

DVD HOME THEATER SOUND SYSTEM DVX-C310/DVX-C310SW

DVR-C310

SERVICE MANUAL

DVX-C310 consists of the DVR-C310 and NX-P300.

DVX-C310SW consists of the DVR-C310 and NX-SW300.

This service manual is for the DVR-C310.

For the NX-P300 and NX-SW300 service manual, please refer to the following publication number :

DVR-C300/NX-P300 (Including NX-SW300) 100946

IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

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This Service Manual uses recycled paper.

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YAMAHA

YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan

06.07

■ TO SERVICE PERSONNEL

1. Critical Components Information

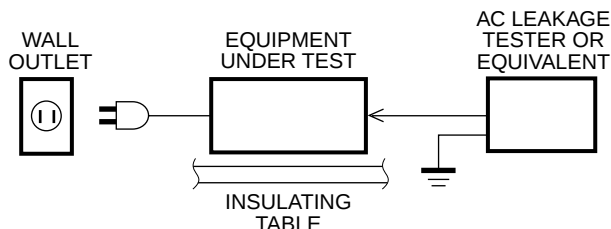
Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Models Only)

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohms shunted by 0.15 μ F.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.

THE DVD AUDIO/VIDEO PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.



WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

WARNING: Laser Safety

This product contains a laser beam component. This component may emit invisible, as well as visible radiation, which may cause eye damage. To protect your eyes and skin from laser radiation, the following precautions must be used during servicing of the unit.

- 1) When testing and/or repairing any component within the product, keep your eyes and skin more than 30 cm away from the laser pick-up unit at all times. Do not stare at the laser beam at any time.
- 2) Do not attempt to readjust, disassemble or repair the laser pick-up, unless noted elsewhere in this manual.
- 3) CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser Emitting conditions:

- 1) When the Top Cover is removed, and the STANDBY/ON SW is turned to the "ON" position, the laser component will emit a beam for several seconds to detect if a disc is present. During this time (5-10 sec.) the laser may radiate through the lens of the laser pick-up unit. Do not attempt any servicing during this period!
If no disc is detected, the laser will stop emitting the beam. When a disc is loaded, you will not be exposed to any laser emissions.
- 2) The laser power level can be adjusted with the VR on the pick-up PWB, however, this level has been set by the factory prior to shipping from the factory. Do not adjust this laser level control unless instruction is provided elsewhere in this manual. Adjustment of this control can increase the laser emission level from the device.

Laser Diode Properties

Type: Semiconductor laser GaAlAs
 Wave length: 650 nm (DVD)
 784 nm (VCD/CD)
 Output Power: 7 mW (DVD/VCD/CD)
 Beam divergence: 60 degree

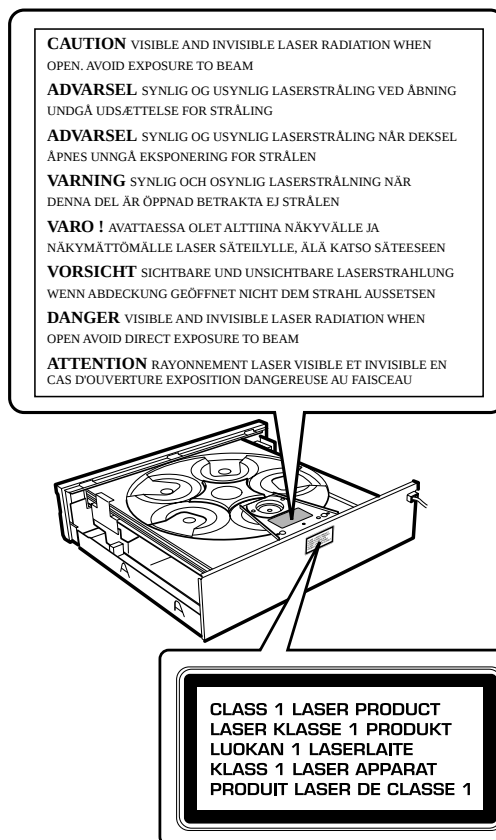
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER-SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

WARNING! : OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.

WARNING

The use of optical instruments with this product will increase eye hazard.

Repair handling should take place as much as possible with a disc loaded inside the player.



Warning for power supply

The primary side of the power supply carries live mains voltage when the player is connected to the mains even when the player is switched off !

This primary area is not shielded so it is possible to touch copper tracks and/or components when servicing the player. Service personnel have to take precautions to prevent touching this area or components in this area.

Note:

The screws on the DVD mechanism may never be touched, removed or re-adjusted.

Handle the DVD mechanism with care when the unit has to be exchanged!

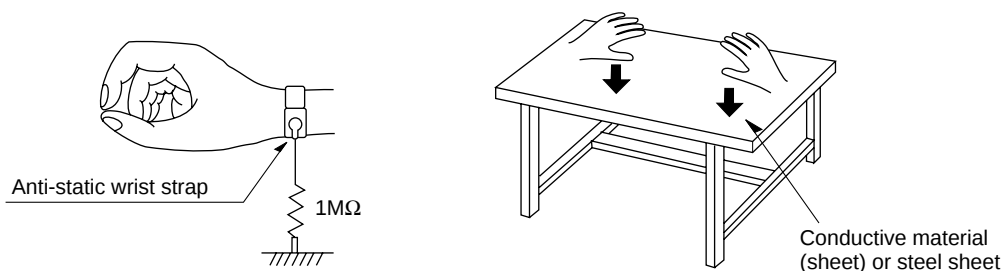
The DVD mechanism is very sensitive for dropping or giving shocks.

■ PREVENTION OF ELECTROSTATIC DISCHARGE

The laser diode in the traverse unit (optical pickup) may be damaged due to static electricity from clothes or the human body. Use caution to prevent electrostatic damage when servicing or handling the laser diode.

1. Grounding for electrostatic damage prevention

1. Worktable grounding
Put a grounded conductive material (sheet) or iron sheet on the area where the optical pickup is placed.
2. Human body grounding
Use an anti-static wrist strap to discharge the static electricity from your body.



2. Handling of the optical pickup

1. To prevent damage to the optical pickup replacement parts during transportation and before installation, both ends of the laser diode are short-circuited. After installing the new part, remove the short circuit according to the correct procedure in this service manual.
2. Do not use a tester to check the laser diode in the optical pickup. The power supply in the tester will damage the laser diode.

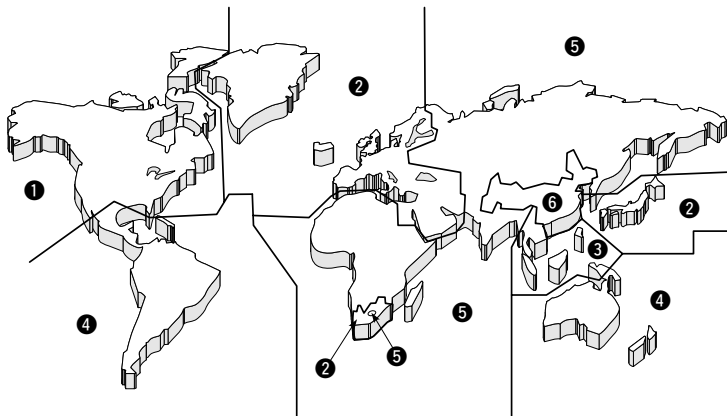
3. Handling Precautions for the Traverse Unit (Optical Pickup)

1. Handle the traverse unit (optical pickup) gently, as it is an extremely high-precision assembly.
2. The flexible cable lines may break if an excessive force is applied to it. Use caution when handling the cable.
3. The semi-fixed resistor for laser power adjustment should not be adjusted. Do not turn the resistor.

■ LOCALE MANAGEMENT INFORMATION

Locale Management Information : This DVD player is designed and manufactured to respond to the Locale Management Information that is recorded on a DVD disc. If the Locale number described on the DVD disc does not correspond to the Locale number of this DVD player, this DVD player cannot play this disc.

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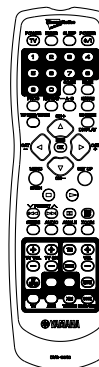
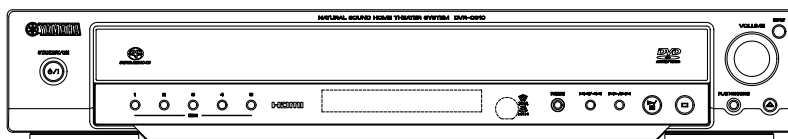


■ SYSTEM COMPOSITION

DVX-C310 consists of the DVR-C310 and NX-P300.

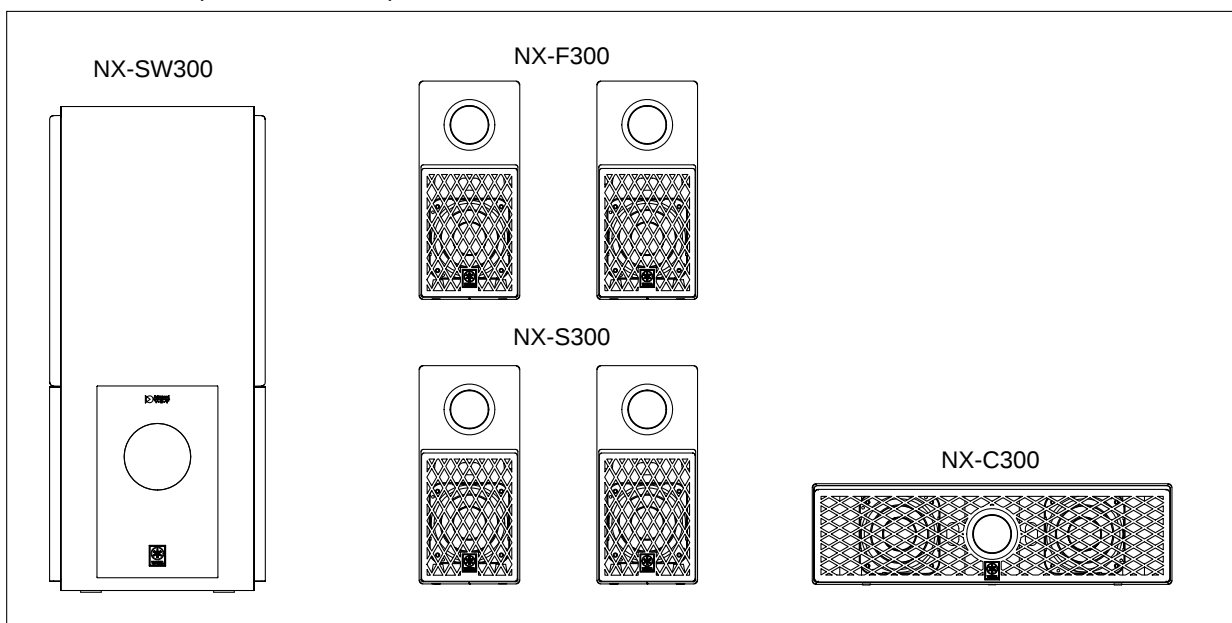
DVX-C310SW consists of the DVR-C310 and NX-SW300.

DVR-C310

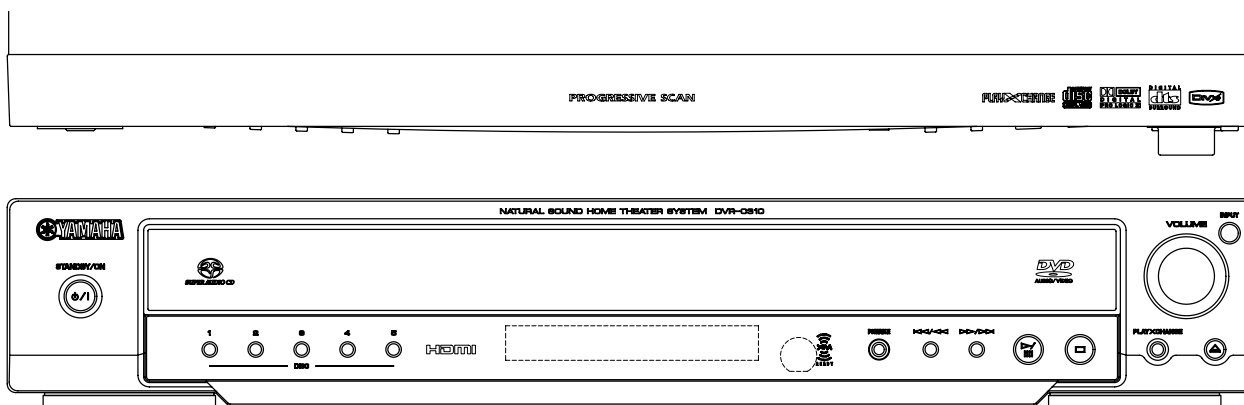


NX-P300

For the NX-P300 and NX-SW300 service manual, please refer to the DVR-C300/NX-P300 (Including NX-SW300) service manual (number : 100946).

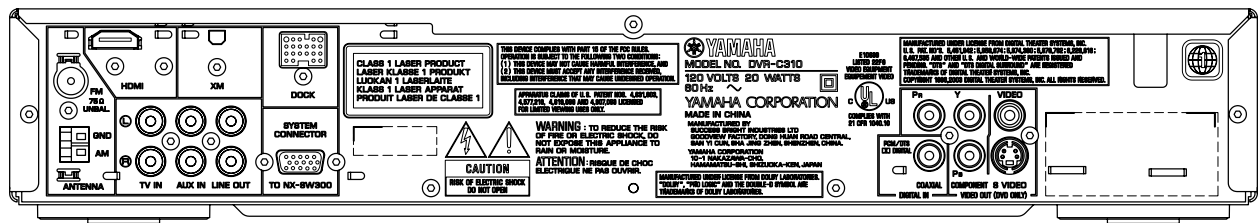


■ FRONT PANEL

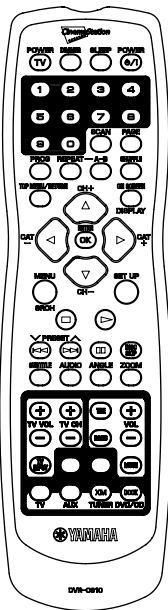


REAR PANEL

DVR-C310 (U, C models)



REMOTE CONTROL PANEL



SPECIFICATIONS

TUNER SECTION

FM Tuning Range	87.50 to 108.00 MHz	4 Hz to 22 kHz (48 kHz)
AM Tuning Range	530 to 1700 kHz	4 Hz to 44 kHz (96 kHz)

DISC SECTION

Laser Type	Semiconductor
Disc Diameter	12cm / 8cm
Video Decoding	MPEG-1 / MPEG-2 / DivX® 5, DivX® 4, DivX® 3
Video DAC	12 bits/108 MHz
Signal System	PAL / NTSC
Video Format	4:3 / 16:9
Composite Video Output	1.0 Vp-p, 75 ohms
S-video Output	Y - 1.0 Vp-p, 75 ohms C - 0.3 Vp-p, 75 ohms
Component Video Output	Y - 1.0 Vp-p, 75 ohms Pb/Cb Pr/CR - 0.7 Vp-p, 75 ohms
Audio DAC	24 bits / 192 kHz
Frequency Response	4 Hz to 20 kHz (44.1 kHz)

Audio S/N	105 dB
Distortion	0.0035 %
Dynamic Range	95 dB

AUDIO FORMAT

Digital	Dolby Digital/DTS/	
	MPEG	Compressed Digital
	PCM	16, 20, 24 bits
		fs 44.1, 48, 96 kHz
	MP3 (ISO 9660)	24, 32, 56, 64, 96, 128, 256 kbps
		fs 16, 22.05, 24, 32, 44.1, 48 kHz
	WMA	32 to 192 kbps, mono, stereo
Full decoding of Dolby Digital and DTS multi-channel sound/ Dolby Surround Compatible Downmix from Dolby Digital multi-channel sound		
Dolby Pro Logic II		

GENERAL

Power Supply Rating	
U, C models	120 V, 60 Hz
Power Consumption	20 W
Frequency Response	20 Hz to 20 kHz / -3 dB (Front, Center, Surround)
Signal to Noise Ratio	> 100 dB
Input Sensitivity	
AUX In, TV In	300 mV
Dimensions (W x H x D)	435 x 75 x 434 mm (17-1/8" x 2-15/16" x 17-1/16")
Weight	5.6 kg (12 lbs. 5 oz.)
Finish	Black color (U, C models) Silver color (U, C models)

ACCESSORIES

Remote Control x1
Battery x2
Indoor FM Antenna x1
AM Loop Antenna x1
Video Pin Cable (1.5m) x1
System Control Cable (4m) x1

** Specifications subject to change without prior notice.*

PLAYXCHANGE

Capable of changing discs without interrupting current disc playback.

Pressing PLAYXCHANGE on the front panel to open the disc tray and reload or unload discs during playback.



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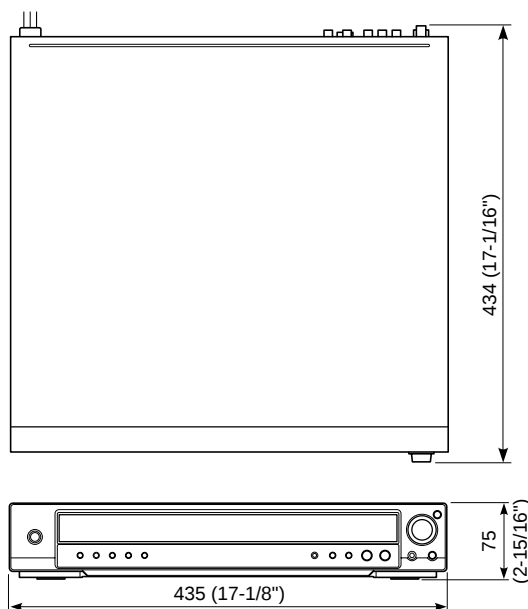
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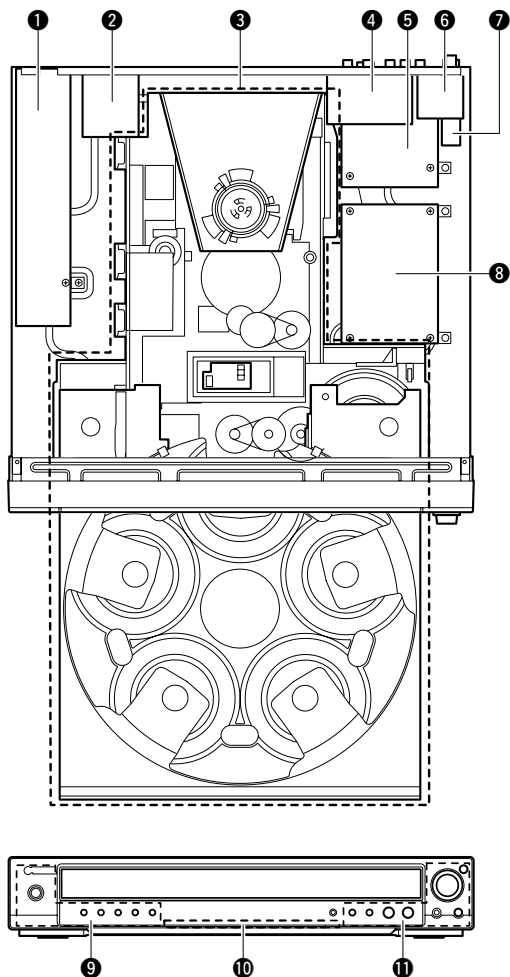
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■ DIMENSIONS

Unit : mm (inch)

INTERNAL VIEW



- ① POWER SUPPLY UNIT
- ② FRONT (4) P.C.B.
- ③ DVD 5-DISC CHANGER MODULE
- ④ XM P.C.B.
- ⑤ AV P.C.B.
- ⑥ HDMI P.C.B.
- ⑦ TUNER
- ⑧ MONO P.C.B.
- ⑨ FRONT (2) P.C.B.
- ⑩ FRONT (3) P.C.B.
- ⑪ FRONT (1) P.C.B.

REPAIR NOTES

1. DVD 5-Disc Changer Module

The DVD 5-disc changer module consists of the CM unit and tray ass'y. The DVD 5-disc changer module is supplied as a whole. Neither the CM unit nor tray ass'y can be supplied independently.

2. P.C.B. ASS'Y

None of the components of the following unit can be supplied separately. Each unit must be replaced as a whole in case of a failure.

MONO P.C.B.

FRONT P.C.B.

AV P.C.B.

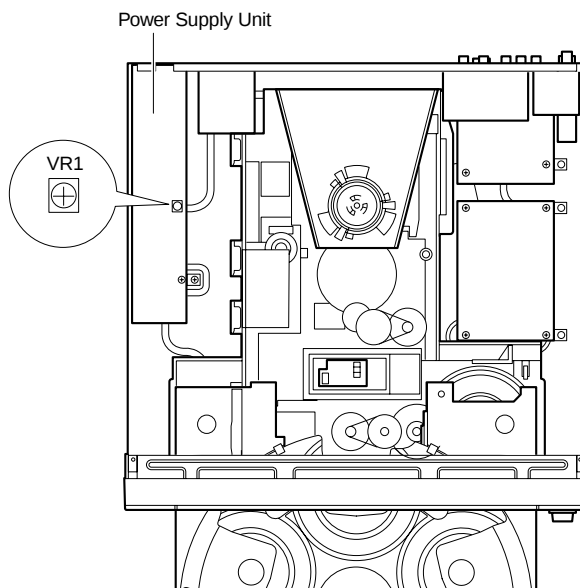
XM P.C.B.

HDMI P.C.B.

Power Supply Unit

3. Power Supply Unit

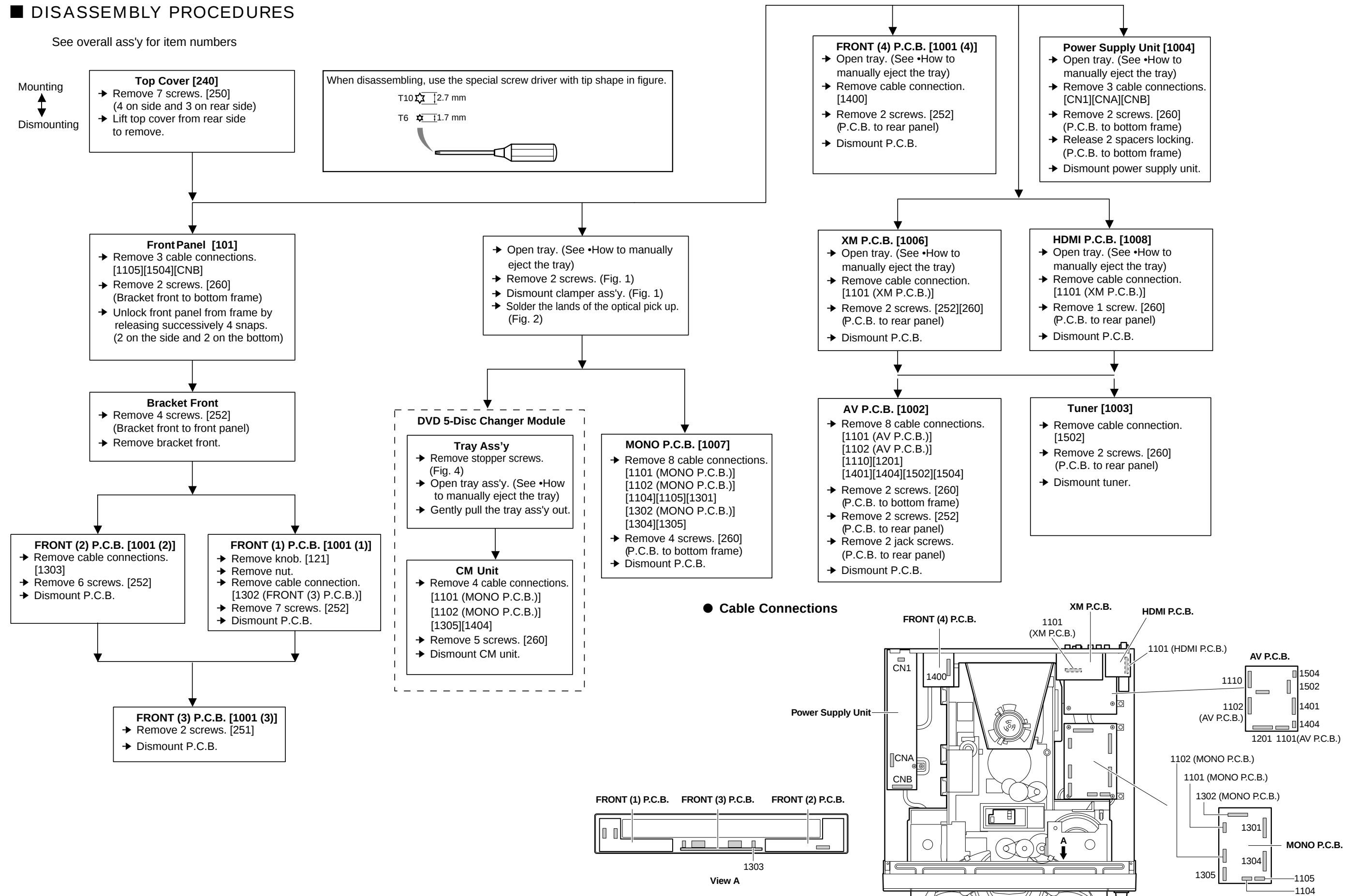
Never touch the potentiometer (VR1) installed to the power supply unit.



DISASSEMBLY PROCEDURES

See overall ass'y for item numbers

Mounting
↕
Dismounting



● Preventive measure for laser diode from electrostatic breakdown

When replacing the MONO Board or DVD 5-disc changer module, solder between lands of the optical pick up P.C.B. to protect the laser diode against electrostatic breakdown.

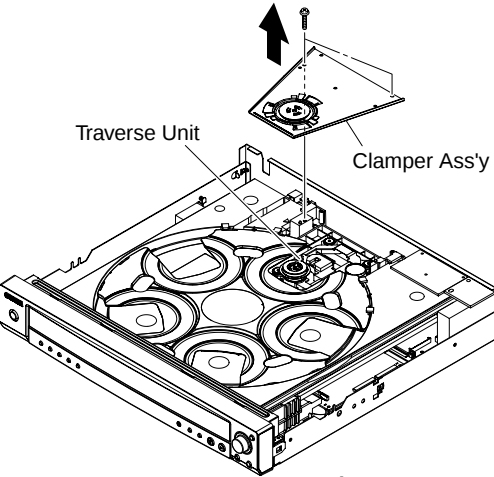


Fig. 1

Notes

- Use an anti-static soldering iron to short-circuit and unshort-circuit laser diode.
- After you have finished repairing, remove the solder from the short-circuit location.

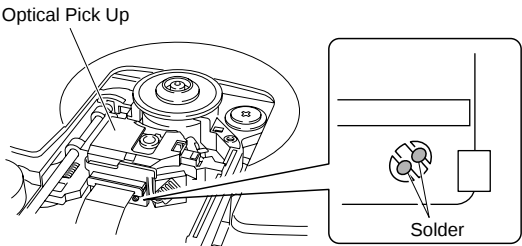


Fig. 2

● How to manually eject the tray

- Turn the player bottom up.
- Move the slider in the direction indicated with a screw driver until the tray is ejected.
- Gently pull the tray out.

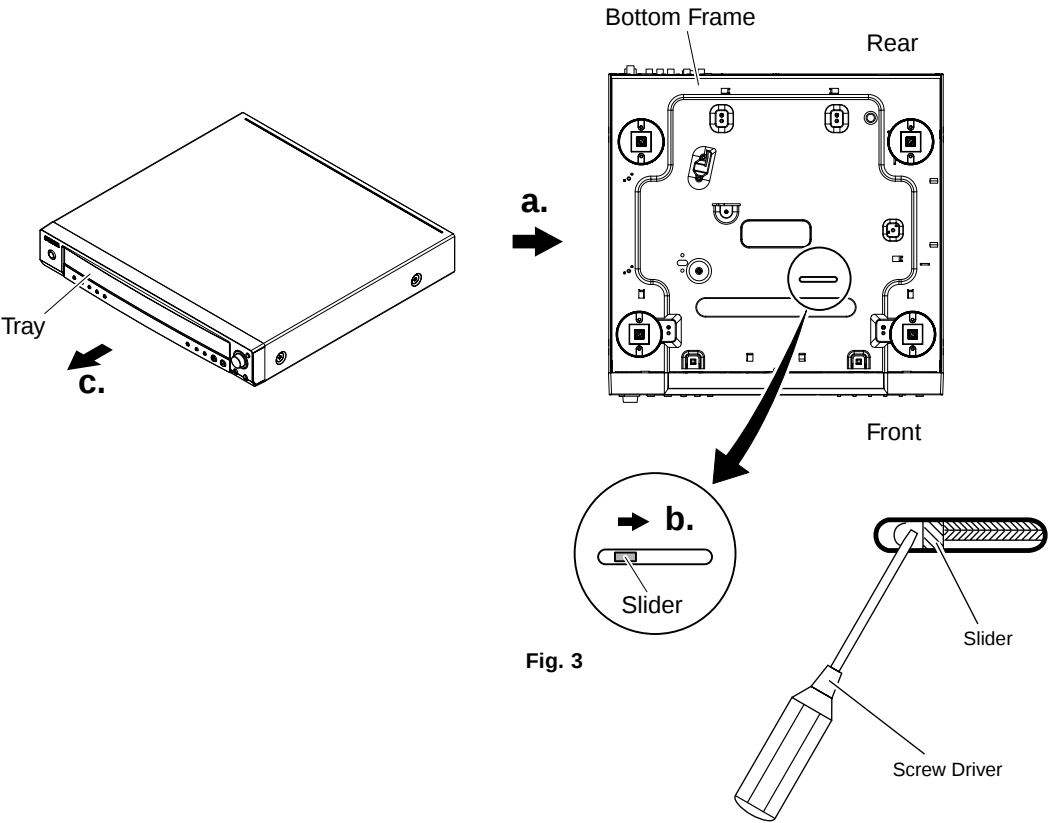


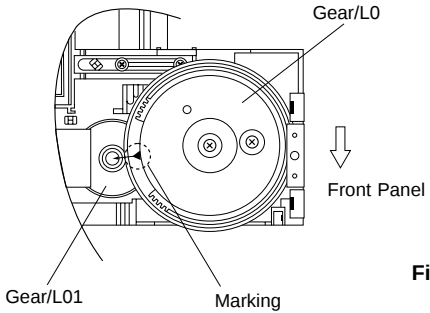
Fig. 3

1. Removal of Tray Ass'y

* The tray ass'y cannot be supplied independently. The tray ass'y is contained in DVD 5-disc changer module and supplied as a DVD 5-disc changer module.

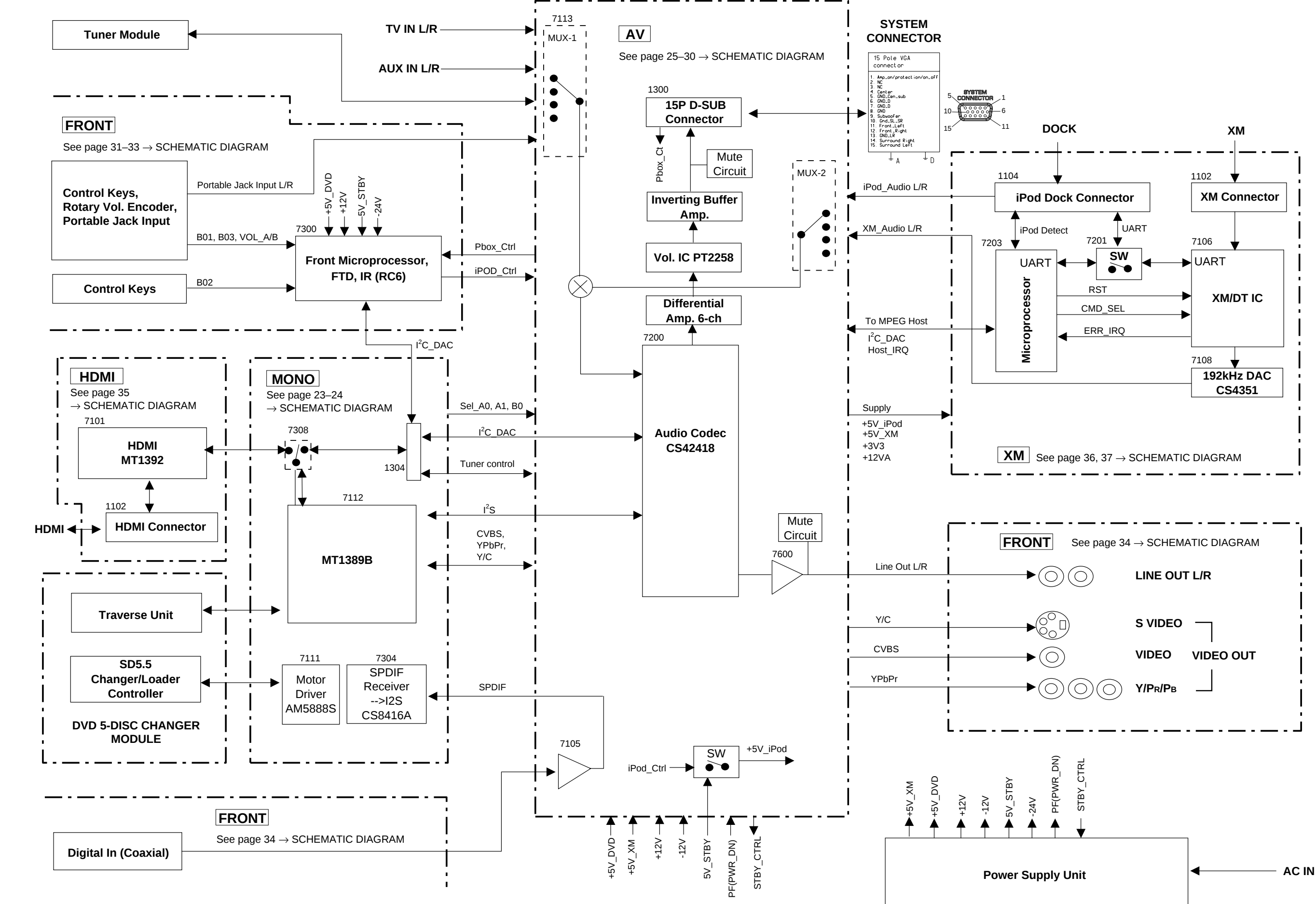
- Remove the top cover.
- Open Tray (see How to manually eject the tray).
- Remove 1 screw (①).
- Remove the tray ass'y.

● Precaution for installation of the tray ass'y.
On tray ass'y setting.
Check the direction of marking "▲" on gear according to this drawing.



MEMO

■ BLOCK DIAGRAM



■ WIRING DIAGRAM

A

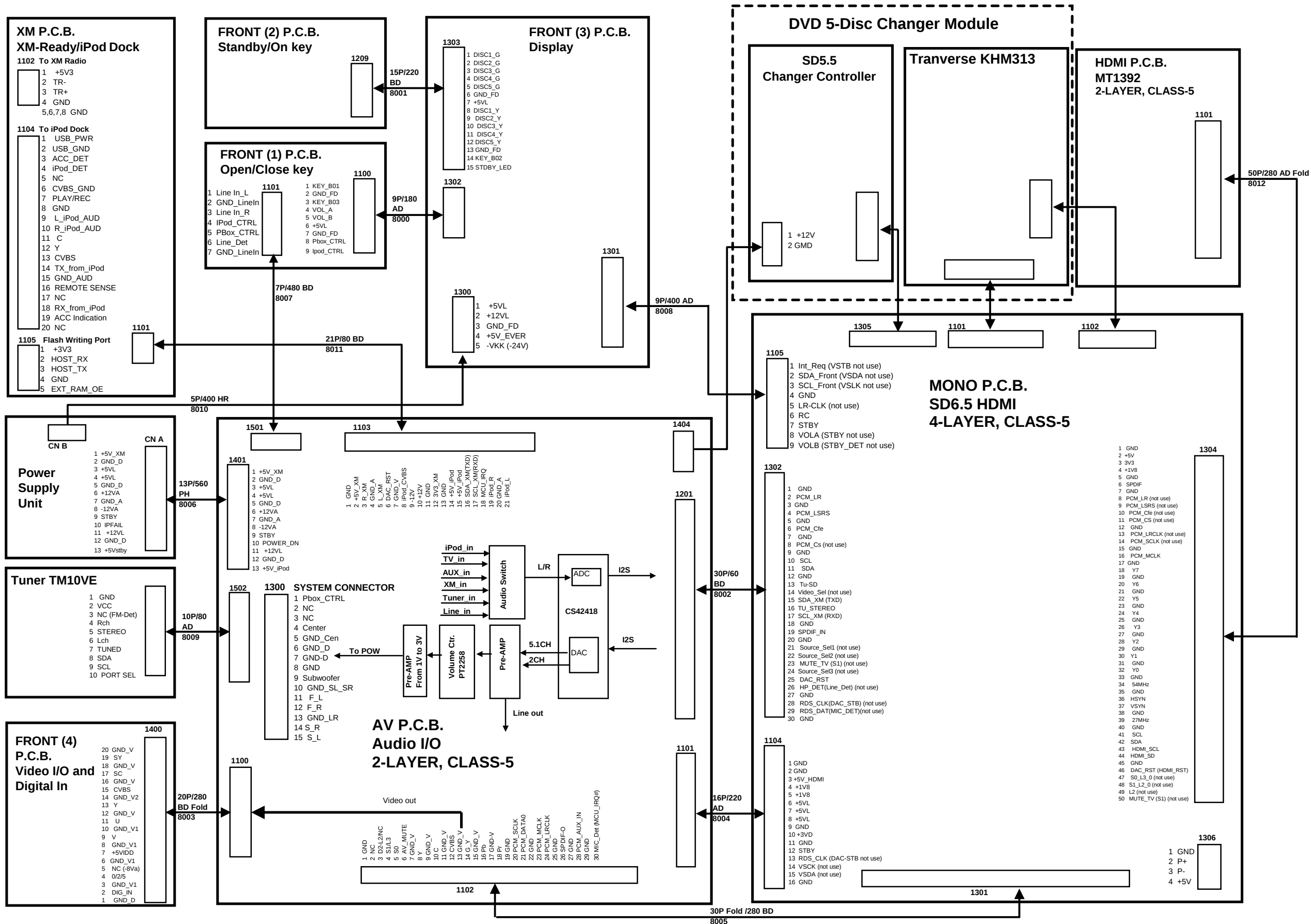
B

C

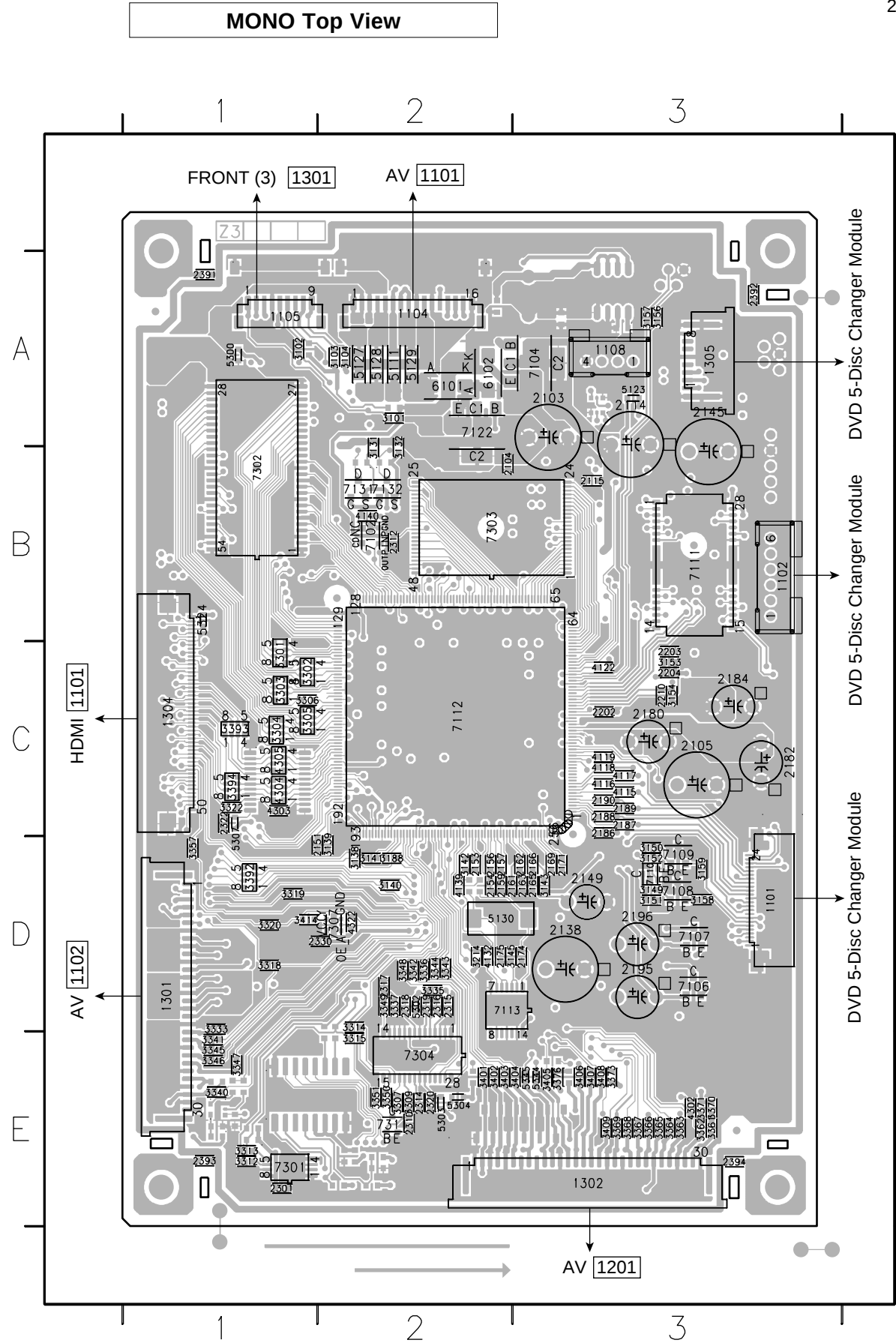
D

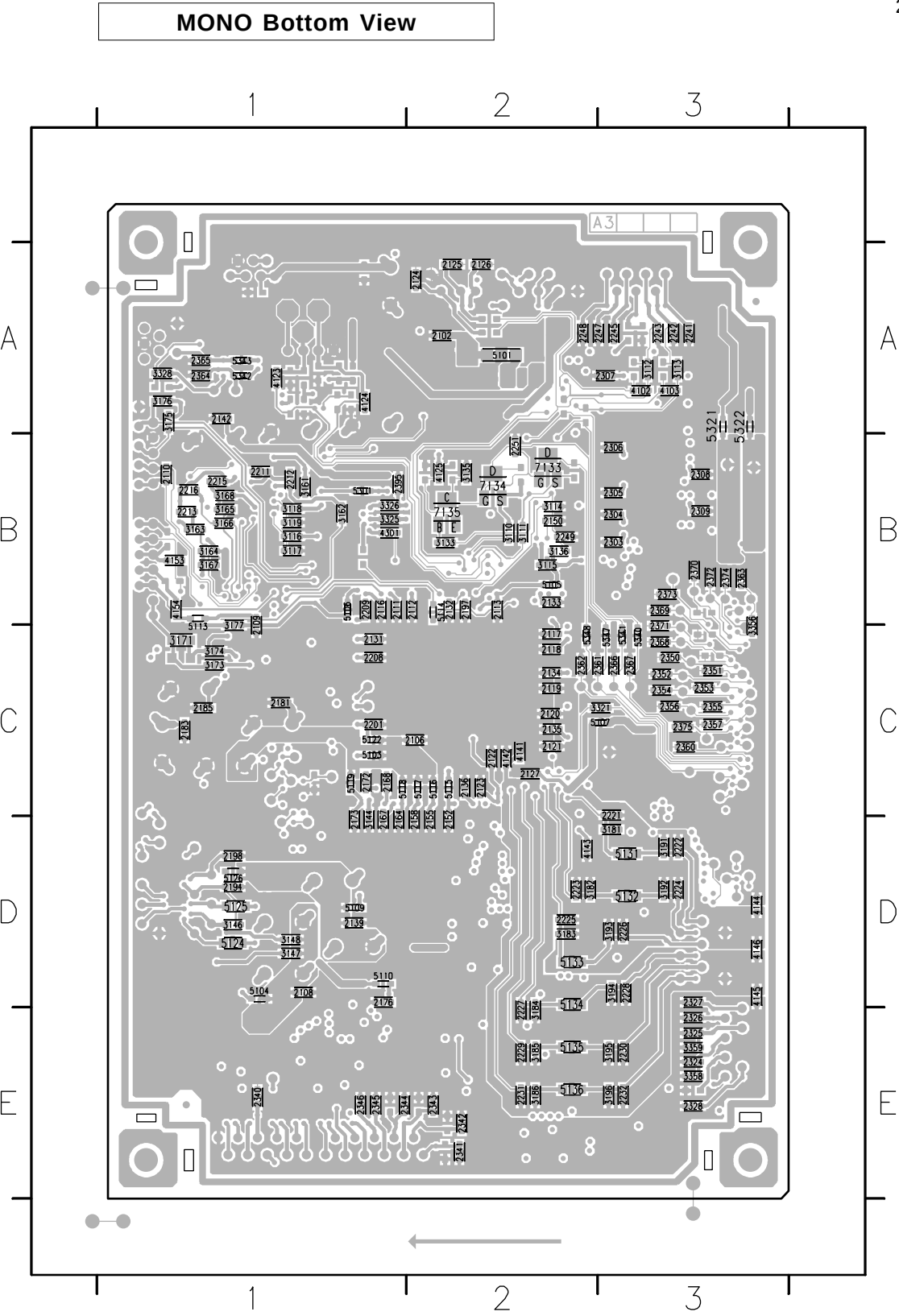
E

F



■ PRINTED CIRCUIT BOARDS
FOR INFORMATION ONLY (NO REPLACEMENT PARTS WILL BE AVAILABLE)





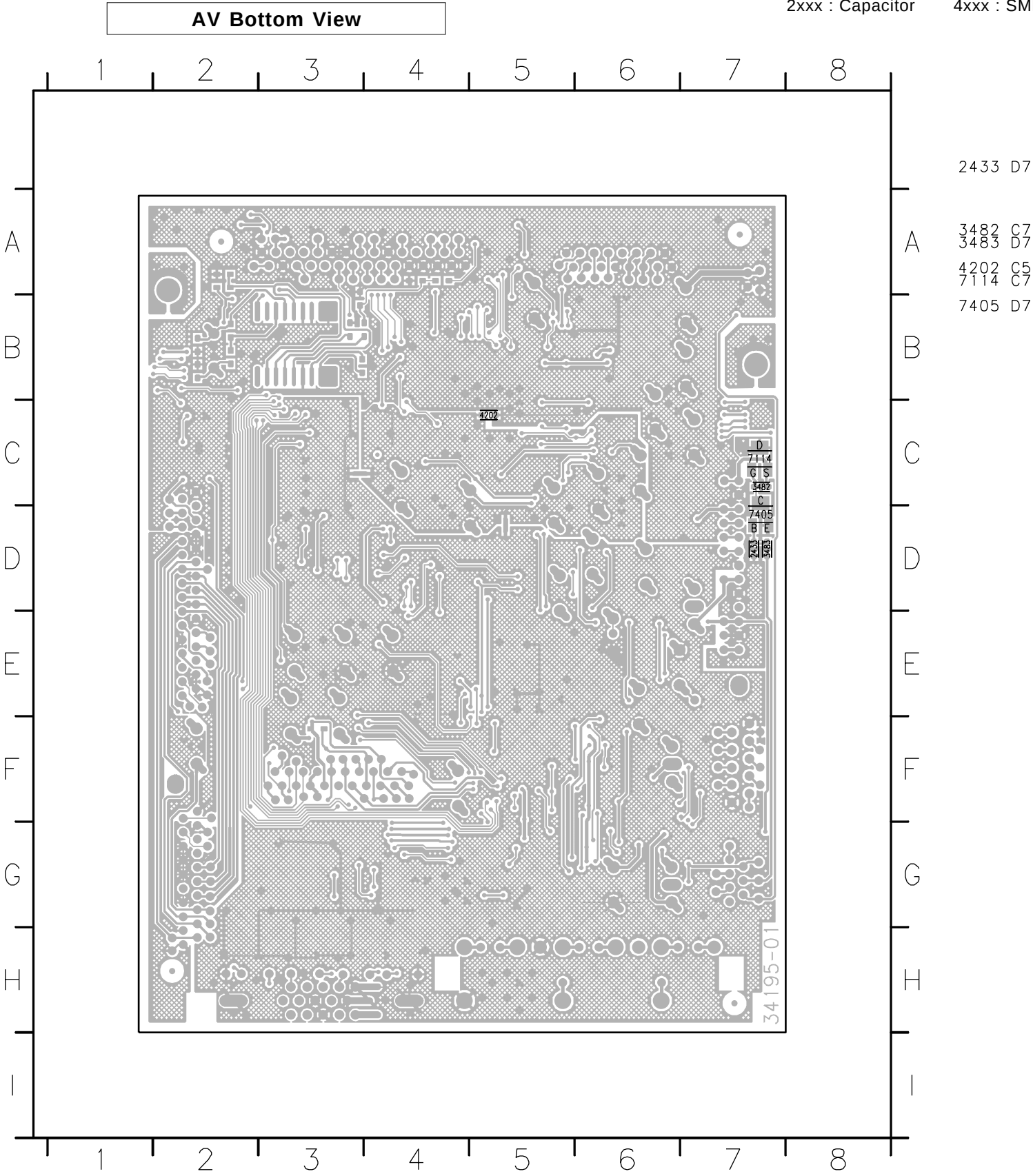
The first digit of a component indicates the component type.

1xxx : Connector	3xxx : Resistor	5xxx : Coil	7xxx : IC, Transistor, FET
2xxx : Capacitor	4xxx : SMD jumper	6xxx : Diode	9xxx : Wire jumper

2102	A2		3164	B1	5104	D1	
2106	C2	2251	B2	3165	B1	5105	B2
2108	D1	2303	B3	3166	B1	5106	B1
2109	C1	2304	B3	3167	B1	5107	C3
2110	B1	2305	B3	3168	B1	5109	D1
2111	B1	2306	B3	3171	C1	5110	D1
2112	B2	2307	A3			5113	C1
2113	B2	2308	B3	3173	C1	5114	B2
2116	B1	2309	B3	3174	C1	5115	C2
2117	C2	2324	E3	3175	A1	5116	C2
2118	C2	2325	E3	3176	A1	5117	C2
2119	C2	2326	E3	3177	C1	5118	C1
2120	C2	2327	D3	3181	D3	5119	C1
2121	C2	2328	E3	3182	D2	5122	C1
2122	C2			3183	D2	5124	D1
2123	C2	2340	E1	3184	E2	5125	

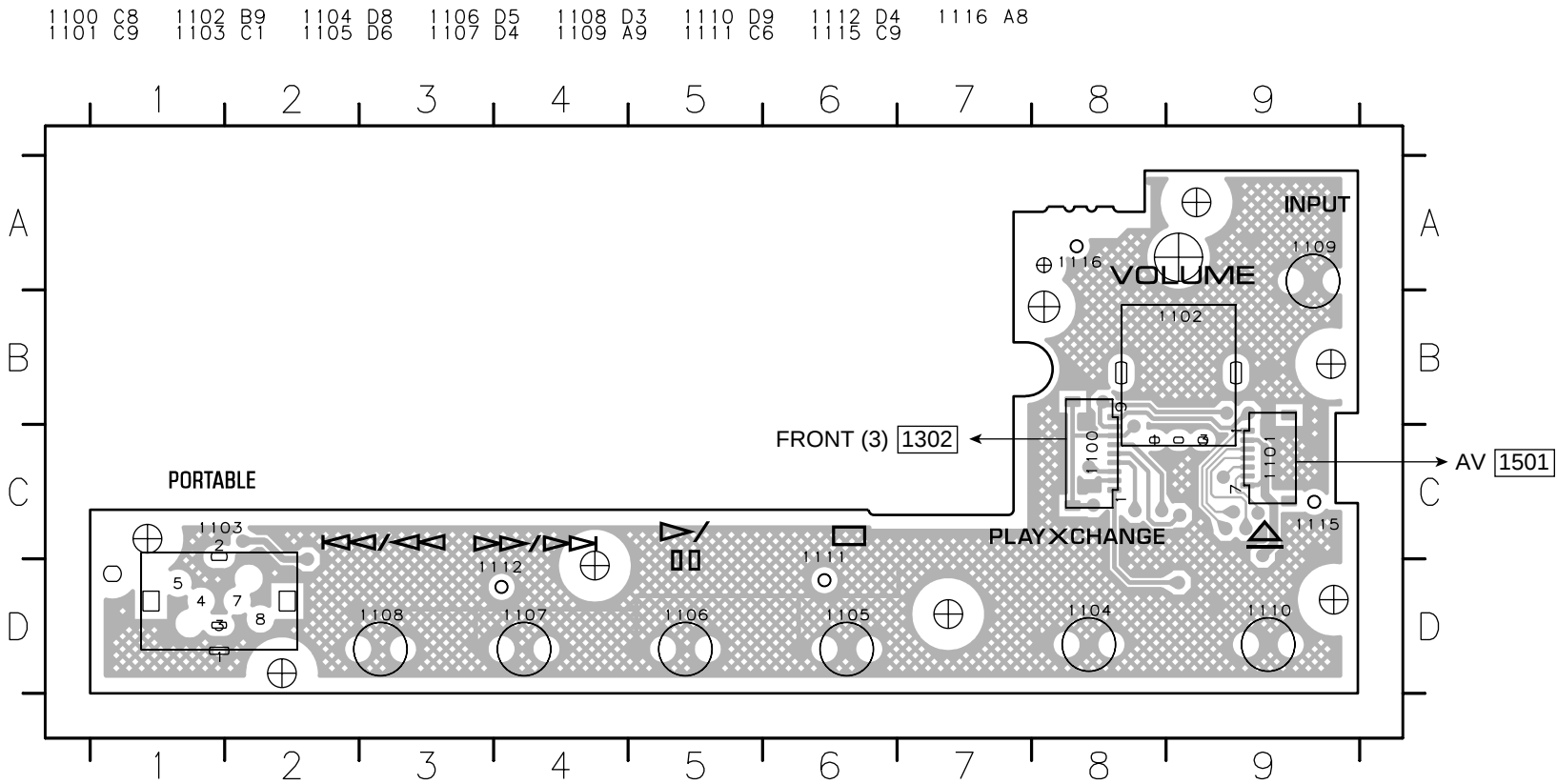
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2xxx : Capacitor	4xxx : SMD jumper	6xxx : Diode	9xxx : Wire jumper

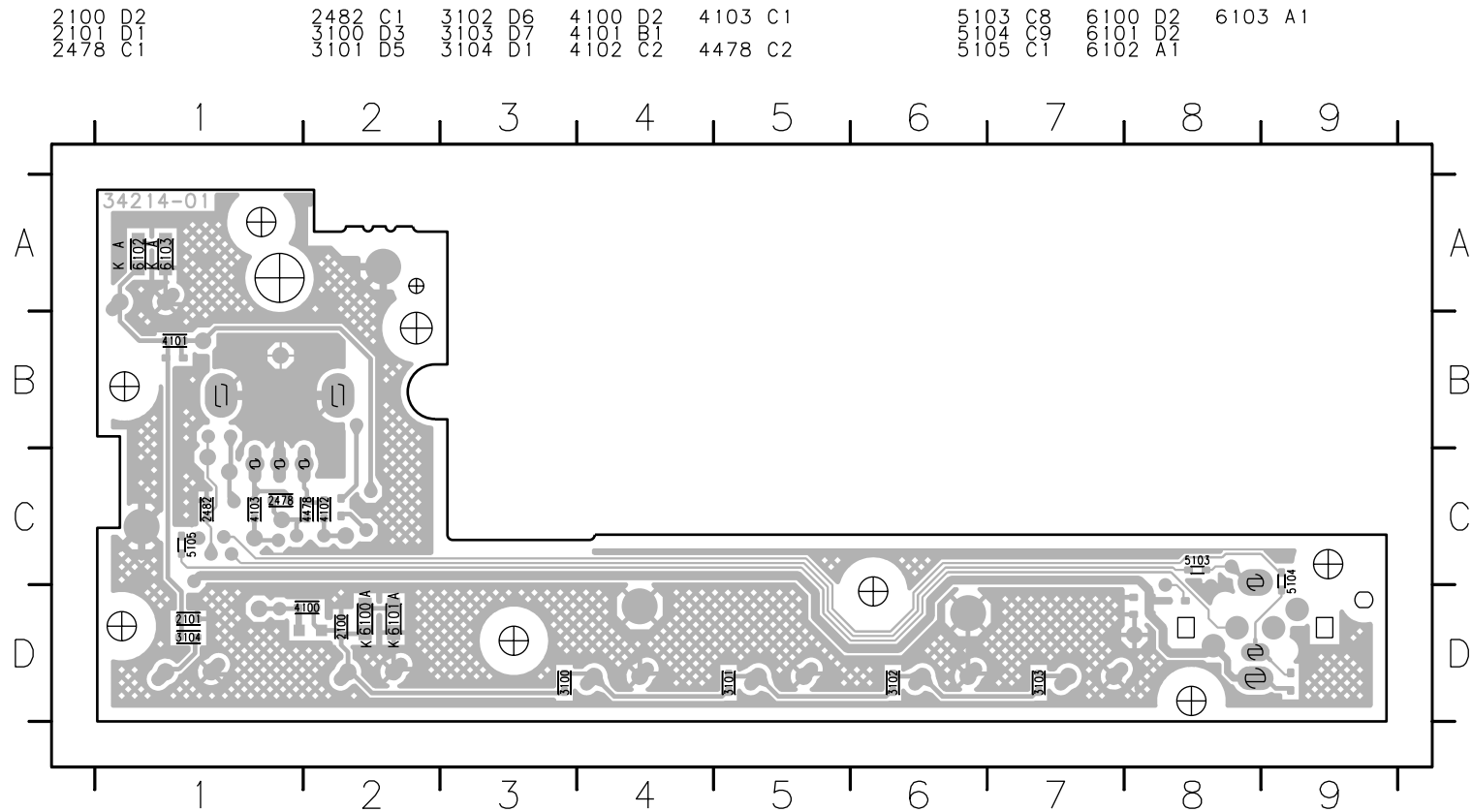


The first digit of a component indicates the component type.
1xxx : Connector 3xxx : Resistor 5xxx : Coil 7xxx : IC, Transistor, FET
2xxx : Capacitor 4xxx : SMD jumper 6xxx : Diode 9xxx : Wire jumper

Front (1) Top View

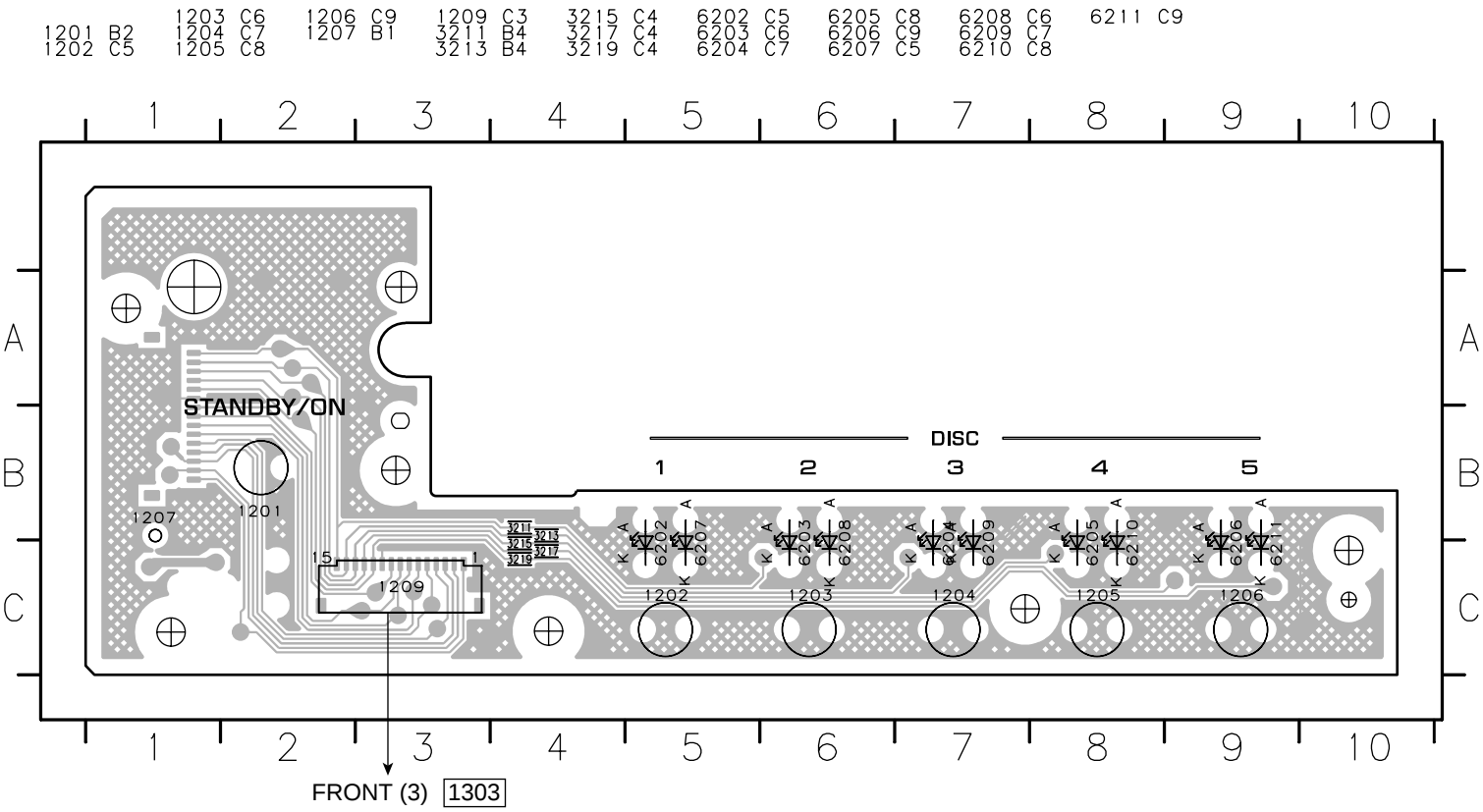


Front (1) Bottom View

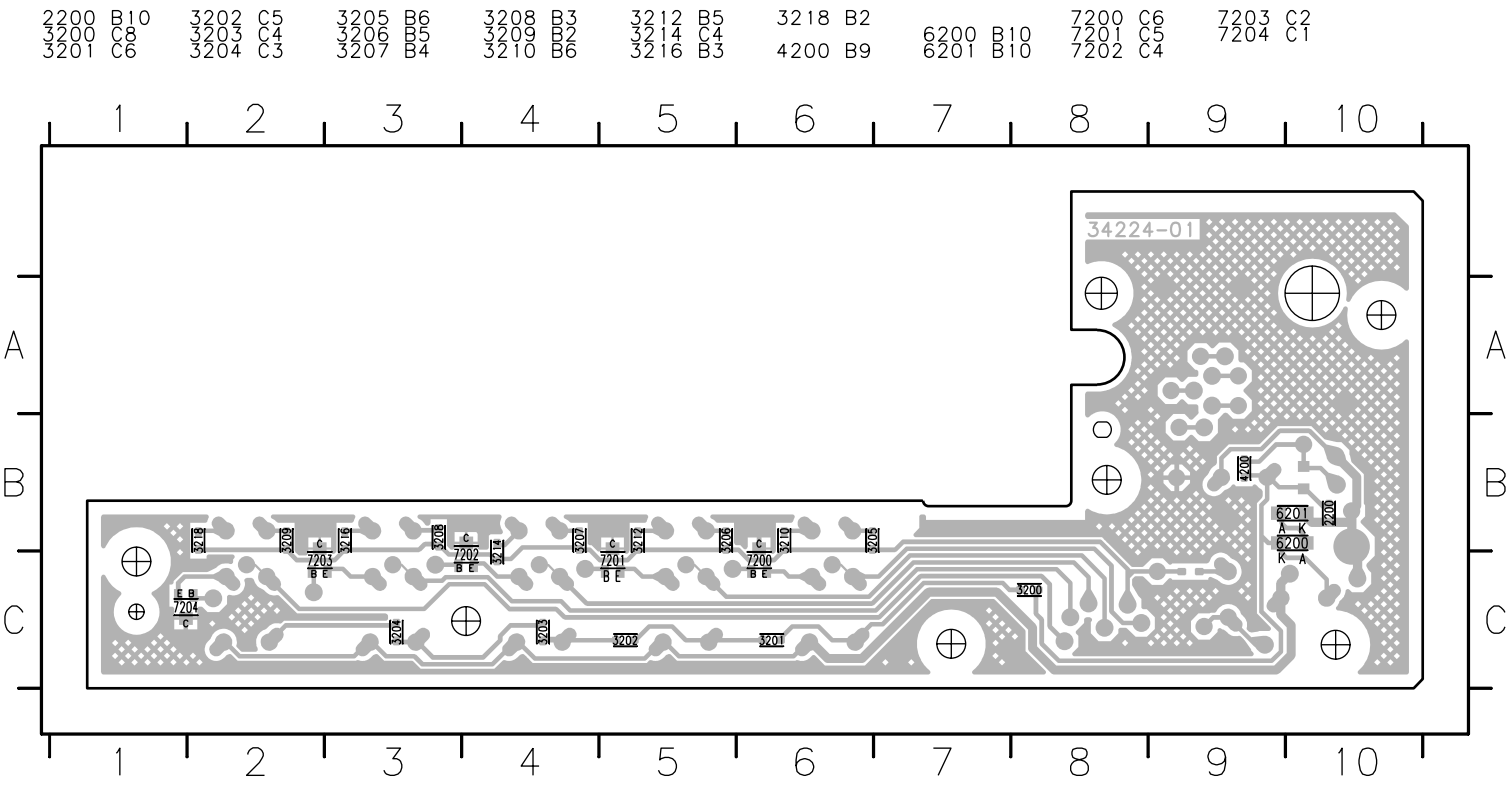


The first digit of a component indicates the component type.
1xxx : Connector 3xxx : Resistor 5xxx : Coil 7xxx : IC, Transistor, FET
2xxx : Capacitor 4xxx : SMD jumper 6xxx : Diode 9xxx : Wire jumper

Front (2) Top View



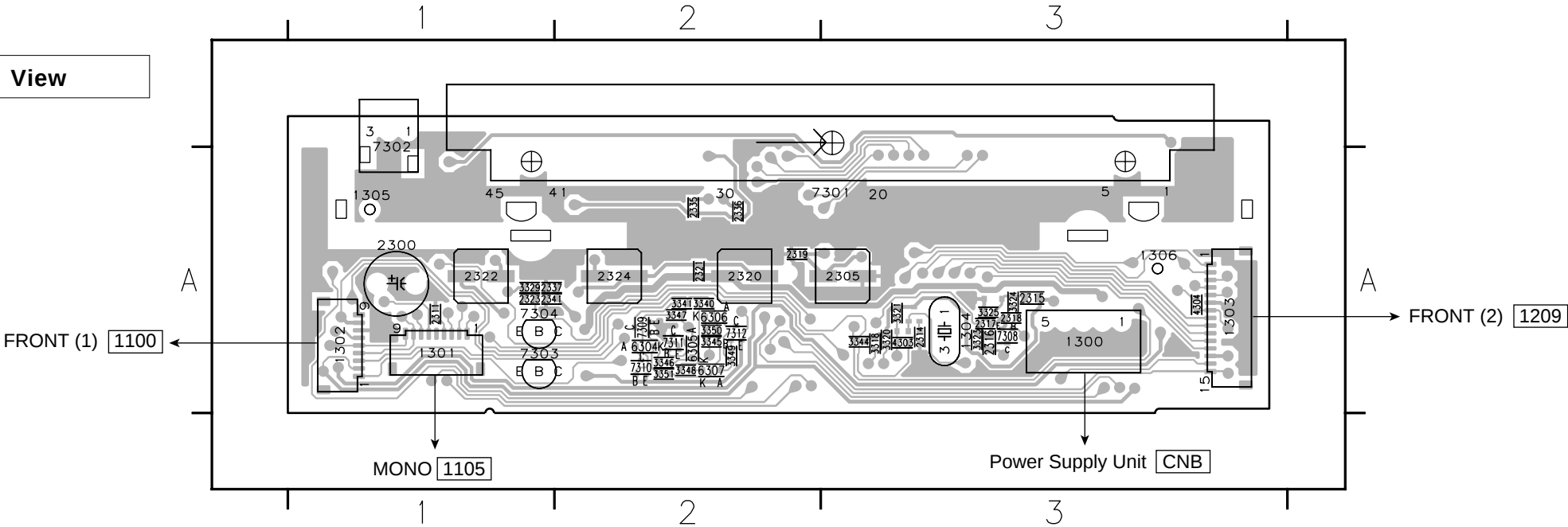
Front (2) Bottom View



The first digit of a component indicates the component type.
1xxx : Connector 3xxx : Resistor 5xxx : Coil 7xxx : IC, Transistor, FET
2xxx : Capacitor 4xxx : SMD jumper 6xxx : Diode 9xxx : Wire jumper

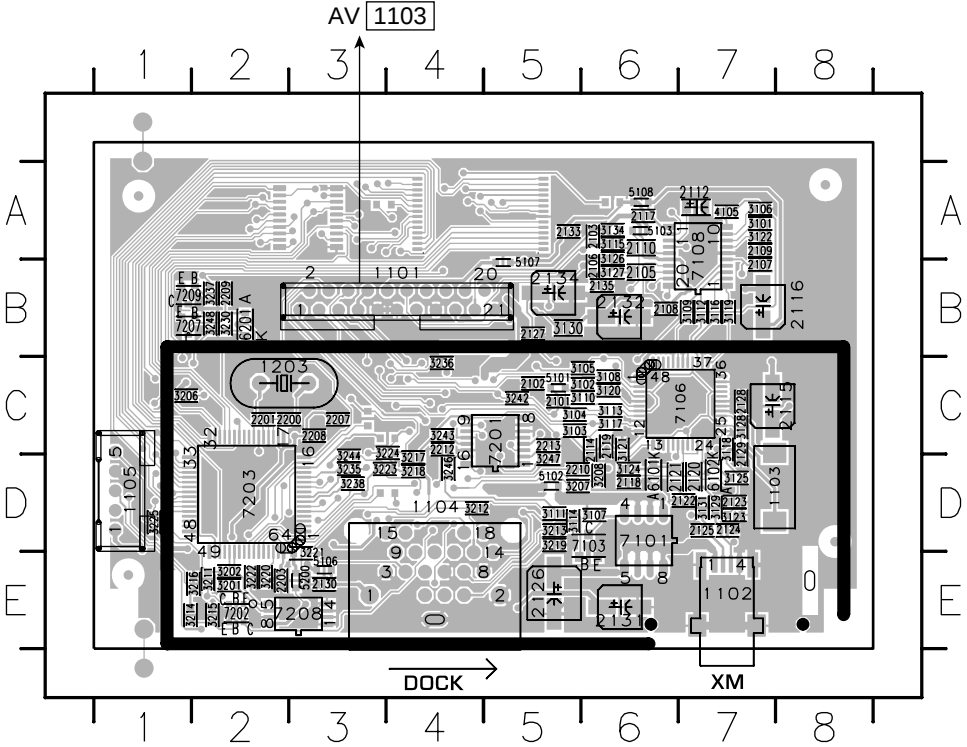
1300 A3	1306 A3	2316 A3	2322 A1	2341 A1	3324 A3	3345 A2	3351 A2	6306 A2		
1301 A1	2300 A1	2317 A3	2323 A1	3318 A3	3325 A3	3346 A2	4303 A3	6307 A2	7308 A3	
1302 A1	2305 A3	2318 A3	2324 A2	3320 A3	3329 A1	3347 A2	4304 A3	7301 A3	7309 A2	
1303 A3	2311 A1	2319 A2	2325 A2	3321 A3	3348 A2	3348 A2		7302 A1	7310 A2	
1304 A3	2314 A3	2320 A2	2326 A2		3341 A2	3349 A2	6304 A2	7303 A1	7311 A2	
1305 A1	2315 A3	2321 A2	2327 A1	3323 A3	3344 A3	3350 A2	6305 A2	7304 A1	7312 A2	

Front (3) Top View



2301 A3	2308 A3	2326 A2	2332 A2	3300 A2	3306 A3	3313 A2	3326 A2	3333 A1	3342 A2	6301 A2
2302 A1	2309 A3	2327 A2	2333 A2	3301 A3						

XM Top View



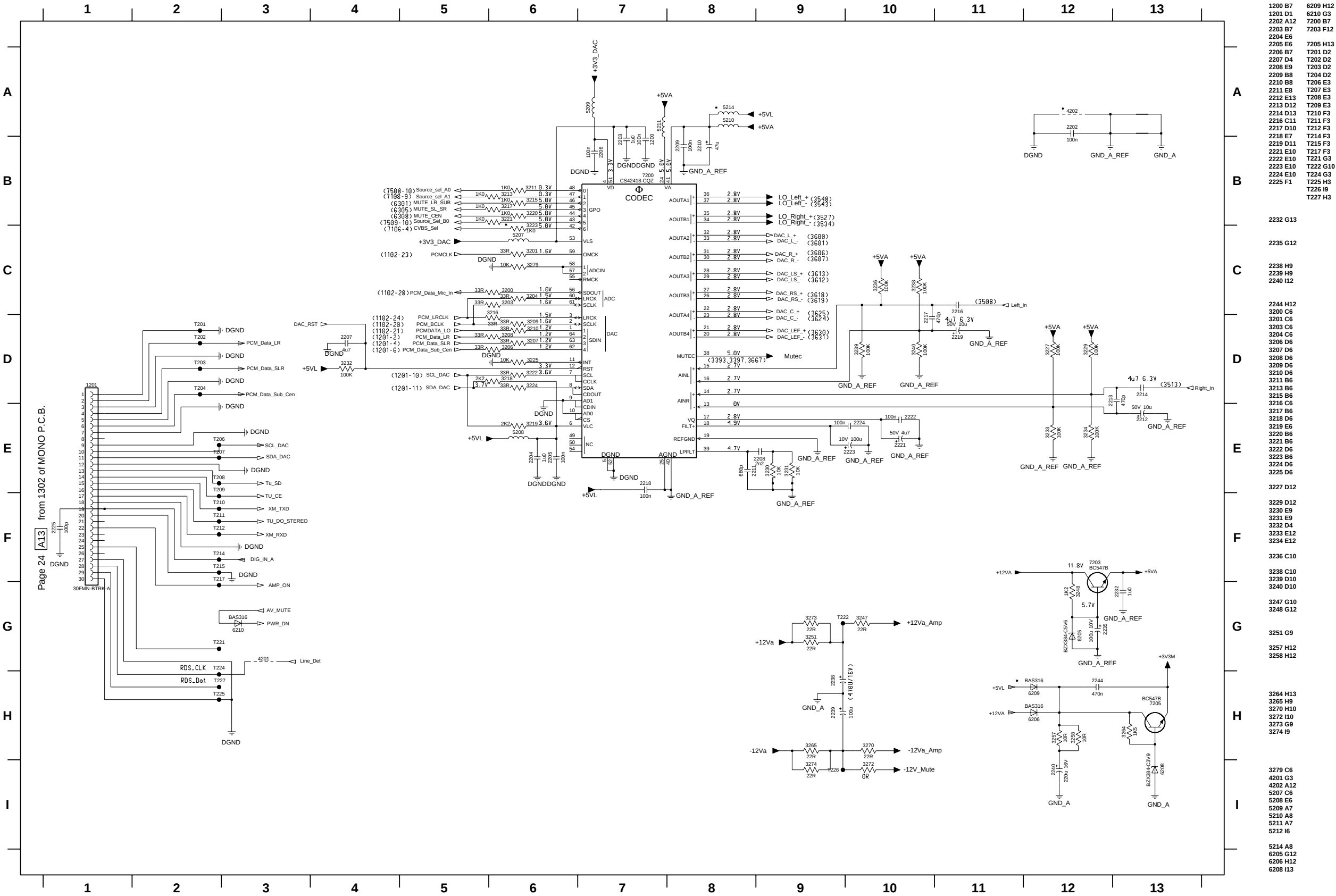
The first digit of a component indicates the component type.
1xxx : Connector 3xxx : Resistor 5xxx : Coil 7xxx : IC, Transistor, FET
2xxx : Capacitor 4xxx : SMD jumper 6xxx : Diode 9xxx : Wire jumper

1103	1101	1105	1203	7203	7201	7202	7204	7205	7206	7207	7208	7209	7210	7211	7212	7213	7214	7215	7216	7217	7218	7219	7220	7221	7222	7223	7224	7225	7226	7227	7228	7229	7230	7231	7232	7233	7234	7235	7236	7237	7238	7239	7240	7241
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AV (2/6)

The first digit of a component indicates the component type.

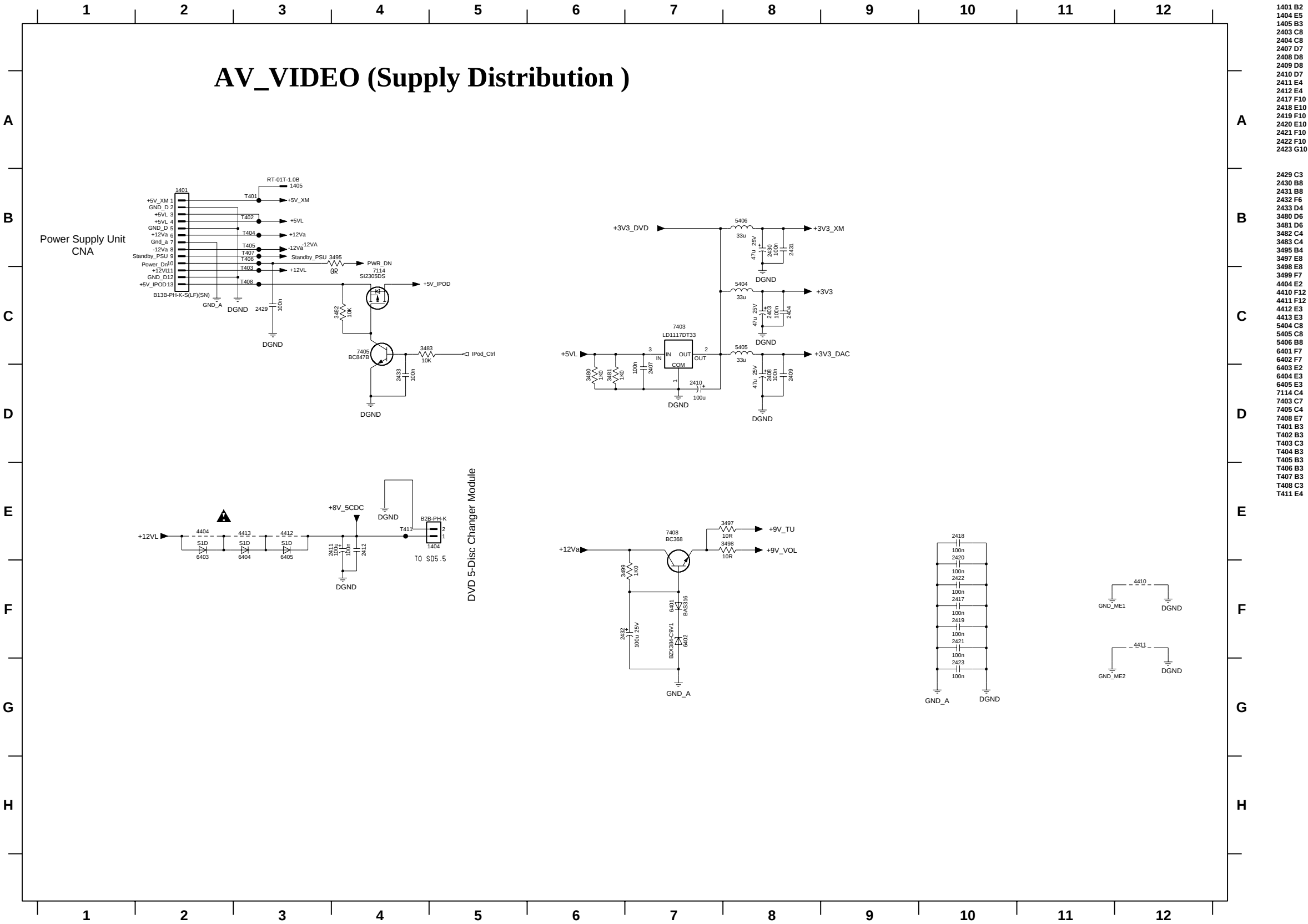
1xxx : Connector 3xxx : Resistor 5xxx : Coil 7xxx : IC, Transistor, FET
2xxx : Capacitor 4xxx : SMD jumper 6xxx : Diode 9xxx : Wire jumper



AV (4/6)

The first digit of a component indicates the component type.

- 1xxx : Connector
- 2xxx : Capacitor
- 3xxx : Resistor
- 4xxx : SMD jumper
- 5xxx : Coil
- 6xxx : Diode
- 7xxx : IC, Transistor, FET
- 9xxx : Wire jumper



DVR-C310



DVR-C310