

Service Manual

Microcassette™ Recorder

Microcassette

RN-202

Colour

(K) ···· Black Type

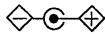


Area

| Country Code No. | Areas | Color |
|------------------|---------|-------|
| (E) | Europe. | (K) |

MZ20 MECHANISM SERIES

■ SPECIFICATIONS

| | |
|--------------------------------|--|
| Power Requirement: | Battery; 3V (Two R6/LR6, UM-3 batteries) AC; (E) ···· 220V, 50 Hz, with optional Panasonic AC adaptor RP-AC31 |
| Power Output: | 300mW RMS (Max.) |
| Frequency Range: | 540 ~ 3400 Hz (at "2.4 cm/s" speed) |
| Program Time: | |
| at "1.2" speed; | 1 hour on one side 2 hours on both sides |
| at "2.4" speed; | 30 minutes on one side 1 hour on both sides (with RT-60MC microcassette tape) |
| Track System: | 2 track monaural recording and playback |
| Tape Speed: | 2.4 cm/s 1.2 cm/s |
| Jaks: | |
| Input; | DC IN ; 3V (Sub mini type)  |
| Output; | MONITOR ; 8 Ω , Ø3.5 |
| Speaker: | 3.6 cm PM dynamic speaker, 4 Ω |
| Dimensions (W × H × D): | 58 × 117 × 23.7mm |
| Weight: | 130 g without batteries |

BATTERY SERVICE LIFE

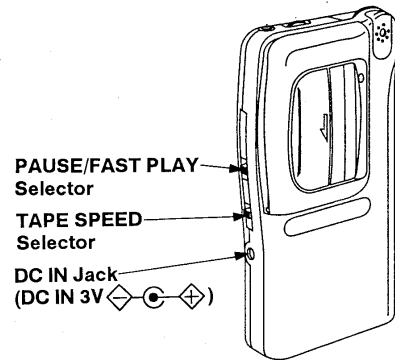
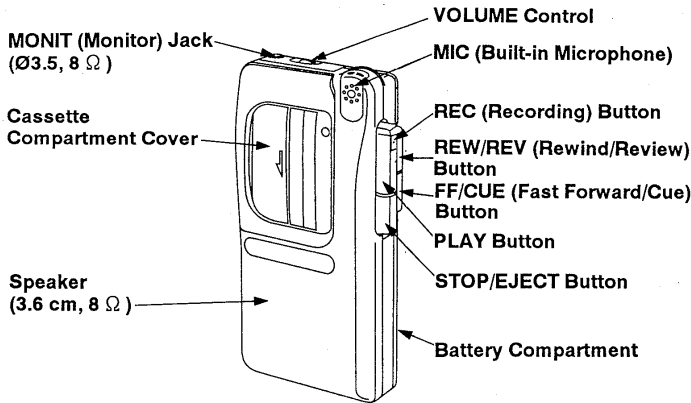
UN-3 ("AA" size) Batteries
Approx. 5.5 hours of recording (EIAJ)
Approx. 3.5 hours of playback (EIAJ) with volume set at 3/4 position.

The above battery service life is measured according to the conditions set forth by EIAJ (Electronic Industries Association of Japan). As the battery service life varies with the method of operation and environmental conditions, use these values as reference.

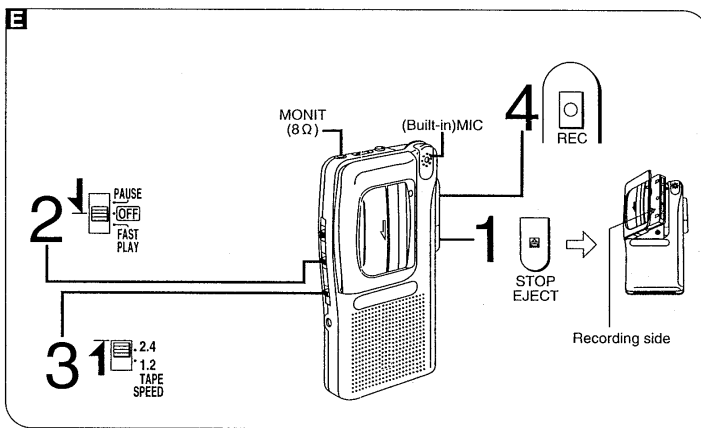
- Notes:** 1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

Panasonic

LOCATION OF CONTROLS



TO MAKE RECORDING



Follow the steps 1–4 as figure E.
 Use a tape with tabs in place.
 The recording level is automatically adjusted.
 The built-in microphone is omnidirectional, so that recording is available in every direction.

■ **To stop recording**
 Press **STOP/EJECT**.

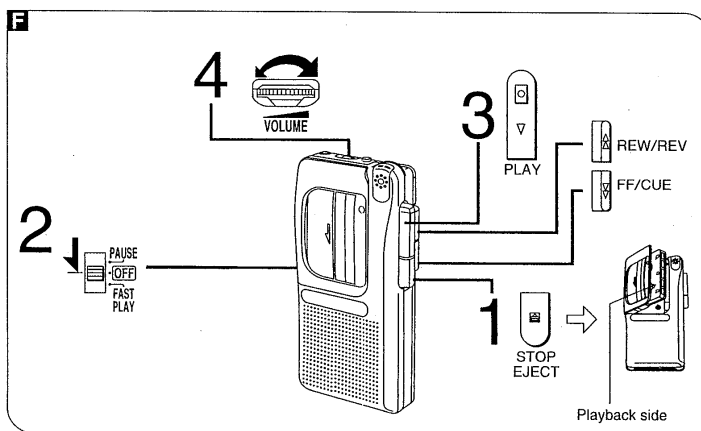
■ **To temporarily stop recording**
 Set the **PAUSE** selector to **PAUSE**.
 To resume recording, set it to **OFF**.

■ **Follow up recording**
 Recording can be started during playback by simply pressing **REC**.

■ **Quick review**
 To listen to the sound you have recorded, press and hold **REW/REV**.
 When the button is released, playback will start.

■ **Monitoring**
 The sound can be heard with an optional earphone plugged into the **MONIT** jack.
 (Plug type: Monaural mini)
 • Avoid listening for prolonged periods of time to prevent hearing damage.

TO PLAYBACK THE TAPE



Follow the steps 1–4 as figure F.

■ **To stop play**
 Press **STOP/EJECT**.

■ **To play faster than usual**
 Set the **FAST PLAY** selector to **FAST PLAY**.

■ **To fast forward and rewind**
 Press **FF/CUE** (fast forward) or **REW/REV** (rewind).

Note:
 When the tape reaches the end, press **STOP/EJECT** to release the button and turn off the unit.

■ **Cue and review**
 Sound can be monitored at a high speed for as long as the **FF/CUE** (cue) or **REW/REV** (review) is held down during playback.
 When the button is released, normal playback will start.

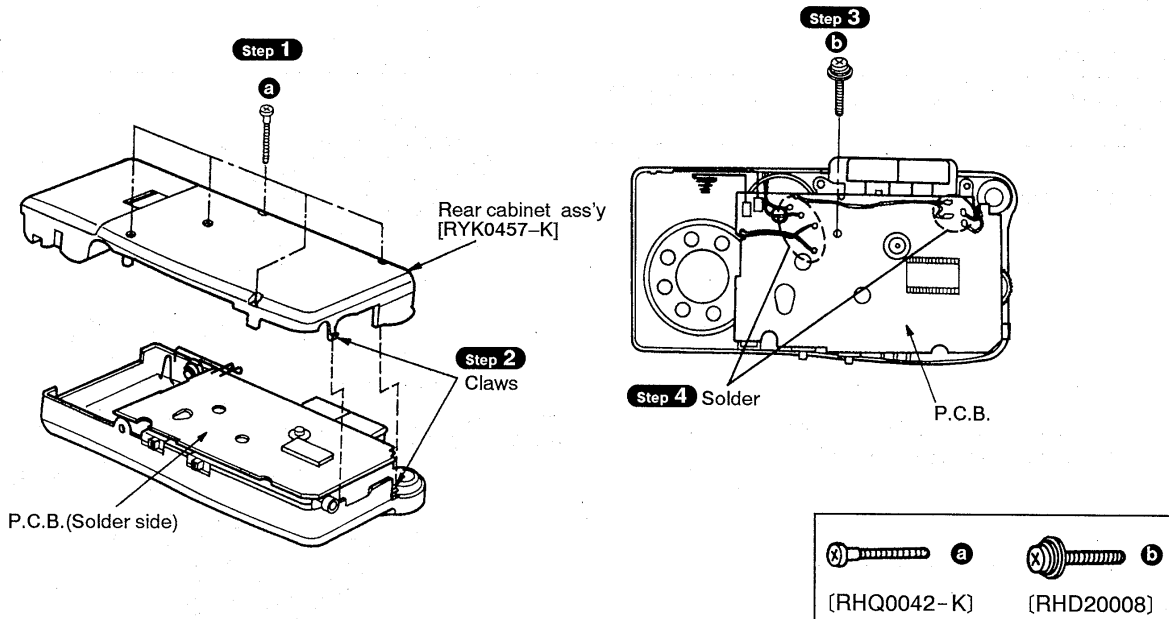
OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT PROCEDURES

NOTE

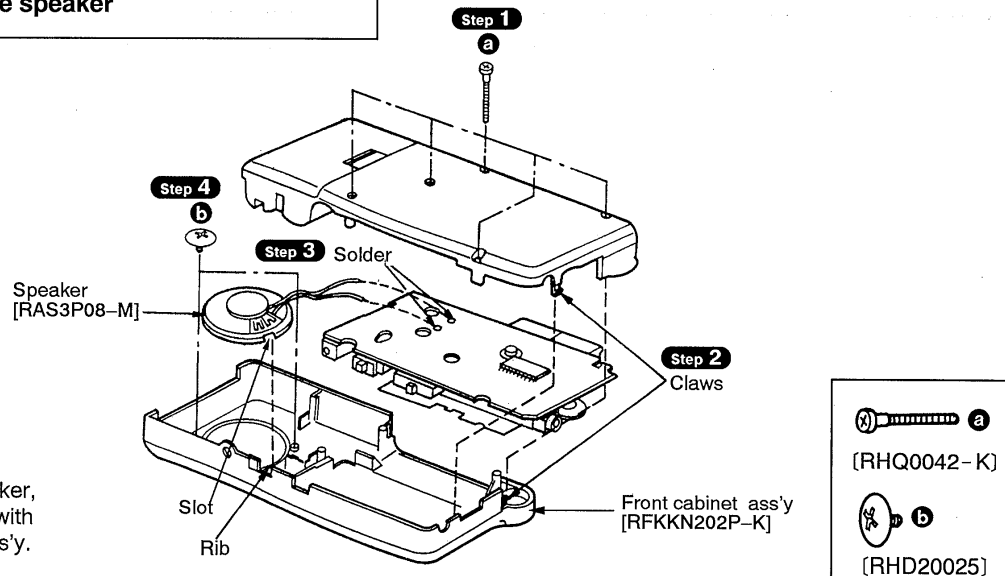
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Illustrated screws are equivalent to actual size.
4. [] indicates Parts No.

1. Checking for the P.C.B.

[Removal procedure for replacing the parts on the P.C.B.]



2. Replacement for the speaker

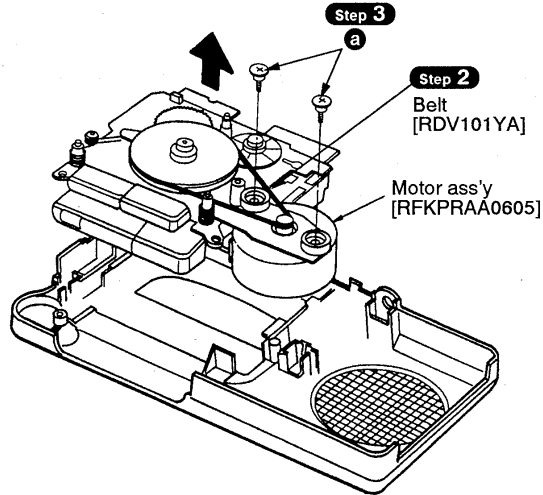


NOTE

When attaching the speaker, align the slot of speaker with the rib of front cabinet ass'y.

3. Replacement for the belt and motor ass'y

Step 1 Perform the item 1.

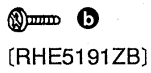
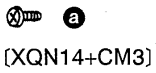
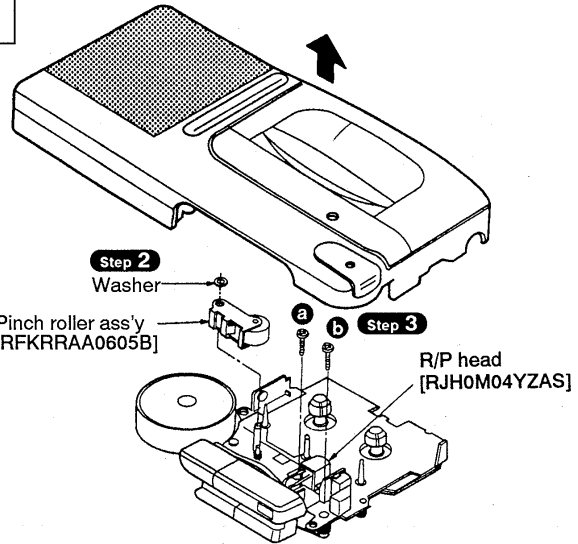


4. Replacement for the pinch roller ass'y and R/P head

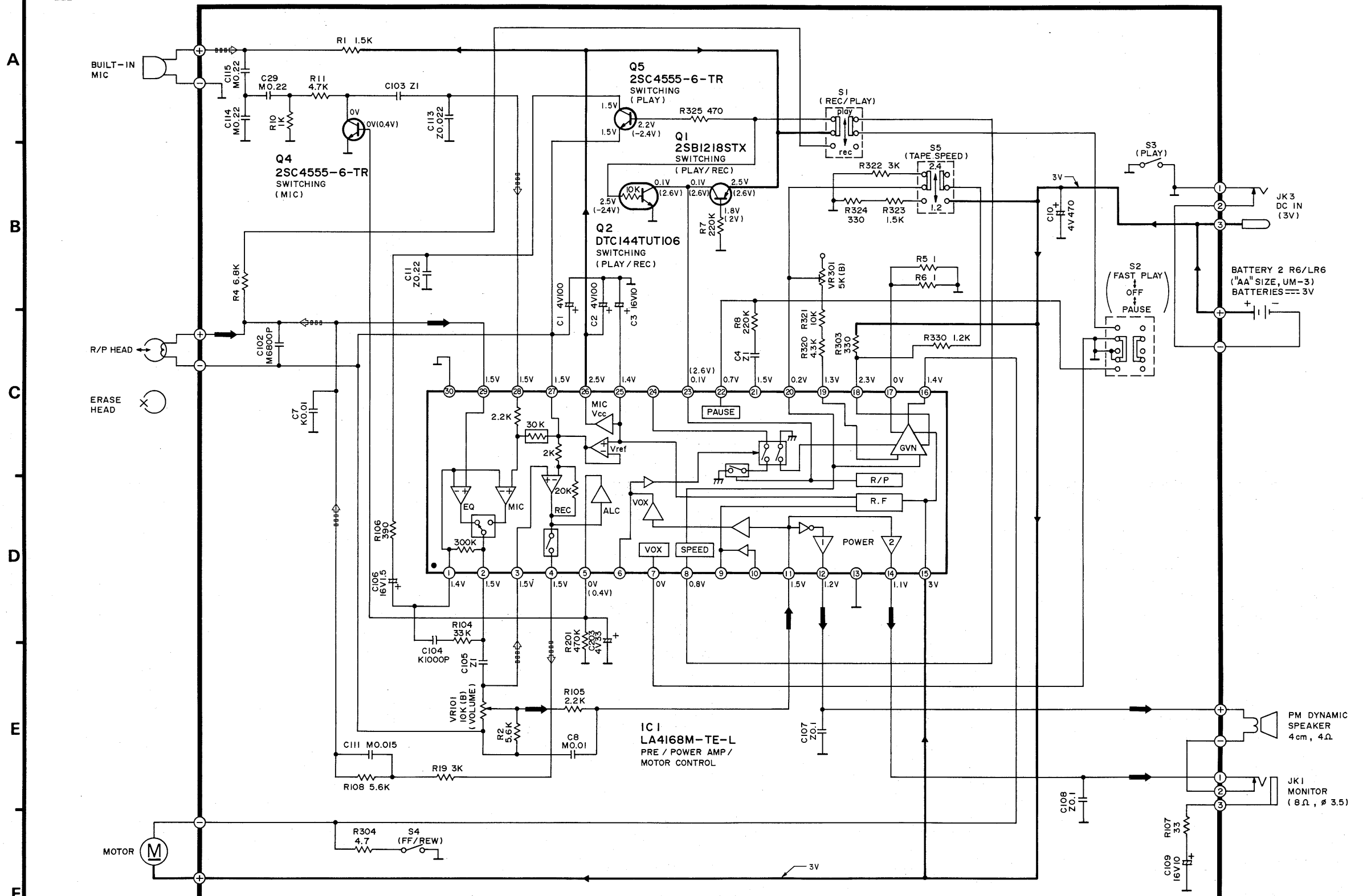
Step 1 Perform the item 1.

NOTE

•After replacing the R/P head,perform the head azimuth adjustment.(See page 5.)



SCHEMATIC DIAGRAM

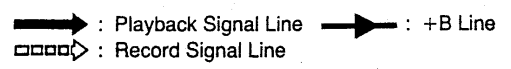


Notes:

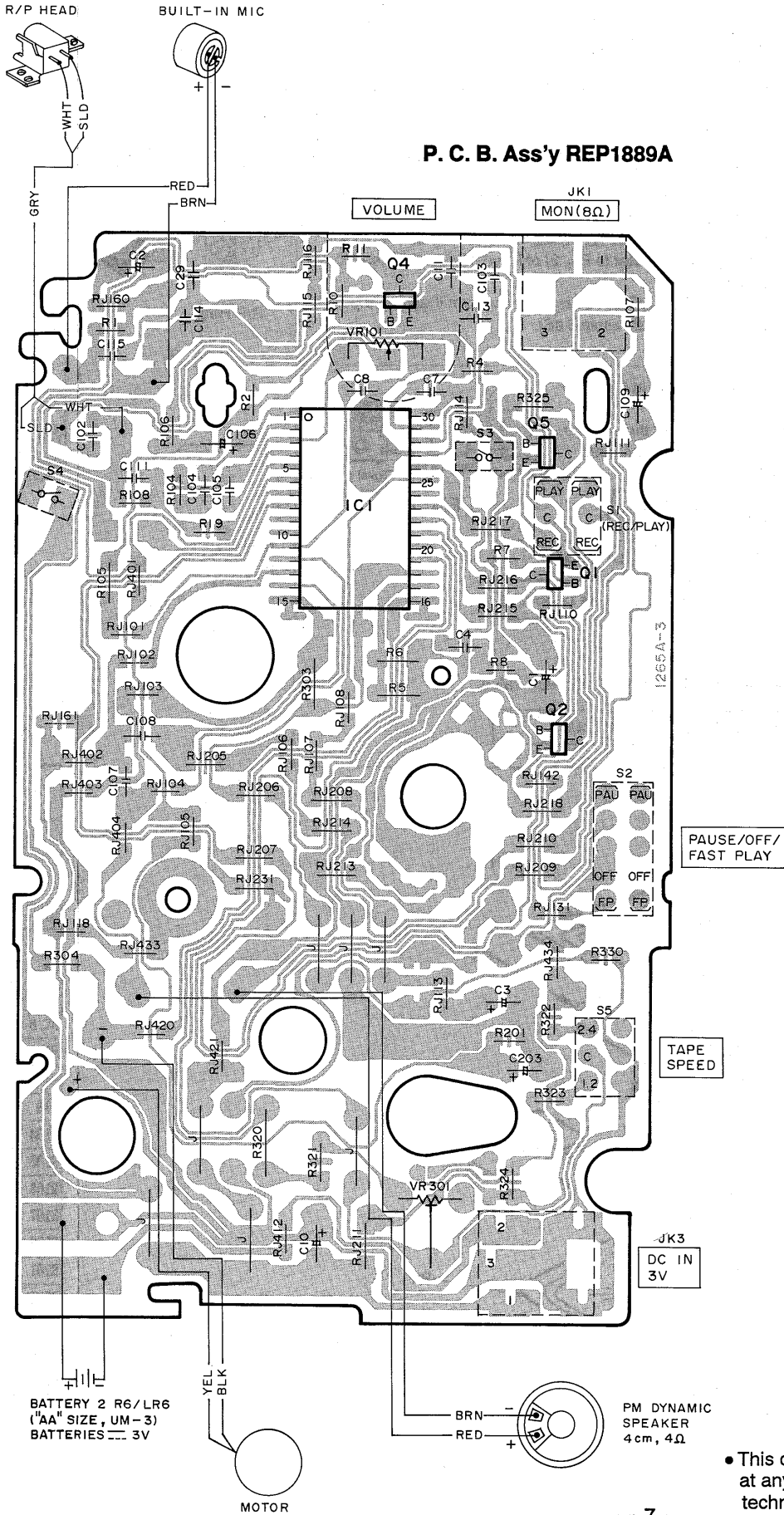
- S1: Record/Playback switch in "PLAYBACK" position.
- S2: Fast Play/Pause switch in "OFF" position.
- S3: Playback switch in "OFF" position.
- S4: FF/REW switch in "OFF" position.
- S5: Tape speed select switch in "2.4 cm/s" position. (1.2...1.2 cm/s, 2.4...2.4 cm/s)
- VR101: Volume control/VAS LEVEL VR.
- VR301: Tape speed adjustment VR. (2.4 cm/s)

- DC voltage measurement are taken with electronic voltmeter from negative terminal of battery.
- No mark Playback
- () Record
- Battery current: No signal 121 mA
- Playback (VR max) 330 mA
- Record 118 mA

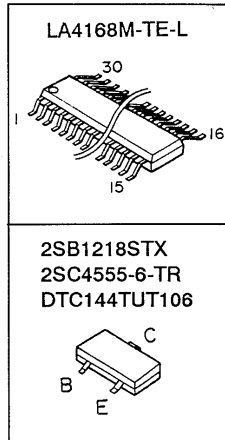
•This schematic diagram may be modified at any time with the development of new technology.



CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



• Terminal guide of IC's, transistors and diodes



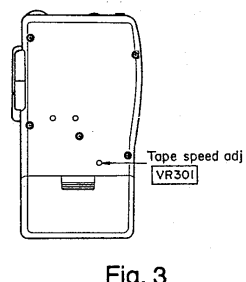
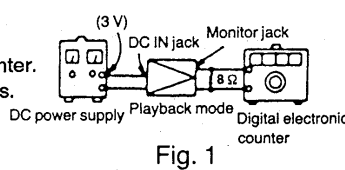
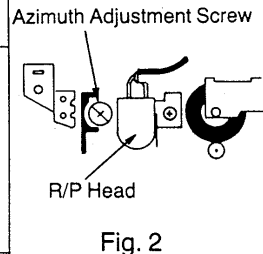
• This circuit board diagram may be modified at any time with the development of new technology.

MEASUREMENT AND ADJUSTMENT METHODS

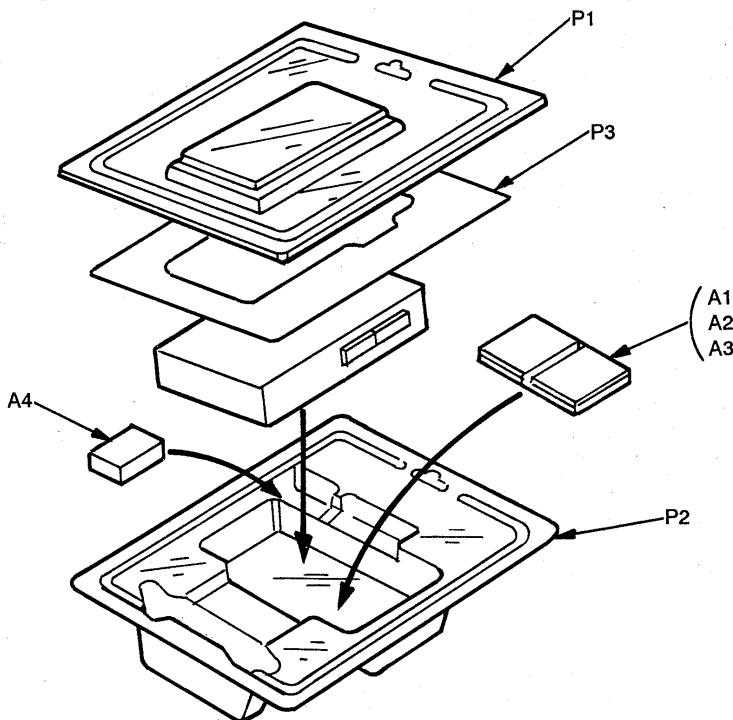
NOTES: Make sure the unit is in good working order before attempting measurements and adjustments.
Set the switches and controls to the positions as specified for this procedure.

- Make sure heads are clean.
- Make sure capstan and pinch roller are clean.
- Suggested room temperature for this procedure.
- Volume control: Maximum
- Tape speed select switch: 2.4 cm/s or 1.2 cm/s

| ITEM | MEASUREMENT & ADJUSTMENT |
|---|--|
| <p>Ⓐ Head Azimuth Adjustment Condition: • Playback mode Equipment: • Test tape ... QZZMFN</p> | <ol style="list-style-type: none"> Assemble the mechanism and cabinet parts completely. Play back the head azimuth adjusting tape (2.4 cm/s, 4 kHz.....QZZMFN). Adjust the azimuth adjusting screw (Refer to Fig. 2) of Record/Playback head to obtain the maximum monitor output. After adjusting, repeat PLAY and STOP some times and confirm that the output variation is less than the specified level (within 3 dB). |
| <p>Ⓑ Tape speed adjustment Condition: • Playback mode Equipment: • DC power supply • Digital electronic counter • Test tape ... QZZMWA for 2.4 cm/s ... QZZMWBL for 1.2 cm/s</p> | <ol style="list-style-type: none"> Test equipment connection is shown in fig. 1 Apply 3V to DC IN. Connect the monitor output (8 Ω) to the counter. Set tape speed selector switch S5 to 2.4 cm/s. Playback test tape QZZMWA. Adjust VR301 so that the output is within the adjustment target value. (Refer to Fig. 3) <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p>Standard value: 2890 ~ 3060 Hz (2.4 cm/s)</p> </div> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p>Adjustment target value: 2960 ± 40 Hz (2.4cm/s)</p> </div> <ol style="list-style-type: none"> Set tape speed selector switch S5 to 1.2 cm/s. Playback test tape QZZMWBL. At that time, check if the output is within the standard value. <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p>Standard value: 2880 ~ 3120 Hz (1.2 cm/s)</p> </div> |



PACKAGING



REPLACEMENT PARTS LIST

| Ref. No. | Part No. | Part Name & Description | Remarks | Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|----------|-------------|-------------------------|---------|
| | | INTEGRATED CIRCUIT | | | | SWITCH (ES) | |
| IC1 | LA4168M-TE-L | IC, PRE/POWER AMP | | S1 | RSS2B71ZA-M | SW, R/P | |
| | | TRANSISTOR(S) | | S2 | RSS3B008-A | SW, FAST PLAY/PAUSE | |
| | | | | S3 | RSH1A008-U | SW, PLAYBACK | |
| Q1 | 2SB1218STX | TRANSISTOR | | S4 | RSH1A008-U | SW, FF/REW | |
| Q2 | DTC144TUT106 | TRANSISTOR | | S5 | RSS2B014-A | SW, TAPE SPEED | |
| Q4, 5 | 2SC4555-6-TR | TRANSISTOR | | | | JACK (S) | |
| | | VARIABLE RESISTOR(S) | | JK1 | RJJ32M01-1 | MONITOR | |
| VR101 | EVLHCAA06B14 | V. R. VOLUME | | JK3 | RJJ43H01-C | DC IN | |
| VR301 | EVND8KA03B53 | V. R. TAPE SPEED ADJ. | | | | | |

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
 * Resistance values are in ohms, unless specified otherwise, 1 K=1,000 (OHM), 1 M=1,000k (OHM)

| Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Values & Remarks |
|----------|--------------|------------------|------------|--------------|------------------|-----------|--------------|------------------|
| | | RESISTORS | R323 | ERJ6GEYG152V | 1/10W 1.5K | | | CAPACITORS |
| | | | R324 | ERJ6GEYJ331V | 1/10W 330 | | | |
| | | | R325 | ERJ8GEYJ471V | 1/8W 470 | C1, 2 | ECEA0GKS101 | 4V 100U |
| R1 | ERJ6GEYJ152V | 1/10W 1.5K | R330 | ERJ6GEYG122V | 1/10W 1.2K | C3 | ECEA1CKS100I | 16V 10U |
| R2 | ERJ6GEYJ562V | 1/10W 5.6K | | | CHIP JUMPERS | C4 | ECUV1C105ZFN | 16V 1U |
| R4 | ERJ6GEYJ682V | 1/10W 6.8K | | | | C7 | ECUV1E103KBN | 25V 0.01U |
| R5, 6 | ERJ8GEYJ1R0V | 1/8W 1.0 | | | | C8 | ECUV1E103MBN | 25V 0.01U |
| R7, 8 | ERJ6GEYJ224V | 1/10W 220K | RJ101-108 | ERJ6GEYOR00V | 1/10W 0 | C10 | ECEA0GKS471I | 4V 470U |
| R10 | ERJ6GEYJ102V | 1/10W 1K | RJ110, 111 | ERJ6GEYOR00V | 1/10W 0 | C11 | ECUV1C224ZFN | 16V 0.22U |
| R11 | ERJ6GEYJ472V | 1/10W 4.7K | RJ113-116 | ERJ6GEYOR00V | 1/10W 0 | C29 | ECUV1C224MBN | 16V 0.22U |
| R19 | ERJ6GEYJ302V | 1/10W 3K | RJ118 | ERJ6GEYOR00V | 1/10W 0 | C102 | ECUV1H682MBN | 50V 6800P |
| R104 | ERJ6GEYJ333V | 1/10W 33K | RJ131 | ERJ6GEYOR00V | 1/10W 0 | C103 | ECUV1C105ZFN | 16V 1U |
| R105 | ERJ8GEYJ222V | 1/8W 2.2K | RJ142 | ERJ6GEYOR00V | 1/10W 0 | C104 | ECUV1H102KBN | 50V 1000P |
| R106 | ERJ6GEYJ391V | 1/10W 390 | RJ160, 161 | ERJ6GEYOR00V | 1/10W 0 | C105 | ECUV1C105ZFN | H 16V 1U |
| R107 | ERJ6GEYJ330V | 1/10W 33 | RJ205-211 | ERJ8GEYOR00V | 1/10W 0 | C106 | ECST1CY155RR | 16V 1.5U |
| R108 | ERJ6GEYJ562V | 1/10W 5.6K | RJ213-218 | ERJ8GEYOR00V | 1/10W 0 | C107 | ECUV1E104ZFN | 25V 0.1U |
| R201 | ERJ6GEYJ474V | 1/10W 470K | RJ231 | ERJ6GEYOR00V | 1/10W 0 | C108 | ECUV1E104ZFM | 25V 0.1U |
| R303 | ERSL39J331U | 1/4W 330 | RJ401-404 | ERJ6GEYOR00V | 1/10W 0 | C109 | ECEA1CKS100I | 16V 10U |
| R304 | ERJ8GEYJ4R7V | 1/8W 4.7 | RJ412 | ERJ6GEYOR00V | 1/10W 0 | C111 | ECUV1E153MBN | H 25V 0.015U |
| R320 | ERDS2TG432T | 1/4W 4.3K | RJ420, 421 | ERJ6GEYOR00V | 1/10W 0 | C113 | ECUV1E223ZFN | H 25V 0.022U |
| R321 | RRSN15J103UE | 1/20W 10K | RJ433, 434 | ERJ6GEYOR00V | 1/10W 0 | C114, 115 | ECUV1C224MBN | H 16V 0.22U |
| R322 | ERJ6GEYG302V | 1/10W 3K | | | | C203 | ECEA0GKS330I | 4V 33U |

| Ref. No. | Part No. | Part Name & Description | Remarks | Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|----------|--------------|-------------------------|---------|
| | | MECHANISM PARTS | | 146A | RGU1056-K | BUTTON, REW | |
| | | | | 147 | RFKRRAA0605J | PLATE ASS'Y | |
| | | | | 148 | RFKPRAA0605 | MOTOR ASS'Y | |
| 101 | RHE5191ZB | SCREW | | 149 | RFKRRAA0605K | ROD ASS'Y | |
| 102 | RJHMD04YZAS | R/P HEAD | | 149A | RGU0452 | BUTTON, REC | |
| 103 | RMD5015ZB | HEAD BRACKET | | | | | |
| 104 | RUQ106ZA | SPRING | | | | | |
| 105 | XQN14+CM3 | SCREW | | | | | |
| 106 | 1WEA125ZA | HEAD WIRE | | | | | |
| 107 | QBW2060 | WASHER | | | | | |
| 108 | RDRI41ZA | ROLLER | | | | | |
| 109 | RDRI37ZA | ROLLER | | | | | |
| 110 | RDV101YA | BELT | | | | | |
| 111 | RML0156 | LEVER | | | | | |
| 112 | RNG132ZA | GEAR | | | | | |
| 113 | RNG133ZB | GEAR | | | | | |
| 114 | RNG134ZA | GEAR | | | | | |
| 115 | RNL185ZA | LEVER | | | | | |
| 116 | RNL186ZA | LEVER | | | | | |
| 117 | RNL187ZC | LEVER | | | | | |
| 118 | RNL188ZA | LEVER | | | | | |
| 119 | RNL190ZA | LEVER | | | | | |
| 120 | RNR76ZB | ROD | | | | | |
| 121 | RNW110ZA | WASHER | | | | | |
| 122 | RNW164ZA | WASHER | | | | | |
| 123 | RUA841ZA | PLATE | | | | | |
| 124 | RUW184ZA | SPRING | | | | | |
| 125 | RUW185YA | SPRING | | | | | |
| 126 | RUW186YA | SPRING | | | | | |
| 127 | RUW187ZA | SPRING | | | | | |
| 128 | RUW188YA | SPRING | | | | | |
| 129 | RUW189ZB | SPRING | | | | | |
| 130 | RUW190YB | SPRING | | | | | |
| 131 | RUW191ZB | SPRING | | | | | |
| 132 | RFE366ZA | SCREW | | | | | |
| 133 | RMA0286 | ANGLE | | | | | |
| 134 | RMG0186 | RUBBER | | | | | |
| 135 | XQN14+C3FN | SCREW | | | | | |
| 136 | XQN16+CF3 | SCREW | | | | | |
| 137 | XQS14+AQ3FZ | SCREW | | | | | |
| 138 | RFKRRAA0605A | EJECT ANGLE ASS'Y | | | | | |
| 139 | RFKRRAA0605B | PINCH ROLLER ASS'Y | | | | | |
| 140 | RFKRRAA0605C | REEL ASS'Y | | | | | |
| 141 | RFKRRAA0605D | FLYWHEEL ASS'Y | | | | | |
| 142 | RFKRRAA0605E | CHASSIS ASS'Y | | | | | |
| 143 | RFKRRAA0608A | ROD ASS'Y | | | | | |
| 143A | RGU1053-K | BUTTON, PLAY | | | | | |
| 144 | RFKRRAA0608B | ROD ASS'Y | | | | | |
| 144A | RGU1054-K | BUTTON, STOP/EJECT | | | | | |
| 145 | RFKRRAA0608C | ROD ASS'Y | | | | | |
| 145A | RGU1055-K | BUTTON, FF | | | | | |
| 146 | RFKRRAA0608D | ROD ASS'Y | | | | | |

MECHANISM PARTS LOCATION

1 2 3 4 5 6 7 8 9

<FRONT VIEW>

<REAR VIEW>

