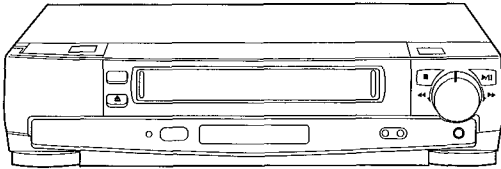


HITACHI

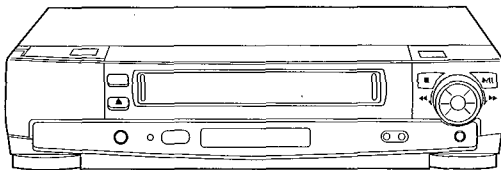
SERVICE MANUAL



V19064



VT-UX625A,AW



VT-UX627A

TK

No.4716E

VT-UX625A, AW
VT-UX627A

US MECHANISM

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

Manuals to be referred.

Name of manual	Manual No.
US Mechanism	4527E

VHS

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

VCR Plus⁺
w/Cable Channel
Changer

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

June 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.

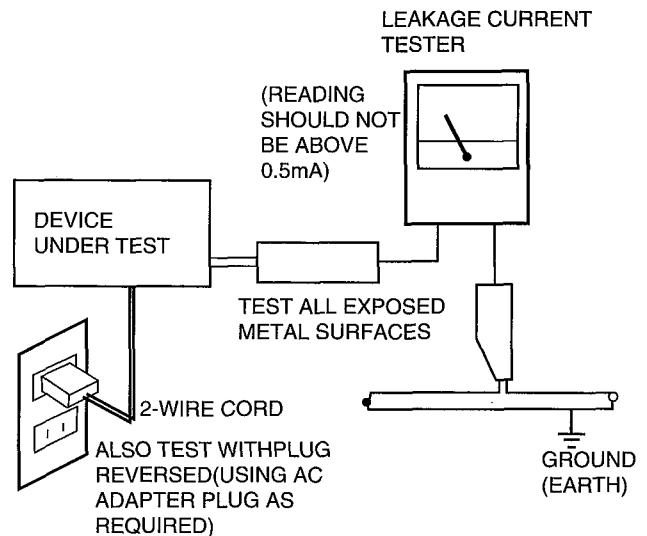
Leakage Current Cold Check

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 Δ on the schematics and the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards. Product safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies for, HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.

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CHAPTER 1**GENERAL INFORMATION**

1. Specifications

Format:	VHS
Video Signal System:	NTSC color EIA standard
Record/Playback System:	Video: 4 Heads Audio: VHS Hi-Fi stereo record/playback system
Tape Speed:	33.35mm/sec(SP), 16.67mm/sec(LP)(playback only), 11.12mm/sec(EP)
RF Input:	UHF/VHF75 ohm
Tuner:	USA: 181 channel tuning ability* (125 cable channels) Canada: 178 channel tuning ability* (122 cable channels)
Type:	Auto programming frequency synthesis
Power Input:	AC120V 60Hz [VT-UX625A/UX627A] AC110-240V 50/60Hz [VT-UX625AW]
Power Consumption:	23W nominal
Cabinet Size:	17-1/8" (W)× 3-7/8" (H)× 11-1/8" (D) 43.5cm(W)× 9.9cm(H)× 28.2cm(D)
Weight:	8.8lbs. (4.0kg)
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. HL10883)[VT-UX625A, AW] 1 remote control unit (Part No. HL10884)[VT-UX627A] 2AA batteries 1 AC plug adaptor (Part No. EY10271)[VT-UX625AW]

* Check your cable company's compatibility requirements.

For information about how to obtain there and other HITACHI accessories, please call HiTRON, Inc. TOLL FREE at 1-800-995-4500(in the continental United States). For ALASKA and HAWAII, please contact the nearest Hitachi Regional Office.

Design and specifications subject to change without notice.

2. Comparison with Previous Model

Item	VT-UX625A,AW/UX627A	VT-UX615A/UX617A,AW
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)	1/1	1/1
Video/audio inputs (front)	1/1	1/1
Video/audio outputs (rear)	1/1	1/1
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-RM625A [VT-UX625A,AW] VT-RM627A [VT-UX627A]	VT-RM613A [VT-UX615A] VT-RM617A [VT-UX617A,AW]
Remote jog/shuttle	No/Yes [VT-UX625A,AW] Yes/Yes [VT-UX627A]	No/Yes
VCR Plus + code guide channel memory	Yes	Yes
Miscellaneous		
Frame Advance playback	Yes	Yes
Jog/Shuttle dial on the VCR	No/Yes [VT-UX625A,AW] Yes/Yes [VT-UX627A]	No/Yes
Cable box control	Yes	Yes
DSS box control	No	Yes [VT-UX617A,AW only]
Tape navigation	No	Yes [VT-UX617A,AW only]
Closed caption	No	Yes [VT-UX617A,AW only]
Commercial Advance(CA SKIP)	Yes [VT-UX627A only]	Yes [VT-UX617A,AW only]
Movie Advance(MA SKIP)	Yes	No
Self-diagnosis	Yes (7 modes)	Yes (7 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 130 seconds[Full loading]	about 120 seconds[Full loading]
X260 Rewind time(with T-120)	about 83 seconds[Half 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	Yes	Yes

3. Comparison of Main Control ICs

Function	VT-UX625A,AW/UX627A	VT-UX615A,AW/UX617A
Video		
Y/chroma signal processing	HA118204F (IC201)	HA118203NF[UX615A](IC201) HA118203F[UX617A,AW]
CCD 1H delay	MSM7476-76MS (IC202)	MSM7470-72MS (IC202)
FM signal processing/EQ	Included in IC201	Included in IC201
CNR	-----	-----
Linear Phase EQ/NAVI.data adder	Included in IC201	Included in IC201
Video AGC	Included in IC201	Included in IC201
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	HTS7342 (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)	HD6433977SB62F (IC901)	HD6433977SB01F[UX615A] HD6433977SB05F[UX617A,AW] (IC901)
VCR-EEPROM	AT24C02-6 (IC903)	ST24C02-6 (IC903)
Loading motor drive	BA6209 (IC904)	BA6209 (IC904)
Shuttle code	uPD17103GS-752 (IC2701)	-----
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)
CCD		
CCD μ P	-----	M37267M8-210SP (IC4401)
NAVI.-EEPROM	-----	X24C16S8 (IC4402)
Reset	-----	PST520CT (IC4403)
NAVI. sync separator	-----	MM1108XF (IC4405)
NAVI. data adder	-----	NJM2249M (IC4406)
Commercial Advance		
Commercial Advance(CA-uP)	CXP80712A122Q (IC4501)	CXP80712A112Q (IC4501)
Reset	PST9145T (IC4502)	PST520CT (IC4502)
Sync separator	MM1108XF (IC4506)	-----
Commercial Advance EEPROM	-----	AT24C02 (IC4603)
Power supply		
Switching driver	STR-F6510 (IC851)	-----
A9V regulator	-----	-----
5V regulator	M5278L05 (IC905)	M5278L05 (IC905)

4. Tips for Servicing

4-1. Trouble Display Function

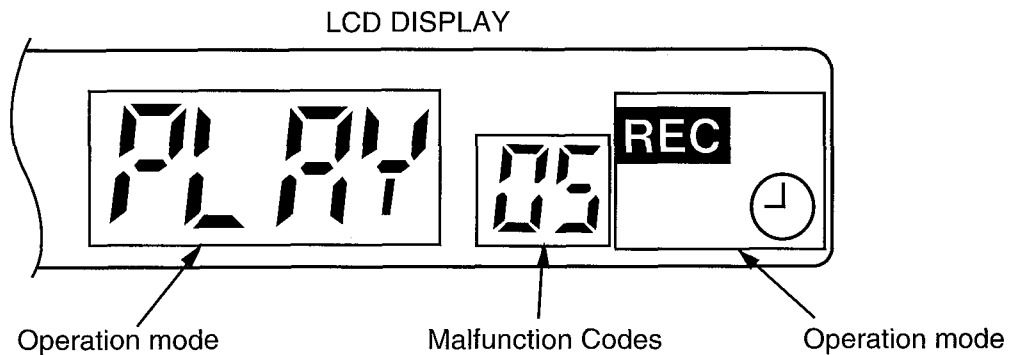
This VCR has a function which displays mechanism malfunctions, etc. in the LCD display. Use this function to analyze the cause when the power is shut off due to a malfunction, etc. in the mechanism.

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	Mode	Display
Stop	No display	Recording pause	REC (flashes)
Fast forward	FF	Playback	PLAY
Super fast forward	S.FF	Forward search	SRCH
Rewind	REW	Reverse search	-SRCH
Super rewind	S.REW	Slow	SLOW
Recording	REC	Still play	STILL
Timer recording	⌏ REC	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.

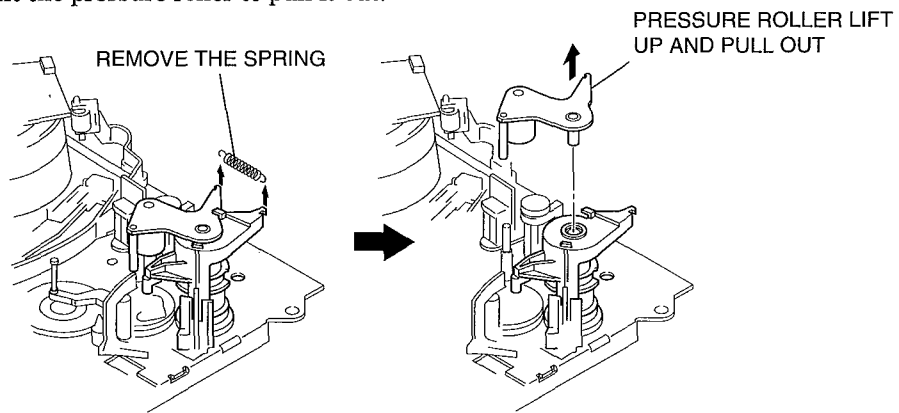
[Work Procedure]

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

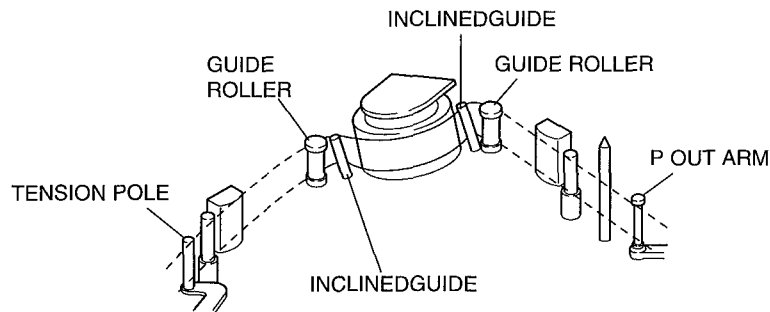
If the tape is wound round the cylinder in the loading state

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.

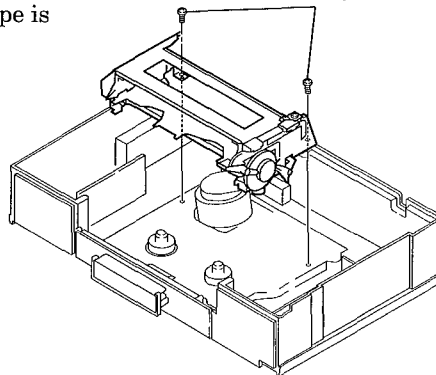


Slacken the tape and release it from the tension pole, guide rollers, inclined guides and P out arm.



- 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.

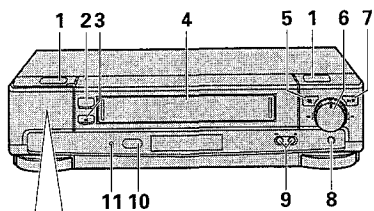
REMOVE TWO SCREWS



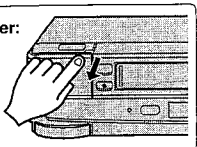


CUSTOMER CONTROLS

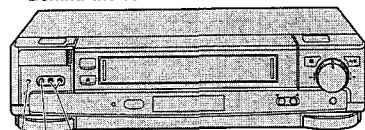
VCR Customer Controls



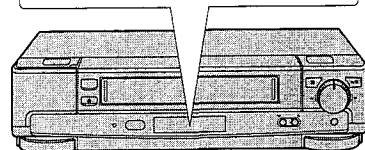
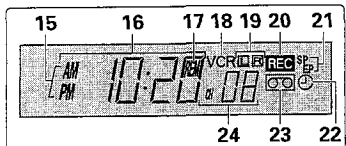
To open the cover:
Pull the cover forward with your fingers.



Behind the cover



14 13 12



Item No.	Function	Page
1	Infrared transmitter	25
2	POWER button	2
3	EJECT button	9
4	Cassette compartment	9
5	STOP button	23
6	Shuttle ring	35
7	PLAY/STILL button	30
8	REC/IRT button	40
9	CHANNEL (channel up/down)/ TRACKING buttons	23
10	Infrared receiver	29
11	REC indicator	8
12	AUDIO IN L(MONO), R jacks	40
13	VIDEO IN jack	56
14	ANT. OUT select button	56
15	VCR Display	10
16	AM/PM indicators	18
	Time,	17
	Time counter,	37
	Tape remaining or	37
	VCR mode indicator	37
	PLAY — playback	28
	SRCH — double-speed play and visual search	31
	SLOW — slow play	31
	REW — rewind	28
	FF — fast forward	—
	STILL — play pause and frame advance	30
17	REM (tape remaining time) indicator	37
18	VCR, operate mode	41
19	Audio indicators	—
20	REC — record (flashes during record pause)	40
21	Tape speed SP/EP	39
22	Delayed recording indicator	46
23	Tape-in indicator	9
24	TV channel or Auxiliary (L1/L2)	39
		55

Accessories supplied

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

①



Remote control

②



Cable for connecting this VCR to a TV

③

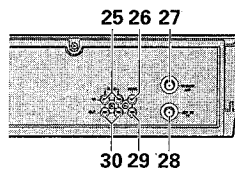


2 pcs.
Batteries for remote control handset (R6)



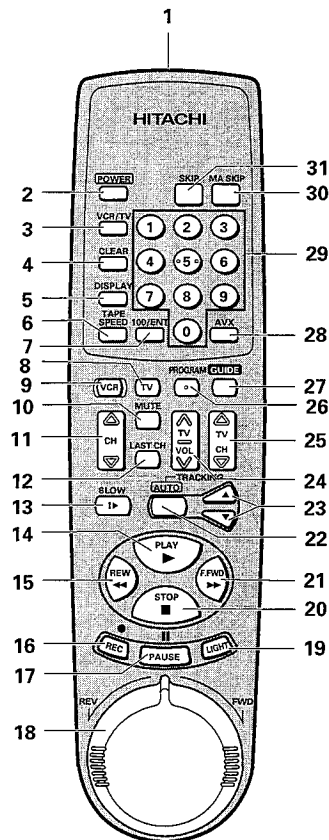
CUSTOMER CONTROLS

VCR Customer Controls



Item No.	Function	Page
25	AUDIO IN (L), (R) jacks	55
26	VIDEO IN jack	57
27	IN FROM ANT. — signal input	10
28	OUT TO TV — signal out to TV	10
29	VIDEO OUT jack	11
30	AUDIO OUT (L), (R) jacks	11

Remote Control Customer Controls



Item No.	Function	Page
1	Transmission window	8
2	POWER button	22
3	VCR/TV mode select button	10
4	CLEAR — clears time counter	38
5	DISPLAY — to recall on-screen display	36
6	TAPE SPEED button	39
7	100/ENT button	39
8	TV button — sets the remote to control TV	54
9	VCR button — sets the remote to control VCR	8
10	MUTE button — turns off the audio until you press MUTE again	54
11	CH (channel up/down) button	39
12	LAST CH button — switches to the TV channel you watched previously during the current viewing session.	54
13	SLOW button	31
14	PLAY button — playback	23
15	REW button — fast rewind or search	28
16	REC — record button	40
17	PAUSE button	30
18	Shuttle ring	35
19	LIGHT button — illuminates key function buttons for a few seconds	—
20	STOP button — stops play/record function	23
21	F.FWD button — fast forward or search	31
22	AUTO TRACKING button	29
23	TRACKING button	29
24	TV VOL button — increase or decrease the audio volume	54
25	TV CH button	54
26	PROGRAM (programming) button	44
27	GUIDE — to recall OSD menu	22
28	AVX button — select L1 or L2	55
29	Number buttons	22
30	MA SKIP button	33
31	SKIP button	30

* If you want to operate the VCR with remote control after operating the TV, first press the VCR button, and then press required buttons on the remote control.



SPECIAL PLAYBACK EFFECTS

MOVIE ADVANCE™ (MA SKIP)

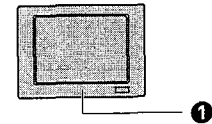
"MOVIE ADVANCE™" is trademark of SRT, Inc.
A Jerry Iggulden invention licensed in association with Arthur D. Little Enterprises, Inc."

MOVIE ADVANCE™ locates the start of movie on rented tape, etc., by automatically skipping commercials, logo marks, previews, information on copyrights, etc. You can also locate the start of previews.

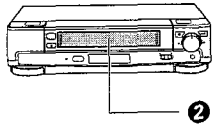
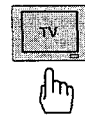
Notes:

- MOVIE ADVANCE™ can be operated only with cassettes recorded in the SP mode and the safety tab removed.
- MOVIE ADVANCE™ will not operate with damaged tapes.
- The VCR may not be able to locate the starts of specific movies or previews.

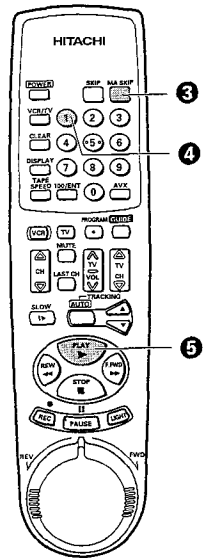
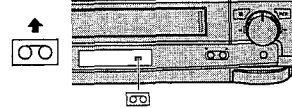
Locating the start of movie



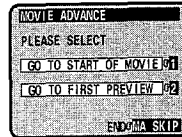
- 1 Turn on the TV and select the video channel (3 or 4).
Or, if you are hooked up with an audio/video cable, set the TV to AUX or VIDEO.



- 2 Insert a recorded tape.
The power comes on automatically and the tape indicator lights on the display.
 - Playback starts automatically.



- 3 Press the MA SKIP button.
The "MOVIE ADVANCE" menu will appear on the TV screen.



- 4 Press the 1 button to select "GO TO START OF MOVIE".
 - The tape is fast forwarded. It will take several minutes to find the start of any designated movie.



- When the start of the movie has been located, the screen on the right will appear.



- 5 Press the PLAY button to start playing.



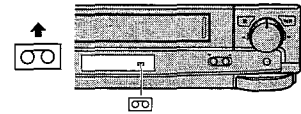
MOVIE ADVANCE™ (MA SKIP)

Locating the start of movie

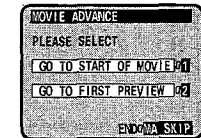
- 1 Turn on the TV and select the video channel (3 or 4).
Or, if you are hooked up with an audio/video cable, set the TV to AUX or VIDEO.



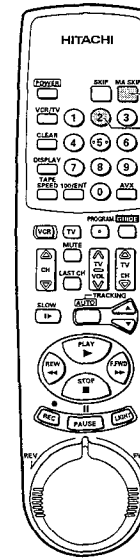
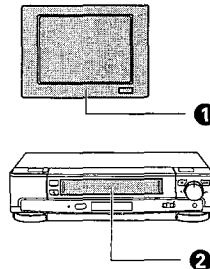
- 2 Insert a recorded tape.
The power comes on automatically and the tape indicator lights on the display.
 - Playback starts automatically.



- 3 Press the MA SKIP button.
The "MOVIE ADVANCE" menu will appear on the TV screen.



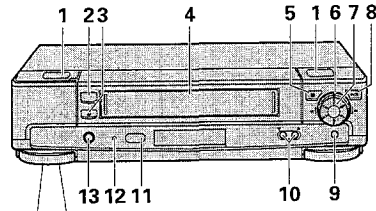
- 4 Press the 2 button to select "GO TO FIRST PREVIEW".
 - The tape is fast forwarded, and a preview will play automatically.
 - If you press the MA SKIP button while viewing the preview, the tape is fast forwarded, and the next preview will play automatically.



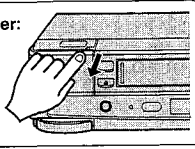


CUSTOMER CONTROLS

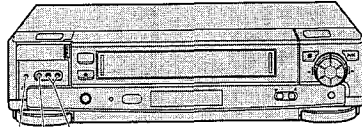
VCR Customer Controls



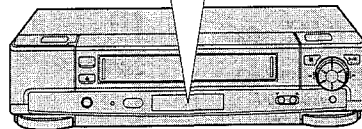
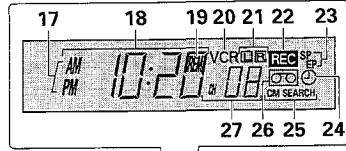
To open the cover:
Pull the cover forward with your fingers.



Behind the cover



16 15 14



Item No.	Function	Page
1	Infrared transmitter	25
2	POWER button	2
3	EJECT button	9
4	Cassette compartment	9
5	STOP button	23
6	Shuttle ring	37
7	Jog dial	37
8	PLAY/STILL button	30
9	REC/IRT button	42
10	CHANNEL (channel up/down)/ TRACKING buttons	23
11	Infrared receiver	8
12	REC indicator	42
13	CA SKIP button	33
14	AUDIO IN L(MONO), R jacks	58
15	VIDEO IN jack	58
16	ANT. OUT select button	10
VCR Display		
17	AM/PM indicators	18
18	Time, Time counter, Tape remaining or VCR mode indicator	17
	PLAY — playback	39
	SRCH — double-speed play and visual search	28
	SLOW — slow play	31
	REW — rewind	28
	S:REW — high speed rewind	29
	FF — fast forward	—
	S:FF — high speed fast forward	29
	STILL — play pause and frame advance	30
19	REM (tape remaining time) indicator	39
20	VCR, operate mode	41
21	Audio indicators	—
22	REC — record (flashes during record pause)	42
23	Tape speed SP/EP	41
24	Delayed recording indicator	48
25	CM SEARCH indicator	34
26	Tape-in indicator	9
27	TV channel or Auxiliary (L1/L2)	41
		57

"—" appears during reverse direction viewing

Accessories supplied

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

①



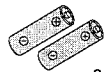
Remote control

②



Cable for connecting this VCR to a TV

③

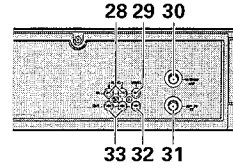


2 pcs. Batteries for remote control handset (R6)



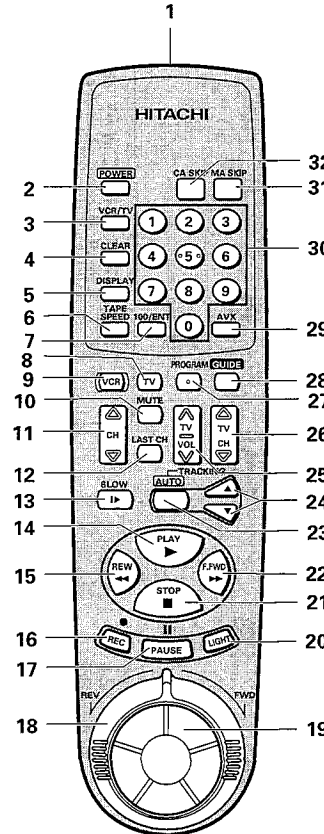
CUSTOMER CONTROLS

VCR Customer Controls



Item No.	Function	Page
28	AUDIO IN (L), (R) jacks	57
29	VIDEO IN jack	59
30	IN FROM ANT. — signal input	10
31	OUT TO TV — signal out to TV	10
32	VIDEO OUT jack	11
33	AUDIO OUT (L), (R) jacks	11

Remote Control Customer Controls



Item No.	Function	Page
1	Transmission window	8
2	POWER button	22
3	VCR/TV mode select button	10
4	CLEAR — clears time counter	40
5	DISPLAY — to recall on-screen display	38
6	TAPE SPEED button	41
7	100/ENT button	41
8	TV button — sets the remote to control TV	56
9	VCR button — sets the remote to control VCR	8
10	MUTE button — turns off the audio until you press MUTE again	56
11	CH (channel up/down) button	41
12	LAST CH button — switches to the TV channel you watched previously during the current viewing session.	56
13	SLOW button	31
14	PLAY button — playback	23
15	REW button — fast rewind or search	28
16	REC — record button	42
17	PAUSE button	30
18	Shuttle ring	37
19	Jog dial	37
20	LIGHT button — illuminates key function buttons for a few seconds	—
21	STOP button — stops play/record function	23
22	F.FWD button — fast forward or search	31
23	AUTO TRACKING button	29
24	TRACKING button	29
25	TV VOL button — increase or decrease the audio volume	56
26	TV CH button	56
27	PROGRAM (programming) button	46
28	GUIDE — to recall OSD menu	22
29	AVX button — select L1 or L2	57
30	Number buttons	22
31	MA SKIP button	35
32	CA SKIP button	33

* If you want to operate the VCR with remote control after operating the TV, first press the VCR button, and then press required buttons on the remote control.



SPECIAL PLAYBACK EFFECTS

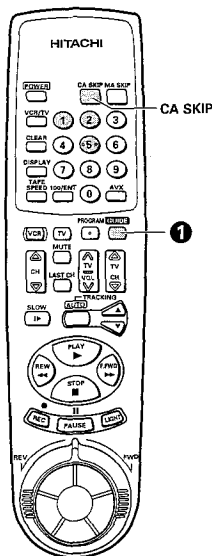
"COMMERCIAL ADVANCE" is a trademark of SRT, Inc.
A Jerry Igguiden invention licensed in association With Arthur D. Little Enterprises, Inc."

COMMERCIAL ADVANCE™ (CA SKIP)

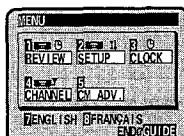
With COMMERCIAL ADVANCE™, the VCR detects commercials on the recorded tape and marks them, they can then be skipped when the tape is played back. This function can operate with a tape on which a program lasting for more than 15 minutes has been recorded. Using this function you can select whether the commercials are to be skipped automatically or manually by operating buttons and you can also select whether the TV screen becomes blue or the commercials are played in the forward search mode when they are being skipped. After a recording is finished, the VCR rewinds the tape to the commercials and marks them. After marking the commercials, the VCR fast forward the tape to the end of the recording.

Note: This function does not erase the commercials from the tape.

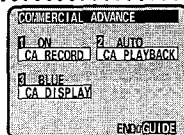
Refer to the following for details.



1 Press the **GUIDE** button. The main on-screen menu will appear on the TV screen.



2 Press the **5** button to select "CM ADV." The "COMMERCIAL ADVANCE" menu will appear on the TV screen.



COMMERCIAL ADVANCE™ Marking:

Confirm that **CA RECORD "ON"** is specified for item 1. If not, press the **1** button.



During delayed recording:

When delayed recording of a program with commercials is finished and the VCR turns off, the tape will rewind automatically, and the commercials will be marked.

During recording without using timer:

If the recording includes commercials, the tape is rewound automatically and the commercials are marked when the **STOP** button is pressed.

Note:

The screen on the right may appear:

- If you turn the VCR on immediately after delayed recording is finished and the VCR is turned off (when commercials are being marked), or
 - If you press any operation button after recording is stopped (while commercials are being marked).
- You can cancel marking of commercials by pressing the **STOP** button.



To Turn Off Marking:

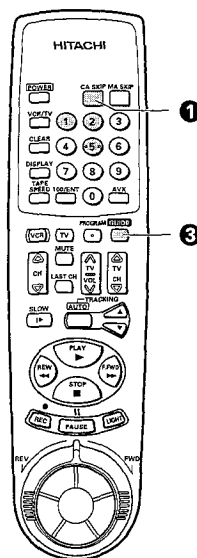
Press the **1** button to select **CA RECORD "OFF"**. The VCR will not mark commercials.

To play back tapes recorded using Commercial Advance:

Press the **2** button to select "AUTO" or "MANUAL"

Select "AUTO" to play the marked commercials in the forward search mode automatically.

Select "MANUAL" if you don't want to play the commercials in the forward search mode. If "MANUAL" is specified, the marked commercials are played in the forward search mode only when the **CA SKIP** button on the remote control is pressed.



To select a background for playback:

Press the **3** button to select "VIDEO" or "BLUE"

Select "BLUE" if you want the screen to become blue when the commercials are being skipped. Select "VIDEO" if you want to play the commercials in the forward search mode when they are being skipped.



3 Press the **GUIDE** button to end the setting.



"This product incorporates COMMERCIAL ADVANCE™ circuitry that eliminates most commercial messages during replay of a recorded television broadcast. Under controlled test conditions with major network daytime and prime time broadcasts, approximately 96% of intraprogram commercials are eliminated.* Actual results may vary and will depend upon the quality of television reception and the nature of programming recorded."

* For a copy of the complete test report please write to:

Arthur D. Little Enterprises
Acorn Park
Cambridge, MA 02140-2390 USA

Note: If a power failure has occurred during recording, **CA RECORD** will not be performed precisely.

Precautions

Position of tape after commercials were marked:

After marking commercials, the VCR fast forwards the tape to the end of recording to be ready for the next recording.

If two or more programs were recorded continuously:

If there is no time for marking the tape the recording of which has finished, the commercials will be marked when all recordings are finished.

If the recording speed is changed:

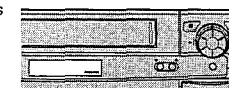
COMMERCIAL ADVANCE™ will operate with recordings at any speed.

If a tape marked using COMMERCIAL ADVANCE™ is played back by another VCR which does not have COMMERCIAL ADVANCE™:

The tape can be played back, of course, but the commercials cannot be skipped automatically.

Markings after delayed recording is finished

After one delayed recording is finished, if it is 99 minutes or less until the next delayed recording starts, the commercials will be marked after the other delayed recording has finished. "CM SEARCH" lights in the VCR display until the next delayed recording starts. Do not perform eject, play, fast forward or rewind while "CM SEARCH" is displayed. If you do, "CM SEARCH" will turn off and marking will be cancelled (marking will not be done).



"MOVIE ADVANCE™" is trademark of SRT, Inc.
 A Jerry Iggulden invention licensed in association with Arthur
 D. Little Enterprises, Inc."

■ **MOVIE→ADVANCE™ (MA SKIP)**

MOVIE ADVANCE™ locates the start of movie on rented tape, etc., by automatically skipping commercials, logo marks, previews, information on copyrights, etc. You can also locate the start of previews.

Notes:

- MOVIE ADVANCE™ can be operated only with cassettes recorded in the SP mode and the safety tab removed.
- MOVIE ADVANCE™ will not operate correctly with tapes which have been played part way.
- MOVIE ADVANCE™ will not operate with damaged tapes.
- The VCR may not be able to locate the starts of specific movies or previews.

Locating the start of movie

1 Turn on the TV and select the video channel (3 or 4).
 Or, if you are hooked up with an audio/video cable, set the TV to AUX or VIDEO.

2 Insert a recorded tape.

- The power comes on automatically and the tape indicator lights on the display.
- Playback starts automatically.
- If you have inserted a tape which was played part way, rewind the tapes to its start, and then press the PLAY button.

3 Press the MA SKIP button.
 The "MOVIE ADVANCE" menu will appear on the TV screen.

4 Press the 1 button to select "GO TO START OF MOVIE"

- The tape is fast forwarded. It will take several minutes to find the start of any designated movie.

- When the start of the movie has been located, the screen on the right will appear.

5 Press the PLAY button to start playing.



SPECIAL PLAYBACK EFFECTS

■ **MOVIE→ADVANCE™ (MA SKIP)**

Locating the start of preview

1 Turn on the TV and select the video channel (3 or 4).
 Or, if you are hooked up with an audio/video cable, set the TV to AUX or VIDEO.

2 Insert a recorded tape.

- The power comes on automatically and the tape indicator lights on the display.
- Playback starts automatically.

3 Press the MA SKIP button.
 The "MOVIE ADVANCE" menu will appear on the TV screen.

4 Press the 2 button to select "GO TO FIRST PREVIEW".

- The tape is fast forwarded, and a preview will play automatically.
- If you press the MA SKIP button while viewing the preview, the tape is fast forwarded, and the next preview will play automatically.

CHAPTER 2

DISASSEMBLY

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.

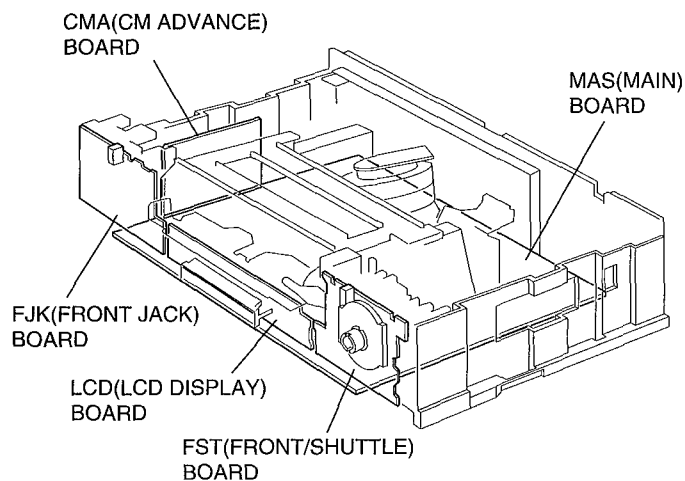


Fig. 1-1

2. Disassembly Method

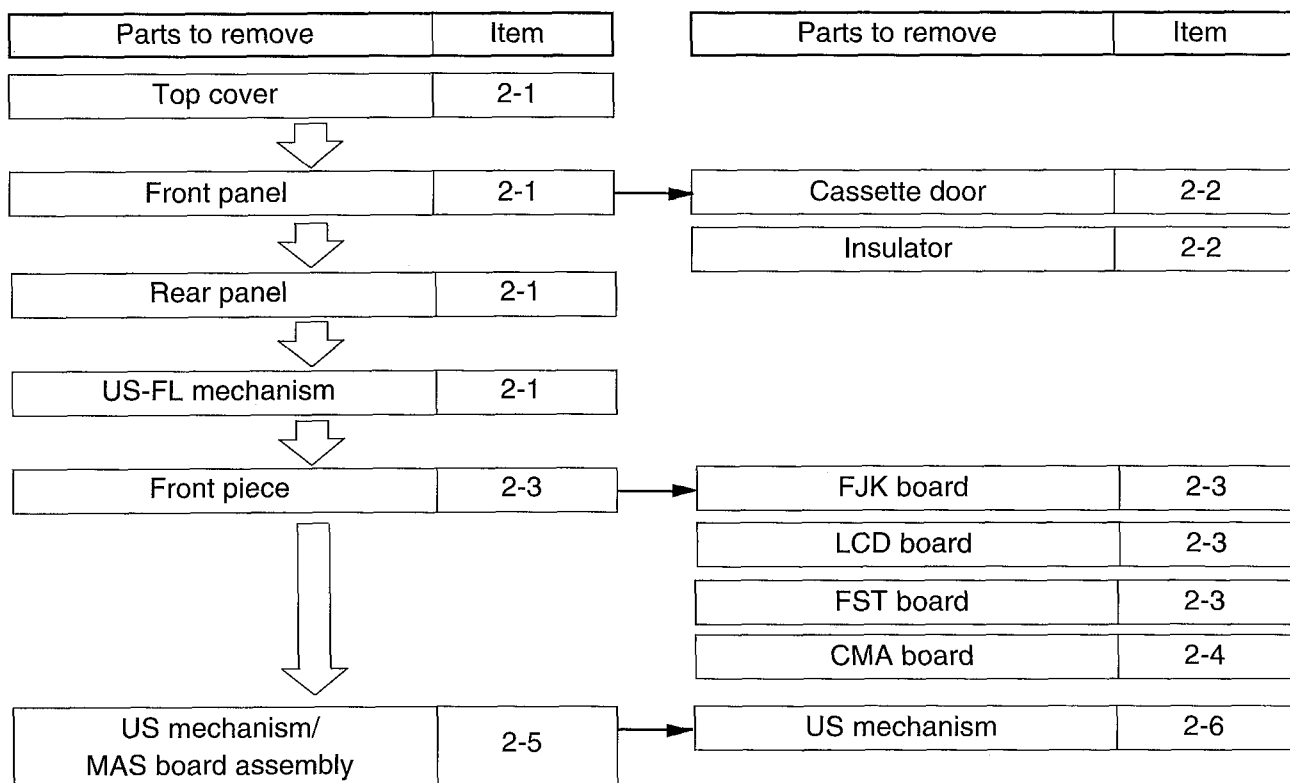
When replacing defective parts, first refer to the "Parts hierarchy chart" shown below. This chart shows the procedure for parts removal when replacing defective parts.

[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.)

TOP COVER (1) REMOVE THREE SCREWS

(2) REMOVE TWO SCREWS

(3) REMOVE THE SCREW

(4) REMOVE FOUR SCREWS

GROUND PLATE

US-FL MECHANISM

FRONT PANEL (1)

REAR PANEL (5) RELEASE FIVE STOPPERS

RELEASE EIGHT STOPPERS

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.

FRONT PANEL

RELEASE TWO STOPPERS

SPRING

[CAUTION WHEN REINSTALLING THE FRONT PANEL]

CASSETTE DOOR

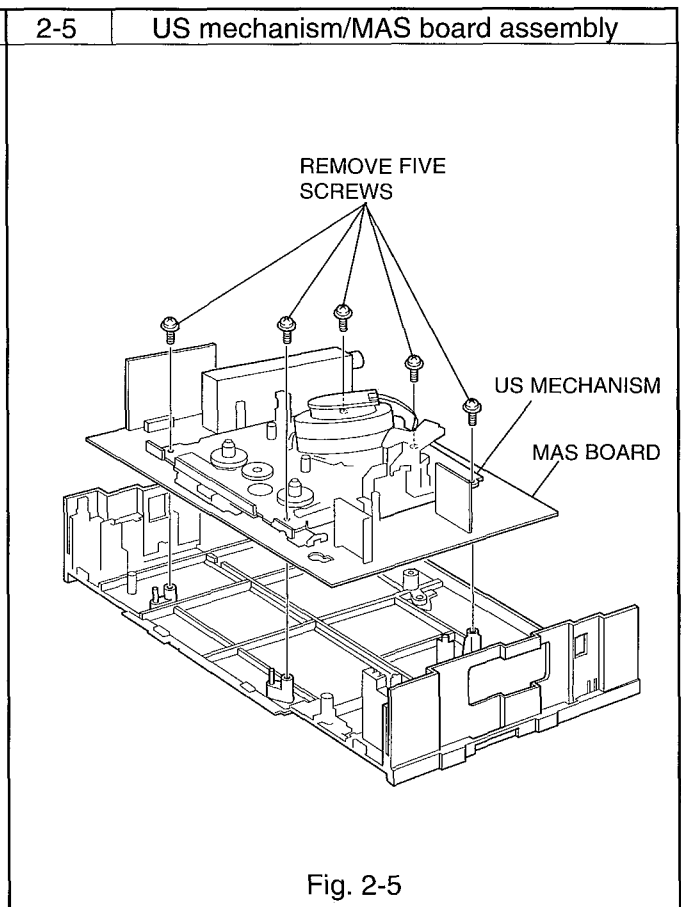
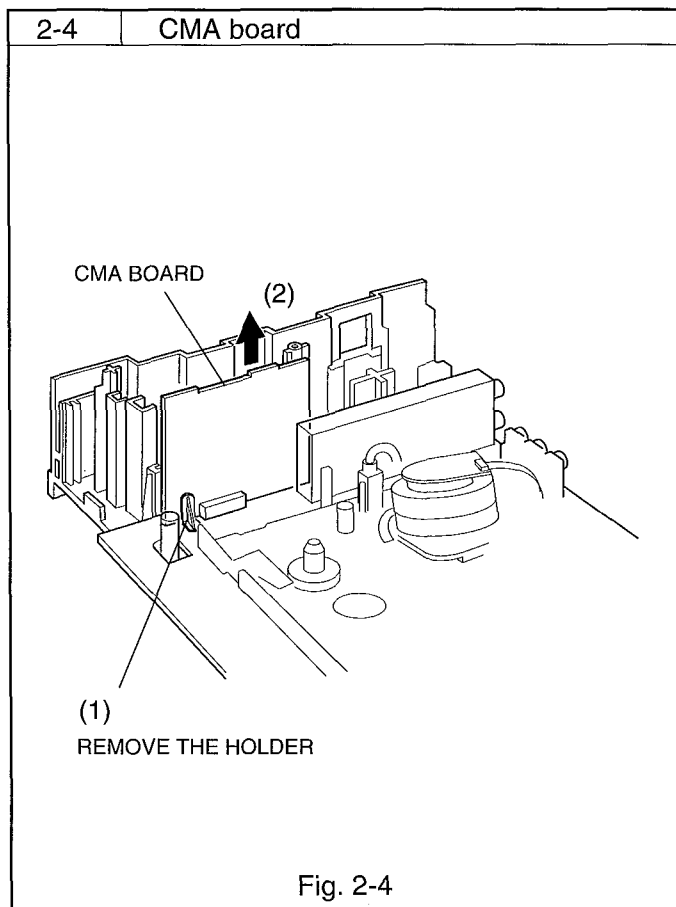
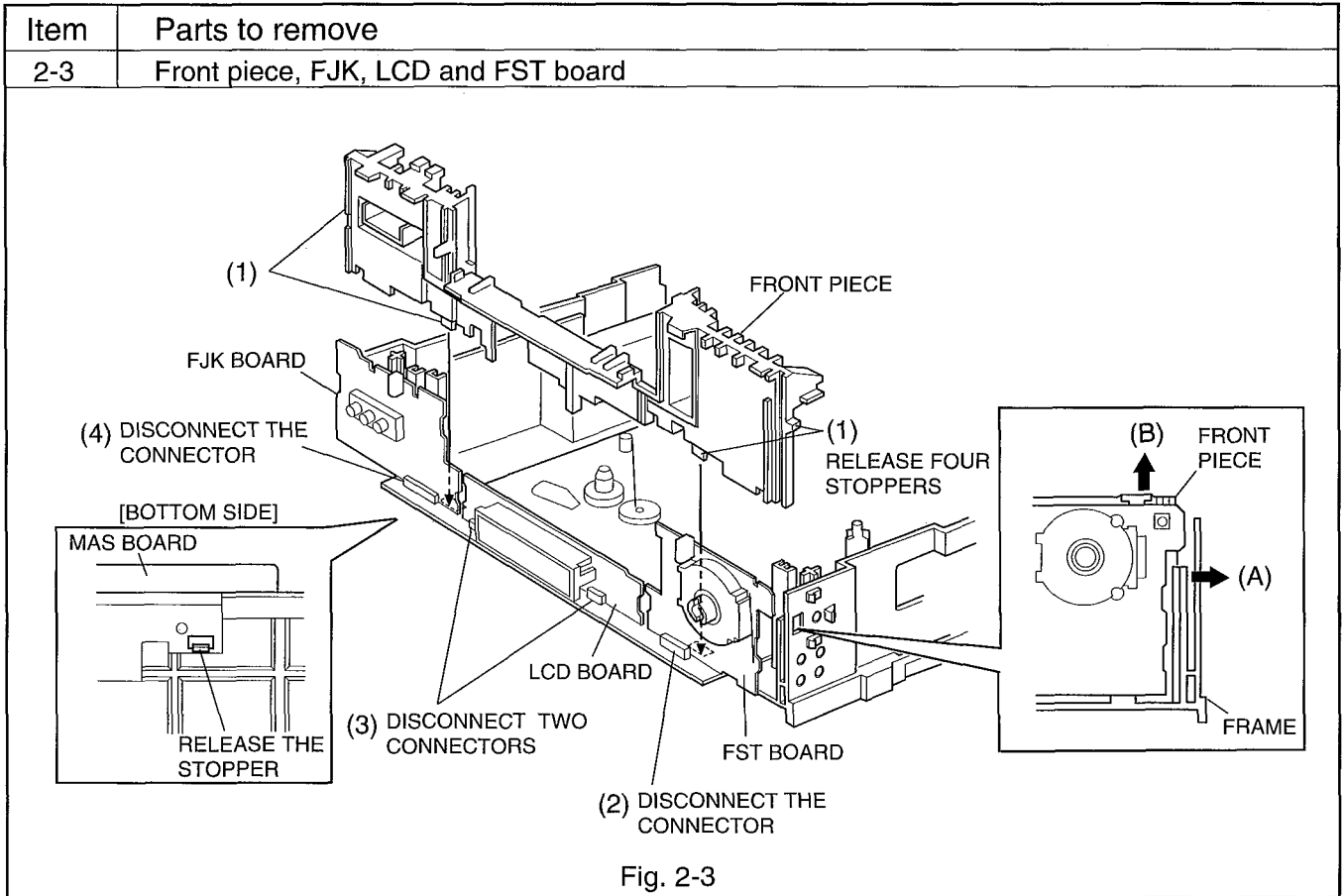
BOSS

BOSS SUPPORT

CASSETTE DOOR

RELEASE TWO STOPPERS

Fig. 2-2



Item	Parts to remove
2-6	Separation of MAS board from US mechanism

[REAR OF THE MECHANISM]

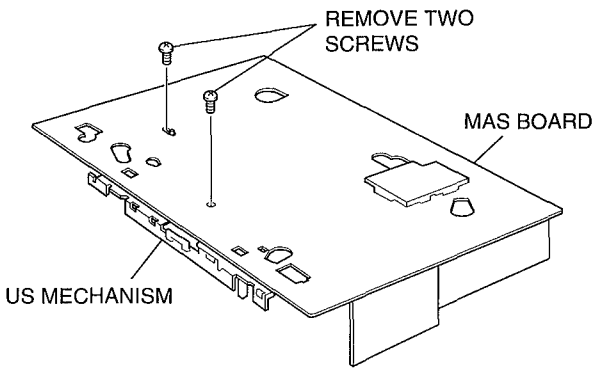
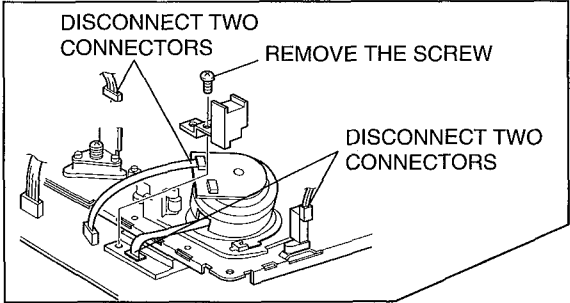


Fig. 2-6

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.	

2-7 Procedure to remove only the US mechanism

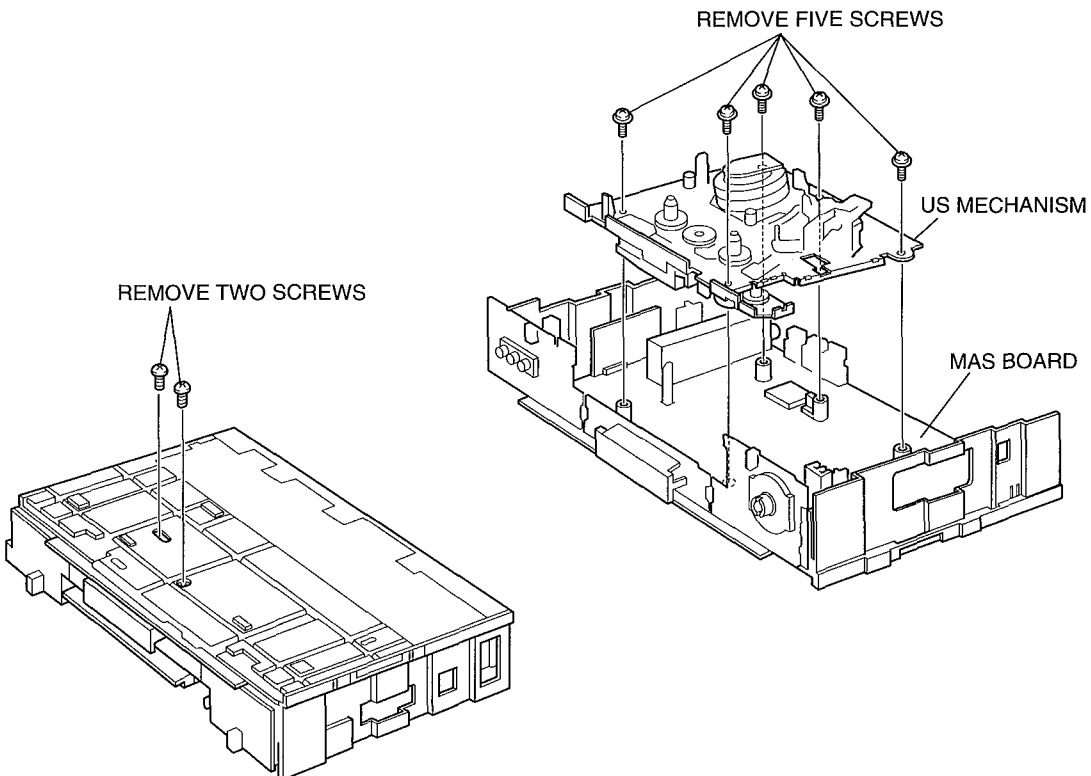

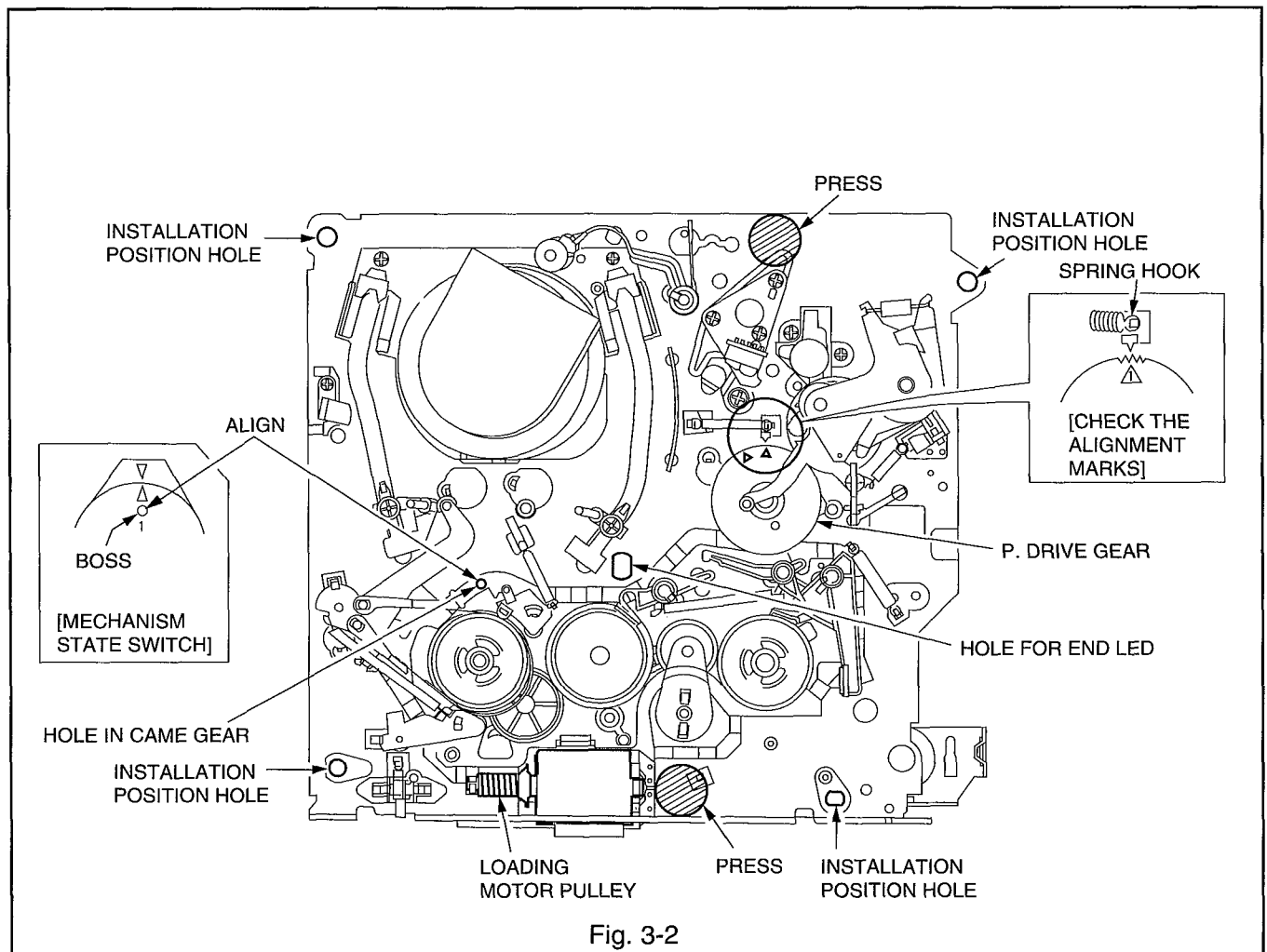
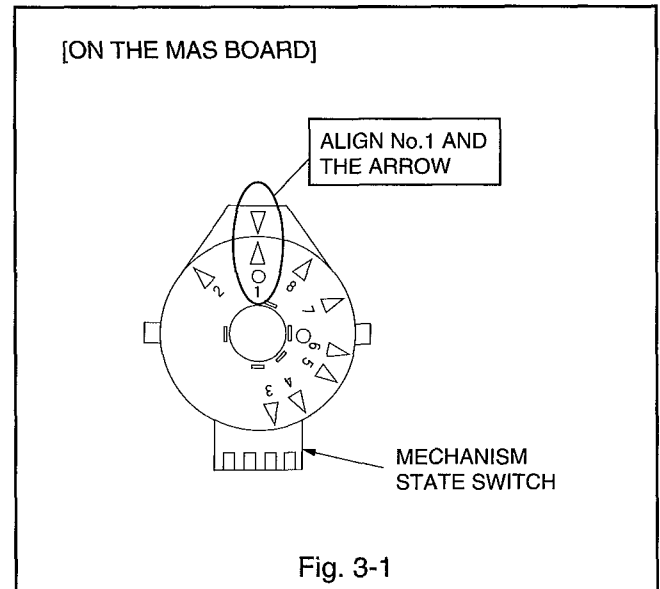


Fig. 2-7

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.



CHAPTER 3

ELECTRIC CIRCUIT ADJUSTMENT

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.

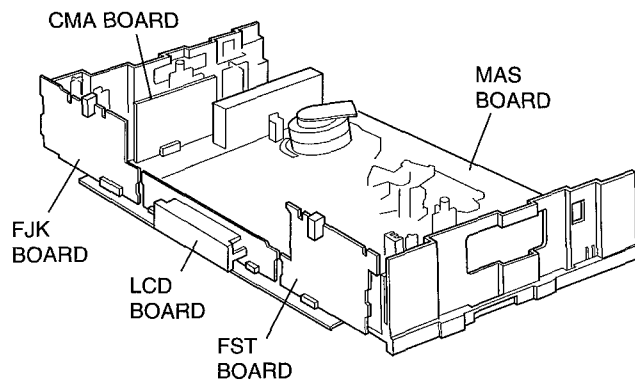


Fig. 1

2. Servicing positions when repairing and checking circuits

2-1. Procedure to set the FJK, LCD, FST and CMA 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.

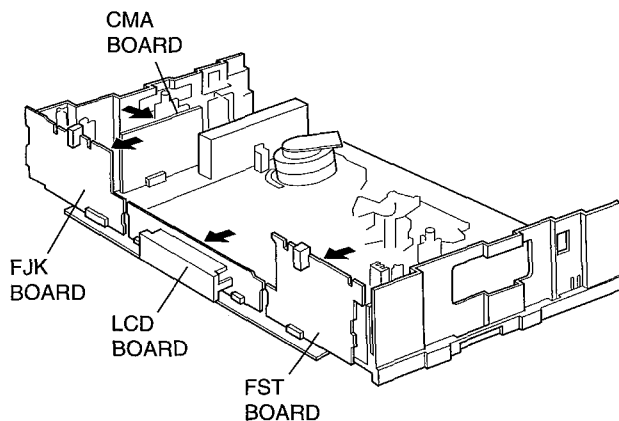


Fig. 2

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 LCJ and FST 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.

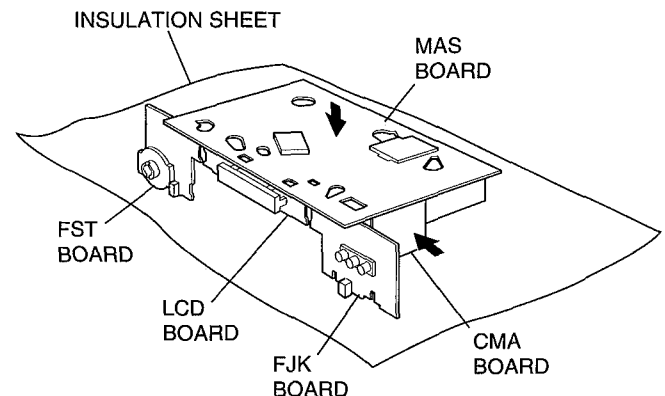


Fig. 3

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.

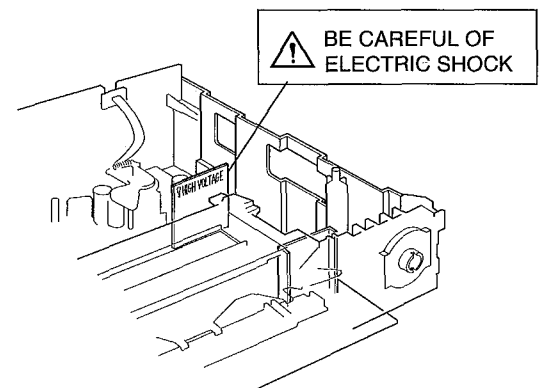


Fig. 4

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)
 - CA,MA test tape : Part No. 7069192
- 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 S1719 on the FJK 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.

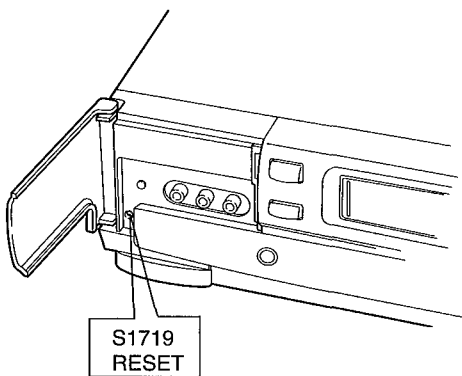


Fig. 5

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 "TRACKING ▲" and "TRACKING ▼" 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).

Check that "TEST" appears in the LCD display.

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

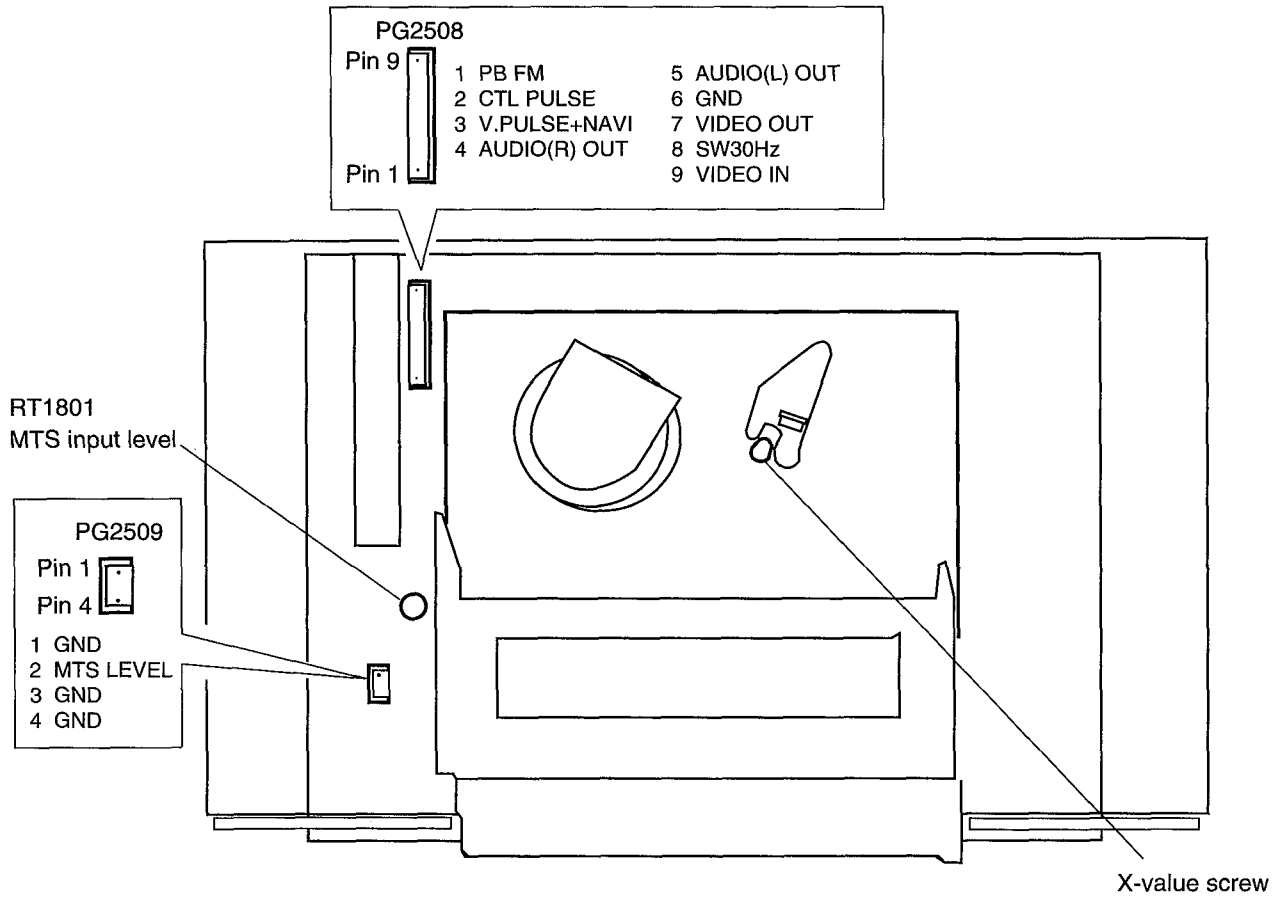


Fig. 6 MAS (Main) Circuit Board [Components Side]

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.

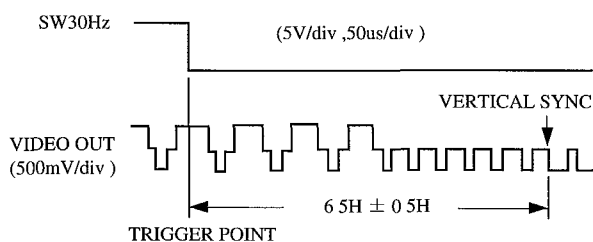
Adjustment Point

F.FWD button(remote control)
REW button(remote control)

Adjustment Procedure

- 1) Play the alignment tape.
- 2) Press the "TRACKING ▲" and "TRACKING ▼" buttons of the remote control provided simultaneously and hold them, then press the "CHANNEL ▽"(S2709) button of the VCR to set the VCR to the test mode. (Check that "TEST" appears 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.

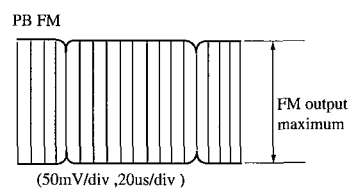
Adjustment Point

Groove for the adjustment X-value

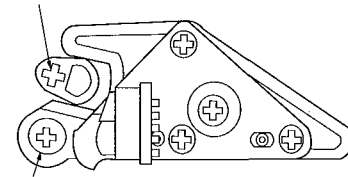
Adjustment Procedure

- 1) Play the alignment tape.
- 2) Press the "TRACKING ▲" and "TRACKING ▼" buttons of the remote control provided simultaneously and hold them, then press the "CHANNEL ▽"(S2709) button of the VCR to set the VCR to the test mode. (Check that "TEST" appears 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.

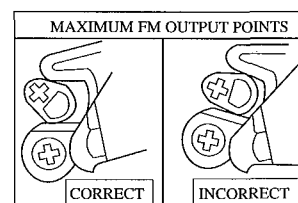
Waveforms



GROOVE FOR ADJUSTMENT THE X-VALUE



A/C HEAD BASE
RETAINING SCREW



Servo Circuit Adjustments

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 (S2708)

CHANNEL ∇ (S2709)

Adjustment Procedure

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

- 1) Press the "PAUSE" button to set the VCR to the still play mode.
- 2) Use the CHANNEL buttons of the VCR to suppress vertical jitter of the picture.

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

- 1) Press the "PAUSE" button to set the VCR to the still play mode.
- 2) Use the CHANNEL buttons of the VCR to suppress vertical jitter in the picture.

6-4. Forward slow tracking preset adjustment

Purpose:

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

Fault due to incomplete adjustment:

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

Test Equipment/Jigs and Connection Points

Monitor TV : Video output jack

Color bar generator: Video input jack

Blank tape (T-120)

State of VCR

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

Adjustment Point

CHANNEL \triangle (S2708)

CHANNEL ∇ (S2709)

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 "TRACKING \blacktriangle " and "TRACKING \blacktriangledown " buttons of the remote control (provided) simultaneously during playback and hold them, then press the "PLAY" button (S2701) 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.

6-4. Reverse slow tracking preset adjustment

Purpose:

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

Fault due to incomplete adjustment:

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

Test Equipment/Jigs and Connection Points

Monitor TV : Video output jack

Color bar generator: Video input jack

Blank tape (T-120)

State of VCR

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

Adjustment Point

CHANNEL \triangle (S2708)

CHANNEL ∇ (S2709)

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 "TRACKING \blacktriangle " and "TRACKING \blacktriangledown " buttons of the remote control (provided) simultaneously during still play and hold them, then press the "PLAY" button (S2701) to set the VCR to the reverse test slow mode.
- 3) Use the CHANNEL buttons so the slow feed noise appears across the bottom of the monitor screen and then it is driven out from the bottom of the screen.
- 4) Check that no noise appears on the monitor screen.
- 5) Press the "PLAY" button to return the VCR to the playback mode (the preset data is written to the EEPROM).
- 6) Perform the same procedure to perform reverse slow tracking preset adjustment in the SP mode.
Do not press the reset switch after adjustment when the power is not turned on as the preset value could drift. If the preset value drifts, turn the power on and press the reset switch again for recovery.

7. Audio/MTS Circuit Adjustments

7-1. Hi-Fi audio playback level check

Purpose:

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

Fault due to incomplete adjustment:

The appropriate volume cannot be obtained during playback.

Test Equipment/Jigs and Connection Points

Voltmeter

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

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

Hi-Fi alignment tape (24HMAF-2)

State of VCR

Play Hi-Fi alignment tape.

Adjustment procedure

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

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

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

7-2. MTS input level adjustment

Purpose:

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

Fault due to incomplete adjustment:

- 1) The S/N deteriorates or distortion becomes conspicuous.
- 2) Stereo separation deteriorates.

Test Equipment/Jigs and Connection Points

MTS sound signal generator: IN FORM ANT

Voltmeter: PG2509-2

State of VCR

E-E mode

Adjustment Point

RT1801

Adjustment procedure

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

Notes:

MTS sound signal generator settings:

- 1) Audio frequency: 300Hz
- 2) Modulation signal: L+R

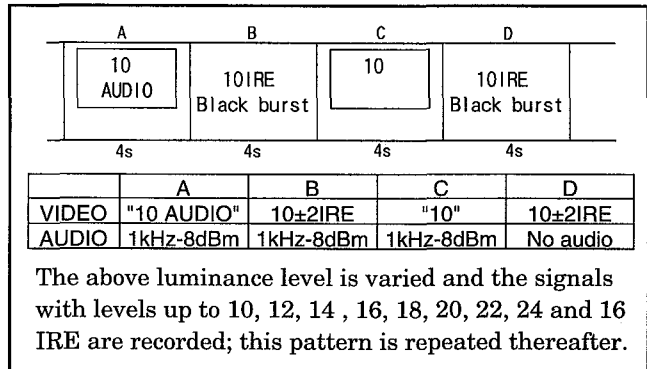
Monitor TV settings:

- 1) Press the "GUIDE" button of the remote control to display the menu on the monitor TV screen.
- 2) Press "2" of the remote control.
- 3) Press "6" of the remote control to select the SAP option and switch it from OFF to ON.

8. CMA Circuit Adjustments

8-1. Setup for adjustment

■ Specifications of CA/MA alignment tape



■ Connections

- (1) Prepare a VCR (VT-FX61XA series) for playback of the alignment tape.
- (2) Connect the RF OUT jack of the playback VCR to the RF IN jack of the VCR to be adjusted.
- (3) Connect the output of the VCR to be adjusted to the monitor TV.
- (4) Set the VCR to be adjusted to channel 03 and receive the RF signal from the playback VCR (without loading a cassette).

8-2. CA adjustment

Adjustment procedure

- 1) Holding the TRACKING ▲ and ▼ buttons of the remote control simultaneously, press the STOP button on the VCR to be adjusted in order to set to TEST MODE 1.
- 2) Insert a CA/MA alignment tape into the playback VCR and perform automatic playback.
- 3) Observing the monitor TV screen, press the PLAY button on the VCR to be adjusted during playback of black burst signal, after "20" is displayed on the screen.
- 4) The adjustment value is stored in the EEPROM and "COMPLETE" is displayed on the OSD.

Operation check

- 1) Play back the alignment tape and make sure that "VIDEO EVENT DETECT" and "AUDIO EVENT DETECT" appear in the burst signal section after "10", "12", "14", "16" and "18" are displayed on the screen.
- 2) Ensure that the messages shown in item 1) do not appear in the black burst signal section after "22", "24" and "26" appear.
- 4) If any defect is found, perform readjustment.

CMA Circuit Adjustments

8-3. MA adjustment

Adjustment procedure

- 1) Insert a CA/MA alignment tape into the playback VCR and play it back.
- 2) Holding the TRACKING ▲ and ▼ buttons of the remote control simultaneously, press the STOP button on the VCR to be adjusted in order to set to TEST MODE 1.
- 3) Observing the monitor TV screen, press the REC button on the VCR to be adjusted during playback of black burst signal, after "14" is displayed on the screen.
- 4) The adjustment value is stored in the EEPROM and "COMPLETE" is displayed on the OSD.

Operation check

- 1) Supply power and play back the alignment tape.
- 2) Press the MA SKIP button of the remote control to select "2".
- 3) Observing the monitor TV screen, make sure that the PREVIEW operation starts when "12" or "14" is displayed.
- 4) If any defect is found, perform readjustment.

9. List of Data in EEPROM and Initial Settings

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

Information	Data memory ROM	List of initial data	
	IC903 VCR EEPROM	Shipment mode initial data	Clearing of trouble display
Tuned channel data	Yes	Yes	No
Auto clock channel data	Yes	Yes	No
VCR mode select data	Yes	Yes	No
Cable box type	Yes	Yes	No
Trouble display data	Yes	Yes	Yes
Slow tracking data	Yes	No (set by adjust)	No
Artificial V sync data	Yes	No (set by adjust)	No
Switching point data	Yes	No (set by adjust)	No
Movie advance data	Yes	No (set by adjust)	No
CM advance data	Yes (UX627A only)	No (set by adjust)	No

10. List of Hidden Commands

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

10-1. Mode setting commands during adjustment

Item	Mode in which command is accepted	Operation	Remarks
Tracking center	Play	Press the "TRACKING ▲" and "▼" buttons on the VCR or the "TRACKING ▲" and "TRACKING ▼" buttons of the remote control simultaneously.	
X-value adjustment test mode	Play	Press the "TRACKING ▲" and "TRACKING ▼" buttons of the remote control simultaneously and press the "CHANNEL ▼" button on the VCR.	"tEst" appears
Forward test slow mode	Play	Press the "TRACKING ▲" and "TRACKING ▼" buttons of the remote control simultaneously and press the "PLAY" button on the VCR.	"SLOW" appears
Reverse test slow mode	Still play	Press the "TRACKING ▲" and "TRACKING ▼" buttons of the remote control simultaneously and press the "PLAY" button on the VCR.	"-SLOW" appears
Test mode 1	Stop	Press the "TRACKING ▲" and "TRACKING ▼" buttons of the remote control simultaneously and press the "STOP" button on the VCR.	

10-2. EEPROM initialization commands

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

11. Initial Settings of IC903 (EEPROM)

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

<p>[A] VCR SETUP MENU (in menu)</p> <p>1 AUTO BLUE [ON]</p> <p>4 AUDIO SETUP [Hi-Fi]</p> <p>5 AUDIO SETUP [STEREO]</p> <p>6 AUDIO SETUP [SAP OFF]</p> <p>[B] CLOCK SET (in menu)</p> <p>1 SET MODE [AUTO]</p> <p>3 TIME ZONE [AUTO]</p> <p>4 D.S.T SET [AUTO]</p> <p>[C] CHANNEL PRESET (in menu)</p> <p>1 CH SOURCE [CATV1]</p>	<p>[D] COMMERCIAL ADVANCE (in menu)</p> <p>1 CM RECORD [ON]</p> <p>2 CA PLAYBACK [AUTO]</p> <p>3 CA DISPLAY [BLUE]</p> <p>[E] Other modes</p> <p>Recording speed : EP</p> <p>[F] Front panel switch</p> <p>ANT. OUT : RFCH 03</p>
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12. Caution When Replacing IC903 (VCR EEPROM)

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

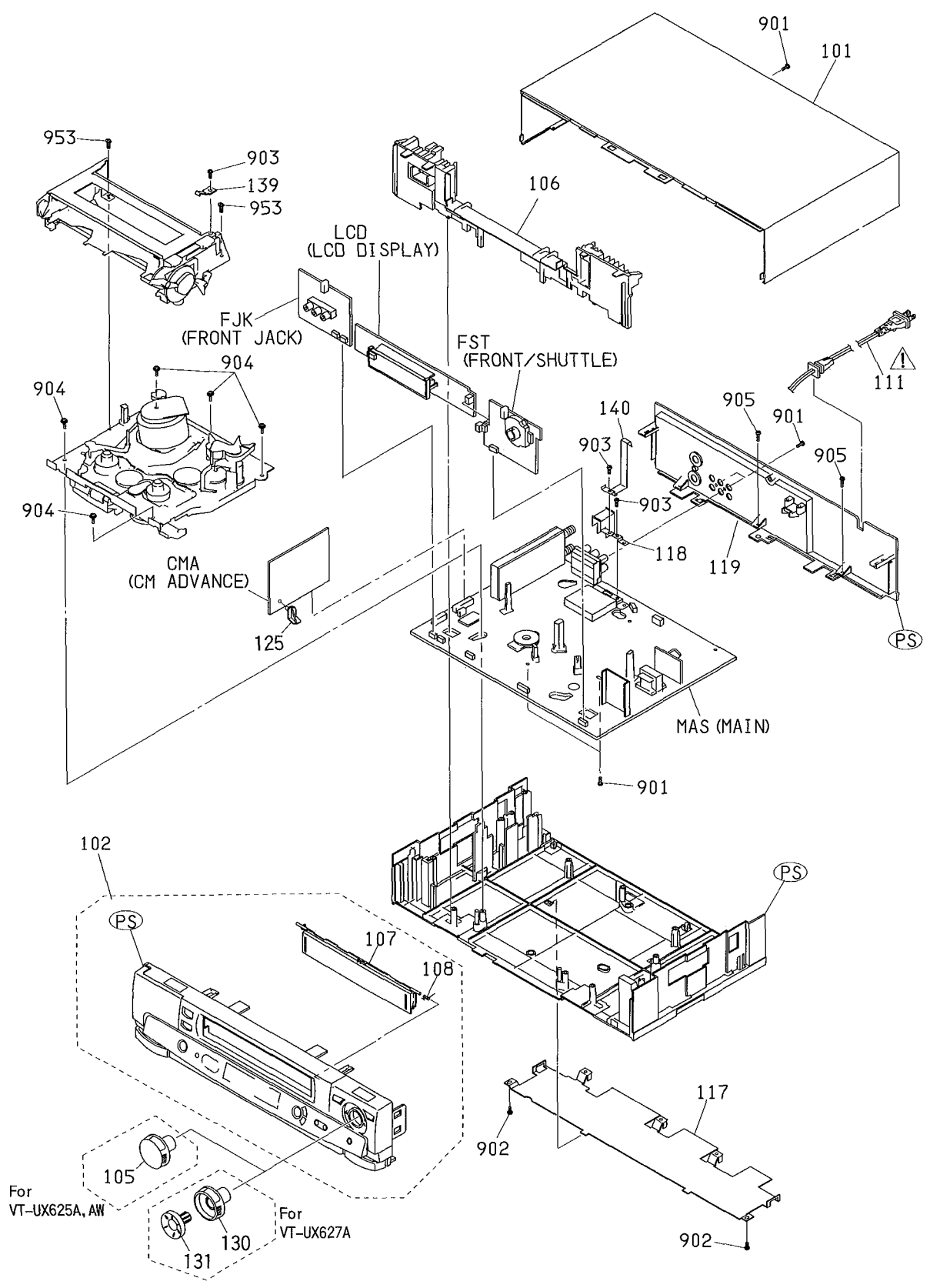
	Adjustment	Page
1	Vertical jitter adjustment	P3-5
2	Forward slow tracking adjustment	P3-5
3	Reverse slow tracking adjustment	P3-5

CHAPTER 4

EXPLODED VIEW

1. CABINET SECTION

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

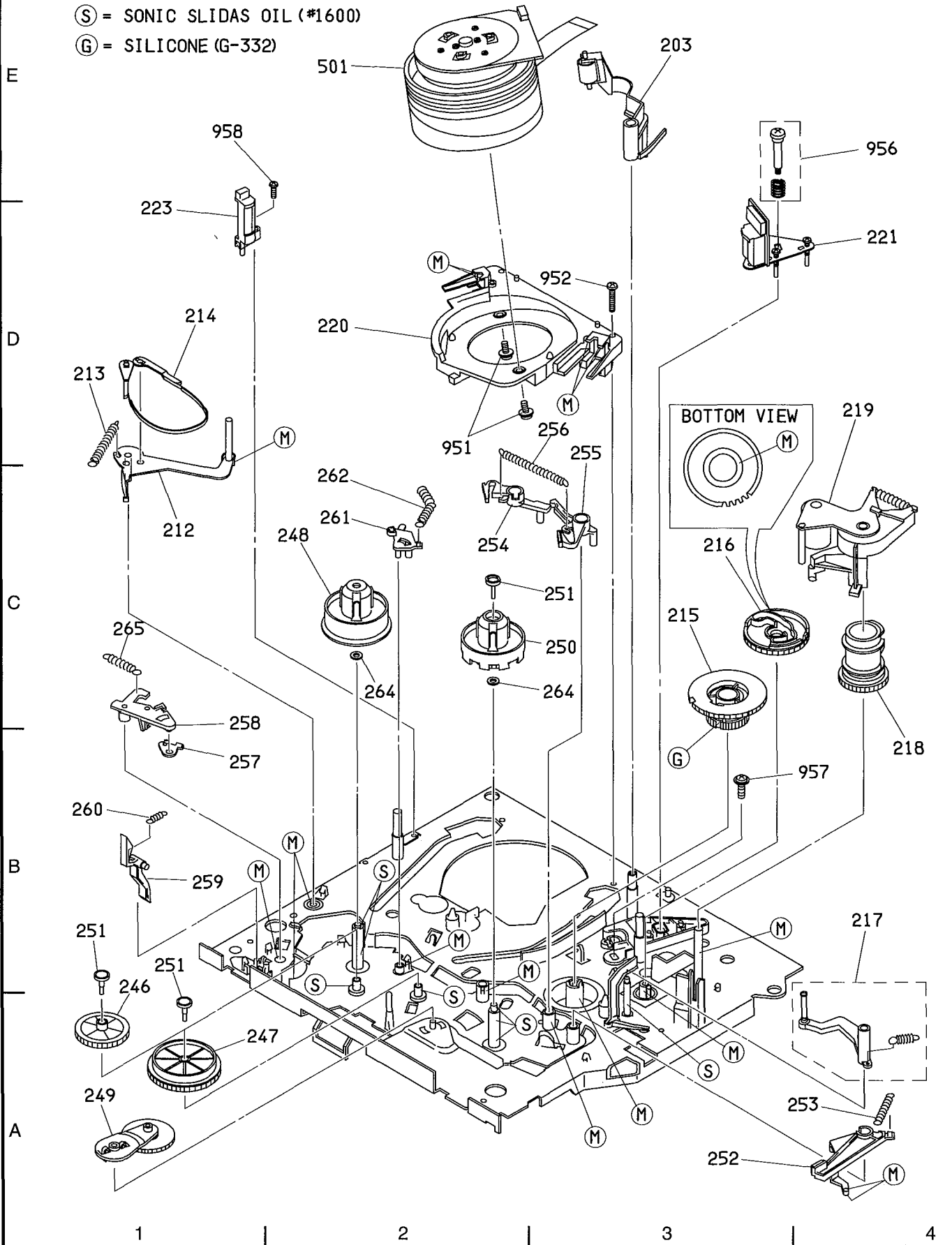


For VT-UX625A, AW

For VT-UX627A

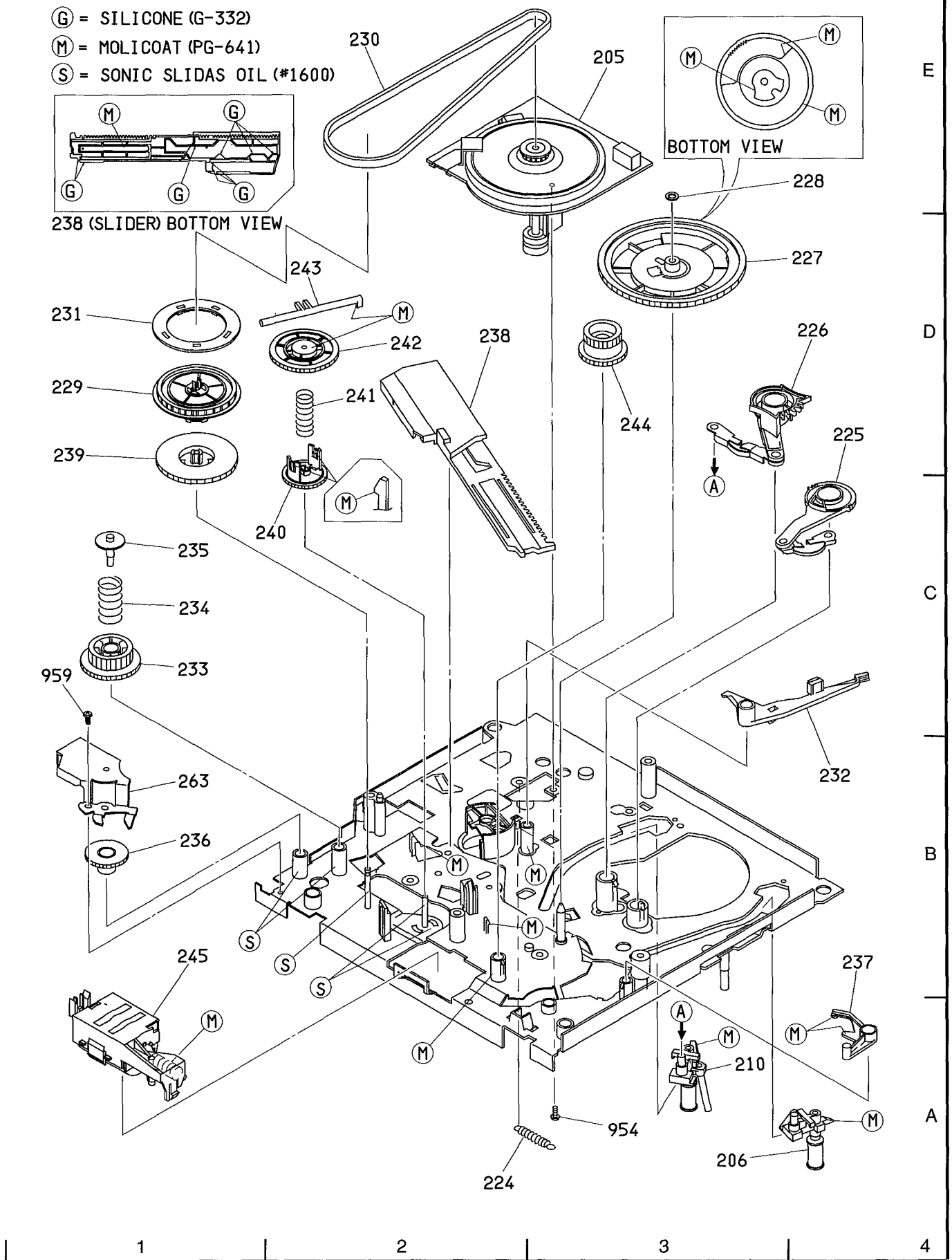
2. US-MECHANISM (TOP VIEW)SECTION

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

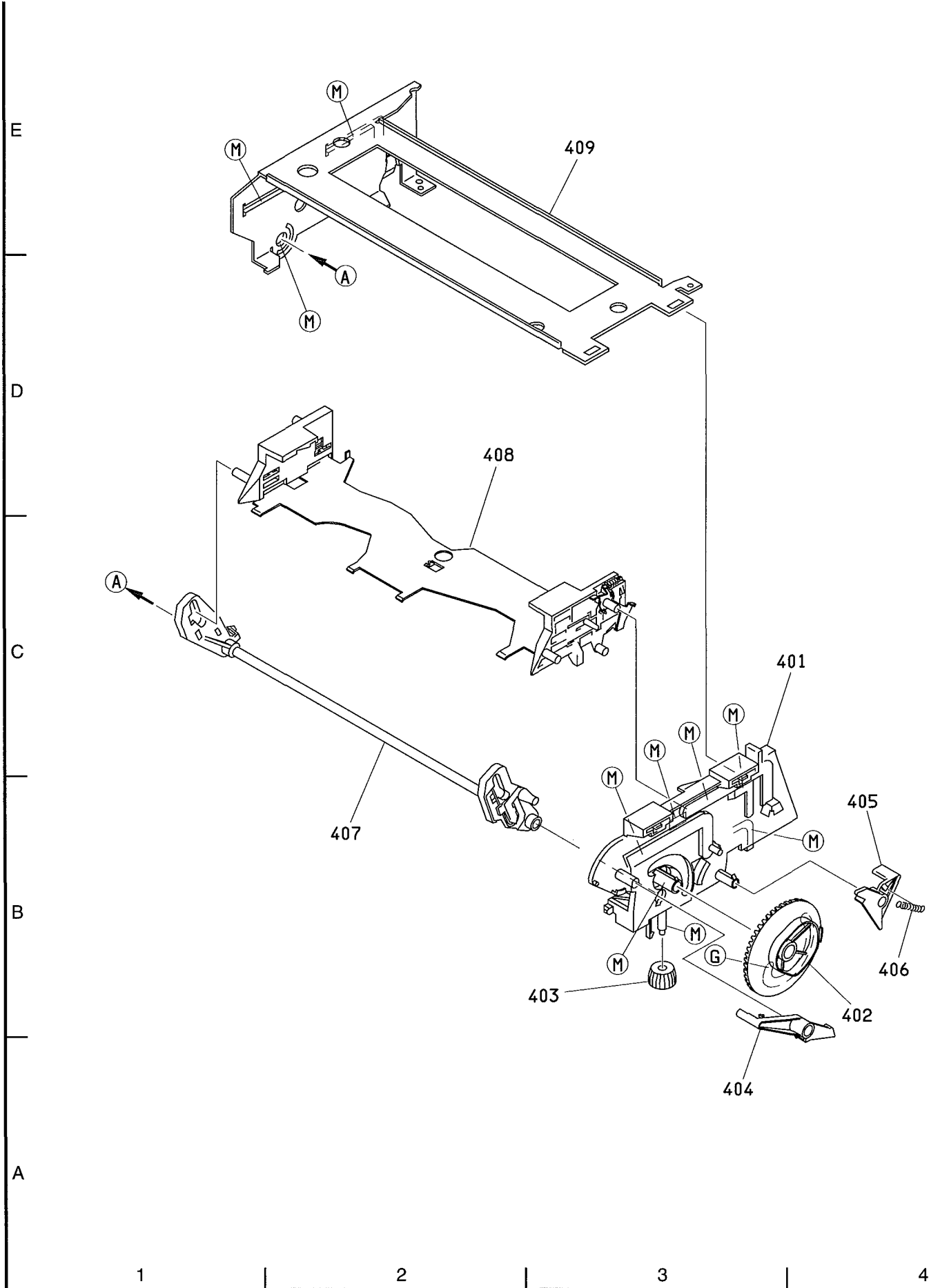


3. US-MECHANISM (BOTTOM VIEW)SECTION

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



4. US-FL MECHANISM SECTION



CHAPTER 5

REPLACEMENT PARTS LIST

1. MECHANICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
MECHANISM SECTION			255	KX11883	BRAKE, R
101	QA11511	COVER, TOP (HEPM)	256	KL10792	SPRING, BRAKE
102	PH15481	PANEL, FRONT (HEPM) [625A, AW]	257	KF10542	GEAR, JOG
102	PH15482	PANEL, FRONT (HEPM) [627A]	258	KX13132	ARM, JOG
105	PC12551	KNOB, SHUTTLE (HEPM) [625A, AW]	259	KX11841	ARM, REC
106	NT10733	PIECE, FRONT (HEPM)	260	6542482	SPRING
107	PH14271	DOOR, CASSETTE (HEPM)	261	KX11811	BRAKE, SUB
108	KL11522	SPRING, DOOR (HEPM)	262	KL10903	SPRING, SUB
△111	EV10271	CORD, POWER (HEPM)	263	KX12461	BRACKET, BASE
117	QA11521	COVER, BOTTOM (HEPM)	264	MN11571	WASHER
118	MD11281	COVER, CBA	265	KL11062	SPRING, JOG
119	PH14291	PANEL, REAR (HEPM)	401	KX11772	BRACKET (R)
125	6810651	HOLDER, CBA	402	KF10682	GEAR 1
130	PC12561	RING, SHUTTLE [627A]	403	KF10691	GEAR 2
131	PC12571	DIAL, JOG [627A]	404	KX11751	ARM, DOOR
139	4826834	SPRING, EARTH	405	KX11761	ARM, SWITCH
140	MD11602	PLATE, EARTH	406	6323723	SPRING
203	KX11661	CLEANING, HEAD	407	KX11931	ARM, DRIVE
205	GP10252	MOTOR, CAPSTAN	408	KX11921	HOLDER, CASSETTE
206	KX12294	BASE, GUIDE ROLLER (1)	409	KX11741	BRACKET (L)
210	KX12302	BASE, GUIDE ROLLER (0)	501	HX10295	CYLINDER ASSY (CY-U6N1)
212	KX11531	ARM, TENSION	901	8699410	SCREW (3X10)
213	KL10662	SPRING	902	MK10271	SCREW (3X12DT)
214	KX11631	BAND, TENSION	903	8671306	SCREW (2.6X6)
215	KF10641	GEAR, DRIVE	904	7781132	BT SCREW
216	KF10701	GEAR, IDLER	905	7784323	SCREW (3X8)
217	KX12661	ARM, OUT	951	8652408	SCREW (PSW3X8)
218	KX11581	GEAR, SPIRAL	952	0671310	DT SCREW-2.6MMDX10MM
219	KX11553	ARM, PINCH ROLLER	953	0671306	DT SCREW 2.6MMDX6MM
220	KX11451	BASE, CYLINDER	954	8691306	BT SCREW 2.6MM
221	KX11941	AC HEAD	956	KX12443	SCREW
223	5423082	FE HEAD	957	MJ10341	SCREW (M2.6)
224	KL10711	SPRING	958	0671308	DT SCREW-2.6MMDX8MM
225	KX11591	GEAR, LOADING (L)	959	0671305	DT SCREW-2.6MMDX5MM
226	KX11611	GEAR, LOADING (R)	ACCESSORIES		
227	KF10673	GEAR, CAM	802	EW10251	CORD, RF
228	4344643	WASHER	803	HL10883	REMOTE HAND SET (VT-RM625A) (HEPM) [625A, AW]
229	KX11443	PULLEY	803	HL10884	REMOTE HAND SET (VT-RM627A) (HEPM) [627A]
230	KX11522	BELT	804	EY10271	PLUG
231	KF10631	FLANGE			
232	KX12031	BRAKE			
233	KF10571	GEAR, CHANGE			
234	KL10771	SPRING			
235	KX12001	STOPPER, SPRING			
236	KF10561	GEAR, IDLER			
237	KX11831	ARM, OPERATION			
238	KX11362	SLIDER			
239	KF10551	GEAR, TRANS			
240	KF10501	GEAR, DRIVE			
241	KL10773	SPRING			
242	KF10513	GEAR, CHANGE			
243	KX11411	ARM, CHANGE			
244	KX11371	GEAR			
245	KX11892	MOTOR, LOADING			
246	KF10521	GEAR, IDLER 1			
247	KF10532	GEAR, IDLER 2			
248	KH10152	REEL, TABLE (S)			
249	KX11423	ARM			
250	KH10161	REEL, TABLE (T)			
251	KX11991	STOPPER			
252	KX11861	BRAKE			
253	KL10782	SPRING, BRAKE			
254	KX11875	BRAKE, L			

2. ELECTRICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
CAPACITORS			C0420	AN10332R	CAPACITOR 0.027UF+-5% 100V
C0201	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0421	0890026	CERAMIC DISC 220PF+-10% 50V
C0204	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0422	0800335	ELECTROLYTIC 220UF 16V
C0205	0893031	CERAMIC CHIP 1000PF+-10% 50V	C0424	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0208	0893082	CERAMIC CHIP 0.022UF	C0427	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0209	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0429	0893082	CERAMIC CHIP 0.022UF
C0211	0800138	ELECTROLYTIC 47UF 6V	C0434	0800117	ELECTROLYTIC 4.7UF 25V
C0212	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0435	0893033	CERAMIC CHIP 1500PF+-10% 50V
C0213	0254458	ELECTROLYTIC 3.3UF+-20% 50V	C0437	0800009	ELECTROLYTIC 4.7UF 25V
C0214	0893082	CERAMIC CHIP 0.022UF	C0501	0800297	ELECTROLYTIC 22UF 6V
C0215	0800115	ELECTROLYTIC 3.3UF 50V	C0502	0800287	CAPASITOR 4.7UF+-20% 35V
C0216	0209948	CERAMIC CHIP 330PF+-5% 50V	C0503	0800287	CAPASITOR 4.7UF+-20% 35V
C0218	0890046	CERAMIC DISC 0.1UF+80-20% 50V	C0504	0800118	ELECTROLYTIC 4.7UF 35V
C0219	0893031	CERAMIC CHIP 1000PF+-10% 50V	C0506	0800308	ELECTROLYTIC 33UF 16V
C0220	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0507	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0221	0800112	ELECTROLYTIC 2.2UF 50V	C0508	0800112	ELECTROLYTIC 2.2UF 50V
C0222	0893039	CERAMIC CHIP 4700PF+-10% 50V	C0509	0800143	ELECTROLYTIC 100UF 6.3V
C0223	0800118	ELECTROLYTIC 4.7UF 35V	C0510	0893088	CERAMIC CHIP 0.015UF+-10% 16V
C0224	0890015	CERAMIC DISC 33PF+-50% 50V	C0511	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0225	0209946	CERAMIC CHIP 220PF+-5% 50V	C0512	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0226	0890044	CERAMIC DISC 0.022UF+80-20% 25V	C0513	0800139	ELECTROLYTIC 47UF 10V
C0227	0800107	ELECTROLYTIC 0.47UF 50V	C0514	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0228	0893004	CERAMIC CHIP 0.047UF+-10% 16V	C0517	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0230	0893002	CERAMIC CHIP 0.033UF+-10% 16V	C0518	0893088	CERAMIC CHIP 0.015UF+-10% 16V
C0233	0800122	ELECTROLYTIC 10UF 16V	C0519	0800143	ELECTROLYTIC 100UF 6.3V
C0234	0800185	ELECTROLYTIC 47UF 6V	C0520	0800112	ELECTROLYTIC 2.2UF 50V
C0235	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0521	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0236	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0522	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0237	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0524	0800118	ELECTROLYTIC 4.7UF 35V
C0238	0800178	ELECTROLYTIC 4.7UF 35V	C0525	0800118	ELECTROLYTIC 4.7UF 35V
C0239	0800179	ELECTROLYTIC 10UF 16V	C0526	0800118	ELECTROLYTIC 4.7UF 35V
C0240	0800179	ELECTROLYTIC 10UF 16V	C0528	0800101	ELECTROLYTIC 0.1UF 50V
C0241	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0529	0800122	ELECTROLYTIC 10UF 16V
C0242	0800178	ELECTROLYTIC 4.7UF 35V	C0530	0800291	ELECTROLYTIC 10UF 16V
C0243	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0531	0800291	ELECTROLYTIC 10UF 16V
C0244	0893013	CERAMIC CHIP 0.22UF+-10% 16V	C0532	0800317	ELECTROLYTIC 47UF 16V
C0245	0800177	ELECTROLYTIC 3.3UF 50V	C0533	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0246	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0534	0800135	ELECTROLYTIC 33UF 16V
C0247	0209937	CERAMIC CHIP 39PF+-5% 50V	C0535	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0249	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0601	0207441	ELECTROLYTIC 2.2UF 35V
C0251	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0602	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0252	0209943	CERAMIC DISC 120PF+-5% 50V	C0604	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0254	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C0605	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C0256	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	C0606	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0258	0890012	CERAMIC DISC 18PF+-5% 50V	C0607	0209938	CERAMIC CHIP 47PF+-5% 50V
C0262	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0608	0890022	CERAMIC DISC 100PF+-10% 50V
C0263	0209931	CERAMIC CHIP 12PF+-5% 50V	C0609	0800179	ELECTROLYTIC 10UF 16V
C0264	0893044	CERAMIC CHIP 0.01UF+-10% 50V	C0611	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0265	0893008	CERAMIC CHIP 0.1UF +-10% 16V	C0612	0800128	ELECTROLYTIC 22UF 16V
C0273	0209937	CERAMIC CHIP 39PF+-5% 50V	C0614	0890035	CERAMIC DISC 1000PF+-10% 50V
C0275	0893013	CERAMIC CHIP 0.22UF+-10% 16V	C0615	0800318	ELECTROLYTIC 47UF 25V
C0402	0800117	ELECTROLYTIC 4.7UF 25V	C0620	0890035	CERAMIC DISC 1000PF+-10% 50V
C0403	0893002	CERAMIC CHIP 0.033UF+-10% 16V	C0621	0890038	CERAMIC DISC 3300PF+-20% 16V
C0404	0893088	CERAMIC CHIP 0.015UF+-10% 16V	C0622	0893065	CERAMIC CHIP 1000PF+-10% 50V
C0405	0893037	CERAMIC CHIP 3300PF+-10% 50V	C0623	0890043	CERAMIC DISC 0.01UF+-20% 16V
C0407	0800122	ELECTROLYTIC 10UF 16V	C0624	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C0408	0800122	ELECTROLYTIC 10UF 16V	C0627	0800141	ELECTROLYTIC 47UF 16V
C0409	0209906	CERAMIC DISC 820PF+-5% 50V	C0701	0800185	ELECTROLYTIC 47UF 6.3V
C0410	0893088	CERAMIC CHIP 0.015UF+-10% 16V	C0702	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C0411	0800109	ELECTROLYTIC 1.0UF 50V	C0703	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C0412	0880055	MYLAR 0.068UF+-10% 50V	C0704	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C0413	0880055	MYLAR 0.068UF+-10% 50V	C0705	0890035	CERAMIC DISC 1000PF+-10% 50V
C0414	0800109	ELECTROLYTIC 1.0UF 50V	C0707	0800141	ELECTROLYTIC 47UF 16V
			△ C0851	AN10201S	FILM CAPACITOR 0.1UF+-20% 250V[EX 625AW]
			△ C0851	0268741	FILM CAPACITOR 0.1UF+-20% 250V[625AW]

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
△C0855	AJ10293	CERAMIC CAPACITOR 2200PF±20% 125V	C1116	0893091	CERAMIC CHIP 0.022UF±10% 16V
△C0856	AJ10293	CERAMIC CAPACITOR 2200PF±20% 125V	C1117	0893091	CERAMIC CHIP 0.022UF±10% 16V
C0857	AL10192	ELECTROLYTIC 100UF 200V [627A.625A]	C1118	0893091	CERAMIC CHIP 0.022UF±10% 16V
C0857	AL10191	ELECTROLYTIC 82UF 400V [625AW]	C1119	0893091	CERAMIC CHIP 0.022UF±10% 16V
C0858	AN10401R	CAPACITOR 0.047UF±10% 250V	C1120	0893091	CERAMIC CHIP 0.022UF±10% 16V
C0860	0800206	ELECTROLYTIC 47UF 35V	C1121	0893091	CERAMIC CHIP 0.022UF±10% 16V
C0861	AJ10249R	CAPACITOR 470PF±10% 50V	C1122	0893091	CERAMIC CHIP 0.022UF±10% 16V
C0862	0235406	CAPACITOR 470PF±10% 1000V	C1123	0893091	CERAMIC CHIP 0.022UF±10% 16V
C0863	AJ10131R	CERAMIC CAPACITOR 470PF±10% 500V	C1124	0893031	CERAMIC CHIP 1000PF±10% 50V
C0864	0880048	MYLAR 0.022UF±10% 50V	C1125	0800185	ELECTROLYTIC 47UF 6.3V
C0871	AL10481S	ELECTROLYTIC 3300UF 16V	C1126	0893082	CERAMIC CHIP 0.022UF
C0872	0800352	ELECTROLYTIC 470UF 10V	C1127	0893013	CERAMIC CHIP 0.22UF±10% 16V
C0873	0254405	CAPACITOR 1000UF±20% 25V	C1128	0800185	ELECTROLYTIC 47UF 6.3V
C0874	0800354	ELECTROLYTIC 470UF 25V	C1129	0893082	CERAMIC CHIP 0.022UF
C0875	0254403	CAPACITOR 22UF±20% 50V	C1131	0893044	CERAMIC CHIP 0.01UF±10% 50V
C0879	0800308	ELECTROLYTIC 33UF 16V	C1134	0209930	CERAMIC CHIP 10PF±0.5% 50V
C0880	0800326	ELECTROLYTIC 100UF 16V	C1135	0209930	CERAMIC CHIP 10PF±0.5% 50V
C0881	0800324	ELECTROLYTIC 100UF 6V	C1136	0209930	CERAMIC CHIP 10PF±0.5% 50V
C0882	0890044	CERAMIC DISC 0.022UF±80-20% 25V	C1137	0890014	CERAMIC DISC 27PF±50% 50V
C0888	AJ10131R	CERAMIC CAPACITOR 470PF±10% 500V	C1138	0209943	CERAMIC DISC 120PF±5%
C0890	0893044	CERAMIC CHIP 0.01UF±10% 50V	C1140	0209944	CERAMIC CHIP 150PF±5% 50V
C0901	0893055	CERAMIC CHIP 0.1UF±80-20% 16V	C1141	0893031	CERAMIC CHIP 1000PF±10% 50V
C0902	0893044	CERAMIC CHIP 0.01UF±10% 50V	C1142	0209944	CERAMIC CHIP 150PF±5% 50V
C0904	0217516	CAPACITOR 0.047UF±80-20% 5.5V	C1401	0890043	CERAMIC DISC 0.01UF±20% 16V
C0907	0209927	CERAMIC CHIP 7.0PF±0.5% 50V	C1402	0209943	CERAMIC DISC 120PF±5%
C0908	0209927	CERAMIC CHIP 7.0PF±0.5% 50V	C1403	0800118	ELECTROLYTIC 4.7UF 35V
C0909	0209932	CERAMIC CHIP 15PF±5% 50V	C1405	0890043	CERAMIC DISC 0.01UF±20% 16V
C0910	0209932	CERAMIC CHIP 15PF±5% 50V	C1409	0209937	CERAMIC CHIP 39PF±5% 50V
C0912	0893055	CERAMIC CHIP 0.1UF±80-20% 16V	C1410	0209936	CERAMIC CHIP 33PF±5% 50V
C0913	0893044	CERAMIC CHIP 0.01UF±10% 50V	C1411	0209945	CERAMIC DISC 180PF±5% 50V
C0914	0800308	ELECTROLYTIC 33UF 16V	C1414	0800122	ELECTROLYTIC 10UF 16V
C0915	0893044	CERAMIC CHIP 0.01UF±10% 50V	C1415	0800118	ELECTROLYTIC 4.7UF 35V
C0916	0893044	CERAMIC CHIP 0.01UF±10% 50V	C1416	0800317	ELECTROLYTIC 47UF 16V
C0917	0800141	ELECTROLYTIC 47UF 16V	C1417	0893044	CERAMIC CHIP 0.01UF±10% 50V
C0918	0893082	CERAMIC CHIP 0.022UF	C1419	0209930	CERAMIC CHIP 10PF±0.5% 50V
C0919	0893065	CERAMIC CHIP 0.047UF±80-20% 25V	C1424	0890044	CERAMIC DISC 0.022UF±80-20% 25V
C0920	0209938	CERAMIC CHIP 47PF±5% 50V	C1425	0209931	CERAMIC CHIP 12PF±5% 50V
C0922	0893055	CERAMIC CHIP 0.1UF±80-20% 16V	C1426	0893065	CERAMIC CHIP 0.047UF±80-20% 25V
C0923	0893082	CERAMIC CHIP 0.022UF	C1427	0890039	CERAMIC DISC 4700PF±20% 16V
C0924	0209938	CERAMIC CHIP 47PF±5% 50V	C1430	0893044	CERAMIC CHIP 0.01UF±10% 50V
C0925	0209938	CERAMIC CHIP 47PF±5% 50V	C1701	0800112	ELECTROLYTIC 2.2UF 50V
C0926	0209930	CERAMIC CHIP 10PF±0.5% 50V	C1802	0800174	ELECTROLYTIC 0.47UF 50V
C0927	0209948	CERAMIC CHIP 330PF±5% 50V	C1811	0800317	ELECTROLYTIC 47UF 16V
C0928	0893065	CERAMIC CHIP 0.047UF±80-20% 25V	C2102	0893082	CERAMIC CHIP 0.022UF
C0940	0209943	CERAMIC DISC 120PF±5%	C2501	0893076	CHIP CERAMIC 0.0033UF 50V
C0942	0890044	CERAMIC DISC 0.022UF±80-20% 25V	C2502	0893037	CERAMIC CHIP 3300PF±10% 50V
C0980	0890043	CERAMIC DISC 0.01UF±20% 16V	C2503	0800352	ELECTROLYTIC 470UF 10V
C0981	0890043	CERAMIC DISC 0.01UF±20% 16V	C2504	0893079	CERAMIC DISC 0.01UF±80-20% 50V
C0982	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2505	0800291	ELECTROLYTIC 10UF 16V
C0985	0890032	CERAMIC DISC 560PF±10% 50V	C2506	0800291	ELECTROLYTIC 10UF 16V
C0986	0893031	CERAMIC CHIP 1000PF±10% 50V	C2507	0800287	CAPASITOR 4.7UF±20% 35V
C0987	0209946	CERAMIC CHIP 220PF±5% 50V	C2508	0893076	CHIP CERAMIC 0.0033UF 50V
C0989	0890026	CERAMIC DISC 220PF±10% 50V	C2509	0800287	CAPASITOR 4.7UF±20% 35V
C1102	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2512	0209942	CERAMIC CHIP 100PF±5% 50V
C1103	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2513	0800317	ELECTROLYTIC 47UF 16V
C1104	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2514	0893044	CERAMIC CHIP 0.01UF±10% 50V
C1105	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2517	0893044	CERAMIC CHIP 0.01UF±10% 50V
C1106	0800185	ELECTROLYTIC 47UF 6.3V	C2518	0800044	ELECTROLYTIC 47UF 50V
C1107	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2519	0893044	CERAMIC CHIP 0.01UF±10% 50V
C1108	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2520	0800335	ELECTROLYTIC 220UF 16V
C1110	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2524	0893044	CERAMIC CHIP 0.01UF±10% 50V
C1111	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2525	0800291	ELECTROLYTIC 10UF 16V
C1112	0893044	CERAMIC CHIP 0.01UF±10% 50V	C2531	0800287	CAPASITOR 4.7UF±20% 35V
C1114	0893091	CERAMIC CHIP 0.022UF±10% 16V	C2532	0893082	CERAMIC CHIP 0.022UF
C1115	0893091	CERAMIC CHIP 0.022UF±10% 16V	C2539	0890029	CERAMIC DISC 390PF±10% 50V

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
C2701	0209942	CERAMIC CHIP 100PF+-5% 50V	R0240	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
C2702	0209942	CERAMIC CHIP 100PF+-5% 50V	R0241	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
C2703	0890046	CERAMIC DISC 0.1UF+80-20% 50V	R0243	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
C2704	0890044	CERAMIC DISC 0.022UF+80-20% 25V	R0253	0700038	CARBON FILM 680 OHM+-5% 1/8W
C2901	0893031	CERAMIC CHIP 1000PF+-10% 50V	R0257	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
C2902	0893062	CERAMIC CHIP 1UF+80-20% 16V	R0258	0700032	CARBON FILM 220 OHM+-5% 1/8W
C2903	0893044	CERAMIC CHIP 0.01UF+-10% 50V	R0263	0101391	CARBON FILM 2.2MOHM+-5% 1/8W
C2904	0800122	ELECTROLYTIC 10UF 16V	R0265	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
C2905	0893044	CERAMIC CHIP 0.01UF+-10% 50V	R0272	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
C2906	0800122	ELECTROLYTIC 10UF 16V	R0402	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
C2907	0800112	ELECTROLYTIC 2.2UF 50V	R0403	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
C2908	0893031	CERAMIC CHIP 1000PF+-10% 50V	R0404	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
C2909	0209944	CERAMIC CHIP 150PF+-5% 50V	R0407	0700029	CARBON FILM 150 OHM+-5% 1/8W
C2910	0209944	CERAMIC CHIP 150PF+-5% 50V	R0408	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
C4501	0800039	ELECTROLYTIC 47UF 10V	R0409	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
C4503	0800109	ELECTROLYTIC 1.0UF 50V	R0410	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
C4504	0893079	CERAMIC DISC 0.01UF+80-20% 50V	R0411	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
C4505	0209930	CERAMIC CHIP 10PF+-0.5% 50V	R0420	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
C4506	0209930	CERAMIC CHIP 10PF+-0.5% 50V	R0421	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
C4507	0893055	CERAMIC CHIP 0.1UF+80-20% 16V	R0422	0700014	CARBON FILM 10 OHM+-5% 1/8W
C4508	0893079	CERAMIC DISC 0.01UF+80-20% 50V	R0423	0700056	CARBON FILM 15KOHM+-5% 1/8W
C4509	0800041	ELECTROLYTIC 47UF 16V	R0424	0700056	CARBON FILM 15KOHM+-5% 1/8W
C4511	0800039	ELECTROLYTIC 47UF 10V	R0427	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
C4513	0202163	CERAMIC CAPACITOR 560PF+-5% 50V	R0429	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
C4514	0893062	CERAMIC CHIP 1UF+80-20% 16V	R0430	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
C4515	0202163	CERAMIC CAPACITOR 560PF+-5% 50V	R0431	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
C4516	0800007	ELECTROLYTIC 3.3UF 50V	R0432	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
C4517	0893037	CERAMIC CHIP 3300PF+-10% 50V	R0434	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
C4518	0893079	CERAMIC DISC 0.01UF+80-20% 50V	R0437	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
C4519	0209936	CERAMIC CHIP 33PF+-5% 50V	R0441	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
C4520	0209936	CERAMIC CHIP 33PF+-5% 50V	R0501	0700054	CARBON FILM 10KOHM+-5% 1/8W
C4521	0893079	CERAMIC DISC 0.01UF+80-20% 50V	R0502	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
C4522	0893065	CERAMIC CHIP 0.047UF+80-20% 25V	R0503	0700063	CARBON FILM 47KOHM+-5% 1/8W
C4523	0800003	ELECTROLYTIC 1UF 50V	R0504	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
C4524	0209930	CERAMIC CHIP 10PF+-0.5% 50V	R0505	0700063	CARBON FILM 47KOHM+-5% 1/8W
C4525	0209942	CERAMIC CHIP 100PF+-5% 50V	R0506	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
C4526	0890043	CERAMIC DISC 0.01UF+-20% 16V	R0509	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
C4527	0893079	CERAMIC DISC 0.01UF+80-20% 50V	R0510	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W
C4528	0893042	CERAMIC CHIP 6800PF+-10% 50V	R0511	0104308	CHIP RESISTOR 15KOHM+-0.1% 1/16W
C4529	0800103	ELECTROLYTIC 0.22UF 50V	R0516	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
C4530	0893008	CERAMIC CHIP 0.1UF +-10% 16V	R0517	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W
C4531	0893091	CERAMIC CHIP 0.022UF+-10% 16V	R0520	0700063	CARBON FILM 47KOHM+-5% 1/8W
C4532	0209950	CERAMIC CHIP 470PF+-5% 50V	R0521	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
C4533	0800005	ELECTROLYTIC 2.2UF 50V	R0522	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
C4534	0893037	CERAMIC CHIP 3300PF+-10% 50V	R0523	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
C4535	0209942	CERAMIC CHIP 100PF+-5% 50V	R0524	0700054	CARBON FILM 10KOHM+-5% 1/8W
RESISTORS			R0525	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R0201	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	R0526	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0202	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W	R0527	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0203	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W	R0530	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R0205	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R0531	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R0206	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0532	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0207	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W	R0533	0700066	CARBON FILM 82KOHM+-5% 1/8W
R0208	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R0534	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0212	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0540	0700033	CARBON FILM 270 OHM+-5% 1/8W
R0213	0700058	CARBON FILM 22KOHM+-5% 1/8W	R0541	0700033	CARBON FILM 270 OHM+-5% 1/8W
R0215	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W	R0602	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0216	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R0605	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0217	0700059	CARBON FILM 27KOHM+-5% 1/8W	R0615	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0218	0700027	CARBON FILM 100 OHM+-5% 1/8W	R0621	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0227	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0622	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0228	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R0623	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0229	0700032	CARBON FILM 220 OHM+-5% 1/8W	R0624	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
			R0625	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
			R0626	0700041	CARBON FILM 1.0KOHM+-5% 1/8W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R0627	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0906	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0628	0103839	CHIP RESISTOR 470 OHM \pm 5% 0.1W	R0907	0103855	CHIP RESISTOR 10KOHM \pm 5% 0.1W
R0629	0103837	CHIP RESISTOR 330 OHM \pm 5% 0.1W	R0908	0103855	CHIP RESISTOR 10KOHM \pm 5% 0.1W
R0630	0103837	CHIP RESISTOR 330 OHM \pm 5% 0.1W	R0909	0103867	CHIP RESISTOR 100KOHM \pm 5% 0.1W
R0631	0103870	CHIP RESISTOR 180KOHM \pm 5% 0.1W	R0910	0103855	CHIP RESISTOR 10KOHM \pm 5% 0.1W
R0632	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W	R0911	0103867	CHIP RESISTOR 100KOHM \pm 5% 0.1W
R0633	0103879	CHIP RESISTOR 1MOHM \pm 5% 0.1W	R0913	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0634	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W	R0914	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0635	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W	R0915	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0636	0700047	CARBON FILM 3.3KOHM \pm 5% 1/8W	R0916	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0701	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0917	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0702	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0918	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0703	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0919	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0704	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0920	0700054	CARBON FILM 10KOHM \pm 5% 1/8W
R0705	0700054	CARBON FILM 10KOHM \pm 5% 1/8W	R0921	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0706	0700067	CARBON FILM 100KOHM \pm 5% 1/8W	R0922	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0707	0700034	CARBON FILM 330 OHM \pm 5% 1/8W	R0923	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0708	0700054	CARBON FILM 10KOHM \pm 5% 1/8W	R0924	0103840	CHIP RESISTOR 560 OHM \pm 5% 0.1W
R0709	0700033	CARBON FILM 270 OHM \pm 5% 1/8W	R0925	0103840	CHIP RESISTOR 560 OHM \pm 5% 0.1W
R0711	0700048	CARBON FILM 3.9KOHM \pm 5% 1/8W	R0926	0103840	CHIP RESISTOR 560 OHM \pm 5% 0.1W
R0712	0700037	CARBON FILM 560 OHM \pm 5% 1/8W	R0927	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0713	0700047	CARBON FILM 3.3KOHM \pm 5% 1/8W	R0928	0103851	CHIP RESISTOR 4.7KOHM \pm 5% 0.1W
R0714	0700045	CARBON FILM 2.2KOHM \pm 5% 1/8W	R0929	0103851	CHIP RESISTOR 4.7KOHM \pm 5% 0.1W
R0715	0700035	CARBON FILM 390 OHM \pm 5% 1/8W	R0934	0103851	CHIP RESISTOR 4.7KOHM \pm 5% 0.1W
R0716	0700044	CARBON FILM 1.8KOHM \pm 5% 1/8W	R0935	0700032	CARBON FILM 220 OHM \pm 5% 1/8W
R0717	0700054	CARBON FILM 10KOHM \pm 5% 1/8W	R0938	0103839	CHIP RESISTOR 470 OHM \pm 5% 0.1W
R0718	0700049	CARBON FILM 4.7KOHM \pm 5% 1/8W	R0939	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0719	0700049	CARBON FILM 4.7KOHM \pm 5% 1/8W	R0940	0103839	CHIP RESISTOR 470 OHM \pm 5% 0.1W
R0720	0700049	CARBON FILM 4.7KOHM \pm 5% 1/8W	R0941	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0721	0700063	CARBON FILM 47KOHM \pm 5% 1/8W	R0943	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0722	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0944	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
△R0851	AT10401G	RESISTOR 4.7MOHM \pm 10% 1/2W	R0945	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0853	0116664	CHIP RESISTOR 68KOHM \pm 5% 2W	R0946	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0854	0116664	CHIP RESISTOR 68KOHM \pm 5% 2W	R0947	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0856	0103841	CHIP RESISTOR 680 OHM \pm 5% 0.1W	R0948	0103851	CHIP RESISTOR 4.7KOHM \pm 5% 0.1W
R0857	AT10246S	RESISTOR 0.33 OHM \pm 5% 1W[627A, 625A]	R0950	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0857	0116046	RESISTOR 0.22 OHM \pm 5% 1W[625AW]	R0951	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0860	0103849	CHIP RESISTOR 3.3KOHM \pm 5% 0.1W	R0952	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0865	0700046	CARBON FILM 2.7KOHM \pm 5% 1/8W	R0954	0700073	CARBON FILM 270KOHM \pm 5% 1/8W
R0866	0700046	CARBON FILM 2.7KOHM \pm 5% 1/8W	R0955	0700036	CARBON FILM 470 OHM \pm 5% 1/8W
R0868	0700054	CARBON FILM 10KOHM \pm 5% 1/8W	R0956	0700036	CARBON FILM 470 OHM \pm 5% 1/8W
R0871	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0957	0103879	CHIP RESISTOR 1MOHM \pm 5% 0.1W
R0872	0700032	CARBON FILM 220 OHM \pm 5% 1/8W	R0963	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0874	0104114	CHIP RESISTOR 3.3KOHM \pm 1% 0.1W	R0967	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W
R0875	0105572	METAL FILM RESISTOR 2.7KOHM \pm 1% 1/10W	R0969	0700027	CARBON FILM 100 OHM \pm 5% 1/8W
R0877	0700056	CARBON FILM 15KOHM \pm 5% 1/8W	R0970	0700027	CARBON FILM 100 OHM \pm 5% 1/8W
R0878	0700056	CARBON FILM 15KOHM \pm 5% 1/8W	R0971	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0879	0700046	CARBON FILM 2.7KOHM \pm 5% 1/8W	R0972	0103851	CHIP RESISTOR 4.7KOHM \pm 5% 0.1W
R0880	0103847	CHIP RESISTOR 2.2KOHM \pm 5% 0.1W	△R0976	0101725	CHIP RESISTOR 2.2 OHM \pm 5% 1/4W
R0881	0103847	CHIP RESISTOR 2.2KOHM \pm 5% 0.1W	R0977	0700067	CARBON FILM 100KOHM \pm 5% 1/8W
R0882	0700058	CARBON FILM 22KOHM \pm 5% 1/8W	R0978	0101765	RESISTOR 10KOHM \pm 1% 1/8W
R0883	0700032	CARBON FILM 220 OHM \pm 5% 1/8W	R0979	0103853	CHIP RESISTOR 6.8KOHM \pm 5% 0.1W
R0884	0700058	CARBON FILM 22KOHM \pm 5% 1/8W	R0980	0103859	CHIP RESISTOR 22KOHM \pm 5% 0.1W
R0885	0103859	CHIP RESISTOR 22KOHM \pm 5% 0.1W	R0981	0103855	CHIP RESISTOR 10KOHM \pm 5% 0.1W
R0888	0700058	CARBON FILM 22KOHM \pm 5% 1/8W	R0983	0103855	CHIP RESISTOR 10KOHM \pm 5% 0.1W
R0889	0103859	CHIP RESISTOR 22KOHM \pm 5% 0.1W	R0984	0103855	CHIP RESISTOR 10KOHM \pm 5% 0.1W
R0893	AT10245S	RESISTOR 68 OHM \pm 5% 2W	R0988	0103856	CHIP RESISTOR 12KOHM \pm 5% 0.1W
R0894	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0991	0103836	CHIP RESISTOR 270 OHM \pm 5% 0.1W
R0895	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0992	0103836	CHIP RESISTOR 270 OHM \pm 5% 0.1W
R0896	0700036	CARBON FILM 470 OHM \pm 5% 1/8W	R0994	0700048	CARBON FILM 3.9KOHM \pm 5% 1/8W
R0901	0700041	CARBON FILM 1.0KOHM \pm 5% 1/8W	R0998	0103854	CHIP RESISTOR 8.2KOHM \pm 5% 0.1W
R0902	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W	R0999	0700054	CARBON FILM 10KOHM \pm 5% 1/8W
R0903	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W	R1101	0103850	CHIP RESISTOR 3.9KOHM \pm 5% 0.1W
R0904	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W	R1103	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W
R0905	0103843	CHIP RESISTOR 1KOHM \pm 5% 0.1W	R1104	0103859	CHIP RESISTOR 22KOHM \pm 5% 0.1W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R1107	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W	R2115	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1108	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W	R2116	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1109	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W	R2117	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R1110	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W	R2501	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1112	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2502	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1113	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2503	0101400	CARBON FILM 75OHM+-5% 1/8W
R1115	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W	R2504	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W
R1116	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W	R2507	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1117	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2508	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1118	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	R2509	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1120	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	R2510	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1121	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	R2511	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1403	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R2512	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1405	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2514	0101835	CARBON FILM 1.5KOHM+-5% 1/4W
R1406	0700024	CARBON FILM 56 OHM+-5% 1/8W	R2515	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R1407	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W	R2517	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R1409	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2518	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1410	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W	R2523	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1412	0700076	CARBON FILM 470KOHM+-5% 1/8W	R2524	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1413	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W	R2527	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1416	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2533	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1418	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W	R2534	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1421	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W	R2542	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1422	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2701	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1423	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	R2702	0700039	CARBON FILM 820 OHM+-5% 1/8W
R1424	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	R2703	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1430	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2704	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1433	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W	R2705	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1434	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W	R2706	0700032	CARBON FILM 220 OHM+-5% 1/8W
R1438	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	R2707	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1701	0700063	CARBON FILM 47KOHM+-5% 1/8W	R2708	0700029	CARBON FILM 150 OHM+-5% 1/8W
R1702	0700063	CARBON FILM 47KOHM+-5% 1/8W	R2709	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1703	0700036	CARBON FILM 470 OHM+-5% 1/8W	R2711	0700057	CARBON FILM 18KOHM+-5% 1/8W
R1704	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2712	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1705	0700023	CARBON FILM 47 OHM+-5% 1/8W	R2713	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1707	0700062	CARBON FILM 39KOHM+-5% 1/8W	R2714	0700057	CARBON FILM 18KOHM+-5% 1/8W
R1708	0700047	CARBON FILM 3.3KOHM+-5% 1/8W	R2715	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R1709	0700057	CARBON FILM 18KOHM+-5% 1/8W	R2716	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1710	0700038	CARBON FILM 680 OHM+-5% 1/8W	R2717	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1711	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2718	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1712	0700051	CARBON FILM 5.6KOHM+-5% 1/8W	R2719	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1713	0700039	CARBON FILM 820 OHM+-5% 1/8W	R2720	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1716	0101400	CARBON FILM 75 OHM+-5% 1/8W	R2721	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1802	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W	R2722	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1806	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2723	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1807	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2724	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1808	0700053	CARBON FILM 8.2KOHM+-5% 1/8W	R2725	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1809	0700057	CARBON FILM 18KOHM+-5% 1/8W	R2901	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1818	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2902	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1820	0700054	CARBON FILM 10KOHM+-5% 1/8W	R2903	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1822	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	R2904	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2101	0700059	CARBON FILM 27KOHM+-5% 1/8W	R2905	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2102	0700067	CARBON FILM 100KOHM+-5% 1/8W	R2906	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R2103	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	R2907	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R2104	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	R2908	0700027	CARBON FILM 100 OHM+-5% 1/8W
R2105	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W	R2909	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2106	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W	R4504	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2107	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R4505	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2108	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W	R4506	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R2109	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R4507	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2110	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W	R4509	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2111	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R4510	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2112	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	R4511	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2113	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W	R4512	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2114	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W	R4513	0700027	CARBON FILM 100 OHM+-5% 1/8W


SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R4514	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	D2501	5339071	DIODE 1SS119
R4515	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W	D2502	5339071	DIODE 1SS119
R4516	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	D2504	5339071	DIODE 1SS119
R4517	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	D4501	5339071	DIODE 1SS119
R4518	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W	D4502	5339071	DIODE 1SS119
R4519	0105147	CHIP RESISTOR 100KOHM+-1% 1/10W	D4503	5339071	DIODE 1SS119
R4520	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W	D4504	5339071	DIODE 1SS119
R4521	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	D4505	5339071	DIODE 1SS119
R4522	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	D4506	5339071	DIODE 1SS119
R4523	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	IC0201	CK14413U	IC HA118204F
R4524	0700027	CARBON FILM 100 OHM+-5% 1/8W	IC0202	CK13574R	IC MSM7476-76MS-KR1
R4525	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	IC0501	CK16761	IC AN3962FB
R4526	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	IC0701	CZ10182	IC BU9716AK (HEPM)
R4527	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	IC0851	CP12062F	IC STR-F6510 (HEPM) [627A, 625A]
R4528	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	IC0851	CP12063F	IC STR-F6523 (HEPM) [625AW]
R4529	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W	IC0871	CP11961R	IC HA17431PA
R4530	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W	IC0901	CK16747	IC HD6433977SB62F (HEPM)
R4531	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W	IC0902	CP10312R	IC PST9129
R4532	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W	IC0903	CP11012	IC AT24C02-10PC
R4533	0700058	CARBON FILM 22KOHM+-5% 1/8W	IC0904	CP10291	IC BA6209
R4534	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W	IC0905	CP11361R	IC M5278L05
R4535	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W	IC1101	CK14481	IC HA118198FP
R4536	0700054	CARBON FILM 10KOHM+-5% 1/8W	IC1102	CP11191	IC LA7256
R4537	0700058	CARBON FILM 22KOHM+-5% 1/8W	IC1801	CS10571	PWB ASSY HTS7342
R4538	0700049	CARBON FILM 4.7KOHM+-5% 1/8W	IC2101	CJ10212	PHOTO INTERLAPTER SG-236
R4539	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W	IC2102	CJ10222	PHOTO INTERLAPTER SG-237
R4540	0105122	CHIP RESISTOR 56KOHM+-1% 1/10W	IC2501	CP11991	IC NJM2533D (HEPM)
R4541	0104122	CHIP RESISTOR 33KOHM+-1% 0.1W	IC2701	CK12311	IC UPD17103GS-752
R4542	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W	IC2901	CP11001	IC LC7455A
R4543	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W	IC4501	CK16602	IC CXP80712A-122Q
R4544	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	IC4502	CP10313R	IC PST9145
R4545	0700049	CARBON FILM 4.7KOHM+-5% 1/8W	IC4503	CK15392R	IC NJM2082M (HEPM)
R4546	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W	IC4504	5352714	IC NJM4558M
R4547	0105122	CHIP RESISTOR 56KOHM+-1% 1/10W	IC4505	5361312	IC UPD4066BG
R4548	0104122	CHIP RESISTOR 33KOHM+-1% 0.1W	IC4506	CK11252	IC MM1108XFFE
R4549	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W	LD0701	CH11141R	DIODE SEL6414E (HEPM)
R4550	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W	LD0702	CH11141R	DIODE SEL6414E (HEPM)
R4551	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W	LD0703	CH11141R	DIODE SEL6414E (HEPM)
RT1801	AW10188R	SEMI VARIABLE 22KOHM	LD0704	CH11141R	DIODE SEL6414E (HEPM)
			LD0705	CH11141R	DIODE SEL6414E (HEPM)
SEMI-CONDUCTORS			LD0706	CH10471R	DIODE SEL6210S
D0206	5339071	DIODE 1SS119	LD1701	CH11131	DIODE LF60 (HEPM)
D0701	5339071	DIODE 1SS119	LD2101	CH10542	DIODE GL451L1
△D0851	5336552	DIODE S1WBA60	LD2701	CH11131	DIODE LF60 (HEPM)
D0852	CH10191M	DIODE EG01C-T	Q0215	5326903	TRANSISTOR UN2213
D0853	CH10481M	DIODE AG01Z	Q0226	CA10672R	TRANSISTOR 2SD601A
D0854	5339071	DIODE 1SS119	Q0228	5326903	TRANSISTOR UN2213
D0855	CH10481M	DIODE AG01Z	Q0406	5323172	TRANSISTOR 2SC1214CD
D0857	5339071	DIODE 1SS119	Q0409	5327063	TRANSISTOR 2SC1740S
D0871	1331361	DIODE RK34 [627A, 625A]	Q0410	5326903	TRANSISTOR UN2213
D0871	CH10641S	DIODE D3S6M[627AW]	Q0411	5327021	TRANSISTOR 2SA844CD
D0872	CH10771S	DIODE RD3Z	Q0412	CA10672R	TRANSISTOR 2SD601A
D0873	5339592	DIODE D1NL40	Q0413	CA10672R	TRANSISTOR 2SD601A
D0875	5339551	DIODE SS1J4	Q0415	CA10672R	TRANSISTOR 2SD601A
D0876	5339551	DIODE SS1J4	Q0701	5327071	TRANSISTOR DTC124ES
D0877	5339231	DIODE 1SR35-100A	Q0702	5327151	TRANSISTOR 2SA952-ML2
D0901	5339551	DIODE SS1J4	Q0703	5327071	TRANSISTOR DTC124ES
D0906	5339071	DIODE 1SS119	Q0704	5327063	TRANSISTOR 2SC1740S
D0908	5339231	DIODE 1SR35-100A	Q0705	5327071	TRANSISTOR DTC124ES
D0909	5339231	DIODE 1SR35-100A	Q0871	1321341	TRANSISTOR 2SD1765
D0910	5339231	DIODE 1SR35-100A	Q0872	1321341	TRANSISTOR 2SD1765
D1101	5339071	DIODE 1SS119	Q0873	5327262	TRANSISTOR 2SB1326
D1102	5339071	DIODE 1SS119	Q0874	CA10672R	TRANSISTOR 2SD601A
D1403	5339071	DIODE 1SS119	Q0875	5326903	TRANSISTOR UN2213
			Q0876	5327063	TRANSISTOR 2SC1740S

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
Q0905	CA10582R	TRANSISTOR 2SB709A	L0501	0770048	CHOKE COIL 22UH+-5%
Q0906	CA10582R	TRANSISTOR 2SB709A	L0502	0770057	CHOKE COIL 100UH+-5%
Q0912	5326903	TRANSISTOR UN2213	L0701	0770057	CHOKE COIL 100UH+-5%
Q0913	5326903	TRANSISTOR UN2213	△L0851	BJ10251	FILTER, LC
Q0914	5326903	TRANSISTOR UN2213	L0871	BH00205R	COIL 22UH
Q1101	CA10672R	TRANSISTOR 2SD601A	L0872	BH00201R	COIL 10UH
Q1102	CA10582R	TRANSISTOR 2SB709A	L1101	0770057	CHOKE COIL 100UH+-5%
Q1401	CA10672R	TRANSISTOR 2SD601A	L1102	0770057	CHOKE COIL 100UH+-5%
Q1404	CA10582R	TRANSISTOR 2SB709A	L1103	0770057	CHOKE COIL 100UH+-5%
Q1407	CA10582R	TRANSISTOR 2SB709A	L1105	5121296	COIL 220UH
Q1409	CA10672R	TRANSISTOR 2SD601A	L1106	5159153	CHOKE COIL 82UH
Q1410	CA10582R	TRANSISTOR 2SB709A	L1107	5159158	CHOKE COIL 220UH
Q1411	CA10672R	TRANSISTOR 2SD601A	L1402	5121288	COIL 15UH
Q1702	5327063	TRANSISTOR 2SC1740S	L1403	5121284	COIL 3.3UH
Q1703	1320003	TRANSISTOR 2SA854(S)	L1406	0770057	CHOKE COIL 100UH+-5%
Q1802	5326903	TRANSISTOR UN2213	L1801	0770057	CHOKE COIL 100UH+-5%
Q2101	CF10372	TRANSISTOR PT493FL1	L2502	0770061	CHOKE COIL 180UH
Q2102	CF10372	TRANSISTOR PT493FL1	L2504	0770053	CHOKE COIL 47UH+-5%
Q2103	5326903	TRANSISTOR UN2213	L2902	5121294	COIL 100UH
Q2104	5326903	TRANSISTOR UN2213	L2903	5121294	COIL 100UH
Q2501	CA10672R	TRANSISTOR 2SD601A	L4501	5121611	COIL
Q2502	CA10672R	TRANSISTOR 2SD601A	L4502	5121611	COIL
Q2503	CA10672R	TRANSISTOR 2SD601A	L4503	5159147	CHOKE COIL 33UH
Q2504	5326903	TRANSISTOR UN2213	L4504	5121611	COIL
Q2505	CA10672R	TRANSISTOR 2SD601A			
Q2506	5326903	TRANSISTOR UN2213			CRYSTALS
Q2509	5327074	TRANSISTOR DTA144ES-T	X0201	BP10611	CRYSTAL
Q2701	5327073	TRANSISTOR DTC144ES	X0901	BP10571	CRYSTAL
Q2702	5327073	TRANSISTOR DTC144ES	X0902	BP10251	CRYSTAL
Q2901	CA10672R	TRANSISTOR 2SD601A	X2701	BP10451G	CRYSTAL
Q4501	CA10672R	TRANSISTOR 2SD601A	X2901	BP10461	CRYSTAL
Q4502	CA10582R	TRANSISTOR 2SB709A	X4501	BP10631	CRYSTAL (HEPM)
Q4503	CA10672R	TRANSISTOR 2SD601A			MISCELLANEOUS
Q4504	CA10582R	TRANSISTOR 2SB709A	BL0851	BZ10471R	CORE
Q4505	CA10672R	TRANSISTOR 2SD601A	BL0852	BZ10471R	CORE
Q4506	CA10582R	TRANSISTOR 2SB709A	BL0853	BZ10471R	CORE
Q4507	CA10672R	TRANSISTOR 2SD601A	BL0871	BZ10471R	CORE
Q4508	5326903	TRANSISTOR UN2213	BL0872	BZ10471R	CORE
Q4509	5326903	TRANSISTOR UN2213	BL0901	BZ10471R	CORE
ZD0871	5339482	DIODE HZS15-2	BL0902	5274521	CORE, FERRITE
ZD0872	5339268	DIODE HZS11B2	BL4501	5272378	LC FILTER
ZD0874	5339474	DIODE HZS12C1	△F0851	FN10201	FUSE 003A
ZD0901	5339275	DIODE HZS7-B2	FE2501	HC10311	TUNER IF UNIT (HEPM)
ZD0903	5339297	DIODE HZS5C3	△FH0851	5722412	HOLDER, FUSE
ZD0904	5339297	DIODE HZS5C3	△FH0852	5722412	HOLDER, FUSE
ZD2501	5339288	DIODE HZS30-3	IR0701	CJ10341	MODULE PIC-21043TE3 (HEPM)
ZD2502	5339476	DIODE HZS4C1	JK1701	EQ10161	JACK
		TRANSFORMERS	JK2501	ES10343	JACK
T0401	BT10251	TRANSFORMER, POWER	LCD0701	DB10371	DISPLAY, LIQUID CRYSTAL (HEPM)
△T0851	BT10401	TRANSFORMER, POWER (HEPM)	LMP0701	5763357	LAMP
		COILS	LMP0702	5763357	LAMP
L0202	0770057	CHOKE COIL 100UH+-5%	LMP0703	5763357	LAMP
L0203	5121288	COIL 15UH	LMP0704	5763357	LAMP
L0204	5121287	COIL 10UH	PC0851	1322421	PHOTOCOUPLER PC817A
L0205	0770057	CHOKE COIL 100UH+-5%	S1713	5634884	SWITCH
L0206	5121569	COIL 82UH	S1714	5634884	SWITCH
L0208	0770057	CHOKE COIL 100UH+-5%	S1715	5634884	SWITCH
L0209	5159142	CHOKE COIL 12UH	S1719	5634884	SWITCH
L0210	5159146	CHOKE COIL 27UH	S1720	5634884	SWITCH
L0401	5159114	COIL 15MH	S2101	FD10211	SWITCH, MODE
L0403	0770057	CHOKE COIL 100UH+-5%	S2102	5635631	SWITCH
			S2103	5635631	SWITCH

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
S2701	5634884	SWITCH			
S2704	5634884	SWITCH			
S2707	5634884	SWITCH			
S2708	5634884	SWITCH			
S2709	5634884	SWITCH			
S2721	FH10231	SWITCH			
S2721	FH10271	SWITCH			

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 μ F
	P pF
Dielectric strength	No indication 50V (All dielectric strengths other than 50V are indicated in the schematic diagrams.)

[Coils]

Item	Indication
Value	μ μ H
	m mH

2. Markings in schematic diagrams

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

Cautions when using circuit board diagrams

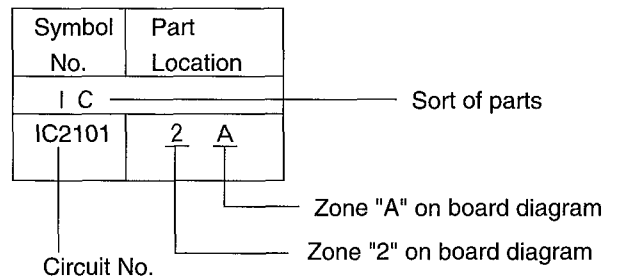
1. Identifications of sides A/B in circuit board diagrams

- 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.

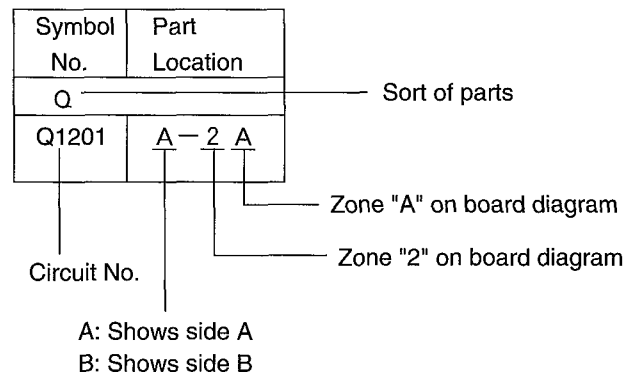
2. Table for indexing locations of parts

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.

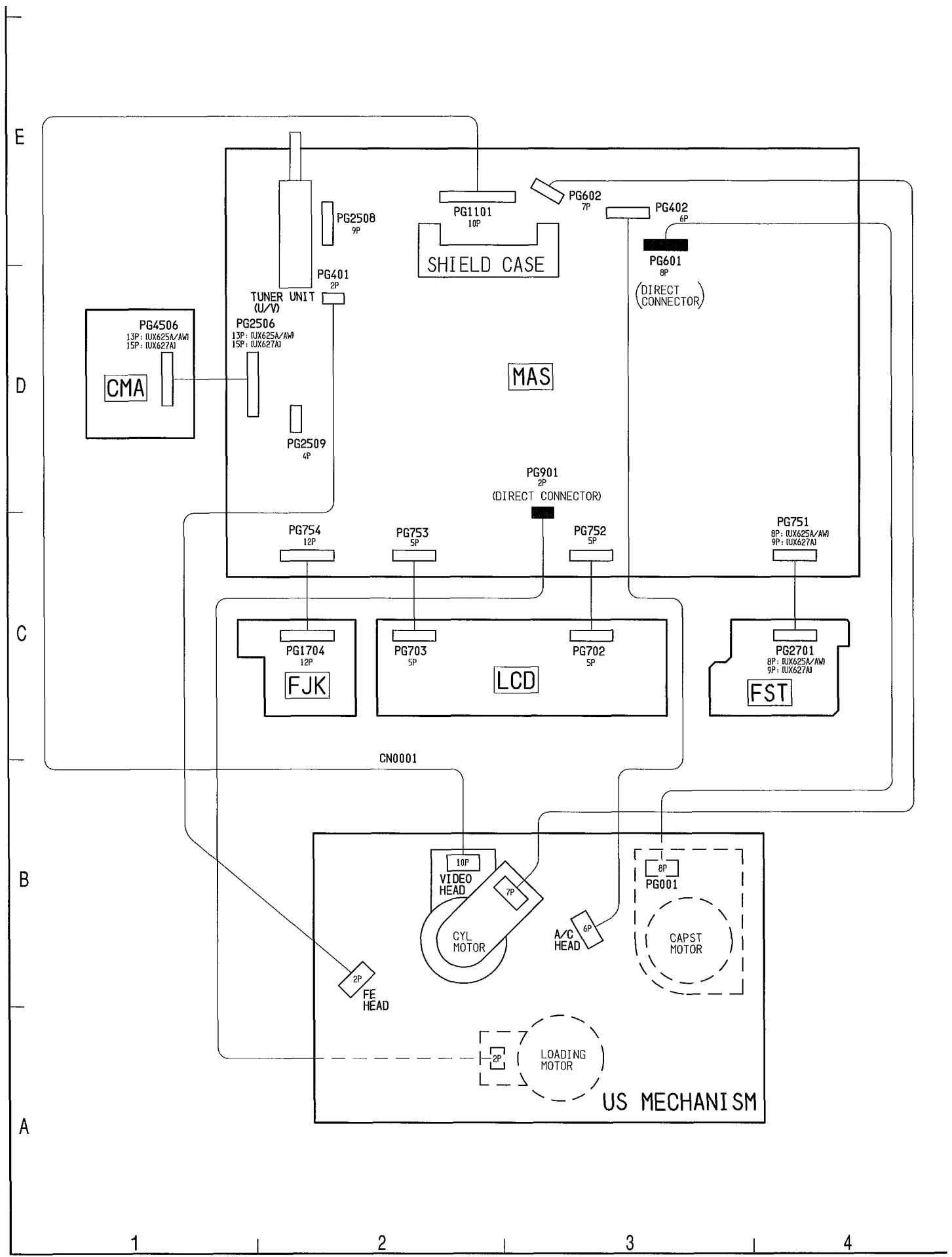
1) In case of one-layer board



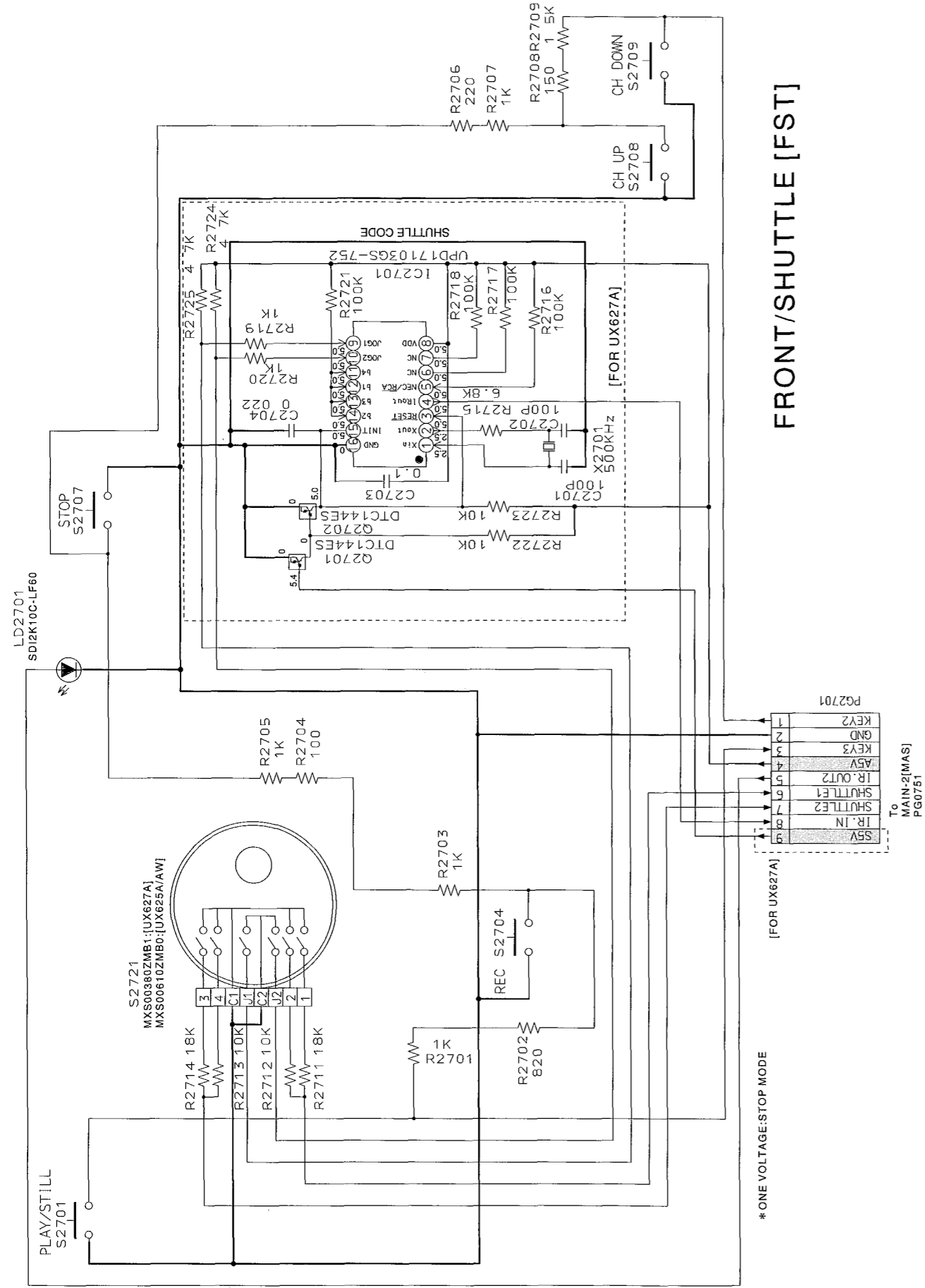
2) In case of side A/B indication board



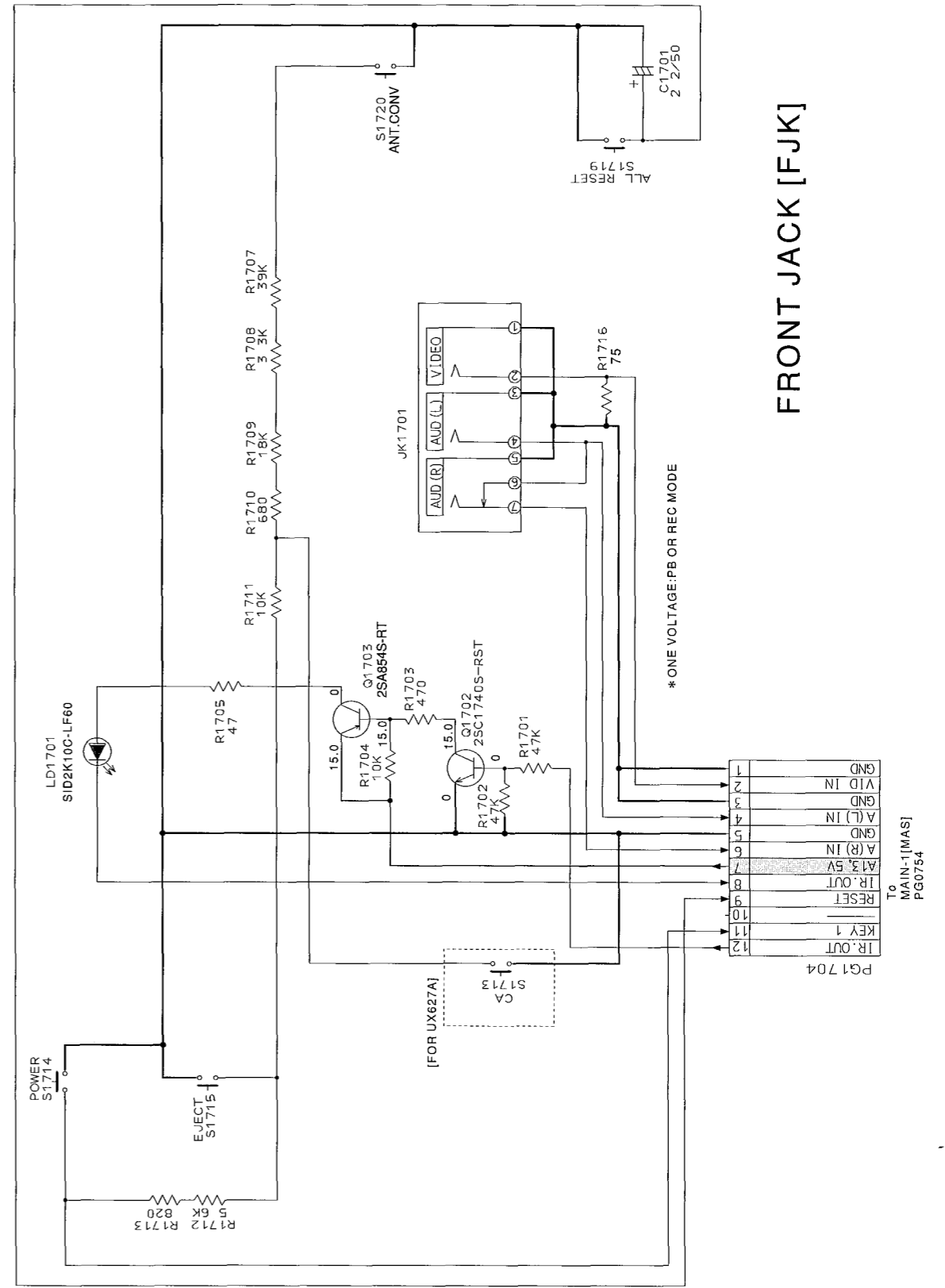
CONNECTION DIAGRAM



FRONT/SHUTTLE [FST] SCHEMATIC DIAGRAM

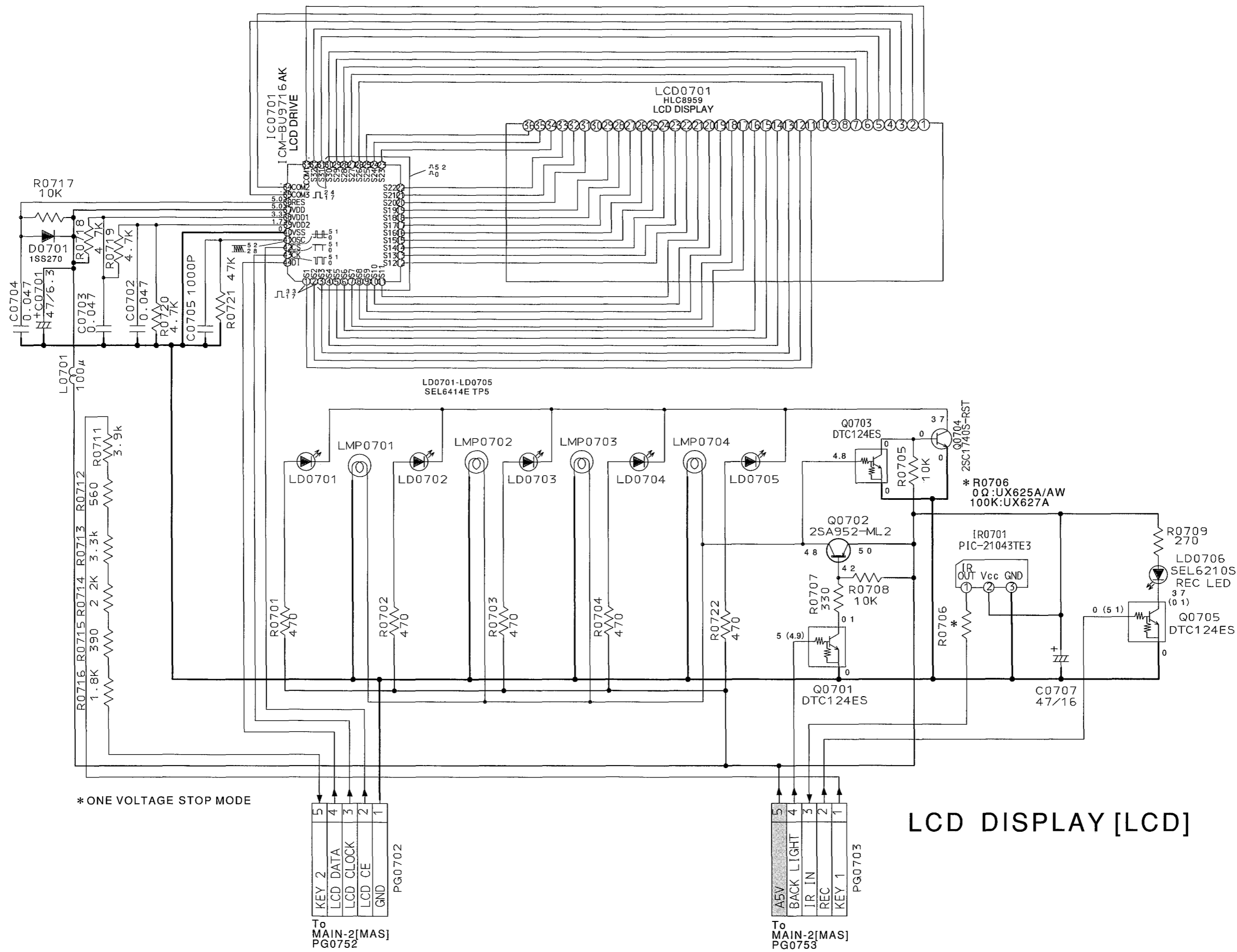


FRONT JACK [FJK] SCHEMATIC DIAGRAM



A B C D E

LCD DISPLAY [LCD] SCHEMATIC DIAGRAM



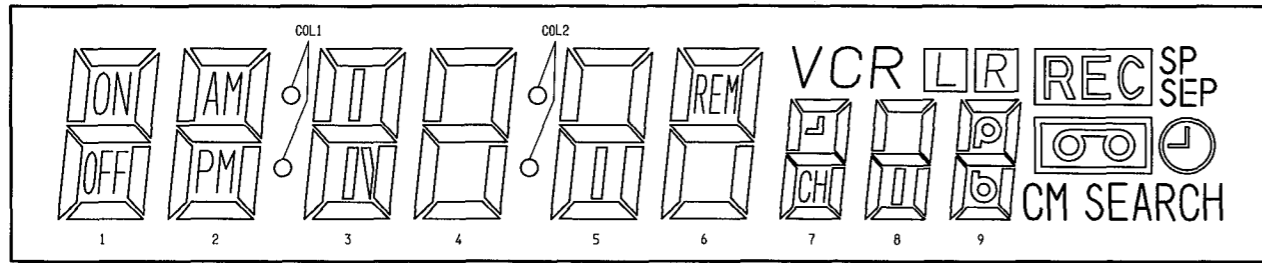
* ONE VOLTAGE STOP MODE

KEY 2
5
4
3
2
1
PG0702
To
MAIN-2[MAS]
PG0752

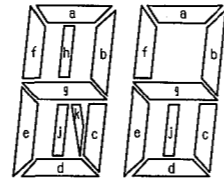
A5V
4
3
2
1
PG0703
To
MAIN-2[MAS]
PG0753

LCD DISPLAY [LCD]

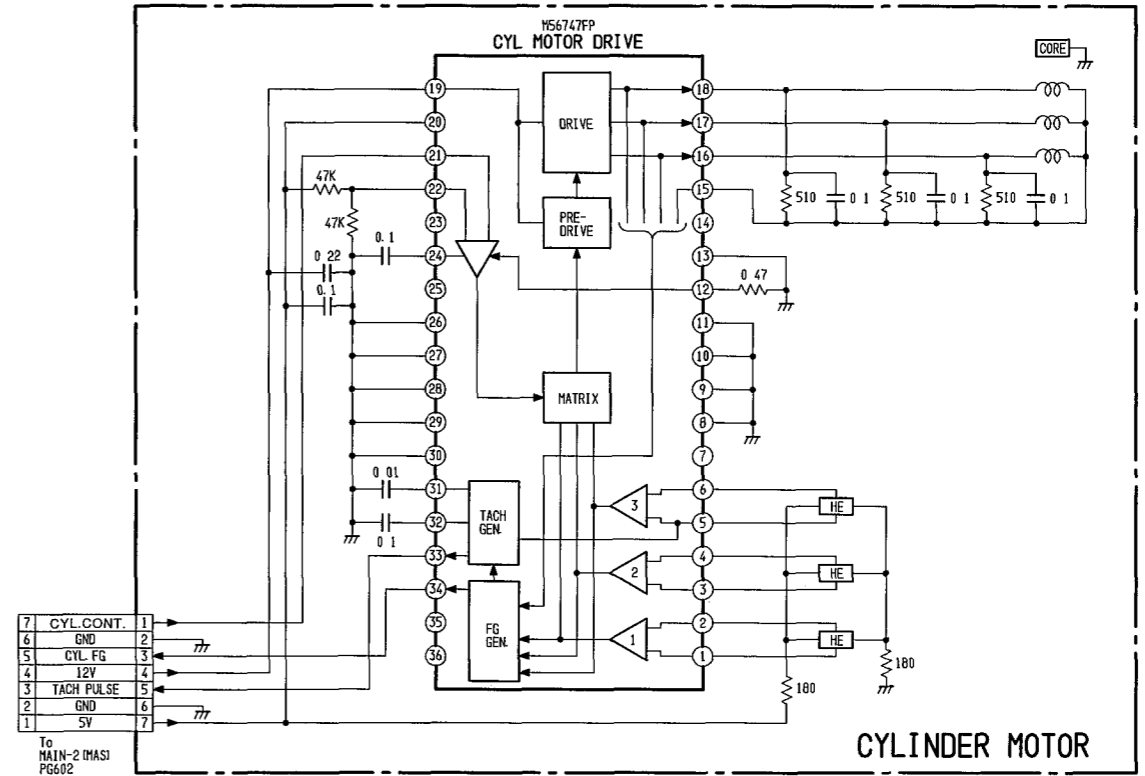
LCD GRID TABLE



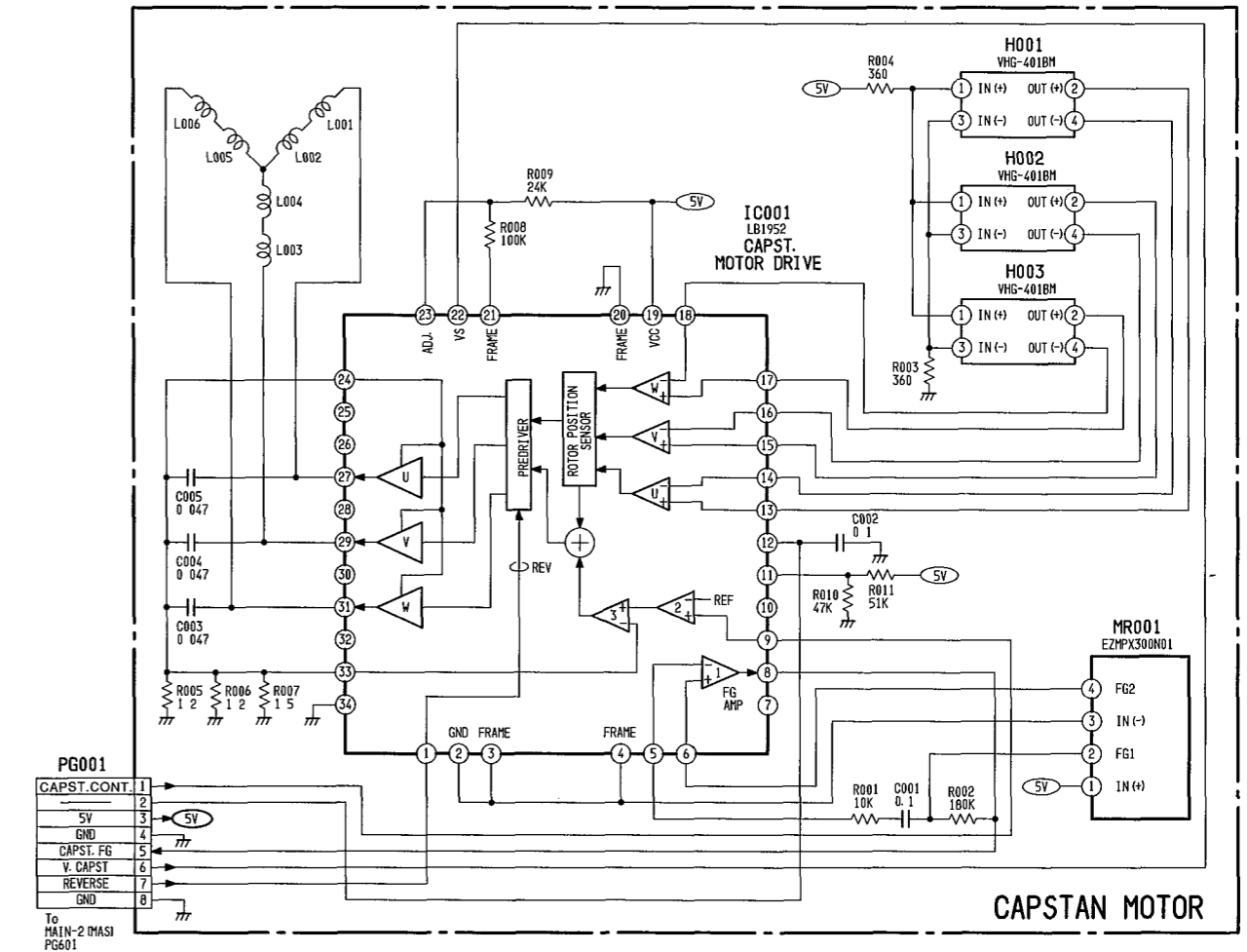
PIN No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
COM1	COM1	---	---	1adef	OFF	2d	PM	2c	3e	3g	3d	3c	4e	4d	5e	5i	5d	6e
COM2	---	COM2	---	1g	1bc	2e	2g	2b	3f	3h	3k	3b	4g	4c	5f	5g	5c	6f
COM3	---	---	COM3	ON	2a	2f	AM	COL1	---	3a	---	4f	4a	4b	COL2	5a	5b	6a
PIN No	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
COM1	6d	6c	7d	CH	7c	8d	8i	8c	9d	9g	9c	---	---	SP	S	---	---	
COM2	6g	6b	7e	7g	7b	8e	8g	8b	9e	9b	N C	---	---	LP	SEARCH	---	N C	
COM3	REM	VCR	7f	7a	8f	8a	L	9f	9a	R	---	---	---	---	---	---	---	



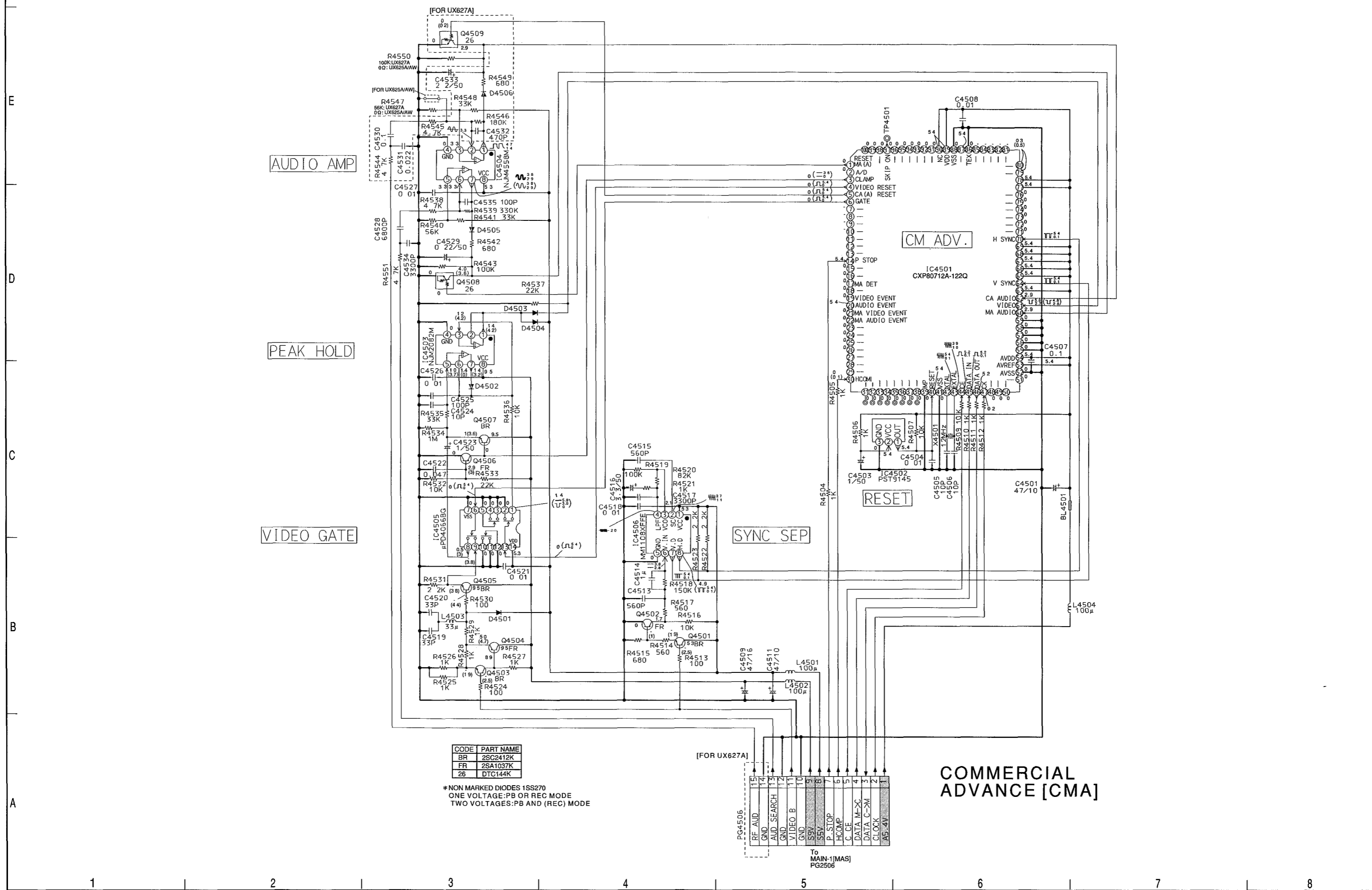
CYLINDER MOTOR SCHEMATIC DIAGRAM



CAPSTAN MOTOR SCHEMATIC DIAGRAM



COMMERCIAL ADVANCE [CMA] SCHEMATIC DIAGRAM



AUDIO AMP

PEAK HOLD

VIDEO GATE

SYNC SEP

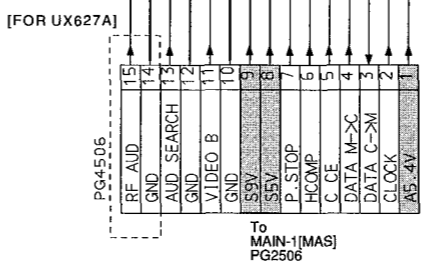
CM ADV.

RESET

CODE	PART NAME
BR	2SC2412K
FR	2SA1037K
26	DTC144K

*NON MARKED DIODES 1SS270
ONE VOLTAGE:PB OR REC MODE
TWO VOLTAGES:PB AND (REC) MODE

COMMERCIAL ADVANCE [CMA]



E

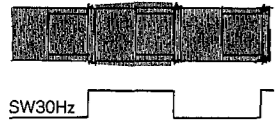



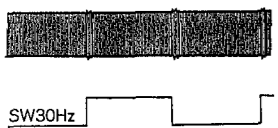

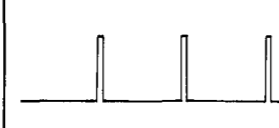






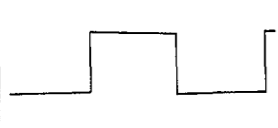

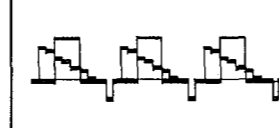


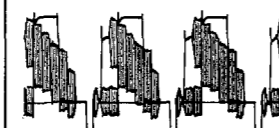
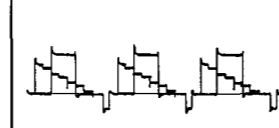
D

C

B

A

VIDEO CIRCUIT WAVEFORMS

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
			
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
			
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
			
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
			

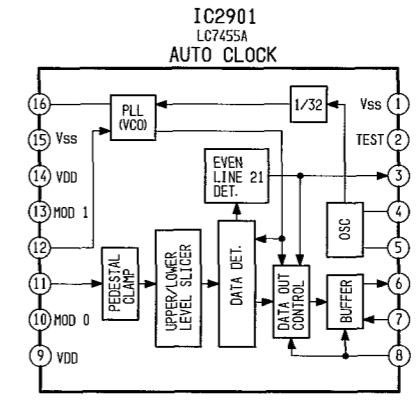
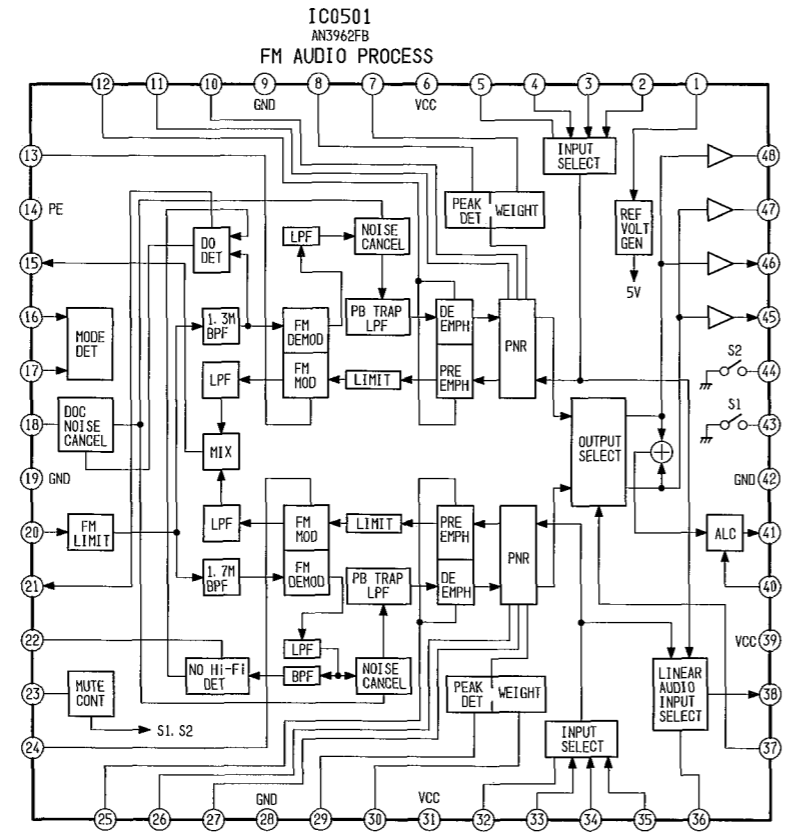
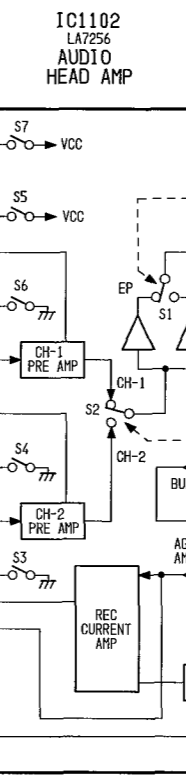
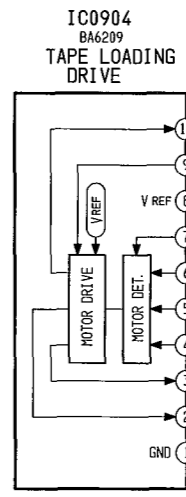
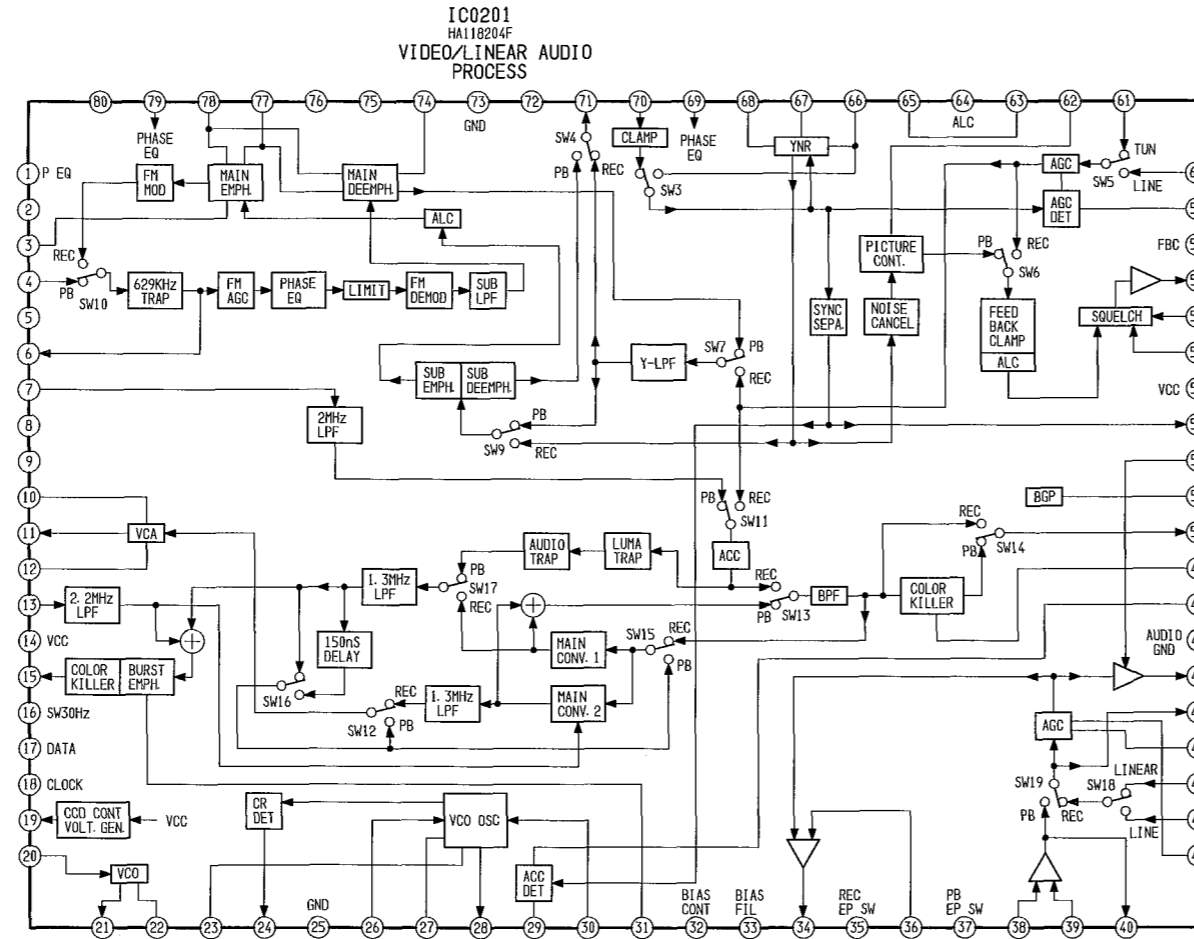
E

D

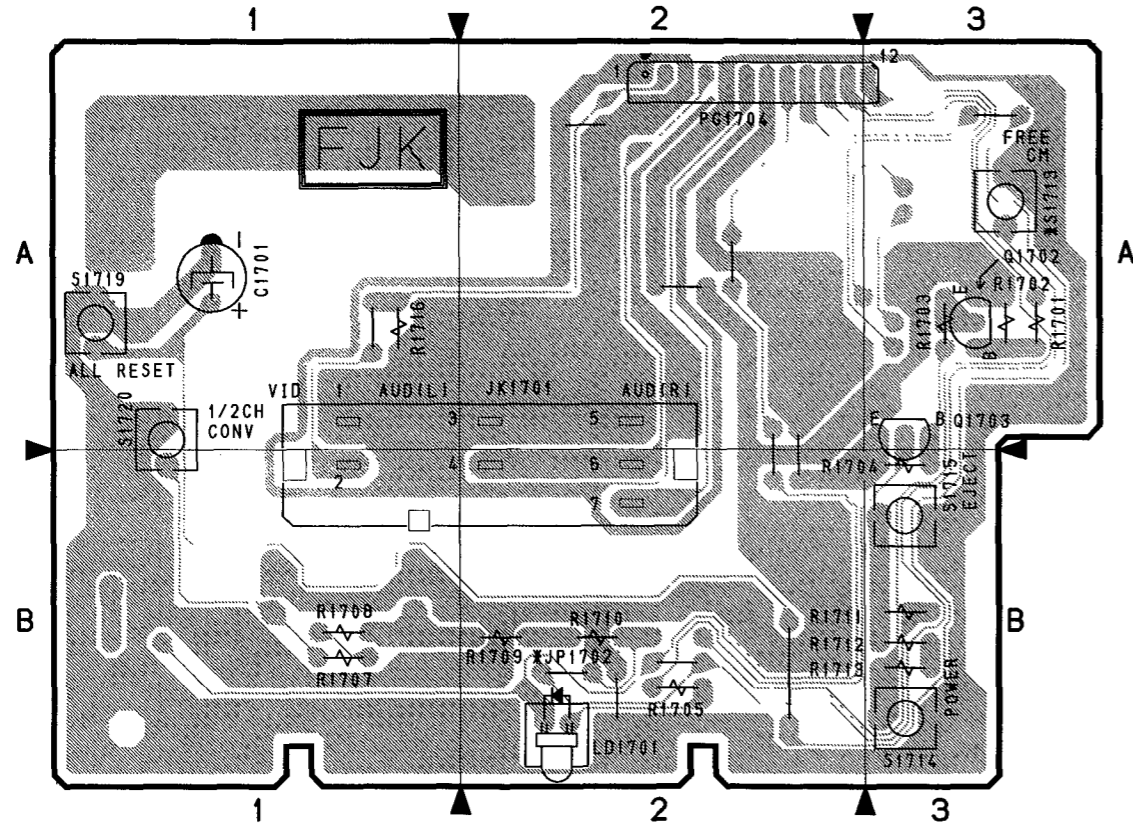
C

B

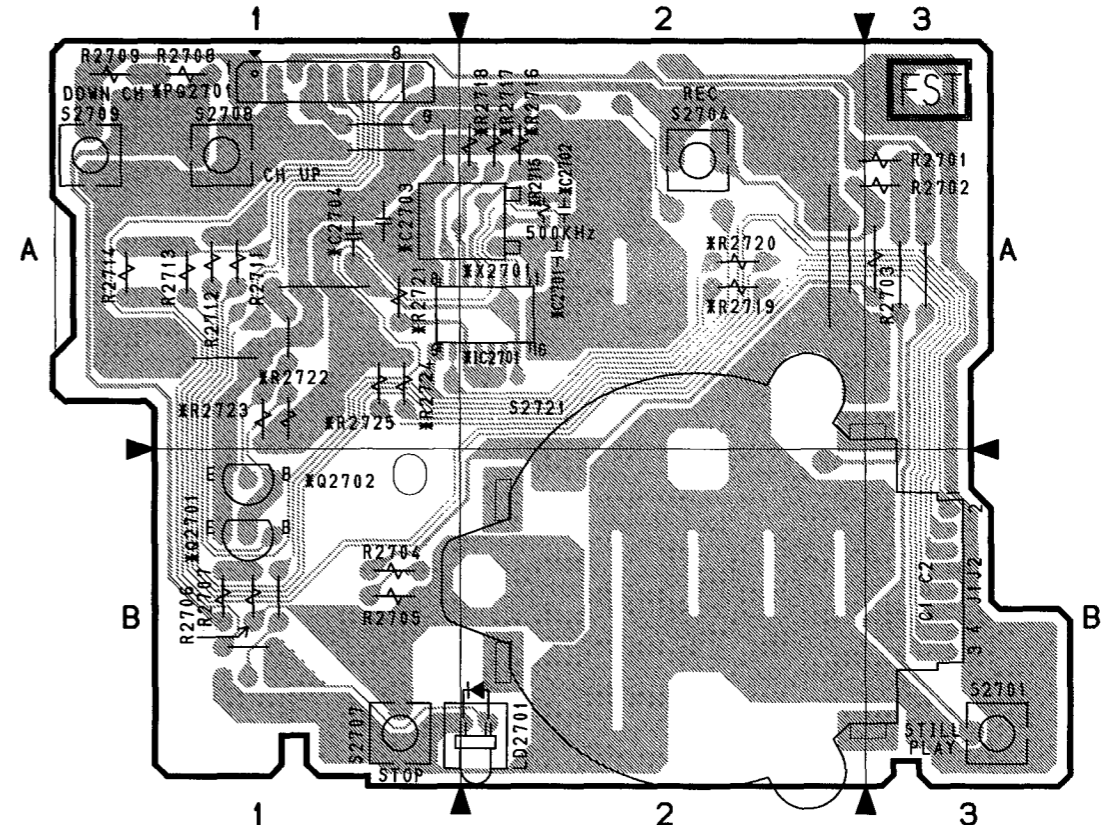
A



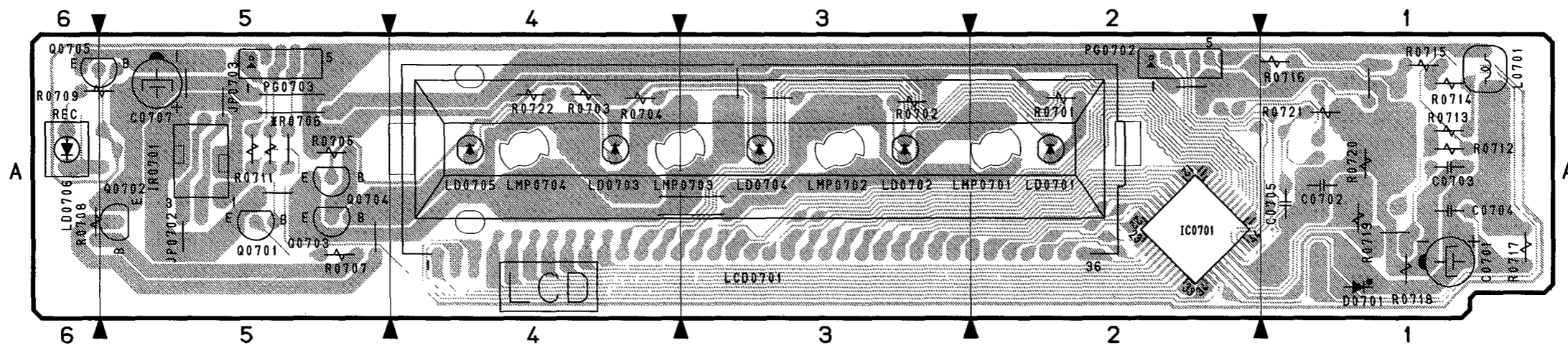
FJK,FST,LCD CIRCUIT BOARDS



FJK (FRONT JACK)
[PATTERN No. JK1281-2]

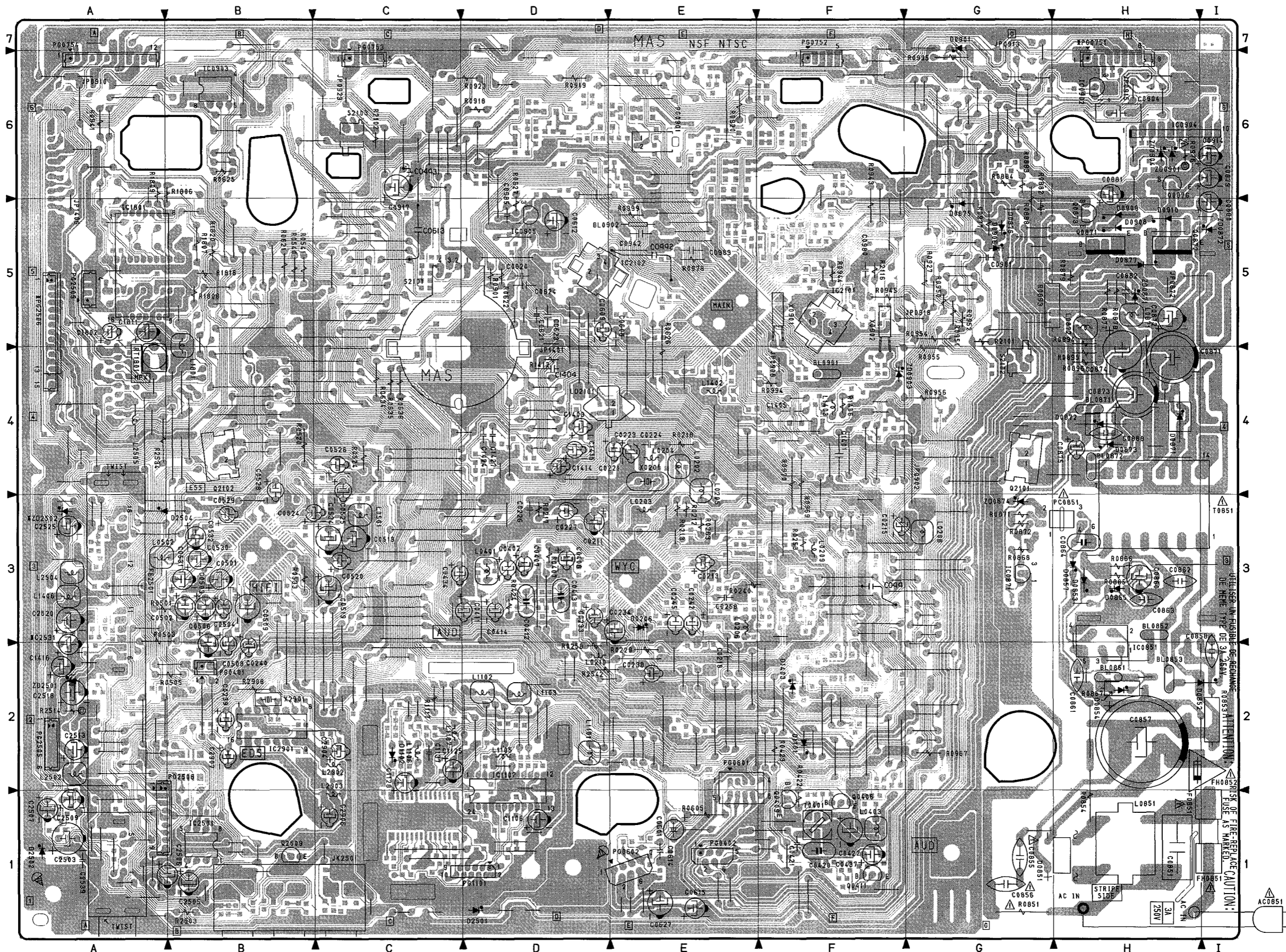


FST (FRONT/SHUTTLE)
[PATTERN No. JK1281-2]



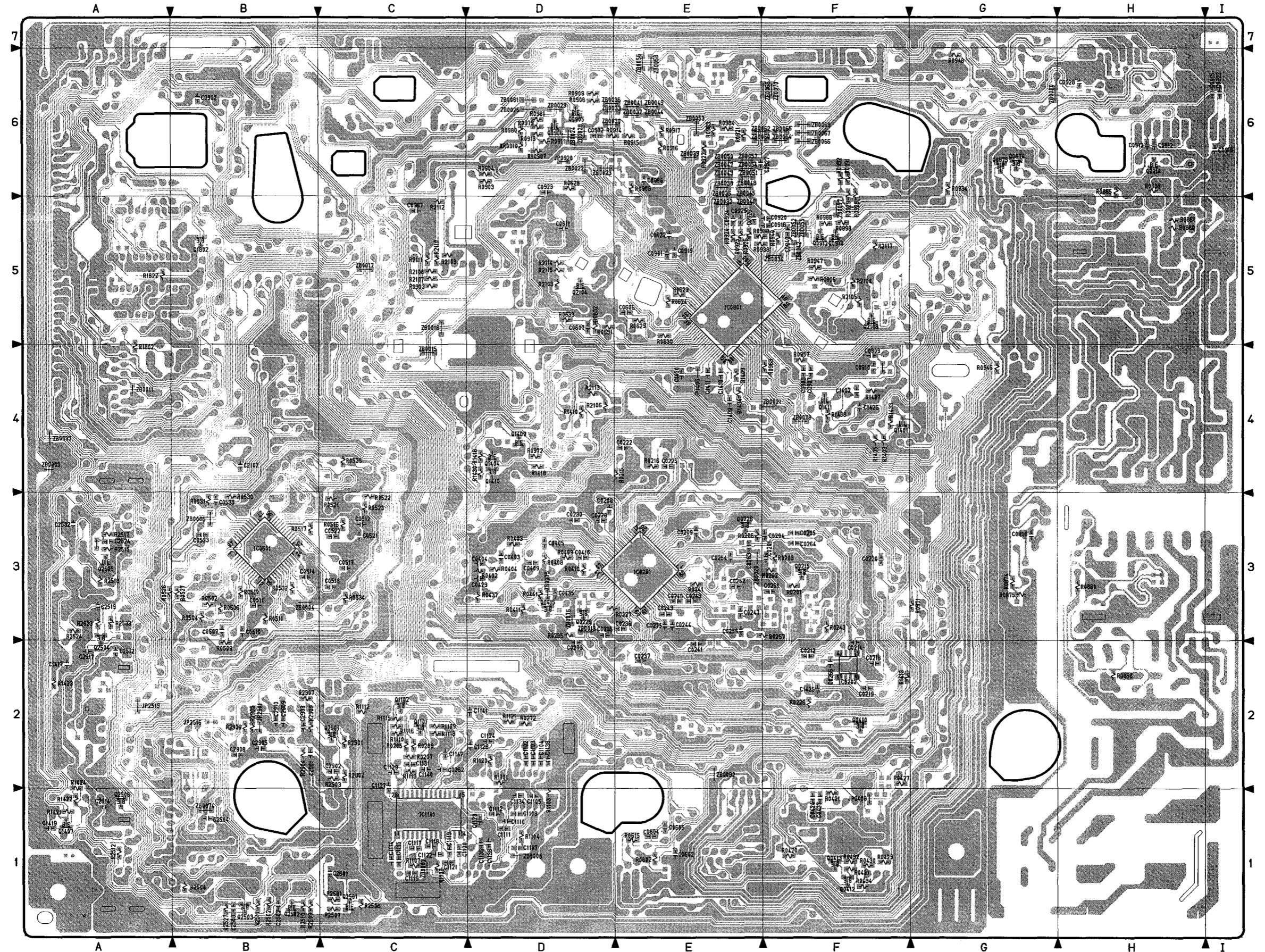
LCD (LCD DISPLAY)
[PATTERN No. JK1280-3]

MAS CIRCUIT BOARD [SIDE · A]



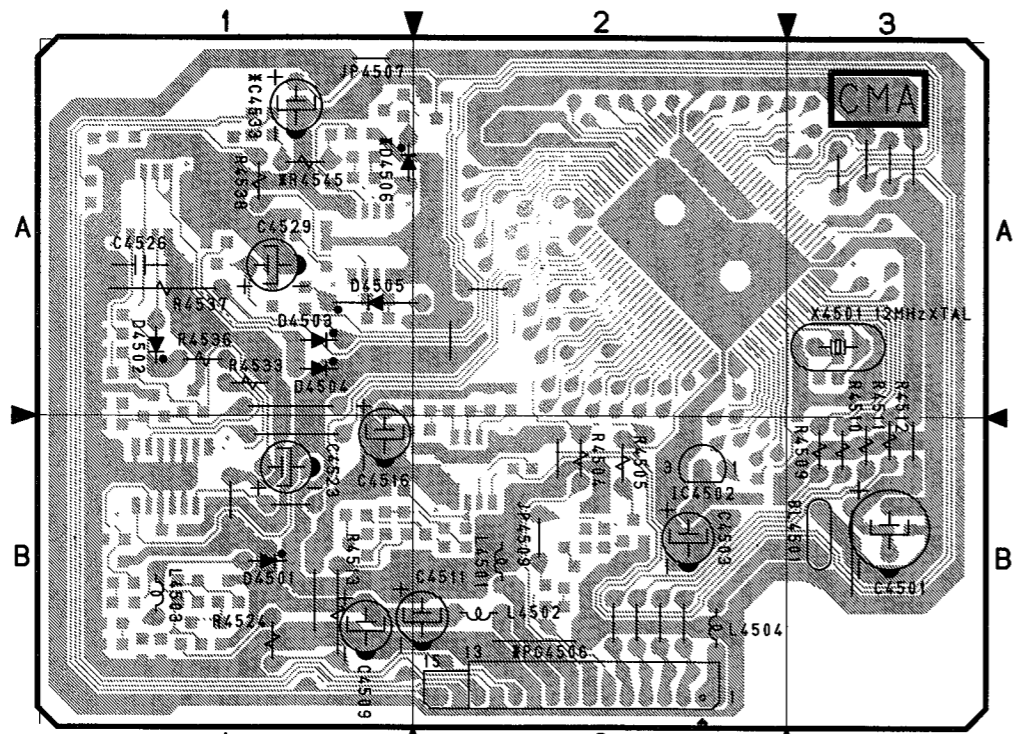
MAS[MAIN]-SIDE A-
[PATTERN No. JK1278-4]

MAS CIRCUIT BOARD [SIDE·B]

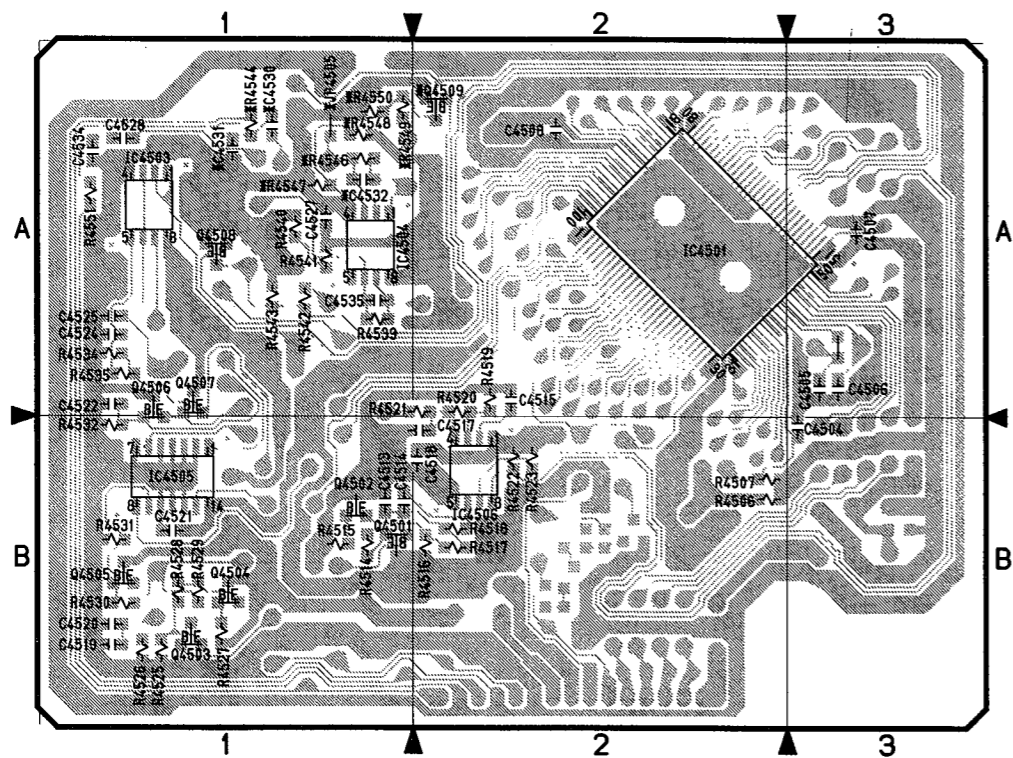


MAS[MAIN]-SIDE B-
[PATTERN No. JK1278-4]

CMA CIRCUIT BOARD



CMA (CM ADVANCE) - SIDE A -
[PATTERN No. JK1281-2]



CMA (CM ADVANCE) - SIDE B -
[PATTERN No. JK1281-2]

IDENTIFICATION OF PARTS LOCATION

FST
[FRONT/SHUTTLE]

Symbol No	Parts Location
C	
C2701	2A
C2702	2A
C2703	1A
C2704	1A
IC	
IC2701	2A
LD	
LD2701	2B
PG	
PG2701	1A
Q	
Q2701	1B
Q2702	1B
R	
R2701	3A
R2702	3A
R2703	3A
R2704	1B
R2705	1B
R2706	1B
R2707	1B
R2708	1A
R2709	1A
R2711	1A
R2712	1A
R2713	1A
R2714	1A
R2715	2A
R2716	2A
R2717	2A
R2718	2A
R2719	2A
R2720	2A
R2721	1A
R2722	1A
R2723	1A
R2724	1A
R2725	1A
S	
S2701	3B
S2704	2A
S2707	1B
S2708	1A
S2709	1A
S2721	3B
X	
X2701	2A

FJK
[FRONT JACK]

Symbol No	Parts Location
C	
C1701	1A
JK	
JK1701	2B
JP	
JP1702	2B
LD	
LD1701	2B
PG	
PG1704	2A
Q	
Q1702	3A
Q1703	3A
R	
R1701	3A
R1702	3A
R1703	3A
R1704	3B
R1705	2B
R1707	1B
R1708	1B
R1709	2B
R1710	2B
R1711	3B
R1712	3B
R1713	3B
R1716	1A
S	
S1713	3A
S1714	3B
S1715	3B
S1719	1A
S1720	1A

LCD
[LCD DISPLAY]

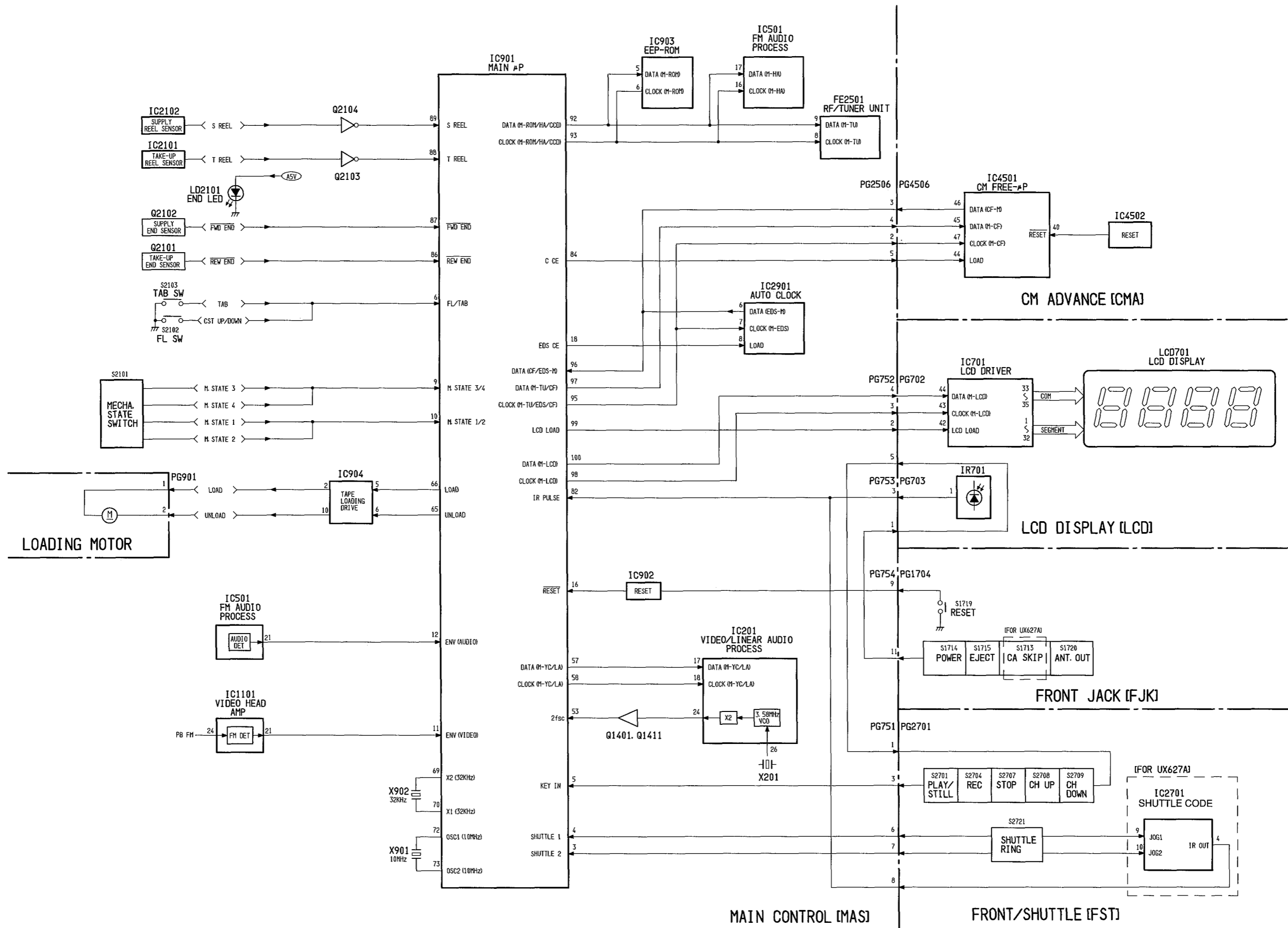
Symbol No.	Parts Location
C	
C0701	1A
C0702	1A
C0703	1A
C0704	1A
C0705	1A
C0707	5A
D	
D0701	1A
IC	
IC0701	2A
IR	
IR0701	5A
L	
L0701	1A
LCD	
LCD0701	3A
LD	
LD0701	2A
LD0702	3A
LD0703	4A
LD0704	3A
LD0705	4A
LD0706	6A
LMP	
LMP0701	2A
LMP0702	3A
LMP0703	3A
LMP0704	4A
PG	
PG0702	2A
PG0703	5A
Q	
Q0701	5A
Q0702	5A
Q0703	5A
Q0704	5A
Q0705	5A
R	
R0701	2A
R0702	3A
R0703	4A
R0704	4A
R0705	5A
R0706	5A
R0707	5A
R0708	6A
R0709	5A
R0711	5A
R0712	1A
R0713	1A
R0714	1A
R0715	1A
R0716	1A
R0717	1A
R0718	1A
R0719	1A

Symbol No	Parts Location
R0720	1A
R0721	1A
R0722	4A

CMA [COMMERCIAL ADVANCE]

Symbol No	Parts Location	Symbol No.	Parts Location	Symbol No	Parts Location
BL		PG4506	A-2B	R4550	B-1A
BL4501	A-3B	Q		R4551	B-1A
C		Q4501	B-1B	X	
C4501	A-3B	Q4502	B-1B	X4501	A-3A
C4503	A-2B	Q4503	B-1B		
C4504	B-3B	Q4504	B-1B		
C4505	B-3A	Q4505	B-1B		
C4506	B-3A	Q4506	B-1A		
C4507	B-3A	Q4507	B-1A		
C4508	B-2A	Q4508	B-1A		
C4509	A-1B	Q4509	B-2A		
C4511	A-2B	R			
C4513	B-1B	R4504	A-2B		
C4514	B-1B	R4505	A-2B		
C4515	B-2A	R4506	B-2B		
C4516	A-1B	R4507	B-2B		
C4517	B-2B	R4509	A-3B		
C4518	B-2B	R4510	A-3B		
C4519	B-1B	R4511	A-3B		
C4520	B-1B	R4512	A-3B		
C4521	B-1B	R4513	A-1B		
C4522	B-1A	R4514	B-1B		
C4523	A-1B	R4515	B-1B		
C4524	B-1A	R4516	B-2B		
C4525	B-1A	R4517	B-2B		
C4526	A-1A	R4518	B-2B		
C4527	B-1A	R4519	B-2A		
C4528	B-1A	R4520	B-2A		
C4529	A-1A	R4521	B-2A		
C4530	B-1A	R4522	B-2B		
C4531	B-1A	R4523	B-2B		
C4532	B-1A	R4524	A-1B		
C4533	A-1A	R4525	B-1B		
C4534	B-1A	R4526	B-1B		
C4535	B-1A	R4527	B-1B		
D		R4528	B-1B		
D4501	A-1B	R4529	B-1B		
D4502	A-1A	R4530	B-1B		
D4503	A-1A	R4531	B-1B		
D4504	A-1A	R4532	B-1B		
D4505	A-1A	R4533	A-1A		
D4506	A-1A	R4534	B-1A		
IC		R4535	B-1A		
IC4501	B-2A	R4536	A-1A		
IC4502	A-2B	R4537	A-1A		
IC4503	B-1A	R4538	A-1A		
IC4504	B-1A	R4539	B-1A		
IC4505	B-1B	R4540	B-1A		
IC4506	B-2B	R4541	B-1A		
JP		R4542	B-1A		
JP4505	B-1A	R4543	B-1A		
L		R4544	B-1A		
L4501	A-2B	R4545	A-1A		
L4502	A-2B	R4546	B-1A		
L4503	A-1B	R4547	B-1A		
L4504	A-2B	R4548	B-1A		
PG		R4549	B-1A		

BLOCK DIAGRAMS
1.SYSTEM CONTROL



2.SERVO

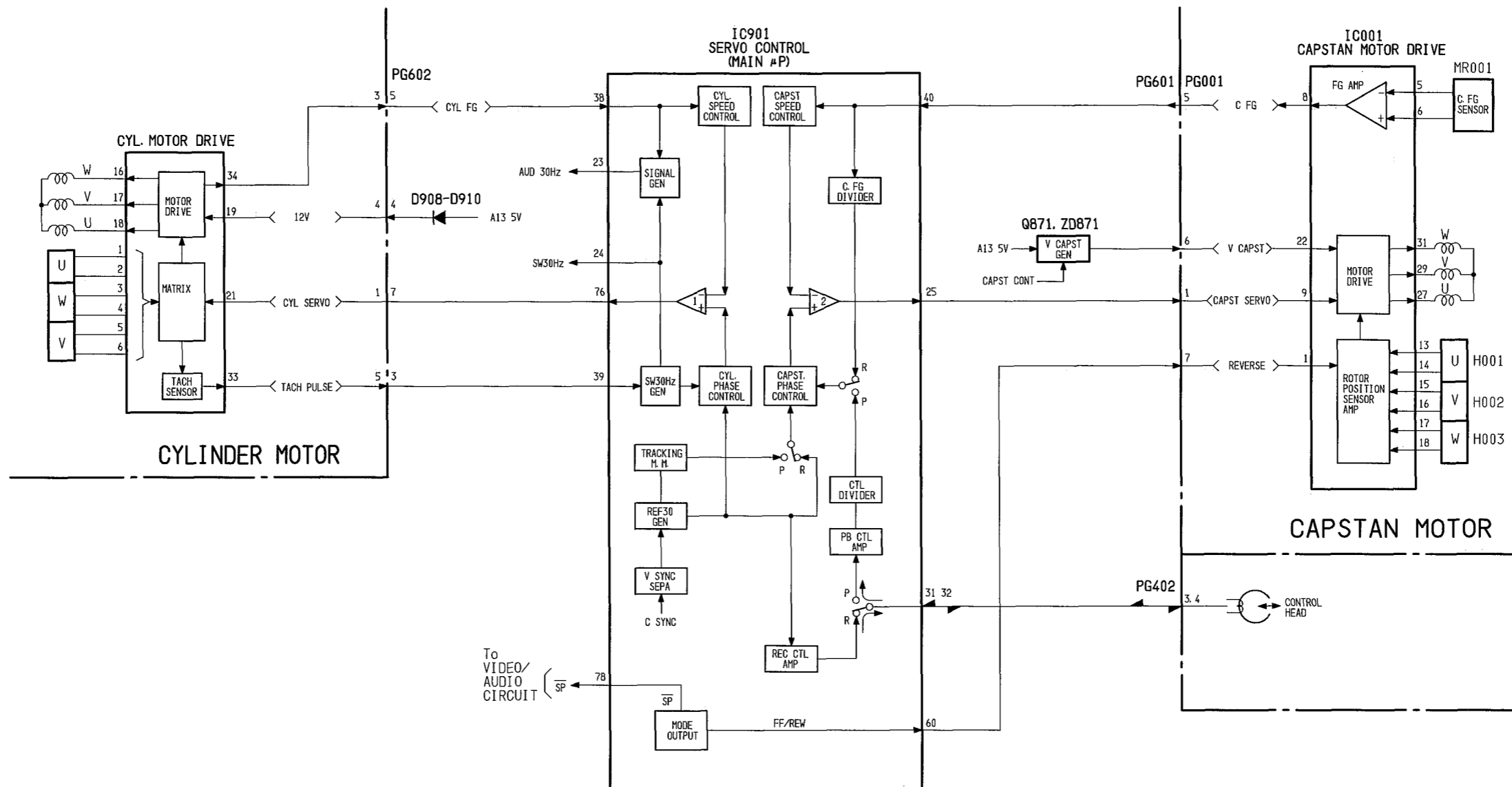
E

D

C

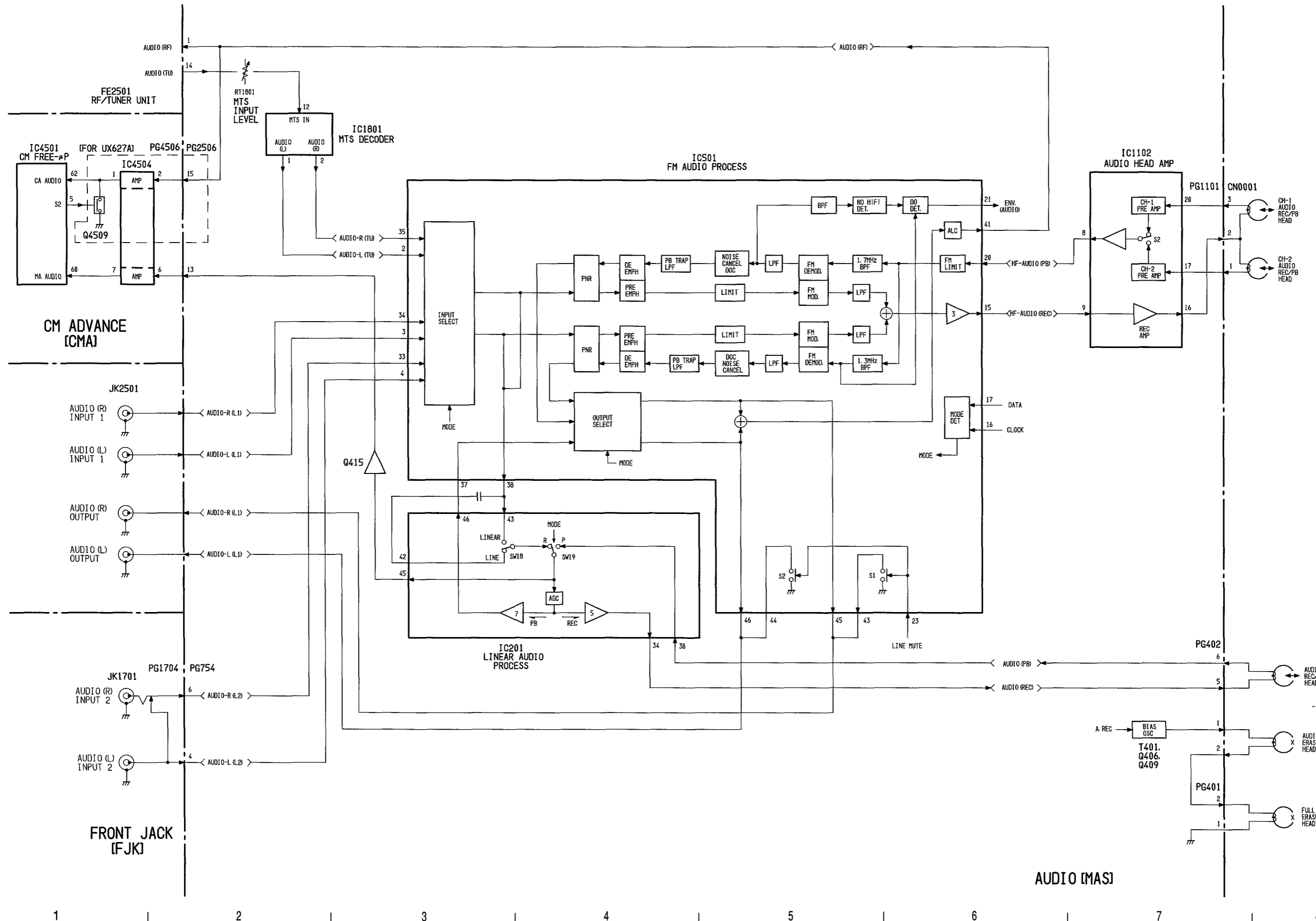
B

A



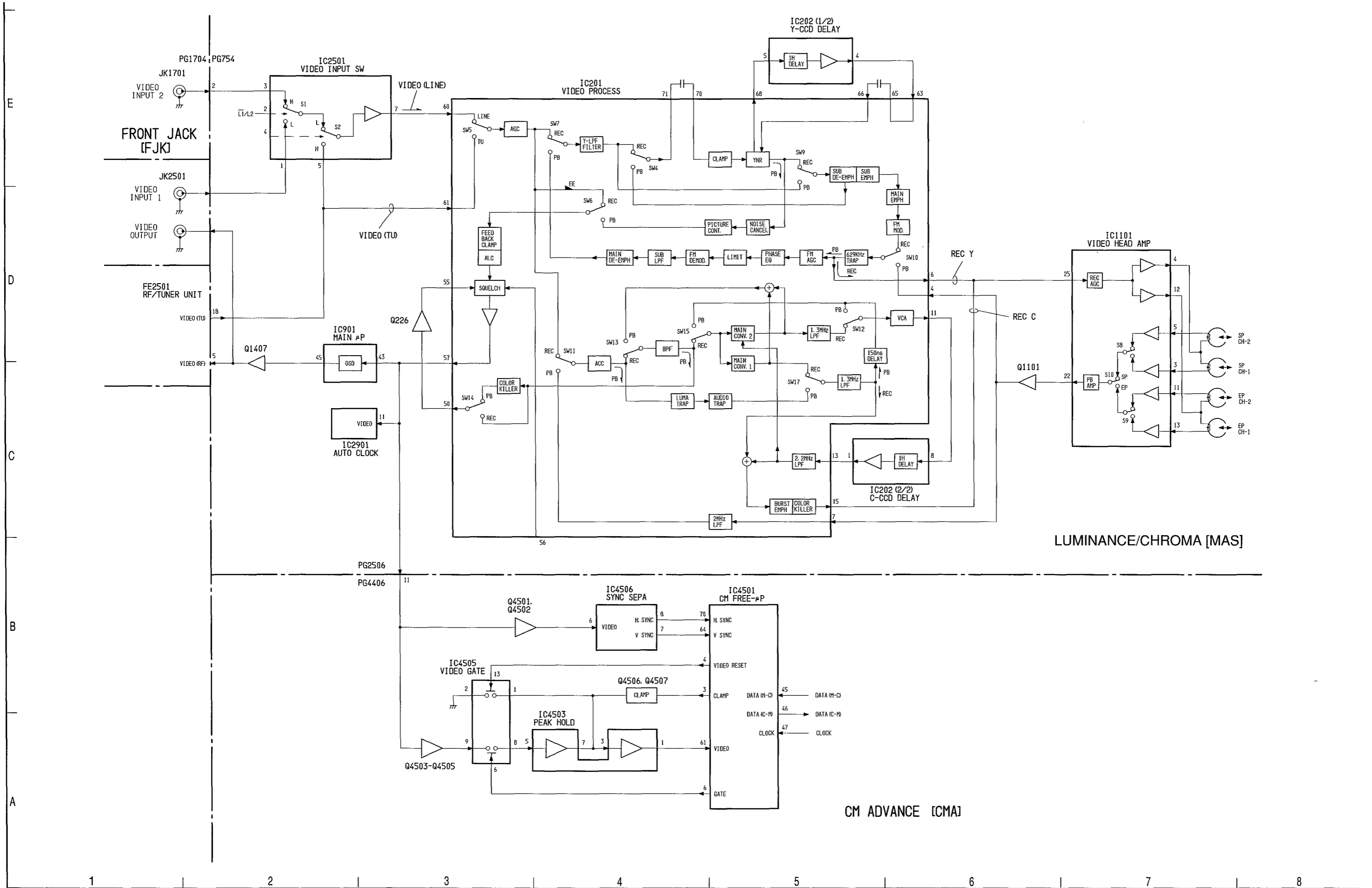
SERVO [MAS]

3.AUDIO



E
D
C
B
A

4.VIDEO



LUMINANCE/CHROMA [MAS]

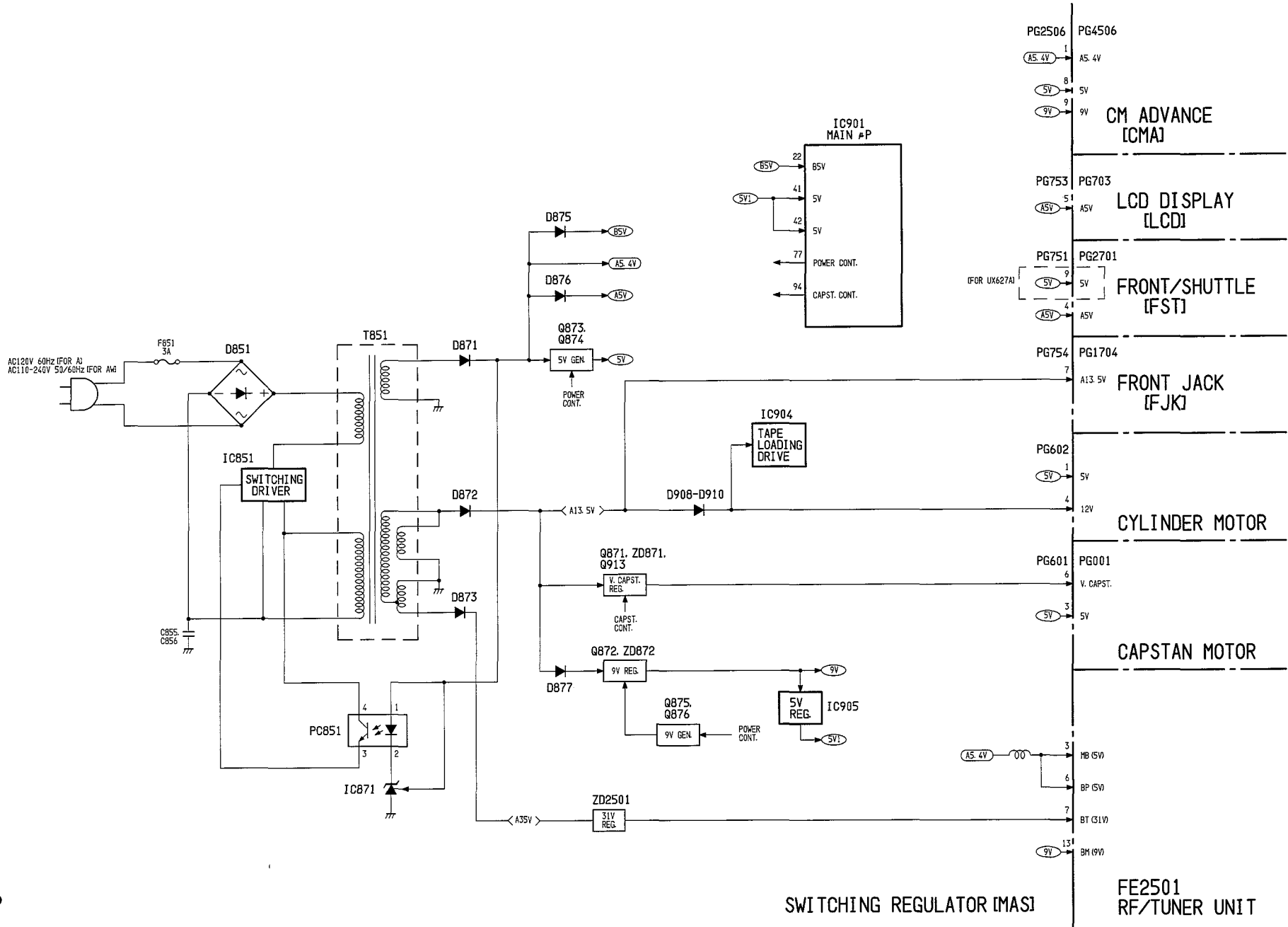
CM ADVANCE [CMA]

E
D
C
B
A

1 2 3 4 5 6 7 8

VIDEO 6-38 6-39 VIDEO

5. REGULATOR



◆ Microprocessor Pin Function Tables

1. LCD DRIVER (IC701)

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]	
32	O	Pulse	SEGMENT 32 [S32]	LCD common (COM) control outputs.
33	O	Pulse	COM1	
34	O	Pulse	COM2	
35	O	Pulse	COM3	Initializes the LCD-uP when power is supplied.
36	I	Lo	RESET(L)	
37	I	Hi	VDD	A5V power input.
38	I	-	VDD 1	LCD drive bias.
39	I	-	VDD 2	LCD drive bias.
40	-	Lo	VSS	Ground.
41	I/O	-	OSC	Generates a 32kHz signal for key scanning.
42	I	Lo	LCD. LOAD (L) [CS]	LOAD signal between the M-uP and LCD-uP. "Lo" input enables chip select.
43	I	Pulse	CLOCK (M-LCD) [CK]	The data transferred from the M-uP, synchronized with the clock signal.
44	I	Pulse	DATA (M-LCD) [DI]	

2. MAIN uP (IC901)

Pin No.	I/O	Active Level	Abbreviation	Function																											
1	O	Hi	BACKLIGHT	LCD backlight switching signal.																											
2	-	-	GND	Ground.																											
3	I	A/D	SHUTTLE 2	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	Key matrix input.																											
6	I	A/D	FL/TAB	Cassette position/erase prevention tab detection input. Hi: TAB SW OFF (with tab), Mid: TAB SW ON (without tab), Lo: When cassette is being inserted/ejected. When a cassette without its erase prevention tab is inserted, recording is inhibited, and when the timer is programmed, it is ejected automatically.																											
7	I	Lo	P. STOP(L)	When A5V voltage drops and "Lo" is input, the M-uP detects that a power failure has occurred.																											
8	I	Hi	S-CURVE	Detects the AFT (S-CURVE) signal from the IF unit to fine tune to a station.																											
9	I	A/D	MODE 2	The signals which detect the mechanism state are input to control the loading motor.																											
10	I	A/D	MODE 1																												
				<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>13</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>14</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	13	0	2.5	1.8	2.5	3.05	3.05	2.5	0	14	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																							
13	0	2.5	1.8	2.5	3.05	3.05	2.5	0																							
14	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 + SAP signal input, Mid low: Mono + SAP signal input, Mid high: Stereo signal input, Hi: Mono signal input.																											
15	I	-	A5V	Connected to A5V.																											
16	I	Lo	RESET (L)	Initializes the M-uP when power is supplied.																											
17	O	H/L	V.CAP 1	See page 6-44.																											
18	O	Hi	EDS CE	LOAD signal between the M-uP and AUTO CLOCK IC.																											
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	DRUM. 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	DRUM.FG	Cylinder FG (CYL.FG) pulse input. Controls the cylinder speed during recording and playback.																											
39	I	Pulse	TACH PULSE [DRUM.PG]	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	-	S5V (SRV)	Connected to 5V.
42	I	-	S5V (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	SSB DATA	Common communication lines with VIDEO/LINEAR AUD. ICs; data is transferred, synchronized with the clock signal.
58	O	Pulse	SSB CLOCK	
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	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.
64	O	Pulse	IR OUT	Signal output to the cable and DSS box control circuit.
65	O	Hi	UNLOAD [LM2]	Loading motor drive signals which set the mechanism to the commanded mode.
66	O	Hi	LOAD [LM1]	
67	O	Hi	REC	REC indi. control. REC;Hi
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	DRUM 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)	Tape speed output.
79	O	Hi	V.REC MUTE	Video signal record muting control. Prevents the signal from being supplied to the video heads.
80	O	Hi	REC	Sets the video and audio head amp circuits to the recording mode. Tuner audio muting control.
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	Lo	C.CE	LOAD signal between the M-up and Commercial advance-up.

Pin No.	I/O	Active Level	Abbreviation	Function												
85	I	Pulse	LINE21	EDS LINE 21H pulse input.												
86	I	Lo	REW END (L) [EST]	When "Lo" is input from the mechanism sensor, the current mode is released. Two sensors detect the two ends of tape. When "Lo" is input from both sensors, the M-uP detects that a cassette is not loaded in the VCR.												
87	I	Lo	FWD END (L) [ESS]													
88	I	Pulse	T.REEL	Calculates the period of the take-up reel pulse to detect whether or not slack tape is taken up on the reel. If slack tape is not taken up, the M-uP stops the mechanism. The supply reel pulses are used with the take-up reel pulses to calculate the tape remaining time.												
89	I	Pulse	S.REEL													
90	I	Lo	CHECK	Checks short-circuits in the 5V/9V power supplies. (This pin goes "Lo" normally when power is off.)												
91	O	Hi	ST/SAP OUT	Output to control the MTS decoder so it is set to the SAP mode.												
92	I/O	Pulse	I2C DATA	Common communications lines with the ROM/Hi-Fi AUD/UV-Tuner, data is communicated, synchronized with the clock signal.												
93	O	Pulse	I2C CLOCK													
17	O	H/L	V.CAPST 1	This is output in the slow, still, playback, recording, fast forward and rewind modes to control the voltage applied to the capstan motor.												
94	O	H/L	V.CAPST 2													
				<table border="1"> <thead> <tr> <th>Pin 17 V.CAP1</th> <th>Pin 94 V.CAP2</th> <th>VOLT.</th> </tr> </thead> <tbody> <tr> <td>Hi</td> <td>Hi</td> <td>7.5V</td> </tr> <tr> <td>Lo</td> <td>Hi</td> <td>9.5V</td> </tr> <tr> <td>Lo</td> <td>Lo</td> <td>13.5V</td> </tr> </tbody> </table>	Pin 17 V.CAP1	Pin 94 V.CAP2	VOLT.	Hi	Hi	7.5V	Lo	Hi	9.5V	Lo	Lo	13.5V
Pin 17 V.CAP1	Pin 94 V.CAP2	VOLT.														
Hi	Hi	7.5V														
Lo	Hi	9.5V														
Lo	Lo	13.5V														
95	O	Pulse	CLOCK	Communication lines with the Commercial advance-up/EDS IC; data is transferred, synchronized with the clock signal.												
96	O	Pulse	DATA (M-CE)													
97	I	Pulse	DATA (CE-M)	EDS caption data input. Commercial advance-uP data input.												
98	O	Pulse	LCD CLOCK	Communication lines with the LCD DRIVER; data is transferred, synchronized with the clock signal.												
100	O	Pulse	LCD DATA													
99	O	Lo	LCD CE(L)	LOAD signal between the M-uP and LCD DRIVER.												

CHAPTER 7 TROUBLE DISPLAY AND TROUBLESHOOTING

◆ 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.

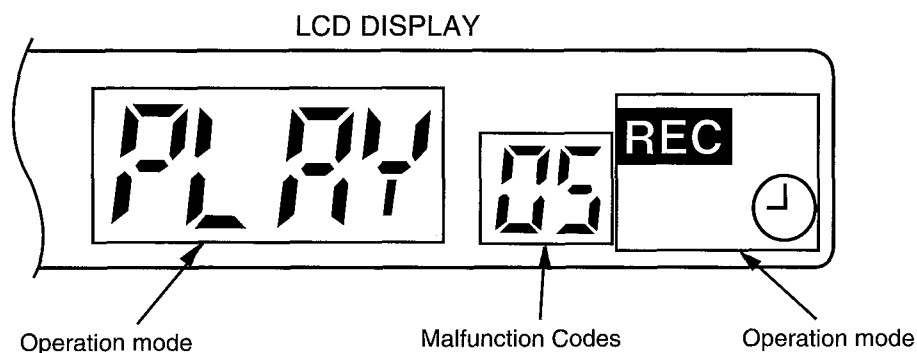
Procedure to display a malfunction

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.

* Hold the "PLAY" button depressed and release it after the display lights.



[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

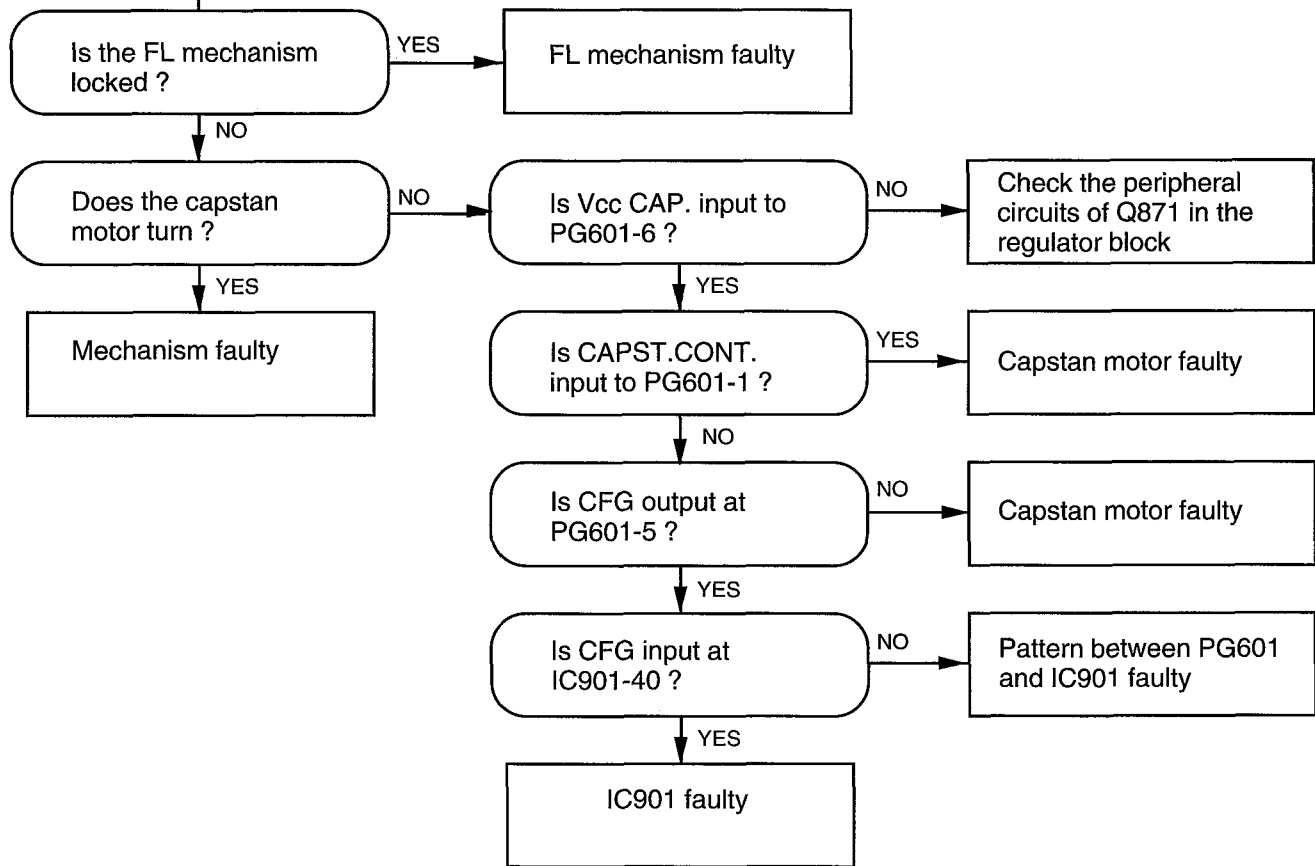
[Mode Display when Malfunction Has Occurred]

Mode	Display	Mode	Display
Stop	No display	Recording pause	REC (flashes)
Fast forward	FF	Playback	PLAY
Super fast forward	S.FF	Forward search	SRCH
Rewind	REW	Reverse search	-SRCH
Super rewind	S.REW	Slow	SLOW
Recording	REC	Still play	STILL
Timer recording	REC	Reverse slow	-SLOW

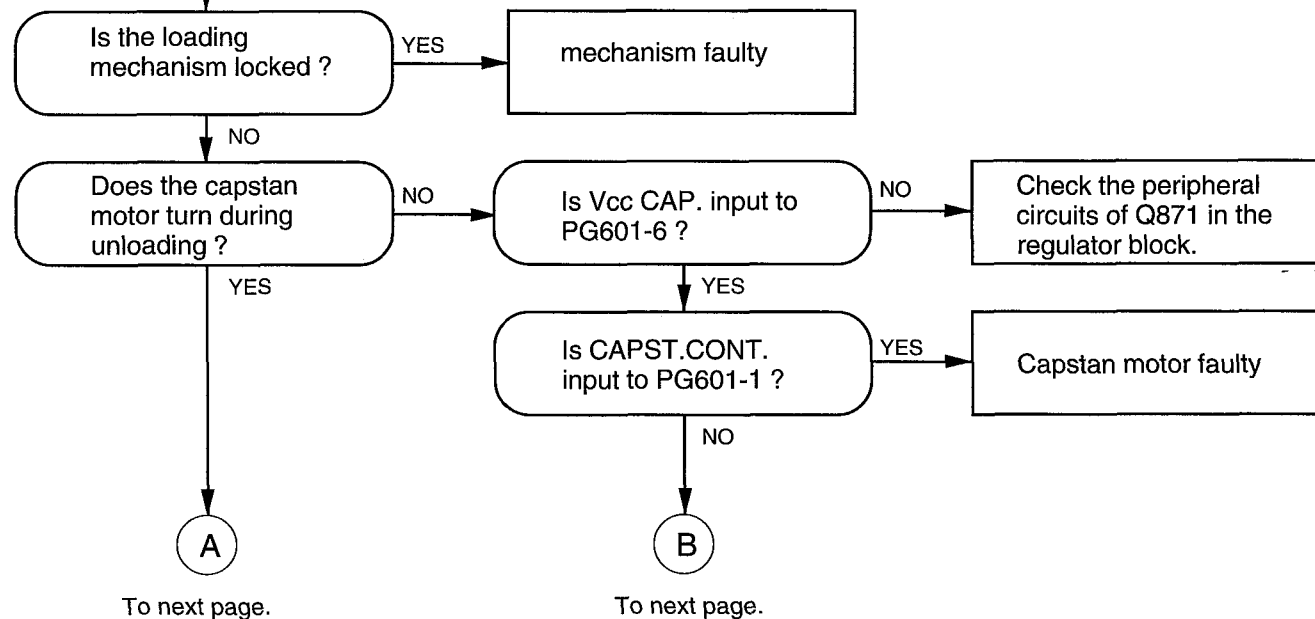
No symbols are displayed if the malfunction occurred when a cassette was inserted or ejected, or the power was switched on from off, and off from on.

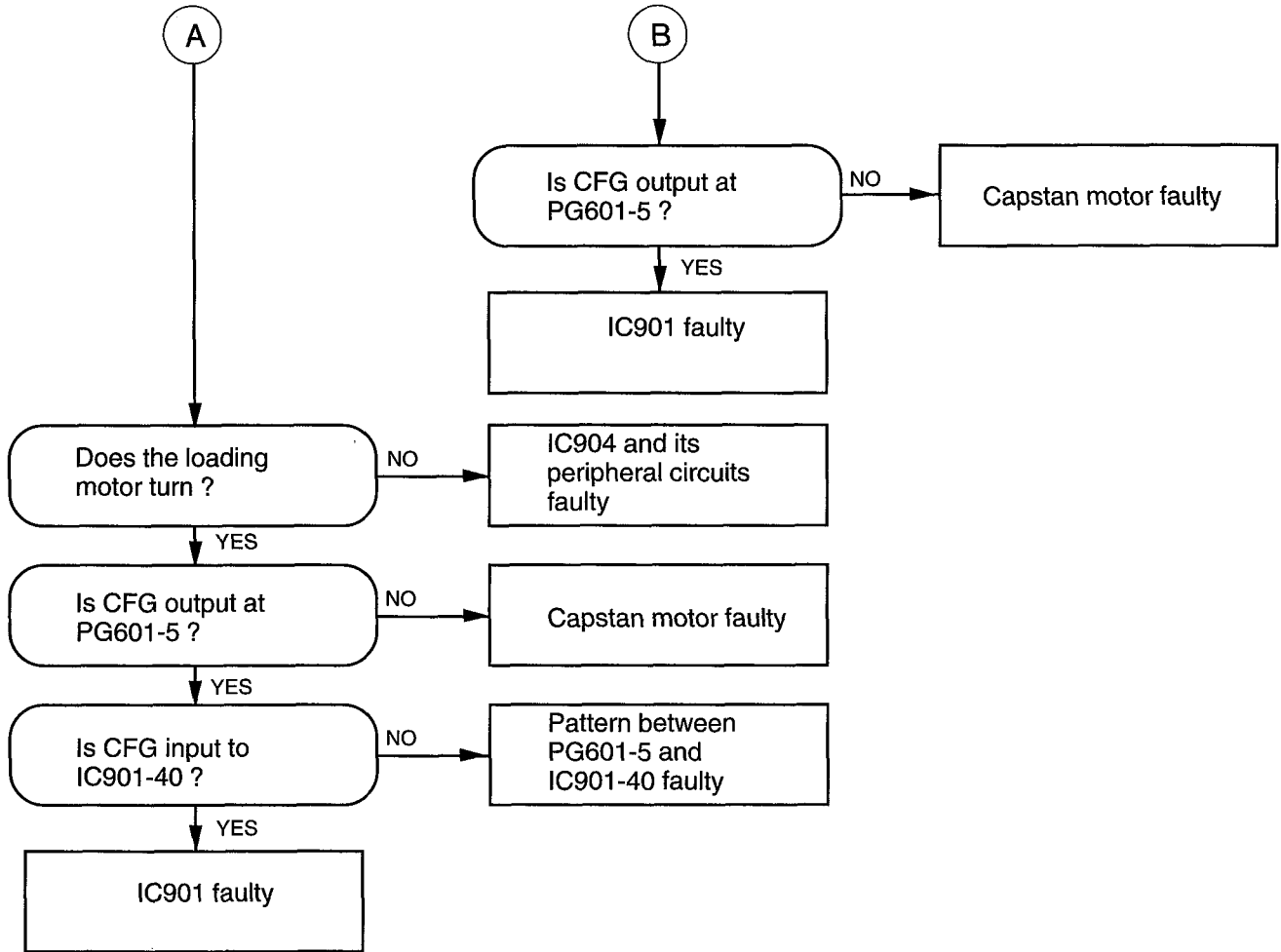
Troubleshooting According to Malfunction Display

1. If "01" Appears in the Display

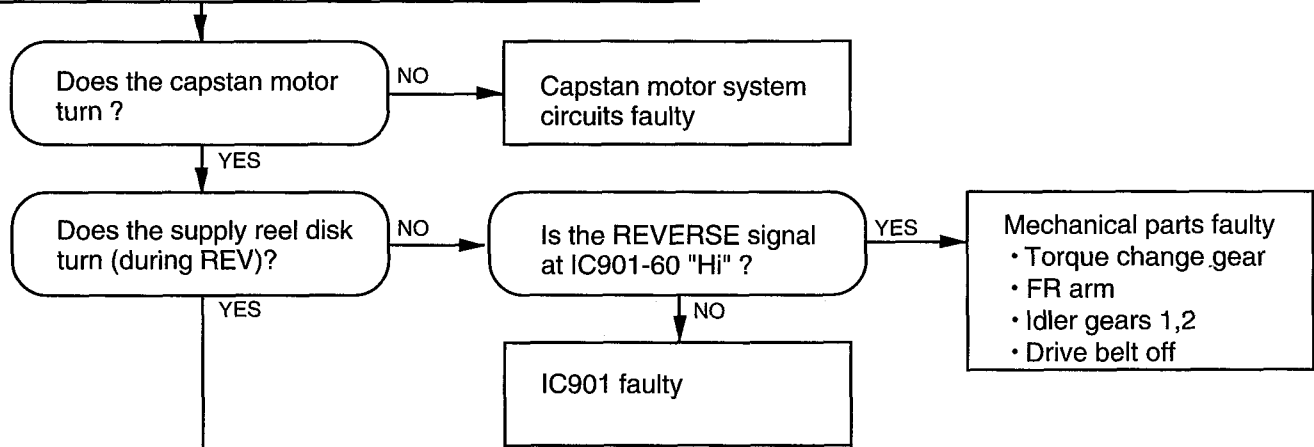


2. If "02" Appears in the Display

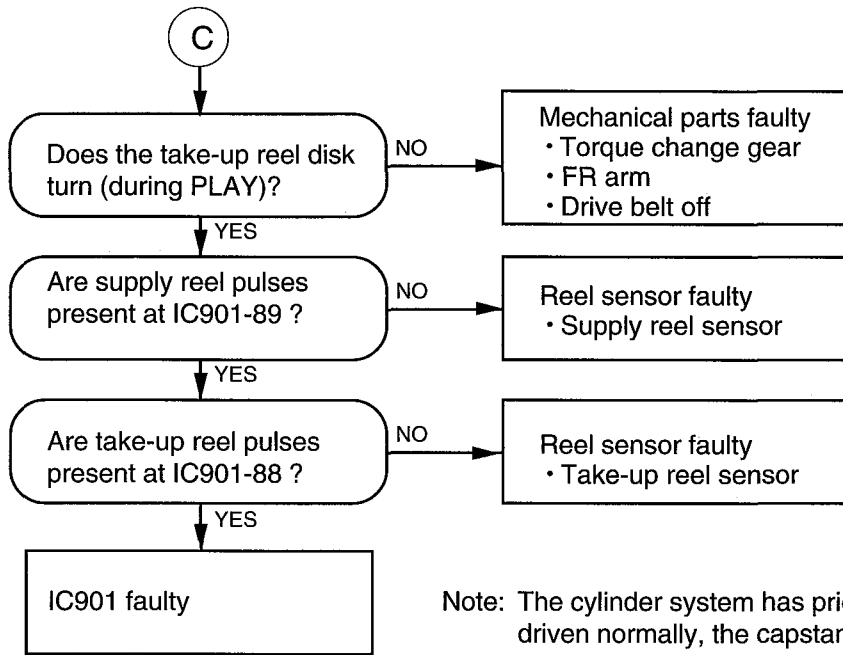




3. If "04" Appears in the Display

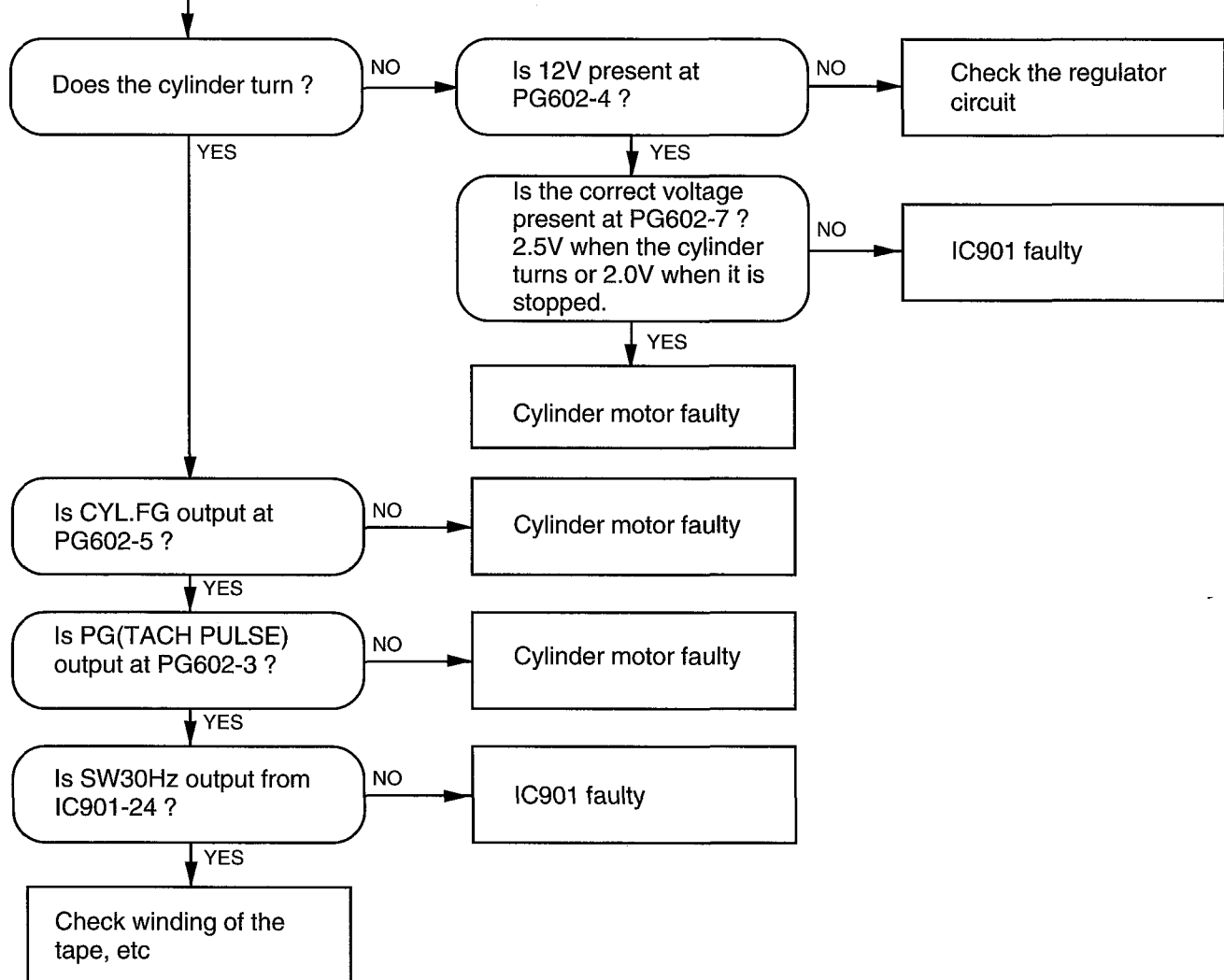


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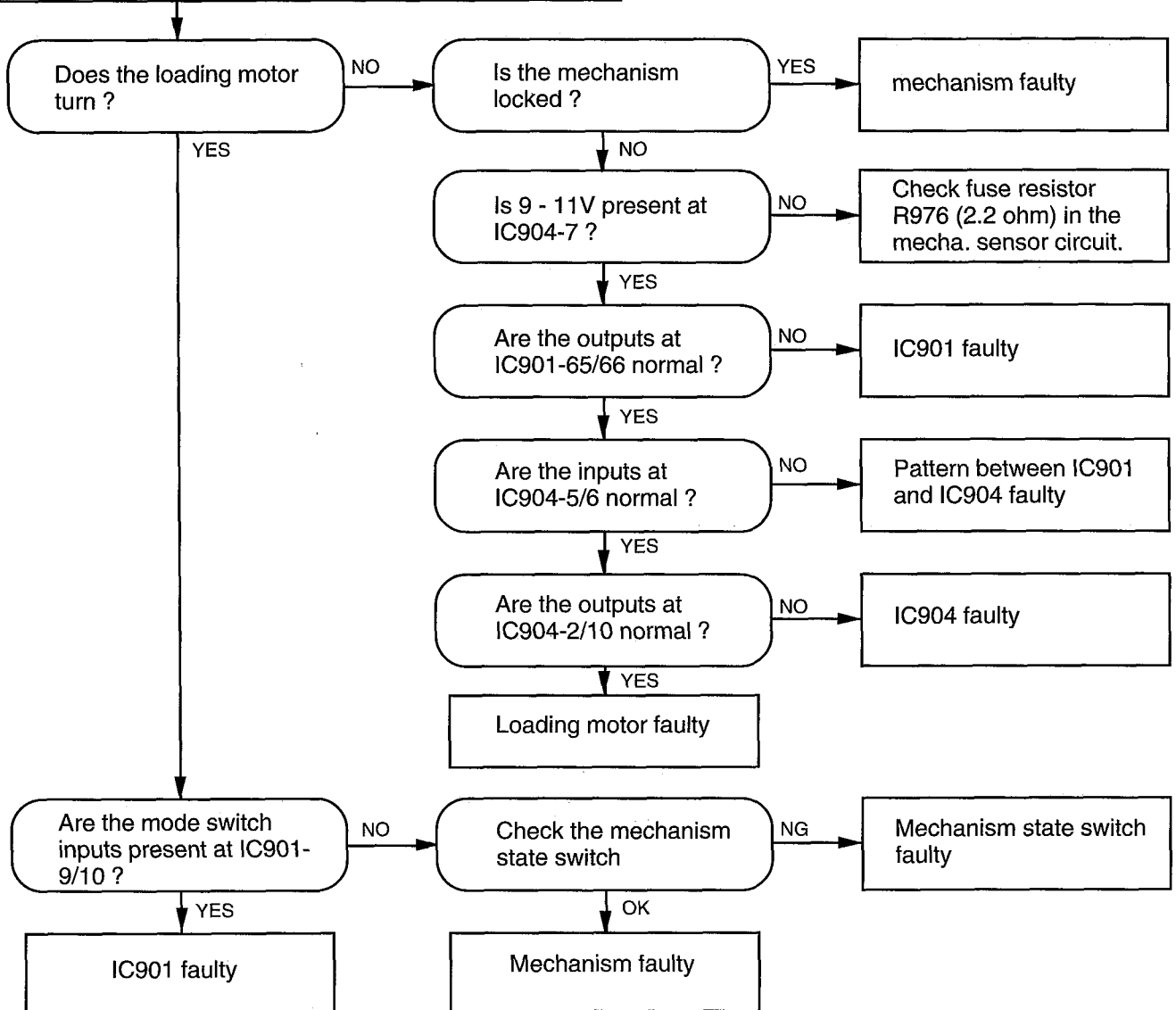


Note: The cylinder system has priority. If the cylinder motor is not driven normally, the capstan motor will not be driven.

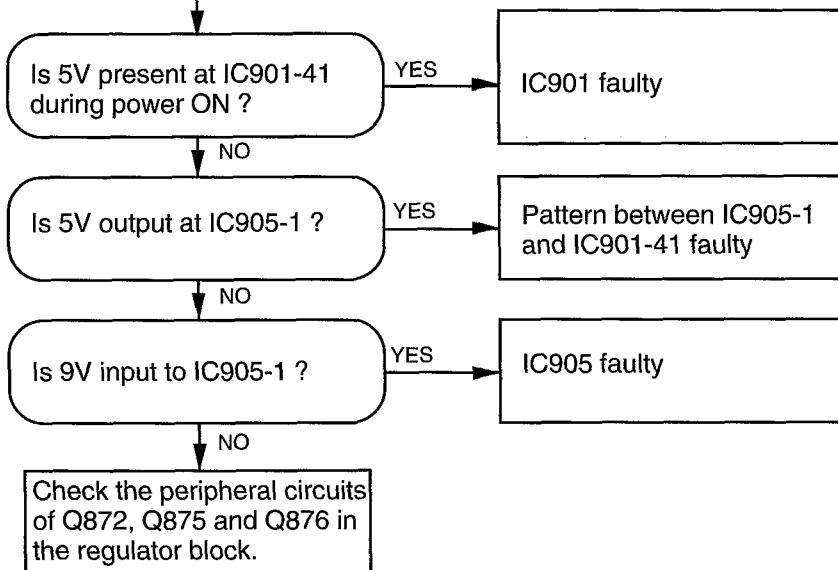
4. If "05" Appears in the Display



5. If "07" Appears in the Display



6. If "16" Appears in the Display



◆ Troubleshooting 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.

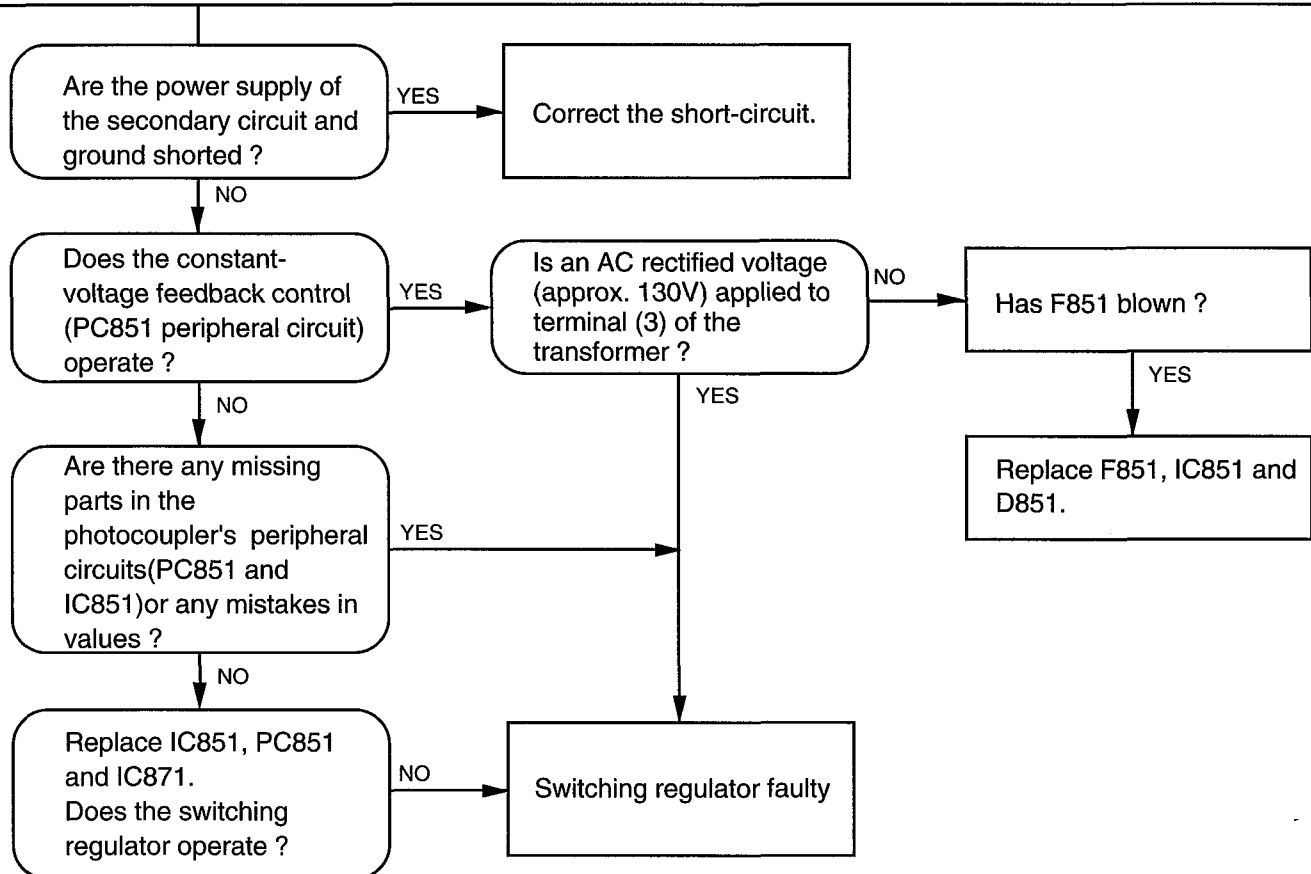
Cautions when checking and repairing the switching regulator circuit

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

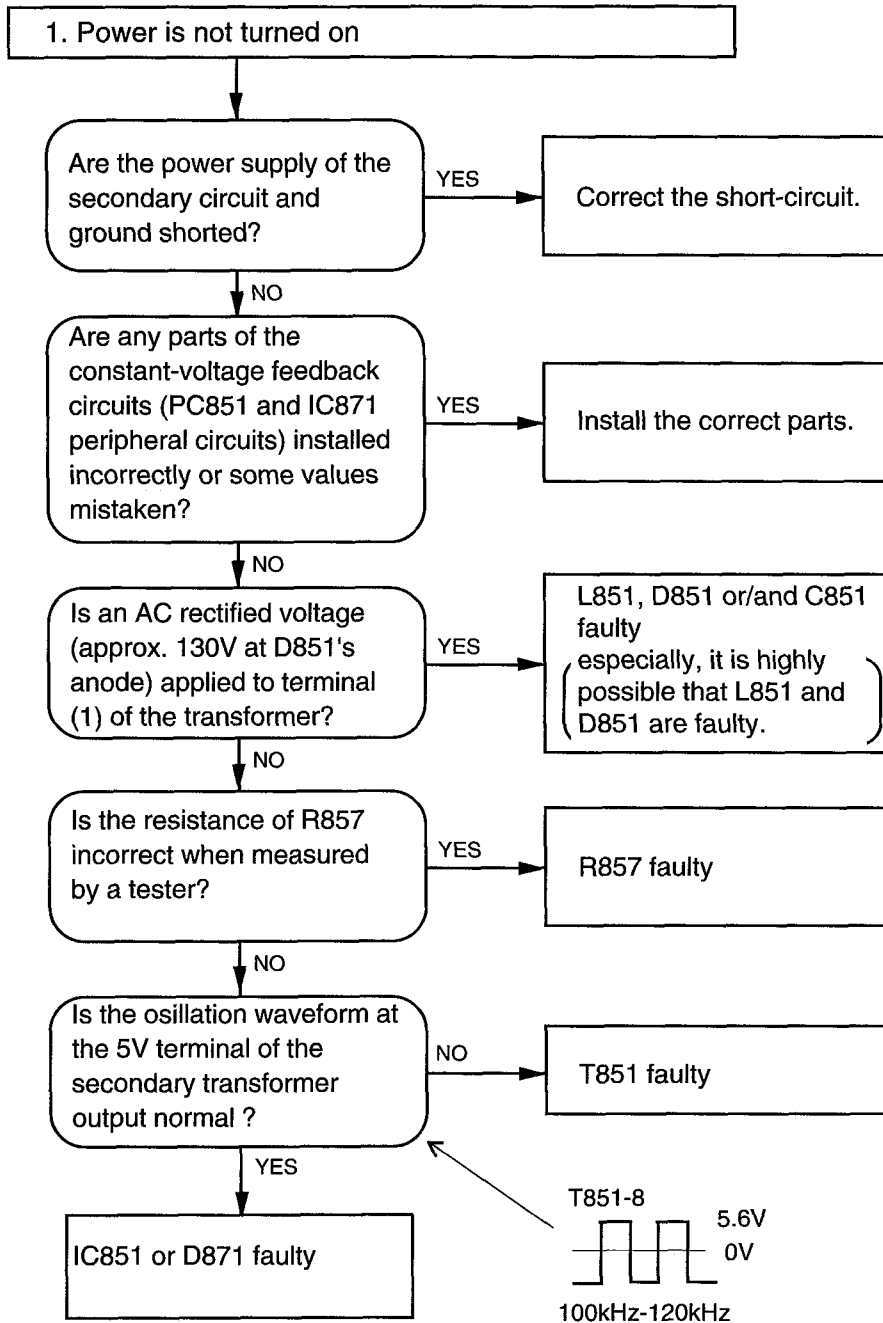
A heat sink which generates a high voltage is provided with IC851 in the switching regulator block. "HIGH VOLTAGE" is printed on the heat sink. Take great care of this section when servicing or handling the VCR when it is turned on. (Supplement: The heat sinks of Q871 and Q872 do not generate a high voltage.)

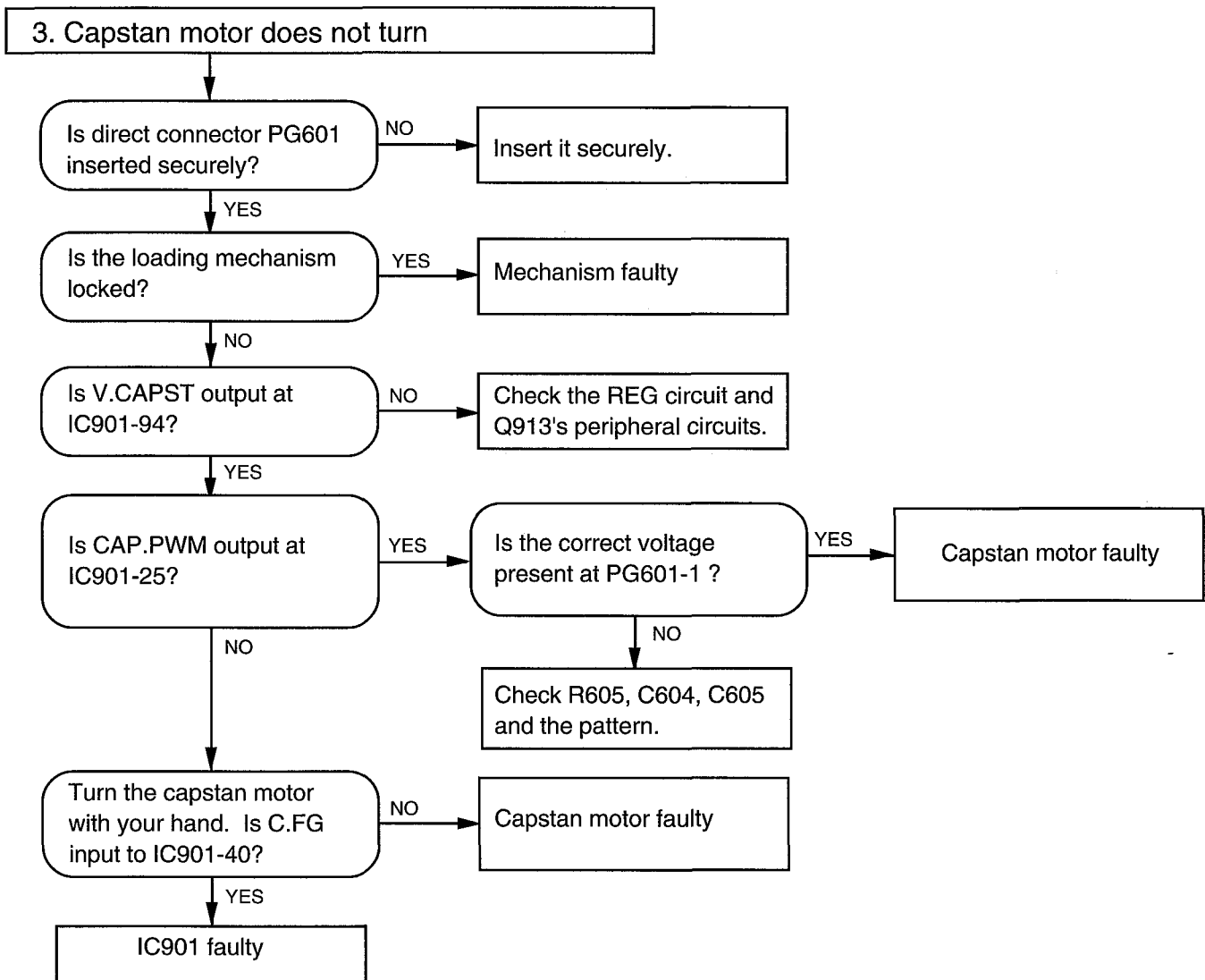
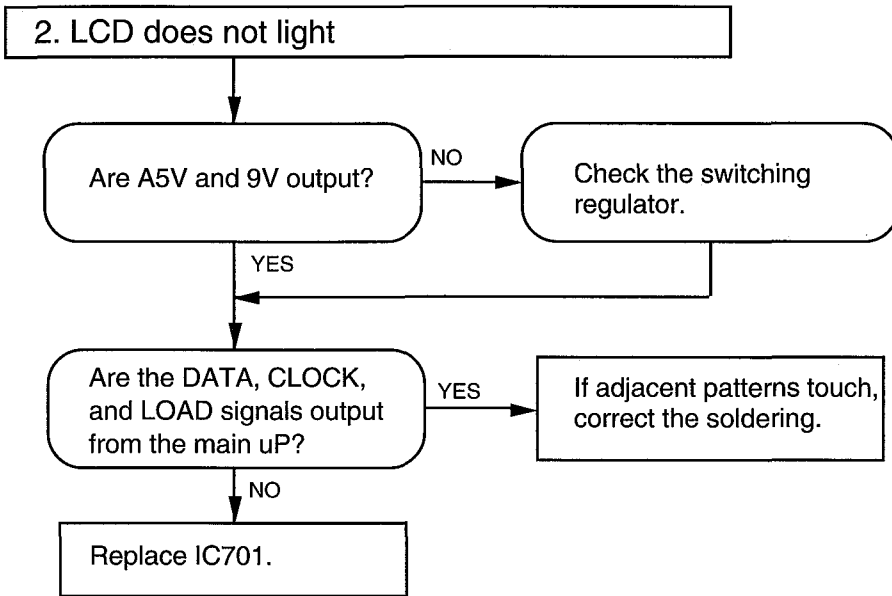
Method to judge that the switching regulator is faulty

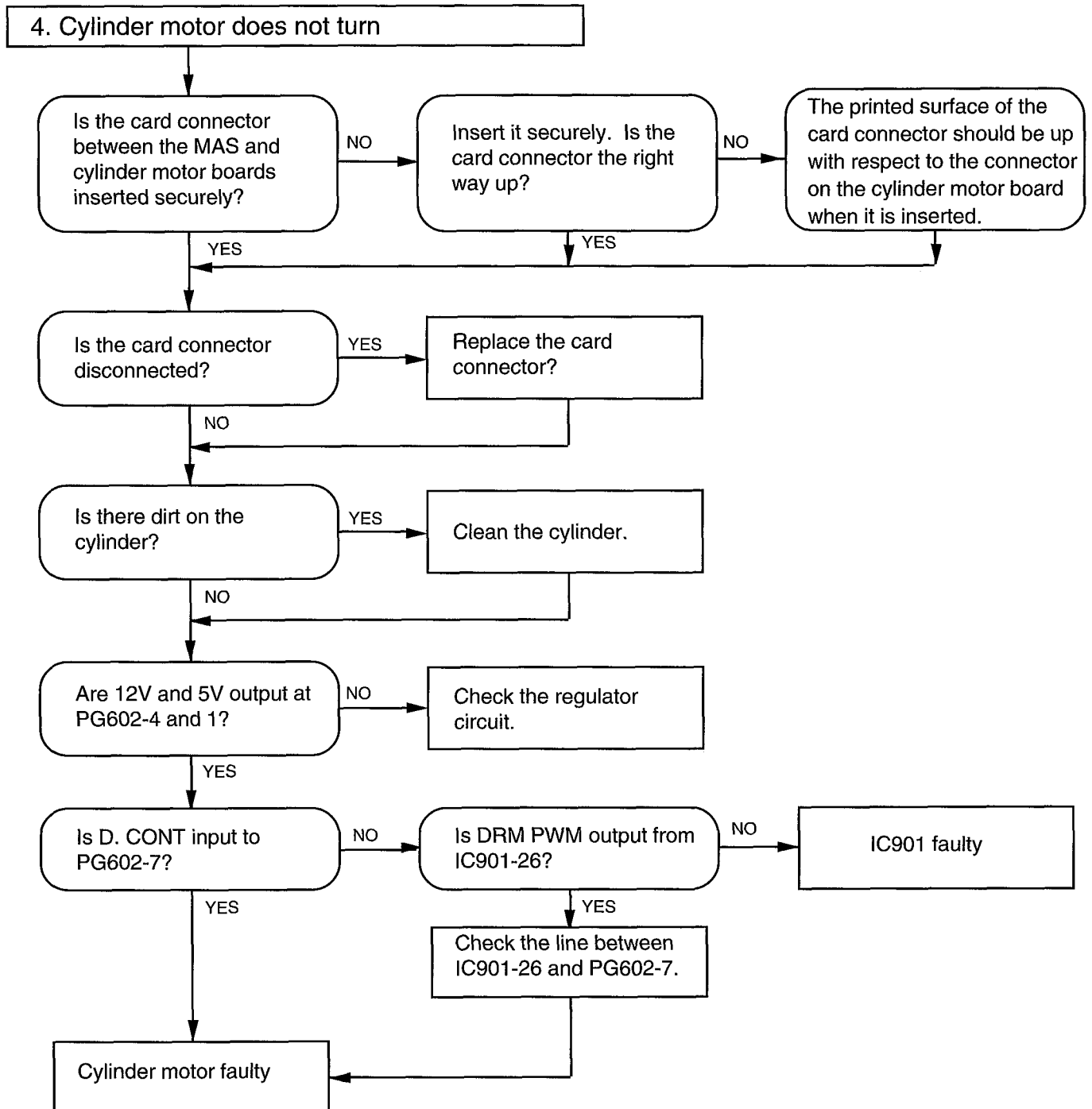


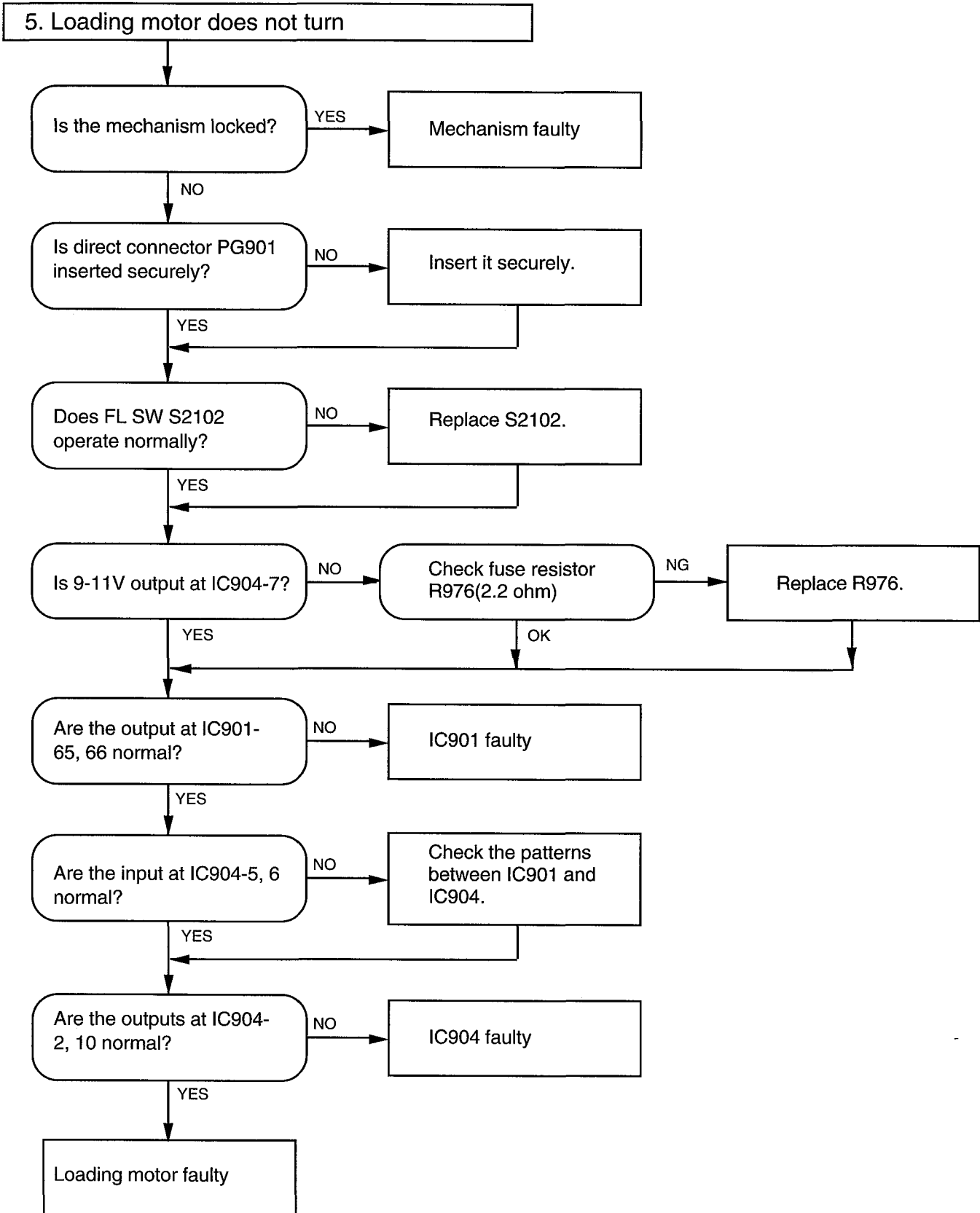
Troubleshooting by Observing Defective Phenomena

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









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