

134

TEAC[®]



SERVICE MANUAL

X-10_{MKII}

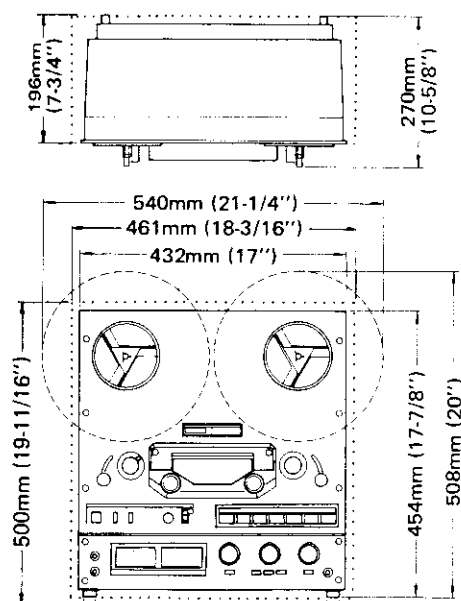
Stereo Tape Deck

134

1 SPECIFICATIONS AND SERVICE DATA

SPECIFICATIONS

Track System	1/4-track, 2-channel stereo
Head System	3 heads: erase, record, playback
Reel Size	10-1/2" and 7"
Tape Speed	19 cm/s (7-1/2 ips) and 9.5 cm/s (3-3/4 ips)
Inputs (level and impedance)	
MIC:	Specified input level: -60dB (0.775 mV)/10 kohms Min. input level: -70dB (245 μV)
LINE IN:	Specified input level: -12dB (195 mV)/50 kohms Min. input level: -22dB (61.5 mV)
Outputs (level and impedance)	
OUTPUT:	Specified output level: -5dB (436 mV)/10 kohms Max. output level: +1dB (0.869 V)
PHONES:	Specified output level: -24dB (48.9 mV)/8 ohms
Playback Equalization	
19 cm/s:	3,180 μs + 50 μs (NAB), 3,180 μs + 35 μs (EE)
9.5 cm/s:	3,180 μs + 90 μs (NAB), 3,180 μs + 50 μs (EE)
Motors	
Capstan motor:	DC brush motor with FG servo
Reel motor:	2 DC slotless motors
Bias Frequency	100 kHz
Operating Position	Vertical, horizontal, angled
Power Requirements	
	100/117/220/240V, AC 50/60Hz, 83W (General export model)
	220V AC 50Hz, 83W (Europe model)
	240V AC 50Hz, 83W (U.K./Australia model)
	117V AC 60Hz, 83W (U.S.A./Canada model)
Weight	19 kg (41-7/8 lbs.) net



Dotted line indicates General Export Models for Limited Areas.

Fig. 1-1 Dimensions

SERVICE DATA

MECHANICAL

Tape Speed Deviation	3,000Hz±30Hz
Tape Speed Drift	15Hz
Wow and Flutter	
Playback:	0.05% (WRMS), 0.10% (RMS) at 19cm/s 0.07% (WRMS), 0.12% (RMS) at 9.5cm/s
Record/Playback:	0.12% (RMS) at 19cm/s 0.15% (RMS) at 9.5cm/s
Pinch Roller Pressure	1.35kg to 1.9kg (3.0 lbs to 4.2 lbs)
Reel Torque	
Play mode:	
Take-up (LARGE):	480±40 g-cm (6.1 to 7.2 oz-inch)
(SMALL):	260±40 g-cm (3.1 to 4.2 oz-inch)
Back tension (LARGE):	300±40 g-cm (3.6 to 4.7 oz-inch)
(SMALL):	180±40 g-cm (1.9 to 3.1 oz-inch)
Fast winding mode:	
Take-up:	1100 g-cm (15.3 oz-inch)
Back tension:	50 g-cm (0.7 oz-inch)
Brake Torque	
Forward direction:	1.2 to 1.7 kg-cm (17 to 24 oz-inch)
Left/right deviation:	0.2 kg-cm (2.8 oz-inch) or less
Fast Winding Time	100 seconds or less for 550 m (1800 feet)
Pitch Control	Standard tape speed ±6% or more
TIMER Activate Time	4 sec.±2 sec.

ELECTRICAL

Frequency Response

Playback:	See Figs. 3-5 to 3-6
Overall:	See Figs. 3-7 to 3-8

Signal to Noise Ratio

Playback:	50 dB min. (19 cm/s, LH) 52 dB min. (19 cm/s, EE) 49 dB min. (9.5 cm/s, LH) 52 dB min. (9.5 cm/s, EE)
Overall:	48 dB min. (19 cm/s, LH) 50 dB min. (19 cm/s, EE) 46 dB min. (9.5 cm/s, LH) 50 dB min. (9.5 cm/s, EE)

Erase Efficiency

68dB min. at 1kHz (measured with input 10dB higher than the specified input level)

Channel Separation

50dB min. at 1kHz

Adjacent Track Crosstalk

40dB min. at 125kHz

Total Harmonic Distortion

0.8% or less at 1kHz

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

1. 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.

- dbx noise reduction system made under license from dbx, Incorporated. The word dbx and the dbx Symbol are trademarks of dbx, Incorporated.

2 MECHANICAL ADJUSTMENTS AND CHECKS

2-1 CONTROL PCB ASSY CHECK

Hooking CONTROL PCB ass'y as shown facilitates this check.

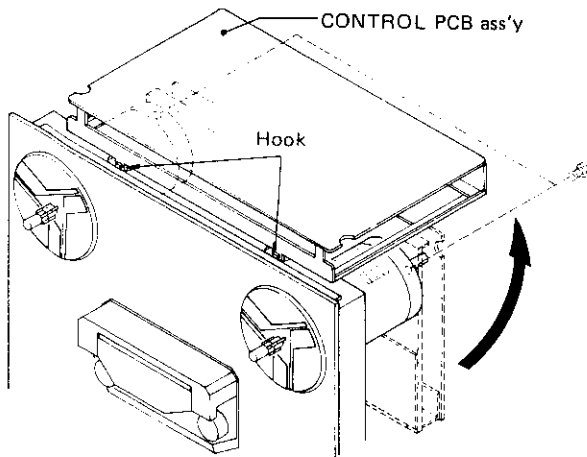


Fig. 2-1

2-2 BRAKE ADJUSTMENT

NOTE: The explanation and figure in this paragraph are for the left side brake, similar checks and adjustments are applicable for the right side one.

1. Adjust by moving the brake band bracket in either direction (arrow (A)) so that the reel motor chassis is in parallel with the brake arm, and so that the brake band makes proper clearance equally all around the reel table base.
2. Adjust by moving the brake solenoid in either direction (arrow (D)) so that the stroke of the solenoid plunger is about 2 mm.
3. Adjust by moving the band ass'y retaining plate as shown in (B, C, E) so that, when the plunger is pushed in the direction of the solenoid housing, the reel table base is not rubbed by the brake band and is properly spaced.

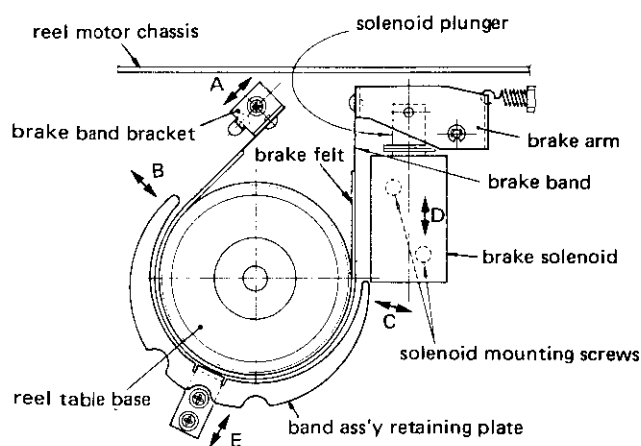
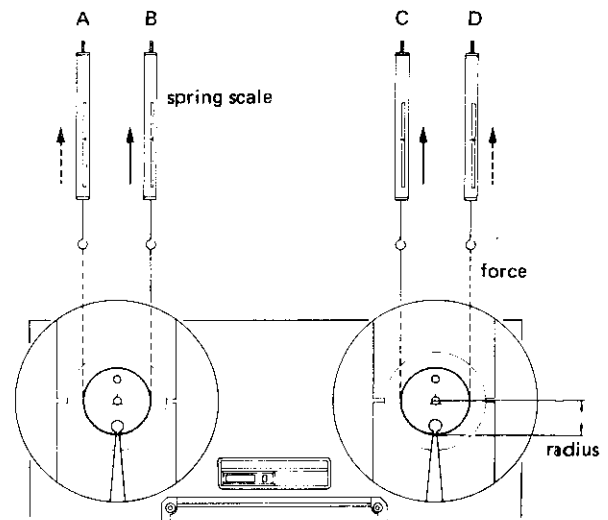


Fig. 2-2

2-3 BRAKE TORQUE MEASUREMENT

1. Place an empty 7" reel, connected to a spring scale by a string, on the reel table.
2. Pull the scale away from the reel and read the scale indication only when the reel table is steady motion.
3. Do steps 1 and 2 for each measuring condition, (A) through (D) in Fig. 2-3.
4. The values are as chart in Fig. 2-3.



↑ Forward direction (B)(C)	1.2 to 1.7 kg-cm (17 to 24 oz-inch)
↑ Reverse direction (A)(D)	0.6 kg-cm (8.3 oz-inch) or less
Left/right deviation	0.2 kg-cm (2.8 oz-inch) or less

- NOTES:**
1. The reverse direction values are reference.
 2. The specification of left/right deviation only applies for forward direction torques.

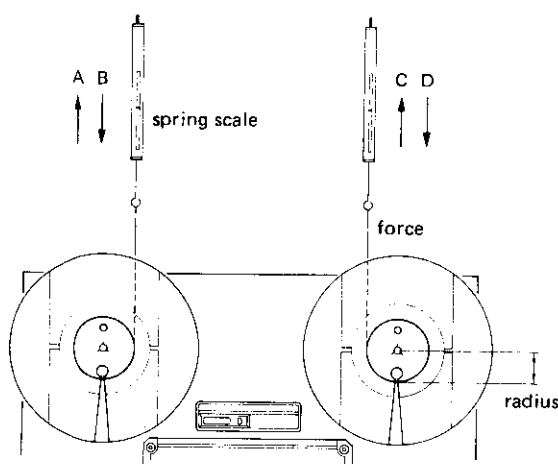
Torque calculating formulas:

- (1) Torque (in g-cm or oz-inch)
= Force or Weight (in g or oz) x Radius (in cm or inch)
- (2) Conversion of g-cm to oz-inch:
 $\text{g-cm} \times 0.0139 = \text{oz-inch}$

Fig. 2-3

2-4 REEL MOTOR TORQUE MEASUREMENT

1. Hold both left and right tension arms in the upper position using rubber bands.
2. See Fig. 2-4. Measure torques for each operating mode with the conditions specified in the chart.
3. Since all the torque values are reference values, it is allowable that the take-up torque during the fast forward or rewind mode is 1 kg-cm or more, and that the back tension torque during these mode is good unless the left or right tension arms are shut-off.
4. There is no specially provided adjustment, so if any torque correction are needed, repair or replace defective part(s) and/or circuit(s).



Reel torque reference value

Play mode

Mode	REEL sw.	Torque
Take-up: (D) in FWD	LARGE	480±40 g-cm (6.1 to 7.2 oz-inch)
	SMALL	260±40 g-cm (3.1 to 4.2 oz-inch)
Back tension: (A) in FWD	LARGE	300±40 g-cm (3.6 to 4.7 oz-inch)
	SMALL	180±40 g-cm (1.9 to 3.1 oz-inch)

Fast winding mode

Mode	Torque
Take-up: (B) in REW, (D) in F.F.	1100 g-cm (15.3 oz-inch)

Back tension: (A) in F.F., (C) in REW 50 g-cm (0.7 oz-inch)

NOTE: For torque calculation, refer Fig. 2-3.

Fig. 2-4

2-5 PAUSE POSITION ADJUSTMENT

1. Place the deck in the pause mode.
2. Adjust by turning the pause positioning nut so that the clearance between the capstan shaft and the tape is 0.5 mm to 1.0 mm.
3. Of the two capstan shaft/pinch rollers, adjustment is allowable only for the side having the narrower clearance.
4. Check that, by repetition of play mode to pause mode and stop mode to pause mode, there is clearance at both sides.

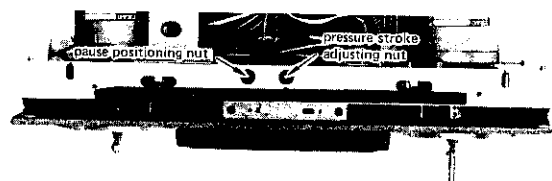


Fig. 2-5 Pause position and pinch roller pressure stroke adjustments

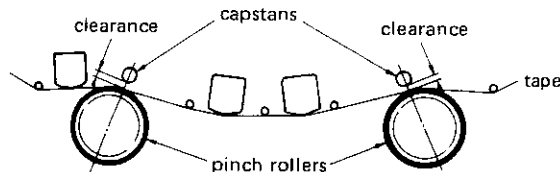
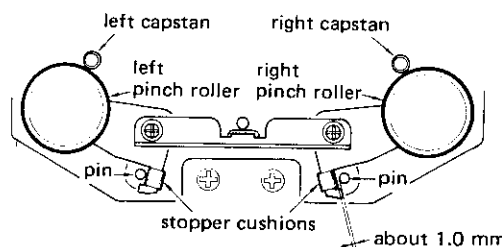


Fig. 2-6 Pause position adjustment

2-6 PINCH ROLLER PRESSURE STROKE ADJUSTMENT

1. Set the deck in the play mode.
2. Adjust by turning the pressure stroke adj. nut (Fig. 2-5) so that the clearance between the pin and the stopper cushion is about 1.0 mm.
3. Since the clearance is produced at one side (left or right), adjustment for this side only is permissible.



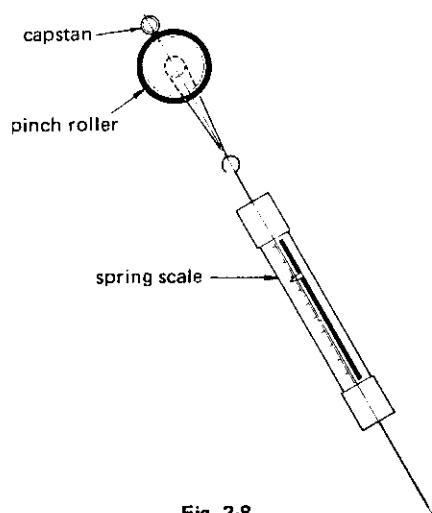
Either the left or right should have a clearance of about 1.0 mm.

Fig. 2-7

2-7 PINCH ROLLER PRESSURE MEASUREMENT

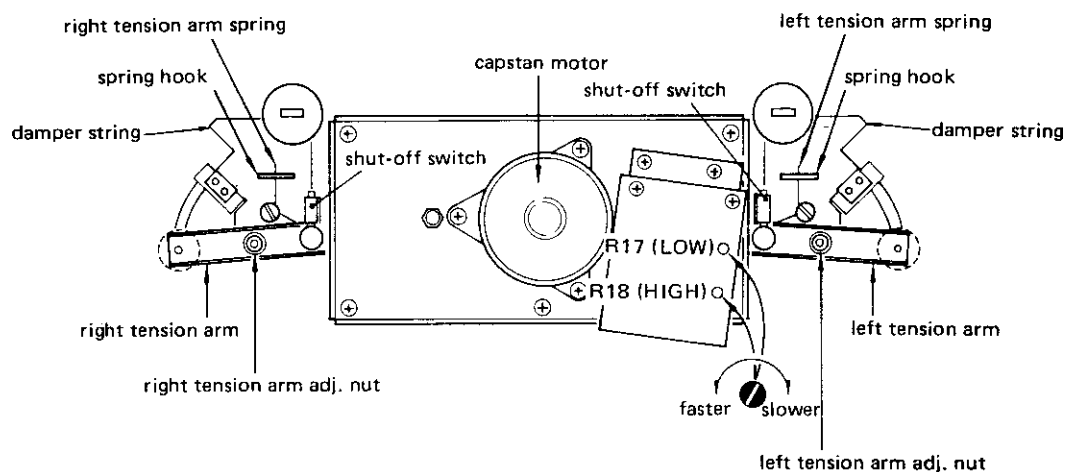
NOTES: 1. The explanation below applies to both the left and right pinch rollers.
2. Both pinch roller pressures are automatically set with equal value.

1. Hold both the left and right tension arms in the upper positions using rubber bands, string etc.
2. Set the deck in play mode with no tape loaded.
3. Attach the spring scale to the pinch roller as shown in the figure.
4. Draw the pinch roller away from the capstan shaft (in the direction of a line intersecting the centers of the capstan shaft and the pinch roller) until the capstan shaft and the pinch roller are separated.
5. Return the scale back until the pinch roller just begins to turn. The scale should then be reading as follow.
Reference value: 1.35 kg to 1.9 kg. (3.0 lbs to 4.2 lbs)
6. If the reading is out of specification, replace defective part(s). There are no adjustable parts.


Fig. 2-8

2-8 TENSION ARM HEIGHT ADJUSTMENT

1. Thread any standard tape on the deck using a standard empty reels such as TEAC RE-702.
2. Set the deck in the play mode.
3. Stop left (right) guide roller's rotation by hand. Adjust by turning the left (right) tension arm adjusting nut (refer Fig. 2-9) so that the tape moves in the center of the guide roller.


Fig. 2-9 Tension arm height, tension arm force, damper function, and tape speed

4. Release the guide roller. Fine-adjust the adjusting nut again until there is no tape curling at the tape guide pin between the erase head and the left (right) guide roller.
5. After adjusting the height of both left and right tension arms, check that the tape running condition is good by repetition of fast forward and rewind modes.
6. If the tape running position is different when the guide roller stops and when it turns, the condition when the guide roller is rotating has priority.

2-9 TENSION ARM FORCE ADJUSTMENT

NOTE: The description below applies to both left and right sides.

1. Check the shut-off switch operates correctly with the deck in the horizontal and vertical positions.
2. Adjustment can be done by changing the hooking position of the tension arm spring against the spring hook.

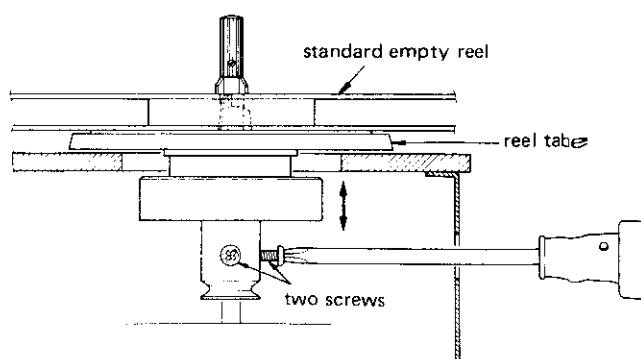
2-10 DAMPER FUNCTION CHECK

NOTE: The explanation below applies to both left and right sides.

1. Check that the damper string begins to function after the tension arm has moved 10 to 15 mm from the lowest position, while the damping function is working, there is a feeling of resistance.
2. Check that the tension arm returns freely from the above position to the lowest position.

2-11 REEL TABLE HEIGHT ADJUSTMENT

1. Adjust the tension arm height beforehand. (See 2-8)
2. Check each reel table height using a TEAC RE-702 empty reel and letting the tape run in each tape operating mode.
3. If the tape rubs against the reel flanges, adjust the reel table height by means of the two reel table mounting screws.


Fig. 2-10

2-12 STOP SENSOR ASS'Y (MAGNETIC RESISTANCE ELEMENT) POSITION ADJUSTMENT

1. Adjust by moving the stop sensor PCB ass'y so that the clearance (A) is about $1\text{ mm} \pm 0.5\text{ mm}$.
2. Be careful not to adjust only the position of the magnetic resistance element when making this adjustment.

Photo seen from the rear of the right reel motor.

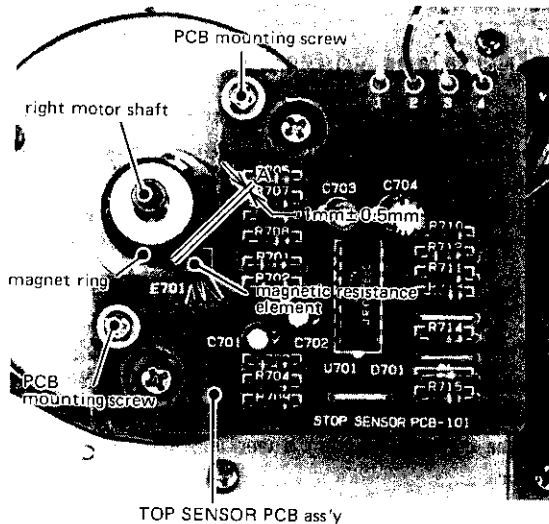


Fig. 2-11

2-14 CAPSTAN MOTOR REPLACEMENT

1. When the capstan motor is replaced, install it with its lead wires and washers as shown.
2. Check that, when the deck is operated by repeating the forward and reverse play modes, the capstan drive belt changes position on the flywheels smoothly.

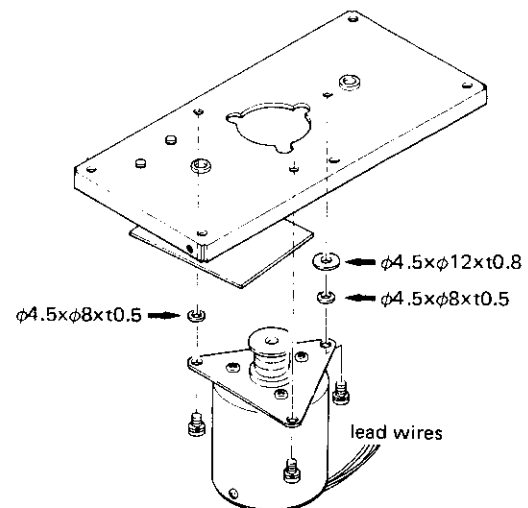


Fig. 2-12

2-13 ROTATING PART THRUST CLEARANCE CHECKS

Reference values

Capstan shaft:	0.1 mm to 0.25 mm (magnefloat type)
Guide roller:	0.05 mm to 0.3 mm
Tension arm guide roller:	0.05 mm to 0.3 mm
Reel motor:	0 (spring type)
Tension arm:	0 (spring type)

NOTE: Since the capstan shaft is a magnefloat type, check that it is forced towards the rear of the deck while rotating.

2-15 TAPE SPEED ADJUSTMENT

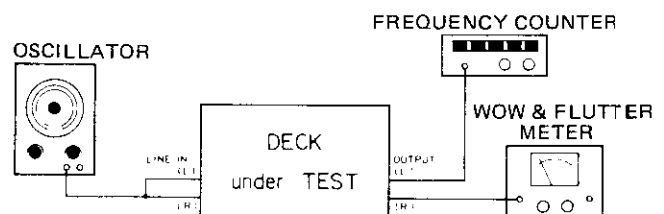


Fig. 2-13

- NOTES:**
1. Conduct all the following in play mode.
 2. When ordering test tapes, allow for the longer delivery time that is required for them.

1. Connect a frequency counter to either OUTPUT terminal.
2. Load a TEAC YTT-2003 test tape. Set the SPEED switch—HIGH, and PITCH CONT knob—OFF.
3. Play the tape. Adjust R18 (see Fig. 2-9) for a reading of $3,000 \text{ Hz} \pm 5 \text{ Hz}$.
4. Check the following at the beginning and the end of the tape.
Specifications:
Tape Speed deviation $3,000 \text{ Hz} \pm 30 \text{ Hz}$
Tape Speed drift 15 Hz
5. Change the test tape to a TEAC YTT-2002, and SPEED switch setting to LOW.
6. Repeat steps 3 through 4. Adjust R17 if necessary.
7. Pull the PITCH CONT knob out. Set SPEED switch HIGH. Play a YTT-2003 tape.
8. Check if the speed variation of at least $3,000 \text{ Hz} \pm 180 \text{ Hz}$ is obtained when the PITCH CONT knob is rotated fully in both directions.
9. Change the test tape to YTT-2002, SPEED switch setting to LOW. Repeat step 8.

2-16 WOW AND FLUTTER CHECKS

- NOTES:**
1. The following measurements should be made at the beginning and the end of the tape.
 2. When ordering test tapes, allow for the longer delivery time that is required for them.

Playback

1. Connect the test equipment to the deck as shown in Fig. 2-13.
2. Load and play a TEAC YTT-2003 test tape for HIGH speed (19 cm/s or $7\frac{1}{2}$ ips), or a TEAC YTT-2002 test tape for LOW speed (9.5 cm/s or $3\frac{3}{4}$ ips).
3. Read the indication on the wow and flutter meter.

Specifications:

- HIGH speed: 0.05% WRMS
0.10% RMS
LOW speed: 0.07% WRMS
0.12% RMS

Overall

4. Load a TEAC YTT-8013 test tape (blank). Apply and record a 3,000 Hz signal.
5. During simultaneous tape monitoring (playing) the recorded signal, read the wow and flutter meter display.

Specifications:

- HIGH speed: 0.12% RMS
LOW speed: 0.15% RMS

2-17 VOLTAGE CONVERSION (FOR GENERAL EXPOST MODELS)

Always disconnect the power line cord before making these adjustments.

Frequency Conversion

Since the X series uses DC motors, frequency conversion is not necessary.

Voltage Conversion

1. First remove the two feet by removing the screws in each one.
2. Unscrew the left and right sides of the cabinet.
3. Locate the voltage selector to the right of the power transformer as seen from the rear of the deck.
4. Turn the slotted center post of the selector with a screw-driver until the desired voltage numerals appear in the cut-out section of the selector.
5. Replace the cabinet and feet.

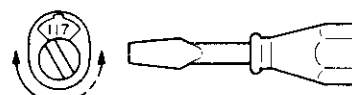


Fig. 2-14

2-18 LUBRICATION

Oiling is needed after every 1,000 hours of operation or once a year if the deck is infrequently used. For this purpose, TEAC spindle oil (from TEAC TZ-255 oil kit), Mobil D.T.E. Oil Light, etc are recommended. Lubrication is normally not necessary except at the points shown.

1. Place the deck in the horizontal position.
2. Apply a few drops of oil to the respective spindles shown, excluding capstans, then spread the oil evenly on the spindle surfaces using a cotton cloth, etc.
3. For capstans, apply a few drops to the indicated position.
4. After oiling all the points, leave the deck for 1 to 2 hours until the oil is thoroughly absorbed.

Figure shows left side. Do also for right side.

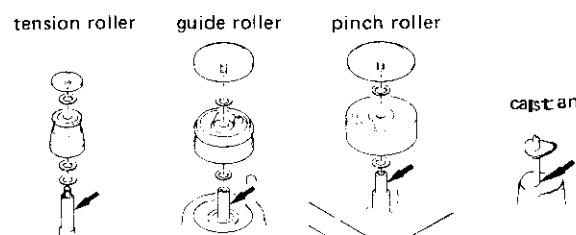


Fig. 2-15

2-19 HEAD AND TAPE PATH ALIGNMENT

2-19-1 HEAD ARRANGEMENT

NOTES: 1. For detailed alignment principles, refer to the book "Audio Fundamental -TAPE DECK-, 8. Mechanical Adjustments" published by the TEAC CORPORATION.

Head adjustment screws

Erase	Record and playback
Fixed screw (not adjustable)	⊕ Azimuth
	⊕ Height and tilt
	⊕ Tangency

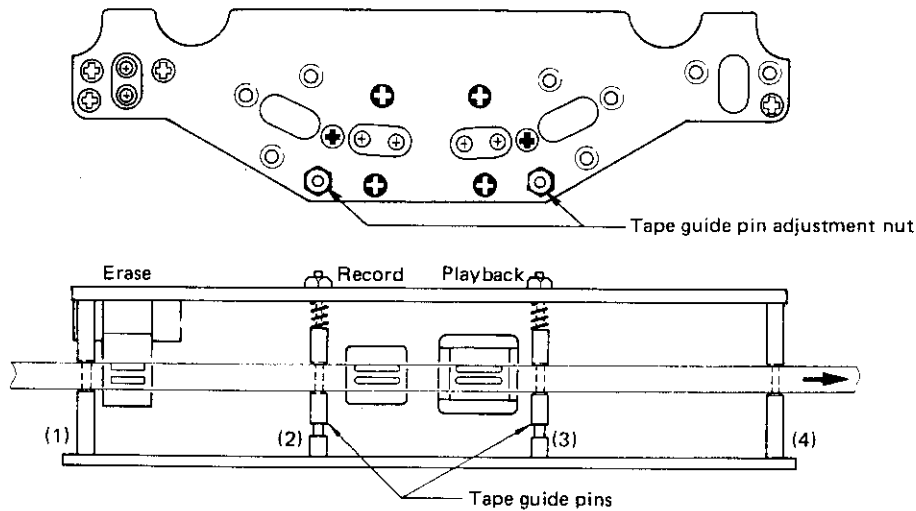


Fig. 2-16 Head arrangement

2-19-2 HEAD REGULATION ELEMENTS

Adjust each head to satisfy each of the following:

TILT The head surface should be parallel to the tape guide pin surface.	
AZIMUTH The gap of the head core should be perpendicular to the tape travel.	
HEIGHT The upper core of the head should be level with the upper edge of the tape.	
TANGENCY The dotted line should be perpendicular to the surface of the tape.	

Fig. 2-17 Head regulation elements

2-19-3 ALIGNMENT PROCEDURE

1. Visually adjust the tilt of each record and playback head so that the head surface is parallel to the nearest tape guide pin.
2. Make coarse azimuth adjustments for the record and playback heads by viewing each head from in front (without tape).
3. Running a TEAC YTT-8013 test tape (thickness = 35 μ m) in the forward direction, fine-adjust the height of the left tension roller so that the lower edge of the tape is just touching the lower edge of the tape guide pin (1). See Fig. 2-18, then adjust the height of the tape guide pin (2) so that the upper edge of the tape is in contact with the upper edge of the tape guide. Confirm that the adjustments do not cause the tape to curl.
4. Confirm that the erase head core protrudes 0.1 mm above the moving tape. If not, replace the head with another one and recheck.

Fig. shows the erase head.

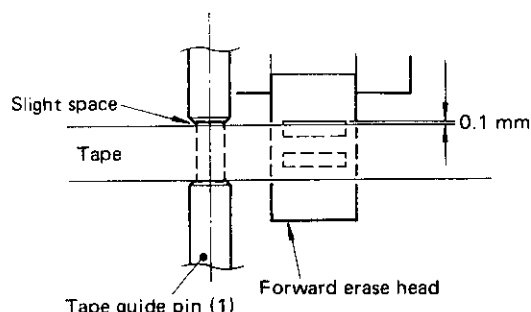
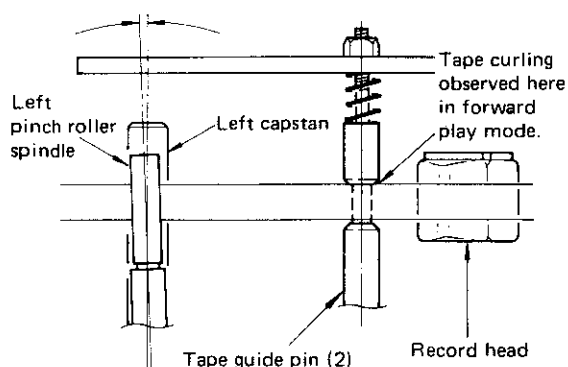


Fig. 2-18 Erase head height

5. Check to for any tape curling at either tape guide pin in the closed loop portion of the tape (i.e., between the capstans).
6. If there is any tape curling at tape guide pin (2) during forward play, do the following: Unthread the tape from the front of the head assembly. Remove both pinch rollers. Set the deck in the play mode. Then visually align the pinch roller spindle with the capstan as described below.

Fig. shows left side.

Pinch roller spindle is tilted to the left



If the pinch roller spindle is tilted to the left (right) with respect to the capstan shaft, tape curling may occur at the upper (lower) edge of the tape guide pin (2).

Fgi. 2-19 Example of improperly aligned pinch roller and capstan

7. Loosen the two screws holding the reinforcement plate then adjust using the correction jig (TEAC P/N 5736000100) as shown in Fig. 2-20.

Note:

- (1) Use the jig as near as possible to the pinch roller spindle.
- (2) Do not touch the surface of spindle.
- (3) Use no other tool for this adjustment!

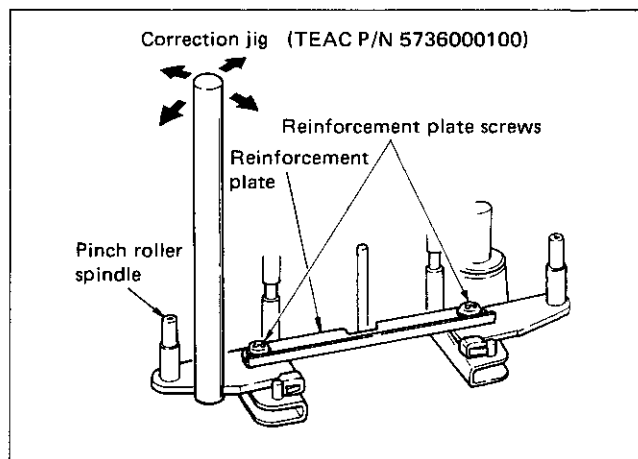
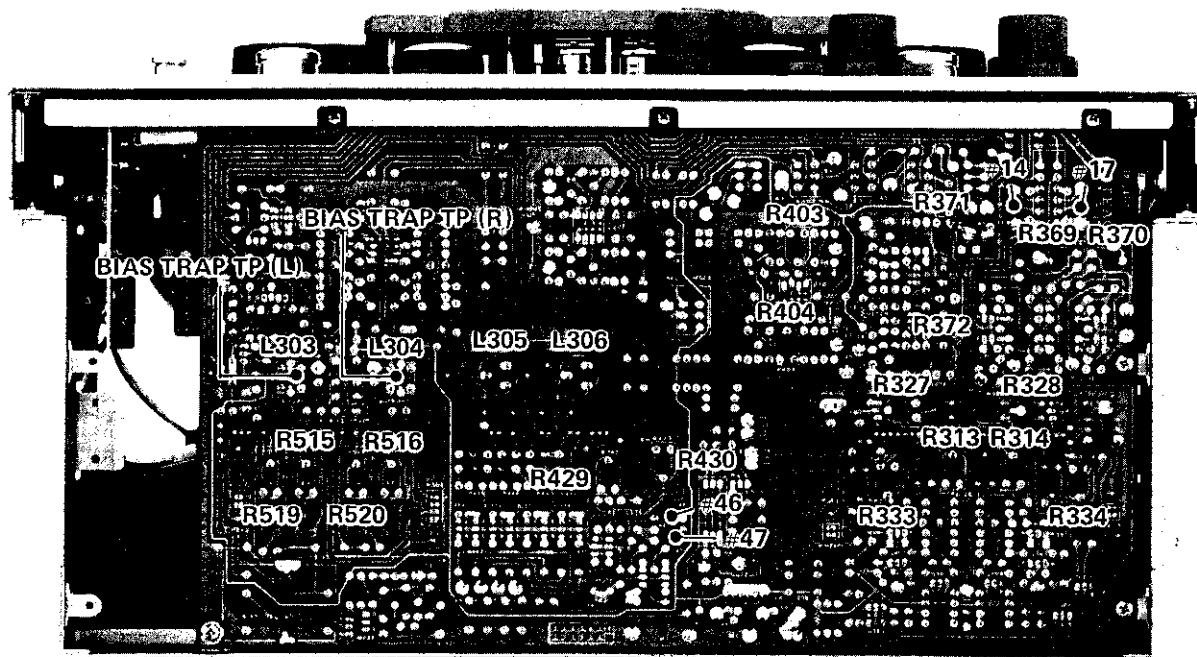


Fig. 2-20 Pinch roller/capstan alignment

8. After it is entirely corrected that there is no tape curling condition in the head assembly, fine-adjust each record and playback height so that the brass-colored spacer of forward direction purpose head will show above the moving tape. (About as thick as a thin pencil line). Adjustment should be done by equally turning three screws required correction not to disturb tilt and azimuth regulation conducted before.
9. Finally, if necessary, make rough tangency adjustment of respective head with tape running.

3 ELECTRICAL ADJUSTMENTS AND CHECKS

ADJUSTMENT AND TEST POINT LOCATIONS



REC AND PLAY AMP PCB

L303/L304	Bias trap (record)
L305/L306	Record EQ
R313/R314	Playback level
R327/R328	Playback EQ (HIGH)
R333/R334	Playback EQ (LOW)
R369/R370	Monitor level
R371/R372	VU meter
R403/R404	Output level
R429/R430	Record level
R515/R516	Record bias for EE
R519/R520	Record bias for LH II

NOTES

1. Before performing adjustments and checks, clean and demagnetize the entire tape path.
2. Check that 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. indicate L-ch/R-ch. (Example: R371/R372)
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. When ordering test tapes, allow for the longer delivery time that is required for them.

3-1 MONITOR PERFORMANCE

ITEM		CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
1. dbx level	1-1	QSC → ATT to LINE IN (L) AC voltmeter to VR PCB terminal #14	MONITOR sw.— SOURCE OUTPUT cont.— CAL LINE cont.—MAX MIC cont.—MIN	400 Hz/—22 dB (61.5 mV)	R369 (L)	—8 dB (308 mV)	LINE min. input level (L)
	1-2	“	“	400 Hz/—12 dB (195 mV)	LINE cont. (L/R)	“	LINE spec. input level (L)
	1-3	“ , but LINE IN (L) → LINE IN (R) #14 → #17	LINE spec. input level condition	“	R370 (R)	“	LINE spec. input level (R)
2. MONITOR output level	2-1	Fig. 3-1	LINE spec. input level condition	400 Hz/—12 dB (195 mV)	R403/R404	—5 dB (436 mV)	
3. VU meter	3-1	Fig. 3-1	LINE spec. input level condition	400 Hz/—12 dB (195 mV)	R371/R372	0 VU on VU meter	
4. MIC input level	4-1	Fig. 3-1, but LINE IN → MIC	LINE cont.—MIN MIC cont.—MAX	400 Hz/ —70 dB ±2 dB (195 μV ~ 308 μV)	Check	—5 dB (436 mV)	MIC min. input level
	4-2	“	“	400 Hz/—60 dB (0.775 mV)	MIC cont. (L/R)	“	MIC spec. input level
	4-3	Fig. 3-1	LINE cont.— spec. position (Item 1-2) MIC cont.—MIN	—	—	—	IMPORTANT: Do not disturb these con'ts during later checks.

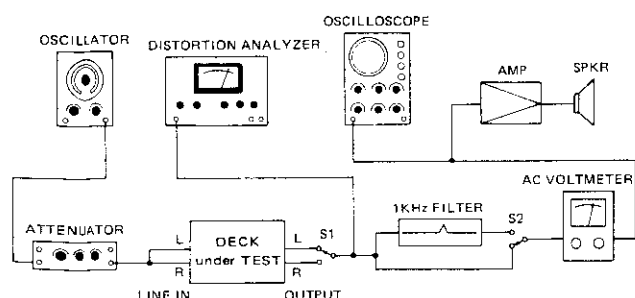


Fig. 3-1 Basic connection

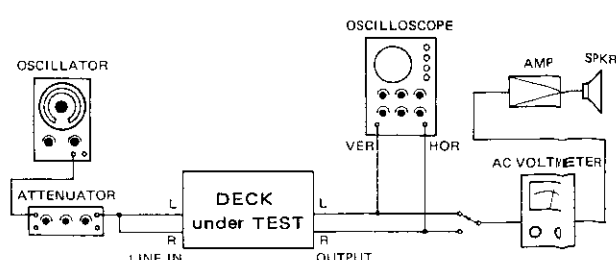


Fig. 3-2 Connection

TEAC test tape: For playback alignment
 YTT-1002: For 9.5 cm/s or 3- $\frac{3}{4}$ ips, LHII
 YTT-1003: For 19 cm/s or 7- $\frac{1}{2}$ ips, LHII
 YTT-1052: For 9.5 cm/s or 3- $\frac{3}{4}$ ips, EE
 YTT-1053: For 19 cm/s or 7- $\frac{1}{2}$ ips, EE
 For recording alignment (blank)
 YTT-8013: For LHII
 YTT-8053: For EE

3-2 PLAYBACK PERFORMANCE

ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
5. Playback head azimuth	5-1 Fig. 3-2	MONITOR sw.—TAPE SPEED sw.—HIGH TAPE SELEC.—LHII	YTT-1003 (16 kHz/—10 dB)	Azimuth adj. screw/s of head (Fig. 2-16)	Phase: within 45° on oscilloscope (Fig. 3-3)	
6. Playback level	6-1 Fig. 3-1	OUTPUT cont.—CAL SPEED sw.—HIGH	YTT-1003 (400 Hz/0 dB)	R313/R314	—5 dB (436 mV)	Spec. PB condition
	6-2 "	OUTPUT cont.—MAX	"	Check	+1 dB $\pm$ 2 dB (690 mV $\sim$ 1.09 V)	Max. output level
	6-3 "	OUTPUT cont.—CAL	"		—5 dB (436 mV)	Spec. PB condition IMPORTANT: Do not disturb OUTPUT cont. during later checks.
7. VU meter	7-1 Fig. 3-1	Spec. PB condition	YTT-1003 (400 Hz/0 dB)	Check	0 VU $\pm$ 1 VU on VU meter	
8. Frequency response	8-1 Fig. 3-1	TAPE SELEC.—LHII SPEED—HIGH	YTT-1003	R327/R328	Fig. 3-5	
	8-2 "	" SPEED—LOW	YTT-1002	R333/R334	Fig. 3-6	
	8-3 "	TAPE SELEC.—EE SPEED—HIGH	YTT-1053	Check	Fig. 3-5	
	8-4 "	" SPEED—LOW	YTT-1052	"	Fig. 3-6	
9. Phase shift	9-1 Fig. 3-2	SPEED—HIGH	YTT-1003	Check	Phase: within 45° on oscilloscope (50 Hz $\sim$ 18 kHz) (Fig. 3-3)	
	9-2 "	SPEED—LOW	YTT-1002	"	" (50 Hz $\sim$ 10 kHz)	
10. Head-phone output level	10-1 Fig. 3-4	Spec. PB condition	YTT-1003 (400 Hz/0 dB)	Check	—24 dB $\pm$ 2 dB (38.8 mV $\sim$ 61.5 mV) (at PHONES jack)	When OUTPUT terminal is at —5 dB
11. Signal to noise ratio	11-1 Fig. 3-1	LH and EE Spec. PB condition Use fully erased tape (Use bulk tape eraser)	YTT-8013 and YTT-8053	Check	LH-I, II HIGH: 50 dB LOW: 49 dB EE HIGH: 52 dB LOW: 52 dB	-Ratio of spec. —5 dB and noise -Change-over the polarity of the AC Line plug. The worse reading should be within spec

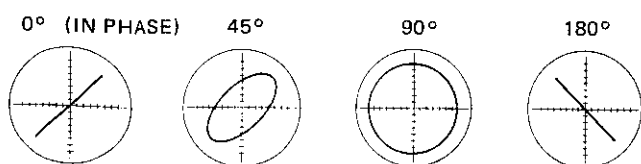


Fig. 3-3 Confirming phase relationship

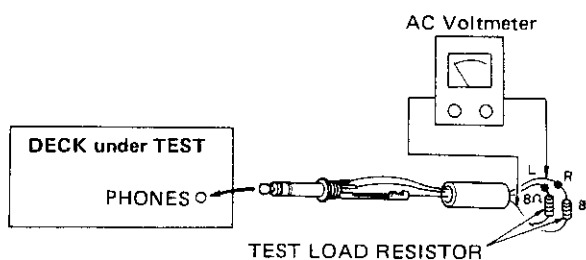


Fig. 3-4 Connection

3-3 RECORDING PERFORMANCE

TEAC test tape: YTT-8013: For recording alignment (blank) for LHII
YTT-8053: For recording alignment (blank) for EE

ITEM		CONNECTION		MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
12. Bias trap	12-1	AC voltmeter between BIAS TRAP TP & GND		Rec-pause mode	—	L303/L304	Min. reading	Bias freq.: 100 kHz $\pm$ 5 kHz
	12-2	Fig. 3-1		Rec-pause mode MONITOR sw.— TAPE OUTPUT cont.— CAL	—	Check	Min. reading —45 dB or more (4.36 mV or less)	
	12-3	"		"	—	Check	VU: no deflection	
13. Record head azimuth	13-1	Fig. 3-2		MONITOR sw.— TAPE	10 kHz/—32 dB (19.5 mV)	Azimuth adj. screw/s of head (Fig. 2-16)	Phase: within 45° on oscilloscope (Fig. 3-3)	
14. Record bias	14-1	Fig. 3-1	SPEED sw.— LOW MONITOR sw.—TAPE	Test tape— YTT-8053 TAPE SELEC- TOR—EE	7 kHz/—22 dB (61.5 mV)	R515/R516	Over-bias value 3 dB $\pm$ 1 dB (from peak)	Simultaneous monitoring First set adjustor fully CCW (⤵), then adjust.
	14-2	"	"	Test tape— YTT-8013 TAPE SELEC- TOR—LHII	"	R519/R520	Over-bias value 4 dB $\pm$ 1 dB (from peak)	
15. Record level	15-1	Fig. 3-1		Same as 14-2 SPEED sw.—HIGH	400 Hz/—12 dB	R429/R430	—5 dB (436 mV)	Spec. REC condition
16. Distortion	16-1	Fig. 3-1		Same as 14-1 and 14-2, but SPEED sw.—HIGH	1 kHz/—12 dB (195 mV)	Check	0.8% or less (W/LHII, EE)	
17. Signal to noise ratio	17-1	Fig. 3-1		MONITOR sw.— TAPE SPEED—HIGH & LOW LHII: YTT-8013 EE: YTT-8053	1 kHz/—12 dB (195 mV) then No signal recording	Check	HIGH: 48 dB min. ratio LOW: 46 dB min. ratio	Ratio of spec. —5 dB and noise
18. Erase efficiency	18-1	Fig. 3-1 switch on 1 kHz filter		Spec. REC condition SPEED sw.—HIGH	1 kHz/—2 dB (615 mV) (+10 dB) then erasing	Check	OUTPUT: —65 dB or more (436 μ V or less) (70 dB min. ratio)	-Reference output level: +5 dB -The worst value should be within spec.
19. REC MUTE function	19-1	Fig. 3-1 switch on 1 kHz filter		Spec. REC condition rec-mute mode	1 kHz/—2 dB (615 mV) (+10 dB) then record muting	Check	OUTPUT: —60 dB or more (775 μ V or less) (65 dB min. ratio)	-Reference output level: +5 dB -The worst value should be within spec.

ITEM	CONNECTION		MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS	
20. Frequency response	20-1	Fig. 3-1	MONITOR sw.—TAPE TAPE SELECTOR— EE Test tape— YTT-8053	SPEED sw.— LOW	Required signal/ —32 dB (19.5 mV)	L305/L306	Fig. 3-7	Also it is possible to fine-adjust by the record bias adjustors (see item 14.) if this respective specified record bias setting ranges are kept.
	20-2	"	"	SPEED sw.— HIGH	"	Check	Fig. 3-8	
	20-3	"	TAPE SELECTOR— LHII Test tape— YTT-8013	SPEED sw.— LOW	"	"	Fig. 3-7	
	20-4	"	"	SPEED sw.— HIGH	"	"	Fig. 3-8	
21. Phase shift	21-1	Fig. 3-2		Spec. REC condition SPEED sw.— HIGH	40 Hz ~ 10 kHz/ —32 dB (19.5 mV)	Check	Phase: within 45° on oscilloscope (40 Hz ~ 10 kHz) (Fig. 3-3)	
22. LHI position check	22-1	Fig. 3-1		Spec. REC condition Test tape—YTT- 8013 SPEED sw.— HIGH	20 kHz/—32 dB (19.5 mV)	Check	When TAPE SELECTOR sw is changed LHII → LHI, output level should raise +3 dB ± 1 dB.	
23. Adjacent track crosstalk	23-1	Fig. 3-1		Spec. REC condition SPEED sw.— HIGH TAPE SELECTOR sw.—LHII	125 Hz/—12 dB (195 mV)	—	—	
	23-2	"		Interchange R & L reels then do FWD playback	—	Check	At both L- and R-ch 125 Hz: —45 dB or more (4.36 mV or less) (40 dB min. ratio)	
24. Channel separation	24-1	Fig. 3-1 switch on 1 kHz filter		Same as 23-1	L: 1 kHz/—12 dB (195 mV) R: No signal record.	Check	R, —55 dB or more (1.38 mV or less) (50 dB min. ratio)	
	24-2	"		"	L: No signal record. R: 1 kHz/—12 dB	"	L, "	

— LH, YTT-1003
 - - - EE, YTT-1053

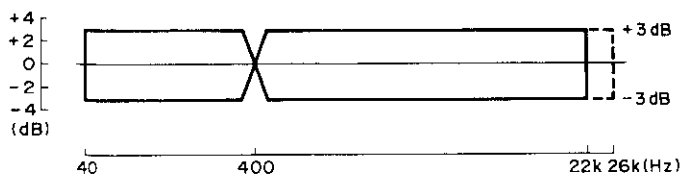


Fig. 3-5 Playback frequency response (19 cm/s)

— LH, YTT-1002
 - - - EE, YTT-1052

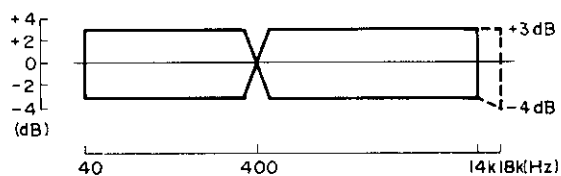


Fig. 3-6 Playback frequency response (9.5 cm/s)

— LH, YTT-8013
 - - - EE, YTT-8053

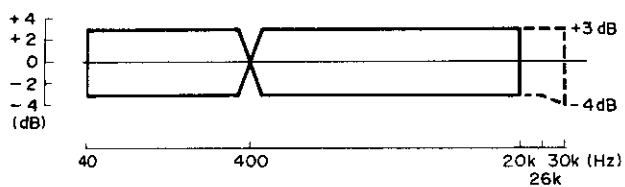


Fig. 3-7 Overall frequency response (19 cm/s)

— LH, YTT-8013
 - - - EE, YTT-8053

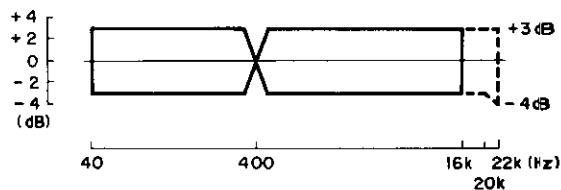
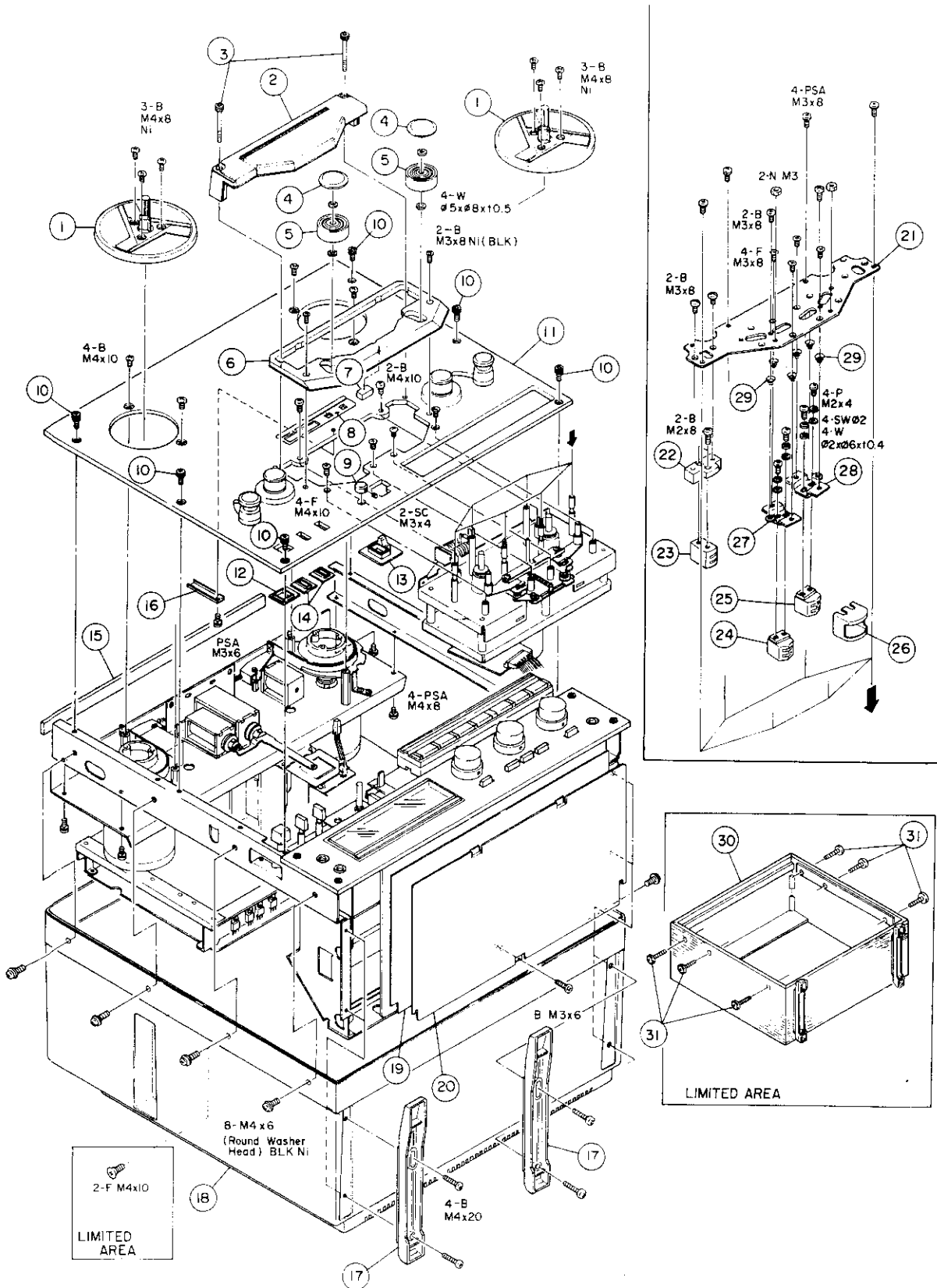


Fig. 3-8 Overall frequency response (9.5 cm/s)

4 EXPLODED VIEWS AND PARTS LIST

EXPLODED VIEW-1



Parts marked with *require longer delivery time.

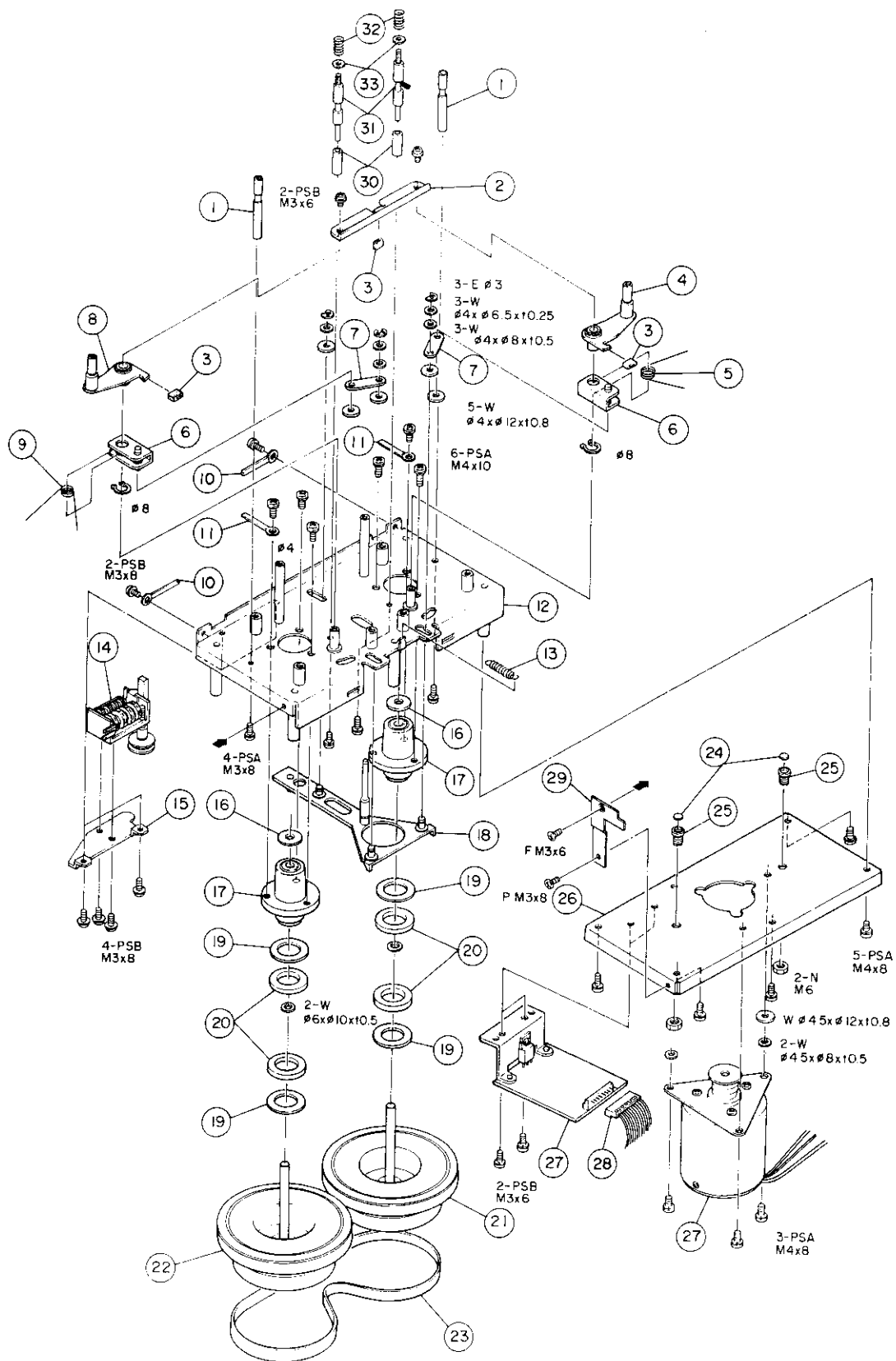
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1 - 1	5504744000	Reel Table Assy	X-10R
1 - 2	5800268500	Head Housing	
1 - 3	5581065000	Screw, Head Housing; A	
1 - 4	5545014000	Cap; Pinch Roller	X-10R
1 - 5	5534691100	Pinch Roller	X-10R
1 - 6	*5532061000	Cover, Head Base Plate	X-10R
1 - 7	*5800002700	Cushion, Housing	X-10R
1 - 8	*5534721001	Escutcheon, Counter	X-10
1 - 9	5534705000	Knob, VR; C	X-10R
1 - 10	*5581067000	Screw, Top Panel	
1 - 11	*5553292002	Panel, Top; D	X-10
1 - 12	*5534707000	Escutcheon, Switch	X-10R
1 - 13	*5534708000	Escutcheon, Cue	X-10R
1 - 14	*5534706001	Escutcheon, Button	X-10R
1 - 15	*5555887000	Escutcheon, Case	X-10R
1 - 16	*5555698000	Plate, Escutcheon, Pressure	X-10R
1 - 17	*5533100000	Foot	X-10R
1 - 18	*5800002802	Case Assy, Deck	X-10R
1 - 19	*5553308001	Paper, Ampl. Insulating	X-10R
1 - 20	*5553306000	Plate, Ampl. Shield	X-7
1 - 21	*5553289100	Plate, Head Base	X-10R
1 - 22	*5800285300	Spacer, Erase Head	X-1000R
1 - 23	5378300800	Head, Erase (4T-2ch)	X-20R "EE"
1 - 24	5569202000	Head, Record (4T-2ch)	X-10R
1 - 25	5569203100	Head, Playback (4T-2ch)	X-10R
1 - 26	*5554949000	Head, Shield; B	A-6600
1 - 27	*5555672000	Bracket, Head; L	X-10R
1 - 28	*5555673000	Bracket, Head; R	X-10R
1 - 29	*5520182000	Spring, D	A-5300
1 - 30	*5502277001	Case Assy, Wooden [L]	X-10R
1 - 31	*5504499000	Screw Assy, Case	A-480

INCLUDED ACCESSORIES

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	5350008500	Cord, Input-Output Connection	
	5062962000	Splicing Tape	
	5598054001	Reel Adapter, Clamp (TZ-612A)	
	5101337100	Open Reel Supplement [U]	
	5101708000	Open Reel Supplement [All except U]	
	5101668000	X-10MKII Owner's Manual [U]	
	5101669000	X-10MKII Owner's Manual [All except U]	

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[A]: AUSTRALIA [E]: EUROPE [UK]: U.K.
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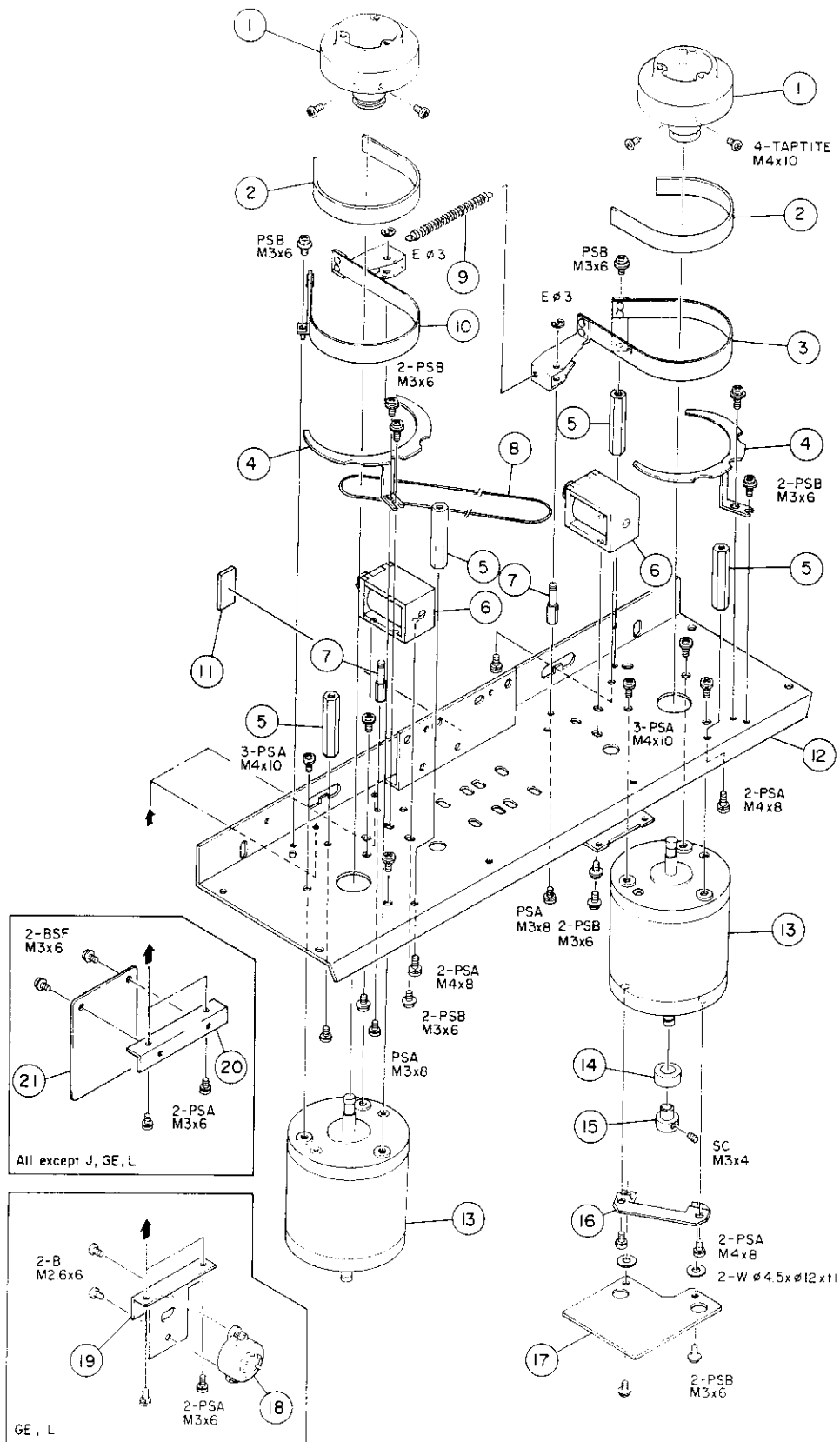
EXPLODED VIEW-2



Parts marked with *require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
2 - 1	*5545023000	Pin, Tape Guide	X-10R
2 - 2	*5555666000	Plate, Reinforcement	X-10R
2 - 3	*5534694000	Cushion, Stopper	X-10R
2 - 4	*5504729000	Arm Assy, Pinch Roller; R	X-10R
2 - 5	*5524216000	Spring, Pinch Roller; R	X-10R
2 - 6	*5504731000	Bracket Assy, Pinch Roller	X-10R
2 - 7	*5555667000	Plate, Joint	X-10R
2 - 8	*5504730000	Arm Assy, Pinch Roller; L	X-10R
2 - 9	*5524217000	Spring, Pinch Roller; L	X-10R
2 - 10	*5786713000	Clamper, Cord; $\phi 3$	
2 - 11	*5786714000	Clamper, Cord; $\phi 4$	
2 - 12	*5503196000	Chassis, Capstan	X-10R
2 - 13	*5524219000	Spring, Slide Plate	X-10R
2 - 14	*5504725000	Counter, Tape; B	
2 - 15	*5555665000	Bracket, Counter Assy	X-10R
2 - 16	*5534695000	Washer, Oil Retaining	X-10R
2 - 17	5504726100	Housing Assy, Capstan Flywheel	X-10R
2 - 18	*5504733001	Plate Assy, Slide	X-10R
2 - 19	*5555704000	Tape, Adhesive	X-10R
2 - 20	*5534715000	Ring, Magnet; Thrust	X-10R
2 - 21	5504727000	Flywheel Assy, Capstan; R	X-10R
2 - 22	5504728000	Flywheel Assy, Capstan; L	X-10R
2 - 23	5534692000	Belt, Capstan Drive	X-10R
2 - 24	*5555703000	Bearing	X-10R
2 - 25	*5544003000	Screw, Bearing	A-7300
2 - 26	*5553290001	Bracket, Motor Mounting	X-10R
2 - 27	*7105018001	DC Motor Assy, Capstan	X-7R
2 - 28	5122172000	Connector Socket, 10P	
2 - 29	*5800285500	Support, Guide	X-1000R
2 - 30	*5800285400	Tape Guide	X-1000R
2 - 31	*5800285600	Spring, Guide	X-1000R
2 - 32	*5800286100	Support Washer, Spring	X-1000R

EXPLODED VIEW-3

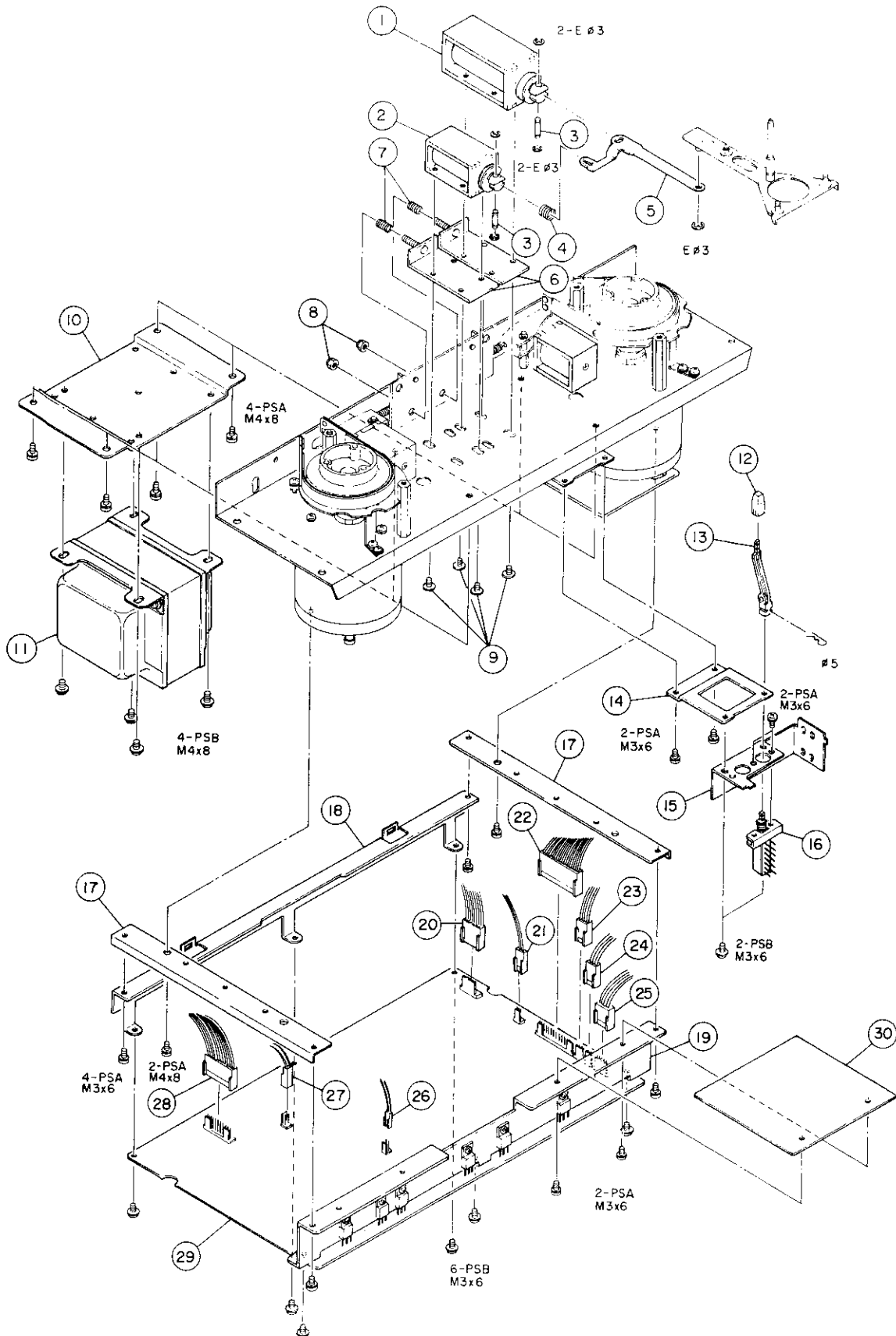


Parts marked with *require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
3 - 1	*5533189000	Base Assy, Reel Table	X-10R
3 - 2	5555274000	Shoe, Brake	A-3300SX
3 - 3	5504735000	Band Assy, Brake; L	X-10R
3 - 4	*5555685000	Plate, Band Assy Retainig	X-10R
3 - 5	*5544916000	Stay, Top Panel	A-6100MKII
3 - 6	5163044000	Solenoid; Brake	
3 - 7	*5545033000	Shaft, Brake Band	X-10R
3 - 8	5534370000	Belt, Counter	A-6600
3 - 9	*5524294000	Spring, Brake	X-10R
3 - 10	5504736000	Band Assy, Brake; R	X-10R
3 - 11	5555570000	Cushion, Case; B	A-500
3 - 12	*5552388001	Chassis, Reel Motor	X-10R
3 - 13	7105019001	DC Motor, Reel	X-7
3 - 14	*5534487000	Ring, Magnet	40-4
3 - 15	*5545036000	Coiler, Magnet	X-10R
3 - 16	5555695100	Bracket, MS PCB	X-10R
3 - 17	5168940000	PCB Assy, STOP SENSOR	
3 - 18	△*5131007000	Switch, Voltage Selector [GE, L]	
3 - 19	*5555790000	Bracket, Voltage Selector [GE, L]	X-10R
3 - 20	*5555789000	Bracket, FUSE PCB [U, C, E, UK, A]	X-10R
3 - 21	*5168997000	PCB Assy, FUSE [U, C]	
	*5158105000	PCB Assy, FUSE [E, UK, A]	

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EXPLODED VIEW-4



Parts marked with *require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
4 - 1	5163041001	Solenoid; Pinch Roller	
4 - 2	5163042000	Solenoid; Pause	
4 - 3	*5545022000	Pin; Solenoid	X-10R
4 - 4	*5524071000	Spring, Solenoid	AL-700
4 - 5	*5555668000	Plate; C	X-10R
4 - 6	*5504732000	Plate Assy, Solenoid	X-10R
4 - 7	*5524218000	Spring, Pinch Roller Pressure	X-10R
4 - 8	*5581066000	Nut, Nylon; M4	
4 - 9	*5800022600	Screw, Shoulder; F	X-10R
4 - 10	*5555681100	Bracket, Power Transformer	X-10R
4 - 11	△ 5152225000	Transformer, Power [U, C]	
	△ 5152239000	Transformer, Power [E, UK, A]	
	△ 5320006600	Transformer, Power [GE, L]	
4 - 12	5534714000	Button, B	X-10R
4 - 13	*5534685000	Rod, Switch	X-10R
4 - 14	*5555664000	Plate, Joint	X-10R
4 - 15	*5555671100	Bracket, Timer Switch	X-10R
4 - 16	5134115000	Switch, Push	
4 - 17	*5553296001	Frame, Joint	X-10R
4 - 18	*5552390000	Frame, PCB	X-10R
4 - 19	*5552391000	Frame, HS	X-10R
4 - 20	*5122167000	Connector, Socket; 4P	
4 - 21	*5122221000	Connector, Socket; 2P (BLK)	
4 - 22	*5122174000	Connector, Socket; 12P	
4 - 23	*5122222000	Connector, Socket; 3P (BLK)	
4 - 24	*5122165000	Connector, Socket; 3P	
4 - 25	*5122166000	Connector, Socket; 4P	
4 - 26	*5122280000	Connector, Socket; 2P (RED)	
4 - 27	*5122164000	Connector, Socket; 2P	
4 - 28	*5122171000	Connector, Socket; 9P	
4 - 29	*5200004702	PCB Assy, CONTROL [U, C]	
	*5200004712	PCB Assy, CONTROL [E, UK, A]	
	*5200004722	PCB Assy, CONTROL [GE, L]	
4 - 30	*5555888000	Heat Sink, C	X-10R

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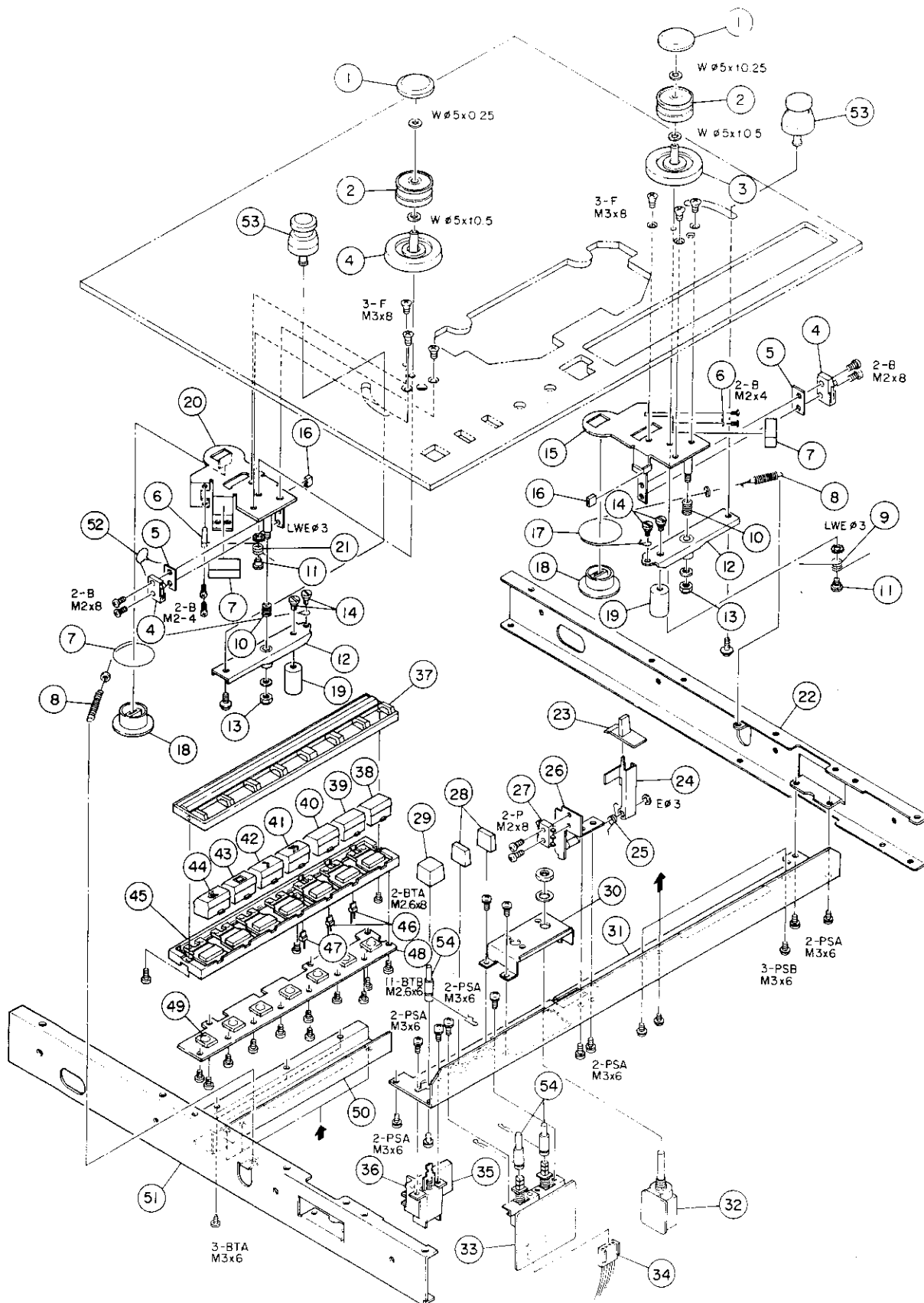
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EXPLODED VIEW-5

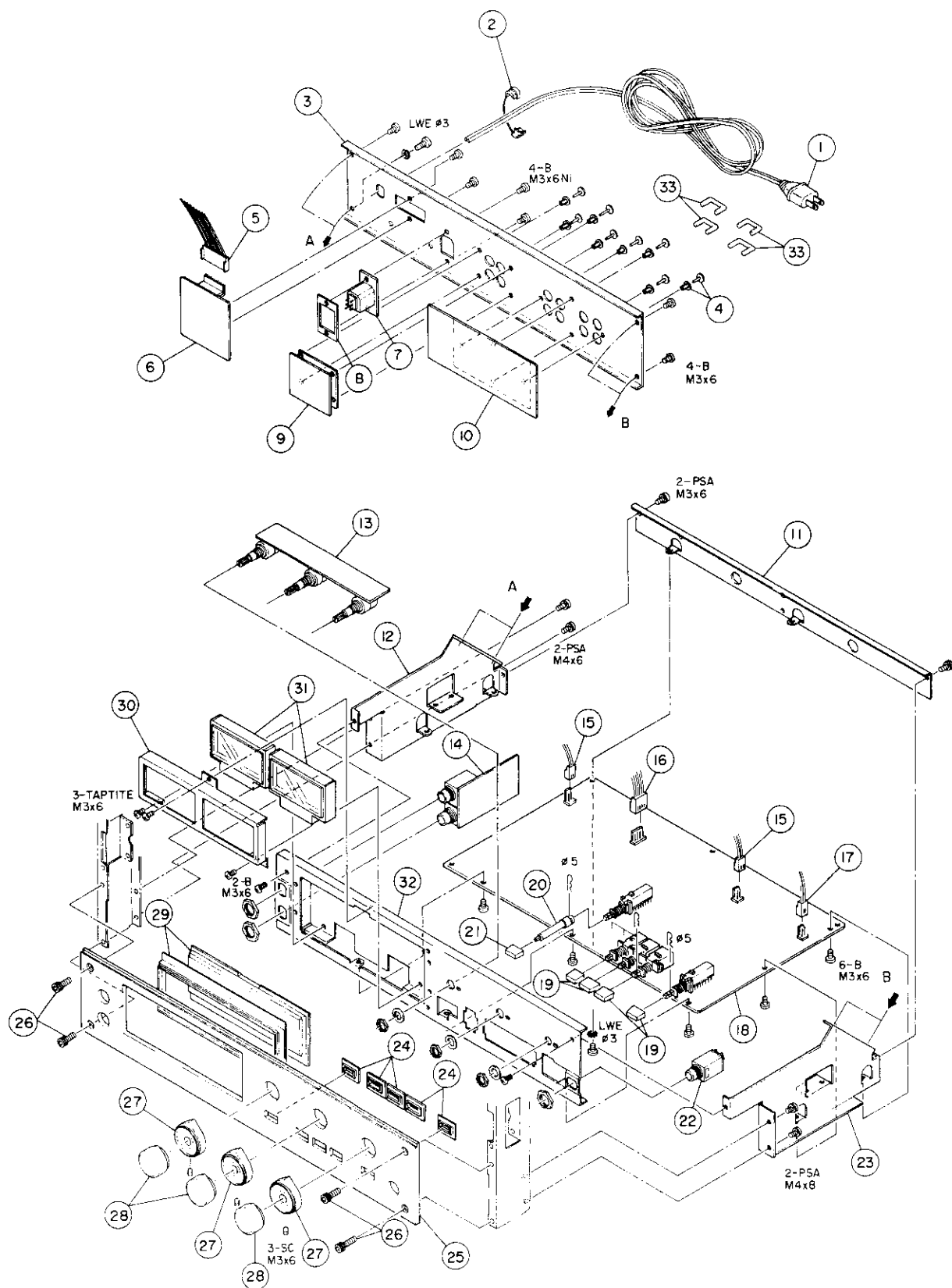


Parts marked with *require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
5 - 1	5545037000	Cap, Roller	X-10R
5 - 2	*5504743002	Roller Assy, B	X-10R
5 - 3	*5504742000	Base Assy, Roller; B	X-10R
5 - 4	5301455500	Switch, Micro; SS5GL13-F	
5 - 5	*5550025100	Plate, Insulating	A-450
5 - 6	*5524215000	Wire, String Stopper	X-10R
5 - 7	*5534686001	Cushion	X-10R
5 - 8	*5524183000	Spring, Motor Switch Lever	A-601R
5 - 9	*5524230001	Spring, Tension Arm; R	X-10R
5 - 10	*5524069000	Spring, Roller Arm	AL-700
5 - 11	*5581064000	Screw, Shoulder; E	
5 - 12	*5800305800	Arm Assy, Tension	X-20R "EE"
5 - 13	*5581045000	Nut, Nylon	
5 - 14	*5800002600	Screw, Shoulder; F	X-10R
5 - 15	*5504720101	Base Assy, Shut off; R	X-10R
5 - 16	*5027699000	Collar, Rubber	
5 - 17	*5788200200	String Assy, Damper	
5 - 18	*5534684001	Drum, Damper	X-10R
5 - 19	*5545010000	Weight, Counter	X-10R
5 - 20	*5504719102	Base Assy, Shut off; L	X-10R
5 - 21	*5524229001	Spring, Tension Arm; L	X-10R
5 - 22	*5552393102	Angle A, Side; R	X-10R
5 - 23	*5534703000	Knob, Cue	X-10R
5 - 24	*5555697000	Lever, Cue	X-10R
5 - 25	*5524223001	Spring, Cue	X-10R
5 - 26	*5504737000	Bracket Assy, Cue	X-10R
5 - 27	*5130003000	Switch, Micro; SS-L08-L13	
5 - 28	5534701000	Button, Switch	X-10R
5 - 29	5534702000	Button, Power Switch	X-10R
5 - 30	*5555699000	Bracket, Speed Switch	X-10R
5 - 31	*5552392001	Chassis, Control	X-10R
5 - 32	*5168938000	PCB Assy, PITCH CONTROL	
5 - 33	*5168927200	PCB Assy, SPEED SWITCH	
5 - 34	*5122168000	Connector Socket, 6P	
5 - 35	△ 5052907000	Spark Killer, 0.01μF+300Ω/300V [GE, L]	
	△ 5052910000	Spark Killer, 0.033μF+120Ω/125V [U]	
	△ 5052911000	Spark Killer, 0.033μF+120Ω/250V [C]	
	△ 5052908000	Spark Killer, 4700pF/250V [E, UK, A]	
5 - 36	△ 5134036000	Switch, Power [GE, L]	
	△ 5134037000	Switch, Power [U]	
	△ 5134034000	Switch, Power [C]	
	△ 5134011000	Switch, Power [E, UK, A]	
5 - 37	*5533191000	Escutcheon, Button; Operation	X-10R
5 - 38	5533199000	Button, G	X-10R
5 - 39	5533219000	Button, H	X-10R
5 - 40	5533198000	Button, F	X-10R
5 - 41	5533195000	Button, C	X-10R
5 - 42	5533193000	Button, A	X-10R
5 - 43	5533197000	Button, E	X-10R
5 - 44	5533196000	Button, D	X-10R
5 - 45	*5532062000	Base Assy, Button; Operation	X-10
5 - 46	5143140000	LED; SLB-26UR (RED)	
5 - 47	5143139000	LED; SLB-26GG (GREEN)	
5 - 48	*5168930000	PCB Assy, OPERATION SW	
5 - 49	5138011000	Switch, Tact; AKC-8S	
5 - 50	*5553300000	Angle, Button Base; A	X-10R
5 - 51	*5552394101	Angle A, Side; L	X-10R
5 - 52	*5054230000	Capacitor, Ceramic; 0.047μF/50V	
5 - 53	*5800349001	Roller Assy, Tension; A	X-1000R
5 - 54	*5534713000	Rod, Switch; C	X-10R

[U]: U.S.A. [C]: CANADA [GE]: GENERAL EXPORT
[A]: AUSTRALIA [E]: EUROPE [UK]: U.K.
[L]: LIMITED AREA

EXPLODED VIEW-6



Parts marked with *require longer delivery time.

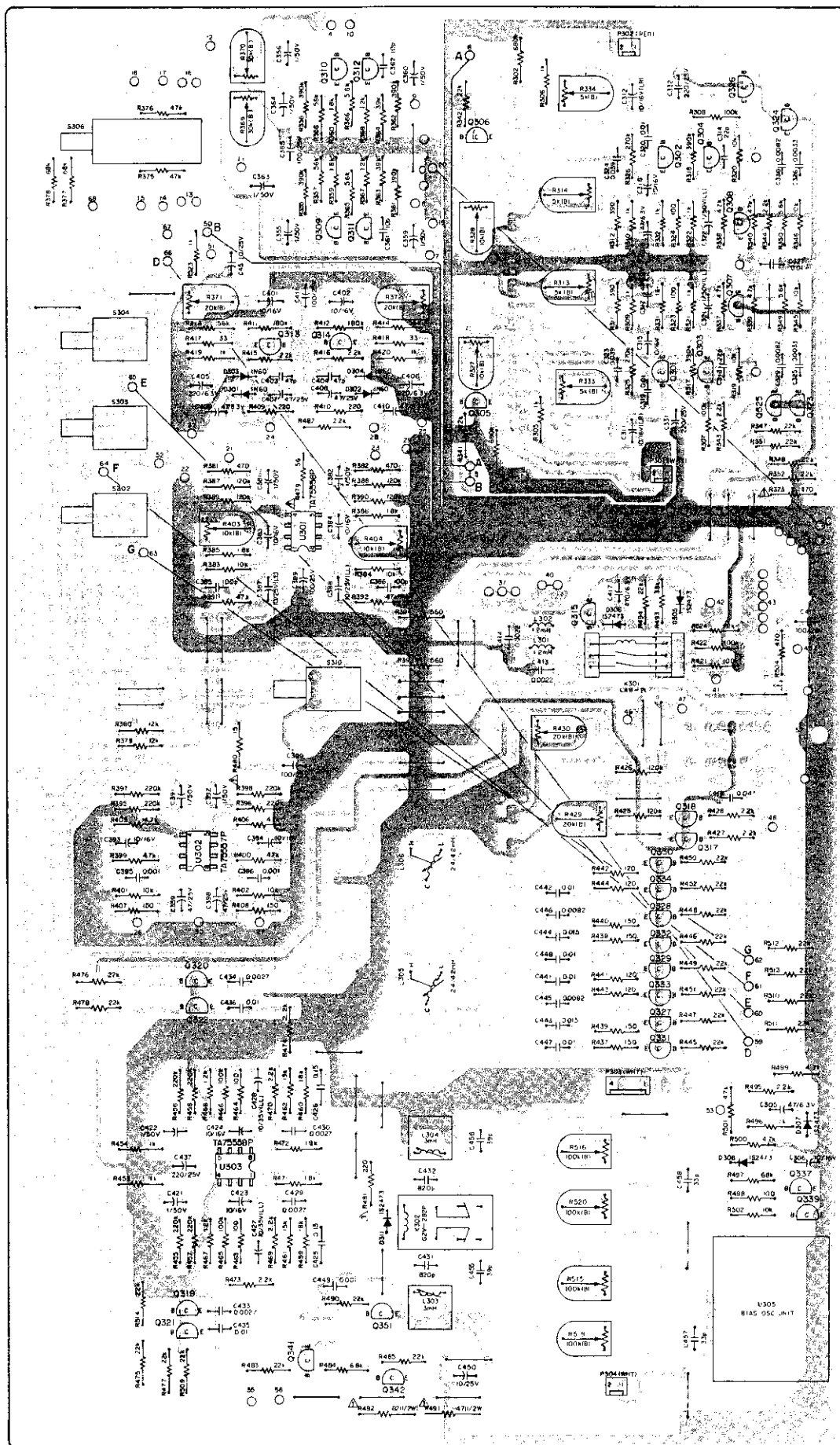
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
6 - 1	△*5128027000 △*5128047000 △*5128075000 △*5350008200 △*5350008300	Cord, AC Power [GE, L] Cord, AC Power [UK] Cord, AC Power [U, C] Cord, AC Power [E] Cord, AC Power [A]	
6 - 2	*5534660000 *5534661000	Strain Relief, AC Power Cord [All except UK] Strain Relief, AC Power Cord [UK]	
6 - 3	*5552395000	Panel, Ampl.; Rear	X-10R
6 - 4	*5534118000	Push Rivet	
6 - 5	*5122174000	Connector Socket, 12P	
6 - 6	*5158002000	PCB Assy, CONNECTOR	
6 - 7	*5122339000	Connector Socket, 6P	
6 - 8	*5555700000	Nut, Plate	X-10R
6 - 9	*5200036000	PCB Assy, IN/OUTPUT	X-20R
6 - 10	*5168936001	PCB Assy, DBX IN/OUTPUT	
6 - 11	*5553297100	Bracket, REC/PLAY AMPL. PCB	
6 - 12	*5553294101	Frame A, Ampl.; L	X-10R
6 - 13	*5200035900	PCB Assy, VR	X-20R
6 - 14	*5200045500	PCB Assy, MIC AMPL.	X-20R
6 - 15	5122280000	Connector, Socket; 2P (RED)	
6 - 16	5122164000	Connector, Socket; 2P	
6 - 17	5122166000	Connector, Socket; 4P	
6 - 18	*5200064100	PCB Assy, REC/PLAY AMPL.	
6 - 19	5800272900	Button, H	
6 - 20	*5534712000	Rod, B	X-10R
6 - 21	5800272800	Button, Switch	
6 - 22	*5124026000	Jack, PHONES	
6 - 23	*5553294101	Fram A, Ampl.; R	X-10R
6 - 24	*5800245600	Escutcheon, Button	X-20R
6 - 25	*5800268400	Panel, Ampl.	
6 - 26	*5581067000	Screw, Ampl. Panel; B	
6 - 27	5534704000	Knob, VR; B	
6 - 28	5533188000	Knob, VR; A	
6 - 29	*5504748001	Cover Assy, Meter	X-10R
6 - 30	*5553293000	Plate, Meter	X-10R
6 - 31	5165068000	Meter, VU	

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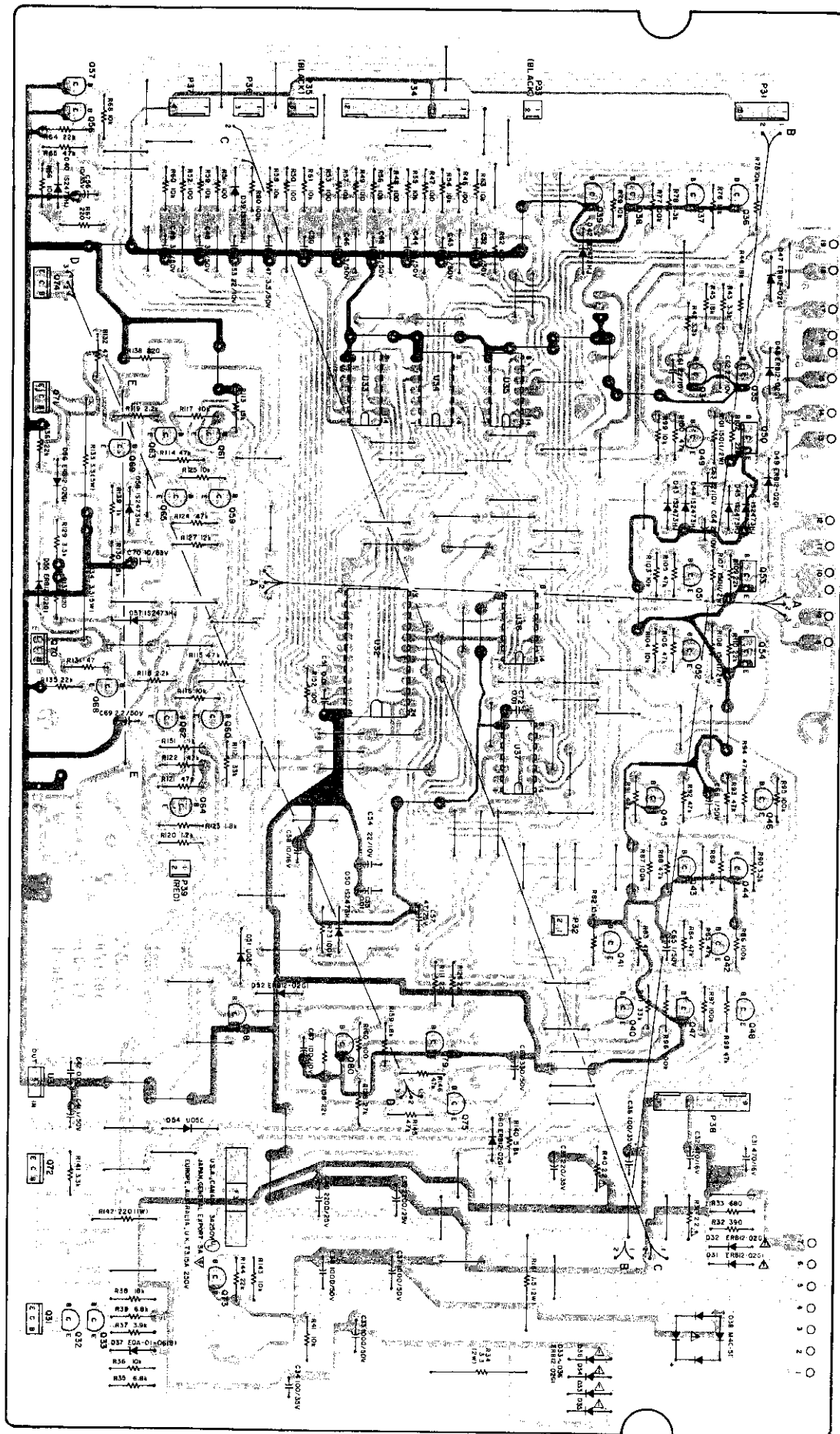
5 PC BOARD AND PARTS LIST

PC Boards shown viewed from foil side.

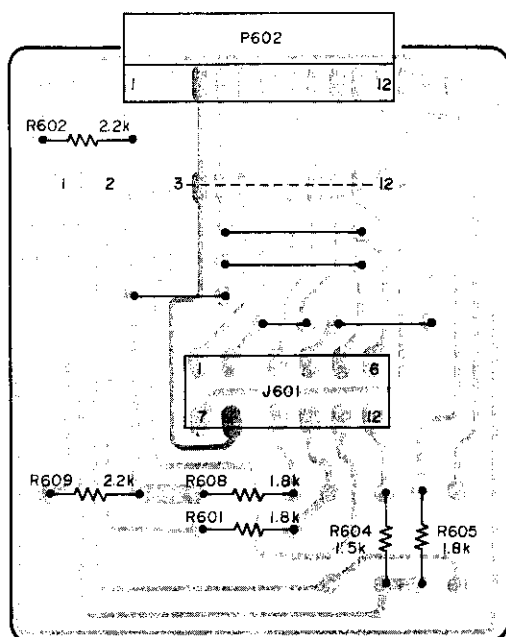
REC/PLAY AMPL. PCB ASSY



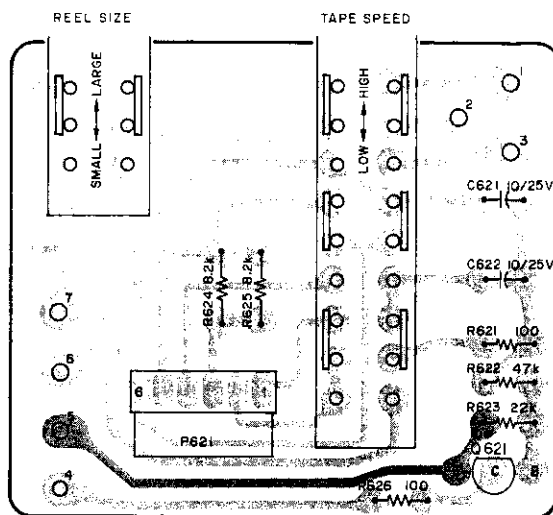
CONTROL PCB ASSY



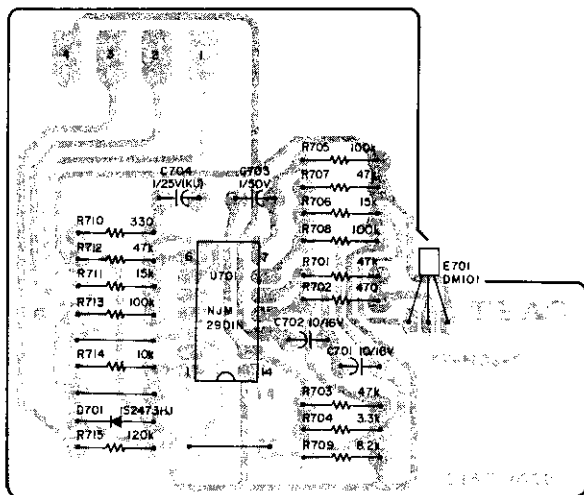
CONNECTOR PCB ASSY



SPEED SW PCB ASSY



STOP SENSOR PCB ASSY



NOTES

1. PC Boards shown viewed from foil side.
2. The colors used on the PCB illustrations have the following significance:
 : +B power supply circuit
 : GND
 : Other
3. Resistor values are in ohms (k = 1,000 ohms).
4. All capacitor values are in microfarads (p = picofarads).

REC/PLAY AMPL, PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200064100	PCB Assy
	5210064100	PCB
	IC's	
U301	5220410900	TA75558P
U302	5220412200	TA75557P
U303	5220410900	TA75558P
	TRANSISTORS	
Q301, Q302	5042461000	2SC-1327T
Q303~Q308	5145036000	2SC-945LK
Q309~Q312	5145092000	2SC-1740LNS
Q313~Q315	5145036000	2SC-945LK
Q319~Q326	5145036000	2SC-945LK
Q327~Q334	5145092000	2SC-1740LNS
Q337	5145036000	2SC-945LK
Q339	5145185000	2SD-655E
Q341	5145036000	2SC-945LK
Q342	5145150000	2SA-1015GR
Q351	5145036000	2SC-945LK
	DIODES	
D301~D304	5042213000	1N60
D305~D308	5042517000	1S2473VE
D311	5042517000	1S2473VE
	CARBON RESISTORS	
All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}W$.		
R301~R304	5183150000	680k Ω
R305, R306	5183082000	1k Ω
R307, R308	5183130000	100k Ω
R309, R310	5183082000	1k Ω
R311, R312	5183072000	390 Ω
R317, R318	5183144000	390k Ω
R319, R320	5183106000	10k Ω
R321, R322	5183082000	1k Ω
R323, R324	5183058000	100 Ω
R325, R326	5183140000	270k Ω
R331, R332	5183082000	1K Ω
R337~R340	5183098000	47k Ω
R341, R342	5183114000	22k Ω
R343, R344	5183090000	2.2k Ω
R345, R346	5183106000	10k Ω
R347, R348	5183114000	22k Ω
R349, R350	5183100000	5.6k Ω
R351, R352	5183114000	22k Ω
R355, R356	5183144000	390k Ω
R357, R358	5183124000	56k Ω
R359, R360	5183088000	1.8k Ω
R361, R362	5183144000	390k Ω
R363, R364	5183120000	39k Ω
R365, R366	5183100000	5.6k Ω
R367, R368	5183084000	1.2k Ω
R373	△5184265000	470 Ω Nonflammable
R375, R376	5185132000	47k Ω 2%
R377, R378	5185136000	68k Ω 2%
R379, R380	5183108000	12k Ω
R381, R382	5183074000	470 Ω
R383, R384	5183106000	10k Ω
R385, R386	5183088000	1.8k Ω
R387~R390	5183132000	120k Ω
R391, R392	5183122000	47k Ω
R393, R394	5183076000	560 Ω

REF. NO.	PARTS NO.	DESCRIPTION
R395~R398	5183138000	220k Ω
R399, R400	5183098000	4.7k Ω
R401, R402	5183106000	10k Ω
R405, R406	5183098000	4.7k Ω
R407, R408	5183062000	150 Ω
R409, R410	5183066000	220 Ω
R411, R412	5183136000	180k Ω
R413, R414	5183124000	56k Ω
R415, R416	5183090000	2.2k Ω
R417, R418	5183046000	33 Ω
R419, R420	5183082000	1k Ω
R421, R422	5183130000	100k Ω
R425, R426	5183132000	120k Ω
R427, R428	5183090000	2.2k Ω
R437~R440	5183062000	150 Ω
R441~R444	5183060000	120 Ω
R445~R452	5183114000	22k Ω
R453, R454	5183082000	1k Ω
R455~R458	5183138000	220k Ω
R459, R460	5183112000	18k Ω
R461, R462	5183110000	15k Ω
R463, R464	5183058000	100 Ω
R465, R466	5183130000	100k Ω
R467, R468	5183084000	1.2k Ω
R469, R470	5183090000	2.2k Ω
R471, R472	5183088000	1.8k Ω
R473, R474	5183090000	2.2k Ω
R475~R478	5183114000	22k Ω
R479	Δ 5184243000	56 Ω Nonflammable
R480	Δ 5184229000	15 Ω Nonflammable
R481	Δ 5184257000	220 Ω Nonflammable
R482	5183090000	2.2k Ω
R483	5183114000	22k Ω
R484	5183102000	6.8k Ω
R485	5183114000	22k Ω
R490	5183114000	22k Ω
R491	Δ 5181990000	47 Ω Nonflammable
R492	5181996000	82 Ω
R493	5183118000	33k Ω
R494	5183114000	22k Ω
R495	5183090000	2.2k Ω
R496	5183082000	1k Ω
R497	5183126000	68k Ω
R498	5183038000	100 Ω
R499~R501	5183098000	4.7k Ω
R502	5183106000	10k Ω
R504	5184265000	470 Ω
R509~R514	5183114000	22k Ω
R523	5183082000	1k Ω
R524	5183084000	1.2k Ω
	CAPACITORS	
C305	5173034000	Elec. 47 μ F 6.3V
C306	5173010000	Elec. 10 μ F 16V
C311, C312	5171565000	Elec. 10 μ F 16V (LR)
C313, C314	5172304000	Ceramic 22pF 50V 10%
C315, C316	5173010000	Elec. 10 μ F 16V
C317, C318	5173034000	Elec. 47 μ F 6.3V
C319, C320	5054877500	Mylar 0.01 μ F 100V 5%
C321, C322	5260226110	Elec. 1 μ F 50V 10%
C323, C324	5054924500	Mylar 0.039 μ F 100V 5%
C325, C326	5054881500	Mylar 0.0033 μ F 100V 5%

[U]: U.S.A.
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[GE]: GENERAL EXPORT
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REF. NO.	PARTS NO.	DESCRIPTION
C327	5054877500	Mylar 0.01 μ F 100V 5%
C329, C330	5054894500	Mylar 0.0082 μ F 100V 5%
C331, C332	5173055000	Elec. 220 μ F 25V
C355, C356	5172992000	Elec. 1 μ F 50V
C359, C360	5172992000	Elec. 1 μ F 50V
C363, C364	5172992000	Elec. 1 μ F 50V
C365	5173046000	Elec. 100 μ F 25V
C381, C382	5172992000	Elec. 1 μ F 50V
C383, C384	5173010000	Elec. 10 μ F 16V
C385, C386	5172312000	Ceramic 100pF 50V 10%
C387, C388	5260222010	Elec. 10 μ F 35V 20%
C389	5173046000	Elec. 100 μ F 25V
C391, C392	5172992000	Elec. 1 μ F 50V
C393, C394	5173010000	Elec. 10 μ F 16V
C395, C396	5054878500	Mylar 0.001 μ F 100V 5%
C397, C398	5173037000	Elec. 47 μ F 25V
C399	5173055000	Elec. 220 μ F 25V
C401, C402	5173010000	Elec. 10 μ F 16V
C403, C404	5172308000	Ceramic 47pF 50V 10%
C405, C406	5173052000	Elec. 220 μ F 6.3V
C407, C408	5173004000	Elec. 4.7 μ F 25V
C409, C410	5173034000	Elec. 47 μ F 6.3V
C411	5173046000	Elec. 100 μ F 25V
C413, C414	5054876500	Mylar 0.0022 μ F 100V 5%
C415	5173046000	Elec. 100 μ F 25V
C417	5173070000	Elec. 470 μ F 6.3V
C419	5054738500	Mylar 0.047 μ F 100V 5%
C420, C422	5172992000	Elec. 1 μ F 50V
C423, C424	5173010000	Elec. 10 μ F 16V
C425, C426	5054930500	Mylar 0.15 μ F 100V 5%
C427, C428	5260222010	Elec. 10 μ F 35V 20%
C429, C430	5054889500	Mylar 0.0027 μ F 100V 5%
C431, C432	5172826000	Polyst. 820pF 50V 5%
C433, C434	5054889500	Mylar 0.0027 μ F 100V 5%
C435, C436	5054877500	Mylar 0.01 μ F 100V 5%
C437	5173055000	Elec. 220 μ F 25V
C441, C442	5054877500	Mylar 0.01 μ F 100V 5%
C443, C444	5054887500	Mylar 0.015 μ F 100V 5%
C445, C446	5054894500	Mylar 0.0082 μ F 100V 5%
C447, C448	5054877500	Mylar 0.01 μ F 100V 5%
C449	5054878500	Mylar 0.001 μ F 100V 5%
C450, C451	5173011000	Elec. 10 μ F 25V
C455, C456	5172794000	Polyst. 30pF 50V 5%
C457, C458	5172792000	Polyst. 33pF 50V 5%
COILS		
L301, L302	5160107000	Choke 1200pF 5%
L303, L304	5056659000	Trap 3 μ H 20%
L305~L308	5056637000	Record, EQ 2.4~4.2mH 20%
VARIABLE RESISTORS		
R313~R316	5280003302	Semi-fixed 5k Ω (B)
R327~R330	5280003502	Semi-fixed 10k Ω (B)
R333~R336	5280003302	Semi-fixed 5k Ω (B)
R369, R370	5280003802	Semi-fixed 30k Ω (B)
R371, R372	5280003602	Semi-fixed 20k Ω (B)
R403, R404	5280003502	Semi-fixed 10k Ω (B)
R429, R430	5280003602	Semi-fixed 20k Ω (B)
R515~R520	5280004202	Semi-fixed 100k Ω (B)

REF. NO.	PARTS NO.	DESCRIPTION
MISCELLANEOUS		
U305	5040090000	OSC Unit, BIAS
K301	5061137000	Relay, Reed 12V LAB2L
K302	5290009400	Relay, Reed 24V G2K-282P
S302 ~ S304	5300024300	Switch, Push 3-gang
S306	5134095000	Switch, Push
S310	5134094000	Switch, Push
P301	5122126000	Connector Plug, 2P
P302	5122299000	Connector Plug, 2P (RED)
P303	5122128000	Connector Plug, 4P
P304	5122126000	Connector Plug, 2P

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[L]: LIMITED AREA

[C]: CANADA
[E]: EUROPE

[GE]: GENERAL EXPORT
[UK]: U.K.

CONTROL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200004702	PCB Assy [U,C]
	5200004712	PCB Assy [E,UK,A]
	5200004722	PCB Assy [GE,L]
	5167933002	PCB
IC's		
U31	5147058000	NJM-78M05A
U32	5147054000	AN6251
U33~U35	5147056000	HD-7400P
U36, U37	5147057000	HD-7402P
TRANSISTORS		
Q31	5145087000	2SD-313E
Q32	5042625000	2SC-1318S
Q33~Q41	5230776520	2SC-1685R
Q42	5230015220	2SA-1127R
Q43~Q45	5230776520	2SC-1685R
Q46	5230015220	2SA-1127R
Q47	5230776520	2SC-1685R
Q48, Q49	5230015220	2SA-1127R
Q50	5042564000	2SC-1061C
Q51, Q52	5230015220	2SA-1127R
Q53, Q54	5042564000	2SC-1061C
Q56~Q61	5230776520	2SC-1685R
Q62~Q65	5230015220	2SA-1127R
Q68, Q69	5042625000	2SC-1318S
Q70, Q71	5145087000	2SD-313E
Q72	5145129000	2SB-507E
Q73	5042625000	2SC-1318S
Q74	5145087000	2SD-313E
Q75	5042625000	2SC-1318S
Q79, Q80	5230776520	2SC-1685R
DIODES		
D31~D36	Δ 5143243000	ERB12-02G1
D37	5143154000	EQA01-06S, Zener
D38	Δ 5143142000	M4C-51
D39~D46	5143118000	1S2473HJ
D47~D49	5143243000	ERB12-02G1
D50	5143118000	1S2473HJ
D51	5143017000	U05C
D52	5143243000	ERB12-02G1
D54	5143017000	U05C
D55, D56	5143243000	ERB12-02G1
D57, D58	5143118000	1S2473HJ
D60	Δ 5143243000	ERB12-02G1
CARBON RESISTORS		
All Resistors are rated ±5% tolerance and ¼W.		
R31	Δ 5184209000	2.2Ω Nonflammable
R32	5183072000	390Ω
R33	5183078000	680Ω
R34	5184306000	3.3Ω 10% 2W Cement
R35	5183102000	6.8kΩ
R36	5183106000	10kΩ
R37	5183096000	3.9kΩ
R38	5183112000	18kΩ
R39	5183102000	6.8kΩ
R40	Δ 5184233000	22Ω Nonflammable
R41	5183106000	10kΩ
R42, R43	5183094000	3.3kΩ
R44, R45	5183112000	18kΩ
R46~R53	5183058000	100Ω
R54~R61	5183106000	10kΩ

REF. NO.	PARTS NO.	DESCRIPTION
R62	5183058000	100Ω
R63	5183106000	10kΩ
R64	5183114000	22kΩ
R65	5183122000	47kΩ
R66	5183130000	100kΩ
R67	5183066000	220Ω
R68	5183106000	10kΩ
R73	5183130000	100kΩ
R75, R76	5183106000	10kΩ
R77	5183130000	100kΩ
R78	5183094000	3.3kΩ
R79	5183106000	10kΩ
R80	5183130000	100kΩ
R81	5183118000	33kΩ
R82	5183110000	15kΩ
R83~R85	5183122000	47kΩ
R87	5183130000	100kΩ
R88, R89	5183122000	47kΩ
R90	5183094000	3.3kΩ
R91~R94	5183122000	47kΩ
R95~R97	5183130000	100kΩ
R98	5183122000	47kΩ
R99	5183106000	10kΩ
R100	5183122000	47kΩ
R101	5183062000	150Ω
R102	5183114000	22kΩ
R103, R104	5183106000	10kΩ
R105, R106	5183122000	47kΩ
R107, R108	5183062000	150Ω
R109~R111	5183114000	22kΩ
R112	5183118000	33kΩ
R113	5183110000	15kΩ
R114, R115	5183122000	47kΩ
R116, R117	5183106000	10kΩ
R118, R119	5183090000	2.2kΩ
R120	5183084000	1.2kΩ
R121, R122	5183122000	47kΩ
R123	5183088000	1.8kΩ
R124	5183122000	47kΩ
R125	5183106000	10kΩ
R126	5183114000	22kΩ
R127	5183108000	12kΩ
R128	5183116000	27kΩ
R129	5183094000	3.3kΩ
R130	5183088000	1.8kΩ
R131, R132	5183050000	47kΩ
R133, R134	Δ 5183410000	47Ω ¼W Nonflammable
R135, R136	5183114000	22kΩ
R137, R138	5183080000	820Ω
R139	5183082000	1kΩ
R140	5183100000	5.6kΩ
R141	5183094000	3.3kΩ
R142	Δ 5184763000	220Ω 1W Nonflammable
R143	5183106000	10kΩ
R144	5183114000	22kΩ
R145, R146	5183122000	47kΩ
R151	5183082000	1kΩ
R152	5183058000	100Ω
R158	5183114000	22kΩ
R159	5183088000	1.8kΩ
R160	5183058000	100Ω
R161	5183302000	2.7kΩ

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DBX IN/OUTPUT PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
CAPACITORS		
C31, C32	5172961000	Elec. 470 μ F 16V
C33	5172973000	Elec. 1000 μ F 50V
C34	5172936000	Elec. 100 μ F 35V
C35	5172945000	Elec. 220 μ F 35V
C36	5172936000	Elec. 100 μ F 35V
C37, C38	5172973000	Elec. 1000 μ F 50V
C39, C40	5055714800	Elec. 2200 μ F 25V
C41	5172882000	Elec. 1 μ F 50V
C42	5054204000	Ceramic 0.01 μ F 50V 10%
C43~C49	5172890000	Elec. 3.3 μ F 50V
C50, C51	5054204000	Ceramic 0.01 μ F 50V 10%
C52~C54	5172890000	Elec. 3.3 μ F 50V
C55	5054204000	Ceramic 0.01 μ F 50V 10%
C56	5172903000	Elec. 10 μ F 50V
C57	5172894000	Elec. 4.7 μ F 25V
C58	5172900000	Elec. 10 μ F 16V
C61~C64	5172907000	Elec. 22 μ F 10V
C65, C66	5172882000	Elec. 1 μ F 50V
C67	5172933000	Elec. 100 μ F 10V
C68	5172955000	Elec. 330 μ F 50V
C69	5172886000	Elec. 2.2 μ F 50V
C70	5172904000	Elec. 10 μ F 63V
C72	5054204000	Ceramic 0.01 μ F 50V 10%
MISCELLANEOUS		
	5033291000	Plate, Insulating
	5033295000	Tube, Insulating
P31	5122129000	Connector Plug 5P
P32	5122126000	Connector Plug 2P
P33	5122183000	Connector Plug 2P (BLK)
P34	5122136000	Connector Plug 12P
P35	5122184000	Connector Plug 3P (BLK)
P36	5122127000	Connector Plug 3P
P37	5122128000	Connector Plug 4P
P38	5122133000	Connector Plug 9P
P39	5122299000	Connector Plug 2P (RED)
F31	△5142231000	Mini Fuse 3A 250V [GE,L]
F31	△5307027100	Mini Fuse 3A 250V [U,C]
F31	△5142191000	Mini Fuse 3.15A 250V [E,UK,A]

REF. NO.	PARTS NO.	DESCRIPTION
	5168936001	PCB Assy
	5167936000	PCB
TRANSISTORS		
Q541, Q542	5145036000	2SC-945LK
Q543, Q544	5145132000	2SA-933LNS
Q551, Q552	5145036000	2SC-945LK
Q553, Q554	5145132000	2SA-933LNS
CARBON RESISTORS		
All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}W$.		
R541, R542	5183082000	1k Ω
R543, R544	5183152000	820k Ω
R545, R546	5183130000	100k Ω
R547, R548	5183100000	5.6k Ω
R549, R550	5183080000	820 Ω
R551, R552	5183130000	100k Ω
R553, R554	5183100000	5.6k Ω
R563, R564	5183152000	820k Ω
R565, R566	5183130000	100k Ω
R567, R568	5183100000	5.6k Ω
R569, R570	5183080000	820 Ω
R571, R572	5183130000	100k Ω
R573, R574	5183100000	5.6k Ω
CAPACITORS		
C541, C542	5171918000	Elec. 1 μ F 50V
C543, C544	5172315000	Ceramic 180pF 50V 10%
C545, C546	5171918000	Elec. 1 μ F 50V
C551, C552	5171918000	Elec. 1 μ F 50V
C553, C554	5172315000	Ceramic 180pF 50V 10%
C555, C556	5171918000	Elec. 1 μ F 50V
MISCELLANEOUS		
	5126035000	Terminal, In/Output (DBX)

[U]: U.S.A.

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[GE]: GENERAL EXPORT

[UK]: U.K.

VR PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200035900	PCB Assy
	5210035900	PCB
CARBON RESISTORS		
R525~R528	5183058000	100Ω ¼W 5%
VARIABLE RESISTORS		
R529, R530	5282706002	Semi-fixed 50kΩ(A)
R537~R540	5282706002	Semi-fixed 50kΩ(A)

CONNECTOR PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5158002000	PCB Assy
	5167931000	PCB
CARBON RESISTORS		
All resistors are rated ±5% tolerance and ¼W.		
R601	5183088000	1.8kΩ
R602	5183090000	2.2kΩ
R604	5183086000	1.5kΩ
R605	5183088000	1.8kΩ
R608	5183088000	1.8kΩ
R609	5183090000	2.2kΩ
MISCELLANEOUS		
J601	5122155000	Connector Plug 12P
	5122336000	Connector Plug 12P
	5554099100	Bracket, Connector

MIC AMPL. PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200045500	PCB Assy
	5167935000	PCB
TRANSISTORS		
Q511, Q512	5042461000	2SC-1327T
CARBON RESISTORS		
All resistors are rated ±5% tolerance and ¼W.		
R511, R512	5183082000	1kΩ
R513, R514	5183140000	270kΩ
R515, R516	5183126000	68kΩ
R517, R518	5183122000	47kΩ
R519, R520	5183060000	120Ω
R521, R522	5183108000	12kΩ
R525	5183084000	1.2kΩ
CAPACITORS		
C511, C512	5170077000	Elec. 10μF 16V
C513, C514	5172300000	Ceramic 10μF 50V 10%
C515, C516	5055403000	Elec. 47μF 6.3V
C517, C518	5055405000	Elec. 10μF 16V
C519	5055417000	Elec. 100μF 25V
MISCELLANEOUS		
	5124045000	Jack, MIC

SPEED SW PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5168927200	PCB Assy
	5167927100	PCB
TRANSISTOR		
Q621	5042383000	2SC-536F
CARBON RESISTORS		
R621	5057058000	100Ω ¼W 5%
R622	5057122000	47kΩ ¼W 5%
R623	5057114000	22kΩ ¼W 5%
R626	5057058000	100Ω ¼W 5%
CAPACITORS		
C621, C622	5055404000	Elec. 10μF 25V
MISCELLANEOUS		
P621	5122149000	Connector Plug, 6P
	5134093000	Push Switch
	5134092000	Push Switch

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STOP SENSOR PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5168940000	PCB Assy
	5167940000	PCB
	IC	
U701	5147039000	NJN-2901N
	DIODE	
D701	5143118000	1S2473HJ
	CARBON RESISTORS	
	All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}W$.	
R701	5183122000	47k Ω
R702	5183074000	470 Ω
R703	5183122000	47k Ω
R704	5183094000	3.3k Ω
R705	5183130000	100k Ω
R706	5183110000	15k Ω
R707	5183122000	47k Ω
R708	5183130000	100k Ω
R709	5183104000	8.2k Ω
R710	5183070000	330 Ω
R711	5183110000	15k Ω
R712	5183122000	47k Ω
R713	5183130000	100k Ω
R714	5183106000	10k Ω
R715	5183132000	120k Ω
	CAPACITORS	
C701, C702	5055405000	Elec. 10 μF 16V
C703	5055454800	Elec. 1 μF 50V
C704	5054966000	Elec. 1 μF 25V
	MISCELLANEOUS	
E701	5143105000	Magnetic Resistance Element, DM-101
J36	5122166000	Connector Scket 4P

PITCH CONT PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5168938000	PCB Assy
	5167988000	PCB
	VARIABLE RESISTORS	
S36	5150239000	5k Ω (B)

FUSE PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5168997000	FUSE PCB Assy [U,C]
	5167997000	PCB
F1, F2	515307004700	Fuse 7A 127V
F3	515307004100	Fuse 2A 250V
	5041237000	Fuse Holder
	5158105000	Fuse PCB Assy [E,UK,A]
	5157105000	PCB Assy
F1, F2	5142193000	Mini Fuse 5A 250V
F3	5142189000	Mini Fuse 2A 250V
	5142087000	Fuse Holder

OPERATION PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5168930000	PCB Assy
	5167930000	PCB
	5138011000	Switch, Tact
	5143139000	LED SLB-26GG (GREEN)
	5143140000	LED SLB-26UR (RED)

IN/OUTPUT TERMINAL PCB ASSY (PC Board Omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200036000	PCB Assy
	5167987101	PCB
	5124058000	Jack, 4P
	CARBON RESISTORS	
R535, R536	5183120000	39k Ω $\frac{1}{4}W$ 5%

[U]: U.S.A.

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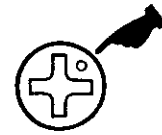
[E]: EUROPE

[GE]: GENERAL EXPORT

[UK]: U.K.

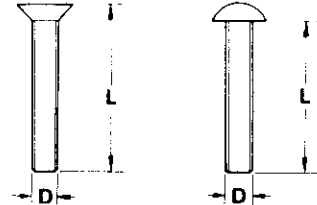
ASSEMBLING HARDWARE CODING LIST

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.



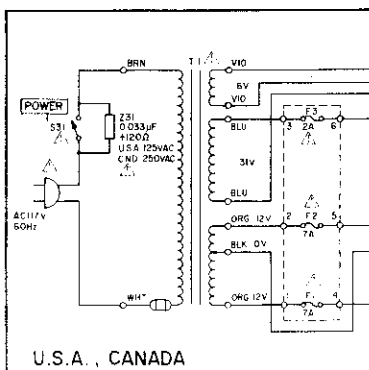
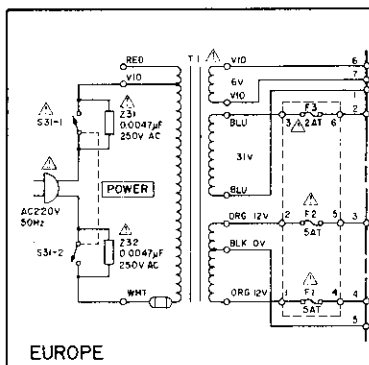
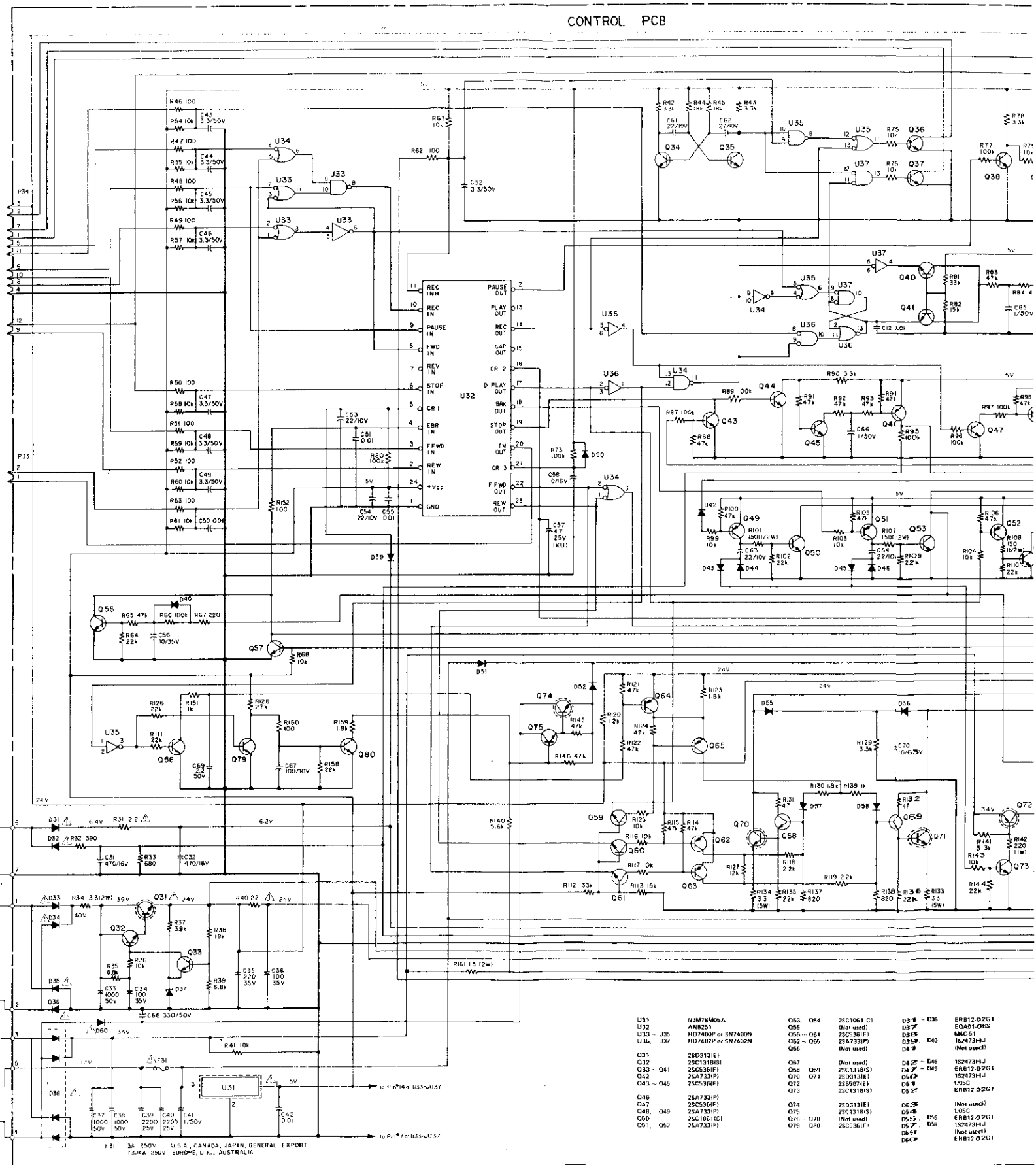
FOR EXAMPLE:

B M3 x 6
 ----- Length in mm (L)
 ----- Diameter in mm (D) *
 ----- Metric System
 ----- Nomenclature

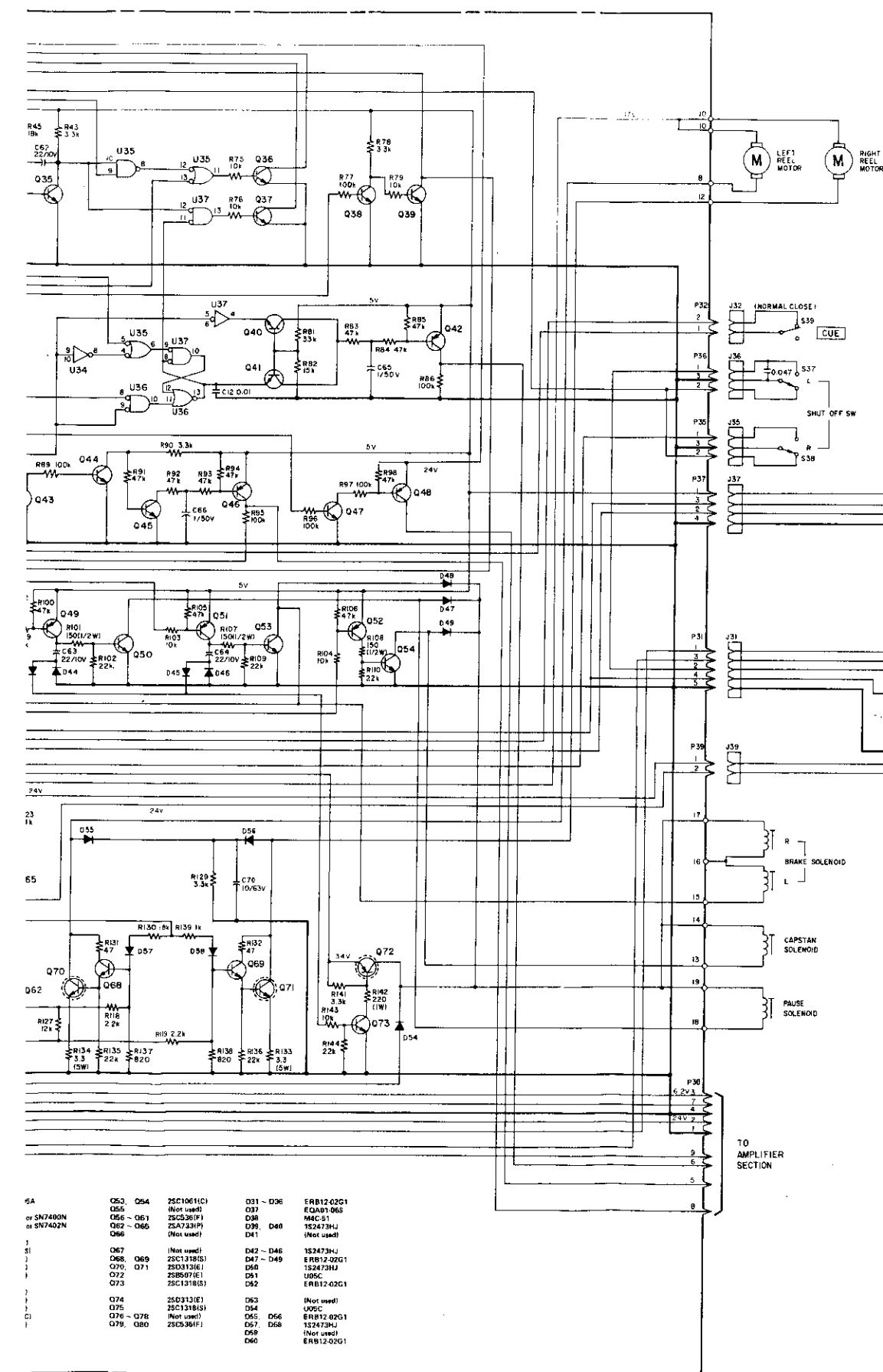


* Inner dia. for washers and nuts

	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	

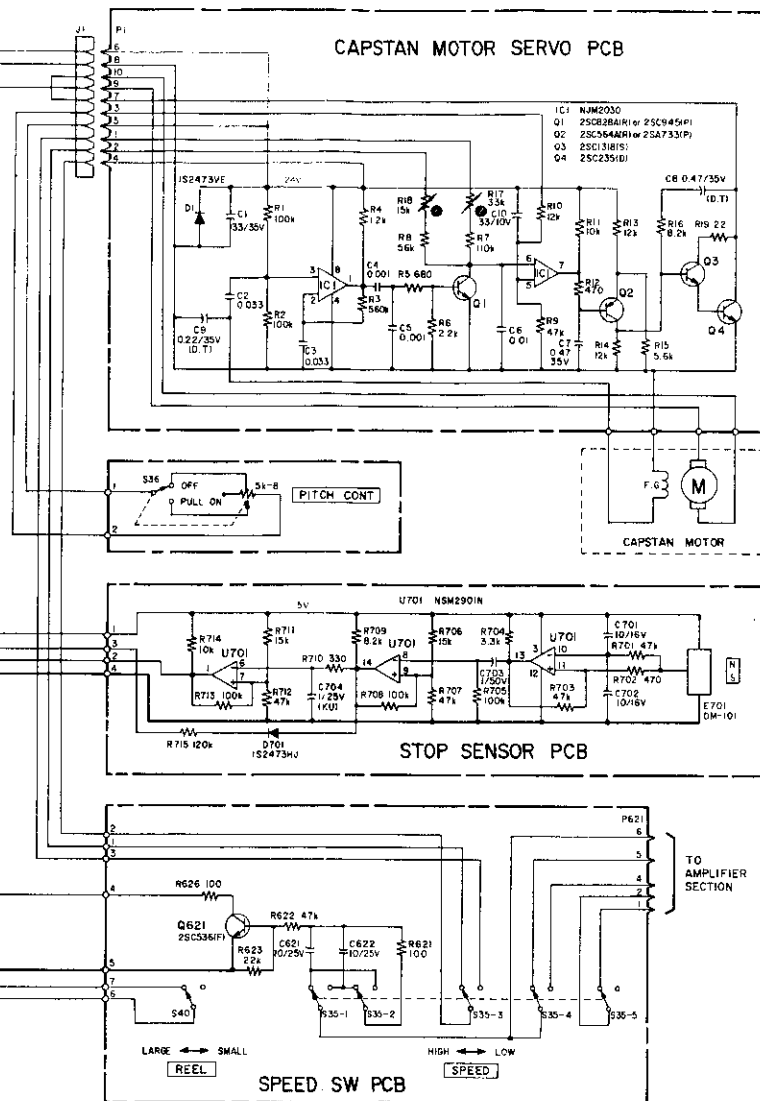


U31	NUM7400A	053, 054	25C1061(C)	D3 7	D36	ERB12 O2G1
U32	AN251	055	(Not used)	D3 7		ERB12 O2G1
U33	U37400	056 ~ 061	25C361(F)	D3 8		MAC 61
U36	NO7402P or SN7402N	062	25A733P(P)	D3 8	D40	15A734P(H)
		066	(Not used)	D3 8		(Not used)
U31	25D313(I)					
U32	25C118(H)	067	(Not used)	D4 2 ~ D46		15A734P(H)
U33 ~ U41	25C361(F)	068, 069	25C118(S)	D4 2 ~ D49		ERB12 O2G1
U42	25A733P	070, 071	25D313(I)	D5 4P		15A734P(H)
U43 ~ U45	072	072	25B801(P)	D5 9		15D02
U46	25A733(P)	073	25C118(S)	D5 9		ERB12 O2G1
U47	25C361(F)	074	(Not used)	D5 13		(Not used)
U48, U49	25A733(P)	075 ~ 078	05C118(S)	D5 4 ~ D56	D56	15D02
U51, U52	25A733(P)	079, 080	25C361(F)	D5 9	U58	15A734P(H)
				D5 9		(Not used)
				D5 7		ERB12 O2G1



NOTES

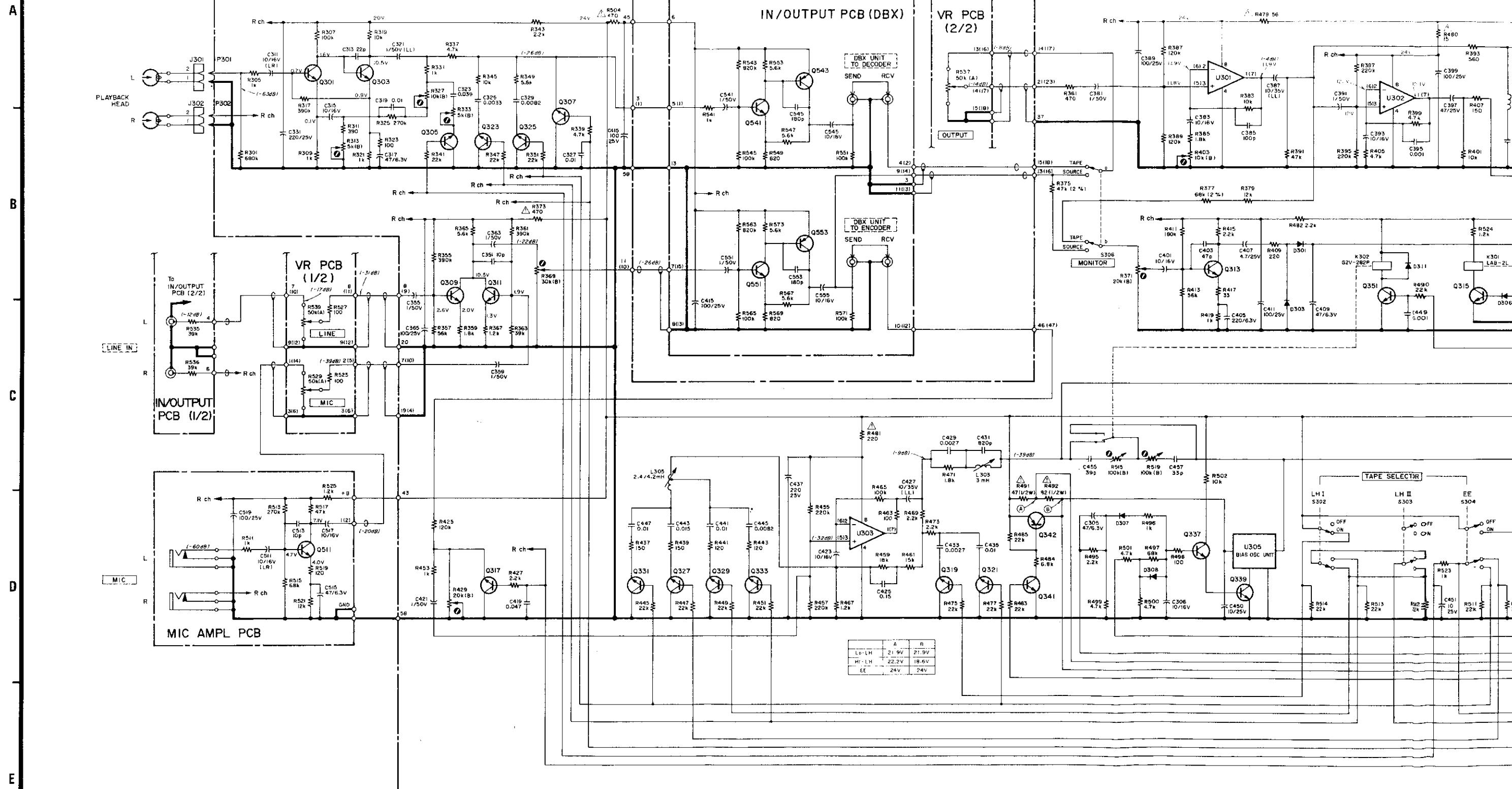
1. All resistors are $\frac{1}{4}$ watt, $\pm 5\%$, unless marked otherwise. Resistor values are in ohms (k = 1,000 ohms).
2. All capacitor values are in microfarads (p = picofarads).
3. Δ Parts marked with this sign are safety critical components. They must always be replaced with identical components—refer to the TEAC parts list and ensure exact replacement.
4. Each Voltage value shown above is the one measured in REC/PAUSE position and each mode.
5. : front panel indication
6. : rear panel indication
7. : +B power supply circuit



X-10_{MkII}
Stereo Tape Deck

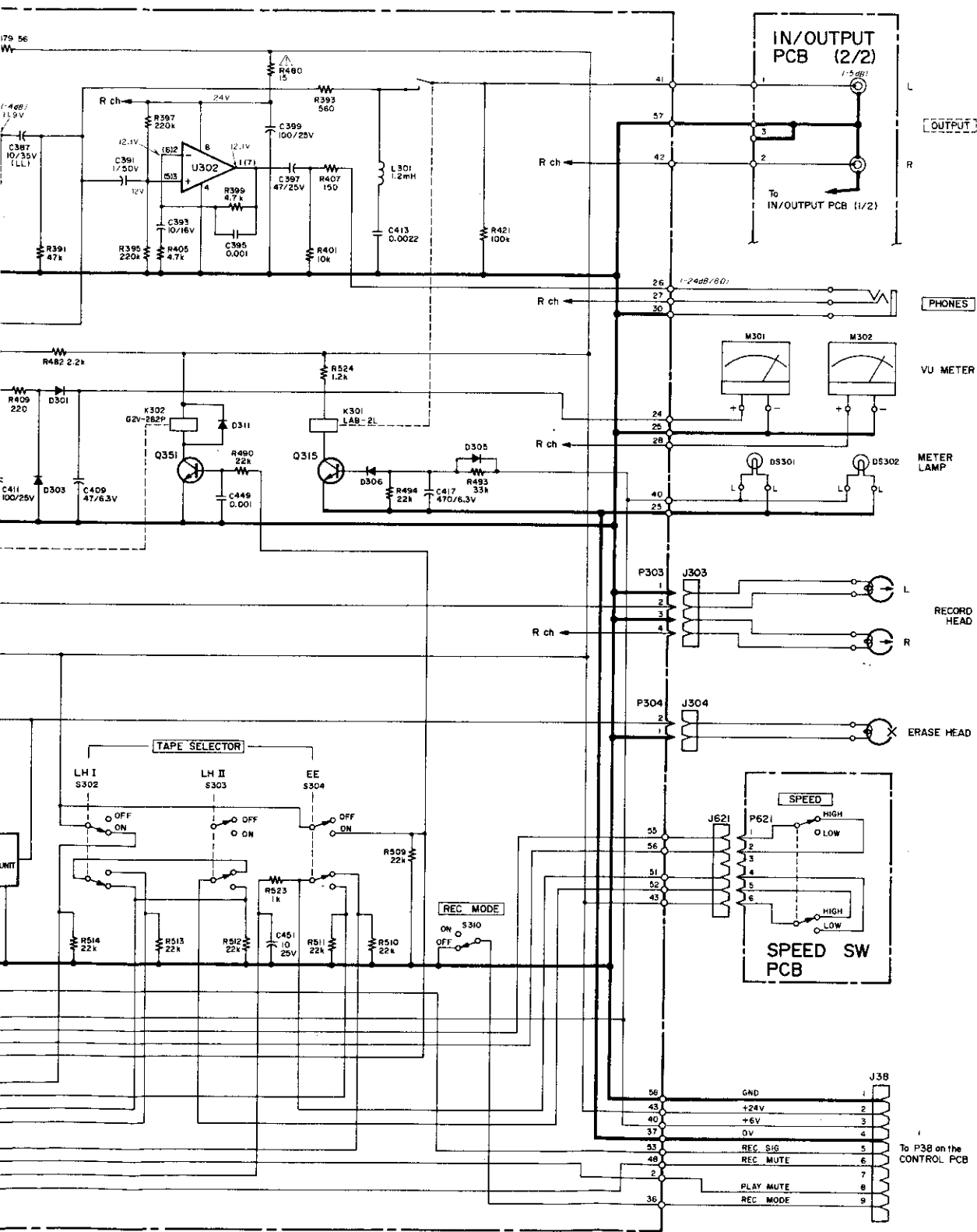
TEAC SCHEMATIC DIAGRAM (AMPLIFIER) X-10 MK II

1 2 3 4 5 6 7 8



L ch / R ch

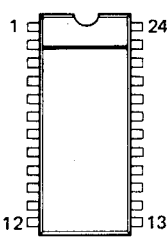
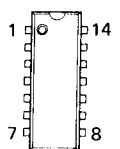
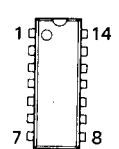
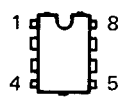
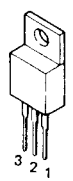
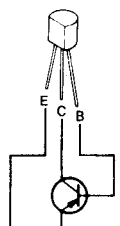
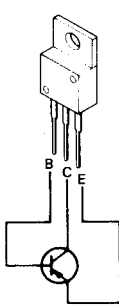
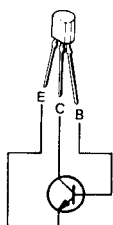
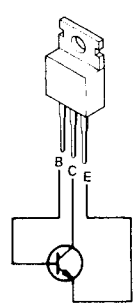
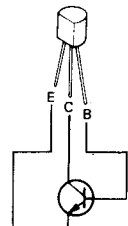
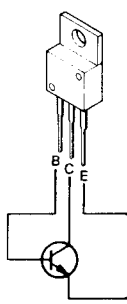
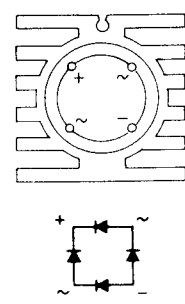
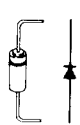
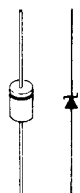
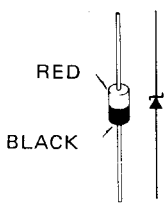
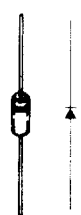
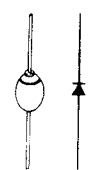
U301	TA7555BP	Q301 / Q302	2SC1327 (T)	Q311 / Q312	2SC1740LN (S)	Q321 / Q322	2SC945L (K)	Q331 / Q332	2SC1740LN (S)	Q342	2SA1015 (GR)	Q541 / Q542	2SC945L (K)	D301 / D302	IN60
U302	TA75557P	Q303 / Q304	2SC945L (K)	Q313 / Q314	2SC945L (K)	Q323 / Q324	2SC945L (K)	Q333 / Q334	2SC1740LN (S)	Q351	2SC945L (K)	Q543 / Q544	2SA826LN (S)	D303 / D304	IN60
U303	TA7555BP	Q305 / Q306	2SC945L (K)	Q315	2SC945L (K)	Q325 / Q326	2SC945L (K)	Q337	2SC945L (K)	Q551 / Q552	2SC1327 (T)	Q553 / Q554	2SA826LN (S)	D305 ~ D308	IS2473
		Q307 / Q308	2SC945L (K)	Q317 / Q318	2SD655 (E)	Q327 / Q328	2SC1740LN (S)	Q339	2SD655 (E)						
		Q309 / Q310	2SC1740LN (S)	Q319 / Q320	2SC945L (K)	Q329 / Q330	2SC1740LN (S)	Q341	2SC945L (K)						



- NOTES
1. Schematic diagram shown for left channel except for some of the components.
 2. All resistors are 1/4 watt, $\pm 5\%$, unless marked otherwise.
Resistor values are in ohms (k = 1,000 ohms).
 3. All capacitor values are in microfarads (p = picofarads).
 4. Δ 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.
 5. Voltage and level values are for reference only.
0dB = 0.775V
Indicated values are those existing when the meter indicates 0VU.
 6. : front panel indication
 7. : rear panel indication
 8. : + B power supply circuit.

X-10_{MkII}
Stereo Tape Deck

SEMICONDUCTOR ELECTRODES

AN6251 (TOP VIEW) 	HD7400P HD7402P (TOP VIEW) 	NJM2901N (TOP VIEW) 	TA75557P TA75558P (TOP VIEW) 	
NJM78M05  1: OUT 2: GND 3: IN	2SA933LN(S) 2SA1015G(R) 2SA1127(R) 	2SB507(E) 	2SC536(F) 	
2SC1061(C) 	2SC945L(K) 2SC1318(S) 2SC1327(T) 2SC1685(R) 2SC1740LN(S) 2SD655(E) 	2SD313(E) 	M4C-51 (BOTTOM VIEW) 	
1S2473HJ 1S2473VE 	EQA01-06S 	ERB12-02G1 RED BLACK 	1N60 	U05C 

X-10_{mkII}

TEAC[®]

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