

TEAC[®]



SERVICE MANUAL

CX-400

Stereo Cassette Deck

1 SPECIFICATIONS AND SERVICE DATA

SPECIFICATIONS

Track System 4-track, 2-channel stereo

3 Heads Erase, record & playback

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

Tape Speed 4.8 cm/s (1-7/8 ips)

Input (level and impedance)

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

Min. input level; -67 dB (346 μ V)

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

Min. input level; -19 dB (86.9 mV)

DIN*: Min. input level; -45 dB (4.36 mV)

*Pursuant to DIN standards

Output (level and load impedance)

OUTPUT: Spec. output level; -5 dB (436 mV)/
50 kohms

Max. output level; -2.5 dB (581 mV)

PHONES: Spec. output level; -16 dB (123 mV)/8 ohms

Equalization

METAL: 3180 μ s + 70 μ s

Co (CrO₂): 3180 μ s + 70 μ s

NORMAL: 3180 μ s + 120 μ s

Head Configuration

1/2-track, 1-channel erase head

1/4-track, 2-channel dual-gap record and playback heads

Motor DC servo motor

Bias Frequency 100 kHz

Operation Position Horizontal

Power Requirements

100/117/220/240 V AC, 50/60 Hz, 12 W (General
Export Model)

117 V AC, 60 Hz, 12 W (U.S.A./Canada Model)

220 V AC, 50 Hz, 12 W (Europe Model)

240 V AC, 50 Hz, 12 W (U.K./Australia Model)

Weight 6.1 kg (13-7/16 lbs.) net

7.7 kg (17 lbs.) net (Some General Exp. Models
have wood case.)

Dimensions See page 3.

* Noise reduction circuit made under license from Dolby Laboratories. The word "Dolby" and the Double-D symbol are trademarks of Dolby Laboratories.

CAUTION

△Parts marked with this sign are safety critical components. They must always be replaced with identical components — refer to the TEAC parts list and ensure exact replacement.

SERVICE DATA

MECHANICAL

Tape Speed Deviation 3,000 Hz $\pm$ 60 Hz

Tape Speed Drift 60 Hz

Wow and Flutter

Playback: 0.10% (WRMS)

Record/Playback: 0.25% (RMS)

Pinch Roller Pressure 350 g to 450 g (12.3 oz to 15.9 oz)

Reel Torque

Take-up: 40 to 60 g-cm (0.56 to 0.83 oz-inch)

Supply: 2 to 6 g-cm (0.028 to 0.083 oz-inch)

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

REW: 90 to 150 g-cm (1.2 to 2.1 oz-inch)

Fast Wind Time

110 sec. or less for MTT-501 (C-60)

Auto End-stop Time 6 sec. or less

ELECTRICAL

Frequency Response

Playback (Co (CrO₂)) 40 Hz +2, -4 dB

(METAL) 63 Hz +2, -2 dB

315 Hz 0 dB (Ref.)

2 kHz +2, -2 dB

4 kHz +4, -2 dB

6.3 kHz +4, -2 dB

10 kHz +4, -5 dB

Overall 40 Hz +4, -4 dB

63 Hz +4, -4 dB

125 Hz +2, -2 dB

400 Hz 0 dB (Ref.)

6.3 kHz +2, -2 dB

8 kHz +3, -2.5 dB

12.5 kHz +3, -4 dB

8 kHz +3, -2.5 dB

14 kHz +3, -4 dB

8 kHz +3, -3 dB

10 kHz +3, -4 dB

Co (CrO₂)

METAL

NORMAL

Signal-to-noise Ratio

Playback NORMAL; 46 dB min.

METAL/Co (CrO₂); 47 dB min.

Record/Playback

METAL, Co (CrO₂); 44 dB min.

NORMAL; 43 dB min.

S/N is improved by 5 dB at 1 kHz and 10 dB above
5 kHz when Dolby NR* is used.

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 METAL/Co(CrO₂); 2.2% or
less.

NORMAL; 2.5% or less

NOTES:

- Improvements may result in SPECIFICATIONS AND SERVICE DATA changes.
- Value of "dB" in the data refers to 0 dB (0.775 V), except where specified.

2 REMOVAL OF EXTERNAL COMPONENTS

Disassemble in number-order

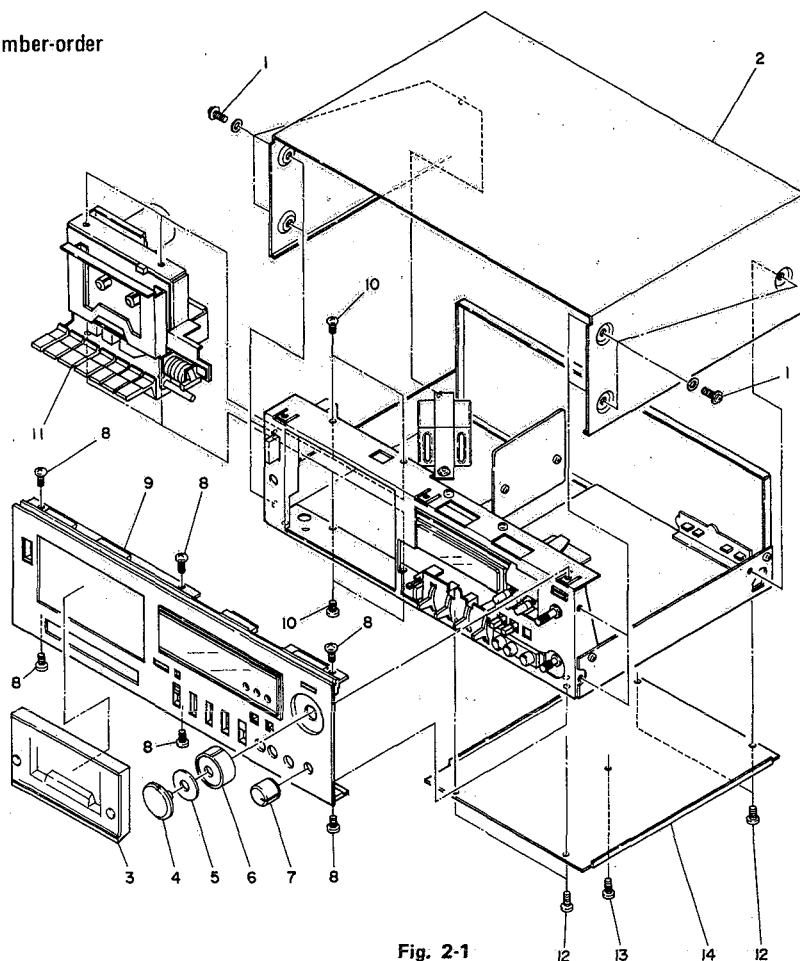
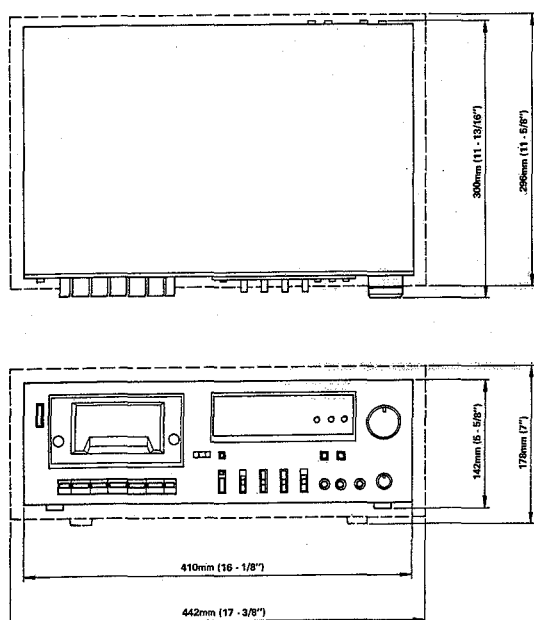


Fig. 2-1



Broken line indicates some General Export models.

Fig. 1-1 Dimensions

LIMITED AREAS ONLY

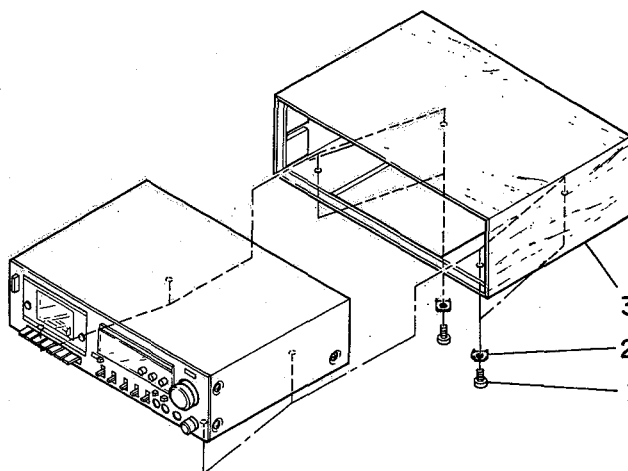


Fig. 2-2

3 PARTS LOCATION

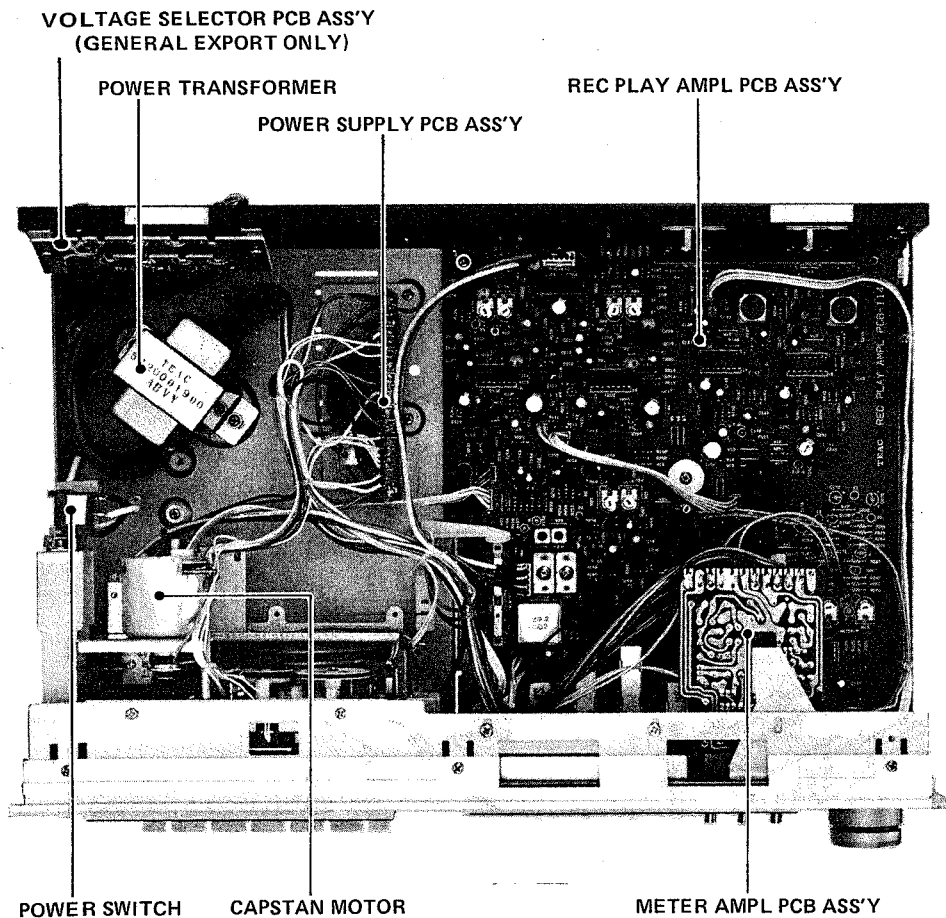


Fig. 3-1

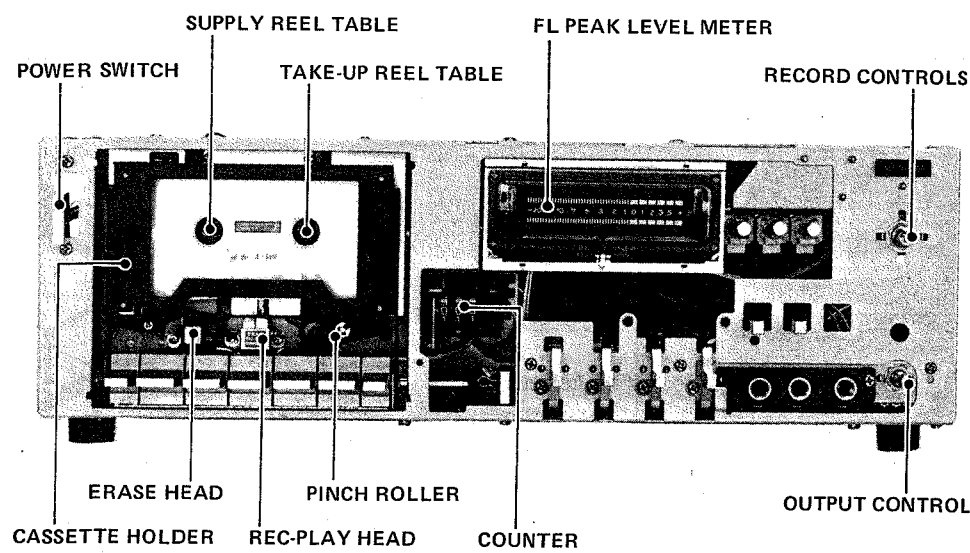


Fig. 3-2

4 MECHANICAL ADJUSTMENTS AND CHECKS

4-1 CAPSTAN ASSEMBLY THRUST

Capstan shaft thrust value: 0.05 mm to 0.15 mm

4-2 PINCH ROLLER PRESSURE

1. Set in the play mode with no tape.
2. Measure the pinch roller pressure when the pinch roller just begins rotation after it is separated from the capstan shaft.

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

4-3 REEL TORQUE

1. Load a cassette torque meter and read the pointer indication on the dial scale for each tape movement operation.
Take-up 40 to 60 g-cm (0.56 to 0.83 oz-inch)
Supply: 2 to 6 g-cm (0.028 to 0.083 oz-inch)
F.F.: 80 to 150 g-cm (1.1 to 2.1 oz-inch)
REW.: 90 to 150 g-cm (1.2 to 2.1 oz-inch)

4-4 TAPE SPEED

1. Load and play a TEAC MTT-111 test tape.
2. Using a common slotted screwdriver with a handle completely insulated from the screwdriver blade, adjust the control on the motor (as far as possible) for a reading of 3,000 Hz (Spec.: 3,000 Hz $\pm$ 5 Hz).

NOTE: This tape speed setting should be done after about 20 seconds of operating time.

3. Check the following at any portion of the tape run.
Tape speed deviation 3,000 Hz $\pm$ 60 Hz
Tape speed drift 60 Hz

4-5 TENSION ARM

1. Check that when the PLAY key is pushed then locked, the tension arm's projection is within the specified area as shown.
2. If not, adjustment can be done using the indicated screws.

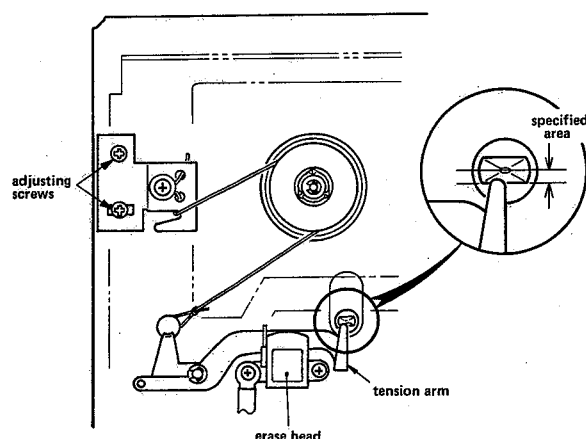


Fig. 4-1

4-6 LUBRICATION

Lubrication is only required when parts are replaced. For this purpose, use the oil and grease specified below.

Oil: TEAC spindle oil (from TEAC TZ-255 oil kit), Mobil D.T.E. Oil Light, or equivalent

Grease: ORE-LUBE G1/3 or equivalent

1. Apply a drop of oil with an oil applicator to a point about 1/3 the way down the shaft (from the free end) of the flywheel, then insert the shaft into the capstan housing.
2. Apply a suitable amount of light grease to the well of the flywheel bearing.

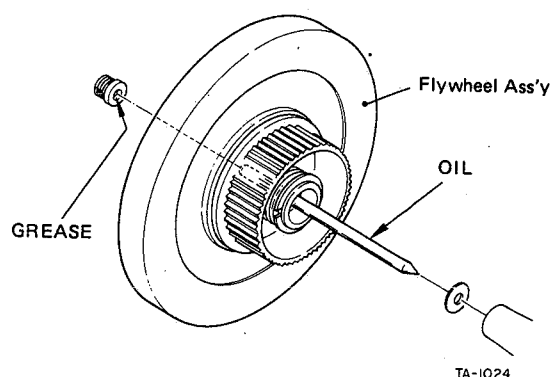


Fig. 4-2

4-7 VOLTAGE CONVERSION (GENERAL EXPORT MODEL ONLY)

ALWAYS DISCONNECT THE POWER LINE CORD BEFORE MAKING THESE ADJUSTMENTS.

1. Remove the top cover of the deck by removing the screws from the sides.
2. Locate the voltage selector, shown in the illustration, near the power transformer.
3. Loosen the two screws in the shorting bar and move the bar so that it shorts across the terminals marked with the required voltage (100, 117, 220 or 240).
4. Retighten the screws.
5. Replace the top cover.

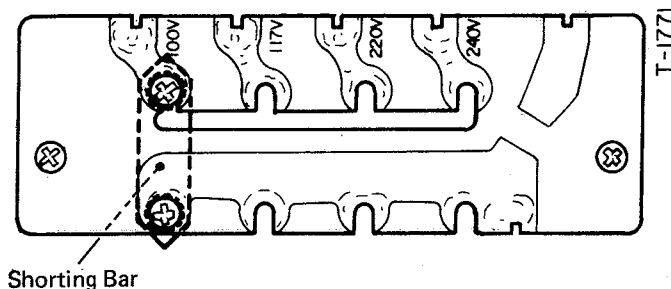


Fig. 4-3

4-8 MUTING SWITCH

1. When the PLAY key is pressed then locked, the muting switch should be pushed positively.
2. When in the STOP mode, the switch should return to the original released condition.

4-9 MOTOR SWITCH

1. Adjust the switch position so that in the STOP condition the movable contact of the switch makes contact with the brake plate as shown.
2. After the power on the deck is switched on, when the PLAY, F.F., or REW keys are depressed, the motor switch should operate to start motor rotation.
3. When in the STOP condition, the switch should operate to stop motor rotation.

4-10 PAUSE SWITCH

1. Adjust the switch position to meet the following requirements.
2. When the PAUSE key is fully depressed by hand, distance

between the pause lever and the conducting portion of the switch's movable leaf should not be less than 0.5 mm so as to prevent the switch from grounding.

3. When the PAUSE key is locked, the fixed contact should be deflected by about 1 mm after both contacts are touched.

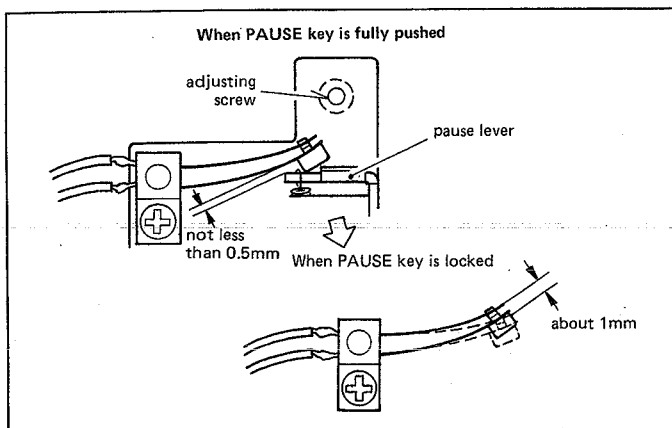
4-11 REWIND SWITCH

1. Check that when the REW key is pressed and locked the switch is actuated positively.

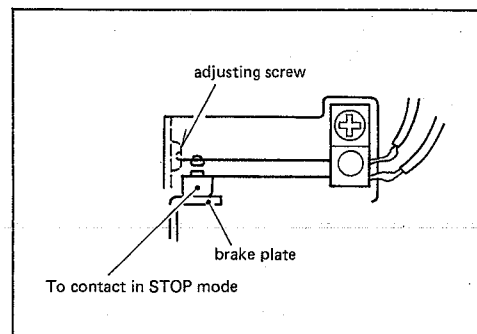
4-12 LOCK PLATE RELEASE SOLENOID

1. Adjust the lock plate release solenoid position so that when its plunger is pushed into the solenoid housing (bottomed) by hand, the solenoid is positioned as far from the operation keys as possible but be sure that the lock plate does not foul the flywheel.
2. Check that while the solenoid plunger is kept pushed and in the course that each F.F., PLAY, REW or REC key is depressed, the clearance pointed out in the illustration is gotten.

PAUSE SWITCH ADJUSTMENT



MOTOR SWITCH ADJUSTMENT



LOCK PLATE RELEASE SOLENOID ADJUSTMENT

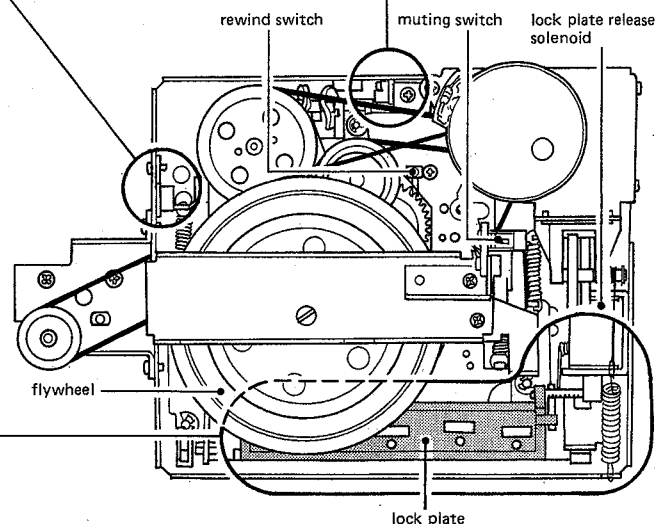
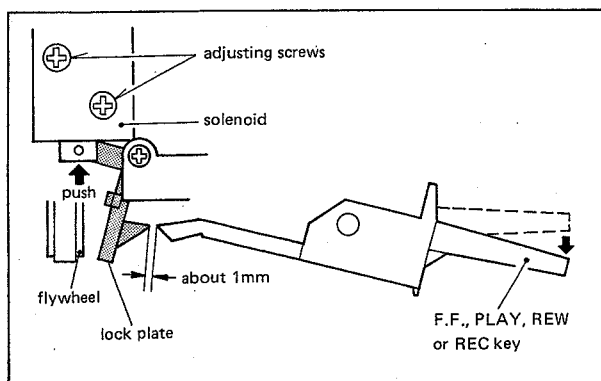


Fig. 4-4

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 done 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. The value of "dB" refers to 0 dB (0.775 V). If an AC voltmeter calibrated to 0 dB (1 V) is to be used, appropriate compensation should be made.
5. The AC voltmeter used in the procedures must have an input impedance of 1 M-ohms or more.
6. Note the "Deck settings" at the top of each chart. The settings must be used for all the checks or the chart unless explicitly stated otherwise.

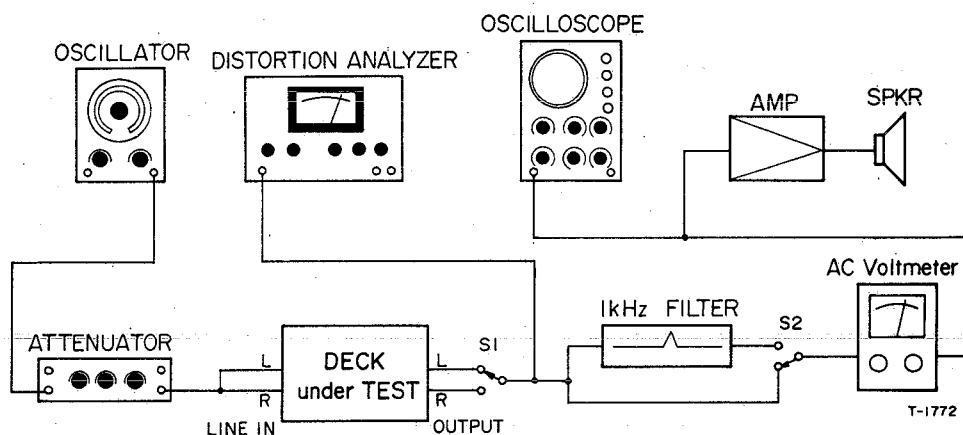


Fig. 5-1 Basic test setup

-70 dB or more ... What does it mean?

Values in dB are often given like this: "-70 dB or more". This sometimes leads to confusion. Is -76 dB more than -70 dB or less? To put the record straight, the "more" refers to the absolute value. The absolute value of -70 is |70|. The absolute value of -76 is |76| which is 6 more than 70.

So, -76 dB is "more" than -70 dB

-55 dB is "less" than -60 dB

Deck settings:
MONITOR sw. — TAPE
DOLBY NR sw. — OUT
INPUT sw. — LINE
OUTPUT cont. — Spec. position (item 2)
RECORD cont. — Spec. position (item 8)
TEAC test tapes:
MTT-506: For record test with Co(CrO₂)

MTT-501: For record test with NORMAL

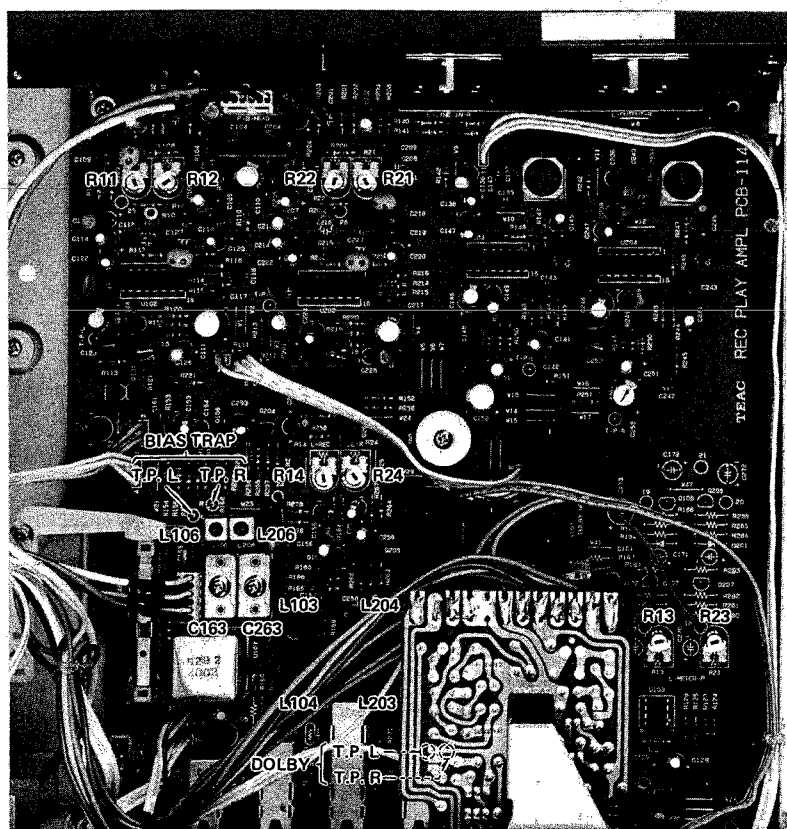
METAL: For record test with METAL

5-3. RECORDING PERFORMANCE

ITEM	INSTRUCTION	INPUT SIGNAL	ADJUST (or CHECK)	MEASURING POINT RESULT	REMARKS	
10. Bias trap	Record-pause mode	LINE IN No signal	L106/L206	BIAS TRAP TP Min. reading		
11. Record bias	BIAS/EQ — Co (CrO ₂) Tape — MTT-506	LINE IN 6.3 kHz/—42 dB (6.15 mV)	C163/C263	OUTPUT 2.5 dB ±1.5 dB over-bias		
12. Record level	BIAS/EQ — Co (CrO ₂) Tape — MTT-506	LINE IN 400 Hz/—12 dB (195 mV)	R14/R24	OUTPUT —8 dB (308 mV)		
	BIAS/EQ — NORMAL Tape — MTT-501	” ”	Check	—8 dB ±1 dB (275 mV~346 mV)		
	BIAS/EQ — METAL Tape — METAL	” ”	” ”	” ”		
13. Total harmonic distortion	BIAS/EQ — METAL Tape — METAL	LINE IN 400 Hz/—12 dB (195 mV)	Check	OUTPUT 2.2% or less		
	BIAS/EQ — Co (CrO ₂) Tape — MTT-506	” ”	” ”	” ”		
	BIAS/EQ — NORMAL Tape — MTT-501	” ”	” ”	2.5% or less		
14. Frequency response	BIAS/EQ — Co (CrO ₂) Tape — MTT-506	LINE IN Required signal/ —42 dB (6.15 mV)	L103/L203	OUTPUT 40 Hz +4, —4 dB 63 Hz +4, —4 dB 125 Hz +2, —2 dB 400 Hz 0 dB (Ref.) 6.3 kHz +2, —2 dB	Co (CrO ₂) METAL NORMAL	
	BIAS/EQ — NORMAL Tape — MTT501	” ”		8 kHz +3, —2.5 dB 12.5 kHz +3, —4 dB 8 kHz +3, —2.5 dB		
	BIAS/EQ — METAL Tape — METAL	” ”		14 kHz +3, —4 dB 8 kHz +3, —3 dB 10 kHz +3, —4 dB		
				L104/L204		
	If frequency response is wrong, recheck steps 11 and 13.					
15. Signal-to-noise ratio	BIAS/EQ — METAL Tape — METAL	LINE IN 1 kHz/—9 dB (275 mV) ↓ no signal	Check	OUTPUT 44 dB min. ratio	Ratio of spec. output —5 dB to noise	
	BIAS/EQ — Co (CrO ₂) Tape — MTT-506			” ”		
	BIAS/EQ — NORMAL Tape — MTT-501			43 dB min. ratio		
16. Erase efficiency	● Connection — Fig. 5-1. But switch ON 1 kHz filter. ● Record 1 kHz. Rewind tape to mid point of recorded portion. Do “no signal” recording. Get difference between 1 kHz portion and its erased portion.					
	BIAS/EQ — METAL Tape — METAL	LINE IN 1 kHz/+1 dB (0.869V) ↓ no signal	Check	OUTPUT 65 dB min. ratio	Ref. output level: +5 dB (1.38V)	
17. REC MUTE function	● Connection — Fig. 5-1. But switch ON 1 kHz filter. ● Record 1 kHz. Then push REC MUTE button for several sec. Rewind and play tape. Get difference between 1 kHz portion and the “no signal” portion.					
	BIAS/EQ — METAL Tape — METAL	LINE IN 1 kHz/+1 dB (0.869V) ↓ no signal	Check	OUTPUT 65 dB min. ratio	Ref. output level: +5 dB (1.38V)	

ITEM	INSTRUCTION	INPUT SIGNAL	ADJUST (or CHECK)	MEASURING POINT RESULT	REMARKS
18. Channel separation	• Connection – Fig. 5-1. But do not connect LINE IN (R), switch ON 1 kHz filter. • Set deck in record mode. Find differences between 1 kHz recorded portion (L-ch) and “no signal” portion (R-ch).				
	BIAS/EQ – Co (CrO ₂) Tape – MTT-506	LINE IN L-ch 1 kHz/–9 dB (275 mV) R-ch No signal	Check	OUTPUT 30 dB min. ratio	
19. Adjacent track crosstalk	• Connection – Fig. 5-1. But do not connect LINE IN (L) and OUTPUT (L). • Record 125 Hz on R-ch. Note output level of its recorded portion. Invert tape and play R-ch track. Check leakage level against the output reference of previously recorded portion.				
	BIAS/EQ – Co (CrO ₂) Tape – MTT-506	LINE IN L-ch No signal R-ch 125 Hz/–9 dB (275 mV)	Check	OUTPUT 40 dB min. ratio	
20. Dolby NR effect	• Record 1 kHz with DOLBY NR switch to OUT. Play its portion with switch, OUT and IN. Get the output level difference between OUT and IN positions. Repeat the above process for 10 kHz.				
	BIAS/EQ – Co (CrO ₂) Tape – MTT-506	LINE IN 1 kHz/–29 dB (27.5 mV)	Check	OUTPUT Variation 3 dB~8 dB	
	”	” 10 kHz/–39 dB (8.69 mV)	”	” 8 dB~12 dB	

5-4. ADJUSTMENT AND TEST POINT LOCATIONS

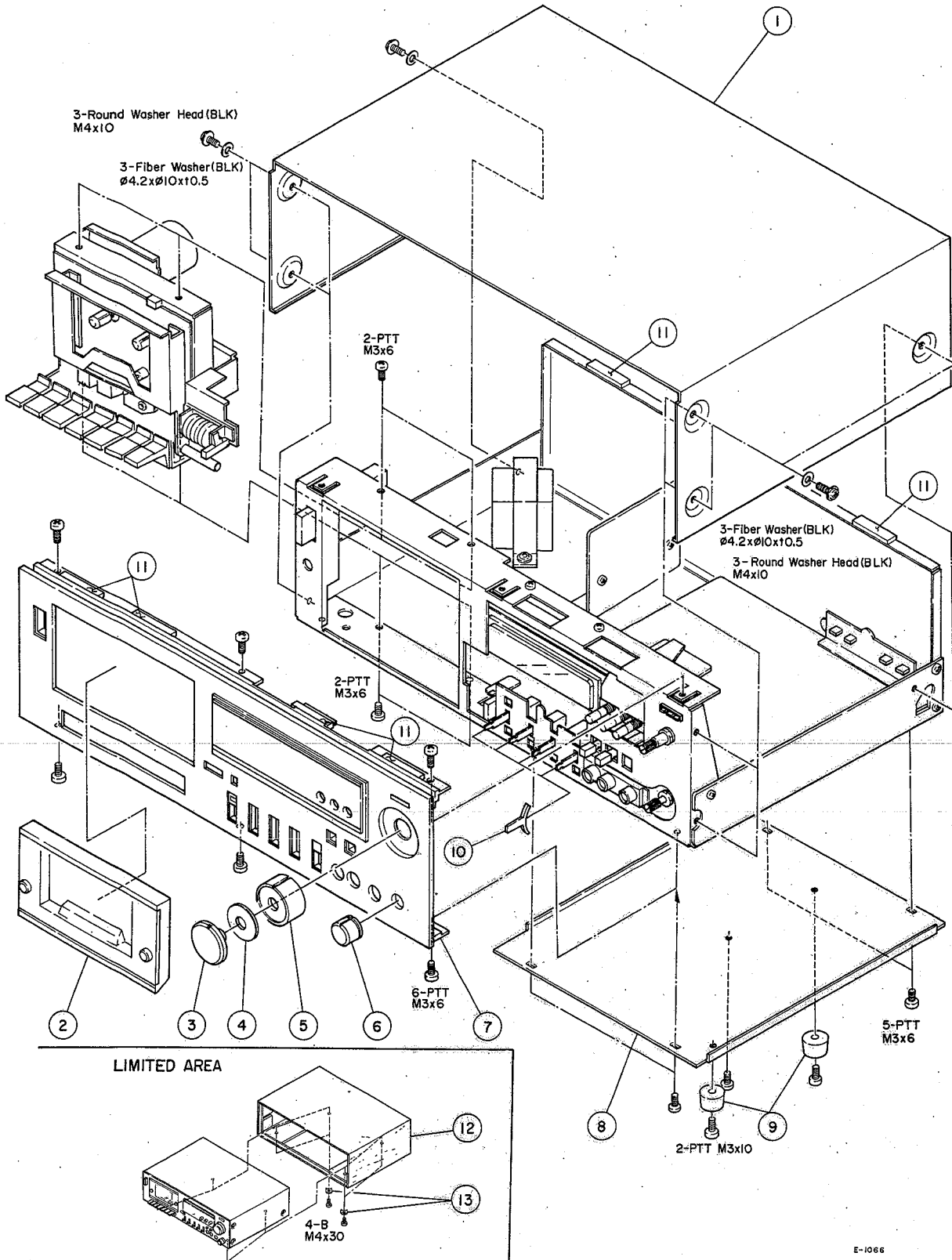


C163/C263	Record bias
L103/L203	Record frequency response for Co (CrO ₂) and NORMAL
L104/L204	Record frequency response for METAL
L106/L206	Bias trap
R11/R21	Output level
R12/R22	Playback frequency response
R13/R23	Peak level meter
R14/R24	Record level

Fig. 5-6

6 EXPLODED VIEWS AND PARTS LIST

EXPLODED VIEW - 1



E-1066

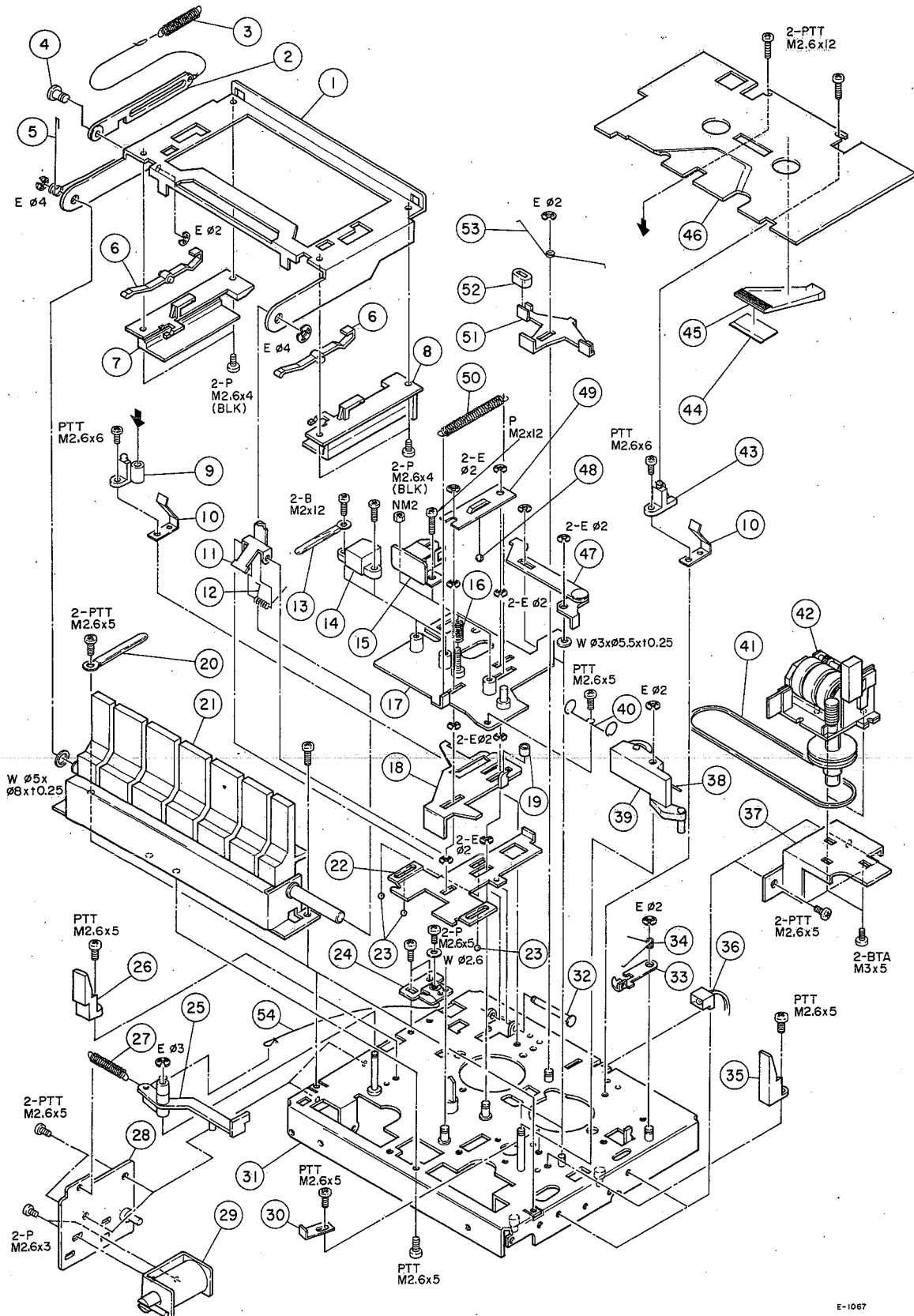
Parts marked with *require longer delivery time than regular parts.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1 - 1	*5800009900	Cover, Top	All except LIMITED AREA LIMITED AREA
1 - 2	5640004700	Cover Assy, Cassette	
1 - 3	5800011700	Knob, REC; A	
1 - 4	*5800025400	Washer, Felt	
1 - 5	5800011800	Knob, REC; B	
1 - 6	5800011900	Knob, VR	
1 - 7	5640004600	Panel Assy, Front	
1 - 8	*5800010400	Cover, Bottom	
	*5800072100	Cover Assy, Bottom; B	
1 - 9	*5534432000	Foot	
1 - 10	5800009600	Knob, Lever Switch	
1 - 11	*5555570000	Cushion, Top Cover; B	
1 - 12	*5800071800	Cabinet Assy	
1 - 13	*5555526000	Washer	LIMITED AREA LIMITED AREA

INCLUDED ACCESSORIES

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	5128107000	Cord, Input-output Connection	U.S.A. All except U.S.A.
	5101345000	Information Supplement, Cassette	
	5101495000	Information Supplement, Cassette	
	5700004600	CX-400 Owner's Manual	U.S.A. All except U.S.A.
	5700004700	CX-400 Owner's Manual	

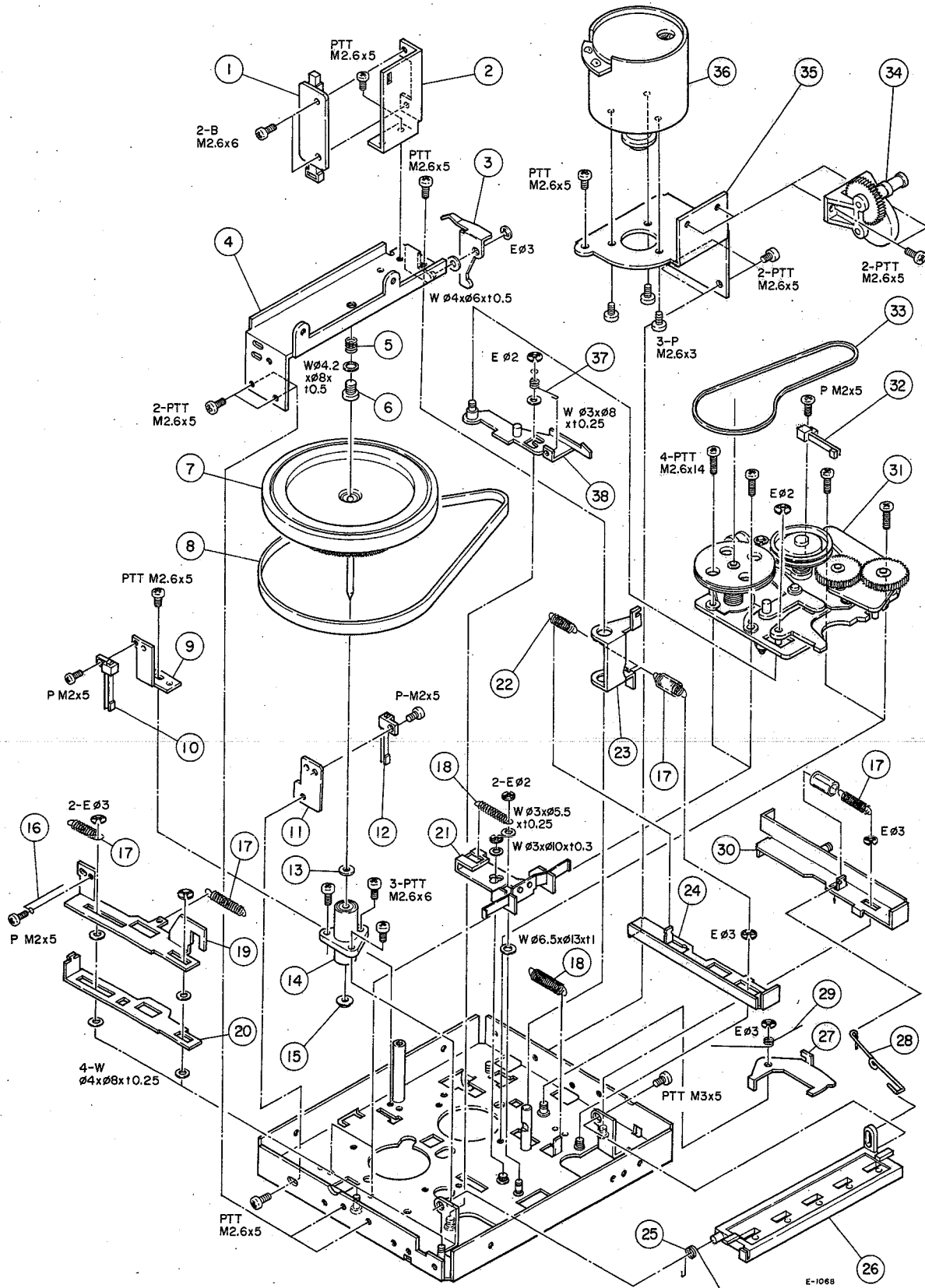
EXPLODED VIEW - 2



Parts marked with *require longer delivery time than regular parts.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
2 - 1	*5553323000	Holder, Cassette	
2 - 2	*5534612000	Plate, Lock	
2 - 3	*5524203000	Spring, Damper	
2 - 4	*5545089000	Shaft, Lock Plate	
2 - 5	*5524247000	Spring, Holder	
2 - 6	*5534615000	Spring, Cassette Pressure	
2 - 7	5534613000	Guide, Cassette; L	
2 - 8	5534614000	Guide, Cassette; R	
2 - 9	*5534765000	Guide, Cassette; L	
2 - 10	*5555773000	Plate, Cassette Pressure	
2 - 11	*5555081100	Lever, Safety; C	
2 - 12	*5520349000	Spring, Safety Lever	
2 - 13	*5581062000	Clamper, Cord; E	
2 - 14	5569613000	Head, ERASE	
2 - 15	5378900000	Head, REC-PLAY; Combination	
2 - 16	*5800090900	Spring, Head	
2 - 17	*5800052301	Plate Assy, Head Base	
2 - 18	*5800052001	Plate, Head Base; B	
2 - 19	*5788100900	Tube, $\phi 3$	
2 - 20	*5581038000	Clamper, Cord; A	
2 - 21	5800047201	Button Assy	
2 - 22	*5800051900	Plate, Brake	
2 - 23	5540056000	Steel Ball, $\phi 3$	
2 - 24	*5600012000	Plate, Tension Adjusting	
2 - 25	*5533174000	Arm, Tension	
2 - 26	*5800048800	Cassette Guide, L	
2 - 27	*5800086700	Spring, Tension	
2 - 28	*5800049700	Bracket, Solenoid	
2 - 29	5313000400	Solenoid, Lock Plate Release	
2 - 30	*5800048901	Plate, Stopper	
2 - 31	*5800051200	Chassis Assy, Mechanism	
2 - 32	*5544656000	Shaft, Record Preventing	
2 - 33	*5084643200	Plate, Lock	
2 - 34	*5084550200	Spring, Lock	
2 - 35	*5534444200	Cassette Guide	
2 - 36	5142036000	Lamp, DC 6V 65mA	
2 - 37	*5600007100	Bracket, Counter	
2 - 38	*5800048600	Spring, Pinch Roller	
2 - 39	5800049000	Arm Assy, Pinch Roller	
2 - 40	*5800087000	Clamper	
2 - 41	5534768000	Belt, Counter	
2 - 42	5800017400	Counter Assy	
2 - 43	*5534766000	Guide, Cassette; R	
2 - 44	*5555771000	Plate, Reflective	
2 - 45	*5534761000	Lens, Cassette	
2 - 46	*5800049500	Panel, Cassette	
2 - 47	*5800049300	Arm Assy, Pause	
2 - 48	5540056000	Steel Ball, $\phi 2$	
2 - 49	*5800051000	Plate, Pressure	
2 - 50	*5800052900	Spring, Play	
2 - 51	*5800012600	Plate, Brake	
2 - 52	*5534840000	Shoe, Brake	
2 - 53	*5800015800	Spring, Brake	
2 - 54	*5788200200	String, Tension	

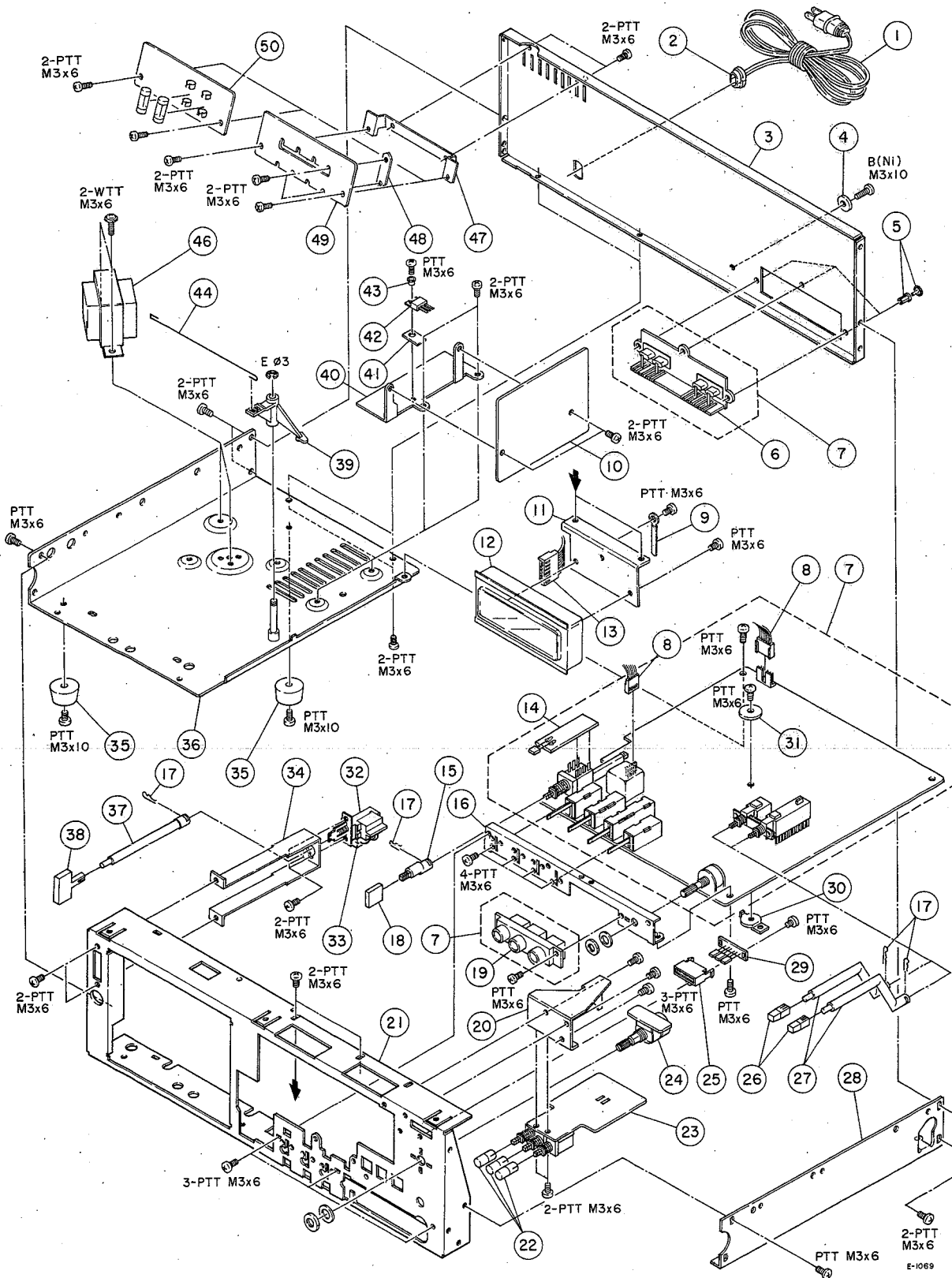
EXPLODED VIEW - 3



Parts marked with *require longer delivery time than regular parts.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
3 - 1	*5200006800	PCB Assy, SWITCH	
3 - 2	*5600005400	Bracket, Switch	
3 - 3	*5555753000	Lever, Slide Switch	
3 - 4	*5800020000	Plate Assy, Thrust	
3 - 5	*5524251001	Spring, Thrust	
3 - 6	*5534744000	Screw, Thrust	
3 - 7	5504757000	Capstan Assy	
3 - 8	5534767000	Belt, Capstan Drive	
3 - 9	*5555755000	Bracket, Switch; B	
3 - 10	5301752500	Switch, Leaf; Motor	
3 - 11	*5800050800	Bracket, Leaf Switch	
3 - 12	5301752700	Switch, Leaf; Pause	
3 - 13	*5550031000	Washer Thrust	
3 - 14	*5504901000	Housing Assy, Capstan	
3 - 15	*5534130000	Washer, Oil Retaining	
3 - 16	*5524244002	Spring, Pause	
3 - 17	*5524235000	Spring, Lever	
3 - 18	*5524250000	Spring, Base Plate	
3 - 19	*5800088100	Lever Assy, Pause; A	
3 - 20	*5555766001	Lever, Pause; B	
3 - 21	*5800017101	Lever Assy, FF; B	
3 - 22	*5524243000	Spring, Record	
3 - 23	*5555764000	Arm, Record Actuating	
3 - 24	*5800050600	Lever, Record	
3 - 25	*5800037501	Spring, Lock Plate; B	
3 - 26	*5533221002	Plate, Lock	
3 - 27	*5800048500	Arm, Preventing	
3 - 28	*5524293001	Lever, Lock Actuating	
3 - 29	*5800048700	Spring, Preventing	
3 - 30	*5800052700	Lever Assy, Eject	
3 - 31	5800123900	Gear Assy, Sub Base	
3 - 32	5301752800	Switch, Leaf; Rewind	
3 - 33	5534768000	Belt, Relay	
3 - 34	*5504777000	Damper Assy, C	
3 - 35	*5555751000	Bracket, Motor Assy	
3 - 36	5370000100	Motor Assy, Capstan	
3 - 37	*5524246000	Spring, Stop Lever	
3 - 38	*5504774000	Lever Assy, Stop	

EXPLODED VIEW - 4



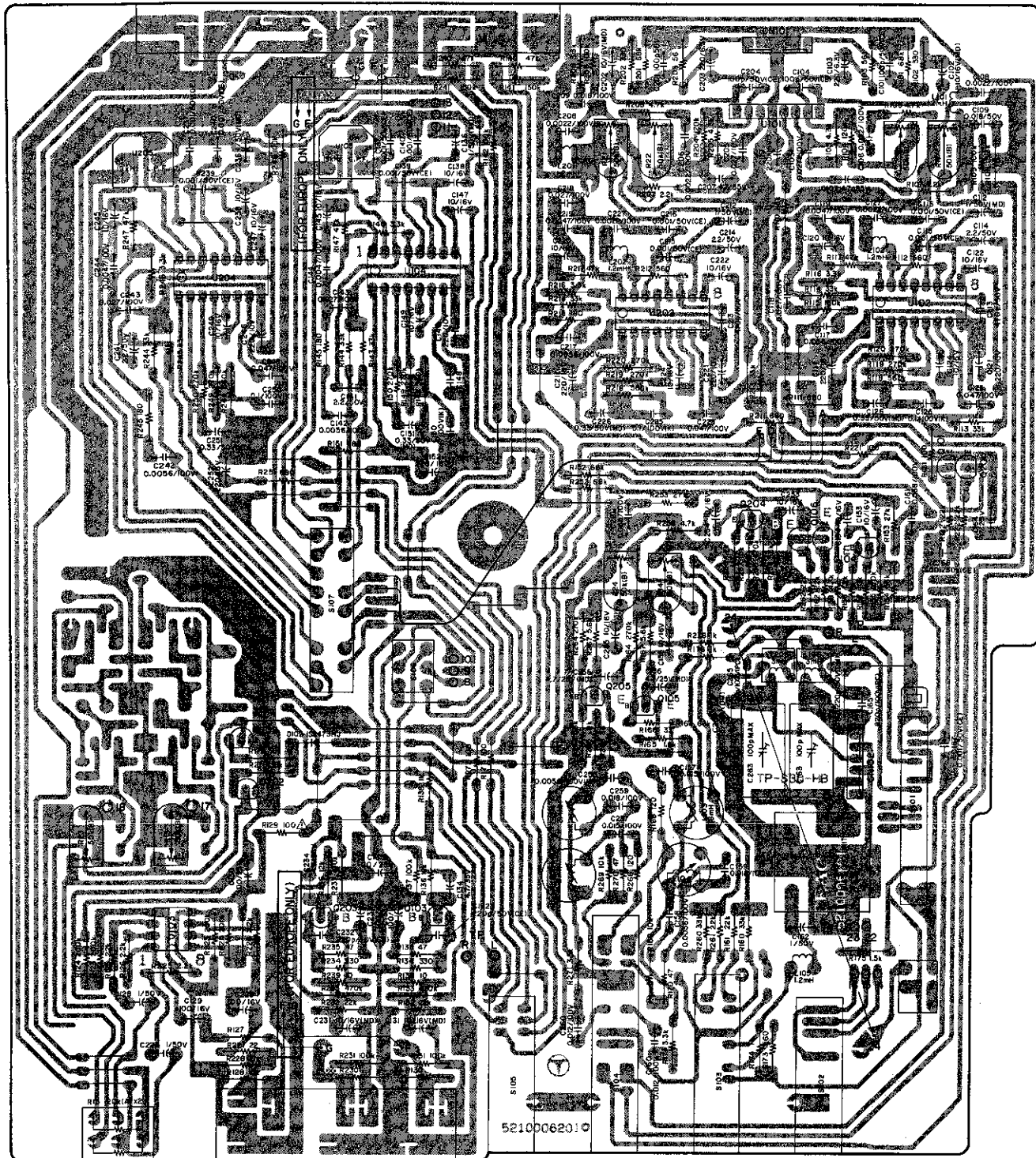
Parts marked with *require longer delivery time than regular parts.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
4 - 1	△ 5128034000 △ 5128075000 △ 5128017000 △ 5128036000 △ 5128031000	Cord, AC Power Cord, AC Power Cord, AC Power Cord, AC Power Cord, AC Power	GENERAL EXPORT, LIMITED AREA U.S.A., CANADA EUROPE U.K. AUSTRALIA
4 - 2	*5534661000 *5534663000 *5534660000	Strain Relief, AC Power Cord Strain Relief, AC Power Cord Strain Relief, AC Power Cord	U.K. AUSTRALIA All except U.K., AUSTRALIA
4 - 3	*5800010300	Panel, Rear	
4 - 4	*5555063000	Washer, GND	
4 - 5	*5534118000	Rivet, Push	
4 - 6	*5126037000 *5126038000	Terminal Assy, In-output Terminal Assy, In-output	EUROPE All except EUROPE
4 - 7	*5200006211 *5200006201	PCB Assy, REC PLAY AMPL PCB Assy, REC PLAY AMPL	EUROPE All except EUROPE
4 - 8	*5122168000	Connector Socket, 6P	
4 - 9	*5581038000	Clamper, Cord; A	
4 - 10	*5200006700	PCB Assy, POWER SUPPLY	
4 - 11	*5800050100	Bracket, Meter	
4 - 12	5040108000	Meter, FL Peak Level	
4 - 13	*5122172000	Connector Socket, 10P	
4 - 14	*5200006300	PCB Assy, LED; A	
4 - 15	*5800008400	Shaft, Joint; C	
4 - 16	*5800009401	Bracket, Switch	
4 - 17	*5786360500	R Pin, Ø5	
4 - 18	5800007900	Button	
4 - 19	*5124063000	Jack Assy, 3-gang	
4 - 20	*5800050200	Bracket, Meter PCB	
4 - 21	*5800010501	Chassis Assy, Front	
4 - 22	5504681000	Knob Assy, Push Switch	
4 - 23	*5200008100	PCB Assy, METER AMPL	
4 - 24	*5200006500	PCB Assy, VOLUME	
4 - 25	*5800010600	Holder, LED	
4 - 26	5534775000	Button, B	
4 - 27	*5800049900	Rod, Switch	
4 - 28	*5800009500	Chassis, Right; B	
4 - 29	*5200006400	PCB Assy, LED; B	
4 - 30	*5800009000	Bracket, PCB	
4 - 31	*5580007000	Washer	
4 - 32	△ 5134018000 △ 5134036000 △ 5134037000 △ 5134044000 △ 5300017800	Switch, Power Switch, Power Switch, Power Switch, Power Switch, Power	CANADA AUSTRALIA U.S.A. EUROPE, U.K. GENERAL EXPORT, LIMITED AREA
4 - 33	△ 5052907000 △ 5052910000 △ 5052911000 △ 5267702600 *5800008800	Spark Killer, 0.01μF + 300Ω/300V Spark Killer, 0.033μF + 120Ω/125V Spark Killer, 0.033μF + 120Ω/250V Spark Killer, 0.047μF/250V Bracket, Power Switch	GENERAL EXPORT, LIMITED AREA, AUSTRALIA U.S.A. CANADA EUROPE, U.K.
4 - 34			
4 - 35	*5534432000	Foot	
4 - 36	*5800011200 *5800071900	Chassis Assy, Left Chassis Assy, Left; B	All except LIMITED AREA LIMITED AREA
4 - 37	*5800008300	Rod, Power Switch	
4 - 38	5534730000	Button, Push; A	
4 - 39	*5800049801	Lever, Record	
4 - 40	*5800050000	Bracket, PCB	
4 - 41	*5033291000	Plate, Insulating	
4 - 42	△ *5145087000	Transistor, 2SD313E	
4 - 43	*5033295000	Tube, Insulating	
4 - 44	*5800086900	Link, Record	
4 - 45		(Not used)	
4 - 46	△ *5320001800 △ *5320001900 △ *5320002000	Transformer, Power Transformer, Power Transformer, Power	U.S.A., CANADA GENERAL EXPORT, LIMITED AREA EUROPE, U.K., AUSTRALIA
4 - 47	*5800009300	Bracket, PCB	GENERAL EXPORT, U.K., EUROPE, LIMITED AREA
4 - 48	*5555062000	Shorting Bar, Voltage Selector	GENERAL EXPORT, LIMITED AREA
4 - 49	△ *5167548100	PCB, Voltage Selector	GENERAL EXPORT, LIMITED AREA
4 - 50	△ *5200002400	PCB Assy, FUSE; A	U.K., EUROPE

7 PC BOARDS AND PARTS LIST

PC Boards shown viewed from foil side.

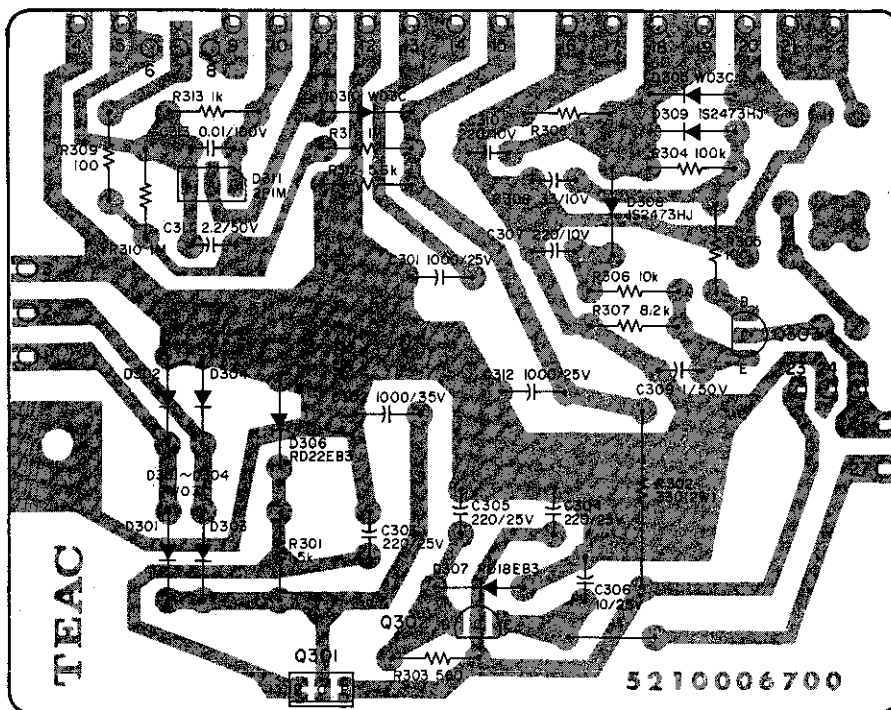
REC PLAY AMPL PCB ASSY



❖ R130, R230 (10k Ω (EUROPE)
SHORTING (all except EUROPE)

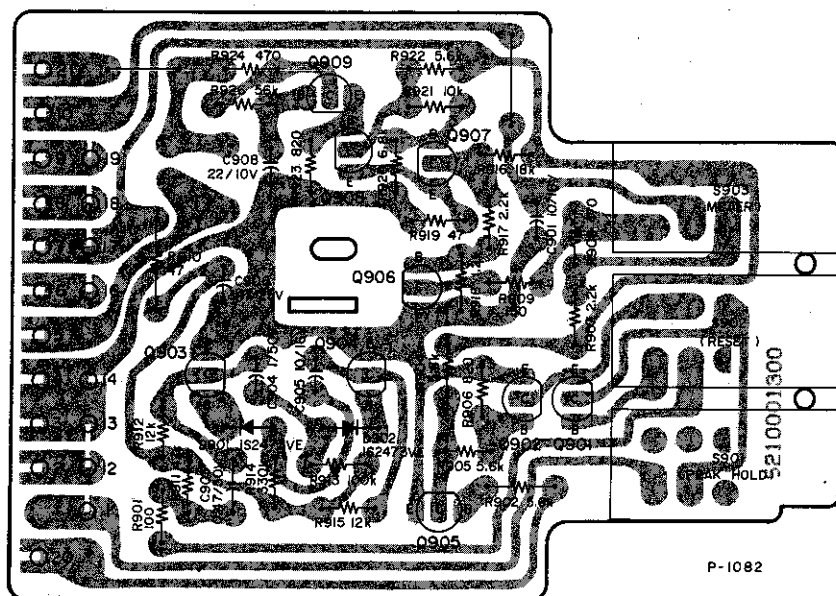
P-1080

POWER SUPPLY PCB ASSY



P-1081

METER AMPL PCB ASSY



P-1082

REF. NO. PARTS NO. DESCRIPTION

REC PLAY AMPL. PCB ASSY

5200006201 PCB Assy (All except EUROPE)
5200006211 PCB Assy (EUROPE)

5210006201 PCB

IC's

U101 5147062000 LA3161
U102, U202 5147077000 LM1011N
U103 5220405000 μ PC4557C
U104, U204 5147077000 LM1011N

TRANSISTORS

Q101, Q201 5042486000 2SC536G
Q102, Q202 5145185000 2SD655E
Q103, Q203 5145119000 2SC1844F
Q104, Q204 5042486000 2SC536G
Q105, Q205 5042486000 2SC536G
Q106, Q206 5145185000 2SD655E

DIODE

D106 5143118000 1S2473HJ

CARBON RESISTORS

All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}$ watt.

R101, R201 5183126000 68k Ω
R102, R202 5183070000 330 Ω
R103, R203 5183052000 56 Ω
R104, R204 5183132000 120k Ω
R105, R205 5183097000 4.3k Ω

R106, R206 5183098000 4.7k Ω
R107, R207 5183090000 2.2k Ω
R108, R208 5183094000 3.3k Ω
R109, R209 5183130000 100k Ω
R110 5183086000 1.5k Ω

R111, R211 5183078000 680 Ω
R112, R212 5183076000 560 Ω
R113, R213 5183118000 33k Ω
R114, R214 5183118000 33k Ω
R115, R215 5183064000 180 Ω

R116, R216 5183094000 3.3k Ω
R117, R217 5183122000 47k Ω
R118, R218 5183148000 560k Ω
R119, R219 5183140000 270k Ω
R120, R220 5183140000 270k Ω

R121, R221 5183058000 100 Ω
R122, R222 5183114000 22k Ω
R123, R223 5183137000 200k Ω
R124, R224 5183137000 200k Ω
R125, R225 5183090000 2.2k Ω

R126, R226 5183090000 2.2k Ω
R127, R227 5183042000 22 Ω
R128, R228 5183106000 10k Ω
R129 Δ 5184249000 100 Ω Non Flammable
R130, R230 5183106000 10k Ω (EUROPE)

R131, R231 5183130000 100k Ω
R132, R232 5183114000 22k Ω
R133, R233 5183146000 470k Ω
R134, R234 5183070000 330 Ω
R135, R235 5183050000 47 Ω

R136, R236 5183108000 12k Ω
R137, R237 5183130000 100k Ω
R138 5183082000 1k Ω
R139, R239 5183034000 10 Ω
R140, R240 5183122000 47k Ω

REF. NO. PARTS NO. DESCRIPTION

R141, R241 5183134000 150k Ω
R142, R242 5183130000 100k Ω
R143, R243 5183118000 33k Ω
R144, R244 5183118000 33k Ω
R145, R245 5183064000 180 Ω

R146, R246 5183094000 3.3k Ω
R147, R247 5183122000 47k Ω
R148, R248 5183148000 560k Ω
R149, R249 5183140000 270k Ω
R150, R250 5183140000 270k Ω

R151, R251 5183078000 680 Ω
R152, R252 5183126000 68k Ω
R153, R253 5183116000 27k Ω
R154, R254 5183124000 56k Ω
R155, R255 5183146000 470k Ω

R156, R256 5183084000 1.2k Ω
R157, R257 5183106000 10k Ω
R158, R258 5183098000 4.7k Ω
R160, R260 5183118000 33k Ω
R161, R261 5183114000 22k Ω

R162, R262 5183114000 22k Ω
R163, R263 5183126000 68k Ω
R164, R264 5183140000 270k Ω
R165, R265 5183088000 1.8k Ω
R166, R266 5183046000 33 Ω

R167, R267 5183100000 5.6k Ω
R168, R268 5183060000 120 Ω
R169, R269 5183106000 10k Ω
R170, R270 5183050000 47 Ω
R171, R271 5183094000 3.3k Ω

R173 5183076000 560 Ω
R174 5183082000 1k Ω
R175 5183086000 1.5k Ω
R176, R276 5183106000 10k Ω
R177, R277 5183058000 100 Ω
R178, R278 5183082000 1k Ω
R179 5183114000 22k Ω

CAPACITORS

C101, C201 5172312000 Ceramic 100pF 50V 10%
C102, C202 5173571800 Elec. 10 μ F 16V
C103, C203 5173052800 Elec. 220 μ F 6.3V
C104, C204 5172312000 Ceramic 100pF 50V 10%
C105, C205 5170435000 Mylar 0.027 μ F 100V 5%

C106, C206 5170409000 Mylar 0.0022 μ F 100V 5%
C107, C207 5173005800 Elec. 4.7 μ F 35V
C108, C208 5170409000 Mylar 0.0022 μ F 100V 5%
C109, C209 5170431000 Mylar 0.018 μ F 100V 5%
C110 5173054800 Elec. 220 μ F 16V

C111, C211 5173054800 Elec. 220 μ F 16V
C112, C212 5173556800 Elec. 1 μ F 50V
C113, C213 5172320000 Ceramic 470pF 50V 10%
C114, C214 5172996800 Elec. 2.2 μ F 50V
C115, C215 5172324000 Ceramic 0.001 μ F 50V 10%

C116, C216 5172324000 Ceramic 0.001 μ F 50V 10%
C117, C217 5170419000 Mylar 0.0056 μ F 100V 5%
C118, C218 5170435000 Mylar 0.027 μ F 100V 5%
C119, C219 5170417000 Mylar 0.0047 μ F 100V 5%
C120, C220 5173010800 Elec. 10 μ F 16V

C121, C221 5173053800 Elec. 220 μ F 10V
C122, C222 5173010800 Elec. 10 μ F 16V
C123, C223 5170441000 Mylar 0.047 μ F 100V 5%
C124, C224 5173010800 Elec. 10 μ F 16V
C125, C225 5170519000 Mylar 0.1 μ F 100V 10%

REF. NO.	PARTS NO.	DESCRIPTION
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C126, C226	5173553800	Elec. 0.33 μ F 50V
C127, C227	5170409000	Mylar 0.0022 μ F 100V 5%
C128, C228	5172992800	Elec. 1 μ F 50V
C129, C229	5173045800	Elec. 100 μ F 16V
C130	5173046800	Elec. 100 μ F 25V
C131, C231	5173571800	Elec. 10 μ F 16V
C132, C232	5172316000	Ceramic 220pF 50V 10%
C133, C233	5173044800	Elec. 100 μ F 10V
C134, C234	5173005800	Elec. 4.7 μ F 35V
C135	5173046800	Elec. 100 μ F 25V
C136, C236	5173556800	Elec. 1 μ F 50V
C137, C237	5172324000	Ceramic 0.001 μ F 50V 10%
C138, C238	5173010800	Elec. 10 μ F 16V
C139, C239	5172324000	Ceramic 0.001 μ F 50V 10%
C140, C240	5172324000	Ceramic 0.001 μ F 50V 10%
C141, C241	5172996800	Elec. 2.2 μ F 50V
C142, C242	5170419000	Mylar 0.0056 μ F 100V 5%
C143, C243	5170435000	Mylar 0.027 μ F 100V 5%
C144, C244	5170417000	Mylar 0.0047 μ F 100V 5%
C145, C245	5173010800	Elec. 10 μ F 16V
C146, C246	5173053800	Elec. 220 μ F 10V
C147, C247	5173010800	Elec. 10 μ F 16V
C148, C248	5170441000	Mylar 0.047 μ F 100V 5%
C149, C249	5173010800	Elec. 10 μ F 16V
C150, C250	5170519000	Mylar 0.1 μ F 100V 10%
C151, C251	5173553800	Elec. 0.33 μ F 50V
C152, C252	5173054800	Elec. 220 μ F 16V
C153, C253	5173010800	Elec. 10 μ F 16V
C154, C254	5173010800	Elec. 10 μ F 16V
C155, C255	5173010800	Elec. 10 μ F 16V
C156, C256	5173564800	Elec. 4.7 μ F 25V
C157, C257	5170429000	Mylar 0.015 μ F 100V 5%
C158, C258	5170419000	Mylar 0.0056 μ F 100V 5%
C159, C259	5170431000	Mylar 0.018 μ F 100V 5%
C160, C260	5170427000	Mylar 0.012 μ F 100V 5%
C161, C261	5170445000	Mylar 0.068 μ F 100V 5%
C162	5172992800	Elec. 1 μ F 50V
C164	5173037800	Elec. 47 μ F 25V
C165, C265	5173731000	Polypro. 820pF 100V 5%
C166	5172324000	Ceramic 0.001 μ F 50V 10%
C167	5172324000	Ceramic 0.001 μ F 50V 10%
C168, C268	5054745000	Dip. Mica 220pF 50V 10%

VARIABLE RESISTORS

R11, R21	5280004002	Semi-fixed 50k Ω (B)
R12, R22	5280004002	Semi-fixed 50k Ω (B)
R13, R23	5280004002	Semi-fixed 50k Ω (B)
R14, R24	5280004002	Semi-fixed 50k Ω (B)
R15	5282405502	20k Ω (A) x 2

TRIMMER CAPACITORS

C163, C263	5054705000	220pF Max.
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COILS

L101, L201	5160107000	Choke 1.2mH (Fixed)
L102, L202	5160107000	Choke 1.2mH (Fixed)
L103, L203	5286000400	Choke 8mH (Variable)
L104, L204	5286000500	Choke 3.4mH (Variable)
L105	5160151000	Choke 1.2mH (Fixed)
L106, L206	5286001000	Choke 3.1mH (Variable)

MISCELLANEOUS

U105, U205	5292802500	Filter, Low-pass
U107	5292200200	OSC Unit, 100kHz

REF. NO.	PARTS NO.	DESCRIPTION
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S101	5131030000	Switch, Slide; 6PDT
S102	5300510800	Switch, Lever; DPDT
S103	5300511300	Switch, Lever; 4P3T
S104	5300511400	Switch, Lever; 6P3T
S105	5300510800	Switch, Lever; DPDT
S106, S107	5300018500	Switch, Push; 2-gang
S108	5300017600	Switch, Push; DPDT
CN101	5122130000	Connector Plug, 6P
CN102	5122130000	Connector Plug, 6P
	5126037000	Terminal Assy; In-output (EUROPE)
	5126038000	Terminal Assy; In-output (All except EUROPE)
	5124063000	Jack, 3-gang
	5544750000	Pin, T.P.
	5200006300	LED A PCB Assy

REF. NO.	PARTS NO.	DESCRIPTION
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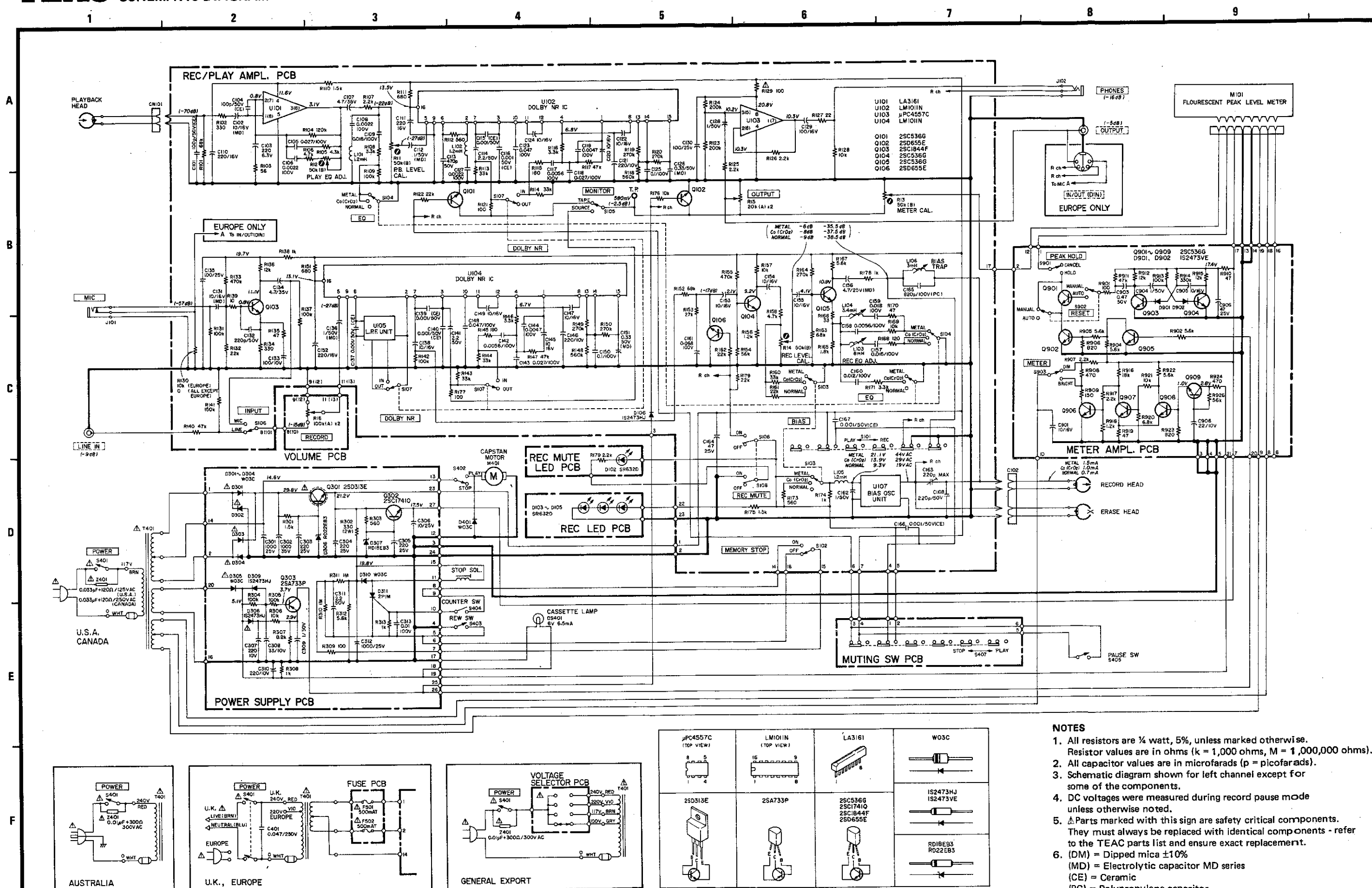
POWER SUPPLY PCB ASSY

	5200006700	PCB Assy	
	5210006700	PCB	
TRANSISTORS			
Q301	△ 5145087000	2SD313E	
Q302	5145098000	2SC1741Q	
Q303	5042553000	2SA733P	
DIODES			
D301 ~ D305	△ 5143315000	W03C	
D306	5224517500	Zener, RD22EB3	
D307	5224518200	Zener, RD18EB3	
D308, D309	△ 5143118000	1S2473HJ	
D310	5143315000	W03C	
D311	5143090000	SCR, 2P1M	
RESISTORS			
All resistors are rated ±5% tolerance, ¼ watt and of carbon type unless otherwise noted.			
R301	5183086000	1.5kΩ	
R302	5184803000	330Ω, 2W	
		Metal Film (Non Flammable)	
R303	5183076000	560Ω	
R304, R305	5183130000	100kΩ	
R306	5183106000	10kΩ	
R307	5183104000	8.2kΩ	
R308	5183082000	1kΩ	
R309	5183058000	100Ω	
R310, R311	5183154000	1MΩ	
R312	5183100000	5.6kΩ	
R313	5183082000	1kΩ	
CAPACITORS			
C301	5173082800	Elec.	1000μF 25V
C302	5173083800	Elec.	1000μF 35V
C303 ~ C305	5173055800	Elec.	220μF 25V
C306	5173011800	Elec.	10μF 25V
C307	5173053800	Elec.	220μF 10V
C308	5173027800	Elec.	33μF 16V
C309	5172992800	Elec.	1μF 50V
C310	5173053800	Elec.	220μF 10V
C311	5172996800	Elec.	2.2μF 50V
C312	5173082800	Elec.	1000μF 25V
C313	5170425000	Mylar	0.01μF 100V 5%

REF. NO.	PARTS NO.	DESCRIPTION
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METER AMPL PCB ASSY

	5200008100	PCB Assy	
	5210001300	PCB	
TRANSISTORS			
Q901 ~ Q909	5042486000	2SC536G	
DIODES			
D901, D902	5042517000	1S2473VE	
CARBON RESISTORS			
All resistors are rated ±5% tolerance and ¼ watt.			
R901	5057058000	100Ω	
R902	5057100000	5.6kΩ	
R904, R905	5057100000	5.6kΩ	
R906	5057080000	820Ω	
R907	5057090000	2.2kΩ	
R908	5057074000	470Ω	
R909	5057062000	150Ω	
R910	5057050000	47Ω	
R911	5057122000	47kΩ	
R912	5057108000	12kΩ	
R913	5057130000	100kΩ	
R914	5057142000	330kΩ	
R915	5057108000	12kΩ	
R916	5057112000	18kΩ	
R917	5057090000	2.2kΩ	
R918	5057084000	1.2kΩ	
R919	5057050000	47Ω	
R920	5057102000	6.8kΩ	
R921	5057106000	10kΩ	
R922	5057100000	5.6kΩ	
R923	5057080000	820Ω	
R924	5057074000	470Ω	
R926	5057124000	56kΩ	
CAPACITORS			
C901	5055405000	Elec.	10μF 16V
C903	5055497000	Elec.	0.47μF 50V
C904	5055454000	Elec.	1μF 50V
C905	5055405000	Elec.	10μF 16V
C906	5055449000	Elec.	47μF 25V
C908	5055472000	Elec.	22μF 10V
MISCELLANEOUS			
M101	5040108000	Meter, FL Peak	
S901 ~ S903	5134049000	Switch, Push, DPDT	



REF. NO.	PARTS NO.	DESCRIPTION
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LED A PCB ASSY (PC Board omitted)

	5200006300	PCB Assy
	5210006300	PCB
R179	5183090000	Carbon Resistor 2.2k Ω 5% 1/4W
D102	5225005100	LED (Red)

LED B PCB ASSY (PC Board omitted)

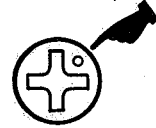
	5200006400	PCB Assy
	5210006400	PCB
D103 ~ D105	5225005100	LED (Red)

VOLUME PCB ASSY (PC Board omitted)

	5200006500	PCB Assy
	5210006500	PCB
R16	5282705000	Var. Res., 100k Ω (A) x 2

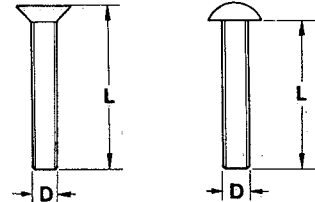
ASSEMBLING HARDWARE CODING LIST

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:

B M 3 x 6
 ----- Length in mm (L)
 ----- Diameter in mm (D) *
 ----- Metric System
 ----- Nomenclature



* Inner dia. for washers and nuts

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