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**MULTI-BAND RADIO CASSETTE RECORDER**

**MODEL TPR-215<sup>EE</sup>, UK**

**AIWA<sup>®</sup>**

**[SERVICE MANUAL]**



Set using ISO screws



DATE OF ISSUE 25/10/1975

**SPECIFICATIONS**

**Type:** 4-band (FM/SW/MW/LW) radio-cassette recorder  
**Circuitry:** 19 transistors, 12 diodes, 1 LED, 1 IC  
**Power source:** Batteries, DC 6V (UM-1 x 4)  
AC 110-120V/220-240V (switchable)  
Car battery (thru car adapter)  
**Output:** 2500 mW, Max.  
**Frequency response:** 50-10,000 Hz  
**Speaker:** 100 x 150 mm oval type, 8 ohms

**Tape Recorder Section**

**Built-in microphone:** Electret condenser microphone  
**Tape speed:** 4.8 cm/sec  
**Recording system:** AC bias  
**Erasing system:** AC erasure  
**Recording time:** 90 min. (two ways, C-90 cassette)  
**S/N ratio:** 55 dB  
**Wow & flutter:** 0,18% (WRMS)

**Radio Section**  
**Frequency range:**

FM 87.5-108 MHz  
SW 5.9-18 MHz  
MW 525-1605 kHz  
LW 150-300 kHz

**Antenna:**

Whip antenna for FM and SW  
Ferrite bar antenna for MW and LW

**Dimensions:**

344 x 216 x 98 mm

**Weight:**

3.2 kgs (w/o batteries)

**Accessories:**

AC power cord 1  
Cassette tape 1  
Carrying case (EE model only) 1  
Battery (Super UM-1) 4  
Erase plug 1

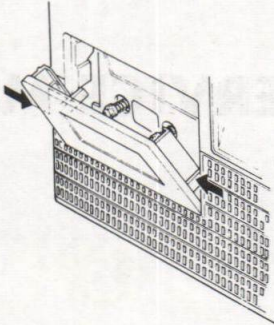
The specifications and external appearance of this set are subject to change without prior notice.



## DISASSEMBLY INSTRUCTIONS

### 1. To Remove Cassette Lid

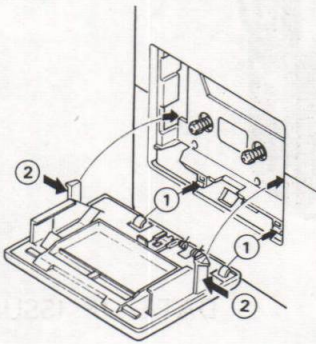
- 1) While pressing hard the arrow-indicated parts (left and right) in the directions indicated by the respective arrow marks in Fig. 1, pull out the cassette lid for removal. (Refer to Fig. 1)



<Fig. 1>

• To Install Cassette Lid:

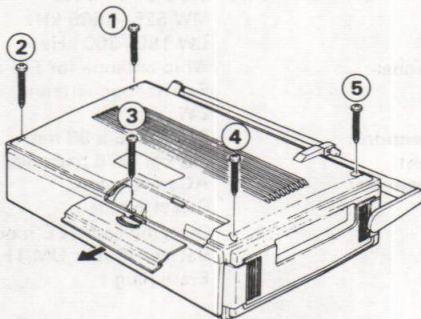
- 1) Referring to Fig. 2, align the pawls (1) of the cassette lid properly with respective guides provided on the mechanism panel and insert them into the guides securely.
- 2) While pressing the parts (2) of the cassette lid in the directions indicated by the respective arrow marks, push the entire cassette lid toward the mechanism panel until it is securely installed in place. (Refer to Fig. 2)



<Fig. 2>

### 2. To Remove Back Cover

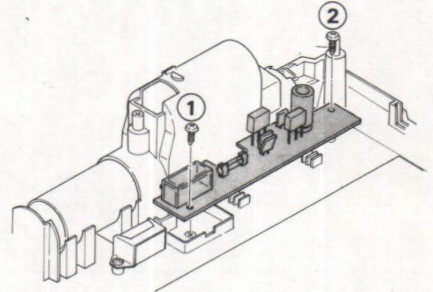
- 1) Remove the battery room lid.
- 2) Remove five screws, (1) through (5). (Refer to Fig. 3)



<Fig. 3>

### 3. To Remove Power Circuit Board

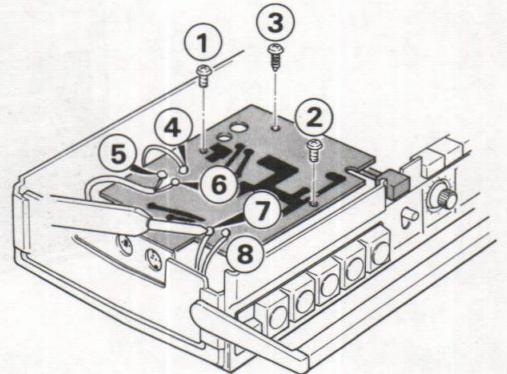
- 1) Remove two screws, (1) and (2). (Refer to Fig. 4)



<Fig. 4>

### 4. To Remove Rec./Pb. Circuit Board

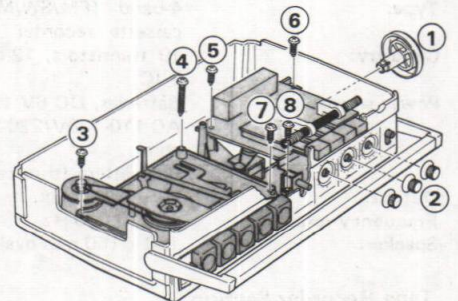
- 1) Remove three screws, (1) through (3).
- 2) Unsolder lead wires ((4) through (8)) and pull in the indicated direction. (Refer to Fig. 5)



<Fig. 5>

### 5. To Remove Chassis

- 1) Pull out the tuning knob (1).
- 2) Pull out the control knobs (2).
- 3) Remove six screws, (3) through (8). (Refer to Fig. 6)

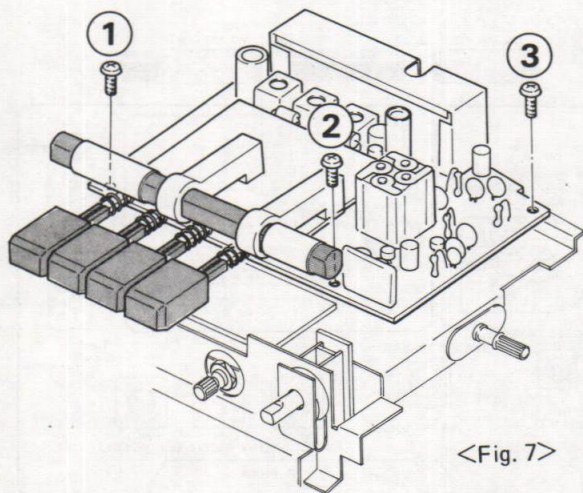


<Fig. 6>



**6. To Remove Tuner Circuit Board**

- 1) Remove three screws, (1) through (3).  
(Refer to Fig. 7)



<Fig. 7>

**7. To Remove Volume/LED Circuit Board**

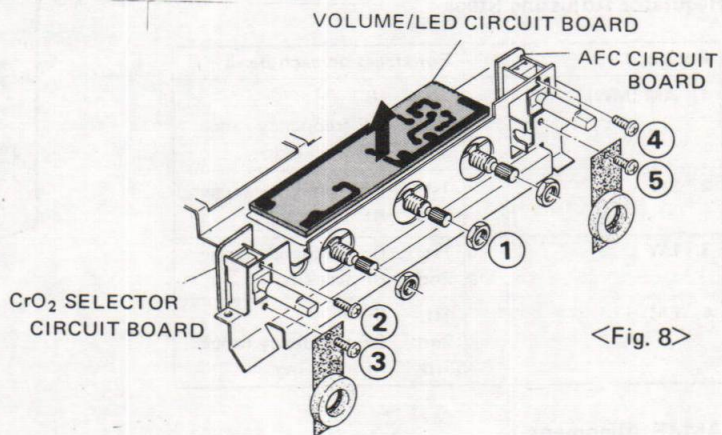
- 1) Remove three nuts (1).  
(Refer to Fig. 8)

**8. To Remove CrO<sub>2</sub> Selector Circuit Board**

- 1) Remove two screws, (2) and (3).  
(Refer to Fig. 8)

**9. To Remove AFC Switch Circuit Board**

- 1) Remove two screws, (4) and (5).  
(Refer to Fig. 8)



<Fig. 8>



## ADJUSTMENTS OF RADIO SECTION

### 1. Instruments Required

#### Signal Source

1. RF Signal generator (AM, FM).
2. IF sweep generator (Centered 455 kHz/468 kHz for AM and 10.7 MHz for FM).

3. Loop antenna
4. Capacitor 8pF

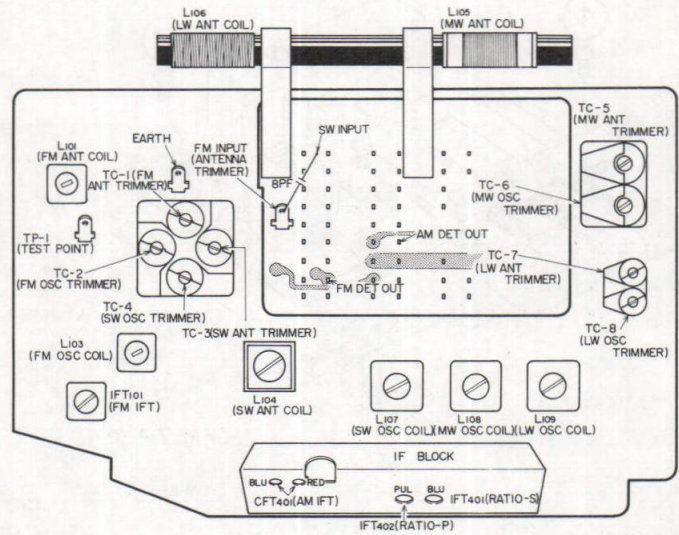
#### Output Indicator

1. V.T.V.M.
2. Oscilloscope

### Regulator Adjusting Steps

For band	For stages on each band
1. AM (MW)	1st: IF 2nd: RF frequency range 3rd: RF tracking
2. SW	1st: RF frequency range 2nd: RF tracking
3. LW	1st: RF frequency range 2nd: RF tracking
4. FM	1st: IF 2nd: RF frequency range 3rd: RF tracking

### Locations of Main Parts



<Fig. 10>

### AM-IF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	AM IF sweep gen.	Sweep centered 455 kHz EE model 468 kHz UK model	Oscilloscope	Min. Freq.	CFT 401	Maximum
	Test point TP-2		AM det. output tab			

### MW-RF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	AM signal gen.	MW 515 kHz (Modulated)	V.T.V.M.	515 kHz (Low end)	L108 (OSC coil)	Maximum
	Loop antenna		AM det. output tab			
2	Loop antenna	1605 kHz (Modulated)	AM det. output tab	1650 kHz (High end)	TC-6 (OSC trim.)	Maximum
3	(Repeat steps 1 and 2 to obtain frequency range.)					
4	Loop antenna	600 kHz (Modulated)	AM det. output tab	600 kHz	L105 (ANT coil)	Maximum
5	Loop antenna	1400 kHz (Modulated)	AM det. output tab	1400 kHz	TC-5 (ANT trim.)	Maximum
6	(Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.)					

### SW-RF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	AM signal gen.	SW 5.7 MHz (Modulated)	V.T.V.M.	5.8 MHz (Low end)	L107 (OSC coil)	Maximum
	Antenna terminal		AM det. output tab			
2	Antenna terminal	16.7 MHz (Modulated)	AM det. output tab	18.5 MHz (High end)	TC-4 (OSC trim.)	Maximum
3	(Repeat steps 1 and 2 to obtain frequency range.)					
4	Antenna terminal	6 MHz (Modulated)	AM det. output tab	5.8 MHz	L104 (ANT coil)	Maximum
5	Antenna terminal	16 MHz (Modulated)	AM det. output tab	18.5 MHz	TC-3 (ANT trim.)	Maximum
6	(Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.)					



## LW-RF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	AM signal gen.	LW 145 kHz (Modulated)	V.T.V.M.	145 kHz (Low end)	L109 (OSC coil)	Maximum
	Loop antenna		AM det. output tab			
2	Loop antenna	310 kHz (Modulated)	AM det. output tab	310 kHz (High end)	TC-8 (OSC trim.)	Maximum
3	(Repeat steps 1 and 2 to obtain frequency range.)					
4	Loop antenna	145 kHz (Modulated)	AM det. output tab	145 kHz	L106 (ANT coil)	Maximum
5	Loop antenna	310 kHz (Modulated)	AM det. output tab	310 kHz	TC-7 (ANT trim.)	Maximum
6	(Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.)					

## FM-RF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	FM signal gen.	88 MHz (Modulated)	V.T.V.M.	88 MHz	L103 (OSC coil)	Maximum
	Antenna terminal		FM det. output tab			
2	Antenna terminal	107 MHz (Modulated)	FM det. output tab	107 MHz	TC-2 (OSC trim.)	Maximum
3	(Repeat steps 1 and 2 to obtain frequency range.)					
4	Antenna terminal	88 MHz (Modulated)	FM det. output tab	88 MHz	L101 (ANT coil)	Maximum
5	Antenna terminal	107 MHz (Modulated)	FM det. output tab	107 MHz	TC-1 (ANT trim)	Maximum
6	(Repeat steps 4 and 5 to minimize tracking error, and step 3 if necessary.)					

## FM-IF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	FM IF sweep gen.	Sweep centered 10.7 MHz	Oscilloscope	Max. Freq.	IFT101 IFT401	Max. Symmetrical response, equal heights
	Test point TP-1		FM det. output tab			
2	Test point TP-1	Sweep centered 10.7 MHz	FM det. output tab	Max. Freq.	IFT402	Symmetrical response, centered 10.7 MHz
3	(Repeat 1 and 2 to obtain a balanced "S" curve linearity.)					

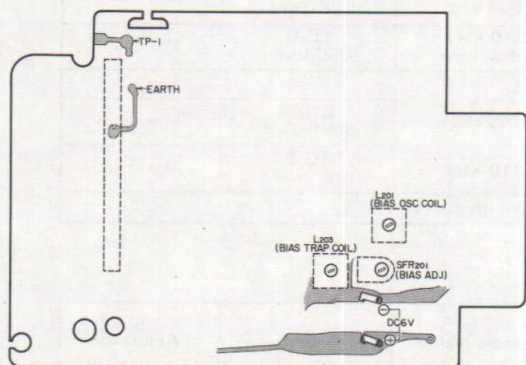
## How to change the upper limit of FM frequency range from 107MHz to 103MHz.

Symbol No.	Description	107 MHz		103 MHz	
L103	FM Coil	1-1/4t	87-006-036-01	1-1/2t	87-006-015-01
C110	Ceramic capacitor	13pF	88-212-130-01	6pF	88-213-060-01



## ADJUSTMENTS OF TAPE RECORDER SECTION

- Electrical Adjustments
- Location of Main Parts



<Fig. 11>

Adjustment Item	Test Point	Adjustment Location	Specification
Azimuth	EXT. SP jack	Head azimuth screw	Test tape TTA-113B (8 kHz)
Bias Osc Frequency	TP-1	L201	OSC switch Center position: 50 kHz "●" position: 49 kHz "●●" position: 51 kHz
Bias Current	TP-1	L203 SFR201	550μA (55mV)

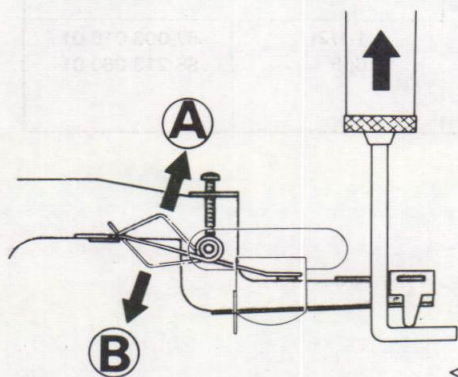
### ■ Mechanical Adjustments

#### 1. To Adjust Stopper Nozzle Pressure

Operate the set in FWD and apply a tension gauge to the tip of the stopper nozzle. Now, pull the gauge slowly in the arrow direction and read the value indicated on the gauge when the Auto (automatic stop) mechanism becomes activated. Adjust the nozzle pressure for 50-65 g.

##### How to Adjust:

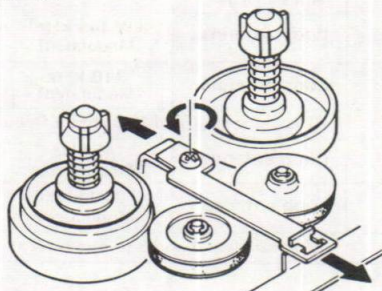
When the nozzle pressure is found improper, adjust it by bending the stopper spring in either A or B direction. (Refer to Fig. 12)



<Fig. 12>

#### 2. To Adjust Position of Brake Lever B

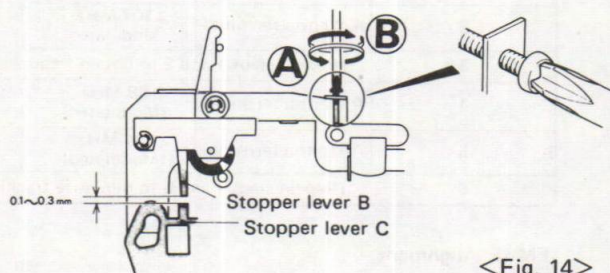
Operate the set in FWD and fasten the screws while pulling the stopper levers A and B fully in the respective arrow directions. Next, confirm that the brake shoe becomes disengaged from the reel platform when the set is operating in FF or REW. (Refer to Fig. 13)



<Fig. 13>

#### 3. Stopper Lever B Position Adjustment

With the set at play condition, turn the adjusting screw in either A or B direction so that spacing between stopper lever B and stopper lever C becomes 0.1 - 0.3 mm. (Apply locking compound to screw after adjusting). (Refer to Fig. 14)



<Fig. 14>

#### 4. Pinch Roller Pressure

350 ~ 450g.

#### 5. Take-up Torque

50 ~ 70g/cm

#### 6. Rewind Torque

80 ~ 120g/cm

#### 7. Fast Forward Torque

50 ~ 80g/cm.

#### 8. Tape Speed Variation

±3%

Use a standard test tape TTA-111 (3kHz) or equivalent.

#### 9. Wow & Flutter

Less than 0.20% (WRMS) at PB

Use a standard test tape TTA-111 (3kHz) or equivalent.

#### 10. Current Consumption

FWD: 150 ± 20mA

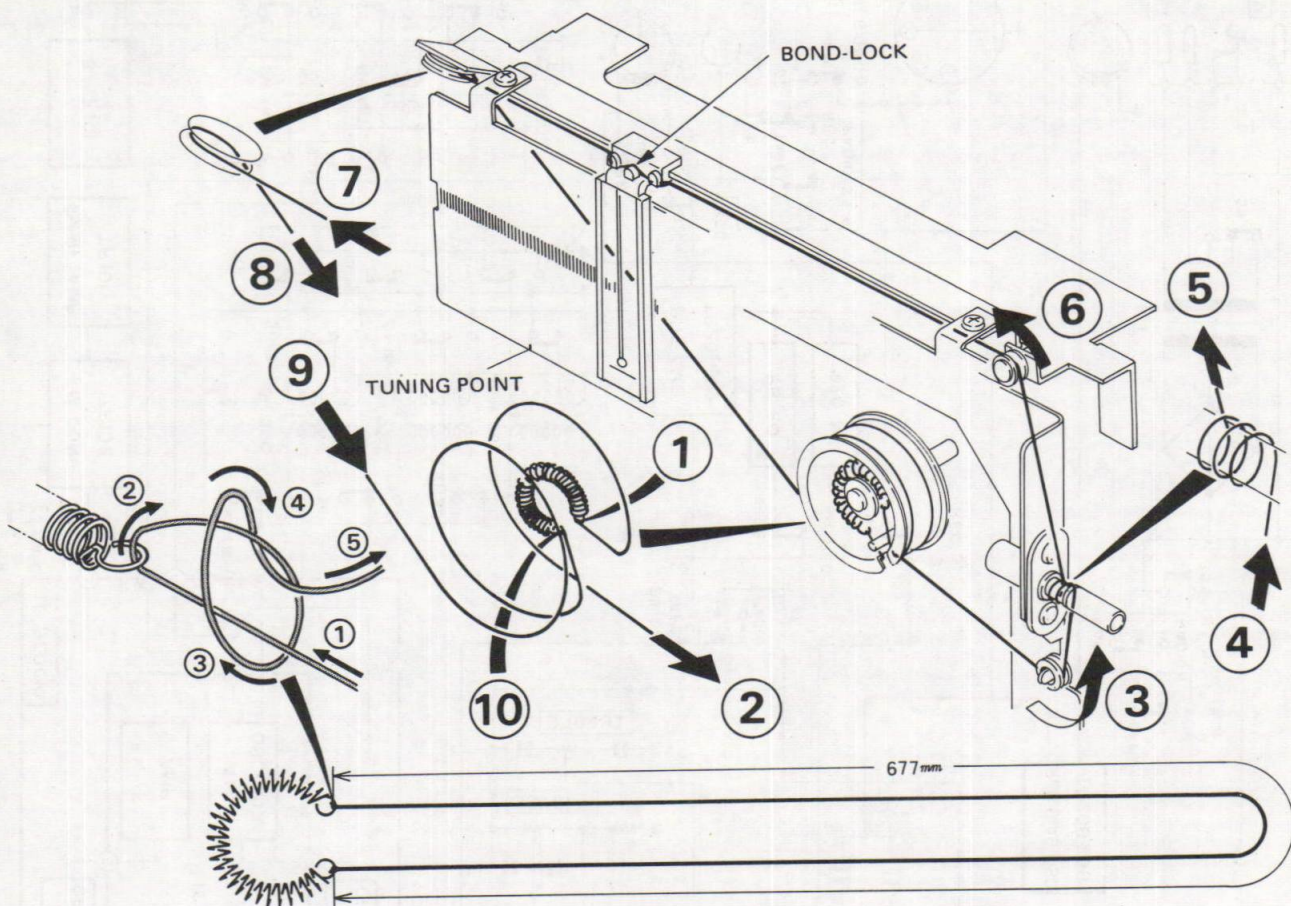
FF: 210 ± 40mA

REW: 200 ± 50mA

(mechanism only)

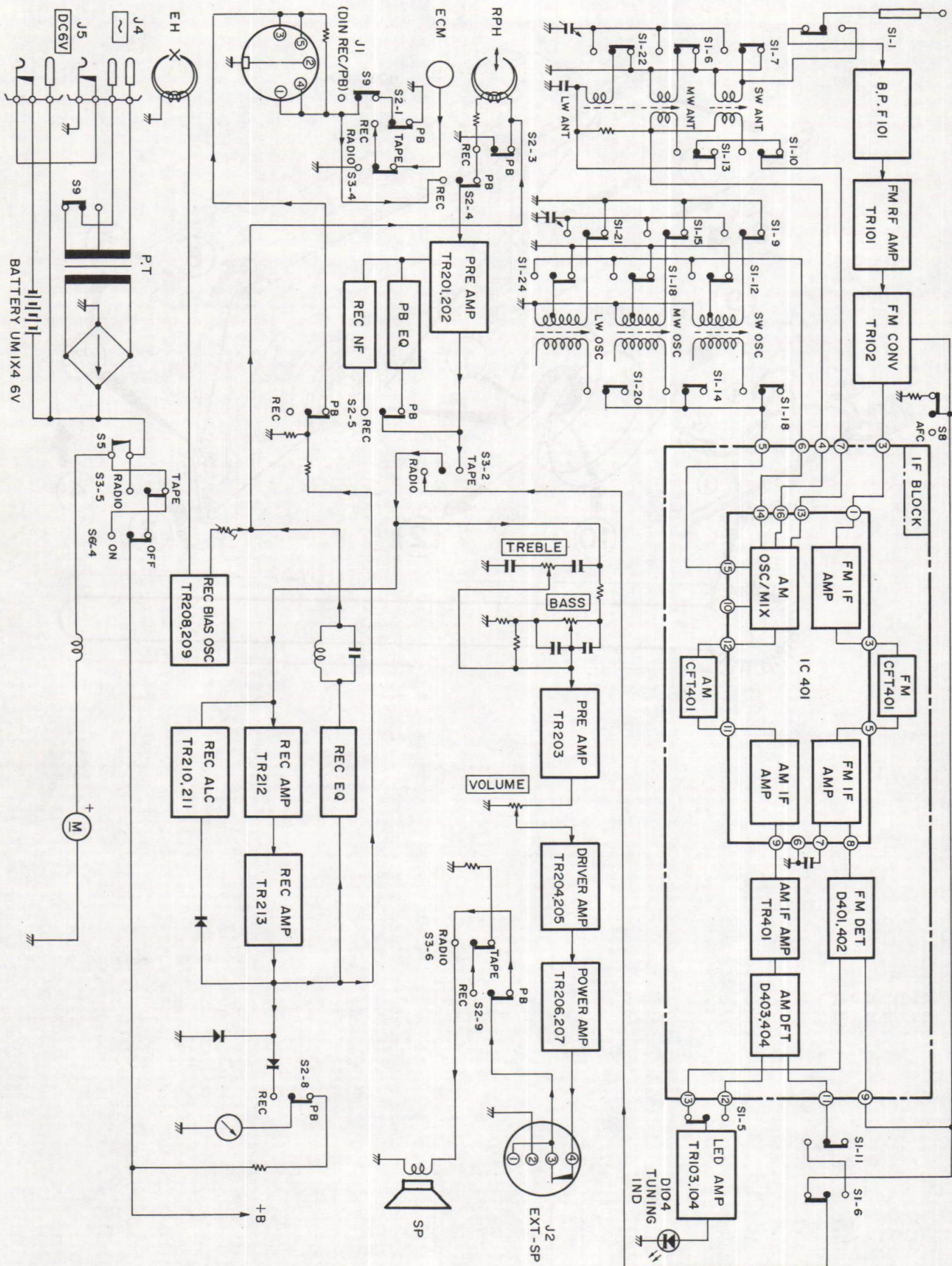


DIAL CORD STRINGING



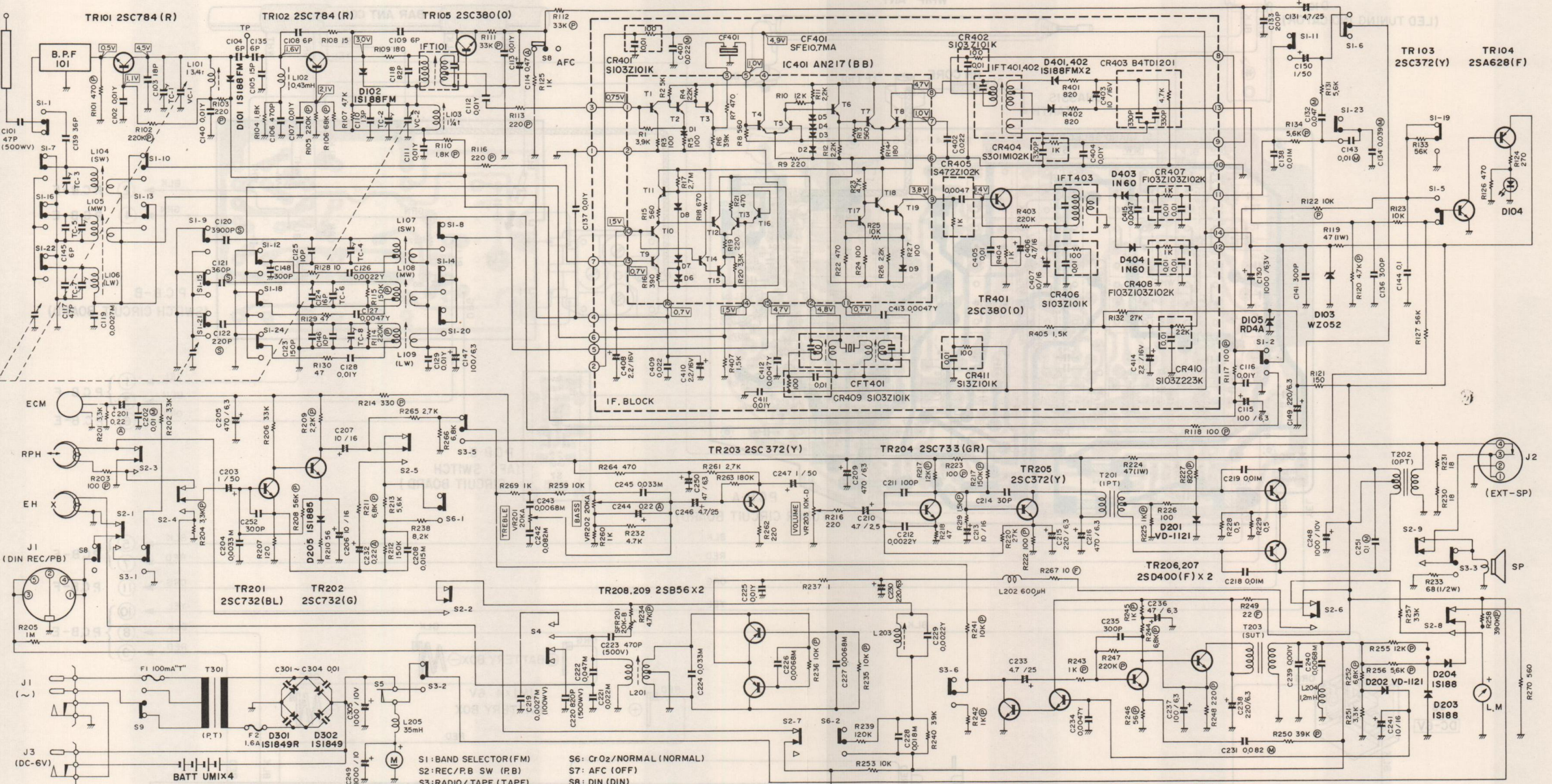


BLOCK DIAGRAM

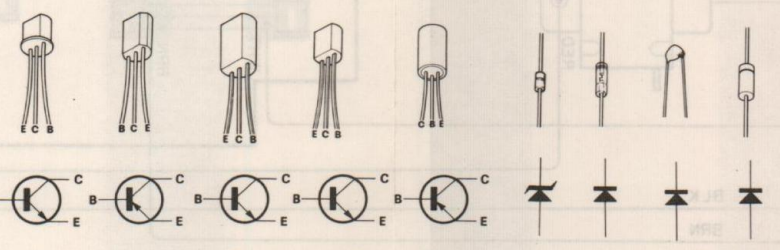




**SCHEMATIC DIAGRAM**



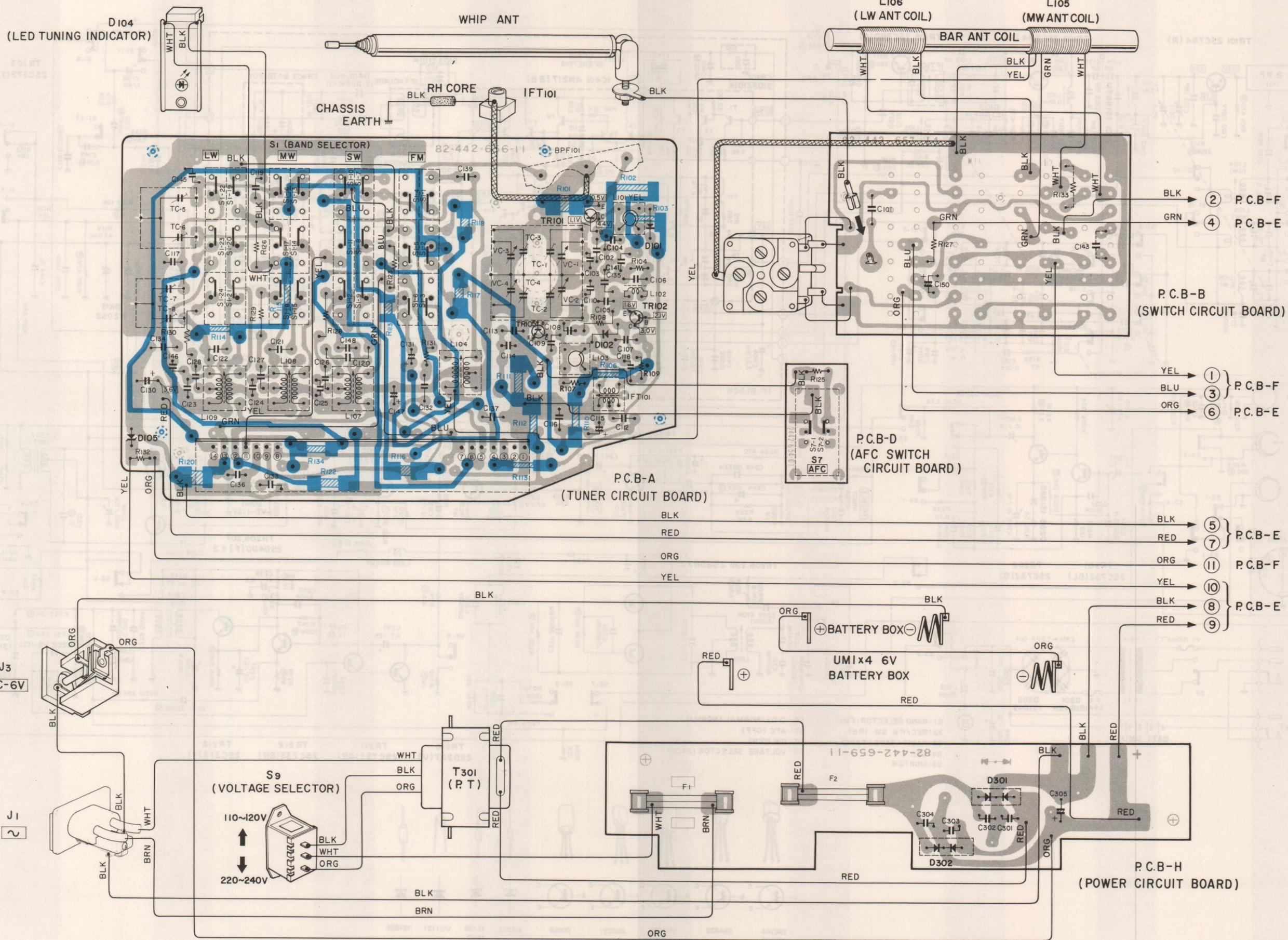
- S1: BAND SELECTOR (FM)
- S2: REC/PB SW (PB)
- S3: RADIO/TAPE (TAPE)
- S4: OSC
- S5: MORTOR
- S6: CrO<sub>2</sub>/NORMAL (NORMAL)
- S7: AFC (OFF)
- S8: DIN (DIN)
- S9: VOLTAGE SELECTOR (240V)



- 2SC784
- 2SC380
- 2SC372
- 2SC732
- 2SA628
- 2SD400
- 2SD227
- 2SB56
- WZ052
- 1S188
- VD1121
- 1S188

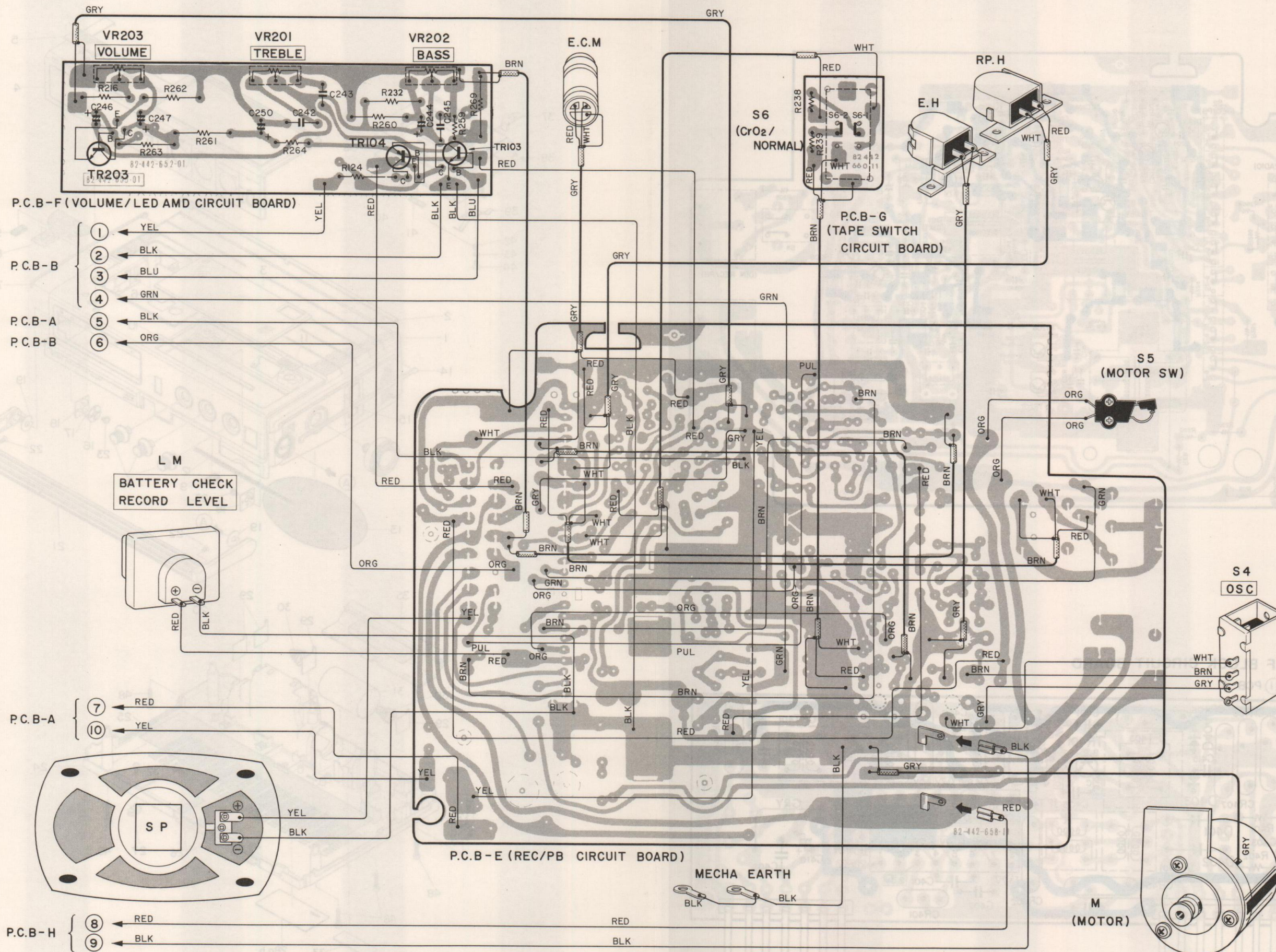


WIRING



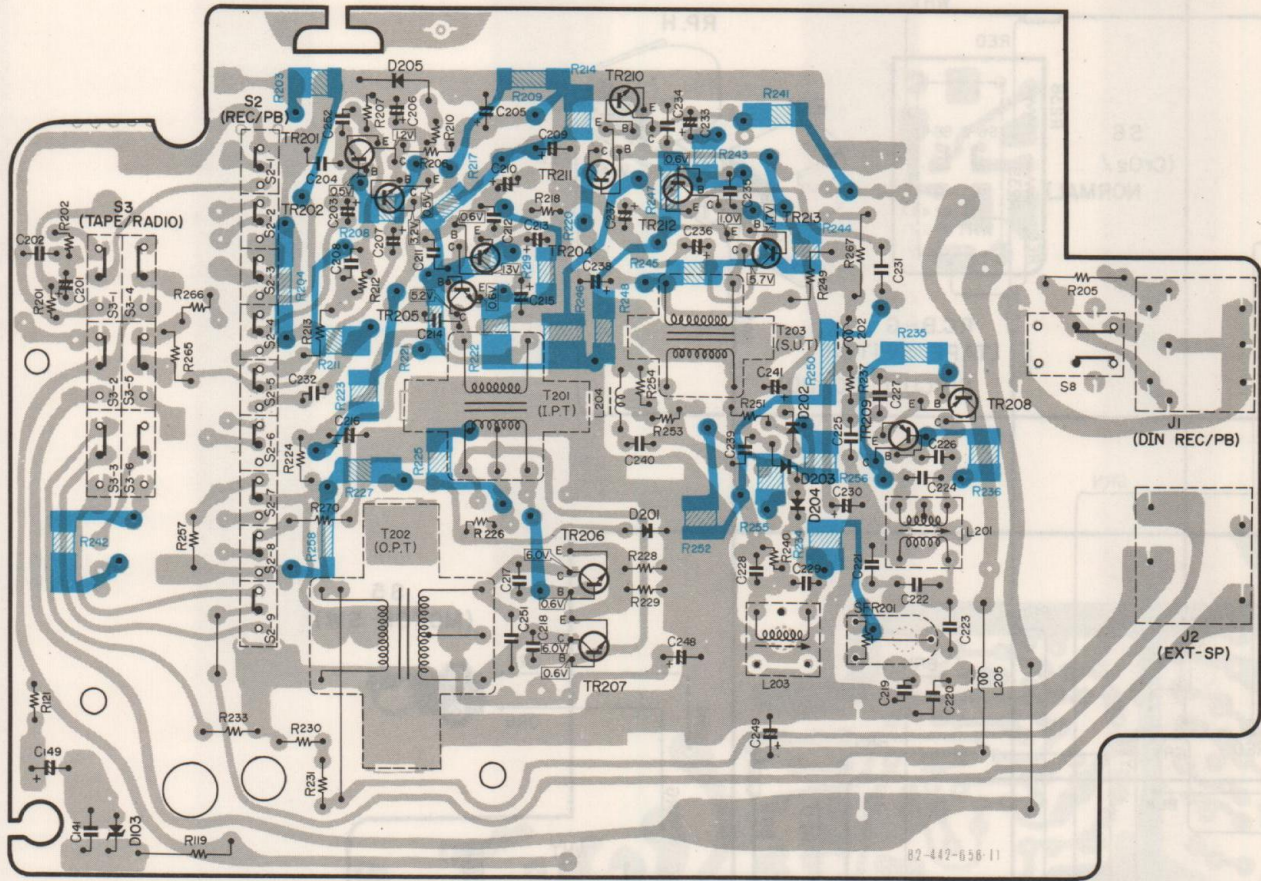


WIRING

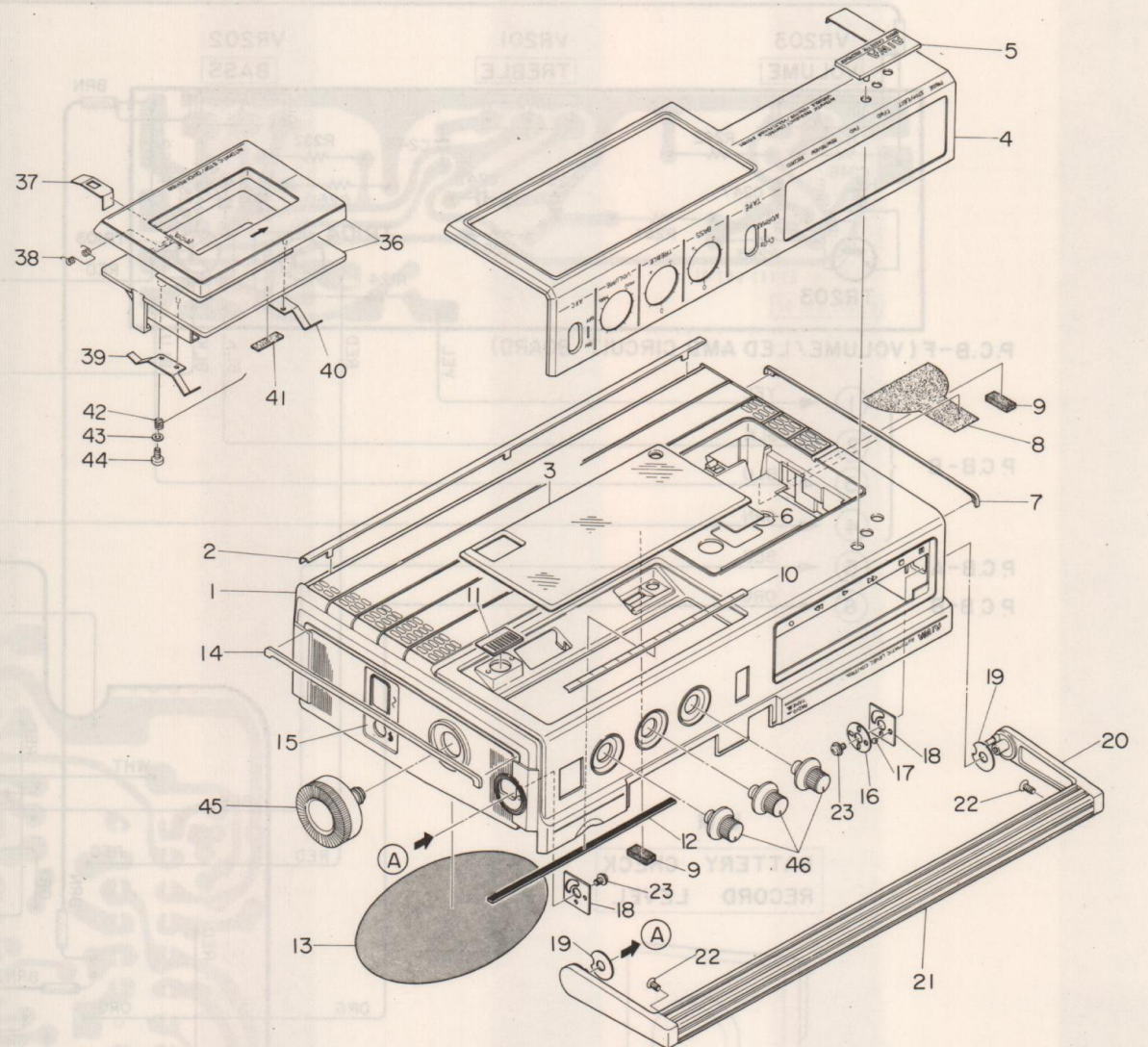




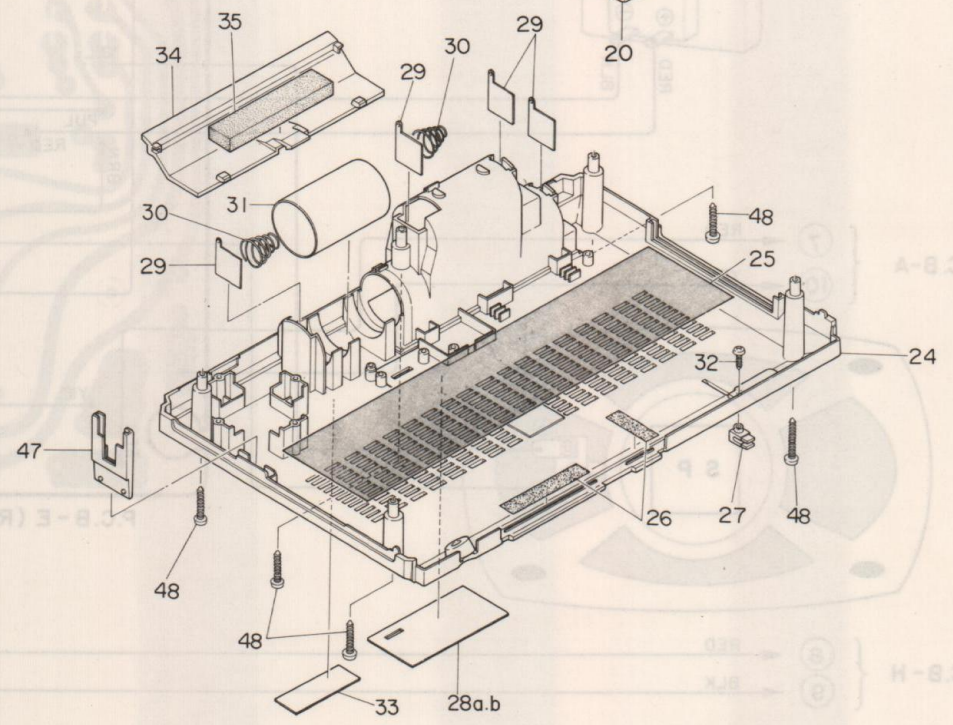
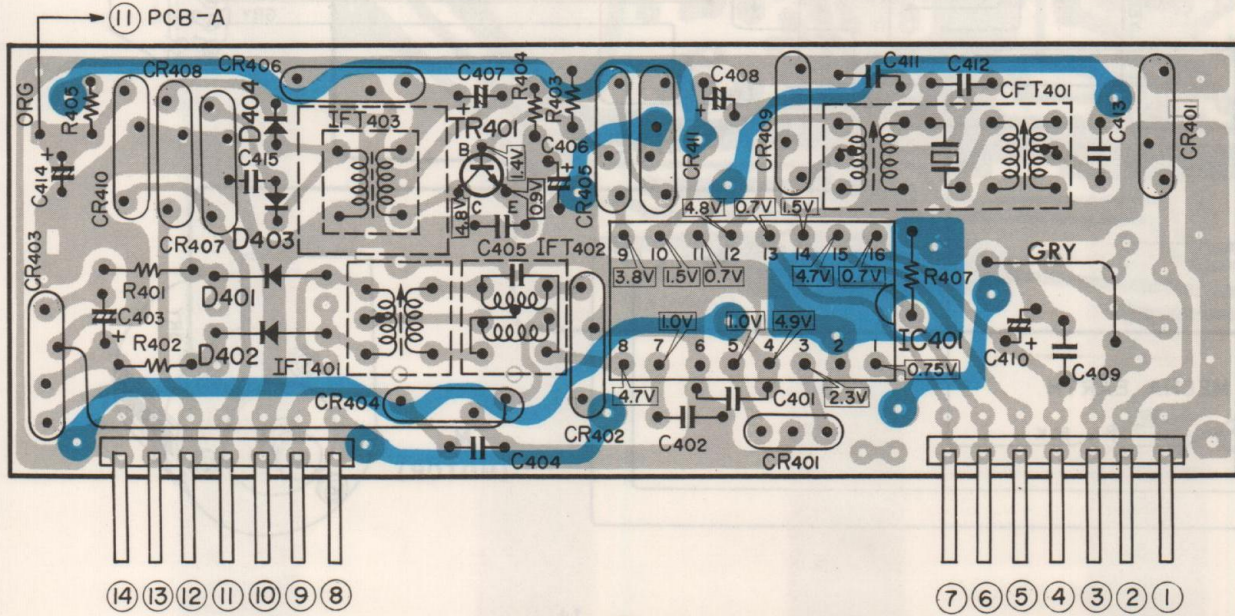
REC/PB CIRCUIT BOARD



EXPLODED VIEW-1



IF BLOCK CIRCUIT BOARD





## PARTS LIST

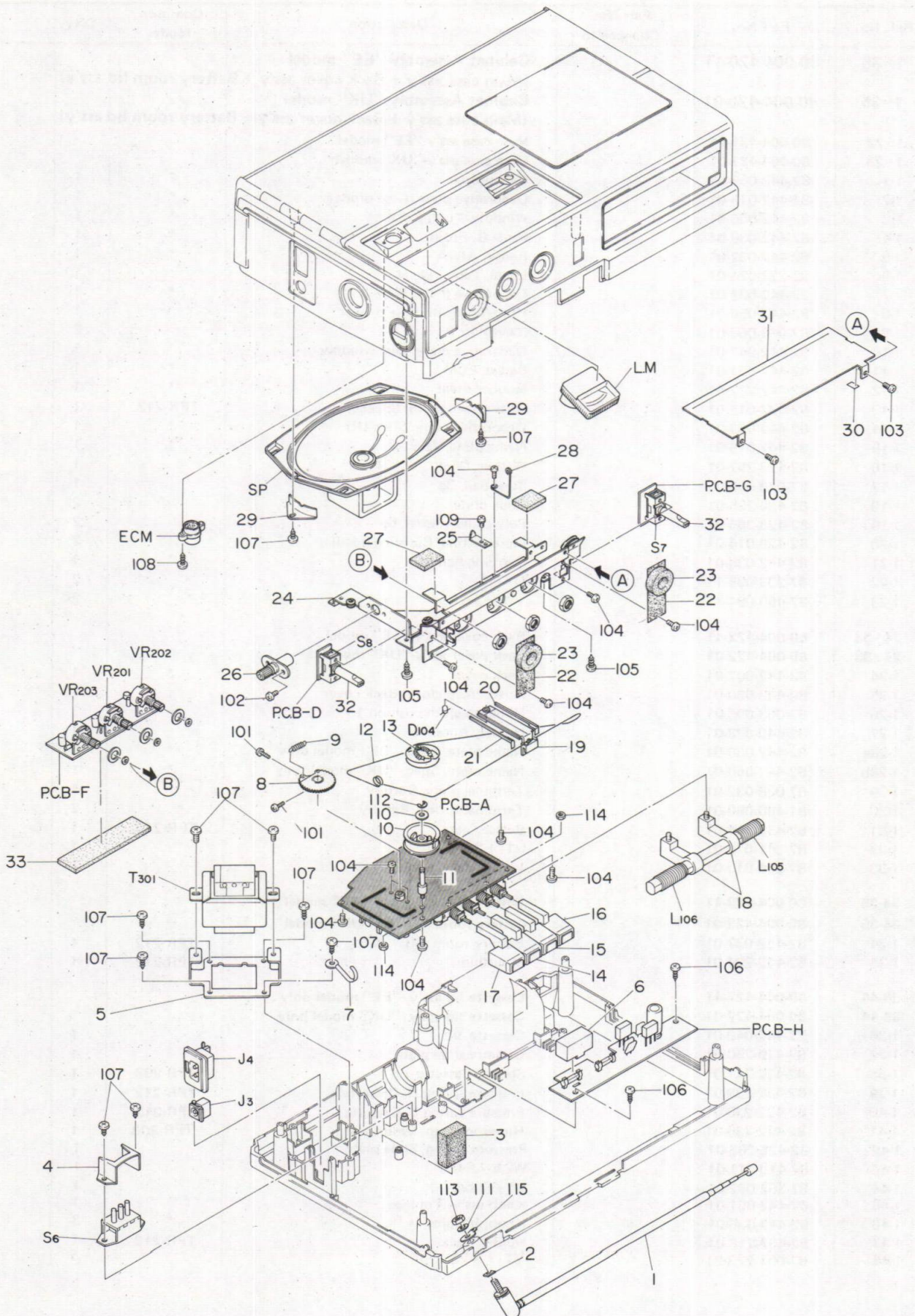
## MECHANICAL PARTS

■ \* mark in this part list shows exclusive part  
(which is used) for only Model TPR-215.

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1~35	80-004-420-41		<b>Cabinet Assembly-"EE" model</b> (Main case ass'y + Back cover ass'y + Battery room lid ass'y)		
1~35	80-004-420-01		<b>Cabinet Assembly-"UK" model</b> (Main case ass'y + Back cover ass'y + Battery room lid ass'y)		
1~23	80-004-421-41		<b>Main case ass'y-"EE" model</b>		
1~23	80-004-421-01		<b>Main case ass'y-"UK" model</b>		
1-1	82-442-059-01		Case proper	*	1
1-2	82-442-015-01		Decorative plate, Case proper	*	1
1-3	82-442-006-01		Window, Tuning dial	*	1
1-4	82-442-038-01		Panel B, Front	*	1
1-5	82-442-032-01		Badge, AIWA	*	1
1-6	82-277-024-01		Label, Tape indicator		1
1-7	82-442-034-01		Decorative plate, Slide (L)	*	1
1-8	82-442-056-01		Himeron cloth, Case proper	*	1
1-9	87-063-063-01		S cushion B		2
1-10	82-442-047-01		Decorative plate, Dial window	*	1
1-11	82-442-031-01		Badge, ECM	*	1
1-12	82-442-212-01		Rubber sheet	*	1
1-13	82-432-015-01		Dust screen cloth, Speaker	TPR-212	1
1-14	82-442-033-01		Decorative plate, Slide (R)	*	1
1-15	82-442-045-01		Name plate, Jack	*	1
1-16	82-429-257-01		Washer, Click		1
1-17	87-073-006-01		Steel ball, 3φ		1
1-18	82-429-225-01		Click plate		2
1-19	82-428-365-01		Poly-slider washer 6φ		2
1-20	82-429-014-01		Metal fitting, Carrying handle		2
1-21	82-442-036-01		Carrying handle	*	1
1-22	87-233-095-11		Q+3-8		2
1-23	87-490-094-11		VWS+3-6		2
24~33	80-004-422-41		<b>Back cover ass'y-"EE" model</b>		
24~33	80-004-422-01		<b>Back cover ass'y-"UK" model</b>		
1-24	82-442-002-01		Back cover	*	1
1-25	82-439-030-01		Dust screen cloth, Back cover		1
1-26	87-063-096-01		Himeron cloth cushion 13		3
1-27	82-440-038-01		Holder, Antenna		1
1-28a	82-442-030-01		Name plate, Spec.-"EE" model only	*	1
1-28b	82-442-060-01		Name plate, Spec.-"UK" model only	*	1
1-29	87-038-032-01		Terminal plate, Battery		4
1-30	81-480-050-01		Terminal spring, Battery		2
1-31	82-432-214-01		Battery case	TPR-212	1
1-32	87-341-073-01		UT <sub>1</sub> + 2.6-6		1
1-33	87-056-010-01		Label, Main supply		1
34-35	80-004-423-41		<b>Battery room lid ass'y-"EE" model</b>		
34-35	80-004-423-01		<b>Battery room lid ass'y "UK" model</b>		
1-34	82-432-037-01		Battery room lid	TPR-212	1
1-35	82-432-224-01		M cushion	TPR-212	1
36-44	80-004-427-41		<b>Cassette lid ass'y -"EE" model only</b>		
36-44	80-004-427-01		<b>Cassette lid ass'y -"UK" model only</b>		
1-36	82-442-040-01		Cassette lid	*	1
1-37	82-429-250-01		Cassette slide plate		1
1-38	82-422-241-01		Spring, Cassette lid	TPR-203	1
1-39	82-432-239-01		Pressure spring R, Cassette	TPR-212	1
1-40	82-432-238-01		Pressure spring L, Cassette	TPR-212	1
1-41	82-422-236-01		Himeron cloth, Cassette lid	TPR-203	1
1-42	82-425-263-01		Pressure spring, Slide plate		1
1-43	87-410-311-01		W2.6-7.5-0.5		1
1-44	87-352-072-01		VT <sub>2</sub> +2.6-5		1
1-45	82-442-061-01		Knob ass'y, Tuning	*	1
1-46	82-442-035-01		Knob, Volume	*	3
1-47	82-432-215-01		Holder, Jack	TPR-212	1
1-48	87-081-273-01		VT <sub>1</sub> + 3-25		5



EXPLODED VIEW-2





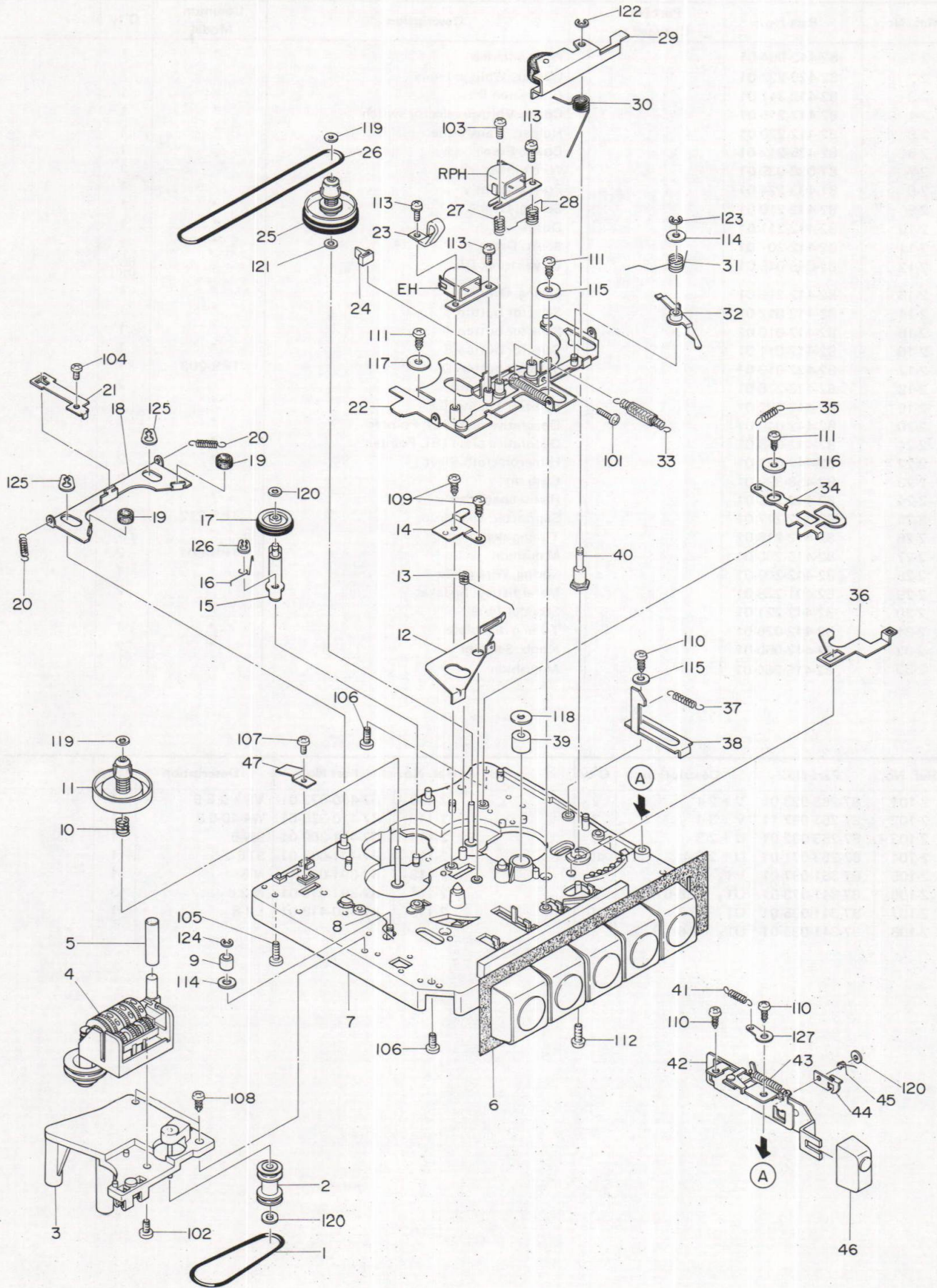
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
2-1	82-442-064-01		Whip antenna	*	1
2-2	82-429-227-01		Washer, Whip antenna		1
2-3	82-412-341-01		G cushion B		1
2-4	82-442-219-01		Cover, Voltage selector switch	*	1
2-5	82-442-220-01		Holder, Transformer	*	1
2-6	82-435-212-01		Cover, Fuse		1
2-7	87-038-039-01		Wire binder		1
2-8	81-493-224-01		Press gear ass'y		1
2-9	82-442-210-01		Spring, Gear	*	1
2-10	82-442-211-01		Drum	*	1
2-11	82-442-207-01		Shaft, Drum	*	1
2-12	87-096-045-01		Drive string, Dial		682 mm
2-13	82-442-215-01		Spring, Drum	*	1
2-14	82-442-012-01		Selector button C	*	1
2-15	82-442-010-01		Selector button A	*	1
2-16	82-442-011-01		Selector button B	*	1
2-17	82-422-013-01		Selector button D	TPR-203	1
2-18	82-428-276-01		Holder, Antenna		2
2-19	82-442-022-01		Pointer, Tuning dial	*	1
2-20	82-442-049-01		Decorative plate (L), Pointer	*	1
2-21	82-442-048-01		Decorative plate (R), Pointer	*	1
2-22	82-442-057-01		Himeron cloth sheet	*	2
2-23	82-458-399-01		Cushion		2
2-24	82-442-205-01		Radio chassis ass'y	*	1
2-25	82-432-217-01		Supporter, Dial drum	TPR-212	1
2-26	82-442-216-01		Tuning shaft	*	1
2-27	82-416-260-01		M cushion	TPR-601	2
2-28	82-442-209-01		Spring, Wire guide	*	1
2-29	82-401-228-01		Metal fitting, Speaker		2
2-30	82-442-221-01		Stopper fibre	*	1
2-31	82-442-026-01		Tuning dial plate	*	1
2-32	82-442-050-01		Knob, Selector	*	2
2-33	82-416-260-01		M cushion		1

Ref. No.	Part No.	Description	Q'ty
2-101	87-263-033-01	V + 2-4	2
2-102	87-263-092-11	V + 3-4	2
2-103	87-253-032-01	U + 2-3	2
2-104	87-253-071-01	U + 2.6-4	10
2-105	87-351-097-01	VT <sub>1</sub> + 3-12	3
2-106	87-341-073-01	UT <sub>1</sub> + 2.6-6	2
2-107	87-341-095-01	UT <sub>1</sub> + 3-8	10
2-108	87-341-035-01	UT <sub>1</sub> + 2-6	2

Ref. No.	Part No.	Description	Q'ty
2-109	87-480-072-01	VS + 2.6-5	1
2-110	87-410-325-01	W4-10-0.8	1
2-111	87-421-309-01	SW-5	1
2-112	87-441-008-01	STE-2.5	1
2-113	87-391-028-11	N-5	1
2-114	87-391-013-01	N-2.6	3
2-115	87-450-418-01	LB-8	1



EXPLODED VIEW-3





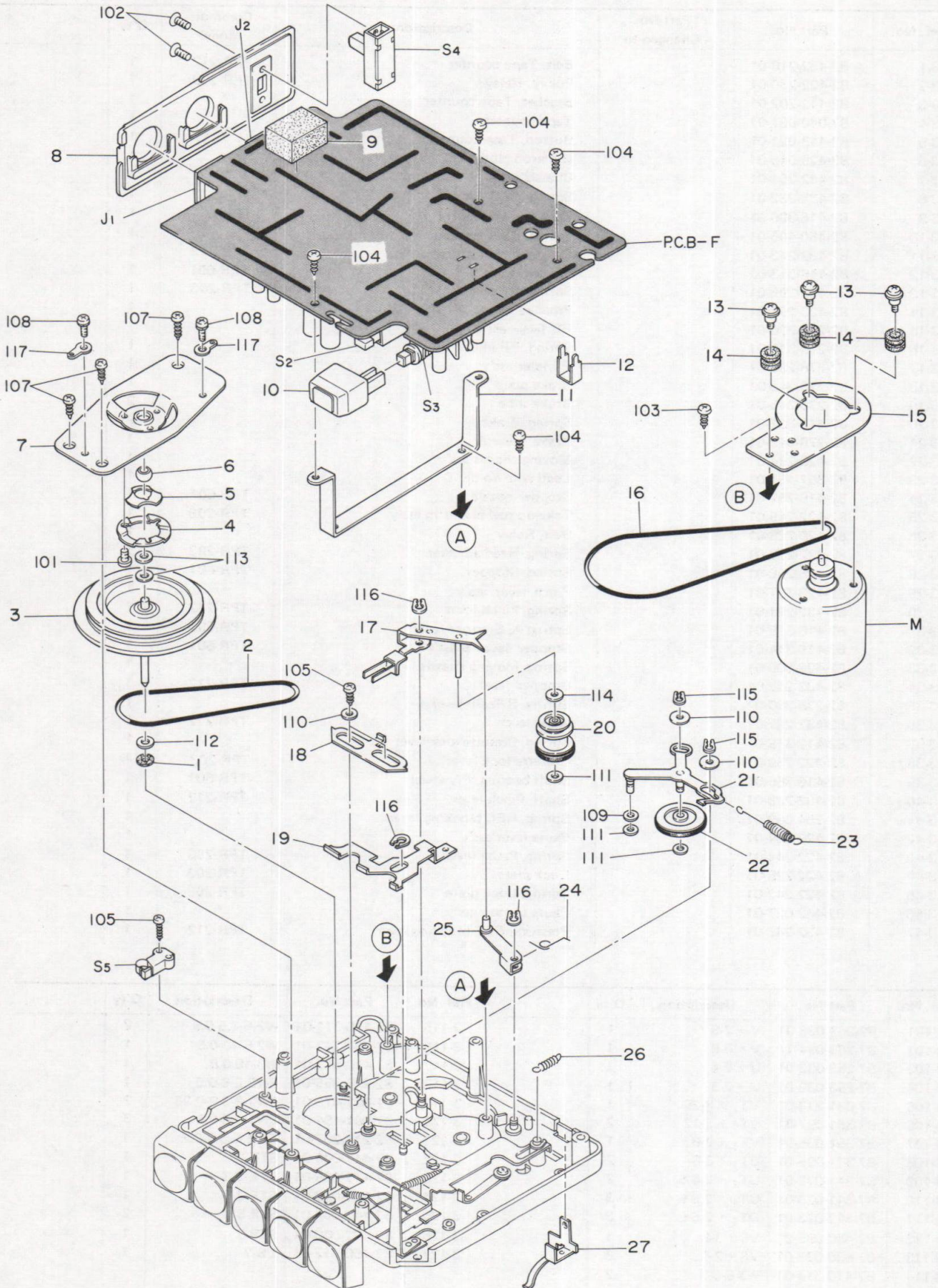
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
3-1	82-432-210-01		Belt, Tape counter	TPR-212	1
3-2	82-422-230-01		Pulley, Relay	TPR-203	1
3-3	82-442-202-01		Bracket, Tape counter	*	1
3-4	87-040-081-01		Tape counter		1
3-5	82-442-021-01		Button, Tape counter	*	1
3-6	82-429-045-01		Himeron cloth		1
3-7	82-442-201-01		Chassis ass'y	*	1
3-8	82-432-232-01		Spring, REC lock	TPR-212	1
3-9	82-416-306-01		Collar, Guide shaft	TPR-601	1
3-10	82-450-405-01		Spring, Back tension		1
3-11	82-432-243-01		Supply reel platform ass'y	TPR-212	1
3-12	82-416-313-01		Review lever B	TPR-601	1
3-13	82-422-296-01		Spring, Release	TPR-203	1
3-14	82-423-291-01		Pressure spring, Moving chassis		1
3-15	82-278-236-01		FF lever ass'y		1
3-16	82-278-319-01		Spring, FF idler		1
3-17	82-278-260-01		FF idler ass'y		1
3-18	82-278-343-01		Brake plate		1
3-19	82-278-345-01		Brake shoe		2
3-20	82-412-331-01		Spring, Brake		2
3-21	82-278-342-01		Brake lever B		1
3-22	82-423-294-01		Moving chassis ass'y		1
3-23	82-357-487-01		Lead wire holder D		1
3-24	82-416-252-01		Stopper nozzle	TPR-601	1
3-25	82-422-249-01		Take-up reel platform ass'y	TPR-203	1
3-26	82-429-228-01		Belt, Relay		1
3-27	82-422-293-01		Spring, Head adjuster	TPR-203	1
3-28	82-416-256-01		Spring, Stopper	TPR-601	1
3-29	82-423-307-01		Pinch lever ass'y		1
3-30	82-432-231-01		Spring, Pinch lever	TPR-212	1
3-31	82-416-318-01		Spring A, Stopper lever	TPR-601	1
3-32	82-416-314-01		Stopper lever B ass'y	TPR-601	1
3-33	82-423-300-01		Spring, Moving chassis		1
3-34	82-432-242-01		Stopper lever C	TPR-212	1
3-35	82-278-330-01		Spring, Release lever		1
3-36	82-432-227-01		Kick lever	TPR-212	1
3-37	82-412-319-01		Spring, Cassette lock lever		1
3-38	82-422-259-01		Cassette lock lever	TPR-203	1
3-39	82-416-365-01		Shaft bearing, Flywheel	TPR-601	1
3-40	82-432-228-01		Shaft, Pinch lever	TPR-212	1
3-41	82-254-089-01		Spring, REC blocking lever		1
3-42	82-429-204-01		Pause lever ass'y		1
3-43	82-422-244-01		Spring, Pause lever	TPR-203	1
3-44	82-422-225-01		Lock plate	TPR-203	1
3-45	82-422-242-01		Spring, Lock plate	TPR-203	1
3-46	82-442-037-01		Pause button ass'y	*	1
3-47	82-432-245-01		Pressure, REC blocking lever	TPR-212	1

Ref. No.	Part No.	Description	Q'ty
3-101	87-263-036-01	V + 2-6	1
3-102	87-263-094-11	V + 3-6	1
3-103	87-253-033-01	U + 2-4	1
3-104	87-253-032-01	U + 2-3	1
3-105	87-081-273-01	VT <sub>1</sub> + 3-25	1
3-106	87-351-097-01	VT <sub>1</sub> + 3-12	2
3-107	87-351-035-01	VT <sub>1</sub> + 2-6	1
3-108	87-341-095-01	UT <sub>1</sub> + 3-8	2
3-109	87-341-072-01	UT <sub>1</sub> + 2.6-5	2
3-110	87-341-073-01	UT <sub>1</sub> + 2.6-6	3
3-111	87-342-073-01	UT <sub>2</sub> + 2.6-6	3
3-112	87-480-095-01	VS + 3-8	1
3-113	87-480-033-01	VS + 2-4	3
3-114	87-410-314-01	W3-8-0.3	2

Ref. No.	Part No.	Description	Q'ty
3-115	87-410-311-01	W2.6-7.5-0.5	2
3-116	87-081-242-01	W2.6-10-0.5	1
3-117	87-410-317-01	W3-10-0.8	1
3-118	82-416-358-01	PW2.5-6-0.5	1
3-119	87-081-473-01	PW1.3-3.2-0.25	2
3-120	87-081-464-01	PW1.8-5-0.5	3
3-121	82-215-207-01	TW1.6-3.8-0.2	1
3-122	87-441-005-01	STE-2	1
3-123	87-441-006-01	STE-2.3	1
3-124	87-441-008-01	STE-2.5	1
3-125	87-442-005-01	STP-5	2
3-126	87-422-003-01	STP-3	1
3-127	87-450-412-01	LB-2	1



EXPLODED VIEW-4

























Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
4-1	87-081-229-01		Washer A, Himeron cloth		1
4-2	82-276-258-01		Belt, FR		1
4-3	82-412-203-01		Flywheel ass'y		1
4-4	82-432-233-01		Holder A, Plate spring	TPR-212	1
4-5	82-432-230-01		Plate spring A, Shaft bearing	TPR-212	1
4-6	82-432-229-01		Shaft bearing A	TPR-212	1
4-7	82-432-226-01		Lower shaft bearing plate	TPR-212	1
4-8	82-442-003-01		Jack plate	*	1
4-9	82-421-261-01		Cushion, Circuit board		1
4-10	82-442-065-01		Selector button, R.T	*	1
4-11	82-463-218-01		Metal fitting, Circuit board		1
4-12	87-038-038-01		Slide switch pressure		1
4-13	87-081-483-01		Metal screw, M2.6		3
4-14	82-416-299-01		Rubber cushion	TPR-601	3
4-15	82-416-231-01		Holder, Motor	TPR-601	1
4-16	82-416-220-01		Belt, Main	TPR-601	1
4-17	82-278-385-01		FR lever ass'y		1
4-18	82-431-211-01		RF slide lever		1
4-19	82-278-341-01		Brake lever A		1
4-20	82-432-240-01		FR pulley ass'y	TPR-212	1
4-21	82-285-258-01		Play idler lever ass'y		1
4-22	82-285-255-01		Play idler ass'y		1
4-23	82-285-254-01		Spring, Play idler		1
4-24	82-278-297-01		Spring, Center shifter		1
4-25	82-416-322-01		Center shifter plate ass'y	TPR-601	1
4-26	82-416-281-01		Spring, REC blocking lever	TPR-601	1
4-27	82-440-237-01		REC blocking lever ass'y		1









Ref. No.	Part No.	Description	Q'ty
4-101	87-263-071-01	V + 2.6-4	3
4-102	87-227-033-01	P + 2-4	2
4-103	87-351-095-01	VT <sub>1</sub> + 3-8	6
4-104	87-341-074-01	UT <sub>1</sub> + 2.6-8	2
4-105	87-341-037-01	UT <sub>1</sub> + 2-10	1
4-106	87-341-073-01	UT <sub>1</sub> + 2.6-6	2
4-107	87-343-096-01	UT <sub>2</sub> + 3-10	3
4-108	87-480-093-11	VS + 3-5	2
4-109	87-410-305-01	W2-6-0.4	1

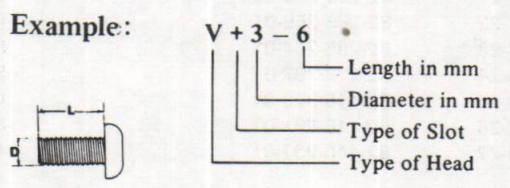
Ref. No.	Part No.	Description	Q'ty
4-110	87-410-311-01	W2.6-7.5-0.5	4
4-111	87-081-464-01	PW1.8-5-0.5	3
4-112	82-416-358-01	PW2.5-6-0.5	1
4-113	86-604-019-01	2.5φ washer	2
4-114	87-081-036-01	TW2-5-0.2	1
4-115	87-081-190-01	STP-2.5	2
4-116	87-442-003-01	STP-3	3
4-117	87-450-414-01	LB-4	2



**HARDWARE NOMENCLATURE**

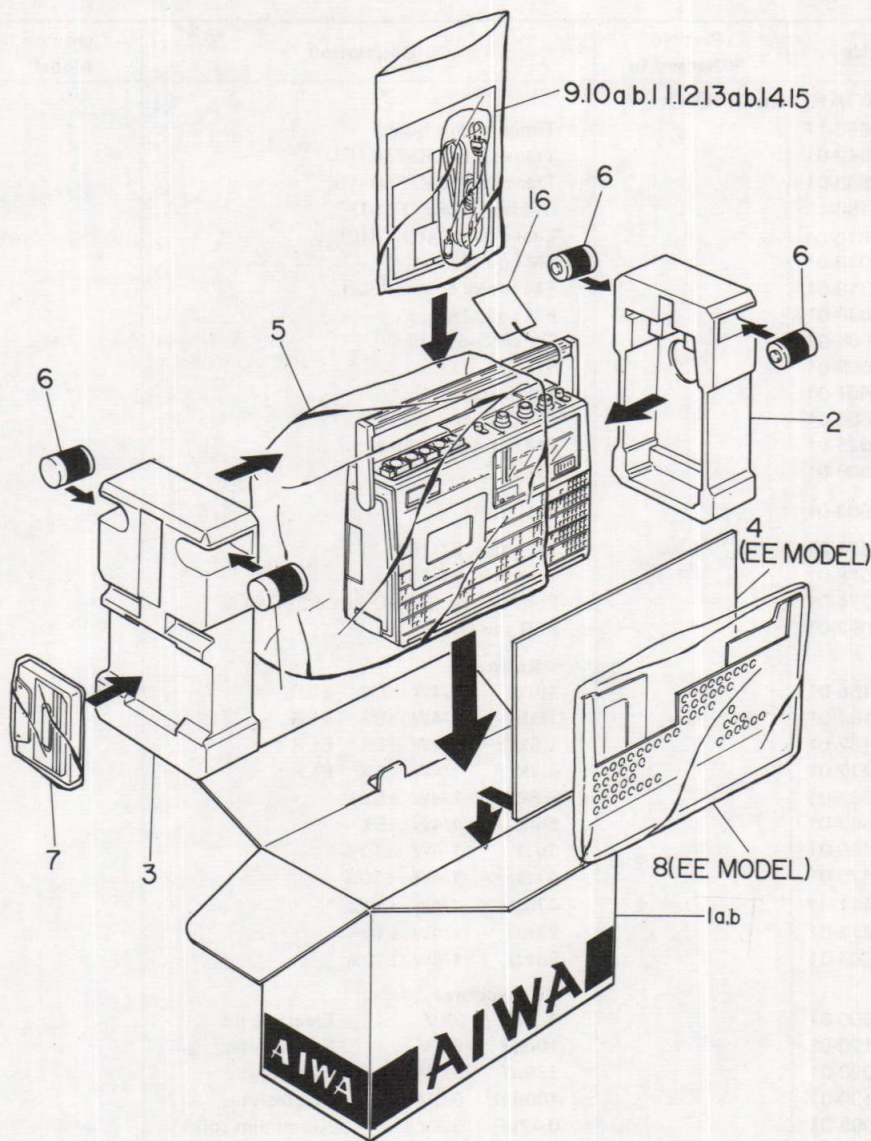
<b>V:</b>	Pan head screw		
<b>U:</b>	Binding head screw		
<b>Q:</b>	Flat countersunk head screw		
<b>P:</b>	Oval countersunk head screw		
<b>VT<sub>1</sub>:</b>	Pan head tapping screw		
<b>VT<sub>2</sub>:</b>	Pan head tapping screw		
<b>UT<sub>1</sub>:</b>	Binding head tapping screw		
<b>UT<sub>2</sub>:</b>	Binding head tapping screw		
<b>VS:</b>	Pan head screw with spring washer		
<b>VWS:</b>	Pan head screw with spring washer and washer		

<b>STP:</b>	Powerful stop ring	
<b>STE:</b>	E ring (washer)	
<b>W:</b>	Washer	
<b>PW:</b>	Poly-slider washer	
<b>TW:</b>	Tefron washer	
<b>SW:</b>	Spring washer	
<b>N:</b>	Nut	
<b>LB:</b>	Lug terminal plate	





ACCESSORIES/PACKAGE



ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1a	82-442-857-01		Printed indiv, Packing – "EE" model only	*	1
1b	82-442-855-01		Printed indiv, Packing – "UK" model only	*	1
2	82-442-853-01		Cushion R, Printed indiv	*	1
3	82-442-852-01		Cushion L, Printed indiv	*	1
4	82-442-859-01		Auxiliary pad	*	1
5	87-051-143-01		Poly-vinyl sack (for case)		1
6	87-047-039-01		Battery, SUM-1 (AG)		4
7	80-291-653-01		Tape cassette, DMC-142		1
8	82-442-951-01		Carrying case – "EE" model only	*	1
9	87-051-171-01		Poly-vinyl sack (for instructions)		1
10a	82-442-907-01		Instructions booklet – "EE" model only	*	1
10b	82-442-908-01		Instructions booklet – "UK" model only	*	1
11	87-056-009-01		Distributors list		1
12	87-051-137-01		Poly-vinyl-sack (for AC cord)		1
13a	87-034-070-01		AC cord – "EE" model only		1
13b	87-034-845-01		AC cord – "UK" model only		1
14	87-056-008-01		Label, AC cord – "UK" model only		1
15	87-032-478-01		DIN erase plug		1
16	87-056-007-01		Tag, Voltage selector – "UK" model only		1



## ELECTRICAL PARTS

Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
<b>&lt;TUNER CIRCUIT BOARD SECTION&gt;</b>					
PCB-A	82-442-656-11		Tuner circuit board	*	1
TR101,102	89-307-842-01		Transistor, 2SC-784 (R)		2
TR105	89-303-803-01		Transistor, 2SC-380 (O)		1
D101,102	88-052-188-11		Diode, 1S-188 (FM-1)		2
D103	82-442-610-01		Zener diode, RD-4A(L)		1
L101	87-006-016-01		FM coil, 1½t		1
L102	81-245-319-01		FM choke coil, 0.43μH		1
L103	87-006-036-01		FM coil, 1½t		1
L104	82-442-605-01		SW antenna coil	*	1
L107	82-442-608-01		SW OSC coil	*	1
L108	82-442-607-01		MW OSC coil	*	1
L109	82-442-606-01		LW OSC coil	*	1
BPF101	87-030-035-01		FM band pass filter		1
IFT101	82-442-609-01		FM IFT	*	1
VC1~4					
TC1~4	82-442-603-01		P, V, C	*	1
TC5,6	81-123-374-01		Trimmer, 2T-10S		1
TC7,8	87-011-048-01		Trimmer, 2T-16M		1
S1	87-031-274-01		Push switch (BAND SELECTOR)		1
	87-033-092-01		PCB tab (A)		2
<b>&lt;Resistors&gt;</b>					
R108	88-181-150-01		15Ω 1/4W ±5% ELR		1
R109	88-181-181-01		180Ω 1/4W ±5% ELR		1
R104	88-181-182-01		1.8kΩ 1/4W ±5% ELR		1
R107	88-181-472-01		4.7kΩ 1/4W ±5% ELR		1
R131	88-131-562-01		5.6kΩ 1/4W ±5%		1
R127	88-131-563-01		56kΩ 1/4W ±5%		1
R128	88-134-100-01		10Ω 1/4W ±10%		1
R129,130	88-134-470-01		47Ω 1/4W ±10%		2
R126	88-134-471-01		470Ω 1/4W ±10%		1
R132	88-134-273-01		27kΩ 1/4W ±10%		1
R133	88-134-563-01		56kΩ 1/4W ±10%		1
<b>&lt;Capacitors&gt;</b>					
C131	88-336-500-01		4.7μF 25V Electrolytic		1
C115,147	88-332-120-01		100μF 6.3V Electrolytic		2
C149	88-332-220-01		220μF 6.3V Electrolytic		1
C130	88-332-130-01		1000μF 6.3V Electrolytic		1
C114	87-015-095-01		0.47μF 6.3V Aluminum solid		1
C122	88-517-480-01		220pF Styrol		1
C121	88-617-530-01		360pF Styrol		1
C120	88-617-710-01		3900pF Styrol		1
C119	88-717-680-01		0.0027μF Mylar		1
C138	88-727-810-01		0.01μF Mylar		1
C134	88-727-870-01		0.039μF Mylar		1
C132	88-727-850-01		0.047μF Mylar		1
C104,108,109 135,145	88-213-060-01		6pF Ceramic		5
C125,146	88-212-100-01		10pF Ceramic		2
C110	88-212-130-01		13pF Ceramic		1
C105	88-212-150-01		15pF Ceramic		1
C124	88-212-160-01		16pF Ceramic		1
C103	88-212-180-01		18pF Ceramic		1
C139	88-212-260-01		36pF Ceramic		1
C117	88-212-290-01		47pF Ceramic		1
C118	88-212-350-01		82pF Ceramic		1
C123	88-212-450-01		150pF Ceramic		1
C133	88-212-470-01		200pF Ceramic		1
C136,148	88-212-510-01		300pF Ceramic		2
C106	88-212-550-01		470pF Ceramic		1
C126	88-214-660-01		0.0022μF Ceramic		1



Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
C127	88-214-720-01		0.0047 $\mu$ F Ceramic		1
C102,107,111 112,113,116 128,129,137 140	88-214-810-01		0.01 $\mu$ F Ceramic		10
C144	88-205-910-01		0.1 $\mu$ F Ceramic		1
<b>«SWITCH CIRCUIT BOARD SECTION»</b>					
PCB-B	82-442-657-11 87-033-092-01		Switch circuit board PCB tab (A)		1 1
R123	88-134-103-01		<Resistor> 10k $\Omega$ 1/4W $\pm$ 10%		1
C150	88-337-100-01		<Capacitors> 1 $\mu$ F 50V Electrolytic		1
C143	88-727-810-01		0.01 $\mu$ F Mylar		1
C101	88-232-290-01		47pF 500V Ceramic		1
<b>«IF BLOCK CIRCUIT BOARD SECTION»</b>					
PCB-C	87-033-131-01		IF BLOCK circuit board		
TR401	89-303-803-01		Transistor, 2SC-380(O)		1
IC401	87-027-139-01		IC, AN-217 (BB)		1
D401,402	88-052-188-01		Diode, 1S-188 (FM)		2
D403,404	88-051-060-01		Diode, 1N-60 (AM)		2
IFT401	87-008-166-01		FM IFT (ratio S)		1
IFT402	87-008-165-01		FM IFT (ratio P)		1
IFT403	87-008-164-01		AM IFT		1
CF401	88-008-153-01		FM ceramic filter – 10.7 MHz		1
CFT401	87-008-162-01		AM ceramic filter trans – 455 kHz (EE model only)		1
CFT401	87-008-150-01		AM ceramic filter trans – 468 kHz (UK model only)		1
CR401,402, 406,409, 411	87-028-020-01		CR block (S103Z-101K)		5
CR403	87-028-027-01		CR block (B4TD1201)		1
CR404	87-028-021-01		CR block (S301M-102K)		1
CR405	87-028-025-01		CR block (S472Z-102K)		1
CR407,408	87-028-024-01		CR block (F103Z-103Z-102K)		2
CR410	87-028-022-01		CR block (S103Z-223K)		1
<b>&lt;Resistors&gt;</b>					
R401,402	88-188-821-01		820 $\Omega$ 1/4W $\pm$ 5% ELR		2
R404	88-188-102-01		1k $\Omega$ 1/4W $\pm$ 5% ELR		1
R405,407	88-188-152-01		1.5k $\Omega$ 1/4W $\pm$ 5% ELR		2
R403	88-188-224-01		220k $\Omega$ 1/4W $\pm$ 5% ELR		1
<b>&lt;Capacitors&gt;</b>					
C408,410,414	88-336-200-01		2.2 $\mu$ F 16V Electrolytic		3
C406	88-336-500-01		4.7 $\mu$ F 16V Electrolytic		1
C403,407	88-335-110-01		10 $\mu$ F 16V Electrolytic		2
C415	88-727-720-01		0.0047 $\mu$ F Mylar		1
C401	88-727-830-01		0.022 $\mu$ F Mylar		1
C412,413	88-214-720-01		0.0047 $\mu$ F Ceramic		2
C404,411	88-214-810-01		0.01 $\mu$ F Ceramic		2
C402,409	88-212-830-01		0.022 $\mu$ F Ceramic		2
C405	88-212-810-01		0.01 $\mu$ F Ceramic		1
<b>«AFC SWITCH CIRCUIT BOARD SECTION»</b>					
PCB-D	82-442-654-01		AFC switch circuit board		1
S7	87-031-351-01		Lever switch (AFC)		1
<b>&lt;Resistor&gt;</b>					
R125	88-134-102-01		1k $\Omega$ 1/4W $\pm$ 10%		1



Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
<b>◀REC/PB CIRCUIT BOARD SECTION▶</b>					
PCB-E	82-442-658-11		REC/PB circuit board	*	1
TR201	89-307-326-01		Transistor, 2SC-732 (BL)		1
TR202	89-307-325-01		Transistor, 2SC-732 (G)		1
TR204,211, 212	89-307-335-01		Transistor, 2SC-733 (GR)		3
TR205,213	89-303-724-01		Transistor, 2SC-372 (Y)		2
TR206,207	89-404-006-01		Transistor, 2SD-400 (F)		2
TR208,209	89-200-562-01		Transistor, 2SB-56 (B)		2
TR210	89-402-275-01		Transistor, 2SD-227 (V)		1
D103	87-026-069-01		Zener diode, WZ-052		1
D201,202	87-026-104-01		Diode, VD-1121		2
D203,204	88-052-188-11		Diode, 1S-188 (FM-1)		2
D205	87-027-083-01		Diode, 1S-1885		1
L201	82-418-612-01		Bias OSC coil		1
L202	82-401-661-01		Choke coil, 600 $\mu$ H		1
L203	87-003-034-01		Trape coil		1
L204	87-005-072-01		Micro inductor, 1,2mH		1
L205	82-401-624-01		Choke coil, 35 $\mu$ H		1
T201	82-409-654-01		Input transformer		1
T202	82-428-603-01		Output transformer		1
T203	87-002-090-01		Step-up transformer		1
J1	87-032-679-01		5P DIN jack (DIN REC/PB)		1
J2	87-032-681-01		2P DIN jack (EXT-SP)		1
S2	87-031-317-01		Slide switch (REC/PB)		1
S3	82-442-662-01		Push switch (RADIO/TAPE)		1
S8	87-032-680-01		DIN slide switch (DIN)		1
SFR201	87-021-358-01		Semi-fixed resistor, 20k $\Omega$ -B		1
<b>&lt;Resistors&gt;</b>					
R228,229	88-181-059-01		0.5 $\Omega$ 1/4W $\pm$ 5% ELR		2
R237	88-181-109-01		1 $\Omega$ 1/4W $\pm$ 5% ELR		1
R230,231			18 $\Omega$ 1/4W $\pm$ 5% ELR		2
R218	88-181-470-01		47 $\Omega$ 1/4W $\pm$ 5% ELR		1
R210	88-181-560-01		56 $\Omega$ 1/4W $\pm$ 5% ELR		1
R226	88-181-101-01		100 $\Omega$ 1/4W $\pm$ 5% ELR		1
R207	88-181-121-01		120 $\Omega$ 1/4W $\pm$ 5% ELR		1
R270	88-181-561-01		560 $\Omega$ 1/4W $\pm$ 5% ELR		1
R265	88-181-272-01		2.7k $\Omega$ 1/4W $\pm$ 5% ELR		1
R201,202,251	88-181-332-01		3.3k $\Omega$ 1/4W $\pm$ 5% ELR		3
R213	88-181-562-01		5.6k $\Omega$ 1/4W $\pm$ 5% ELR		1
R266	88-181-682-01		6.8k $\Omega$ 1/4W $\pm$ 5% ELR		1
R253,254	88-181-103-01		10k $\Omega$ 1/4W $\pm$ 5% ELR		2
R206,257	88-181-333-01		33k $\Omega$ 1/4W $\pm$ 5% ELR		2
R240	88-181-393-01		39k $\Omega$ 1/4W $\pm$ 5% ELR		1
R212	88-181-154-01		150k $\Omega$ 1/4W $\pm$ 5% ELR		1
R205	88-181-105-01		1M $\Omega$ 1/4W $\pm$ 5% ELR		1
R121	88-134-151-01		150 $\Omega$ 1/4W $\pm$ 10%		1
R224,119	88-150-470-01		47 $\Omega$ 1W $\pm$ 5%		2
R233	88-142-680-01		68 $\Omega$ 1/2W $\pm$ 10%		1
R267	87-029-010-01		10 $\Omega$ 1/4W Fuse resistor		1
R249	87-029-007-01		22 $\Omega$ 1/4W Fuse resistor		1
<b>&lt;Capacitors&gt;</b>					
C203	88-337-100-01		1 $\mu$ F 50V Electrolytic		1
C210,233	88-336-500-01		4.7 $\mu$ F 25V Electrolytic		2
C206,207,213 214	88-335-110-01		10 $\mu$ F 16V Electrolytic		4
C248,249	88-333-130-01		1000 $\mu$ F 10V Electrolytic		2
C236	88-332-510-01		47 $\mu$ F 6.3V Electrolytic		1
C237	88-332-120-01		100 $\mu$ F 6.3V Electrolytic		1
C149,215,230, 238	88-332-220-01		220 $\mu$ F 6.3V Electrolytic		4
C205,209,216	88-332-520-01		470 $\mu$ F 6.3V Electrolytic		3
C208	88-707-820-01		0.015 $\mu$ F Mylar		1



Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
C231	88-707-970-01		0.082 $\mu$ F Mylar		1
C228	88-717-640-01		0.0018 $\mu$ F Mylar		1
C204	88-717-700-01		0.0033 $\mu$ F Mylar		1
C240	88-727-740-01		0.0068 $\mu$ F Mylar		1
C251	88-727-910-01		0.1 $\mu$ F Mylar		1
C202,217,218	88-727-810-01		0.01 $\mu$ F Mylar		3
C219	88-728-680-01		0.0027 $\mu$ F Mylar		1
C226,227	88-728-740-01		0.0068 $\mu$ F Mylar		2
C221	88-728-830-01		0.022 $\mu$ F Mylar		1
C224	88-728-840-01		0.033 $\mu$ F Mylar		1
C222	88-728-850-01		0.047 $\mu$ F Mylar		1
C201,232	87-015-093-01		0.22 $\mu$ F 6.3V Aluminum solid		2
C214	88-212-240-01		30pF Ceramic		1
C211	88-212-410-01		100pF Ceramic		1
C235,252,141	88-212-510-01		300pF Ceramic		3
C239	88-214-610-01		0.001 $\mu$ F Ceramic		1
C229,212	88-214-660-01		0.0022 $\mu$ F Ceramic		2
C234	88-214-720-01		0.0047 $\mu$ F Ceramic		1
C225	88-214-810-01		0.01 $\mu$ F Ceramic		1
C223	88-238-550-01		470pF Ceramic		1
C220	88-238-580-01		820pF Ceramic		1
<b>&lt;&lt;VOLUME/LED AMP CIRCUIT BOARD SECTION&gt;&gt;</b>					
PCB-F	82-442-652-01		VOLUM/LED AMP circuit board		1
TR103	89-303-724-01		Transistor, 2SC-372 (Y)		1
TR104	89-106-285-01		Transistor, 2SA-628 (F)		1
TR203	89-307-325-01		Transistor, 2SC-732 (G)		1
VR201,202	82-431-605-01		Volume, 20k $\Omega$ -A (TREBLE, BASS)		2
VR203	87-021-452-01		Volume, 10k $\Omega$ -D (VOLUME)		1
<b>&lt;Resistors&gt;</b>					
R264	88-181-471-01		470 $\Omega$ 1/4W $\pm$ 5% ELR		1
R259	88-181-103-01		10k $\Omega$ 1/4W $\pm$ 5% ELR		1
R216,262	88-131-221-01		220 $\Omega$ 1/4W $\pm$ 5%		2
R124	88-131-271-01		270 $\Omega$ 1/4W $\pm$ 5%		1
R260,269	88-131-102-01		1k $\Omega$ 1/4W $\pm$ 5%		2
R261	88-131-272-01		2.7k $\Omega$ 1/4W $\pm$ 5%		1
R232	88-131-472-01		4.7k $\Omega$ 1/4W $\pm$ 5%		1
R263	88-131-184-01		180k $\Omega$ 1/4W $\pm$ 5%		1
<b>&lt;Capacitors&gt;</b>					
C247	88-337-100-01		1 $\mu$ F 50V Electrolytic		1
C246	88-336-500-01		4.7 $\mu$ F 25V Electrolytic		1
C250	88-332-510-01		47 $\mu$ F 6.3V Electrolytic		1
C243	88-727-740-01		0.0068 $\mu$ F Mylar		1
C245	88-727-840-01		0.033 $\mu$ F Mylar		1
C242	88-727-970-01		0.082 $\mu$ F Mylar		1
C244	87-015-093-01		0.22 $\mu$ F 6.3V Aluminum solid		1
<b>&lt;&lt;TAPE SWITCH CIRCUIT BOARD SECTION&gt;&gt;</b>					
PCB-G	82-442-660-11		Tape switch circuit board	*	1
S6	87-031-351-01		Lever switch (CrO <sub>2</sub> /NORMAL)		1
R238	88-188-822-01		8.2k $\Omega$ 1/4W $\pm$ 5% ELR		1
R239	88-188-124-01		120k $\Omega$ 1/4W $\pm$ 5% ELR		1
<b>&lt;&lt;POWER CIRCUIT BOARD SECTION&gt;&gt;</b>					
PCB-H	82-442-659-11		Power circuit board	*	1
D301	87-026-099-01		Diode, 1S-1849 (R)		1
D302	87-026-098-01		Diode, 1S-1849		1
F1	87-035-067-01		Fuse, 100mA "T"		1
	87-057-766-11		Fuse label, 100mA "T"		1
F2	87-035-141-01		Fuse, 1.6A		1
	87-057-818-01		Fuse label, 1.6A		1
	87-032-323-01		Fuse clamp		4



Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
C305	88-333-130-01		<Capacitors>		
C301,302,303	88-727-910-01		1000 $\mu$ F 10V Electrolytic		1
304			0.1 $\mu$ F Mylar		4
<b>«MISCELLANEOUS»</b>					
T301	82-442-663-01		Power transformer	*	1
D104	82-442-601-01		Light emitting diode, SR-106	*	1
RPH	87-746-125-01		Rec/Pb head		1
EH	87-046-105-11		Erase head		1
ECM	80-562-083-01		ECM ass'y		1
M	80-661-881-01		Motor (AM-130A)		1
SP	82-432-680-01		Speaker		1
LM	82-431-614-11		Level meter		1
L105,106	82-442-604-01		MW, LW bar antenna coil	*	1
S4	82-409-630-01		Slide switch (OSC)		1
S5	87-031-261-01		Micro switch (MOTOR)		1
S9	87-031-280-01		Slide switch (VOLTAGE SELECTOR)		1
J3	82-266-214-11		DC jack		1
J4	87-032-434-01		AC jack		1
	87-005-080-01		RH core		1
	82-461-625-01		Fasten ass'y		1
	82-432-665-01		Fasten ass'y (RED)		1
	82-432-666-01		Fasten ass'y (BLK)		1







