

SAMSUNG

Color Laser Printer

CLP-300 Series

CLP-300/XSG

Basic Model : CLP-300

SERVICE *Manual*

Samsung Color Laser Printer



The keynote of Product

[The keynote of Product]

[Series Model]

.CLP-300: B/W 16 ppm, Color 4 ppm, SPL-C

.CLP-300N: CLP-300 + Network

[Resolution]

. 2400 x 600 dpi

[CPU]

.Samsung CorrusM 170MHz

[Interface]

.CLP-300 : USB 2.0

.CLP-300N : USB 2.0, Ethernet 10/100 Base TX

[Consumables]

.2K black toner cartridge

.1K color toner cartridge

.Waste toner box

[Paper Handling]

.150 sheets Semi-cassette

.1 sheet manual slot

.150 sheet Face-Down

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1. Precautions

In order to prevent accidents and to prevent damage to the equipment please read the precautions listed below carefully before servicing the printer and follow them closely.

1.1 Safety Warning

- (1) Only to be serviced by appropriately qualified service engineers.

High voltages and lasers inside this product are dangerous. This printer should only be serviced by a suitably trained and qualified service engineer.

- (2) Use only Samsung replacement parts

There are no user serviceable parts inside the printer. Do not make any unauthorized changes or additions to the printer, these could cause the printer to malfunction and create electric shock or fire hazards.

- (3) Laser Safety Statement

The Printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR, chapter 1 Subchapter J for Class 1(1) laser products, and elsewhere, it is certified as a Class I laser product conforming to the requirements of IEC 825. Class I laser products are not considered to be hazardous. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Warning >> Never operate or service the printer with the protective cover removed from Laser/Scanner assembly. The reflected beam, although invisible, can damage your eyes. When using this product, these basic safety pre-cautions should always be followed to reduce risk of fire, electric shock, and injury to persons.



CAUTION - INVISIBLE LASER RADIATION
WHEN THIS COVER OPEN.
DO NOT OPEN THIS COVER.

VORSICHT - UNSICHTBARE LASERSTRAHLUNG,
WENN ABDECKUNG GEFFNET.
NICHT DEM STRAHL AUSSETZEN.

ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS
D'OUVERTURE. EXPOSITION DANGEREUSE
AU FAISCEAU.

ATTENZIONE - RADIAZIONE LASER INVISIBILE IN CASO DI
APERTURA. EVITARE L'ESPOSIZIONE AL
FASCIO.

PRECAUCION - RADIACION LASER INVISIBLE CUANDO SE ABRE.
EVITAR EXPONERSE AL RAYO.

ADVARSEL - USYNLIG LASERSTRÅLING VED ÅBNING, N R
SIKKERHEDSBRYDERE ER UDE AF FUNKTION.
UNDG UDSETTELSE FOR STRÅLING.

ADVARSEL - USYNLIG LASERSTRÅLING N R DEKSEL
PNES. STIRR IKKE INN I STRÅLEN.
UNNG EKSPONERING FOR STRÅLEN.

VARNING - OSYNLIG LASERSTRÅLING N R DENNA DEL
R PPNAD OCH SPÄRRER R URKOPPLAD.
BETRAKTA EJ STRÅLEN. STRÅLEN R FARLIG.

VARO! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA
OLET ALTTIINA N KYM TT M LLE LASER-
S TEILYLLE L KATSO S TEESEEN.

注 意 - 严禁揭开此盖, 以免激光泄露灼伤

주 의 - 이 덮개를 열면 레이저광에 노출될 수 있으므로
주의하십시오.

1.2 Caution for safety

1.2.1 Toxic material

This product contains toxic materials that could cause illness if ingested.

- (1) If the LCD control panel is damaged it is possible for the liquid inside to leak. This liquid is toxic. Contact with the skin should be avoided, wash any splashes from eyes or skin immediately and contact your doctor. If the liquid gets into the mouth or is swallowed see a doctor immediately.
- (2) Please keep toner cartridges away from children. The toner powder contained in the toner cartridge may be harmful and if swallowed you should contact a doctor.

1.2.2 Electric Shock and Fire Safety Precautions

Failure to follow the following instructions could cause electric shock or potentially cause a fire.

- (1) Use only the correct voltage, failure to do so could damage the printer and potentially cause a fire or electric shock.
- (2) Use only the power cable supplied with the printer. Use of an incorrectly specified cable could cause the cable to overheat and potentially cause a fire.
- (3) Do not overload the power socket, this could lead to overheating of the cables inside the wall and could lead to a fire.
- (4) Do not allow water or other liquids to spill into the printer, this can cause electric shock. Do not allow paper clips, pins or other foreign objects to fall into the printer these could cause a short circuit leading to an electric shock or fire hazard..
- (5) Never touch the plugs on either end of the power cable with wet hands, this can cause electric shock. When servicing the printer remove the power plug from the wall socket.
- (6) Use caution when inserting or removing the power connector. The power connector must be inserted completely otherwise a poor contact could cause overheating possibly leading to a fire. When removing the power connector grip it firmly and pull.
- (7) Take care of the power cable. Do not allow it to become twisted, bent sharply round corners or otherwise damaged. Do not place objects on top of the power cable. If the power cable is damaged it could overheat and cause a fire or exposed cables could cause an electric shock. Replace a damaged power cable immediately, do not reuse or repair the damaged cable. Some chemicals can attack the coating on the power cable, weakening the cover or exposing cables causing fire and shock risks.
- (8) Ensure that the power sockets and plugs are not cracked or broken in any way. Any such defects should be repaired immediately. Take care not to cut or damage the power cable or plugs when moving the machine.
- (9) Use caution during thunder or lightening storms. Samsung recommend that this machine be disconnected from the power source when such weather conditions are expected. Do not touch the machine or the power cord if it is still connected to the wall socket in these weather conditions.
- (10) Avoid damp or dusty areas, install the printer in a clean well ventilated location. Do not position the machine near a humidifier. Damp and dust build up inside the machine can lead to overheating and cause a fire.
- (11) Do not position the printer in direct sunlight. This will cause the temperature inside the printer to rise possibly leading to the printer failing to work properly and in extreme conditions could lead to a fire.
- (12) Do not insert any metal objects into the machine through the ventilator fan or other part of the casing, it could make contact with a high voltage conductor inside the machine and cause an electric shock.

1.2.3 Handling Precautions

The following instructions are for your own personal safety, to avoid injury and so as not to damage the printer

- (1) Ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall.
- (2) The printer contains many rollers, gears and fans. Take great care to ensure that you do not catch your fingers, hair or clothing in any of these rotating devices.
- (3) Do not place any small metal objects, containers of water, chemicals or other liquids close to the printer which if spilled could get into the machine and cause damage or a shock or fire hazard.
- (4) Do not install the machine in areas with high dust or moisture levels, beside an open window or close to a humidifier or heater. Damage could be caused to the printer in such areas.
- (5) Do not place candles, burning cigarettes, etc. on the printer, these could cause a fire.

1.2.4 Assembly / Disassembly Precautions

Replace parts carefully, always use Samsung parts. Take care to note the exact location of parts and also cable routing before dismantling any part of the machine. Ensure all parts and cables are replaced correctly. Please carry out the following procedures before dismantling the printer or replacing any parts.

- (1) Check the contents of the machine memory and make a note of any user settings. These will be erased if the mainboard is replaced.
- (2) Ensure that power is disconnected before servicing or replacing any electrical parts.
- (3) Disconnect printer interface cables and power cables.
- (4) Only use approved spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct.
- (5) When removing or re-fitting any parts do not use excessive force, especially when fitting screws into plastic.
- (6) Take care not to drop any small parts into the machine.
- (7) Handling of the OPC Drum
 - The OPC Drum can be irreparably damaged if it is exposed to light.
Take care not to expose the OPC Drum either to direct sunlight or to fluorescent or incandescent room lighting. Exposure for as little as 5 mins can damage the surface's photoconductive properties and will result in print quality degradation. Take extra care when servicing the printer. Remove the OPC Drum and store it in a black bag or other lightproof container. Take care when working with the covers (especially the top cover) open as light is admitted to the OPC area and can damage the OPC Drum.
 - Take care not to scratch the green surface of the OPC Drum Unit.
If the green surface of the Drum Cartridge is scratched or touched the print quality will be compromised.

1.2.5 Disregarding this warning may cause bodily injury

(1) Be careful with the high temperature part.

The fuser unit works at a high temperature. Use caution when working on the printer. Wait for the fuser to cool down before disassembly.

(2) Do not put finger or hair into the rotating parts.

When operating a printer, do not put hand or hair into the rotating parts (Paper feeding entrance, motor, fan, etc.). If do, you can get harm.

(3) When you move the printer.

This printer weighs 13.6kg including Consumables. Use safe lifting and handling techniques. Back injury could be caused if you do not lift carefully.

(4) Ensure the printer is installed safely.

The printer weighs 13.6Kg, ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall possibly causing personal injury or damaging the printer.

(5) Do not install the printer on a sloping or unstable surface. After installation, double check that the printer is stable.

1.3 ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called “Electrostatically Sensitive (ES) Devices”, or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor “chip” components.

The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

Caution >>Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, which should be removed for your personal safety reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.
3. Use only a grounded tip soldering iron to solder or desolder ESDs.
4. Use only an “anti-static” solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESDs.
5. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.
7. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
8. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.
9. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one’s foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

1.4 Super Capacitor or Lithium Battery Precautions

1. Exercise caution when replacing a super capacitor or Lithium battery. There could be a danger of explosion and subsequent operator injury and/or equipment damage if incorrectly installed.
2. Be sure to replace the battery with the same or equivalent type recommended by the manufacturer.
3. Super capacitor or Lithium batteries contain toxic substances and should not be opened, crushed, or burned for disposal.
4. Dispose of used batteries according to the manufacture’s instructions.

2. Product Specifications

2.1 Product Overview

Item	Descriptions		
Basic Model	CLP-300		
Series Model	CLP-300, CLP-300N		
Maket of Sales	· Main Target : SOHO, SMB · Black only Function(Saving money)		
Main Specification	1.Speed · Up to 16 ppm in A4 (17 ppm in Letter) · Up to 4 ppm in A4 (4 ppm in Letter)		
	2.Printing Resolution · Native 600 x 600 dpi standard		
	3.Processor · CHORUSm (300Mhz), Proprietary SOC		
	4.Printer Language Emulations · SPL-Color		
	5.Memory · The controller has 32 MB SDRAM and 4 MB flash ROM on Board		
	6.Interfaces · One USB port · One 10/100 BaseT network connector		
	7.Contr ol Panel · No LCD, 2 keys and 6LEDs		

2.2 Specifications

Specifications are correct at the time of printing. Product specifications are subject to change without notice. See below for product specifications.

2.2.1 General Specifications

Item		CLP-300 Series	
		CLP-300	CLP-300N
Engine Speed	Simplex	Up to 16 ppm in A4 (17 ppm in Letter) Up to 4 ppm in A4 (4 ppm in Letter)	
	Duplex	N/A	
Warmup time		Less than 35 sec	
FPOT (B&W)	From Ready	Less than 14 sec	
	From Idle	Less than 45 sec	
	From Coldboot	Less than 45 sec	
FPOT (Color)	From Ready	Less than 26 sec	
	From Idle	Less than 57 sec	
	From Coldboot	Less than 57 sec	
Resolution	Optical	600 x 600 dpi	
	Support	MAX: 2400 x 600 dpi effective output, 1200 x 600 dpi (default), 600 x 600 dpi(Color & B&W)	

2.2.2 Controller & S/W

Item		CLP-300 Series	
		CLP-300	CLP-300N
MPU		Samsung CHORUSm 300MHz	
Memory	Std.	32 MB 64 MB	
	Max.	32 MB 64 MB	
Memory Expansion		N/A	
Printer Languages		SPL-C (Samsung Printer Language Color)	
Fonts		N/A	
Driver	Supporting OS	Windows 98/Me/2000/XP/2003	
		Various Linux OS including Red Hat 8.0~9.0, Mandrake 9.0~10.1, SuSE 8.2~9.2 and Fedora Core 1~3	
		Mac OS 10.3 ,10.4	
	Default Driver	SPL-C (Samsung Printer Language Color)	
	Driver feature	Watermark Overlay N-up printing Poster printing Manual duplex Quality(1200 dpi, 1200dpi class, 600 dpi) Color mode (Color, Gray scale) Color spec. application color matching Device color Black only status in Status monitor	
	WHQL	Windows 2000/XP/2003	
	Language Localization	Korean, English, French, German, Italian, Spanish, Russian, Dutch, E.Portuguese, Finish, Swedish, Norwegian, Danish, S.Chinese, T.Chinese, Polish, Hungarian, Czech	
Application	RCP	USB	USB / Network
	Smart Panel	Yes(USB, Install Default)	Yes(USB / Network, Install Default)
	Network Management	N/A	Set IP, Web SyncThru3 (SWS)
	SmarThru4	N/A	
Interface			
Parallel		N/A	
USB		USB 2.0	
Network		N/A	Ethernet 10/100 Base TX
Wireless		External	
Network Interface			
Protocol		N/A	TCP/IP, DLC/LLC, IPP, SNMP
Network OS		N/A	Microsoft Windows 98/ME/2000/XP/2003Microsoft Windows NT 4.x and aboveDriver longhorn, Mac OS 10.3 or higher (TCP/IP only)Mac OS 9 available Various Linux OS including Red Hat, Caldera, Debian, Mandrake, Slackware, SuSE and Turbo LinuxNovell not available

2.2.3 Paper Handling

Item		CLP-300 Series	
		CLP-300	CLP-300N
Standard Capa.		150-sheet Semi Cassette Tray	
Max. Capa.		150 sheets @75g/ m²	
Printing	Max. Size	216 x 356mm (8.5" x 14")	
	Min. Size	76 x 127 mm (3" x 5")	
	Margin(T/B/L/R)	4 mm, 4 mm, 4 mm, 4 mm	
Multi-purpose tray			
Capacity		N/A	
Media sizes		N/A	
Media type		N/A	
Media weight		N/A	
Sensing		N/A	
Standard Cassette Tray - Semi cassette type			
Capacity		150 sheets @ 75g/ m²	
Media sizes		76 x 127 mm (3" x 5") ~ 216 x 356 mm (8.5" x 14")	
Media types		Envelopes, Labels, Card stock, Transparency Papers(Pre-printed,Glossy,punched,recycled)	
Media weight		16~43lb (60 to 163g/ m²)	
Size sensor		N/A	
Sensing		Paper empty sensor	
Optional Cassette Tray			
Capacity		N/A	
Media sizes		N/A	
Media types		N/A	
Media weight		N/A	
Size sensor		N/A	
User Interface		N/A	
Sensing		N/A	
Output Stacking			
Capacity	FaceUp	N/A	
	FaceDown	100 sheets @ 75g/ m²	
Output Full sensing		N/A	
Duplex			
Supporting		Manual	
Throughput		N/A	
Media sizes		N/A	
Media types		N/A	
Media weight		N/A	

2.2.4 Consumables

Item		CLP-300 Series	
		CLP-300	CLP-300N
CRU			
No. of CRUs		6 (C/M/Y/K toner, Imaging Unit, Waste toner container) K toner cartridge: CLP-K300A C toner cartridge: CLP-C300A M toner cartridge: CLP-M300A Y toner cartridge: CLP-Y300A Imaging unit : CLP-R300A Waste toner container: CLP-W300A	
Toner	Black	:	Initial : 1,500 (Sales : 2,000) A4/Letter pages, at ISO 19752 Standard Coverage,Semi glossy
	Color		Initial : 700 (Sales : 1,000) A4/Letter pages, at ISO 19752 Standard Coverage Semi glossy
	Key		Unique, Electronic key(CRUM)
	Life detect		Sensor (Y)Remain % (90% : warning,100%: empty, 120% : hardstop)
Imaging Kit(OPC+Deve)	Yield		Approx. 20K black pages (or 12.5K color pages)
	Key		Unique, Electronic key(CRUM)
	Sensor		None, that would be traced via software
	Replace method		6 steps for install/replacing
Waste Toner Container	Yield		1,250 sheets (Full Color Std. Image) or 5,000 images, Full Sensor
	Key		N/A
FRU			
No. of FRUs		4 (ITB, Fuser, T2 roller, Pick-up roller)	
ITB	Yield		Approx. 60K black pages (or 15K color pages)
	Key		None
	Sensor		None
Fuser	Yield		100,000 sheets B&W or 50,000 sheets Color
	Key		None
T2 Roller	Yield		100,000 sheets, Replacable
	Key		None
Pick-up Roller	Yield		50,000 sheets, Replacable
	Key		None

2.2.5 Environment

Item		CLP-300 Series	
		CLP-300	CLP-300N
Acoustic Noise Level (Sound Power/Pressure)	Printing	Less than 48.0 dBA (Color printing) Less than 49.0 dBA (B/W printing)	
	Standby	Less than 35 dBA	
	Sleep	Background noise level	
Input Voltages		90-140 VAC, 50/60Hz	
		189-264 VAC, 50/60Hz	
		Power Switch	
Power Consumption	Ready	Less than 160w	
	AVG.	Less than 450W	
	Max/Peak	700W/1KW	
	Sleep/Power Off	Less than 17W /Less than	
Dimension(W x D x H)	Set	390 X 344 X 265 mm (15.4" x 13.5" x 10.4")	
	Set Packing	531 X 443 X 418 mm (20.9" x 17.4" x 16.5")	
Weight	Set (with consumables)	13.6 kg	
	Set Packing	17.0 kg	
	Consumable	3.5 kg(Imaging Unit)	

2.2.6 Options

Item	CLP-300 Series	
	CLP-300	CLP-300N
Memory	N/A	
Second Cassette	N/A	
PostScript	N/A	
Network	N/A	
Wireless Network	N/A	
Hard Disk	N/A	
Duplex Unit	N/A	

2.2.7 Accessory

No	항목	제품코드	수량
	INA-ACCESSORY	JC99-02015A	-
	CBF-POWER CORD	3903-000042	1
	BAG PE	6902-000288	1
	S/W APPLICATION-CD	JC46-00257A	1
	S/W APPLICATION-CD	JC46-00313A	1
	MANUAL-(CARD)WARRANTY CARD	JC68-00690A	1
	LABEL(P)-BLANK 90*25	JC68-01584A	1

2.3 Model Comparison Table

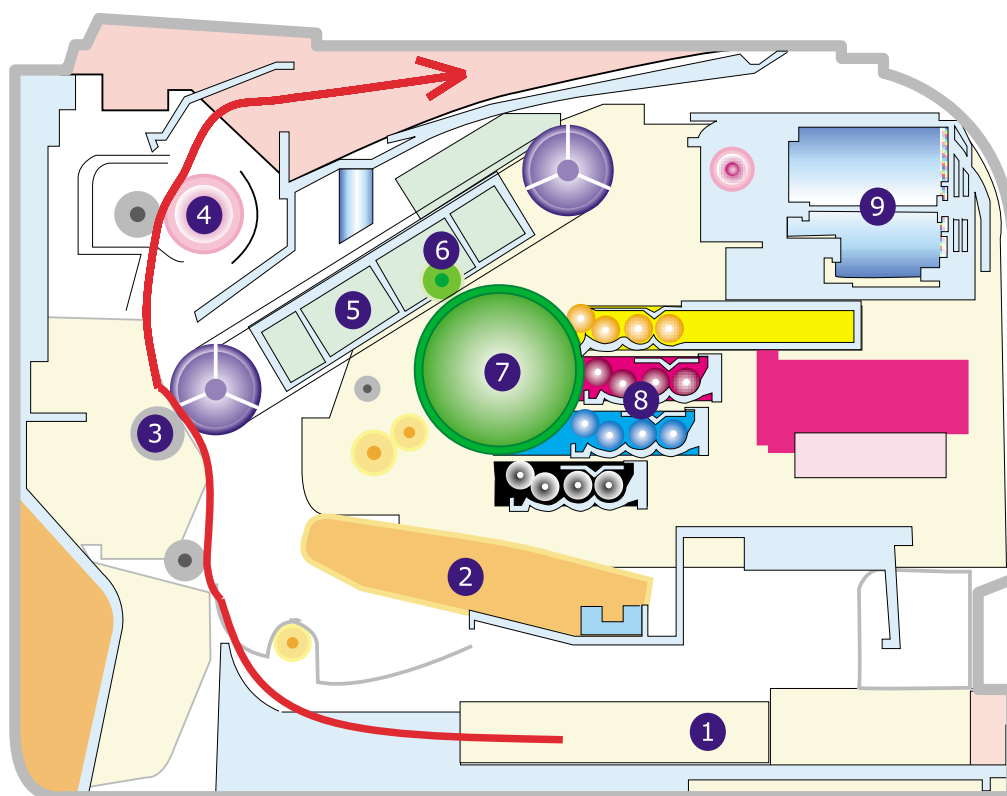
Item	Magicolor 2400W	CLP-300 Series
Print Method:	Electro photographic laser	Electro photographic laser
Print Speed:	5 ppm colour/ 20 ppm monochrome	4 ppm colour/ 16 ppm monochrome
Resolution:	2400 x 600 ; 1200 x 600 ; 600 x 600	2400 x 600 dpi class
First page print:	12 sec monochrome, 21 sec colour	14 sec monochrome, 26 sec colour
Warm-up time:	49 seconds	35 seconds
Processor Type:	Special ASIC 48 MHz	ChorusM 300MHz
Memory:	32 MB RAM	32 MB RAM
Printer Emulations:	GDI	GDI
Standard Interfaces:	USB 2.0 (High Speed) supporting MS 'Plug and Play'	USB 2.0 (High Speed) supporting MS 'Plug and Play'
OS Compatibility	Windows XP / 2000 / ME / 98 SE	Windows XP/2K/2003/ME/98/Longhorn
Standard Paper In:	200-sheet Multi-purpose Tray	150-sheet Cassette Tray
Standard Paper Out:	200-sheet Face-down Output Tray	150-sheet Face-down Output Tray
Dimensions (WxDxH):	395 x 430 x 341 (mm)	350 x 315 x 250 (mm)
Weight:	with consumables 20 kg;	with consumables 13 kg;

3. System Overview

This chapter describes the functions and operating principles of the main components.

3.1 System Structure

3.1.1 Main Parts of System



- | | |
|------------------------------------|-----------------------------------|
| ① Paper Input (Cassette) | ② LSU (Laser Scanning Unit) |
| ③ 2 nd Transfer Roller | ④ Fuser |
| ⑤ ITB (Intermediate Transfer Belt) | ⑥ 1 st Transfer Roller |
| ⑦ OPC (Organic Photo Conductor) | ⑧ Developers (Y, M, C, & K) |
| ⑨ Toner Kits (Y, M, C, & K) | |

① Cassette

- Feeding Method : Cassette Type
- Feeding Standard : Center Loading
- Feeding Capacity : Cassette 150 Sheets(75g/ m², 20lb Paper Standard)
No Manual Feeder
- Paper Detecting Sensor : Photo Sensor (Empty, Registration, Exit)
- Paper Size Sensor : None

② LSU(Laser Scan Unit)

- Consisted of LD(Laser Diode) and Polygon Motor Control.

Error	Phenomenon
Polygon Motor Error	The Rotation of Polygon Motor can not reach stable
Hsync Error	Though the rotation of Polygon Motor reach stable, the signal of Hsync is not occurred

③ 2nd Transfer Ass'y

- The life span: Print over 100,000 sheets (in 15~30 °C)
- Specification: Similar to CLP-500 Series

④ Fuser Ass'y

- Heat Lamp : New Part - Knuckle Type
- Heat Roller : Similar to CLP-500 Series
- 2 Pressure Roller : One is similar to HummingBird, the Other is a new added part comparing with other Fuser
- Thermistor - Temperature-Measuring Device
- Thermostat - Critical Temperature-Detecting Device

⑤&⑥ ITB(Intermediate Transfer Belt) & 1st Transfer Roller

- The life span: Print over 100,000 Images
- The ITB unit includes 1st Transfer Roller

⑦&⑧ OPC(Organic Photo-Conductor) & Developer

- The life span: Print over 44,000 Images (Both)
- Imagine Unit consists of 4 kinds of Developer , OPC, and Deve. Main Frame

⑨ Toner Kits

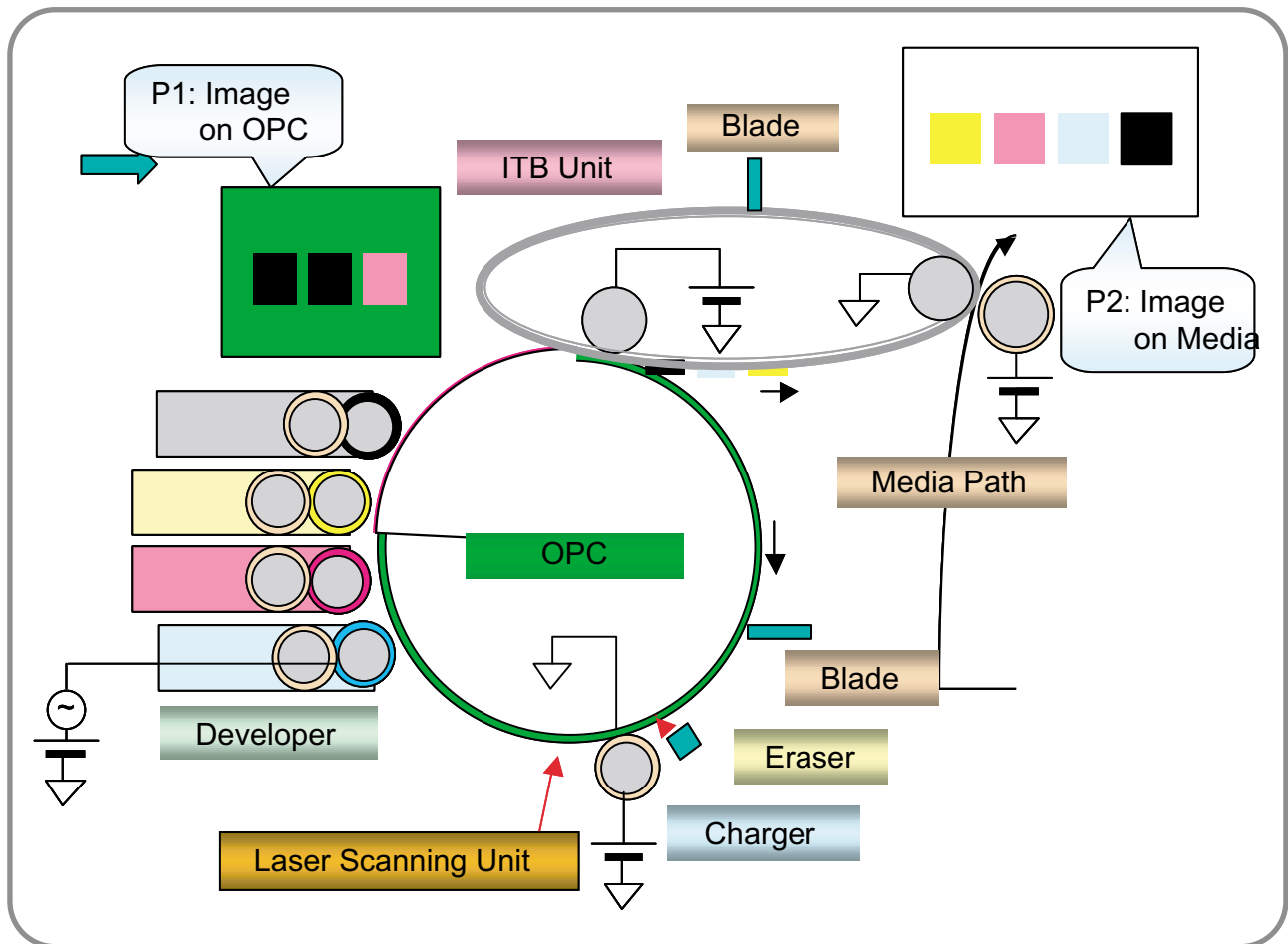
- The life span: Color -> Initial 700 / Sales 1,000 images (ISO 19752 Standard Coverage Print-Out)
Black -> Initial 1,000 / Sales 2,000images (ISO 19752 Standard Coverage Print-Out)

Driver Ass'y

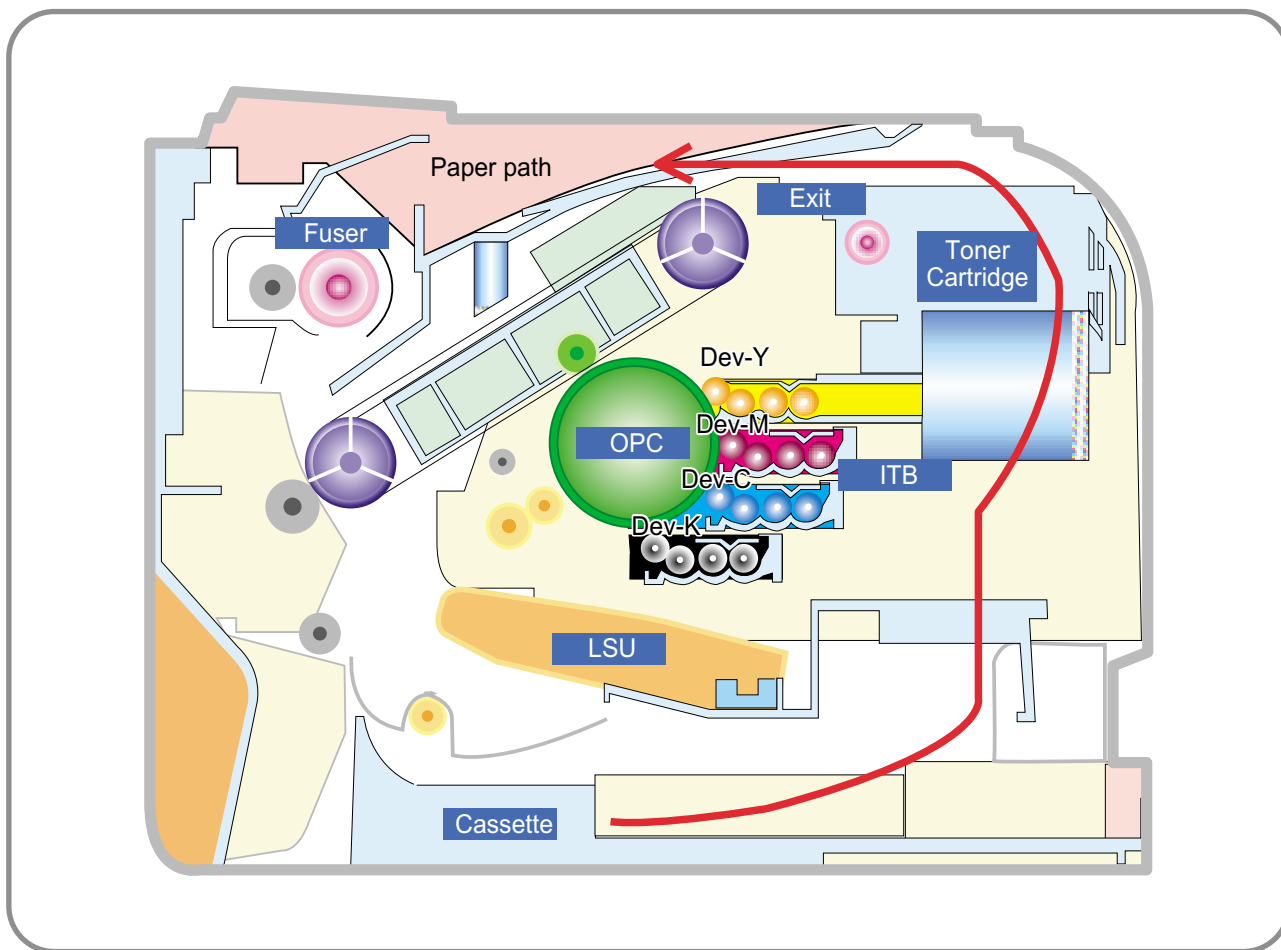
- It is a power delivery unit by gearing
- By driving the motor, it supplies the power to the feeding unit, the fusing unit, and the distributing unit.
- The Main Motor is similar to CLP-500 Series Main Motor.

3.1.2 EP Process

- Structure of EP Process



- System Outline



① Charging

- Conductive Roller charging
- Roller resistivity : $\sim 10^5$ ohm-cm
- Applied voltage : -1.1kV
- Charge acceptance : -520V
- OPC coating thickness : 21um
- OPC diameter : $\phi 60$ mm
- Non eraser system

1. Organic Photoconductor is charged to uniform voltage by conductive roll charging method
2. No ozone is produced because corona is not used
3. Charger roll is cleaned with cleaning roll
4. Toner remained on OPC after T1 process is cleaned by cleaning blade and retrieved into waste toner box by auger and belt driving mechanism

② Exposing

- One polygon motor (6 facet)
- Single beam LD (1ea)
- LD wavelength : 785nm
- Polygon motor rpm : 23747.5
- LSU energy : 0.25uJ/cm²
- OPC exposed potential : -50V

1. Exposing is implemented by laser striking on to OPC with uniform potential
2. Laser beam is modulated according to image to be printed that is from PC
3. Latent Image is formed on OPC, which is developed with toner

③ Developing

- Non-magnetic, mono component
- Non-contact development
- Developing bias : DC + AC
- AC peak to peak : 1.5 ~ 2.0kV
- Mass on developing roller : 550 ~ 600ug/cm²
- Toner coulomb : 15 ~ 20uC/g
- Roller diameter : ϕ 10mm
- Roller resistivity : $10^5 \sim 10^6$ ohm-cm
- Process speed ratio : 1.2 (OPC=1.0)
- Color order : Y -> M -> C -> K

1. Only latent image formed by exposing process is developed with toner
2. AC + DC Voltage is being used to develop toner into latent image on OPC because non-contact developing method is adopted
3. Y, M, C, and K Images are sequentially developed onto OPC and transferred onto Intermediate Transfer Belt (hereafter ITB) to form a color image on ITB
4. Toner Bottles are used to supply toner into developer compartment
5. Toner level is being sensed to control toner supply from toner bottle to developer

④ Transfer 1

- Multi-pass transfer
- Indirect transfer
- Transfer voltage : 0.5 ~ 2.0kV (controllable)
- Roller diameter : ϕ 14mm
- Roller resistivity : $\sim 10^7$ ohm-cm
- Belt resistivity : $10^9 \sim 10^{11}$ ohm-cm
- Environment sensing by Y-transfer roller
- Transfer unit life : 50K images

1. Developed Image on OPC is transferred onto ITB by T1 Process
2. T1 Voltage is positive which attract toner to ITB
3. 4 times of T1 process is required to make a color image on ITB, which means multi-pass process
4. ITB has a hole as a fiducial mark for timing. Engine control for color image is synchronous with it, ITB Home Sensing Signal

⑤ Transfer 2

- Indirect transfer
- Transfer voltage : 1 ~ 4.0kV (controllable)
- Roller diameter : $\phi 18.6\text{mm}$
- Roller resistivity : $\sim 10^7 \text{ ohm-cm}$
- Belt resistivity : $10^9 \sim 10^{11} \text{ ohm-cm}$
- Transfer unit life : 50 K images

1. Color image formed on ITB is transferred onto media by T2 process
2. T2 voltage is also positive to get color image moved onto media
3. Toner remained on ITB after T2 process is cleaned by ITB cleaning blade and collected and
4. Transported and retrieved into waste toner box by auger and belt driving system
5. T2 Roll is engaged when color image is being transferred onto media. Otherwise it is disengaged. Clutch is used for driving T2 Roll engagement and disengagement

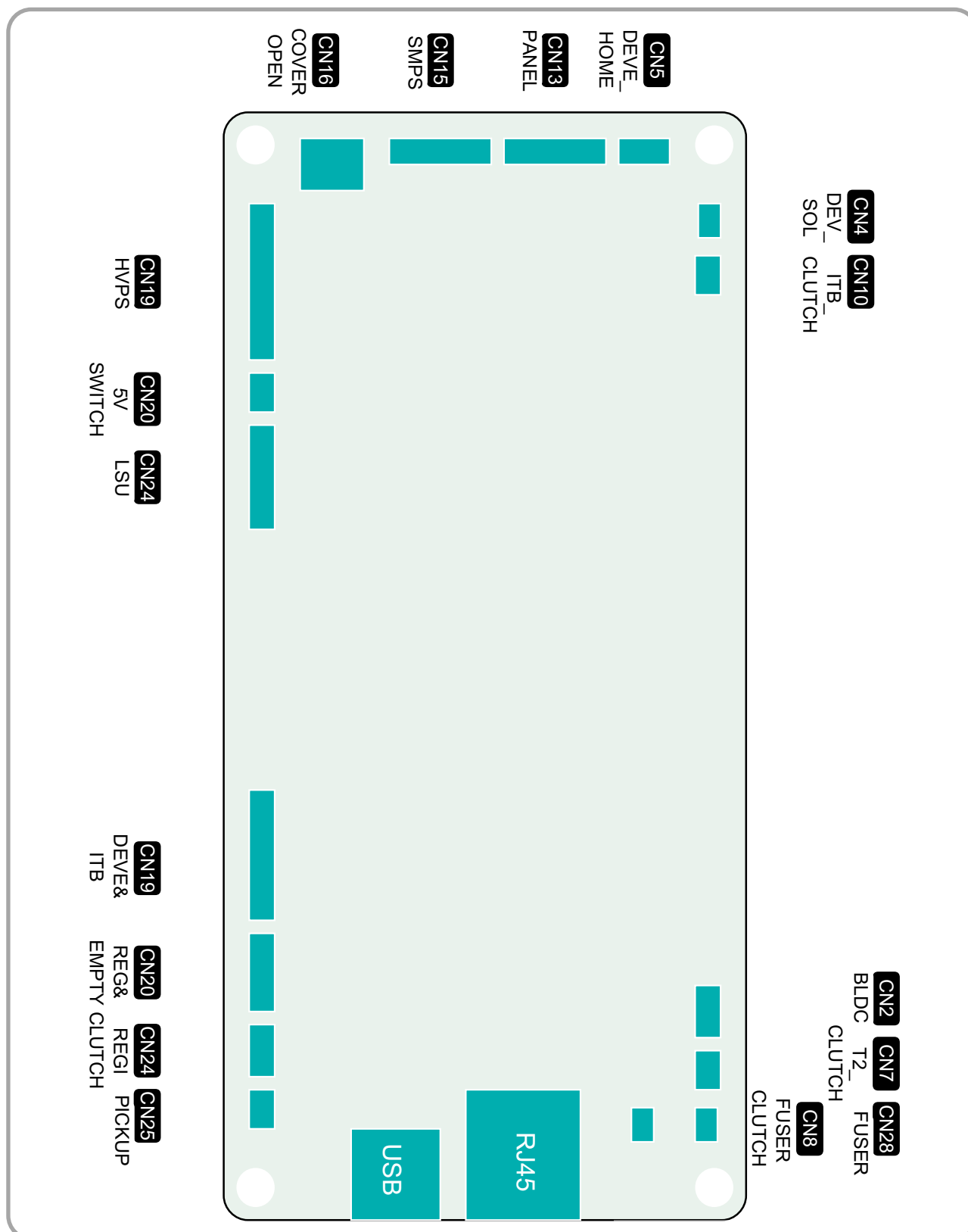
⑥ Fusing

- 3 Roll system
 - > short warm-up time (45sec)
- Post Pressure Roll

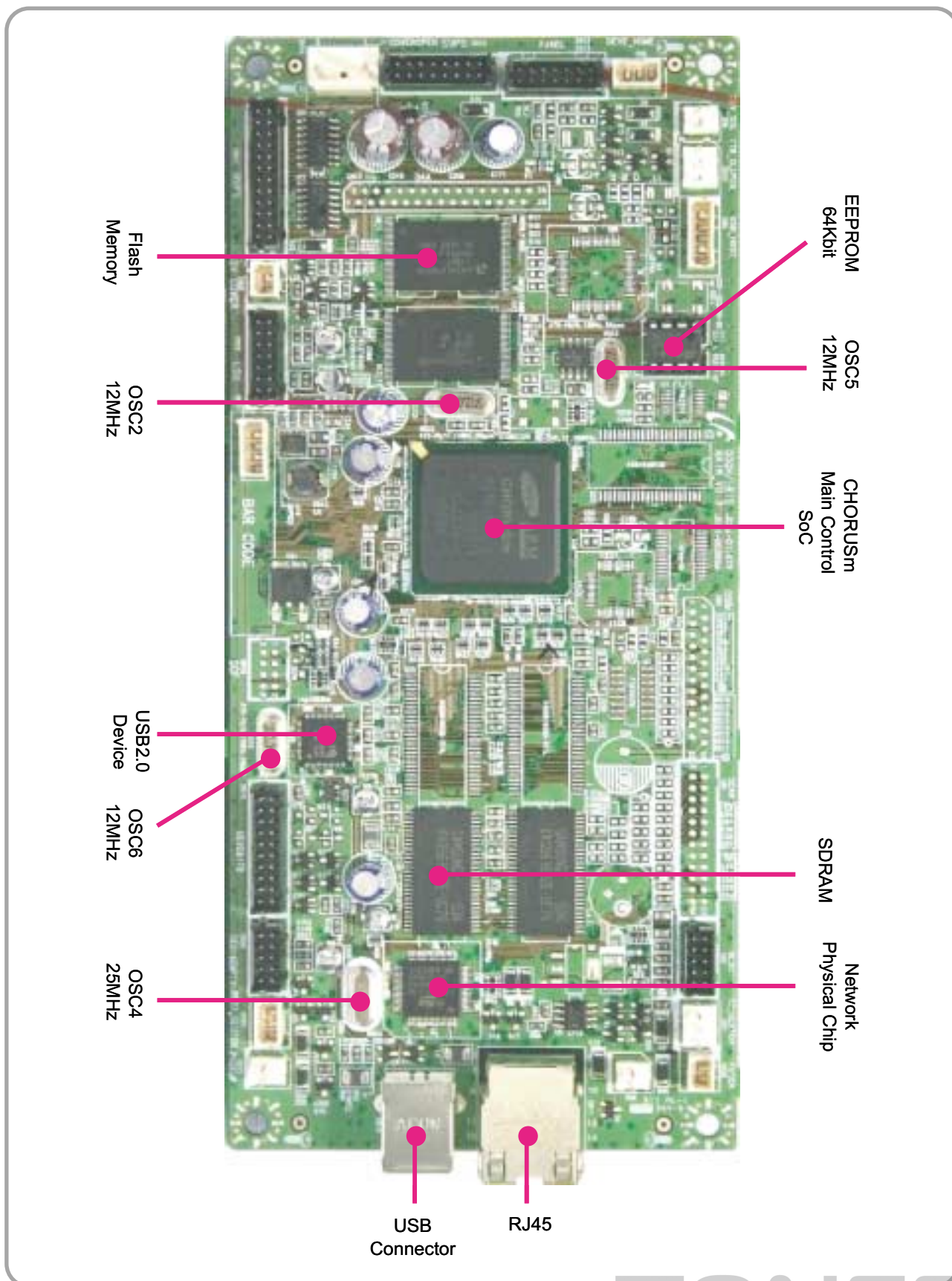
1. Color Image on media is melted down and fixed into media by fusing process

3.2 Main PBA Description

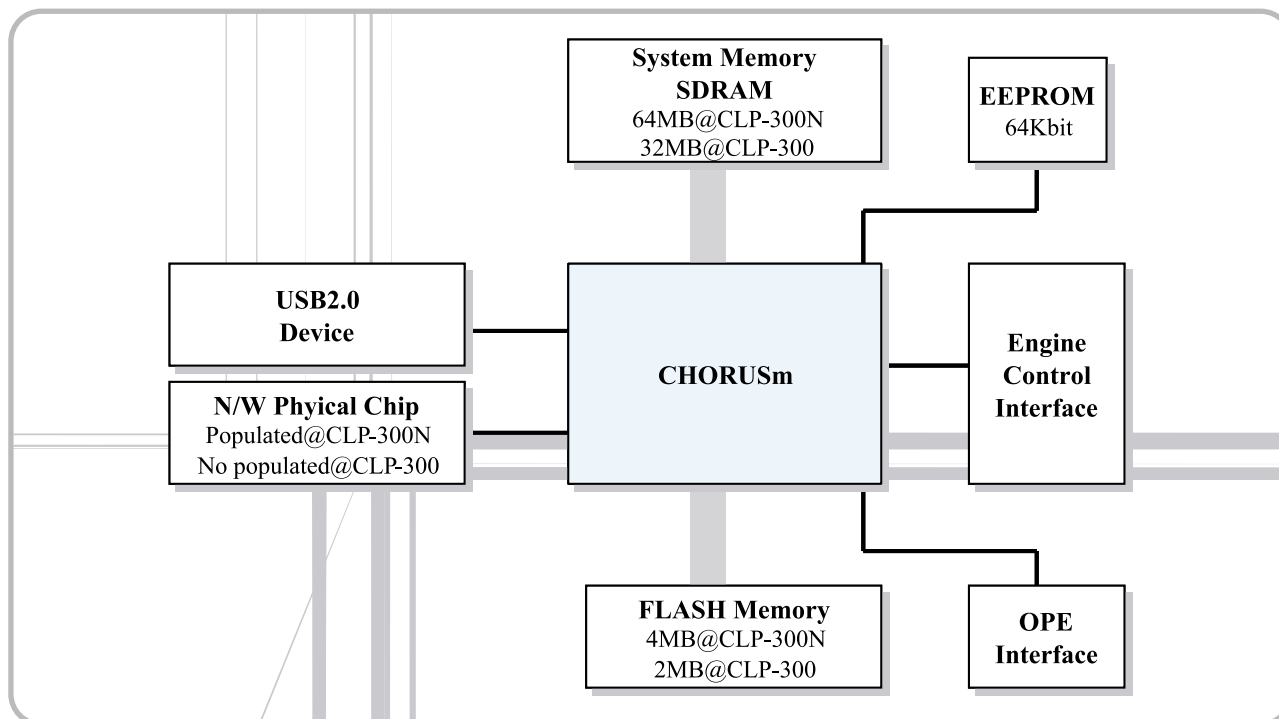
3.2.1 Main Controller PBA



3.2.2 Main PBA



3.2.3 Main PBA Description



1) CHORUSm

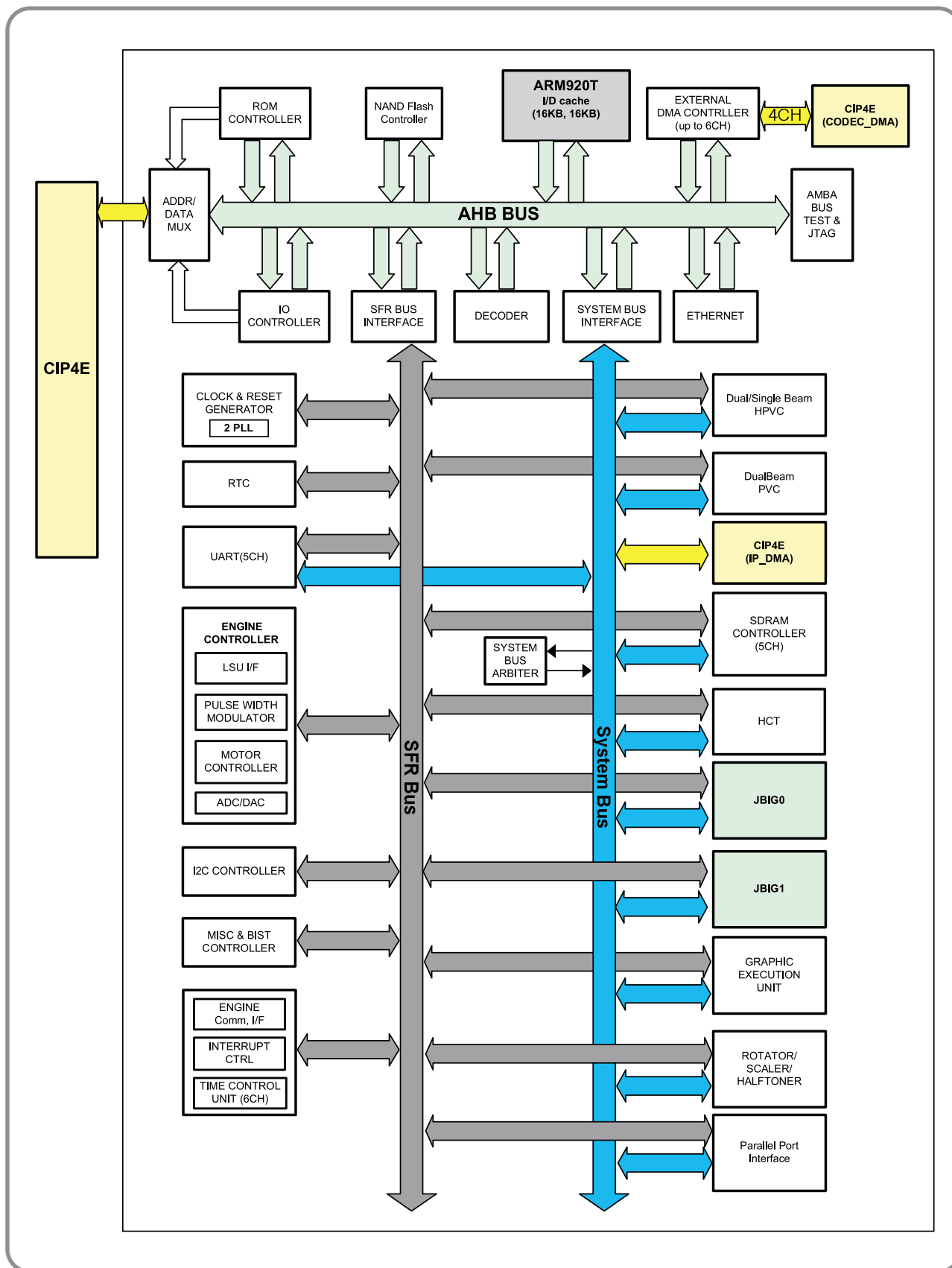
CHORUSm involves in itself the functions to control ARM Processor Core and various H/W devices. CHORUSm, therefore, controls Main PBA and all engine mechanism, processing the print job received from host and enabling the engine to print image.

» Function

- ▶ Process
 - 0.13um Technology
- ▶ Package
 - 496 PBGA
- ▶ CPU Core
 - ARM 920T - 300MHz
 - Cache : I-Cache 16KB, D-Cache 16KB
- ▶ System Bus
 - 32-bit width, 100MHz
- ▶ SDRAM Controller
 - 32-bit width, 100MHz operation
 - 5 Banks, Up to 128MB Address space per Bank
 - Programmable Timing to Control SDRAM A.C Characteristics
 - Support Self Refresh for Data Retention
- ▶ ROM Controller
 - 32-bit width, 4 Banks, Up to 16MB Address space per Bank
 - Burst Capability
 - Programmable Timing per Bank

- ▶ IO Controller
 - 6 Channels, Up to 16MB Address space per Bank
 - Programmable Timing per Bank
- ▶ DMA Controller
 - 6 Channels General Purpose DMA
- ▶ HPVC Controller
 - Hyper Printer Video Controller
 - High Performance DMA-based Interface to Printer Engine
 - Support Dual/Single Beam LSU, LVDS Video Output
 - Support A3, 1200dpi
- ▶ UART Controller
 - 5 Channels Independent Full Duplex UART
- ▶ Interrupt Controller
 - Support 6 External Interrupts
 - Support 26 Internal Interrupts
- ▶ Timer Controller
 - 6 System Timers and Watch Dog Timer for S/W Trap
- ▶ Scanner Controller
 - 300/400/600/1200dpi CIS/CCD Interface
 - Color/Mono grey image, Binary image scan support
 - 600dpi Color/Mono Copy support
 - Image Processing for High-End MFP, Digital Copier
 - MH/MR/MMR CODEC for Fax
 - Scan image : A4 1200dpi processing
 - Copy image : A4 600dpi processing
- ▶ MAC Controller
 - 10/100Mbps
 - Full IEEE 802.3 compatibility
- ▶ PPI Controller
 - IEEE1284 compliant parallel port interface
 - DMA-Based or Interrupt-Based operation
- ▶ GEU Controller
 - Graphic Engine Unit for Banding support of Printer Language
 - Scan Line Buffer, Polygon Filling
- ▶ CODEC Controller
 - 2 Channels JBIG Encoding and Decoding
- ▶ I2C Controller
 - 1 Channel, Operated at max frequency 400kHz
- ▶ RTC Controller
- ▶ Engine Controller
 - LSU Control and Interface Unit
 - 2 Channels STEP Motor Control Unit
 - 8 Channels PWM Control Unit
 - 8 Channels ADC Control Unit
 - 2 Channels DAC Control Unit

■ CHORUSm (Internal Block Diagram)



2) System Memory Block

Memory saves program and video data and print jobs received from host. Its volume is 64MB with network function and 32MB without network function. It has no separate device for extension. SDRAM is used, driven at width of 32-bit and 100MHz, and controlled by memory controller built in CHORUSm.

3) Flash Memory Block

Flash memory is the space used for saving program. Its volume is 4MB with network function and 2MB without network function. It has no separate device for extension. NOR type flash memory is used and accessed at 32-bit width burst, being controlled by the ROM controller built in CHORUSm.

4) USB2.0 Device Block

This block supports USB2.0 high speed (480Mbps). ISP1582 of Philips company is used and connected to the IO Bus of CHORUSm at 16-bit, controlled by IO controller built in CHORUSm. Through this I/O port it receives print job from host.

5) Network Block

This block has 10/100Mbps wired network function and is controlled by MAC controller built in CHORUSm. It is connected to host through physical layer chip outside, and thus receives print job from host. STE100P is used for physical layer chip.

6) EEPROM Block

System EEPROM is controlled by the I2C controller built in CHORUSm, connected to the other non-volatile memory on I2C bus. It works at the speed of 400KHz. This system EEPROM contains all drive information and production information necessary for the operation of printer. Its size is 16k-bit.

7) OPE Control

The panel is driven in the form of PIO by GPIO controller built in CHORUSm. OPE consists of one key and four monochrome LED, and one dual LED.

8) LSU Control

Laser Scanning Unit is controlled by LSU controller built in CHORUSm. It makes use of all functions such as Polygon Mirror Motor Control necessary for driving LSU and Synchronized Signal Generation Control, and helps to scan laser beam on the photosensitive drum to form latent image.

9) BLDC Control

It is controlled by BLDC controller built in CHORUSm. It controls the drive of printer mechanism and helps it to be driven at an equal speed.

10) Sensors Control

GPIO controller built in CHORUSm collects the status of all sensors. According to this status of sensors, it controls printer mechanism to help normal printing. There are sensors such as Paper Empty Sensor, Registration Sensor and Developer Home Sensor, etc.

11) Clutches Control

GPIO Controller built in CHORUSm controls all clutches, which help printer to do print job normally. There are clutches such as Paper Pick-up Clutch, Registration Clutch, Developer Home Clutch, ITB Clutch, T2 Clutch, Fuser Clutch, Developer Toner Supply Clutch, etc.

12) PWM Control

PWM Controller built in CHORUSm controls the parts that require PWM for normal printing, such as BLDC drive speed and HVPS high voltage level, etc.

13) ADC Control

It is controlled by ADC Controller built in CHORUSm, and is used for perception of charged voltage and current, 1st and 2nd transfer voltage and current, fusing temperature, used-up toner and toner amount, and interior temperature, etc.

14) DAC Control

It is controlled by DAC Controller built in CHORUSm and used to set standard level of light amount of LSU Laser Diode.

3.2.4 SMPS(Switching Mode Power Supply) PBA

SMPS is consisted of SMPS part which supplies DC power for driving system and AC Heat Control part which supplies power to Fuser. Standard TYPE III is used.

1) DC Output

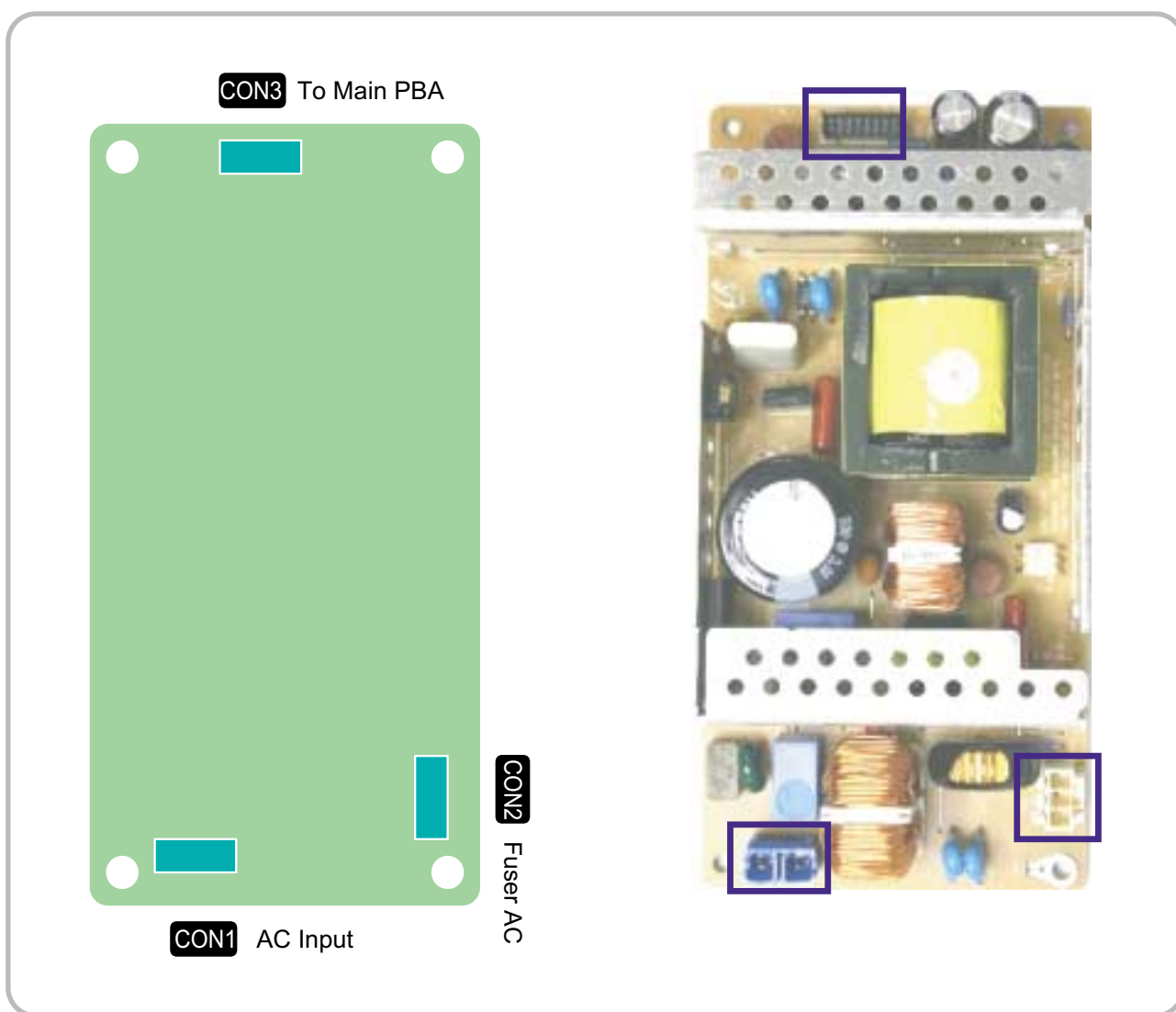
- Main Controller PBA, OP Panel, BLDC, Sensors, Clutches, Other PBAs

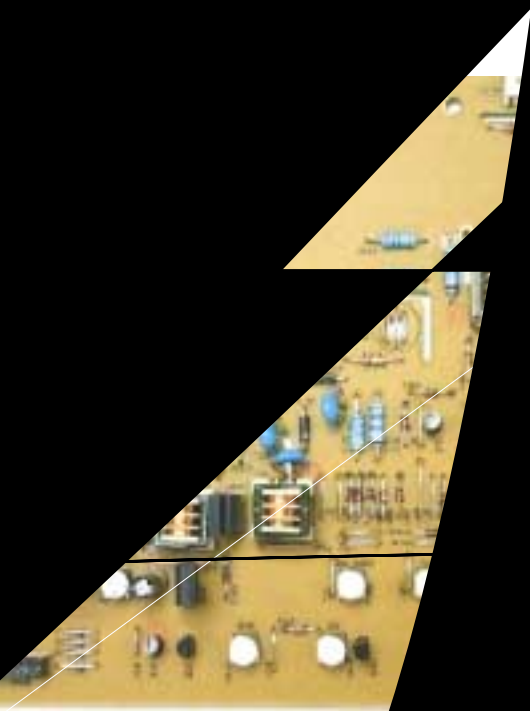
2) AC Output

- Fuser Unit(Heat Lamp, Thermostat)

3) Output Voltage

CHANNEL	+5.0V	+24V	+24VF
V_out	+5.0V +/-5%	+24.0V +15%/-10%	+24.0V +15%/-10%
Load	MicroController, CMOS, LOGIC	LSU	MOTOR, CLUTCH, HVPS





1) Charger Voltage : Charger

- Function: voltage that charges OPC surface up to ?500V~ -800V.
- Output voltage: -1.0KV ~ -2.0KV DC \pm 3%
- Error type: if the voltage fails to be output to Charger Roll, OPC surface will not be charged, and the toner on the developer roller will be transferred to OPC Drum, printing black paper.

2) 1st Transfer High Voltage : T1(+)

- Function: voltage necessary for transferring toner developed on OPC Drum surface onto ITB.
- Output voltage: Max +2.0KV \pm 3%(Duty variable, no load)
- ERROR type: if T1(+) output fails, the toner on OPC drum will not be transferred to ITB normally and the image will be blurred.

3) 2nd Transfer High Voltage : T2(+)

- Function: voltage used to transfer the toner primarily transferred on ITB again onto paper.
- Output voltage: Max +5.0KV \pm 3%(Duty variable, no load)
- ERROR type: if T2(+) output fails, the toner on ITB will not be transferred to paper normally and the image will be blurred.

4) T2 Cleaning Voltage : Clean : T2(-)

- Function: prevent reverse side of paper from being dirtied, by recovering the negatively charged toner remaining at Transfer Roller and sending it onto ITB.
- Output voltage: with no feedback control, output fixed voltage(-1300V +/- 15%)
- ERROR type: reverse side of paper will be dirtied.

5) Supplying Voltage : Supply AC+DC(-)

- Function: voltage that makes toner to develop on the area exposed by LSU by means of potential difference, output will be the voltage of AC+DC overlapped form.
- Output voltage: AC 600V ~ 2000V p-p +/-1.5%
DC -50V ~ -600V DC +/- 3%
- ERROR type: 1. if supply is GND, density will be extremely low.
2. if supply is floating (for insecure terminal contact), density will be down so slightly that it is impossible to make out with naked eyes.

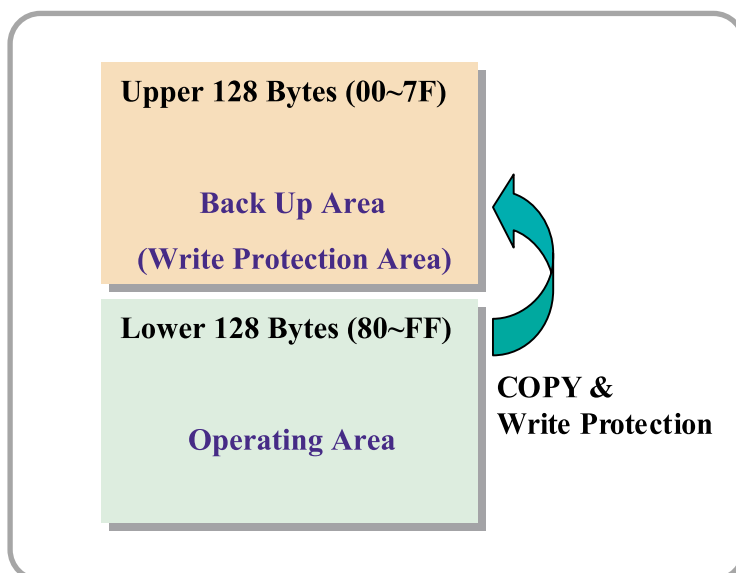
6) Developing Voltage : Deve AC+DC(-)

- Function: voltage that supplies toner to Developing Roller
- Output voltage: AC 300V ~ 1700Vp-p \pm 1.5% (supply voltage is connected to ZENER Diode 300V)
DC -50V ~ -600V DC +/- 3%
- ERROR type: 1. if Deve is GND, density will be extremely down.
2. if Deve is floating (for insecure terminal contact), density will be extremely down.

3.3 CRUM

■ In the case of Refill Toner Install

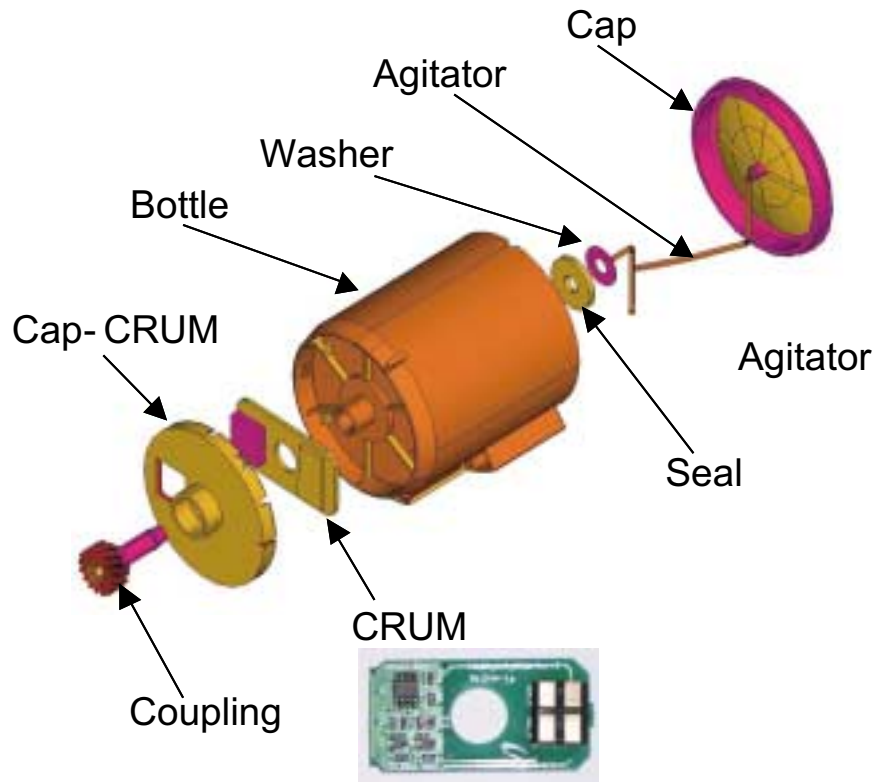
- 1) Perception of Refill Cartridge (when power is on or the cover is closed)
 - End of Life / life span data initialization -> judge to be Refill Cartridge
 - End of Life / life exhausted (simple refill) -> stop printing caused by life exhaustion
- 2) Operating
 - It is impossible to control appropriate development parameters, for there's no toner specification data.
 - It runs with the setting of default development parameter. (Image quality will be degraded, for the lack of appropriate respond to the change of time and environment.)
- 3) Service Response
 - It is possible to response appropriately, for the information of cartridge life is saved at Back Up Area.



■ Process after CRU life expiration

- 1) Record the information of End of Life.
- 2) Copy the information of Operating Area into Back up Area.
- 3) Write-Protect Back up Area.
- 4) Clear some information of Operation Area.
 - > Supplier/Model Name/MFC date/Serial Number (Manufacture Information)
 - > Let cartridge refiller initialize manufacture information and life span information.

■ CRUM Position



3.4 General Description

This chapter is the product specification for the CLP-300 Series. The CLP-300 Series is a Color Laser Printer. The CLP-300 Series series can be expanded to multi functional printer (MFP). CLP-300 Series is developed for two target users. Those are small office users who sometimes need color printouts, and medium business users who mainly use B/W printouts. The main product concept is “the world smallest and lightest color laser printer”. This model has 16ppm B/W print-speed and 4ppm color print-speed, 2400 x 600 dpi class (optical 600 x 600 dpi) color laser printer.

3.4.1 Controller

- The video controller board is located on the right side of the printer.
- Basic Memory is 32 Mbytes SDRAM.
- Field F/W upgradeable FLASH ROM firmware for controller, 1024 byte EEPROM
- Printing Resolution :
 - Native 600 x 600 dpi standard
 - Resolution can be enhanced up to 2400 x 600 dpi class, 1200 x 600 dpi (default), 600 x 600 dpi

3.4.2 Processor

CHORUSm (300Mhz), Proprietary SOC

3.4.3 Printer Language Emulations

SPL-Color

3.4.4 Memory

The controller has 32 MB SDRAM and 4 MB flash ROM on Board.

3.4.5 Interfaces

The system supports the following standard interfaces:

- One USB port
 - USB v.2.0 compliant
 - Color-coded to meet WHQL requirements, connector must be Pantone 426C
- One 10/100 BaseT network connector
 - The printer supports an internal Network Interface that can be installed pre-configured on the video controller board at the factory. This supports all of the major Network Operating Systems such as the Novell NetWare, TCP/IP, etc. Details of the network specification will be provided separately.

3.4.6 Control Panel

No LCD, 2 keys and 6LEDs

3.4.7 Periodic Replacing Parts

Samsung shall specify parts requiring replacement and the frequency of replacement. The parts identified may be deemed customer replaceable parts. Periodic replacement parts shall be recommended as follows

Item(s)	Pages Printed	Part number	Remark
Black toner cartridge	Approx. Initial : 1,500 pages [*] Sales : 2,000 pages [*]	CLP-K300A	User Replacement
Color toner cartridge	Approx. Initial : 700 pages [*] Sales : 1,000 pages [*]	CLP-C300A:Cyan CLP-M300A:Magenta CLP-Y300A:Yellow	
Imaging unit	Approx. 20,000 black pages or approx. 12,500 color pages	CLP-R300A	
Waste toner container	Approx. 5,000 images ^{**} or Approx. 1,250 pages (full color standard image)	CLP-W300A	
Pick-up roller	Approx. 50,000 pages	Contact a service representative	Engineer Replacement
Fuser unit	Approx. 100,000 black pages or 50,000 color pages		
T2 roller	Approx. 100,000 pages		
ITB	Approx. 60,000 black pages or 15,000 color pages		

* Average A4-/letter-sized page count based on ISO 19752 Standard coverage of individual colors on each page. Usage conditions and print patterns may cause results to vary.

** Image counts based on one color on each page. If you print documents in full color (Cyan, Magenta, Yellow, Black), the life of this item will be reduced by 25%.

3.4.8 Power Switch

The Switch is located at rear-side of printer and must be marked to indicate on and off.

3.4.9 Operator Panel

LCD: None

KEY: 2 keys (Stop, Black only)

LED: 6 LEDs (C, M, Y, K Toner, Status, Black only)

3.4.10 Sensor

Paper empty (Cassette)

3.4.11 CRUMS

The CLP-300 Series engine will be equipped with electronics that can read and write data into NVRAMs otherwise known as CRUMs that reside within 1) C, M, Y, K Toner cartridges and 2) Imaging kit(Developer, OPC, ITB). The CRUM has a company ID, and Samsunga electronics logo.

The toner CRUM also identifies the type of toner cartridge (Standard or High Capacity). The CRUMs contain fixed data such as the low warning point, specified life point, and hard stop point (on toner, not on IBT unit) and also store the current life count (pages count, pixels count, images count) and % of usage (gas gauge) data.

3.4.12 LOW / OUT Behavior for consumables

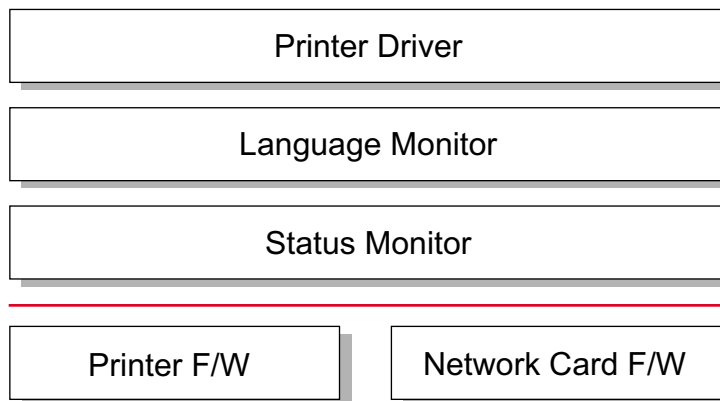
The consumable low and out behavior on CLP-300 Series engine is specified by SEC.

FP message	Device for life end detection	Law(90%)	Life(100%)	Hard stop	Reset to 0
Toner	CRUM	Yes	Yes	Yes(115%)	No
Imaging Kit	CRUM	Yes	Yes	No	No
Fuser	No	Yes	Yes	No	Yes
T2 Roller	No	Yes	Yes	No	Yes
Pick-up	No	No	No	No	No

4. S/W Structure and Descriptions

4.1 Architecture

The belt CRUM interface board is a transmission belt CRUM interface board of the photoelectric Dry Color Laser Printer, mounted on the printer body, making it possible to physically combine the body and the belt CRUM board.



4.2 Language Monitor

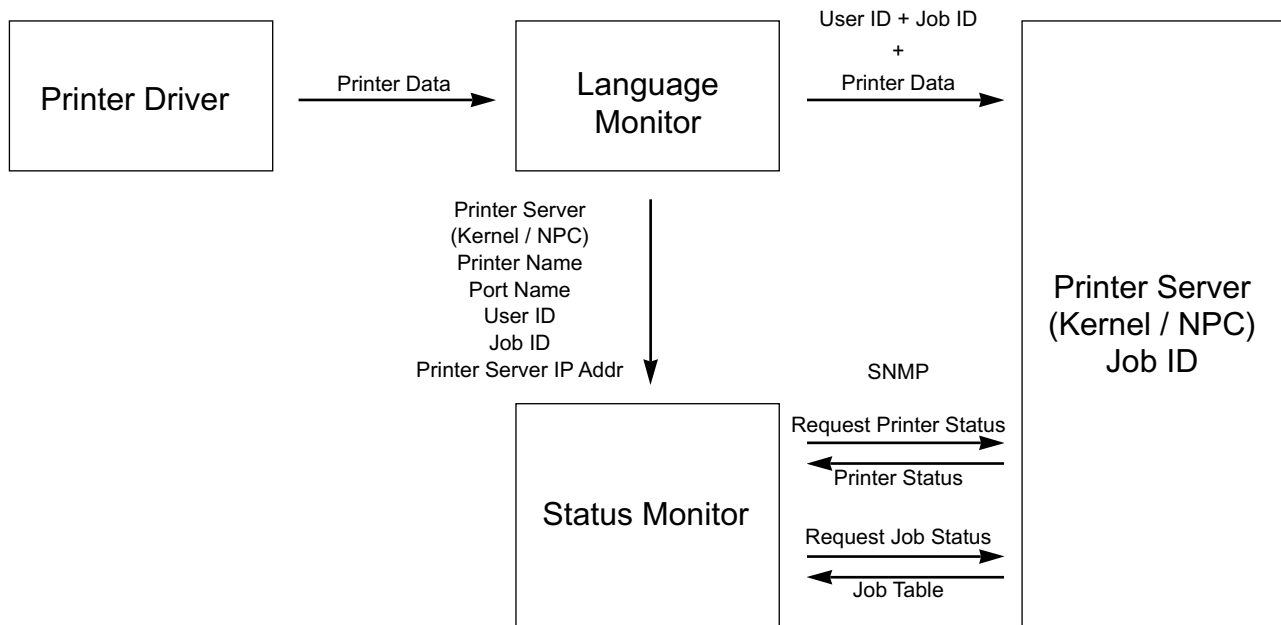
Language Monitor is a part of the Printer Driver and the Windows Spool System. The main roll of the Language Monitor is that sends a job start message to the Status Monitor. Therefore the Status Monitor can start polling to get the printer status.

The second roll is that sends the job information such as User ID and Job ID to the Status Monitor and the Printer F/W. Hence the Status Monitor can stop polling because the Printer F/W informs the Status Monitor that printing job is complete.

4.3 Status Monitor

Status Monitor has no user interface. It shows only HTML help when any error occurs during printing jobs.

4.4 Network Interface



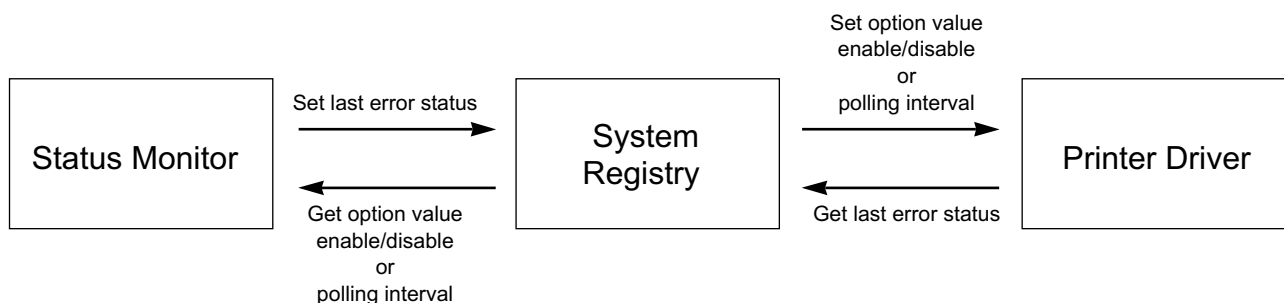
Status Monitor Data Flow

After polling is started, Status Monitor has to know when it stops the polling. For this reason, the Network Printer Server should inform of completing job when the printing job is finished. When Status Monitor requests a job status, the Printer Server returns the job table that contains user id, job id, and job status (printing or complete or canceled).

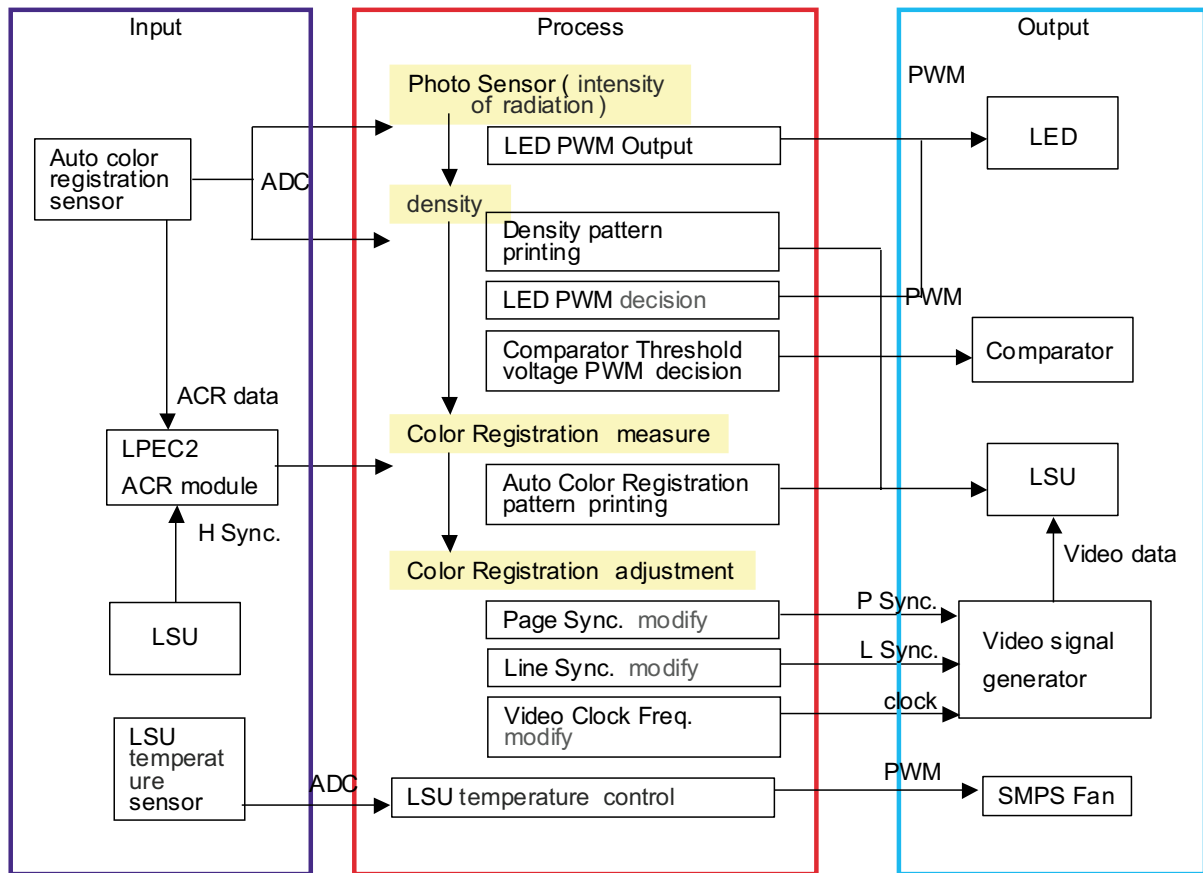
4.5 Printer Driver <-> Status Monitor

The Printer Driver and the Status Monitor can set/get some data to the system registry to share the Status Monitor information such as the polling interval.

When the user wants to set the option of the Status Monitor manually, he or she can set it using the Printer Driver User Interface. So, if the user set option that the Status Monitor is disabled, the Status Monitor can't show HTML Help to the user although the error has occurred while printing.



4.6 System F/W Flow



4.7 Alarm Shortage

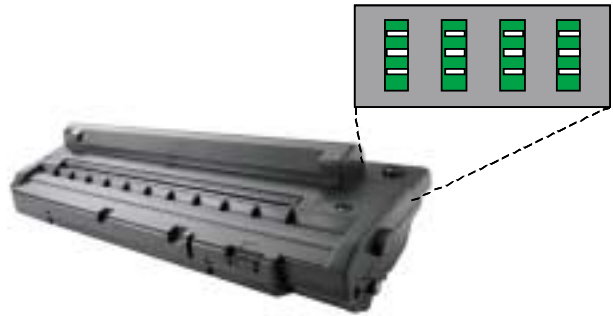
	90 ~ 100 %	100 ~ 110 %	110 %~
Toner (C,M,Y,K)	Ready Yellow Toner Low	Replace Yellow Toner	Yellow Toner Empty
Transfer Belt	Replace Transfer Belt Soon	Replace Transfer Belt	
Fuser	Replace Fuser Soon	Replace Fuser	
Pickup Rollers (MP/Tray1/Tray2)		Replace MP Pick-Roller	

4.8 Error status

1. Missing/Invalid Consumables
 - Install Cyan (Magenta, Yellow, Black) Toner
 - Install Transfer Belt
 - Invalid Cyan (Magenta, Yellow, Black) Toner
 - Invalid Transfer Belt
2. Paper Empty/Mismatch
 - Paper Empty In MP(Tray1, Tray2)
 - Load A4 In MP(Tray1, Tray2)
3. Paper JAM
 - Jam 0 In MP(Tray1, Tray2)
 - Jam Inside Printer
 - Jam In Exit Area
4. Cover
 - Cover Open : Message toggles between
"Cover Open" and "Install Transfer Belt"
 - SCF Cove Open
5. Service Call : Unrecoverable Error
 - Engine LSU Error
 - Main Motor Error / Dev. Motor Error
 - Engine Fuser Over(Low) Heat Error
 - Rear Fan Error / Left Fan Error / SMPS Fan Error
6. Others
 - Memory Overflow Error
 - Ready IP Conflict

4.9 CRUM Overview

- Stands for “Customer Replaceable Unit Monitor”
- EEPROM is used for CRUM Memory.
- CRUM stores various information on consumables (including consumables' life).
- In CLP600, total five CRUM's are used (four on toner cartridges and one on transfer belt)



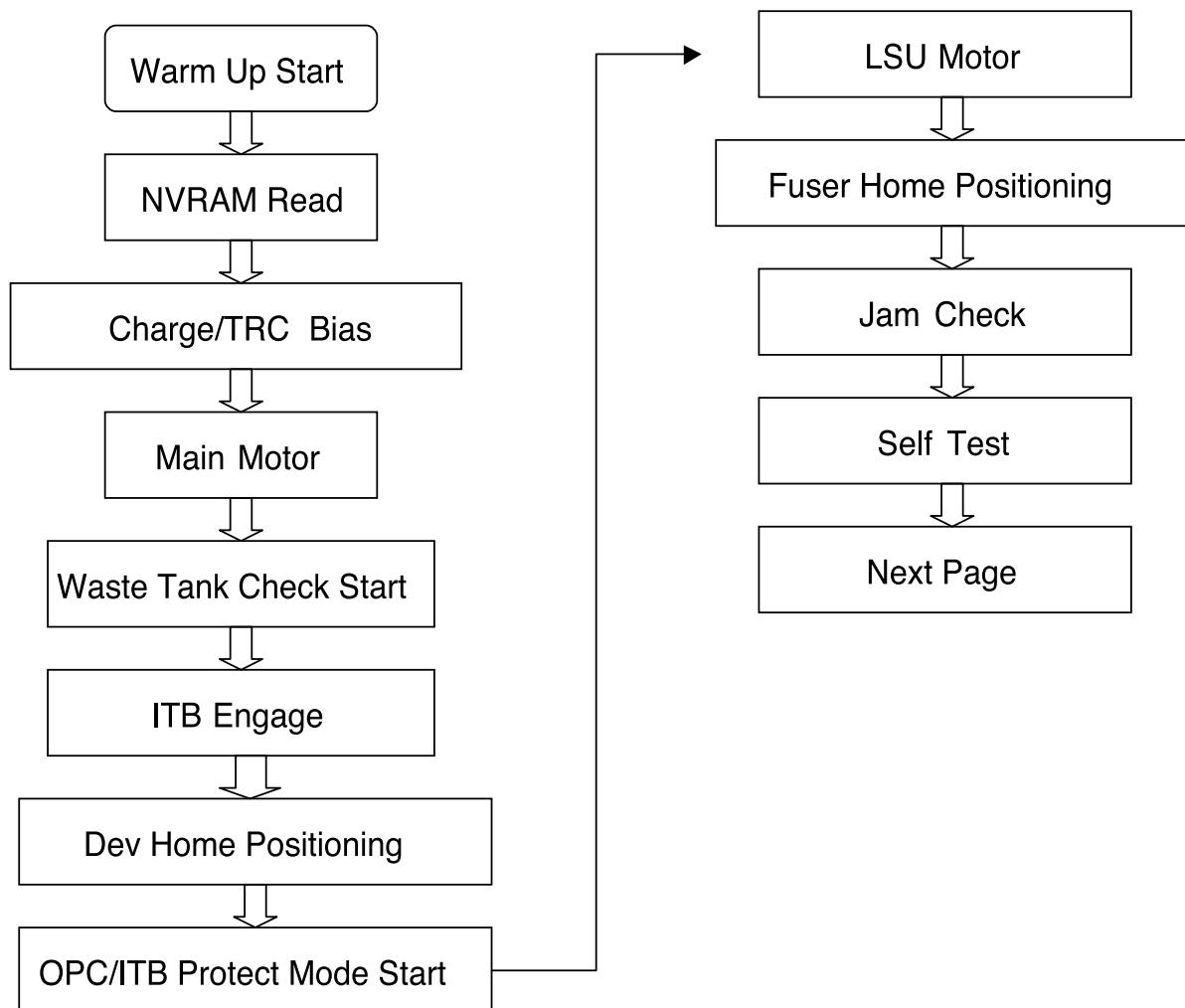
CRUM stores the following information

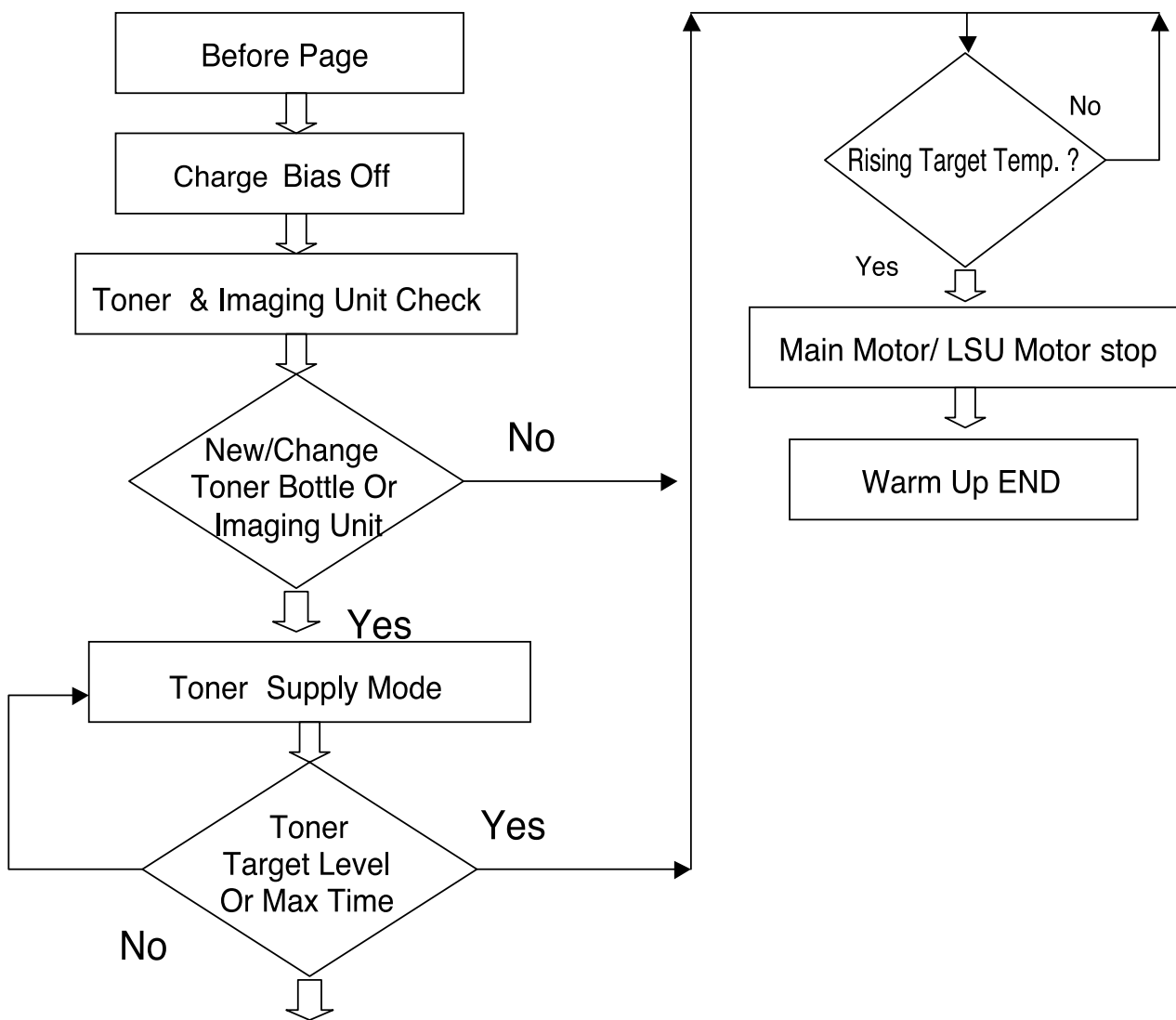
- Model Name
- Supplier ID
- Serial Number
- Company ID
- MFG Date
- Capacity
- Page Count
 - Toner Cartridge and Transfer Belt
 - Indicates how many pages are printed by using the consumable
- Dot Count
 - Toner Cartridge Only
 - Indicates how many dots are printed by using the toner cartridge

4.10 FW Upgrade

- Via USB or Network (SWS/SWAS)
- You can upgrade F/W via USB or Network whenever the printer is “Ready”
- Via Using F/W Download Mode :
 - Step 1) Power on while pressing the Online Key
 - Step 2) Press Online Key one more time if “Press Key Again” is displayed on LCD
 - Step 3) Download F/W via USB

4.11 Initailize Flow





5. Disassembly and Reassembly

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5.1 Precautions when replacing parts

5.1.1 Precautions when assembling and disassembling

- * Use only approved Samsung spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct. Failure to do so could result in damage to the machine, circuit overload, fire or electric shock.
- * Do not make any unauthorized changes or additions to the printer, these could cause the printer to malfunction and create electric shock or fire hazards.
- * Take care when dismantling the unit to note where each screw goes. There are 19 different screws. Use of the wrong screw could lead to system failure, short circuit or electric shock.
- * Do not disassemble the LSU unit. Once it is disassembled dust is admitted to the mirror chamber and will seriously degrade print quality. There are no serviceable parts inside.
- * Regularly check the condition of the power cord, plug and socket. Bad contacts could lead to overheating and fire. Damaged cables could lead to electric shock or unit malfunction.

5.1.2 Precautions when handling PBA

Static electricity can damage a PBA, always use approved anti-static precautions when handling or storing a PBA.

>> Precautions when moving and storing PBA

1. Please keep PBA in a conductive case, anti-static bag, or wrapped in aluminum foil.
2. Do not store a PBA where it is exposed to direct sunlight.

>> Precautions when replacing PBA

1. Disconnect power connectors first, before disconnecting other cables
2. Do not touch any soldered connections, connector terminals or other electronic parts when handling insulated parts.

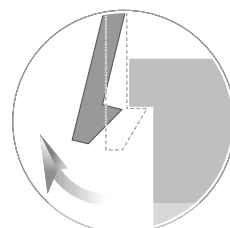
>> Precautions when checking PBA

1. Before touching a PBA, please touch other grounded areas of the chassis to discharge any static electrical charge on the body.
2. Take care not to touch the PBA with your bare hands or metal objects as you could create a short circuit or get an electric shock. Take extra care when handling PBAs with moving parts fitted such as sensors, motors or lamps as they may get hot.
3. Take care when fitting, or removing, screws. Look out for hidden screws. Always ensure that the correct screw is used and always ensure that when toothed washers are removed they are refitted in their original positions.

5.1.3 Releasing Plastic Latches

Many of the parts are held in place with plastic latches. The latches break easily; release them carefully.

To remove such parts, press the hook end of the latch away from the part to which it is latched.



5.2 Parts for Maintenance and Repair

5.2.1 Replacement interval for parts with a limited life

Some of the parts in this printer have a limited life, shorter than that of the whole machine. These parts must be replaced periodically.

The table below shows the interval at which these parts should be replaced.

The table shows the life of each part, and is measured when using A4 paper. When servicing a machine always check the status of these parts using the control panel and ensure that parts are replaced at the appropriate times otherwise a general degradation in print quality will occur.

Item(s)	Pages Printed	Part number
Black toner cartridge	Approx. 1,500 pages*	CLP-K300A
Color toner cartridge	Approx. 700 pages*	CLP-C300A:Cyan CLP-M300A:Magenta CLP-Y300A:Yellow
Imaging unit	Approx. 20,000 black pages or approx. 12,500 color pages	CLP-R300A
Waste toner container	Approx. 5,000 images** or Approx. 1,250 pages (full color ISO 19752 Standard image)	CLP-W300A
Pick-up roller	Approx. 50,000 pages	Contact a service representative
Fuser unit	Approx. 100,000 black pages or 50,000 color pages	
T2 roller	Approx. 100,000 pages	
ITB	Approx. 60,000 black pages or 25,000 color pages	

* Average A4-/letter-sized page count based on ISO 19752 Standard coverage of individual colors on each page. Usage conditions and print patterns may cause results to vary.

** Image counts based on one color on each page. If you print documents in full color (Cyan, Magenta, Yellow, Black), the life of this item will be reduced by 25%.

5.2.2 Printer Cleaning

A printer should be regularly cleaned, especially if it is used in a dusty environment. This will ensure that print quality remains high and failure due to contamination of printing services is less likely to occur.

- * Clean the printer with a soft, lint free, cloth dipped in a "Recommended cleaner"
"Recommended cleaner" can be purchased from our service center. (where available)
- * Do not touch the transfer roller when cleaning the inside of the printer. Grease and oils from the skin will contaminate the surface and reduce print quality.
- * Do not touch transfer roller when cleaning inside of machine. If transfer roller gets dirty, printing quality could be low.
- * Please refer to the User Manual for cleaning instructions.

5.3 Information Related to Disassembly and Assembly.

5.3.1 Special service parts

Never disassemble or adjust the items mentioned, a stock of these items should be maintained.

1) Disassembly of the LSU unit

There are no serviceable parts inside the LSU. Alignment of the mirrors is critical. Opening the LSU will allow dust into the laser and significantly reduce print quality. It is very dangerous to operate or service a machine with the LSU open or system interlocks disabled. Exposure to laser radiation can cause blindness.

2) Disassembly of the ITB unit

Do not disassemble the ITB. The alignment of the home sensor is critical and is set up in the factory on a special jig. Incorrect re-assembly will cause print quality degradation.

3) Care of the Toner cartridge

Toner cartridges contain an extremely fine powder. Please keep toner cartridges away from children. The toner powder contained in the toner cartridge may be harmful and if swallowed you should contact a doctor. Take care not to spill toner - spillages should be cleaned with a vacume cleaner and washed in cold water (hot water sets the toner). Do not touch the developer roller surface as contamination will reduce print quality. Take care not to damage the roller's surface when installing or removing a toner cartridge.

4) Disassembly of DEVE drive ass'y and the main drive ass'y

The alignment of the drive mechanism is critical and it has been set up in factory using a jig and a driving gear. It is adjusted for the best gearing alignment. If the motor is disassembled alignment would not be maintained and this could cause operational noise and image problems: image alignment and toner distribution may be affected.

5) Disassembly of terminal parts

Do not adjust the variable resistors on the PBA. They have been already adjusted in the factory.

6) Disassembly of the fuser unit

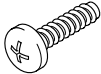
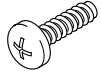
- The fuser melts toner onto the paper at a high temperature: therefore, you need to take special care not to get burned by a hot fuser. When removing the fuser from a set that has recently been operating you need to take extra care.
- Do not touch an AC line (Copper contact) on a main frame even after removing the fuser.

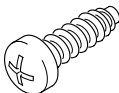


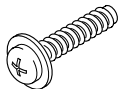
7) When you replace ITB Unit, be careful with following things;

- When you replace ITB Unit, carefully handle with ITB Belt. If not, it harms ITB Belt.
- Do not turn ITB Belt back and forth. If not, waste toner powder would be leaked.
- When shutter is working on an outlet of waste toner, be careful that waste toner powder would be leaked


5.3.2 Screws used in the printer

The screws listed in the table below are used in this printer. Please ensure that, when you disassemble the printer, you keep a note of which screw is used for which part and that, when reassembling the printer, the correct screws are used in the appropriate places.

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QTY
S1 	6009-001396	SCREW-SPECIAL:PH,+, -,M3,L 10.3, ZPC(BLK),SWRCH 18A,B TITE,-	PTB Draw Connector	2
S2 	6003-000269	SCREW-TAPTITE:BH,+, -, S,M3,L6,ZPC(YEL),SWRCH 18A,-	BRACKET-CONT LOWER + Assy Network Card	2
			BRACKET-CONT LOWER + BRACKET-CONT UPPER	4
			BRACKET-CONT LOWER + MAIN PBA	4
			BRACKET-CONT UPPER + BRACKET-POWER	2
			SUB MAIN FRAME + BRACKET-CONT LOWER	2
			SUB MAIN FRAME + UNIT SMPS	2
			BRACKET-CONT UPPER + IPR-SHIELD SMM	1
			BRKT-SHIELD SMPS + SMPS type5 + Fuser BD	8
			FRAME-FRONT + FRAME-REAR + FRAME-BOTTOM	4
			SUB MAIN FRAME + PBA DRIVE	3
			MEA-FRAME BASE + CHANNEL FRAME BASE	3
S3 	6003-000275	SCREW-TAPTITE:BH,+,B,M3,L 10,BLK, SWCH 10 18AK	MAIN FRAME + COVER-REAR	4
			DRAW CONNECTOR	2
S4 	6003-001086	SCREW-TAPTITE:BH,+,B,M3,L 12, ZPC(BLK),SWRCH 18A	SUB MAIN FRAME + BRACKET-MPF	1
			SUB MAIN FRAME + SUB PICK-UP	1
			UNIT MPF + BRACKET-MPF	1
			MEA-ASSY-MPF + GUIDE-PAPER-MP	2
			MEA-UNIT FRAME BASE + MEA-ASSY-MPF	3
S5 	6003-000261	SCREW-TAPTITE:BH,+,B,M3,L6, ZPC(YEL),SWRCH 18A	HOUSING-OPC	8
S6 	6003-000282	SCREW-TAPTITE:BH,+,B,M3,L8, ZPC(BLK),SWCH 10	F/M_Upper-Fuser + C/M_Carbon-Brush	2
			FRAME ASSY	28
			FRAME-PTB ASS'Y	28
			COVER-M-OP FRAME LED + Cover DECO	4
			COVER-M-OP FRAME LED + LED PBA	7

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QTY
			COVER EXIT + Cover Actuator Sensor	1
			Cover Exit + COVER- AIR-DUCT	1
			FRAME MAIN + GUIDE RAIL REAR	6
			FRAME-MAIN + ELA UNIT-BRKT-DRAW	1
			FRAME-MAIN + ELECTRODE-HV D	1
			FRAME-MAIN + HOUSING-SENSOR EXIT	1
			FRAME-MAIN + MEA UNIT-DUCT-REAR	2
			FRAME-MAIN + PLATE-GROUND FUSER	1
			FRAME-MAIN + PLATE-GROUND OPC	2
			COVER FUSER AC + HOLDER- _M,MIDDLE PART4	
			GUIDE-TERMINAL CH + GUIDE-PTB TERMNAL	1
S7 	6003-001256	SCREW-TAPTITE:BH,+,B,M4,L10,NI PLT,SWRCH18A	SUB MAIN FRAME + COVER LEFT	2
			SUB MAIN FRAME + COVER TOP	2
			SUB MAIN FRAME + UNIT LSU	3
			FRAME FRONT/REAR + SUB FRAME BASE	4
			SUB FRAME + SUB FRAME BASE	4
			MEA-FRAME BASE + ELA-Guide-SCT-paper	2
			MEA-UNIT FRAME BASE + BRACKET-POWER	1
			MEA-UNIT FRAME BASE + MEA-ASSY-PICKUP	5
S8 	6003-000301	SCREW-TAPTITE:BH,+,S,M4,L6, ZPC(YEL),SWRCH18A	BRKT main front + BRKT main rear	6
			BRKT main rear + Motor	10
			BRACKET-P-POWER + Power Inlet GND wire	1
S9 	6002-000308	SCREW-TAPTITE:PH,+,B,M2.6,L6, ZPC(YEL),SWRCH18A,-	COVER-OP-FRAME-LCD + LCD PBA	2
S10 	6003-000196	SCREW-TAPTITE:PW,+,B,M3, L10,NI PLT,SWRCH18A	SUB MAIN FRAME + COVER DECO	4
			SUB MAIN FRAME + COVER-LEFT-HANDLE	2
			SUB MAIN FRAME + COVER-TOP	3
			SUB MAIN FRAME + DRIVE unit	6
			SUB MAIN FRAME + HOUSING MIDDLE PART	2
			SUB MAIN FRAME + HVPS PBA	6
			SUB MAINFRAME + LINK FRONT(COVER RIGHT)	1
			UNIT DUCT LEFT+ HOUSING MIDDLE PART	1
			COVER_FRAME-FUSER + BRACKET_GUIDE-FRAME	2
			COVER_M_EXIT-ROLLER + COVER_M_SIDE-L/R	2

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QTY
			FRAME_LOWER-FUSER + FRAME_UPPER-FUSER	2
			FRAME_M_LOWER FUSER + HOLDER_M_SPRING PR	2
			FRAME_M_LOWER-FUSER + COVER_M_SIDE-L	1
			FRAME_M_LOWER-FUSER + COVER_M_SIDE-R	1
			FRAME_M_LOWER-FUSER + GUIDE_M_INPUT	2
			FRAME_M_UPPER-FUSER + SHEET-DUMMY	1
			FRAME_M_UPPER-FUSER + THERMISTOR-NTC	1
			FRAME_M_UPPER-FUSER + THERMOSTAT	2
			FRAME_UPPER-FUSER + Bracket_Idle-Gear	1
			FRAME_UPPER-FUSER + ELECTRODE_TERMINAL L	1
			FRAME_UPPER-FUSER + ELECTRODE_TERMINAL R	1
			FRAME_UPPER-FUSER + GROUND_P_FUSER-BALL	1
			FRAME_UPPER-FUSER + PBA-FUSIBILITY	1
			GUIDE_M_OUTPUT + GUIDE_M_DUPLEX	2
			Cover right + Holder Link	2
			Cover right + Holder Lower F	3
			Cover right + Holder Lower R	2
			Cover right + Holder Upper F	1
			Cover right + Holder Upper R	1
			FRAME-CASSETTE + GEAR-PINION	1
			FRAME-CASSETTE + GUIDE-FRONT CASSETTE	2
			SUB MAIN FRAME + FRAME-FRONT/FRAME-REAR	4
			FRAME MAIN + ELA UNIT-Deve-Terminal	4
			FRAME MAIN + ELA UNIT-PTB-Terminal	3
			FRAME MAIN + GUIDE RAIL FRONT	2
			FRAME MAIN + SUB-HOLDER-AC	2
			SUB MAIN FRAME + COVER EXIT GUIDE	2
			Sub Main Frame + Link Rear 1	1
			MEA FRAME BASE + MPF unit(right)	1
			MEA-UNIT FRAME BASE + CAM-CATCH	1
			MEA-UNIT FRAME BASE + IPR-BRKT BASE BAR	3
			BRKT-GEAR-TRAY + BRKT-HOLDER-PICKUP	1
			FRAME-BASE-MP + BRACKET-GEAR-TRAY	1
			FRAME-BASE-MP + PLATE-GROUND BRACKET	1

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QTY
			MPF UNIT ASS'Y + SOLENOID	1
			FRAME-P-REGI + COVER-M-REGI-FRAME	2
			FRAME-P-REGI + FRAME-PICK-UP	4
			FRAME-PICK-UP + GUIDE-GEAR-BRACKET	3
			SOLENOID-MAIN + GUIDE-GEAR-BRACKET	1
			HOLDER SENSOR + FRAME-P-REGI	1
S11 	6003-000264	SCREW-TAPTITE;PWH,+,B,M3, L6,ZPC(YEL.),SWRCH18	COVER-INNER-MP + GEAR-PINION	1

5.4 Disassembly Procedure

5.4.1 Cover Unit

1. Open a Front-Cover and Remove the Image Unit.



2. Remove the ITB Unit

- 1) Pull out the unit toward outside of printer slightly.
- 2) Lift up the unit gently.
- 3) Pull out the unit gently.



3. Unscrew 2 screws on the Top Cover and then remove the Top Cover.



4. Unscrew 1 screw on the Right Cover and then remove the Right Cover after open the Rear Cover.



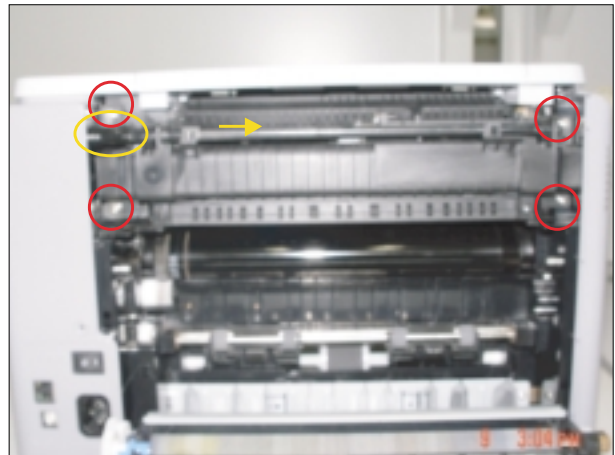
5. Remove the Left Cover.



5.4.2 Fuser Ass'y

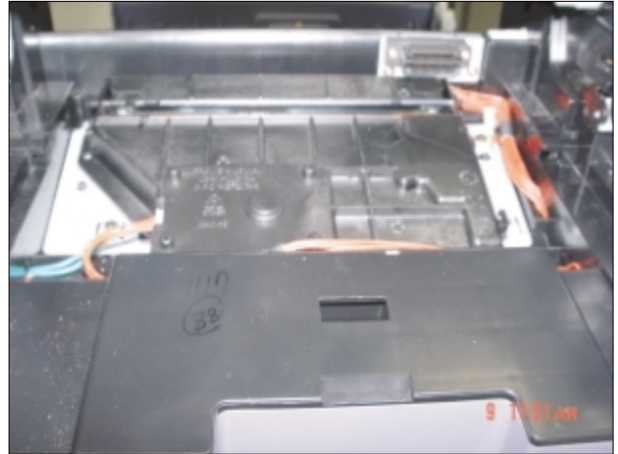
1. Unscrew 4 screws on the Fuser after open the Rear Cover.
2. Push the Holder Shaft Fuser as shown in Picture.

3. Take out the Fuser Ass'y from Printer.



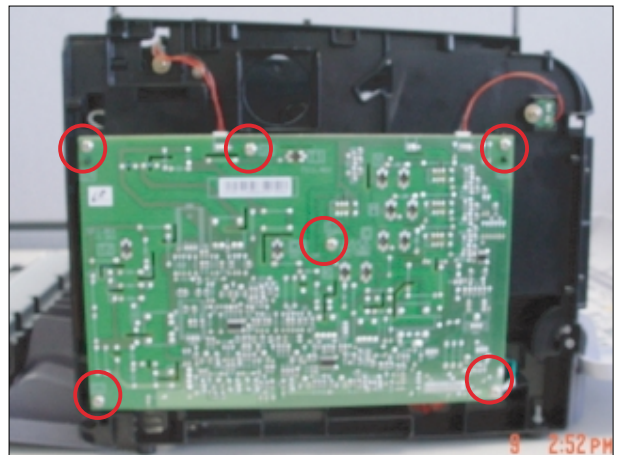
5.4.3 LSU(Laser Scan Unit)

1. Follow step 1 through step 3 in Cover Unit Disassembly
2. Lift up the LSU Cover(as shown in Picture) and then take out.
3. Remove 4 screws and then take out the LSU.



5.4.4 HVPS(High Voltage Power Supply)

1. Follow step 1 through step 5 in Cover Unit Disassembly except removing Right Cover
2. Unscrew 6 screws and then take out the HVPS.
 - Be careful of taking out the HVPS because there are 7 High Voltage Terminal behind HVPS.



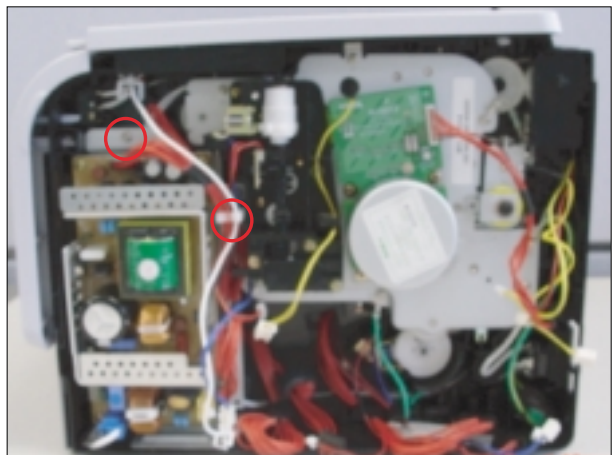
5.4.5 Main Board

1. Follow step 1 through step 4 in Cover Unit Disassembly
2. Unscrew 5 screws and then take out the Main Board after plug out all the Harness.



5.4.6 SMPS(Switching Mode Power Supply)

1. Follow step 1 through step 4 in Cover Unit Disassembly
2. Remove the Main Board
3. Unscrew 2 screws and then take out the SMPS after plug out all the Harness.

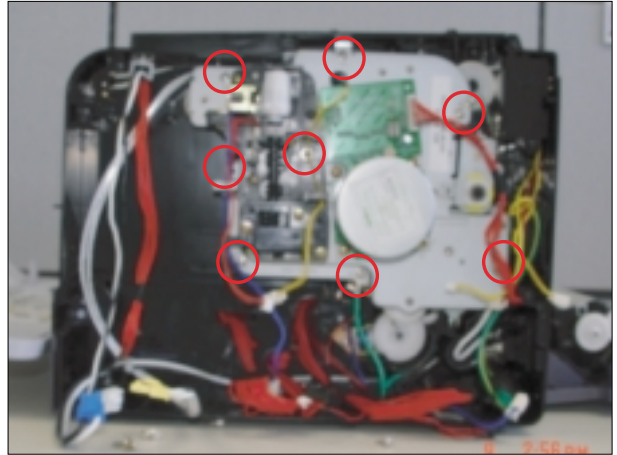


5.4.7 Drive Ass'y

1. Follow step 1 through step 4 in Cover Unit Disassembly
2. Remove the Main Board

3. Remove the SMPS

4. Unscrew 8 screws and then take out the Drive Ass'y.



5.4.8 Transfer Roller

1. Open Rear Cover.

2. Pull back the hook, which holds the Roller, like below picture and remove the Transfer Roller



6. Alignment and Adjustments

This chapter describes some of the main service procedures including:
Using the EDC mode; Clearing paper jam and test patterns.
Much of this chapter is also included in the user's guide.

6.1. Control Panel

6.1.1 Overview

- The CLP-300 printers do not have LCD panel which is used in other color model printers. On the contrary to other models of color printers, they show the status of the printer only with their LEDs.
- The CLP-300 printers have 2 keys and 6 LEDs. The 'User Interface' module handles the processing of the 'Key Press' and 'Led control' at different states of the machine.

6.1.2 Architecture

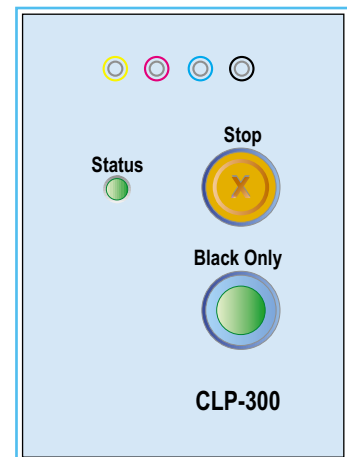
KEY (2 key): Stop key, Black only key

LED (6 LEDs):

4 LED for CMYK toners : toner-low(cyan, magenta, yellow, black) LEDs

1 LED for status : ready (green) or error(red) status LED (two color LED)

1 LED for Black only: If Black only key is pressed, Black only led glows.



6.1.3 Data and Control Flow

User interface (panel) is made up of

- KEY input detection & process
- LED control

The initial process to use the panel checks register's values of key and LED.

If user input key value, the operation to be defined by key value is processed and the LED operation to be defined by printer status is controlled.

6.2 Function

6.2.1 KEY Function

There are two keys present. The one is Stop key and the other is Black only key.
If users input key value, the key input is transferred via GIP (General Input Port) and the operation to be defined by key value is processed.

6.2.1.1 Functions

Stop key function is made up of

- Demo page/Configuration sheet printing function
- Job cancels function
- Start manual feeding function
- Firmware downloads mode function

Black only key function is made up of

- Change printer mode to Black-only mode function
- Black only LED light function

6.2.1.2 Detail Description

KEY input detection & process order

1) User KEY input

2) KEY input detection

: If the key input is detected when the key input check per timer tick 10ms, The 10ms interrupt service routine sends the key detection event to panel task.

3) KEY input process

Stop key input process

: After the panel task is received the Stop key detection event, it checks the engine error status two times and process the operation to be defined by key value.

- Demo page/Configuration sheet function

This button will have multiple functions when the printer is in idle state.

Demo page printing

Press and hold this button for about 2 seconds until the control panel lights blink slowly to print a demo page.

Configuration sheet printing

Press and hold this button for about 6 seconds until the control panel lights blink rapidly to print a configuration sheet.

- Job cancels function

When the printer is printing an active printing job, press and holds this button until the control panel lights blink to cancel a job the printer is currently except the manual job.

- Start manual feeding function

When you select manual feed for paper source, press this button each time you feed a sheet of paper manually.

The application of manual feeding function in CLP-300 will be determined

- Firmware downloads mode function

Turn on the printer at the same time that the button is pressed.

If all LEDs scroll, release the button and download the firmware ROM file via USB port

Black only key input process

: After the panel task is received the Black only key detection event, it changes printer mode to Black only mode and notifies driver that the printer mode is changed to Black only mode. If printer mode is Black only mode, driver makes printer image by only mono excepting color and the Black only LED glows.

6.2.2 LED Function

There are six LEDs present. Status led indicate the error/online status of the printer in idle mode. In error mode, the status LED glows by red color and in ready mode, it glows by green color. The other four LEDs indicate the toner status. If the black toner needs to change, the toner-low (black) LED glows and if the color (yellow, magenta, cyan) toners need to change, the toner-low (yellow, magenta, cyan) LED glows. Black only LED indicate the printer mode. If the users press the Black only button, the printer mode changes to Black only mode and Black only LED glows.

6.2.2.1 Functions

LED function is made up of

- Ready/Printing status display
- Error status display
- Toner low status display
- Black only status display

6.2.2.2 Detail Description

LED control order

1) Control LED according to current printer state

: After the panel task is received each event, the LED operation is controlled by current printer status.

2) Write LED value to GOP (General Output Port)

LED behavior

Status LED (Green/Red)	Black-only LED	Toner-low (CMYK)LEDs	Status
Green LED ON	N/A	N/A	Ready to receive the data.
Green LEDS LOWLY BLINK	N/A	N/A	Receiving the data from the host.
Green LED FAST BLINK	N/A	N/A	Printing the page.
Red LED BLINK	N/A	N/A	Paper source is set to "MANUAL". Need to push the button to start the printing
Red LED ON	N/A	N/A	Out of paper
Red LED ON	N/A	N/A	Cover open
Red LED ON	N/A	N/A	Paper jam
Green/Red BLINK	BLINK	CMYK BLINK	Service error (LSU or Fuser error)
N/A	N/A	Toner-low(black) ON	Black toner needs to change
N/A	N/A	Toner-low(cyan) ON	Cyan toner needs to change
N/A	N/A	Toner-low(magenta) ON	Magenta toner needs to change
N/A	N/A	Toner-low(yellow) ON	Yellow toner needs to change
N/A	ON	N/A	Black only key is pressed

Service Error LED Operation

All LEDs blink the each time interval.

Service Error		LED operation
Fuser Error	Open Fuser Error	All LEDs (Toner low LEDs, Status (Red) LED, Black only LED) blink a time interval of 1 second.
	No Heat Error	All LEDs (Toner low LEDs, Status (Red) LED, Black only LED) blink a time interval of 4 seconds.
	Over Heat Error	All LEDs (Toner low LEDs, Status (Green/Red) LED, Black only LED) blink a time interval of 1 second.
Scanner Error (=LSU Error)	P Motor Error	All LEDs (Toner low LEDs, Status (Green) LED, Black only LED) blink a time interval of 1 second.
	H Sync Error	All LEDs (Toner low LEDs, Status(Green) LED, Black only LED) blink a time interval of 4 seconds.

Assert Error LED Operation

The panel LED operation display the line number of assert error occurrence.

Line number	LED operation
start & end	All LEDs(Toner low LEDs, Status(Red) LED, Black only LED) turn ON for approximately 2 seconds and then All LEDs turn OFF for approximately 3 seconds.
1	After Status (Red) LED blinks one time, Toner low LEDs blink one time.
2	After Status (Red) LED blinks two times, Toner low LEDs blink one time.
3	After Status (Red) LED blinks three times, Toner low LEDs blink one time.
4	After Status (Red) LED blinks four times, Toner low LEDs blink one time.
5	After Status (Red) LED blinks five times, Toner low LEDs blink one time.
6	After Status (Red) LED blinks six times, Toner low LEDs blink one time.
7	After Status (Red) LED blinks seven times, Toner low LEDs blink one time.
8	After Status (Red) LED blinks eight times, Toner low LEDs blink one time.
9	After Status (Red) LED blinks nine times, Toner low LEDs blink one time.

6.3 Jam Removal

When a jam occurs while printing a jam message is displayed on the control panel.

*** Jam0 In Tray 1:**

Paper jam in the main cassette.

*** Jam0 In MP Tray:**

Paper jam in the MP tray

*** Jam Inside Printer:**

Jam 1, Paper is jammed inside the printer.

*** Jam In Exit Area:**

Jam2, Paper is jammed in the exit area when ejecting paper.

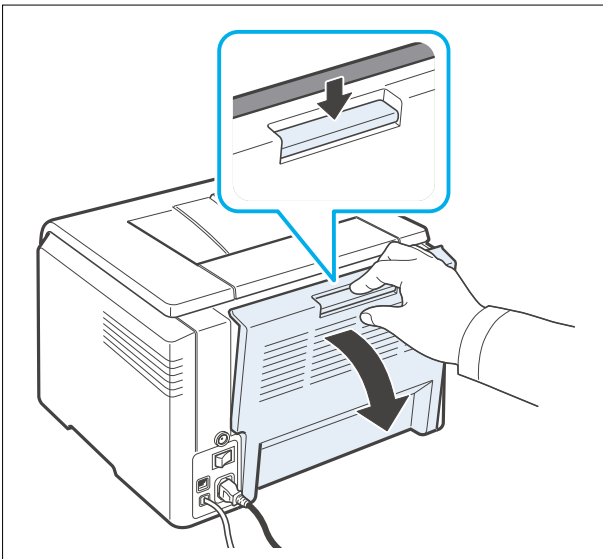
CAUTION: When removing jammed paper, always pull it firmly and evenly without any sudden jerks. If at all possible, remove the paper as a single sheet. If the paper tears ensures ALL paper fragments are removed. Any fragments left inside the machine will cause it to jam again.

6.3.1 Clearing Paper Jams

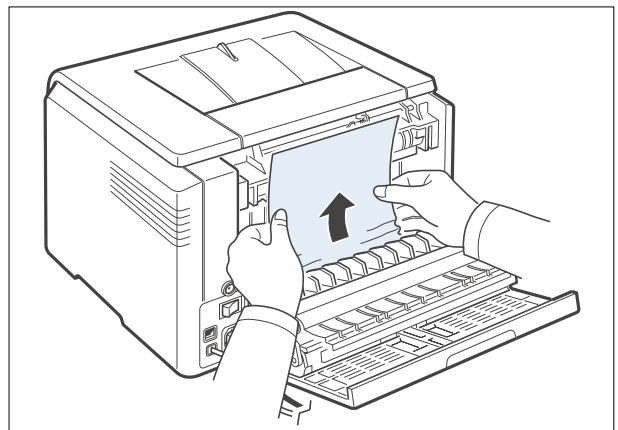
NOTE: When removing paper that is jammed in the printer, if possible always pull the paper in the direction that it normally moves so as not to damage internal components. Always pull firmly and evenly; do not jerk the paper. If the paper tears, ensure that all fragments of paper are removed; otherwise a jam will occur again.

If a paper jam occurs, the Status LED on the control panel lights red. Find and remove the jammed paper. To resume printing after clearing paper jams, you must open and close the front cover or rear cover.

1. To remove the jammed paper, open the rear cover.

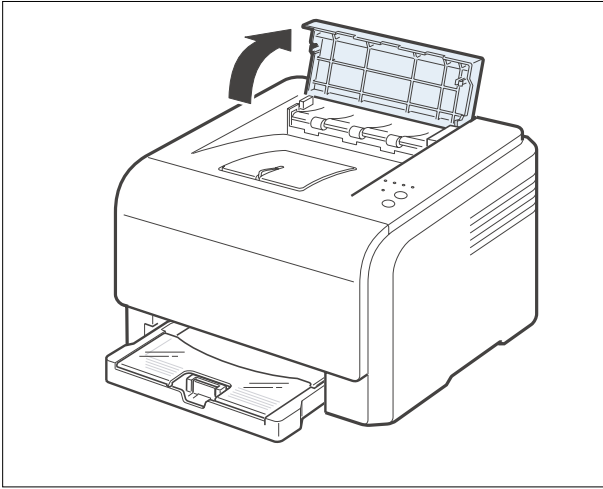


2. Carefully remove the paper by pulling in the direction as shown below. Most of the jammed paper can be removed in this step.

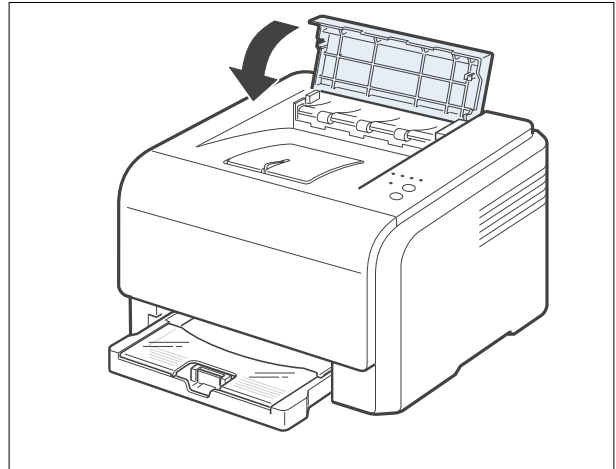


If you cannot find the jammed paper, or if there is any resistance removing the paper, stop pulling and go to the next step.

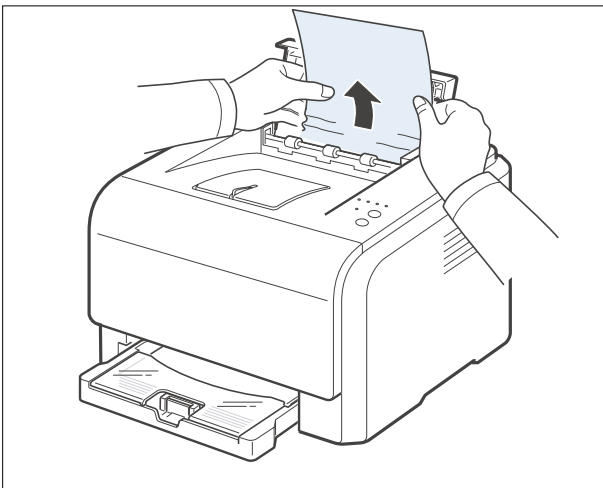
3. Close the rear cover and then open the top cover.



5. Close the top cover. Make sure that it is securely latched.



4. Holding the inner cover open, carefully take the jammed paper out of the printer. The inner cover will then close automatically.



6. Open and then close the rear cover or front cover to resume printing.

6.3.2 Tips for Avoiding Paper Jams

By selecting the correct paper types, most paper jams can be avoided.

- Follow the procedures Jam remove. Ensure that the adjustable guides are positioned correctly.
- Do not overload the paper tray.
- Do not remove the paper from the tray while printing.
- Flex, fan, and straighten the paper before loading.
- Do not use creased, damp, or highly curled paper.
- Do not mix paper types in a tray.
- Use only recommended print materials.
- Ensure that the recommended print side of print materials is facing up in the paper tray.

6.4 Sample Pattern

This product provides several printable test patterns for maintenance purposes. These patterns can be used to aid the diagnosis of print quality problems.

6.4.1 Printing a Demo Page

Print a demo page to make sure that the printer is operating correctly.

To print a demo page: In ready mode, press and hold the Stop button for 2 seconds.

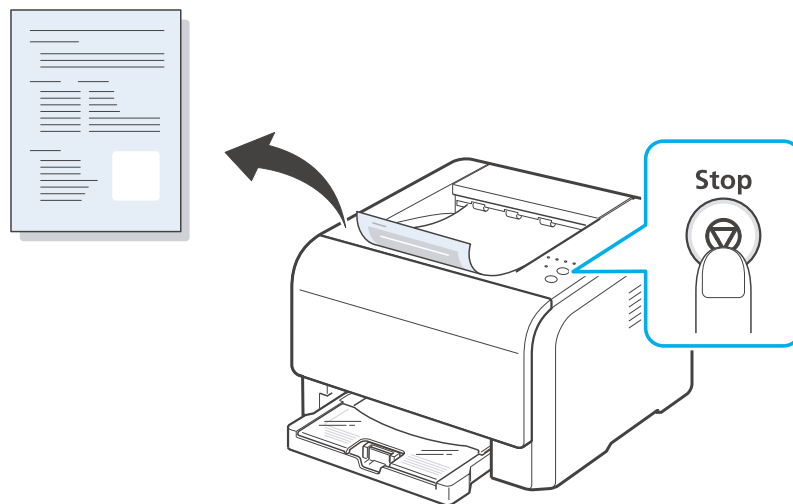
A demo page showing the printer's features and capabilities is printed.

6.4.2 Printing a Configuration Page

You can print a configuration page from the printer's control panel. Use the configuration page to view the current settings, to help troubleshoot problems.

To print a configuration page: In ready mode, press and hold the Stop button on the control panel for 5 seconds.

A configuration page prints out.



>> Demo Page



Color Laser Printers

CLP-300/300N

SAMSUNG



>> Configuration Report



SAMSUNG Color Laser Printer CLP-300 Series

[General Information]

OS Version : CLP300N_V1.30.01.33 06-27-2006
 SPL-C Version : 5.23 06-24-2006
 Engine Version : 1.00.64
 USB Serial Number : 2136-06061552837
 Set Model : DOM

[Options]

RAM Size : 64 Mbytes
 EEPROM Size : 8192 bytes

USB Connected (FULL).
 NPC Installed

[Consumables Life]

Total Page Count : 552/84 Pages (color/mono)
 Fuser Life : 1185 Pages
 Transfer Roller Life : 634 Pages
 Tray1 Roller Life : 636 Pages
 Total Image Count : 2300 Images
 Imaging Unit / Deve Roller Life : 13504 Images / 3718 Pages
 Transfer Belt Life : 2300 Images
 Toner Image Count : 291/1529/795/1451 Images (C/M/Y/K)

[Toner Information]

Toner Remains Percent : 67%/12%/47%/44% (C/M/Y/K)
 Toner Average Coverage : 5%/2%/3%/3% (C/M/Y/K)

[Consumables Information]

Cyan Toner : SAMSUNG(DOM) / Magenta Toner : SAMSUNG(DOM)
 Yellow Toner : SAMSUNG(DOM) / Black Toner : SAMSUNG(DOM)
 Imaging Unit : SAMSUNG(DOM)

[Color Menu]

Custom Color : Manual Adjust (CMYK : 0,0,0,0)

[Setup Menu]

Power Save : 30 Minutes
 Auto Continue : On
 Altitude Adj. : Plain

[Network Menu]

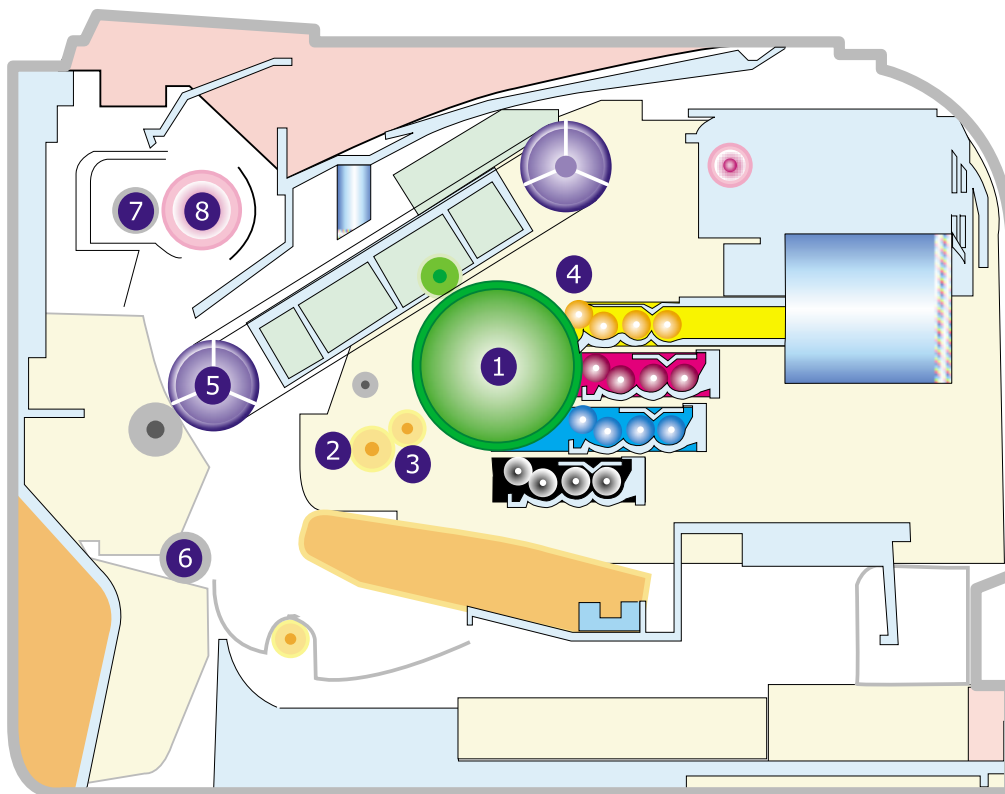
IP Get Method : STATIC / IP Address : 10.240.15.145
 Subnet Mask : 255.255.255.0 / Gateway : 10.240.15.1



6.5 Periodic Defective Image

If an image defects appears at regular intervals on the printed-paper, it is due to a faulty or damaged roller. Refer to the table below and check the condition of the appropriate roller.

No	Roller	Period	Phenomenon
1	OPC Drum	188.5 mm	White and Black Spots
2	Charge Roller	37.7mm	Black Spot and line and Periodic Band
3	Supply Roller	47.5mm	Periodic Band by little difference of density
4	Developing Roller	26.0mm	White Spot, Horizontal black band
5	1 st Transfer Roller	32.7mm	Ghost, Damaged Image by abnormal tranfer
6	2 nd Transfer Roller	57.5mm	Ghost, Damaged Image by abnormal tranfer
7	Heat Roller	86.6mm	Black Spots or Vertical Black Band
8	Pressure Roller	86.6mm	Background



6.6 How to use EDC (Engine Diagnostic Control) Mode

EDC Mode is a feature that allows the engineer to check the condition of the print engine. It can check the operating condition of the motors, sensors, solenoids and clutches, measure the High Voltage from the HVPS and check the operation of the fuser and LSU.

6.6.1 Entrence

When trying to check the CLP-300 Series EDC Mode, additional EDC execution program needed.

[Procedure of EDC Mode operation]

- First, turn on the Power of Printer, wait until Ready state
- In this state, Run the EDC program on the computer
- After that, click the menu of screen
- Then <Motor Test> appears on the initial screen
- Should you get out of this program, press Exit of screen

6.6.2 Keys

Key	Discription
Exit	Close program
Update LCD	Update value (ex : sensor value)
Menu	Move to the top menu
Left/Right arrow	Move test item
Enter	Start testing or select Sub-item
Upper level	Stop testing or the upper menu

Motor Test	Solenoid Test	Sensor Test	LSU/Fuser Test
Main Motor	Dev Clutch Y Relay M Relay C Relay K Relay Y Toner M Toner C Toner K Toner Regi Clutch T2 Clutch ITB Clutch Tray1 Clutch	Regi. Sensor Exit Sensor Waste Box Cover Tray1 Empty	LSU

6.6.3.1 Motor Test

Item	Discription
Main Motor	If motor lock signal is normal, "Succesed" message will be displayed. When motor lock signal is abnormal, "failed" message will be displayed. When "Upper Level" is pushed, "off " message will be displayed.

6.6.3.2 Solenoid Test

Item	Discription
Dev Clutch	When "select" key is pushed, "Dev Clutch ON" message will be displayed. "Upper Level" is pushed, "Dev Clutch Off" message will be displayed.
Y Relay	When "select" key is pushed, "Y Relay ON" message will be displayed. "Upper Level" is pushed, "Y Relay Off" message will be displayed on.
M Relay	When "select" key is pushed, "M Relay ON" message will be displayed. "Upper Level" is pushed, "M Relay Off" message will be displayed.
C Relay	When "select" key is pushed, "C Relay ON" message will be displayed. "Upper Level" is pushed, "C Relay Off" message will be displayed.
K Relay	When "select" key is pushed, "K Relay ON" message will be displayed. "Upper Level" is pushed, "K Relay Off" message will be displayed.
Y Toner	When "select" key is pushed, "Y Toner ON" message will be displayed. "Upper Level" is pushed, "Y Toner Off" message will be displayed.
M Toner	When "select" key is pushed, "M Toner ON" message will be displayed. "Upper Level" is pushed, "M Toner Off" message will be displayed.
C Toner	When "select" key is pushed, "C Toner ON" message will be displayed. "Upper Level" is pushed, "C Toner Off" message will be displayed.
K Toner	When "select" key is pushed, "K Toner ON" message will be displayed. "Upper Level" is pushed, "K Toner Off" message will be displayed.
Regi Clutch	When "select" key is pushed, " REGI Clutch ON" message will be displayed. "Upper Level" is pushed, " REGI Clutch Off" message will be displayed.
T2 Clutch	When "select" key is pushed, " T2 Clutch ON" message will be displayed. "Upper Level" is pushed, " T2 Clutch Off" message will be displayed.
ITB Clutch	When "select" key is pushed, " ITB Clutch ON" message will be displayed. "Upper Level" is pushed, " ITB Clutch Off" message will be displayed.
Tray1 Clutch	When "select" key is pushed, " Tray1 Clutch ON" message will be displayed. "Upper Level" is pushed, " Tray1 Clutch Off" message will be displayed.
Regi. Sensor	If actuator is checked by sensor, "Without Paper" message will be displayed. if not, "With Paper" message will be.
Exit Sensor	If actuator is checked by sensor, "Without Paper" message will be displayed. if not, "With Paper" message will be.
Waste Box	If waste Box exists , "Installed " message will be displayed. If not, "Not Installed " message will be.
Cover	If cover is opened, " Opened " message will be displayed. If not, "Closed" message will be.
Tray1 Empty	If paper exists in the tray, "With Paper" will be displayed. If not, "Without Paper" message will be.

6.6.3.3 LSU/ Fuser Test

Item	Discription
LSU Motor	If LSU motor lock signal is normal, "Succesed" message will be displayed. When LSU motor lock signal is abnormal , "failed" message will be displayed. When "Upper Level" is pushed, "off" message will be displayed.
LSU Power	When "select" key is pushed, "LSU Power On" message will be displayed. If not, "LSU Power Off" message will be.
Laser Diode	When "select" key is pushed, "Laser Diode On" message will be displayed. If not, "Laser Diode Off" message will be.
PTL	When "select" key is pushed, "PTL On" message will be displayed . If not, "PTL Off" message will be.
Fuser	When "select" key is pushed, "Fuser On" message will be displayed. If not, "Fuser Off" message will be.

6.6.3.4 HVPS Test

Item	Discription
Charger	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
T1	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
T2	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
T2 REVERSE	When "select" key is pushed, "T2 REVERSE On" message will be displayed. If not, "T2 REVERSE Off" will be.
Dev DC	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
Dev AC Vpp	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
Dev AC	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
Charger	Duty : 50% -> "-789V", Range : -81V ~ -1689V
T1	Duty : 50% -> "1159V", Range : 122V ~ 2188V
T2	Duty : 50% -> "2552V", Range : 264V ~ 4730V
Supply DC	Duty : 50% -> "-269V", Range : -1V ~ -591V
AC, Vpp	Duty : 50%-> "1210V", Range : 800V ~ 2160V

6.6.3.5 Maintenance

Item	Discription
Fuser	When “select” key is pushed, “Initialized” message will be displayed. When “Upper Level” is pushed, “Off” message is disappeared.
Transfer	When “select” key is pushed, “Initialized” message will be displayed. When “Upper Level” is pushed, “Off” message is disappeared.
Pick Up Roll	When “select” key is pushed, “Initialized” message will be displayed. When “Upper Level” is pushed, “Off” message is disappeared.
ITB	When “select” key is pushed, “Initialized” message will be displayed. When “Upper Level” is pushed, “Off” message is disappeared.

6.6.3.6 Error list and recovery

► Paper Empty / Paper Mismatch

- Load specified paper in the tray 1
 - Paper does not exist in the tray1
 - Load Paper, When you still want to continue printing
- Paper mismatch in the tray 1
 - Paper is mismatched
 - Press stop key for a while, When you still want to continue printing

► Cover Open

- Cover Open
 - Cover is opened
 - Close the door, When you still want to continue printing

► Waster Tank Full or not installed

- Waste Tank Full
 - Toner of Waste toner box is full
 - Empty or Insert the waste toner box

► Paper Jam

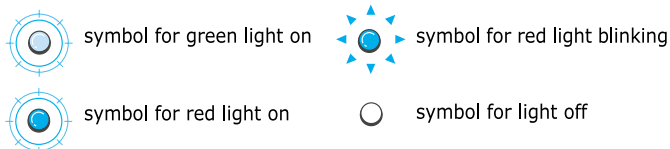
- Paper Jam at the tray1
 - Paper is not picked up
 - Cover Open /Close, When you still want to continue printing
- Paper Jam inside printer
 - There is a paper inside printer
 - After cover Open , Paper must be removed, and then close the cover

- Paper Jam at the paper exit area
 - There is a paper at exit area
 - After cover Open , Paper must be removed, and then close the cover
- Motor Lock Error
 - Motor does not run or runs abnormal speed
 - Motor or Main board must be checked
- LSU Motor Lock Error
 - LSU motor does not run or runs abnormal speed
 - Hsync is not detected
 - LSU or Main board must be checked
- Transfer Belt Error
 - ITB home sensor is not checked for a normal time
 - ITB must be checked
- Fuser Over Heat error
 - Temperature of fuser is high
 - Fuser or Main board must be checked
- Fuser Low Heat error
 - Temperature of fuser is low
 - Fuser or Main board must be checked
- Dev. Home error
 - Home of Development is not checked or checked at the abnormal time
 - Clutch of Development or Main board must be checked
- ADC not Confirm Error
 - Signal of confirmation for ADC is not detected
 - Main board must be checked

6.7 Error Message

When the printer experiences an error, the control panel will indicate an error message with the indicator lights and the Smart Panel program window will display to show the printer's status or errors. Find the light pattern below that matches the printer light pattern and follow the solutions to clear the error.

LED status legend



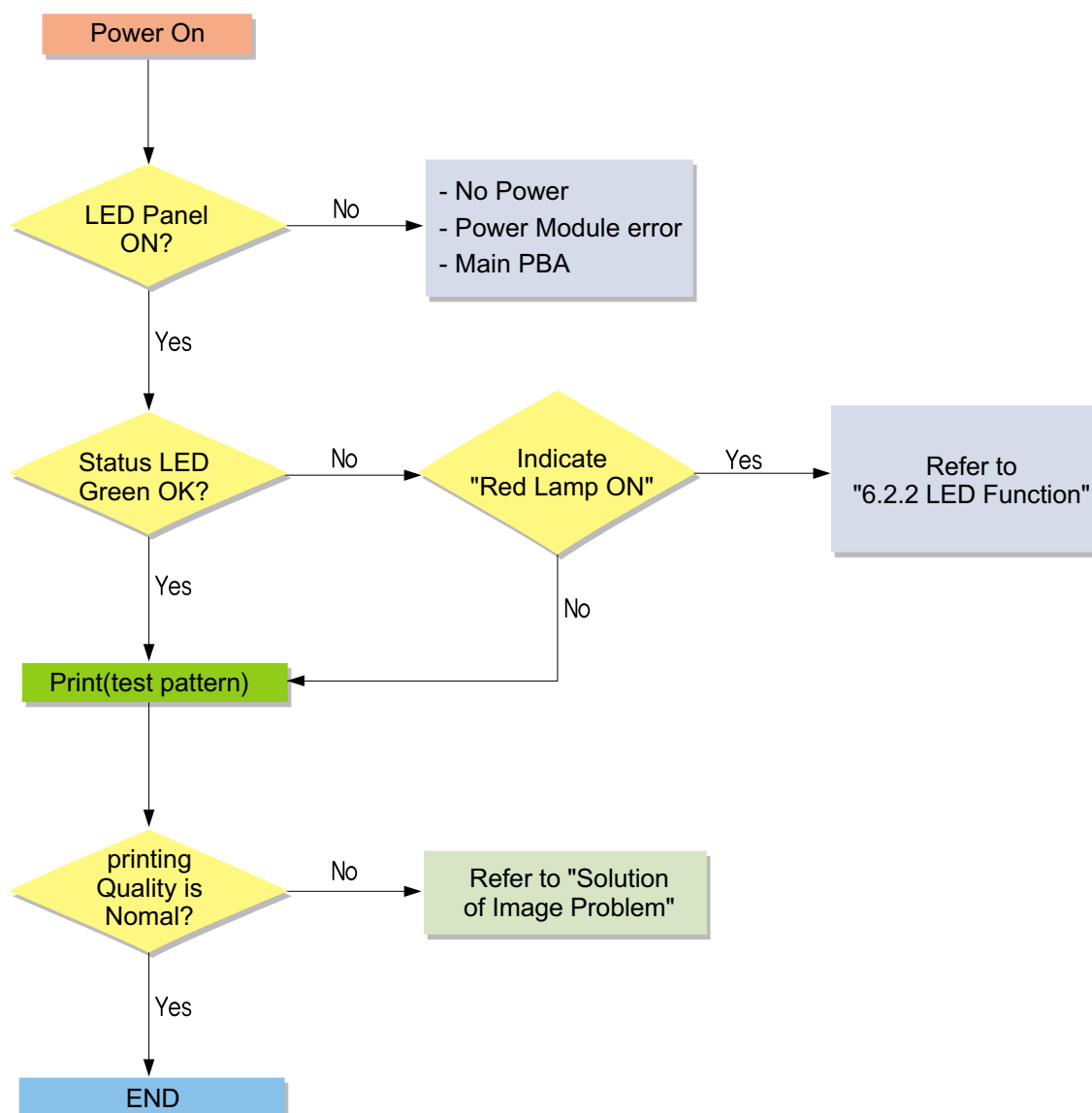
LED pattern	Possible Problem and Solution
	<p>The blinking toner cartridge is low. Order a new toner cartridge. You can temporarily improve print quality by redistributing the toner.</p>
	<p>The lighting toner cartridge is empty. Remove the old toner cartridge and install a new one.</p>
	<ul style="list-style-type: none"> · The blinking toner cartridge is totally exhausted. Remove the old toner cartridge and install a new one. · The blinking toner cartridge is wrong. Only install a Samsung toner cartridge, designed for your printer.
	<ul style="list-style-type: none"> · A paper jam has occurred. To solve the problem. · The front cover is open. Close the front cover. · There is no paper in the tray. Load paper in the tray. · The waste toner container is open or full. Check the container. · Your system has some problems. If this problem occurs, contact your service representative.

7

7. Troubleshooting

7.1 Procedure of Checking the Symptoms

Before attempting to repair the printer first obtain a detailed description of the problem from the customer.



7.2 Troubleshooting Checklist

If the printer is not working properly, consult the following checklist. If the printer does not pass a step, follow the corresponding troubleshooting suggestions.

Status	Response
Make sure that the Status LED on the control panel green and "Ready" is shown on the Smart Panel program window.	<ul style="list-style-type: none"> · If the Status LED is off, check the power cord connection. Check the power switch. Check the power source by plugging the power cord into another outlet. · If the Status LED blinks or lights red, solve the problems.
Print a demo page to verify that the printer is feeding paper correctly.	<ul style="list-style-type: none"> · If a demo page does not print, check the paper supply in the paper tray. · If the paper jams in the printer, go to "Clearing Paper Jams"
Check the demo page to see if it is printed correctly.	If there is a print quality problem, go to "Solving Print Quality Problems"
Print a short document from a software application to verify that the computer and printer are connected and communicating correctly.	<ul style="list-style-type: none"> · If the page does not print, check the cable connection between the printer and the computer. · Check the print queue or print spooler to see if the printer has been paused. · Check the software application to ensure that you are using the proper printer driver and communication port. If the page is interrupted during printing, go to "Solving General Printing Problems"
If completing the checklist does not resolve the printer problem, check the following troubleshooting sections.	<ul style="list-style-type: none"> · See "Solving General Printing Problems" · See "Solving Print Quality Problems" · See "Common Windows Problems" · See "Common Macintosh Problems" · See "Common Linux Problems"

7.3 Solving General Printing Problems

For problems with the operation of your printer, refer to the table for suggested solutions.

Problem	Possible Cause	Solution
The printer does not print.	The printer is not receiving power.	Check the power cord connections. Check the power switch and the power source.
	The printer is not selected as the default printer.	Select Samsung CLP-300 Series as your default printer.
	Check the printer for the following: <ul style="list-style-type: none"> • The printer cover is not closed. • Paper is jammed. • No paper is loaded. • A toner cartridge is not installed. 	After locating the problem, clear it. If a printer system error occurs, contact your service representative. <ul style="list-style-type: none"> • Close the printer cover. • Clear the paper jam. • Load paper. • Install the toner cartridge.
	The printer may be in manual feed mode and out of paper.	Check the message on the Smart Panel program window, add paper to the Tray and press the Stop button on the control panel.
	The connection cable between the computer and the printer is not connected properly.	Disconnect the printer cable and reconnect it.
	The connection cable between the computer and the printer is defective.	If possible, attach the cable to another computer that is working properly and try to print a document. You can also try using a different printer cable.
	The port setting is incorrect.	Check the Windows printer setting to make sure that the print job is sent to the correct port. If the computer has more than one port, make sure that the printer is attached to the correct one.
	The printer may be configured incorrectly.	Check the printer properties to ensure that all of the print settings are correct.


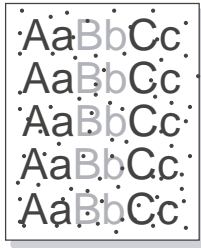
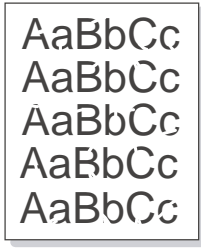
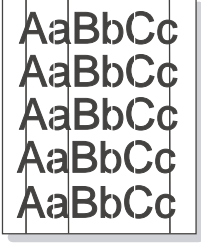
Problem	Possible Cause	Solution
The printer does not print. (continued)	The printer driver may be incorrectly installed.	Reinstall the printer driver; see the Software Section . Try printing a test page.
	The printer is malfunctioning.	Check the LEDs on the control panel to determine if the printer is indicating a system error.
Paper does not feed into the printer.	Paper has been loaded incorrectly.	Remove paper from the tray and reload it correctly. Check that the paper guides are set correctly.
	There is too much paper in the paper tray.	Remove excess paper from the tray.
	The paper is too thick.	Use only paper that meets printer specifications.
A print job is extremely slow.	The job may be very complex.	Reduce the complexity of the page(s) or try adjusting the print quality settings. Adjust the print quality settings, such as reducing the resolution. If you have set the resolution to 1200 dpi [Best] , change it to 600 dpi [Normal] or 600 dpi [Draft] . See the Software Section . Change the port setting to the USB or network port to improve print speed. Your printer prints A4-sized paper at 16 ppm in black and white mode and 4 ppm in color mode.
	If using Windows 98/Me, the Spooling Setting may be set incorrectly.	From the Start menu, choose Settings and Printers . Right-click the Samsung CLP-300 Series printer icon, choose Properties , click the Details tab, and then choose the Spool Settings button. Select the desired spool setting.
Half the page is blank.	The page orientation setting may be incorrect.	Change the page orientation in your application. For details, see the Software Section .
	The paper size and the paper size settings do not match.	Ensure that the paper size in the printer driver settings matches the paper in the tray. Or, ensure that the paper size in the printer driver settings matches the paper selection in the software application settings you use.

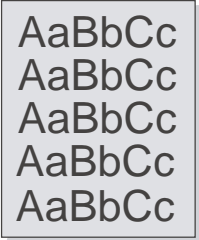
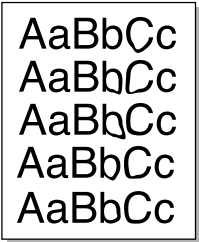
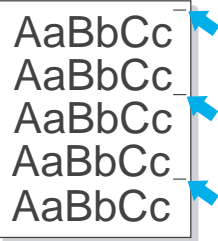
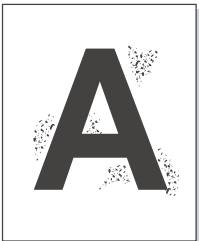
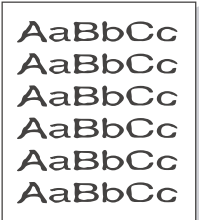
The paper keeps jamming.	There is too much paper in the paper tray.	Remove excess paper from the tray. Check that the paper guides are set correctly.
	An incorrect type of paper is being used.	Use only paper that meets printer specifications.
	There may be debris inside the printer.	After opening the front cover, remove the imaging unit and then clear the debris.
The printer prints, but the text is wrong, garbled, or incomplete.	The printer cable is loose or defective.	Disconnect and reconnect the printer cable. Try a print job that you have already printed successfully. If possible, attach the cable and printer to another computer and try a print job that you know works. Finally, try a new printer cable.
	The wrong printer driver was selected.	Check the application's printer selection menu to ensure that your printer is selected.
	The software application is malfunctioning.	Try printing a job from another application.
	The operating system is malfunctioning.	Exit Windows and reboot the computer. Turn the printer off and then back on again.
Pages print, but are blank.	The toner cartridge is defective or out of toner.	Redistribute the toner. If necessary, replace the toner cartridge.
	The file may have blank pages.	Check the file to ensure that it does not contain blank pages.
	Some parts in the printer may be defective.	Contact a service represent

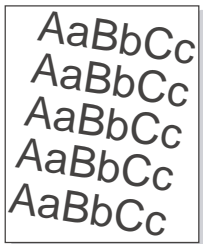
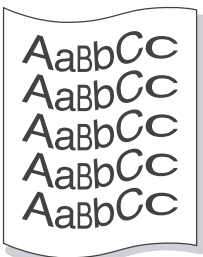
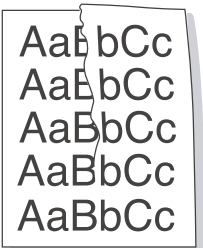
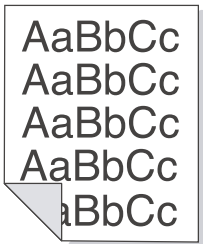
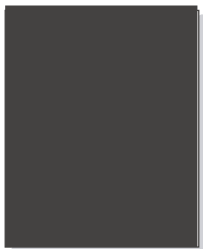


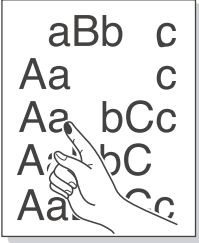
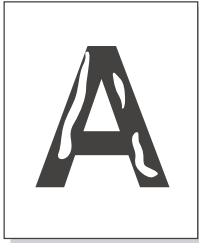
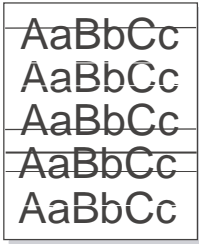
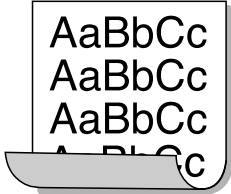
7.4 Solving Print Quality Problems

Dirt inside of the printer or improper paper loading may reduce print quality. See the table below to troubleshoot problems.

Problem	Solution
Light or faded print 	<p>If a vertical white streak or faded area appears on the page:</p> <ul style="list-style-type: none"> • The toner supply is low. You may be able to temporarily extend the toner cartridge life. If this does not improve print quality, install a new toner cartridge. • The paper may not meet paper specifications (for example, the paper is too moist or too rough). • A combination of faded or smeared defects may indicate that the printer needs cleaning.
Toner specks 	<p>The paper may not meet specifications (for example, the paper is too moist or too rough).</p>
Dropouts 	<p>If generally rounded, faded areas occur randomly on the page:</p> <ul style="list-style-type: none"> • A single sheet of paper may be defective. Try reprinting the job. • The moisture content of the paper is uneven or the paper has moist spots on its surface. Try a different brand of paper. • The paper lot is bad. The manufacturing process can cause some areas to reject toner. Try a different kind or brand of paper. • The toner cartridge may be defective. See "Vertical repetitive defects" on the next page. • If these steps do not correct the problems, contact a service representative.
Vertical lines 	<p>If black vertical streaks appear on the page:</p> <ul style="list-style-type: none"> • A imaging unit has probably been scratched. Remove the imaging unit and install a new one. <p>If white vertical lines appear on the page:</p> <ul style="list-style-type: none"> • Clean the inside of the printer. If you still have the same problems, replace the imaging unit with a new one.

Problem	Solution
Color or Black background 	<p>If the amount of background shading becomes unacceptable, the procedures below may fix the problem.</p> <ul style="list-style-type: none"> • Change to lighter weight paper. • Check the printer's environment; very dry (low humidity) or high humidity (higher than 80% RH) conditions can increase the amount of background shading. • Remove one of the old toner cartridges and install a new one.
Toner smear 	<ul style="list-style-type: none"> • Clean the inside of the printer. • Check the paper type and quality. • Remove the imaging unit and install a new one.
Vertical repetitive defects 	<p>If marks repeatedly appear on the printed side of the page at even intervals:</p> <ul style="list-style-type: none"> • Clean the inside of the printer. After cleaning the inside of the printer, if you still have the same problems, install a new toner cartridge of the problem color. • Parts of the printer may have toner on them. If the defects occur on the back of the page, the problem will likely correct itself after a few more pages. • The fusing assembly may be damaged. Contact a service representative.
Background scatter 	<p>Background scatter results from bits of toner distributed on the printed page.</p> <ul style="list-style-type: none"> • The paper may be too damp. Try printing with a different batch of paper. Do not open packages of paper until necessary so that the paper does not absorb too much moisture. • If background scatter occurs on an envelope, change the printing layout to avoid printing over areas that have overlapping seams on the reverse side. Printing on seams can cause problems. • If background scatter covers the entire surface area of a printed page, adjust the print resolution through your software application or via the printer properties window.
Misformed characters 	<ul style="list-style-type: none"> • If characters are improperly formed and producing hollowed images, the paper stock may be too slick. Try a different paper. • If characters are improperly formed and producing a wavy effect, the printer may need service. Verify that it also occurs on a demo page.

Problem	Solution
Page skew 	<ul style="list-style-type: none"> • Ensure that the paper is loaded properly. • Check the paper type and quality. • Ensure that the paper or other material is loaded correctly and the guides are not too tight or too loose against the paper stack.
Curl or wave 	<ul style="list-style-type: none"> • Ensure that the paper is loaded properly. • Check the paper type and quality. Both high temperature and high humidity can cause paper curl. • Turn the stack of paper over in the tray. Also try rotating the paper 180° in the tray.
Wrinkles or creases 	<ul style="list-style-type: none"> • Ensure that the paper is loaded properly. • Check the paper type and quality. • Turn the stack of paper over in the paper tray. Also try rotating the paper 180° in the tray.
Back of printouts are dirty 	<ul style="list-style-type: none"> • Check for leaking toner. Clean the inside of the printer.
Solid Color or Black pages 	<ul style="list-style-type: none"> • The toner cartridge may not be installed properly. Remove the toner cartridge and reinsert. • The toner cartridge may be defective and need replacing. Install a new toner cartridge. • The printer may require repair. Contact a service representative.

Problem	Solution
Loose toner 	<ul style="list-style-type: none"> • Clean the inside of the printer. • Check the paper type and quality. • Install a new toner cartridge. • If the problem persists, the printer may require repair. Contact a service representative.
Character Voids 	<p>Character voids are white areas within characters that should be solid black:</p> <ul style="list-style-type: none"> • You may be printing on the wrong surface of the paper. Remove the paper and turn it over. • The paper may not meet paper specifications.
Horizontal stripes 	<p>If horizontally aligned color or black streaks or smears appear:</p> <ul style="list-style-type: none"> • A toner cartridge may be installed improperly. Remove the toner cartridge and reinsert. • A toner cartridge may be defective. Install a new toner cartridge. • If the problem persists, the printer may require repair. Contact a service representative.
Curl 	<p>If the printed paper is curled or paper does not feed into the printer:</p> <ul style="list-style-type: none"> • Turn the stack of paper over in the paper tray. Also try rotating the paper 180° in the tray.

7.5 Common Windows Problems

Problem	Possible Cause and Solution
"File in Use" message appears during installation.	Exit all software applications. Remove all software from the StartUp Group, then restart Windows. Reinstall the printer driver.
"Error Writing to LPTx" message appears.	<ul style="list-style-type: none"> • Ensure that all cables are connected correctly and the printer is on. • If bi-directional communication is not turned on in the driver, it will also cause this message.
"General Protection Fault", "Exception OE", "Spool32", or "Illegal Operation" messages appear.	Close all other applications, reboot Windows and try printing again.
"Fail To Print", "A printer timeout error occurred." messages appear.	These messages may appear during printing. Just keep waiting until the printer finishes printing. If the message appears in standby mode or after printing has been completed, check the connection and/or whether an error has occurred.

NOTE: Refer to the Microsoft Windows 98/Me/NT 4.0/2000/2003/XP User's Guide that came with your PC for further information on Windows error messages.

7.6 Common Macintosh Problems

Problem	Possible Cause and Solution
The printer does not print a document from Acrobat Reader.	You should change the Print Method option to Print as Image when you print from Acrobat Reader.
The document has printed, but the print job has not disappeared from the spooler in Mac OS 10.3.2.	Update your Mac OS to OS 10.3.3 or higher.

7.7 Common Linux Problems

Problem	Possible Cause and Solution
I can't change settings in the configuration tool.	You need to have administrator privileges to be able to change global settings.
I am using the KDE desktop but the configuration tool and LLPR won't start.	You may not have the GTK libraries installed. These usually come with most Linux distributions, but you may have to install them manually. Refer to your distribution's installation manual for more details about installing additional packages.
I just installed this package but can't find entries in the KDE/Gnome menus.	Some versions of the KDE or GNOME desktop environments may require that you restart your session for the changes to take effect.
I get a "Some options are not selected" error message while editing the printer settings.	Some printers have conflicting settings, meaning that some settings for two options can't be selected at the same time. When you change a setting and the Printer Package detects such a conflict, the conflicting option is changed to a "No Choice" value. You have to choose an option that does not conflict before being able to submit the changes.
I can't make a printer the system default.	<p>In some conditions, it may not be possible to change the default queue. This happens with some variants of LPRng, especially on recent RedHat systems that use the "printconf" database of queues.</p> <p>When using printconf, the /etc./printcap file is automatically refreshed from the database of printers managed by the system (usually through the "print-tool" command), and the queues in /etc./printcap.local are appended to the resulting file. The default queue in LPRng is defined as the first queue in /etc./printcap, and therefore it is not possible for the Linux Printer Package to change the default when some queues have otherwise been defined using printtool.</p> <p>LPD systems identify the default queue as the one named "lp". Thus, if there is already a queue by this name, and if it doesn't have an alias, then you won't be able to change the default. To work around this, you can either delete the queue or rename it by manually editing the /etc./printcap file.</p>
The N-up setting does not work correctly for some of my documents.	The N-up feature is achieved through post-processing of the PostScript data that is sent to the printing system. However, such post-processing can only be adequately achieved if the PostScript data conforms to the Adobe Document Structing Conventions. Problems may arise when using N-up and other features that rely on post-processing if the document being printed isn't compliant.
I am using BSD lpr (Slackware, Debian, older distributions) and some options chosen in LLPR don't seem to take effect.	Legacy BSD lpr systems have a hard limitation on the length of the option string that can be passed to the printing system. As such, if you selected a number of different options, you may have exceeded the length of the options and some of your choices won't be passed to the programs responsible for implementing them. Try to select fewer options that deviate from the defaults, to save on memory usage.

Problem	Possible Cause and Solution
I am trying to print a document in Landscape mode, but it prints rotated and cropped.	Most Unix applications that offer a Landscape orientation option in their printing options will generate correct PostScript code that should be printed as is. In that case, you need to make sure that you leave the LLPR option set to its default Portrait setting, to avoid unwanted rotations of the page that would result in cropped output.
Some pages come out all white (nothing is printed), and I am using CUPS.	If the data being sent is in Encapsulated PostScript (EPS) format, some earlier versions of CUPS (1.1.10 and before) have a bug preventing them from being processed correctly. When going through LLPR to print, the Printer Package will work around this issue by converting the data to regular PostScript. However, if your application bypasses LLPR and feeds EPS data to CUPS, the document may not print correctly.
I can't print to an SMB (Windows) printer.	To be able to configure and use SMB-shared printers (such as printers shared on a Windows printer), you need to have a correct installation of the SAMBA package that enables that feature. The "smbclient" command should be available and usable on your system.
My application seems to be frozen while LLPR is running.	Most Unix applications will expect a command like the regular "lpr" command to be non-interactive and thus return immediately. Since LLPR is waiting for user input before passing the job on to the print spooler, very often the application will wait for the process to return, and thus will appear to be frozen (its windows won't refresh). This is normal and the application should resume functioning correctly after the user exits LLPR.
How do I specify the IP address of my SMB server?	It can be specified in the "Add Printer" dialogue of the configuration tool, if you don't use the CUPS printing system. Unfortunately, CUPS currently doesn't allow you to specify the IP address of SMB printers, so you will have to be able to browse the resource with SAMBA in order to be able to print.
Some documents come out as white pages when printing.	Some versions of CUPS, especially those shipped with Mandrake Linux before the 8.1 release, have some known bugs when processing PostScript output from some applications. Try upgrading to the latest version of CUPS (at least 1.1.14). Some RPM packages for the most popular distributions are provided as a convenience with this Linux Printing Package.
I have CUPS and some options (such as N-up) seem to be always enabled even though I don't choose them in LLPR.	There may be some local options defined in your ~/.lpoptions file, which are manipulated by the lpoptions command. These options are always used if not overridden by LLPR settings. To get rid of all options for a printer, run the following command, replacing "printer" with the name of the queue: lpoptions -x printer
I configured a printer to print to a file, but I get "Permission denied" errors.	Most printing systems will not run as the super-user but as a special user (usually "lp"). Therefore, make sure that the file you have chosen to print to is accessible to the user owning the spooler daemon.

Problem	Possible Cause and Solution
On my PCL (or GDI) printer, I sometimes get error messages printing instead of my document.	Unfortunately, some Unix applications may generate non-compliant PostScript output that may not be supported by Ghostscript, or even the printer itself in PostScript mode. You can try to capture the output to a file and view the results with Ghostscript (gv or ghostview will allow you to do so interactively) and see if you get error messages. However, since the application is probably at fault, contact your software vendor to inform them of the issue.
Some color images come out all black.	This is a known bug in Ghostscript (until GNU Ghostscript version 7.05) when the base color space of the document is indexed color space and it is converted through CIE color space. Because Postscript uses CIE color space for Color Matching System, you should upgrade Ghostscript on your system to at least GNU Ghostscript version 7.06 or later. You can find recent Ghostscript versions at www.ghostscript.com .

7.8 Major Problems Trouble shooting

7.8.1 Vertical Line and Band

Error	Vertical Line and Band
[Description]	<ol style="list-style-type: none"> 1. Straight thin black vertical line occurs in the printing. 2. Dark black vertical band occur in the printing.
[Wrong Part]	<ol style="list-style-type: none"> 1. LSU 2. Developer
[Check and Cause]	<ol style="list-style-type: none"> 1. Damaged develop roller in the Developer. Deformed Doctor-blade or cleaningblade. 2. Scratched surface of the discharge roller in the developer. 3. Partly depression or deformation on the surface of the transfer roller.
[Solution]	<ol style="list-style-type: none"> 1. If causes 1 and 2 occur in the developer unit, replace the developer and try to print out. 2. Replace the transfer roller if occurred as No. 3.
[Etc]	

7.8.2 Vertical White Line

Error	Vertical White Line
[Description]	White vertical voids in the image.
[Wrong Part]	1.LSU
[Check and Cause]	<ol style="list-style-type: none"> 1. Foreign matter stuck onto the window of internal lenses of LSU mirror. 2. Foreign matter or toner particles between the developer roller and blade. (In case the life of the developer has been expired, white lines or light image occur in front of the image.) 3. It may occur when Burr and foreign substances are on the window of the developer frame. 4. If the fuser is defective, voids occur periodically at the top of a black image.
[Solution]	<ol style="list-style-type: none"> 1. Foreign matter stuck onto the window : Clean the LSU window with recommended cleaner(IPA) Clean the window with a clean cotton swab. 2. Foreign matter in the LSU : Open the cover of LSU and clean with a cotton swab on the surface of the reflex mirror. 3. No 3. : Remove the foreign matter and burr of the exposure window. (Developer cartridge) 4. No. 4. : Open the front cover and check ribs that corresponds to the position of the voids. Remove if found. 5. If the problems are not solved, replace the developer cartridge.

7.8.3 Light Image

Error	Light Image
[Description]	1. The printed image is light, with no ghost.
[Wrong Part]	1. Developer 2. HVPS
[Check and Cause]	1. Develop roller is stained when the toner of developer cartridge is almost consumed. 2. Ambient temperature is below than 10°C. 3. Bad contact caused by the toner stains between the high voltage terminal in the HVPS and the one in the set. 4. Abnormal output from the HVPS.
[Solution]	1. Replace the developer cartridge and try to print out. 2. Wait 30 minutes after printer is powered on before you start printing. 3. Clean up the contaminated area by the toner. 4. Replace the HVPS if the problems are not solved by the above four directions.

7.8.4 Dark Image or black

Error	Dark Image or black
[Description]	The printed image is dark.
[Wrong Part]	1. HVPS
[Check and Cause]	1. No charge voltage in the HVPS board. 2. Charge voltage is not turned on due to the bad contacts between power supply in the side of the Developer and charge terminal of HVPS.
[Solution]	1. Clean the high voltage charge terminal. 2. Check the state of the connector which connects the engine board and HVPS. 3. Replace the HVPS if not solved by the above direction 1 and 2.

7.8.5 Background

Error	Background
[Description]	Light dark background appears in whole area of the printing.
[Wrong Part]	1. HVPS 2. Developer
[Check and Cause]	1. Does character exist less than 2% per a page, and hasn't it been used long time? 2. Does recycle paper be used? 3. Has the life span of the developer ended? 4. Is the movement(Up and Down) of the transfer roller smooth? 5. Is the HVPS normal?
[Solution]	1. The toner cartridge is basically designed to print 3,000 sheets with 5% image. If it prints more than 3,000 sheets (around 5,000 sheets) with 2% image, a background can be occurred. 2. The B/S is not guaranteed if using recycle paper. 3. Replace the developer when the life span of it has been ended. 4. Clean the bushing part of the transfer roller. 5. If the problem is still not solved, replace the developer.

7.8.6 JAM 0

Error	JAM 0
[Description]	1. Paper is not exited from the cassette. 2. Jam-0 occurs if the paper feeds into the printer.
[Wrong Part]	1. Sensor 2. Solenoid 3. Pick-up roller 4. Main B'D
[Check and Cause]	1. Check the Solenoid by using EDC mode. 2. Check if the pad is loose due to bad sealing of the side-pad. 3. Check the surface of the roller-pickup for foreign matter. 4. If the paper feeds into the printer and Jam 0 occurs, perform EDC to check feed-sensor of the engine board.
[Solution]	1. Replace the solenoid. 2. Replace the side-pad Assembly L or R, if necessary. 3. Clean with soft cloth dampened with IPA(Isopropyl Alcohol) or water. 4. Replace the Main B'D and/or Sensor.

7.8.7 JAM 1

Error	JAM 1
[Description]	<ol style="list-style-type: none"> 1. Recording paper is jammed in front of or inside the fuser. 2. Recording paper is stuck in the discharge roller and in the fuser just after passing through the Actuator-Feed.
[Wrong Part]	<ol style="list-style-type: none"> 1. Sensor
[Check and Cause]	<ol style="list-style-type: none"> 1. If the recording paper is jammed in front of or inside the fuser. 2. If the recording paper is stuck in the discharge roller and the fuser just after passing through the Actuator-Feed, Feed Actuator may be defective.
[Solution]	<ol style="list-style-type: none"> 1. Replace the SMPS. 2. Reassemble the Actuator-Feed and Spring-Actuator if the returning is bad.

7.8.8 Multi-Feeding

Error	Multi-Feeding
[Description]	Multiple sheets of paper are fed at once.
[Wrong Part]	<ol style="list-style-type: none"> 1. Sensor 2. Solenoid
[Check and Cause]	<ol style="list-style-type: none"> 1. Solenoid malfunction(the solenoid does not work properly) 2. Pad-Friction is contaminated with foreign matter.(oil...) 3. The face of paper is blended.
[Solution]	<ol style="list-style-type: none"> 1. Replace the solenoid if necessary. 2. Clean the pad friction with soft clothe dampened with IPA(Isopropyl Alcohol). 3. Use the smooth paper.

7.8.9 Not function of the gear of the fuser due to melting away

Error	Not function of the gear of the fuser due to melting away
[Description]	The motor breaks away from its place due to gear melting away.
[Wrong Part]	<ol style="list-style-type: none"> 1. Fuser 2. Main PBA
[Check and Cause]	Check the operation of Fuser Erasing Lamp
[Solution]	<ol style="list-style-type: none"> 1. Replace the Fuser. 2. Replace the Main Control board.

7.8.10 Paper Empty

Error	Paper Empty
[Description]	The paper lamp on the operator panel is on even when paper is loaded in the cassette.
[Wrong Part]	1. Actuator 2. Sensor
[Check and Cause]	1. Bending or deformation of the actuator of the paper sensor. 2. The function of the engine board is defective Perform
[Solution]	1. Replace the defective actuator. 2. Replace the engine board.

7.8.11 Cover Open

Error	Cover Open
[Description]	The ERROR lamp is on even when the print cover is closed.
[Wrong Part]	1. Hook Lever in the Front / Jam cover
[Check and Cause]	1. The Hook Lever in the top cover may be defective. 2. Check the connector (Main B' D) and circuit of the cover switch department in the Main Control board.
[Solution]	1. Replace the hook lever, if defective. 2. Check the insertion of the Cover Open S/W Connect. 3. Replace the Main Control board or Cover Open S/W.

7.8.12 Defective motor operation

Error	Defective motor operation
[Description]	Main motor is not driving when printing, and paper does not feed into the printer, resulting 'Jam 0'.
[Wrong Part]	1. Main PBA 2. Motor Harness
[Check and Cause]	1. Motor harness or sub PCB may be defective.
[Solution]	1. Check the motor harness, replace it, if defective. 2. Check 24V in the SMPS 3. Check Front Cover or Jam cover are opened. 4. Replace the Main PBA, if necessary.

7.8.13 No Power

Error	No Power
[Description]	When system power is turned on, all lamps on the operator panel do not come on.
[Wrong Part]	1. SMPS
[Check and Cause]	1. Check if the power input and SMPS output are normal. 2. Check the inferiority of LED -Panel on the front-cover if the LED of Panel does not appear after normal warmingup.
[Solution]	1. Replace the power supply cord or SMPS. 2. Replace the control board. 3. Replace the LED-panel.

7.8.14 Vertical Line Getting Curved

Error	Vertical Line Getting Curved
[Description]	When printing, vertical line gets curved.
[Wrong Part]	1. LSU 2. Main PBA
[Check and Cause]	1. If the supply of +24v is unstable in the Main Control board linking with LSU
[Solution]	1. Replace LSU. 2. Replace the Main Control board.

7.8.15 LSU Error

Error	LSU Error
[Description]	The printing is stop in the fad status, With LSU Error SM Message
[Wrong Part]	1. LSU 2. Main Controller 3. Micro Switch Harness
[Check and Cause]	1. Foreign matter stuck onto the window of internal lenses of LSU mirror 2. Main Controller LSU Part defect 3. Micro Switch Harness
[Solution]	1. Cleaning foreign matter in LSU mirror 2. Replace Main Controller 3. Replace Micro Switch Harness

8. Exploded Views and Parts List

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Way to observe Part Code & Description

Part code and Description is quoted and controlled by determined standard. Refer to this determined standard, it will help with ordering Part.

- There are two kinds of Part code inscription type.

●●●●●●●●●●	ex) 2007-007961	R-CHIP
■ ■ ● ● ● ● ● ■	ex) JB96-01268A	ELA UNIT-COVER TOP
It shows part specific		
(● : figure, ■ : character (alphabet))		

Type 1 : Controlled by Company : It can be commonly used for all kinds of product SEC produce. Mostly, electronics Parts.

Type 2 : Controlled by Division : It is used or one produce. Mostly, Mostly, mechanical Parts.

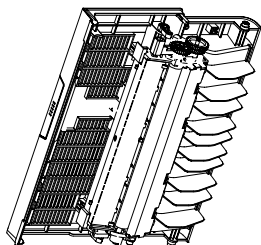
- **A/S privately used part** : It is only used for A/S .

- **Ass'y part** : Assembled by more than 2 Parts. If necessary part is not A/S Part, Ass'y part including necessary par can be used. It is shown in the diagram and drawing of SVC manual.

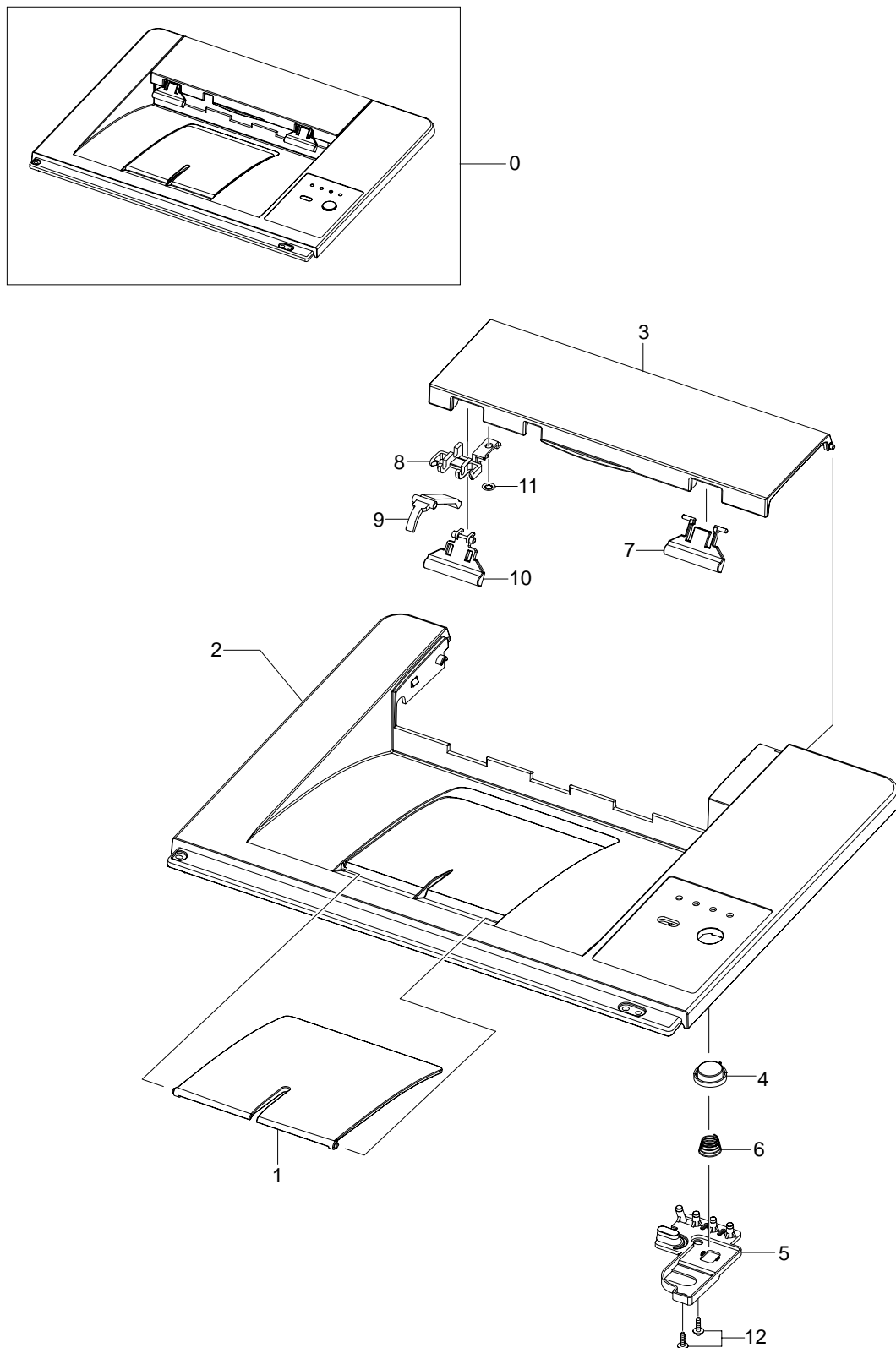
- Ass'y part and A/S privately used Part is distinguished by part Code and Description. The are inscription type 2. It is recognized by Part character and front side of description.

DIVISION	PART CODE	DESCRIPTION
A/S Private	**81-***** (JB81-00039A)	AS-***** (AS-USE)
ASS'Y Part	**75-***** (JB75-00068A)	MEC-***** (MEC-CHUTE)
ASS'Y Part	**92-***** (JB92-01131A)	PBA ***** (PBA MAIN-CONTROLLER)
ASS'Y Part	**97-***** (JB97-01089A)	MEA ***** (MEA UNIT-PULLEY IDLE)

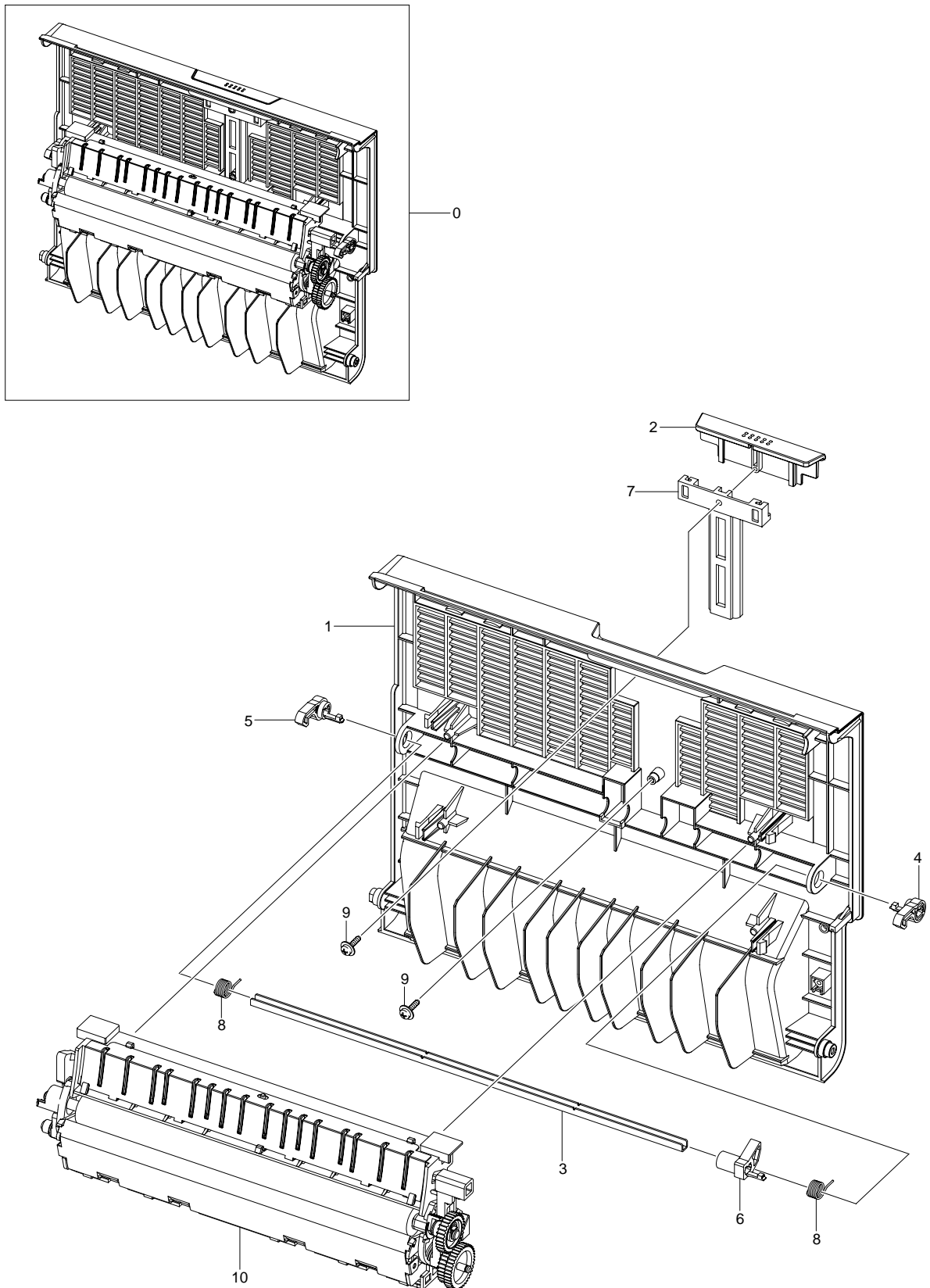
8.1 Main



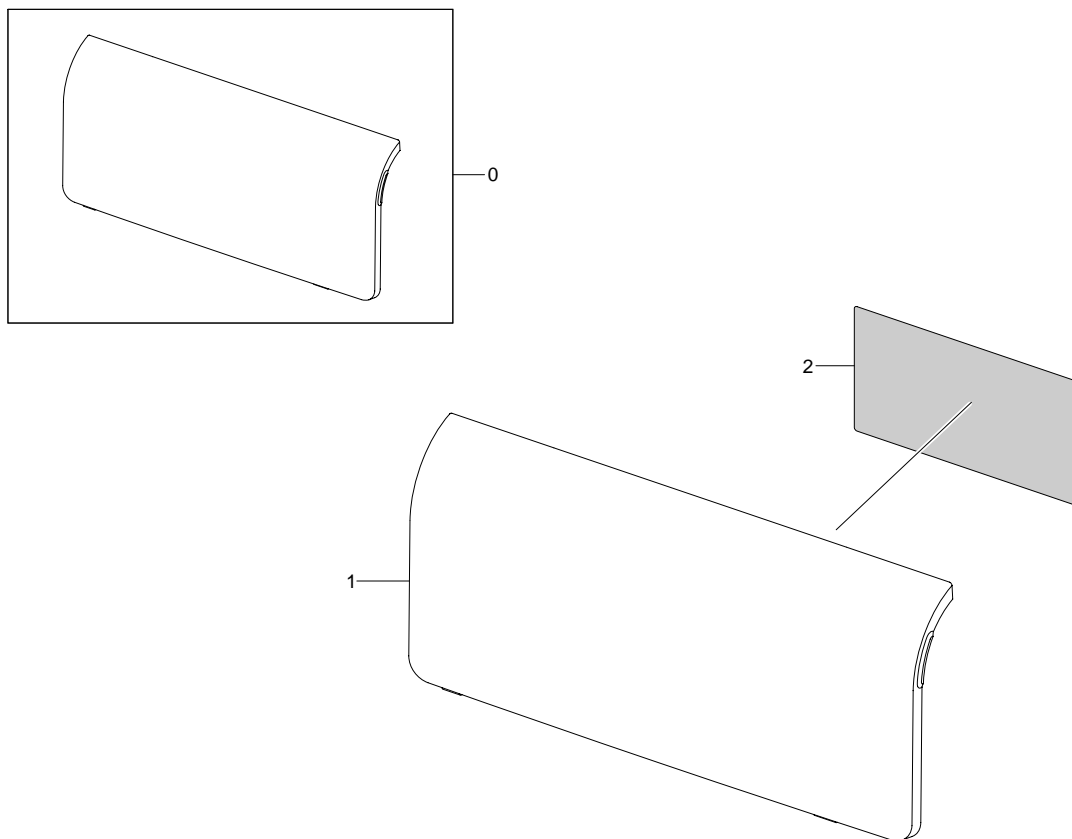
8.2 Top Cover



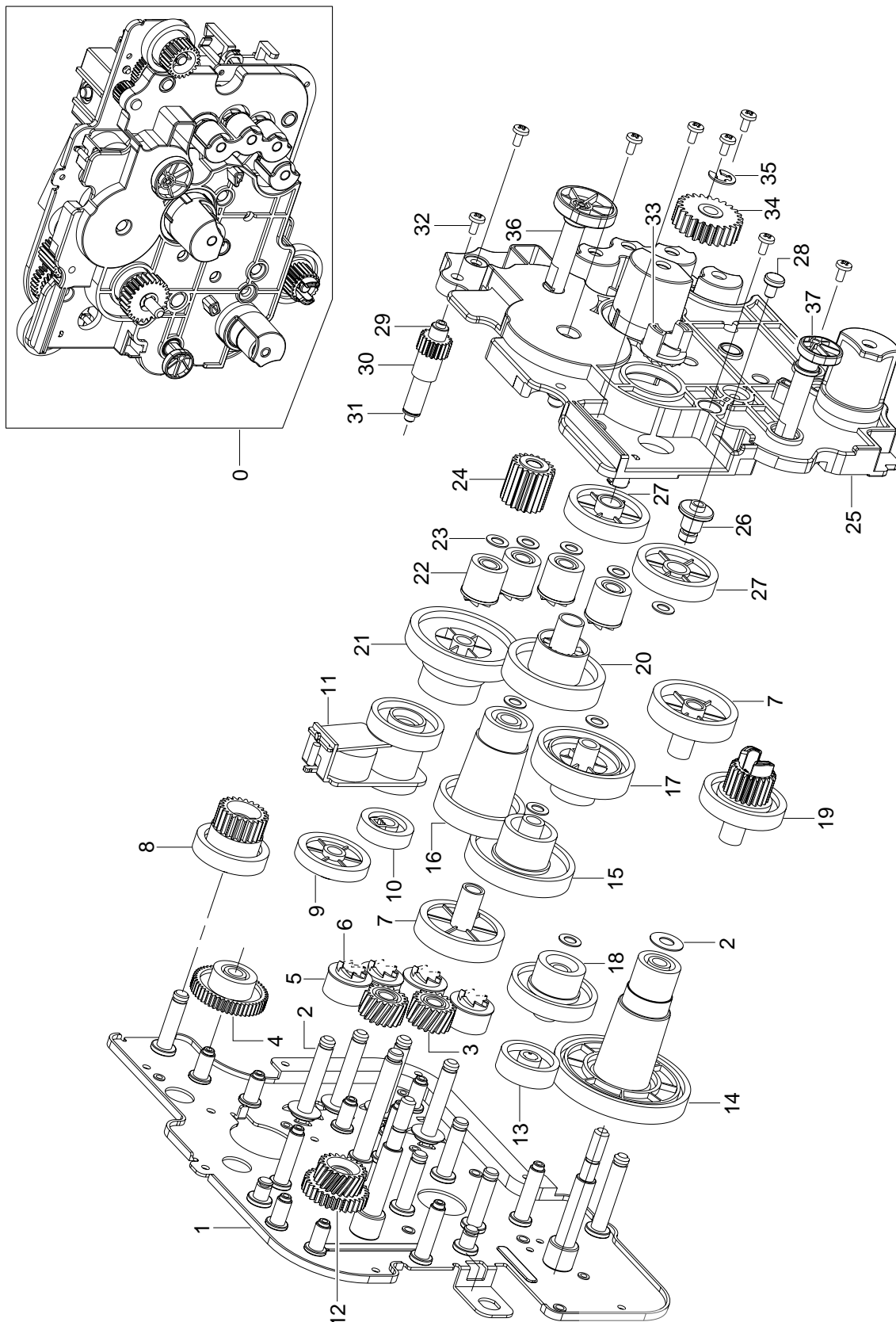
8.3 Rear Cover



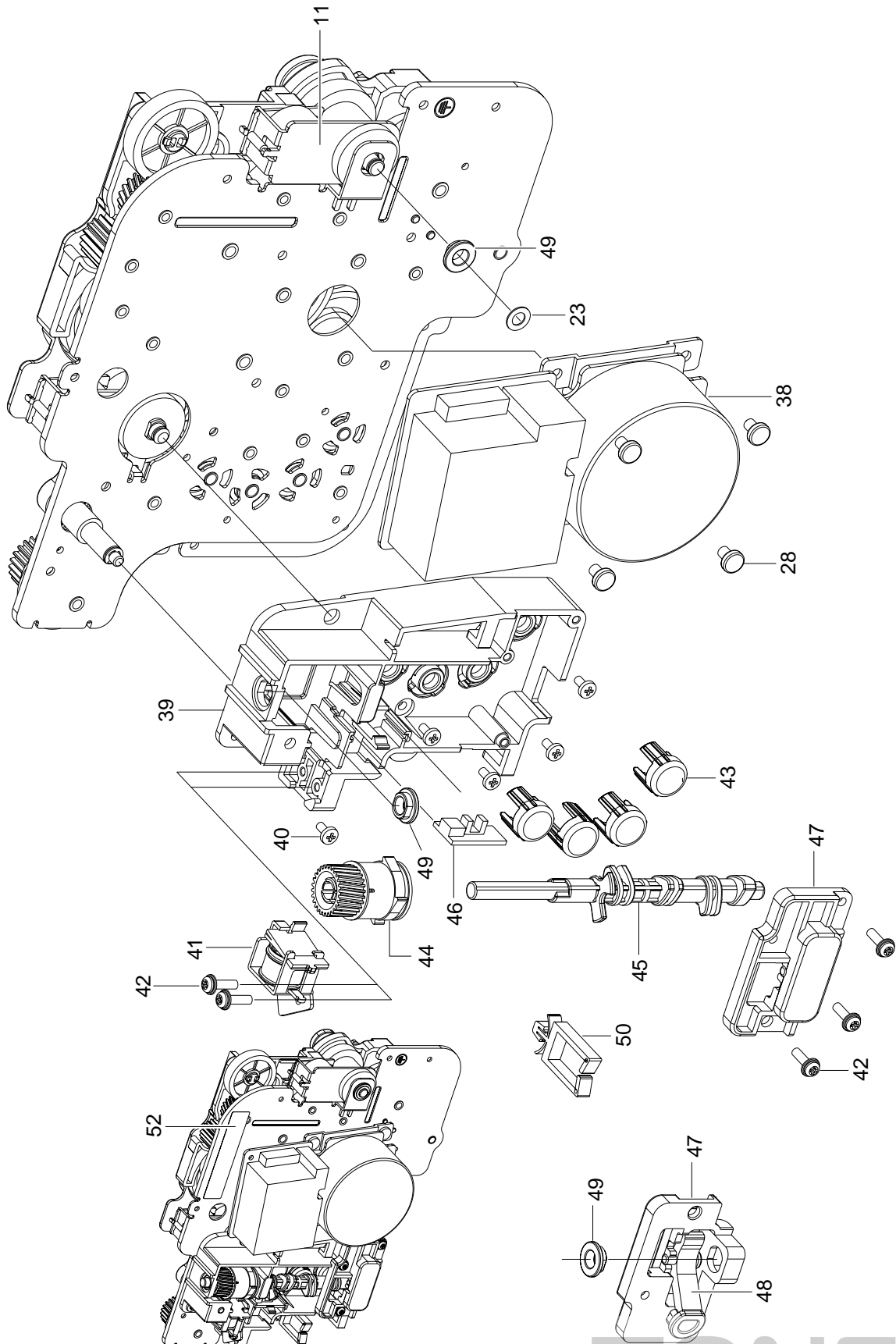
8.4 Front Cover



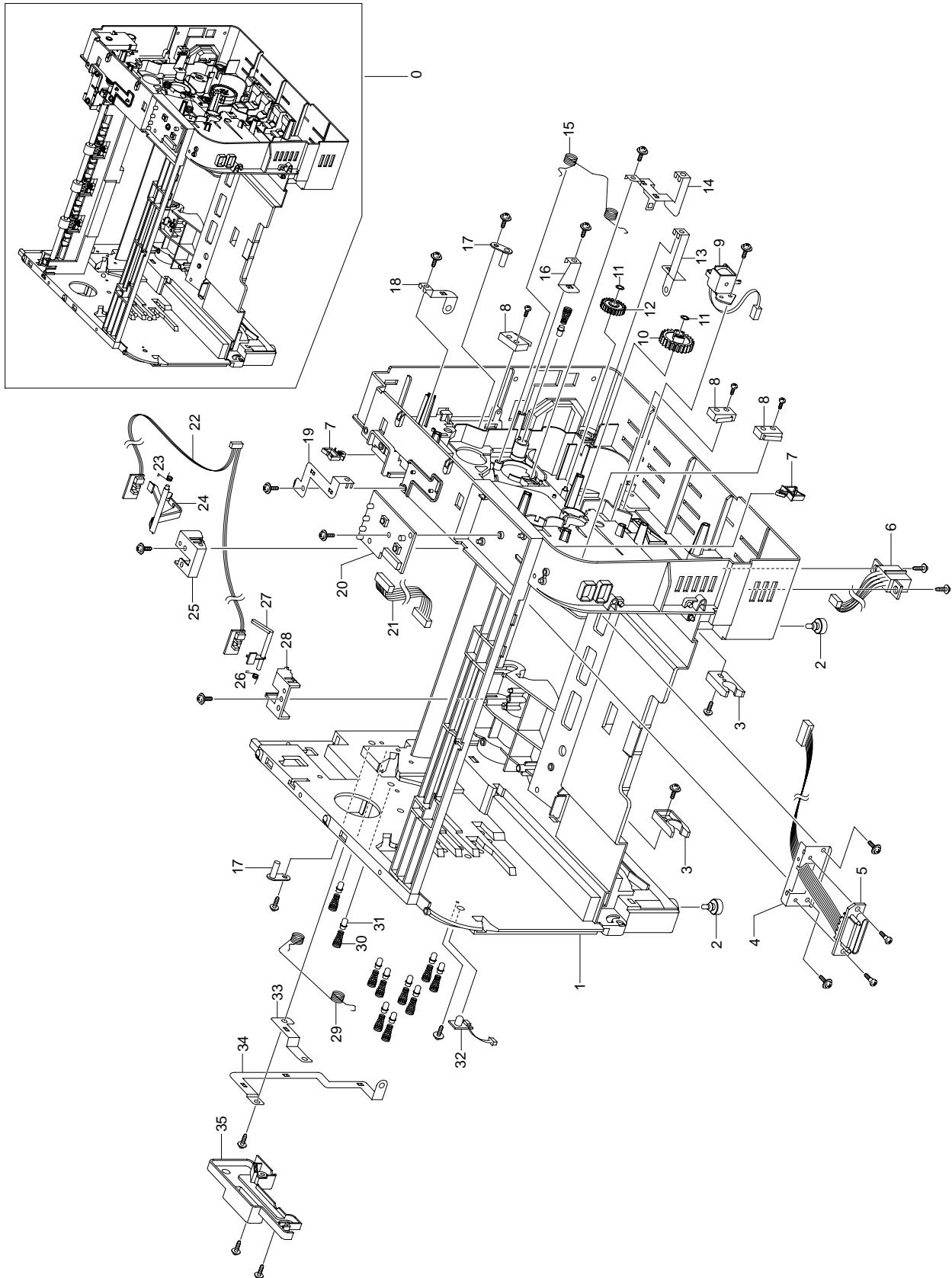
8.5 Main Driver(1)



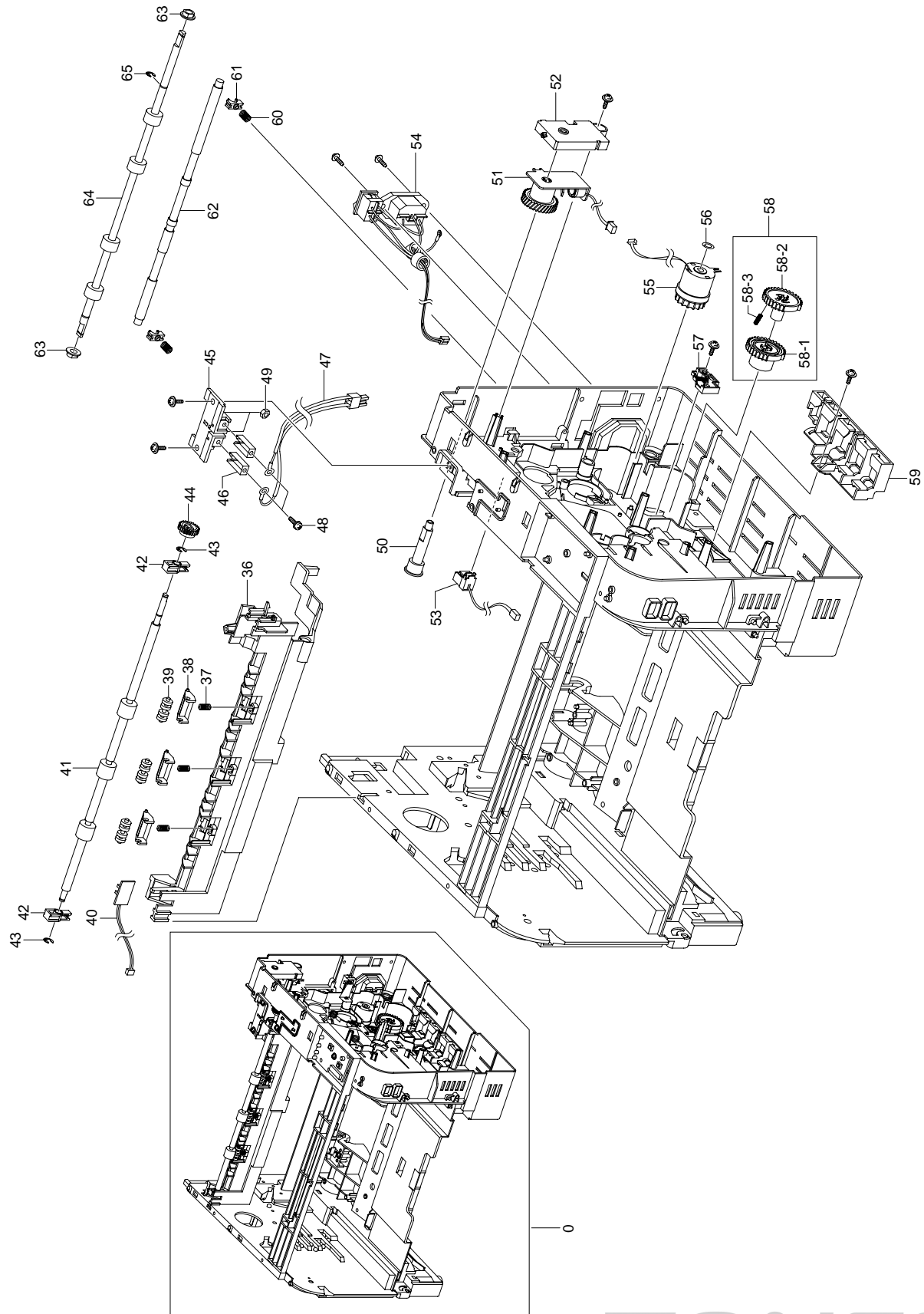
Main Driver(2)



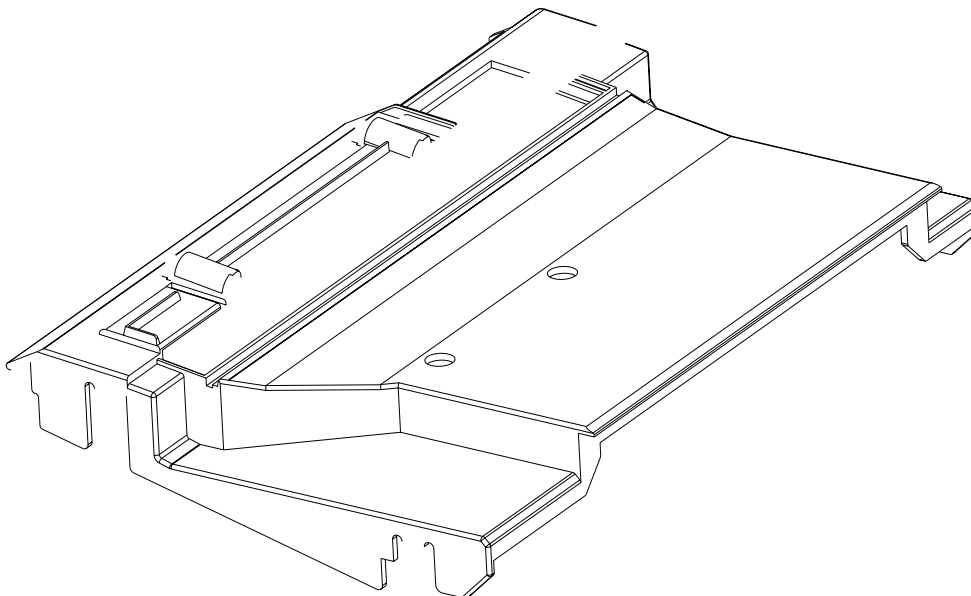
8.6 Main Frame(1)



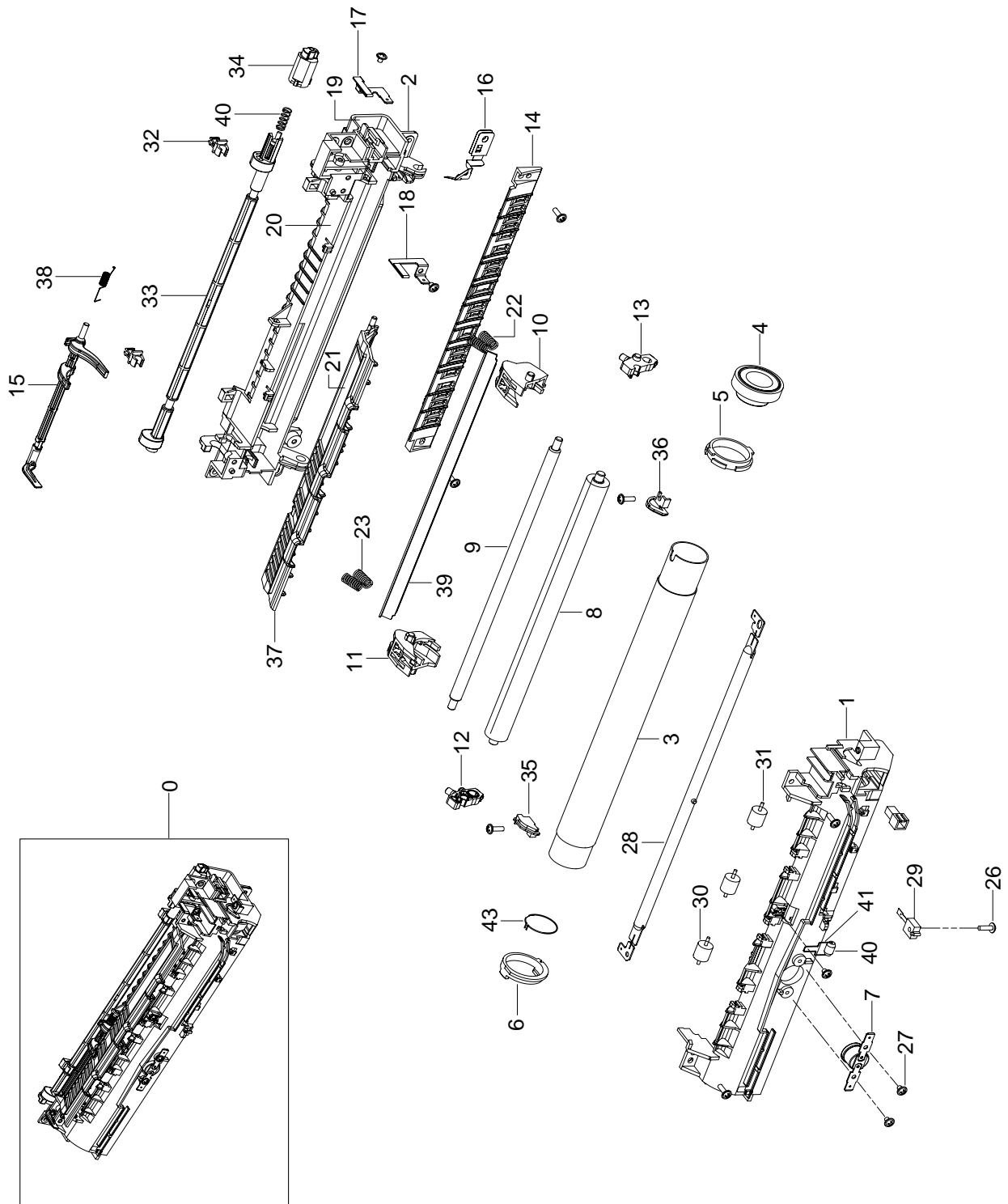
Main Frame(2)



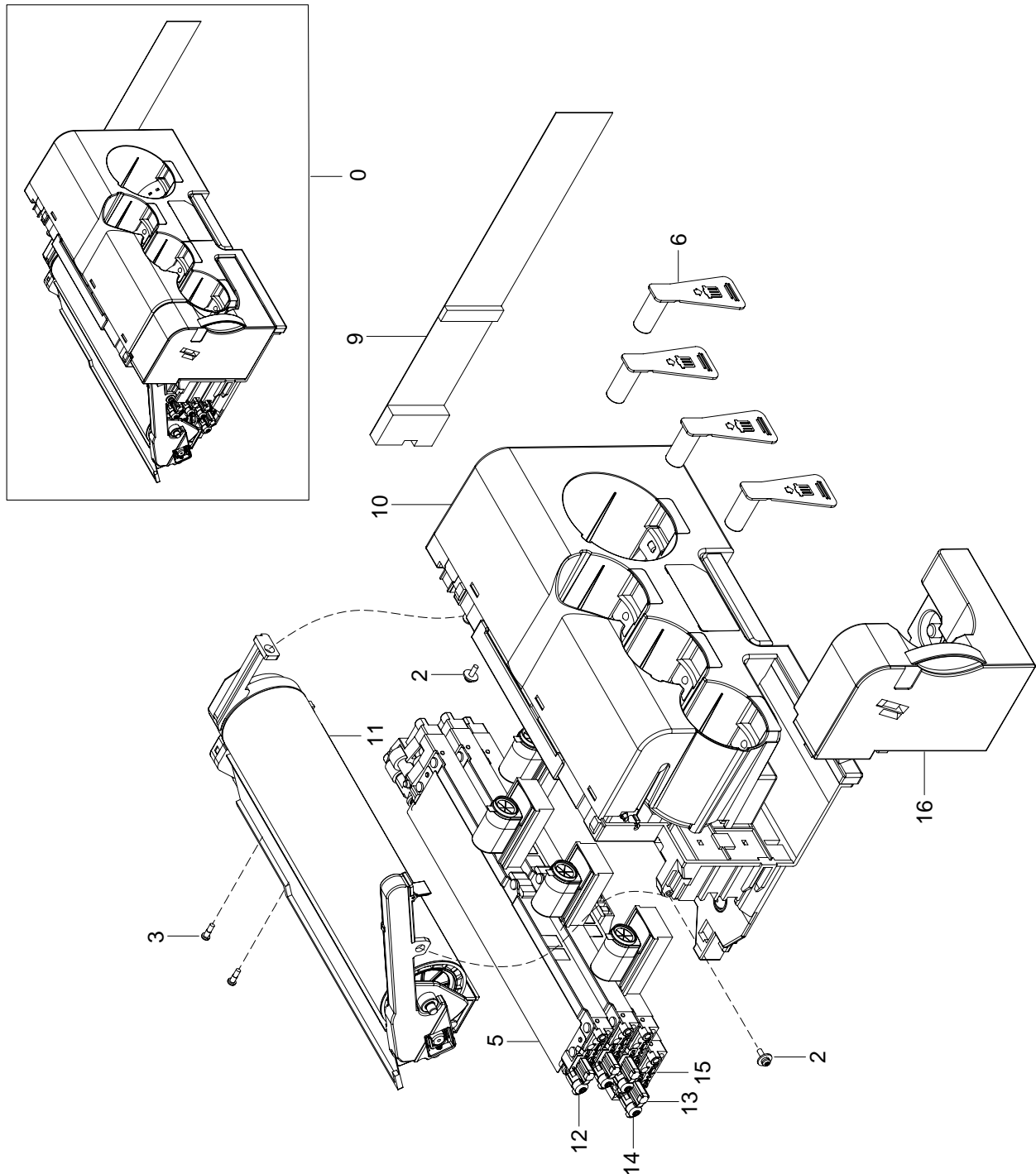
8.7 LSU Cover



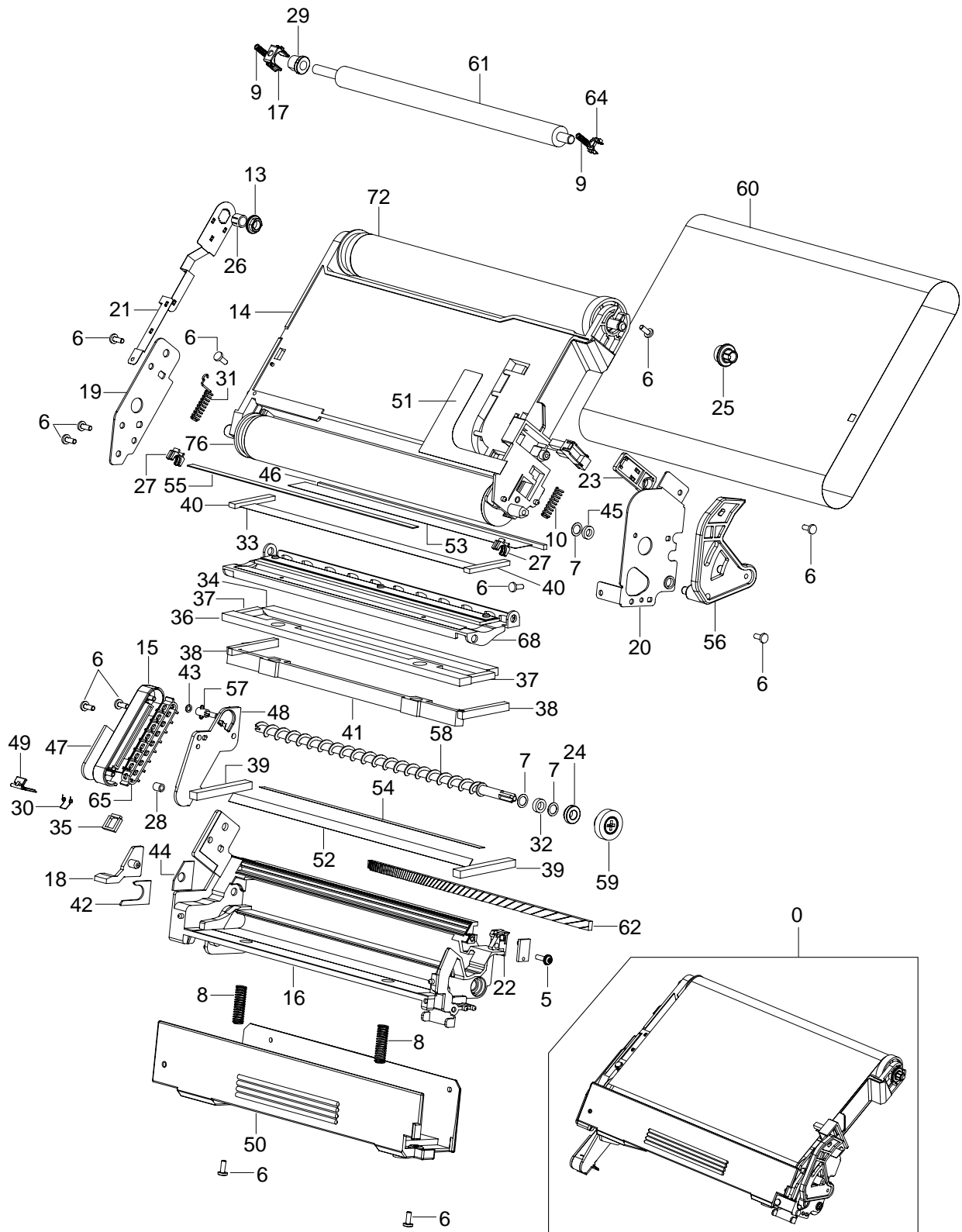
8.8 Fuser Unit



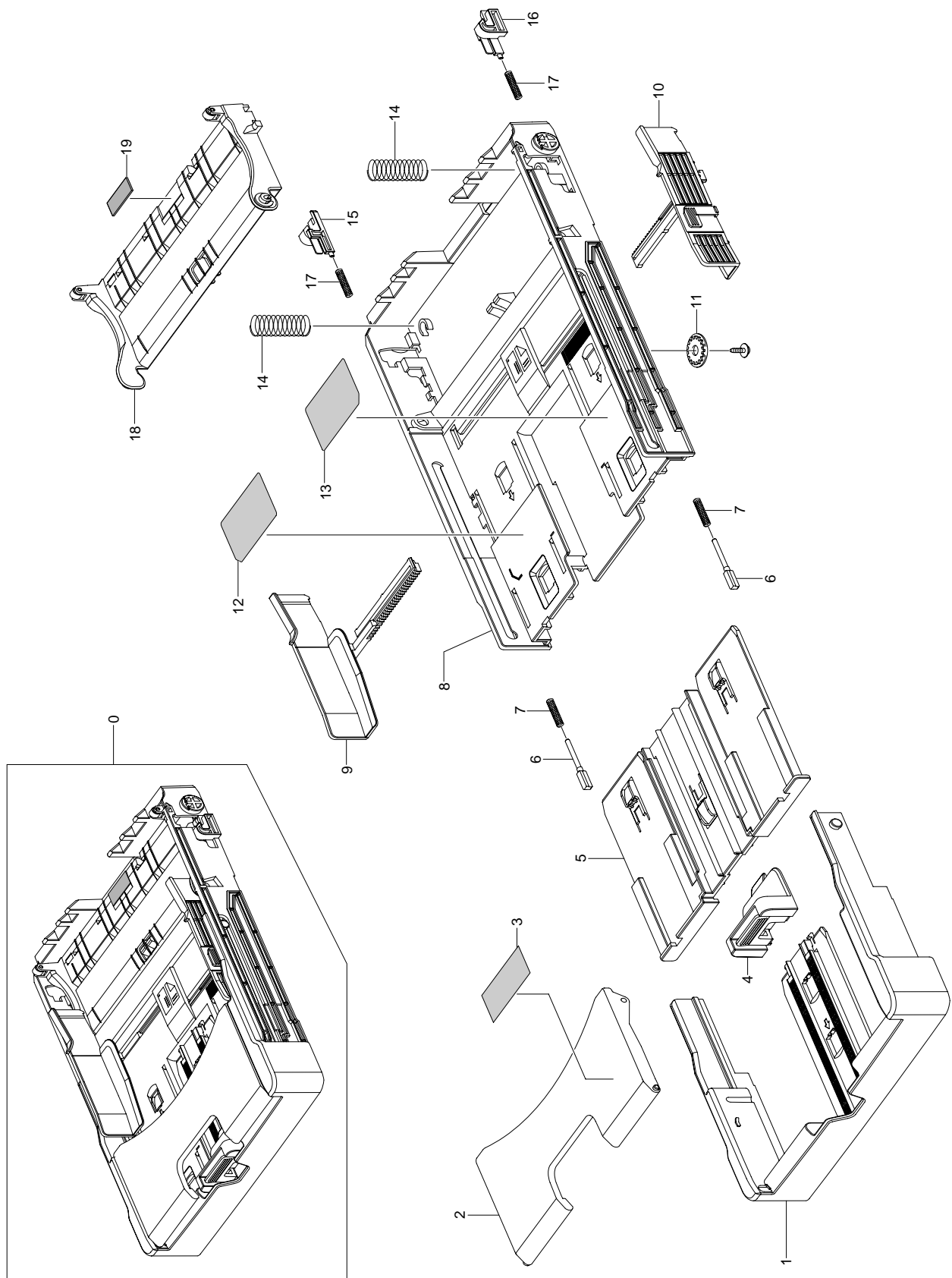
8.9 ELA-UNIT OPC DEV



8.10 ITB Unit



8.11 Casstte Unit



Service Parts List (Model code : CLP-300/XSG)

SA : SERVICE AVAILABLE SNA : SERVICE not AVAILABLE DNA : DELIVERY not AVAILABLE

Drawer#	SEC-Code	Description & Specification	Location	Service
8.1-1	JC97-02330A	MEA UNIT-FRAME;CLP-300,SEC,WORLD,-,-,-	Z4398	SA
8.1-2	JC63-00842A	COVER-M-LEFT SIDE;CLP-300,ABS FR,T2.5,23	Z4399	SA
8.1-3	JC63-00847A	COVER-M-DUMMY FRONT;CLP-300,ABS FR,T2.5,	Z4400	SA
8.1-4	JC63-01102B	SHEET-COVER TOP;CLP-300,PC SHEET,T0.5,W7		SA
8.1-6	JC96-03608A	ELA UNIT-DRIVE MAIN;CLP-300,SEC,WORLD,-,	Z4403	SA
8.1-7	JC96-03610F	ELA UNIT-OPC DEV_SET;CLP-300,SEC,EXPORT,		SA
8.1-8	JC96-03611A	ELA UNIT-ITB_SET;CLP-300,SEC,WORLD,SET,-	Z4404	SA
8.1-9	JC96-03615A	ELA UNIT-TONER TANK C;CLP-300,SEC,EXPORT		SNA
8.1-10	JC96-03614A	ELA UNIT-TONER TANK M;CLP-300,SEC,EXPORT		SNA
8.1-11	JC96-03613A	ELA UNIT-TONER TANK Y;CLP-300,SEC,EXPORT		SNA
8.1-12	JC96-03616A	ELA UNIT-TONER TANK K;CLP-300,SEC,EXPORT		SNA
8.1-13	JC97-02332A	MEA-UNIT CASSETTE;CLP-300,SEC,WORLD,-,-,	Z4405	SA
8.1-14	JC97-02439A	MEA UNIT-COVER TOP;CLP-300,SEC,WORLD,-,-	Z4406	SA
8.1-15	JC97-02440A	MEA UNIT-COVER REAR;CLP-300,SEC,WORLD,-,	Z4407	SA
8.1-16	JC97-02659A	MEA-UNIT COVER FRONT;CLP-300,SEC,WORLD,-	Z4408	SA
8.1-18	JC63-00863A	SHIELD-P-MAIN LOWER;CLP-300,SECC,T1.0,99		SNA
8.1-19	JC44-00090A	SMPS-PSP_TYPE3_V2C;SCX-4521F,*,AC/DC,-,2	D2114	SA
8.1-20	JC44-00089A	HVPS-GOGH;-24V,21.6V~26.4V,-,-,-	Z4410	SA
8.1-21	JC59-00018E	UNIT-LSU;CLP-300,-,-,STANDARD SINGLEBEAM	Z4411	SA
8.1-22	JC97-02656A	MEA UNIT-COVER LSU;CLP-300,SEC,EXPORT,-,	Z4412	SA
8.1-23	JC96-03609A	ELA UNIT-FUSER 220V;CLP-300,SEC,WORLD,-,	Z4413	SA
8.1-29	JC97-01771A	MEA UNIT-TERMINAL S;CLP-500,SEC,EXPORT,S	K3635	SA
8.1-30	3903-000042	CBF-POWER CORD;DT,EU,FP3/YES,IEC320 C13/	C0022	SA
8.2-1	JC61-01460A	GUIDE-M-STACKER COVER;CLP-300,ABS FR V0,		SNA
8.2-2	JC63-00846A	COVER-M-TOP;CLP-300,ABS FR,T2.5,279.3,37		SNA
8.2-3	JC63-00843A	COVER-M-JAM COVER;CLP-300,ABS FR,-,79.4,		SNA
8.2-4	JC64-00211A	KEY-M-OP1;CLP-300,ABS,-,-,36024,-,HF-066	Z4414	SA
8.2-5	JC63-00860A	COVER-M-LED;CLP-300,ABS,T1.5,52,77.9,-,-		SNA
8.2-6	6107-001169	SPRING-CS;SUS304-WPB,-,PI0.55,D9.3,14.25	Z4415	SA
8.2-6	6107-001306	SPRING-CS;SUS304-WPB,-,PI0.55,D6.45,L11,		SA
8.2-6	6107-001285	SPRING-CS;SUS304-WPB,-,PI0.45,D8.85,L12,		SNA
8.2-6	6107-001278	SPRING-CS;SUS304 WPB,-,PI0.7,D6.9,L20,-,	Z4416	SA
8.2-6	6107-001292	SPRING-CS;SUS304-WPB,-,PI0.55,-,L11.1,-,		SNA
8.2-7	JC72-01343A	PMO-SUB_M_STACKER;ML-1520,PC,BLACK,39*25	Z4139	SA
8.2-8	JC61-01761A	HOLDER-LEVER BLOCKING;CLP-300,PC,2.5,30.		SNA
8.2-9	JC66-01297A	LEVER-MID BLOCKING;CLP-300,PC+GF20,2.5,1		SNA
8.2-10	JC66-01296A	LEVER-BLOCKING;CLP-300,PC,2.5,39.6,30.2,		SNA
8.2-11	6044-000001	RING-CS;ID3,OD3,T0.25,BLACK,SUS304		SNA
8.2-11	6044-001005	RING-CS;ID4.8,OD10.0,T0.25,PASS,SUS-30	Z4417	SA
8.2-12	6002-000440	SCREW-TAPPING;PWH,+,-,2,M3,L8,ZPC(BLK),S	Z4418	SA
8.3-1	JC63-00844A	COVER-M-REAR;CLP-300,ABS,T3.0,249.3,296.		SNA
8.3-2	JC64-00215A	BUTTON-M-OPEN REAR;CLP-300,ABS FR V0,80.		SNA
8.3-3	JC66-01089A	SHAFT-P-LOCKBAR REAR;CLP-300,SECC,284,6,		SNA
8.3-4	JC61-01461A	HOLDER-M-HOOK REAR R;CLP-300,POM,T5.0,19		SNA
8.3-5	JC61-01456A	HOLDER-M-HOOK REAR L;CLP-300,POM,T5.0,19		SNA
8.3-6	JC61-01462A	HOLDER-M-HOOK REAR C;CLP-300,POM,T5.0,19		SNA
8.3-7	JC66-01071A	LEVER-M-REAR LOCK;CLP-300,HIPS,T2.5,55.1		SNA
8.3-8	6107-001268	SPRING-TS;SUS304 WPB,-,PI0.9,D8.9,L7,-,-	Z4419	SA
8.3-8	6107-001283	SPRING-TS;SWRS82A,-,1.0X0.6,D13.70,L12.1	Z4420	SA
8.3-8	6107-001284	SPRING-TS;SWRS82A,-,0.75X0.5,-,L8.4,-,-		SNA
8.3-10	JC96-03990A	ELA UNIT-TRANSFER;CLP-300,SEC,EXPORT,-,-	Z4421	SA
8.4-1	JC63-00841A	COVER-M-FRONT;CLP-300,ABS FR,T2.5,185.3,		SNA
8.4-2	JC68-01678A	LABEL-INSTRUCTION;CLP-300,-,YUPO 150G,15		SNA

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8.5-1	JC61-01450A	BRACKET-P-DRIVE MOTOR;CLP-300,SECC,T1.2,		SNA
8.5-2	6031-001528	WASHER-PLAIN;POLYIMIDE,-,ID6,OD13.5,T0.5,	Z4422	SA
8.5-2	6031-001051	WASHER-PLAIN;M4,ID4.1,OD7.0,T0.13,*,POLY		SNA
8.5-2	6031-001543	WASHER-PLAIN;POLY,-,ID5.1,OD8,T0.13,-,-		SNA
8.5-2	6031-001547	WASHER-PLAIN;POLY,-,ID6.5,OD12,T0.5,-,-		SNA
8.5-2	6031-001577	WASHER-PLAIN;POLY,-,ID5.1,OD14,T0.5,BLK,		SNA
8.5-3	JC66-01042A	GEAR-IDLE DEVE Z19;CLP-300,POM,M0.8,Z19,	Z4423	SA
8.5-4	JC66-01052A	GEAR-RDCN DEVE CAM;CLP-300,POM,M0.8/M0.6	Z4424	SA
8.5-5	JC66-01041A	GEAR-DEVE COUPLING;CLP-300,POM,M0.8,Z18,	Z4425	SA
8.5-6	6107-001271	SPRING-CS;SUS304 WPB,-,PI0.55,D6.75,L9.0	Z4426	SA
8.5-7	JC66-01047A	GEAR-IDLE Z39;CLP-300,POM,M0.8,Z39,-,WHI	Z4427	SA
8.5-8	JC66-01065A	GEAR-TONER DRIVE;CLP-300,POM,M0.8/Z0.8,Z	Z4428	SA
8.5-9	JC66-01046A	GEAR-IDLE Z33;CLP-300,POM,M0.8,Z33,-,WHI	Z4429	SA
8.5-10	JC66-00763A	GEAR-M-PICK UP IDLE;CLP-600,POM,M0.8,SPU	G0031	SA
8.5-11	JC47-00007E	MEP-CLUTCH CAM;- ,CLP-300,-,DC24V,0.133A,	Z4430	SA
8.5-12	JC66-01208A	GEAR-RDCN FUSER CAM;CLP-300,POM,M0.8/Z0.	Z4431	SA
8.5-13	JC66-01045A	GEAR-IDLE ITB Z43;CLP-300,POM,M0.5,Z43,-	Z4432	SA
8.5-14	JC66-01048A	GEAR-ITB DRIVE;CLP-300,POM,M0.5/M0.5,Z10	Z4433	SA
8.5-15	JC66-01054A	GEAR-RDCN OPC;CLP-300,POM,M0.5/M0.6,Z79/	Z4434	SA
8.5-16	JC63-01049A	SHEET-HOUSING ITB;CLP-300,PET FILM,T0.18		SNA
8.5-17	JC66-01051A	GEAR-RDCN DEVE;CLP-300,POM,M0.5/M0.8,Z73	Z4435	SA
8.5-18	JC66-01055A	GEAR-RDCN P_PATH;CLP-300,POM,M0.5/M0.8,Z	Z4436	SA
8.5-19	JC66-01050A	GEAR-PICK UP DRIVE;CLP-300,POM,M0.8/M0.8	Z4437	SA
8.5-20	JC66-01044A	GEAR-FUSER DRIVE 1;CLP-300,POM,M0.8,Z45,	Z4438	SA
8.5-21	JC66-01053A	GEAR-RDCN EXIT;CLP-300,POM,M0.8/M0.8,Z51	Z4439	SA
8.5-22	JC66-01043A	GEAR-DEVE DRIVE;CLP-300,POM,M0.6,Z21,-,W	Z4440	SA
8.5-23	6031-001255	WASHER-PLAIN;NYLON,CUTTING,ID5,OD9,T0.5,	W0004	SA
8.5-24	JC66-00771A	GEAR-_M_IDLE PICKUP;CLP-600,POM,M0.8,SPU	G0010	SA
8.5-25	JC61-01459A	BRACKET-M-DRIVE FRONT;CLP-300,PC,T2.5,W1		SNA
8.5-26	JC66-01061A	SHAFT-IDLE D8;CLP-300,SUM24L+NI,L16.7,D1		SNA
8.5-27	JC66-01064A	GEAR-IDLE Z37;CLP-300,POM,M0.8,Z37,-,WHI	Z4441	SA
8.5-28	6003-000301	SCREW-TAPTITE;BH,+,S,M4,L6,ZPC(YEL),SWRC		SNA
8.5-28	6003-000152	SCREW-TAPTITE;PH,+,B,M2,L10,ZPC(YEL),SWR	Z4442	SA
8.5-28	6002-000308	SCREW-TAPTITE;PH,+,B,M2.6,L6,ZPC(YEL),SW	Z4443	SA
8.5-29	JC66-01060A	SHAFT-WORM GEAR;CLP-300,SUM24L+NI,L44.6,		SNA
8.5-30	JC66-01057A	GEAR-WORM DEVE CAM;CLP-300,POM,M0.6/M0.6	Z4444	SA
8.5-31	6044-000159	RING-C;ID3,OD7,T0.6,PASS,STSC	Z4357	SA
8.5-32	6001-000130	SCREW-MACHINE;BH,+,M3,L6,ZPC(WHT),SWRCH1	Z4445	SA
8.5-32	6001-000485	SCREW-MACHINE;PH,+,M2.6,L4,ZPC(YEL),SWRC		SNA
8.5-33	JC66-01070A	LATCH-M-HUB CLUTCH;CLP-300,POM,T2.0,D18.		SNA
8.5-34	JC66-01155A	GEAR-FUSER RDCN OUT V;ML-3560,HTNFR52G30		SNA
8.5-35	6044-000231	RING-E;ID5.0,OD11.0,T0.6,PASS,STS304	R0006	SA
8.5-36	JC66-01068A	SHAFT-M-T2 CAM;CLP-300,POM,L52,D20,BLACK	Z4446	SA
8.5-37	JC66-01067A	SHAFT-M-ITB CLEAN CAM;CLP-300,POM,L44,D2	Z4447	SA
8.5-38	JC31-00041A	MOTOR DC-DEVE DRIVE;50M843A152,CLP-600,2	M0024	SA
8.5-39	JC33-00015C	SOLENOID-PICK UP;- ,CLP-300,DC24V,48\$U _i 3/41 S	Z4448	SA
8.5-40	6003-000269	SCREW-TAPTITE;BH,+,S,M3,L6,ZPC(YEL),SW	Z4449	SA
8.5-41	JC61-01458A	BRACKET-M-DEVE CAM;CLP-300,PC+ABS,T2.5,W		SNA
8.5-42	6003-000196	SCREW-TAPTITE;PWH,+,B,M3,L10,NI PLT,SWRC	Z4397	SA
8.5-43	JC67-00130A	CAP-M-PUSH COUPLING;CLP-300,POM,T2.0,D13	Z4450	SA
8.5-44	JC97-01788B	MEA UNIT-CLUTCH DEV;CLP-300,-,WORLD,M0.6	Z4451	SA
8.5-45	JC66-01066A	SHAFT-M-DEVE CAM;CLP-300,POM,L116,D18.3,	Z4452	SA
8.5-46	JC92-01720A	PBA SUB-DEVE_HOME;CLP-300,SEC,KOREA,DEVE	Z4453	SA
8.5-47	JC61-01453A	HOLDER-M-LINK BLACK;CLP-300,PC+ABS,T2.5,	Z4454	SA
8.5-48	JC66-01097A	LINK-M-PUSH BLACK CAP;CLP-300,POM,22,T2.	Z4455	SA
8.5-49	JC61-00699A	BUSH-D6/L4;CLP-500,BRONZE+ST,ID6.0,OD9.0	B0027	SA
8.5-50	6502-001093	CABLE CLAMP;DAWS-3NE,ID11*L34.8,-,NYLON6	C0002	SA

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8.5-50	6502-000121	CABLE CLAMP;DAMC-101,D7~8,L19,SCP-1,NTR		SNA
8.5-51	0205-001003	GREASE-BEARING;NYOGEL788,DAMPING GREASE,		SNA
8.5-51	0205-001059	GREASE-BEARING;PETAMO GHV 133,BEIGE,15KG		SNA
8.5-51	0205-001144	GREASE-BEARING;SF-112,HANARL,NOISE TAMPI		SNA
8.5-51	0205-001080	GREASE-BEARING;NYOGEL 774H,NOISE DAMPING		SNA
8.5-51	0205-001095	GREASE-BEARING;NYE8512,NOISE DAMPING(BLU		SNA
8.5-52	JF68-10532B	LABEL(P)-BAR CODE;CLP-500,-,YUPO PAPER,1		SNA
8.6-27	JC66-01133A	LEVER-M-ACTUATOR FEED;CLP-300,POM,T2.5,3		SNA
8.6-65	6044-000125	RING-E;ID4,OD9,T0.6,PASS,STSC	R0004	SA
8.6-11	6107-001282	SPRING-CS;C5210W,-,PI0.6,-,L12.5,-,ID3	Z4456	SA
8.6-34	JC39-00302A	CBF HARNESS-100M_GND;CLP-500,-,1 PIN,5	C0007	SA
8.6-34	JC61-01486A	PLATE-P-GROUND PICKUP;CLP-300,C5210P,T0.		SNA
8.6-35	JC63-00854A	COVER-M-GROUND OPC;CLP-300,ABS HB,T1.5,		SNA
8.6-35	JC39-00493A	CBF HARNESS-THER;CLP-300,WIRE HARNESS,UL	Z4457	SA
8.6-54	JC39-00497A	CBF HARNESS-INLET;CLP-300,WIRE HARNESS,U	Z4458	SA
8.6-37	6107-001163	SPRING-CS;SUS304-WPB,-,PI0.4,D3.9,L13,-,	Z4460	SA
8.6-37	JC39-00498A	CBF HARNESS-COVER S/W;CLP-300,WIRE HARNE	Z4459	SA
8.6-38	JC39-00578A	CBF HARNESS-GND_BRK;CLP-300,WIRE HARNESS	Z4461	SA
8.6-38	JC61-00829B	HOLDER-BEARING EXIT F/DOWN;CLP-300,POM(A	Z4462	SA
8.6-39	JC66-01149A	ROLLER-EXIT MAIN;CLP-300,PFA,D8.5,L23,BL	Z4464	SA
8.6-39	JC39-00579A	CBF HARNESS-LSU_S/W;CLP-300,WIRE HARNESS	Z4463	SA
8.6-47	JC39-00581A	CBF HARNESS-FUSER_AC;CLP-300,WIRE HARNES	Z4465	SA
8.6-41	JC39-00583A	HARNESS-GND_FRAME;CLP-300,WIRE HARNESS,U	Z4466	SA
8.6-41	JC66-01040A	ROLLER-EXIT F DOWN;CLP-300,SUM22/EPDM,D4		SNA
8.6-55	JC61-01546A	SPRING ETC-OPC LOCK L;CLP-300,C5210W,D1.	Z4468	SA
8.6-55	JC47-00009C	MEP-CLUTCH REGI;-CLP-300,3.0W,DC24V,125	Z4467	SA
8.6-58	JC47-00014A	MEP-CLUTCH CAM;-CLP-300,-,DC24V,0.18A,C	Z4469	SA
8.6-58	JC61-01566A	HOLDER-M-CLUTCH FUSER;CLP-300,PC+ABS,T2.		SNA
8.6-1	JC61-01443A	FRAME-M BASE GOGH;CLP-300,PC+ABS,NH-1000		SNA
8.6-33	JC61-01451A	PLATE-P-GROUND OPC L;CLP-300,C5210P,T0.2		SNA
8.6-59	JC61-01478A	GUIDE-M-HARNESS;CLP-300,ABS,HB,T2.5,118.		SNA
8.6-18	JC61-01482A	PLATE-P-GROUND FUSER;CLP-300,SUS304-CSP,		SNA
8.6-13	JC61-01483A	PLATE-P-GROUND LSU;CLP-300,C5210P,T0.2,1		SNA
8.6-16	JC61-01484A	PLATE-P-GROUND T2;CLP-300,C5210P,T0.2,21		SNA
8.6-14	JC61-01485A	PLATE-P-GROUND REGI;CLP-300,SUS304 CSP,T		SNA
8.6-19	JC61-01489A	PLATE-P-GROUND EXIT;CLP-300,SUS 304 CSP,		SNA
8.6-17	JC61-01537A	PLATE-P-SHAFT LACK;CLP-300,SECC,T1.0,4,1		SNA
8.6-15	JC61-01547A	SPRING ETC-OPC LOCK R;CLP-300,C5210W,D1.	Z4470	SA
8.6-57	JC61-01548A	HOLDER-M-CAM;CLP-300,POM (DE8903),T2.0,1		SNA
8.6-2	JC61-40001A	FOOT-ML80;ML-80,NBR,-,GRAY,-,-,-	F0003	SA
8.6-60	JC61-70940A	SPRING ETC-TR(12);ML-5500,-,4.5,-,12.7,1	O1054	SA
8.6-3	JC66-00050A	CAM-CATCH;ML-9400W,POM,-,34jz18jz7,WHITE S	C0004	SA
8.6-12	JC66-00346A	GEAR-MP/DUP DRV;SCX-5100,POM,SW-01,M0.8,	G0340	SA
8.6-10	JC66-01056A	GEAR-REGI DRIVE;CLP-300,POM,M0.8,Z32,-,W	Z4471	SA
8.6-62	JC66-01120A	SHAFT-FEED IDLE;CLP-300,SUM22+NI,L237,D8		SNA
8.6-64	JC66-01128A	ROLLER-REGI;CLP-300,SUM22+EPDM,D6.0/D14.		SNA
8.6-67	JC66-01207A	SHAFT-M-CLUTCH FUSER;CLP-300,POM,L39.8,D	Z4472	SA
8.6-68	JC70-00050A	IPR-TERMINAL,SF-5100,SWRCH1018,-,-,-,8		SNA
8.6-61	JC72-00102A	PMO-BUSHING_TR(L);SF-5100,POM (CH-15),BL	O1101	SA
8.6-20	JC92-01714A	PBA SUB-PANEL;CLP-300,SEC,KOREA,PANEL,-,	Z4473	SA
8.6-32	JC92-01723A	PBA SUB-WASTE_T;CLP-300,SEC,KOREA,WASTE_	Z4474	SA
8.6-72	JC92-01718A	PBA SUB-EXIT;CLP-300,SEC,KOREA,EXIT SENS	Z4475	SA
8.6-49	6006-000127	SCREW-MACHINE;WS,PH,+,M3,L6,ZPC(YEL),SWR		SNA
8.6-75	6021-000222	NUT-HEXAGON;2C,M3,ZPC(YEL),SM20C,-		SNA
8.6-46	JC70-10961A	IPR-TERMINAL FU;ML-165,C5210P,-,T0.3,-,-	K3422	SA
8.6-45	JC72-41010A	PMO-HOUSING TERMINAL;ML-165,ABS GF10%,BL	H6086	SA
8.6-78	JC97-02362A	MEA UNIT-DRAW;CLP-300,SEC,WORLD,-,-,-	Z4476	SA

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8.6-79	6009-001396	SCREW-SPECIAL;PH,+,-,M3,L10.3,ZPC(BLK),S		SNA
8.6-5	JC39-00488A	CBF HARNESS-MAIN_DRAW;CLP-300,WIRE HARNE	Z4477	SA
8.6-4	JC61-01521A	PLATE-P-DRAW CONNECTOR;CLP-300,SECC,T1.0		SNA
8.6-26	JC61-00018A	SPRING ETC-SENSOR;SF-5100,SUS304WPB,0.2,		SNA
8.6-28	JC61-01480A	HOLDER-M-ACTUATOR FEED;CLP-300,ABS,T2.5,		SNA
8.6-87	JC72-00463A	PMO-CAP CONNECTOR L;ML-6060A,POM,BLACK,-	Z0013	SA
8.6-88	JC72-00465A	PMO-CAP CONNECTOR U;ML-6060A,POM,BLACK,-	Z0014	SA
8.6-36	JC61-01477A	FRAME-M-EXIT;CLP-300,PC,NH-1035,5V,BLACK		SNA
8.6-42	JC61-01568A	HOLDER-M-EXIT F DOWN;CLP-300,PC,T2.5,26.		SNA
8.6-44	JC66-00810A	GEAR-EXIT_DRV17;ML-1610,POM,0.8,17,-,BLK	O1073	SA
8.6-100	6107-001167	SPRING-CS;SUS304-WPB,-,PI0.25,D3.25,L9.6	Z4318	SA
8.6-101	JC61-01151A	HOUSING-M-PICK_U;ML-1610,POM,-,-,35,NATU	P2067	SA
8.6-102	JC61-01173A	HOUSING-M-PICK_UP B;ML-1610,ABS HB,-,-,3	P2068	SA
8.6-103	JC61-01473A	GUIDE-M-PICK UP;CLP-300,PC+ABS,HB,T2.5,5		SNA
8.6-104	JC61-01533A	PLATE-P-PICK UP;CLP-300,SECC,T1.0,264,43		SNA
8.6-105	JC61-01538A	HOLDER-M-PAD;CLP-300,PC+ABS,HB,T2.5,-,-,		SNA
8.6-106	JC61-01570A	GUIDE-M-PAPER;CLP-300,POM M90-44,T2.0,15		SNA
8.6-107	JC61-70911A	SPRING ETC-EXIT ROLL FD;ML-165,SUS304 WP	O1053	SA
8.6-108	JC66-00815A	LEVER-M-KICKER P/U;ML-1610,POM,-,10.5,31	R1120	SNA
8.6-109	JC66-01076A	GEAR-PICK UP A;CLP-300,POM,M0.8,Z45,-,WH	Z4478	SA
8.6-110	JC66-01077A	GEAR-PICK UP B;CLP-300,POM,M0.8,Z45,-,WH	Z4479	SA
8.6-111	JC66-01080A	SHAFT-P-PICKUP;CLP-300,SECC,L286,T1.2,-,		SNA
8.6-112	JC66-01105A	CAM-M-PICK UP;CLP-300,POM M90-44,-,-,WHI		SNA
8.6-113	JC69-00961A	PAD-FRICTION;CLP-300,NBB,T1.0,W9.0,L39.5	Z4480	SA
8.6-114	JC73-00211A	RUBBER-PICK_UP;ML-1610,EPDM+IR,MM,-,-,-,	P2148	SA
8.6-23	JB61-00076A	SPRING ETC-TORSION DOC (CC2-F);SCX-1110F	O1013	SA
8.6-25	JC61-01481A	HOLDER-M-ACTUATOR EMPTY;CLP-300,ABS,T2.5		SNA
8.6-24	JC66-01119A	LEVER-M-ACTUATOR EMPTY;CLP-300,PC,T2.5,5		SNA
8.7-1	JC67-00168A	BRUSH-LSU;CLP-300,PP BRUSH,-,W4.5,L180.6		SNA
8.7-2	JC64-00267A	SHUTTER-LSU;CLP-300,ABS GF20,T2.5,W11.5,		SNA
8.7-3	JC63-00839A	COVER-M-LSU;CLP-300,ABS HB,T2.0,239.5,1		SNA
8.7-4	6107-001295	SPRING-CS;SUS304,-,PI0.45,D5.45,L22.5,-,		SNA
8.7-5	JC63-01093A	SHEET-LSU FRONT;CLP-300,PET SHEET,T0.188		SNA
8.7-6	JC62-00338A	SEAL-COVER LSU;CLP-300,EPDM,-,T2.5,W8,L1		SNA
8.8-1	JC61-01474A	FRAME-M-UPPER FUSER;CLP-300,PET+GF30%,BN		SNA
8.8-2	JC61-01475A	FRAME-M-LOWER FUSER;CLP-300,PET+GF30%,BN		SNA
8.8-3	JC66-01078A	ROLLER-HEAT;CLP-300,AL5052+RUBBER,D27.5,		SNA
8.8-4	JC66-00669A	GEAR-FUSER;SCX-5315F,PPS, OFL4036,1,34,P	Z4481	SA
8.8-5	JC66-10902A	BEARING-H/R L;ML-165,PPS(RBA313N),-,ID26	B1019	SA
8.8-6	JC72-00814A	PMO-BEARING H/R-F;SCX-5100,-,PPS,BLK,V0,	B1040	SA
8.8-7	4712-001027	THERMOSTAT;125/250VAC,15/7.5A,170+-5C,0C	T0002	SA
8.8-8	JC66-01079A	ROLLER-PRESSURE;CLP-300,SUM22,D16,L237.5		SNA
8.8-9	JC66-01111A	ROLLER-PRESSURE SHAFT;CLP-300,SUM22,D8.0		SNA
8.8-10	JC61-01490A	HOLDER-M-BUSH 2PR_R;CLP-300,PBT,T2.0,33.		SNA
8.8-11	JC61-01491A	HOLDER-M-BUSH 2PR_L;CLP-300,PBT,T2.0,33.		SNA
8.8-12	JC61-01534A	BUSH-M-2PR L;CLP-300,PPS(RBA313N),-,5.		SNA
8.8-13	JC61-01535A	BUSH-M-2PR R;CLP-300,PPS(RBA313N),-,5.3,		SNA
8.8-14	JC61-01522A	GUIDE-M-INPUT FUSER;CLP-300,PET+GF30%,5V		SNA
8.8-15	JC66-01110A	LEVER-M-ACTUATOR EXIT;CLP-300,PET+GF30%,		SNA
8.8-16	JC61-01476A	PLATE-P-GROUND FUSER;CLP-300,SUS 304 CSP		SNA
8.8-17	JC70-00518A	ELECTRODE-P-AC R;CLP-300,C5210P T0.8,D3.		SNA
8.8-18	JC70-00519A	ELECTRODE-P-AC L;CLP-300,C5210P T0.8,D3.		SNA
8.8-19	JC68-00407A	LABEL(R)-HV FUSER;ML-6060,PVC,-,220V,-,	L0006	SNA
8.8-20	JC68-01134A	LABEL(P)-BLANK(FUSER);ML-1710D3,-,WHITE		SNA
8.8-21	JC68-01581A	LABEL(P)-CAUTION HOT;COMMON,SAMSUNG,PET,		SNA
8.8-22	6107-001246	SPRING-CS;SWP-B,-,PI0.9,D5.6,L16.6,-,-,I		SNA
8.8-23	6107-001267	SPRING-CS;SWP-B,-,PI1.0,D5.9,L17,-,-,ID4	Z4482	SA

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8.8-24	JC39-00500A	CBF HARNESS-FUSE_LINK1;CLP-300,WIRE HARN	Z4483	SA
8.8-25	JC39-00501A	CBF HARNESS-FUSE_LINK2;CLP-300,WIRE HARN	Z4484	SA
8.8-27	6003-000261	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(YEL),SWRC		SNA
8.8-28	4713-001210	LAMP-HALOGEN;230V,-,850W,-,-,8x299.5mm	Z4485	SA
8.8-29	1404-001368	THERMISTOR-NTC ASSY;1KOHM,-,4537K,0.25MW	Z4486	SA
8.8-30	JC70-00064A	IPR-PIN ROLLER EXIT;SF-5100,SUS304,PI1.8		SNA
8.8-31	JC72-20902A	PEX-ROLLER F/UP(2);ML-5000A,TEFLON,WHT,-	O1106	SA
8.8-32	JC72-00382A	PMO-BUSHING TX;ML-6060A,POM M9044,BLK,-		SNA
8.8-33	JC66-01206A	SHAFT-M-CAM FUSER;CLP-300,PC+GF30%,L252.		SNA
8.8-34	JC61-01647A	HOLDER-M-SHAFT FUSER;CLP-300,PC,T2.0,-,L		SNA
8.8-35	JC66-01147A	LEVER-M-RELEASE;CLP-300,PET+GF30%,T1.5,W		SNA
8.8-36	JC66-01148A	LEVER-M-LINK FUSER;CLP-300,PET+GF30%,T1.	Z4487	SA
8.8-37	JC61-01523A	GUIDE-M-OUTPUT FUSER;CLP-300,PET+GF30%,5		SNA
8.8-38	JC61-01271A	SPRING ETC-ACTUATOR;CLP-600,SUS304 ,0.35	S0018	SA
8.8-39	JC97-02778A	MEA UNIT-GUIDE PR;CLP-300,SEC,EXPORT,-,-		SNA
8.8-40	6107-001290	SPRING-CS;SUS304 WPB,-,PI0.55,D5.55,L16,	Z4488	SA
8.8-41	JC66-01309A	ROLLER-DUMMY;CLP-300,PFA,OD6.0,L10.0,-,-		SNA
8.8-42	JC61-01685A	SPRING ETC-DUMMY;CLP-600,SUS,0.5,-,-,20.	Z4489	SA
8.8-43	JC61-01679A	SPRING ETC-GROUND;CLP-300,SUS 304 WPB,¥Ö	Z4490	SA
8.9-2	6006-001078	SCREW-TAPTITE;WSP,PH,+,M3,L10,ZPC(YEL),S		SNA
8.9-4	JC39-00499A	CBF HARNESS-JOIN_DRAW;CLP-300,WIRE HARNE		SNA
8.9-5	JC63-01142A	SHEET-FILM YELLOW UP;CLP-300,PC,T0.38,W5		SNA
8.9-6	JC67-00199A	CAP-DEVE;CLP-300,PP,-,31.5,62,-,-		SNA
8.9-7	JC68-01708A	LABEL-INFORMATION;CLP-300,-,WHITE POLY,T		SNA
8.9-7	JC68-01766A	LABEL-INFORMATION;CLP-300,DSL,YUPO,0.08,		SNA
8.9-8	JC68-10914D	LABEL(P)-SERIAL NO;ML-85,ART,70X15,G100,		SNA
8.9-9	JC69-01013A	CUSHION-DEVE;CLP-300,EPP,T10,W75,L351,-,		SNA
8.9-10	JC96-03911A	ELA UNIT-DEV MAIN SET;CLP-300,SEC,EXPORT		SNA
8.9-11	JC97-02571A	MEA UNIT-OPC SET;CLP-300,SEC,WORLD,-,-,-		SNA
8.9-12	JC97-02613A	MEA UNIT-DEV Y;CLP-300,SEC,EXPORT,-,-,-,		SNA
8.9-13	JC97-02614A	MEA UNIT-DEV M;CLP-300,SEC,EXPORT,-,-,-,		SNA
8.9-14	JC97-02615A	MEA UNIT-DEV C;CLP-300,SEC,EXPORT,-,-,-,		SNA
8.9-15	JC97-02616A	MEA UNIT-DEV K;CLP-300,SEC,EXPORT,-,-,-,		SNA
8.9-16	JC97-02619A	MEA UNIT-TONER WASTE;CLP-300,SEC,EXPORT,		SNA
8.10-4	0604-001257	PHOTO-INTERRUPTER;TR,-,-,DIP-4,BK		SNA
8.10-4	0604-001154	PHOTO-INTERRUPTER;TR,0.2-1.0MA,80MW,DIP,	P0012	SA
8.10-5	6003-000282	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(BLK),SW	Z4491	SA
8.10-6	6031-000019	WASHER-PLAIN;-ID6.1,OD8.5,T0.1,BLK,POLY		SNA
8.10-7	6107-001287	SPRING-CS;SUS304-WPB,-,PI0.6,D6.5,L25,-,		SNA
8.10-8	6107-001288	SPRING-CS;SUS304-WPB,-,PI0.35,D3.55,L12,		SNA
8.10-9	6107-001289	SPRING-CS;SUS304-WPB,-,PI0.95,-,L21.2,-,		SNA
8.10-10	JC02-00054A	TONER-BLACK;CLP-300,SAK-79JG-K1,BLACK,8.		SNA
8.10-11	JC39-00489A	CBF HARNESS-ITB_JOINT;CLP-300,WIRE HARNE		SNA
8.10-12	JC39-00502A	CBF HARNESS-ITB_HOME;CLP-300,WIRE HARNES		SNA
8.10-14	JC61-01494A	FRAME-M-ITB;CLP-300,ABS+GF20%,GR-4020,-,		SNA
8.10-15	JC61-01495A	FRAME-M-WASTE ITB;CLP-300,ABS GF20%,GR-4		SNA
8.10-16	JC61-01497A	HOUSING-M-CLEANING ITB;CLP-300,ABS GF 20		SNA
8.10-17	JC61-01498A	HOLDER-M-BUSH CHARGE;CLP-300,POM(M90-44)		SNA
8.10-18	JC61-01499A	GUIDE-M-POLE ITB;CLP-300,ABS HF-0660I,-,		SNA
8.10-19	JC61-01502A	BRACKET-P-HOUSING LEFT;CLP-300,SECC,1.2T		SNA
8.10-20	JC61-01503A	BRACKET-P-HOUSING RIGHT;CLP-300,SECC,1.2		SNA
8.10-21	JC61-01504A	PLATE-P-GND ITB;CLP-300,BRONZE(C5210P-H)		SNA
8.10-22	JC61-01505A	HOLDER-M-PTL;CLP-300,ABS HB HF-0660I,10.		SNA
8.10-23	JC61-01506A	HOLDER-M-HOME SENSOR;CLP-300,ABS HB(HF-0		SNA
8.10-24	JC61-01536A	BUSH-M-CHARGE CLEANING;CLP-300,POM(M90-4		SNA
8.10-25	JC61-01539A	BUSH-M-DRIVE ITB;CLP-300,POM(M90-44),ID6		SNA
8.10-26	JC61-01540A	BUSH-M-ITB;CLP-300,POM(M90-44),ID6,OD8.1		SNA

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8.10-27	JC61-01541A	BUSH-M-TR ITB;CLP-300,POM(AT-15CF),ID6,-		SNA
8.10-28	JC61-01542A	BUSH-M-IDLER WASTE BELT;CLP-300,POM(M90-		SNA
8.10-29	JC61-01543A	BUSH-CHARGE LEFT;CLP-300,SINTERED BRONZE		SNA
8.10-30	JC61-01701A	SPRING ETC-SHUTTER;CLP-300,SWP-B,0.35,S		SNA
8.10-31	JC61-01704A	SPRING ETC-GROUND ITB;CLP-300,SUS304-WPB		SNA
8.10-32	JC62-00210A	SEAL-AUGER OPC;CLP-300,PORON LE-20,-,5T,		SNA
8.10-33	JC62-00212A	SEAL-BELT ITB;CLP-300,URETHANE FILM,-,0.		SNA
8.10-34	JC62-00213A	SEAL-LOW ITB;CLP-300,POLYURETHANE,-,6T,W		SNA
8.10-35	JC62-00217A	SEAL-COVER WASTE;CLP-300,PORON,-,T2,W11.		SNA
8.10-36	JC62-00219A	SEAL-BACK ITB;CLP-300,POLYURETHANE FOAM,		SNA
8.10-37	JC62-00221A	SEAL-BACK ITB RIGHT;CLP-300,POLYURETHANE		SNA
8.10-38	JC62-00222A	SEAL-SIDE ITB LEFT;CLP-300,POLYURETHANE		SNA
8.10-39	JC62-00223A	SEAL-SIDE ITB RIGHT;CLP-300,POLYURETHANE		SNA
8.10-40	JC62-00229A	SEAL-BLADE ITB LEFT;CLP-300,POLYURETHANE		SNA
8.10-41	JC62-00232A	SEAL-TOP ITB;CLP-300,POLYURETHANE,-,10T,		SNA
8.10-42	JC62-00257A	SEAL-FRAME WASTE ITB;CLP-300,PORON LE-20		SNA
8.10-43	JC62-00258A	SEAL-WASTE OPC;CLP-300,PORON LE-20,-,T0.		SNA
8.10-44	JC62-00281A	SEAL-HOUSING ITB L;CLP-300,PORON LE-20,B		SNA
8.10-45	JC62-00282A	SEAL-HOUSING ITB R;CLP-300,PORON LE-20,B		SNA
8.10-46	JC62-00326A	SEAL-WASTE SIDE;CLP-300,POLY URETHANE FO		SNA
8.10-47	JC63-00857A	COVER-M-WASTE ITB;CLP-300,PC,2.0T,W49.4,		SNA
8.10-48	JC63-00859A	COVER-M-WASTE EXIT;CLP-300,POM(M90-44),T		SNA
8.10-49	JC63-00862A	COVER-M-HANDLE ITB;CLP-300,ABS HF-0660I,		SNA
8.10-50	JC63-01045A	SHEET-FRAME ITB;CLP-300,PC,T0.125,W80.5,		SNA
8.10-52	JC63-01124A	SHEET-HOUSING ITB F;CLP-300,PET,T0.188,W		SNA
8.10-53	JC63-01170A	SHEET-BLADE ITB;CLP-300,PC,T0.5,5,222.5,		SNA
8.10-54	JC66-01082A	ARM-M-BLADE ITB;CLP-300,PC,T5.0,53,L71,B		SNA
8.10-55	JC66-01083A	SHAFT-M-BELT WASTE;CLP-300,POM(M90-44),L		SNA
8.10-56	JC66-01085A	SHAFT-M-AUGER ITB;CLP-300,ABS+GF20%,253,		SNA
8.10-57	JC66-01087A	GEAR-AUGER ITB;CLP-300,POM (M90-44),M0.8		SNA
8.10-58	JC66-01112A	DRUM-ITB BELT;CLP-300,PI,OD120,W240,L376		SNA
8.10-59	JC66-01131A	ROLLER-T1;CLP-300,NBR + ECO FORM,OD14,L2		SNA
8.10-60	JC67-00027A	LENS-PTL;ML-1710,PMMA,NTR,-,-,-,-	K3433	SA
8.10-62	JC72-40332A	PMO-BUSHING_CHARGE;ML-80,POM,BLK,HB,-		SNA
8.10-63	JC73-00222A	RUBBER-BELT WASTE ITB;CLP-300,CR+NR20%,1		SNA
8.10-64	JC92-01709A	PBA SUB-ITB_JOINT;CLP-300,SEC,KOREA,ITB-		SNA
8.10-71	JC92-01724A	PBA SUB-PTL;CLP-300,SEC,KOREA,PTL,-,-,-,		SNA
8.10-75	JC97-02645A	MEA UNIT-BLADE ITB;CLP-300,SEC,EXPORT,-,		SNA
8.10-81	JC97-02646A	MEA UNIT-ROLL DRV ITB;CLP-300,SEC,EXPORT		SNA
8.10-85	JC97-02695A	MEA UNIT-ROLL IDL ITB;CLP-300,SEC,WORLD,		SNA
8.11-1	JC61-01530A	FRAME-M-SEMI CASSETTE;CLP-300,ABS,HF-066		SNA
8.11-2	JG61-70531A	SPRING ETC-LOCKER,PLATE;SF6000,STS304WPB	S0025	SA
8.11-3	JC64-00222A	LOCKER-M-KNOCK UP R;CLP-300,POM (M90-44)	Z4492	SA
8.11-4	JC64-00223A	LOCKER-M-KNOCK UP L;CLP-300,POM (M90-44)	Z4493	SA
8.11-5	JC97-02218A	MEA UNIT-PLATE KNOCK_UP;ML-1610,SAMSUNG,	K3602	SA
8.11-6	6107-001240	SPRING-CS;SUS304-WPB,GROUND END,PI0.6,D1	D4084	SA
8.11-7	JC70-00516A	ADJUST-M-CASSETTE R;CLP-300,ABS HB,T2.5,	Z4494	SA
8.11-8	JC70-00517A	ADJUST-M-CASSETTE L;CLP-300,ABS HB,T2.5,	Z4495	SA
8.11-9	JG66-40003A	GEAR-PINION;SF4000,POM,WHT,M1,Z16	O1127	SA
8.11-13	JC63-00869A	TRAY-M-EXTENSION SMALL;CLP-300,ABS,T2.5,		SNA
8.11-14	JC63-00855A	COVER-M-CASSETTE;CLP-300,ABS,T2.5,77,224		SNA
8.11-16	JC68-01679A	LABEL-INSTRUCTION;CLP-300,-,WHITE PET,T0		SNA
8.11-17	JC68-01680A	LABEL-INSTRUCTION;CLP-300,-,WHITE PET,T0		SNA
#N/A	JC61-01531A	STOPPER-M-PAPER REAR;CLP-300,ABS HB,T2.5		SNA
#N/A	JC61-01572A	HOLDER-M-SHAFT CLUTCH;CLP-300,POM,T1.5,D		SA
#N/A	JC62-00227A	SEAL-SHUTTER BOTTLE;CLP-300,POLYURETHANE		SNA
#N/A	JC62-00237A	SEAL-AGITATOR BOTTLE;CLP-300,PORON,BLACK		SNA

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Drawer#	SEC-Code	Description & Specification	Location	Service
#N/A	3704-000349	SOCKET-IC;8P,DIP,SN,2.54MM		SNA
#N/A	JC62-00259A	SEAL-BOTTLE AUGER;CLP-300,PORON LE-20,-,		SNA
#N/A	JC63-00864A	SHIELD-P-SMPS;CLP-300,SECC,T1.0,109.7,19		SNA
#N/A	JC63-00872A	TRAY-M-EXT CASSETTE;CLP-300,ABS,T2.5,118		SNA
#N/A	JC63-01110A	SHEET-BRACKET ITB;CLP-300,PET FILM,T0.18		SNA
#N/A	JC64-00218A	SHUTTER-M-TONER BOTTLE;CLP-300,POM HB,-,		SNA
#N/A	JC66-01095A	GEAR-AGITATOR BOTTLE;CLP-300,POM(DE8903)		SNA
#N/A	JC66-01139A	GEAR-AUGER A;CLP-300,POM,M0.6,Z89,T4.1,B		SNA
#N/A	JC66-01144A	SHAFT-AUGER;CLP-300,POM,L67,OD16,BLACK,-		SNA
#N/A	JC67-00135A	CAP-M-TONER BOTTLE;CLP-300,ABS HB,-,PI59		SNA
#N/A	JC92-01711A	PBA SUB-CRUM_M;CLP-300,SEC,KOREA,CRUM_M,		SNA
#N/A	JC92-01712A	PBA SUB-CRUM_C;CLP-300,SEC,KOREA,CRUM_C,		SNA
#N/A	JC92-01713A	PBA SUB-CRUM_K;CLP-300,SEC,KOREA,CRUM_K,		SNA
#N/A	JC96-04001A	ELA UNIT-CONNECTOR;CLP-300,SEC,EXPORT,-,		SA
#N/A	JC97-02688A	MEA UNIT-PICK UP GEAR;CLP-300,SEC,WORLD,		SA
#N/A	6601-001384	BEARING-BALL;676ZZ,ID6,OD10,L3,GCr 15 +		SNA
#N/A	6902-000288	BAG PE;LDPE,T0.05,W250,L450,TRP,8,2-		SNA
#N/A	JC68-01765A	LABEL-POP;CLP-300,DSH,YUPO,0.08,360,154,		SNA
#N/A	0201-001235	ADHESIVE-TS;DEH-390D,RED,400,-		SNA
#N/A	JC99-01896A	PAA MAIN-PACKING;CLP-300,SAMSUNG,EXPORT,		SNA
#N/A	JC64-00260C	HANDLE-BOTTLE M;CLP-300,ABS,T5.4,-,L43.6		SNA
#N/A	JC99-01897B	PAA WOOD-LABEL(SEE);CLP-300/SEE,EU,GOGH,		SNA
#N/A	JC64-00260D	HANDLE-BOTTLE C;CLP-300,ABS,T5.4,-,L43.6		SNA
#N/A	JC99-01898J	INA-ACCESSORY;CLP-300/XSG,SAMSUNG,-,GOGH		SNA
#N/A	0202-001240	SOLDER-WIRE;HSE-01,-,D3,SN/0.5CU/0.03NI/		SNA
#N/A	JC63-00894A	COVER-INNER;CLP-300,ABS,T2.0,PI 56,-,HB,		SNA
#N/A	0202-001459	SOLDER-CREAM;S3X58-M405,-,D20~38\$,96.5SS		SNA
#N/A	JC68-01564B	MANUAL-INSTALL;CLP-300,SEC,10 ,GOGH,M150		SNA
#N/A	JC92-01707B	PBA MAIN-GOGH_NET;CLP-300,SEC,KOREA,GDI,		SA
#N/A	JC64-00260A	HANDLE-M-BOTTLE;CLP-300,ABS,T5.9,W32.3,L		SNA
#N/A	JC66-01049A	GEAR-OPC DRIVE;CLP-300,POM,M0.6/M0.6,Z53		SA
#N/A	JC39-00484A	CBF HARNESS-SMPS;CLP-300,WIRE HARNESS,UL		SA
#N/A	JC39-00485A	CBF HARNESS-HVPS;CLP-300,WIRE HARNESS,UL		SA
#N/A	JC67-00135B	CAP-TONER BOTTLE C;CLP-300,ABS HB,T10.87		SNA
#N/A	6902-000775	BAG PE;HDPE,T0.015,W1000,L900,TRP,28,0,		SNA
#N/A	0201-001162	ADHESIVE-CYA;LOCTITE403,NTR,1250,20G		SNA
#N/A	JC61-01466A	FRAME-M-T2 BASE;CLP-300,PC+ABS,-,HB,BLAC		SNA
#N/A	JC61-01468A	GUIDE-P-T2 OUTPUT;CLP-300,SECC,T0.6,-,22		SNA
#N/A	JC61-01677A	SPRING ETC-RETURN;CLP-300,SUS304,1.6T		SNA
#N/A	JC66-01084A	SHAFT-M-AUGER OPC;CLP-300,ABS+GF20%,L250		SNA
#N/A	JC66-01086A	GEAR-DRUM OPC;CLP-300,PC(LF1025),M0.6,Z9		SNA
#N/A	JC66-01088A	SHAFT-OPC;CLP-300,SUS303,L284.5,OD6,-,-,		SNA
#N/A	JC66-01113A	GEAR-IDLE M08Z30R;CLP-300,POM (M90-44),M		SNA
#N/A	JC69-01016A	CUSHION-CASSETTE IN;CLP-300,HONEY PAD,T3		SNA
#N/A	JC74-00011A	MPR-PAD KNOCK UP MP;ML-6060A,CR+CORK,10*	O1109	SA
#N/A	JC39-00487A	CBF HARNESS-OPE;CLP-300,WIRE HARNESS,UL1		SA
#N/A	JC66-01124A	GEAR-IDLE OPC;CLP-300,POM (M90-44),M0.6/		SNA
#N/A	JC61-01500A	BRACKET-P-CLEANING ITB;CLP-300,SECC,1.6T		SNA
#N/A	JC61-01496A	HOUSING-M-CLEANING OPC;CLP-300,ABS GF 20		SNA
#N/A	JC39-00486A	CBF HARNESS-BLDC;CLP-300,WIRE HARNESS,UL		SA
#N/A	JC39-00580A	CBF HARNESS-DEVE_HOME;CLP-300,WIRE HARNE		SA
#N/A	JC61-01493A	FRAME-M-RIGHT OPC;CLP-300,ABS+GF20%,-,-,		SNA
#N/A	JC66-01299A	SHAFT-AUGER SUPPLY M;CLP-300,ABS GF20% G		SNA
#N/A	JC61-01529A	HOLDER-M-CRUM;CLP-300,ABS(XR-409),T2.0,W		SNA
#N/A	JC66-01074A	LEVER-M-RELEASE R;CLP-300,ABS+GF20%,T2.0		SNA
#N/A	JC61-01669A	GUIDE-M-SENSOR L;CLP-300,PS,T10.29,W11.7		SNA
#N/A	JC66-01069A	GEAR-CLUTCH DEVE CAM;CLP-300,POM,M0.6,Z2		SA

SA : SERVICE AVAILABLE SNA : SERVICE not AVAILABLE DNA : DELIVERY not AVAILABLE

Drawer#	SEC-Code	Description & Specification	Location	Service
#N/A	JC73-00220A	RUBBER-BELT BLACK;CLP-300,NBR,0.7T,-,22,		SNA
#N/A	JC72-00382B	PMO-BUSHING FEED;ML-1710,POM(DERLIN 8903	O1102	SA
#N/A	JC46-00257A	S/W APPLICATION-CD;- ,CLP-300,PRT DRV,1.0		SNA
#N/A	JC39-00494A	CBF HARNESS-REGI EMT;CLP-300,WIRE HARNES		SA
#N/A	JC61-01675A	SPRING ETC-AUGER;CLP-300,SUS304,jE1.2,-,S		SNA
#N/A	JC61-01676A	SPRING ETC-AUGER K;CLP-300,SWP-B,jE1.2,IS		SNA
#N/A	JC72-01384A	SPONGE-CAP BOTTLE;CLP-300,POLYURETHANE F		SNA
#N/A	JC66-01140A	GEAR-AUGER B;CLP-300,POM,M0.6,Z56,T4.1,W		SNA
#N/A	JC66-01141A	GEAR-AUGER Z15;CLP-300,POM,M0.6,Z15,T3.5		SNA
#N/A	JC66-01301A	LEVER-COVER OPEN;CLP-300,PET+GF30,2.0,24		SNA
#N/A	JC70-50901A	IPR-IPM BUSHING DEV R;ML-5000,BRONZE,-,D		SNA
#N/A	JC94-01153A	PHANTOM AU JC92-01707B		SNA
#N/A	JC72-41105A	PMO-BUSHING DEV;ML-5000,POM,NTR,-,-,-,-,		SNA
#N/A	JC66-00720A	SHAFT-P-CORE;ML-1750,SECC 1.2T,203,-,-,-	O1068	SA
#N/A	JC63-00897A	COVER-M-WIRE;CLP-300,ABS,T2.0,W18.9,L133		SNA
#N/A	JC33-00018A	SOLENOID-TONER;- ,CLP-300,DC24V,120\$Uj%410SN		SNA
#N/A	JC64-00229A	HANDLE-LOCK;CLP-300,ABS,T34.26,W39.3,L83		SNA
#N/A	JC68-01245A	MANUAL-WARRANTY CARD;COMMON,XSG,ARABIC,U		SNA
#N/A	3711-000198	HEADER-BOARD TO CABLE;1WALL,3P,1R,2.5MM,		SA
#N/A	JC92-01710A	PBA SUB-CRUM_Y;CLP-300,SEC,KOREA,CRUM_Y,		SNA
#N/A	JC72-01389A	SPONGE-CRUM;CLP-300,PORON,-,T2,W8,L12,-,		SNA
#N/A	JC61-01777A	HOLDER-BLADE ITB;CLP-300,PC,-,W10,L17.2,		SNA
#N/A	JC67-00134A	TANK-M-TONER BOTTLE BK;CLP-300,ABS HB,-,		SNA
#N/A	JC97-01401A	MEA UNIT-TERMINAL:TR;ML-5000A,SAMSUNG,KO		SA
#N/A	JC97-02638A	MEA UNIT-TERMINAL GND;CLP-300,SEC,EXPORT		SA
#N/A	JC97-02639A	MEA UNIT-FU TERMINAL;CLP-300,SEC,EXPORT,		SA
#N/A	JC97-02640A	MEA UNIT-REGIACTUATOR;CLP-300,SEC,EXPORT		SA
#N/A	JC97-02641A	MEA UNIT-EXIT ROLLER;CLP-300,SEC,EXPORT,		SA
#N/A	JC68-01154A	LABEL(R)-POP(A);COMMON,-,PC+HOLOGRAM,T0.		SNA
#N/A	JC68-01825A	LABEL-CAUTION;CLP-300,SEC,WHITE POLY,-,W		SNA
#N/A	JC69-01014A	CUSHION-MAIN BOTTOM;CLP-300,EPP,87,502,4		SNA
#N/A	JC63-00845A	COVER-M-RIGHT SIDE;CLP-300,ABS FR,T2.5,2		SA
#N/A	JC69-00919B	BOX(P)-MAIN;CLP-300,OFFSET4,A-1,515,424,		SA
#N/A	JC96-03590A	ELA UNIT-MAIN LINE;CLP-300,SEC,WORLD,220		SNA
#N/A	0202-001492	SOLDER-WIRE FLUX;HSE-02 LFM48 SR-34 S,-,		SNA
#N/A	0203-000007	TAPE-FILAMENT;3M,T0.15,W18,L55M,TRP		SNA
#N/A	0203-001100	TAPE-OPP MASKING;OPP/W75/CLR,T0.05,W75,L		SNA
#N/A	0203-001159	TAPE-FILAMENT;#8915,T0.15,W12,L55000,CLR		SNA
#N/A	0204-000469	THINNER;#4662,-,0.795,-		SNA
#N/A	0204-002978	FLUX;KSP-70M,-,84%,FLUX,SPRAY		SNA
#N/A	0205-001214	GREASE;LUBTECH FF 662,WHITE,-		SNA
#N/A	1103-001273	IC-EEPROM;24C64A,64Kbit,8Kx8Bit,DIP,8P,9		SA
#N/A	2801-003886	CRYSTAL-UNIT;12MHz,50ppm,28-AAA,16pF,50o		SNA
#N/A	3711-000164	HEADER-BOARD TO CABLE;1WALL,2P,1R,2.5mm,		SNA
#N/A	3711-000203	HEADER-BOARD TO CABLE;1WALL,2P/3P,1R,7.9		SA
#N/A	3711-002410	HEADER-BOARD TO CABLE;BOX,10P,2R,2mm,STR		SNA
#N/A	3711-003035	HEADER-BOARD TO CABLE;BOX,14P,2R,2mm,STR		SA
#N/A	3711-003204	HEADER-BOARD TO CABLE;BOX,24P,2R,2mm,STR		SA
#N/A	3711-003340	HEADER-BOARD TO CABLE;BOX,16P,2R,2mm,STR		SA
#N/A	3711-003408	HEADER-BOARD TO CABLE;BOX,2P,1R,2mm,STRA		SNA
#N/A	3722-002303	JACK-USB;4P/1C,AU30U,BLK,ANGLE,B TYPE		SA
#N/A	6902-000732	BAG PE;LDPE,T0.1,W120,L200,TRP,0,0,-		SNA
#N/A	6902-000734	BAG PE;LDPE,T0.1,W140,L250,TRP,-,-,-		SNA
#N/A	JB68-00073A	LABEL(R)-BAR CODE;SF-3000,PY,38X6.5,T0.1		SNA
#N/A	JB68-00916A	LABEL RATING-BLANK;SF-340,SEC,TETRON,0.0		SNA
#N/A	JC02-00052A	TONER-MAGENTA;CLP-300,SAM-79GZ-K1,MAGENT		SNA
#N/A	JC02-00053A	TONER-CYAN;CLP-300,SAC-79GZ-K1,CYAN,8.5?		SNA

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#N/A	JC02-00055A	TONER-YELLOW;CLP-300,SAY-79GZ-K1,YELLOW,		SNA
#N/A	JC39-00483A	CBF HARNESS-LSU;CLP-300,WIRE HARNESS,UL1		SA
#N/A	JC39-00496A	CBF HARNESS-LSU_GND;CLP-300,WIRE HARNESS		SA
#N/A	JC62-00261A	SEAL-SHUTTER A;CLP-300,PE FOAM,-,T10,ID3		SNA
#N/A	JC63-00895A	COVER-INNER BK;CLP-300,ABS,T2.0,R75,-,HB		SNA
#N/A	JC63-01046A	SHEET-AGITATOR;CLP-300,PET,T0.125,W25.5,		SNA
#N/A	JC63-01047A	SHEET-AGITATOR BK;CLP-300,PET,T0.125,W35		SNA
#N/A	JC64-00260B	HANDLE-BOTTLE Y;CLP-300,ABS,T5.4,-,L43.6		SNA
#N/A	JC66-01145A	SHAFT-SPRING;CLP-300,POM,L16.5,OD11.5,BL		SNA
#N/A	JC66-01146A	SHAFT-AUGER K;CLP-300,POM,L70.3,OD10,WHI		SNA
#N/A	JC67-00131A	TANK-M-TONER BOTTLE Y;CLP-300,ABS HB,-,P		SNA
#N/A	JC67-00135C	CAP-TONER BOTTLE M;CLP-300,ABS HB,T10.87		SNA
#N/A	JC67-00136A	CAP-M-TONER BOTTLE BK;CLP-300,ABS HB,-,P		SNA
#N/A	JC67-00137A	CAP-M-CRUM BOTTLE;CLP-300,ABS HB,-,PI52,		SNA
#N/A	JC67-00140A	CAP-M-CRUM BOTTLE BK;CLP-300,ABS(HF-0660		SNA
#N/A	JC67-00141A	CAP-M-CRUM BOTTLE C;CLP-300,ABS(HF-0660I		SNA
#N/A	JC67-00142A	CAP-M-CRUM BOTTLE M;CLP-300,ABS(HF-0660I		SNA
#N/A	JC67-00145A	CAP-M-TONER;CLP-300,PP,T4.5,ID16.7,OD19,		SNA
#N/A	JC67-00187A	CAP-BOTTLE Y;CLP-300,PET,T0.65,W64.53,L5		SNA
#N/A	JC67-00188A	CAP-BOTTLE BK;CLP-300,PET,T0.65,R39.1,L5		SNA
#N/A	JC68-01032A	MANUAL-REGISTRATION CARD;COMMON,XGE,ARAB		SNA
#N/A	JC68-01381B	LABEL(R)-PPID(DEVE);COMMON,DELL,ART,0.05		SNA
#N/A	JC68-01584A	LABEL(P)-BLANK 90*25;CLP-510,SEE,ART 100	D2120	SA
#N/A	JC68-01707A	LABEL-FUNCTION;CLP-300,-,YUPO,T0.2,W10,L		SNA
#N/A	JC68-01805A	LABEL-FUNCTION;CLP-300,SEC,YUPO,T0.2,W10		SNA
#N/A	JC68-10932A	LABEL(P)-BLANK(ML);ML-85,ART,70X60,G100,		SNA
#N/A	JC69-01014B	CUSHION-MAIN TOP;CLP-300,EPP,184,502,411		SNA
#N/A	JC96-04002A	ELA HOU-REGI_EMP;CLP-300,KOREA,KOREA,REG		SA
#N/A	JC97-02642A	MEA UNIT-EMPTY ACT;CLP-300,SEC,EXPORT,-,		SA
#N/A	JC97-02647A	MEA UNIT-PICKUP ROLL;CLP-300,SEC,EXPORT,		SA
#N/A	JG61-40001A	FOOT-SF4000;SF4000,CR,-,BLK,CR,3,-,-	F1017	SA
#N/A	0201-001183	ADHESIVE-AA;ARON ALPHA #202F,NTR,100,20G		SNA
#N/A	0205-001056	GREASE-GRAPHITE;CRS841,WHT,-		SNA
#N/A	0205-001067	GREASE-GRAPHITE;NYOGEL 756G,HYDRO CARBON		SNA
#N/A	0401-000116	DIODE-SWITCHING;MMSD914T1,100V,200MA,SOD		SNA
#N/A	0407-000122	DIODE-ARRAY;KDS226,80V,300mA,C2-3,SOT-23		SA
#N/A	0501-000462	TR-SMALL SIGNAL;MMBT2907A,PNP,350mW,SOT-		SA
#N/A	0505-001326	FET-SILICON;SI2308DS,N,60V,2A,0.22OHM,1.		SA
#N/A	0601-001226	LED;SMD,RED,1.2x0.8mm,660nm,1.6x0.8mm		SA
#N/A	0601-001383	LED;ROUND,RED,3.0MM,700NM		SNA
#N/A	0803-000634	IC-TTL;74LS07,BUFFER/DRIVER,SOP,14,150MI		SA
#N/A	0904-001989	IC-USC;ISP1582BS,-,HVQFN56,56P,8X8X0.85M		SA
#N/A	1105-001535	IC-DRAM;M12L128168A-7T,-,128MBIT,4X2MX16		SA
#N/A	1107-001302	IC-FLASH MEMORY;29LV800,1Mx8/512Kx16,TSO		SA
#N/A	1202-000164	IC-VOLTAGE COMP.;393,SOP,8P,150MIL,DUAL,		SA
#N/A	1203-001455	IC-POS.FIXED REG.;1117,DPAK,3P,265MIL,P		SA
#N/A	1203-002233	IC-RESET;XC61F,SOT-23,3P,-,PLASTIC,0.7/1		SNA
#N/A	1203-003739	IC-DC/DC CONVERTER;MVP31,DFN,12P,4X3MM,		SNA
#N/A	1205-002339	IC-CLOCK GENERATOR;CY25811SC,SOIC,8P,150		SA
#N/A	2007-000066	R-CHIP;20Kohm,1%,1/10W,TP,1608		SA
#N/A	2007-000067	R-CHIP;15Kohm,1%,1/10W,TP,1608		SA
#N/A	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000094	R-CHIP;22Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000105	R-CHIP;200Kohm,5%,1/10W,TP,1608		SA

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#N/A	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000123	R-CHIP;1.5Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000134	R-CHIP;33Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000239	R-CHIP;1.5Kohm,1%,1/10W,TP,1608		SA
#N/A	2007-000309	R-CHIP;10ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000402	R-CHIP;150ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000475	R-CHIP;1Mohm,1%,1/10W,TP,1608		SA
#N/A	2007-000539	R-CHIP;200ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000729	R-CHIP;300ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-001056	R-CHIP;6.2Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-002901	R-CHIP;12.1Kohm,1%,1/10W,TP,1608		SA
#N/A	2007-007239	R-CHIP;31.6Kohm,1%,1/10W,TP,1608		SNA
#N/A	2007-008371	R-CHIP;280Kohm,1%,1/10W,TP,1608		SNA
#N/A	2011-001011	R-NET;10Kohm,5%,1/16W,L,CHIP,8P,TP,3.2x1		SNA
#N/A	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,2.0x1.		SA
#N/A	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608		SA
#N/A	2203-000384	C-CER,CHIP;0.015nF,5%,50V,C0G,1608		SA
#N/A	2203-000426	C-CER,CHIP;0.018nF,5%,50V,C0G,1608		SA
#N/A	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608		SA
#N/A	2203-005384	C-CER,CHIP;4700nF,+80-20%,10V,Y5V,2012		SA
#N/A	2203-005819	C-CER,CHIP;1000nF,+80-20%,16V,Y5V,-,1608		SNA
#N/A	2203-006474	C-CER,CHIP;22000nF,20%,6.3V,X5R,2012		SA
#N/A	2203-006646	C-CER,CHIP;10000nF,10%,6.3V,X5R,2012		SA
#N/A	2401-000042	C-AL;100uF,20%,16V,GP,TP,6.3x7,5		SA
#N/A	2401-000207	C-AL;100uF,20%,50V,WT,TP,8x12,5		SNA
#N/A	2401-002300	C-AL;47uF,20%,50V,GP,TP,6.3x11,5		SA
#N/A	2402-001049	C-AL,SMD;10uF,20%,16V,GP,TP,3.3x3.3x5.4		SA
#N/A	2703-000300	INDUCTOR-SMD;1uH,10%,1608		SA
#N/A	2703-002055	INDUCTOR-SMD;2.2UH,20%,6363		SNA
#N/A	2901-001178	FILTER-EMI SMD;25V,2A,-,100000pF,2x1.25x		SA
#N/A	3301-000325	BEAD-SMD;60ohm,3.2x2.5x1.3mm,400mA,TP,,,		SNA
#N/A	3301-001122	BEAD-SMD;600ohm,1.6x0.8x0.8mm,TP,-,-		SNA
#N/A	3301-001240	BEAD-SMD;120ohm,1608,200mA,,393ohm/305MH		SNA
#N/A	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	D2158	SA
#N/A	3711-003409	HEADER-BOARD TO CABLE;BOX,3P,1R,2mm,STRA		SNA
#N/A	3711-003410	HEADER-BOARD TO CABLE;BOX,4P,1R,2mm,STRA		SNA
#N/A	3711-003411	HEADER-BOARD TO CABLE;BOX,5P,1R,2mm,STRA		SNA
#N/A	6044-001035	RING-ETC;ID2.2,OD6.4,T3,BLK,STS304		SNA
#N/A	JC13-00031B	IC ASIC-CHORUSM;CHORUSM,SCX-4920N_VE,496		SA
#N/A	JC39-00036A	CBF HARNESS-OPE GND;SF-5100,#18,UL 1007,		SA
#N/A	JC39-00490A	WIRE HARNESS-WASTE_T;CLP-300,WIRE HARNES		SA
#N/A	JC39-00492A	CBF HARNESS-PTL;CLP-300,WIRE HARNESS,UL1		SNA
#N/A	JC39-00495A	CBF HARNESS-EXIT;CLP-300,WIRE HARNESS,UL		SA
#N/A	JC39-00577A	CBF HARNESS-DEVE_ITB;CLP-300,WIRE HARNES		SNA
#N/A	JC41-00300A	PCB MAIN-GOGH_GDI;CLP-300,FR-4,6L,-,1.6T		SNA
#N/A	JC60-00014A	FLANGE-M-DRUM OPC;CLP-300,PC(LF1025),W11		SNA
#N/A	JC60-00015A	SPACER-M-DR G;CLP-300,KL4540,-,ID6.03,OD		SNA
#N/A	JC61-00424A	BUSH-4;ML-9400W,NTN B-F4-42,-,-,NTR,-	K2867	SA
#N/A	JC61-01120B	PLATE-CRUM;CLP-300,C5210P,0.15,W3,L5.2,-		SNA
#N/A	JC61-01158A	PLATE-M-KNOCK_UP;ML-1610,HIPS HB,T2,W80,	K5002	SA
#N/A	JC61-01281A	BRACKET-P-BAR_PICK_UP;ML-1610,SECC,T1.0,		SNA
#N/A	JC61-01467A	PLATE-P-T2 GROUND;CLP-300,C5210P 1/2H TA		SNA
#N/A	JC61-01469A	HOLDER-M-LOCATE SHAFT;CLP-300,POM (M90-4		SNA
#N/A	JC61-01470A	GUIDE-P-T2 INPUT;CLP-300,SECC,T0.6,-,230		SNA
#N/A	JC61-01492A	FRAME-M-LEFT OPC;CLP-300,ABS+GF20%,-,-,B		SNA
#N/A	JC61-01501A	PLATE-P-EARTH OPC;CLP-300,C5210P,T0.2,ID		SNA

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#N/A	JC61-01508A	FRAME-M-DEVE YELLOW;CLP-300,ABS+GF20%,GR		SNA
#N/A	JC61-01509A	FRAME-M-DEVE MAGENTA;CLP-300,ABS+GF20%,G		SNA
#N/A	JC61-01510A	FRAME-M-DEVE CYAN;CLP-300,ABS+GF20%,GR40		SNA
#N/A	JC61-01511A	FRAME-M-DEVE BLACK;CLP-300,ABS+GF20%,GR4		SNA
#N/A	JC61-01512A	HOLDER-M-DEVE YELLOW L;CLP-300,ABS+GF20%		SNA
#N/A	JC61-01516A	GUIDE-M-DEVE;CLP-300,ABS+GF20%,GR4020,22		SNA
#N/A	JC61-01518A	PLATE-P-SUPPLY ROLLER;CLP-300,SUS 301-CS		SNA
#N/A	JC61-01519A	PLATE-P-DEVE ROLLER;CLP-300,SUS 301-CSP		SNA
#N/A	JC61-01520A	FRAME-M-DEVE MAIN;CLP-300,ABS GF20%,GR-4		SNA
#N/A	JC61-01526A	GUIDE-M-BUSH IDL ITB R;CLP-300,POM M90-4		SNA
#N/A	JC61-01527A	HOLDER-P-SEAL DEVE L;CLP-300,SUS301-CSP		SNA
#N/A	JC61-01528A	HOLDER-P-SEAL DEVE R;CLP-300,SUS301-CSP		SNA
#N/A	JC61-01561A	HOLDER-M-DEVE ROLLER;CLP-300,POM M90-44,		SNA
#N/A	JC61-01562A	GUIDE-M-DRIVE ITB;CLP-300,POM(M90-44),-,		SNA
#N/A	JC61-01573A	HOLDER-SUPPORT;CLP-300,ABS,T14.5,W26.5,L		SNA
#N/A	JC61-01576A	BUSH-SHAFT;CLP-300,POM,ID3.0,OD4.5,T3.5,		SNA
#N/A	JC61-01670A	GUIDE-M-SENSOR R;CLP-300,PS,T10.29,W11.7		SNA
#N/A	JC61-01671A	GUIDE-M-SENSOR BK R;CLP-300,PS,T10,W13.4		SNA
#N/A	JC61-01672A	GUIDE-M-SENSOR BK L;CLP-300,PS,T10,W13.4		SNA
#N/A	JC61-01673A	BLADE-CLEANING ITB;CLP-300,POLYURETHANE,		SNA
#N/A	JC61-01684A	BLADE-SENSOR;CLP-300,PET FILM,-,W6.3*L9.		SNA
#N/A	JC61-01687A	SPRING ETC-LOCK;CLP-300,PW-2,PI1.3,-,-,L		SNA
#N/A	JC61-01700A	GUIDE-WASTE;CLP-300,PC,-,31,41,TRANSPARE		SNA
#N/A	JC61-01706A	STUD-GEAR ITB;CLP-300,SUM22L,-,-,-,OD6		SNA
#N/A	JC61-01750A	BRACKET-P_GUIDE PR;CLP-300,SUS,T1.0,W232		SNA
#N/A	JC61-01751A	GUIDE-P_PAPER PR;CLP-300,SUS304,T0.1,W21		SNA
#N/A	JC61-01753A	PLATE-_P-DEVE SUPPORT;CLP-300,STSC301-CS		SNA
#N/A	JC61-01775A	BRACKET-CAM BAR;CLP-300,SECC,T1.2,W4.5,L		SNA
#N/A	JC61-70929A	SPRING ETC-HV LARGE;ML-5000A,SUS304-WPB,	Z4437	SA
#N/A	JC62-00211A	SEAL-DRUM OPC;CLP-300,URETHANE FILM,-,T0		SNA
#N/A	JC62-00215A	SEAL-SIDE DEVE;CLP-300,PORON LE20,BLACK,		SNA
#N/A	JC62-00216A	SEAL-BRACKET OPC;CLP-300,EPDM,-,T2.7,W3,		SNA
#N/A	JC62-00226A	SEAL-DOCTOR BLADE;CLP-300,EPDM,-,T4.0,W4		SNA
#N/A	JC62-00230A	SEAL-SIDE RIGHT OPC;CLP-300,POLYURETHANE		SNA
#N/A	JC62-00231A	SEAL-SIDE LEFT OPC;CLP-300,POLYURETHANE		SNA
#N/A	JC62-00234A	SEAL-DEVE BLOCK;CLP-300,POLYURETHANE,-,3		SNA
#N/A	JC62-00235A	SEAL-DEVE ROLLER;CLP-300,PET Film,-,0.07		SNA
#N/A	JC62-00236A	SEAL-DEVE FRONT;CLP-300,PET FILM,-,0.075		SNA
#N/A	JC62-00240A	SEAL-AUGER;CLP-300,PORON ,BLACK,T5.0,ID4		SNA
#N/A	JC62-00241A	SEAL-COVER DUCT;CLP-300,PE FOAM,-,T2.0,W		SNA
#N/A	JC62-00256A	SEAL-FRAME WASTE OPC;CLP-300,PORON LE-20		SNA
#N/A	JC62-00260A	SEAL-CAP CRUM;CLP-300,Polyurethane Foam(SNA
#N/A	JC62-00262A	SEAL-WASTE;CLP-300,PE FORM,-,T3.0,W4,L13		SNA
#N/A	JC62-00269A	SEAL-COVER FRONT;CLP-300,PE FOAM,-,T2.0,		SNA
#N/A	JC62-00270A	SEAL-COVER BOTTOM;CLP-300,POLYURETHANE F		SNA
#N/A	JC62-00271A	SEAL-COVER DEV K;CLP-300,PE FOAM,-,T3.0,		SNA
#N/A	JC62-00272A	SEAL-LSU REAR;CLP-300,URETHAN FILM,NTR,T		SNA
#N/A	JC62-00273A	SEAL-DEVE ROLLER K;CLP-300,PET FILM,-,T0		SNA
#N/A	JC62-00274A	SEAL-SIDE GAP OPC;CLP-300,POLYURETHAN FO		SNA
#N/A	JC62-00275A	SEAL-BLADE;CLP-300,PE FOAM,-,T3.0,W3,L8.		SNA
#N/A	JC62-00279A	SEAL-SENSOR BK;CLP-300,FLOCKING(DOBIRU),		SNA
#N/A	JC62-00280A	SEAL-SENSOR Y;CLP-300,FLOCKING(DOBIRU),B		SNA
#N/A	JC62-00306A	SEAL-CAP DUCT;CLP-300,FLOCKING,-,T0.5,W8		SNA
#N/A	JC62-00307A	SEAL-SENSOR;CLP-300,FLOCKING,-,T0.5,W13.		SNA
#N/A	JC62-00308A	SEAL-DOCTOR BLADE S;CLP-300,EPDM,-,T2.0,		SNA
#N/A	JC62-00320A	SEAL-WASTE F;CLP-300,PE FOAM,GRAY,2.0T,W		SNA
#N/A	JC62-00321A	SEAL-WASTE R;CLP-300,PE FOAM,GRAY,2.0T,w		SNA

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#N/A	JC62-00324A	SEAL-WASTE B;CLP-300,POLY-URETHANE(SHL),		SNA
#N/A	JC62-00341A	SEAL-WASTE EXIT;CLP-300,PORON LE-20 + PE		SNA
#N/A	JC62-00342A	SEAL-SIDE CLN OPC;CLP-300,POLYURETHANE F		SNA
#N/A	JC62-00343A	SEAL-SENSOR TOP;CLP-300,EPDM,-,T2.5,W4,L		SNA
#N/A	JC63-00853A	COVER-M-TONER BOTTLE;CLP-300,ABS HB HF-0		SNA
#N/A	JC63-00858A	COVER-M-WASTE OPC;CLP-300,ABS,T2,W15.8,L		SNA
#N/A	JC63-00883A	COVER-M-WASTE;CLP-300,PC(141R),T2.0,W77,		SNA
#N/A	JC63-00898A	COVER-M-DEVE Y;CLP-300,ABS HF0660I,T1.5,		SNA
#N/A	JC63-00899A	COVER-M-DEVE M;CLP-300,ABS HF0660I,T1.5,		SNA
#N/A	JC63-00900A	COVER-M-DEVE C;CLP-300,ABS HF0660I,T1.5,		SNA
#N/A	JC63-00901A	COVER-M-DEVE K;CLP-300,ABS HF0660I,T1.5,		SNA
#N/A	JC63-01048A	SHEET-COVER HARNESS;CLP-300,PC,T0.125,W4		SNA
#N/A	JC63-01086A	SHEET-WASTE;CLP-300,PET,T0.188,W24,L24,B		SNA
#N/A	JC63-01087A	SHEET-LSU COVER;CLP-300,PC,T0.38,W17,L23		SNA
#N/A	JC63-01164A	SHEET-HOUSING REAR;CLP-300,PC,T0.38,W11.		SNA
#N/A	JC64-00217A	HANDLE-M-UNIT;CLP-300,ABS,7.0T,50.5,130,		SNA
#N/A	JC64-00276A	LOCKER-FRAME;CLP-300,PC,BLK,-,-,-		SNA
#N/A	JC66-00494A	GEAR-OPC ROLL CLEAN_Z18;CLP-500,POM,M0.8		SNA
#N/A	JC66-00604A	ROLLER-CHARGER CLEANING;CLP-500,URETHAN+		SNA
#N/A	JC66-00830A	ROLLER-M-EXIT FR;ML-1610,TEFLON,6.5,L22.		SNA
#N/A	JC66-01058A	LATCH-M-CLUTCH SPRING;CLP-300,POM,T1.2,D		SNA
#N/A	JC66-01072A	SHAFT-LOCATE;CLP-300,SUM 22+NI(COATING),		SNA
#N/A	JC66-01075A	LEVER-M-RELEASE L;CLP-300,ABS+GF20%,T2.0		SNA
#N/A	JC66-01081A	GEAR-RDCN T2 DRIVE;CLP-300,POM,M0.8/M0.8		SA
#N/A	JC66-01090A	GEAR-DEVE ROLLER;CLP-300,POM DE8903,M0.6		SNA
#N/A	JC66-01091A	GEAR-SUPPLY ROLLER;CLP-300,POM DE588P,M0		SNA
#N/A	JC66-01092A	SHAFT-M-AUGER SUPPLY;CLP-300,ABS GF20% G		SNA
#N/A	JC66-01093A	SHAFT-M-BELT;CLP-300,POM(M90-44),24.8,¥ÖS		SNA
#N/A	JC66-01094A	LEVER-M-WASTE SENSOR;CLP-300,ABS,3.0T,18		SNA
#N/A	JC66-01099A	SHAFT-M-AUGER TONER Y;CLP-300,ABS GF20%		SNA
#N/A	JC66-01100A	SHAFT-M-AUGER TONER M;CLP-300,ABS GF20%		SNA
#N/A	JC66-01101A	SHAFT-M-AUGER TONER C;CLP-300,ABS GF20%		SNA
#N/A	JC66-01102A	SHAFT-M-AUGER TONER K;CLP-300,ABS GF20%		SNA
#N/A	JC66-01103A	LEVER-M-LOCK DEVE FRAME;CLP-300,ABS,2.0T		SNA
#N/A	JC66-01107A	GEAR-AUGER SUPPLY;CLP-300,POM DE588P,M0.		SNA
#N/A	JC66-01108A	GEAR-IDLE;CLP-300,POM DE8903,M0.6/M0.5,Z		SNA
#N/A	JC66-01109A	GEAR-AUGER TONER;CLP-300,POM DE588P,M0.5		SNA
#N/A	JC66-01114A	GEAR-DRIVE Z20;CLP-300,POM (DE588P),M0.8		SNA
#N/A	JC66-01115A	GEAR-WORM AGITATOR;CLP-300,PC-141R,-,-,-		SNA
#N/A	JC66-01116A	GEAR-IDLE M08Z30L;CLP-300,POM (M90-44),M		SNA
#N/A	JC66-01117A	GEAR-IDLE ITB;CLP-300,POM (M90-44),M0.8,		SNA
#N/A	JC66-01121A	LEVER-M-T2 HOLDER R;CLP-300,ABS+GF20%,T2		SNA
#N/A	JC66-01122A	LEVER-M-T2 HOLDER L;CLP-300,ABS+GF20%,T2		SNA
#N/A	JC66-01123A	GEAR-AUGER OPC;CLP-300,POM (M90-44),M0.5		SNA
#N/A	JC66-01125A	ROLLER-DEVE;CLP-300,NBR+ECO,OD10,L295.3,		SNA
#N/A	JC66-01126A	ROLLER-SUPPLY;CLP-300,Fur Brush,OD9.15,L		SNA
#N/A	JC66-01127A	DRUM-OPC;CLP-300,AL,ID58,OD60,L248,-,-		SNA
#N/A	JC66-01129A	ROLLER-DRIVE ITB;CLP-300,AL+EPDM,OD29.7,		SNA
#N/A	JC66-01130A	ROLLER-IDLE ITB;CLP-300,AL,OD30,L234,-,-		SNA
#N/A	JC66-01137A	GEAR-DRIVE ITB;CLP-300,PC(LF1025),M0.5,Z		SNA
#N/A	JC66-01142A	ROLLER-SLIDE A;CLP-300,POM,L10,OD10.2,BL		SNA
#N/A	JC66-01143A	ROLLER-SLIDE B;CLP-300,POM,L20,OD14,BLAC		SNA
#N/A	JC66-01230A	SHAFT-DEVE FRAME;CLP-300,SUS303,L28.4,¡ËS		SNA
#N/A	JC66-01295A	SHAFT-AUGER SUPPLY Y;CLP-300,ABS GF20% G		SNA
#N/A	JC66-01298A	SHAFT-AUGER SUPPLY C;CLP-300,ABS GF20% G		SNA
#N/A	JC66-01302A	SHAFT-HOUSING PICK UP;CLP-300,SUM22+NI C		SNA
#N/A	JC67-00143A	CAP-M-WASTE BOTTLE;CLP-300,LDPE(MB9205),		SNA

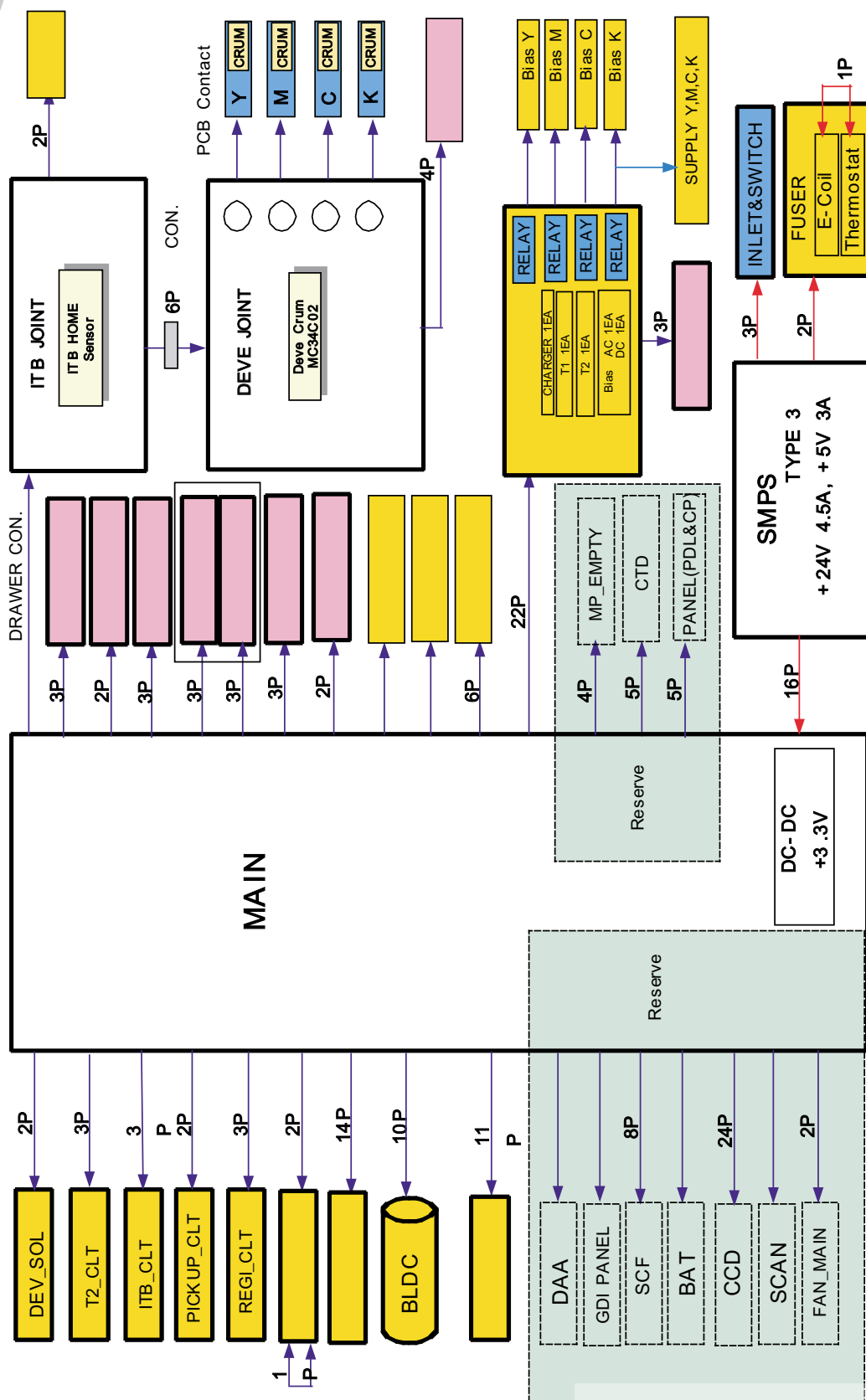
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#N/A	JC67-00144A	TANK-M-WASTE;CLP-300,ABS(TR557A),T2.0,W1		SNA
#N/A	JC67-00162A	CAP-DUCT;CLP-300,NBR,T0.7,17.8,19.7,-,-		SNA
#N/A	JC67-00191A	CAP-DUMMY;CLP-300,ABS,-,-,L31.4,DM GRAY,		SNA
#N/A	JC70-10232A	IPR-PLATE SAW;ML-80,SUS304 CSP 1/2H,-,T0	O1099	SA
#N/A	JC70-40912A	ICT-SHAFT HV LARGE;ML-5000A,SWCH18A,-,¥÷	O1100	SA
#N/A	JC71-00009A	NPM-BUSHING DEV R;ML-6060,BRONZE,D7*12,-		SNA
#N/A	JC72-01004A	PMO-IDLE KNOCK UP MP;ML-2150,POM,BLK,-,M	P0041	SA
#N/A	JC73-00217A	RUBBER-BELT YELLOW;CLP-300,NBR,0.7T,-,22		SNA
#N/A	JC73-00221A	RUBBER-BELT WASTE OPC;CLP-300,NBR,L335.9		SNA
#N/A	JC92-01708A	PBA SUB-DEVE_JOINT;CLP-300,SEC,KOREA,DEV		SNA
#N/A	JC92-01721A	PBA SUB-REGI_EMPTY;CLP-300,SEC,KOREA,REG		SNA
#N/A	JC92-01722A	PBA SUB-WASTE_R;CLP-300,SEC,KOREA,WASTE_		SNA
#N/A	JC94-01119A	0		SNA
#N/A	JC94-01120A	0		SNA
#N/A	JC94-01121A	0		SNA
#N/A	JC94-01122A	0		SNA
#N/A	JC94-01123A	0		SNA
#N/A	JC94-01124A	0		SNA
#N/A	JC94-01125A	0.1		SNA
#N/A	JC94-01126A	0.1		SNA
#N/A	JC94-01129A	0.1		SNA
#N/A	JC94-01130A	0.2		SNA
#N/A	JC97-01788C	MEA UNIT-CLUTCH TONER;CLP-300,-,WORLD,M0		SNA
#N/A	JC97-02620A	MEA UNIT-SUS BLADE;CLP-300,SEC,WORLD,-,-		SNA
#N/A	JC97-02628A	MEA UNIT-T2 ROLLER;CLP-300,SEC,WORLD,-,-		SA
#N/A	JC97-02643A	MEA UNIT-BLADE OPC;CLP-300,SEC,EXPORT,-,		SNA
#N/A	JC97-02644A	MEA UNIT-CHARGE OPC;CLP-300,SEC,EXPORT,-		SNA
#N/A	JC97-02694A	MEA-GUIDE IDL ITB;CLP-300,SEC,WORLD,-,-,		SNA
#N/A	0407-000101	DIODE-ARRAY;DA204K,20V,100mA,C2-3,SOT-23		SA
#N/A	0501-000457	TR-SMALL SIGNAL;MMBT2222A,NPN,350mW,SOT-		SA
#N/A	0601-000003	LED;ROUND,RED/GRN,3.1MM,650/563NM,3.8X5.		SA
#N/A	0601-001138	LED-IR;ROUND,5mm,150mW,4V,950nm,BK		SNA
#N/A	0601-001908	LED;ROUND,RED,3MM,630NM,3.2X4.6MM		SNA
#N/A	0603-001021	PHOTO TR;NPN,20V,5V,20mA,75mW,TP		SA
#N/A	1103-001366	IC-EEPROM;34C02,2KBIT,256X8BIT,SOP,8P,5X		SNA
#N/A	2001-000831	R-CARBON;510OHM,5%,1/4W,AA,TP,2.4X6.4MM		SA
#N/A	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216		SA
#N/A	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000730	R-CHIP;300ohm,5%,1/4W,TP,3216		SA
#N/A	2007-001003	R-CHIP;510ohm,5%,1/4W,TP,3216		SNA
#N/A	2201-000021	C-CERAMIC,DISC;100NF,+80-20%,50V,Y5V,TP,		DNA
#N/A	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608		SA
#N/A	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608		SA
#N/A	2203-005249	C-CER,CHIP;100nF,10%,50V,X7R,1608		SNA
#N/A	2404-001102	C-TA,CHIP;33uF,20%,16V,GP,TP,6032,-		SNA
#N/A	3711-002001	HEADER-BOARD TO CABLE;BOX,20P,2R,2MM,STR		SA
#N/A	JC39-00491A	CBF HARNESS-WASTE_R;CLP-300,WIRE HARNESS		SNA
#N/A	JC41-00171C	PCB-PTL (1LAYER);SCX-4100,FR-1,1,-,1.6T,		SNA
#N/A	JC41-00201A	PCB-TONER_TX;CLP-500,FR-1,1L,-,1.2,15*10		SNA
#N/A	JC41-00296A	PCB SUB-ITB_JOINT;CLP-300,FR-1,1L,-,1.6T		SNA
#N/A	JC41-00298A	PCB SUB-TONER_CRUM;CLP-300,FR-4,2L,-,1.6		SNA
#N/A	JC41-00299A	PCB SUB-PANEL;CLP-300,FR-1,1L,-,1.6T,45*		SNA
#N/A	JC61-01471A	HOLDER-M-T2 ROLLER R;CLP-300,POM (M90-44		SNA
#N/A	JC61-01507A	PLATE-P-DOCTOR BLADE;CLP-300,SECC,1.2T,3		SNA

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#N/A	JC61-01525A	GUIDE-M-BUSH IDL ITB L;CLP-300,POM M90-4		SNA
#N/A	JC61-01545A	BRACKET-P-CLEANING OPC;CLP-300,SECC,T1.2		SNA
#N/A	JC61-01575A	BLADE-P-DOCTOR;CLP-300,SUS,NATURAL,223*1		SNA
#N/A	JC61-01668A	COLLAR-M-CLUTCH;CLP-300,POM,ID11.4,OD13.		SNA
#N/A	JC61-01674A	BLADE-CLEANING OPC;CLP-300,POLY URETHANE		SNA
#N/A	JC66-01073A	GEAR-T2 ROLLER;CLP-300,POM,M0.8,Z28,-,WH		SA
#N/A	JC66-01098A	GEAR-CHARGE;CLP-300,POM (M90-44),M0.8,Z1		SNA
#N/A	JC66-01104A	ROLLER-TRANSFER;CLP-300,SUM22+HYBRID FOA		SNA
#N/A	JC66-01224A	GEAR-WORM CLUTCH;CLP-300,POM,M0.8,Z2,-,W		SNA
#N/A	JC66-01308A	ROLLER-CHARGE;CLP-300,NBR+ECO,D12,L230,-		SNA
#N/A	JC70-00525A	HUB-M-CLUTCH SPRING;CLP-300,POM,-,D13.4,		SNA
#N/A	JC71-10322B	NPR-EARTH OPC;- ,ML-80,C5210P-1/2H,T0.2,-		SNA
#N/A	JC94-01118A	0		SNA
#N/A	JC94-01127A	0.1		SNA
#N/A	JC94-01128A	0.1		SNA
#N/A	0402-001189	DIODE-RECTIFIER;M4,400V,1A,TS-1,TP		SA
#N/A	1001-000170	IC-ANALOG SWITCH;MC14051BD,SPDT CMOS,SOP		SA
#N/A	1404-001141	THERMISTOR-NTC;5.6Kohm,5%,3200K,2.1mW/C,		SNA
#N/A	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM		SA
#N/A	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000122	R-CHIP;1.2Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000839	R-CHIP;39ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000939	R-CHIP;47Kohm,1%,1/10W,TP,1608		SNA
#N/A	2007-007233	R-CHIP;61.9ohm,1%,1/10W,TP,1608		SNA
#N/A	2007-007550	R-CHIP;3.16Kohm,1%,1/10W,TP,1608		SNA
#N/A	2007-007613	R-CHIP;121ohm,1%,1/10W,TP,1608		SNA
#N/A	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608		SA
#N/A	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608		SA
#N/A	3711-005561	CONNECTOR-HEADER;BOX,5P,1R,2MM,SMD-S,SN,		SA
#N/A	3711-005596	HEADER-BOARD TO CABLE;BOX,3P,1R,2MM,SMD-		SNA
#N/A	3711-005851	HEADER-BATTERY;NOWALL,2P,1R,4.25MM,BATTE		SA
#N/A	3711-006032	CONNECTOR-HEADER;BOX,2P,1R,2MM,SMD-A,SN,		SNA
#N/A	JC41-00133A	PCB-SENSOR;SCX-5100,FR-1,1L,-,1.6T,22X12		SNA
#N/A	JC41-00202A	PCB-TONER_RX;CLP-500,FR-1,1L,-,1.2,15*10		SNA
#N/A	JC41-00295A	PCB SUB-DEVE_JOINT;CLP-300,FR-1,1L,-,1.6		SNA

9. Block Diagram





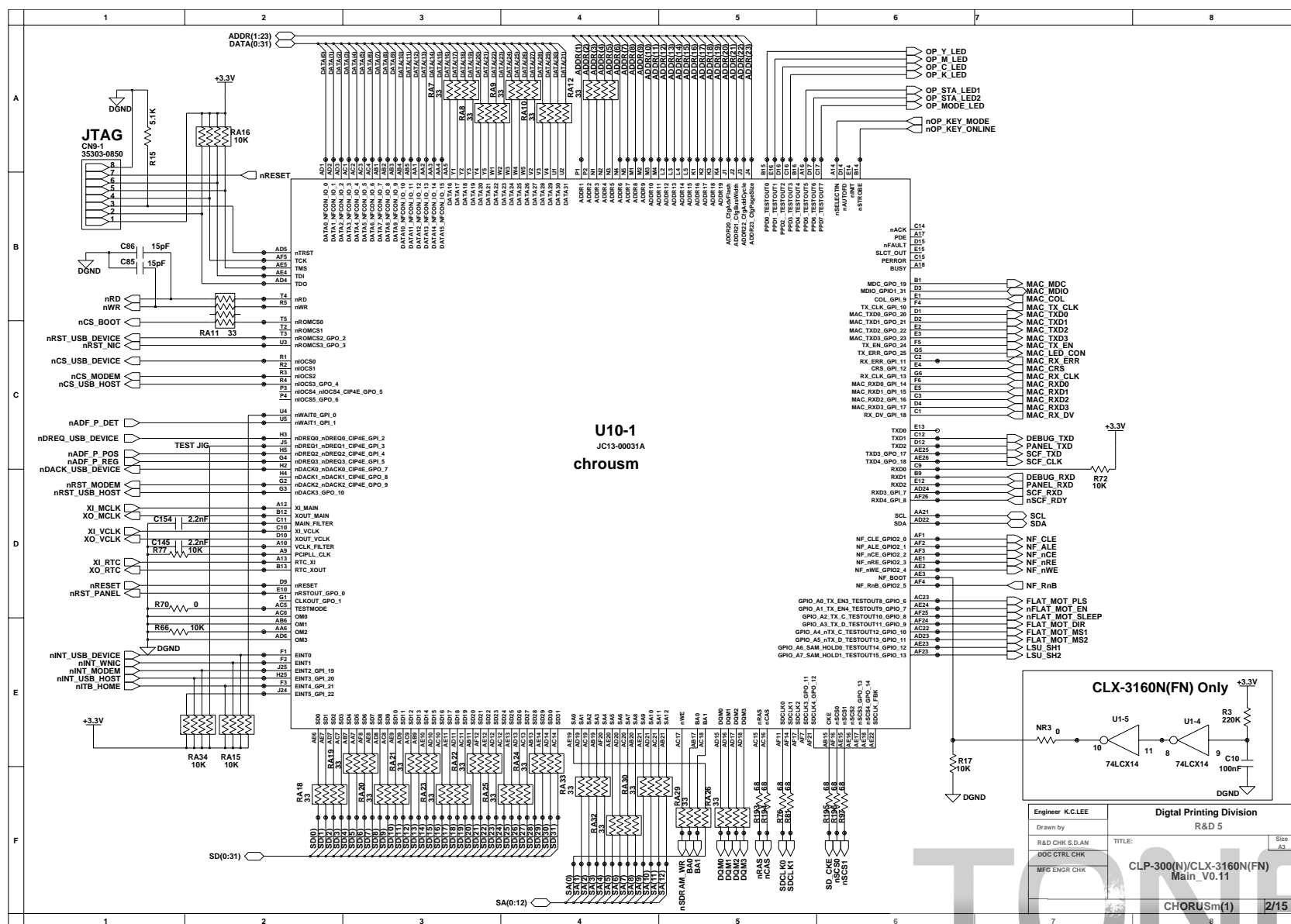
11. Schematic Diagrams

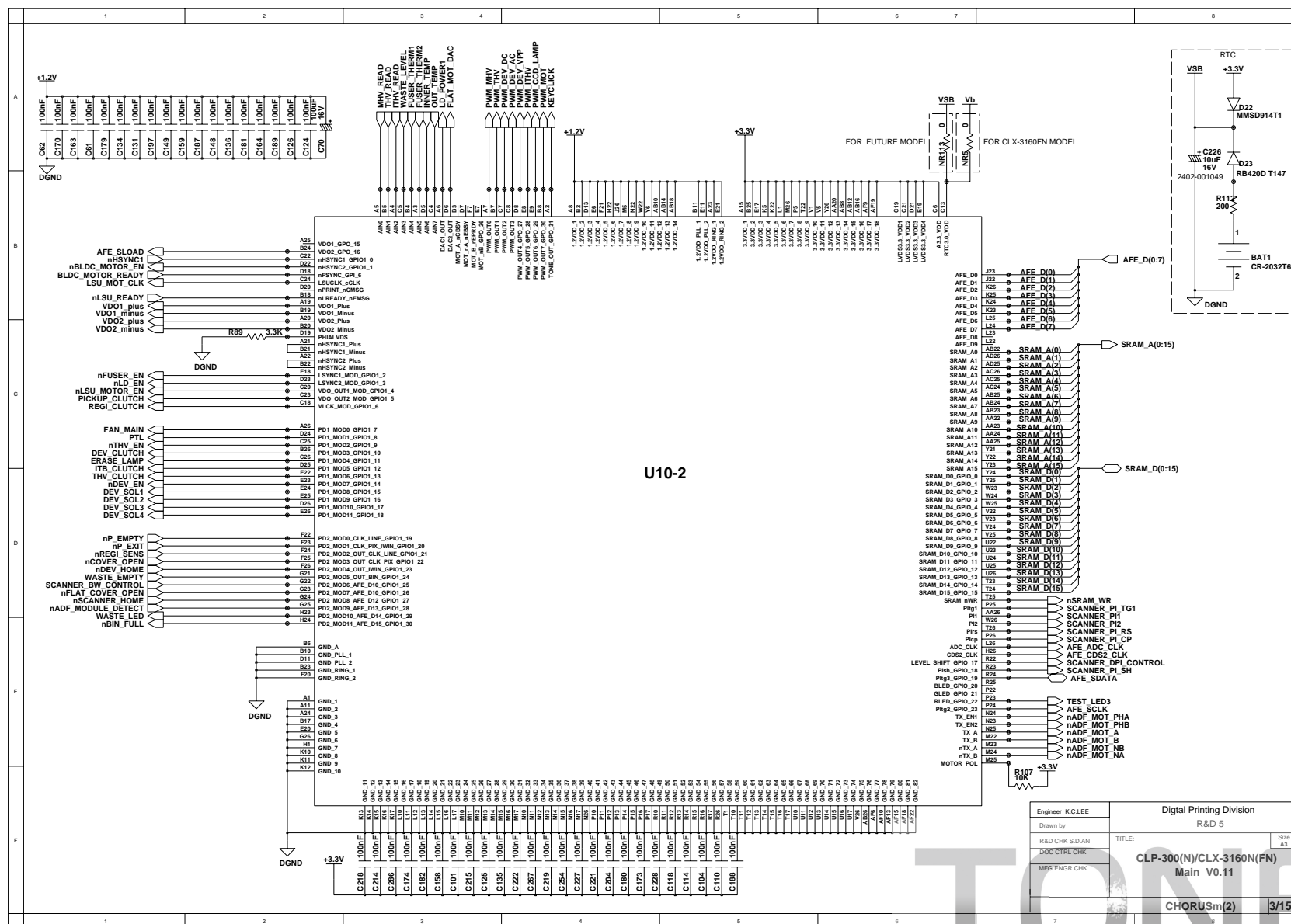
11.1 Main Board(1/15)

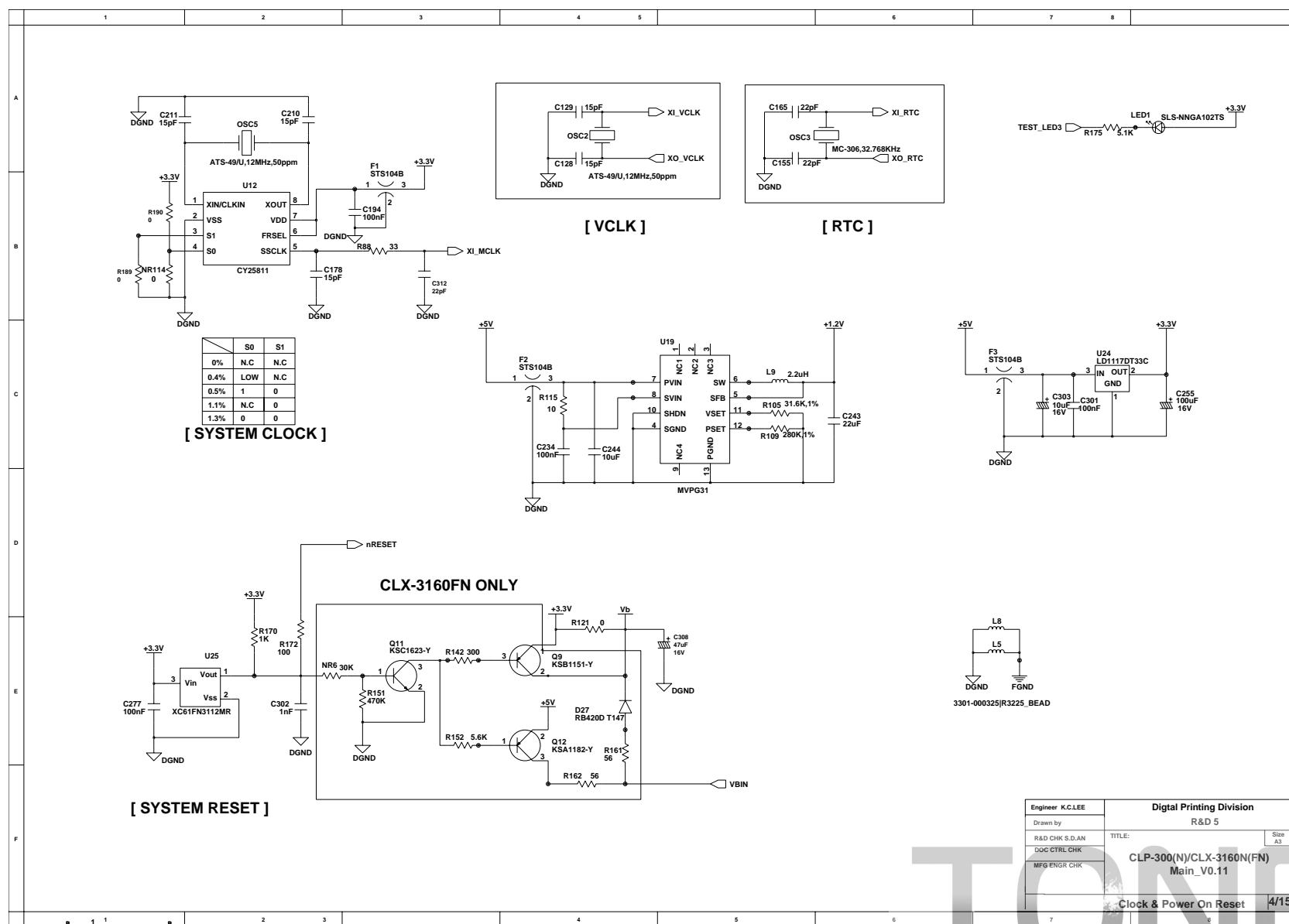
	1	2		3		4	5		6	7		8
A												
B												
C												
D												
E												
F												

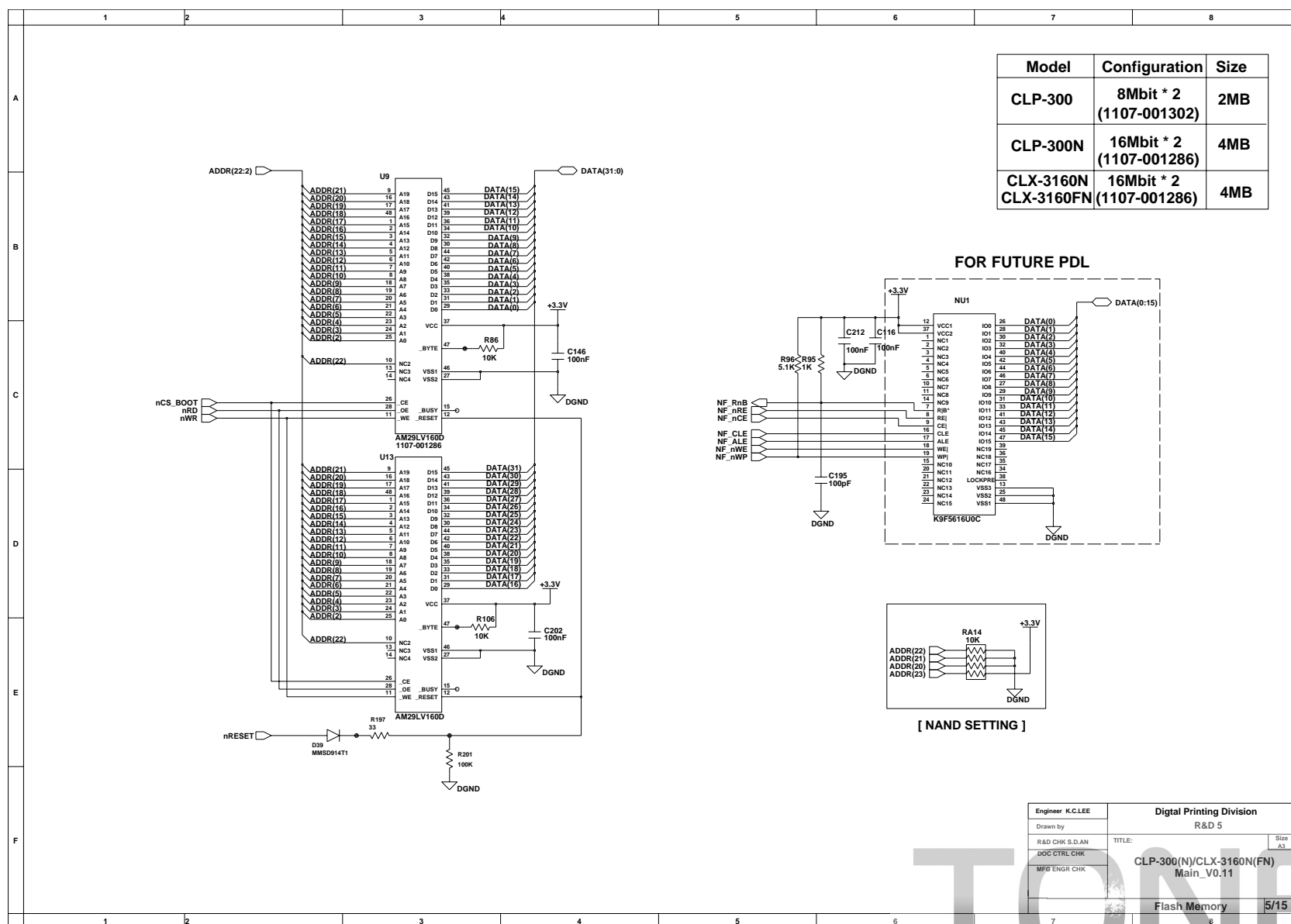
Page	Function
1	Index
2	CHORUSm(1)
3	CHORUSm(2)
4	Clock & Power On Reset
5	Flash Memory
6	SDRAM
7	USB Host & Device Controller
8	Ethernet Physical Layer
9	Scanner Interface
10	Hyper Terminal, EEPROM, OPE
11	SmartDAA Interface
12	LSU
13	DEVE_HOME, SCF, FUSER THER
14	BLDC, CLUTCH, DEVE & ITB JOINT
15	HVPS, SMPS, COVER_OPEN

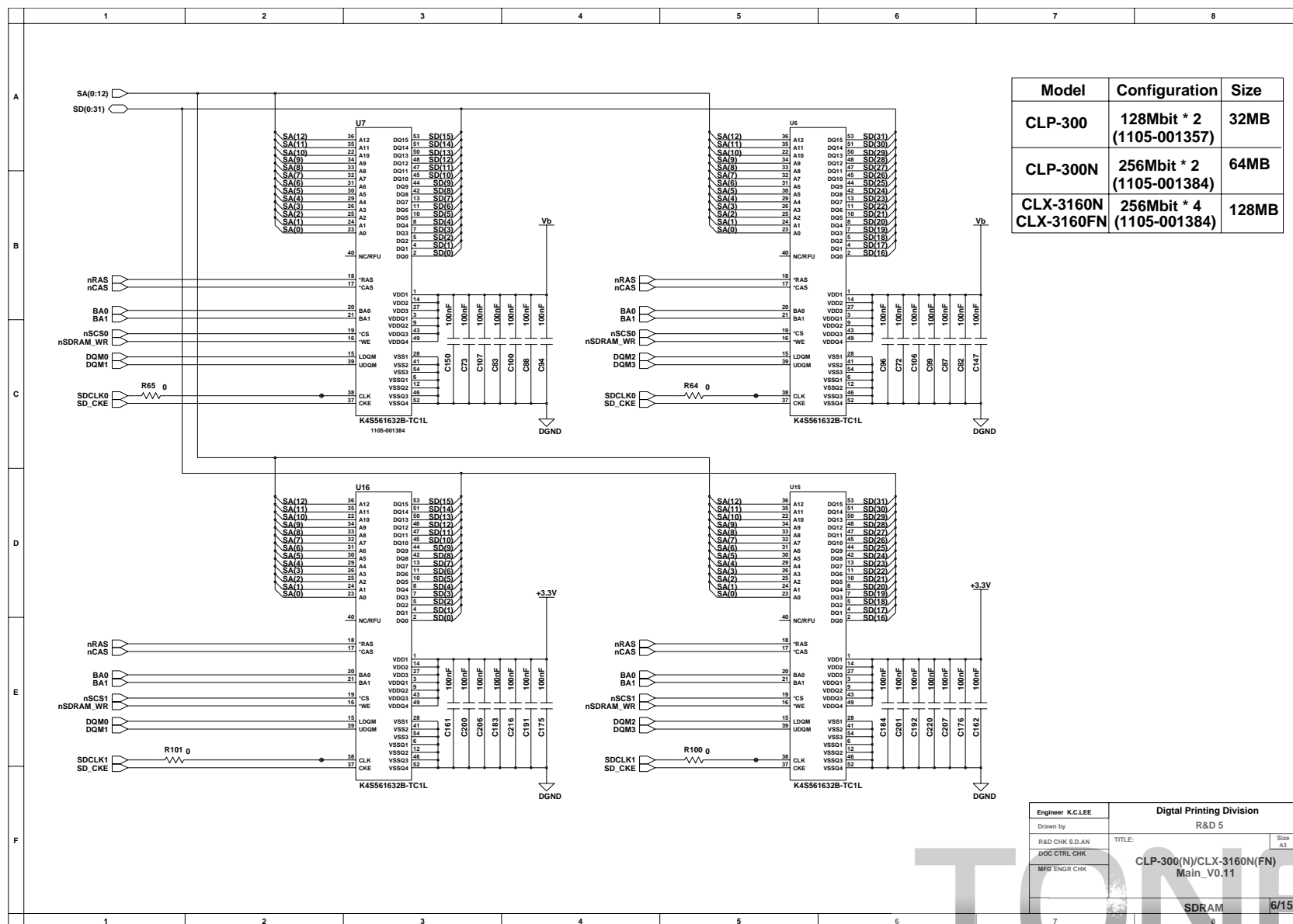
Engineer K.C.LEE	Digital Printing Division	
Drawn by	R&D 5	
R&D CHK S.D.AN	TITLE:	CLP-300(N)/CLX-3160N(FN)
DOC CTRL CHK	Main_V0.11	
MFG ENGR CHK	05.06.03	
	INDEX	1/15



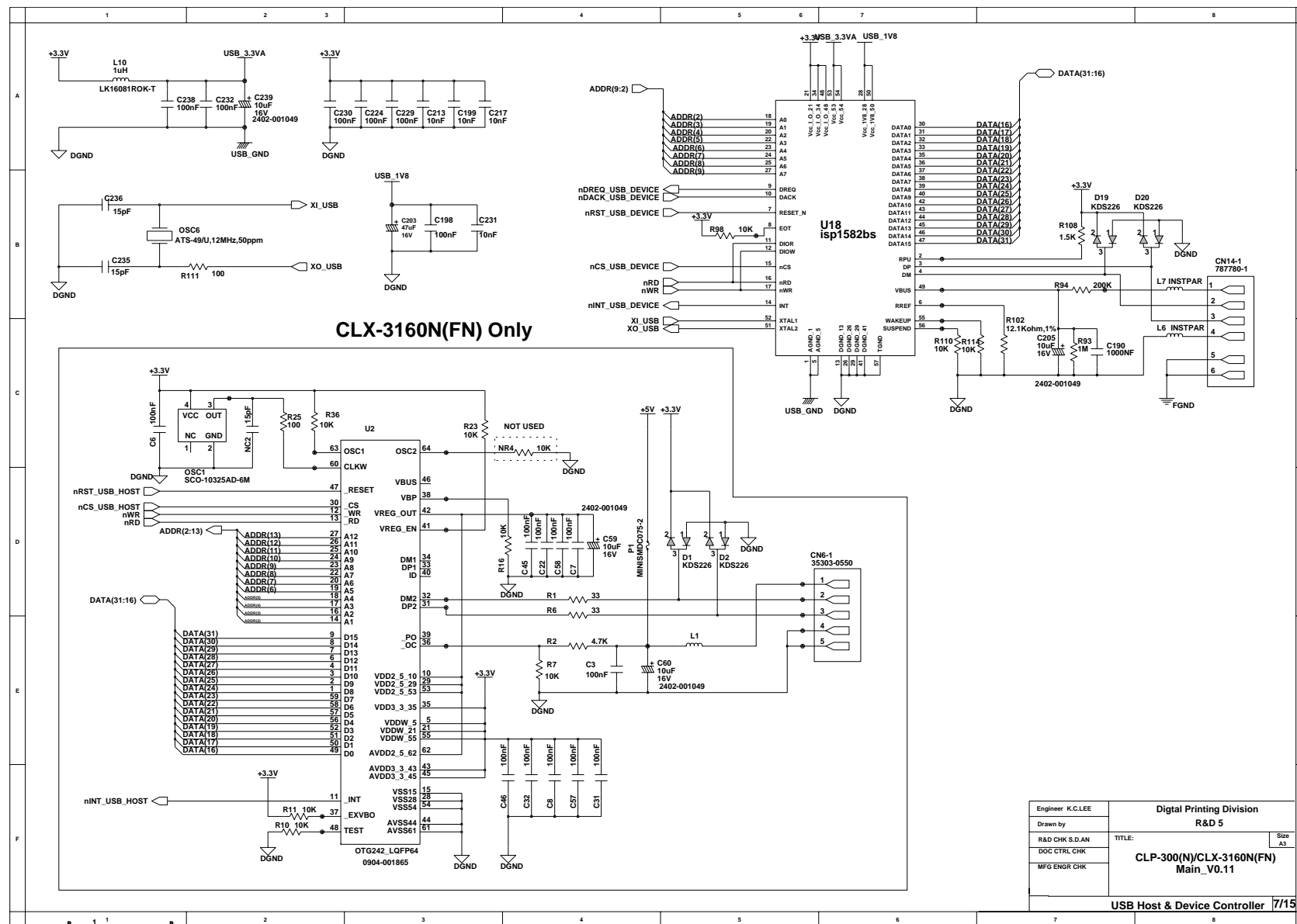


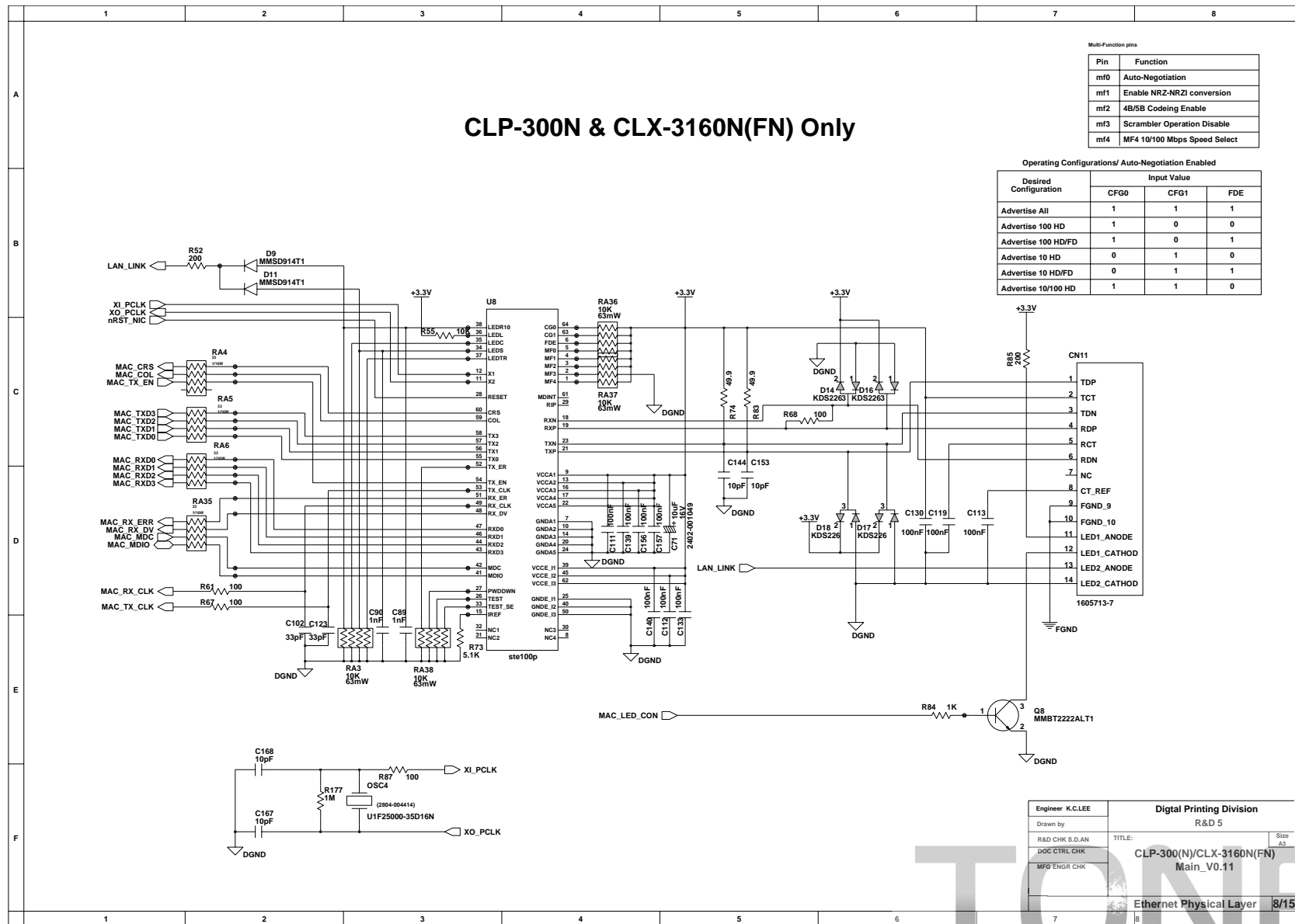


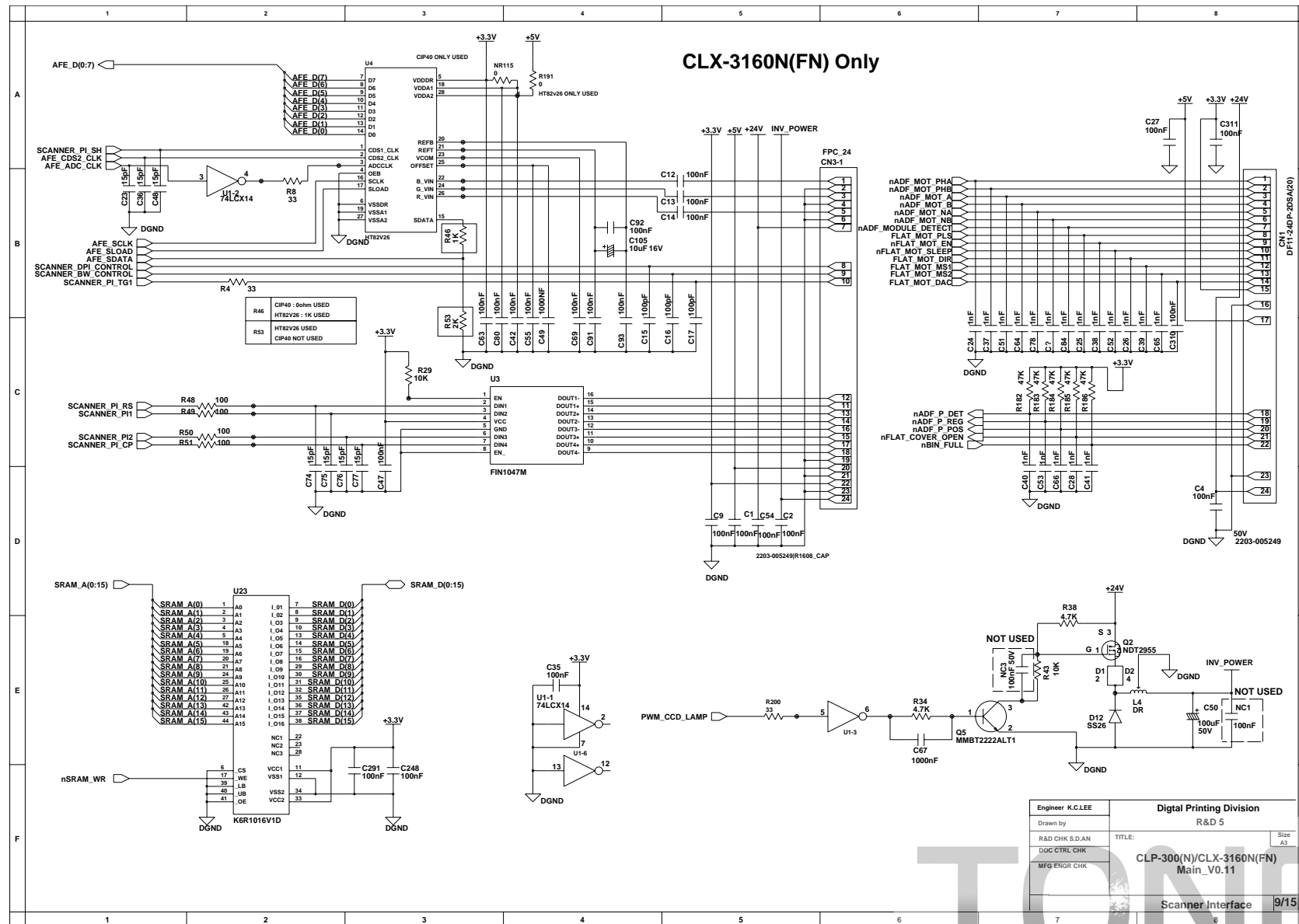


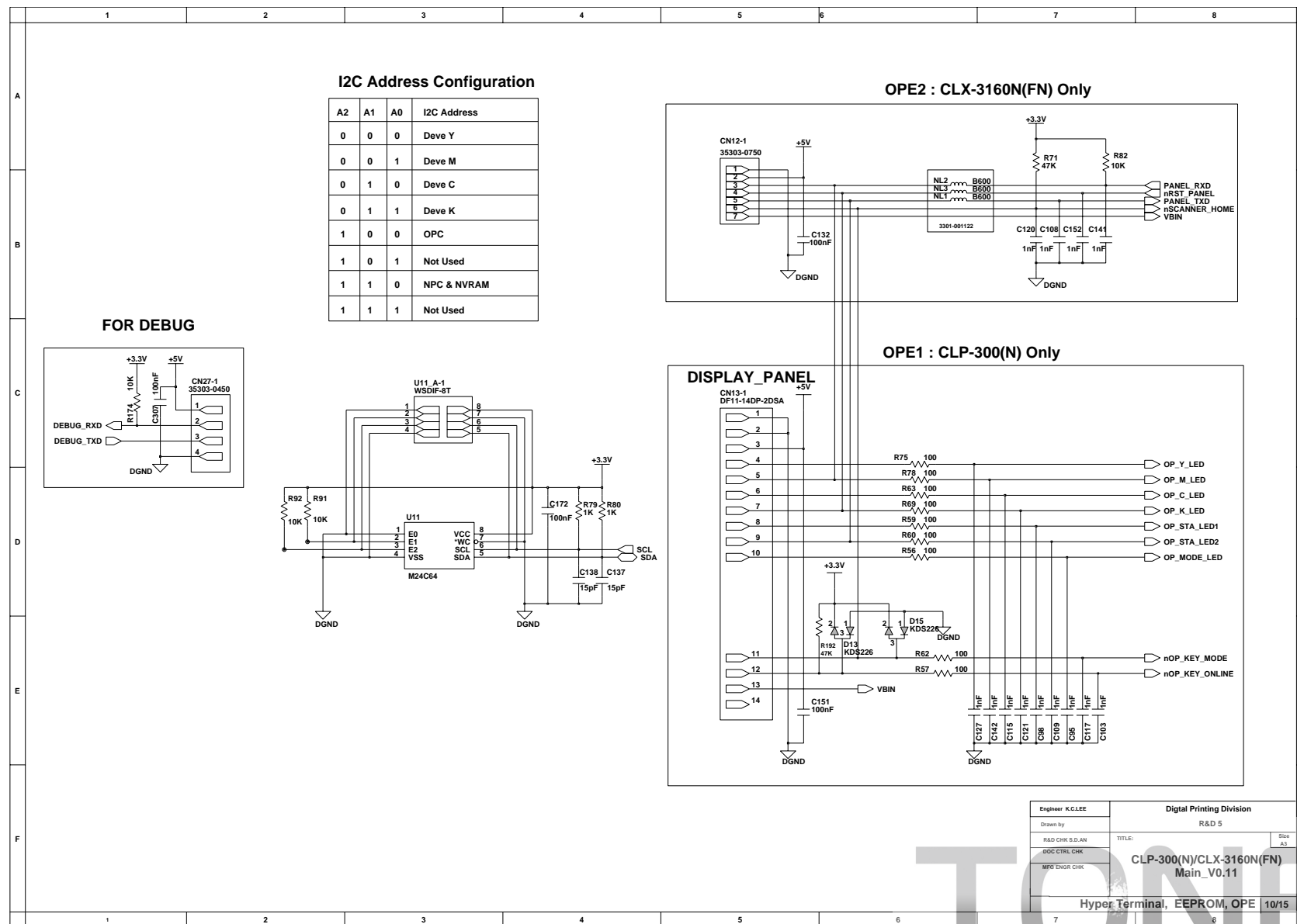


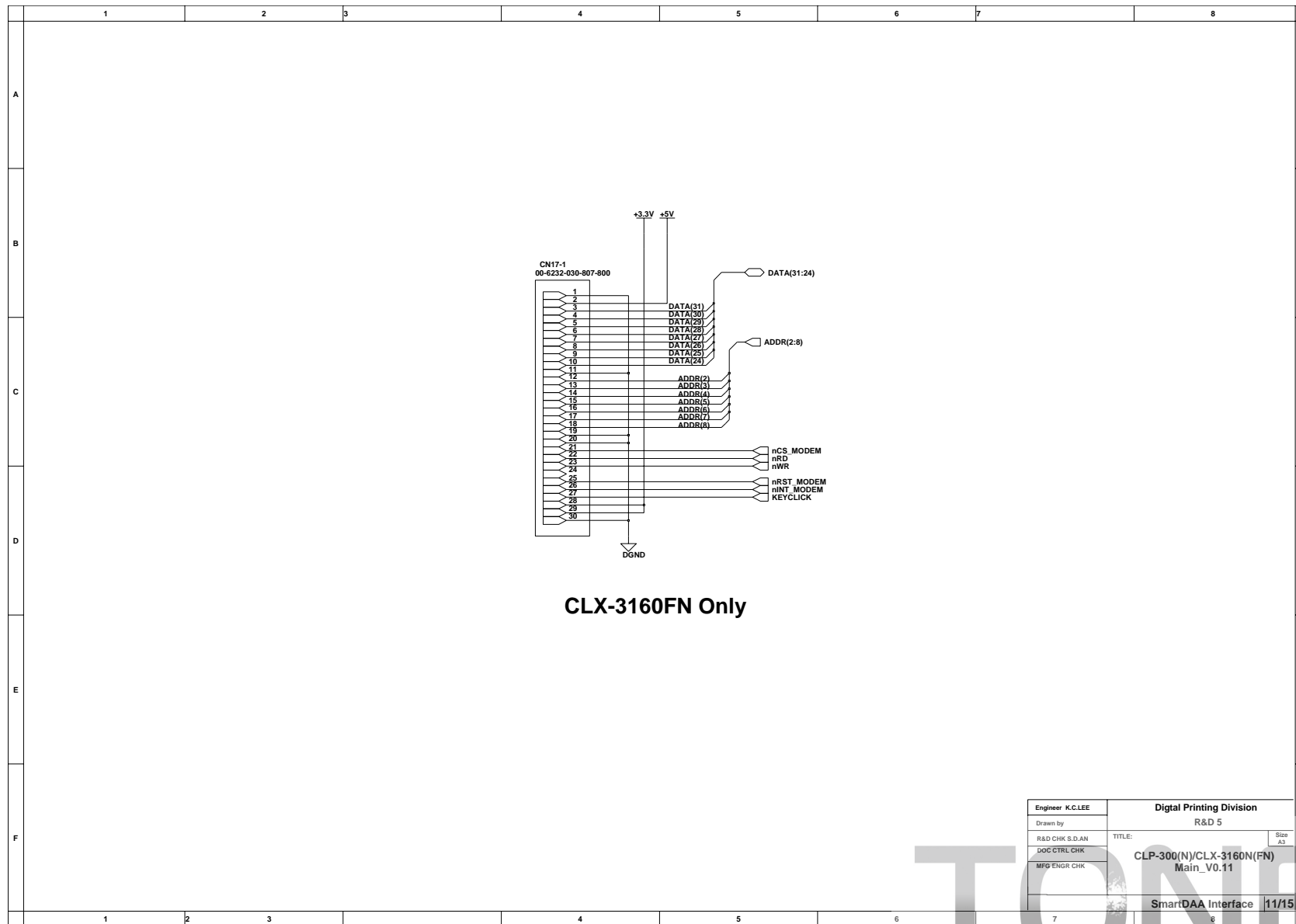
Engineer K.C.LEE	Digital Printing Division	
Drawn by	R&D 5	
R&D CHK S.D.AN	TITLE:	Size A3
DOC CTRL CHK	CLP-300(N)/CLX-3160N(FN)	
MFG ENGR CHK	Main_V0.11	
	SDRAM	6/15

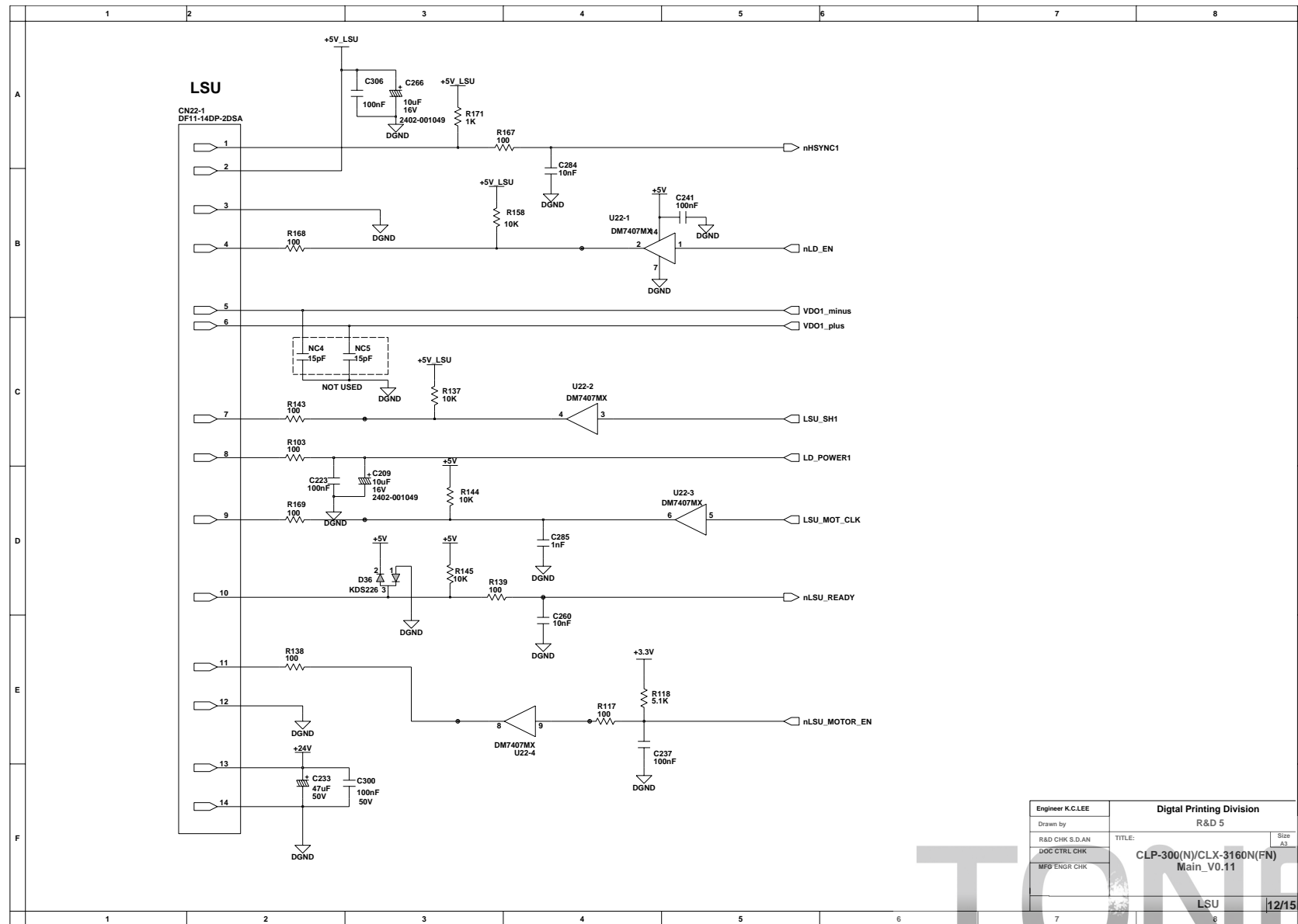


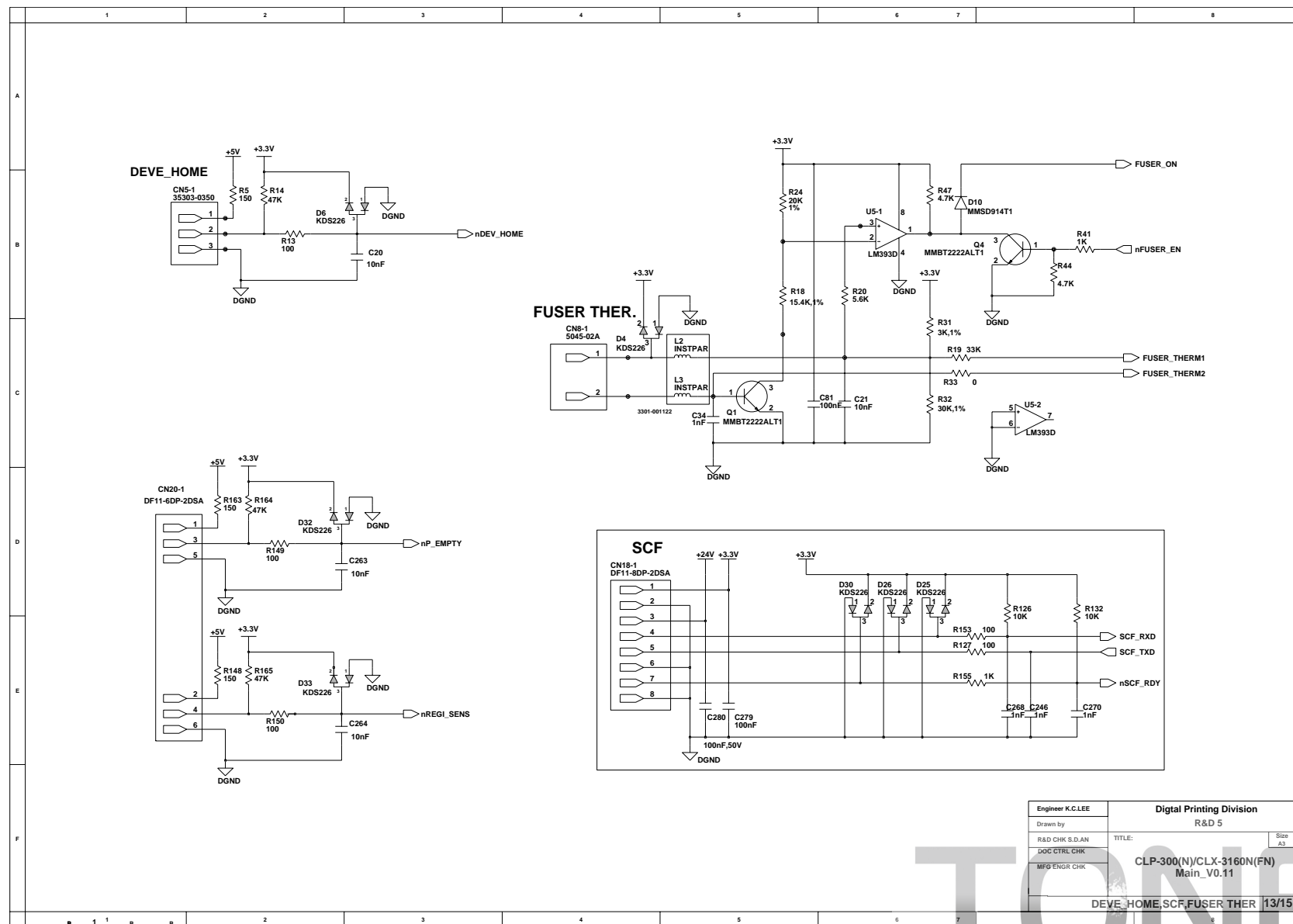


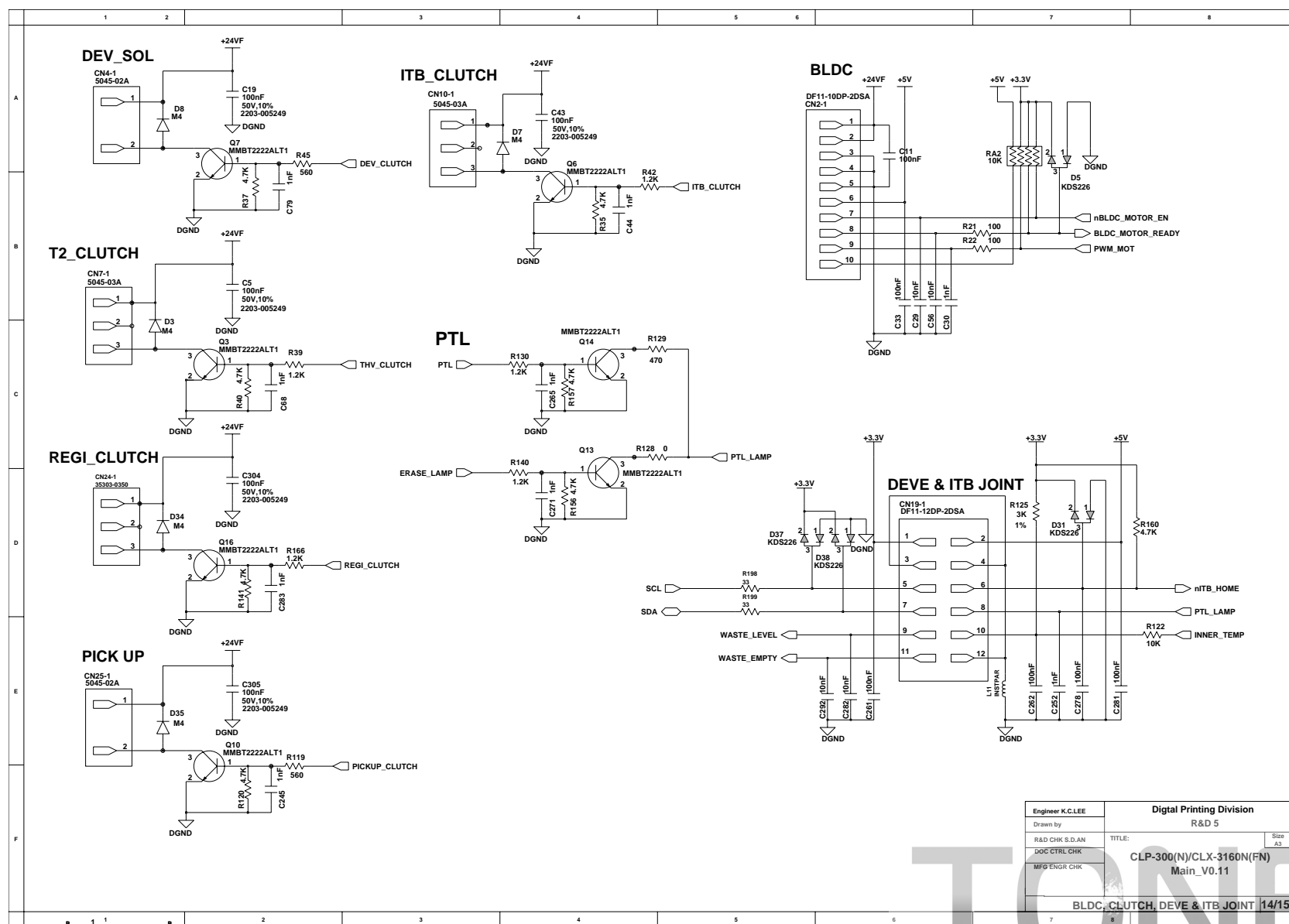




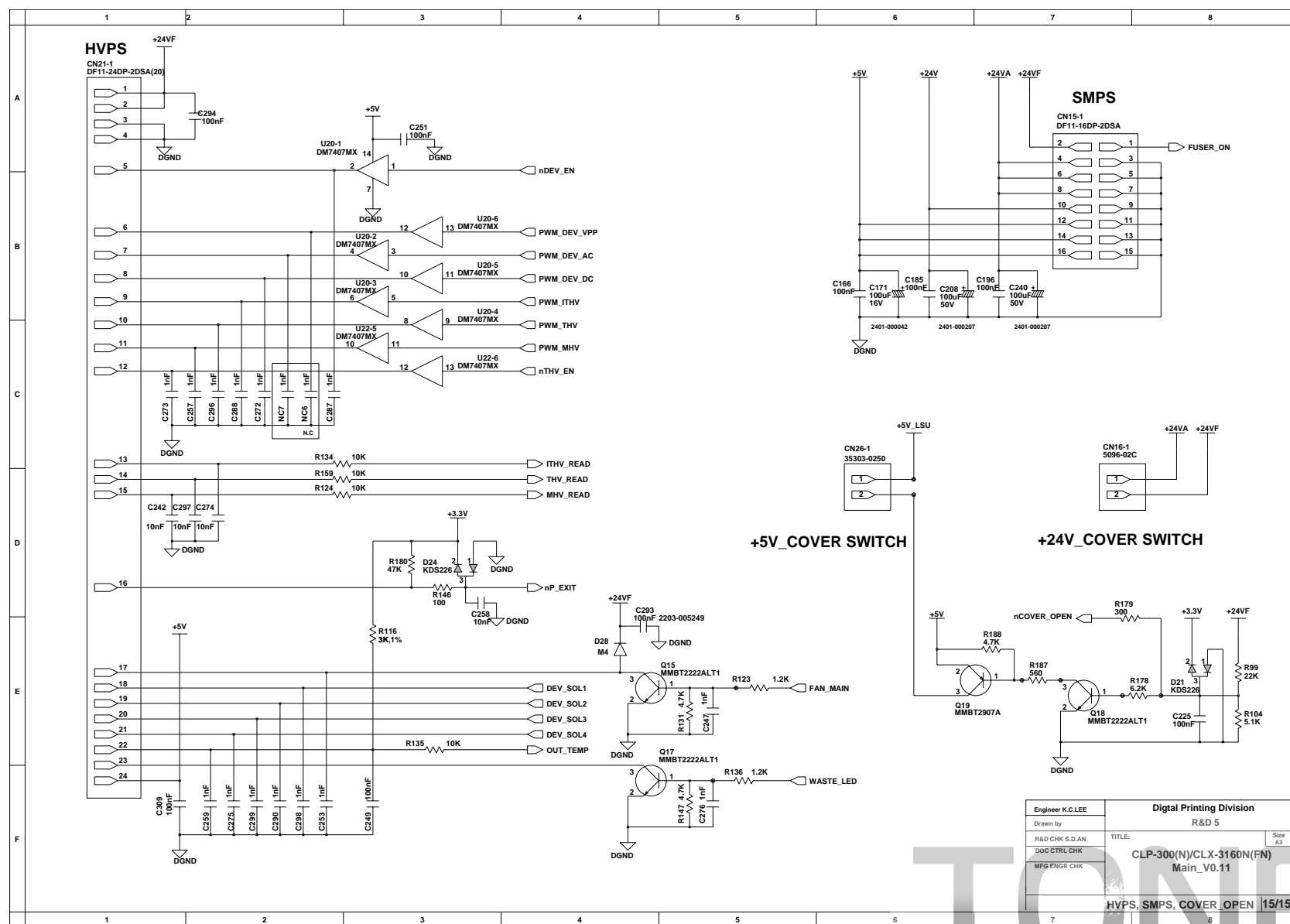


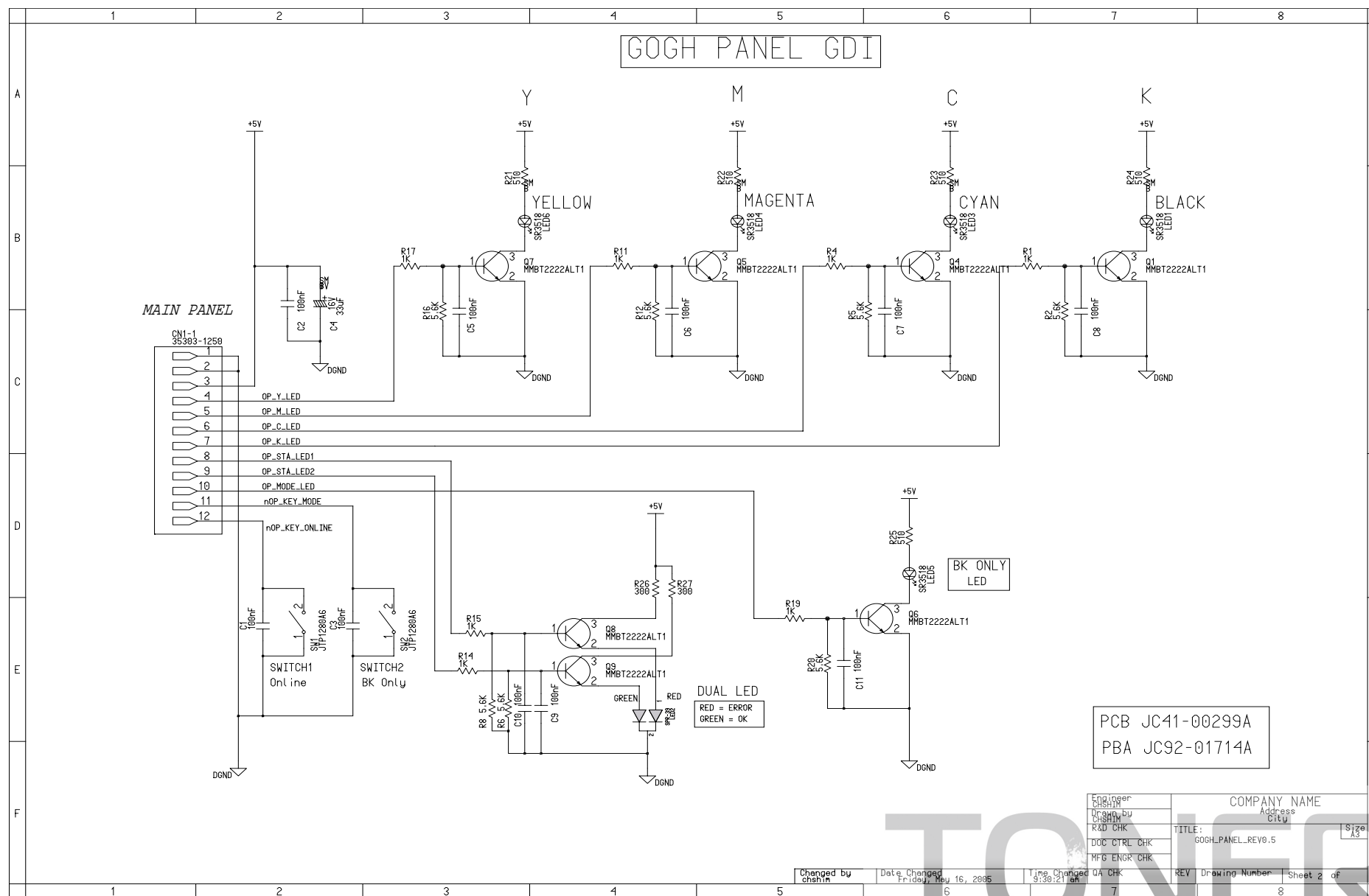


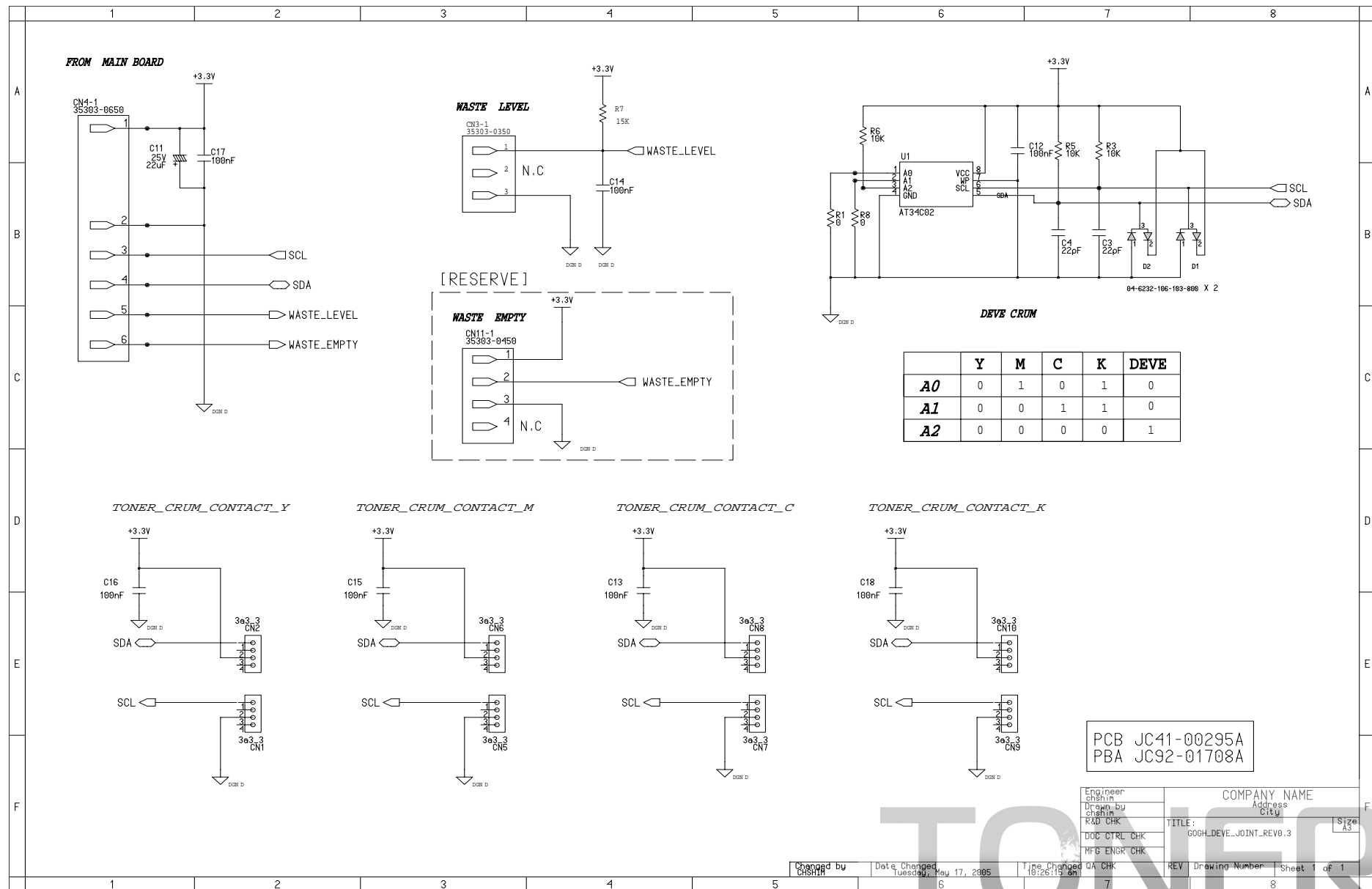


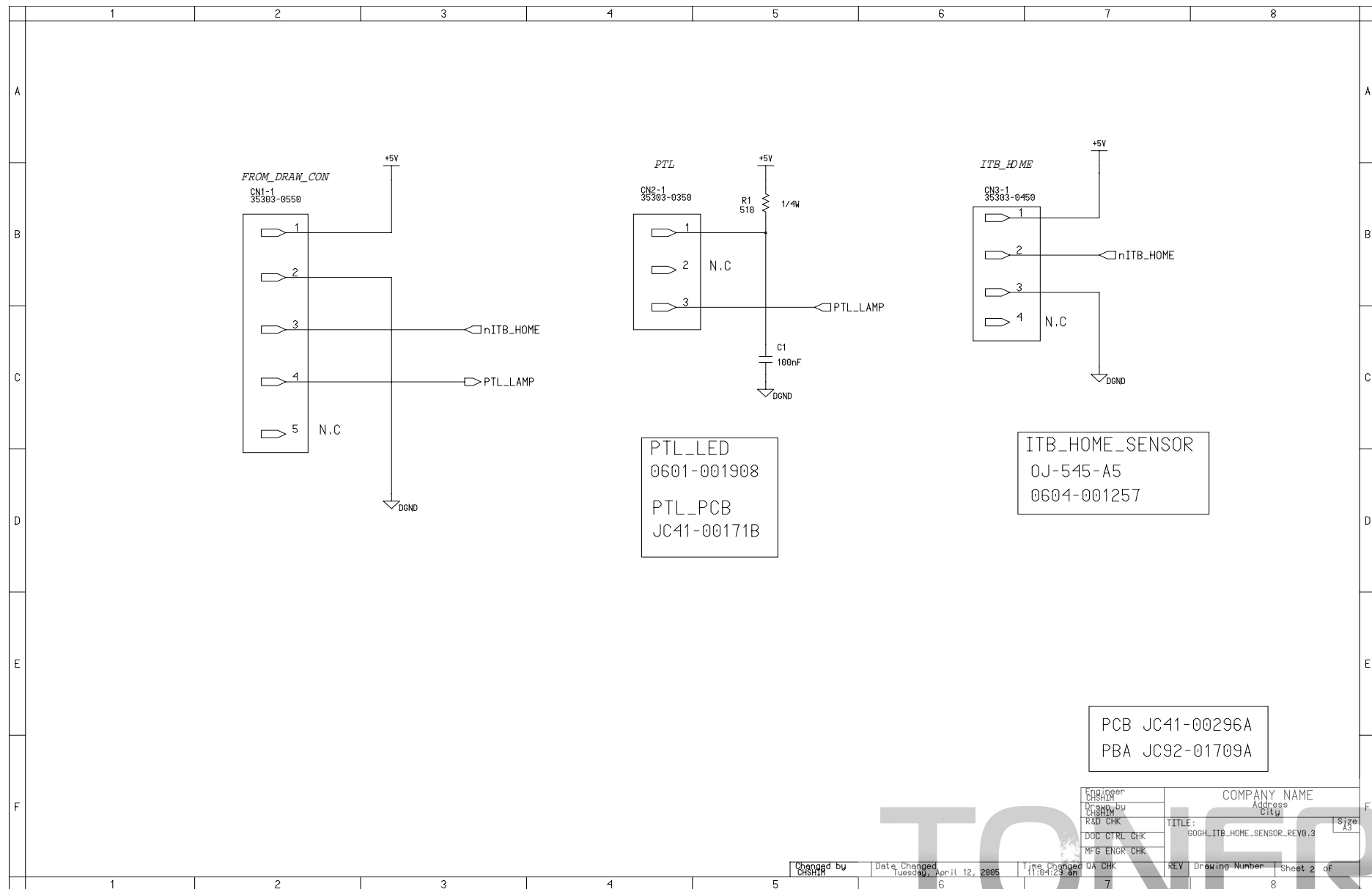


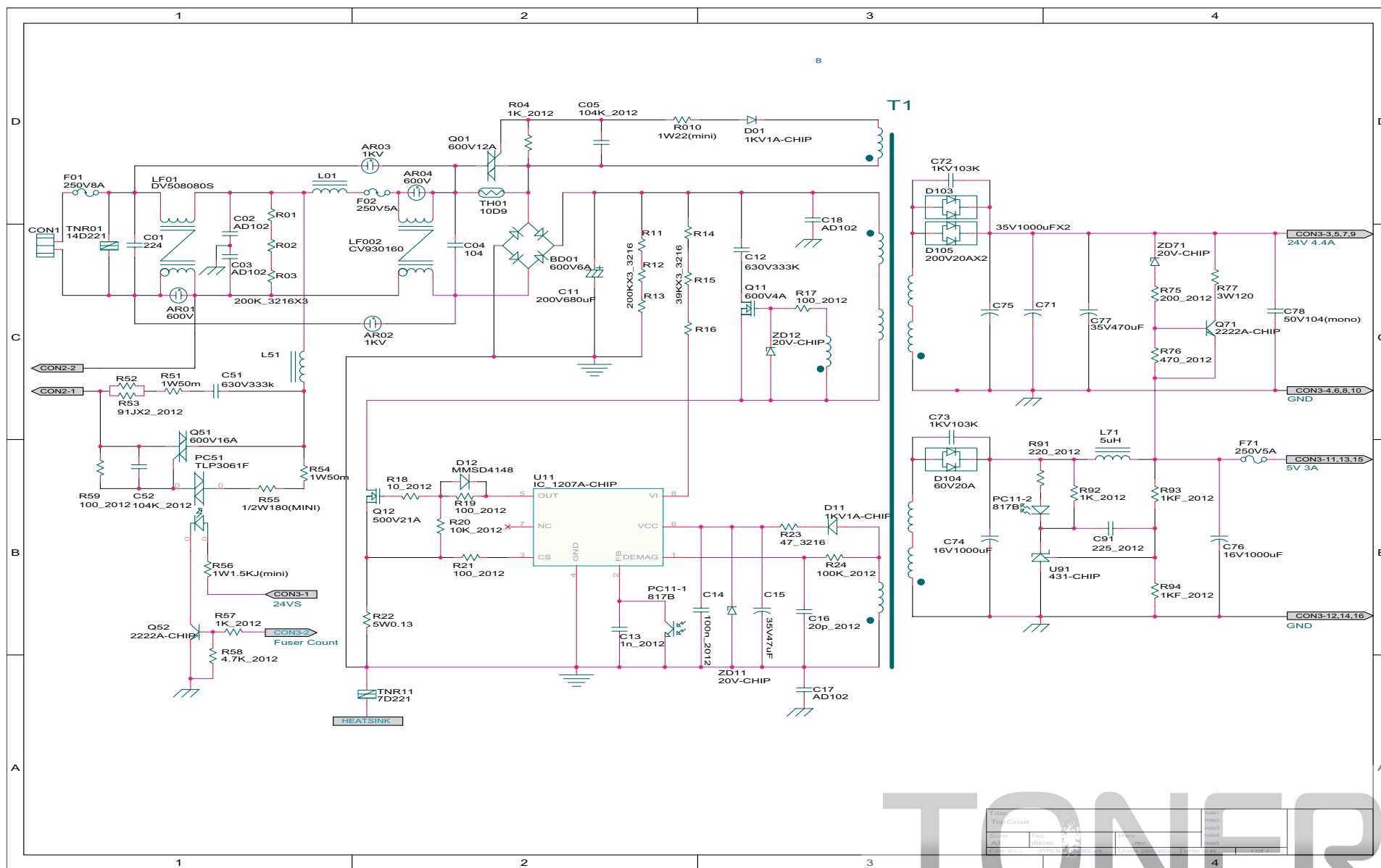
Engineer K.C.LEE	Digital Printing Division
Drawn by	R&D 5
R&D CHK S.D.AN	TITLE:
DOC CTRL CHK	CLP-300(N)/CLX-3160N(FN)
MFG ENGR CHK	Main_V0.11
	BLDC, CLUTCH, DEVE & ITB JOINT 14/15

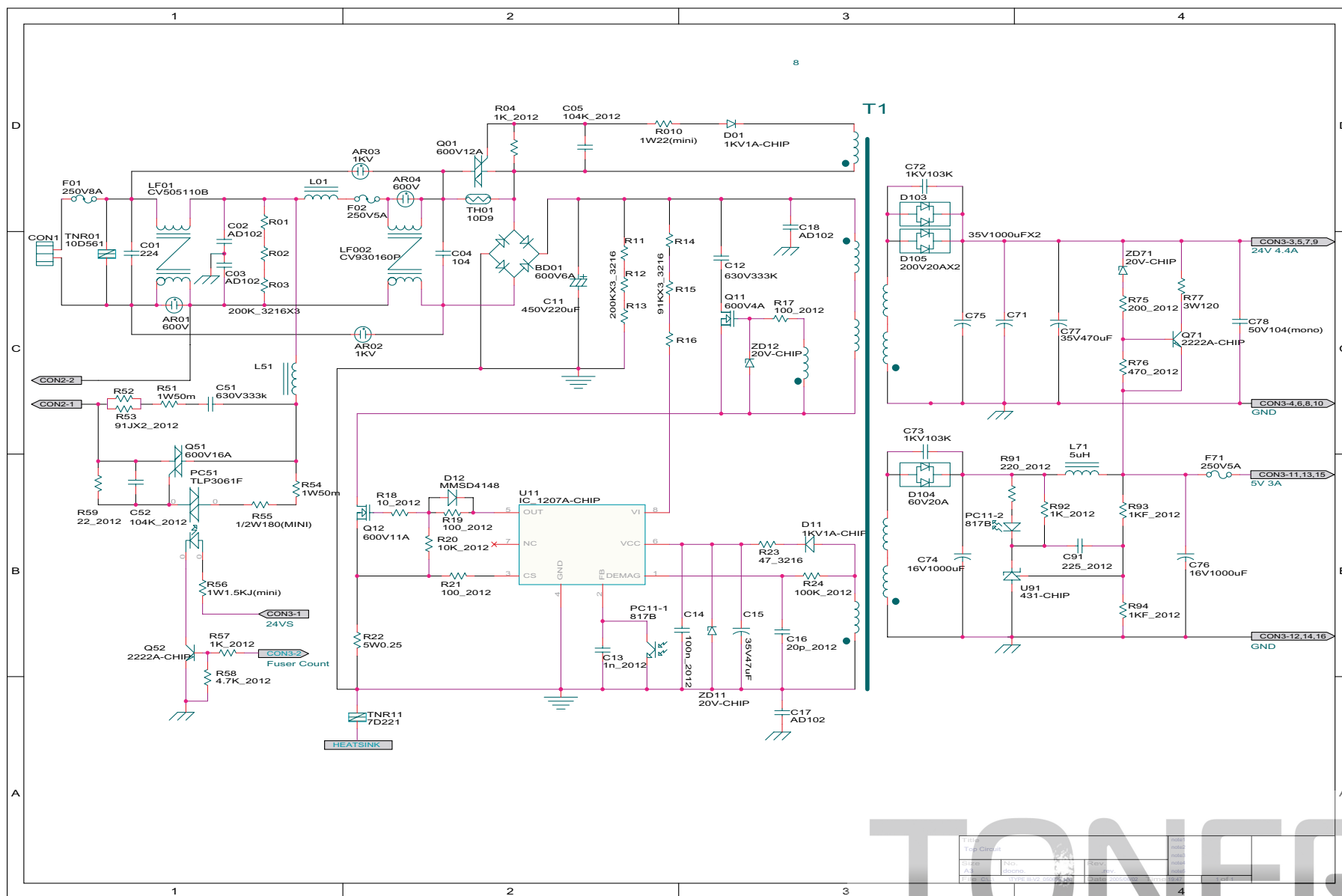










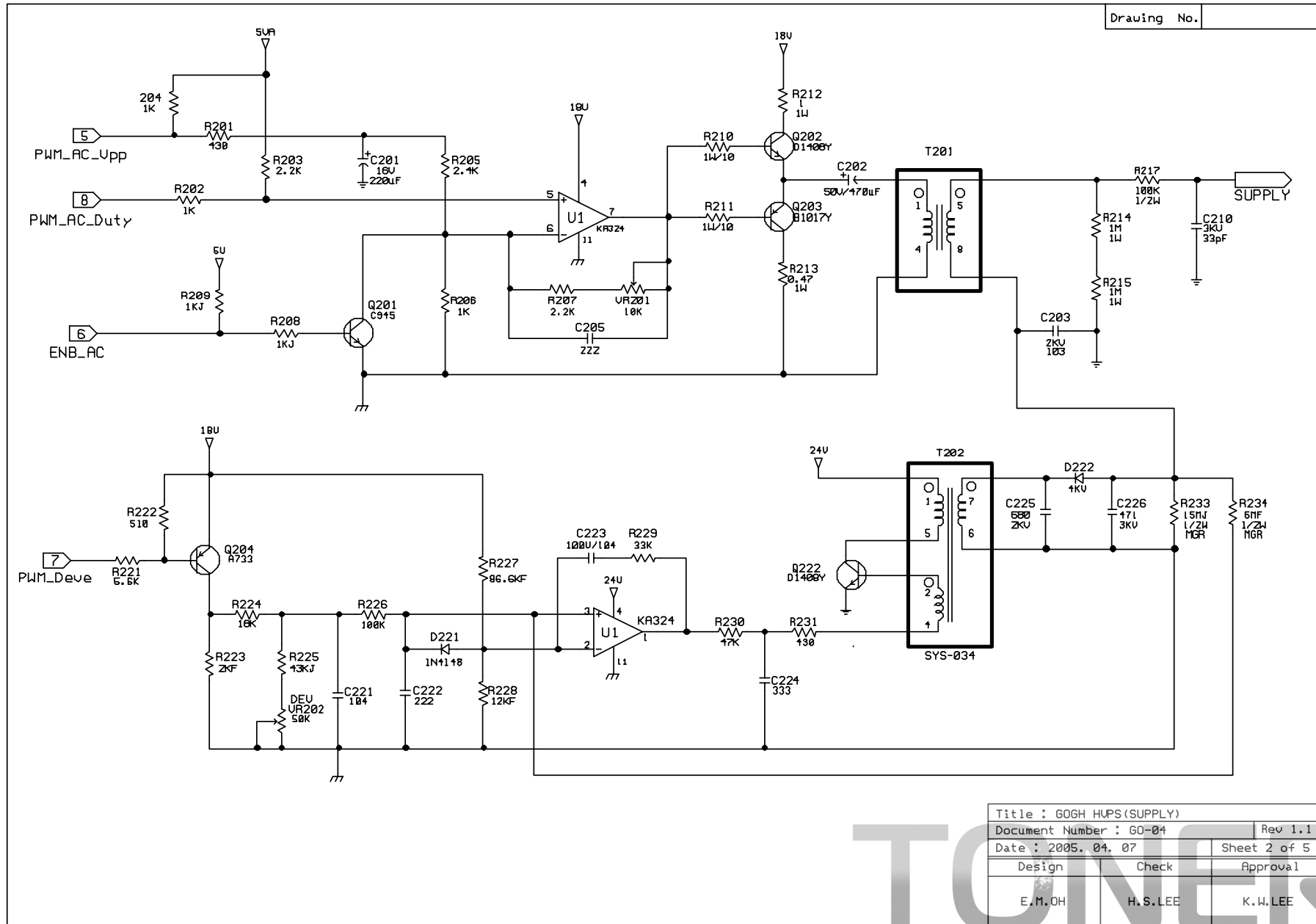


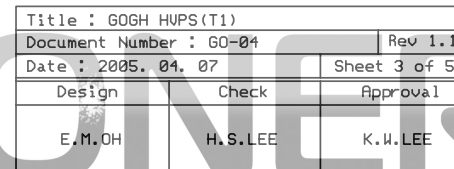
TONER

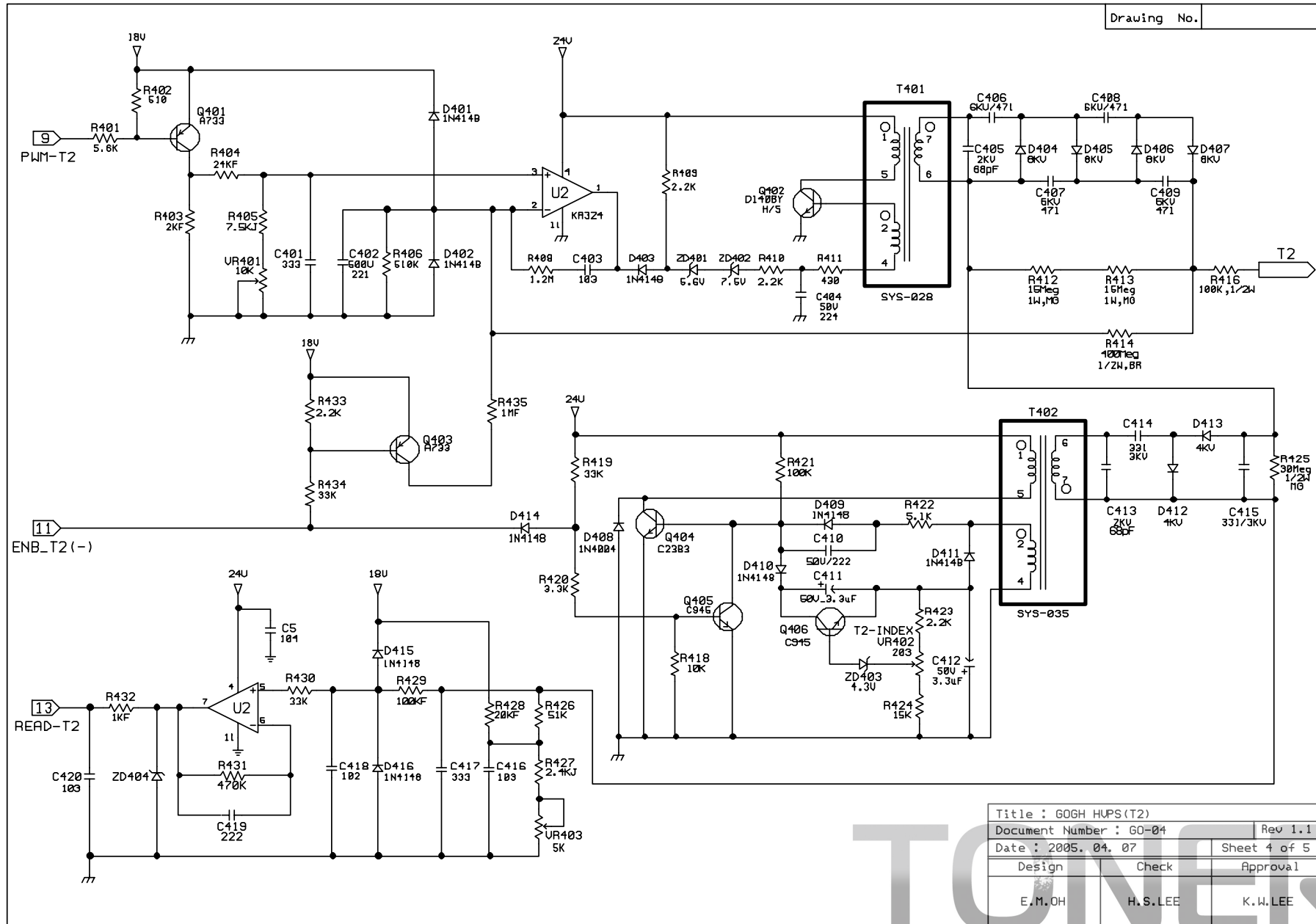
Schematic Diagram

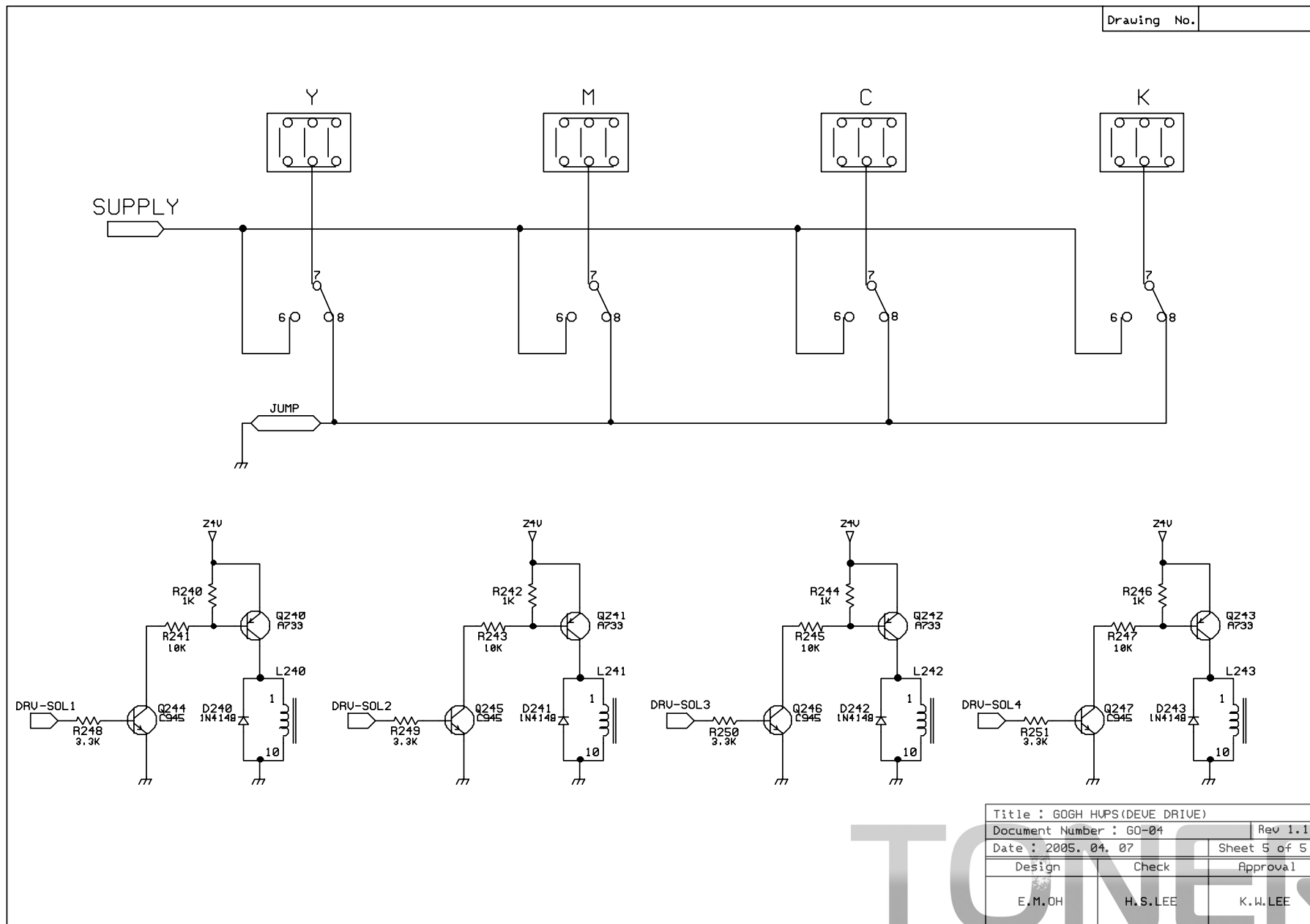
Drawing No.

Title : GOGH HVPS(CHARGE)		
Document Number : 60-04		Rev 1.1
Date : 2005. 04. 07		Sheet 1 of 5
Design	Check	Approval
E.M.OH	H.S.LEE	K.W.LEE









12. Reference Information

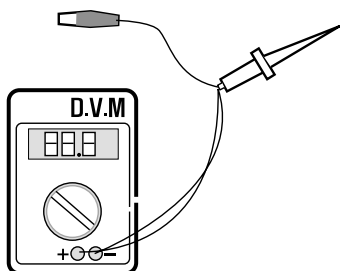
This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of tests pages and Wireless Network information definition is also included.

12.1 Tools for Troubleshooting

The following tools are recommended safe and easy troubleshooting as described in this service manual.

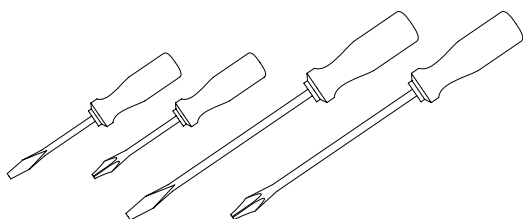
- **DVM(Digital Volt Meter)**

Standard : Indicates more than 3 digits.



- **Driver**

Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short).



- **Tweezers**

Standard : For general home use, small type.



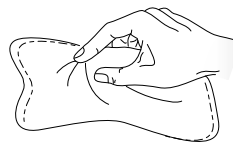
- **Cotton Swab**

Standard : For general home use, for medical service.

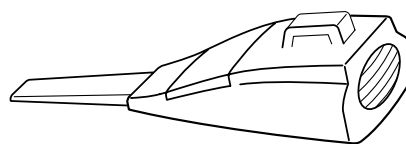


- **Cleaning Equipments**

Standard : An IPA(Isopropyl Alcohol)dry wipe tissue or a gentle neutral detergent and lint-free cloth.



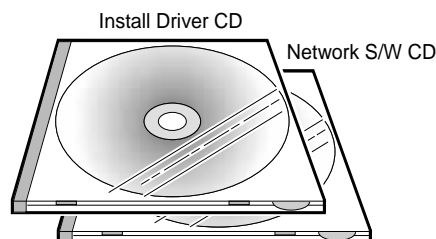
- **Vacuum Cleaner**



- **Brush**



- **Software (Driver) installation CD ROM**



12.2 Acronyms and Abbreviations

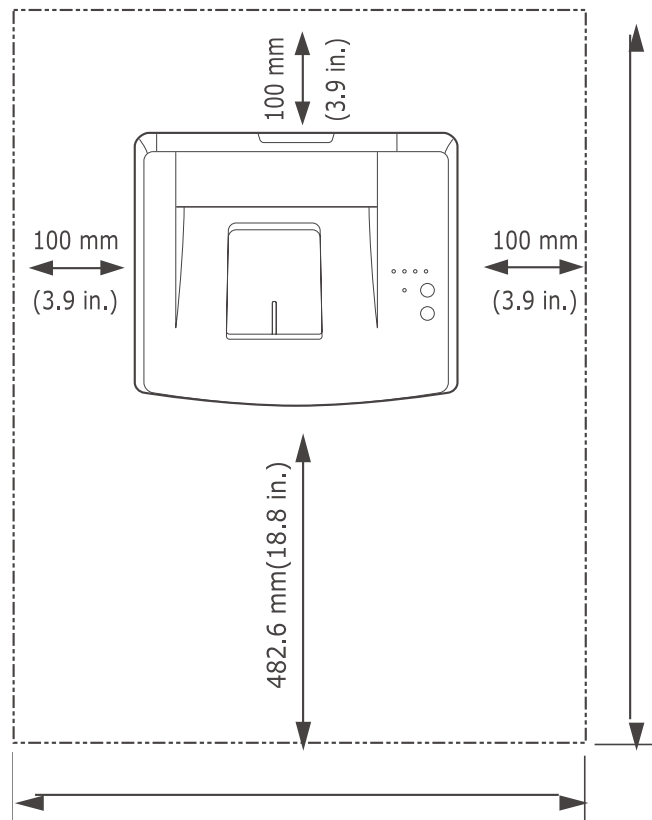
The table below explains the abbreviations and acronyms used in this service manual. Where abbreviations or acronyms are used in the text please refer to this table.

ADC	Analog-to-Digital-Conversion	EPP	Enhanced Parallel Port
AP	Access Point	F/W	Firmware
AC	Alternating Current	FCF/FCT	First Cassette Feeder/First Cassette Tray
ASIC Circuit	Application Specific Integrated	FISO	Front-In, Side-Out
ASSY	Assembly	FPOT	First Print out Time
BIOS	Basic Input Output System	GDI	Windows Graphic Device Interface
BLDC Motor	Brushless DC Motor	GIF	Graphic Interchange Format
CLBP	Color Laser Beam Printer	GND	Ground
CMOS	Complementary Metal Oxide Semiconductor	HBP	Host Based Printing
CMYK	Cyan, Magenta, Yellow, Black	HDD	Hard Disk Drive
CN	Connector	HTML	Hyper Text Transfer Protocol
CON	Connector	HV	High Voltage
CPU	Central Processing Unit	HVPS	High Voltage Power Supply
CTD Sensor	Color Toner Density Sensor	I/F	Interface
dB	Decibel	I/O	Input and Output
dBA	A-Weighted decibel	lb	Pound(s)
dBm	Decibel milliwatt	IC	Integrated Circuit
DC	Direct Current	ICC	International Color Consortium
DCU	Diagnostic Control Unit	IDE	Intelligent Drive Electronics or Integrated Drive Electronics
DIMM	Dual In-line Memory Module	IEEE	Institute of Electrical and Electronics Engineers. Inc
DPI	Dot Per Inch	IOT	Image Output Terminal (Color printer, Copier)
DRAM	Dynamic Random Access Memory	IPA	Isopropyl Alcohol
DVM	Digital Voltmeter	IPC	Inter Process Communication Enhanced parallel Port
ECP	Enhanced Capability Port	IPM	Images Per Minute
ECU	Engine Control Unit	ITB	Image Transfer Belt
EEPROM	Electrically Erasable Programmable Read Only Memory	LAN	local area network
EMI	Electro Magnetic Interference	LBP	Laser Beam Printer
EP	Electro photographic		

LCD	Liquid Crystal Display	PTB	Paper-Transfer Belt
LED	Light Emitting Diode	PWM	Pulse Width Moduration
LSU	Laser Scanning Unit	Q'ty	Quantity
MB	Megabyte	RAM	Random Access Memory
MHz	Megahertz	RCP	Remote Control Panel
MPBF	Mean Prints Between Failure	ROM	Read Only Memory
MPF/MPT	Multi Purpose Feeder/Multi Purpose Tray	SCF/SCT	Second Cassette Feeder/Second Cassette Tray
NIC	Network Interface Card	SMPS	Switching Mode Power Supply
NPC	Network Printer Card	SPGP	Samsung Printer Graphic Processor
NVRAM	Nonvolatile Random Access Memory	SPL	Samsung Printer Language
OPC	Organic Photo Conductor	SPL-C	Samsung Printer Language-Color
PBA	Printed Board Assembly	Spool	Simultaneous Peripheral Operation Online
PCL	Printer Command Language , Printer Control Language	SRS	Software Requirment Specification
PCI	Peripheral Component Interconnect by Intel 1992/6/22, is a local bus standard developed by Intel and introduced in April, 1993 : A60, B60 Pins	SURF	Surface Rapid Fusing
PCL5Ce	Printer Command Language 5Ce-Color	SW	Switch
PCL6	Printer Command Language 6	sync	Synchronous or Synchronization
PDF	Portable Document Format	T1	ITB
PDL	Page Description Language	T2	Transfer Roller
Ping	Packet internet or Inter-Network Groper	TRC	Toner Reproduction Curve
PPD	Postscript Printer Discription	PnP	Universal Plug and Play
PPM	Page Per Minute	U.I.	User Interface
PS	Post Script	URL	Uniform Resource Locator
PS3	Post Script Level3	USB	Universal Serial Bus
PTL	Pre-Transfer Lamp	VCCI	Voluntary Control Council for Interference Information Technology Equipment
		WECA Alliance	Wireless Ethernet Compatibility
		Wi-Fi	Wireless Fidelity

12.3 Select a location for the printer

- Leave enough room to open the printer trays, covers, and allow for proper ventilation. (see diagram below)
- Provide the proper environment :
 - A firm, level surface
 - Away from the direct airflow of air conditioners, heaters, or ventilators
 - Free of extreme fluctuations of temperature, sunlight, or humidity
 - Clean, dry, and free of dust



12.4 A4 ISO 19752 Standard Pattern

This test page is reproduced at 70% of the normal A4 size

