

## 2. 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 patterns is also included.

### 2.1 Tool for Troubleshooting

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

- **DCU(Diagnostic Control Unit)**

Standard : Test equipment to diagnose the Laser printer supplied by Samsung Electronics.

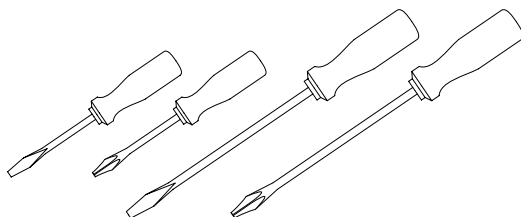


- **DVM(Digital Volt Meter)**

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.



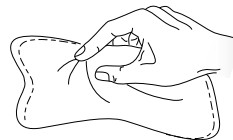
- **Cotton Swab**

Standard : For general home use, for medical service.

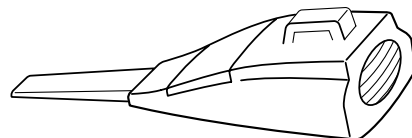


- **Cleaning Equipments**

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



- **Vacuum Cleaner**

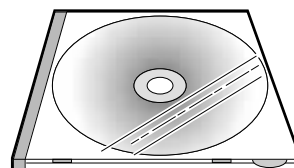


- **Spring Hook**

Standard : For general use



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



## 2.2 Acronyms and Abbreviations

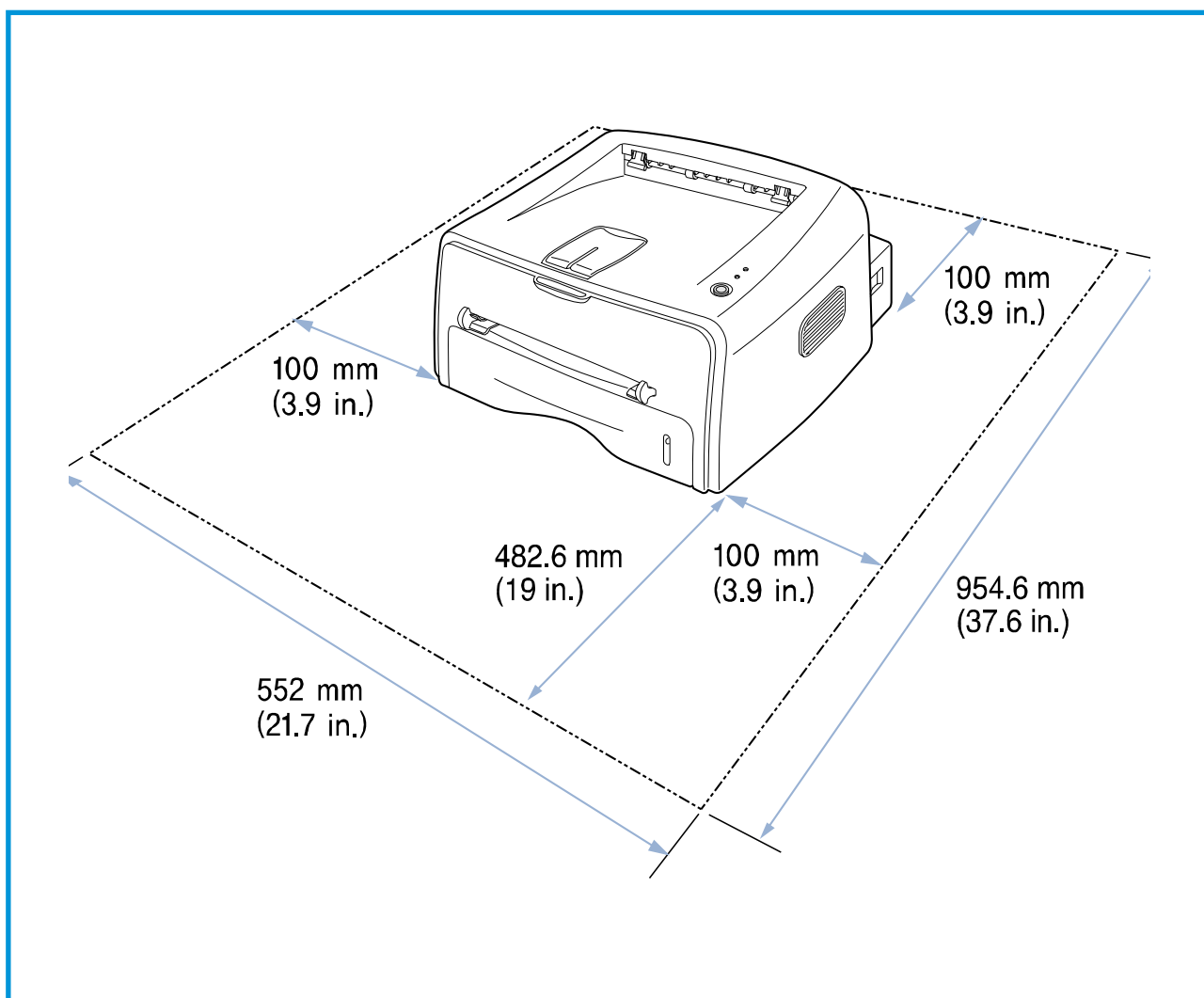
The table below explains the abbreviations and acronyms used in this service manual. Where abbreviations or acronyms are used in the text please refer to this table.

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
CMOS	Complementary Metal Oxide Semiconductor	GND	Ground
CMYK	Cyan, Magenta, Yellow, Black	HBP	Host Based Printing
CN	Connector	HDD	Hard Disk Drive
CON	Connector	HTML	Hyper Text Transfer Protocol
CPU	Central Processing Unit	HV	High Voltage
CTD Sensor	Color Toner Density Sensor	HVPS	High Voltage Power Supply
dB	Decibel	I/F	Interface
dBA	A-Weighted decibel	I/O	Input and Output
dBm	Decibel milliwatt	lb	Pound(s)
DC	Direct Current	IC	Integrated Circuit
DCU	Diagnostic Control Unit	ICC	International Color Consortium
DIMM	Dual In-line Memory Module	IDE	Intelligent Drive Electronics or Integrated Drive Electronics
DPI	Dot Per Inch	IEEE	Institute of Electrical and Electronics Engineers. Inc
DRAM	Dynamic Random Access Memory	IOT	Image Output Terminal (Color printer, Copier)
DVM	Digital Voltmeter	IPA	Isopropyl Alcohol
ECP	Enhanced Capability Port	IPC	Inter Process Communication Enhanced parallel Port
ECU	Engine Control Unit	IPM	Images Per Minute
EEPROM	Electronically Erasable Programmable Read Only Memory	ITB	Image Transfer Belt
EMI	Electro Magnetic Interference	LAN	local area network
EP	Electro photographic		

LBP	Laser Beam Printer	RAM	Random Access Memory
LCD	Liquid Crystal Display	ROM	Read Only Memory
LED	Light Emitting Diode	SCF/SCT	Second Cassette Feeder/Second Cassette Tray
LSU	Laser Scanning Unit	SMPS	Switching Mode Power Supply
MB	Megabyte	SPGP	Samsung Printer Graphic Processor
MHz	Megahertz	SPL	Samsung Printer Language
MPBF	Mean Prints Between Failure	Spool	Simultaneous Peripheral Operation Online
MPF/MPT	Multi Purpose Feeder/Multi Purpose Tray	SURF	Surface Rapid Fusing
NIC	Network Interface Card	SW	Switch
NPC	Network Printer Card	sync	Synchronous or Synchronization
NVRAM	Nonvolatile Random Access Memory	T1	ITB
OPC	Organic Photo Conductor	T2	Transfer Roller
PBA	Printed Board Assembly	TRC	Toner Reproduction Curve
PCL	Printer Command Language , Printer Control Language	PnP	Universal Plug and Play
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	URL	Uniform Resource Locator
PDF	Portable Document Format	USB	Universal Serial Bus
PDL	Page Description Language	VCCI	Voluntary Control Council for Interference Information Technology Equipment
Ping	Packet internet or Inter-Network Groper	WECA Alliance	Wireless Ethernet Compatibility
PPD	Postscript Printer Discription	Wi-Fi	Wireless Fidelity
PPM	Page Per Minute		
PS	Post Script		
PTL	Pre-Transfer Lamp		
PWM	Pulse Width Moduration		
Q'ty	Quantity		

## 2.3 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



## 2.4 Sample Tests Patterns

The sample patterns shown below are the standard test patterns used in the factory.

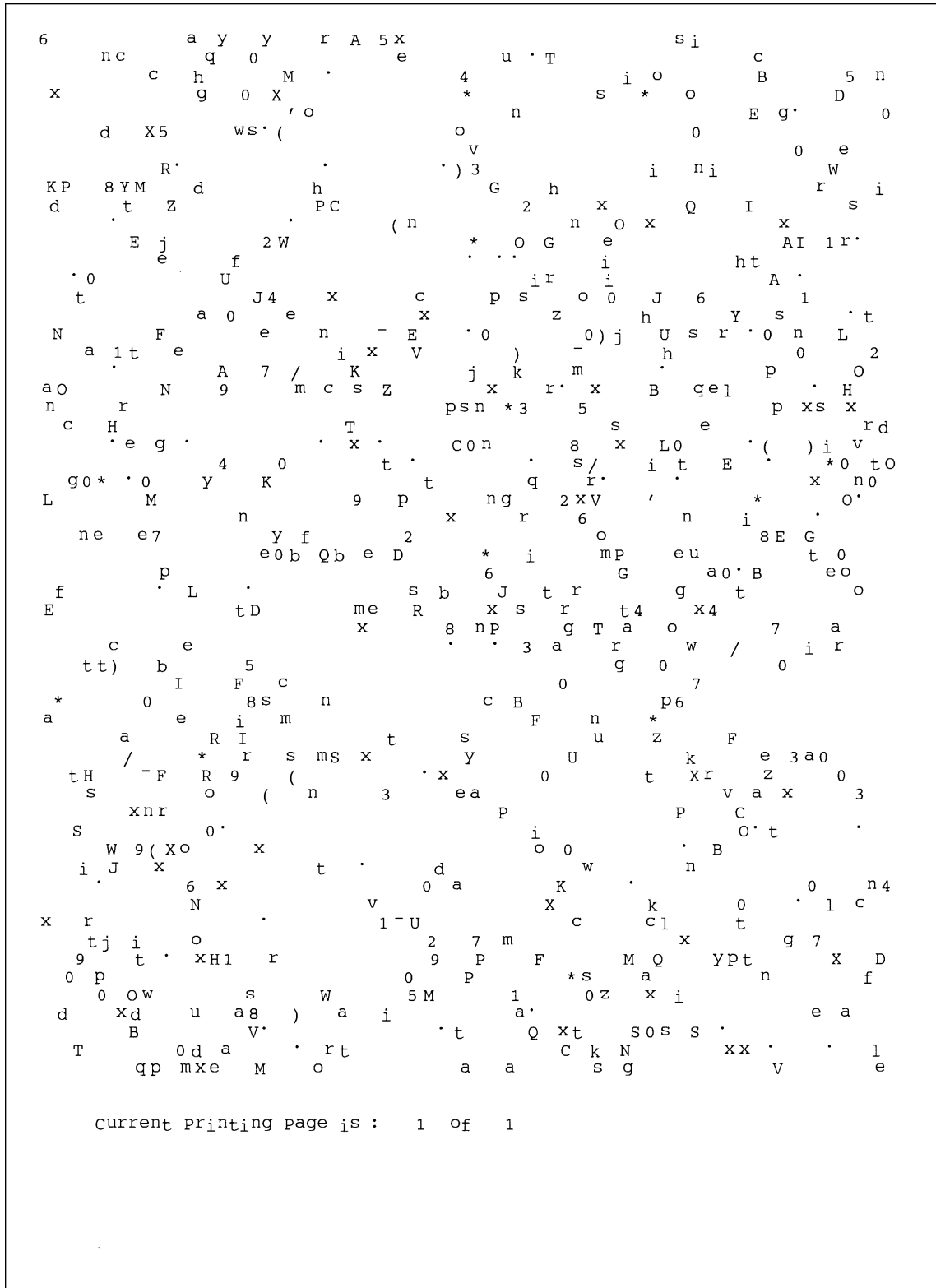
The life of the toner cartridge, developer cartridge and printing speed are measured with the pattern shown below (5%). The 5% and 2% samples are reproduced reduced to 70% of the actual A4 size.

### 2.4.1 A4 5% Pattern

```
i o 0 e / A K 06 cs hh r m E ei *.0 Y S r a i
r a) ( . Y b S lM* s g .3 A A4 r n
t Leyi RS . s t d u x o 0 lg P t f l
N l 0t f ' t psF ott o 2 ux-s o i t Anvp N t o tQ
tl ti uso w i ag' l u p o . n X0t li at
L ey OH m m n N: lc T c hrry x i t
ia* X 0 t' utst- N*Qir ep n b pepa we t
eo t s IT' i 'e dn o s b* te * G * srx is n
. auo s t s e l A cko o 9 0 gs
ne 3 o n 1* r a/n i op r r i * ee
s 0 aeocs p * * Ke'0 sn*s z eo cr o 0 ma go
FPT sonm da t s l xopr a r p . o ' - u
ac-n* / Sac Y t e (ty* mlai p b t2 (l
i edu ar -0 l DPR e pse ag c e sa6g p p'
*/mn0ov p se* w a 0 r * gm 0 p p r P00
n t*n su n h*xv ri tp' o rg co ine s v0 -0 1 T
y 01 m ' (10 M ' u/ r ne o p e
s ob d t nu e n e lA apro iotre
pe e o e d 0 u I si esc o i X'ee
pe e t i md OPC e Letyo aoi t nn l tm e B
x i Xlo ) c aicn fern i)x i p n* n oi e u in D W
X Y X r eo 001 dE bs PB teo * Ro H g u*K
d s Fxr rCF a bh s p g s le r roj n e pp
a p tr ps(s oaddr la s p z uis n oa
.m d t E *F i* opn E h i rudc r s 0
a petya b d e V" d t.e.p) . r0 h n s t
n p t e v t ho *f0x*a 0 ic 0 em i a FA0
i2q n/ s8' i ) BZ P cd~ pso o 30a Or Y*h
dr-e tu9 t F iet3 rhP * e m0 dt x De
Wtpp xiX n m( wd lAacc a -0 z)l i i n e
5 e * sn o Pd .Xl o ic sa y X Pk
i- P00 P h Yb olo) C e ( w sc0"o o ynn !Xnj
i va3 AC H a C Xt0rP ow . ersico s 10 a
Plplae a tid ep/tF t )s pn F't g(ed e
so ss w 10h yxt OS p) Dn0- o r
*dynM o u ii Tp nly ne' l c X s(seo o'c
i 08 BW ouCH ue k EX t2' i sonn * op
is1 n g ir r Q o x gr ny* tu o mxsar uj*
a 0/* p 8 ur f o t a ip p no e
es pn .i* i .t) .t W 5A * iyn t I O stn rtx-
n t e s ev s n x ( xen eo Xw td l' -
Ui c i7 e )SPX m uros3*is s .n n M o l L-g
at *sUrN2 7e u l X o o tH-res c p eo W
5* oe s- a o( Q FOP nN * em.r*ud e t mm c iox5
iog s- a os on d b so'6p s 6At eo . n s
Hist 0 J t R 6 ei T RJ iil' i o ank'
p r e ro F Bui op mm e0M 0 00 lEe u e B u
q t i o xB iO *hn t r i a ses " t X t t s n
m) g p d G F I soy Ors fE*0 o Ie hd e n
p gno' t H r s nZE e iea p * t - P/4e l
t E oo w a g e s6 n oc xpc -w n
d X er s t o t idt *o s o' p e t ll/R
XX i g i e fg s P C . m x h te C g os ta e
Pa(00 n/t00'ozdI dno x.p O W ae or R t icF
(1 xa B co o s )r s 8Y*x toe' ie t o ah
r B 0 rlr d t .l Ei et0Da h n s7
c - s oo lo t ga 'r FM *d i*s 0 x o pe *
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current printing page is : 1 of 1

## 2.4.2 A4 2% Pattern



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

