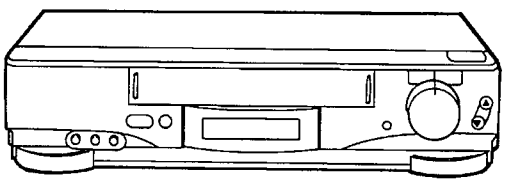
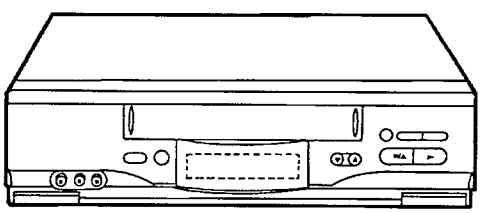
HITACHI

SERVICE MANUAL

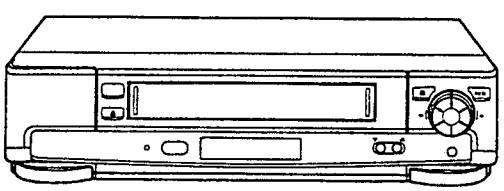
V18349



– VT-F55XE/F650E –



– VT-F640E/F645E –



– VT-F660E –

TK | No. 4710E

VT-F550E MKII(NA)(VPS)
VT-F551E/F552E(VPS)
VT-F640E(NA)
VT-F645E/F650E(UKN)
VT-F660E(UKN)(NAV)

US MECHANISM

This service manual does not include information on the US Mechanism used in this model.
Use this manual together with the following manual.

Manual related to the VT-F55XE/F64XE/ F650E/F660E

Name of manual	Manual No.	Chapters Included
US Mechanism	4527E	——

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

VIDEO Plus+
SHOWVIEW

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

May 1997 Image & Information Media Systems Division, Tokai

PRODUCT SAFETY NOTICE

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

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CHAPTER 5 REPLACEMENT PARTS LIST

CHAPTER 6 SCHEMATIC, CIRCUIT BOARD AND BLOCK DIAGRAMS AND MICROPROCESSOR PIN FUNCTION TABLES

CHAPTER 1 GENERAL INFORMATION

SPECIFICATIONS

Format:	VHS PAL Standard
Recording:	Rotary Two-Head Helical Scan Azimuth Recording
Tape Speed:	23.39 mm/sec.--SP, 11.7 mm/sec.--LP
Tape Width:	12.7 mm
Operation Temperature:	5 ℃ TO 40 ℃
Video:	PAL colour (system I) & CCIR monochrome signals 625 lines [For UKN] PAL colour (system B & G) & CCIR monochrome signals 625 lines [Except for UKN]
Recording Time:	240 min. with E-240 cassette--SP 480 min. with E-240 cassette--LP
Aerial input:	VHF channels 2--20 CATV channels S1--S41] [Except for UKN] CATV channels X--Z+2] UHF channels 21--69 [For UKN]
RF Output:	UHF channels 35 (25--55 adjustable) (System I) [For UKN] UHF channels 37 (32--42 adjustable) (System G) [Except for UKN]
Video Input:	0.5 to 1.5 Vp-p 75 ohm Unbalanced
Video Output:	1 Vp-p 75 ohm Unbalanced
S/N Ratio (Video):	More than 43 dB
Horizontal Resolution:	Colour 260 lines
Audio (Linear)	
Input:	PERI: -3.8 dBm 10 Kohm, LINE: -7.8 dBm 50 Kohm
Output:	PERI: -3.8 dBm 1 Kohm, LINE: -7.8 dBm 1 Kohm
S/N Ratio:	43 dB
Frequency Range:	70 Hz to 12 kHz
Hi-Fi Audio	
Frequency Range:	20 Hz to 20 kHz
Dynamic Range:	More than 90 dB
Wow and Flutter:	Less than 0.005% WRMS
Power:	AC230V, 50 Hz
Power Consumption:	24 W (including timer) [Except for F660E] 25 W (including timer) [For F660E]
Timer:	24-hour digital indication
Cabinet Size:	380 mm (W) × 93 mm (H) × 279 mm (D) [Except for F660E] 435 mm (W) × 99 mm (H) × 282 mm (D) [For F660E]
Weight:	Approx.. 3.8 kg [Except for F660E] Approx.. 4.3 kg [For F660E]
Accessories Included:	1--Aerial cable 1--Infrared remote control handset 2--Batteries

* Design and specifications are subject to change without notice.

COMPARISON OF FEATURES

	ITEM	VT-F55XE/F640E/F660E	VT-F550E
GENERAL	VIDEO HEADS	DA4 Heads + Hi-Fi SP : 48 µm LP : 24 µm Hi-Fi : 28 µm	DA4 Heads + Hi-Fi SP : 48 µm LP : 24 µm Hi-Fi : 28 µm
	BASIC CHASSIS TYPE	US	US
	CAPSTAN DRIVE	DIRECT DRIVE	DIRECT DRIVE
	CYLINDER MOTOR	THREE-PHASE OUTER ROTOR : 360Hz	THREE-PHASE OUTER ROTOR : 360Hz
VIDEO	PAL COLOUR	B/G (Except for UKN) I (For UKN)	B/G (Except for UKN) I (For UKN)
	MESECAM COLOUR	YES (For F660E)	YES
TUNER	TUNING SYSTEM	F.S TUNING	F.S TUNING
	CATV	YES (Except for UKN)	YES (Except for UKN)
	CHANNEL PRESET No.	49CH	49CH
	RF CONVERTER	B/G (Except for UKN) I (For UKN)	B/G (Except for UKN) I (For UKN)
	RF CONV. CHANNEL (32-42)	37 (Except for UKN) 35 (For UKN)	37 (Except for UKN) 35 (For UKN)
	A2	YES (Except for UKN)	YES (Except for UKN)
	UK NICAM	YES (For UKN)	YES (For UKN)
	CT NICAM	YES (For NA, NAV)	YES (For NA, NAV)
TIMER	REC. PROGRAMME	8 PROG./1 YEAR	8 PROG./1 YEAR
	DIMMER	YES (AUTO)	YES (AUTO)
	IRT	LENGTH ONLY (For F660E)	LENGTH ONLY
	BACK-UP TIME	ABOUT 30 MIN.	ABOUT 30 MIN.
	PDC	OPTION (Except for VPS)	OPTION (Except for VPS)
	VPS	OPTION (Except for NA, VPS)	OPTION (For NA, VPS)
OTHER FEATURES	AUTO HEAD CLEANING	YES (Except for F640E)	YES
	POWER SAVE	YES	YES
	EDIT IN/OUT JACK	NO	NO
	TAPE SPEED	SP/LP	SP/LP
	VIDEO DUB	YES (For F660E)	YES
	AUDIO DUB	YES (MONAURAL) (For F660E)	YES (MONAURAL)
	X2 PLAY	NO	NO
	SLOW/REV.SLOW PLAY	YES	YES
	F.ADV PLAY	YES	YES
	SATELLITE CONTROL	YES (For F660E)	YES
	SHUTTLE RING	YES (For F650E/F660E)	YES
	JOG DIAL	YES (For F660E)	NO
	NTSC PLAYBACK	YES (For F660E)	YES
	FRONT A/V INPUT JACK	YES (Except for F640E)	YES
	COUNTER GO-TO	NO	NO
	TITLE INDEX	NO	NO
	TROUBLE MODE	YES	YES
AUTO FEATURES	AUTO TRACKING	YES	YES
	AUTO OPERATE ON	YES	YES
	AUTO PLAY	YES	YES
	AUTO REWIND	YES	YES
	AUTO REW.SHUT OFF	YES	YES
	AUTO TAPE CANCELLER	YES	YES
REMOTE CONTROL	PROGRAMME SETTING	LCD (For F660E)	LCD
	CLOCK SETTING	LCD (For F660E)	LCD
	VCR1/VCR2/TV	YES (For F660E)	YES
	SHOW	YES	YES

COMPARISON OF FEATURES

	ITEM	VT-F645E/F650E (UKN)	VT-F540E/F545E (UKN)
GENERAL	VIDEO HEADS	DA4 Heads + Hi-Fi SP : 48 µm LP : 24 µm Hi-Fi : 28 µm	DA4 Heads + Hi-Fi SP : 48 µ LP : 24 µm Hi-Fi : 28 µm
	BASIC CHASSIS TYPE	US	US
	CAPSTAN DRIVE	DIRECT DRIVE	DIRECT DRIVE
	CYLINDER MOTOR	THREE-PHASE OUTER ROTOR : 360Hz	THREE-PHASE OUTER ROTOR : 360Hz
VIDEO	PAL COLOUR	I	I
	MESECAM COLOUR	YES	YES
TUNER	TUNING SYSTEM	F.S TUNING	F.S TUNING
	CHANNEL PRESET No.	49CH	49CH
	RF CONVERTER	I	I
	RF CONV. CHANNEL (32-42)	35	35
	UK NICAM	YES	YES
TIMER	REC. PROGRAMME	8 PROG./1 YEAR	8 PROG./1 YEAR
	DIMMER	YES (AUTO)	YES (AUTO)
	IRT	NO	NO
	BACK-UP TIME	ABOUT 30 MIN.	ABOUT 30 MIN.
	PDC	OPTION	OPTION
	VPS	NO	NO
OTHER FEATURES	AUTO HEAD CLEANING	YES	YES
	POWER SAVE	YES	YES
	EDIT IN/OUT JACK	NO	NO
	TAPE SPEED	SP/LP	SP/LP
	VIDEO DUB	NO	NO
	AUDIO DUB	NO	NO
	X2 PLAY	NO	NO
	SLOW/REV.SLOW PLAY	YES	YES
	F.ADV PLAY	YES	YES
	SATELLITE CONTROL	YES	YES
	SHUTTLE RING	YES (For F650E)	NO
	JOG DIAL	NO	NO
	NTSC PLAYBACK	NO	NO
	FRONT A/V INPUT JACK	YES	YES
	COUNTER GO-TO	NO	NO
	TITLE INDEX	NO	NO
	TROUBLE MODE	YES	YES
AUTO FEATURES	AUTO TRACKING	YES	YES
	AUTO OPERATE ON	YES	YES
	AUTO PLAY	YES	YES
	AUTO REWIND	YES	YES
	AUTO REW.SHUT OFF	YES	YES
	AUTO TAPE CANCELLER	YES	YES
REMOTE CONTROL	PROGRAMME SETTING	NO (Operate for OSD)	NO (Operate for OSD)
	CLOCK SETTING	NO (Operate for OSD)	NO (Operate for OSD)
	VCR1/VCR2/TV	NO	NO
	VIDEO PLUS+	NO (Operate for OSD)	NO (Operate for OSD)

COMPARISON OF MAIN CONTROL ICs

ITEM	VT-F55XE/F640E/F645E/F650E/F660E		VT-F540E/F545E/F550E	
VIDEO SYSTEM				
Y/CHROMA PROCESS	HA118203F	(IC201)	HA118203F	(IC201)
CCD DELAY	MSM7470-71MS	(IC202)	MSM7470-71MS	(IC202)
PRE/REC AMP				
AUDIO HEAD AMP	LA7256	(IC1102)	LA7256	(IC1102)
VIDEO HEAD AMP	HA118198F	(IC1101)	HA118198F	(IC1101)
AUDIO				
FM AUDIO PROCESS	AN3964FB	(IC501)	AN3964FB	(IC501)
MAIN CONTROL				
MAIN μP (system control μP)	HD6433977SB54F [F55XE/F640E] HD6433977SB55F [F660E] HD6433977SB56F [F645E/F650E]	(IC901)	HD6433977SA67F	(IC901)
EEPROM	ST24C02	(IC903)	ST24C02	(IC903)
TAPE LOADING DRIVE	BA6209	(IC904)	BA6209	(IC904)
SERVO CONTROL	Included in Main μp		Included in Main μp	
NICAM (Except for VPS)				
NICAM DECORDER	SAA7283GP	(IC1801)	SAA7283GP	(IC1801)
DUAL OPE. AMP	NJM4558M	(IC1802)	NJM4558F	(IC1802)
A2 (Except for UKN)				
ST/DUAL SOUND PROCESSOR	TDA9840T	(IC1851)	TDA9840T	(IC1851)
FM DEMODULATOR	TDA9821	(IC1852)	TDA9821	(IC1852)
PDC/VPS				
PDC/VPS DECODER	SDA5649	(IC4581)	SDA5649	(IC4581)
POWER SUPPLY				
SWITCHING DRIVER	FS3KM-18A	(Q851)	FS3KM-18A	(Q851)
REAR JACK				
AUDIO SW	LA7151	(IC4551)	LA7151	(IC4551)
VIDEO SW	BH7633AS	(IC4501)	BH7633AS	(IC4501)

TIPS FOR SERVICING

TROUBLE DISPLAY FUNCTION

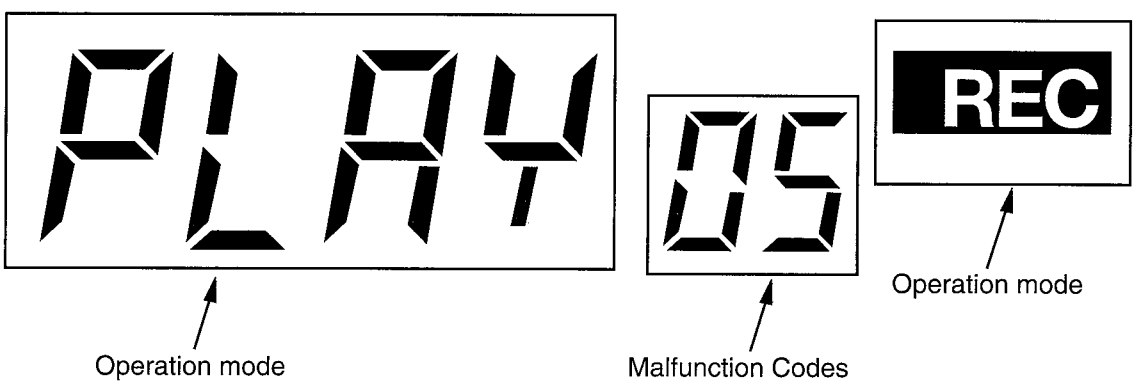
This VCR has a function which displays mechanism malfunctions, etc. in the LCD display. Use this function to analyze the cause when the power is shut off due to a malfunction, etc. in the mechanism.
Two types of information are displayed, 1) The operation mode when the malfunction occurred, 2) Malfunction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

The details of the malfunction are displayed as follows.

PROCEDURE TO DISPLAY A MALFUNCTION

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

LCD DISPLAY



【Display of details of malfunction】

Displayed No.	Item	Details
" 0 0 "	No malfunction	
" 0 1 "	FL mechanism lock	Malfunction in insertion/ejection of cassette
" 0 2 "	Capstan lock	Malfunction of capstan motor drive during tape unloading
" 0 4 "	Reel lock	Reel rotation trouble when tape is running
" 0 6 "	Cylinder lock	Cylinder rotation malfanction
" 0 7 "	Loading mechanism lock	Malfunction in shifting mechanism mode
" 1 6 "	Servo lock	Shorting of 5V detected

【Mode Display when Malfunction Has Occurred】

Mode	Display	Mode	Display
Stop	No Display	Playback	P L A Y
Fast forward	F F	Reverse playback	— P L A Y
Rewind	R E W	Forward search	S R C H
Hight speed fast forward	S : F F	Reverse search	— S R C H
Hight speed rewind	S : R E W	Slow motion play	S L O W
Recording	REC	Reverse motion slow play	— S L O W
Recording pause	REC (flashes)	Still motion play	S T I L L

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.

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.

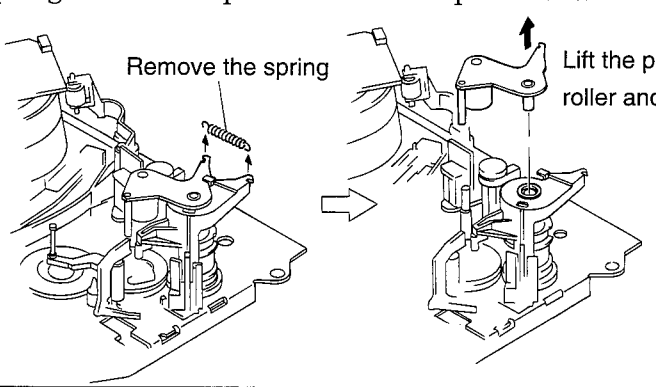
〔Work Procedure〕

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

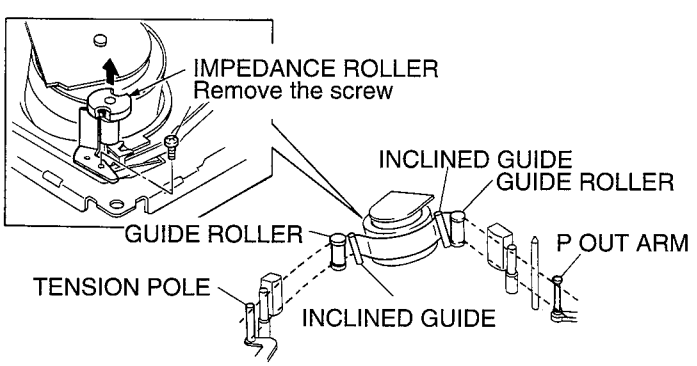
If the tape is wound round the cylinder in the loading state

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

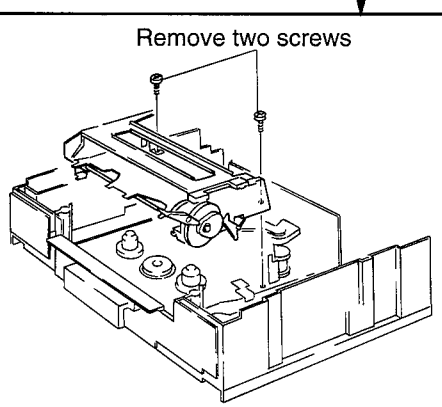
Remove the spring and lift the pressure roller to pull it out.



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.



SERVICE MANUAL ABBREVIATION LIST

A	
ACC	Automatic Color Control
ACK	Automatic Color Killer
ADC B-Y	Analog to Digital Converted B-Y Signal
ADC R-Y	Analog to Digital Converted R-Y Signal
ADC Y	Analog to Digital converted Luminance
ADD	Adder
ADRS	Address
A.DUB	Audio Dubbing
AF	Autofocus
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
AGC KILLER	AGC Killer Voltage
ALC	Automatic Level Conrol
AM	Automatic Iris Control
AMP	Amplifier
APC	Automatic Phase Control
ASBL	Assemle (Phase Matching)
AUD.	Audio
AUX	Auxiliary
B	
B (BLU)	Color Signal BLUE
BATT.	Battery
BF	Burst Flag
BG	Burst Gate or Back Ground
BGP	Burst Gate Pulse
BH	Power Supply for Selecting VHF Figh Band
BL	Power Supply for Selecting VHF Low Band
BLK	Blanking
BM	Power Supply for Selecting VHF Mid Band
BPF	Bandpass Filter
BS	Power Suplly for Selecting VHF Super Band
BU	Power Supply for Selecting UHF Band
BU	Back-up
BUF.	Buffer Amplifier
B-YL	Battery
C	
C (CHROMA)	Chrominance Signal
CAPST.	Capstan
CAS	Column Addresss Strobe
CARRI.	Carrier
CATV	Cable TV
C.BLANK	Chroma Blanking
C.BLK	Composite Blanking
CCD	Charge Coupled Device
CG	Character Generator
CFG	Capstan Frequency Generater
C.FREE RUN	Capstan Free Run
CH	Channel
CHD	Camera Horizontal Drive Pulse
CHARA.	Character
CHROMA	Chrominance
C.MEMORY	Counter Memory
CNR	Chroma Noise Reducer
COM.	Common
COMPA.	Comparator
COMPE.	Compensator
COMP-EXP	Compressor-Expander
CONV.	Converter
CONT.	Control
CORR.	Correlation
COUNT.	Counter
CP	CP
C.PAUSE	Camp Pulse
C/R	Capacitor/Resistor
C.RESET	Counter Reset
C.REVERSE	Count Reverse

C	
C.REVERSE	Count Reverse
CST	Cassette
C.SYNC	Composite Synchronizing Signal
CTL	Control Track Pulse (Control)
CYL	Cylinder
D	
D	Digital
DA	Double Azimuth
D/A	Digital to Analog Converter
D-D	Direct Drive
DEEMPHA.	Deephasis
DEF	Deflefction
DEMOD.	Demodulator
DEMPX	Demultiplexer
DET	Detector
DIFF. AMP	Differential Amplifier
DISCRI.	Discriminator
DISP.	Display
DL	Delay Line
DN	Down
DO	Dropout
DOC	Dropout Compensator
DRAM	Dynamic Random Access Memory
D.REF 25/30	Delayed Reference 25/30Hz
D.SW 25/30	Delayed Switching 25/30Hz
DSP	Digital Signal Processor
DT/OE	Data Transfer/Output Enable
D/W	Dark White
DWC	Delayed Write Clock
E	
EAROM	Electrically Alterable Read Only Memory
EEPROM	Electrical Erasable Proframmed
E-E	Electronic-to-Electronic
EMPHA.	Emphasis
EQ	Equalizer
EVF	Electronic Viewfinder
EXT.	External
F	
F.ADV	Frame Advance
F/V	Frequency-to-Voltage Converter
FB	Feed back
FF	Flip Flop
F.FWD	Fast Forward
FG	Frequency Generator
FLE	Frequency Modulation
FM	Frequency
FREQ.	Frame Advance
fsc	Color Sub Carrier Frequency
FWD	Forward
G	
GEN.	Generator
GND	Ground]
H	
H (HORIZ.)	Horizontal
HBF	Horizontal Burst Flag
HD	Horizontal Drive
Hi-Fi	ahigh Fidelity
HLT	Halt
HPF	High-pass Filter
HPL	High-pass Limiter
HSS	Horizontal Sync. Separator
I	
IF	Intermediate Frequency
INC	Row Couter Increment
INDI.	Indicator
INT.	Internal

I	
INV.	Inverter
I/O	In/Out (Input/Output)
IR	Infrared Rays
IRIS DET	Iris Detection
IRT	Instant Recording Timer
L	
LCD	Liquid Crystal Dissplay
LIN.	Linear
LM	Loading Motor
LNC	Line Noise Canceller
LOG	Logarithm
LP	Long Play
LPF	Low-pass Filter
LUMA	Luminance
L/R	Left/Right
M	
MAN	Manual
M.BRAKE	Main Brake
M.CUT	Monitor Cut
MEM.	Memory
MIX	Mixer
MMV	Monostable Multivibator
MOD.	Modulator
MPX	Multiplex
MPX VIDEO	Multiplexed Video
M.STATE	Mechanism State
M.STOP	Memory Stop
MTS	Multi Channel Television Sound
N	
NEG	Negative
NFB	Negative Feed Back
NORM.or NOR.	Normal
NR	Noise Reduction
O	
OB	Optial Black
O/E	Odd/Even Field
OSC	Oscillator
OSD	On-Screen Display
P	
PB/PLAY	Playback
P.CONT	Power Control
PIF	Picture Intermediate Frequency
PG	Pulse Generator
PIX MOVE	Picture Move
PLL	Phase Locked Loop
POS.	Positive
POWER CONT.	Power Control
PROG.	Program
PROTECT.	Protector
PWM	Pulse width modulation
R	
R (RED)	Color Signal RED
RAM	Random Access Memory
RAS	Row Address Strobe
RC	Reading Clock
RCC	Reading Clock Clear
RCR	Row Counter Reset
REC	Record
RECT.	Rectifier
REF	Reference
REF 25/30	Reference 25/30Hz from servo circuit
REG	Regulator
REL	Refresh Control
REW	Rewind
REV	Review
RF	Radio Frequency

R	
RM	Reel Motor
ROM	Read Only Memory
R-YL	Color Dfference Signal R-YL
S	
SAP	Second Audio Program
SAW	Sawtooth
SC	Serial Control
SC1 (0)	3.58MHz Subcarrier Signal 1 (0-degree Phase Shifted)
SC2 (90)	3058MHz Subcarrier Signal 2 (90-degree Phase Shifted)
SEPA.	Separator
SG	Signal Generator
S/H	Samle and Hold
SIF	Sound Intermediate Frequency
SOL	Solenoid
SP	Standard Play
SP/LP	Standard Play/Long Play
S.REEL	Supply Reel Sensor
SRCH	Search
SRV	Servo
STABI.	Stabilizer
S.TRACK	Slow Tracking
STBY	Standby Mode
S-VHS	Super VHS
SW 25/30Hz	25/30Hz Head Switching Pulse
SYNC	Synchronizing signal
SYS.CON	System Control
T	
T (TELE)	Telephoto Angle
T.BRAKE	Take-up Brake
T/L	Tuner/Line
TP	Test Point
T.REEL	Take-up Reel Sensor
T.RESET	Timer Reset
TRS	Transfer
U	
U/D	Up/Down
UNI.	Unified
V	
V (VERT.)	Vertical
V.AGC	AGC Voltage
VCA	Voltage Controlled Amplitier
VCO	Voltage Controlled Oscillator
V.DUB	Video Dubbing
V/F	Voltage to Frequency Converter
VHS	Video Home System
VF	Focus Voltage
VOL.	Volume
VP	Voltage Reference
VSS	Vertical Sync. Separator
Vss	Voltage Super Source
VT	Tuning Voltage
VT-U	Tuning Voltage-UHF
VT-V	Tuning Voltage-VHF
VCXO	Voltage Controlled Crystal Oscillator
W	
WC	White Clock
WCC	White Clock Clear
WE	Weighting
WHT	Color Sifnal WHITE
WIDE	Wide Angle
WHD	Wide Horizontal Drive
WHT BAL CONT.	White Balance Control
Y	
Y/C	Luminance/Chrominance

LEADLESS (CHIP) COMPONENT IDENTIFICATION

1.Leadless Transistor

The part name of a leadless transistor is indicated by a code on its surface, using one letter, one letter and one numeral,two letters, two letters and one numeral, two numerals, two numerals and one letter, three letters, or four letters.

Note: There are transistors with the same code but different part names, or with the same part name but different codes. Refer to the parts lists to finally identify a transistor.

CODE	PART NAME	CODE	PART NAME
Leadless (Chip) Transistor			
3925	2SC3925	BQ	2SB709A
ICQ	2SCB902	BR	2SC4081R
ID	2SC3127	BR	2SC2412K
IDS	2SD1328S	BR	2SC4617
IDT	2SD1328	BS	2SC2412K
1R	2SB970TX	C-7	2SA811
2BQ	2SK374PQ	C1G	KSC1623
2BR	2SK374QR	CB	2SC3646
2Y	2SC3757	CC	2SA1122C
2YQ	2SC4691	CC	2SC3647T
3N	2SK620	CC	2SC3647
4N	XN5601	CD	2SA1122D
4Q	XN1B301	CE	2SA1122E
4R	XN1C301	CK	2SD999
5C	XN4601	CP	2SC4097
5C	XP4601	CQ	2SC2411K
5H	XP4501	CR	2SB710
5H	XN4501	CR	2SC2411
5K	XP4401	CR	2SB1219
5K	XN4401	D16	2SC1622A
5L	XN5501	D17	2SC1622A
5N	XN6501	D18	2SC1622A
5O	XN6401	DB	2SD1766
5R	XP1501	DE	2SC2463
5R	XN1501	DF	2SD1623
5S	XN1504	DF	2SD1898
5V	XN1401	DG	2SD1624
5W	XN2501	DK	2SB798
5X	XN4504	EC	2SA1022
7R	XN2401	F-2	2SC1009F2
7S	XN1601	F-3	2SC1009F3
AA	2SD1757K	F-4	2SC1009F4
AKQ	2SA1738	FC	2SC2619
AKQ	2SA1806	FR	2SA1774
AL	2SA1791	FR	2SA1037K
AM	2SC4656	FR	2SA1576R
AO	2SB709AQR	FS	2SA1037K
AQ	2SB709AQ	GC	2SC2734
AQ	2SB766	GM	3SD1615
AR	2SB1462	HQ	2SA1036K
AR	2SB766	IC	2SC3016
AR	2SB709ARS	IRD	2SA1484
AR	2SB1218R	IS	2SB792S
AS	2SB766	IT	2SB792T
AS	2SB709AS	L-4	2SC1623L4
B3	2SC1621B3	L-5	2SC1623L5
B4	2SC1621B4	L-6	2SC1623L6
BC	2SB1188	L-6	2SC2812L6
BD	2SB1121	L-7	2SC2812L7
BE	2SB1260	L5	MMBC1623L5
BF	2SB1123	L6	MMBC1623L6
BF	2SB1308	LB	2SC2462B
BG	2SB1124	LC	2SC2462C
BH	2SB1001	LD	2SC2462D

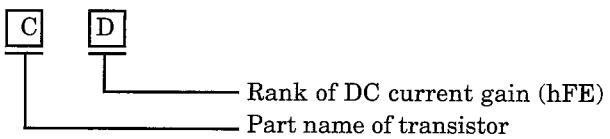
CODE	PART NAME	CODE	PART NAME
Leadless (Chip) Transistor			
LR	2SC2412KLN	T2	IMT2
M-5	2SA812	UD	2SC2404
M-6	2SA1179	ZS	2SD874S
MC	2SA1052MC	VR	2DS968A
MD	2SA1052MC-D	W1	FMW1
N3	2SC1653	W10	FMW10
ND	2SD1306ND	W2	FMW2
NE	2SD1306NE	W3	FMW3
PD	2SA1171D	WR	2SD602
PS	2SD814	X1	UMX1
QB	2SC2520QB	X1	IMX1
QC	2SC2620QC	X2	IMX2
QO	2SC2714	Y1	FMY1
R22	2SC4226	Y12	2SA1464
R22	2SC3356	Y25	NTM3906
R32	2SC4227	Y3	FMY3
R34	2SC3583	YCD	2SK197
R42	2SC3585	YI	2SA1666
RB	2SC2618RB	YQ	2SD601YQ
RC	2SC2618RC	YR	2SD601YR
RK	2SC3357	YR	2SD1819R
S1	FMS1	YR	2SD2216
S2	FMS2	YS	2SD601YS
SC	2SA1121	Z1	IMZ1
SO	2SA1162	Z2	IMZ2
SP	2SC3082K	ZO	2SD874T
T1	IMT1	ZQ	2SD601A
T1	UMT1	ZR	2SD874R
Digital Transistor			
3	DTC143TK	6C	UN9113
4	DTC114TK	6S	NP4113
6	DTC144TK	8B	UN5212
13	DTA143EK	8C	UN9213
14	DTA144EK	8C	UN2213
15	DTA124K	8S	XP4213
15	DTA124EU	9L	XP1213
16	DTA144EU	9L	XN1213
16	XDA144EK	A1	FMA1
16	DTA144EE	A1	UMA1
23	DTC143EK	A2	FMA2
24	DTC114EU	B2	UMB2
24	DTC144EK	B2	IMB2
25	DTC124EU	C2	FMC2
25	DTC124K	C5	FMC5
26	DTC144EE	D2	IMD2
26	DTC144EU	F52	DTB123
26	XDC144EK	G1	FMG1
33	DTA143XK	G2	FMG2
43	DTC143XK	G21	DTD113ZK
52	DTA123YK	G5	FMG5
60	UN511F	H03	DTC343TK
64	DTC114YK	H2	IMH2
80	UN521F	H2	UNH2
4P	XN1A312T	H27	DTC363EK
6B	UN5112	RO4	KSR1104
6C	UN2113	R31	FP1L2Q
FET			
30	2SK621	KB	2SK323
1FQ	2SK321FQ	WS	2SK322T
1FR	2SK321FQR	WT	2SK322T
1KP	2SK316	X15	2SK425
2BQ	2SK663	X4	2SK94
DY	2SK1579	XAF	2SK980FG
JO	2SK208	YC	2SK197YC
K	3SK166	YD	2SK197YD
K4	2SK160K4	YE	2SK197YE
K5	2SK160K5	ZD	2SK217ZD

(1)Identification with two letters

Use this code and the following chart for transistor identification.

Example :

Code	Part name
CD	2SA1122D
LD	2SC2462D

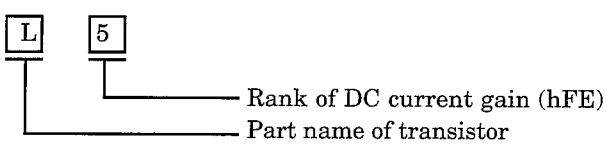


(2)Identification with one letter and one numeral

Use this code and the following chart for transistor identification.

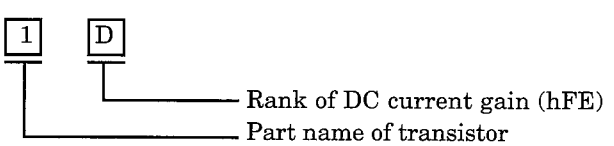
Example :

Code	Part name
L5	2SC1623(5)
L6	2SC1623(6)



Example :

Code	Part name
1D	2SC3127D



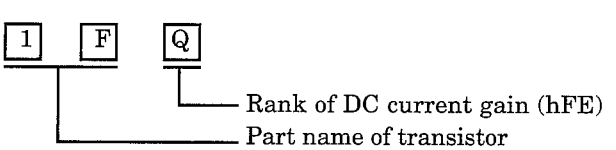
Note: Codes S1,S2,T1,W1,W2,W3,X1,Y1,Y3,Z1 and Z2 encode only the part names.

(3)Identification with one numeral and two letters

Use this code and the following chart for transistor identification.

Example :

Code	Part name
1FQ	2SK321Q

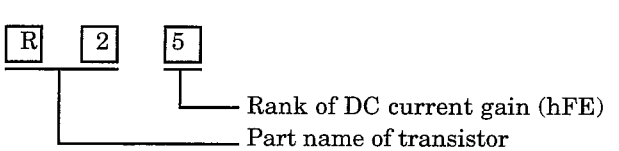


(4)Identification with one letter and two numerals

Use this code and the following chart for transistor identification.

Example :

Code	Part name
R25	2SC3356

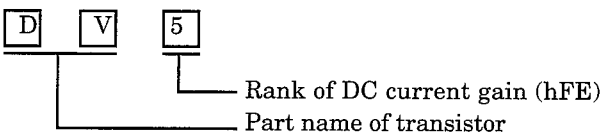


(5)Identification with two letters and one numeral

Use this code and the following chart for transistor identification.

Example :

Code	Part name
DV5	2SD596

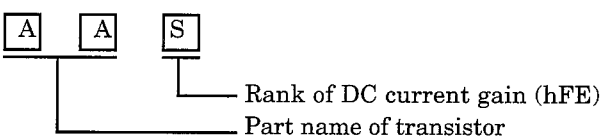


(6)Identification with three letters

Use this code and the following chart for transistor identification.

Example :

Code	Part name
AAS	2SD1757KS



2.Leadless Diode

The part name of a leadless diode is indicated by a code on the surface, using one letter and one numeral,two letters, two letters and one numeral, two numerals and one letter, or three numerals. Use this code and the following table to identify the part name of a diode.

Note: Refer to the parts lists to finally identify a diode.

CODE	PART NAME	CODE	PART NAME
Diode			
0	HVU300A	3D	RB715F
1.0	ISV201	3.0L	MA3030L
2.0	MA3020	3.6L	MA3036L
5.1	MA3051L	3.9L	MA3039L
5.1	MA3051M	4.3H	MA3043H
6.8	MA3068	4.3L	MA3043L
6.8	MA3068M	4.3M	MA3043M
7.5	MA3075L	4.7L	MA3047L
8.2	MA3082M	4.7M	MA3047M
9.1	MA3091	5.1H	MA3051H
20	HZM6	5.1L	MA3051L
24	ISV221	5.1M	MA3051M
27	RD2.7M B	5.6M	MA3056M
30	RD3.0M B	6.2L	MA3062L
51	RD5.1M B2	6.2M	MA3062M
56	RD5.6M B	6.8H	MA3068H
91	RD9.1M B	6.8L	MA3068L
102	RD10M B2	6.8M	MA3068M
122	RD12M B2	6.8M	MA3068
163	RD16M B3	7.5H	MA3075H
182	RD10M B2	7.5L	MA3075L
271	RD2.7M B	8A	UN221D
272	D2.7M B2	8.2H	MA3082H
301	RD3.0M B	8.2M	MA3082M
362	D3.6M B2	9.1M	MA3091M
391	D3.9M B1	9.1M	MA3091
512	RD5.1M B2	10L	MA3100L
561	RD5.6M B	10M	MA3100M
621	RD6.2M B1	11L	MA3110L
681	RD6.8M	12M	MA3120M
683	RD6.8M B3	13H	MA3130H
911	RD9.1M B	18M	MA3180M
2.7H	MA3027H	36M	MA3360

CODE	PART NAME	CODE	PART NAME
Zener Diode			
1A	MA110	M3A	MA199
A3	1S2835	MC	MA153
A4	HSM2836C	MC	MA143
A5	1S2837	MH	MA141K
A6	HSM2838C	MH	MA151K
B	SB0505CP	MH	MA152K
B64	SFPB64	MI	MA132K
B74	SFPB74	MN	MA141WA
BE	1SV172	MN	MA152WK
C1	HSM88S	MN	MA132WA
C2	HSM276S	MO	MA152WA
C3	1SS226	MO	MA133
C4	HSM88WK	MP	MA151WK
F7	KV1470	MT	MA141WK
H5	HVM14	MT	MA141WK
J	SB07-03C	MU	MA132WK
K	DA221	MU	MA151WA
M1A	MA159	N	DAN222
M1C	MA158	N	DAN202T
M1M	MA721	NU	MA152WK
M1N	MA713DAT	P	DAP202T
M1P	MA714	S4	DIFS4
M2A	MA122	SA	SB10-05P
M2B	MA123	Z	DA106K

3.Leadless Resistor

The resistor value is indicated on its surface, using three numerals, or one letter and one numeral.

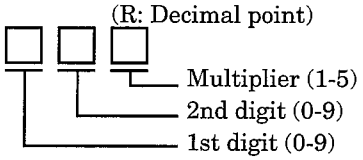
(1)Identification with three numerals

Read this code following the same procedure as when reading the color code on discrete resistors.

Example:

code	value
330	$33 \times 10^0 = 33$ ohms
561	$56 \times 10^1 = 560$ ohms
123	$12 \times 10^3 = 12K$ ohms
1R2	$1 + 0.2 = 1.2$ ohms

(R: Decimal point)



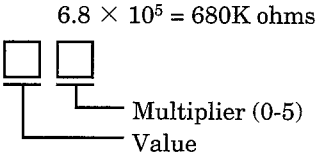
(2)Identification with one letter and one numeral

Use this code and the following chart for resistor identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

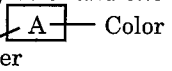
code	value
A1	$1 \times 10^1 = 10$ ohms
G2	$1.8 \times 10^2 = 180$ ohms
L3	$2.7 \times 10^3 = 2700$ ohms
S4	$4.7 \times 10^4 = 47K$ ohms
W5	$6.8 \times 10^5 = 680K$ ohms



4.Leadless Capacitors

The capacitor value is indicated on its surface, using body color and one letter, or one letter and one numeral.

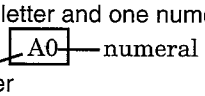
(1)Identification with body color and one letter



Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	G	180(PF)
	C	2		J	220
	E	3		L	270
	G	4		N	330
	J	5		Q	390
	L	6		S	470
	N	7		U	560
	Q	8		W	680
	S	9		Y	820
Black	A	10(PF)	White	A	0.001(μF)
	C	12		E	0.0015
	E	15		J	0.0022
	G	18		L	0.0027
	J	22		N	0.0033
	L	27		S	0.0047
	N	33		W	0.0068
	Q	39	Green	A	0.01(μP)
	S	47		E	0.015
	U	56		J	0.022
	W	68		N	0.033
	Y	82		S	0.047
Blue	A	100(PF)	U	0.056	
	C	120		W	0.068
	E	150		Y	0.082
			Yellow	A	0.1(μP)

Example : Color	Letter	Value
Red	A	1PF
Black	A	10PF

(2) Identification with one letter and one numeral



Letter/Numeral	Value	Letter/Numeral	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
A1	10(PF)	U2	560
C1	12	W2	680
E1	15	Y2	820
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56	A4	0.01(μP)
W1	68	E4	0.015
Y1	82	J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

Example :

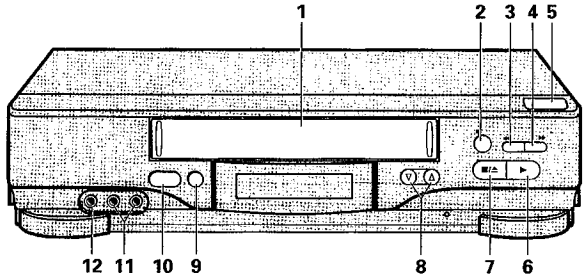
Letter/Numeral	Value
A0	1PF
A1	10PF

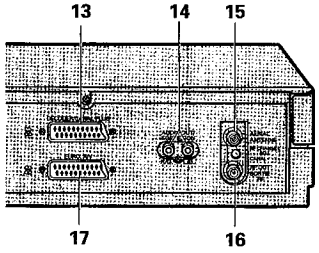
5.Leadless Jumper

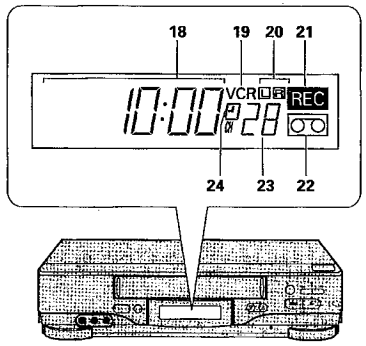
The leadless jumper indicated as shown below.

CUSTOMER CONTROLS

VCR Customer Controls

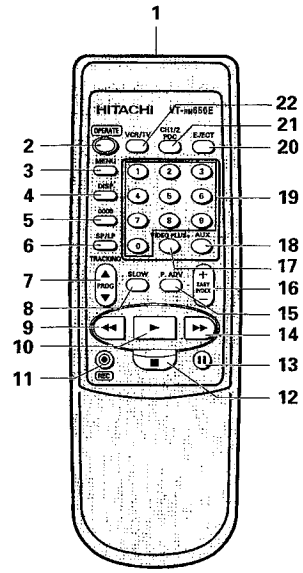






Item No.	Function	Page
1	Cassette compartment	20
2	REC button	25
3	Rewind button	23
4	Fast forward button	23
5	Infrared transmitter	46
6	PLAY button	22
7	STOP/EJECT button	23
8	PROG (programme up/down) buttons	12
9	Remote control receiving window	10
10	OPERATE (Operate/Standby) button	2
11	AUDIO IN (L-mono),(R) sockets	42
12	VIDEO IN socket	42
13	Decoder socket	44
14	AUDIO OUT (L), (R) sockets for stereo system connection	–
15	AERIAL — signal input	6
16	RF OUT — signal out to TV	6
17	Scart socket	7
	VCR Display	
18	Time,	19
	Time counter or	37
	VCR mode indicator	22
	PLAY— play-back ["–" appears during reverse direction viewing]	22
	SRCH— visual search	23
	SLOW— slow play	22
	REW — rewind	23
	S:REW—high speed rewind	23
	FF — fast forward	23
	S:FF — high speed fast forward	23
	STILL— play pause and frame advance	22
19	VCR, operate mode	22
20	Audio indicators	24
21	REC — record (flashes during record pause)	25
22	Tape-in indicator	20
23	TV programme number or Auxiliary (L1/L2/L3)	25 42
24	Timer indicator	28

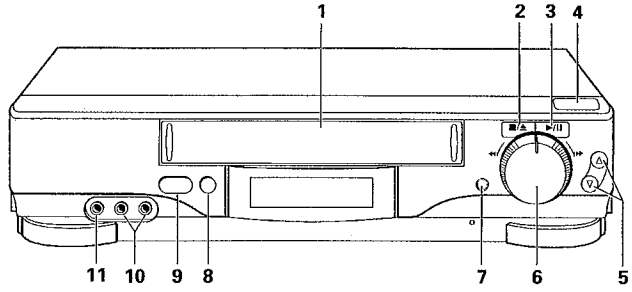
Remote Control Handset Customer Controls

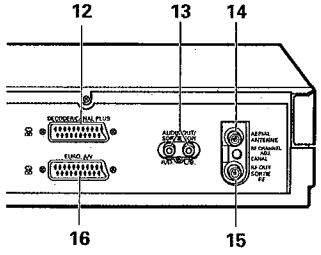


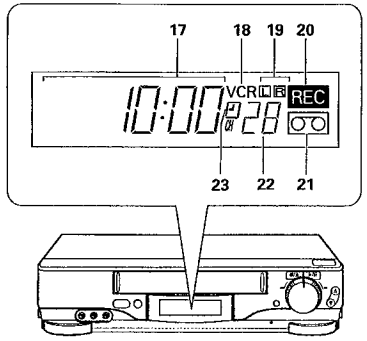
Item No.	Function	Page
1	Transmission window	10
2	OPERATE—switch between operate and standby mode	28
3	MENU — to recall OSD menu	39
4	DISP —to recall on-screen display, change VCR's display	40
5	0000 —to correct an incorrect digit, reset the time counter when it appears in the VCR's display	19 37
6	SP/LP — changes tape speed during record	20
7	PROG (programme up ▲ /down ▼) button	12
	TRACKING button	24
8	SLOW button— press during playback	22
9	Rewind ◄◄ — fast rewind or search	23
10	Play ► —play-back	22
11	REC — record button	25
12	Stop ■ —stops play/record function	23
13	Pause ❚❚ — pause or still	22
14	Fast forward ►► — fast forward or search	23
15	F ADV button — advance the picture by one frame during still playback	22
16	EASY INDEX (+ / -) — used for index function	38
17	VIDEO PLUS+ — VIDEO Plus+ programming	29
18	AUX button — select L1,L2 or L3 input	32
19	Number buttons	19
20	EJECT button — press to eject a cassette	—
21	CH1/2 button	24
	PDC button	56
22	VCR/TV select button	22

CUSTOMER CONTROLS

VCR Customer Controls



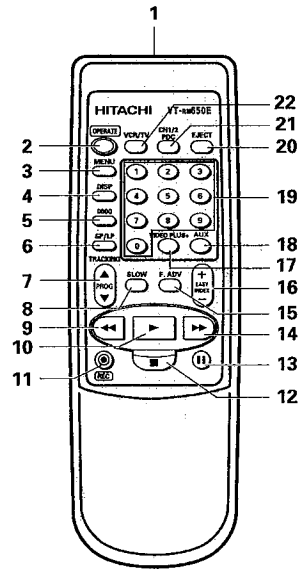




Item No	Function	Page
1	Cassette compartment	20
2	STOP/EJECT button	23
3	PLAY/STILL button	22
4	Infrared transmitter	47
5	PROG (programme up/down) buttons	12
6	Shuttle ring	25
7	REC button	26
8	Remote control receiving window	10
9	OPERATE (Operate/Standby) button	2
10	AUDIO IN (L-mono),(R) sockets	43
11	VIDEO IN socket	43
12	Decoder socket	45
13	AUDIO OUT (L), (R) sockets for stereo system connection	–
14	AERIAL — signal input	6
15	RF OUT — signal out to TV	6
16	Scart socket	7
	VCR Display	
17	Time,	19
	Time counter or	38
	VCR mode indicator	22
	PLAY— play-back	22
	SRCH— visual search	23
	SLOW— slow play	22
	REW — rewind	23
	S:REW—high speed rewind	23
	FF — fast forward	23
	S:FF — high speed fast forward	23
	STILL— play pause and frame advance	22
18	VCR, operate mode	22
19	Audio indicators	24
20	REC — record (flashes during record pause)	26
21	Tape-in indicator	20
22	TV programme number or Auxiliary (L1/L2/L3)	26 43
23	Timer indicator	29

"–" appears during reverse direction viewing

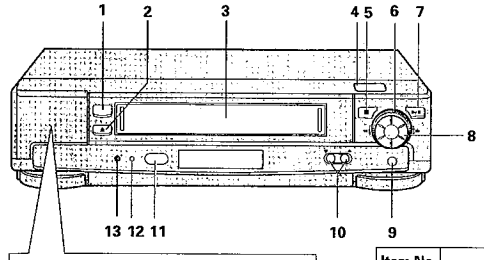
Remote Control Handset Customer Controls

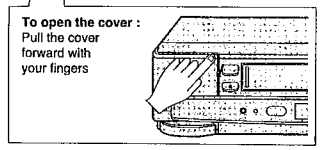


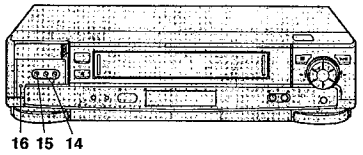
Item No.	Function	Page
1	Transmission window	10
2	OPERATE—switch between operate and standby mode	29
3	MENU — to recall OSD menu	40
4	DISP —to recall on-screen display, change VCR's display	41
5	0000 —to correct an incorrect digit, reset the time counter when it appears in the VCR's display	19 38
6	SP/LP—changes tape speed during record	20
7	PROG (programme up ▲ /down ▼) button TRACKING button	12 24
8	SLOW button — press during playback to view slow motion picture	22
9	Rewind ◄◄ — fast rewind or search	23
10	Play ► —play-back	22
11	REC — record button	26
12	Stop ■ —stops play/record function	23
13	Pause ▮▮ — pause or still	22
14	Fast forward ►► — fast forward or search	23
15	F ADV button — advance the picture by one frame during still playback	22
16	EASY INDEX (+ / -) — used for index function	39 —
17	VIDEO PLUS+ — VIDEO Plus+ programming	30
18	AUX button — select L1,L2 or L3 input	33
19	Number buttons	19
20	EJECT button — press to eject a cassette	20
21	CH1/2 button PDC button	24 57
22	VCR/TV select button	22

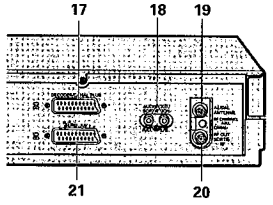
CUSTOMER CONTROLS

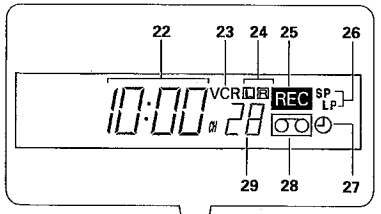
VCR Customer Controls

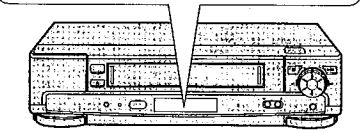






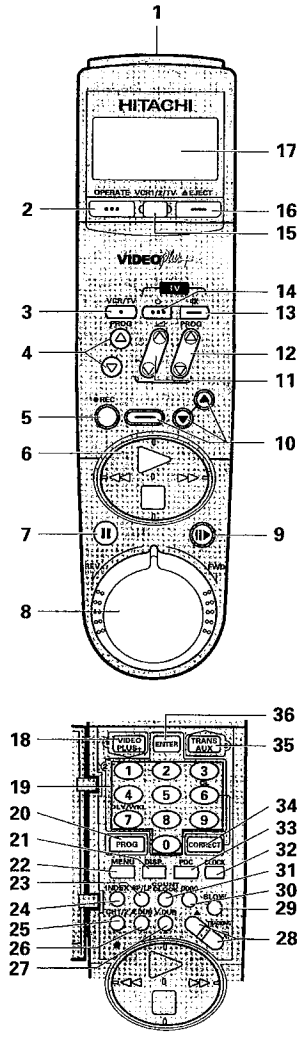






Item No.	Function	Page
1	OPERATE (Operate/Standby) button	2
2	EJECT button	20
3	Cassette compartment	20
4	Infrared transmitter	57
5	STOP button	23
6	Shuttle ring	25
7	PLAY/STILL button	22
8	Jog dial	25
9	REC/IRT button	26
10	PROG (programme up/down) buttons	12
11	Remote control receiving window	10
12	REC (record) indicator-lights up during REC (Timer Recording, IRT), record pause, video dubbing and video dubbing pause	
13	SUPER REWIND button	23
14	AUDIO IN (L-mono),(R) socket	51
15	VIDEO IN socket	51
16	Reset switch	66
17	Decoder socket	55
18	AUDIO OUT (L), (R) socket for stereo system connection	–
19	AERIAL — signal input	6
20	RF OUT — signal out to TV	6
21	Scart socket	7
	VCR Display	
22	Time,	19
	Time counter or	39
	VCR mode indicator ["–" appears during reverse direction viewing]	22
	PLAY— play-back	22
	SRCH— visual search	22
	SLOW— slow play	22
	REW — rewind	23
	S:REW—high speed rewind	23
	FF — fast forward	23
	S:FF — high speed fast forward	23
	STILL— play pause and frame advance	22
23	VCR, operate mode	22
24	Audio indicators	25
25	REC — record (flashes during record pause)	26
26	Tape speed SP/LP	26
27	Timer indicator	30
28	Tape-in indicator	20
29	TV programme number or Auxiliary (L1/L2/L3)	26 47

ıote Control Handset Customer Controls



Item No.	Function	Page
1	Transmission window	10
2	OPERATE—switch between operate and standby mode	30
3	VCR/TV select button	22
4	PROG (programme up/down) button	12
5	REC — record button	26
6	Tape transport button ▷ — play-back ◁◁ — fast rewind or search ▷▷ — fast forward or search □ — stops play/record function	22
7	Pause/still button	22
8	Shuttle ring	25
9	Frame advance during still	22
10	These buttons are not used	
11	TV volume buttons — Buttons used	64
12	TV PROG button — exclusively to	64
13	TV mute button — operate the TV	64
14	TV Operate button	64
	Note: Four buttons 11 – 14 are used only when operating the TV	
15	VCR1/2/TV select button	10
16	EJECT — ejects cassette	20
17	Display clock/timer programme information	19
18	VIDEO Plus+ programming	31
19	Number buttons	19
20	PROG — to enter timer programme information	34
21	DISP — to recall on-screen display	43
22	MENU — to recall OSD menu	42
23	SP/LP — changes tape speed during record	20
24	INDEX button — INDEX feature	41
25	CH1/2 button	24
26	A DUB button	50
27	V DUB button	48
28	TRACKING buttons	24
29	SLOW button	22
30	0000 — clears time counter	39
31	COUNT/CLOCK — changes VCR display	39
32	CLOCK — enter or correct time on handset	19
33	PDC button	69
34	CORRECT button	19
35	TRANS/AUX button — transmits data, select L1,L2 or L3 input	32
36	ENTER button — to enter PlusCode number	31

CHAPTER 2 DISASSEMBLY

— VT-F55XE/F64XE/F650E —

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.

Identifications of Circuit Boards

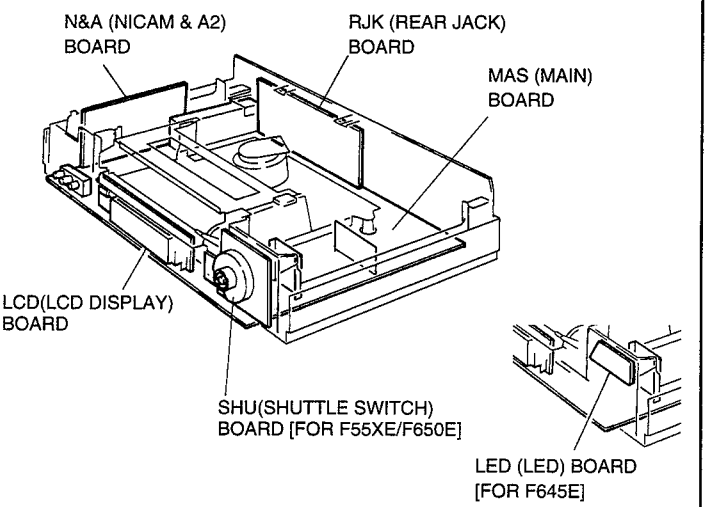


Fig. 1-1

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.

Parts to remove	Item	Parts to remove	Item
Top cover	2-1		
Front panel	2-1	Cassette door	2-2
		Buttons	2-2
		SHU or LED board	2-3
		Front frame	2-4
		LCD board	2-4
Rear panel	2-1	RJK board	2-1
US-FL mechanism	2-1		
US mechanism/ MAS board assembly	2-5	US mechanism	2-6
N&A board	2-5		

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

◆ Caution when reinstalling the US-FL mechanism

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

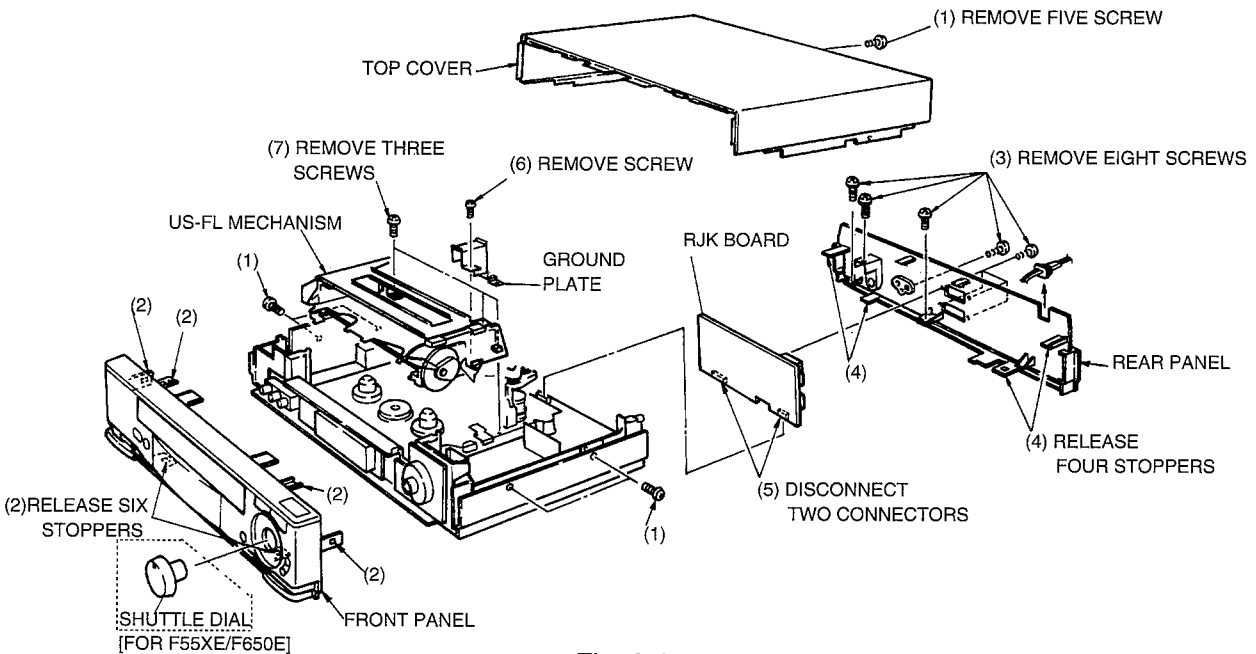


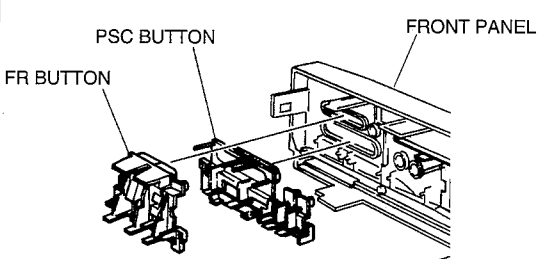
Fig. 2-1

2-2	Cassette door and buttons

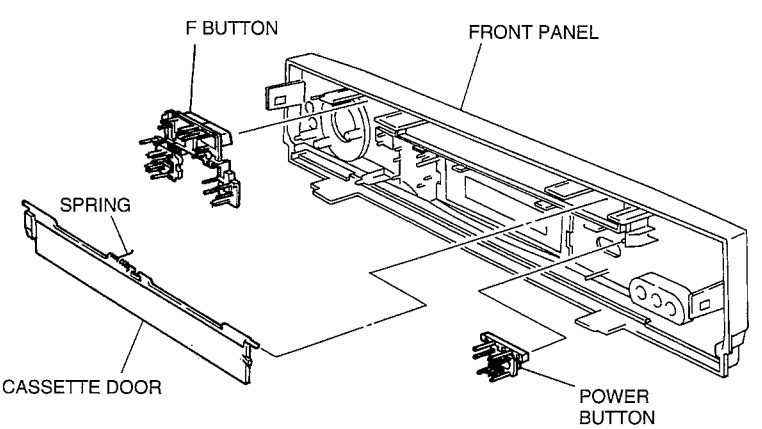
◆ Caution when reinstalling the front panel

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.

[FOR F640E/F645E]



[FOR F55XE/F650E]



[Caution when reinstalling the front panel]

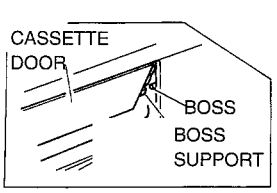
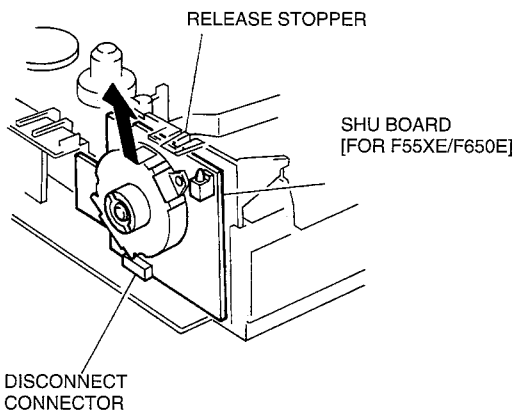


Fig. 2-2

Item	Parts to remove
2-3	SHU or LED board

[FOR F55XE/F650E]



[FOR F645E]

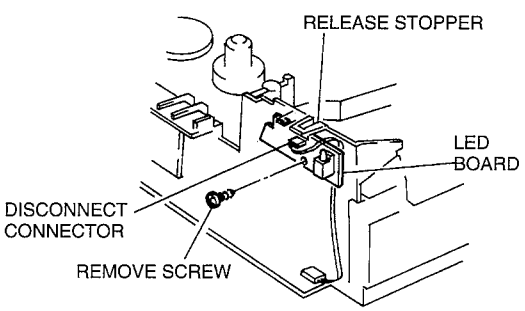


Fig. 2-3

2-4	Front frame and LCD board

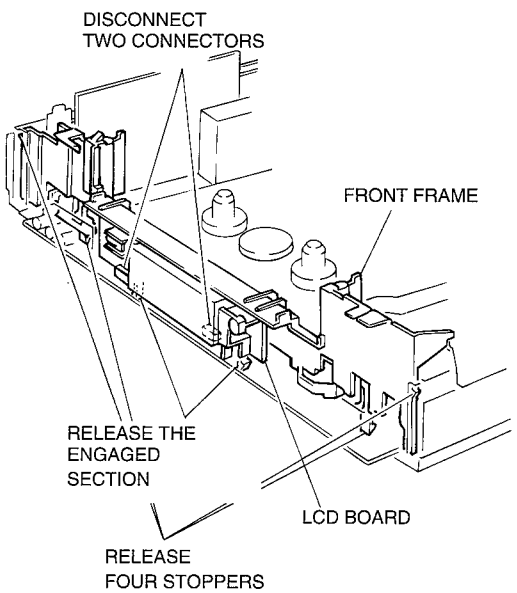


Fig. 2-4

2-5	US mechanism/MAS board assembly and N&A board

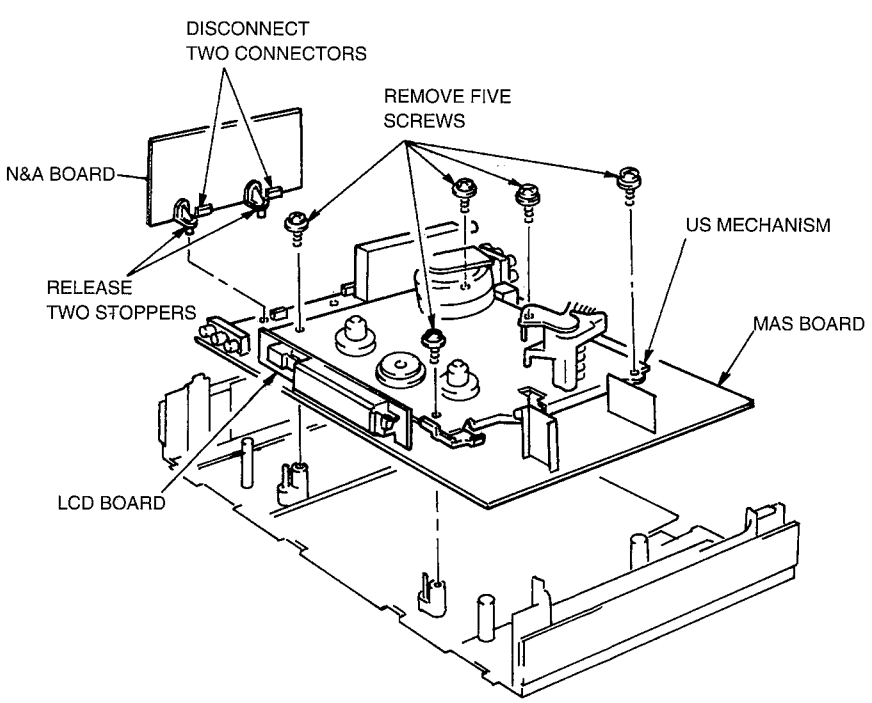


Fig. 2-5

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

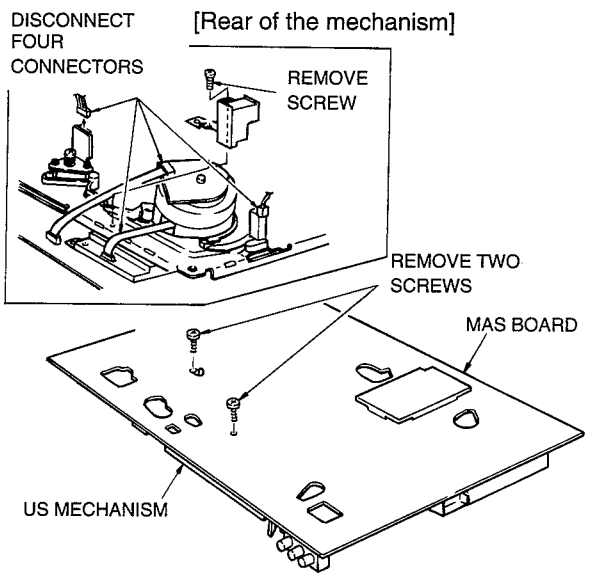


Fig. 2-6

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 cover	2-1
⇩	
Front 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

2-7	Procedure to remove only the US mechanism

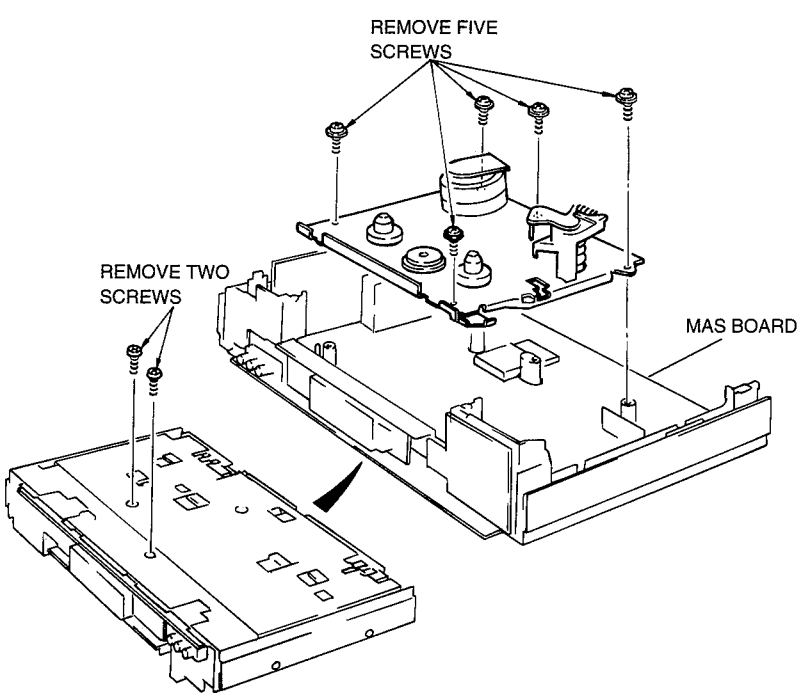


Fig. 2-7

— VT-F660E —

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.

Identifications of Circuit Boards

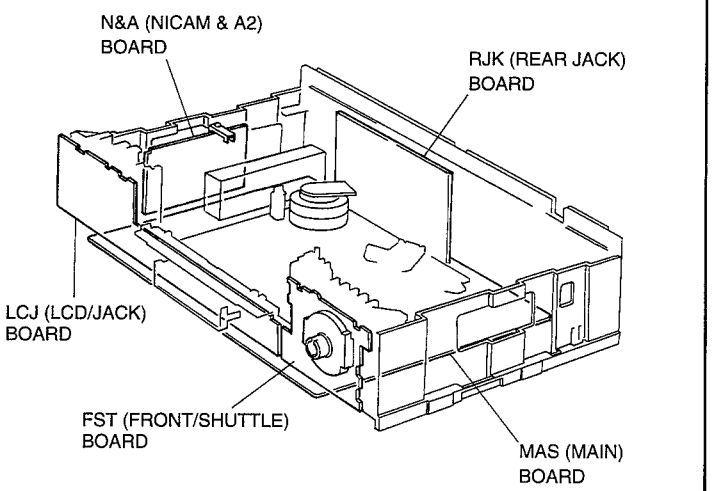


Fig.1-1

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.

LED (LED) BOARD
[FOR F645E]

[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.

Parts to remove	Item
Top cover	2-1
Front panel	2-1
Bottom cover	2-1
Rear panel	2-1
US-FL mechanism	2-1
N&A board	2-4
US mechanism/ MAS board assembly	2-5

Parts to remove	Item
Cassette door	2-2
Buttons	2-2
Front frame	2-3
LCJ and FST	2-3
RJK board	2-1
US mechanism	2-6

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

◆ Caution when reinstalling the US-FL mechanism

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

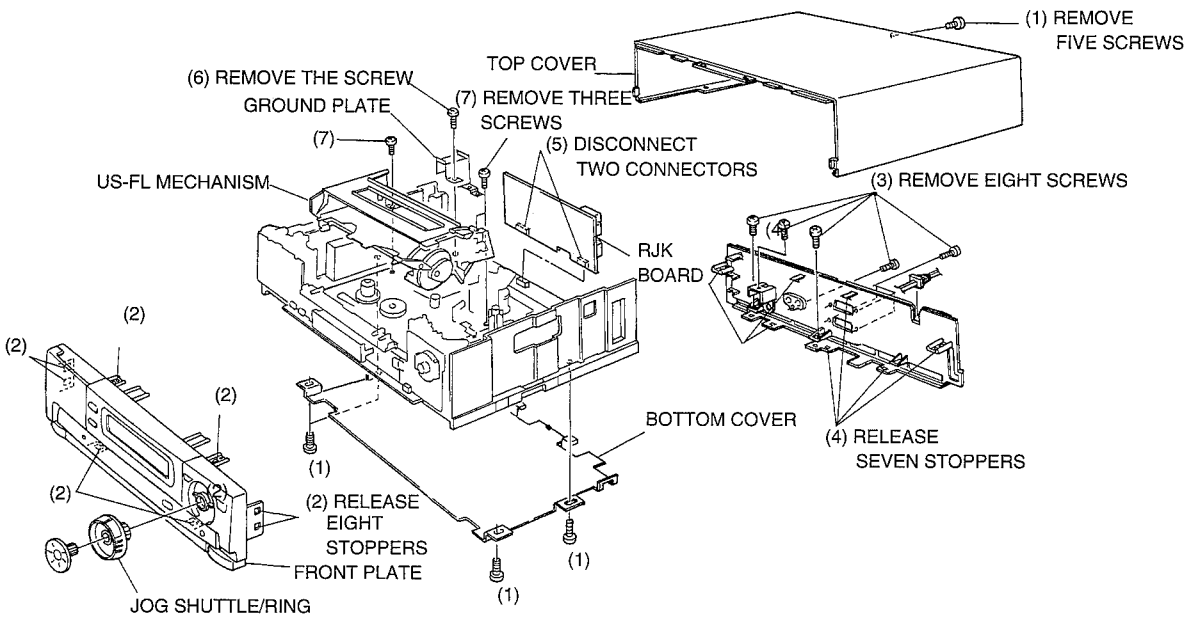


Fig. 2-1

2-2	Cassette door and buttons

◆ Caution when reinstalling the front panel

Reinstall the front panel in the state the cassette door is pushed so the boss of the door arm comes to the front of the boss support of the cassette door.

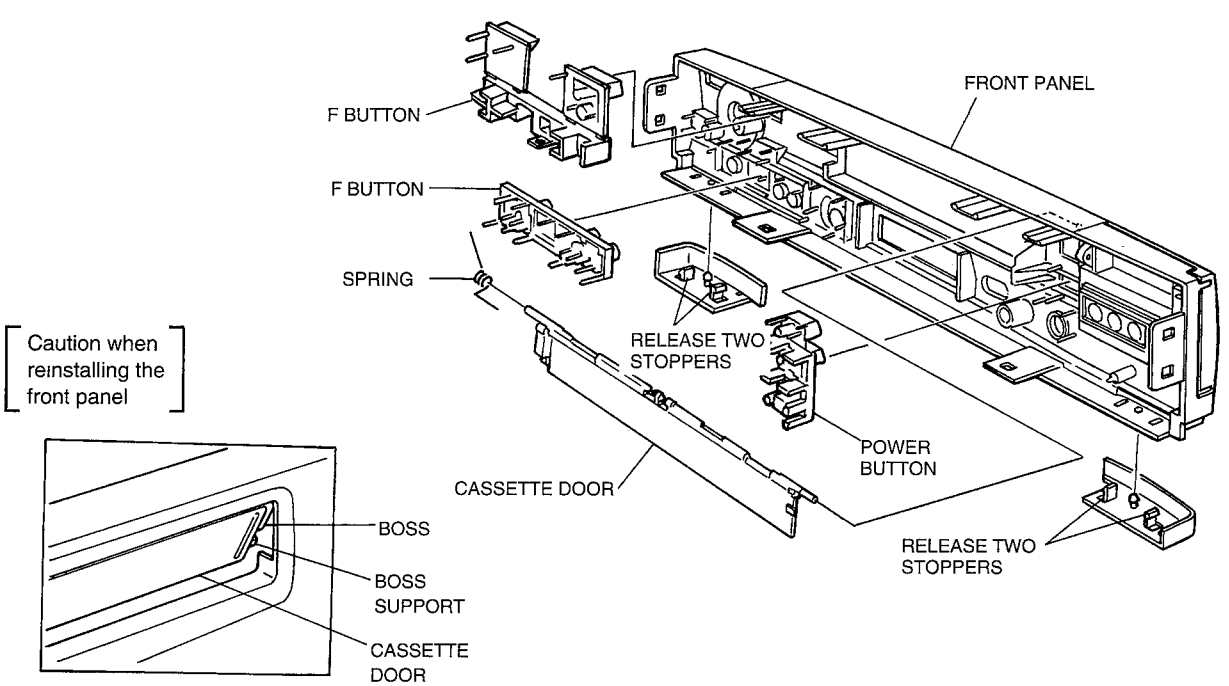


Fig. 2-2

Item	Parts to remove
2-3	Front frame, LCJ and FST board

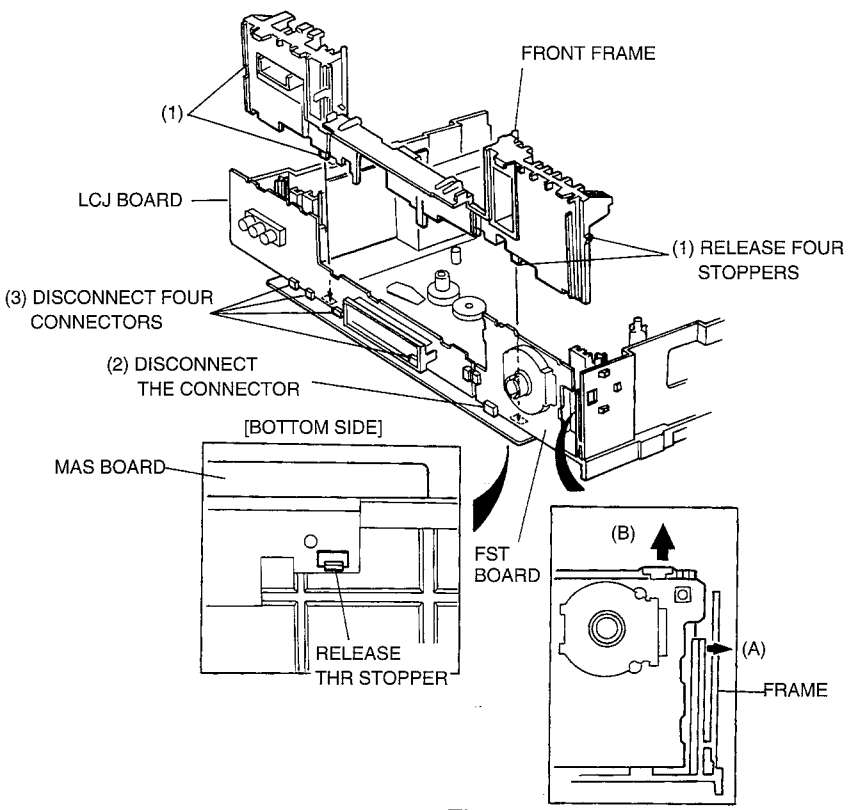


Fig. 2-3

2-4	N&A board

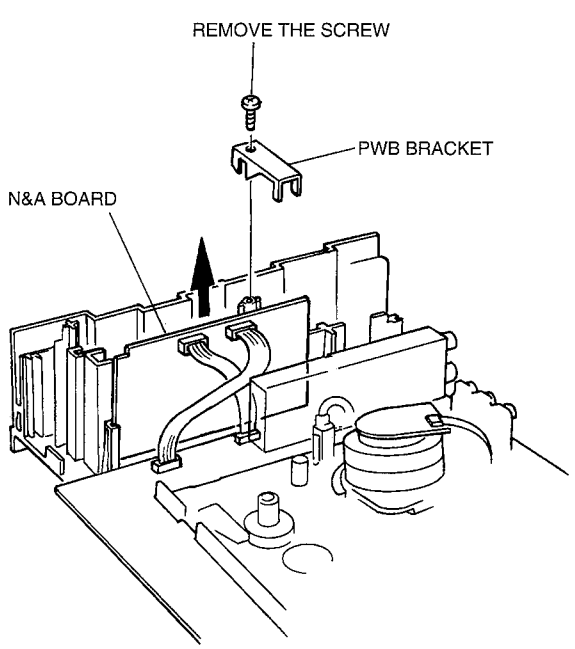


Fig. 2-4

2-5	US machanism and MAS board assembly

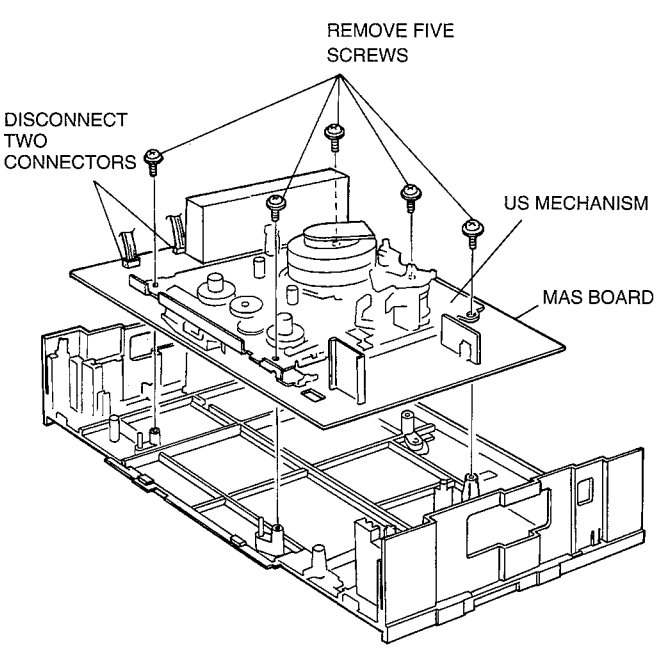


Fig. 2-5

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

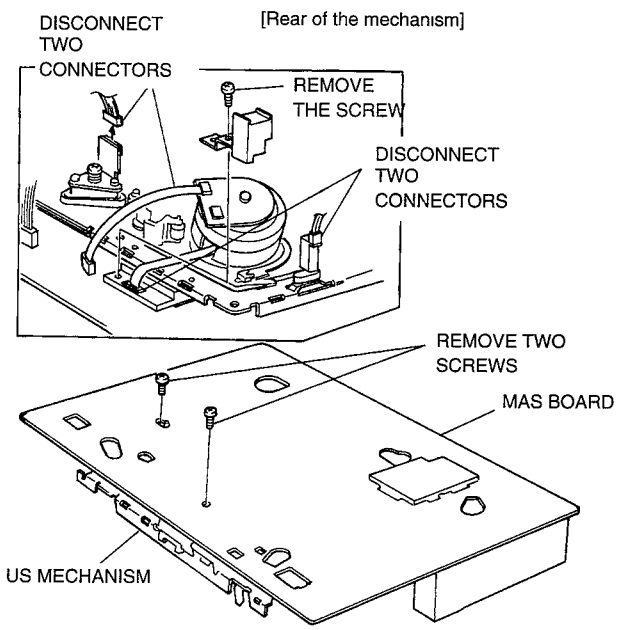


Fig. 2-6

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 cover	2-1
⇩	
Front 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

2-7	Procedure to remove only the US mechanism

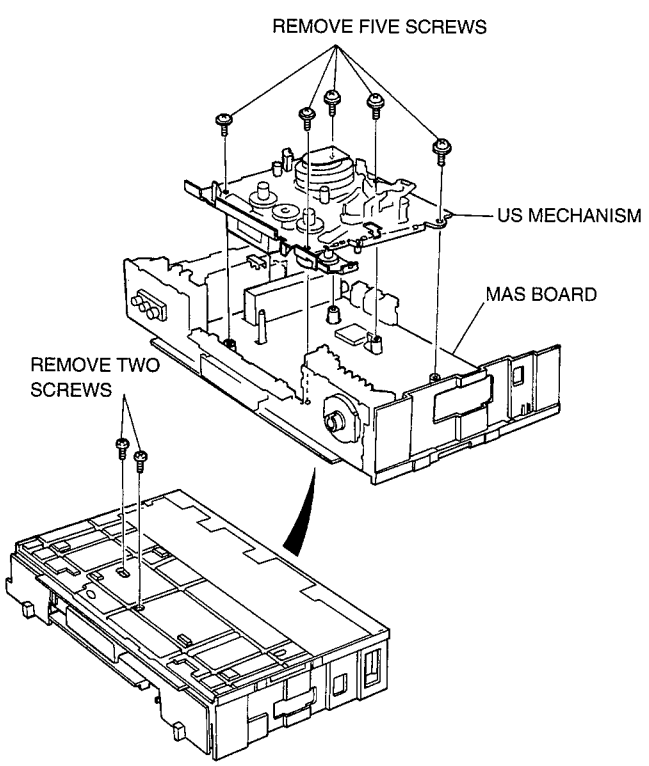


Fig. 2-7

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.

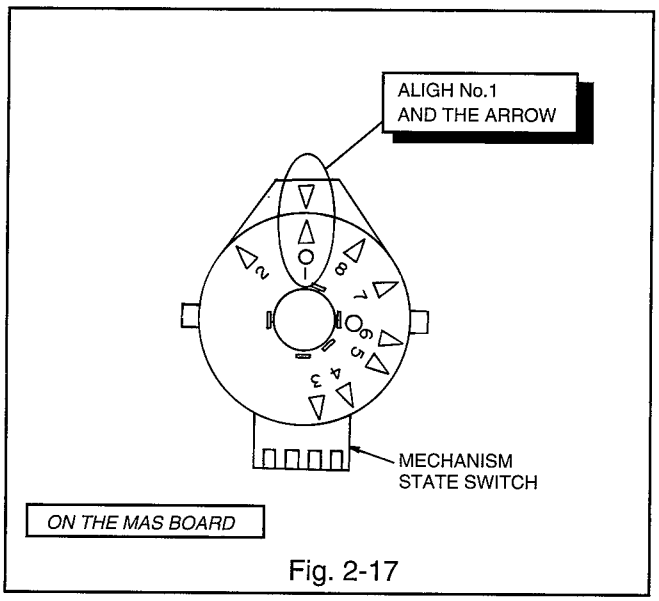


Fig. 2-17

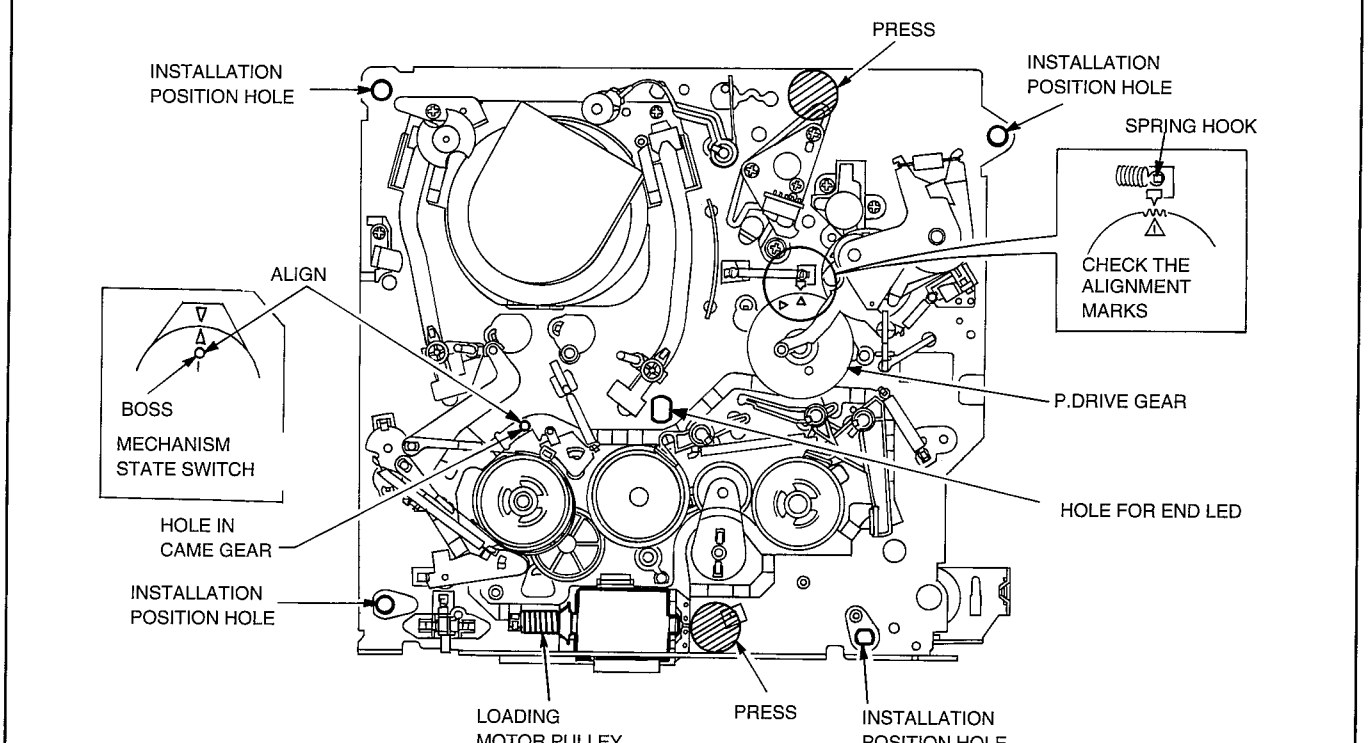


Fig. 2-18

CHAPTER 3 ELECTRIC CIRCUIT ADJUSTMENT AND TROUBLE DISPLAY

Service Positions

— VT-F55XE/F640E/F645E/F650E —

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 circuit boards is removed, noise appears in the played back picture. Attach the shield cover when checking the picture on the screen.

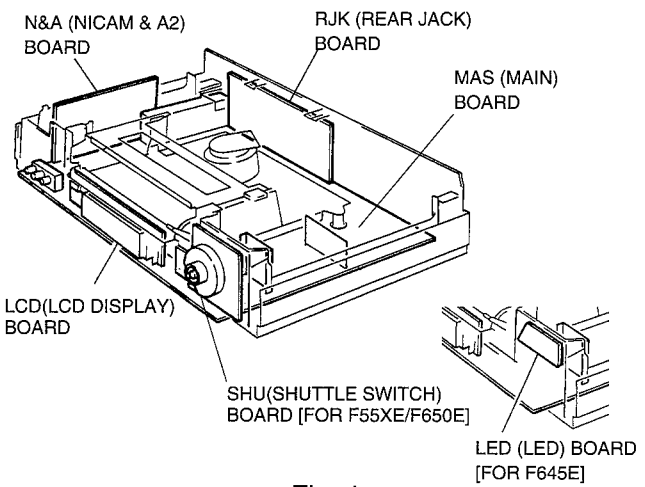


Fig. 1

2. Servicing positions when repairing and checking circuits

2-1. Procedure to set the SHU, FST or LED and LCD or LCJ boards to the servicing positions (Fig. 2)

1) Remove the top cover and front panel.
2) Remove the US-FL mechanism.
3) Remove the SHU or LED and LCD boards and front frame, then reattach the SHU or LED and LCD board.

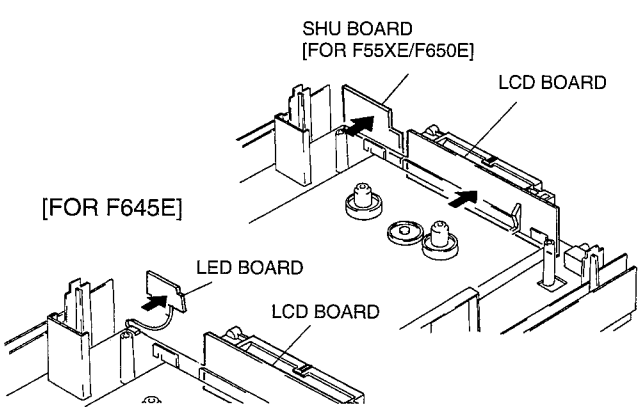


Fig. 2

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

1) Remove the top cover, front panel and rear panel.
2) Remove the US-FL mechanism and front frame.
3) Remove the MAS board, with the LCD and SHU or LED, N&A and RJK boards and US mechanism assembled from the frame.
4) Turn over the MAS board and perform checks from the pattern side indicated by the arrow.
   Be careful of the following at this time.
   · Lay out an insulation sheet under the boards.
   · Attach the shield cover at the rear of the cylinder.
   Attach the US-FL mechanism when loading the tape.

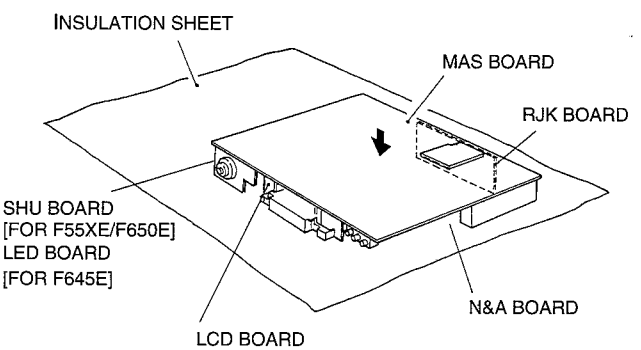


Fig. 3

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.

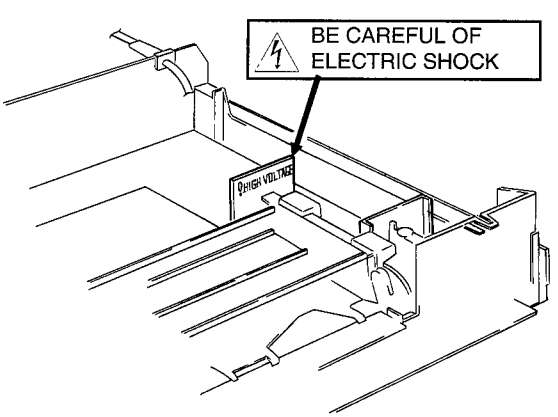


Fig. 4

— VT-F660E —

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 circuit boards is removed, noise appears in the played back picture. Attach the shield cover when checking the picture on the screen.

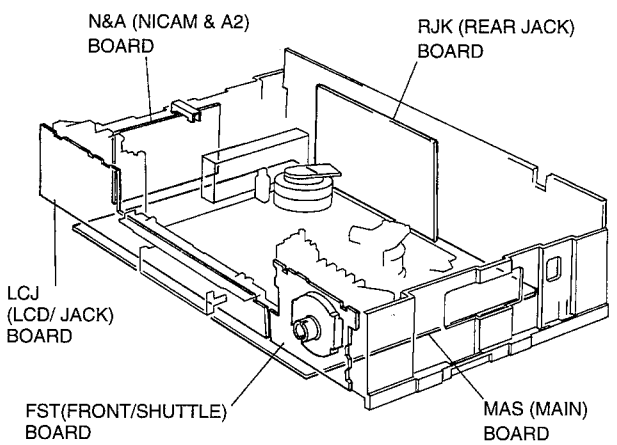


Fig. 1

2. Servicing positions when repairing and checking circuits

2-1. Procedure to set the LCJ, FST and N&A boards to the servicing positions (Fig. 2)

1) Remove the top cover, front panel and rear panel.
2) Remove the US-FL mechanism.
3) Remove the front frame and open each board as shown in the diagram below and perform check from the patterm side (indicated by the arrow).

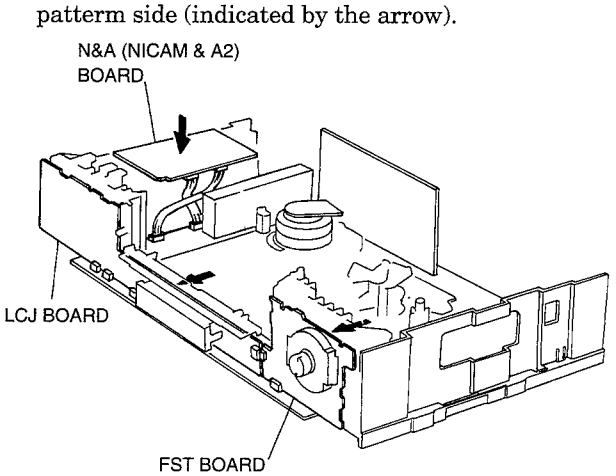


Fig. 2

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

1) Remove the top cover, front panel and rear panel.
2) Remove the US-FL mechanism and front frame.
3) Remove the MAS board, with each board and the US mechanism assembled on it, from the frame.
4) Turn over the MAS board and perform checks from the pattern side (indicated by the arrow).
   Take care of the following at this time.
   · Lay the insulation sheet under the boards.
   · Attach the US-FL mechanism when loading a tape.

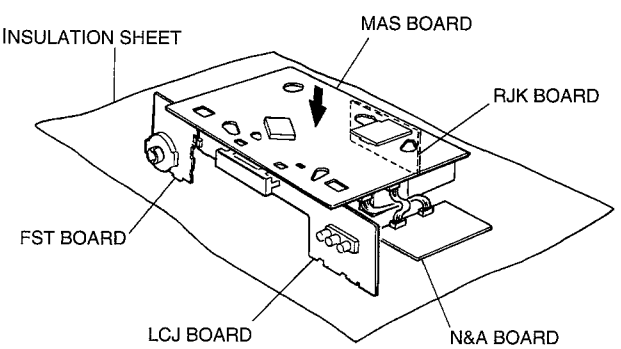


Fig. 3

3. Be careful of electric shocks

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

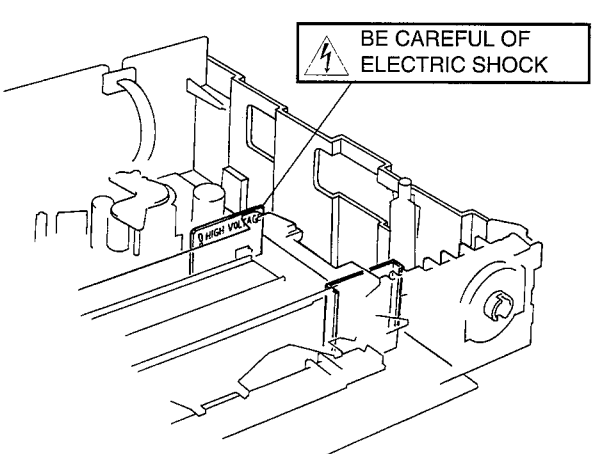


Fig. 4

Electrical Circuit Adjustment

1. Test equipment/jigs necessary for adjustment

1) Dual-trace oscilloscope
2) Colour bar generator
3) Voltmeter
4) Monitor TV (with A/V jacks)
5) Alignment tapes:
   MH-2: Part No. 7099052
   24HMAF-2: Part No. 7099175
   (Hi-Fi alignment tape)
6) Blank tape
7) C/R oscillator

2. Cautions on adjustment

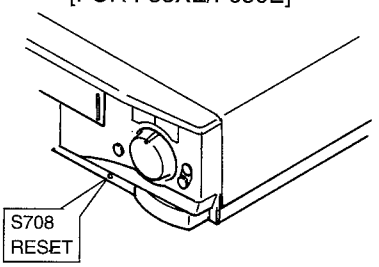
1) The following conditions apply when otherwise not specified.
   Probe of oscilloscope: 10:1
   Synchronization of oscilloscope: Internal sync
   Ground of test equipment: PG2508 pin 6
   (on MAS board)
2) When performing more than one adjustment, follow the specified order.

3. Tips for adjustment

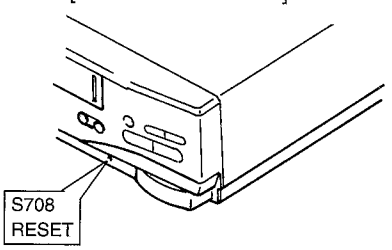
3-1.Procedure to reset the main microprocessor

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

[FOR F55XE/F650E]



[FOR F640E/F645E]



[FOR F660E]

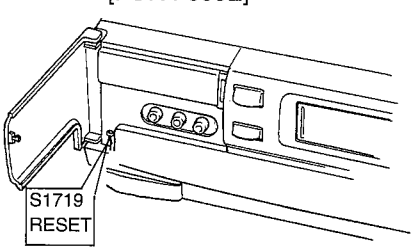


Fig. 5

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 LP head playback mode (X-value adjustment test mode)

Press the TRACKING UP(▲) and DOWN(▼) 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 LP head playback mode (X-value adjustment test mode).

4. Connections of test equipment

Connect the test equipment as follows when otherwise not specified.

1) Connect a colour bar generator to the video input jack of the VCR.
2) Connect a monitor TV to the Euro Socket of the VCR.
3) Connect an antenna to the antenna jack and receive a TV broadcast (only for sound multiplex adjustment).

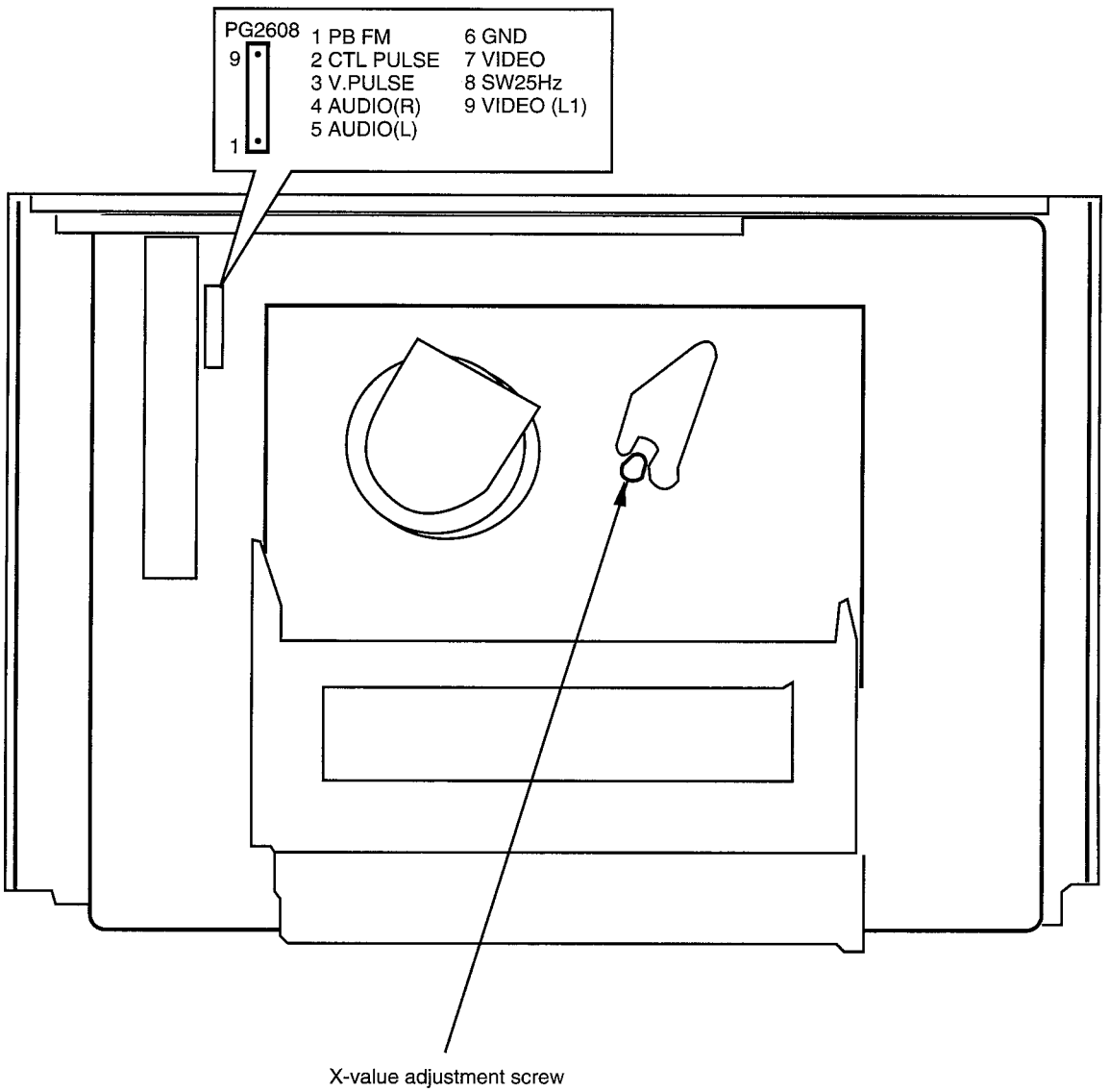


Fig. 6 MAS (Main) Circuit Board [Components Side]

5. Servo Circuit Adjustments

5-1. 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	Connection Points	State of VCR	Adjustment Point
Oscilloscope	CH-1: Video out jack CH-2: PG2508-8(SW25Hz)	1) Play the alignment tape 2) Set to the X-value adjustment test mode.	· F.FWD button (S702) · REW button (S703)
Alignment tape (MH-2)			

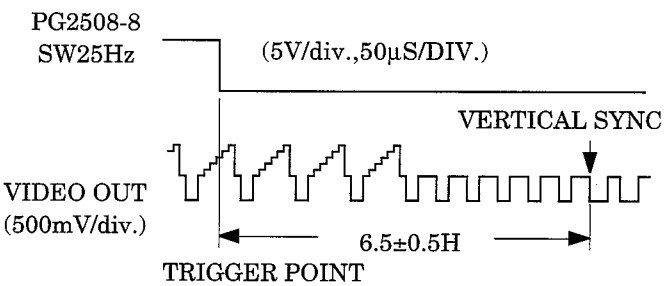
Adjustment Procedure

1) Play the alignment tape.
2) Press the tracking up(▲) and down(▼) buttons of the remote control provided simultaneously and hold them, then press the "CHANNEL ▽ "(S707) button of the VCR to set the VCR to the test mode. (SP is switched to LP in the display.)
3) Press the "F.FWD"and "REW" buttons of the remote control so the phase from the vertical sync to the trailing edge (trigger position) of the SW25Hz pulse is set to 6.5H ± 0.5H.
4) Press the STOP button to release the test mode.

-Conditions of oscilloscope-

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

Waveforms



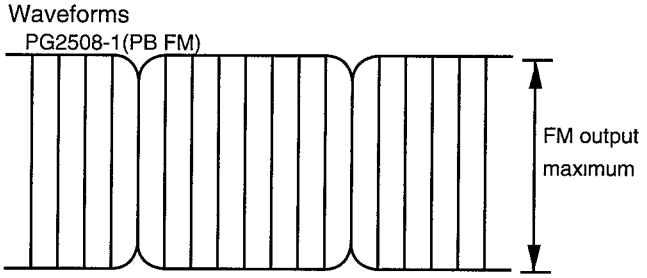
5-2. X-value adjustment (Fig. 6)

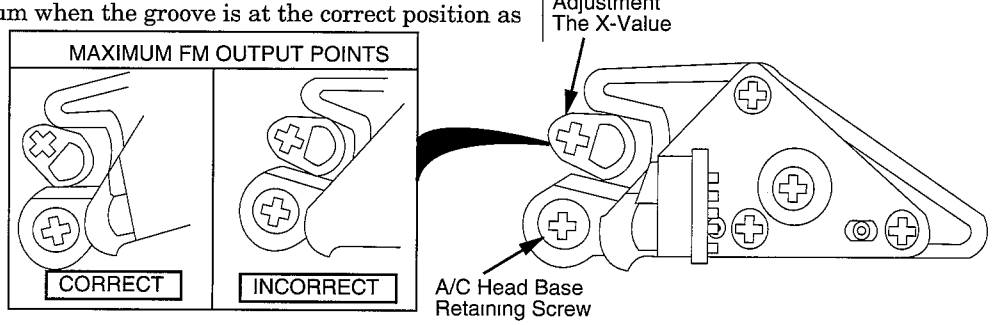
Purpose: To ensure compatibility with other VCRs.		Fault due to incomplete adjustment: When a tape recorded by another VCR is played back, the tracking is not optimized and noise appears on the screen.	
Test Equipment/Jigs	Connection Points	State of VCR	Adjustment Point
Oscilloscope	CH-1: PG2508-1 (PB FM) CH-2: PG2508-8 (SW25Hz)	1) Play the alignment tape. 2) Set to the X-value adjustment test mode.	Groove for the djustment X-value
Alignment tape (MH-2)			

Adjustment Procedure

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

Waveforms





5-3. 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	Connection Points	State of VCR	Adjustment Point
Monitor TV Colour bar generator Blank tape	Video output jack Video input jack	Record a colour bar signal and play it using the same VCR.	· Tracking up(▲) · Tracking down(▼)
Adjustment Procedure <LP vertical jitter correction>. Record in the LP 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 tracking up or down buttons of the remote control 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 tracking upn or down buttons of the remote control to suppress vertical jitter in the picture.	

5-4. 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	Connection Points	State of VCR	Adjustment Point
Monitor TV Colour bar generator Blank tape (E-180)	Video output jack Video input jack	Slow tracking: Unplug the power cord to set the slow tracking to the center.	· Tracking up(▲) · Tracking down(▼)
Adjustment Procedure 1) Record a signal on the middle of a E-180 blank tape in the LP mode and play it back using the same VCR. 2) Press the tracking up and down buttons of the remote control (provided) simultaneously during playback and hold them, then press the "PLAY" button (S701) to set the VCR to the forward test slow mode. 3) Press the tracking up or down 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.	

5-5. Reverse slow tracking preset adjustment

Purpose: To adjust the timing with which the brake pulse of the capstan motor is generated during reverse slow play so that noise is minimum.		Fault due to incomplete adjustment: Noise appears during reverse slow play and the picture is not clear.	
Test Equipment/Jigs	Connection Points	State of VCR	Adjustment Point
Monitor TV Colour bar generator Blank tape (E-180)	Video output jack Video input jack	Slow tracking: Unplug the power cord to set the slow tracking to the center.	· Tracking up(▲) · Tracking down(▼)
Adjustment Procedure 1) Record a signal on the middle of a E-180 blank tape in the LP mode and play it back using the same VCR. 2) Press the tracking up and down buttons of the remote control (provided) simultaneously during still and hold them, then press the "PLAY" button (S701) to set the VCR to the forward test slow mode. 3) Press the tracking up or down 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. Audio Circuit Adjustment

6-1. Hi-Fi audio playback level check

Purpose: To set the playback level of the Hi-Fi audio signai to the specified value.		Fault due to incomplete adjustment: The appropriate volume cannot be obtained during playback.	
Test Equipment/Jigs	Connection Points	State of VCR	Adjustment Point
Voltmeter Hi-Fi Alignment tape (24HMAF-2)	When checking R-CH: PG2508-4 When checking L-CH: PG2508-5	Play Hi-Fi alignment tape.	———
Adjustment Procedure Use the same checking procedure for both the L and R channels. Check that the voltmeter reads -7.8dBs ± 3.0dBs. If it cannot be confirmed, check the playback signal system.			

6-2. E-E audio level check

Purpose: To check the audio level in the E-E mode.		Fault due to incomplete adjustment: The sound is abnormal in the E-E mode.	
Test Equipment/Jigs	Connection Points	State of VCR	Adjustment Point
C/R oscillator Voltmeter	Audio in 1 jack (L-CH) Audio in 1 jack (R-CH) Audio out jack (L-CH) Audio out jack (R-CH)	E-E mode	———
Adjustment Procedure 1) Apply a 1kHz, -7.8dBs sinewave signal to the audio input 1 (L-CH and R-CH) jacks. 2) Check that the voltmeter reads -9.8dBs ± 2.0dBs. 3) If the above cannot be confirmed, check the E-E audio line.			

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, when the trouble display is cleared.

Information	Data memory ROMs IC903 EEPROM	List of initial data Shipment mode initial data	Clearing of trouble display	Remarks
Channel memory	○	○		
VCR mode select data	○	○		
Trouble display data	○	○	○	
Slow tracking data	○	×(set by adj.)		
Artificial V sync data	○	×(set by adj.)		
Switching point data	○	×(set by adj.)		
SAT data	○	○		

List of Hidden Commands

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

1. Mode setting commands during adjustment

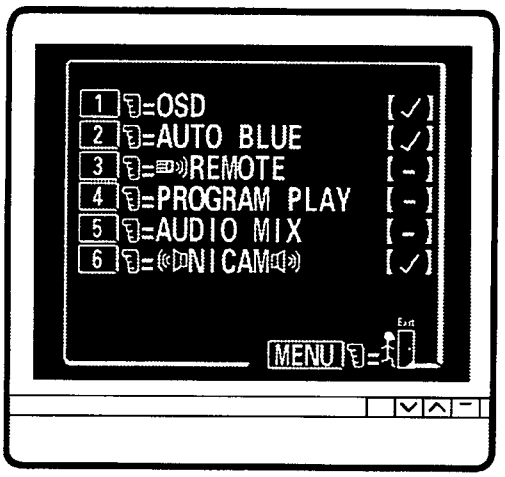
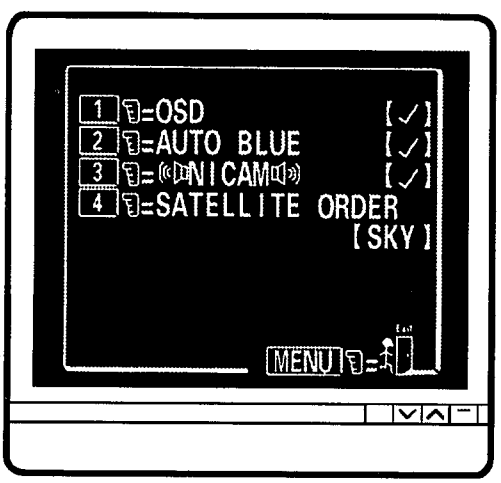
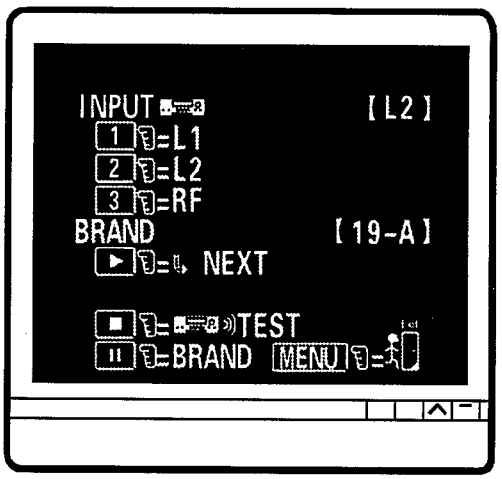
Item	Mode in which command is accepted	Operation	Remarks
Tracking center	Play	Press the tracking up(▲) and down(▼) buttons of the remote control simultaneously.	
X-value adjustment test mode	Play	Press the tracking up(▲) and down(▼) buttons of the remote control simultaneously and press the "CHANNEL ▽ "button on the VCR.	
Forward test slow mode	Play	Press the tracking up(▲) and down(▼) buttons of the remote control simultaneously and press the "PLAY" button on the VCR.	
Reverse test slow mode	Still play	Press the tracking up(▲) and down(▼) buttons of the remote control simultaneously and press the "PLAY" button on the VCR.	

2. EEPROM initialization commands

Item	Mode in which command is accepted	Operation	Remarks
Shipment mode initial setting	EJECT	Press the "REC" buttons 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.

Initial Settings of IC903(EEPROM)

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

(A)VCR SET-UP MENU	(B)SATELLITE SET-UP MENU
[FOR F660E]  [FOR F55XE/F64XE/F650E]  Note: 3 is for (UKN), (NA) & (NAV) only. 4 is for (UKN) only.	

Caution When Replacing IC903 (EEPROM)

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

	Adjustment	Page
1	Switching point adjustment	P3-4
2	Vertical jitter adjustment	P3-5
3	Forward slow tracking adjustment	P3-5
4	Reverse slow tracking adjustment	P3-5

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.

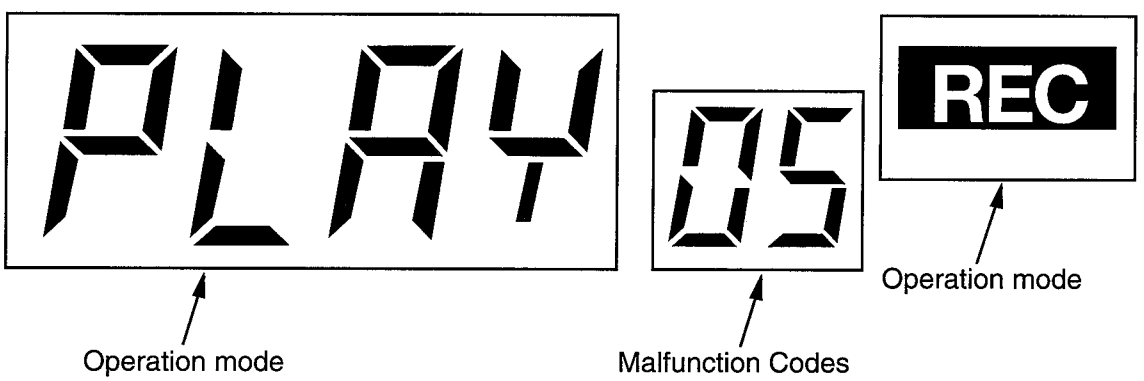
Procedure to display a malfunction

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

Procedure to clear the malfunction display

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

LCD DISPLAY



【Display of details of malfunction】

Displayed No.	Item	Details
" 0 0 "	No malfunction	
" 0 1 "	FL mechanism lock	Malfunction in insertion/ejection of cassette
" 0 2 "	Capstan lock	Malfunction of capstan motor drive during tape unloading
" 0 4 "	Reel lock	Reel rotation trouble when tape is running
" 0 6 "	Cylinder lock	Cylinder rotation malfanction
" 0 7 "	Loading mechanism lock	Malfunction in shifting mechanism mode
" 1 6 "	Servo lock	Shorting of 5V detected

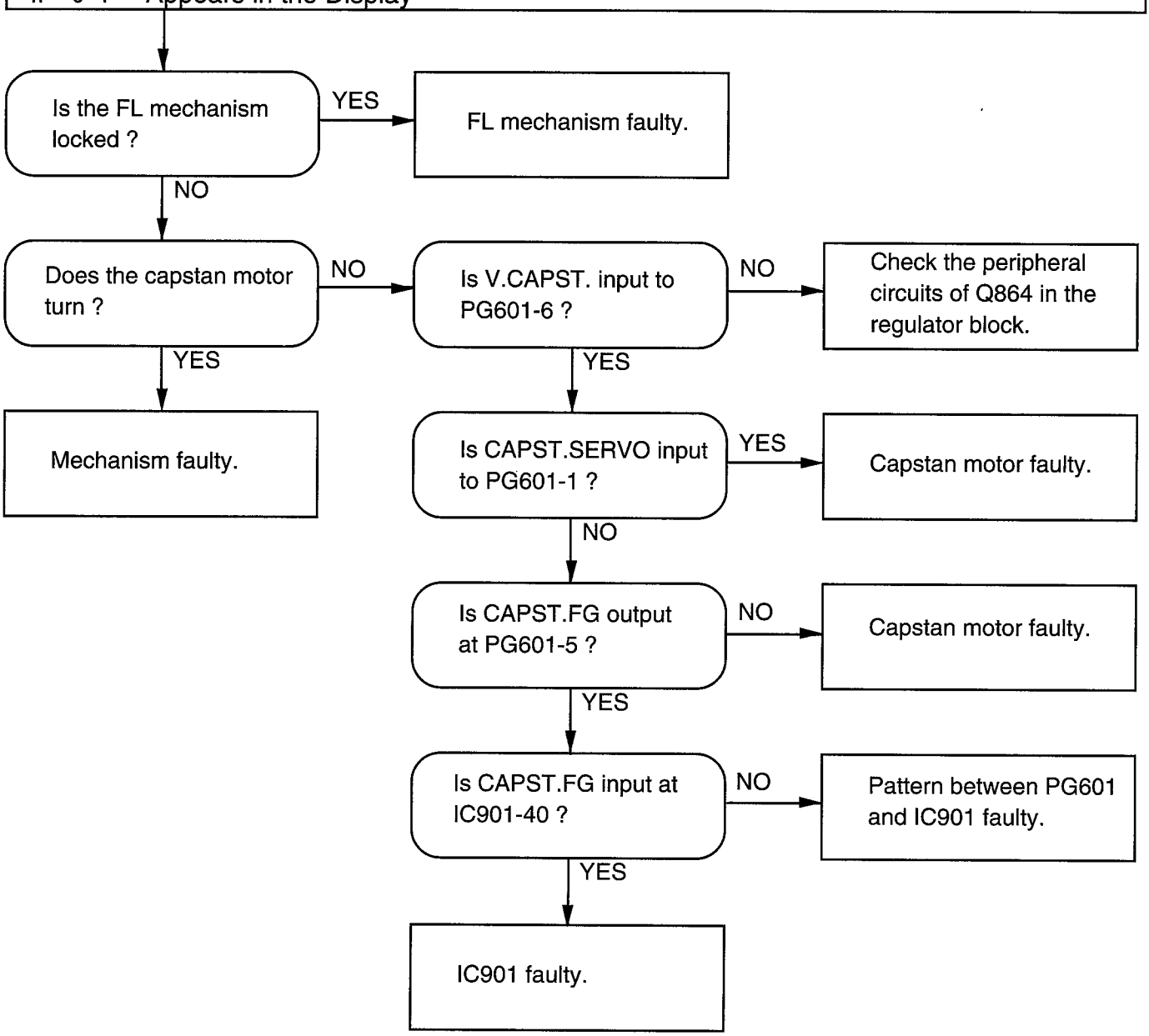
【Mode Display when Malfunction Has Occurred】

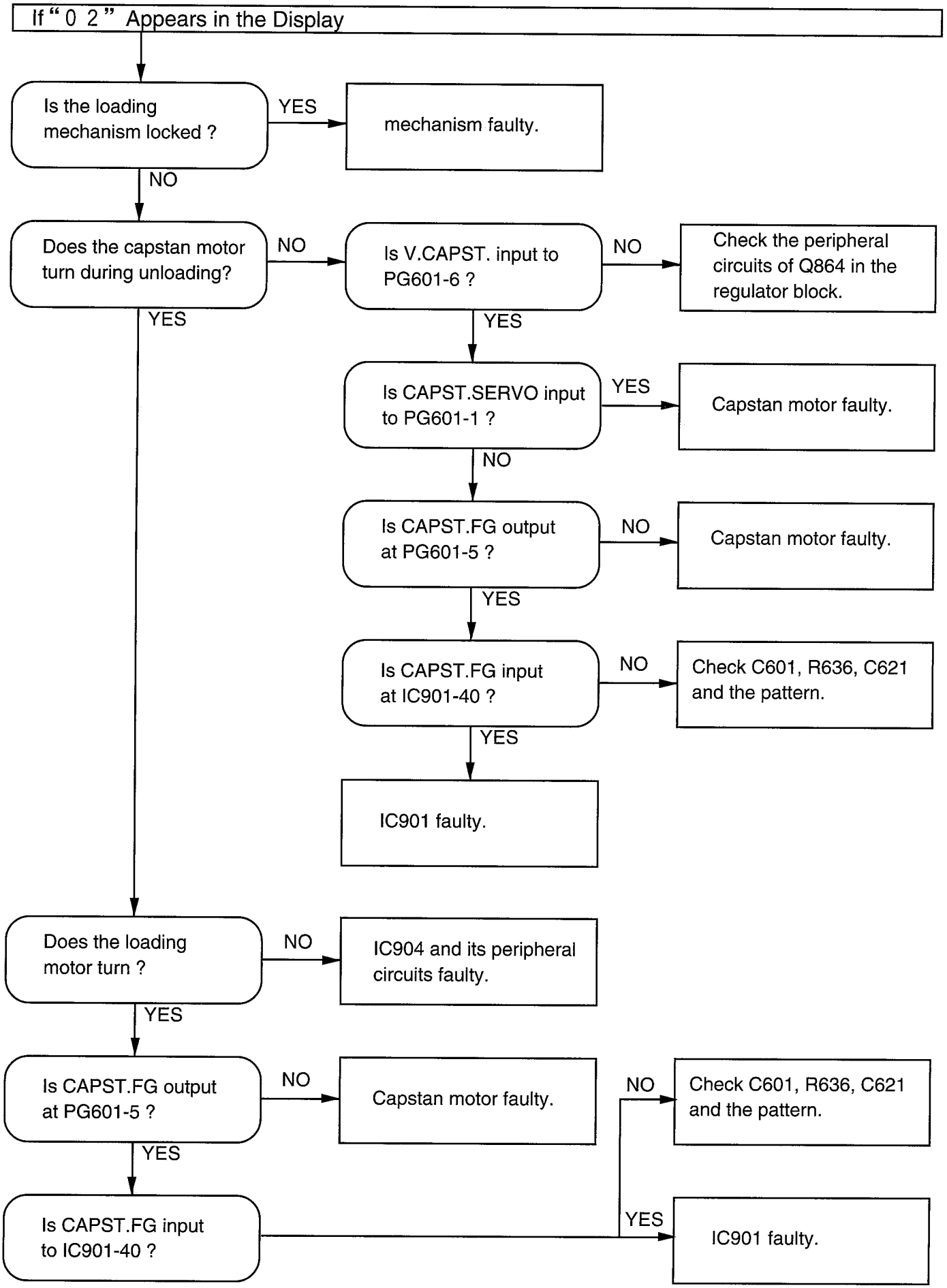
Mode	Display	Mode	Display
Stop	No Display	Playback	P L A Y
Fast forward	F F	Reverse playback	— P L A Y
Rewind	R E W	Forward search	S R C H
Hight speed fast forward	S : F F	Reverse search	— S R C H
Hight speed rewind	S : R E W	Slow motion play	S L O W
Recording	**R E C**	Reverse motion slow play	— S L O W
Recording pause	**R E C** (flashes)	Still motion play	S T I L L

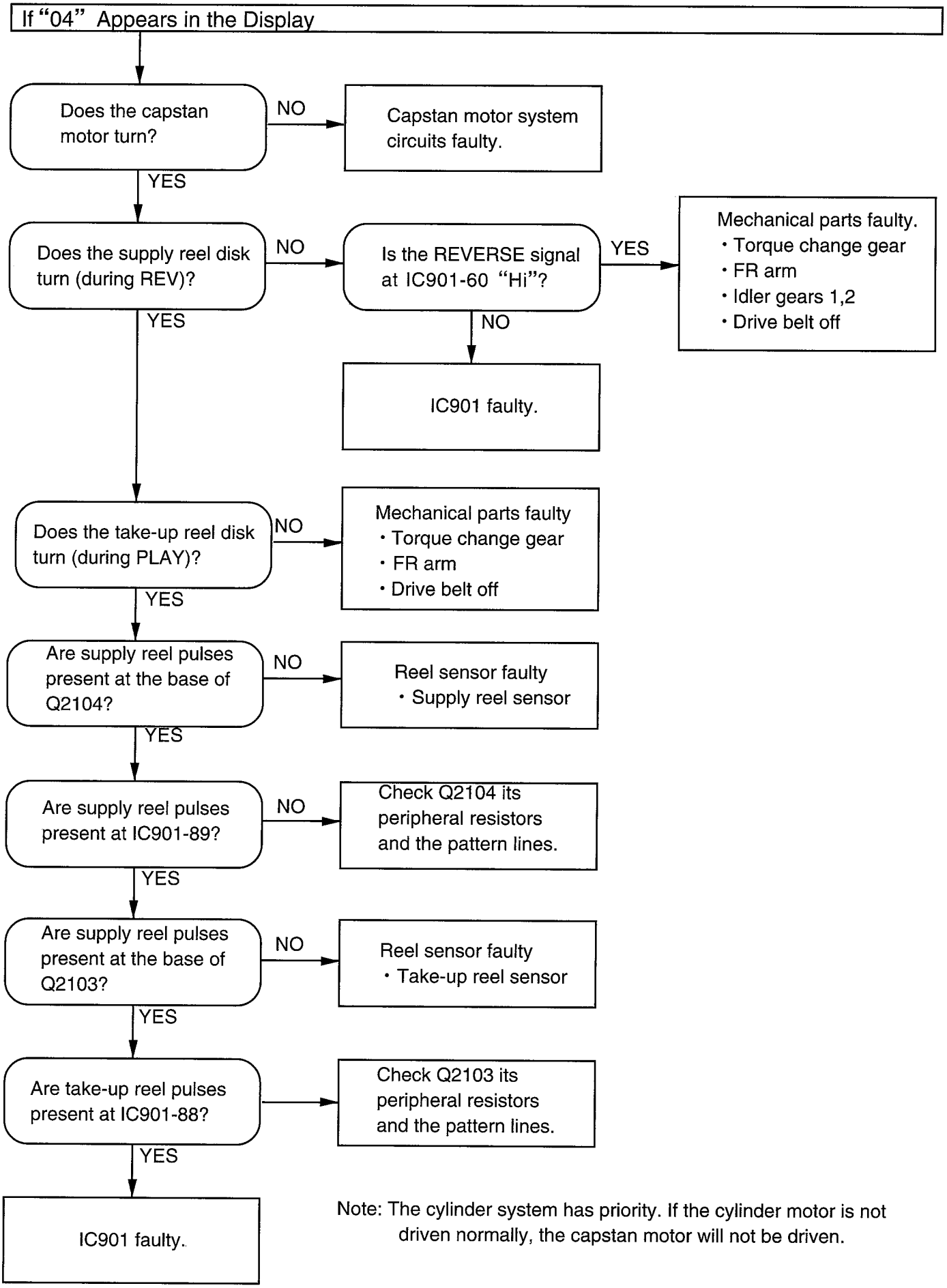
No symbols are displayed if the malfunction occurred when a cassette was inserted or ejected, or the power was switched on from off, and off from on.

Troubleshooting According to Malfunction Display

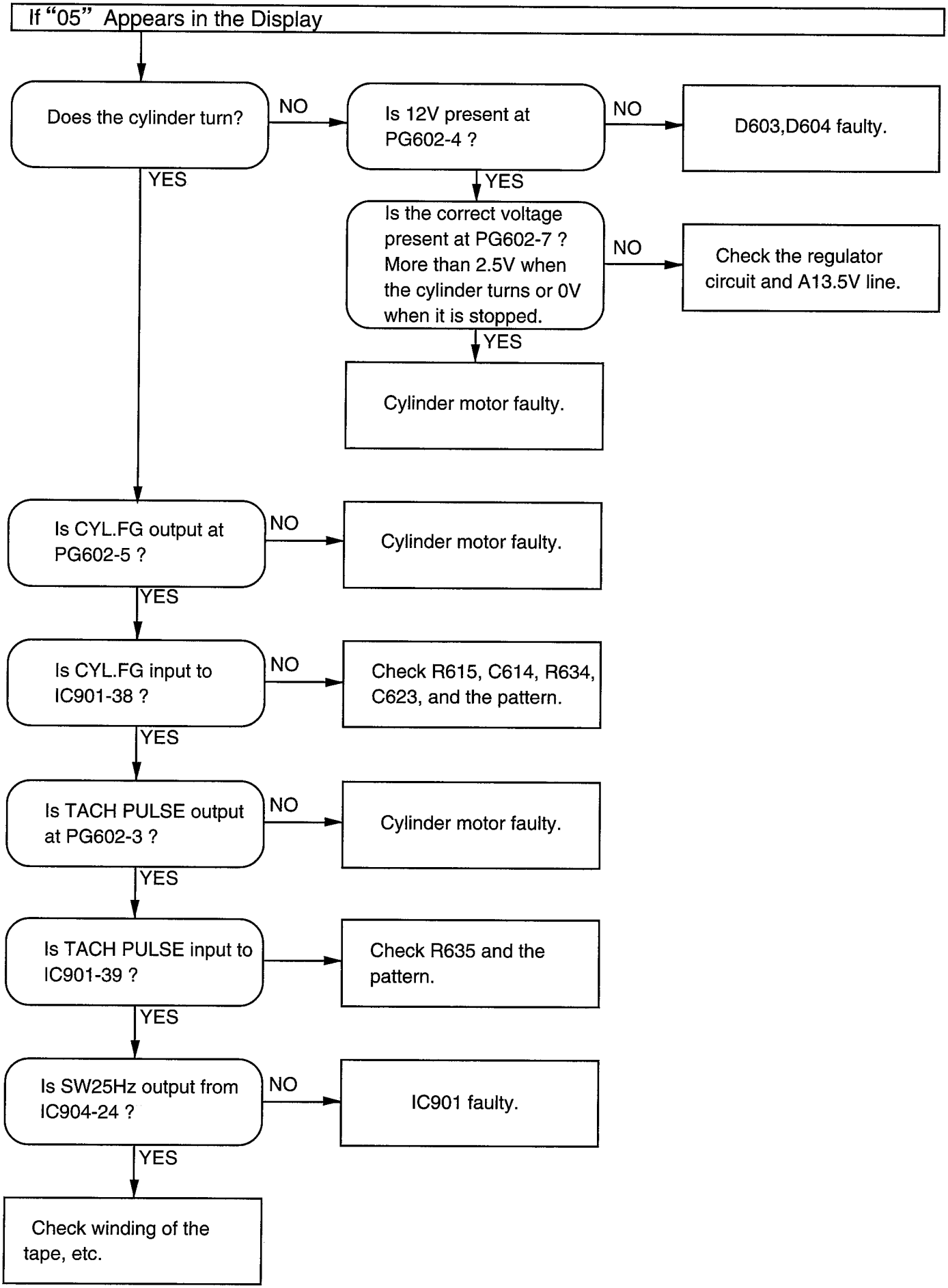
If " 0 1 " Appears in the Display

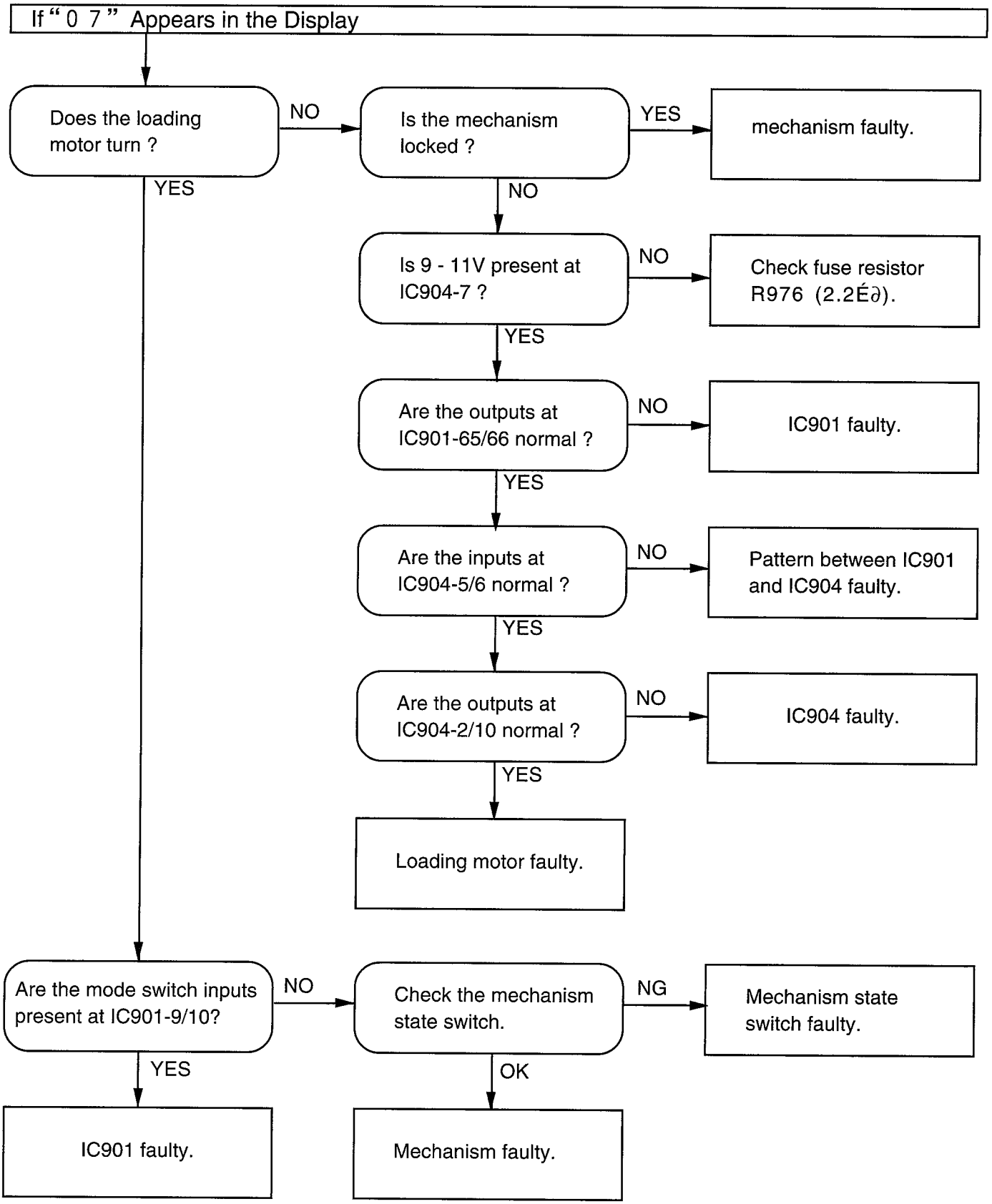


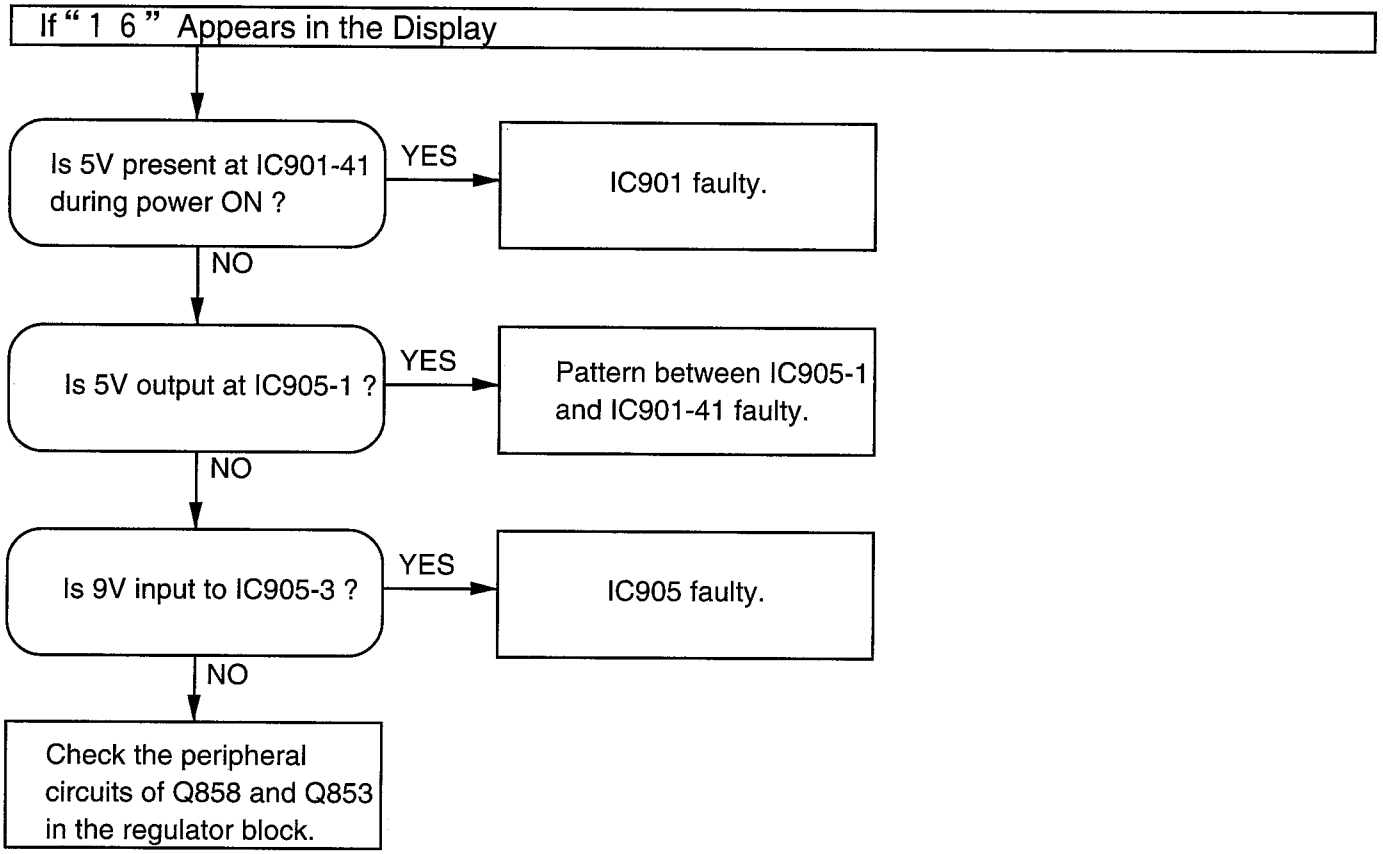

If " 0 2 " Appears in the Display
Is the loading mechanism locked ?
YES
mechanism faulty.
NO
Does the capstan motor turn during unloading?
NO
Is V.CAPST. input to PG601-6 ?
NO
Check the peripheral circuits of Q864 in the regulator block.
YES
YES
Is CAPST.SERVO input to PG601-1 ?
YES
Capstan motor faulty.
NO
Is CAPST.FG output at PG601-5 ?
NO
Capstan motor faulty.
YES
Is CAPST.FG input at IC901-40 ?
NO
Check C601, R636, C621 and the pattern.
YES
IC901 faulty.
Does the loading motor turn ?
NO
IC904 and its peripheral circuits faulty.
YES
Is CAPST.FG output at PG601-5 ?
NO
Capstan motor faulty.
NO
Check C601, R636, C621 and the pattern.
YES
Is CAPST.FG input to IC901-40 ?
YES
IC901 faulty.



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

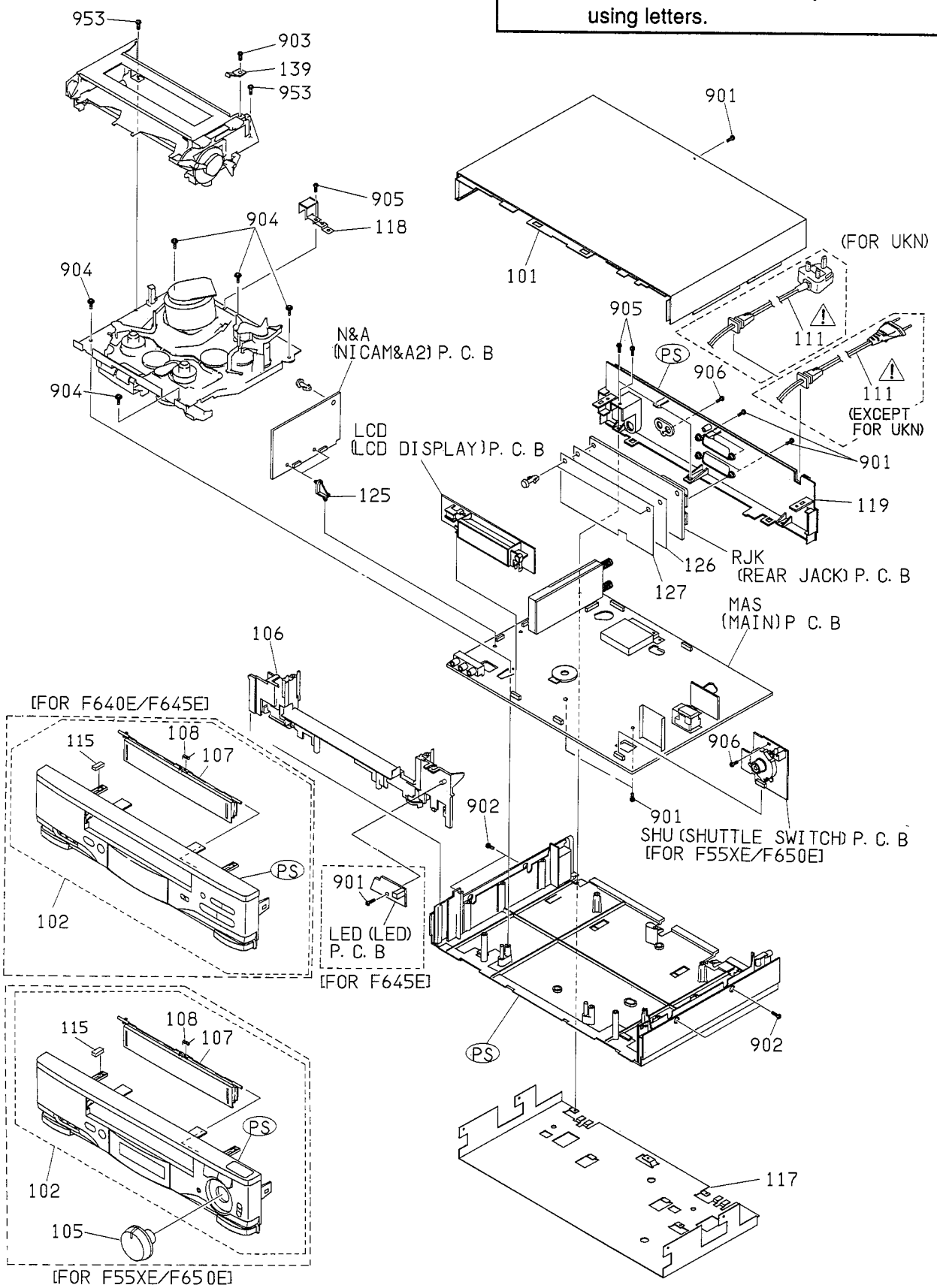

If "05" Appears in the Display
Does the cylinder turn?
NO
Is 12V present at PG602-4 ?
NO
D603,D604 faulty.
YES
YES
Is the correct voltage present at PG602-7 ? More than 2.5V when the cylinder turns or 0V when it is stopped.
NO
Check the regulator circuit and A13.5V line.
YES
Cylinder motor faulty.
Is CYL.FG output at PG602-5 ?
NO
Cylinder motor faulty.
YES
Is CYL.FG input to IC901-38 ?
NO
Check R615, C614, R634, C623, and the pattern.
YES
Is TACH PULSE output at PG602-3 ?
NO
Cylinder motor faulty.
YES
Is TACH PULSE input to IC901-39 ?
Check R635 and the pattern.
YES
Is SW25Hz output from IC904-24 ?
NO
IC901 faulty.
YES
Check winding of the tape, etc.


If " 0 7 " Appears in the Display
Does the loading motor turn ?
NO
Is the mechanism locked ?
YES
mechanism faulty.
YES
NO
Is 9 - 11V present at IC904-7 ?
NO
Check fuse resistor R976 (2.2É∂).
YES
Are the outputs at IC901-65/66 normal ?
NO
IC901 faulty.
YES
Are the inputs at IC904-5/6 normal ?
NO
Pattern between IC901 and IC904 faulty.
YES
Are the outputs at IC904-2/10 normal ?
NO
IC904 faulty.
YES
Loading motor faulty.
Are the mode switch inputs present at IC901-9/10?
NO
Check the mechanism state switch.
NG
Mechanism state switch faulty.
YES
OK
IC901 faulty.
Mechanism faulty.


If " 1 6 " Appears in the Display
Is 5V present at IC901-41 during power ON ?
YES
IC901 faulty.
NO
Is 5V output at IC905-1 ?
YES
Pattern between IC905-1 and IC901-41 faulty.
NO
Is 9V input to IC905-3 ?
YES
IC905 faulty.
NO
Check the peripheral circuits of Q858 and Q853 in the regulator block.

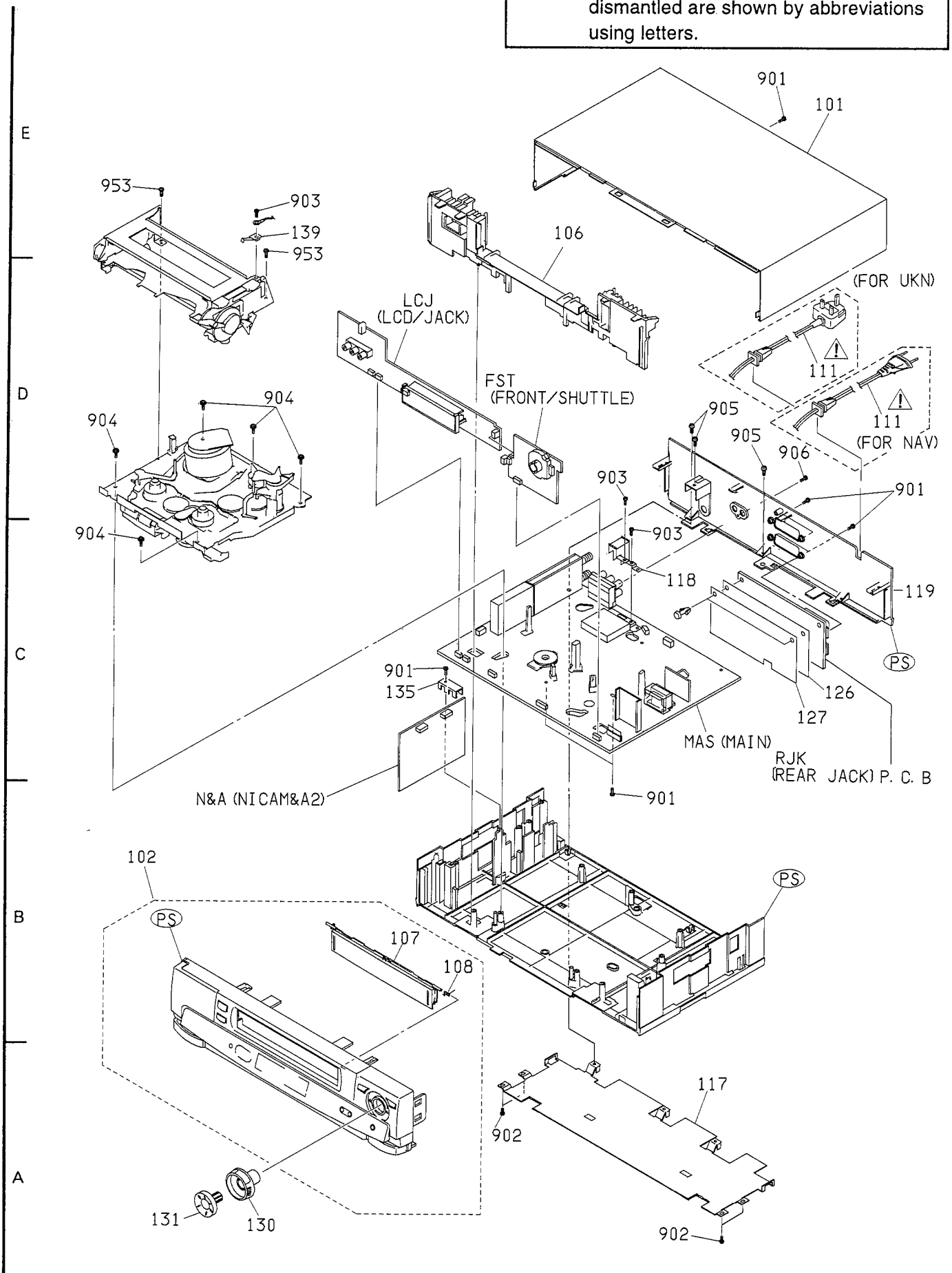
1.CABINET SECTION [EXCEPT FOR VT-F660E]

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



[FOR VT-F660E]

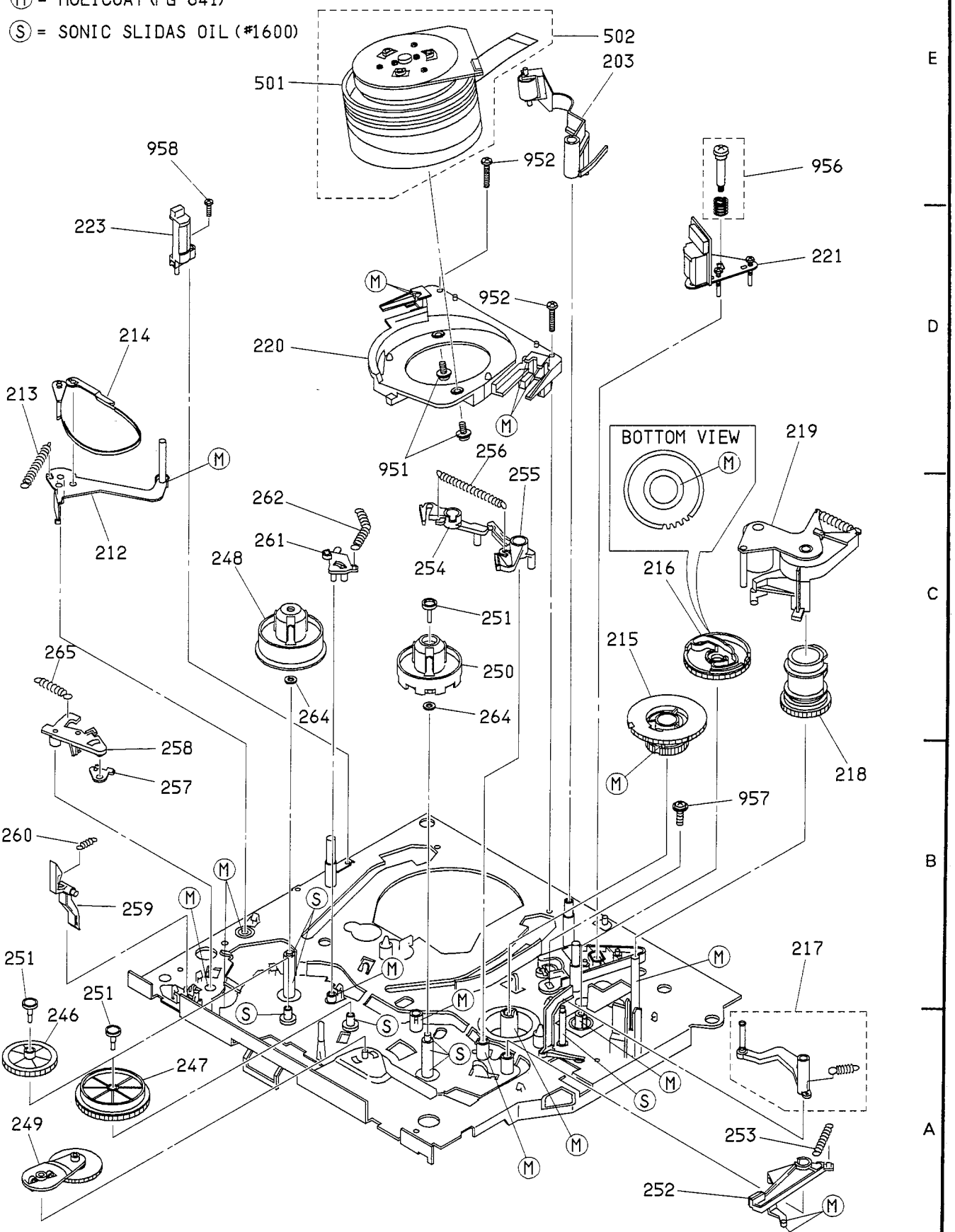
NOTE : The synthetic resin members that can be dismantled are shown by abbreviations using letters.



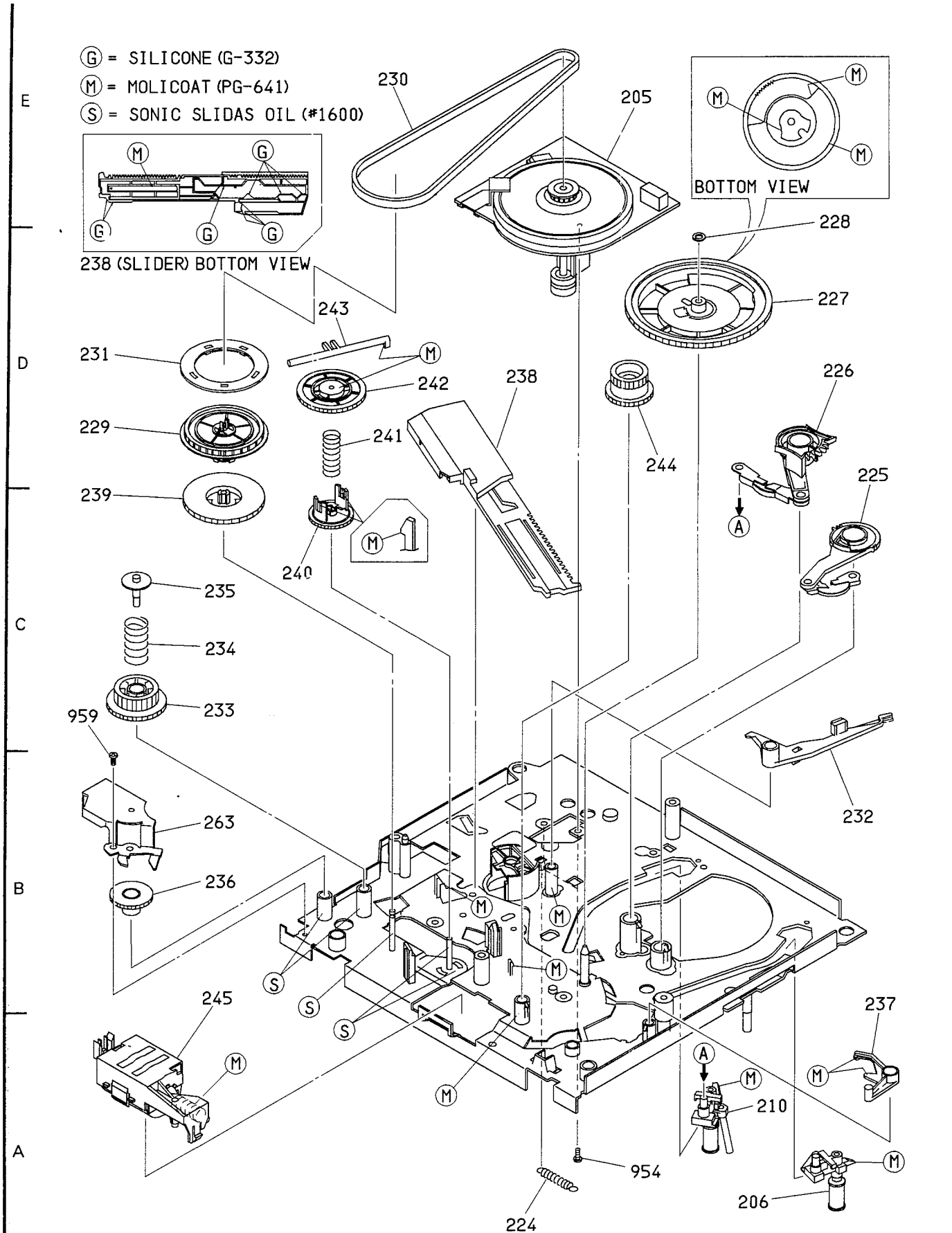
2. US-MECHANISM (TOP VIEW) SECTION

Ⓜ = MOLICOAT (PG-641)

Ⓢ = SONIC SLIDAS OIL (#1600)



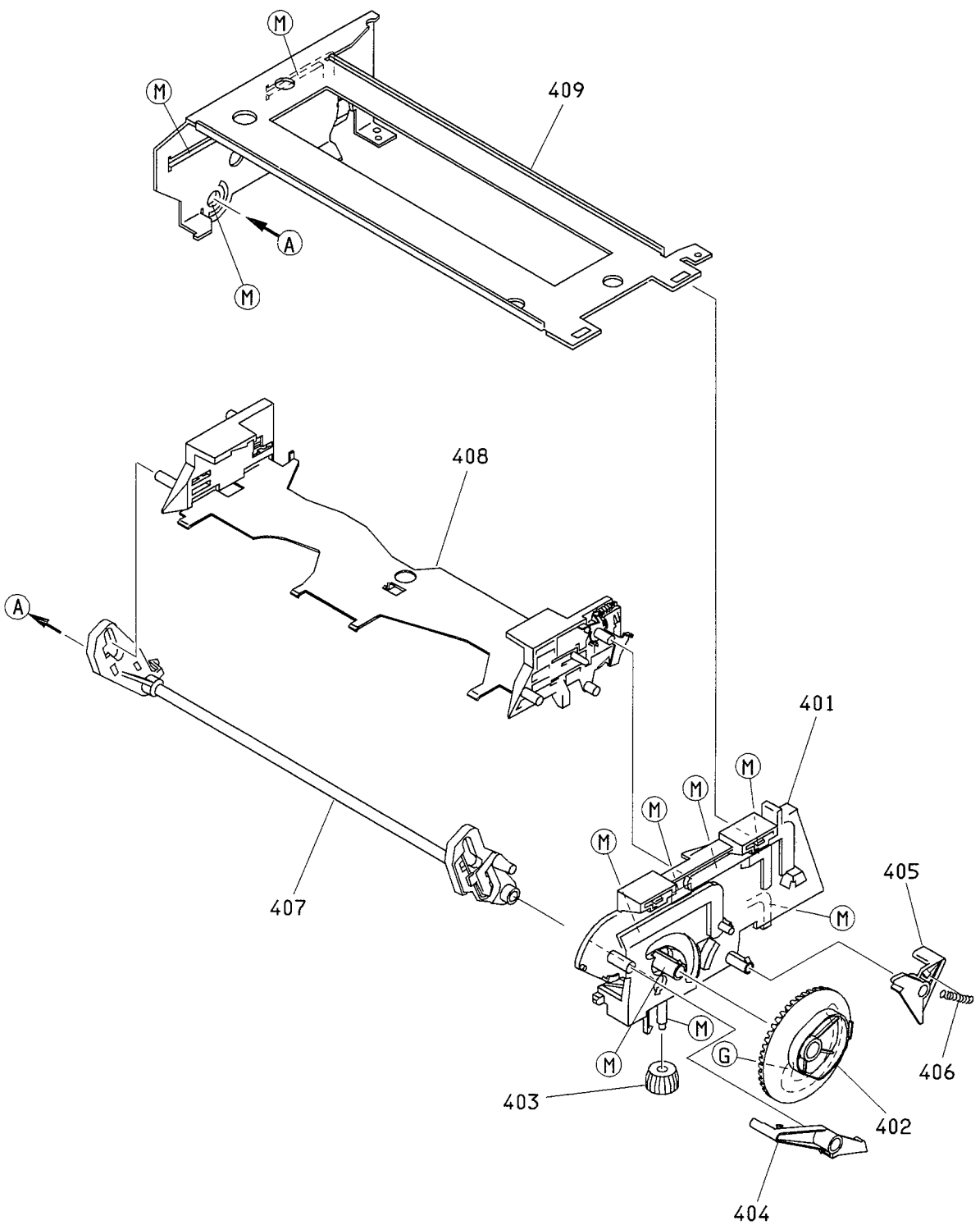
3.US-MECHANISM (BOTTOM VIEW) SECTION



4.US-FL MECHANISM SECTION

Ⓜ = MOLICOAT (PG-641)

Ⓖ = SILICONE (G-332)



CHAPTER 5 REPLACEMENT PARTS LIST

1. MECHANICAL PARTS LIST

Note1. The model names shown in the parts list are abbreviated as follows in this supplement.
1: VT-F551E(VPS) 2: VT-F552E(VPS) MV: VT-F550EMX2(VPS) MN: VT-F550MK2(NA) 4N: VT-F640E(NA)
4U: VT-F645E(UKN) 5U: VT-F650E(UKN) 6U: VT-F660E(UKN) 6N: VT-F660E(NAV)
2. For example, [EX 6U, 6N] may be used in place of [EXCEPT 6U,6N].

SYMBOL-NO	P-NO	DESCRIPTION	
		MECHANISM SECTION	
101	QA11514	COVER, TOP	[6U, 6N]
101	QA11931	COVER, TOP (HEPM)	[EXCEPT 6U, 6N]
102	PH15251	PANEL, FRONT (HEPM)	[6U]
102	PH15253	PANEL, FRONT (HEPM)	[6N]
102	PH15541	PANEL, FRONT (HEPM)	[4U]
102	PH15542	PANEL, FRONT (HEPM)	[4N]
102	PH15543	PANEL, FRONT (HEPM)	[5U]
102	PH15544	PANEL, FRONT (HEPM)	[1, 2, MN, MV]
105	PC11912	KNOB, SHUTTLE (HEPM)	[5U, 1, 2, MN, MV]
106	NT10483	PIECE, FRONT (HEPM)	[EXCEPT 6U, 6N]
106	NT10733	PIECE, FRONT (HEPM)	[6U, 6N]
107	PH13321	DOOR, CASSETTE (HEPM)	[EXCEPT 6U, 6N]
107	PH15561	DOOR, CASSETTE (HEPM)	[6U, 6N]
108	KL11451	SPRING, DOOR (HEPM)	[EXCEPT 6U, 6N]
108	KL11522	SPRING, DOOR (HEPM)	[6U, 6N]
⚠111	EV10541	AC CORD (HEPM)	[EXCEPT 4U, 5U, 6U]
⚠111	EV10551	CORD, POWER (HEPM)	[4U, 5U, 6U]
115	MQ10199	CUSHION, RUBBER	[EXCEPT 6U, 6N]
117	QA11151	COVER, BOTTOM (HEPM)	[EXCEPT 6U, 6N]
117	QA11911	COVER, BOTTOM (HEPM)	[6U, 6N]
118	MD11281	COVER, CBA	
119	PH13721	PANEL, REAR (HEPM)	[EXCEPT 6U, 6N]
119	PH15361	PANEL, REAR (HEPM)	[6U, 6N]
125	6810651	HOLDER, CBA	
126	MN12251	SHEET, INSULATE (HEPM)	
127	MD11661	SHEET, SIELD (HEPM)	
130	PC12562	RING, SHUTTLE	[6U, 6N]
131	PC12572	DIAL, JOG	[6U, 6N]
135	NA13982	BRACKET, CBA	[6U, 6N]
139	4826834	SPRING, EARTH	
203	KX11661	CLEANING, HEAD	
205	GP10252	MOTOR, CAPSTAN	
206	KX12294	BASE, GUIDE ROLLER (I)	
210	KX12302	BASE, GUIDE ROLLER(O)	
212	KX11531	ARM, TENSION	
213	KL10662	SPRING	
214	KX11631	BAND, TENSION	
215	KF10641	GEAR, DRIVE	
216	KF10701	GEAR, IDLER	
217	KX12661	ARM, OUT	
218	KX11581	GEAR, SPIRAL	
219	KX11553	ARM, PINCH ROLLER	
220	KX11451	BASE, CYLINDER	
221	KX11941	AC HEAD	
223	5423082	FE HEAD	
224	KL10711	SPRING	
225	KX11591	GEAR, LOADING(L)	
226	KX11611	GEAR, LOADING(R)	
227	KF10673	GEAR, CAM	
228	4344643	WASHER	
229	KX11443	PULLEY	
230	KX11522	BELT	
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	
255	KX11883	BRAKE, R	
256	KL10792	SPRING, BRAKE	
257	KF10542	GEAR, JOG	
258	KX13132	ARM, JOG	
259	KX11841	ARM, REC	
260	6542482	SPRING	
261	KX11811	BRAKE, SUB	
262	KL10903	SPRING, SUB	
263	KX12461	BRACKET, BASE	
264	MN11571	WASHER	
265	KL11062	SPRING, JOG	
401	KX11772	BRACKET (R)	
402	KF10682	GEAR 1	
403	KF10691	GEAR 2	
404	KX11751	ARM, DOOR	
405	KX11761	ARM, SWITCH	
406	6323723	SPRING	
407	KX11931	ARM, DRIVE	
408	KX11921	HOLDER, CASSETTE	
409	KX11741	BRACKET(L)	
501	5435721	CYLINDER, UPPER (CY-G6S1)	
502	5435711	CYLINDER ASSY (CY-G6S1)	
901	8699412	SCREW (3X12) BLACK	
902	8679408	SCREW (3.0X8)	[EXCEPT 6U, 6N]
902	MK10271	SCREW(3X12DT)	[6U, 6N]
903	8671306	SCREW(2.6X6)	
904	7781132	BT SCREW	
905	7784323	SCREW(3X8)	
906	8699410	SCREW(3X10)	
951	8652408	SCREW (PSW3X8)	
952	0671310	DT SCREW-2.6MMDX10MM	
953	0671306	DT SCREW 2.6MMDX6MM	
954	8691306	BT SCREW 2.6MM	
956	KX12443	SCREW	
957	MJ10341	SCREW(M2.6)	
958	0671308	DT SCREW-2.6MMDX8MM	
959	0671305	DT SCREW-2.6MMDX5MM	
		ACCESSARIES	
802	HL10374	REMOTE HAND SET(VT-RM453E)(HEPM)	[6U]
802	HL10375	REMOTE HAND SET(VT-RM454E)(HEPM)	[6N]
802	HL10663	REMOTE HAND SET(VT-RM650E)(HEPM)	[4U, 5U]
802	HL10664	REMOTE HAND SET(VT-RM655E)(HEPM)	[1, 2, MN, MV, 4N]
803	5858315	CABLE (HEPM)	

Note 1. The model names shown in the parts list are abbreviated as follows in this supplement.
1: VT-F551E(VPS) 2: VT-F552E(VPS) MV: VT-F550EMX2(VPS) MN: VT-F550MK2(NA) 4N: VT-F640E(NA)
4U: VT-F645E(UKN) 5U: VT-F650E(UKN) 6U: VT-F660E(UKN) 6N: VT-F660E(NAV)
2. For example, [EX 6U, 6N] may be used in place of [EXCEPT 6U,6N].
3. Where different value components used for different models have the same symbol no., the model names are shown be abbreviations. However, the model names are not shown for components with a single symbol no. For these components, refer to the difference tables in the schematic and circuit board diagrams.

2. ELECTRICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C0201	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0202	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0203	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C0204	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0205	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0206	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0207	0209945	CERAMIC DISC 180PF+-5% 50V
C0208	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0209	0890043	CERAMIC DISC 0.01UF+-20% 16V
C0211	0800138	ELECTROLYTIC 47UF 6.3V
C0212	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0213	0254458	ELECTROLYTIC 3.3UF+-20% 50V
C0214	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0215	0800177	ELECTROLYTIC 3.3UF 50V
C0216	0209947	CERAMIC DISC 270PF+-5% 50V
C0218	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0219	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0220	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0221	0800112	ELECTROLYTIC 2.2UF 50V
C0222	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C0223	0800118	ELECTROLYTIC 4.7UF 35V
C0224	0209936	CERAMIC CHIP 33PF+-5% 50V
C0225	0209943	CERAMIC DISC 120PF+-5%
C0226	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0227	0800107	ELECTROLYTIC 0.47UF 50V
C0228	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0230	0893002	CERAMIC CHIP 0.033UF+-10% 16V
C0233	0800179	ELECTROLYTIC 10UF 16V
C0234	0800185	ELECTROLYTIC 47UF 6.3V
C0235	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0236	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0237	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0238	0800178	ELECTROLYTIC 4.7UF 35V
C0239	0800179	ELECTROLYTIC 10UF 16V
C0240	0207446	CERAMIC CHIP 10UF+-20% 16V
C0241	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0242	0800178	ELECTROLYTIC 4.7UF 35V
C0243	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0244	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0245	0800007	ELECTROLYTIC 3.3UF 50V
C0246	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0249	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0250	0209937	CERAMIC CHIP 39PF+-5% 50V
C0251	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0252	0209943	CERAMIC DISC 120PF+-5%
C0253	0800176	ELECTROLYTIC 2.2UF 50V
C0254	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0255	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0257	0209929	CERAMIC CHIP 9.0PF+-0.5% 50V
C0258	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C0262	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0263	0209935	CERAMIC CHIP 27PF+-5% 50V
C0265	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0268	0209939	CERAMIC CHIP 56PF+-5% 50V
C0269	0209939	CERAMIC CHIP 56PF+-5% 50V
C0273	0209935	CERAMIC CHIP 27PF+-5% 50V
C0275	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0276	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0277	0209935	CERAMIC CHIP 27PF+-5% 50V
C0278	0209936	CERAMIC CHIP 33PF+-5% 50V
C0279	0209929	CERAMIC CHIP 9.0PF+-0.5% 50V
C0292	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0293	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0295	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0296	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0297	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0299	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0402	0800117	ELECTROLYTIC 4.7UF 25V
C0403	0893002	CERAMIC CHIP 0.033UF+-10% 16V
C0404	0880046	POLYESTER FILM 0.015UF+-10% 50V
C0405	0800117	ELECTROLYTIC 4.7UF 25V
C0406	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0407	0800122	ELECTROLYTIC 10UF 16V
C0408	0800122	ELECTROLYTIC 10UF 16V
C0409	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0410	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0411	0800175	ELECTROLYTIC 1.0UF 50V
C0412	0800101	ELECTROLYTIC 0.1UF 50V
C0413	0800171	ELECTROLYTIC 0.1UF 50V
C0414	0800175	ELECTROLYTIC 1.0UF 50V
C0415	AN10321R	CAPACITOR 0.033UF+-10% 100V
C0416	0800032	ELECTROLYTIC 33UF 16V
C0417	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0418	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0419	0800117	ELECTROLYTIC 4.7UF 25V
C0420	AN10324R	CAPACITOR 0.1UF+-10% 100V [6U,6N]
C0420	AN10332R	CAPACITOR 0.027UF+-5% 100V [EXCEPT 6U,6N]
C0421	0890026	CERAMIC DISC 220PF+-10% 50V
C0422	0800032	ELECTROLYTIC 33UF 16V
C0424	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0427	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0428	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0429	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0434	0209945	CERAMIC DISC 180PF+-5% 50V
C0435	0209939	CERAMIC CHIP 56PF+-5% 50V
C0436	0890036	CERAMIC DISC 1500PF+-20% 16V
C0437	0800011	ELECTROLYTIC 4.7UF 35V
C0501	0800022	ELECTROLYTIC 22UF 10V
C0502	0800011	ELECTROLYTIC 4.7UF 35V
C0503	0800118	ELECTROLYTIC 4.7UF 35V
C0504	0800118	ELECTROLYTIC 4.7UF 35V
C0505	0800011	ELECTROLYTIC 4.7UF 35V
C0506	0800135	ELECTROLYTIC 33UF 16V
C0507	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C0508	0800005	ELECTROLYTIC 2.2UF 50V
C0509	0800143	ELECTROLYTIC 100UF 6.3V
C0510	0893046	CERAMIC CHIP 0.015UF+-10% 50V
C0511	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0512	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0513	0800139	ELECTROLYITC 47UF 10V
C0514	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0517	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0518	0893046	CERAMIC CHIP 0.015UF+-10% 50V
C0519	0800143	ELECTROLYTIC 100UF 6.3V
C0520	0800112	ELECTROLYTIC 2.2UF 50V
C0521	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0522	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C0523	0800118	ELECTROLYTIC 4.7UF 35V
C0524	0800118	ELECTROLYTIC 4.7UF 35V
C0525	0800118	ELECTROLYTIC 4.7UF 35V
C0526	0800118	ELECTROLYTIC 4.7UF 35V
C0527	0800118	ELECTROLYTIC 4.7UF 35V
C0528	0800101	ELECTROLYTIC 0.1UF 50V
C0529	0800122	ELECTROLYTIC 10UF 16V
C0530	0800015	ELECTROLYTIC 10UF 16V
C0531	0800015	ELECTROLYTIC 10UF 16V
C0532	0800041	ELECTROLYTIC 47UF 16V

SYMBOL-NO	P-NO	DESCRIPTION
C0533	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0534	0800135	ELECTROLYTIC 33UF 16V
C0535	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0536	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0601	0207453	ELECTROLYTIC 2.2UF 50V
C0602	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0604	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0605	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C0606	0893035	CERAMIC CHIP 2200PF+-10% 50V
C0607	0209943	CERAMIC DISC 120PF+-5% 50V
C0608	0209943	CERAMIC DISC 120PF+-5% 50V
C0609	0800179	ELECTROLYTIC 10UF 16V
C0611	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0612	0800128	ELECTROLYTIC 22UF 16V
C0614	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0615	0800042	ELECTROLYTIC 47UF 25V
C0619	0209949	CERAMIC DISC 390PF+-5% 50V
C0621	0893037	CERAMIC CHIP 3300PF+-10% 50V
C0623	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0624	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0701	0893053	CERAMIC CHIP 0.047UF+-10% 50V
⚠C0851	AN10201S	FILM CAPACITOR 0.1UF+-20% 250V
⚠C0852	AN10201S	FILM CAPACITOR 0.1UF+-20% 250V
⚠C0853	0235993	CERAMIC CHIP 220PF+-20% 250V
⚠C0855	AJ10294	CERAMIC CAPACITOR 4700PF+-20% 125V
⚠C0856	0235993	CERAMIC CHIP 220PF+-20% 250V
⚠C0858	0235993	CERAMIC CHIP 220PF+-20% 250V
⚠C0860	AJ10294	CERAMIC CAPACITOR 4700PF+-20% 125V
⚠C0861	0235993	CERAMIC CHIP 220PF+-20% 250V
C0862	0254241	ELECTROLYTIC 82UF 400V
C0863	0890035	CERAMIC DISC 1000PF+-10% 50V
C0864	1143005	CERAMIC CAPACITOR 220PF+-5% 1KV
C0865	AN10401R	CAPACITOR 0.047UF+-10% 250V
C0866	0880053	POLYESTER FILM 0.047UF+-10% 50V
C0867	0880039	POLYESTER FILM 0.0047UF+-10% 50V
C0868	0880035	POLYESTER FILM 0.0022UF+-10% 50V
C0869	1143002	CERAMIC DISC 100PF 500V
C0870	0254403	CAPACITOR 22UF+-20% 50V
C0871	0254405	CAPACITOR 1000UF+-20% 25V
C0872	0800354	ELECTROLYTIC 470UF 25V
C0873	0254406	CAPACITOR 3300UF+-20% 10V
C0874	0800354	ELECTROLYTIC 470UF 25V
C0875	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0876	0800135	ELECTROLYTIC 33UF 16V
C0878	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C0890	0800015	ELECTROLYTIC 10UF 16V
C0891	0800009	ELECTROLYTIC 4.7UF 25V
C0892	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0893	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0895	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C0901	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0902	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0903	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C0904	0217516	CAPACITOR 0.047UF+80-20% 5.5V
C0905	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0906	0800176	ELECTROLYTIC 2.2UF 50V
C0907	0209927	CERAMIC CHIP 7.0PF+-0.5% 50V
C0908	0209927	CERAMIC CHIP 7.0PF+-0.5% 50V
C0909	0209932	CERAMIC CHIP 15PF+-5% 50V
C0910	0209932	CERAMIC CHIP 15PF+-5% 50V
C0912	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0913	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0914	0800184	ELECTROLYTIC 33UF 25V
C0915	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C0916	0893044	CERAMIC CHIP 0.01UF+-10% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C0917	0800182	ELECTROLYTIC 22UF 16V
C0919	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C0922	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0923	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0924	0209938	CERAMIC CHIP 47PF+-5% 50V
C0925	0209938	CERAMIC CHIP 47PF+-5% 50V
C0926	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C0940	0209938	CERAMIC CHIP 47PF+-5% 50V
C0941	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0942	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C0943	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C0945	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1102	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1103	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1104	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1105	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1106	0800185	ELECTROLYTIC 47UF 6.3V
C1107	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1108	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1110	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1111	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1112	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1114	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1115	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1116	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1117	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1118	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1119	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1120	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1121	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1122	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1123	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1124	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1125	0800185	ELECTROLYTIC 47UF 6.3V
C1126	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1127	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1128	0800185	ELECTROLYTIC 47UF 6.3V
C1129	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1131	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1132	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C1133	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1134	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C1135	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C1136	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C1137	0209938	CERAMIC CHIP 47PF+-5% 50V
C1138	0209942	CERAMIC CHIP 100PF+-5% 50V
C1139	0209934	CERAMIC CHIP 22PF+-5% 50V
C1140	0209938	CERAMIC CHIP 47PF+-5% 50V
C1142	0209935	CERAMIC CHIP 27PF+-5% 50V
C1143	0209935	CERAMIC CHIP 27PF+-5% 50V
C1403	0800178	ELECTROLYTIC 4.7UF 35V
C1404	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1409	0209937	CERAMIC CHIP 39PF+-5% 50V
C1410	0209937	CERAMIC CHIP 39PF+-5% 50V
C1411	0209945	CERAMIC DISC 180PF+-5% 50V
C1412	0800141	ELECTROLYTIC 47UF 16V
C1413	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C1414	0800179	ELECTROLYTIC 10UF 16V
C1415	0800178	ELECTROLYTIC 4.7UF 35V
C1416	0209939	CERAMIC CHIP 56PF+-5% 50V
C1419	0209931	CERAMIC CHIP 12PF+-5% 50V
C1423	0800141	ELECTROLYTIC 47UF 16V
C1424	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C1425	0890009	CERAMIC DISC 12PF+-5% 50V
C1426	0893062	CERAMIC CHIP 1UF+80-20% 16V

SYMBOL-NO	P-NO	DESCRIPTION
C1444	0209927	CERAMIC CHIP 7.0PF+-0.5% 50V
C1701	0800185	ELECTROLYTIC 47UF 6.3V
C1702	0890045	CERAMIC DISC 0.047UF+80-20% 50V[6U,6N]
C1702	0890103	CERAMIC DISC 47000PF+80-20% 12V [EXCEPT 6U,6N]
C1703	0890045	CERAMIC DISC 0.047UF+80-20% 50V[6U,6N]
C1703	0890103	CERAMIC DISC 47000PF+80-20% 12V [EXCEPT 6U,6N]
C1704	0890045	CERAMIC DISC 0.047UF+80-20% 50V[6U,6N]
C1704	0890103	CERAMIC DISC 47000PF+80-20% 12V [EXCEPT 6U,6N]
C1705	0890035	CERAMIC DISC 1000PF+-10% 50V
C1706	0800185	ELECTROLYTIC 47UF 6.3V
C1707	0800176	ELECTROLYTIC 2.2UF 50V
C1708	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1801	0800103	ELECTROLYTIC 0.22UF 50V
C1802	0890019	CERAMIC DISC 68PF+-50% 50V
C1803	0800039	ELECTROLYTIC 47UF 10V
C1804	0800038	ELECTROLYTIC 47UF 6.3V
C1805	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1806	0800039	ELECTROLYTIC 47UF 10V
C1807	0890019	CERAMIC DISC 68PF+-50% 50V
C1808	0800103	ELECTROLYTIC 0.22UF 50V
C1810	0880053	POLYESTER FILM 0.047UF+-10% 50V
C1811	0800015	ELECTROLYTIC 10UF 16V
C1812	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1813	0800039	ELECTROLYTIC 47UF 10V
C1814	0890008	CERAMIC DISC 10PF+-5% 50V
C1815	0800015	ELECTROLYTIC 10UF 16V
C1816	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1817	0800015	ELECTROLYTIC 10UF 16V
C1818	0890026	CERAMIC DISC 220PF+-10% 50V
C1819	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1820	0800015	ELECTROLYTIC 10UF 16V
C1821	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1822	0800003	ELECTROLYTIC 1UF 50V
C1823	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1824	0800039	ELECTROLYTIC 47UF 10V
C1825	0880048	MYLAR 0.022UF+-10% 50V
C1826	0880019	POLYESTER FILM 0.33UF+-10% 50V
C1828	0890021	CERAMIC DISC 82PF+-10% 50V
C1829	0890021	CERAMIC DISC 82PF+-10% 50V
C1830	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1831	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C1833	0800001	ELECTROLYTIC 0.47UF 50V
C1834	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1835	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1836	0800039	ELECTROLYTIC 47UF 10V
C1837L	0800015	ELECTROLYTIC 10UF 16V
C1837R	0800015	ELECTROLYTIC 10UF 16V
C1838L	0800015	ELECTROLYTIC 10UF 16V
C1838R	0800015	ELECTROLYTIC 10UF 16V
C1839L	0890039	CERAMIC DISC 4700PF+-20% 16V
C1839R	0890039	CERAMIC DISC 4700PF+-20% 16V
C1841	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1842	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1851	0800176	ELECTROLYTIC 2.2UF 50V
C1852	0800176	ELECTROLYTIC 2.2UF 50V
C1853	0890108	CERAMIC DISC 5.0PF+-0.25% 50V
C1854	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1856	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1857	0800185	ELECTROLYTIC 47UF 6.3V
C1858	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1859	0800176	ELECTROLYTIC 2.2UF 50V
C1860	0800176	ELECTROLYTIC 2.2UF 50V

SYMBOL-NO	P-NO	DESCRIPTION
C1861	0800176	ELECTROLYTIC 2.2UF 50V
C1862	0800178	ELECTROLYTIC 4.7UF 35V
C1863	0800178	ELECTROLYTIC 4.7UF 35V
C1864	0800015	ELECTROLYTIC 10UF 16V
C1865	0800179	ELECTROLYTIC 10UF 16V
C1866	0800103	ELECTROLYTIC 0.22UF 50V
C1867	0800103	ELECTROLYTIC 0.22UF 50V
C1881	0890029	CERAMIC DISC 390PF+-10% 50V
C1882	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C1890	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1891	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1895	0890025	CERAMIC DISC 180PF+-10% 50V
C1896	0800187	ELECTROLYTIC 100UF 6.3V
C1897	0890036	CERAMIC DISC 1500PF+-20% 16V
C1898	0800179	ELECTROLYTIC 10UF 16V
C1899	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C2101	0893031	CERAMIC CHIP 1000PF+-10% 50V
C2102	0893031	CERAMIC CHIP 1000PF+-10% 50V
C2503	0800351	ELECTROLYTIC 470UF 6.3V
C2507	0800011	ELECTROLYTIC 4.7UF 35V
C2508	0893037	CERAMIC CHIP 3300PF+-10% 50V
C2509	0800041	ELECTROLYTIC 47UF 16V
C2511	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2512	0800041	ELECTROLYTIC 47UF 16V
C2513	0800044	ELECTROLYTIC 47UF 50V
C2514	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2515	0800041	ELECTROLYTIC 47UF 16V
C2517	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2518	0800044	ELECTROLYTIC 47UF 50V
C2519	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2520	0800353	ELECTROLYTIC 470UF 16V
C2521	0800041	ELECTROLYTIC 47UF 16V
C2522	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2523	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C2524	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2525	0800186	ELECTROLYTIC 47UF 16V
C2531	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C2532	0893031	CERAMIC CHIP 1000PF+-10% 50V
C2533	0893031	CERAMIC CHIP 1000PF+-10% 50V
C2534	0207458	ELECTROLYTIC 10UF 25V
C2540	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C2541	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C2543	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C2544	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C2545	0209939	CERAMIC CHIP 56PF+-5% 50V
C2570	0800115	ELECTROLYTIC 3.3UF 50V
C2701	AJ10241R	CERAMIC CAPACITOR 100PF+-10% 50V
C2702	AJ10241R	CERAMIC CAPACITOR 100PF+-10% 50V
C2703	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C2704	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C4501	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C4502	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C4503	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C4504	0800141	ELECTROLYTIC 47UF 16V
C4505	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C4513	0800141	ELECTROLYTIC 47UF 16V
C4514	0255138	ELECTROLYTIC 470UF 6.3V
C4515	0800109	ELECTROLYTIC 1.0UF 50V
C4517	0255138	ELECTROLYTIC 470UF 6.3V
C4518	0800109	ELECTROLYTIC 1.0UF 50V
C4520	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C4522L	0890035	CERAMIC DISC 1000PF+-10% 50V
C4522R	0890035	CERAMIC DISC 1000PF+-10% 50V
C4524L	0890032	CERAMIC DISC 560PF+-10% 50V
C4524R	0890032	CERAMIC DISC 560PF+-10% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C4526L	0890035	CERAMIC DISC 1000PF+-10% 50V
C4526R	0890035	CERAMIC DISC 1000PF+-10% 50V
C4528L	0890032	CERAMIC DISC 560PF+-10% 50V
C4528R	0890032	CERAMIC DISC 560PF+-10% 50V
C4529	0880053	POLYESTER FILM 0.047UF+-10% 50V
C4530	0890008	CERAMIC DISC 10PF+-5% 50V
C4531	0890018	CERAMIC DISC 56PF+-50% 50V
C4532	0890018	CERAMIC DISC 56PF+-50% 50V
C4534	0800122	ELECTROLYTIC 10UF 16V
C4535	0255138	ELECTROLYTIC 470UF 6.3V
C4551	0800122	ELECTROLYTIC 10UF 16V
C4552	0800122	ELECTROLYTIC 10UF 16V
C4553	0800122	ELECTROLYTIC 10UF 16V
C4554	0800122	ELECTROLYTIC 10UF 16V
C4555	0800122	ELECTROLYTIC 10UF 16V
C4556	0800122	ELECTROLYTIC 10UF 16V
C4557	0800122	ELECTROLYTIC 10UF 16V
C4558	0800122	ELECTROLYTIC 10UF 16V
C4559	0800122	ELECTROLYTIC 10UF 16V
C4560	0800122	ELECTROLYTIC 10UF 16V
C4561	0800122	ELECTROLYTIC 10UF 16V
C4562	0800122	ELECTROLYTIC 10UF 16V
C4563	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C4564	0800141	ELECTROLYTIC 47UF 16V
C4565	0800122	ELECTROLYTIC 10UF 16V
C4571L	0880042	MYLAR 6800PF+-10% 50V
C4571R	0880042	MYLAR 6800PF+-10% 50V
C4572L	0800122	ELECTROLYTIC 10UF 16V
C4572R	0800122	ELECTROLYTIC 10UF 16V
C4581	0890018	CERAMIC DISC 56PF+-50% 50V
C4582	0880016	POLYESTER FILM 0.1UF+-10% 50V
C4583	0800122	ELECTROLYTIC 10UF 16V
C4584	0880035	POLYESTER FILM 0.0022UF+-10% 50V
C4585	0880187	CAPACITOR 0.033UF+-5% 50V

RESISTORS

R0202	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R0205	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R0206	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R0207	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0208	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R0212	0700058	CARBON FILM 22KOHM+-5% 1/8W
R0213	0700058	CARBON FILM 22KOHM+-5% 1/8W
R0215	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R0216	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R0217	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R0227	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0228	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0229	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0238	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R0239	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R0240	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R0241	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R0243	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0245	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R0249	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R0250	0700067	CARBON FILM 100KOHM+-5% 1/8W
R0253	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R0254	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R0256	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0258	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0261	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0263	0101391	CARBON FILM 2.2MOHM+-5% 1/8W
R0264	0105515	CHIP RESISTOR 4.7MOHM+-5% 1/10W
R0265	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R0266	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0267	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R0268	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R0269	0103834	CHIP RESISTOR 180 OHM+-5% 0.1W
R0402	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R0403	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R0404	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R0407	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0408	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R0409	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R0410	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0411	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R0412	0103812	CHIP RESISTOR 2.7OHM+-10% 0.1W
R0413	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R0414	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0417	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0418	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0419	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R0420	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0421	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R0422	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R0423	0700057	CARBON FILM 18KOHM+-5% 1/8W
R0424	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R0425	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0429	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0430	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0431	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0432	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0434	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R0437	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R0443	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0445	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0446	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0501	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0502	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0503	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R0504	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0505	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R0506	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0507	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R0508	0105572	METAL FILM RESISTOR 2.7KOHM+-1% 1/10W
R0509	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0510	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W
R0511	AQ10296R	CHIP RESISTOR 15KOHM+-0.1% 1/10W
R0512	AQ10295R	CHIP RESISTOR 11KOHM+-0.1% 1/10W
R0516	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0517	0104252	CHIP RESISTOR 510 OHM+-5% 1/10W
R0518	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R0519	0105572	METAL FILM RESISTOR 2.7KOHM+-1% 1/10W
R0520	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0521	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0522	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R0523	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0524	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0525	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0526	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0527	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0528	0700056	CARBON FILM 15KOHM+-5% 1/8W
R0529	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0530	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R0531	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0532	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R0533	0700066	CARBON FILM 82KOHM+-5% 1/8W
R0534	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R0602	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0605	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0615	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0616	0700072	CARBON FILM 220KOHM+-5% 1/8W
R0621	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0622	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0623	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0624	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0625	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0626	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0627	0700036	CARBON FILM 470 OHM+-5% 1/8W
R0628	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0629	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R0630	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R0631	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R0632	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0633	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R0634	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0635	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0636	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R0637	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R0639	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0703	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0704	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0705	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R0706	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0707	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0708	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0709	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R0710	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0711	0700063	CARBON FILM 47KOHM+-5% 1/8W
R0712	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0713	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R0714	0700023	CARBON FILM 47 OHM+-5% 1/8W
R0715	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0716	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R0852	AT10211M	CHIP RESISTOR 1MOHM 1/2W
R0853	0700074	CARBON FILM 330KOHM+-5% 1/8W
R0854	0700074	CARBON FILM 330KOHM+-5% 1/8W
R0855	0700074	CARBON FILM 330KOHM+-5% 1/8W
R0856	AT10246S	RESISTOR 0.33 OHM+-5% 1W
R0857	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0858	0116673	RESISTOR 330 OHM+-5% 2W
R0860	0116671	RESISTOR 100KOHM+-5% 3w
R0861	0116671	RESISTOR 100KOHM+-5% 3w
R0862	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R0863	0700054	CARBON FILM 10KOHM+-5% 1/8W[EXCEPT 6U,6N]
R0863	0700055	CARBON FILM 12KOHM+-5% 1/8W[6U,6N]
R0864	0700033	CARBON FILM 270 OHM+-5% 1/8W
R0865	0700039	CARBON FILM 820 OHM+-5% 1/8W
R0866	0700034	CARBON FILM 330 OHM+-5% 1/8W
R0867	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R0868	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0869	0104114	CHIP RESISTOR 3.3KOHM+-1% 0.1W
R0871	0105572	METAL FILM RESISTOR 2.7KOHM+-1% 1/10
R0872	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0873	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0874	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0875	0700035	CARBON FILM 390 OHM+-5% 1/8W
R0876	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0877	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R0878	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0879	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R0880	0700058	CARBON FILM 22KOHM+-5% 1/8W
R0881	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R0885	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0886	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R0887	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R0888	0700062	CARBON FILM 39KOHM+-5% 1/8W
R0890	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0891	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0892	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0893	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0894	0700058	CARBON FILM 22KOHM+-5% 1/8W
R0895	0700058	CARBON FILM 22KOHM+-5% 1/8W
R0896	0700058	CARBON FILM 22KOHM+-5% 1/8W
R0897	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R0904	0700036	CARBON FILM 470 OHM+-5% 1/8W
R0906	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0907	0700053	CARBON FILM 8.2KOHM+-5% 1/8W [#N,#V,1,2,6N]
R0907	0700055	CARBON FILM 12KOHM+-5% 1/8W[4U,5U,6U]
R0907	0700057	CARBON FILM 18KOHM+-5% 1/8W[4N]
R0908	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0909	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R0910	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0911	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R0913	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0914	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0915	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0916	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0917	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0918	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0919	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0920	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0921	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0922	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0923	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0924	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R0925	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R0926	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R0928	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R0929	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0934	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0935	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0936	0700054	CARBON FILM 10KOHM+-5% 1/8W
R0937	0700029	CARBON FILM 150 OHM+-5% 1/8W
R0938	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0939	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0940	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R0943	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0944	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0945	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0946	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0947	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0948	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0949	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0952	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0957	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R0965	0700034	CARBON FILM 330 OHM+-5% 1/8W
R0967	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R0968	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0969	0700027	CARBON FILM 100 OHM+-5% 1/8W
R0970	0700027	CARBON FILM 100 OHM+-5% 1/8W
R0974	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R0975	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R0976	0101725	CHIP RESISTOR 2.2 OHM+-5% 1/4W
R0977	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R0978	0101765	RESISTOR 10KOHM+-1% 1/8W
R0979	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R0980	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R0981	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0982	0893044	CERAMIC CHIP 0.01UF+-10% 50V
R0983	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0984	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0985	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R0986	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0993	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R0994	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0996	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R0997	0700037	CARBON FILM 560 OHM+-5% 1/8W
R0998	0700037	CARBON FILM 560 OHM+-5% 1/8W
R0999	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1101	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1102	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1104	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R1107	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1108	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1109	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1110	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1112	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1113	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1115	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1116	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1117	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1118	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1119	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R1120	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R1121	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1122	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1409	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1410	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R1412	0700076	CARBON FILM 470KOHM+-5% 1/8W
R1414	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1416	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1417	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1418	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1419	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1421	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1423	0700038	CARBON FILM 680 OHM+-5% 1/8W
R1424	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R1429	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1430	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1431	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1432	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1446	0209925	CERAMIC DISC 5PF+-0.25%
R1701	0700036	CARBON FILM 470 OHM+-5% 1/8W [6U,6N]
R1701	0700054	CARBON FILM 10KOHM+-5% 1/8W [EX 6U,6N]
R1702	0700036	CARBON FILM 470 OHM+-5% 1/8W [6U,6N]
R1702	0700063	CARBON FILM 47KOHM+-5% 1/8W [EX 6U,6N]
R1703	0700032	CARBON FILM 220 OHM+-5% 1/8W [4N,4U]
R1703	0700036	CARBON FILM 470 OHM+-5% 1/8W [5U,#N,#V,1,2]
R1703	0700038	CARBON FILM 680 OHM+-5% 1/8W [6U,6N]
R1704	0700032	CARBON FILM 220 OHM+-5% 1/8W [4U,4N]
R1704	0700036	CARBON FILM 470 OHM+-5% 1/8W [5U,#N,#V,1,2]
R1704	0700049	CARBON FILM 4.7KOHM+-5% 1/8W [6U,6N]
R1705	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1708	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1709	0700034	CARBON FILM 330 OHM+-5% 1/8W
R1710	0700034	CARBON FILM 330 OHM+-5% 1/8W
R1711	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1712	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1713	0700049	CARBON FILM 4.7KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R1714	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1715	0700062	CARBON FILM 39KOHM+-5% 1/8W
R1716	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R1717	0700057	CARBON FILM 18KOHM+-5% 1/8W
R1718	0700038	CARBON FILM 680 OHM+-5% 1/8W
R1719	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1720	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R1721	0700039	CARBON FILM 820 OHM+-5% 1/8W
R1722	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1723	0700037	CARBON FILM 560 OHM+-5% 1/8W
R1724	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R1725	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1726	0700035	CARBON FILM 390 OHM+-5% 1/8W
R1727	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1728	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1729	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1730	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1731	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1732	0700063	CARBON FILM 47KOHM+-5% 1/8W
R1733	0700033	CARBON FILM 270 OHM+-5% 1/8W
R1801	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1802	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1803	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1804	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1805	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1807	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1808	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1809	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1810	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1811	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1812	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1813	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1814	0700034	CARBON FILM 330 OHM+-5% 1/8W
R1815	0700078	CARBON FILM 680KOHM+-5% 1/8W
R1816L	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1816R	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1817L	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1817R	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1830L	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1830R	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1831L	0700068	CARBON FILM 120KOHM+-5% 1/8W
R1831R	0700068	CARBON FILM 120KOHM+-5% 1/8W
R1832L	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1832R	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1833L	0700062	CARBON FILM 39KOHM+-5% 1/8W
R1833R	0700062	CARBON FILM 39KOHM+-5% 1/8W
R1834L	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R1834R	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R1851	0700037	CARBON FILM 560 OHM+-5% 1/8W
R1852	0700031	CARBON FILM 180 OHM+-5% 1/8W
R1853	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1854	0700037	CARBON FILM 560 OHM+-5% 1/8W
R1855	0700028	CARBON FILM 120 OHM+-5% 1/8W
R1856	0700028	CARBON FILM 120 OHM+-5% 1/8W
R1857	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1858	0700059	CARBON FILM 27KOHM+-5% 1/8W
R1860	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1861	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1862	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1863	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1864	0700034	CARBON FILM 330 OHM+-5% 1/8W
R1865	0700034	CARBON FILM 330 OHM+-5% 1/8W
R1870	0700038	CARBON FILM 680 OHM+-5% 1/8W
R1899	0700059	CARBON FILM 27KOHM+-5% 1/8W
R2101	0700059	CARBON FILM 27KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R2102	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R2103	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2104	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R2105	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2106	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R2107	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R2108	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R2109	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R2110	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R2111	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R2112	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R2113	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R2114	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R2115	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2116	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2117	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R2507	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R2508	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2509	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R2510	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2511	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R2512	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W [EXCEPT 4U,5U,6U]
R2512	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W[4U,5U,6U]
R2513	0101841	CARBON FILM 4.7KOHM+-5% 1/4W
R2514	0101841	CARBON FILM 4.7KOHM+-5% 1/4W
R2515	0700073	CARBON FILM 270KOHM+-5% 1/8W
R2517	0700074	CARBON FILM 330KOHM+-5% 1/8W
R2518	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2530	0103826	CHIP RESISTOR 39 OHM+-5% 0.1W
R2531	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2532	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2533	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R2534	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R2535	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2537	0700019	CARBON FILM 27 OHM+-5% 1/8W
R2538	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R2541	0700027	CARBON FILM 100 OHM+-5% 1/8W
R2542	0700027	CARBON FILM 100 OHM+-5% 1/8W
R2701	0700057	CARBON FILM 18KOHM+-5% 1/8W
R2702	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2703	0700057	CARBON FILM 18KOHM+-5% 1/8W
R2704	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2705	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R2706	0700029	CARBON FILM 150 OHM+-5% 1/8W [5U,#N,#V,1,2]
R2706	0700041	CARBON FILM 1.0KOHM+-5% 1/8W[6U,6N]
R2707	0700039	CARBON FILM 820 OHM+-5% 1/8W[6U,6N]
R2707	0700046	CARBON FILM 2.7KOHM+-5% 1/8W [5U,#N,#V,1,2]
R2708	0700041	CARBON FILM 1.0KOHM+-5% 1/8W[6U,6N]
R2708	0700049	CARBON FILM 4.7KOHM+-5% 1/8W [5U,#N,#V,1,2]
R2709	0700027	CARBON FILM 100 OHM+-5% 1/8W[6U,6N]
R2709	0700047	CARBON FILM 3.3KOHM+-5% 1/8W [5U,#N,#V,1,2]
R2710	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2711	0700032	CARBON FILM 220 OHM+-5% 1/8W
R2712	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2713	0700029	CARBON FILM 150 OHM+-5% 1/8W
R2714	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R2715	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R2716	0700067	CARBON FILM 100KOHM+-5% 1/8W
R2717	0700067	CARBON FILM 100KOHM+-5% 1/8W
R2718	0700067	CARBON FILM 100KOHM+-5% 1/8W
R2719	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2720	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2721	0700067	CARBON FILM 100KOHM+-5% 1/8W
R2722	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2723	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2724	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R2725	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R2727	0700063	CARBON FILM 47KOHM+-5% 1/8W
R2728	0700063	CARBON FILM 47KOHM+-5% 1/8W
R4501	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R4502	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R4503	1109023	METAL FILM 75 OHM+-50% 1/8W
R4504	1109023	METAL FILM 75 OHM+-50% 1/8W
R4505	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R4506	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R4507	1109023	METAL FILM 75 OHM+-50% 1/8W
R4508	1109023	METAL FILM 75 OHM+-50% 1/8W
R4510	0700063	CARBON FILM 47KOHM+-5% 1/8W
R4511	0700062	CARBON FILM 39KOHM+-5% 1/8W
R4512L	0700036	CARBON FILM 470 OHM+-5% 1/8W
R4512R	0700036	CARBON FILM 470 OHM+-5% 1/8W
R4514L	0700036	CARBON FILM 470 OHM+-5% 1/8W
R4514R	0700036	CARBON FILM 470 OHM+-5% 1/8W
R4516	0700054	CARBON FILM 10KOHM+-5% 1/8W
R4517	0700054	CARBON FILM 10KOHM+-5% 1/8W
R4518	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R4519	0700025	CARBON FILM 68 OHM+-5% 1/8W
R4520	0700026	CARBON FILM 82 OHM+-5% 1/8W
R4521	0700027	CARBON FILM 100 OHM+-5% 1/8W
R4571L	0700032	CARBON FILM 220 OHM+-5% 1/8W
R4571R	0700032	CARBON FILM 220 OHM+-5% 1/8W
R4572L	0700063	CARBON FILM 47KOHM+-5% 1/8W
R4572R	0700063	CARBON FILM 47KOHM+-5% 1/8W
R4573L	0700032	CARBON FILM 220 OHM+-5% 1/8W
R4573R	0700032	CARBON FILM 220 OHM+-5% 1/8W
R4584	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R4585	0101970	CARBON FILM 1200KOHM+-5% 1/8W
R4587	0700067	CARBON FILM 100KOHM+-5% 1/8W
R4588	0101970	CARBON FILM 1200KOHM+-5% 1/8W
R4589	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R4590	0700052	CARBON FILM 6.8KOHM+-5% 1/8W

SEMI-CONDUCTORS

D0401	5339071	DIODE 1SS119
D0402	5339071	DIODE 1SS119
D0403	5339071	DIODE 1SS119
D0603	CH10871M	DIODE 1N4001
D0604	CH10871M	DIODE 1N4001
D0851	5336552	DIODE S1WBA60
D0852	CH10191M	DIODE EG01C-T
D0853	CH10921M	DIODE PR1003L
D0856	5339592	DIODE D1NL40
D0857	CH10462S	DIODE S3L20U
D0858	CH10942F	DIODE SB360-F (HEPM)
D0859	CH10942F	DIODE SB360-F (HEPM)
D0860	5339551	DIODE SS1J4
D0861	5339551	DIODE SS1J4
D0862	5339071	DIODE 1SS119
D0901	5339551	DIODE SS1J4
D0906	5339071	DIODE 1SS119
D0907	5339071	DIODE 1SS119
D0908	5339071	DIODE 1SS119
D0909	5339071	DIODE 1SS119
D0910	CH10871M	DIODE 1N4001

SYMBOL-NO	P-NO	DESCRIPTION	
D0911	CH10871M	DIODE 1N4001	
D1101	5339071	DIODE 1SS119	
D1102	5328322	DIODE MA151K	
D1403	5339071	DIODE 1SS119	
D1701	5339071	DIODE 1SS119	
D1702	5339551	DIODE SS1J4[6U,6N]	
D1801	CH11041	DIODE BB405B (HEPM)	[EXCEPT #V,1,2]
D1802	5339071	DIODE 1SS119	[EXCEPT #V,1,2]
D2502	5339071	DIODE 1SS119	
D2503	5339071	DIODE 1SS119	
D2504	5339071	DIODE 1SS119	
D2505	5339071	DIODE 1SS119	
D4501	5339071	DIODE 1SS119	
IC0201	CK14411	IC HA118203F	
IC0202	CK13573R	IC MSM7470-71MS-KR1	
IC0501	CK14421	IC AN3964FB	
IC0851	1360452	IC TL431CLP	
IC0901	CK16744	IC HD6433977SB54F	[MN,MV,1,2,4N]
IC0901	CK16745	IC HD6433977SB55F[6U,6N]	
IC0901	CK16746	IC HD6433977SB56F (HEPM)	[5U,4U]
IC0902	CP10312R	IC PST9129	
IC0903	CP10915	IC ST24C02FB6	[6U,6N]
IC0903	CP11013	IC AT24C04-10PC (HEPM)	[EXCEPT 6U,6N]
IC0904	CP10291	IC BA6209	
IC0905	CP11361R	IC M5278L05	
IC1101	CK14481	IC HA118198FP	
IC1102	CP11191	IC LA7256	
IC1701	CZ10181	IC BU9716K	
IC1801	CK12201	IC SAA7283GP	
IC1802	5352714	IC NJM4558M	
IC1851	CK14551	IC TDA9840T	
IC1852	1346191	IC TDA9821	
IC2101	CJ10212	PHOTO INTERLAPTER SG-236	
IC2102	CJ10222	PHOTO INTERLAPTER SG-237	
IC2701	CK12311	IC UPD17103GS-752[6U,6N]	
IC4501	CP11612	IC BH7633AS (HEPM)	
IC4551	CP10351	IC LA7151	
IC4552	CP10351	IC LA7151	
IC4581	CP10641	IC SDA5649	
IR1701	CJ10261	MODULE PIC-12043TE2 (HEPM)	[6U,6N]
IR1701	CW10173	MODULE TFMS5380B	[EXCEPT 6U,6N]
LD1701	CH10781R	DIODE SLP3117E	
LD1702	CH10781R	DIODE SLP3117E	
LD1703	CH10781R	DIODE SLP3117E	
LD1704	CH10781R	DIODE SLP3117E	
LD1705	CH10781R	DIODE SLP3117E	
LD1706	CH10433	LED SLR-342VR3F	
LD2101	CH10542	DIODE GL451L1	
LD2701	CH10181G	LED	[6U,6N]
LD2701	CH10791	DIODE SLP932C-20	[5U]
LD2702	CH10791	DIODE SLP932C-20	
Q0201	5328793	TRANSISTOR DTC144EK	
Q0219	5328793	TRANSISTOR DTC144EK	
Q0222	5328793	TRANSISTOR DTC144EK	
Q0226	5328972	TRANSISTOR 2SC2412K-BRT	
Q0228	5328793	TRANSISTOR DTC144EK	
Q0230	5328793	TRANSISTOR DTC144EK	
Q0231	5328795	TRANSISTOR DTA144EK-16	
Q0232	5328793	TRANSISTOR DTC144EK	
Q0401	5327001	TRANSISTOR 2SC458CD	
Q0402	5323172	TRANSISTOR 2SC1214CD	
Q0403	5328972	TRANSISTOR 2SC2412K-BRT	
Q0405	5328962	TRANSISTOR 2SA1037K	
Q0406	5323172	TRANSISTOR 2SC1214CD	
Q0408	5328793	TRANSISTOR DTC144EK	
Q0410	5328793	TRANSISTOR DTC144EK	
Q0411	5328962	TRANSISTOR 2SA1037K	
Q0412	5328972	TRANSISTOR 2SC2412K-BRT	
Q0413	5328972	TRANSISTOR 2SC2412K-BRT	
Q0417	5328793	TRANSISTOR DTC144EK	
Q0602	5328972	TRANSISTOR 2SC2412K-BRT	
Q0701	1323081	TRANSISTOR 2SA1036K	
Q0702	5328972	TRANSISTOR 2SC2412K-BRT	
Q0851	CF10621	TRANSISTOR FS3KM-18A	
Q0852	CF10451R	TRANSISTOR 2SC3246	
Q0853	1321341	TRANSISTOR 2SD1765	
Q0854	5327262	TRANSISTOR 2SB1326	
Q0855	5328972	TRANSISTOR 2SC2412K-BRT	
Q0856	5327262	TRANSISTOR 2SB1326	
Q0857	5328972	TRANSISTOR 2SC2412K-BRT	
Q0858	5327262	TRANSISTOR 2SB1326	
Q0859	5328972	TRANSISTOR 2SC2412K-BRT	
Q0860	5327262	TRANSISTOR 2SB1326	
Q0861	5328972	TRANSISTOR 2SC2412K-BRT	
Q0864	1321341	TRANSISTOR 2SD1765	
Q0901	5327031	TRANSISTOR 2SA673(C)	[EXCEPT 6U,6N]
Q0901	5327261	TRANSISTOR 2SB1326(Q)	[6U,6F]
Q0902	5328793	TRANSISTOR DTC144EK	
Q0905	5328962	TRANSISTOR 2SA1037K	
Q0906	5328962	TRANSISTOR 2SA1037K	
Q0907	5328962	TRANSISTOR 2SA1037K	
Q0909	5328793	TRANSISTOR DTC144EK	
Q0913	5328972	TRANSISTOR 2SC2412K-BRT	
Q0914	5328793	TRANSISTOR DTC144EK	
Q1101	5328972	TRANSISTOR 2SC2412K-BRT	
Q1102	5328962	TRANSISTOR 2SA1037K	
Q1103	5328793	TRANSISTOR DTC144EK	
Q1104	5328793	TRANSISTOR DTC144EK	
Q1404	5328962	TRANSISTOR 2SA1037K	
Q1405	5328793	TRANSISTOR DTC144EK	
Q1406	5328972	TRANSISTOR 2SC2412K-BRT	
Q1407	5328962	TRANSISTOR 2SA1037K	
Q1408	5328962	TRANSISTOR 2SA1037K	
Q1409	5328793	TRANSISTOR DTC144EK	
Q1410	5328962	TRANSISTOR 2SA1037K	
Q1701	5327071	TRANSISTOR DTC124ES	
Q1702	5327063	TRANSISTOR 2SC1740S	[6U,6N]
Q1702	5327071	TRANSISTOR DTC124ES	[EXCEPT 6U,6N]
Q1703	5327071	TRANSISTOR DTC124ES	
Q1704	5327071	TRANSISTOR DTC124ES	
Q2101	CF10372	TRANSISTOR PT493FL1	
Q2102	CF10372	TRANSISTOR PT493FL1	
Q2103	5328793	TRANSISTOR DTC144EK	
Q2104	5328793	TRANSISTOR DTC144EK	
Q2501	5328972	TRANSISTOR 2SC2412K-BRT	
Q2502	5328972	TRANSISTOR 2SC2412K-BRT	
Q2503	5328972	TRANSISTOR 2SC2412K-BRT	
Q2505	5328793	TRANSISTOR DTC144EK	
Q2506	5327021	TRANSISTOR 2SA844CD	
Q2507	5328795	TRANSISTOR DTA144EK-16	
Q2508	5328972	TRANSISTOR 2SC2412K-BRT	
Q2701	5327073	TRANSISTOR DTC144ES	
Q2702	5327073	TRANSISTOR DTC144ES	
Q4501	5327031	TRANSISTOR 2SA673(C)	
Q4502	5327073	TRANSISTOR DTC144ES	
Q4503	5327141	TRANSISTOR 2SD468C	
Q4504	1320003	TRANSISTOR 2SA854(S)	
⚠PC0851	CF10431G	PHOTO COUPLER PC123FY	
⚠QF0851	5721945	IC PROTECTOR,ICP-N38	
⚠QF0852	5721946	PROTECTOR,ICP-N15	

SYMBOL-NO	P-NO	DESCRIPTION
⚠QF0853	5721944	IC PROTECTOR, ICP-N25
⚠QF4501	5721941	IC PROTECTOR, ICP-N5
ZD0851	5339251	DIODE HZS2-C3
ZD0861	5336811	DIODE MA2180A
ZD0862	5339468	DIODE HZS11B3
ZD0864	5339482	DIODE HZS15-2
ZD0901	5339275	DIODE HZS7-B2
ZD0903	5339297	DIODE HZS5C3
ZD2501	5339288	DIODE HZS30-3
ZD2502	5339288	DIODE HZS30-3
ZD4501	5339277	DIODE HZS6A2
ZD4502	5339293	DIODE HZS12B2
		TRANSFORMERS
T0401	BT10251	TRANSFORMER, POWER [EXCEPT 6U, 6N]
T0401	BT10262	TRANSFORMER, POWER [6U, 6N]
T0402	5230352	TRANSFORMER
⚠T0851	BT10282	TRANSFORMER, POWER (HEPM)
		COILS
L0201	5121296	COIL 220UH
L0202	5121611	COIL 100UH
L0203	5159142	CHOKE COIL 12UH
L0204	5121287	COIL 10UH
L0205	5121611	COIL 100UH
L0207	5159153	CHOKE COIL 82UH
L0208	5121611	COIL 100UH
L0209	5159142	CHOKE COIL 12UH
L0210	5159146	CHOKE COIL 27UH
L0401	5159114	COIL 15MH
L0402	0770057	CHOKE COIL 100UH+-5%
L0403	0770057	CHOKE COIL 100UH+-5%
L0501	0770048	CHOKE COIL 22UH+-5%
⚠L0851	BV10241	FILTER, LINE 18MH
L0853	BH10337R	COIL 10UH
L0854	BH00205R	COIL 22UH
L0901	0770057	CHOKE COIL 100UH+-5%
L0902	5121611	COIL 100UH
L1101	5121611	COIL 100UH
L1102	5121611	COIL 100UH
L1103	5121611	COIL 100UH
L1105	5121296	COIL 220UH
L1106	5121296	COIL 220UH
L1402	5121288	COIL 15UH
L1403	5121289	COIL 22UH
L1701	0770057	CHOKE COIL 100UH+-5%
L1801	5121286	COIL 6.8UH
L1802	0770057	CHOKE COIL 100UH+-5%
L1803	0770057	CHOKE COIL 100UH+-5%
L1804	0770057	CHOKE COIL 100UH+-5%
L1805	0770048	CHOKE COIL 22UH+-5%
L1806	5159111	CHOKE COIL 5600UH
L1807	0770057	CHOKE COIL 100UH+-5%
L1808L	5159113	COIL, CHOKE 8.2MH
L1808R	5159113	COIL, CHOKE 8.2MH
L2501	0770053	CHOKE COIL 47UH+-5%
L2502	0770057	CHOKE COIL 100UH+-5%
L2504	0770052	COIL, CHOKE 39UH+-5%
L2505	0770057	CHOKE COIL 100UH+-5%
L2507	0770053	CHOKE COIL 47UH+-5%
L4501	0770057	CHOKE COIL 100UH+-5%
L4502	0770057	CHOKE COIL 100UH+-5%
L4503	0770057	CHOKE COIL 100UH+-5%
L4551	0770057	CHOKE COIL 100UH+-5%
L4581	0770057	CHOKE COIL 100UH+-5%
		CRYSTALS
X0202	BP10541	CRYSTAL (HEPM)
X0901	BP10571	CRYSTAL
X0902	BP10251	CRYSTAL
X1401	BP10573	CRYSTAL (HEPM)
X1801	BP10471	CRYSTAL (HCPUK)
X1851	BP10571	CRYSTAL
X2701	BP10451G	CRYSTAL
		MISCELLANEOUS
BL0601	BZ10471R	CORE
BL0602	BZ10471R	CORE
BL0603	BZ10471R	CORE
BL0604	BZ10471R	CORE
BL0851	BZ10471R	CORE
BL0852	BZ10471R	CORE
BL0853	BZ10471R	CORE
BL0855	BZ10471R	CORE
BL1803	5272376	FILTER
BL2501	BZ10471R	CORE
BL2502	BZ10471R	CORE
BL4501L	BZ10471R	CORE
BL4501R	BZ10471R	CORE
BL4502L	BZ10471R	CORE
BL4502R	BZ10471R	CORE
BL4503L	BZ10471R	CORE
BL4503R	BZ10471R	CORE
BL4504L	BZ10471R	CORE
BL4504R	BZ10471R	CORE
BL4571L	BZ10471R	CORE
BL4571R	BZ10471R	CORE
CF1851	5160561	FILTER
CF1852	5160562	FILTER
⚠F0851	5723351	FUSE
FE2501	1730395	TUNER IF UNIT (HEPM) [4U, 5U, 6U]
FE2501	1730403	TUNER IF UNIT (HCPUK) [EXCEPT 4U, 5U, 6U]
⚠FH0851	5722412	HOLDER, FUSE
⚠FH0852	5722412	HOLDER, FUSE
J4501	EQ10151	JACK
J4502	EQ10151	JACK
J4571	ES10391	JACK (HEPM)
JK2503	EQ10163	JACK [6U, 6N]
JK2503	ES10373	JACK (HEPM) [EXCEPT 6U, 6N]
LCD1701	DB10341	FLOURESENT DISPLAY [EXCEPT 6U, 6N]
LCD1701	DB10371	DISPLAY, LIQUID CRYSTAL (HEPM) [6U, 6N]
LMP1701	5763357	LAMP
LMP1702	5763357	LAMP
LMP1703	5763357	LAMP
LMP1704	5763357	LAMP
S0701	FE10141R	SWITCH
S0702	FE10141R	SWITCH
S0703	FE10141R	SWITCH
S0704	FE10141R	SWITCH
S0705	FE10141R	SWITCH
S0706	FE10141R	SWITCH
S0707	FE10141R	SWITCH
S0708	5636101	SWITCH
S1701	5634884	SWITCH
S1713	5634884	SWITCH
S1714	5634884	SWITCH

SYMBOL-NO	P-NO	DESCRIPTION
S1715	5634884	SWITCH
S1719	5634884	SWITCH
S2101	FD10211	SWITCH, MODE
S2102	5635631	SWITCH
S2103	5635631	SWITCH
S2701	5634884	SWITCH
S2701	FH10271	SWITCH
S2702	5634884	SWITCH
S2703	5634884	SWITCH
S2704	5634884	SWITCH
S2705	5634884	SWITCH
S2706	5634884	SWITCH
S2707	5634884	SWITCH
S2708	5634884	SWITCH
S2709	5634884	SWITCH
S2721	FH10231	SWITCH

SYMBOL-NO	P-NO	DESCRIPTION

CHAPTER 6 SCHEMATIC, CIRCUIT BOARD AND BLOCK DIAGRAMS/ MICROPROCESSOR PIN FUNCTION TABLES

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 ..... ± 5% (All tolerances other than ± 5% are indicated in the schematic diagrams)
Power capacitance	No indication ..... 1/8W (1/16W for leadless resistors without indication) All capacitances other than the above are indicated in the schematic diagrams.

[Capacitors]

Item	Indication
Value	No indication ..... 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

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

Cautions when using circuit board diagrams

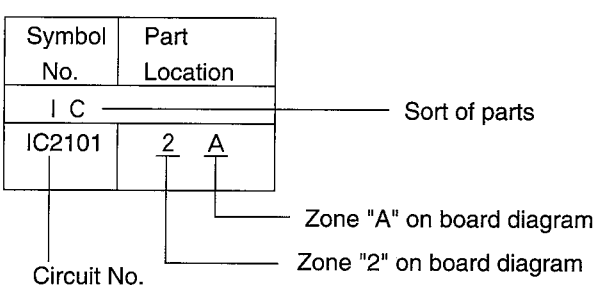
1. Identifications of sides A/B in circuit board diagrams

1) Board having a pattern on one side and parts on both sides.
   Side A: Shows discrete parts, viewed from the pattern side.
   Side B: Shows leadless parts, viewed from the pattern side.
2) Board having patterns on both sides and parts on both sides.
   Side A: Shows parts and patterns which can be seen when the case is opened.
   Side B: Shows parts and the pattern on the back of side A.

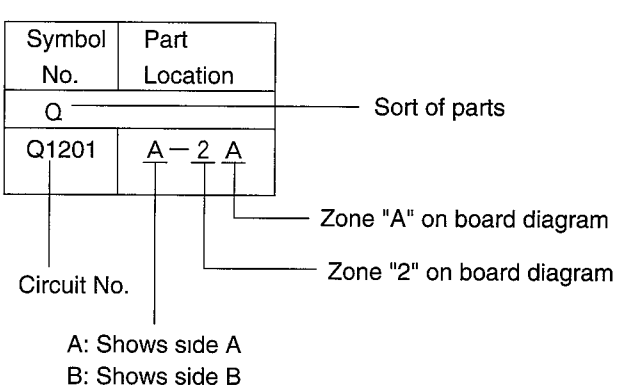
2. Table for indexing locations of parts

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

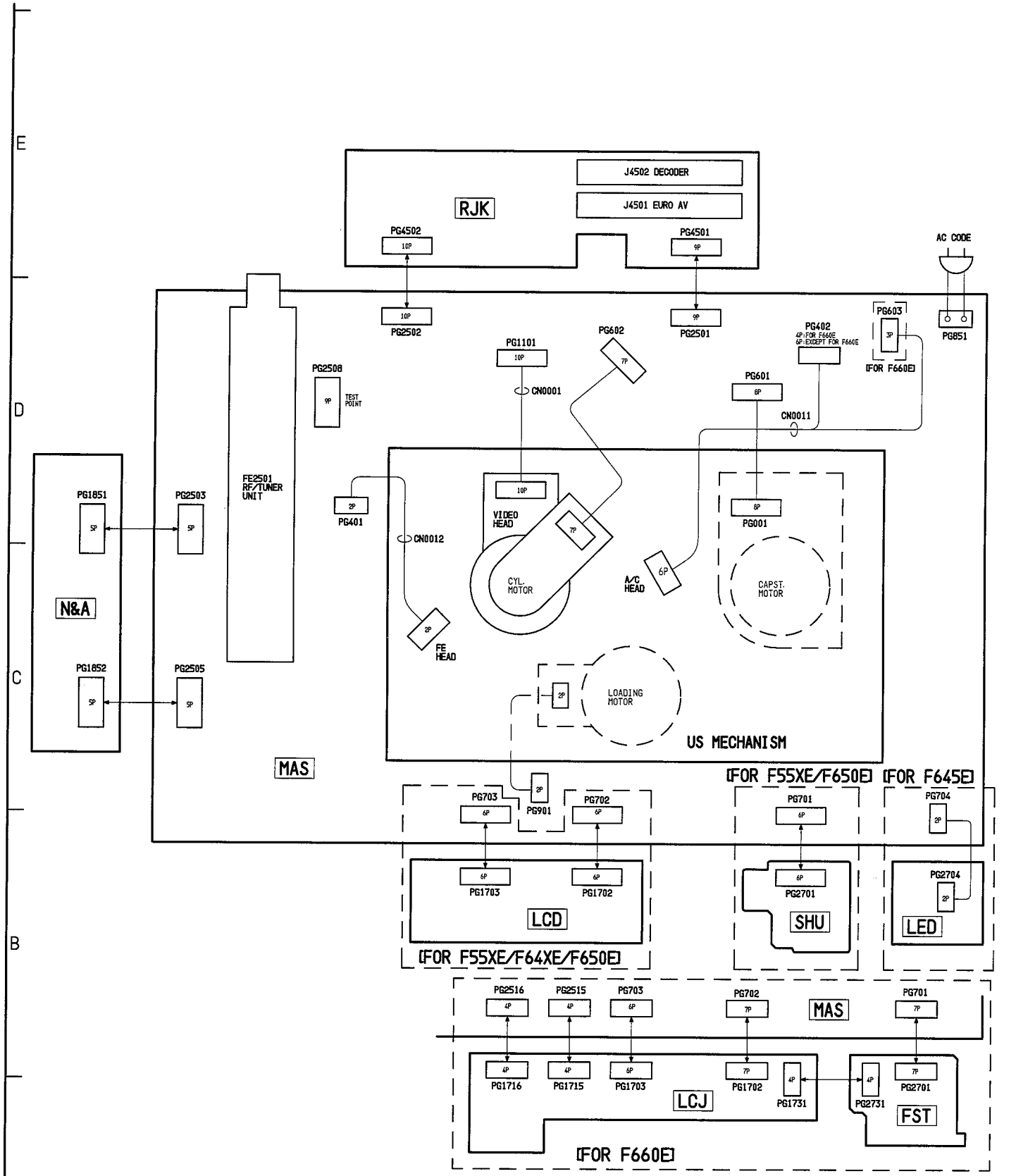
1) In case of one-layer board



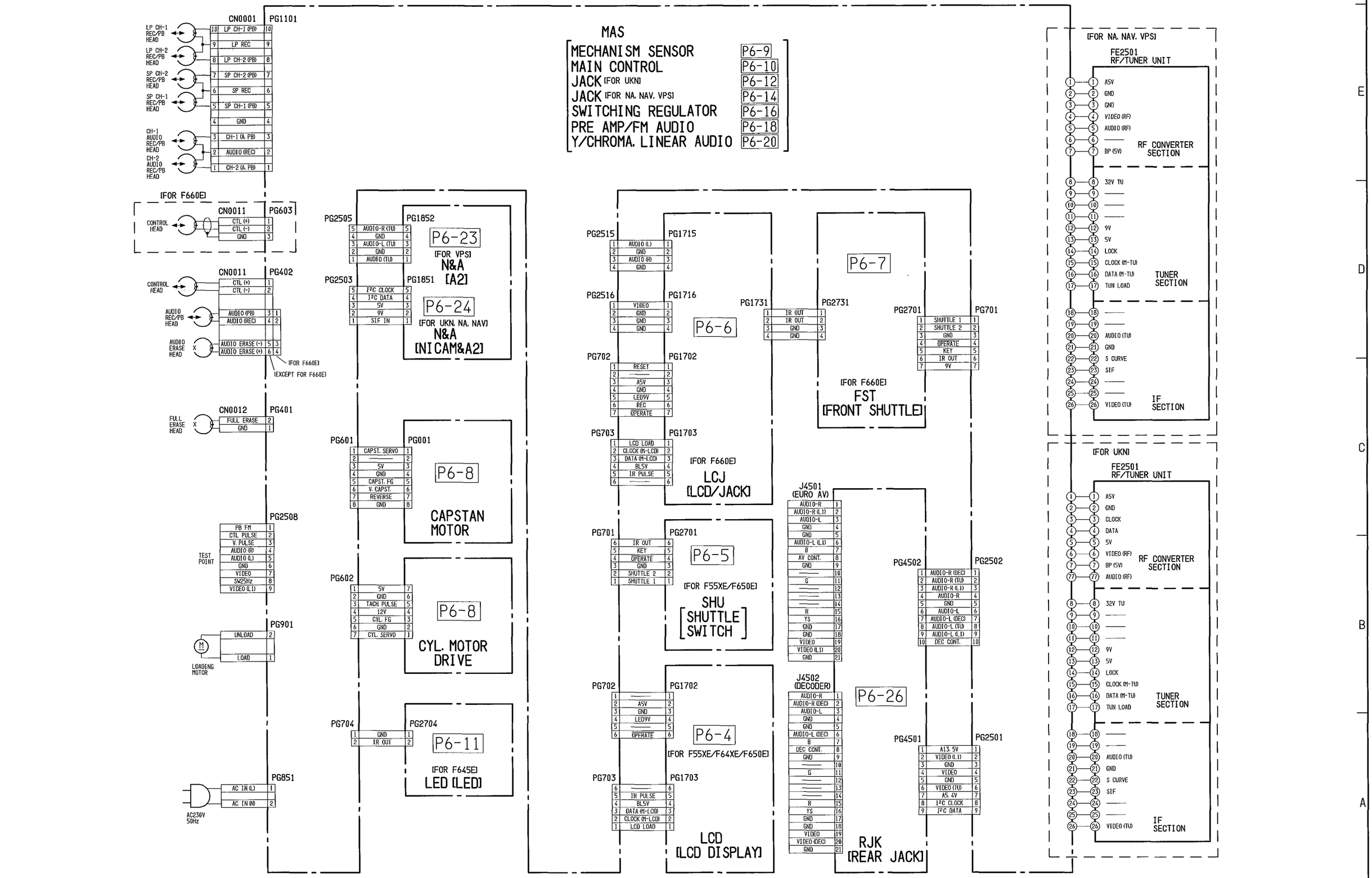
2) In case of side A/B indication board



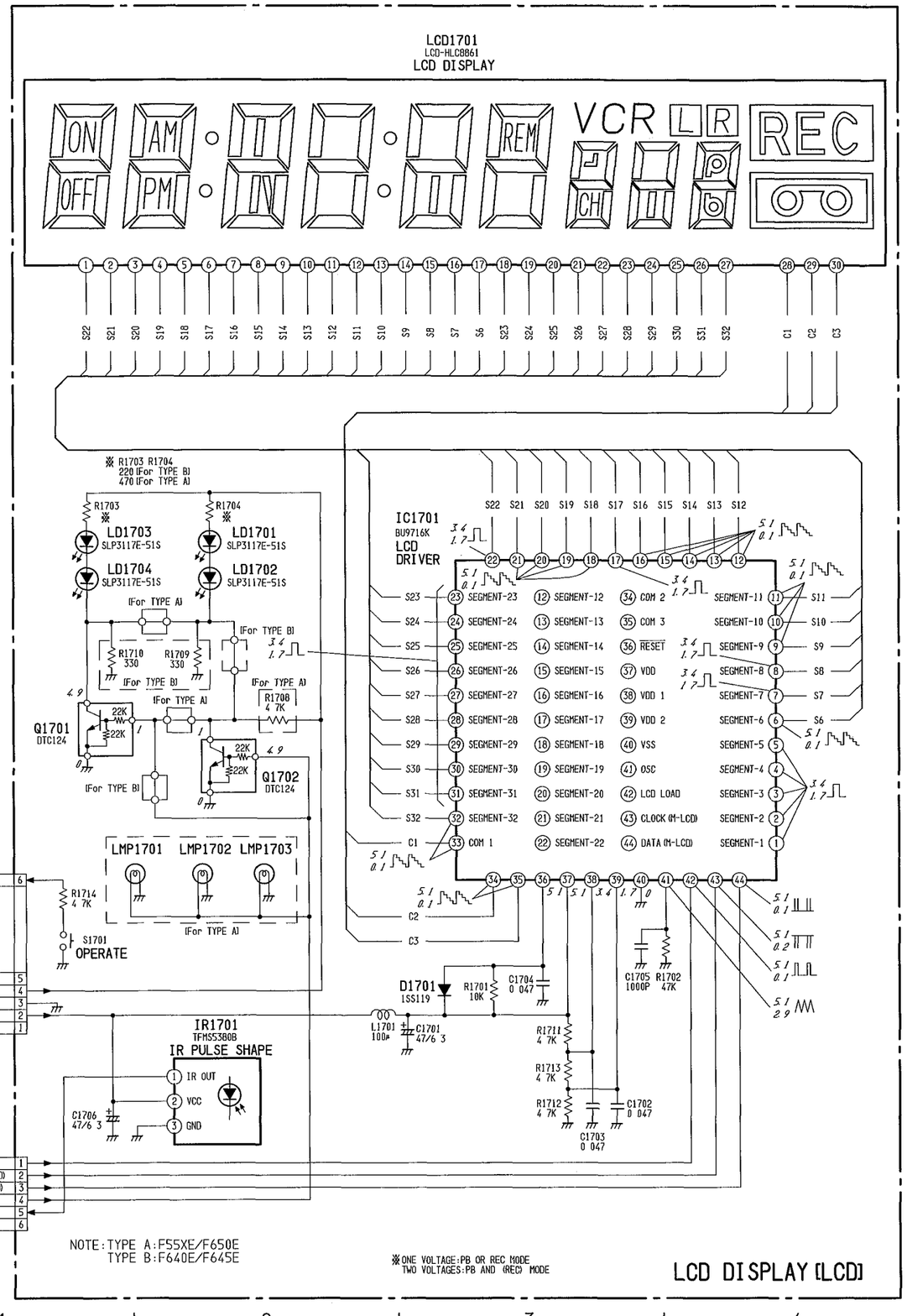
CONNECTION DIAGRAM



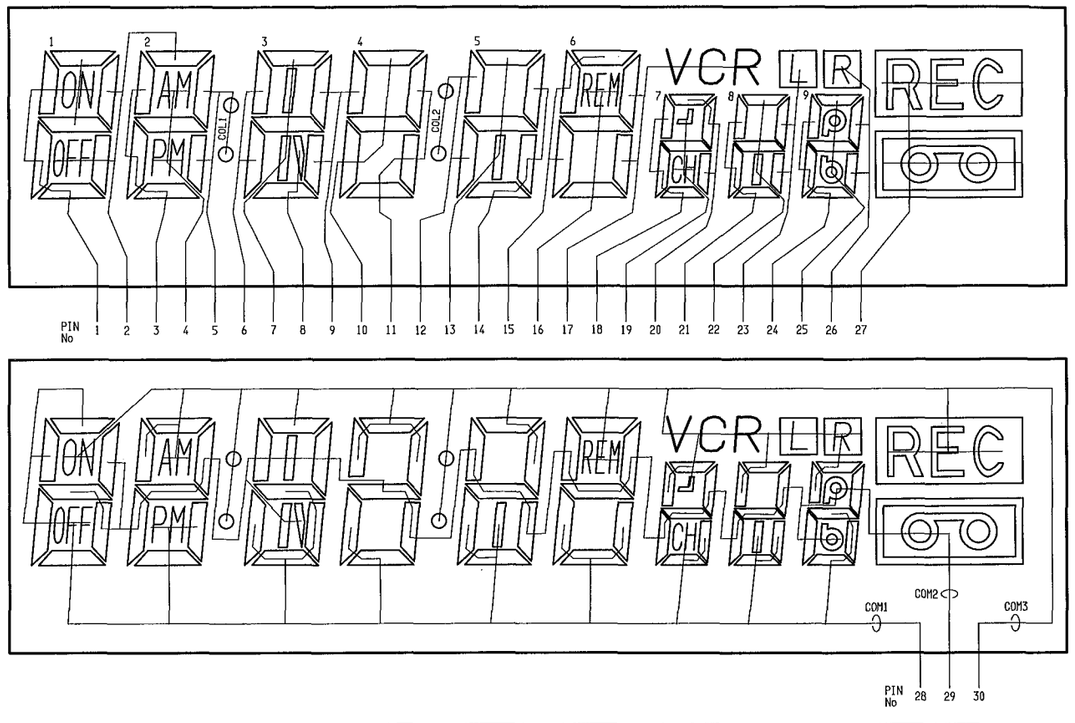
INTERNAL WIRING DIAGRAM



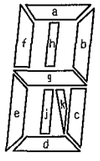
LCD DISPLAY [LCD] SCHEMATIC DIAGRAM (FOR F55XE/F64XE/F650E)



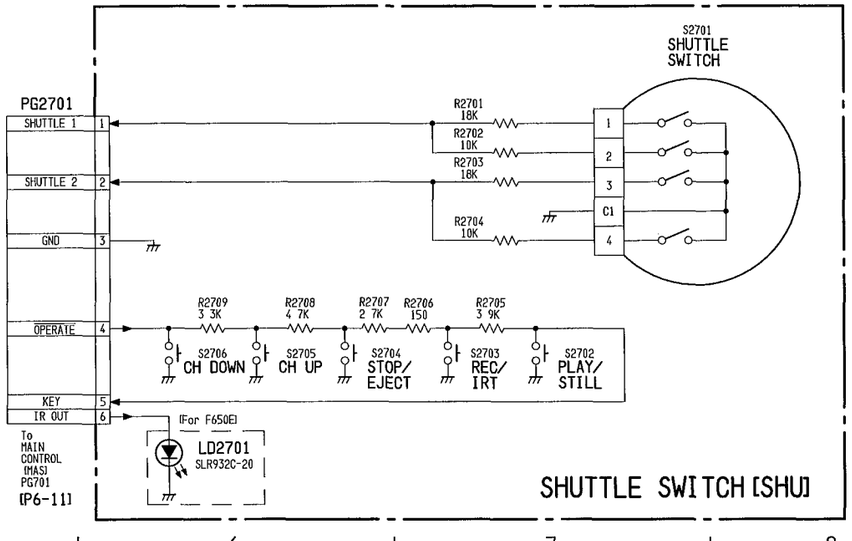
LCD GRID TABLE



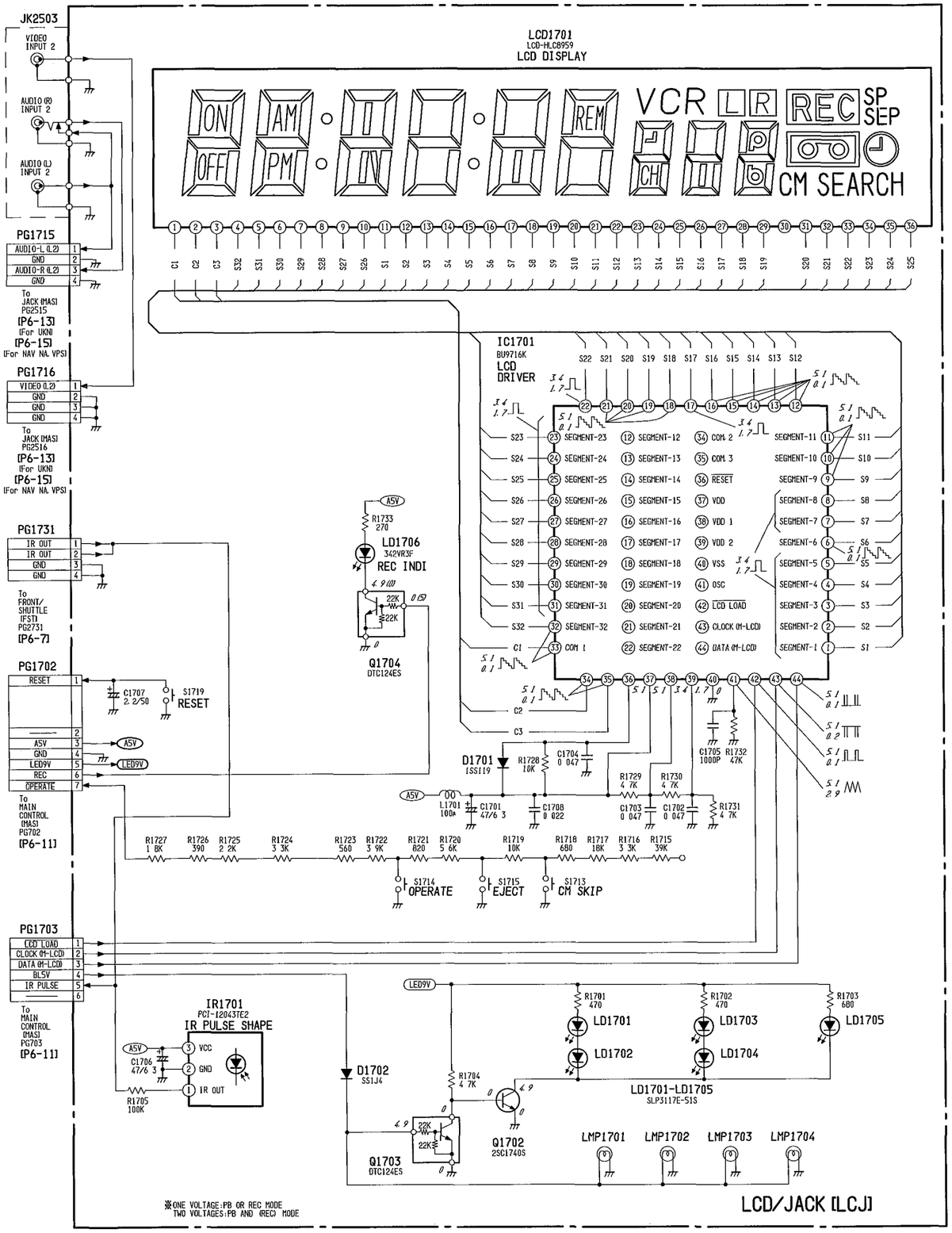
PIN No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
COM1	1a	1f	OFF	2d	PM	2c	3e	3g	3d	3c	4e	4d	5e	5j	5d	6e	6d	6c	7d	CH	7c	8d	8j	8c	9d	9g	9c	—	COM	—	—
COM2	1g	1bc	2e	2g	2b	3f	3hj	3k	3b	4g	4c	5f	5g	5c	6f	6g	6b	7e	7g	7b	8e	8g	8b	9e	P b	9b	⊙⊙	—	COM	—
COM3	ON	2a	2f	AM	COL1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



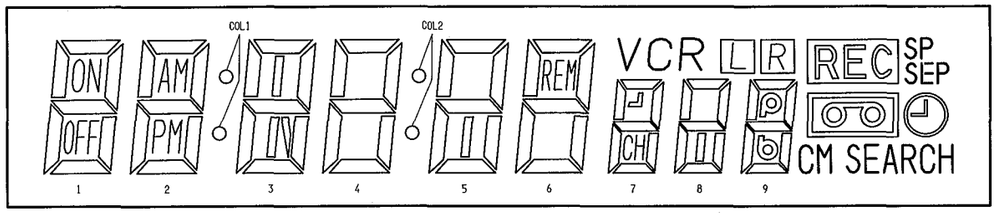
SHUTTLE SWITCH [SHU] SCHEMATIC DIAGRAM (FOR F55XE/F650E)



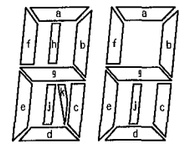
LCJ/JACK [LCJ] SCHEMATIC DIAGRAM (FOR F660E)



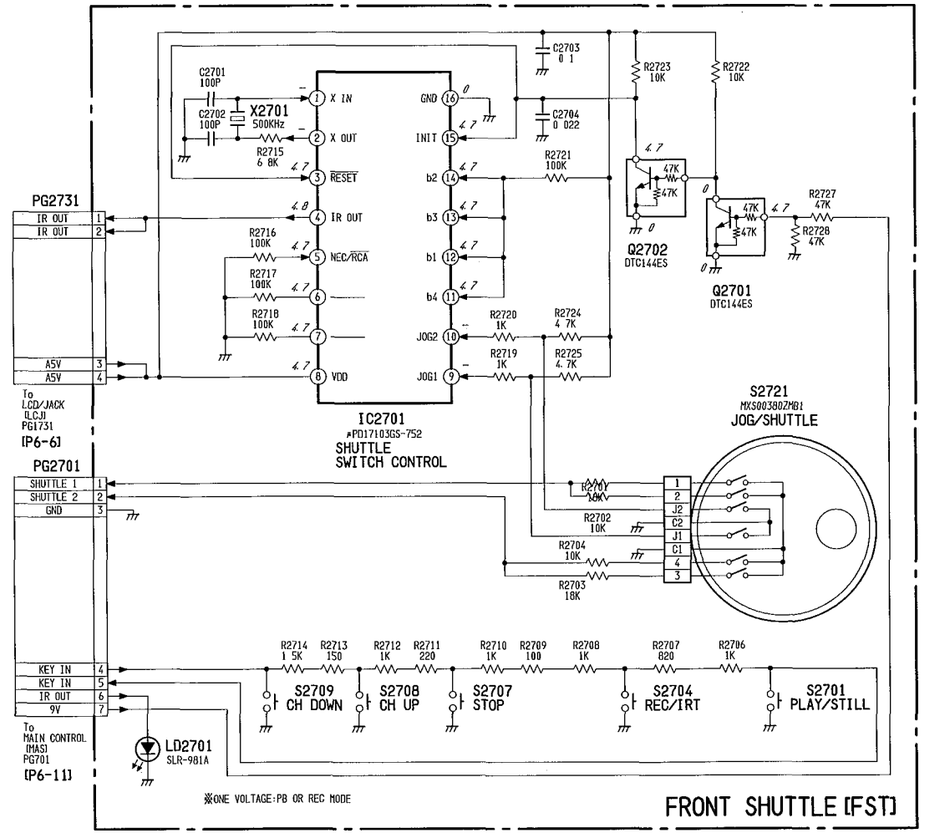
LCD GRID TABLE



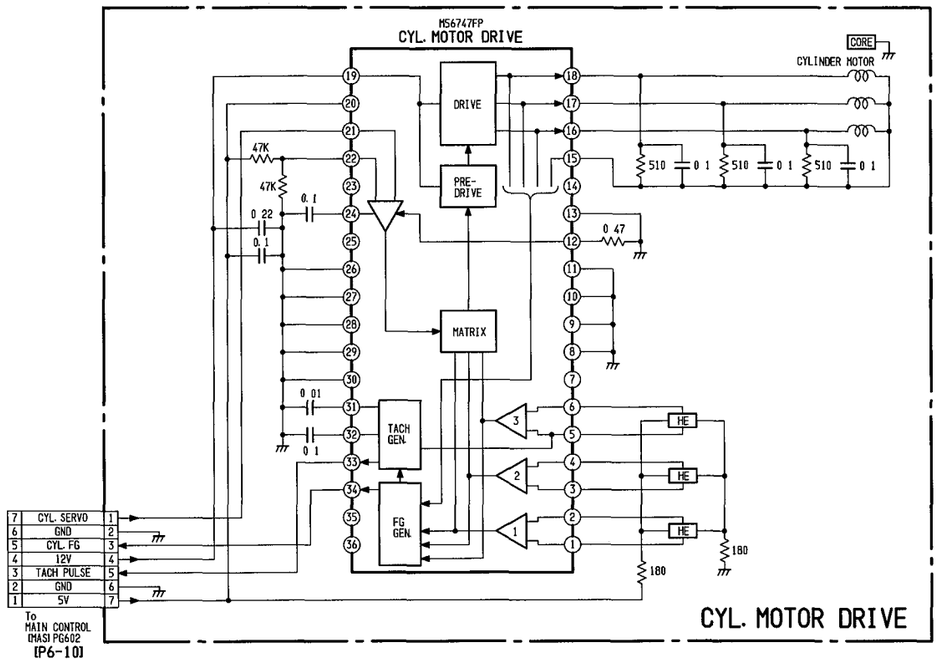
PIN No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
COM1	COM1	—	—	1adef	OFF	2d	PM	2c	3e	3g	3d	3c	4e	4d	5e	5i	5d	6e
COM2	—	COM2	—	1g	1bc	2e	2g	2b	3f	3hi	3k	3b	4g	4c	5f	5g	5c	6f
COM3	—	—	COM3	ON	2a	2f	AM	COL1	—	3a	—	4f	4a	4b	COL2	5a	5b	6a
PIN No	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
COM1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



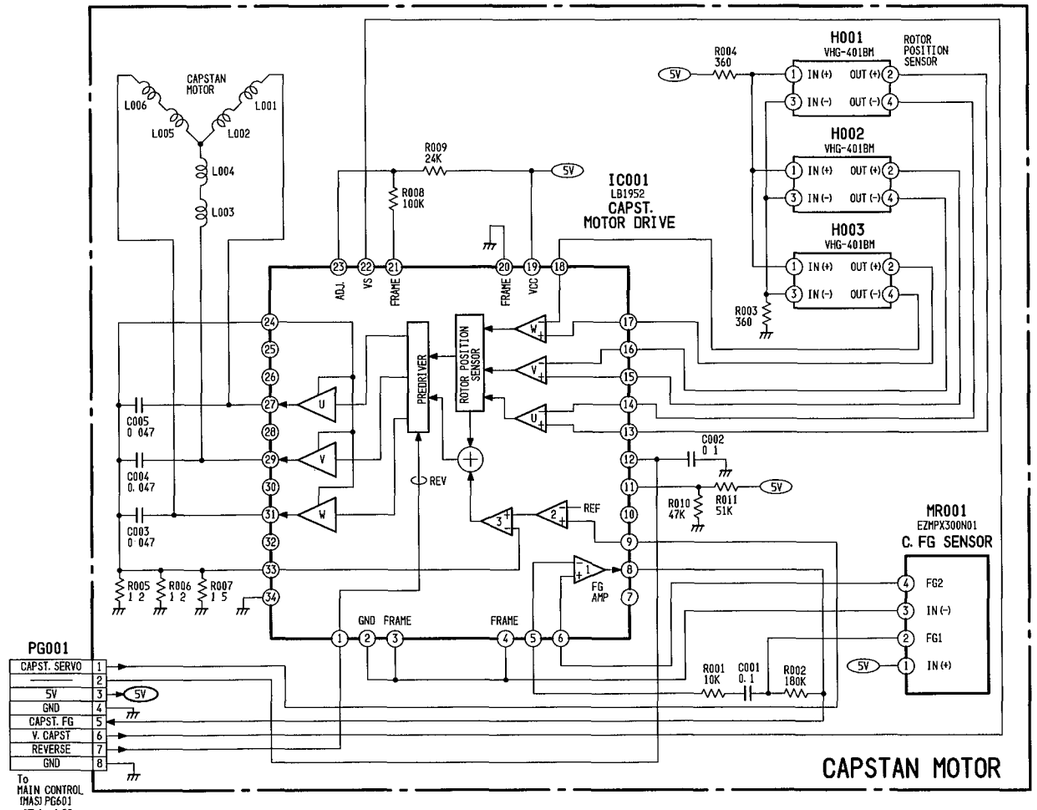
FRONT SHUTTLE [FST] SCHEMATIC DIAGRAM (FOR F660E)



CYL. MOTOR DRIVE SCHEMATIC DIAGRAM



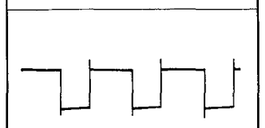
CAPSTAN MOTOR SCHEMATIC DIAGRAM



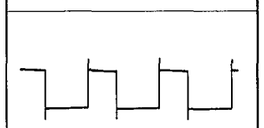
SERVO WAVEFORMS

1-A IC901-24 5.0Vp-p
1V/5.0msec. cm
REC/PLAY

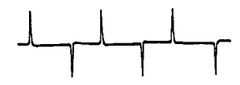
2-A IC901-31 5.4Vp-p
1V/5.0msec cm
REC



3-A IC901-32 5.4Vp-p
1V/5.0msec. cm
REC



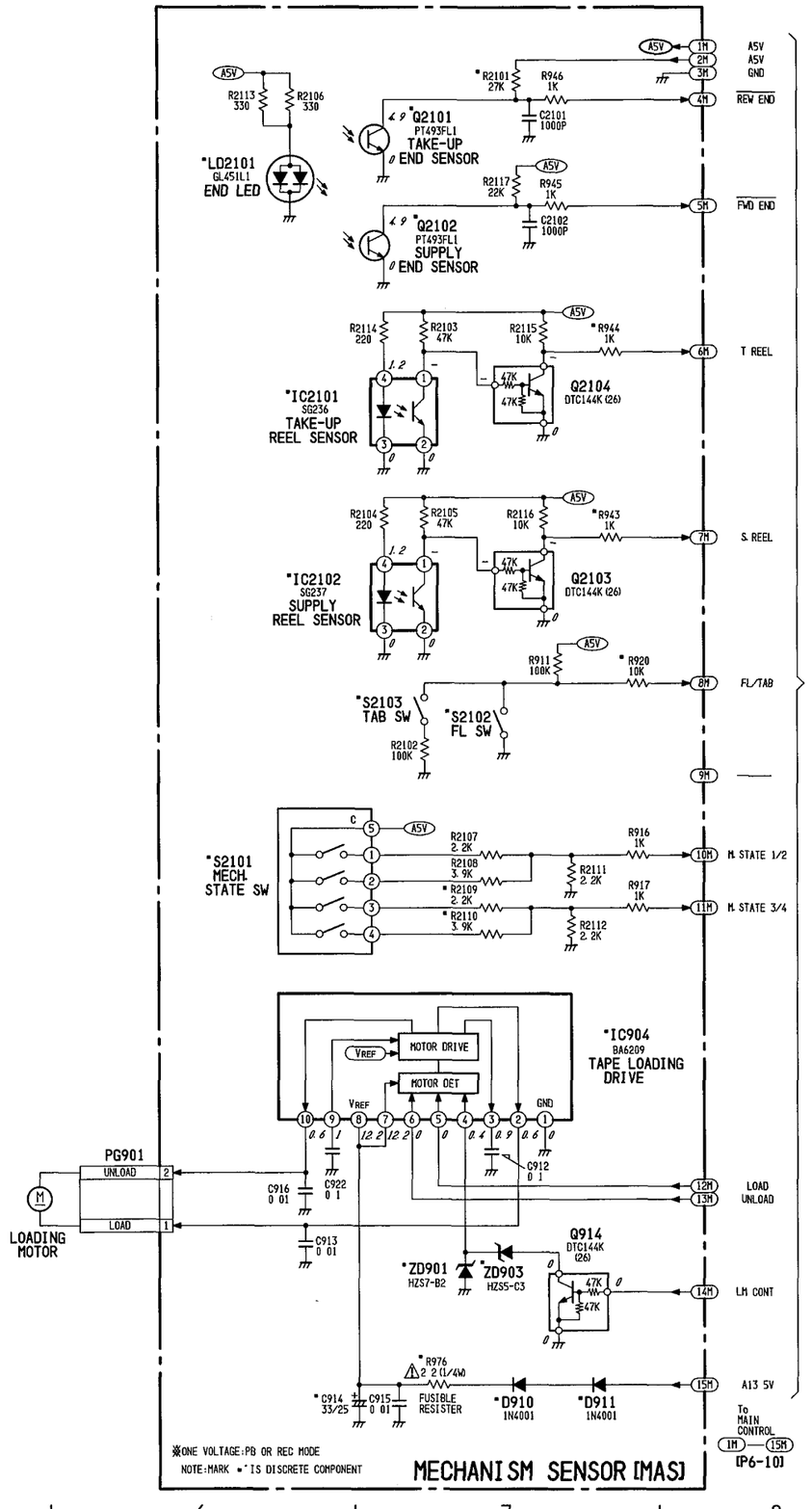
4-B IC901-37 2.7Vp-p
500mV/10.0msec cm
PLAY



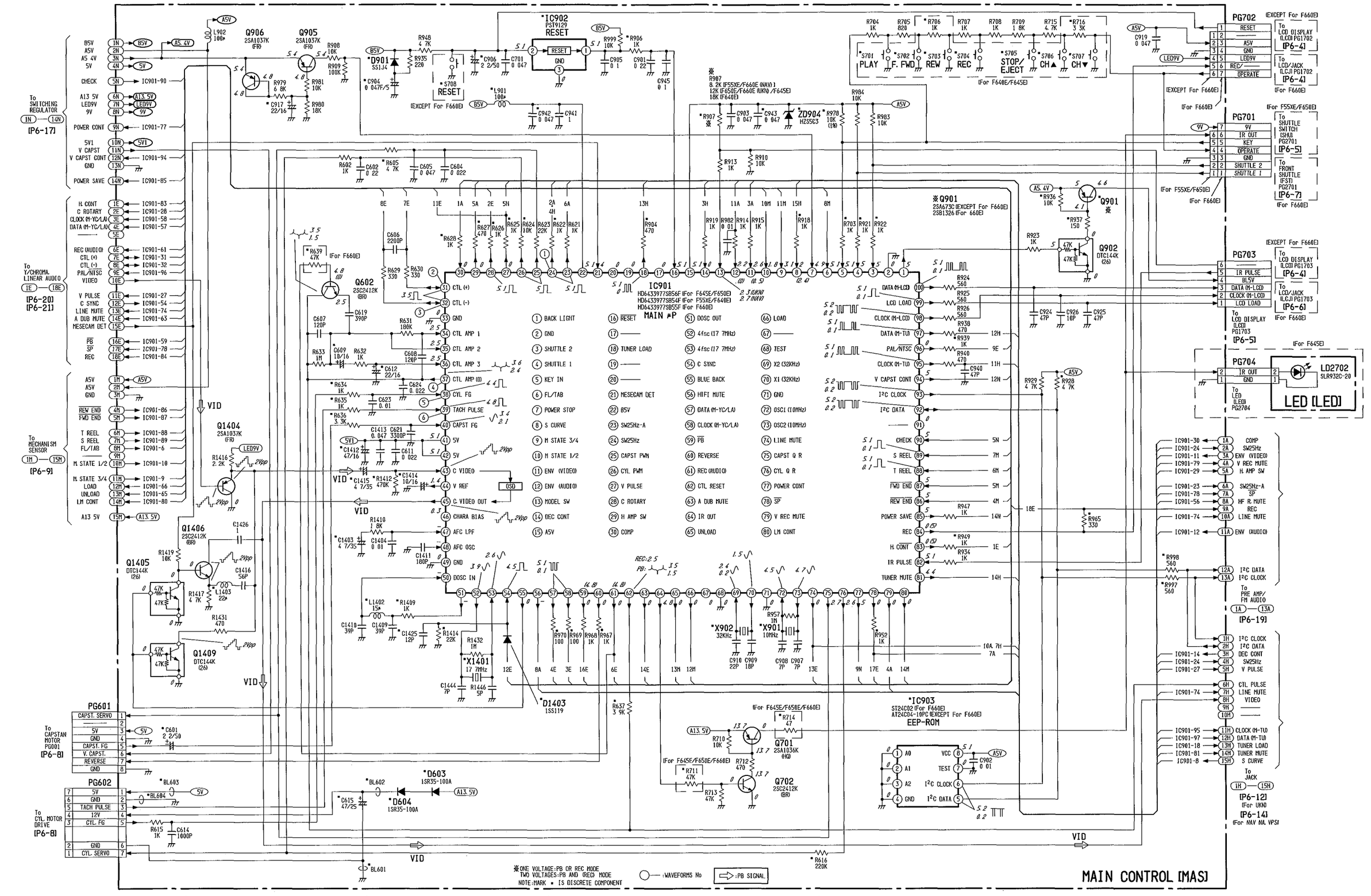
5-A IC901-38 4.6Vp-p
1V/500 μ sec. cm
REC/PLAY

6-A IC901-39 4.8Vp-p
1V/10.0msec cm
REC/PLAY

MECHANISM SENSOR [MAS] SCHEMATIC DIAGRAM

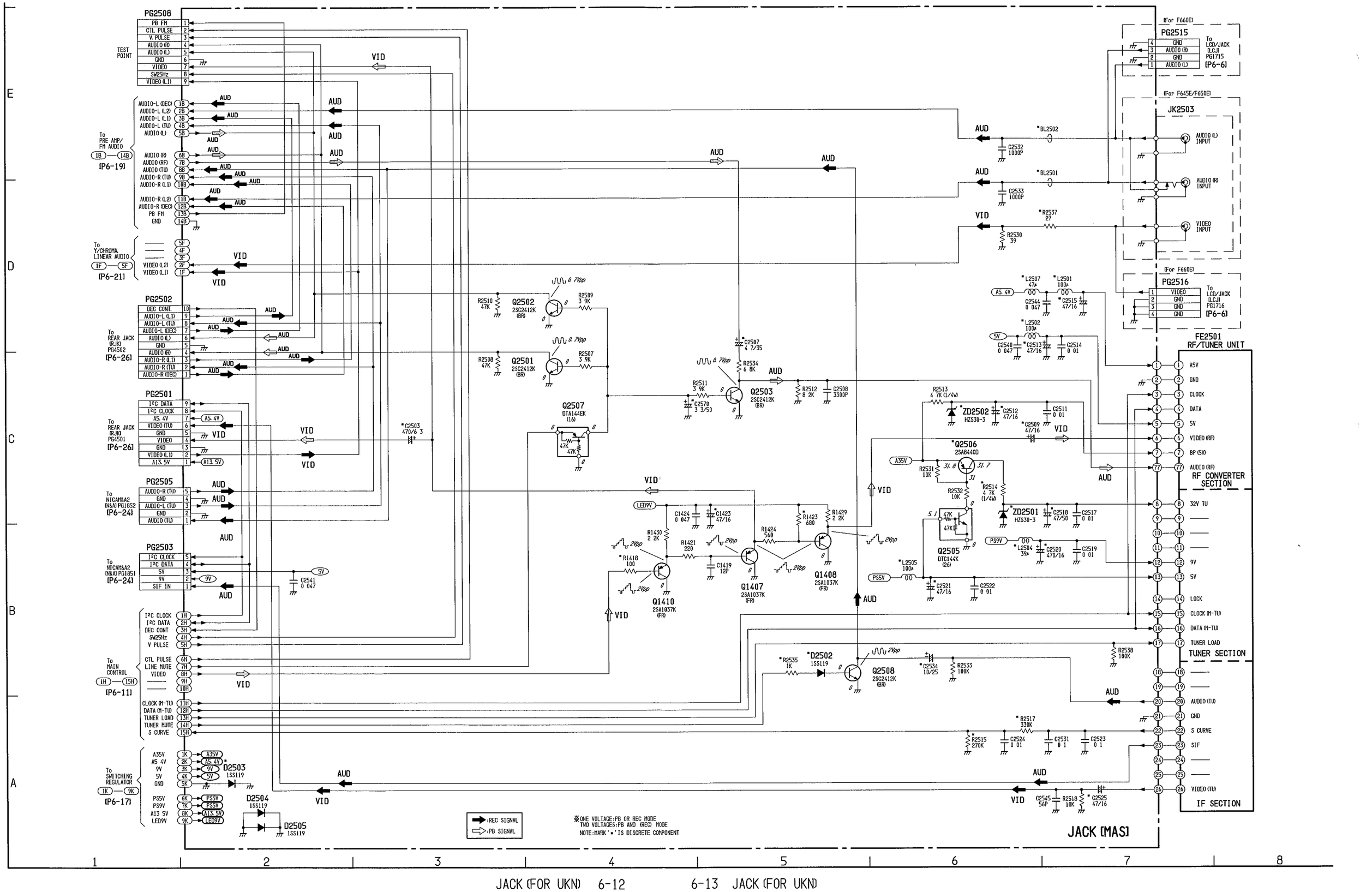


MAIN CONTROL [MAS] /LED [LED] SCHEMATIC DIAGRAMS

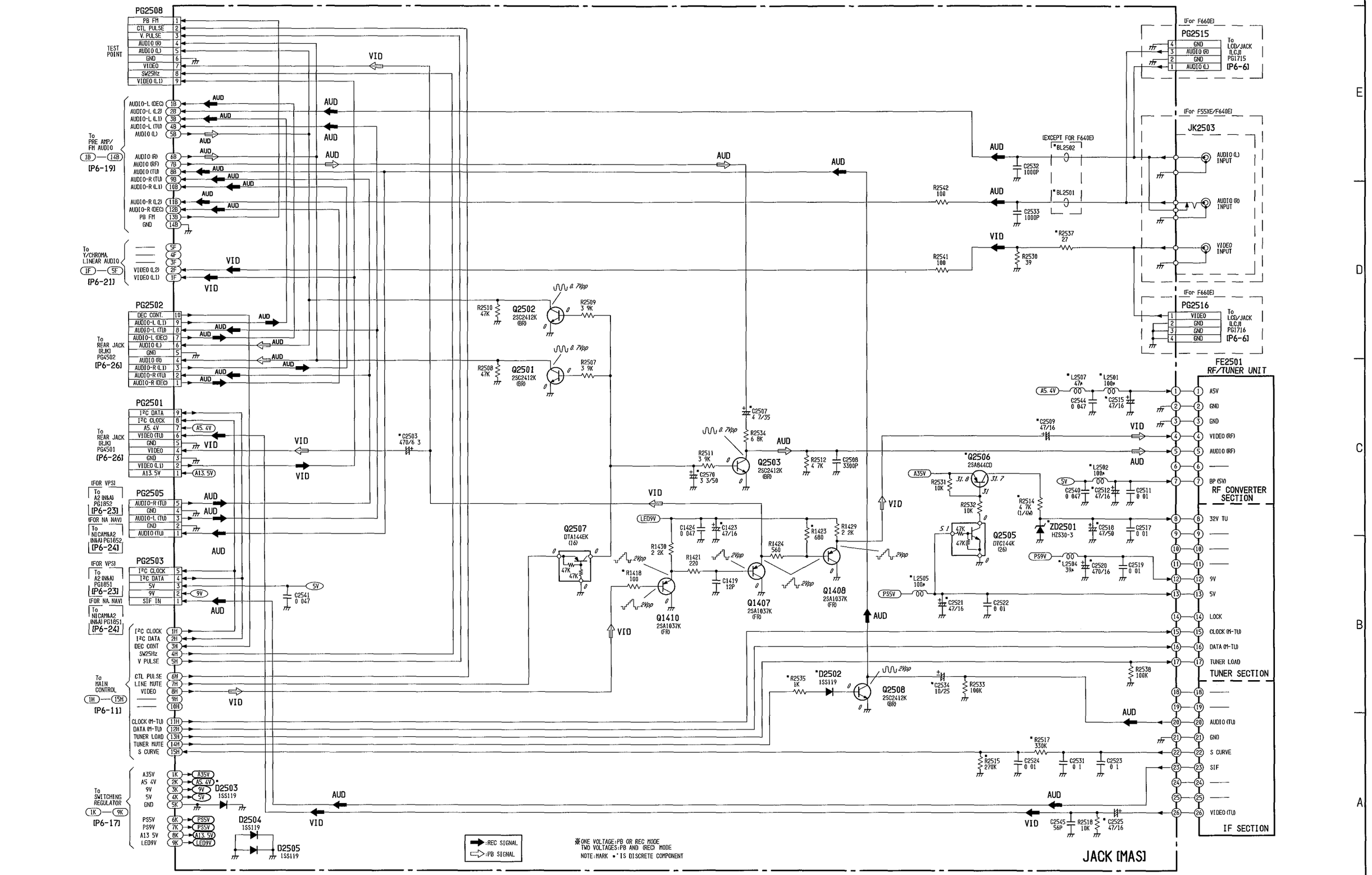


MAIN CONTROL 6-10 6-11 MAIN CONTROL. LED

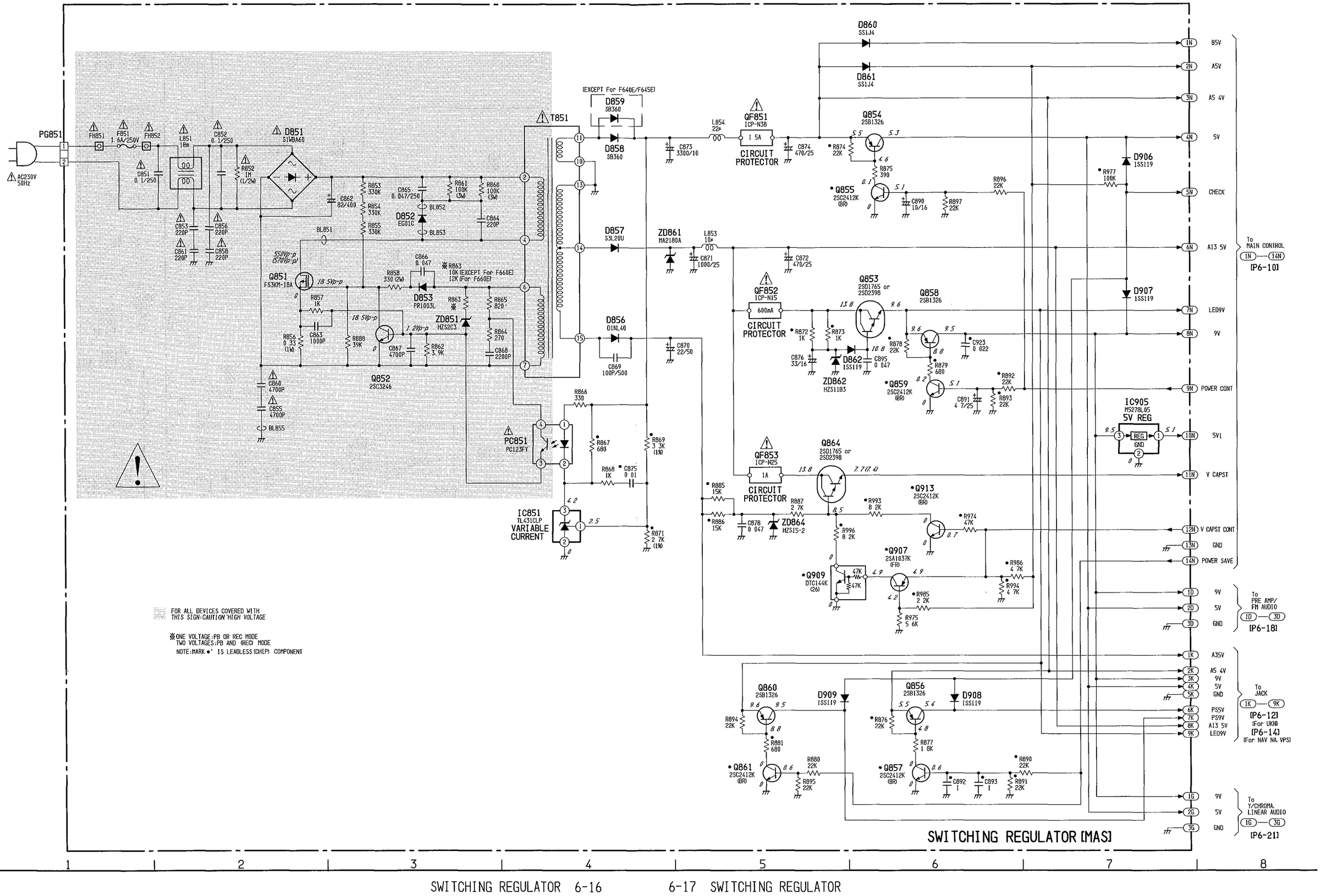
JACK [MAS] SCHEMATIC DIAGRAM (FOR UKN)



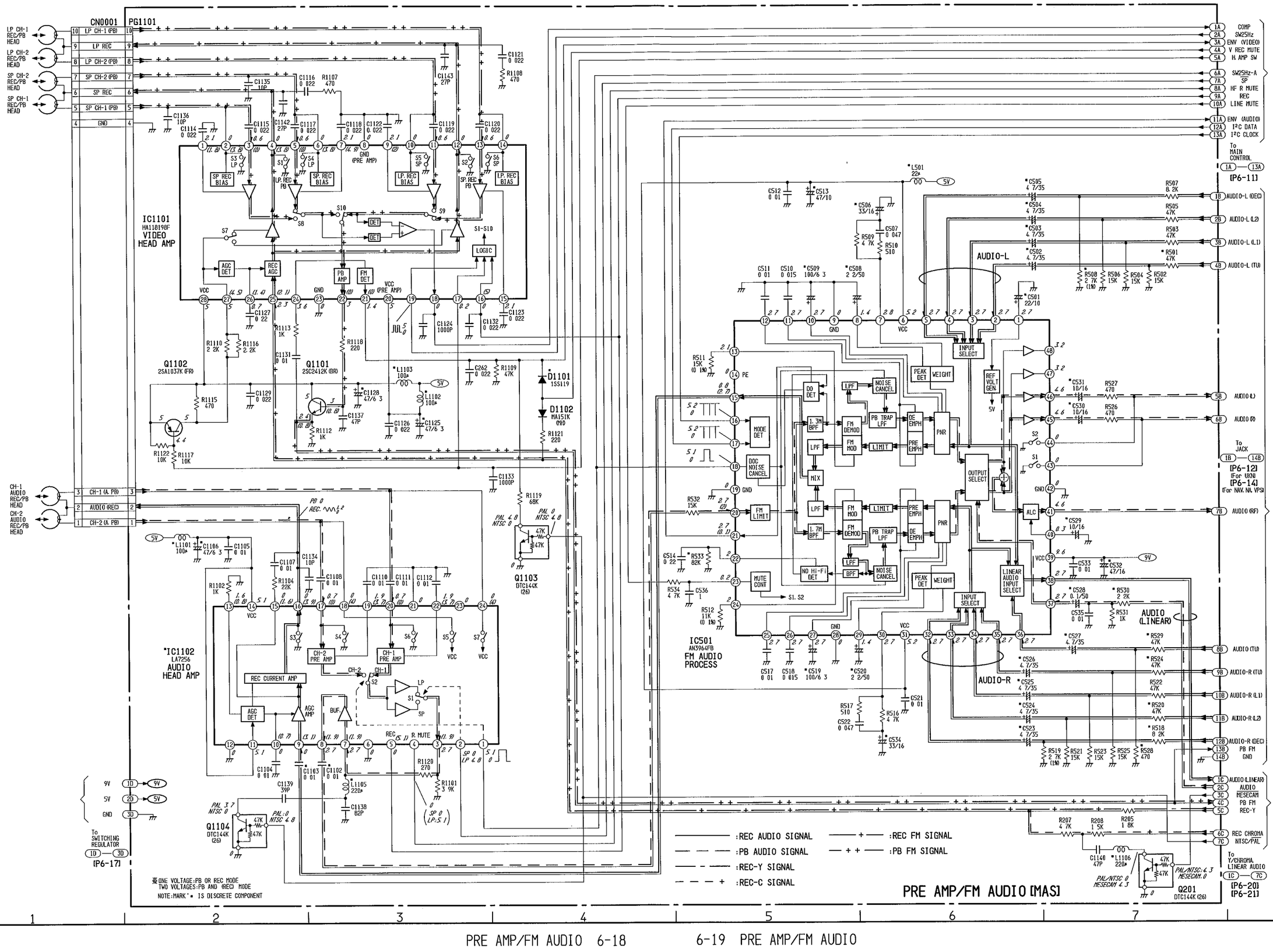
JACK [MAS] SCHEMATIC DIAGRAM (FOR NA, NAV, VPS)



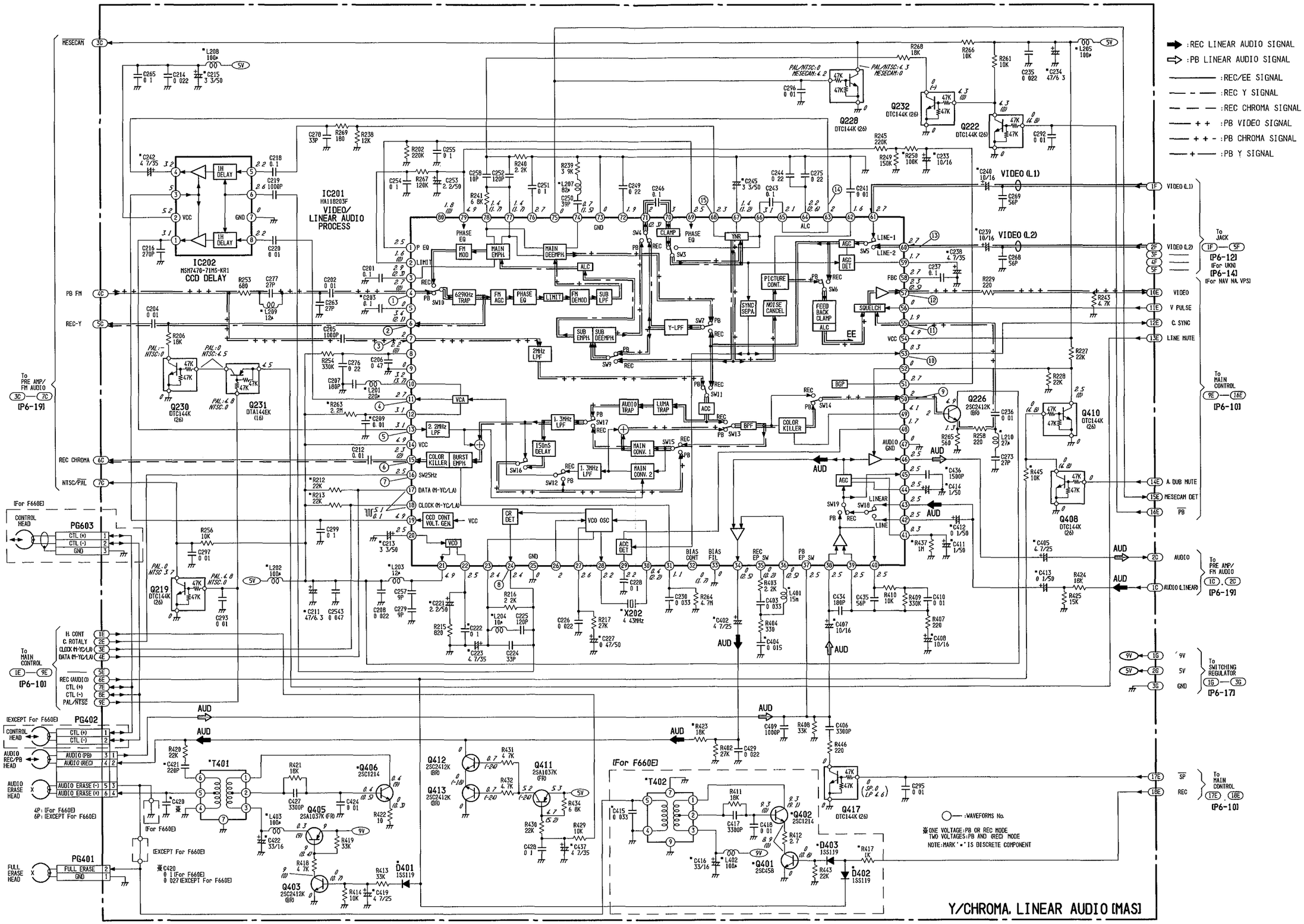
SWITCHING REGULATOR [MAS] SCHEMATIC DIAGRAM



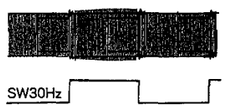
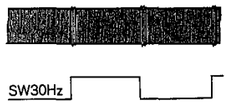
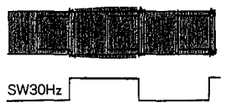
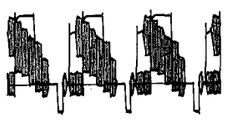
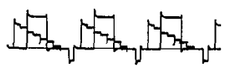
PRE AMP/FM AUDIO [MAS] SCHEMATIC DIAGRAM



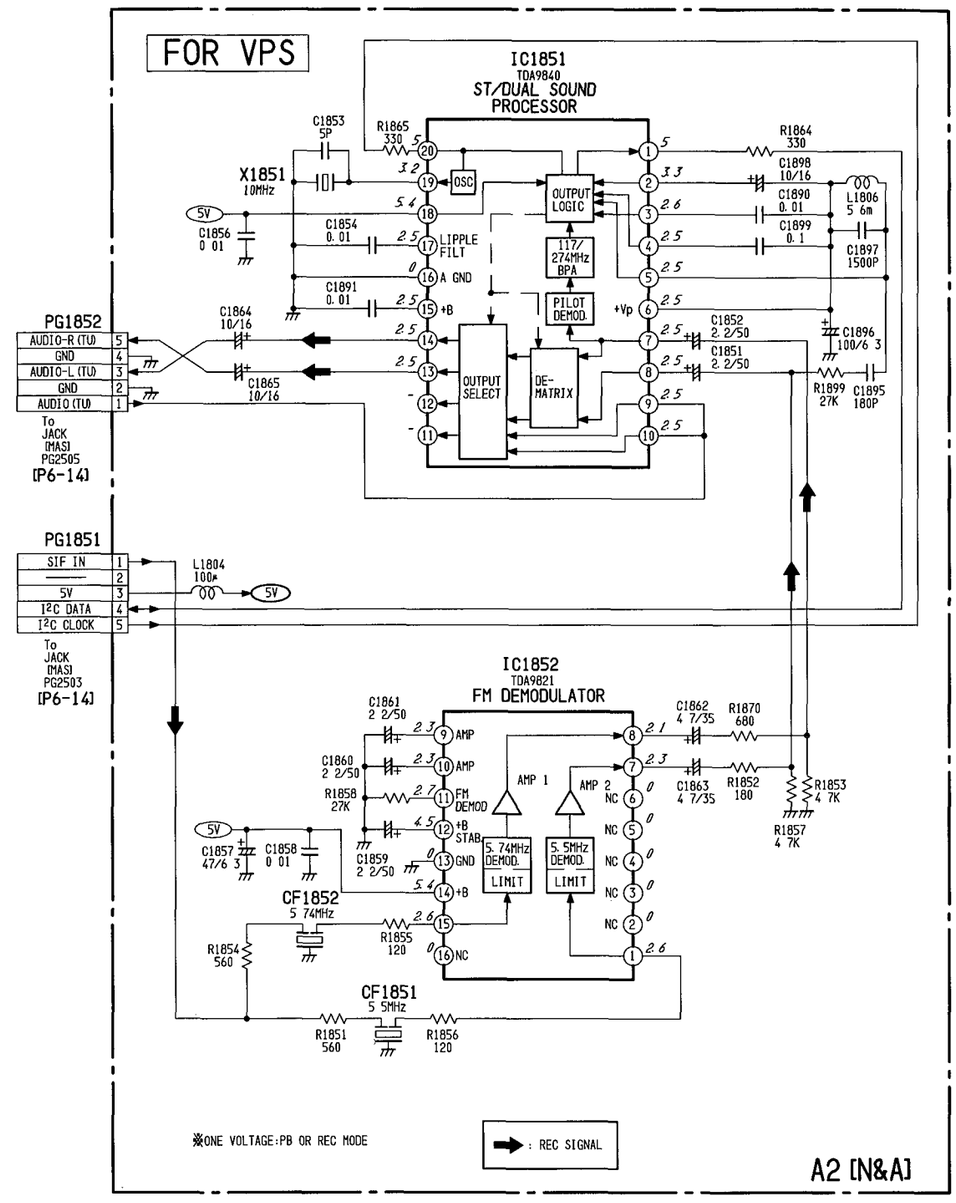
Y/CHROMA. LINEAR AUDIO [MAS] SCHEMATIC DIAGRAM



Y/CHROMA WAVEFORMS

1-B IC201-4 1 0p-p 0 5V/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 0Vp-p 0 5V/20 0 μ sec cm REC
			
2-A IC201-6 400mVp-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 670mVp-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 1.0Vp-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
			

A2 [N&A] SCHEMATIC DIAGRAM (FOR VPS)



FOR UKN. NA. NAV

[FOR NA. NAV]

IC1801
SAA7283GP
NICAM DECODER

IC1851
TDA9840
ST/DUAL SOUND
PROCESSOR

IC1852
TDA9821
FM DEMODULATOR

IC1802
NJM4558M
DUAL OPE. AMP

X1801
8.192MHz

X1851
10MHz

CF1852
5.74MHz

CF1851
5.5MHz

D1801
BB405B

D1802
1SS119

PG1852
AUDIO-R (TU) 5
GND 4
AUDIO-L (TU) 3
GND 2
AUDIO (TU) 1
To JACK (MAS) PG2505 [P6-14]

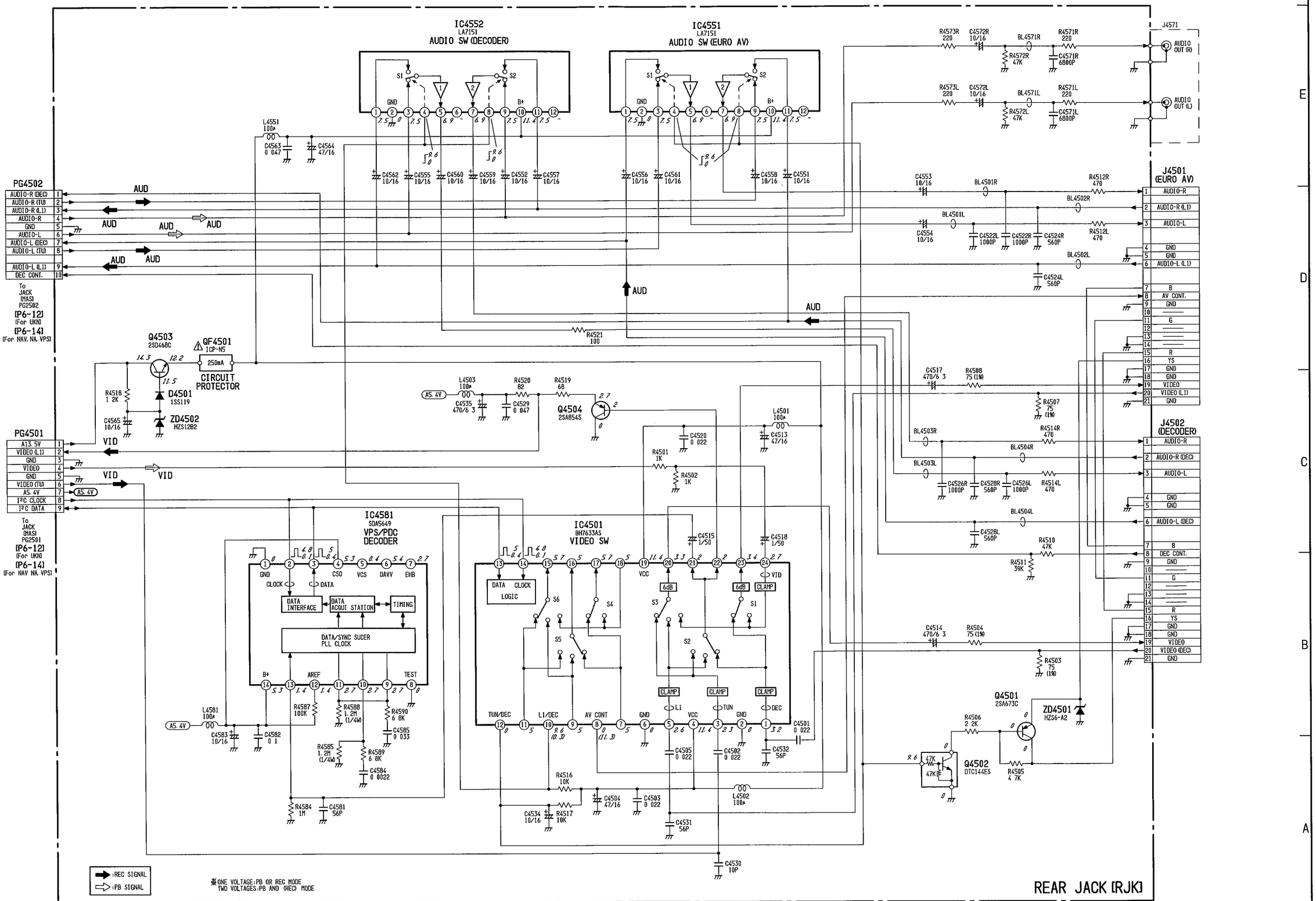
PG1851
SIF IN 1
9V 2
5V 3
I²C DATA 4
I²C CLOCK 5
To JACK (MAS) PG2503 [P6-14]

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

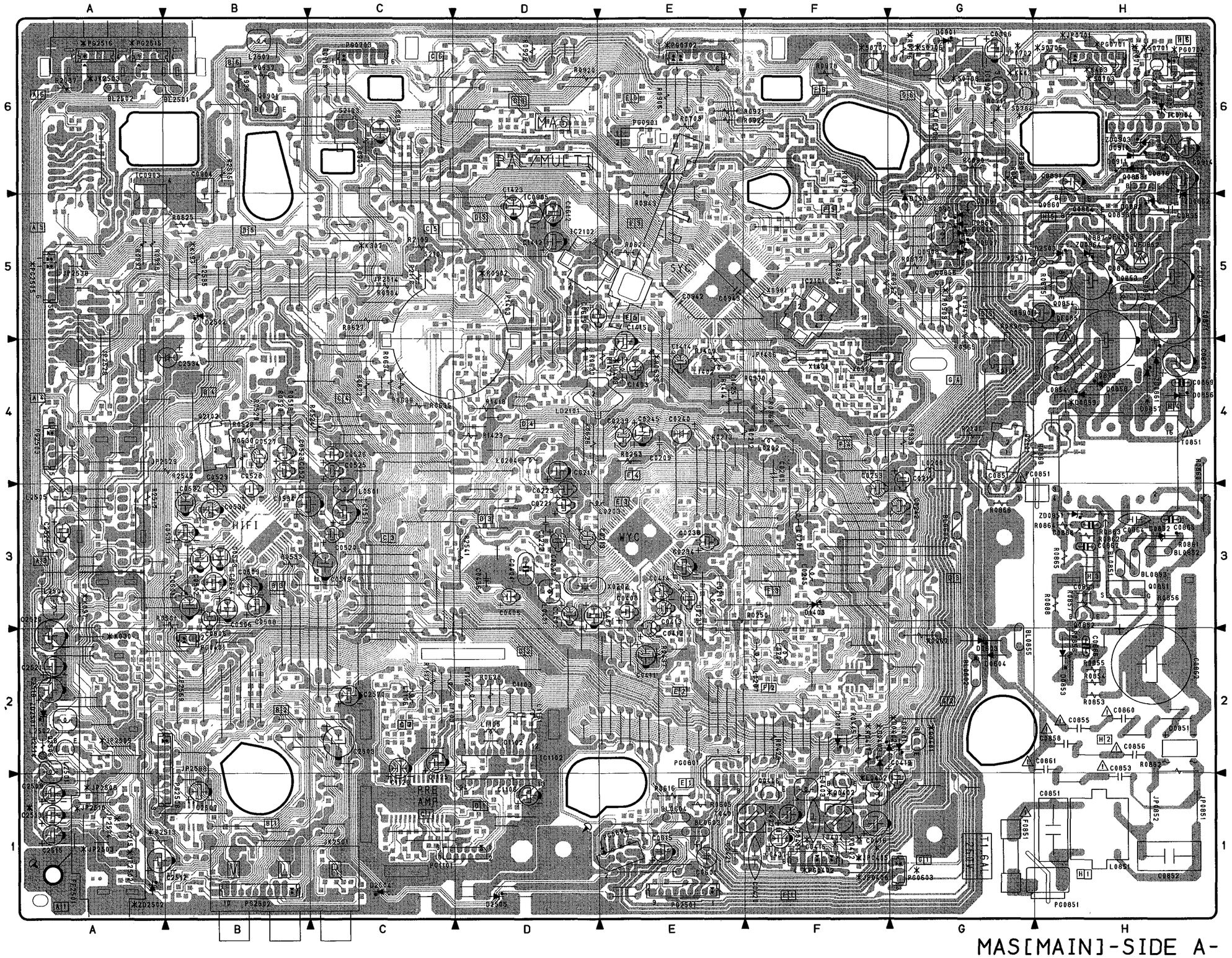
: REC SIGNAL

NICAM&A2 [N&A]

REAR JACK [RJK] SCHEMATIC DIAGRAM



MAS CIRCUIT BOARD [SIDE A]



MAS[MAIN]-SIDE A-
[PATTERN No.JA1266-7]

DIFFERENCE TABLE
MAS[MAIN] – SIDE A –

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

SYMBOL No.	F55XE	F640E	F645E	F650E	F660E (UKN)	F660E (NAV)
C0415	×	×	×	×	○	○
C0416	×	×	×	×	○	○
C2513	×	×	○	○	○	×
D0402	×	×	×	×	○	○
D0403	×	×	×	×	○	○
D0859	○	×	×	○	○	○
JK2503	○	○	○	○	×	×
JP0401	○	○	○	○	×	×
JP0402	×	×	×	×	○	○
JP0405	○	○	○	○	×	×
JP0406	○	○	○	○	×	×
JP0701	×	○	○	×	×	×
JP0702	○	×	×	○	○	○
JP0903	×	×	○	○	○	○
JP0908	×	×	×	×	○	○
JP2502	○	○	×	×	×	○
JP2503	○	○	×	×	×	○
JP2504	×	×	○	○	○	×
JP2508	×	×	○	○	○	×
JP2509	○	○	×	×	×	○
JP2510	○	○	×	×	×	○
K030	×	×	○	○	○	×
K037	×	×	○	○	○	×
K197	×	×	○	○	○	×
K215	×	×	○	○	○	×
K307	×	×	○	○	○	×
K443	○	○	○	○	×	×
K483	×	×	×	×	○	○
L0402	×	×	×	×	○	○
PG0402	6P	6P	6P	6P	4P	4P
PG0603	×	×	×	×	○	○
PG0701	6P	×	×	6P	7P	7P
PG0702	6P	6P	6P	6P	7P	7P
PG0704	×	○	○	×	×	×
PG2515	×	×	×	×	○	○
PG2516	×	×	×	×	○	○
Q0401	×	×	×	×	○	○
Q0402	×	×	×	×	○	○
R0417	×	×	×	×	○	○
R0639	×	×	×	×	○	○
R0706	×	○	○	×	×	×
R0711	×	×	○	○	○	○
R0714	×	×	○	○	○	○
R0716	×	○	○	×	×	×
R0902	×	×	JUMPER	JUMPER	JUMPER	×
R2513	×	×	○	○	○	×
S0701	×	○	○	×	×	×
S0702	×	○	○	×	×	×
S0703	×	○	○	×	×	×
S0704	×	○	○	×	×	×
S0705	×	○	○	×	×	×
S0706	×	○	○	×	×	×
S0707	×	○	○	×	×	×
S0708	○	○	○	○	×	×
T0402	×	×	×	×	○	○
ZD2502	×	×	○	○	○	×

IDENTIFICATION OF PARTS LOCATION

MAS [MAIN] 1/2

Symbol No.	Parts Location
BL	
BL0601	A-3G
BL0602	A-2G
BL0603	A-1E
BL0604	A-1E
BL0851	A-3H
BL0852	A-3H
BL0853	A-3H
BL0855	A-2G
BL2501	A-6B
BL2502	A-6A
C	
C0201	B-4F
C0202	B-2F
C0203	A-4F
C0204	B-2D
C0205	B-2F
C0206	B-2F
C0207	B-3F
C0208	B-4D
C0209	A-4E
C0211	A-4D
C0212	B-3F
C0213	A-3D
C0214	B-2F
C0215	A-4G
C0216	B-2F
C0218	B-2F
C0219	B-4D
C0220	B-2F
C0221	A-3D
C0222	A-3D
C0223	A-3D
C0224	B-3D
C0225	B-3D
C0226	B-3D
C0227	A-3D
C0228	B-3D
C0230	B-3D
C0233	A-3E
C0234	A-3E
C0235	B-3E
C0236	B-3E
C0237	B-3E
C0238	A-3E
C0239	A-4E
C0240	A-4E
C0241	B-3E
C0242	A-3G
C0243	B-3E
C0244	B-3E
C0245	A-4E
C0246	B-3E
C0249	B-3E
C0250	B-2F
C0251	B-3E
C0252	B-3F
C0253	A-3F
C0254	B-2E
C0255	B-3F
C0257	B-3D
C0258	B-3F
C0262	B-2C
C0263	B-2F
C0265	B-2F
C0268	B-4E
C0269	B-4E
C0273	B-2E
C0275	B-3E
C0276	B-2F
C0277	B-2F
C0278	B-2F
C0279	B-3D
C0292	B-4F
C0293	B-3D
C0295	B-2F
C0296	B-2F
C0297	B-2F
C0299	B-4E
C0402	A-3D
C0403	B-3D
C0404	A-3D
C0405	A-3D
C0406	B-2E
C0407	A-3D
C0408	A-3E
C0409	B-3E
C0410	B-3E
C0411	A-2E
C0412	A-3E
C0413	A-3E
C0414	A-3E
C0415	A-1F
C0416	A-1F
C0417	B-1F
C0418	B-1F
C0419	A-1G
C0420	A-1F
C0421	A-1E
C0422	A-1F
C0424	B-1F
C0427	B-1F
C0428	B-1F
C0429	B-3D
C0434	B-3E
C0435	B-3E
C0436	A-3D
C0437	A-1F
C0501	A-3B
C0502	A-3B
C0503	A-3B
C0504	A-3B
C0505	A-3B
C0506	A-3B
C0507	B-3B
C0508	A-3B
C0509	A-3B
C0510	B-3B
C0511	B-3B
C0512	B-3C
C0513	A-3C
C0514	B-3C
C0517	B-3B
C0518	B-3C
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C0524	A-4B
C0525	A-4C
C0526	A-4C
C0527	A-4B
C0528	A-3B
C0529	A-3B
C0530	A-3B
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C0532	A-3B
C0533	B-4B
C0534	A-3B
C0535	B-4B
C0536	B-3B
C0601	A-1E
C0602	B-1E
C0604	B-1E
C0605	B-1E
C0606	B-5E
C0607	B-5E
C0608	B-5D
C0609	A-5E
C0611	B-5D
C0612	A-5D
C0614	B-1E
C0615	A-1E
C0619	B-5E
C0621	B-4D
C0623	B-4D
C0624	B-5D
C0701	B-6G
C0851	A-1H
C0852	A-1H
C0853	A-1H
C0855	A-2H
C0856	A-2H
C0858	A-2H
C0860	A-2H
C0861	A-2H
C0862	A-2H
C0863	A-3H
C0864	A-3H
C0865	A-3H
C0866	A-2H
C0867	A-3H
C0868	A-3H
C0869	A-4H
C0870	A-4H
C0871	A-5H
C0872	A-5H
C0873	A-4H
C0874	A-5H
C0875	B-4H
C0876	A-6H
C0878	B-5H
C0890	A-5H
C0891	A-6H
C0892	B-6F
C0893	B-6F
C0895	A-5H
C0901	B-5E
C0902	B-5A
C0903	B-6D
C0904	A-5B
C0905	B-6G
C0906	A-6G
C0907	B-5F
C0908	B-5F
C0909	B-4F
C0910	B-4F
C0912	B-6H
C0913	B-6H
C0914	A-6H
C0915	B-6H
C0916	B-6H
C0917	A-6C
C0919	B-6E
C0922	B-6H
C0923	B-5D
C0924	B-5E
C0925	B-6E
C0926	B-6E
C0940	B-6E
C0941	B-5F
C0942	A-5E
C0943	A-5E
C0945	B-5E
C1102	A-2D
C1103	A-2D
C1104	B-2D
C1105	B-1D
C1106	A-1D
C1107	B-1D
C1108	B-1D
C1110	B-1D
C1111	B-1D
C1112	B-1D
C1114	B-1C
C1115	B-1C
C1116	B-1C
C1117	B-1C
C1118	B-1C
C1119	B-1C
C1120	B-1C
C1121	B-1C
C1122	B-1C
C1123	B-1C
C1124	B-2D
C1125	A-2C
C1126	B-2C
C1127	B-2C
C1128	A-2C
C1129	B-1C
C1131	B-2C
C1132	B-2D
C1133	B-2D
C1134	B-1D
C1135	B-1D
C1136	B-1D
C1137	B-2C
C1138	B-2D
C1139	B-2D
C1140	B-2C
C1142	B-1C
C1143	B-1D
C1403	A-4E
C1404	B-4E
C1409	B-4E
C1410	B-4E
C1411	B-4E
C1412	A-5D
C1413	B-4D
C1414	A-4E
C1415	A-4E
C1416	B-4E
C1419	B-4D
C1423	A-5D
C1424	B-4C
C1425	A-4E
C1426	B-4D
C1444	B-4F
C2101	B-4G
C2102	B-4B
C2503	A-2C
C2507	A-1B
C2508	B-1A
C2509	A-1A
C2511	B-1A
C2512	A-1A
C2513	A-1A
C2514	B-1A
C2515	A-1A
C2517	B-2A
C2518	A-2A
C2519	B-2A
C2520	A-2A
C2521	A-2A
C2522	B-2A
C2523	B-3A
C2524	B-3A
C2525	A-3A
C2531	B-3A
C2532	B-6A
C2533	B-6A
C2534	A-4B
C2540	B-3C
C2541	B-4A
C2543	B-4F
C2544	B-3A
C2545	B-3A
C2570	A-2C
D	
D0401	A-2G
D0402	A-2G
D0403	A-2F
D0603	A-2G
D0604	A-2G
D0851	A-2H
D0852	A-3H
D0853	A-2H
D0856	A-4H
D0857	A-4H
D0858	A-4H
D0859	A-4H
D0860	A-5G
D0861	A-5G
D0862	A-5H
D0901	A-6G
D0906	A-5G
D0907	A-5G
D0908	A-5G
D0909	A-5G
D0910	A-6H
D0911	A-6H
D1101	A-2F
D1102	B-2C
D1403	A-3F
D2502	A-5B
D2503	A-5H
D2504	A-1C
D2505	A-1D
F	
F0851	A-1G
FE	
FE2501	A-2A
FH	
FH0851	A-1G
FH0852	A-1G
IC	
IC0201	B-3E
IC0202	B-2F
IC0501	B-3B
IC0851	A-3G
IC0901	B-5E
IC0902	A-6G
IC0903	A-5A
IC0904	A-6H
IC0905	A-5D
IC1101	B-1C
IC1102	A-2D
IC2101	A-5F
IC2102	A-5D
JK	
JK2503	A-6A
JP	
JP0401	A-1F
JP0402	A-1F
JP0405	A-1F
JP0406	A-1F
JP0701	A-6H
JP0702	A-6G
JP0903	A-5G
JP0908	A-6G
JP2502	A-1A
JP2503	A-1A
JP2504	A-1A
JP2505	B-1A
JP2506	B-1A
JP2507	B-1A
JP2508	A-1A
JP2509	A-2A
JP2510	A-1A
K	
K0030	A-2A
K0037	A-3A
K0197	A-5B
K0215	A-1A
K0307	A-5C
K0443	A-6G
K0483	A-6H
L	
L0201	A-3F
L0202	A-4F
L0203	A-3D
L0204	A-4D
L0205	A-3F
L0207	A-2F
L0208	A-4G
L0209	A-2F
L0210	A-3E
L0401	A-3D
L0402	A-1F
L0403	A-1F
L0501	A-3C
L0851	A-1H
L0853	A-5H
L0854	A-4H
L0901	A-5G
L0902	A-6G
L1101	A-2D
L1102	A-2D
L1103	A-2C
L1105	A-2D
L1106	A-2C
L1402	A-4E
L1403	A-4E
L2501	A-2A
L2502	A-2A
L2504	A-3A
L2505	A-3A
L2507	A-6B
LD	
LD2101	A-4E
PC	
PC0851	A-3H
PG	
PG0401	A-2B
PG0402	A-1F
PG0601	A-2E
PG0602	A-1E
PG0603	A-1G
PG0701	A-6H
PG0702	A-6E
PG0703	A-6C
PG0704	A-6H
PG0851	A-1H
PG0901	A-6E
PG1101	A-1D
PG2501	A-1E
PG2502	A-1B
PG2503	A-4A
PG2505	A-5A
PG2508	A-2A
PG2515	A-6A
PG2516	A-6A
Q	
Q0201	B-2C
Q0219	B-2F
Q0222	B-3F
Q0226	B-3E
Q0228	B-2F
Q0230	B-2F
Q0231	B-2F
Q0232	B-3F
Q0401	A-2G
Q0402	A-1F
Q0403	B-2G
Q0405	B-2F
R	
R0202	B-3F
R0205	B-2C
R0206	B-2F
R0207	B-2C
R0208	B-2C
R0212	A-4F
R0213	A-4E
R0215	B-3D
R0216	B-4D
R0217	B-3D
Q0851	A-3H
Q0852	A-3H
Q0853	A-5H
Q0854	A-5H
Q0855	B-5G
Q0856	A-5G
Q0857	B-6F
Q0858	A-6H
Q0859	B-6H
Q0860	A-5H
Q0861	B-5G
Q0864	A-5H
Q0901	A-6B
Q0902	B-6B
Q0905	B-6D
Q0906	B-6D
Q0907	B-5F
Q0909	B-5F
Q0913	B-6F
Q0914	B-6H
Q1101	B-2C
Q1102	B-2C
Q1103	B-2F
Q1104	B-2D
Q1404	B-4D
Q1405	B-4D
Q1406	B-4D
Q1407	B-4D
Q1408	B-3D
Q1409	B-4D
Q1410	B-4D
Q2101	A-4G
Q2102	A-4B
Q2103	B-6D
Q2104	B-5F
Q2501	B-1C
Q2502	B-1B
Q2503	B-1A
Q2505	B-2A
Q2506	A-2A
Q2507	B-2C
Q2508	B-5A
QF	
QF0851	A-5H
QF0852	A-5H
QF0853	A-5H

IDENTIFICATION OF PARTS LOCATION

MAS [MAIN] 2/2

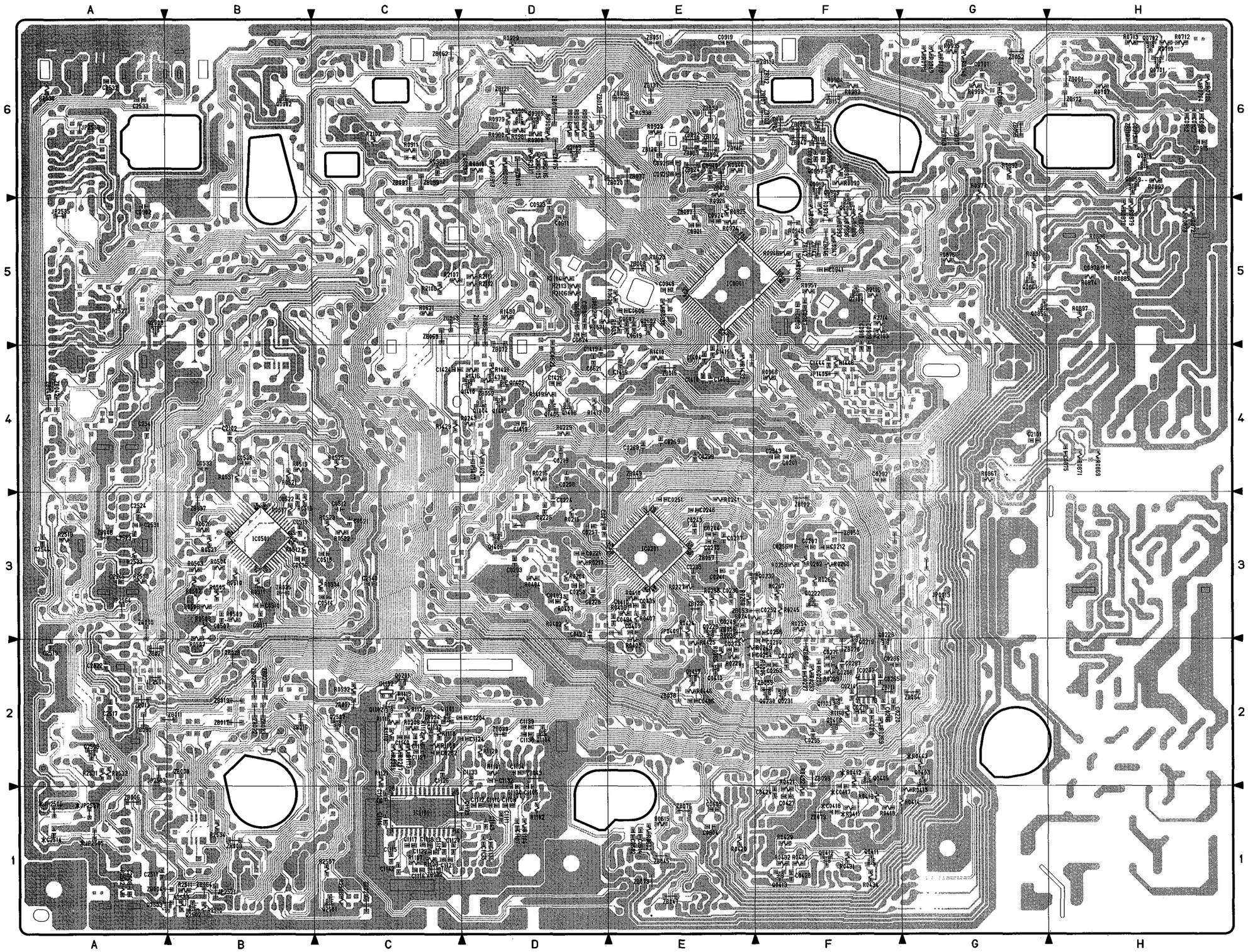
Symbol No.	Parts Location
R0227	B-3E
R0228	B-2E
R0229	B-4D
R0238	B-2E
R0239	B-2F
R0240	B-3F
R0241	B-3E
R0243	B-4D
R0245	B-3F
R0249	B-2E
R0250	A-3E
R0253	B-2F
R0254	B-3F
R0256	B-3F
R0258	B-3E
R0261	B-3F
R0263	A-4E
R0264	B-3D
R0265	B-2E
R0266	B-3F
R0267	B-3F
R0268	B-3E
R0269	B-2F
R0402	B-3D
R0403	B-3D
R0404	B-3D
R0407	B-3E
R0408	B-2E
R0409	B-3E
R0410	B-3E
R0411	B-1F
R0412	B-2F
R0413	B-1G
R0414	B-1G
R0417	A-2F
R0418	B-1F
R0419	B-1F
R0420	B-1E
R0421	B-1F
R0422	B-1F
R0423	A-2F
R0424	B-3E
R0425	B-2E
R0429	B-1F
R0430	B-1F
R0431	B-1F
R0432	B-1F
R0434	B-1F
R0437	A-2E
R0443	B-2G
R0445	A-2F
R0446	B-2E
R0501	A-3B
R0502	B-3B
R0503	B-3B
R0504	B-3B
R0505	B-3B
R0506	B-3B
R0507	B-3B
R0508	B-3B
R0509	B-3B
R0510	B-3B
R0511	B-3B
R0512	B-3B
R0516	B-3B
R0517	B-3B
R0518	A-4B
R0519	B-4B
R0520	A-4B
R0521	B-4B
R0522	B-3C
R0523	B-3C
R0524	A-4C
R0525	B-4C
R0526	B-3B
R0527	B-3B
R0528	A-4B
R0529	A-4B
R0530	A-4B
R0531	B-4B
R0532	B-2C
R0533	A-3B
R0534	B-3C
R0602	B-1E
R0605	A-1E
R0615	B-1E
R0616	A-1E
R0621	B-5C
R0622	A-4C
R0623	B-5E
R0624	A-5E
R0625	A-5B
R0626	A-4D
R0627	A-5C
R0628	A-2D
R0629	B-5E
R0630	B-5E
R0631	B-5D
R0632	B-5D
R0633	B-5E
R0634	A-4C
R0635	A-4C
R0636	A-4C
R0637	A-4D
R0639	A-4E
R0703	A-6E
R0704	B-6H
R0705	B-6H
R0706	A-6H
R0707	B-6H
R0708	B-6G
R0709	B-6G
R0710	B-6H
R0711	A-6G
R0712	B-6H
R0713	B-6H
R0714	A-6H
R0715	B-6G
R0716	A-6G
R0852	A-2H
R0853	A-2H
R0854	A-2H
R0855	A-2H
R0856	A-3H
R0857	A-3H
R0858	A-2H
R0860	A-3H
R0861	A-3H
R0862	A-3H
R0863	A-3H
R0864	A-3H
R0865	A-3H
R0866	A-3G
R0867	B-4G
R0868	A-4H
R0869	B-4H
R0871	B-4H
R0872	B-5H
R0873	B-5H
R0874	B-5H
R0875	A-5H
R0876	B-5G
R0877	A-5G
R0878	B-5H
R0879	B-5H
R0880	A-6G
R0881	B-5G
R0885	B-5H
R0886	B-5H
R0887	A-5H
R0888	A-3H
R0890	B-6F
R0891	B-6F
R0892	B-6G
R0893	B-6H
R0894	A-6G
R0895	A-6G
R0896	A-5H
R0897	B-5H
R0902	A-5D
R0904	A-5C
R0906	A-6E
R0907	A-6C
R0908	B-6D
R0909	B-6D
R0910	B-6D
R0911	B-6C
R0913	B-6D
R0914	B-6D
R0915	B-6D
R0916	B-6D
R0917	B-6D
R0918	A-6C
R0919	B-6D
R0920	A-6D
R0921	A-6E
R0922	A-6E
R0923	B-6E
R0924	B-5E
R0925	B-5E
R0926	B-6E
R0928	A-6D
R0929	B-6D
R0934	B-5F
R0935	B-6G
R0936	A-6B
R0937	A-6B
R0938	B-6E
R0939	A-4G
R0940	B-6E
R0943	A-5E
R0944	A-5F
R0945	B-5F
R0946	B-5F
R0947	B-5F
R0948	B-6G
R0949	A-5G
R0952	A-5F
R0957	B-5F
R0965	A-5G
R0967	A-2G
R0968	B-4F
R0969	A-4F
R0970	A-4F
R0974	B-5F
R0975	A-6F
R0976	A-6H
R0977	B-6G
R0978	A-6F
R0979	B-6D
R0980	B-6D
R0981	B-6D
R0982	B-6C
R0983	B-6F
R0984	B-6F
R0985	B-5F
R0986	B-5F
R0993	B-5F
R0994	B-5F
R0996	B-5F
R0997	A-5A
R0998	A-5A
R0999	B-6G
R1101	B-2D
R1102	B-1D
R1104	B-1D
R1107	B-1C
R1108	B-1C
R1109	B-2C
R1110	B-2C
R1112	B-2C
R1113	B-2C
R1115	B-2C
R1116	B-2C
R1117	A-2C
R1118	B-2C
R1119	B-2F
R1120	B-2D
R1121	B-2C
R1122	B-2C
R1409	A-4E
R1410	B-4E
R1412	A-4E
R1414	A-4E
R1416	B-4D
R1417	B-4D
R1418	A-4D
R1419	B-4D
R1421	B-4D
R1423	A-4D
R1424	B-4D
R1429	B-4C
R1430	B-5D
R1431	B-4D
R1432	B-4E
R1446	B-4F
R2101	A-4G
R2102	B-6C
R2103	B-5F
R2104	B-5D
R2105	B-6D
R2106	B-5D
R2107	B-5C
R2108	B-5C
R2109	A-5C
R2110	A-5C
R2111	B-5D
R2112	B-5D
R2113	B-5D
R2114	B-5F
R2115	B-5F
R2116	B-6D
R2117	B-6D
R2507	B-1C
R2508	B-1C
R2509	B-1B
R2510	B-1B
R2511	B-1B
R2512	B-1A
R2513	A-1A
R2514	A-2A
R2515	A-6B
R2517	A-3A
R2518	B-3A
R2530	B-6A
R2531	B-2A
R2532	B-2A
R2533	B-3A
R2534	B-1B
R2535	A-5B
R2537	A-6A
R2538	B-3A
R2541	A-3D
R2542	A-4B
S	
S0701	A-6H
S0702	A-6H
S0703	A-6H
S0704	A-6G
S0705	A-6H
S0706	A-6G
S0707	A-6F
S0708	A-6G
S2101	A-5C
S2102	A-4G
S2103	A-6C
T	
T0401	A-1F
T0402	A-1F
T0851	A-4H
X	
X0202	A-3D
X0901	A-5F
X0902	A-4F
X1401	A-4F
ZD	
ZD0851	A-3H
ZD0861	A-4H
ZD0862	A-5H
ZD0864	A-5H
ZD0901	A-6H
ZD0903	A-6H
ZD2501	A-2A
ZD2502	A-1A

MAS[MAIN] – SIDE B – DIFFERENCE TABLE

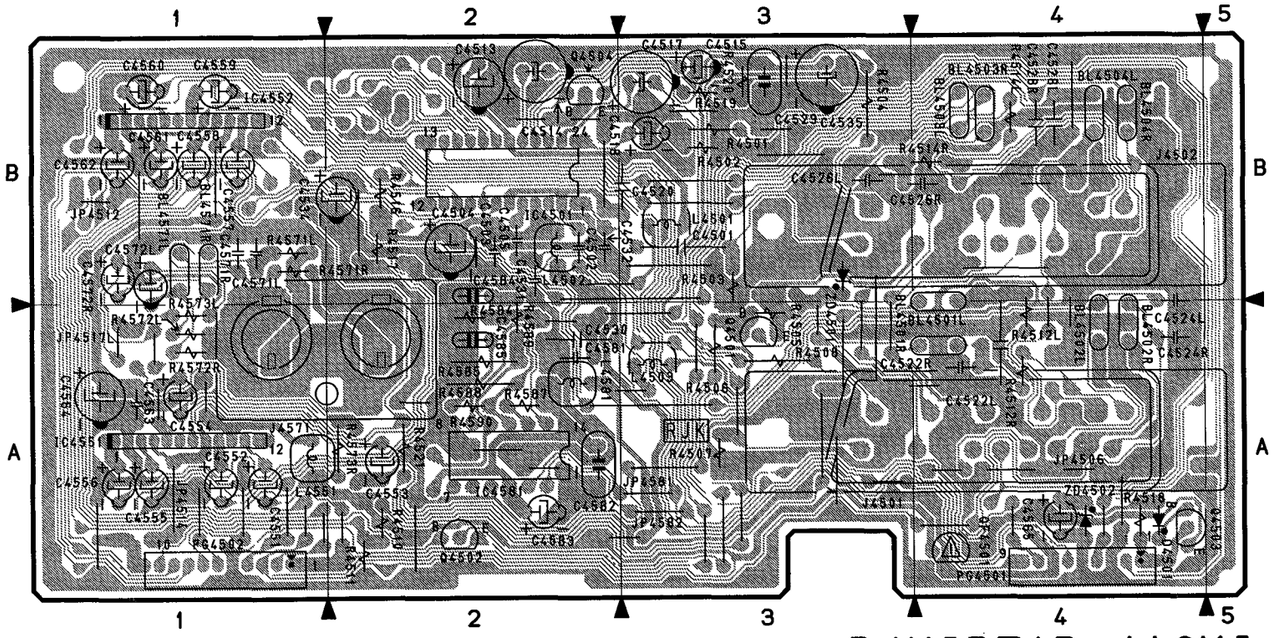
NOTE: This table listes the different components marked with asterisks(＊) in the circuit board diagrams.

SYMBOL No.	F55XE	F640E	F645E	F650E	F660E (UKN)	F660E (NAV)
C0417	×	×	×	×	○	○
C0418	×	×	×	×	○	○
C2514	×	×	○	○	○	×
JP2505	×	×	○	○	○	×
JP2506	○	○	×	×	×	○
JP2507	×	×	○	○	○	×
R0411	×	×	×	×	○	○
R0412	×	×	×	×	○	○
R0443	×	×	×	×	○	○
WIRE1	×	×	○	○	○	×
ZB058	×	×	×	×	○	○

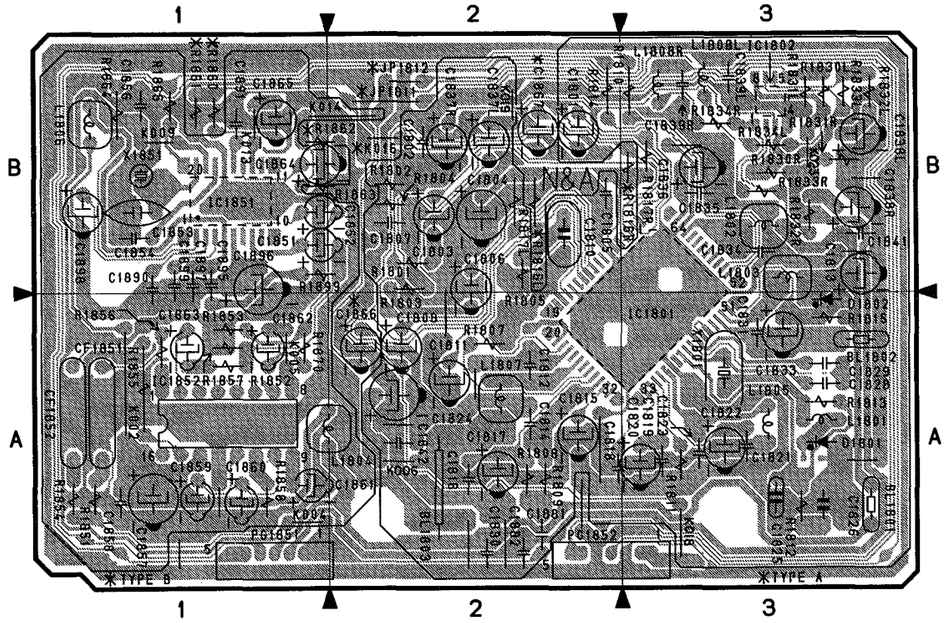
MAS CIRCUIT BOARD [SIDE B]



MAS[MAIN]-SIDE B-
[PATTERN No.JA1266-7]



RJK[REAR JACK]
[PATTERN No.JK1195-5]



N&A[NICAM & A2]
[PATTERN No.JK1177-4]

IDENTIFICATION OF PARTS LOCATION

RJK [REAR JACK]

Symbol No.	Parts Location
BL	
BL4501L	4A
BL4501R	4A
BL4502L	4A
BL4502R	4A
BL4503L	4B
BL4503R	4B
BL4504L	4B
BL4504R	4B
BL4571L	1B
BL4571R	1B
C	
C4501	3B
C4502	2B
C4503	2B
C4504	2B
C4505	2B
C4513	2B
C4514	2B
C4515	3B
C4517	3B
C4518	3B
C4520	3B
C4522L	4A
C4522R	4A
C4524L	4A
C4524R	4A

Symbol No.	Parts Location
C4526L	3B
C4526R	4B
C4528L	4B
C4528R	4B
C4529	3B
C4530	2A
C4531	2B
C4532	2B
C4534	2B
C4535	3B
C4551	1A
C4552	1A
C4553	2A
C4554	1A
C4555	1A
C4556	1A
C4557	1B
C4558	1B
C4559	1B
C4560	1B
C4561	1B
C4562	1B
C4563	1A
C4564	1A
C4565	4A
C4571L	1B
C4571R	1B

Symbol No	Parts Location
C4572L	1B
C4572R	1B
C4581	2A
C4582	2A
C4583	2A
C4584	2B
C4585	2A
D	
D4501	4A
IC	
IC4501	2B
IC4551	1A
IC4552	1B
IC4581	2A
J	
J4501	4A
J4502	4B
J4571	1A
L	
L4501	3B
L4502	2B
L4503	3A
L4551	1A
L4581	2A
PG	
PG4501	4A
PG4502	1A

Symbol No.	Parts Location
Q	
Q4501	3A
Q4502	2A
Q4503	4A
Q4504	2B
QF	
QF4501	4A
R	
R4501	3B
R4502	3B
R4503	3B
R4504	3B
R4505	3A
R4506	3A
R4507	3A
R4508	3A
R4510	2A
R4511	2A
R4512L	4A
R4512R	4A
R4514L	4B
R4514R	4B
R4516	2B
R4517	2B
R4518	4A
R4519	3B
R4520	3B

Symbol No.	Parts Location
R4521	2A
R4571L	1B
R4571R	1B
R4572L	1A
R4572R	1A
R4573L	1A
R4573R	2A
R4584	2A
R4585	2A
R4587	2A
R4588	2A
R4589	2A
R4590	2A
ZD	
ZD4501	3B
ZD4502	4A

N & A [NAICM & A2]

Symbol No.	Parts Location
BL	
BL1801	3A
BL1802	3A
BL1803	2A
C	
C1801	2B
C1802	2B
C1803	2B
C1804	2B
C1805	2B
C1806	2B
C1807	2B
C1808	2A
C1810	2B
C1811	2A
C1812	2A
C1813	3B
C1814	2A
C1815	2A
C1816	2A
C1817	2A
C1818	2A
C1819	3A
C1820	3A
C1821	3A
C1822	3A
C1823	3A

Symbol No.	Parts Location
C1824	2A
C1825	3A
C1826	3A
C1828	3A
C1829	3A
C1830	2A
C1831	3A
C1833	3A
C1834	3B
C1835	3B
C1836	3B
C1837L	2B
C1837R	2B
C1838L	3B
C1838R	3B
C1839L	3B
C1839R	3B
C1841	3B
C1842	2A
C1851	1B
C1852	1B
C1853	1B
C1854	1B
C1856	1B
C1857	1A
C1858	1A
C1859	1A

Symbol No.	Parts Location
C1860	1A
C1861	1A
C1862	1A
C1863	1A
C1864	1B
C1865	1B
C1866	2A
C1867	2B
C1881	2A
C1882	2A
C1890	1B
C1891	1B
C1895	1B
C1896	1B
C1897	1B
C1898	1B
C1899	1B
CF	
CF1851	1A
CF1852	1A
D	
D1801	3A
D1802	3A
IC	
IC1801	3A
IC1802	3B
IC1851	1B

Symbol No.	Parts Location
IC1852	1A
JP	
JP1811	2B
JP1812	2B
K	
K0002	1A
K0004	1A
K0005	1A
K0006	2A
K0009	1B
K0013	1B
K0014	2B
K0016	2B
K0018	3A
K0019	2B
K0023	3B
L	
L1801	3A
L1802	3B
L1803	3B
L1804	1A
L1805	3A
L1806	1B
L1807	2A
L1808L	3B
L1808R	3B
PG	

Symbol No.	Parts Location
PG1851	1A
PG1852	2A
R	
R1801	2B
R1802	2B
R1803	2B
R1804	2B
R1805	2B
R1807	2A
R1808	2A
R1809	2A
R1810	3B
R1811	3A
R1812	3A
R1813	3A
R1814	2B
R1815	3A
R1816L	2B
R1816R	3B
R1817L	2B
R1817R	3B
R1830L	3B
R1830R	3B
R1831L	3B
R1831R	3B
R1832L	3B
R1832R	3B

Symbol No.	Parts Location
R1833L	3B
R1833R	3B
R1834L	3B
R1834R	3B
R1851	1A
R1852	1A
R1853	1A
R1854	1A
R1855	1A
R1856	1A
R1857	1A
R1858	1A
R1860	1B
R1861	1B
R1862	1B
R1863	1B
R1864	1B
R1865	1B
R1870	1A
R1899	1B
X	
X1801	3A
X1851	1B

N & A [NICAM & A2] DIFFERENCE TABLE

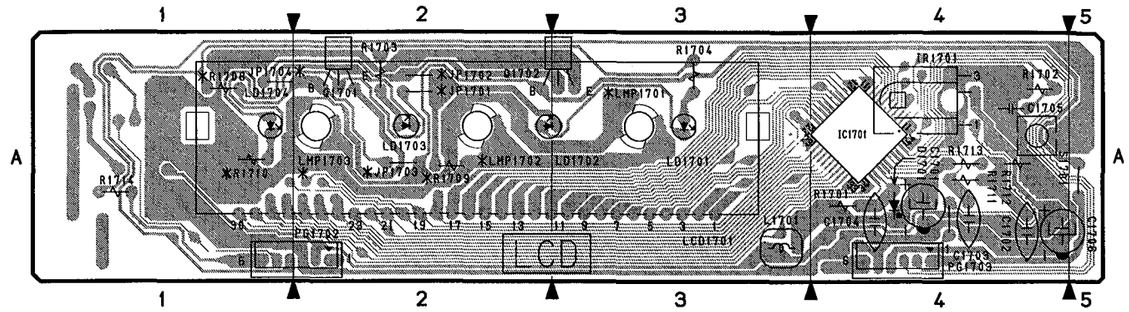
NOTE: This table listes the different components marked with asterisks(＊) in the circuit board diagrams.

SYMBOL No.	UKN	NA, NAV	VPS
BL1801	○	○	×
BL1802	○	○	×
BL1803	○	○	×
C1801	○	○	×
C1802	○	○	×
C1803	○	○	×
C1804	○	○	×
C1805	○	○	×
C1806	○	○	×
C1807	○	○	×
C1808	○	○	×
C1810	○	○	×
C1811	○	○	×
C1812	○	○	×
C1813	○	○	×
C1814	○	○	×
C1815	○	○	×
C1816	○	○	×
C1817	○	○	×
C1818	○	○	×
C1819	○	○	×
C1820	○	○	×
C1821	○	○	×
C1822	○	○	×
C1823	○	○	×
C1824	○	○	×
C1825	○	○	×
C1826	○	○	×
C1828	○	○	×
C1829	○	○	×
C1830	○	○	×
C1831	○	○	×
C1833	○	○	×
C1834	○	○	×
C1835	○	○	×
C1836	○	○	×
C1837L	○	○	×
C1837R	○	○	×
C1838L	○	○	×
C1838R	○	○	×
C1839L	○	○	×
C1839R	○	○	×
C1841	○	○	×
C1842	○	○	×
C1851	×	○	○
C1852	×	○	○
C1853	×	○	○
C1854	×	○	○
C1856	×	○	○
C1857	×	○	○

SYMBOL No.	UKN	NA, NAV	VPS
C1858	×	○	○
C1859	×	○	○
C1860	×	○	○
C1861	×	○	○
C1862	×	○	○
C1863	×	○	○
C1864	×	○	○
C1865	×	○	○
C1866	×	○	×
C1867	×	○	×
C1881	○	○	×
C1882	○	○	×
C1890	×	○	○
C1891	×	○	○
C1895	×	○	○
C1896	×	○	○
C1897	×	○	○
C1898	×	○	○
C1899	×	○	○
CF1851	×	○	○
CF1852	×	○	○
D1801	○	○	×
D1802	○	○	×
IC1801	○	○	×
IC1802	○	○	×
IC1851	×	○	○
IC1852	×	○	○
JP1811	×	×	○
JP1812	×	×	○
K002	×	○	○
K004	×	○	○
K005	×	○	○
K006	○	○	×
K009	×	○	○
K013	×	○	○
K014	×	○	○
K016	×	○	×
K018	○	○	×
K019	○	○	×
K023	○	○	×
L1801	○	○	×
L1802	○	○	×
L1803	○	○	×
L1804	×	○	○
L1805	○	○	×
L1806	×	○	○
L1807	○	○	×
L1808L	○	○	×
L1808R	○	○	×
R1801	○	○	×

SYMBOL No.	UKN	NA, NAV	VPS
R1802	○	○	×
R1803	○	○	×
R1804	○	○	×
R1805	○	○	×
R1807	○	○	×
R1808	○	○	×
R1809	○	○	×
R1810	○	○	×
R1811	○	○	×
R1812	○	○	×
R1813	○	○	×
R1814	○	○	×
R1815	○	○	×
R1816L	×	○	×
R1816R	×	○	×
R1817L	○	○	×
R1817R	○	○	×
R1830L	○	○	×
R1830R	○	○	×
R1831L	○	○	×
R1831R	○	○	×
R1832L	○	○	×
R1832R	○	○	×
R1833L	○	○	×
R1833R	○	○	×
R1834L	○	○	×
R1834R	○	○	×
R1851	×	○	○
R1852	×	○	○
R1853	×	○	○
R1854	×	○	○
R1855	×	○	○
R1856	×	○	○
R1857	×	○	○
R1858	×	○	○
R1860	×	1.5K	JUMPER
R1861	×	○	×
R1862	×	1.5K	JUMPER
R1863	×	○	×
R1864	×	○	○
R1865	×	○	○
R1870	×	○	○
R1899	×	○	○
X1801	○	○	×
X1851	×	○	○

LCD. LED CIRCUIT BOARDS



LCD[LCD DISPLAY]
[PATTERN No.JK1165-4]
[EXCPET FOR VT-F660E]

IDENTIFICATION OF PARTS LOCATION

LCD [LCD DISPLAY]

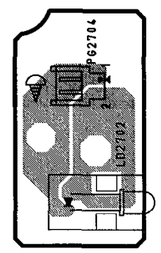
Symbol No	Parts Location
C	
C1701	4A
C1702	4A
C1703	4A
C1704	4A
C1705	4A
C1706	4A
D	
D1701	4A
IC	
IC1701	4A
IR	
IR1701	4A
JP	
JP1701	2A
JP1702	2A
JP1703	2A
L	
L1701	3A
LCD	
LCD1701	2A
LD	
LD1701	3A
LD1702	2A
LD1703	2A

Symbol No	Parts Location
LD1704	1A
LMP	
LMP1701	3A
LMP1702	2A
LMP1703	2A
PG	
PG1702	2A
PG1703	4A
Q	
Q1701	2A
Q1702	3A
R	
R1701	4A
R1702	4A
R1703	2A
R1704	3A
R1708	1A
R1709	2A
R1710	1A
R1711	4A
R1712	4A
R1713	4A
R1714	1A
S	
S1701	4A

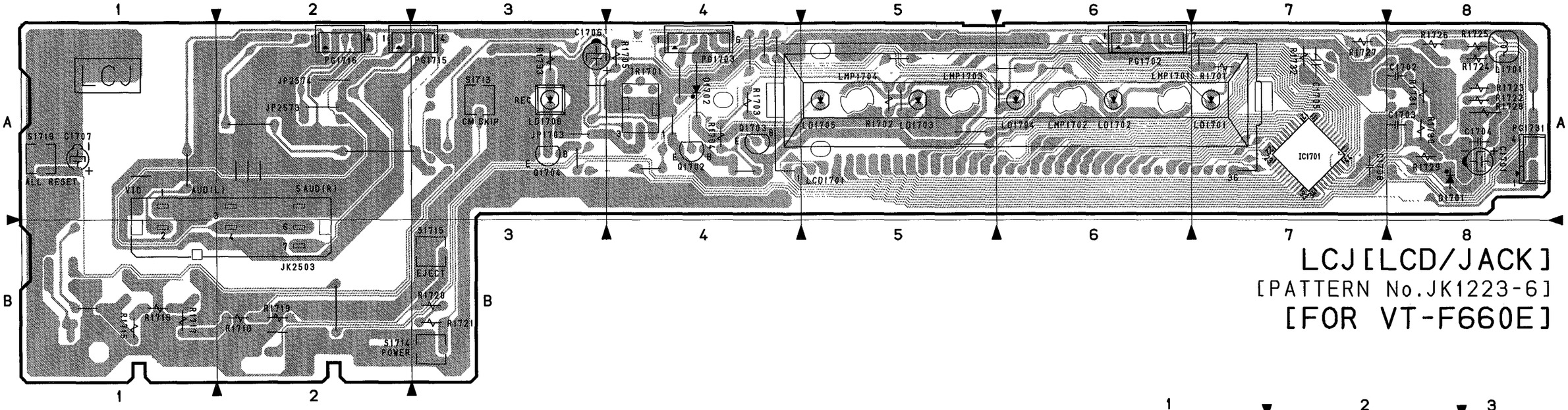
LCD[LCD DISPLAY] EXCEPT FOR VT-F660E DIFFERENCE TABLE

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

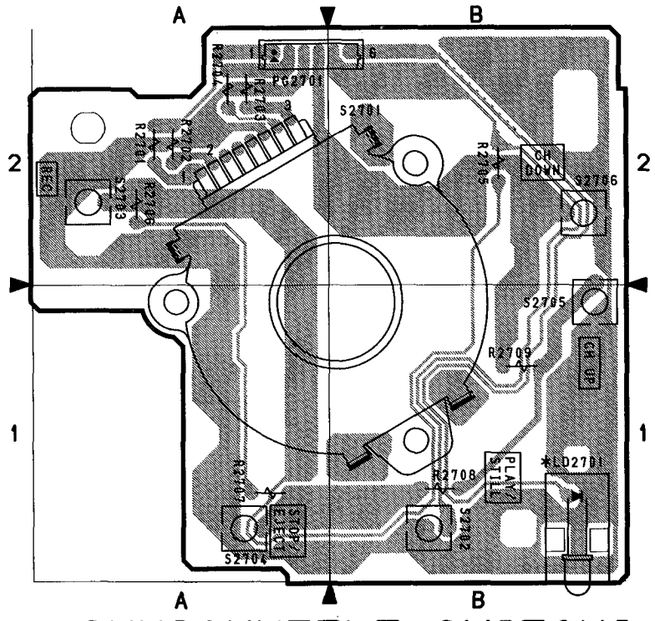
SYMBOL No.	F55XE/F650E	F640E/F645E
JP1701	○	×
JP1702	×	○
JP1703	×	○
JP1704	○	×
LMP1701	○	×
LMP1702	○	×
LMP1703	○	×
R1708	○	×
R1709	×	○
R1710	×	○



LED[LED]
[PATTERN No.JK1166-4]
[FOR VT-F645E]



LCJ[LCD/JACK]
[PATTERN No.JK1223-6]
[FOR VT-F660E]



SHU[SHUTTLE SWITCH]
[PATTERN No.JK1166-4]
[FOR VT-F55XE/F650E]

IDENTIFICATION OF PARTS LOCATION

SHU
[SHUTTLE SWITCH]

Symbol No.	Parts Location
LD	
LD2701	1B
PG	
PG2701	2A
R	
R2701	2A
R2702	2A
R2703	2A
R2704	2A
R2705	2B
R2706	2A
R2707	1A
R2708	1B
R2709	1B
S	
S2701	2A
S2702	1B
S2703	2A
S2704	1A
S2705	1B
S2706	2B

LCJ [LCD/JACK]

Symbol No	Parts Location
C	
C1701	8A
C1702	8A
C1703	8A
C1704	8A
C1705	7A
C1706	3A
C1707	1A
C1708	7A
D	
D1701	8A
D1702	4A
IC	
IC1701	7A
IR	
IR1701	4A
JK	
JK2503	2B
L	
L1701	8A
LCD	
LCD1701	5A
LD	
LD1701	7A
LD1702	6A
LD1703	5A
LD1704	6A

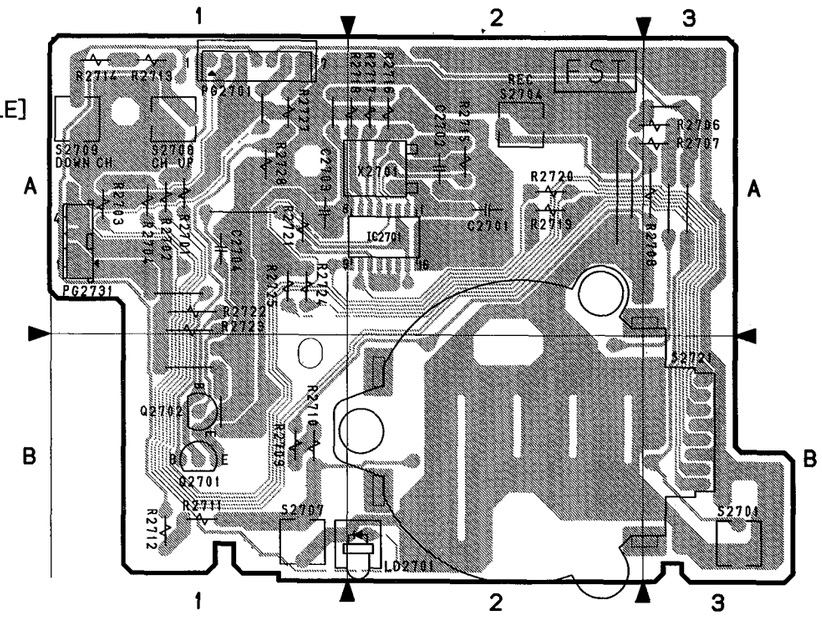
Symbol No.	Parts Location
LD1705	5A
LD1706	3A
LMP	
LMP1701	6A
LMP1702	6A
LMP1703	5A
LMP1704	5A
PG	
PG1702	6A
PG1703	4A
PG1715	3A
PG1716	2A
PG1731	8A
Q	
Q1702	4A
Q1703	4A
Q1704	3A
R	
R1701	7A
R1702	5A
R1703	4A
R1704	4A
R1705	4A
R1715	1B
R1716	1B
R1717	1B
R1718	2B

Symbol No	Parts Location
R1719	2B
R1720	3B
R1721	3B
R1722	8A
R1723	8A
R1724	8A
R1725	8A
R1726	8A
R1727	7A
R1728	8A
R1729	8A
R1730	8A
R1731	8A
R1732	7A
R1733	3A
S	
S1713	3A
S1714	3B
S1715	3B
S1719	1A

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
PG2731	1A
Q	
Q2701	1B
Q2702	1B
R	
R2701	1A
R2702	1A
R2703	1A
R2704	1A
R2706	3A
R2707	3A
R2708	3A
R2709	1B
R2710	1B
R2711	1B
R2712	1B

Symbol No.	Parts Location
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
R2727	1A
R2728	1A
S	
S2701	3B
S2704	2A
S2707	1B
S2708	1A
S2709	1A
S2721	3B
X	
X2701	2A



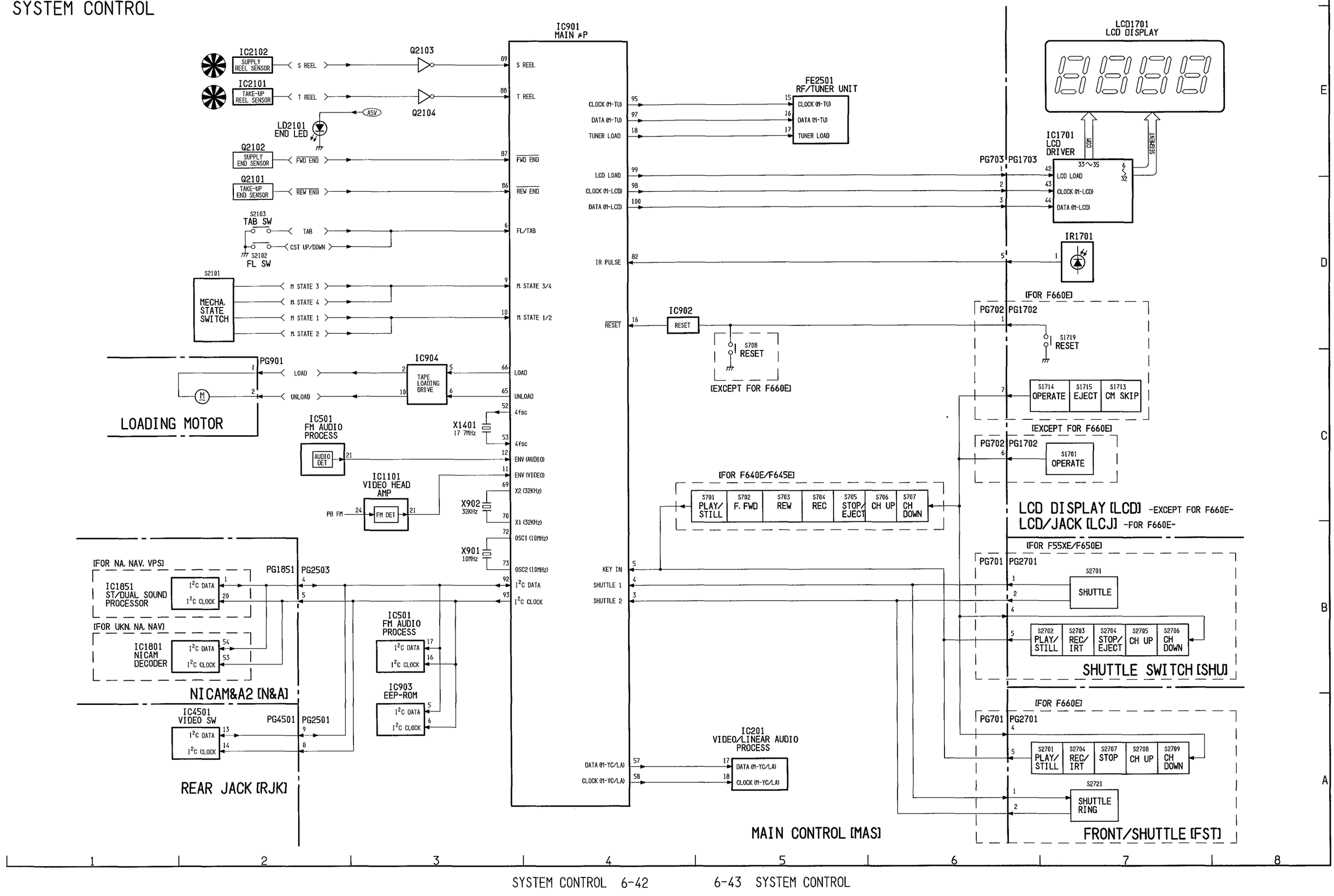
FST[FRONT SHUTTLE]
[PATTERN No.JK1223-6]
[FOR VT-F660E]

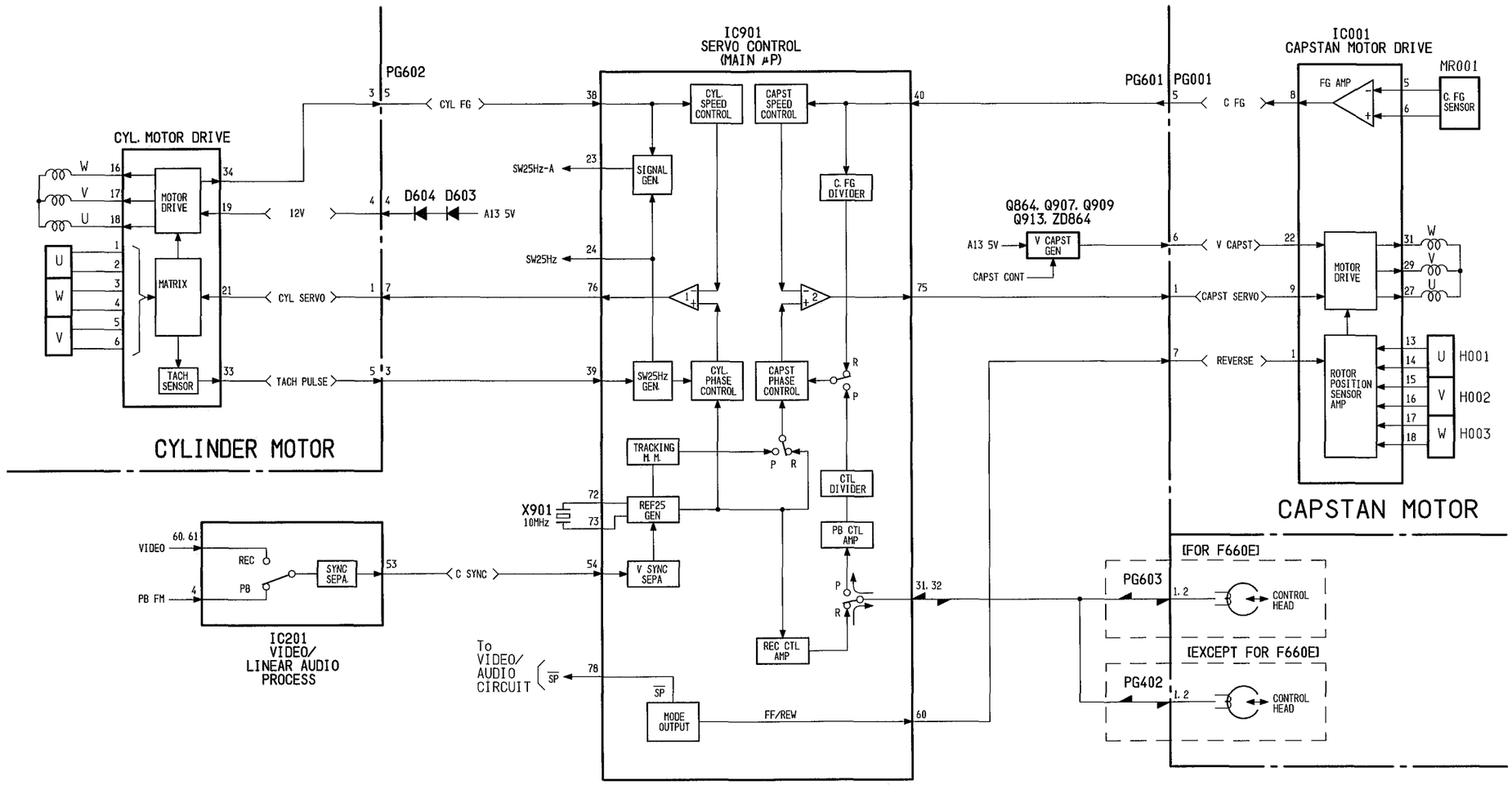
SHUTTLE SWITCH [SHU] DIFFERENCE TABLE

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

SYMBOL No.	F55XE	F650E
LD2701	○	×

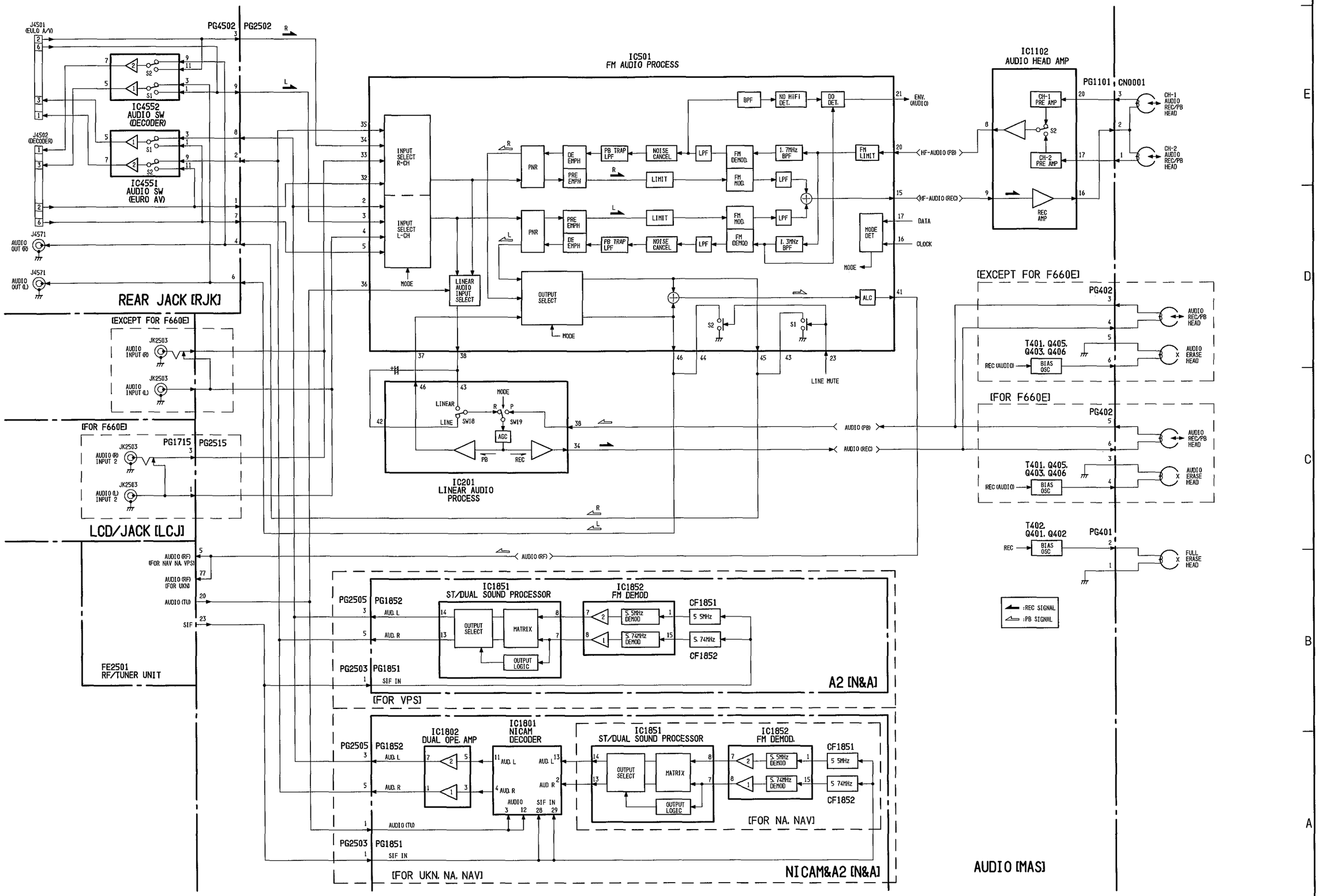
BLOCK DIAGRAMS
SYSTEM CONTROL

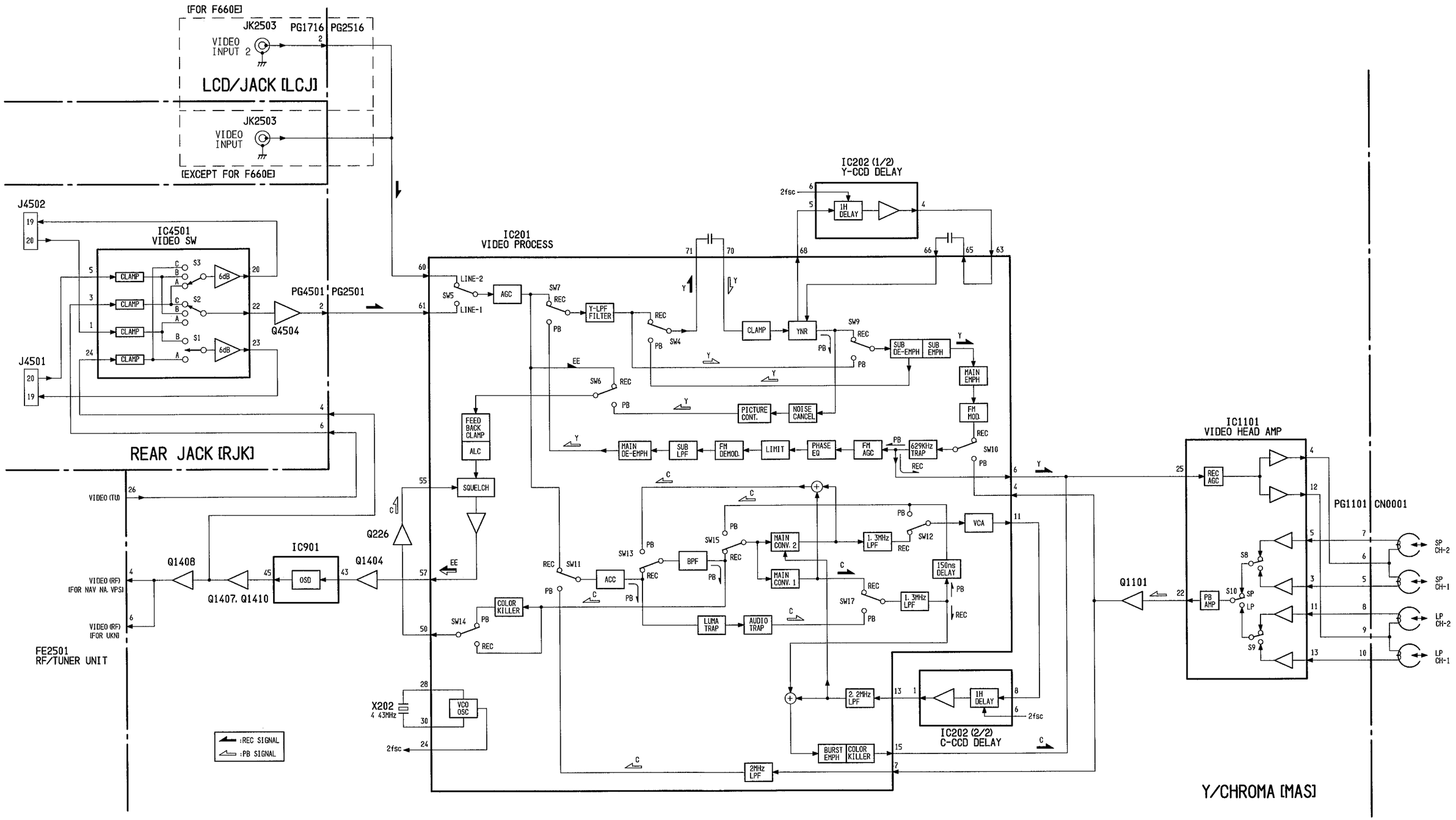




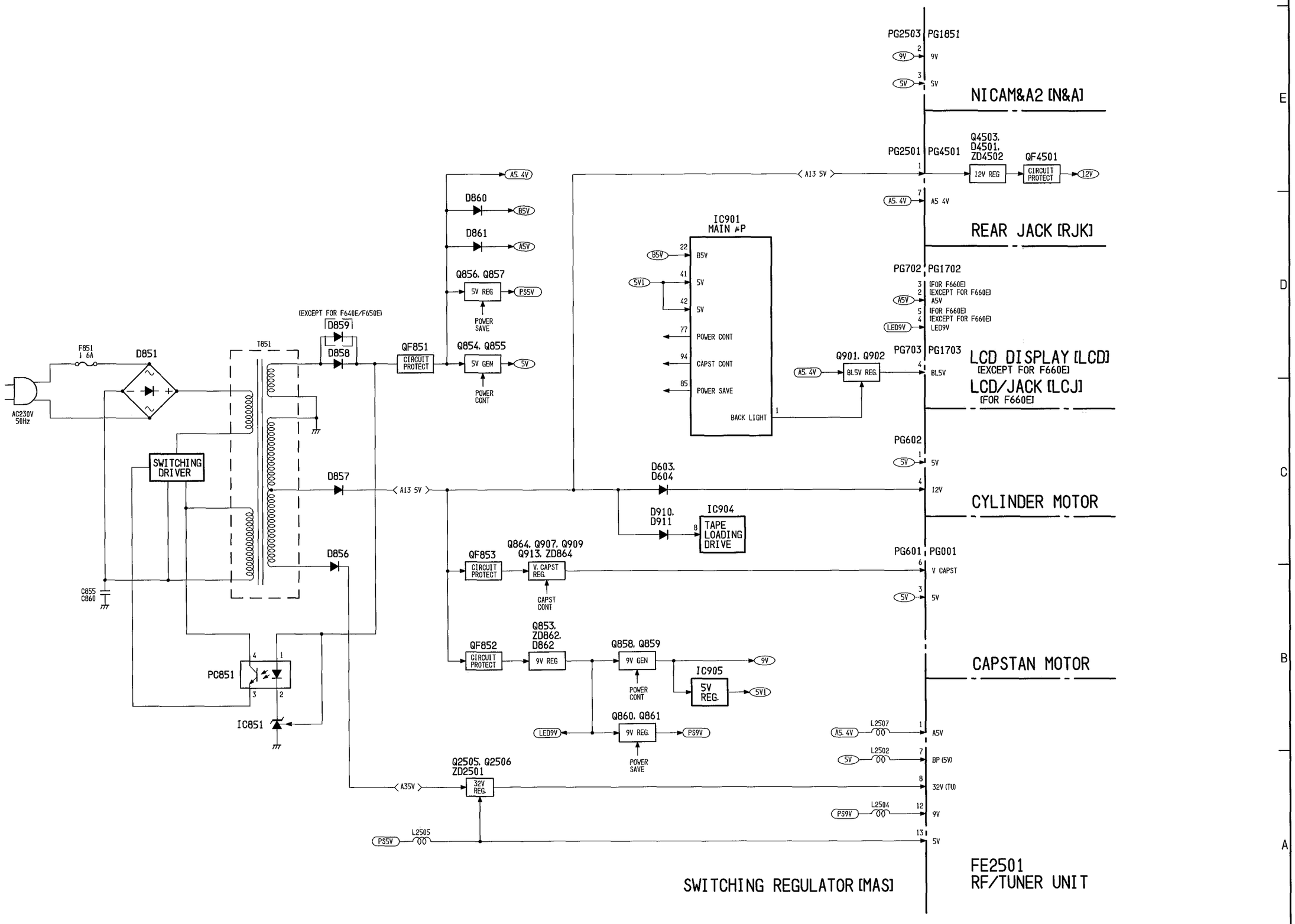
MAIN CONTROL [MAS]

AUDIO


REAR JACK [RJK]
[EXCEPT FOR F660E]
[FOR F660E]
LCD/JACK [LCJ]
FE2501
RF/TUNER UNIT
IC4552
AUDIO SW
(DECODER)
IC4551
AUDIO SW
(EURO AV)
IC501
FM AUDIO PROCESS
IC201
LINEAR AUDIO
PROCESS
IC1102
AUDIO HEAD AMP
IC1851
ST/DUAL SOUND PROCESSOR
IC1852
FM DEMOD
IC1802
DUAL OPE. AMP
IC1801
NICAM
DECODER
A2 [N&A]
NICAM&A2 [N&A]
[FOR VPS]
[FOR UKN, NA, NAV]
[FOR NA, NAV]
AUDIO [MAS]
:REC SIGNAL
:PB SIGNAL


(FOR F660E)
JK2503
PG1716 PG2516
VIDEO INPUT 2
LCD/JACK (LCJ)
JK2503
VIDEO INPUT
(EXCEPT FOR F660E)
J4502
IC4501
VIDEO SW
CLAMP
6dB
S3
S2
S1
PG4501 PG2501
Q4504
J4501
REAR JACK (RJK)
VIDEO (TU)
VIDEO (RF) (FOR NAV NA VPS)
VIDEO (RF) (FOR UKN)
FE2501
RF/TUNER UNIT
Q1408
Q1407, Q1410
IC901
OSD
Q1404
Q226
IC201
VIDEO PROCESS
LINE-2
LINE-1
SW5
AGC
SW7
REC
PB
Y-LPF FILTER
SW4
EE
SW6
PICTURE CONT.
NOISE CANCEL
FEED BACK CLAMP
ALC
SQUELCH
COLOR KILLER
SW14
SW11
ACC
SW13
BPF
SW15
MAIN CONV. 2
MAIN CONV. 1
1.3MHz LPF
SW12
SW17
150ns DELAY
VCA
LUMA TRAP
AUDIO TRAP
X202
4.43MHz
VCO OSC
2fsc
2.2MHz LPF
2MHz LPF
BURST EMPH
COLOR KILLER
IC202 (1/2)
Y-CCD DELAY
1H DELAY
YNR
SW9
SUB DE-EMPH
SUB EMPH
MAIN EMPH
FM MOD.
SW10
629KHz TRAP
FM AGC
PHASE EQ
LIMIT
FM DEMOD.
SUB LPF
MAIN DE-EMPH
IC202 (2/2)
C-CCD DELAY
IC1101
VIDEO HEAD AMP
REC AGC
PB AMP
Q1101
PG1101 CN0001
SP CH-2
SP CH-1
LP CH-2
LP CH-1
:REC SIGNAL
:PB SIGNAL
Y/CHROMA (MAS)

POWER SUPPLY



MICROPROCESSOR PIN FUNCTION TABLES

LCD DRIVER µP (IC1701)

Pin No.	I/O	Active Level	Abbreviation	Function
1	-	-	SEGMENT(1)	Not used.
2	-	-	SEGMENT(2)	
:		:	:	
:		:	:	
5	-	-	SEGMENT(5)	
6	O	Pulse	SEGMENT(6)	LCD segment control outputs.
7	O	Pulse	SEGMENT(7)	
:		:	:	
:		:	:	
31	O	Pulse	SEGMENT(31)	
32	O	Pulse	SEGMENT(32)	
33	O	Pulse	COM1	LCD common (COM) control outputs.
34	O	Pulse	COM2	
35	O	Pulse	COM3	
36	I	Lo	RESET(L)	Initializes the LCD-µP when power supplied.
37	I	Hi	VDD	A5V power Input.
38	I	-	VDD1	LCD drive bias.
39	I	-	VDD2	LCD drive bias.
40	I	Lo	VSS	Ground.
41	I/O	-	OSC	Generates a 32KHz signal for key scanning.
42	I	Lo	LCD LOAD	LOAD signal between the LCD-µP and M-µP "Lo" input enables chip select.
43	I	Pulse	CLOCK (M-LCD)	The data is transferred from the M-µP, synchronized with the clock signal.
44	I	Pulse	DATA (M-LCD)	

MAIN µP (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	POWER STOP	When A5V voltage drops and "Lo" is input, the M-µP detects that a power failure has occurred.
8	I	Hi	S-CURVE	Detects the AFT (S-CURVE) signal from the IF unit to fine tune to a station.
9	I	A/D	M.STATE 3/4	The signals which detect the mechanism state are input to control the loading motor.
10	I	A/D	M.STATE 1/2	

Pin	EJECT	UNLOAD	REV.	R.SLOW	SLOW	R/P	STOP2	FF/REW
9	0	2.5	1.8	2.5	3.05	3.05	2.5	0
10	1.8	3 05	0	0	0	1.8	2.5	3.05

11	I	A/D	ENV.(VIDEO)	Audio and video envelope level inputs for autotracking.
12	I	A/D	ENV.(AUDIO)	
13	I	A/D	MODEL SW	Model switching control.
14	I	A/D	DEC. CONT	Decorder control signal.
15	I	-	A5V	Connected to A5V.
16	I	Lo	RESET(L)	Initializes the M-µP when power is supplied.
17		-	NC	
18	O	Hi	TUNER LOAD	A data line is provided between the M-µP and RF/Tuner and the µP sets the LOAD pin to "Hi" when transferring data and holds it until transfer is completed.
19	O	Hi/Lo	L3/L3(L)	FRONT/REAR Jack switching control signal output
20		-	NC	
21	I	Hi/Lo	MESECAM DET	Mode selection input. Hi: MESECAM
22	I	-	B5V	Connected to B5V.
23	O	Pulse	SW25Hz-A	Head switching pulse output for audio circuits.
24	O	Pulse	SW25Hz	Head switching pulse output.
25	O	PWM	CAPST.PWM	Cylinder and capstan motor servo control outputs.
26	O	PWM	CYL.PWM	
27	O	Hi	V.PULSE	Artificial V sync signal for trick play.
28	O	Pulse	C.ROTARY	Chroma rotation control signal.
29	O	Hi/Lo	H.AMP SW	SP/LP head switching control signal (pulse during trick play).
30	I	Hi/Lo	COMP	SP/LP 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 output.
38	I	Pulse	CYL.FG	Cylinder FG (CYL.FG) pulse input. Controls the cylinder speed during recording and playback.
39	I	Pulse	TACH PULSE	Tach pulse input. Comparison (feedback)signal which controls the recording cylinder phase
40	I	Pulse	CAPST.FG	Capstan FG (CAPST FG) pulse input. Used to control the capstan motor.
41	I	-	5V	Connected to 5V.

Pin No.	I/O	Active Level	Abbreviation	Function
42	I	-	5V	Connected to 5V.
43	I	-	C.VIDEO	Video signal input.
44	O	-	V.REF	Reference bias/clamp bias voltage.
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	-	4fsc (17.7MHz)	These generate a 17.7MHz signal as the clock signal for the OSD and servo circuits.
53	I	-	4fsc (17.7MHz)	
54	I	Pulse	C.SYNC	Composite sync signal input. Controls the cylinder speed during recording.
55	O	Hi	BLUE BACK	Blue background control signal output.
56	O	Hi	HIFI MUTE	Hi-Fi audio muting control output during recording.
57	O	Pulse	DATA(M-YC/LA)	Common communication lines with VIDEO/LINEAR AUD.ICs; data is transferred, synchronized with the clock signal.
58	O	Pulse	CLOCK(M-YC/LA)	
59	O	Lo	PB (L)	Sets the video/audio circuits to the playback mode.
60	O	Hi	REVERSE	Sets the drive direction of the capstan motor to reverse.
61	O	Hi	REC (AUDIO)	Sets the audio circuit to the recording mode.
62	O	Pulse	CTL RESET	Apples reset pulses to the CTL amp during slow and reverse slow play.
63	O	Lo	A.DUB MUTE	
64	O	Pulse	IR OUT	Signal output to the cable box control circuit.
65	O	Hi	UNLOAD	Loading motor drive signals which set the mechanism to the commanded mode.
66	O	Hi	LOAD	
67	I	Hi/Lo	CK DET OUT	Not used.
68	-	-	TEST	Ground.
69	I	-	X2 (32kHz)	These generate a 32.768kHz signal as the clock signal for the VCR's clock.
70	O	-	X1 (32kHz)	
71	-	-	GND	Ground.
72	I	-	OSC 1 (10MHz)	These generate a 10MHz signal as the system clock signal in modes other than back-up.
73	O	-	OSC 2 (10MHz)	
74	O	Hi	LINE MUTE	Audio output muting control.
75	O	Hi/Lo	CAPST.Q.R	Cylinder and capstan motor phase control outputs.
76	O	Hi/Lo	CYL.Q.R	
77	O	Hi	POWER CONT	Power on/off control. When the power switch is operated, a cassette is inserted or a power failure is detected, the internal power supply is switched to be on/off.
78	O	Lo	SP (L)	Tape speed output.
79	I	Hi	V.REC MUTE	Video signal record muting control. Prevents the signal from being supplied to the video heads.
80	O	Hi	LM CONT.	Flying erase control (not used) /signal to control the voltage applied to the loading motor when forward slow is switched to reverse slow vice versa.
81	O	Hi	TUN. MUTE	Tuner audio muting control receives the remote control code from the infrared.
82	I	Pulse	IR PULSE	Receives the remote control code from the infrared receiver and sets the VCR to the specified mode. AV BUS data input.
83	O	Hi	H.CONT	Linear audio head control signal.
84	O	Hi	REC	Sets the video and audio head amp circuits to the recording mode.
85	O	Hi	POWER SAVE	Power save signal during power off.
86	I	Lo	REW END (L)	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-μP detects that a cassette is not loaded in the VCR.
87	I	Lo	FWD END (L)	
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-μP 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	

Pin No.	I/O	Active Level	Abbreviation	Function
90	I	Lo	CHECK	Checks short-circuits in the 5V/9V power supplies. (This pin goes "Lo" normally when power is off.)
91		-	NC	
92	I/O	Pulse	DATA(M-ROM/HA)	Common communication lines with the ROM/Hi-Fi AUD; data is communicated, synchronized with the clock signal.
93	O	Pulse	CLOCK(M-ROM/HA)	
94	O	Hi/ Mid/ Lo	V.CAPST.CONT.	This is output in the slow, still, playback, recording, fast forward and rewind modes to control the voltage applied to the capstan motor. Lo:13.5V, Mid:9.5V, Hi:7.5V.
95	O	Pulse	CLOCK(M-TU)	Communication lines with the RF/TUNER; data is transferred, synchronized with the clock signal.
97	O	Pulse	DATA(M-TU)	
96	O	Hi/Lo	PAL/NTSC(L)	OSD X`tal select signal. Hi:PAL Lo:NTSC
98	O	Pulse	CLOCK(M-LCD)	Communication lines with the LCD DRIVER; data is transferred, synchronized with the clock signal.
100	O	Pulse	DATA(M-LCD)	
99	O	Hi	LCD LOAD	LOAD signal between the M-μP and LCD-DRIVER.

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