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TEAC®



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## SERVICE MANUAL

# X-7R MKII/X-7MKII

Stereo Tape Deck

# 1 SPECIFICATIONS AND SERVICE DATA

## SPECIFICATIONS

**Track System** ½-track, 2-channel stereo

**Head System**

**X-7RMKII:** 6 heads: forward erase, forward record, reverse playback, forward playback, reverse record, reverse erase.

**X-7MKII:** 3 heads: erase, record, playback

**Reel Size** 7"

**Tape Speed** 19cm/s (7-½ ips) and 9.5cm/s (3-¾ ips)

**Inputs (level and impedance)**

**MIC:** Specified input level: -60dB (0.775mV)/10kohms  
Min. input level: -70dB (245µV)

**LINE IN:** Specified input level: -12dB (195mV)/50kohms  
Min. input level: -22dB (61.5mV)

**Outputs (level and impedance)**

**OUTPUT:** Specified output level: -5dB (436mV)/10kohms  
Max. output level: +1dB (0.869V)

**PHONES:** Specified output level: -24dB (48.9mV)/8ohms

**Playback Equalization**

19cm/s: 3,180µs + 50µs (NAB), 3,180µs + 35µs (EE)

9.5cm/s: 3,180µs + 90µs (NAB), 3,180µs + 50µs (EE)

**Motors**

**Capstan motor:** DC brush motor with FG servo  
**Reel motor:** 2 DC slotless motors

**Bias Frequency** 100kHz

**Operating Position** Vertical, horizontal, angled

**Power Requirements**

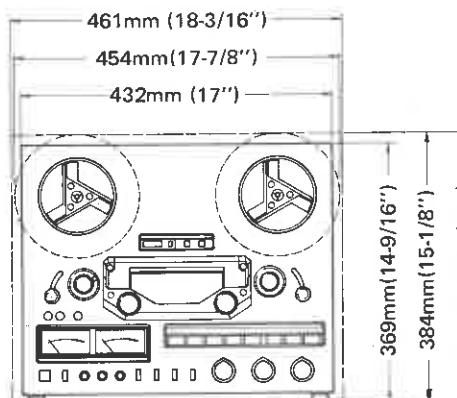
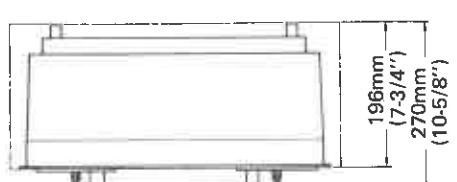
100/117/220/240V, AC 50/60Hz, 77W, 72W for X-7MKII  
(General export model)

220V AC 50Hz, 77W, 72W for X-7MKII (Europe model)

240V AC 50Hz, 77W, 72W for X-7MKII (U.K./Australia model)

117V AC 60Hz, 77W, 72W for X-7MKII (U.S.A./Canada model)

**Weight** 18kg (38-11/16 lbs.) net



Dashed 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

**FWD/RED Tape Speed Differential (X-7RMKII only)** 30Hz

**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 ~ 1.9kg (3.0 lbs ~ 4.2 lbs)

**Reel Torque**

**Play mode:**  
**Take-up** 260 ± 40g-cm (3.1 ~ 4.2oz-inch)

**Back tension** 180 ± 40g-cm (1.9 ~ 3.1oz-inch)

**Fast winding mode:**

**Take-up:** 1100g-cm (15.3oz-inch)  
**Back tension:** 50g-cm (0.7oz-inch)

**Brake Torque**

**Forward direction:** 800 ~ 1400g-cm (11 ~ 19oz-inch)

**Reverse direction:** 500g-cm (6.9oz-inch) or less

**Left/right deviation:** 200g-cm (2.8oz-inch) or less

**Fast Winding Time** 150 seconds or less for 550m (1800 feet)

**Pitch Control** Standard tape speed ±6% or more

**FWD/REV Change Time (X-7RMKII only)** 3.5 sec. ±0.5 sec.

**TIMER Activate Time** 4 sec. ±2 sec.

### ELECTRICAL

**Frequency Response** **Playback:** See Fig. 3-5 to 3-6

**Overall:** See Fig. 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)

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 125Hz

**Total Harmonic Distortion** 0.8% or less at 1kHz

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

⚠ 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.

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# 2 MECHANICAL ADJUSTMENTS AND CHECKS

**NOTE:** All the explanations are for the X-7RMKII. But unless specified they can also be applied to the X-7MKII except for those in relation to the REVERSE direction.

### 2.1 CONTROL PCB ASSY CHECK

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

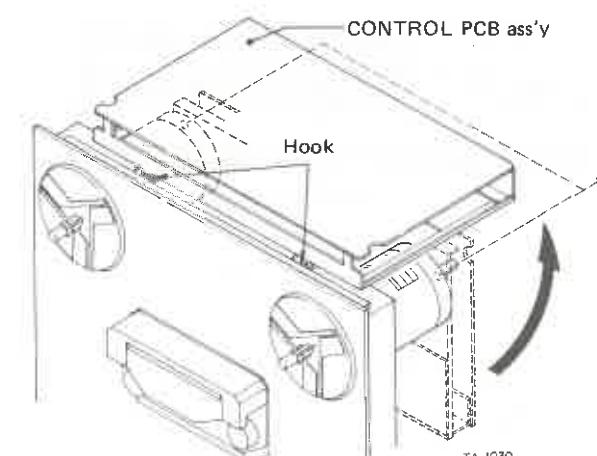


Fig. 2-1

### 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 2mm.
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.

Forward direction (B) (C)	800 to 1400g-cm (11 to 19oz-inch)
Reverse direction (A) (D)	500g-cm (6.9oz-inch) or less
Left/right deviation	200g-cm (2.8oz-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:  
g-cm x 0.0139 = oz-inch

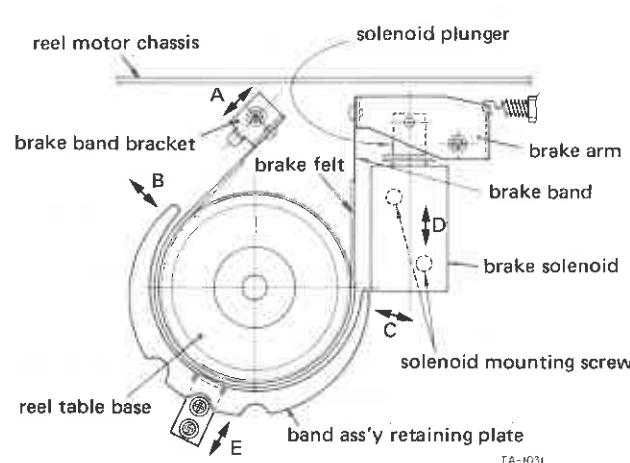
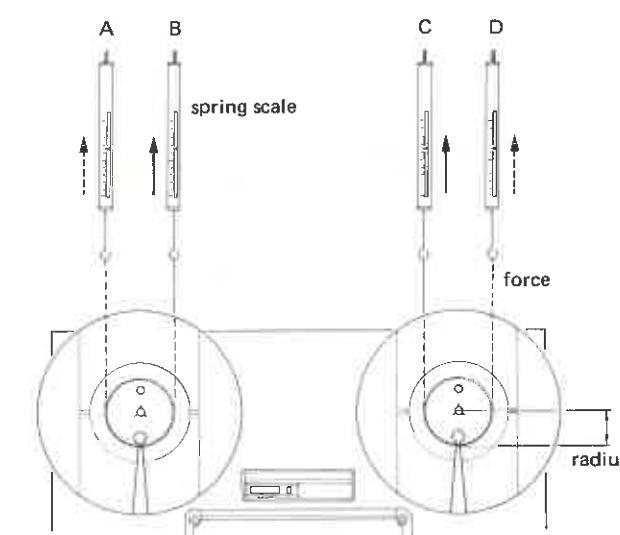


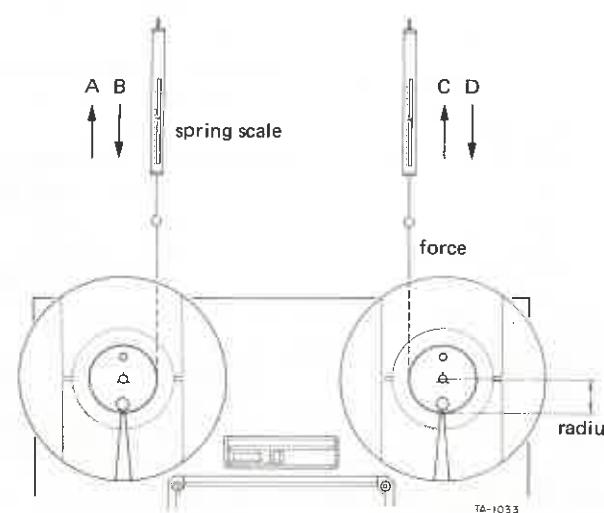
Fig. 2-2

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 1kg-cm or more, and that the back tension torque during these mode is good unless the left or right tension arm 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	Torque
Take-up: (B) in REV (D) in FWD	$260 \pm 40\text{g-cm}$ (3.1 ~ 4.2oz-inch)
Back tension: (A) in FWD (C) in REV	$180 \pm 40\text{g-cm}$ (1.9 ~ 3.1oz-inch)

## Fast winding mode

Mode	Torque
Take-up: (B) in REW, (D) in F.F.	1100g-cm (15.3oz-inch)
Back tension: (A) in F.F., (C) in REW	50g-cm (0.7oz-inch)

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

Fig. 2-4

## 2-5 PINCH ROLLER PRESSURE STROKE ADJUSTMENT

1. Set the deck in the forward or reverse 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 1.0mm.
3. Since the clearance is produced at one side (left or right), adjustment for this side only is permissible.

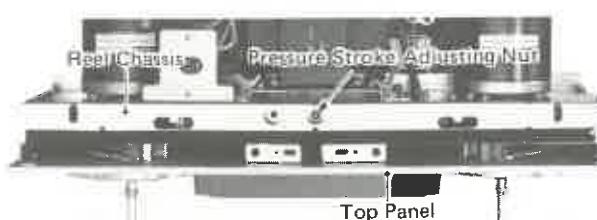
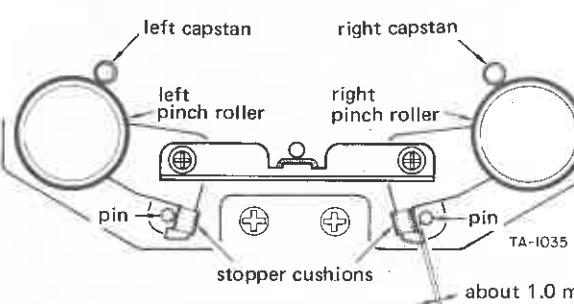


Fig. 2-5 Pinch roller pressure stroke adjustments



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

Fig. 2-6

## 2-6 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 either 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: 1.35kg to 1.9kg. (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. 2-4

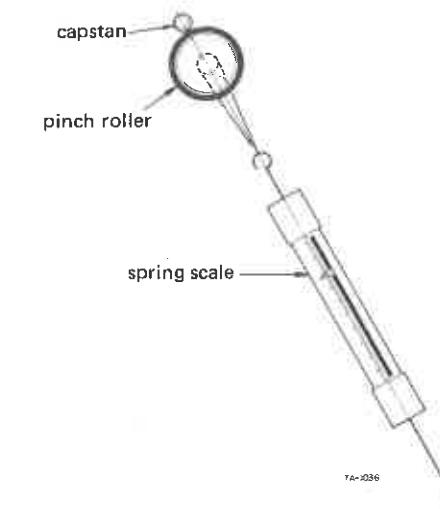


Fig. 2-7

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.

## 2-8 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.

## 2-9 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 15mm 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.

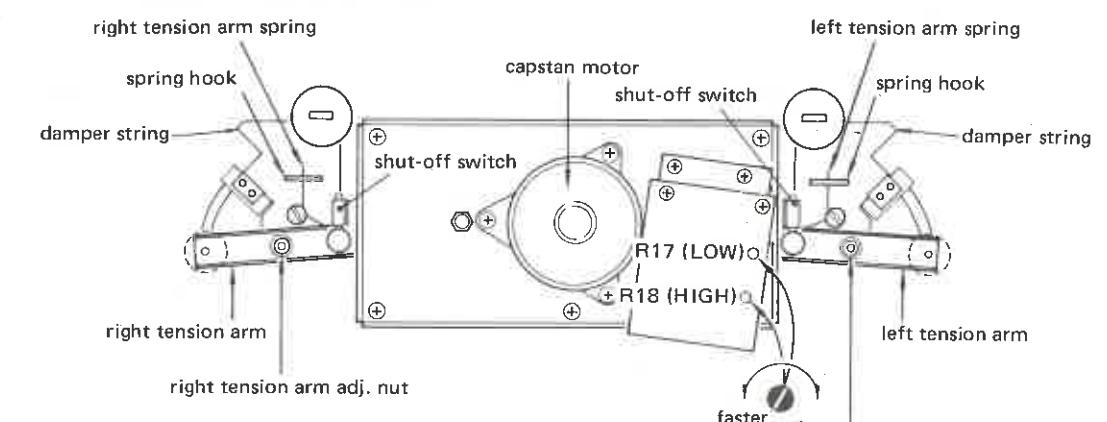


Fig. 2-8 Tension arm height, tension arm force, damper function, and tape speed

## 2-10 REEL TABLE HEIGHT ADJUSTMENT

1. Adjust the tension arm height beforehand. (See 2-7)
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.

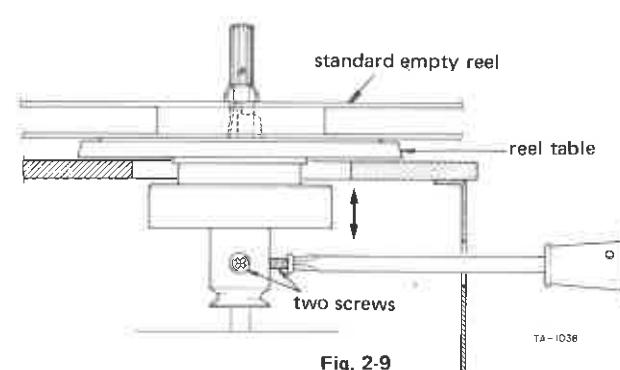


Fig. 2-9

## 2-11 REVERSE SOLENOID ADJUSTMENT (X-7RMKII ONLY)

- When the reverse solenoid releases, if the slide plate hits the stopper screw/s noisily, the solenoid stopper plate may be adjusted in the direction of the solenoid housing. See illustration.

Parts below are accessible from the rear of the amplifier chassis.

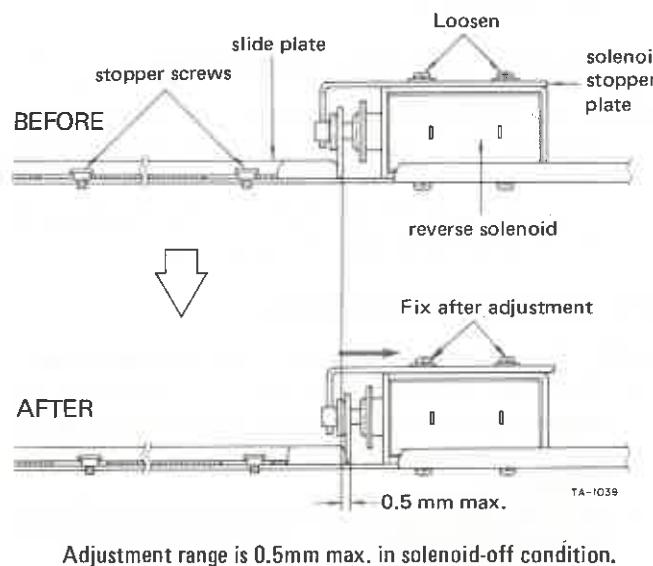


Fig. 2-10

## 2-12 ROTATING PART THRUST CLEARANCE CHECKS

### Reference values

Capstan shaft:	0.1mm to 0.25mm (magnefloat type)
Guide roller:	0.05mm to 0.3mm
Tension arm guide roller:	0.05mm to 0.3mm
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.

## 2-13 CAPSTAN MOTOR REPLACEMENT

- When the capstan motor is replaced, install it with its lead wires and washers as shown.
- 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.

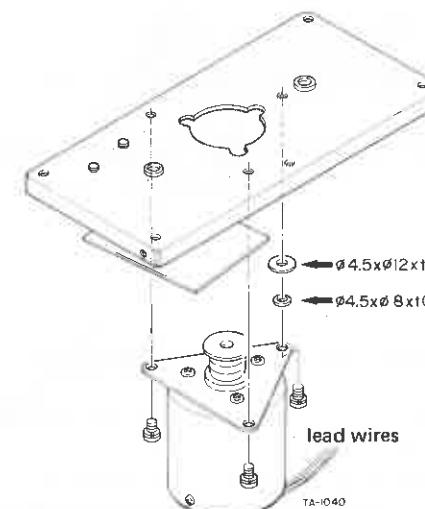


Fig. 2-11

## 2-14 TAPE SPEED ADJUSTMENT



Fig. 2-12

**NOTES:** 1. Conduct all the following in both forward and reverse play modes.

2. When ordering test tapes, allow for the longer delivery time that is required for them.

- Connect a frequency counter to either OUTPUT terminal.
- Load a TEAC YTT-2003 test tape. Set the SPEED switch-HIGH, and PITCH CONT knob-OFF.
- Play the tape. Adjust R18 (see Fig. 2-8) for a reading of 3,000 Hz  $\pm 5$ Hz.
- Check the following at the beginning and the end of the tape.

### Specifications:

Tape Speed deviation . . . . . 3,000Hz  $\pm 30$ Hz  
Tape speed drift . . . . . 15Hz  
FWD/REV tape speed differential . . . 30Hz (X-7RMKII only)

- Change the test tape to a TEAC YTT-2002, and SPEED switch setting to LOW.
- Repeat steps 3 through 4. Adjust R17 if necessary.
- Pull the PITCH CONT knob out. Set SPEED switch HIGH. Play a YTT-2003 tape.
- Check if the speed variation of at least 3,000Hz  $\pm 180$ Hz is obtained when the PITCH CONT knob is rotated fully in both directions.
- Change the test tape to YTT-2002, SPEED switch setting to LOW. Repeat step 8.

## 2-15 WOW AND FLUTTER CHECKS

**NOTES:** 1. All the following apply to both forward and reverse play modes.

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

### Playback

- Connect the test equipment to the deck as shown in Fig. 2-12.
- Load and play a TEAC YTT-2003 test tape for HIGH speed (19cm/s or 7-1/2 ips), or a TEAC YTT-2002 test tape for LOW speed (9.5cm/s or 3-3/4 ips).
- 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

- Load a TEAC YTT-8013 test tape (blank). Apply and record a 3,000Hz signal.
- 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

## 2-16 VOLTAGE CONVERSION (FOR GENERAL EXPORT 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

- First remove the two feet by removing the screws in each one.
- Unscrew the left and right sides of the cabinet.
- Locate the voltage selector to the right of the power transformer as seen from the rear of the deck.
- 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.
- Replace the cabinet and feed.



Fig. 2-13

## 2-17 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.

- Place the deck in the horizontal position.
- 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.
- For capstans, apply a few drops to the indicated position.
- 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.

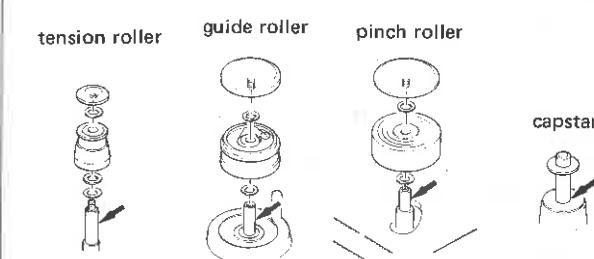


Fig. 2-14

## 2-18 HEAD AND TAPE PATH ALIGNMENTS

- NOTES:**
1. Head and tape path alignment are the same for the X-7RMKII and X-7MKII. The procedure for the X-7RMKII is given below.
  2. For detailed alignment principles, refer to the book "Audio Fundamental -TAPE DECK-, 8. Mechanical Adjustments" published by the TEAC CORPORATION.

### 2-18-1 HEAD ARRANGEMENT (for X-7RMKII)

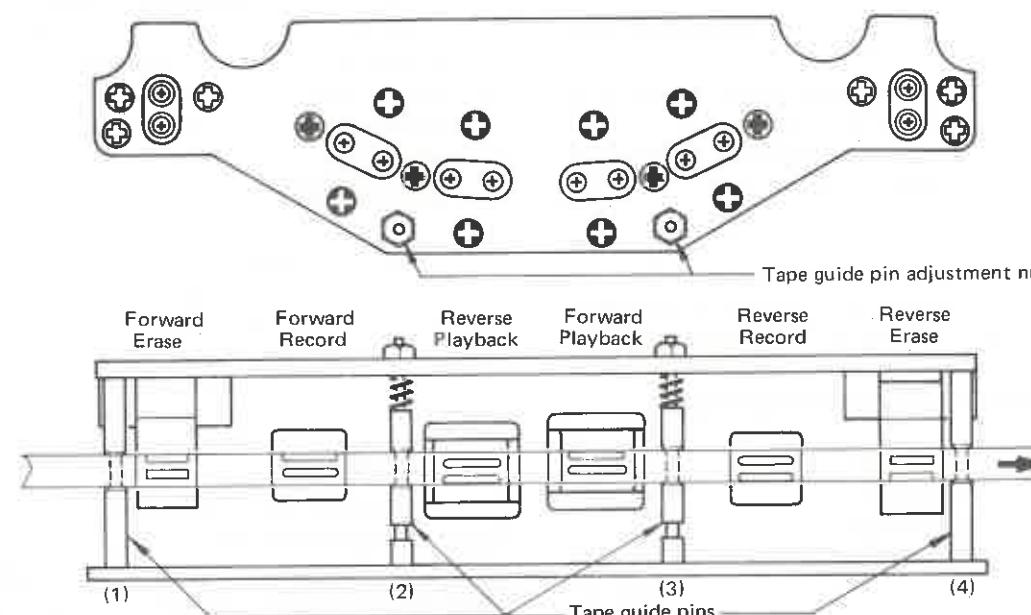


Fig. 2-15 Head arrangement

### 2-18-2 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 (lower) core of the head should be level with the upper (lower) edge of the tape.

#### TANGENCY

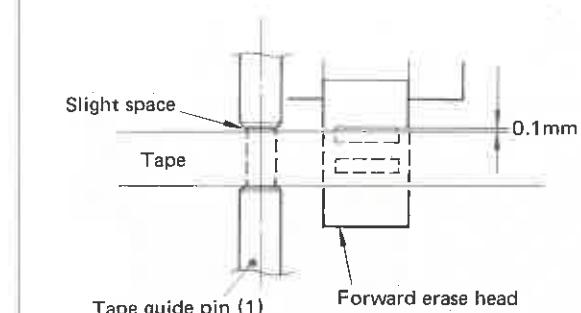
The dotted line should be perpendicular to the surface of the tape.

Fig. 2-16 Head regulation elements

#### Head adjustment screws

Erase		Record and playback
Fixed screws (not adjustable)		<input checked="" type="radio"/> Azimuth <input checked="" type="radio"/> Height and tilt <input checked="" type="radio"/> Tangency

Fig. shows the forward erase head.

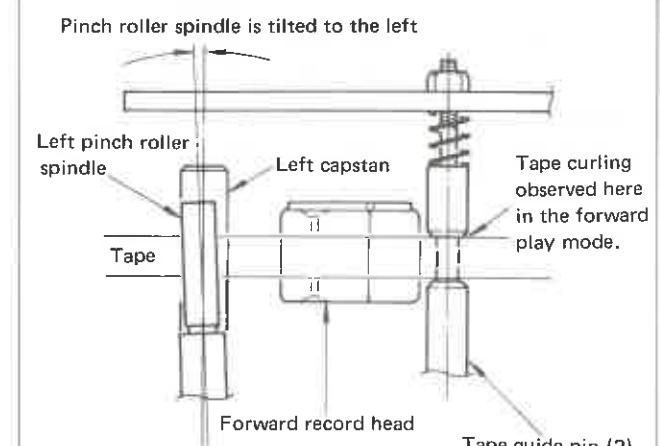


**NOTE:** In the case of the reverse erase head, the tape should be in contact with the lower surface of the tape guide pin (4).

Fig. 2-17 Erase head height

6. Check for any tape curling at either tape guide pin in the closed loop portion of the tape (i.e., between the capstans).
7. 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.



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).

Fig. 2-18 Example of improperly aligned pinch roller and capstan

8. Loosen the two screws holding the reinforcement plate, then adjust using the correction jig (TEAC P/N 5736000100) as shown in Fig. 2-19.

**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!

Correction jig (TEAC P/N 5736000100)

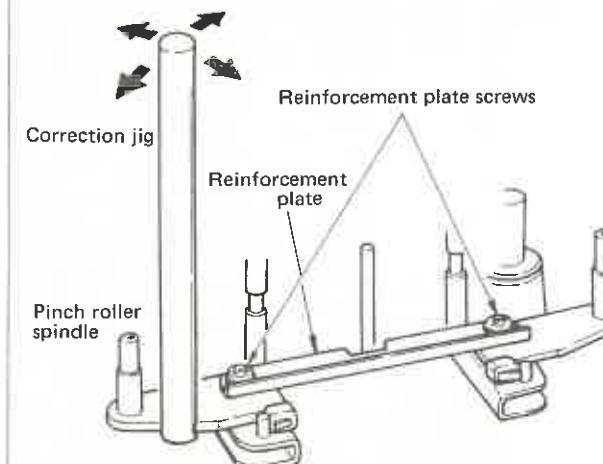
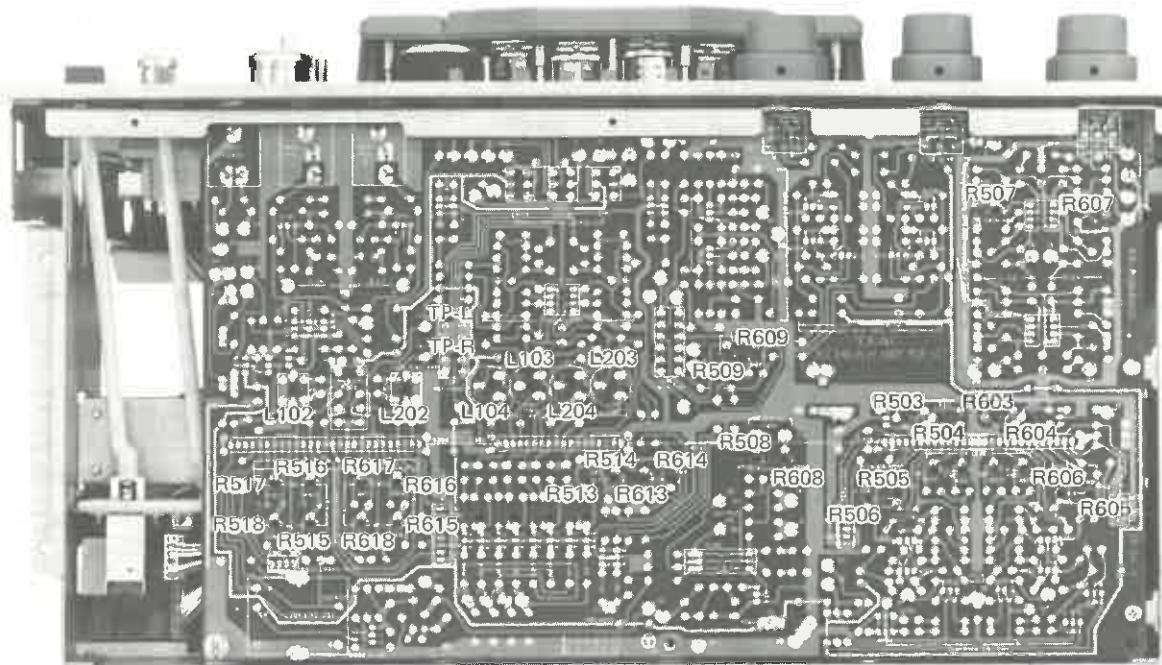


Fig. 2-19 Pinch roller/capstan alignment

9. If the tape curls at tape guide pin (3) in reverse play, correct in the same way (steps 7 and 8).
10. 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 (reverse) direction purpose head will show above (below) 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.
11. Finally, if necessary, make rough tangency adjustment of respective head with tape running.

### 3 ELECTRICAL ADJUSTMENTS AND CHECKS

#### ADJUSTMENT AND TEST POINT LOCATIONS



R501/R601	Playback level (FWD)	R514/R614	Record level (FWD)
R502/R602	Playback level (REV)	R513/R613	Record level (REV)
R503/R603	Playback EQ (HIGH FWD)	R516/R616	Record Bias EE (FWD)
R504/R604	Playback EQ (HIGH REV)	R515/R615	Record Bias EE (REV)
R505/R605	Playback EQ (LOW FWD)	R517/R617	Record Bias LHII (FWD)
R506/R606	Playback EQ (LOW REV)	R518/R618	Record Bias LHII (REV)
R507/R607	Output level	L102/L202	Bias trap (record)
R508/R608	VU meter (playback)	L103/L203	Record EQ (FWD)
R509/R609	VU meter (monitor)	L104/L204	Record EQ (REV)

#### NOTES

- The following data in both the charts and the illustrations are for the X-7RMKII. All the procedures, however, are applicable to the X-7MKII except for those relating to the REVERSE direction.
- Before performing adjustments and checks, clean and demagnetize the entire tape path.
- Check that the deck is properly set for the voltage in your locality.
- 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: R509/R609)
- 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.
- The AC voltmeter used in the procedures must have an input impedance of 1 M-ohms or more.
- 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. MONITOR output level	1-1 Fig. 3-1	MONITOR sw.— SOURCE OUTPUT cont.— CAL LINE cont.—MAX MIC cont.—MIN	400 Hz—22 dB (61.5 mV)	R507 (for L-ch)	—5 dB (436 mV) at L-ch	LINE min. input level (L)
	1-2 "	"	400 Hz—12 dB (195 mV)	LINE cont. (L/R)	"	LINE spec. input level (L)
	1-3 "	LINE spec. input level condition	"	R607 (for R-ch)	—5 dB at R-ch	LINE spec. input level (R)
2. VU meter	2-1 Fig. 3-1	LINE spec. input level condition	400 Hz—12 dB (195 mV)	R509/R609	0 VU on VU meter	
3. MIC input level	3-1 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
	3-2 "	"	400 Hz—60 dB (0.775 mV)	MIC cont. (L/R)	"	MIC spec. input level
	3-3 Fig. 3-1	LINE cont.— spec. position (Item 1-2) MIC cont.—MIN	"	—	—	IMPORTANT: Do not disturb these cont's during later checks.

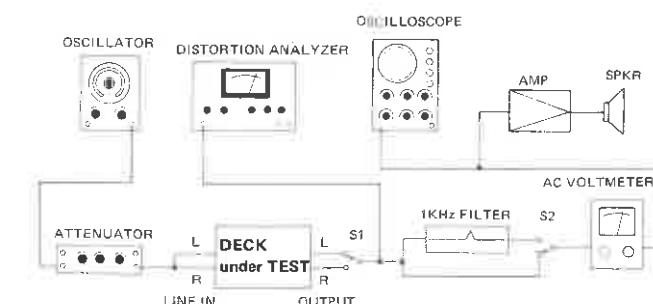


Fig. 3-1 Basic connection

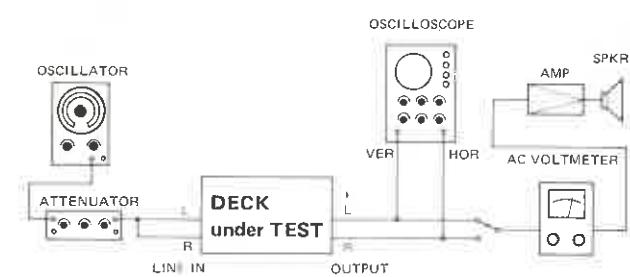


Fig. 3-2 Connection

## 3-2 PLAYBACK PERFORMANCE

ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
4. Playback head azimuth	4-1	Fig. 3-2	Do for both FWD & REV heads MONITOR sw.—TAPE SPEED sw.—HIGH TAPE SELEC.—LHII	YTT-1003 (16 kHz/—10 dB)	Azimuth adj. screw/s of head (Fig. 2-15)	Phase: within 45° on oscilloscope (Fig. 3-3)
5. Playback level	5-1	Fig. 3-1	FWD & REV OUTPUT cont.—CAL SPEED sw.—HIGH	YTT-1003 (400 Hz/0 dB)	R501/R601 (FWD) R502/R602 (REV)	—5 dB (436 mV)
	5-2	"	OUTPUT cont.—MAX	"	Check	+1 dB ±2 dB (690 mV ~ 1.09 V)
	5-3	"	OUTPUT cont.—CAL	"	—	—5 dB (436 mV) Spec. PB condition <b>IMPORTANT: Do not disturb OUTPUT cont. during later checks.</b>
6. VU meter	6-1	Fig. 3-1	FWD Spec. PB condition	YTT-1003 (400 Hz/0 dB)	R508/R608	0 VU on VU meter
7. Frequency response	7-1	Fig. 3-1	FWD & REV TAPE SELEC. LHII	YTT-1003	R503/R603 (FWD) R504/R604 (REV)	Fig. 3-5
	7-2	"	" SPEED-LOW	YTT-1002	R505/R605 (FWD) R506/R606 (REV)	Fig. 3-6
	7-3	"	FWD & REV TAPE SELEC. EE	YTT-1053	Check	Fig. 3-5
	7-4	"	" SPEED-LOW	YTT-1052	Check	Fig. 3-6
8. Phase shift	8-1	Fig. 3-2	FWD & REV	YTT-1003	Check	Phase: within 45° on oscilloscope (50 Hz ~ 18 kHz) (Fig. 3-3)
	8-2	"	" SPEED-LOW	YTT-1002	" (50 Hz ~ 10 kHz)	
9. Headphone output level	9-1	Fig. 3-4	Spec. PB condition	YTT-1003 (400 Hz/0 dB)	Check	—24 dB ±2 dB (38.8 mV ~ 61.5 mV) (at PHONES jack)
10. Signal to noise ratio	10-1	Fig. 3-1	FWD & REV LH and EE Spec. PB condition Use fully erased tape (Use bulk tape eraser)	YTT-8013 and YTT-8053	Check	LH, LHII 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.

TEAC test tape: For playback alignment  
YTT-1002: 9.5 cm/s or 3-½ ips, LHII  
YTT-1003: 19 cm/s or 7-½ ips, LHII  
YTT-1052: For 9.5 cm/s or 3-½ ips, EE  
YTT-1053: For 19 cm/s or 7-½ ips, EE  
For recording alignment (blank)  
YTT-8013: For LHII  
YTT-8053: For EE

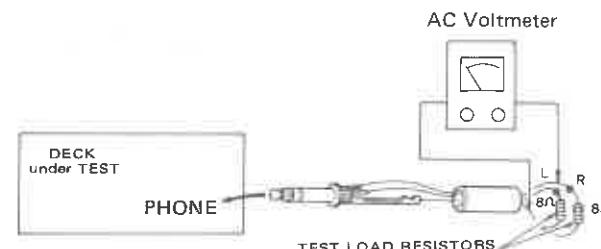
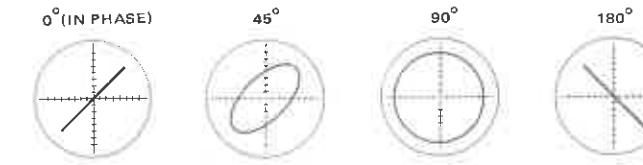


Fig. 3-3 Confirming phase relationship

Fig. 3-4 Connection

## 3-3 RECORDING PERFORMANCE

ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
11. Bias trap	11-1 Fig. 3-1	AC voltmeter between BIAS TRAP TP & GND	Rec-pause mode	—	L102/L202	Min. reading Bias freq.: 100 kHz ±5 kHz
	11-2 Fig. 3-1	Rec-pause mode MONITOR sw.—TAPE OUTPUT cont.—CAL	—	Check	Min. reading —45 dB or more (4.36 mV or less)	
	11-3	—	“	—	Check	VU: no deflection
12. Record head azimuth	12-1 Fig. 3-2	Do for both FWD & REV heads MONITOR sw.—TAPE	10 kHz/—32 dB (19.5 mV)	Azimuth adj. screw/s of head (Fig. 2-15)	Phase: within 45° on oscilloscope (Fig. 3-3)	
13. Record bias	13-1 Fig. 3-1	FWD & REV Test tape— SPEED YTT-8053 sw.—LOW TAPE SELEC- MONITOR TOR—EE	7 kHz/—22 dB (61.5 mV)	R516/R616 (FWD) R515/R615 (REV)	Over-bias value 3 dB ±1 dB (from peak)	Simultaneous monitoring First set adjustor fully CCN (↓), then adjust.
	13-2	—	Test tape— YTT-8013 TAPE SELEC- TOR—LHII	“	R517/R617 (FWD) R518/R618 (REV)	Over-bias value 4 dB ±1 dB
14. Record level	14-1 Fig. 3-1	Same as 13-2 SPEED sw.—HIGH	400 Hz/—12 dB (195 mV)	R514/R614 (FWD) R513/R613 (REV)	—5 dB (436 mV)	Spec. REC condition
15. Distortion	15-1 Fig. 3-1	Same as 13-1 and 13-2, but SPEED sw.—HIGH	1 kHz/—12 dB (195 mV)	Check	0.8% or less (W/LHII, EE)	
16. Signal to noise ratio	16-1 Fig. 3-1	FWD & REV MONITOR sw.— TAPE HIGH & LOW LHII; YTT-8013 EE: YTT-8053	1 kHz/—12 dB (195 mV) then No signal recording	Check	LHII HIGH: 48 dB LOW: 46 dB EE HIGH: 50 dB LOW: 50 dB	Ratio of spec. —5 dB to noise.
17. Erase efficiency	17-1 Fig. 3-1 switch on 1 kHz filter	FWD & REV TAPE SELEC.—EE MONITOR sw.—TAPE SPEED sw.—HIGH YTT-8053 (EE)	1 kHz/—2 dB (615 mV) (+10 dB) then erasing	Check	OUTPUT: —65 dB or more (436 µV or less) (70 dB min. ratio)	-Reference output level: +5 dB -The worst value should be within spec.
18. REC MUTE function	18-1 Fig. 3-1 switch on 1 kHz filter	FWD & REV Spec. REC condition rec-mute mode	1 kHz/—2 dB (615 mV) (+10 dB) then record muting	Check	OUTPUT: —60 dB or more (0.775 mV 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
19. Frequency response	19-1 Fig. 3-1	FWD & REV MONITOR sw. TAPE SELEC. EE Test tape YTT-8053	SPEED— LOW Required signal -32 dB (19.5 mV)	L103/L203 (FWD) L104/L204 (REV)	Fig. 3-8	Also it is possible to fine-adjust by the record bias adjustors (See item 13.) if this respective specified record bias setting ranges are kept.
19-2	"	" SPEED— HIGH	"	Check	Fig. 3-7	
19-3	"	TAPE SELEC. LOW LHII Test tape YTT-8013	SPEED— HIGH	"	Fig. 3-8	
19-4	"	" SPEED— HIGH	"	"	Fig. 3-7	
20. Phase shift	20-1 Fig. 3-2	FWD & REV 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)	
21. LHI position check	21-1 Fig. 3-1	FWD & REV 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	
22. Adjacent track crosstalk	22-1 Fig. 3-1	FWD record. Spec. REC condition SPEED sw.— HIGH TAPE SELECTOR sw.—LHII	125 Hz/-12 dB (195 mV)	—	For FWD record.	
22-2	"	REV playback the portion recorded above	—	Check	At both L- and R-ch 125 Hz: -45 dB or more (4.36 mV or less) (40 dB min. ratio)	
22-3	"	Interchange R & L reels then do FWD playback	—	—	"	
22-4	Repeat 22-1 through 22-3, but interchange FWD and REV				For REV record.	
23. Channel separation	23-1 Fig. 3-1 switch on 1 kHz filter	Same as 22-1	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)	For WED record.
23-2	"	"	L: No signal record. R: 1 kHz/-12 dB	"	L, "	
23-3	Repeat 23-1 and 23-2 with REV recording.				For REV record.	

## 3-4 FREQUENCY RESPONSE

## 3-4-1 PLAYBACK

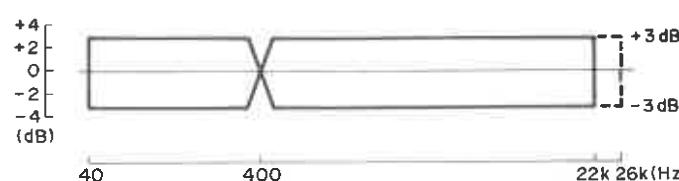


Fig. 3-5 Playback frequency response (19 cm/s)

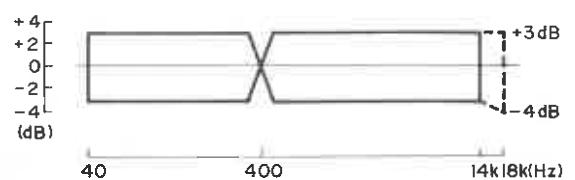


Fig. 3-6 Playback frequency response (9.5 cm/s)

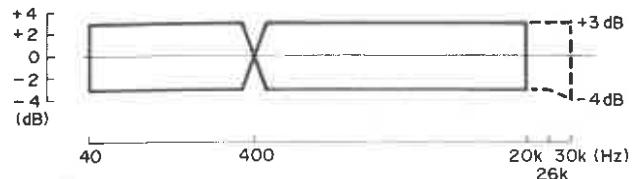


Fig. 3-7 Overall frequency response (19 cm/s)

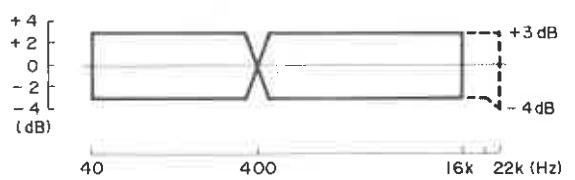
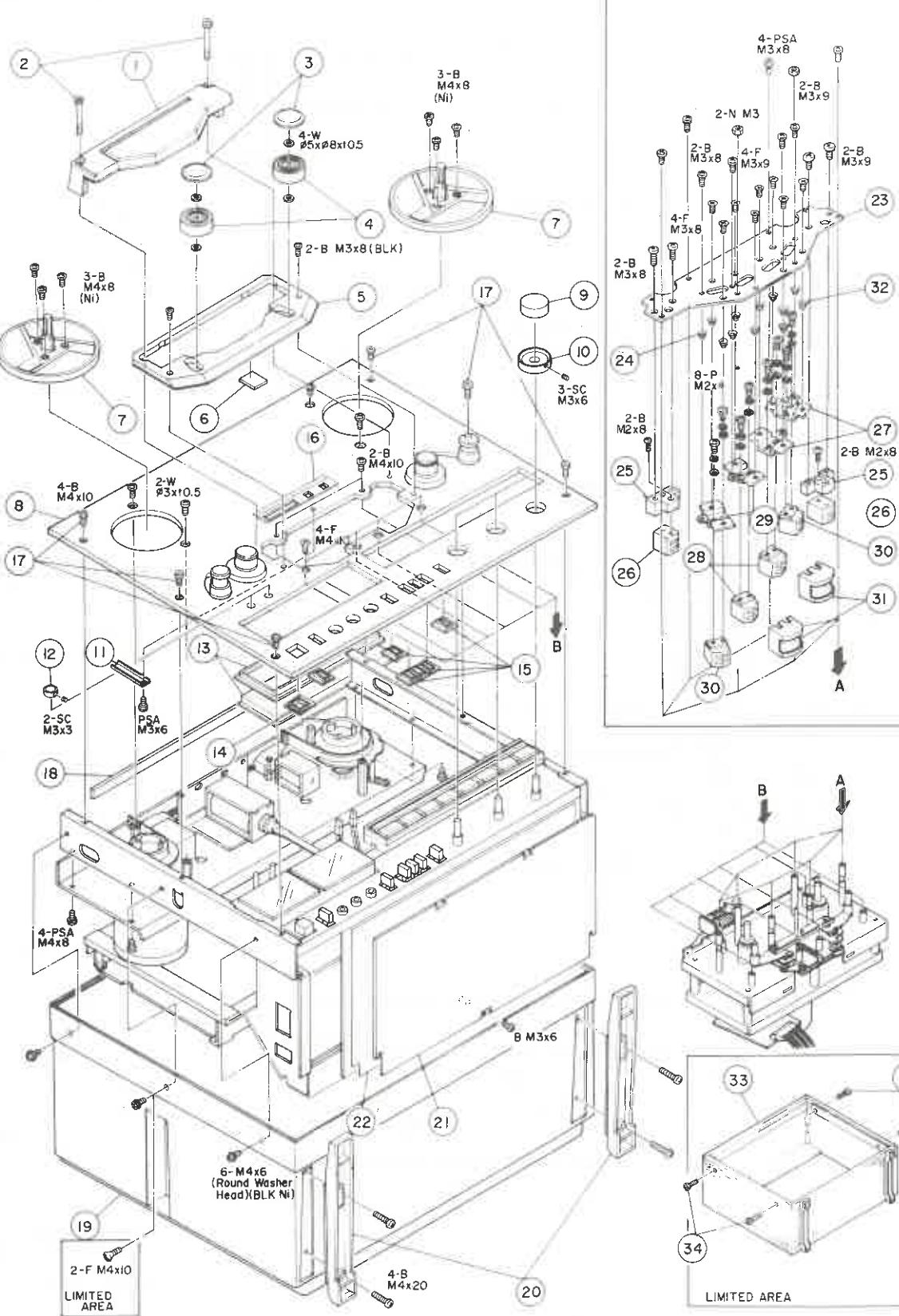


Fig. 3-8 Overall frequency response (9.5 cm/s)

## 4 EXPLODED VIEWS AND PARTS LIST

EXPLODED VIEW-1 (X-7RMKII)



Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1 - 1	5800268160	Head Housing	
1 - 2	5581065000	Screw, Cap; A	X-10R
1 - 3	5545014000	Cap, Pinch Roller	X-10R
1 - 4	5534691101	Pinch Roller	X-10R
1 - 5	5532061000	Cover, Head Base Plate	X-10R
1 - 6	*5800002700	Cushion, Head Base Plate	X-10R
1 - 7	5504744000	Reel Table Assy	X-10R
1 - 8	*5800268200	Top Panel	X-10R
1 - 9	5534704000	Knob, VR; B	X-10R
1 - 10	5533188000	Knob, VR; A	X-10R
1 - 11	*5555698000	Plate, Escutcheon Pressure	X-10R
1 - 12	5534722000	Knob, VR; D	X-7R
1 - 13	*5504748000	Cover Assy, VU Meter	X-10R
1 - 14	*5534707000	Escutcheon, Power Switch	X-10R
1 - 15	*5534706001	Escutcheon, Bottom	X-10R
1 - 16	*5533186100	Escutcheon, Counter; R	X-10R
1 - 17	5581067000	Screw, Cap; B	X-7R
1 - 18	*5555887001	Cushion; Case (All except L)	X-10R
1 - 19	*5800055001	Case; S	X-10R
1 - 20	5533190000	Foot	X-10R
1 - 21	*5553306000	Plate, Ampl. Shield	X-7
1 - 22	*5553308000	Paper, Ampl. Insulating	X-10R
1 - 23	*5553289100	Plate, Head Base	X-10R
1 - 24	*5520182000	Spring; D	A-5300
1 - 25	*5800285300	Spacer, Erase Head	X-1000R
1 - 26	5378300800	Head, Erase	X-10R
1 - 27	*5555673000	Bracket, Head; R	X-20R "EE"
1 - 28	5378300700	Head, Playback; 4T2ch	X-10R
1 - 29	*5555672000	Bracket, Head; L	X-20R "EE"
1 - 30	5378300600	Head, Record; 4T2ch	
1 - 31	*5554949000	Head Shield, A	A-6600
1 - 32	*5022050000	Spring, B	X-7R
1 - 33	*5502278000	Case Assy, Wooden (L)	
1 - 34	*5504499000	Screw Assy, Case (L)	A-480

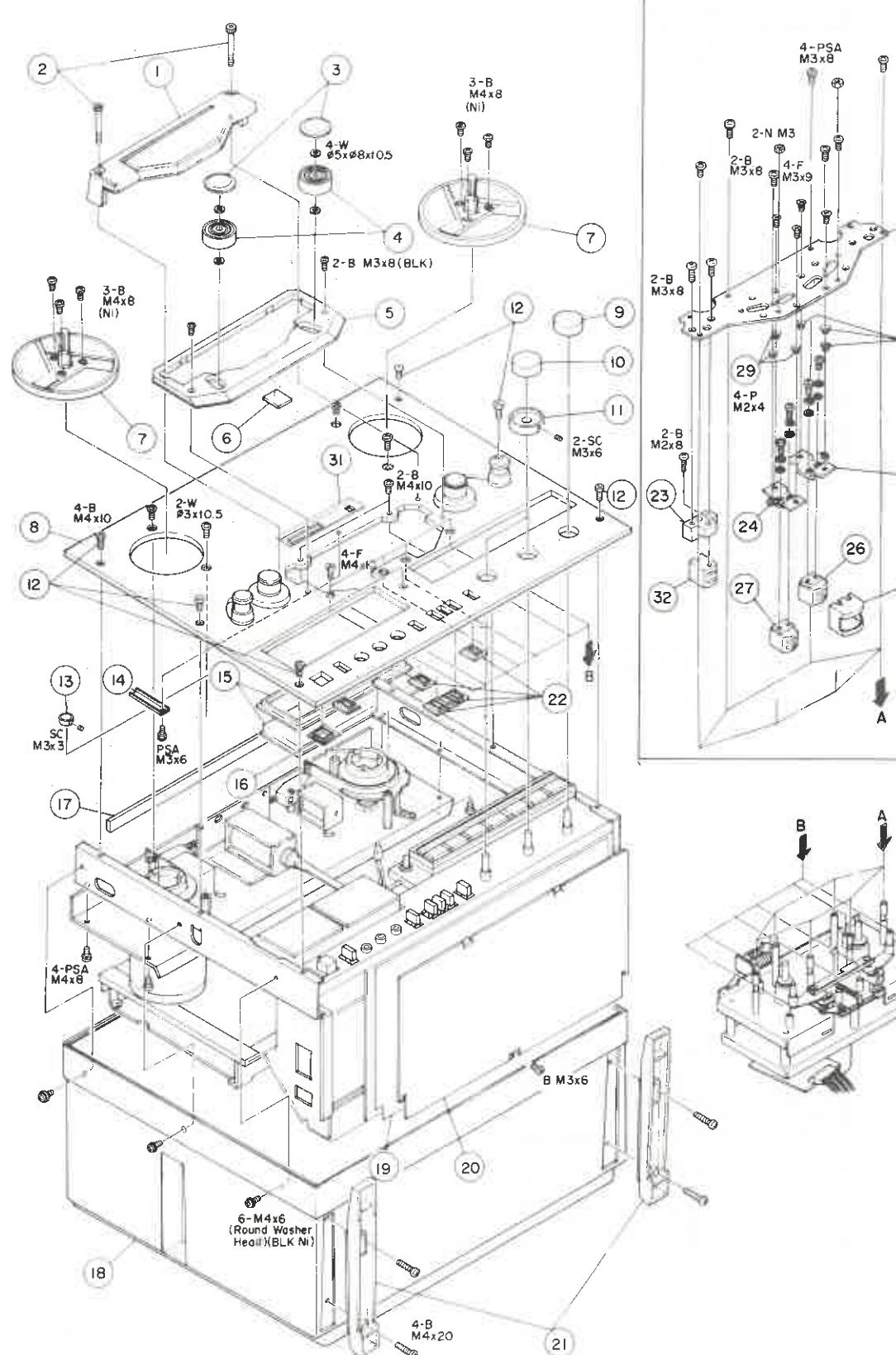
## INCLUDED ACCESSORIES

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	5350008500	Cord, Input-Output Connection	
	5085008300	Empty Reel, 7inch	
	5062962000	Splicing Tape	
	5101337100	Open Reel Supplement [U]	
	5101708000	Open Reel Supplement [All except U]	
	5101671000	X - 7RMKII Owners Manual [U]	
	5101672000	X - 7RMKII Owners Manual [All except U]	
	5101668000	X - 7MkII Owners Manual [U]	
	5101669000	X - 7MkII Owners Manual [All except U]	

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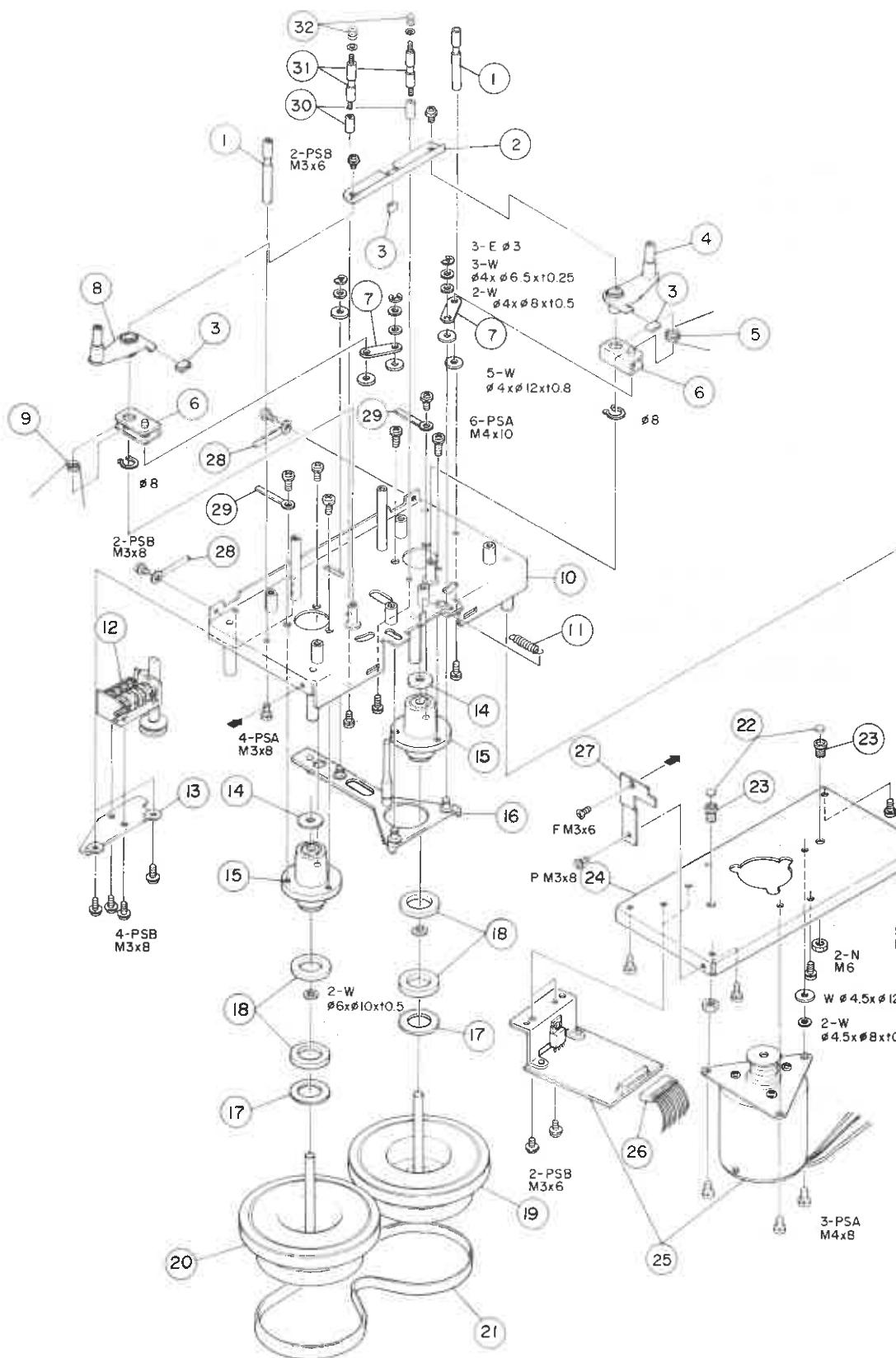
## EXPLODED VIEW-2 (X-7 MKII)



Parts marked with \* require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
2 - 1	5800285200	Head Housing	
2 - 2	5581065000	Screw, Cap; A	X-10R
2 - 3	5545014000	Cap, Pinch Roller	X-10R
2 - 4	5534691100	Pinch Roller	X-10R
2 - 5	5532061000	Cover, Head Base Plate	X-10R
2 - 6	*5800002700	Cushion, Head Base Plate	X-10R
2 - 7	5504744000	Reel Table Assy	X-10R
2 - 8	*5800285100	Panel Assy, Top	X-7R
2 - 9	5533230000	Knob, VR; E	X-10R
2 - 10	5534704000	Knob, VR; B	X-10R
2 - 11	5533188000	Knob, VR; A	X-10R
2 - 12	5581067000	Screw, Cap; B	X-10R
2 - 13	5534705000	Knob, VR; C	X-10R
2 - 14	*5555698000	Plate, Escutcheon Pressure	X-10R
2 - 15	*5504748000	Cover Assy, VU Meter	X-10R
2 - 16	*5534707000	Escutcheon, Power Switch	X-10R
2 - 17	*5555887001	Cushion, Case	X-10R
2 - 18	*5800055001	Case Assy; S	X-7R
2 - 19	*5553308001	Paper, Ampl. Insulating	X-10R
2 - 20	*5553306000	Plate, Ampl. Shield	X-7
2 - 21	5533190000	Foot	X-10R
2 - 22	*5534706001	Escutcheon, Bottom	X-10R
2 - 23	*5800285300	Spacer, Erase Head	X-1000R
2 - 24	*5555672000	Bracket, Head Base; L	X-10R
2 - 25	*5555673000	Bracket, Head Base; R	X-10R
2 - 26	5569203100	Head, Playback; 4T2ch	X-1000R
2 - 27	5569202000	Head, Record; 4T2ch	A-6600
2 - 28	*5554949000	Head Shield, B	A-5300
2 - 29	*5520182000	Spring; D	X-10R
2 - 30	*5553289100	Plate, Head Base	X-10R
2 - 31	*5534721001	Escutcheon, Counter	X-10
2 - 32	5378300800	Head, Erase	X-1000R

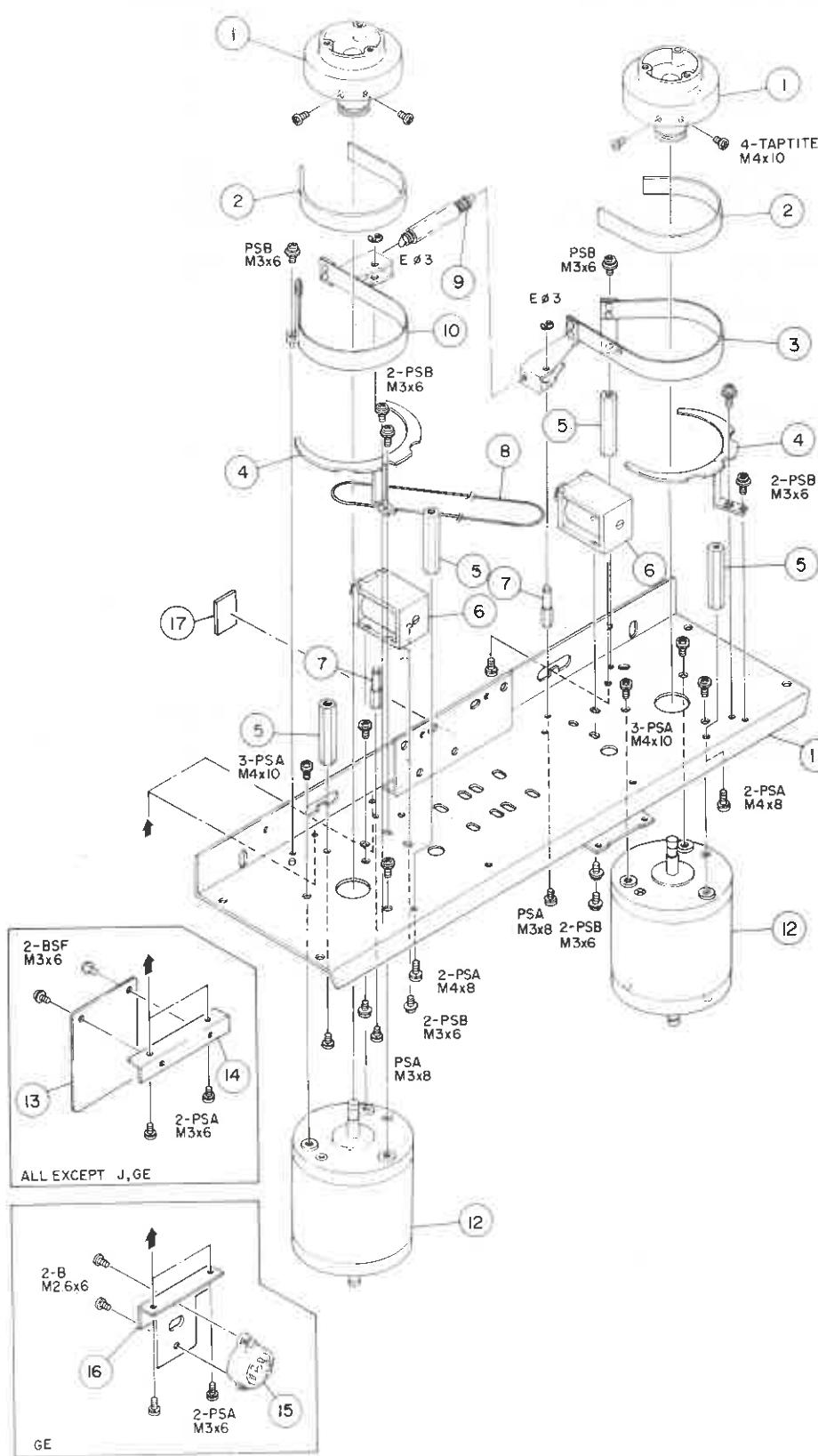
## EXPLODED VIEW-3



Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
3 - 1	*5545023000	Pin, Tape Guide	X-10R
3 - 2	*5555666000	Plate, Reinforcement	X-10R
3 - 3	*5534694000	Cushion, Stopper	X-10R
3 - 4	*5504729000	Arm Assy, Pinch Roller; R	X-10R
3 - 5	*5524216000	Spring, Pinch Roller; R	X-10R
3 - 6	*5504731000	Arm Assy, Press	X-10R
3 - 7	*5555667000	Plate, Joint	X-10R
3 - 8	*5504730000	Arm Assy, Pinch Roller; L	X-10R
3 - 9	*5524217000	Spring, Pinch Roller; L	X-10R
3 - 10	*5503196000	Base Assy, Capstan	X-10R
3 - 11	*5524219000	Spring, Slide Plate	X-10R
3 - 12	5504724000	Counter Assy; A [X-7RMkII]	X-10R
3 - 13	5504725000	Counter Assy; B [X-7MkII]	X-10
3 - 14	*5555665000	Bracket, Counter	X-10R
	*5534695000	Washer, Oil Retaining	X-10R
3 - 15	5504726100	Housing Assy, Capstan Flywheel	X-10R
3 - 16	*5504733001	Plate Assy, Slide	X-10R
3 - 17	*5555704000	Tape, Adhesive	X-10R
3 - 18	*5534715000	Ring, Magnet; Thrust	X-10R
3 - 19	5504727000	Flywheel Assy, Capstan; R	X-10R
3 - 20	5504728000	Flywheel Assy, Capstan; L	X-10R
3 - 21	5534692000	Belt, Capstan Drive; 4T	X-10R
3 - 22	*5555703000	Bearing	X-10R
3 - 23	*5544003000	Screw, Bearing	A-7300
3 - 24	*5553290001	Bracket, Motor Mounting	X-10R
3 - 25	7105018000	DC Motor Assy, Capstan	X-7R
3 - 26	*5122172000	Connector Socket, 10P	X-10R
3 - 27	*5555914100	Plate, Capstan Chassis	
3 - 28	*5786713000	Clamper, Cord; $\phi 3$	
3 - 29	*5786714000	Clamper, Cord; $\phi 4$	
3 - 30	*5800285500	Support, Guide	X-1000R
3 - 31	*5800285400	Tape Guide	X-1000R
3 - 32	*5800285600	Guide Spring	X-1000R

## EXPLODED VIEW 4



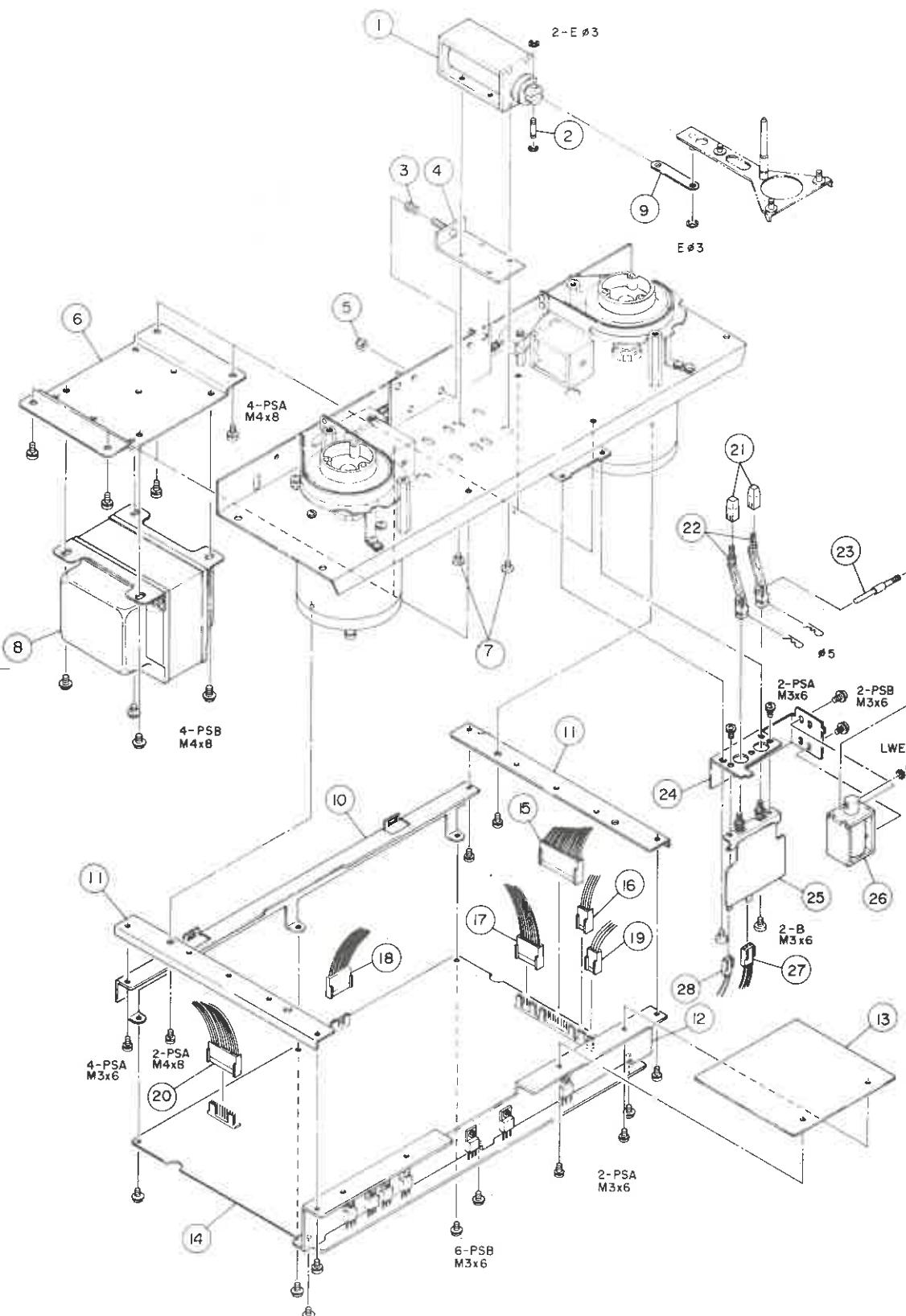
Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
4 - 1	*5533189000	Base Assy, Reel Table	X-10R
4 - 2	5555274000	Shoe, Brake	A-3300SX
4 - 3	5504736000	Band Assy, Brake; R	X-10R
4 - 4	*5555685000	Plate, Band Assy Retaining	X-10R
4 - 5	*5544916000	Stay, Top Panel	A-6100Mk-II
4 - 6	5163044000	Solenoid, Brake	
4 - 7	*5545033000	Shaft, Brake Band	X-10R
4 - 8	*5027759000	Belt, Counter	A-7030
4 - 9	*5524296000	Spring, Brake; 1	X-7R
4 - 10	5504735000	Band Assy, Brake; L	X-10R
4 - 11	*5503194002	Chassis, Reel Motor	X-10R
4 - 12	7105019001	DC Motor, Reel	X-7
4 - 13	*5168997000	PCB Ass'y, FUSE [U, C: X-7RMkII, U: X-7MkII]	
	*5158105000	PCB Ass'y, FUSE [E, UK, A: X-7RMkII]	
4 - 14	*5555789000	Bracket, FUSE PCB Ass'y [U, C, E, UK, A]	X-10
4 - 15	5131007000	Voltage Selector [GE, L: X-7RMkII]	X-10
4 - 16	*5555790000	Bracket, Voltage Selector [GE, L]	X-10
4 - 17	*5555570000	Cushion	X-10R

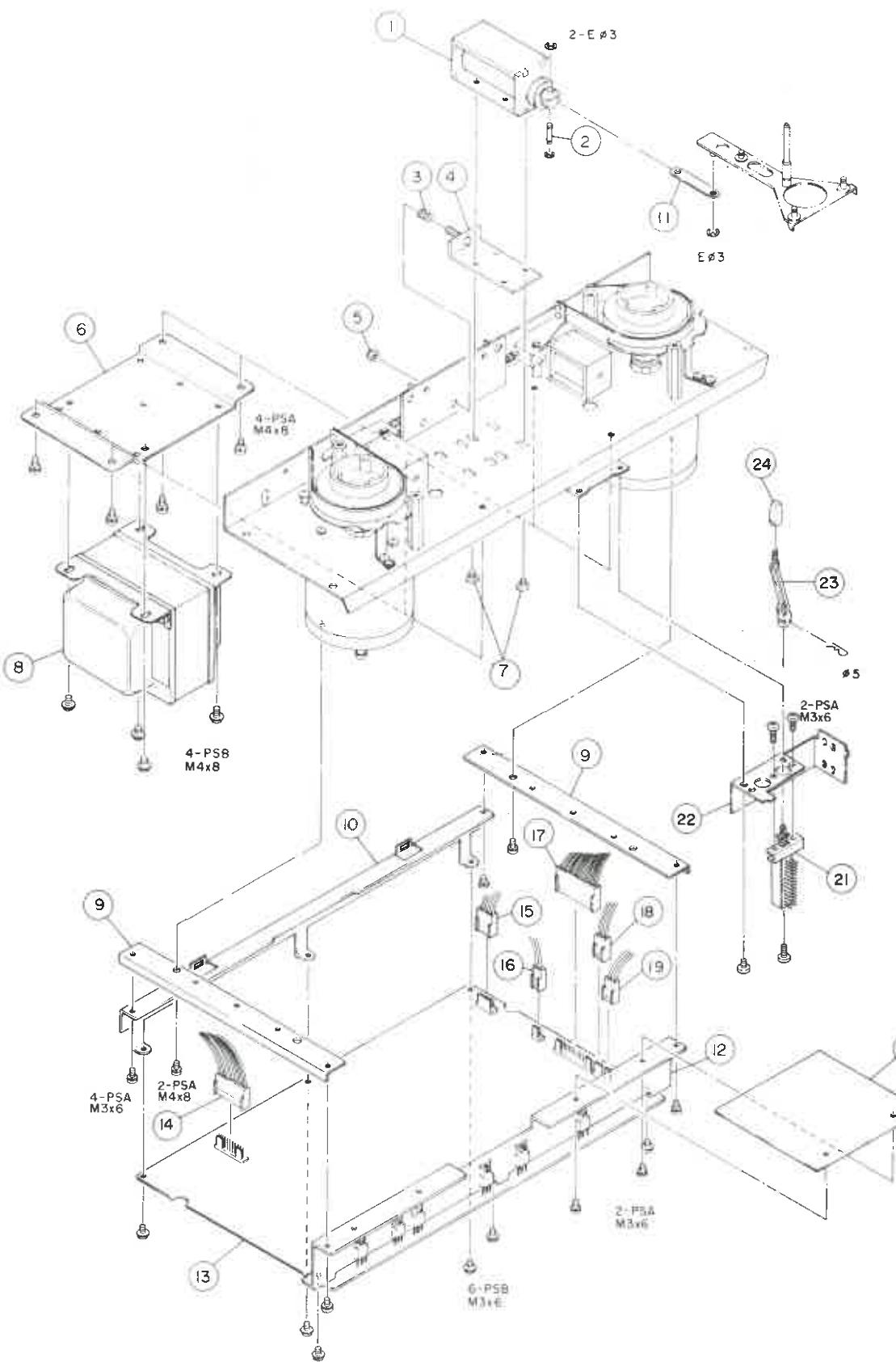
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## EXPLODED VIEW-5 (X-7RMKII)



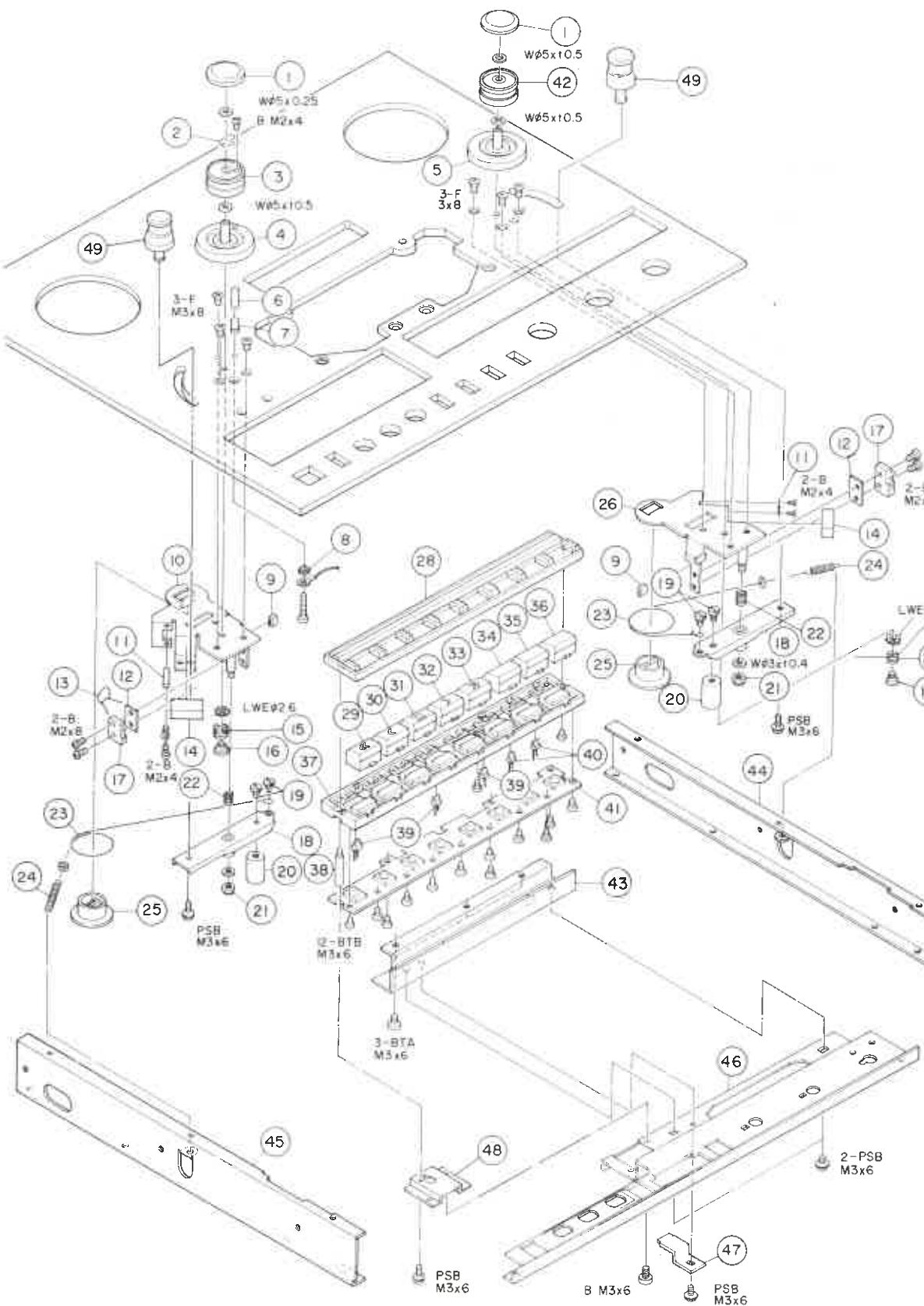
## EXPLODED VIEW-6 (X-7MKII)



Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
6 - 1	5163041001	Solenoid, Pinch Roller	
6 - 2	*5545022000	Pin, Solenoid	X-10R
6 - 3	*5524218000	Spring, Pinch Roller Pressure	X-10R
6 - 4	*5504732000	Plate Assy, Solenoid	X-10R
6 - 5	*5581066000	Nut, Nylon; M4	
6 - 6	*5555681100	Bracket, Power Transformer	X-10R
6 - 7	*5800022600	Screw, Shoulder; G	X-10R
6 - 8	△ 5152225000	Power Transformer	X-10R
6 - 9	*5553296001	Frame, Joint	X-10R
6 - 10	*5552390000	Frame, PCB	X-10R
6 - 11	*5555676000	Plate, B	X-10R
6 - 12	*5552390000	Frame, H.S	X-10R
6 - 13	*5200004803	PCB Assy, CONTROL	X-7
6 - 14	*5127171000	Connector Socket, 9P	
6 - 15	*5122167000	Connector Socket, 5P	
6 - 16	*5122221000	Connector Socket, 2P (BLK)	X-10R
6 - 17	*5122174000	Connector Socket, 12P	
6 - 18	*5122222000	Connector Socket, 3P (BLK)	
6 - 19	*5122165000	Connector Socket, 3P	
6 - 20	*5555888000	Heat Sink	
6 - 21	5134115000	Switch, Push; DPDT	
6 - 22	*5555671100	Bracket, Timer Switch	X-10R
6 - 23	*5534685000	Rod, Switch	X-10R
6 - 24	5534714000	Button; B	X-10R

## EXPLODED VIEW-7 (X-7RMKII)



Parts marked with \*require longer delivery time.

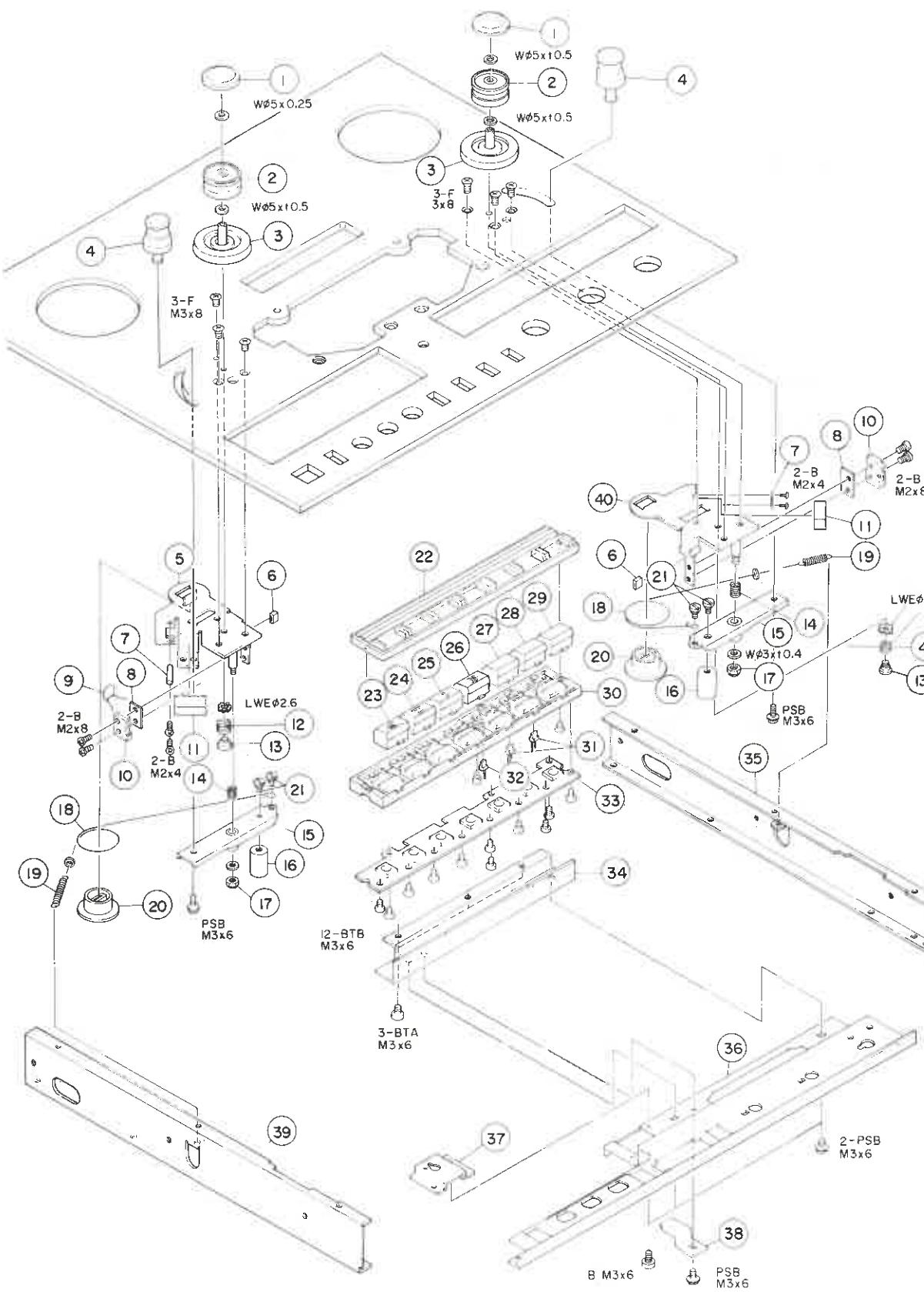
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
7 - 1	5545037000	Cap, Roller	X-10R
7 - 2	*5524225000	Spring, GND	X-10R
7 - 3	5504740002	Roller Assy, A	X-10R
7 - 4	*5504739000	Base Assy, Roller; A	X-10R
7 - 5	*5504742000	Base Assy, Roller; B	X-10R
7 - 6	5545042000	Post, Sensing	X-10R
7 - 7	*5534716000	Post, Insulating	X-10R
7 - 8	*5534368100	Washer, Insulating	A-6600
7 - 9	5027699000	Collar, Rubber	
7 - 10	*5504719102	Base Assy, Shut Off; L	X-10R
7 - 11	*5524215000	Wire, String Stopper	X-10R
7 - 12	*5550025100	Plate, Insulating	A-450
7 - 13	*5054230000	Capacitor, Ceramic 0.047μF 50V ±20%	
7 - 14	*5534686001	Cushion	X-10R
7 - 15	*5524229001	Spring, Tension Arm; L	X-10R
7 - 16	*5581064000	Screw, Shoulder; E	
7 - 17	5301455500	Switch, Micro	
7 - 18	5800305800	Arm Assy, Tension	X-20R "EE"
7 - 19	*5800002600	Screw, Shoulder; F	X-10R
7 - 20	*5545010000	Weight, Counter	X-10R
7 - 21	*5581045000	Nut, Nylon; M3	AL-700
7 - 22	*5524069000	Spring, Roller Arm	X-10R
7 - 23	*5504721000	String Assy, Damper	A-601R
7 - 24	*5524183000	Spring, Motor Switch Lever	X-10R
7 - 25	*5534684001	Drum, Damper	
7 - 26	*5504720101	Base Assy, Shut Off; R	X-10R
7 - 27	*5524230001	Spring, Tension Arm; R	X-10R
7 - 28	*5533192000	Escutcheon, Button; Operation	X-10R
7 - 29	5533196000	Button, D	X-10R
7 - 30	*5533194000	Button; B	X-10R
7 - 31	5533197000	Button, E	X-10R
7 - 32	5533193000	Button, A	X-10R
7 - 33	5533195000	Button, C	X-10R
7 - 34	5533198000	Button, F	X-10R
7 - 35	5533219000	Button, K	X-10R
7 - 36	5533199000	Button, G	X-10R
7 - 37	*5503204001	Base Assy, Button	X-10R
7 - 38	*5545166001	Stay, Button Escutcheon	X-7R
7 - 39	*5143139000	LED, SLB-26GG (GRN)	
7 - 40	*5143140000	LED, SLB-26UR (RED)	
7 - 41	*5168929000	PCB Assy, OPERATION	X-10R
7 - 42	*5504743002	Roller Assy, B	
7 - 43	*5600003600	Bracket Assy, OPERATION PCB	X-7R
7 - 44	*5552404001	Angle, Side; R	X-7R
7 - 45	*5552405001	Angle, Side; L	X-7R
7 - 46	*5552403102	Chassis, Ampl.; B	X-7
7 - 47	*5555720000	Bracket, Stopper	X-7R
7 - 48	*5555719100	Bracket, Variable Resistor	X-7
7 - 49	*5800349000	Roller Assy, Tension; (A)	X-20R "EE"

[U]: U.S.A.  
[A]: AUSTRALIA  
[L]: LIMITED AREA

[C]: CANADA  
[E]: EUROPE

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

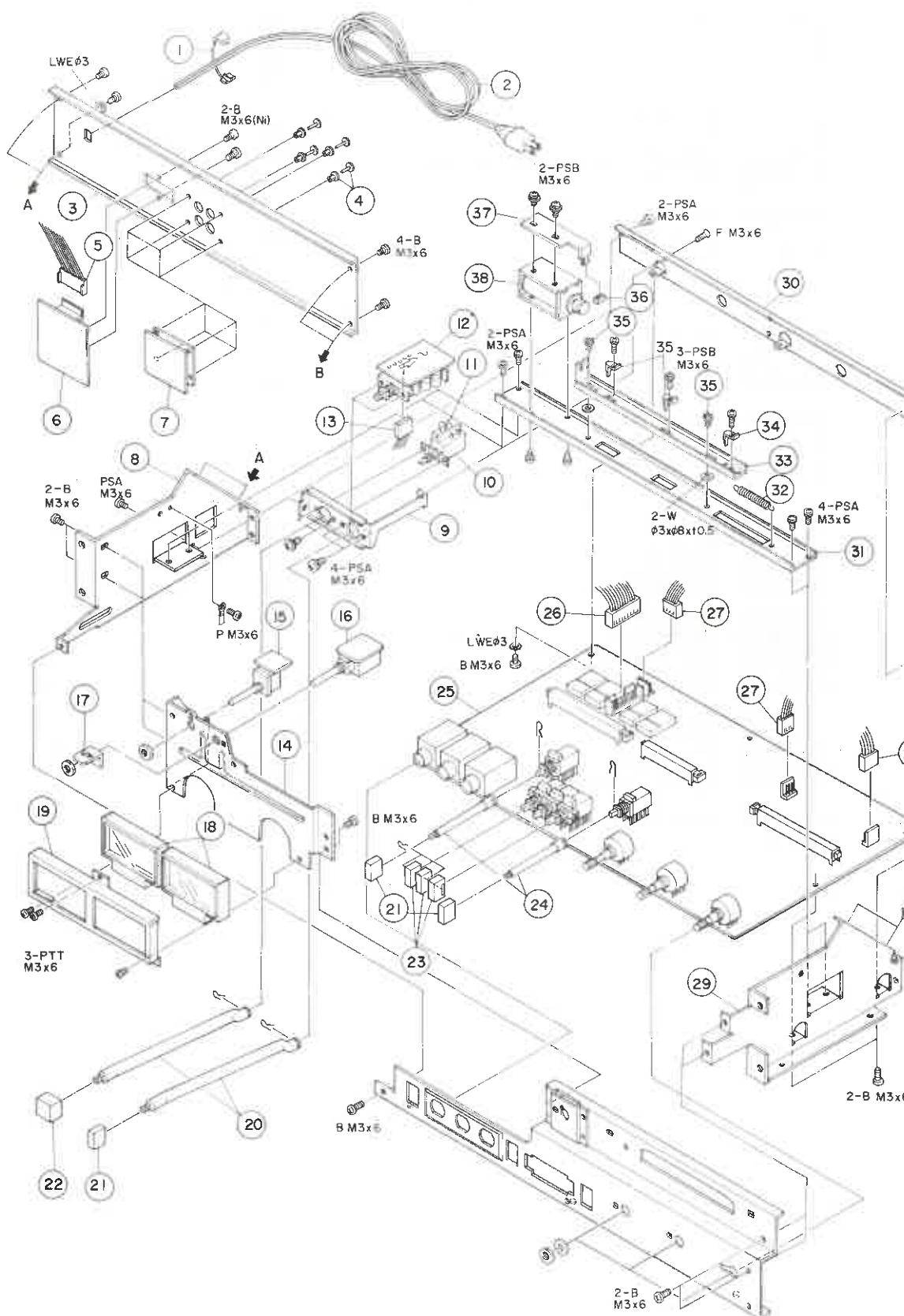
## EXPLODED VIEW-8 (X-7R MKII)



Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
8 - 1	5545037000	Cap, Roller	X-10R
8 - 2	5504743002	Roller Assy, B	X-10R
8 - 3	*5504742000	Base Assy, Roller; B	X-10R
8 - 4	*5800306100	Roller Assy, Tension	X-20R "EE"
8 - 5	*5504719102	Base Assy, Shut Off; L	X-10R
8 - 6	*5027699000	Collar, Rubber	X-10R
8 - 7	*5524215000	Wire, String Stopper	X-10R
8 - 8	*5550025100	Plate, Insulating	A-450
8 - 9	*5054230000	Capacitor, Ceramic 0.047 $\mu$ F 50V ±10%	
8 - 10	*5301455500	Switch, Micro	
8 - 11	*5534686001	Cushion	X-10R
8 - 12	*5524229001	Spring, Tension Arm; L	X-10R
8 - 13	*5581064000	Screw, Shoulder; E	AL-700
8 - 14	*5524069000	Spring, Roller Arm	X-20R "EE"
8 - 15	5800305800	Arm Assy, Tension	
8 - 16	*5545010000	Weight, Counter	X-10R
8 - 17	*5581045000	Nut, Nylon; M3	
8 - 18	*5504721000	String Assy, Damper	
8 - 19	*5524183000	Spring, Motor Switch Lever	
8 - 20	*5534684001	Drum, Damper	
8 - 21	*5800002600	Screw, Shoulder; F	X-10
8 - 22	*5533191000	Escutcheon, Button; Operation	X-10R
8 - 23	5533196000	Button, D	X-10R
8 - 24	5533197000	Button, E	X-10R
8 - 25	5533193000	Button, A	X-10R
8 - 26	5533195000	Button, C	X-10R
8 - 27	5533198000	Button, F	X-10R
8 - 28	5533219000	Button, H	X-10R
8 - 29	5533199000	Button, G	X-10R
8 - 30	*5503205000	Base Assy, Button	X-10
8 - 31	*5143140000	LED (RED)	X-10R
8 - 32	*5143139000	LED (GREEN)	X-7R
8 - 33	*5168930000	PCB Assy, OPERATION SW	X-7
8 - 34	*5553321000	Angle, Button Base; B	X-7
8 - 35	*5552404001	Angle, Side; R	X-7
8 - 36	*5552403102	Chassis, Ampl.; B	X-7
8 - 37	*5555719100	Bracket, PC-VR	X-7
8 - 38	*5555720000	Bracket, Stopper	X-7R
8 - 39	*5552405001	Angle, Side; L	X-7R
8 - 40	*5504720101	Base Assy, Shut Off; R	X-10R
8 - 41	*5524230001	Spring, Tension Arm; R	X-10R

## EXPLODED VIEW-9 (X-7RMKII)

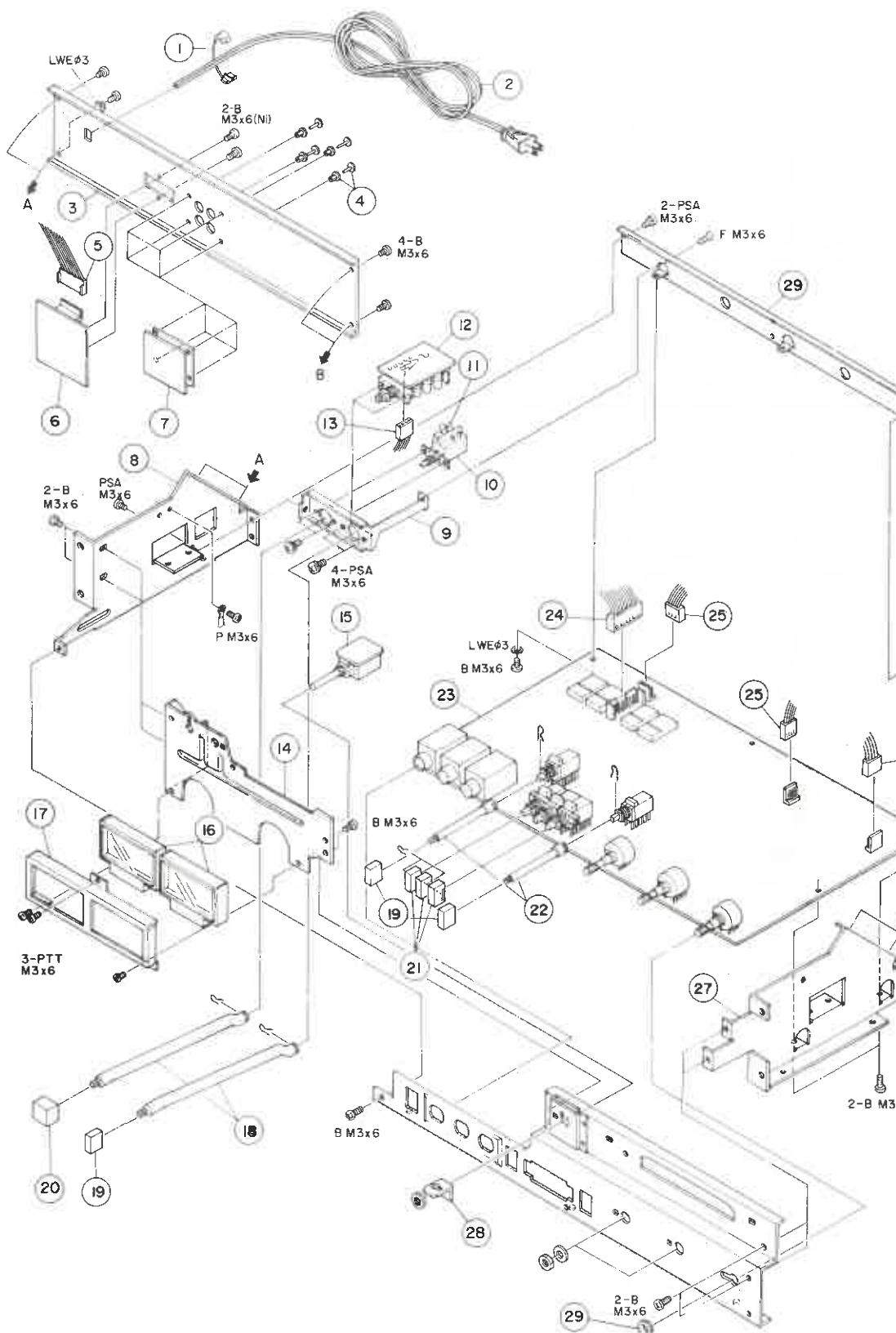


Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
9 - 1	*5534660000 *5534661000	Strain Relief, AC Power Cord [All except UK] Strain Relief, AC Power Cord [UK]	
9 - 2	△*5128027000 △*5128075000 △*5350008200	Cord, AC Power [GE, L] Cord, AC Power [U, C] Cord, AC Power [E, A]	X-7
9 - 3	△*5350008300	Cord, AC Power [UL]	X-7
9 - 4	*5552402000	Panel, Ampl.; Rear	X-20R
9 - 5	*5534118000	Push Rivet	X-7
9 - 6	*5122177000 *5168931100	Connector Socket, 15P PCB Assy, CONNECTOR; A	X-7R
9 - 7	*5200036000	PCB Assy, IN/OUTPUT	
9 - 8	*5553304000	Frame, Ampl.; L	X-7
9 - 9	*5555718000	Bracket, Push Switch	X-7R
9 - 10	△*5134036000 △*5134018000	Push Switch, POWER [GE, L] Push Switch, POWER [U, C]	
9 - 11	△*5134011000 △*5052910000 △*5052907000 △*5052911000 △*5267702500	Push Switch, POWER [E, UK, A] Spark Killer, 0.03μF + 120V/125V [U] Spark Killer, 0.01μF + 300V/300V [GE, L] Spark Killer, 0.033μF + 120V/250V [C] Spark Killer, 0.0047μF 250V [E, UK, A]	
9 - 12	*5158001000	PCB Assy, SPEED	X-7
9 - 13	*5127168000	Connector Socket, 6P	X-7
9 - 14	*5553307100	Bracket, Meter; B	
9 - 15	*5168928000	PCB Assy, Switch	
9 - 16	*5168938000	PCB Assy, PITCH CONT	
9 - 17	*5800003000	Bracket, Variable Resistor	X-10R
9 - 18	5296001500	VU Meter	X-10R
9 - 19	*5553293000	Plate, Meter	X-7
9 - 20	*5534723000	Rod; A	X-10R
9 - 21	*5534701000	Button	X-10R
9 - 22	5534702000	Button, Switch	X-10R
9 - 23	5800000100	Button, Loose; B	X-10R
9 - 24	*5534712000	Rod; B	X-10R
9 - 25	*5200064000	PCB Assy, REC/PLAY AMPL.	X-10R
9 - 26	*5122170000	Connector Socket, 8P	
9 - 27	*5122160000	Connector Socket, 4P	X-10R
9 - 28	*5122282000	Connector Socket, 4P (RED)	X-10R
9 - 29	*5553305000	Frame, Ampl.; R	X-7
9 - 30	*5553297100	Frame, Connector	
9 - 31	*5553298000	Bracket, Solenoid	
9 - 32	*5524222000	Spring, Return	X-10R
9 - 33	*5555694000	Plate, Slide	X-10R
9 - 34	*5524224000	Spring, Plate; Change	X-10R
9 - 35	*5581056000	Screw, Shoulder; A	A-304
9 - 36	*5534116000	Cushion	A-400
9 - 37	*5555701000	Plate, Solenoid Stopper	X-10R
9 - 38	5163043000	Solenoid, Reverse	

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

## EXPLODED VIEW-10 (X-7MKII)



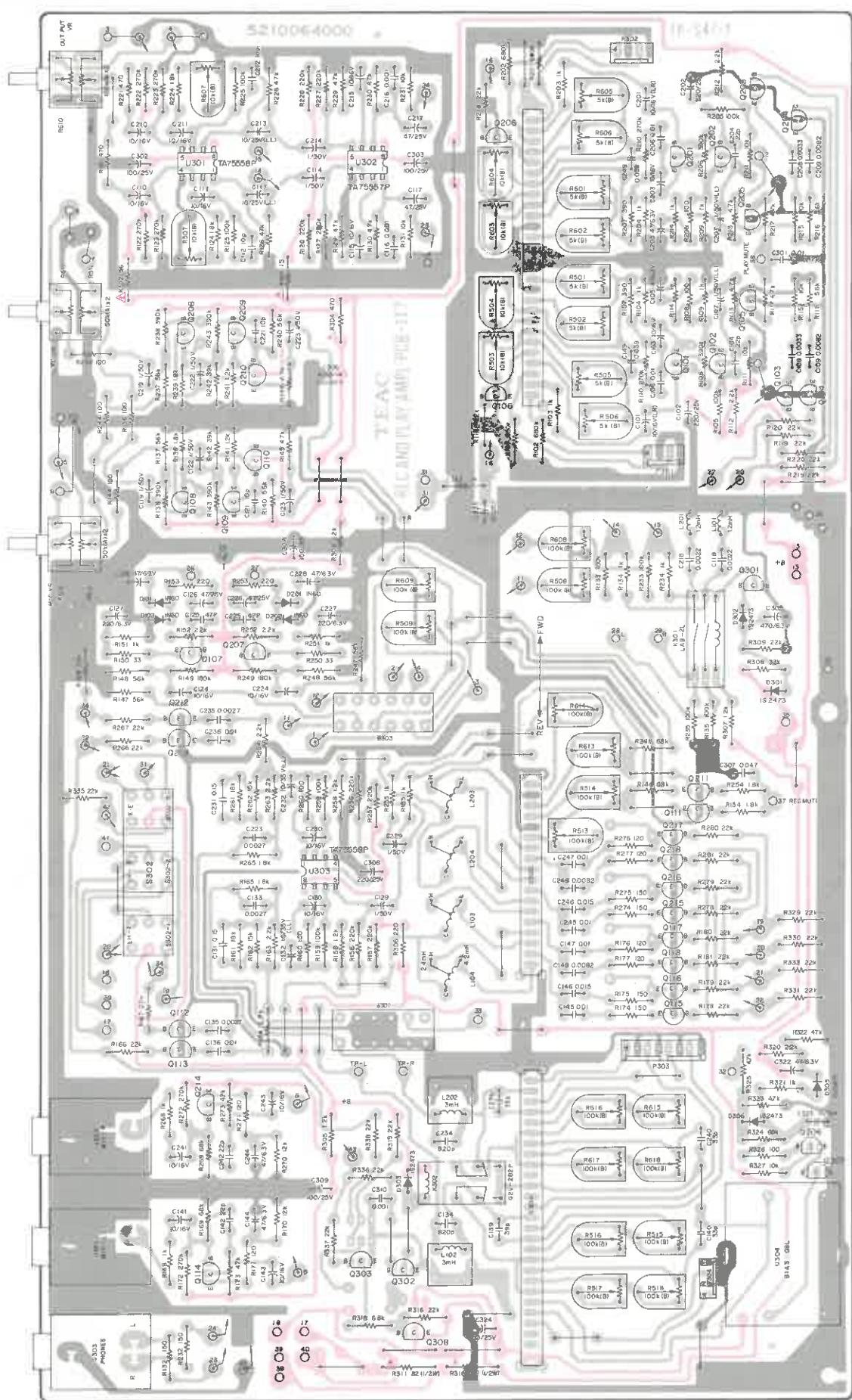
Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
10 - 1	*5534660000	Strain Relief, AC Power Cord	
10 - 2	△*5128075000	Cord, AC Power	
10 - 3	*5552402000	Panel, Ampl.; Rear	X-20R
10 - 4	*5534118000	Push Rivet	X-7
10 - 5	*5122174000	Connector Socket; 12P	X-7R
10 - 6	*5158002000	PCB Assy, CONNECTOR; B	
10 - 7	*5200036000	PCB Assy, IN/OUT	
10 - 8	*5553304000	Frame, Ampl.; L	
10 - 9	*5555718000	Bracket, Push Switch	
10 - 10	△ 5134018000	Push Switch, POWER	
10 - 11	△ 5052110000	Spark Killer 0.033μF + 120V/125V	X-7
10 - 12	*5158001000	PCB Assy, SPEED SW	
10 - 13	*5122168000	Connector Socket, 6P	
10 - 14	*5553307100	Bracket, Meter; B	
10 - 15	*5168938000	PCB Assy, PITCH CONT	
10 - 16	*5296001500	Meter, VU	X-10R
10 - 17	*5553293000	Plate, Meter	X-10R
10 - 18	*5534723000	Rod; A	X-7
10 - 19	5534701000	Button	
10 - 20	5534702000	Button, Switch	X-10R
10 - 21	5800000101	Button, Loose; B	X-10R
10 - 22	*5534712000	Rod; B	
10 - 23	*5200073000	PCB Assy, REC/PLAY AMPL.	
10 - 24	*5122166000	Connector Socket, 4P	
10 - 25	*5122164000	Connector Socket, 2P	
10 - 26	*5122280000	Connector Socket, 2P (RED)	X-7
10 - 27	*5553305000	Frame, Ampl.; R	X-7R
10 - 28	*5800003000	Bracket, Variable Resistor	
10 - 29	*5545049000	Bracket, Collar; VR	X-7

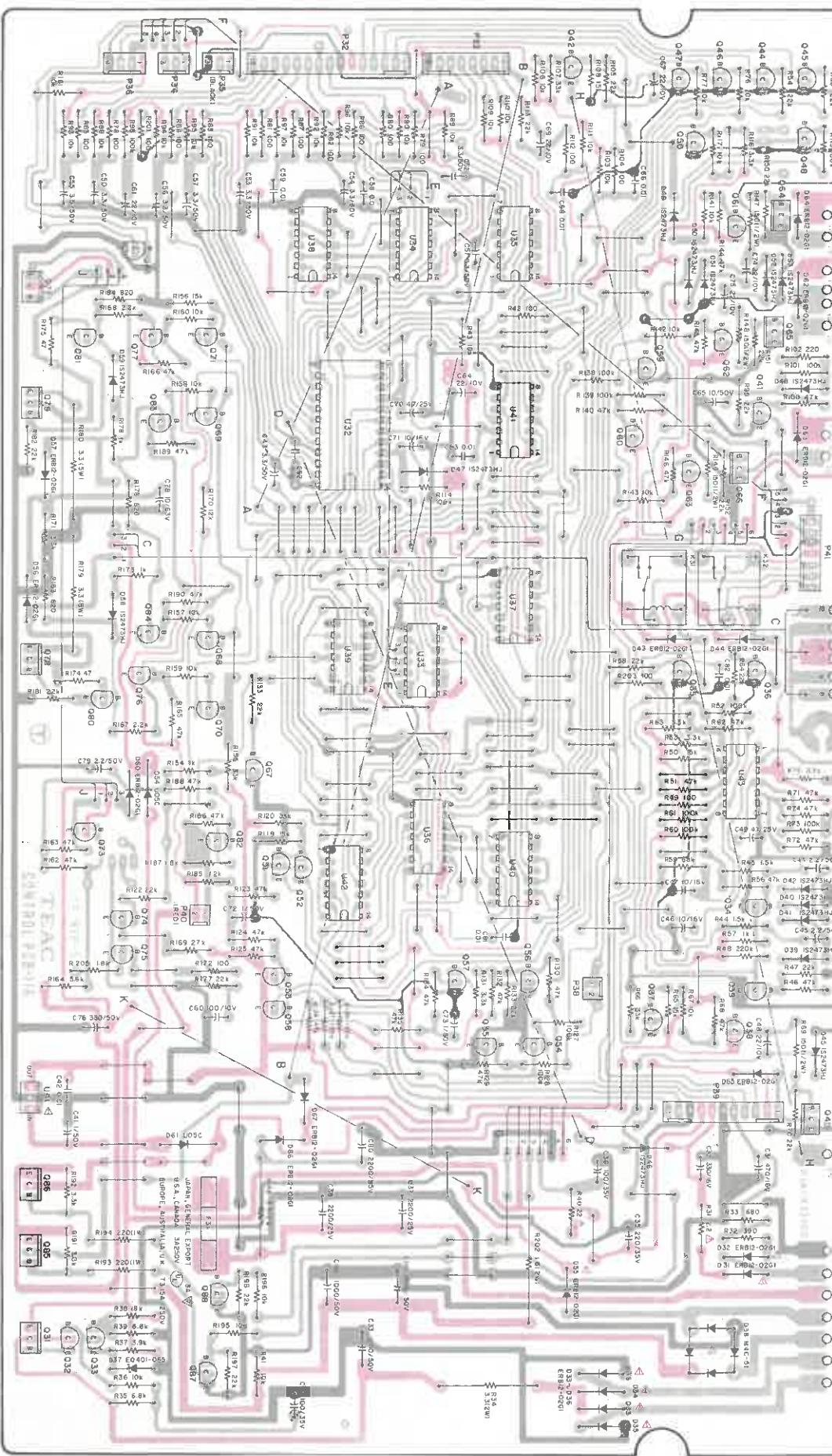
## 5 PC BOARD AND PARTS LIST

PC Boards shown viewed from foil side.

## REC AND PLAY AMPL. PCB ASSY (X-7RMkII)



## CONTROL PCB ASSY (X-7RMkII)

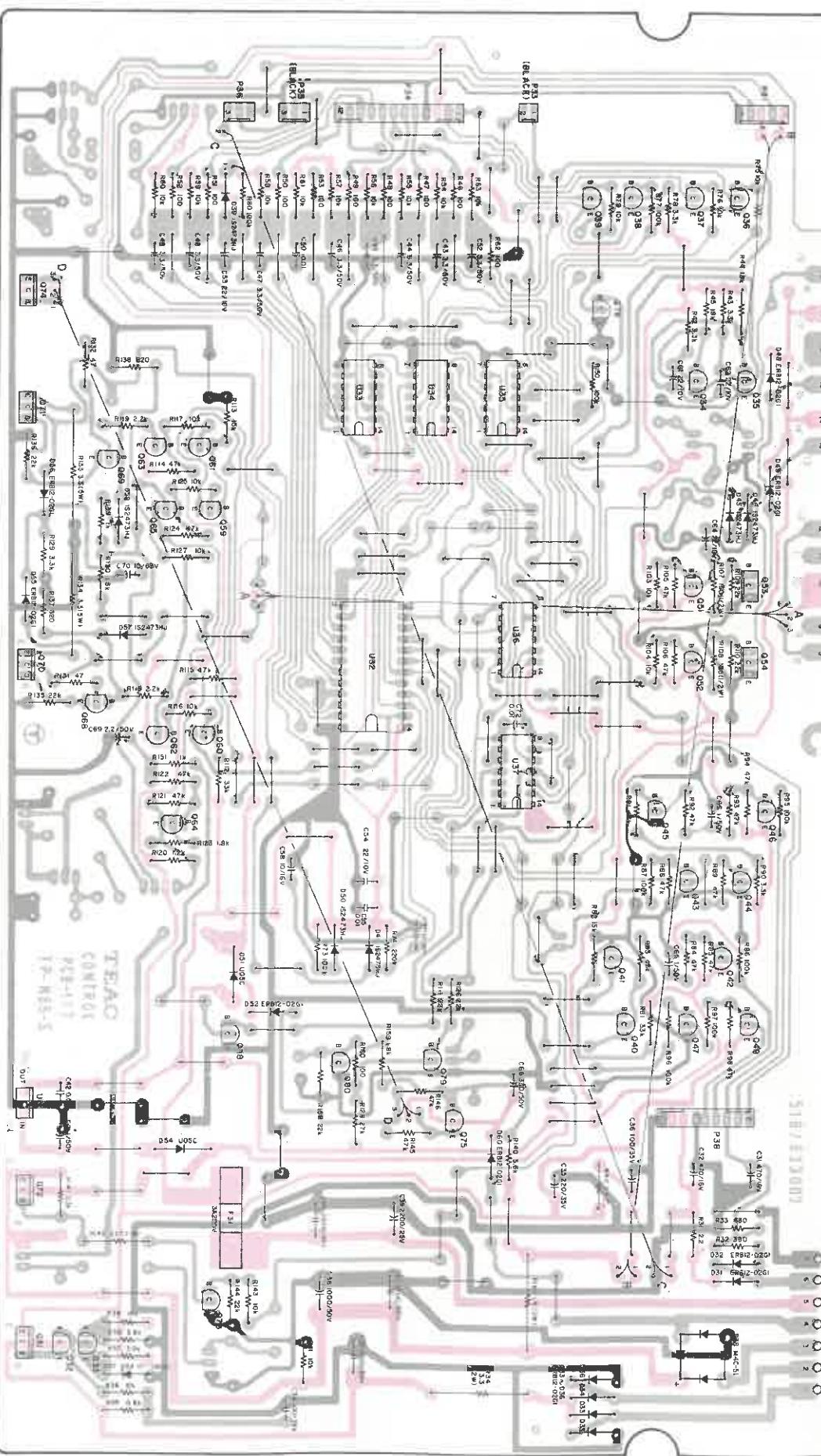


## REC AND PLAY AMPL. PCB ASSY (X-7RMkII)

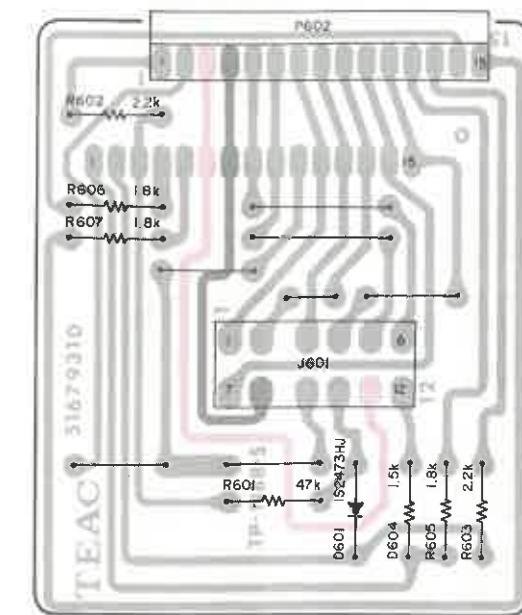
REF. NO.	PARTS NO.	DESCRIPTION
	5200064000	PCB Assy
	5210064000	PCB
	IC's	
U301	5220410900	TA-75558P
U302	5220412200	TA-75557P
U303	5220410900	TA-75558P
	TRANSISTORS	
Q101, Q201	5042461000	2SC-1327T
Q102, Q202	5145036000	2SC-945LK
Q103, Q203	5145036000	2SC-945LK
Q104, Q204	5145036000	2SC-945LK
Q105, Q205	5145036000	2SC-945LK
Q106, Q206	5145036000	2SC-945LK
Q107, Q207	5145036000	2SC-945LK
Q108, Q208	5145092000	2SC-1740LNS
Q109, Q209	5145092000	2SC-1740LNS
Q110, Q210	5145036000	2SC-945LK
Q111, Q211	5145036000	2SC-945LK
Q112, Q212	5145036000	2SC-945LK
Q113, Q213	5145036000	2SC-945LK
Q114, Q214	5042461000	2SC-1327T
Q115, Q215	5145036000	2SC-945LK
Q116, Q276	5145036000	2SC-945LK
Q117, Q217	5145036000	2SC-945LK
Q118, Q218	5145036000	2SC-945LK
Q301~Q308	5145036000	2SC-945LK
Q306	5145036000	2SC-945LK
Q307	5145036000	2SD-655E
Q308	5145036000	2SA-1015GR
	DIODES	
D101, D201	5042213000	IN60
D102, D202	5042213000	IN60
D301~D303	5042517000	1S2473VE
D305, D306	5042517000	1S2473VE
	CARBON RESISTORS	
All Resistors are rated $\pm 5\%$ tolerance and $\frac{1}{2}\text{W}$ .		
R101, R201	5183150000	680k $\Omega$
R102, R202	5183150000	680k $\Omega$
R103, R203	5183082000	1k $\Omega$
R104, R204	5183082000	1k $\Omega$
R105, R205	5183130000	100k $\Omega$
R106, R206	5183144000	390k $\Omega$
R107, R207	5183072000	390 $\Omega$
R108, R208	5183058000	100 $\Omega$
R109, R209	5183082000	1k $\Omega$ *
R110, R210	5183142000	330k $\Omega$
R111, R211	5183106000	10k $\Omega$
R112, R212	5183090000	2.2k $\Omega$
R113, R213	5183098000	47k $\Omega$
R114, R214	5183082000	1k $\Omega$
R115, R215	5183106000	10k $\Omega$
R116, R216	5183100000	5.6k $\Omega$
R117, R217	5183098000	4.7k $\Omega$
R118, R218	5183114000	22k $\Omega$
R119, R219	5183114000	22k $\Omega$
R120, R220	5183114000	22k $\Omega$
R121, R221	5183074000	470 $\Omega$
R122, R222	5183140000	270k $\Omega$
R123, R223	5183140000	270k $\Omega$
R124, R224	5183088000	1.8k $\Omega$

REF. NO.	PARTS NO.	DESCRIPTION
R125, R225	5183130000	100k $\Omega$
R126, R226	5183122000	47k $\Omega$
R127, R227	5183138000	220k $\Omega$
R128, R228	5183138000	220k $\Omega$
R129, R229	5183098000	4.7k $\Omega$
R130, R230	5183098000	4.7k $\Omega$
R131, R231	5183106000	10k $\Omega$
R132, R232	5183062000	150 $\Omega$
R133, R233	5183130000	100k $\Omega$
R134, R234	5183082000	1k $\Omega$
R135, R235	5183130000	100k $\Omega$
R136, R236	5183058000	100 $\Omega$
R137, R237	5183124000	56k $\Omega$
R138, R238	5183144000	390k $\Omega$
R139, R239	5183088000	1.8k $\Omega$
R140, R240	5183100000	5.6k $\Omega$
R141, R241	5183084000	1.2k $\Omega$
R142, R242	5183120000	39k $\Omega$
R143, R243	5183144000	390k $\Omega$
R144, R244	5183058000	100 $\Omega$
R145, R245	5183098000	4.7k $\Omega$
R146, R246	5183130000	100k $\Omega$
R147, R247	5183124000	56k $\Omega$
R148, R248	5183124000	56k $\Omega$
R149, R249	5183136000	180k $\Omega$
R150, R250	5183046000	33 $\Omega$
R151, R251	5183082000	1k $\Omega$
R152, R252	5183090000	2.2k $\Omega$
R153, R253	5183066000	220 $\Omega$
R154, R254	5183088000	1.8k $\Omega$
R155, R255	5183082000	1k $\Omega$
R156, R256	5183138000	220k $\Omega$
R157, R257	5183138000	220k $\Omega$
R158, R258	5183084000	1.2k $\Omega$
R159, R259	5183130000	100k $\Omega$
R160, R260	5183058000	100 $\Omega$
R161, R261	5183112000	18k $\Omega$
R162, R262	5183110000	15k $\Omega$
R163, R263	5183090000	2.2k $\Omega$
R164, R264	5183090000	2.2k $\Omega$
R165, R265	5183088000	1.8k $\Omega$
R166, R266	5183114000	22k $\Omega$
R167, R267	5183114000	22k $\Omega$
R168, R268	5183082000	1k $\Omega$
R169, R269	5183126000	68k $\Omega$
R170, R270	5183108000	12k $\Omega$
R171, R271	5183060000	120 $\Omega$
R172, R272	5183140000	270k $\Omega$
R173, R273	5183122000	47k $\Omega$
R174, R274	5183062000	150 $\Omega$
R175, R275	5183062000	150 $\Omega$
R176, R276	5183060000	120 $\Omega$
R177, R277	5183060000	120 $\Omega$
R178, R278	5183114000	22k $\Omega$
R179, R279	5183114000	22k $\Omega$
R180, R280	5183114000	22k $\Omega$
R181, R281	5183114000	22k $\Omega$
R301	△5184229000	15 $\Omega$
R302	△5184243000	56 $\Omega$
R303	△5183090000	2.2k $\Omega$
R304	△5184265000	470 $\Omega$
R305	△5183084000	1.2k $\Omega$
R306	△5184257000	220 $\Omega$
R307	△5183084000	1.2k $\Omega$
	Nonflammable	
	Nonflammable	
	Nonflammable	

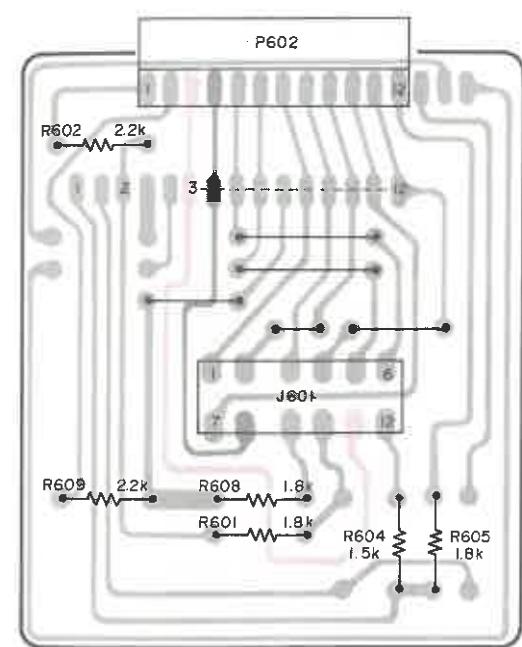
CONTROL PCB ASSY (X-7MkII)



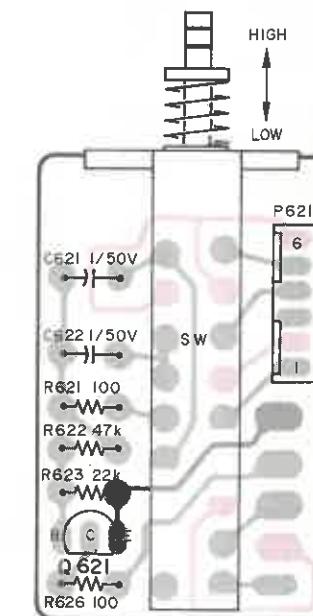
CONNECTOR PCB ASSY (X-7RMkII)



CONNECTOR PCB ASSY (X-7MkII)



SPEED SW PCB ASSY (X-7RMkII/X-7MkII)



## 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.  
( $p = \text{picofarads}$ ).

REF. NO.	PARTS NO.	DESCRIPTION
R308	5183118000	33kΩ
R309	5183114000	22kΩ
R310	5181990000	47Ω Nonflammable
R311	5181996000	82Ω Nonflammable
R316	5183114000	22kΩ
R318	5183102000	6.8kΩ
R320	5183090000	2.2kΩ
R321	5183082000	1kΩ
R322, R323	5183098000	4.7kΩ
R324	5183126000	68kΩ
R325	5183098000	4.7kΩ
R326	5183058000	100Ω
R327	5183106000	10kΩ
R328~R331	5183114000	22kΩ
R332	5183082000	1kΩ
R333	5183114000	22kΩ
R335~R337	5183114000	22kΩ
<b>CAPACITORS</b>		
C101, C201	5171565000	Elec. 10μF 16V (LR)
C102, C202	5173055000	Elec. 220μF 25V (SM)
C103, C203	5173010000	Elec. 10μF 16V (SM)
C104, C204	5172304000	Ceramic 220pF 50V ±10%
C105, C205	5173034000	Elec. 47μF 6.3V (SM)
C106, C206	5054877500	Mylar 0.01μF 100V ±5%
C107, C207	5260226110	Elec. 1μF 50V ±10%
C108, C208	5054881500	Mylar 0.0033μF 100V ±5%
C109, C209	5054894500	Mylar 0.0082μF 100V ±5%
C110, C210	5173010000	Elec. 10μF 16V (SM)
C111, C211	5173010000	Elec. 10μF 16V (SM)
C112, C212	5172300000	Ceramic 10pF 50V ±20%
C113, C213	5260222010	Elec. 10μF 35V ±20%
C114, C214	5172992000	Elec. 1μF 50V (SM)
C115, C215	5173010000	Elec. 10μF 16V (SM)
C116, C216	5054878500	Mylar 0.001μF 100V ±5%
C117, C217	5173037000	Elec. 47μF 25V (SM)
C118, C218	5054876500	Mylar 0.0022μF 100V ±5%
C119, C219	5172992000	Elec. 1μF 50V (SM)
C121, C221	5172300000	Elec. 10pF 50V ±20%
C122, C222	5172992000	Elec. 1μF 50V (SM)
C123, C223	5172992000	Elec. 1μF 50V (SM)
C124, C224	5173010000	Elec. 10μF 16V (SM)
C125, C225	5172308000	Ceramic 47pF 50V ±10%
C126, C226	5173004000	Elec. 4.7μF 25V (SM)
C127, C227	5173052000	Elec. 220μF 6.3V (SM)
C128, C228	5173034000	Elec. 47μF 6.3V (SM)
C129, C229	5172992000	Elec. 1μF 50V (SM)
C130, C230	5173010000	Elec. 10μF 16V (SM)
C131; C231	5054930500	Mylar 0.15μF 100V ±5%
C132, C232	5260222000	Elec. 10μF 35V ±20%
C133, C233	5054889500	Mylar 0.0027μF 100V ±5%
C134, C234	5172826000	Rubber Polyst. 820pF 50V ±5%
C135, C235	5054889500	Mylar 0.0027μF 100V ±5%
C136, C236	5054877500	Mylar 0.01μF 100V ±5%
C139, C239	5172794000	Rubber Polyst. 39pF 50V ±5%
C140, C240	5172794000	Rubber Polyst. 33pF 50V ±5%
C141, C241	5173010000	Elec. 10μF 16V (SM)
C142, C242	5172304000	Ceramic 22pF 50V ±10%
C143, C243	5173010000	Elec. 10μF 16V (SM)
C144, C244	5173034000	Elec. 47μF 6.3V (SM)
C145, C245	5054877500	Mylar 0.01μF 100V ±5%
C146, C246	5054887500	Mylar 0.015μF 100V ±5%
C147, C247	5054877500	Mylar 0.01μF 100V ±5%
C148, C248	5054894500	Mylar 0.0082μF 100V ±5%

REF. NO.	PARTS NO.	DESCRIPTION
C149, C249	5054924500	Mylar 0.039μF 100V ±5%
C301	5054877500	Mylar 0.01μF 100V ±5%
C302	5173046000	Elec. 100μF 25V (SM)
C303	5173055000	Elec. 220μF 25V (SM)
C304	5173046000	Elec. 100μF 25V (SM)
C305	5173070000	Elec. 470μF 6.3V (SM)
C306	5173046000	Elec. 100μF 25V (SM)
C307	5054738500	Mylar 0.047μF 100V ±5%
C308	5173055000	Elec. 220μF 25V (SM)
C309	5173046000	Elec. 100μF 25V (SM)
C310	5054878500	Mylar 0.001μF 100V ±5%
C322	5173034000	Elec. 47μF 6.3V (SM)
C323	5173010000	Elec. 10μF 16V (SM)
C324, C325	5173011000	Elec. 10μF 25V (SM)
<b>VARIABLE RESISTORS</b>		
R501, R601	5280003302	Semi-fixed 5kΩ(Β)
R502, R602	5280003302	Semi-fixed 5kΩ(Β)
R503, R603	5280003502	Semi-fixed 10kΩ(Β)
R504, R604	5280003502	Semi-fixed 10kΩ(Β)
R505, R605	5280003302	Semi-fixed 5kΩ(Β)
R506, R606	5280003302	Semi-fixed 5kΩ(Β)
R507, R607	5280003502	Semi-fixed 10kΩ(Β)
R508, R608	5280004202	Semi-fixed 100kΩ(Β)
R509, R609	5280004202	Semi-fixed 100kΩ(Β)
R513, R613	5280004202	Semi-fixed 100kΩ(Β)
<b>MISCELLANEOUS</b>		
U304	5040090000	BIAS OSC Unit
K301	5061137000	Relay; 12V LAB2L
K302	5290009400	Relay; 24V G2V-282P
S301	5134095000	Push; 4-2
S303	5134095000	Push; 4-2
S304	5131044000	Slide; 9-2
S305	5131045000	Slide; 6-2
S306	5131044000	Slide; 9-2
S307	5300025200	Push Switch; 2x3
S309	5300025200	Push Switch; 2x3
P301	5122128000	Connector Plug 4P
P302	5122301000	Connector Plug 4P (RED)
P303	5122132000	Connector Plug 8P
P304	5122128000	Connector Plug 4P
L101, L201	5160107000	Choke Coil; 1200μF ±5% (Lock)
L102, L202	5056659000	Trap Coil; 3μH 20%
L103, L203	5056637000	Record Coil; EQ 2.4-4.2mH 20%
L104, L204	5056637000	Record Coil; EQ 2.4-4.2mH 20%
J301, J302	5124045000	Jack, MIC
J303	5124046000	Jack, PHONES

**REC AND PLAY AMPL. PCB ASSY (X-7MkII)**

REF. NO.	PARTS NO.	DESCRIPTION
	5200073000	PCB Assy
	5210073000	PCB
	<b>IC's</b>	
U301	5220410900	TA75558P
U302	5220412200	TA75559P
U303	5220410900	TA75558P
	<b>TRANSISTORS</b>	
Q101, Q201	5042461000	2SC-1327T
Q102, Q202	5145036000	2SC-945LK
Q103, Q203	5145036000	2SC-945LK
Q104, Q204	5145036000	2SC-945LK
Q105, Q205	5145036000	2SC-945LK
Q106, Q206	5145036000	2SC-945LK
Q107, Q207	5145036000	2SC-945LK
Q108, Q208	5145092000	2SC-1740LNS
Q109, Q209	5145092000	2SC-1740LNS
Q110, Q210	5145036000	2SC-945LK
Q111, Q211	5145036000	2SC-945LK
Q112, Q212	5145036000	2SC-945LK
Q113, Q213	5145036000	2SC-945LK
Q114, Q214	5042461000	2SC-1327T
Q115, Q215	5145036000	2SC-945LK
Q116, Q216	5145036000	2SC-945LK
Q117, Q217	5145036000	2SC-945LK
Q118, Q218	5145036000	2SC-945LK
Q301	5145036000	2SC-945LK
Q302	5145036000	2SC-945LK
Q303	5145036000	2SC-945LK
Q306	5145036000	2SC-945LK
Q307	5145185000	2SD-655E
Q308	5145150000	2SA-1015GR
	<b>DIODES</b>	
D101, D201	5042213000	IN60
D102, D202	5042213000	IN60
D301~D303	5042517000	1S2473VE
D305, D306	5042517000	1S2473VE
	<b>CARBON RESISTORS</b>	
All Resistors are rated ±5% tolerance and 1/4W.		
R101, R201	5183150000	680kΩ
R103, R203	5183082000	1kΩ
R104, R204	5183082000	1kΩ
R105, R205	51831300	

REF. NO.	PARTS NO.	DESCRIPTION
R305	5183084000	1.2kΩ
R306	△5184257000	220Ω Nonflammable
R307	5183084000	1.2kΩ
R308	5183118000	33kΩ
R309	5183114000	22kΩ
R310	△5181990000	47kΩ Nonflammable
R311	△5181996000	82kΩ Nonflammable
R316	5183114000	22kΩ
R318	5183102000	6.8kΩ
R320	5183090000	2.2kΩ
R321	5183082000	1kΩ
R322	5183098000	4.7kΩ
R323	5183098000	4.7kΩ
R324	5183126000	68kΩ
R325	5183098000	4.7kΩ
R326	5183058000	100Ω
R327	5183106000	10kΩ
R328~R331	5183114000	22kΩ
R332	5183082000	1kΩ
R333	5183114000	22kΩ
R335~R337	5183114000	22kΩ
<b>CAPACITORS</b>		
C101, C201	5171565000	Elec. 10μF 16V (LR)
C102, C202	5173055000	Elec. 220μF 25V (SM)
C103, C203	5173010000	Elec. 10μF 16V (SM)
C104, C204	5172304000	Ceramic 22pF 50V ±10%
C105, C205	5173034000	Elec. 47μF 63V (SM)
C106, C206	5054877500	Mylar 0.01μF 100V ±5%
C107, C207	5260226110	Elec. 1μF 50V ±10%
C108, C208	5054881500	Mylar 0.0033μF 100V ±10%
C109, C209	5054881500	Mylar 0.0082μF 100V ±10%
C110, C210	5173010000	Elec. 10μF 16V (SM)
C111, C211	5173010000	Elec. 10μF 16V (SM)
C112, C212	5172300000	Ceramic 10pF 50V ±20%
C113, C213	5260222000	Elec. 10μF 35V ±20%
C114, C214	5172992000	Elec. 1μF 50V (SM)
C115, C215	5173010000	Elec. 10μF 16V (SM)
C116, C216	5054878500	Mylar 0.001μF 100V ±5%
C117, C217	5173037000	Elec. 47μF 25V (SM)
C118, C218	5054876500	Mylar 0.0022μF 100V ±5%
C119, C219	5172992000	Elec. 1μF 50V (SM)
C121, C221	5172300000	Ceramic 10pF 50V ±20%
C122, C222	5172992000	Elec. 1μF 50V (SM)
C123, C223	5172992000	Elec. 1μF 50V (SM)
C124, C224	5173010000	Elec. 10μF 16V (SM)
C125, C225	5172308000	Ceramic 47pF 50V ±10%
C126, C226	5173004000	Elec. 4.7μF 25V (SM)
C127, C227	5173052000	Elec. 220μF 6.3V (SM)
C128, C228	5173034000	Elec. 47μF 6.3V (SM)
C129, C229	5172992000	Elec. 1μF 50V (SM)
C130, C230	5173010000	Elec. 10μF 16V (SM)
C131, C231	5054930500	Mylar 0.15μF 100V ±5%
C132, C232	5260222010	Elec. 10μF 35V ±20%
C133, C233	5054889500	Mylar 0.0027μF 100V ±5%
C134, C234	5172826000	Rubber Polyst. 820pF 50V ±5%
C135, C235	5054889500	Mylar 0.0027μF 100V ±5%
C136, C236	5054877500	Mylar 0.01μF 100V ±5%
C139, C239	5172794000	Rubber Polyst. 39pF 50V ±5%
C140, C240	5172792000	Rubber Polyst. 33pF 50V ±5%
C141, C241	5173010000	Elec. 10μF 16V (SM)
C142, C242	5172304000	Ceramic 22pF 50V ±10%
C143, C243	5173010000	Elec. 10μF 16V (SM)
<b>CONTROL PCB ASSY (X-7RMkII)</b>		
REF. NO.	PARTS NO.	DESCRIPTION
	5200004603	PCB Assy [U, C]
	5200004613	PCB Assy [E, UK, A]
	5200004623	PCB Assy [GE, L]
	5167932102	PCB
	IC's	
U31	△5147058000	NJM-78M05A
U32	5147054000	AN6251
U33~U37	5147056000	HD-7400P
U38~U42	5147057000	HD-7402P
U43	5147039000	NJM-2901N

REF. NO.	PARTS NO.	DESCRIPTION
C144, C244	5173034000	Elec. 47μF 6.3V (SM)
C145, C245	5054877500	Mylar 0.01μF 100V ±5%
C146, C246	5054887500	Mylar 0.015μF 100V ±5%
C147, C247	5054877500	Mylar 0.01μF 100V ±5%
C148, C248	5054894500	Mylar 0.0082μF 100V ±5%
C149, C249	5054924500	Mylar 0.039μF 100V ±5%
C301	5054877500	Mylar 0.01μF 100V ±5%
C302~C304	5173046000	Elec. 100μF 25V (SM)
C305	5173070000	Elec. 470μF 6.3V (SM)
C306	5173046000	Elec. 100μF 25V (SM)
C307	5054738500	Mylar 0.047μF 100V ±5%
C308	5173055000	Elec. 220μF 25V (SM)
C309	5173046000	Elec. 100μF 25V (SM)
C310	5054878500	Mylar 0.001μF 100V ±5%
C322	5173034000	Elec. 47μF 6.3V (SM)
<b>VARIABLE RESISTORS</b>		
R501, R601	5280003302	Semi-fixed 5kΩ(Β)
R503, R603	5280003502	Semi-fixed 10kΩ(Β)
R505, R605	5280003302	Semi-fixed 5kΩ(Β)
R507, R607	5280003502	Semi-fixed 10kΩ(Β)
R508, R608	5280004202	Semi-fixed 100kΩ(Β)
R509, R609	5280004202	Semi-fixed 100kΩ(Β)
R514, R614	5280004202	Semi-fixed 100kΩ(Β)
R516, R616	5280004202	Semi-fixed 100kΩ(Β)
R517, R617	5280004202	Semi-fixed 100kΩ(Β)
<b>MISCELLANEOUS</b>		
U304	5040090000	BIAS OSC Unit
K301	5061137000	Relay; 12V LAB2L
K302	5290009400	Relay; 24V G2V-282P
S301	5134095000	Push Switch; 4-2
S303	5134095000	Push Switch; 4-2
S307	5300025200	Push Switch; 2-2x3
P301	5122126000	Connector Plug 2P
P302	5122299000	Connector Plug 2P (RED)
P303	5122128000	Connector Plug 4P
P304	5122126000	Connector Plug 2P
J301, J302	5124045000	Jack, MIC
J303	5124046000	Jack, PHONES
L101, L201	5160107000	Choke Coil 1200μF ±5% (Lock)
L102, L202	5056659000	Trap Coil 3mH 20%
L103, L203	5056637000	Record Coil; EQ 2.4-4.2mH 20%

REF. NO.	PARTS NO.	DESCRIPTION
<b>TRANSISTORS</b>		
Q31	△5145087000	2SD-313E
Q32	5042625000	2SC-1318S
Q33~Q37	5042383000	2SC-536F
Q38	5042553000	2SA-733P
Q39	5042383000	2SC-536F
Q40	5042564000	2SC-1061C
Q41~Q52	5042383000	2SC-536F
Q53	5042553000	2SA-733P
Q54~Q57	5042383000	2SC-536F
Q58	5042553000	2SA-733P
Q67~Q71	5042383000	2SC-536F
Q72	5145087000	2SD-313E
Q73	5042625000	2SC-1318S
Q74, Q75	5230776500	2SC-1685R
Q76, Q77	5042553000	2SA-733P
Q78, Q79	5145087000	2SD-313E
<b>DIODES</b>		
D31~D36	△5143243000	ERB12-02GI
D37	5143154000	Zener, EQA01-06S
D38	△5143142000	M4C-51
D39~D42	5143118000	IS2473HJ
D43, D44	5143243000	ERB12-02GI
D45~D47	5143118000	IS2473HJ
D52, D53	5143118000	IS2473HJ
D54	5143017000	U05C
D55~D57	5143243000	ERB12-02GI
D58, D59	5143118000	IS2473HJ
<b>CARBON RESISTORS</b>		
All Resistors are rated ±5% tolerance and 1/4W.		
R31	△5184209000	2.2Ω Nonflammable
R32	5183072000	390Ω
R33	5183078000	680Ω
R34	5184306000	3.3Ω 10% Cement
R35	5183102000	6.8kΩ
R36	5183106000	10kΩ
R37	5183096000	3.9kΩ
R38	5183112000	18kΩ
R39	5183102000	6.8kΩ
R40	△5184233000	22Ω Nonflammable
R41	5183106000	10kΩ
R		

## CONTROL PCB ASSY (X-7MkII)

REF. NO.	PARTS NO.	DESCRIPTION
R172	5183058000	100Ω
R177	5183114000	22kΩ
R191, R192	5183094000	3.3kΩ
R193, R194	5184763000	220Ω 1W Nonflammable
R195, R196	5183106000	10kΩ
R197, R198	5183114000	22kΩ
R199	5184306000	3.3Ω 2W ±10% Cement
R200	5183138000	220kΩ
R202	5184302000	1.5Ω 2W ±10% Cement
R203	5183058000	100Ω
R205	5183088000	1.8kΩ
<b>CAPACITORS</b>		
C31, C32	5172961000	Elec. 470μF 16V
C33	5172973000	Elec. 1000μF 50V
C34	5172936000	Elec. 100μF 35V
C35	5172945000	Elec. 220μF 35V
C36	5172936000	Elec. 100μF 35V
C37, C38	5055714800	Elec. 2200μF 25V
C39, C40	5172973000	Elec. 1000μF 50V
C41	5172882000	Elec. 1μF 50V
C42	5054204000	Ceramic 0.01μF 50V 10%
C43	5172890000	Elec. 3.3μF 50V
C44, C45	5172886000	Elec. 2.2μF 50V
C46, C47	5172900000	Elec. 10μF 16V
C48	5172907000	Elec. 22μF 10V
C49	5172894000	Elec. 4.7μF 25V
C50~C57	5172890000	Elec. 3.3μF 50V
C58, C59	5054204000	Elec. 0.01μF 50V
C61	5172907000	Elec. 22μF 10V
C63	5054204000	Ceramic 0.01μF 50V 10%
C64	5172907000	Elec. 22μF 10V
C66	5054204000	Ceramic 0.01μF 50V 10%
C67	5172907000	Elec. 22μF 10V
C68	5054204000	Ceramic 0.01μF 50V 10%
C69	5172907000	Elec. 22μF 10V
C70	5172894000	Elec. 47μF 25V
C71	5172900000	Elec. 10μF 16V
C72, C73	5172882000	Elec. 1μF 50V
C75	5172907000	Elec. 2.2μF 10V
C78	5172904000	Elec. 10μF 63V
C79	5172886000	Elec. 2.2μF 50V
C80	5055714800	Elec. 2200μF 25V
C81, C82	5054204000	Ceramic 0.01μF 50V 10%
<b>MISCELLANEOUS</b>		
K31, K31	5061144000	Relay; G2U-113P 24V
	5033291000	Plate, Insulating
	5033295000	Tube, Insulating
	5122127000	Connector Plug 3P
	5122131000	Connector Plug 7P
	5122132000	Connector Plug 8P
	5122135000	Connector Plug 11P
	5122139000	Connector Plug 15P
	5122184000	Connector Plug 3P (BLK)
	5142087000	Fuse Holder
F31	△5142231000	Mini Fuse 3A 250V [GE, L]
	△5307027100	Mini Fuse 3A 250V [U, C]
	△5142191000	Mini Fuse 3.15A 250V [E, UK, A]

REF. NO.	PARTS NO.	DESCRIPTION
	5200004803	PCB Assy
	5167933002	PCB
	<b>IC's</b>	
U31	△5147058000	NJM78M05A
U32	5147054000	AN6251
U33~U35	5147056000	HD7400P
U36, U37	5147057000	HD7402P
<b>TRANSISTORS</b>		
Q31	△5145087000	2SD313(E)
Q32	5042625000	2SC1318(S)
Q33~Q41	5230776520	2SC-1685R
Q42	5230015220	2SA-1127R
Q43~Q45	5230776520	2SC-1685R
Q46	5230015220	2SA-1127R
Q47	5230776520	2SC-1685R
Q48	5230015220	2SA-1127R
Q51, Q52	5230015220	2SA-1127R
Q53, Q54	5042564000	2SC1061(C)
Q58~Q61	5230776520	2SC-1685R
Q68, Q69	5042625000	2SC1318(S)
Q70, Q71	5145087000	2SD313(E)
Q72	5145129000	2SB507(E)
Q73	5042625000	2SC1318(S)
Q74	5145087000	2SD-313E
Q75	5042625000	2SC-1318S
Q78	5230776520	2SC-1685R
Q79, Q80	5230776520	2SC-1685R
<b>DIODES</b>		
D31~D36	△5143243000	ERB12-02GI
D37	5143154000	Zener, EQA01-06S
D38	△5143142000	M4C-51
D39	5143118000	1S2473HJ
D41	5143118000	1S2473HJ
D45, D46	5143118000	1S2473HJ
D48, D49	5143243000	ERB12-02GI
D50	5143118000	1S2473HJ
D51	5143017000	U05C
D52	5143243000	ERB12-02GI
D55, D56	5143243000	ERB12-02GI
D57, D58	5143118000	1S2473HJ
D60	△5143243000	ERB12-02GI
<b>RESISTORS</b>		
All Resistors are rated ±5% tolerance, ½W and of carbon type unless otherwise noted.		
R31	△5184209000	2.2Ω Nonflammable
R32	5183072000	390Ω
R33	5183078000	680Ω
R34	5184306000	3.3Ω 2W Cement
R35	5183102000	6.8kΩ
R36	5183106000	10kΩ
R37	5183096000	3.9kΩ
R38	5183112000	18kΩ
R39	5183102000	6.8kΩ
R40	△5184233000	22Ω Nonflammable
R41	5183106000	10kΩ
R42, R43	5183094000	3.3kΩ
R44, R45	5183112000	18kΩ
R46~R53	5183058000	100Ω
R54~R61	5183054000	10kΩ

REF. NO.	PARTS NO.	DESCRIPTION
R62	5183058000	100Ω
R63	5183106000	10kΩ
R73	5183130000	100kΩ
R74	5183138000	220kΩ
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
R86, R87	5183130000	100kΩ
R88, R89	5183122000	47kΩ
R90	5183094000	3.3kΩ
R91, R94	5183122000	47kΩ
R96, R97	5183130000	100kΩ
R98	5183122000	47kΩ
R103, R104	5183106000	10kΩ
R105, R106	5183122000	47kΩ
R107, R108	5180062000	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
R127	5183106000	10kΩ
R128	5183116000	27kΩ
R129	5183094000	3.3kΩ
R130	5183088000	1.8kΩ
R131, R132	5183050000	47Ω
R133, R134	5184410000	3.3Ω
R135, R136	5183114000	22kΩ
R137, R138	518308000	820Ω
R139	5183082000	1kΩ
R140	5183100000	5.6kΩ
R141	5183094000	3.3kΩ
R142	5184763000	220Ω
R143	5183106000	10kΩ
R144	5183114000	22kΩ
R145, R146	5183122000	47kΩ
R150	5183130000	100kΩ
R151	5183082000	1kΩ
R158	5183114000	22kΩ
R159	5183088000	1.8kΩ
R160	5183058000	100Ω
R161	5184302000	1.5Ω
2W 10% Cement		
<b>CAPACITORS</b>		
C31, C32	5172961000</	

## CONNECTOR PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5168931100	PCB Assy
	5167931000	PCB
<b>DIODE</b>		
D601	5143118000	1S2473HJ
<b>CARBON RESISTORS</b>		
All Resistors are rated $\pm 5\%$ tolerance and $1/4W$ .		
R601	5183122000	47k $\Omega$
R602, R603	5183090000	2.2k $\Omega$
R604	5183086000	1.5k $\Omega$
R605~R607	5183088000	1.8k $\Omega$
<b>MISCELLANEOUS</b>		
P602	5122158000	Connector Plug, 15P
J601	5122336000	Connector Plug, 12P
	5554099100	Bracket, Connector [A-7300]

## OPERATION PCB ASSY (PC Board Omitted.)[X-7MkII]

REF. NO.	PARTS NO.	DESCRIPTION
	5168930000	PCB Assy
	5167930000	PCB
S801~S807	5138011000	Switch, Tact
D801	5143139000	LED SLB-260GG (GREEN)
D802, D803	5143140000	LED SLB-26UR (RED)

## ASSEMBLING HARDWARE CODING LIST

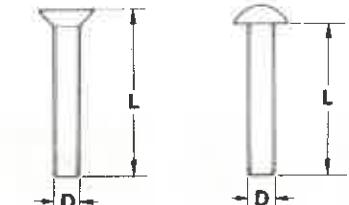
All screws conform to ISO standards, and have crossrecessed heads, unless otherwise noted.  
ISO screws have the head inscribed with a point as in the figure to the right.



## FOR EXAMPLE:

B M 3 x 6

Length in mm (L)  
Diameter in mm (D) \*  
Metric System  
Nomenclature



\* Inner dia. for washers and nuts

## CONNECTOR PCB ASSY (X-7MkII)

REF. NO.	PARTS NO.	DESCRIPTION
	5158002000	PCB Assy
	5167931000	PCB
<b>CARBON RESISTORS</b>		
All Resistors are rated $\pm 5\%$ tolerance and $1/4W$ .		
R601	5183088000	1.8k $\Omega$
R602	5183090000	2.2k $\Omega$
R604	5183086000	1.5k $\Omega$
R605	5183088000	1.8k $\Omega$
R609	5183090000	2.2k $\Omega$
<b>MISCELLANEOUS</b>		
	5122155000	Connector Plug, 12P

TIMER PCB ASSY (PC Board Omitted.)  
[X-7RMkII/X-7MkII]

REF. NO.	PARTS NO.	DESCRIPTION
	5168926100	PCB Assy
	5167926000	PCB
<b>DIODE</b>		
D641	5143243000	ERB12-02
<b>MISCELLANEOUS</b>		
P641	5122145000	Connector Plug, 2P (WHT)
P642	5122454000	Connector Plug, 3P (RED)
S32	5134090000	Push Switch 2-4

OPERATION PCB ASSY (PC Board Omitted.)  
[X-7RMkII]

REF. NO.	PARTS NO.	DESCRIPTION
	5168929000	PCB Assy
	5167929000	PCB
D801~D803	5143139000	LED SLB-260GG (GREEN)
D804, D805	5143140000	LED SLB-26UR (RED)
S801~S808	513801100	Switch, Tact

IN/OUTPUT TERMINAL PCB ASSY (PC Board Omitted.)  
[X-7RMkII/X-7MkII]

REF. NO.	PARTS NO.	DESCRIPTION
	5200036000	PCB Assy
	5167987101	PCB
	5124058000	Jack, 4P
<b>CARBON RESISTORS</b>		
R535, R536	5183120000	39k $\Omega$ $1/4W$ 5%

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

[U]: U.S.A.  
[A]: AUSTRALIA  
[C]: CANADA  
[E]: EUROPE  
[L]: LIMITED AREA

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

# **X-7R<sub>MKII</sub>/X-7<sub>MKII</sub>**

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**TEAC®**

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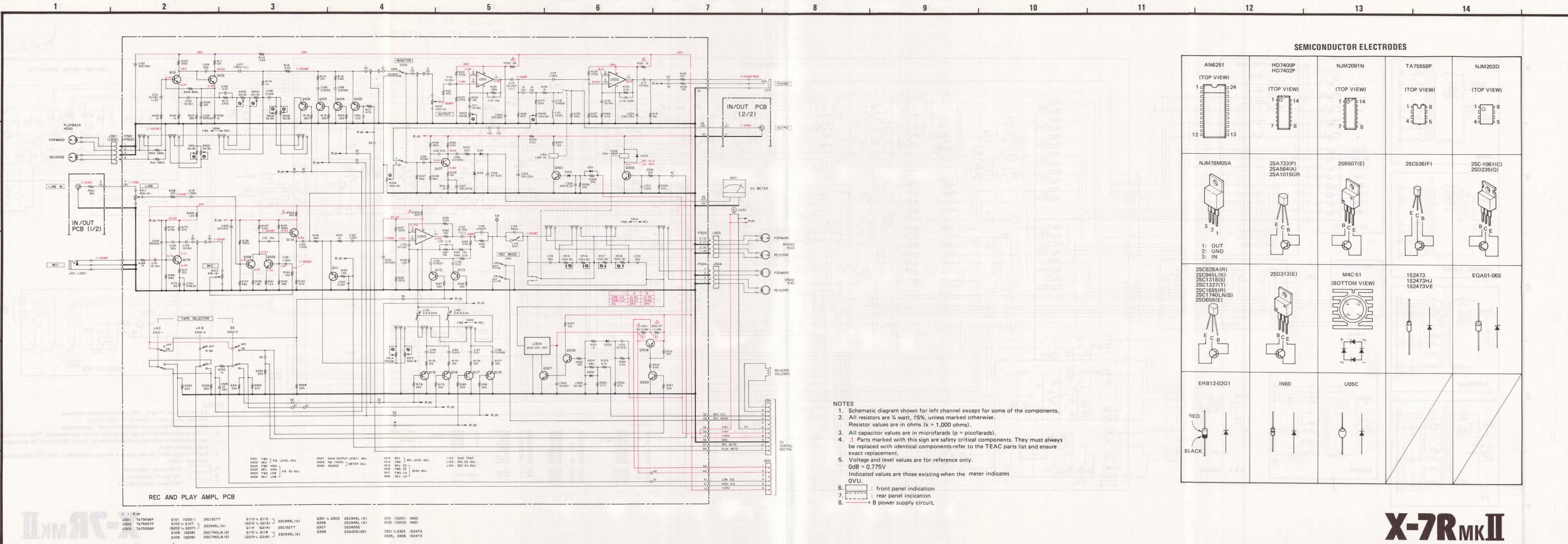
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**TEAC CORPORATION**

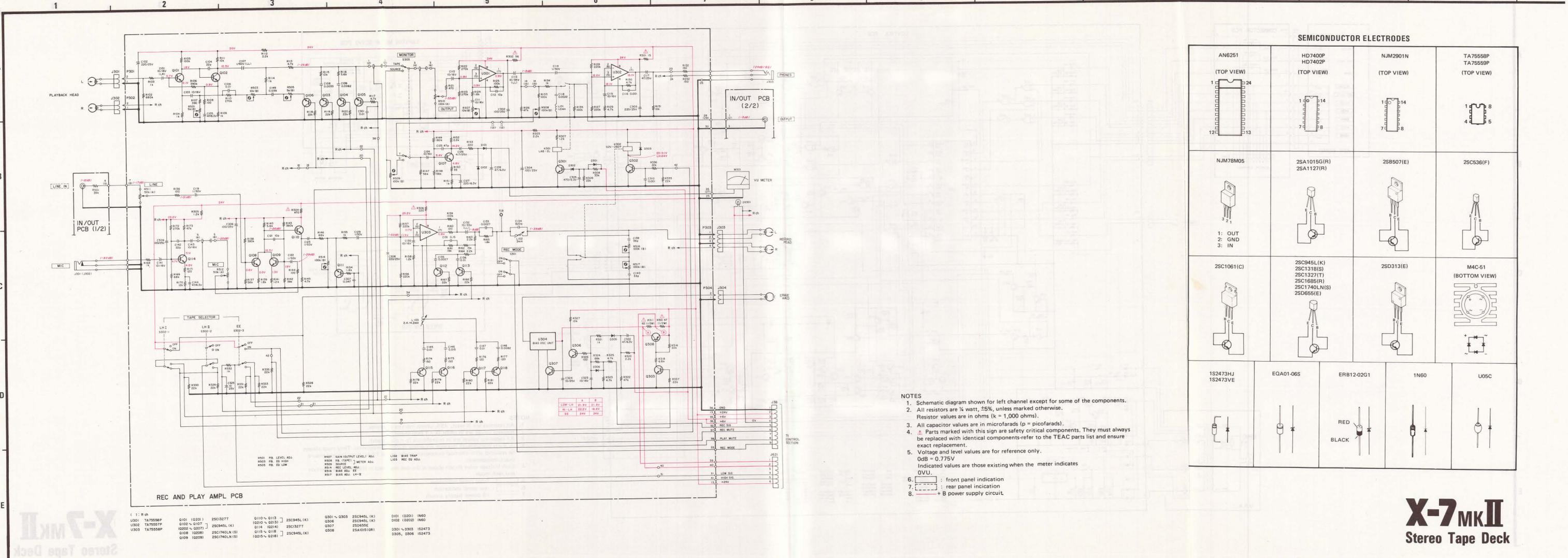
TEAC CORPORATION OF AMERICA  
TEAC AUSTRALIA PTY., LTD.

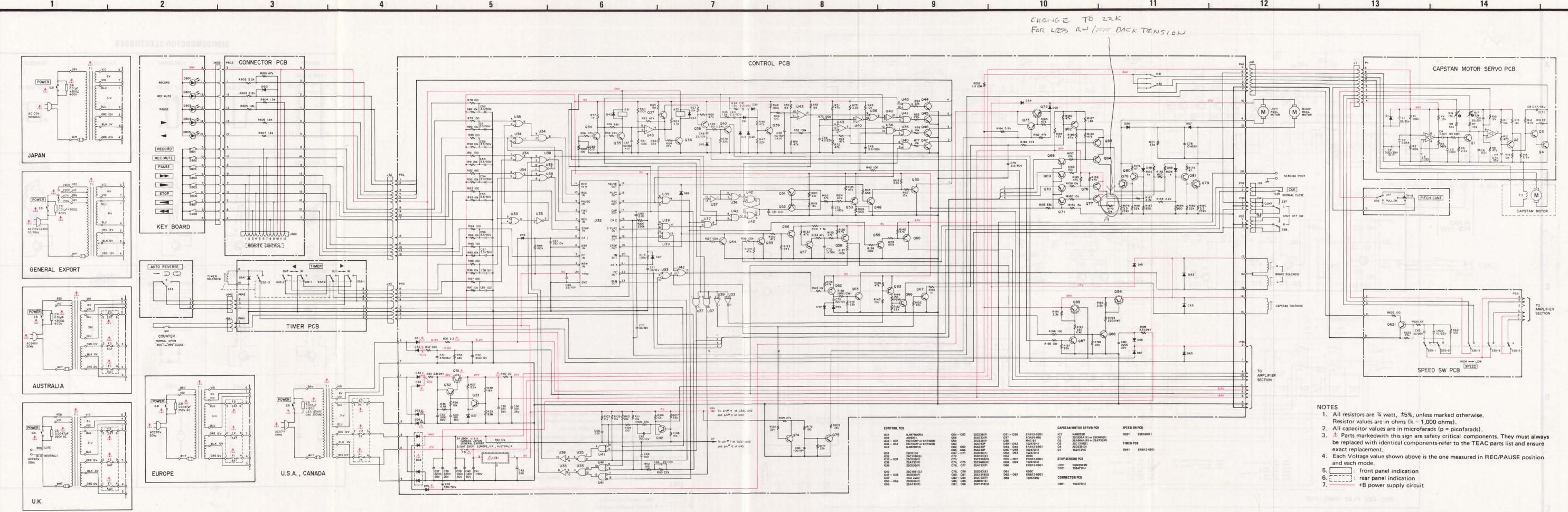
3-7-3 NAKA-CHO MUSASHINO TOKYO PHONE (0422) 53-1111

7733 TELEGRAPH ROAD MONTEBELLO CALIFORNIA 90640 PHONE (213) 726-0303  
115 WHITEMAN STREET SOUTH MELBOURNE VICTORIA 3205 PHONE 699-6000



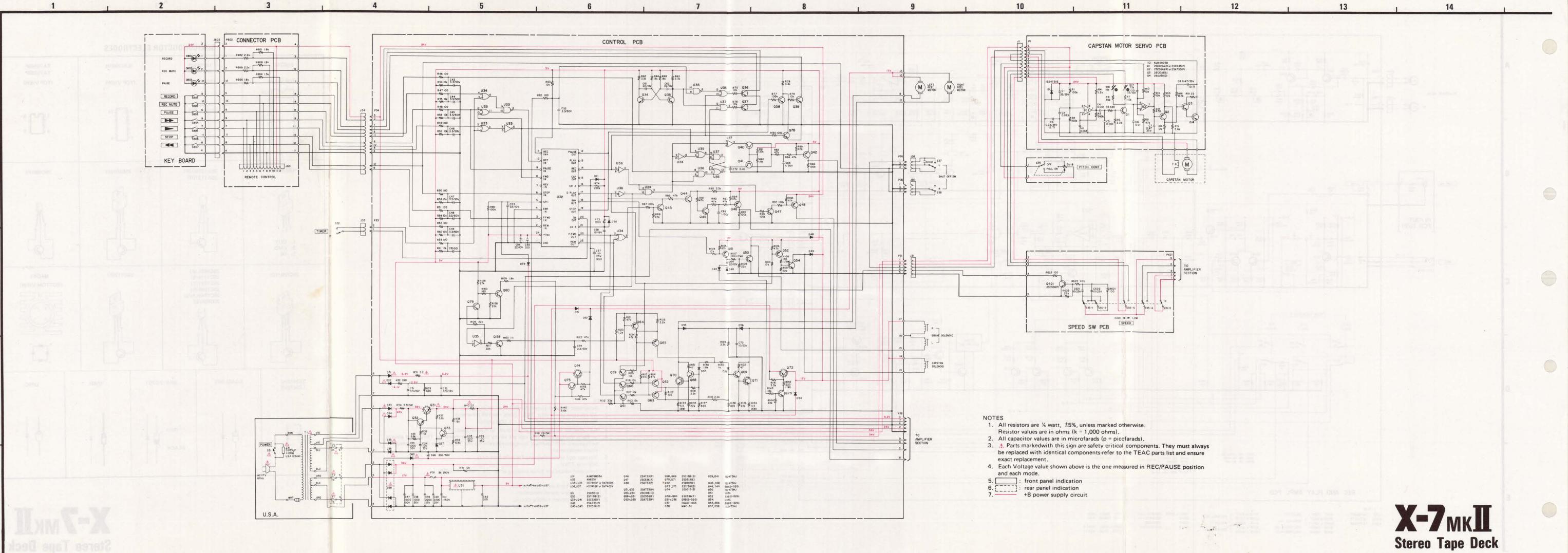
**TEAC** SCHEMATIC DIAGRAM (AMPLIFIER) **X-7 MKII**





- 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 ( $\mu F$  = picofarads).
  3.  $\triangle$  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.  $\square$ : front panel indication  
 6.  $\square$ : rear panel indication  
 7.  $\square$ : +B power supply circuit

**X-7R MKII**  
Stereo Tape Deck



**X-7 MKII**  
Stereo Tape Deck