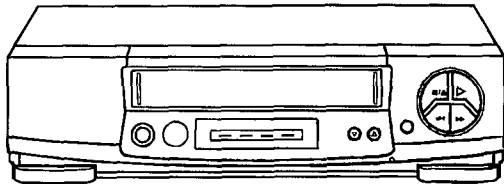


HITACHI

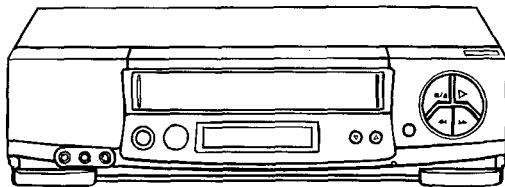
SERVICE MANUAL



V21454



VT-FX630AW



VT-FX633AW

TK

No.4803E

VT-FX630AW
VT-FX633AW

US MECHANISM

This model uses a US Mechanism. Refer to the following manuals for the US Mechanism.

Manuals to be referred.

Name of manual	Manual No.
US Mechanism	4527E

VHS

This video deck is a VHS type video recorder. For proper operation, only the VHS type cassette must be used.

VCR Plus[®]
w/Cable Channel
Changer

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

May

1998

Image & Information Media Systems Division, Tokai

SAFETY PRECAUTIONS

NOTICE:

Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis.

1. When replacing a chassis in the instrument, all the protective devices must be put back in place, such as barriers, non-metallic knobs, adjustment and compartment covers/shields, isolation resistors/capacitors, etc.
2. When service is required, observe the original lead dress. Extra precautions should be taken to assure correct lead dress in the high voltage circuit.
3. Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacturer's. Furthermore, where a short-circuit has occurred, replace those components that indicate evidence of overheating.
4. Before returning an instrument to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the instrument by the manufacturer has become defective or inadvertently defeated during servicing. Therefore, the following checks should be performed for the continued protection of the customer and service technician.

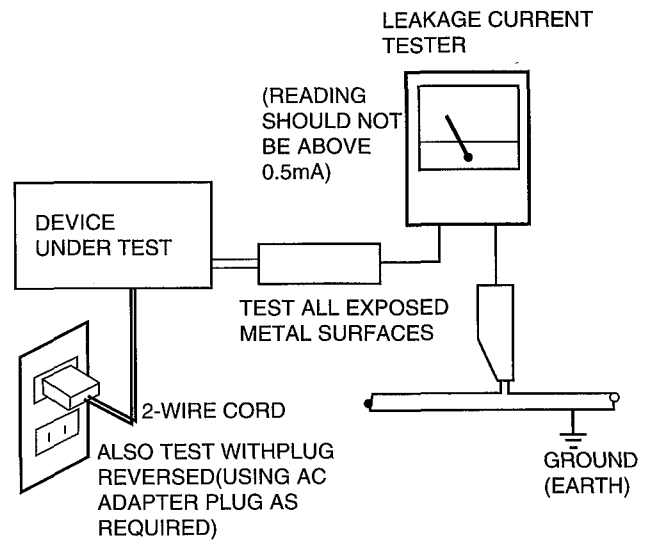
Leakage Current Cold Check

With the AC plug removed from the AC120V, 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester (DC500V), connect one lead to the jumpered AC plug and touch the other lead to exposed metal parts (antennas, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 0.3 Mohm and a maximum resistor reading of 5 Mohm. Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a AC120V, 60Hz outlet (do not use an isolation transformer for this check).


Turn the AC power switch on. Using a "Leakage Current Tester", measure for current from all exposed metal parts of the cabinet (antennas, screwheads, metal overlays, control shaft, etc.), particularly an exposed metal part having a return path to the chassis, to a known ground (earth) (water pipe, conduit, etc.). Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE UNIT TO THE CUSTOMER.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts have special safety-related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for a higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual. Electrical components having such features are identified by marking with a  on the schematics and the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards. Product safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies for, HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.

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1. Specifications

Format:	VHS	
Video Signal System:	NTSC color EIA standard	
Record/Playback	Video: 4 Heads	
System:	Audio: VHS Hi-Fi stereo record/playback system	
Tape Speed:	33.35mm/sec(SP), 16.67mm/sec(LP)(playback only), 11.12mm/sec(EP)	
RF Input:	UHF/VHF75 ohm	
Tuner:	181 channel tuning ability* (125 cable channels)	
Type:	Auto programming frequency synthesis	
Power Input:	AC110-240V 50/60Hz	
Power Consumption:	20W normal, 7W (standby mode)	[VT-FX630AW]
	22W normal, 8W (standby mode)	[VT-FX633AW]
Cabinet Size	14-15/16" (W) × 3-11/16" (H) × 10-13/16" (D) 38.0cm(W) × 9.3cm(H) × 27.5cm(D)	
Weight:	7.7lbs. (3.5kg)	
Storage Temperature:	-4° F to 131° F	
Operating Temperature:	41° F to 104° F	
Accessories:	1 coaxial cable (Part No. EW10251)	
	1 remote control unit (Part No. HL10991)	[VT-FX633AW]
	1 remote control unit (Part No. HL10992)	[VT-FX630AW]
	2AA BATTERIES	
	1 Power plug adapter (Part No. EY10271)	

*Check your cable company's compatibility requirements.

Design and specifications subject to change without notice.

2. Comparison with Previous Model

Item	VT-FX630AW/FX633AW	VT-FX623AW
Video		
Video recording/playback system	VHS	VHS
Y/C separation	Comb filter(CCD)	Comb filter
YNR (noise reduction)	Yes	Yes
CNR (noise reduction)	No	No
Picture quality function	No	No
Color edge clean circuit	No	No
New sync circuit	Yes (PB only)	Yes (PB only)
Picture control	No	No
S-VHS quasi playback function	No	No
Jacks		
Video/audio inputs (rear)	1/2	1/2
Video/audio inputs (front)	1/2 (FX633AW)	1/2
Video/audio outputs (rear)	1/2	1/2
Synchro input (front)	No	No
Prog.		
VCR Plus + programming	(++)(FX633AW)	Yes
Number of timer programs	8 programs/1 year	8 programs/1 year
Auto recording speed	No	No
Remote control		
Model	RCU-02A (FX630AW) RCU-01A (FX633AW)	VT-RM623A
Remote jog/shuttle	No/No	No/No
VCR Plus + code guide channel memory	No	No
Super index	Yes	No
CATV	No/Yes (FX633AW)	Yes
Miscellaneous		
Auto clock setting	No/Yes (FX633AW)	Yes
Jog/Shuttle dial on the VCR	No/No	No/No
Cable box control	No/Yes (FX633AW)	Yes
Tape navigation	No	No
Closed caption	No	No
Self-diagnosis	Yes (6 modes)	Yes (6 modes)
No. of channels	181	181
Backup time	30 sec (FX630AW)/ 1 hour (FX633AW)	1 hour
Front display	LED Display (FX630AW) LCD Display (FX633AW)	LCD Display
IRT	No/Yes (FX633AW)	Yes
Trouble indication	No/Yes (FX633AW)	Yes
Mechanism		
Basic chassis type	US	US
Fast forward/rewind time(with T-120)	about 120seconds[Full loading]	about 120 seconds[Full loading]
Configuration of heads	DA4 heads + Hi-Fi SP video : 2 [48/56µm] EP video : 2 [19/19µm] Audio : 2 [28/28µm]	DA4 heads + Hi-Fi SP video : 2 [48/56µm] EP video : 2 [19/19µm] Audio : 2 [28/28µm]
Material of heads	SP video : Ferrite EP video : Ferrite Audio : Ferrite	SP video : Ferrite EP video : Ferrite Audio : Ferrite
Impedance roller	No	No
Head cleaning roller	No/Yes (FX633AW)	Yes
Total time for cylinder rotation	Yes	No

3. Comparison of Main Control ICs

Function	VT-FX630AW/FX633AW	VT-FX623AW
Video		
Y/chroma signal processing	HA118214F (IC201)	HA118204F (IC201)
CCD 1H delay	MSM7476-76MS-KR1 (IC202)	MSM7476-76MS -KR1 (IC202)
FM signal processing/EQ	Included in IC201	Included in IC201
CNR	-----	-----
Linear Phase EQ	Included in IC201	Included in IC201
Video AGC	-----	-----
FM audio		
Audio signal processing	AN3962FB (IC501)	AN3962FB (IC501)
Level meter control	-----	-----
Preamp		
Video head switch	HA118198F (IC1101)	HA118198F (IC1101)
Audio head amp	AN3329S (IC1102)	LA7256 (IC1102)
MTS/OSD		
MTS decoder	HTS7342 (IC1801)	HTS7337C (IC1801)
OSD control/Sync separator/AFC	Included in Main μ P	Included in Main μ P
Servo		
Servo control	Included in Main μ P	Included in Main μ P
FG/tach amp	Included in Main μ P	Included in Main μ P
System control		
Main μ P (system control μ P)	HD6433977SB99F (IC901)	HD6433977SB46F (IC901)
Reset	RN5VS30AA (IC902)	PST9129-T (IC902)
VCR-EEPROM	ST24C01-6 [FX630AW](IC903) ST24C02-6 [FX633AW](IC903)	ST24C02-6 (IC903)
Loading motor drive	BA6209 (IC904)	BA6209 (IC904)
Timer		
Timer μ P	Included in Main μ P	Included in Main μ P
Display driver	BU9716AK [FX630AW] (IC1701)	BU9716K (IC1701)
Expander	-----	-----
Auto clock setting	LC7455A [FX633AW] (IC2901)	LC7455A (IC2901)
Power supply		
5V regulator	M5278L05 (IC905)	M5278L05 (IC905)

4. Tips for Servicing (FOR VT-FX633AW)

4-1. Trouble Display Function

This VCR has a function which displays mechanism malfunctions, etc. in the LCD display. Use this function to analyze the cause when the power is shut off due to a malfunction, etc. in the mechanism.

Two types of information are displayed, (1)The operation mode when the malfunction occurred, (2)Malfunction Codes.

The details of the malfunction are displayed as follows.

Procedure to display a malfunction

Press the "CHANNEL DOWN" button on the VCR when the power is turned off and hold it; the malfunction code is displayed while the button is held depressed.

LCD DISPLAY

Operation mode
Malfunction Codes
Operation mode

[Display of Details of Malfunction]

Displayed No.	Item	Details
00	No malfunction	
01	FL mechanism lock	Malfunction in insertion/ejection of cassette
02	Capstan lock	Malfunction of capstan motor drive during tape unloading
04	Reel lock	Reel rotation trouble when tape is running
05	Cylinder lock	Cylinder rotation malfunction
07	Loading mechanism lock	Malfunction in shifting mechanism mode
16	Servo lock	Shorting of 5V detected

[Mode Display when Malfunction Has Occurred]

Mode	Display
Stop	No display
Fast forward	FF
Rewind	REW
Recording	REC
Recording pause	REC (flashes)
Playback	PLAY

Mode	Display
Reverse playback	-PLAY
Forward search	SRCH
Reverse search	-SRCH
Slow	SLOW
Still play	STILL
Reverse slow	-SLOW

No symbols are displayed if the malfunction occurred when a cassette was inserted or ejected, or the power was switched on from off, and off from on.

4-2. How to Remove the Cassette when a Malfunction Has Occurred in the Mechanism

If a cassette is caught in the mechanism because of a malfunction in the mechanism, remove it by the following procedure.

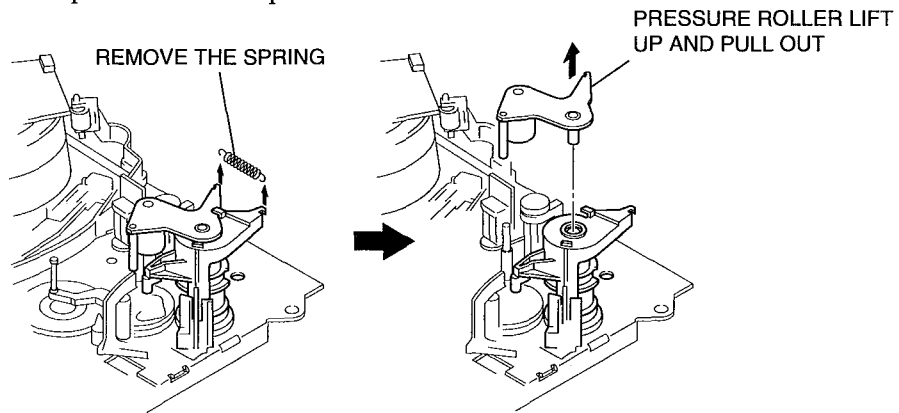
[Work Procedure]

1. Remove the top cover.
2. Remove the front panel.

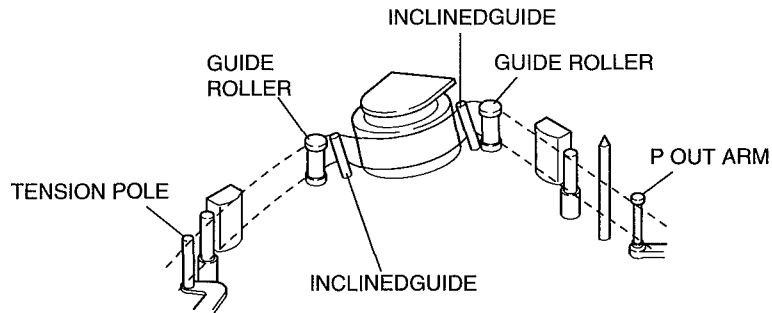
If the tape is wound round the cylinder in the loading state

If the cassette does not come out from the FL mechanism in the unloading state.

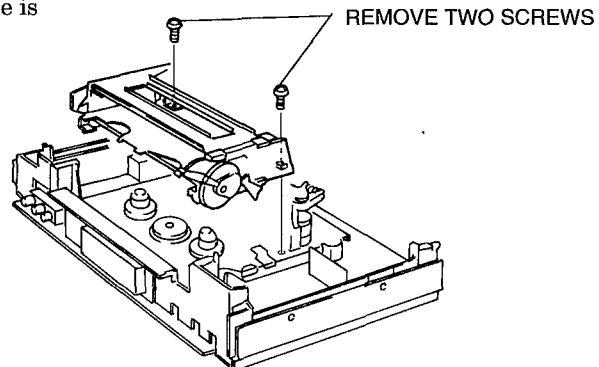
Remove the spring and lift the pressure roller to pull it out.



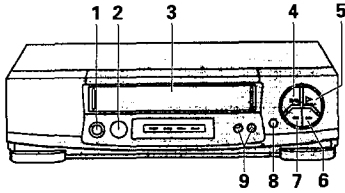
Slacken the tape and release it from the tension pole, guide rollers, inclined guides and P out arm.



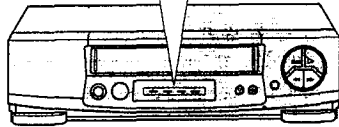
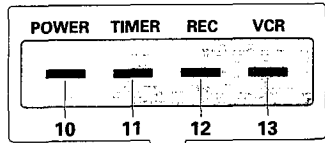
- 1) Remove two screws holding the FL mechanism.
- 2) Hold the cassette lid with your fingers so the tape is not damaged and remove the FL mechanism.
- 3) Remove the slack tape and eject the cassette.



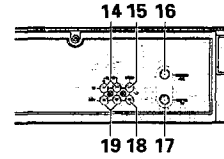
VCR Customer Controls



Item No.	Function	Page
1	POWER button	2
2	Infrared receiver	8
3	Cassette compartment	9
4	STOP/EJECT button	9
5	PLAY button	22
6	F.FWD button	23
7	REW button	23
8	REC button	33
9	CHANNEL (channel up/down)/ TRACKING buttons	23
LED Indicator		
10	POWER indicator	22
11	TIMER (delayed recording) indicator	38
12	REC — recording indicator	33
13	VCR — operate mode indicator	—

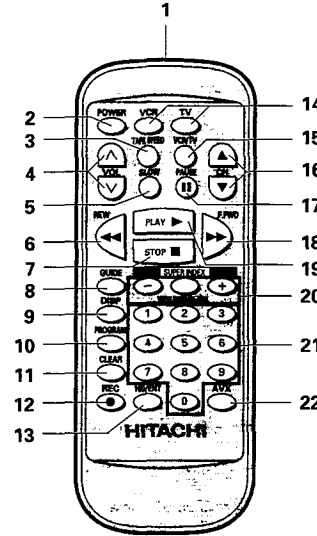


VCR Customer Controls



Item No.	Function	Page
14	AUDIO IN L, R jacks	41
15	VIDEO IN jack	43
16	IN FROM ANT. — signal input	10
17	OUT TO TV — signal out to TV	10
18	VIDEO OUT jack	11
19	AUDIO OUT L, R jacks	11

Remote Control Customer Controls



Item No.	Function	Page
1	Transmission window	8
2	POWER button	19
3	TAPE SPEED button — select the recording speed SP or EP	32
4	VOL button — increase or decrease the audio volume	40
5	SLOW button — for slow motion picture	25
6	REW button — fast rewind or search	22
7	STOP button — stops play/record function	22
8	GUIDE — to recall OSD menu	19
9	DISP — to recall on-screen display	30
10	PROGRAM (programming) button	36
11	CLEAR — clears time counter	31
12	REC — record button	33
13	100/ENT button	32
14	VCR, TV — device buttons let you set the remote to control one of the two devices	8
15	VCR/TV mode select button	10
16	CH (channel up/down) button	32
17	PAUSE button	24
18	F.FWD button — fast forward or search	25
19	PLAY button — playback	22
20	SUPER INDEX buttons — to use the SUPER INDEX function	27
21	Number buttons	19
22	AVX button — select LINE	41

[FOR VT-FX630AW]

4-3. Instructions on Use

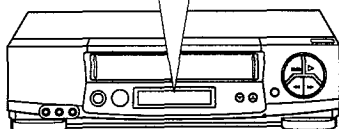
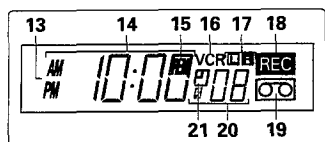
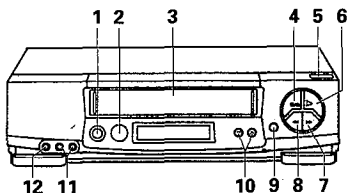
(The following are extracts from the instruction manual.)

Check and identify the accessories supplied. If any are missing or appear damaged, consult you dealer

Accessories supplied

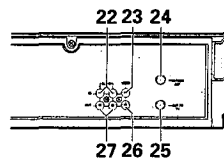
- ① Remote control
- ② Cable for connecting this VCR to a TV
- ③ Batteries for remote control handset (R6) 2 pcs.
- ④ Power plug adapter

VCR Customer Controls



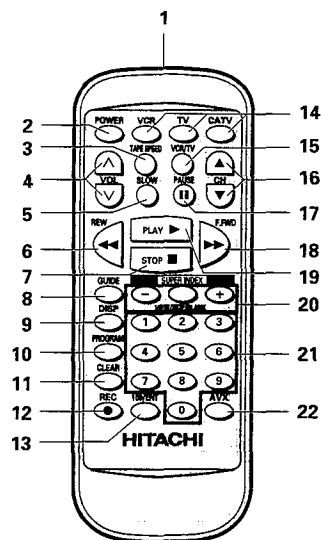
Item No.	Function	Page
1	POWER button	2
2	Infrared receiver	8
3	Cassette compartment	9
4	STOP/EJECT button	9
5	Infrared transmitter	26
6	PLAY button	29
7	F.FWD button	30
8	REW button	30
9	REC/IRT button	40
10	CHANNEL (channel up/down)/ TRACKING buttons	39
11	AUDIO IN L, R jacks	57
12	VIDEO IN jack	57
VCR Display		
13	AM/PM indicators	18
14	Time, Time counter, Tape remaining or VCR mode indicator	17
	PLAY — playback	37
	SRCH — double-speed play, visual search and skip playback	29
	SLOW — slow play	32
	REW — rewind	29
	S:REW — high speed rewind	30
	FF — fast forward	—
	S:FF — high speed fast forward	30
	STILL — play pause and frame advance	31
15	REM (tape remaining time) indicator	37
16	VCR, operate mode	—
17	Audio indicators	—
18	REC — record (flashes during record pause)	40
19	Tape-in indicator	9
20	TV channel or Auxiliary (L1/L2)	39
21	Delayed recording indicator	56
		46

/CR Customer Controls



Item No.	Function	Page
22	AUDIO IN L, R jacks	56
23	VIDEO IN jack	58
24	IN FROM ANT. — signal input	10
25	OUT TO TV — signal out to TV	10
26	VIDEO OUT jack	11
27	AUDIO OUT L, R jacks	11

Remote Control Customer Controls



Item No.	Function	Page
1	Transmission window	8
2	POWER button	22
3	TAPE SPEED button — select the recording speed SP or EP	39
4	VOL button — increase or decrease the audio volume	54
5	SLOW button — for slow motion picture	32
6	REW button — fast rewind or search	29
7	STOP button — stops play/record function	29
8	GUIDE — to recall OSD menu	22
9	DISP — to recall on-screen display	37
10	PROGRAM (programming) button	44
11	CLEAR — clears time counter	38
12	REC — record button	40
13	100/ENT button	39
14	VCR, TV, CATV — device buttons let you set the remote to control one of the three devices	8
15	VCR/TV mode select button	10
16	CH (channel up/down) button	39
17	PAUSE button	31
18	F.FWD button — fast forward or search	32
19	PLAY button — playback	29
20	SUPER INDEX buttons — to use the SUPER INDEX function	34
21	Number buttons	22
22	AVX button — select L1 or L2	56

Accessories supplied

Check and identify the accessories supplied. If any are missing or appear damaged, consult your dealer.

①

Remote control

②

Cable for connecting this VCR to a TV

③

2 pcs.
Batteries for remote control handset (R6)

④

Power plug adapter

1. Before Starting Disassembly

- 1) Unplug the power cord from the AC outlet.
- 2) [Removal procedure]
If a special procedure is required when dismantling any component, it is indicated using numbers. Follow the numbers (1),(2),(3) ... shown in the illustrations.
[Reinstallation procedure]
Reinstall each component in the reverse order to removal when otherwise not specified.
- 3) Insert card connectors securely all the way as they are of the direct insertion type.

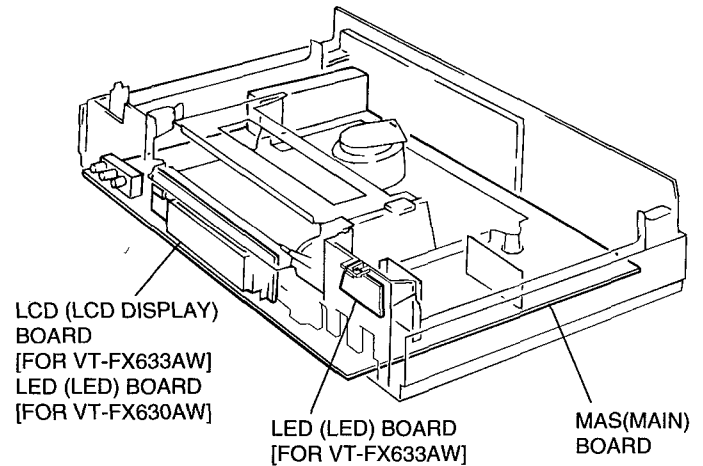


Fig. 1-1

2. Disassembly Method

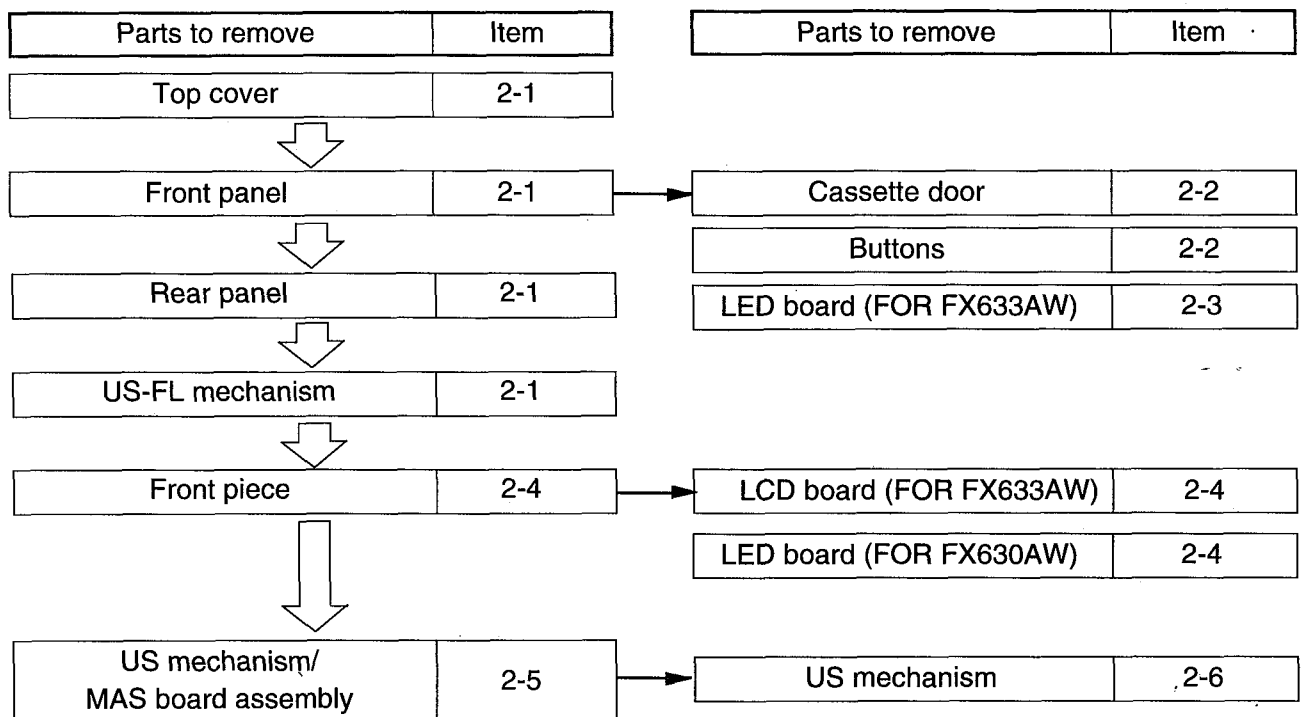
When replacing defective parts, first refer to the "Parts hierarchy chart" shown below. This chart shows the procedure for parts removal when replacing defective parts.

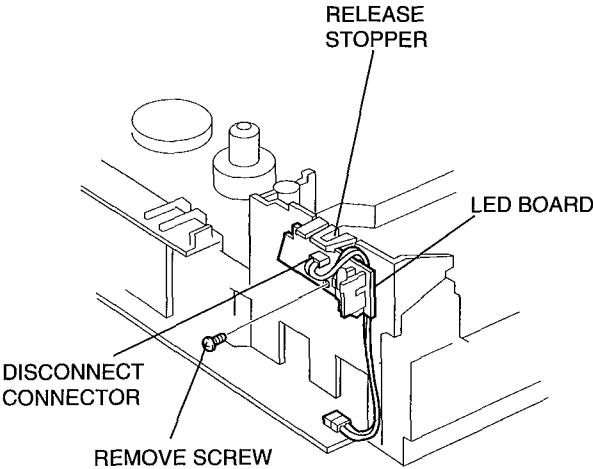
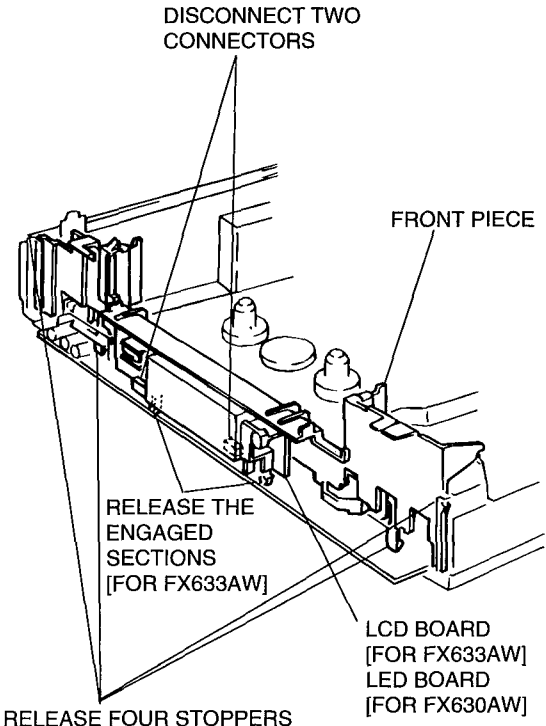
[How to use the parts hierarchy chart]

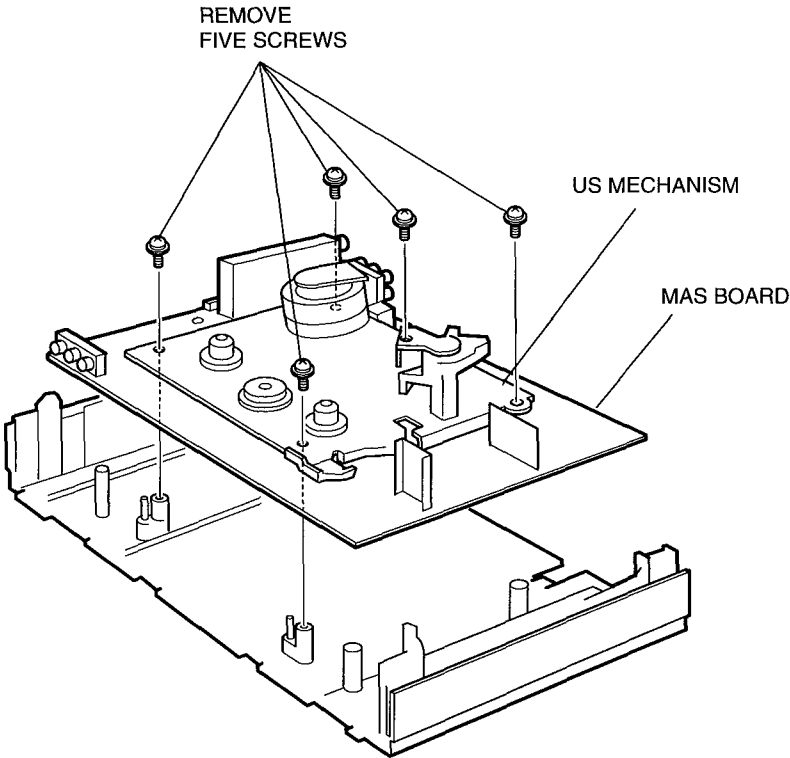
- (1) Locate the part to be replaced.
- (2) Check the parts in the ranks above the part to be replaced and start dismantling.
- (3) Replace the defective part and reinstall the parts in the reverse order to that shown in the parts hierarchy chart.

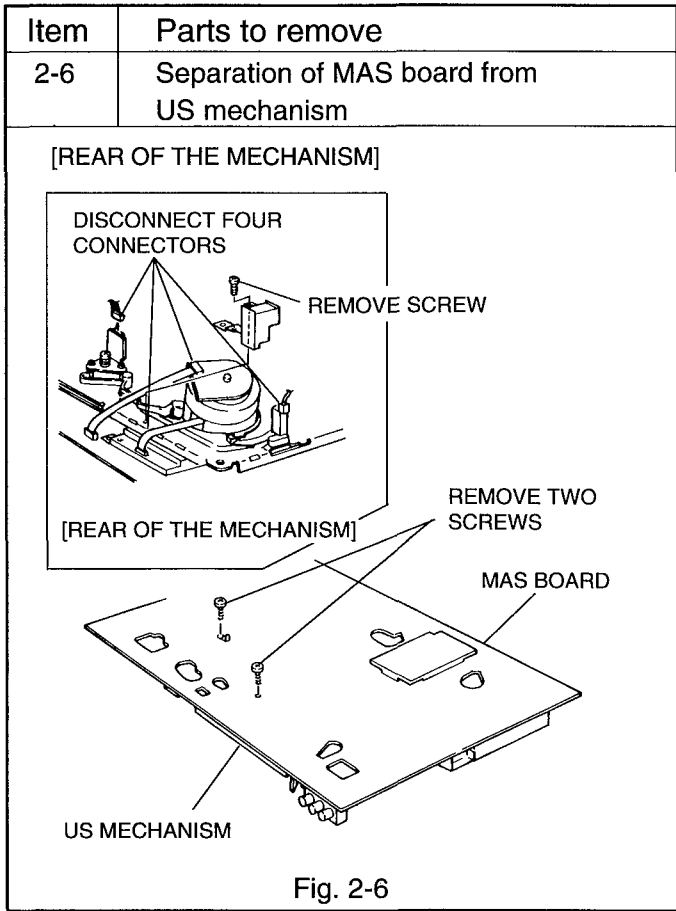
Parts Hierarchy Chart

Note: Dismantle parts in the eject state.



Item	Parts to remove		Parts to remove
2-3	LED board (FOR VT-FX633AW)	2-4	Front Piece and LCD board or LED board
 <p data-bbox="464 1017 564 1049">Fig. 2-3</p>		 <p data-bbox="1150 1017 1251 1049">Fig. 2-4</p>	

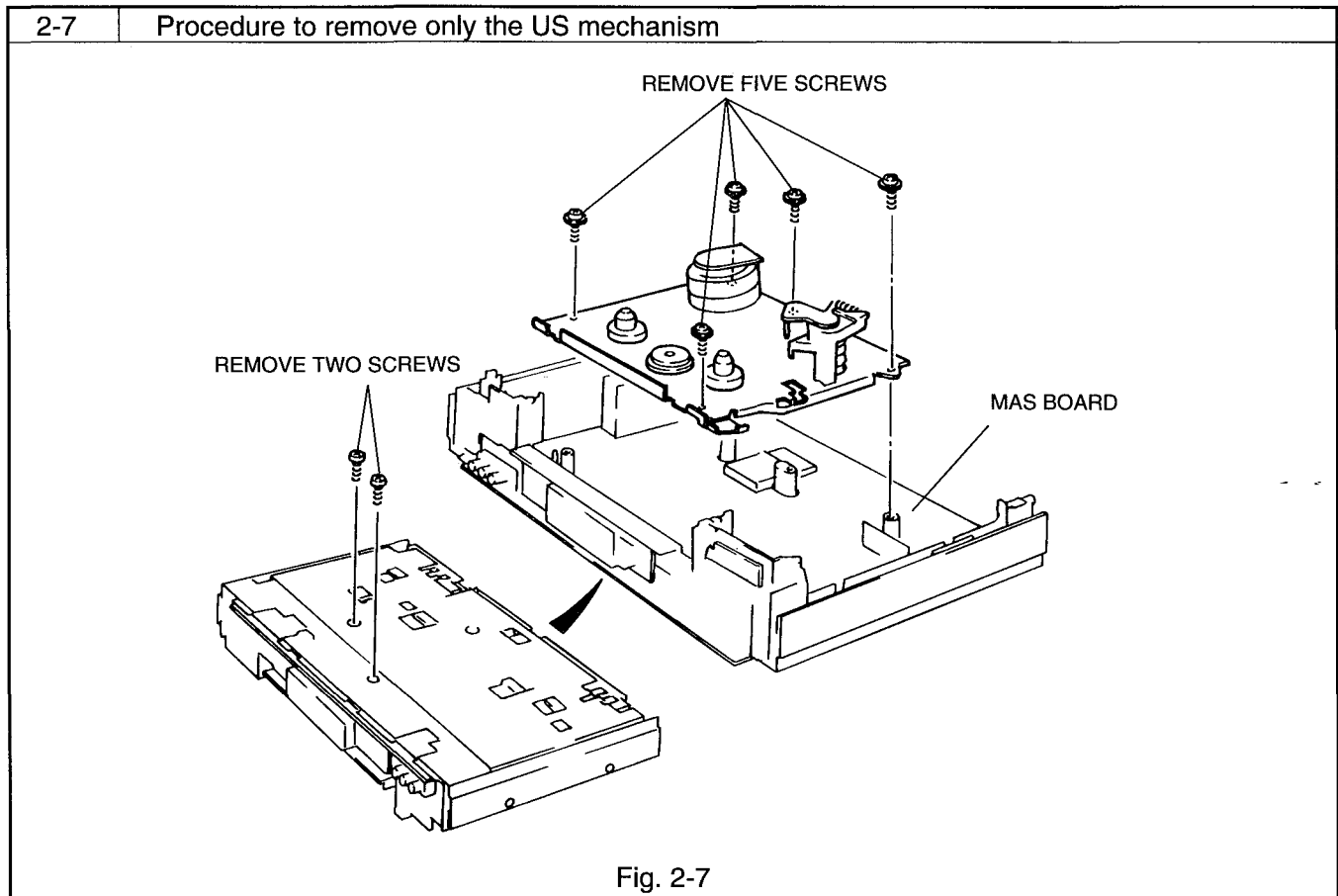
2-5	US mechanism/MAS board assembly		
 <p data-bbox="807 1932 908 1964">Fig. 2-5</p>			



Procedure to remove only the US mechanism


With this VCR the US mechanism can be removed without removing the MAS board. This is done by a different method from the normal disassembly method.

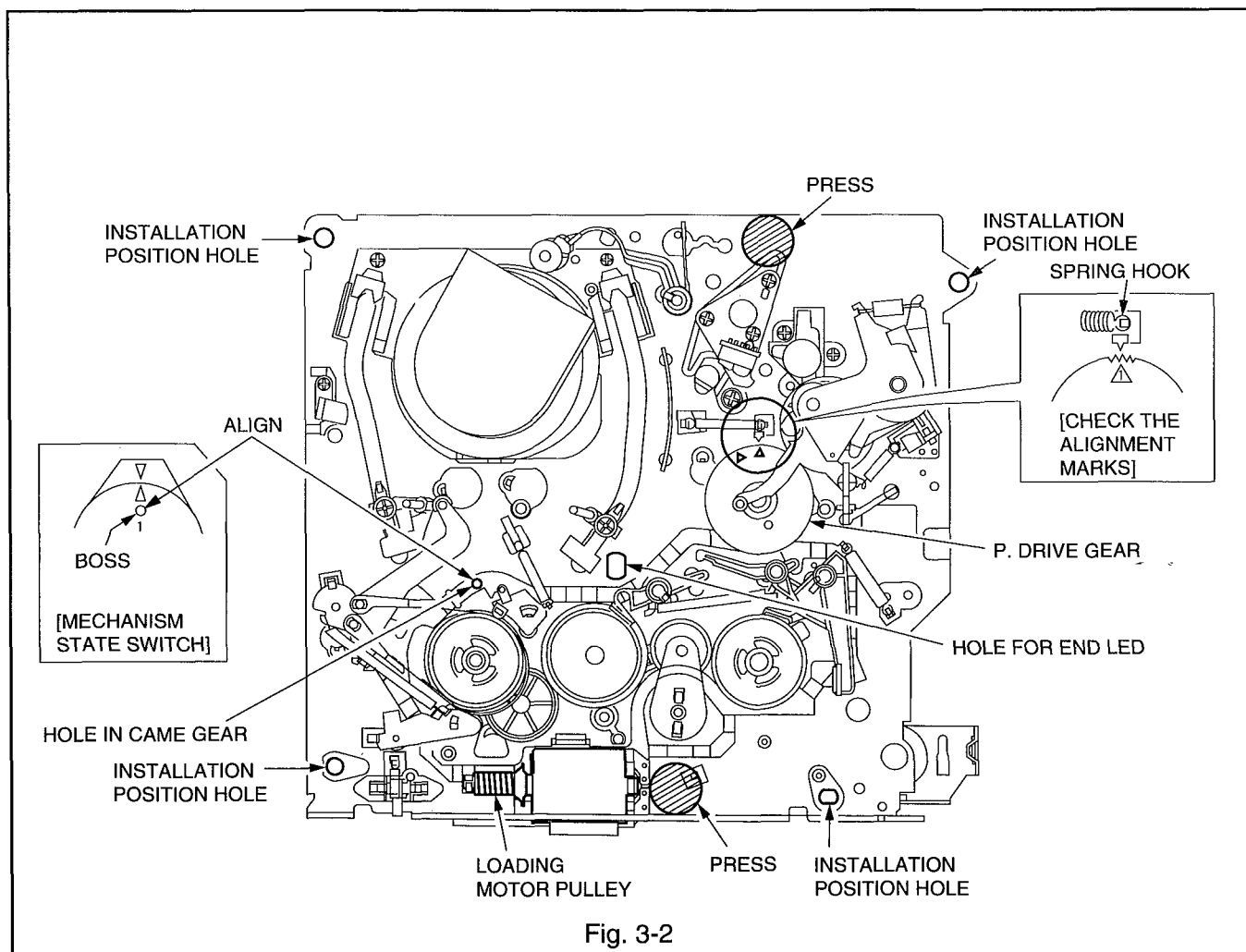
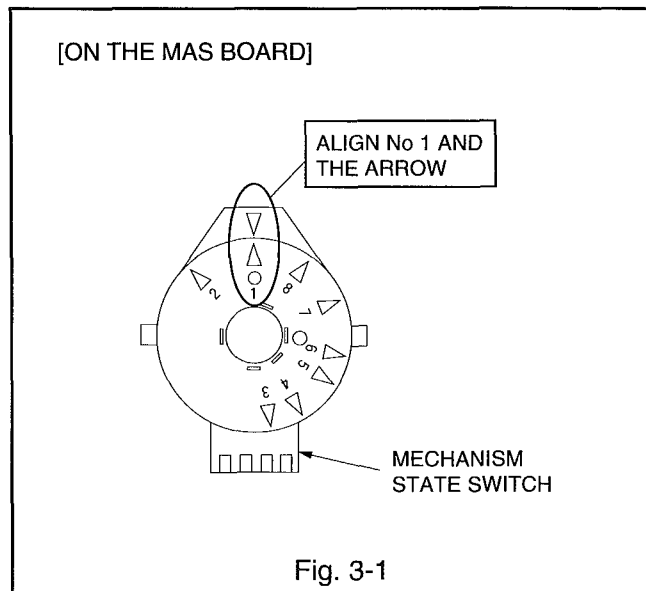
Parts to remove	Item
Top, Front and Rear panel	2-1
↓	
US-FL mechanism	2-1
↓	
Remove two screws on the bottom of the VCR.	2-7
↓	
Remove five screws holding the US mechanism.	2-7
↓	
Disconnect the connectors on the US mechanism and lift the mechanism.	



3. Cautions When Reinstalling the US Mechanism

This VCR has mechanism sensors on the MAS board and the capstan and loading motors are connected via direct connectors. Therefore, when reinstalling the US mechanism, observe the following cautions.

- 1) Align the ∇ mark and mode no. 1 of the mechanism state switch on the MAS board. (Mode no. 1 of the mechanism state switch has a click position.)
- 2) Check that mode no. 1 on the P drive gear in the mechanism and the ∇ mark of the spring hook are aligned. If they are not aligned, turn the loading motor pulley to align them.
- 3) Pass the end LED through the hole in the mechanism and install the mechanism from immediately above using the installation position holes as reference. Check that the boss of the mechanism state switch and the hole in the cam gear are aligned.
- 4) Push the terminal sections (shaded sections ) of the capstan and loading motors and check that they are inserted securely.



Service Position

1. Servicing position during electrical adjustment

Perform adjustment after removing the top cover, front panel and rear panel.

When the shield cover of the connector between the cylinder motor and MAS boards is removed, noise appears in the playback picture. Attach the shield cover when checking the picture on the screen.

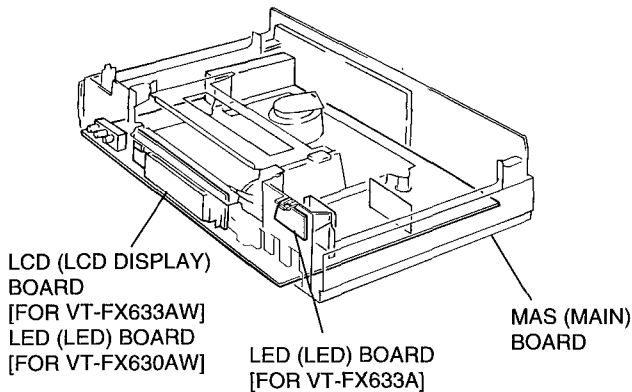


Fig. 1

2. Servicing positions when repairing and checking circuits

2-1. Procedure to set the LCD and LED boards to the servicing positions (Fig. 2)

- 1) Remove the top cover and front panel.
- 2) Remove the rear panel.
- 3) Remove the US-FL mechanism.
- 4) Remove the front piece.
- 5) Open each board as shown in the figure below and perform checks from the pattern sides indicated by the arrows.

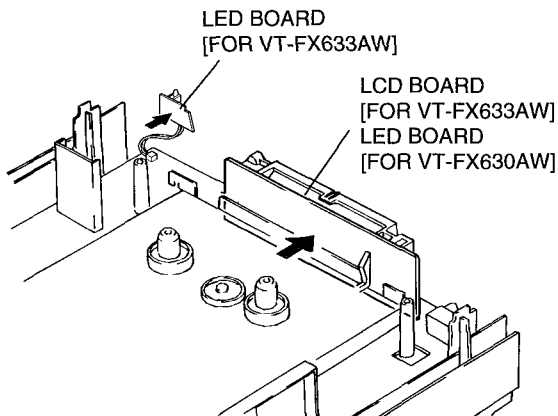


Fig. 2

2-2. Procedure to set the MAS board to the servicing position (Fig. 3)

- 1) Remove the top cover and front panel.
 - 2) Remove the rear panel.
 - 3) Remove the US-FL mechanism and front piece.
 - 4) Remove the MAS board, with the LCD and LED boards and US mechanism assembled from the frame.
 - 5) Turn over the MAS board and perform checks from the pattern side indicated by the arrow.
- Note the following two points at this time.
- 1) Lay an insulation sheet under the boards.
 - 2) Attach the shield cover at the rear of the cylinder. Attach the US-FL mechanism when loading the tape.

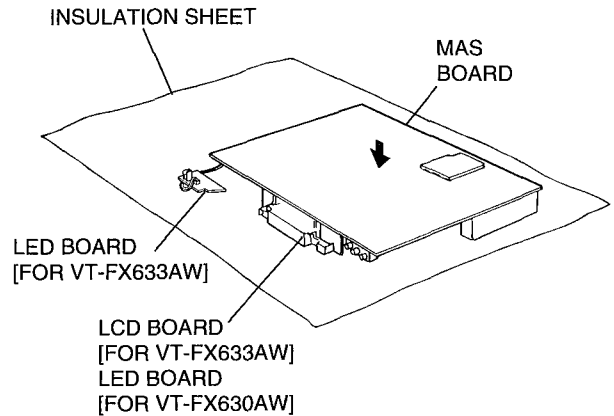


Fig. 3

3. Be careful of electric shocks

The power supply block on the right of the VCR has a heat sink which generates a high voltage. "HIGH VOLTAGE" is printed on the heat sink. Take great care when handling this heat sink when the power is turned on during servicing.

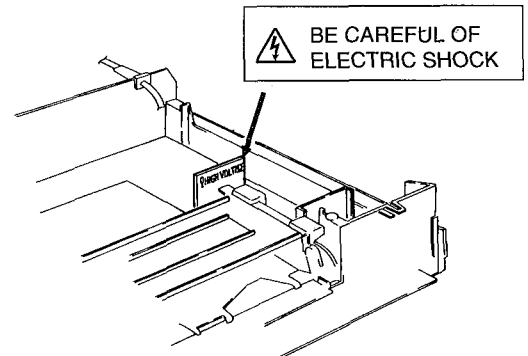


Fig. 4



Electrical Circuit Adjustment

1. Test equipment/jigs necessary for adjustment

- 1) Dual-trace oscilloscope
- 2) Color bar generator
- 3) Voltmeter
- 4) Monitor TV (with A/V jacks)
- 5) Alignment tapes:
 - NTSC tape : Part No. 7099046
 - 30HMP2-1 : Part No. 7099089
 - 24HMAF-2 : Part No. 7099153
(Hi-Fi alignment tape)
- 6) Blank tape
- 7) C/R oscillator

2. Cautions on adjustment

- 1) The following conditions apply when otherwise not specified.
 - Probe of oscilloscope: 10:1
 - Synchronization of oscilloscope: Internal sync
 - Ground of test equipment: PG2508 pin 6
(on MAS board)
- 2) When performing more than one adjustment, follow the specified order.

3. Tips for adjustment

3-1. Procedure to reset the main microprocessor

The main microprocessor is not reset even when the power cord is unplugged from the AC outlet because its power is backed up by a backup circuit. Press S708 on the MAS board to reset the entire microprocessor. Do not press the reset switch with the power cord unplugged from the AC outlet as the slow tracking preset value could drift. If the preset value drifts, plug the power cord into an AC outlet and press the reset switch again with the power turned on. It is recommended that you press the reset switch after reinstalling the front panel.

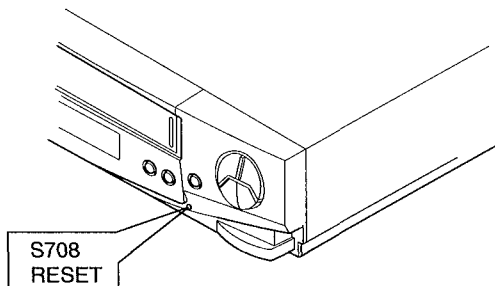


Fig. 5

3-2. Procedure to switch off the blue background function

- 1) Press the "GUIDE" button of the remote control to display the menu on the monitor TV screen.
- 2) Press "2" to select the VCR setup screen.
- 3) Press "1" to specify blue background off.

3-3. Procedure to obtain the EP head playback mode (X-value adjustment test mode)

Press the "1" and "4" buttons of the remote control provided simultaneously when an alignment tape is being played and hold them, then press the "CHANNEL ▽" button on the VCR; The VCR enters the EP head playback mode (X-value adjustment test mode).

4. Connections of test equipment

Connect the test equipment as follows when otherwise not specified.

- 1) Connect a color bar generator to the video input 1 jack of the VCR.
- 2) Connect a monitor TV to the video output 1 jack of the VCR.
- 3) Connect a monitor TV (able to handle a stereo signal) to the audio output 1 jack.
- 4) Connect an antenna to the antenna jack and receive a TV broadcast (only for sound multiplex adjustment).

5. Test Points and Adjustment Points

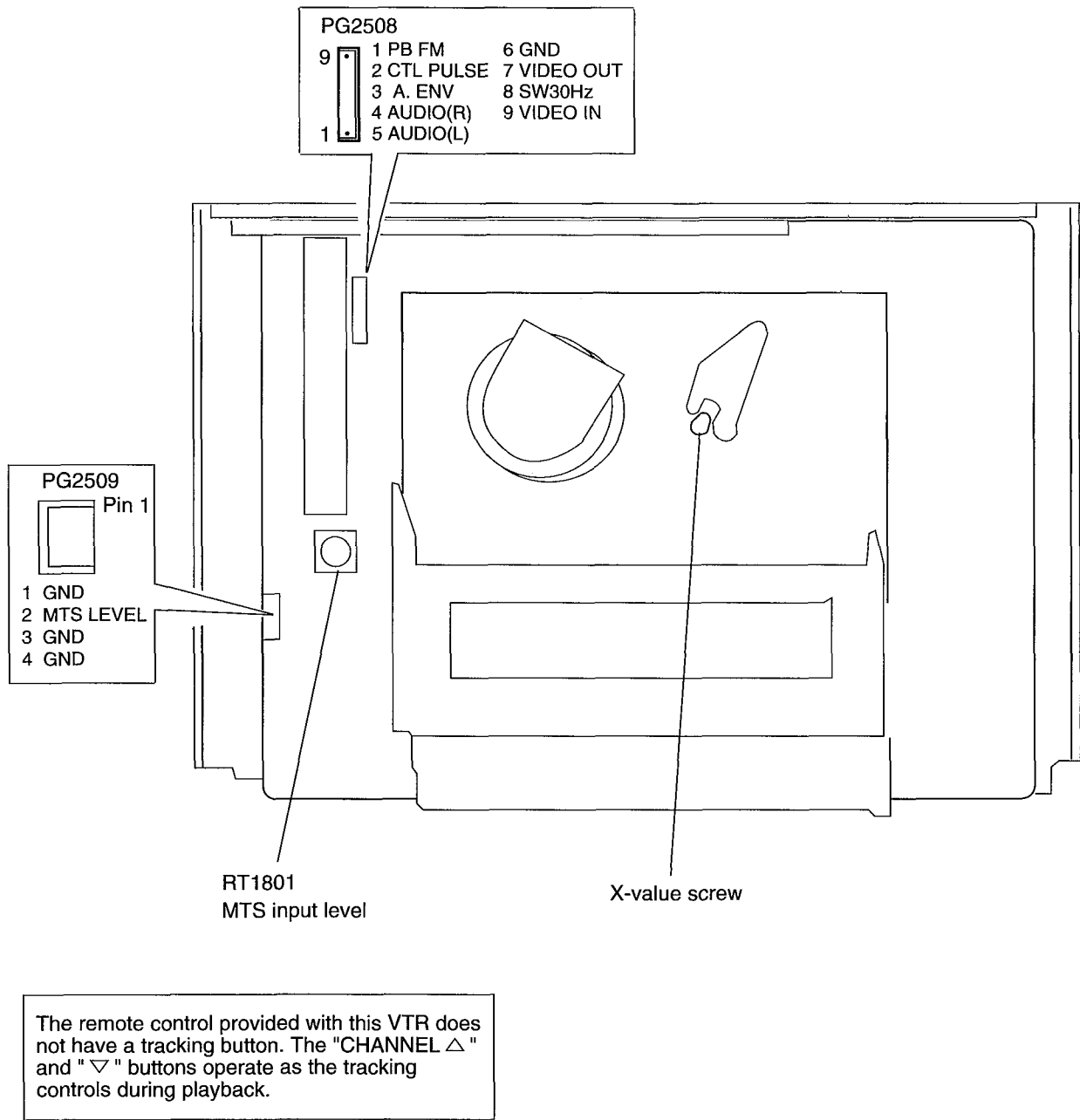


Fig. 6 MAS (Main) Circuit Board [Components Side]

6. Servo Circuit Adjustments

6-1. Switching point adjustment (Fig. 6)

Purpose:

To set the switching point of the video heads during playback to the center where the CH-1 and CH-2 envelopes overlap each other.

Fault due to incomplete adjustment:

Vertical sync signal is degraded and vertical jitter occurs.

Switching noise appears across the bottom of the screen.

Test Equipment/Jigs and Connection Points

Oscilloscope CH-1: Video out jack
CH-2: PG2508-8(SW30Hz)

Alignment tape (30HMP2-1)

State of VCR

- 1) Play the alignment tape
- 2) Set to the X-value adjustment test mode.

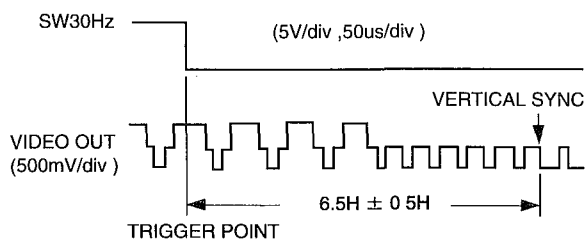
Adjustment Point

F.FWD button(S702)
REW button(S703)

Adjustment Procedure

- 1) Play the alignment tape.
- 2) Press the "1" and "4" buttons of the remote control provided simultaneously and hold them, then press the "CHANNEL ▽"(S707) button of the VCR to set the VCR to the test mode. (SP is switched to LP in the display.)
- 3) Press the "F.FWD" and "REW" buttons of the remote control so the phase from the vertical sync to the trailing edge (trigger position) of the SW30Hz pulse is set to $6.5H \pm 0.5H$.
- 4) Press the "STOP" button to release the test mode.

Waveforms



<Conditions of oscilloscope>

Trigger with CH-2.
Set the sync slope to "-".

6-2. X-value adjustment (Fig. 6)

Purpose:

To ensure compatibility with other VCRs.

Fault due to incomplete adjustment:

When a tape recorded by another VCR is played back, the tracking is not optimized and noise appears on the screen.

Test Equipment/Jigs and Connection Points

Oscilloscope CH-1: PG2508-1 (PB FM)
CH-2: PG2508-8 (SW30Hz)

Alignment tape (30HMP2-1)

State of VCR

- 1) Play the alignment tape.
- 2) Set to the X-value adjustment test mode.

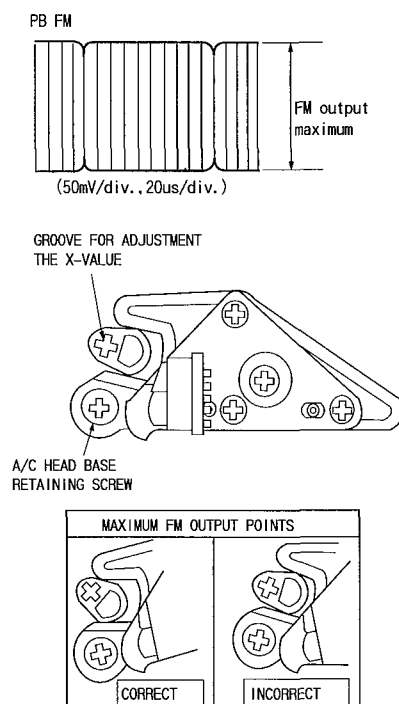
Adjustment Point

Groove for the adjustment X-value

Adjustment Procedure

- 1) Play the alignment tape.
- 2) Press the "1" and "4" buttons of the remote control provided simultaneously and hold them, then press the "CHANNEL ▽"(S707) button of the VCR to set the VCR to the test mode. (SP is switched to LP in the display.)
- 3) Loosen the screw holding the A/C head base (do not loosen it excessively).
- 4) Insert a screwdriver into the groove for adjusting the X-value and adjust so the FM output is maximum. There are two maximum FM output points when the groove for adjusting the X-value is turned. Adjust the FM output to a maximum when the groove is at the correct position as shown in the figure below.
- 5) Press the "STOP" button to release the test mode.

Waveforms



6-3. Vertical jitter adjustment

Purpose:

To suppress vertical jitter during slow and still play.

Fault due to incomplete adjustment:

Vertical jitter appears in the picture during slow and still play.

Test Equipment/Jigs and Connection Points

Monitor TV : Video output jack

Color bar generator: Video input jack

Blank tape

State of VCR

Record a color bar signal and play it using the same VCR.

Adjustment Point

CHANNEL \triangle (S706)

CHANNEL ∇ (S707)

Adjustment Procedure

<EP vertical jitter correction>: Record in the EP mode and play it back using the same VCR.

1) Press the "PAUSE" button to set the VCR to the still play mode.

2) Use the CHANNEL buttons of the VCR to suppress vertical jitter of the picture.

<SP vertical jitter correction>: Record in the SP mode and play it back using the same VCR.

1) Press the "PAUSE" button to set the VCR to the still play mode.

2) Use the CHANNEL buttons of the VCR to suppress vertical jitter in the picture.

6-4. Forward slow tracking preset adjustment

Purpose:

To adjust the timing with which the brake pulse of the capstan motor is generated during slow play so that noise is minimum.

Fault due to incomplete adjustment:

Noise appears during slow play and the picture is not clear.

Test Equipment/Jigs and Connection Points

Monitor TV : Video output jack

Color bar generator: Video input jack

Blank tape (T-120)

State of VCR

Slow tracking: Unplug the power cord to set the slow tracking to the center.

Adjustment Point

CHANNEL \triangle (S706)

CHANNEL ∇ (S707)

Adjustment Procedure

1) Record a signal on the middle of a T-120 blank tape in the EP mode and play it back using the same VCR.

2) Press the "1" and "4" buttons of the remote control (provided) simultaneously during playback and hold them, then press the "PLAY" button (S701) to set the VCR to the forward test slow mode.

- 3) Use the CHANNEL buttons so the slow feed noise appears across the bottom of the monitor screen and then it is driven out from the bottom of the screen.
- 4) Check that no noise appears on the monitor screen.
- 5) Press the "PLAY" button to return the VCR to the playback mode (the preset data is written to the EEPROM).
- 6) Perform the same procedure to perform slow tracking preset adjustment in the SP mode.
Do not press the reset switch after adjustment when the power is not turned on as the preset value could drift. If the preset value drifts, turn the power on and press the reset switch again for recovery.

6-5. Reverse slow tracking preset adjustment

Purpose:

To adjust the timing with which the brake pulse of the capstan motor is generated during reverse slow play so that noise is minimum.

Fault due to incomplete adjustment:

Noise appears during reverse slow play and the picture is not clear.

Test Equipment/Jigs and Connection Points

Monitor TV : Video output jack

Color bar generator: Video input jack

Blank tape (T-120)

State of VCR

Slow tracking: Unplug the power cord to set the slow tracking to the center.

Adjustment Point

CHANNEL \triangle (S706)

CHANNEL ∇ (S706)

Adjustment Procedure

- 1) Record a signal on the middle of a T-120 blank tape in the EP mode and play it back using the same VCR.
- 2) Press the "1" and "4" buttons of the remote control (provided) simultaneously during still play and hold them, then press the "PLAY" button (S701) to set the VCR to the reverse test slow mode.
- 3) Use the CHANNEL buttons so the slow feed noise appears across the bottom of the monitor screen and then it is driven out from the bottom of the screen.
- 4) Check that no noise appears on the monitor screen.
- 5) Press the "PLAY" button to return the VCR to the playback mode (the preset data is written to the EEPROM).
- 6) Perform the same procedure to perform reverse slow tracking preset adjustment in the SP mode.
Do not press the reset switch after adjustment when the power is not turned on as the preset value could drift. If the preset value drifts, turn the power on and press the reset switch again for recovery.

7. Audio/MTS Circuit Adjustments

7-1. Hi-Fi audio playback level check

Purpose:

To set the playback level of the Hi-Fi audio signal to the specified value.

Fault due to incomplete adjustment:

The appropriate volume cannot be obtained during playback.

Test Equipment/Jigs and Connection Points

Voltmeter

When checking L-CH:Audio output (L) jack

When checking R-CH:Audio output(R)jack

Hi-Fi alignment tape (24HMAF-2)

State of VCR

Play Hi-Fi alignment tape.

Adjustment procedure

Use the same checking procedure for both the L and R channels.

Check that the voltmeter reads $-7.8\text{dBs} \pm 3.0\text{dBs}$.

If it cannot be confirmed, check the playback signal system.

7-2. MTS input level adjustment

Purpose:

To set the level of the MTS signal supplied to the MTS processor in IC1801 from the tuner/IF to the specified level.

Fault due to incomplete adjustment:

1) The S/N deteriorates or distortion becomes conspicuous.

2) Stereo separation deteriorates.

Test Equipment/Jigs and Connection Points

MTS sound signal generator: IN FORM ANT

Voltmeter: PG2509-2

State of VCR

E-E mode

Adjustment Point

RT1801

Adjustment procedure

1) RT1801: Set the reading of the voltmeter to $-20.0\text{dBs} \pm 0.2\text{dBs}$.

Notes:

MTS sound signal generator settings:

1) Audio frequency: 300Hz

2) Modulation signal: L+R

Monitor TV settings:

1) Press the "GUIDE" button of the remote control to display the menu on the monitor TV screen.

2) Press "2" of the remote control.

3) Press "6" of the remote control to select the SAP option and switch it from OFF to ON.

8. Cylinder Rotation Accumulated Hours of Usage Display

Display

This VCR has a function which displays the accumulated hours of cylinder rotation as a reference for replacing the cylinder.

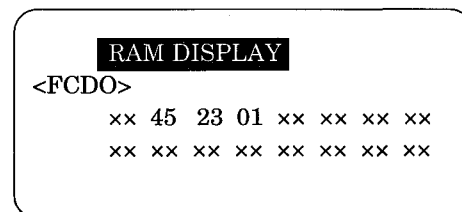
1. Method for display

simultaneously holding down the "VCR channel 1" and "VCR channel 4" buttons on the provided remote control, with power ON and without a cassette inserted, press the "channel up" button on the VCR. When power is turned off, the display will disappear.

2. Clearing the accumulated hours

Same as for shipment mode initial setting.

3. Example of display [In case of 12,345 hours]



VCR DISPLAY

9. List of Data in EEPROM and Initial Settings

The table below lists the data stored in ROM. It also shows the data set by shipment mode initialization and when the trouble display is cleared.

Information	Data memory ROM	List of initial data		Remarks
	IC903 VCR EEPROM	Shipment mode initial data	Clearing of trouble display	
Channel memory	Yes	Yes	No	
Guide channel data	Yes	Yes	No	
Auto clock channel data	Yes	Yes	No	
VCR mode select data	Yes	Yes	No	
Trouble display data	Yes	Yes	Yes	
Slow tracking data	Yes	No (set by adjust)	No	
Artificial V sync data	Yes	No (set by adjust)	No	
Switching point data	Yes	No (set by adjust)	No	
Cylinder rotation accumulated hour data	Yes	Yes	No	

10. List of Hidden Commands

The following tables list the mode setting commands during adjustment and EEPROM initial setting commands.

10-1. Mode setting commands during adjustment

Item	Mode in which command is accepted	Operation	Remarks
Tracking center	Play	Press the "TRACKING \triangle " and " ∇ " buttons on the VCR or the "1" and "4" buttons of the remote control simultaneously.	
X-value adjustment test mode	Play	Press the "1" and "4" buttons of the remote control simultaneously and press the "CHANNEL ∇ " button on the VCR.	
Forward test slow mode	Play	Press the "1" and "4" buttons of the remote control simultaneously and press the "PLAY" button on the VCR.	
Reverse test slow mode	Still play	Press the "1" and "4" buttons of the remote control simultaneously and press the "PLAY" button on the VCR.	

10-2. EEPROM initialization commands

Item	Mode in which command is accepted	Operation	Remarks
Shipment mode initial setting	EJECT	Press the "REC" button on the VCR and hold it, then press the "RESET" button used to initialize the microprocessor.	Hold the "REC" button depressed and release it after the display lights.
Clearing of trouble display	—	Press the "PLAY" button on the VCR and hold it, then press the "RESET" button used to initialize the microprocessor.	Hold the "PLAY" button depressed and release it after the display lights.

11. Initial Settings of IC903 (EEPROM)

The following shows the on-screen display and modes of switches when IC903 (EEPROM) is initialized.

[A] VCR SETUP MENU (in menu)	[C] CHANNEL PRESET (in menu)
1 AUTO BLUE [ON]	1 CHANNEL [CATV1]
4 AUDIO SETUP [Hi-Fi]	[D] Front panel switch
5 AUDIO SETUP [STEREO]	ANT. OUT : RFCH 03
6 AUDIO SETUP [SAP OFF]	
[B] CLOCK SET (in menu) [For VTFX633AW]	
1 CLOCK SET [AUTO]	
3 SET TIME ZONE [AUTO]	
4 SET D.S.T [AUTO]	

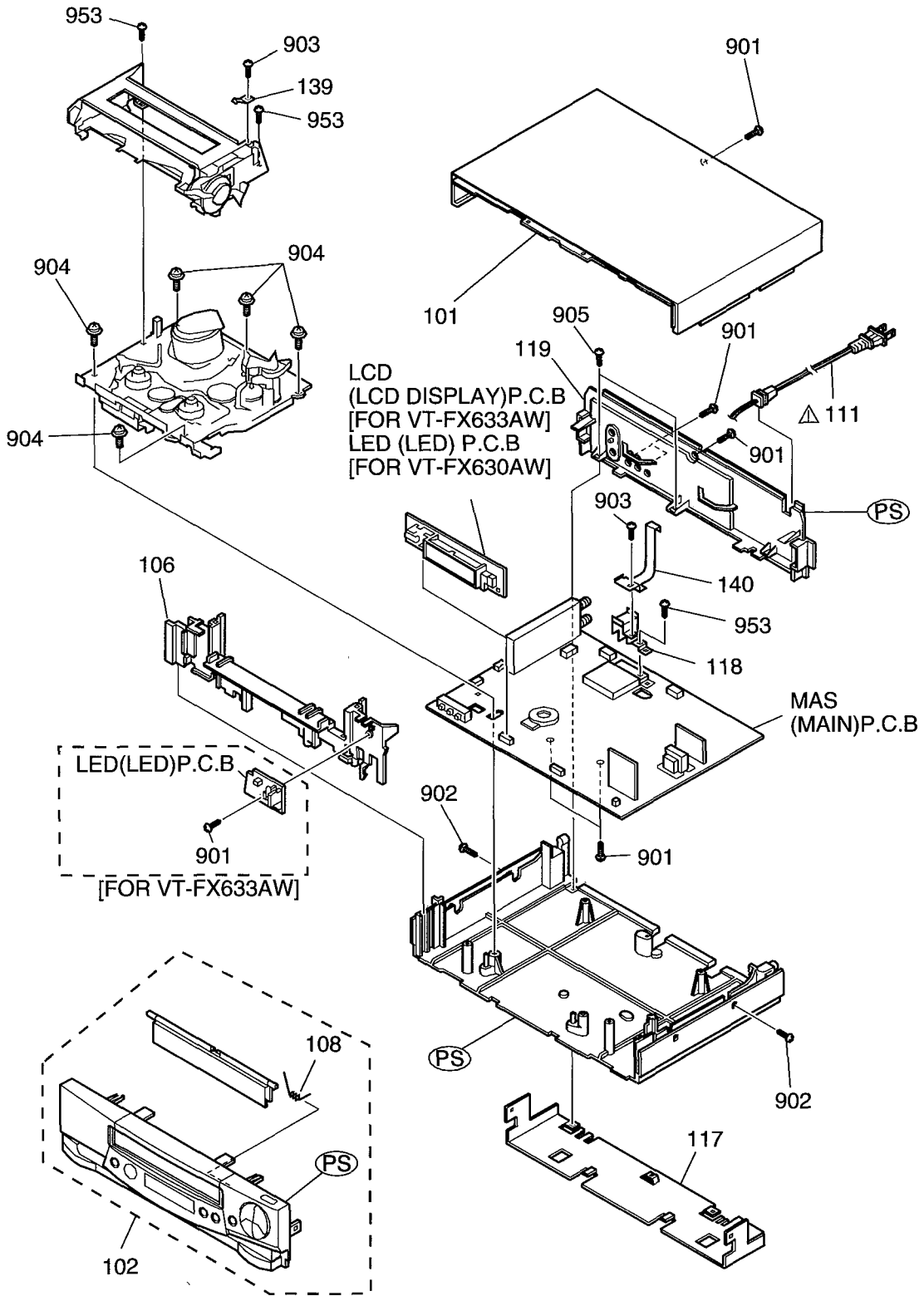
12. Caution When Replacing IC903 (VCR EEPROM)

After replacing IC903 (VCR EEPROM), execute the VCR initial settings and then perform the following adjustments.

	Adjustment	Page
1	Vertical jitter adjustment	P3-5
2	Forward slow tracking adjustment	P3-5
3	Reverse slow tracking adjustment	P3-5

1. CABINET SECTION

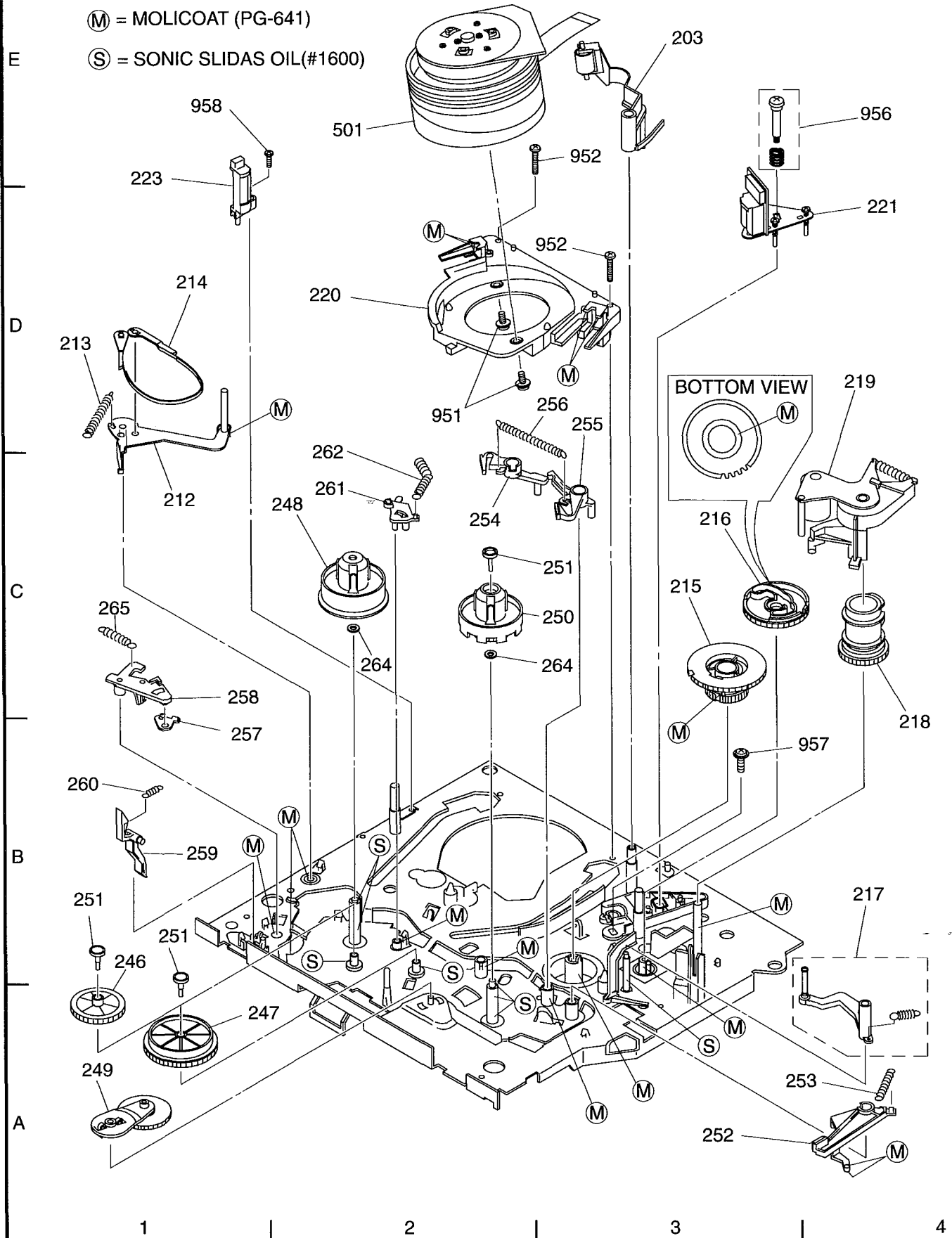
NOTE: The synthetic resin members that can be dismantled are shown by abbreviations using letters.



E
D
C
B
A

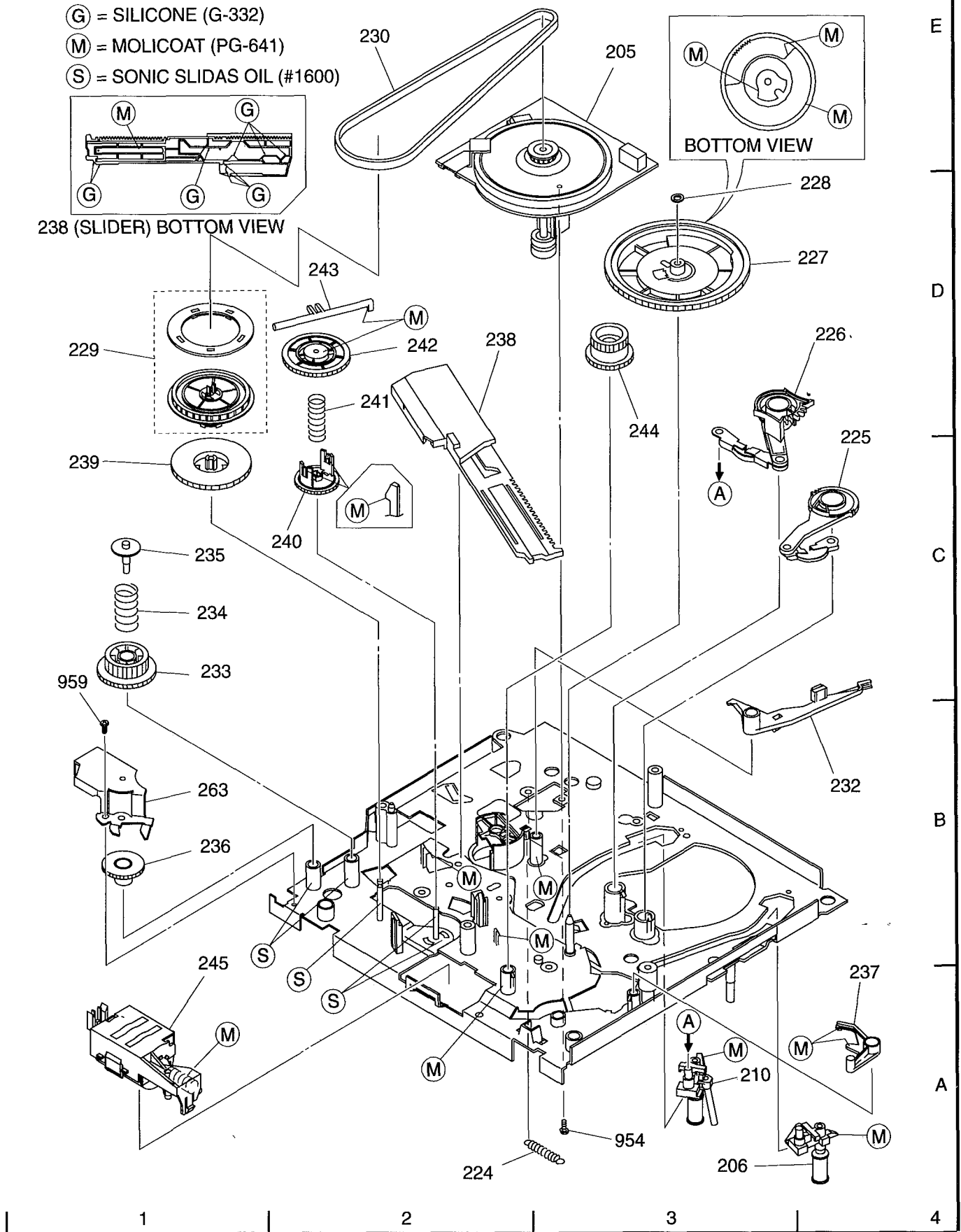
1 2 3 4

2. US-MECHANISM (TOP VIEW) SECTION



3. US-MECHANISM (BOTTOM VIEW) SECTION

- (G) = SILICONE (G-332)
- (M) = MOLICOAT (PG-641)
- (S) = SONIC SLIDAS OIL (#1600)



4. US-FL MECHANISM SECTION

(M) = MOLICOAT (PG-641)

(G) = MOLICOAT (PG-641)

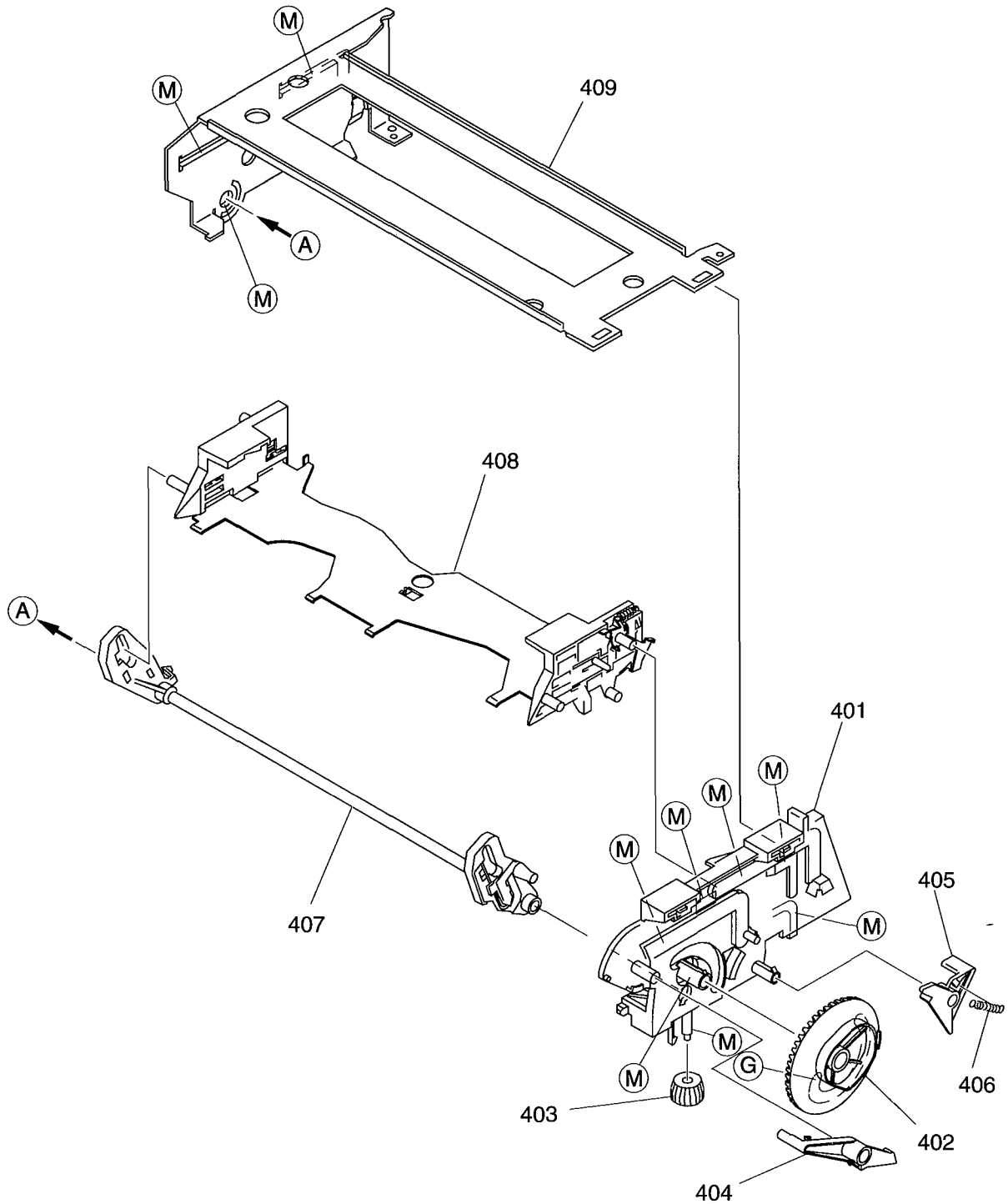
E

D

C

B

A



1

2

3

4

1. MECHANICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
MECHANISM SECTION			261	KX11811	BRAKE, SUB
101	QA11161	COVER, TOP (HEPM)	262	KL10903	SPRING, SUB
102	PH16592	PANEL, FRONT (HEPM) [FX633AW]	263	KX12461	BRACKET, BASE
102	PH16593	PANEL, FRONT (HEPM) [FX630AW]	264	MN11571	WASHER
106	NT10486	PIECE, FRONT (HEPM)	265	KL11062	SPRING, JOG
108	KL12071	SPRING	401	KX11773	BRACKET (R)
△ 111	EV10271	CORD, POWER (HEPM)	402	KF10682	GEAR 1
117	QA11141	COVER, BOTTOM	403	KF10691	GEAR 2
118	MD11281	COVER, CBA	404	KX11752	ARM, DOOR
119	PH13241	PANEL, REAR (HEPM)	405	KX11761	ARM, SWITCH
139	4826834	SPRING, EARTH	406	6323723	SPRING
140	MD11602	PLATE, EARTH	407	KX11931	ARM, DRIVE
203	KX11661	CLEANING, HEAD	408	KX11922	HOLDER, CASSETTE
205	GP10253	MOTOR, CAPSTAN	409	KX11741	BRACKET (L)
206	KX12294	BASE, GUIDE ROLLER (1)	501	HX10295	CYLINDER ASSY (CY-U6N1)
210	KX12302	BASE, GUIDE ROLLER (0)	901	8699410	SCREW (3X10)
212	KX11531	ARM, TENSION	902	8679408	SCREW (3.0X8)
213	KL10662	SPRING	903	8671306	SCREW (2.6X6)
214	KX11631	BAND, TENSION	904	7781132	BT SCREW
215	KF10641	GEAR, DRIVE	905	7784323	SCREW (3X8)
216	KF10701	GEAR, IDLER	951	8652408	SCREW (PSW3X8)
217	KX12662	ARM, OUT	952	0671310	DT SCREW-2.6MMDX10MM
218	KX11581	GEAR, SPIRAL	953	8671306	SCREW (2.6X6)
219	KX11554	ARM, PINCH ROLLER	954	8691306	BT SCREW 2.6MM
220	KX11451	BASE, CYLINDER	956	KX12443	SCREW
221	KX11944	AC HEAD	957	MJ10341	SCREW (M2.6)
223	5423082	FE HEAD	958	0671308	DT SCREW-2.6MMDX8MM
224	KL10711	SPRING	959	0671305	DT SCREW-2.6MMDX5MM
225	KX11591	GEAR, LOADING (L)	ACCESSORIES		
226	KX11611	GEAR, LOADING (R)	802	EW10251	CORD, RF
227	KF10673	GEAR, CAM	803	HL10991	REMOTE HAND SET (HEPM) [FX633AW]
228	4344643	WASHER	803	HL10992	REMOTE HAND SET (RCU-02A) (HEPM) [FX630AW]
229	KX11444	PULLEY			
230	KX18201	BELT			
232	KX12031	BRAKE			
233	KF10571	GEAR, CHANGE			
234	KL10771	SPRING			
235	KX12001	STOPPER, SPRING			
236	KF10561	GEAR, IDLER			
237	KX11831	ARM, OPERATION			
238	KX11362	SL IDLER			
239	KF10551	GEAR, TRANS			
240	KF10501	GEAR, DRIVE			
241	KL10773	SPRING			
242	KF10513	GEAR, CHANGE			
243	KX11411	ARM, CHANGE			
244	KX11371	GEAR			
245	KX11892	MOTOR, LOADING			
246	KF10521	GEAR, IDLER 1			
247	KF10532	GEAR, IDLER 2			
248	KH10152	REEL, TABLE (S)			
249	KX11423	ARM			
250	KH10161	REEL, TABLE (T)			
251	KX11991	STOPPER			
252	KX11861	BRAKE			
253	KL10782	SPRING, BRAKE			
254	KX11875	BRAKE, L			
255	KX11883	BRAKE, R			
256	KL10792	SPRING, BRAKE			
257	KF10542	GEAR, JOG			
258	KX13132	ARM, JOG			
259	KX11841	ARM, REC			
260	6542485	SPRING			

2. ELECTRICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
CAPACITORS			C0422	0800335	ELECTROLYTIC 220UF 16V
C0201	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0424	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0204	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0427	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0205	0893031	CERAMIC CHIP 1000PF+-10% 50V	C0429	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0208	0893082	CERAMIC CHIP 0.022UF+80-20% 50V	C0434	0800117	ELECTROLYTIC 4.7UF 25V
C0209	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0435	0893033	CERAMIC CHIP 1500PF+-10% 50V
C0211	0800151	ELECTROLYTIC 220UF 6.3V	C0437	0800009	ELECTROLYTIC 4.7UF 25V
C0212	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0501	0800297	ELECTROLYTIC 22UF 6.3V
C0213	0254458	ELECTROLYTIC 3.3UF+-20% 50V	C0502	0800287	CAPASITOR 4.7UF+-20% 35V
C0214	0893082	CERAMIC CHIP 0.022UF+80-20% 50V	C0503	0800287	CAPASITOR 4.7UF+-20% 35V
C0215	0800115	ELECTROLYTIC 3.3UF 50V	C0504	0800118	ELECTROLYTIC 4.7UF 35V[FX633AW]
C0216	0209948	CERAMIC CHIP 330PF+-5% 50V	C0506	0800308	ELECTROLYTIC 33UF 16V
C0218	0890046	CERAMIC DISC 0.1UF+80-20% 50V	C0507	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0219	0893031	CERAMIC CHIP 1000PF+-10% 50V	C0508	0800112	ELECTROLYTIC 2.2UF 50V
C0220	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0509	0800143	ELECTROLYTIC 100UF 6.3V
C0221	0800112	ELECTROLYTIC 2.2UF 50V	C0510	0893088	CERAMIC CHIP 0.015UF+-10% 16V
C0222	0893039	CERAMIC CHIP 4700PF+-10% 50V	C0511	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0223	0800118	ELECTROLYTIC 4.7UF 35V	C0512	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0224	0209936	CERAMIC CHIP 33PF+-5% 50V	C0513	0800139	ELECTROLYTIC 47UF 10V
C0225	0209946	CERAMIC CHIP 220PF+-5% 50V	C0514	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0226	0890044	CERAMIC DISC 0.022UF+80-20% 25V	C0517	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0227	0800107	ELECTROLYTIC 0.47UF 50V	C0518	0893088	CERAMIC CHIP 0.015UF+-10% 16V
C0228	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0519	0800143	ELECTROLYTIC 100UF 6.3V
C0230	0893002	CERAMIC CHIP 0.033UF+-10% 16V	C0520	0800112	ELECTROLYTIC 2.2UF 50V
C0233	0800122	ELECTROLYTIC 10UF 16V	C0521	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0234	0800185	ELECTROLYTIC 47UF 6.3V	C0522	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0235	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0524	0800118	ELECTROLYTIC 4.7UF 35V[FX633AW]
C0236	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0525	0800118	ELECTROLYTIC 4.7UF 35V
C0237	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0526	0800118	ELECTROLYTIC 4.7UF 35V
C0238	0800178	ELECTROLYTIC 4.7UF 35V	C0528	0880051	MYLAR 0.033UF+-10% 50V
C0239	0800179	ELECTROLYTIC 10UF 16V	C0529	0800122	ELECTROLYTIC 10UF 16V
C0241	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C0530	0800291	ELECTROLYTIC 10UF 16V
C0242	0800178	ELECTROLYTIC 4.7UF 35V	C0531	0800291	ELECTROLYTIC 10UF 16V
C0243	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0532	0800317	ELECTROLYTIC 47UF 16V
C0244	0254455	ELECTROLYTIC 0.47UF+-20% 50V	C0533	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0245	0800177	ELECTROLYTIC 3.3UF 50V	C0534	0800135	ELECTROLYTIC 33UF 16V
C0246	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0535	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0247	0209937	CERAMIC CHIP 39PF+-5% 50V	C0601	0207453	ELECTROLYTIC 2.2UF 50V
C0249	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0602	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0251	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0605	0880055	MYLAR 0.068UF+-10% 50V
C0252	0209943	CERAMIC DISC 120PF+-5% 50V	C0606	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0254	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C0607	0209938	CERAMIC CHIP 47PF+-5% 50V
C0256	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C0608	0890022	CERAMIC DISC 100PF+-10% 50V
C0258	0209933	CERAMIC CHIP 18PF+-5% 50V	C0609	0800179	ELECTROLYTIC 10UF 16V
C0262	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0610	0800141	ELECTROLYTIC 47UF 16V
C0263	0209931	CERAMIC CHIP 12PF+-5% 50V	C0612	0800128	ELECTROLYTIC 22UF 16V
C0264	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0615	0800317	ELECTROLYTIC 47UF 16V
C0265	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0620	0890035	CERAMIC DISC 1000PF+-10% 50V
C0273	0209937	CERAMIC CHIP 39PF+-5% 50V	C0621	0890038	CERAMIC DISC 3300PF+-20% 16V
C0402	0800117	ELECTROLYTIC 4.7UF 25V	C0622	0893065	CERAMIC CHIP 0.047UF+80-20% 25V
C0403	0893002	CERAMIC CHIP 0.033UF+-10% 16V	C0623	0890043	CERAMIC DISC 0.01UF+-20% 16V
C0404	0893088	CERAMIC CHIP 0.015UF+-10% 16V	C0624	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0406	0893037	CERAMIC CHIP 3300PF+-10% 50V	△C0851	0268741	POLYESTER FILM 0.1UF+-20% 250V
C0407	0800122	ELECTROLYTIC 10UF 16V	△C0859	AJ10293	CERAMIC CAPACITOR 2200PF+-20% 125V
C0408	0800122	ELECTROLYTIC 10UF 16V	△C0860	AJ10293	CERAMIC CAPACITOR 2200PF+-20% 125V
C0409	0209906	CERAMIC DISC 820PF+-5% 50V	C0862	AL10191	ELECTROLYTIC 82UF 400V(HEPM)
C0410	0893088	CERAMIC CHIP 0.015UF+-10% 16V	C0865	AN10401R	CAPACITOR 0.047UF+-10% 250V
C0411	0800109	ELECTROLYTIC 1.0UF 50V	C0866	0880053	POLYESTER FILM 0.047UF+-10% 50V
C0412	0800101	ELECTROLYTIC 0.1UF 50V	C0867	0880039	POLYESTER FILM 0.0047UF+-10% 50V
C0413	0800101	ELECTROLYTIC 0.1UF 50V	C0868	0880035	POLYESTER FILM 0.0022UF+-10% 50V
C0414	0800109	ELECTROLYTIC 1.0UF 50V	C0870	0254403	CAPACITOR 22UF+-20% 50V
C0420	AN10332R	CAPACITOR 0.027UF+-5% 100V	C0871	0254405	CAPACITOR 1000UF+-20% 25V
C0421	0890026	CERAMIC DISC 220PF+-10% 50V	C0872	0800353	ELECTROLYTIC 470UF 16V
			C0873	0254405	CAPACITOR 1000UF+-20% 25V[FX630AW]
					CAPACITOR 3300UF+-20% 10V[FX633AW]

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
C0874	0800352	ELECTROLYTIC 470UF 10V	C1135	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C0875	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C1136	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C0876	0800308	ELECTROLYTIC 33UF 16V	C1137	0209935	CERAMIC CHIP 27PF+-5% 50V
C0878	0890044	CERAMIC DISC 0.022UF+80-20% 25V	C1138	0209943	CERAMIC DISC 120PF+-5% 50V
C0882	0800047	ELECTROLYTIC 100UF 6.3V	C1140	0209944	CERAMIC CHIP 150PF+-5% 50V
C0885	AJ10131R	CERAMIC CAPACITOR 470PF+-10% 500V	C1141	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0888	1143004	CERAMIC CAPACITOR 150PF+-5% 1KV	C1142	0209944	CERAMIC CHIP 150PF+-5% 50V
C0901	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C1401	0890043	CERAMIC DISC 0.01UF+-20% 16V
C0902	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C1402	0209943	CERAMIC DISC 120PF+-5% 50V
C0904	0217516	CAPACITOR 0.047UF+80-20% 5.5V[FX633AW]	C1403	0800118	ELECTROLYTIC 4.7UF 35V
C0904	0800358	ELECTROLYTIC 1000UF 6.3V[FX630AW]	C1404	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0906	0800176	ELECTROLYTIC 2.2UF 50V	C1405	0890043	CERAMIC DISC 0.01UF+-20% 16V
C0907	0209927	CERAMIC CHIP 7.0PF+-0.5% 50V	C1409	0209937	CERAMIC CHIP 39PF+-5% 50V
C0908	0209927	CERAMIC CHIP 7.0PF+-0.5% 50V	C1410	0209936	CERAMIC CHIP 33PF+-5% 50V
C0909	0209932	CERAMIC CHIP 15PF+-5% 50V	C1411	0209945	CERAMIC DISC 180PF+-5% 50V
C0910	0209932	CERAMIC CHIP 15PF+-5% 50V	C1414	0800122	ELECTROLYTIC 10UF 16V
C0912	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C1415	0800118	ELECTROLYTIC 4.7UF 35V
C0913	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C1416	0800317	ELECTROLYTIC 47UF 16V
C0914	0800308	ELECTROLYTIC 33UF 16V	C1417	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0915	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C1419	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C0916	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C1424	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0917	0800141	ELECTROLYTIC 47UF 16V	C1425	0209931	CERAMIC CHIP 12PF+-5% 50V
C0918	0893082	CERAMIC CHIP 0.022UF	C1426	0893065	CERAMIC CHIP 0.047UF+80-20% 25V
C0919	0893065	CERAMIC CHIP 0.047UF+80-20% 25V	C1427	0890039	CERAMIC DISC 4700PF+-20% 16V
C0920	0209938	CERAMIC CHIP 47PF+-5% 50V	C1701	0800141	ELECTROLYTIC 47UF 16V[FX630AW]
C0922	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C1701	0800185	ELECTROLYTIC 47UF 6.3V[FX633AW]
C0923	0893082	CERAMIC CHIP 0.022UF+80-20% 50V	C1702	0890103	CERAMIC DISC 47000PF+80-20% 12V
C0924	0209938	CERAMIC CHIP 47PF+-5% 50V	C1703	0890103	CERAMIC DISC 47000PF+80-20% 12V
C0925	0209938	CERAMIC CHIP 47PF+-5% 50V	C1704	0890103	CERAMIC DISC 47000PF+80-20% 12V
C0926	0209935	CERAMIC CHIP 27PF+-5% 50V	C1705	0890035	CERAMIC DISC 1000PF+-10% 50V
C0927	0209948	CERAMIC CHIP 330PF+-5% 50V	C1706	0800185	ELECTROLYTIC 47UF 6.3V
C0928	0893065	CERAMIC CHIP 0.047UF+80-20% 25V	C1802	0800103	ELECTROLYTIC 0.22UF 50V
C0942	0890044	CERAMIC DISC 0.022UF+80-20% 25V	C1811	0800317	ELECTROLYTIC 47UF 16V
C0980	0890043	CERAMIC DISC 0.01UF+-20% 16V	C2101	0890035	CERAMIC DISC 1000PF+-10% 50V
C0981	0890043	CERAMIC DISC 0.01UF+-20% 16V	C2102	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0982	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2501	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0985	0209904	CERAMIC DISC 560PF+-5% 50V	C2502	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0986	0893031	CERAMIC CHIP 1000PF+-10% 50V	C2503	0800352	ELECTROLYTIC 470UF 10V
C0987	0209946	CERAMIC CHIP 220PF+-5% 50V	C2504	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1102	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2505	0800291	ELECTROLYTIC 10UF 16V
C1103	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2506	0800291	ELECTROLYTIC 10UF 16V
C1104	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2507	0800287	CAPASITOR 4.7UF+-20% 35V
C1105	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2508	0893037	CERAMIC CHIP 3300PF+-10% 50V
C1106	0800185	ELECTROLYTIC 47UF 6.3V	C2509	0800287	CAPASITOR 4.7UF+-20% 35V
C1107	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2513	0800317	ELECTROLYTIC 47UF 16V
C1108	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2514	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1111	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2517	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1112	0800177	ELECTROLYTIC 3.3UF 50V	C2518	0800044	ELECTROLYTIC 47UF 50V
C1114	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2519	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1115	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2520	0800335	ELECTROLYTIC 220UF 16V
C1116	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2524	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1117	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2525	0800291	ELECTROLYTIC 10UF 16V
C1118	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2531	0800287	CAPASITOR 4.7UF+-20% 35V
C1119	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2532	0893082	CERAMIC CHIP 0.022UF+80-20% 50V
C1120	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2539	0209849	CERAMIC CHIP 390PF+-5% 50V
C1121	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2901	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1122	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2902	0800109	ELECTROLYTIC 1.0UF 50V
C1123	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C2903	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1124	0893031	CERAMIC CHIP 1000PF+-10% 50V	C2904	0800122	ELECTROLYTIC 10UF 16V
C1125	0800185	ELECTROLYTIC 47UF 6.3V	C2905	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1126	0893082	CERAMIC CHIP 0.022UF+80-20% 50V	C2906	0800122	ELECTROLYTIC 10UF 16V
C1127	0893013	CERAMIC CHIP 0.22UF+-10% 16V	C2907	0800112	ELECTROLYTIC 2.2UF 50V
C1128	0800185	ELECTROLYTIC 47UF 6.3V	C2908	0890035	CERAMIC DISC 1000PF+-10% 50V
C1129	0893082	CERAMIC CHIP 0.022UF+80-20% 50V	C2909	0209944	CERAMIC CHIP 150PF+-5% 50V
C1131	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C2910	0209944	CERAMIC CHIP 150PF+-5% 50V

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
RESISTORS					
R0201	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	R0526	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0202	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W	R0527	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0203	0700057	CARBON FILM 18KOHM+-5% 1/8W	R0530	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R0205	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R0531	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R0206	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0532	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0207	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R0533	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R0208	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R0534	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0212	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0602	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0213	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0605	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0215	0700039	CARBON FILM 820 OHM+-5% 1/8W	R0615	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0216	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R0621	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0217	0700059	CARBON FILM 27KOHM+-5% 1/8W	R0622	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0218	0700027	CARBON FILM 100 OHM+-5% 1/8W	R0623	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0226	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W	R0624	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0227	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0625	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0228	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0626	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0229	0700032	CARBON FILM 220 OHM+-5% 1/8W	R0627	0700036	CARBON FILM 470 OHM+-5% 1/8W
R0240	0700043	CARBON FILM 1.5KOHM+-5% 1/8W	R0628	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0241	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W	R0629	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R0243	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R0630	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R0253	0700038	CARBON FILM 680 OHM+-5% 1/8W	R0631	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R0257	0700048	CARBON FILM 3.9KOHM+-5% 1/8W	R0632	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0258	0700032	CARBON FILM 220 OHM+-5% 1/8W	R0633	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R0263	0101391	CARBON FILM 2.2MOHM+-5% 1/8W	R0634	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0272	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R0635	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0402	0700059	CARBON FILM 27KOHM+-5% 1/8W	R0636	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R0403	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R0638	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R0404	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	R0704	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0407	0103832	CHIP RESISTOR 120 OHM+-5% 0.1W	R0705	0700039	CARBON FILM 820 OHM+-5% 1/8W
R0408	0700061	CARBON FILM 33KOHM+-5% 1/8W	R0706	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0409	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W	R0707	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0410	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R0708	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R0420	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0709	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R0421	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0710	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0422	0103812	CHIP RESISTOR 2.7OHM+-10% 0.1W	R0712	0700036	CARBON FILM 470 OHM+-5% 1/8W
R0423	0700057	CARBON FILM 18KOHM+-5% 1/8W	R0714	0700023	CARBON FILM 47 OHM+-5% 1/8W
R0424	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W	R0715	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0426	0700063	CARBON FILM 47KOHM+-5% 1/8W	R0716	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R0427	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	△R0851	AT10401M	RESISTOR 4.7MOHM+-10% 1/2W
R0429	0700054	CARBON FILM 10KOHM+-5% 1/8W	R0853	0700074	CARBON FILM 330KOHM+-5% 1/8W
R0430	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0854	0700074	CARBON FILM 330KOHM+-5% 1/8W
R0431	0700049	CARBON FILM 4.7KOHM+-5% 1/8W	R0855	0700074	CARBON FILM 330KOHM+-5% 1/8W
R0432	0700049	CARBON FILM 4.7KOHM+-5% 1/8W	R0856	AT10246S	RESISTOR 0.33 OHM+-5% 1W
R0434	0700052	CARBON FILM 6.8KOHM+-5% 1/8W	R0857	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0437	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W	R0859	0700032	CARBON FILM 220 OHM+-5% 1/8W
R0501	0700054	CARBON FILM 10KOHM+-5% 1/8W	R0860	0116671	CHIP RESISTOR 100KOHM+-5% 3W
R0502	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W	R0861	0116671	CHIP RESISTOR 100KOHM+-5% 3W
R0503	0700063	CARBON FILM 47KOHM+-5% 1/8W	R0862	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R0504	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0863	0700055	CARBON FILM 12KOHM+-5% 1/8W
R0505	0700063	CARBON FILM 47KOHM+-5% 1/8W	R0864	0700033	CARBON FILM 270 OHM+-5% 1/8W
R0506	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0865	0700038	CARBON FILM 680 OHM+-5% 1/8W
R0509	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R0866	0700034	CARBON FILM 330 OHM+-5% 1/8W
R0510	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W	R0867	0700038	CARBON FILM 680 OHM+-5% 1/8W
R0511	0104308	CHIP RESISTOR 15KOHM+-0.1% 1/16W	R0868	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0516	0700049	CARBON FILM 4.7KOHM+-5% 1/8W	R0869	0104114	CHIP RESISTOR 3.3KOHM+-1% 0.1W
R0517	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W	R0871	0105572	METAL FILM RESISTOR 2.7KOHM+-1% 1/10W
R0520	0700063	CARBON FILM 47KOHM+-5% 1/8W	R0872	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0521	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0873	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0522	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	R0874	0700058	CARBON FILM 22KOHM+-5% 1/8W
R0523	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0875	0700032	CARBON FILM 220 OHM+-5% 1/8W
R0524	0700054	CARBON FILM 10KOHM+-5% 1/8W	R0880	0700036	CARBON FILM 470 OHM+-5% 1/8W
R0525	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W	R0885	0700056	CARBON FILM 15KOHM+-5% 1/8W
			R0886	0700056	CARBON FILM 15KOHM+-5% 1/8W
			R0887	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
			R0889	0700062	CARBON FILM 39KOHM+-5% 1/8W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R0891	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0998	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R0892	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0999	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0901	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1102	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0902	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1103	0103821	CHIP RESISTOR 15 OHM+-5% 0.1W
R0903	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1104	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0905	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1107	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0906	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R1108	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0908	0700054	CARBON FILM 10KOHM+-5% 1/8W	R1109	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R0909	0700067	CARBON FILM 100KOHM+-5% 1/8W	R1110	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R0910	0700054	CARBON FILM 10KOHM+-5% 1/8W	R1112	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0911	0700067	CARBON FILM 100KOHM+-5% 1/8W	R1113	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0913	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1115	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R0914	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1116	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R0915	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1117	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0916	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R1118	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0917	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R1120	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0918	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1121	0700032	CARBON FILM 220 OHM+-5% 1/8W
R0919	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1403	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R0920	0700054	CARBON FILM 10KOHM+-5% 1/8W	R1405	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0923	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R1406	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R0924	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	R1407	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R0925	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	R1409	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0926	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	R1410	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R0927	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1412	0700076	CARBON FILM 470KOHM+-5% 1/8W
R0928	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R1413	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0929	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R1416	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0934	0700049	CARBON FILM 4.7KOHM+-5% 1/8W	R1418	0700027	CARBON FILM 100 OHM+-5% 1/8W
R0935	0700032	CARBON FILM 220 OHM+-5% 1/8W	R1421	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0936	0700054	CARBON FILM 10KOHM+-5% 1/8W	R1422	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0937	0700037	CARBON FILM 560 OHM+-5% 1/8W	R1423	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0939	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R1424	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0940	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W	R1430	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R0941	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1433	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R0943	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1434	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R0944	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1438	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0945	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1701	0700034	CARBON FILM 330 OHM+-5% 1/8W [FX630AW]
R0946	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1701	0700054	CARBON FILM 10KOHM+-5% 1/8W [FX633AW]
R0947	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1702	0700034	CARBON FILM 330 OHM+-5% 1/8W [FX630AW]
R0948	0700049	CARBON FILM 4.7KOHM+-5% 1/8W	R1702	0700063	CARBON FILM 47KOHM+-5% 1/8W [FX633AW]
R0950	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1703	0700034	CARBON FILM 330 OHM+-5% 1/8W [FX630AW]
R0951	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1703	0700039	CARBON FILM 820 OHM+-5% 1/8W [FX633AW]
R0952	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1704	0700034	CARBON FILM 330 OHM+-5% 1/8W [FX630AW]
R0954	0700073	CARBON FILM 270KOHM+-5% 1/8W	R1704	0700039	CARBON FILM 820 OHM+-5% 1/8W [FX633AW]
R0955	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W	R1706	0790049	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0956	0700036	CARBON FILM 470 OHM+-5% 1/8W	R1708	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0957	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W	R1711	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0963	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1712	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0967	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1713	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0969	0700027	CARBON FILM 100 OHM+-5% 1/8W	R1714	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0970	0700027	CARBON FILM 100 OHM+-5% 1/8W	R1802	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R0971	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W	R1806	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0972	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R1807	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0976	0101725	CHIP RESISTOR 2.2 OHM+-5% 1/4W	R1808	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R0977	0700067	CARBON FILM 100KOHM+-5% 1/8W	R1809	0700057	CARBON FILM 18KOHM+-5% 1/8W
R0978	0104111	CHIP RESISTOR 10KOHM+-1% 1/10W	R1818	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0979	0700052	CARBON FILM 6.8KOHM+-5% 1/8W	R1820	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0980	0700058	CARBON FILM 22KOHM+-5% 1/8W	R1822	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0981	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2101	0700059	CARBON FILM 27KOHM+-5% 1/8W
R0987	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2102	0700067	CARBON FILM 100KOHM+-5% 1/8W
R0988	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W	R2103	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R0991	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W	R2104	0700032	CARBON FILM 220 OHM+-5% 1/8W
R0992	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W	R2105	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0993	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2106	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W
R0994	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2107	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R0995	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2108	0700048	CARBON FILM 3.9KOHM+-5% 1/8W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R2109	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	IC0201	CK14414	IC HA118214F
R2110	0700048	CARBON FILM 3.9KOHM+-5% 1/8W	IC0202	CK13574R	IC MSM7476-76MS-KR1
R2111	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	IC0501	CK16761	IC AN3962FB
R2112	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	IC0851	CP11961R	IC HA17431PA
R2113	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W	IC0901	CK16759	IC HD64339775B99F
R2114	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	IC0902	CK19601R	IC RN5VS30AA
R2115	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	IC0903	CP10914	IC ST24C01FB6 [FX630AW]
R2116	0700054	CARBON FILM 10KOHM+-5% 1/8W	IC0903	CP10915	IC ST24C02FB6 [FX633AW]
R2117	0700058	CARBON FILM 22KOHM+-5% 1/8W	IC0904	CP10291	IC BA6209
R2501	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	IC0905	CP11361R	IC M5278L05
R2502	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	IC1101	CK14482	IC HA118198F
R2503	0101400	CARBON FILM 75 OHM+-5% 1/8W	IC1102	CK20671R	IC AN3329S-E1
R2504	0101400	CARBON FILM 75 OHM+-5% 1/8W	IC1701	CZ10182	IC BU9716AK (HEPM)
R2507	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	IC1801	CS10571	PWB ASSY HTS7342
R2508	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	IC2101	CJ10391	SENSOR SG-HT10(T)
R2509	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	IC2102	CJ10401	SENSOR SG-HT11(S)
R2510	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	IC2501	CP11991	IC NJM2533D (HEPM)
R2511	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	IC2901	CP11001	IC LC7455A
R2512	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W	IR1701	CJ10261	MODULE PIC-12043TE2 (HEPM) [FX630AW]
R2514	0101835	CARBON FILM 1.5KOHM+-5% 1/4W	IR1701	CJ10411	IC TSOP1738SB1 [FX633AW]
R2515	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W	LD1701	CH10472R	DIODE SEL6410E [FX630AW]
R2517	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W	LD1701	CH11141R	DIODE SEL6414E (HEPM) [FX633AW]
R2518	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	LD1702	CH10473R	DIODE SEL6910A [FX630AW]
R2523	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	LD1702	CH11141R	DIODE SEL6414E (HEPM) [FX633AW]
R2524	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	LD1703	CH10471R	DIODE SEL6210S [FX630AW]
R2527	0700063	CARBON FILM 47KOHM+-5% 1/8W	LD1703	CH11141R	DIODE SEL6414E (HEPM) [FX633AW]
R2530	0101400	CARBON FILM 75 OHM+-5% 1/8W	LD1704	CH10472R	DIODE SEL6410E [FX630AW]
R2533	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	LD1704	CH11141R	DIODE SEL6414E (HEPM) [FX633AW]
R2534	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	LD2101	CH10542	DIODE GL451L1
R2542	0700054	CARBON FILM 10KOHM+-5% 1/8W	LD2702	CH10791	DIODE SLR932C-20
R2901	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	Q0215	CA10733R	TRANSISTOR DTC144K (HEPM)
R2902	0700032	CARBON FILM 220 OHM+-5% 1/8W	Q0228	CA10733R	TRANSISTOR DTC144K (HEPM)
R2903	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	Q0406	5323172	TRANSISTOR 2SC1214CD
R2904	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	Q0409	5327063	TRANSISTOR 2SC1740S
R2905	0700081	CARBON FILM 1.0MOHM+-5% 1/8W	Q0410	CA10733R	TRANSISTOR DTC144K (HEPM)
R2906	0700047	CARBON FILM 3.3KOHM+-5% 1/8W	Q0411	5327021	TRANSISTOR 2SA844CD
R2907	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W	Q0412	5327063	TRANSISTOR 2SC1740S
R2908	0700027	CARBON FILM 100 OHM+-5% 1/8W	Q0413	5327063	TRANSISTOR 2SC1740S
R2909	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	Q0701	1320004	TRANSISTOR 2SA854SOR
RT1801	AW10188R	SEMI VARIABLE 22KOHM	Q0702	CF10852R	TRANSISTOR DTC144ESA
SEMI-CONDUCTORS			Q0851	CF10621	TRANSISTOR FS3KM-18A-300
D0206	5339071	DIODE 1SS119	Q0852	CF10451R	TRANSISTOR 2SC3246
△D0851	5336552	DIODE SIWBA60	Q0853	1321341	TRANSISTOR 2SD1765
D0852	CH10191M	DIODE EG01C-T	Q0854	5327131	TRANSISTOR 2SB562C
D0856	CH10921M	DIODE PR1003L	Q0855	5328975	TRANSISTOR 2SC2412K
D0857	CH10771S	DIODE RN3Z	Q0864	1321341	TRANSISTOR 2SD1765
D0858	1331361	DIODE RK34	Q0901	5327151	TRANSISTOR 2SA952-ML2
D0859	5339241	DIODE EK14	Q0902	CF10852R	TRANSISTOR DTC144ESA
D0860	5339551	DIODE SS1J4	Q0905	CA11272R	TRANSISTOR 2SA1037K-R
D0861	5339551	DIODE SS1J4	Q0906	CA11272R	TRANSISTOR 2SA1037K-R
D0864	CH10191M	DIODE EG01C-T	Q0912	CA10733R	TRANSISTOR DTC144K (HEPM)
D0901	5339551	DIODE SS1J4	Q0913	CA10733R	TRANSISTOR DTC144K (HEPM)
D0906	5339071	DIODE 1SS119	Q0914	CA10733R	TRANSISTOR DTC144K (HEPM)
D0908	CH10871M	DIODE 1N4001	Q1101	5328975	TRANSISTOR 2SC2412K
D0909	CH10871M	DIODE 1N4001	Q1102	CA11272R	TRANSISTOR 2SA1037K-R
D1101	5339071	DIODE 1SS119	Q1401	5328975	TRANSISTOR 2SC2412K
D1102	5339071	DIODE 1SS119	Q1404	CA11272R	TRANSISTOR 2SA1037K-R
D1103	5339071	DIODE 1SS119	Q1407	CA11272R	TRANSISTOR 2SA1037K-R
D1403	5339071	DIODE 1SS119	Q1409	5328975	TRANSISTOR 2SC2412K
D1701	5339071	DIODE 1SS119	Q1410	CA11272R	TRANSISTOR 2SA1037K-R
D2501	5339071	DIODE 1SS119	Q1411	5328975	TRANSISTOR 2SC2412K
D2502	5339071	DIODE 1SS119	Q1701	5327071	TRANSISTOR DTC124ES
D2504	5339071	DIODE 1SS119	Q1702	5327071	TRANSISTOR DTC124ES
			Q1703	5327071	TRANSISTOR DTC124ES
			Q1704	5327071	TRANSISTOR DTC124ES

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
Q1802	CF10852R	TRANSISTOR DTC144ESA	X0201	BP10741	CRYSTAL
Q2101	CF10372	TRANSISTOR PT493FL1	X0901	BP10571	CRYSTAL
Q2102	CF10372	TRANSISTOR PT493FL1	X0902	BP10251	CRYSTAL
Q2103	CA10733R	TRANSISTOR DTC144K (HEPM)	X2901	BP10461	CRYSTAL
Q2104	CA10733R	TRANSISTOR DTC144K (HEPM)			
Q2501	5328975	TRANSISTOR 2SC2412K			
Q2502	5328975	TRANSISTOR 2SC2412K			MISCELLANEOUS
Q2503	5328975	TRANSISTOR 2SC2412K			
Q2504	CA10733R	TRANSISTOR DTC144K (HEPM)	BL0851	BZ10471R	CORE
Q2505	5328975	TRANSISTOR 2SC2412K	BL0853	BZ10471R	CORE
Q2506	CA10733R	TRANSISTOR DTC144K (HEPM)	BL0856	BZ10471R	CORE
Q2509	CF10842R	TRANSISTOR DTA144ESA	BL0901	BZ10471R	CORE
Q2901	5328975	TRANSISTOR 2SC2412K	BL0902	5274522	CORE
△ PC0851	1322421	PHOTOCOUPLER PC817A	△ F0851	FN10201	FUSE 3A
△ QF0851	FN10213R	FUSE 1.5A	FE2501	HC10301	TRNER IF UNIT(HEPM)
△ QF0852	FN10211R	FUSE 630mA	△ FH0851	5722413	HOLDER, FUSE (HEPM)
△ QF0853	5721944	IC PROTECTOR, ICP-N25	△ FH0852	5722413	HOLDER, FUSE (HEPM)
ZD0851	5339251	DIODE HZS2-C3	JK2501	ES10343	JACK
ZD0861	CH10961M	ZUNER DIODE MA7180-A	JK2503	ES10372	JACK
ZD0862	5339268	DIODE HZS11B2	LCD1701	DB10341	FLOURESENT DISPLAY
ZD0864	5339482	DIODE HZS15-2	LMP1701	DP10221	LIGHT, BACK
ZD0901	5339275	DIODE HZS7-B2	LMP1702	DP10221	LIGHT, BACK
ZD0903	5339297	DIODE HZS5C3	LMP1703	DP10221	LIGHT, BACK
ZD0904	5339297	DIODE HZS5C3	S0701	FE10421R	SWITCH
ZD2501	5339288	DIODE HZS30-3	S0702	FE10421R	SWITCH
ZD2502	5339257	DIODE HZS4-B1	S0703	FE10421R	SWITCH
		TRANSFORMERS	S0704	FE10421R	SWITCH
T0401	BT10251	TRANSFORMER, POWER	S0705	FE10142R	SWITCH
△ T0851	BT10322	TRANSFORMER, POWER (HEPM)	S0706	FE10421R	SWITCH
		COILS	S0707	FE10421R	SWITCH
L0202	BH10468R	COIL 100UH	S0708	5636101	SWITCH
L0203	5121288	COIL 15UH	S1701	5634884	SWITCH
L0204	5121287	COIL 10UH	S2101	FD10211	SWITCH, MODE
L0205	BH10468R	COIL 100UH	S2102	5635631	SWITCH
L0206	5121569	COIL 82UH	S2103	5635631	SWITCH
L0208	BH10468R	COIL 100UH			
L0209	5159142	CHOKE COIL 12UH			
L0210	5159146	CHOKE COIL 27UH			
L0401	5159114	COIL 15MH			
L0403	BH10468R	COIL 100UH			
L0501	BH10468R	COIL 100UH			
L0502	BH10468R	COIL 100UH			
△ L0851	BJ10251	FILTER, LC			
L0853	BH10337R	COIL 10UH			
L0854	BH10339R	COIL 22UH			
L1101	BH10468R	COIL 100UH			
L1102	5121611	COIL 100UH			
L1103	5121611	COIL 100UH			
L1105	5121296	COIL 220UH			
L1106	5159153	CHOKE COIL 82UH			
L1107	5159158	CHOKE COIL 220UH			
L1402	5121288	COIL 15UH			
L1403	5121284	COIL 3.3UH			
L1406	BH10468R	COIL 100UH			
L1801	BH10468R	COIL 100UH			
L2502	BH10471R	COIL 220UH			
L2504	BH10466R	COIL 47UH			
L2902	5121294	COIL 100UH			
L2903	5121294	COIL 100UH			
		CRYSTALS			

CHAPTER 6 | SCHEMATIC, CIRCUIT BOARD AND BLOCK DIAGRAMS

Applied Models: VT-FX630AW VT-FX633AW

Cautions when using schematic diagrams

Caution for safety

The parts marked are critical for safety. Be sure to use the specified parts to ensure safety when replacing them.

1. Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

[Resistors]

Item	Indication
Value	No indication Ω
	K k Ω
	M M Ω
Tolerance	No indication $\pm 5\%$ (All tolerances other than $\pm 5\%$ are indicated in the schematic diagrams)
	Power capacitance No indication 1/8W (1/16W for leadless resistors without indication) All capacitances other than the above are indicated in the schematic diagrams.

[Capacitors]

Item	Indication
Value	No indication μF
	P pF
Dielectric strength	No indication 50V (All dielectric strengths other than 50V are indicated in the schematic diagrams.)

[Coils]

Item	Indication
Value	μ μH
	m mH

Cautions when using circuit board diagrams

1. Identifications of sides A/B in circuit board diagrams

1) Board having a pattern on one side and parts on both sides.

Side A: Shows discrete parts, viewed from the pattern side.

Side B: Shows leadless parts, viewed from the pattern side.

2) Board having patterns on both sides and parts on both sides.

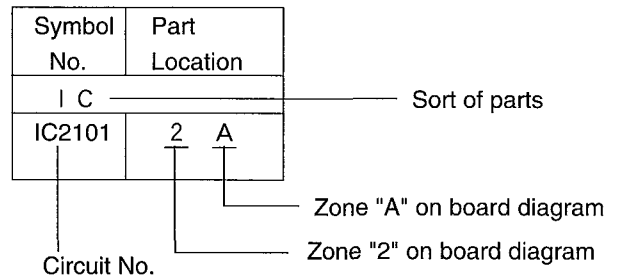
Side A: Shows parts and patterns which can be seen when the case is opened.

Side B: Shows parts and the pattern on the back of side A.

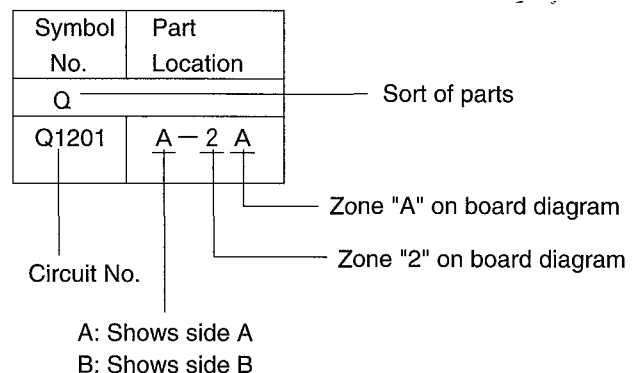
2. Table for indexing locations of parts

This table shows locations of each part on the circuit board diagrams. The locations are indicated using the guide scales on the external lines of diagrams.

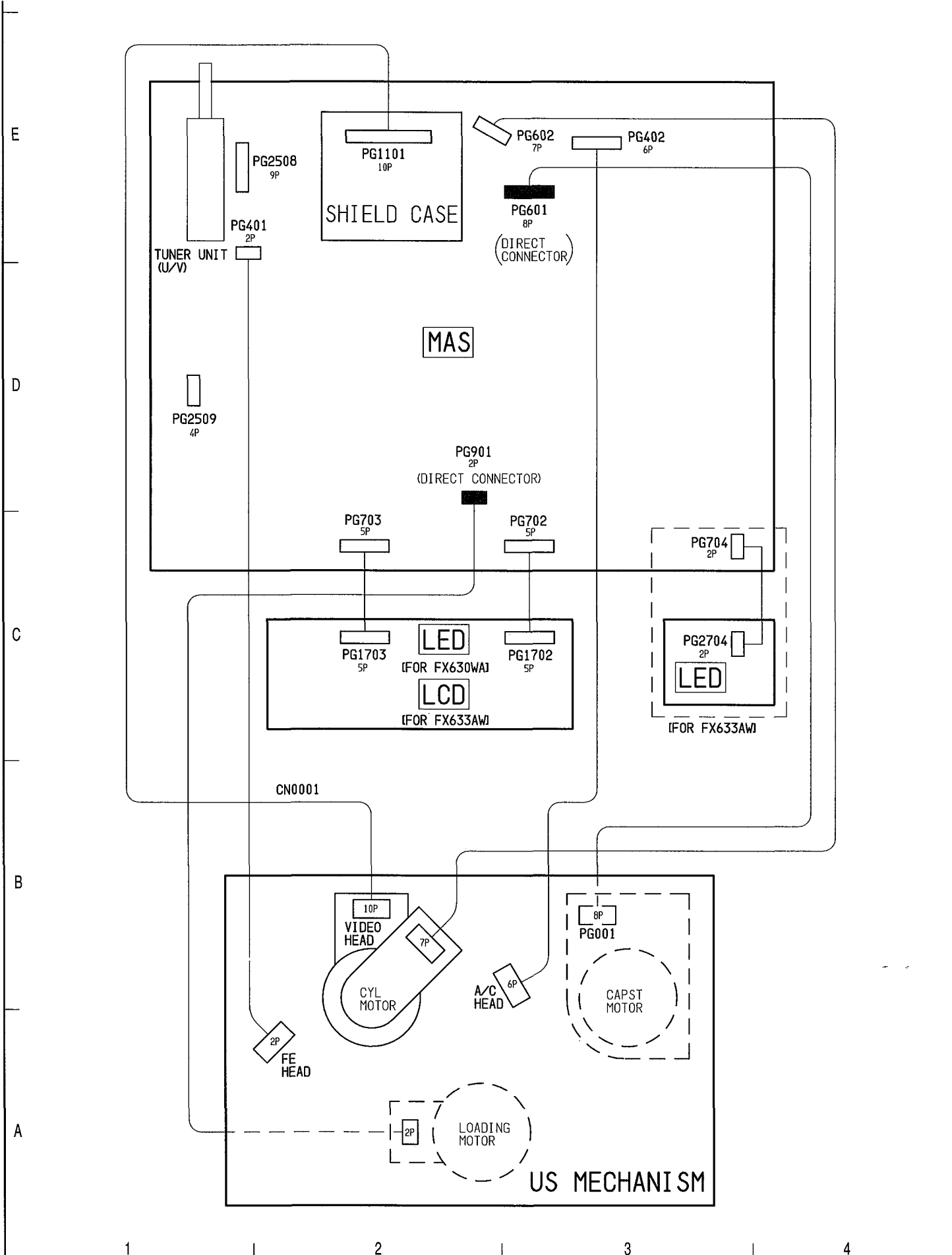
1) In case of one-layer board



2) In case of side A/B indication board

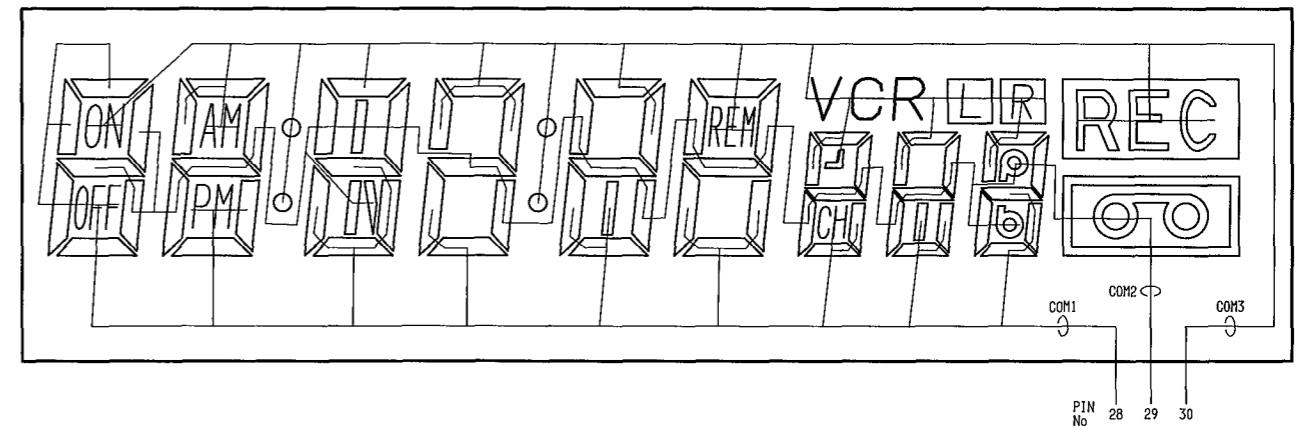
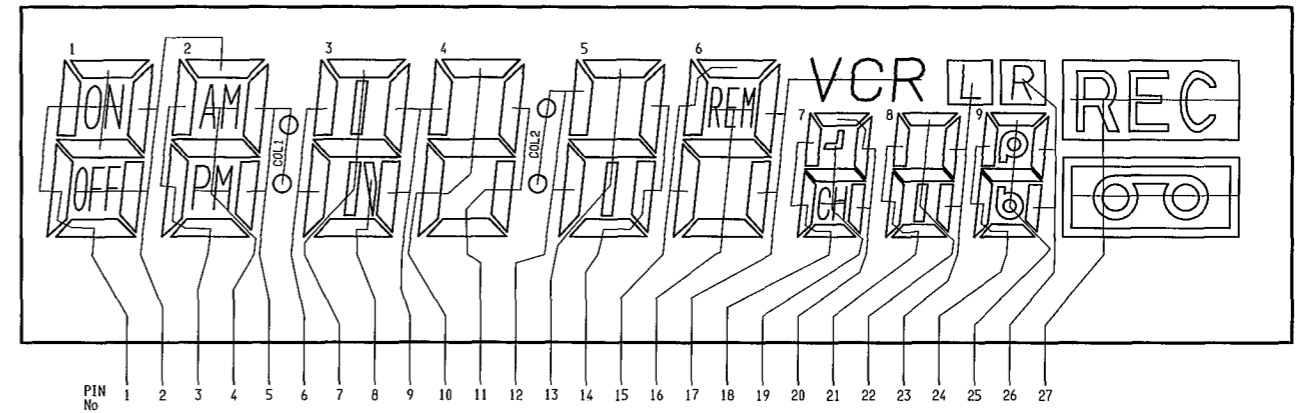


CONNECTION DIAGRAM

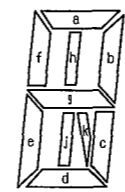


LCD DISPLAY [LCD] SCHEMATIC DIAGRAM (FOR VT-FX633AW)

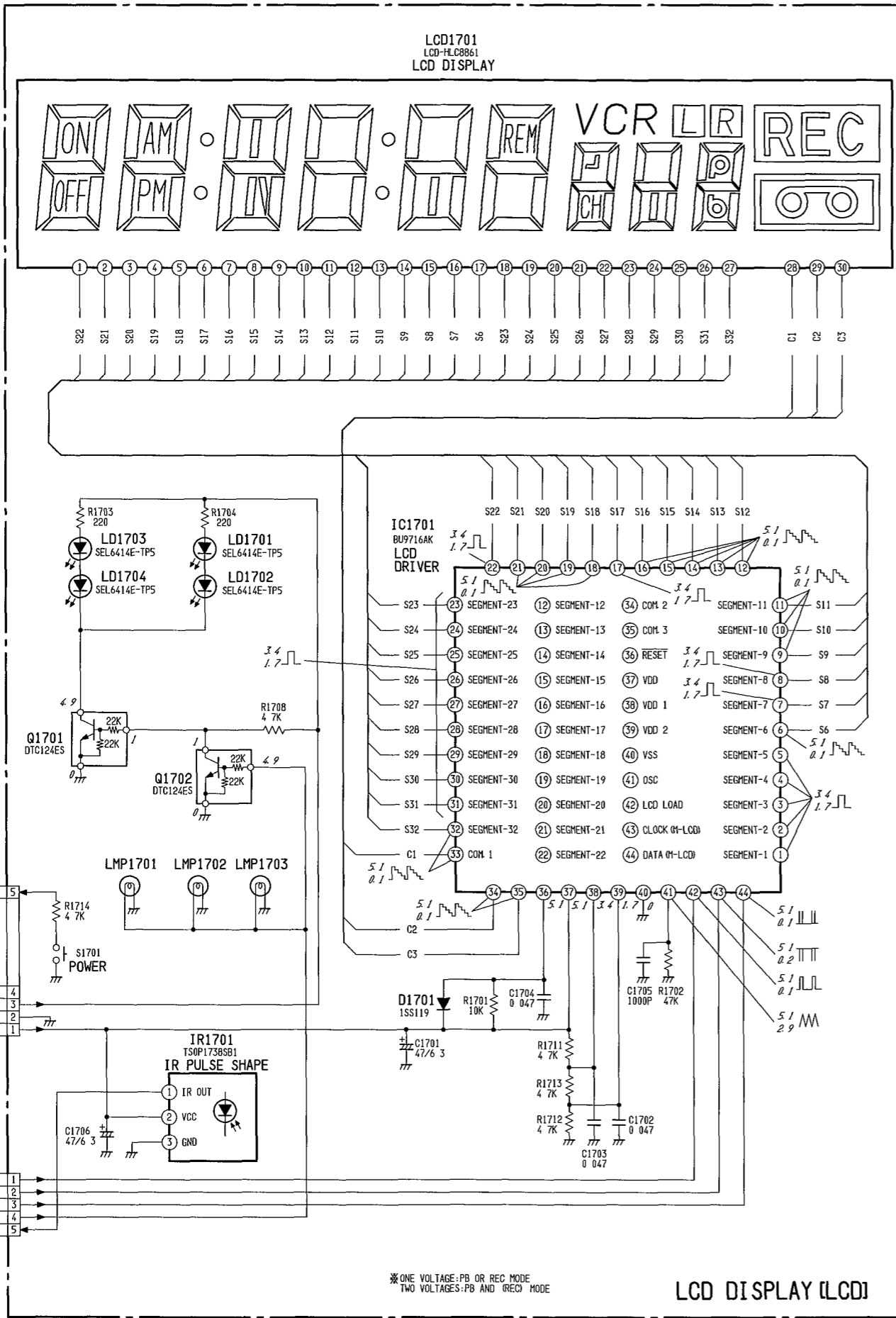
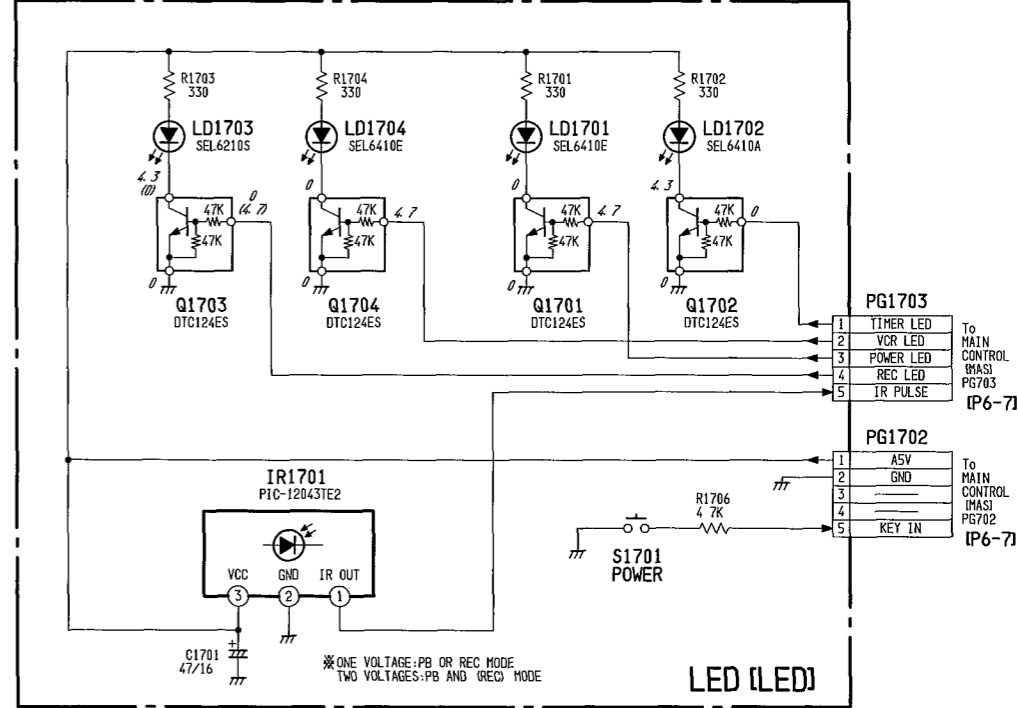
LCD GRID TABLE



PIN No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
COM1	Lcd	OFF	2d	PM	2c	3a	3g	3d	3c	4e	4d	5e	5j	5d	6e	6d	6c	7d	CH	7c	8d	8j	8c	9d	9g	9c	---	COM	---	
COM2	1g	1bc	2e	2g	2b	3f	3hj	3k	3b	4g	4c	5f	5g	5c	6f	6g	7e	7g	7b	8e	8g	8b	9e	9b	9a	---	---	---	---	---
COM3	ON	2a	2f	AM	COL1	---	3a	---	4f	4a	4b	COL2	5a	5b	6a	REM	VCR	7f	7a	8f	8a	L	9f	9a	R	REC	---	---	---	



LED [LED] SCHEMATIC DIAGRAM (FOR VT-FX630AW)



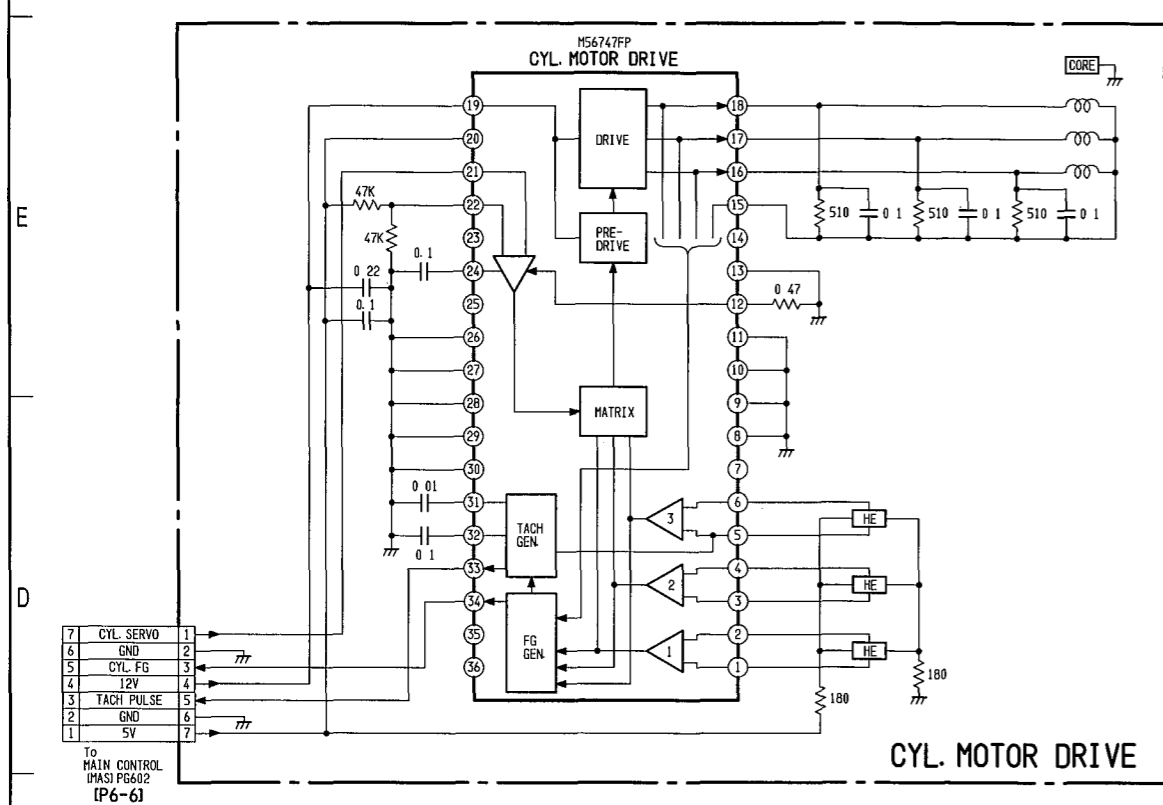
*ONE VOLTAGE:PB OR REC MODE
TWO VOLTAGES:PB AND (REC) MODE

LCD DISPLAY [LCD]

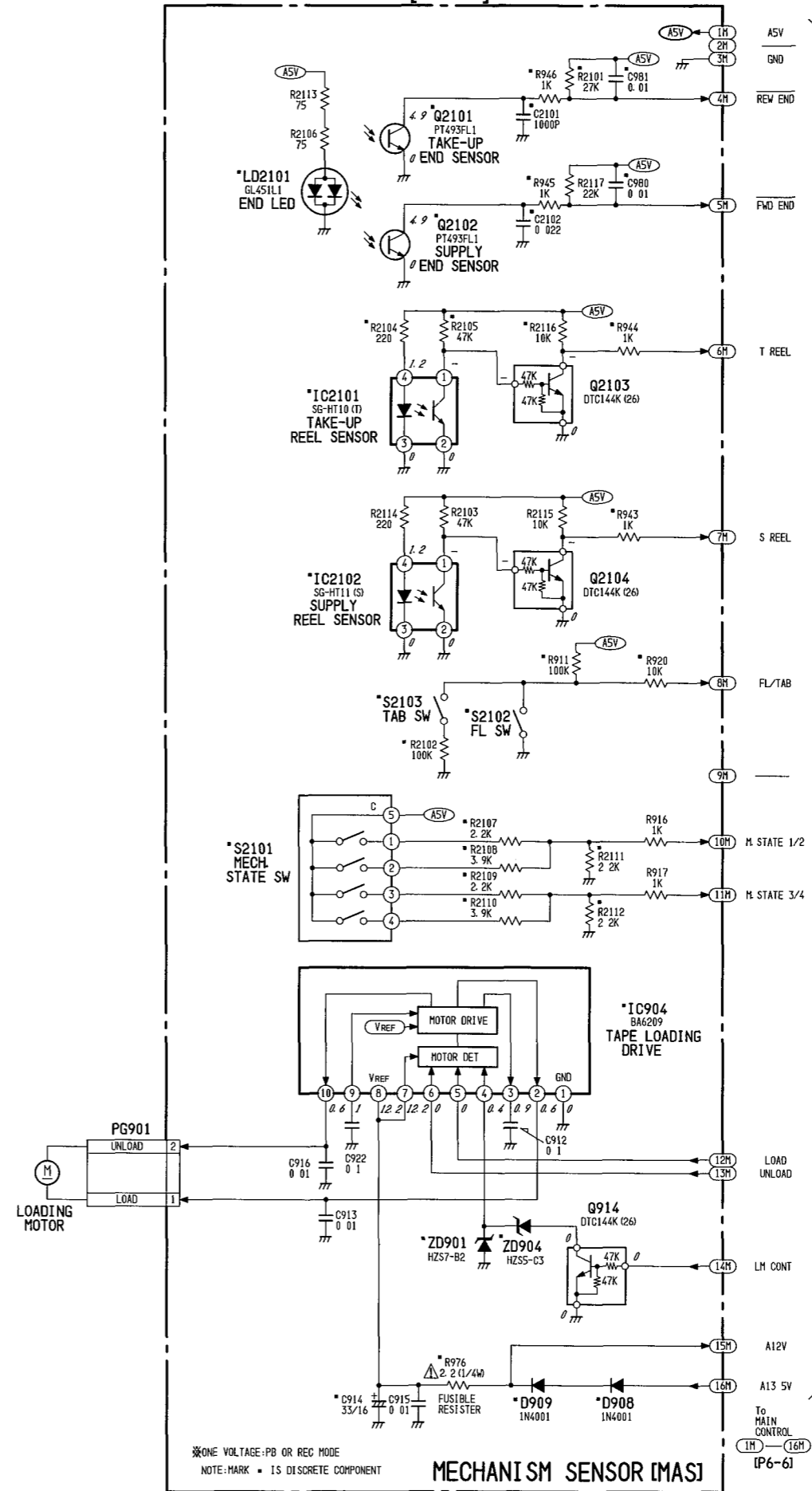
*ONE VOLTAGE:PB OR REC MODE
TWO VOLTAGES:PB AND (REC) MODE

LED [LED]

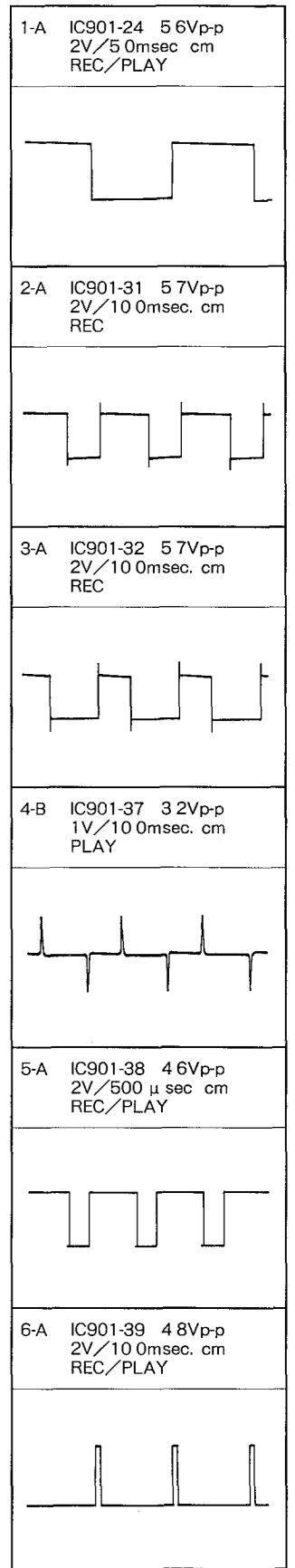
CYL. MOTOR DRIVE SCHEMATIC DIAGRAM



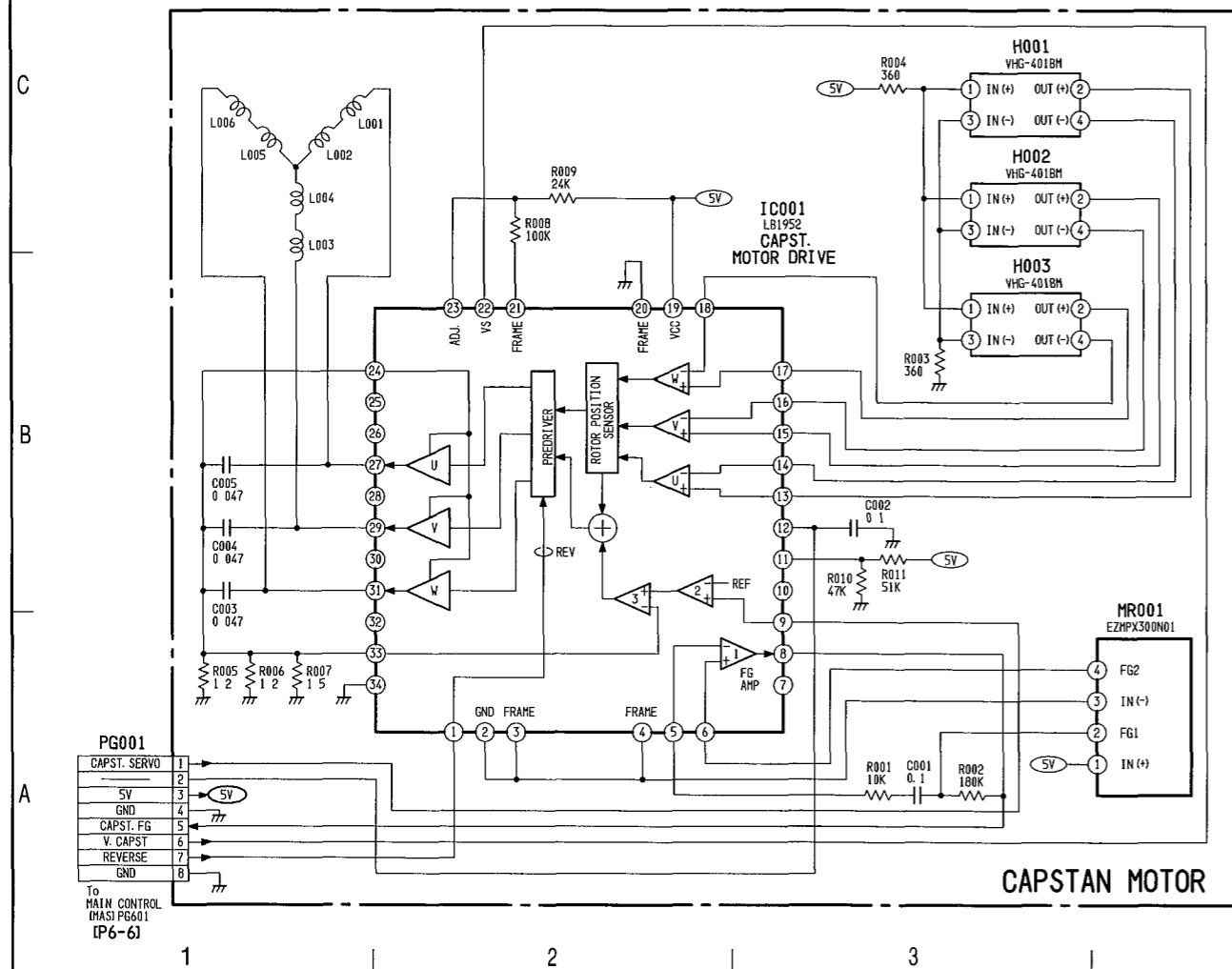
MECHANISM SENSOR [MAS] SCHEMATIC DIAGRAM



SERVO WAVEFORMS



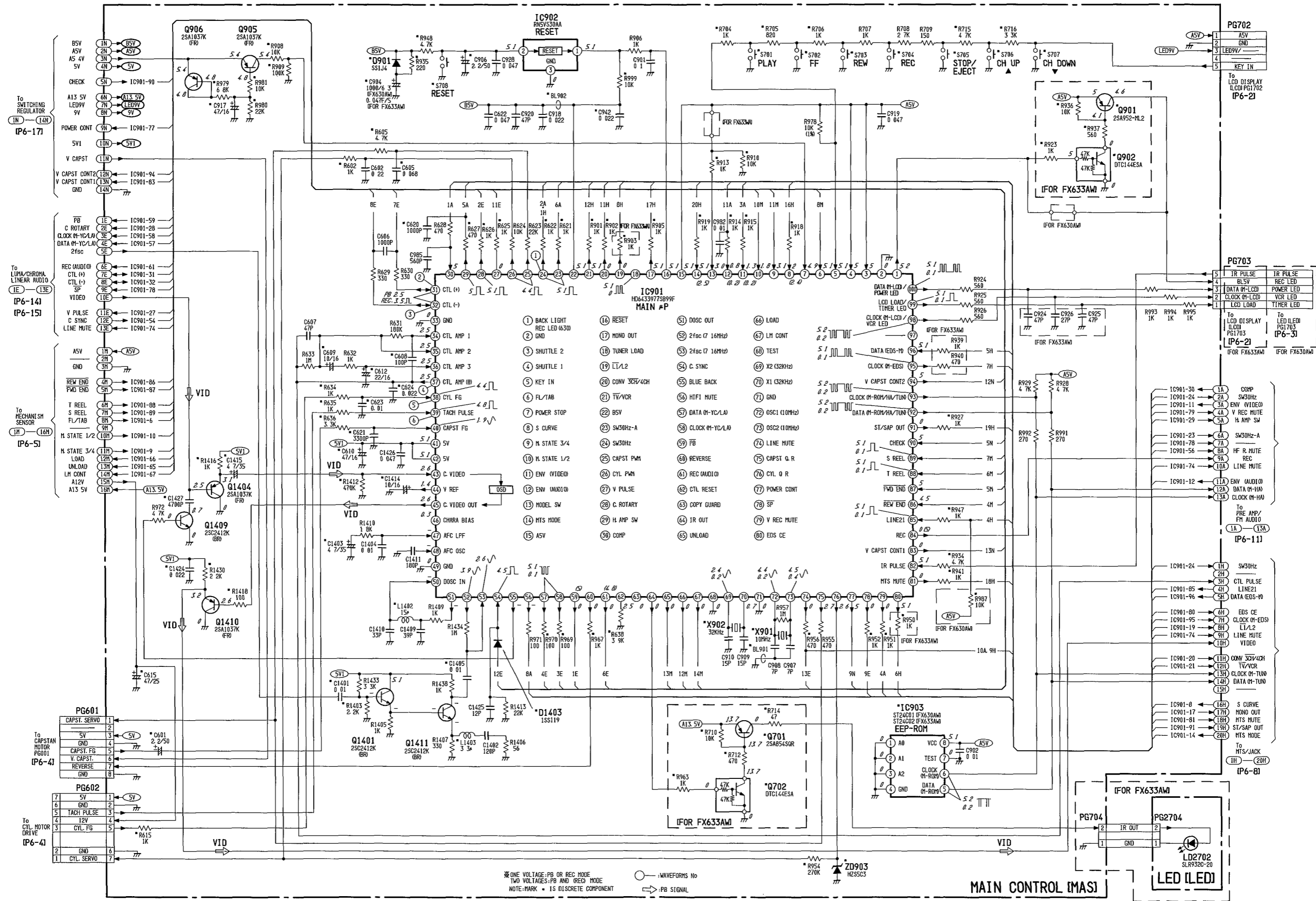
CAPSTAN MOTOR SCHEMATIC DIAGRAM



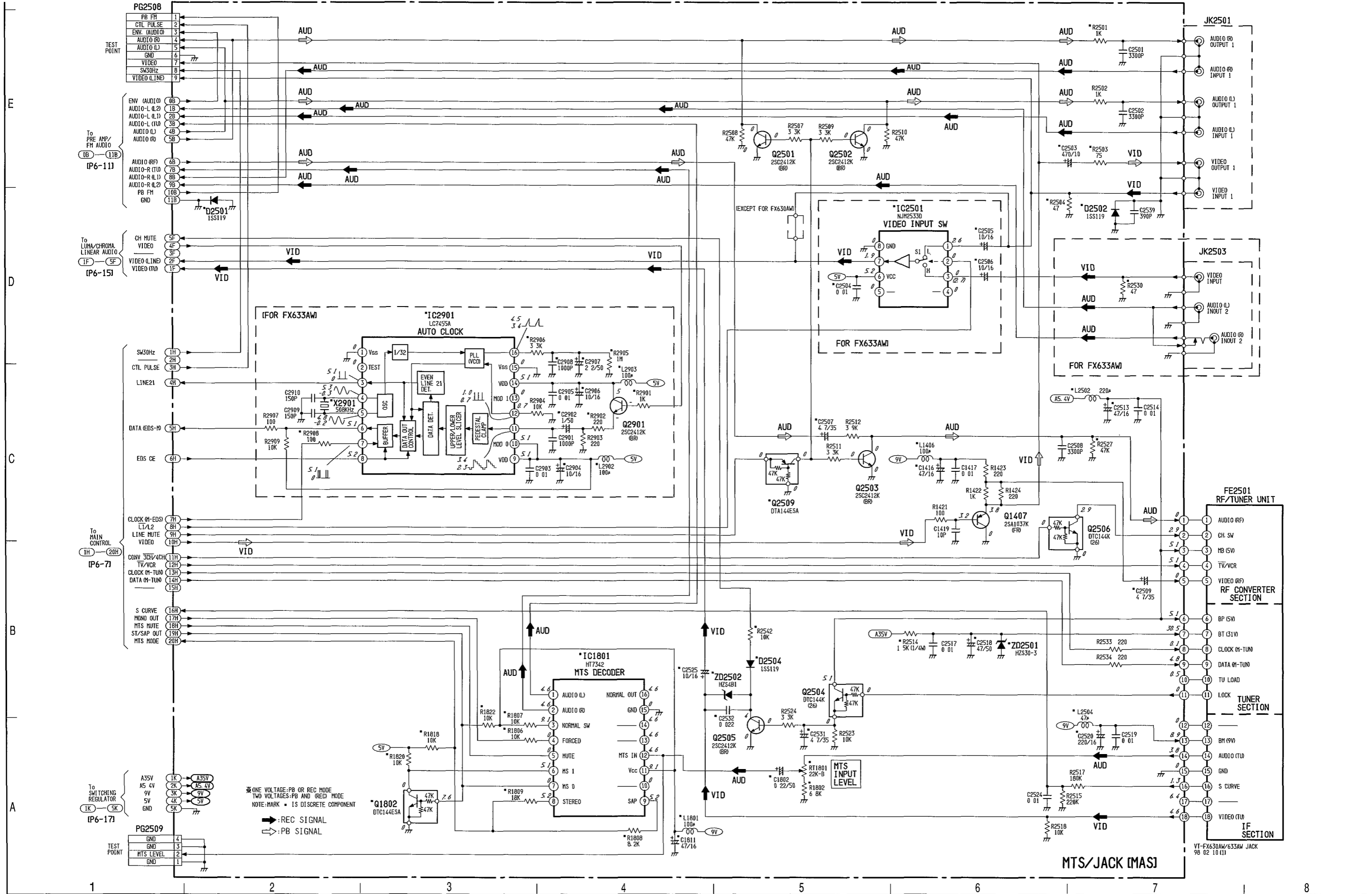
CYL. MOTOR DRIVE, CAPSTAN MOTOR 6 - 4

MECHANISM SENSOR, SERVO WAVEFORMS 6 - 5

MAIN CONTROL [MAS] /LED [LED] (FOR VT-FX633AW) SCHEMATIC DIAGRAM



MTS/JACK[MAS] SCHEMATIC DIAGRAM



* ONE VOLTAGE: PB OR REC MODE
 TWO VOLTAGES: PB AND REC MODE
 NOTE: MARK * IS DISCRETE COMPONENT

→ : REC SIGNAL
 - - - : PB SIGNAL

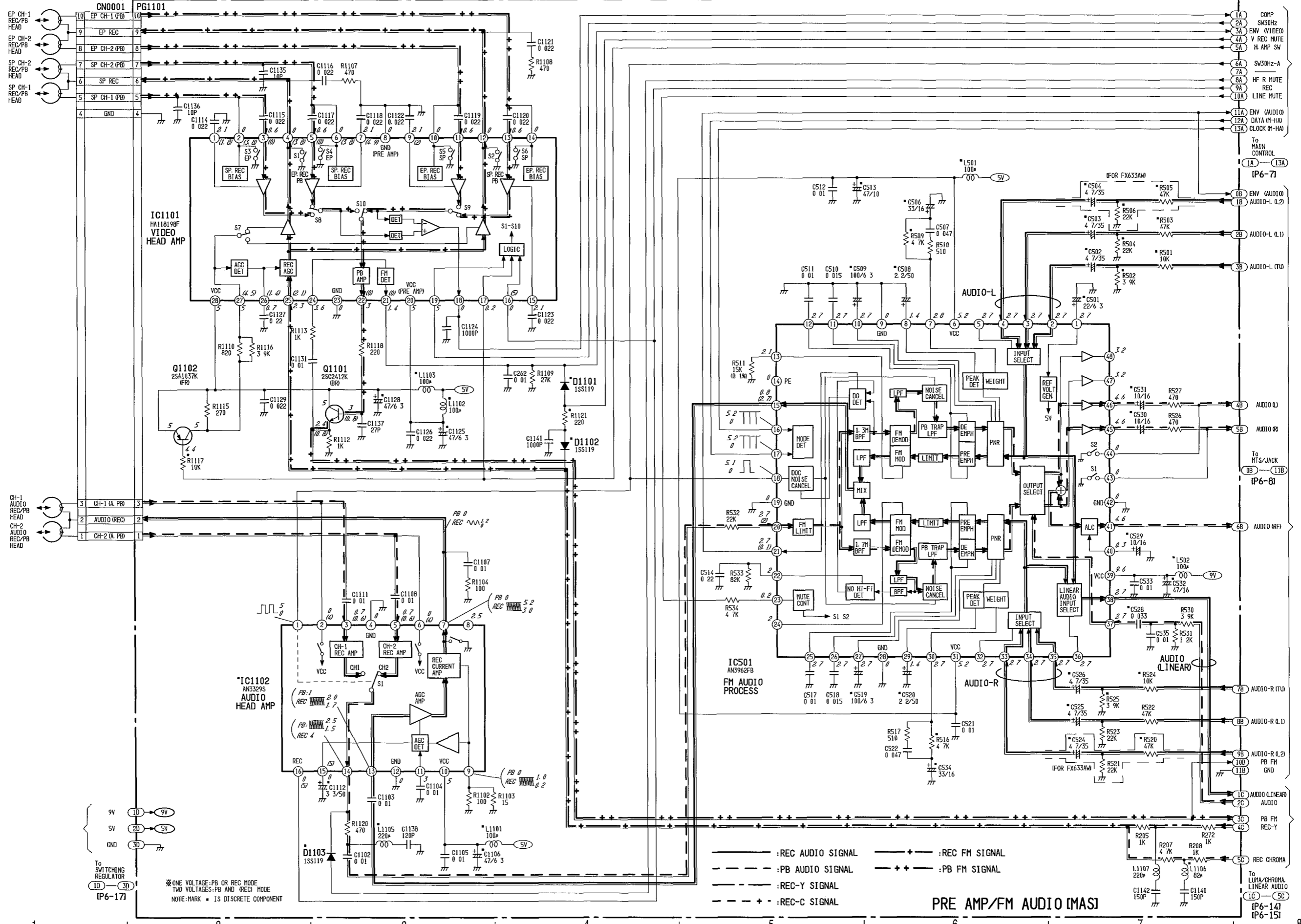
MTS/JACK [MAS]

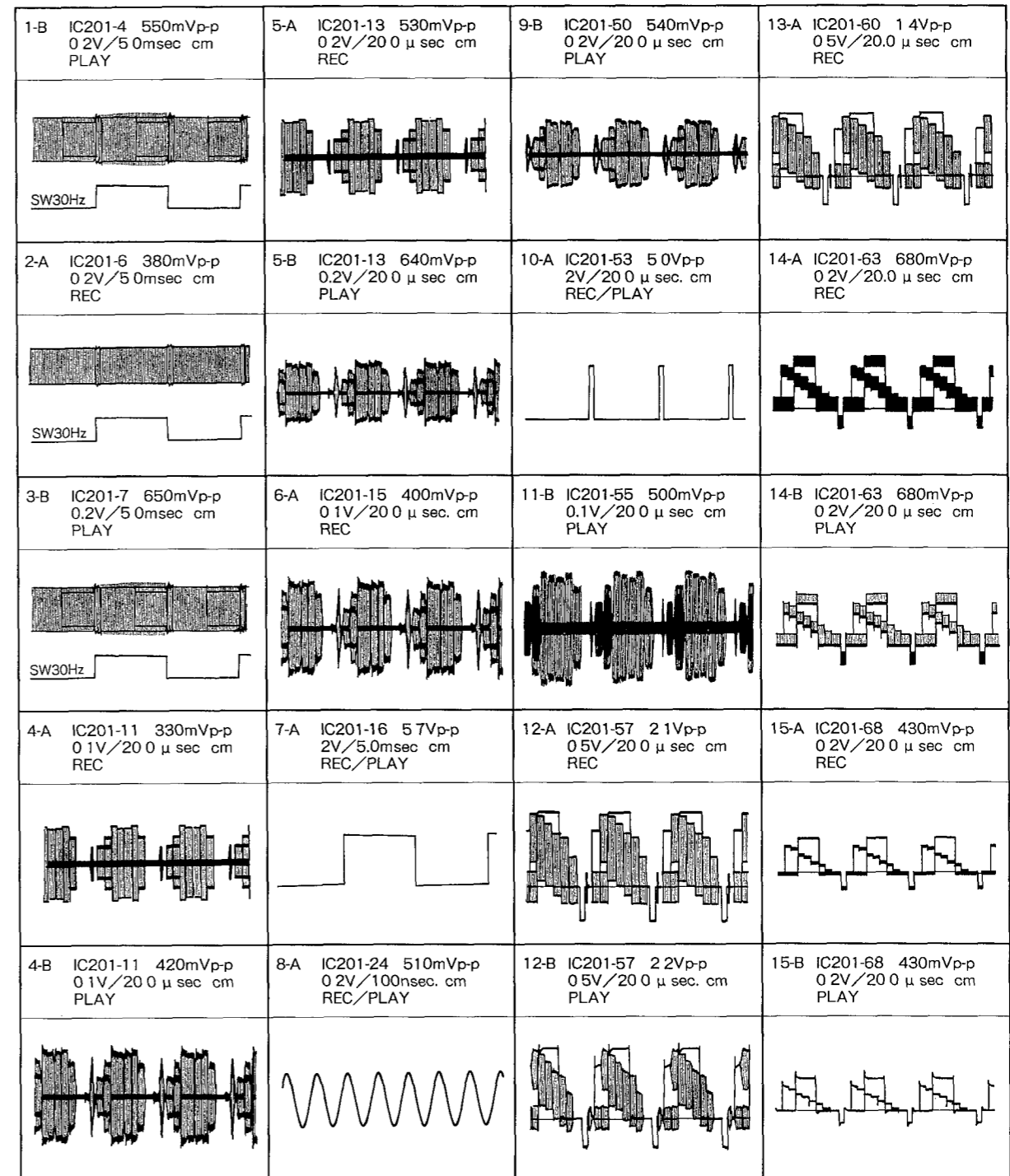
VT-FX630AW/633AW JACK
 98 02 10 (11)

MTS/JACK 6 - 8

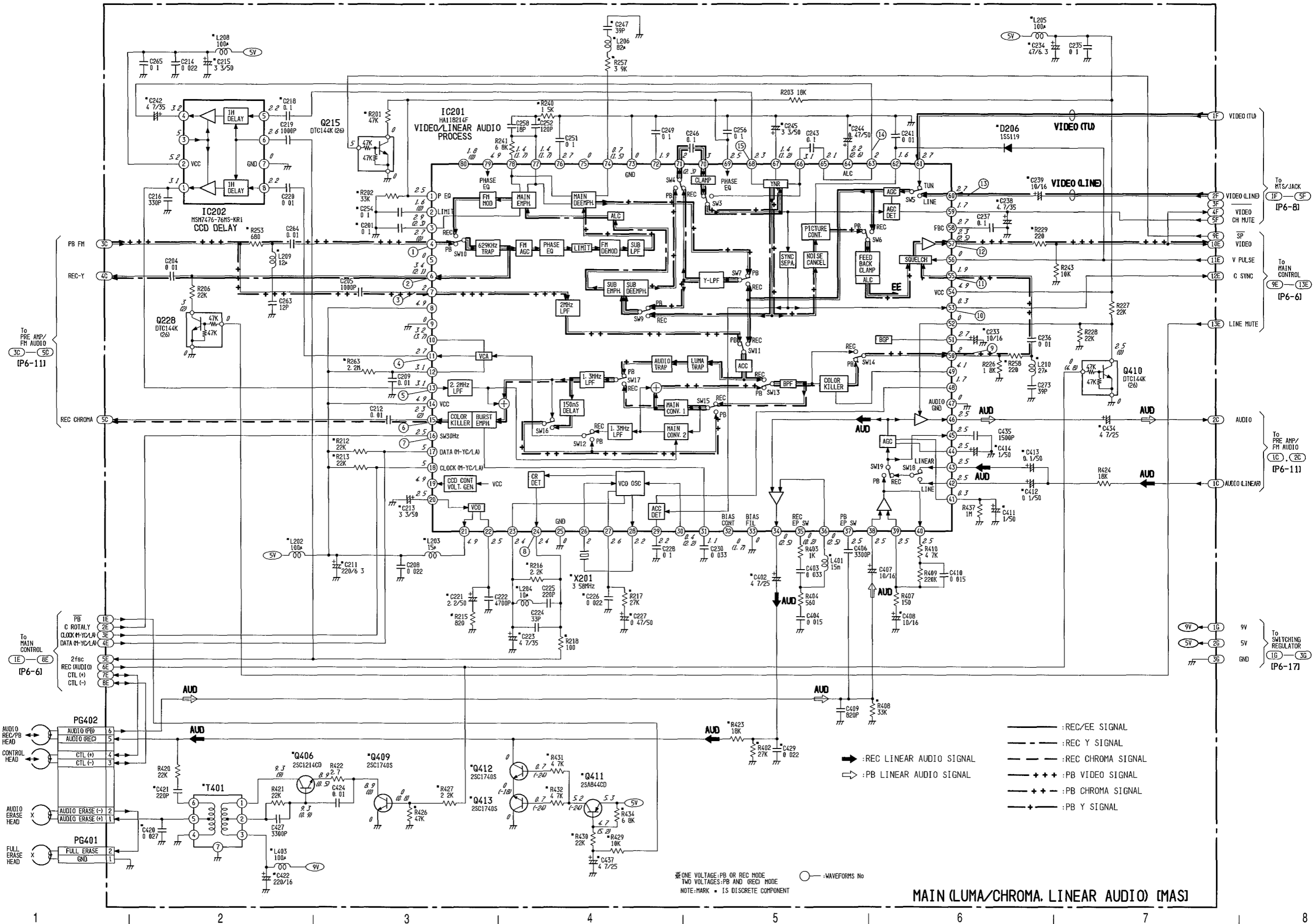
6 - 9 MTS/JACK

PRE AMP/FM AUDIO [MAS] SCHEMATIC DIAGRAM



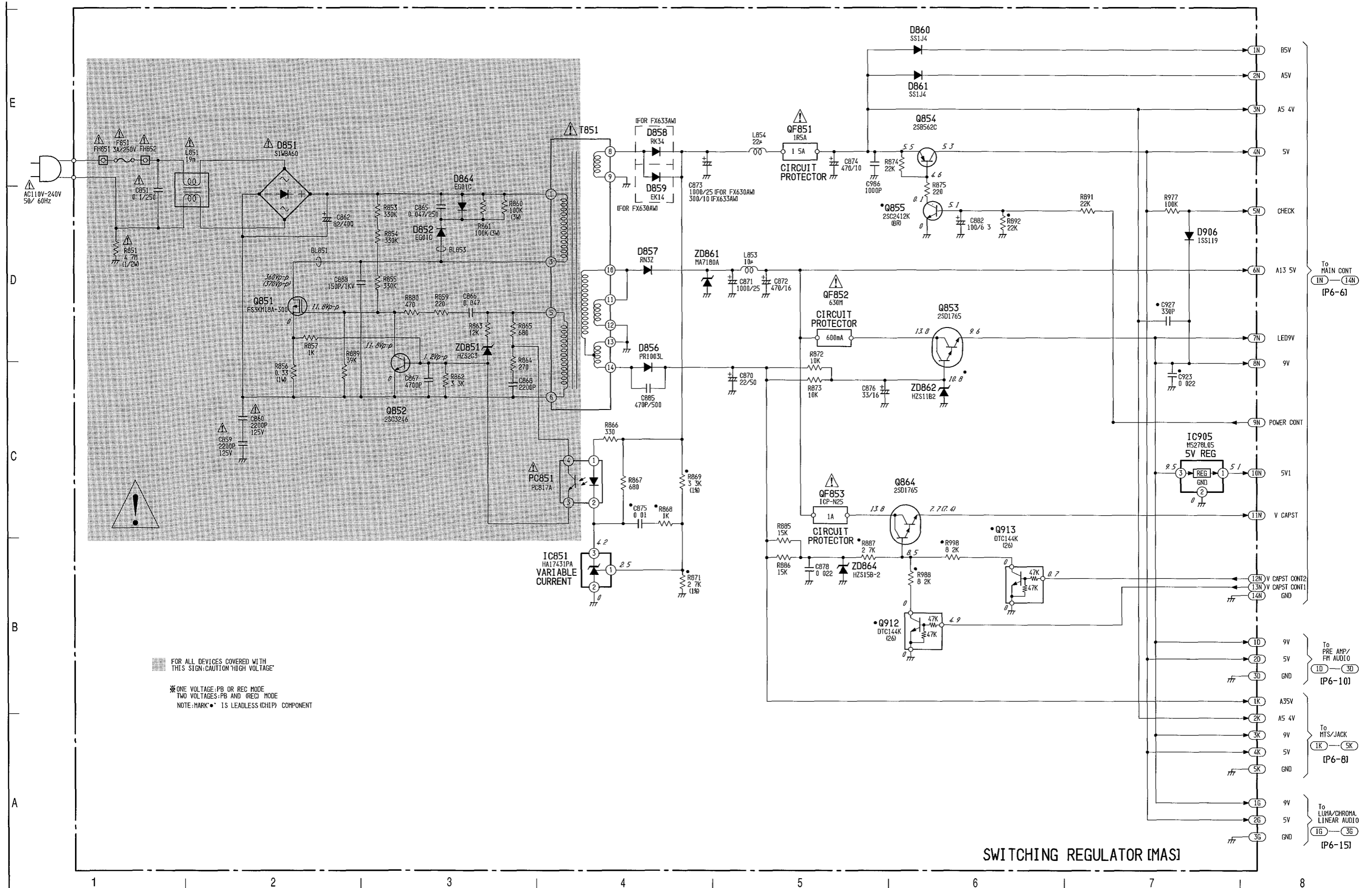


LUMA/CHROMA, LINEAR AUDIO [MAS] SCHEMATIC DIAGRAM



MAIN (LUMA/CHROMA, LINEAR AUDIO) [MAS]

SWITCHING REGULATOR [MAS] SCHEMATIC DIAGRAM



FOR ALL DEVICES COVERED WITH THIS SIGN: CAUTION 'HIGH VOLTAGE'

* ONE VOLTAGE: PB OR REC MODE
 TWO VOLTAGES: PB AND (REC) MODE
 NOTE: MARK • IS LEADLESS (CHIP) COMPONENT

SWITCHING REGULATOR [MAS]

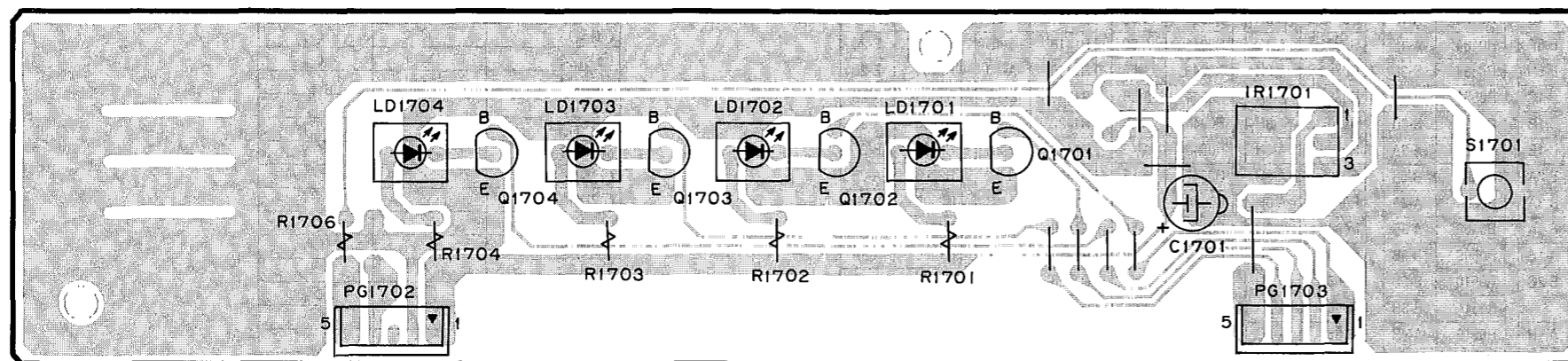
To MAIN CONT
 IN 14N
 IP6-6I

To PRE AMP/
 FM AUDIO
 1D 3D
 IP6-10I

To MTS/JACK
 1K 5K
 IP6-8I

To LUNA/CHROMA
 LINEAR AUDIO
 1G 3G
 IP6-15I

LCD CIRCUIT BOARD (FOR VT-FX633AW)

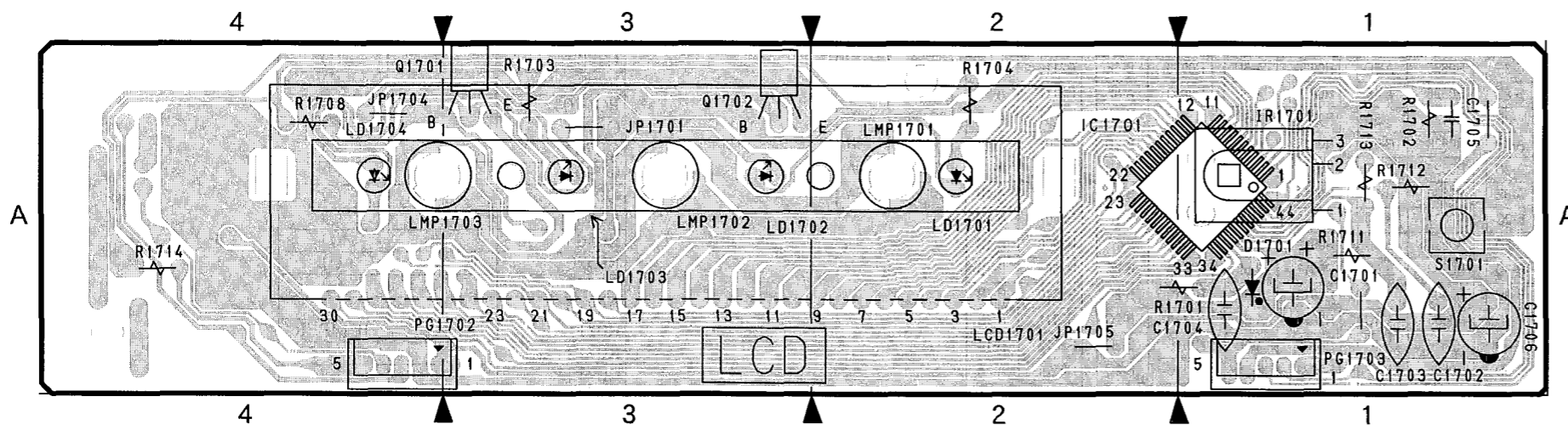


LED [LED]
 [PATTERN No. JA1365-1]
 [FOR FX630AW]

IDENTIFICATION OF PARTS LOCATION

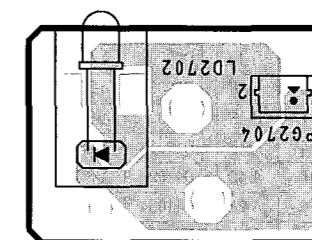
Symbol No	Parts Location	Symbol No	Parts Location
C		LMP1701	2A
C1701	1A	LMP1702	3A
C1702	1A	LMP1703	4A
C1703	1A	PG	
C1704	1A	PG1702	4A
C1705	1A	PG1703	1A
C1706	1A	Q	
D		Q1701	3A
D1701	1A	Q1702	3A
IC		R	
IC1701	1A	R1701	1A
IR		R1702	1A
IR1701	1A	R1703	3A
LCD		R1704	2A
LCD1701	2A	R1708	4A
LD		R1711	1A
LD1701	2A	R1712	1A
LD1702	3A	R1713	1A
LD1703	3A	R1714	4A
LD1704	4A	S	
LMP		S1701	1A

LED CIRCUIT BOARD (FOR VT-FX630AW)



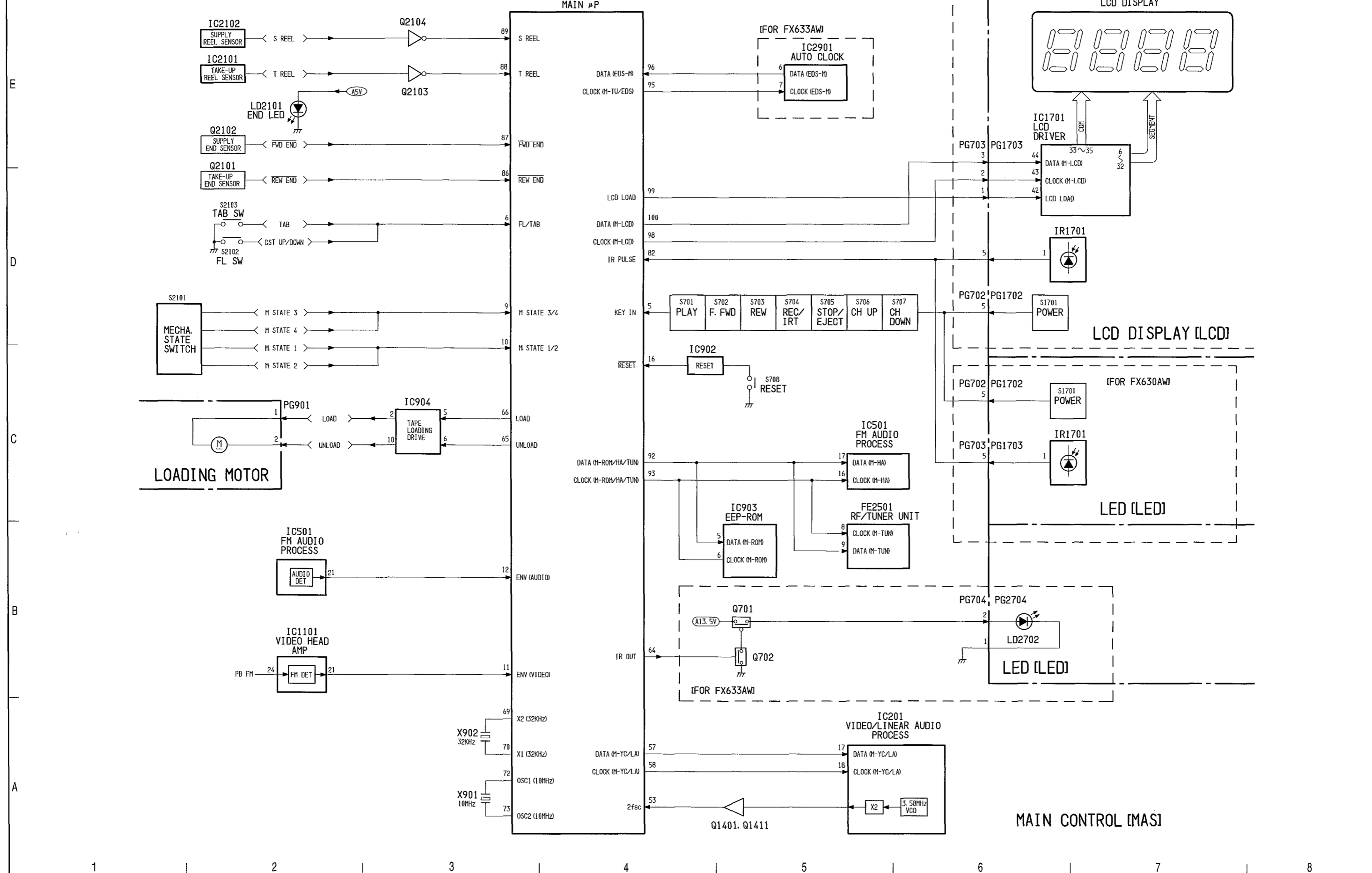
LCD [LCD DISPLAY]
 [PATTERN No. JA1361-2]
 [FOR FX633AW]

LED CIRCUIT BOARD (FOR VT-FX633AW)

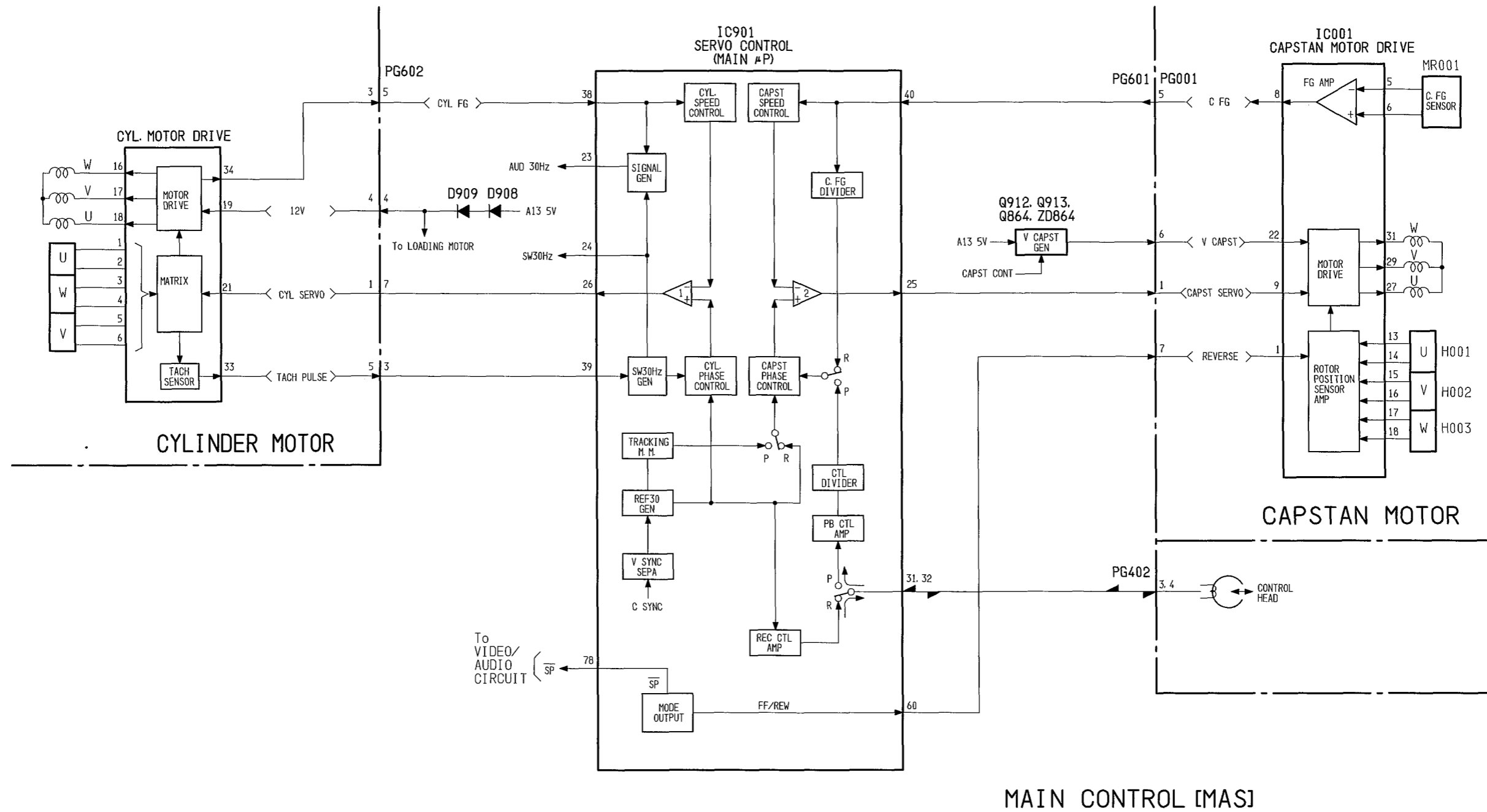


LED [LED]
 [PATTERN No. JA1376-3]
 [FOR FX633AW]

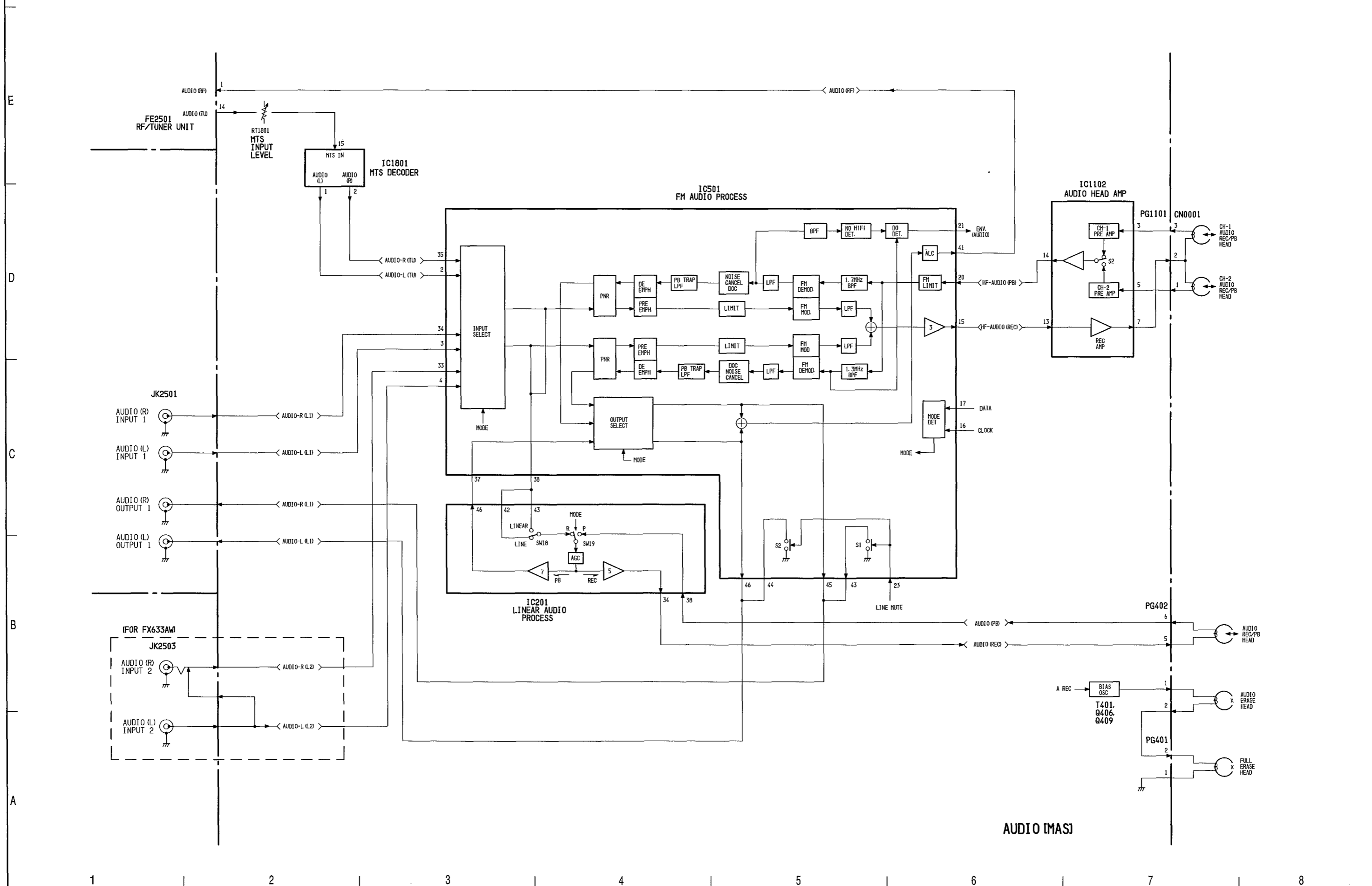
BLOCK DIAGRAM
1. MAIN CONTROL



2. SERVO



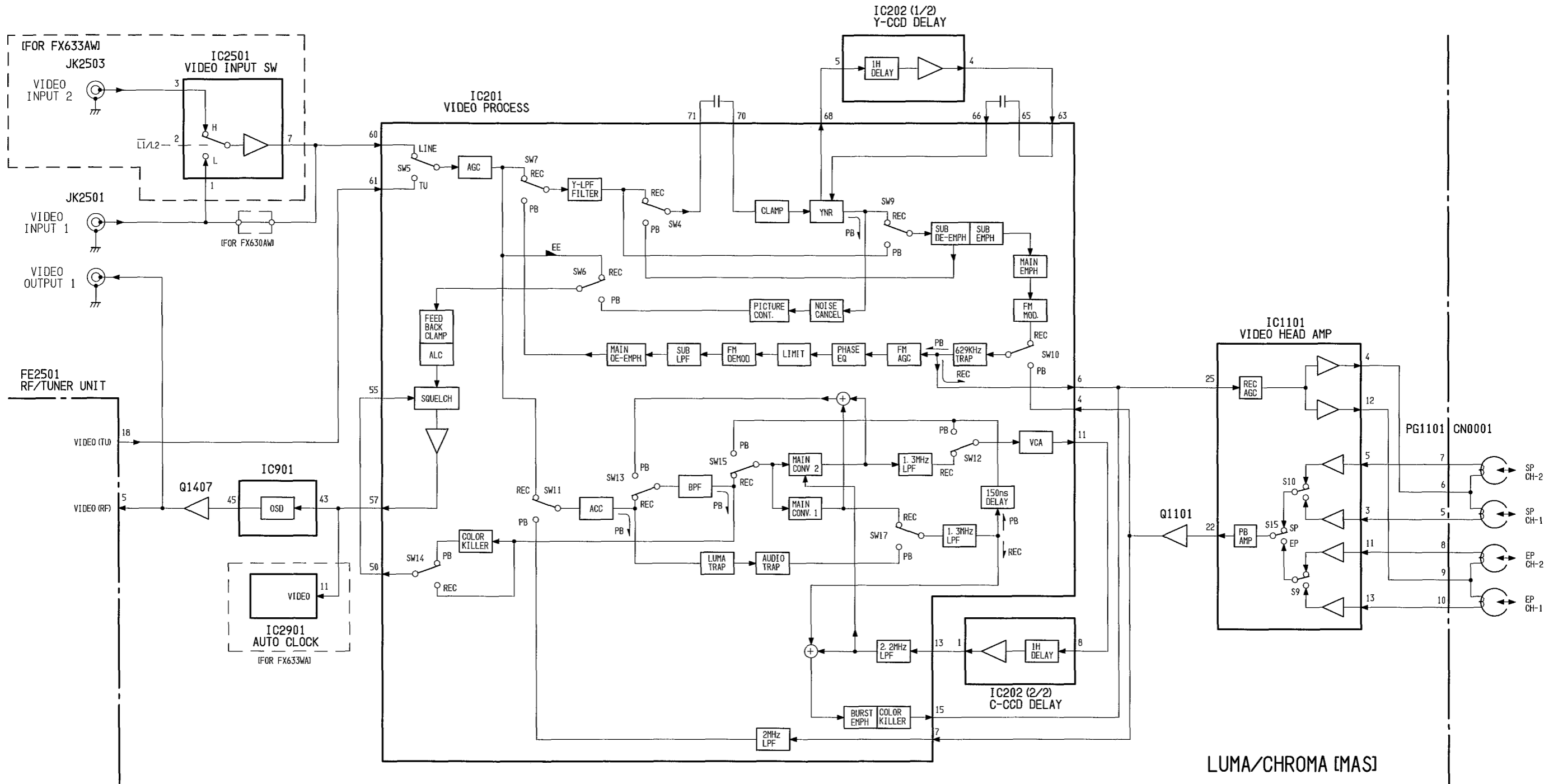
3. AUDIO



AUDIO 6 - 34 6 - 35 AUDIO

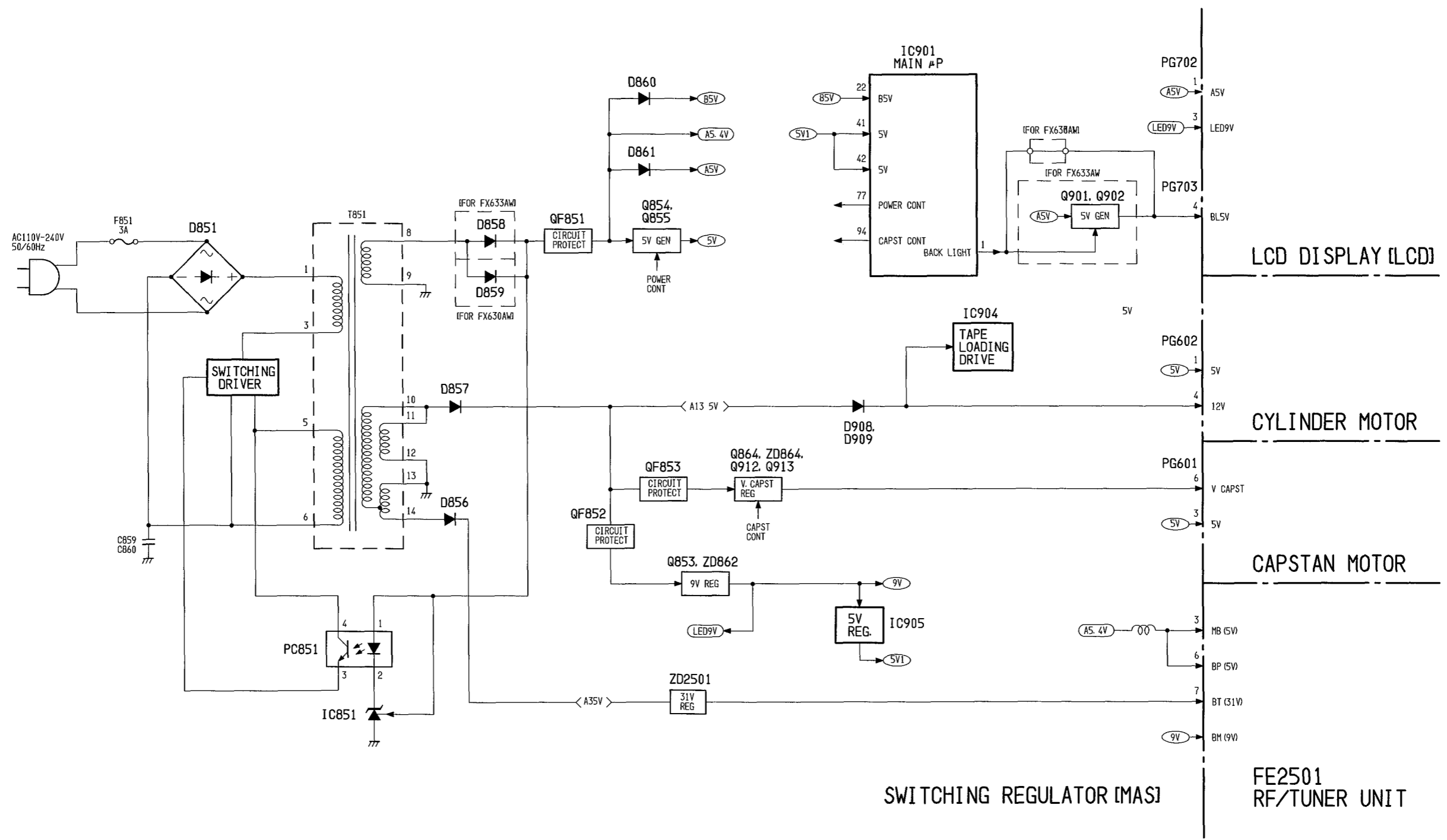
AUDIO (MAS)

4. VIDEO



E
D
C
B
A

5. POWER SUPPLY



◆ Microprocessor Pin Functin Tables

1. LCD DRIVER (IC1701) [FOR VT-FX633AW]

Pin No.	I/O	Active Level	Abbreviation	Function
1	O	Pulse	SEGMENT 1 [S1]	Not used.
2	O	Pulse	SEGMENT 2 [S2]	
5	-	-	SEGMENT 5 [S5]	
6	O	Pulse	SEGMENT 6 [S6]	LCD segment control outputs.
7	O	Pulse	SEGMENT 7 [S7]	
31	O	Pulse	SEGMENT 31 [S31]	
32	O	Pulse	SEGMENT 32 [S32]	
33	O	Pulse	COM1	
34	O	Pulse	COM2	LCD common (COM) control outputs.
35	O	Pulse	COM3	
36	I	Lo	RESET(L)	Initializes the LCD-uP when power is supplied.
37	I	Hi	VDD	A5V power input.
38	I	-	VDD 1	LCD drive bias.
39	I	-	VDD 2	LCD drive bias.
40	-	Lo	VSS	Ground.
41	I/O	-	OSC	Generates a 32kHz signal for key scanning.
42	I	Lo	LCD. LOAD (L) [CS]	LOAD signal between the M-uP and LCD-uP. "Lo" input enables chip select.
43	I	Pulse	CLOCK (M-LCD) [CK]	The data is transferred from the M-uP, synchronized with the clock signal.
44	I	Pulse	DATA (M-LCD) [DI]	

2. MAIN uP (IC901)

Pin No.	I/O	Active Level	Abbreviation	Function																											
1	O	Hi	BACKLIGHT	LCD backlight switching signal.																											
2	-	-	GND	Ground.																											
3	I	A/D	SHUTTLE 2	Not used.																											
4	I	A/D	SHUTTLE 1																												
5	I	A/D	KEY IN	Key matrix input.																											
6	I	A/D	FL/TAB	Cassette position/erase prevention tab detection input. Hi: TAB SW OFF (with tab), Mid: TAB SW ON (without tab), Lo: When cassette is being inserted/ejected. When a cassette without its erase prevention tab is inserted, recording is inhibited, and when the timer is programmed, it is ejected automatically.																											
7	I	Lo	P. STOP(L)	When A5V voltage drops and "Lo" is input, the M-uP detects that a power failure has occurred.																											
8	I	Hi	S-CURVE	Detects the AFT (S-CURVE) signal from the IF unit to fine tune to a station.																											
9	I	A/D	M.STATE 3/4	The signals which detect the mechanism state are input to control the loading motor.																											
10	I	A/D	M.STATE 1/2																												
				<table border="1"> <thead> <tr> <th>Pin</th> <th>EJECT</th> <th>UNLOAD</th> <th>REV</th> <th>R. SLOW</th> <th>SLOW</th> <th>R/P</th> <th>STOP2</th> <th>FF/REW</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>0</td> <td>2.5</td> <td>1.8</td> <td>2.5</td> <td>3.05</td> <td>3.05</td> <td>2.5</td> <td>0</td> </tr> <tr> <td>10</td> <td>1.8</td> <td>3.05</td> <td>0</td> <td>0</td> <td>0</td> <td>1.8</td> <td>2.5</td> <td>3.05</td> </tr> </tbody> </table>	Pin	EJECT	UNLOAD	REV	R. SLOW	SLOW	R/P	STOP2	FF/REW	9	0	2.5	1.8	2.5	3.05	3.05	2.5	0	10	1.8	3.05	0	0	0	1.8	2.5	3.05
Pin	EJECT	UNLOAD	REV	R. SLOW	SLOW	R/P	STOP2	FF/REW																							
9	0	2.5	1.8	2.5	3.05	3.05	2.5	0																							
10	1.8	3.05	0	0	0	1.8	2.5	3.05																							
11	I	A/D	VIDEO ENV.	Audio and video envelope level inputs for autotracking.																											
12	I	A/D	AUDIO ENV.																												
13	I	A/D	MODEL SW	Model switching control																											
14	I	H/MH/ML/L	MTS MODE	Lo: Stereo signal input, Mid : Bilingual signal input, Hi: Mono signal input.																											
15	I	-	A5V	Connected to A5V.																											
16	I	Lo	RESET (L)	Initializes the M-uP when power is supplied.																											
17	O	Hi	MONO OUT	Output to control the MTS decoder output mode to mono.																											
18	-	-	NC	Not used.																											
19	O	Lo/Hi	L1(Lo)/L2	L1/L2 switching control signal output.																											
20	O	Lo/Hi	CONV.CH-3/CH-4	CH-3/CH-4 switching control signal output.																											
21	O	Hi/Lo	TV(Lo)/VCR	RF converter (VCR/TV switching) control signal output.																											
22	I	-	B5V	Connected to B5V.																											
23	O	Pulse	SW30Hz-A	Head switching pulse output for audio circuits.																											
24	O	Pulse	SW30Hz	Head switching pulse output.																											
25	O	PWM	CAPST. PWM	Cylinder and capstan motor servo control outputs.																											
26	O	PWM	CYL. PWM																												
27	O	Hi	V.PULSE	Artificial V sync signal for trick play.																											
28	O	Pulse	C.ROTARY	Chroma rotation control signal.																											
29	O	Hi/Lo	H.AMP SW	SP/EP head switching control signal (pulse during trick play).																											
30	I	Hi/Lo	COMP	SP/EP head switching control signal (pulse during trick play).																											
31	I/O	Pulse	CTL (+)	CTL signal input/output.																											
32	I/O	Pulse	CTL (-)																												
33	-	-	GND	Ground.																											
34	I	Pulse	CTL AMP 1	CTL amp inputs.																											
35	I	Pulse	CTL AMP 2																												
36	I	Pulse	CTL AMP 3																												
37	O	Pulse	CTL AMP(O)	CTL amp outputs.																											
38	I	Pulse	CYL.FG	Cylinder FG (CYL.FG) pulse input. Controls the cylinder speed during recording and playback.																											
39	I	Pulse	TACH PULSE	Tach pulse input. Comparison(feedback) signal which controls the recording cylinder phase.																											
40	I	Pulse	CAPST.FG	Capstan FG (CAPST.FG) pulse input. Used to control the capstan motor.																											
41	I	-	5V (SRV)	Connected to 5V.																											
42	I	-	5V (OSD)	Connected to 5V.																											

Pin No.	I/O	Active Level	Abbreviation	Function
43	I	-	C.VIDEO IN	Video signal input.
44	O	-	V.REF	Reference voltage of analog circuits.
45	O	-	C.VIDEO OUT	Video signal output.
46	-	-	CHARA. BIAS	Not used.
47	-	-	AFC LPF	An LPF is attached externally for AFC.
48	-	-	AFC OSC	Oscillator for AFC.
49	-	-	GND	Ground.
50	I	Pulse	DOSC IN	OSD dot clock oscillator.
51	O	Pulse	DOSC OUT	
52	O	-	2 fsc (7.16MHz)	These generate a 7.16MHz signal as the clock signal for the OSD and servo circuit.
53	I	-	2 fsc (7.16MHz)	
54	I	Pulse	C.SYNC	Composite sync signal input. Controls the cylinder speed during recording.
55	O	Hi	BLUE BACK	Blue background control signal output.
56	O	Hi	HiFi REC	Hi-Fi audio control output during recording.
57	O	Pulse	DATA (M-YC/LA)	Common communication lines with VIDEO/LINEAR AUD. ICs; data is transferred, synchronized with the clock signal.
58	O	Pulse	CLOCK (M-YC/LA)	
59	O	Lo	PB(L)	Sets the video/audio circuits to the playback mode.
60	O	Hi	REVERSE	Sets the drive direction of the capstan motor to reverse.
61	O	Hi	AUDIO REC	Sets the audio circuit to the recording mode.
62	I	Pulse	CTL RESET	Not used.
63	-	-	NC	Not used.
64	O	Pulse	IR OUT	Signal output to the cable box control circuit.
65	O	Hi	UNLOAD [LM2]	Loading motor drive signals which set the mechanism to the commanded mode.
66	O	Hi	LOAD [LM1]	
67	O	Hi	LM CONT.	Signal to control the voltage applied to the loading motor when forward slow is switched to reverse slow and vice versa.
68	-	-	TEST	Ground
69	I	-	X 2(32kHz)	These generate a 32.768kHz signal as the clock signal for the VCR's clock.
70	O	-	X 1(32kHz)	
71	-	-	Vss	Ground
72	I	-	OSC 1(10MHz)	These generate a 10MHz signal as the system clock signal in modes other than back-up.
73	O	-	OSC 2(10MHz)	
74	O	Hi	LINE MUTE	Audio output muting control.
75	O	Hi/Lo	CAPST. Q.R	Cylinder and capstan motor phase control outputs.
76	O	Hi/Lo	CYL. Q.R	
77	O	Hi	POWER CONT	Power on/off control. When the power switch is operated, a cassette is inserted or a power failure is detected, the internal power supply is switched to be on/off.
78	O	Lo	SP(L)	Not used.
79	O	Hi	V.REC MUTE	Video signal record muting control. Prevents the signal from being supplied to the video heads.
80	O	Lo	EDS CE	LOAD signal between the M- μ P and AUTO CLOCK IC.
81	O	Hi	MTS MUTE	Tuner audio muting control.
82	I	Pulse	IR PULSE	Receives the remote control code from the infrared receiver and sets the VCR to the specified mode.
83	O	Hi/Lo	V.CAPST. CONT.1	These are output in the slow, still, playback recording, fast forward and rewind modes to control the voltage applied to the capstan motor.
94	O	Hi/Lo	V.CAPST. CONT.2	

⑧③ V CAPST.CONT 1	⑧④ V CAPST CONT 2	V CAPST
Hi	Hi	7.5V
Lo	Hi	9.5V
Lo	Lo	13.5V

Pin No.	I/O	Active Level	Abbreviation	Function
84	O	Hi	REC	Sets the video and audio head amp circuits to the recording mode.
85	I	Pulse	LINE21	EDS LINE 21H pulse input.
86	I	Lo	REW END (L) [EST]	When "Lo" is input from the mechanism sensor, the current mode is released. Two sensors detect the two ends of tape. When "Lo" is input from both sensors, the M-uP detects that a cassette is not loaded in the VCR.
87	I	Lo	FWD END (L) [ESS]	
88	I	Pulse	T.REEL	Calculates the period of the take-up reel pulse to detect whether or not slack tape is taken up on the reel. If slack tape is not taken up, the M-uP stops the mechanism. The supply reel pulses are used with the take-up reel pulses to calculate the tape remaining time.
89	I	Pulse	S.REEL	
90	I	Lo	CHECK	Checks short-circuits in the 5V/9V power supplies. (This pin goes "Lo" normally when power is off.)
91	O	Hi	ST/SAP OUT	Output to control the MTS decoder so it is set to the SAP mode.
92	I/O	Pulse	DATA (M-ROM/HA/TUN)	Common communications lines with the ROM/Hi-Fi AUD/UV-Tuner, data is communicated, synchronized with the clock signal.
93	O	Pulse	CLOCK (M-ROM/HA/TUN)	
95	O	Pulse	CLOCK (M-TU)	Communication lines with the U/V TUNER; data is transferred, synchronized with the clock signal.
97	O	Pulse	DATA (M-TU)	
96	I	Pulse	DATA (EDS-M)	EDS caption data input.
98	O	Pulse	CLOCK (M-LCD)	Communication lines with the LCD DRIVER; data is transferred, synchronized with the clock signal.
100	O	Pulse	DATA (M-LCD)	
99	O	Lo	LCD LOAD	LOAD signal between the M-uP and LCD DRIVER.

◆ Trouble Display Function (FOR VT-FX633AW)

This VCR has a function which displays mechanism malfunctions, etc. in the LCD display. Use this function to analyze the cause when the power is shut off due to a malfunction, etc. in the mechanism. Two types of information are displayed, (1)The operation mode when the malfunction occurred, (2)Malfunction Codes.

The details of the malfunction are displayed as follows.

Procedure to display a malfunction

Press the "CHANNEL ▼" button on the VCR when the power is turned off and hold it; the malfunction code is displayed while the button is held depressed.

Procedure to clear the malfunction display

Press the "PLAY" button on the VCR and hold it, then press the microprocessor "RESET" button to initialize the trouble display.

LCD DISPLAY

Operation mode

Malfunction Codes

Operation mode

[Display of Details of Malfunction]

Displayed No.	Item	Details
00	No malfunction	
01	FL mechanism lock	Malfunction in insertion/ejection of cassette
02	Capstan lock	Malfunction of capstan motor drive during tape unloading
04	Reel lock	Reel rotation trouble when tape is running
05	Cylinder lock	Cylinder rotation malfunction
07	Loading mechanism lock	Malfunction in shifting mechanism mode
16	Servo lock	Shorting of 5V detected

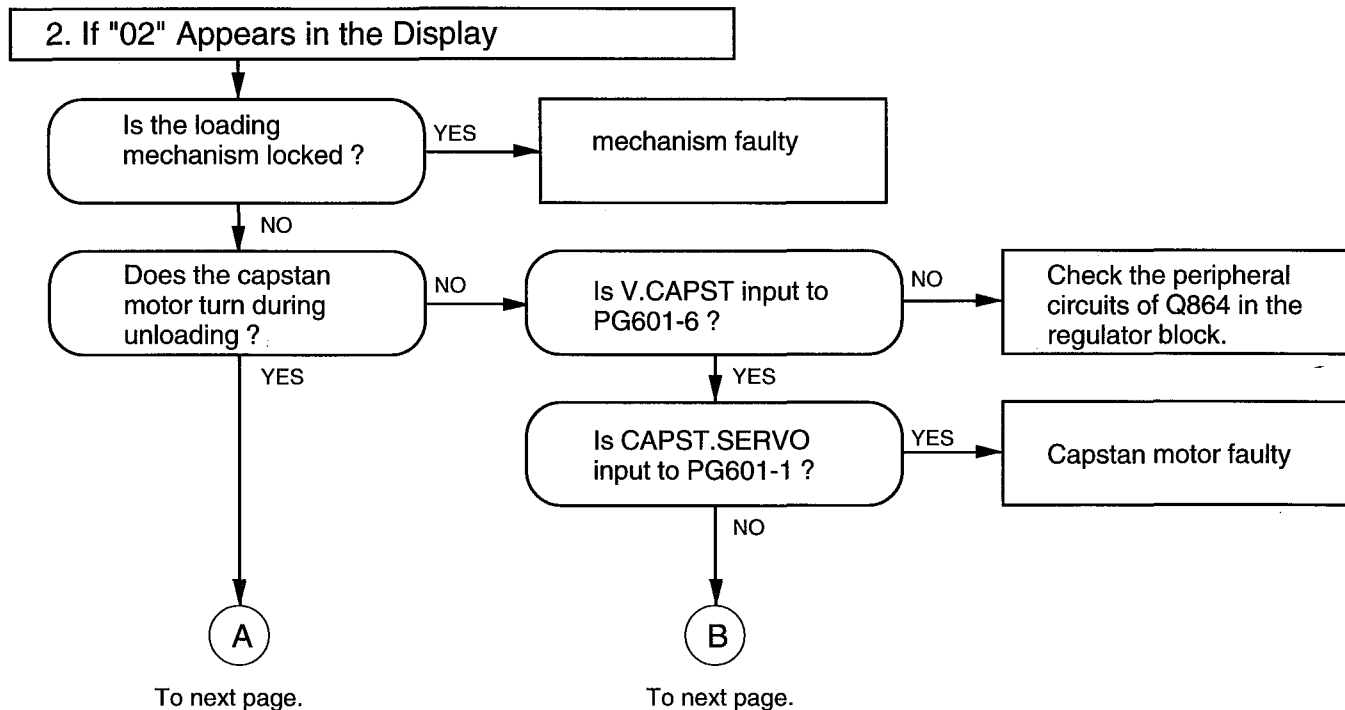
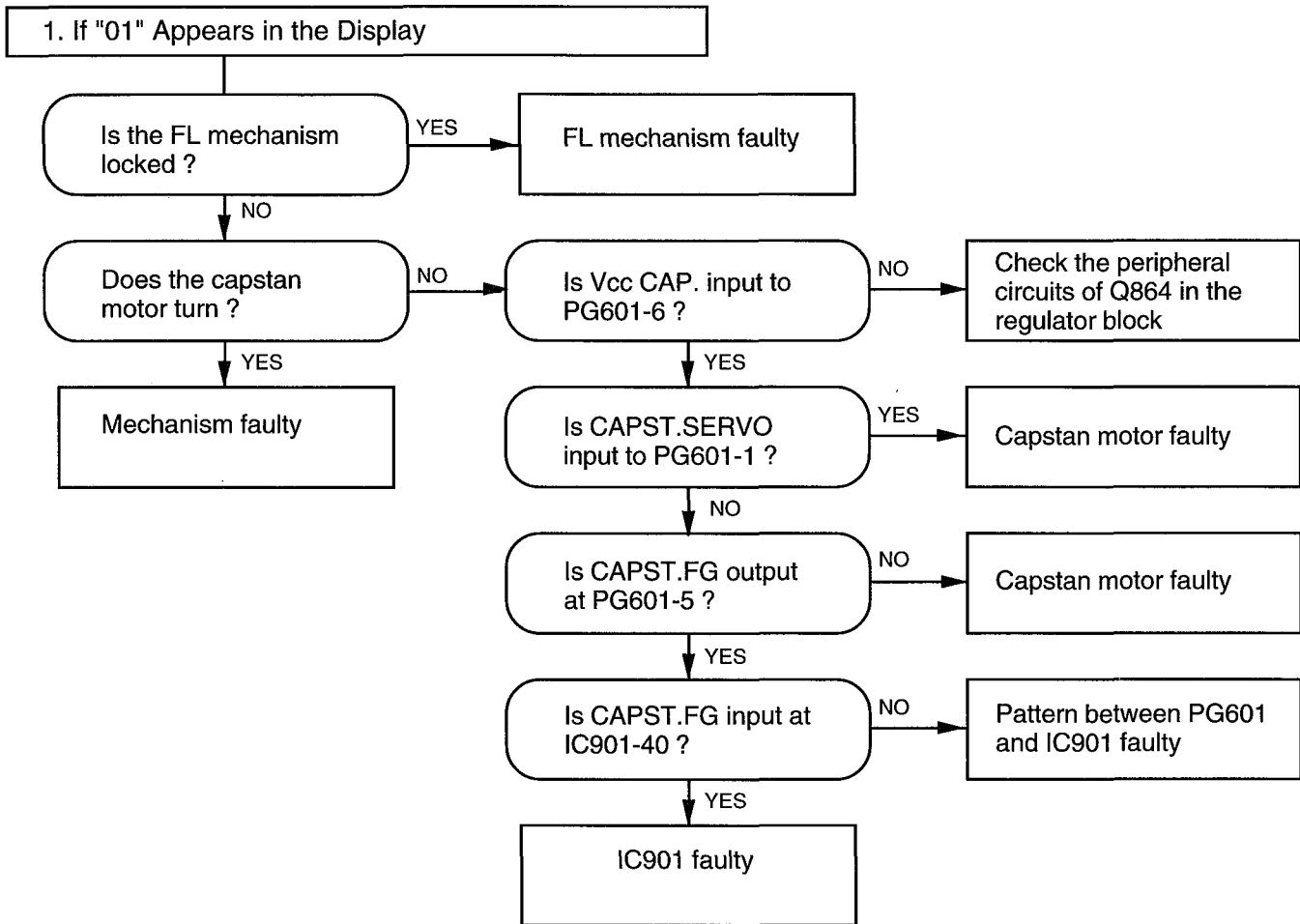
[Mode Display when Malfunction Has Occurred]

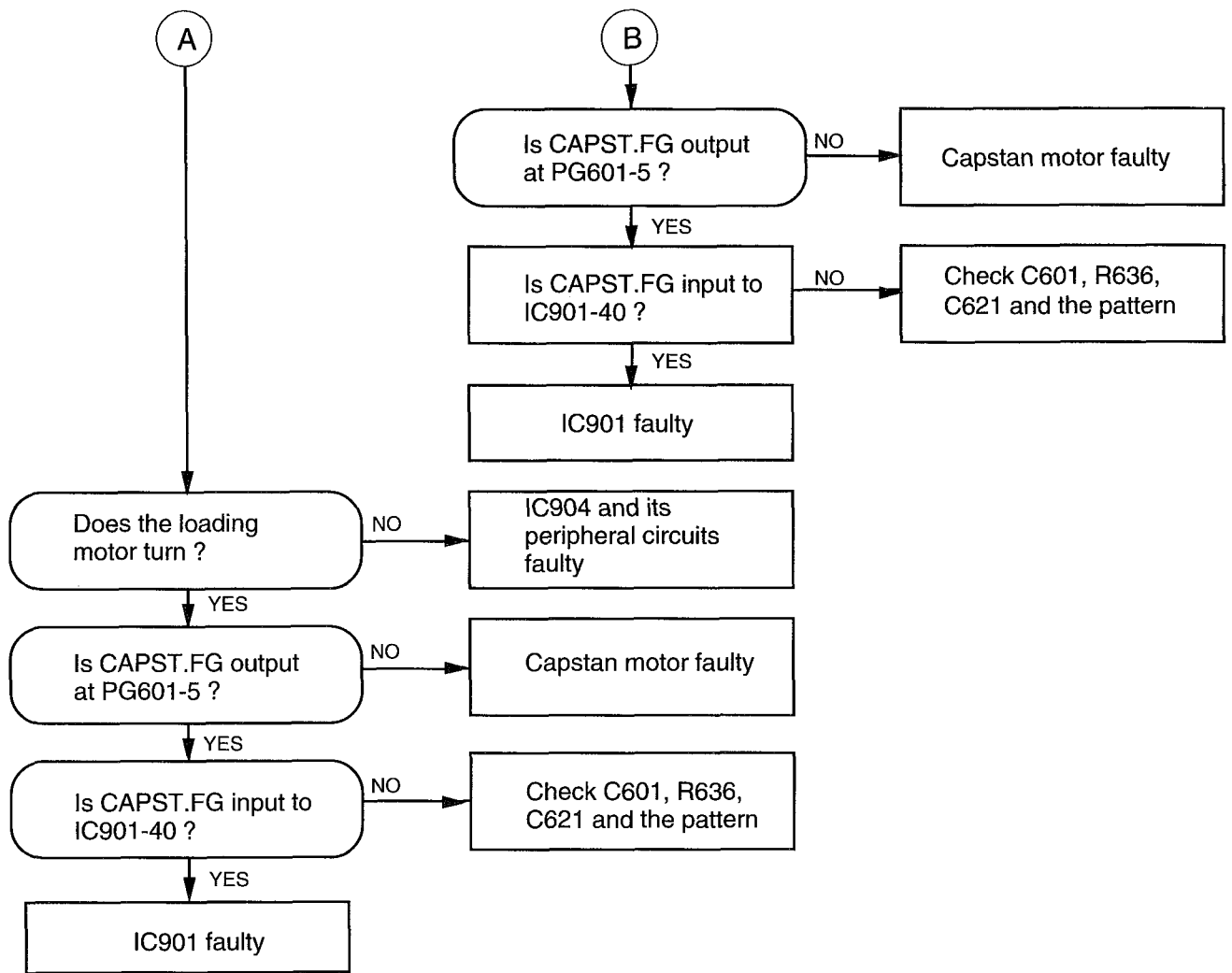
Mode	Display
Stop	No display
Fast forward	FF
Rewind	REW
Recording	REC
Recording pause	REC (flashes)
Playback	PLAY

Mode	Display
Reverse playback	-PLAY
Forward search	SRCH
Reverse search	-SRCH
Slow	SLOW
Still play	STILL
Reverse slow	-SLOW

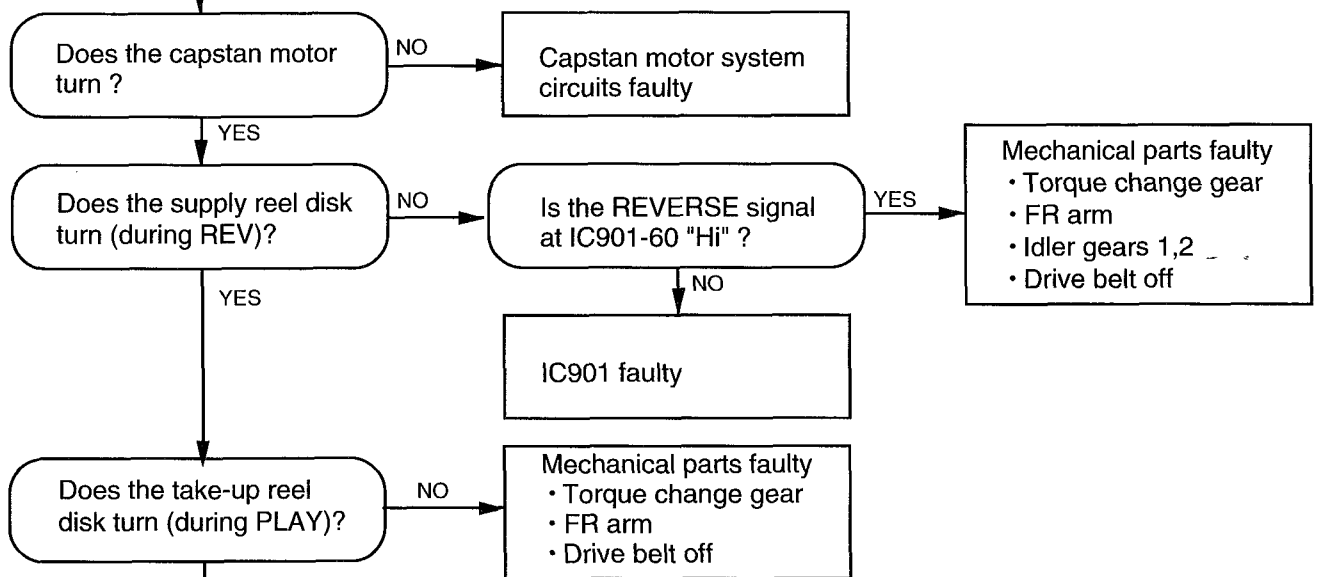
No symbols are displayed if the malfunction occurred when a cassette was inserted or ejected, or the power was switched on from off, and off from on.

Troubleshooting According to Malfunction Display



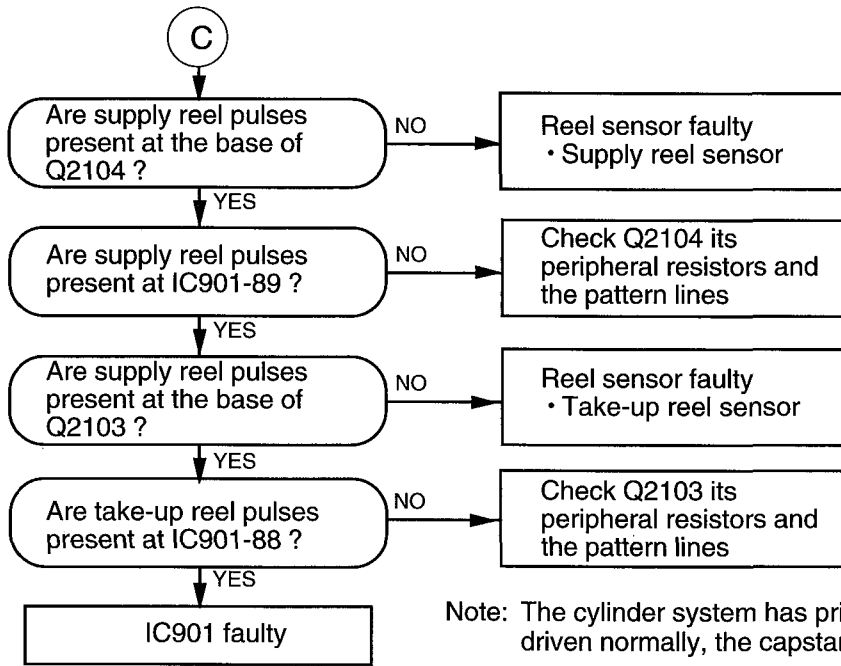


3. If "04" Appears in the Display



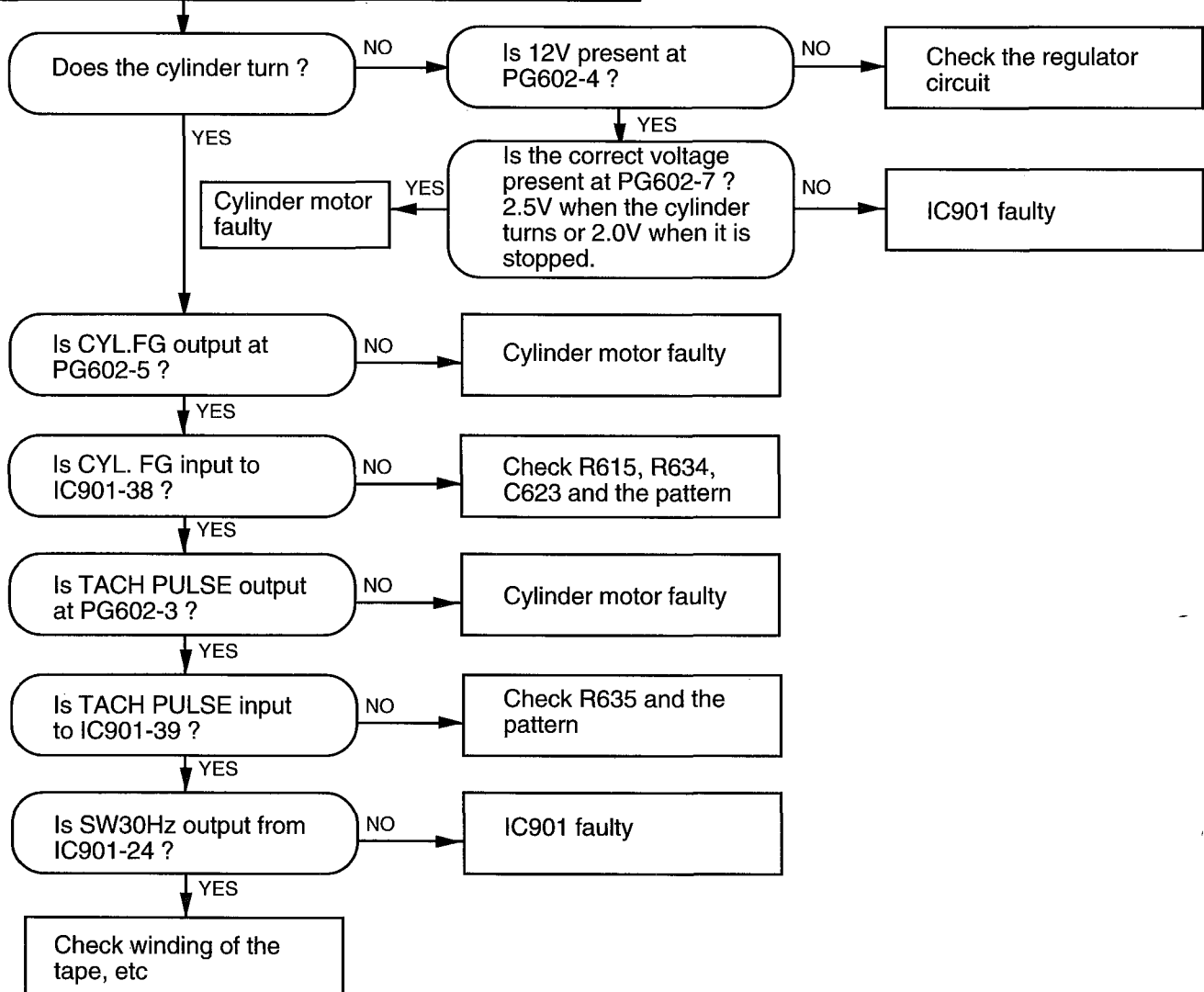
C

To next page.

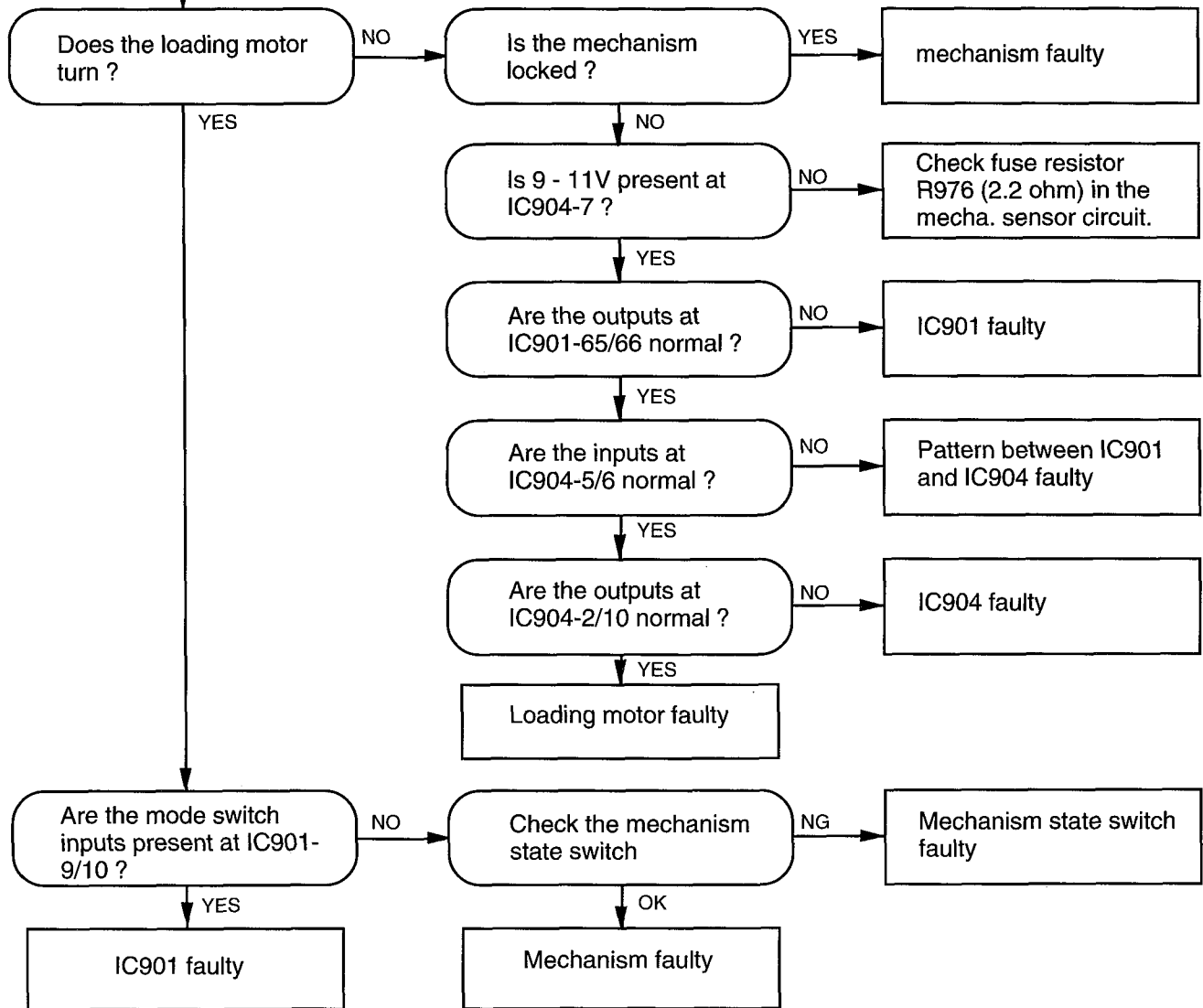


Note: The cylinder system has priority. If the cylinder motor is not driven normally, the capstan motor will not be driven.

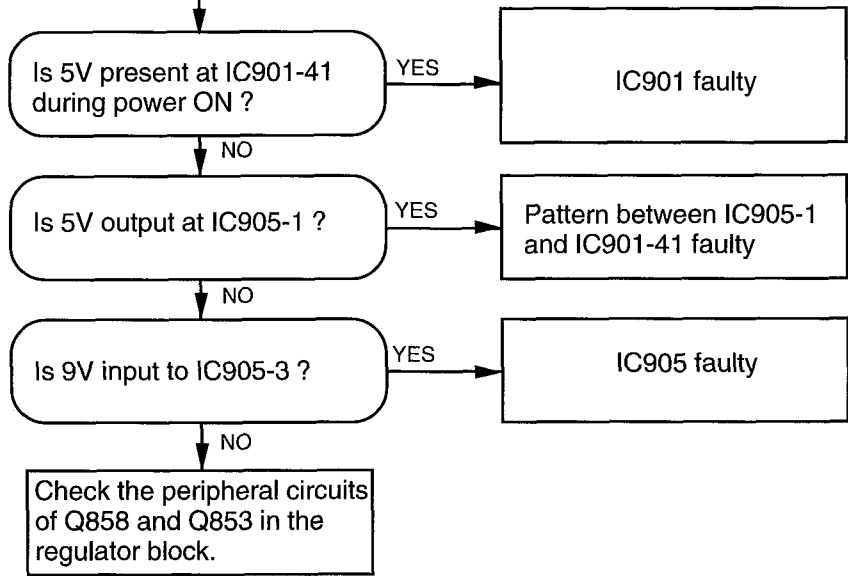
4. If "05" Appears in the Display



5. If "07" Appears in the Display



6. If "16" Appears in the Display



◆ Trouble shooting the Switching Regulator

This section summarizes the troubleshooting of defects in the switching regulator. Perform diagnosis, taking each defective phenomenon into consideration. Even if the same defective phenomenon appears, it may be caused by other circuits, not by the switching regulator, so use this item as a reference.

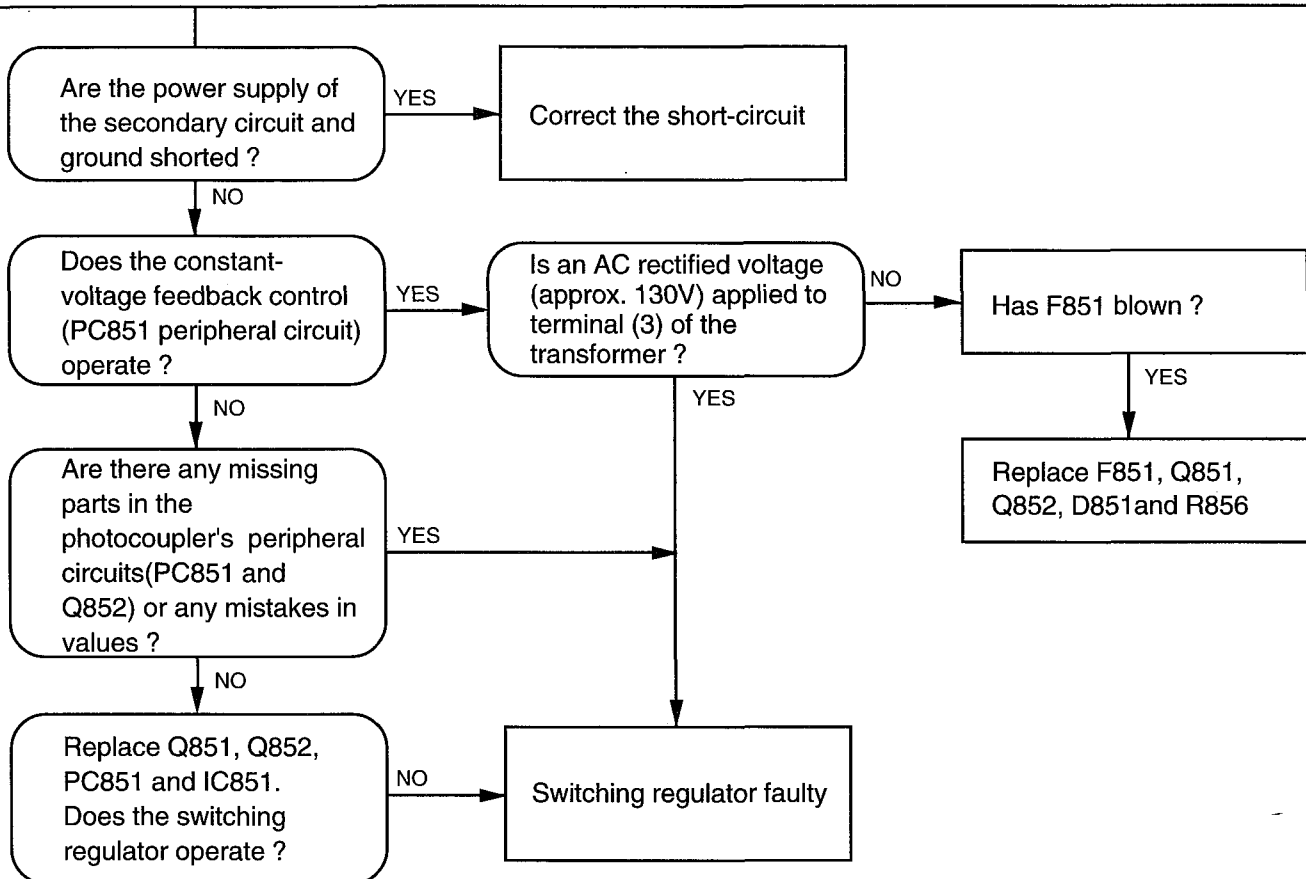
Cautions when checking and repairing the switching regulator circuit

When using test equipment to check the primary circuit (circuit No. 8XX) of the power supply, use a two-pole AC outlet for the test equipment (attach a conversion adapter to the test equipment plug to connect it to a three-pole outlet).

Be careful of electric shock

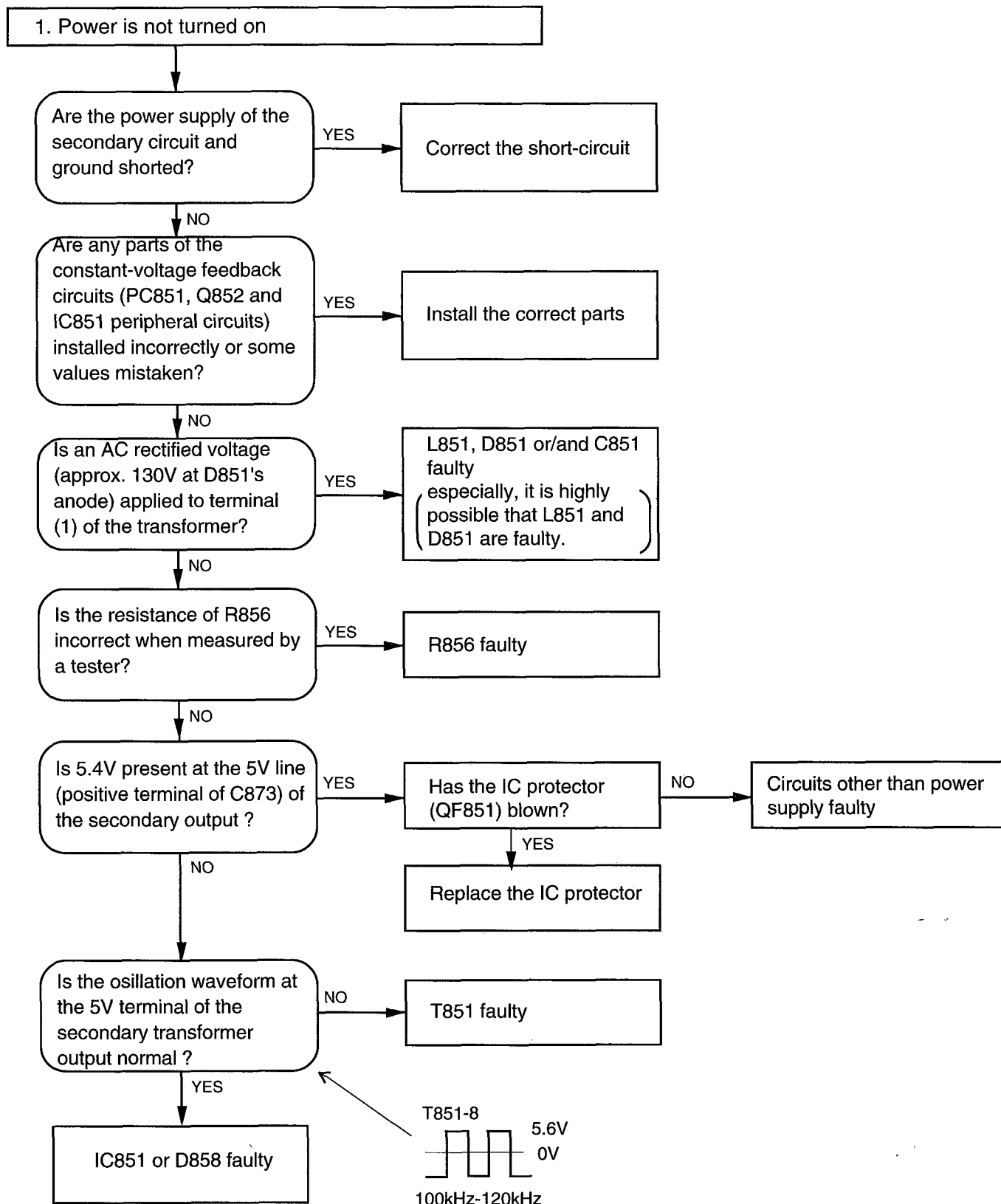
A heat sink which generates a high voltage is provided with Q851 in the switching regulator block. "HIGH VOLTAGE" is printed on the heat sink. Take great care of this section when servicing or handling the VCR when it is turned on. (Supplement: The heat sinks of Q853 and Q864 do not generate a high voltage.)

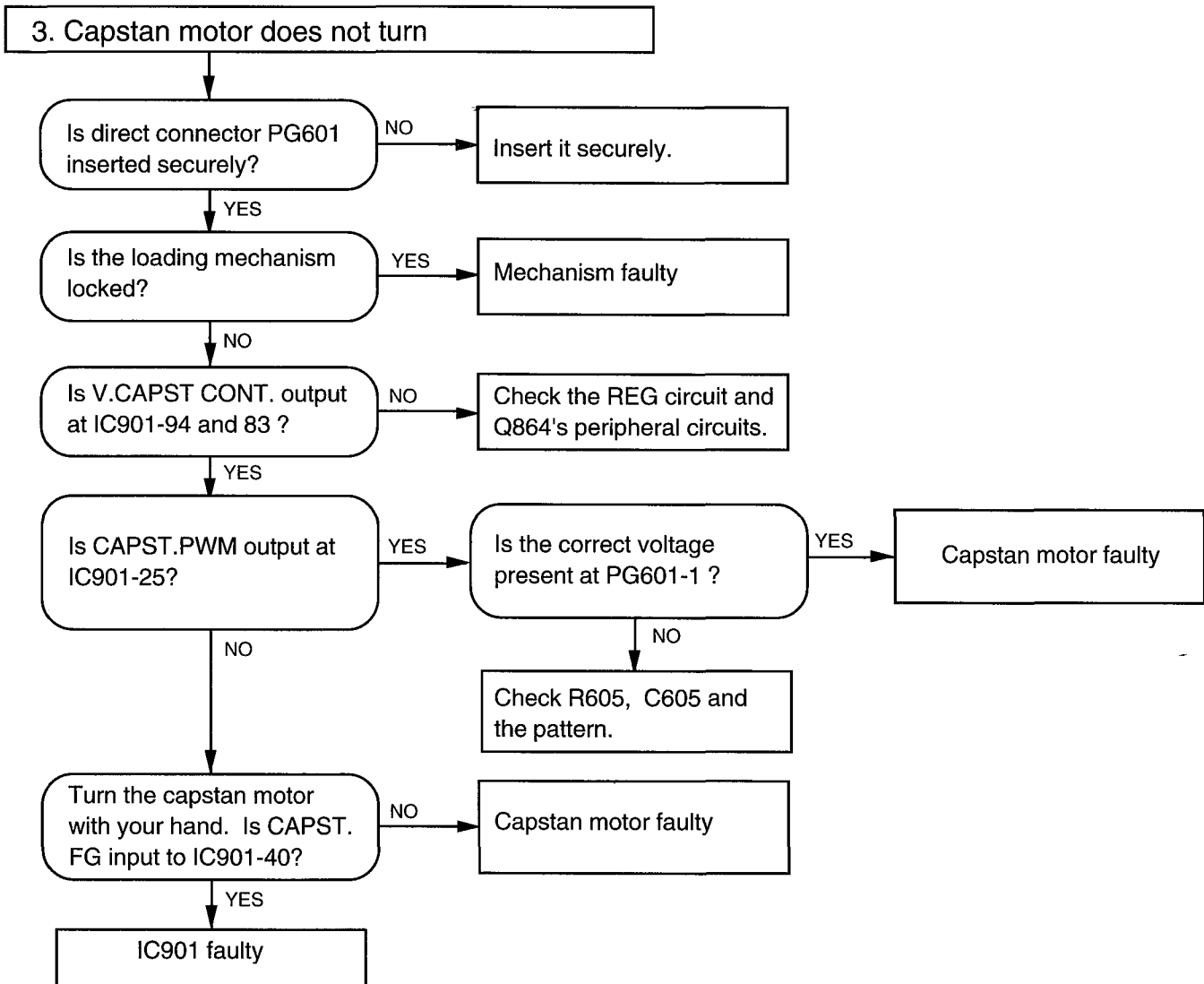
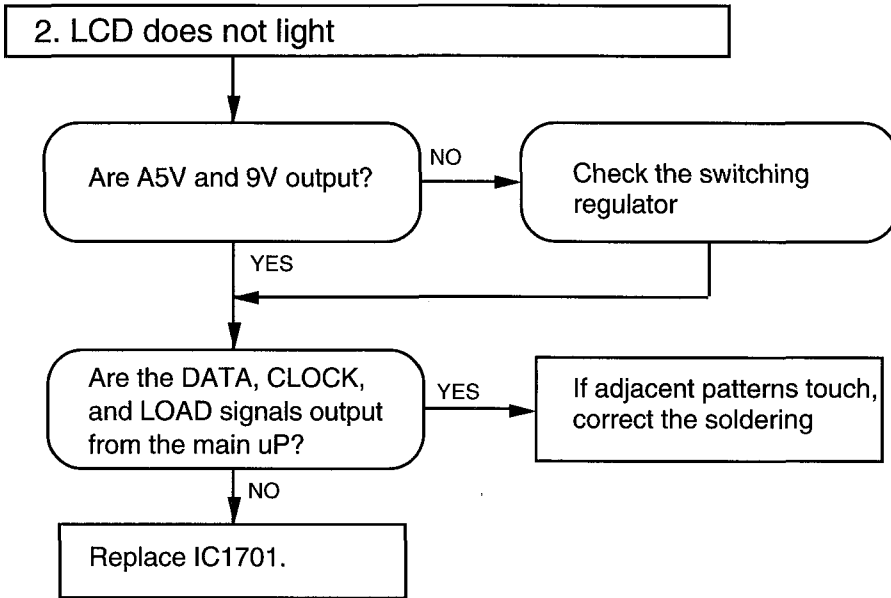
Method to judge that the switching regulator is faulty

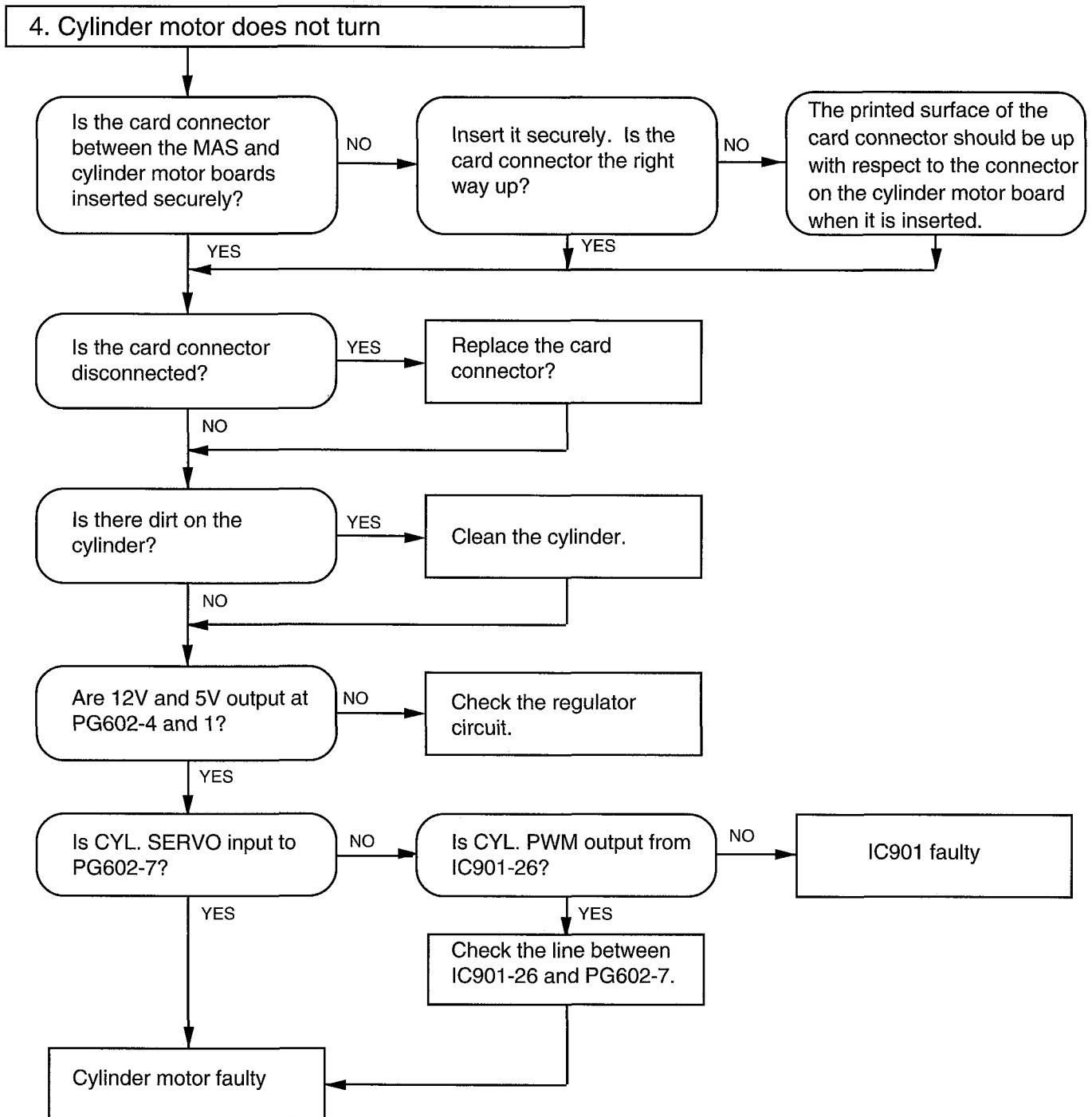


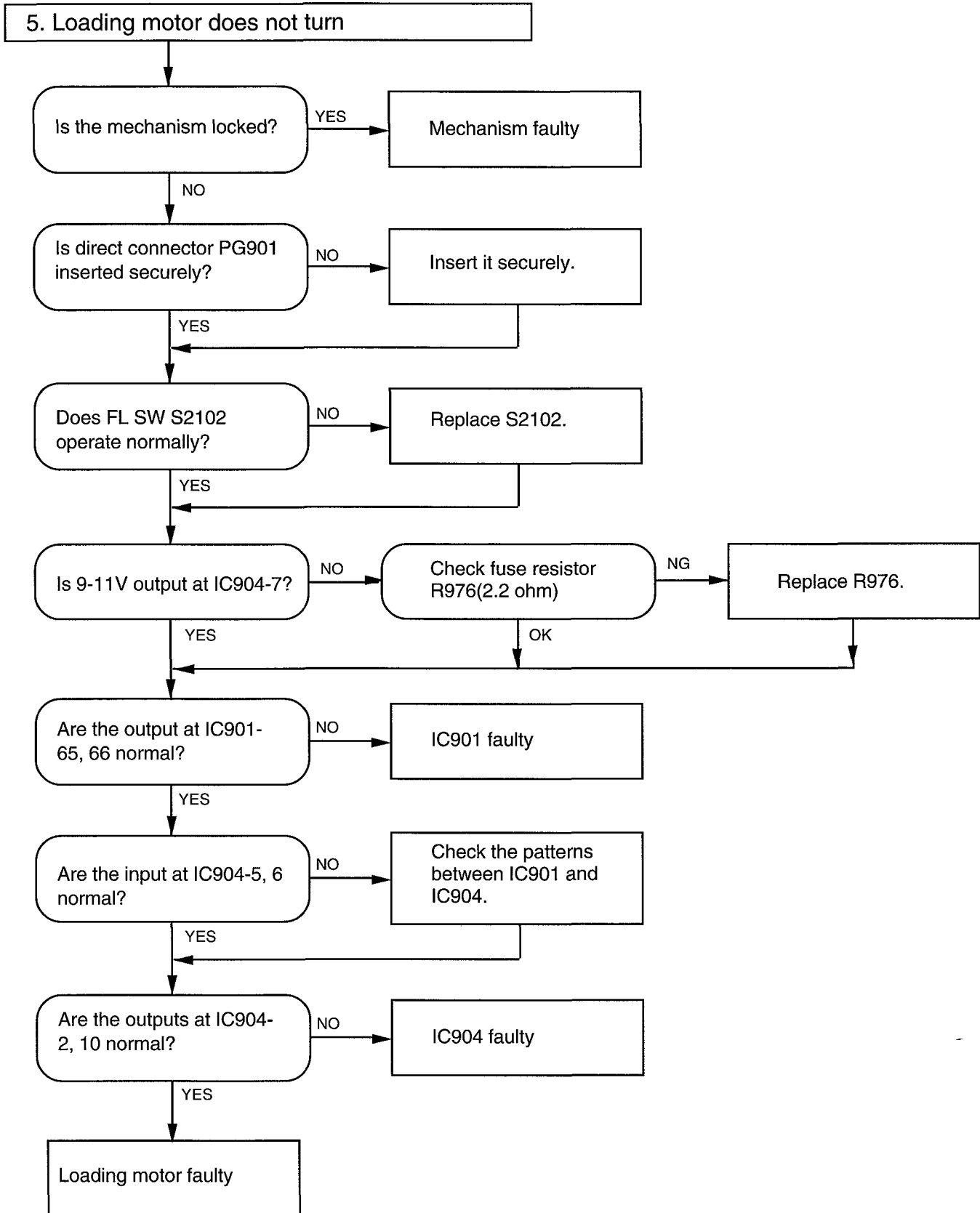
Troubleshooting by Observing Defective Phenomena

If the switching regulator is normal and there is a defect in another circuit (shorting between the power supply and ground of the secondary circuit), the protective function of IC851 operates and the power is not turned on. If a defect occurs in the switching regulator, a phenomenon such that the VCR power is not turned on or the power fuse has blown also occurs.









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