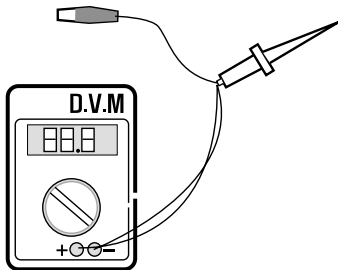# 13. Reference Information

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 test pages and Wireless Network information definition is also included.

13.1 Tool for Troubleshooting

The following tools are recommended safe and easy troubleshooting as described in this service manual.
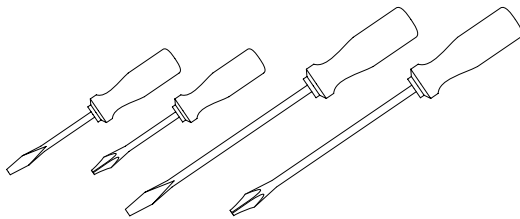
- **DVM (Digital Volt Meter)**
  Standard : Indicates more than 3 digits.

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

- **Tweezers**
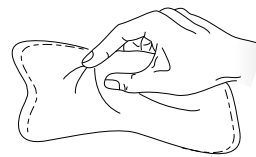 Standard : For general home use, small type.

- **Cotton Swab**
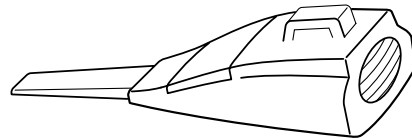 Standard : For general home use, for medical service.

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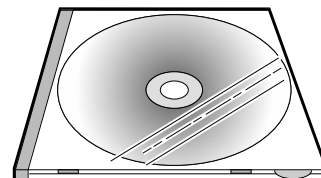
- **Vacuum Cleaner**

- **Spring Hook**
  Standard : For general use

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

13.2 Acronyms and Abbreviations

The table below explains abbreviations used in this service manual.
The contents of this service manual are declared with abbreviations in many parts. Please refer to the table.

13.2.1 Acronyms

ABS	Automatic Background Suppression(a kind of copy feature)		FDI	Foreign Device Interface
APF	Automatic Paper Feeder(Tray)		FIA	Foreign Interface Attachment
BOOTP	BOOTSTRAP PROTOCOL		FRU	Field Replaceable Unit
CCD	Charged Coupled Device		FPOT	First Print Out Time
CIS	Contact Image Sensor		GW	GateWay
CPM	Copies Per Minute		HH	High Temperature, High Humidity (Testing Chamber conditions)
CP	Control Panel(= OPE)		HPVC	Halftone Printing Video Controller in the SPGPm (Graphic Processor for Copy)
CQ	Copy Quality			
CRU	Customer Replaceable Unit			
CRUM	CRU Memory		IDC	International Data Corp.
CW	Center Ware		IMAP	Internet Message Access Protocol
CWDP	Center Ware Device Discovery Software(Samsung equivalent of Samsung's SyncThru)		IPP	Internet Printing Protocols
			IPM	Images Per Minutes
			IPX	Internetwork Packet Exchange
CWIS	Center Ware Internet Services		IQ	Image Quality
DADF	Duplex Auto Document Feeder (= DADH)		ITU	International Telecommunication Union
DC	Direct Connect		JBIG	Joint Binary Image Group (a kind of image data coding method)
DDNS	Dynamic Domain Name System			
DHCP	Dynamic Host Configuration Protocol		JPEG	Joint Photographic Expert Group (a kind of image data coding method)
DLC	Data Link Control			
DNS	Domain Name System		LCD	Liquid Crystal Display
ECM	Error Correction Mode		LEF	Long Edge Feeding
ECP	Enhanced Capability Port		LL	Low Temperature, Low Humidity (Testing Chamber conditions)
e-Coil	Extended Coil technology for Rapid(Fast) Fusing.			
EH&S	Samsung Environment, Health, & Safty		LPR/LPD	Line Printer Daemon Protocols (LPR is a TCP-based protocol)
ESMTP	Extended Simple Mail Transfer Protocol		LSU	Laser Scanning Unit
			LUI	Local User Interface
EP	Electro Photography		MCBF	Mean Copy Between Failure
EPC	Electric Pre-Collation		MDSP	Multiple Document Single Printout
FCOT	First Copy Out Time		MFP	Multi-Functional Product
			MH	Modified Huffman (a kind of image data coding method)

MIB	Management Information Base		RT-OS	Real Time Operating System
MIME	Multipurpose Internet Mail Extensions		RX	Receive
MR	Modified Read (a kind of image data coding method)		S2E	Scan-To-Email
			SAD	Solid Area Density
MMR	Modified and Modified Read (a kind of image data coding method)		SC	Service Call
			SCF	Second Cassette Feeder
MN std	Multi-National Standard		SDSP	Single Document Single Printout
MSOK	Master SOK(System Operation Key)		SDMP	Single Document Multiple Printout
MSO	Mixed Size Original		SDR	Shut Down Rate
MP	Multi Purpose		SEF	Short Edge Feeding
MPBF	Mean Print Between Failure		SIR	Sacrified(or Standard) Image Reference
MSI	Multi Sheet Input			
MTBF	Mean Time Between Failure		SOK	System Operation Key
MTTR	Mean Time To Repair		sRGB	Standard RGB (Color Coordinate System)
NCP	Network Control Protocol			
NIC	Network Interface Card		SNMP	Simple Network Management Protocol
NOS	Network Operating System		TCP/IP	Transmission Control Protocol/Internet Protocol
NN	Normal Temperature, Normal Humidity (Testing Chamber conditions)			
			TBC(or tbc)	To Be Confirmed
NSDR	Non-Shut Down Rate(=USDR)		TBD(or tbd)	To Be Determined
NW	Network		TIFF	(Adobe & Aldus) Tagged Image File Format
OD	Optical Density			
OHD	On Hook Dial		TRIM	Technical Retrofit Interim Maintenance
OSOK	Optional SOK(System Operation Key)		TTM	Time to Market
OP	Operational Procedure		TX	Transmit
PCL	Printer Control Language		UI	User Interface
PDF	(Adobe) Portable Document Format		UMC	Unit Manufacturing Cost
PPM	Pages Per Minutes		UMR	Unscheduled Maintenance Ratio
PQ	Print Quality		UPnP	Universal Plug and Play
PS/3	PostScript Level-3		USB	Universal Serial Bus
PVC	Printing Video Controller in the SPGPm(Graphic Processor for Printer)		USDR	Un-Shut Down Rate(=NSDR)
			XCMI	Samsung's Management Information Base
QCD	Quality, Cost, and Delivery		WA	Warranty Action
RCP	Remote Control Panel		W x D x H	Width x Depth x Height

13.2.2 Service Parts

ACRONYM	EXPLANATION
ELA HOU-SCANNER ASS'Y	ELA=Electrical Assembly, HOU =Housing
MEA UNIT-COVER PA EXIT ASS'Y	MEA= Mechanical Assembly, PA=Paper
PMO-TRAY EXTENTION MP NE	PMO= Processing Mold MP=Multi-Purpose(Bypass) tray NE=for NEC (common as Samsung Halk printer)
MEC-CASSETTE ASS'Y(LETTER)	MEC = Mechanic Combined unit
COVER-M-FRONT	M=Mold
MPR-NAME/PLATE	MPR= Machinery Press,
UNIT-LSU	LSU =Laser Scanning Unit
SMPS-SMPS(V1)+HVPS	SMPS =Switching Mode Power Supply HVPS =High Voltage Power Supply
ELA-OPC UNIT SET	OPC=Organic Photo-Conductive
ELA HOU-MP ASS'Y	MP =Multi-Purpose (Bypass) tray
PBA MAIN-MAIN	PBA =Printed circuit Board Assembly
PMO-CONNECT PAPER MFP	MFP =Multi-Functional Peripheral
FAN-DC	DC =Direct Current
CBF POWER STITCH GRAY	CBF= Cable Form
MEA UNIT GUIDE CST PA ASS'Y	CST=Cassette(Paper tray), PA=Paper
PBA LIU	PBA =Printed circuit Board Assembly LIU =Line Interface Unit for FAX
SHIELD-P_MAIN LOWER	P=Press
CBF HARNESS-LIU GND	LIU =Line Interface Unit for FAX GND= Ground
PMO-COVER FEED AY	AY=Assembly
PMO-COVER BRKT MOTER	BRKT=Bracket
CBF HARNESS-LSU	LSU =Laser Scanning Unit
IPR-SHIELD SMPS UPPERI	IPR=Iron Press
PMO-BUSHING P/U.MP	P/U=Pickup MP=Multi-Purpose (Bypass) Tray
PMO-HOLDER GEAR TRr	TR= Transfer Roller
SPRING ETC-TR_L	TR_L=Transfer Roller - Left

ACRONYM	EXPLANATION
PMO-CAM JAM REMOVE	PMO-CAM= Processing Mold-CAM
PMO-LOCKER DEVE	DEVE=Developer
SPECIAL SCREW(PANNEL MFP)	MFP =Multi-Functional Peripheral
A/S MATERAL-DUMMY UPPER ASS'Y	A/S=After-Service
MCT-GLASS ADF	MCT= Machinery Cutting ADF=Automatic Document Feeder
PPR-REGISTRATION EDGE(F)	PPR= Processing Press
IPR-HOLDER GLASSI	PR=Iron Press
MCT-GLASS SCANNER(LEGAL)	MCT= Machinery Cutting
CBF HARNESS-OPE	OPE=Operation Panel(Control Panel)
PBA SUB-D_SUB	PBA SUB-D_SUB =>Sub Printed circuit Board Assembly for the D-SUB type electrical connector (D-Sub) a kind of the connector type(shape 'D')
COVER-M-CCD CABLE	M=Mold CCD=Charge Coupled Device
COVER-SCAN LOWER(UMAX)	UMAX=> Supplier's name for CCD module
ICT-INSERT SHAFTI	ICT= Iron Cutting
IPR-BRK SCAN BD	IPR=Iron Press BRK=Bracket BD= Board
CBF SIGNAL-CCD FFC	CCD = Charge Coupled Device FFC =Flexible Flat Cable
COVER-M-OPE	M=Mold OPE=Operation Panel(Control Panel)
KEY-M-COPY	M=Mold
PLATE-M-ALPHA KEY	M=Molde ALPHA=Alphabet
PMO-GUIDE DP SIDE	DP=Duplex
RING-CS	CS= Compress
GEAR-MP/DUP DRV	MP =Multi-Purpose (Bypass) tray DUP DRV = Duplex Driver
IPR-BRKT G DUPI	PR=Iron Press BRKT=BRACKET G= Ground DUP=Duplex
PMO-BUSHING TX(B4)	TX=Transmit
PMO-TRAY CASE, MP	MP=Multi-Purpose tray(Bypass tray)

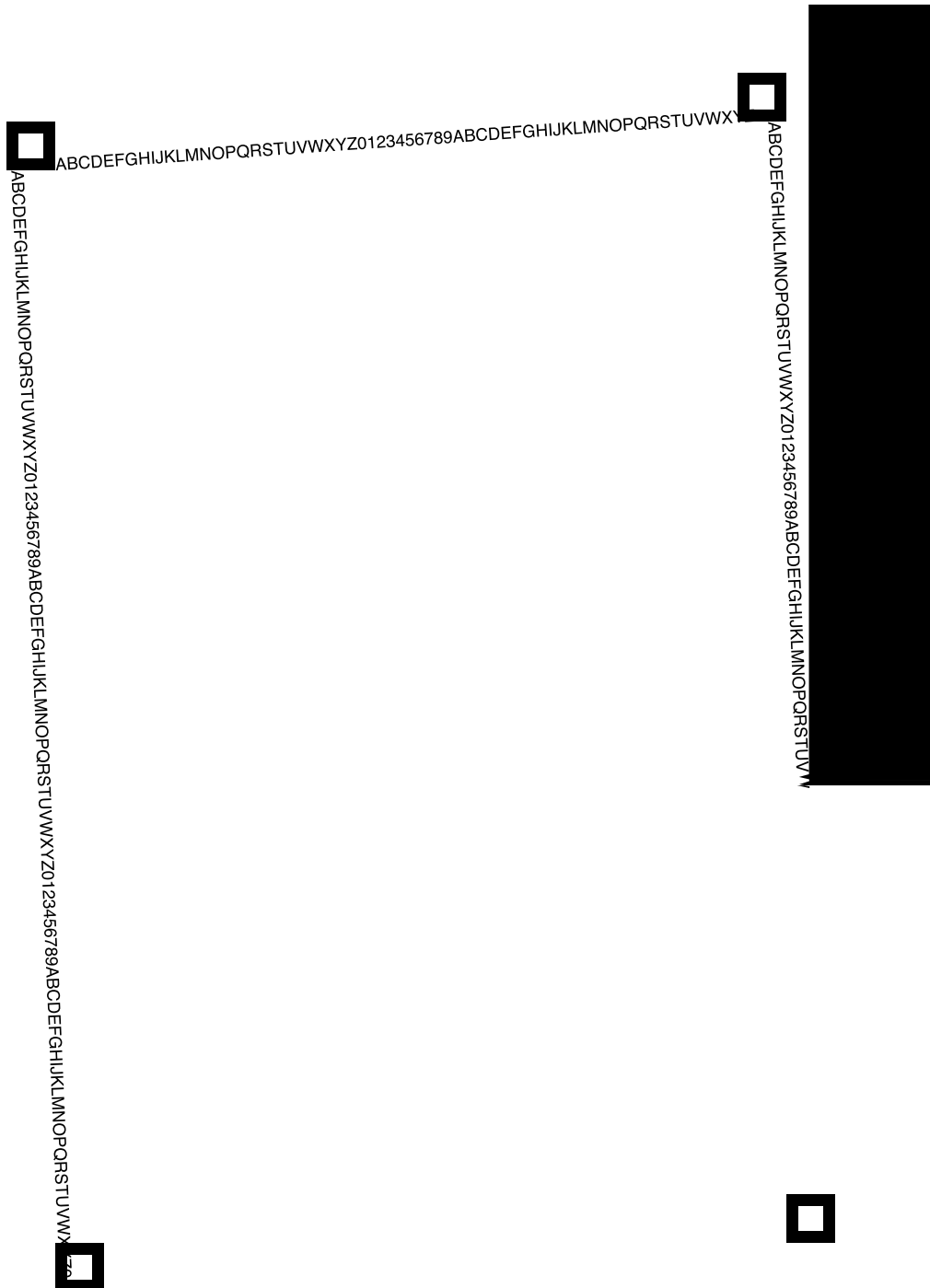| ACRONYM	EXPLANATION
SPRING CS RE	CS=Compress RE=Rear
SPRING CS FR	CS=Compress FR=Front
PMO-BUSHING FINGER, F	F=Front
ICT-SHAFT-EXIT LOWER ID	ID=Idler
SPRING-EXIT ROLL FD	FD=Face Down
PMO-BUSHING_P/U,MP	P/U=Pickup MP =Multi-Purpose (Bypass) tray
PMO-HOLDER CAM MPF	MPF=Multi-Purpose Feeder(=MP)
PMO-GEAR P/U MPF	P/U=Pickup
MFP =Multi-Functional Peripheral	
RPR-RUBBER PICK UP,MP	RPR=Rubber Press
PBA SUB-MP SEN	PBA SUB-MP-SEN =>Sub Printed circuit Board Assembly for the MP-SEN(= Multi-Purpose (Bypass) tray-Sensor)
A/S MATERAL-PICKUP,MP	
FOOT-ML80	
HOLDER CATCH CST MC2	MC2=>McKInley2 (Samsung Project code name)
IPR-GROUND PLATE A(OPC)	OPC=Organic Photo-Conductive
ELA M/M-AUD SPEAKER	ELA M/M => Electrical Assembly M/M AUD=Audio
CBF HARNESS-OPC GND	OPC GNG=Organic Photo-Conductive-Ground
IPR-GROUND PLATE SCF	SCF=Second Cassette Feeder(Tray2)
PBA SUB-PTL	PBA SUB-PTL=>Sub Printed circuit Board Assembly for the PTL(= Pre Transfer Lamp)
PBA SUB-FEED+P.EMP SEN.	PBA SUB-FEED=>Sub Printed circuit Board Assembly for the feeder EMP SEN=Empty Sensor
MOTOR STEP-MCK2(MAIN)	
GEAR-EXIT/U	EXIT/U=EXIT/Upper
GEAR-RDCN FEED INNER	RDCN=Reduction
CBF-HARNESS-MAIN-THV WIRE	THV =Transfer High Voltage
CBF-HARNESS-MAIN-MHV WIRE	MHV= High Voltage(Charge Voltage)

ACRONYM	EXPLANATION
GEAR-EXIT/U,ID	U=Upper ID=Idler
IPR-TERMINAL FU	FU=Fuser
PMO-BEARING H/R-F	H/R-F=Heat Roller - Front
BEARING-H/R L	H/R-L=Heat Roller -Left
PEX-ROLLER EXIT F_UP	PEX= Processing Extrude F_UP=Face Up
SPRING ETC-P/R	P/R=Pressure Roller
SPRING(R)-CAU-HOT-FU	CAU-HOT-FU = Caution Hot -Fuser
PMO-ARM ACTUATOR	PMO-ARM= Processing Mold Arm
LABEL(R)-HV FUSER	HV=High Voltage (220V)
LABEL(R)-LV FUSER	LV=Low Voltage (110V)
PPR-SPONG SHEET	PPR=Plastic Press
IPR-P_PINCH(SCAN)I	PR-P = Iron Press
ROLLER-REGI	REGI=Registration
PBA SUB-REGI	PBA SUB-REGI => Sub Printed circuit Board Assembly for the Registration
GROUND-P_SCAN ROLLER	GROUND-P =Ground-Press
IPR-GUARD C/O S/W	C/O = Cover Open S/W= Switch
MEA UNIT-TX STACKER	TX =Transmit
IPR-WASHER SPRING CU	CU=Curve

13.3 The Sample Pattern for the Test

The sample pattern shown in below is the standard pattern used in the factory.
The life of the toner cartridge and the printing speed are measured using the pattern shown below.
(The image is 70% of the actual A4 size).

13.3.1 A4 ISO 19752 Standard Pattern

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

13.4 Wireless LAN

• This product uses a printing function with a wireless LAN, which is an option.
- The wireless LAN function uses a frequency instead of connecting LAN cable to connect data to an access point for print.
- For a wireless LAN connection, an AP is needed, It is possible to use wireless LAN onnection with wired LAN. Also, if AP is installed in an office or at home, the wireless LAN function can be simply used.

• Types of desk top PC (or Lap top) that uses the wireless LAN.

Division	Basic type	Recommend type
CPU	Over PENTIUM 233M	PENTIUM 300MHz
MEMORY	Over 64MB	Over 128MB
VIDEO CARD	Over 800X600	Over 1024X768
OS	Over WINDOWS 98	Over WINDOWS ME
INTERFACE CARD	A product has a certificated mark of Wi-Fi™	

• **About the certificated mark of Wi-Fi™**

- The Wi-Fi™ is a registered trademark of WECA (Wireless Ethernet Compatibility Alliance). Over 50 of a wireless LAN companies are member of it. The most of main wireless networking companies are attending and the main companies are Lucent technologies, Cisco, Intel/Symbol, 3Com, Enterasys (Cabletron), Compaq, IBM, Nokia, Dell, Philips, Samsung electronic, Sony, Intersil, and so on. This mark certifies mutual compatibility among product has Wi-Fi™ (IEEE 802.1) and it is certified as a standard of a wireless LAN market.

13.5 Selecting a location

Select a level, stable place with adequate space for air circulation. Allow extra space for opening covers and trays.
The area should be well-ventilated and away from direct sunlight or sources of heat, cold, and humidity. Do not set the machine close to the edge of your desk or table.

Clearance space

• Front: 482.6 mm (enough space so that the paper tray can be removed)
• Back: 100 mm (enough space for ventilation)
• Right: 300 mm (enough space for ventilation)
• Left: 100 mm (enough space for ventilation)