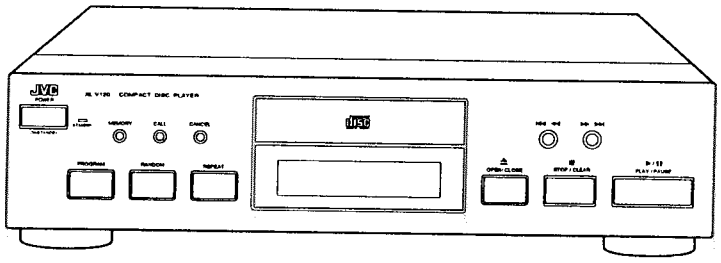
JVC

SERVICE MANUAL

COMPACT DISC PLAYER

XL-V120BK

PICK UP	OPTIMA-150S
DIGITAL SERVO LSI	MN35510



Area Suffix

Bs	the U.K
EF	Continental Europe Except Germany & Italy
EN	Nordic Countries
G	Germany
J	U.S.A
C	Canada

COMPACT disc DIGITAL AUDIO

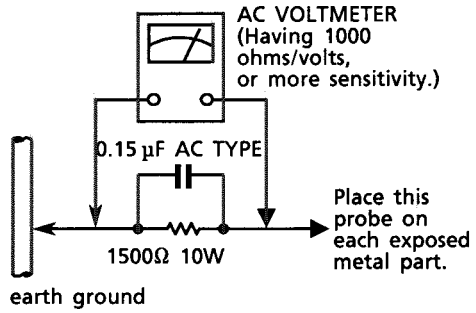
COMPU LINK Component

Contents

No.20599
Aug.1996

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 µF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
4. CAUTION : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
5. CAUTION : If safety switches malfunction, the laser is able to function.
6. CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

VARNING : Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

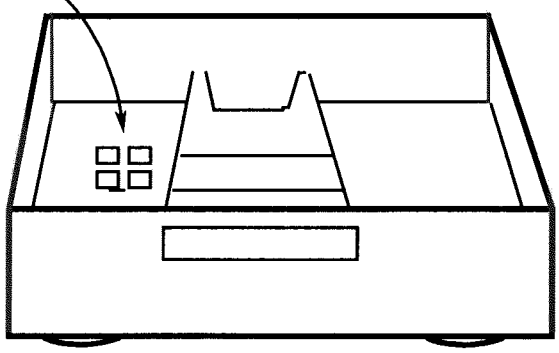
ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL

(Except for the U. S. A.)

DANGER: invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)	VARNING: Osynling laser-stråling när denna del ä öppnad och spärren är urkoppled. Betrakta ej stålen. (s)
ADVARSEL: Usynling laser-stråling ved åbning, når sikkerhedsafbrydere er ude at funktion. Undgåudsæt-telse for stråling. (d)	VARO: Avattaessa ja suo-jalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen. (f)



CONTENTS

Thank you for purchasing this JVC product. Before you begin operating this unit, please read the instructions carefully to be sure you get the best possible performance.
If you have any question, consult your JVC dealer.

COMPU LINK
Control System

COMPU LINK Control System is a convenient system using COMPU LINK-1, 3/SYNCHRO terminals on the rear panel. For further details, refer to page 2.

PRECAUTION IN USE

Installation
- Select a location which is level, dry and **Neither too cold nor too hot (between 5°C (41°F) and 35°C(95°F).**
- Avoid a dusty location or a location subject to vibrations.

Power
- When unplugging from the wall outlet, always pull on the plug, not on the power cord.

Malfunctions, etc.
- Do not insert any metallic object into the player.
- The discs to be played on this player are limited to those bearing the mark below (Fig. 1).
- Placing anything other than a compact disc on the tray may cause the player to malfunction.
- If something goes wrong, turn the power off immediately. If the same phenomenon occurs when the power is turned on again, turn the power off and consult your JVC dealer.

Volume setting
As a compact disc causes almost no noise, it is difficult to set the volume level by listening to noise as in the case of an ordinary analog turntable or a tape deck. If the volume level is raised too much because the beginning of the selection is quiet, the speakers may be damaged by a sudden increase in the sound level.

Condensation
As the compact disc player uses optical parts, moving it from a cold to warm place or using it in a room subject to excessive humidity or in a room where a fire has just been lit may cause condensation on the optical parts. This phenomenon may prevent the light from being correctly transmitted, and may cause noise or malfunction.
If dew condenses and the player does not function correctly, leave it on for several hours with the power turned on.
If the player does not function even after such period, consult your dealer.

Note:
- **When this unit is placed near a tuner or a receiver, noise may occur. If this happens, move this unit as far from the tuner or the receiver as possible, or briefly turn off the power of the unit.**

COMPACT
disc
DIGITAL AUDIO

Fig 1

HOW TO HANDLE A COMPACT DISC

Since compact discs are made of plastic, they can be easily damaged; if the disc gets dirty, dusty, damaged or warped, the sound will not be picked up correctly, and such discs may cause the player to malfunction. When handling compact disc,use the following precautions.
- Do not touch the surface of the disc (reflective silver i.e. the side without the label) When handling the discs.
- **Storage**
Make sure to keep discs in their cases. If discs are piled on top of the one another without cases, they can be damaged. Do not put discs in a location exposed to direct sunlight or in a place with high temperature and humidity.
Avoid leaving discs in your car.
- **Maintenance of discs (Fig. 2)**
When fingerprints and dirt adhere to a disc, wipe the disc off with a soft, dry cloth from the inside towards the outside. If it is difficult to clean, wipe the disc with a cloth moistened with water.
- Do not use record cleaners, benzine, alcohol or antistatic agent.
- Do not damage the label side or stick paper or adhesive to the surface.
- In the case of an 8 cm (3") single CD, place it in the disc hold, for an 8 cm (3") disc, within the tray.

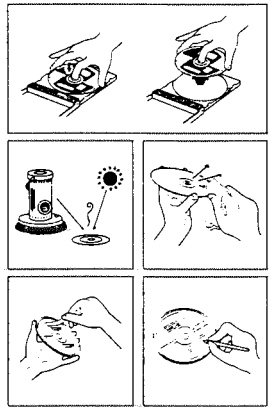


Fig. 2

COMPU LINK CONTROL SYSTEM

The Compu Link Remote Control System controls relative operations between components automatically and facilitates various operations. This is a system originated and developed by JVC for facilitating various system operations. There are two versions of this system; version 1 and 3. (For version 1 components, "COMPU LINK-1 SYNCHRO" is marked on the rear panel. For version 3 components, "COMPU LINK-3 SYNCHRO" is marked on the rear panel. This unit belongs to version 3.) The version 3 system controls relative functions between this unit and an amplifier or receiver, in addition to all of the functions of version 1.

Automatic Source Selection
When the provided compulink cord is used for connecting this unit to other components which have COMPU LINK -1, 3/SYNCHRO terminals, the switch-over of all system components is possible with simple one-touch of the source selector button of the JVC amplifier or receiver. By doing this, the corresponding component will start playing automatically. The source select button of the remote control unit or the select button of the desired component can also be used for this purpose.
When the components have been switched over, the previously used component will stop playing within five seconds.

Synchronized Recording
If a cassette deck with COMPU LINK-1, 3/SYNCHRO terminals is connected with the remote cable supplied, synchronized recording becomes possible.
Synchronized recording refers to the process in which the cassette deck starts recording in the synchronism with the CD player. Perform the synchronized recording as follows.
1. Set the cassette deck to the REC/PAUSE mode in accordance with the procedures in the instructions.
2. If you want programmed recordings, program the desired selections in any order you wish to hear them.
3. Press the [PLAY►/II PAUSE] button of the CD player. By doing so, the cassette deck is placed in the record mode and synchronized with the CD player for recording. Synchronized recording thus can be made possible.

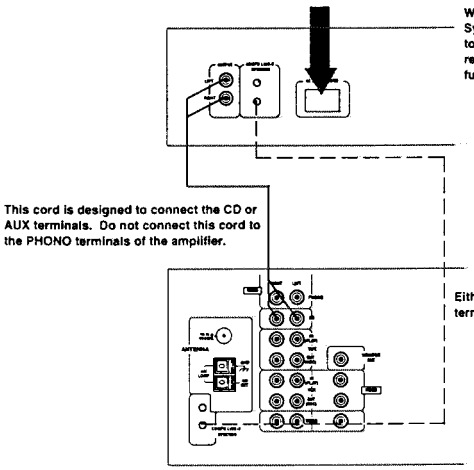
Automatic power ON/OFF
This feature works only when this unit is connected to an amplifier or receiver with COMPU LINK-3 SYNCHRO terminals.
By pressing the [PLAY►/II PAUSE] button, you can turn on this unit and the connected equipment (amplifier or receiver), and by turning off the connected equipment, you can turn off this unit.

Notes:
- **Synchronized recording stops automatically when the CD player stops playing.**
- **To cancel synchronized recording, press the [STOP/CLEAR (■)] button of the CD player or cassette deck.**

CAUTION:
- **When the REC/PAUSE mode is set by pressing the [PAUSE (II)] button after pressing the [REC (○)] and [PLAY (►)] buttons simultaneously, synchronized recording is not possible. For details, refer to the instructions of the cassette deck.**
- **Abnormal operation will result if the power supply of the component(s) is interrupted. If this happens, you must start all over again.**
- **Ensure that the COMPU LINK-1, 3/SYNCHRO terminals of the individual components are connected with the provided remote cables. Also be sure to fully read the instructions for each component.**

CONNECTION DIAGRAM

- **Do not connect the power plug unless all the connections are completed.**
- **Connect the audio plug firmly.**
- **The synchronized recording is only possible with JVC products which have the COMPU LINK-1, 3/SYNCHRO terminals. To carry out synchronized recording, connect to the amplifier's CD terminal. For further details, consult your JVC dealer.**
- **The AC power cord is supplied and must be connected to the unit before use.**

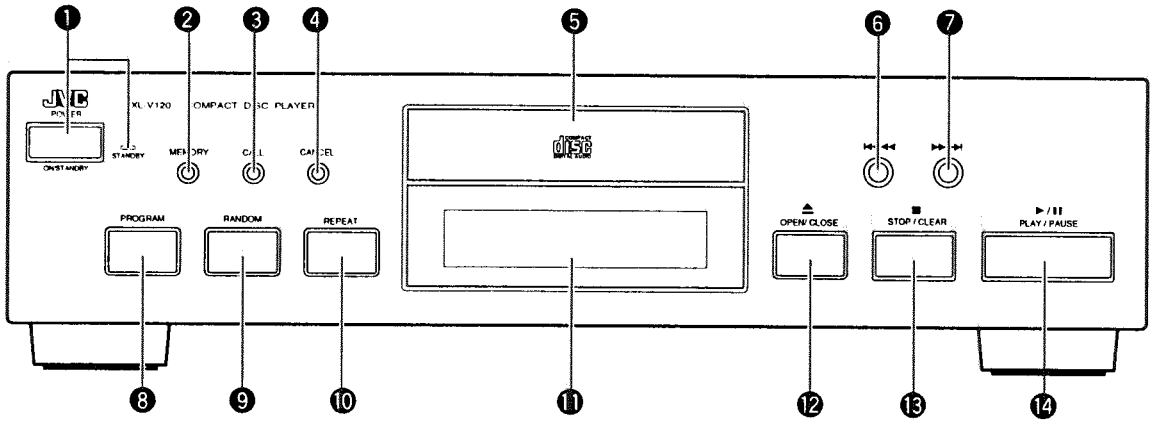


When using the Compu Link Remote Control System Version 3, do not connect the power cord to the SWITCHED AC OUTLET of an amplifier or receiver. Otherwise, the automatic power on/off function cannot be carried out.

This cord is designed to connect the CD or AUX terminals. Do not connect this cord to the PHONO terminals of the amplifier.

Either one of these two COMPU LINK-1, 3/SYNCHRO terminals can be used.

DESCRIPTION AND FUNCTIONS



❶ POWER (ON/STANDBY) button and STANDBY Indicator
Press this button to turn the power on. Press again to turn the power off and activate the standby mode.
A small amount of power (3 Watts) is consumed and the STANDBY indicator is lit in the standby mode. To turn the power off completely, disconnect the power cord from the wall outlet.

❷ MEMORY
Use this button to enter the program contents.

❸ CALL
Use this button to display and modify the program contents.

❹ CANCEL
Press this button to cancel a programmed track , each time it is pressed, one track is cancelled.

❺ Disc Tray
Load the disc to be played.

❻ ⏮ ◀◀
Press this button to go to the start of the current selection or go back to the previous track during play. Play will go back one track each time the button is pushed. when the button is kept pressed, the CD player will backward-search slowly for about 3 seconds, and then go into a higher speed search.

❼ ▶▶ ⏭
Press this button to go to the start of the next track. Play will go forward one track each time the button is pressed. When the button is kept pressed, the CD player will forward-search slowly for about 3 seconds and then go into a higher speed search.

❽ PROGRAM
To program the sequence of the tracks to be played, press this button while the CD player is in the STOP mode. The PROGRAM indicator lights and up to 32 tracks can be programmed.

❾ RANDOM
Press this button to light "RANDOM" on the display and start RANDOM mode.

❿ REPEAT
Press this button to play one track, all the tracks or the programmed tracks of the disc repeatedly.
To repeat all the tracks, press the button once. "REPEAT" will be lit in the display window. To repeat only one track, press the button once again. "REPEAT 1" will be lit in the display window. To cancel this repeat play, press the [REPEAT] button again.

⓫ Display Window
This shows the total number of selections on the disc, the total playing time, the elapsed playing time, the remaining playing time, various program data, etc.

⓬ ▲ OPEN/CLOSE
Press this button to move the disc tray in and out. Press once and the disc tray will move out; now you can load a disc. Press again to move the tray back in. The disc is now ready to be played.
If it is pressed during play, play will be interrupted. And the program will be erased from memory and the disc tray will move out.

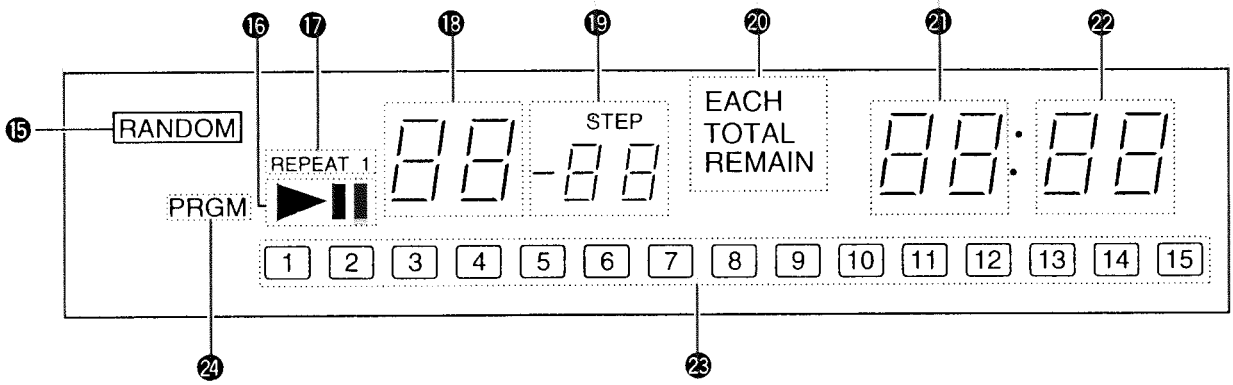
Note:
- **If the power is turned off with the disc tray out, the disc tray will move in automatically.**
  The disc tray can be moved in and out even in the standby mode.

⓭ ■ STOP/CLEAR
Press this button to stop play. A few seconds after the disc has stopped rotating, the player goes into the STOP mode with the track number "1" shown in the display window. The player is then ready to play.
Press the [■STOP/CLEAR] button during PROGRAM MODE to clear all the program steps.

⓮ PLAY ▶/II PAUSE
Press this button to start play. If the disc tray is out when this button is pressed, the disc tray will then move in and play will start (without pressing the [▲OPEN/CLOSE] button).
Press this button again to suspend play temporarily. The optical pick-up stops and the disc continues to rotate. This status is called the pause mode.

Note:
- **If the button is pressed with no disc loaded, the disc tray will move out.**
  If the button is pressed in the standby mode, the power will turn on automatically and play will start.

DISPLAY



⑮ **RANDOM**
Lights during RANDOM MODE.

⑯ **PLAY/PAUSE indicators**
► : Lights during play.
II : Lights in the pause mode.

⑰ **REPEAT**
Lights when the repeat play is on.
REPEAT : Lights when repeat play for all the tracks.
REPEAT 1 : Lights when repeat play for only one track.

⑱ **TRACK**
Shows the current track being played.
Shows the current programmed track in PROGRAM MODE.

⑲ **STEP**
Shows the numbers of memory steps of the programmed selections.
In any play mode other than program play,Index numbers are shown here.

⑳ **EACH/TOTAL/REMAIN**
If the EACH light is on, the time indicators will show the elasped time of current track being played.
If the TOTAL light is on, the time indicators will show the total play time.
If both EACH and REMAIN lights are on, the time indicators will show the play time of the current track.

㉑ **Time indicator (MINUTE)**
Shows the total playing time or elapsed playing time in minutes.

㉒ **Time indicator (SECOND)**
Shows the total playing time or elapsed playing time in seconds.

㉓ **Program Chart**
This chart indicates the number of each track on the disc.
When a track is programmed, the selected track number lights.

㉔ **PRGM**
Lights during PROGRAM MODE.

HOW TO OPERATE

Preliminary Operation

1. Turn on and adjust components such as the amplifier.
2. Turn on the CD player.
3. Press the [≜(OPEN/CLOSE)] button to slide the disc tray out.
4. With its label side up, load a disc on the disc tray.
5. Press the [≜(OPEN/CLOSE)] button again to slide the disc tray in.

Notes:

- **The display will show the number of tracks and total playing time of the disc for 3 seconds.**
- **You can also close the disc tray by pressing the [PLAY ▶/II PAUSE] button. In such a case, play starts immediately with the first track of the disc.**

To Play From the First Track

Press the [PLAY ▶/II PAUSE] button.

To Play From Other Track

1. Select the desired track by pressing the [▶▶ ▶▶I] or [I◀◀ ◀◀] button.
2. Press the [PLAY ▶/II PAUSE] button.

To Stop Play Temporarily

Press the [PLAY ▶/II PAUSE] button.

Note:

- **To continue playing, press the [PLAY ▶/II PAUSE] button again.**

To Switch Track During Play

- **To skip to the next track**

  Press the [▶▶ ▶▶I] button.
- **To skip to the previous track**

1. Press the [I◀◀ ◀◀] button once to go to the start of the current track.
2. Immediately after step 1, press the [I◀◀ ◀◀] button again.

To Repeat Play

- **To repeat all the tracks**

1. Press the [REPEAT] button once.
2. Press the [PLAY ▶/II PAUSE] button.

- **To repeat one track**

1. Press the [REPEAT] button twice.
2. Select the desired track by pressing the [▶▶ ▶▶I] or [I◀◀ ◀◀] button.
3. Press the [PLAY ▶/II PAUSE] button.

To Stop Play

Press the [■STOP/CLEAR] button.

To Remove the Disc

Press the [≜OPEN/CLOSE] button.

To Program Play

1. If the CD player is playing, press [■STOP/CLEAR] button to stop play.
2. Press the [PROGRAM] button to go to the PROGRAM MODE. The PRGM light will turn on.
3. Select the desired track by pressing the [▶▶ ▶▶I] or [I◀◀ ◀◀] button. During this process, the track indicator will blink.
4. Press the [MEMORY] button while the track indicator is blinking (within 4 seconds) to add the selected track into the program. The STEP indicator will increase by 1.
5. Repeat steps 3 and 4 to add other tracks into the program. If the wrong track is added, press [CANCEL] to clear the last program step.
6. Press [PLAY ▶/II PAUSE] button to begin play.

Notes:

- **A maximum of 32 program steps can be programmed.**
- **The STEP indicator displays the total number of program steps.**
- **The time indicator displays the total time of program steps, except when programming with the disc tray out.**
- **When the total play time of the program exceeds 99 minutes and 59 seconds, the time display will be disabled.**
- **To cancel PROGRAM MODE, press the [PROGRAM] button again, or press the [≜OPEN/CLOSE] button.**

To Check Program

1. If the CD player is playing, press the [■ STOP/CLEAR] button to stop play.
2. Press the [CALL] button repeatedly. Each time the [CALL] button is pressed, the STEP indicator will increase by 1 and the TRACK indicator will display the corresponding track number in the program steps. During this process, both the TRACK and STEP indicators will be blinking.

To Clear Program

- **To clear entire program**

1. If the CD player is playing, press the [■ STOP/CLEAR] button to stop play.
2. Press the [■ STOP/CLEAR] button.

- **To clear selected program steps**

1. If the CD player is playing, press the [■ STOP/CLEAR] button to stop play.
2. Press the [CALL] button repeatedly to select the desired program step. During this process, both the TRACK and STEP indicators will be blinkin.
3. Press the [CANCEL] button while the display is blinkin (within 4 seconds) to clear the selected program step. The STEP indicator will decreased by 1.
4. Repeat steps 2 and 3 to clear other program steps.

To Modify Program

1. If the CD player is playing, press [■STOP/CLEAR] button to stop play.
2. Press the [CALL] button repeatedly to select the program step that is to be modified. During this process, both the TRACK and STEP indicators will be blinking.
3. At the selected program step, press the [▶▶I ▶▶] or [I◀◀ ◀◀]button to select the new track for this program step. During this process, only the TRACK indicator will blink.
4. Once the new track is displayed, press the [MEMORY] button while only the TRACK indicator is blinking (within 4 seconds) to confirm the modification.
5. Now, both the TRACK indicator and STEP indicator will be blinking again. Repeat steps 2, 3 and 4 to modify other program steps.

To Random Play

1. Press the [■STOP/CLEAR] button.
2. Press the [RANDOM] button. The RANDOM light will turn on.
3. Press the [PLAY ▶/II PAUSE] button to start random play.

Note:

To cancel the random mode,press the [■STOP /CLEAR]button, followed by the [RANDOM] button.

To Perform Synchronized Recording

Synchronized recording is possible by connecting the cassette deck to the COMPU LINK-1, 3/SYNCHRO terminals of the CD player through the remote cable.

1. Press the [REC (○)] and [PAUSE (II)] buttons of the cassette deck.
2. Press the [PLAY ▶/II PAUSE] button of the CD player to start the synchronized recording.
3. Press the [STOP/CLEAR (■)] button to stop recording.

TROUBLESHOOTING

What appears to be a malfunction may not always be serious.
Make sure first.

Although the disc is inserted in the CD player, DISPLAY shows no data.
Is the disc placed upside down?
- Place the disc on the disc tray with its label side up.

Selections cannot be programmed.
Is the "PROGRAM" indicator lit?
- Press the [PROGRAM] button.

The sound is intermittent and is harsh to the ear.
Is the disc dirty?
- Wipe off the surface with a soft cloth.

Is the disc scratched?
- Replace the disc with a new one.

Is the disc warped?
- Replace the disc with a new one.

SPECIFICATIONS

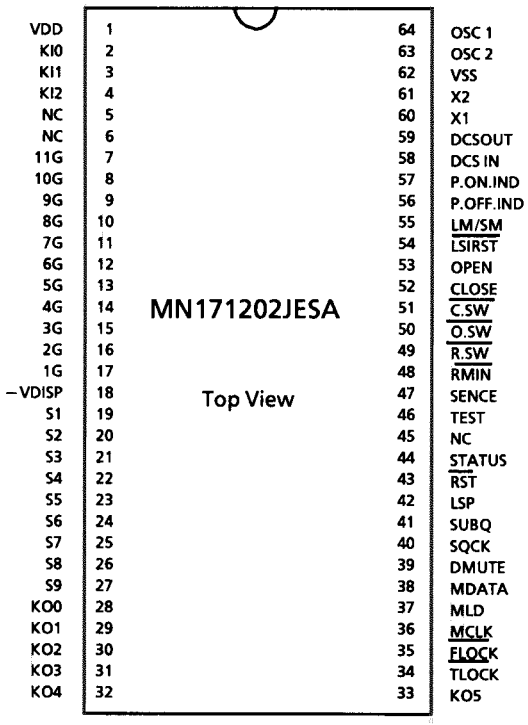
System	: Compact disc player
Signal detection system	: Non-contact optical system
Number of channels	: 2 channels
Frequency response	: 4 Hz ~ 20,000 Hz
Dynamic range	: 95 dB (1 kHz)
Signal/noise ratio	: 100 dB (at digital 0)
Harmonic distortion	: 0.006 % (1 kHz)
Wow and flutter	: Less than measurable limit
Output level	: 2.0 Vrms (full scale)
Number of program steps	: 32 step
Power Requirements	: AC230V g, 50Hz
Power Consumption	: 9 Watts 3 Watts (STAND BY)
Dimensions	: 435 (W) x 103 (H) x .. 274.6 (D) mm (17-3/16" x 4-1/16" x 10-13/16")
Weight	: 3.3 kg (7.3 lbs)

Accessories : Signal cord (1 m • 3.28 ft.) 1
: compulink cord (1 m • 3.28 ft.) 1

Design and specifications subject to change without notice.

■ MN171202JESA(IC201) : System controller

1.Terminal Layout



2.Key Matrix

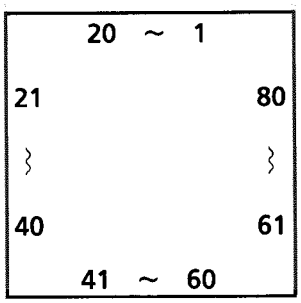
	KEY I 0 (PIN 2)	KEY I 1 (PIN 3)	KEY I 2 (PIN 4)
KEY O0 (PIN 28)	POWER	⏮	REPEAT
KEY O1 (PIN 29)	MEMORY	⏭	PROGRAM
KEY O2 (PIN 30)	CALL		CANCEL
KEY O3 (PIN 31)	▲	■	RANDOM

3.Pin Description

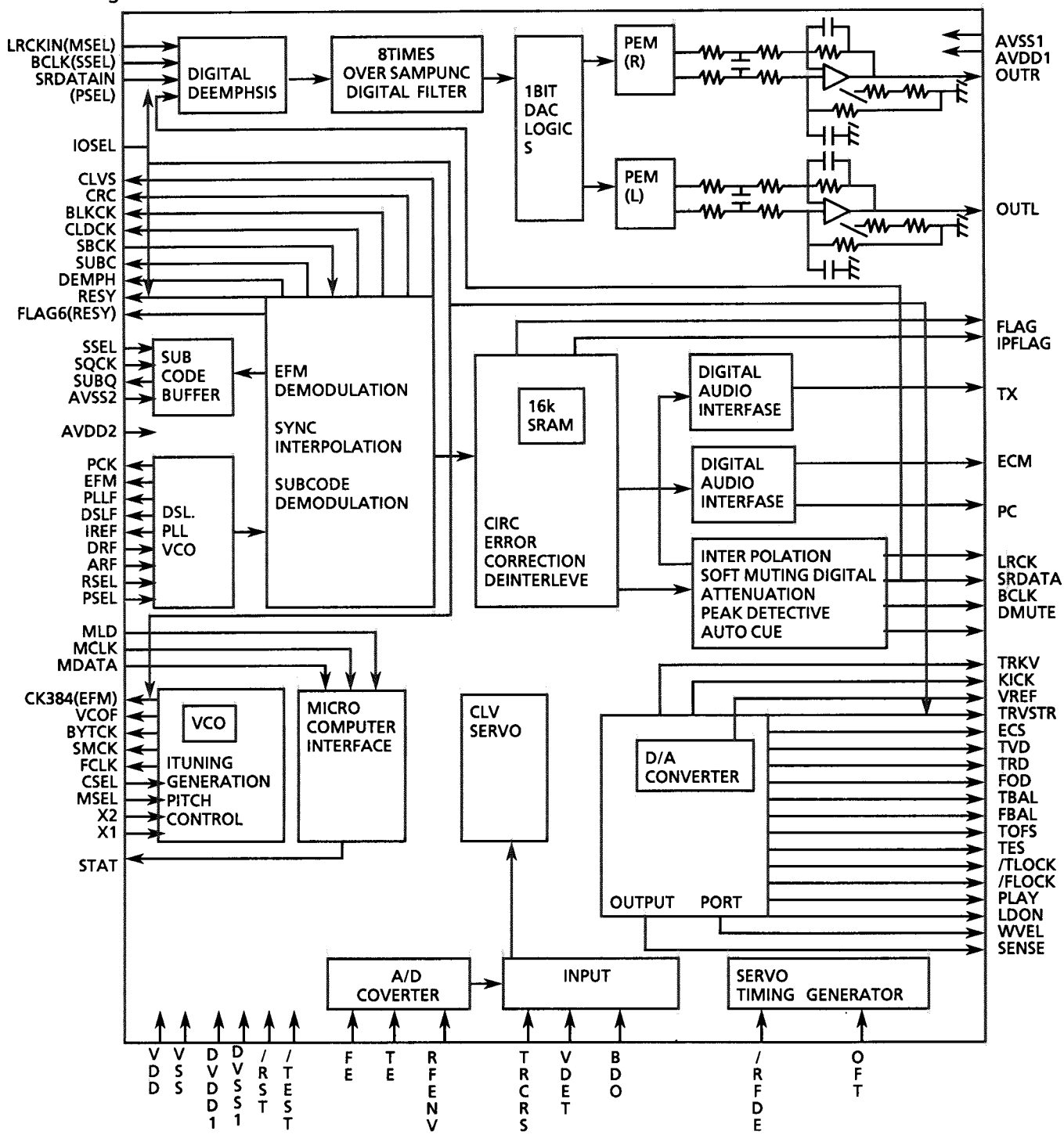
Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	VDD	--	Power supply(+5V)	46	TEST		+5V pull up
2~4	KEYI0 ~KEYI2	I	Key signal input	47	SENSE	I	Sens signal input
5~6	NC		Non Connection	48	/RMIN	I	Remort control signal input
7~17	1G~11G	O	FL grid control output	49	/RESTSW	I	"L"with pickup rest position
18	−VDISP	--	FL power supply	50	/OPENSW	I	"L" with disc table open
19~27	S1~S9	O	FL segment control output	51	/CLOSESW	O	"L" with disc table close
28~ 31	KO0~ KO3	O	FL grid control output	52	CLOSE	O	"H" with disc table close
34	/TLOCK	I	Lock signal for Tracking	53	OPEN	O	"H" with disc table open
35	/FLOCK	I	Lock signal for Focus	54	/LSIRST	I	Lsi reset signal input
36	MCLK	O	μ-com command clock signal output	55	LM/SM	O	H:loding motor L:spindle motor
37	MLD	O	μ-com command load signal output	56	P.,ON.IND	O	H:Power OFF,L: Power ON
38	MDATA	O	μ-com command data output	57	P.,OFF,IND	--	Non nonnection
39	DMUTE	O	Digital mute output	58	DCS IN	I	Conpulink control signal input
40	SQCK	O	Sub Q clock output	59	DCS OUT	O	Conpulink control signal output
41	SUBQ	O	Sub-code Q-code output	60	X1	--	GND
42	LSP	--	Non connection	61	X2	--	Non nonnection
43	/RST	I	Reset signal input	62	VSS	--	GND
44	STATUS	I	Status signal input	63	OSC2	--	Oscillation terminal
45	NC	--	Non Connection	64	OSC1	--	Oscillation terminal

■ MN35510 (IC603) : DIGITAL SERVO & DIGITAL SIGNAL PROCESSER

1. Terminal Layout



2. Block Diagram

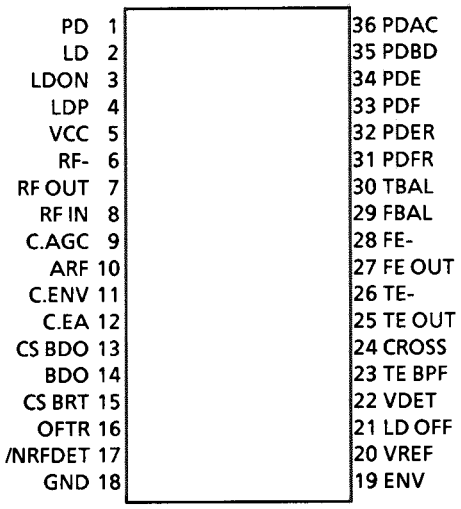


3. Description

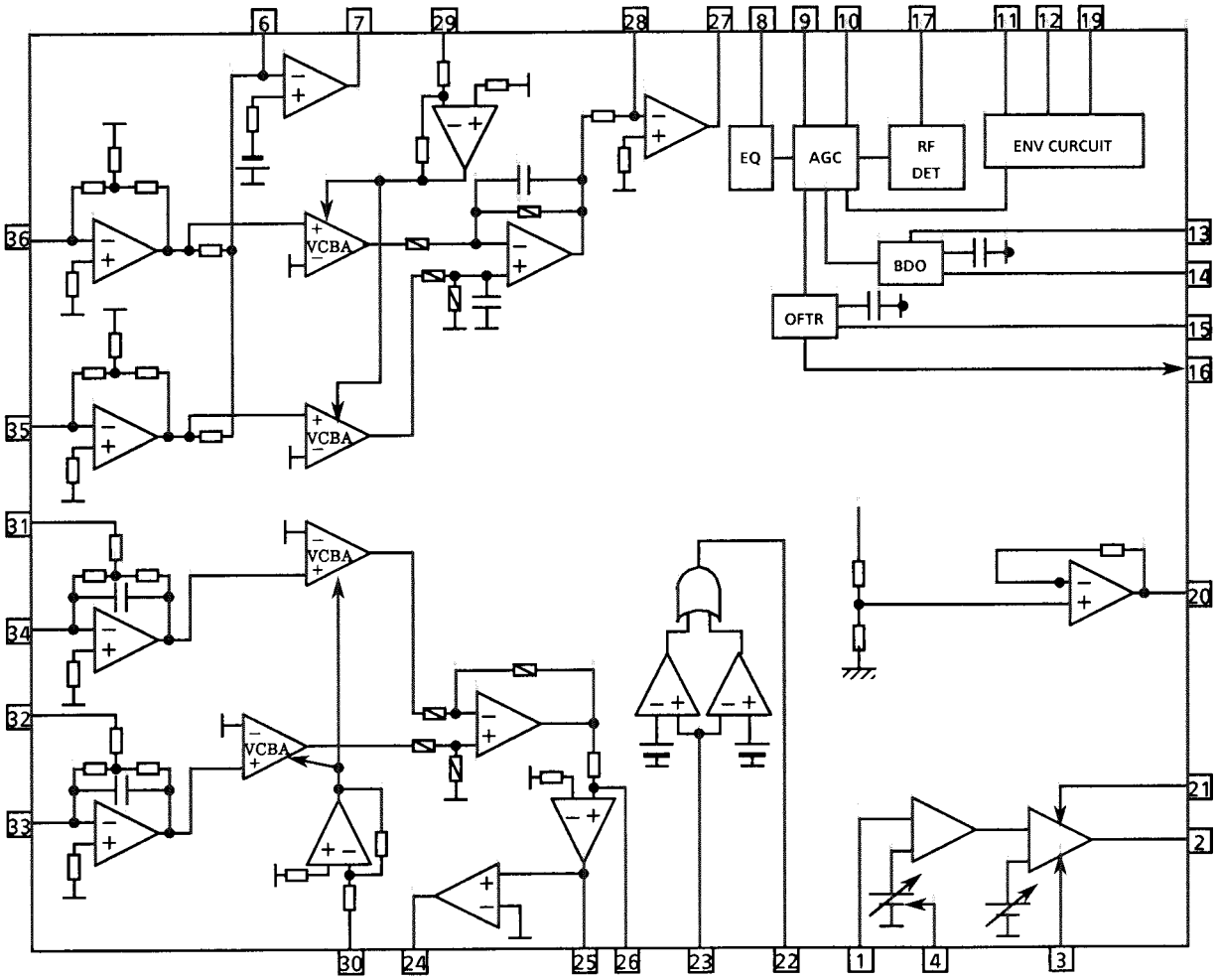
Pin No.	symbol	I/O	Description	Pin No.	symbol	I/O	Description
1	BCLK	O	Not used	41	TES	—	Not use
2	LRCK	O	Not used	42	PLAY	—	Not used
3	SRDATA	O	Not used	43	WVEL	—	Not used
4	DVDD1	—	Power supply(Digital)	44	ARF	I	RF signal input
5	DVSS1	—	Connected to GND(Digital)	45	IREF	I	Reference current input pin
6	TX	O	Not used	46	DRF	—	Not use
7	MCLK	I	µ-com command clock signal input (Data is latched at signal's rising point)	47	DSLF	I/O	Loop filter pin for DSL
8	MDATA	I	µ-com command data input	48	PLLF	I/O	Loop filter pin for PLL
9	MLD	I	µ-com command load signal input	49	VCOF	—	Connected to GND
10	SENSE	O	Sense signal output (OFT,FESL,NALEND,SFG,NWTEND)	50	AVDD2	—	Power supply (Analog)
11	/FLOCK	O	Lock signal for focus(L:pull)	51	AVSS2	—	Connected to GND(Analog)
12	/TLOCK	O	Lock signal for Tracking (L:pull)	52	EFM	—	Not used
13	BLKCK	O	Not use	53	PCK	—	Not used
14	SQCK	I	Outside lock for sub-code Q resister input	54	PDO	—	Not used
15	SUBQ	O	Sub-code Q-code output	55	SUBC	—	Not used
16	DMUTE	I	Muting input	56	SBCK	—	Not used
17	STATUS	O	Status signal (CRC,CUE,CLVS,TTSTOP,ECLV,SQOK)	57	VSS	—	Connected to GND(for X'tal cscillation circuit)
18	/RST	I	Reset signal input (L :Reset)	58	X1	I	Input of 16.9344MHz X'tal oscillation circuit
19	SMCK	—	Not used	59	X2	O	Output of X'tal oscillation circuit
20	PMCK	—	Not used	60	VDD	—	Power supply(for X'tal cscillation circuit)
21	TRV	O	Traverse enforced output	61	BYTCK	—	Not used
22	TVD	O	Traverse drive output	62	/CLDCK	—	Not used
23	PC	—	Not used	63	FCLK	—	Not used
24	ECM	O	Spindle motor drive signal (Enforced mode output) 3-State	64	IPPLAG	—	Not used
25	ECS	O	Spindle motor drive signal (Servo error signal output)	65	FLAG	—	Not used
26	KICK	O	Kick pulse output	66	CLVS	—	Not used
27	TRD	O	Tracking drive output	67	CRC	—	Not used
28	FOD	O	Focus drive output	68	DEMPH		Not used
29	VREF	I	Reference voltage input pin for D/A output block(TVD,FOD,FBAL,TBAL)	69	RESY	—	Not used
30	FBAL	O	Focus Balance adjust signal output	70	IOSEL	—	Pull up
31	TBAL	O	Tracking Balance adjust signal output	71	/TEST	—	Pull up
32	FE	I	Focus error signal input(Analog input)	72	AVDD1	—	Power supply (Digital)
33	TE	I	Tracking error signal input(Analog input)	73	OUT L	O	Lch audio output
34	RF ENV	I	RF envelope signal input(Analog input)	74	AVSS1	—	Connected to GND
35	VDET	I	Vibration detect signal input(H : detect)	75	OUT R	O	Rch audio output
36	OFT	I	Off track signal input(H : off track)	76	RSEL	—	Pull up
37	TRCRS	I	Track cross signal input	77	CSEL	—	Connected to GND
38	/RFDET	I	RF detect signal input (L : detect)	78	PSEL	—	Connected to GND
39	BDO	I	BDO input pin (H : drop out)	79	MSEL	—	Connected to GND
40	LDON	O	Laser ON signal output (H : on)	80	SSEL	—	Pull up

■ AN8806SB (IC501) : RF & SERVO AMP

1. Terminal Layout



2. Block Diagram



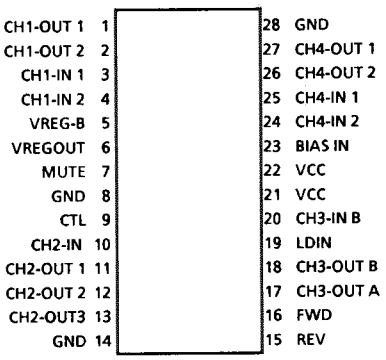
3. Functions

Pin No.	Symbol	I/O	Functions and operations
1	PD	I	APC amp input terminal
2	LD	O	APC amp output terminal
3	LD ON	I	APC ON/OFF control terminal
4	LDP	--	Connected to ground
5	VCC	--	Power supply
6	RF-	I	Inverse input pin for RF amp
7	RF OUT	O	RF amp output
8	RF IN	I	RF input
9	C.AGC	I/O	Connecting pin of AGC loop filter
10	ARF	O	RF output
11	C.ENV	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
12	C.EA	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
13	CS BDO	I/O	A capacitor is connected to detect the lower envelope of the RF signal
14	BDO	O	BDO output pin
15	CS BRT	I/O	A capacitor is connected to detect the lower envelope of the RF signal
16	OFTR	O	Of-track status signal output
17	/NRFDET	O	RF detection signal output
18	GND	--	Ground
19	ENV	O	Envelope output
20	VREF	O	Reference voltage output
21	LD OFF	--	Connect to ground
22	VDET	O	Vibration detection signal output
23	TE BPF	I	Input pin of tracking error through BPF
24	CROSS	O	Tracking error cross output
25	TE OUT	O	Tracking error signal output
26	TE-	I	Inverse input pin for tracking error amp
27	FE OUT	O	Output pin of focus error
28	FE-	I	Inverse input pin for focus error amp
29	FBAL	I	Focus balance control
30	TBAL	I	Tracking balance control
31	PDFR	I/O	Not use
32	PDER	I/O	Not use
33	PDF	I	I-V amp input
34	PDE	I	I-V amp input
35	PD BD	I	I-V amp input
36	PD AC	I	I-V amp input

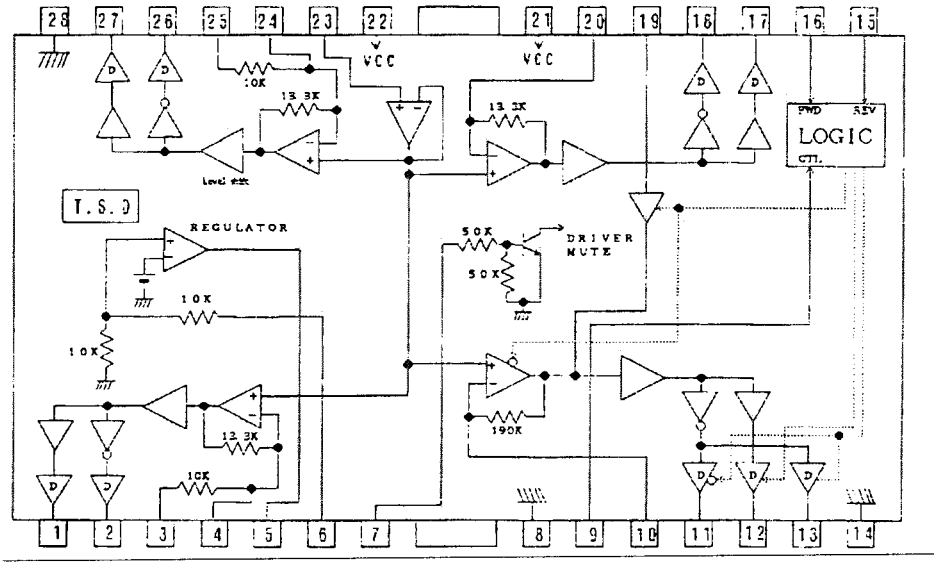
XL-V120BK

■ BA6795FP(IC801) : BTL DRIVER

1. Terminal Layout



2. Block Diagram

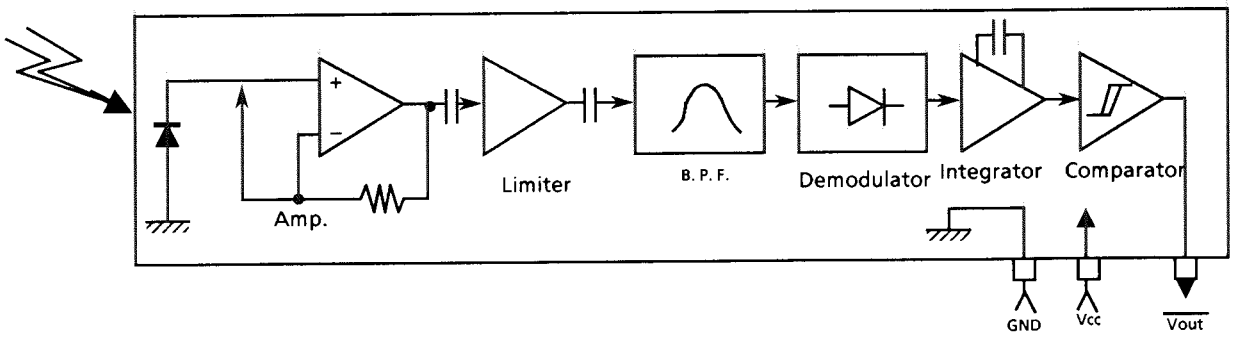


3.Description

Pin No.	Symbol	I/O	Description
1 2	CH1-OUT 1 CH1-OUT 2	O	Focus drive output
3	CH1-IN 1	--	Non connection
4	CH1-IN 2	I	Focus drive signal input
5	VREG-B	I/O	Connected base of transistor
6	VREQOUT	O	+5V out
7	MUTE	I	Mute signal input pin
8,14,28	GND	—	GND
9	CTL	I	Loding /Spindle control H:loding L: spindle
10	CH2-IN	I	Spindle motor drive input
11	CH2-OUT1	O	Spindle motor drive output
12	CH2-OUT2	O	Spindle and loding motor drive output

Pin No.	Symbol	I/O	Description
13	CH2-OUT3	O	Loding motor drive output
15	REV	I	Tray open signal input
16	FWD	I	Tray close signal input
17 18	CH3-OUT A CH3-OUT B	O	Feed motor drive output
19	LDIN	I	Loding motor drive input
20	CH3-INB	I	Feed motor drive input
21,22	VCC	I	Power suplly
23	BIAS IN	I	Input pin of Bias
24 25	CH4-IN 2 CH4-IN 1	I I	Tracking drive input Tracking drive input
26 27	CH4-OUT 2 CH4-OUT 1	O	Tracking drive output

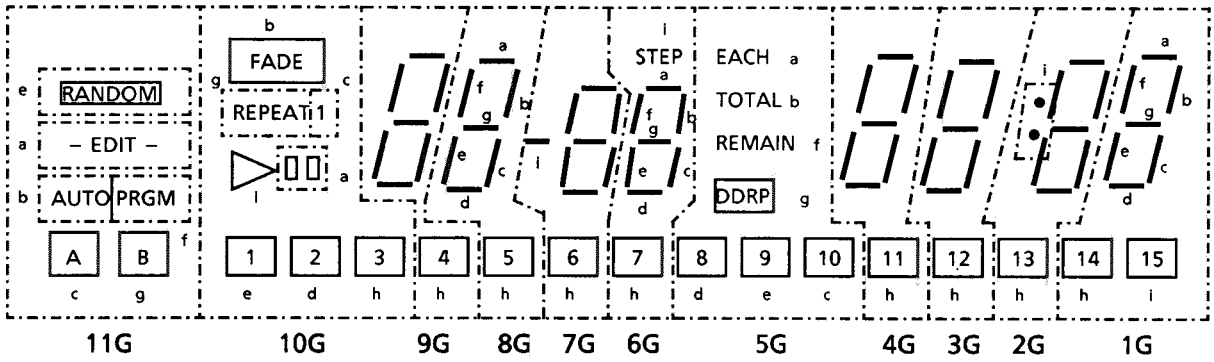
■SPS-420-1 (IC202) : Receiver for remote controller (Use for XL-V282BK only)



Internal Connections of FL Display Tube

■ ELU0001-114 (DI251)

1. Grid Layout



2. Pin Connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Electrode	F1	F1	NP	NC	11G	10G	9G	8G	7G	6G	5G	S1 (i)	4G	3G	2G	1G	S2 (a)	S3 (b)	S4 (f)

Pin No.	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Electrode	S5 (g)	S6 (c)	S7 (e)	S8 (d)	S9 (h)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NP	F2	F2

Note ···· F : Filament, G : Grid, a~i : Element, NP : No pin, NC : No connection

Disassembly Procedures

1. Removing the metal cover

1) Remove the 4 screws holding the both sides of the metal cover, and the 2 screws holding the rear side of it.
2) Gently spread both sides of the metal cover to the outside, lift up the rear section, and remove the metal cover.

2.Removing the tray assembly

1) Remove the metal cover.
2) Turn on the power. Press the OPEN / CLOSE switch to move the tray out and remove the power cord .
3) Remove the screw Ⓐ on the tray.
4) Pull the tray toward the front to move it.

Note: If the power can not be turned on due to a malfunction , etc., insert a Philips screwdriver through the hole on the bottom and turn it clockwise to move the tray out .

3.Removing the mechanism assembly

1) Remove the metal cover.
2) Remove the tray assembly.
3) Remove the 2 screws Ⓑ holding the clamp assembly, then remove the clamp assembly.
4) Remove the 3 screws Ⓒ holding the mechanism assembly.
5) Remove the connectors connecting with the main PC Board .

4.Removing the rear panel

1) Remove the 6 screws Ⓓ holding the rear panel.
2) Remove the rear panel.

5.Removing the main P.C. Board

1) Remove the metal cover.
2) Remove the rear panel.
3) Remove the 4 screws Ⓕ holding the P.C.board and 2 screws Ⓖ holding the transformer.
4) Remove the connectors connecting with the main P.C.board.

6.Removing the front panel assembly

1) Remove the metal cover.
2) Remove the tray assembly.
3) Remove the screw Ⓗ on the bottom of the front panel.
4) Remove the connector.
5) Release the hooks Ⓘ holding the front panel and remove the front panel assembly.

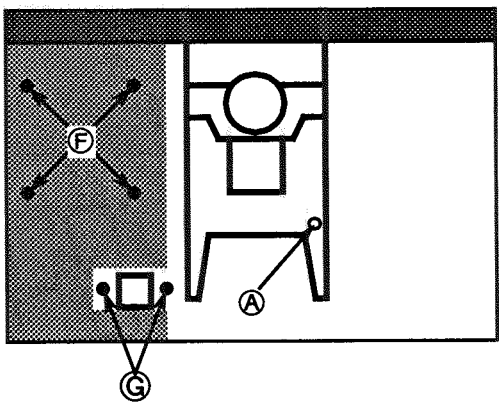


Figure 1

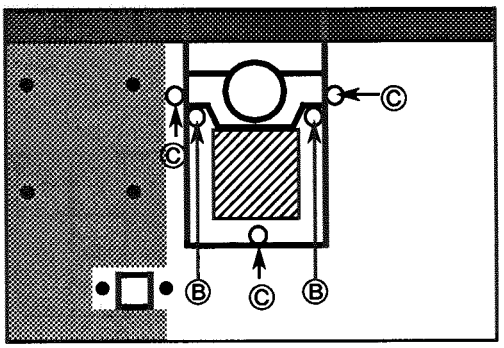


Figure 2

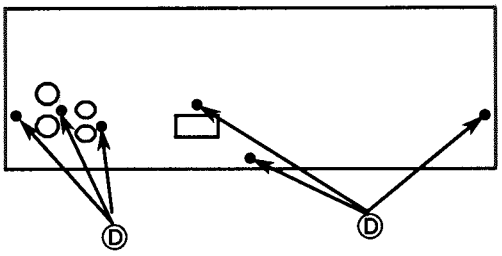


Figure 3

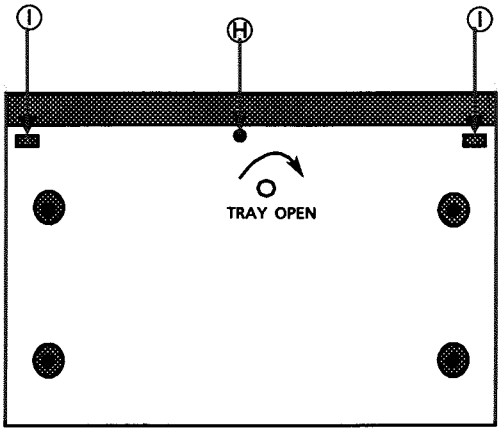


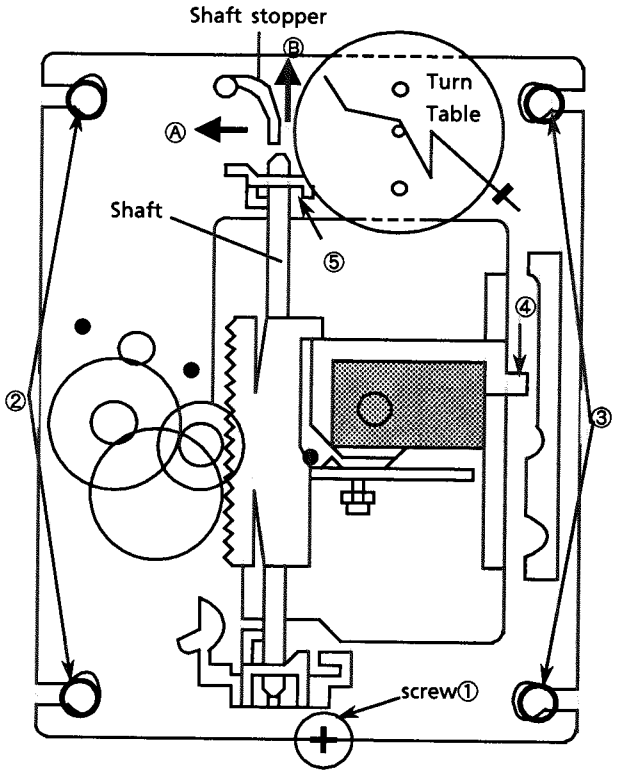
Figure 4

7. Removing the Laser Pickup

1) Remove the metal cover, tray assembly and the clamp.
2) Remove the screw ① from the Mecha Base assembly.
3) Remove the Mecha Base assembly from the rubber cushion ②③.
4) Move the Shaft stopper from the rest position to the left side Ⓐ.
5) Remove the Pickup Shaft from the Mecha Base assembly.(Slide the Pickup shaft to the up sideⒷ)
6) Remove the CD Pick Unit with the shaft.

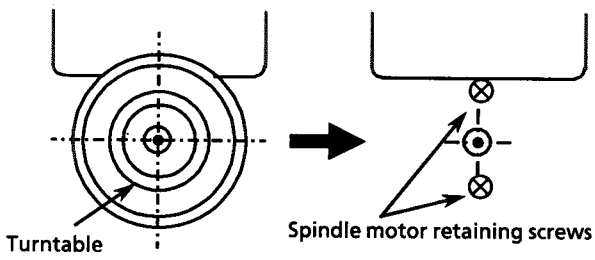
8. Installing the Laser Pickup

1) Connect the Flat wire with the connectors of APC (Automatic Power Control) P.C.Board.
2) While installing the ④ in the CD Support, set the shaft on the base hook⑤.
3) Install the Mecha Base assembly to the rubber cushion ②③..



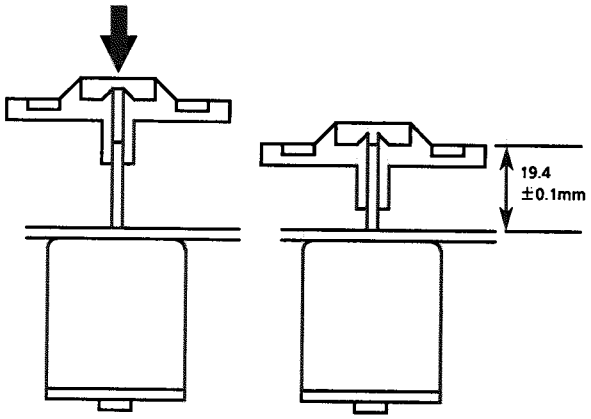
9. Removing the spindle motor

1) Remove the Mechanism assembly.
2) Remove the turntable, and remove the two screws retaining the spindle motor.
3) Remove the screw retaining the spindle and the Feed Motor P.C. Board and unsolder it.

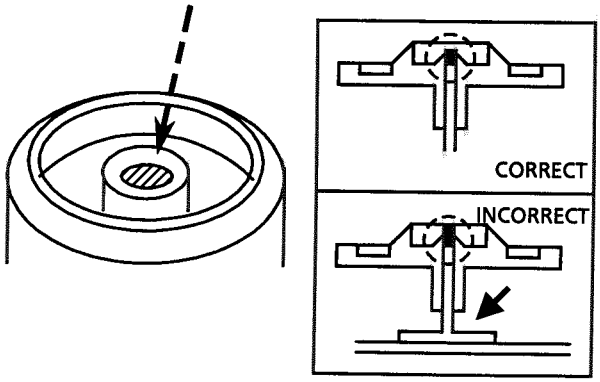


10. Installing the spindle motor

1) Tighten the 2 screws to the same torque.
2) Fasten the Spindle and the Feed Motor P.C. Board with the screw and solder.
3) Install the turntable.When installing, press straight down at the center of the turntable until the distance from the surface of the mechanism base to the top of the turntable is exactly 19.4±0.1mm.

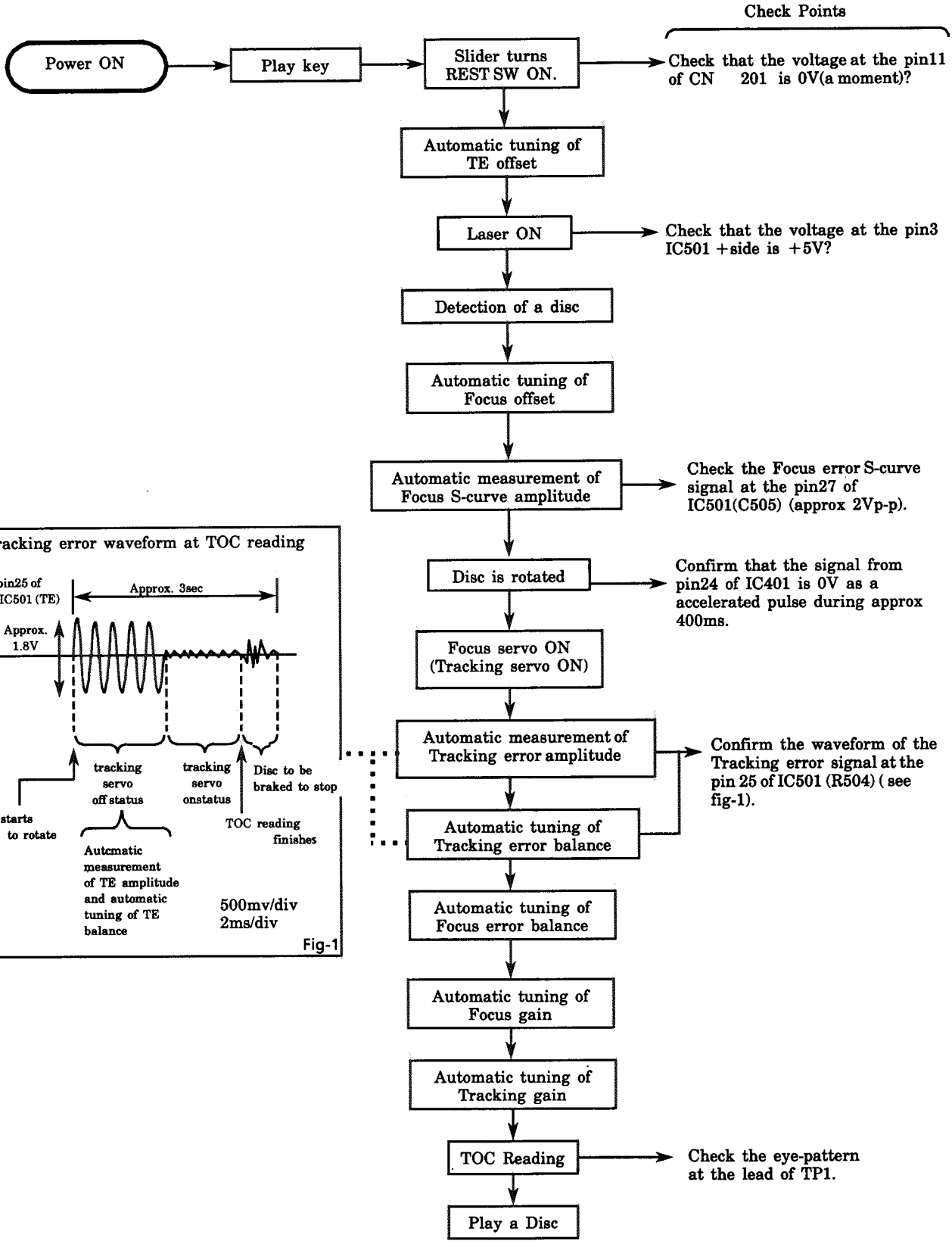


4) After insertion is complete, bond the motor shaft and turntable together (at the section marked by an arrow in the figure on the left below).

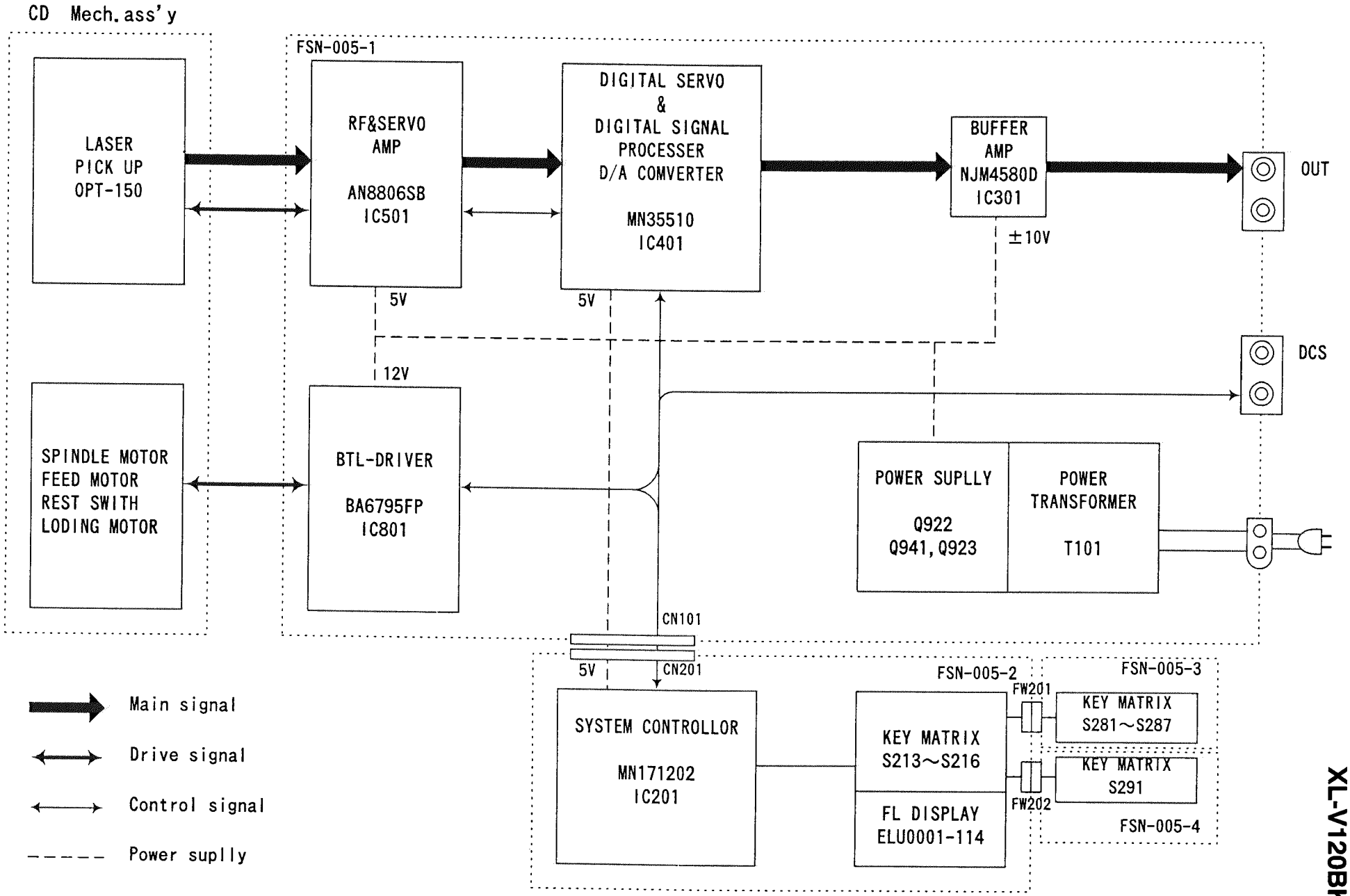


5) Use "LOCKTITE" #460 bonding agent, and apply as little as possible. Take care not to allow any excess bonding agent to get onto the turntable. Be extremely careful not to allow bonding agent to adhere to the motor bearings (the section marked by an allow in the figure on the right).

Flow of Functional Operation Until TOC is Read



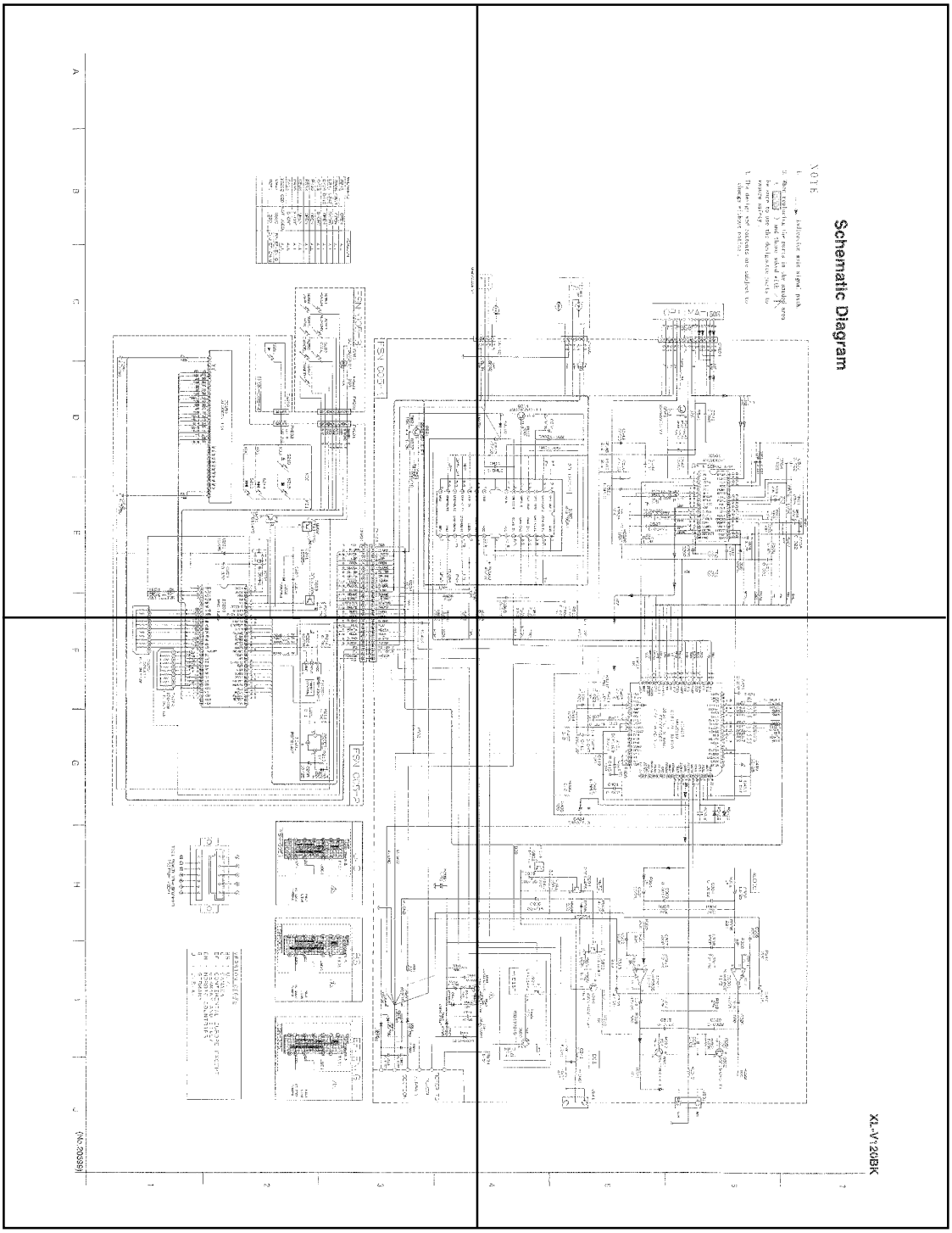
Block Diagram



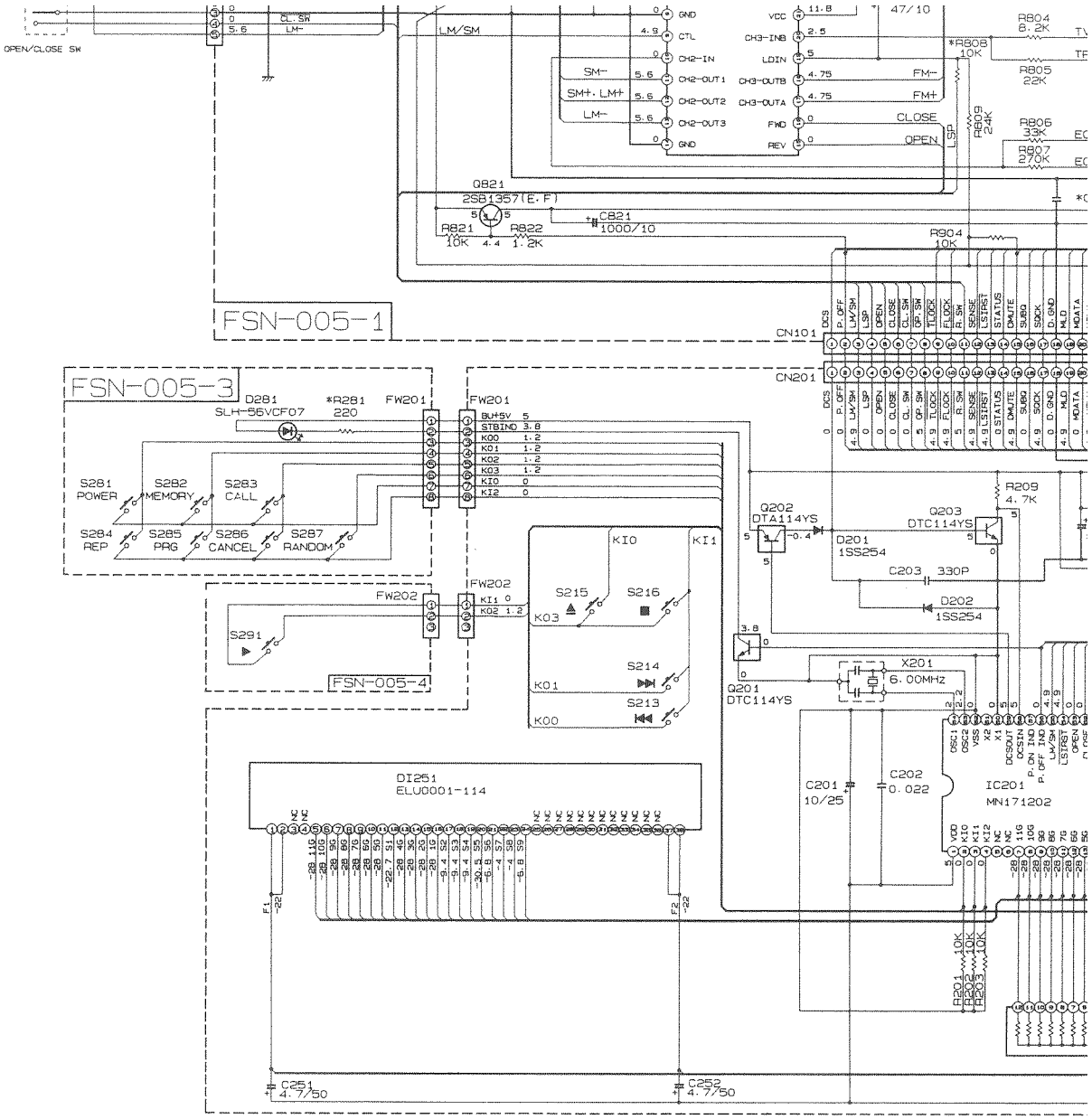
XL-V120BK

-MEMO-

P-S.D-a P-S.D-b



P-S.D-c P-S.D-d



*REMARKS

		VERSION
R242	OPEN	ALL
R808. C803	OPEN	ALL
L241. L242	SHORT	ALL
D409. D410	OPEN	ALL
C409	SHORT	ALL
R410	OPEN	ALL
R523	OPEN	ALL
C528	OPEN	ALL
D810	SHORT	ALL
C414	SHORT	ALL
IC202. C204	NOT USED	ALL
C991	USED	BS. EF. EN. G
R281	390	C. J. EF. EN. G

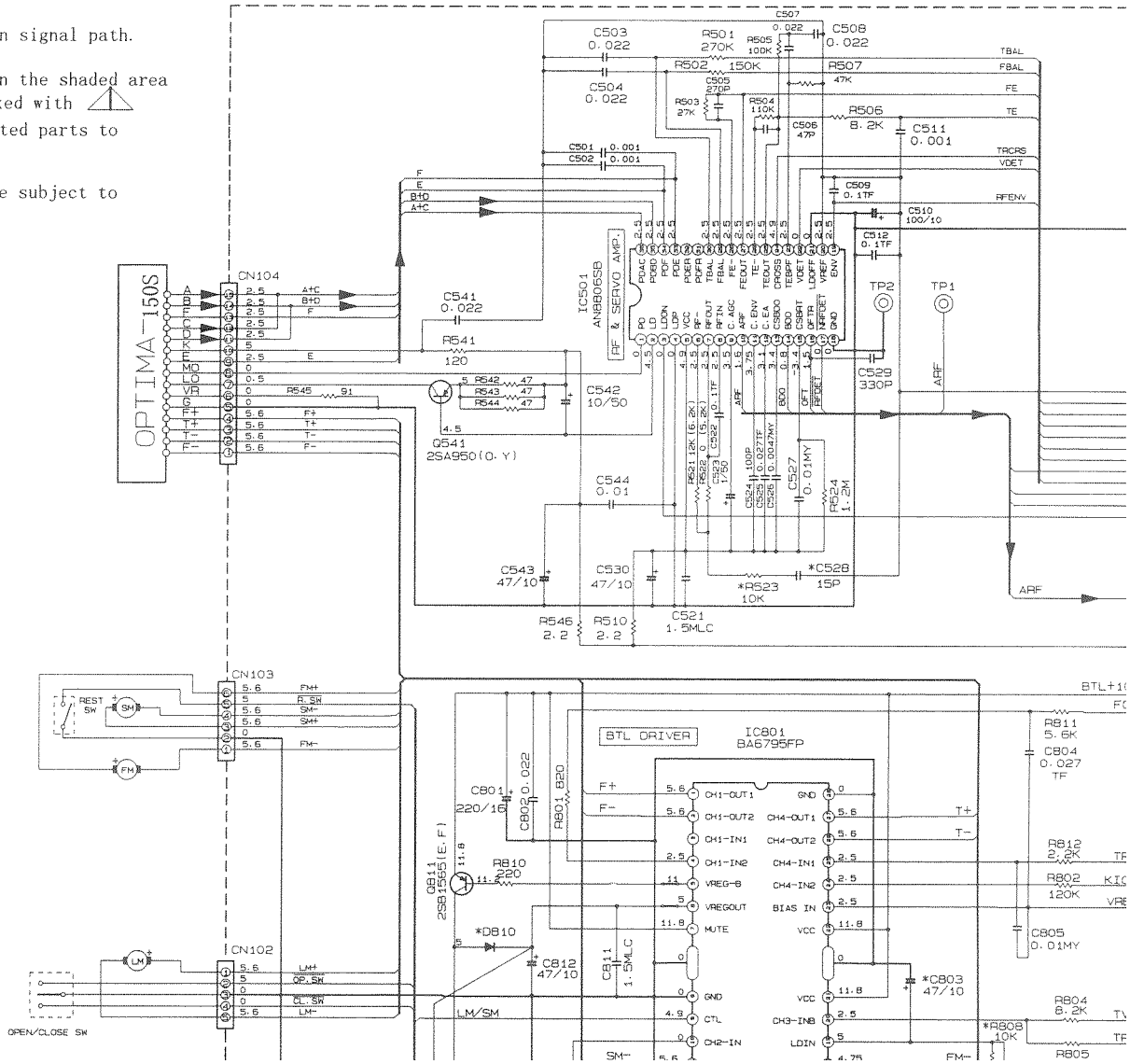
A B C D E

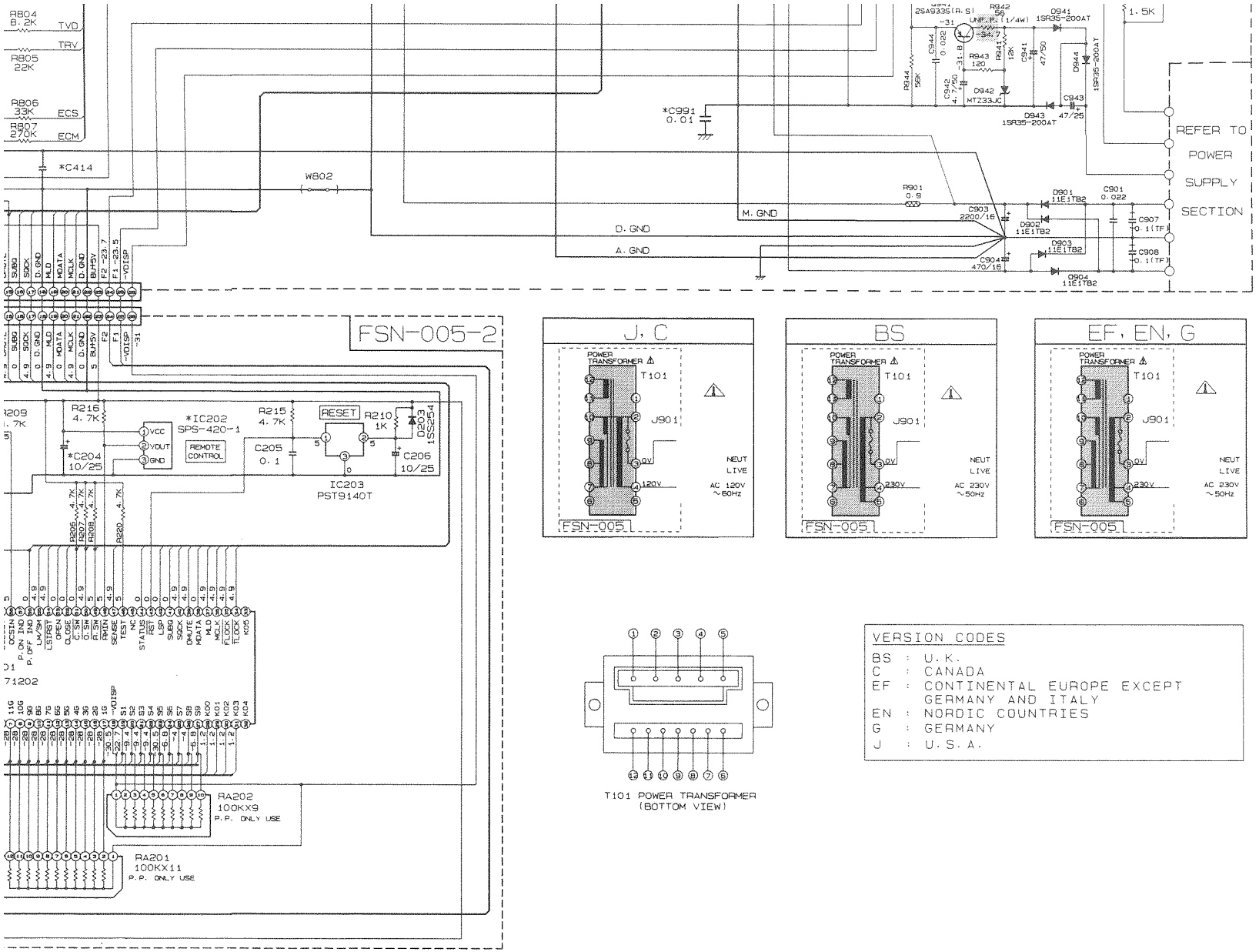
P-S.D-a

Schematic Diagram

NOTE

1. ⟶ imdication main signal path.
2. When replacing the parts in the shaded area (▭) and those maked with ⚠ be sure to use the designated parts to ensure safety .
3. The desige and contents are subject to change without notice .

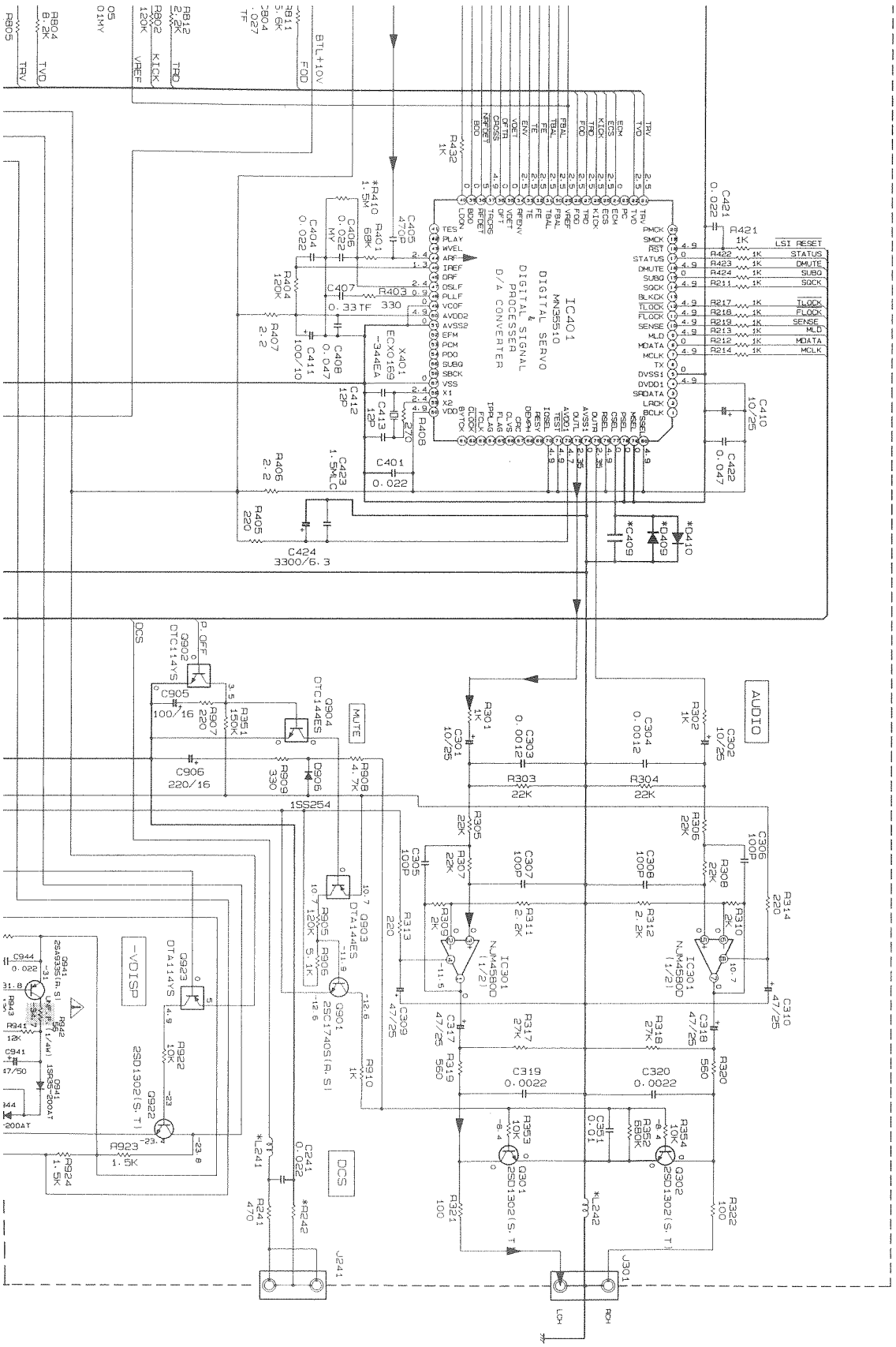




F G H I J

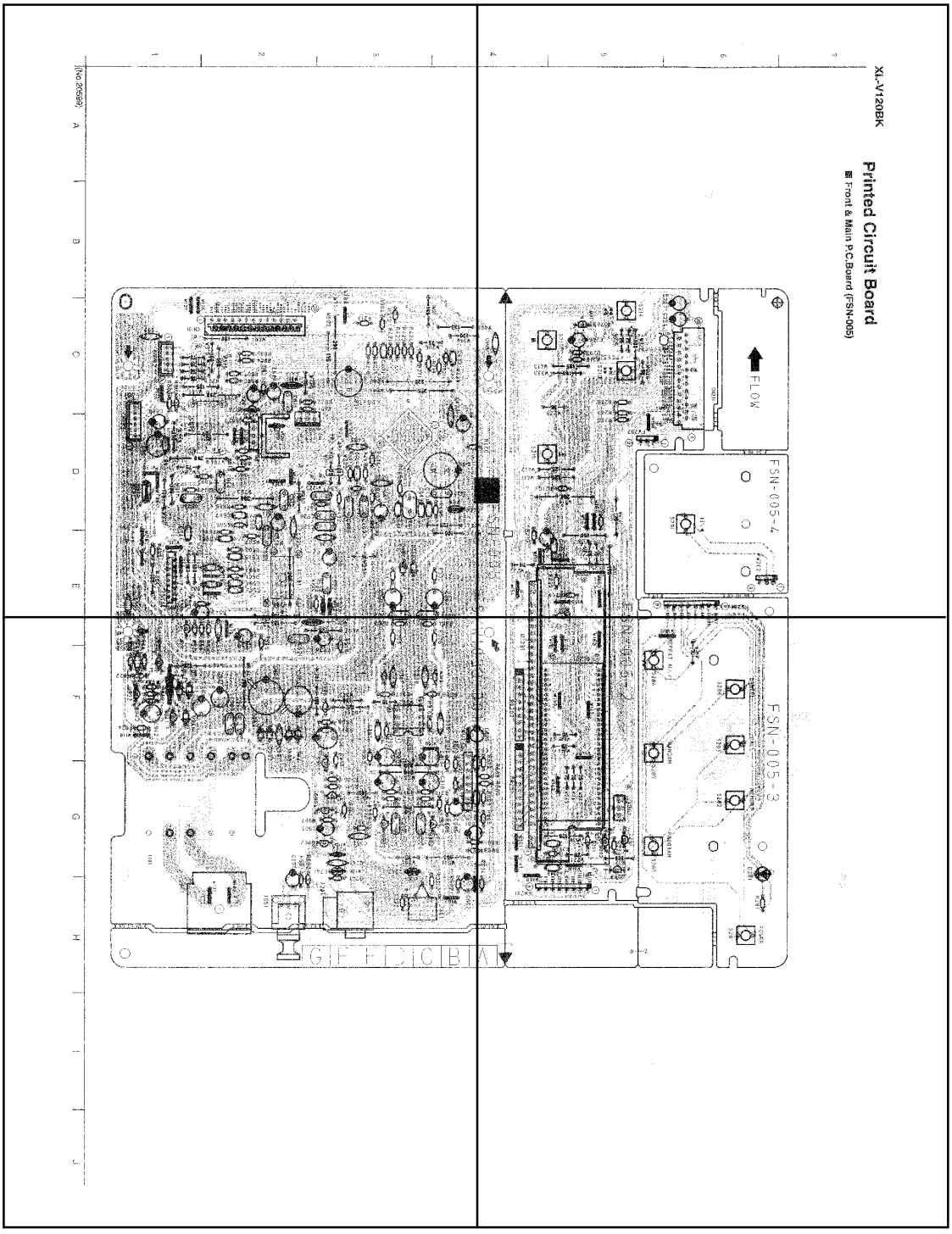
(No.20599)

P-S.D-c


IC401
MN35510
DIGITAL SERVO
&
DIGITAL SIGNAL
PROCESSER
D/A CONVERTER
AUDIO
MUTE
DCS
-VDISP
LSI RESET
STATUS
DMUTE
SUBQ
SQCK
TLOCK
FLOCK
SENSE
MLD
MDATA
MCLK
IC301
NJM4580D
(1/2)
Q901
2SC1740S(R,S)
Q902
DTC114YS
Q903
DTA144ES
Q904
DTC144ES
Q922
2SD1302(S,T)
Q923
DTA114YS
Q941
1SR35-200AT
Q942
2SA933S(R,S)
1SS254
J241
J301
LCH
RCH

P-P.C.B-a

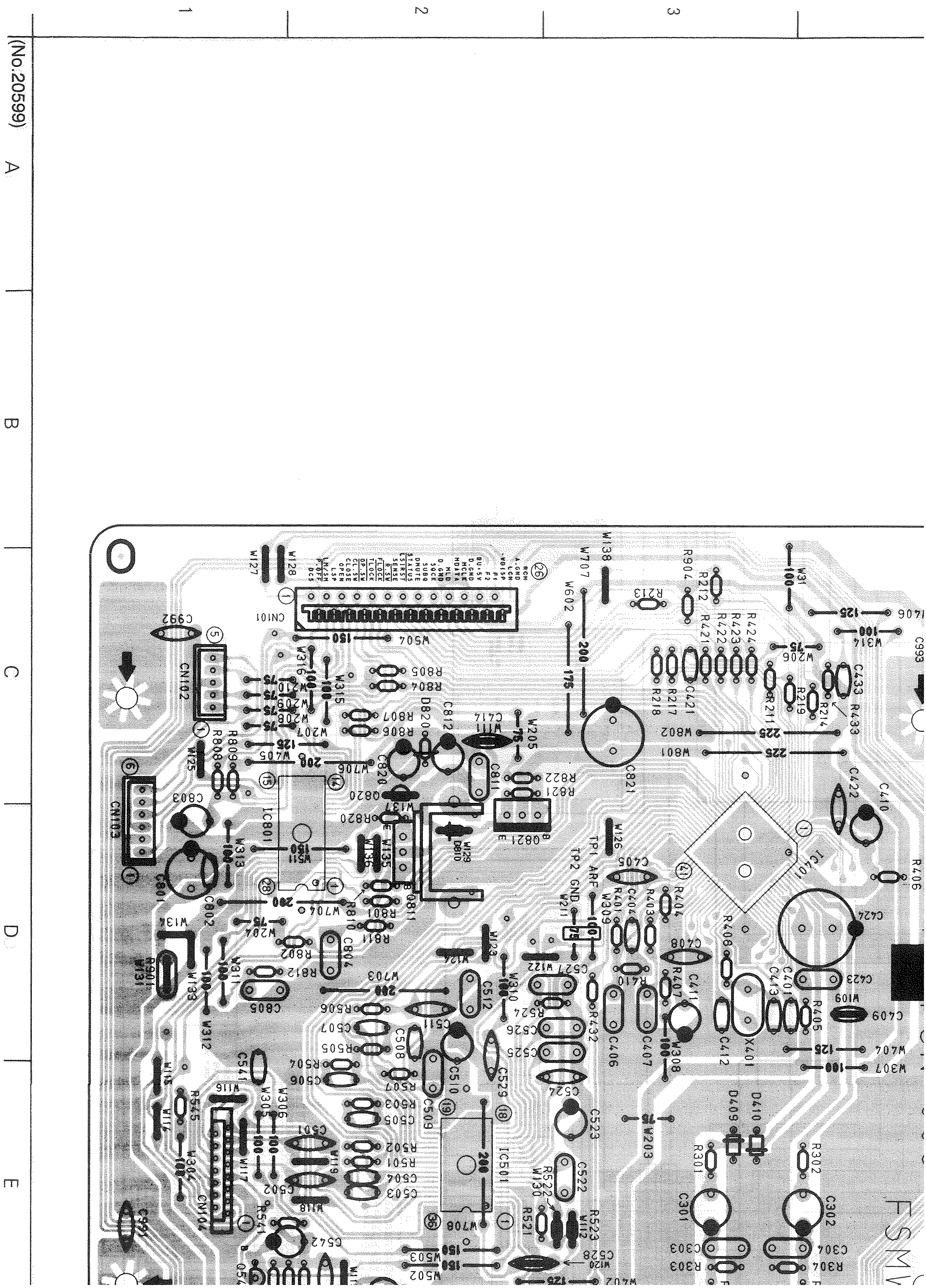
P-P.C.B-b



P-P.C.B-c

P-P.C.B-d

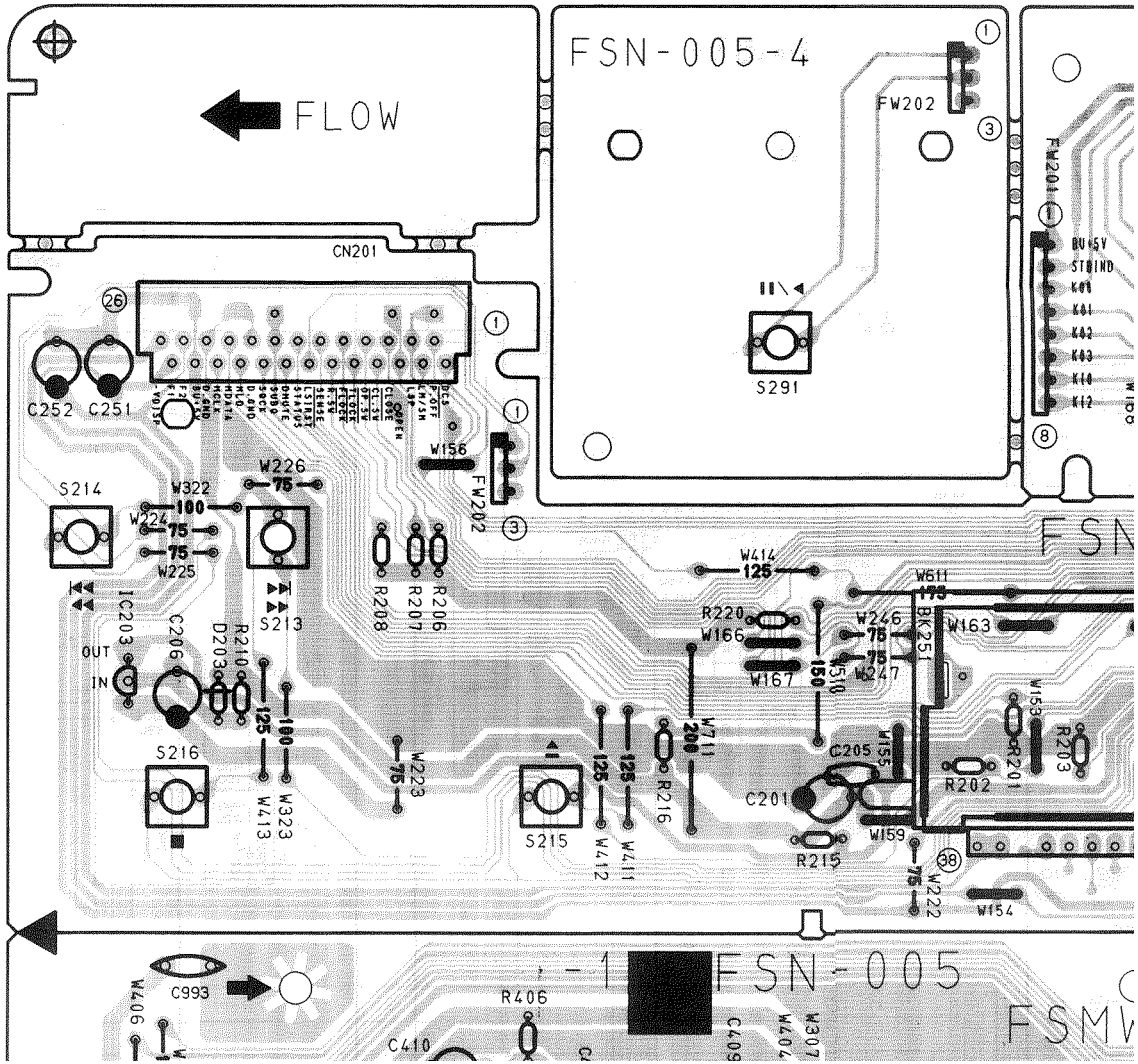
(No.20599)

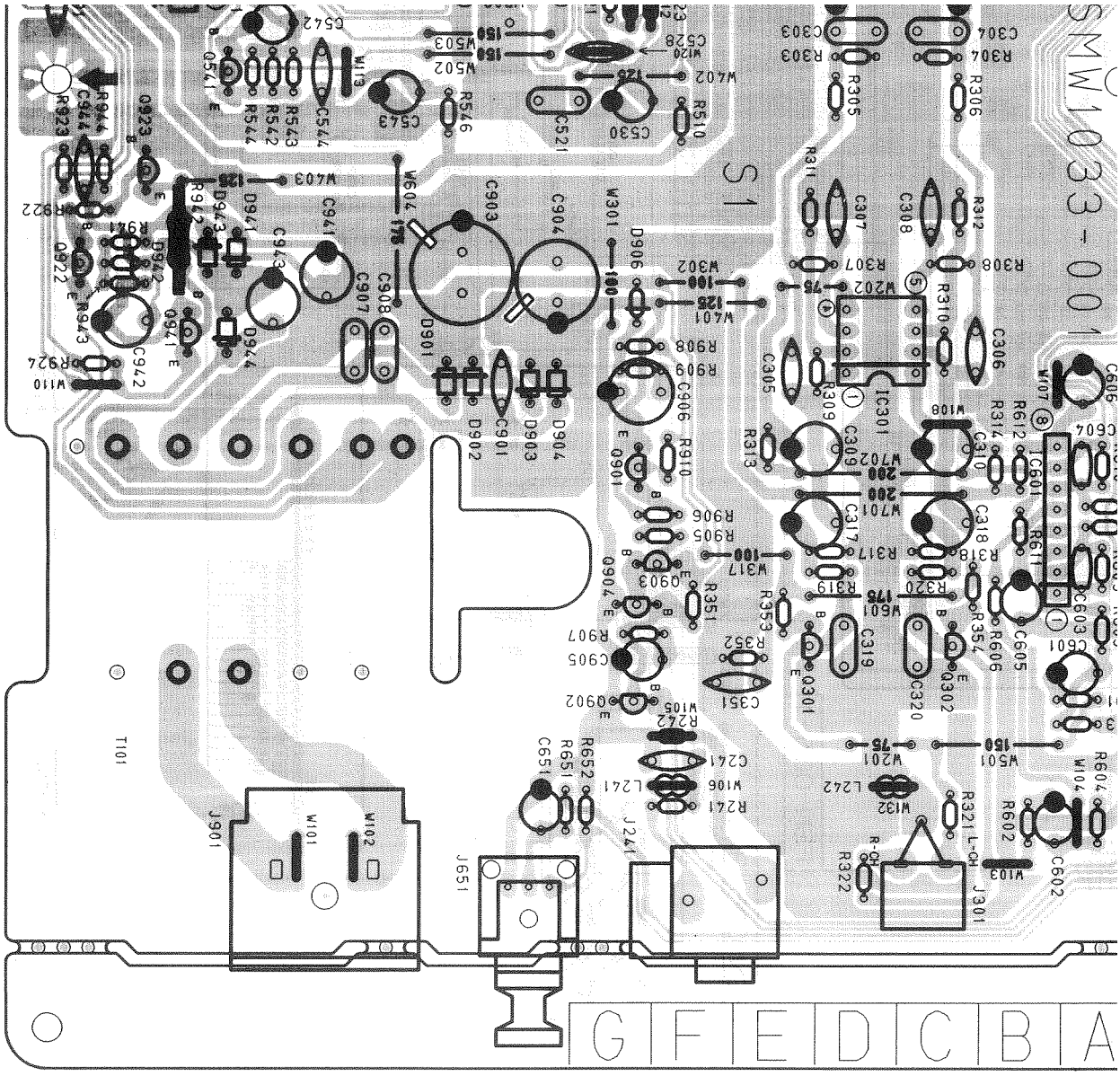


P-P.C.B-a

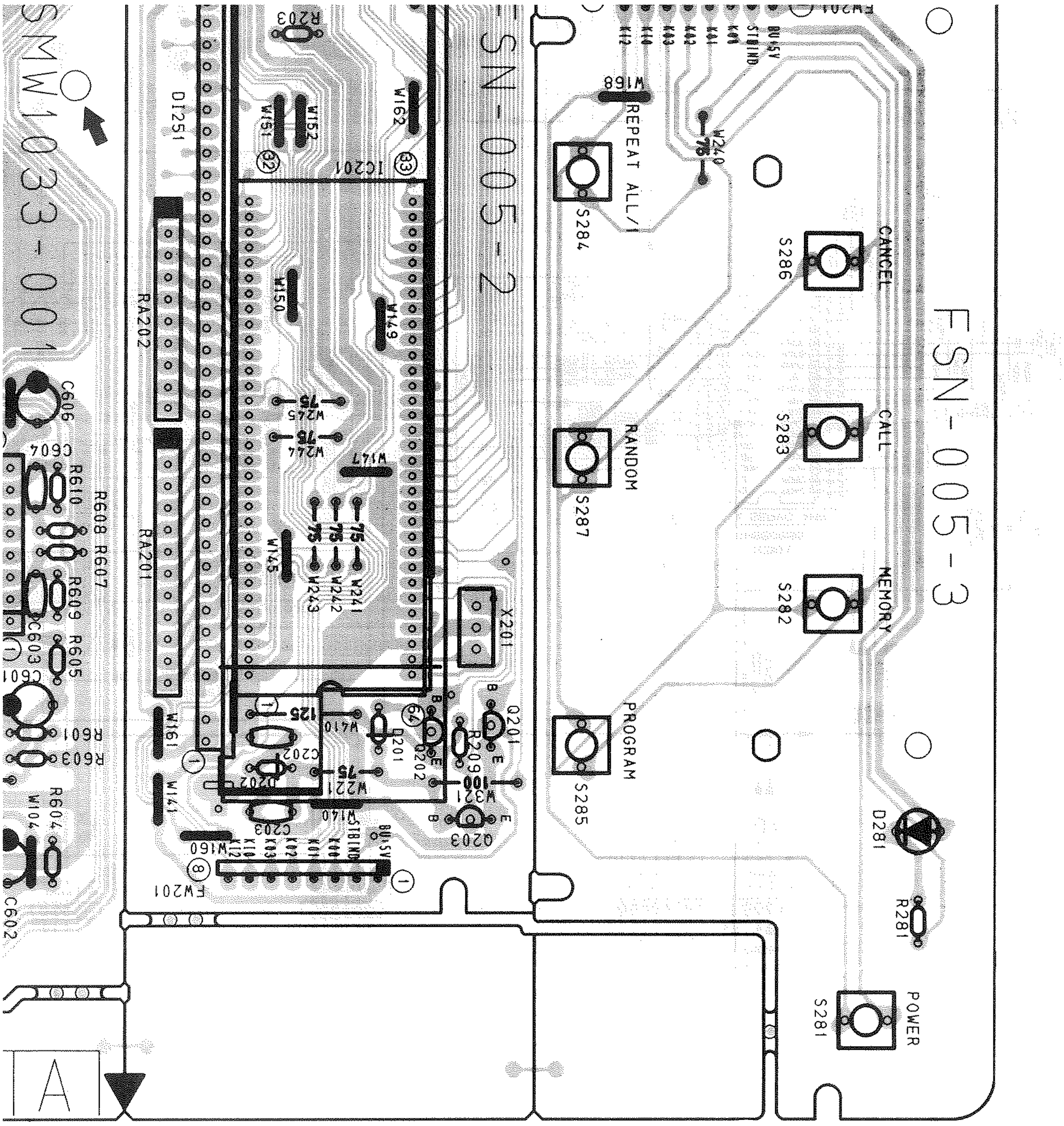
Printed Circuit Board

■ Front & Main P.C.Board (FSN-005)





P-P.C.B-c


FSN-005-3
FSN-005-2
SMW1033-001
REPEAT ALL/1
S284
CANCEL
S286
CALL
S283
RANDOM
S287
MEMORY
S282
PROGRAM
S285
POWER
S281
D281
R281
IC201
X201
RA201
RA202
DI251
FW201
A

PARTS LIST
< XI-V120BK >

* All printed circuit boards and its assemblies are not available as service parts.

The Markes for Dasignated Areas

BS・・・the U.K. EF・・・Continental Europe EN・・・Scandinavia

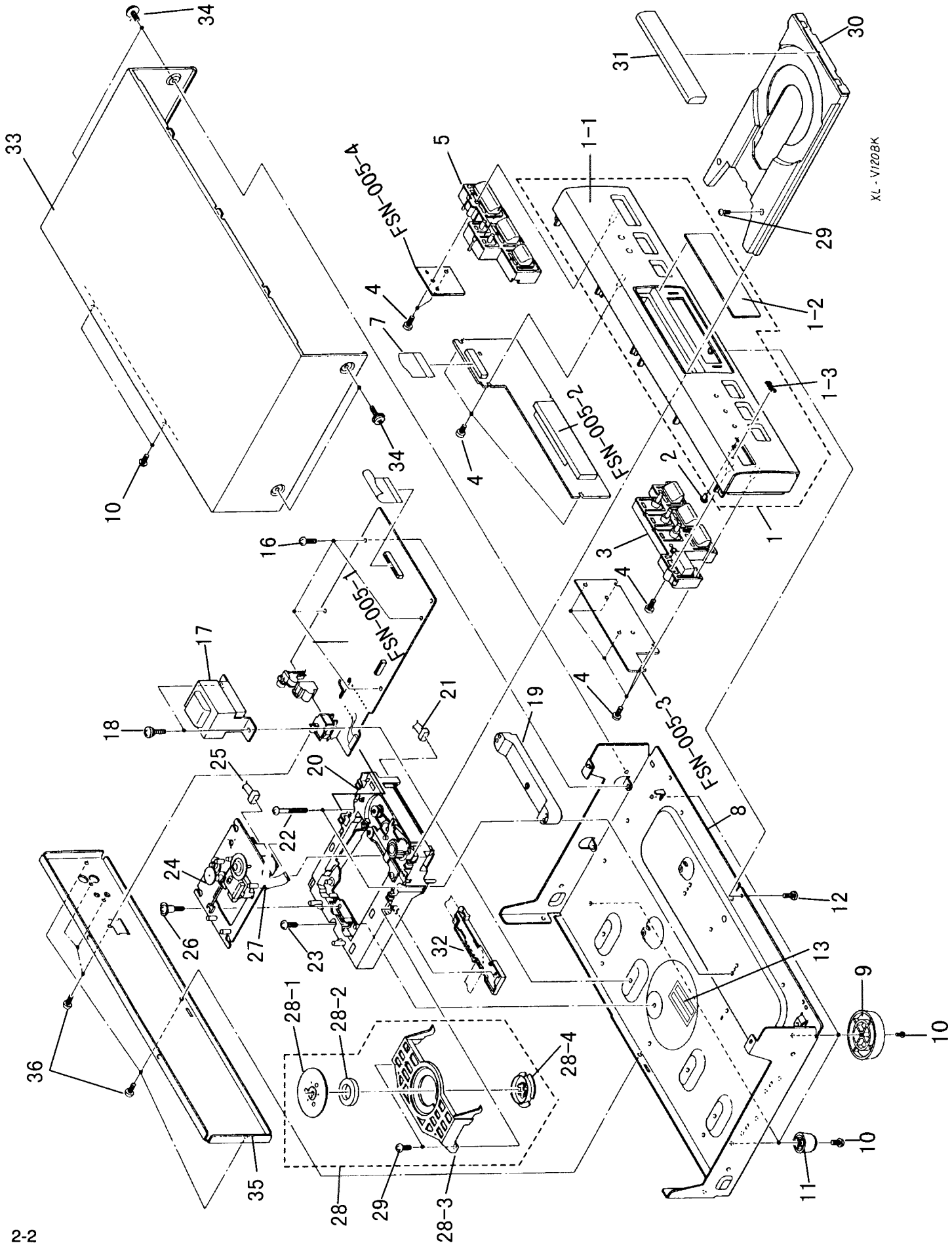
G・・・Germany J・・・U.S.A C・・・Canada

- Contents -

XL-V120BK

General Exploded View and Parts List

Block No. M1MM



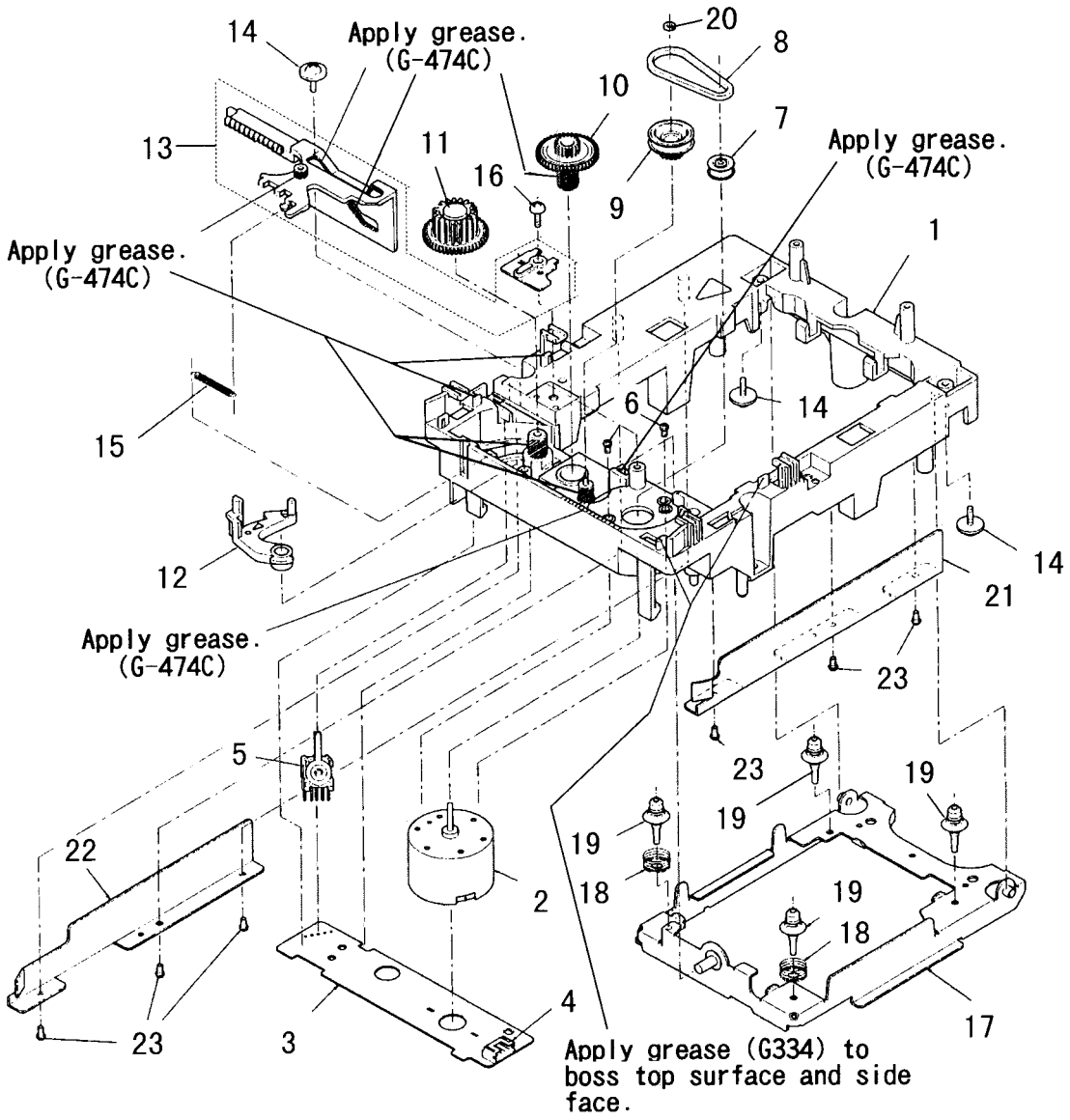
■ Parts List

Block No. M1MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	EFP-XLV120BEKJ(S	FRONT PANEL ASSY			
	1-1	FSJC1024-001	FRONT PANEL	1		
	1-2	FSJK3005-001	W. SCREEN	1		
	1-3	VJD5429-001	JVC MARK	1		
	2	FSJD4001-002	INDICATOR LENS	1		
	3	FSXP2020-001	POWER BUTTON	1		
	4	SDSF2608Z	SCREW	11		
	5	FSXP2021-001	OPEN BUTTON	1		
	7	VWF1226-12TTBW	FFC CABLE	1		
	8	E102355-003SS	CHASSIS BASE	1		
	9	FSYH4001-00F	FOOT	4		BS EF EN G
	9	FSYH4001-00F	FOOT	2		C
	10	SBST3008M	TAPPING SCREW	8		
	11	E47227-020	FOOT	4		J
	11	E47227-028	FOOT	2		C
	12	SDSF3008M	WOOD SCREW	1		
	13	E406507-001	CAUTION LABEL	1		BS EF EN G C
	16	SBSG3008CC	TAPPING SCREW	4		
⚠	17	ETP1000-70EAJBS	POWER TRANSFORMER	1		BS EF EN G
⚠	17	ETP1000-70JAJ	POWER TRANSFORMER	1		J C
	18	E65389-002	SPECIAL SCREW	2		
	19	E307158-003SS	MECHA STAND	1		
	20	----------	CD LOADING UNIT	1		
	21	EWS265-B408J2	SOCKET WIRE ASSY	1	5P	
	22	SBST3025Z	TAPPING SCREW	2		
	23	SBST3008Z	TAPPING SCREW	1		
	25	EWS266-B410J2	SOCKET WIRE ASSY	1		
	26	E406293-002	SPECIAL SCREW	1		
	27	EWPZ02-001	FFC CABLE	1		
	28	E306837-005	CLAMPER ASSY	1		
	28-1	E306836-223SS	YOKE PLATE	1		
	28-2	E74897-002	MAGNET	1		
	28-3	E26756-222SS	CLAMPER BASE	1		
	28-4	E306835-221SS	CD CLAMPER	1		
	29	SBSF3008M	TAPPING SCREW	3		
	30	E102984-001SS	CD TRAY	1		
	31	E309268-001SS	CD FITTING	1		
	32	E308181-221SS	FFC HOLDER	1		
	33	E206906-004SS	METAL COVER	1		
	34	E406308-001	SPECIAL SCREW	4		
	35	E206904-073SS	REAR PANEL	1		BS EN EF G
	35	E206904-072SS	REAR PANEL	1		J
	35	E206904-074SS	REAR PANEL	1		C
	36	E73273-006	SPECIAL SCREW	6		
		E408919-001	RATING LABEL	1		BS

XL-V120BK

Loading Mechanism Ass'y and Parts List Block No. M2MM



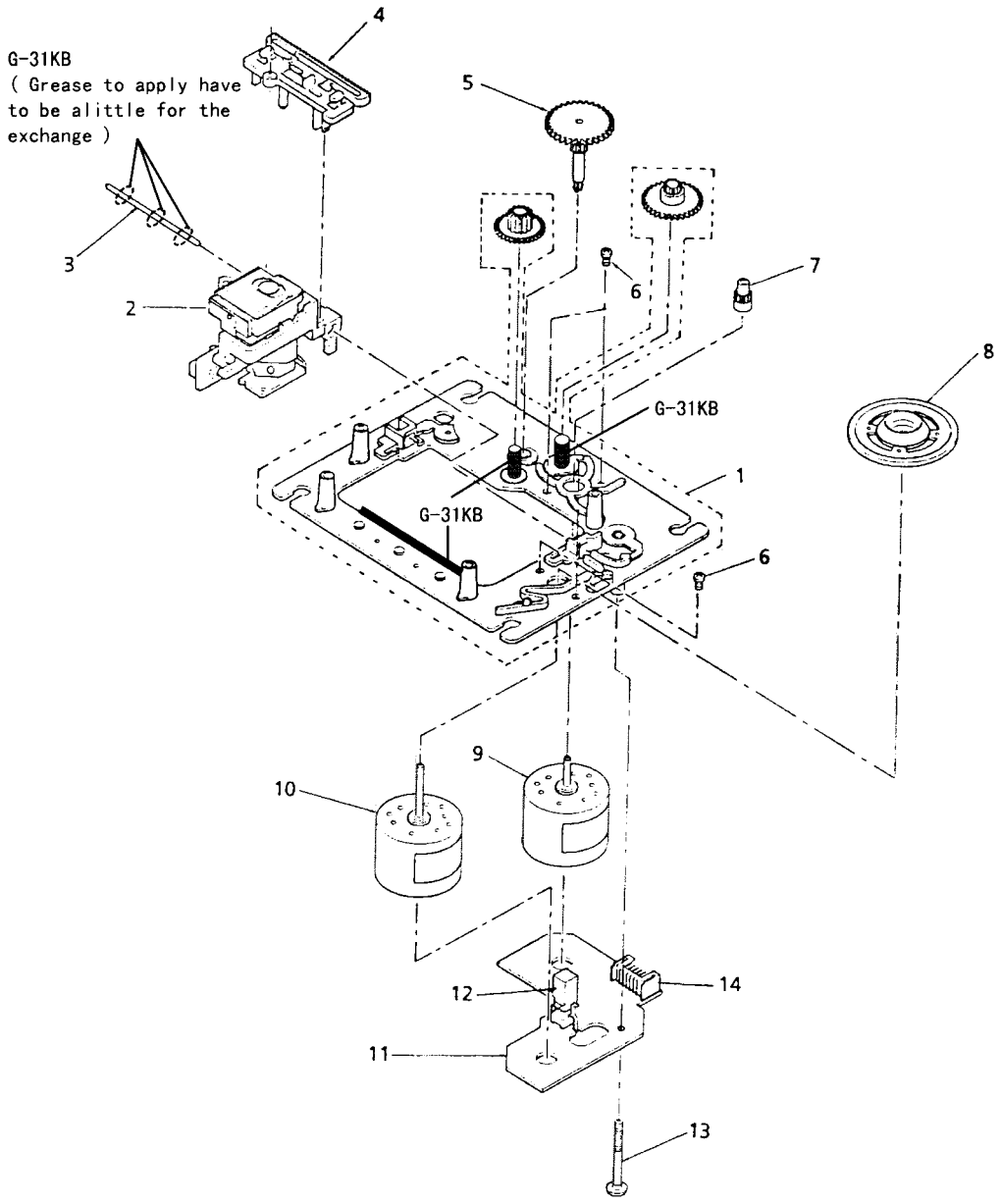
■ Parts List (Loading Mechanism Ass'y) Block No. M2MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	E102357-221	LOADING BASE	1		
	2	MMN-6F1LB8K	MOTOR	1		
	3	EMW10264-002	P.C.BOARD	1		
	4	EMV5109-005B	5P PLUG ASSY	1		
	5	ESS1200-002	SWITCH	1		
	6	SPSK2640Z	SCREW	2		
	7	E75984-221	MOTOR PULLEY	1		
	8	E75950-002	BELT	1		
	9	E75985-221SS	GEAR (1)	1		
	10	E75986-221SS	GEAR (2)	1		
	11	E75987-221SS	GEAR (3)	1		
	12	E307162-331	LEVER	1		
	13	E307252-331	CAM PLATE	1		
	14	E65923-003	SCREW	3		
	15	E75989-001	SPRING	1		
	16	SBSF3008Z	SCREW	1		
	17	E307179-332	ELEVATOR BASE ASSY	1		
	18	E406871-001	SPRING	2		
	19	E406294-002	INSULATOR	4		
	20	E60912-005SS	SPEED NUT	1		

CD Mechanism Ass'y and Pars List

■ Grease Point

Block No. M3MM



■ Parts List (CD Mechanism Ass'y)

Block No. M3MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	EPB-002A	MECHA. BASE ASSY	1		
	2	OPTIMA-6S	OPTICAL PICK UP	1		
	3	E407782-001	CD SHAFT	1		
	4	E307746-001	CD RACK	1		
	5	EPB-003A	MECHA GEAR	1		
	6	SDSP2003N	SCREW	3		
	7	E406750-001	PINION GEAR	1		
	8	E75807-302	TURN TABLE	1		
	9	E406784-001	FEED MOTOR	1		
	10	E406783-001	SPINDLE MOTOR	1		
	11	EMW10190-001(S)	P.C.BOARD	1		
	12	ESB1100-005	LEAF SWITCH	1		
	13	E75832-001	SCREW	1		
	14	EMV5109-006B	CONN. TERMINAL	1	6PIN	

XL-V120BK

■ Electrical Parts List

⚠	Item	Parts Number	Description	Area
	EP1	I.C.S		
	IC201	MN171202JESA	I.C.	
	IC203	PST9140T	I.C(MONO-ANALOG)	
	IC301	NJM4580DD	I.C(MONO-ANALOG)	
	IC401	MN35510-S	I.C(M)	
	IC501	AN8806SB	I.C(MONO-ANALOG)	
	IC801	BA6795FP-X	I.C(MONO-ANALOG)	
		DIODES		
	D201	1SS254	DIODE	
	D202	1SS254	DIODE	
	D203	1SS254	DIODE	
	D281	SLH-56VCF07	L.E.D.	
	D901	11E1	SI.DIODE	
	D902	11E1	SI.DIODE	
	D903	11E1	SI.DIODE	
	D904	11E1	SI.DIODE	
	D906	1SS254	DIODE	
	D941	1SR35-200A	SI.DIODE	
	D942	MTZ33JC	ZENER DIODE	
	D943	1SR35-200A	SI.DIODE	
	D944	1SR35-200A	SI.DIODE	
		TRANSISTORS		
	Q201	DTC114YS	DIGITAL TRANSISTO	
	Q202	DTA114YS	DIGITAL TRANSISTO	
	Q203	DTC114YS	DIGITAL TRANSISTO	
	Q301	2SD1302	SI.TRANSISTOR	
	Q302	2SD1302	SI.TRANSISTOR	
	Q541	2SA950(O,Y)	SI.TRANSISTOR	
	Q811	2SB1565(E,F)	SI.TRANSISTOR	
	Q821	2SB1357(E,F)	SI.TRANSISTOR	
	Q901	2SC1740S(R,S)	SI.TRANSISTOR	
	Q902	DTC114YS	DIGITAL TRANSISTO	
	Q903	DTA144ES	DIGITAL TRANSISTO	
	Q904	DTC144ES	DIGITAL TRANSISTO	
	Q922	2SD1302	SI.TRANSISTOR	
	Q923	DTA114YS	DIGITAL TRANSISTO	
	Q941	2SA933S(RS)	SI.TRANSISTOR	
		CAPACITORS		
	C201	QETB1EM-106	10MF 25V AL	
	C202	QCHB1EZ-223	0.022MF 25V CER.	
	C203	QCBB1HK-331Y	330PF 50V CER.	
	C205	QCFB1HZ-104Y	0.1MF 50V CER.	
	C206	QEK51EM-106	10MF 25V AL	
	C241	QCF21HP-223A	0.022MF 50V CER.	
	C251	QEK51HM-475	4.7MF 50V AL	
	C252	QEK51HM-475	4.7MF 50V AL	
	C301	QETB1EM-106	10MF 25V AL	
	C302	QETB1EM-106	10MF 25V AL	
	C303	QFN31HJ-122Z	1200PF 50V MYLA	
	C304	QFN31HJ-122Z	1200PF 50V MYLA	
	C305	QCS21HJ-101A	100PF 50V CER.	
	C306	QCS21HJ-101A	100PF 50V CER.	
	C307	QCS21HJ-101A	100PF 50V CER.	
	C308	QCS21HJ-101A	100PF 50V CER.	
	C309	QETB1EM-476	47MF 25V AL	
	C310	QETB1EM-476	47MF 25V AL	
	C317	QETB1EM-476	47MF 25V AL	
	C318	QETB1EM-476	47MF 25V AL	
	C319	QFN81HJ-222	2200PF 50V META	
	C320	QFN81HJ-222	2200PF 50V META	
	C351	QCF21HP-103A	0.01MF 50V CER.	
	C401	QCHB1EZ-223	0.022MF 25V CER.	
	C404	QCHB1EZ-223	0.022MF 25V CER.	
	C405	QCS31HJ-471Z	470PF 50V CER.	
	C406	QFN81HJ-223	0.022MF 50V META	
	C407	QFV81HJ-334	0.33MF 50V TF.C	

⚠	Item	Parts Number	Description	Area
	C408	QCF21HP-473A	0.047MF 50V CER.	
	C410	QETB1EM-106	10MF 25V AL	
	C411	QETB1AM-107	100MF 10V AL	
	C412	QCSB1HJ-120Y	12PF 50V CER.	
	C413	QCSB1HJ-120Y	12PF 50V CER.	
	C421	QCHB1EZ-223	0.022MF 25V CER.	
	C422	QCF21HP-473A	0.047MF 50V CER.	
	C423	QCZ0205-155	1.5MF 25V C.CA	
	C424	QETC0JM-338ZM	3300MF 6.3V ELEC	
	C501	QCF31HP-102Z	1000PF 50V CER.	
	C502	QCF31HP-102Z	1000PF 50V CER.	
	C503	QCHB1EZ-223	0.022MF 25V CER.	
	C504	QCHB1EZ-223	0.022MF 25V CER.	
	C505	QCBB1HK-271Y	270PF 50V CER.	
	C506	QCSB1HJ-470	47PF 50V CER.	
	C507	QCHB1EZ-223	0.022MF 25V CER.	
	C508	QCHB1EZ-223	0.022MF 25V CER.	
	C509	QFV81HJ-104	0.1MF 50V THIN	
	C510	QETB1AM-107	100MF 10V AL	
	C511	QCF31HP-102Z	1000PF 50V CER.	
	C512	QFV81HJ-104	0.1MF 50V THIN	
	C521	QCZ0205-155	1.5MF 25V C.CA	
	C522	QFV81HJ-104	0.1MF 50V THIN	
	C523	QETB1HM-105	1MF 50V AL	
	C524	QCS21HJ-101A	100PF 50V CER.	
	C525	QFV81HJ-273	0.027MF 50V THIN	
	C526	QFN81HJ-472	4700PF 50V MYLA	
	C527	QFN31HJ-103Z	0.01MF 50V MYLA	
	C529	QCS31HJ-331Z	330PF 50V CER.	
	C530	QETB1AM-476	47MF 10V E.CA	
	C541	QCHB1EZ-223	0.022MF 25V CER.	
	C542	QETB1HM-106	10MF 50V E.CA	
	C543	QETB1AM-476	47MF 10V E.CA	
	C544	QCF21HP-103A	0.01MF 50V CER.	
	C801	QETB1CM-227	220MF 16V AL	
	C802	QCHB1EZ-223	0.022MF 25V CER.	
	C804	QFV81HJ-273	0.027MF 50V THIN	
	C805	QFN31HJ-103Z	0.01MF 50V MYLA	
	C811	QCZ0205-155	1.5MF 25V C.CA	
	C812	QETB1AM-476	47MF 10V E.CA	
	C821	QETB1AM-108	1000MF 10V E.CA	
	C901	QCF21HP-223A	0.022MF 50V CER.	
	C903	QETB1CM-228	2200MF 16V AL	
	C904	QETB1CM-477M	470MF 16V E.CA	
	C905	QETB1CM-107	100MF 16V AL	
	C906	QETB1CM-227	220MF 16V AL	
	C941	QETB1HM-476	47MF 50V E.CA	
	C942	QETB1HM-475E	4.7MF 50V E.CA	
	C943	QETB1EM-476	47MF 25V AL	
	C944	QCF21HP-223A	0.022MF 50V CER.	
	C991	QCF21HP-103A	0.01MF 50V CER.	BS EF EN G
		RESISTORS		
	R201	QRD161J-103	10K 1/6W CARB	
	R202	QRD161J-103	10K 1/6W CARB	
	R203	QRD161J-103	10K 1/6W CARB	
	R206	QRD161J-472	4.7K 1/6W CARB	
	R207	QRD161J-472	4.7K 1/6W CARB	
	R208	QRD161J-472	4.7K 1/6W CARB	
	R209	QRD161J-472	4.7K 1/6W CARB	
	R210	QRD161J-102	1K 1/6W CARB	
	R211	QRD161J-102	1K 1/6W CARB	
	R212	QRD161J-102	1K 1/6W CARB	
	R213	QRD161J-102	1K 1/6W CARB	
	R214	QRD161J-102	1K 1/6W CARB	
	R215	QRD161J-472	4.7K 1/6W CARB	
	R216	QRD161J-472	4.7K 1/6W CARB	

■ Electrical Parts List

⚠	Item	Parts Number	Description	Area
	R217	QRD161J-102	1K 1/6W CARB	
	R218	QRD161J-102	1K 1/6W CARB	
	R219	QRD161J-102	1K 1/6W CARB	
	R220	QRD161J-472	4.7K 1/6W CARB	
	R241	QRD161J-471	470 1/6W CARB	
	R281	QRD161J-221	220 1/6W CARB	BS
	R281	QRD161J-391	390 1/6W CARB	C EF EN G J
	R301	QRD161J-102	1K 1/6W CARB	
	R302	QRD161J-102	1K 1/6W CARB	
	R303	QRD167J-223	22K 1/6W CARB	
	R304	QRD167J-223	22K 1/6W CARB	
	R305	QRD167J-223	22K 1/6W CARB	
	R306	QRD167J-223	22K 1/6W CARB	
	R307	QRD167J-223	22K 1/6W CARB	
	R308	QRD167J-223	22K 1/6W CARB	
	R309	QRD161J-202	2K 1/6W CARB	
	R310	QRD161J-202	2K 1/6W CARB	
	R311	QRD161J-222	2.2K 1/6W CARB	
	R312	QRD161J-222	2.2K 1/6W CARB	
	R313	QRD161J-221	220 1/6W CARB	
	R314	QRD161J-221	220 1/6W CARB	
	R317	QRD161J-273	27K 1/6W CARB	
	R318	QRD161J-273	27K 1/6W CARB	
	R319	QRD161J-561	560 1/6W CARB	
	R320	QRD161J-561	560 1/6W CARB	
	R321	QRD161J-101	100 1/6W CARB	
	R322	QRD161J-101	100 1/6W CARB	
	R351	QRD167J-154	150K 1/6W CARB	
	R352	QRD161J-684	680K 1/6W CARB	
	R353	QRD161J-103	10K 1/6W CARB	
	R354	QRD161J-103	10K 1/6W CARB	
	R401	QRD161J-683	68K 1/6W CARB	
	R403	QRD161J-331	330 1/6W CARB	
	R404	QRD161J-124	120K 1/6W CARB	
	R405	QRD161J-221	220 1/6W CARB	
	R406	QRD161J-2R2	2.2 1/6W CARB	
	R407	QRD161J-2R2	2.2 1/6W CARB	
	R408	QRD161J-271	270 1/6W CARB	
	R421	QRD161J-102	1K 1/6W CARB	
	R422	QRD161J-102	1K 1/6W CARB	
	R423	QRD161J-102	1K 1/6W CARB	
	R424	QRD161J-102	1K 1/6W CARB	
	R432	QRD161J-102	1K 1/6W CARB	
	R501	QRD161J-274	270K 1/6W CARB	
	R502	QRD167J-154	150K 1/6W CARB	
	R503	QRD161J-273	27K 1/6W CARB	
	R504	QRD161J-114	110K 1/6W CARB	
	R505	QRD161J-104	100K 1/6W CARB	
	R506	QRD167J-822	8.2K 1/6W CARB	
	R507	QRD161J-473	47K 1/6W CARB	
	R510	QRD161J-2R2	2.2 1/6W CARB	
	R521	QRD161J-123	12K 1/6W CARB	
	R524	QRD161J-125	1.2M 1/6W CARB	
	R541	QRD167J-121	120 1/6W CARB	
	R542	QRD161J-470	47 1/6W CARB	
	R543	QRD161J-470	47 1/6W CARB	
	R544	QRD161J-470	47 1/6W CARB	
	R545	QRD161J-910Y	91 1/6W CARB	
	R546	QRD161J-2R2	2.2 1/6W CARB	
	R801	QRD161J-821	820 1/6W CARB	
	R802	QRD161J-124	120K 1/6W CARB	
	R804	QRD167J-822	8.2K 1/6W CARB	
	R805	QRD167J-223	22K 1/6W CARB	
	R806	QRD161J-683	68K 1/6W CARB	
	R807	QRD161J-274	270K 1/6W CARB	
	R809	QRD161J-243	24K 1/6W CARB	

⚠	Item	Parts Number	Description	Area
	R810	QRD161J-221	220 1/6W CARB	
	R811	QRD167J-562	5.6K 1/6W CARB	
	R812	QRD161J-222	2.2K 1/6W CARB	
	R821	QRD161J-103	10K 1/6W CARB	
	R822	QRD161J-122	1.2K 1/6W CARB	
	R901	PTH8L07BA0R9M1B	POSI	
	R904	QRD161J-103	10K 1/6W CARB	
	R905	QRD161J-124	120K 1/6W CARB	
	R906	QRD161J-512	5.1K 1/6W CARB	
	R907	QRD161J-221	220 1/6W CARB	
	R908	QRD161J-472	4.7K 1/6W CARB	
	R909	QRD161J-331	330 1/6W CARB	
	R910	QRD161J-102	1K 1/6W CARB	
	R922	QRD161J-103	10K 1/6W CARB	
	R923	QRD167J-152	1.5K 1/6W CARB	
	R924	QRD167J-152	1.5K 1/6W CARB	
	R941	QRD161J-123	12K 1/6W CARB	
⚠	R942	QRZ0077-560	56 1/4W FUSI	
	R943	QRD167J-121	120 1/6W CARB	
	R944	QRD161J-563	56K 1/6W CARB	
		OTHERS		
		E306805-010	SPACER	
		E306951-222SS	FL. HOLDER	
		FSMW1033-001	CIR. BOARD	
	J241	QMS3501-020	PIN JACK	
	J301	EMN00TV-217A	PIN JACK	
⚠	J901	QMCB001-E02H	AC SOCKET	BS EF EN G
	J901	QMCB001-E03H	AC INLET	C J
	S213	QSQ1001-E01AJ4	PUSH SWITCH	
	S214	QSQ1001-E01AJ4	PUSH SWITCH	
	S215	QSQ1001-E01AJ4	PUSH SWITCH	
	S216	QSQ1001-E01AJ4	PUSH SWITCH	
	S281	QSQ1001-E01AJ4	PUSH SWITCH	
	S282	QSQ1001-E01AJ4	PUSH SWITCH	
	S283	QSQ1001-E01AJ4	PUSH SWITCH	
	S284	QSQ1001-E01AJ4	PUSH SWITCH	
	S285	QSQ1001-E01AJ4	PUSH SWITCH	
	S286	QSQ1001-E01AJ4	PUSH SWITCH	
	S287	QSQ1001-E01AJ4	PUSH SWITCH	
	S291	QSQ1001-E01AJ4	PUSH SWITCH	
	X201	ECX0060-000EM	CERAMIC RESONATOR	
	X401	ECX0169-344EA	CRYSTAL	
	CN101	VMC0161-026	FFC SOCKET	
	CN102	EMV5109-005A	MALE CONNECTOR	
	CN103	EMV5109-006A	CONNECT TERMINAL	
	CN104	EMV7144-015	F.P.C. PLUG	
	CN201	VMC0161-R26	CONNECT TERMINAL	
	D1251	ELU0001-114	FLUORESCENT DISPL	
	FW201	EWR38D-20SS	FLAT WIRE ASSY	
	FW202	EWR33D-13SS	FLAT WIRE ASSY	
	SP401	VYH7653-002	I.C. SOCKET	
	SP501	VYH7653-010	I.C. PROTECTOR	
	SP801	VYH7653-002	I.C. SOCKET	

XL-V120BK

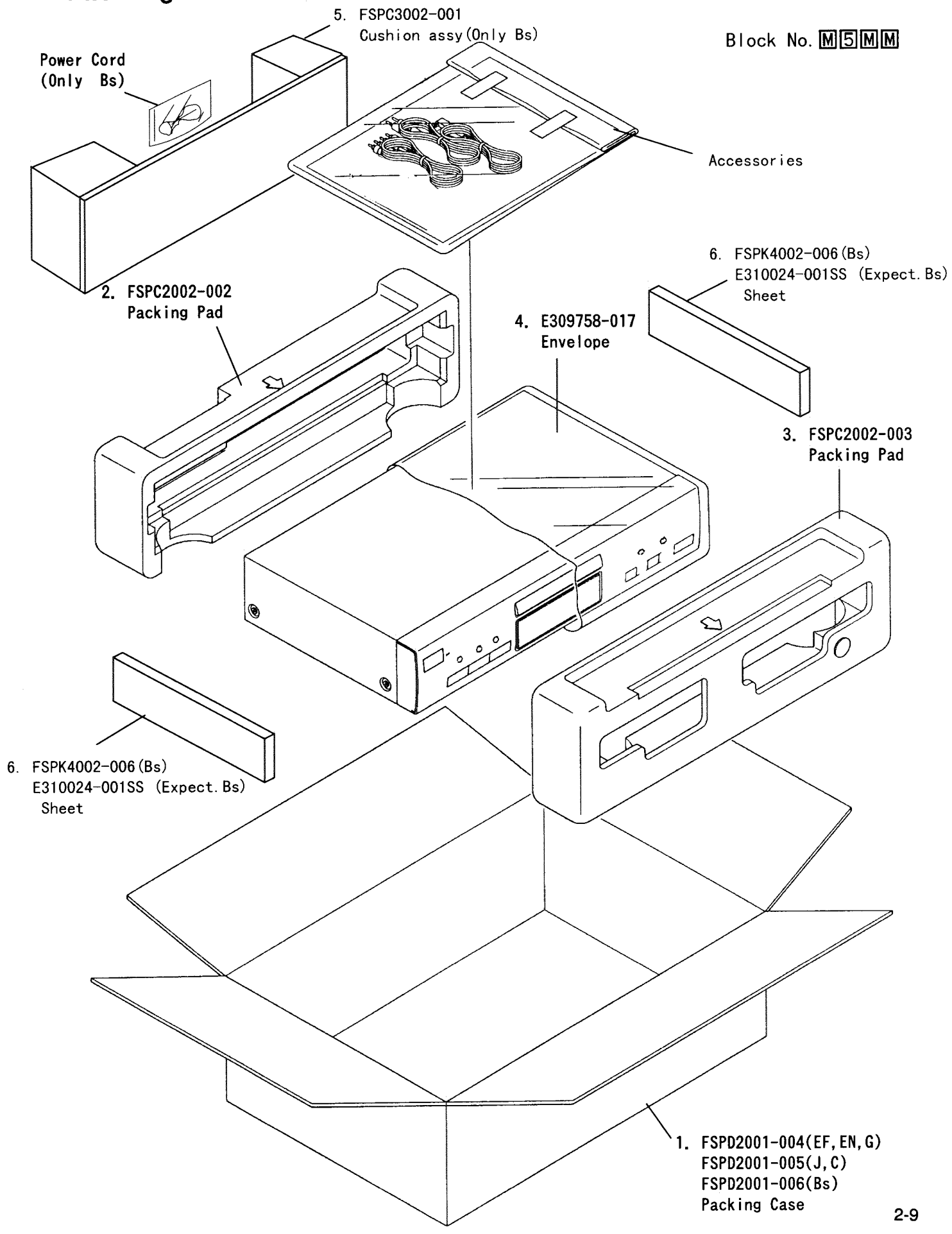
■ Accessories List

symbol No. M4MM

Item	Parts Number	Parts Name	Q'ty	Description	Area
1	E30580-2524A	INSTRUCTION BOOK	1		J
1	E30580-2525A	INSTRUCTION BOOK	1		C
1	E30580-2526ABS	INSTRUCTION BOOK	1		BS
1	E30580-2527A	INSTRUCTION BOOK	1		EF G
1	E30580-2528A	INSTRUCTION BOOK	1		EN
2	QMP1360-183J3	POWER CORD	1		C J
2	QMP39F0-183E	POWER CORD	1		EF EN G
2	QMP5520-183BS	POWER CORD	1		BS
3	EWP302-011W	SIGNAL CORD	1		
4	EWP805-001W	PLUG WIRE ASSY	1		
5	BT-51006-1	REGISTER CARD	1		J
6	E43486-340A	SAFETY SHEET	1		BS
7	BT-20044G	SAFETY SHEET	1		J
7	BT-20066A	DISTRIBUTOR LIST	1		BS
7	BT-20071B	SERVICE NETWORK	1		C
7	BT-20134	WARRANTY CARD	1		G
7	BT-52002-1	WARRANTY CARD	1		C
7	BT-54003-1	WARRANTY CARD	1		BS
9	QPGA010-03003	POLY BAG	1		BS
9	E309758-003	POLY BAG	1		

Packing Materials and Part Numbers

Block No. M5MM



XL-V120BK

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