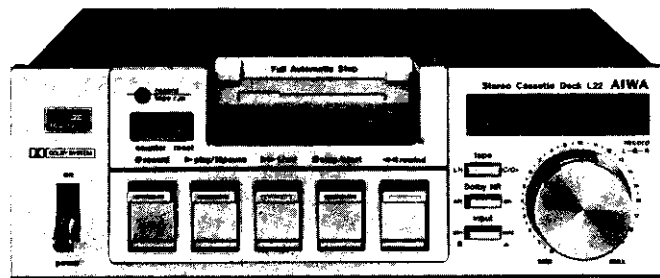


# STEREO CASSETTE DECK WITH DOLBY NR SYSTEM

MODEL NO. **SD-L22H,E,K,G**

## AIWA® [SERVICE MANUAL]

Cord No. 19-220-000-53



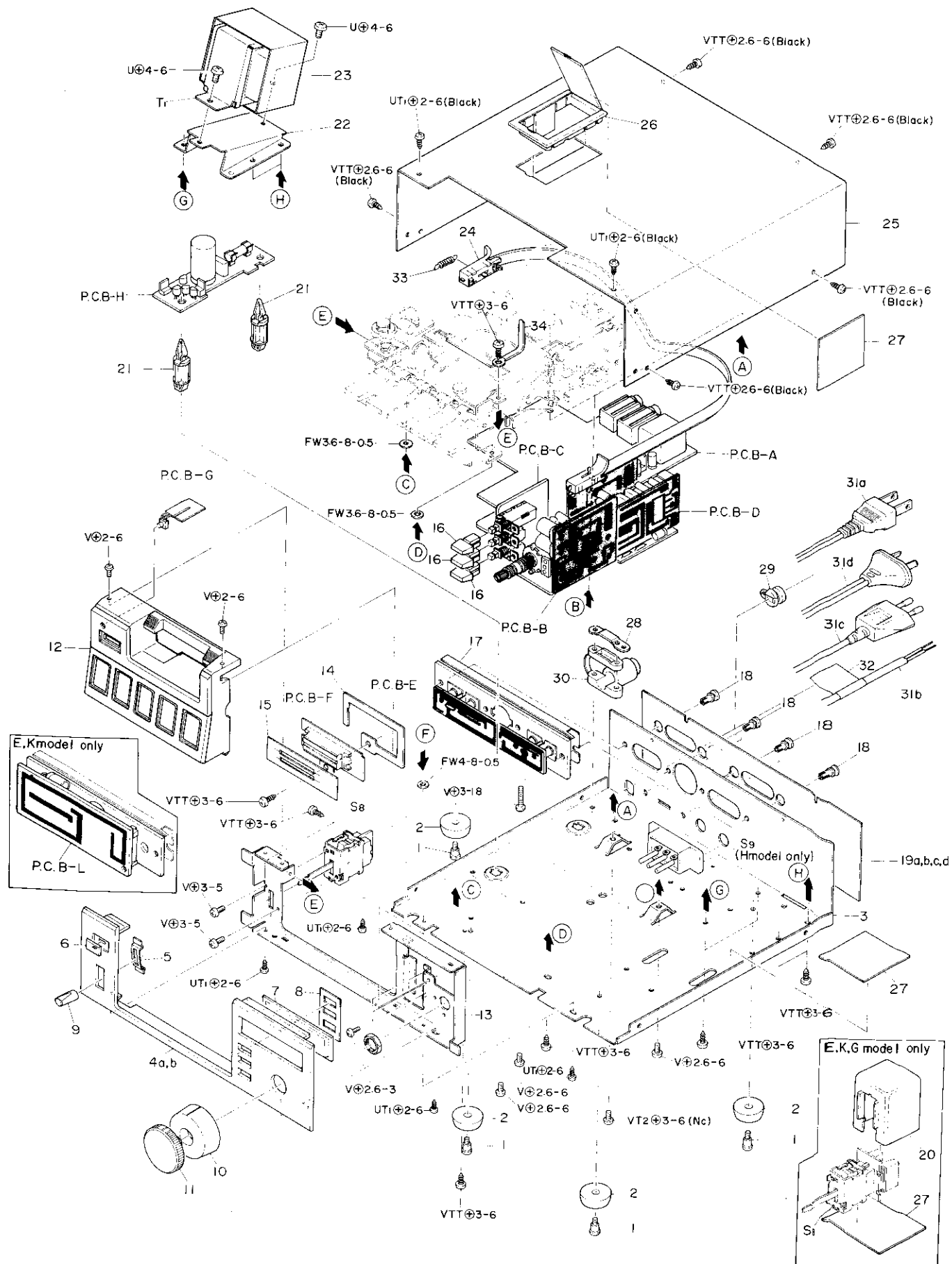
DATE OF ISSUE 6/1979

### SPECIFICATIONS

|                                             |                                                                                                                            |                                                                                                                              |                                                                                                                                                                  |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Semiconductors:</b>                      | H, G model<br>5 IC's, 17 transistors, 8 diodes,<br>11 LED's<br>E, K model<br>5 IC's, 19 transistors, 8 diodes,<br>11 LED's | <b>Cross talk:</b><br>(1 kHz 0 VU)<br><b>Erasing ratio:</b><br>(400 Hz 0 VU +10 dB)<br><b>Level indicator display error:</b> | More than 65 dB<br>More than 60 dB<br>± 1.5 dB                                                                                                                   |
| <b>Power source:</b>                        | H model<br>AC 110V/220V, switchable<br>50/60 Hz<br>E model<br>AC 220V, 50 Hz<br>K, G model<br>AC 240V, 50 Hz               | <b>Dolby effect:</b><br><b>Bias frequency:</b><br><b>Frequency response:</b>                                                 | More than 8 dB<br>85 kHz<br>CrO <sub>2</sub> : 25~16,000 Hz<br>LH: 25~14,000 Hz<br>According to DIN 45500<br>CrO <sub>2</sub> : 30~15,000 Hz<br>LH: 30~12,500 Hz |
| <b>Power consumption:</b>                   | 10W                                                                                                                        | <b>Motor:</b>                                                                                                                | DC servo motor                                                                                                                                                   |
| <b>Dimensions:</b>                          | 210(W) x 73(H) x 228(D) mm                                                                                                 | <b>Head:</b>                                                                                                                 | Hard permalloy head (for Rec./Pb)<br>Ferrite head (for Erase)                                                                                                    |
| <b>Weight:</b>                              | 2.7 kg                                                                                                                     | <b>Input:</b>                                                                                                                | MIC;<br>Max. input sensitivity<br>0.3 mV<br>(200Ω~10kΩ suitable)                                                                                                 |
| <b>Track system:</b>                        | 4-track 2-channel stereo                                                                                                   |                                                                                                                              | H, G model                                                                                                                                                       |
| <b>Tape speed:</b>                          | 4.76 cm/s ± 1%                                                                                                             |                                                                                                                              | LINE IN; Max. input sensitivity<br>50 mV<br>(More than 50kΩ)                                                                                                     |
| <b>Wow &amp; flutter:</b>                   | Less than 0.09% (WRMS)<br>Less than 0.20%<br>(According to DIN 45 500)                                                     |                                                                                                                              | E, K model                                                                                                                                                       |
| <b>Automatic stop system:</b>               | Full auto-stop                                                                                                             |                                                                                                                              | DIN; Max. input sensitivity<br>0.1 mV/kΩ                                                                                                                         |
| <b>Automatic shut-off action time:</b>      | 5 ± 3 s.                                                                                                                   |                                                                                                                              | H, G model                                                                                                                                                       |
| <b>Pinch roller pressure:</b>               | 300 ± 50 g (2.94 ± 0.49 N)                                                                                                 | <b>Output:</b>                                                                                                               | LINE OUT; Standard output level<br>0.41V (0 VU)<br>Optimum load<br>impedance<br>More than 50kΩ                                                                   |
| <b>Take-up torque:</b>                      | 50 +20 -10 g-cm (490 +196 -98 mN·m)                                                                                        |                                                                                                                              | E, K model                                                                                                                                                       |
| <b>FF &amp; rewind torque:</b>              | 140 +60 -50 g-cm (1372 +588 -490 mN·m)                                                                                     |                                                                                                                              | DIN; Standard output level<br>0.41V (0 VU)<br>Optimum load<br>impedance<br>More than 50kΩ                                                                        |
| <b>FF &amp; rewind time:</b>                | Less than 90 s (w/c-60 cassette)                                                                                           |                                                                                                                              |                                                                                                                                                                  |
| <b>Playback output:</b><br>(TTA-161)        | 0.58 ± 0.05V (LINE, DIN)                                                                                                   |                                                                                                                              |                                                                                                                                                                  |
| <b>Playback noise:</b><br>(Weighted A)      | Less than 2.0 mV<br>(LH, DOLBY NR OFF)                                                                                     |                                                                                                                              |                                                                                                                                                                  |
| <b>Rec./Pb output:</b><br>(400 Hz 0 VU)     | 0 VU ± 1.2 dB (LINE)                                                                                                       |                                                                                                                              |                                                                                                                                                                  |
| <b>Rec./Pb distortion:</b><br>(400 Hz 0 VU) | Less than 2.0% (CrO <sub>2</sub> )<br>Less than 1.5% (LH)                                                                  |                                                                                                                              |                                                                                                                                                                  |
| <b>Rec./Pb S/N:</b><br>(400 Hz, Weighted A) | More than 50/56 dB (CrO <sub>2</sub> , DOLBY<br>NR OFF/ON)<br>More than 48/54 dB (LH, DOLBY<br>NR OFF/ON)                  |                                                                                                                              |                                                                                                                                                                  |
| <b>Channel separation:</b><br>(1 kHz 0 VU)  | More than 35 dB                                                                                                            |                                                                                                                              |                                                                                                                                                                  |

- Specifications and external appearance are subject to change without notice due to product improvement.
- Dolby Noise Reduction System is licensed from Dolby Laboratories Incorporated.
- The name "Dolby" and the "Double D" symbol are trademarks of Dolby Laboratories Incorporated.

EXPLODED VIEW-1



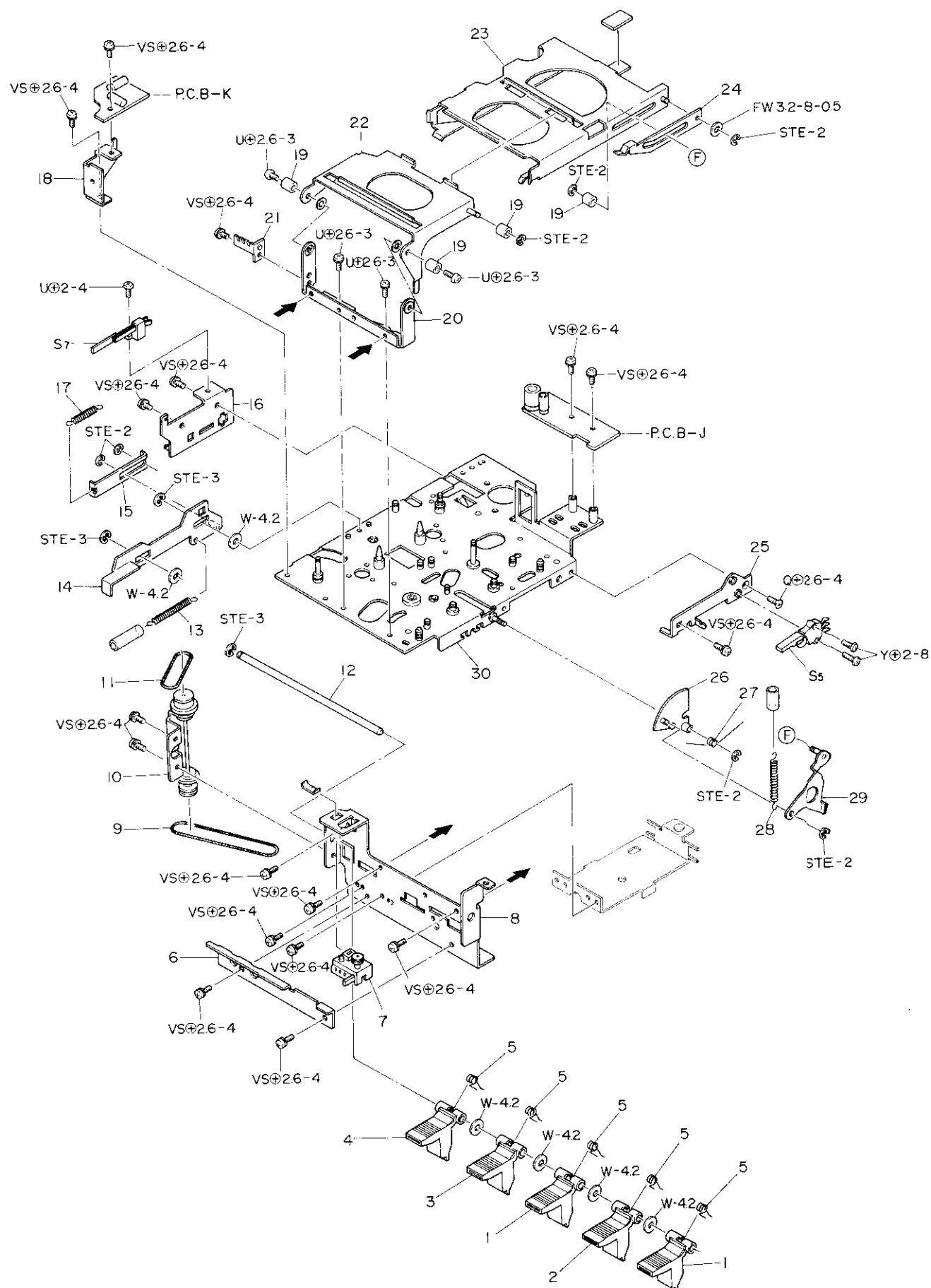
## PARTS LIST

## MECHANICAL PARTS

■ \* mark in this part list shows exclusive part  
(which is used) for only Model SD-L22.

| Ref. No. | Part No.      | Part No.<br>Changed to | Description                                 | Common<br>Model | Q'ty           |
|----------|---------------|------------------------|---------------------------------------------|-----------------|----------------|
| 1-1      | 87-081-884-01 |                        | Screw                                       |                 | 4              |
| 1-2      | 85-735-012-01 |                        | Rubber foot                                 |                 | 4              |
| 1-3      | 82-150-210-01 |                        | Amp. chassis H                              | *               | 1              |
| 1-4a     | 82-150-020-01 |                        | Panel H, Front (H, G model only)            | *               | 1              |
| 1-4b     | 82-150-029-01 |                        | Panel E, Front (E, K model only)            | *               | 1              |
| 1-5      | 82-498-008-01 |                        | Lever guide                                 | SA-C22          | 1              |
| 1-6      | 86-992-013-01 |                        | Badge, Pet name                             |                 | 1              |
| 1-7      | 82-150-004-01 |                        | Window, LED                                 | *               | 1              |
| 1-8      | 82-150-205-01 |                        | Guide, Push button                          | *               | 1              |
| 1-9      | 82-498-012-01 |                        | Key                                         |                 | 1              |
| 1-10     | 82-150-012-01 |                        | Knob, Volume (Lower)                        | *               | 1              |
| 1-11     | 82-150-011-01 |                        | Knob, Volume (Upper)                        | *               | 1              |
| 1-12     | 09-047-147-01 |                        | Front cabinet ass'y                         | *               | 1              |
|          | 82-150-009-01 |                        | Decorative plate, Cassette                  | *               | 1              |
|          | 82-150-006-01 |                        | Plate, Push-key                             | *               | 1              |
|          | 82-150-212-01 |                        | Adhesive sheet                              | *               | 1              |
|          | 82-150-002-01 |                        | Cabinet, Front                              | *               | 1              |
|          | 82-150-007-01 |                        | Cassette plate                              | *               | 1              |
|          | 82-150-211-01 |                        | Adhesive sheet, Cassette plate              | *               | 1              |
|          | 82-150-014-01 |                        | Cassette lid                                | *               | 1              |
|          | 82-150-208-01 |                        | T spring, Cassette lid                      | *               | 1              |
|          | 82-150-206-01 |                        | Shaft, Cassette lid                         | *               | 1              |
| 1-13     | 82-150-201-01 |                        | Front chassis                               | *               | 1              |
| 1-14     | 82-150-209-01 |                        | Space fiber                                 | *               | 1              |
| 1-15     | 82-150-005-01 |                        | LED plate                                   | *               | 1              |
| 1-16     | 82-150-013-01 |                        | Push button                                 | *               | 3              |
| 1-17     | 82-386-629-01 |                        | Shield plate, Jack                          | AD-1250         | 1              |
| 1-18     | 87-085-102-01 |                        | Nylon rivet                                 |                 | H:6<br>E,K,G:4 |
| 1-19a    | 82-150-015-01 |                        | Name plate, Jack (H model only)             | *               | 1              |
| 1-19b    | 82-150-017-01 |                        | Name plate, Jack (E model only)             | *               | 1              |
| 1-19c    | 82-150-018-01 |                        | Name plate, Jack (K model only)             | *               | 1              |
| 1-19d    | 82-150-030-01 |                        | Name plate, Jack (G model only)             | *               | 1              |
| 1-20     | 82-730-642-01 |                        | Cover, Power switch (E, K, G model only)    | ST-R22          | 1              |
| 1-21     | 82-150-204-01 |                        | Holder, Circuit board                       | *               | 2              |
| 1-22     | 82-150-214-01 |                        | Holder, Power transformer                   | *               | 1              |
| 1-23     | 82-150-635-01 |                        | Ring, Core                                  | *               | 1              |
| 1-24     | 87-034-579-01 |                        | Wire, Remot switch                          |                 | 1              |
| 1-25     | 82-150-003-01 |                        | Steel cabinet                               | *               | 1              |
| 1-26     | 82-150-008-01 |                        | Head lid                                    | *               | 1              |
| 1-27     | 82-730-622-01 |                        | Insulation, Fiber                           | ST-R22          | H:2<br>E,K,G:3 |
| 1-28     | 82-735-206-01 |                        | Plate, IC (E, K model only)                 | SA-A22          | 1              |
| 1-29     | 87-085-165-01 |                        | Cord bushing (H, G model only)              |                 | 1              |
| 1-30     | 87-085-166-01 |                        | Holder, AC power cord<br>(E, K, model only) |                 | 1              |
| 1-31a    | 87-034-826-01 |                        | AC power cord (H model only)                |                 | 1              |
| 1-31b    | 87-034-872-01 |                        | AC power cord (K model only)                |                 | 1              |
| 1-31c    | 87-034-877-01 |                        | AC power cord (E model only)                |                 | 1              |
| 1-31d    | 87-034-878-01 |                        | AC power cord (G model only)                |                 | 1              |
| 1-32     | 87-056-008-01 |                        | Label, AC power cord (K model only)         |                 | 1              |
| 1-33     | 82-150-207-01 |                        | E Spring (REC, Switch)                      | *               | 1              |
| 1-34     | 87-038-039-01 |                        | Binder, Wire                                |                 | 1              |

**EXPLODED VIEW-2**

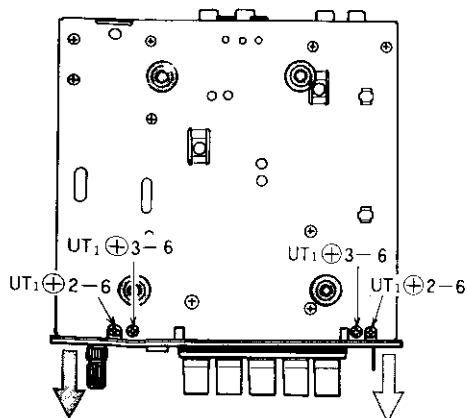


| Ref. No. | Part No.      | Part No.<br>Changed to | Description                     | Common<br>Model | Q'ty |  |
|----------|---------------|------------------------|---------------------------------|-----------------|------|--|
| 2-1      | 82-150-255-01 |                        | Push-key                        | *               | 2    |  |
| 2-2      | 82-150-319-01 |                        | Push-key (Blue)                 | *               | 1    |  |
| 2-3      | 82-150-320-01 |                        | Push-key (Green)                | *               | 1    |  |
| 2-4      | 82-150-318-01 |                        | Push-key (Red)                  | *               | 1    |  |
| 2-5      | 82-150-321-01 |                        | Spring, Push-key                | *               | 5    |  |
| 2-6      | 82-150-253-01 |                        | Lever stopper                   | *               | 1    |  |
| 2-7      | 82-150-316-01 |                        | Counter                         | *               | 1    |  |
| 2-8      | 82-150-252-01 |                        | Holder, Lever                   | *               | 1    |  |
| 2-9      | 82-540-339-01 |                        | Belt, Reel platform             |                 | 1    |  |
| 2-10     | 82-150-276-01 |                        | Pulley plate ass'y              | *               | 1    |  |
| 2-11     | 82-150-294-01 |                        | Belt, Counter                   | *               | 1    |  |
| 2-12     | 82-150-317-01 |                        | Shaft, Push-key                 | *               | 1    |  |
| 2-13     | 82-150-325-01 |                        | Spring, REC lever               | *               | 1    |  |
| 2-14     | 82-150-282-01 |                        | REC lever ass'y                 | *               | 1    |  |
| 2-15     | 82-150-242-01 |                        | Plate spring holder, REC switch | *               | 1    |  |
| 2-16     | 82-150-281-01 |                        | REC switch holder ass'y         | *               | 1    |  |
| 2-17     | 82-150-330-01 |                        | Spring, REC                     | *               | 1    |  |
| 2-18     | 82-150-254-01 |                        | Holder, Protector               | *               | 1    |  |
| 2-19     | 82-484-356-01 |                        | Spacer, Bracket                 |                 | 2    |  |
| 2-20     | 82-150-223-01 |                        | Bracket B, CAS                  | *               | 1    |  |
| 2-21     | 82-150-263-01 |                        | Holder, PR spring               | *               | 1    |  |
| 2-22     | 82-150-262-01 |                        | CAS bracket A ass'y             | *               | 1    |  |
| 2-23     | 82-150-260-01 |                        | Cassette case ass'y             | *               | 1    |  |
| 2-24     | 82-150-342-01 |                        | Stopper, CAS                    | *               | 1    |  |
| 2-25     | 82-150-237-01 |                        | Holder, SSW                     | *               | 1    |  |
| 2-26     | 82-150-275-01 |                        | Holder UD plate ass'y           | *               | 1    |  |
| 2-27     | 82-150-326-01 |                        | Spring, UD plate                | *               | 1    |  |
| 2-28     | 82-150-328-01 |                        | Spring, Stopper lever           | *               | 1    |  |
| 2-29     | 82-150-261-01 |                        | Holder UD lever ass'y           | *               | 1    |  |
| 2-30     | 82-150-278-01 |                        | Mechanism chassis ass'y         | *               | 1    |  |

## DISASSEMBLY INSTRUCTIONS

### 1. To Remove Front Panel

- 1) Remove Steel cabinet
  - 2) Pull out the control knobs.
  - 3) Remove 2 screws.
- (Refer to Fig. 1)



### 2. To Remove Mechanism

- Remove 5 screws.  
(Refer to Fig. 2)

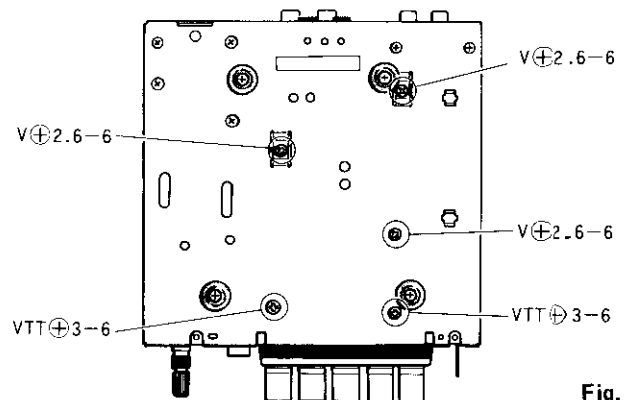
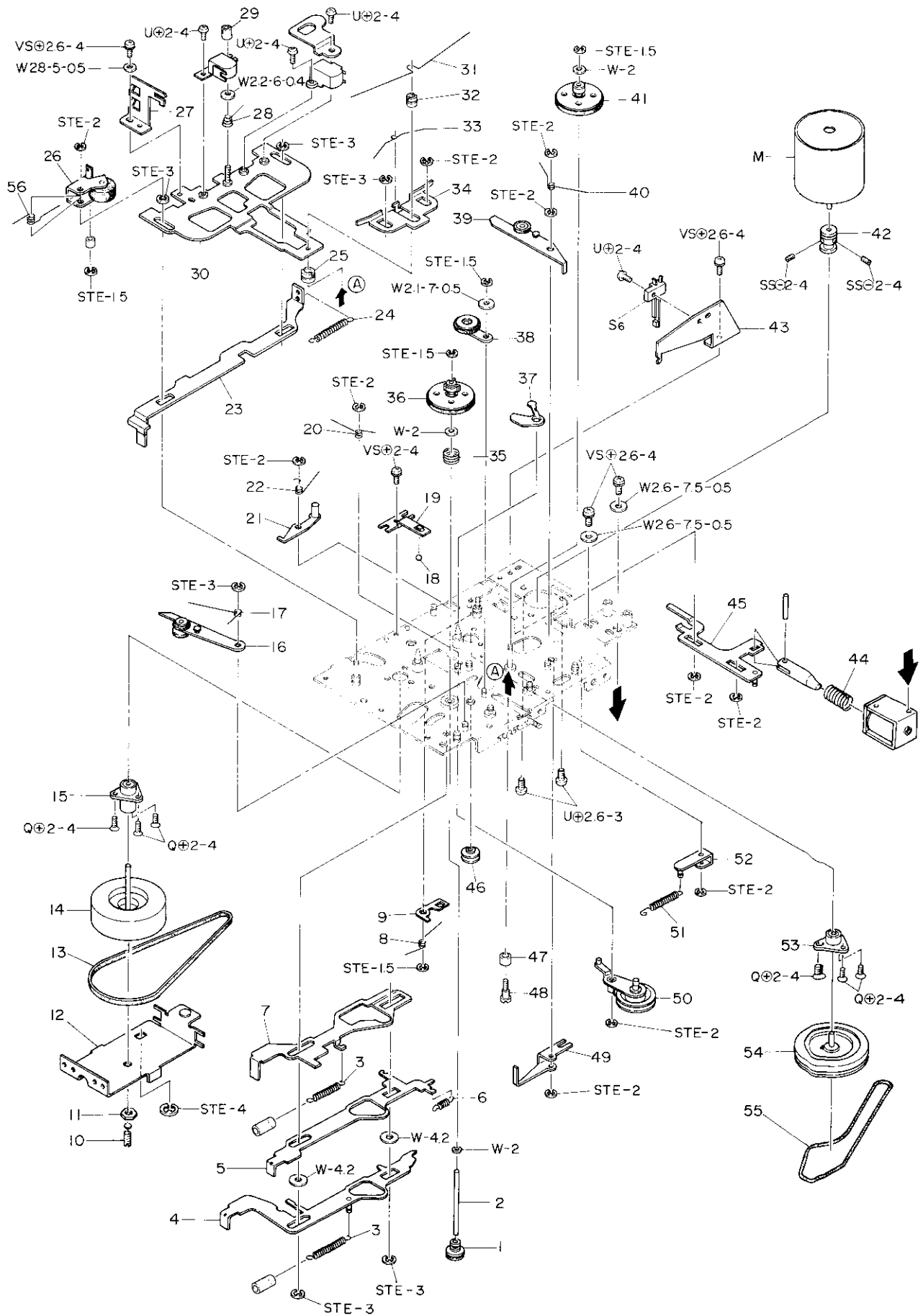


Fig. 1

Fig. 2

**EXPLODED VIEW-3**



| Ref. No. | Part No.      | Part No.<br>Changed to | Description                      | Common<br>Model | Q'ty |  |
|----------|---------------|------------------------|----------------------------------|-----------------|------|--|
| 3-1      | 82-150-251-01 |                        | Counter pulley                   | *               | 1    |  |
| 3-2      | 82-150-311-01 |                        | Reel shaft, REW                  | *               | 1    |  |
| 3-3      | 82-150-327-01 |                        | Spring, STE lever                | *               | 2    |  |
| 3-4      | 82-150-240-01 |                        | FF lever                         | *               | 1    |  |
| 3-5      | 82-150-239-01 |                        | REW lever                        | *               | 1    |  |
| 3-6      | 82-150-329-01 |                        | Spring, FRD lever                | *               | 2    |  |
| 3-7      | 82-150-238-01 |                        | STE lever                        | *               | 1    |  |
| 3-8      | 82-150-286-01 |                        | Lock spring                      | *               | 1    |  |
| 3-9      | 82-150-285-01 |                        | Cam plate                        | *               | 1    |  |
| 3-10     | 82-150-295-01 |                        | Screw (for thrust adjustment)    | *               | 1    |  |
| 3-11     | 82-150-296-01 |                        | Flywheel bearing nut             | *               | 1    |  |
| 3-12     | 82-150-274-01 |                        | Flywheel bearing ass'y           | *               | 1    |  |
| 3-13     | 82-150-292-01 |                        | Rubber belt                      | *               | 1    |  |
| 3-14     | 82-150-290-01 |                        | Flywheel ass'y                   | *               | 1    |  |
| 3-15     | 82-150-291-01 |                        | Flywheel shaft bearing (A) ass'y | *               | 1    |  |
| 3-16     | 82-150-298-01 |                        | FF arm ass'y                     | *               | 1    |  |
| 3-17     | 82-150-337-01 |                        | Spring, FF arm                   | *               | 1    |  |
| 3-18     | 82-484-371-01 |                        | Steel ball                       |                 | 1    |  |
| 3-19     | 82-150-304-01 |                        | Slide plate spring, HP           | *               | 1    |  |
| 3-20     | 82-150-338-01 |                        | Spring, Clutch lever             | *               | 1    |  |
| 3-21     | 82-150-280-01 |                        | REC Lock plate ass'y             | *               | 1    |  |
| 3-22     | 82-150-330-01 |                        | Spring, REC                      | *               | 1    |  |
| 3-23     | 82-150-279-01 |                        | Pause lever ass'y                | *               | 1    |  |
| 3-24     | 82-484-281-01 |                        | Spring, FRD lever                |                 | 1    |  |
| 3-25     | 82-484-328-01 |                        | Spacer, HP                       |                 | 1    |  |
| 3-26     | 82-150-264-01 |                        | PR lever F ass'y                 | *               | 1    |  |
| 3-27     | 82-150-273-01 |                        | Stopper, Head                    | *               | 1    |  |
| 3-28     | 82-150-271-01 |                        | Spring, Azimuth                  | *               | 1    |  |
| 3-29     | 82-150-272-01 |                        | Post A, Azimuth                  | *               | 1    |  |
| 3-30     | 82-150-270-01 |                        | Head plate ass'y                 | *               | 1    |  |
| 3-31     | 82-484-290-01 |                        | Spring, HP                       |                 | 1    |  |
| 3-32     | 82-150-302-01 |                        | Spacer, HP lock                  | *               | 1    |  |
| 3-33     | 82-150-307-01 |                        | Spring, Brake                    | *               | 1    |  |
| 3-34     | 82-150-306-01 |                        | Brake lever                      | *               | 1    |  |
| 3-35     | 82-150-312-01 |                        | Spring, BT                       | *               | 1    |  |
| 3-36     | 82-150-310-01 |                        | Take-up reel platform ass'y      | *               | 1    |  |
| 3-37     | 82-150-248-01 |                        | Pause cam                        | *               | 1    |  |
| 3-38     | 82-150-308-01 |                        | Idler ass'y                      | *               | 1    |  |
| 3-39     | 82-150-297-01 |                        | REW arm ass'y                    | *               | 1    |  |
| 3-40     | 82-150-336-01 |                        | Spring, REW arm                  | *               | 1    |  |
| 3-41     | 82-150-309-01 |                        | Supply reel platform ass'y       | *               | 1    |  |
| 3-42     | 82-150-267-01 |                        | Motor pulley                     | *               | 1    |  |
| 3-43     | 82-150-225-01 |                        | Holder, SW                       | *               | 1    |  |
| 3-44     | 82-150-284-01 |                        | Spring, Solenoid                 | *               | 1    |  |
| 3-45     | 82-150-265-01 |                        | Lock eject plate ass'y           | *               | 1    |  |
| 3-46     | 82-150-241-01 |                        | Tansion pulley                   | *               | 1    |  |
| 3-47     | 82-484-377-01 |                        | Roller                           |                 | 1    |  |
| 3-48     | 82-150-301-01 |                        | Shaft, HP lock                   | *               | 1    |  |
| 3-49     | 82-150-236-01 |                        | Lock plate                       | *               | 1    |  |
| 3-50     | 82-150-288-01 |                        | Clutch ass'y                     | *               | 1    |  |
| 3-51     | 82-150-323-01 |                        | Spring, Lock lever               | *               | 1    |  |
| 3-52     | 82-150-268-01 |                        | FRD lock lever ass'y             | *               | 1    |  |
| 3-53     | 82-150-340-01 |                        | FW shaft bearing (B) ass'y       | *               | 1    |  |
| 3-54     | 82-150-332-01 |                        | Fly wheel ass'y                  | *               | 1    |  |
| 3-55     | 82-150-293-01 |                        | Clutch belt                      | *               | 1    |  |
| 3-56     | 82-150-314-01 |                        | PR spring F                      | *               | 1    |  |

## ACCESSORIES/PACKAGE

| Ref. No. | Part No.      | Part No.<br>Changed to | Description                                                          | Common<br>Model | Q'ty |  |
|----------|---------------|------------------------|----------------------------------------------------------------------|-----------------|------|--|
| 1        | 82-150-856-01 |                        | Printed indiv., Packing                                              | *               | 1    |  |
| 2        | 82-150-852-01 |                        | Cushion L, Printed indiv.                                            | *               | 1    |  |
| 3        | 82-150-853-01 |                        | Cushion R, Printed indiv.                                            | *               | 1    |  |
| 4        | 87-051-131-11 |                        | Poly-vinyl sack (H model only)                                       |                 | 1    |  |
| 5        | 87-051-130-11 |                        | Poly-vinyl sack (E model only)                                       |                 | 1    |  |
| 6        | 87-051-135-11 |                        | Poly-vinyl sack (E, K, G model only)                                 |                 | 1    |  |
| 7        | 87-056-603-01 |                        | Poly-vinyl sack (for case)                                           |                 | 1    |  |
| 8        | 82-150-902-01 |                        | Instructions booklet (H model only)                                  | *               | 1    |  |
| 9        | 82-150-903-01 |                        | Instructions booklet (E model only)                                  | *               | 1    |  |
| 10       | 82-150-904-01 |                        | Instructions booklet (K model only)                                  | *               | 1    |  |
| 11       | 82-150-905-01 |                        | Instructions booklet (G model only)                                  | *               | 1    |  |
| 12       | 87-051-130-11 |                        | Poly-vinyl sack (H model only)                                       |                 | 1    |  |
| 13       | 87-051-175-01 |                        | Poly-tube A                                                          |                 | 1    |  |
| 14       | 87-056-008-11 |                        | Label, AC power cord (K model only)                                  |                 | 1    |  |
| 15       | 87-056-009-01 |                        | Distributors list (H model only)                                     |                 | 1    |  |
| 16       | 87-056-009-41 |                        | Distributors list (E, K, G model only)                               |                 | 1    |  |
| 17       | 87-056-032-01 |                        | Guarantee card (G model only)                                        |                 | 1    |  |
| 18       | 82-498-010-01 |                        | Handle (E <sub>1</sub> , H <sub>1</sub> , K <sub>1</sub> model only) | S-C22           | 1    |  |
| 19       | 86-444-015-01 |                        | Connection cord, CW-129CSK<br>(H, G model only)                      |                 | 2    |  |
| 20       | 86-925-016-01 |                        | Connection cord, CW-115CSK<br>(E, K model only)                      |                 | 1    |  |
| 21       | 87-032-845-01 |                        | Siemens plug (H model only)                                          |                 | 1    |  |
| 22       | 87-058-024-01 |                        | Head cleaning pole ass'y                                             |                 | 1    |  |

# AIWACO.,LTD.



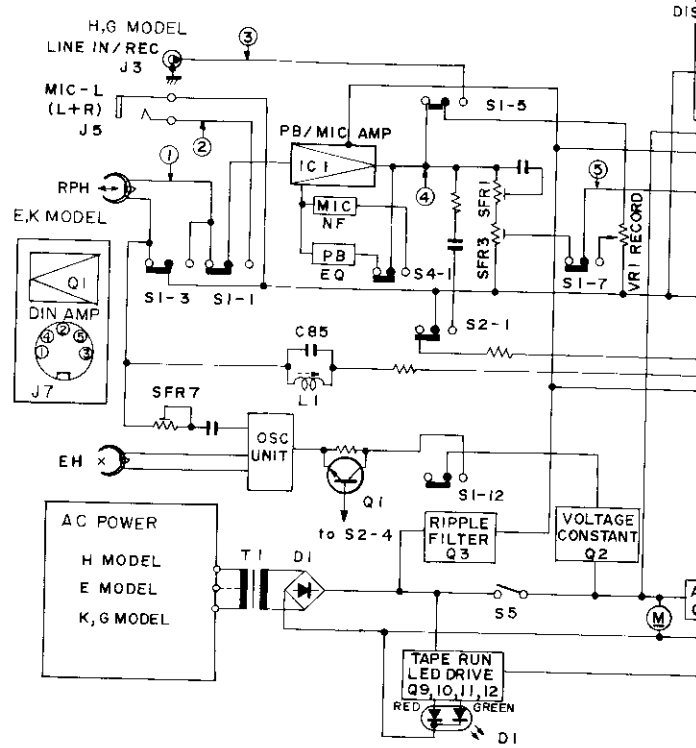
ELECTRICAL MAIN PARTS

| Symbol No.                         | Part No.      | Description                             |
|------------------------------------|---------------|-----------------------------------------|
| ◀MAIN CIRCUIT BOARD SECTION▶       |               |                                         |
| PCB-A                              | 82-150-607-31 | Main circuit board                      |
| IC1                                | 87-027-453-01 | IC, AN7311                              |
| IC4,5                              | 87-027-351-01 | IC, LB-1416                             |
| Q1,4                               | 89-318-155-01 | Transistor, 2SC1815 (GR)                |
| Q2                                 | 89-313-173-01 | Transistor, 2SC1317 (Q)                 |
| Q3                                 | 89-318-154-01 | Transistor, 2SC1815 (Y)                 |
| Q6                                 | 89-107-336-01 | Transistor, 2SA733 (P)                  |
| Q7,8                               | 89-406-555-01 | Transistor, 2SD655 (E)                  |
| D1                                 | 87-027-097-01 | Diode, 1S1555                           |
| D2                                 | 87-027-474-01 | Zener diode, HZ11A2                     |
| L3                                 | 82-371-648-01 | Micro inductor coil, 6.8 mH             |
| OSC UNIT                           | 82-150-620-01 | OSC unit                                |
| S1                                 | 87-031-506-01 | Slide switch (REC/PB)                   |
| J5,6                               | 87-032-952-01 | Jack, 6.3 $\phi$ (MIC)                  |
| SFR1,3,5                           | 87-021-569-01 | Semi-fixed resistor, 50k $\Omega$ -B    |
| 7,8                                |               |                                         |
| SFR9,10                            | 87-021-567-01 | Semi-fixed resistor, 10k $\Omega$ -B    |
| PIN1,2                             | 87-032-903-01 | Pin, 3P                                 |
| <Capacitors>                       |               |                                         |
| C3,4                               | 87-015-246-01 | 4.7 $\mu$ F 25V Electrolytic LL         |
| C8                                 | 87-015-487-01 | 4.7 $\mu$ F 25V Electrolytic LS         |
| C7                                 | 87-015-486-01 | 100 $\mu$ F 10V Electrolytic LS         |
| C102,103                           | 87-015-480-01 | 220 $\mu$ F 16V Electrolytic LS         |
| C10                                | 87-015-467-01 | 220 $\mu$ F 10V Electrolytic LS         |
| ◀REC VOLUME CIRCUIT BOARD SECTION▶ |               |                                         |
| PCB-B                              | 82-150-608-31 | Rec. volume circuit board               |
| Q5                                 | 89-318-155-01 | Transistor, 2SC1815 (GR)                |
| L1,2                               | 87-008-173-01 | Bias trap coil                          |
| L4                                 | 82-371-648-01 | Micro inductor coil, 6.8 mH             |
| VR1,2                              | 82-150-621-01 | Volume, 50k $\Omega$ -A (REC LEVEL)     |
| SFR2,4,6                           | 87-021-569-01 | Semi-fixed resistor, 50k $\Omega$ -B    |
| <Capacitor>                        |               |                                         |
| C85,86                             | 87-014-045-01 | 330pF PP                                |
| ◀SWITCH CIRCUIT BOARD SECTION▶     |               |                                         |
| PCB-C                              | 82-150-609-11 | Switch circuit board                    |
| S2                                 | 87-031-507-01 | Push switch (TAPE SELECTOR)             |
| S3,4                               | 87-031-508-01 | Push switch (DOLBY NR, INPUT SELECTOR)  |
|                                    | 87-032-641-01 | Pin, 11P                                |
| ◀DOLBY CIRCUIT BOARD SECTION▶      |               |                                         |
| PCB-D                              | 82-150-610-31 | Dolby NR circuit board                  |
| IC2                                | 87-027-460-01 | IC, LM1011N                             |
| LPF1,2                             | 87-030-061-01 | Low-pass filter                         |
|                                    | 87-032-637-01 | Pin, 7P                                 |
| <Capacitor>                        |               |                                         |
| C31                                | 87-015-241-01 | 1 $\mu$ F 50V Electrolytic LL           |
| C39                                | 82-371-643-01 | 0.0047 $\mu$ F PP                       |
| C41                                | 82-371-642-01 | 0.0056 $\mu$ F PP                       |
| C43                                | 82-371-641-01 | 0.027 $\mu$ F PP                        |
| ◀JACK CIRCUIT BOARD SECTION▶       |               |                                         |
| = H,G model only                   |               |                                         |
| PCB-E                              | 82-150-611-11 | Jack circuit board                      |
| J1,2,3,4                           | 82-399-609-01 | Jack ass'y (LINE OUT/PLAY, LINE IN/REC) |
| ◀LED-1 CIRCUIT BOARD SECTION▶      |               |                                         |
| PCB-F                              | 82-150-612-01 | LED-1 circuit board                     |
| D1,2                               | 87-027-462-01 | Light emitting diode                    |

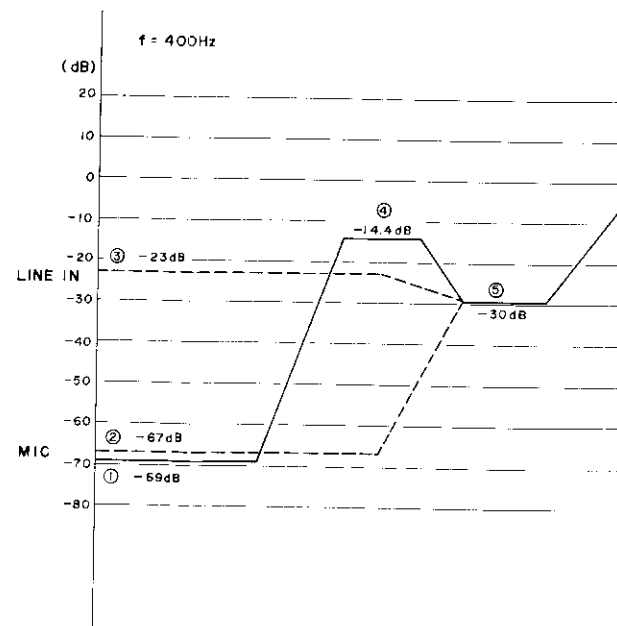
| Symbol No.                           | Part No.      | Description                                        |
|--------------------------------------|---------------|----------------------------------------------------|
| ◀LED-2 CIRCUIT BOARD SECTION▶        |               |                                                    |
| PCB-G                                | 82-150-634-01 | LED-2 circuit board                                |
| D1                                   | 87-027-463-01 | Light emitting diode                               |
| ◀POWER CIRCUIT BOARD SECTION▶        |               |                                                    |
| PCB-H                                | 82-150-615-01 | Power circuit board                                |
| Q9,10,11                             | 89-318-155-01 | Transistor, 2SC1815 (GR)                           |
| 12,13                                |               |                                                    |
| D1                                   | 87-027-376-01 | Diode, 1B4B41                                      |
| F1                                   | 87-035-216-01 | Fuse, "T" 200 mA (H model only)                    |
|                                      | 87-098-009-01 | Fuse label, "T" 200 mA (H model only)              |
| F1                                   | 87-035-219-01 | Fuse "T" 500mA (E,K,G model only)                  |
|                                      | 87-098-013-01 | Fuse label, "T" 500 mA (E,K,G model only)          |
|                                      | 87-033-147-01 | Fuse clamp                                         |
| PIN3,4                               | 87-032-903-01 | Pin, 3P                                            |
| ◀AUTO STOP CIRCUIT BOARD SECEION▶    |               |                                                    |
| PCB-J                                | 82-150-256-01 | Auto stop circuit board                            |
|                                      | 82-150-256-01 | AS PCB ass'y (AUTO STOP)                           |
| ◀DME CIRCUIT BOARD SECTION▶          |               |                                                    |
| PCB-K                                | 82-150-277-01 | DME circuit board                                  |
|                                      | 82-150-277-01 | DME PCB ass'y                                      |
| ◀DIN CIRCUIT BOARD SECTION▶          |               |                                                    |
| = E,K model only                     |               |                                                    |
| PCB-L                                | 82-150-633-01 | DIN circuit board                                  |
| RY1                                  | 84-184-612-01 | Reed relay HA212N                                  |
| Q1,2                                 | 89-309-456-01 | Transistor, 2SC945L (P)                            |
| J7                                   | 82-150-622-01 | Terminal plate ass'y (DIN, REC/PLAY)               |
| ◀POWER SWITCH CIRCUIT BOARD SECTION▶ |               |                                                    |
| = E,K,G model only                   |               |                                                    |
| PCB-M                                | 82-730-628-01 | Power switch circuit board                         |
| S8                                   | 87-031-501-01 | Lever switch (POWER)                               |
| <Capacitors>                         |               |                                                    |
| C202                                 | 87-019-101-01 | 0.022 $\mu$ F 250V Line capacitor (E model only)   |
| C202,203                             | 87-019-101-01 | 0.022 $\mu$ F 250V Line capacitor (K,G model only) |
| ◀MISCELLANEOUS▶                      |               |                                                    |
| T1                                   | 82-150-602-01 | Power transformer (H model only)                   |
| T1                                   | 82-150-604-01 | Power transformer (E model only)                   |
| T1                                   | 82-150-605-01 | Power transformer (K,G model only)                 |
| RPH                                  | 87-046-159-01 | Rec./Pb head                                       |
| EH                                   | 87-046-131-01 | Erase head                                         |
| SOL1                                 | 82-150-283-01 | Solenoid ass'y                                     |
| M                                    | 82-150-266-01 | DC motor                                           |
| S5                                   | 82-150-238-01 | Micro switch (AUTO STOP)                           |
| S6                                   | 82-150-269-01 | Leaf switch (AUTO STOP)                            |
| S7                                   | 82-150-289-01 | Leaf switch (AUTO STOP)                            |
| S8                                   | 87-031-515-01 | Lever switch (POWER) (H model only)                |
| S9                                   | 87-031-364-01 | Slide switch (VOLTAGE SELECTOR) (H model only)     |
| CP1                                  | 87-028-036-01 | Compound capacitor (H model only)                  |

| Symbol No.                                                                                                                                                                                                                                                              | Part No.      | Description                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------|
|                                                                                                                                                                                                                                                                         | 87-034-826-01 | AC power cord (H model only)             |
|                                                                                                                                                                                                                                                                         | 87-034-877-01 | AC power cord (E model only)             |
|                                                                                                                                                                                                                                                                         | 87-034-872-01 | AC power cord (K model only)             |
|                                                                                                                                                                                                                                                                         | 87-034-878-01 | AC power cord (G model only)             |
|                                                                                                                                                                                                                                                                         | 87-085-166-01 | Holder, AC power cord (E,K,G model only) |
|                                                                                                                                                                                                                                                                         | 87-085-165-01 | Cord bushing (H model only)              |
| CON-1                                                                                                                                                                                                                                                                   | 82-150-625-01 | Connector ass'y, 3P                      |
| CON-2                                                                                                                                                                                                                                                                   | 82-150-626-01 | Connector ass'y, 3P                      |
| CON-3                                                                                                                                                                                                                                                                   | 82-150-627-01 | Connector ass'y, 3P                      |
| CON-4                                                                                                                                                                                                                                                                   | 82-150-628-01 | Connector ass'y, 3P                      |
| This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part. |               |                                          |

BLOCK DIAGRAM



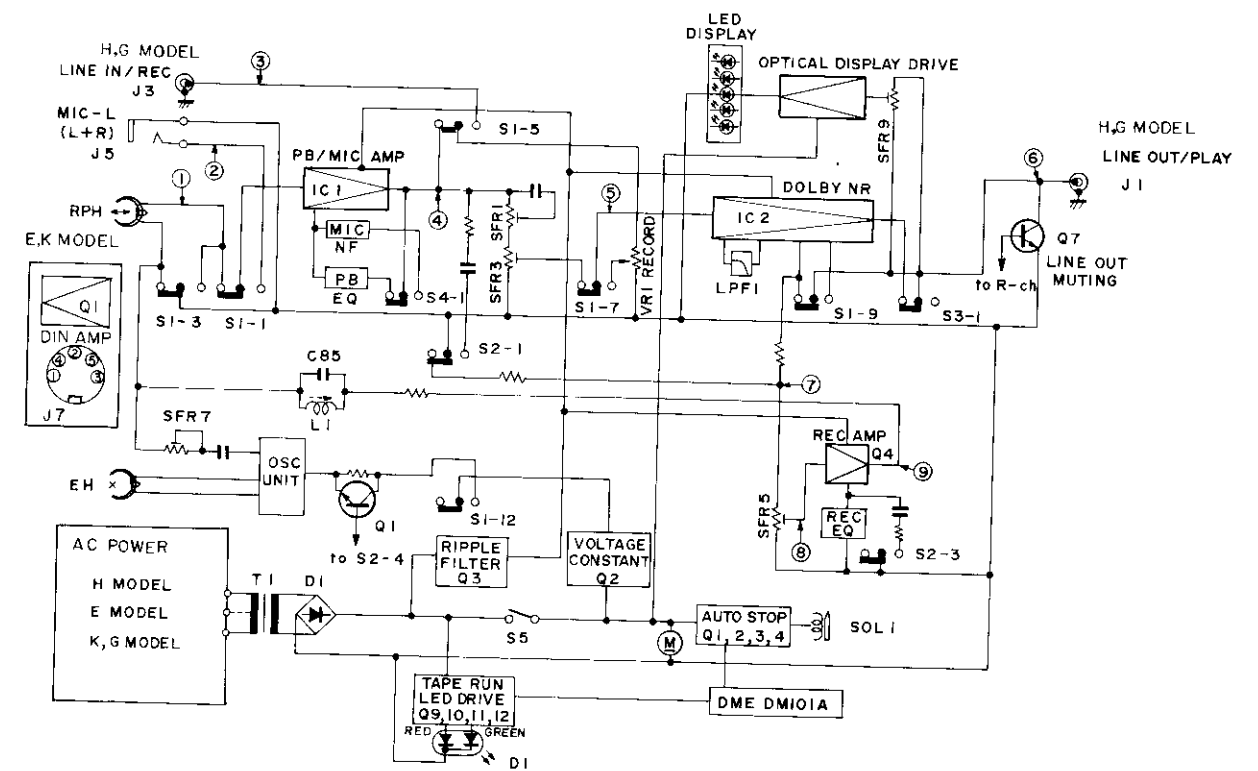
LEVEL DIAGRAM



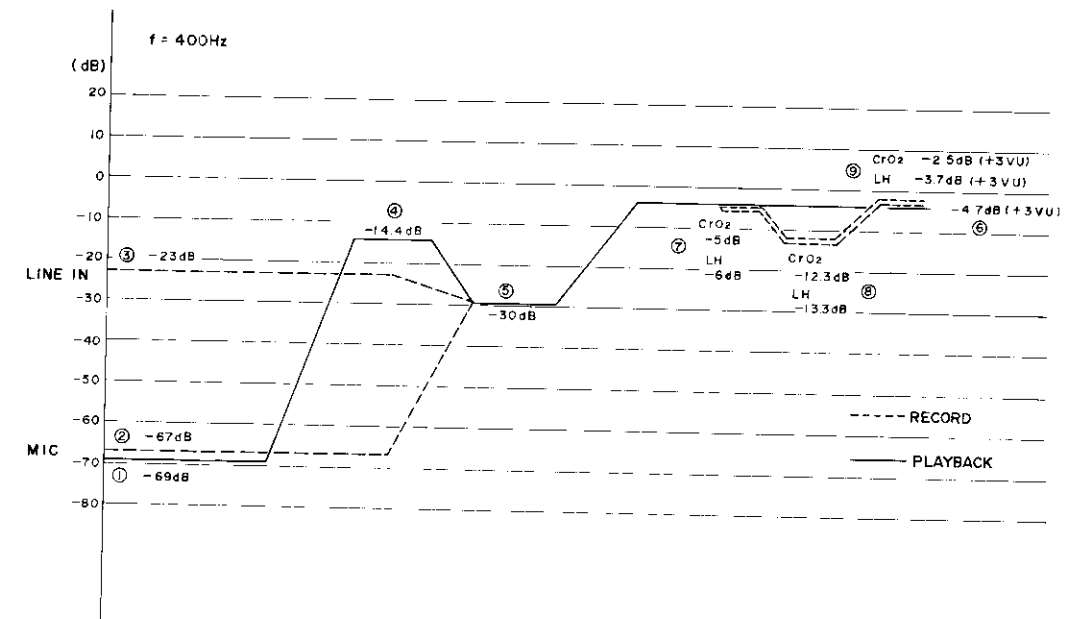
| Symbol No.                                  | Part No.      | Description                                           |
|---------------------------------------------|---------------|-------------------------------------------------------|
| <b>«LED-2 CIRCUIT BOARD SECTION»</b>        |               |                                                       |
| PCB-G                                       | 82-150-634-01 | LED-2 circuit board                                   |
| D1                                          | 87-027-463-01 | Light emitting diode                                  |
| <b>«POWER CIRCUIT BOARD SECTION»</b>        |               |                                                       |
| PCB-H                                       | 82-150-615-01 | Power circuit board                                   |
| Q9,10,11<br>12,13                           | 89-318-155-01 | Transistor, 2SC1815 (GR)                              |
| D1                                          | 87-027-376-01 | Diode, 1B4B41                                         |
| F1                                          | 87-035-216-01 | Fuse, "T" 200 mA<br>(H model only)                    |
| F1                                          | 87-098-009-01 | Fuse label, "T" 200 mA<br>(H model only)              |
| F1                                          | 87-035-219-01 | Fuse "T" 500mA<br>(E,K,G model only)                  |
| F1                                          | 87-098-013-01 | Fuse label, "T" 500 mA<br>(E,K,G model only)          |
| PIN3,4                                      | 87-033-147-01 | Fuse clamp                                            |
| PIN3,4                                      | 87-032-903-01 | Pin, 3P                                               |
| <b>«AUTO STOP CIRCUIT BOARD SECEION»</b>    |               |                                                       |
| PCB-J                                       | 82-150-256-01 | Auto stop circuit board                               |
| PCB-J                                       | 82-150-256-01 | AS PCB ass'y (AUTO STOP)                              |
| <b>«DME CIRCUIT BOARD SECTION»</b>          |               |                                                       |
| PCB-K                                       | 82-150-277-01 | DME circuit board                                     |
| PCB-K                                       | 82-150-277-01 | DME PCB ass'y                                         |
| <b>«DIN CIRCUIT BOARD SECTION»</b>          |               |                                                       |
| <b>= E,K model only</b>                     |               |                                                       |
| PCB-L                                       | 82-150-633-01 | DIN circuit board                                     |
| RY1                                         | 84-184-612-01 | Reed relay HA212N                                     |
| Q1,2                                        | 89-309-456-01 | Transistor, 2SC945L (P)                               |
| J7                                          | 82-150-622-01 | Terminal plate ass'y<br>(DIN, REC/PLAY)               |
| <b>«POWER SWITCH CIRCUIT BOARD SECTION»</b> |               |                                                       |
| <b>= E,K,G model only</b>                   |               |                                                       |
| PCB-M                                       | 82-730-628-01 | Power switch circuit board                            |
| S8                                          | 87-031-501-01 | Lever switch (POWER)                                  |
| <b>&lt;Capacitors&gt;</b>                   |               |                                                       |
| C202                                        | 87-019-101-01 | 0.022 $\mu$ F 250V Line capacitor<br>(E model only)   |
| C202,203                                    | 87-019-101-01 | 0.022 $\mu$ F 250V Line capacitor<br>(K,G model only) |
| <b>«MISCELLANEOUS»</b>                      |               |                                                       |
| T1                                          | 82-150-602-01 | Power transformer<br>(H model only)                   |
| T1                                          | 82-150-604-01 | Power transformer<br>(E model only)                   |
| T1                                          | 82-150-605-01 | Power transformer<br>(K,G model only)                 |
| RPH                                         | 87-046-159-01 | Rec./Pb head                                          |
| EH                                          | 87-046-131-01 | Erase head                                            |
| SOL1                                        | 82-150-283-01 | Solenoid ass'y                                        |
| M                                           | 82-150-266-01 | DC motor                                              |
| S5                                          | 82-150-238-01 | Micro switch (AUTO STOP)                              |
| S6                                          | 82-150-269-01 | Leaf switch (AUTO STOP)                               |
| S7                                          | 82-150-289-01 | Leaf switch (AUTO STOP)                               |
| S8                                          | 87-031-515-01 | Lever switch (POWER)<br>(H model only)                |
| S9                                          | 87-031-364-01 | Slide switch (VOLTAGE<br>SELECTOR) (H model only)     |
| CP1                                         | 87-028-036-01 | Compound capacitor<br>(H model only)                  |

| Symbol No. | Part No.                                                                                                                                                                                                                                                                | Description                                 |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| ⚠          | 87-034-826-01                                                                                                                                                                                                                                                           | AC power cord (H model only)                |
|            | 87-034-877-01                                                                                                                                                                                                                                                           | AC power cord (E model only)                |
|            | 87-034-872-01                                                                                                                                                                                                                                                           | AC power cord (K model only)                |
|            | 87-034-878-01                                                                                                                                                                                                                                                           | AC power cord (G model only)                |
|            | 87-085-166-01                                                                                                                                                                                                                                                           | Holder, AC power cord<br>(E,K,G model only) |
| ⚠          | 87-085-165-01                                                                                                                                                                                                                                                           | Cord bushing (H model only)                 |
|            | 82-150-625-01                                                                                                                                                                                                                                                           | Connector ass'y, 3P                         |
|            | 82-150-626-01                                                                                                                                                                                                                                                           | Connector ass'y, 3P                         |
|            | 82-150-627-01                                                                                                                                                                                                                                                           | Connector ass'y, 3P                         |
| ⚠          | 82-150-628-01                                                                                                                                                                                                                                                           | Connector ass'y, 3P                         |
|            | This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part. |                                             |

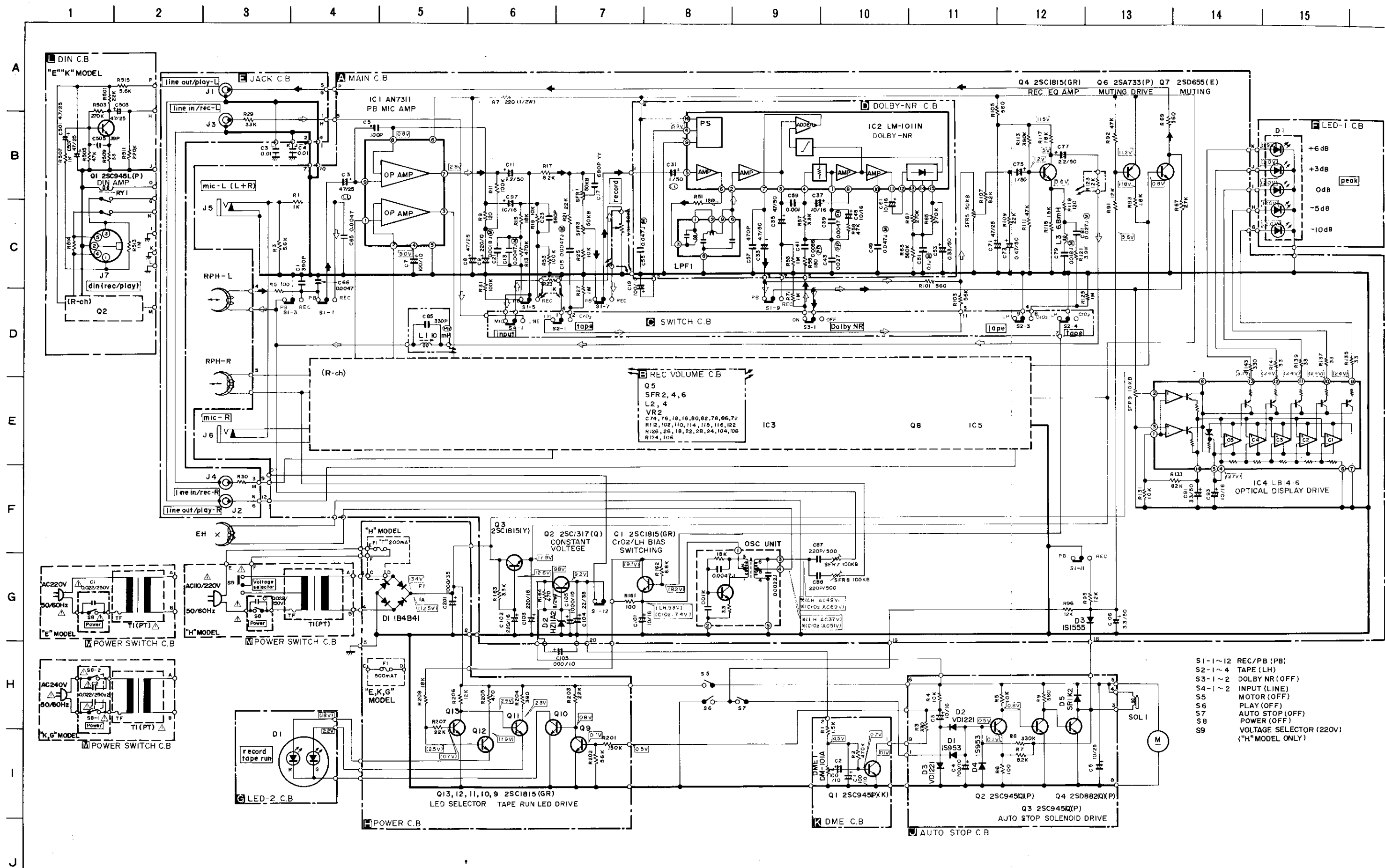
BLOCK DIAGRAM

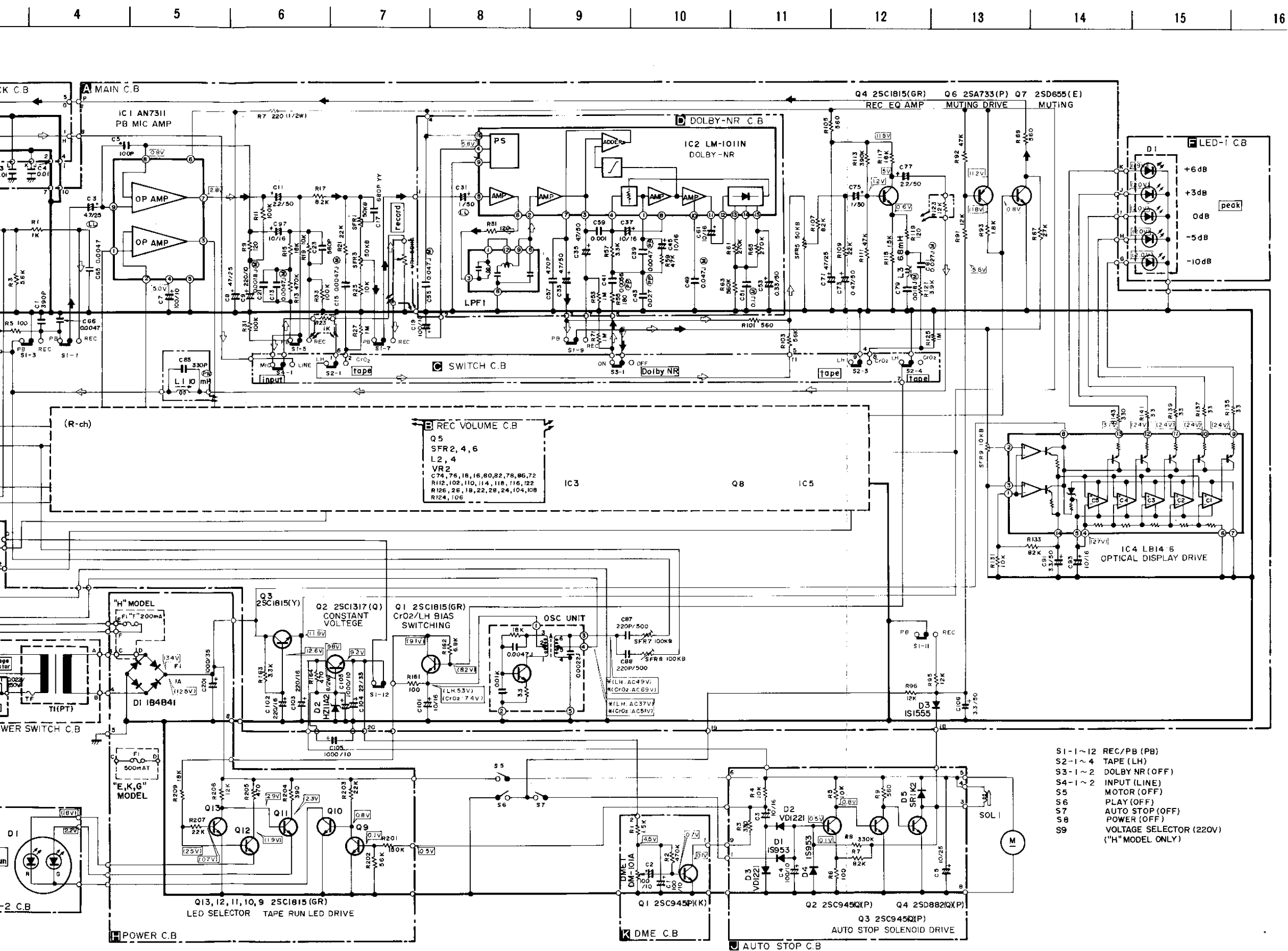


LEVEL DIAGRAM



# SCHEMATIC DIAGRAM





1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

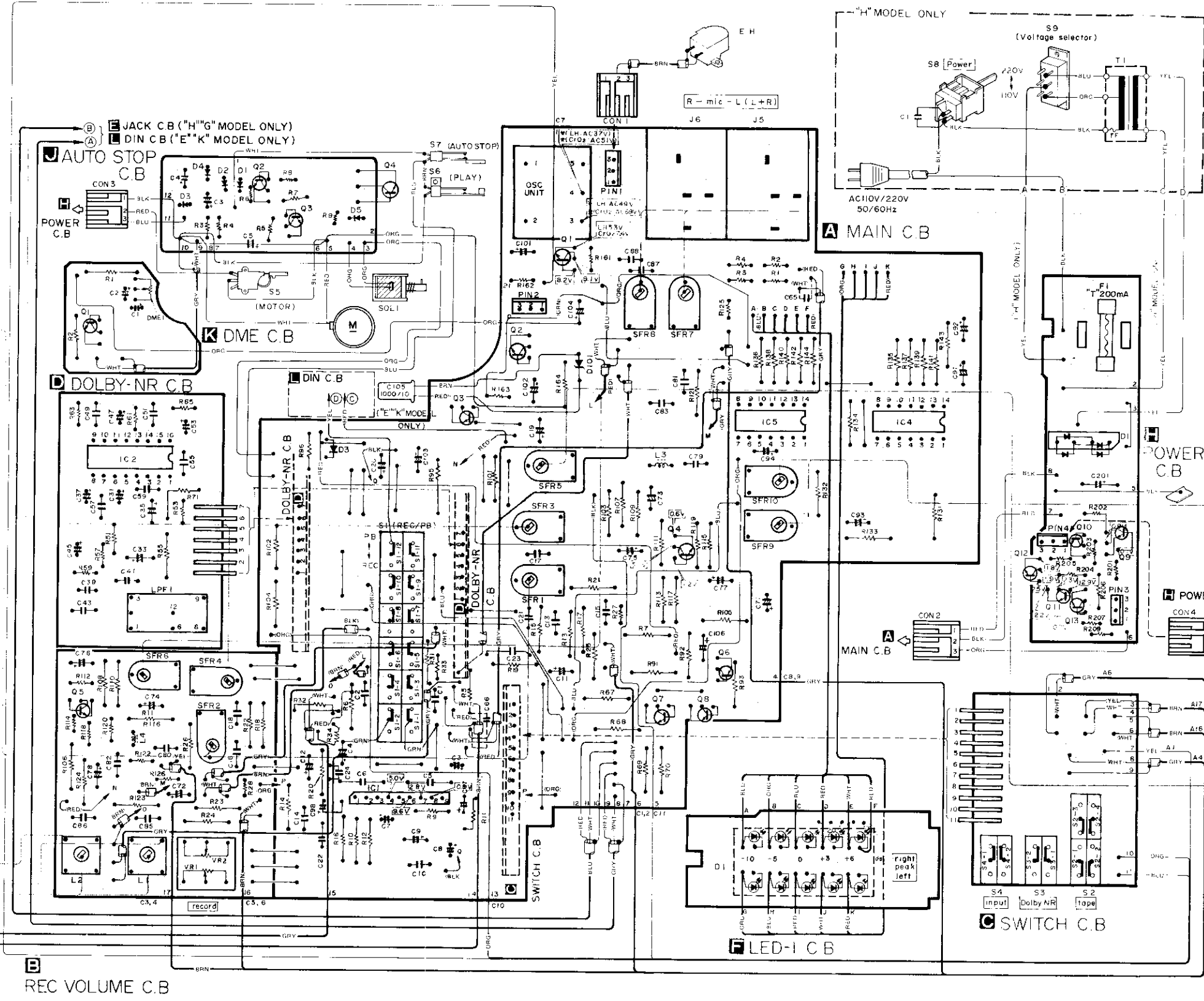
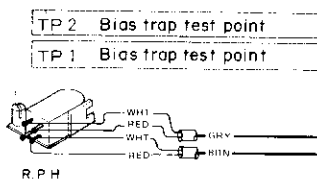
A  
B  
C  
D  
E  
F  
G  
H  
I  
J

**2. Playback Level Adjustment**  
**Settings:**  
 • Test tape: TTA-161  
 • TAPE SELECTOR switch: LH  
 • Adjustment locations: SFR3 (L-ch), SFR4 (R-ch)  
**Method:**  
 Play back the test tape and adjust so that the LINE output is 580 mV.

**3. Playback Frequency Characteristic Adjustment**  
**Settings:**  
 • Test tape: TTA-117E  
 • TAPE SELECTOR switch: CrO<sub>2</sub>  
 • DOLBY NR switch: OFF  
 • Adjustment locations: SFR1 (L-ch), SFR2 (R-ch)  
**Method:**  
 Play back the test tape and adjust so that the 1 kHz and 10 kHz outputs are identical.  
**Rating:**  
 0 ± 0.5 dB

**4. Bias Trap Coil Adjustment**  
**Settings:**  
 • Recording mode  
 • REC VOLUME: MIN  
 • Test points: TP1 (L-ch), TP2 (R-ch)  
 • Adjustment locations: L1 (L-ch), L2 (R-ch)  
**Method:**  
 Adjust L1, 2 so that the voltage at test point TP1,2 is reduced to minimum value. Bias OSC frequency become 85 ± 5 kHz.

**1. Azimuth Adjustment**  
**Settings:**  
 • Play back mode  
 • Output Level: MAX  
 • Test tape: TTA-117E  
 • TAPE SELECTOR switch: CrO<sub>2</sub>  
 • Adjustment location: azimuth adjusting screw  
**Method:**  
 Play back the test tape and adjust so that the output of the 10 kHz section reaches the maximum and same phase for both the left and right channel.



**5. REC./PB. Frequency**  
**ment**  
 ■ LH tape  
**Settings:**  
 • Recording mode  
 • Test tape: CS-10  
 • Input signal: 400 Hz, -10 dB  
 • Output level: LINE OUT  
 • TAPE SELECTOR switch: OFF  
 • DOLBY NR switch: OFF  
 • Adjustment locations: SFR3 (L-ch), SFR4 (R-ch)  
**Method:**  
 Record and play back the test tape. Adjust so that the 1 kHz output is 580 mV (E, K model only).  
 0VU LED (Orange) light is brought in -50 dB (at 400 Hz) signal decrease by 20 dB.  
**Rating:**  
 0 ± 0.5 dB  
 ■ CrO<sub>2</sub> tape (Test tape: TTA-117E)  
**Rating:**  
 0 ± 1 dB

**7. Level Indicator Adjust**  
**Settings:**  
 • Recording mode  
 • Test tape: TTA-119E  
 • Input signal: 400 Hz, -10 dB  
 • DOLBY NR switch: OFF  
 • Adjustment locations: SFR3 (L-ch), SFR4 (R-ch)  
**Method:**  
 Adjust the REC level so that the LINE output becomes 580 mV when the input signal is -10 dB (at 400 Hz).  
 0VU LED (Orange) light is brought in +3 dB LED (Orange) light decrease by 1 dB.

**6. REC./PB. Sensitivity A**  
 ■ LH tape  
**Settings:**  
 • Recording mode  
 • Test tape: CS-10  
 • Input signal: 400 Hz, -10 dB  
 • TAPE SELECTOR switch: OFF  
 • DOLBY NR switch: OFF  
 • Adjustment locations: SFR3 (L-ch), SFR4 (R-ch)  
**Method:**  
 Record and play back the test tape. Adjust so that the LINE output becomes 410 mV (E, K model only).  
 0VU LED (Orange) light is brought in -50 dB (at 400 Hz) signal decrease by 20 dB.  
**Rating:**  
 410 ± 10 mV  
 ■ CrO<sub>2</sub> tape (Test tape: TTA-117E)  
**Rating:**  
 0 ± 1 dB

**NOTES** (1) B(+) Pattern Others pattern  
 (2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (\*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

R4 (R-ch)

hat the LINE

c Adjust-

R2 (R-ch)

at the 1 kHz

ch)

point TP1,2  
C frequency

screw

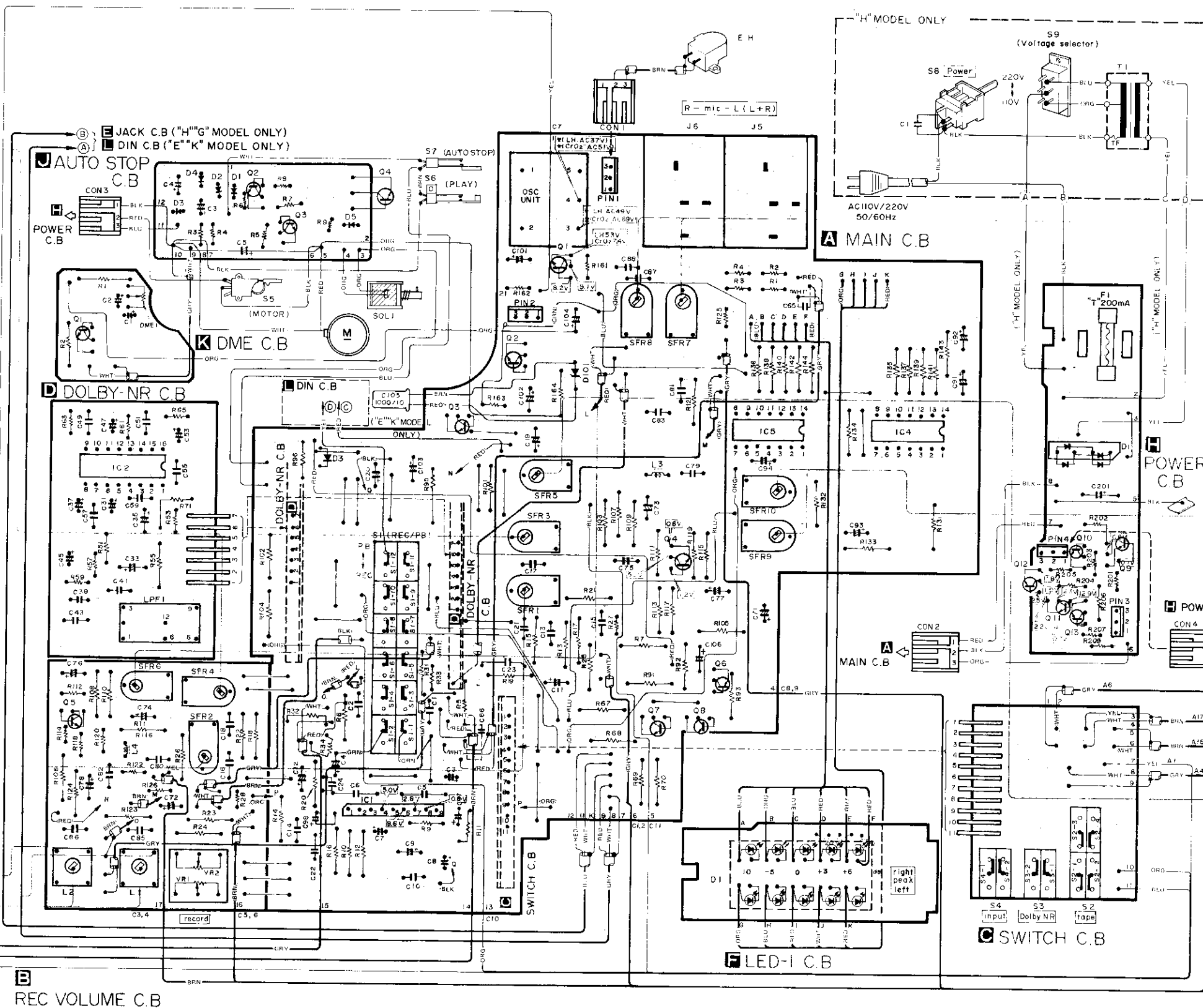
t the output  
maximum and  
channel.

est point

est point

GRV

BRN



### 5. REC./PB. Frequency Characteristic Adjustment

#### ■ LH tape

##### Settings:

- Recording mode
- Test tape: CS-10
- Input signal: 400 Hz, -30 dB
- Output level: LINE OUTPUT 41 mV
- TAPE SELECTOR switch: LH
- DOLBY NR switch: OFF
- Adjustment locations: SFR7 (L-ch), SFR8 (R-ch)

##### Method:

Record and play back the 1 kHz and 10 kHz signals. Adjust so that the 1 kHz and 10 kHz outputs are identical.

(E, K model only)

OVU LED (Orange) lights up when the input signal brought in -50 dB (at 400 Hz). Following input signal decrease by 20 dB.

##### Rating:

0 ± 0.5 dB

■ CrO<sub>2</sub> tape (Test tape: TTA-119G)

##### Rating:

0 ± 1 dB

### 7. Level Indicator Adjustment

#### Settings:

- Recording mode
- Test tape: TTA-119E
- Input signal: 400 Hz, -10 dB
- DOLBY NR switch: OFF
- Adjustment locations: SFR9 (L-ch), SFR10 (R-ch)

##### Method:

Adjust the REC level so that the LINE output becomes 580 mV when the input signal brought in -10 dB (at 400 Hz). Following adjust SFR9, 10 so that the +3 dB LED (Orange) lights up. Finally +3 dB LED (Orange) put out when input signal decrease by 1 dB.

### 6. REC./PB. Sensitivity Adjustment

#### ■ LH tape

##### Settings:

- Recording mode
- Test tape: CS-10
- Input signal: 400 Hz, -10 dB
- TAPE SELECTOR switch: LH
- DOLBY NR switch: OFF
- Adjustment locations: SFR5 (L-ch), SFR6 (R-ch)

##### Method:

Record and play back the test tape and adjust so that the LINE OUTPUT (E, K model: DIN output) becomes 410 mV.

(E, K model only)

OVU LED (Orange) lights up when the input signal brought in -50 dB (at 400 Hz).

##### Rating:

410 ± 10 mV

■ CrO<sub>2</sub> tape (Test tape: TTA-119G)

##### Rating:

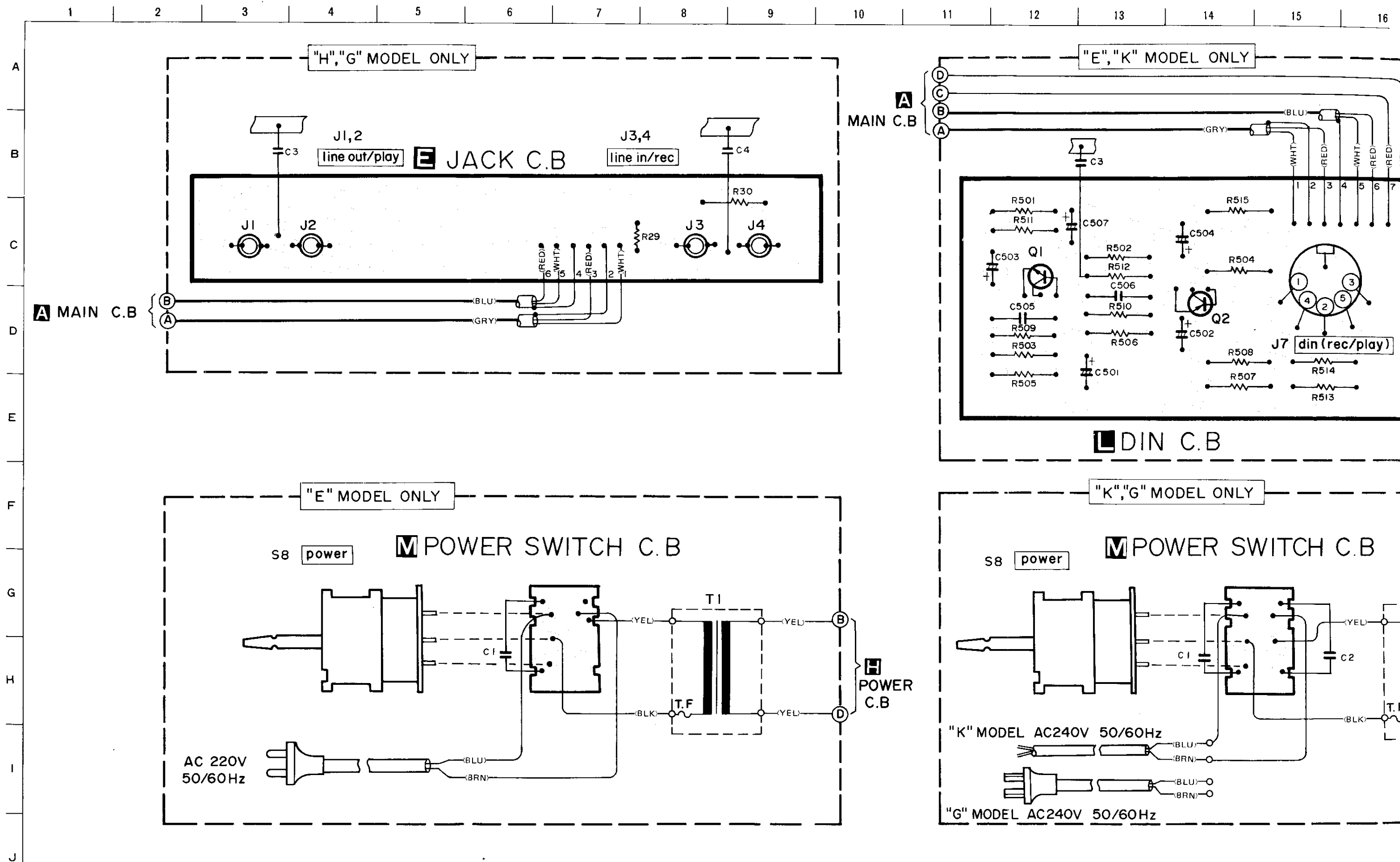
0 ± 1 dB

NOTES (1) B(+) Pattern Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (\*) indicates that the value was measured with a vacuum-tube voltmeter during recording.



## WIRING-2



NOTES

B(+) Pattern Others pattern

