# WM-EX500/EX505

# SERVICE MANUAL

**Ver 1.0 2000. 01**

*AEP Model*
*WM-EX500/EX505*
*E Model*
*WM-EX505*


Photo: WM-EX505



| | |
|---|---|
| Model Name Using Similar Mechanism | NEW |
| Tape Transport Mechanism Type | MT-WMEX505-162 |

## SPECIFICATIONS

- **Frequency response (Dolby NR off (WM-EX505))**
  Playback: 30 - 18,000 Hz
- **Output**
  Headphones (🎧 jack)
  Load impedance 8 - 300 ohms
- **Power requirements**
  1.5 V
  One R6 (size AA) battery
- **Dimensions (w/h/d)**
  Approx. 78.7 x 109.7 x 28.1 mm, incl. projecting parts and controls
- **Mass**
  Approx. 145 g
  Approx. 200 g (incl. a battery and a cassette)
- **Supplied accessories**
  Stereo headphones or earphones with remote control (1) (WM-EX505)
  Stereo headphones or earphones (1) (WM-EX500)

Design and specifications are subject to change without notice.

**Battery life (Approx. hours)** (EIAJ*)

| | Sony alkaline LR6 (SG) |
|---|---|
| Tape playback | 35 |

* Measured value by the standard of EIAJ (Electronic Industries Association of Japan). (Using a Sony HF series cassette tape)

**Note**

- The battery life may shorten depending on the operation of the unit.

## CASSETTE PLAYER

MICROFILM

SONY®

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### Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

### Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

# SECTION 1
# SERVICING NOTES

This set detects the rotation of the idler gear (A) (side S) using the PH701 (photo reflector). The PH701 is mounted on the MAIN board, therefore the idler gear (A) (side S) cannot be detected with the MAIN board removed. As a result, the motor (M901) cannot be controlled, causing malfunction.
Further, the DIRECTION switch (S701) is also mounted on the MAIN board, and with the board removed, the mechanism position cannot be detected and the operation is not changed over.
Therefor, when the voltage check is executed with the MAIN board removed, follow the procedure provided below.

1. Setting

(1) Refer to "3. DISASSEMBLY", and remove the MAIN board.
(2) Connect the MAIN board to the motor (M901) and the plunger (PM901) using jumper wires. These can be connected easily with the use of the extension tool (Part No. 1-769-143-11) (ten in one set).
(3) Short the TAPE DETECT switch (S901-1) terminals and the ATS switch (S901-2) terminals.
(4) Connect the AF oscillator to the TP36 (PHOTO IN) and the TP46 (GND).
(5) Supply 1.3 V to the battery terminals using the regulated power supply.

2. Preset state

To set the PLAY, FF, REW modes, the preset state must be set.

(1) Check that the slider (NR) and the DIRECTION switch (S701) are set to the center position. If not, set the preset state as follow.
(2) Move the DIRECTION switch (S701) to the side, which the slider (NR) is facing.
(3) The slider (NR) will move when the regulated power supply switch is set to OFF once and then set to ON. Move the DIRECTION switch (S701) according to this timing and set to the center position.

3. FF, REW modes

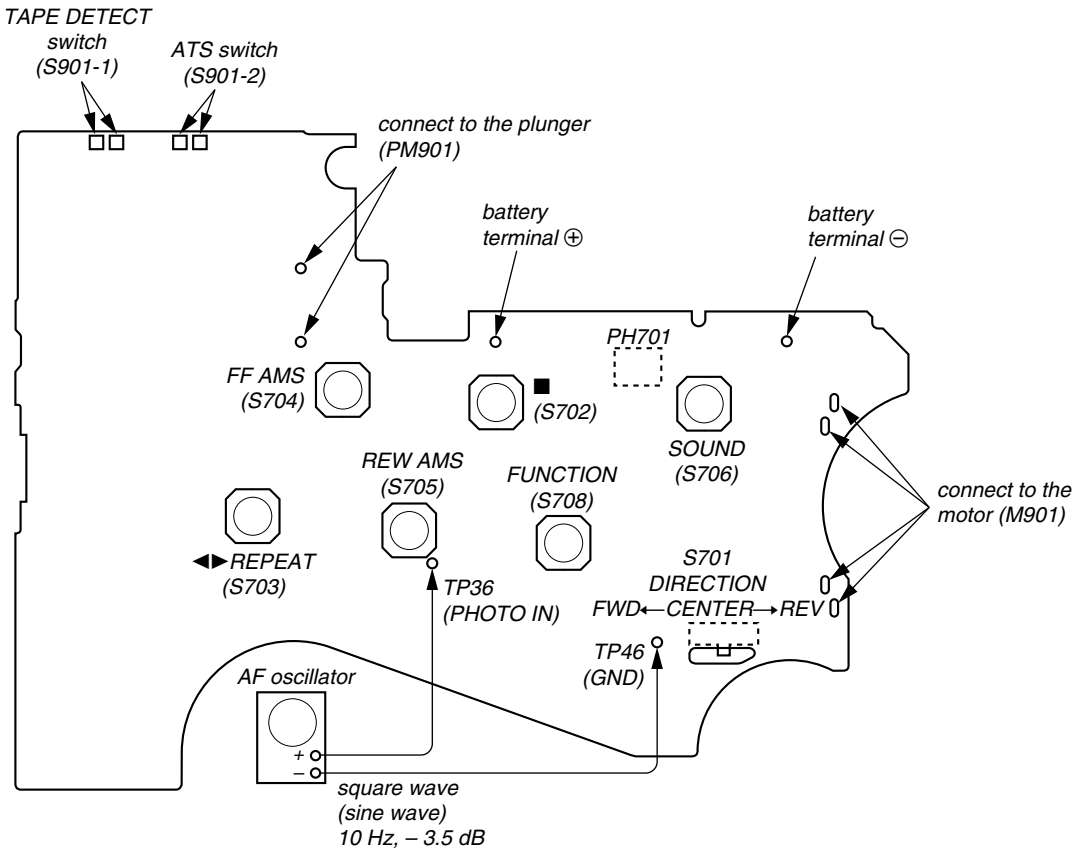
(1) Check that the preset state is set.
(2) Input the square wave or sine wave to the TP36 (PHOTO IN) and the TP46 (GND).
(3) Press the ■ button (S702) to set the STOP mode.
(4) Press the FF AMS button (S704) or the REW AMS button (S705).

4. PLAY mode

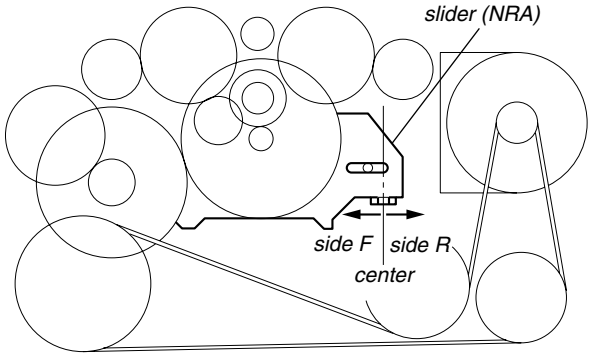
(1) Check that the preset state is set.
(2) Input the square wave or sine wave to the TP36 (PHOTO IN) and the TP46 (GND).
(3) Press the ■ button (S702) to set the STOP mode.
(4) Press the ◄► REPEAT button (S703) will move the slider (NR) once towards the side R and then to the side F. Move the DIRECTION switch (S701) according to this timing will set the PLAY mode (side F). Press the ◄► REPEAT button (S703) another time and move the DIRECTION switch (S701) according to the movement of the slider (NR) will set the PLAY (R mode).

**Note 1:** If the above fails, perform from preset again.
**Note 2:** Use the ◄► REPEAT (S703), ■ (S702), FF AMS (S704), and REW AMS (S705) buttons on the remote controller as much as possible. If no remote controller, do not touch the buttons with your hands, but using a stick with a round tip.
**Note 3:** When using headphones, the timing for move the DIRECTION switch (S701) can be determined from the beep sound.

**– MAIN Board (Side B) –**

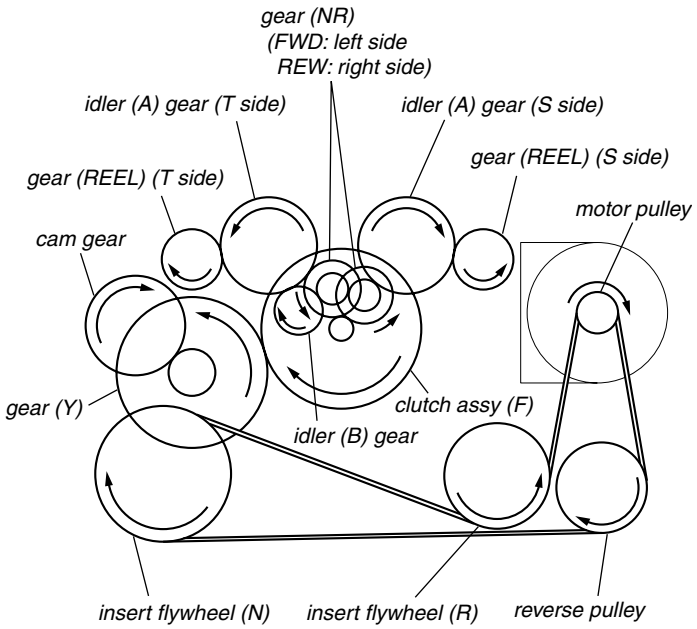


**SLIDER (NRA)**

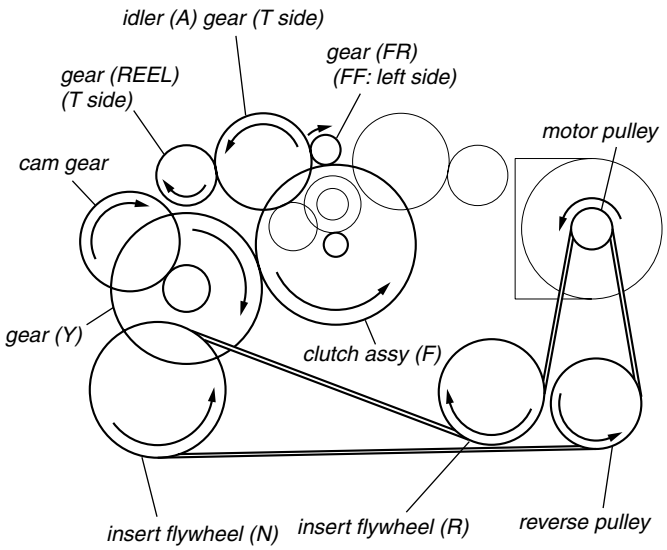



**Rotation system**

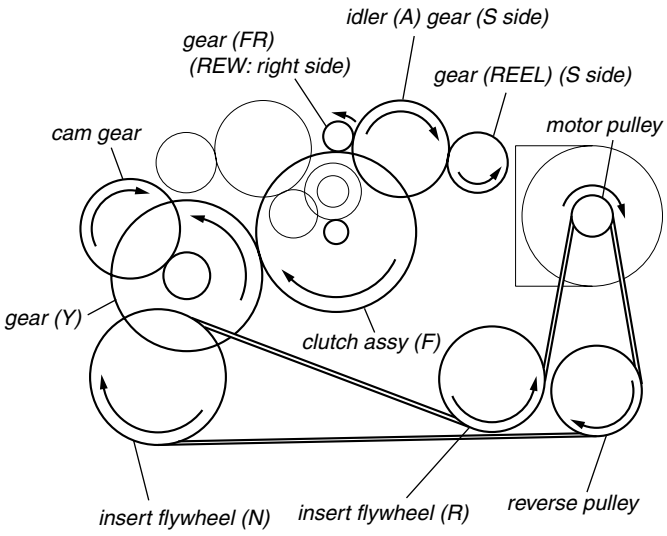
Rotation system during PLAY



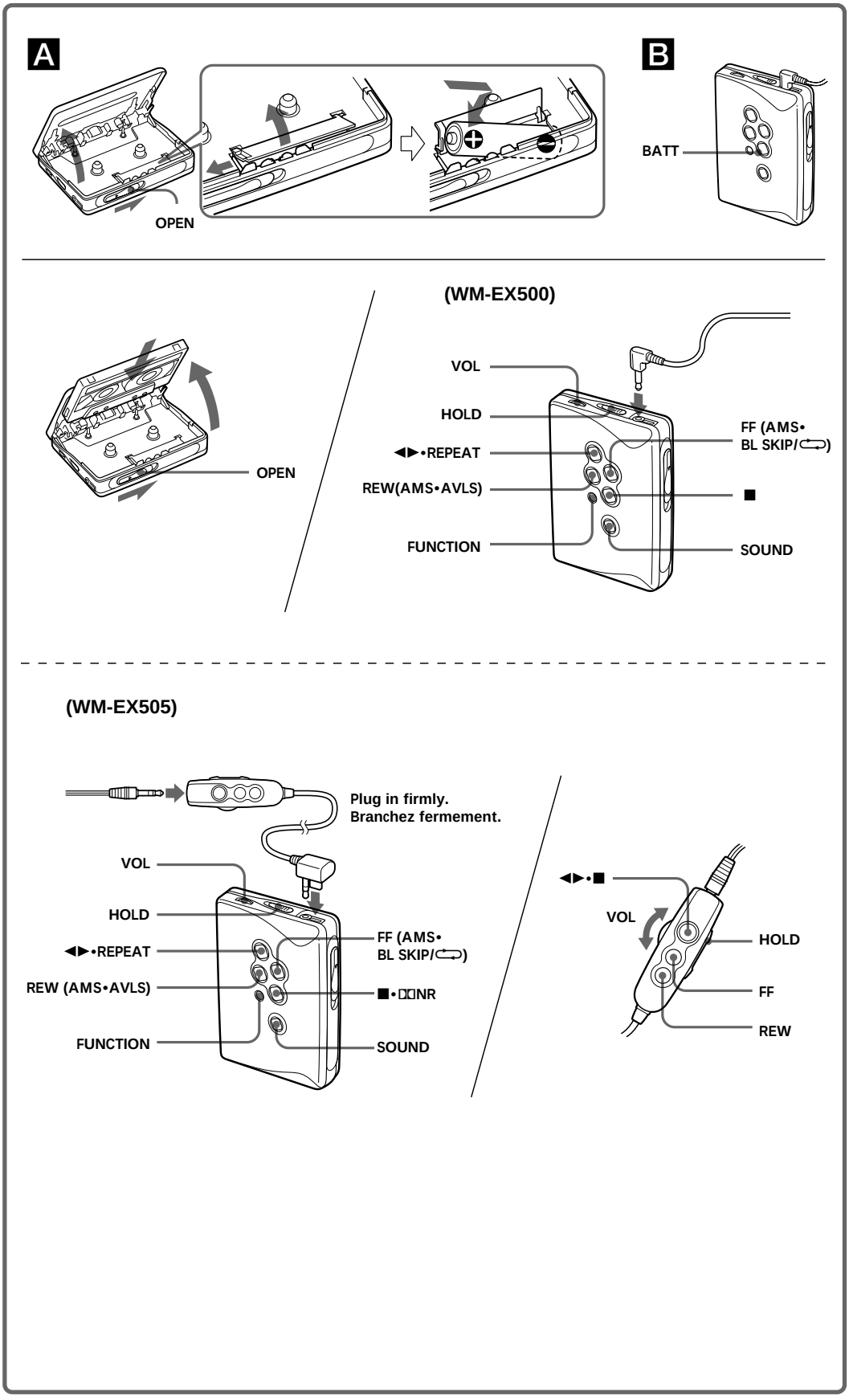

Rotation system during FF




Rotation system during REW

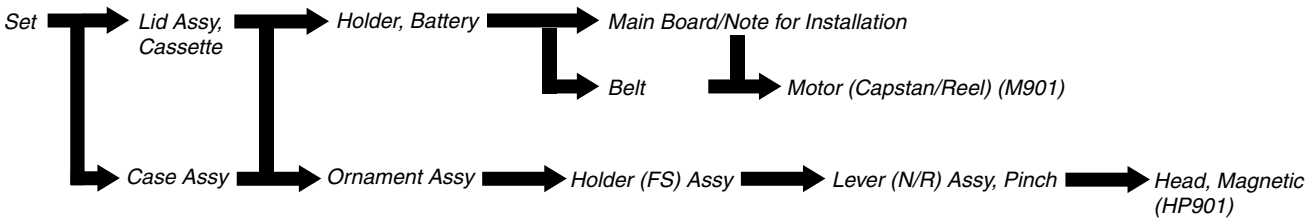


This section is extracted from instruction manual.



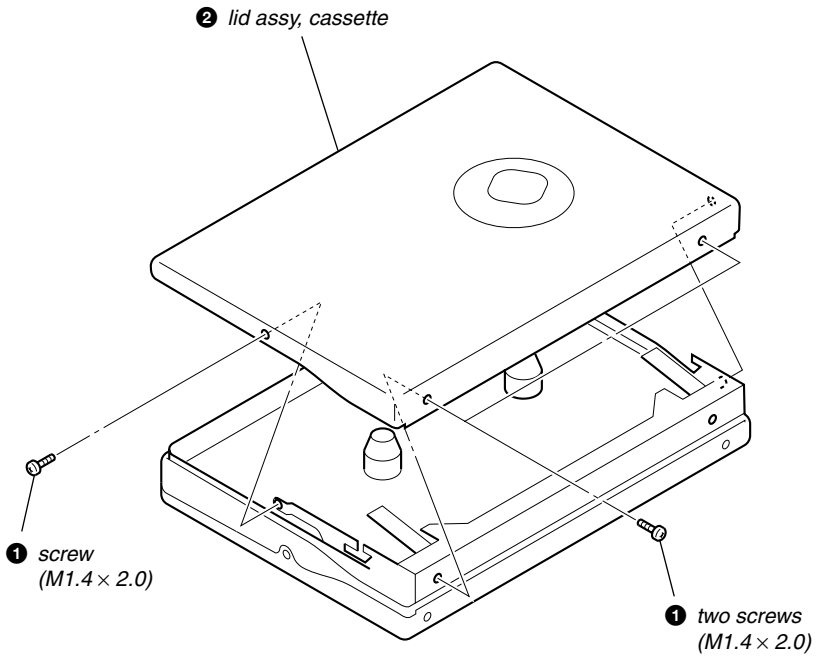
# SECTION 3
# DISASSEMBLY

• This set can be disassembled in the order shown below.

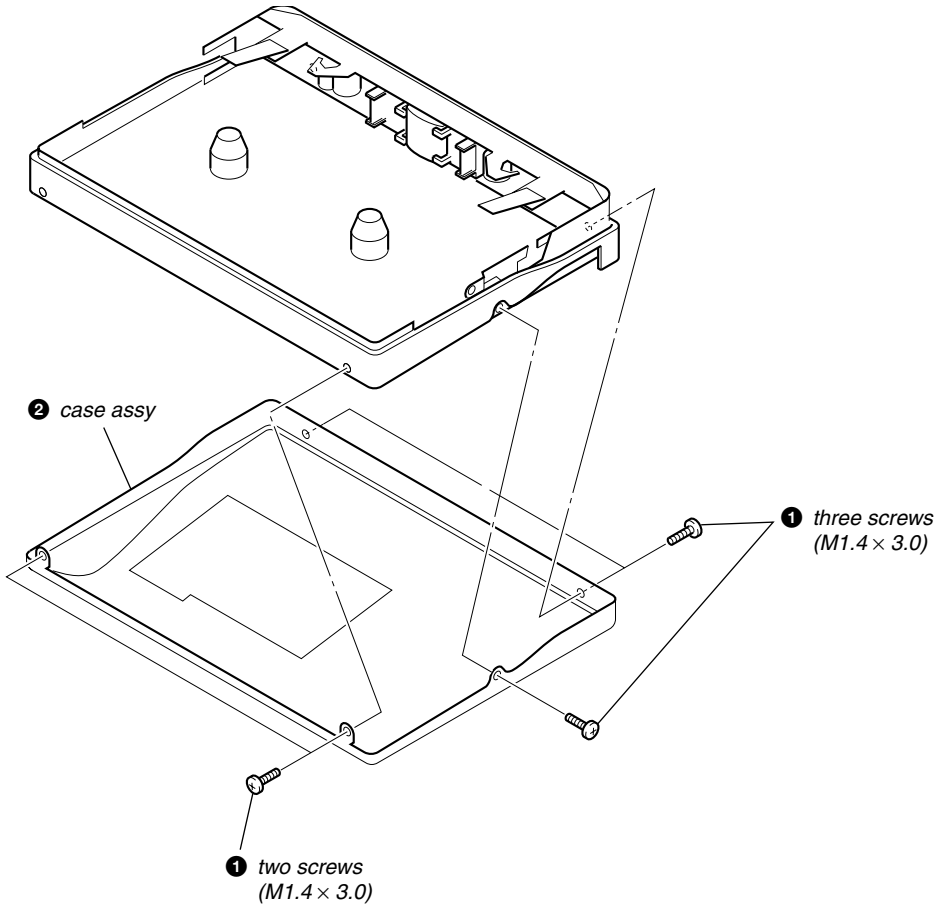



**Note:** Follow the disassembly procedure in the numerical order given.

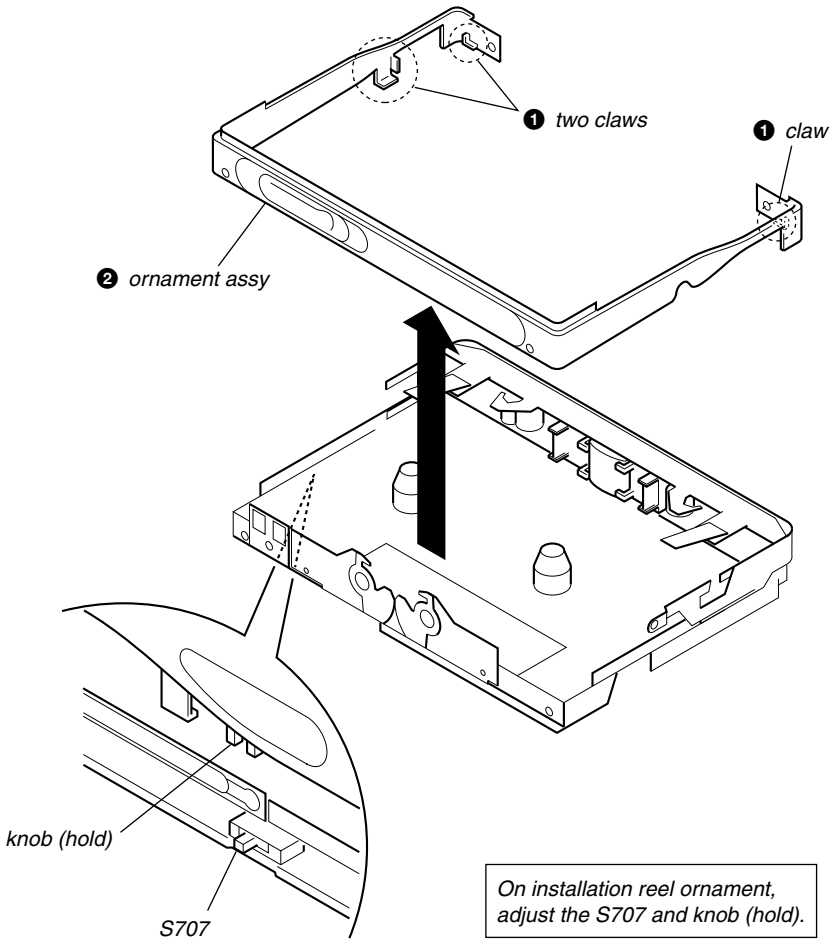
## LID ASSY, CASSETTE



**CASE ASSY**

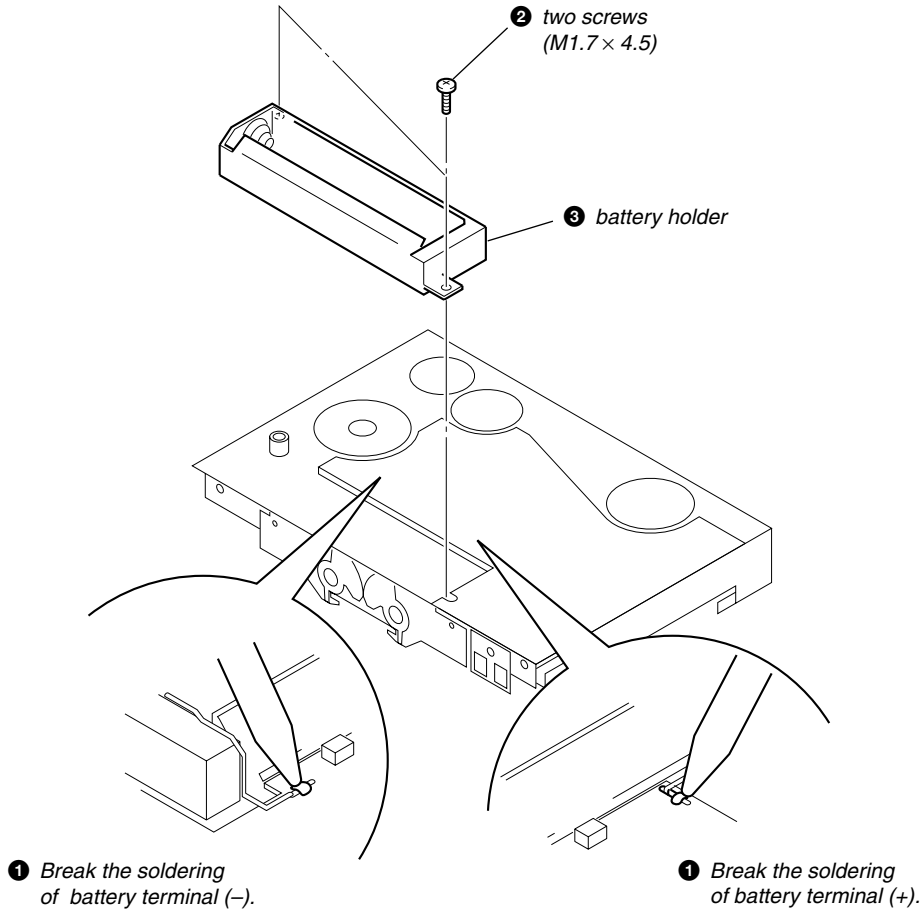



**ORNAMENT ASSY**

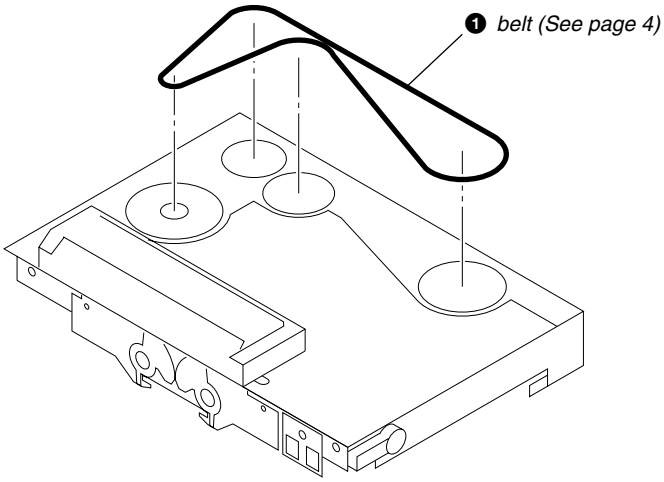



*On installation reel ornament, adjust the S707 and knob (hold).*

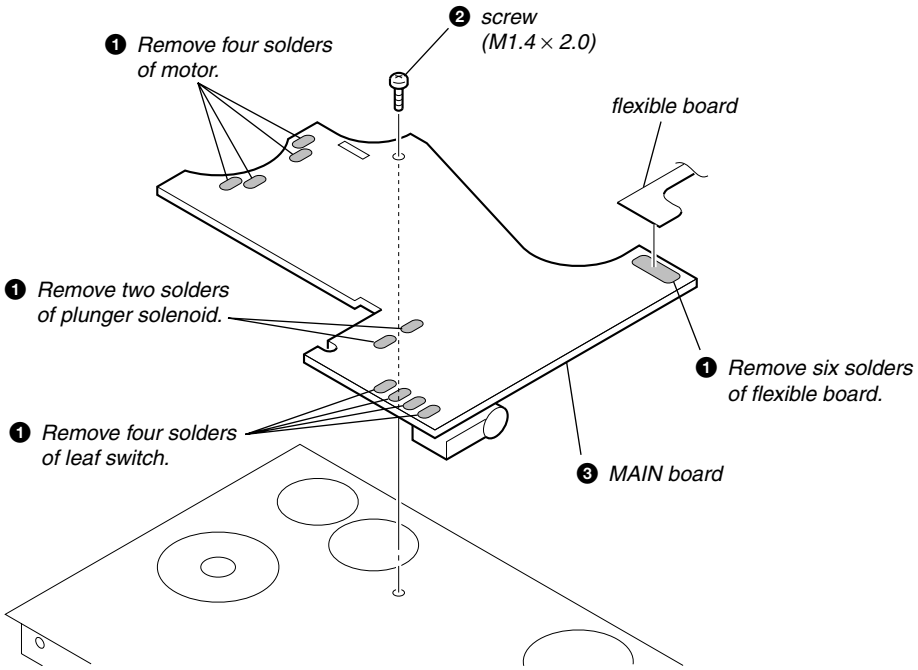
**HOLDER, BATTERY**




**BELT**

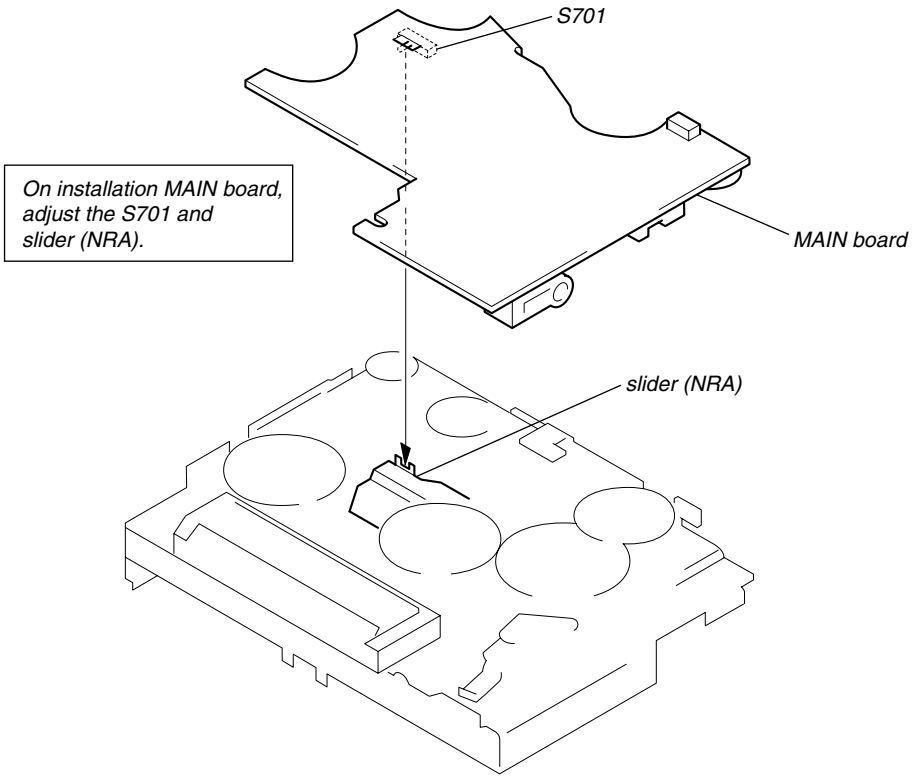


**MAIN BOARD**

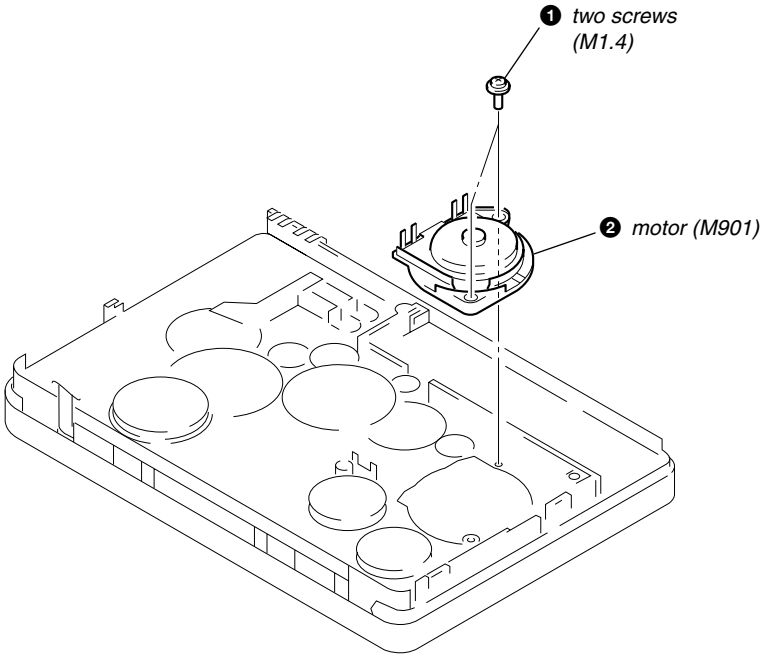



**NOTE FOR INSTALLATION**

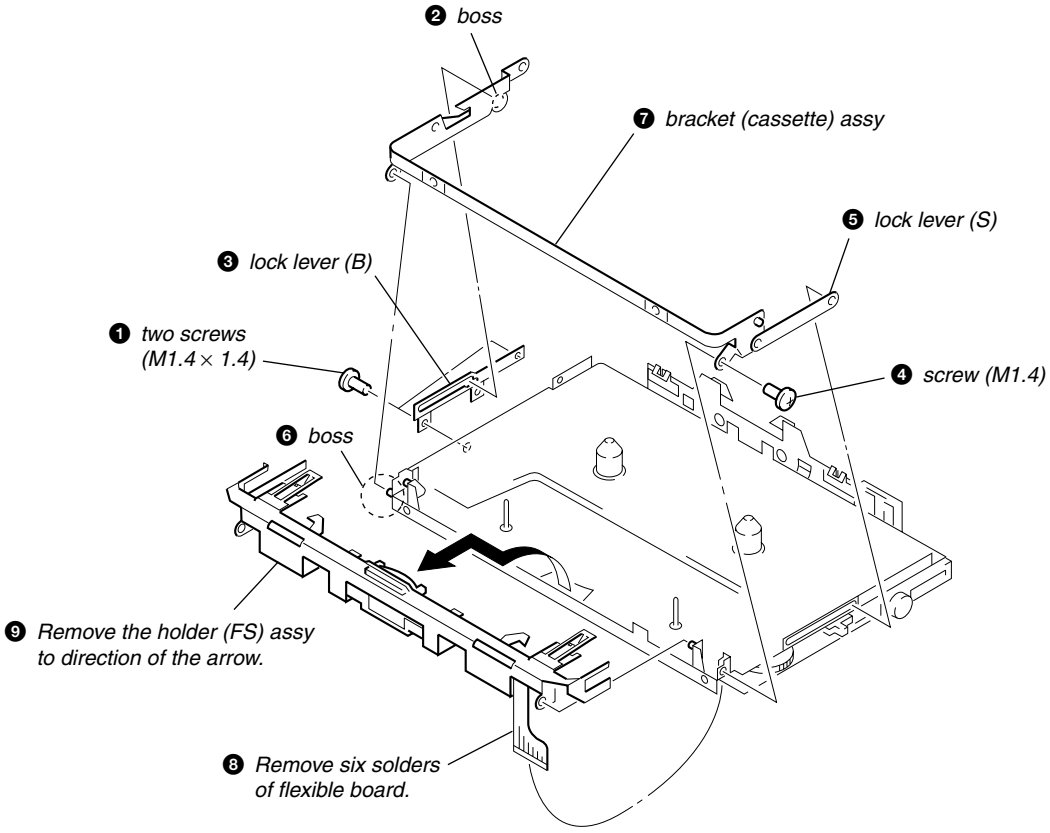
**• MAIN BOARD**



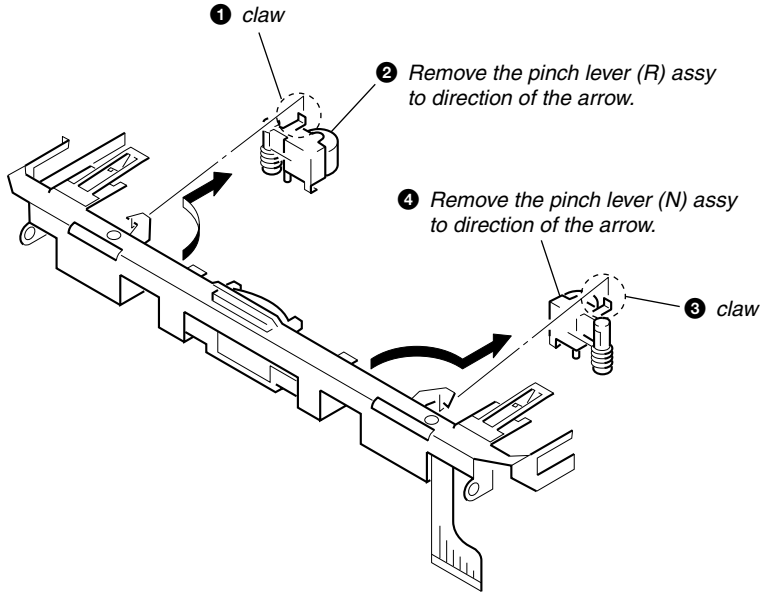
**MOTOR (CAPSTAN/REEL) (M901)**



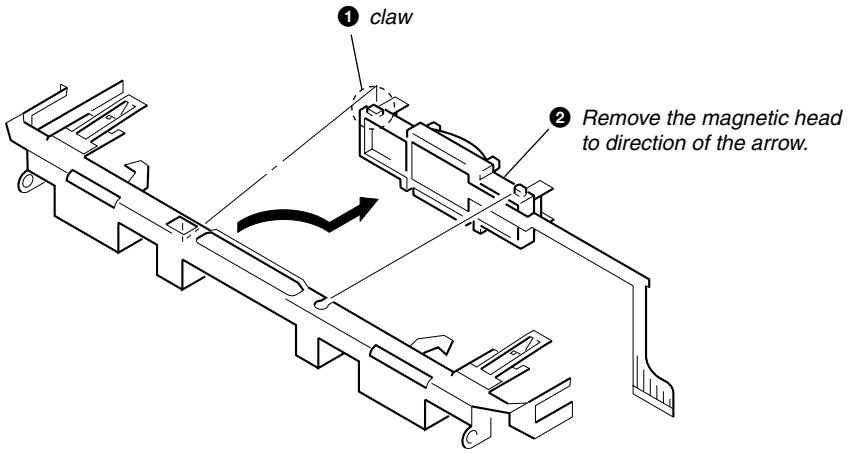

**HOLDER (FS) ASSY**



**LEVER (N/R) ASSY, PINCH**




**HEAD, MAGNETIC (HP901)**



# SECTION 4
# MECHANICAL ADJUSTMENTS

### PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   playback head  pinch roller
   rubber belts  capstan
2. Demagnetize the playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. The adjustments should be performed with the rated power supply voltage (1.3 V) unless otherwise noted.

### Torque Measurement

| Mode | Torque Meter | Meter Reading |
|---|---|---|
| FWD | CQ-102C | 1.57 – 2.45 mN•m<br>(16 – 25 g•cm)<br>(0.23 – 0.34 oz•inch) |
| FWD<br>Back Tension | CQ-102C | 0.049 – 0.147 mN•m<br>(0.5 – 1.5 g•cm)<br>(0.007 – 0.02 oz•inch) |
| REV | CQ-102RC | 1.57 – 2.45 mN•m<br>(16 – 25 g•cm)<br>(0.23 – 0.34 oz•inch) |
| REV<br>Back Tension | CQ-102RC | 0.049 – 0.147 mN•m<br>(0.5 – 1.5 g•cm)<br>(0.007 – 0.02 oz•inch) |
| FF, REW | CQ-201B | more than 4.90 mN•m<br>(more than 50 g•cm)<br>(more than 0.7 oz•inch) |

# SECTION 5
# ELECTRICAL ADJUSTMENTS

### PRECAUTION

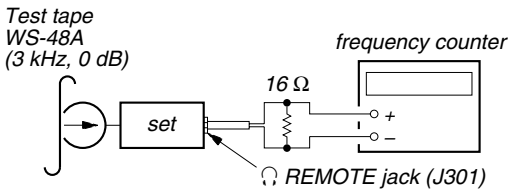
1. Specified voltage : 1.3 V (DC)
2. Setting
   BL SKIP : OFF
   SOUND NORM/MB/GRV : NORM
   AVLS : OFF
   □□NR (WM-EX505 only) : OFF

### Test tape

| Type | Signal | Used for |
|---|---|---|
| WS-48A | 3 kHz, 0 dB | Tape Speed Adjustment |

### Tape Speed Adjustment

**Procedure:**



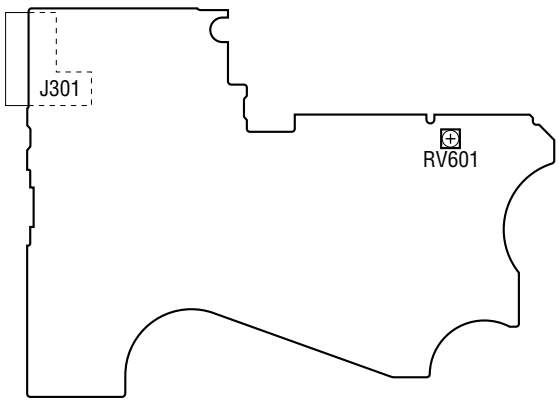

1. Playback WS-48A (tape center) in the FWD state.
2. Adjust RV601 so that the frequency counter reading becomes 3,000 Hz.

**Specificated Value:** 2,970 to 3,030 Hz

3. Check that deflection of the frequency counter reading between the beginning and the end of tape is within 1.5% (apporox. 45 Hz).

**Adjustment Location:**

*– MAIN Board (Side B) –*

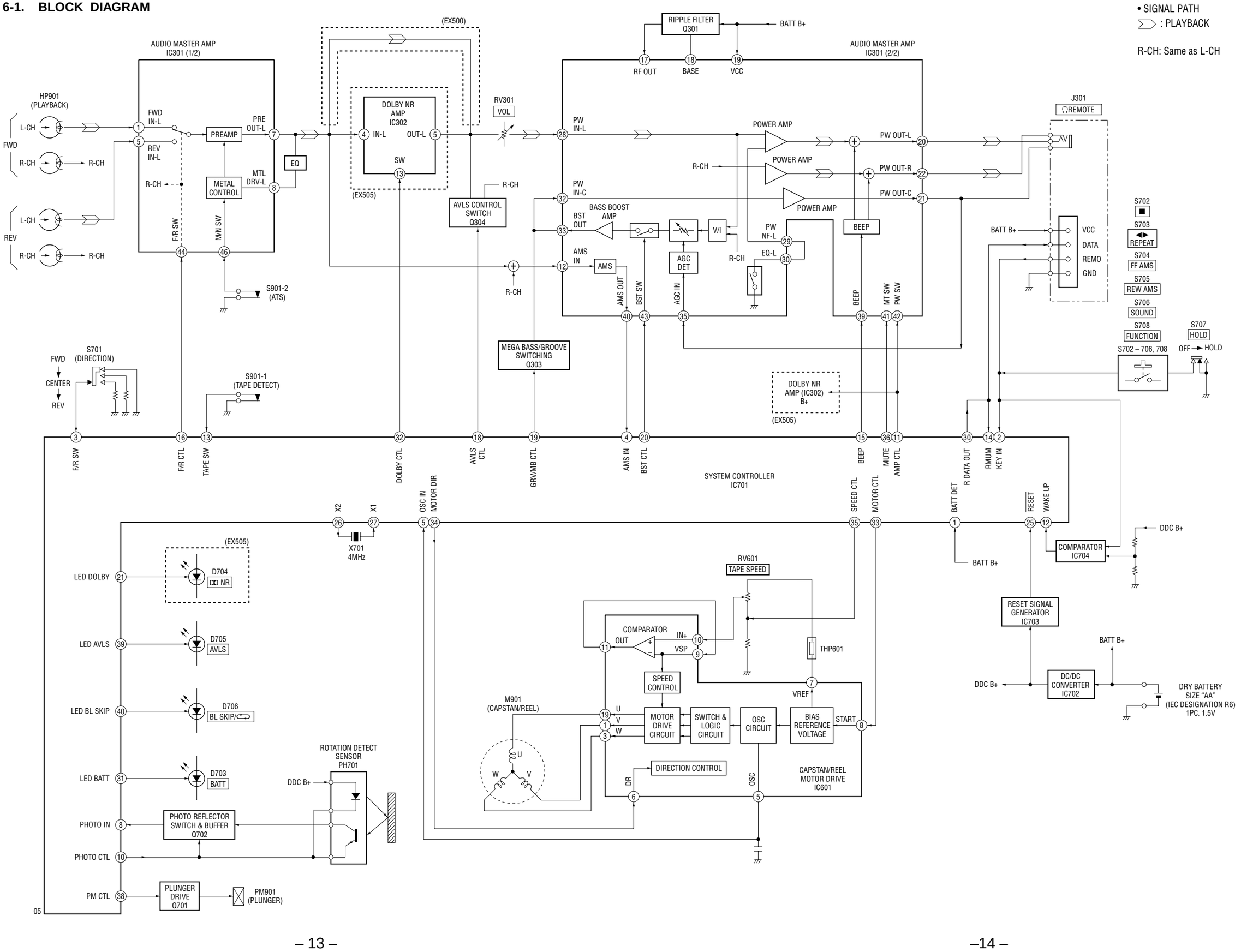


# SECTION 6
# DIAGRAMS

## 6-1. BLOCK DIAGRAM

• SIGNAL PATH
: PLAYBACK

R-CH: Same as L-CH



## 6-2. PRINTED WIRING BOARD

- **Semiconductor Location**

| Ref. No. | Location |
|---|---|
| D701 | E-16 |
| D702 | I-8 |
| D703 | H-13 |
| D704 | G-13 |
| D705 | F-12 |
| D706 | E-13 |
| D709 | C-16 |
| D710 | C-1 |
| D711 | C-1 |
| IC301 | C-6 |
| IC302 | C-4 |
| IC601 | J-13 |
| IC701 | F-4 |
| IC702 | H-8 |
| IC703 | D-2 |
| IC704 | H-11 |
| PH701 | I-4 |
| Q301 | B-6 |
| Q303 | C-15 |
| Q304 | C-3 |
| Q701 | G-4 |
| Q702 | J-4 |


**Note on Printed Wiring Board:**

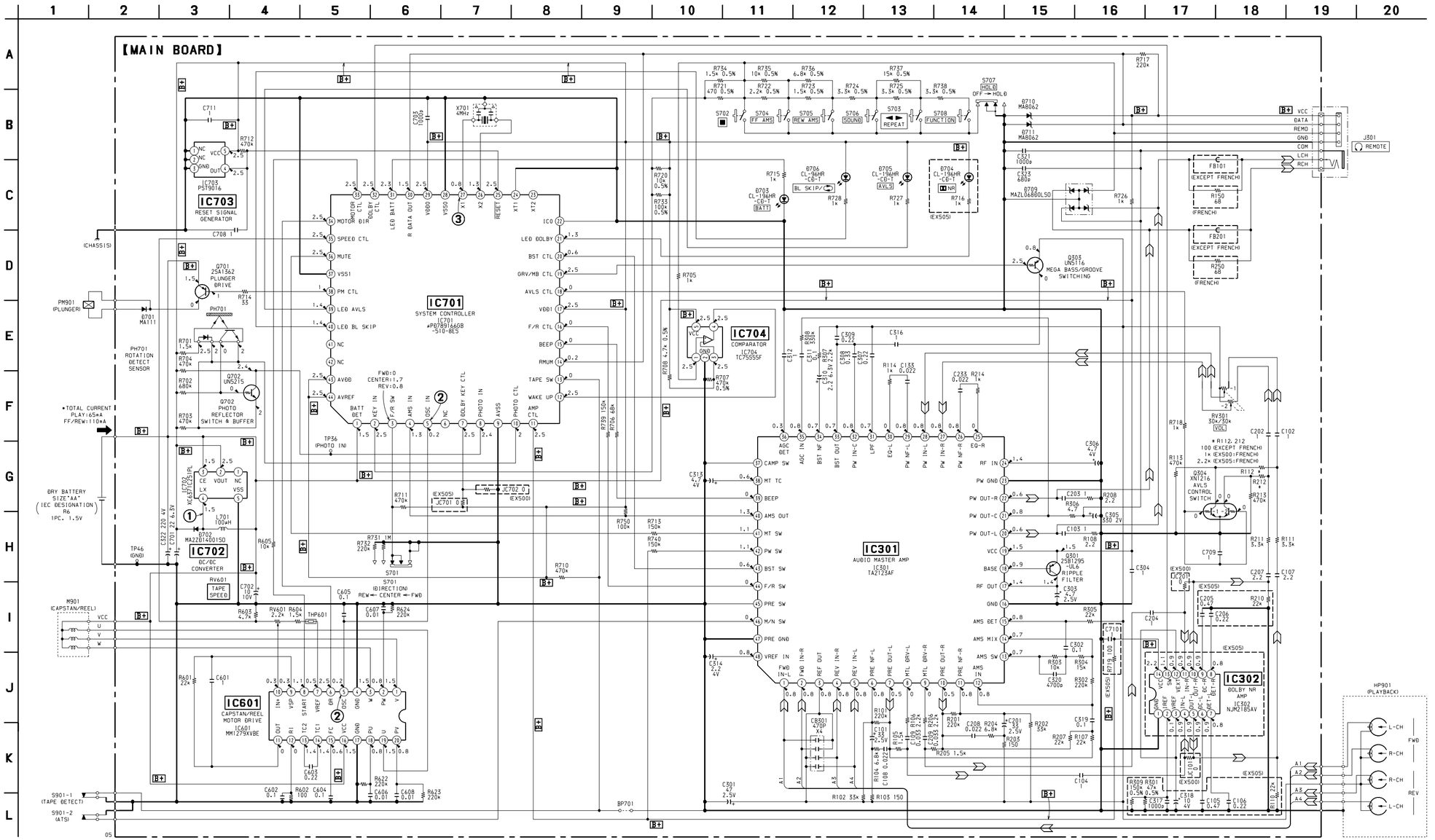
- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ● : Through hole.
- △ : internal component.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:

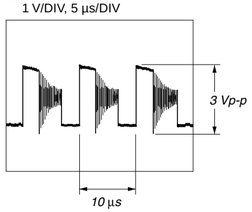
| | |
|---|---|
| Pattern face side: (Side B) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Side A) | Parts on the parts face side seen from the parts face are indicated. |

## 6-3. SCHEMATIC DIAGRAM • See page 20 for IC Block Diagrams.

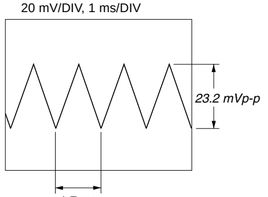



### • Waveforms

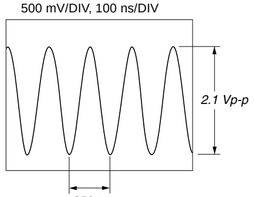
❶ IC702 ④ LX
1 V/DIV, 5 µs/DIV




❷ IC601 ⑤ OSC, IC701 ⑤ OSC IN
20 mV/DIV, 1 ms/DIV




❸ IC701 ㉗ X1
500 mV/DIV, 100 ns/DIV

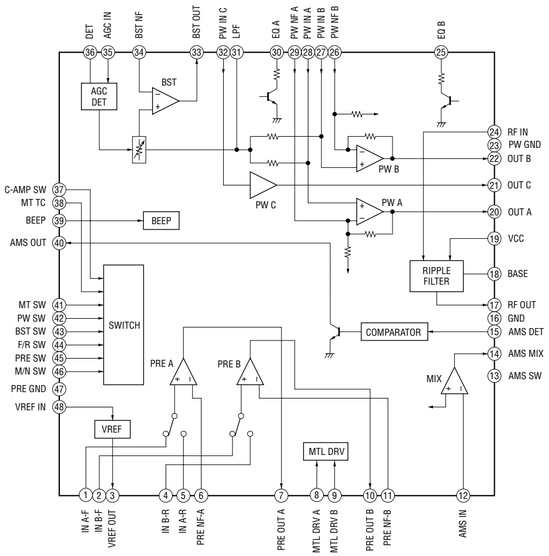



**Note on Schematic Diagram:**

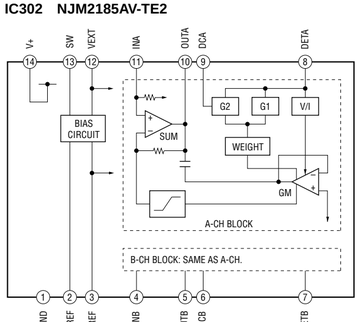
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- % : indicates tolerance.
- Δ : internal component.
- ▭ : panel designation.
- B+ : B+ Line.
- ▬ : adjustment for repair.
- Total current is measured with a cassette installed.
- Power voltage is dc 1.5 V and fed with regulated dc power supply from battery terminal.
- Voltages and waveforms are dc with respect to ground in playback mode.
  no mark : PLAYBACK
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ▷ : PLAYBACK

• **IC Block Diagrams**

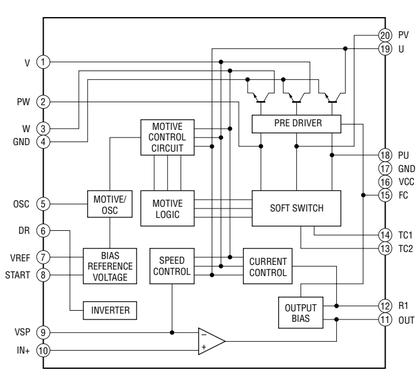
**IC301 TA2123AF (EL)**



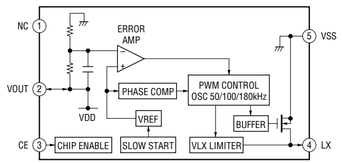

**IC302 NJM2185AV-TE2**




**IC601 MM1279XVBE**




**IC702 XC6371C251PL**








## 6-4. IC PIN FUNCTION DESCRIPTION

• **IC701 uPD789166GB-510-8ES (SYSTEM CONTROLLER)**

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | BATT DET | I | Battery voltage detection signal input (A/D input) |
| 2 | KEY IN | I | Key input terminal (A/D input) |
| 3 | F/R SW | I | Tape direction switch (S701) input terminal “L”: forward position |
| 4 | AMS IN | I | Whether a music is present or not from TA2123AF (IC301) is detected at auto music sensor<br>“L”: music is present, “H”: music is not present |
| 5 | OSC IN | I | Motor restart control signal input from the capstan/reel motor drive (IC601)<br>“H”: FF/REW motor rotation status |
| 6 | NC | I | Not used (open) |
| 7 | DOLBY KEY CTL | I | Dolby is present or not control terminal<br>“L”: dolby is not present (WM-EX500), “H”: dolby is present (WM-EX505) |
| 8 | PHOTO IN | I | Rotation detect signal input of the capstan/reel motor (M901) |
| 9 | AVSS | — | Ground terminal (for A/D converter) |
| 10 | PHOTO CTL | O | Control signal output to the capstan/reel motor rotation detect circuit<br>“L”: rotation detect circuit on |
| 11 | AMP CTL | O | Also, this is used as control signal output for power on/off to the TA2123AF (IC301), or power supply output for the dolby NR amp (IC302) “L”: power off, “H”: power on<br>IC302: Used for the WM-EX505 only |
| 12 | WAKE UP | I | Input of acknowledge signal for the key entry Acknowledge signal is input to accept function in the power off status On at input of “H” |
| 13 | TAPE SW | I | Cassette tape detect switch (S901-1) input terminal “L”: cassette detected, “H”: no cassette |
| 14 | RMUM | I | Connection detect signal input of the remote commander |
| 15 | BEEP | O | Beep sound signal output to the TA2123AF (IC301) |
| 16 | F/R CTL | O | Forward/reverse selection signal output to the TA2123AF (IC301)<br>“L”: forward direction, “H”: reverse direction |
| 17 | VDD1 | — | Power supply terminal (+2.5V) |
| 18 | AVLS CTL | O | AVLS (Automatic Volume Limiter System) on/off control signal output terminal<br>“L”: AVLS off, “H”: AVLS on |
| 19 | GRV/MB CTL | O | Emphasizing sound control signal output to the TA2123AF (IC301)<br>“L”: MB (mega bass), “H”: normal/GRV (groove) |
| 20 | BST CTL | O | Bass boost control signal output to the TA2123AF (IC301) “L”: off, “H”: on |
| 21 | LED DOLBY | O | LED drive signal output of the □□ NR indicator (D704) “L”: LED on<br>Used for the WM-EX505 only |
| 22 | IC0 | — | Not used (fixed at “L”) |
| 23 | XT2 | O | Sub clock output terminal Not used (open) |
| 24 | XT1 | I | Sub clock input terminal Not used (fixed at “L”) |
| 25 | $\overline{\text{RESET}}$ | I | System reset signal input from the reset signal generator (IC703)<br>“L”: reset “L” is input for several 100 msec after power on, then it changes to “H” |
| 26 | X2 | O | System clock output terminal (4MHz) |
| 27 | X1 | I | System clock input terminal (4MHz) |
| 28 | VSS0 | — | Ground terminal |
| 29 | VDD0 | — | Power supply terminal (+2.5V) |
| 30 | R DATA OUT | O | Communication serial data output to the remote commander |
| 31 | LED BATT | O | LED drive signal output of the BATT indicator (D703) “H”: LED on |
| 32 | DOLBY CTL | O | Dolby on/off control signal output to the dolby NR amp (IC302)<br>“L”: dolby NR on, “H”: dolby NR off Used for the WM-EX505 only |
| 33 | MOTOR CTL | O | Motor start control signal output to the capstan/reel motor drive (IC601)<br>“L”: motor off, “H”: motor on |

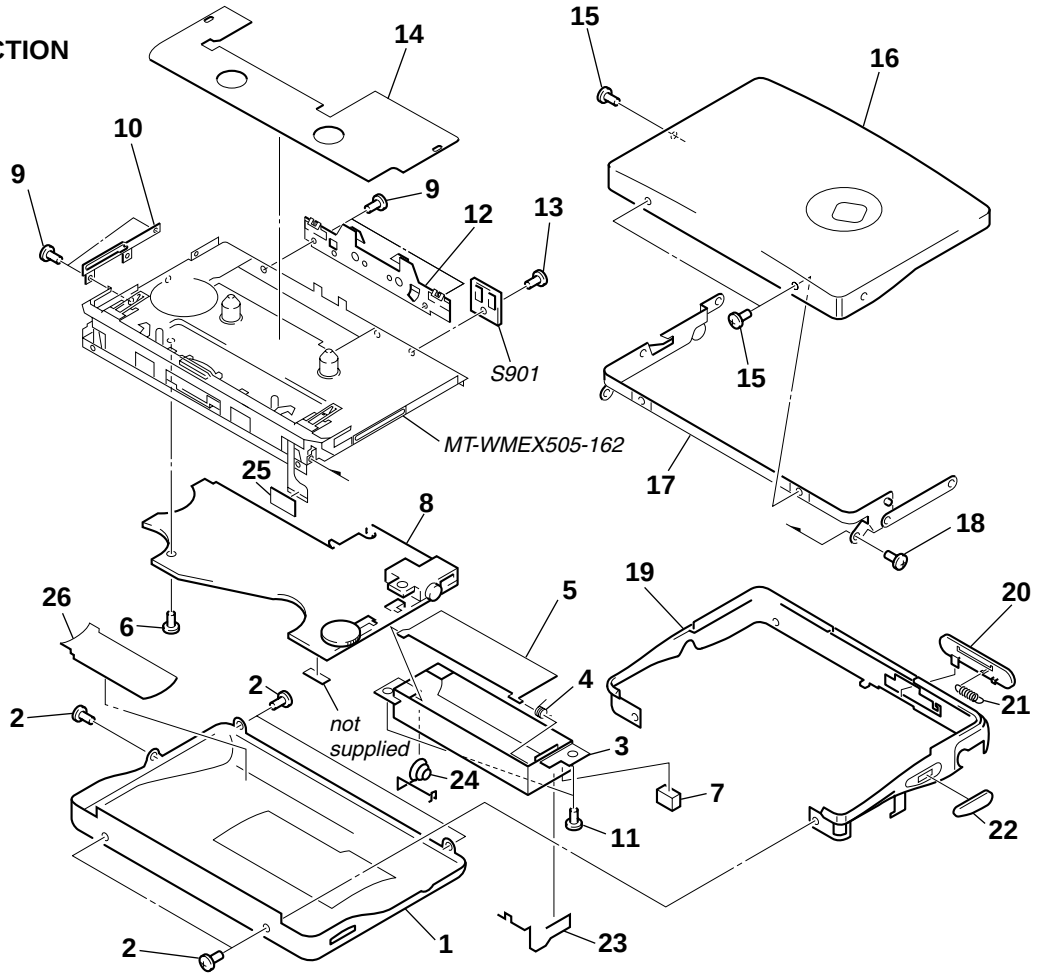
| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 34 | MOTOR DIR | O | Motor direction control signal output to the capstan/reel motor drive (IC601)<br>“L”: counterclockwise, “H”: clockwise |
| 35 | SPEED CTL | O | Motor speed control signal output to the capstan/reel motor drive (IC601)<br>“L”: normal speed, “H”: 1/2 speed |
| 36 | MUTE | O | Power on mute control signal output to the TA2123FA (IC301) “L”: mute on |
| 37 | VSS1 | — | Ground terminal |
| 38 | PM CTL | O | Plunger drive signal output terminal “L”: plunger on |
| 39 | LED AVLS | O | LED drive signal output of the AVLS indicator (D705) “L”: LED on |
| 40 | LED BL SKIP | O | LED drive signal output of the BL SKIP/⮌ indicator (D706) “L”: LED on |
| 41, 42 | NC | — | Not used (open) |
| 43 | AVDD | — | Power supply terminal (+2.5V) (for A/D converter) |
| 44 | AVREF | I | Reference voltage input terminal (+2.5V) (for A/D converter) |

# SECTION 7
# EXPLODED VIEWS

NOTE:

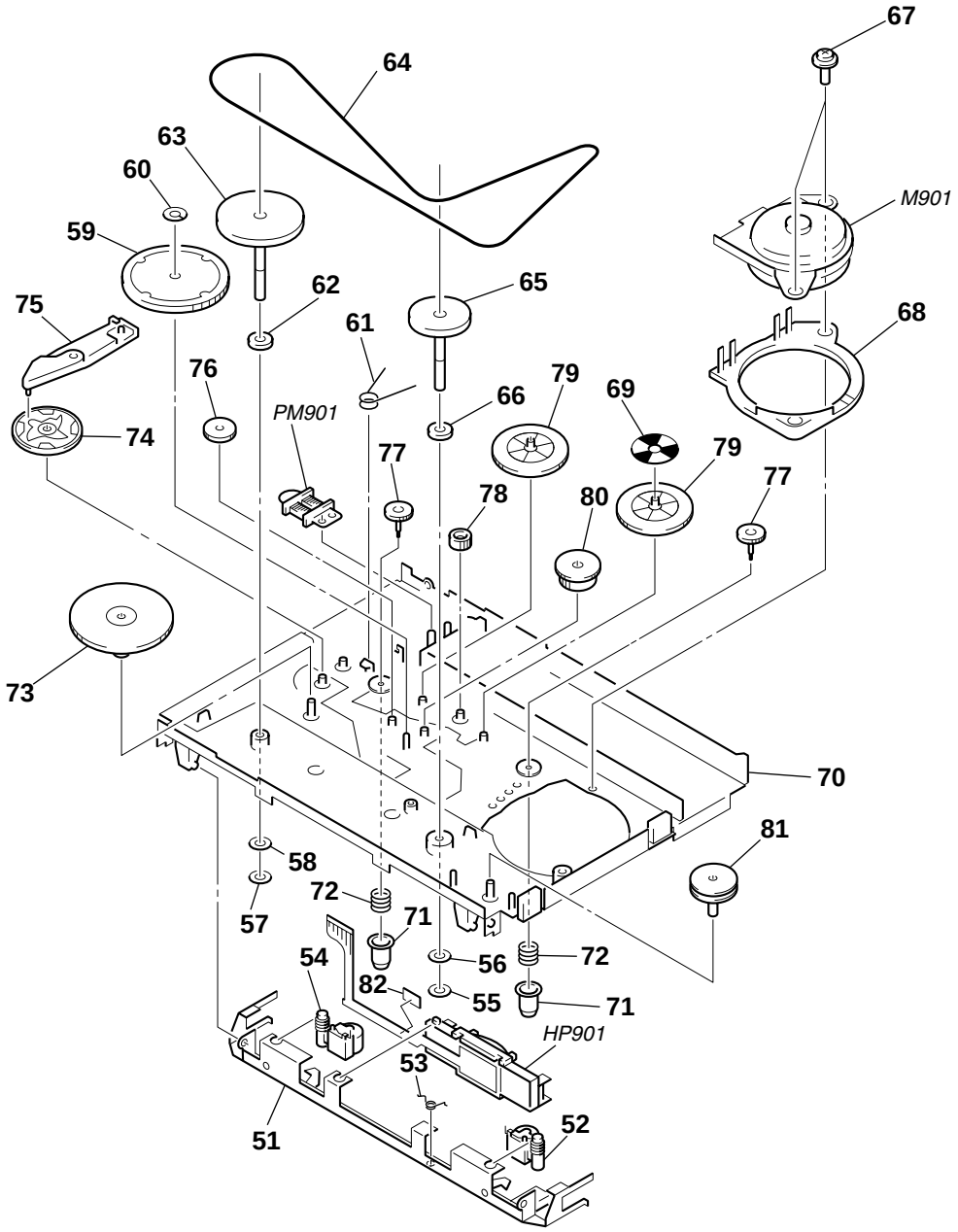
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

## (1) CASE SECTION




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3378-883-1 | LID ASSY (SV-S-C), CASSETTE | (SILVER) (EX500) |
| 1 | X-3378-884-1 | LID ASSY (SV-L-C), CASSETTE | (BLUE) (EX500) |
| 1 | X-3378-885-1 | LID ASSY (SV-N-C), CASSETTE | (GOLD) (EX505) |
| 2 | 3-704-197-31 | SCREW (M1.4X3.0), LOCKING | (SILVER)...(SILVER, GOLD) |
| 2 | 3-704-197-33 | SCREW (M1.4X3.0), LOCKING | (BLACK)...(BLUE) |
| 3 | 3-042-001-01 | HOLDER, BATTERY | |
| 4 | 3-042-003-01 | SPRING | |
| 5 | 3-042-002-01 | LID, BATTERY CASE | |
| 6 | 3-345-648-95 | SCREW (M1.4), TOOTHED LOCK | |
| 7 | 3-047-460-01 | CUSHION (C) | |
| 8 | A-3021-284-A | MAIN BOARD, COMPLETE | (EX505: EXCEPT FRENCH) |
| 8 | A-3021-286-A | MAIN BOARD, COMPLETE (EX505: FRENCH) | |
| 8 | A-3021-287-A | MAIN BOARD, COMPLETE | (EX500: EXCEPT FRENCH) |
| 8 | A-3021-288-A | MAIN BOARD, COMPLETE (EX500: FRENCH) | |
| 9 | 3-939-590-05 | SCREW (IB LOCK) | |
| 10 | 3-029-217-01 | LEVER (B), LOCK | |
| 11 | 3-375-114-81 | SCREW | |
| 12 | X-3377-717-1 | BRACKET ASSY (/M) | |
| 13 | 3-939-590-02 | SCREW (IB LOCK) | |
| 14 | 3-042-015-01 | COVER, MD (EX500) | |
| 14 | 3-042-015-11 | COVER, MD (EX505) | |
| 15 | 3-704-197-11 | SCREW (M1.4X2.0), LOCKING | (SILVER)...(SILVER, GOLD) |
| 15 | 3-704-197-13 | SCREW (M1.4X2.0), LOCKING | (BLACK)...(BLUE) |
| 16 | X-3378-898-1 | CASE ASSY (SV-S) (SILVER) (EX500) | |
| 16 | X-3378-899-1 | CASE ASSY (SV-L) (BLUE) (EX500) | |
| 16 | X-3378-900-1 | CASE ASSY (SV-N) (GOLD) (EX505) | |
| 17 | X-3376-279-1 | BRACKET (CASSETTE) ASSY | |
| 18 | 3-365-630-41 | SCREW (M1.4) | |
| 19 | 3-042-006-01 | ORNAMENT, REEL | |
| 20 | 3-042-007-01 | KNOB (OPEN) | |
| 21 | 3-042-008-01 | SPRING, TENSION | |
| 22 | 3-042-009-01 | KNOB (HOLD) | |
| 23 | 3-042-004-01 | TERMINAL (+), BATTERY | |
| 24 | 3-042-005-01 | TERMINAL (-), BATTERY | |
| 25 | 3-309-595-11 | SHEET, INSULATING, PACK | |
| 26 | 3-044-951-01 | SHEET (A) | |
| S901 | 1-771-888-11 | SWITCH, LEAF (TAPE DETECT) | |

## (2) MECHANISM DECK SECITON (MT-WMEX505-162)




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | X-3378-354-1 | HOLDER (FS) ASSY | |
| 52 | X-3377-363-1 | LEVER (R) ASSY, PINCH | |
| 53 | 3-046-789-01 | SPRING (HDA) | |
| 54 | X-3377-362-1 | LEVER (N) ASSY, PINCH | |
| 55 | 3-029-275-01 | WASHER (STOPPER N) | |
| 56 | 3-029-278-01 | WASHER | |
| 57 | 3-029-276-01 | WASHER (STOPPER R) | |
| 58 | 3-029-289-01 | WASHER | |
| 59 | X-3376-813-1 | CLUTCH ASSY (F) | |
| 60 | 3-932-724-21 | WASHER | |
| 61 | 3-040-897-01 | SPRING (TGA), TORSION | |
| 62 | 3-386-694-01 | WASHER | |
| 63 | 3-029-306-11 | FLYWHEEL (N), INSERT | |
| 64 | 3-029-280-01 | BELT (F2) | |
| 65 | 3-029-268-11 | FLYWHEEL (R), INSERT | |
| 66 | 3-007-428-01 | WASHER (R) | |
| 67 | 3-029-765-01 | SCREW (M1.4), TOOTHED LOCK | |
| 68 | 3-029-274-11 | RETAINER (F2), MOTOR | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 69 | 3-007-433-01 | SHEET (N), REFLECTION | |
| 70 | X-3378-107-1 | CHASSIS (FB) ASSY | |
| 71 | 3-010-274-02 | TABLE, REEL | |
| 72 | 3-010-954-01 | SPRING (BT), COMPRESSION | |
| 73 | 3-029-282-01 | GEAR (Y) | |
| 74 | 3-029-285-01 | GEAR, CAM | |
| 75 | 3-029-284-01 | LEVER, TRIGGER | |
| 76 | 3-029-281-01 | GEAR, IDLER (B) | |
| 77 | 3-010-273-02 | GEAR (REEL) | |
| 78 | 3-029-273-01 | GEAR (FR) | |
| 79 | 3-029-283-01 | GEAR, IDLER (A) | |
| 80 | 3-029-286-01 | GEAR (NR) | |
| 81 | 3-029-288-01 | PULLEY, REVERSE | |
| 82 | 3-033-757-01 | SHEET (H) | |
| HP901 | 1-500-576-11 | HEAD, MAGNETIC (PLAYBACK) | |
| M901 | 1-763-166-11 | MOTOR (CAPSTAN/REEL) (WITH PULLEY) | |
| PM901 | 1-454-674-41 | SOLENOID, PLUNGER | |

**MAIN**

# SECTION 8
# ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Abbreviation
  9E: No indication of country of origin
  EE: East European
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

When indicating parts by reference number, please include the board.

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | A-3021-284-A | MAIN BOARD, COMPLETE (EX505: EXCEPT FRENCH) | | | |
| | A-3021-286-A | MAIN BOARD, COMPLETE (EX505: FRENCH) | | | |
| | A-3021-287-A | MAIN BOARD, COMPLETE (EX500: EXCEPT FRENCH) | | | |
| | A-3021-288-A | MAIN BOARD, COMPLETE (EX500: FRENCH) | | | |
| | | ********** | | | |
| | | < CAPACITOR > | | | |
| C101 | 1-107-520-11 | TANTALUM CHIP 33uF | 20% | 2.5V | |
| C102 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C103 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C104 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C105 | 1-117-863-11 | CERAMIC CHIP 0.47uF | 10% | 6.3V | (EX505) |
| C106 | 1-115-467-11 | CERAMIC CHIP 0.22uF | 10% | 10V | (EX505) |
| C107 | 1-164-505-11 | CERAMIC CHIP 2.2uF | | 16V | |
| C108 | 1-164-227-11 | CERAMIC CHIP 0.022uF | 10% | 25V | |
| C109 | 1-164-677-11 | CERAMIC CHIP 0.033uF | 10% | 16V | |
| C133 | 1-164-227-11 | CERAMIC CHIP 0.022uF | 10% | 25V | |
| C201 | 1-107-520-11 | TANTALUM CHIP 33uF | 20% | 2.5V | |
| C202 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C203 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C204 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C205 | 1-117-863-11 | CERAMIC CHIP 0.47uF | 10% | 6.3V | (EX505) |
| C206 | 1-115-467-11 | CERAMIC CHIP 0.22uF | 10% | 10V | (EX505) |
| C207 | 1-164-505-11 | CERAMIC CHIP 2.2uF | | 16V | |
| C208 | 1-164-227-11 | CERAMIC CHIP 0.022uF | 10% | 25V | |
| C209 | 1-164-677-11 | CERAMIC CHIP 0.033uF | 10% | 16V | |
| C233 | 1-164-227-11 | CERAMIC CHIP 0.022uF | 10% | 25V | |
| C301 | 1-119-663-11 | TANTALUM CHIP 47uF | 20% | 2.5V | |
| C302 | 1-164-156-11 | CERAMIC CHIP 0.1uF | | 25V | |
| C303 | 1-117-181-11 | TANTALUM CHIP 4.7uF | 20% | 2.5V | |
| C304 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C305 | 1-126-236-11 | ELECT 330uF | 20% | 2V | |
| C306 | 1-109-935-11 | TANTALUM CHIP 4.7uF | 20% | 4V | |
| C307 | 1-115-467-11 | CERAMIC CHIP 0.22uF | 10% | 10V | |
| C308 | 1-165-112-11 | CERAMIC CHIP 0.33uF | | 16V | |
| C309 | 1-115-467-11 | CERAMIC CHIP 0.22uF | 10% | 10V | |
| C310 | 1-135-149-21 | TANTALUM CHIP 2.2uF | 20% | 10V | |
| C311 | 1-164-156-11 | CERAMIC CHIP 0.1uF | | 25V | |
| C312 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C313 | 1-109-935-11 | TANTALUM CHIP 4.7uF | 20% | 4V | |
| C314 | 1-135-187-21 | TANTALUM CHIP 2.2uF | 20% | 4V | |
| C316 | 1-125-837-11 | CERAMIC CHIP 1uF | 10% | 6.3V | |
| C317 | 1-162-964-11 | CERAMIC CHIP 0.001uF | 10% | 50V | (EX505) |
| C318 | 1-135-201-11 | TANTALUM CHIP 10uF | 20% | 4V | (EX505) |
| C319 | 1-164-156-11 | CERAMIC CHIP 0.1uF | | 25V | |
| C320 | 1-162-968-11 | CERAMIC CHIP 0.0047uF | 10% | 50V | |
| C321 | 1-115-416-11 | CERAMIC CHIP 1000PF | 5% | 25V | |
| C322 | 1-125-899-11 | TANTALUM CHIP 220uF | 20% | 4V | |
| C323 | 1-115-412-11 | CERAMIC CHIP 680PF | 5% | 25V | |
| C601 | 1-125-837-11 | CERAMIC CHIP 1uF | 10% | 6.3V | |
| C602 | 1-107-826-11 | CERAMIC CHIP 0.1uF | 10% | 16V | |
| C603 | 1-115-467-11 | CERAMIC CHIP 0.22uF | 10% | 10V | |
| C604 | 1-164-156-11 | CERAMIC CHIP 0.1uF | | 25V | |
| C605 | 1-107-826-11 | CERAMIC CHIP 0.1uF | 10% | 16V | |
| C606 | 1-162-970-11 | CERAMIC CHIP 0.01uF | 10% | 25V | |
| C607 | 1-162-970-11 | CERAMIC CHIP 0.01uF | 10% | 25V | |
| C608 | 1-162-970-11 | CERAMIC CHIP 0.01uF | 10% | 25V | |
| C701 | 1-119-750-11 | TANTALUM CHIP 22uF | 20% | 6.3V | |
| C702 | 1-104-851-11 | TANTALUM CHIP 10uF | 20% | 10V | |
| C703 | 1-162-964-11 | CERAMIC CHIP 0.001uF | 10% | 50V | |
| C708 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C709 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| C710 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | (EX505) |
| C711 | 1-115-156-11 | CERAMIC CHIP 1uF | | 10V | |
| | | < COMPOSITION CIRCUIT BLOCK > | | | |
| CB301 | 1-127-575-21 | CERAMIC CHIP 470PF | | 50V | |
| | | < DIODE > | | | |
| D701 | 8-719-073-01 | DIODE MA111-(K8).S0 | | | |
| D702 | 8-719-072-70 | DIODE MA2ZD14001S0 | | | |
| D703 | 8-719-077-09 | LED CL-196HR-CD-T (BATT) | | | |
| D704 | 8-719-077-09 | LED CL-196HR-CD-T (□□ NR) (EX505) | | | |
| D705 | 8-719-077-09 | LED CL-196HR-CD-T (AVLS) | | | |
| D706 | 8-719-077-09 | LED CL-196HR-CD-T (BL SKIP/⮌) | | | |
| D709 | 8-719-068-83 | DIODE MAZL068D0LS0-TX/L | | | |
| D710 | 8-719-422-58 | DIODE MA8062 | | | |
| D711 | 8-719-422-58 | DIODE MA8062 | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < FERRITE BEAD > | | | |
| FB101 | 1-469-125-21 | FERRITE BEAD (EXCEPT FRENCH) | | | |
| FB201 | 1-469-125-21 | FERRITE BEAD (EXCEPT FRENCH) | | | |
| | | < IC > | | | |
| IC301 | 8-759-579-12 | IC TA2123AF (EL) | | | |
| IC302 | 8-759-488-80 | IC NJM2185AV-TE2 (EX505) | | | |
| IC601 | 8-759-356-46 | IC MM1279XVBE | | | |
| IC701 | 8-759-651-61 | IC uPD789166GB-510-8ES | | | |
| IC702 | 8-759-566-77 | IC XC6371C251PL | | | |
| IC703 | 8-759-665-68 | IC PST9016NL | | | |
| IC704 | 8-759-387-31 | IC TC75S55F (TE85R) | | | |
| | | < JACK > | | | |
| J301 | 1-779-867-81 | JACK (∩ REMOTE) | | | |
| | | < RESISTOR > | | | |
| JC101 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W (EX500) |
| JC201 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W (EX500) |
| JC701 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W (EX505) |
| JC702 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W (EX500) |
| | | < COIL > | | | |
| L701 | 1-412-032-11 | INDUCTOR CHIP | 100uH | | |
| | | < PHOTO INTERRUPTER > | | | |
| PH701 | 8-749-014-43 | PHOTO INTERRUPTER PR-20-T | | | |
| | | < TRANSISTOR > | | | |
| Q301 | 8-729-800-71 | TRANSISTOR | 2SB815B7-TB | | |
| Q303 | 8-729-924-04 | TRANSISTOR | DTA143TU | | |
| Q304 | 8-729-421-23 | TRANSISTOR | XN1216 | | |
| Q701 | 8-729-230-72 | TRANSISTOR | 2SA1362YG | | |
| Q702 | 8-729-420-50 | TRANSISTOR | UN5215 | | |
| | | < RESISTOR > | | | |
| R101 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R102 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R103 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W |
| R104 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R105 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R106 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R107 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R108 | 1-216-789-11 | METAL CHIP | 2.2 | 5% | 1/16W |
| R110 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W (EX505) |
| R111 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R112 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W (EXCEPT FRENCH) |
| R112 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W (EX500: FRENCH) |
| R112 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W (EX505: FRENCH) |
| R113 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R114 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R150 | 1-216-807-11 | RES, CHIP | 68 | 5% | 1/16W (FRENCH) |
| R201 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R202 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R203 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W |
| R204 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R205 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R206 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R207 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R208 | 1-216-789-11 | METAL CHIP | 2.2 | 5% | 1/16W |
| R210 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W (EX505) |
| R211 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R212 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W (EXCEPT FRENCH) |
| R212 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W (EX500: FRENCH) |
| R212 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W (EX505: FRENCH) |
| R213 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R214 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R250 | 1-216-807-11 | RES, CHIP | 68 | 5% | 1/16W (FRENCH) |
| R301 | 1-218-887-11 | METAL CHIP | 47K | 0.5% | 1/16W (EX505) |
| R302 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R303 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R304 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R305 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R306 | 1-216-793-11 | RES, CHIP | 4.7 | 5% | 1/16W |
| R307 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R308 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W |
| R309 | 1-218-899-11 | METAL CHIP | 150K | 0.5% | 1/16W (EX505) |
| R601 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R602 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R603 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R604 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R605 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R622 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R623 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R624 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R701 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R702 | 1-216-855-11 | METAL CHIP | 680K | 5% | 1/16W |
| R703 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R704 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R705 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R706 | 1-216-843-11 | METAL CHIP | 68K | 5% | 1/16W |
| R707 | 1-218-911-11 | METAL CHIP | 470K | 0.5% | 1/16W |
| R708 | 1-218-863-11 | METAL CHIP | 4.7K | 0.5% | 1/16W |
| R710 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R711 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R712 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R713 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W |
| R714 | 1-216-803-11 | METAL CHIP | 33 | 5% | 1/16W |
| R715 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R716 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W (EX505) |

## MAIN

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R717 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R718 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R719 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W (EX505) |
| R720 | 1-218-871-11 | METAL CHIP | 10K | 0.5% | 1/16W |
| R721 | 1-218-839-11 | METAL CHIP | 470 | 0.5% | 1/16W |
| R722 | 1-218-855-11 | METAL CHIP | 2.2K | 0.5% | 1/16W |
| R723 | 1-218-851-11 | METAL CHIP | 1.5K | 0.5% | 1/16W |
| R724 | 1-218-859-11 | METAL CHIP | 3.3K | 0.5% | 1/16W |
| R725 | 1-218-859-11 | METAL CHIP | 3.3K | 0.5% | 1/16W |
| R726 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R727 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R728 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R731 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R732 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R733 | 1-218-895-11 | METAL CHIP | 100K | 0.5% | 1/16W |
| R734 | 1-218-851-11 | METAL CHIP | 1.5K | 0.5% | 1/16W |
| R735 | 1-218-871-11 | METAL CHIP | 10K | 0.5% | 1/16W |
| R736 | 1-218-867-11 | METAL CHIP | 6.8K | 0.5% | 1/16W |
| R737 | 1-218-875-11 | METAL CHIP | 15K | 0.5% | 1/16W |
| R738 | 1-218-859-11 | METAL CHIP | 3.3K | 0.5% | 1/16W |
| R739 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W |
| R740 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W |
| R750 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| | | < VARIABLE RESISTOR > | | | |
| RV301 | 1-227-167-21 | RES, VAR, CARBON 30K/30K (VOL) | | | |
| RV601 | 1-223-576-11 | RES, ADJ, METAL GLAZE 2.2K | | | |
| | | < SWITCH > | | | |
| S701 | 1-771-475-21 | SWITCH, SLIDE (DIRECTION) | | | |
| S702 | 1-771-851-21 | SWITCH, TACTILE (SMD) (■) | | | |
| S703 | 1-771-851-21 | SWITCH, TACTILE (SMD) (◄► REPEAT) | | | |
| S704 | 1-771-851-21 | SWITCH, TACTILE (SMD) (FF AMS) | | | |
| S705 | 1-771-851-21 | SWITCH, TACTILE (SMD) (REW AMS) | | | |
| S706 | 1-771-851-21 | SWITCH, TACTILE (SMD) (SOUND) | | | |
| S707 | 1-572-922-11 | SWITCH, SLIDE (HOLD) | | | |
| S708 | 1-771-851-21 | SWITCH, TACTILE (SMD) (FUNCTION) | | | |
| | | < THERMISTOR (POSITIVE) > | | | |
| THP601 | 1-810-794-11 | THERMISTOR, POSITIVE | | | |
| | | < VIBRATOR > | | | |
| X701 | 1-767-289-11 | VIBRATOR, CERAMIC (4MHz) | | | |
| ********** | | | | | |
| | | MISCELLANEOUS | | | |
| | | ********** | | | |
| HP901 | 1-500-576-12 | HEAD, MAGNETIC (PLAYBACK) | | | |
| M901 | 1-763-166-14 | MOTOR (CAPSTAN/REEL) (WITH PULLEY) | | | |
| PM901 | 1-454-674-41 | SOLENOID, PLUNGER | | | |
| S901 | 1-771-888-11 | SWITCH, LEAF (TAPE DETECT) | | | |
| ********** | | | | | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ACCESSORIES & PACKING MATERIALS | |
| | | ********** | |
| | 3-868-001-11 | MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE, ITALIAN) (EX505: AEP, FRENCH) | |
| | 3-868-001-21 | MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, FINNISH) (EX505: AEP) | |
| | 3-868-001-31 | MANUAL, INSTRUCTION (ENGLISH, CHINESE) (EX505: 9E) | |
| | 3-868-002-11 | MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE, GERMAN, ITALIAN, DUTCH, SWEDISH, FINNISH) (EX500: EXCEPT EE) | |
| | 3-868-002-21 | MANUAL, INSTRUCTION (ENGLISH, HUNGARIAN, POLISH, RUSSIAN, CZECH, SLOVAKIAN) (EX500: EE) | |
| | 8-953-130-90 | HEADPHONE MDR-E805LP (EX500) | |
| | 8-953-304-90 | RECEIVER MDR-E805SP (EX505) | |
| | A-3052-138-A | REMOTE CONTROL ASSY (RM-WME5) | (EX505) |