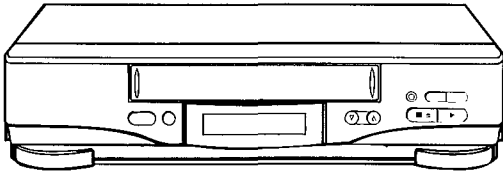


HITACHI

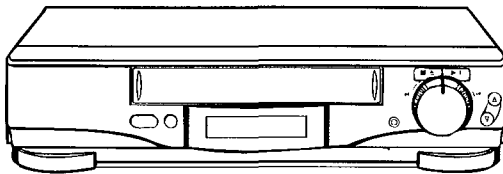
SERVICE MANUAL



V19327



VT-MX223AW
VT-FX621AW



VT-MX425AW

TK

No.4719E

**VT-MX223AW
VT-MX425AW
VT-FX621AW**

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+*

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

September 1997

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.

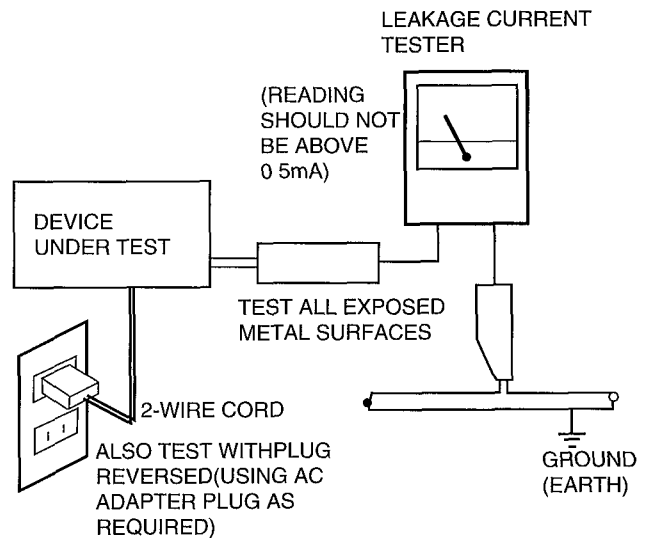
Leakage Current Cold Check

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.

CONTENTS

CHAPTER 1 GENERAL INFORMATION

- 1. Specifications 1-1
- 2. Comparison with Previous Model 1-2
- 3. Comparison of Main Control ICs 1-3
- 4. Tips for Servicing 1-4
 - 4-1. Trouble Display Function 1-4
 - 4-2. How to Remove the Cassette when a Malfunction Has Occurred in the Mechanism 1-5
 - 4-3. Instructions on Use 1-6

CHAPTER 2 DISASSEMBLY

- 1. Before Starting Disassembly 2-1
- 2. Disassembly Method 2-1
 - Parts Hierarchy Chart 2-1
 - Disassembly Procedure Diagrams 2-2
 - 2-1. Top cover, front panel, rear panel and US-FL mechanism 2-2
 - 2-2. Cassette door and insulator 2-2
 - 2-3. SHU board 2-3
 - 2-4. Front piece and LCD board 2-3
 - 2-5. US mechanism/MAS board assembly 2-3
 - 2-6. Separation of MAS board from US mechanism 2-4
 - 2-7. Procedure to remove only the US mechanism 2-4
- 3. Cautions When Reinstalling the US Mechanism 2-5

CHAPTER 3 ELECTRIC CIRCUIT ADJUSTMENT

Service Position

- 1. Servicing position during electrical adjustment 3-1
- 2. Servicing positions when repairing and checking circuits 3-1
 - 2-1. Procedure to set the LCD and SHU board to the servicing positions 3-1
 - 2-2. Procedure to set the MAS board to the service position 3-1
- 3. Be careful of electric shocks 3-1

Electrical Circuit Adjustment

- 1. Test equipment/jigs necessary for adjustment 3-2
- 2. Cautions on adjustment 3-2
- 3. Tips for adjustment 3-2
 - 3-1. Procedure to reset the main microprocessor 3-2
 - 3-2. Procedure to switch off the blue background function 3-2
 - 3-3. Procedure to obtain the EP head playback mode (X-value adjustment test mode) 3-2
- 4. Connections of test equipment 3-2
- 5. Test Points and Adjustment points 3-3

- 6. Servo Circuit Adjustments 3-4
 - 6-1. Switching point adjustment 3-4
 - 6-2. X-value adjustment 3-4
 - 6-3. Vertical jitter adjustment 3-5
 - 6-4. Forward slow tracking preset adjustment 3-5
 - 6-5. Reverse slow tracking preset adjustment 3-5
- 7. Audio/MTS Circuit Adjustments 3-6
 - 7-1. Hi-Fi audio playback level check 3-6
 - 7-2. MTS input level adjustment 3-6
- 8. List of Data in EEPROM and Initial Settings 3-7
- 9. List of Hidden Commands 3-7
 - 9-1. Mode setting commands during adjustment 3-7
 - 9-2. EEPROM initialization commands 3-8
- 10. Initial Settings of IC903(EEPROM) 3-8
- 11. Caution When Replacing IC903(VCR EEPROM) 3-8

CHAPTER 4 EXPLODED VIEWS

- 1. CABINET SECTION 4-1
- 2. US-MECHANISM (TOP VIEW) SECTION 4-2
- 3. US-MECHANISM (BOTTOM VIEW) SECTION 4-3
- 4. US-FL MECHANISM SECTION 4-4

CHAPTER 5 REPLACEMENT PARTS LIST

- 1. MECHANISM PARTS LIST 5-1
- 2. ELECTRICAL PARTS LIST 5-2

CHAPTER 6 SCHEMATIC, CIRCUIT BOARD AND BLOCK DIAGRAMS

Schematic and circuit board diagrams

[VT-MX223AW, MX425AW]

- CONNECTION DIAGRAM 6-1
- SCHEMATIC / CIRCUIT
- LCD DISPLAY[LCD] 6-2 / 6-18
- LCD DISPLAY GRID TABLE 6-3 / --
- SHUTTLE SWITCH[SHU] 6-3 / 6-18
- CYL. MOTOR DRIVE 6-4 / --
- CAPSTAN MOTOR 6-4 / --
- MECHANISM SENSOR[MAS] 6-5 / 6-20
- MAIN CONTROL[MAS] 6-6 / 6-20
- MTS/JACK[MAS] 6-8 / 6-20
- PRE AMP/FM AUDIO[MAS] 6-10 / 6-20
- LUMA/CHROMA, LINEAR AUDIO[MAS] 6-14 / 6-20
- SWITCHING REGULATOR[MAS] 6-16 / 6-20
- SERVO WAVEFORMS 6-5
- LUMA/CHROMA WAVEFORMS 6-13

[VT-FX621AW]

CONNECTION DIAGRAM	6-51
SCHEMATIC / CIRCUIT	
LCD DISPLAY[LCD]	6-52 / 6-68
LCD DISPLAY GRID TABLE	6-53 / --
CYL. MOTOR DRIVE	6-54 / --
CAPSTAN MOTOR	6-54 / --
MECHANISM SENSOR[MAS]	6-55 / 6-70
MAIN CONTROL[MAS].....	6-56 / 6-70
MTS/JACK[MAS]	6-58 / 6-70
PRE AMP/FM AUDIO[MAS]	6-60 / 6-70
LUMA/CHROMA,LINEAR AUDIO[MAS]	6-64 / 6-70
SWITCHING REGULATOR[MAS]	6-66 / 6-70
SERVO WAVEFORMS	6-55
LUMA/CHROMA WAVEFORMS	6-63

Block diagrams

1. MAIN CONTROL	6-101
2. SERVO	6-103
3. AUDIO	6-105
4. VIDEO	6-107
5. REGULATOR	6-109

Microprocessor Pin Function Tables

1. LCD Driver (IC701)	6-110
2. Main uP (IC901)	6-111

CHAPTER 7	TROUBLE DISPLAY AND TROUBLESHOOTING
------------------	--

Trouble Display Function	7-1
Troubleshooting According to Malfunction Display ..	7-2
Troubleshooting the Switching Regulator	7-6

1. Specifications

Format:	VHS
Video Signal System:	NTSC color EIA standard
Record/Playback	Video: 2 Heads [VT-MX223AW] Video: 4 Heads [VT-MX425AW/FX621AW]
System:	Audio: Monaural record/playback system [VT-MX223AW/MX425AW] Audio: VHS Hi-Fi stereo record/playback system [VT-FX621AW]
Tape Speed:	33.35mm/sec(SP), 16.67mm/sec(LP)(playback only), 11.12mm/sec(EP)
RF Input:	UHF/VHF75 ohm
RF Output:	Channel 3 and Channel 4
Tuner:	181 channel tuning ability* (125 cable channels)
Type:	Auto programming frequency synthesis
Power Input:	AC110-240V 50/60Hz
Power Consumption:	16W nominal [VT-MX223AW] 17W nominal [VT-MX425AW] 20W nominal [VT-FX621AW]
Cabinet Size	
[MX223AW/FX621AW]:	14-15/16" (W)× 3-11/16" (H)× 10-11/16" (D) 38.0cm(W)× 9.3cm(H)× 27.1cm(D)
[MX425AW]:	14-15/16" (W)× 3-11/16" (H)× 10-15/16" (D) 38.0cm(W)× 9.3cm(H)× 27.9cm(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. HL10911)[VT-MX223AW] 1 remote control unit (Part No. HL10931)[VT-MX425AW] 1 remote control unit (Part No. HL10626)[VT-FX621AW] 2AA BATTERIES 1 AC plug adaptor (Part No. EY10271)

Design and specifications subject to change without notice.

2. Comparison with Previous Model

Item	VT-FX621AW	VT-FX613AW
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
Video/audio outputs (rear)	1/2	1/2
Synchro input (front)	No	No
Prog.		
VCR Plus + programming	Yes	Yes
Number of timer programs	8 programs/1 year	8 programs/1 year
Auto recording speed	No	No
Remote control		
Model	VT-RM621A	VT-RM613A
Remote jog/shuttle	No/No	No/Yes
VCR Plus + code guide channel memory	No	No
Miscellaneous		
Auto clock setting	No	Yes
Jog/Shuttle dial on the VCR	No/No	No/Yes
Cable box control	No	Yes
Tape navigation	No	No
Closed caption	No	No
Self-diagnosis	Yes (6 modes)	Yes (6 modes)
No. of channels	181	181
Backup time	1 hour	1 hour
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

3. Comparison of Main Control ICs

Function	VT-FX621AW	VT-FX613AW
Video		
Y/chroma signal processing	HA118204F (IC201)	HA118203A (IC201)
CCD 1H delay	MSM7476-76MS-KR1 (IC202)	MSM7470-72MS-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)	AN3964FB (IC501)
Level meter control	-----	-----
Preamp		
Video head switch	HA118198F (IC1101)	HA118198F (IC1101)
Audio head amp	LA7256 (IC1102)	LA7256 (IC1102)
MTS/OSD		
MTS decoder	HTS7337A (IC1801)	HTS7337A (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)	HD6433977SB46F (IC901)	HD6433977SA70F (IC901)
VCR-EEPROM	AT24C01-6 (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 (IC701)	BU9706K (IC1701)
Expander	-----	-----
Auto clock setting	LC7455A (IC2901)	LC7455A (IC2901)
Power supply		
5V regulator	M5278L05 (IC905)	M5278L05 (IC905)

4. Tips for Servicing

4-1. Trouble Display Function

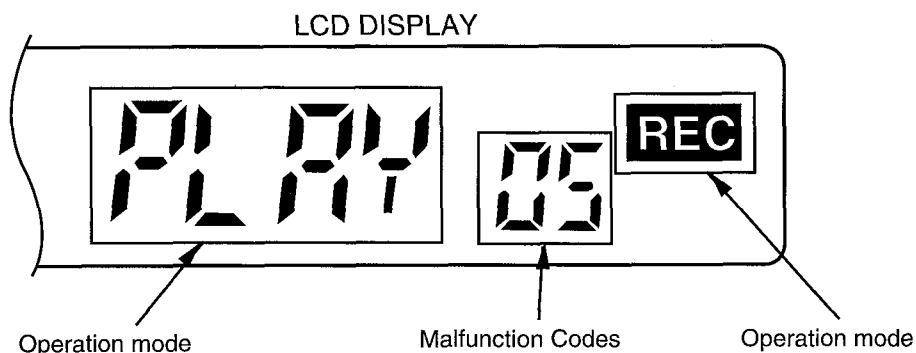
This VCR has a function which displays mechanism malfunctions, etc. in the LCD display. Use this function to analyze the cause when the power is shut off due to a malfunction, etc. in the mechanism.

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.



[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.

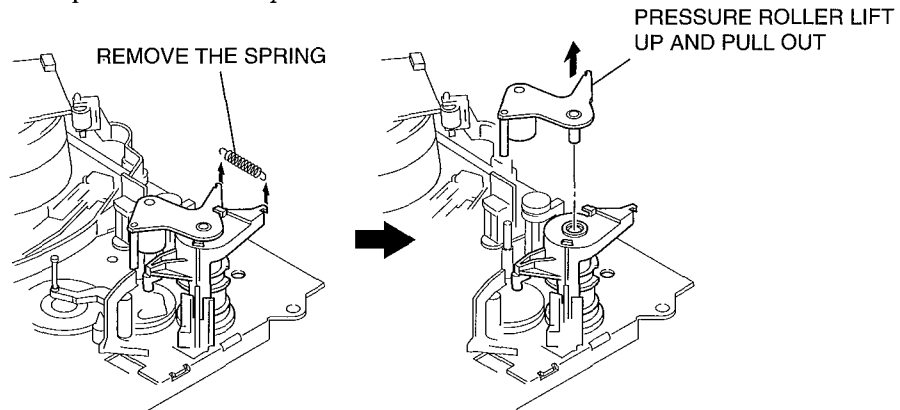
[Work Procedure]

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

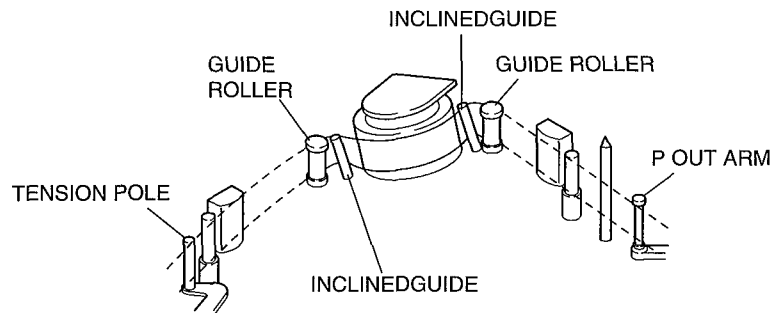
If the tape is wound round the cylinder in the loading state

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

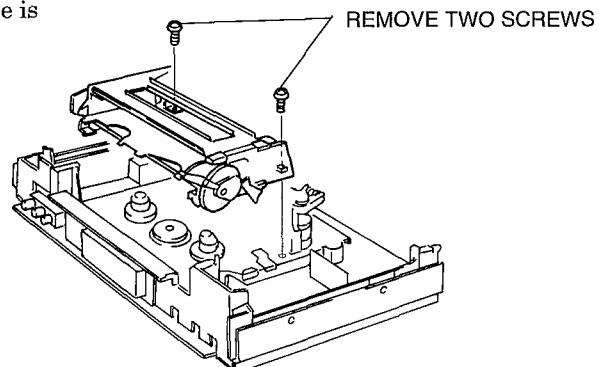
Remove the spring and lift the pressure roller to pull it out.



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



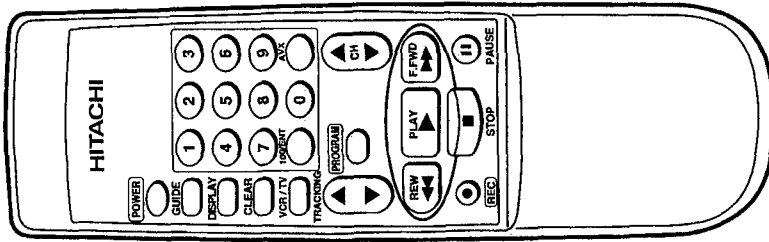
- 1) Remove two screws holding the FL mechanism.
- 2) Hold the cassette lid with your fingers so the tape is not damaged and remove the FL mechanism.
- 3) Remove the slack tape and eject the cassette.



[FOR VT-MX223AW]

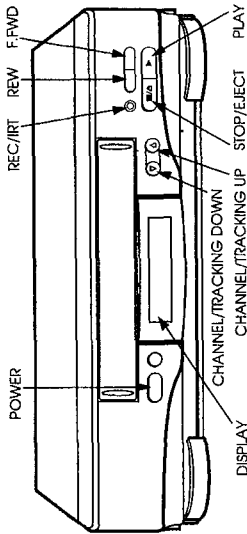
Remote Control Buttons

- POWER** Turns the VCR on and off.
- GUIDE** Brings up an on-screen setup and programming guide, the Easy Guide System.
- DISPLAY** Used in on-screen programming and indexing.
- CLEAR** Used in on-screen programming and indexing.
- VCR/TV** Switches between viewing through the VCR and not viewing through the VCR.
- TRACKING** Used to minimize picture noise manually during playing.
- PROGRAM** Used to program the timer for unattended recording.
- REW** Rewinds the videotape.
- PLAY** Starts playing a loaded videocassette.
- REC** Starts recording on the station the VCR is set to.



- 0 to 9** Number buttons used in on-screen programming. Can also be used to change channels. (Simply press 2 or 3 digits for the channel you want—such as 0 and 6 for channel 6, or 100/ENT for channel 2 and 4 for channel 124.)
- AVX** Used for recording from an auxiliary input such as a stereo system.
- CHANNEL** Top button switches to the next higher channel, bottom button switches to the next lower channel. For these to operate, you must have preset your channels.
- F.FWD** Fast forwards the videotape.
- STOP** Stops a videocassette from playing, recording, pausing, rewinding—or anything it is doing.
- PAUSE** Temporarily stops the cassette from recording or playing. Press PAUSE again (or PLAY) to resume.

VCR Controls



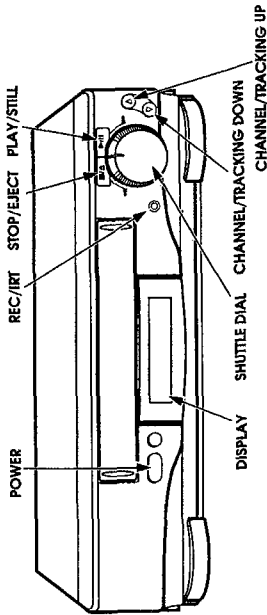
- POWER** Turns VCR power on and off.
- STOP/EJECT** Cancels any videotape action, and when pressed a second time, ejects tape.
- PLAY** Plays the loaded videotape.
- DISPLAY** Shows time, channel, and status indicators.
- CHANNEL/** Up and down arrows for selecting channels.
- TRACKING** Used to adjust the tracking during playback.
- REC/VRT** To begin recording
- F.FWD** Fast forwards the videotape
- REW** Rewinds the videotape

Display Indicators

Watch for these signs and symbols that let you know that the VCR is responding to your instructions.

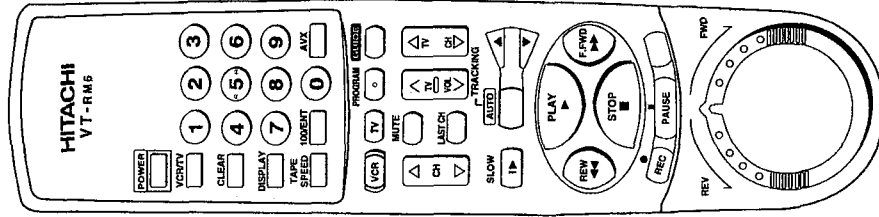
	Cassette Loaded	SRCH	Forward Search
	Recording	-SRCH	Reverse Search
REW	Rewind	REM	Remaining Tape Display
S:REW	Super Rewind		Programmed to Record Later
FF	Fast-Forward	L	Signal Being Received Through Audio/Video Input Jacks on Back of Unit
S:FF	Super Fast-Forward		
PLAY	Playback		
STILL	Stop-Motion Play		
VCR	VCR Mode		

VCR Controls



- POWER** Turns VCR power on and off.
- STOP/EJECT** Cancels any videotape action, and when pressed a second time, ejects tape.
- PLAY/STILL** Plays and pauses the loaded videotape.
- DISPLAY** Shows time, channel, and status indicators.
- CHANNEL/ TRACKING** Up and down arrows for selecting channels. Used to adjust the tracking during playback.
- REC/IRF** To begin recording
- SHUTTLE DIAL** Controls the videocassette's forward and reverse motion with one convenient dial.

Remote Control Buttons



- 0 to 9** Number buttons used in on-screen programming. Can also be used to change channels. (Simply press 2 or 3 digits for the channel you want—such as 0 and 6 for channel 6, or 100/ENT and 2 and 4 for channel 124.)
- AVX** Used for recording from an auxiliary input such as a stereo system.
- PROGRAM** Used to program the timer for unattended recording
- GUIDE** Brings up an on-screen setup and programming guide, the Easy Guide System.
- LAST CHANNEL** Switches to the TV channel you watched previously during the current viewing session.
- VOLUME** Increase or decrease the audio volume.
- TV CHANNEL** Switches channel of your TV using VCR remote.
- AUTO TRACKING, TRACKING** Used to remove picture noise during playing.
- F.FWD** Fast forwards the videotape.
- STOP** Stops a videocassette from playing, recording, pausing, rewinding—or anything it is doing.

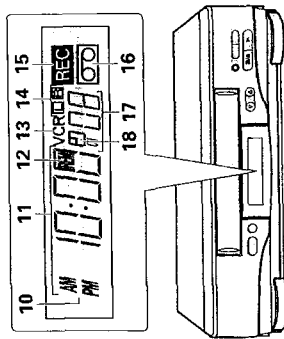
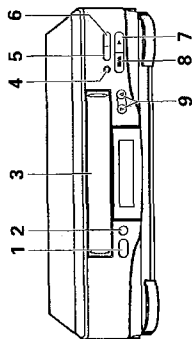
- POWER** Turns the VCR on and off.
- VCR/TV** Switches between viewing through the VCR and not viewing through the VCR.
- CLEAR** Used in on-screen programming and indexing.
- DISPLAY** Used in on-screen programming and indexing.
- TAPE SPEED** Used to change speed (SP/EP) during recording.
- VCR, TV** Device buttons let you set the remote to control one of the two devices.
- MUTE** Turns off the audio until you press MUTE again.
- CHANNEL** Top button switches to the next higher channel, bottom button switches to the next lower channel. For these to operate, you must have preset your channels.
- SLOW** Used to slow the playback speed during playing.
- REW** Rewinds the videotape.
- PLAY** Starts playing a loaded videocassette.
- REC** Starts recording on the station the VCR is set to.
- PAUSE** Temporarily stops the cassette from recording or playing. Press PAUSE again (or PLAY) to resume.
- SHUTTLE DIAL** Controls the videocassette's forward and reverse motion with one convenient dial.

Display Indicators

Watch for these signs and symbols that let you know that the VCR is responding to your instructions.

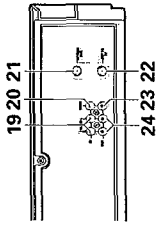
	Cassette Loaded	SRCH	Forward Search
	Recording	-SRCH	Reverse Search
REW	Rewind	-SLOW	Reverse Slow-Motion Play
S:REW	Super Rewind	REM	Remaining Tape Display
FF	Fast-Forward		Programmed to Record Later
S:FF	Super Fast-Forward	L	Signal Being Received Through Audio/Video Input Jacks on Back of Unit
PLAY	Playback		
STILL	Stop-Motion Play		
SLOW	Slow-Motion Play		
VCR	VCR Mode		
-PLAY	Reverse Playback		

VCR Customer Controls

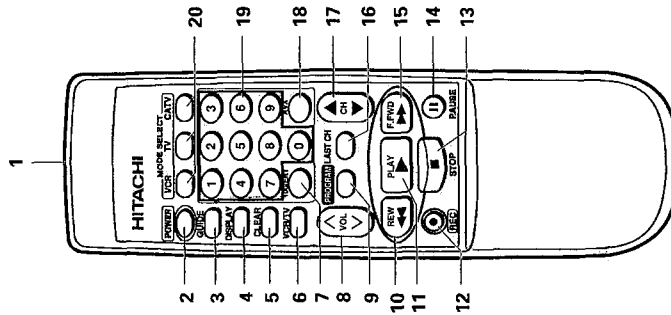


Item No.	Function	Page
1	POWER button	2
2	Infrared receiver	8
3	Cassette compartment	9
4	REC/IRT button	31
5	REW button	23
6	F.FWD button	23
7	PLAY button	24
8	STOP/EJECT button	9
9	CHANNEL (channel up/down)/TRACKING buttons	31
10	VCR Display	23
11	AMP/PM indicators	18
	Time	18
	Time counter	18
	Tape remaining or VCR mode indicator	28
	PLAY — playback	28
	SRCH — double-speed search and skip playback	22
	SLOW — slow play	25
	REW — rewind	25
	S:REW — high speed rewind	22
	FF — fast forward	23
	S:FF — high speed fast forward	23
	STILL — play pause and frame advance	24
	REM (tape remaining time) indicator	28
12	VCR, operate mode	—
13	Audio indicators	—
14	REC — record (flashes during record pause)	31
15	Tape-in indicator	9
16	TV channel or Auxiliary (L)	31
17	Delayed recording indicator	43
18		37

VCR Customer Controls



Remote Control Customer Controls



Item No.	Function	Page
19	AUDIO IN, L, R, jacks	41
20	VIDEO IN jack	43
21	IN FROM ANT. — signal input	10
22	OUT TO TV — signal out to TV	10
23	VIDEO OUT jack	11
24	AUDIO OUT, L, R, jacks	11

Item No.	Function	Page
1	Transmission window	8
2	POWER button	19
3	GUIDE — to recall OSD menu	19
4	DISPLAY — to recall on-screen display	27
5	CLEAR — clears time counter	29
6	VCR/TV mode select button	10
7	100/ENT button	31
8	VOL button — increase or decrease the audio volume	39
9	PROGRAM (programming) button	35
10	REW button — fast rewind or search	23
11	PLAY button — playback	20
12	REC — record button	31
13	STOP button — stops play/record function	20
14	PAUSE button	24
15	F.FWD button — fast forward or search	25
16	LAST CH button — switches to the TV channel you watched previously during the current viewing session.	39
17	CH (channel up/down) button	31
18	AVX button — select L	42
19	Number buttons	17
20	VCR, TV, CATV — device buttons let you set the remote to controls one of the three devices	8

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.

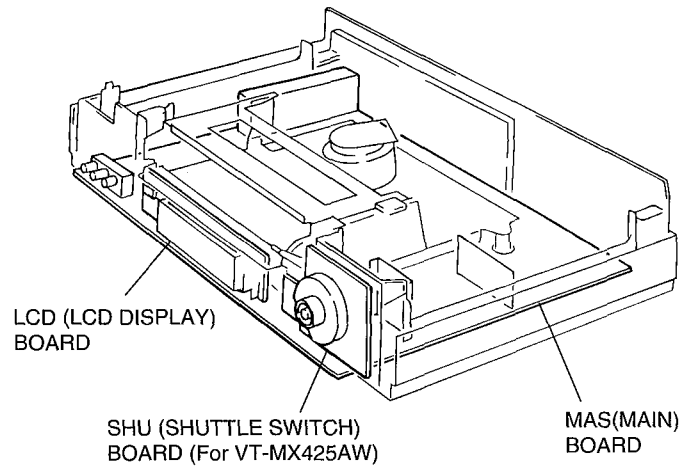


Fig. 1-1

2. Disassembly Method

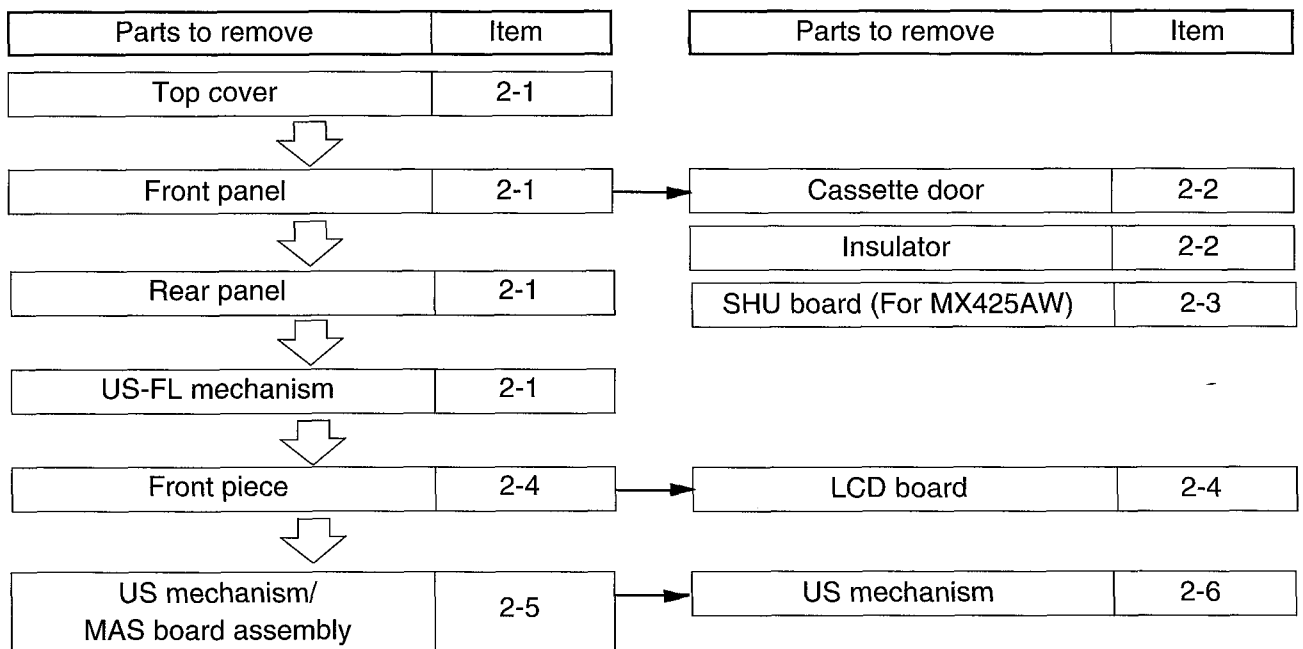
When replacing defective parts, first refer to the "Parts hierarchy chart" shown below. This chart shows the procedure for parts removal when replacing defective parts.

[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.



Disassembly Procedure Diagrams

Item	Parts to remove
2-1	Top cover, front panel, rear panel and US-FL mechanism

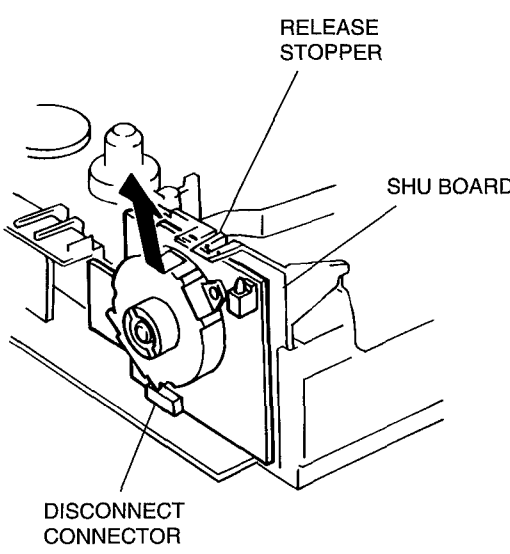
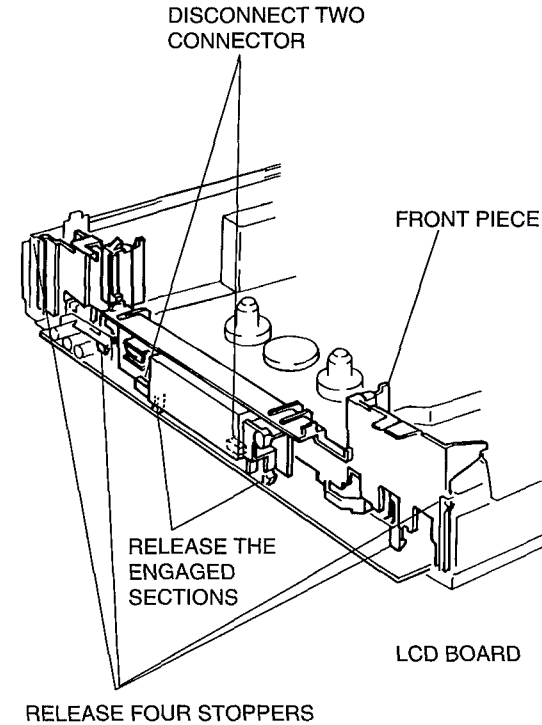
◆ **Caution when reinstalling the US-FL mechanism**
 Reinstall the US-FL mechanism in the state that the cassette holder is pulled forward.
 (Otherwise, the switch arm could damage the FL switch on the MAS board.)

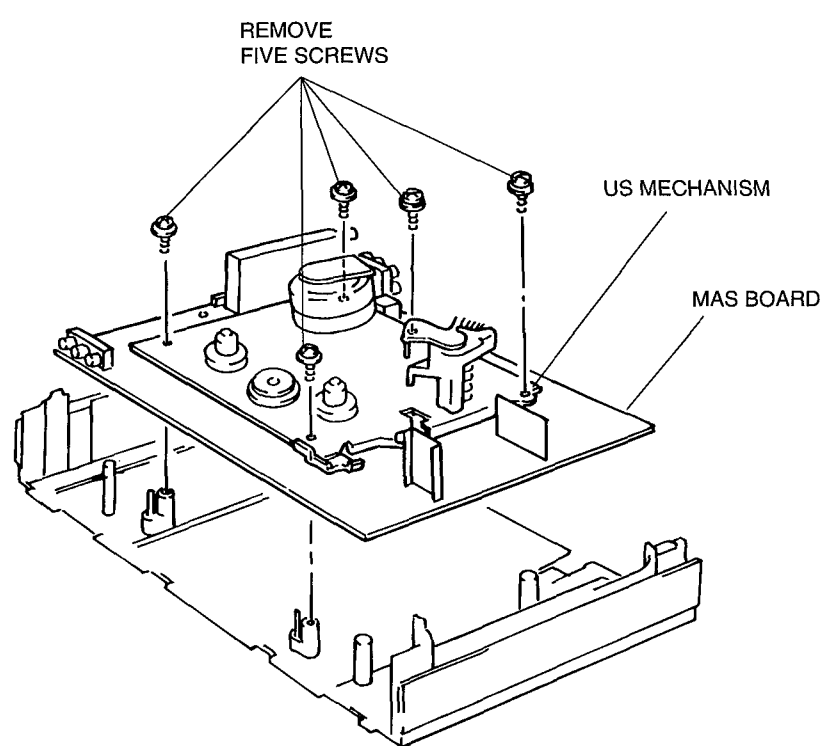
Fig. 2-1

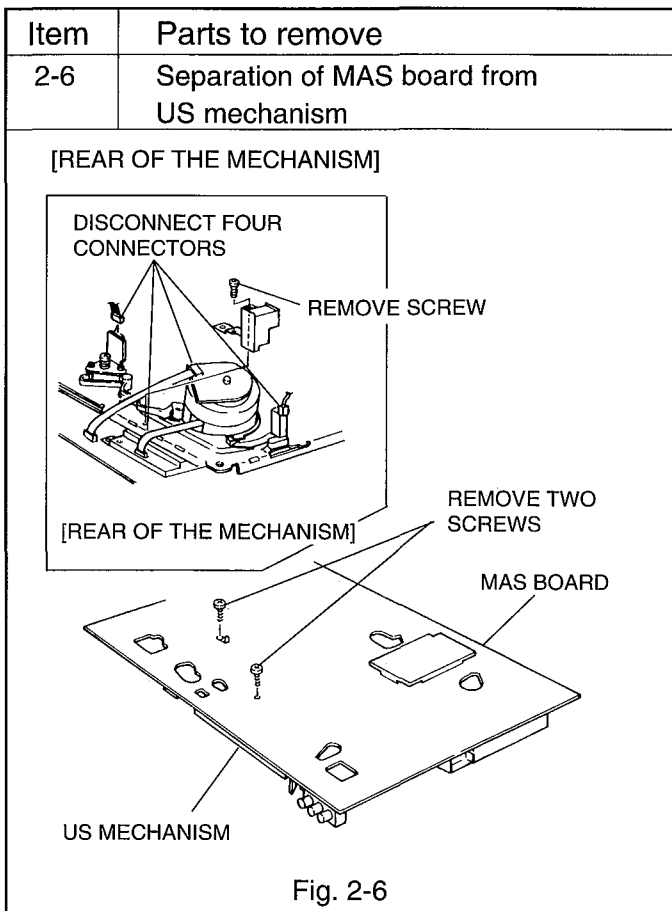
2-2	Cassette door and insulator
-----	-----------------------------

◆ **Caution when reinstalling the front panel**
 Reinstall the front panel in the state the cassette door is pushed so the boss of the door arm comes to the front of the boss support of the cassette door.

Fig. 2-2

Item	Parts to remove	
2-3	SHU board (For VT-MX425AW)	2-4 Front Piece and LCD board
 <p>Diagram showing the SHU board being removed from the device. A black arrow points to the SHU board. Labels include: RELEASE STOPPER, SHU BOARD, and DISCONNECT CONNECTOR.</p>		 <p>Diagram showing the front piece and LCD board being removed. Labels include: DISCONNECT TWO CONNECTOR, FRONT PIECE, RELEASE THE ENGAGED SECTIONS, LCD BOARD, and RELEASE FOUR STOPPERS.</p>
Fig. 2-3		Fig. 2-4

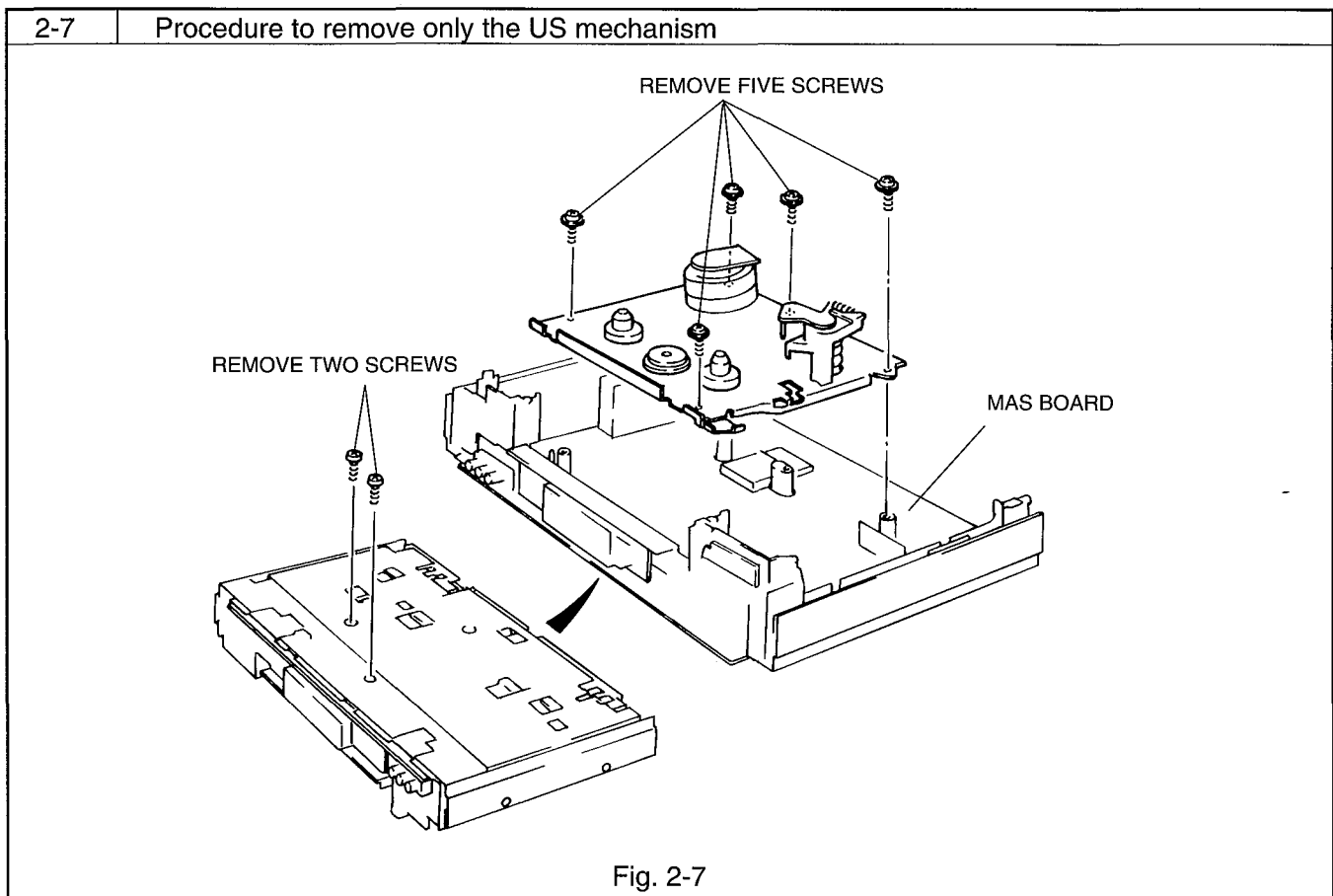
2-5	US mechanism/MAS board assembly
 <p>Diagram showing the US mechanism and MAS board assembly being removed. Labels include: REMOVE FIVE SCREWS, US MECHANISM, and MAS BOARD.</p>	
Fig. 2-5	



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.

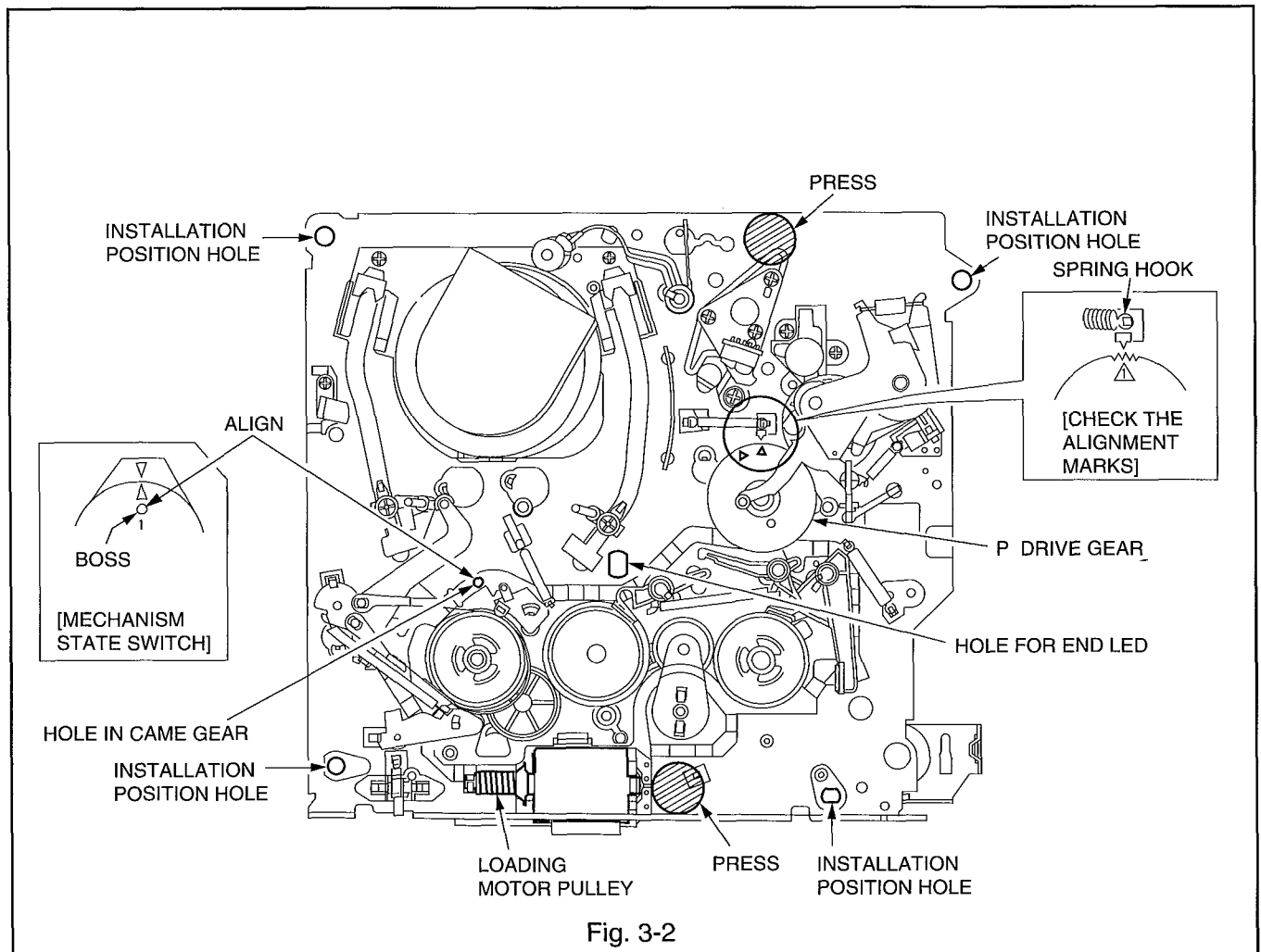
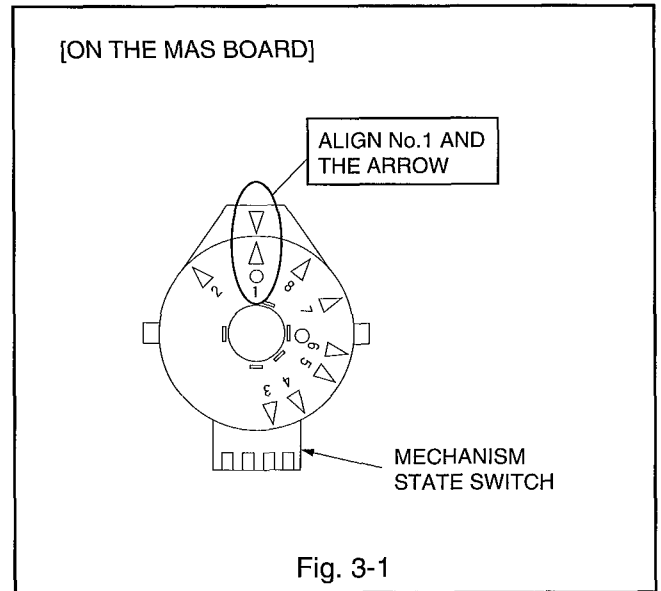
Parts to remove	Item
Top, Front and Rear panel	2-1
↓	
US-FL mechanism	2-1
↓	
Remove two screws on the bottom of the VCR.	2-7
↓	
Remove five screws holding the US mechanism.	2-7
↓	
Disconnect the connectors on the US mechanism and lift the mechanism.	



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.

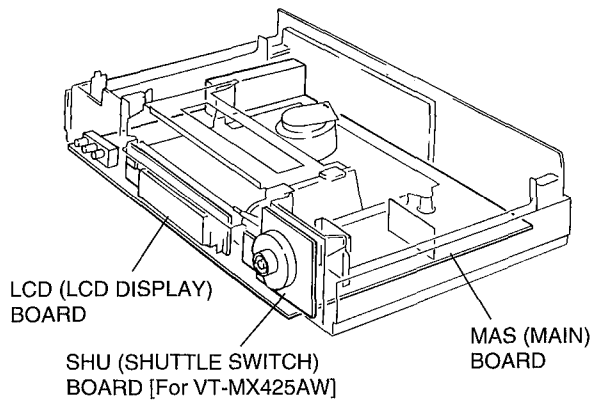


Fig. 1

2. Servicing positions when repairing and checking circuits

2-1. Procedure to set the LCD and SHU 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.

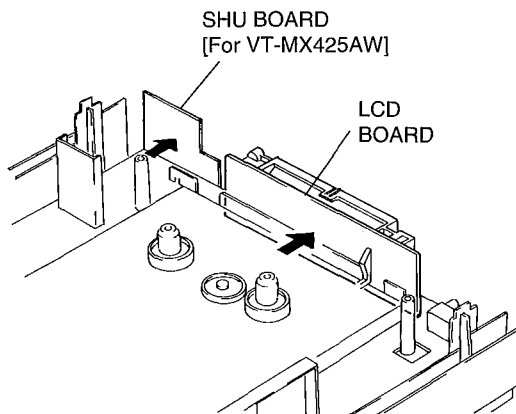


Fig. 2

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 SHU 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.

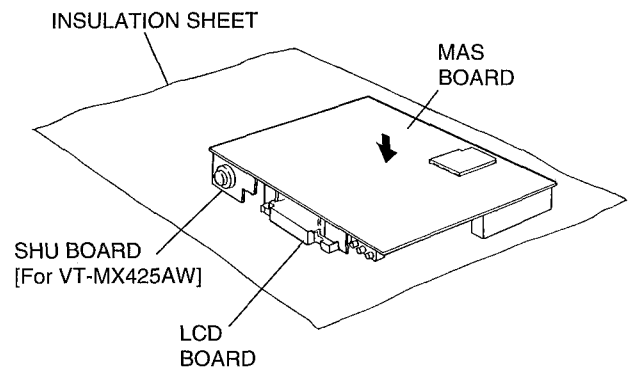


Fig. 3

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.

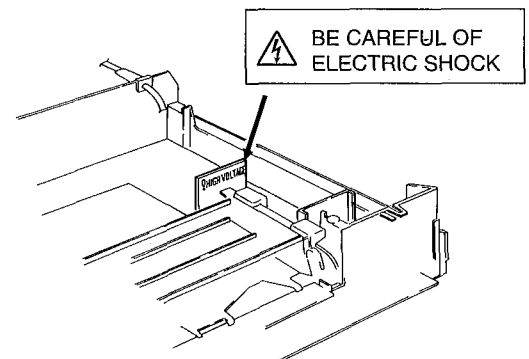


Fig. 4

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.

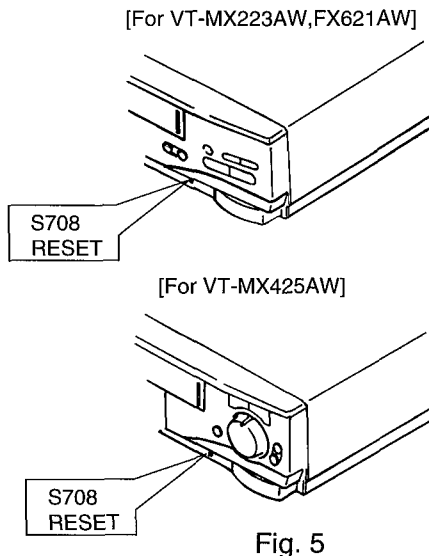


Fig. 5

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

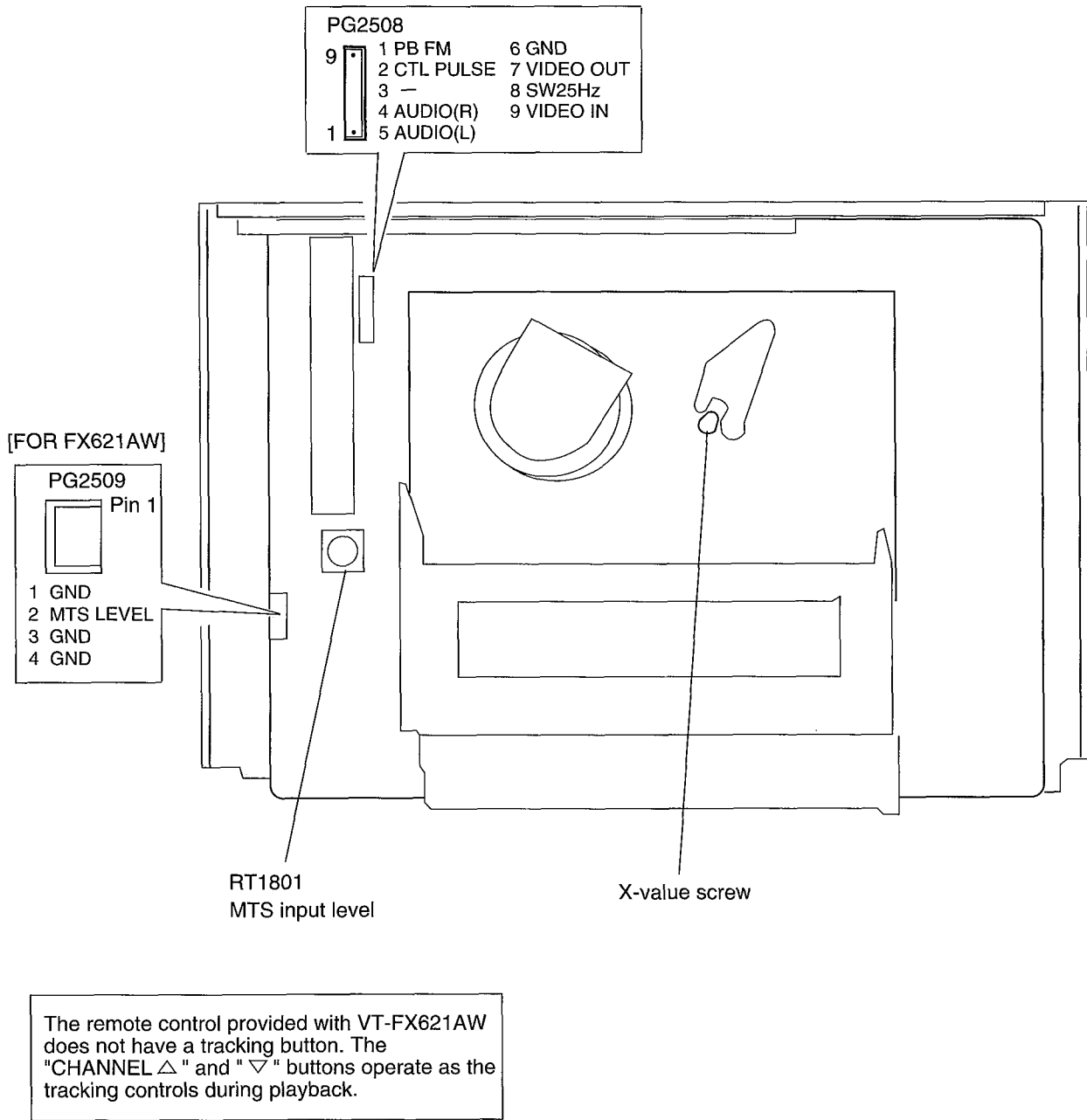


Fig. 6 MAS (Main) Circuit Board [Components Side]

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.

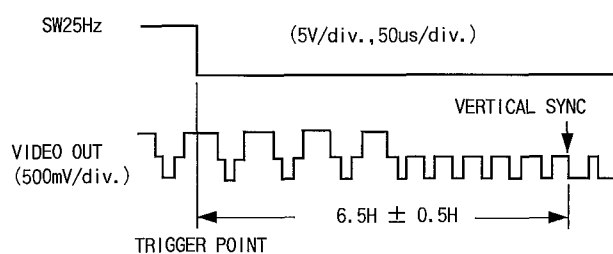
Adjustment Point

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.

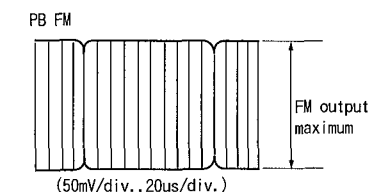
Adjustment Point

Groove for the adjustment X-value

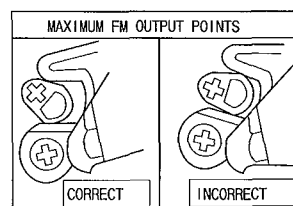
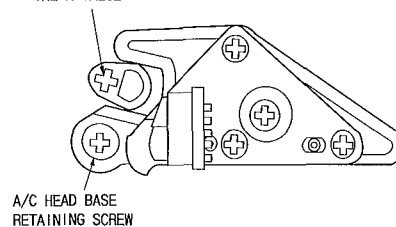
Adjustment Procedure

- 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



GROOVE FOR ADJUSTMENT THE X-VALUE



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

[FOR MX425AW/FX621AW]

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

[FOR MX425AW/FX621AW]

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

[FOR FX621AW]

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 $-7.8\text{dB} \pm 3.0\text{dB}$.

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 $-20.0\text{dB} \pm 0.2\text{dB}$.

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. 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	
	IC903 VCR EEPROM	Shipment mode initial data	Clearing of trouble display
channel memory	Yes	No	No
Guide channel data	Yes	Yes	No
Auto clock channel data	Yes	Yes	No
VCR mode select data	Yes	Yes	No
Cable box type	Yes	Yes	Yes
Trouble display data	Yes	Yes	No
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

9. List of Hidden Commands

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

9-1. 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.	

9-2. 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.

10. 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)	[D] Front panel switch
1 AUTO BLUE [ON]	ANT. OUT : RFCH 03
4 AUDIO SETUP [Hi-Fi]	
5 AUDIO SETUP [STEREO]	
6 AUDIO SETUP [SAP OFF]	
[B] CLOCK SET (in menu) [For FX621AW]	
1 CLOCK SET [AUTO]	
3 SET TIME ZONE [AUTO]	
4 SET D.S.T [AUTO]	
[C] CHANNEL PRESET (in menu)	
1 CHANNEL [CATV1]	

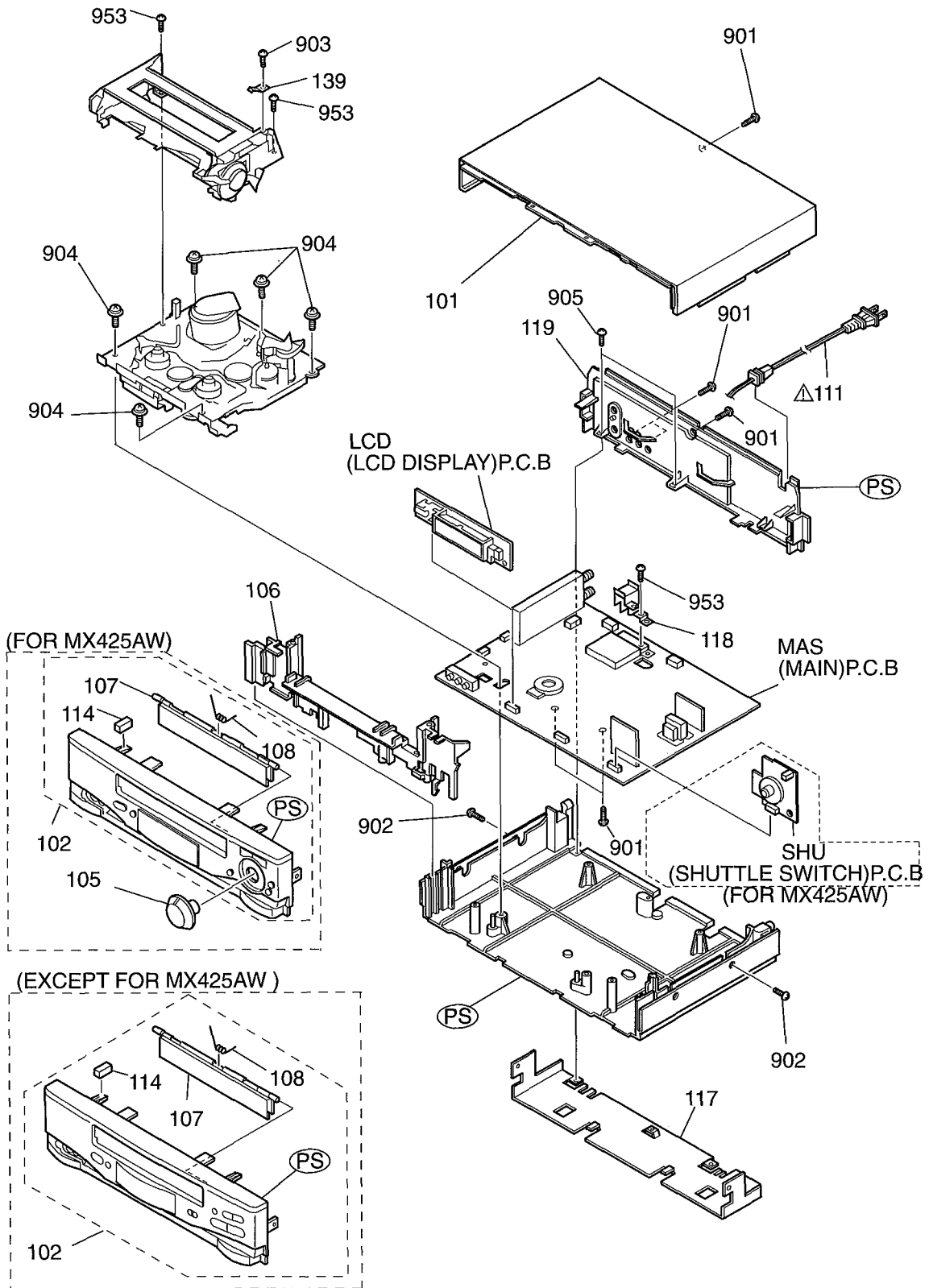
11. Caution When Replacing IC903 (VCR EEPROM)

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

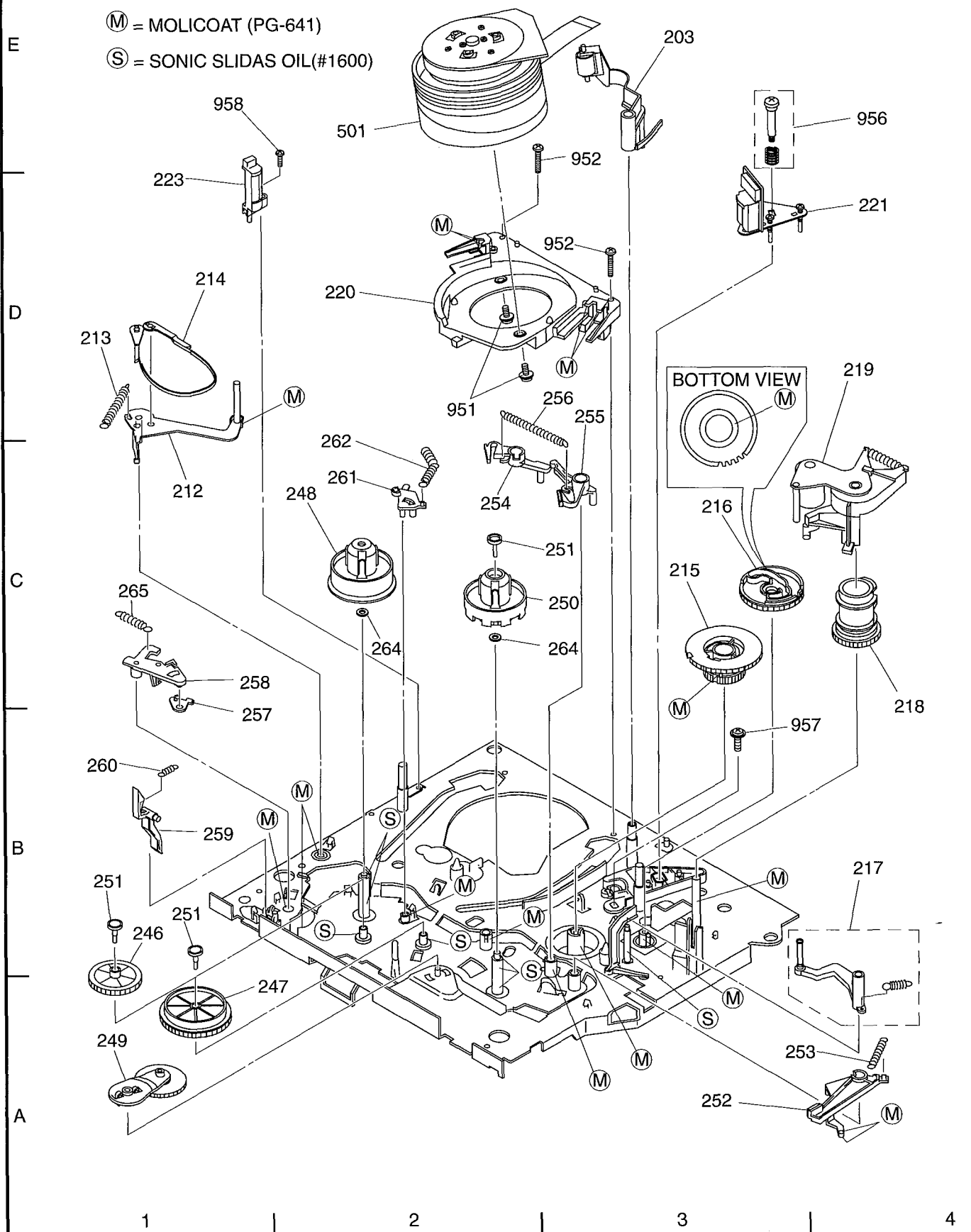
NOTE: The synthetic resin members that can be dismantled are shown by abbreviations using letters.



E
D
C
B
A

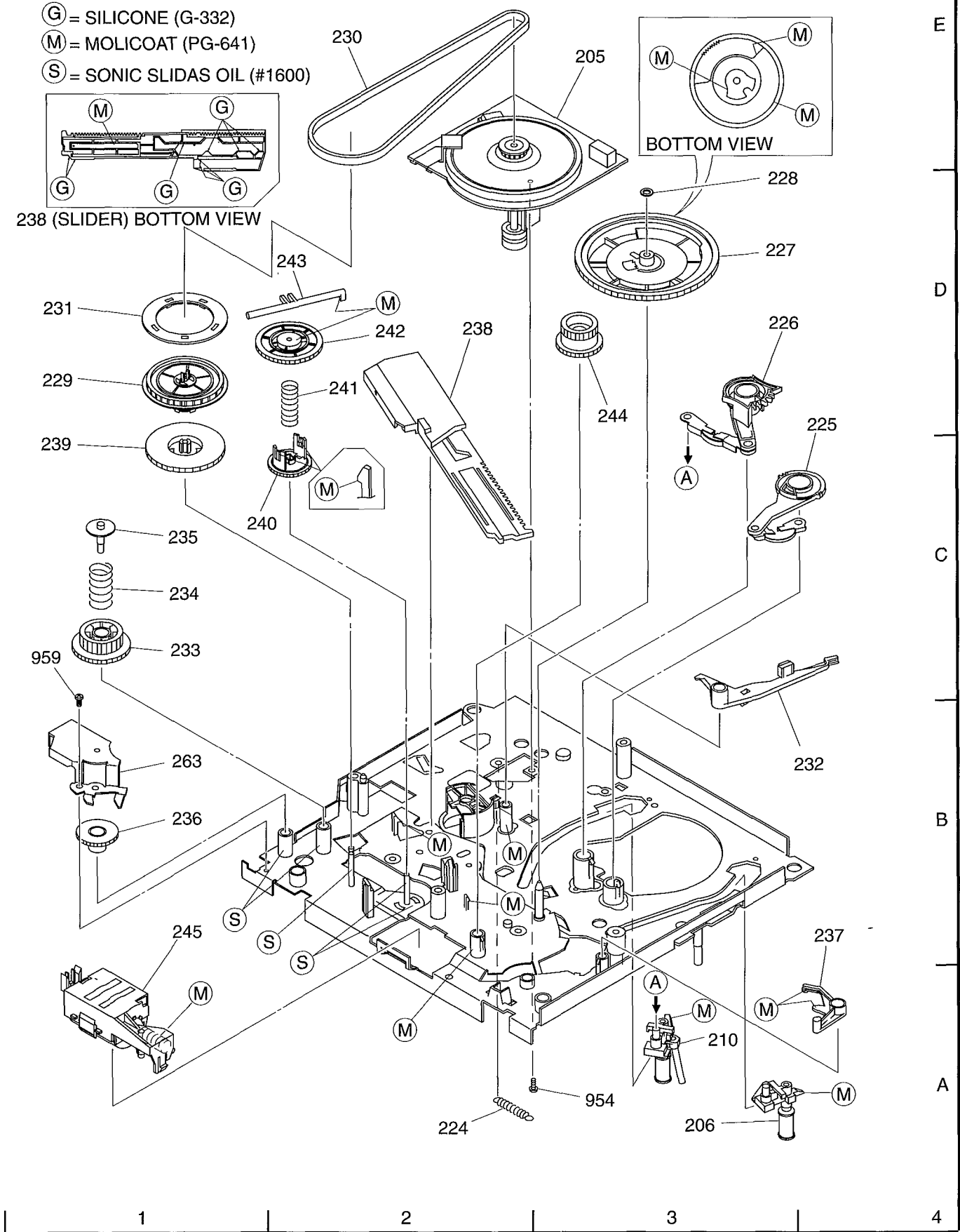
1 2 3 4

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) = SILICONE (G-332)

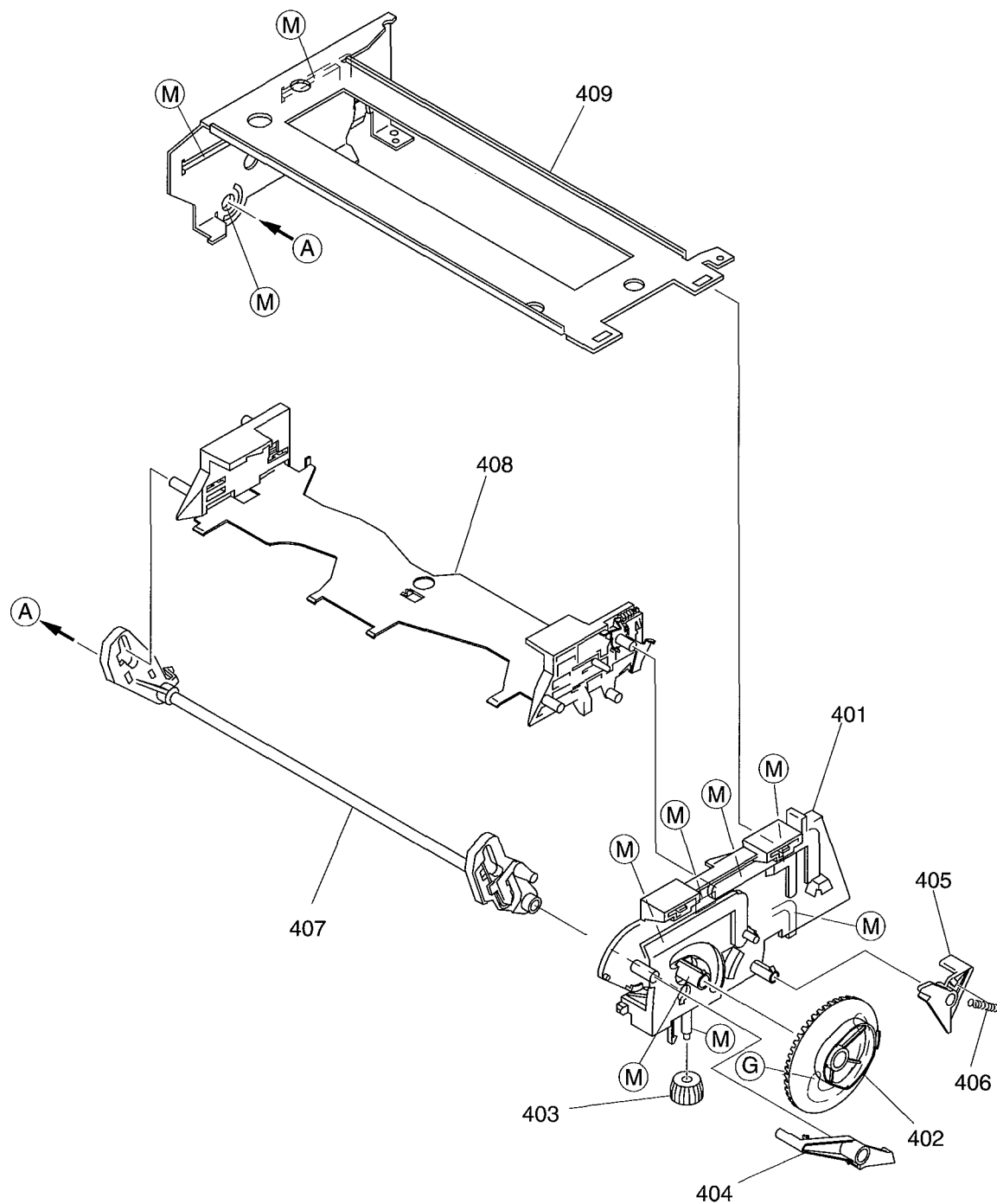
E

D

C

B

A



1. MECHANICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
MECHANISM SECTION			247	KF10532	GEAR, IDLER 2
101	QA11161	COVER, TOP (HEPM) [FX621AW]	248	KH10152	REEL, TABLE(S)
101	QA11166	COVER, TOP [EXCEPT FX621AW]	249	KX11423	ARM
102	PH13122	PANEL, FRONT (HEPM) [FX621AW]	250	KH10161	REEL, TABLE(T)
102	PH15911	PANEL, FRONT (HEPM) [MX223AW]	251	KX11991	STOPPER
102	PH15912	PANEL, FRONT (HEPM) [MX425AW]	252	KX11861	BRAKE
102	PH15915	PANEL, FRONT (HEPM) [MX223AT]	253	KL10782	SPRING, BRAKE
102	PH15916	PANEL, FRONT (HEPM) [FX621AT]	254	KX11875	BRAKE, L
105	PC11915	KNOB, SHUTTLE (HEPM)	255	KX11883	BRAKE, R
106	NT10483	PIECE, FRONT (HEPM)	256	KL10792	SPRING, BRAKE
107	PH13321	DOOR, CASSETTE (HEPM)	257	KF10542	GEAR, JOG
108	KL11451	SPRING, DOOR (HEPM)	258	KX13132	ARM, JOG
△ 111	EV10271	CORD, POWER (HEPM)	259	KX11841	ARM, REC
114	MQ10199	CUSHION, RUBBER	260	6542482	SPRING [FX621AW]
117	QA11141	COVER, BOTTOM	260	6542485	SPRING [EXCEPT FX621AW]
118	MD11281	COVER, CBA	261	KX11811	BRAKE, SUB
119	PH13241	PANEL, REAR (HEPM) [FX621AW]	262	KL10903	SPRING, SUB
119	PH16451	PANEL, REAR (HEPM) [FX621AT]	263	KX12461	BRACKET, BASE
119	PH16452	PANEL, REAR (HEPM) [EXC. FX621AW, FX621AT]	264	MN11571	WASHER
139	4826834	SPRING, EARTH	265	KL11062	SPRING, JOG
140	MD11602	PLATE, EARTH	401	KX11772	BRACKET (R) [FX621AW]
203	KX11661	CLEANING, HEAD	401	KX11773	BRACKET (R) [EXCEPT FX621AW]
205	GP10252	MOTOR, CAPSTAN	402	KF10682	GEAR 1
206	KX12294	BASE, GUIDE ROLLER (1)	403	KF10691	GEAR 2
210	KX12302	BASE, GUIDE ROLLER(0)	404	KX11751	ARM, DOOR
212	KX11531	ARM, TENSION	404	KX11752	ARM, DOOR
213	KL10662	SPRING	405	KX11761	ARM, SWITCH
214	KX11631	BAND, TENSION	406	6323723	SPRING
215	KF10641	GEAR, DRIVE	407	KX11931	ARM, DRIVE
216	KF10701	GEAR, IDLER	408	KX11921	HOLDER, CASSETTE [FX621AW]
217	KX12661	ARM, OUT [FX621AW]	408	KX11922	HOLDER, CASSETTE [EXCEPT FX621AW]
217	KX12662	ARM, OUT [EXCEPT FX621AW]	409	KX11741	BRACKET(L)
218	KX11581	GEAR, SPIRAL	501	HX10295	CYLINDER ASSY (CY-U6N1) [FX621AW, FX621AT]
219	KX11553	ARM, PINCH ROLLER [FX621AW]	501	HX10351	CYLINDER ASSY (CY-U4NK) [MX425AW]
219	KX11554	ARM, PINCH ROLLER [EXCEPT FX621AW]	501	HX10381	CYLINDER ASSY (CY-U2PA) [MX223AT, MX223AW]
220	KX11451	BASE, CYLINDER	901	8699410	SCREW(3X10)
221	KX11941	AC HEAD [FX621AW]	902	8679408	SCREW (3.0X8)
221	KX11945	AC HEAD [EXCEPT FX621AW]	903	8671306	SCREW(2.6X6)
223	5423082	FE HEAD	904	7781132	BT SCREW
224	KL10711	SPRING	905	7784323	SCREW(3X8)
225	KX11591	GEAR, LOADING(L)	951	8652408	SCREW (PSW3X8)
226	KX11611	GEAR, LOADING(R)	952	0671310	DT SCREW-2.6MMDX10MM
227	KF10673	GEAR, CAM	953	8671306	SCREW(2.6X6)
228	4344643	WASHER	954	8691306	BT SCREW 2.6MM
229	KX11443	PULLEY [FX621AW]	956	KX12443	SCREW
229	KX11444	PULLEY [EXCEPT FX621AW]	957	MJ10341	SCREW(M2.6)
230	KX11522	BELT [FX621AW]	958	0671308	DT SCREW-2.6MMDX8MM
230	KX18201	BELT [EXCEPT FX621AW]	959	0671305	DT SCREW-2.6MMDX5MM
232	KX12031	BRAKE	ACCESSORIES		
233	KF10571	GEAR, CHANGE	802	EW10251	CORD, RF
234	KL10771	SPRING	803	HL10622	REMOTE HAND SET (VT-RM611A) (HEPM)
235	KX12001	STOPPER, SPRING			[FX621AT]
236	KF10561	GEAR, IDLER	803	HL10626	REMOTE HAND SET (VT-RM621A) (HEPM)
237	KX11831	ARM, OPERATION			[FX621AW]
238	KX11362	SLIDER	803	HL10911	REMOTE HAND SET (VT-RM5) (HEPM)
239	KF10551	GEAR, TRANS			[MX223AT, MX223AW]
240	KF10501	GEAR, DRIVE	803	HL10931	REMOTE HAND SET (VT-RM6) (HEPM) [MX425AW]
241	KL10773	SPRING	804	EY10271	PLUG
242	KF10513	GEAR, CHANGE			
243	KX11411	ARM, CHANGE			
244	KX11371	GEAR			
245	KX11892	MOTOR, LOADING			
246	KF10521	GEAR, IDLER 1			

2. ELECTRICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
CAPACITORS					
C0201	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0258	0209933	CERAMIC CHIP 18PF+-5% 50V
C0203	0893008	CERAMIC CHIP 0.1UF+-10% 16V	C0260	0209931	CERAMIC CHIP 12PF+-5% 50V
C0204	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0262	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0205	0893031	CERAMIC CHIP 1000PF+-10% 50V	C0263	0209931	CERAMIC CHIP 12PF+-5% 50V
C0206	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C0264	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0208	0893091	CERAMIC CHIP 0.022UF+-10% 16V [EXCEPT FX621AW]	C0265	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0208	0893082	CERAMIC CHIP 0.022UF+80-20% 50V[FX621AW]	C0273	0209937	CERAMIC CHIP 39PF+-5% 50V
C0209	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0402	0800117	ELECTROLYTIC 4.7UF 25V
C0211	0800138	ELECTROLYTIC 47UF 6.3V	C0403	0893002	CERAMIC CHIP 0.033UF+-10% 16V
C0212	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0404	0893046	CERAMIC CHIP 0.015UF+-10% 50V
C0213	0254458	ELECTROLYTIC 3.3UF+-20% 50V			[EXCEPT FX621AW]
C0214	0893091	CERAMIC CHIP 0.022UF+-10% 16V [EXCEPT FX621AW]	C0404	0893088	CERAMIC CHIP 0.015UF+-10% 16V[FX621AW]
C0214	0893082	CERAMIC CHIP 0.022UF+80-20% 50V[FX621AW]	C0406	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0215	0800115	ELECTROLYTIC 3.3UF 50V	C0407	0800122	ELECTROLYTIC 10UF 16V
C0216	0209948	CERAMIC CHIP 330PF+-5% 50V	C0408	0800122	ELECTROLYTIC 10UF 16V
C0218	0890046	CERAMIC DISC 0.1UF+80-20% 50V	C0409	0209906	CERAMIC DISC 820PF+-5% 50V
C0219	0893031	CERAMIC CHIP 1000PF+-10% 50V	C0410	0893046	CERAMIC CHIP 0.015UF+-10% 50V [EXCEPT FX621AW]
C0220	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0410	0893088	CERAMIC CHIP 0.015UF+-10% 16V[FX621AW]
C0221	0800112	ELECTROLYTIC 2.2UF 50V	C0411	0800109	ELECTROLYTIC 1.0UF 50V
C0222	0893039	CERAMIC CHIP 4700PF+-10% 50V	C0412	0800101	ELECTROLYTIC 0.1UF 50V
C0223	0800118	ELECTROLYTIC 4.7UF 35V	C0413	0800101	ELECTROLYTIC 0.1UF 50V
C0224	0890015	CERAMIC DISC 33PF+-50% 50V	C0414	0800109	ELECTROLYTIC 1.0UF 50V
C0225	0890026	CERAMIC DISC 220PF+-10% 50V	C0419	0800009	ELECTROLYTIC 4.7UF 25V
C0226	0890044	CERAMIC DISC 0.022UF+80-20% 25V	C0420	0204337	CAPACITOR FILM 2700PF+-5% 100V
C0227	0800107	ELECTROLYTIC 0.47UF 50V			[EXCEPT FX621AW]
C0228	0893053	CERAMIC CHIP 0.047UF+-10% 50V [EXCEPT FX621AW]	C0420	AN10332R	CAPACITOR 0.027UF+-5% 100V[FX621AW]
C0228	0893008	CERAMIC CHIP 0.1UF +-10% 16V[FX621AW]	C0421	0890026	CERAMIC DISC 220PF+-10% 50V
C0230	0893002	CERAMIC CHIP 0.033UF+-10% 16V	C0422	0800335	ELECTROLYTIC 220UF 16V
C0233	0800122	ELECTROLYTIC 10UF 16V	C0424	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0234	0800185	ELECTROLYTIC 47UF 6.3V	C0427	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0235	0893091	CERAMIC CHIP 0.022UF+-10% 16V [EXCEPT FX621AW]	C0428	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C0235	0893082	CERAMIC CHIP 0.022UF[FX621AW]	C0429	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0236	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0434	0800118	ELECTROLYTIC 4.7UF 35V [EXCEPT FX621AW]
C0237	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0434	0800117	ELECTROLYTIC 4.7UF 25V[FX621AW]
C0238	0800178	ELECTROLYTIC 4.7UF 35V	C0435	0893033	CERAMIC CHIP 1500PF+-10% 50V
C0239	0800179	ELECTROLYTIC 10UF 16V	C0437	0800009	ELECTROLYTIC 4.7UF 25V
C0240	0800179	ELECTROLYTIC 10UF 16V	C0501	0800297	ELECTROLYTIC 22UF 6.3V[FX MODEL]
C0241	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0502	0800287	CAPASITOR 4.7UF+-20% 35V[FX MODEL]
C0241	0893055	CERAMIC CHIP 0.1UF+80-20% 16V[FX621AW]	C0503	0800287	CAPASITOR 4.7UF+-20% 35V[FX MODEL]
C0242	0800178	ELECTROLYTIC 4.7UF 35V	C0504	0800118	ELECTROLYTIC 4.7UF 35V[FX MODEL]
C0243	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0506	0800308	ELECTROLYTIC 33UF 16V[FX MODEL]
C0244	0254455	ELECTROLYTIC 0.47UF+-20% 50V	C0507	0893004	CERAMIC CHIP 0.047UF+-10% 16V [FX621AW]
C0245	0800177	ELECTROLYTIC 3.3UF 50V	C0507	0893053	CERAMIC CHIP 0.047UF+-10% 50V [FX621AT]
C0246	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0508	0800112	ELECTROLYTIC 2.2UF 50V[FX MODEL]
C0247	0209936	CERAMIC CHIP 33PF+-5% 50V	C0509	0800143	ELECTROLYTIC 100UF 6.3V[FX MODEL]
C0249	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0510	0893088	CERAMIC CHIP 0.015UF+-10% 16V [FX621AW]
C0251	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0510	0893046	CERAMIC CHIP 0.015UF+-10% 50V [FX621AT]
C0252	0209943	CERAMIC DISC 120PF+-5% 50V	C0511	0893044	CERAMIC CHIP 0.01UF+-10% 50V[FX MODEL]
C0254	0893008	CERAMIC CHIP 0.1UF+-10% 16V [EXCEPT FX621AW]	C0512	0893044	CERAMIC CHIP 0.01UF+-10% 50V[FX MODEL]
C0254	0893055	CERAMIC CHIP 0.1UF+80-20% 16V[FX621AW]	C0513	0800139	ELECTROLYTIC 47UF 10V[FX MODEL]
C0255	0893008	CERAMIC CHIP 0.1UF+-10% 16V	C0514	0893013	CERAMIC CHIP 0.22UF+-10% 16V[FX MODEL]
C0255	0893055	CERAMIC CHIP 0.1UF+80-20% 16V[FX621AW]	C0517	0893044	CERAMIC CHIP 0.01UF+-10% 50V[FX MODEL]
C0256	0893008	CERAMIC CHIP 0.1UF+-10% 16V [EXCEPT FX621AW]	C0518	0893046	CERAMIC CHIP 0.015UF+-10% 50V [FX621AT]
C0256	0893055	CERAMIC CHIP 0.1UF+80-20% 16V[FX621AW]	C0518	0893088	CERAMIC CHIP 0.015UF+-10% 16V [FX621AW]
			C0519	0800143	ELECTROLYTIC 100UF 6.3V[FX MODEL]
			C0520	0800112	ELECTROLYTIC 2.2UF 50V[FX MODEL]
			C0521	0893044	CERAMIC CHIP 0.01UF+-10% 50V[FX MODEL]
			C0522	0893053	CERAMIC CHIP 0.047UF+-10% 50V [FX621AT]
			C0522	0893004	CERAMIC CHIP 0.047UF+-10% 16V [FX621AW]
			C0524	0800118	ELECTROLYTIC 4.7UF 35V[FX MODEL]
			C0525	0800118	ELECTROLYTIC 4.7UF 35V[FX MODEL]
			C0526	0800118	ELECTROLYTIC 4.7UF 35V[FX MODEL]
			C0528	0880048	MYLAR 0.022UF+-10% 50V[FX621AT]

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
C0528	0880051	MYLAR 0.033UF+-10% 50V[FX621AW]	C0875	0700041	CARBON FILM 1KOHM+-5% 1/8W [MX223AW, MX425AW]
C0529	0800122	ELECTROLYTIC 10UF 16V[FX MODEL]	C0875	0880044	POLYESTER FILM 0.01UF+-10% 50V[FX621AW]
C0530	0800291	ELECTROLYTIC 10UF 16V[FX MODEL]	C0876	0800308	ELECTROLYTIC 33UF 16V
C0531	0800291	ELECTROLYTIC 10UF 16V[FX MODEL]	C0878	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0532	0800317	ELECTROLYTIC 47UF 16V[FX MODEL]	C0882	0800192	ELECTROLYTIC 100UF 16V[MX223AW, MX425AW]
C0533	0893044	CERAMIC CHIP 0.01UF+-10% 50V[FX MODEL]	C0882	0800047	ELECTROLYTIC 100UF 6.3V [MX223AT, FX621AT, FX621AW]
C0534	0800135	ELECTROLYTIC 33UF 16V[FX MODEL]	C0885	AJ10131R	CERAMIC CAPACITOR 470PF+-10% 500V
C0535	0893046	CERAMIC CHIP 0.015UF+-10% 50V[FX621AT]	C0886	0890035	CERAMIC DISC 1000PF+-10% 50V
C0535	0893044	CERAMIC CHIP 0.01UF+-10% 50V[FX621AW]	C0888	1143004	CERAMIC CHIP 150PF+-5% 1KV [EXCEPT, FX621AW]
C0601	0207453	ELECTROLYTIC 2.2UF 50V	C0888	1143004	CERAMIC CHIP 150PF+-5% 1KV[FX621AW]
C0602	0880018	POLYESTER FILM 0.022UF+-10% 50V [EXCEPT FX621AW]	C0901	0893086	CERAMIC CHIP 0.1UF+80-20% 50V [EXCEPT, FX621AW]
C0602	0893013	CERAMIC CHIP 0.22UF+-10% 16V[FX621AW]	C0901	0893055	CERAMIC CHIP 0.1UF+80-20% 16V[FX621AW]
C0605	0890094	CERAMIC DISC 3300PF+-10% 25V [EXCEPT FX621AW]	C0902	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0605	0880055	MYLAR 0.068UF+-10% 50V[FX621AW]	C0904	0217516	CAPACITOR 0.047UF+80-20% 5.5V
C0606	0893031	CERAMIC CHIP 1000PF+-10% 50V	C0906	0800176	ELECTROLYTIC 2.2UF 50V
C0607	0209938	CERAMIC CHIP 47PF+-5% 50V	C0907	0209927	CERAMIC CHIP 7.0PF+-0.5% 50V
C0608	0890022	CERAMIC DISC 100PF+-10% 50V	C0908	0209927	CERAMIC CHIP 7.0PF+-0.5% 50V
C0609	0800179	ELECTROLYTIC 10UF 16V	C0909	0209932	CERAMIC CHIP 15PF+-5% 50V
C0610	0800141	ELECTROLYTIC 47UF 16V	C0910	0209932	CERAMIC CHIP 15PF+-5% 50V
C0611	0893091	CERAMIC CHIP 0.022UF+-10% 16V	C0912	0893086	CERAMIC CHIP 0.1UF+80-20% 50V [EXCEPT, FX621AW]
C0612	0800128	ELECTROLYTIC 22UF 16V	C0912	0893055	CERAMIC CHIP 0.1UF+80-20% 16V[FX621AW]
C0614	0890035	CERAMIC DISC 1000PF+-10% 50V	C0913	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0615	0800317	ELECTROLYTIC 47UF 16V	C0914	0800308	ELECTROLYTIC 33UF 16V
C0620	0890035	CERAMIC DISC 1000PF+-10% 50V	C0915	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0621	0890044	CERAMIC DISC 0.022UF+80-20% 25V [EXCEPT FX621AW]	C0916	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0621	0890038	CERAMIC DISC 3300PF+-20% 16V[FX621AW]	C0917	0800141	ELECTROLYTIC 47UF 16V
C0622	0893053	CERAMIC CHIP 0.047UF+-10% 50V	C0918	0893091	CERAMIC CHIP 0.022UF+-10% 16V [EXCEPT, FX621AW]
C0622	0893065	CERAMIC CHIP 0.047UF+80-20% 25V[FX621AW]	C0918	0893082	CERAMIC CHIP 0.022UF+80-20% 50V[FX621AW]
C0623	0890043	CERAMIC DISC 0.01UF+-20% 16V	C0919	0893053	CERAMIC CHIP 0.047UF+-10% 50V [EXCEPT, FX621AW]
C0624	0890044	CERAMIC DISC 0.022UF+80-20% 25V	C0919	0893065	CERAMIC CHIP 0.047UF+80-20% 25V[FX621AW]
C0627	0890023	CERAMIC DISC 120PF+-10% 50V	C0920	0209938	CERAMIC CHIP 47PF+-5% 50V
△C0851	0268741	POLYESTER FILM 0.1UF+-20% 250V [MX223AW, FX621AW, MX425AW]	C0922	0893086	CERAMIC CHIP 0.1UF+80-20% 50V [EXCEPT, FX621AW]
△C0851	AN10201S	FILM CAPACITOR 0.1UF+-20% 250V [MX223AT, FX621AT]	C0922	0893055	CERAMIC CHIP 0.1UF+80-20% 16V[FX621AW]
△C0859	0235992	CERAMIC DISC 2200PF 250V	C0923	0893091	CERAMIC CHIP 0.022UF+-10% 16V [EXCEPT, FX621AW]
△C0860	0235992	CERAMIC DISC 2200PF 250V	C0923	0893082	CERAMIC CHIP 0.022UF+80-20% 50V[FX621AW]
C0862	AL10191	ELECTROLYTIC 82UF 400V (HEPM) [MX223AW, FX621AW, MX425AW]	C0924	0209938	CERAMIC CHIP 47PF+-5% 50V
C0862	A110192	ELECTROLYTIC 100UF 200V[MX223AT, FX621AT]	C0925	0209938	CERAMIC CHIP 47PF+-5% 50V
C0864	AJ10134R	CERAMIC CAPACITOR 270PF+-10% 500V	C0926	0209935	CERAMIC CHIP 27PF+-5% 50V [EXCEPT, FX621AW]
C0865	AN10401R	CAPACITOR 0.047UF+-10% 250V[FX621AW]	C0926	0209930	CERAMIC CHIP 10PF+-0.5% 50V[FX621AW]
C0865	0204284	ELECTROLYTIC 0.047UF 250V[EXC. FX621AW]	C0927	0209948	CERAMIC CHIP 330PF+-5% 50V
C0866	0880053	POLYESTER FILM 0.047UF+-10% 50V	C0928	0893053	CERAMIC CHIP 0.047UF+-10% 50V [EXCEPT, FX621AW]
C0867	0880039	POLYESTER FILM 0.0047UF+-10% 50V [MX223AW, FX621AW, MX425AW]	C0928	0893065	CERAMIC CHIP 0.047UF+80-20% 25V[FX621AW]
C0867	0880037	POLYESTER FILM 0.0033UF+-10% 50V [MX223AT, FX621AT]	C0940	0209943	CERAMIC DISC 120PF+-5% 50V
C0868	0880035	POLYESTER FILM 0.0022UF+-10% 50V	C0942	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0870	0254403	CAPACITOR 22UF+-20% 50V	C0972	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C0871	0254405	CAPACITOR 1000UF+-20% 25V	C0980	0890043	CERAMIC DISC 0.01UF+-20% 16V
C0872	0800353	ELECTROLYTIC 470UF 16V[FX621AW]	C0981	0893044	CERAMIC CHIP 0.01UF+-10% 50V [EXCEPT, FX621AW]
C0872	0800354	ELECTROLYTIC 470UF 25V[EXCEPT FX621AW]	C0981	0890043	CERAMIC DISC 0.01UF+-20% 16V[FX621AW]
C0873	0254405	CAPACITOR 1000UF+-20% 25V [MX223AT, FX621AT, FX621AW]	C0982	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0873	0254408	CAPACITOR 3300UF+-20% 25V [MX223AW, MX425AW]	C0983	0890045	CERAMIC DISC 0.047UF+-20% 16V
C0874	0800352	ELECTROLYTIC 470UF 10V[FX621AW]	C0984	0890045	CERAMIC DISC 0.047UF+-20% 16V
C0874	0800354	ELECTROLYTIC 470UF 25V[MX223AT, FX621AT]	C0985	0209904	CERAMIC DISC 560PF+-5% 50V
C0875	0700055	CARBON FILM 12KOHM+-5% 1/8W [MX223AT, FX621AT]	C0986	0893031	CERAMIC CHIP 1000PF+-10% 50V

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
C0987	0209946	CERAMIC CHIP 220PF+5% 50V	C1703	0890103	CERAMIC DISC 47000PF+80-20% 12V
C1102	0893044	CERAMIC CHIP 0.01UF+10% 50V	C1704	0890103	CERAMIC DISC 47000PF+80-20% 12V
C1103	0893044	CERAMIC CHIP 0.01UF+10% 50V	C1705	0890035	CERAMIC DISC 1000PF+10% 50V
C1104	0893044	CERAMIC CHIP 0.01UF+10% 50V	C1706	0800185	ELECTROLYTIC 47UF 6.3V
C1105	0893044	CERAMIC CHIP 0.01UF+10% 50V	C1802	0800291	ELECTROLYTIC 10UF 16V[FX621AT]
C1106	0800185	ELECTROLYTIC 47UF 6.3V	C1802	0800103	ELECTROLYTIC 0.22UF 50V[FX621AW]
C1107	0893044	CERAMIC CHIP 0.01UF+10% 50V	C1811	0800317	ELECTROLYTIC 47UF 16V
C1108	0893044	CERAMIC CHIP 0.01UF+10% 50V	C2101	0890035	CERAMIC DISC 1000PF+10% 50V
C1110	0893044	CERAMIC CHIP 0.01UF+10% 50V	C2102	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1111	0893044	CERAMIC CHIP 0.01UF+10% 50V	C2501	0893037	CERAMIC CHIP 3300PF+10% 50V[FX621AW]
C1112	0893044	CERAMIC CHIP 0.01UF+10% 50V	C2501	0890038	CERAMIC DISC 3300PF+20% 16V[FX621AT]
C1114	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2502	0893037	CERAMIC CHIP 3300PF+10% 50V [FX621AT,FX621AW]
C1115	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2502	0893046	CERAMIC CHIP 0.015UF+10% 50V [MX223AT, MX223AW, MX425AW]
C1116	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2503	0800352	ELECTROLYTIC 470UF 10V
C1117	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2504	0890043	CERAMIC DISC 0.01UF+20% 16V
C1118	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2505	0800291	ELECTROLYTIC 10UF 16V
C1119	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2506	0800291	ELECTROLYTIC 10UF 16V
C1120	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2507	0800287	CAPASITOR 4.7UF+20% 35V
C1121	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2508	0893037	CERAMIC CHIP 3300PF+10% 50V[FX621AW]
C1122	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2508	0890038	CERAMIC DISC 3300PF+20% 16V [EXCEPT FX621AW]
C1123	0893091	CERAMIC CHIP 0.022UF+10% 16V	C2509	0800287	CAPASITOR 4.7UF+20% 35V
C1124	0893031	CERAMIC CHIP 1000PF+10% 50V	C2513	0800317	ELECTROLYTIC 47UF 16V
C1125	0800185	ELECTROLYTIC 47UF 6.3V	C2514	0893044	CERAMIC CHIP 0.01UF+10% 50V
C1126	0893091	CERAMIC CHIP 0.022UF+10% 16V [EXCEPT, FX621AW]	C2517	0893044	CERAMIC CHIP 0.01UF+10% 50V
C1126	0893082	CERAMIC CHIP 0.022UF+80-20% 50V[FX621AW]	C2518	0800044	ELECTROLYTIC 47UF 50V
C1127	0893013	CERAMIC CHIP 0.22UF+10% 16V	C2519	0893044	CERAMIC CHIP 0.01UF+10% 50V
C1128	0800185	ELECTROLYTIC 47UF 6.3V	C2520	0800335	ELECTROLYTIC 220UF 16V
C1129	0893091	CERAMIC CHIP 0.022UF+10% 16V [EXCEPT, FX621AW]	C2523	0800273	ELECTROLYTIC 0.22UF 50V
C1129	0893082	CERAMIC CHIP 0.022UF+80-20% 50V[FX621AW]	C2524	0893044	CERAMIC CHIP 0.01UF+10% 50V
C1131	0893044	CERAMIC CHIP 0.01UF+10% 50V	C2525	0800291	ELECTROLYTIC 10UF 16V
C1134	0209930	CERAMIC CHIP 10PF+0.5% 50V	C2530	0800118	ELECTROLYTIC 4.7UF 35V
C1135	0209930	CERAMIC CHIP 10PF+0.5% 50V	C2531	0800287	CAPASITOR 4.7UF+20% 35V
C1136	0209930	CERAMIC CHIP 10PF+0.5% 50V	C2532	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1137	0209935	CERAMIC CHIP 27PF+5% 50V	C2539	0890029	CERAMIC DISC 390PF+10% 50V[EXC.FX621AW]
C1138	0209943	CERAMIC DISC 120PF+5% 50V	C2539	0209849	CERAMIC CHIP 390PF+5% 50V[FX621AW]
C1140	0209938	CERAMIC CHIP 47PF+5% 50V [EXCEPT, FX621AW]			RESISTORS
C1140	0209943	CERAMIC DISC 120PF+5% 50V[FX621AW]			
C1141	0893031	CERAMIC CHIP 1000PF+10% 50V	R0205	0103846	CHIP RESISTOR 1.8KOHM+5% 0.1W
C1401	0890043	CERAMIC DISC 0.01UF+20% 16V	R0206	0103859	CHIP RESISTOR 22KOHM+5% 0.1W
C1402	0209943	CERAMIC DISC 120PF+5% 50V	R0207	0103850	CHIP RESISTOR 3.9KOHM+5% 0.1W[FX621AW]
C1403	0800118	ELECTROLYTIC 4.7UF 35V	R0207	0103851	CHIP RESISTOR 4.7KOHM+5% 0.1W
C1404	0893044	CERAMIC CHIP 0.01UF+10% 50V [EXCEPT, FX621AW]			[EXCEPT FX621AW]
C1404	0893091	CERAMIC CHIP 0.022UF+10% 16V[FX621AW]	R0208	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
C1405	0890043	CERAMIC DISC 0.01UF+20% 16V	R0212	0700058	CARBON FILM 22KOHM+5% 1/8W
C1409	0209937	CERAMIC CHIP 39PF+5% 50V	R0213	0700058	CARBON FILM 22KOHM+5% 1/8W
C1410	0209936	CERAMIC CHIP 33PF+5% 50V	R0215	0700039	CARBON FILM 820OHM+5% 1/8W
C1411	0209945	CERAMIC DISC 180PF+5% 50V	R0216	0700045	CARBON FILM 2.2KOHM+5% 1/8W
C1414	0800122	ELECTROLYTIC 10UF 16V	R0217	0700059	CARBON FILM 27KOHM+5% 1/8W
C1415	0800118	ELECTROLYTIC 4.7UF 35V	R0218	0700027	CARBON FILM 100 OHM+5% 1/8W
C1416	0800317	ELECTROLYTIC 47UF 16V	R0226	0103846	CHIP RESISTOR 1.8KOHM+5% 0.1W
C1417	0893044	CERAMIC CHIP 0.01UF+10% 50V	R0227	0103859	CHIP RESISTOR 22KOHM+5% 0.1W
C1419	0209930	CERAMIC CHIP 10PF+0.5% 50V	R0228	0103859	CHIP RESISTOR 22KOHM+5% 0.1W
C1424	0890044	CERAMIC DISC 0.022UF+80-20% 25V	R0229	0103835	CHIP RESISTOR 220 OHM+5% 0.1W [EXCEPT FX621AW]
C1425	0209931	CERAMIC CHIP 12PF+5% 50V	R0229	0700032	CARBON FILM 220 OHM+5% 1/8W[FX621AW]
C1426	0893053	CERAMIC CHIP 0.047UF+10% 50V [EXCEPT, FX621AW]	R0238	0103856	CHIP RESISTOR 12KOHM+5% 0.1W
C1426	0893065	CERAMIC CHIP 0.047UF+80-20% 25V[FX621AW]	R0240	0103845	CHIP RESISTOR 1.5KOHM+5% 0.1W [EXCEPT FX621AW]
C1427	0890039	CERAMIC DISC 4700PF+20% 16V	R0240	0700043	CARBON FILM 1.5KOHM+5% 1/8W[FX621AW]
C1428	0893044	CERAMIC CHIP 0.01UF+10% 50V	R0241	0103853	CHIP RESISTOR 6.8KOHM+5% 0.1W [EXCEPT FX621AW]
C1701	0800185	ELECTROLYTIC 47UF 6.3V			
C1702	0890103	CERAMIC DISC 47000PF+80-20% 12V			

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R0241	0700052	CARBON FILM 6.8KOHM+-5% 1/8W[FX621AW]	R0436	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W[FX621AT]
R0253	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W [EXCEPT FX621AW]	R0436	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W [EXCEPT FX621AT,FX621AW]
R0253	0700038	CARBON FILM 680OHM+-5% 1/8W[FX621AW]	R0437	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R0254	0700075	CARBON FILM 390KOHM+-5% 1/8W	R0441	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R0257	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W [EXCEPT FX621AW]	R0501	0700054	CARBON FILM 10KOHM+-5% 1/8W [FX MODEL]
R0257	0700055	CARBON FILM 12KOHM+-5% 1/8W[FX621AW]	R0502	0700048	CARBON FILM 3.9KOHM+-5% 1/8W[FX MODEL]
R0258	0700027	CARBON FILM 100 OHM+-5% 1/8W	R0503	0700063	CARBON FILM 47KOHM+-5% 1/8W [FX MODEL]
R0261	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R0504	0700058	CARBON FILM 22KOHM+-5% 1/8W [FX MODEL]
R0263	0101391	CARBON FILM 2.2MOHM+-5% 1/8W	R0505	0700063	CARBON FILM 47KOHM+-5% 1/8W [FX MODEL]
R0265	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	R0506	0700058	CARBON FILM 22KOHM+-5% 1/8W [FX MODEL]
R0402	0700059	CARBON FILM 27KOHM+-5% 1/8W	R0509	0700049	CARBON FILM 4.7KOHM+-5% 1/8W[FX MODEL]
R0403	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W [EXCEPT FX621AW]	R0510	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W[FX MODEL]
R0403	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W[FX621AW]	R0511	AQ10296R	CHIP RESISTOR 15KOHM+-0.1% 1/10W[FX MODEL]
R0404	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W [EXCEPT FX621AW]	R0512	AQ10295F	CHIP RESISTOR 11KOHM+-0.1% 1/10W[FX MODEL]
R0404	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W[FX621AW]	R0516	0700049	CARBON FILM 4.7KOHM+-5% 1/8W[FX621AW]
R0407	0103834	CHIP RESISTOR 180 OHM+-5% 0.1W	R0516	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W[FX621AT]
R0407	0103833	[EXCEPT FX621AW,FX621AW] CHIP RESISTOR 150 OHM+-5% 0.1W [FX621AW,FX621AW]	R0517	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W[FX MODEL]
R0408	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W [EXCEPT FX621AW]	R0520	0700063	CARBON FILM 47KOHM+-5% 1/8W [FX MODEL]
R0408	0700061	CARBON FILM 33KOHM+-5% 1/8W[FX621AW]	R0521	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W[FX MODEL]
R0409	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W	R0522	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W[FX MODEL]
R0410	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R0523	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W[FX MODEL]
R0413	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W	R0524	0700054	CARBON FILM 10KOHM+-5% 1/8W [FX MODEL]
R0414	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R0525	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W[FX621AT]
R0418	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R0525	0700048	CARBON FILM 3.9KOHM+-5% 1/8W [FX621AW]
R0419	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W	R0526	0103839	CHIP RESISTOR 470OHM+-5% 0.1W[FX MODEL]
R0420	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W [EXCEPT FX621AT,FX621AW]	R0527	0103839	CHIP RESISTOR 220OHM+-5% 0.1W[FX MODEL]
R0420	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W [FX621AT,FX621AW]	R0530	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W[FX MODEL]
R0421	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0531	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W[FX MODEL]
R0422	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W	R0532	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W[FX MODEL]
R0423	0700056	CARBON FILM 15KOHM+-5% 1/8W [EXCEPT FX621AT,FX621AW]	R0533	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W[FX MODEL]
R0423	0700057	CARBON FILM 18KOHM+-5% 1/8W [FX621AT,FX621AW]	R0534	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W[FX MODEL]
R0424	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W [EXCEPT FX621AT,FX621AW]	R0540	0700033	CARBON FILM 270 OHM+-5% 1/8W[FX MODEL]
R0424	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W [FX621AT,FX621AW]	R0541	0700033	CARBON FILM 270 OHM+-5% 1/8W[FX MODEL]
R0425	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R0602	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0426	0700063	CARBON FILM 47KOHM+-5% 1/8W	R0605	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0427	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	R0615	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0429	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R0616	0700033	CARBON FILM 270OHM+-5% 1/8W
R0429	0700054	CARBON FILM 10KOHM+-5% 1/8W[FX621AW]	R0617	0700033	CARBON FILM 270OHM+-5% 1/8W
R0430	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W [EXCEPT FX621AW]	R0621	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0430	0700058	CARBON FILM 22KOHM+-5% 1/8W[FX621AW]	R0622	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0431	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W [EXCEPT FX621AW]	R0623	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0431	0700049	CARBON FILM 4.7KOHM+-5% 1/8W[FX621AW]	R0624	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0432	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W [EXCEPT FX621AW]	R0625	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0432	0700049	CARBON FILM 4.7KOHM+-5% 1/8W[FX621AW]	R0626	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0434	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W [EXCEPT FX621AW]	R0627	0700036	CARBON FILM 470 OHM+-5% 1/8W
R0434	0700052	CARBON FILM 6.8KOHM+-5% 1/8W[FX621AW]	R0628	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R0435	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R0629	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
			R0630	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
			R0631	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
			R0632	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
			R0633	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
			R0634	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W [EXCEPT FX621AW]
			R0634	0700041	CARBON FILM 1.0KOHM+-5% 1/8W[FX621AW]
			R0635	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
			R0636	0700037	CARBON FILM 560 OHM+-5% 1/8W [EXCEPT FX621AW]
			R0636	0700047	CARBON FILM 3.3KOHM+-5% 1/8W[FX621AW]
			R0637	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
			R0638	0700044	CARBON FILM 1.8KOHM+-5% 1/8W [EXCEPT FX621AW]
			R0638	0700048	CARBON FILM 3.9KOHM+-5% 1/8W[FX621AW]
			R0704	0700041	CARBON FILM 1.0KOHM+-5% 1/8W[FX621AW]
			R0704	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R0705	0700039	[EXCEPT FX621AW, MX425AW] CARBON FILM 820OHM+5% 1/8W	R0893	0700058	CARBON FILM 22KOHM+5% 1/8W
R0706	0700041	CARBON FILM 1.0KOHM+5% 1/8W	R0894	0700058	CARBON FILM 22KOHM+5% 1/8W
R0707	0103843	CHIP RESISTOR 1KOHM+5% 0.1W [EXCEPT FX621AW, MX425AW]	R0901	0700041	CARBON FILM 1.0KOHM+5% 1/8W
R0707	0700041	CARBON FILM 1.0KOHM+5% 1/8W[FX621AW]	R0902	0700041	CARBON FILM 1.0KOHM+5% 1/8W
R0708	0700046	CARBON FILM 2.7KOHM+5% 1/8W	R0903	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
R0709	0103833	CHIP RESISTOR 150 OHM+5% 0.1W	R0904	0103839	CHIP RESISTOR 470 OHM+5% 0.1W
R0715	0103851	CHIP RESISTOR 4.7KOHM+5% 0.1W [EXCEPT FX621AW, MX425AW]	R0905	0700041	CARBON FILM 1.0KOHM+5% 1/8W
R0715	0700049	CARBON FILM 4.7KOHM+5% 1/8W[FX621AW]	R0906	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
R0716	0700047	CARBON FILM 3.3KOHM+5% 1/8W	R0907	0103855	CHIP RESISTOR 10KOHM+5% 0.1W
△R0851	AT10401G	RESISTOR 4.7MOHM+10% 1/2W	R0908	0700054	CARBON FILM 10KOHM+5% 1/8W[FX621AW]
R0852	AT10211M	RESISTOR 1MOHM 1/2W	R0908	0103855	CHIP RESISTOR 10KOHM+5% 0.1W [EXCEPT FX621AW]
R0853	0700074	CARBON FILM 330KOHM+5% 1/8W	R0909	0700067	CARBON FILM 100KOHM+5% 1/8W[FX621AW]
R0854	0700074	CARBON FILM 330KOHM+5% 1/8W	R0909	0103867	CHIP RESISTOR 100KOHM+5% 0.1W [EXCEPT FX621AW]
R0855	0700074	CARBON FILM 330KOHM+5% 1/8W	R0910	0700054	CARBON FILM 10KOHM+5% 1/8W
R0856	AT10244S	RESISTOR 0.47 OHM+5% 1W [MX223AT, FX621AT]	R0910A	0700055	CARBON FILM 12KOHM+5% 1/8W [FX621AT]
R0856	AT10246S	RESISTOR 0.33 OHM+5% 1W	R0910A	0700045	CARBON FILM 2.2KOHM+5% 1/8W[MX425AW]
R0857	0700041	[MX223AW, FX621AW, MX425AW] CARBON FILM 1.0KOHM+5% 1/8W	R0910A	0700053	CARBON FILM 8.2KOHM+5% 1/8W[MX223AT]
R0858	AT10242S	RESISTOR 120 OHM+5% 2W[MX223AT, FX621AT]	R0911	0700067	CARBON FILM 100KOHM+5% 1/8W[FX621AW]
R0858	0700032	CARBON FILM 220 OHM+5% 1/8W [MX223AW, MX425AW]	R0911	0103867	CHIP RESISTOR 100KOHM+5% 0.1W [EXCEPT FX621AW]
R0859	0700032	CARBON FILM 220 OHM+5% 1/8W	R0913	0700041	CARBON FILM 1.0KOHM+5% 1/8W[FX621AW]
R0860	0116664	CHIP RESISTOR 68KOHM+5% 2W [MX223AT, FX621AT]	R0913	0103843	CHIP RESISTOR 1KOHM+5% 0.1W [EXCEPT FX621AW]
R0860	0116671	RESISTOR 100KOHM+5% 3w [EXCEPT MX223AT, FX621AT]	R0914	0700041	CARBON FILM 1.0KOHM+5% 1/8W[FX621AW]
R0861	0116664	CHIP RESISTOR 68KOHM+5% 2W [MX223AT, FX621AT]	R0914	0103843	CHIP RESISTOR 1KOHM+5% 0.1W [EXCEPT FX621AW]
R0861	0116671	RESISTOR 100KOHM+5% 3w [EXCEPT MX223AT, FX621AT]	R0915	0700041	CARBON FILM 1.0KOHM+5% 1/8W[FX621AW]
R0862	0700047	CARBON FILM 3.3KOHM+5% 1/8W	R0915	0103843	CHIP RESISTOR 1KOHM+5% 0.1W [EXCEPT FX621AW]
R0863	0700054	CARBON FILM 10KOHM+5% 1/8W [MX223AT, FX621AT]	R0916	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
R0863	0700056	CARBON FILM 15KOHM+5% 1/8W [MX223AW, MX425AW]	R0917	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
R0863	0700055	CARBON FILM 12KOHM+5% 1/8W[FX621AW]	R0918	0103843	CHIP RESISTOR 1KOHM+5% 0.1W [EXCEPT FX621AW]
R0864	0700033	CARBON FILM 270OHM+5% 1/8W	R0918	0700041	CARBON FILM 1.0KOHM+5% 1/8W[FX621AW]
R0865	0700036	CARBON FILM 470 OHM+5% 1/8W [MX223AT, FX621AT]	R0919	0700041	CARBON FILM 1.0KOHM+5% 1/8W
R0865	0700038	CARBON FILM 680OHM+5% 1/8W [EXCEPT MX223AT, FX621AT]	R0920	0700054	CARBON FILM 10KOHM+5% 1/8W
R0866	0700034	CARBON FILM 330OHM+5% 1/8W	R0921	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
R0867	0700038	CARBON FILM 680OHM+5% 1/8W	R0922	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
R0868	0880044	POLYESTER FILM 0.01UF+10% 50V [EXCEPT FX621AW]	R0923	0700041	CARBON FILM 1KOHM+5% 1/8W
R0868	0700041	CARBON FILM 1.0KOHM+5% 1/8W[FX621AW]	R0924	0103840	CHIP RESISTOR 560 OHM+5% 0.1W
R0869	0104114	CHIP RESISTOR 3.3KOHM+1% 0.1W	R0925	0103840	CHIP RESISTOR 560 OHM+5% 0.1W
R0871	0105572	METAL FILM 2.7KOHM+1% 1/10W	R0926	0103840	CHIP RESISTOR 560 OHM+5% 0.1W
R0872	0700045	CARBON FILM 2.2KOHM+5% 1/8W	R0927	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
R0873	0700045	CARBON FILM 2.2KOHM+5% 1/8W			[FX621AT, MX425AW]
R0874	0700058	CARBON FILM 22KOHM+5% 1/8W	R0927	0700041	CARBON FILM 1.0KOHM+5% 1/8W[FX621AW]
R0875	0700032	CARBON FILM 220 OHM+5% 1/8W	R0928	0103851	CHIP RESISTOR 4.7KOHM+5% 0.1W
R0878	0103859	CHIP RESISTOR 22KOHM+5% 0.1W	R0929	0103851	CHIP RESISTOR 4.7KOHM+5% 0.1W
R0879	0700038	CARBON FILM 680 OHM+5% 1/8W	R0934	0103851	CHIP RESISTOR 4.7KOHM+5% 0.1W
R0880	0700036	CARBON FILM 470 OHM+5% 1/8W			[EXCEPT FX621AW]
R0885	0700056	CARBON FILM 15KOHM+5% 1/8W	R0934	0700049	CARBON FILM 4.7KOHM+5% 1/8W[FX621AW]
R0886	0700056	CARBON FILM 15KOHM+5% 1/8W	R0935	0103835	CHIP RESISTOR 220 OHM+5% 0.1W [EXCEPT FX621AW]
R0887	0700046	CARBON FILM 2.7KOHM+5% 1/8W	R0935	0700032	CARBON FILM 220 OHM+5% 1/8W[FX621AW]
R0889	0700062	CARBON FILM 39KOHM+5% 1/8W	R0936	0103855	CHIP RESISTOR 10KOHM+5% 0.1W [EXCEPT FX621AW]
R0891	0700058	CARBON FILM 22KOHM+5% 1/8W	R0936	0700054	CARBON FILM 10KOHM+5% 1/8W[FX621AW]
R0892	0103859	CHIP RESISTOR 22KOHM+5% 0.1W	R0937	0103840	CHIP RESISTOR 560 OHM+5% 0.1W [EXCEPT FX621AW]
			R0937	0700037	CARBON FILM 560OHM+5% 1/8W[FX621AW]
			R0938	0103839	CHIP RESISTOR 470 OHM+5% 0.1W
			R0939	0103843	CHIP RESISTOR 1KOHM+5% 0.1W
			R0940	0103839	CHIP RESISTOR 470OHM+5% 0.1W
			R0941	0700041	CARBON FILM 1.0KOHM+5% 1/8W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R0943	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1109	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R0944	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1110	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W [FX621AT,FX621AW]
R0945	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1110	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W [MX223AT, MX332AW]
R0946	0103843	CHIP RESISTOR 1K OHM+-5% 0.1W [EXCEPT FX621AW]	R1110	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W [MX425AW]
R0946	0700041	CARBON FILM 1.0KOHM+-5% 1/8W [FX621AW]	R1112	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0947	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1113	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0948	0103851	CHIP RESISTOR 4.7K OHM+-5% 0.1W [EXCEPT FX621AW]	R1115	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R0948	0700049	CARBON FILM 4.7KOHM+-5% 1/8W [FX621AW]	R1116	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W [FX621AT,FX621AW]
R0951	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W [EXCEPT FX621AW]	R1116	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W [MX425AW]
R0951	0700041	CARBON FILM 1.0KOHM+-5% 1/8W [FX621AW]	R1117	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0952	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W [EXCEPT FX621AW]	R1118	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0952	0700041	CARBON FILM 1.0KOHM+-5% 1/8W [FX621AW]	R1120	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0954	0700073	CARBON FILM 270KOHM+-5% 1/8W	R1121	0700032	CARBON FILM 220 OHM+-5% 1/8W
R0955	0103839	CHIP RESISTOR 470OHM+-5% 0.1W	R1403	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R0956	0700036	CARBON FILM 470 OHM+-5% 1/8W	R1405	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0957	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W	R1406	0700024	CARBON FILM 56 OHM+-5% 1/8W [MX425AW]
R0963	0700041	CARBON FILM 1KOHM+-5% 1/8W	R1406	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W [FX621AW]
R0967	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	R1407	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R0969	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W [EXCEPT FX621AW]	R1409	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0969	0700027	CARBON FILM 100 OHM+-5% 1/8W [FX621AW]	R1410	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R0970	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W [EXCEPT FX621AW]	R1412	0700076	CARBON FILM 470KOHM+-5% 1/8W
R0970	0700027	CARBON FILM 100 OHM+-5% 1/8W [FX621AW]	R1413	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0971	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R1416	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0972	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R1418	0700027	CARBON FILM 100 OHM+-5% 1/8W
R0976	0101725	CHIP RESISTOR 2.2 OHM+-5% 1/4W	R1421	0700027	CARBON FILM 100 OHM+-5% 1/8W
R0977	0700067	CARBON FILM 100KOHM+-5% 1/8W	R1422	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W [EXCEPT FX621AW]
R0978	0101765	RESISTOR 10KOHM+-1% 0.1W [EXCEPT FX621AW]	R1422	0700041	CARBON FILM 1.0KOHM+-5% 1/8W [FX621AW]
R0978	0104111	CHIP RESISTOR 10KOHM+-1% 1/10W [FX621AW]	R1423	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0979	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W [EXCEPT FX621AW]	R1424	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W [EXCEPT FX621AW]
R0979	0700052	CARBON FILM 6.8KOHM+-5% 1/8W [FX621AW]	R1424	0700032	CARBON FILM 220 OHM+-5% 1/8W [FX621AW]
R0980	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W [EXCEPT FX621AW]	R1430	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R0980	0700058	CARBON FILM 22KOHM+-5% 1/8W [FX621AW]	R1432	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0981	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W [EXCEPT FX621AW]	R1433	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W [EXCEPT FX621AW]
R0981	0700054	CARBON FILM 10KOHM+-5% 1/8W [FX621AW]	R1433	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W [FX621AW]
R0982	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R1434	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R0983	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R1437	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R0984	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R1438	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0987	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W [EXCEPT FX621AW]	R1701	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0987	0700054	CARBON FILM 10KOHM+-5% 1/8W [FX621AW]	R1702	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0988	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W	R1703	0700032	CARBON FILM 220 OHM+-5% 1/8W [EXCEPT MX425AW]
R0990	0700067	CARBON FILM 100KOHM+-5% 1/8W	R1703	0700039	CARBON FILM 820OHM+-5% 1/8W [MX425AW]
R0991	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W	R1704	0700032	CARBON FILM 220 OHM+-5% 1/8W [EXCEPT MX425AW]
R0992	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W	R1704	0700039	CARBON FILM 820OHM+-5% 1/8W [MX425AW]
R0993	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R1708	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0994	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	R1709	0700038	CARBON FILM 680OHM+-5% 1/8W
R0995	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W	R1710	0700038	CARBON FILM 680OHM+-5% 1/8W
R0996	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R1711	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0997	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	R1712	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0998	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W	R1713	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0999	0700054	CARBON FILM 10KOHM+-5% 1/8W	R1714	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1101	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W	R1802	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W [FX621AT]
R1103	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R1802	0893021	CERAMIC CHIP 0.033UF+-10% 25V [MX223AT, MX223AW, MX425AW]
R1104	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R1802	0700052	CARBON FILM 6.8KOHM+-5% 1/8W [FX621AW]
R1107	0103839	CHIP RESISTOR 470OHM+-5% 0.1W	R1806	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1108	0103839	CHIP RESISTOR 470OHM+-5% 0.1W	R1807	0700054	CARBON FILM 10KOHM+-5% 1/8W
			R1808	0700053	CARBON FILM 8.2KOHM+-5% 1/8W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R1809	0700057	CARBON FILM 18KOHM+-5% 1/8W	R2534	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W [FX621AW]
R1818	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2535	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1820	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2536	0700019	CARBON FILM 27 OHM+-5% 1/8W
R1822	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2537	0700019	CARBON FILM 27 OHM+-5% 1/8W
R2101	0700059	CARBON FILM 27KOHM+-5% 1/8W	R2538	0700025	CARBON FILM 68 OHM+-5% 1/8W
R2102	0700067	CARBON FILM 100KOHM+-5% 1/8W	R2539	0103834	CHIP RESISTOR 180 OHM+-5% 0.1W
R2103	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	R2540	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R2104	0700032	CARBON FILM 220 OHM+-5% 1/8W [FX621AW]	R2541	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R2104	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W [EXCEPT FX621AW]	R2542	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2105	0700063	CARBON FILM 47KOHM+-5% 1/8W [FX621AW]	R2701	0700057	CARBON FILM 18KOHM+-5% 1/8W
R2105	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W [EXCEPT FX621AW]	R2702	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2106	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W	R2703	0700057	CARBON FILM 18KOHM+-5% 1/8W
R2107	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	R2704	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2108	0700048	CARBON FILM 3.9KOHM+-5% 1/8W	R2705	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R2109	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	R2706	0700029	CARBON FILM 150 OHM+-5% 1/8W
R2110	0700048	CARBON FILM 3.9KOHM+-5% 1/8W	R2707	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R2111	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	R2708	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R2112	0700045	CARBON FILM 2.2KOHM+-5% 1/8W	R2709	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R2113	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W	RF0861	BZ10471R	CORE
R2114	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	RT1801	AW10188R	SEMI VARIABLE 22KOHM [FX621AW]
R2115	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	RT1801	0800291	ELECTROLYTIC 10UF 16V [EXCEPT FX621]
R2116	0700054	CARBON FILM 10KOHM+-5% 1/8W			SEMI-CONDUCTORS
R2117	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W [EXCEPT FX621AW]	D0206	5339071	DIODE 1SS119
R2117	0700058	CARBON FILM 22KOHM+-5% 1/8W [FX621AW]	D0401	5339071	DIODE 1SS119
R2501	0700041	CARBON FILM 1.0KOHM+-5% 1/8W	D0402	5339551	DIODE SS1J4
R2502	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W [MX223AT, MX223AW, MX425AW]	D0603	5339231	DIODE 1SR35-100A
R2502	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W [FX621AT, AW]	D0604	5339231	DIODE 1SR35-100A
R2503	0101400	CARBON FILM 75OHM+-5% 1/8W	D0851	5336552	DIODE S1WBA60
R2504	0700023	CARBON FILM 47 OHM+-5% 1/8W [EXC. FX621AW]	D0852	CH10191M	DIODE EG01C-T
R2504	0101400	CARBON FILM 75OHM+-5% 1/8W [FX621AW]	D0853	CH10481M	DIODE AG01Z
R2505	0700037	CARBON FILM 560 OHM+-5% 1/8W	D0856	CH10481M	DIODE AG01Z [EXCEPT FX621AW]
R2506	0700037	CARBON FILM 560 OHM+-5% 1/8W	D0856	CH10921M	DIODE PR1003L [FX621AW]
R2507	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	D0857	CH10462S	DIODE S3L20U
R2508	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	D0858	1331361	DIODE RK34 [MX223AW, MX425AW]
R2509	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	D0858	5339241	DIODE EK14 [MX223AT, FX621AT]
R2510	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	D0859	5339241	DIODE EK14
R2511	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	D0860	5339551	DIODE SS1J4 [EXCEPT FX621AW]
R2512	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W [MX223AW, MX425AW]	D0860	CH10891M	DIODE 1N5817 [FX621AW]
R2512	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W [MX223AT, FX621AT, FX621AW]	D0861	5339551	DIODE SS1J4 [EXCEPT FX621AW]
R2514	0101835	CARBON FILM 1.5KOHM+-5% 1/4W	D0861	CH10891M	DIODE 1N5817 [FX621AW]
R2515	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W [EXCEPT FX621AW]	D0864	CH10191M	DIODE EG01C-T
R2515	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W [FX621AW]	D0901	5339551	DIODE SS1J4 [EXCEPT FX621AW]
R2517	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W [EXCEPT FX621AW]	D0901	CH10891M	DIODE 1N5817 [FX621AW]
R2517	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W [FX621AW]	D0906	5339071	DIODE 1SS119
R2518	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	D0907	5339071	DIODE 1SS119
R2523	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	D0908	5339231	DIODE 1SR35-100A [EXCEPT FX621AW]
R2524	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	D0908	CH10871M	DIODE 1N4001 [FX621AW]
R2527	0700042	CARBON FILM 1.2KOHM+-5% 1/8W [MX223AW, MX425AW]	D0909	5339231	DIODE 1SR35-100A [EXCEPT FX621AW]
R2527	0700063	CARBON FILM 47KOHM+-5% 1/8W [MX223AT, FX621AT, FX621AW]	D0909	CH10871M	DIODE 1N4001 [FX621AW]
R2530	0700023	CARBON FILM 47 OHM+-5% 1/8W	D1101	5339071	DIODE 1SS119
R2533	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W [EXCEPT FX621AW]	D1102	5328307	DIODE MA151WK [EXCEPT FX621AW]
R2533	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W [FX621AW]	D1102	5339071	DIODE 1SS119 [FX621AW]
R2534	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W [EXCEPT FX621AW]	D1403	5339071	DIODE 1SS119
			D1701	5339071	DIODE 1SS119
			D2501	5339071	DIODE 1SS119
			D2502	5339071	DIODE 1SS119
			D2504	5339071	DIODE 1SS119
			IC0201	CK14413U	IC HA118204F
			IC0202	CK13574R	IC MSM7476-76MS-KR1
			IC0501	CK16761	IC AN3962FB
			IC0851	1360452	IC TL431CLP [EXCEPT FX621AW]
			IC0851	CP11961R	IC HA17431PA [FX621AW]
			IC0901	CK16738	IC HD6433977SB46F


SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
IC0901	CK16748	IC HD6433977SB69F (HEPM)	Q1102	CA10582R	TRANSISTOR 2SB709A [FX621AW]
IC0902	CP10312R	IC PST9129	Q1401	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]
IC0903	CP10914	IC ST24C01FB6	Q1401	CA10672R	TRANSISTOR 2SD601A [FX621AW]
IC0904	CP10291	IC BA6209	Q1404	5328962	TRANSISTOR 2SA1037K [EXCEPT FX621AW]
IC0905	CP11361R	IC M5278L05	Q1404	CA10582R	TRANSISTOR 2SB709A [FX621AW]
IC1101	CK14481	IC HA118198FP	Q1407	5328962	TRANSISTOR 2SA1037K [EXCEPT FX621AW]
IC1102	CP11191	IC LA7256	Q1407	CA10582R	TRANSISTOR 2SB709A [FX621AW]
IC1701	CZ10182	IC BU9716AK (HEPM)	Q1409	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]
IC1801	CS10352	MODULE HTS7337A [FX621AT]	Q1409	CA10672R	TRANSISTOR 2SD601A [FX621AW]
IC1801	CS10354	MODULE HTS7337C [FX621AW]	Q1410	5328962	TRANSISTOR 2SA1037K [EXCEPT FX621AW]
IC2101	CJ10212	PHOTO INTERLAPTER SG-236	Q1410	CA10582R	TRANSISTOR 2SB709A [FX621AW]
IC2102	CJ10222	PHOTO INTERLAPTER SG-237	Q1411	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]
IC2501	CK13501R	IC NJM2533M	Q1411	CA10672R	TRANSISTOR 2SD601A [FX621AW]
IR1701	CW10173	MODULE TENS5380B	Q1701	5327071	TRANSISTOR DTC124ES
LD1701	CH10781R	DIODE SLP3117E	Q1702	5327071	TRANSISTOR DTC124ES
LD1702	CH10781R	DIODE SLP3117E	Q1802	5327073	TRANSISTOR DTC144ES [FX621AW]
LD1703	CH10781R	DIODE SLP3117E	Q1802	5328793	TRANSISTOR DTC144EK [FX621AT]
LD1704	CH10781R	DIODE SLP3117E	Q2101	CF10372	TRANSISTOR PT493FL1
LD2101	CH10542	DIODE GL451L1	Q2102	CF10372	TRANSISTOR PT493FL1
Q0221	5328793	TRANSISTOR DTC144EK	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0222	5328793	TRANSISTOR DTC144EK	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0226	5328972	TRANSISTOR 2SC2412K-BRT	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0228	5326903	TRANSISTOR UN2213 [FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0228	5328793	TRANSISTOR DTC144EK [EXCEPT FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0403	5328972	TRANSISTOR 2SC2412K-BRT	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0405	5328962	TRANSISTOR 2SA1037K	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0406	5323172	TRANSISTOR 2SC1214CD	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0409	5327001	TRANSISTOR 2SC458CD [FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0409	5327063	TRANSISTOR 2SC1740S [EXCEPT FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0410	5326903	TRANSISTOR UN2213 [FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0410	5328793	TRANSISTOR DTC144EK [EXCEPT FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0411	5327021	TRANSISTOR 2SA844CD	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0412	5327063	TRANSISTOR 2SC1740S [FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0412	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0413	5327063	TRANSISTOR 2SC1740S [FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0413	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]	Q2103	5326903	TRANSISTOR UN2213 [FX621AW]
Q0851	CF10621	TRANSISTOR FS3KM-18A-300 [EXC. MX223AW, MX425AW]	Q2501	5328793	TRANSISTOR DTC144EK [EXCEPT FX621AW]
Q0851	CF10622	TRANSISTOR FS3KM-10-300 [MX223AW, FX621AT]	Q2501	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]
Q0852	CF10451R	TRANSISTOR 2SC3246	Q2501	CA10672R	TRANSISTOR 2SD601A [FX621AW]
Q0853	1321341	TRANSISTOR 2SD1765	Q2502	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]
Q0854	5327131	TRANSISTOR 2SB562C [EXC. MX223AW, MX425AW]	Q2502	CA10672R	TRANSISTOR 2SD601A [FX621AW]
Q0854	5327262	TRANSISTOR 2SB1326 [MX223AW, MX425AW]	Q2503	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]
Q0855	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]	Q2503	CA10672R	TRANSISTOR 2SD601A [FX621AW]
Q0855	CA10672R	TRANSISTOR 2SD601A [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0858	5327131	TRANSISTOR 2SB562C	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0859	5327063	TRANSISTOR 2SC1740S	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0864	1321341	TRANSISTOR 2SD1765	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0901	5327151	TRANSISTOR 2SA952-ML2	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0902	5327073	TRANSISTOR DTC144ES [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0902	5328793	TRANSISTOR DTC144EK [EXCEPT FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0905	5328962	TRANSISTOR 2SA1037K [EXCEPT FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0905	CA10582R	TRANSISTOR 2SB709A [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0906	5328962	TRANSISTOR 2SA1037K [EXCEPT FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0906	CA10582R	TRANSISTOR 2SB709A [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0911	5328962	TRANSISTOR 2SA1037K	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0912	5326903	TRANSISTOR UN2213 [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0912	5328793	TRANSISTOR DTC144EK [EXCEPT FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0913	5326903	TRANSISTOR UN2213 [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0913	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0914	5326903	TRANSISTOR UN2213 [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q0914	5328793	TRANSISTOR DTC144EK [EXCEPT FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q1101	5328972	TRANSISTOR 2SC2412K-BRT [EXCEPT FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q1101	CA10672R	TRANSISTOR 2SD601A [FX621AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
Q1102	5328962	TRANSISTOR 2SA1037K [FX621AT, MX425AW]	Q2504	5326903	TRANSISTOR UN2213 [FX621AW]
			Q2509	5327074	TRANSISTOR DTA144ES-T
			△ QF0851	5721945	IC PROTECTOR, ICP-N38
			△ QF0852	5721946	PROTECTOR, ICP-N15
			ZD0851	5339251	DIODE HZS2-C3
			ZD0861	5336811	DIODE MA2180A [EXCEPT FX621AW]
			ZD0861	CH10961M	ZUNER DIODE MA7180-A [FX621AW]
			ZD0862	5339268	DIODE HZS11B2
			ZD0864	5339482	DIODE HZS15-2
			ZD0901	5339275	DIODE HZS7-B2
			ZD0903	5339297	DIODE HZS5C3
			ZD0904	5339297	DIODE HZS5C3
			ZD2501	5339288	DIODE HZS30-3
			ZD2502	5339257	DIODE HZS4-B1 [FX621AW]
			ZD2502	5339296	DIODE HZS5B2 [EXCEPT FX621AT]
					TRANSFORMERS
			T0401	BT10251	TRANSFORMER, POWER
			△ T0851	5216914	TRANSFORMER, POWER [MX223AT, FX621AT]
			△ T0851	BT10322	TRANSFORMER, POWER (HEPM)
					[EXCEPT MX223AT, FX621AT]
					COILS
			L0202	0770057	CHOKE COIL 100UH+-5%
			L0203	5121288	COIL 15UH
			L0204	5121287	COIL 10UH
			L0205	0770057	CHOKE COIL 100UH+-5%
			L0206	5121569	COIL 82UH
			L0208	0770057	CHOKE COIL 100UH+-5%

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
L0209	5159142	CHOKE COIL 12UH	S0707	FE10141R	SWITCH
L0210	5159146	CHOKE COIL 27UH	S0708	5636101	SWITCH
L0401	5159114	COIL 15MH	S1701	5634884	SWITCH
L0403	0770057	CHOKE COIL 100UH+-5%	S2101	FD10211	SWITCH, MODE
L0501	0770048	CHOKE COIL 22UH+-5% [FX621AT]	S2102	5635631	SWITCH
L0501	0770057	CHOKE COIL 100UH+-5% [FX621AW]	S2103	5635631	SWITCH
L0502	0770057	CHOKE COIL 100UH+-5% [FX MODEL]	S2701	FH10271	SWITCH
△L0851	BJ10251	FILTER, LC	S2702	5634884	SWITCH
L0853	BH10337R	COIL 10UH	S2703	5634884	SWITCH
L0854	BH10339R	COIL 22UH	S2704	5634884	SWITCH
L1101	0770057	CHOKE COIL 100UH+-5%	S2705	5634884	SWITCH
L1102	5121611	COIL	S2706	5634884	SWITCH
L1103	0770057	CHOKE COIL 100UH+-5% [EXCEPT FX621AW]			
L1103	5121611	COIL [FX621AW]			
L1105	5121296	COIL 220UH			
L1106	5121296	COIL 220UH [EXCEPT FX621AW]			
L1106	5159155	CHOKE COIL 120UH+-10% [FX621AW]			
L1402	5121288	COIL 15UH			
L1403	5121284	COIL 3.3UH			
L1406	0770057	CHOKE COIL 100UH+-5%			
L1701	0770057	CHOKE COIL 100UH+-5%			
L1801	0770057	CHOKE COIL 100UH+-5%			
L2502	0770061	CHOKE COIL 180UH			
L2504	0770057	CHOKE COIL 100UH+-5%			
CRYSTALS					
X0201	BP10531	CRYSTAL [EXCEPT FX621AW]			
X0201	BP10611	CRYSTAL [FX621AW]			
X0901	BP10571	CRYSTAL			
X0902	BP10251	CRYSTAL			
MISCELLANEOUS					
BL0851	5272378	LC FILTER [MX223AT, FX621AT]			
BL0851	5272379	COIL [MX223AW, MX425AW]			
BL0851	BZ10471R	CORE [FX621AT]			
BL0853	5272378	LC FILTER [MX223AT, FX621AT]			
BL0853	5272379	COIL [MX223AW, MX425AW]			
BL0853	BZ10471R	CORE [FX621AW]			
BL0861	5272378	LC FILTER			
BL0901	5272379	COIL [EXCEPT FX621AT]			
BL0901	BZ10471R	CORE [FX621AT]			
BL0902	5274521	CORE, FERRITE			
△F0851	FN10201	FUSE 3A			
FE2501	5582213	TUNER IF UNIT (HEPM) [MX223AT, FX621AT]			
FE2501	5582216	TUNER IF UNIT [MX223AW, MX425AW]			
FE2501	5582218	TUNER IF UNIT (HEPM) [FX621AW]			
△FH0851	5722412	HOLDER, FUSE			
△FH0852	5722412	HOLDER, FUSE			
JK2501	ES10342	JACK (HEPM) [EXCEPT FX621AW, FX621AT]			
JK2501	ES10343	JACK [FX621AW, FX621AT]			
JK2503	ES10372	JACK			
LCD1701	DB10341	FLOURESENT DISPLAY			
LMP1701	5763357	LAMP			
LMP1702	5763357	LAMP			
LMP1703	5763357	LAMP			
△PC0851	5327593	PHOTO COUPLER PS2501-1 [FX621AW]			
△PC0851	1322421	PHOTOCOUPLER PC817A [EXCEPT FX621AW]			
S0701	FE10141R	SWITCH			
S0702	FE10141R	SWITCH			
S0703	FE10141R	SWITCH			
S0704	FE10141R	SWITCH			
S0705	FE10141R	SWITCH			
S0706	FE10141R	SWITCH			

Applied Models: VT-MX223AW/MX223AT
VT-MX425AW
VT-FX621AT

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

[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

1. Markings in schematic diagrams

- Parts marked "■" with circuit numbers in the schematic diagrams are discrete parts.
- Parts marked "●" with circuit numbers in the schematic diagram are leadless parts.

Cautions when using circuit board diagrams

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

- 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.

- Board having patterns on both sides and parts on both sides.

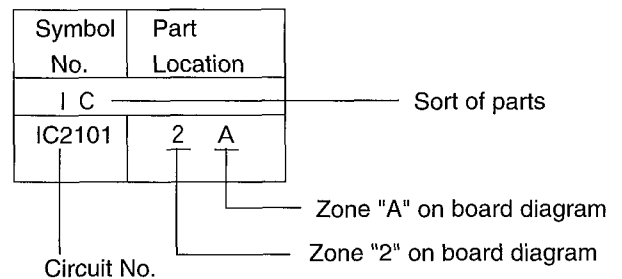
Side A: Shows parts and patterns which can be seen when the case is opened.

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

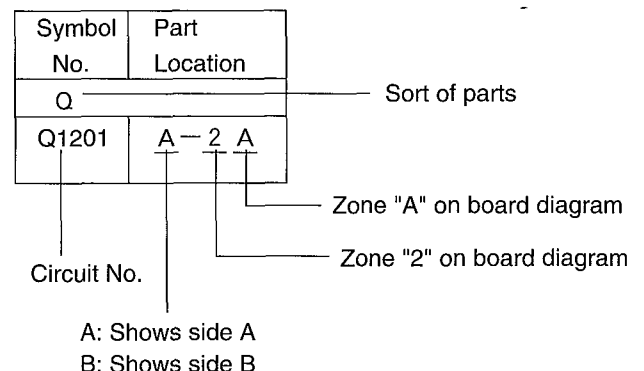
2. Table for indexing locations of parts

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.

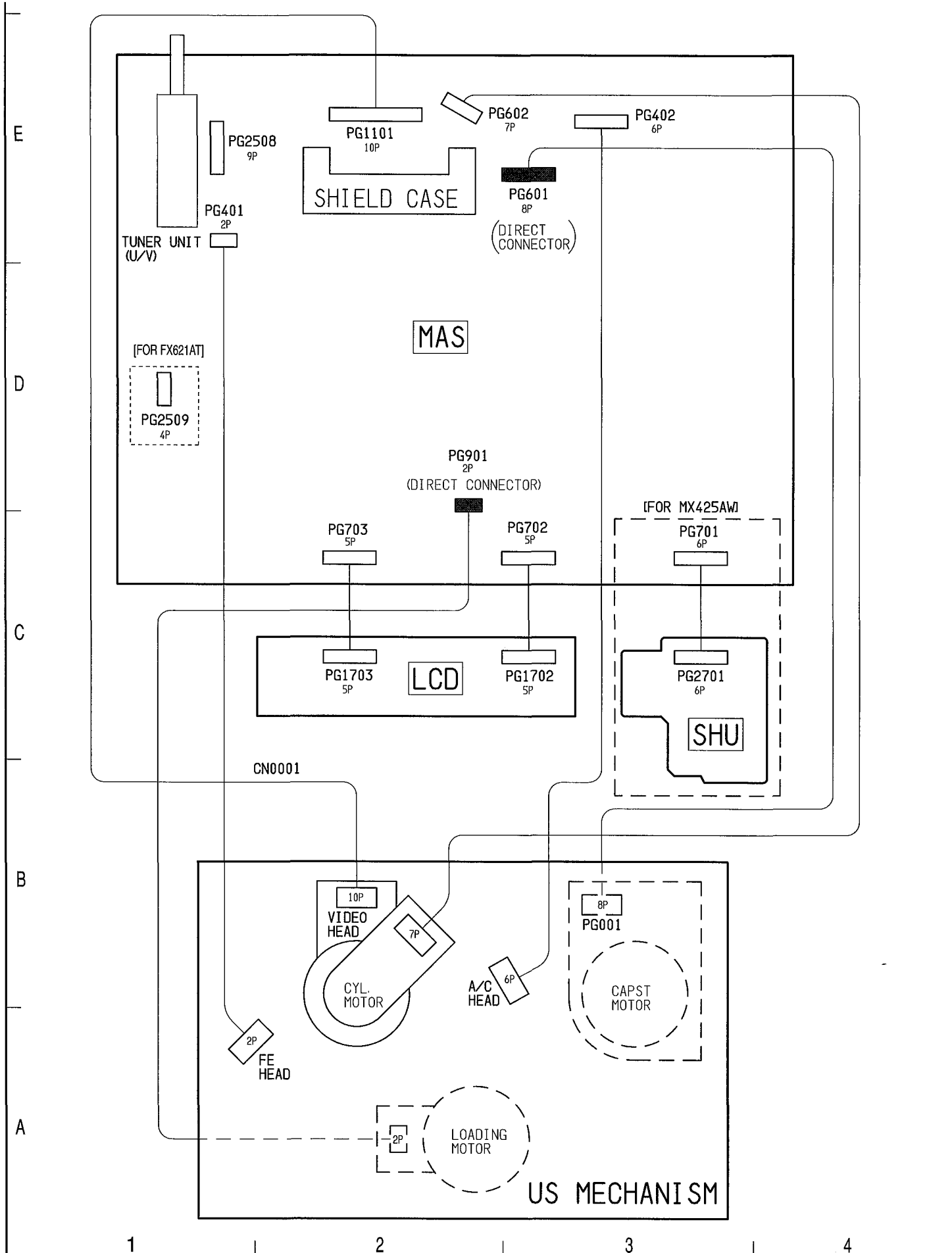
1) In case of one-layer board



2) In case of side A/B indication board

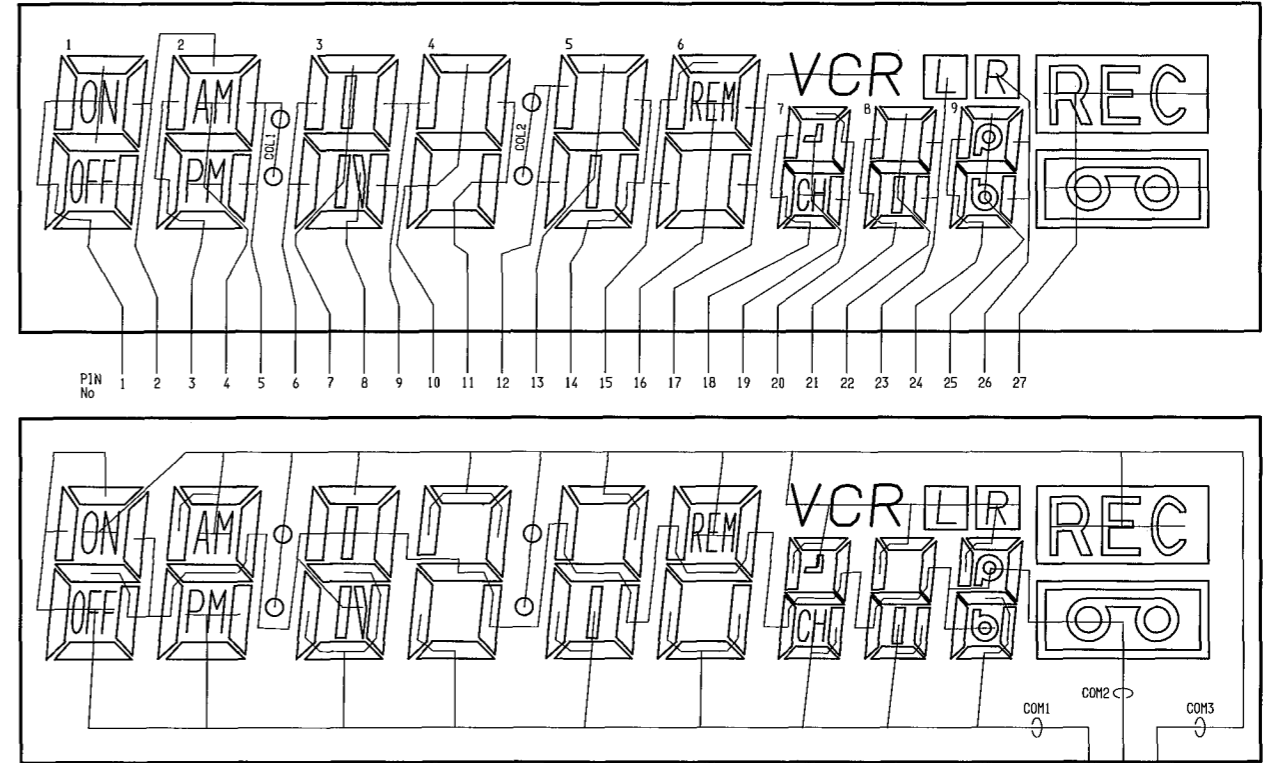
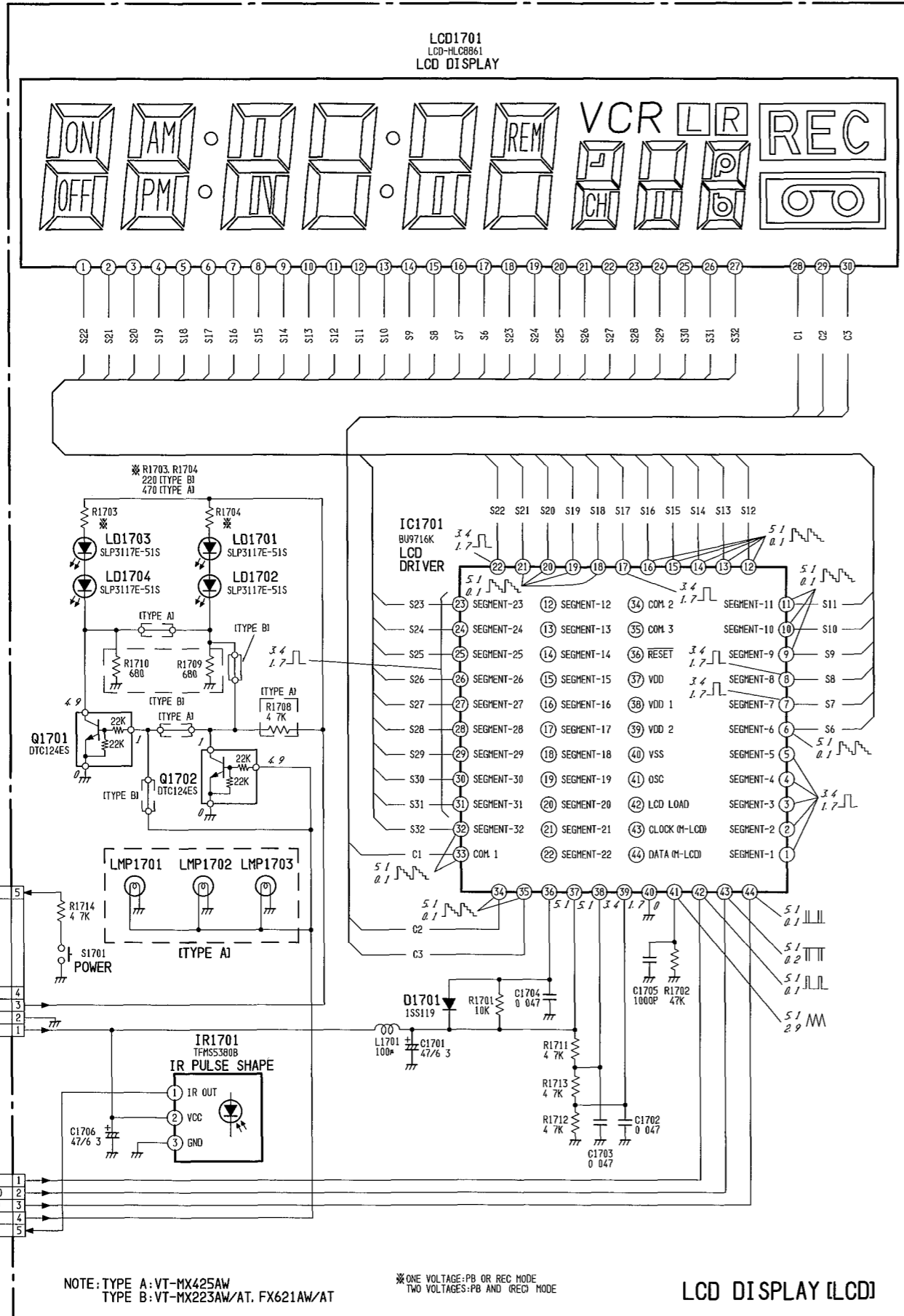


INTERNAL WIRING DIAGRAM

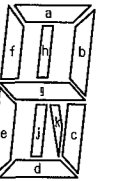


LCD DISPLAY [LCD] SCHEMATIC DIAGRAM

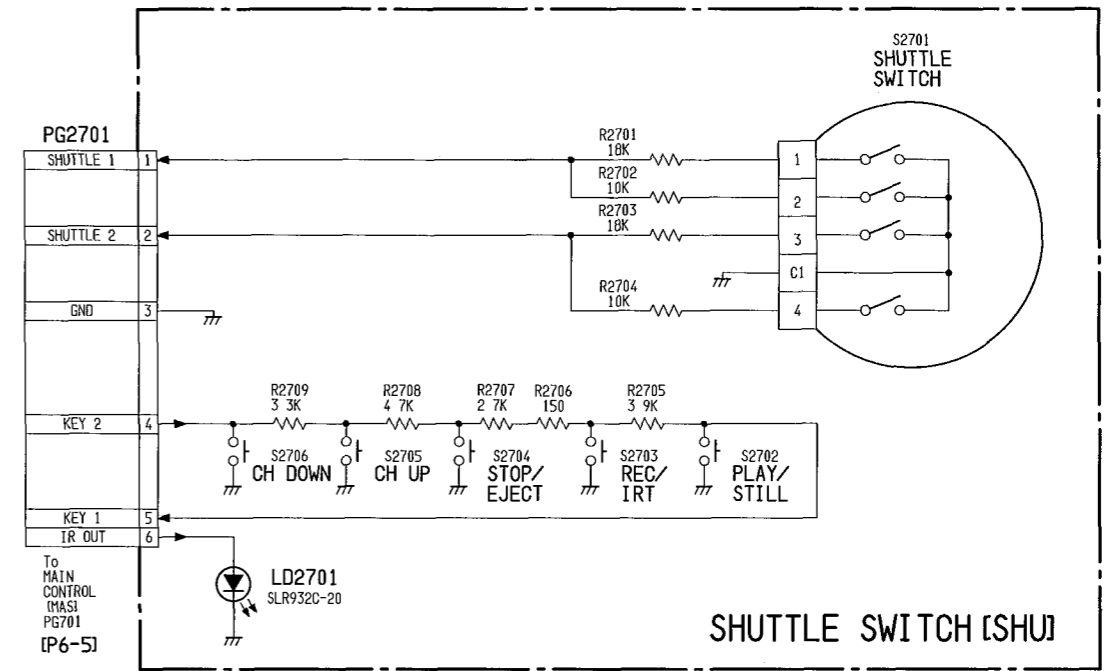
LCD DISPLAY GLID TABLE



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	1adef	OFF	2d	PM	2c	3e	3g	3d	3c	4e	4d	5e	5j	5d	6e	6d	6c	7d	CH	7c	8d	8j	8c	9d	9j	9c	—	COM	—	—
COM2	1g	1bc	2e	2g	2b	3f	3hj	3k	3b	4g	4c	5f	5g	5c	6f	6g	6b	7e	7g	7b	8e	8g	8b	9e	9b	9d	—	COM	—	—
COM3	ON	2a	2f	AM	COL1	—	3a	—	4f	4a	4b	COL2	5a	5b	6a	REM	VCR	7f	7a	7a	8f	8a	L	9f	9a	R	REC	—	—	COM



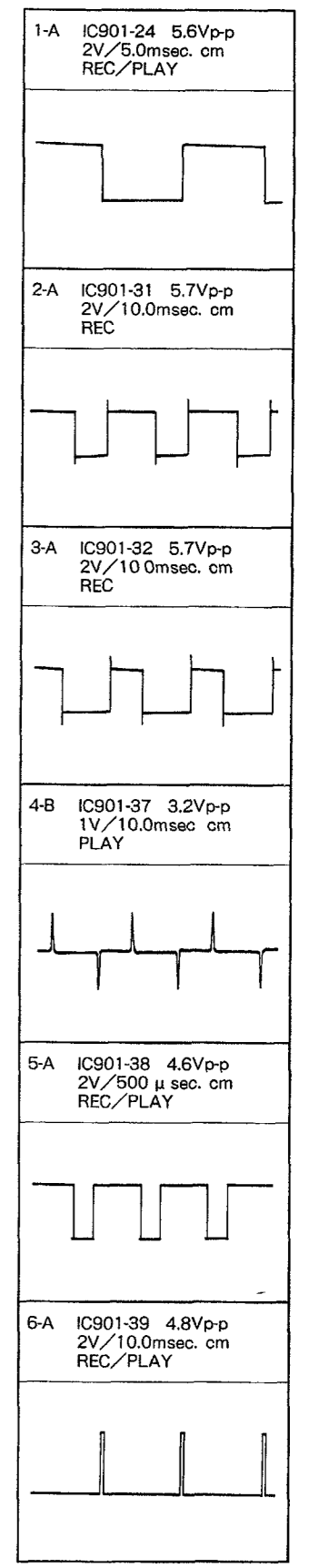
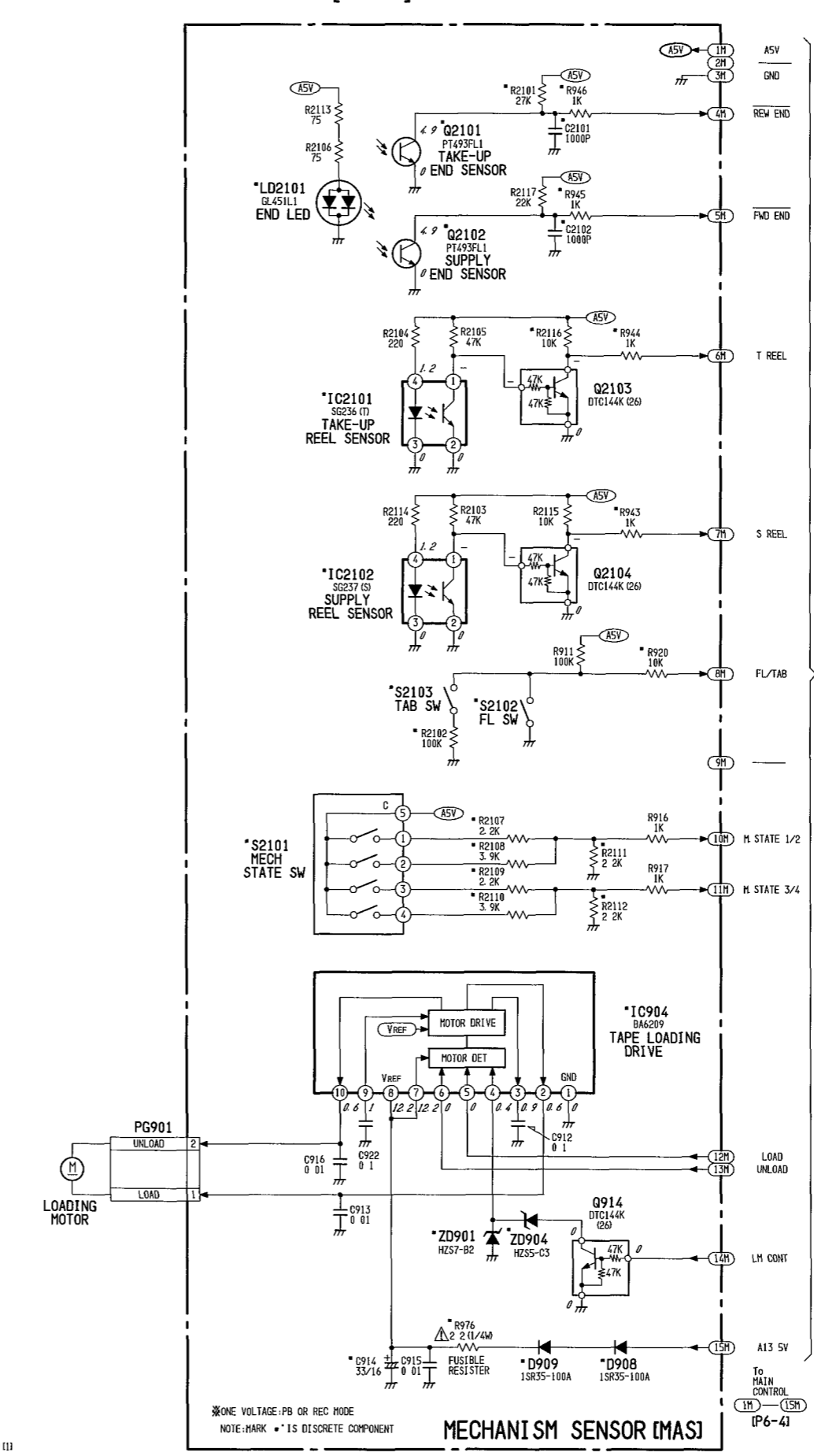
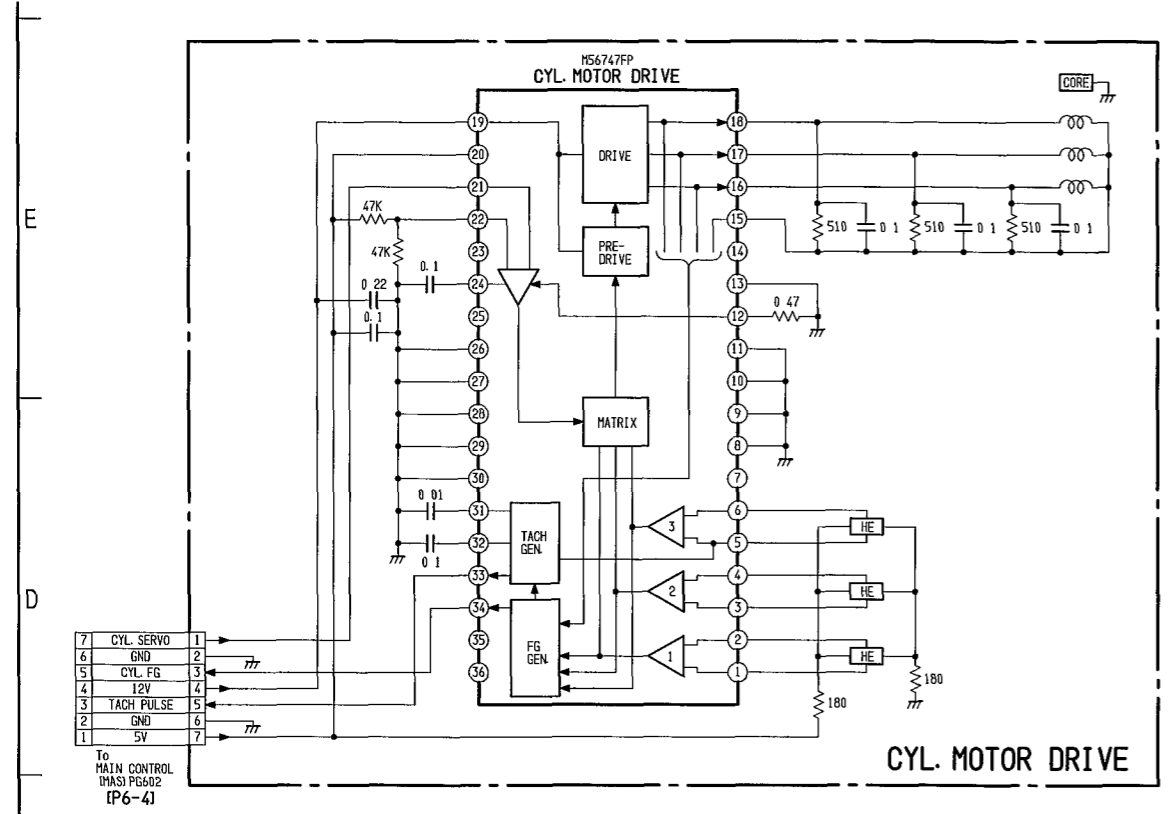
SHUTTLE SWITCH [SHU] SCHEMATIC DIAGRAM (For VT-MX425AW)



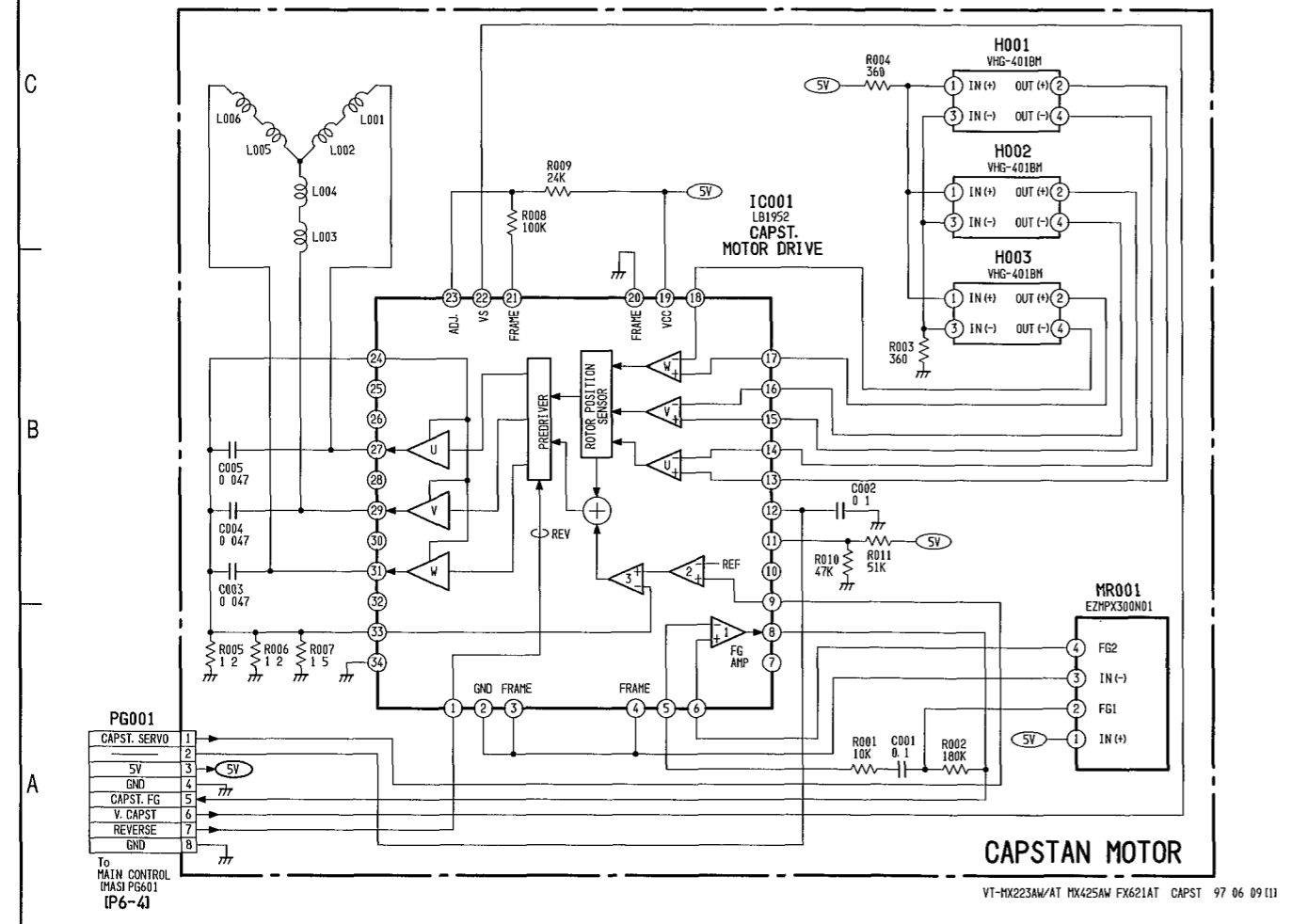
CYL. MOTOR DRIVE SCHEMATIC DIAGRAM

MECHANISM SENSOR [MAS] SCHEMATIC DIAGRAM

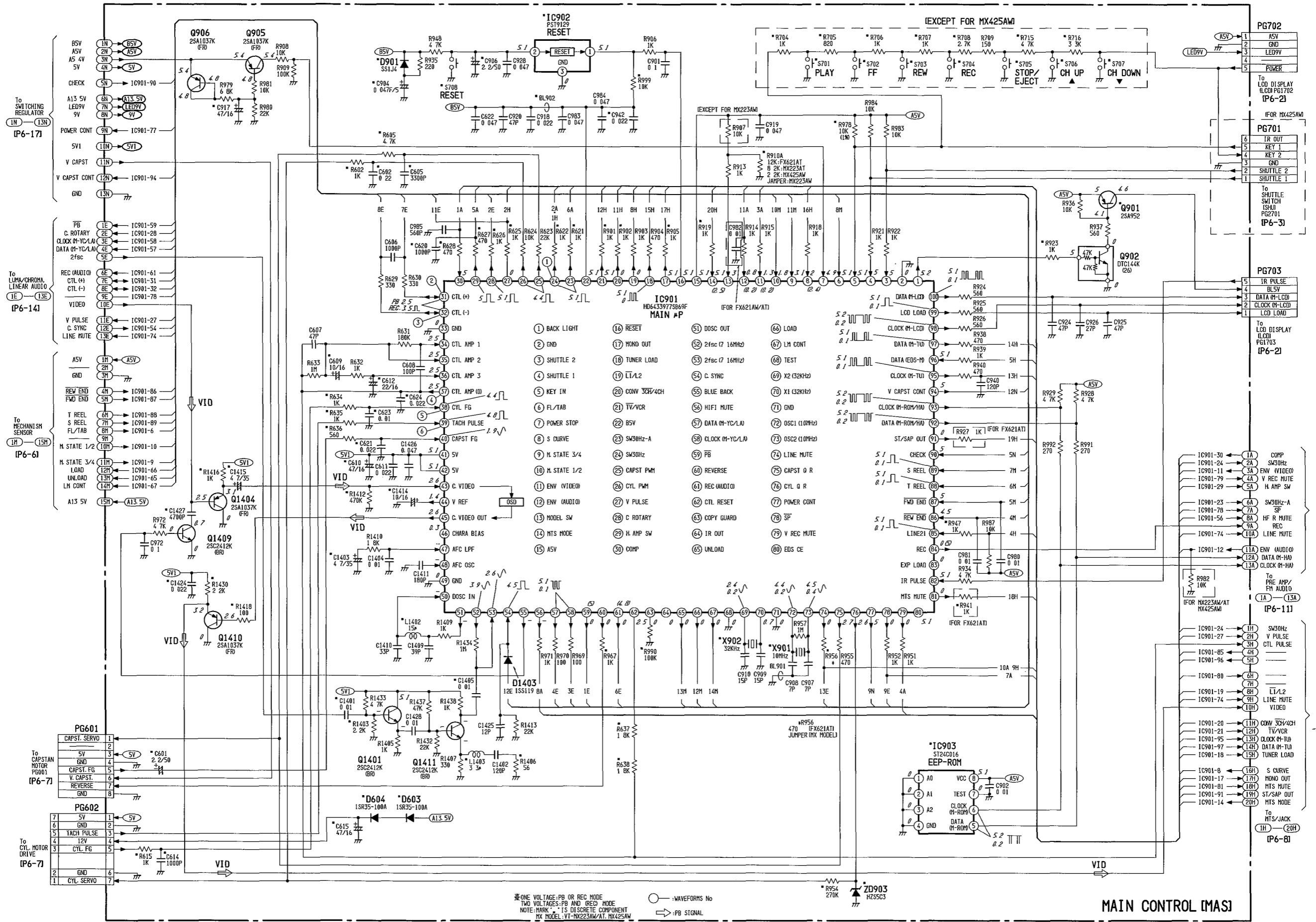
SERVO WAVEFORMS



CAPSTAN MOTOR SCHEMATIC DIAGRAM



MAIN CONTROL [MAS] SCHEMATIC DIAGRAM

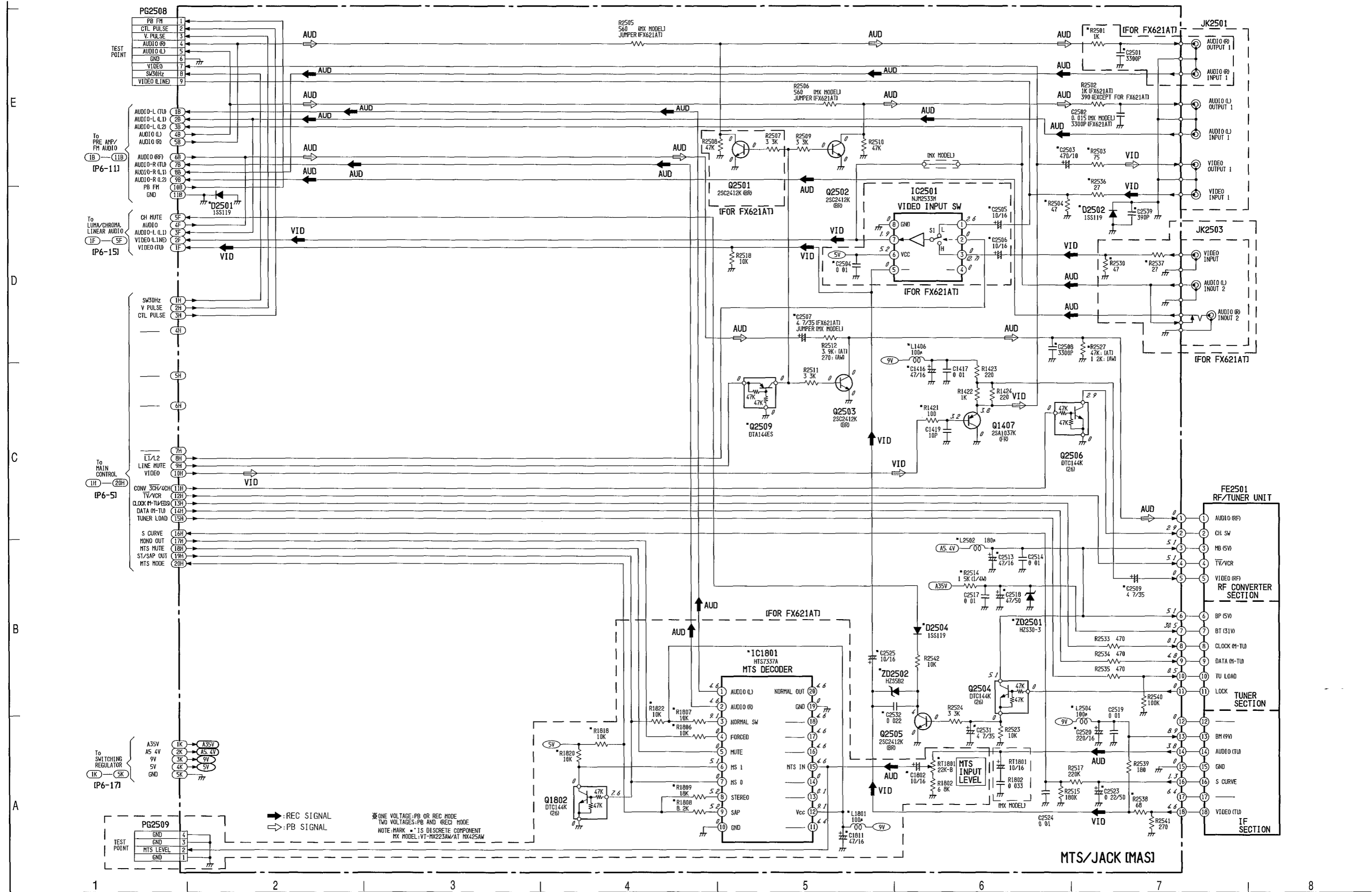


*ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND REC MODE
NOTE: MARK * IS DISCRETE COMPONENT
MX MODEL: VT-MX223AM/AT, MX425AM

○ - WAVEFORMS No
⊃ - FB SIGNAL

MAIN CONTROL [MAS]

MTS/JACK [MAS] SCHEMATIC DIAGRAM



PG2508

1	PB FM
2	CTL PULSE
3	V. PULSE
4	AUDIO (R)
5	AUDIO (L)
6	GND
7	VIDEO
8	SW30Hz
9	VIDEO (LINE)

To PRE AMP/ FM AUDIO
IP6-11J

18	AUDIO-L (TU)
20	AUDIO-L (L1)
30	AUDIO-L (L2)
40	AUDIO (L)
50	AUDIO (R)
60	AUDIO (RF)
70	AUDIO-R (TU)
80	AUDIO-R (L1)
90	AUDIO-R (L2)
100	PB FM
110	GND

To LUMA/CHROMA LINEAR AUDIO
IP6-15J

5F	CH MUTE
4F	AUDIO
3F	AUDIO-L (L1)
2F	VIDEO (LINE)
1F	VIDEO (TU)

1H	SW30Hz
2H	V PULSE
3H	CTL PULSE
4H	
5H	
6H	

To MAIN CONTROL
IP6-5J

7H	L1/L2
8H	LINE MUTE
9H	VIDEO
10H	
11H	CONV 30V/40V
12H	TV/VCR
13H	CLOCK #1-TU/EDS
14H	DATA #1-TU
15H	TUNER LOAD
16H	S CURVE
17H	HONO OUT
18H	MTS MUTE
19H	ST/SAP OUT
20H	MTS MODE

To SWITCHING REGULATOR
IP6-17J

1K	A35V
2K	A5.4V
3K	9V
4K	5V
5K	GND

TEST POINT
PG2509

4	GND
3	GND
2	MTS LEVEL
1	GND

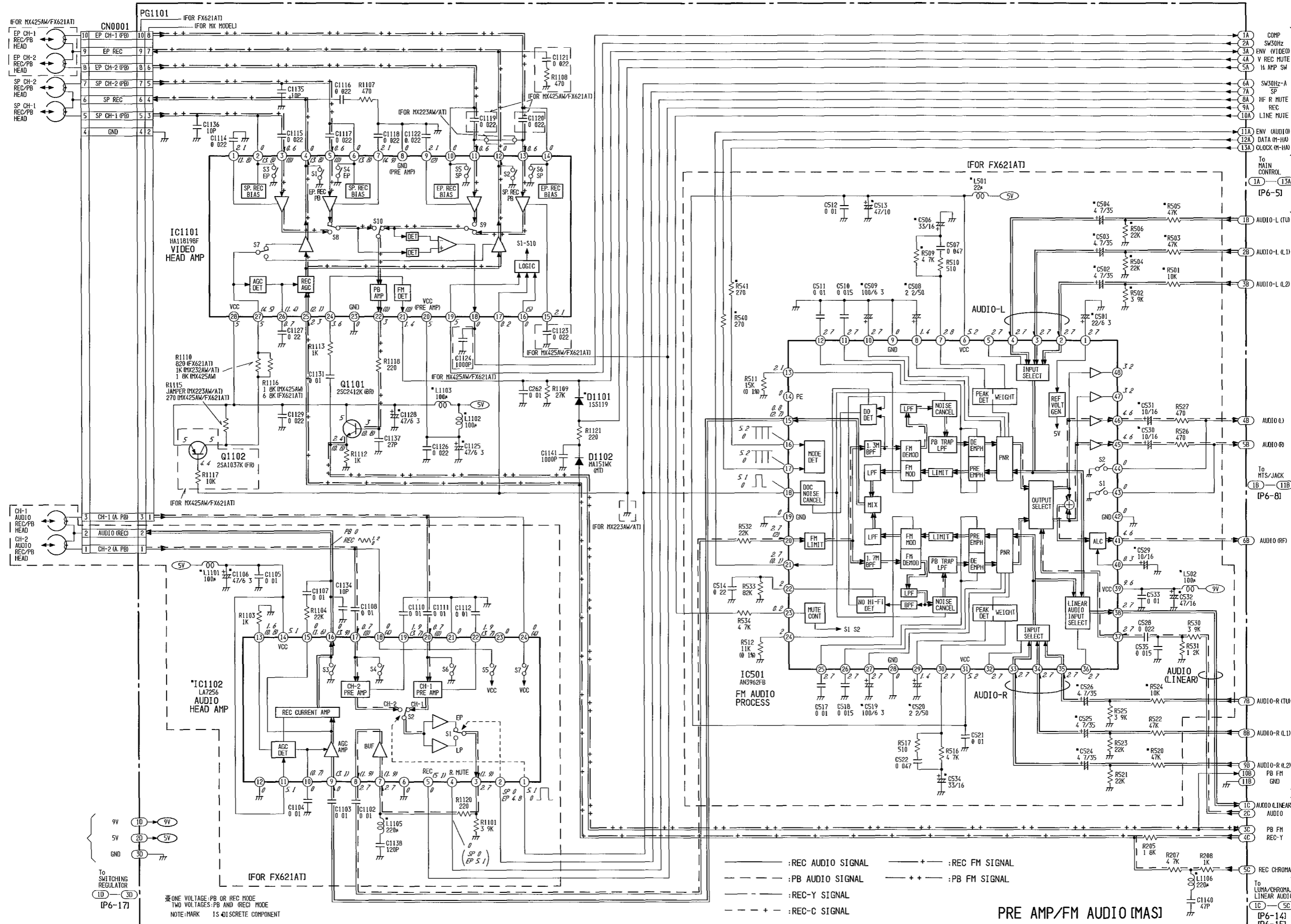
→ REC SIGNAL
⇨ PB SIGNAL





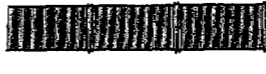








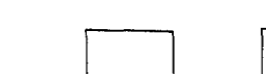






*ONE VOLTAGE-PB OR REC MODE
TWO VOLTAGES-PB AND REC MODE
NOTE: MARK * IS DISCRETE COMPONENT
HX MODEL-VT-HX223AM/AT HX425AW

MTS/JACK 6-8 6-9 MTS/JACK

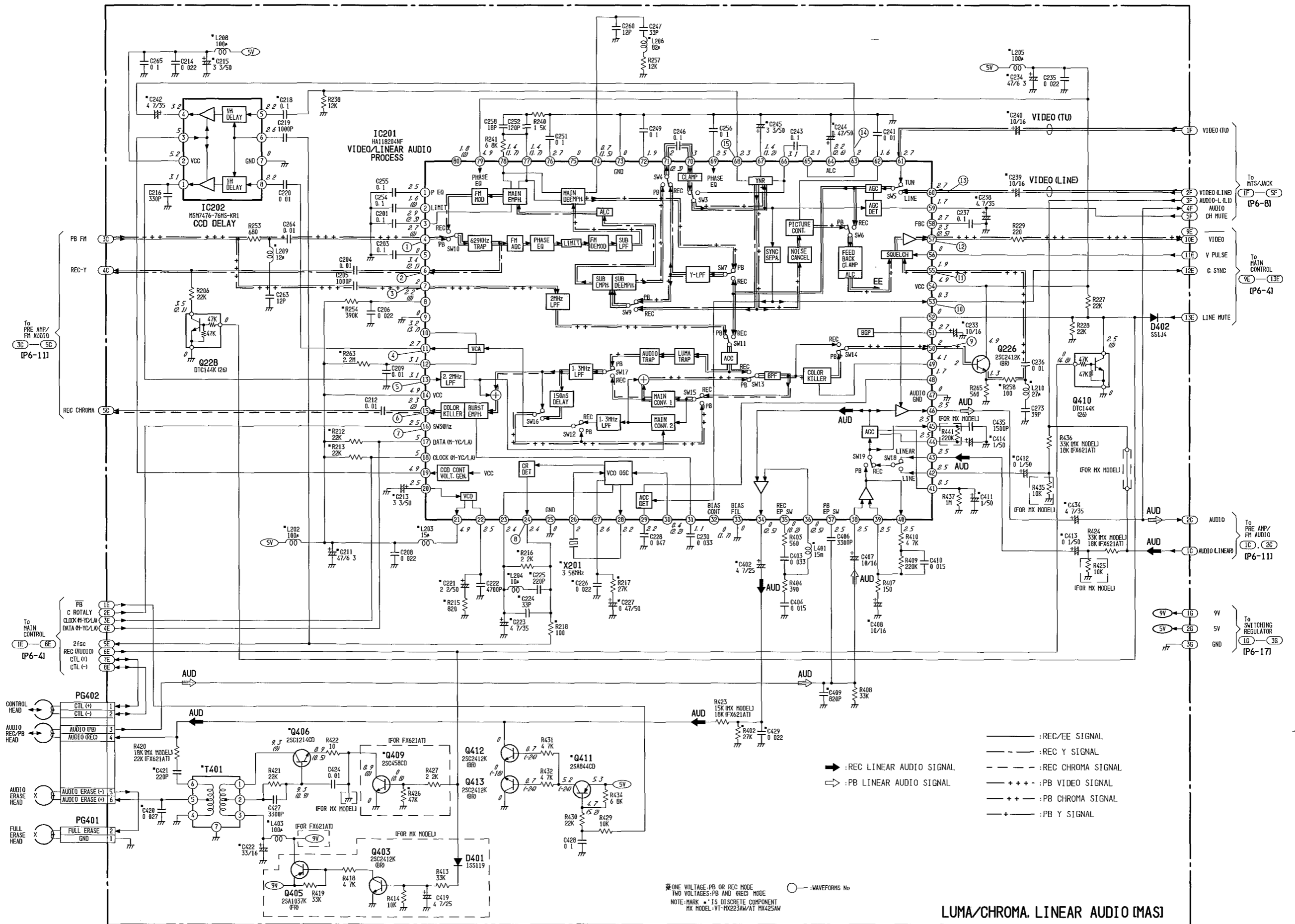
MTS/JACK [MAS]

PRE AMP/FM AUDIO [MAS] SCHEMATIC DIAGRAM



1-B IC201-4 550mVp-p 0.2V/5.0msec. cm PLAY	5-A IC201-13 530mVp-p 0.2V/20.0 μ sec. cm REC	9-B IC201-50 540mVp-p 0.2V/20.0 μ sec. cm PLAY	13-A IC201-60 1.4Vp-p 0.5V/20.0 μ sec. cm REC
 SW30Hz			
2-A IC201-6 380mVp-p 0.2V/5.0msec. cm REC	5-B IC201-13 640mVp-p 0.2V/20.0 μ sec. cm PLAY	10-A IC201-53 5.0Vp-p 2V/20.0 μ sec. cm REC/PLAY	14-A IC201-63 680mVp-p 0.2V/20.0 μ sec. cm REC
 SW30Hz			
3-B IC201-7 650mVp-p 0.2V/5.0msec. cm PLAY	6-A IC201-15 400mVp-p 0.1V/20.0 μ sec. cm REC	11-B IC201-55 500mVp-p 0.1V/20.0 μ sec. cm PLAY	14-B IC201-63 680mVp-p 0.2V/20.0 μ sec. cm PLAY
 SW30Hz			
4-A IC201-11 330mVp-p 0.1V/20.0 μ sec. cm REC	7-A IC201-16 5.7Vp-p 2V/5.0msec. cm REC/PLAY	12-A IC201-57 2.1Vp-p 0.5V/20.0 μ sec. cm REC	15-A IC201-68 430mVp-p 0.2V/20.0 μ sec. cm REC
			
4-B IC201-11 420mVp-p 0.1V/20.0 μ sec. cm PLAY	8-A IC201-24 510mVp-p 0.2V/100nsec. cm REC/PLAY	12-B IC201-57 2.2Vp-p 0.5V/20.0 μ sec. cm PLAY	15-B IC201-68 430mVp-p 0.2V/20.0 μ sec. cm PLAY
			

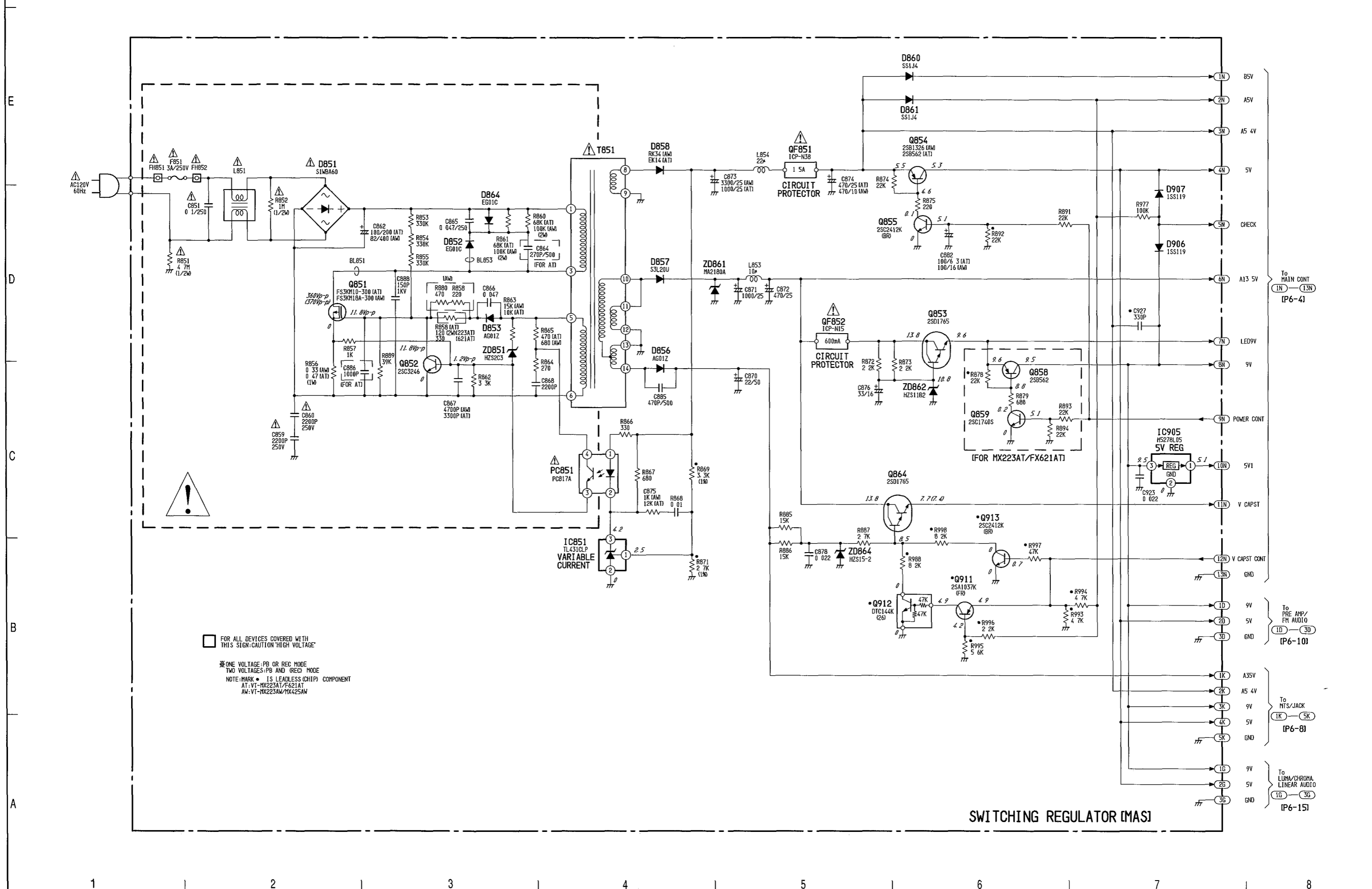
LUMA/CHROMA, LINEAR AUDIO [MAS] SCHEMATIC DIAGRAM



ONE VOLTAGE: PB OR REC MODE
 TWO VOLTAGES: PB AND REC MODE
 NOTE: MARK * IS DISCRETE COMPONENT
 MX MODEL-VT-MX223AW/AT-MX425AW

LUMA/CHROMA, LINEAR AUDIO [MAS]

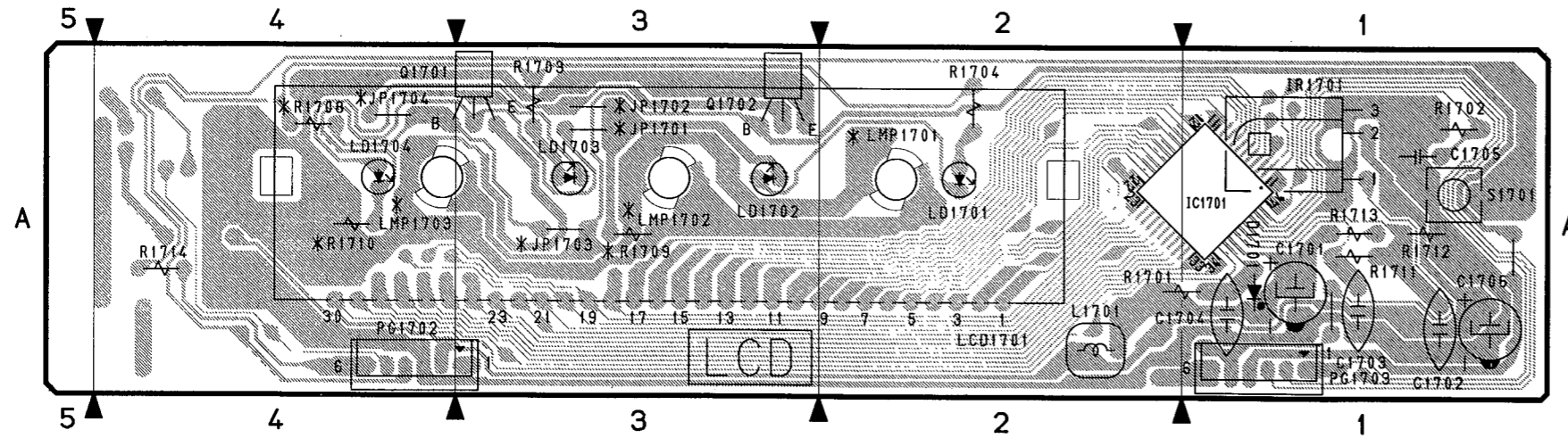
SWITCHING REGULATOR [MAS] SCHEMATIC DIAGRAM



□ 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
 AT: VI-MX223AT/F621AT
 AW: VI-MX223AM/MX425AM

SWITCHING REGULATOR [MAS]

LCD CIRCUIT BOARD



DIFFERENCE TABLE LCD [LCD DISPLAY]

NOTE: This table lists the different components marked with asterisks (*) in the circuit board diagrams.

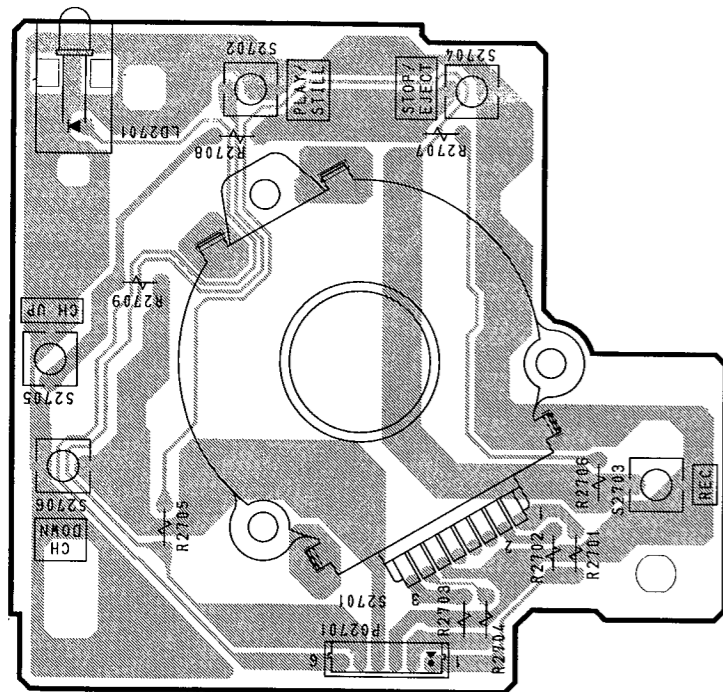
SYMBOL-No.	MX223AW/AT FX621AT	MX425AW
JP1701	×	○
JP1702	○	×
JP1703	○	×
JP1704	×	○
LMP1701	×	○
LMP1702	×	○
LMP1703	×	○
R1708	×	○
R1709	○	×
R1710	○	×

IDENTIFICATION OF PARTS LOCATION

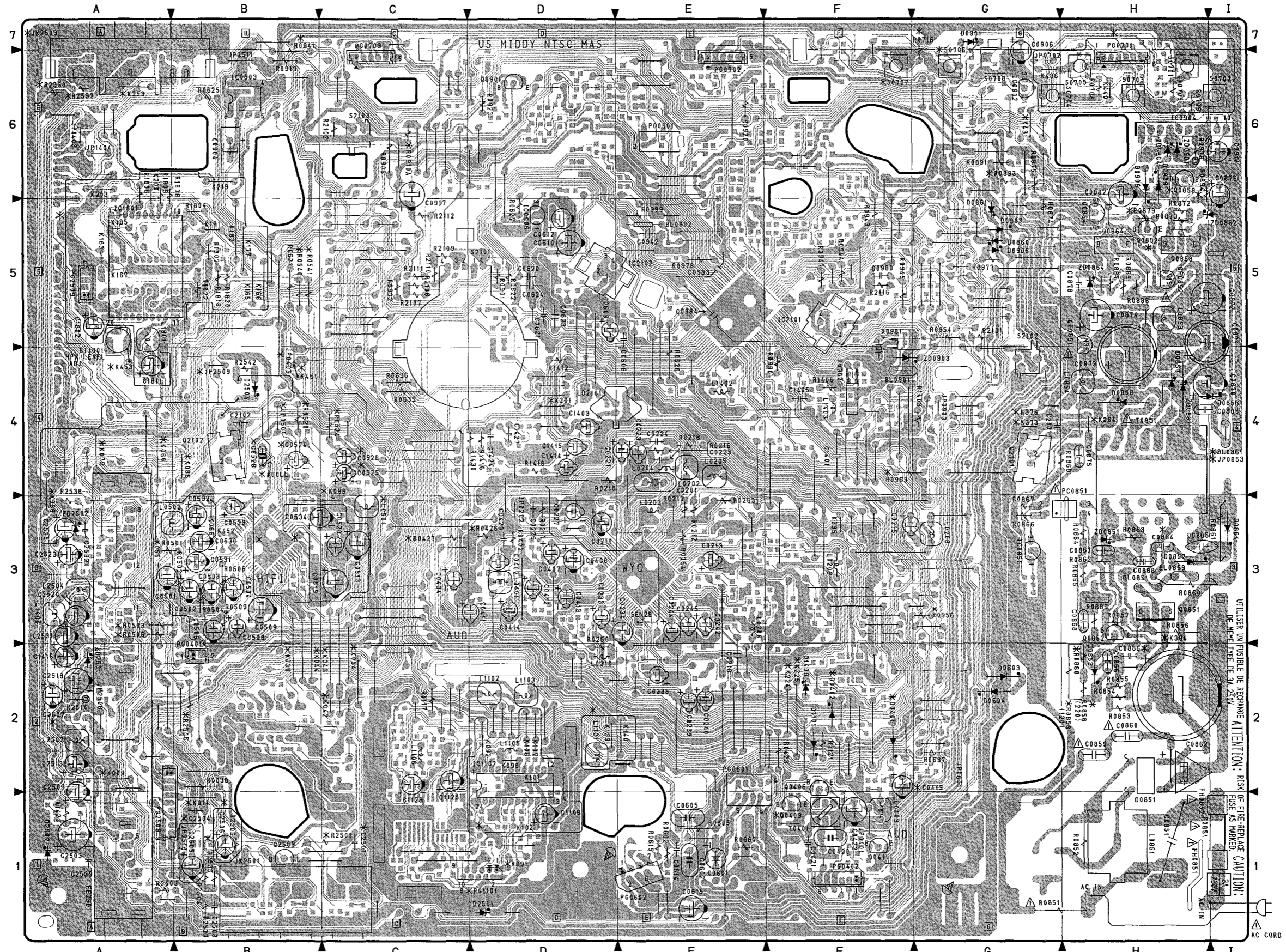
LCD [LCD DISPLAY]

Symbol No	Parts Location	Symbol No	Parts Location
C		LD1704	4A
C1701	1A	LMP	
C1702	1A	LMP1701	2A
C1703	1A	LMP1702	3A
C1704	1A	LMP1703	4A
C1705	1A	PG	
C1706	1A	PG1702	4A
D		PG1703	1A
D1701	1A	Q	
IC		Q1701	3A
IC1701	1A	Q1702	3A
IR		R	
IR1701	1A	R1701	1A
JP		R1702	1A
JP1701	3A	R1703	3A
JP1702	3A	R1704	2A
JP1703	3A	R1708	4A
JP1704	4A	R1709	3A
L		R1710	4A
L1701	2A	R1711	1A
LCD		R1712	1A
LCD1701	3A	R1713	1A
LD		R1714	4A
LD1701	2A	S	
LD1702	3A	S1701	1A
LD1703	3A		

SHU CIRCUIT BOARD [FOR MX425AW]



SHU (SHUTTLE SWITCH)
[PATTERN No. JK1166-4]



UTILISER UN FORTRE DE RECHANGE ATTENTION: RISK OF FIRE-REPLACE CAUTION:
DE VECHER TYPE DE JA 2501
RISK OF FIRE-REPLACE CAUTION:
USE AS MARKED.

MAS[MAIN]-SIDE A-
[PATTERN No. JA1243-8]

DIFFERENCE TABLE MAIN [MAS] -SIDE A-

NOTE: This table lists the different components marked with asterisks (*) in the circuit board diagrams.

SYMBOL-No.	223AT	223AW	425AW	621AT
#00LL	○	○	○	×
BL0861	×	○	○	×
C0419	○	○	○	×
C0501	×	×	×	○
C0502	×	×	×	○
C0503	×	×	×	○
C0504	×	×	×	○
C0506	×	×	×	○
C0508	×	×	×	○
C0509	×	×	×	○
C0513	×	×	×	○
C0519	×	×	×	○
C0520	×	×	×	○
C0524	×	×	×	○
C0525	×	×	×	○
C0526	×	×	×	○
C0528	×	×	×	○
C0529	×	×	×	○
C0530	×	×	×	○
C0531	×	×	×	○
C0532	×	×	×	○
C0534	×	×	×	○
C0864	○	×	×	○
C0886	○	×	×	○
C1106	×	×	×	○
C1802	×	×	×	○
C1811	×	×	×	○
C2501	×	×	×	○
C2504	×	×	×	○
C2505	×	×	×	○
C2506	×	×	×	○
C2507	JUMPER	JUMPER	JUMPER	4 7/35
D0401	○	○	○	×
D0402	○	○	○	×
IC1801	×	×	×	○
IC1102	×	×	×	○
JK2503	×	×	×	○
JP0405	×	×	×	○
JP0501	×	×	×	○
JP0702	×	×	○	×
JP0853	○	×	×	○
JP2509	○	○	○	×
JP2510	○	○	○	×
K009	×	×	×	○
K014	×	×	×	○
K039	×	×	×	○
K042	×	×	×	○
K044	×	×	×	○
K049	×	×	×	○
K054	×	×	×	○
K055	×	×	×	○

SYMBOL-No.	223AT	223AW	425AW	621AT
K058	×	×	×	○
K066	×	×	×	○
K079	×	×	×	○
K080	×	×	×	○
K086	×	×	×	○
K091	×	×	×	○
K092	×	×	×	○
K096	×	×	×	○
K099	×	×	×	○
K101	×	×	×	○
K102	×	×	×	○
K106	×	×	×	○
K107	×	×	×	○
K139	×	×	×	○
K140	×	×	×	○
K163	×	×	×	○
K165	×	×	×	○
K166	×	×	×	○
K167	×	×	×	○
K176	×	×	×	○
K177	×	×	×	○
K182	×	×	×	○
K185	×	×	×	○
K191	×	×	×	○
K200	×	×	×	○
K201	×	×	×	○
K203	×	×	×	○
K219	×	×	×	○
K224	×	×	×	○
K225	×	×	×	○
K253	×	×	×	○
K264	×	○	○	×
K394	○	×	×	○
K431	×	×	○	×
K436	○	○	×	○
K440	×	×	○	×
K451	○	○	○	×
K452	○	○	○	×
K453	○	○	○	×
L0501	×	×	×	○
L0502	×	×	×	○
L1101	×	×	×	○
L1105	×	×	×	○
L1801	×	×	×	○
PG0701	×	×	○	×
PG1101	8P	8P	8P	10P
PG2509	×	×	×	○
Q0409	×	×	×	○
Q0858	○	×	×	○
Q0859	○	×	×	○
R0426	×	×	×	○

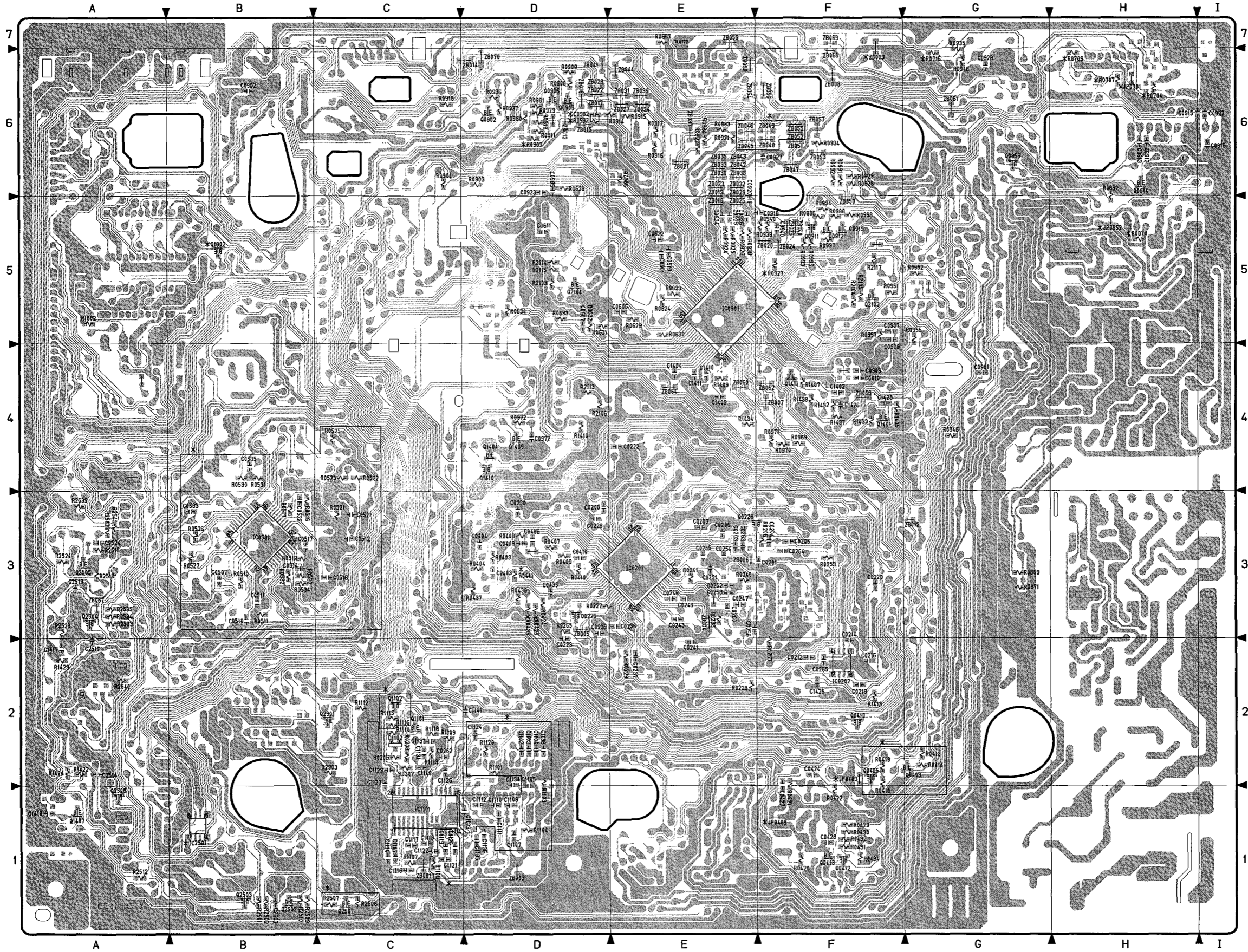
DIFFERENCE TABLE MAIN [MAS] -SIDE B-

NOTE: This table lists the different components marked with asterisks (*) in the circuit board diagrams.

SYMBOL-No.	223AT	223AW	425AW	621AT
R0427	×	×	×	○
R0501	×	×	×	○
R0502	×	×	×	○
R0503	×	×	×	○
R0504	×	×	×	○
R0505	×	×	×	○
R0506	×	×	×	○
R0509	×	×	×	○
R0520	×	×	×	○
R0524	×	×	×	○
R0540	×	×	×	○
R0541	×	×	×	○
R0705	○	○	×	○
R0706	○	○	×	○
R0708	○	○	×	○
R0716	○	○	×	○
R0858	120	220	220	120
R0879	×	×	×	○
R0880	×	○	○	×
R0893	○	×	×	○
R0894	○	×	×	○
R0910A	8 2k	JUMPER	2.2k	12k
R0941	×	×	×	○
R0956	JUMPER	JUMPER	JUMPER	470
R0963	○	○	○	×
R1804	×	×	×	JUMPER
R1806	×	×	×	○
R1807	×	×	×	○
R1808	×	×	×	○
R1809	×	×	×	○
R1818	×	×	×	○
R1822	×	×	×	○
R2501	×	×	×	○
R2506	560	560	560	JUMPER
R2530	×	×	×	○
R2537	×	×	×	○
S0701	○	○	×	○
S0702	○	○	×	○
S0703	○	○	×	○
S0704	○	○	×	○
S0705	○	○	×	○
S0706	○	○	×	○
S0707	○	○	×	○

SYMBOL-No.	223AT	223AW	425AW	621AT
C0507	×	×	×	○
C0510	×	×	×	○
C0511	×	×	×	○
C0512	×	×	×	○
C0514	×	×	×	○
C0517	×	×	×	○
C0518	×	×	×	○
C0521	×	×	×	○
C0522	×	×	×	○
C0533	×	×	×	○
C0535	×	×	×	○
C0982	×	×	×	○
C1102	×	×	×	○
C1103	×	×	×	○
C1104	×	×	×	○
C1105	×	×	×	○
C1107	×	×	×	○
C1108	×	×	×	○
C1110	×	×	×	○
C1111	×	×	×	○
C1112	×	×	×	○
C1119	×	×	○	○
C1120	×	×	○	○
C1121	×	×	○	○
C1123	×	×	○	○
C1124	×	×	○	○
C1138	×	×	×	○
IC0501	×	×	×	○
IC2501	×	×	×	○
JP0403	×	×	×	○
JP0408	○	○	○	×
JP0701	○	○	×	○
JP0852	×	○	○	×
JP1101	○	○	×	×
Q04032	○	○	○	×
Q0405	○	○	○	×
Q1102	×	×	○	○
Q1802	×	×	×	○
Q2501	×	×	×	○
R0413	○	○	○	×
R0414	○	○	○	×
R0418	○	○	○	×
R0419	○	○	○	×

SYMBOL-No.	223AT	223AW	425AW	621AT
R0425	○	○	○	×
R0435	○	○	○	×
R0441	○	○	○	×
R0510	×	×	×	○
R0511	×	×	×	○
R0512	×	×	×	○
R0516	×	×	×	○
R0517	×	×	×	○
R0521	×	×	×	○
R0522	×	×	×	○
R0523	×	×	×	○
R0525	×	×	×	○
R0526	×	×	×	○
R0527	JUMPER	JUMPER	JUMPER	470
R0530	JUMPER	JUMPER	JUMPER	3 9k
R0531	×	×	×	○
R0532	×	×	×	○
R0533	×	×	×	○
R0534	×	×	×	○
R0704	○	○	×	○
R0707	○	○	×	○
R0709	○	○	×	○
R0715	○	○	×	○
R0878	○	×	×	○
R0907	○	×	○	○
R0927	×	×	×	○
R0982	○	○	○	×
R1101	×	×	×	○
R1103	×	×	×	○
R1104	×	×	×	○
R1108	×	×	○	○
R1115	JUMPER	JUMPER	270	270
R1116	×	×	○	○
R1120	×	×	×	○
R2507	×	×	×	○
R2508	×	×	×	○
ZB009	○	○	×	○
ZB045	×	×	○	×
ZB046	×	×	○	×
ZB048	×	×	○	×
ZB049	×	×	○	×
ZB052	×	×	○	×
ZB055	×	×	○	×




MAS[MAIN]-SIDE B-
[PATTERN No. JA1243-8]

Applied Models: VT-FX621AW

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)
	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

1. Markings in schematic diagrams

- Parts marked "■" with circuit numbers in the schematic diagrams are discrete parts.
- Parts marked "●" with circuit numbers in the schematic diagram are leadless parts.

Cautions when using circuit board diagrams

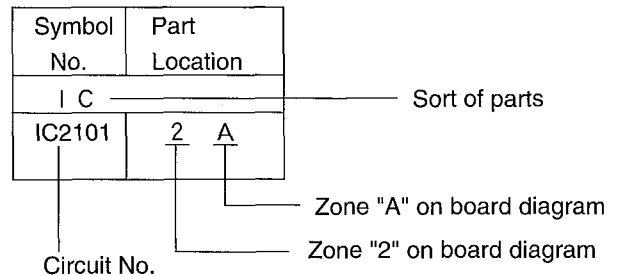
1. Identifications of sides A/B in circuit board diagrams

- 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.
- 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.

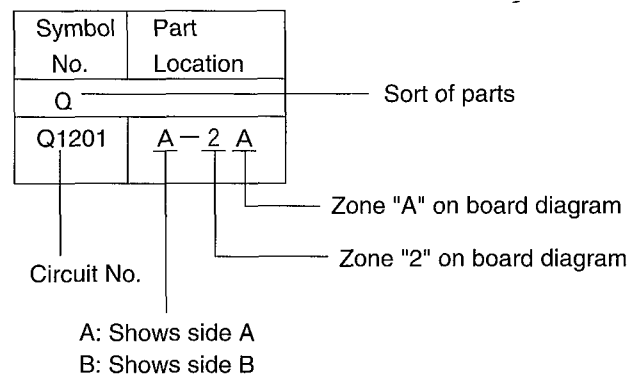
2. Table for indexing locations of parts

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.

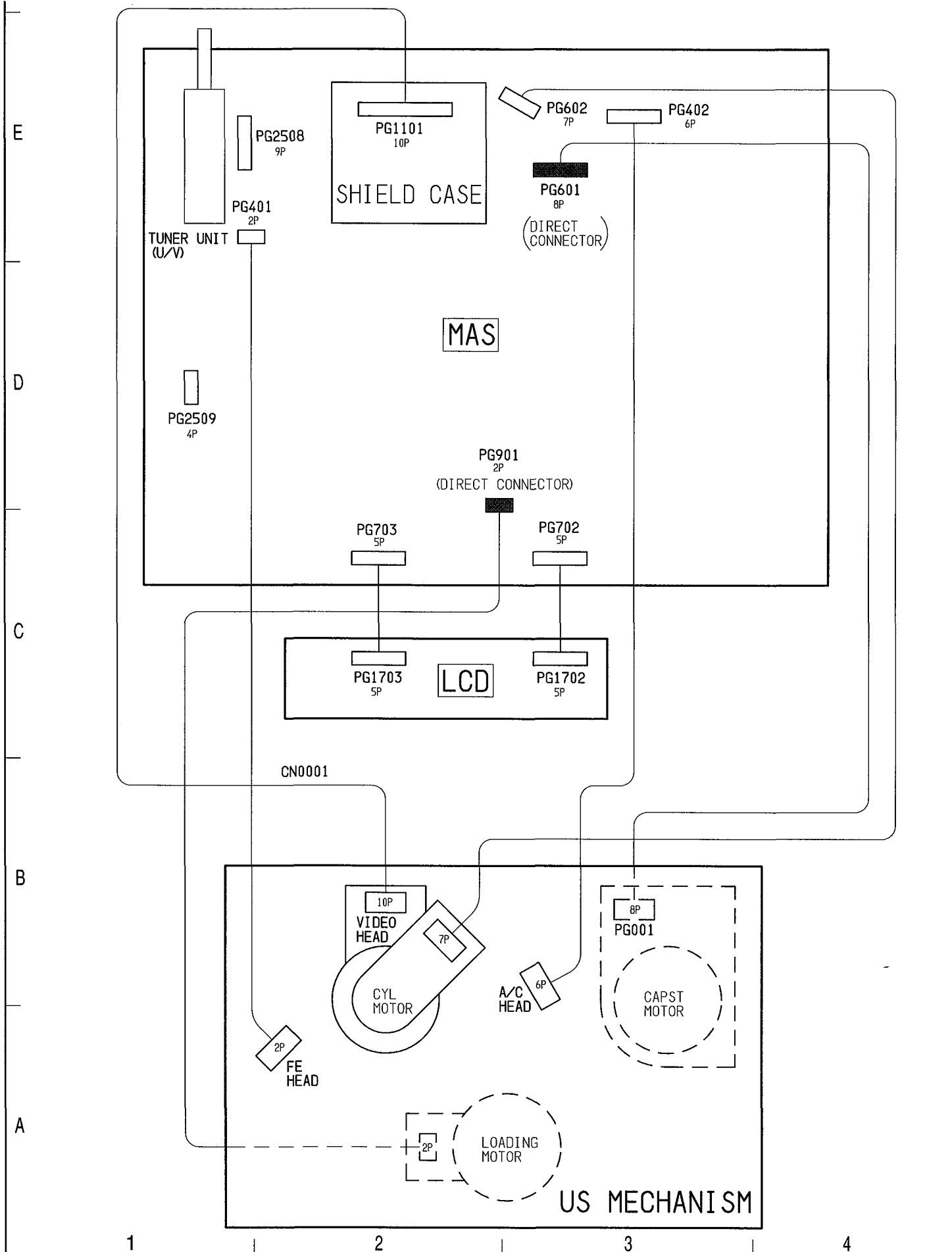
1) In case of one-layer board



2) In case of side A/B indication board

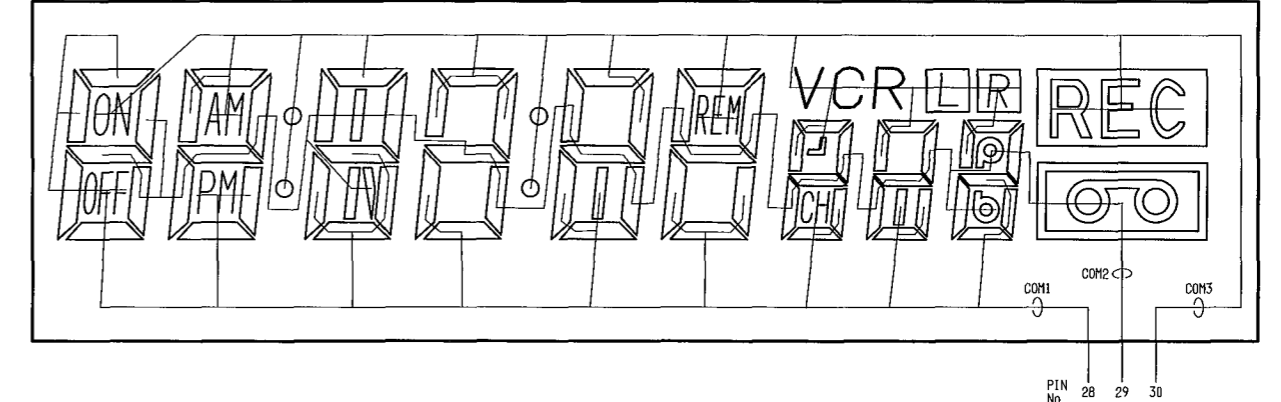
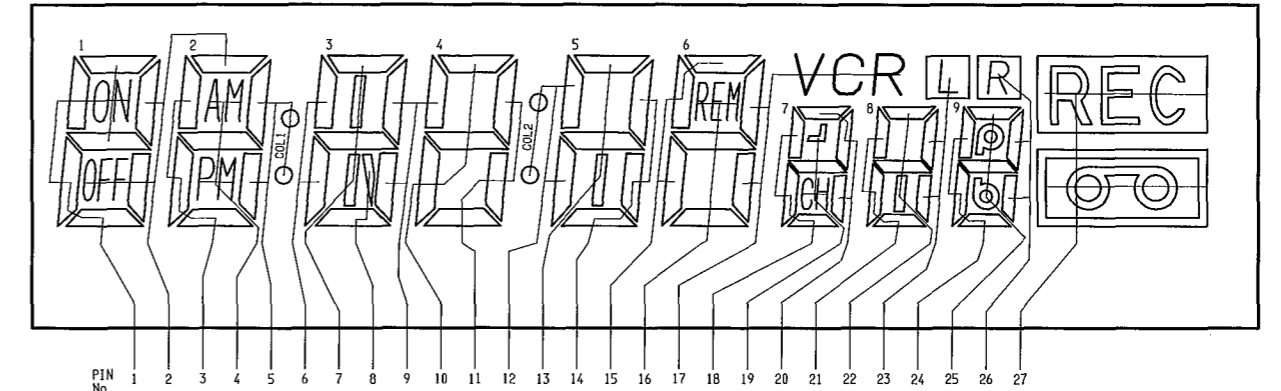
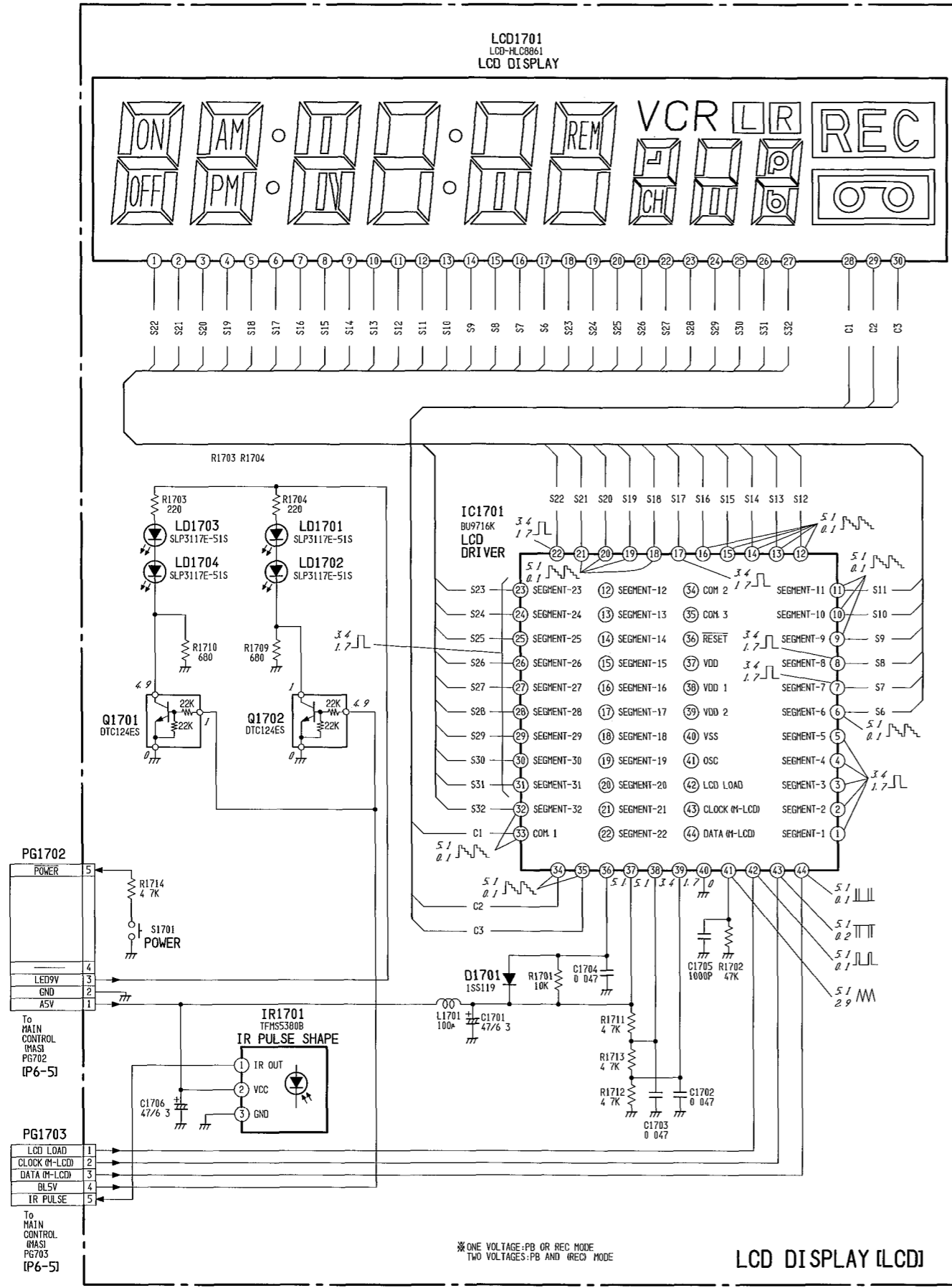


INTERNAL WIRING DIAGRAM

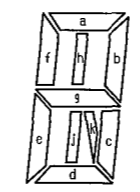


LCD DISPLAY [LCD] SCHEMATIC DIAGRAM

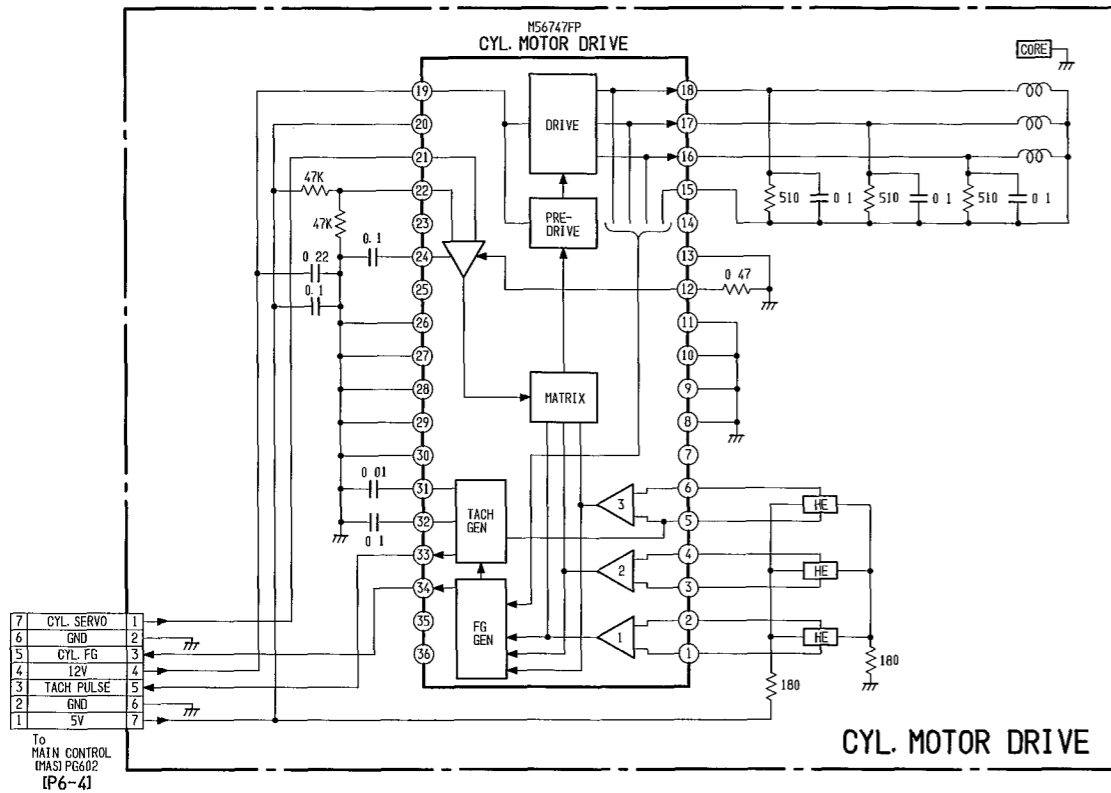
LCD GRID TABLE



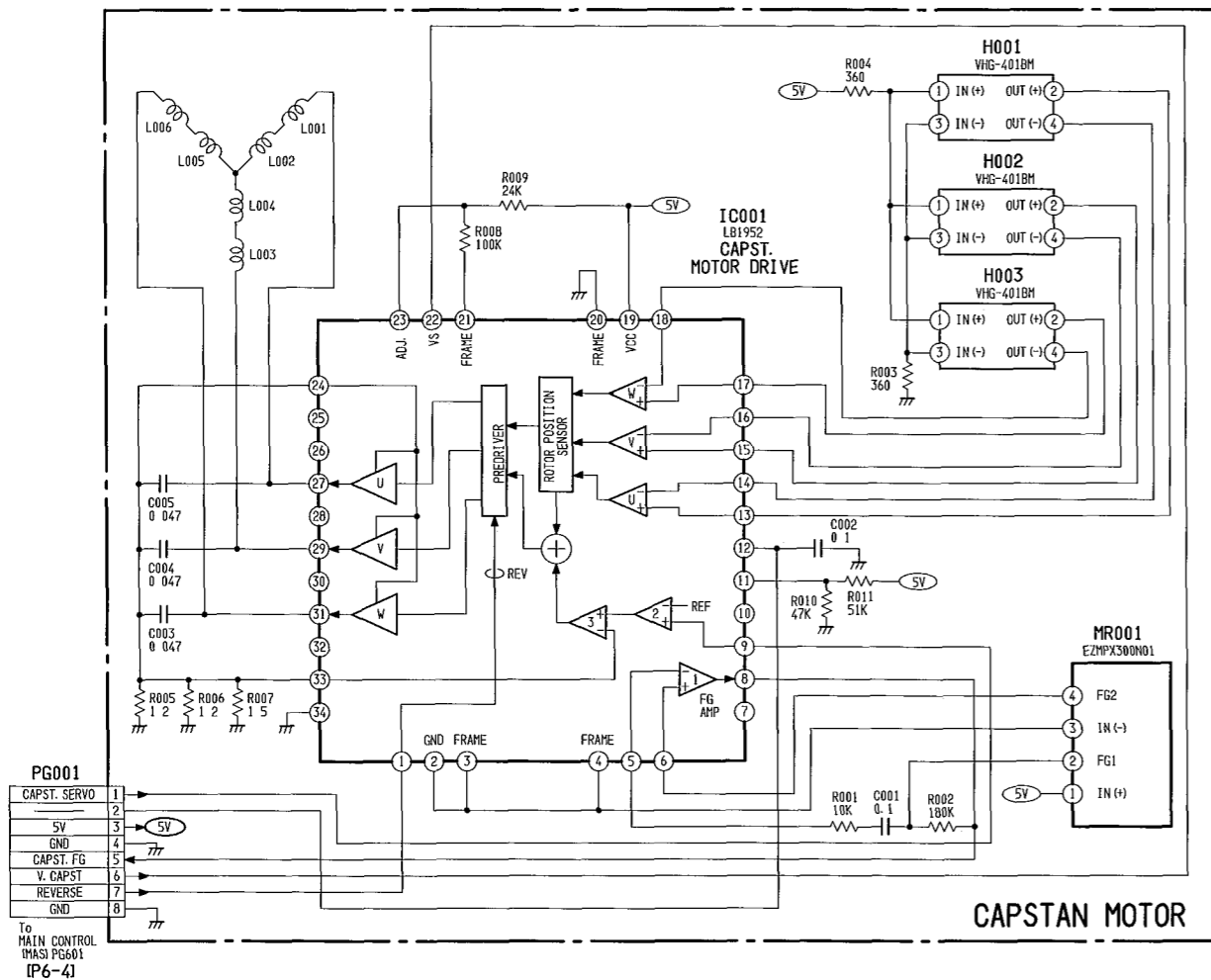
PIN No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
COM1	1def	OFF	2d	PM	2c	3e	3g	3d	3c	4e	4d	5e	5j	5d	6e	6d	6c	7d	CH	7c	8d	8j	8c	9d	9g	9c	COM	COM	COM	
COM2	1g	1bc	2e	2g	2b	3f	3h	3k	3b	4g	4c	5f	5g	5c	6f	6g	6b	7e	7g	7b	8e	8g	8b	9e	9b	COM	COM	COM	COM	
COM3	ON	2a	2f	AM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



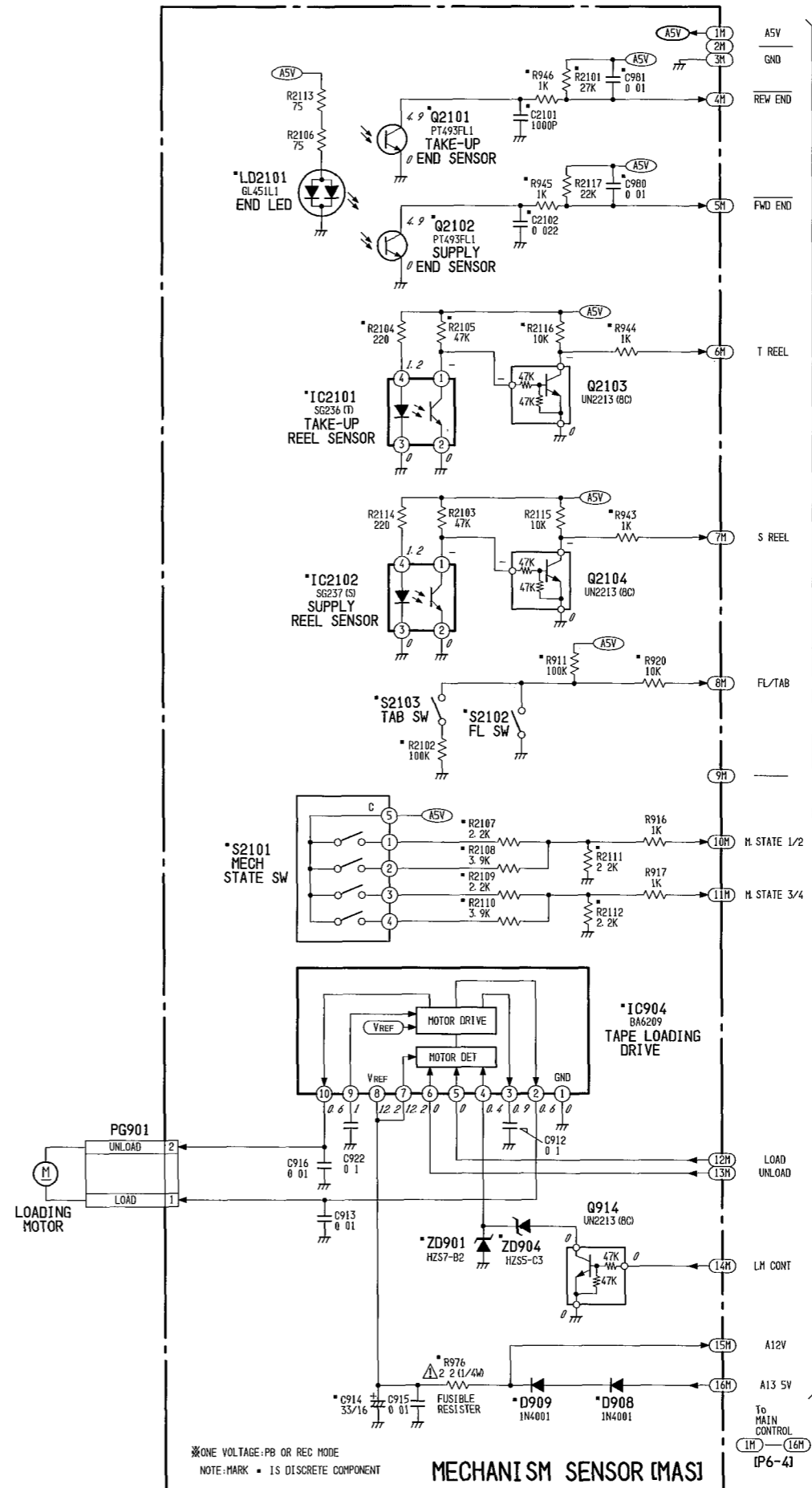
CYL. MOTOR DRIVE SCHEMATIC DIAGRAM



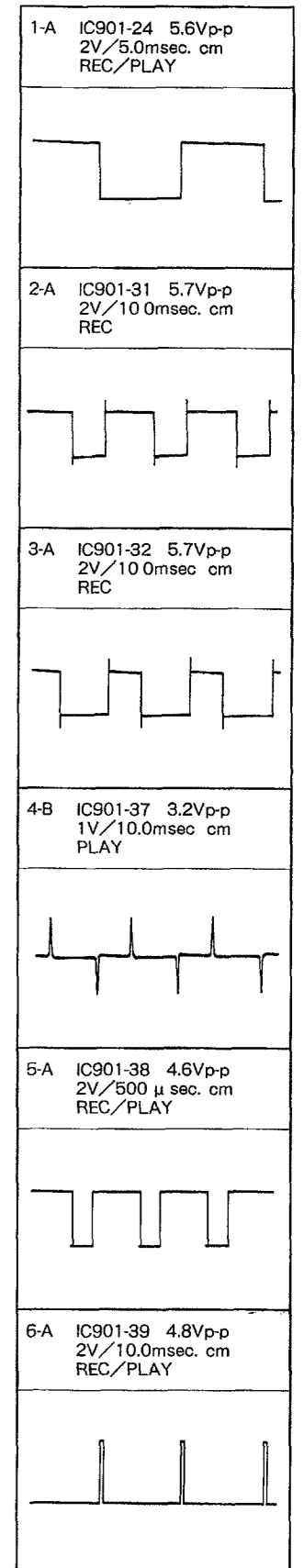
CAPSTAN MOTOR SCHEMATIC DIAGRAM



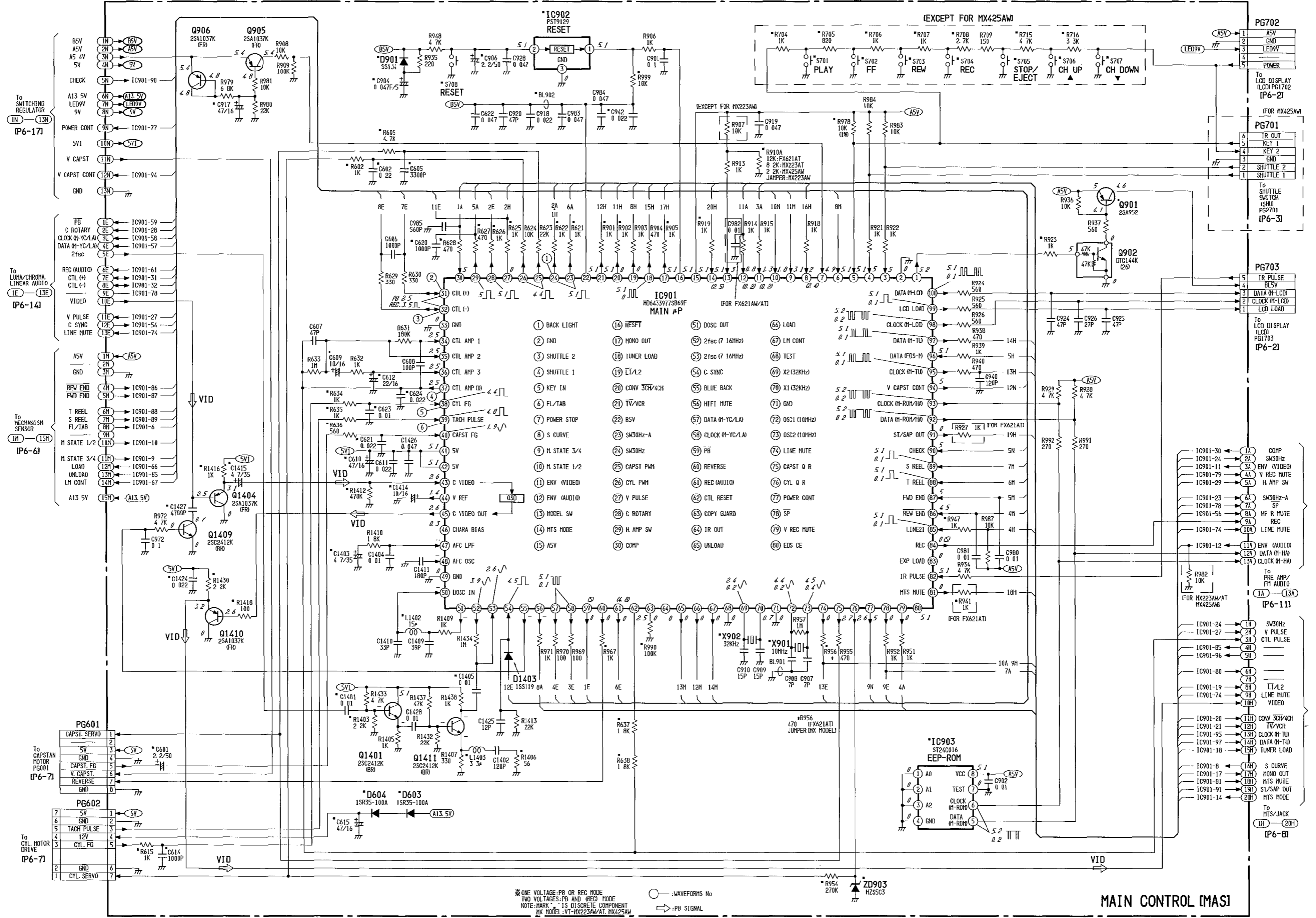
MECHANISM SENSOR [MAS] SCHEMATIC DIAGRAM



SERVO WAVEFORMES



MAIN CONTROL [MAS] SCHEMATIC DIAGRAM

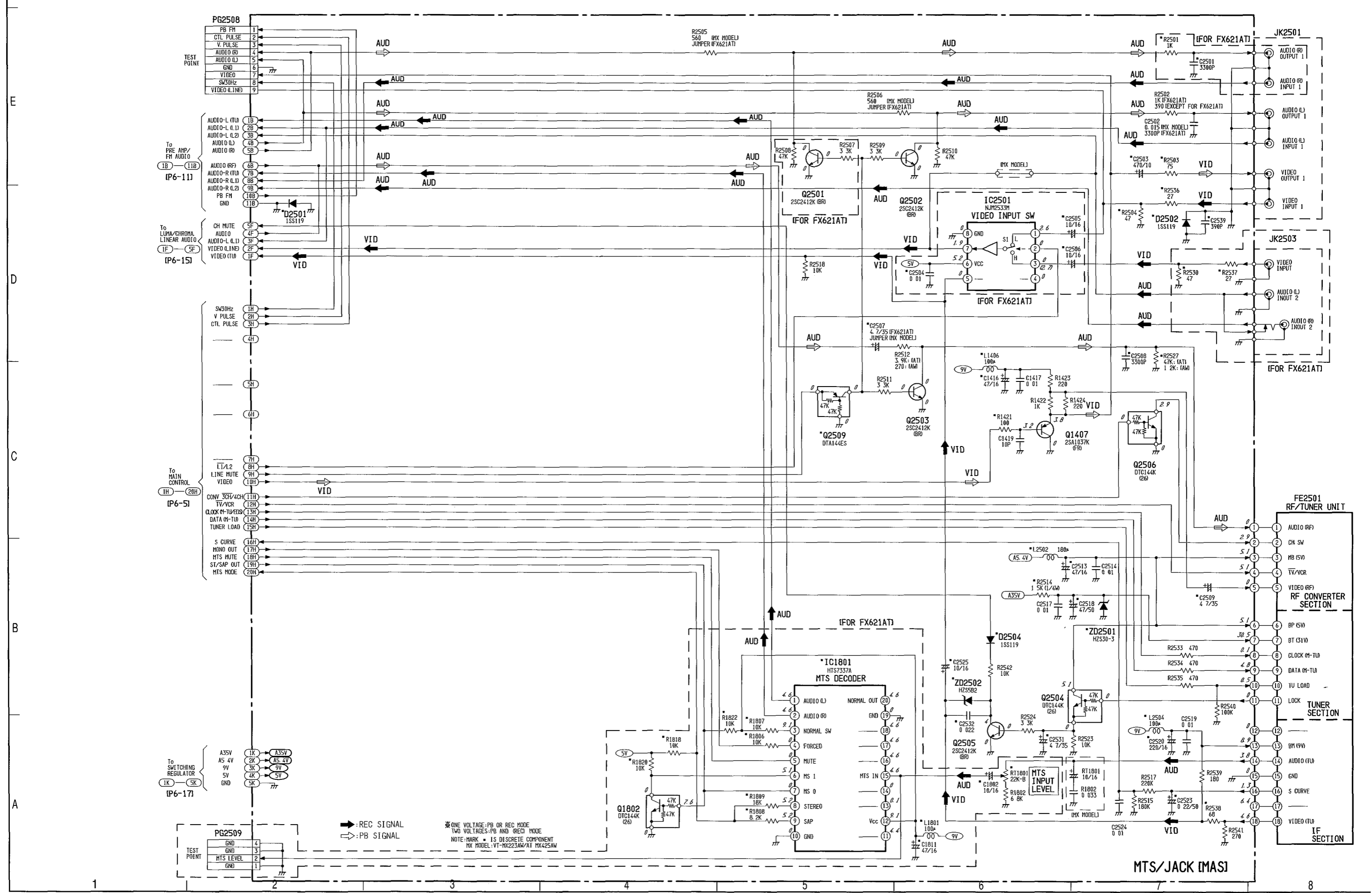


ONE VOLTAGE: PB OR REC MODE
 TWO VOLTAGES: PB AND REC MODE
 NOTE: MARK * IS DISCRETE COMPONENT
 MODEL: VT-HX223AM/AT, HX425AM

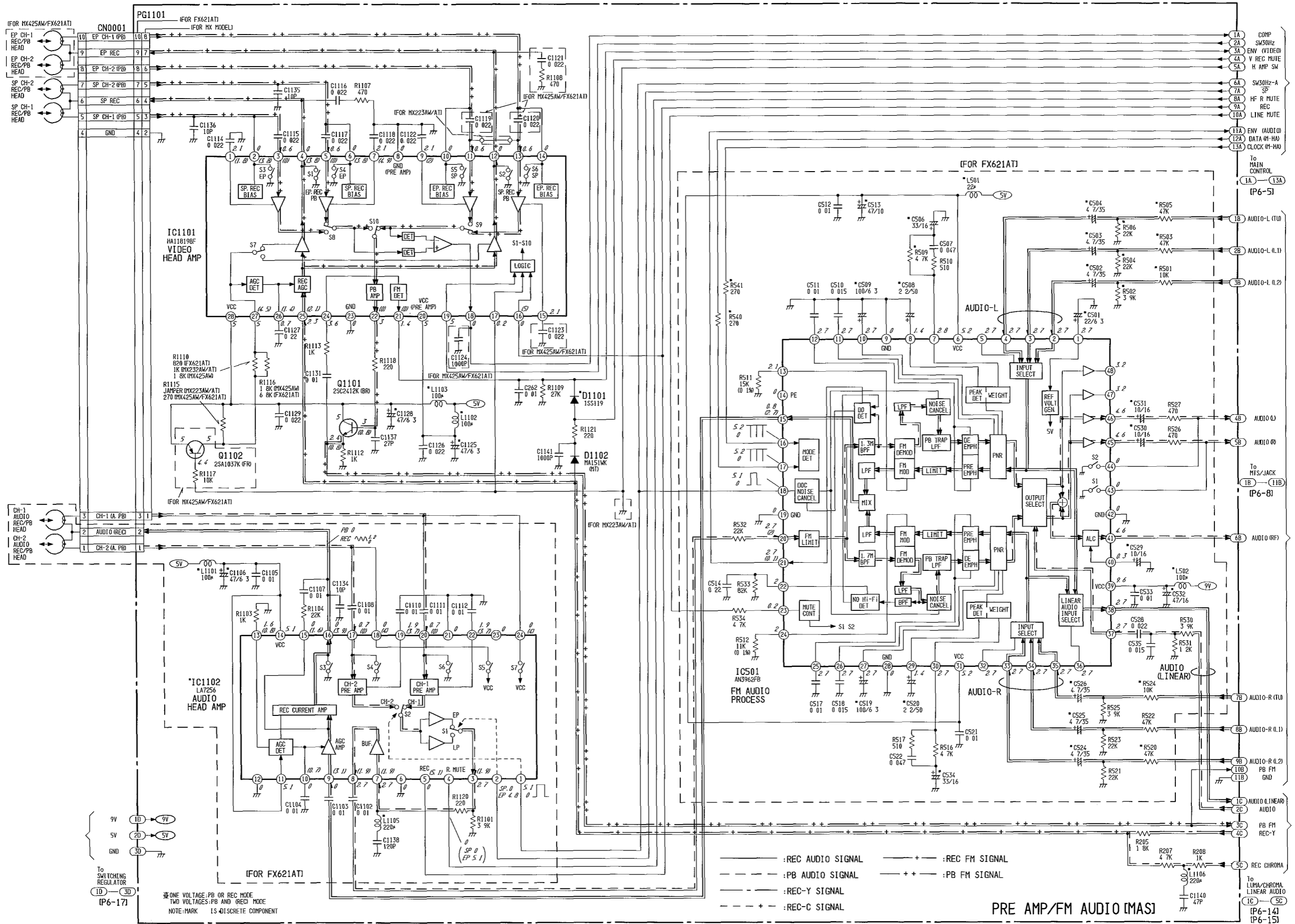
○ : WAVEFORMS No
 ⇨ : PB SIGNAL

MAIN CONTROL [MAS]

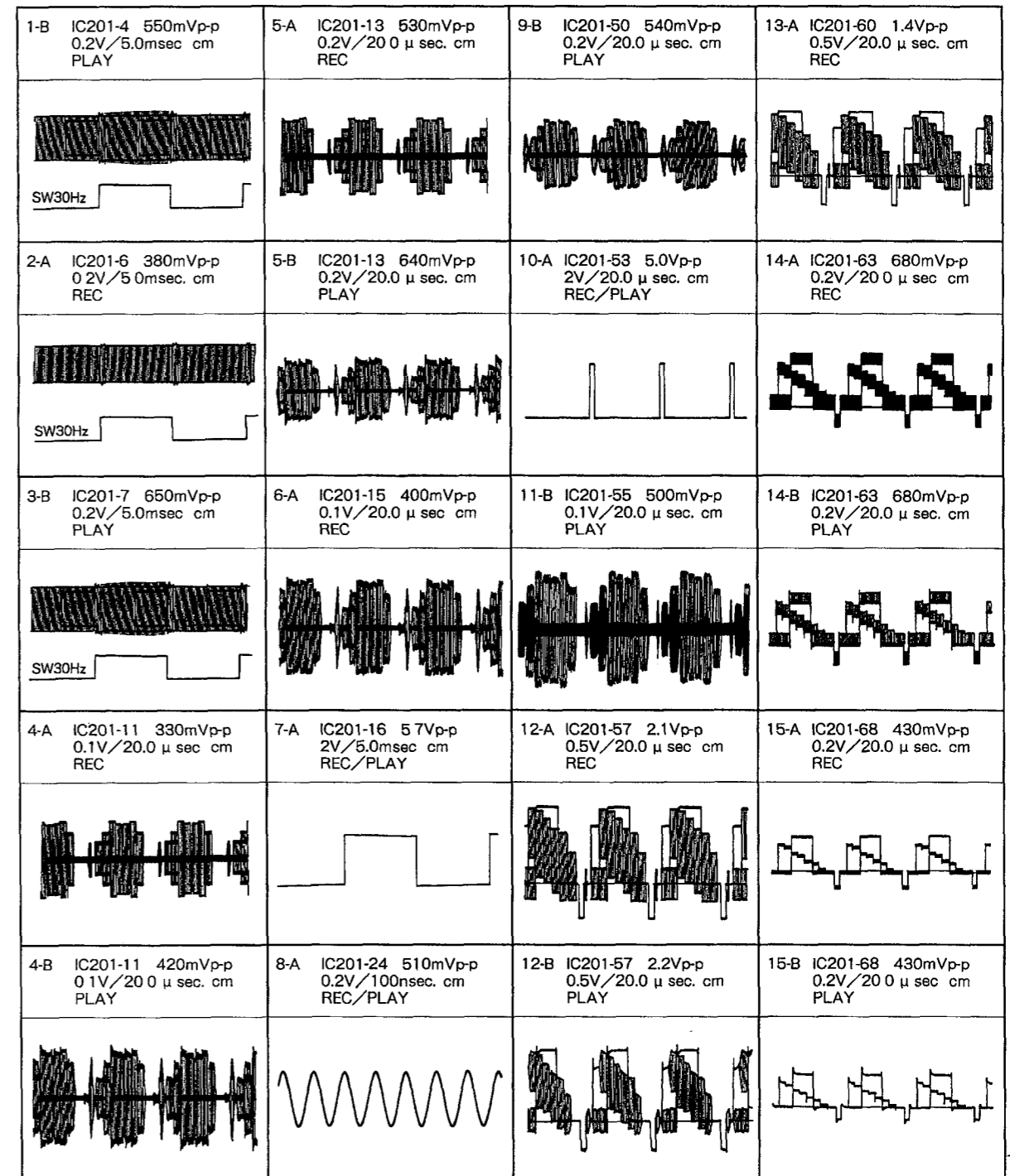
MTS/JACK [MAS] SCHEMATIC DIAGRAM



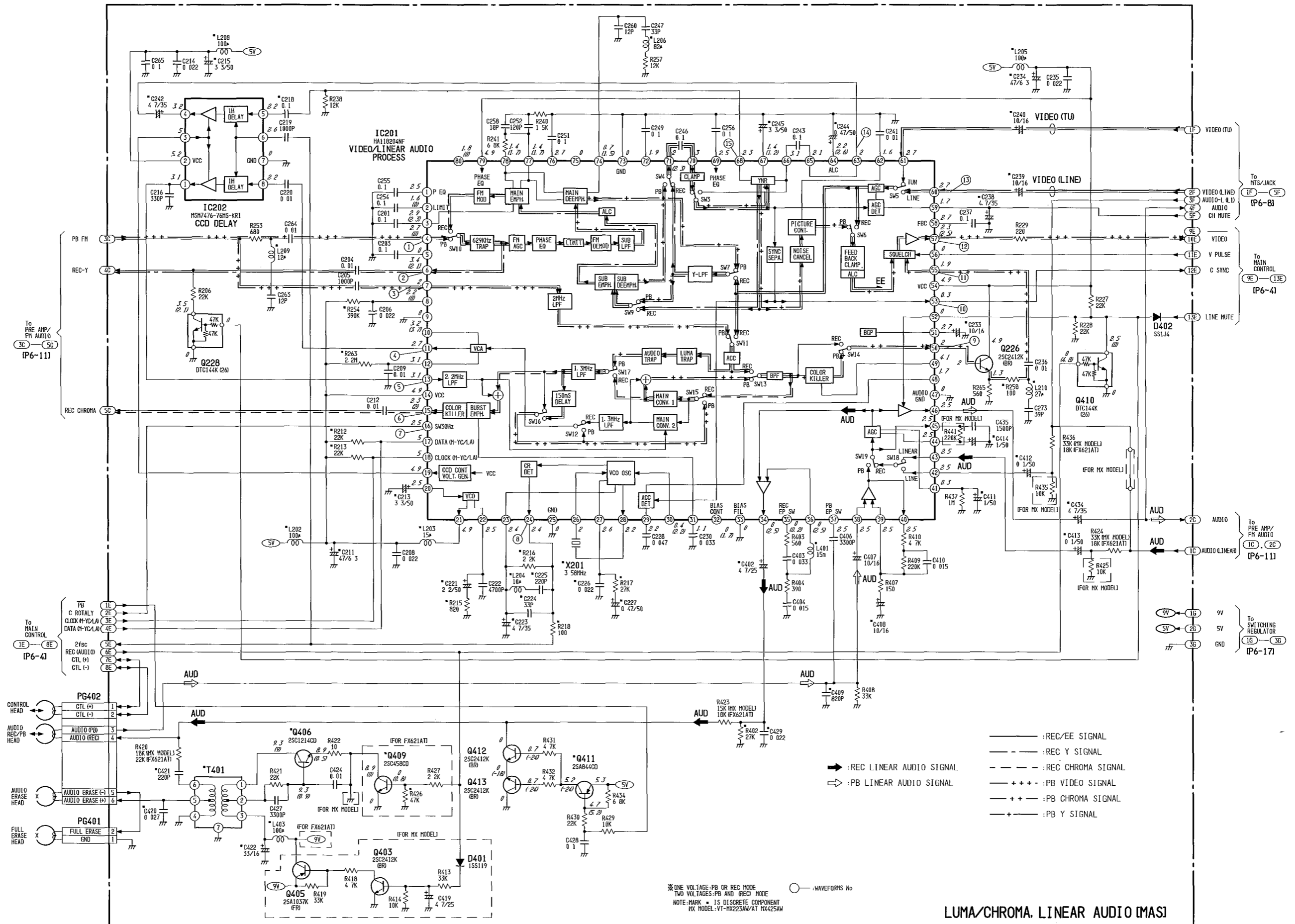
PRE AMP/FM AUDIO [MAS] SCHEMATIC DIAGRAM



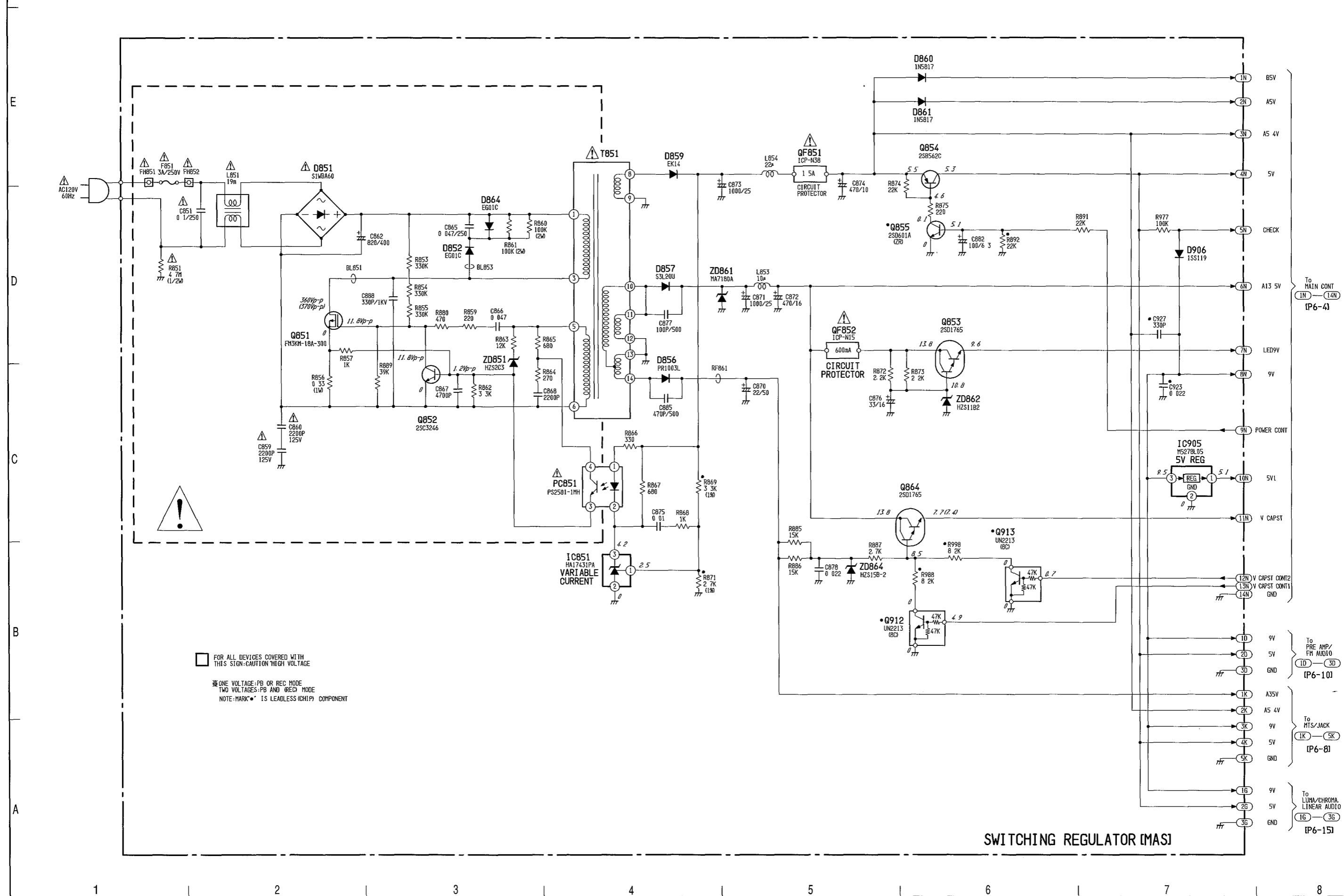
E
D
C
B
A



LUMA/CHROMA, LINEAR AUDIO [MAS] SCHEMATIC DIAGRAM

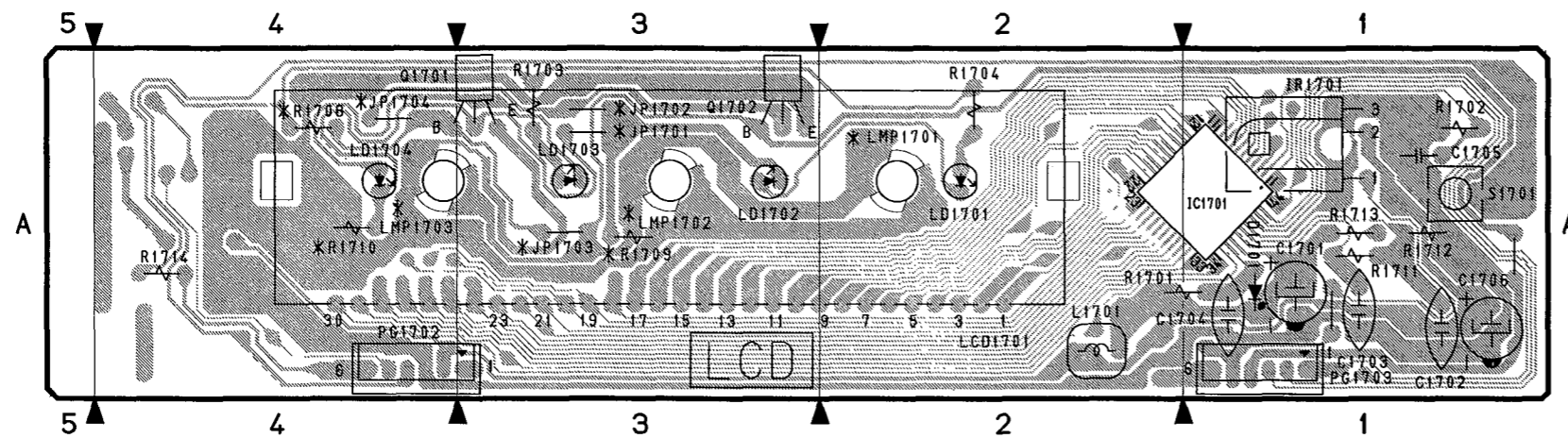


SWITCHING REGULATOR [MAS] SCHEMATIC DIAGRAM



SWITCHING REGULATOR [MAS]

LCD CIRCUIT BOARD

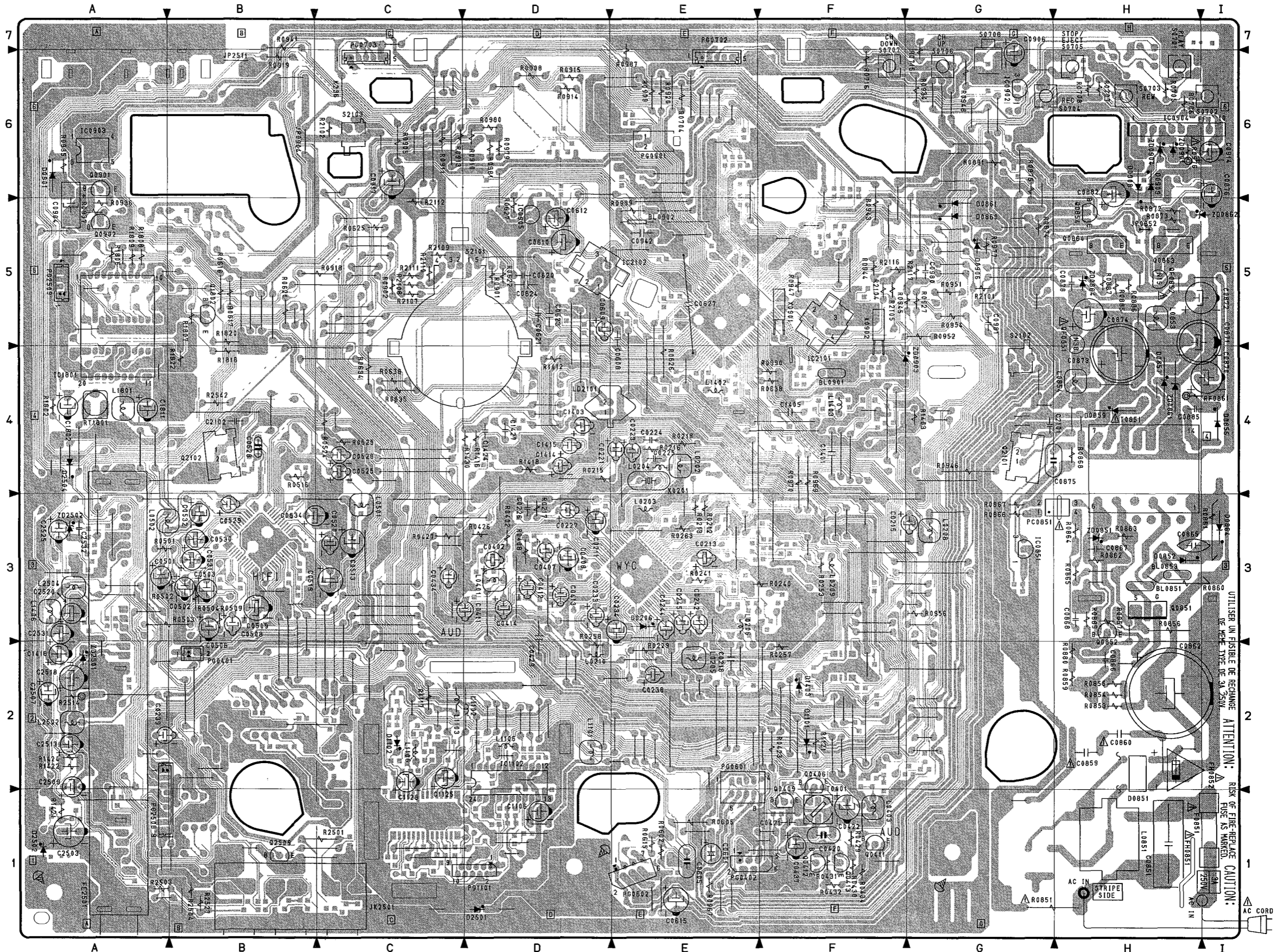


LCD (LCD DISPLAY)
[PATTERN No. JK1165-4]

IDENTIFICATION OF PARTS LOCATION

LCD [LCD DISPLAY]

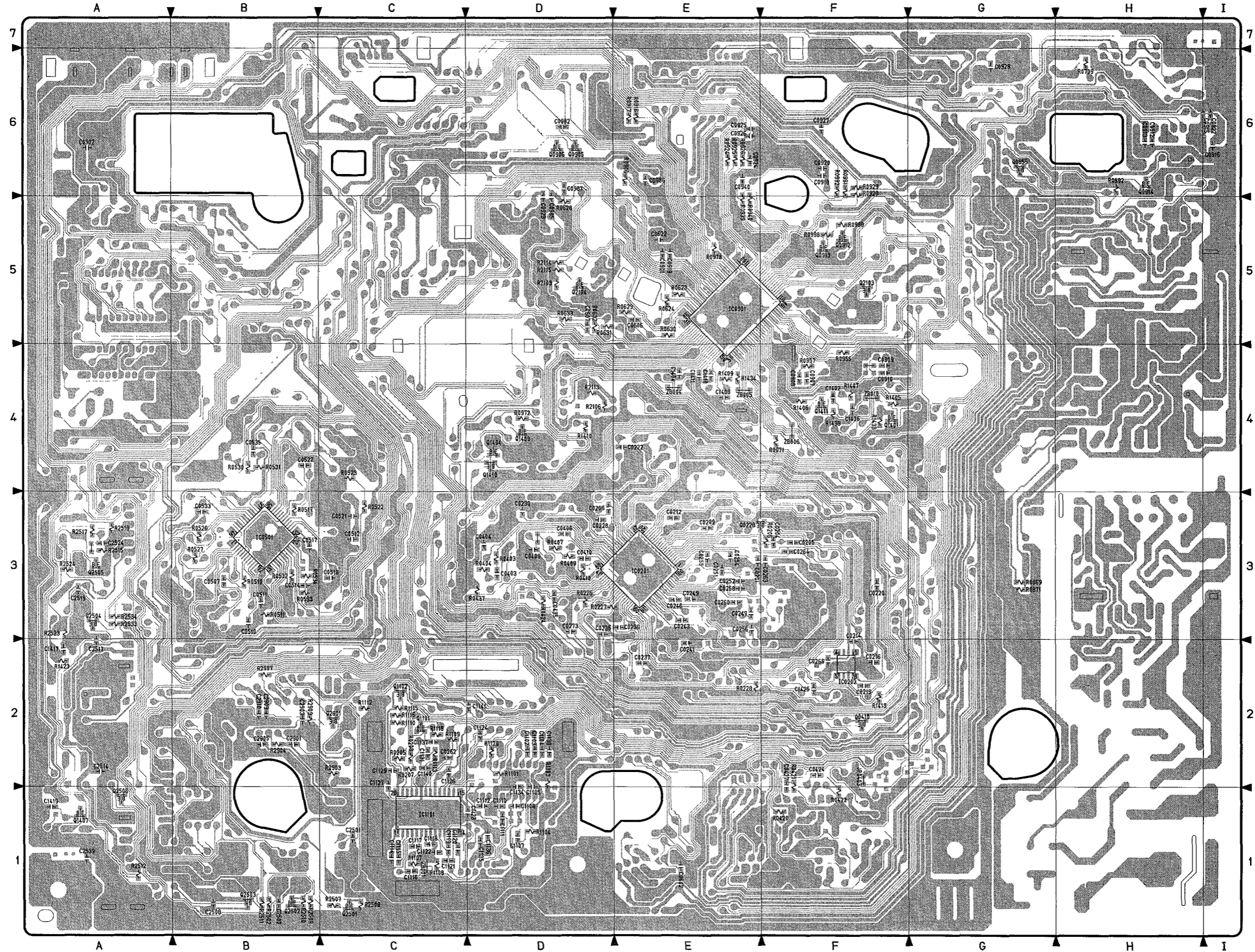
Symbol No	Parts Location	Symbol No	Parts Location
C		LD1704	4A
C1701	1A	LMP	
C1702	1A	LMP1701	2A
C1703	1A	LMP1702	3A
C1704	1A	LMP1703	4A
C1705	1A	PG	
C1706	1A	PG1702	4A
D		PG1703	1A
D1701	1A	Q	
IC		Q1701	3A
IC1701	1A	Q1702	3A
IR		R	
IR1701	1A	R1701	1A
JP		R1702	1A
JP1701	3A	R1703	3A
JP1702	3A	R1704	2A
JP1703	3A	R1708	4A
JP1704	4A	R1709	3A
L		R1710	4A
L1701	2A	R1711	1A
LCD		R1712	1A
LCD1701	3A	R1713	1A
LD		R1714	4A
LD1701	2A	S	
LD1702	3A	S1701	1A
LD1703	3A		



MAS (MAIN) - SIDE A -
[PATTERN No. JA1376-3]

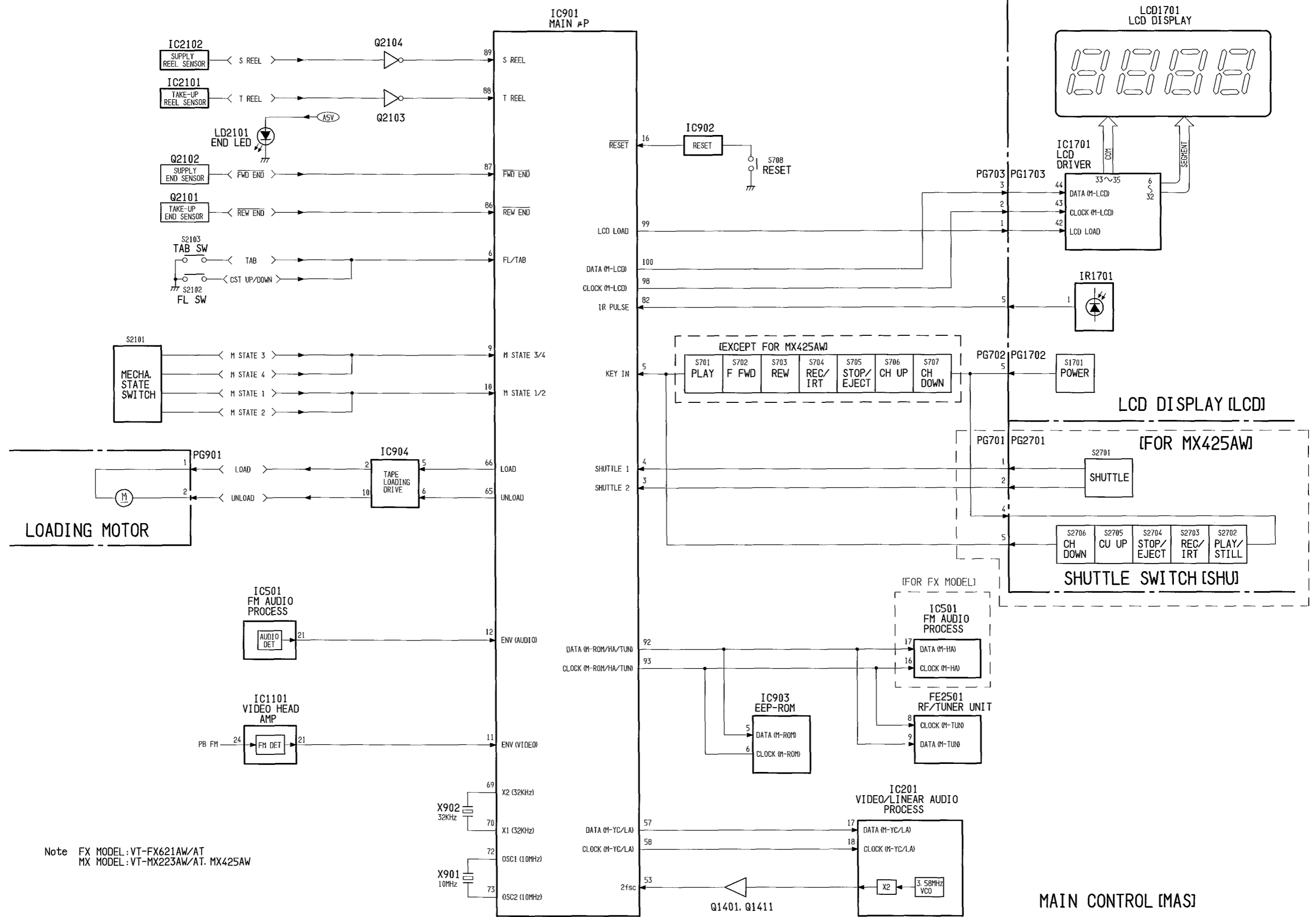
UTILISER UN FIDUCIE DE RECHANGE ATTENTION:
DE HAUT TYPE DE 3A 250V
RISK OF FIRE-REPLACE CAUTION:
FUSE IS MARKED
AC IN STRIPE SIDE

MAS CIRCUIT BOARD [SIDE B]



MAS (MAIN)-SIDE B-
[PATTERN No.JA1376-3]

BLOCK DIAGRAM MAIN CONTROL



Note FX MODEL: VT-FX621AW/AT
MX MODEL: VT-MX223AW/AT. MX425AW

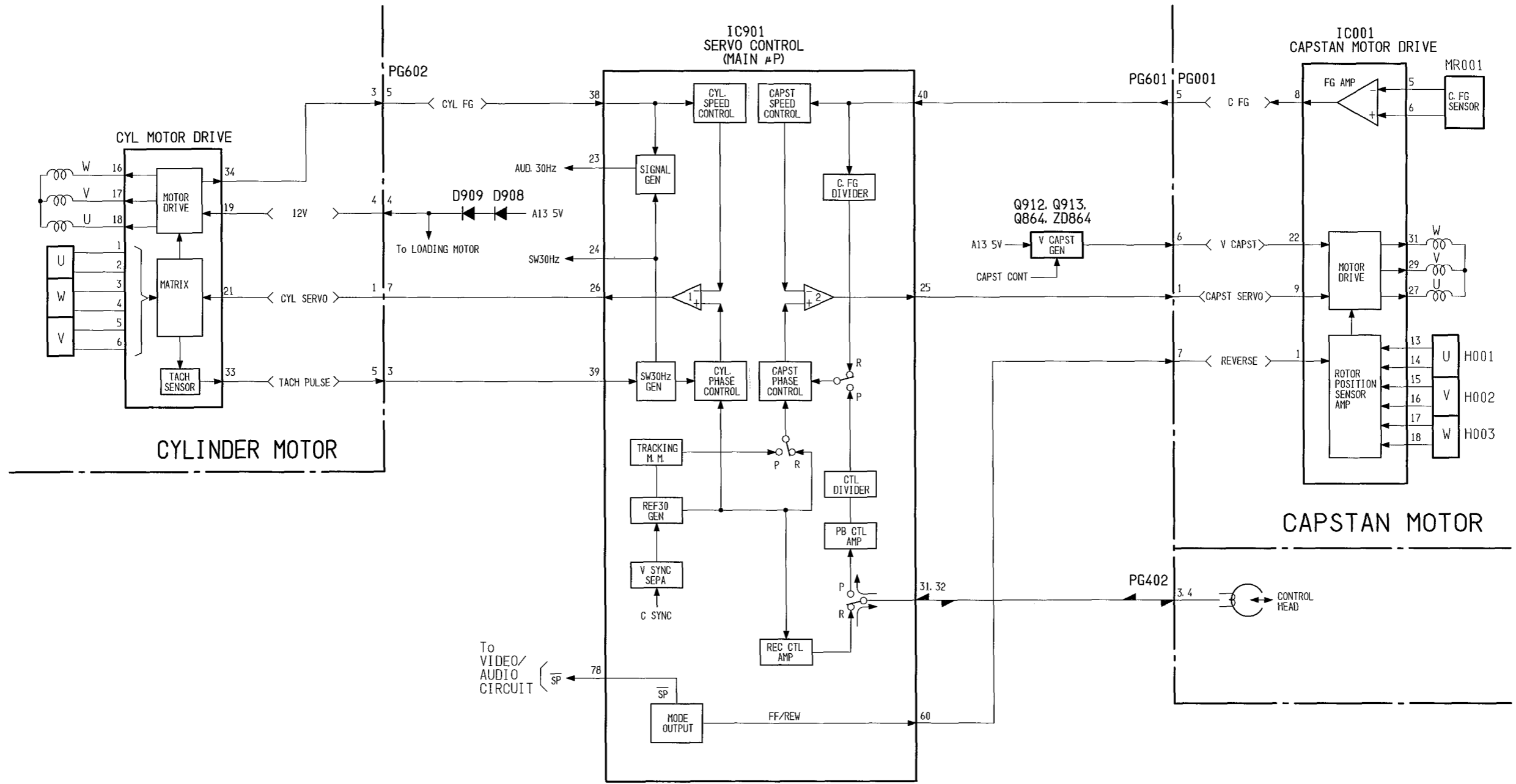
E

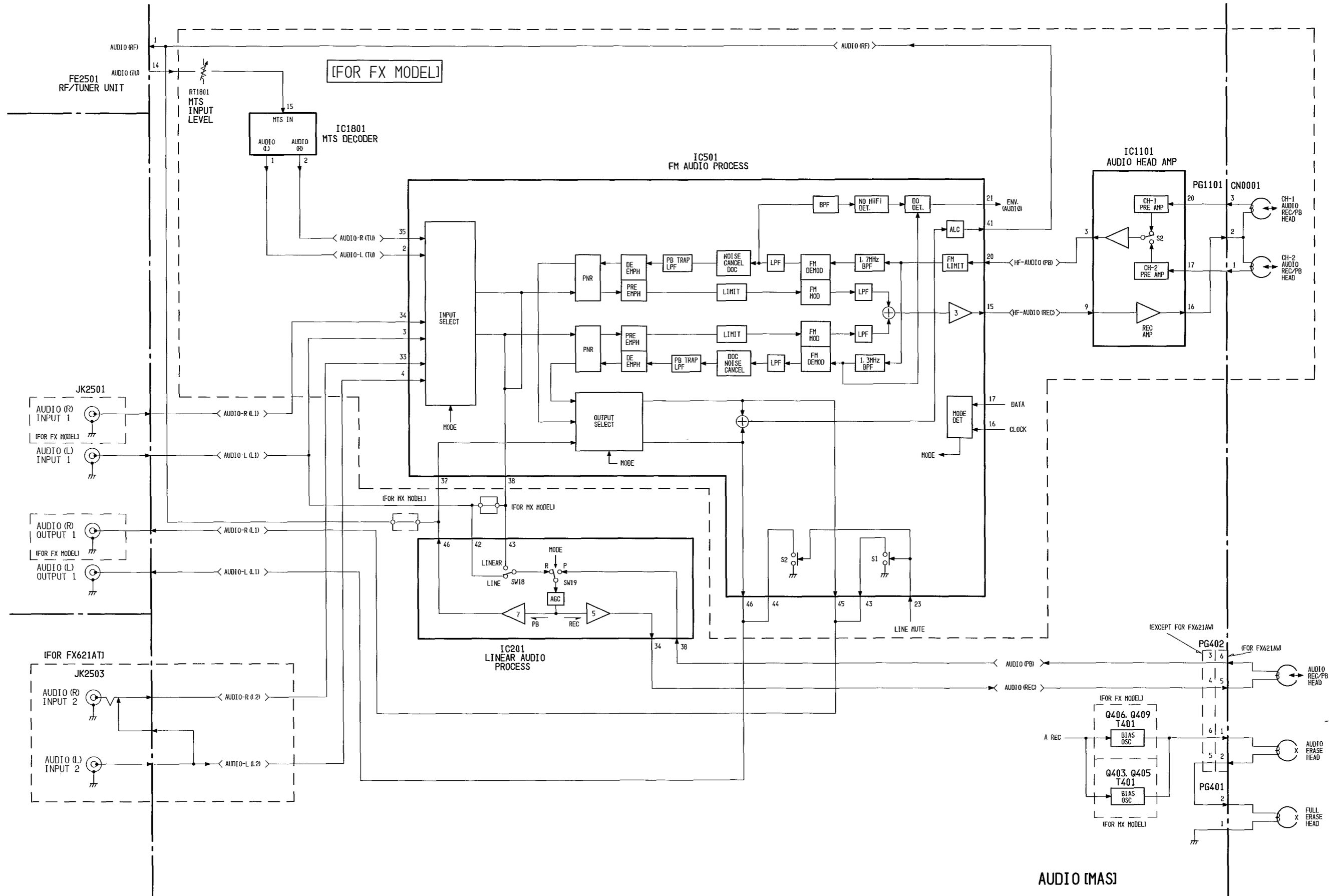
D

C

B

A





E
D
C
B
A

AUDIO (MS)

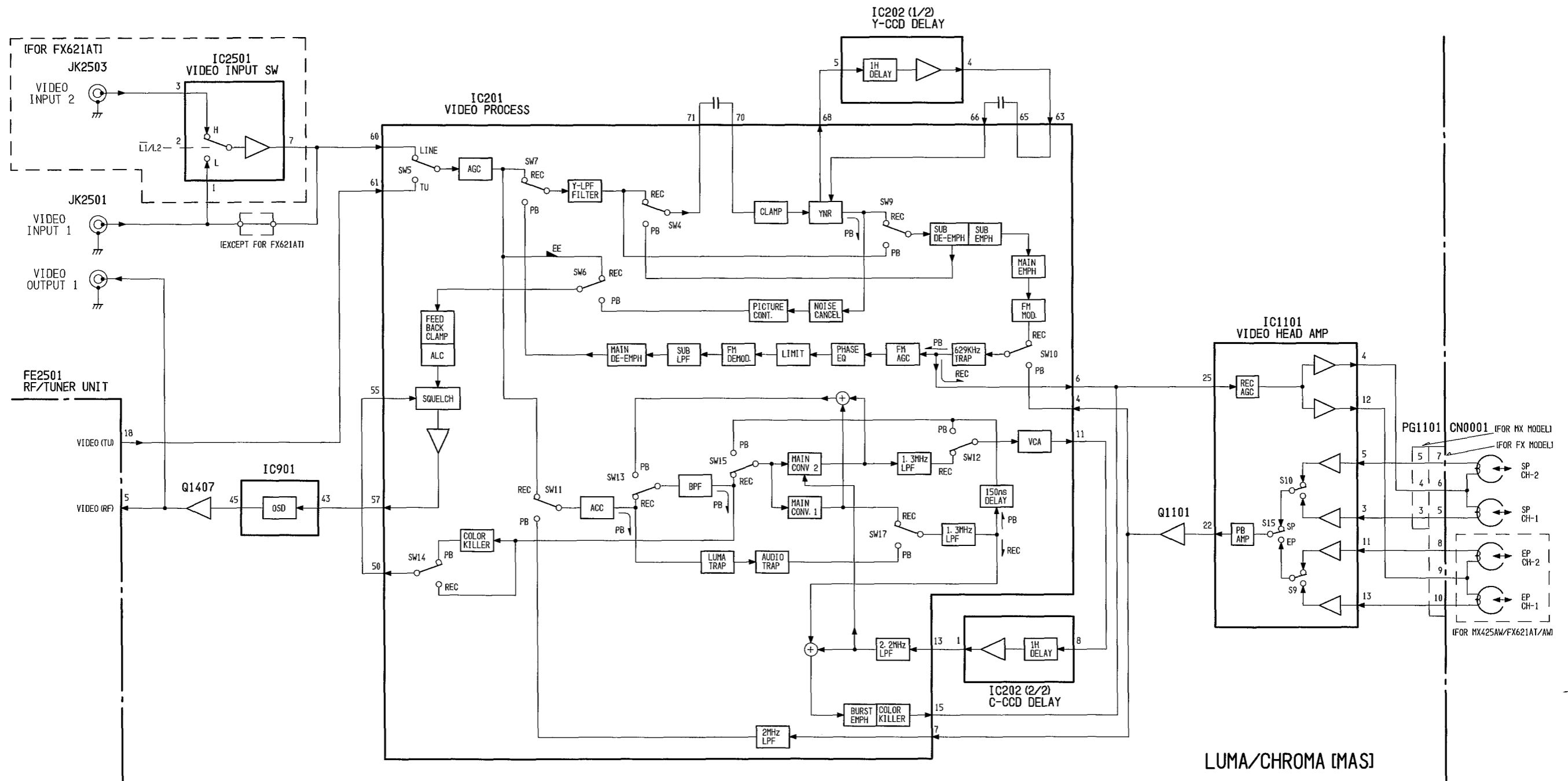
E

D

C

B

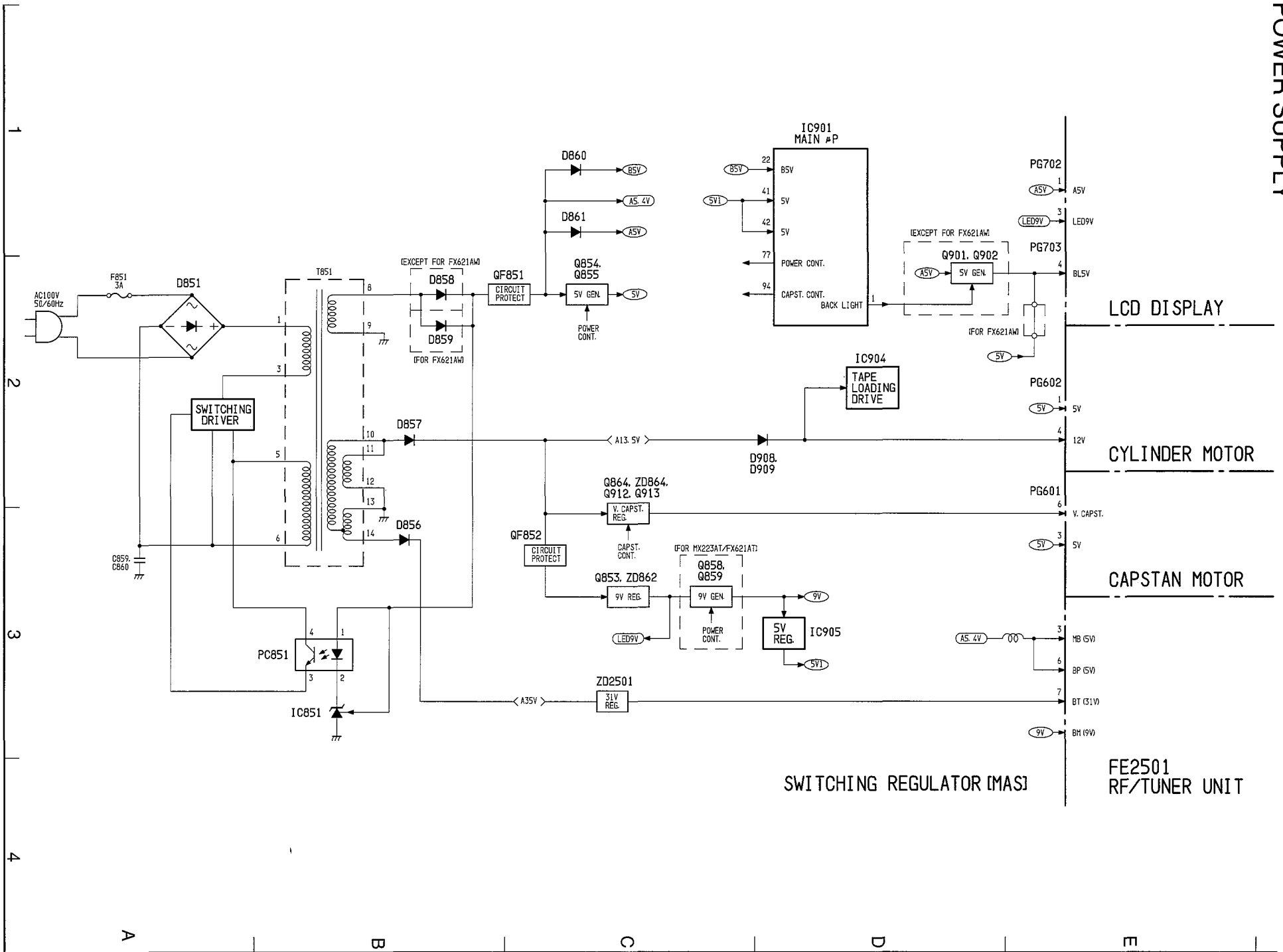
A



LUMA/CHROMA (MAS)

POWER SUPPLY

POWER SUPPLY 6 - 109



A

B

C

D

E

◆ Microprocessor Pin Functin Tables

1. LCD DRIVER (IC1701)

Pin No.	I/O	Active Level	Abbreviation	Function
1	O	Pulse	SEGMENT 1 [S1]	LCD segment control outputs.
2	O	Pulse	SEGMENT 2 [S2]	
31	O	Pulse	SEGMENT 31 [S31]	LCD common (COM) control outputs.
32	O	Pulse	SEGMENT 32 [S32]	
33	O	Pulse	COM1	
34	O	Pulse	COM2	Initializes the LCD-uP when power is supplied.
35	O	Pulse	COM3	
36	I	Lo	RESET(L)	A5V power input.
37	I	Hi	VDD	LCD drive bias.
38	I	-	VDD 1	LCD drive bias.
39	I	-	VDD 2	Ground.
40	-	Lo	VSS	Generates a 32kHz signal for key scanning.
41	I/O	-	OSC	LOAD signal between the M-uP and LCD-uP. "Lo" input enables chip select.
42	I	Lo	LCD. LOAD (L) [CS]	
43	I	Pulse	CLOCK (M-LCD) [CK]	The data transferred from the M-uP, synchronized with the clock signal.
44	I	Pulse	DATA (M-LCD) [DI]	

2. MAIN μ P (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	Inputs from the shuttle dial switches. The shuttle speed and direction are determined.																											
4	I	A/D	SHUTTLE 1																												
5	I	A/D	KEY IN																												
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- μ P 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- μ P when power is supplied.																											
17	O	Hi	MONO OUT	Output to control the MTS decoder output mode to mono.																											
18	O	Hi	TUNER LOAD	A data line is provided between the M- μ P and U/V tuner and the μ P sets the LOAD pin to "Hi" when transferring data and holds it until transfer is completed.																											
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.																											

Pin No.	I/O	Active Level	Abbreviation	Function
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.
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	HF REC MUTE	Hi-Fi audio muting 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	Applies reset pulses to the CTL amp during slow and reverse slow play.
63	I	Lo	COPY GUARD	Not used.
64	O	Pulse	IR OUT	Not used.
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	Not used.
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	MONO OUT	Output to control the MTS decoder output mode to mono.
84	O	Hi	REC	Sets the video and audio head amp circuits to the recording mode. Tuner audio muting control.

Pin No.	I/O	Active Level	Abbreviation	Function								
85	I	Pulse	LINE21	Not used.								
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/HATUN)									
94	O	H/L	V.CAPST CONT	<p>This is output in the slow, still, playback, recording, fast forward and rewind modes to control the voltage applied to the capstan motor.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Pin 94 V CAP</th> <th>VOLT</th> </tr> </thead> <tbody> <tr> <td>Hi</td> <td>7.5V</td> </tr> <tr> <td>Mi</td> <td>9.5V</td> </tr> <tr> <td>Lo</td> <td>13.5V</td> </tr> </tbody> </table>	Pin 94 V CAP	VOLT	Hi	7.5V	Mi	9.5V	Lo	13.5V
Pin 94 V CAP	VOLT											
Hi	7.5V											
Mi	9.5V											
Lo	13.5V											
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)	Not used.								
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

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.

[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]

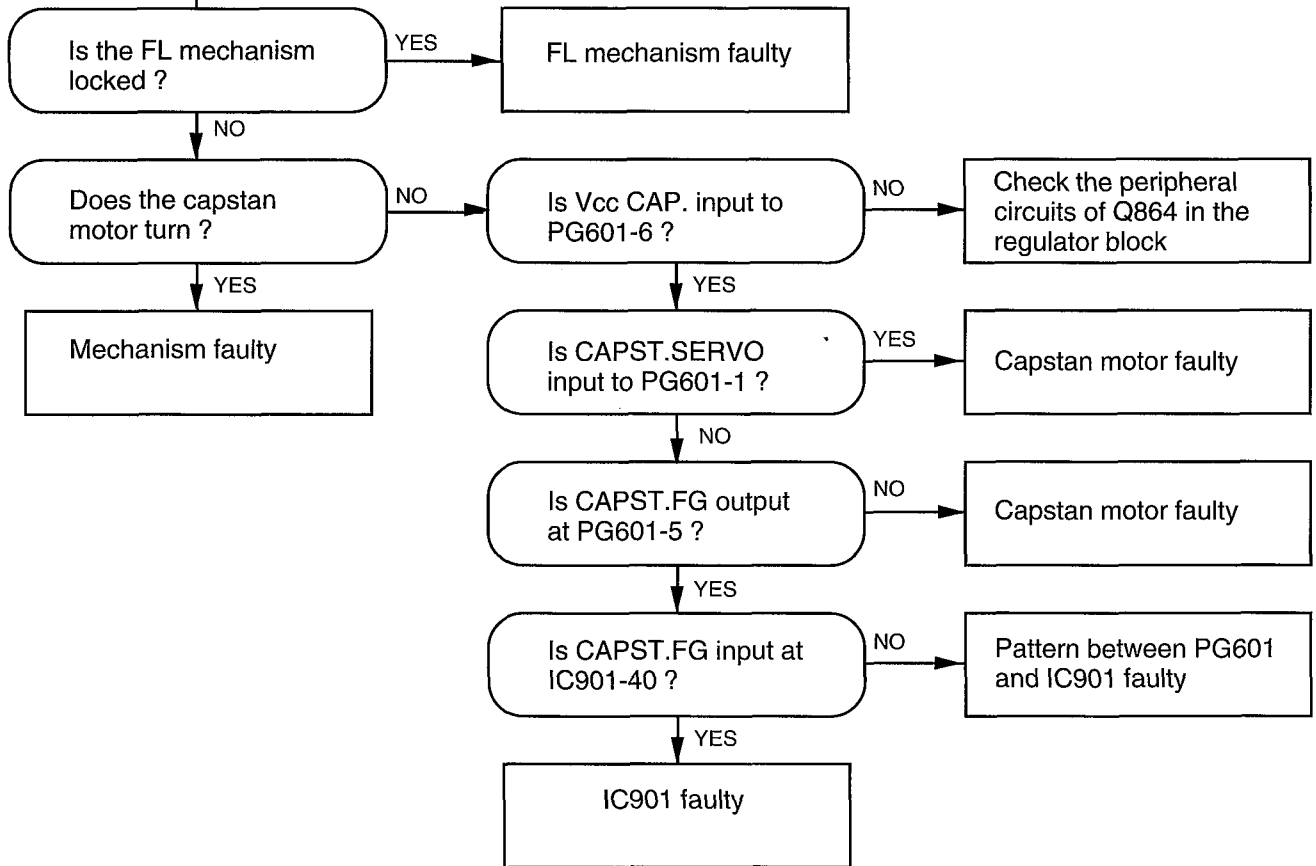
Mode	Display
Stop	No display
Fast forward	FF
Rewind	REW
Recording	REC
Recording pause	REC (flashes)
Playback	PLAY

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

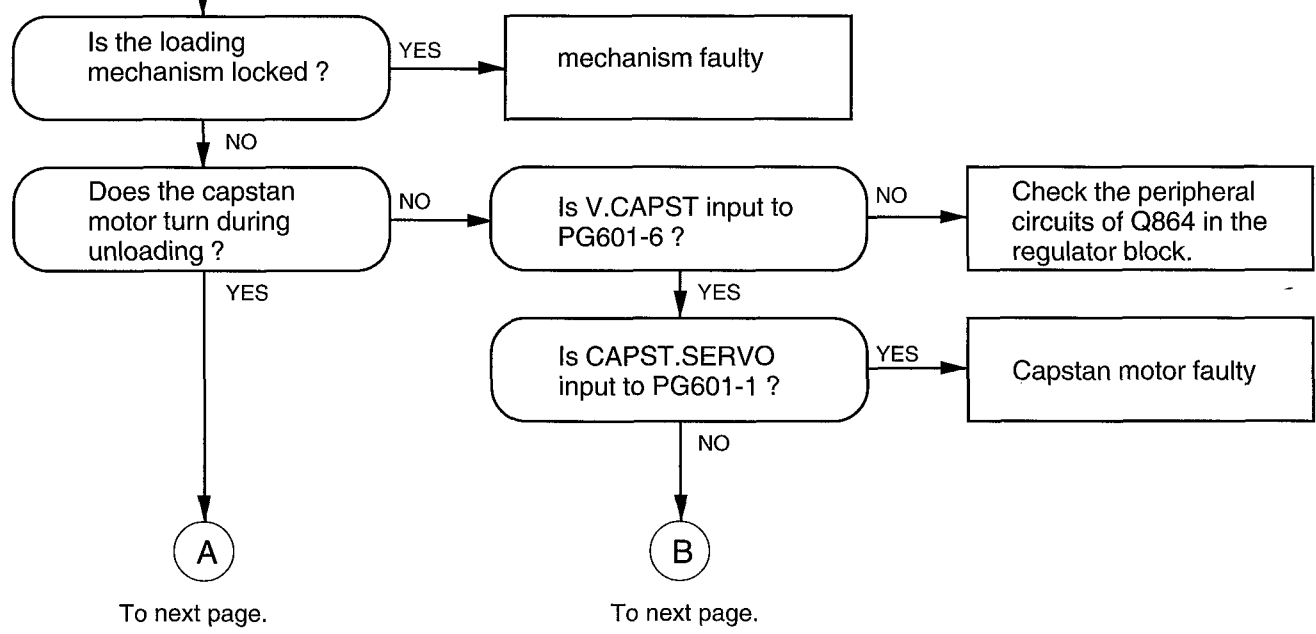
No symbols are displayed if the malfunction occurred when a cassette was inserted or ejected, or the power was switched on from off, and off from on.

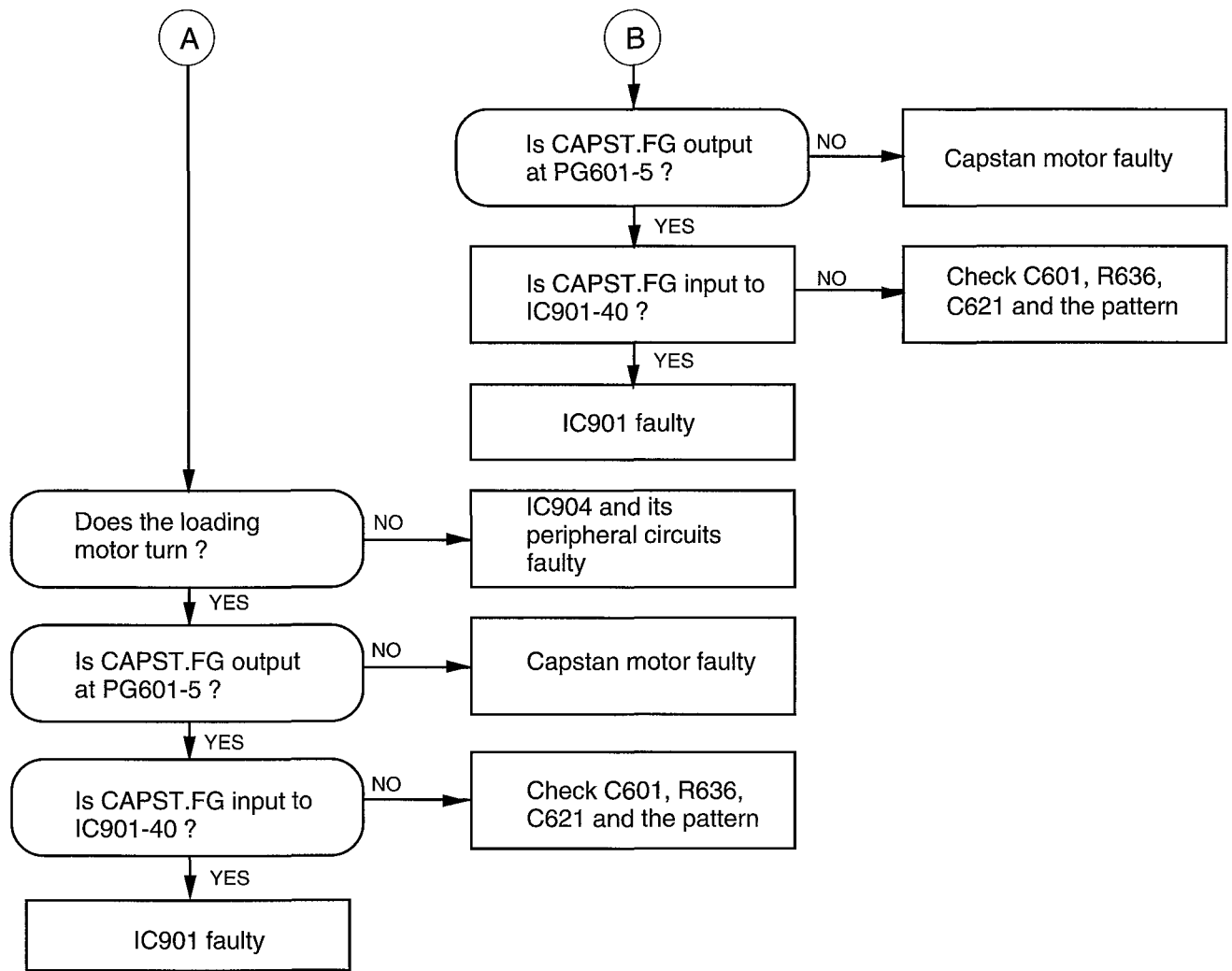
Troubleshooting According to Malfunction Display

1. If "01" Appears in the Display

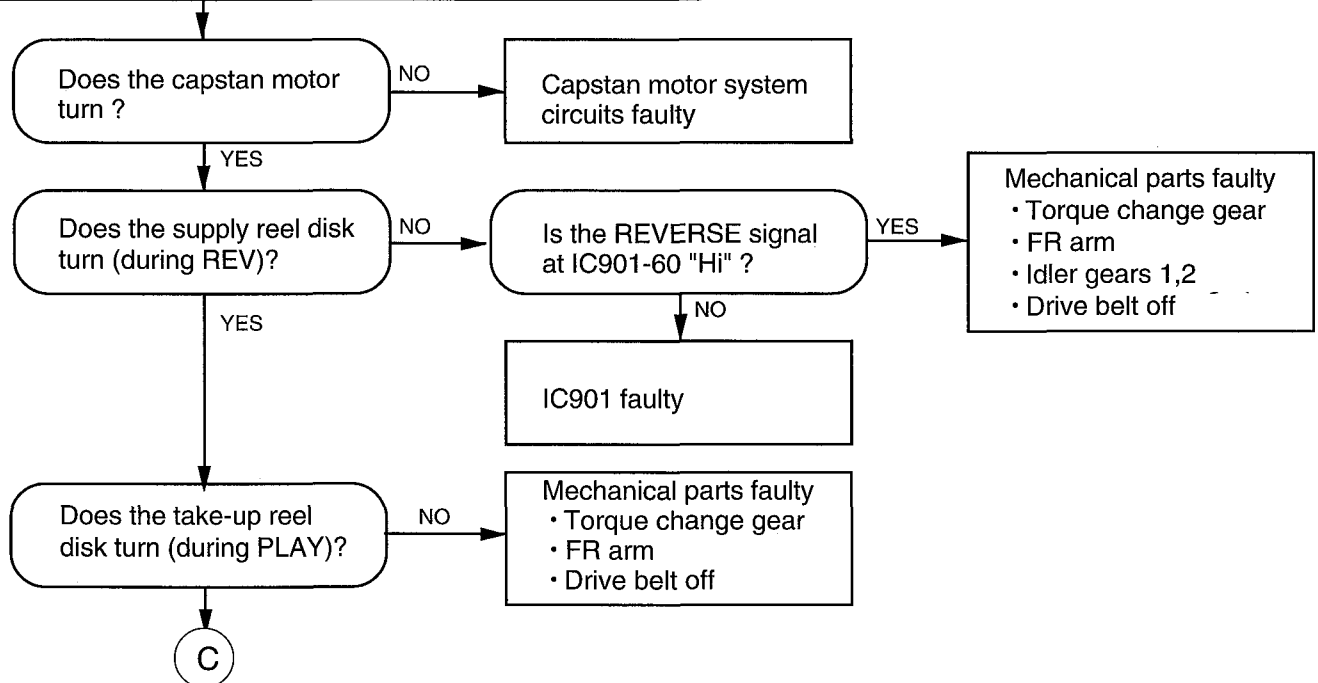


2. If "02" Appears in the Display

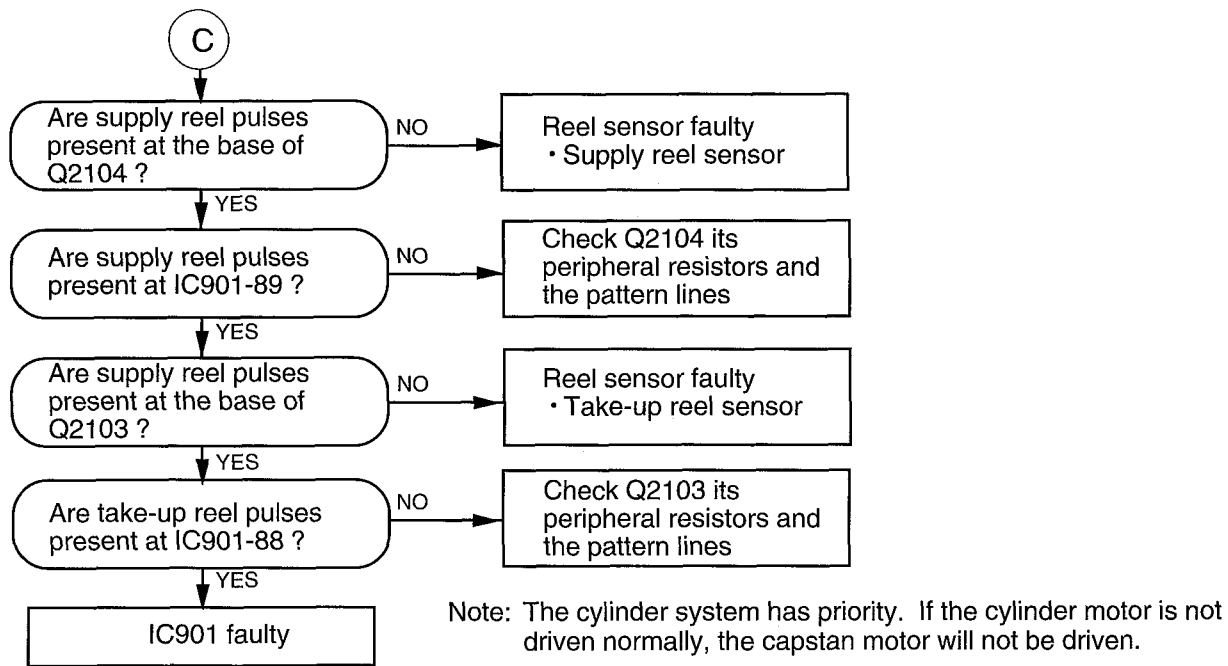




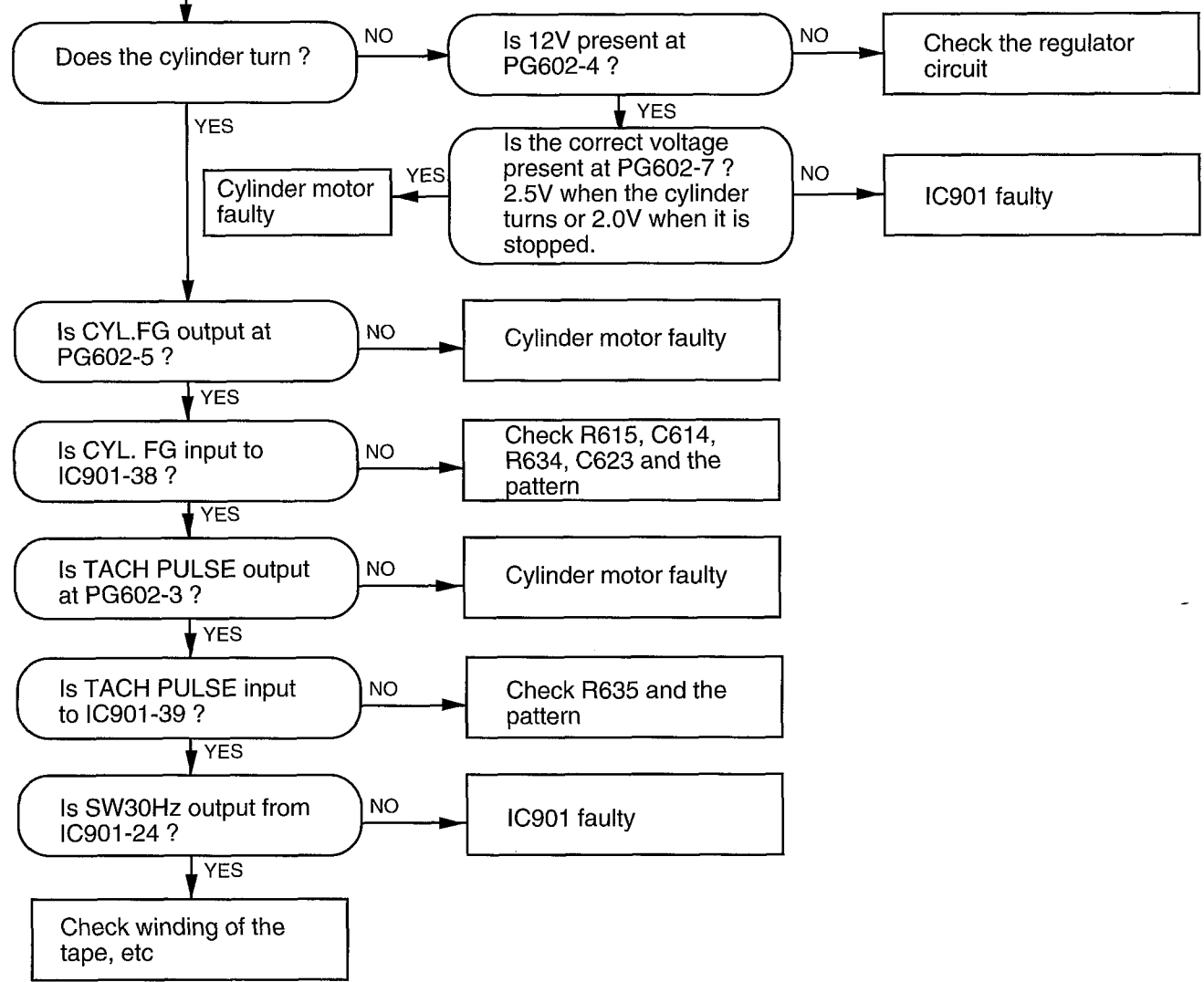
3. If "04" Appears in the Display



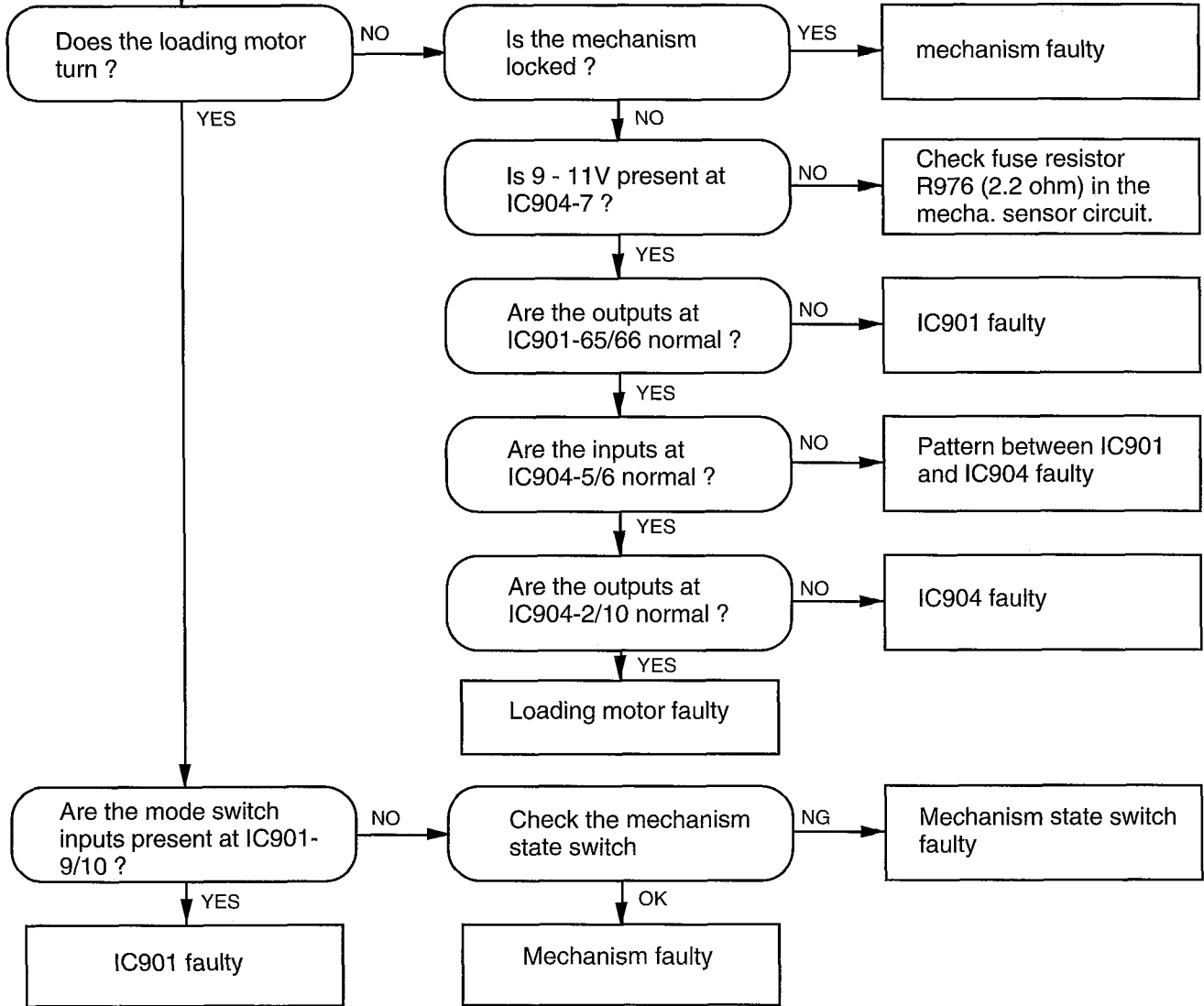
To next page.



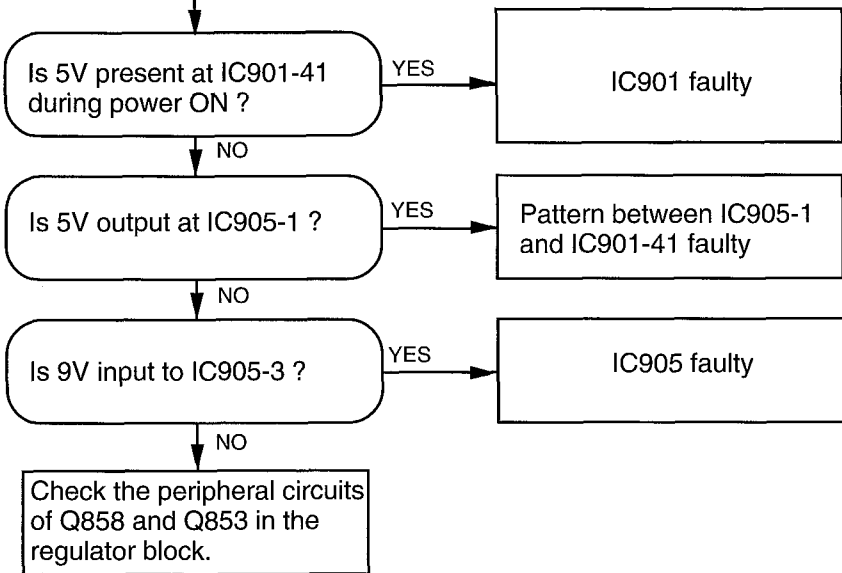
4. If "05" Appears in the Display



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.

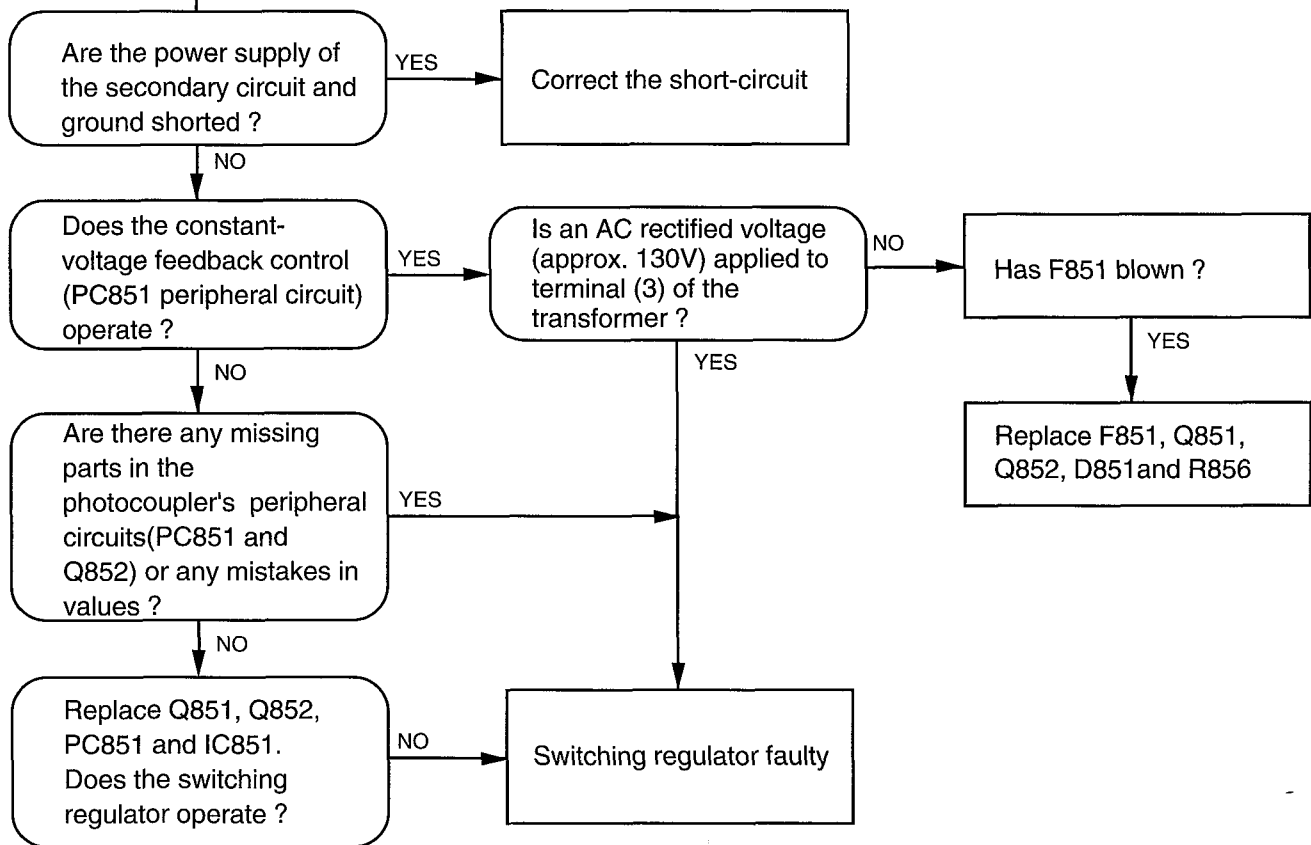
Cautions when checking and repairing the switching regulator circuit

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

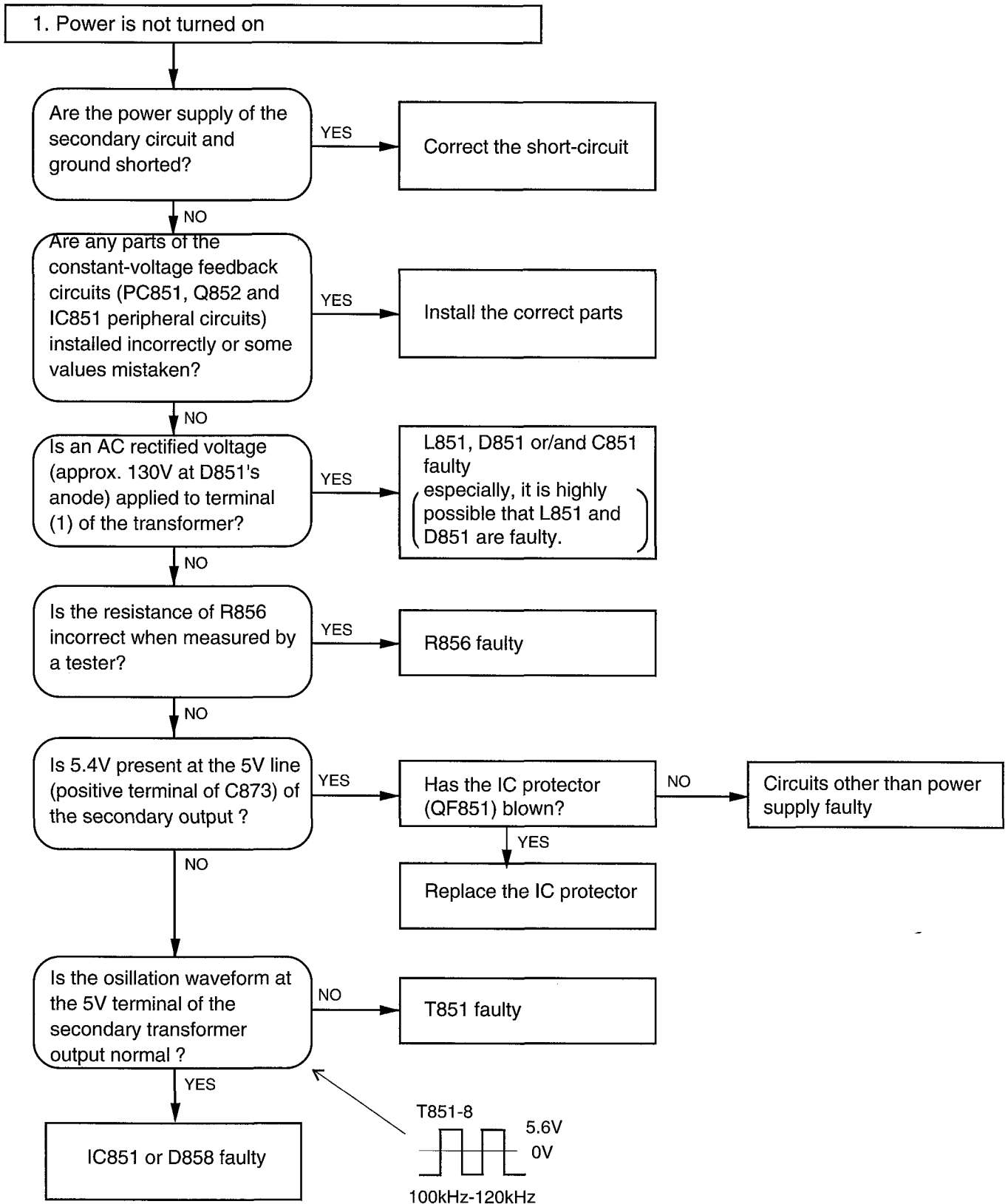
A heat sink which generates a high voltage is provided with Q851 in the switching regulator block. "HIGH VOLTAGE" is printed on the heat sink. Take great care of this section when servicing or handling the VCR when it is turned on. (Supplement: The heat sinks of Q853 and Q864 do not generate a high voltage.)

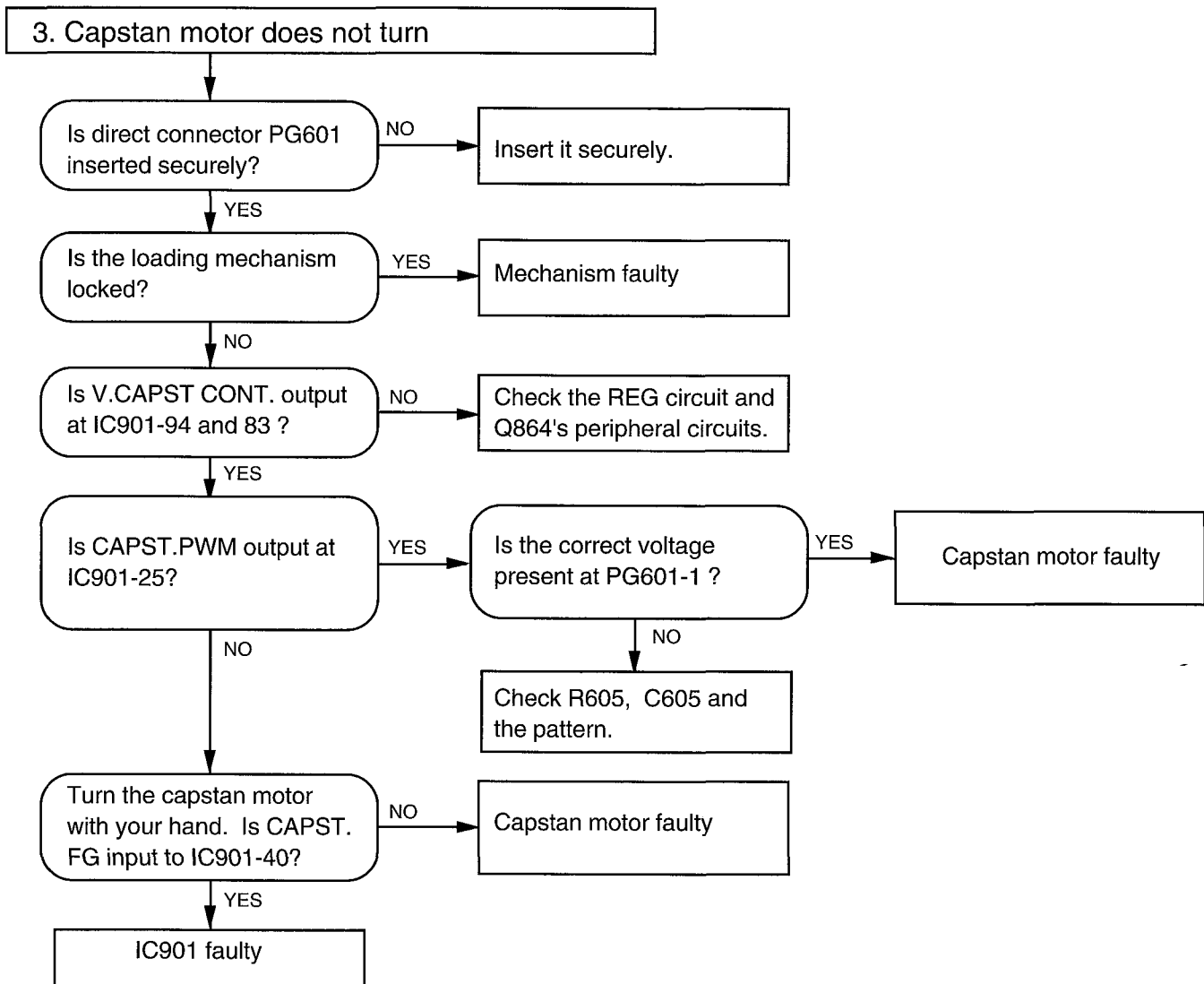
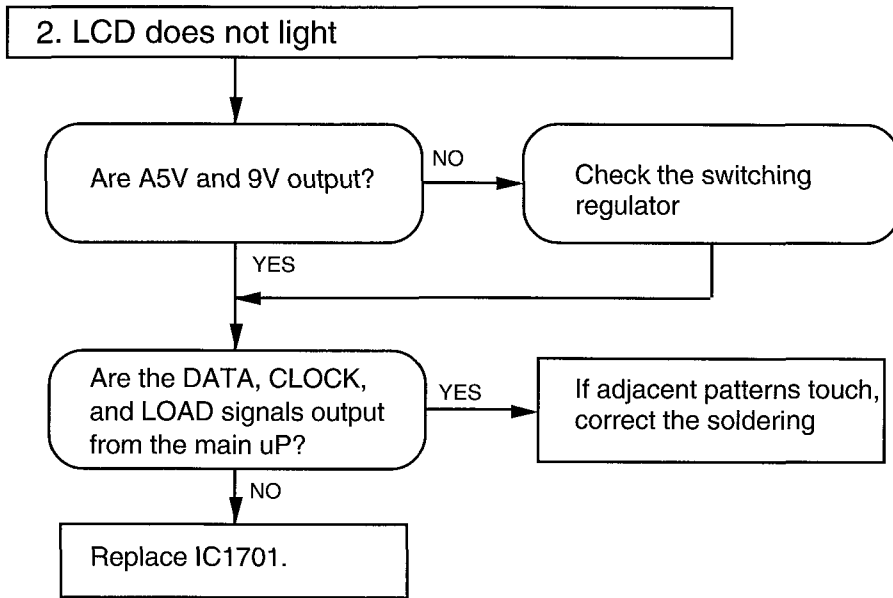
Method to judge that the switching regulator is faulty



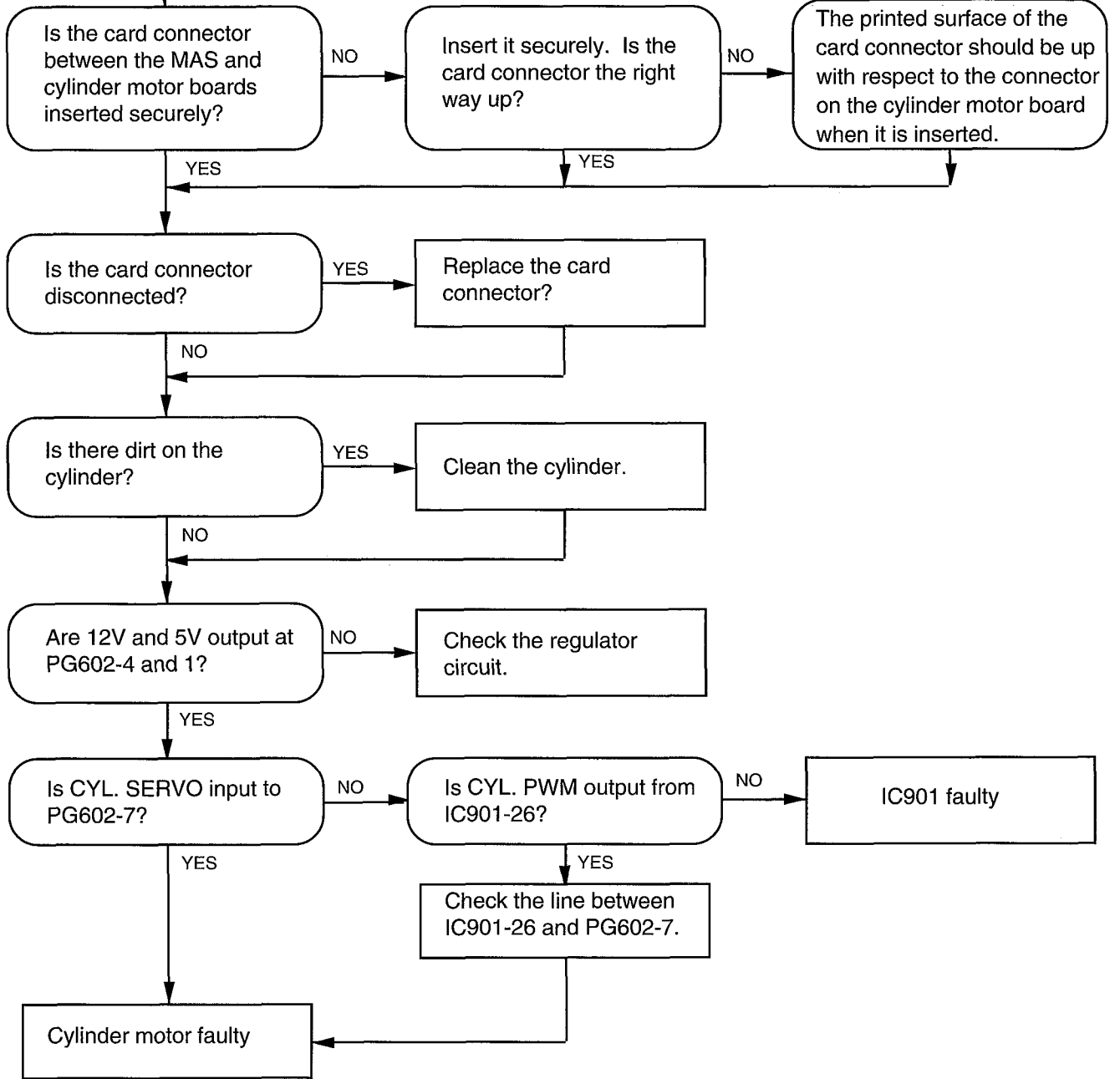
Troubleshooting by Observing Defective Phenomena

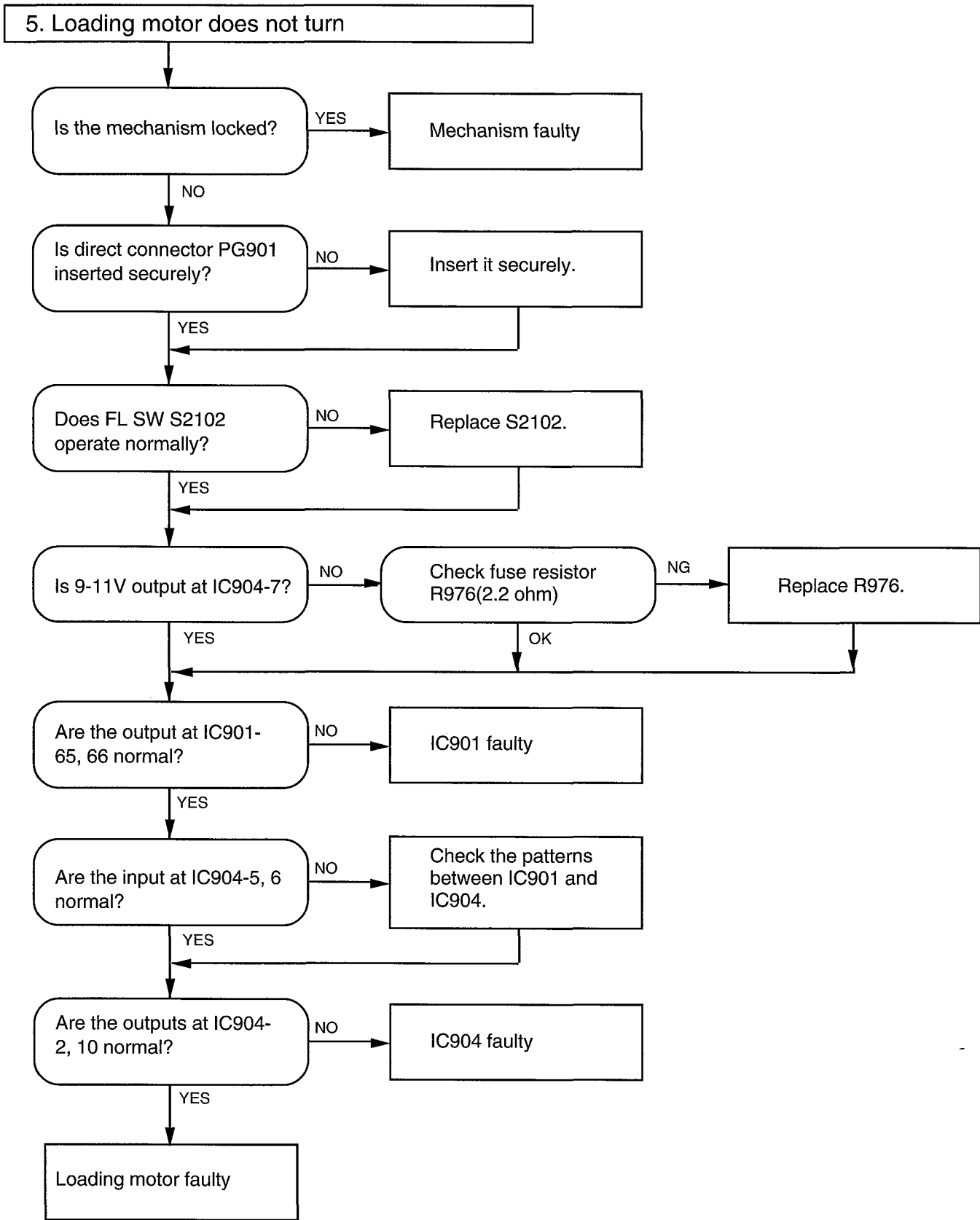
If the switching regulator is normal and there is a defect in another circuit (shorting between the power supply and ground of the secondary circuit), the protective function of IC851 operates and the power is not turned on. If a defect occurs in the switching regulator, a phenomenon such that the VCR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





4. Cylinder motor does not turn





HITACHI

HITACHI LTD. TOKYO JAPAN
International Sales Division,
THE HITACHI ATAGO BLDG.
No. 15 -12 Nishi-Shinbashi, 2 - Chome,
Minato-Ku, Tokyo 105, Japan
Tel. Tokyo 3 32581111

HITACHI SALES EUROPA GmbH
Am Seestern 18,
40547 Düsseldorf,
Germany
Tel. 0211 5291 50

HITACHI SALES (HELLAS) S.A.
91, Falirou Street, 117-41 Athens,
Greece
Tel. 92 42-620-4

HITACHI HOME ELECTRONICS (EUROPE) Ltd.
Hitachi House, Station Road, Hayes,
Middlesex UB3 4DR,
England
Tel. 0181 849 2000

HITACHI SALES IBERICA, S.A.
Gran Via Carlos Tercero.101,1 -1
Barcelona 08028
Tel. 3- 330.86.52

HITACHI FRANCE (RADIO-T.V.-ELECTRO-MENAGER) S.A.
4, allée des Sorbiers,
Parc d'active de Chêne,
69671 BRON Cedex,
France
Tel. 72 14-29-70

HITACHI HOME ELECTRONICS NORDIC
Domnarvsgatan 29 Lunda, Box 62
S-163 91 Spanga,
Sweden
Tel. 08 621 8250

**Scan & PDF-Design: Schaltungsdienst
Lange oHG
Verlag technische Druckschriften**

**Zehrendorfer Straße 11
D-12277 Berlin**

<http://www.schaltungsdienst.com>