

AIWA®

S/M Code No. 85-015

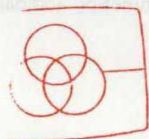
DATE OF ISSUE 4/1985

SERVICE MANUAL

STEREO CASSETTE DECK

MODEL NO.

FX-R80



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TYPE. HB, UB, EB, KB, ZB

SPECIFICATIONS

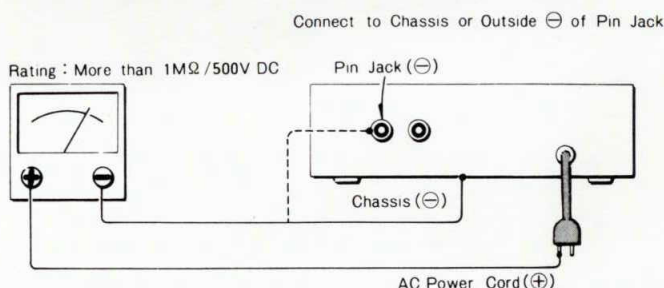
Type	Stereo cassette tape deck		Tape speed	4.8 cm/sec. (1-7/8 ips)
Track format	4 tracks 2 channels		Rewind time	90 sec. (C-60)
Power supply			Fast forward time	90 sec. (C-60)
FX-R80U	AC 120 V, 60 Hz		Recording system	AC bias (frequency 85 kHz)
FX-R80K	AC 240 V, 50/60 Hz		Erase system	AC erase
FX-R80E, Z	AC 220 V, 50/60 Hz		Motor	DC Servomotor, DC motor
FX-R80H	AC 120 V/220 V ~ 240 V switchable, 50/60 Hz		Heads	Record/playback head × 1 Erase head × 1
Power consumption	15 W		Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 kΩ)
Frequency response	METAL tape: 20—17,000 Hz CrO ₂ position tape: 20—16,000 Hz LH tape: 20—15,000 Hz		Outputs	LINE OUT standard output level: 280 mV (0 VU); suitable load impedance: over 50 kΩ
Signal-to-noise ratio	73 dB (METAL tape DOLBY C NR ON)		Dimensions	330 (W) × 107 (H) × 230 (D) mm
Wow and flutter	0,065% (WRMS)		Weight	3.1 kg

- Design and specifications are subject to change without notice.

Follow the instructions carefully, which will allow the user to optimise the products' performance and give many years of service.

1. No scratch and melting shall be made to covered lead-wires of an a.c. primary circuit including mains leads.
2. No illegibility shall be given to the specification plate, the caution labels, the fuse labels and others.
3. When, on pattern sides of circuit boards, additional repair-parts have been made up, the parts shall be firmly glued to circuit boards or other components, unless the parts can be attached firmly.
4. The following matters shall be maintained as they are, when repairing.
 - 1) Soldering of lead-wire ends
 - * Care should be taken of the space distance in an a.c. primary circuit as well as soldering.
 - 2) Wiring and holding of lead-wires with wire-clips and binders
 - 3) Materials of lead-wires
 - * e.g.; For UL models, lead-wires to be used shall be approved or accepted by the UL.
 - 4) Location of all kinds of insulators
 - 5) Setting of voltage selector switch
 - * Set the Voltage Selector Switch to 240V, 220V, or 120V, According to your Local Voltage.
5. After repaired, the insulation resistance or leakage current shall be measured with $500 \pm 5V$ D.C and shall be not less than $1M\Omega$.

Measuring Point



• ONE-POINT ADVICE

To remove the mechanism easily, push the illustrated position by which the azimuth adjusting screw may be caught.

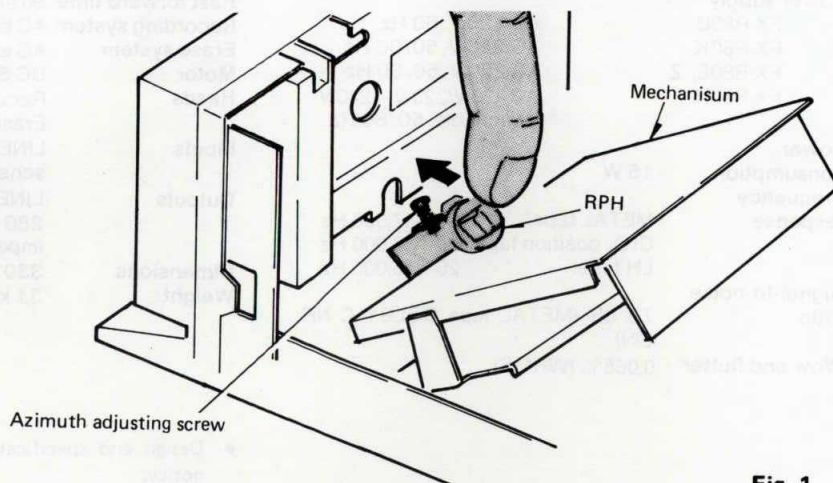
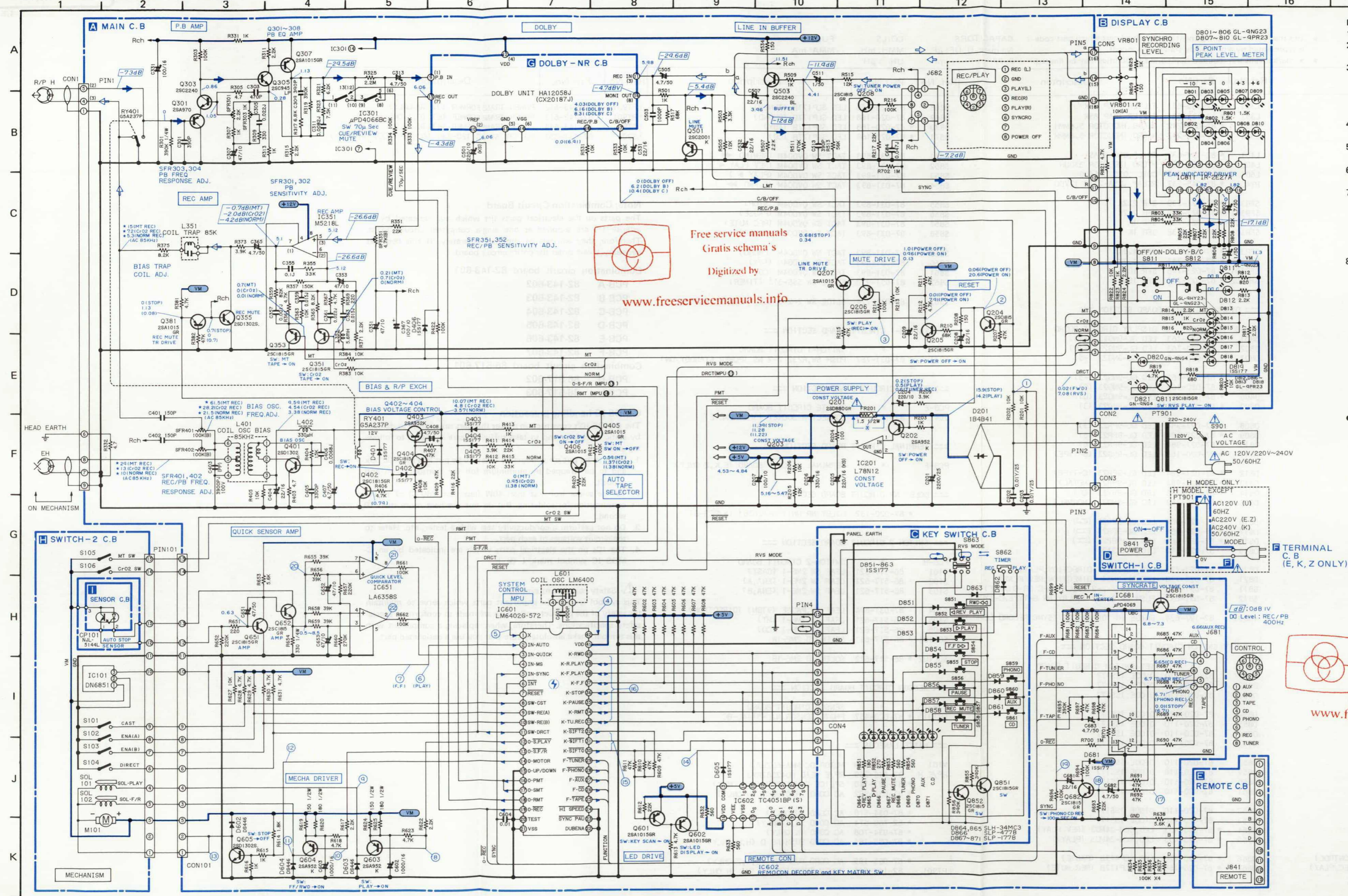
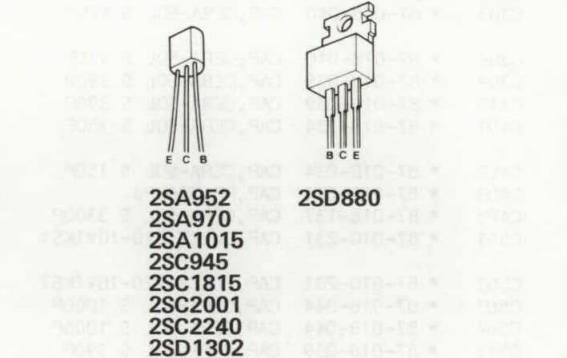


Fig. 1

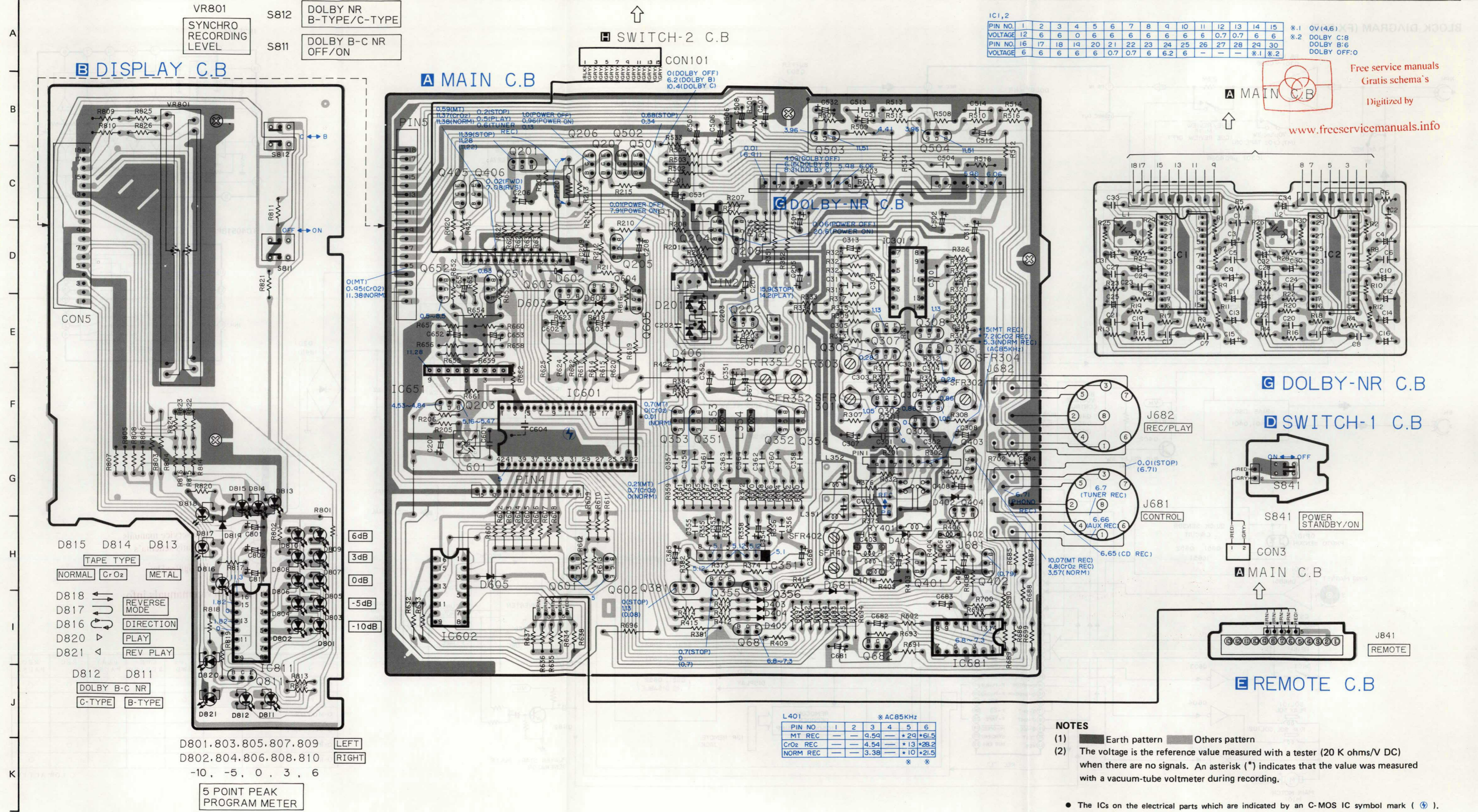
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.



- NOTES:**
- 1) B (+) power supply
 - 2) Signal path
 - 3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But () is with recording. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
 - 4) Resistors with no designation have a rated power of 1/8W and a tolerance of $\pm 5\%$.
 - 5) Capacitors with no designation have a dielectric strength of less than 50WV.
 - 6) The only capacitor tolerance indicated are $\pm 5\%$ (J) and $\pm 10\%$ (K).
 - 7) Ceramic capacitor symbols:
 - For temperature compensation (SL)
 - High dielectric constant system (YY)
 - High dielectric constant system (YW, YP, YZ)
 - Semiconductor ceramic
 - For temperature compensation (SH)
 - 8) Explanation of symbols:
 - Mylar capacitor
 - Polypropylene film capacitor
 - Bi-polarized capacitor
 - Low-leakage capacitor
 - Fuse resistor
- Safety component symbol**
- 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.
- This schematic diagram is subject to change without notice in the interests of improved performance.



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IC1,2

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
VOLTAGE	12	6	6	0	6	6	6	6	6	6	6	0.7	0.7	6	6
PIN NO.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
VOLTAGE	6	6	6	6	6	0.7	0.7	6	6.2	6	-	-	-	*1	*2

*.1 OV(4.6)
*.2 DOLBY C:8
DOLBY B:6
DOLBY OFF:0

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L401

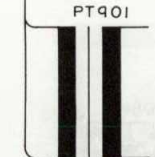
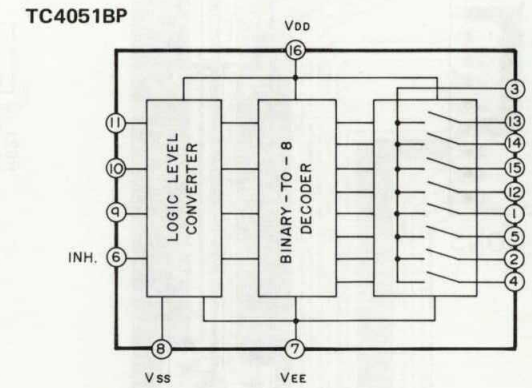
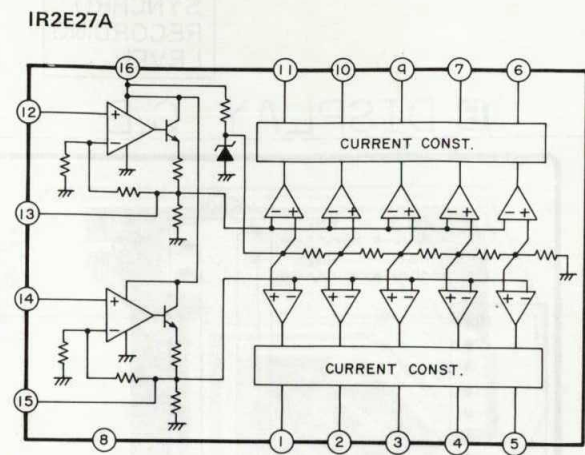
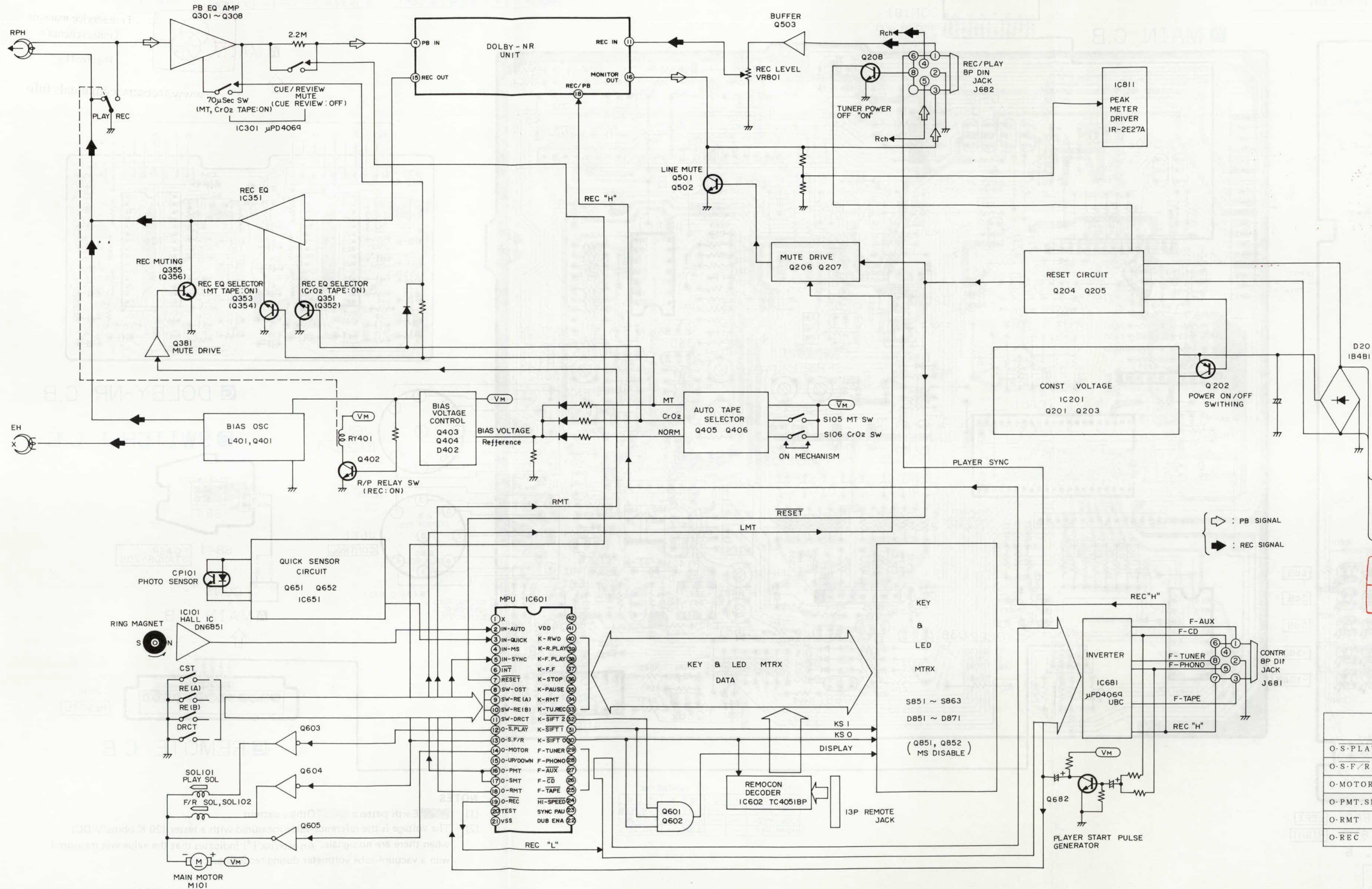
PIN NO.	1	2	3	4	5	6
MT REC	-	-	4.54	-	*29	*61.5
CrO2 REC	-	-	4.54	-	*13	*28.2
NORM REC	-	-	3.38	-	*10	*21.5

* AC85KHZ

- NOTES
- (1) Earth 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.

The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark ().

BLOCK DIAGRAM (FX-R80)

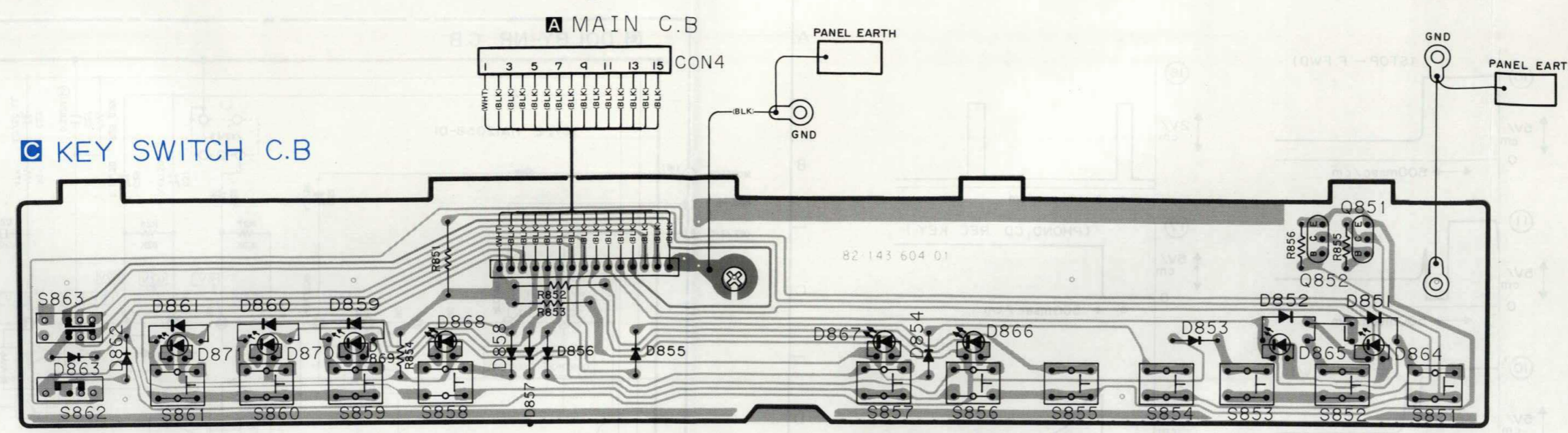


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	STOP	PLAY	F.F/ RWD	CUE/ REVIEW	PLAY PAUSE	REC	REC PAUSE
O-S-PLAY		○		○	○	○	○
O-S-F/R			○	○			
O-MOTOR	○						
O-PMT.SMT		○		○		○	○
O-RMT						○	
O-REC						○	○

○: LOW ACTIVE

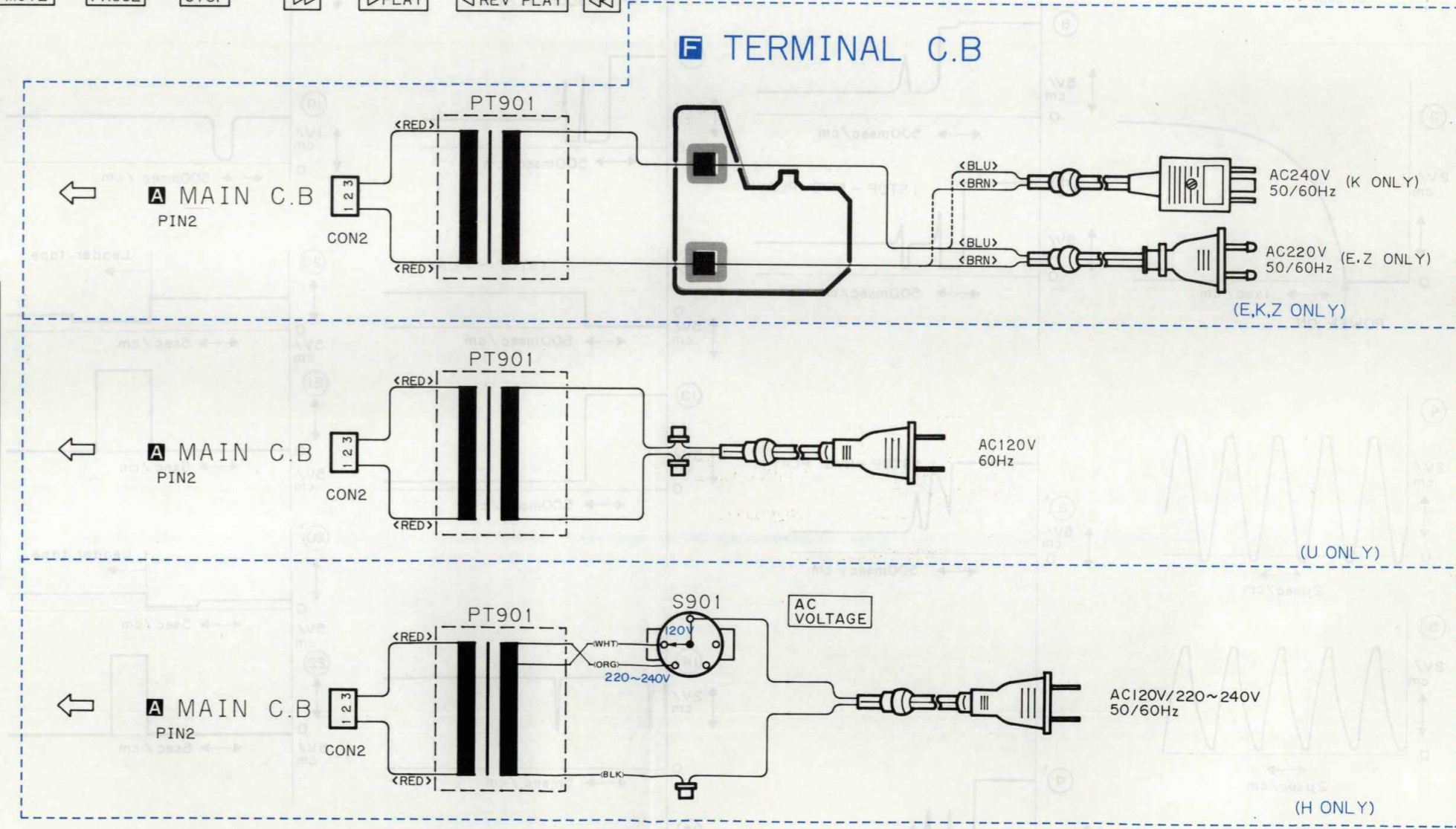
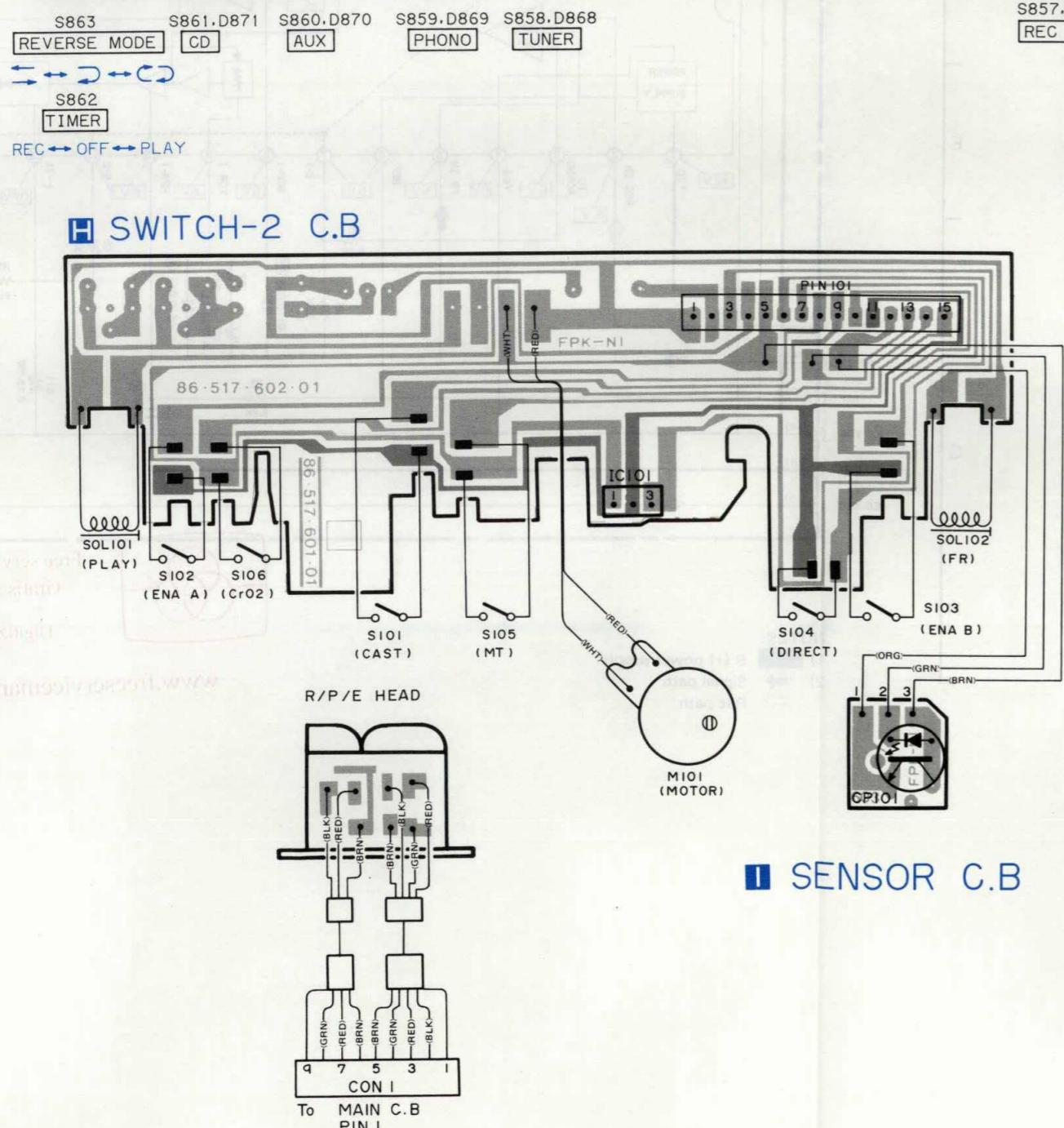


NOTES

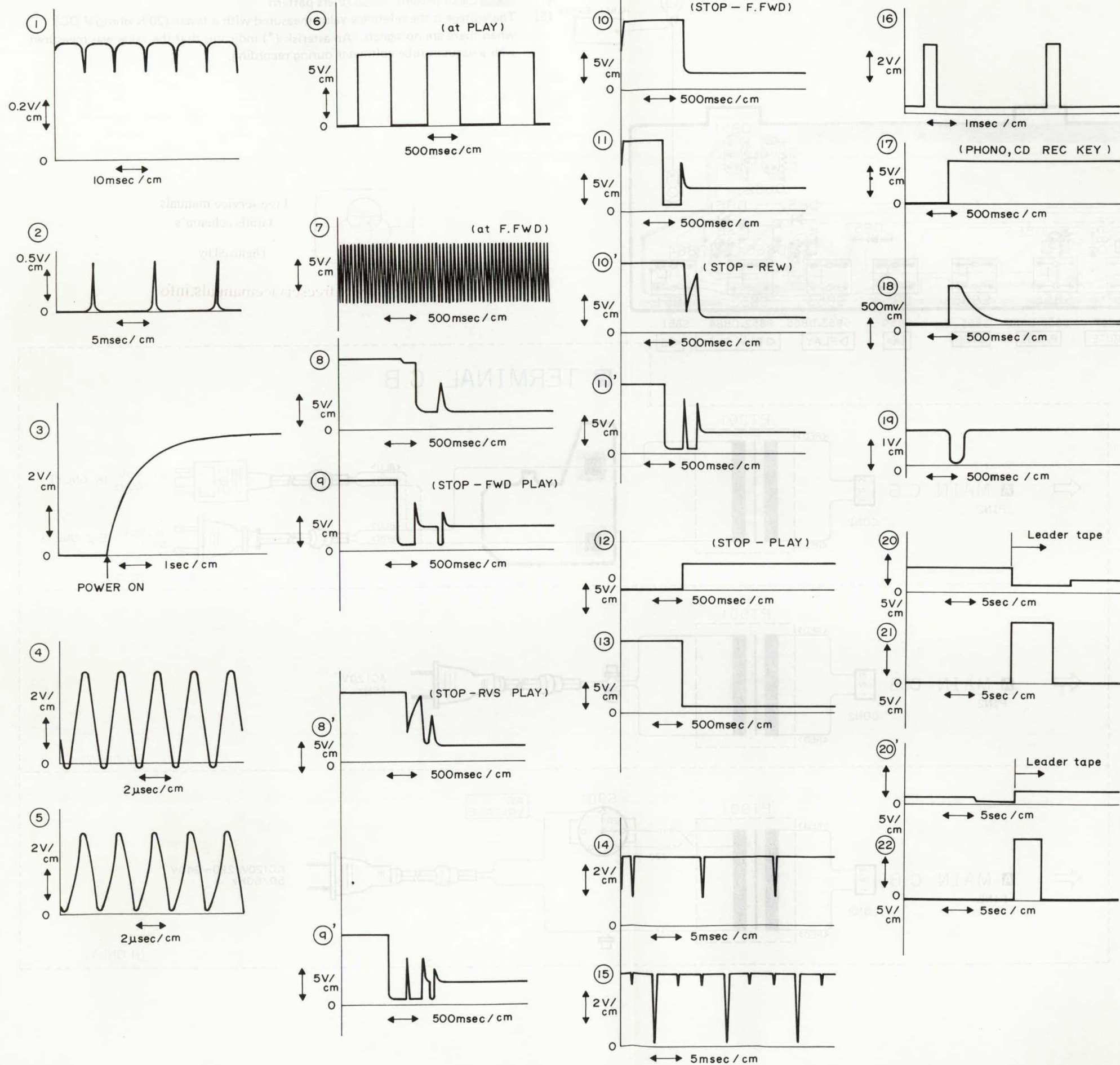
(1) Earth pattern Others pattern

(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.

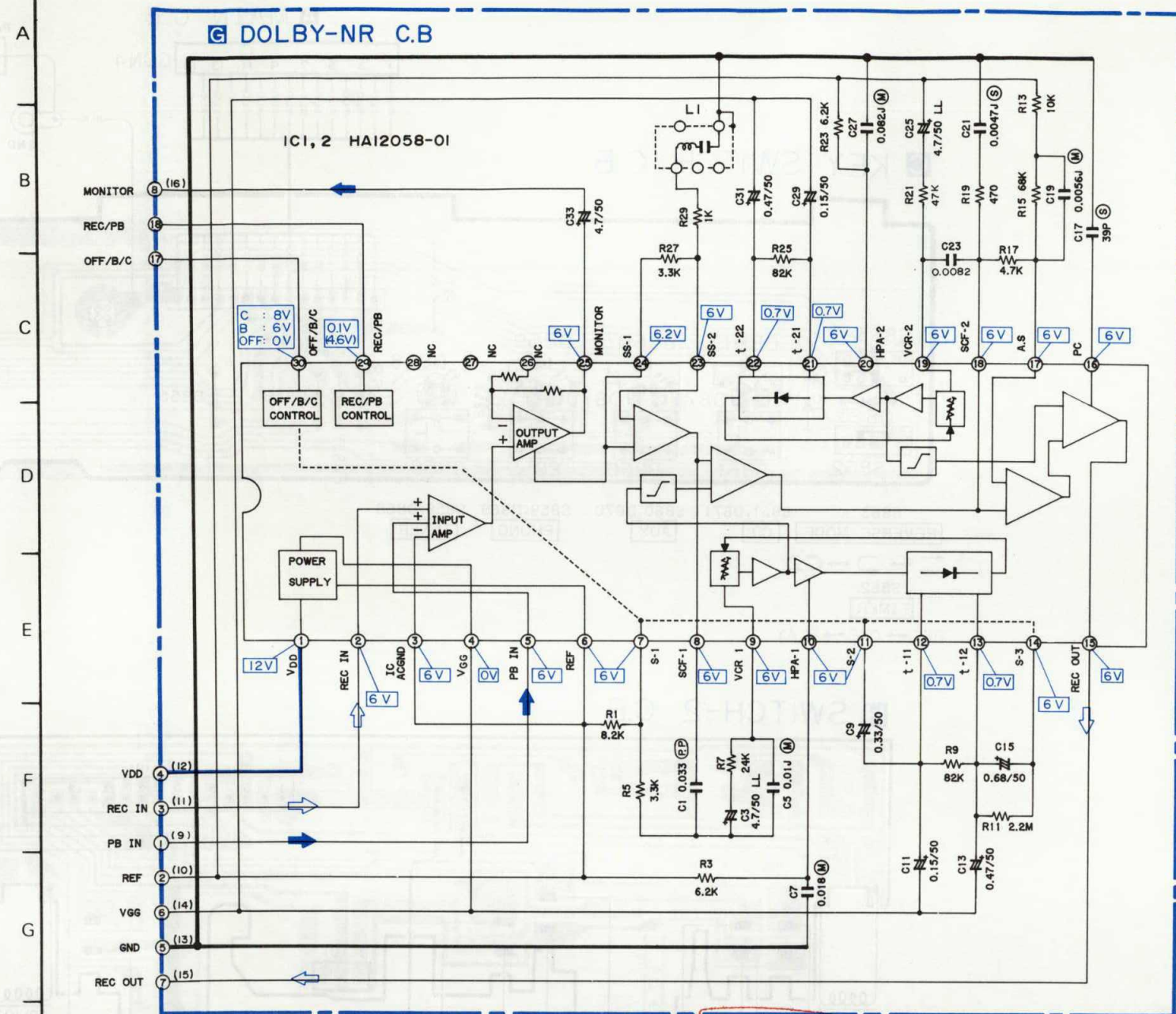
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WAVEFORMS (FX-R80)

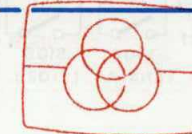


SCHEMATIC DIAGRAM-2 (FX-R80)



NOTES:

- 1) B (+) power supply
- 2) Signal path
- Rec path



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ADJUSTMENT (FX-R80)

1. PB Sensitivity Adjustment
Settings: • Test tape: TTA-161
• Test point: DIN output connector
• Dolby NR SW: OFF
• Adjustment location: SFR301 (Lch)
SFR302 (Rch)
Method: Play back the test tape, then adjust so that the output is 395mV ± 0.25dB.

2. PB Frequency Response Adjustment
Settings: • Test tape: TTA-317E
• Test point: DIN output connector
• Dolby NR SW: OFF
• Adjustment location: SFR303 (Lch)
SFR304 (Rch)
Method: Play back the test tape, then adjust so that the output difference between 1kHz and 10kHz is +1dB ± 0.25dB.

7. Bias OSC Frequency Adjustment
Settings: • Test point: TP1
• Adjustment location: L401
Method: Adjust so that the frequency at test point becomes 8.5kHz.

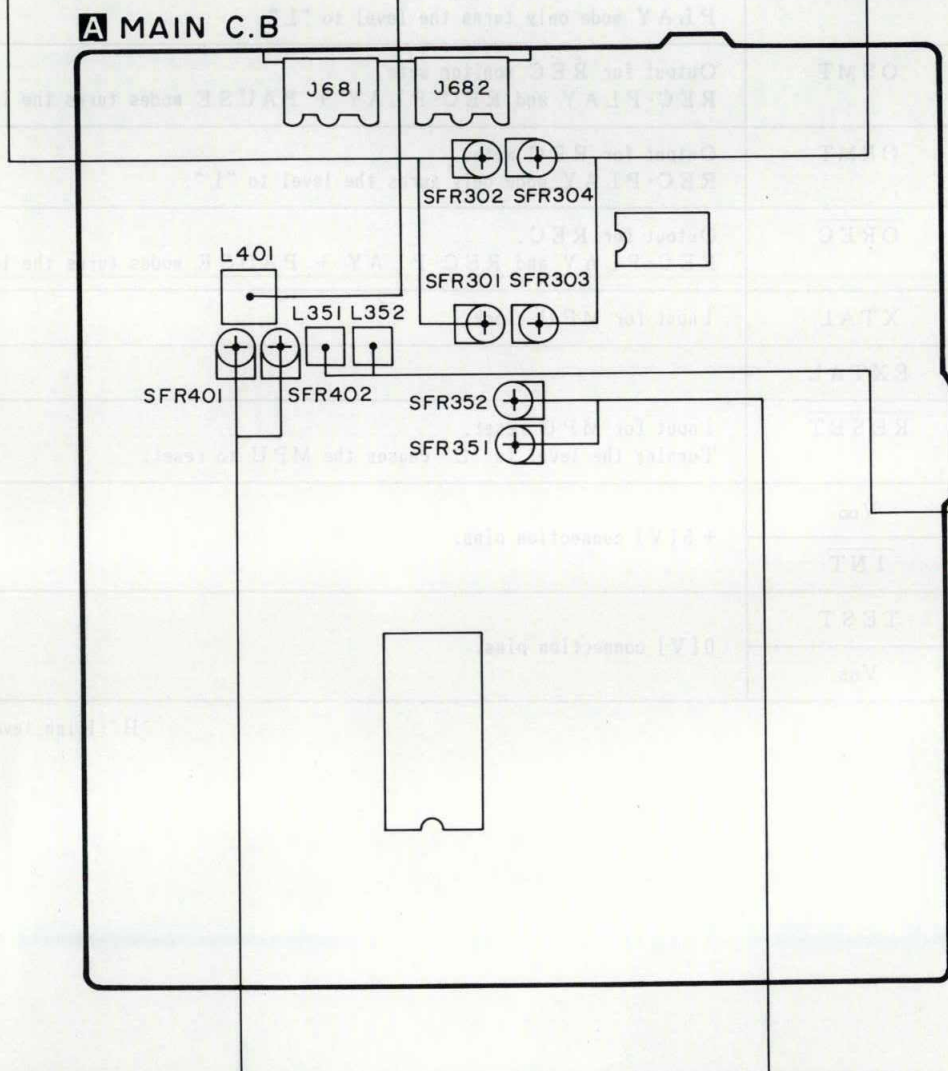
5. Tape Speed Adjustment
Settings: • Test tape: TTA-111S
• Test point: DIN output connector
Method: Adjust so that the frequency is 3000Hz.

8. Bias Trap Coil Adjustment
Settings: • Adjustment location: L351 (Lch)
L352 (Rch)
Method: Adjust L351, 353 for minimum leakage.

6. Head Azimuth Adjustment
Settings: • Test tape: TTA-317E
• Test point: DIN output connector
• Adjustment location: REC/PB/E head azimuth adjustment screw
Method: Make adjustment in each of the PLAY and REV PLAY.

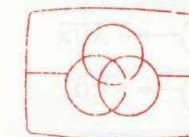
3. REC/PB Frequency Response Adjustment
Settings: • Test tape: TTA-119J
• Test point: DIN output connector
• Dolby NR SW: OFF
• Adjustment location: SFR401 (Lch)
SFR402 (Rch)
Method: Set in the REC mode and adjust the ATT so that the 1kHz signal output is 280mV. Record the 1kHz & 10kHz signals, then play back the recorded tape and adjust so that the output difference between 1kHz and 10kHz is 0dB ± 0.2/-0.4 dB.

4. REC/PB Sensitivity Adjustment
Settings: • Test tape: TTA-119J
• Test point: DIN output connector
• Dolby NR SW: OFF
• Adjustment location: SFR351 (Lch)
SFR352 (Rch)
Method: Set in the REC mode and adjust the ATT so that the output is 280mV. Record the 1kHz signal, then play back the recorded tape and adjust so that the output is 280mV ± 0.4 dB.



Practical Service Figure

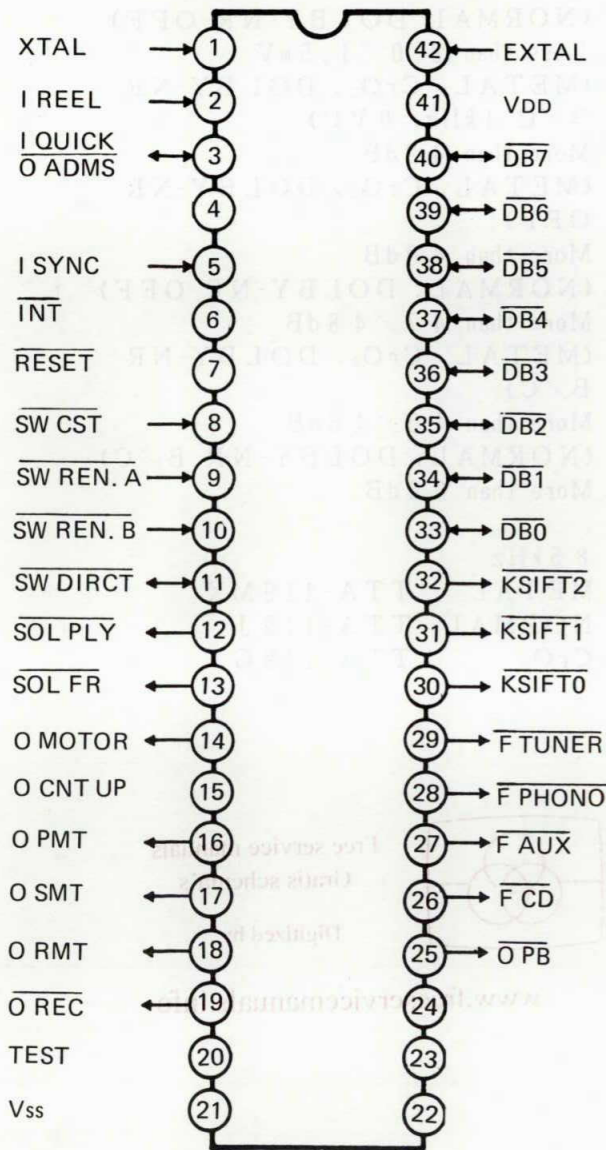
Pinch roller pressure:	290 ± 7 0g
Take-up torque:	40 ± 10 g-cm
FF & rewind torque:	130 ± 3 0g-cm
Back tension:	4 ± 0.5 g-cm (FWD./REV.)
PB output:	395mV ± 1dB (TTA-161)
REC/PB output:	0VU(280mV) ± 1.5dB
REC/PB distortion:	Less than 2.5% (METAL) Less than 2.5% (CrO ₂) Less than 2% (NORMAL)
Playback noise: (Unweighted)	Less than 3.0mV (NORMAL DOLBY-NR OFF) Less than 2.0/1.5mV (METAL, CrO ₂ , DOLBY-NR B/C 1kHz, 0VU)
REC/PB SN ratio: (Unweighted)	More than 42dB (METAL, CrO ₂ , DOLBY-NR OFF) More than 40dB (NORMAL, DOLBY-NR OFF) More than 47/48dB (METAL, CrO ₂ , DOLBY-NR B/C) More than 45/46dB (NORMAL, DOLBY-NR B/C) More than 60dB
Erasing ratio: (125 Hz)	
Bias frequency:	8.5kHz
Test tape:	METAL TTA-119MX NORMAL TTA-119J CrO ₂ TTA-119G



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DESCRIPTION OF IC TERMINAL
1. IC, LM6402G-572
1-1 Terminal name



Signal flow in the direction indicated by the arrow.

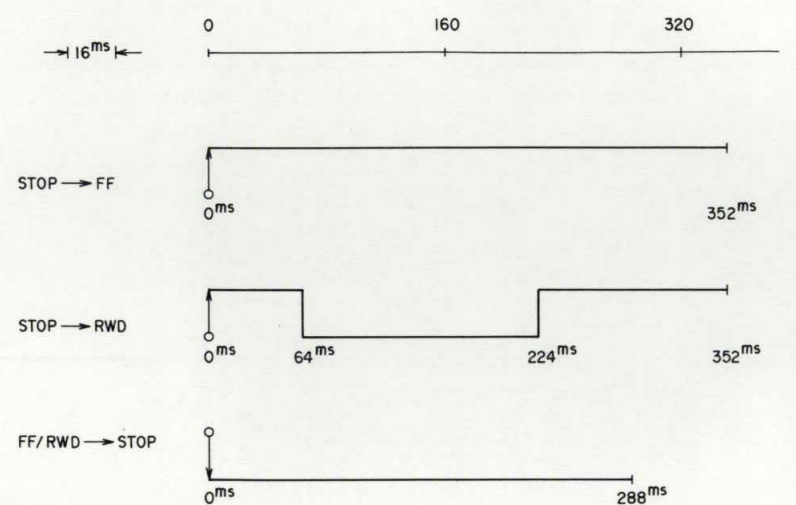
1-2 Description of IC terminal

Pin No.	Symbol	Description			
		Matrix key input			LED display output (Turns on by "L")
		KSIFT0 : "L"	KSIFT1 : "L"	KSIFT2 : "L"	KSIFT0,1,2 : "H"
33	DB0	TUNER REC key input	CD REC key input	One Way switch input	CD REC display
34	DB1	REC MUTE key input	AUX REC key input		AUX REC display
35	DB2	PAUSE key input	PHONO REC key input		PHONO REC display
36	DB3	STOP key input	RVS Mode (↶) switch input	N.C.	TUNER REC display
37	DB4	FF key input	RVS Mode (↷) switch input	N.C.	REC MUTE display
38	DB5	FWD PLAY key input	Timer REC switch input		PAUSE display
39	DB6	RVS PLAY key input	Timer PLAY switch input		FWD PLAY display
40	DB7	RWD key input			RVS PLAY display
30	KSIFT0	<div>Input for matrix key. Output for display assortment.</div> <div><div>KSIFT0</div><div>KSIFT1</div><div>KSIFT2</div></div> <div>Waveform at pins</div> <div>4 ms/cm</div>			
31	KSIFT1				
32	KSIFT2				
29	FTUNER	REC-PLAY and REC-PLAY + PAUSE modes of each function turns the level to "L".			
28	FPHONO				
27	FAUX				
26	FCD				
25	OPB	PLAYBACK state turns the level to "L".			
2	I REEL	Input for auto-stop detection.			
3	I QUICK O ADMS	Input for tape-end sensor. Output for ADMS. Resetting operation turns the level to "L" for two seconds.			
5	I SYNC	Input for synchronous REC of PHONO/CD. Turning the level to "L" sets up REC mode. Turning the level to "H" sets up REC + PAUSE mode.			
8	SW CST	Input for cassette tape detection. Installing a cassette tape turns the level to "L".			
9	SW REN.A	Input for erasing protection of forward side. Turning the level to "L" enables to set up REC mode.			
10	SW REN.B	Input for erasing protection of reverse side. Turning the level to "L" enables to set up REC mode.			
11	SW DIRECT	Input and output for direction detection of head. Turning the level to "L" sets the head to direction of forward side.			
12	SOL PLY	Output for PLAY solenoid. Turning the level to "L" causes the solenoid to energize. (Refer to timing chart)			

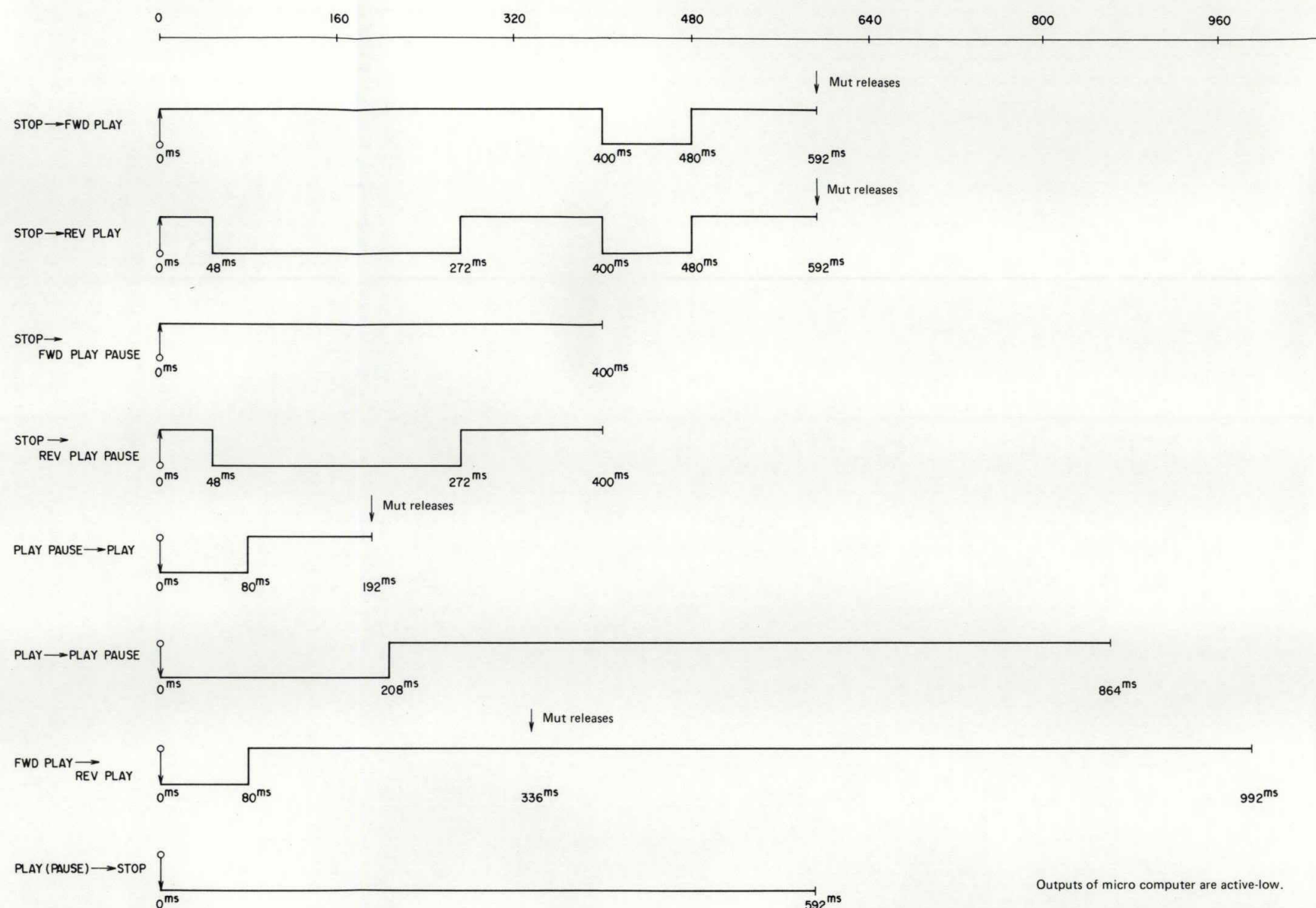
Pin No.	Symbol	Description
13	SOL FR	Output for FF/RWD solenoid. Turning the level to "L" causes the solenoid to energize. (Refer to timing chart)
14	OMOTOR	Output for motor on/off. Turning the level to "L" causes the motor to stop.
15	OCNTUP	Output for electronic tape-counter up/down. Turning the level to "L" controls down-count. Turning the level to "H" controls up-count.
16	OPMT	Output for PLAY mute. PLAY mode only turns the level to "L".
17	OSMT	Output for REC monitor mute. REC-PLAY and REC-PLAY + PAUSE modes turns the level to "L".
18	ORMT	Output for REC mute. REC-PLAY mode only turns the level to "L".
19	OREC	Output for REC. REC-PLAY and REC-PLAY + PAUSE modes turns the level to "L".
1	XTAL	Input for MPU clock.
42	EXTAL	
7	RESET	Input for MPU reset. Turning the level to "L" causes the MPU to reset.
41	VDD	+5[V] connection pins.
6	INT	
20	TEST	0[V] connection pins.
21	VSS	

"H":High level, "L":Low level

TIMING CHART (FX-R80)



Outputs of micro computer are active-low.



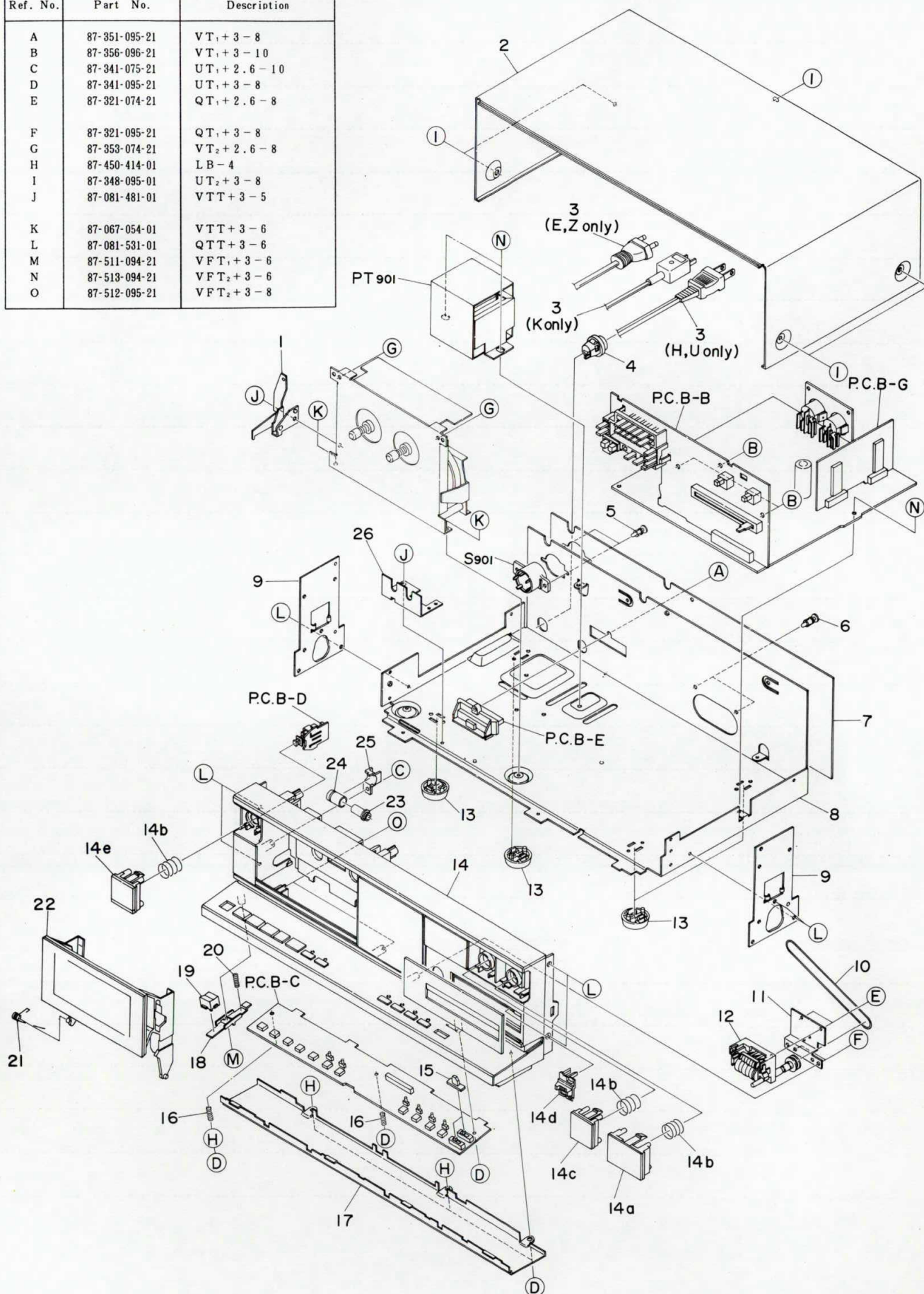
Outputs of micro computer are active-low.

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EXPLODED VIEW - I

Ref. No.	Part No.	Description
A	87-351-095-21	VT ₁ +3-8
B	87-356-096-21	VT ₁ +3-10
C	87-341-075-21	UT ₁ +2.6-10
D	87-341-095-21	UT ₁ +3-8
E	87-321-074-21	QT ₁ +2.6-8
F	87-321-095-21	QT ₁ +3-8
G	87-353-074-21	VT ₂ +2.6-8
H	87-450-414-01	LB-4
I	87-348-095-01	UT ₂ +3-8
J	87-081-481-01	VTT+3-5
K	87-067-054-01	VTT+3-6
L	87-081-531-01	QTT+3-6
M	87-511-094-21	VFT ₁ +3-6
N	87-513-094-21	VFT ₂ +3-6
O	87-512-095-21	VFT ₂ +3-8

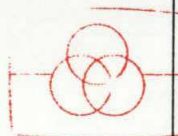


PARTS LIST

MECHANICAL PARTS LIST

- ※ mark in this part list shows exclusive part.
- ★-mark means less required items availabilities may be limited.
- No availability part is marked with — in Part No. list.

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1-1	★82-143-202	LEVER EJECT Ass'y	※	1
	1-2	★82-143-020	STEEL CABINET B	※	1
	1-3	★87-034-992	AC POWER CORD (H only)		1
		★87-034-578	AC POWER CORD (U only)		1
		★82-788-674	AC POWER CORD (E, Z only)		1
		★87-034-708	AC POWER CORD (K only)		1
	1-4	★87-085-184	CORD BUSHING (H, U only)		1
		★87-085-185	CORD BUSHING (E, K, Z only)		1
	1-5	★87-085-090	NYLON RIVET 3-6.5 (H only)		2
	1-6	★87-085-102	NYLON RIVET 3.5-5.5		2
	1-7	—	JACK PLATE (H only)		1
		—	JACK PLATE (U only)		1
		—	JACK PLATE (E only)		1
		—	JACK PLATE (K only)		1
		—	JACK PLATE (Z only)		1
	1-8	—	AMP. CHASSIS (H only)		1
		—	AMP. CHASSIS (U, E, K, Z only)		1
	1-9	—	HOLDER, SIDE L		2
	1-10	82-143-207	COUNTER BELT	※	1
	1-11	—	HOLDER, COUNTER A		1
	1-12	★87-040-181	COUNTER		1
	1-13	★87-055-057	FOOT B		4
	1-14	★82-143-016	FRONT CABINET B Ass'y	※	1
	14a	★82-136-011	BUTTON BC M Ass'y		1
	14b	★82-798-209	C-SPRING, POWER	MX-90	3
	14c	★82-136-009	BUTTON DOLBY M Ass'y		1
	14d	★82-798-015	KNOB, VOLUME	MX-90	1
	14e	★81-740-050	PUSH-KEY POWER B Ass'y		1
	1-15	★82-142-015	SLIDE KNOB		2
	1-16	★82-197-218	C-SPRING, FRONT EARTH	FX-90	2
	1-17	★82-198-028	BOTTOM CABINET		1
	1-18	★82-146-209	LEVER-A, EJECT (H only)		1
		★82-198-203	LEVER, EJECT A (U, E, K, Z only)		1
	1-19	★82-136-022	KNOB, EJECT A		1
	1-20	★82-197-211	C-SPRING, EJECT	FX-90	1
	1-21	★82-197-207	T-SPRING, EJECT	FX-90	1
	1-22	82-143-012	CASSETTE BOX Ass'y	※	1
	1-23	★82-534-264	GEAR, OIL-DAMP		1
	1-24	★82-197-221	SHAFT BEARING, OIL-DAMP	FX-90	1
	1-25	—	HOLDER, OIL-DAMP		1
	1-26	—	SHIELD PLATE, HEAD		1



Free service manuals

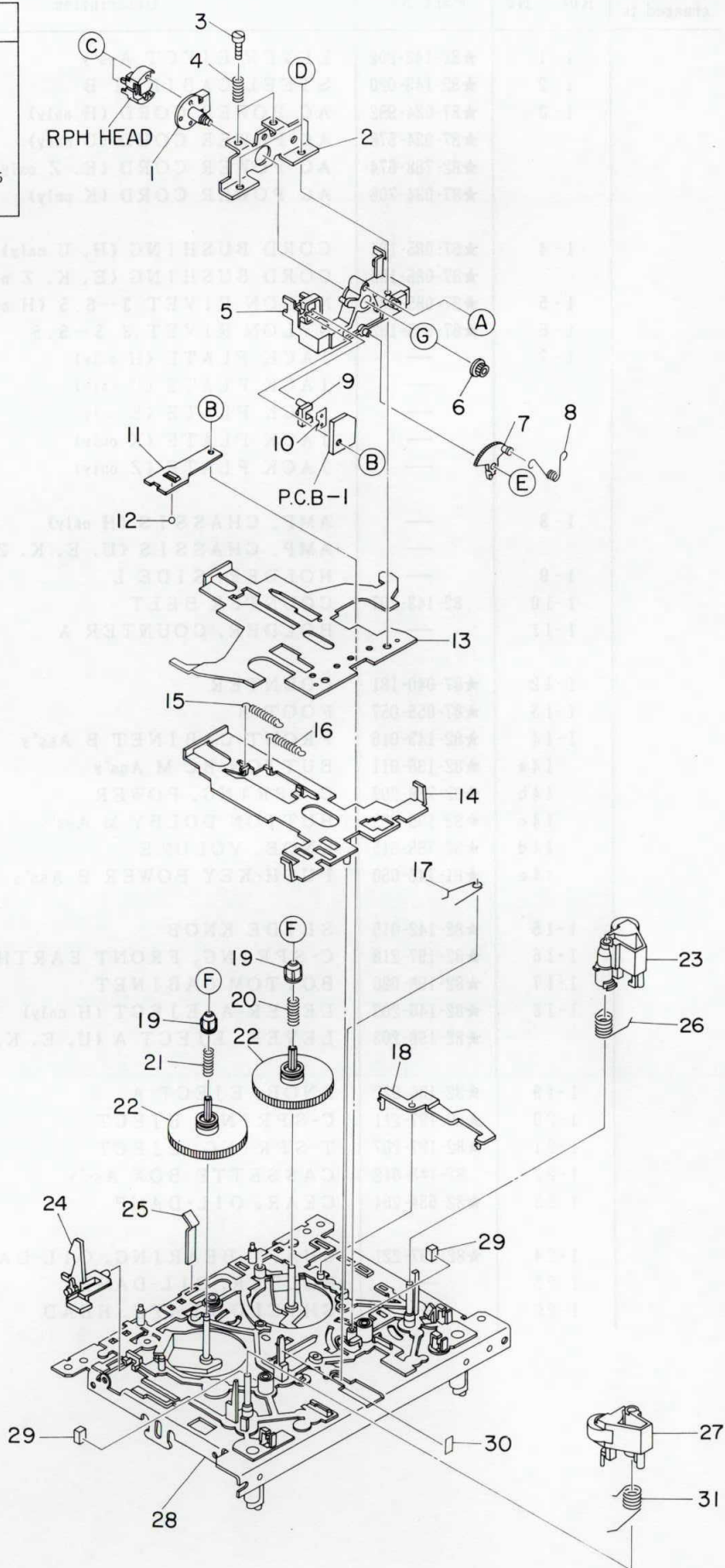
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EXPLODED VIEW-2

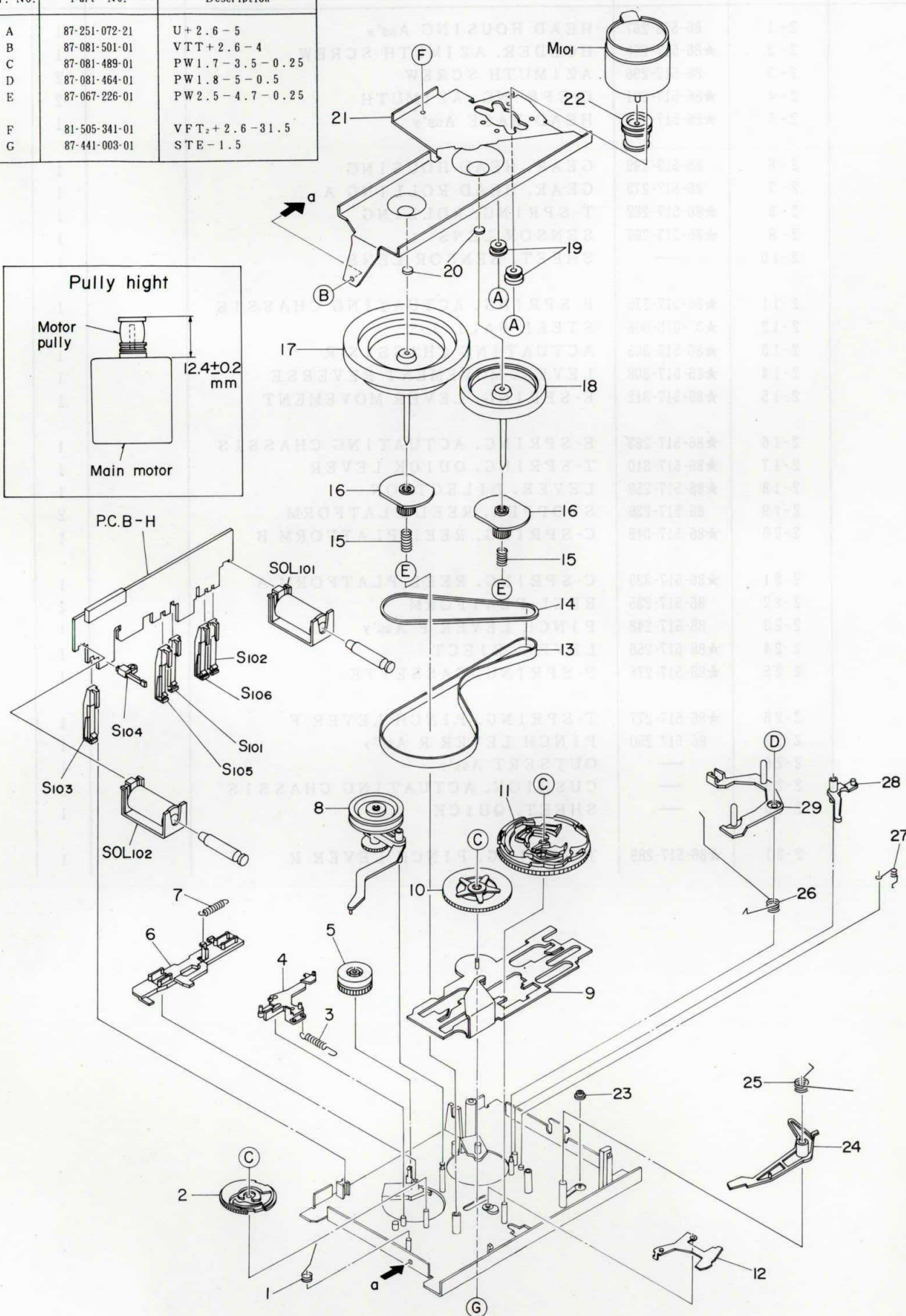
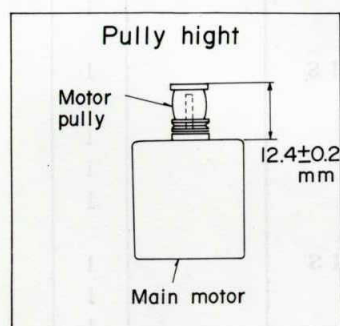
Ref. No.	Part No.	Description
A	87-251-036-21	U+2-8
B	87-351-033-21	VT ₁ +2-4
C	87-067-177-01	V+1.6-5.5
D	87-081-504-01	VTT+2.6-10
E	87-067-217-01	VFT ₂ +2-6
F	87-081-808-01	PW1.7-3.5-0.25
G	87-067-105-01	PW3.4-8-0.5C



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	2-1	86-513-267	HEAD HOUSING Ass'y		1
	2-2	★86-517-268	HOLDER, AZIMUTH SCREW		1
	2-3	86-517-296	AZIMUTH SCREW		2
	2-4	★86-517-291	C-SPRING, AZIMUTH		2
	2-5	★86-517-269	HEAD BASE Ass'y		1
	2-6	86-513-299	GEAR, HEAD HOUSING		1
	2-7	86-517-273	GEAR, HEAD ROLLING A		1
	2-8	★86-517-282	T-SPRING, ROLLING		1
	2-9	★86-517-297	SENSOR LENS		1
	2-10	—	SHEET, SENSOR LENS		1
	2-11	★86-517-275	P-SPRING, ACTUATING CHASSIS		1
	2-12	★87-073-008	STEEL BALL 2.5		1
	2-13	★86-517-305	ACTUATING CHASSIS R		1
	2-14	★86-517-308	LEVER, MOVEMENT REVERSE		1
	2-15	★86-517-312	E-SPRING, LEVER MOVEMENT		1
	2-16	★86-517-283	E-SPRING, ACTUATING CHASSIS		1
	2-17	★86-517-310	T-SPRING, QUICK LEVER		1
	2-18	★86-517-258	LEVER, DIRECTION		1
	2-19	86-517-236	STOPPER, REEL PLATFORM		2
	2-20	★86-517-349	C-SPRING, REEL PLATFORM B		1
	2-21	★86-517-333	C-SPRING, REEL PLATFORM A		1
	2-22	86-517-235	REEL PLATFORM		2
	2-23	86-517-248	PINCH LEVER F Ass'y		1
	2-24	★86-517-256	LEVER, EJECT		1
	2-25	★86-517-276	P-SPRING, CASSETTE		1
	2-26	★86-517-277	T-SPRING, PINCH LEVER F		1
	2-27	86-517-250	PINCH LEVER R Ass'y		1
	2-28	—	OUTSERT Ass'y		1
	2-29	—	CUSHION, ACTUATING CHASSIS		2
	2-30	—	SHEET, QUICK		1
	2-31	★86-517-289	T-SPRING, PINCH LEVER R		1

1	2	3	4	5	6	7
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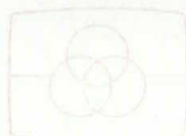
Ref. No.	Part No.	Description
A	87-251-072-21	U + 2.6 - 5
B	87-081-501-01	VTT + 2.6 - 4
C	87-081-489-01	PW1.7 - 3.5 - 0.25
D	87-081-464-01	PW1.8 - 5 - 0.5
E	87-067-226-01	PW2.5 - 4.7 - 0.25
F	81-505-341-01	VFT ₂ + 2.6 - 31.5
G	87-441-003-01	STE - 1.5



ACCESSORIES / PACKAGE LIST

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	3-1	★86-517-278	T-SPRING, FR CAM		1
	3-2	86-517-215	GEAR, FR CAM C		1
	3-3	★86-517-346	E-SPRING, TRIGGER LEVER FR		1
	3-4	★86-517-257	TRIGGER LEVER FR		1
	3-5	86-517-238	GEAR, FF		1
	3-6	★86-517-254	LEVER, SLIDE BRAKE		1
	3-7	★86-517-284	E-SPRING, SLIDE BRAKE		1
	3-8	86-517-239	FR PULLEY A Ass'y		1
	3-9	★86-517-263	SLIDE PLATE R Ass'y		1
	3-10	86-517-225	GEAR PLAY R Ass'y		1
	3-11	86-517-336	GEAR MAIN CAM R Ass'y		1
	3-12	★86-517-306	LEVER QUICK Ass'y		1
	3-13	86-517-355	MAIN BELT R A		1
	3-14	86-517-295	BELT FR		1
	3-15	★86-517-323	C-SPRING, FLYWHEEL DC F		2
	3-16	86-517-317	GEAR, FLYWHEEL DC F		2
	3-17	86-517-314	FLYWHEEL DC F Ass'y		1
	3-18	86-517-318	FLYWHEEL DC R Ass'y		1
	3-19	★86-513-441	COLLAR		2
	3-20	★86-517-348	FLYWHEEL BEARING		2
	3-21	—	MOTOR HOLDER DC		1
	3-22	86-517-351	MOTOR PULLEY B		1
	3-23	★86-517-345	COLLAR, SLIDE PLATE R		1
	3-24	★86-517-252	TRIGGER LEVER PLAY-A		1
	3-25	★86-517-280	T-SPRING, TRIGGER LEVER PLAY		1
	3-26	★86-517-332	T-SPRING, LEVER SWITCH		1
	3-27	★86-517-281	T-SPRING, SLIDE LEVER R		1
	3-28	★86-517-253	TRIGGER LEVER PLAY-B		1
	3-29	★86-517-255	SWITCH LEVER		1

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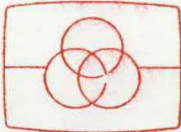


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AIWA Co., Ltd. Tokyo Japan

ACCESSORIES/PACKAGE LIST

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1	★82-143-901	INSTRUCTION BOOKLET	*	1



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