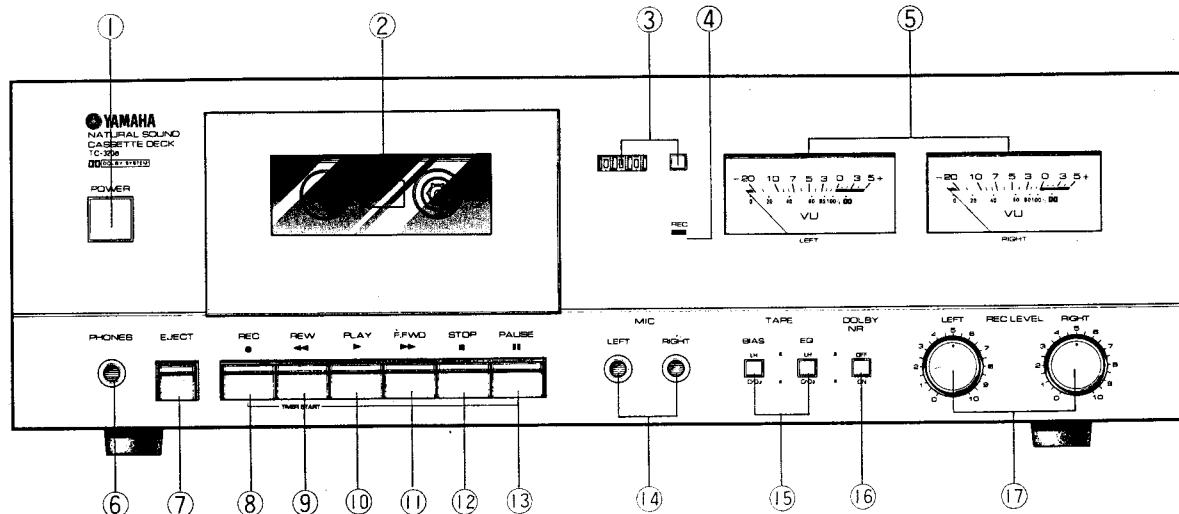


# TC-320a

## SERVICE MANUAL

### ■ FRONT PANEL



- ① POWER SWITCH
- ② CASSETTE COMPARTMENT
- ③ TAPE COUNTER/REST PUSH-BUTTON
- ④ RECORDING INDICATOR
- ⑤ LEVEL METERS
- ⑥ PHONES JACK
- ⑦ EJECT KEY
- ⑧ REC (●) RECORDING KEY
- ⑨ REW (◀◀) REWIND KEY
- ⑩ PLAY (◀) PLAYBACK KEY

- ⑪ F.FWD (▶▶) FAST FORWARD KEY
- ⑫ STOP KEY (■)
- ⑬ PAUSE (II) INSTANTANEOUS PAUSE KEY
- ⑭ LEFT AND RIGHT MIC (MICROPHONE) JACKS
- ⑮ TAPE SELECTOR SWITCHES
- ⑯ DOLBY NR SWITCH
- ⑰ REC LEVEL CONTROLS

### ■ CONTENTS

DISASSEMBLY PROCEDURES	2
ELECTRICAL ADJUSTMENTS	4
SPECIFICATIONS	8
BLOCK DIAGRAM	8
WIRING DIAGRAM	9
SCHEMATIC DIAGRAM	10
PARTS LIST	

SINCE 1887  **YAMAHA**  
NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

004389

Printed in Japan '79 JUN. 1.52K 

## ■ DISASSEMBLY PROCEDURES

### 1. Top cover removal

Remove 4 screws from both sides and then remove the top cover.

### 2. Bottom cover removal

Remove tapping screws (1) to (8) in Photo 1 and then remove the bottom cover.

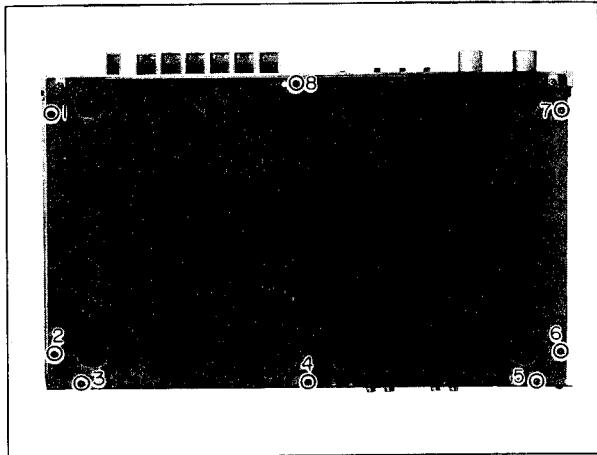


Photo 1

### 3. Front panel removal

- (1) Remove the top cover. (Refer to Step 1.)
- (2) Remove the bottom cover. (Refer to Step 2.)
- (3) Remove screws (1) to (3) in Photo 2 and screws (1) and (2) in Photo 3. Now pull out the front panel gently toward you.

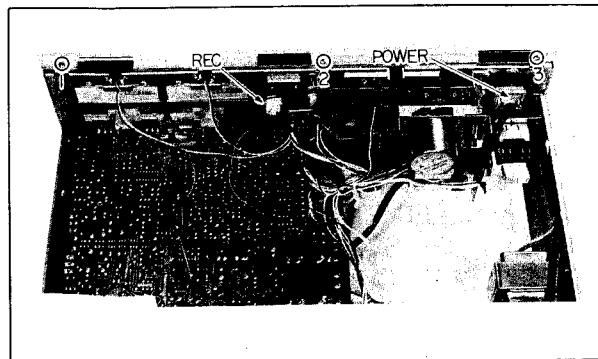


Photo 2

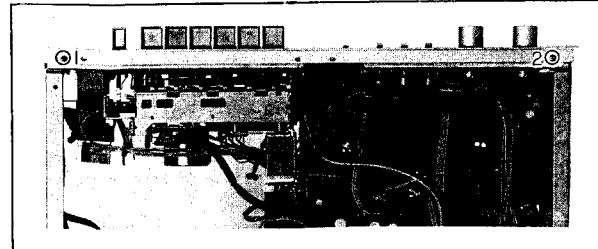


Photo 3

### 4. Tape mechanism unit removal

- (1) Remove the front panel. (Refer to Step 3.)
- (2) Disconnect the lead wires which are connected to the tape mechanism unit.
- (3) Remove the cassette door as in Fig. 1 so that it is not removed due to carelessness.
- (4) Remove screws (3) to (6) in Photo 4 and then remove the tape mechanism unit.

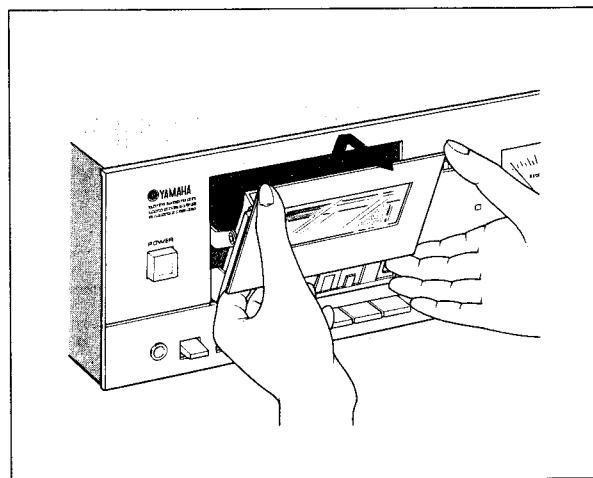


Fig. 1

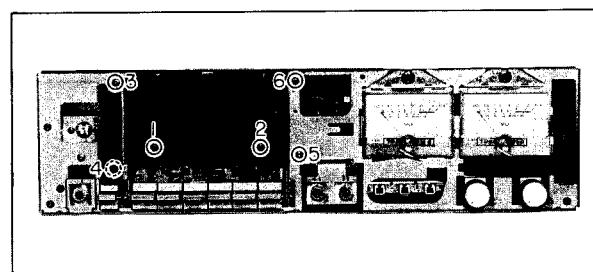


Photo 4

### 5. PB/REC circuit board removal

- (1) Remove the front panel.
- (2) Disconnect all the leads which are connected to the PB/REC circuit board.
- (3) Grasp the PB/REC switch flexible wire between your fingers as in Photo 5 and remove it.  
Depress the REC button and check that the PB/REC switch functions properly after remounting the flexible wire.

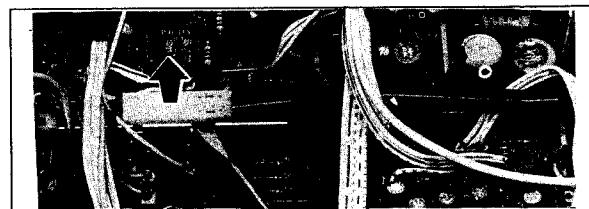


Photo 5

- (4) Push down on plastic rivets (1) to (3) in Photo 8 from the rear and remove them.
- (5) Remove nuts (3) to (4) in Photo 6 and also stopper (5) and (6).
- (6) Remove screws (1) to (3) in Photo 7 and then remove the PB/REC circuit board.  
Note: Before removing the circuit board, be careful not to force the pin connectors, variable resistors and switch shafts.

#### **6. Level meter removal**

- (1) Remove the front panel. (Refer to Step 3.)
- (2) Disconnect the lead wires which are connected to the level meters.
- (3) If the both ends (A) and (B) of the meter cover in Photo 6 are held lightly from the rear back panel and the meter cover is then pulled forward, both the meter cover and the level meters can be removed.

#### **7. Power switch removal**

- (a) Remove the front panel. (Refer to Step 3.)
- (b) Remove screws (7) and (8) in Photo 6 and then remove the power switch.

#### **8. PHONES jack removal**

- (a) Remove the front panel. (Refer to Step 3.)
- (b) Remove the stopper (9) in Photo 6 and then remove the PHONES jack.

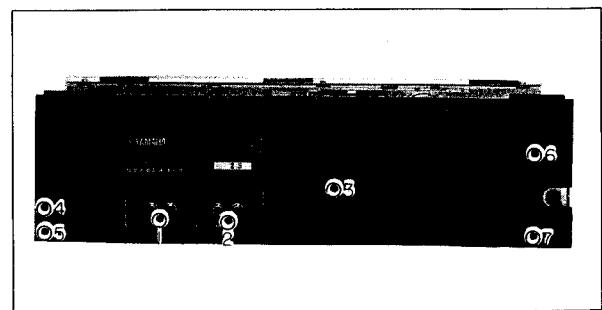


Photo 8

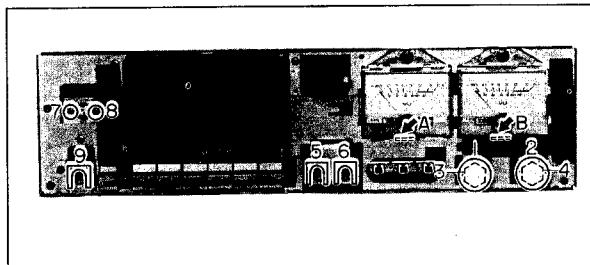


Photo 6

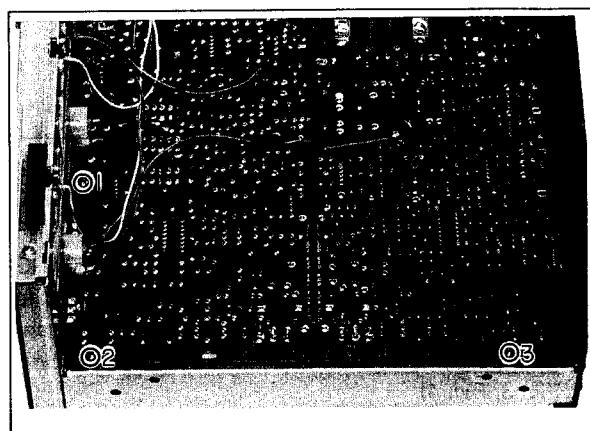


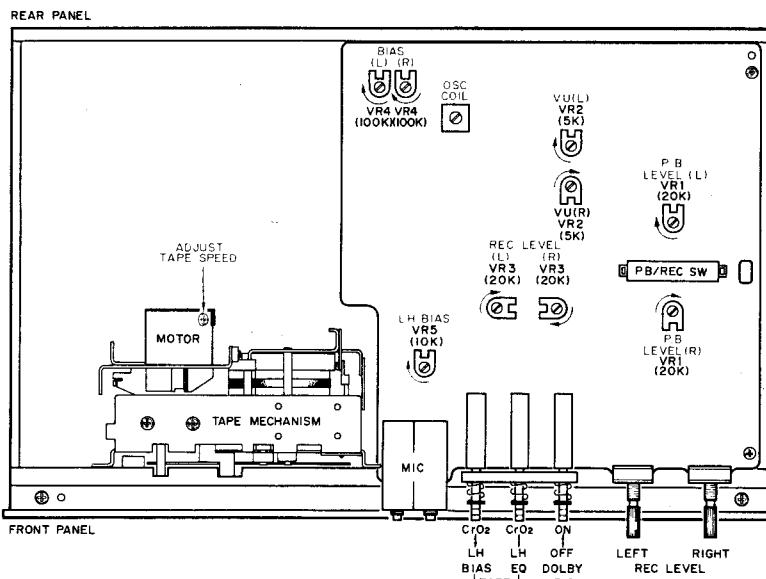
Photo 7

## ELECTRICAL ADJUSTMENTS

### \* Before electrical adjustments

1. Demagnetize the recording tape with a tape eraser.
2. Do not bring the standard tape into contact with a magnet or place it in the sun.
3. Do not scratch or otherwise damage the heads during adjustment.
4. Take steps to safeguard against external induction and noise during the measurements.
5. Connect a 100-k ohm load resistance for the LINE OUT and a 8-ohm load resistance for the PHONES.

### ● PB/REC CIRCUIT BOARD ADJUSTMENT LOCATIONS



### 1. Head azimuth adjustment

Play back the LCT-3013 test tape (10 kHz 250 nWb/m, -10 dB) and adjust the angle of the PB/REC head adjustment screw so that the output of both channels is brought to the maximum and the phase is identical. (Fig. 1, Fig. 2)

\* Note: Lock the screw after adjustment.

Use the LCT-3004 (6.3 kHz 250 nWb/m, -10 dB) test tape and measure the amplitude of the level fluctuations.

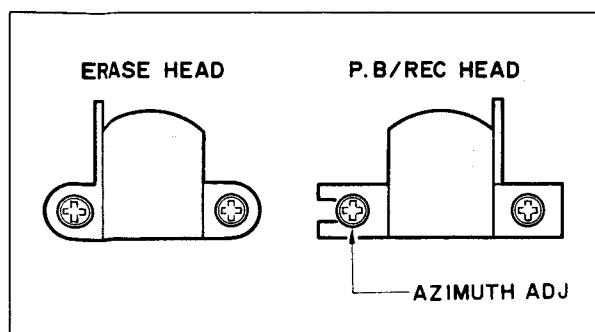


Fig. 1

### \* Test Tape

The level referred to in the section "Adjustment" is based on the case of using 160 nWb/m.

Note that 200 nWb/m tape increases the level by 3 dB and 250 nWb/m tape, by 4 dB.

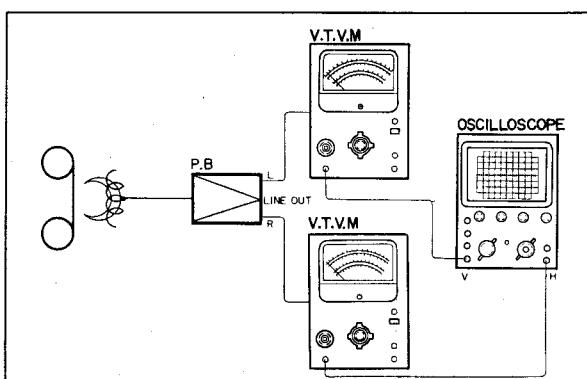


Fig. 2

### 2. Tape speed adjustment

Play back the center portion of the LCT-3001 (3 kHz 250 nWb/m, -10 dB) test tape and adjust the speed of the monitor so that the playback frequency response is 3 kHz ±10 Hz with specification). (Fig. 3, Fig. 4)

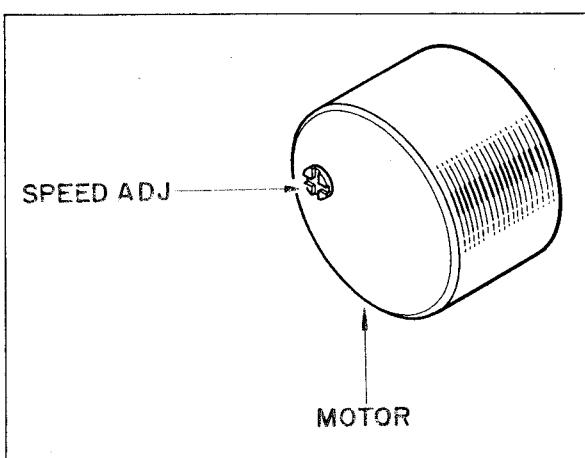


Fig. 3

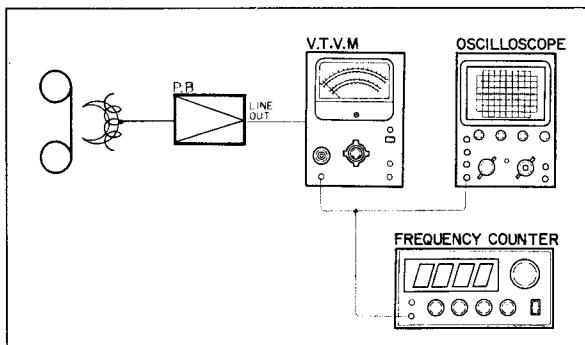


Fig. 4

### 3. Wow/flutter measurement

Play back the LCT-3001 (3 kHz 250 nWb/m, -10 dB) test tape and measure the wow/flutter at the start, center and end of the tape. Check that the measured values are within the specified range (JIS, less than 0.085% WRMS). (Fig. 5)

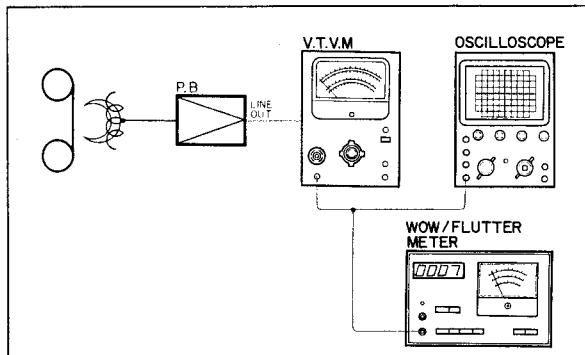


Fig. 5

### 4. Playback level adjustment

Play back the LCT-3003-160 (333 Hz, 160 nWb/m) test tape and adjust VR1 (20 kohms) for both channels so that the output at the LINE OUT terminals is  $-5.5 \text{ dBm} \pm 0.5 \text{ dB}$ . (Fig. 6)

### 5. Playback Signal-to-Noise ratio measurement

Play back the LCT-3003S test tape and check that the LINE OUT terminal output is  $-5.5 \text{ dBm}$  for the both LH and CrO<sub>2</sub> tapes.

Next, depress the PAUSE button and check that the noise level is within the specified range.

### 6. Dolby level check

Play back the LCT-7001 (400 Hz, 200 nWb/m) test tape and check that the output is  $-2.5 \text{ dBm} \pm 1.5 \text{ dB}$ . (Fig. 6)

Note: Set the Dolby NR switch to ON.

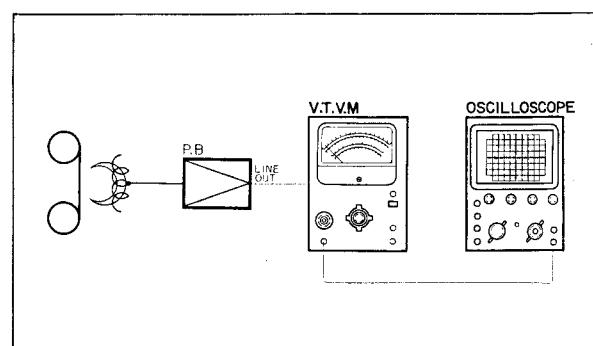


Fig. 6

### 7. Dolby effect measurement

Play back the Dolby effect measurement tape (5 kHz, -30 dB) and check that the deviation in the output when the Dolby NR switch is set to both ON and OFF is less than  $-8 \text{ dB}$ . (Fig. 8)

Note: Connect the specified Dolby filter.

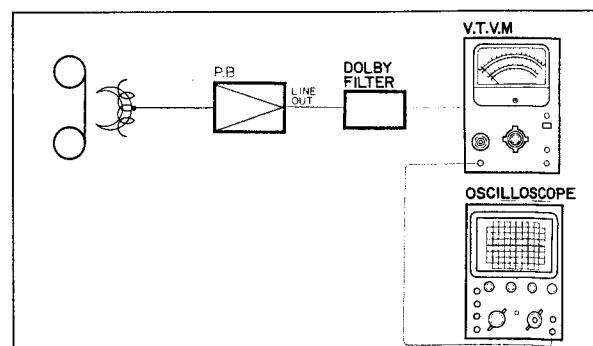


Fig. 7

### 8. Playback frequency response measurement

Play back the LCT-3031C test tape and check that the frequency response is within the specified zone in Fig. 8. Set the TAPE switch to the LH position. Now set the position of the switch from LH to

$\text{CrO}_2$  and check that the deviation at 10 kHz is  $-4.5 \text{ dBm} \pm 1 \text{ dB}$ . (Fig. 7, Fig. 8)

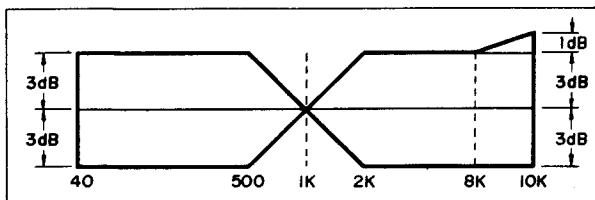


Fig. 8

#### 9. VU meter adjustment

Apply a 1 kHz  $-20 \text{ dBm}$  signal to the LINE IN terminals and adjust the REC LEVEL controls for both channels so that a signal of  $-5.5 \text{ dBm}$  is produced at the LINE OUT terminals. (Fig. 9) and adjust VR 2 (5 k-ohms) for both channels at the VU meter deflects to OVU.

#### 10. Headphone output measurement

Apply a 1 kHz  $-20 \text{ dBm}$  signal to the LINE IN terminals and adjust the REC LEVEL controls for both channels so that a signal of  $-5.5 \text{ dBm}$  is produced at the LINE OUT terminals.

Check that the output level of the PHONES jack is  $-23 \text{ dbm} \pm 2 \text{ dB}$  (at 8-ohm load) and that the channel balance is less than 3 dB. (Fig. 9)

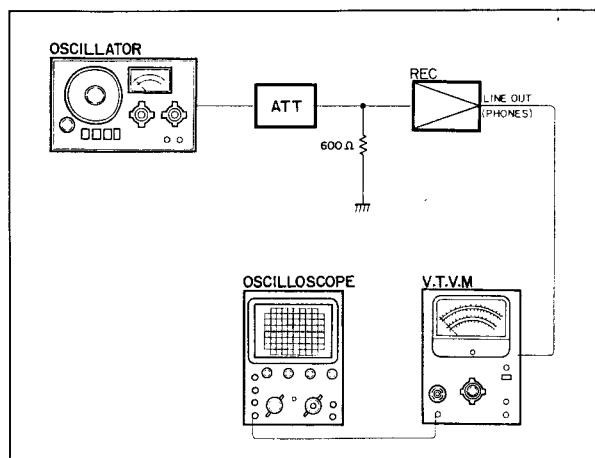


Fig. 9

#### 11. Bias current temporary adjustment

Set to the recording mode but do not apply a signal. Adjust VR4 (100 kohms) for both channels to set the bias current at the end of R1 (10 ohms) resistor of the PB/REC head. (Fig. 10)

#### 12. Bias oscillator frequency measurement

Set to the recording mode but do not apply a signal. Measure the bias oscillator frequency at the end of R1 (10 ohms) resistor of the PB/REC head and

check that it is  $85 \text{ kHz} \pm 3 \text{ kHz}$  (specification:  $85 \text{ kHz} \pm 8 \text{ kHz}$ ). If the frequency deviates widely rotate the oscillator coil core and adjust to  $85 \text{ kHz}$ . (Fig. 11)

Note: Lock the screw after adjustment.

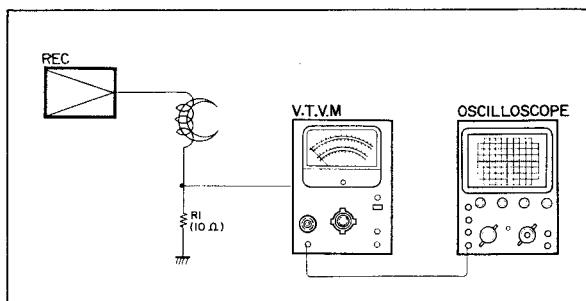


Fig. 10

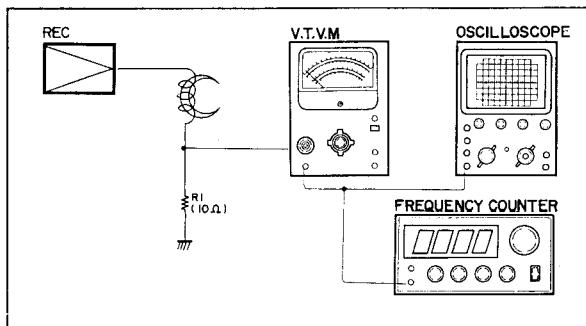


Fig. 11

#### 13. Recording level adjustment

Apply a 1 kHz  $-20 \text{ dBm}$  signal to the LINE IN terminals and adjust the REC LEVEL controls for both channels for a level of  $-5.5 \text{ dBm} \pm 0.5 \text{ dB}$  at the LINE OUT terminals.

Now record and play back, and adjust VR3 (20 kohms) so that the output at the LINE OUT terminals is  $-5.5 \text{ dBm}$  for both channels. (Fig. 12)

Use an LH tape for the adjustment. Make the channel deviation less than 3 dB.

#### 14. Overall frequency response

1) When the Dolby NR switch is set to OFF  
Apply a 333 Hz,  $-20 \text{ dBm}$  signal to the LINE IN terminals. Adjust the REC LEVEL controls for both channels for a level of  $-5.5 \text{ dBm}$  at the LINE OUT terminals.

Now make the input level  $-40 \text{ dBm}$ . With an LH tape, apply a 63 Hz to 12 kHz signal and with a  $\text{CrO}_2$  tape, apply a 63 Hz to 14 kHz signal. Record and play back the signals and check that the output level at each of the frequencies is within the specified zone in Fig. 13

Make the channel balance less than 6 dB with 12 kHz frequency.

- 2) When the Dolby NR switch is set to ON  
Apply a 333 Hz -20 dBm signal to the LINE IN terminals and adjust the REC LEVEL controls for both channels for a level of -5.5 dBm at the LINE OUT terminals.  
Now make the input level -40 dBm. Record and play back 63 Hz to 12 kHz signals on both the LH and CrO<sub>2</sub> tapes and check that the output level at each of the frequencies is within the specified zone in Fig. 14.  
Make the channel balance less than 6 dB with 12 kHz frequency.

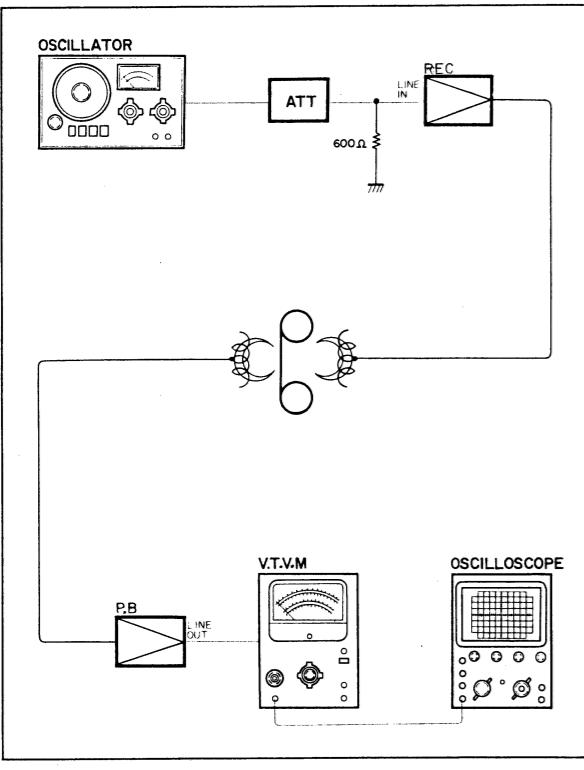


Fig. 12

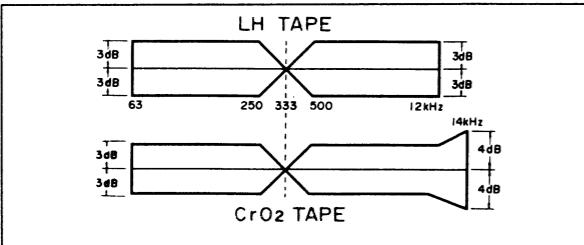


Fig. 13

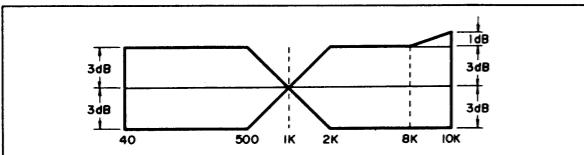


Fig. 14

#### 15. Overall distortion measurement

Apply a 1 kHz -20 dBm signal to the LINE IN terminals and adjust the REC LEVEL controls for both channels for a level of -5.5 dBm at the LINE OUT terminals.  
Check that the distortion is less than 2.0% for the LH tape and less than 2.5% for the CrO<sub>2</sub> tape. (Fig. 15)

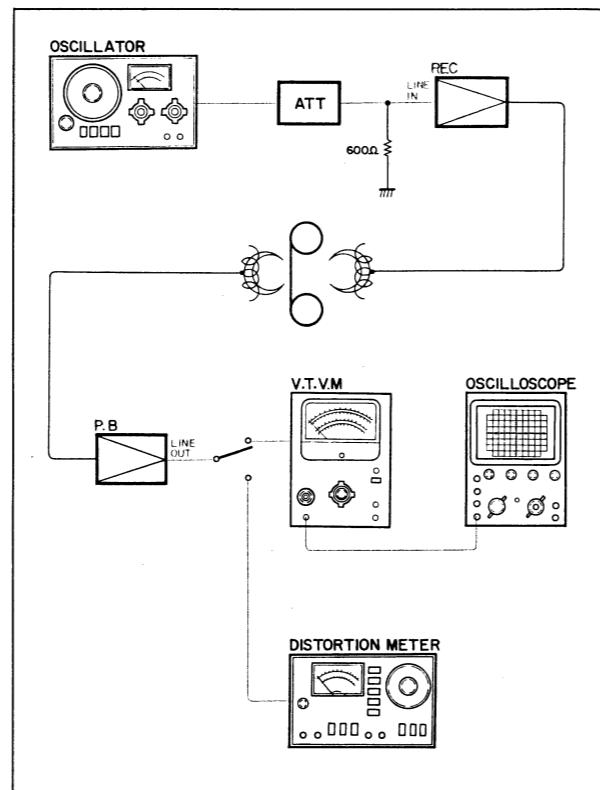


Fig. 15

#### 16. Overall Signal-to-Noise ratio measurement

Apply a 1 kHz -20 dBm signal to the LINE IN terminals and adjust the REC LEVEL controls for both channels for a level of -5.5 dBm at the LINE OUT terminals, and record.  
Now short the LINE IN terminals and record without applying a signal.

Rewind the tape and play it back. Check that the difference in the signal-recorded and non-signal-recorded section levels is:  
\* More than 40 dB for the LH tape when the Dolby NR switch is set to OFF.  
\* More than 44 dB for the CrO<sub>2</sub> tape when the Dolby NR switch is set to ON.

Note: The connections are the same as those in Fig. 12.

## SPECIFICATIONS

**Track Configuration :** 4-track 2-channel stereo cassette deck

### MECHANICAL

**Wow & flutter** : Less than 0.06% (WRMS)  
Less than 0.2 % (DIN)

**Tape speed** : 4.8 cm/sec. ±2%

**Rapid transport (F. FWD/REW)**

: Within 90 sec. (for C-60)  
**Motor** : 1-DC motor with electronic governor

**Recording/Playback head**

: Hard-Permalloy

**Erase head** : Ferrite

**Operation** : Full auto stop system

### ELECTRICAL

**Recording/Playback frequency response**

: 40 to 14,000 Hz ±3 dB  
(LH TAPE)  
40 to 15,000 Hz ±3 dB  
(CrO<sub>2</sub> TAPE)

**Input sensitivity** : Mic 0.3 mV/5 kΩ  
Line 50 mV/90 kΩ

**Output level/Impedance**

: Line 400 mV/at 50 kΩ  
(0 VU)  
Phone 3 mW/at 150Ω  
(0 VU)

**Bias frequency** : 85 kHz

**Signal to noise ratio** : 57 dB without Dolby  
(LH tape)

**Dolby NR effect** : 9 dB

**Overall distortion** : Less than 1.5% at 1 kHz  
(LH tape)  
Less than 2.0% at 1 kHz  
(CrO<sub>2</sub> tape)

### GENERAL

**Semiconductors** : 18 transistors  
6 ICs  
11 diodes  
1 LED

**Power consumption** : 12W

**Dimensions (W x H x D)** : 435 x 140 x 286 mm  
(17-1/8 x 5-1/2 x 11-1/4")

**Weight**

**Power supplies** : 5.7 kg (12 lb 9 oz)

Canadian model 120V 60 Hz

North European model 220V 50 Hz

General Model 110~130V/220~240V

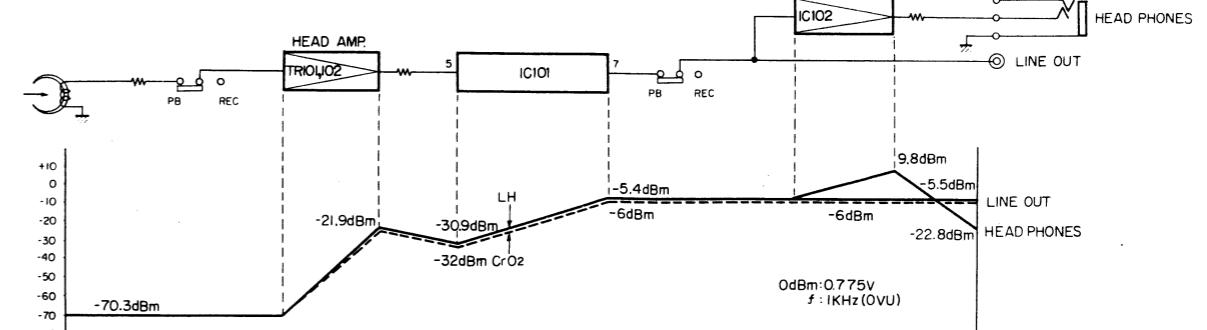
50/60 Hz

British & Australian model 240V 50 Hz

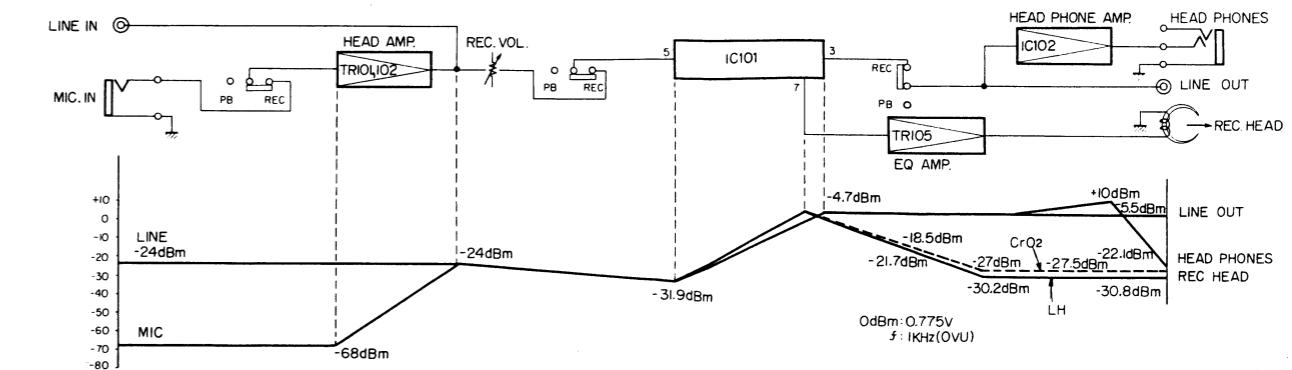
*Specifications subject to change without notice.*

## BLOCK DIAGRAM/LEVEL DIAGRAM

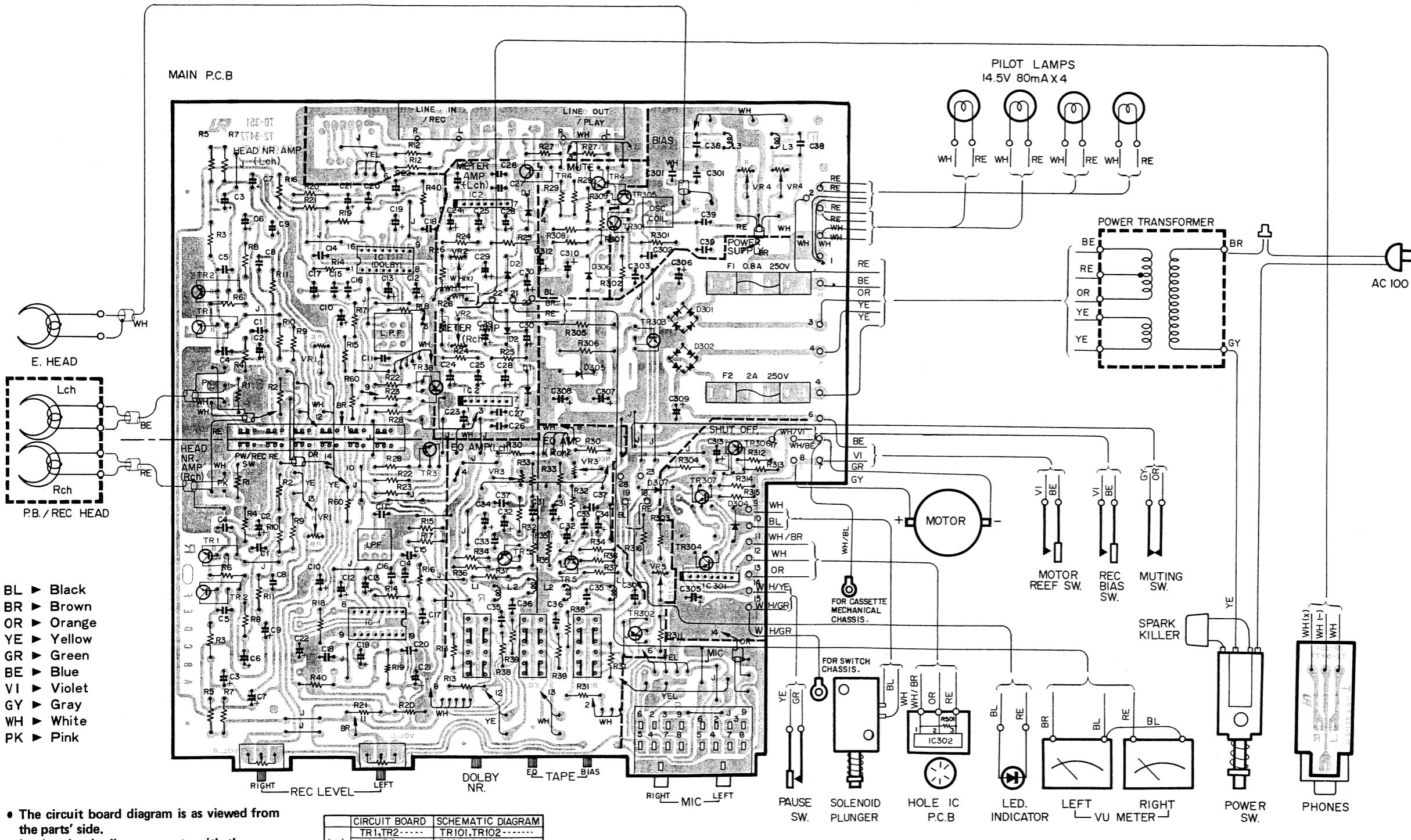
### PLAY BACK BLOCK DIAGRAM/LEVEL DIAGRAM (REFERENCE VALUE)



### REC BLOCK DIAGRAM/LEVEL DIAGRAM (REFERENCE VALUE)

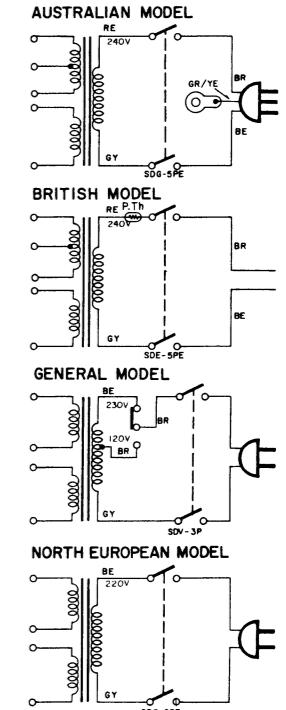
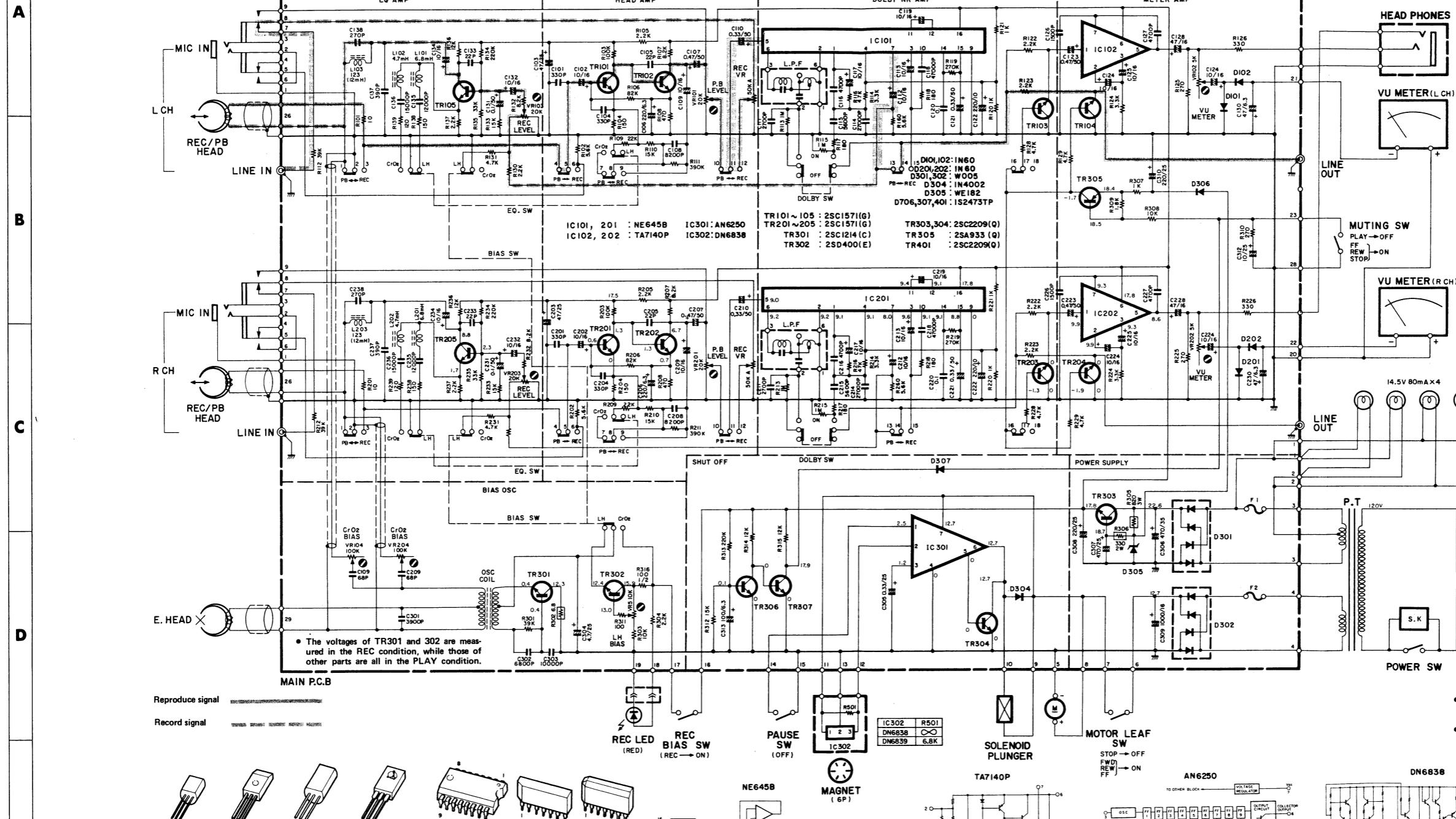


## ■ WIRING DIAGRAM



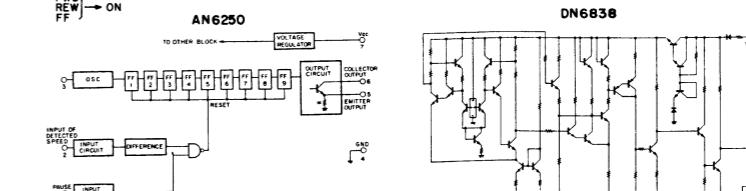
## ■SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10



CANADIAN MODEL

- This circuit diagram is a standard circuit diagram, and may be subject to change without previous notice.
- Ⓐ This mark shows a semi-fixed variable resistor.



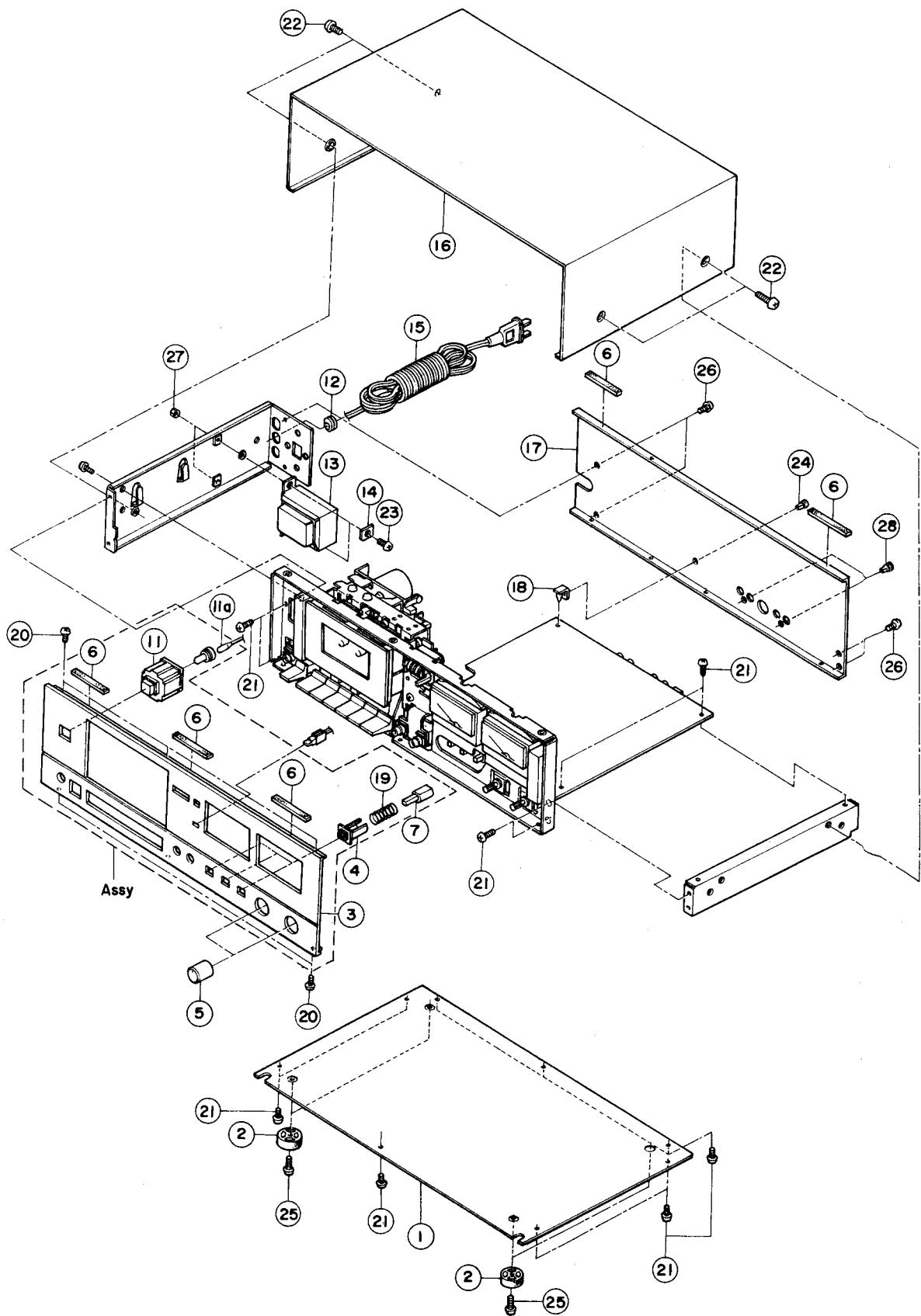


# PARTS LIST

**TC-320a**



**TC-320a EXPLODED VIEW(1)**



## **PARTS LIST**

TC-320a

來：New Part (新部品)

#### DESTINATION ABBREVIATIONS

## ESTIMATION B-General

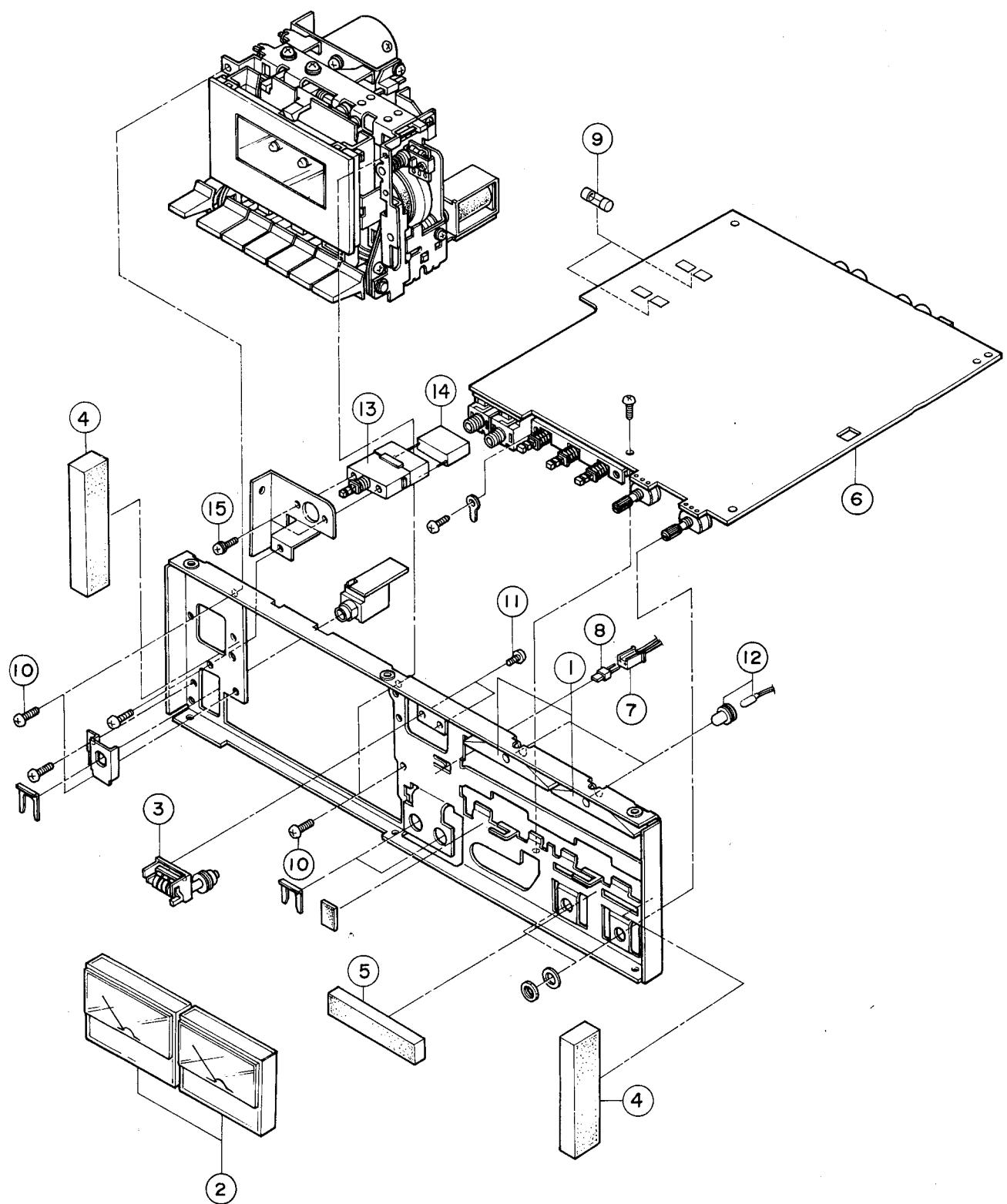
## ABBREVIATION

Canadian

B-British

G:North European

**TC-320a EXPLODED VIEW(2)**

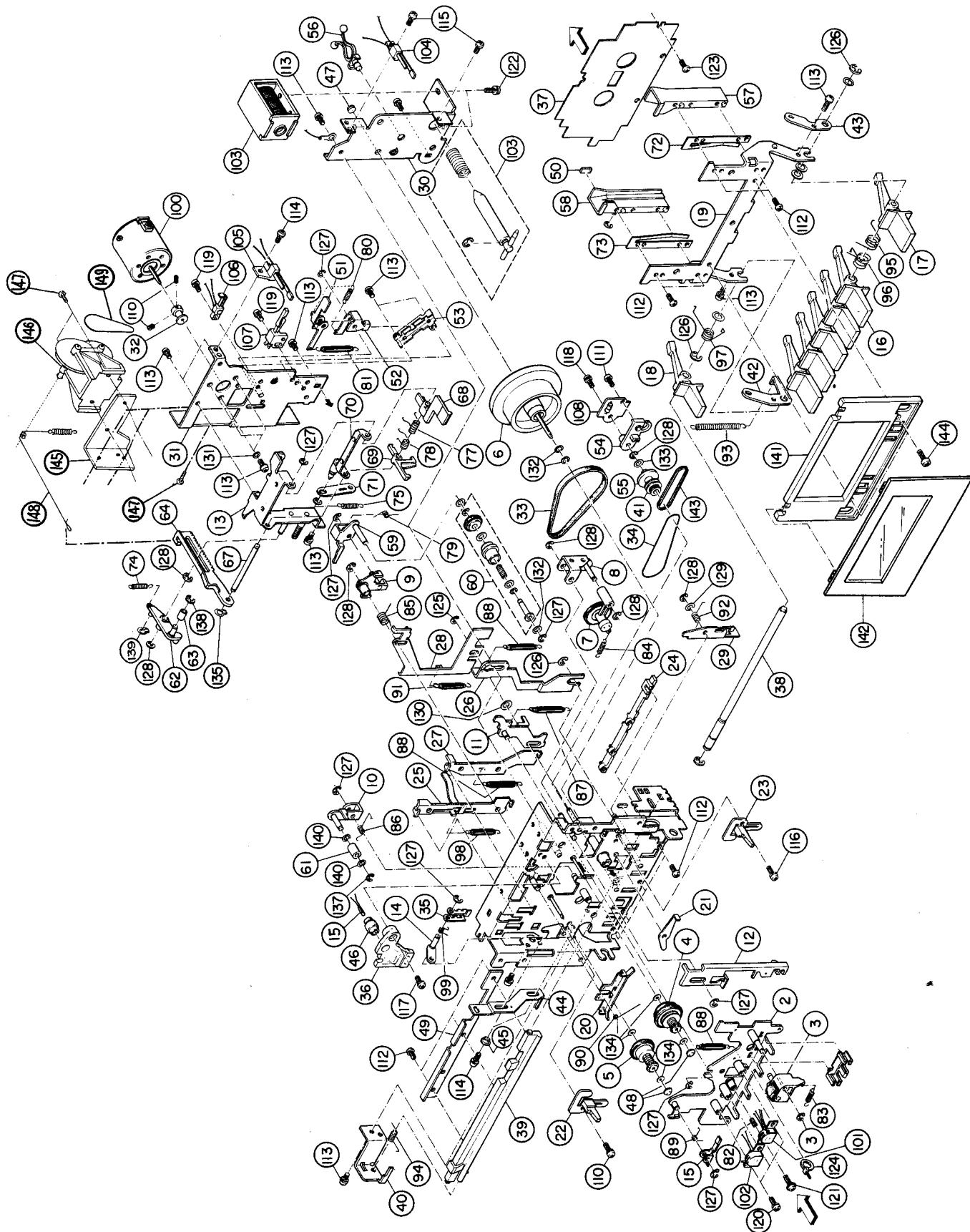


## **PARTS LIST**

TC-320c

\* : New Part (新部品)

**TC-320a EXPLoded VIEW(3)**



## ■PARTS LIST

Ref. No.	Part No.		Description	(部品名)	Remarks	Common model	Markets
2	32 00 00	SX 70 08 30	Head Base Assembly	ヘッドベース組立			
3	32 00 00	SX 70 08 40	Pinch Roller Arm Assembly	ピンチローラーアーム組立			
4	32 00 00	SX 70 08 50	Reel Base Assembly (Take-up)	リール受台組立(A)			
5	32 00 00	SX 70 08 60	" (Supply)	" (B)			
6	32 00 00	SX 70 08 70	Flywheel Assembly	フライホイール組立			
7	32 00 00	SX 70 08 80	Take-up Idler Assembly	TUアイドラー組立			
8	32 00 00	SX 70 08 90	Take-up Lever Assembly	TUレバー組立			
9	32 00 00	SX 70 09 00	F.R Lever Assembly	FRレバー組立			
10	32 00 00	SX 70 09 10	Idler B Lever Assembly	アイドラーBレバー組立			
11	32 00 00	SX 70 09 20	Head Base Actuating Assembly	ヘッドベース作動板組立			
12	32 00 00	SX 70 09 30	Pause Interlocking Lever Assembly	ポーズ連動レバー組立			
13	32 00 00	SX 70 09 40	Cassette Holding Mounting Plate Assembly	カセット押え取付板組立			
14	32 00 00	SX 70 09 50	REC Stopper Mounting Assembly	RECストッパー取付組立			
15	32 00 00	JB 00 06 80	Pilot Lamp 14.5V 80mA	パイロットランプ			
16	32 00 00	SX 70 09 70	Push Button Lever (Silver) " (Black)	押ボタンレバー			
17	32 00 00	SX 70 09 80	PAUSE Button Lever Assembly (Silver) " (Black)	PAUSEボタンレバー組立			
18	32 00 00	SX 70 10 10	EJECT Button Lever (Silver) " (Black)	EJECTボタンレバー			
19	32 00 00	SX 70 10 30	Cassette Holder	カセットホルダー			
20	32 00 00	SX 70 10 40	Brake Lever	ブレーキレバー			
21	32 00 00	SX 70 10 50	Pinch Roller Actuating Plate	ピンチローラー作動板			
22	32 00 00	SX 70 10 60	Head Base Holding (LEFT)	ヘッドベース押え(L)			
23	32 00 00	SX 70 10 70	" (RIGHT)	" (R)			
24	32 00 00	SX 70 10 80	Stopper Push Button	押ボタンストッパー			
25	32 00 00	SX 70 10 90	REC Lever	RECレバー			
26	32 00 00	SX 70 11 00	F.F Lever	F.Fレバー			
27	32 00 00	SX 70 11 10	REW Lever	REWレバー			
28	32 00 00	SX 70 11 20	Brake Actuating Lever	ブレーキ作動レバー			
29	32 00 00	SX 70 11 30	Pause Lock Plate	ポーズロック板			
30	32 00 00	SX 70 11 40	Flywheel Base	フライホイール受板			
31	32 00 00	SX 70 11 50	Motor Base Assembly	モーター受板組立			
32	32 00 00	SX 70 11 60	Motor Pulley	モーターブーリー			
33	32 00 00	SX 70 11 70	Belt Motor φ66.9×0.4	平ベルト			
34	32 00 00	SX 70 75 80	Belt Index Counter	カウンターベルト			
35	32 00 00	SX 70 11 90	REC Stopper	レックストッパー			
36	32 00 00	SX 70 77 10	Prism, Pilot Lamp (Tape)	照明プリズム			
37	32 00 00	SX 70 12 10	Cassette Guide Plate	化粧板			
38	32 00 00	SX 70 12 20	Shaft, Push Button	押ボタン軸			
39	32 00 00	SX 70 12 30	Lock Plate, Push Button	押ボタンロック板			
40	32 00 00	SX 70 12 40	Holder Push Button Lock Plate	押ボタンロック板ホルダー			
41	32 00 00	SX 70 12 50	INDEX Idler, Counter	カウンターアイドラー			
42	32 00 00	SX 70 12 60	Mounting Plate for Cassette Holder (Left)	カセットホルダー固定板(L)			
43	32 00 00	SX 70 12 70	" (Right)	" (R)			
44	32 00 00	SX 70 12 80	EJECT Lever	EJECTレバー			
45	32 00 00	SX 70 12 90	Spacer, EJECT Lever	EJECTレバーカラン			
46	32 00 00	SX 70 77 20	Holder, Pilot Lamp	ランプチューブ			
47	32 00 00	SX 70 77 30	Flywheel Adjust Screw	フライホイール調整ネジ			
48	32 00 00	SX 98 83 90	Cap, Reel Shaft	リール軸キャップ			
49	32 00 00	SX 70 13 10	Spacer, Lock Plate	ロック板補強板			
50	32 00 00	SX 70 13 20	Damper	ビリ止めクッション			
51	32 00 00	SX 70 13 30	Over Stroke Lever (A)	オーバーストロークレバー(A)			
52	32 00 00	SX 70 13 40	" (B)	" (B)			
53	32 00 00	SX 70 13 50	Cable Holder	ケーブルホルダー			
54	32 00 00	SX 70 13 60	Holder, Hole Element	ホール素子固定板			

※ : New Part (新部品)

## TC-320a

Ref. No.	Part No.		Description	(部品名)	Remarks	Common model	Markets
55	32:00:00		SX 70:13:60	Magnet	終端検出マグネット		
56	32:00:00		SX 98:30:60	Lead Lock	ベースロック		
57	32:00:00		SX 70:13:80	Cassete Guide (Right)	カセットガイド(R)		
58	32:00:00		SX 70:13:90	" (Left)	" (L)		
59	32:00:00		SX 70:14:00	Idler Lever Assembly	アイドラー・レバー組立		
60	32:00:00		SX 70:14:10	Idler Assembly (A)	アイドラーA組立		
61	32:00:00		SX 70:14:20	" (B)	アイドラーB組立		
62	32:00:00		SX 70:14:30	Hook Lever Assembly	フックレバー組立		
63	32:00:00		SX 70:14:40	Roller	ローラー		
64	32:00:00		SX 70:14:50	Lock Plate, Cassete Holder	カセットホルダーロック板		
67	32:00:00		SX 70:14:80	Shaft, Detection Record Lock	録音防止レバー軸		
68	32:00:00		SX 70:14:90	Cassette Holding	カセット押え		
69	32:00:00		SX 70:15:00	Detection Record Lock	録音防止レバー		
70	32:00:00		SX 70:15:10	EJECT Lever (B) Assembly	EJECTレバーB組立		
71	32:00:00		SX 70:15:20	EJECT Interlocking Lever	EJECT連動レバー		
72	32:00:00		SX 70:15:30	Cassette Holding Spring (Right)	カセット押えバネ(R)		
73	32:00:00		SX 70:15:40	" (Left)	" (L)		
75	32:00:00		SX 70:15:60	EJECT Interlocking Lever Spring	EJECT連動レバーバネ		
76	32:00:00		SX 70:15:70	Spring	圧着バネ		
77	32:00:00		SX 70:15:80	" Cassette Holding	カセット押えバネ		
78	32:00:00		SX 70:15:90	" Detection Record Lock	録音防止レバーバネ		
79	32:00:00		SX 70:16:00	" Idler Lever	アイドラー・レバーバネ		
80	32:00:00		SX 70:16:10	" Over Stroke	オーバーストロークバネ		
81	32:00:00		SX 70:16:20	"	"		
82	32:00:00		SX 98:87:10	Spring, Head Adjust	ヘッド調整バネ		
83	32:00:00		SX 70:16:30	" Pinch Roller	ピンチローラーバネ		
84	32:00:00		SX 70:16:40	" Take-up Lever	TULレバーバネ		
85	32:00:00		SX 70:16:50	" F.R Lever	F.Rレバーバネ		
86	32:00:00		SX 70:16:60	" Idler (B)	アイドラー(B)バネ		
87	32:00:00		SX 70:16:70	" Head Base Actuating	ヘッドベース作動板バネ		
88	32:00:00		SX 70:16:80	" Head Base	ヘッドベースバネ		
89	32:00:00		SX 70:16:90	" Tension Lever	テンションレバーバネ		
90	32:00:00		SX 70:17:00	" Brake Lever	ブレーキレバーバネ		
91	32:00:00		SX 70:17:10	" Brake Actuating Lever	ブレーキ作動板バネ		
92	32:00:00		SX 70:17:20	" PAUSE Lock Plate	PAUSEロック板バネ		
93	32:00:00		SX 70:17:30	" Cassette Holder	カセットホルダーバネ		
94	32:00:00		SX 70:17:40	" Push Button Lock Plate	押ボタンロック板バネ		
95	32:00:00		SX 70:17:50	" PAUSE Button	PAUSEボタンバネ		
96	32:00:00		SX 70:17:60	" STOP Button	STOPボタンバネ		
97	32:00:00		SX 70:17:70	" EJECT Button	EJECTボタンバネ		
98	32:00:00		SX 70:17:80	" REC Lever	RECレバーバネ		
99	32:00:00		SX 70:17:90	" REC Stopper	RECストッパー・バネ		
100	32:00:00		SX 70:18:00	Motor (MH15R2CHA)	モーター		
101	32:00:00		SX 70:00:10	Recording / Playback Head	録再ヘッド		
102	32:00:00		SX 70:00:20	Erase Head	消去ヘッド		
103	32:00:00		SX 70:61:00	Plunger	プランジャー		
104	32:00:00		SX 70:00:40	Leaf Switch (MSW-0038)	リーフスイッチ		
105	32:00:00		SX 70:00:50	" (MSW-0058G)	"		
106	32:00:00		SX 70:00:60	" (MSW-0044)	"		
107	32:00:00		SX 70:18:10	" (BSW-81)	"		

※ : New Part (新部品)

\* : New Part (新部品)

## TC-320a

Ref. No.	Part No.			Description	(部品名)	Remarks	Common model	Markets
				Main Circuit Board	メイン基板			
TR101 TR102	42 00 00	iC	99 02 00	Transistor 2SC2634C(S.T)	トランジスター			
TR103	42 00 00	iC	13 27 00	" 2SC1327(S.T)	"			
	42 00 00	iC	99 02 00	" 2SC2634C(S.T)	"	inter-changeable		
	42 00 00	iC	08 28 00	" 2SC828(R.S)	"			
	42 00 00	iC	99 00 40	" 2SC536(F.G)	"			
TR201 TR202	42 00 00	iC	99 02 00	" 2SC2634C(S.T)	"			
TR203	42 00 00	iC	13 27 00	" 2SC1327(S.T)	"			
	42 00 00	iC	99 02 00	" 2SC2634C(S.T)	"	inter-changeable		
	42 00 00	iC	08 28 00	" 2SC828(R.S)	"			
	42 00 00	iC	99 00 40	" 2SC536(F.G)	"			
TR301	42 00 00	iC	99 00 70	" 2SC1214(C)	"			
TR302	42 00 00	iD	04 00 00	" 2SD400(E)	"			
TR303 TR304	42 00 00	iC	99 00 60	" 2SC2209(Q)	"			
TR305	42 00 00	iA	99 00 10	" 2SA564(R)	"			
TR306 TR307	42 00 00	iC	99 02 00	" 2SC2634C(S.T)	"			
D101 D102	42 00 00	iF	00 03 30	Diode 1S188AMTP	ダイオード			
D201 D202	42 00 00	iF	00 03 30	"	"			
D301 D302	32 00 00	SX	70 01 80	Bridge Diode W005 G.I	ブリッジダイオード			
D304	42 00 00	iH	00 00 60	Diode 1N4002(1N4003)G.I	ダイオード			
D305	42 00 00	iF	99 01 00	Zener Diode WZ-182	ゼンナーダイオード			
D306 D307	42 00 00	iF	00 06 70	Diode 1N2473TP	ダイオード			
IC101	42 00 00	iG	99 00 90	IC NE646B	IC			
IC102	42 00 00	iG	00 24 50	" TA7140P	"			
IC201	42 00 00	iG	99 00 90	" NE646B	"			
IC202	42 00 00	iG	00 24 50	" TA7140P	"			
IC301	42 00 00	iG	99 00 50	" AN6250				
L101	32 00 00	SX	70 20 80	Fixed Inductor 6.8mH	固定インダクター			
L102	32 00 00	SX	70 20 70	" 4.7mH	"			
L103	32 00 00	SX	70 20 90	" #7106 12mH	"			
L201	32 00 00	SX	70 20 80	" 6.8mH	"			
L202	32 00 00	SX	70 20 70	" #7106 4.7mH	"			
L203	32 00 00	SX	70 20 90	" #7106 12mH	"			
	32 00 00	SX	70 01 90	Low Pass Filter VSL 221G85	ローパスフィルター			
	32 00 00	SX	70 20 60	OSC Coil	バイアスOSCコイル			
	32 00 00	SX	70 21 00	Slide Switch CL212R	録再スイッチ			
	32 00 00	SX	70 21 10	Variable Resistor 50KA 16φ	単連ボリューム			
	42 00 00	KA	99 00 10	Push Switch 12J-8S193	3連プッシュSW			
	42 00 00	EH	03 00 60	Sems Screw M3×6	バネ座付セムスネジ			
	42 00 00	LB	99 00 10	Mic Jack (Silver)	マイクジャック			
	32 00 00	SX	70 81 70	" (Black)	"			
	42 00 00	LB	99 00 20	Phones Jack (Black)	ヘッドホーンジャック			
	32 00 00	SX	70 81 80	" (Silver)	"			
	32 00 00	SX	70 75 90	Heat Sink	電源放熱板			
	42 00 00	EK	39 00 20	⊕ Bind Head Tap-Tight Screw M3×8	⊕バインドタップタイト			
VR101	42 00 00	SX	98 40 20	Semi Fixed Variable Resistor 8φ20KB	半固定ボリューム			
VR102	42 00 00	SX	98 40 10	" 5KB	"			
VR103	42 00 00	SX	98 40 20	" 20KB	"			
VR104	42 00 00	SX	99 67 90	" 100KB	"			

\* : New Part (新部品)

Ref. No.	Part No.		Description		(部品名)	Remarks	Common model	Markets
VR201	42	00	00	SX 98 40 20	Semi Fixed Variable Resistor 8φ 20KB	半固定ポリューム		
VR202	42	00	00	SX 98 40 10	" 5KB	"		
VR203	42	00	00	SX 98 40 20	" 20KB	"		
VR204	42	00	00	SX 99 67 90	" 100KB	"		
VR305	42	00	00	SX 99 69 10	" 10KB	"		
	32	00	00	SX 70 22 30	4P Pin Jack	4Pピンジャック		
R101	42	00	00	HJ 35 41 00	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST 10Ω	カーボン抵抗		
R102	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R103	42	00	00	HJ 35 81 00	" 100KΩ	"		
R104	42	00	00	HJ 35 51 50	" 150Ω	"		
R105	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R106	42	00	00	HJ 35 78 20	" 82KΩ	"		
R107	42	00	00	HJ 35 68 20	" 8.2KΩ	"		
R108	42	00	00	HJ 35 54 70	" 470Ω	"		
R109	42	00	00	HJ 35 72 20	" 22KΩ	"		
R110	42	00	00	HJ 35 71 50	" 15KΩ	"		
R111	42	00	00	HJ 35 83 90	" 390KΩ	"		
R112	42	00	00	HJ 35 73 90	" 39KΩ	"		
R113	42	00	00	HJ 35 91 00	" 1MΩ	"		
R114	42	00	00	HJ 35 63 30	" 3.3KΩ	"		
R115	42	00	00	HJ 35 91 00	" 1MΩ	"		
R116	42	00	00	HJ 35 74 70	" 47KΩ	"		
R117	42	00	00	HJ 35 51 80	" 180Ω	"		
R118	42	00	00	HJ 35 65 60	" 5.6KΩ	"		
R119	42	00	00	HJ 35 82 70	" 270KΩ	"		
R120	42	00	00	HJ 35 61 00	" 1KΩ	"		
R121	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R122	42	00	00	HJ 35 63 30	" 3.3KΩ	"		
R123	42	00	00	HJ 35 64 70	" 4.7KΩ	"		
R124	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R125	42	00	00	HG 10 52 70	Carbon Resistor SR $\frac{1}{2}$ w	270Ω	"	
R126	42	00	00	HJ 35 53 30	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST 330Ω	"		
R127	42	00	00	HJ 35 64 70	" 4.7KΩ	"		
R128	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R130	42	00	00	HJ 35 64 70	" 4.7KΩ	"		
R131	42	00	00	HJ 35 68 20	" 8.2KΩ	"		
R132	42	00	00	HJ 35 71 50	" 15KΩ	"		
R133	42	00	00	HJ 35 82 20	" 220KΩ	"		
R134	42	00	00	HJ 35 73 30	" 33KΩ	"		
R135	42	00	00	HJ 35 71 20	" 12KΩ	"		
R136	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R137	42	00	00	HJ 35 51 50	" 150Ω	"		
R138	42	00	00	HJ 35 51 20	" 120Ω	"		
R139	42	00	00	HJ 35 81 80	" 180KΩ	"		
R201	42	00	00	HJ 35 41 00	" 10Ω	"		
R202	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R203	42	00	00	HJ 35 81 00	" 100KΩ	"		
R204	42	00	00	HJ 35 51 50	" 150Ω	"		
R205	42	00	00	HJ 35 62 20	" 2.2KΩ	"		
R206	42	00	00	HJ 35 78 20	Carbon Resistor SR $\frac{1}{2}$ w	82KΩ	"	
R207	42	00	00	HJ 35 68 20	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST 8.2KΩ	"		
R208	42	00	00	HJ 35 54 70	" 470Ω	"		
R209	42	00	00	HJ 35 72 20	" 22KΩ	"		

※ : New Part (新部品)

## TC-320a

Ref. No.	Part No.		Description		(部品名)	Remarks	Common model	Markets
R210	42:00:00	HJ:35:71:50	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST	15K $\Omega$	カーボン抵抗			
R211	42:00:00	HJ:35:83:90	"	390K $\Omega$	"			
R212	42:00:00	HJ:35:73:90	"	39K $\Omega$	"			
R213	42:00:00	HJ:35:91:00	"	1M $\Omega$	"			
R214	42:00:00	HJ:35:63:30	"	3.3K $\Omega$	"			
R215	42:00:00	HJ:35:91:00	"	1M $\Omega$	"			
R216	42:00:00	HJ:35:74:70	"	47K $\Omega$	"			
R217	42:00:00	HJ:35:51:80	"	180 $\Omega$	"			
R218	42:00:00	HJ:35:65:60	"	5.6K $\Omega$	"			
R219	42:00:00	HJ:35:82:70	"	270K $\Omega$	"			
R220	42:00:00	HJ:35:61:00	"	1K $\Omega$	"			
R221	42:00:00	HJ:35:62:20	"	2.2K $\Omega$	"			
R222	42:00:00	HJ:35:63:30	"	3.3K $\Omega$	"			
R223	42:00:00	HJ:35:52:70	Carbon Resistor SR J $\frac{1}{2}$ w	270 $\Omega$	"			
R224	42:00:00	HJ:35:53:30	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST	330 $\Omega$	"			
R225	42:00:00	HJ:35:64:70	"	4.7K $\Omega$	"			
R226	42:00:00	HJ:35:62:20	"	2.2K $\Omega$	"			
R227	42:00:00	HJ:35:64:70	"	4.7K $\Omega$	"			
R228	42:00:00	HJ:35:64:70	"	4.7K $\Omega$	"			
R229	42:00:00	HJ:35:62:20	"	2.2K $\Omega$	"			
R230	42:00:00	HJ:35:64:70	"	8.2K $\Omega$	"			
R231	42:00:00	HJ:35:68:20	"	15K $\Omega$	"			
R232	42:00:00	HJ:35:71:50	"	220K $\Omega$	"			
R233	42:00:00	HJ:35:73:30	"	33K $\Omega$	"			
R234	42:00:00	HJ:35:62:20	"	12K $\Omega$	"			
R235	42:00:00	HJ:35:62:20	"	2.2K $\Omega$	"			
R236	42:00:00	HJ:35:51:50	"	150 $\Omega$	"			
R237	42:00:00	HJ:35:51:20	"	120 $\Omega$	"			
R238	42:00:00	HJ:35:81:80	"	180K $\Omega$	"			
R239	42:00:00	HJ:35:65:60	"	5.6K $\Omega$	"			
R240	42:00:00	HJ:35:73:90	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST	39K $\Omega$	"			
R241	42:00:00	HJ:35:42:20	Carbon Resistor SRJ $\frac{1}{2}$ w	22 $\Omega$	"			
R242	42:00:00	HJ:35:71:00	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST	10K $\Omega$	"			
R243	42:00:00	HJ:35:62:20	"	2.2K $\Omega$	"			
R244	42:00:00	HL:43:58:20	Metal Oxide Film Resistor J3W	820 $\Omega$	"			
R245	42:00:00	HL:42:53:30	"	330 $\Omega$	"			
R246	42:00:00	HJ:35:61:00	Carbon Resistor ERD14PJV RD $\frac{1}{2}$ ST	1K $\Omega$	"			
R247	42:00:00	HJ:35:71:00	"	10K $\Omega$	"			
R248	42:00:00	HJ:35:61:80	"	1.8K $\Omega$	"			
R249	42:00:00	HK:15:52:70	"	270 $\Omega$	"			
R250	42:00:00	HJ:35:51:00	"	100 $\Omega$	"			
R251	42:00:00	HJ:35:71:50	"	15K $\Omega$	"			
R252	42:00:00	HJ:35:82:20	"	220K $\Omega$	"			
R253	42:00:00	HJ:35:71:20	"	12K $\Omega$	"			
R254	42:00:00	HV:99:00:10	Carbon Resistor J $\frac{1}{2}$ w	100 $\Omega$	不燃性カーボン抵抗			
C101	42:00:00	FG:21:23:30	Ceramic Capacitor (SL)	330pF 50V	セラミックコンデンサ(SL)			
C102	42:00:00	FZ:00:04:70	Electrolytic Capacitor (MS)	10 $\mu$ F 16V	ケミコン(MS)			
C103	42:00:00	FJ:15:74:70	"	47 $\mu$ F 25V	"			
C104	42:00:00	FG:21:23:30	Ceramic Capacitor (SL)	330pF 50V	セラミックコンデンサ(SL)			
C105	42:00:00	FG:21:12:20	"	22pF 50V	"			
C106	42:00:00	FJ:11:82:20	Electrolytic Capacitor	220 $\mu$ F 6.3V	ケミコン			
C107	42:00:00	FJ:16:54:70	"	0.47 $\mu$ F 50V	"			
C108	42:00:00	FA:41:38:20	Mylar Capacitor	0.0082 $\mu$ F J50V	マイラーコンデンサ			
C109	42:00:00	FJ:33:71:00	Electrolytic Capacitor	10 $\mu$ F 16V	ケミコン			

\* : New Part (新部品)

Ref. No.	Part No.			Description			(部品名)	Remarks	Common model	Markets
C100	42	00	00	FZ	99	00	10	Electrolytic Capacitor(LR) 0.33μF 50V	ケミコン(LR)	
C111	42	00	00	FG	71	32	70	Ceramic Capacitor(B) 2700pF 50V	セラミックコンデンサ	
C112	42	00	00	FZ	00	04	70	Electrolytic Capacitor(MS) 10pF 16V	ケミコン(MS)	
C113	42	00	00	FA	15	42	70	Mylar Capacitor 0.027μF J50V	マイラーコンデンサ	
C114	42	00	00	FA	41	35	60	" 0.0056μF	"	
C115	42	00	00	FA	41	34	70	" 0.0047μF	"	
C116	42	00	00	FJ	33	71	00	Electrolytic Capacitor 10μF 16V	ケミコン	
C117	42	00	00	FA	41	44	70	Mylar Capacitor 0.047μF	マイラーコンデンサ	
C118	42	00	00	FJ	33	71	00	Electrolytic Capacitor 10μF 16V	ケミコン	
C119	42	00	00	FA	41	51	00	Mylar Capacitor 0.1μF J50V	マイラーコンデンサ	
C120	42	00	00	FM	42	53	30	Electrolytic Capacitor(Z) 0.33μF 50V	ケミコン(Z)	
C121	42	00	00	FJ	13	82	20	Electrolytic Capacitor 220μF 10V	ケミコン	
C122	42	00	00	FJ	46	54	70	" 0.47μF 50V	"	
C123	42	00	00	FJ	33	71	00	" 10μF 16V	"	
C124	42	00	00	FG	24	41	00	Ceramic Capacitor 10000pF(B) 50V	セラミックコンデンサ	
C125	42	00	00	FG	21	34	70	" 4700pF(B) 50V	"	
C126	42	00	00	FJ	33	74	70	Electrolytic Capacitor 47μF 16V	ケミコン	
C127	42	00	00	FJ	33	71	00	" 10μF 16V	"	
C128	42	00	00	FJ	31	74	70	" 47μF 6.3V	"	
C129	42	00	00	FM	42	51	00	Electrolytic Capacitor(Z) 0.1μF 50V	ケミコン(Z)	
C130	42	00	00	FJ	33	71	00	Mylar Capacitor 0.012μF J50V	マイラーコンデンサ	
C131	42	00	00	FA	41	41	50	" 0.015μF J50V	"	
C132	42	00	00	FG	21	23	90	Ceramic Capacitor(SL) 390pF 50V	セラミックコンデンサ	
C133	42	00	00	FG	21	12	20	Ceramic Capacitor(SL) 22pF 50V	セラコン(SL)	
C134	42	00	00	FZ	00	04	70	Electrolytic Capacitor(MS) 10μF 16V	ケミコン(MS)	
C135	42	00	00	FA	41	41	20	Mylar Capacitor 0.0082μF J50V	マイラーコンデンサ	
C136	42	00	00	FA	41	38	20	" 0.0050μF J50V	"	
C137	42	00	00	FG	21	23	10	Ceramic Capacitor(SL) 2700pF 50V	セラミックコンデンサ	
C138	42	00	00	SX	70	23	10	Mica Capacitor 270pF J50V	マイカコンデンサ	
C139	42	00	00	SX	70	23	20	" 68pF J50V	"	
C201	42	00	00	FG	21	23	30	Ceramic Capacitor(SL) 330pF 50V	セラミックコンデンサ	
C202	42	00	00	FZ	00	04	70	Electrolytic Capacitor(MS) 10μF 16V	ケミコン	
C203	42	00	00	FJ	15	74	70	Electrolytic Capacitor 47μF 25V	"	
C204	42	00	00	FG	21	23	30	Ceramic Capacitor(SL) 330pF 50V	セラミックコンデンサ	
C205	42	00	00	FG	71	12	20	" 22pF 50V	"	
C206	42	00	00	FJ	31	82	20	Electrolytic Capacitor 220μF 6.3V	ケミコン	
C207	42	00	00	FJ	26	54	70	" 0.47μF 50V	"	
C208	42	00	00	FA	41	38	20	Mylar Capacitor 0.0082μF J50V	マイラーコンデンサ	
C209	42	00	00	FJ	23	71	00	Electrolytic Capacitor 10μF 16V	ケミコン	
C210	42	00	00	FZ	99	00	10	" (MS) 0.33μF 50V	"	
C211	42	00	00	FG	71	32	70	Ceramic Capacitor(B) 2700pF 50V	セラミックコンデンサ	
C212	42	00	00	FZ	00	04	70	Electrolytic Capacitor(MS) 10μF 16V	ケミコン	
C213	42	00	00	FA	15	42	70	Mylar Capacitor 0.027μF J50V	マイラーコンデンサ	
C214	42	00	00	FA	41	35	60	" 0.0050μF J50V	"	
C215	42	00	00	FA	41	34	70	" 0.0047μF J50V	"	
C216	42	00	00	FA	41	38	20	" 0.0082μF J50V	"	
C217	42	00	00	FJ	33	71	00	Electrolytic Capacitor 10μF 16V	ケミコン	
C218	42	00	00	FA	41	44	70	Mylar Capacitor 0.047μF J50V	マイラーコンデンサ	
C219	42	00	00	FA	15	51	00	" 0.1μF J50V	"	
C220	42	00	00	FM	42	53	30	Electrolytic Capacitor(Z) 0.33μF 50V	ケミコン	
C221	42	00	00	FJ	23	82	20	Electrolytic Capacitor 220μF 10V	"	
C222	42	00	00	FJ	26	54	70	" 0.47μF 50V	"	
C223	42	00	00	FJ	26	54	70	" 10μF 16V	"	
C224	42	00	00	FG	24	41	00	Ceramic Capacitor 10000pF 50V	セラミックコンデンサ	
C225	42	00	00	FG	21	34	70	" (B) 4700pF 50V	"	
C226	42	00	00	FG	24	41	00	Ceramic Capacitor 10000pF 50V	セラミックコンデンサ	
C227	42	00	00	FG	21	34	70	" (B) 4700pF 50V	"	

※ : New Part (新部品)

TC-320a

\* : New Part (新部品)