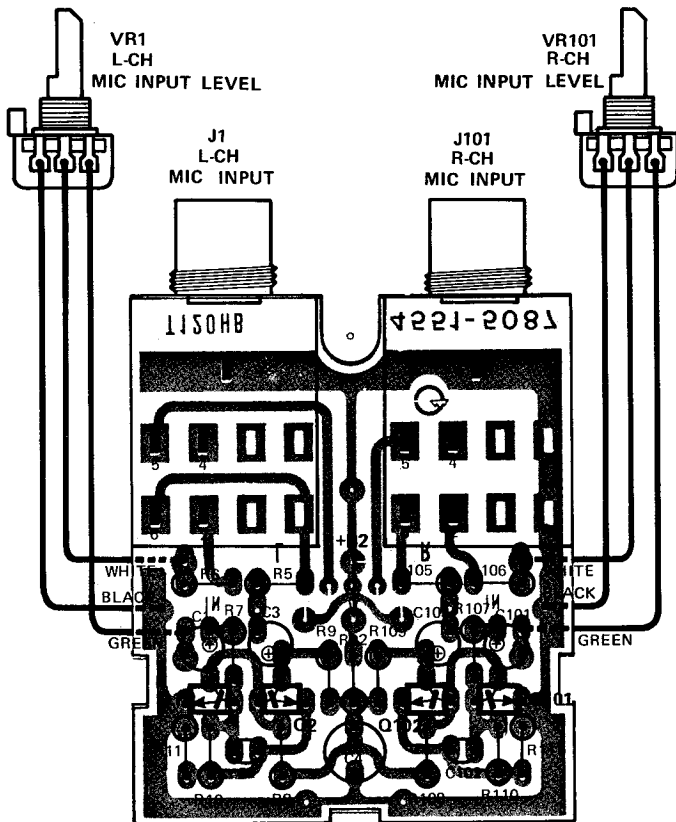
Switch, Play/Start

RECORD AMPLIFIER



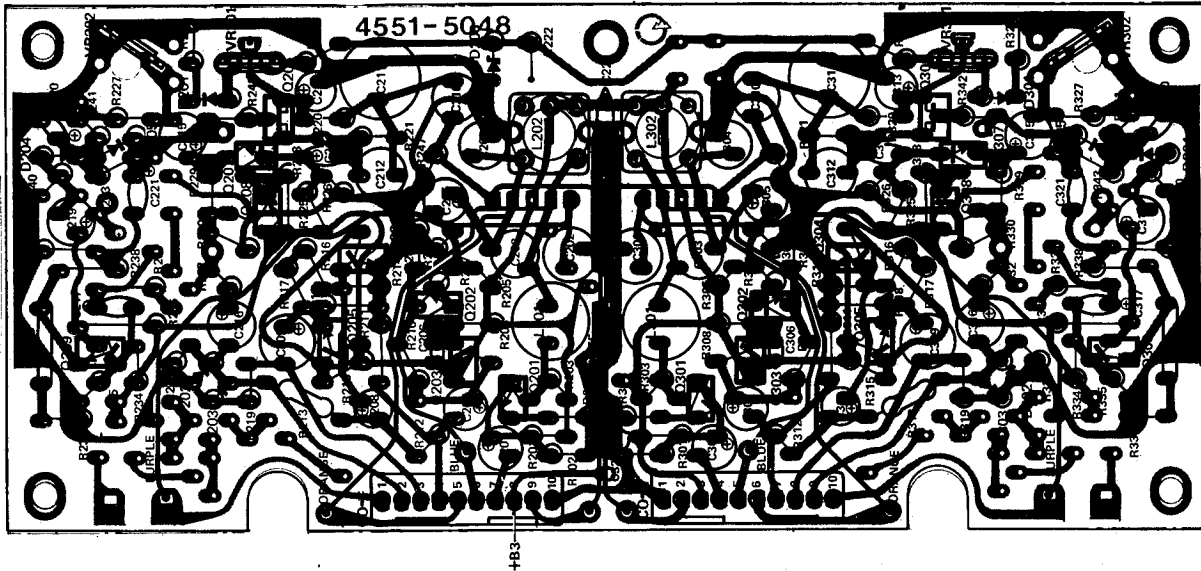
CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	01531834	P.C. Board Assy., Record Amplifier
RESISTORS		
VR61, 62, 63, 161, 162, 163	23531874	Variable Resistor, 20k ohm
VR64, 164	23531871	Variable Resistor, 100k ohm
SEMICONDUCTORS		
Q61, 161	43028517*	Transistor, 2SA672(B)
Q62, 162	43028518*	Transistor, 2SC458(D)
Q63, 64	43028540*	Transistor, 2SC1213(C)
D61, 16	38128520*	Varistor MV11 (orange)
COILS AND TRANSFORMER		
L61, 161	12031875	Coil, Record Bias Trap
L62, 63, 162, 163	12028558	Coil, Record Bias Trap
T61	12031876	Transformer, Record Bias Oscillator
MISCELLANEOUS		
SW10	01531877	Switch, Tape Selector

MIC AMPLIFIER



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	01531832	P.C. Board Assy., MIC Amplifier
TRANSISTORS		
Q1, 101	43031868*	2SC1344(D)
Q2, 102	43028518*	2SC458(D)

DOLBY AMPLIFIER



CIRCUIT REF. NO. **H/K PART NO.** **DESCRIPTION**
 01531835 P.C. Board Assy.,
 Dolby Amplifier

RESISTORS
 VR201, 301 23531880 Variable Resistor, 5k ohm
 VR202, 302 23531881 Variable Resistor, 2k ohm

SEMICONDUCTORS
 Q201, 301 43028582* Transistor, 2SC458LG(D)
 Q202, 302 43028582* Transistor, 2SC458LG(D)
 Q203, 303 43028517* Transistor, 2SA672(B)
 Q204, 304 43028582* Transistor, 2SC458LG(D)
 Q205, 305 43031872* Transistor, 2SC458(C)
 Q206, 306 43031882* Transistor, F.E.T.,
 2SK40(R)

CIRCUIT REF. NO. **H/K PART NO.** **DESCRIPTION**

SEMICONDUCTORS (continued)
 Q207, 307 43028582* Transistor, 2SC458LG(D)
 Q208, 308 43028517* Transistor, 2SA672(B)
 Q209, 309 43028518* Transistor, 2SC458(D)
 D201, 204, 301,
 304 41528591* Diode 1N34A
 D202, 203, 302,
 303 38128521* Varistor HV23G (blue)
 D205, 305 41028593* Diode 1S2076
 D206 41028594* Zener Diode H27(A)

COILS
 L201, 301 12031886 Low Pass Filter
 L202, 302 12028599 MPX Filter

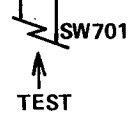
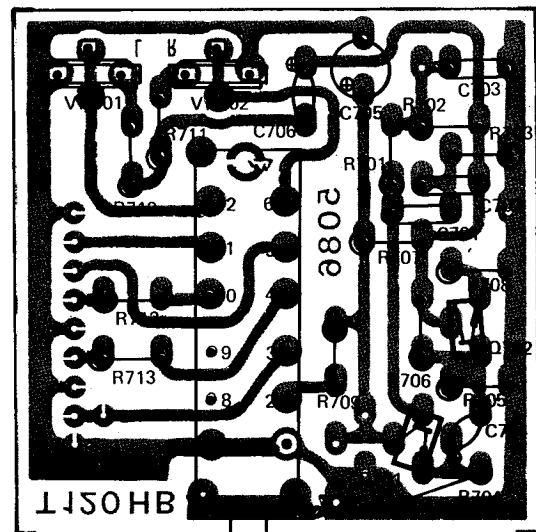
TEST TONE

CIRCUIT REF. NO. **H/K PART NO.** **DESCRIPTION**
 01531830 P.C. Board Assy.,
 Test Tone

RESISTORS
 VR701, 702 23531880 Variable Resistor,
 5k ohm

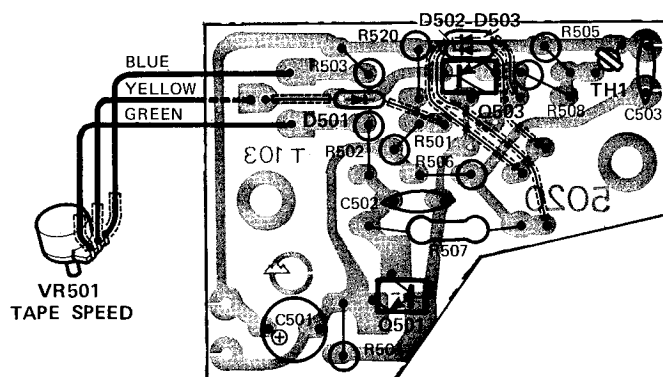
TRANSISTORS
 Q701, 702 43028518* 2SC458(D)

MISCELLANEOUS
 SW701 25028509 Switch, Test Tone



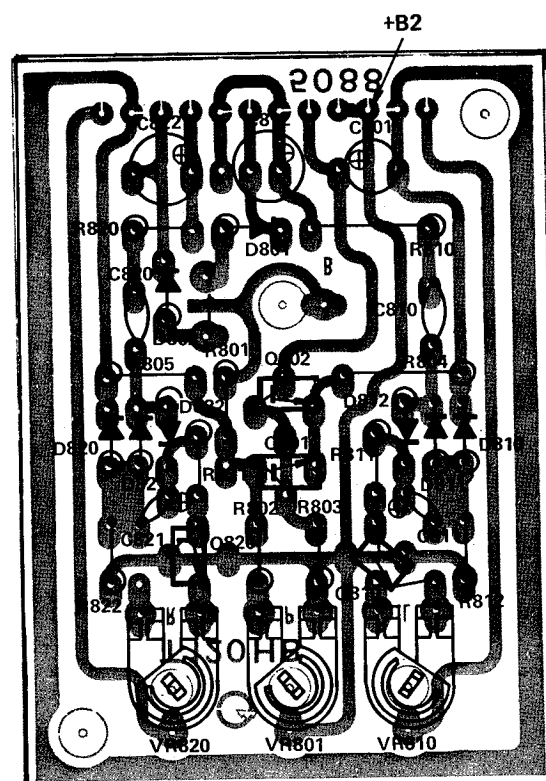
MOTOR GOVERNOR

CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	01531825	P.C. Board Assy., Motor Governor
RESISTORS		
VR501	23532177	Variable Resistor, 500 ohm
SEMICONDUCTORS		
Q501	43028516*	Transistor, 2SC1368(C)
Q503	43028517*	Transistor, 2SA672(B)
D501	41030552*	Diode 1S2076
D502, 503	38128521*	Varistor HV23G (blue)
TH1	38031888*	Thermistor 112900-2

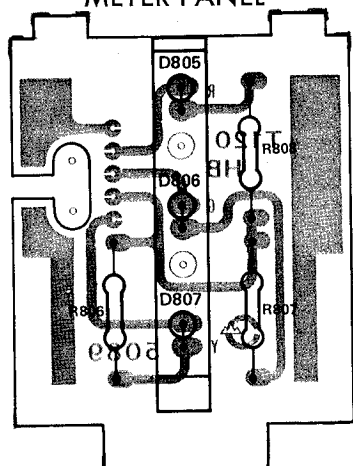


INDICATOR DRIVE

CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	01531833	P.C. Board Assy., Indicator Drive
RESISTORS		
VR801	23531895	Variable Resistor, 200k ohm
VR810, 820	23531874	Variable Resistor, 20k ohm
SEMICONDUCTORS		
Q801, 802	43031872*	Transistor, 2SC458(C)
Q810, 820	43025972*	Transistor, 2SC1335(F)
D801, 802, 811, 821	41528591*	Diode 1N34A
D810, 820	38128521*	Varistor HV23G
D812, 822	41028593*	Diode 1S2076



INDICATOR METER PANEL



CIRCUIT REF. NO.	H/K PART NO.	DESCRIPTION
	01531829	P.C. Board Assy., Indicator
LAMP, SOLID STATE		
D805	46731897*	L.E.D. Red
D806	46731898*	L.E.D. Green
D807	46731899*	L.E.D. Yellow