TEAC



SERVICE MANUAL

Stereo Cassette Deck

Effective: March, 1982 B-10258 5704012600

1 SPECIFICATIONS AND SERVICE DATA

Notes:

- 1. Improvements may result in changes in specifications and service data.
- 2. 0 dB is referenced to 0.775 V in this manual.

SPECIFICATIONS

Track system

4-track, 2-channel stereo

Heads

3: Erase, record and playback

Type of tape

Cassette tape, C-60 and C-90 (Philips type)

Tape speed

4.76 cm/s (1-7/8 ips)

Input (level and impedance)

MIC:

Specified input level: -57 dB (1.09 mV)/10 kohms

Minimum input level: $-67 \text{ dB} (346 \mu\text{V})$

Specified input level: -9 dB (275 mV)/50 kohms

Minimum input level: -19 dB (86.9 mV)

Output (level and impedance)

OUTPUT:

LINE IN:

Specified output level: -5 dB (436 mV)/50 kohms

PHONES:

Specified output level: -15 dB (138 mV)/8 ohms

Equalization

METAL:

 $3180 \, \mu s + 70 \, \mu s$

Co (CrO₂): $3180 \mu s + 70 \mu s$

NORMAL: $3180 \mu s + 120 \mu s$

Head configuration

1/2-track, 1-channel erase head

1/4-track, 2-channel record and playback head

Motors

1 DC servo motor (for capstan drive)

1 DC motor (for reel drive)

1 DC motor (for ancillary control)

Bias frequency 100 kHz ± 5 kHz

Operation position Horizontal

Power requirements

100/120/220/240 V AC, 50/60 Hz, 25 W (General export)

120 V AC, 60 Hz, 25 W (U.S.A./Canada)

220 V AC, 50 Hz, 25 W (Europe)

240 V AC, 50 Hz, 25 W (U.K./Australia)

Weight 6.0 kg (13-4/16 lbs.) net

Dimensions See Fig. 2-2

SERVICE DATA

MECHANICAL

Tape speed deviation

 $3,000 \text{ Hz} \pm 45 \text{ Hz}$

Tape speed drift

45 Hz

Wow and flutter

Playback:

0.035% (WRMS)

Record/playback:

0.20% (RMS)

350 g to 450 g (12.3 oz to 15.9 oz.) Pinch roller pressure

Reel Torque

Take-up: 50 to 65 g-cm (0.69 to 0.90 oz-inch)

1.5 to 3 g-cm (0.021 to 0.042 oz-inch) Supply:

F.F.:

More than 55 g-cm (0.76 oz-inch)

REW:

80 to 150 g-cm (1.1 to 2.1 oz-inch)

Fast winding time

85 seconds for MTT-501 (C-60)

ELECTRICAL

Frequency response

See Figs. 5-5 and 5-7 to 5-9.

Signal-to-noise ratio

Playback:

NORMAL: 47 dB min.

Overall:

METAL, Co (CrO₂): 46 dB min.

NORMAL: 45 dB min.

Erase efficiency 65 dB min. at 1 kHz (measured with input 10 dB

higher than the specified input level)

Channel separation 30 dB min. at 1 kHz

Adjacent track crosstalk 40 dB min. at 125 Hz

Total harmonic distortion

1.8% or less with METAL and Co

(CrO₂) tapes

2.0% or less with NORMAL tape

CAUTION

- A Parts marked with this sign are safety critical components. They must always be replaced with identical components refer to the appropriate parts list and ensure exact replacement.
- Dolby Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
 - "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- dbx Noise Reduction system made under license from dbx, Incorporated. The name "dbx" and the dbx symbol are trademarks of dbx, Incorporated.

2 CASE AND FRONT PANEL REMOVAL

Disassemble in number-order

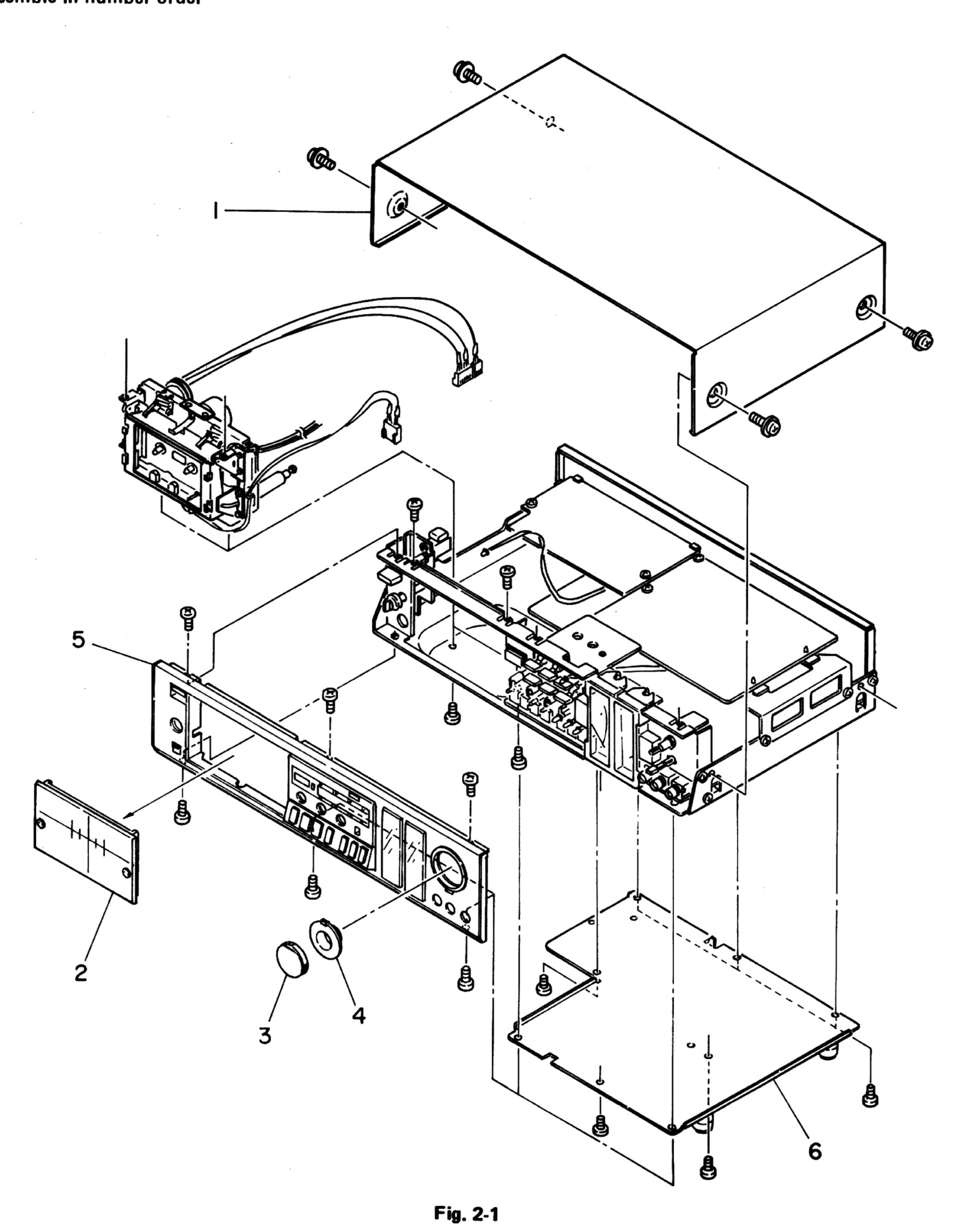


Fig. 2-2 Dimensions

3 PARTS LOCATION

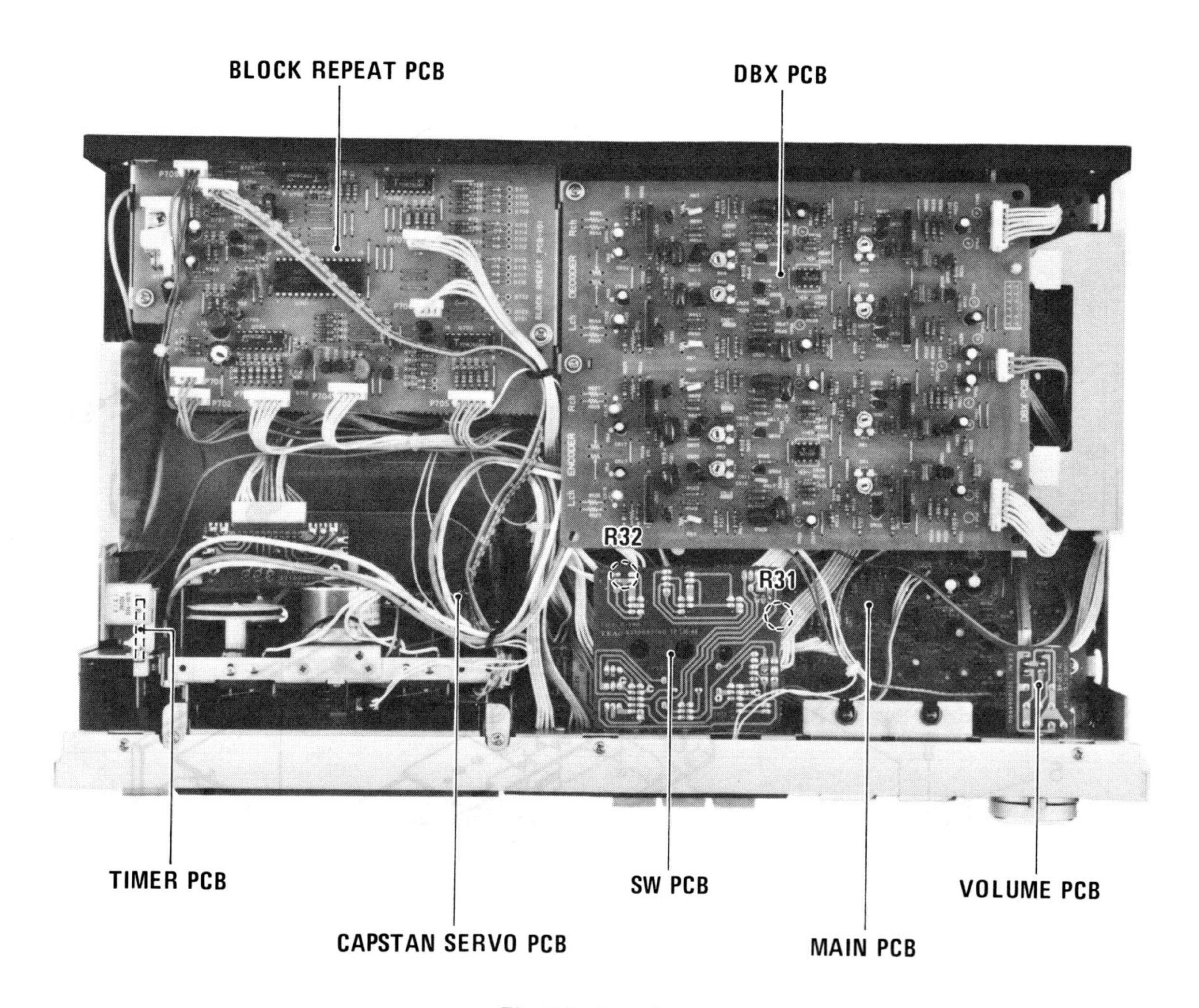


Fig. 3-1 Top view

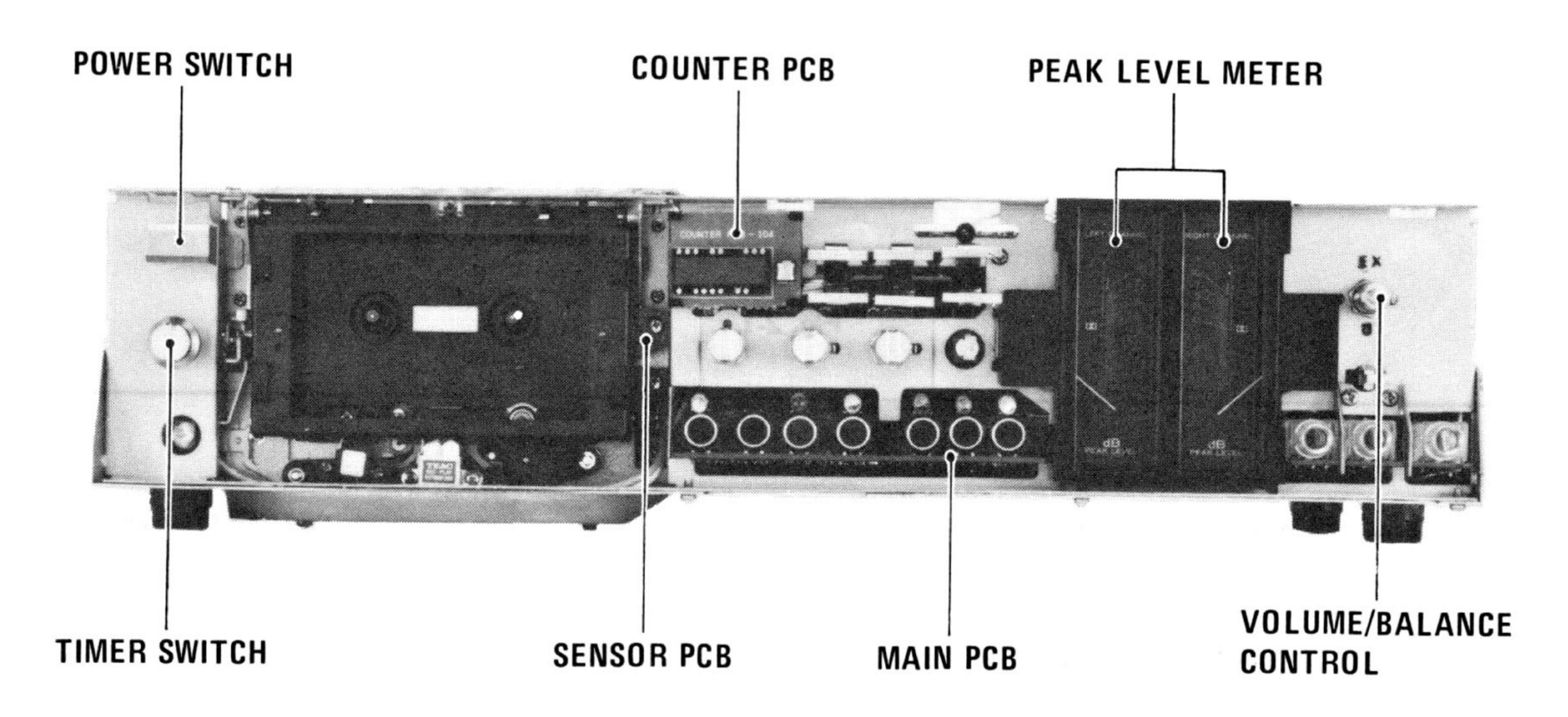


Fig. 3-2 Front view

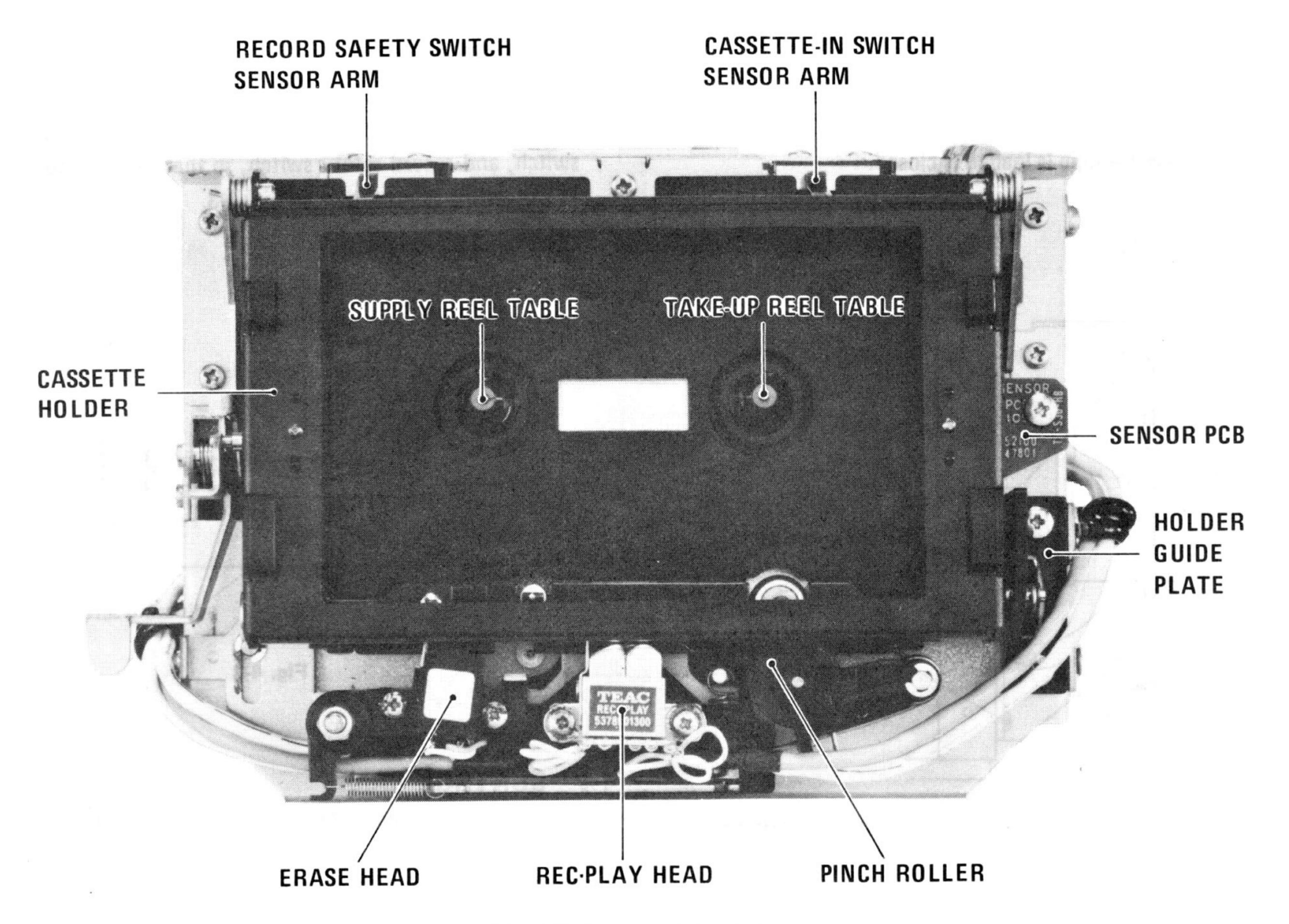


Fig. 3-3 Transport front view

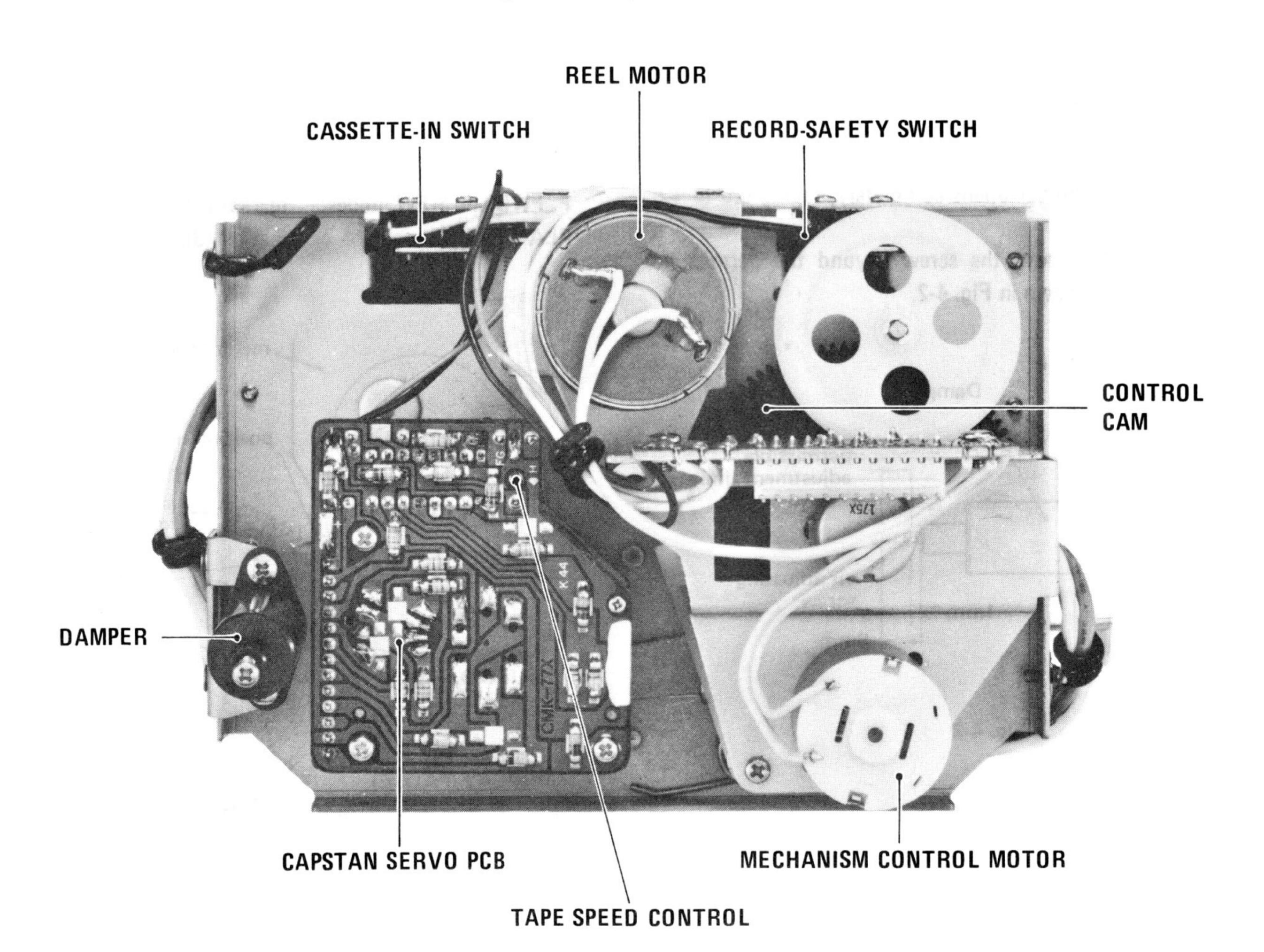


Fig. 3-4 Transport rear view

4 MECHANICAL ADJUSTMENTS AND CHECKS

4-1 CASSETTE HOLDER

1. Adjust the position of holder guide plate so that the parallel condition shown in Fig. 4-1 is obtained when the cassette holder in which the cassette tape is loaded is closed.

Viewed from right side

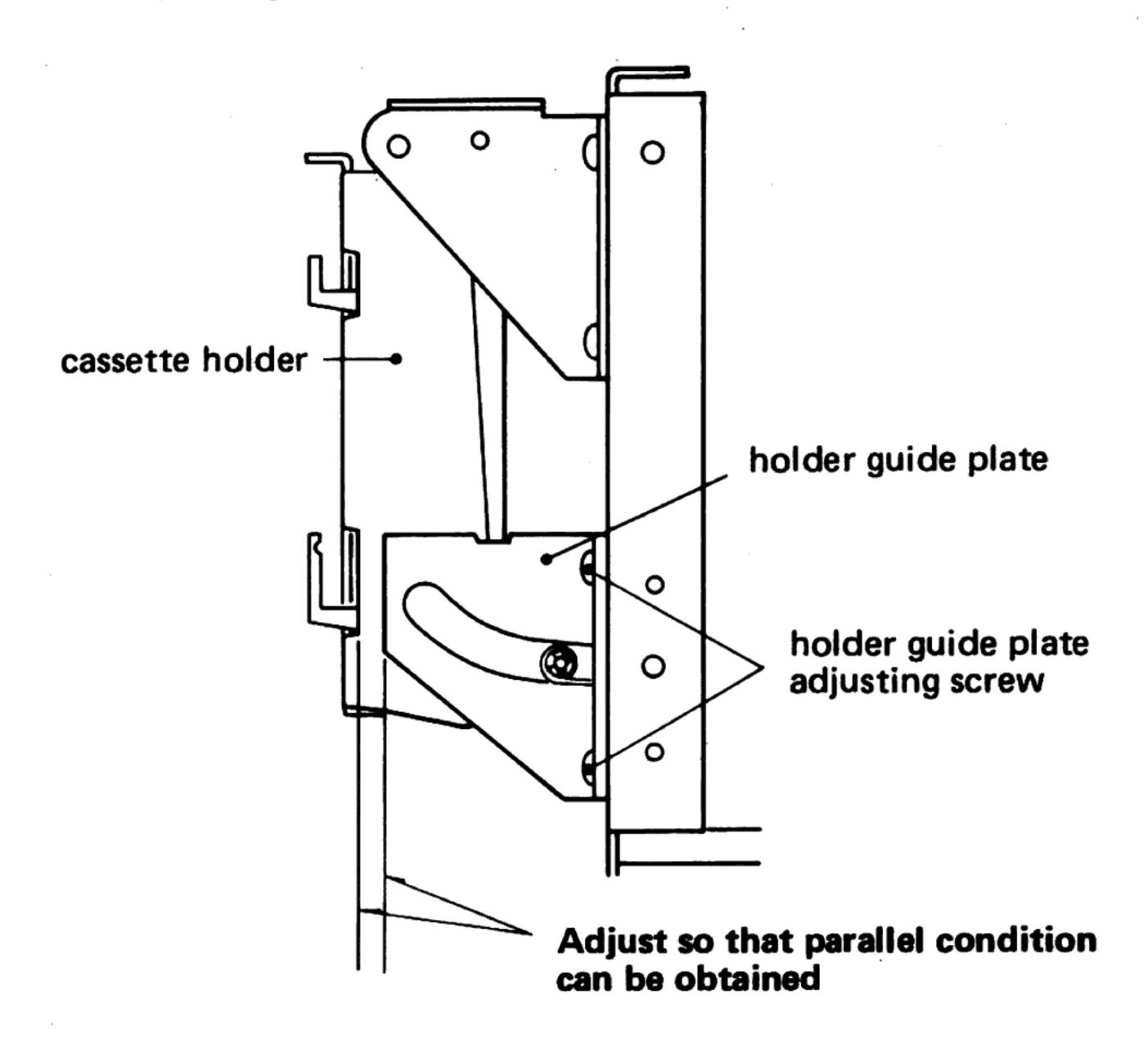


Fig. 4-1

4-2 DAMPER ADJUSTMENT

- 1. Load a C-60 tape and close the cassette holder.
- 2. Turn the air adjusting screw so that after pushing the EJECT button, the cassette holder opens completely, taking 0.5 to 1.5 seconds.

Note: Be careful not to turn the screw beyond the permissible adjustment limit shown in Fig. 4-2.

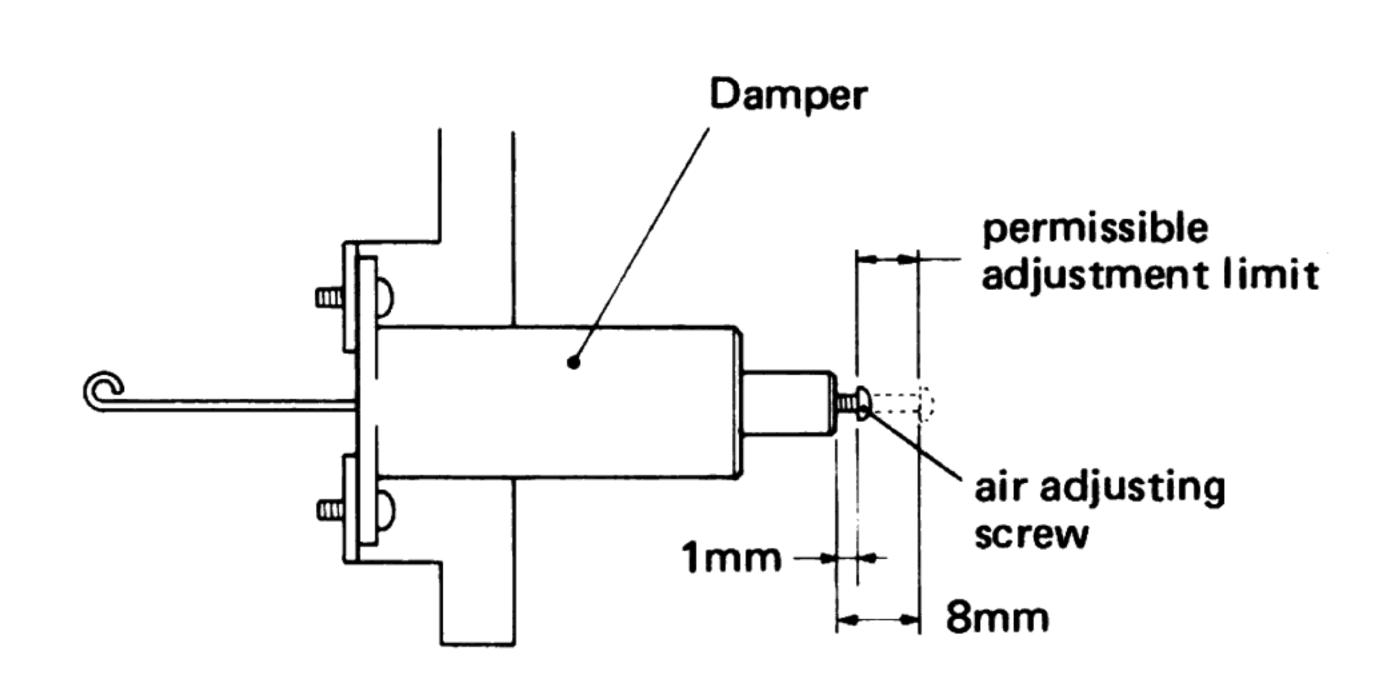


Fig. 4-2

4-3 MICRO SWITCH

- 1. Load any standard cassette and close the cassette holder.
- 2. Adjust mounting position of the two micro switches, cassette-in switch, and record safety switch, so that the actuator position is in the setting range shown in Fig. 4-3.

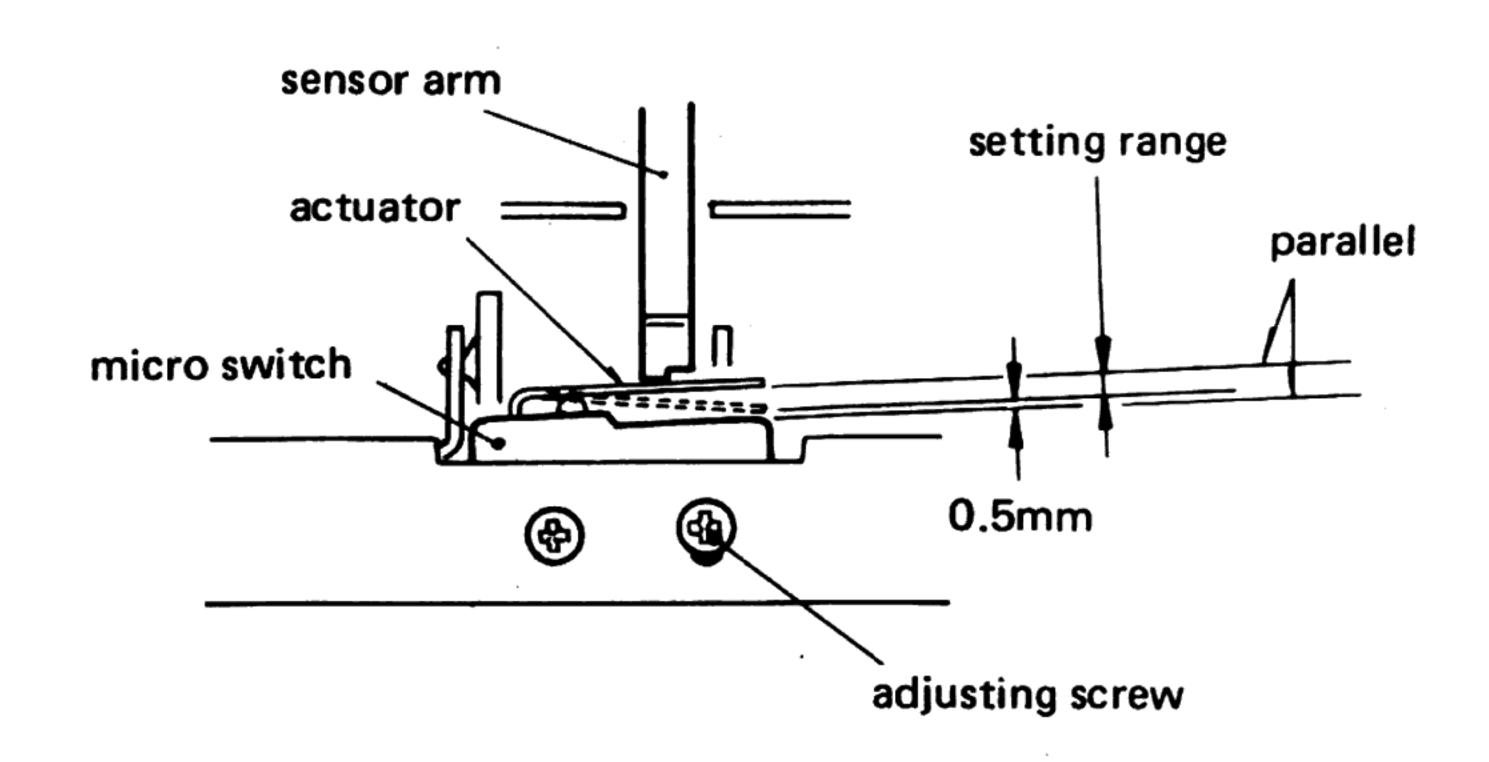


Fig. 4-3

4-4 CONTROL CAM

Note: For R31, R32 adjustor locations, see Fig. 3-1.

- 1. Load any cassette tape which has the record-protect tab in place.
- Push PLAY (►) button, then check that the center of marker
 (4) coincides with position indicator of the reel motor mounting plate. If not, adjust by using R32.
- 3. Pushing the STOP button, check that the center of marker (1) coincides with the indicator as shown in Fig. 4-4. R31 is for this adjustment.
- 4. Check that when in below modes the indicator is within range of respective marker.

F. FWD and REW modes: marker (2). PLAY/PAUSE mode: marker (3).

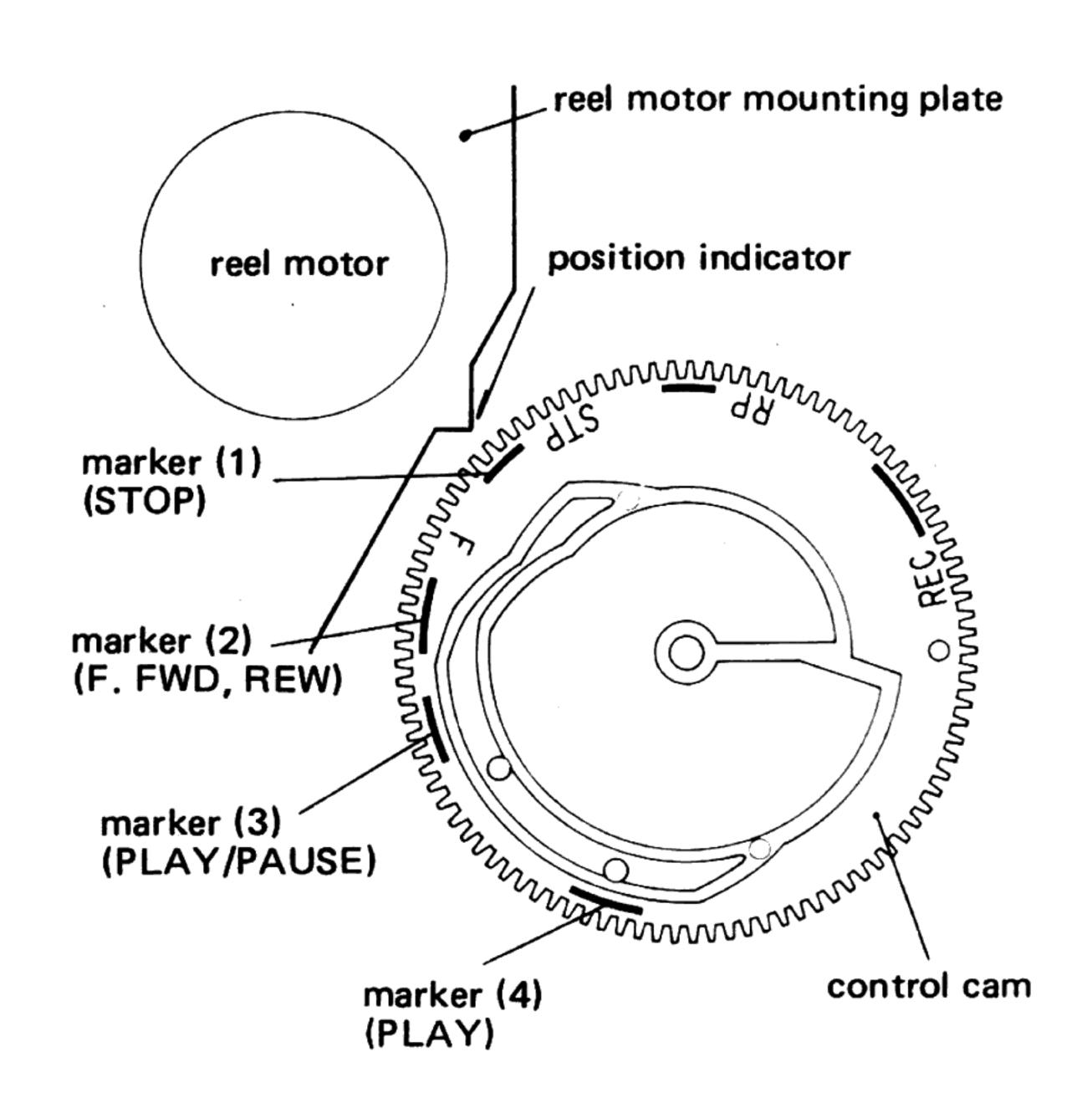


Fig. 4-4 Control cam positioning

4-5 PINCH ROLLER PRESSURE

- 1. With the cassette holder shut and no tape loaded, put the deck in play mode after pushing the cassette-in switch sensor arm upwards and holding it.
- 2. Hook a spring scale on the pinch roller assembly, as shown in the illustration.
- 3. Pull the scale down until there is sufficient force to separate the pinch roller from the capstan shaft.
- 4. Ease pressure until the pinch roller makes just enough contact with the capstan shaft so that the pinch roller just begins to turn. At this point, note the reading on the scale. It should be from 350 g to 450 g (12.3 oz. to 15.9 oz.)

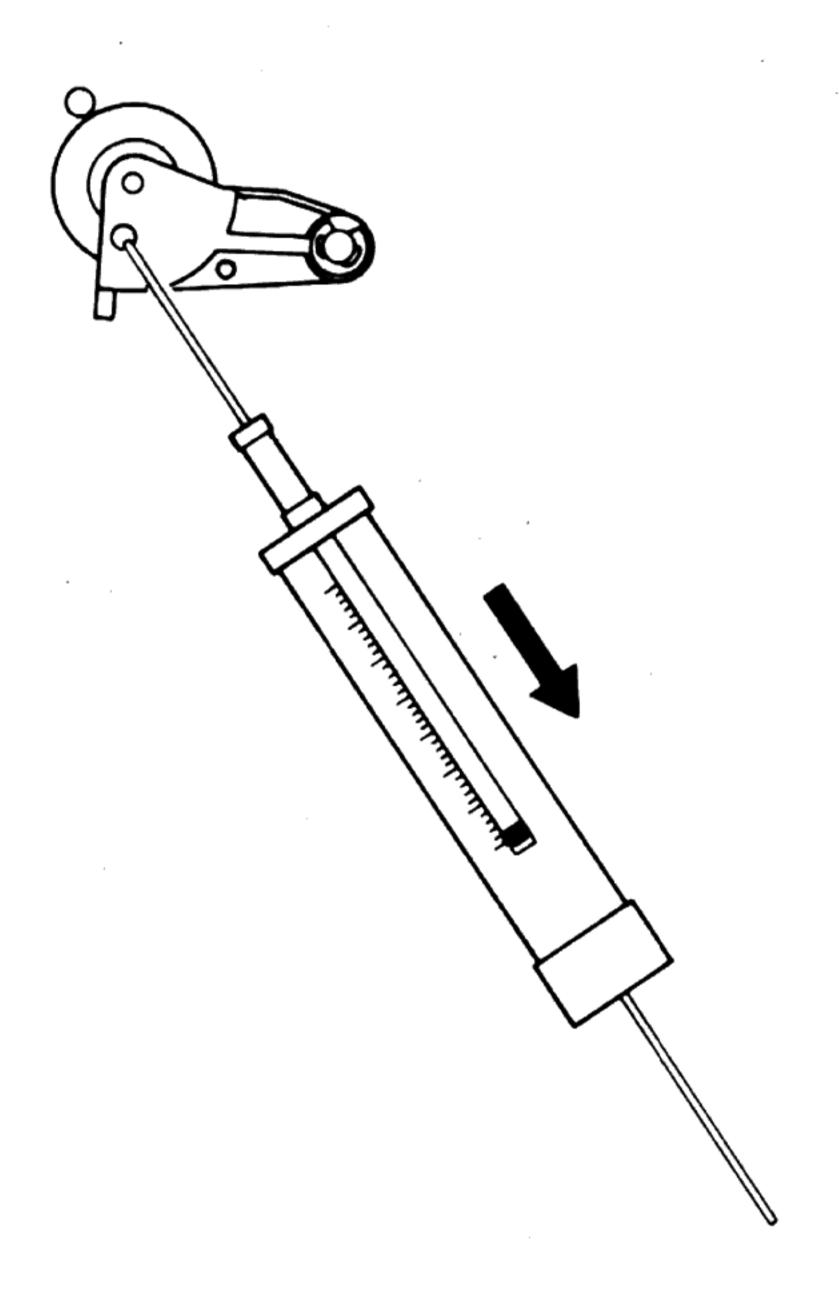


Fig. 4-5

4-6 REEL TORQUE

 Load the cassette torque meter on the deck and read the pointer indication on the dial scale for each tape transport operation.
 The measured torque should be within the following values:

Take-up:

50 to 65 g-cm (0.69 to 0.90 oz-inch)

Supply:

1.5 to 3 g-cm (0.021 to 0.042 oz-inch)

F.F:

More than 55 g-cm (0.76 oz-inch)

REW:

80 to 150 g-cm (1.1 to 2.1 oz-inch)

- 2. Take-up torque may be adjusted, if required. Within the take-up reel table you will notice three small "teeth" located at 120° around the hub and one marker "tooth" on the periphery. Torque is adjusted by pushing and slightly lifting the "tooth" (A) on the ramp* near the marker up or down. The ramps are like a three step stairway. Maximum torque is when the teeth sit on the highest steps.
 - * This ramp has catches on each step.

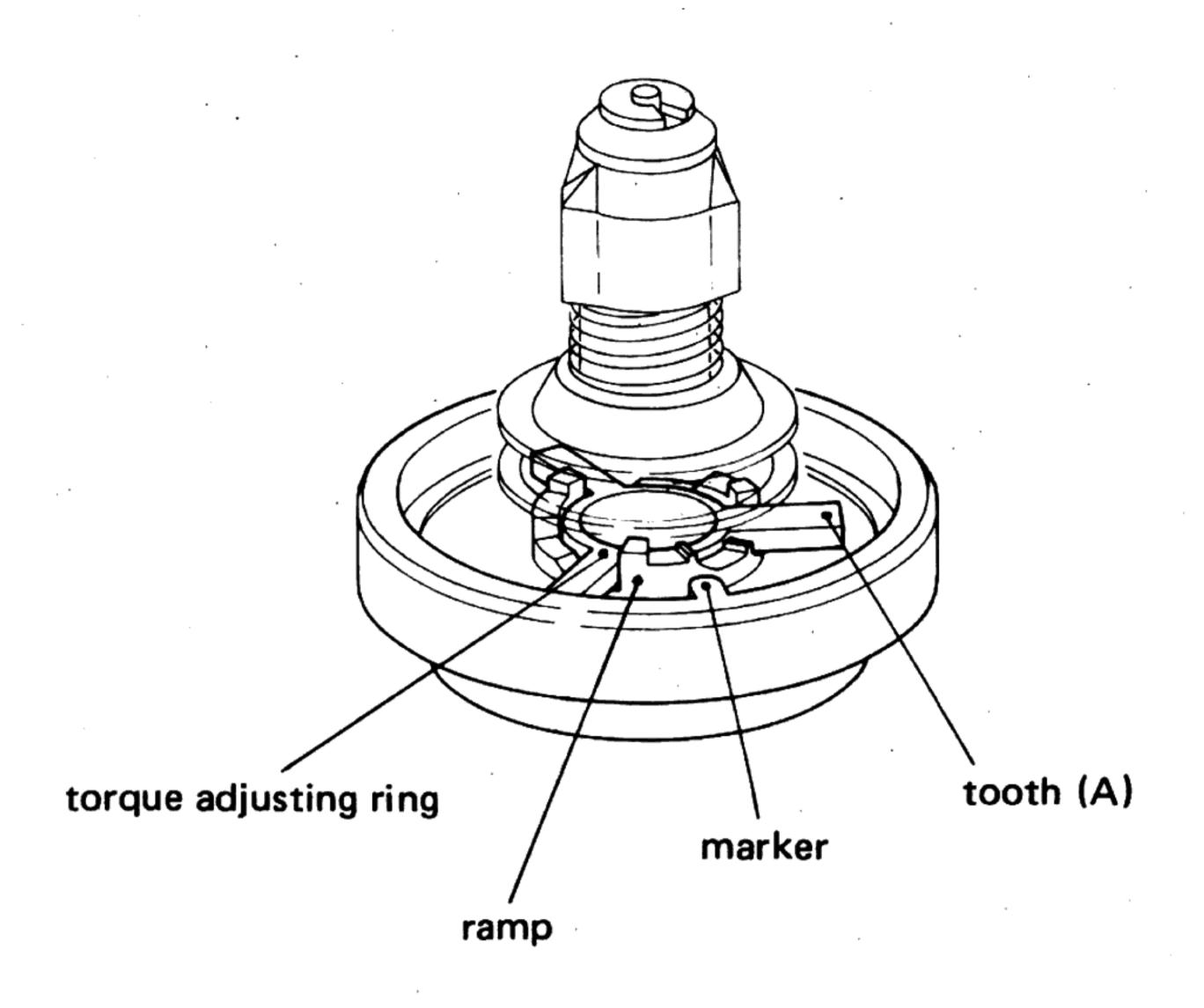


Fig. 4-6 Take-up reel table

4-7 TAPE SPEED

- 1. Connect a frequency counter to the deck as shown in Fig. 4-7.
- 2. Play a tape for around five minutes to warm up the deck, then load a TEAC MTT-111 test tape containing a 3000-Hz test tone and play the test tape from the beginning.
- 3. While the tape is playing, use a non-metalic screwdriver, and adjust the tape speed control (semi-fixed variable resistor) on the capstan sero PCB (see Fig. 3-4) for a reading of 3000 to 3010 Hz on the frequency counter.

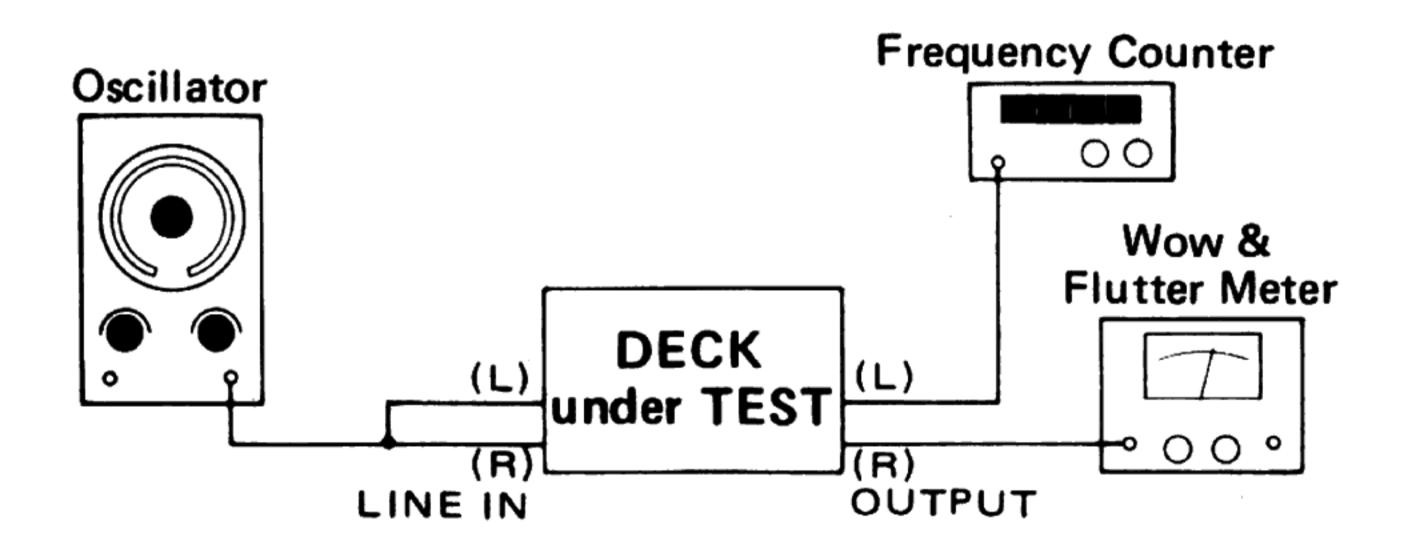


Fig. 4-7

4-8 WOW AND FLUTTER

Note: These measurements should be made at the beginning, middle, and the end of the tape.

1) PLAYBACK

- 1. Connect a wow-and-flutter meter to the deck as shown in Fig. 4-7.
- 2. Load and play a TEAC MTT-111 test tape.
- 3. Check that the reading on the wow-and-flutter meter is within 0.035% (WRMS).
- 2) RECORD/PLAYBACK
- 4. Load a TEAC MTT-502 test tape (blank) and record a 3000-Hz signal.
- 5. Rewind the tape to the beginning of the recorded section, and play it.
- 6. The wow and flutter should not be more than 0.20% (RMS).

4-9 SENSOR PCB ASSEMBLY

1. Adjust by moving the SENSOR PCB assembly so that the clearance shown in Fig. 4-8 is $0.3\sim0.5$ mm.

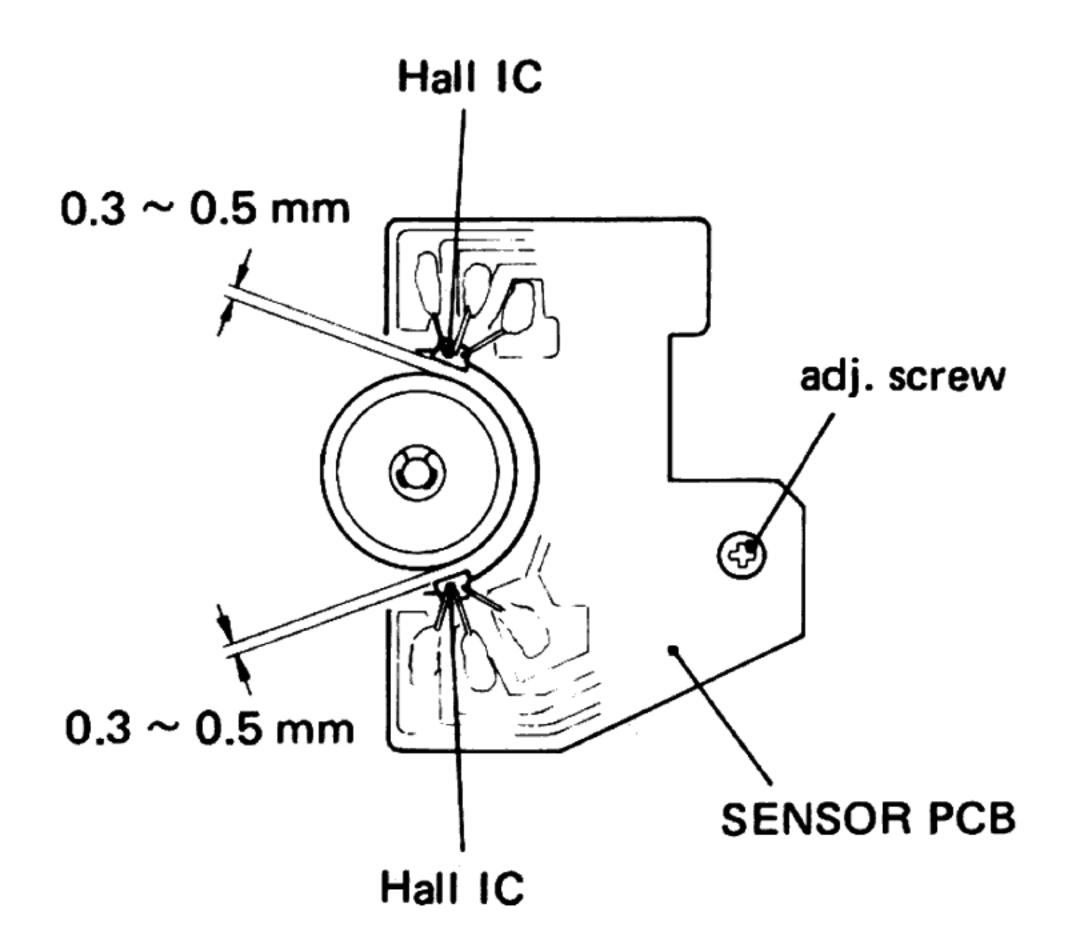


Fig. 4-8

4-10. TAPE PATH ADJUSTMENT

- 1. Thread and advance a mirror tape (MTT-902T) and check for any noticeable tape curling on the sides of the record playback head guide. Adjust the height of the erase head when curling is evident.
- 2. The clearance between the head base plate and the head stopper should be 0.3 mm \sim 0.5 mm, as shown in the figure below, when the erase head is touching the pad holder assembly during playback.

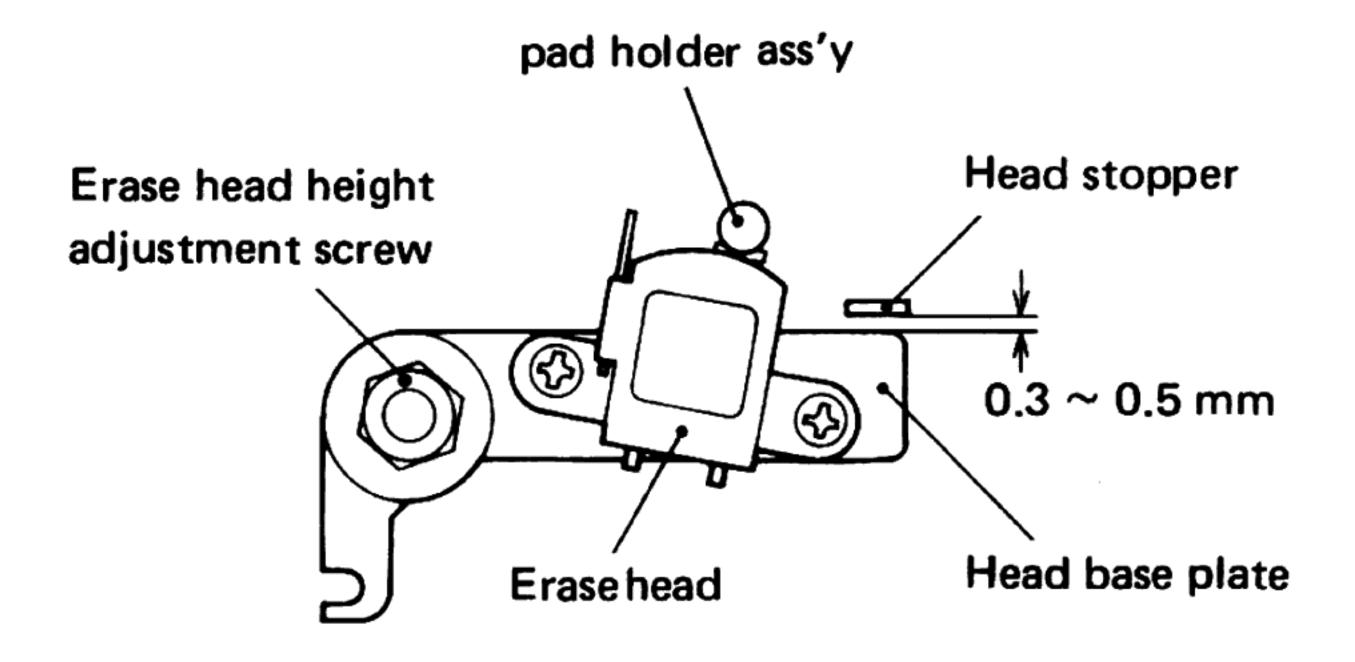


Fig. 4-9

4-11 VOLTAGE SELECTION (FOR GENERAL EXPORT MODELS)

- 1. Always disconnect the power line cord before making these adjustments.
- 2. Remove the top cover of the deck by removing the screws from the sides.
- 3. Locate the voltage selector, shown in the illustration, near the power transformer.
- 4. Loosen the two screws in the jumper bar and move the bar so that it jumps the opposing terminals marked with the required voltage (100, 120, 220 or 240).
- 5. Retighten the screws and replace the top cover.

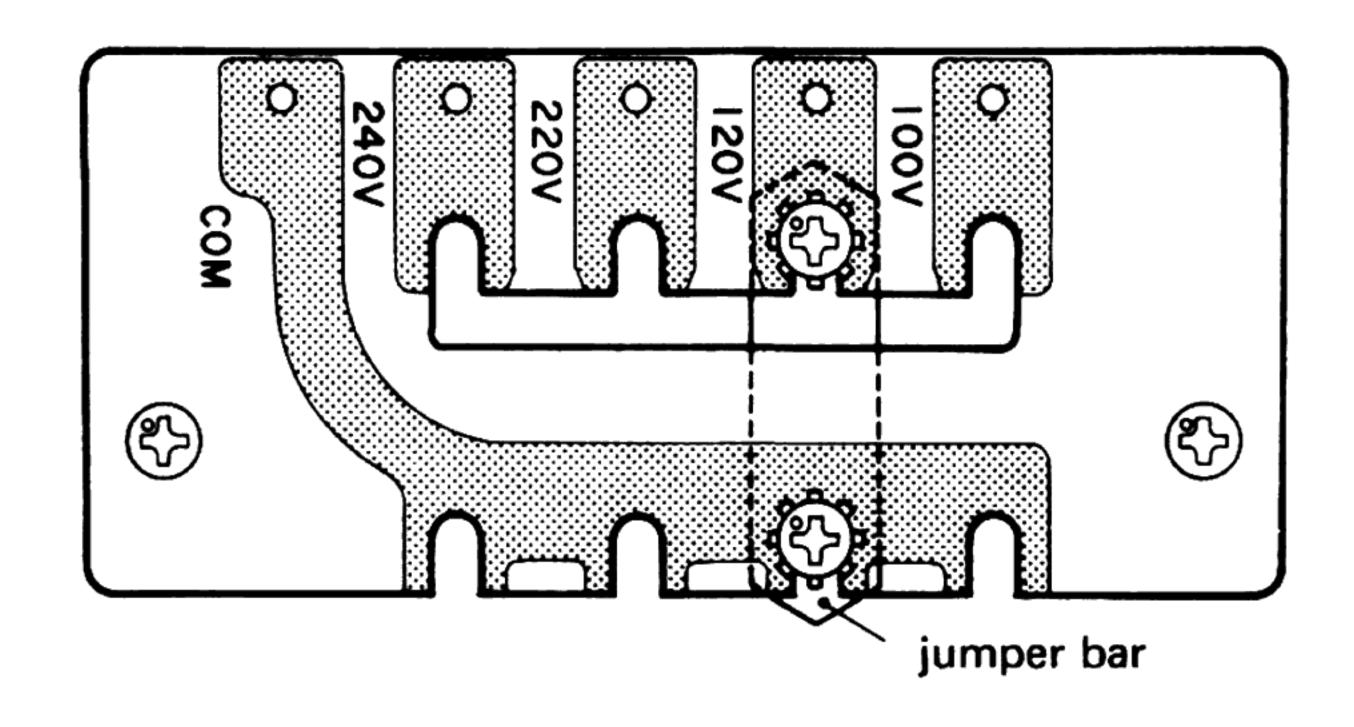


Fig. 4-10

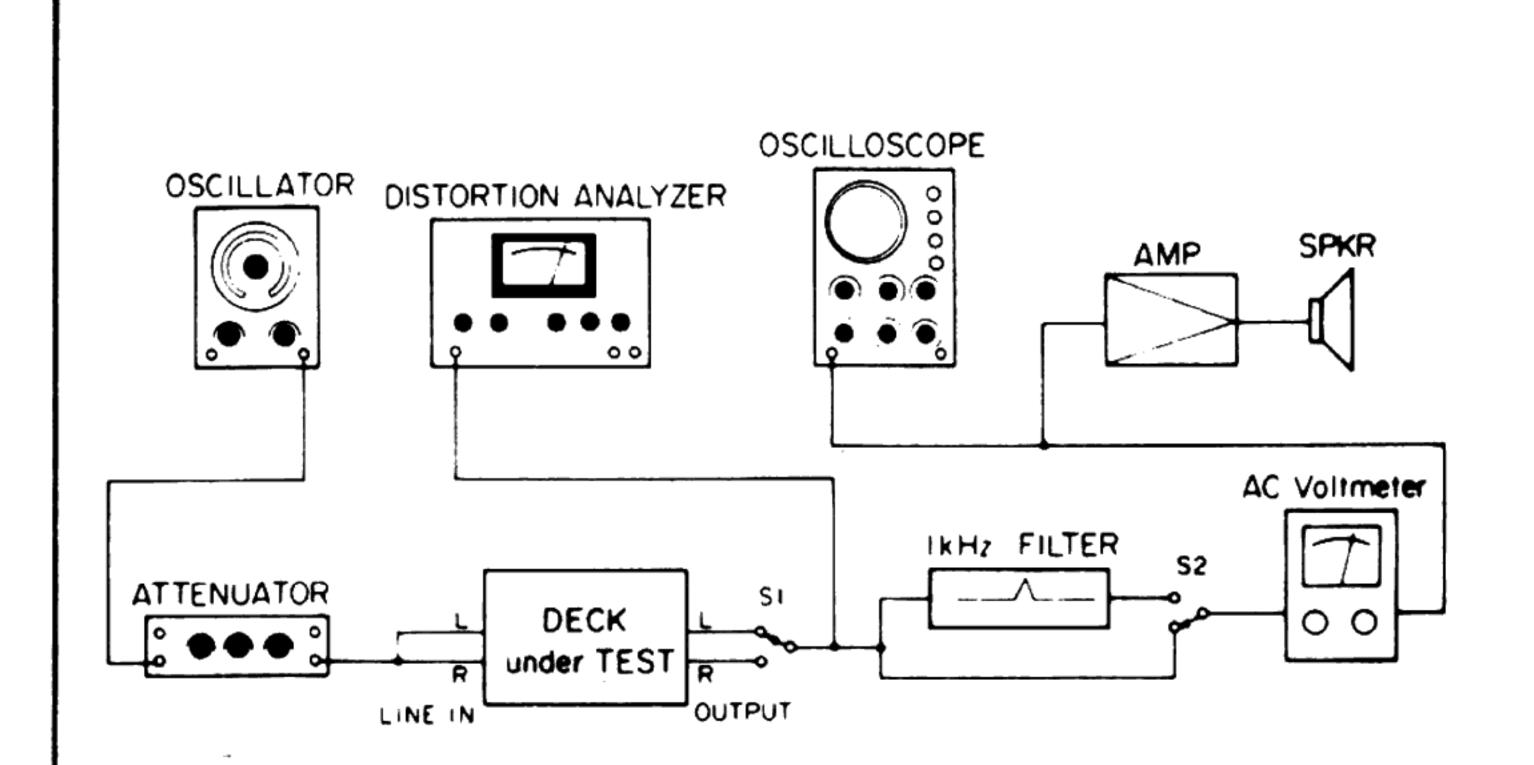


Fig. 5-1 Basic test setup

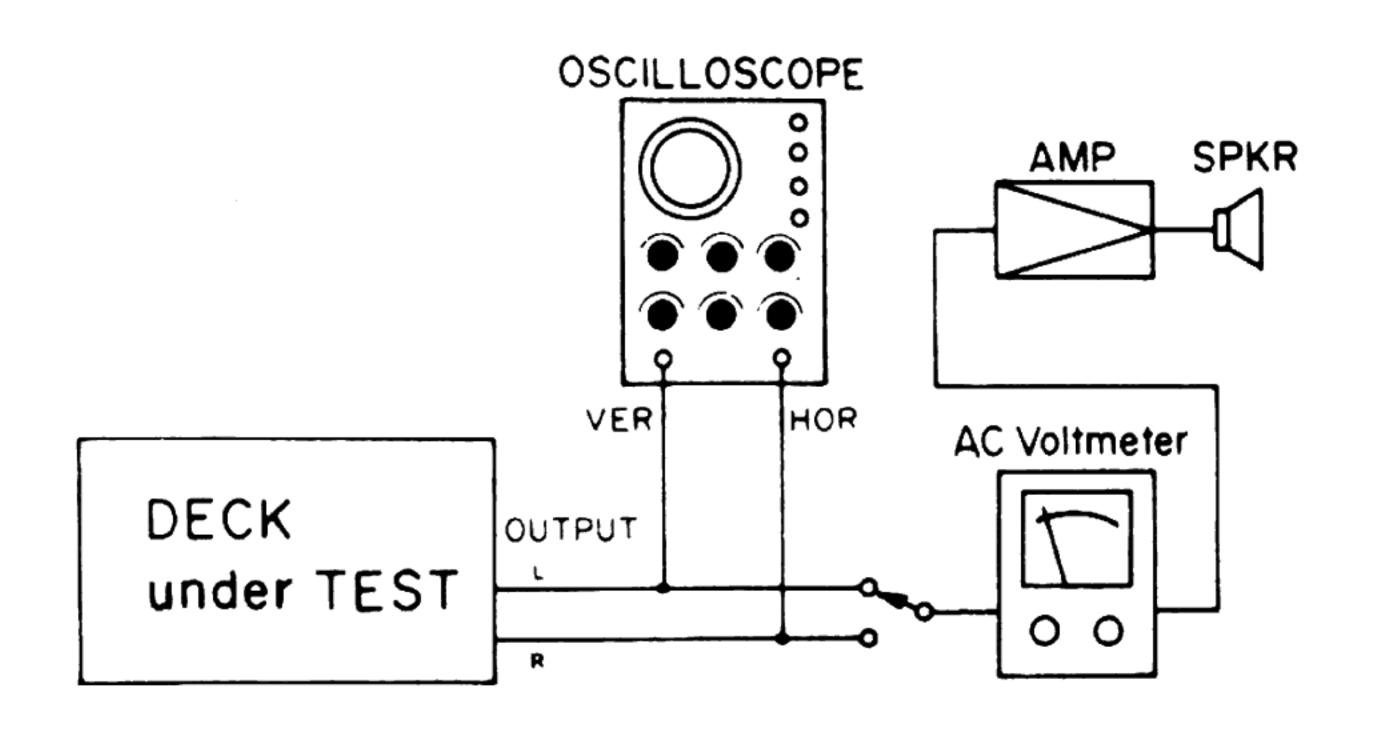


Fig. 5-2 Test setup for azimuth check

5 ELECTRICAL ADJUSTMENTS AND CHECKS

PRECAUTIONS

- 1. Before performing adjustments and checks, clean and demagnetize the entire tape path.
- 2. Make sure the deck is properly set for the voltage in your locality.
- 3. In general, adjustments and checks are made in the order of L-ch then R-ch. Double REF. Nos. and test point designations indicate L-ch/R-ch. (Example: R11/R21)
- 4. 0 dB is referenced to 0.775 V. If an AC voltmeter that references 0 dB to 1 V is used, appropriate compensation should be made.
- 5. The AC voltmeter used in the procedures must have an input impedance of $1M\Omega$ or more.
- 6. Note the "deck settings" at the top of each chart. The settings apply to all checks for a specific chart unless explicitly stated otherwise.

Deck settings:

MONITOR sw:

NR SYSTEM sw:

TAPE (BIAS/EQ) sw:

OUT METAL TAPE TEAC test tapes:

MTT-150: For Dolby level calibration MTT-356: For playback frequency response

check for METAL, Co (CrO₂)
MTT-501: For S/N check with NORMAL

5-1 PLAYBACK PERFORMANCE

	ITEM	SETTING	INPUT SIGNAL	ADJUST (or CHECK)	MEASURING POINT: RESULT	REMARKS
1.	REC/PLAY		MTT-150	Check	OUTPUT: Phase: within 45°	Refer to Fig. 5-4.
	head azimuth	Connection: Fig. 5-2	MTT-356 (10 kHz)	Azimuth nut of R.P heads (Fig. 5-3)	OUTPUT: Max. output at L-& R-ch's (on VTVM)	
2.	Specified output	Connection: Fig. 5-2	MTT-150	R11/R21	TP11/TP21 (Dolby) 580 mV (-2.5 dB)	
	level	Connection: Fig. 5-2	MTT-150	OUTPUT	OUTPUT: -5 dB (436 mV)	Spec. output level
3.	PEAK LEVEL METER		MTT-150	R13/R23	PEAK LEVEL meter: 0 dB	
4.	Frequency	TAPE sw: METAL If 10 kHz output is lower than spec., connect C102 (C202) in parallel with C101 (C201) on MAIN PCB.	MTT-356	Check	OUTPUT: Fig. 5-5	
	response	TAPE sw: NORMAL	MTT-356	Check	OUTPUT: At 10 kHz should be approx. 4 dB higher than measured in above step.	
5.	Signal-to-noise ratio	TAPE sw: NORMAL	Fully-erased tape: (Use bulk tape eraser)	Check	OUTPUT: 47 dB min.	Ratio of spec. output of -5 dB to noise

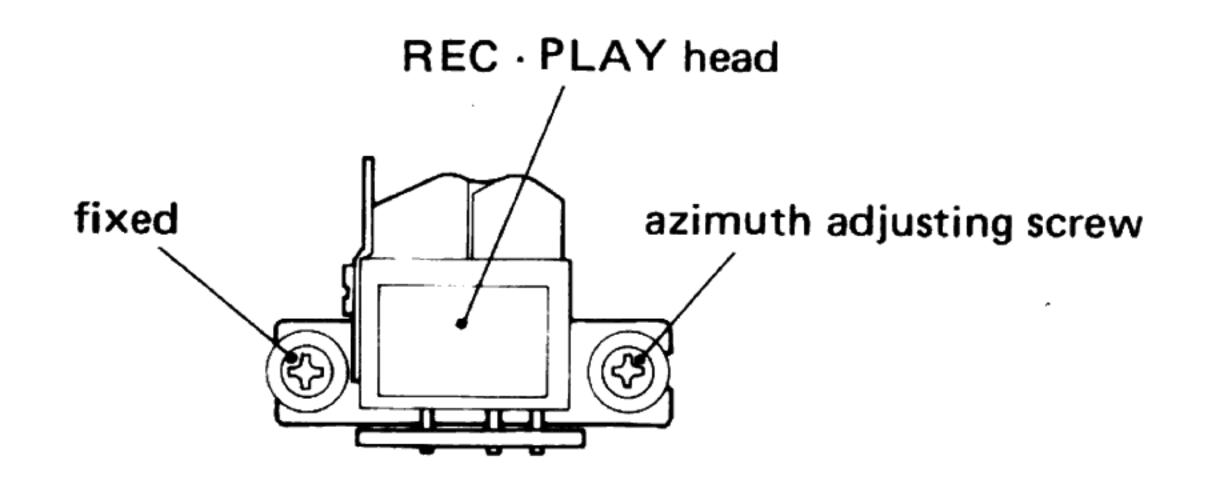
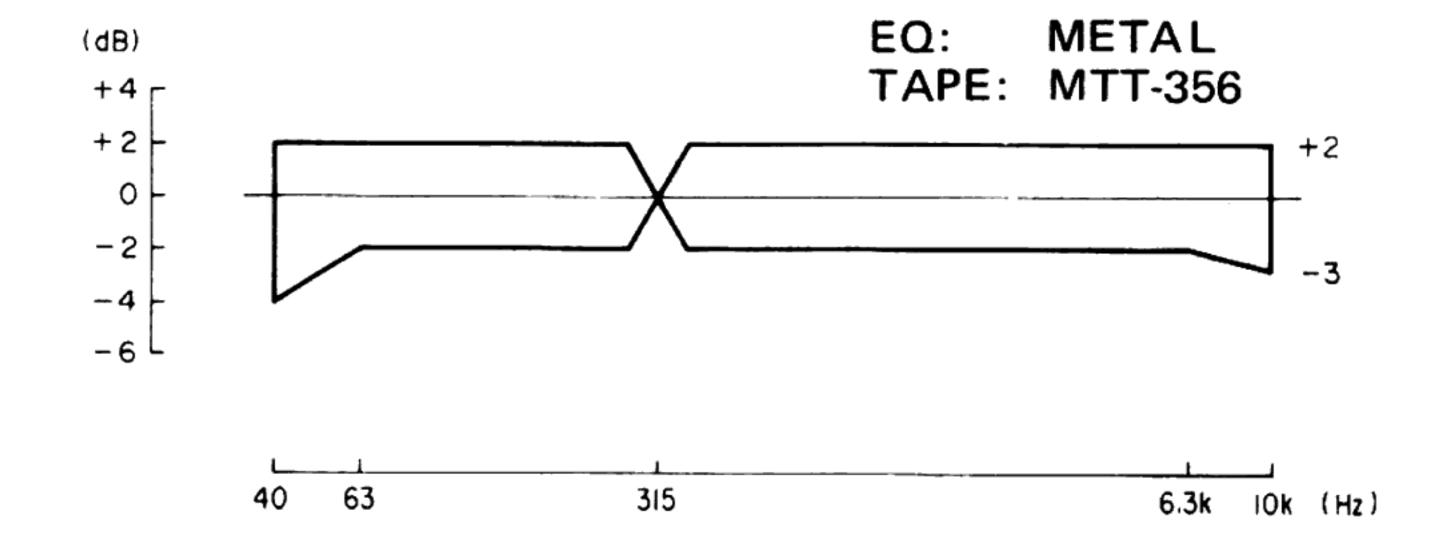
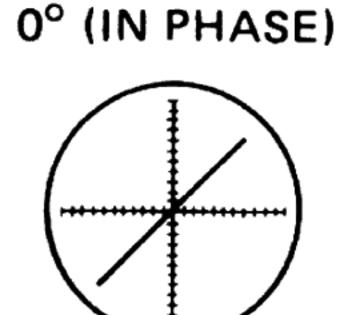
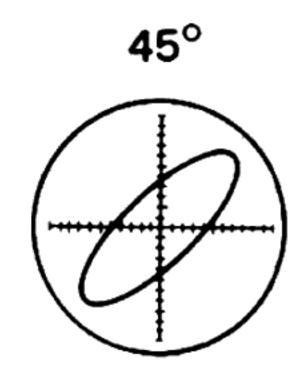
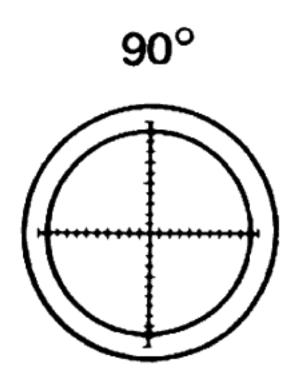


Fig. 5-3 Azimuth screw location









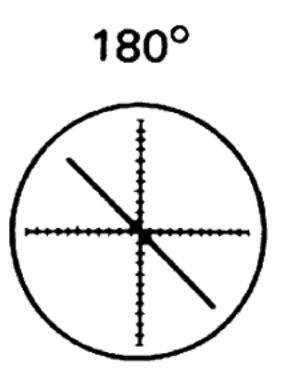


Fig. 5-4 Confirming phase relationship

Fig. 5-5 Playback frequency response

Deck settings:

NR SYSTEM sw.: OUT INPUT sw.: LINE

BALANCE cont.: Center Position
MONITOR sw.: SOURCE

5-2 MONITOR PERFORMANCE

ITEM	SETTING		INPUT	ADJUST (or CHECK)	MEASURING POINT: RESULT	REMARKS
	VOLUME INPUT sw.: cont.: MIC Max.		MIC: 400 Hz/-67 dB (346 μV)	Check	TP12/TP22 (DOLBY) 580 mV ±3 dB (411 to 820 mV)	MIC min. input level
6. Min. input level	NR SYSTEM sw.: DOLBY	INPUT sw.:	LINE IN: 400 Hz/-19 dB (86.9 mV)	Check	TP12/TP22 (DOLBY) 580 mV ±3 dB (411 to 820 mV)	LINE min. input level
			LINE IN: 400 Hz/-9 dB	VOLUME cont.	TP12/TP22 (DOBLY) 580 mV (-2.5 dB)	Specified setting of VOLUME cont.
			(275 mV)	If OUTPUT level difference between L-& R-ch is 1 dB or more, cut R139/R239 on the lower reading ch.		
7. Specified LINE input level	NR SYSTEM sw.: OUT		LINE IN: 400 Hz/–9 dB (275 mV)	R12/R22	TP12/TP22 (DOLBY) 580 mV (-2.5 dB)	
				Check	OUTPUT -5 dB ±1 dB (388 to 489 mV)	
	IMPORTANT: Do not change the setting of the VOLUME control after establishing the setting as above.					
8. PEAK LEVEL meter		,,	LINE IN: 400 Hz/-9 dB (275 mV)	Check	PEAK LEVEL meter: 0 dB ±1 dB	
9. PHONES output level	" Conn. — Fig. 5-6		LINE IN: 400 Hz/-9 dB (275 mV)	Check	PHONES: -15 dB ±3 dB (97.5 mV ~ 195 mV)	
10.MONITOR S/N			No signal	Check	OUTPUT: LINE S/N 55 dBmin MIC S/N 50 dBmin	

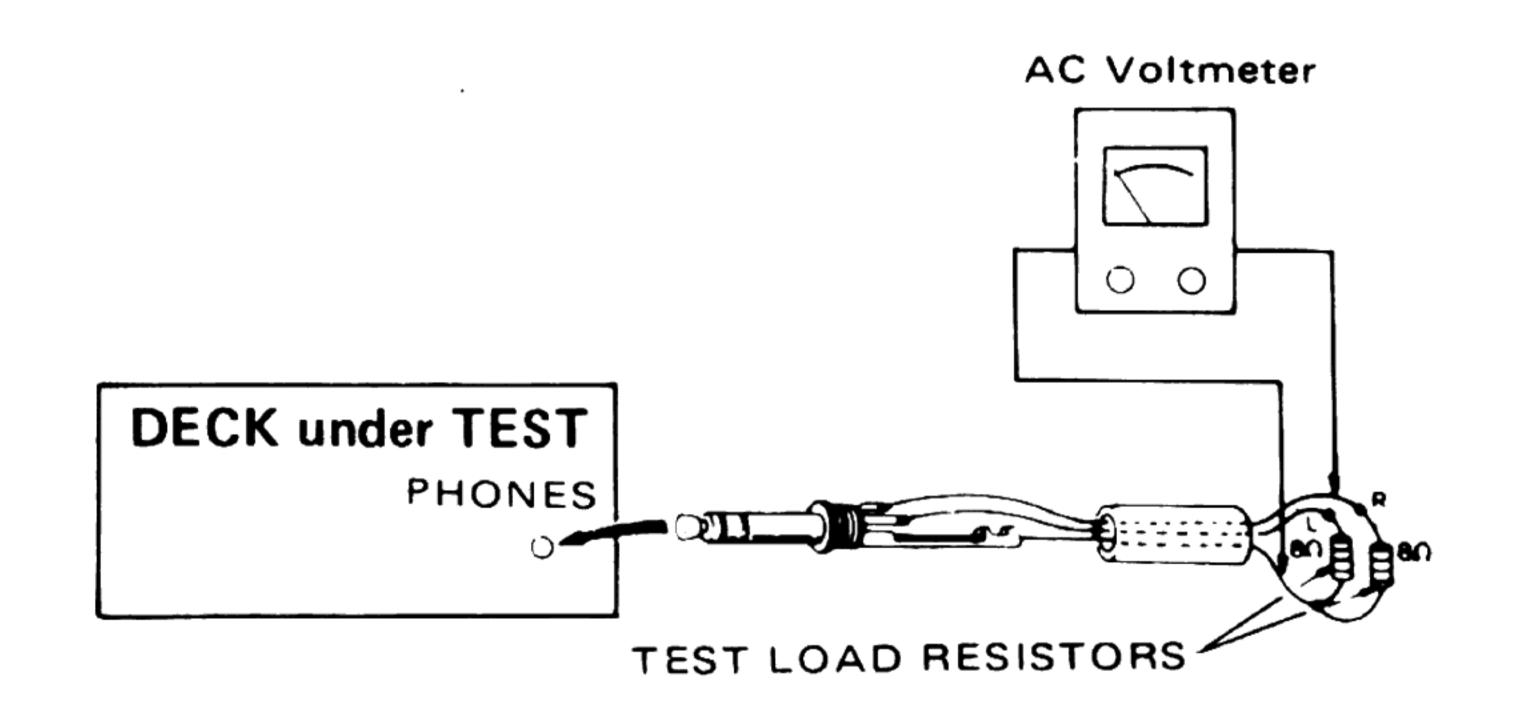


Fig. 5-6 Test setup for PHONES check

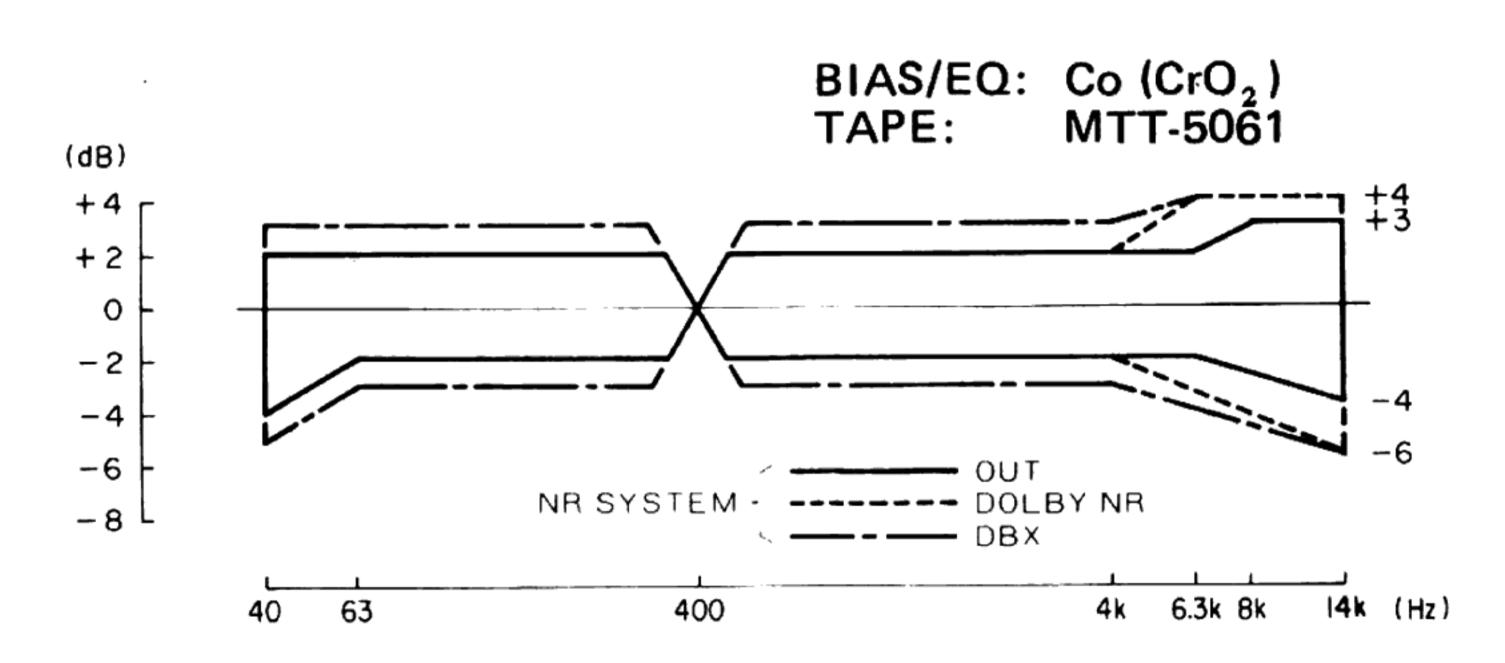


Fig. 5-8 Overall frequency response [Co (CrO₂)]

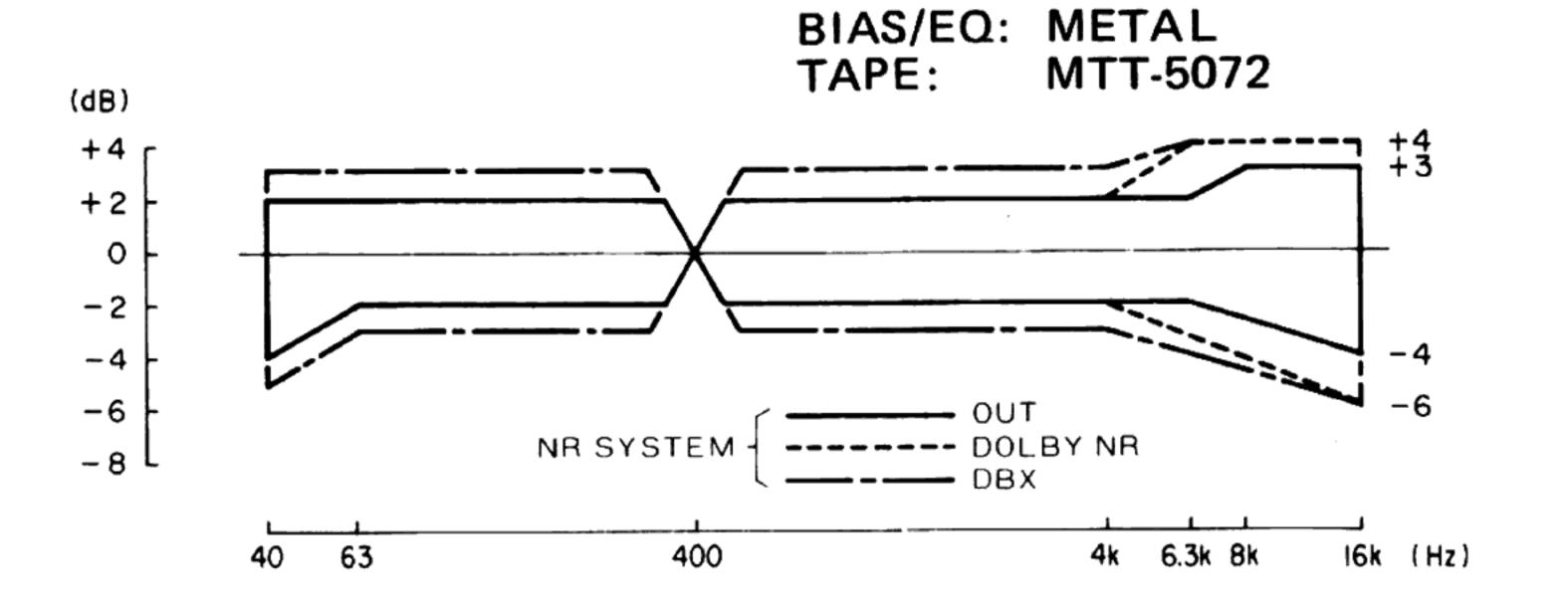


Fig. 5-7 Overall frequency response [METAL]

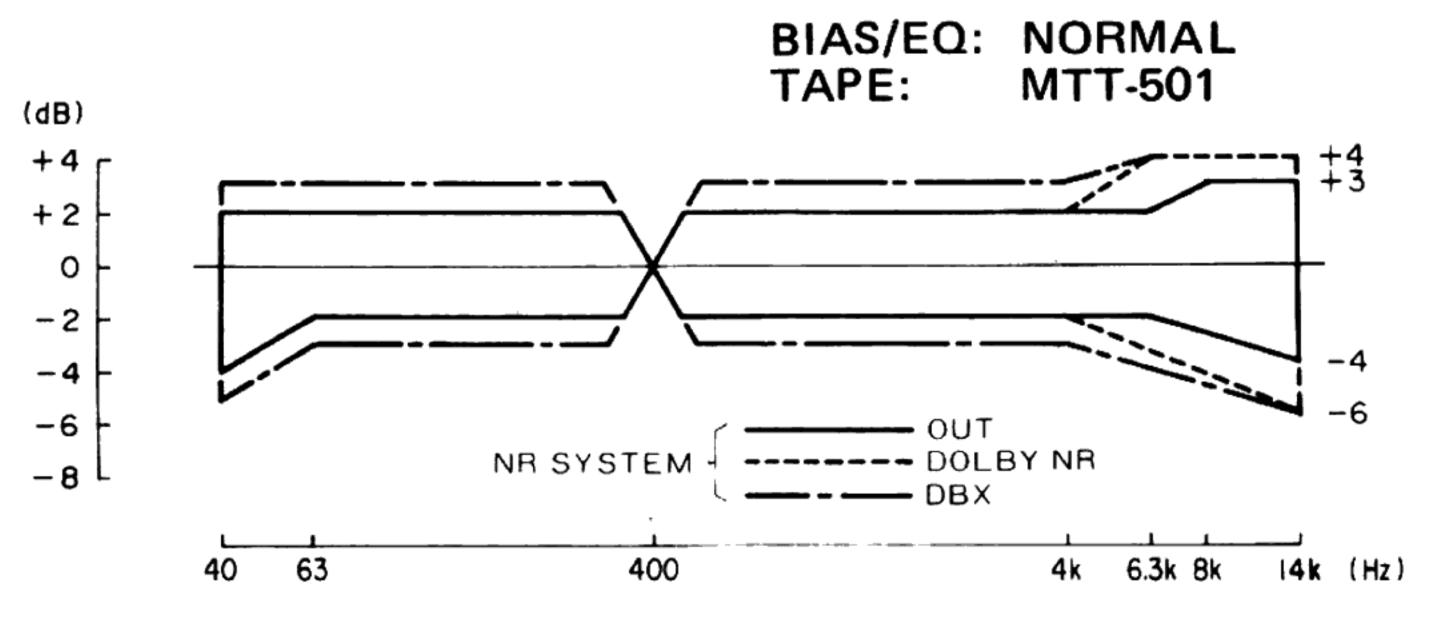


Fig. 5-9 Overall frequency response [NORMAL]

DECK settings:

NR SYSTEM sw.: OUT LINE INPUT sw.:

VOLUME cont.: Specified position (item 7) BALANCE cont.: Center position

BIAS FINE: MONITOR sw.: **TAPE** TEAC test tapes:

MTT-5072: For METAL record test MTT-5061: For Co (CrO₂) record test For NORMAL record test MTT-501:

RECORDING PERFORMANCE

ITEM	SETTING	INPUT	ADJUST (or CHECK)	MEASURING POINT: RESULT	REMARKS			
11.BIAS trap	Record-pause mode	LINE IN: No signal	L104/L204	TP13/TP23 Min. reading				
	1) Adjust in the order of ste	ps (2) (3) (4).						
	2) TAPE sw.: METAL Tape: MTT-5072	LINE IN: 400 Hz & 6.3 kHz alternately/–42 dB (6.15 mV)	C168/C268	OUTPUT: Nearly equal level at both frequencies				
12.Record bias	3) TAPE sw.: Co (CrO ₂) Tape: MTT-5061	LINE IN: 400 Hz & 6.3 kHz alternately/-42 dB (6.15 mV)	R15	OUTPUT: Nearly equal level at both frequencies	For L-& R-ch			
	TAPE sw.: NORMAL Tape: MTT-501	LINE IN: 400 Hz & 6.3 kHz alternately/–42 dB (6.15 mV)	R16	OUTPUT: Nearly equal level at both frequencies	For L-& R-ch			
	TAPE sw.: METAL Tape: MTT-5072	LINE IN: 400 Hz/-12 dB (195 mV)	R14/R24	OUTPUT: -8 dB (308 mV)				
13.Record level	TAPE sw.: Co (CrO ₂) Tape: MTT-5061	LINE IN: 400 Hz/-12 dB (195 mV)	Check	OUTPUT: -8 dB ±1.5 dB (259 to 367 mV)				
	TAPE sw.: NORMAL Tape: MTT-501	LINE IN: 400 Hz/-12 dB (195 mV)	Check	OUTPUT: -8 dB ±1.5 dB (259 to 367 mV)				
14. Total harmonic distortion	Same as 13 above.	LINE IN: 400 Hz/-12 dB (195 mV)	Check	OUTPUT: 1.8% or less with M 2.0% or less with N	-			
	TAPE sw.: METAL Tape: MTT-5072	LINE IN: Required signal/ -42 dB (6.15 mV)		OUTPUT: Fig. 5-7				
15. Frequency response	TAPE sw.: Co (CrO ₂) Tape: MTT-5061	LINE IN: Required signal/ -42 dB (6.15 mV)	Check	OUTPUT: Fig. 5-8				
	TAPE sw.: NORMAL Tape: MTT-501	LINE IN: Required signal/ -42 dB (6.15 mV)		OUTPUT: Fig. 5-9				
	If frequency response is out of specification, recheck #12. "Record bias".							
	TAPE sw.: METAL Tape: MTT-5072	LINE IN: 1 kHz/-9 dB (275 mV) ↓ no signal	Check	OUTPUT: 46 dB min.				
16.Signal-to-noise ratio	TAPE sw.: Co (CrO ₂) Tape: MTT-5061	LINE IN: 1 kHz/-9 dB (275 mV) ↓ no signal	Check	OUTPUT 46 dB min.	Ratio of spec- ified output of -5 dB to noise			
	TAPE sw.: NORMAL Tape: MTT-501	LINE IN: 1 kHz/-9 dB (275 mV) ↓ no signal	Check	OUTPUT: 45 dB min.				

ITEM	SETTING	INPUT	ADJUST (or CHECK)	MEASURING POINT: RESULT	REMARKS			
17, Erase	 Connection is same as in Fig. 5-1, but engage 1-kHz filter. Record a 1-kHz signal. Rewind tape to midpoint of recorded portion. Record a "no signal" portion. Find the difference between the 1-kHz portion and the "no-signal" portion. 							
efficiency	TAPE sw.: METAL Tape: MTT-5072	LINE IN: 1 kHz/+1 dB (0.869 V) ↓ no signal	Check	OUTPUT: 65 dB min. ratio	Ref. output level: +5 dB (1.38 V)			
	● Record a 1-kHz sig	n lights). Rewind and pla	utton for several s	econds. (At this time, mathematical difference between the	ake sure ne 1-kHz			
18.REC MUTE function	TAPE sw.: METAL Tape: MTT-5072	LINE IN: 1 kHz/+1 dB (0.869 V) the property of the state	Check	OUTPUT: 65 dB min. ratio	Ref. output level: +5 dB (1.38 V)			
	 Connection Fig. 5-1, but do not connect LINE IN (R), or engage 1-kHz filter. Set the deck to record mode. Find the difference between the 1-kHz recorded portion (L-ch) and the "no signal" portion (R-ch). 							
19. Channel seperation	TAPE sw.: METAL Tape: MTT-5072	LINE IN: L-ch 1 kHz/-9 dB (275 mV) R-ch No signal	Check	OUTPUT: 30 dB min. ratio				
20, Adjacent track	 Connection: Fig. 5-1, but do not connect LINE IN (L) or OUTPUT (L). Record a 125-Hz signal on R-ch and note output level. Invert tape and play R-ch track. Check leakage level against the output reference of previously recorded portion. 							
crosstalk	TAPE sw.: METAL Tape: MTT-5072	LINE IN: L-ch No signal R-ch 125 Hz/-9 dB (275 mV)	Check	OUTPUT: 40 dB min. ratio				
 Record a 1-kHz signal with NR SYSTEM switch OUT. Play this portion with NR SYSTEM switch set to OUT and set to DOLBY NR. Obtain the difference in output level between OUT and DOLBY NR positions. Repeat the above process using a 10-kHz signal. 								
21.DOLBY NR effect	TAPE sw.: METAL Tape: MTT-5072	LINE IN: 1 kHz/-32 dB (19.5 mV)	Check	OUTPUT: Variation 3 dB ~ 8 dB				
	TAPE sw.: METAL Tape: MTT-5072	LINE IN: 10 kHz/-42 dB (6.15 mV)	Check	OUTPUT: Variation 8 dB ~ 12 dB				

5-4 DBX PERFORMANCE

Note: Test this performance only after you are sure that the "5-5 dbx PCB ADJUST-MENT" is correct.

Deck settings:

NR SYSTEM sw.: DBX INPUT sw.: LINE

VOLUME cont.: Specified position (item 7) BALANCE cont.: Center position

TEAC test tapes:

MTT-5072: For METAL record test
MTT-5061: For Co (CrO2) record test
MTT-501: For NORMAL record test

ITEM	SE	TTING	INPUT SIGNAL	ADJUST (or CHECK)	MEASURING POINT: RESULT	REMARKS
	REC/PAUSE mode		LINE IN: 1 kHz/-14.5 dB (146 mV)	Check	TP51/TP61 on dbx PCB: -8.2 dB (300 mV)	
22. Encoding level setting	\ \ \	f, in the above sterol OLUME control on the specified po	p, the RESULT is out of so that the correct value sition (item 7).	f specification, co	rrect using the the control is	
	REC/PAUS	E mode	LINE IN: 1 kHz/-14.5 dB (146 mV)	R52/R62	TP52/TP62 on dbx PCB: -8.2 dB (300 mV)	Reference 1
	REC/PAUSE mode		LINE IN: 1 kHz/-74.5 dB (146 µV)	Check	TP52/TP62 on dbx PCB: -30 dB ±0.5 dB variation from Ref. 1	
23. Encoder operation check (level)			LINE IN: 1 kHz/+5.5 dB (1.46 V)	CHECK	TP52/TP62 on dbx PCB: +10 dB ±0.5 dB variation from Ref. 1	
24.Encoder operation	REC/PAUSE mode		LINE IN: 100 Hz/-14.5 dB (146 mV)	- Check	TP52/TP62 on dbx PCB: +0.5 dB ±1 dB deviation from Ref. 1	
check (frequency)			LINE IN: 10 kHz/-14.5 dB		TP52/TP62 on dbx PCB: -2.8 dB ±1 dB deviation from Ref. 1	
25. Decoding level	Record a 1 kHz signal with NR SYTEM switch OUT. Rewind and play the recorded portion. Note the off-the-tape level from OUTPUT (1). Repeat the above process with NR SYSTEM switch set to "DBX". Note the off-the-tape level (2). Compare the difference between (1) and (2). If ±1 dB or more, correct by R55/R65 using (1) as Reference.					
setting	REC/PLAY mode BIAS/EQ:	NR SYSTEM: OUT	LINE IN: 1 kHz/-14.5 dB (146 mV)	Check	OOTPUT Note the off-the- tape level	Reference 2
	METAL Tape: MTT- 5072	NR SYSTEM: DBX	LINE IN: 1 kHz/-14.5 dB	Check (R56/R66)	OUTPUT: ±1 dB from Ref. 2	
	REC/PLAY Measure th level	mode e off-the-tape				
26.Distortion	[BIAS, EQ: METAL Tape: MTT-5072 [BIAS, EQ: Co (CrO ₂) Tape: MTT-5061 [BIAS, EQ: NORMAL Tape: MTT-501		LINE IN: 400 Hz/-12 dB (195 mV)	Check	OUTPUT: 1.5% or less	
27. Signal-to-noise ratio	Same as ab	ove	LINE IN: 1 kHz/-9 dB (275 mV) ↓ No signal	Check	OUTPUT: 65 dB min. ratio	Ratio of 1 kHz output (-5 dB to noise

5-5 DBX PCB ADJUSTMENT

Notes:

- 1. Since the dbx PCB assembly has been precisely adjusted at the factory, this section adjustment is not usually needed unless any of adjustor(s) have been changed, or any component(s) on the PCB have sustained damage.
- 2. For this section adjustment, it is necessary to disconnect the P501 and P503 connectors on the dbx PCB. Turn the deck OFF to prevent accidental damage when disconnecting or reconnecting.
- 3. Preset all adjustors to their approximate center positions, and press the POWER switch on to supply power to the P502 (other deck controls and switches do not apply at this time). Proceed on to the adjustments described in this section.

5-5-1 ENCODING ADJUSTMENTS

1. RMS Symmetrical Check

Make the connections as shown in Fig. 5-12, and see that TP53 and TP63 output a clear 200 Hz sine wave on the oscilloscope after applying a 100 Hz, 300 mV input signal to the TP51 and TP61 test points. See Figs. 5-10 and 5-11.

2. RMS Time Constant

After confirming the above, check that the output level from the TP53 and TP63 test points is $425 \,\mu\text{V}$, $\pm 10\%$.

3. ENCODE REFERENCE LEVEL Adjust

Change the connection to as shown in Fig. 5-13 and adjust R52 and R62 to obtain a 300 mV reading on the AC voltmeter after applying a 1 kHz, 300 mV input signal to TP51 and TP61 test points.

4. VCA Symmetrical Adjust

After completion of the above, adjust R51 and R61 to obtain minimal reading (0.2% or less) on the distortion meter.

5. Frequency Response Checks

Check that the output level from the TP52 and TP62 test points is 0.5 dB, ± 0.5 dB (300 mV \sim 337 mV) for 300 mV when a 100 Hz, 300 mV input signal is applied to the TP51 and TP61 test points.

If a 10 kHz, 300 mV input signal is applied to the TP51 and TP61 test points, the output level should be –2.8 dB, ± 0.5 dB (205 mV \sim 230 mV) for 300 mV.

6. ENCODE EFFECT Check

Check that the output level from the TP52 and TP62 test points is 9.49 mV, ± 0.5 dB (8.95 mV \sim 10.1 mV) when a 1 kHz, 300 μ V input signal is applied to the TP51 and TP61 test points. If a 1 kHz, 3 V input signal is applied, the output level should be 949 mV, ± 0.5 dB (895 mV \sim 1005 mV) with a distortion factor of 0.3% or less.

5-5-2 DECODING ADJUSTMENTS

1. RMS Symmetrical Checks

Make the connections as shown in Fig. 5-14, and see that a clear 200 Hz sine wave is displayed on the oscilloscope after applying a 1 kHz, 300 mV input signal to the TP54 and TP64 test points.

2. RMS Time Constant

After confirming the above, check that the output level from the TP56 and TP66 test points is 425 μ V, ±10%.

3. DECODE REFERENCE LEVEL Adjust

Change the connection to as shown in Fig. 5-15, and adjust R56 and R66 to obtain a 300 mV reading on the AC voltmeter after applying a 1 kHz, 300 mV input signal to the TP54 and TP64 test points.

4. VCA Symmetrical Adjust

After completion of the above, adjust R55 and R65 to obtain minimal reading (0.2% or less) on the distortion meter.

5. Frequency Response Checks

Check that the output level from the TP55 and TP65 test points is -1 dB, ± 1 dB (238 mV \sim 300 mV) for 300 mV when a 100 Hz, 300 mV input signal is applied to the TP54 and TP64 test points.

If a 10 kHz, 300 mV input signal is applied to the TP54 and TP64 test points, the output level should be +5 dB, ± 1 dB (475 mV \sim 600 mV) for 300 mV.

6. DECODE EFFECT Checks

Check that the output level from TP55 and TP65 test points is 300 μ V, ± 1 dB (267 μ V \sim 336 μ V) when a 1 kHz, 9.49 mV input signal is applied to the TP54 and TP64 test points.

If a 1 kHz, 949 mV input signal is applied to the TP54 and TP64 test points, the output level should be 3 V, ± 1 dB (2.67 V \sim 3.37 V).

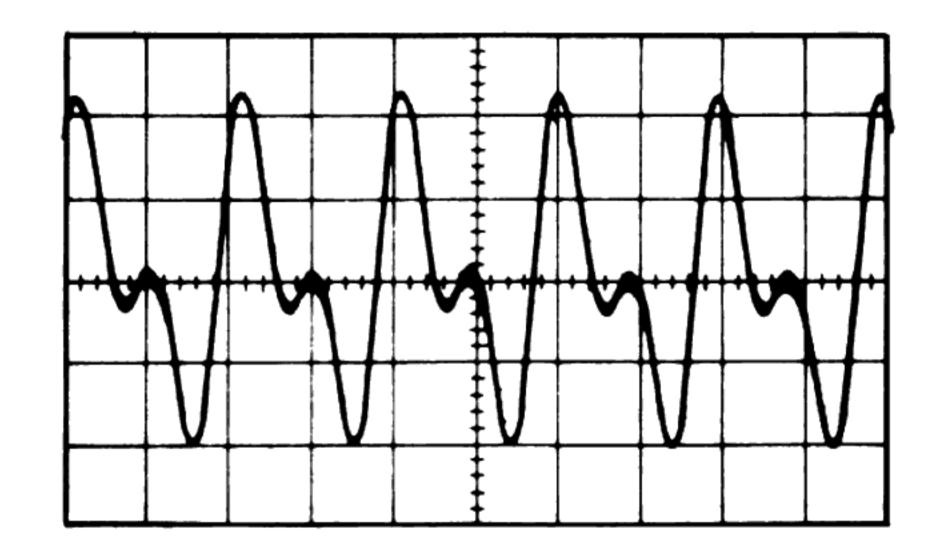


Fig. 5-10 Incorrect

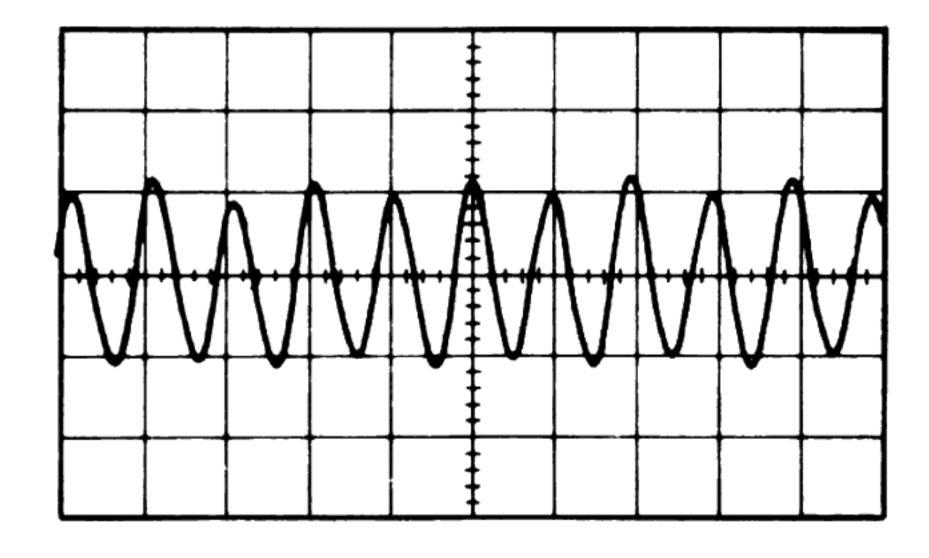


Fig. 5-11 Correct

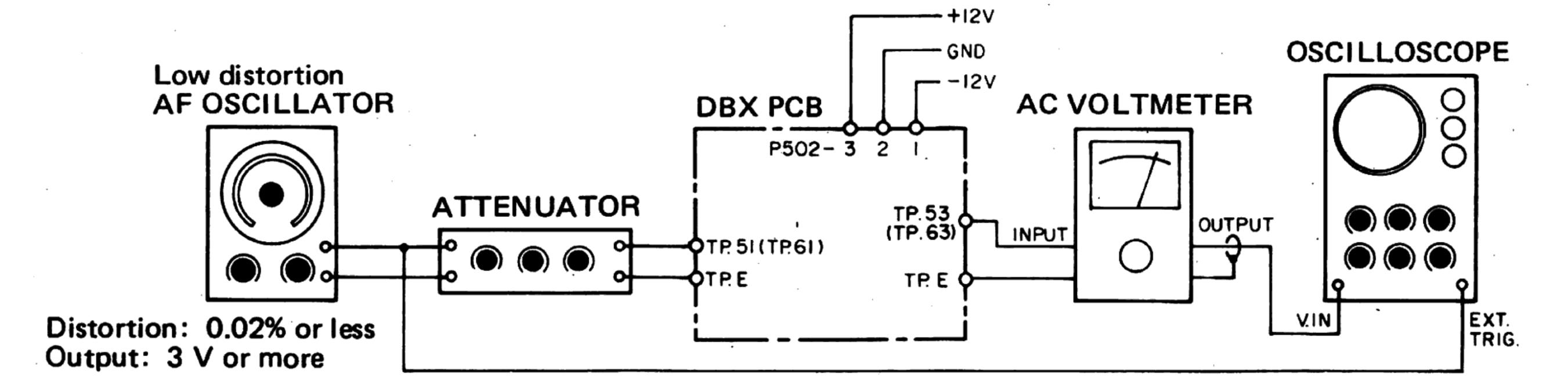


Fig. 5-12

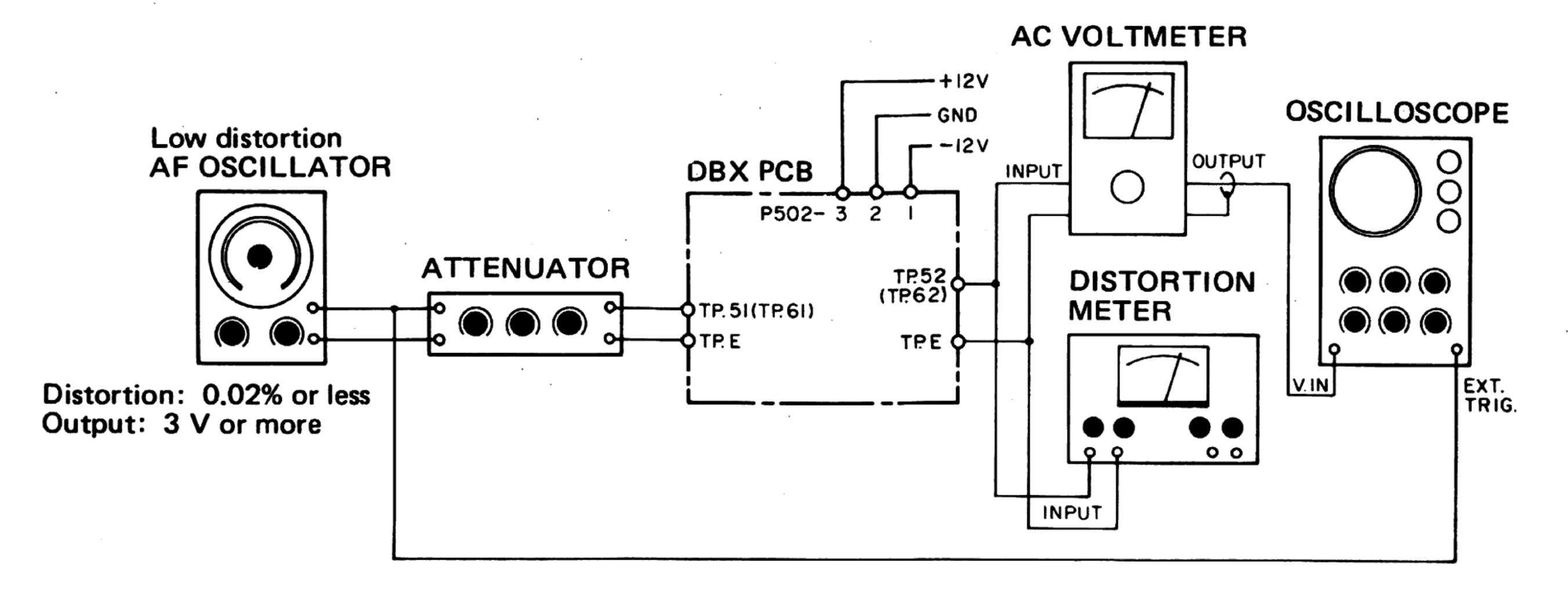


Fig. 5-13

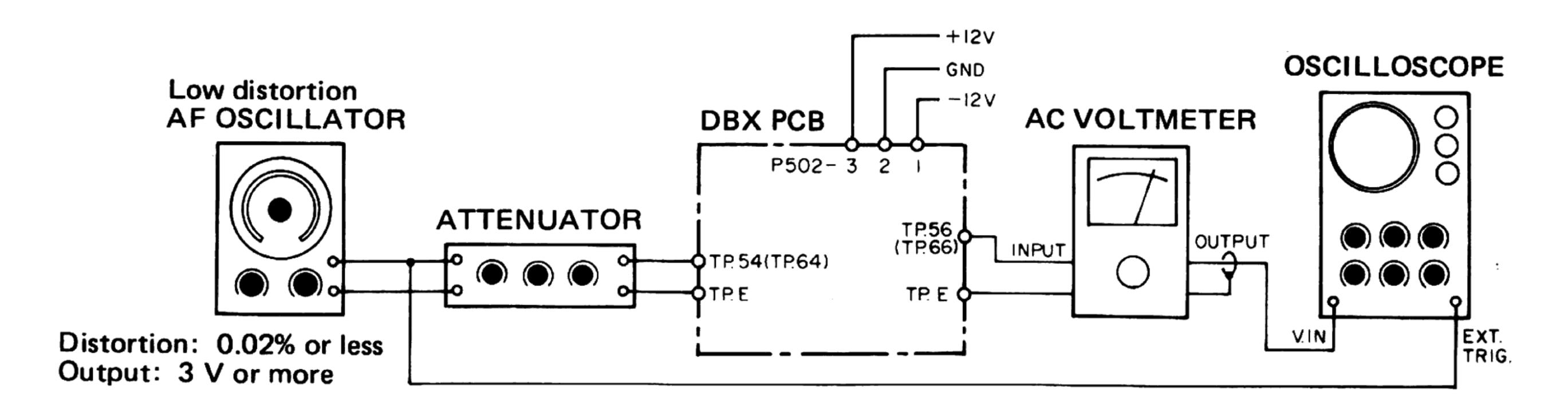


Fig. 5-14

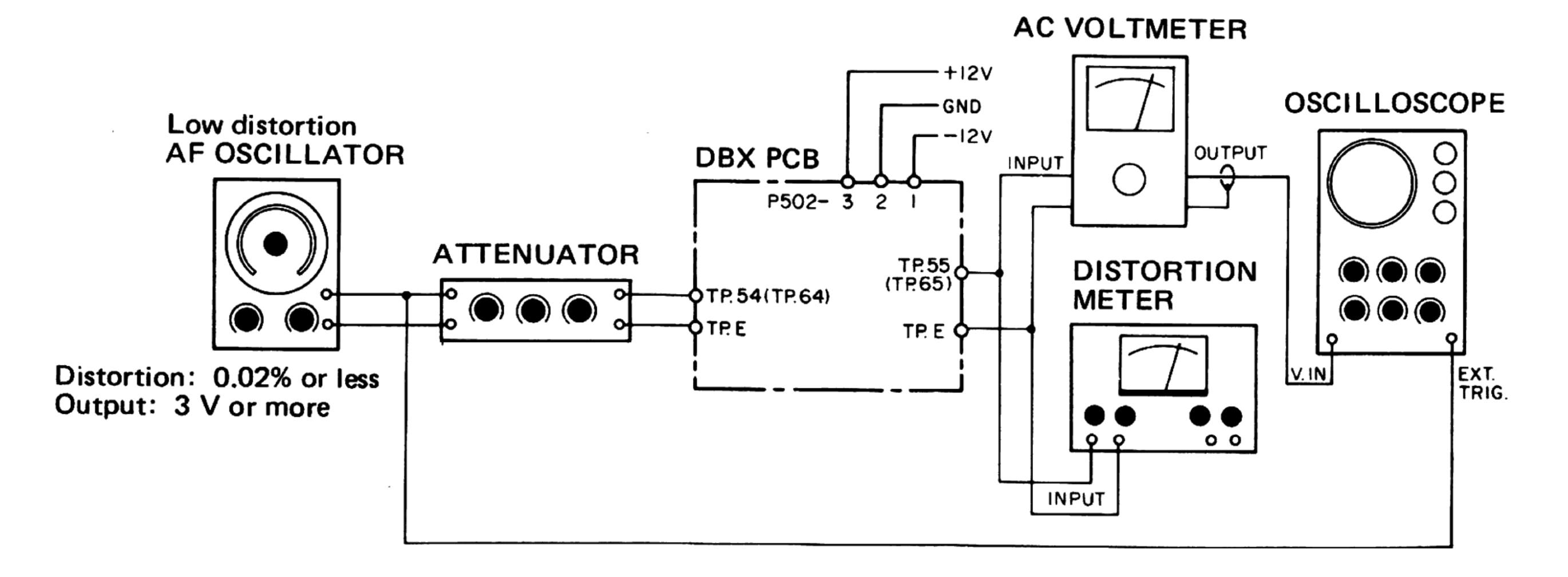
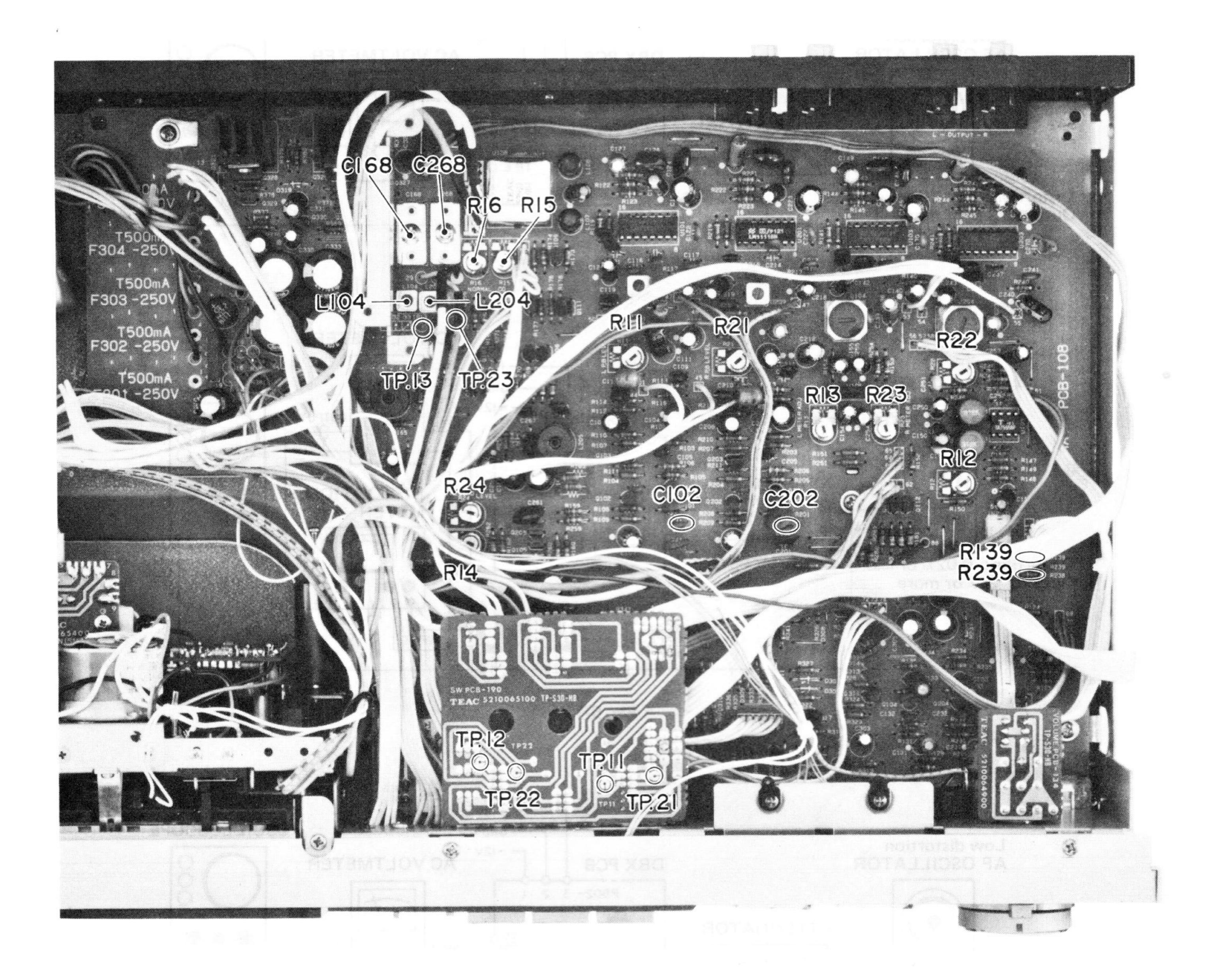
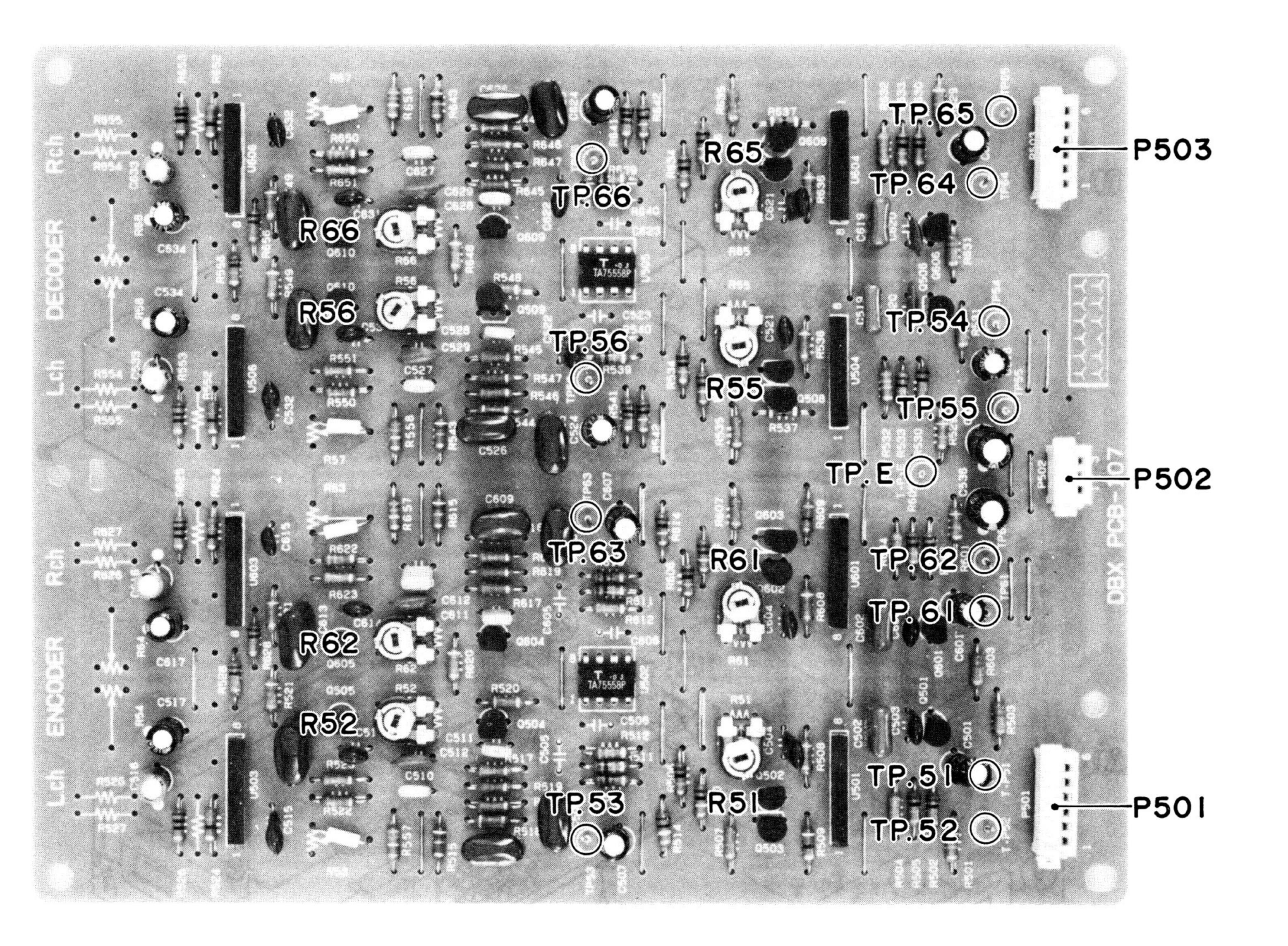


Fig. 5-15

5-6 ADJUSTMENT AND TEST POINT LOCATIONS

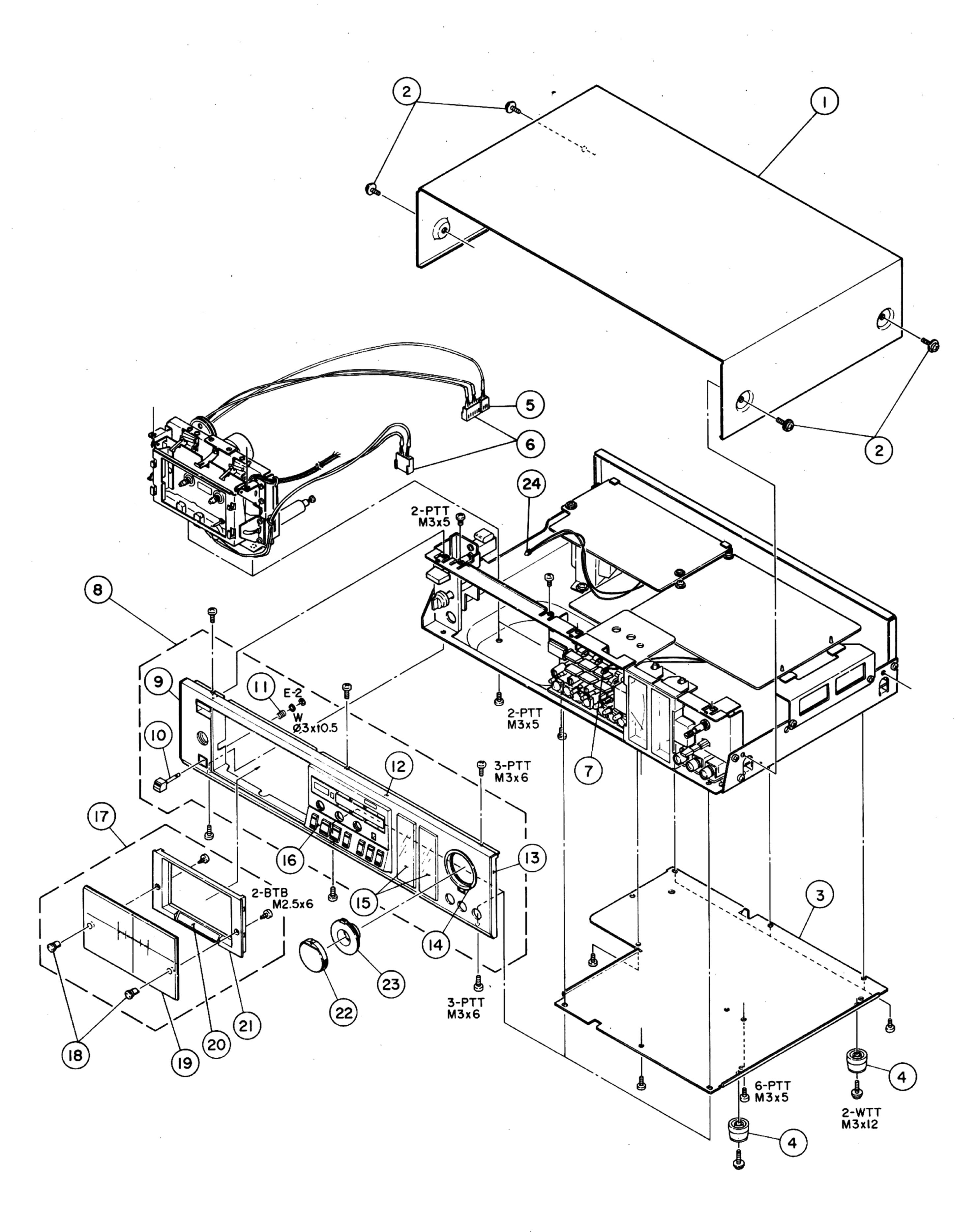




C168/C268	Record bias [METAL]
L105/L205	Frequency response [record]
R11/R21	Playback level
R12/R22	Line level adjustment
R14/R24	Record level
R16	Record bias [NORMAL]
R15	Record bias [Co (CrO ₂)]
R13/R23	Peak level meter
R51/R61	VCA SYM adjustment Encoder
R55/R65	VCA SYM adjustment Decoder
R52/R62	Encoding level
R56/R66	Decoding level
C102/C202	Frequency response [playback]
R139/R239	Fine adj. for LINE input level, fixed resistors
L104/L204	Bias trap

6 EXPLODED VIEWS AND PARTS LIST

EXPLODED VIEW - 1



Parts marked with *require longer delivery time.

REF. No.	PARTS NO.	DESCRIPTION	REMARKS	
1 - 1	*5800155301	Cover, Top		
1 - 2	*5783084008	Screw, M4 x 8 (BLK Ni)		
1 - 3	*5800155500	Cover, Bottom	V-3RX	
1 - 4	*5800116100	Foot	V-9	
1 - 5	*5122222000	Connector Socket, 3P		
1 - 6	*5122225000	Connector Socket, 6P		
1 - 7	*5142089000	Lamp, DC6V 65mA		
1 - 8	*5640028400	Panel Assy, Front		
1 - 9	*5800257800	Sash, Side; L		
1 - 10	*5800256900	Button, Eject		
1 - 11	*5800160000	Spring, Earth; C	V-3RX	
1 - 12	*5800260100	Panel, Front		
1 - 13	*5800257900	Sash, Side; R		
1 - 14	*5800257500	Escutcheon, VR		
1 - 15	*5800296800	Cover, Meter; B		
1 - 16	*5800260002	Escutcheon Assy, Cassette		
1 - 17	5640028500	Cover Assy, Cassette; (5)	V-9	
1 - 18	*5800116800	Bushing		
1 - 19	*5800260300	Cover, Cassette		
1 - 20	*5800258100	Plate, Holder		
1 - 21	*5800260200	Cover, Cassette; (5)		
1 - 22	5800257600	Knob, REC; C		
1 - 23	5800259100	Knob, REC; D		
1 - 24	*5142210000	* ** * * *		

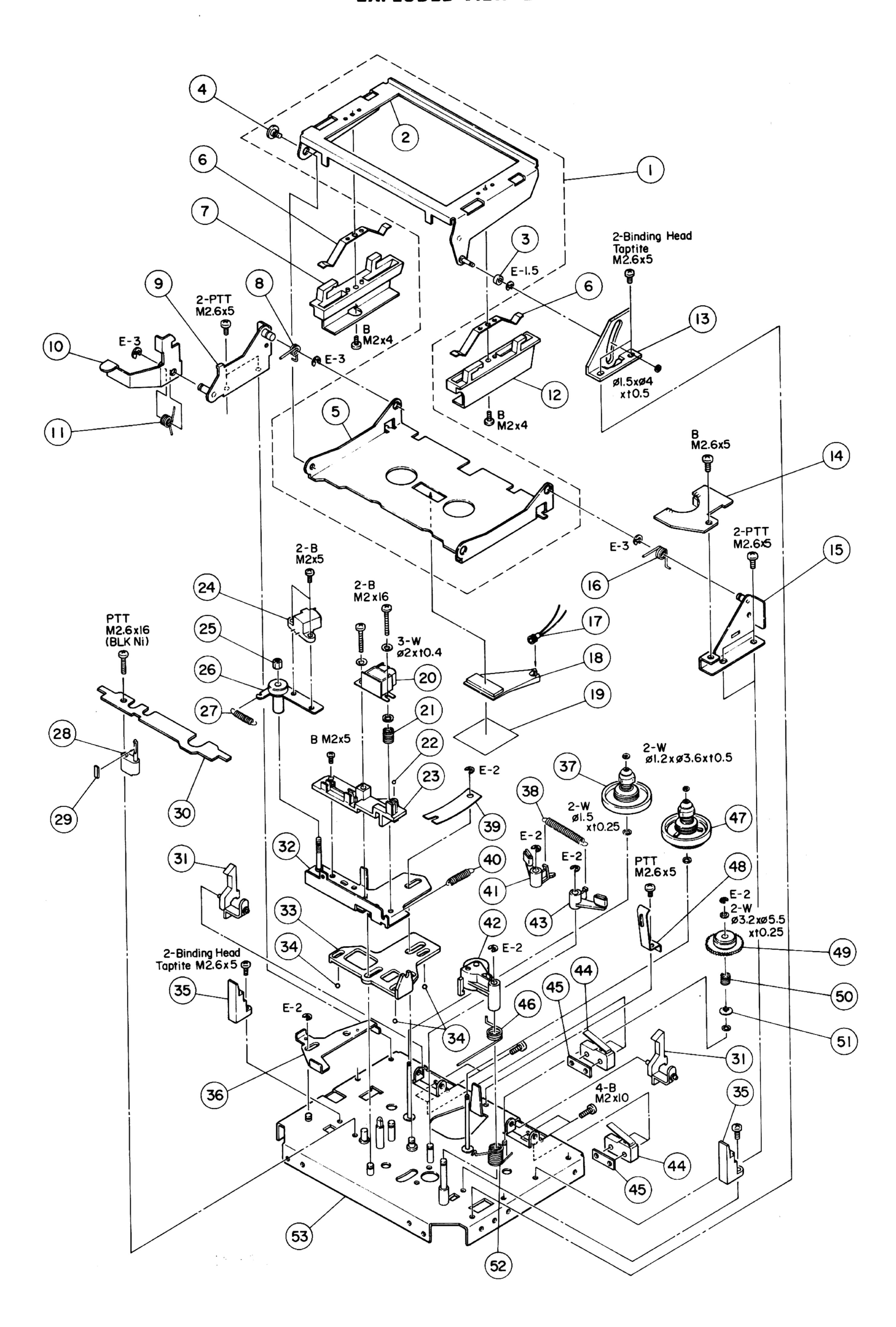
INCLUDED ACCESSORIES

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	5700025100	V-1RX Owner's Manual [J]	
	5700025200	V-1RX Owner's Manual [US]	
	5700025300	V-1RX Owner's Manual [All except J, US]	
	5101369000	Information Supplement [J]	
	5101345000	Information Supplement [US]	
	5101495000	Information Supplement [All except J, US]	
	5128107000	Cord, In-output	

[US]: U.S.A. [C]: CANADA [GE]: GENERAL EXPORT [E]: EUROPE [UK]: U.K.

[A]: AUSTRALIA [J]: JAPAN

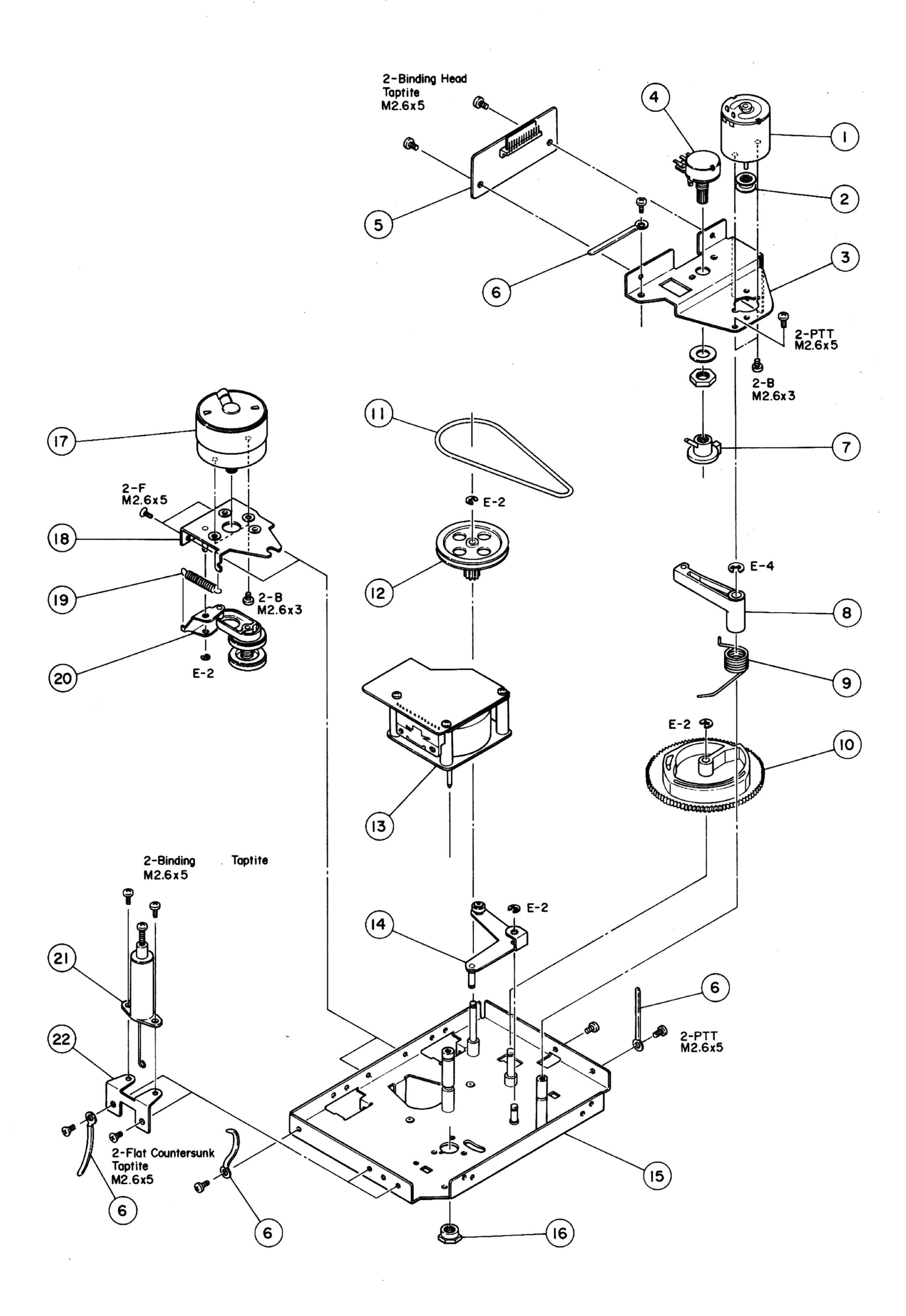
EXPLODED VIEW - 2



Parts marked with *require longer delivery time.

			Parts marked with *require longer delivery time.
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
2 - 1	*5800157400	Holder Sub-assy, Cassette	V-3RX
2 - 2	*5800122901	Holder Sub-assy, Casette; (1)	V-9
2 - 3	*5800120100	Roller, Guide	V-9
2 - 4	*5581056000	Screw, Shoulder; A	A-304
2 - 5	*5800157300	Holder, Cassette; (3)	V-3RX
2 6	*E00011E402	Carina Casastta Prossura	V-9
2 - 6	*5800115402 *5800100600	Spring, Cassette Pressure	V-9 V-9
2 - 7	*5800109600 *5800115500	Holder, L	V-9 V-9
2 - 8	*5800115500 *5800121200	Spring, Holder; L	V-9 V-9
2 - 9 2 - 10	*5800121300 *5800119100	Bracket Assy, Holder; L Arm, Eject	V-9
2 - 11	*5800115700	Spring, Lock	V-9
2 - 12	*5800122100	Holder, R	V-9
2 - 13	*5800119000	Bracket, Holder Guide	V-9
2 - 14	*5200047801	PCB Assy, SENSOR	V-3RX
2 - 15	*5800159200	Bracket Assy, Holder; R	V-3RX
2 - 16	*5800115600	Spring, Holder; R	V-9
2 - 17	5142201000	Lamp, DC 6V 65mA	
2 - 18	*5800265600	Lens, Lamp	
2 - 19	*5800002900	Plate, Reflective	C-2
2 - 20	5378901300	Head, REC-PLAY	
2 - 21	*5800114700	Spring, Head	V-9
2 - 22	*5540055000	Steel Ball, ϕ 2	A-450
2 - 23	*5800238302	Holder, Head; B	7.400
2 - 24	5569613000	Head, Erase	C-3
2 - 25	*5781953000	Nut, M3	
2 20	370133000	1441, 1410	
2 - 26	*5800234600	Bracket Assy, Head	
2 - 27	*5800235000	Spring, Erase Head	
2 - 28	*5800235100	Holder, Pad	V-80
2 - 29	*5800235201	Pad, Head	V-80
2 - 30	*5800237801	Cover, Head; B	
2 - 31	*5800117301	Arm, Sensor	V-9
2 - 32	*5800235600	Plate Sub-assy, Head Base	
2 - 33	*5800122801	Plate, Slider	V-9
2 - 34	*5540056000	Steel Ball, ϕ 3	A-450
2 - 35	*5800117400	Guide, Cassette	V-9
2 - 36	*5800119200	Plate, Stopper	V-9
2 - 37	*5800107300	Table Assy, Reel; Supply	V-9
2 - 38	*5800114800	Spring, Brake	V-9
2 - 39	*5800235700	Spring, Base Plate Pressure; B	
2 - 40	*5800114101	Spring, Head Base	V-9
2 - 41	*5800131601	Arm Accy Brake I	V-9
2 - 41		Arm Assy, Brake; L Arm Assy, Pinch Roller; B	V-9
2 - 42 2 - 43	5800239001 *5800131701	Arm Assy, Finch Holler; B Arm Assy, Brake; R	
2 - 43	5301455300	Switch, Micro	
2 - 45	*5554447000	Plate, Micro Switch	A-400
0 40	* = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
2 - 46	*5800235801 *5800100701	Spring, Pinch Roller Arm	
2 - 47	*5800108701 *5800115002	Table Assy, Reel; Take-up	V-9
2 - 48	*5800115002	Spring, Cassette Pressure	V-9 V-3BY
2 - 49	5800158800 *E800134300	Gear Assy, Counter; A	V-3RX
2 - 50	*5800124300	Spring, Tension	A-770
2 - 51	*5800159100	Holder, Tension Spring	
2 - 52	*5800152600	Spring, Arm Return	V-9
2 - 53	*5800237600	Chassis Assy, Mechanism	

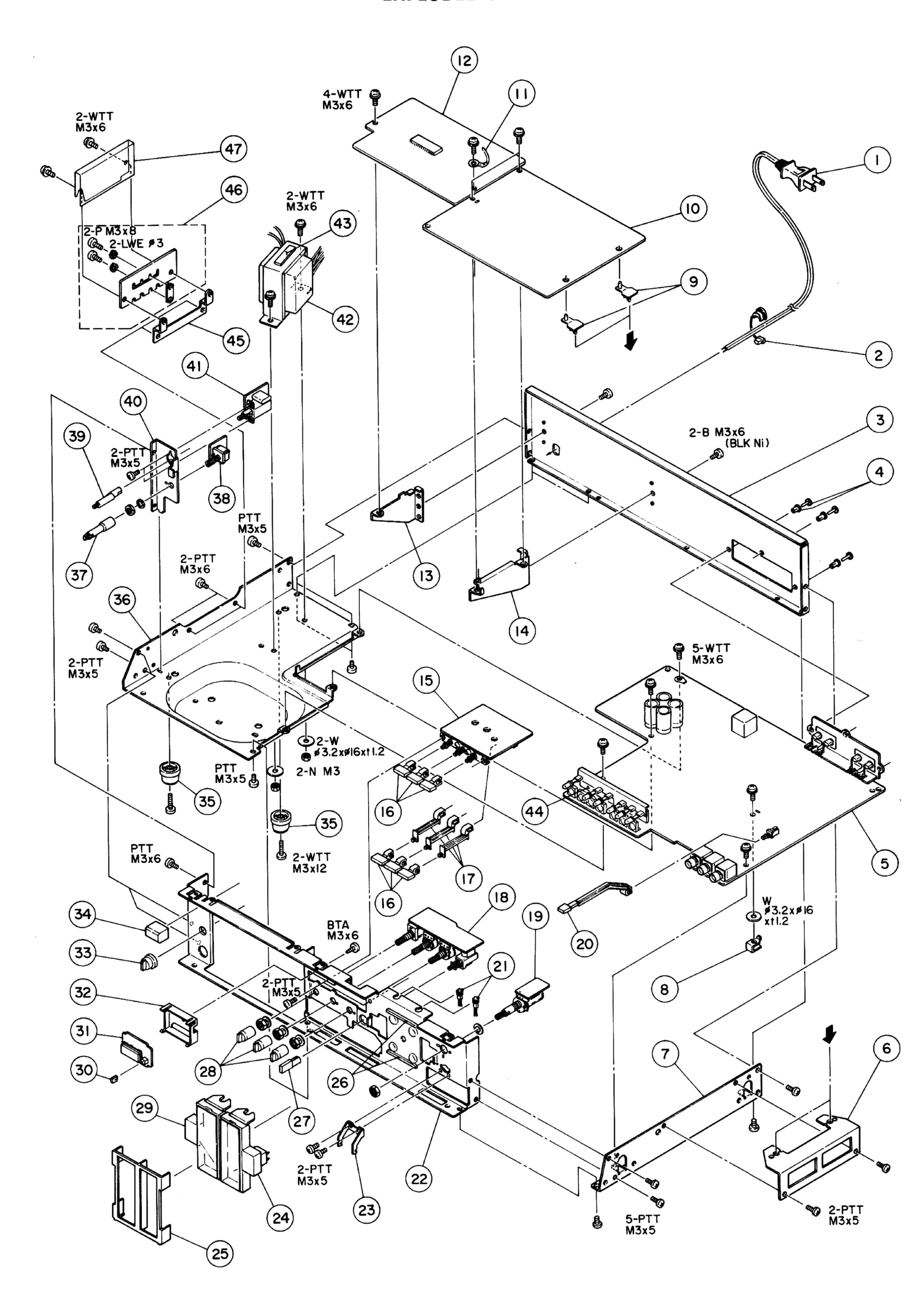
EXPLODED VIEW - 3



Parts marked with *require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
3 - 1	5370001400	Motor, Control; DC	V-9
3 - 2	*5800123300	Pulley, V	V-9
3 - 3	*5800122200	Bracket, Motor	V-9
3 - 4	*5282010800	Var. Res., 100kΩ (B) R35	
3 - 5	*5200065400	PCB Assy, MECHANISM	
3 - 6	*5581038000	Clamper, Cord; A	
3 - 7	*5800116700	Joint	V-9
3 - 8	*5800105400	Arm Assy, Balance	V-9
3 - 9	*5800114600	Spring, Balance Arm	· V-9
3 - 10	*5800122700	Cam, Control	V-9
3 - 11	*5800106800	Belt, Reduction Pulley	V-9
3 - 12	*5800117200	Pulley, Reduction	V-9
3 - 13	5370002300	Motor Assy, Capstan; DC	
3 - 14	*5800105801	Arm Assy, Base Plate Actuating	V-9
3 - 15	*5800237600	Chassis Assy, Mechanism	
3 - 16	*5800239200	Nut, Motor	
3 - 17	5370001200	Motor Assy, Reel; DC	V-9
3 - 18	*5800121801	Bracket Assy, Reel Motor	V-9
3 - 19	*5800115800	Spring, Idler Arm	· V-9
3 - 20	5800107800	Idler Assy	V-9
3 - 21	*5800131802	Damper Assy	V-9
3 - 22	*5800236000	Bracket, Damper	

EXPLODED VIEW - 4



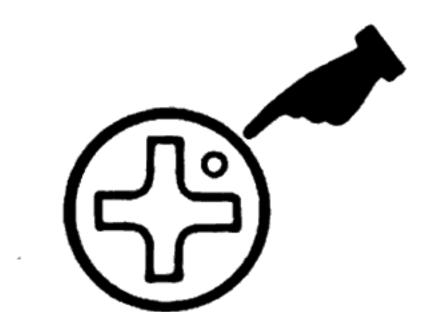
			raits marked with require longer delivery time.
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
4 - 1		Cord, AC Power [J] Cord, AC Power [US, C, GE] Cord, AC Power [E] Cord, AC Power [UK] Cord, AC Power [A]	
4 - 2 4 - 3 4 - 4 4 - 5	*5534660000 *5534661000 *5800259900 *5534118000 *5200064700 *5200064710	Strain Relief, Cord; 4N-4 [All except UK] Strain Relief, Cord; 4K-1 [UK] Panel, Rear Rivet, Push PCB Assy, MAIN [All except E, UK] PCB Assy, MAIN [E, UK]	
4 - 6 4 - 7 4 - 8 4 - 9 4 - 10	*5800258600 *5800155402 *5555059100 *5800273000 *5200065300	Bracke, DBX PCB; F Chassis, R Bracket, PCB Hinge, PCB PCB Assy, DBX	
4 - 11 4 - 12 4 - 13 4 - 14	*5581038000 *5200065500 *5200065510 *5800153901 *5800258500	Clamper, Cord; A PCB Assy, BLOCK REPEAT [All except C] PCB Assy, BLOCK REPEAT [C] Bracket, DBX PCB; B Bracket, DBX PCB; E	
4 - 15 4 - 16 4 - 17 4 - 18 4 - 19	*5200065100 5800257000 5800257100 *5200065000 *5200064900	PCB Assy, SWITCH Button, Selector Rod, Selector Button PCB Assy, VR; B PCB Assy, VR; A	
4 - 20 4 - 21 4 - 22 4 - 23 4 - 24	5800257700 5310005900 *5800259800 *5800156800 5296004600	Button, D Lamp, 8V 80mA Chassis, Front Bracket, Jack Meter, Peak Level; R	V-3RX
4 - 25 4 - 26 4 - 27 4 - 28 4 - 29	*5800258000 *5800153100 5800257300 5800285900 5296004500	Escutcheon, Meter; B Cushion, Meter Button, Monitor Knob, Memory Meter, Peak Level; L	V-3RX
4 - 30 4 - 31 4 - 32 4 - 33 4 - 34	5800257400 *5200065200 *5800258700 5800044300 5800256800	Button, Reset PCB Assy, COUNTER Bracket, COUNTER PCB Knob, Timer Button, Power	
4 - 35 4 - 36 4 - 37	*5800116100 *5800155600 *5800284000 *5800154700	Foot Chassis, L [All except C] Chassis, L [C] Rod, Joint	V-9 V-3RX
4 - 38 4 - 39 4 - 40 4 - 41	*5200047600 *5800116200 *5800256700 *5200073200 *5200073210 *5200073220 *5200073250 Δ*5300027500 Δ*5292002500	PCB Assy, TIMER Rod, A Bracket, Switch PCB Assy, POWER SW [J] PCB Assy, POWER SW [US] PCB Assy, POWER SW [C] PCB Assy, POWER SW [E, UK] PCB Assy, POWER SW [A] Switch, Power [GE] Spark Killer, 0.01μF + 300Ω [GE]	
4 - 42	<pre>↑*5320009300 ↑*5320009400 ↑*5320009800 ↑*5320009500 ↑*5320009600</pre>	Transformer, Power [U] Transformer, Power [US] Transformer, Power [C] Transformer, Power [GE] Transformer, Power [E, UK, A]	
4 - 43 4 - 44 4 - 45 4 - 46 4 - 47	*5555570000 *5200064800 *5800154900 *5200034900 *5800157800	Cushion, Top Cover; B PCB Assy, LED Bracket, PCB [GE] PCB Assy, VOLTAGE SELECTOR [GE] Cover, SELECTOR PCB [GE]	

[US]: U.S.A. [C]: CANADA [GE]: GENERAL EXPORT [E]: EUROPE [UK]: U.K.

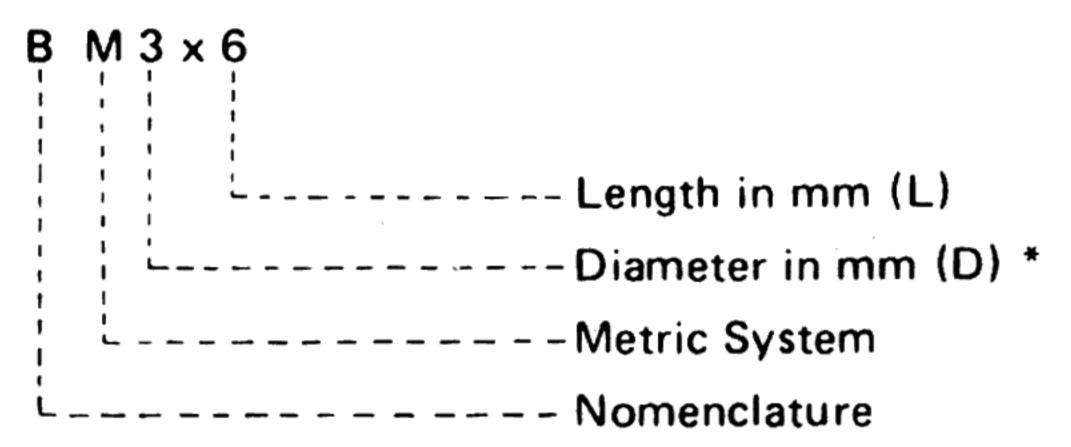
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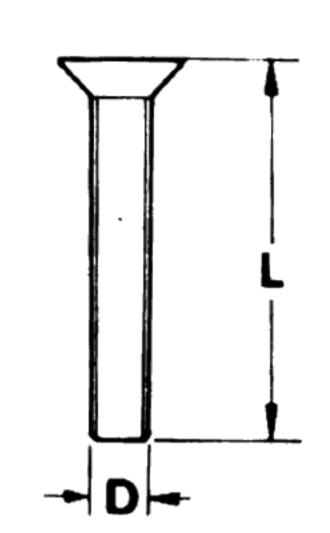
ASSEMBLING HARDWARE CODING LIST

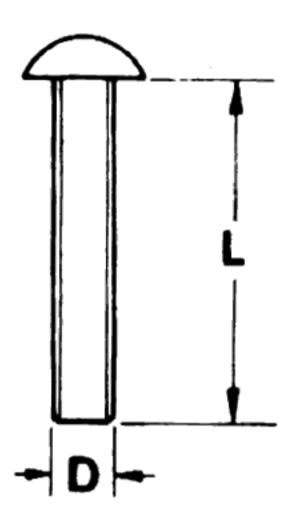
All screws conform to ISO standards, and have crossrecessed heads, unless otherwise noted. ISO screws have the head inscribed with a point as in the figure to the right.



FOR EXAMPLE:





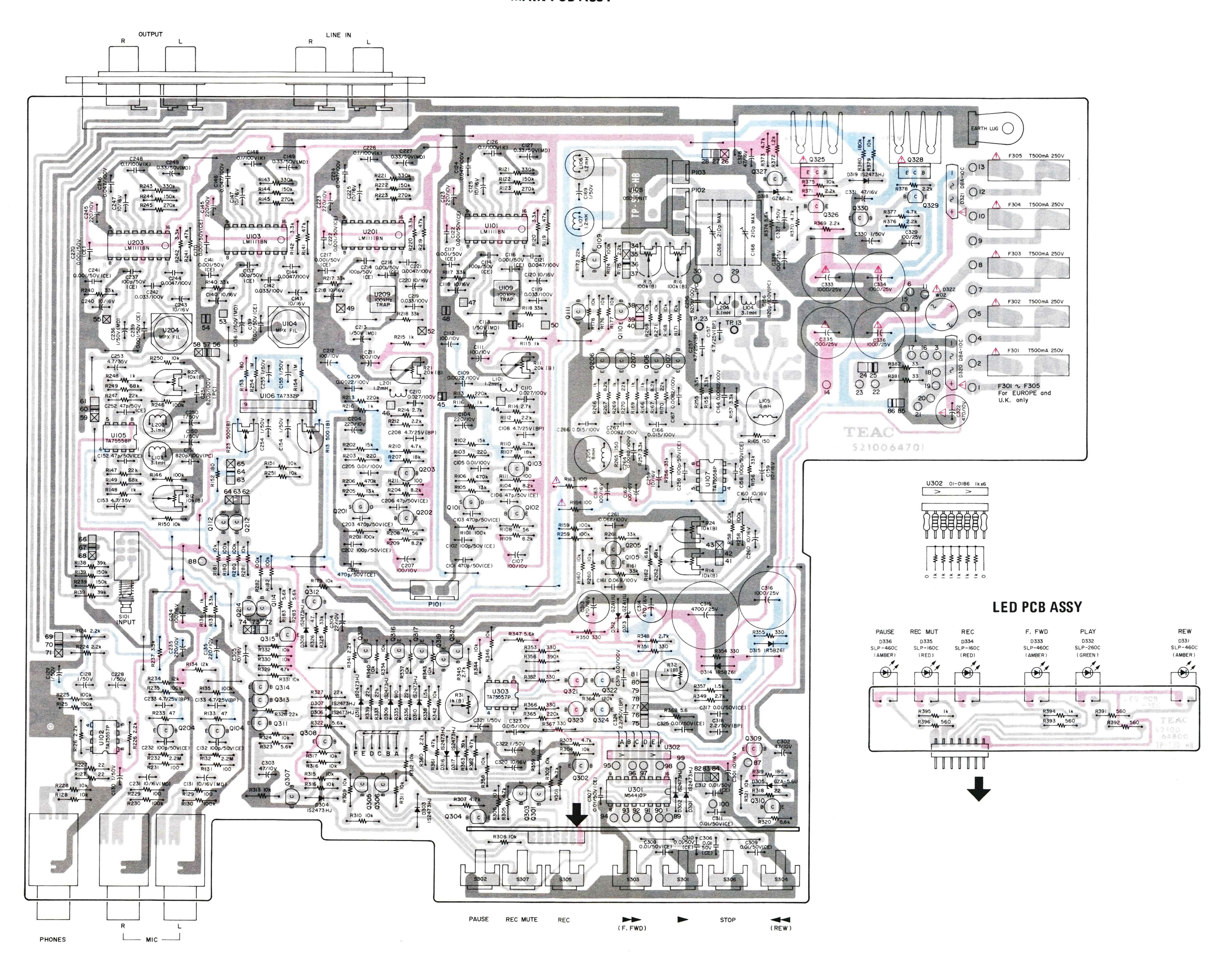


^{*} Inner dia. for washers and nuts

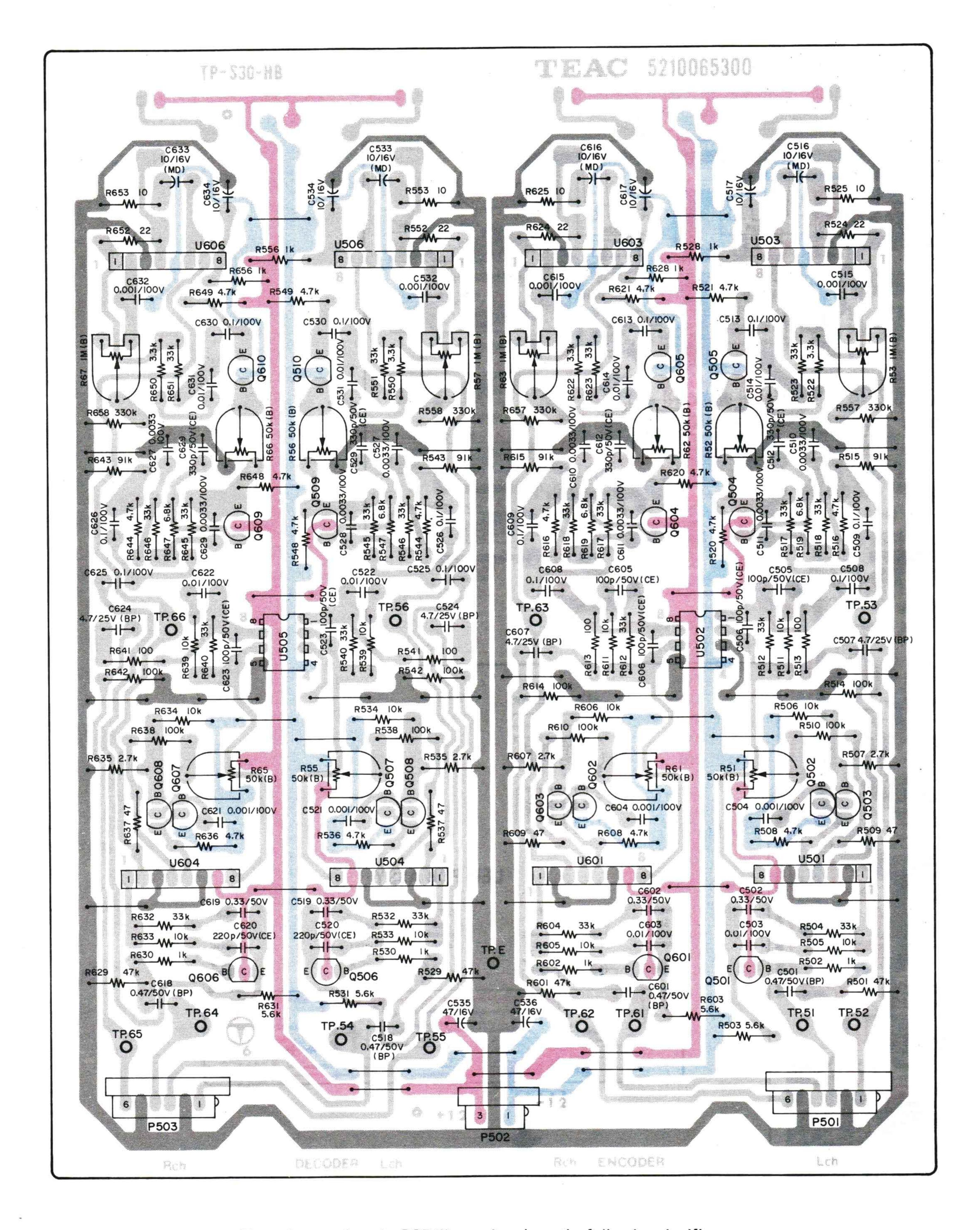
	Code	Name	Туре		Code	Name	Туре
MACHINE SCREW	R	Round Head Screw		TAPPING SCREW	BTA	Binding Head Tapping Screw(A Type)	
	P	Pan Head Screw			втв	Binding Head Tapping Screw(B Type)	
	T	Stove Head Screw (Truss)			RTA	Round Head Tapping Screw(A Type)	
	В	Binding Head Screw			RTB	Round Head Tapping Screw(B Type)	Ammin St
	F	Flat Countersunk Head Screw		SETSCREW	SF	Hex Socket Setscrew(Flat Point)	
	0	Oval Countersunk Head Screw			SC	Hex Socket Setscrew(Cup Point)	
WOOD SCREW	RW	Round Head Wood Screw			SS	Slotted Socket Setscrew(Flat Point)	
TAPTITE	PTT	Pan Head Taptite Screw		WASHER	E	E-Ring (Retaining Washer)	(5)
	WTT	Washer Head Taptite Screw			W	Flat Washer (Plain)	
SEMS SCREW	BSA	Binding Head SEMS Screw(A Type)			SW	Lock Washer (Spring)	0
	BSB	Binding Head SEMS Screw(B Type)			LWI	Lock Washer (Internal Teeth)	(222) (222)
	BSF	Binding Head SEMS Screw(F Type)			LWE	Lock Washer (External Teeth)	£555
	PSA	Pan Head SEMS Screw(A Type)			TW	Trim Washer (Countersunk)	
	PSB	Pan Head SEMS Screw(B Type)		NUT	N	Hex Nut	

PC Boards shown viewed from foil side.

MAIN PCB ASSY



DBX PCB ASSY



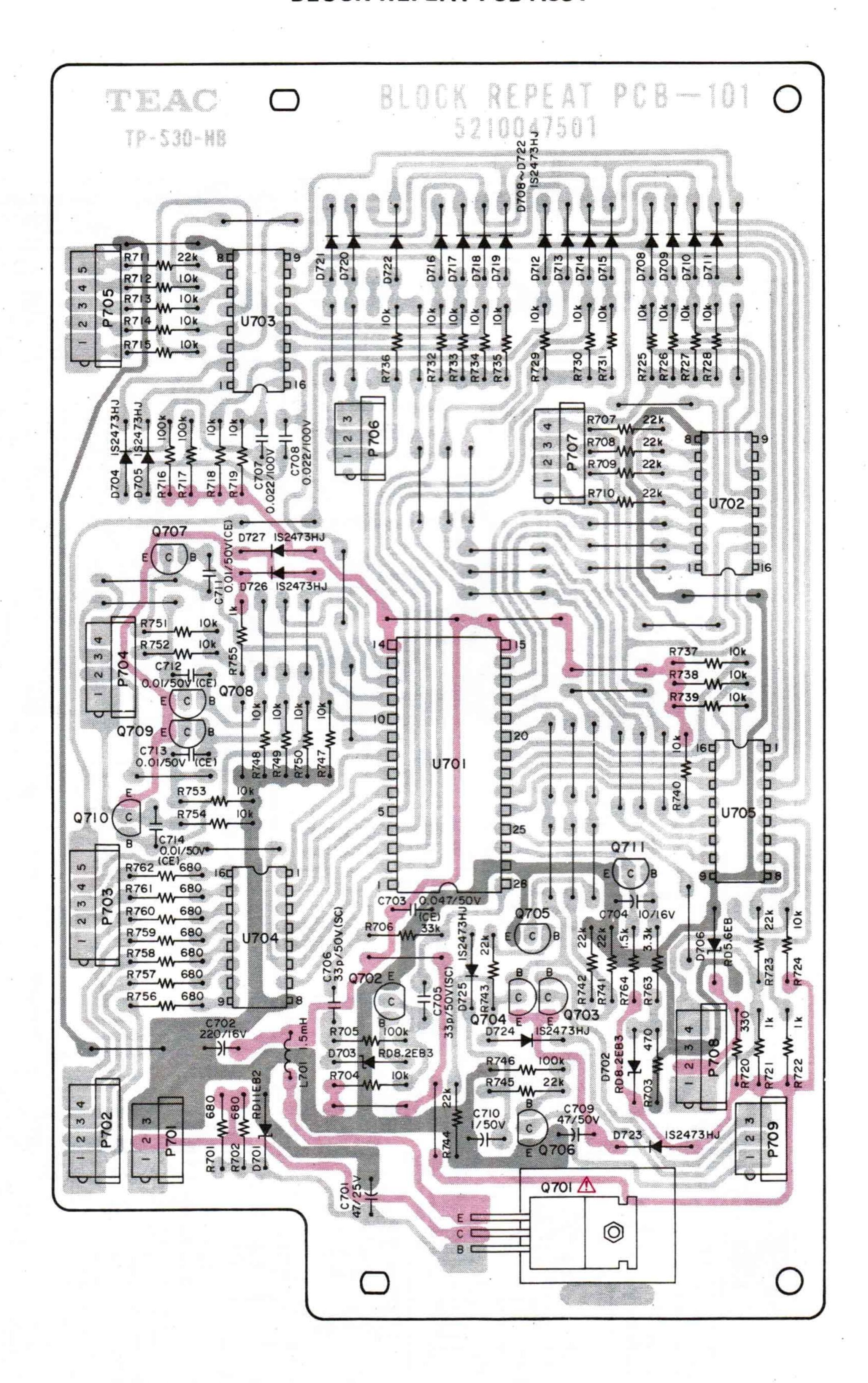
The colors used on the PCB illustrations have the following significance:

www.hiflengine.com

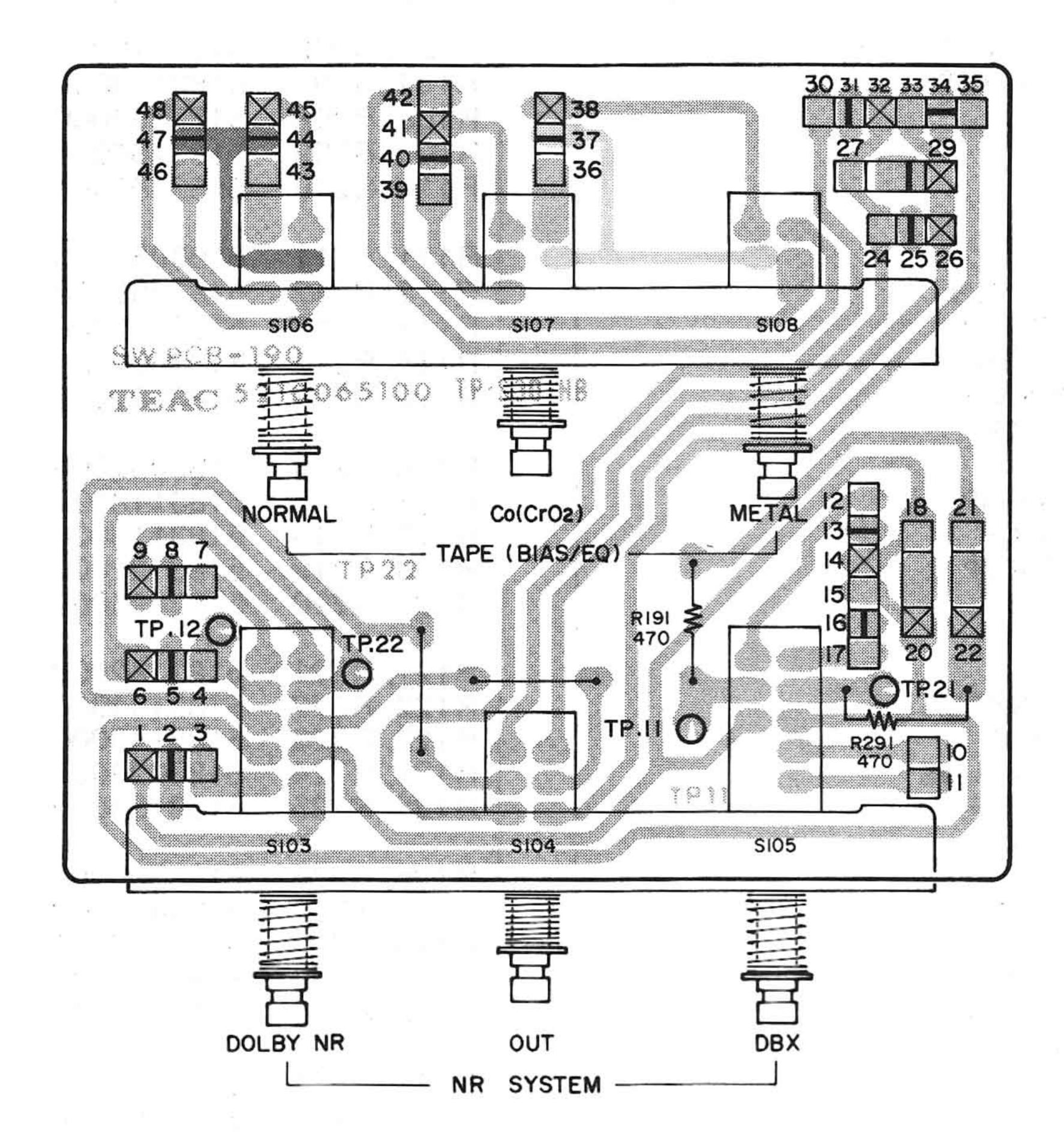
: +B power supply circuit : -B power supply circuit

: GND : Other

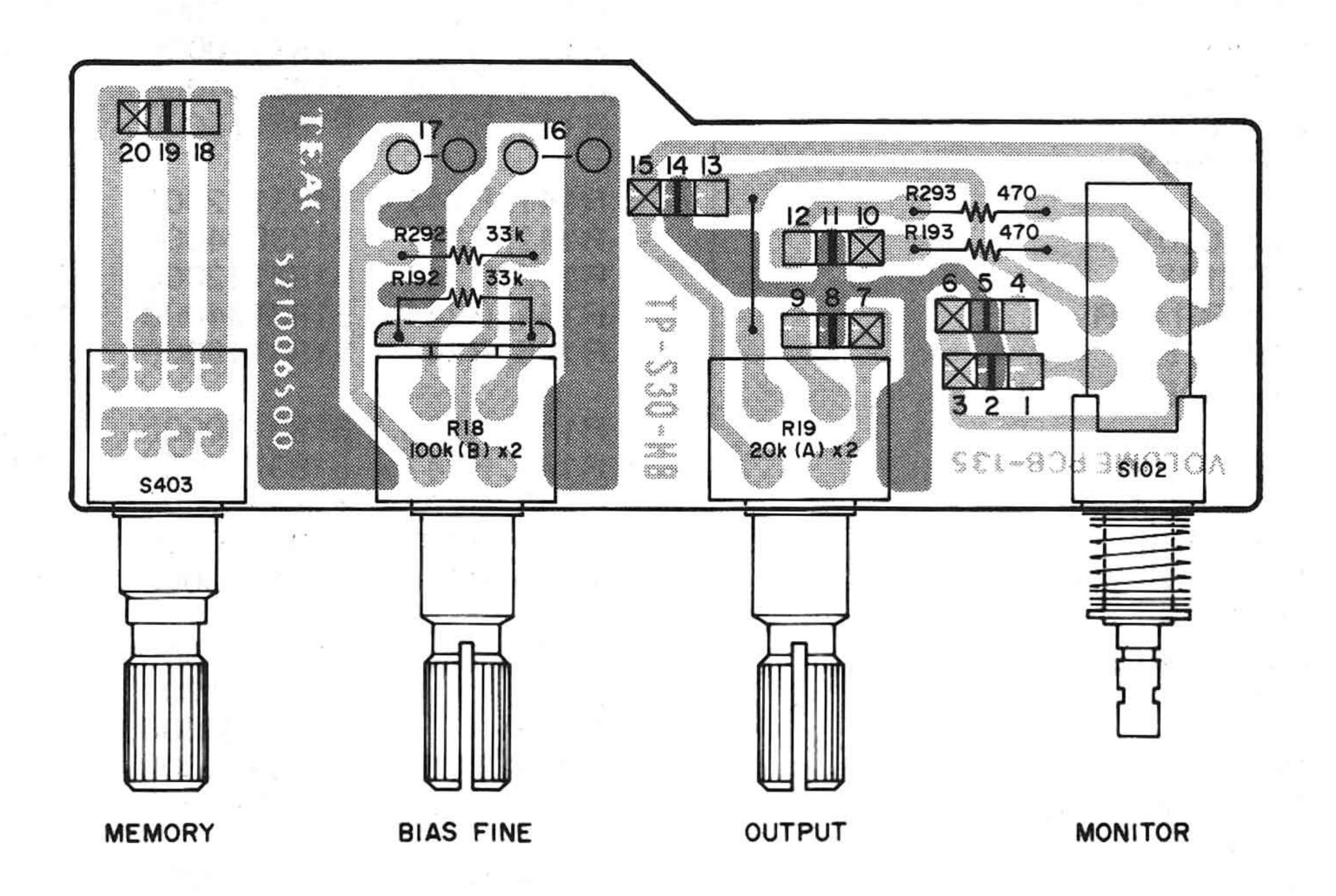
BLOCK REPEAT PCB ASSY



SWITCH PCB ASSY



VR PCB B ASSY



NOTES

- 1. Resistor values are in ohms (k=1,000 ohms, M=1,000,000 ohms).
- 2. Capacitor values are in microfarads (p=picofarads).

(MD): Electrolytic capacitor MD series

(CE) : Ceramic(PC) : Polypro.(BP) : Bipolar

All non-polarized capacitors are ±5% Mylar, unless otherwise noted.

3. AParts marked with this sign are safety critical components.

They must always be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.

MAIN PCB ASSY

INIVITA L. C.D.		
REF. NO.	PARTS NO.	DESCRIPTION
	5200064700 5200064710	PCB Assy [All except E, UK] PCB Assy [E, UK]
	5210064700	PCB
	IC's	
U101, U201 U102 U103, U203 U105 U106	5220411300 5220412200 5220411300 5220410900 5220414700	LM1111BN TA75557P LM1111BN TA75558P TA7332P
U107 U301 U303	5220410900 5147047000 5220412200	TA75558P M54410P TA75557P
	TRANSIST	OR
Q101, Q201 Q102, Q202 Q103, Q203 Q104, Q204 Q105, Q205	5145102000 5230016200 5145092000 5145119000 5230775000	FET 2SK68AL 2SA750E 2SC1740LNS 2SC1844F 2SC2878B
Q106, Q206 Q107, Q207 Q109 Q110 Q111, Q211	5230777200 5230777200 5231758500 5230014000 5230777200	KTN5014GR KTN5014GR 2SD1140 2SA1020Y KTN5014GR
Q112, Q212 Q113, Q213 Q301~Q307 Q308 Q309	5230775000 5230775000 5230777200 5145150000 5230773800	2SC2878B 2SC2878B KNT5014GR 2SA1015GR 2SC2655Y
Q310 Q311~Q320 Q321 Q322 Q323	5145099000 5230777200 5230773800 5230014000 5230773800	2SC1741R KTN5014GR 2SC2655Y 2SA1020Y 2SC2655Y
Q326, Q327	5230014000 ∆ 5145087000 5230777200 ∆ 5145129000 5145150000	2SA1020Y 2SD313E KTN5014GR 2SB507E 2SA1015GR
	DIODES	
D301~D304 D305 D306~D311 D312, D313 D314, D315		1S2473HJ Zener GZA5, 6U 1S2473HJ Zener GZA11U 1R5BZ61
l '	5143118000 5224519700 5143118000 \triangle 5224013600 \triangle 5228005000	1S2473HJ Zener GZA6.2L 1S2473HJ DBA-10C W02
All resist	CARBON Riors are rated ± unless othe	ESISTORS 5% tolerance and ¼ watterwise noted.
R101, R201 R102, R202 R103, R203 R104, R204 R105, R205	5183130000 5183110000 5183104000 5183109000	100kΩ 15kΩ 220Ω 8.2kΩ 13kΩ

REF. NO.	PARTS NO.	DESCRIPTIO	N
R106, R206	5183146000	470kΩ	•
R107, R207	5183112000	18kΩ .	
R108, R208	5183052000	56Ω	
R109, R209	5183104000	8.2kΩ	
R110, R210	5183098000	4.7kΩ	•
R111, R211	5183058000	100Ω	
R112, R212	5183090000	2.2kΩ	
R113, R213	5183138000	220kΩ	•
R114, R214	5183092000	2.7kΩ	
R115, R215	5183082000	1kΩ	
R116, R216	5183082000	1kΩ	
R117, R217	5183118000	$33k\Omega$	
R118, R218	5183118000	33kΩ	
R119, R219	5183122000	47kΩ	
R120, R220	5183094000	3.3 k Ω	
R121, R221	5183142000	330 k Ω	
R122, R222	5183134000	150kΩ	
R123, R223	5183140000	270kΩ	
R124, R224	5183090000	2.2kΩ	
H125, H225	5183130000	100kΩ	•
R126, R226	5183090000	2.2kΩ	
R127, R227	5183042000	22Ω	
R128, R228	5183106000	10k Ω	
R129, R229	5183058000	100Ω	
R130, R230	5183130000	100k Ω	
D121 D221	E1020E0000	1000	
R131, R231 R132, R232	5183058000 5183162000	100Ω	
R132, R232	5183050000	47Ω	
R134, R234	5183108000	12kΩ	
R135, R235	5183130000	100kΩ	
11.00,1.200	0.00.0000	rooker	
R136	5183082000	1kΩ	
R137, R237	5183094000	3.3 k Ω	
R138, R238	5183120000	$39k\Omega$	
R139, R239	5183134000	150k Ω	
R140, R240	5183118000	$33k\Omega$	
R141, R241	5183122000	47kΩ	
R142, R242	5183094000	$3.3k\Omega$	
R143, R243	5183142000	330kΩ	
R144, R244	5183134000	150kΩ	
R145, R245	5183140000	270kΩ	
R146, R246	5183130000	100kΩ	
R147, R247	5183114000	22kΩ	
R148, R248	5183082000	1kΩ	
R149, R249	5183126000	68kΩ	
R150, R250	5183106000	10kΩ	
R151, R251	5183106000	10kΩ	
R151, N251	5183064000	180Ω	
R153	5183064000	18032	
R154, R254	5183154000	1ΜΩ	
R155, R255	5183094000	3.3kΩ	
R156, R256	5183118000	33k Ω	
R150, R250	5183094000	$3.3k\Omega$	
R158, R258	5183130000	100kΩ	
R159, R259	5183130000	100kΩ	
R160, R260	5183106000	10kΩ	
R161, R261	5183118000	33kΩ	
R162, R262	5183126000	68kΩ	
1	15184249000		Nonflammable
***	15184249000	100Ω	Nonflammable
R165, R265	5183062000	150 Ω	

[US]: U.S.A. [C]: CANADA [GE]: GENERAL EXPORT [E]: EUROPE [UK]: U.K.

[A]: AUSTRALIA [J]: JAPAN

		·
REF. NO.	PARTS NO.	DESCRIPTION
R167, R267	5183104000	8.2kΩ
R168, R268	5183106000	10kΩ
R169, R269	5183082000	1kΩ
R170, R270	5183114000	22kΩ 10kΩ
R171, R271	5183106000	10kΩ
R173	5183114000	22kΩ
R174	5183130000	100kΩ
R175	5183090000 5183106000	2.2kΩ 10kΩ
R176 R177	5183106000 5183106000	10kΩ 10kΩ
N1//	510010000	IOKār
R178	5183106000	10kΩ
R179	5183106000	10kΩ
R180, R280	5183106000	10kΩ 10kΩ
R181, R281 R182, R282	5183106000 5183130000	10kΩ 100kΩ
· ·	0100100000	100K26
R183, R283	5183100000	5.6kΩ
R301	5183098000	4.7kΩ
R302	5183106000	10kΩ
R303	5183098000	4.7kΩ
R304	5183106000	10kΩ 4.7kΩ
R305	5183098000	4.7kΩ
R306	5183106000	·10kΩ
R307	5183098000	$4.7k\Omega$
R308~R317	5183106000	10kΩ
R318	5183042000	120Ω
R319	5183064000	180Ω
R320	5183100000	5.6 kΩ
R321	5183106000	10kΩ
R322	5183100000	5.6kΩ
R323	5183100000	5.6kΩ
R324	5183106000	10kΩ
R325	5183118000	33kΩ
R326	5183050000	47Ω
R327	5183114000	22kΩ
R328	5183114000	22kΩ
R329	5183122000	47kΩ
R330~R332	5183106000	10kΩ
R323	5183114000	22kΩ
R334	5183106000	10kΩ
R335	5183081000	910Ω
R336	5183114000	22kΩ
R337	5183106000	. 10kΩ
R338	5183086000	1.5kΩ
R339	5183114000	22kΩ
R340	5183106000	10kΩ ΄
R341	5183090000	2.2kΩ
R342~R344	5183106000	10kΩ
R345	5183092000	2.7kΩ
R346	5183106000	10kΩ
R347 R348	5183100000 5183092000	5.6kΩ 2.7kΩ
M340	5183092000	2.7kΩ
R349	5183092000	2.7kΩ
R350~R355	5183070000	330Ω
R356	5183144000	390kΩ
R357 R358	5183086000 5183106000	1.5kΩ 10kΩ
HJDO	5183106000	JOK75
R359	5183106000	10kΩ
R360	5183090000	2.2kΩ
R361	5183122000	47kΩ
R362	5183122000	47kΩ
•		

REF. NO.	PARTS NO.	DESCRIP	PTION		
R363 R364 R365 R366 R367	5183120000 5183132000 5183138000 5183070000 5183070000	39kΩ 120kΩ 220kΩ 330Ω 330Ω			
R368 R369 R370 R371 R372	5183028000 5183090000 5183098000 5183090000 5183084000	5.6Ω 2.2kΩ 4.7kΩ 2.2kΩ 1.2kΩ			
R373 R374 R375 R376 R377	5183098000 5183100000 5183106000 5183090000 5183098000	4.7kΩ 5.6kΩ 10kΩ 2.2kΩ 4.7kΩ			
R378 R379 R380 R381 R382	5183090000 5183106000 5183136000 5183046000 5183046000	2.2kΩ 10kΩ 180kΩ 33Ω 33Ω			
	CAPACITO	RS			
C101, C201 C102, C202 C103, C203 C104, C204 C105, C205	5172320000 5172312000 5172320000 5173053800 5170425000	Ceramic Ceramic Ceramic Elec. Mylar	470pF 82pF 470pF 220µF 0.01µF	50V 50V 50V 10V	10% 10% 10%
C106, C206 C107, C207 C108, C208 C109, C209 C110, C210	5172308000 5173044800 5260073500 5170409000 5170435000	Ceramic Elec. Elec. Mylar Mylar	47pF 100μF 4.7μF 0.0022μF 0.027μF	50V 10V 25V 100V	10% (BP) 5% 5%
C111, C211 C112, C212 C113, C213 C114, C214 C116, C216	5173044800 5173044800 5173556800 5172312000 5172324000	Elec. Elec. Elec. Ceramic Ceramic	100µF 100µF 1µF 82pF 0.001µF	10V 10V 50V 50V	10% 10%
C117, C217 C118, C218 C119, C219 C120, C220 C121, C221	5172324000 5173010800 5170437000 5173010800 5170417000	Ceramic Elec. Mylar Elec. Mylar	0.001µF 10µF 0.033µF 10µF 0.0047µF	50V 16V 100V 16V 100V	10% 5%
C122, C222 C123, C223 C124, C224 C125, C225 C126, C226	5172324000 5173053800 5170441000 5173010800 5170519000	Ceramic Elec. Mylar Elec. Mylar	0.001µF 220µF 0.047µF 10µF 0.1µF	50V 10V 100V 16V 100V	10% 5% 10%
C127, C227 C128, C228 C129 C130 C131, C231	5173553800 5172992800 5172992800 5172992800 5173571800	Elec. Elec. Elec. Elec.	0.33μF 1μF 1μF 1μF 10μF	50V 50V 50V 50V 16V	
C132, C232 C133, C233 C134 C135, C235 C136, C236	5172312000 5260073512 5173045800 5173053800 5173556800	Ceramic Elec. Elec. Elec.	82pF 4.7μF 100μF 220μF 1μF	50V 25V 16V 10V 50V	10% (BP)
C137, C237 C139, C239 C140, C240 C141, C241	5172312000 5172324000 5173010800 5172324000	Ceramic Ceramic Elec. Ceramic	82pF 0.001μF 10μF 0.001μF	50V 50V 16V 50V	10% 10% 10%

REF. NO.	PARTS NO.	DESCRIP	TION	····	
C142, C242	5170437000	Mylar	0.033µF	100V	5%
C143, C243 C144, C244	5173010800 5170417000	Elec. Mylar	10μF 0.0047μF	16V 100V	5%
C145, C245 C146, C246	5173053800 5170441000	Elec. Mylar	220μF 0.047μF	10V 100V	5%
C147, C247 C148, C248	5173010800 5170519000	Elec. Mylar	10μF 0.1μF	16V 100V	10%
C149, C249 C150, C250	5173553800 5172992800	Elec. Elec.	0.33μF 1μF	50V 50V	1070
C151, C251	5173731000	Polypro.	820pF	100V	5%
C152, C252 C153, C253	5172308000 5173005800	Celamic Elec.	47pF 4.7µF	50V 35V	10%
C154, C254 C155, C255	5172992800 5172992800	Elec. Elec.	1μF 1μF	50V 50V	
C156, C256	5173731000	Polypro.	820pF	100V	5%
C157, C257 C158, C258	5260073512 5172312000	Elec. Celamic	4.7μF 82pF	25V 50V	(BP) 10%
C159, C259 C160, C260	5173010800 5173010800	Elec. Elec.	10μF 10μF	16V 16V	
C161, C261	5170445000	Mylar	0.068µF	100V	5%
C162 C163	5173045800 5173045800	Elec. Elec.	100μF 100μF	16V 16V	
C164, C264	5170423000	Mylar	0.0082µF	100V	5%
C166, C266 C167, C267	5170429000 5170423000	Mylar Mylar	0.015µF 0.0082µF	100V 100V	5% 5%
C169	5170423000	Elec.	0.0082μ1 1μF	50V	5%
C170, C270	5172324000	Celamic	0.001µF	50V	10%
C301 C302	5173010800 5173035800	Elec. Elec.	10μF 47μF	16V 10V	
C303	5173035800	Elec.	47µF	10V	
C304 C305	5173017800 5173010800	Elec. Elec.	22μF 10μF	10V 16V	
C306~C312	5172336000	Celamic	0.01μF	50V	2%
C313, C314 C315	5173072800 5262001110	Elec. Elec.	470μF 4700μF	16V 25V	
C316 C317	5173082800 5172336000	Elec. Celamic	1000μF 0.01μF	25V 50V	
C318	5260065812	Elec.	2.2μF	50 V	(BP)
C319	5170425000	Mylar	0.01µF	100V	5%
C320 C321, C322	5173010800 5172992800	Elec. Elec.	10μF 1μF	16V 50V	
C323	5170429000	Mylar	0.015µF	100V	5%
C324 C325	5260065800 5172336000	Elec. Celamic	2.2μF 0.01μF	50V 50V	
C326	5173046800	Elec.	100μF	25V	
C327 C328	5172992800 5173036800	Elec. Elec.	1μF 47μF	50V 16V	
C329 C330	5173046800	Elec.	100μF	25V	
C330	5172992800 5173036800	Elec. Elec.	1μF 47μF	50V 16V	
	∆5173071800 ∆5173082800	Elec. Elec.	470μF 1000μF	10V 25V	
	VARIABLE		·		
RR11, R21	5280003602	Semi-fixed			
R12, R22 R13, R23	5280003502 5280002602	Semi-fixed Semi-fixed			
R14, R24	5280003502	Semi-fixed	$10k\Omega(B)$		
R15 R16	5280004202 5280004202	Semi-fixed Semi-fixed			
R31	5280025603	Semi-fixed	1kΩ(B)		
R32	5280025603	Semi-fixed	1kΩ(B)		

REF. NO.	PARTS NO.	DESCRIPTION
	TRIMMER	CAPACITORS
C168, C268	5267205300	30 — 210pF
	COILS	
L101, L201 L103, L203 L104, L204 L105, L205 L106 L107	5160107000 5286006200 5286001000 5160151000 5160151000	Choke 1.2mH (Fixed) Choke 3.1mH Choke 3.1mH (Variable) Choke 8mH (Variable) Choke 1.2mH (Fixed) Choke 1.2mH (Fixed)
	MISCELLA	NEOUS
U104, C204 U108 U109, U209 U302 S101	5292802500 5292200200 5286000200 5293000300 5300022500	Filter, Low-pass OSC Unit, 100kHz Coil, Trap 100kHz Resistor Array Switch, Push
S301~S307	5302100500 5330008000 5330008100 5126038000 5555590000	Switch, Tact Jack, MIC Jack, PHONES Terminal Assy Plate, GND; A
P101 P102 P103	5553132000 5122130000 5122130000 5122127000	Heatsink Connector Plug, 6P Connector Plug, 6P Connector Plug, 3P
F301~F305	5041138000 5142087000	Fuse 500mAT 250V [E] Holder, Fuse 10 used [E]

DBX PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200065301	PCB Assy
	5210065300	РСВ
	IC's	
U501, U601 U502 U503, U603 U504, U604 U505 U506, U606	5220414500 5220414601 5220414500 5220410900 5220414601	μPC1252H TA75558P μPC1253H2 μPC1252H TA75558P μPC1253H2
	TRANSISTO	DRS
Q501, Q601 Q502, Q602 Q503, Q603 Q504, Q604 Q505, Q605	5145151000 5145151000 5145150000 5145150000	2SC1815GR 2SC1815GR 2SA1015GR 2SC1815GR 2SA1015GR
Q506, Q606 Q507, Q607 Q508, Q608 Q509, Q609 Q510, Q610	5145151000 5145150000 5145151000 5145150000	2SC1815GR 2SC1815GR 2SA1015GR 2SC1815GR 2SA1015GR

REF. NO.	PARTS NO.	DESCRIPTION
	CARBON R	ESISTORS
All resist	ors are rated ±	5% tolerance and ¼ watt.
R501, R601	5183122000	47 kΩ
R502, R602	5183082000	1kΩ
R503, R603 R504, R604	5183100000 5183118000	5.6kΩ 33kΩ
R505, R605	5183106000	10kΩ
		44.
R506, R606	5183106000 5183092000	10kΩ 2.7kΩ
R507, R607 R508, R608	5183098000	$4.7k\Omega$
R509, R609	5183050000	47Ω
R510, R610	5183130000	100kΩ
R511, R611	5183106000	10kΩ
R512, R612	5183118000	33kΩ
R513, R613	5183058000	100Ω
R514, R614	5183130000 5183129000	100kΩ 91kΩ
R515, R615	3103129000	
R516, R616	5183098000	4.7kΩ
R517, R617 R518, R618	5183118000 5183118000	$33 \mathrm{k}\Omega$
R510, R610	5183110000	6.8kΩ
R520, R620	5183098000	4.7kΩ
R521, R621	5183098000	4.7kΩ
R522, R622		3.3 k Ω
R523, R623	5183118000	33kΩ
R524, R624 R525, R625	5183042000 5183034000	22Ω 10Ω
		41.0
R528, R628 R529, R629	5183082000 5183122000	1kΩ 47kΩ
R530, R630		1kΩ
R531, R631	5183100000	5.6kΩ
R532, R632	5183118000	33 kΩ
R533, R633	5183106000	10kΩ
R534, R634	5183106000	10kΩ
R535, R635 R536, R636		$2.7 k\Omega$ $4.7 k\Omega$
R537, R637		47Ω
R538, R638	5183130000	100kΩ
R539, R639		10kΩ
R540, R640	5183118000	33kΩ
R541, R641	5183058000 5183130000	100Ω 100kΩ
11042, 11042	3103130000	
R543, R643		91kΩ
R544, R644 R545, R645		$4.7 \mathrm{k}\Omega$ $33 \mathrm{k}\Omega$
R546, R646		33kΩ
R547, R647		6.8 kΩ
R548, R648	5183098000	4.7 k Ω
R549, R649	5183098000	4.7kΩ
R550, R650		3.3kΩ 33kΩ
R551, R651 R552, R652	5183118000 5183042000	33kΩ 22Ω
		10Ω
R553, R653 R556, R656	• - •	1032 1kΩ
R557, R657		470kΩ
R558, R658		470kΩ
R559, R659 R560, R660		1.8MΩ 1.8MΩ
11300,11000	313313337	

REF. NO.	PARTS NO.	DESCRIPTION
	CAPACITOF	RS
C501, C601 C502, C602	5260065412 5263162813	Elec. $0.47 \mu F$ 50V (BP) Meta. $0.33 \mu F$ 50V 5%
C503, C603 C504, C604 C505, C605 C506, C606 C507, C607	5170425000 5170401000 5172312000 5172312000 5260073512	$\begin{array}{llllllllllllllllllllllllllllllllllll$
C508, C608 C509, C609 C510, C601 C511, C611 C512, C612	5170449000 5170449000 5170413000 5170413000 5172318000	$\begin{array}{llllllllllllllllllllllllllllllllllll$
C513, C613 C514, C614 C515, C615 C517, C617 C518, C618	5170449000 5170425000 5170401000 5173010800 5260065412	$ \begin{array}{llllllllllllllllllllllllllllllllllll$
C519, C619 C520, C620 C521, C621 C522, C622 C523, C623	5263162813 5172316000 5170401000 5170425000 5172312000	Meta. 0.33μF 50V 5% Ceramic 220pF 50V Mylar 0.001μF 100V 5% Mylar 0.01μF 100V 5% Ceramic 82pF 50V
C524, C624 C525, C625 C526, C626 C527, C627 C528, C628	5260073512 5170449000 5170413000 5170413000	Elec. $4.7\mu F$ 25V (BP) Mylar $0.1\mu F$ 100V 5% Mylar $0.1\mu F$ 100V 5% Mylar $0.0033\mu F$ 100V 5% Mylar $0.0033\mu F$ 100V 5%
C529, C629 C530, C630 C531, C631 C532, C632 C533, C633	5172318000 5170449000 5170425000 5170401000 5173571800	$\begin{array}{lllll} \text{Ceramic} & 330 \text{pF} & 50 \text{V} \\ \text{Mylar} & 0.1 \mu \text{F} & 100 \text{V} & 5\% \\ \text{Mylar} & 0.01 \mu \text{F} & 100 \text{V} & 5\% \\ \text{Mylar} & 0.001 \mu \text{F} & 100 \text{V} & 5\% \\ \text{Elec.} & 10 \mu \text{F} & 16 \text{V} \\ \end{array}$
C534, C634 C535 C536	5173010800 5173036800 5173036800	Elec. $10\mu F$ $16V$ Elec. $47\mu F$ $16V$ Elec. $10\mu F$ $16V$
	VARIABLE	RESISTORS
R51, R61 R52, R62 R55, R65 R56, R66	5280004002 5280004002 5280004002 5280004002	$\begin{array}{ll} \text{Semi-fixed} & 50 k \Omega(B) \\ \end{array}$
	MISCELLA	NEOUS
P501 P502 P503	5336088600 5336088300 5336088600 5544750000	Connector Socket, 6P Connector Socket, 3P Connector Socket, 6P Pin, TP

BLOCK REPEAT PCB ASSY

	PEAT PCB A	
REF. NO.	PARTS NO.	DESCRIPTION
	5200065500	PCB-101 Assy
	5210047501	PCB-101
	IC's	
U701 U703~U705	5220803200 5293000900	μPD554C-071 TD62504P Transistor Array
-	TRANSIST	ORS
Q701 Q702 Q703, Q704 Q705, Q708 Q707~Q710 Q711	△5145087000 5230777200 5145150000 5145150000 5230777200	2SD313E KTN5014GR 2SA1015GR KTN5014GR 2SA1015GR KTN5014GR
	DIODES	
D701 D702, D703 D704, D705 D706 D708~D727	5224518100 5224518000 5143118000 5143118000	Zener RD5.6EB
All resiste	CARBON Rors are rated	ESISTORS 5% tolerance and ¼ watt.
R701, R702 R703 R704 R705 R706	5183078000 5183074000 5183106000 5183130000 5183118000	680Ω 470Ω 10kΩ 100kΩ 33kΩ
R707~R711 R712~R715 R716, R717 R718, R719 R720	5183114000 5183106000 5183130000 5183106000 5183070000	22kΩ 10kΩ 100kΩ 10kΩ 330Ω
R721, R722 R723 R724~R740 R741~R745 R746	5183082000 5183114000 5183114000 5183130000	1kΩ 22kΩ 10kΩ 22kΩ 100kΩ
R747~R754 R755 R756~R762 R763 R764	5183106000 5183082000 5183072000 5183094000 5183086000	10kΩ 1kΩ 390Ω 3.3kΩ 1.5kΩ
	CAPACITOR	RS
C701 C702 C703 C704 C705, C706	5173037800 5173054800 5173395000 5173010800 5172792000	Elec. $47μF$ 25V Elec. $220μF$ 16V Elec. $0.047μF$ 50V 10% Elec. $10μF$ 16V Polyst. $33pF$ 50V 5%
C707, C708 C709 C710 C711~C714	5170433000 5173036800 5172992800 5172336000	
	COIL	
L701	5286002100	Choke 1.5mH

REF. NO.	PARTS NO.	DESCRIPTION
	CONNECTO	ORS
P701	5336088300	Socket, 3P
P702	5336088400	Socket, 4P
P703	5336088500	Socket, 5P
P704	5336088400	Socket, 4P
P705	5336088500	Socket, 5P
P706	5336088300	Socket, 3P
P707, P708	5336088400	Socket, 4P
P709	5336088300	Socket, 3P
•	MISCELLA	NEOUS
	5800004000	Bracket, Transistor
	5783003008	Screw PTT M3 x 8
	5781823000	Nut M3

LED PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200064800	PCB Assy
	5210064800	PCB .
D331 D332 D333 D334 D335 D336	5225009100 5225009100 5225007300 5225007300 5225009100	LED SLP-460C (AMBER) LED SLP-460C (GREEN) LED SLP-460C (AMBER) LED SLP-160C (RED) LED SLP-160C (RED) LED SLP-460C (AMBER)
R391~R393 R394, R395 R396	5183076000 5183082000 5183076000	Carbon Res. 560Ω ¼W $\pm 5\%$ Carbon Res. $1k\Omega$ ¼W $\pm 5\%$ Carbon Res. 560Ω ¼W $\pm 5\%$
	5800258801 5334025700	Holder, LED Connector Plug. 7P

SWITCH PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200065100	PCB Assy
	5210065100	PCB
R191, R291	5300025300 5300022400 5183074000	Push Switch, 3-gang Push Switch, 3-gang (S) Carbon Res. 470Ω 1 4W $\pm 5\%$

VR PCB B ASSY

REF. NO.	PARTS NO.	DESCRIPTION	
	5200065000	PCB Assy	
	5210065000	PCB	
S102 R18 R19 R192, R292 R193, R293	5301202800 5300025400 5282406002 5282407802 5183118000 5183074000		±5% ±5%

MECANISM PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200065400	PCB Assy
	5210065400	PCB
R35 D351, D352 P301	5282010800 5143315000 5122155000	Var. Res. $100k\Omega(B)$ Diode W03C Connector Plug, 12P

SENSOR PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200047801	PCB Assy
	5210047801	PCB
E001, E002	5228700200	IC TL170C

POWER SW PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200073200	PCB Assy [J]
	5200073210	PCB Assy [US]
	5200073220	PCB Assy [C]
	5200073240	PCB Assy [E, UK]
	5200073250	PCB Assy [A]
	5210073200	РСВ
S401	 £ 5300027000	Push Switch [J]
	 ∆ 5300027100	Push Switch [US, C]
	 ∆ 5300027200	Push Switch [E, UK, A]
Z401	₫5052905000	Spark Killer $0.1\mu\text{F}+120\Omega/300\text{V}$ [J]
	 ∆5052910000	Spark Killer 0.033μF+120Ω/125V [US]
	 ∆ 5292002600	Spark Killer 0.033μF+120Ω/125V [C]
	 ∆ 5267702500	Spark Killer 0.0047µF/250V [E, UK, A]

TIMER PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200047600	PCB Assy
	5210047600	PCB
S402	5301202800	Rotary Switch, 2-3

COUNTER PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200065200	PCB Assy
	5210065200	PCB
S404	5225008900 5302101300	LED Indicator Tact Switch

VR PCB A ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200064900	PCB Assy
	5210064900	PCB
R17	5283503000	Var. Res. $100k\Omega x2$, $200k\Omega$

VOLTAGE SELECTOR PCB (PC Board Omitted) [GE]

REF. NO.	PARTS NO.	DESCRIPTION
_	5200034900	PCB Assy [GE]
	5210034900	PCB [GE]
	5555062000	Plate, Selector; A

[US]: U.S.A. [C]: CANADA [GE]: GENERAL EXPORT [E]: EUROPE [UK]: U.K.

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