

TOSHIBA

TOSHIBA Thermal Printer

B-SX6T/SX8T SERIES

System Mode Manual

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TABLE OF CONTENTS

	Page
1. INTRODUCTION -----	1- 1
1.1 Key Operation Flow -----	1- 1
1.2 Operation Panel -----	1- 2
2. SYSTEM MODE -----	2- 1
2.1 Self-diagnostic Test -----	2- 3
2.1.1 Printing Mode Selection-----	2- 4
2.1.2 Dispensing Mode Selection-----	2- 4
2.1.3 Maintenance Counter/Parameter Settings Printing Out-----	2- 5
2.1.4 Self-Diagnostic Test and Result Print Out-----	2-11
2.1.5 Print Head Element Check-----	2-17
2.2 Parameter Setting -----	2-18
2.2.1 Character Code Selection-----	2-19
2.2.2 Character Zero Selection-----	2-20
2.2.3 Baud Rate Selection-----	2-20
2.2.4 Data Length Selection-----	2-21
2.2.5 Stop Bit Length Selection-----	2-21
2.2.6 Parity Selection-----	2-22
2.2.7 Flow Control Code Selection-----	2-22
2.2.8 LCD Language Selection-----	2-23
2.2.9 Auto Forward Wait Selection-----	2-23
2.2.10 Head Up Cut Selection-----	2-24
2.2.11 Ribbon Save Function Selection-----	2-24
2.2.12 Control Code Selection-----	2-25
2.2.13 Ribbon Type Selection-----	2-26
2.2.14 Strip Wait Status Selection-----	2-26
2.2.15 FEED Key Function Selection-----	2-27
2.2.16 KANJI Code Selection-----	2-27
2.2.17 EURO Code Selection-----	2-27
2.2.18 Auto Print Head Check Selection-----	2-28
2.2.19 Centronics Interface ACK/BUSY Timing Selection-----	2-28
2.2.20 Web Printer Function Selection-----	2-29
2.2.21 Media Sensor Selection-----	2-29
2.2.22 Input Prime Selection-----	2-30
2.2.23 Expansion I/O Interface Type Selection-----	2-30
2.2.24 Plug & Play Selection-----	2-31
2.2.25 Label End/Ribbon End Selection-----	2-31
2.2.26 Pre-Strip Selection-----	2-33
2.2.27 Reverse Feed Speed Selection-----	2-33
2.2.28 Maxi Code Specification Selection-----	2-33
2.2.29 Strip Motor Torque Selection-----	2-34
2.2.30 Stabilizer Function Selection-----	2-34

	Page
2.3 Printer Parameter Fine Adjustment -----	2-35
2.3.1 Feed Amount Fine Adjustment -----	2-37
2.3.2 Cut/Strip Position Fine Adjustment -----	2-38
2.3.3 Reverse Feed Amount Fine Adjustment -----	2-41
2.3.4 X Coordinate Fine Adjustment -----	2-42
2.3.5 Print Tone Fine Adjustment (Thermal Transfer/Thermal Direct Print) -----	2-44
2.3.6 Ribbon Motor Voltage Fine Adjustment (Feed/Take-up Motor) -----	2-45
2.3.7 Threshold Manual Fine Adjustment (Black Mark/Feed Gap Sensor) -----	2-46
2.4 Test Print -----	2-47
2.4.1 Specifying the Print Condition for the Test Print -----	2-49
2.4.2 Test Print Pattern Selection -----	2-52
2.4.3 Slant Line (1 dot) -----	2-53
2.4.4 Slant Line (3 dots) -----	2-54
2.4.5 Characters -----	2-55
2.4.6 Barcode -----	2-55
2.4.7 Non-Printing -----	2-56
2.4.8 Factory Test -----	2-56
2.4.9 Auto Print -----	2-57
2.5 Sensor Adjustment -----	2-58
2.5.1 Sensor Status Display -----	2-59
2.5.2 Black Mark Sensor Adjustment -----	2-59
2.5.3 Feed Gap Sensor Adjustment -----	2-60
2.5.4 Black Mark Sensor and Feed Gap Sensor Adjustment (Paper End Level) -----	2-60
2.6 RAM Clear -----	2-61
2.6.1 RAM Clear Menu Selection -----	2-62
2.6.2 No RAM Clear -----	2-62
2.6.3 Maintenance Counter Clear -----	2-62
2.6.4 Printer Parameter Clear -----	2-63
2.7 IP Address Setting -----	2-66
2.7.1 Printer IP Address, Gateway IP Address, and Subnet Mask Settings -----	2-67
2.7.2 Socket Port Setting -----	2-68
2.7.3 DHCP and DHCP ID Settings -----	2-68
2.7.4 DHCP Host Name Setting -----	2-69
2.8 BASIC Setting -----	2-70
2.8.1 Basic Specification Selection Mode -----	2-71
2.8.2 Basic File Browser -----	2-71
2.8.3 Basic Trace Selection Mode -----	2-71
2.8.4 Basic Expansion Mode (Execution of Basic Program) -----	2-72
2.9 RFID Module Setting -----	2-73
2.9.1 RFID Read Test -----	2-74
2.9.2 RFID Module Type Selection -----	2-75
2.9.3 RFID Tag Type Selection -----	2-76
2.9.4 RFID Error Tag Delection -----	2-76
2.9.5 Maximum Number of RFID Issue Retries -----	2-77
2.9.6 Maximum Number of RFID Read Retries -----	2-78
2.9.7 RFID Read Retry Time-out -----	2-79

	Page
2.9.8 Maximum Number of RFID Write Retries -----	2-80
2.9.9 RFIDWrite Retry Time-out-----	2-81
2.9.10 RFID Adjustment for Retry -----	2-82
2.9.11 RFID Wireless Power Level Setting-----	2-83
2.9.12 RFID AGC Threshold-----	2-83
2.9.13 RFID Module Q Value Setting -----	2-84
2.9.14 AGC Threshold for Data Write Setting-----	2-85
2.9.15 AGC Threshold Lower Limit for Retry Setting -----	2-86
3. ON LINE MODE -----	3- 1
3.1 Automatic Threshold Setting -----	3- 4
3.2 Reset Operation -----	3- 5
3.3 Dump Mode -----	3- 6
3.4 BASIC Expansion Mode -----	3- 8
3.5 Automatic Calibration Setting -----	3- 9
3.6 LAN Enable/Disable Setting -----	3-11
3.7 Real Time Clock (RTC) Setting -----	3-12
4. PROGRAM DOWN LOAD -----	4- 1
4.1 Outline of Features -----	4- 1
4.2 Download Program Installation -----	4- 1
4.2.1 System Requirements-----	4- 1
4.2.2 Setup-----	4- 2
4.3 Firmware Download -----	4- 2
5. RFID ANALYZE TOOL -----	5- 1
5.1 System Requirement-----	5- 1
5.2 Set up -----	5- 2
5.3 Application Functions -----	5- 3
5.3.1 Main Menu-----	5- 3
5.3.2 File Menu -----	5- 4
5.3.3 Tool Menu -----	5- 7
5.3.4 Help Menu-----	5-12
5.4 Operating Procedure-----	5-13

CAUTION!

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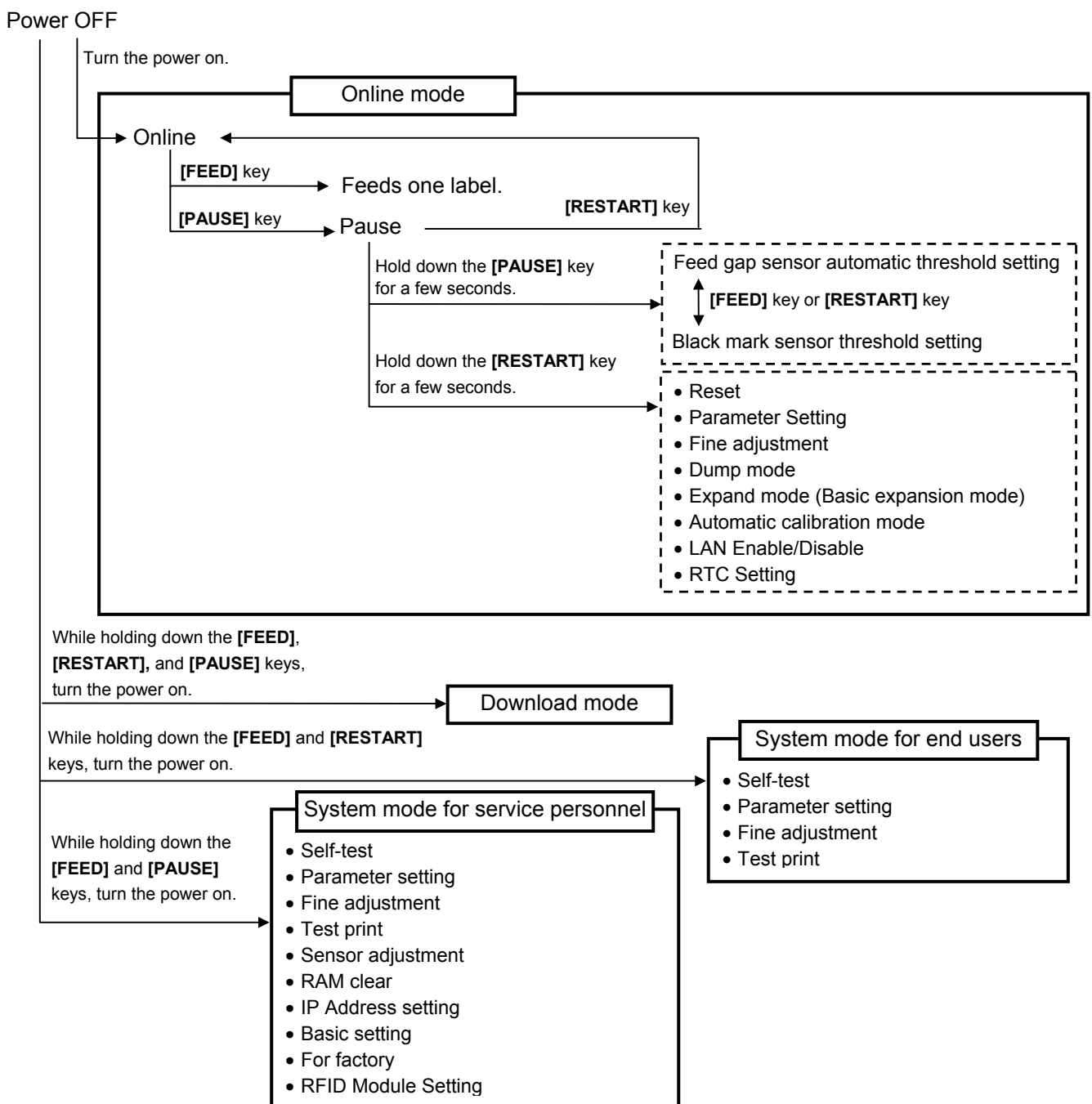
1. INTRODUCTION

This document describes key operations using the keys and LCD display on the printer that you can operate on a printer alone. Key operations are performed in the following four printer setting modes:

- Online mode where a pause, reset, automatic threshold setting, etc. are performed.
- Download mode where a firmware downloading is performed.
- System mode for service personnel where a self-diagnosis, printer parameter settings, RAM clear, IP address setting etc. are performed.
- System mode for end user where a self-diagnosis, printer parameter settings, fine adjustment, etc., which are same functions as those in System mode for service personnel, are performed.

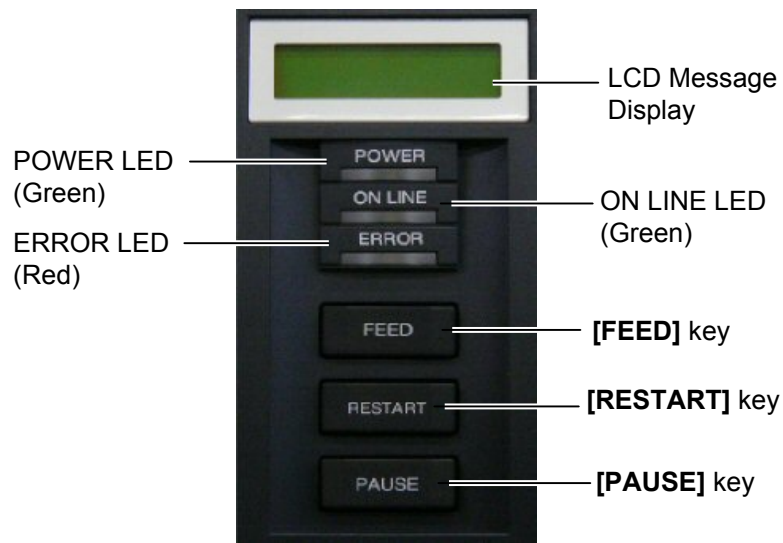
NOTE: This document uses the B-SX8T for examples of the display.

1.1 Key Operation Flow



1.2 Operation Panel

The figure below illustrates the Operation Panel and key functions.



The LCD Message Display is a 16-character x 2-line display, which shows messages in alphanumeric characters and symbols to indicate the printer's status. .

There are three LEDs on the Operation Panel.

LED	Illuminates when...
POWER	The printer is turned on.
ON LINE	The printer is ready to print.
ERROR	The printer is in an error state.

The **[FEED]**, **[RESTART]** and **[PAUSE]** keys function as described below.

FEED	Feeds or ejects one media. Adjusts media to a proper position if the media is not properly positioned by feeding one or two blank media before printing. Prints data in the image buffer on one media according to the system mode setting.
	In system mode, this key is used to select various parameters or to set a fine adjustment value in the negative direction (-).
RESTART	Resumes printing when the printer is in a pause state or an error state. Restores the same state as when the power is turned off and on again.
	In system mode, this key is used to select various parameters or to set a fine adjustment value in the positive direction (+).
PAUSE	Stops printing temporarily. Programs threshold values.
	In system mode, this key is used as an enter key.

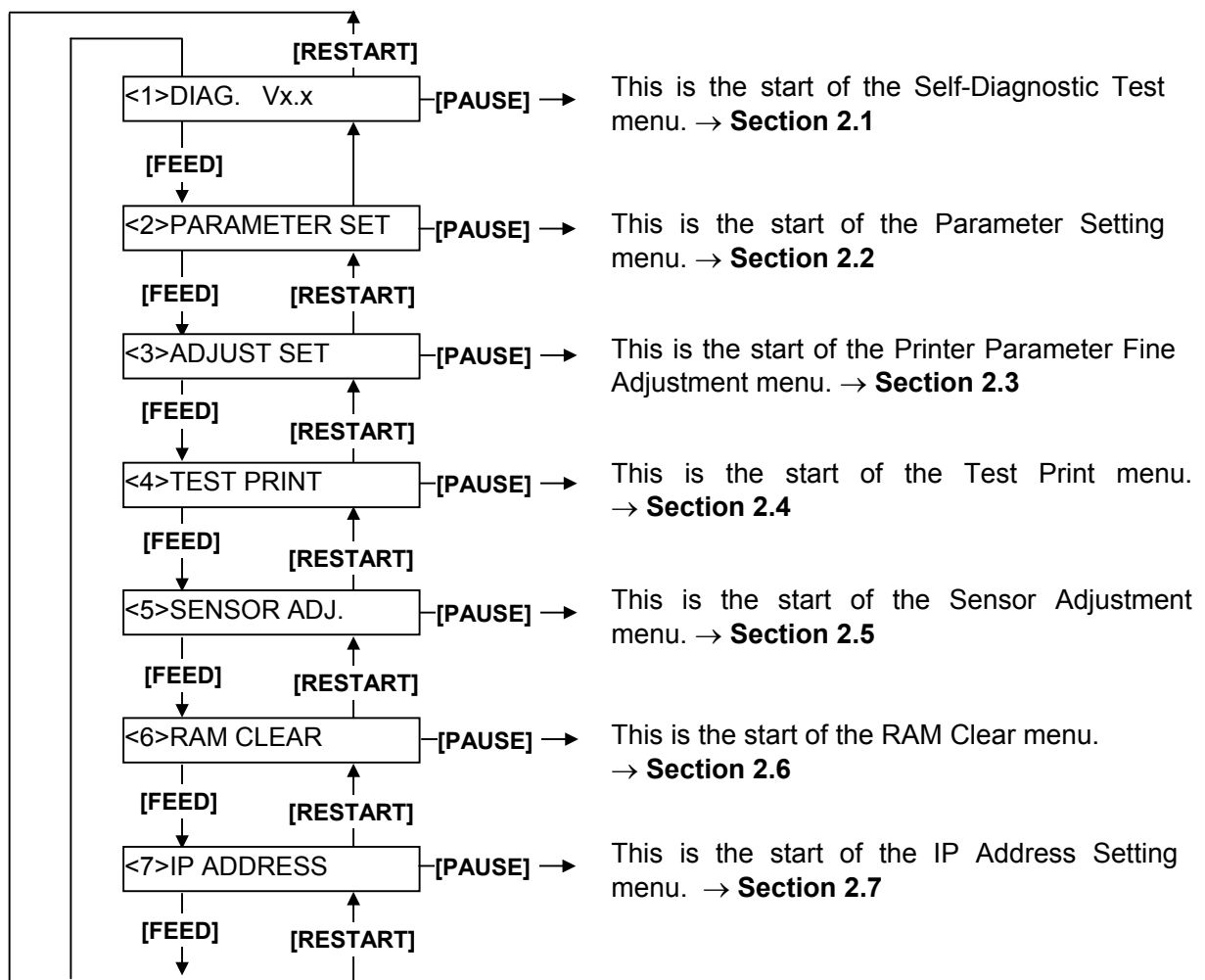
2. SYSTEM MODE

System mode consists of ten main menus: Self-diagnostic test, Parameter setting, Printer parameter fine adjustment, Test print, Sensor adjustment, RAM clear, IP address setting, Basic setting, and Factory mode.

Each menu is used for the following purposes:

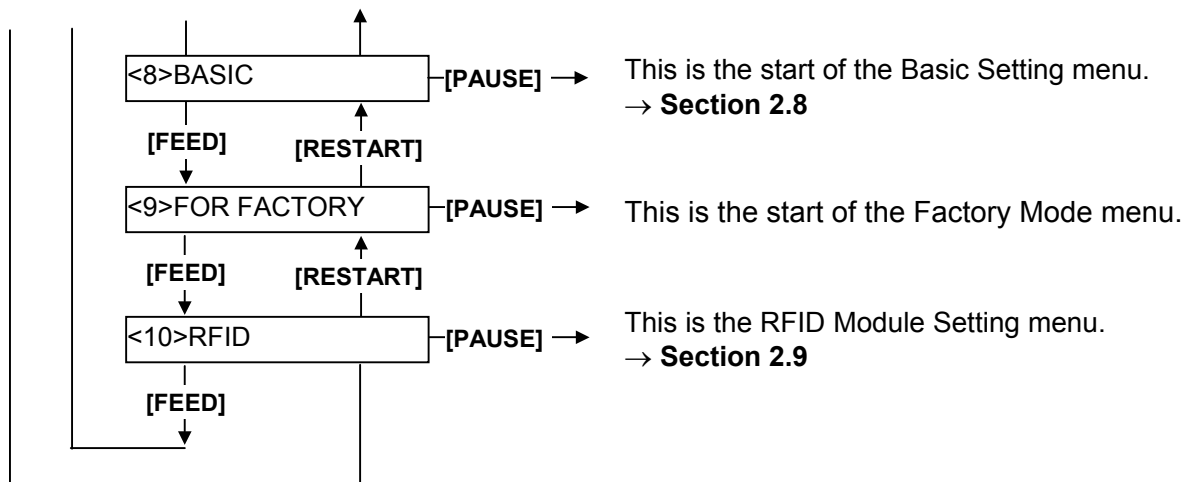
- To check and print the system status, the Maintenance Counter, and the Print Head Element.
- To set the parameters for the communication with the host computer, and the printer functions such as the language for LCD message, Feed key function, etc.
- To make fine adjustment related to the media issue.
- To perform a test print for checking print quality.
- To check the status of the sensors and to set the threshold of the media sensor for pre-printed media.
- To perform a Maintenance Counter clear and Parameter clear.
- To set the IP address
- To set the Basic setting
- To perform the factory mode

To enter System mode, turn on the printer while pressing the **[FEED]** and **[PAUSE]** keys at the same time. Hold both keys until “<1>DIAG. Vx.x” message appears on the display.



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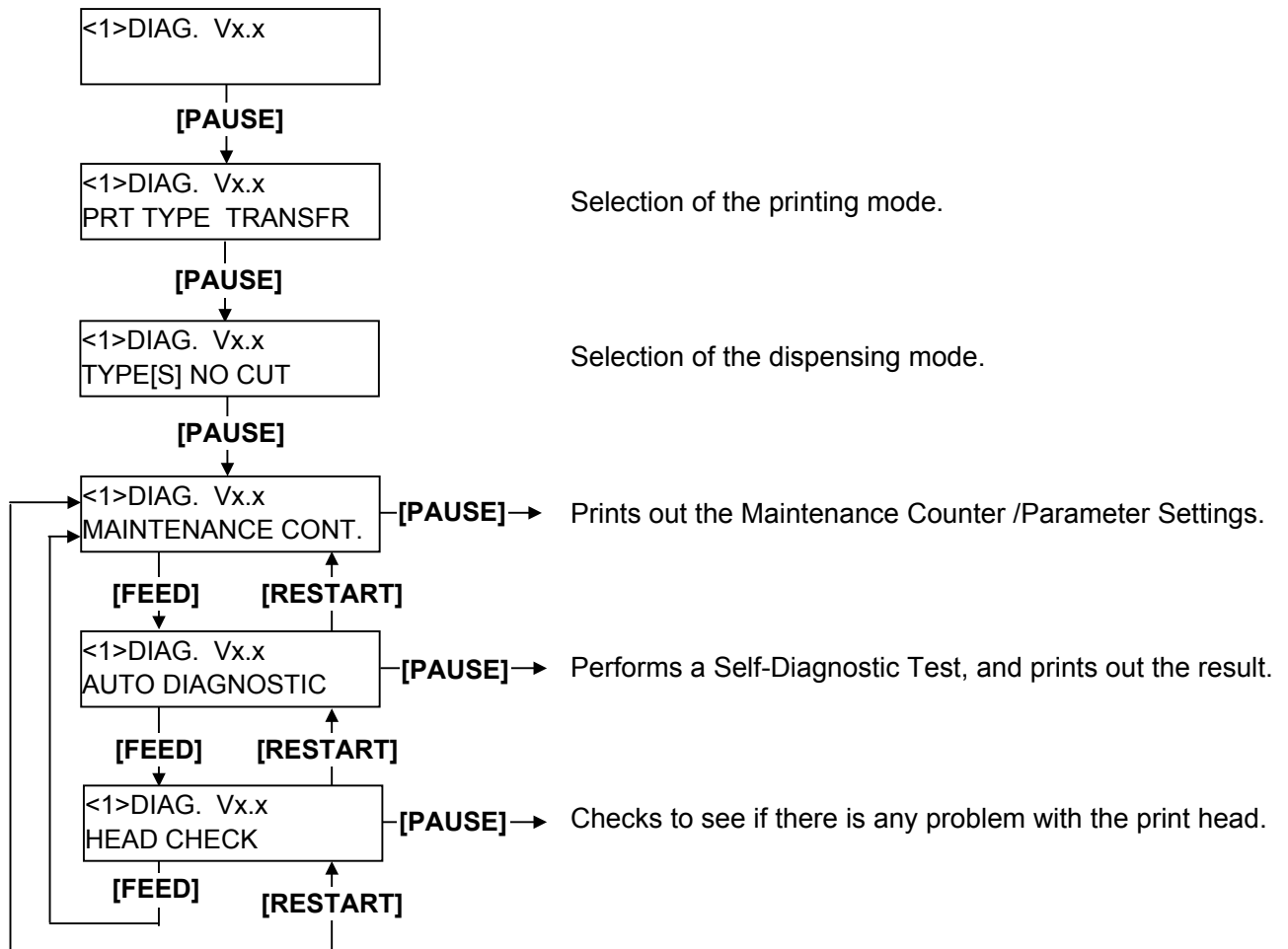
- NOTES:**
1. System Mode menu can be selected with the **[RESTART]** or **[FEED]** key.
 2. Pressing the **[PAUSE]** key allows you to enter the sub menus of each System Mode menu. Flowcharts of each menu's sub menus are provided on the following pages.
 3. "x.x" of "DIAG. Vx.x" indicates firmware version and revision.

2.1 Self-diagnostic Test

■ Outline of Self-diagnostic Test

In the Self-diagnostic test mode, the printer automatically checks and prints out the printer system information such as the sensor status or interface, and the maintenance counter. Also it performs a print head broken element check.

The **Self-diagnostic test** contains the following sub menus:



NOTE: Use the **[FEED]** or **[RESTART]** key to select a desired option.

■ How to Enter Self-diagnostic Test Mode

Turn on the printer while pressing the **[FEED]** and **[PAUSE]** keys at the same time. Hold both keys until the “<1>DIAG. Vx.x” message appears in the display.

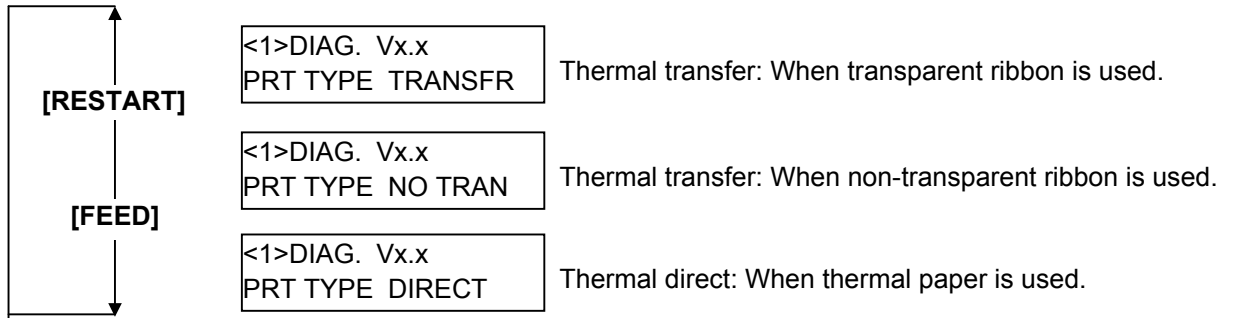
<1>DIAG. Vx.x

2.1.1 Printing Mode Selection

While “PRT TYPE TRANSFR” is displayed on the LCD, press the **[PAUSE]** key. The type of printing mode can be selected:

“TRANSFR” (Thermal transfer) or “DIRECT” (Thermal direct).

After selecting the printing mode to be used, press the **[PAUSE]** key.



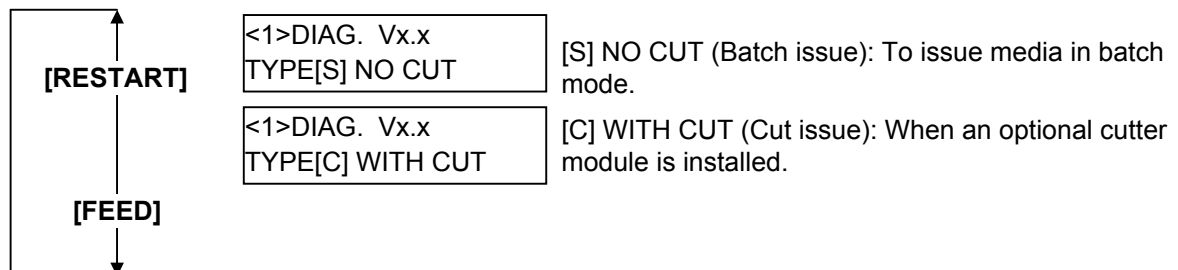
NOTE: When using the ribbon, be sure to select “Thermal Transfer”. When using the thermal media, be sure to select the “Thermal Direct”.

2.1.2 Dispensing Mode Selection

When “TYPE[S] NO CUT” is displayed, press the **[PAUSE]** key. The type of dispensing mode can be selected:

“[S] NO CUT” (Batch issue) or “[C] WITH CUT” (Cut issue)

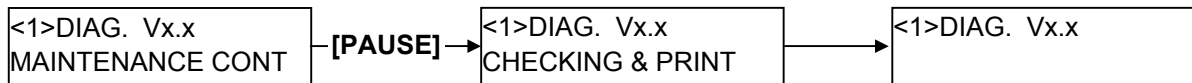
After selecting the dispensing mode to be used, press the **[PAUSE]** key.



NOTE: When using the cutter module, be sure to select “[C] WITH CUT”. When the cutter module is not installed, be sure to select “[S] NO CUT”.

2.1.3 Maintenance Counter/Parameter Settings Print Out

When "MAINTENANCE CONT" is displayed, the printer is ready to print out the Maintenance Counter/Parameter Settings. Press the **[PAUSE]** key to start.



• Print Sample

(1)	TOTAL FEED	1.1km	[QM]
(2)	FEED	1.1km	
(3)	PRINT	0.5km	
(4)	CUT	96	
(5)	HEAD U/D	12320	
(6)	RIBBON	3h	
(7)	SOLENOID	2h	
(8)	232C ERR	255	
(9)	SYSTEM ERR	0	
(10)	POWER FAIL	0	
	[PC]		[KEY]
(11)	FEED +2.0mm	FEED	+0.0mm
(12)	CUT +0.0mm	CUT	+1.0mm
(13)	BACK +0.0mm	BACK	+0.0mm
(14)	TONE(T) +0 step	TONE(T)	+0 step
(15)	TONE (D) +0 step	TONE(D)	+0 step
(16)	RBN(FW) -10	RBN (FW)	-8
(17)	RBN (BK) +0	RBN (BK)	+0
(18)	X ADJ. +0.0mm		
(19)	THRESHOLD (R)	1.0V	
(20)	THRESHOLD (T)	1.4V	
(21)	FONT	[PC-850]	[0]
(22)	SPEED	[9600]	
(23)	DATA LENG.	[8]	
(24)	STOP BIT	[1]	
(25)	PARITY	[EVEN]	
(26)	CONTROL	[XON+READY AUTO]	
(27)	MESSAGE	[ENGLISH]	
(28)	FORWARD WAIT	[ON] +0.0mm	
(29)	HEAD UP CUT	[ON]	
(30)	RIBBON SAVE	[ON:LABEL]	
(31)	CODE	[AUTO]	
(32)	RIBBON	[TRANS]	
(33)	PEEL OFF STATUS	[ON]	
(34)	FEED KEY	[FEED]	
(35)	KANJI	[TYPE1]	
(36)	EURO CODE	[B0]	
(37)	AUTO HD CHK	[OFF]	
(38)	ACK/BUSY	[TYPE1]	
(39)	WEB PRINTER	[OFF]	
(40)	SENSOR POSITION	[CENTER]	
(41)	INPUT PRIME	[ON]	
(42)	EX. I/O MODE	[TYPE1]	
(43)	PLUG & PLAY	[OFF]	
(44)	LBL/RBN END	[TYPE1]	
(45)	PRE PEEL OFF	[ON] +0.0mm	
(46)	BACK SPEED	[STD]	
(47)	MAXI CODE SPEC.	[TYPE1]	
(48)	PEEL OFF TRQ	[R3]	

(49)	STABILIZER	[ON]	
(50)	AUTO CALIB.	[OFF]	
(51)	LAN	[ON SNMP ON]	
(52)	PRTR IP ADDRESS	[192.168.010.020]	
(53)	GATE IP ADDRESS	[000.000.000.000]	
(54)	SUBNET MASK	[255.255.255.000]	
(55)	MAC ADDRESS	[00-80-91-34-00-CC]	
(56)	TTF AREA	[1280KB]	
(57)	EXT CHR AREA	[256KB]	
(58)	BASIC AREA	[128KB]	
(59)	PC SAVE AREA	[128KB]	
(60)	SOCKET PORT	[OFF][08000]	
(61)	BASIC	[OFF]	
(62)	BASIC TRACE	[OFF]	
(63)	DHCP	[OFF]	
(64)	DHCP ID	[FFFFFFFFFFFFFFFFFFFFF]	
		[FFFFFFFFFFFFFF]	
(65)	DHCP HOST NAME	[]
(66)	RTC BATT. CHK	[ON]	
(67)	RTC RENEWAL	[PAGE]	
(68)	RFID MODULE	[U2]	
(69)	RFID TAG TYPE	[NONE]
(70)	RFID ERR CHECK	[OFF]	
(71)	RFID RETRY	[3]	
(72)	RFID RD CYCLE	[5] [2.0sec]	
(73)	RFID WT CYCLE	[5] [2.0sec]	
(74)	RFID ADJ RETRY	[+00mm]	
(75)	RFID POWER LEV	[18]	
(76)	RFID AGC THR.	[0]	
(77)	RFID Q VAL	[0]	
(78)	RFID WT AGC	[0]	
(79)	RFID WT AGC MIN	[0]	
(80)	RFID WT OK TAGS		0
(81)	RFID VOID PRINT TAGS		0

NOTE: Print conditions:

Print speed: 4"/sec., Sensor: No sensor, Printing mode: Thermal transfer/Direct thermal^(*1), Media length: 240 mm, Issue mode: Batch printing

(*1) Depends on the printing mode setting.

• Descriptions of the Maintenance Counter

#	Item	Count Condition	Range
(1)	Total media distance covered	Counts when the feed motor is driven to feed, print or issue media. (Counted also during a reverse feed.) See NOTE 2 .	0.0 to 3200.0 km
(2)	Media distance covered	Destination printed on the same line indicates one selected for a parameter clear.	0.0 to 3200.0 km
(3)	Print distance	Counts while printing. (Reverse feed is not counted.) See NOTE 3 .	0.0 to 200.0 km
(4)	Cut count	Counts every cut. See NOTE 4 .	0 to 1000000 times
(5)	Head up and down cycle count	Counts every head up and down cycle by means of the solenoid which is used for the ribbon save function. See NOTE 4 .	0 to 2000000 times
(6)	Ribbon motor driving time	Counts when the ribbon motor is driven to feed, print or issue media. (The driving time is also counted during a reverse feed.) See NOTE 5 .	0 to 2000 hours
(7)	Solenoid drive time for head up	Counts when the ribbon save function is activated. See NOTE 5 .	0 to 1000 hours
(8)	RS-232C hardware error count	Counts when a parity, overrun or framing error occurs. See NOTE 6 .	0 to 255 times
(9)	System error count	Counts when a system error occurs.	0 to 15 times
(10)	Momentary power failure count	Counts when a momentary power interruption occurs.	0 to 15 times
(80)	Number of successful RFID write	Counts when an RFID write has succeeded.	0 to 9999999 times
(81)	Number of failure in RFID write	Counts when an RFID write has failed.	0 to 9999999 times

NOTES:

- Item from (2) through (10) are initialized to "0" after RAM clear.
- If the media distance covered is 50.0 cm or less, it is rounded down and no data is added to the memory at power off.
- If the print distance is 5.5 m or less, it is rounded down and no data is added to the memory at power off.
- If the count is 31 or less, it is rounded down and no data is added to the memory at power off.
- If the driving time is 27 sec. or less, it is rounded down and no data is added to the memory at power off.
- When a sent command results in an error, the same number as the data capacity of the command is counted by byte.

• Descriptions of the Parameters

Item	#	Description	Specification
FEED	(11)	Print start position fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
CUT	(12)	Cut/strip position fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
BACK	(13)	Reverse feed amount fine adjustment (PC), (KEY)	-9.9 mm to +9.9 mm
TONE(T)	(14)	Print tone fine adjustment (Thermal transfer), (PC), (KEY)	-10 step to +10 step
TONE(D)	(15)	Print tone fine adjustment (Thermal direct), (PC), (KEY)	-10 step to +10 step
RBN(FW)	(16)	Ribbon take-up motor driving voltage fine adjustment (PC), (KEY)	-15 step to +0 step
RBN(BK)	(17)	Ribbon feed motor driving voltage fine adjustment (PC), (KEY)	-15 step to +10 step
X ADJ.	(18)	X coordinate fine adjustment	-99.9 mm to +99.9 mm
THRESHOLD<R>	(19)	Threshold manual fine adjustment for the black mark sensor	0.0V to 4.0V
THRESHOLD<T>	(20)	Threshold manual fine adjustment for the feed gap sensor	0.0V to 4.0V
FONT	(21)	Character code	PC-850 PC-851 PC-1252 LATIN9 PC-852 PC-855 PC-1253 Arabic PC-857 PC-1250 PC-1254 PC-8 PC-1251 PC-1257 PC-866 UTF-8
		Character "0"	0: without slash ∅: with slash
SPEED	(22)	Baud rate	2400: 2400 bps 19200: 19200 bps 4800: 4800 bps 38400: 38400 bps 9600: 9600 bps 115200: 115200 bps
DATA LENG.	(23)	Data length	7: 7 bits 8: 8 bits
STOP BIT	(24)	Stop bit length selection	1: 1 bit 2: 2 bits
PARITY	(25)	Parity	NON: None ODD: ODD EVEN: EVEN
CONTROL	(26)	Flow control code	XON/XOFF: XON/XOFF READY/BUSY: READY/BUSY (DTR) XON+READ AUTO: XON/XOFF+READY/BUSY (DTR) XON/XOFF AUTO: XON/XOFF READY/BUSY RTS: RTS
MESSAGE	(27)	Language selection for LCD message	ENGLISH: English GERMAN: German FRENCH: French DUTCH: Dutch SPANISH: Spanish JAPANESE: Japanese ITALIAN: Italian
FORWARD WAIT	(28)	Auto forward wait	ON: Available OFF: Unavailable NOTE: The stop position fine adjustment value is also printed out.
HEAD UP CUT	(29)	Head up cut in cut issue mode	ON: Activated OFF: Not activated
RIBBON SAVE	(30)	Ribbon saving function	ON(TAG): Activated (When the head lever is set to the tag position.) ON(LBL): Activated (When the head lever is set to the label position.) OFF: Not activated
CODE	(31)	Control code selection	AUTO: Automatic selection ESC LF NUL: ESC LF NUL mode { }: Mainframe mode xx xx xx: Optional code (The values are given in HEX.)

Item	#	Description	Specification
RIBBON	(32)	Ribbon type selection	TRANS: Transparent ribbon NON TRANS: Non transparent ribbon
PEEL OFF STATUS	(33)	Strip wait status selection	ON: Available OFF: Unavailable
FEED KEY	(34)	Feed key function	FEED: Feeds one label PRINT: Prints image buffer on one label
KANJI	(35)	Kanji code type (Not supported by QM model)	TYPE 1: Windows code TYPE 2: Original code
EURO CODE	(36)	Euro font code	20H to FFH
AUTO HD CHK	(37)	Auto print head broken element check	ON: Available OFF: Unavailable
ACK/BUSY	(38)	Centronics interface ACK/BUSY timing setting	TYPE1: A rise of ACK signal and a release of BUSY occur at the same time. TYPE2: A fall of ACK signal and a release of BUSY occur at the same time.
WEB PRINTER	(39)	Web printer function	ON: Available OFF: Unavailable
SENS POSI	(40)	Media sensor	CENTER: Fixed sensor EDGE: Movable sensor
INPUT PRIME	(41)	Input prime selection (Reset operation when INIT signal is ON)	ON: Available OFF: Unavailable
EX. I/O MODE	(42)	Expansion I/O interface operating mode	TYPE1: Standard mode TYPE2: Inline mode
PLUG&PLAY	(43)	Plug & Play setting	ON: Available OFF: Unavailable
LBL/RBN END	(44)	Print processing setting at the label/ribbon error detection	TYP1: Printing is paused in the middle of printing. TYP2: Printing is paused after the label is issued.
PRE PEEL OFF	(45)	Pre-Strip setting	OFF: Unavailable
BACK SPEED	(46)	Reverse Feed Speed setting	STD: 3"/second LOW: 2"/second
MAXI CODE SPEC.	(47)	MAXI code specification selection	TYPE1: Compatible with the current version TYPE2: Special specification
PEEL OFF TRQ	(48)	Strip motor torque	R0: Standard
STABILIZER	(49)	Stabilizer function	ON: Stabilizer function is used. OFF: Stabilizer function is not used.
AUTO CALB.	(50)	Automatic calibration	OFF: Disabled ON TRANS: Enabled with the transmissive sensor ON REFLECT: Enabled with the reflective sensor
LAN	(51)	Enabling or disabling the LAN	ON SNMP ON: LAN Enabled SNMP Enabled ON SNMP OFF: LAN Enabled SNMP Disabled OFF: LAN Disabled
PRTR IP ADDRESS	(52)	Printer IP address	*** ** *
GATE IP ADDRESS	(53)	Gateway IP address	*** ** *
SUBNET MASK	(54)	Subnet mask	*** ** *
MAC ADDRESS	(55)	MAC (Media Access Control) address for LAN controller on the MAIN PC Board	*-*-*-*-*-*-*-*
TTF AREA	(56)	True type font registration area size	0 KB to 3072 KB (unit of 128 KB)
EXT CHR AREA	(57)	External character registration area size	0 KB to 3072 KB (unit of 128 KB)
BASIC AREA	(58)	BASIC file store area size	0 KB to 1792 KB (unit of 128 KB)
PC SAVE	(59)	PC saving area size	0 KB to 3072 KB (unit of 128 KB)
SOCKET PORT	(60)	Socket port number	ON: Available OFF: Unavailable Port No. 0 to 65535

Item	#	Description	Specification
BASIC	(61)	BASIC interpreter setting	ON: Available OFF: Unavailable
BASIC TRACE	(62)	BASIC interpreter trace setting	ON: Available OFF: Unavailable
DHCP	(63)	DHCP function setting	ON: Available OFF: Unavailable
DHCP ID	(64)	DHCP ID setting	Max. 16 characters
DHCP HOST NAME	(65)	DHCP host name	Max. 16 characters
RTC BATT. CHK	(66)	RTC Low Battery Check setting	ON: Available OFF: Unavailable
RTC RENEWAL	(67)	RTC data renewal timing	BATCH: per batch PAGE: per page
RFID MODULE	(68)	RFID module type	NONE: No RFID kit is installed. U2: U2 B-SX708-RFID-U2-EU-R, B-SX708-RFID-U2-CN-R
RFID TAG TYPE	(69)	RFID tag type	NONE: 11 EPC C1 Gen2: 24
RFID ERR CHECK	(70)	RFID error tag detection	ON: An error tag detection is performed. OFF: An error tag detection is not performed.
RFID RETRY	(71)	Maximum number of RFID issue retries	0 to 255
RFID RD CYCLE	(72)	Maximum number of RFID read retries RFID read retry time-out	0 to 255 0 sec. to 9.9 sec.
RFID WT CYCLE	(73)	Maximum number of RFID write retries RFID write retry time-out	0 to 255 0 sec. to 9.9 sec.
RFID ADJ RETRY	(74)	RFID adjustment for retry	-99 mm to +99 mm
RFID POWER LEV	(75)	RFID wireless power level setting	9 to 18
RFID AGC THR.	(76)	RFID AGC Threshold Setting	0 to 15
RFID Q VAL	(77)	RFID Q VAL (Q value)	0 to 5
RFID WT AGC	(78)	RFID WT AGC (AGC threshold for data write)	0 to 15
RFID WT AGC MIN	(79)	RFID WT MIN AGC (AGC threshold lower limit for retry)	0 to 15

2.1.4 Self-Diagnostic Test and Result Print Out

When the Maintenance Counter/Parameter Settings is printed, the message returns to "<1>DIAG. Vx.x". Press the **[PAUSE]** key twice.

The Self-Diagnostic Test is ready. Press the **[PAUSE]** key to start.

```
<1>DIAG. Vx.x
AUTO DIAGNOSTIC
```

The printer starts a self-diagnosis, and prints out the result. During printing, the message below appears on the display.

```
<1>DIAG. Vx.x
CHECKING & PRINT
```

After printing is completed, the display returns to "<1>DIAG. Vx.x".

NOTE: If an error occurs, an error message appears, the printer stops printing. After clearing the error, press the **[PAUSE]** key to return the display to "<1>DIAG.Vx.x". The printer does not restart printing automatically.

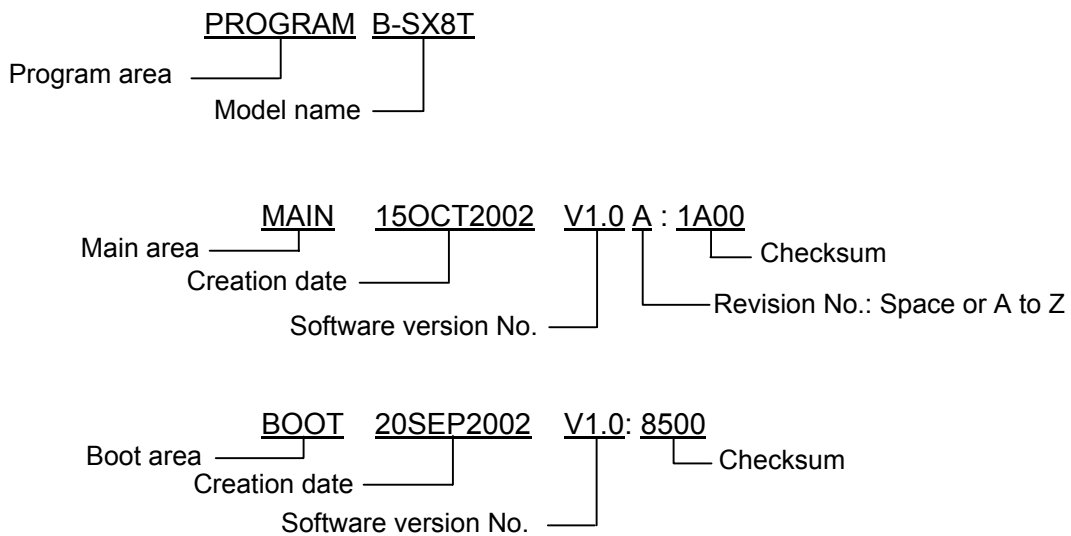
• Print Sample

(1)	PROGRAM	B-SX8T
	MAIN	15OCT2005 V1.0A: 1A00
	BOOT	20SEP2005 V1.0: 8500
(2)	FONT	AD00
(3)	KANJI	GOTHIC :9F00
		MINCHO :7400
(4)	EEPROM	OK
(5)	SDRAM	16MB
(6)	SENSOR1	00000000, 00000111
(7)	SENSOR2	[H]23°C [A]22°C
		[R]4.2V [T]2.5V
(8)	PE LV.	[R]1.2V [T]4.3V
(9)	M THRE.	[R]5.0V [T]5.0V
		[RANK]1 305DPI
(10)	EXP.I/O	NG
(11)	EX.232C	NG
(12)	SIO	NG NG
(13)	STRIP	NG
(14)	RFID	OK #00RV972 (EU0)

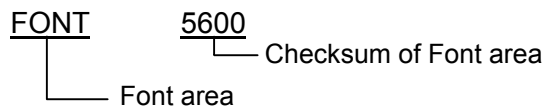
- NOTES:**
1. Print conditions: Print speed: 4"/sec., Sensor: No sensor, Printing method: Thermal transfer/Direct thermal^(*), Media length: 87 mm, Issue mode: Batch printing
(*1) Depends on the printing mode setting.
 2. Software version No., Part No. of ROM and checksum vary according to the software version of PROGRAM ROM.
 3. The last two digits of the checksum are usually "00".
 4. When Kanji ROM is not installed, the checksum becomes "0000".
 5. The symbol "°" of "C" may not be printed depending on the type of character code.

• **Descriptions**

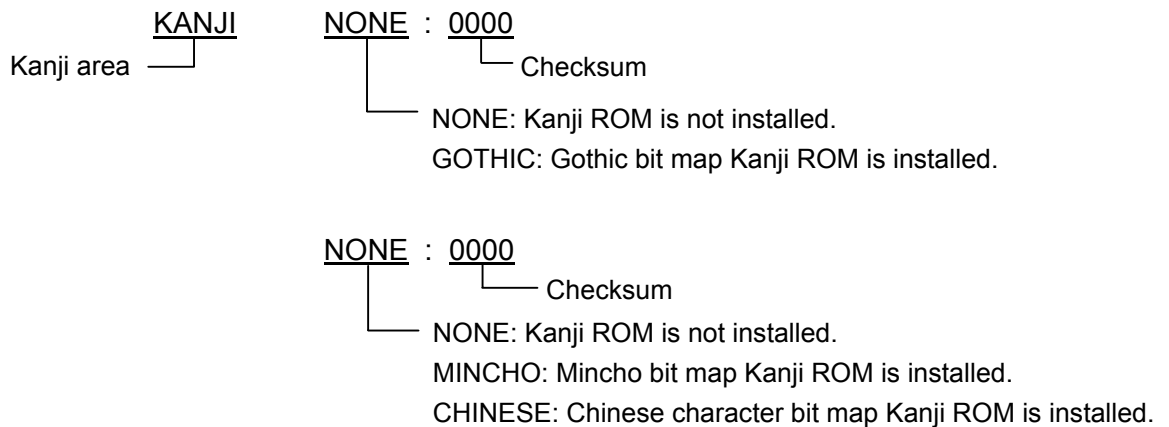
(1) Program ROM Check (Model Name, Date, Version, Part number, Checksum)



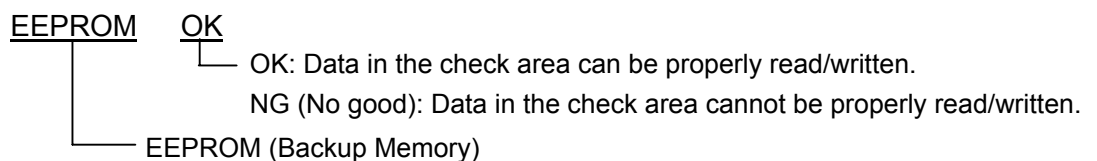
(2) Alphanumeric Font ROM Check



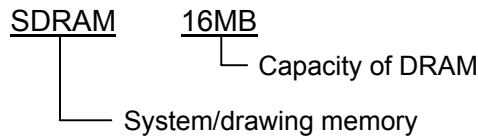
(3) Kanji ROM Check



(4) EEPROM Check

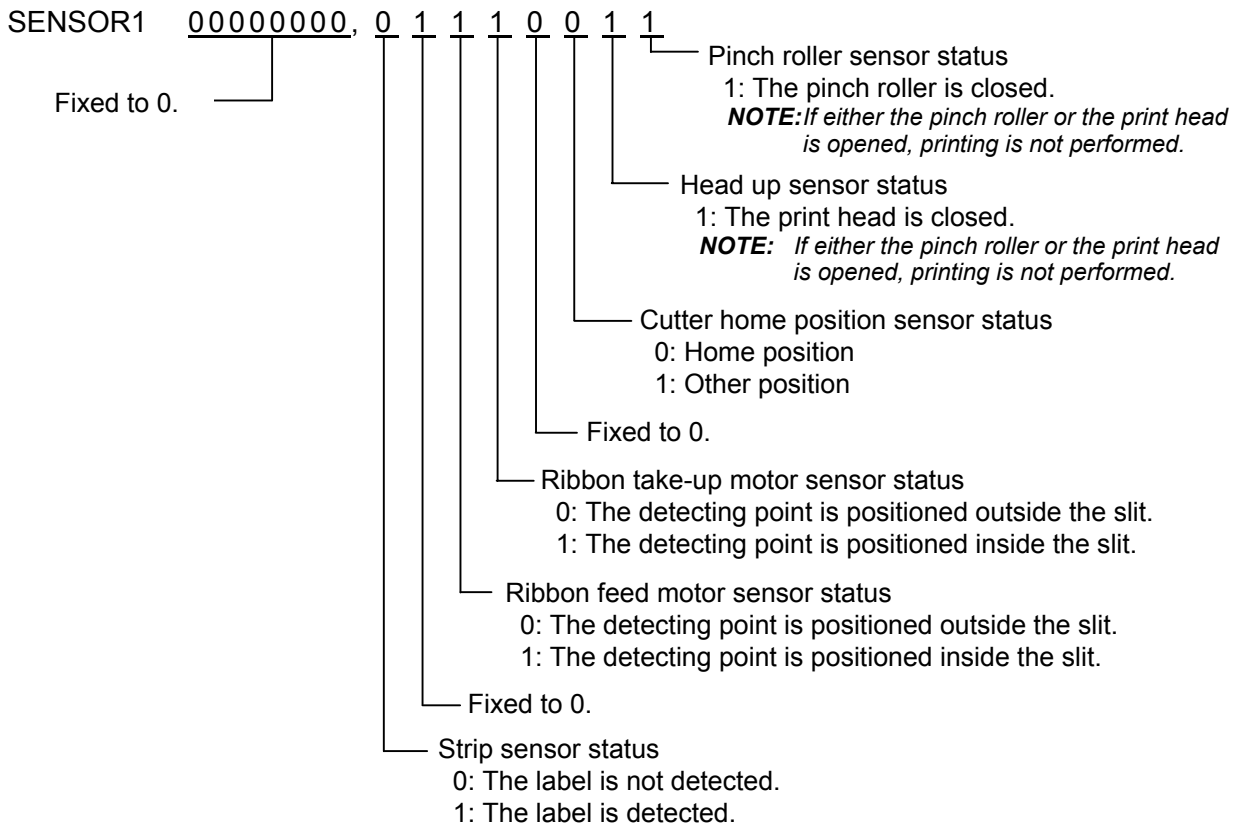


(5) SDRAM Capacity



(6) Sensor 1 Check

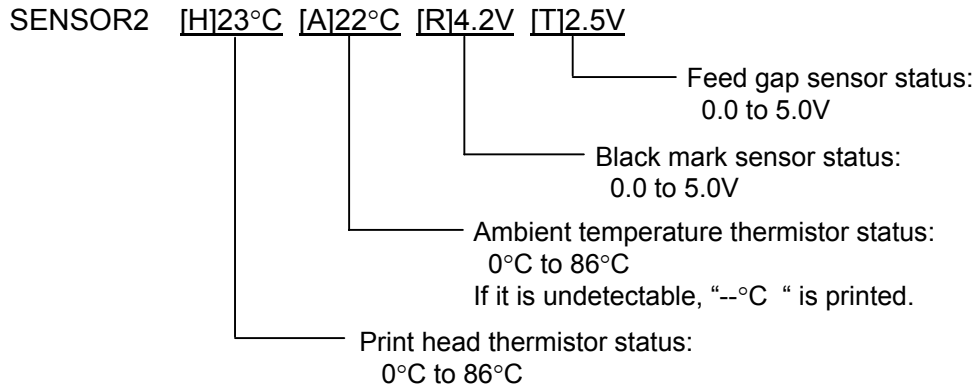
The status of the Strip Sensor, Ribbon Feed Motor Sensor, Ribbon Take-up Motor Sensor, Cutter Home Position Switch, Head Up Sensor, and Pinch Roller Sensor are printed.



Sensor/Switch	Print status description
Pinch roller sensor	Detects the Open or Close status of the pinch roller. Only when the pinch roller and the print head are both closed, printing is performed.
Head up sensor	Detects the Open or Close status of the print head. Only when the pinch roller and the print head are both closed, printing is performed.
Cutter home position sensor	Indicates whether or not the cutter is at the home position.
Ribbon take-up motor sensor Ribbon feed motor sensor	Controls ribbon motor rotation by detecting the slit on the ribbon take-up motor and the ribbon feed motor. Indicates the position of the slit sensor.
Strip sensor	Detects whether or not the label is at the paper outlet in strip printing mode. When the label is not detected, the printer feeds the label at the print start position.

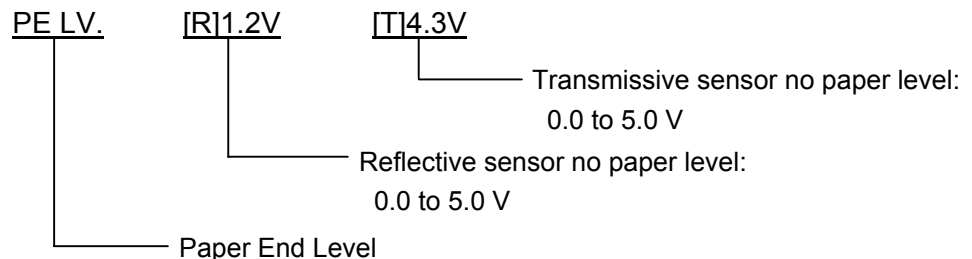
(7) Sensor 2 Check

The status of the Print Head Thermistor, Ambient Temperature Thermistor, Black Mark Sensor, and Feed Gap Sensor, Print Head resistance rank, and print head resolution are printed.

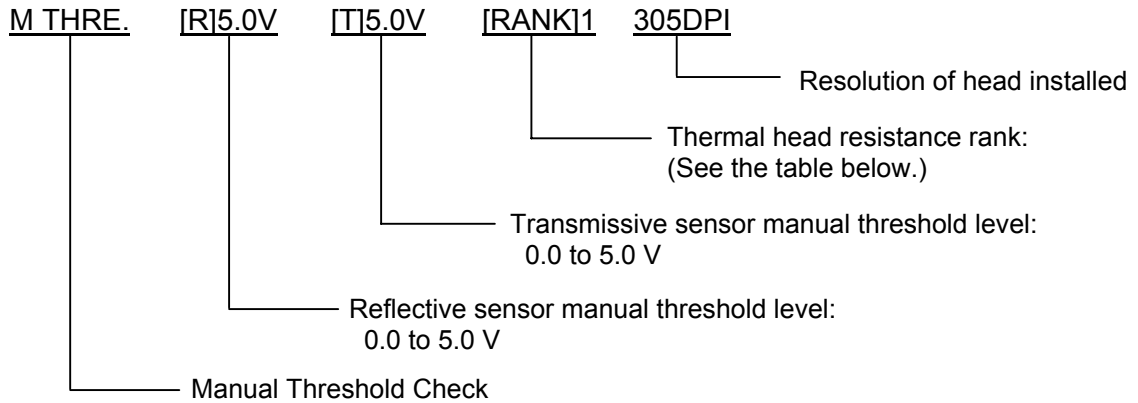


Sensor/Thermistor	Print status description
Print head thermistor	A thermistor built in the print head detects a print head temperature. The current supplied to the print head (= print tone) is controlled on the basis of this temperature. When the print head overheats (80°C or over), the printer displays "EXCESS HEAT TEMP" message and stops printing to protect the print head.
Ambient temperature thermistor	Temperature inside the printer (around the media) is detected. The current supplied to the print head (= print tone) is controlled on the basis of this temperature. When the temperature of 61°C is detected, an error message, "EXCESS HEAT TEMP", is displayed and the printer stops.
Black mark sensor	Real time voltage detected by the black mark sensor is displayed/printed.
Feed gap sensor	Real time voltage detected by the feed gap sensor is displayed/printed.
Print head resistance rank	There is individual variability in average resistance of the thermal element. The current supplied to the print head is controlled on the basis of this value to obtain the optimal print tone.

(8) Paper End Level Check



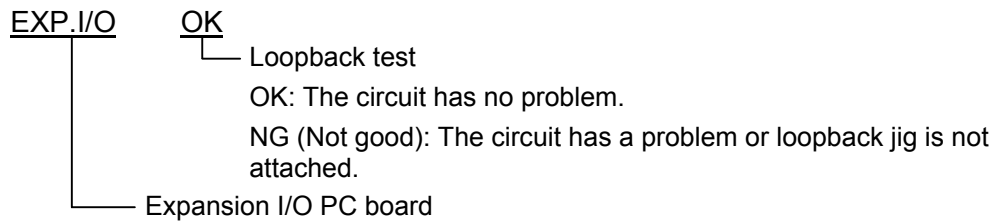
(9) Manual Threshold Check



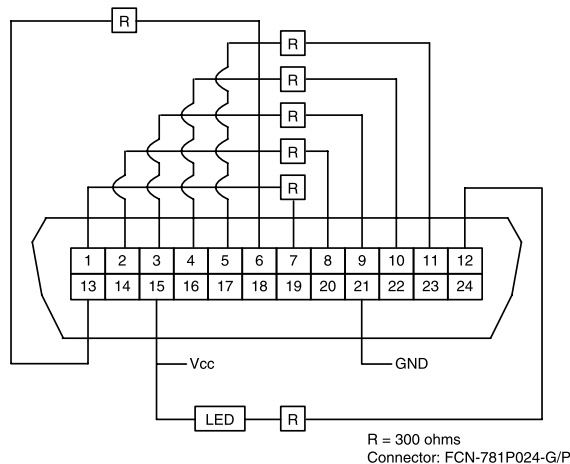
Resistance rank	Average resistance (ohm)	Resistance rank	Average resistance (ohm)
0	1432 to 1454	8	1242 to 1265
1	1409 to 1431	9	1219 to 1241
2	1385 to 1408	10	1195 to 1218
3	1361 to 1384	11	1171 to 1194
4	1337 to 1360	12	1147 to 1170
5	1314 to 1336	13	1124 to 1146
6	1290 to 1313	14	1100 to 1123
7	1266 to 1289	15	1076 to 1099

(10) Expansion I/O Interface Check

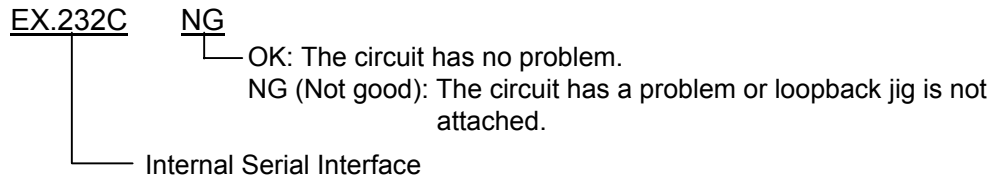
Result of a loop back check performed on an expansion I/O interface, which may connect to an external equipment like a labeller, is printed.



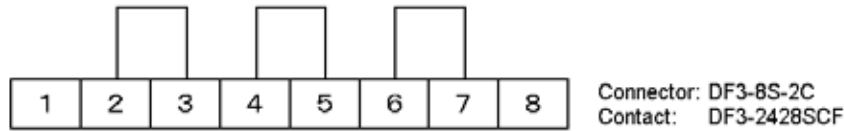
Connect the jig like below to the Expansion I/O PC board's connector and perform a loop back check.



(11) Internal Serial Interface Check

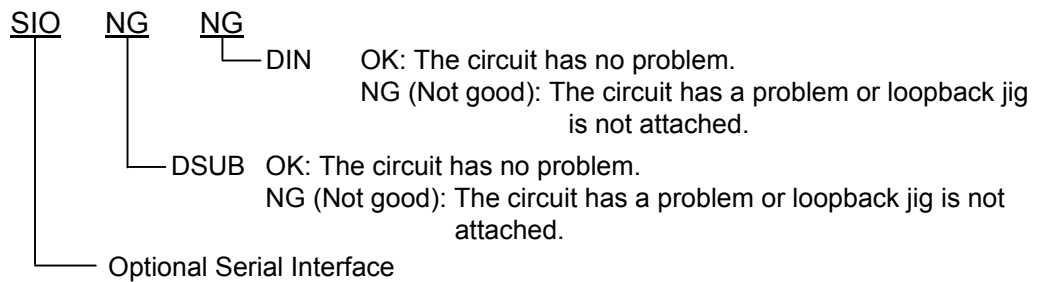


Connect the jig like below to the serial interface connector and perform a loop back check.



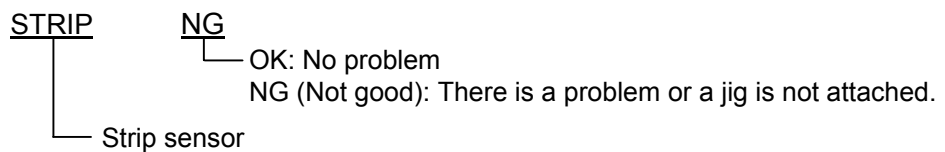
(12) SIO Interface check

Result of optional serial interface check is printed.



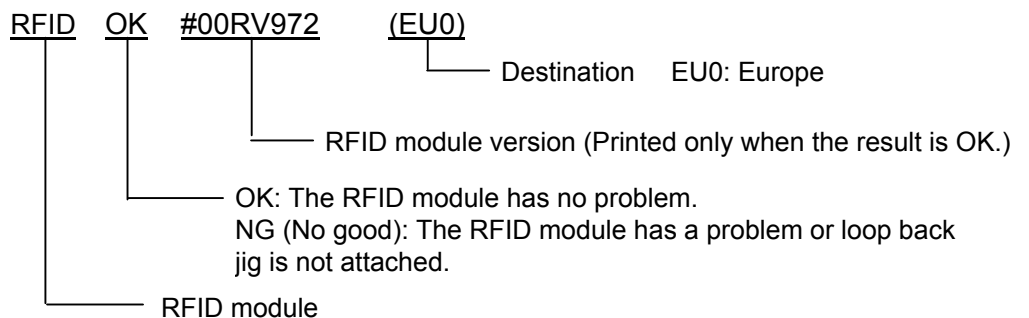
(13) Strip sensor check

Result of a check of the strip sensor on optional strip module is printed.



(14) RFID module check

Results of a RFID module check is printed.



2.1.5 Print Head Element Check

This function is used to check for any broken thermal elements of the print head.

If blurred print or missing dots occurs, this check helps you find whether the thermal elements are actually broken or the print head is just stained.

Also, use this check just after a replacement of a print head to find an initial failure.

When the Self-Diagnostic Test result is printed, the message returns to "<1>DIAG. Vx.x". Press the **[PAUSE]** key three times and **[FEED]** key twice.

The printer is ready to check the print head to see if there is any problem with the print head. Press the **[PAUSE]** key to start.



If there is no problem with the print head, the print head check is complete. Press the **[PAUSE]** key to return to "<1>DIAG. Vx.x".

```
<1>DIAG. Vx.x  
NORMAL END
```

If there is a problem with the print head, the following message is displayed.

```
<1>DIAG. Vx.x  
HEAD ERROR
```

Press the **[PAUSE]** key to return to "<1>DIAG. Vx.x".

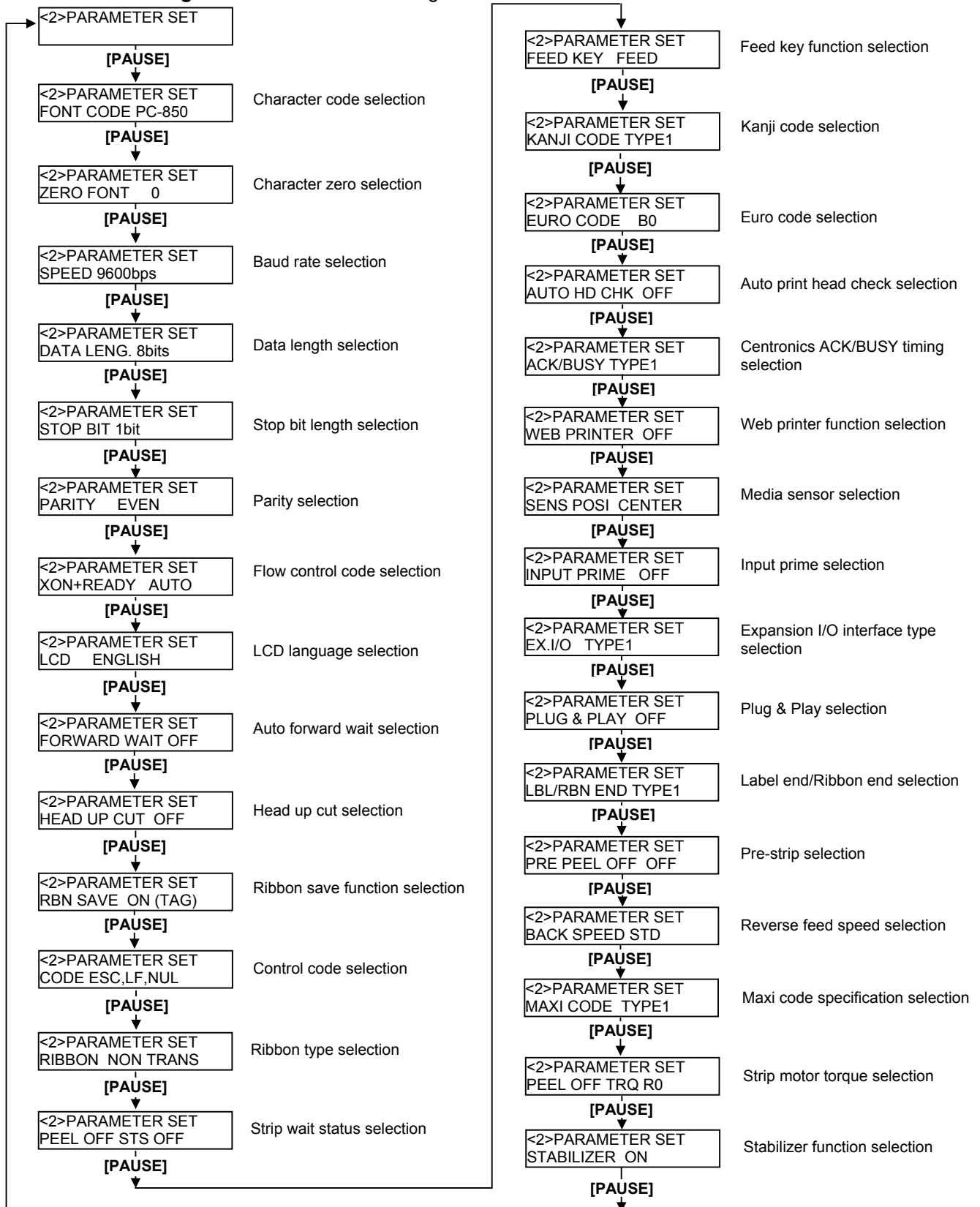
- NOTES:**
1. Make sure that the Top Cover is closed before starting the print head check.
 2. If "HEAD ERROR" appears, the print head element may be damaged. Replace the print head.
 3. The print head element check can be performed at the power on time.
For selecting this function, refer to **Section 2.2 Parameter Setting**.

2.2 Parameter Setting

■ Outline of Parameter Setting

In the Parameter Setting mode, various kinds of parameters, such as communication, key, LCD, etc. can be set. This will allow a use of the printer to comply with your operating conditions.

The **Parameter Setting** menu contains the following:



NOTE: Baud rate, Data length, Parity, and Transmission control code should be set to the same values as those of the host computer. Failure to do this causes improper operation.

■ How to Enter Parameter Setting Mode

Turn on the printer while pressing the **[FEED]** and the **[PAUSE]** keys at the same time. Hold both keys until the “<1>DIAG. Vx.x” message appears.

<1>DIAG. Vx.x

Press the **[FEED]** key. The printer is at the start of the Parameter Setting menu.

<2>PARAMETER SET

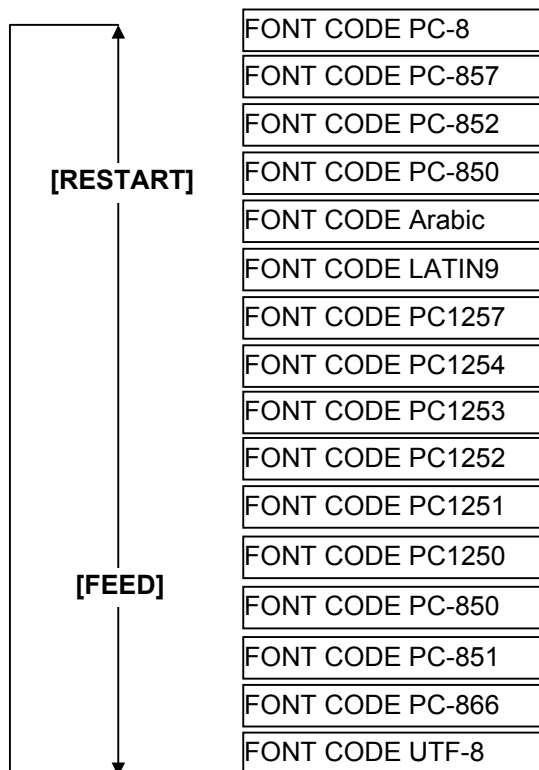
2.2.1 Character Code Selection

This parameter is to choose a character code used for printing. Printed characters differ depending on a chosen character code and font. For details of characters, refer to the **B-SX6T/SX8T Series External Equipment Interface Specification** (Printer Command Manual).

When “<2>PARAMETER SET” appears, press the **[PAUSE]** key.

<2>PARAMETER SET
 FONT CODE PC-850

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a character code, press the **[PAUSE]** key.

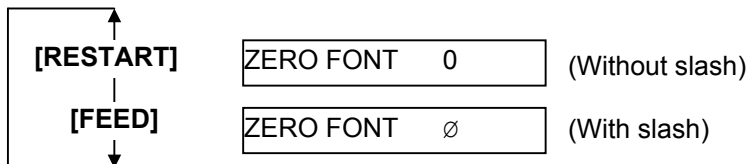
- NOTES:**
1. When pressing the **[FEED]** and **[RESTART]** keys at the same time in the parameter setting, the message returns to “<2>PARAMETER SET”.
 2. If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the parameter setting the key is entered continuously.
 3. A changed parameter becomes effective by pressing the **[PAUSE]**.

2.2.2 Character Zero Selection

This parameter is to choose the way to indicate zero between “0” and “∅”.
When “<2>PARAMETER SET” appears, press the **[PAUSE]** key twice.

```
<2>PARAMETER SET
ZERO FONT  0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a character zero, press the **[PAUSE]** key.

NOTE: The following fonts do not support a zero with slash.

Bit Map Font: OCR-A, OCR-B, GOTHIC 725 Black, Kanji, Chinese

Outline Font: Price Font 1, Price Font 2, Price Font 3, DUTCH 801 Bold, BRUSH 738 Regular, GOTHIC 725 Black, True Type Font

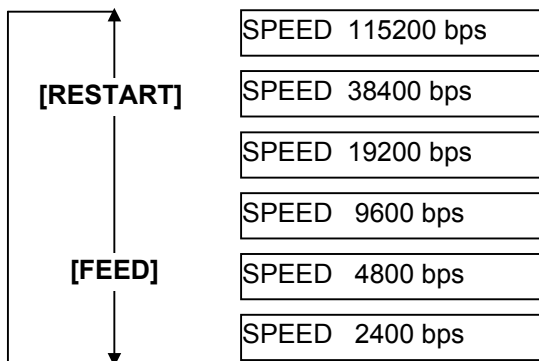
2.2.3 Baud Rate Selection

This parameter is to choose a baud rate of the RS-232C interface. When the printer communicates with a host computer by serial interface, be sure to match the setting with the host.

When “<2>PARAMETER SET” appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
SPEED 9600bps
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a baud rate, press the **[PAUSE]** key.

2.2.4 Data Length Selection

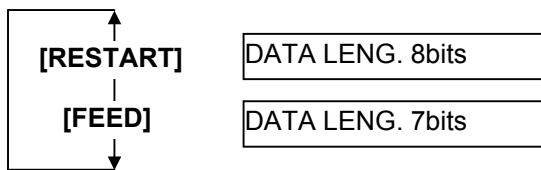
This parameter is to choose a communication data length of the RS-232C interface.

7 bits is used when transmitting alphanumeric data only. 8 bits is used to when transmitting special characters. Be sure to match a setting with a host computer.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

<2>PARAMETER SET DATA LENG. 8bits

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a data length, press the **[PAUSE]** key.

2.2.5 Stop Bit Length Selection

This parameter is to choose a stop bit length of the RS-232C interface.

Be sure to match a setting with a host computer.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

<2>PARAMETER SET STOP BIT 1bit

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a stop bit, press the **[PAUSE]** key.

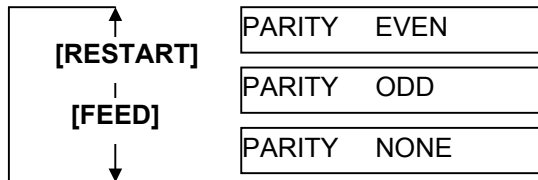
2.2.6 Parity Selection

This parameter is to choose the parity of the RS-232C interface.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
PARITY  NONE
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the parity, press the **[PAUSE]** key.

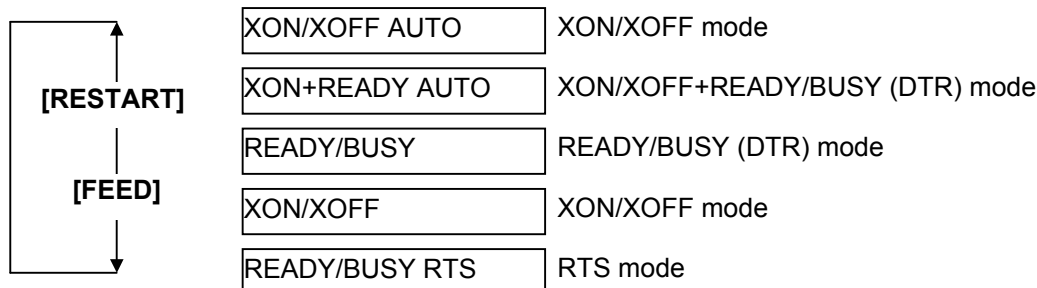
2.2.7 Flow Control Code Selection

This parameter is to choose a flow control code of the RS-232C interface.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
XON+READY AUTO
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a flow control code, press the **[PAUSE]** key.

NOTE: The following is the detailed descriptions for each transmission control code.

- 1) **XON/XOFF AUTO**
At the power on time, the printer outputs XON. At the power off time, the printer outputs XOFF.
- 2) **XON+READY AUTO**
At the power on time, the printer outputs XON. At the power off time, the printer outputs XOFF.
- 3) **READY/BUSY**
At the power on time, the DTR signal output from the printer turns to High level (READY). At the power off time, the printer does not output XOFF.
- 4) **ON/XOFF**
At the power on time, the printer outputs XON. At the power off time, the printer does not output XOFF.
- 5) **READY/BUSY RTS**
At the power on time, the RTS signal output from the printer turns to High level (READY). At the power off time, the printer does not output XOFF.

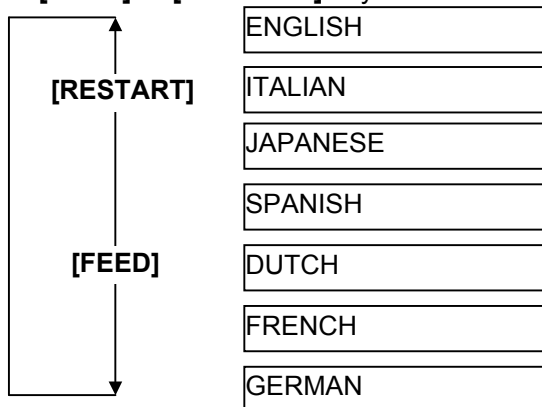
2.2.8 LCD Language Selection

This parameter is to choose a language in which the LCD message is displayed.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
LCD ENGLISH
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a language, press the **[PAUSE]** key.

2.2.9 Auto Forward Wait Selection

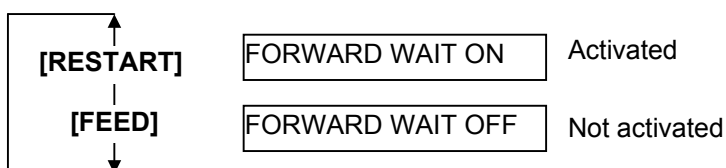
This parameter is to choose whether to activate the Auto Forward Wait function or not.

This function, used in the cut mode, automatically feeds the media forward for about 14 mm if there is more than 1-second idle time after printing, to prevent the top edge of the media from curling.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

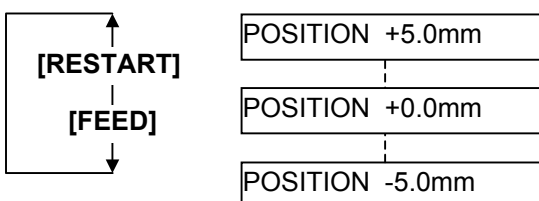
```
<2>PARAMETER SET
FORWARD WAIT OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



When ON is selected, pressing the **[PAUSE]** key will result that the LCD Message Display shows the stop position fine adjustment value setting screen.

```
<2>PARAMETER SET
POSITION +0.0mm
```



[FEED] key: Pressing the **[FEED]** key one time causes a -0.1 mm change, up to -5.0 mm.

[RESTART] key: Pressing the **[RESTART]** key one time causes a $+0.1$ mm change, up to $+5.0$ mm.

After selecting an auto forward wait, press the **[PAUSE]** key.

- NOTES:**
1. If the printer is not used for a few days, the top edge of the media may become curly, which may cause a paper jam. The Auto Forward Wait Function prevents this problem since the media feed amount is increased so that the media stops past the platen.
 2. When the Stop Position Fine Adjustment Value is set in + direction, the media will stop past the media outlet.
When the value is set in – direction, the media will stop inside the media outlet.
 3. This setting will be useful to fine adjust the cut position of labels.

2.2.10 Head Up Cut Selection

This parameter is to choose whether to activate the head up action in the cut issue.

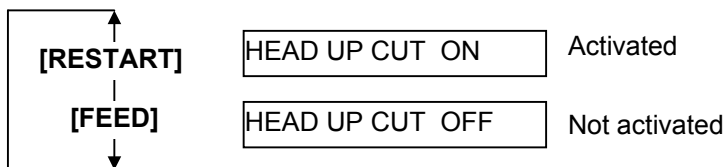
This function prevents ribbon smudges by raising the print head during a reverse feed to the print start position.

When “<2>PARAMETER SET” appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
HEAD UP CUT OFF
  
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the head up action in cut issue, press the **[PAUSE]** key.

- NOTES:**
1. For the B-SX6T, this function is available only when an optional ribbon saving module (B-SX908-R-QM-R) is installed
 2. The print head may not be raised depending on the rise of the solenoid's temperature.

2.2.11 Ribbon Save Function Selection

This parameter is to choose whether to activate the Ribbon Saving function or not.

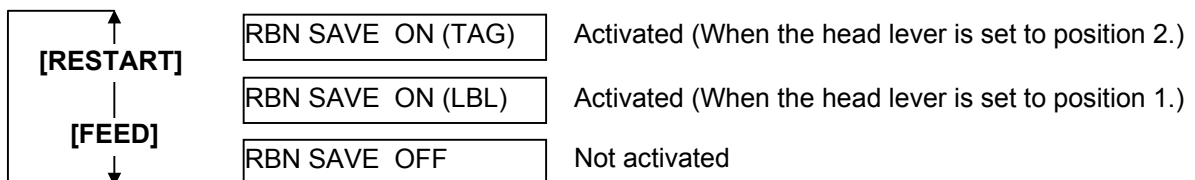
This function enables reducing the ribbon loss caused by taking up unused ribbon during non-print areas.

When “<2>PARAMETER SET” appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
RBN SAVE ON (TAG)
  
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the ribbon save function, press the **[PAUSE]** key.

- NOTES:**
1. For the B-SX6T, this function is available only when an optional ribbon saving module (B-SX908-R-QM-R) is installed.
 2. If this parameter is set to ON without installing a ribbon saving module, the ribbon will be slack during paper feed or printing, and as a result, printing cannot be performed properly.
Also, be sure to conform the choice to the actual head lever position. Failure to do this may disable proper ribbon saving function.

3. The ribbon saving function is activated when there is a 20-mm or more non-print area in the media feed direction.
4. Ribbon saving is enabled up to 4 areas per media.
5. To use the ribbon saving function for more than one area in a label/tag, there should be at least an 8-mm print area between non-print areas where the ribbon saving is performed

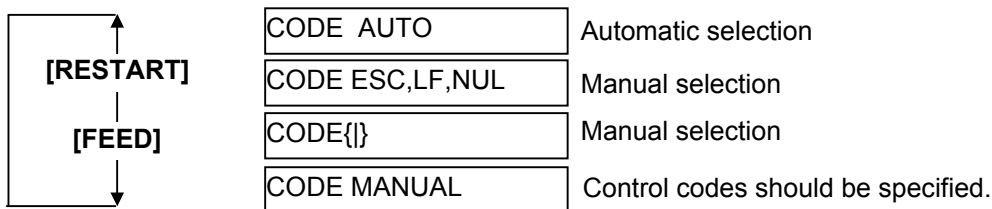
2.2.12 Control Code Selection

This parameter is to choose a Control Code.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

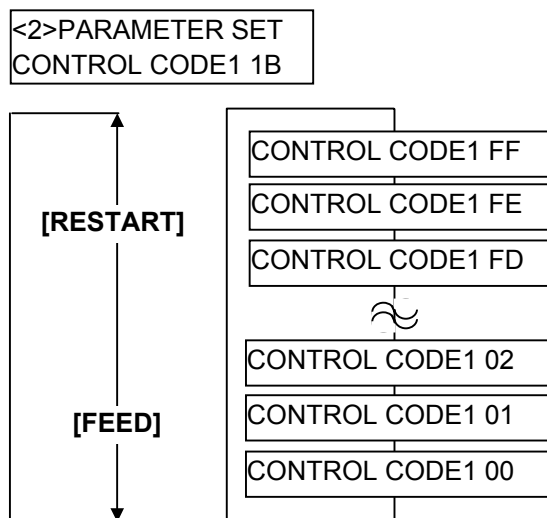
```
<2>PARAMETER SET
CODE AUTO
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



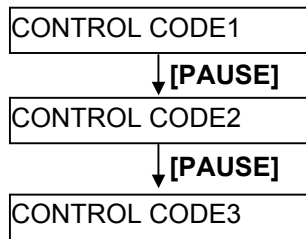
- NOTES:**
1. This parameter is used to select the Control Code for the communication between the printer and the host computer.
 2. Selecting "Manual" enables you to set the control code.

When "CODE MANUAL" is selected and the **[PAUSE]** key is pressed, the LCD display will show the setting screen of CONTROL CODE1 to CONTROL CODE3 as follows.



- NOTES:**
1. Pressing the **[FEED]** or **[RESTART]** key causes 1-byte change in the Control Code value.
 2. You cannot specify the same control code with the one used for the commands.
 3. You cannot use the specified Control Code for the data of the Data Command or Display Command.

After setting the control code for Control Code 1, press the **[PAUSE]** key to show the CONTROL CODE2 screen. In a same manner, press the **[PAUSE]** key after setting the control code for Control Code 2 to display the CONTROL CODE3 screen.



Press the **[PAUSE]** key after setting the control code for Control Code 3.

2.2.13 Ribbon Type Selection

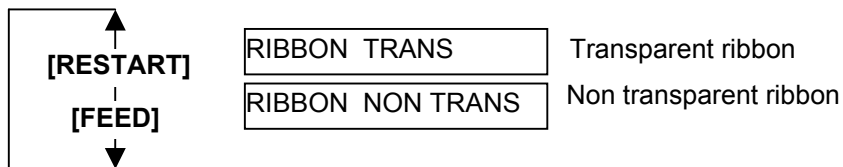
This parameter is to choose a ribbon type to be used.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
RIBBON TRANS
  
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a ribbon type, press the **[PAUSE]** key.

2.2.14 Strip Wait Status Selection

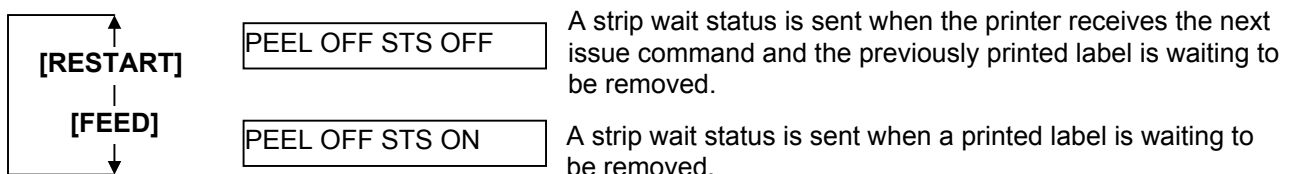
This parameter is to choose when the printer sends a strip wait status (05H) to a host in response to a status request command.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
PEEL OFF STS OFF
  
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the Strip Wait Status, press the **[PAUSE]** key.

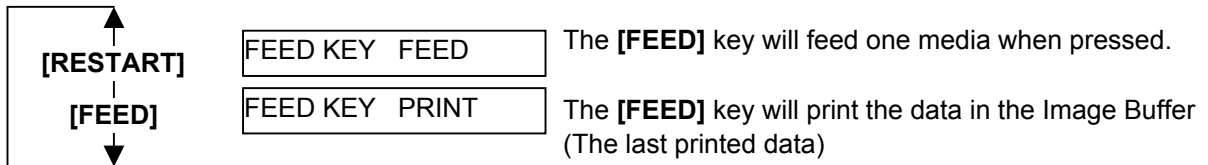
2.2.15 FEED Key Function Selection

This parameter is to choose the function of the **[FEED]** key.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
FEED KEY FEED
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the FEED key function, press the **[PAUSE]** key.

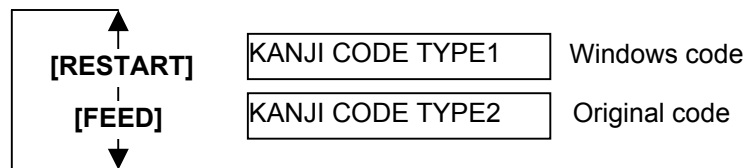
2.2.16 KANJI Code Selection

This parameter is to choose a KANJI code.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
KANJI CODE TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



NOTE: Kanji code selection is not supported by the QM model as the Kanji ROMs are not installed.

After selecting a Kanji code, press the **[PAUSE]** key.

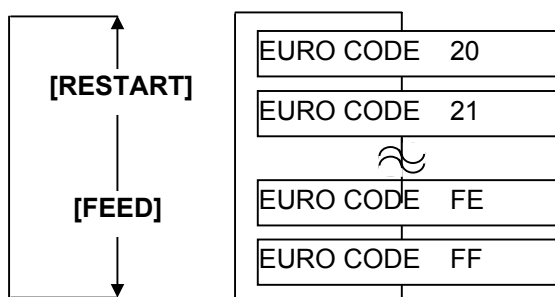
2.2.17 EURO Code Selection

This parameter is to choose a Euro code (€).

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
EURO CODE B0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



NOTE: Pressing the **[FEED]** or **[RESTART]** key causes 1 byte change in the Euro Code value.

After selecting a Euro code, press the **[PAUSE]** key.

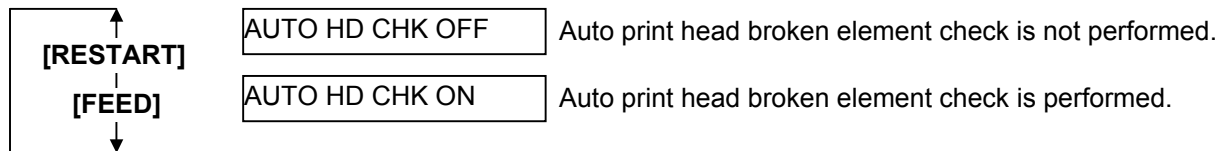
2.2.18 Auto Print Head Check Selection

This parameter is to choose whether to perform the Auto Print Head Check function at the power on time. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
AUTO HD CHK OFF
  
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



- NOTES:**
1. It will take about 2 seconds to perform an Auto Print Head check.
 2. It is recommended that this function should be activated when high quality printing such as bar codes printing is required. Otherwise, choose OFF.
 3. When a broken element is found, the printer stops, displaying "HEAD ERROR". The error state can be cleared by pressing the **[RESTART]** key, but if the broken element affects bar code readability or actual operations, please replace the print head with a proper one.

After selecting auto print head check, press the **[PAUSE]** key.

2.2.19 Centronics Interface ACK/BUSY Timing Selection

This parameter is to choose an ACK/BUSY timing of the Centronics interface.

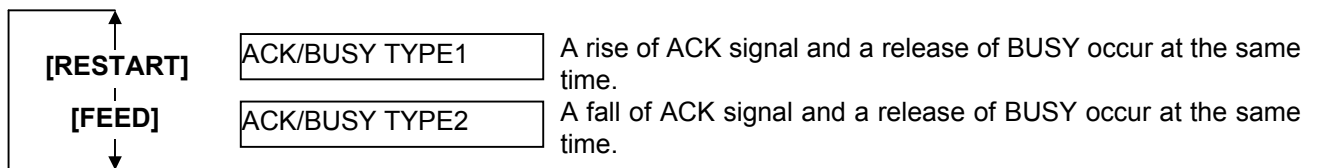
"TYPE1" has been chosen as default, but if a communication error occurs or a communication is not properly made, change to "TYPE2".

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
ACK/BUSY TYPE1
  
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting an ACK/BUSY timing, press the **[PAUSE]** key.

2.2.20 Web Printer Function Selection

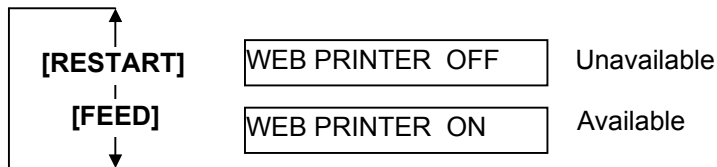
This parameter is to choose whether to use the printer as a web printer.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
WEB PRINTER OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the Web printer function, press the **[PAUSE]** key.

NOTE: When "WEB PRINTER ON" is selected, the status of the printer connected in a network can be checked through the Web browser.

2.2.21 Media Sensor Selection

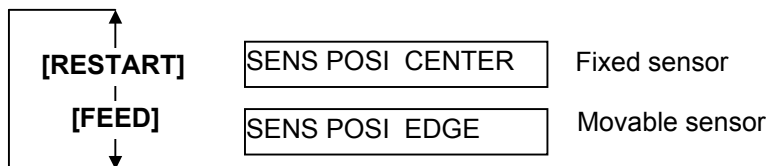
This parameter is to choose the media sensor type to be used.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```

<2>PARAMETER SET
SENS POSI CENTER
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the media sensor type, press the **[PAUSE]** key.

2.2.22 Input Prime Selection

This parameter is to choose whether to enable a reset operation when $\overline{\text{INIT}}$ signal is ON.

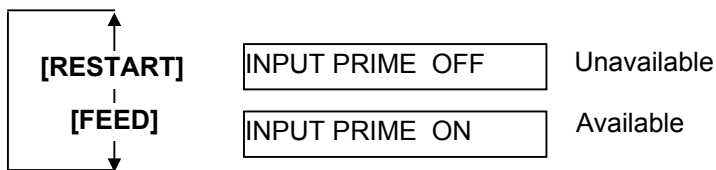
Normally, when the printer receives a reset request signal (nInit signal) from the host via Centronics interface, the printer will be reset and turn to the idle state.

When the INPUT PRIME parameter is set to OFF, the printer is reset but does not turn to idle. When this parameter is set to ON, the host sends an $\overline{\text{INIT}}$ signal and the printer turns to idle each time the printer is turned on. If you would like to avoid this processing, set this parameter to OFF.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
INPUT PRIME OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the Input Prime, press the **[PAUSE]** key.

2.2.23 Expansion I/O Interface Type Selection

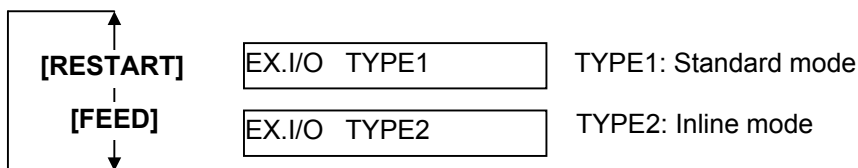
This parameter is to choose a type of the Expansion I/O interface operating mode.

This parameter should be set depending on the expansion I/O control specification of the device to be connected via the expansion I/O interface. For details, refer to the **External Equipment Interface Specification**.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
EX.I/O TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting an Expansion I/O Interface type, press the **[PAUSE]** key.

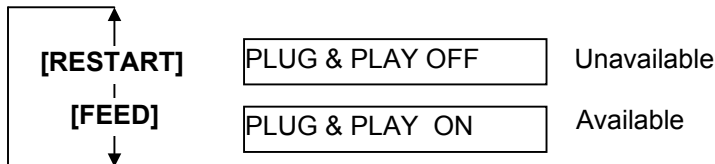
2.2.24 Plug & Play Selection

This parameter is to choose whether to enable a Plug & Play function.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

<2>PARAMETER SET PLUG & PLAY OFF

Use the **[FEED]** or **[RESTART]** key to select a desired option.



NOTE: If the printer and the PC are connected by USB, plug & play will be automatically enabled, regardless of the setting of this parameter.

After selecting a Plug & Play, press the **[PAUSE]** key.

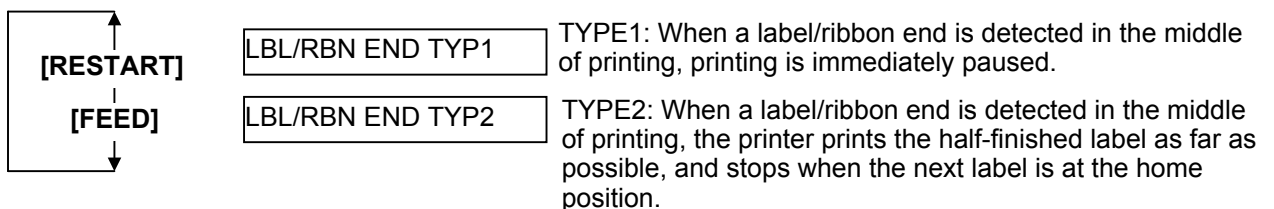
2.2.25 Label End/Ribbon End Selection

This parameter is to choose a printing process when a label end or ribbon end is detected. For details, refer to NOTE on the following page.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

<2>PARAMETER SET LBL/RBN END TYP1

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a Label End/Ribbon End type, press the **[PAUSE]** key.

NOTE: Difference between TYPE 1 and TYPE 2

TYPE1:

When a label end or ribbon end is detected, printing is immediately stopped. When the printing is restarted, first the initial feed is performed, and then the printer starts printing from the unfinished label.

TYPE2:

When a label end is detected:

When a label end is detected in the middle of printing, the printer completes the half-finished label and stops when the next label comes to the home position, displaying the error message "NO PAPER X".

NOTES: 1. "X" indicates the number of remaining labels to be printed.

The number of remaining labels to be printed = Specified number of labels – The number of finished labels including the label that caused the error

2. If a label end is detected while the specified last label is printed, the position of "X" will be blank. When the printing is restarted, first an initial feed is performed, and then the printer starts printing from the next label. When the printer has already completed printing the last label, it only performs an initial feed. Then, it sends an End of Feed status and an End of Issue status if the status response parameter is set to ON.

Example) Number of specified labels = 5, A label end is detected while the 3rd label is printed.

- (1) After the 3rd label is printed completely, the printer stops, displaying "NO PAPER 2".
- (2) When printing is restarted, first an initial feed is performed, then the 4th and 5th labels are printed.
- (3) All of 5 labels have been finished.

When a ribbon end is detected when the unfinished label length is 30 mm or more.

After printing for 20mm, the printer stops printing, displaying an error message "NO RIBBON X".

NOTES: 1. "X" indicates the number of remaining labels to be printed.

The number of remaining labels to be printed = Specified number of labels – The number of finished labels – 1

2. If a ribbon end is detected while the specified last label is printed, the position of "X" will be blank. When the printing is restarted, first an initial feed is performed, and then the printer starts printing from the next label. When the printer has already completed printing the last label, it only performs an initial feed.

Example) Specified number of labels = 5, A ribbon end is detected while the 3rd label is printed.

- (1) After the 3rd label is printed for 20 mm, the printer stops, displaying "NO RIBBON 2".
- (2) When printing is restarted, first an initial feed is performed, then the 4th and 5th labels are printed.
- (3) Only the 3rd label has not been printed completely.

When a ribbon end is detected when the unfinished label length is less than 30 mm.

The printer completes the current label and stops printing when the next label comes to the home position, displaying the error message "NO RIBBON X".

NOTES: 1. "X" indicates the number of remaining labels to be printed.

The number of remaining labels to be printed = Specified number of labels – The number of finished labels including the label that caused the error

2. If a ribbon end is detected while the specified last label is printed, the position of "X" will be blank. When the printing is restarted, first the initial feed is performed, and then the printer starts printing from the next label. When the printer has already completed printing the last label, it only performs an initial feed. Then, it sends an End of Feed status and an End of Issue status if the status response parameter is set to ON.

Example) Specified number of labels = 5, A ribbon end is detected while the 3rd label is printed.

- (1) After the 3rd label is printed completely, the printer stops, displaying "NO RIBBON 2".
- (2) When printing is restarted, first an initial feed is performed, then the 4th and 5th labels are printed.
- (3) All of 5 labels have been finished.

2.2.26 Pre-Strip Selection

This parameter is to choose whether to activate the Pre-strip function.

When this parameter is set to ON (Available), the top edge of a label is separated (pre-stripped) from the backing paper before the label is printed. This function is intended to make the strip issue easier in case the labels are hard to strip due to the label intensity, adhesive power, or the printing speed.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
PRE PEEL OFF OFF
```

NOTE: This parameter is fixed to OFF.

Press the **[PAUSE]** key to skip.

2.2.27 Reverse Feed Speed Selection

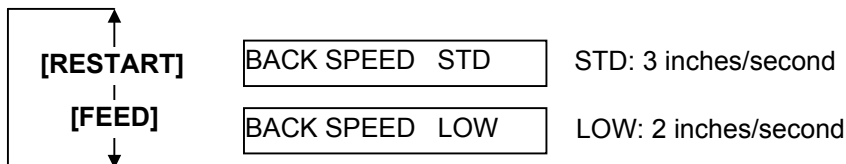
This parameter is to choose a reverse feed speed.

In the strip issue, the back feed speed of 3"/sec. may cause a shortage of feed amount due to a lack of torque, slippery media surface, etc. In such case, reduce the back feed speed to 2"/sec. to secure the feed amount.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
BACK SPEED STD
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the Back Feed Speed, press the **[PAUSE]** key.

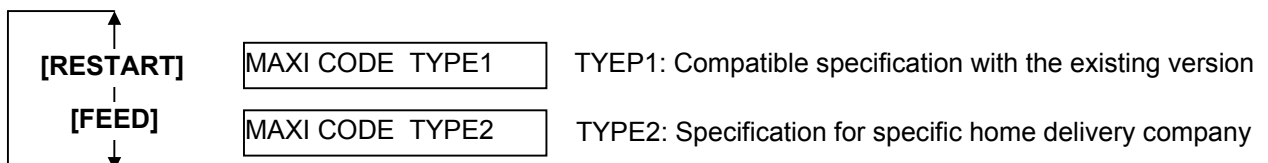
2.2.28 Maxi Code Specification Selection

This parameter is to choose a Maxi code specification.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
MAXI CODE TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting a Maxi code specification, press the **[PAUSE]** key.

2.2.29 Strip Motor Torque Selection

This parameter is to choose a strip motor torque.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
PEEL OFF TRQ R0
```

NOTE: This parameter is fixed to R0.

Press the **[PAUSE]** key to skip.

2.2.30 Stabilizer Function Selection

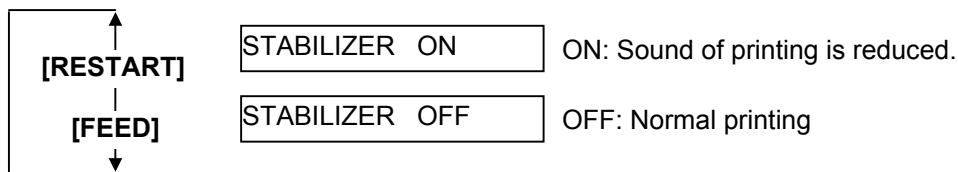
This parameter is to choose whether to use the stabilizer function.

The stabilizer function reduces the sound of printing.

When "<2>PARAMETER SET" appears, press the **[PAUSE]** key until the following display appears.

```
<2>PARAMETER SET
STABILIZER ON
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the stabilizer function, press the **[PAUSE]** key.

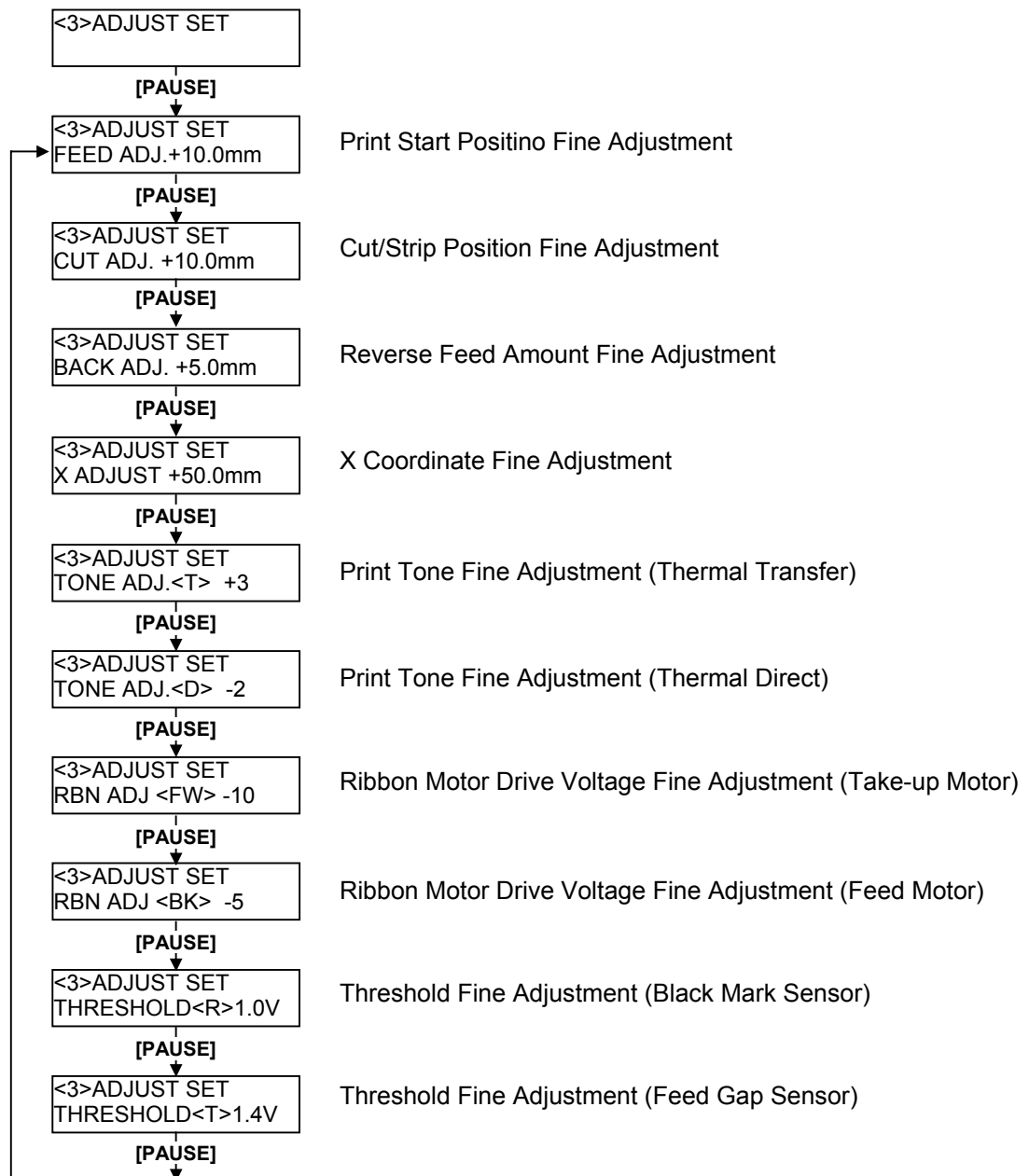
NOTE: The stabilizer function is available only to the thermal direct print mode.

2.3 Printer Parameter Fine Adjustment

■ Outline of Printer Parameter Fine Adjustment

In the Printer Parameter Fine Adjustment mode, you can fine adjust each parameter, such as Print tone, Print start position, Threshold, etc. which are set by the PC command. This is useful when using several types of media by turns or when the print start position or cut/strip position is required to be fine adjusted.

The **Printer Parameter Fine Adjustment** menu contains the following.



■ How to Enter Printer Parameter Fine Adjustment Mode

Turn on the printer while pressing the **[FEED]** and **[PAUSE]** keys at the same time. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

<1>DIAG. Vx.x

Press the **[FEED]** key twice.

The printer is at the start of the Printer Parameter Fine Adjustment menu.

<3>ADJUST SET

- NOTES:**
1. When pressing the **[FEED]** and **[RESTART]** keys at the same time in the parameter setting, the message returns to "<3>ADJUST SET".
 2. If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the Printer Parameter Fine Adjustment, the key is entered continuously.
 3. A changed parameter becomes effective by pressing the **[PAUSE]**.
 4. Use the **[FEED]** or **[RESTART]** key to select a desired value or option.

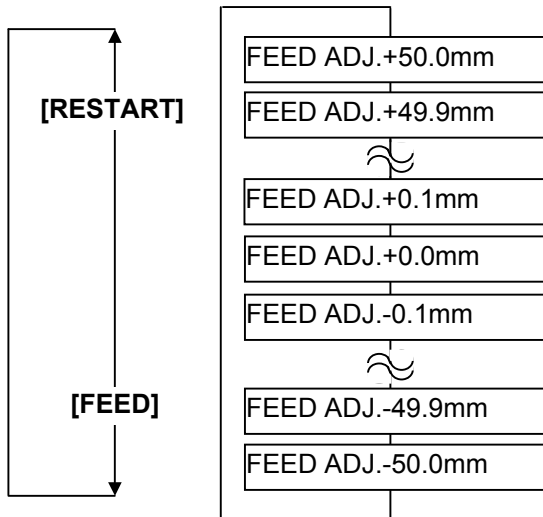
2.3.1 Print Start Position Fine Adjustment

This parameter is to fine adjust a print start position after printing (= to fine adjust the feed amount to the next media's print start position).

When "<3>ADJUST SET" appears, press the [PAUSE] key.

<3>ADJUST SET
FEED ADJ. +0.0mm

Use the [FEED] or [RESTART] key to select a desired option. (Range: -50.0 mm to +50.0 mm)

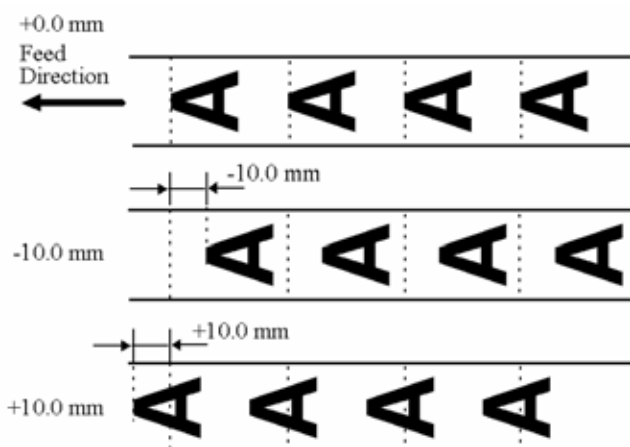


[FEED] key: Pressing the [FEED] key one time causes a -0.1 mm change, up to -50.0 mm.

[RESTART] key: Pressing the [RESTART] key one time causes a +0.1 mm change, up to +50.0 mm.

After completing the fine adjustment, press the [PAUSE] key.

• **Print Start Position Fine Adjustment (Example)**



NOTE: The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter.

The maximum print position fine adjustment value is ± 50.0 mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

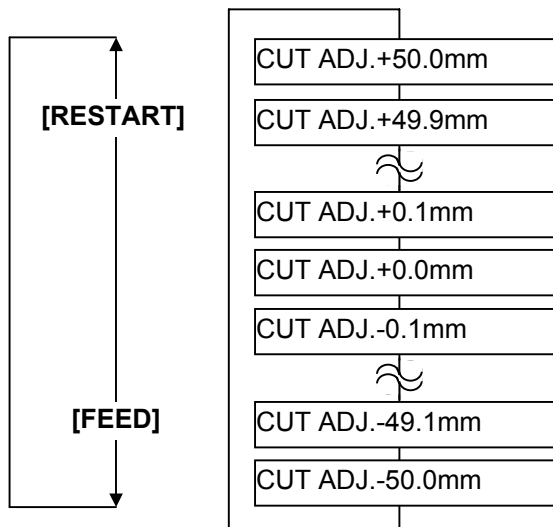
2.3.2 Cut/Strip Position Fine Adjustment

This parameter is to fine adjust a cut or strip position.

When “<3>ADJUST SET” appears, press the **[PAUSE]** key twice.

```
<3>ADJUST SET
CUT ADJ. +0.0mm
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: -50.0 mm to +50.0 mm)



[FEED] key: Pressing the **[FEED]** key one time causes a -0.1 mm change, up to -50.0 mm.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.1 mm change, up to +50.0 mm.

After completing the fine adjustment, press the **[PAUSE]** key.

• Example of Cut Position Fine Adjustment

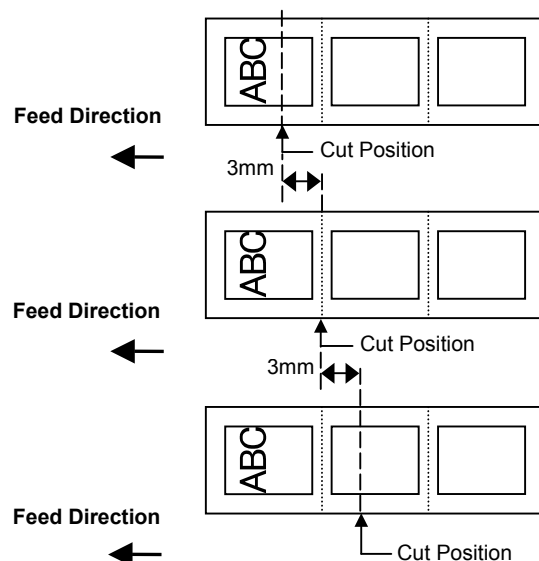
When setting +3.0 mm

Compared with “+0.0 mm” position,
the cut position is shifted forward.

When setting +0.0 mm

When setting -3.0 mm

Compared with “+0.0 mm” position,
the cut position is shifted backward.



- NOTES:**
1. Cut issue is available only when the optional cutter unit (B-SX208-QM-R) is installed.
 2. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter.
The maximum cut position fine adjustment value is +50.0 mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

[Handling of labels having the label pitch of less than 38 mm in cut issue mode]**Method 1**

Under the conditions described below, the printer performs as follows in cut issue mode.

Head up → Forward feed to the cut position → Head down → Cut → Head up → Reverse feed to the home position → Head down

Condition: When receiving the issue command, feed command, eject command
 label pitch: 38.0 mm or less, with cutter, transmissive sensor
 cut position fine adjustment: ±10.0 mm or less, issue mode: C

* A head up/down is performed only when the ribbon saving module is installed. When it is not installed, use Method 2.

NOTES: 1. Although a label, being fed to be cut, cannot be fed any more because its trailing edge has already passed the feed roller during head up, no error is detected.
 2. The print head may not be raised depending on the rise of the solenoid's temperature for head up operation in cut issue mode.

Method 2

The minimum label pitch in normal cut issue mode is 38.0 mm. When a label stock having the pitch of less than 38.0 mm is used (although it is out of specification), an edge of a label may be caught by an edge of the thermal head during a back feed to the home position after the cutter is cut in a gap area between labels. This may prevent the label from being fed back to the proper home position. In such a case, perform the method below to solve the problem.

Prevention by fine adjustment of the cut position

NOTE: Use of this method will cause one or more printed labels to be left between the print head and the cutter. These labels should be removed by an issue or a label feed.

(a) Calculation of a cut position fine adjustment value

A cut position fine adjustment value is calculated using the following formula.

If the label is not fed back to the proper home position even by using the value obtained, the cut position should be adjusted using any other value.

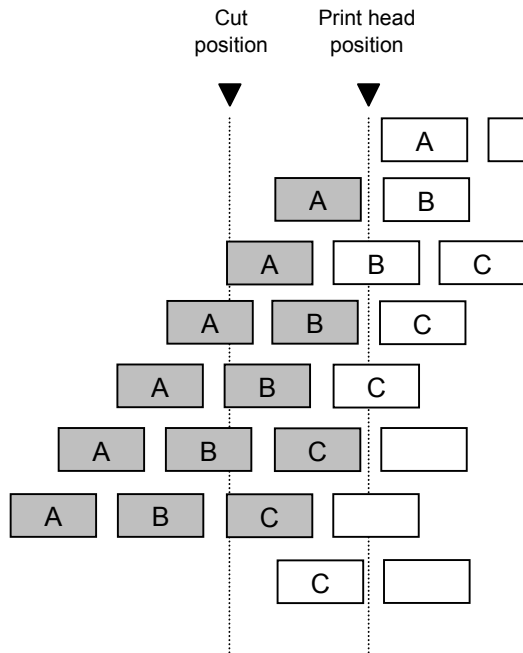
$$\begin{aligned} \text{Cut position fine adjustment value} &= \frac{\text{The number of labels left between the print head and the cutter}}{\text{Label pitch}} \times \text{Label pitch} \\ &= \frac{32.8 \text{ mm}}{\text{Label pitch}} \times \text{Label pitch} \\ &\quad \uparrow \text{ (Round down any decimals.)} \end{aligned}$$

Example) Label pitch: 30.0 mm

$$\begin{aligned} \text{Cut position fine adjustment value} &= (32.8 \text{ mm} / 20.0 \text{ mm}) \times 30.0 \text{ mm} \\ &= 1 \times 30.0 \text{ mm} \\ &= +30.0 \text{ mm} \end{aligned}$$

(b) Operation example

Issue count: 3, Cut interval: 1



- (1) Idling
- (2) Printing Label A has been finished.
- (3) While Label B is being printed, the front gap of label A is cut off.
- (4) Printing Label B has been finished.
- (5) While Label C is being printed, the front gap of label B is cut off.
- (6) Printing Label C has been finished.
- (7) Label C is fed to the cut position, then this Label is cut off.
- (8) Label C is fed backward to the home position.

• Example of Strip Position Fine Adjustment

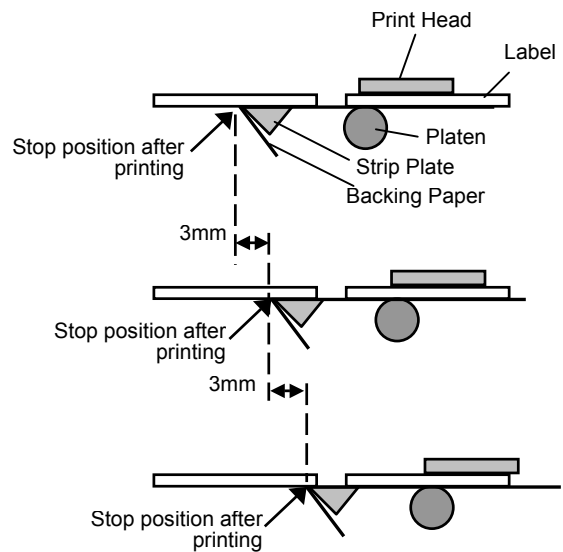
When setting +3.0 mm

Compared with “+0.0mm” position, the stop position after printing is shifted forward.

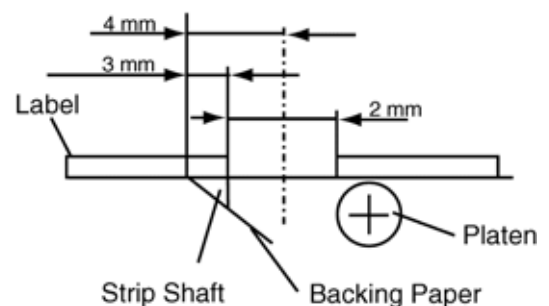
When setting +0.0 mm

When setting -3.0 mm

Compared with “+0.0mm” position, the stop position after printing is shifted backward.



NOTE: The print stop position when printing the label in strip mode varies according to label length as the strip mode printing stops so that the edge of the strip shaft is 4 mm from the middle of the gap. This is because the gap length is programmed as 2 mm. When the gap length is 5 mm or more, the effective print length should be set to the value obtained by subtracting 2 mm from the label pitch, that is, set the gap length to 2 mm. If the print format hangs over the gap as a result, correct the print start position.



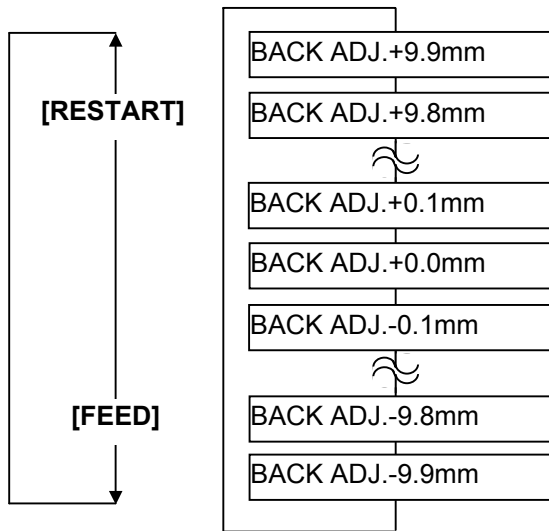
2.3.3 Reverse Feed Amount Fine Adjustment

This parameter is to fine adjust a reverse feed amount.

When "<3>ADJUST SET" appears, press the **[PAUSE]** key until the following display appears.

<3>ADJUST SET
BACK ADJ. +5.0mm

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: -9.9 mm to +9.9 mm)



[FEED] key: Pressing the **[FEED]** key one time causes a -0.1 mm change, up to -9.9 mm.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.1 mm change, up to +9.9 mm.

After completing the fine adjustment, press the **[PAUSE]** key.

• **Example of Reverse Feed Amount Fine Adjustment**

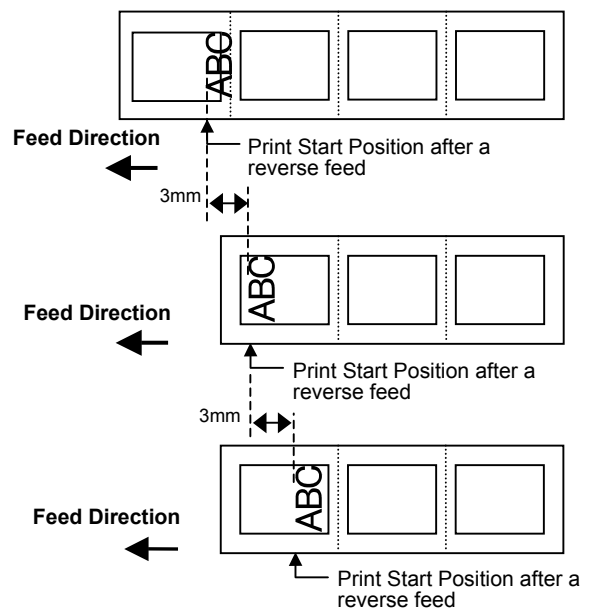
When setting +3.0 mm

Compared with "+0.0mm" position, the stop position after printing is shifted forward.

When setting +0.0 mm

When setting -3.0 mm

Compared with "+0.0mm" position, the stop position after printing is shifted backward.



NOTES:

1. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum reverse feed amount fine adjustment value is ± 9.9 mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
2. There may be cases where a label is not returned to the home position depending on the print conditions, even if a reverse feed amount is the same as a forward feed amount.
When an operation including a reverse feed (cut issue, strip issue, forward feed standby after an issue) is performed using a sensor, a label/tag may not be returned to the home position resulting an error, if the label pitch length is almost the same as the distance between the thermal print head and the paper sensor (69.8 mm). To prevent this problem, the reverse feed amount should be increased by performing the reverse feed amount fine adjustment in the + direction.

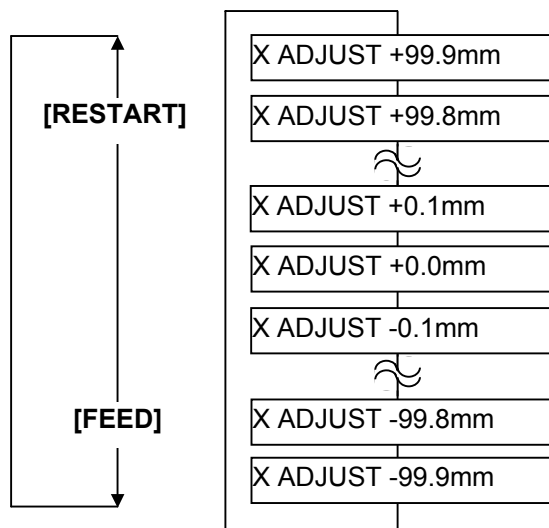
2.3.4 X Coordinate Fine Adjustment

This parameter is to fine adjust the print position on X coordinate.

When "<3>ADJUST SET" appears, press the **[PAUSE]** key until the following display appears.

```
<3>ADJUST SET
X ADJUST +5.0mm
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: -99.9 mm to +99.9 mm)



[FEED] key: Pressing the **[FEED]** key one time causes a -0.1 mm change, up to -99.9 mm.

[RESTART] key: Pressing the **[RESTART]** key one time causes a $+0.1$ mm change, up to $+99.9$ mm.

After completing the fine adjustment, press the **[PAUSE]** key.

• Example of X Coordinate Fine Adjustment

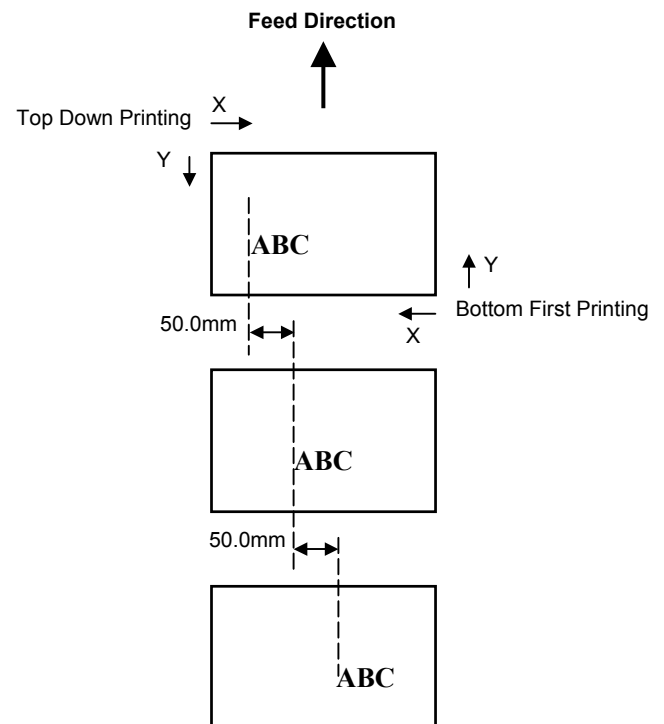
When setting -50.0 mm

Compared with "+0.0mm" position, the print position is shifted to the left.

When setting +0.0 mm

When setting +50.0 mm

Compared with "+0.0mm" position, the print position is shifted to the right.



NOTES:

1. The X coordinate fine adjustment is performed to fine adjust the print position in horizontal direction (left or right).
2. Adjust the X coordinate within the effective print range. After the value reaches the coordinate 0, the value remains unchanged even if the subsequent fine adjustment is performed in the negative direction.
3. This adjustment cannot be used in the Self Test mode or Test print.
4. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum X coordinate fine adjustment value is ± 99.9 mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

2.3.5 Print Tone Fine Adjustment (Thermal Transfer/Thermal Direct Print)

This parameter is to fine adjust the Print Tone.

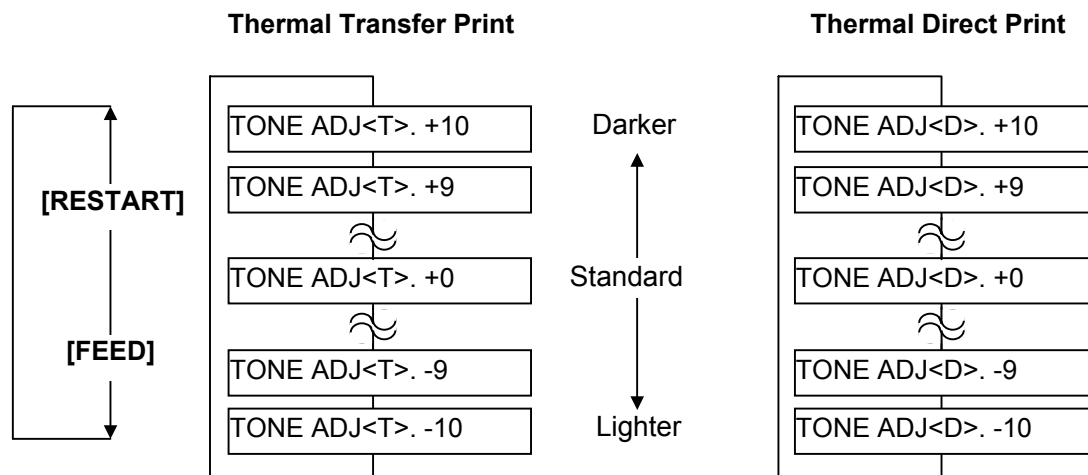
When “<3>ADJUST SET” appears, press the **[PAUSE]** key until the following display appears.

<3>ADJUST SET TONE ADJ.<T> +0	Print Tone for thermal transfer printing
----------------------------------	--

To fine adjust the print tone for thermal direct printing, press the **[PAUSE]** key again.

<3>ADJUST SET TONE ADJ.<D> +0	Print tone for thermal direct printing
----------------------------------	--

When the LCD display shows “TONE ADJ.<T>” or “TONE ADJ.<D>”, select a desired value with the **[FEED]** or **[RESTART]** key. (Range: -10 to +10)



[FEED] key: Pressing the **[FEED]** key one time causes a -1 tone change, up to -10 tones.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 tone change, up to +10 tones.

After completing the fine adjustment, press the **[PAUSE]** key.

NOTES: 1. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum print tone fine adjustment value is +10. The following table shows the maximum fine adjustment value for each print speed. Even if the set value exceeds the maximum value, it will be automatically corrected to the following value.

Maximum fine adjustment value

Print speed	B-SX6T		B-SX8T	
	Thermal direct	Thermal transfer	Thermal direct	Thermal transfer
3 ips	+10 step	+10 step	+10 step	+10 step
4 ips	+5 step	+5 step	+5 step	+5 step
8 ips	+2 step	+2 step	+2 step	+2 step

2. This is useful when print tone is required to be fine adjusted.
e.g.) When the ribbon is changed to different type.

2.3.6 Ribbon Motor Voltage Fine Adjustment (Feed/Take-up Motor)

This parameter is to fine adjust the Ribbon Motor Voltage (Torque).

When the ribbon is slack or wrinkled and printing is affected, fine adjust the ribbon motor torque by using the following procedure.

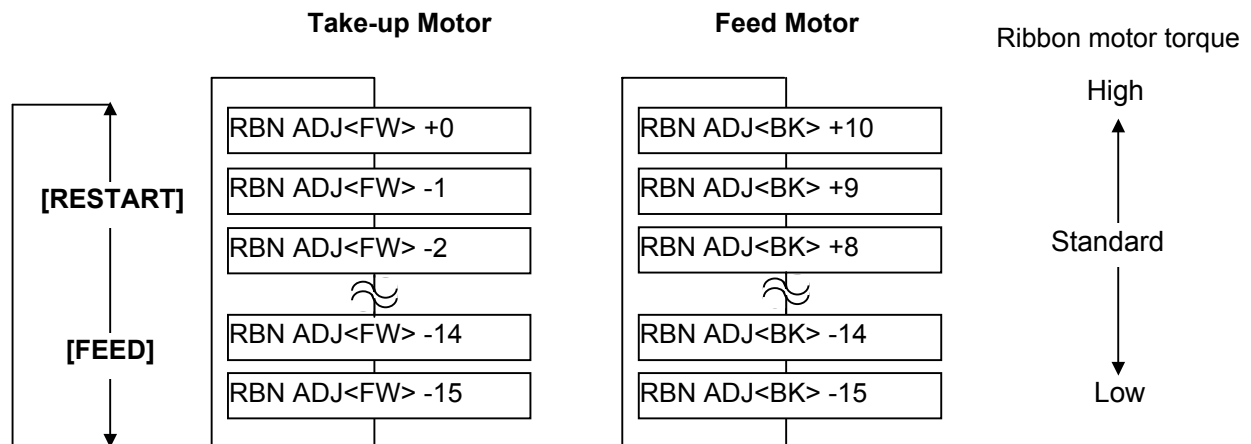
When "<3>ADJUST SET" appears, press the **[PAUSE]** key until the following display appears.

<3>ADJUST SET RBN ADJ<FW> +0	Ribbon take-up motor voltage
---------------------------------	------------------------------

To fine adjust the ribbon feed motor voltage, press the **[PAUSE]** key again.

<3>ADJUST SET RBN ADJ<BK> +0	Ribbon feed motor voltage
---------------------------------	---------------------------

When the LCD display shows "RBN ADJ<FW>" or "RBN ADJ<BK>", select a desired option with the **[FEED]** or **[RESTART]** key. (Range: -15 to +0 for take-up motor / -15 to +10 for feed motor)



[FEED] key: Pressing the **[FEED]** key one time causes a -1 step change, up to -15 steps.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 step change, up to +0 steps for take-up motor / +10 for feed motor.

After completing the fine adjustment, press the **[PAUSE]** key.

- NOTES:**
1. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum ribbon motor voltage fine adjustment value is -15. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
 2. One step corresponds to 5% of the standard voltage and up to 75% of the voltage can be decreased.
 3. Please make this adjustment if a ribbon error occurs though the ribbon is proper.

2.3.7 Threshold Manual Fine Adjustment (Black Mark/Feed Gap Sensor)

This parameter is to set a threshold voltage of the black mark sensor or feed gap sensor.

When pre-printed media is used, and if the black mark sensor or feed gap sensor cannot properly detect a print start position even after an automatic threshold setting has been performed, set a threshold voltage here.

Usually, a threshold is a midpoint between the voltage at a print area and the voltage at a black mark (black mark sensor) or a gap (feed gap sensor).

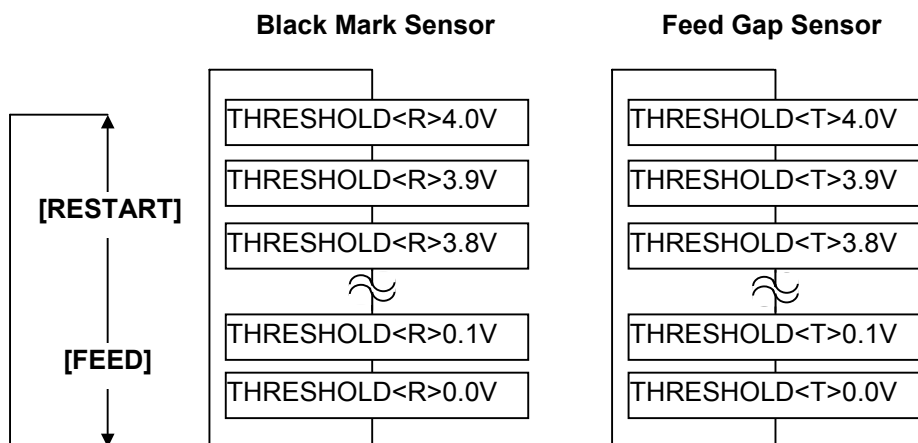
When "<3>ADJUST SET" appears, press the **[PAUSE]** key until the following display appears.

<3>ADJUST SET THRESHOLD<R>1.0V	Threshold setting for the black mark sensor
-----------------------------------	---

To set the threshold for the feed gap sensor, press the **[PAUSE]** key again.

<3>ADJUST SET THRESHOLD<T>1.4V	Threshold setting for the feed gap sensor
-----------------------------------	---

When the LCD display shows "THRESHOLD<R>" or "THRESHOLD<T>", select a desired value with the **[FEED]** or **[RESTART]** key. (Range: 0.0V to 4.0V)



[FEED] key: Pressing the **[FEED]** key one time causes a -0.1V change, up to 0.0V.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.1V change, up to +4.0V.

After completing the fine adjustment, press the **[PAUSE]** key.

NOTE: If "0.0V" is set as a threshold voltage, it will be automatically changed to the initial value when the printer is turned off and back to on.

THRESHOLD<R>: 1.4V

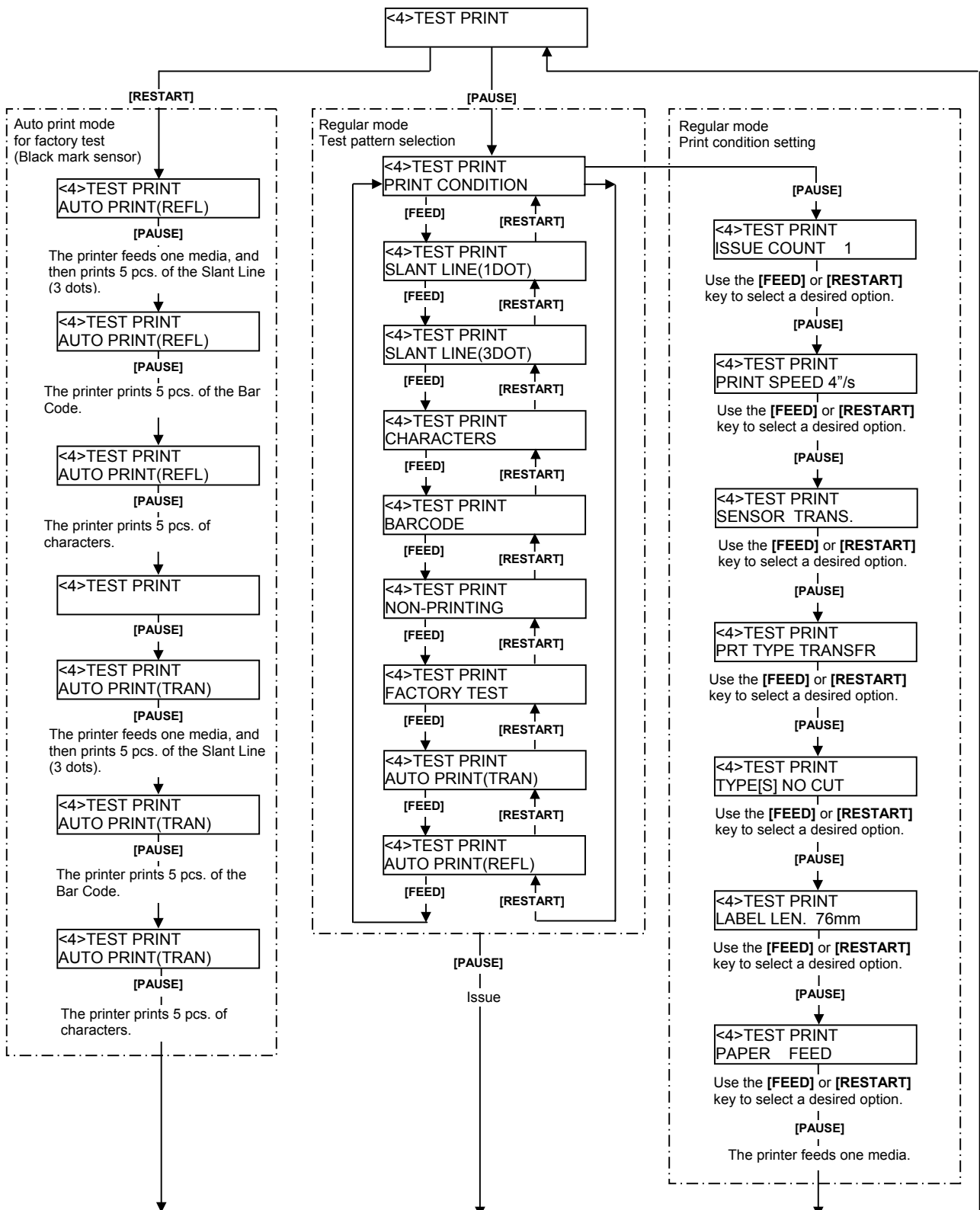
THRESHOLD<T>: 1.0V

2.4 Test Print

■ Outline of Test Print

In the Test Print mode, you can print the test patterns and set print conditions for a test print. This is useful to check the print quality of new media or ribbon.

The **Test Print** menu consists of the following:



■ How to Enter Test Print Mode

While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

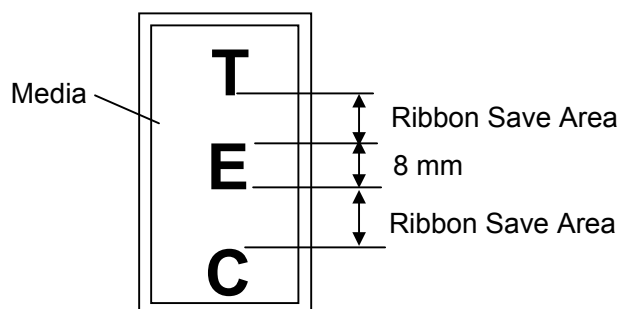
<1>DIAG. Vx.x

Press the **[FEED]** key 3 times.

The Test Print is ready to be performed.

<4>TEST PRINT

- NOTES:**
1. When pressing the **[FEED]** and **[RESTART]** keys at the same time in the Test Print menu, the message returns to "<4>TEST PRINT".
 2. If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the Test Print menu, the key is entered continuously.
 3. The fine adjustment parameters are effective for the Test Print. (except for X Axis Fine Adjustment.)
 4. If any error occurs, an error message appears, and the printer stops printing. After clearing the errors, press the **[PAUSE]** key to return to the System Mode menu. The printer does not restart printing automatically.
 5. A changed parameter becomes enabled by pressing the **[PAUSE]** key.
 6. A label size greater than the image buffer length cannot be designated. If designated, the printer prints in the image buffer, or the printer stops because of an error.
 7. The ribbon saving function automatically starts when the space area is as described below if the ribbon saving function parameter is set to ON and thermal transfer is selected for the printing mode:
 - 3"/sec: 20 mm or more
 - 4"/sec: 20 mm or more
 - 8"/sec: 30 mm or more
 - 8.
 - 9.



2.4.1 Specifying the Print Condition for the Test Print

The print conditions for the Test Print should be specified before printing. When "<4>TEST PRINT" appears, press the **[PAUSE]** key.

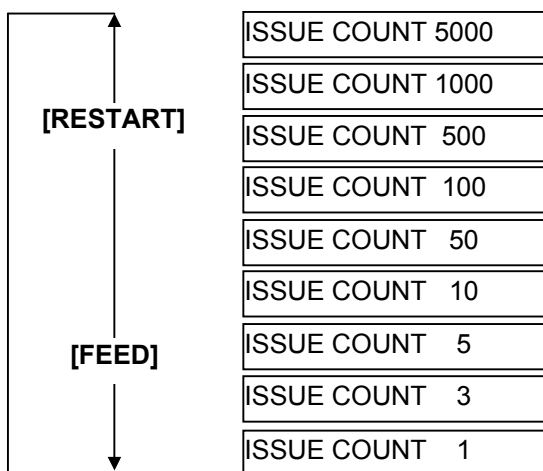
```
<4>TEST PRINT
PRINT CONDITION
```

To set the print conditions, press the **[PAUSE]** key.

Issue Count Setting

Select an issue count from a range of 1 to 5000.

```
<4>TEST PRINT
ISSUE COUNT 1
```

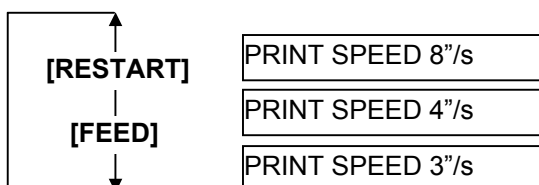


After selecting an issue count, press the **[PAUSE]** key to go to Print Speed Setting.

Print Speed Setting

Select a print speed for the test print among 8"/sec., 4"/sec., and 3"/sec.

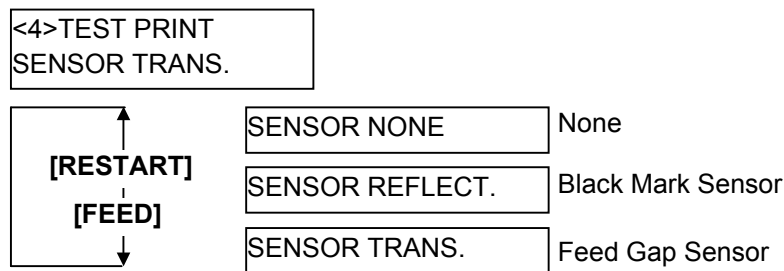
```
<4>TEST PRINT
PRINT SPEED 4"/s
```



After selecting a print speed, press the **[PAUSE]** key to go to Sensor Type Selection.

Sensor Type Selection

Select a sensor type among “TRANS” (Feed Gap Sensor), “REFLECT” (Black Mark Sensor) and “NONE”.

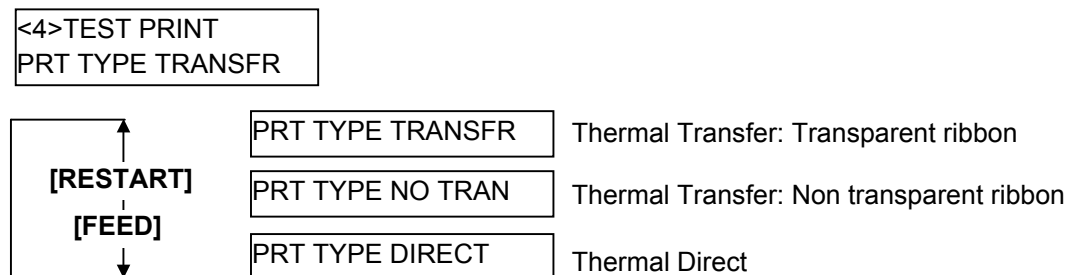


After selecting a sensor type, press the **[PAUSE]** key to go to Printing Mode Selection.

NOTE: Select a sensor type which is proper for the media being used. Basically, the Reflective Sensor (Black Mark Sensor) is for tag paper, and the Transmissive Sensor (Feed Gap Sensor) is for label.

Printing Mode Selection

Select a printing mode for the test print among “TRANSFR” (Thermal transfer: transparent ribbon), “NO TRAN” (Thermal transfer: non transparent ribbon), and “DIRECT” (Thermal direct).

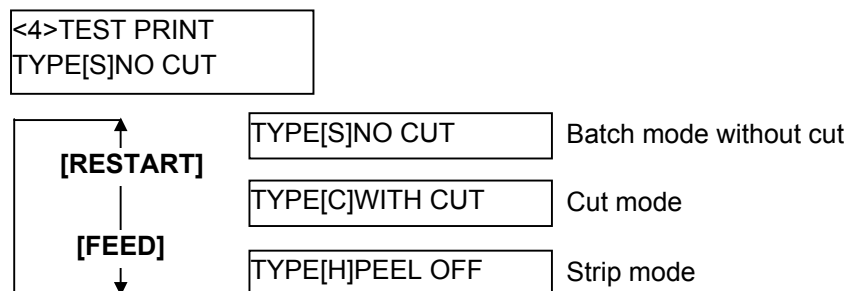


After selecting a printing mode, press the **[PAUSE]** key to go to Issue Mode Selection.

NOTE: Select a printing mode which is proper for the operating conditions. Basically, the Thermal Transfer is for the use of ribbon, and the Thermal Direct is for the use of thermal paper.

Issue Mode Selection

Select an issue mode for the test print among “[S]NO CUT” (Batch mode without cut), “[C]WITH CUT” (Cut mode), and “[H]PEEL OFF” (Strip mode).

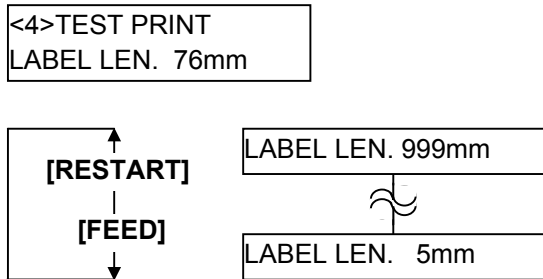


After selecting an Issue Mode, press the **[PAUSE]** key to go to Media Length Setting.

NOTE: Cut mode is available only when the optional cutter module (B-SX208-QM-R) is installed. Strip mode is available only when the optional strip module (B-SX908-H-QM-R) is installed.

Media Length Setting

Select a label length for the test print from a range of 5 mm to 999 mm.



[FEED] key: Pressing the **[FEED]** key one time causes a –1 mm change, up to 5 mm.

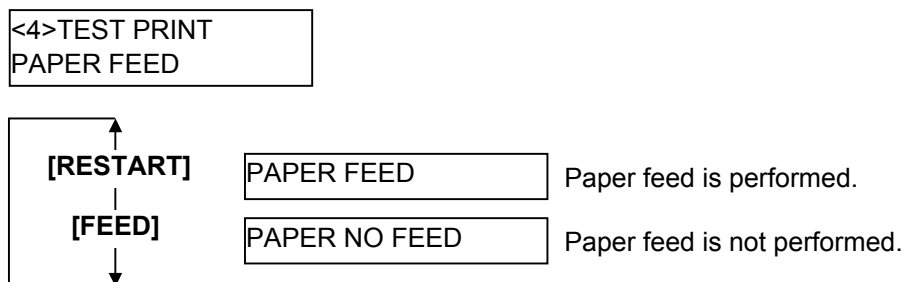
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 mm change, up to 999 mm.

After selecting a media length, press the **[PAUSE]** key to go to Paper Feed Selection.

NOTE: Pressing and holding the **[RESTART]** or **[FEED]** key causes the display to show the values quickly and continuously. To stop it, release the key.

Paper Feed Selection

Select whether or not a paper feed is performed prior to a test print.



After selecting whether to perform a paper feed, press the **[PAUSE]** key. The display returns to the “<4>TEST PRINT”.

NOTE: When “PAPER FEED” is selected, the printer feeds the media prior to a test print to adjust the print start position. When “PAPER NO FEED” is selected, the printer starts printing without print start position adjustment. If the print start position adjustment is unnecessary, you can save the media by selecting “PAPER NO FEED”.

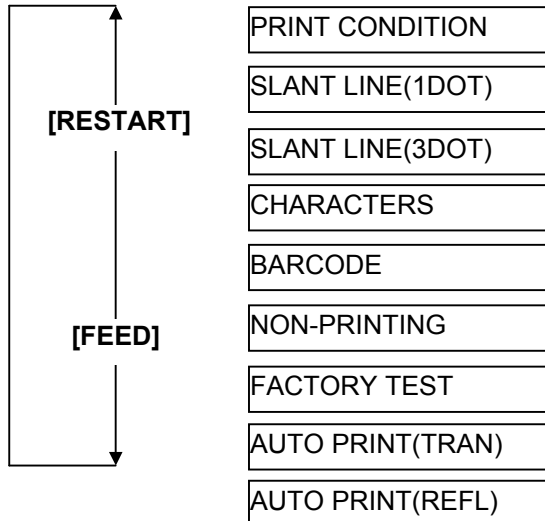
2.4.2 Test Print Pattern Selection

Several print patterns are provided for test print.

When "<4>TEST PRINT" appears after paper feed selection, press the **[PAUSE]** key.

<4>TEST PRINT PRINT CONDITION

Use the **[FEED]** or **[RESTART]** key to select a desired option.

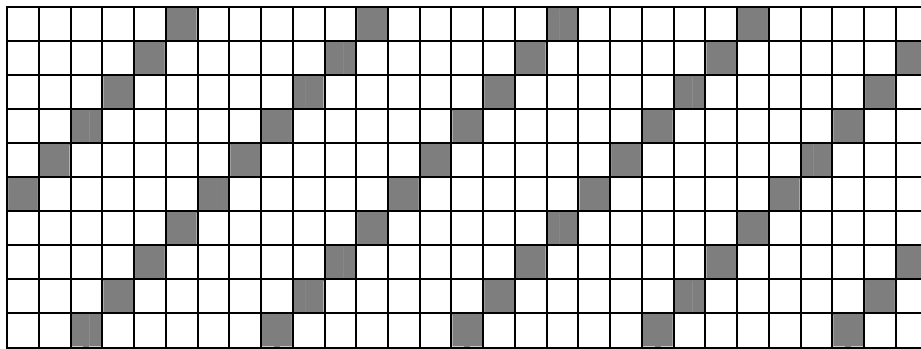
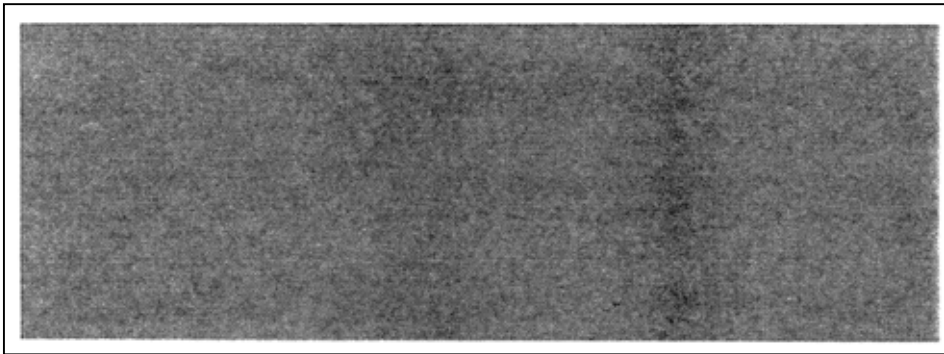


2.4.3 Slant Line (1 dot)

SLANT LINE(1DOT)

Pressing the **[PAUSE]** key while SLANT LINE (1 DOT) is displayed causes the slant line patterns (1 dot) to be printed.

■ Print Sample of Slant Line (1 dot)



(Magnified view: Print ratio 16.7%)

After printing is completed, the display returns to "<4>TEST PRINT".

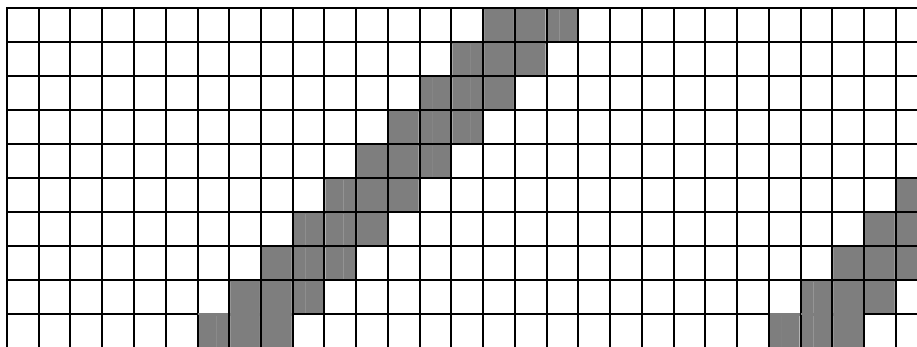
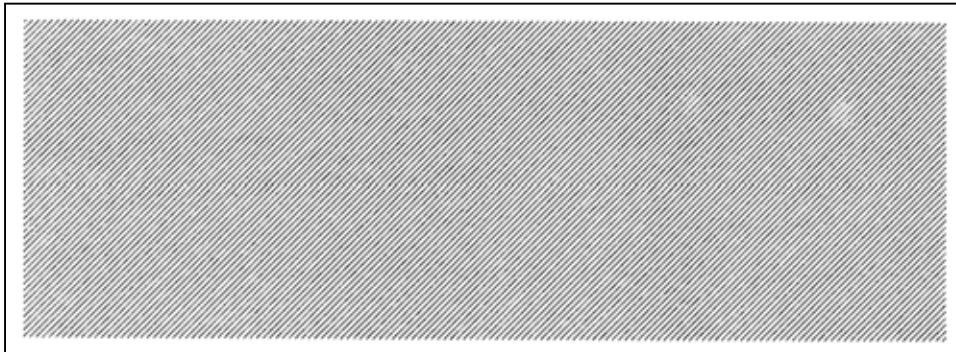
Pressing the **[PAUSE]** key causes the display to show "SLANT LINE (1 DOT)" again. Then, press the **[FEED]** key to display "SLANT LINE (3 DOT)".

2.4.4 Slant Line (3 dots)

SLANT LINE(3DOT)

Pressing the **[PAUSE]** key while SLANT LINE (3 DOT) is displayed causes the slant line patterns (3 dots) to be printed.

■ Print Sample of Slant Line (3 dots)



(Magnified view: Print ratio 16.7%)

After printing is completed, the display returns to "<4>TEST PRINT".

Pressing the **[PAUSE]** key causes the display to show "SLANT LINE (3DOT)" again. Then, press the **[FEED]** key to display "CHARACTERS".

2.4.5 Characters

CHARACTERS

Pressing the **[PAUSE]** key while CHARACTERS is displayed causes the characters to be printed.

■ **Print Sample of Characters**



After printing is completed, the display returns to “<4>TEST PRINT”.

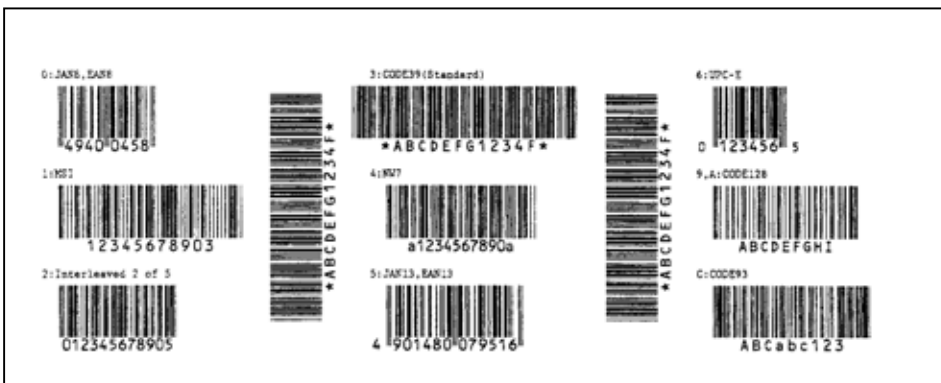
Pressing the **[PAUSE]** key causes the display to show “CHARACTERS” again. Then, press the **[FEED]** key to display “BARCODE”.

2.4.6 Barcode

BARCODE

Pressing the **[PAUSE]** key while BARCODE is displayed causes the bar codes to be printed.

■ **Print Sample of Barcodes**



After printing is completed, the display returns to “<4>TEST PRINT”.

Pressing the **[PAUSE]** key causes the display to show “BARCODE” again. Then, press the **[FEED]** key to display “NON-PRINTING”.

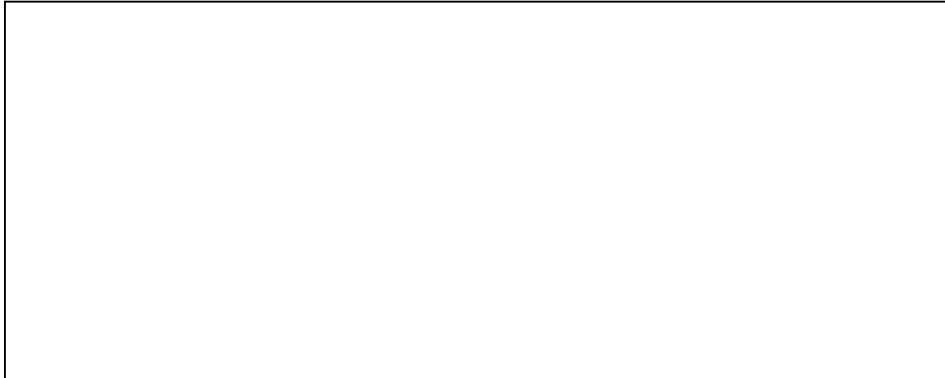
2.4.7 Non-Printing



Pressing the **[PAUSE]** key while NON-PRINTING is displayed causes a blank media to be issued.

NOTE: The Non-Printing function looks like a media feeding.

■ Print Sample of Non-print



After printing is completed, the display returns to "<4>TEST PRINT".

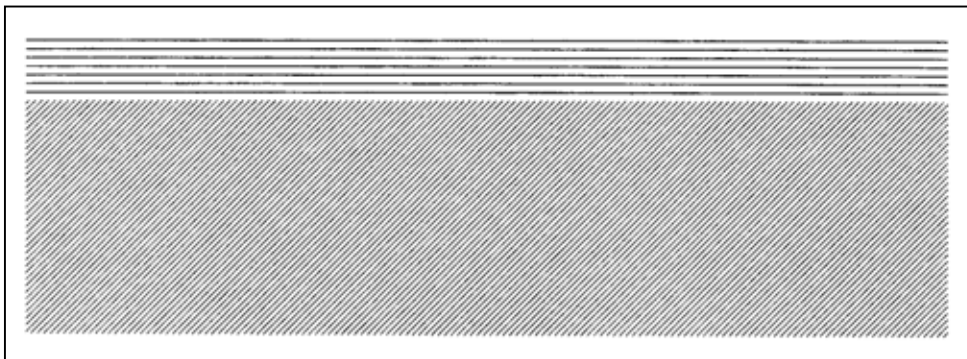
Pressing the **[PAUSE]** key causes the display to show "NON-PRINTING" again. Then, press the **[FEED]** key to display "FACTORY TEST".

2.4.8 Factory Test



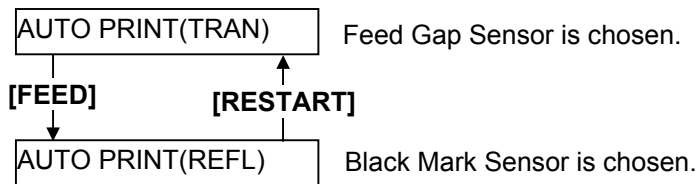
Pressing the **[PAUSE]** key while FACTORY TEST is displayed causes the factory test pattern to be printed. After printing is completed, the display returns to "<4>TEST PRINT".

■ Print Sample of Factory Test



Pressing the **[PAUSE]** key causes the display to show "FACTORY TEST" again. Then, press the **[FEED]** key to display "AUTO PRINT (TRAN)".

2.4.9 Auto Print



Pressing the **[PAUSE]** key while AUTO PRINT (TRAN) or AUTO PRINT (REFL) is displayed causes the following automatic test print:

- (1) **[PAUSE]** key → Feeds one media and prints slant lines (3 dots) on 5 pieces of media
- (2) **[PAUSE]** key → Prints bar codes on 5 pieces of media
- (3) **[PAUSE]** key → Prints characters on 5 pieces of media

- NOTES:**
1. Select "AUTO PRINT (TRAN)" when using labels, and "AUTO PRINT (REFL)" when using tag paper with black marks.
 2. Auto print is performed on the conditions below. Parameter setting and print tone fine adjustment value is ignored.

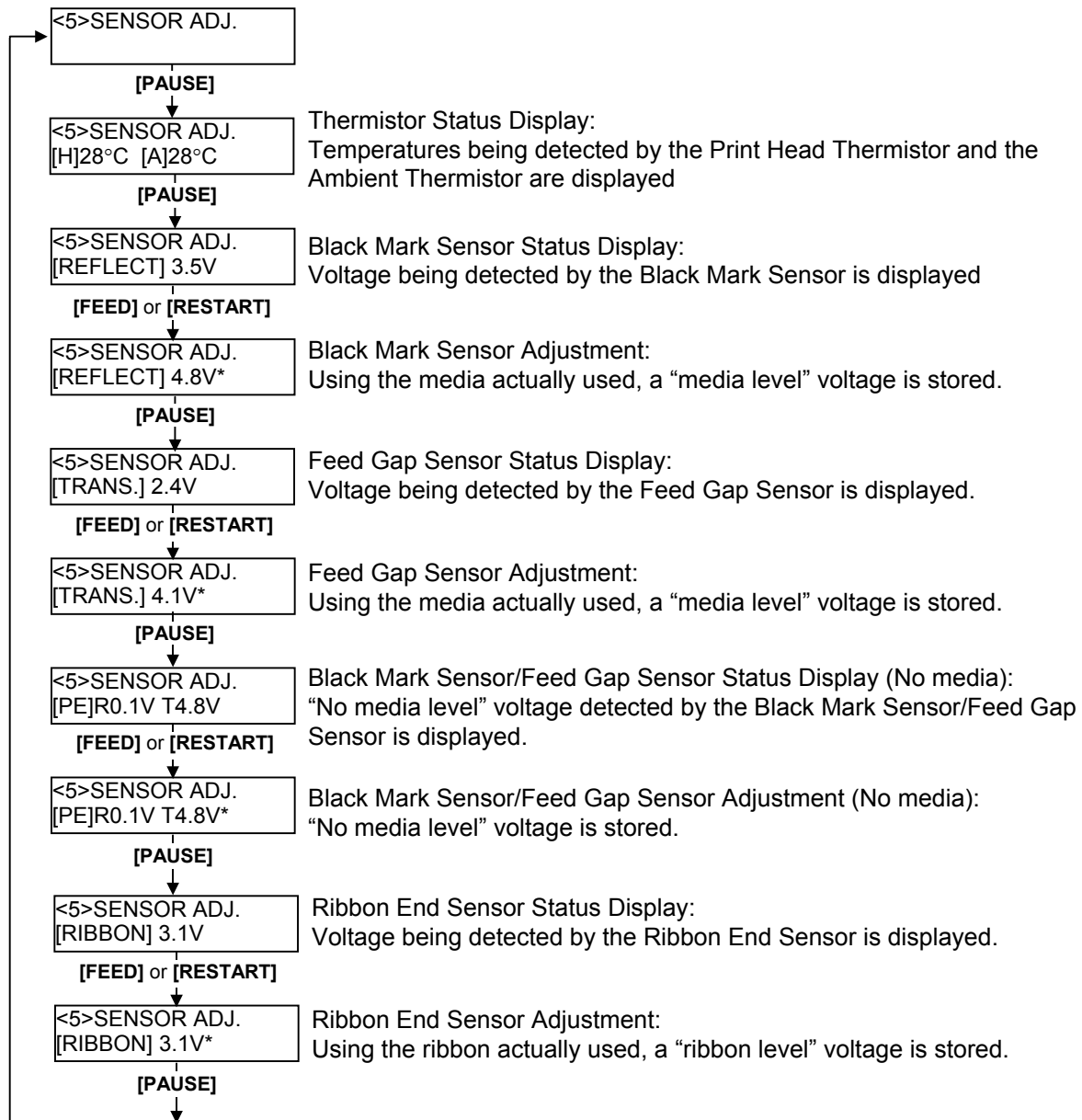
Print speed:	8 inches/second
Sensor type:	Black mark or feed gap sensor
Printing method:	Thermal transfer
Issuing mode:	Batch printing
Label size:	76mm
Print tone fine adjustment value:	±0

2.5 Sensor Adjustment

■ Outline of the Sensor Adjustment

In the Sensor Adjustment mode, the status of the sensors and thermistors is displayed. Also you can store media level voltage and media end level voltage for the Black Mark, Feed Gap, and Ribbon End Sensors.

The **Sensor Adjustment** menu contains the following:



- NOTES:**
1. Perform a sensor threshold setting after changing the media to a different type.
 2. An error related to the print position may be caused by the improperly set sensor threshold. In this case please perform a threshold setting in this mode. In case further adjustment is required, refer to **Section 2.3 Printer Parameter Fine Adjustment** to make the threshold fine adjustment.
 3. When pressing the [FEED] and [RESTART] keys at the same time in the Sensor Adjustment menu, the display returns to "<5>SENSOR ADJ.".
 4. The sensor status is checked every 200 msec. Therefore, the display may change according to the status.

■ How to Enter the Sensor Adjustment Mode

While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

```
<1>DIAG. Vx.x
```

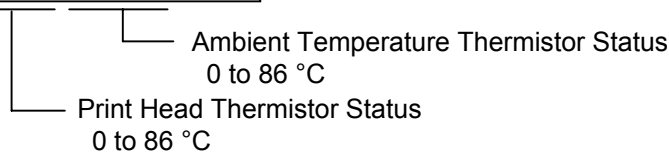
Press the **[FEED]** key 4 times. The printer is at the start of the Sensor Adjustment menu.

```
<5>SENSOR ADJ.
```

2.5.1 Thermistor Status Display

When "<5>SENSOR ADJ." appears, press the **[PAUSE]** key to display the following.

```
<5>SENSOR ADJ.  
[H]20°C [A]22°C
```



Press the **[PAUSE]** key to show a real-time black mark sensor status.

2.5.2 Black Mark Sensor Adjustment

```
<5>SENSOR ADJ.  
[REFLECT] 3.8V
```

Real-time status detected by the Black Mark Sensor
0.0V to 5.0V

Follow the procedure below to store a media level voltage of the black mark sensor.

- (1) Load a tag stock in the printer so that the Black Mark Sensor detects a print area (no black mark).
- (2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.  
[REFLECT] 2.8V*
```

When storing a media level voltage is completed, "*" appears.

- (3) Remove the tag stock from the printer.
- (4) Press the **[PAUSE]** key to show a real-time Feed Gap Sensor status.

2.5.3 Feed Gap Sensor Adjustment

```
<5>SENSOR ADJ.
[TRANS.] 2.3V
```

Real-time status detected by the Feed Gap Sensor
0.0V to 5.0V

Follow the procedure below to store a backing paper level voltage of the Feed Gap Sensor.

- (1) Place the backing paper (labels are removed) in the printer so that the Feed gap Sensor detects it.
- (2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.
[TRANS.] 4.1V*
```

When storing a backing paper level voltage is completed, "*" appears.

- (3) Remove the backing paper from the printer.
- (4) Press the **[PAUSE]** key to show a paper end status of the Black Mark Sensor and the Feed Gap Sensor.

2.5.4 Black Mark Sensor and Feed Gap Sensor Adjustment (Paper End Level)

```
<5>SENSOR ADJ.
[PE]R0.2V T4.6V
```

Real-time status detected by the Feed Gap Sensor (Paper end level)

Real-time status detected by the Black Mark Sensor (Paper end level)

Follow the procedure below to store a paper end level voltage of the Black Mark Sensor or Feed Gap Sensor.

- (1) Remove any paper from the detecting area of the Black Mark Sensor and the Feed Gap Sensor.
- (2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.
[PE]R0.2V T4.6V*
```

When storing a paper end level voltage is completed, "*" appears.

- (3) Press the **[PAUSE]** key to show a real-time status of the ribbon end sensor.

2.5.5 Ribbon End Sensor Adjustment (Ribbon Level)

```
<5>SENSOR ADJ.
[RIBBON] 3.1V
```

Real-time status detected by the ribbon end sensor
0.0V to 5.0V

Follow the procedure below to store a ribbon level voltage of the ribbon end sensor.

- (1) Place the ribbon in the printer so that the ribbon end sensor detects it.
- (2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.
[RIBBON] 3.1V*
```

When storing a ribbon level voltage is completed, "*" appears.

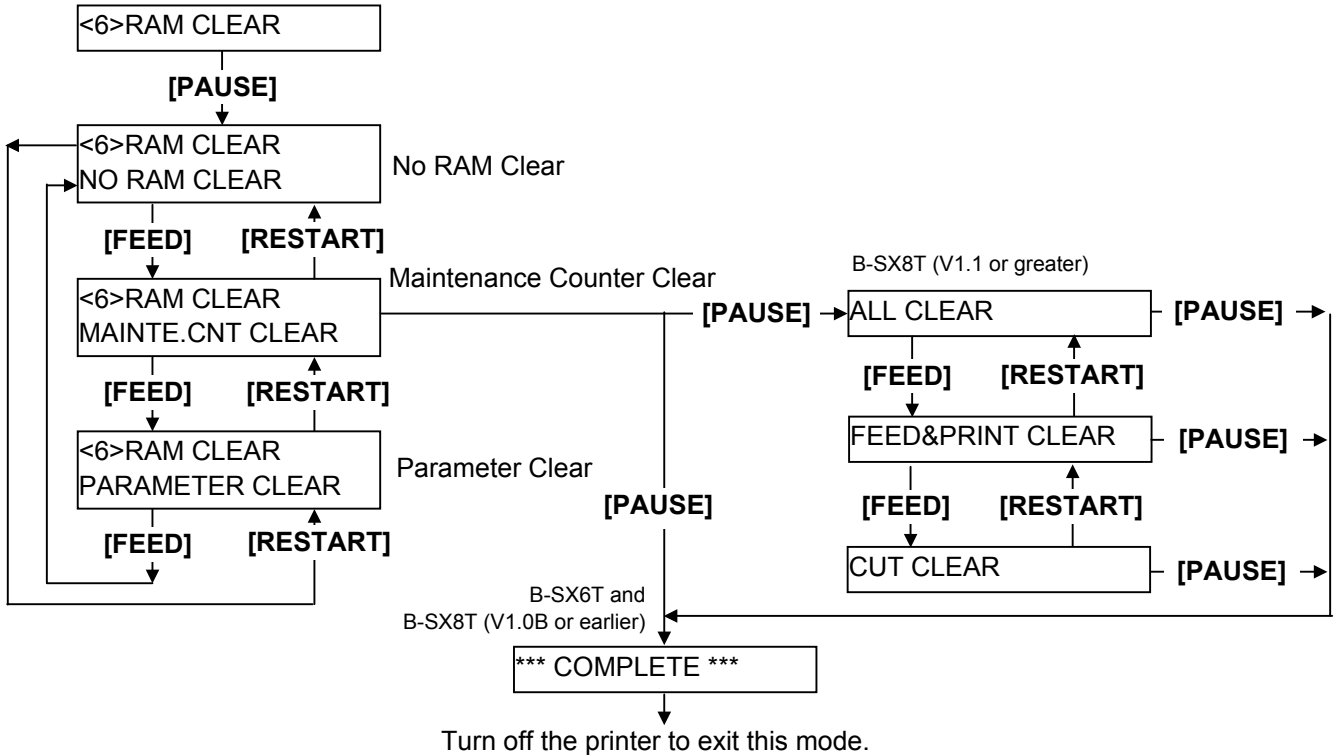
- (3) Press the **[PAUSE]** key to return to "<5>SENSOR ADJ." display.

2.6 RAM Clear

■ Outline of RAM Clear

In the RAM Clear mode, clearing the Maintenance Counter and initializing the Parameters are possible. After replacing the print head, ribbon motor, or platen, perform a maintenance clear.

The **RAM Clear** menu contains the following:



■ How to Enter RAM Clear Mode

Turn on the printer while pressing the **[FEED]** and **[PAUSE]** keys at the same time. Hold both keys until the “<1>DIAG. Vx.x” Message appears.

<1>DIAG. Vx.x

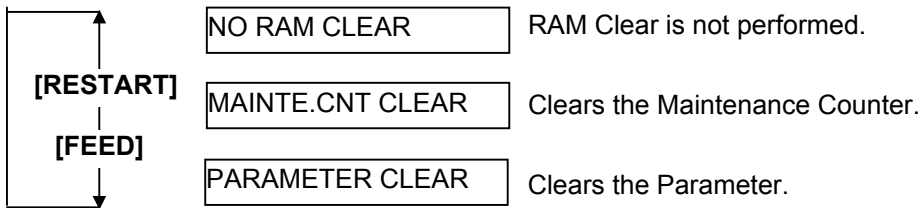
Press the **[FEED]** key 5 times. The printer is at the start of the RAM Clear menu.

<6>RAM CLEAR

2.6.1 RAM Clear Menu Selection

When "<6>RAM CLEAR" appears, press the **[PAUSE]** key.

Choose a RAM Clear menu among "No RAM Clear", "Maintenance Counter Clear", or "Parameter Clear".



- NOTES:**
- To exit the RAM clear menu selection, press the **[FEED]** and **[RESTART]** keys at the same. The display returns to "<6>RAM CLEAR".
 - Even after performing a RAM clear, the following items are still stored: Label distance covered, Sensor adjustment value, IP address, Socket port number, Language for the LCD message, data in the flash memory.

2.6.2 No RAM Clear

NO RAM CLEAR

Press the **[PAUSE]** key. No RAM Clear operation is performed and the display returns to "<6>RAM CLEAR".

Pressing the **[PAUSE]** key again causes the display to return to "NO RAM CLEAR".

2.6.3 Maintenance Counter Clear

B-SX6T-TS12-QM-R and B-SX8T-TS12-QM-R (V1.0B or earlier)

MAINTENANCE.CNT CLEAR All items of the Maintenance Counter are cleared.

Press the **[PAUSE]** key to perform the Maintenance Counter Clear.

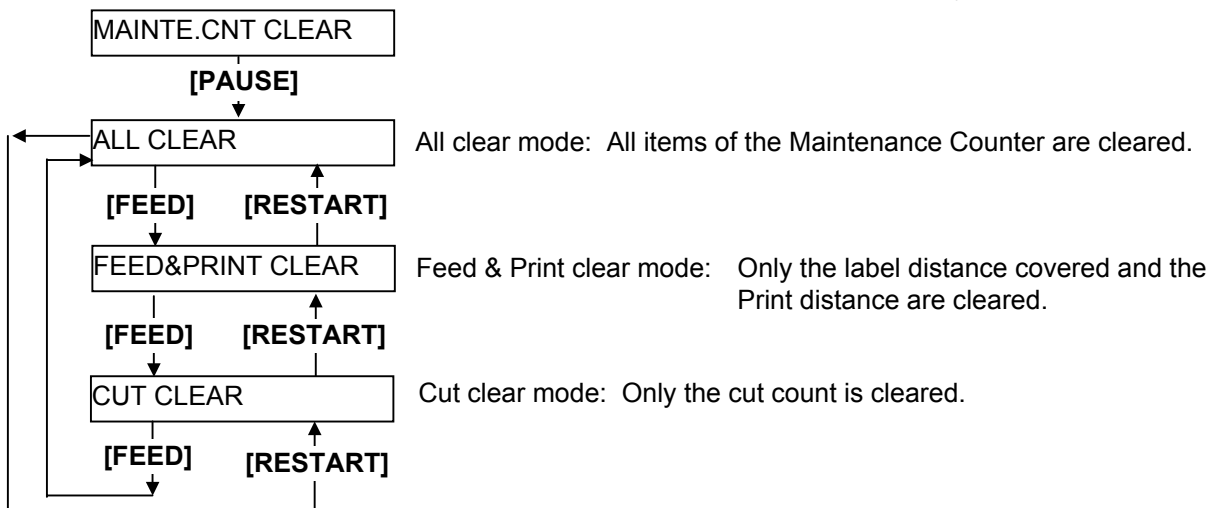
When the Maintenance Counter Clear is completed, the following message appears.

*** COMPLETE ***

Turn off the printer to exit this mode.

B-SX8T-TS12-QM-R (V1.1 or greater)

Choose a maintenance counter clear mode with the **[FEED]** or **[RESTART]** key.



After choosing a mode, press the **[PAUSE]** key. A maintenance counter clear will be performed according to the chosen mode.

When the Maintenance Counter Clear is completed, the following message appears.

*** COMPLETE ***

Turn off the printer to exit this mode.

■ Initial values after clearing the maintenance counter (MANTE.CNT CLEAR)

Item	Initial Value
Media distance covered	0 km
Print distance	0 km
Cut count	0 time
Head up and down cycle count	0
Ribbon motor drive time	0 hours
Solenoid drive time for head up	0 hours
RS-232C hardware error count	0
System error count	0
Momentary power failure count	0

■ Maintenance counter items to be cleared according to the mode (B-SX8T-TS12-QM-R (V1.1 or greater))

Item	Mode		
	ALL	FEED&PRINT	CUT
Media distance covered	O	O	---
Print distance	O	O	---
Cut count	O	---	O
Head up and down cycle count	O	---	---
Ribbon motor drive time	O	---	---
Solenoid drive time for head up	O	---	---
RS-232C hardware error count	O	---	---
System error count	O	---	---
Momentary power failure count	O	---	---

Note: "O" indicates the item to be cleared.

2.6.4 Parameter Clear

PARAMETER CLEAR

Press the [PAUSE] key to show the destination code selection display.

QM TYPE

Standard for worldwide

[FEED] or [RESTART] key

CND TYPE

B-SX8T-TS15-CND-R only (Japanese model)

Press the [PAUSE] key to perform a Printer Parameter Clear.

When the Printer Parameter Clear is completed, the following message appears.

*** COMPLETE ***

Turn off the printer to exit this mode.

■ Initial values after clearing the parameters (PARAMETER CLEAR)

Item	Initial Value	
Feed amount fine adjustment (PC), (KEY)	0 mm	
Cut (Strip) position fine adjustment (PC), (KEY)	0 mm	
Reverse feed amount fine adjustment (PC), (KEY)	0 mm	
Print tone fine adjustment (Thermal transfer), (PC), (KEY)	0	
Print tone fine adjustment (Thermal direct), (PC), (KEY)	0	
Ribbon take-up motor driving voltage fine adjustment (PC), (KEY)	0	
Ribbon feed motor driving voltage fine adjustment (PC), (KEY)	0	
Threshold manual fine adjustment for the black mark sensor	1.0V	
Threshold manual fine adjustment for the feed gap sensor	1.4V	
X axis fine adjustment (KEY)	0 mm	
Character code and zero font code	PC-850, "0" (without slash)	
Baud rate	9600 bps	
Data length	8 bits	
Stop bit	1 bit	
Parity	None	
Flow control code	XON/XOFF + READY/BUSY (DTR) protocol: (XON output when the power is on, XOFF output when the power is off)	
LCD message language	English	
Forward wait	OFF	
Head up cut in cut issue mode	OFF (Not activated)	
Ribbon saving function	B-SX6T-TS12-QM-R	OFF (Not activated)
	B-SX8T-TS12-QM-R	ON (Activated) (When the head lever is set to the tag position.)
Control code	AUTO	
Ribbon type	TRANS (Transparent ribbon)	
Strip wait status	OFF	
Feed key function	FEED	
Kanji code type	TYPE1	
Euro code	B0H	
Auto print head check	OFF	
ACK/BUSY timing	TYPE 1	
Web printer function	OFF	
Media sensor	CENTER (Fixed sensor)	
Input prime (Reset operation when INIT signal is ON.)	OFF: Unavailable	
Strip wait status	OFF	
Expansion I/O mode	Standard mode	
Plug & Play	OFF	
Print processing at the label/ribbon end detection	The printer stops an issue operation.	
Pre strip	OFF: Unavailable	
Reverse feed speed	3 inches/second	
Maxi code specification selection	TYPE1 (Compatible with the current version)	
Strip motor torque	R0 (For standard papers)	
Stabilizer function	ON (Enabled only in direct thermal mode)	
Automatic calibration	OFF	
LAN enable/disable	LAN: Enabled, SNMP: Enabled	
Status response	ON	

Item		Initial Value
Label pitch		76.2 mm
Effective print length		74.2 mm
Effective print width	B-SX6T-TS12-QM-R	170.6 mm
	B-SX8T-TS12-QM-R	213.3 mm
Printing mode		Thermal transfer
Sensor type		Feed gap sensor
Print speed		4"/sec.
Issue mode		Batch print
PC save automatic calling		ON
Basic interpreter		OFF: Unavailable
Basic interpreter trace		OFF: Unavailable
DHCP function		OFF: Unavailable
RFID module type		NONE: No RFID kit is installed.
RFID tag type		NONE
RFID error tag detection		OFF
Maximum number of RFID issue retries		3
Maximum number of RFID read retries		5
RFID read retry time-out		4.0
Maximum number of RFID write retries		5
RFID write retry time-out		2.0
RFID adjustment for retry		+00mm
RFID wireless power level setting		18
RFID AGC Threshold Setting		0
RFID Q VAL (Q value)		0
RFID WT AGC (AGC threshold for data write)		0
RFID WT MIN AGC (AGC threshold lower limit for retry)		0
Number of successful RFID write		0
Number of failure in RFID write		0

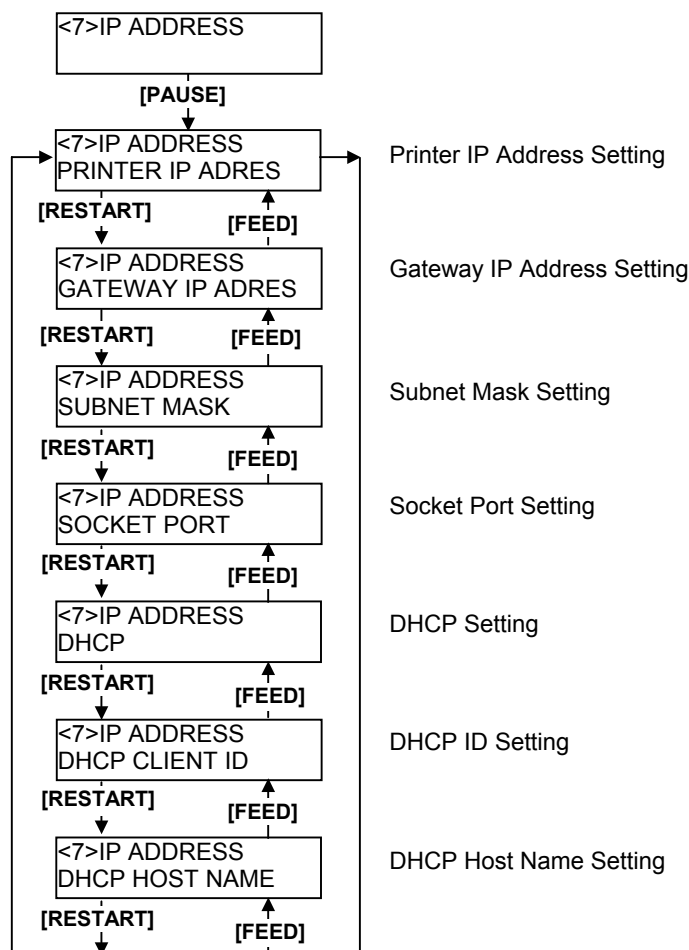
NOTE: The initial values of Data length, Parity, Control code, LCD message language are different according to the destination code.

2.7 IP Address Setting

■ Outline of the IP Address Setting

In the IP Address Setting mode, you can set the IP Address, Gateway Address, Subnet Mask, DHCP, DHCP Client ID, and DHCP Host Name which are necessary for a network communication. Since each setting value is different depending on your operating environment.

The **IP Address Setting** menu contains the following:



■ How to Enter IP Address Setting Mode

Turn on the printer while pressing the [FEED] and [PAUSE] keys at the same time. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

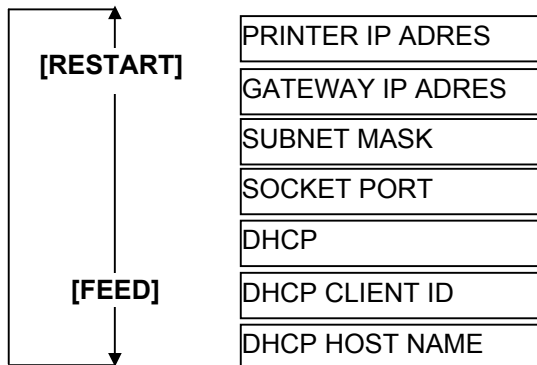
<1>DIAG. Vx.x

Press the [FEED] key until "<7>IP ADDRESS" is displayed.
The printer is at the start of the IP Address Setting menu.

<7>IP ADDRESS

When "<7>IP ADDRESS" appears, press the **[PAUSE]** key.

Choose an IP Address menu among "Printer IP Address", "Socket Port", "Gateway IP Address", "Subnet Mask", or "DHCP".



To enter each sub menu, press the **[PAUSE]** key.

2.7.1 Printer IP Address, Gateway IP Address, and Subnet Mask Settings

When "PRINTER IP ADRES" is displayed, press the **[PAUSE]** key.

PRINTER IP ADRES

Set the IP address using the following procedure.

192.168.010.020

Set the first 3-digit value with the **[FEED]** or **[RESTART]** key.

Press the **[PAUSE]** key to move the cursor to the next 3-digit value.

Set the next values in the same way.

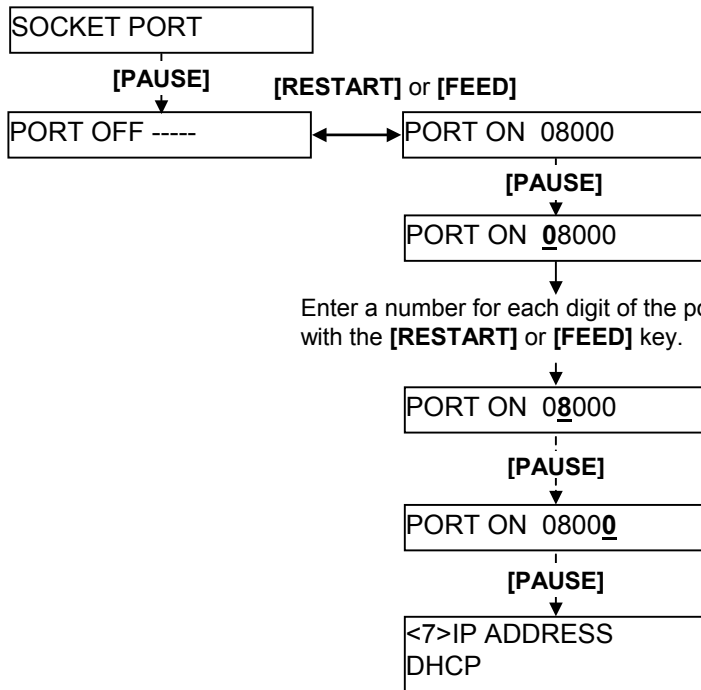
192.168.010.020 → 192.168.010.020 → 192.168.010.020

- NOTES:**
1. Pressing the **[FEED]** key one time causes a -1 change. Pressing the **[RESTART]** key one time causes a $+1$ change.
 2. If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the parameter setting, the key is entered continuously.

After the last 3-digit value is set, press the **[PAUSE]** key. The display will show "GATEWAY IP ADDRESS". Set the values for the Gateway IP Address and Subnet Mask, respectively.

2.7.2 Socket Port Setting

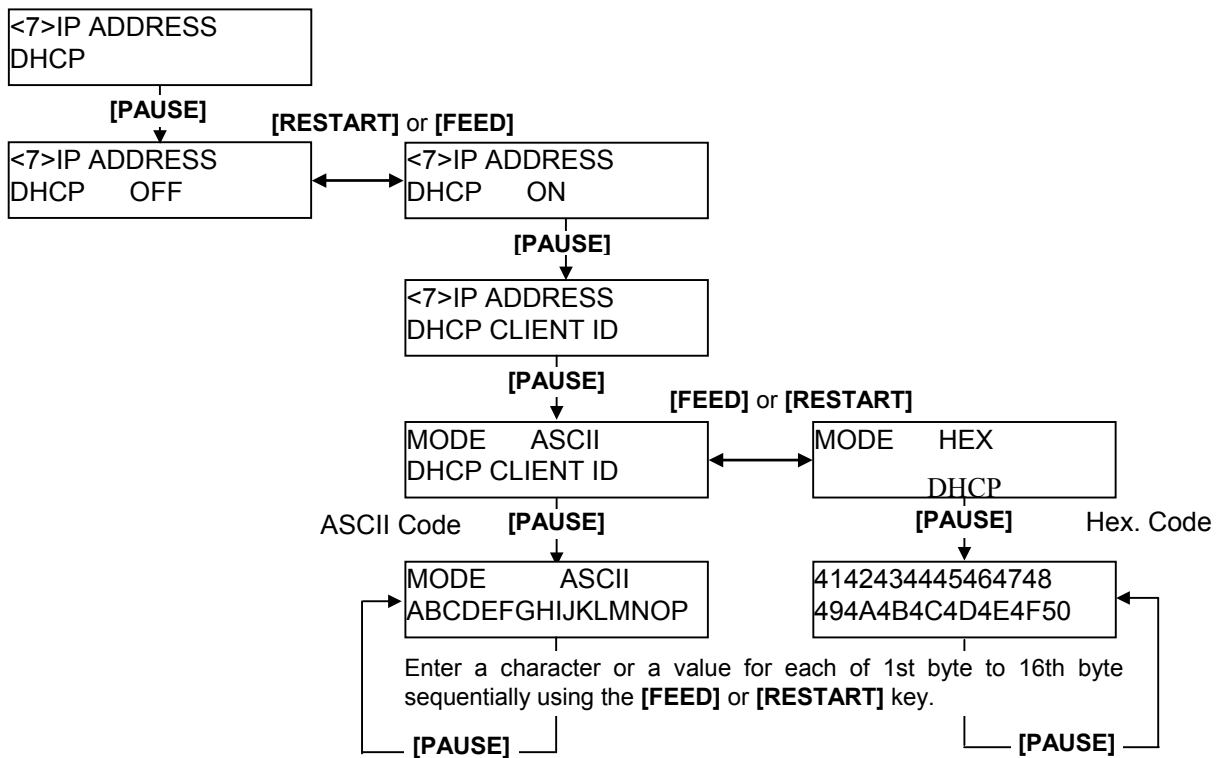
To set a socket port number, follow the procedure below.



Enter the 5th digit of the port number with the [RESTART] or [FEED] key. Pressing the [PAUSE] key allows the 4th digit setting. Repeat this procedure until the 1st digit setting has been completed.

2.7.3 DHCP and DHCP Client ID Setting

To set the DHCP and the DHCP client ID, follow the procedure below.

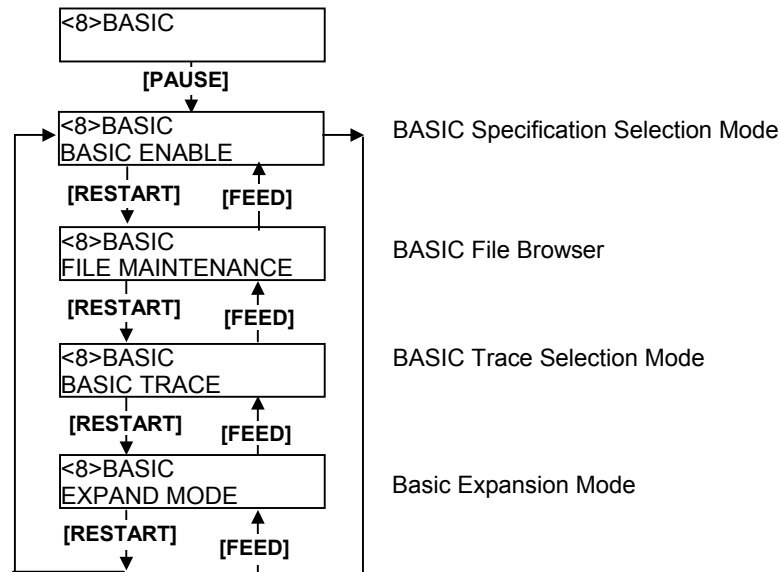


2.8 BASIC Setting

■ Outline of Basic Setting

The Basic function enables the printer to operate with the program created for other printers, by converting it to Basic program and downloading this Basic program to the printer. Setting the downloaded Basic program to be enabled/disabled, browsing the program file, data file, and area file, etc. are available in this mode. For details, refer to the Basic Interpreter Specification and the Specification of Program Loader for Basic Interpreter.

The Basic Setting menu contains the following.



■ How to Enter Basic Setting Mode

While pressing the [FEED] and [PAUSE] keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

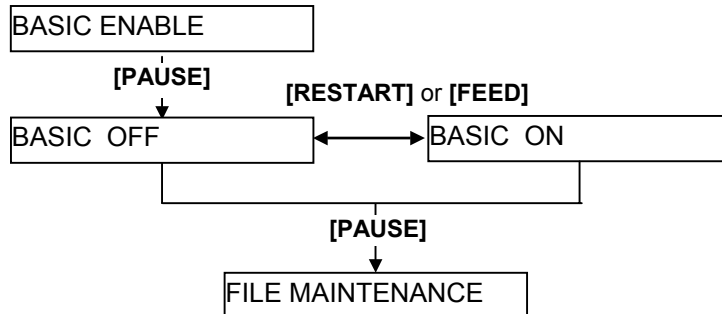
<1>DIAG. Vx.x

Press the [FEED] key until the following display appears.
The printer is at the start of the BASIC setting menu.

<8>BASIC

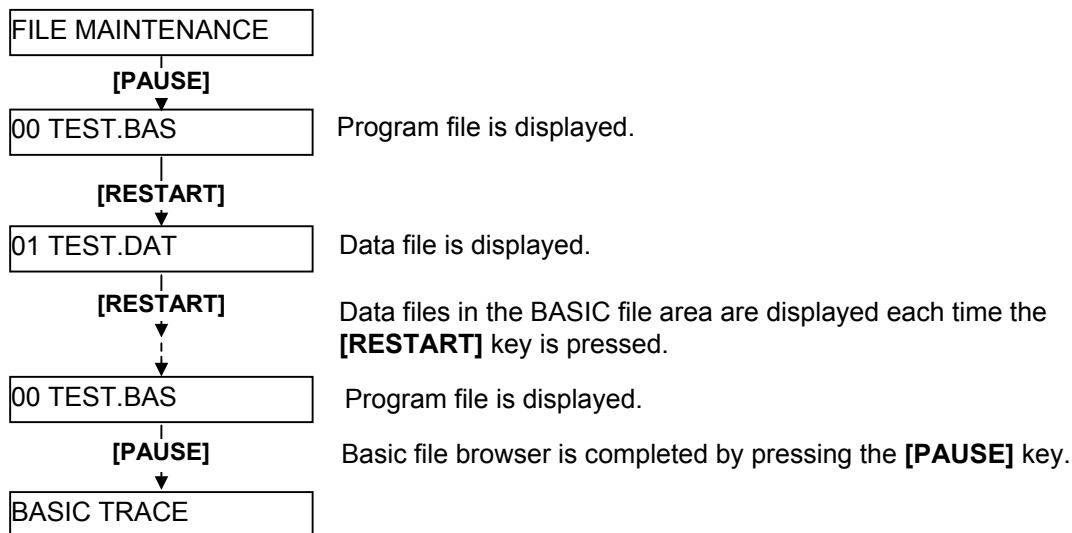
2.8.1 Basic Specification Selection Mode

This parameter is to choose whether to enable the BASIC specification function or not. When "<8>BASIC" appears, press the **[PAUSE]** key.



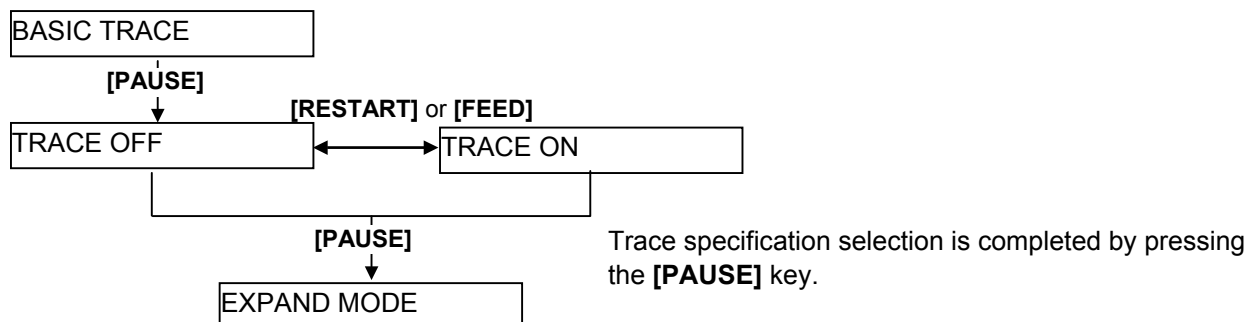
2.8.2 Basic File Browser

This parameter is to display the data files in the program file and basic file area. Using this function allows you to check the file names installed in the block.



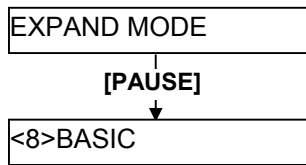
2.8.3 Basic Trace Selection Mode

This parameter is to choose whether to enable the Basic trace function or not. Usually, this function is set to OFF. When this function is enabled, it will be easier to find an erroneous program as the program line number are displayed. However, the processing speed of BASIC interpreter will be slower.



2.8.4 Basic Expansion Mode (Execution of Basic Program)

This parameter is to execute the Basic expansion mode program.



When the program for the Basic expansion mode has been downloaded, it will be executed by pressing the **[PAUSE]** key. The way of completion is different depending on the program.

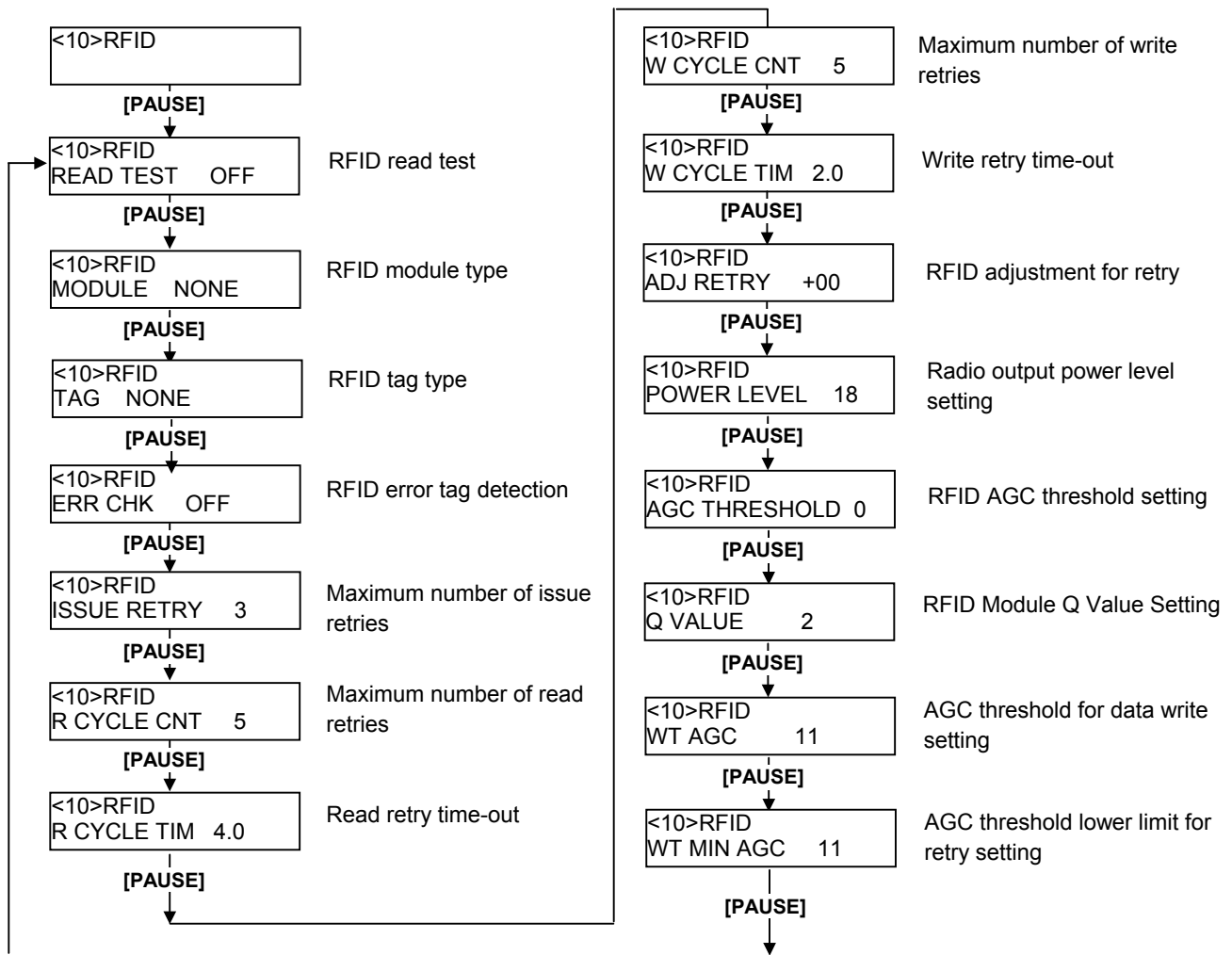
NOTE: *In this mode, it is possible to add the program exclusively for the B-SX6T/SX8T to the programs for other printer systems.*

2.9 RFID Module Setting

■ Outline of the RFID Module Setting

In the RFID Module Setting mode, you can set various parameters related to the RFID module. It is necessary to set these parameters before operating the RFID module. If a read or write error occurs frequently, adjust the values for the parameters.

The **RFID Module Setting** menu contains the following:



■ **How to Enter RFID Module Setting Mode**

Turn on the printer while pressing the **[FEED]** and **[PAUSE]** keys at the same time. Hold both keys until the “<1>DIAG. Vx.x” Message appears.

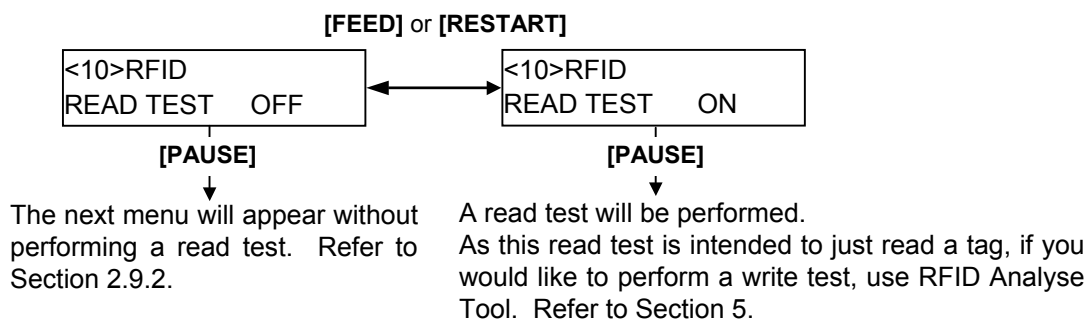
```
<1>DIAG. Vx.x
```

Press the **[RESTART]** key or **[FEED]** key until “<10>RFID” appears.

2.9.1 RFID Read Test

This parameter is to choose whether to perform an RFID read test. When using an RFID module for the first time, or when performing an RFID read test after performing a parameter clear, it is necessary to set the RFID module parameters in advance. Refer to Section 2.9.2.

When “<10>RFID” appears, press the **[PAUSE]** key.



<Read Test Procedure>

- 1) Place a TOSHIBA-recommended RFID tag as close as the antenna.
NOTE: Available RFID tag
 B-SX708-RFID-U2-EU-R, B-SX708-RFID-U2-CN-R: EPC C1 Gen2
- 2) The printer enters the read test mode, and a read test is performed each time the **[PAUSE]** key is pressed. The read data on the tag is displayed on the LCD message display. If the tag cannot be read, “RFID TIMEOUT” or “RFID READ ERROR” is displayed. Only the tags selected by the RFID tag type selection can be read. An RFID tag read error will result if the type of the tag to be read and the type of the tag selected by the RFID tag type selection do not match. Make sure the RFID tag type has been selected before the read test is started.

Example (Q value = 0)

```
1234567890123456  
6543210987654321
```

Example (Q value = 1)

```
1234567890123456  
65432109 (0E)
```

The data, displayed in hex. numbers. Displayed data is an EPC code in the EPC area. When the RFID tag contains data of 16 digits or more, the first 16 digits are displayed. When data volume is less than 16 digits, the vacant digits will be filled with spaces.

In the case the Q value is set to 1 or greater, the AGC value of a read tag, enclosed with parentheses, is displayed on the right most place on the lower line. Therefore, 14-byte data is displayed in hex. code.

Additionally, if more than one tag is read at one time, especially when short-pitch tags are used, pressing the **[FEED]** or **[RESTART]** key shows the other tags' data. Among them, a tag with the highest AGC value is considered to be positioned just above the antenna.

When the RFID module type is set to “NONE” or a communication cannot be established, a message, “NON RFID MODULE”, is displayed.

“NO RFID MODULE”, “TIMEOUT” or “RFID READ ERROR” indicates an error. In that case, check the following:

- In case of NO RFID MODULE
 - Connection failure of the antenna cable ⇒ Check the connection.
 - Connection failure of the interface cable ⇒ Check the connection.
 - Wrong parameter setting ⇒ Check the parameter setting.
 - In case of TIMEOUT or RFID READ ERROR
 - The RFID tag used is hard to read. ⇒ Refer to the Product Description and check the available RFID tag types.
 - TOSHIBA-recommended tag is not used. ⇒ Refer to the Product Description and check the available RFID tag types. Increase the value for R CYCLE CNT or R CYCLE TIM
- 3) In case a test succeeded, a read test will be performed each time the **[PAUSE]** key is pressed.
- 4) To finish a read test, turn off the printer.

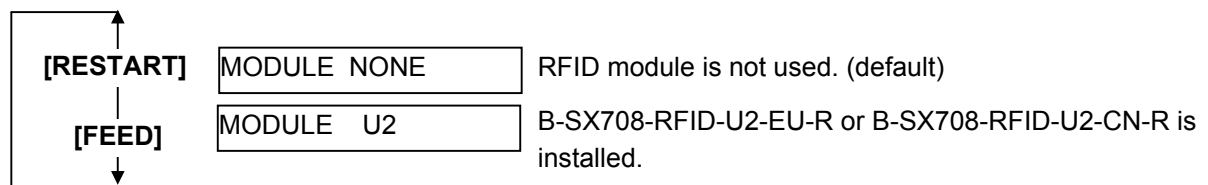
2.9.2 RFID Module Type Selection

This parameter is to choose an RFID module type to be used. Improper choice will disable the RFID module. The initial setting (including the status after a parameter clear) is “MODULE NONE”.

When “MODULE NONE” is displayed, press the **[PAUSE]** key.

```
<10>RFID
MODULE NONE
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



NOTE: This parameter setting is effective when turning OFF then ON the printer.
After selecting the RFID module type to be used, press the **[PAUSE]** key.

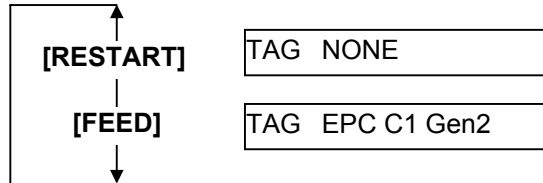
2.9.3 RFID Tag Type Selection

This parameter is to choose an RFID tag type to be used. Available tag type is different depending on the RFID module type.

When the RFID Module Type has been set to NONE

```
<10>RFID
TAG  NONE
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the RFID tag type to be used, press the **[PAUSE]** key.

NOTE: Combination of RFID module type and available tag type

Tag type	Parameter for TPCL command	RFID module type
NONE	00	B-SX708-RFID-U2-EU-R, B-SX708-RFID-CN-R
EPC C1 Gen2	24	

2.9.4 RFID Error Tag Detection

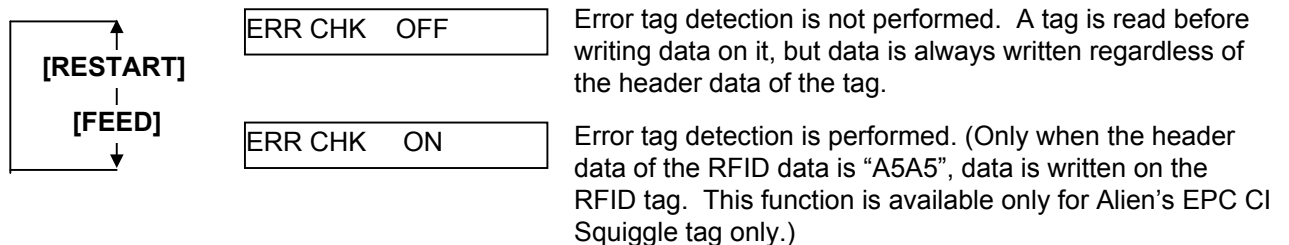
This parameter is to choose whether an error detection is performed or not before writing data on an RFID tag. When "ON" is selected, data is written on an RFID only when no error is detected.

NOTE: This function is exclusively for Alien's EPC CI Squiggle tag. Choose "OFF" usually.

When "ERR CHK OFF" is displayed, press the **[PAUSE]** key.

```
<10>RFID
ERR CHK  OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the RFID error tag detection function to be used, press the **[PAUSE]** key.

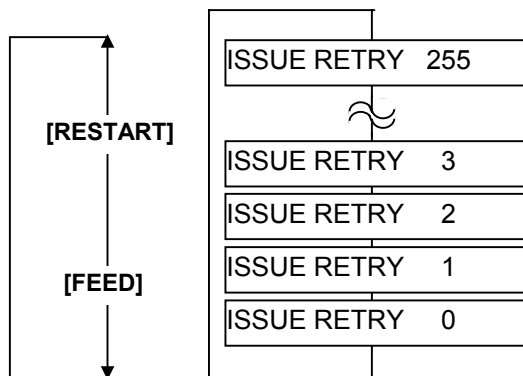
2.9.5 Maximum Number of RFID Issue Retries

This parameter is to set the maximum number of times to issue an RFID tag. If the printer fails to issue an RFID tag, it prints an error pattern ("VOID") and retries to issue the tag for up to a specified number of times. If the printer does not succeed even after having retried for the maximum number of times, the printer stops, resulting in an error (RFID WRITE ERROR).

When "ISSUE RETRY 3" is displayed, press the **[PAUSE]** key.

```
<10>RFID
ISSUE RETRY 3
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 255)



[FEED] key: Pressing the **[FEED]** key one time causes a -1 change, up to 0.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the maximum number of issue retries, press the **[PAUSE]** key.

2.9.6 Maximum Number of RFID Read Retries

This parameter is to set the maximum number of times to read an RFID tag.

If the printer does not succeed even if after having retried for the maximum number of times, the printer stops, resulting in an error (TIMEOUT). In case of frequent read errors, increase this retry count. However, when the retry count is increased, a data read may become slower.

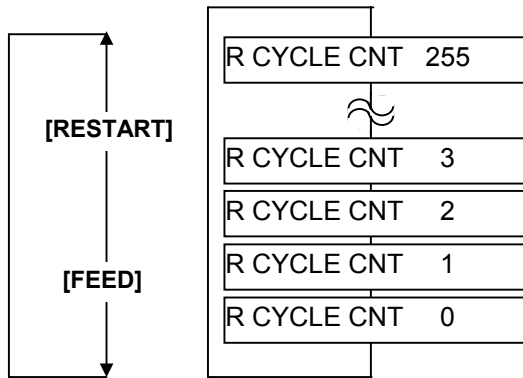
If the specified time-out runs out, the printer stops retry even before the maximum number of retry times is reached. The printer always reads an RFID tag for a maximum number of retry times set by this parameter before writing data to the RFID.

When “R CYCLE CNT 5” is displayed, press the **[PAUSE]** key.

```

    <10>RFID
    R CYCLE CNT  5
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 255)



[FEED] key: Pressing the **[FEED]** key one time causes a -1 change, up to 0.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the maximum number of read retries, press the **[PAUSE]** key.

2.9.7 RFID Read Retry Time-out

This parameter is to set the time-out for retry to read an RFID tag.

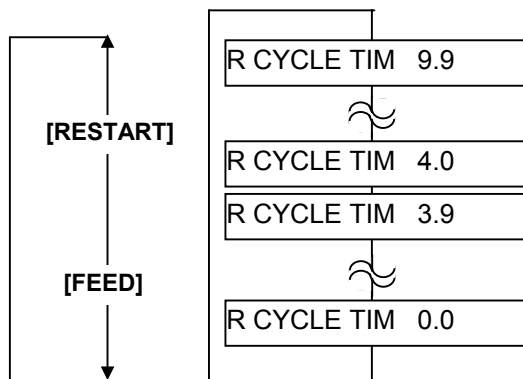
If the printer does not succeed within the specified time-out, the printer stops, resulting in an error (TIMEOUT). In case of frequent read errors, increase the amount of time. However, when the amount of time is increased, a data read may become slower.

If the maximum number of retries is reached, the printer stops retry even before the specified time runs out. The printer always reads an RFID tag for the specified time set by this parameter before writing data to the RFID.

When "R CYCLE TIM 4.0" is displayed, press the **[PAUSE]** key.

```
<10>RFID
R CYCLE TIM 4.0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0.0 sec. to 9.9 sec.)



[FEED] key: Pressing the **[FEED]** key one time causes a -0.1 change, up to 0.0.

[RESTART] key: Pressing the **[RESTART]** key one time causes a $+0.1$ change, up to 9.9.

After selecting the time-out, press the **[PAUSE]** key.

2.9.8 Maximum Number of RFID Write Retries

This parameter is to set the maximum number of times to write data onto an RFID tag.

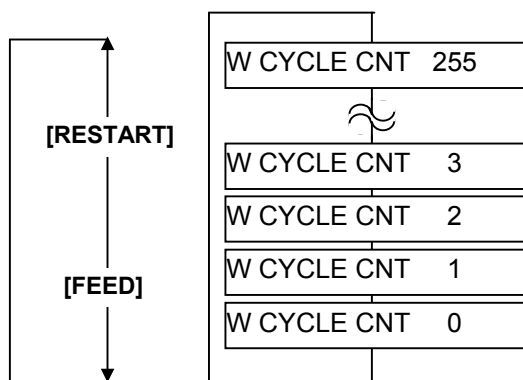
If the printer does not succeed even if after having retried for the maximum number of times, the printer stops, resulting in an error (RFID WRITE ERROR). In case of frequent write errors, increase this retry count. However, when the retry count is increased, writing data may become slower.

If the specified time-out runs out, the printer stops retry even before the maximum number of retry times is reached.

When "W CYCLE CNT 5" is displayed, press the **[PAUSE]** key.

```
<10>RFID
W CYCLE CNT 5
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 255)



[FEED] key: Pressing the **[FEED]** key one time causes a -1 change, up to 0.

[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the maximum number of write retries, press the **[PAUSE]** key.

2.9.9 RFID Write Retry Time-out

This parameter is to set the time-out for retry to write data onto an RFID tag.

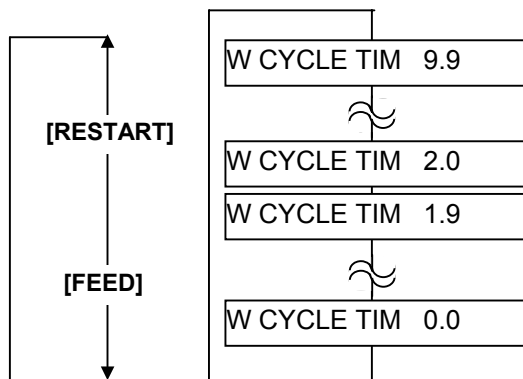
If the printer does not succeed within the specified time-out, the printer stops, resulting in an error (TIMEOUT). In case of frequent read errors, increase the amount of time. However, when the amount of time is increased, a data read may become slower.

If the maximum number of retries is reached, the printer stops retry even before the specified time runs out. The printer always reads an RFID tag for the specified time set by this parameter before writing data to the RFID.

When "W CYCLE TIM 2.0" is displayed, press the **[PAUSE]** key.

```
<10>RFID
W CYCLE TIM 2.0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0.0 sec. to 9.9 sec.)



[FEED] key: Pressing the **[FEED]** key one time causes a -0.1 change, up to 0.0.

[RESTART] key: Pressing the **[RESTART]** key one time causes a $+0.1$ change, up to 9.9.

After selecting the time-out, press the **[PAUSE]** key.

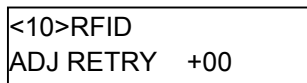
2.9.10 RFID Adjustment for Retry

If the printer fails to write data to an RFID tag, it feeds the RFID tag forward or backward for a specified length, then starts retrying to write data. If “0” is set for this parameter, however, a feed or a reverse feed of the RFID tag is not performed.

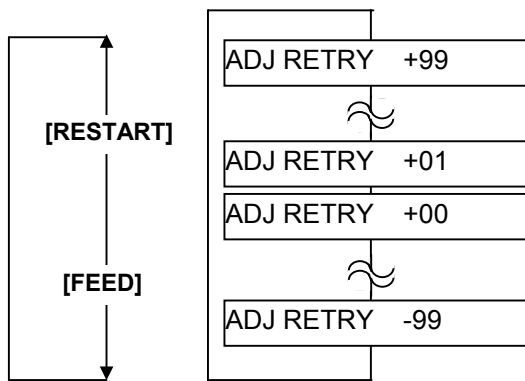
As a write error may be caused by a misalignment of an RFID tag and the antenna, adjust the RFID tag position so that it stops just above the antenna.

Please obtain a value to be set for this parameter by using an RFID Analyze Tool (See Section 5.)

When “ADJ RETRY +00” is displayed, press the **[PAUSE]** key.

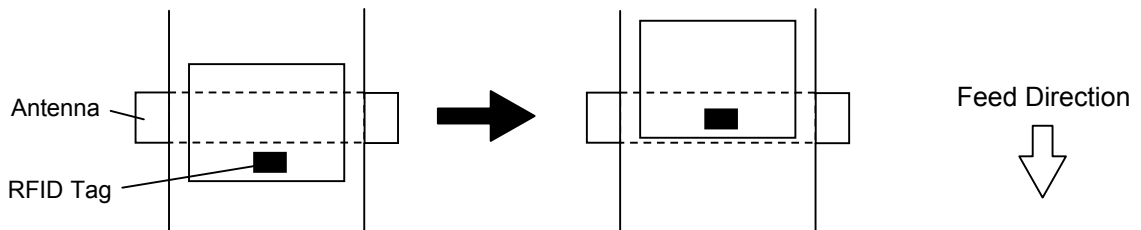


Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: -99mm to +99mm)

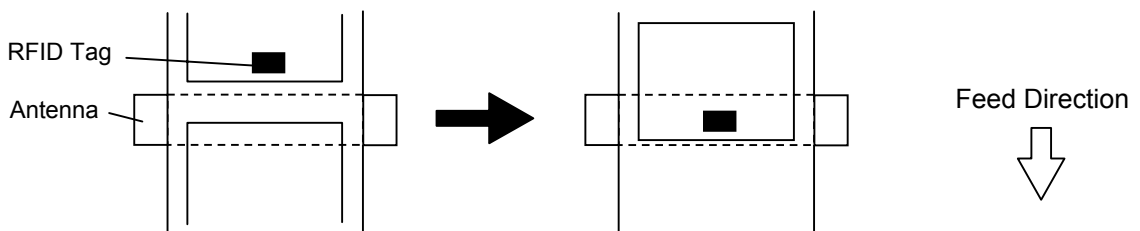


- [FEED]** key: Pressing the **[FEED]** key one time causes a -1mm change, up to -99mm.
- [RESTART]** key: Pressing the **[RESTART]** key one time causes a +1mm change, up to +99mm.

• Adjustment in negative (-) direction



• Adjustment in positive (+) direction



After selecting the adjustment value, press the **[PAUSE]** key.

2.9.11 RFID Wireless Power Level Setting

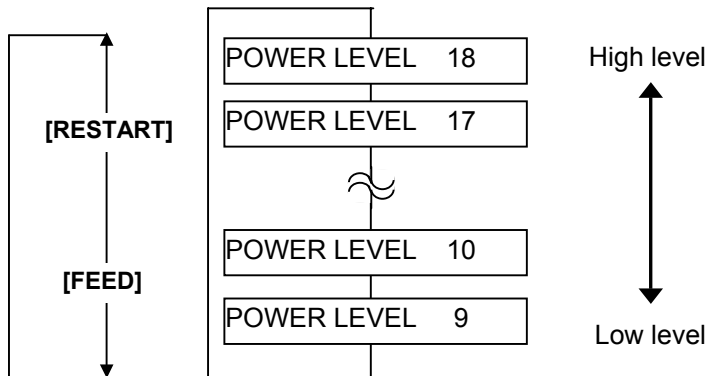
With this parameter, it is possible to adjust the level of radio frequency output from the RFID module. The optimum level differs depending on the tag types and module types.

First, try issuing RFID tags with the default setting. If an error frequently occurs, adjust the output level.

When "POWER LEVE" is displayed, press the **[PAUSE]** key. (Default is 18.)



Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 9 to 18)



After selecting the adjustment value, press the **[PAUSE]** key. The display returns to "<10>RFID".

NOTE: The optimal value is different depending on the tags used. Usually it is not necessary to change this value but changing the value sometimes can increase the number of successful read/write times.

2.9.12 RFID AGC Threshold

This parameter is to set a threshold used to identify an RFID tag is defective or not.

When the obtained gain of an RFID tag is lower than the AGC threshold, the tag is considered as an error tag even if a data write succeeds.

When the AGC threshold is set to "0", all tags are writable.

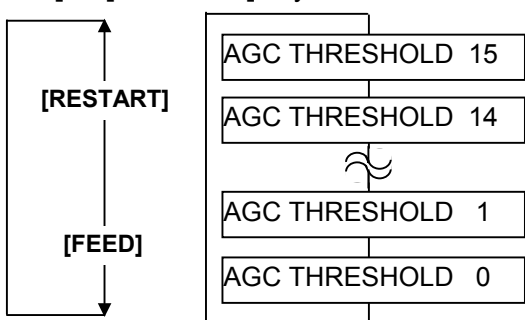
When set to "8", for example, only tags with the AGC threshold level of 9 or greater are writable. The optimum value is different depending on the tag types. The factory default is 0.

Set an AGC threshold with the **[FEED]** or **[RESTART]** key.

When "AGC THRESHOLD" is displayed, press the **[PAUSE]** key.



Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key.

2.9.13 RFID Module Q Value Setting

This parameter is to set the Q value.

In the case multiple RFID tags are read at the same time, this menu is useful to pinpoint a target tag.

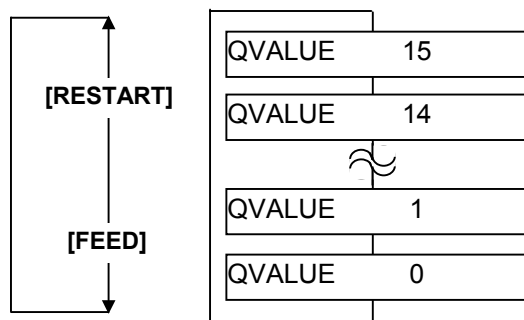
Set the Q value to "1" or greater (2 is recommended.) with the **[FEED]** or **[RESTART]** key. Q value "0" causes the tags to interfere with each other and disables proper data write.

When a Q value is set, set an AGC threshold for data write and an AGC threshold lower limit for retry, also. Setting all these values enable writing data to a tag placed just above the antenna. (For details, refer to Section 8.5 of Option Installation Manual) The factory default is 0.

When "Q VALUE" is displayed, press the **[PAUSE]** key.

<10>RFID	
Q VALUE	2

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key.

2.9.14 AGC Threshold for Data Write Setting

This parameter is to set the AGC threshold for data write.

When the Q value is set to 1 or greater, the AGC threshold for data write becomes effective.

When the obtained gain of an RFID tag is lower than the AGC threshold for data write, a data write operation is not performed. In other words, setting an AGC threshold for data write enables writing data only to a tag placed just above the antenna.

Supposing that the gain of a tag just above the antenna is 14 and that of a tag off the antenna is 7, setting the threshold to 11 (a value between 8 and 14) enables the printer to write data only to the tag just above the antenna.

When the threshold is set to 0, a data write operation is performed regardless of the gain of a tag.

The optimum value differs depending on the tag type. (For details, refer to Section 8 of Option Installation Manual.)

Difference between the AGC threshold and the AGC threshold for data write

Both of the AGC threshold and the AGC threshold for data write are used to determine whether a tag is defective or not, but the timing of a gain measurement is different. In the case of the AGC threshold, this is performed after data is written to a tag.

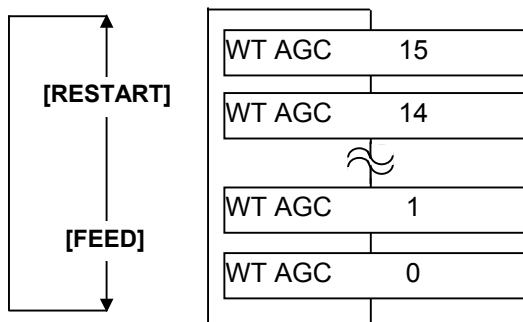
On the contrary, when the AGC threshold for data write is effective a measurement is performed before data is written. And if a gain value is lower than the threshold, a data write operation is not performed.

Set an AGC threshold for data write with the **[FEED]** or **[RESTART]** key, if necessary.

When "WT AGC" is displayed, press the **[PAUSE]** key.

<10>RFID	
WT AGC	11

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key.

2.9.15 AGC Threshold Lower Limit for Retry Setting

This parameter is to set an AGC threshold lower limit.

When the Q value is set to 1 or greater, the AGC threshold lower limit for retry becomes effective.

Even if a tag's gain is lower than the AGC threshold for data write, a data write to the tag may be successful in a retry if the gain is greater than the lower limit. For a retry, the printer lowers the threshold to the highest gain of the tag if it is greater than the lower limit or to the lower limit if it is greater than the highest gain of the tag. (For details, refer to Section 8 of Option Installation Manual.)

When the same value is set to the AGC threshold for data write and the AGC threshold lower limit for retry, respectively, the threshold will not be changed for a retry.

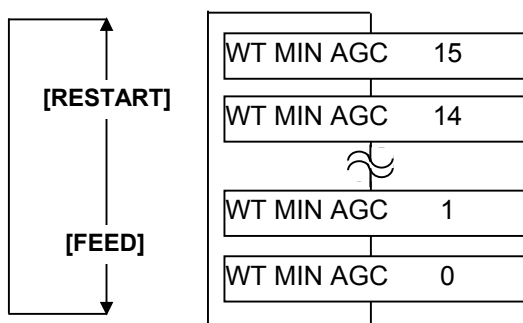
The optimum value differs depending on the tag type.

Set the lower limit for retry with the **[FEED]** or **[RESTART]** key, if necessary.

When "WT MIN AGC" is displayed, press the **[PAUSE]** key.

```
<10>RFID
WT MIN AGC  11
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key. The display returns to "<10>RFID".

Note:

Example 1

AGC threshold for data write: 11

Lower limit for retry: 9

Detected tag's gain: 10

As the gain of the tag is lower than the threshold, a data write operation is not performed for this tag at the first try. However, the gain is greater than the lower limit.

Then the printer retries to write data to this tag according to a new AGC threshold of 10.

In this case, a retry of a data write will mostly succeed because the detected tag's gain is greater than the new threshold. (However, the success rate is not 100% because a gain of a tag is not always the same.)

Example 2

AGC threshold for data write: 11

Lower limit for retry: 9

Detected tag's gain: 8

As the gain of the tag is lower than the threshold, a data write operation is not performed for this tag at the first try. Also, the gain is lower than the lower limit.

Then the printer retries to write data to this tag according to a new AGC threshold of 9.

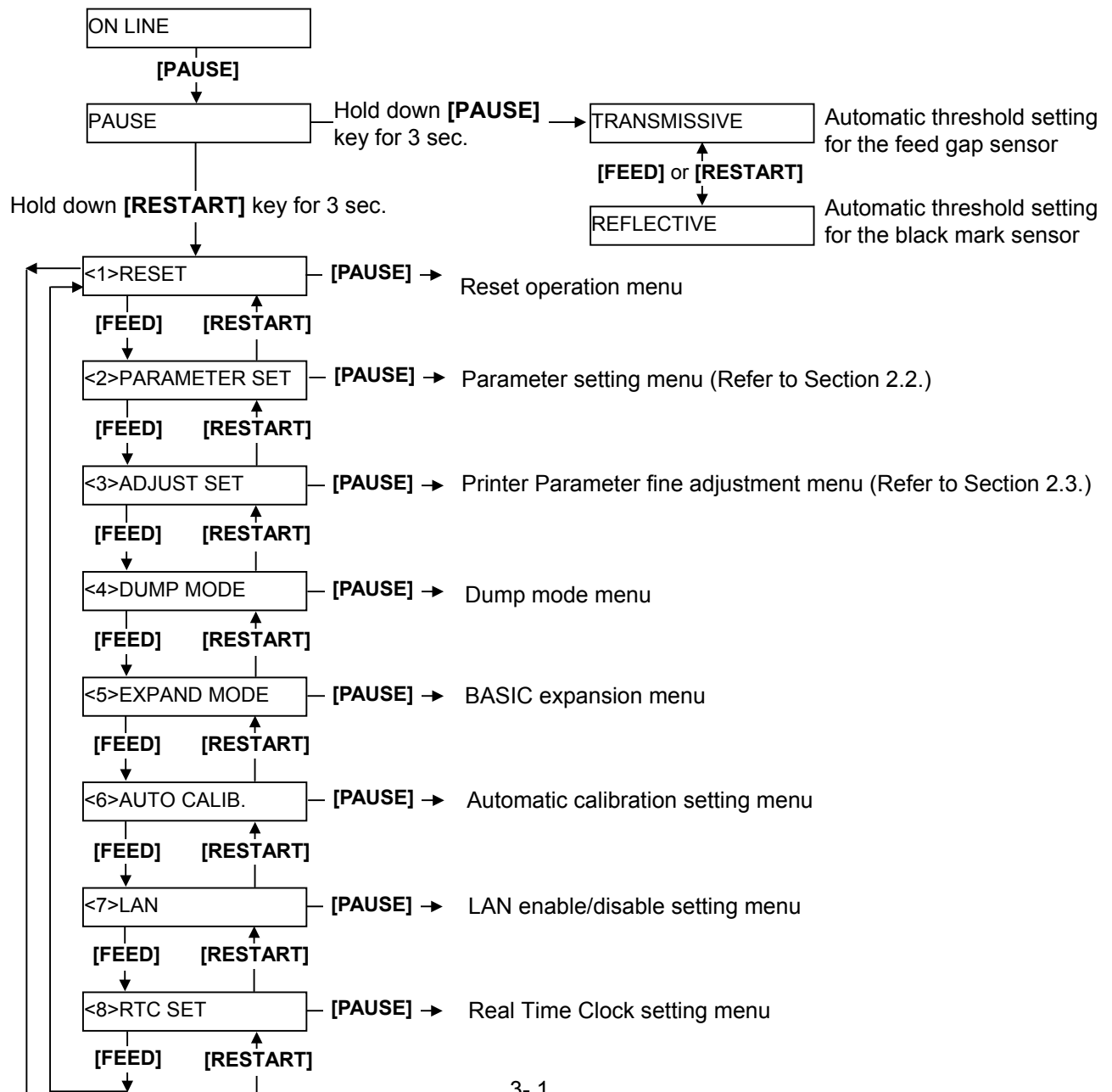
In this case, a retry of data write will mostly fail because the detected tag's gain is lower than the new threshold. (However, the error rate is not 100% because a gain of a tag is not always the same.)

3. ON LINE MODE

In the ON LINE mode, the following settings can be performed.

- Automatic threshold setting for the Feed Gap Sensor
- Automatic threshold setting for the Black Mark Sensor
- Reset
- Parameter settings (Same as Section 2.2.)
- Printer parameter fine adjustment (Same as Section 2.3.)
- Dump mode
- Expansion mode
- Automatic calibration
- Enabling/disabling the LAN
- Real time clock setting

This section describes the automatic threshold setting for the feed gap sensor/black mark sensor, reset operation, dump mode, automatic calibration, LAN setting, and real time clock setting. The procedures of the parameter setting and printer parameter fine adjustment are described in Section 2.2 and Section 2.3 respectively.



■ LCD message and LED indication

Symbols in the message

- 1: ○: The LED is illuminated. ⊙: The LED is flashing. ●: The LED is unlit.
 2: ****: the number of unprinted media. Up to 9999 (in pieces)
 3: ###: Flash memory card remaining memory for PC save area: 0 to 3072 (in K bytes)
 4: &&&&: Remaining flash memory capacity for storing writable characters 0 to 3072 (in K bytes)

No.	LCD Message	LED Indication			Printer Status	Restoration by RESTART key Yes/No	Acceptance of Status Request Reset Command Yes/No
		POWER	ON LINE	ERROR			
1	ON LINE	○	○	●	Online mode	----	Yes
	ON LINE	○	⊙	●	Online mode (communicating)	----	Yes
2	HEAD OPEN	○	●	●	The Top Cover is opened in online mode.	----	Yes
3	PAUSE ****	○	●	●	Pause state	Yes	Yes
4	COMMS ERROR	○	●	○	A parity, overrun, or framing error has occurred during a communication by RS-232C.	Yes	Yes
5	PAPER JAM ****	○	●	○	A paper jam has occurred during paper feed.	Yes	Yes
6	CUTTER ERROR****	○	●	○	A problem has occurred at the cutter module.	Yes	Yes
7	NO PAPER ****	○	●	○	The media has run out, or the media is not loaded properly.	Yes	Yes
8	NO RIBBON ****	○	●	○	The ribbon has run out.	Yes	Yes
9	HEAD OPEN ****	○	●	○	A feed or an issue was attempted with the Top Cover opened. (Except when the [FEED] key is pressed.)	Yes	Yes
10	HEAD ERROR	○	●	○	The print head has a problem.	Yes	Yes
11	EXCESS HEAD TEMP	○	●	○	The print head is overheated.	No	Yes
12	RIBBON ERROR****	○	●	○	The ribbon has been torn. A problem has occurred with the sensor that determines the torque for the ribbon motor.	Yes	Yes
13	SAVING #####&&&&	○	○	●	In writable character or PC command save mode	----	Yes
14	FLASH WRITE ERR.	○	●	○	An error has occurred in writing to the flash ROM.	No	Yes
15	FORMAT ERROR	○	●	○	An error has occurred in formatting the flash ROM.	No	Yes
16	FLASH CARD FULL	○	●	○	Saving failed because of an insufficient capacity of the flash ROM.	No	Yes
17	Display of error message (See Note.)	○	●	○	A command error has occurred in analyzing the command.	Yes	Yes
18	POWER FAILURE	○	●	○	A momentary power failure has occurred.	No	No
19	INITIALIZING...	○	●	●	The flash ROM is being initialized.	----	----
20	EEPROM ERROR	○	●	○	Data cannot be read from/written to a backup EEPROM properly.	----	----

No.	LCD Message	LED Indication			Printer Status	Restoration by RESTART key Yes/No	Acceptance of Status Request Reset Command Yes/No
		POWER	ON LINE	ERROR			
21	SYSTEM ERROR	○	●	○	When the following abnormal operations are performed, a system error occurs: (a) Command fetch from an odd address (b) Access to word data at an odd address (c) Access to long-word data at an odd address (d) Access to the area of 80000000H to FFFFFFFFH in the logic space in user mode. (e) An undefined instruction in an area other than a delay slot was decoded. (f) An undefined instruction in a delay slot was decoded. (g) An instruction to rewrite a delay slot was decoded.	No	No
22	100BASE LAN INITIALIZING...	○	●	●	100 Base LAN Board is being initialised.	----	----
23	DHCP CLIENT INITIALIZING...	○	●	●	The DHCP client is being initialized. *When the DHCP function is enabled.	----	----
24	LOW BATTERY	○	●	○	The voltage of the Real Time Clock Battery is 1.9V or less.	No	Yes
25	RFID WRITE ERROR	○	●	○	The printer did not succeed in writing data onto an RFID tag after having retried for a specified times.	Yes	Yes
26	RFID ERROR	○	●	○	The printer cannot communicate with the RFID module.	No	Yes

NOTE: Description of Command Error

- If a command error is found in a command received, 16 bytes of the command error, starting from the command code, will be displayed. (However, [LF] and [NUL] will not be displayed.)

Example 1

[ESC] T20 G30 [LF] [NUL]
└─── Command error

The following message appears.

T20G30
B-SX8T V1.0A

Example 2

[ESC] XR; 0200, 0300, 0450, 1200, 1, [LF] [NUL]
└─── Command error

The following message appears.

XR;0200,0300,045
B-SX8T V1.0A

Example 3

[ESC] PC001; 0A00, 0300, 2, 2, A, 00, B [LF] [NUL]
└─── Command error

The following message appears.

PC001;0A00,0300,
B-SX8T V1.0A

XR;0200,0300,045
B-SX8T V1.0A

- When the error command is shown, “? (3FH)” appears for codes other than codes 20H to 7FH and A0H to DFH.
- For details, please refer to the **B-SX6T/SX8T Series External Equipment Interface Specification**.

3.1 Automatic Threshold Setting

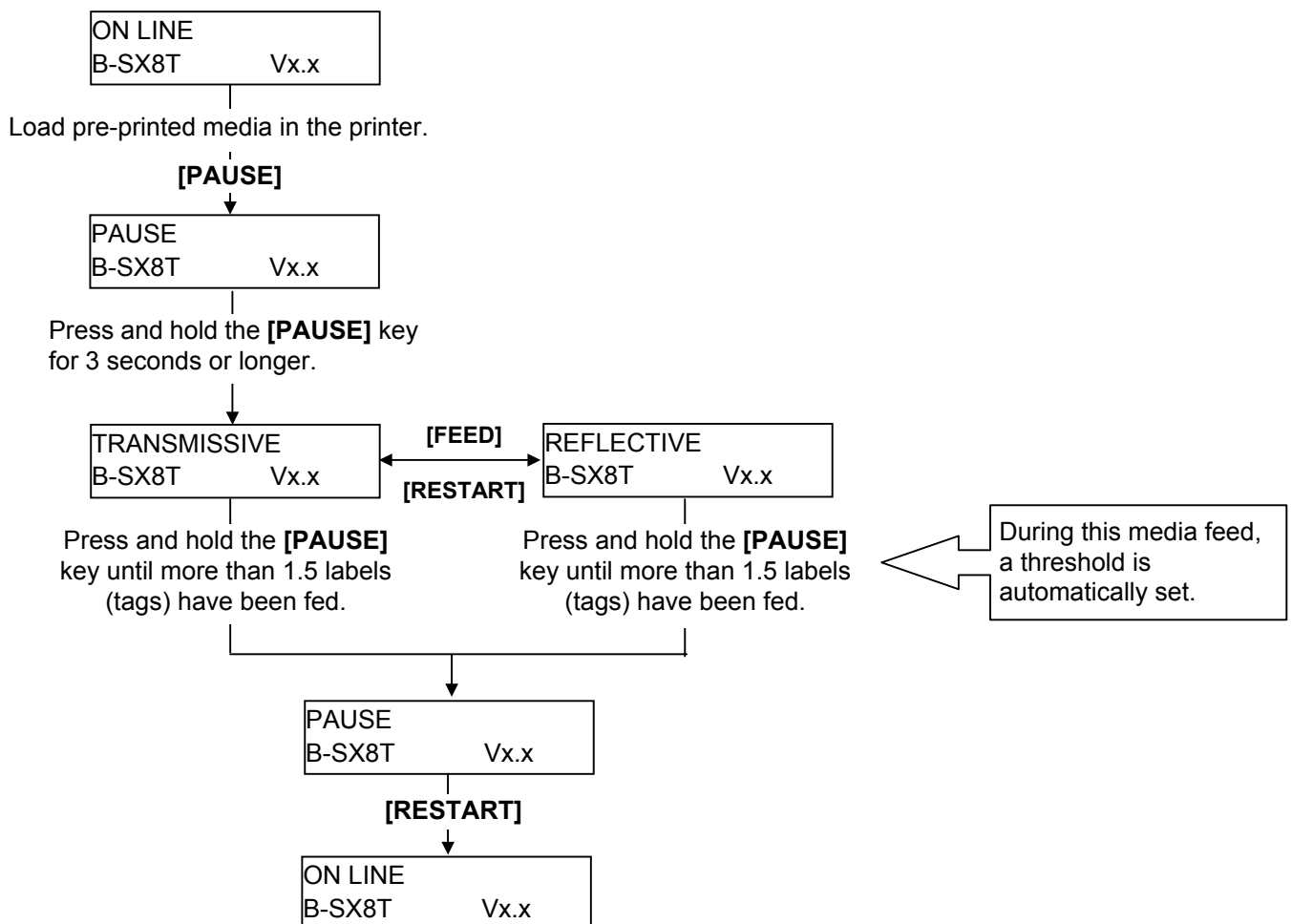
■ Outline of Automatic Threshold Setting

To maintain a constant print position the printer uses the media sensor to detect a print start position according to the difference of voltage between a print area and a gap or black mark. When the media is pre-printed, the darker (or more dense) inks can interfere with this process, causing "PAPER JAM" errors even if the media is not actually jammed.

To get around this problem, first, try an automatic threshold setting.

If the problem still occurs, then, the threshold voltage needs to be manually set. (Refer to **Section 2.3.7.**)

■ How to Perform an Automatic Threshold Setting



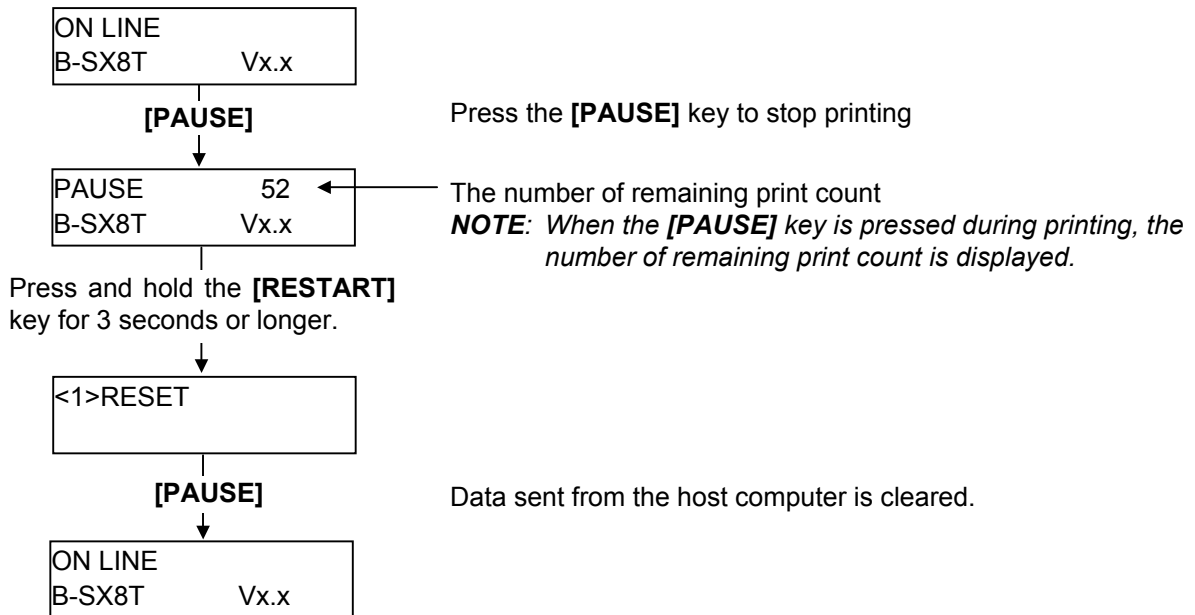
NOTES: 1. Failure to feed more than 1.5 labels may result in an incorrect threshold setting.

2. While the Top Cover is raised, the [PAUSE] key does not work.

3.2 Reset Operation

A reset operation clears the print data sent from the host computer to the printer, and returns the printer to an idle condition.

■ How to Perform a Reset Operation

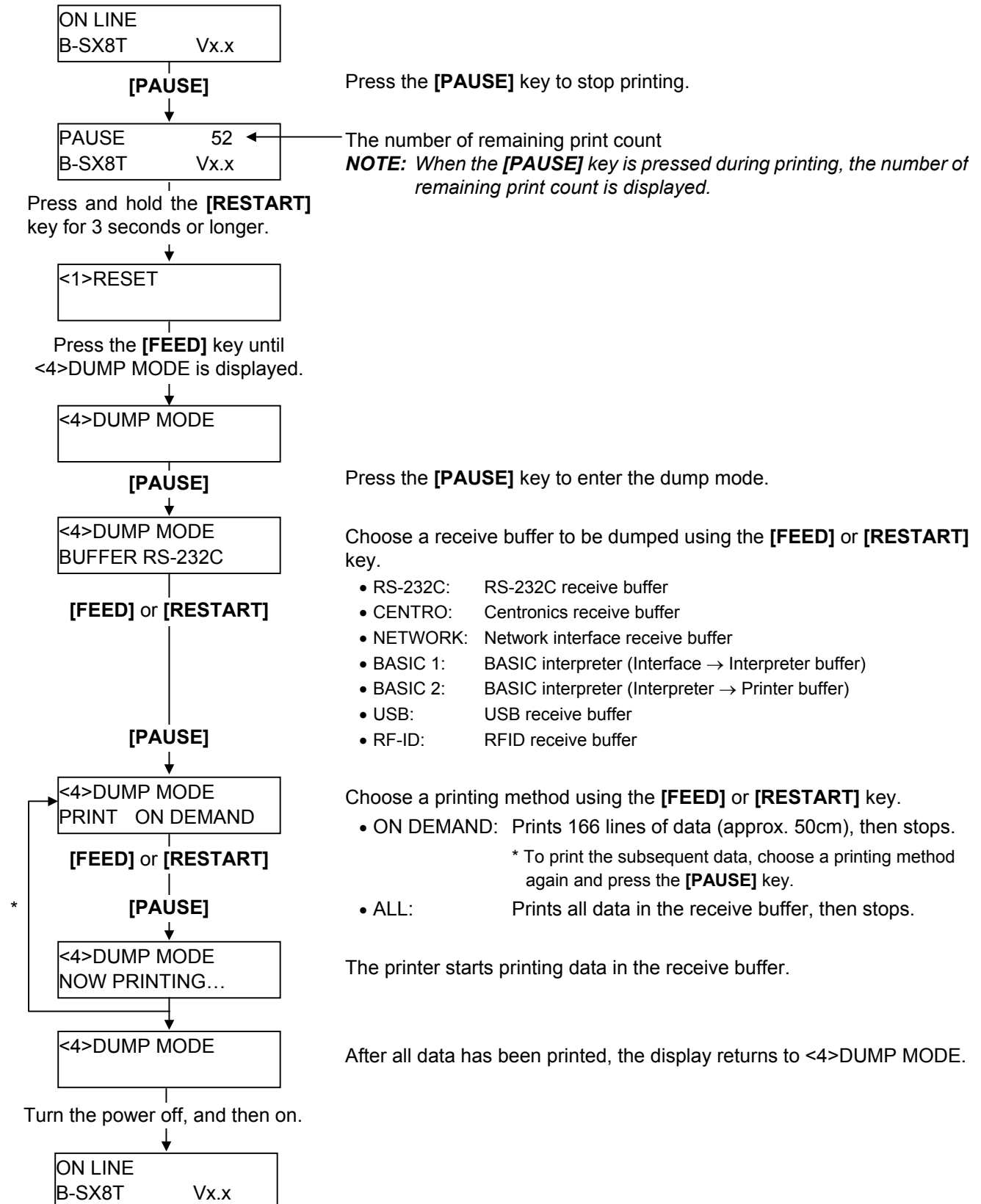


NOTE: Failure to press the **[RESTART]** key for 3 seconds or longer causes the printer to restart printing. However, when a communication error or command error occurs, the printer returns to an idle state.

3.3 Dump Mode

In dump mode, data in the receive buffer are printed. Data are expressed in hexadecimal values. This operation allows the user to verify programming commands or debug the program.

How to Perform a Dump Operation

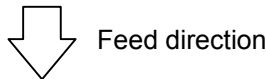


The data in the receive buffer is printed as follows:

```

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
7B 41 58 3B 2B 30 30 30 2C 2B 30 30 30 2C 2B 30 {AX:+000,+000,+0
30 7C 7D 7B 44 30 37 37 30 2C 31 31 30 30 2C 30 0}|{D0760,1100,0
37 34 30 7C 7D 7B 43 7C 7D 7B 4C 43 3B 30 30 33 740}|{C}|{LC;003
30 2C 30 30 32 30 2C 30 30 33 30 2C 30 36 36 30 0,0020,0030,0660
2C 30 2C 32 7C 7D 7B 4C 43 3B 30 30 37 30 2C 30 ,0,2}|{LC;0070,0
30 32 30 2C 30 30 37 30 2C 30 36 36 30 2C 30 2C 020,0070,0660,0,
39 7C 7D 7B 4C 43 3B 30 30 35 30 2C 30 30 32 30 9}|{LC;0050,0020
:
:
:
44 45 46 47 48 49 4A 7C 7D 7B 50 43 31 30 3B 30 DEFGHIJ}|{PC10;0
33 35 30 2C 30 34 30 30 2C 31 2C 31 2C 4B 2C 30 350,0400,1,1,K,0
30 2C 42 3D 41 42 43 44 65 66 67 68 69 6A 6B 6C 0,B=ABCDefghijkl

6D 6E 6F 70 7C 7D 7B 50 56 30 32 3B 30 33 33 30 mnop}|{PV02;0330
2C 30 36 36 30 2C 30 32 37 30 2C 30 32 35 30 2C ,0660,0270,0250,
41 2C 30 30 2C 42 3D 42 7C 7D 7B 50 56 30 33 3B A,00,B=B}|{PV03;
:
:
:
3B 30 39 30 30 2C 30 31 38 30 2C 54 2C 48 2C 30 ;0900,0180,T,H,0
35 2C 41 2C 30 3D 31 32 33 34 35 36 37 38 39 30 5,A,0=1234567890
41 42 43 44 45 7C 7D 00 00 00 00 00 00 00 00 00 ABCDE|}
:
:
:
    
```



Print Conditions

- Printing width: 3.9 inches (100 mm)
- Sensor selection: None
- Print speed: 4"/sec.
- Printing mode: Depends on the selection in use.
- 16 bytes/line
- Data is printed in the order from the new one to the old one.
- Data specified by the receive buffer write pointer will be printed in boldface.

Receive buffer size

Interface	Buffer size
RS-232C	1MB (65536 lines)
Centronics	1MB (65536 lines)
Network Interface	1MB (65536 lines)
BASIC 1	8KB (512 lines)
BASIC 2	8KB (512 lines)
USB	1MB (65536 lines)
RFID	8KB (512 lines)

Required label length

Interface	Media length*
RS-232C	198.2m
Centronics	198.2m
Network Interface	198.2m
BASIC 1	2m
BASIC 2	2m
USB	198.2m
RFID	8KB (512 lines)

* Media length required for printing all data in the receive buffer.

NOTE:

If an error occurs during dumping, the printer will display an error message and stop printing. The error can be cleared by pressing the **[PAUSE]** key, and then the display will show "<4>DUMP MODE" again. After a recovery from the error the printer will not start printing automatically.

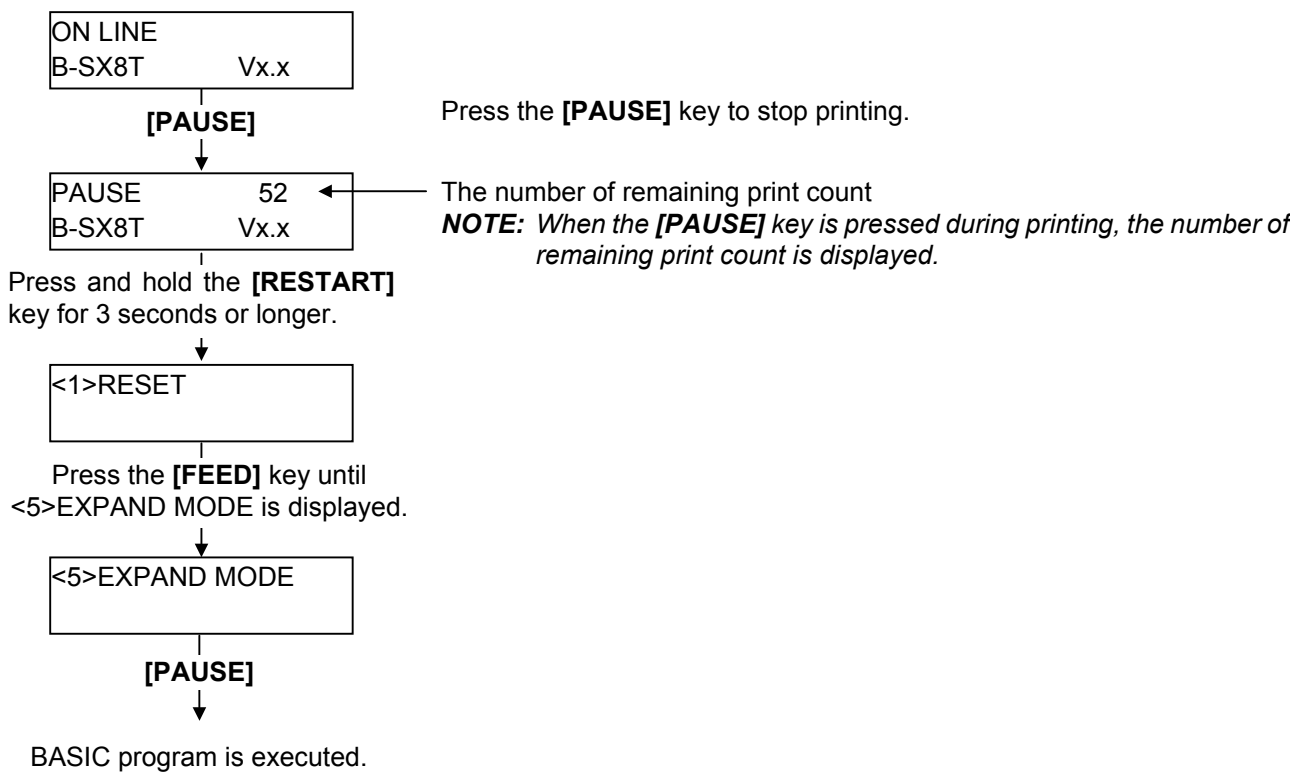
3.4 BASIC Expansion Mode

It is possible to execute the BASIC expansion mode program in BASIC expansion mode under the following conditions:

- The BASIC expansion mode program has already been loaded.
- The BASIC enable setting mode is selected.

The basic expansion mode ends when the basic expansion program is exited.

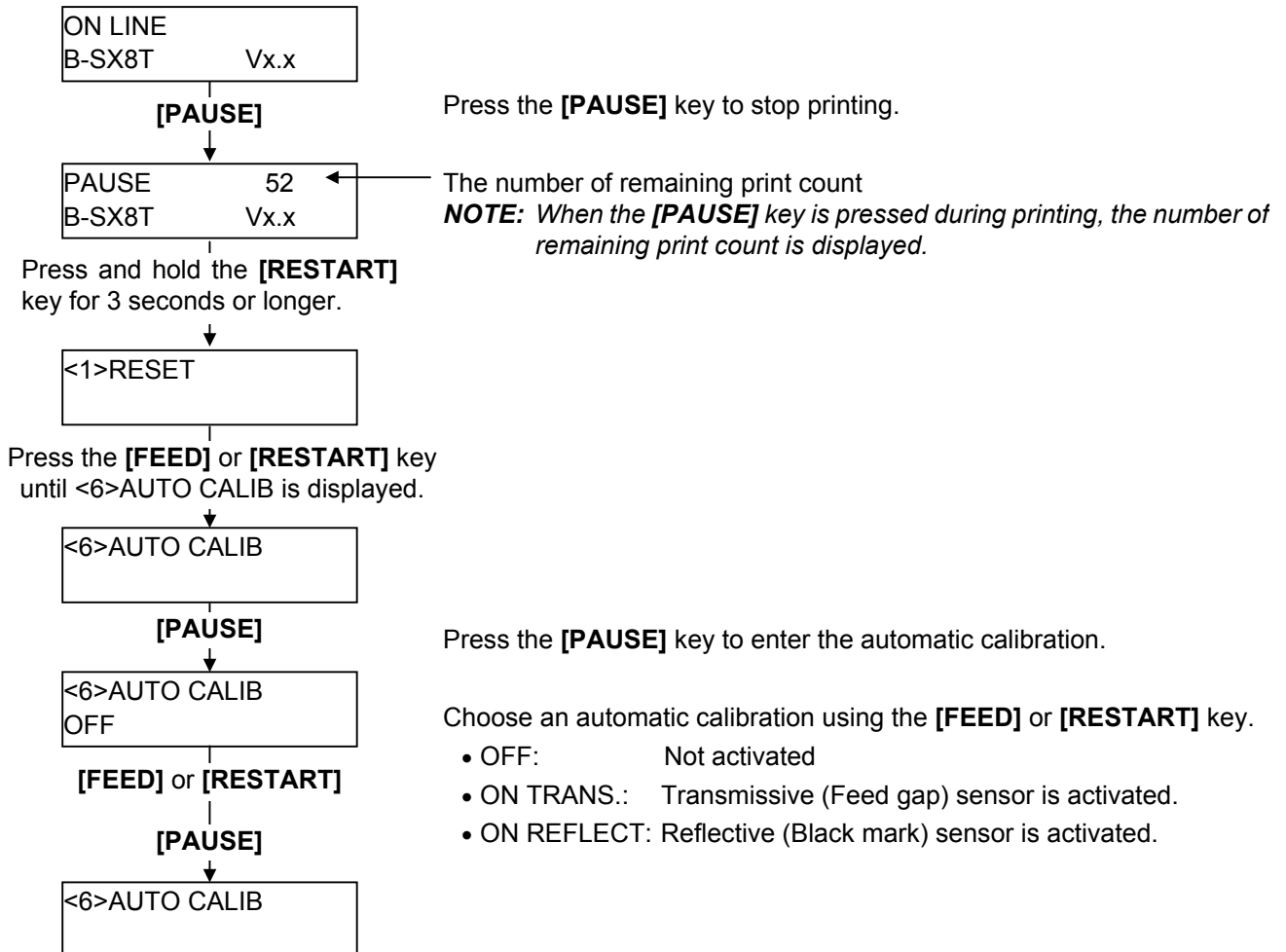
■ How to Perform BASIC Expansion



3.5 Automatic Calibration Setting

Whether to activate the automatic calibration at a power on time or not is selectable in the Automatic Calibration Mode. When the automatic calibration is activated, the printer feeds the media for about 160 mm each time the power is turned on or the Top Cover is opened, to detect a print start position.

■ How to Choose an Automatic Calibration Setting



NOTES:

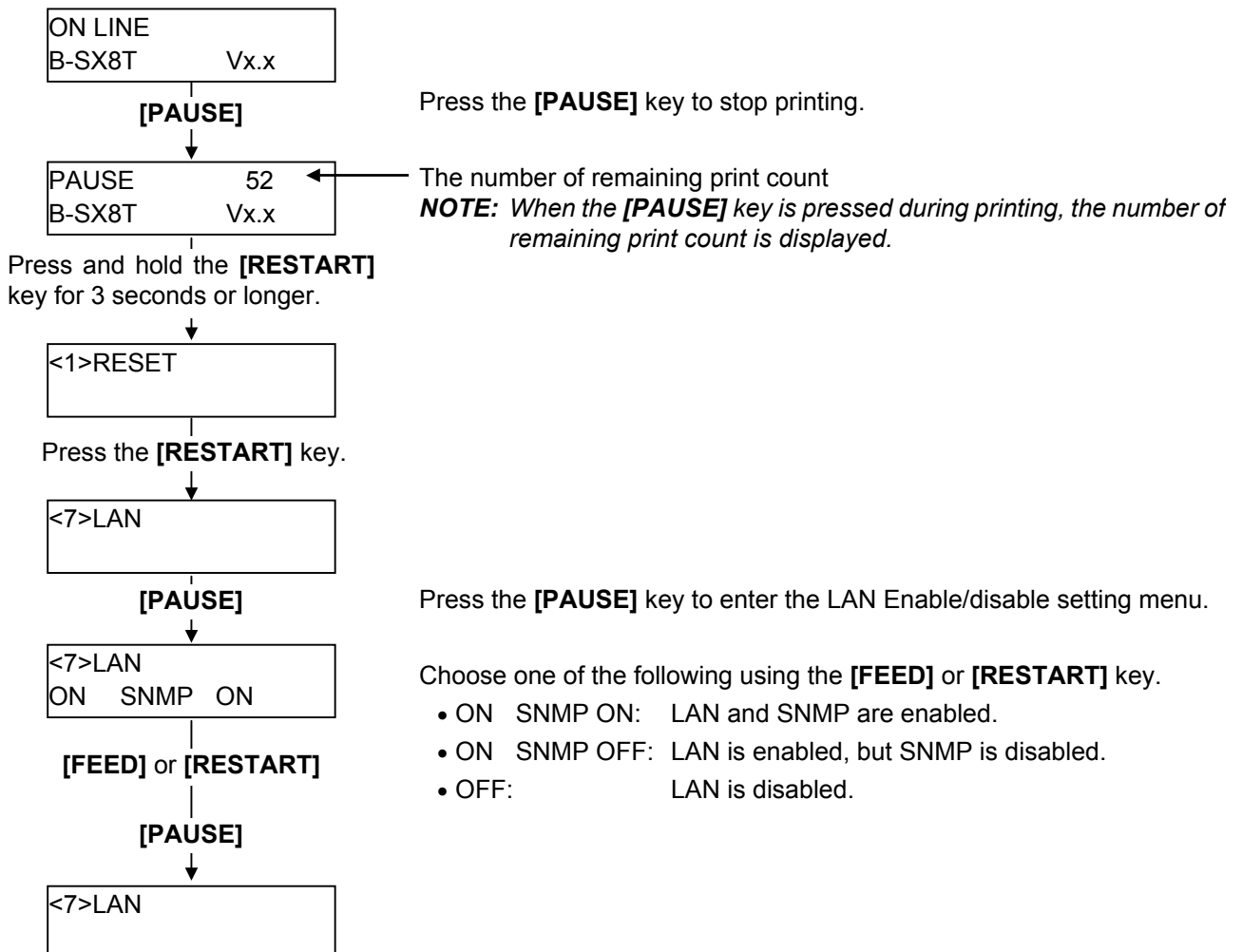
1. When this parameter is set to ON, the printer performs an automatic calibration each time the power is turned on or the top cover is closed.
2. When this parameter is set to ON, the media length, effective print length, and sensor type specified in the command are ignored.
3. When "ON REFLECT" is selected, the lowest voltage detected by the black mark sensor is considered as a black mark level. And, the sum of this voltage and the manual threshold voltage will be adopted as a threshold.
4. When "ON TRANS" is selected, the highest voltage detected by the feed gap sensor is considered as a gap level. After subtracting the manual threshold voltage from this voltage, the result will be adopted as a threshold.
5. The printer feeds about 160 mm long media to detect a black mark/gap, measure the media pitch, and determine the threshold. When the printer detects more than two black marks/gaps during this media feed, the automatic calibration is stopped where 1 mm short of the bottom of a black mark or gap. If the printer cannot detect a black mark/gap under this condition by feeding the media for up to 500.0 mm, the printer will stop, resulting in a paper jam.

6. *This function is available only when the media pitch is 10.0 mm to 150.0 mm.*
7. *When a label end or head open error occurs during an automatic calibration, the printer stops, resulting in an error.*
8. *During an automatic calibration, the ribbon motor is rotated. Even if the ribbon is not loaded, this function does not result in an error. However, the print condition will be automatically changed to "No ribbon" after the calibration ends.*
9. *When the cutter is installed and a previous issue was performed in cut issue mode, paper is cut and ejected after automatic calibration completes*
10. *When the automatic calibration is in operation, paper does not stop at a strip position even in strip or special strip mode.*
11. *When the automatic calibration is in operation, ribbon saving function is disabled even if its parameter is set to ON.*
12. *When the printing speed is set to 8"/sec. it will be automatically changed to 4"/sec. during an automatic calibration.*
13. *An automatic forward feed is not performed immediately after an automatic calibration, even if the auto forward wait parameter is set to ON.*

3.6 LAN Enable/Disable Setting

Whether to enable the LAN or not and whether to enable Simple Network Management Protocol (SNMP) or not are chosen by this menu.

■ How to Enable/Disable the LAN



3.7 Real Time Clock (RTC) Setting

This module holds the current time: year, month, day, hour, minute, second.

■ How to perform the Real Time Clock Setting

Power ON

Turn on the printer. "ONLINE" will be displayed on the LCD.

ON LINE
B-SX8T Vx.x

[PAUSE]

Press the [PAUSE] key to turn the printer to pause state.

PAUSE 52
B-SX8T Vx.x

The number of remaining print count

NOTE: When the [PAUSE] key is pressed during printing, the number of remaining print count is displayed.

Press and hold the [RESTART] key for 3 seconds or longer.

Hold down the [RESTART] key until the printer enters the system mode.

<1>RESET

When "<1>RESET" is displayed on the LCD, press the [RESTART] key until "<8>RTC SET" appears.

Press the [RESTART] key.

<8>RTC SET

Press the [PAUSE] key. The date currently stored in the real time clock is displayed.

[PAUSE]

<8>RTC SET
DATE 05/01/01

Pressing the [PAUSE] key enables changing the Year.

[PAUSE]

<8>RTC SET
DATE Y 05/01/01

[FEED]
[RESTART]

Set the Year with the [FEED] or [RESTART] key. Pressing the [PAUSE] key fixes the Year and causes the cursor to move to the Month.

Year [PAUSE]

<8>RTC SET
DATE M 06/01/01

[FEED]
[RESTART]

Set the Month with the [FEED] or [RESTART] key. Pressing the [PAUSE] key fixes the Month and causes the cursor to move to the Day.

[PAUSE]

<8>RTC SET
DATE D 06/03/01

[FEED]
[RESTART]

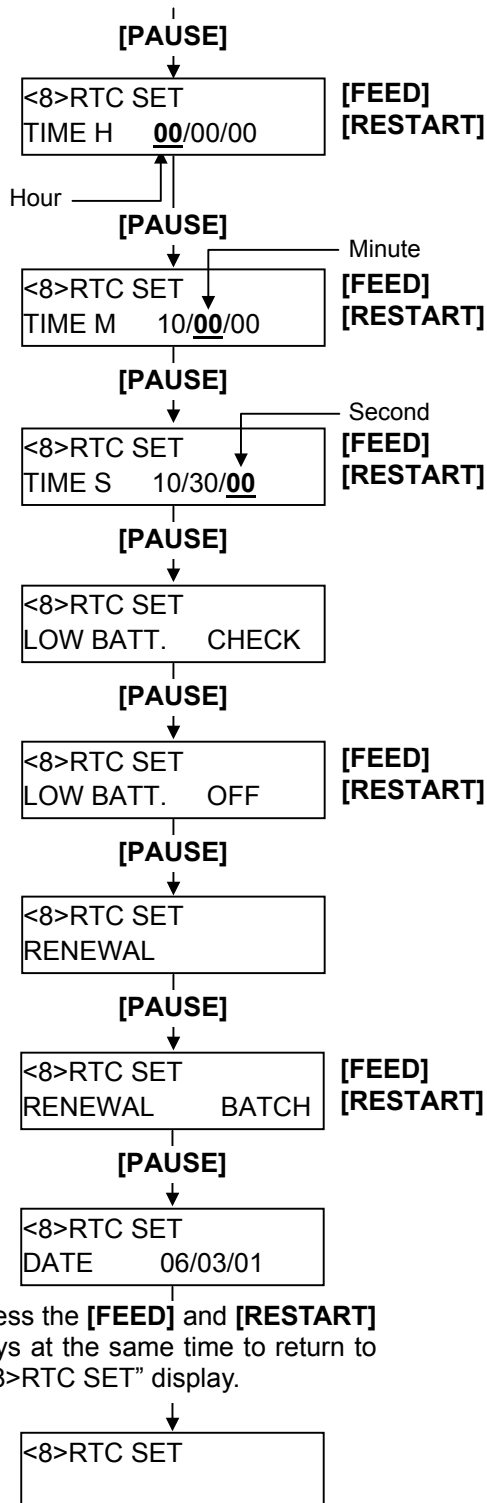
Set the Day with the [FEED] or [RESTART] key. Press the [PAUSE] key to fix the Day. Then, the time currently stored in the real time clock is displayed.

[PAUSE]

<8>RTC SET
TIME 00/00/00

(Continued on the next page.)

(Continued from the previous page)



Press the **[FEED]** and **[RESTART]** keys at the same time to return to “<8>RTC SET” display.

Pressing the **[PAUSE]** key enables setting the Hour.

Set the Hour with the **[FEED]** or **[RESTART]** key. Pressing the **[PAUSE]** key fixes the Hour and cause the cursor to move to the Minute.

Set the Minute with the **[FEED]** or **[RESTART]** key. Pressing the **[PAUSE]** key fixes the Minute and cause the cursor to move to the Second.

Set the second with the **[FEED]** or **[RESTART]** key. Press the **[PAUSE]** key to fix the Second. Then, the Low Battery Check selection screen is displayed.

Pressing the **[PAUSE]** key enables choosing whether to activate the low battery check function or not. Set the function to ON or OFF with the **[FEED]** or **[RESTART]** key.

ON: Low battery check function is activated.

OFF: Low battery check function is not activated. (Default)

Press the **[PAUSE]** key to fix the setting. Then, the RTC Data Renewal Timing setting screen is displayed.

Pressing the **[PAUSE]** key enables choosing the RTC data renewal timing.

Choose PAGE or BATCH with the **[FEED]** or **[RESTART]** key.

PAGE: A real time can be printed on each media. However, the printer needs to stop the motion before printing each media to read the real time clock data.

BATCH: Batch print is possible. However, the same time is printed on the all media issued in a batch because the real time clock data is read only for the first media.

Press the **[PAUSE]** key to fix the setting. Then, the current date is displayed.

NOTES:

1. Be sure to load the battery and set the low battery check function to ON whenever the real time clock is used. If the battery is not loaded or the battery voltage is low, the real time clock data is erased at the power off time.
2. When the low battery check function is set to ON, the printer stops at the power on time due to a “LOW BATTERY” error if the battery voltage is 1.9V or less. As a restart is invalidated in this case, hold down the **[RESTART]** key to cause the printer to enter <1>RESET mode, access the Real Time Clock setting mode, and set the low battery function to OFF.

3. *The factory setting for the low battery check function is OFF.*
4. *To enable the real time clock function, set the low battery check to ON.*
5. *When the low battery check is set to OFF, the RTC function is available even in a low battery state. However, the setting and check of the real time clock is required whenever the power is turned on.*
6. *When the RTC data renewal timing is set to "PAGE", the printer stops between labels ignoring the on-the-fly issue even when an Issue command is sent to print more than one label.*

4. PROGRAM DOWN LOAD

This section provides step-by-step instructions on how to setup and download the firmware to the printer. The firmware download will be made from a PC via the Centronics interface or RS-232C interface of the printer.

NOTE: Some examples of the screen provided in this section may vary according to the program files to be downloaded.

4.1 Outline of Features

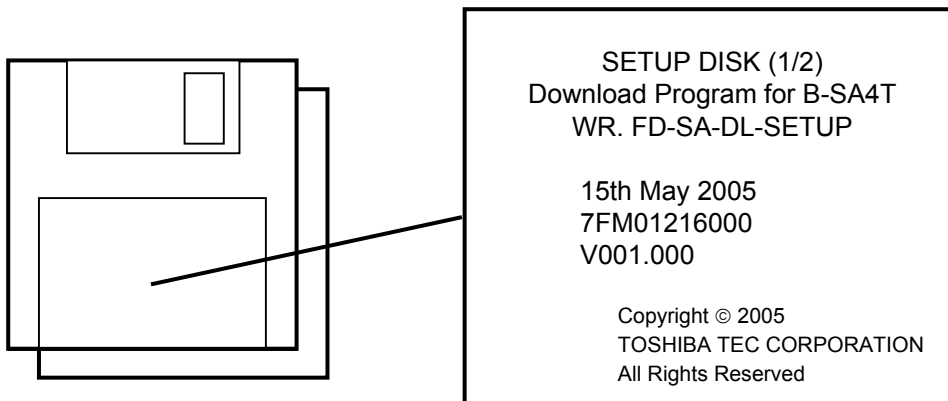
The software for performing the program download will allow the download of the Firmware (Boot program, Application program, and Character generator) from the provided FDK. The software will be run on a standard PC and communication to the printer will be via the Centronics interface or RS-232C interface.

Firmware Download

The Boot program, Application program and Character generator are installed into the printer's flash memory prior to being shipped to the customer. However, if specifications should change at a later date, this software will allow downloading firmware updates to the printer.

4.2 Download Program Installation

Before you can communicate from your PC to the printer, you must first copy the "B-SA series Download Program" from the two FDKs provided to the hard disk of your PC. This program allows you to download the firmware (Boot program, Application program and Character generator) to the printer.



4.2.1 System Requirements

System

- IBM Compatible PC running Windows® 98, Windows® 2000 or Windows® XP
- Installed memory of 16MB minimum (32MB recommended)
- Available Hard Disk space of 20MB or more

NOTE: Windows is a registered trademark of the Microsoft Corporation in the United States and other countries.

Interface

Centronics interface or RS-232C interface

4.2.2 Setup

Setup Disk

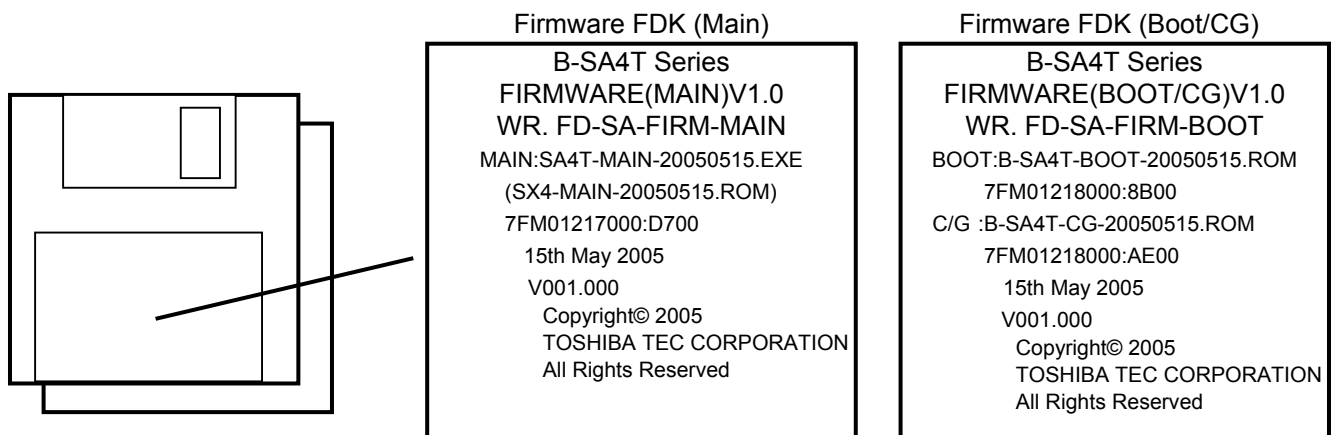
Make sure that you have all two diskettes available of the "B-SA series Download Program".

Installation Procedure

- (1) While running Windows 98, Windows 2000, or Windows XP, insert Setup Disk (1/2) into the PC floppy drive.
- (2) Click on the START button then highlight RUN and click on RUN.
- (3) When the RUN display appears, type in A:\SETUP and click on OK.
- (4) Install the Download Program by following the messages on the display.

4.3 Firmware Download

If it ever becomes necessary to upgrade the firmware in the printer you will be supplied with a floppy disk containing the latest firmware revision similar to that shown below.



The following paragraphs give the download procedure that the firmware (Boot program, Application program and Character generator) is copied onto the PC hard disk before being transferred to the printer.

Before starting the download procedure

- Copy the firmware program contained in the FDKs to your specified directory of the hard disk. If the file format of the file installed into the FDK is "*.EXE", click it twice to decompress into "*.ROM" file.
- Connect the printer to your PC with the Centronics I/F cable or the RS-232C I/F cable. For the Centronics communication, if the printer port has been allocated to LPT 1, change to another one temporarily. Failure to do this will disable you from firmware download.

1. First, start the printer in download mode.

Power off

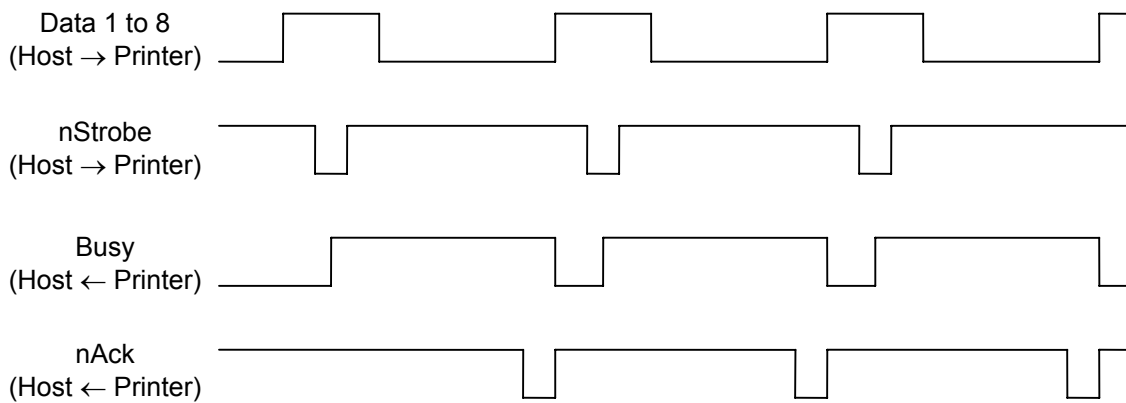
While pressing the [FEED], [PAUSE], and [RESTART] keys at the same time, turn on the printer.



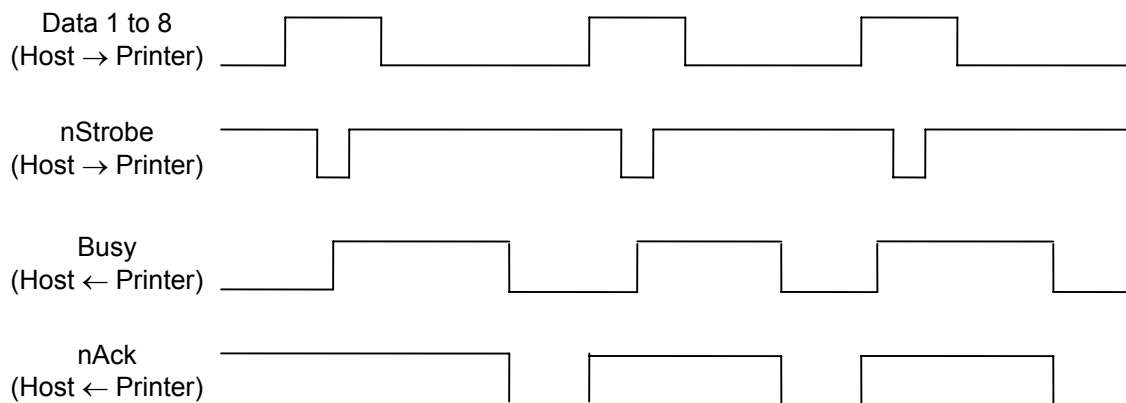
Choose either mode. For the difference, refer to **NOTE** below.

NOTE: Centronics interface ACK/BUSY timing is different between "DOWNLOAD MODE" and "DOWNLOAD MODE 2". If data cannot be downloaded in "DOWNLOAD MODE", choose "DOWNLOAD MODE 2" and retry downloading.

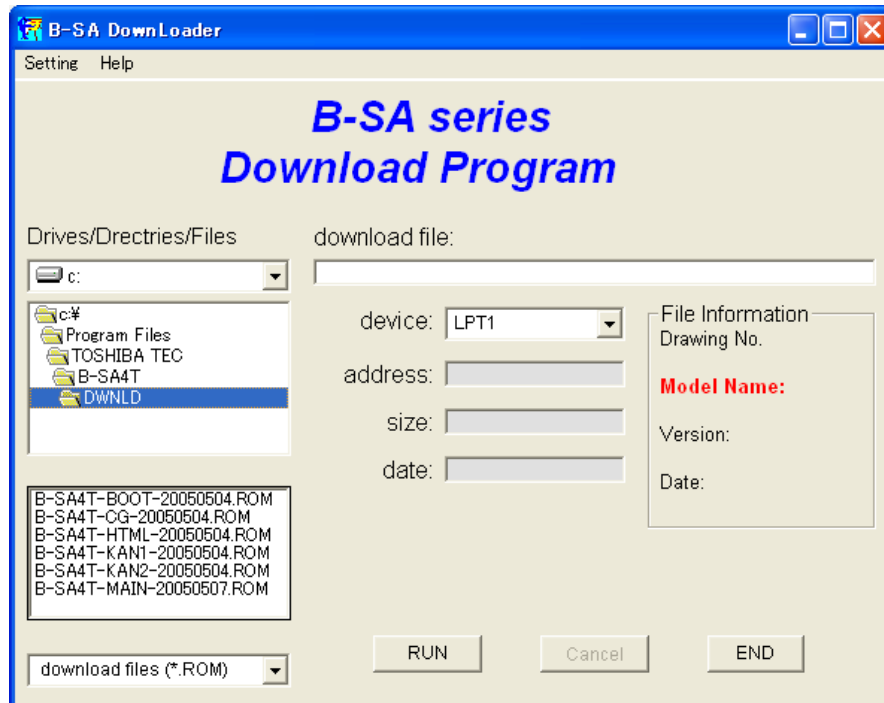
DOWNLOAD MODE (default)



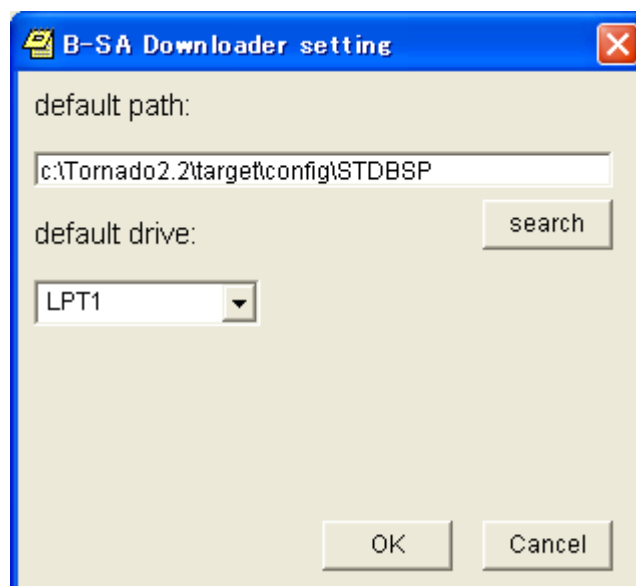
DOWNLOAD MODE 2



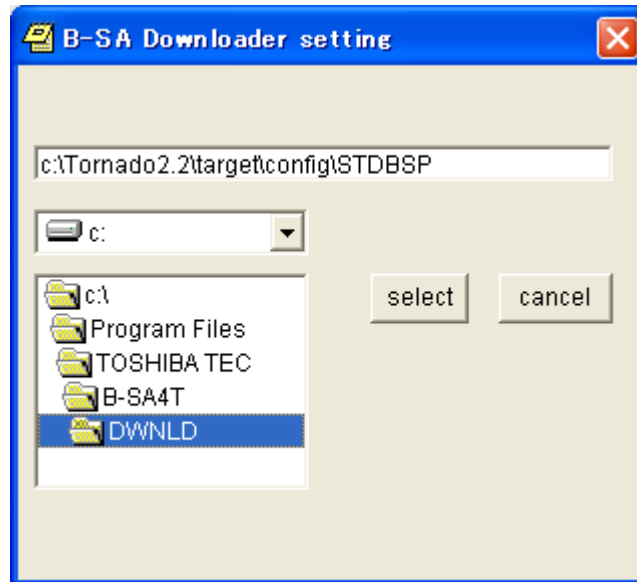
2. Turn on the PC power and start Windows.
3. Click on the START button to access the program menu.
4. Highlight "TOSHIBA TEC", "B-SA4T" and "Dwnld", and click on "B-SA4T Downloader" to start up the download program. The main menu screen appears.



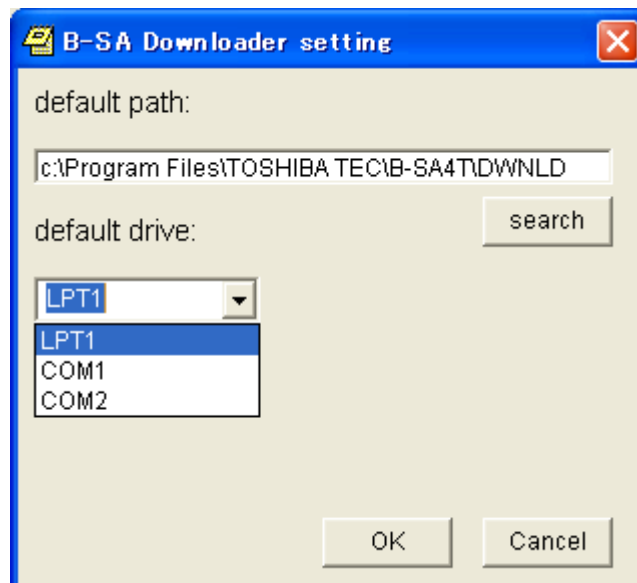
5. On the main menu screen, perform Default Device setting and Default Path setting in the following procedure.
 - 1) Click on "Setting" on the upper left corner of the main menu screen.
 - 2) Click on "Open setting menu" to show the sub menu screen as shown below.



- 3) Click on the Search button on the above screen, and show the sub menu screen as shown below. Select a directory to be set as the default path.
- 4) Click on the Select button and then the OK button. The default path setting is completed. This setting will be effective when you start up Windows next time.

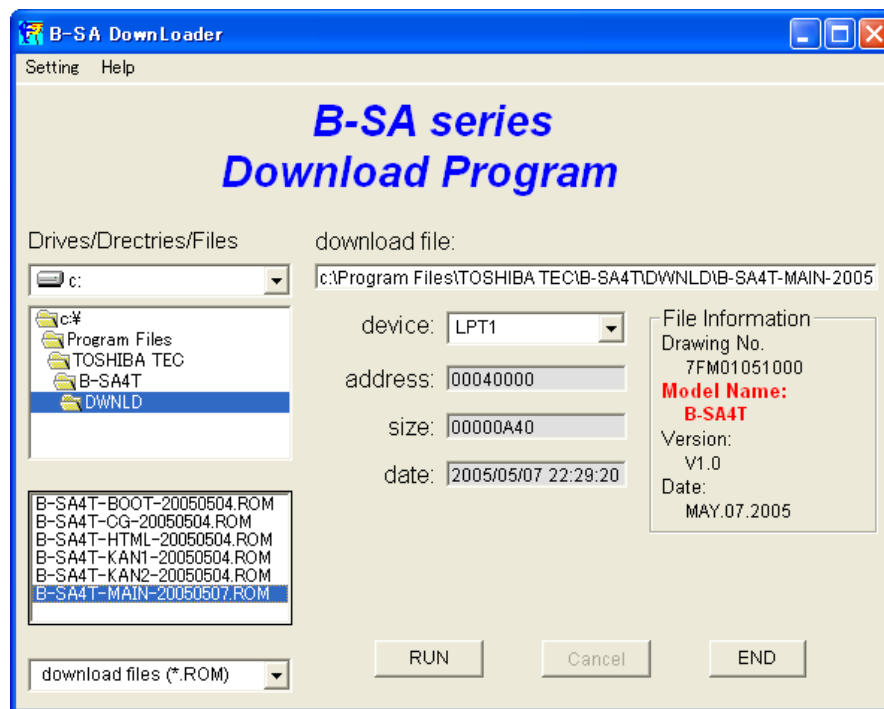


- 5) Select a device to be set as the default device, and then click on the OK button. The default device setting is completed. This setting will be effective next time you start up Windows.

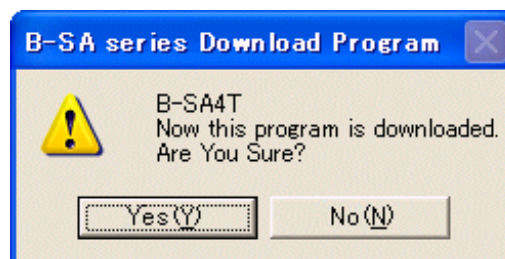


- NOTES:**
1. When COM1 or COM2 is selected as the default drive, communications parameter will be fixed as follows; Baud rate: 115200bps, Parity: even, Data Length: 8 bits, and Stop Bit: 1 bit.
 2. The default device can be set on the main menu screen, however, it will be cleared when you exit the download program.

6. Select the drive directory in which the firmware file (*.ROM) is stored, and the file name to be downloaded. (File information will be shown on the right side of the screen.) Click on the RUN button.



7. When the following message screen appears, click on the Yes button to start the program download. To cancel a download, click on the No button.



NOTE: While downloading, the following message will appear on the LCD display of the printer, respectively.

Data in the Flash ROM is being erased.:

DOWNLOAD MODE
ERASING...

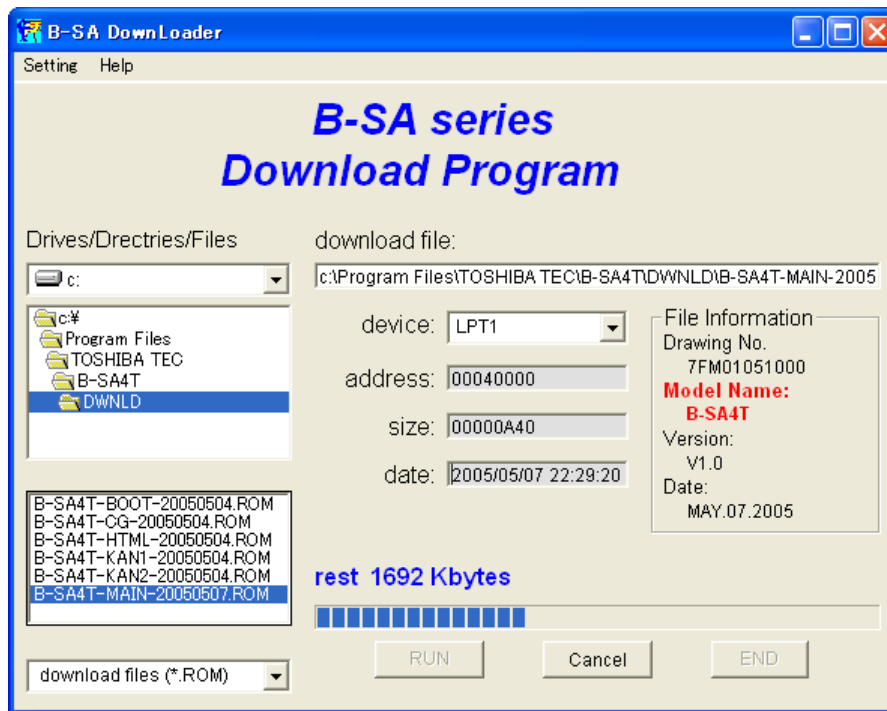
The printer is receiving data.:

DOWNLOAD MODE
RECEIVING...

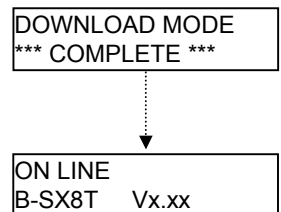
Data is being written into the Flash ROM.:

DOWNLOAD MODE
PROGRAMMING...

8. While the printer is preparing for the downloading, part of the screen may be disordered. After approximately 15 seconds, the following screen will appear causing the firmware to be transferred.



9. After the firmware has been transferred to the printer successfully, the display returns to the main menu screen.
10. After data has been written into the Flash ROM successfully, the message "**** COMPLETE ****" appears on the LCD display. And then the printer will restart automatically.
- NOTE:** If the printer does not restart and keeps on displaying the message "**** COMPLETE ****", wrong firmware may have been downloaded. Confirm the model of the firmware, and then download a proper one to the printer again.
11. Click on the END button to terminate the download program.



5. RFID ANALYZE TOOL

When an RFID module is installed, the printer will be able to write data on an RFID tag as well as print data on the surface of the RFID-tag embedded label.

To properly issue RFID tags, it may be necessary to adjust the RFID tag position so that it stops just above the antenna of the RFID module.

A proper adjustment value is obtained by using RFID Analyze Tool. It is different depending on the following conditions.

- RFID tag type
- The shape of RFID tag antenna
- Position of RFID tag embedded in RFID tag supply
- Variation of RFID module

The RFID Analyze Tool enables discovering an optimum tag position and output power of the RFID module for data read/write.

An adjustment value is stored in the printer memory by using a PC command or "RFID Adjustment for Retry" parameter in the system mode (Section 2.9.8.)

5.1 System Requirement

System

IBM Compatible PC running Windows 2000 or Windows XP

Installed memory 16MB minimum (32M byte recommended)

Available hard disk space of 10M byte or more

NOTE: *Windows 2000 and Windows XP are registered trademarks of Microsoft Corporation.*

Interface

Connect the printer to a PC with an RS-232C (Serial) interface or LAN interface.

Download

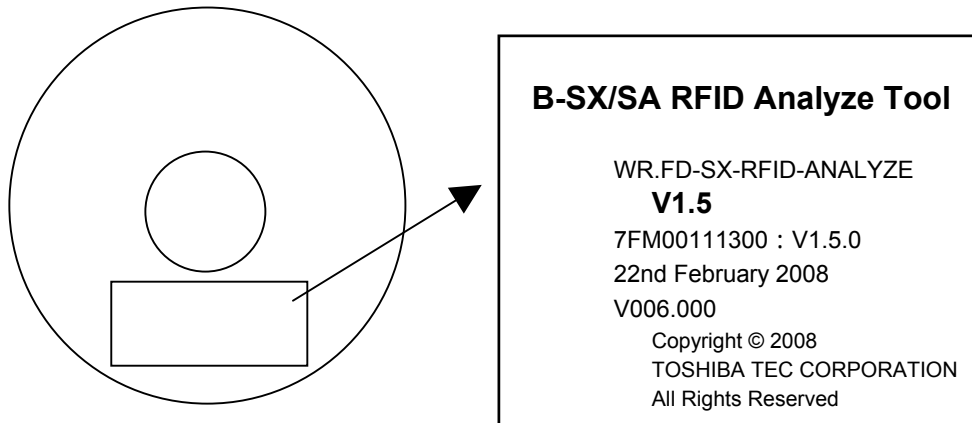
RFID Analyze Tool is downloadable from the following web site.

<http://barcode.toshibatec.co.jp/Ris/products/barcode/support/en/index.php>

5.2 Set up

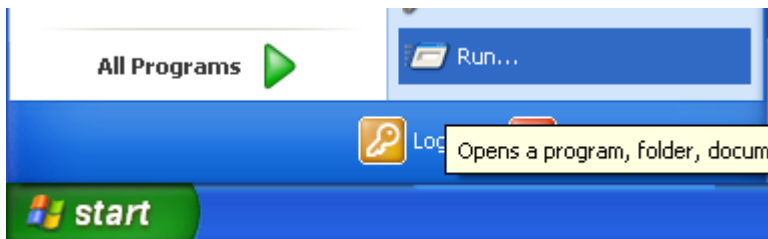
Setup Disk

The Installation Setup Disk consists of one CD-ROM.

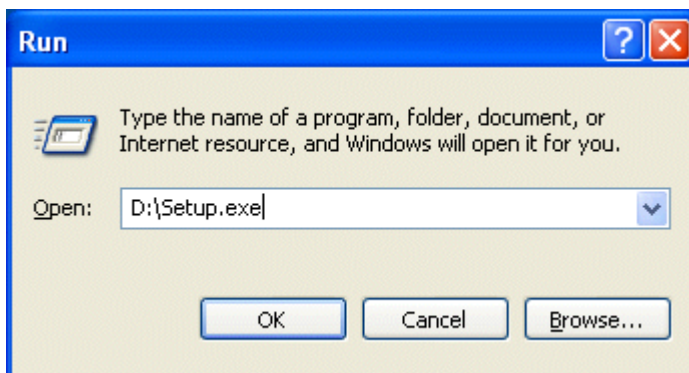


Installation Procedure

1. Start Windows put the CD-ROM in the CD-ROM drive.
2. Click on the “Start” button, then choose “Run”.



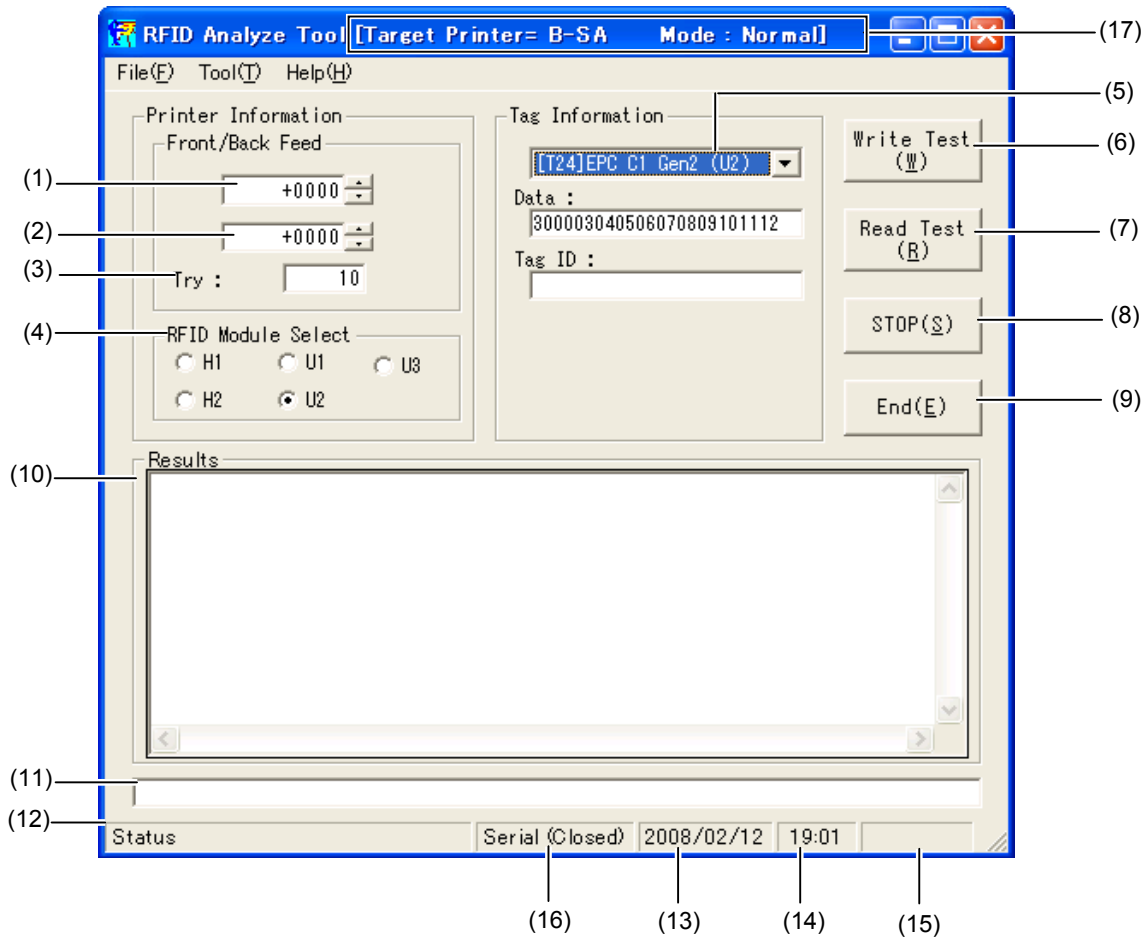
3. When the “Run” screen appears, enter “D:\Setup.exe” in the “Open” entry field, then click on the “OK” button. (When the CD-ROM drive is drive D.)



4. For the subsequent procedures, follow the instructions on the screens to complete the installation.
5. When the installation completes successfully, the screen, which notifies the completion of the installation of the “RFID Analyze Tool” software, appears.

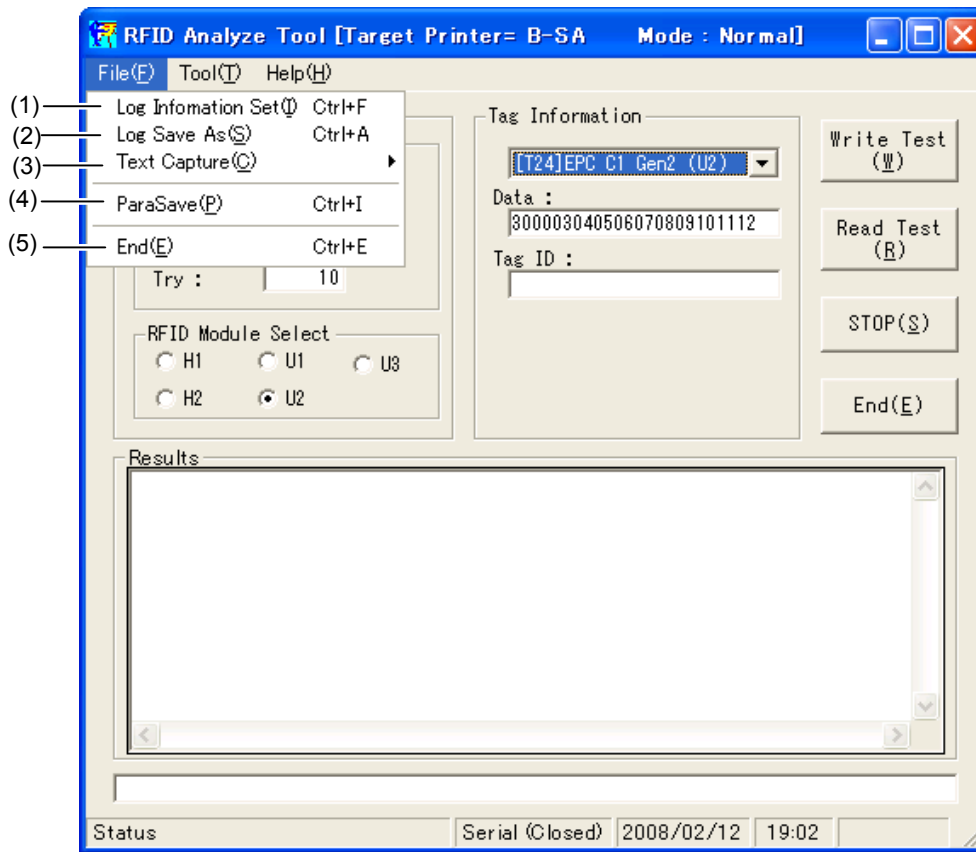
5.3 Application Functions

5.3.1 Main Menu

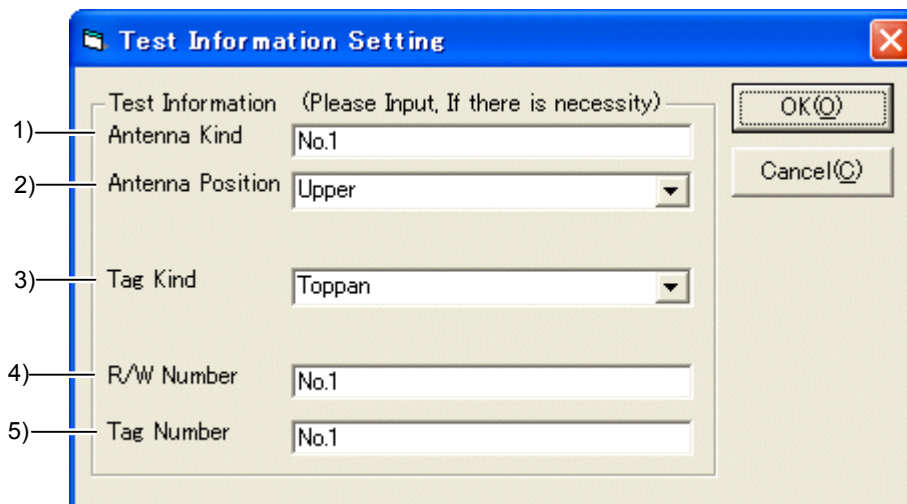


- | | |
|---|---|
| (1) Front Feed amount: +9999 ~ -9999 | (6) Write Test Button |
| (2) Back Feed amount: +9999 ~ -9999 | (7) Read Test Button |
| (3) Number of test tries: 999 ~ 0 | (8) Test Stop Button |
| (4) RFID module select | (9) Application End Button |
| H1: B-9704-RFID-H1-QM/QM-R | (10) Test Results Display Area |
| U1: B-9704-RFID-U1-US/EU/EU-R | (11) Response Data Display Area |
| H2: B-SX704-RFID-H2 (Japanese model only) | (12) Test Status Display Area |
| U2: B-SX704-RFID-U2-EU/AU/US/CN-R | (13) Date |
| B-SX708-RFID-U2-EU/CN-R | (14) Time |
| (5) Tag type select | (15) Capture Display Area |
| H1: C220 | (16) Communication Status Display Area |
| I-Code | (17) Printer Model and Test Mode Display Area |
| ISO15693 | |
| Tag it | |
| C320 | |
| U1: ISO18000-6B | |
| EPC Class1 | |
| EPC C1 Gen2 | |
| H2: ISO15693 | |
| U2: EPC C1 Gen2 | |

5.3.2 File Menu



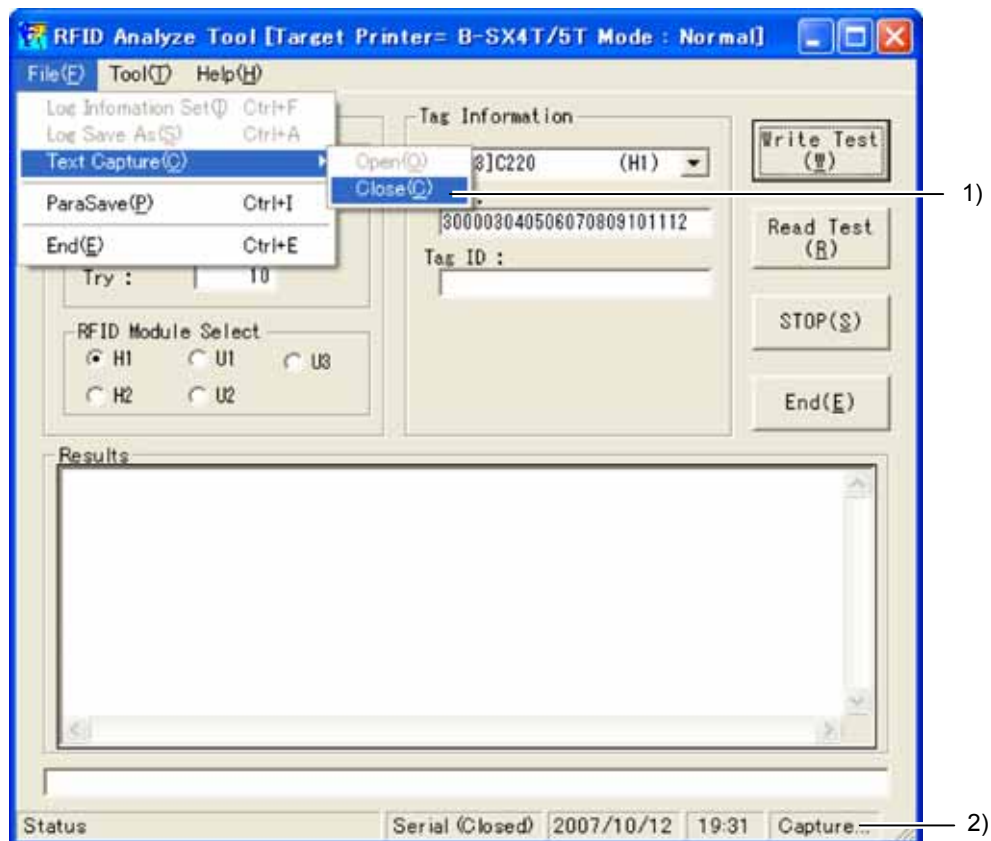
- (1) Log Information Set
Displays the Test Information Setting screen shown below. Make necessary settings and click on the “OK” button.



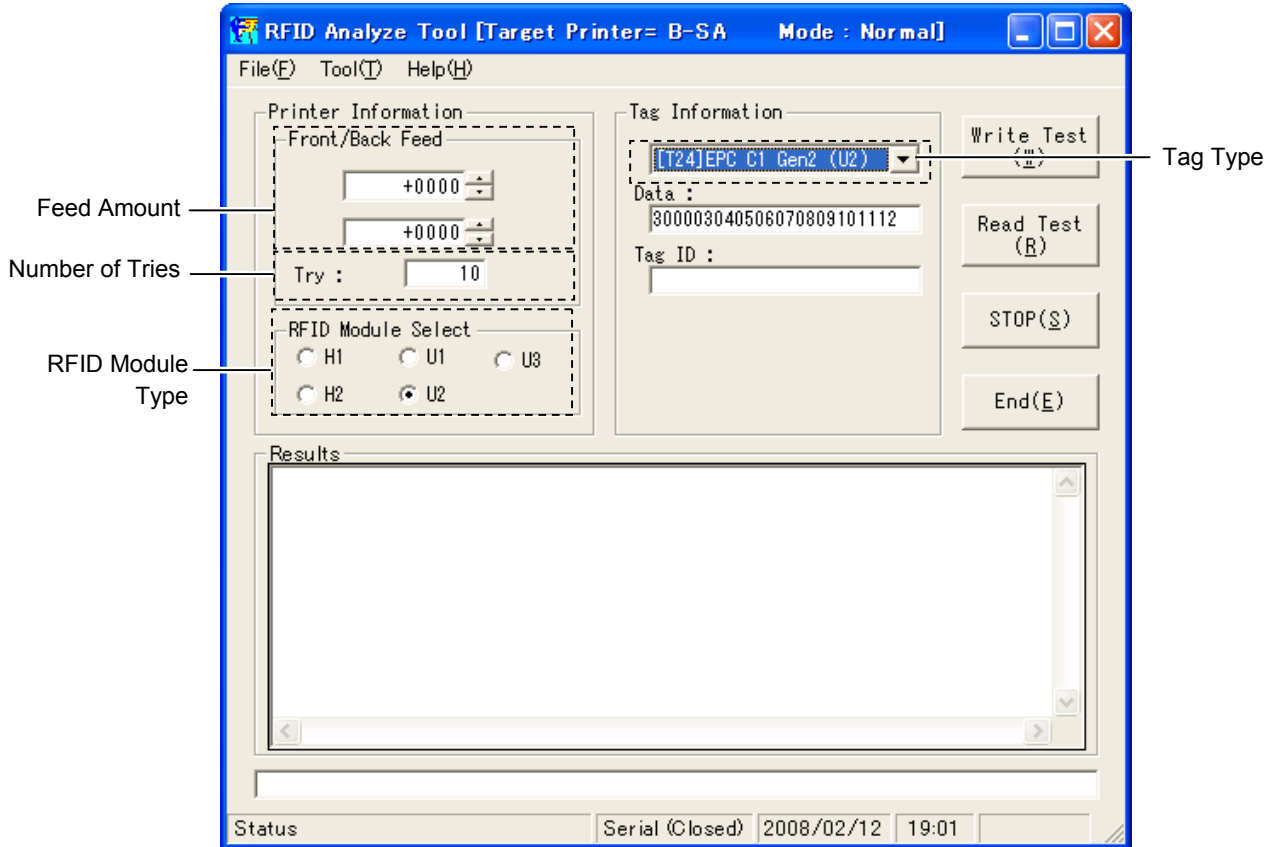
- 1) Antenna Kind Information
- 2) Antenna Position: “Upper”, “Lower”, “In addition to this”
- 3) Tag Kind Information: “Toppan”, “OMRON”, “Rafsec”, “Impinj”, “In addition to this”
- 4) R/W Number
- 5) Tag Number

When a write/read test is executed log information is shown in the “Results” box of the RFID Analyze Tool screen. Log information for each test is saved in a text or CSV file.

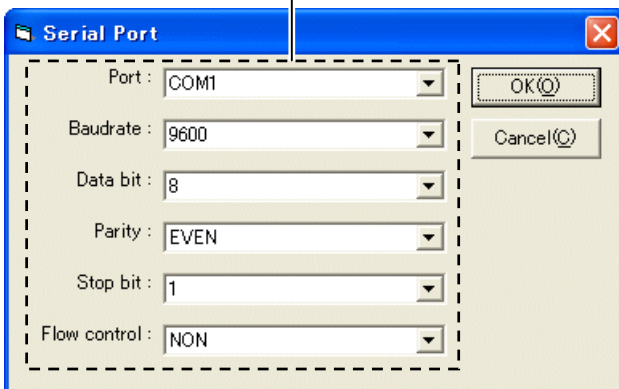
- (2) Log Save As
Saves text data in the “Results” box of the RFID Analyze Tool screen into a text file.
- (3) Text Capture
Saves the test result into a CSV file.
Selecting “Text Capture” then “Open” shows “Capture” in the area indicated by “2)” in the figure below. When a write/read test is executed with “Capture” shown, the test result is automatically saved in a CSV file specified.



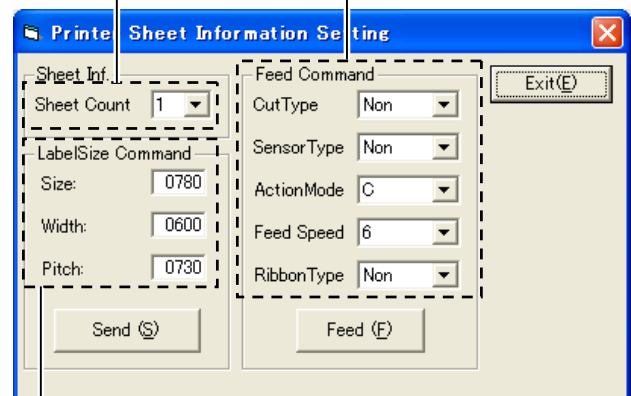
- 1) After “Text Capture” is selected, the menu adds “Close” under “Open”. Selecting “Close” exits from this function.
- 2) When “Text Capture” is selected, “Capture” is shown.
- (4) ParaSave (Parameter Save)
Saves the current test information to facilitate a next test. The saved parameters are invoked at a program boot. Information to be saved are feed amount, number of tries, RFID module type, tag type, communication settings between PC and printer, label size command, Feed command, Sheet count, printer type, and test mode.



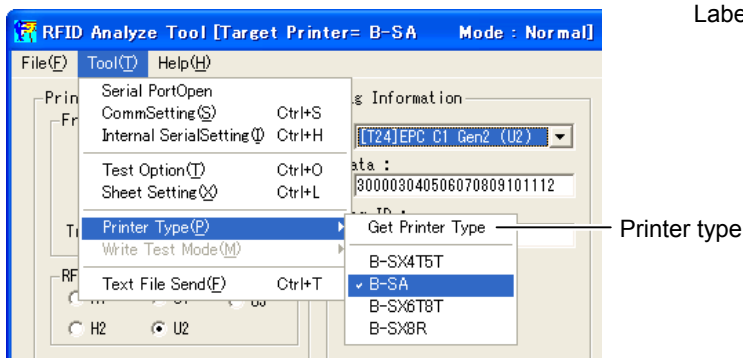
Communication Settings between PC and Printer
 (Serial Port Setting)



Sheet Count Feed Command

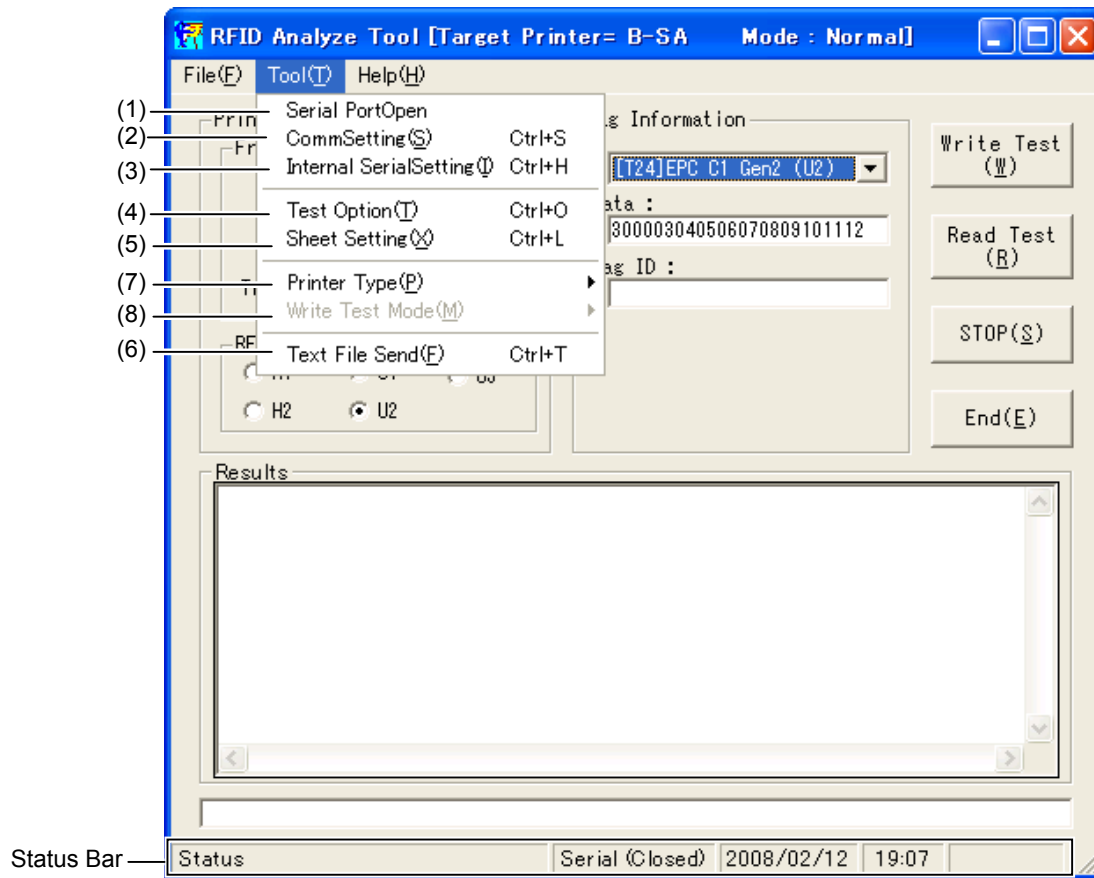


Label Size Command



- (5) End (Exit)
 Exits from the Analyze Tool program.

5.3.3 Tool Menu

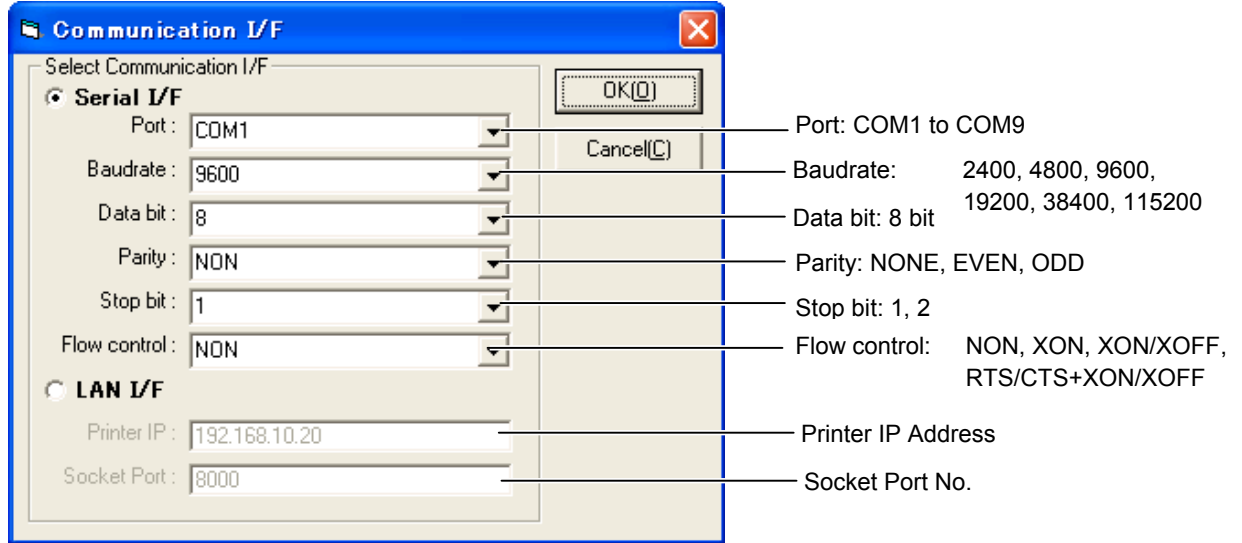


(1) Port Open

Opens/closes a port to communicate with the printer.

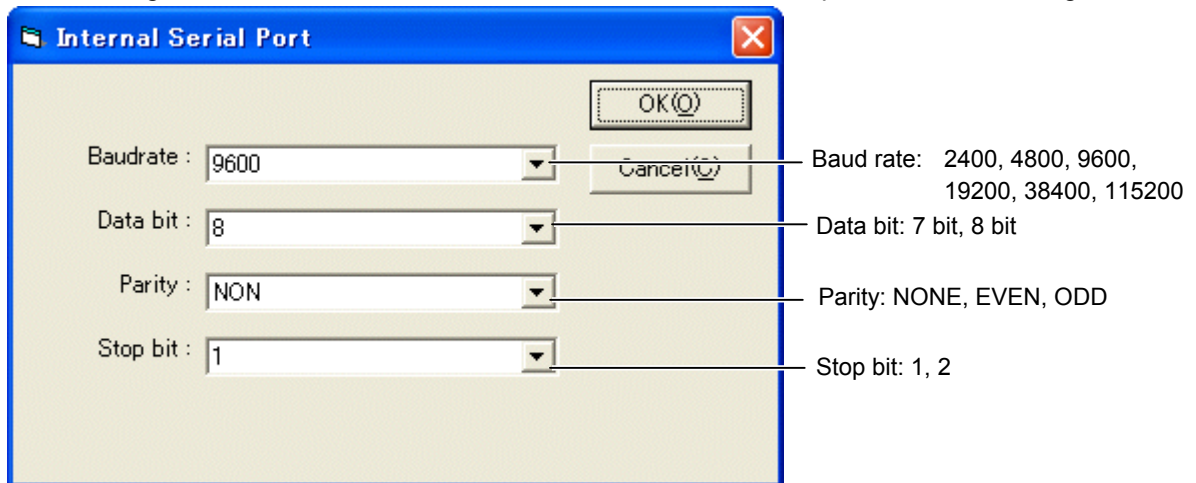
- "Serial PortOpen": The printer port is ready to be opened. After the port is opened, "Serial PortClose" will be displayed in the Tool menu and "Serial (Open)" will be displayed on the status bar.
- "Serial PortClose": The printer port is ready to be closed. After the port is closed, "Serial PortOpen" will be displayed in the Tool menu and "Serial (Close)" will be displayed on the status bar.
- "LAN Connect": The LAN port is ready to be opened. After the LAN port is opened, "LAN DisConnect" will be displayed in the Tool menu and "7:Connect" will be displayed on the status bar.
- "LAN DisConnect": The LAN port is ready to be closed. After the LAN port is closed, "LAN Connect" will be displayed in the Tool menu and "0:Close" will be displayed on the status bar.

- (2) CommSetting
 Makes settings for communication between the PC and the printer.



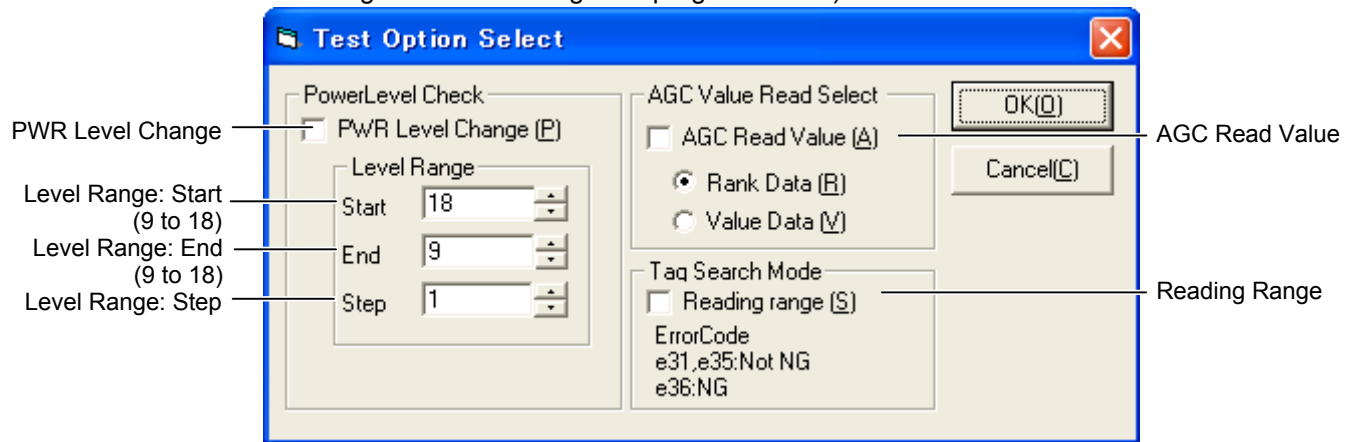
- NOTES:** 1. In the case of the LAN interface, a socket communication is used.
 2. Serial port may not be selectable depending on the printer types.
 3. The above settings can be saved by a parameter save function.

- (3) Internal Serial Setting
 Makes settings for communication between the RFID module and the printer. Do not change the setting.



(4) Test Option

This menu is available only when the U2 type is selected. (However, when the U1 type is selected, only the Power Level Change and Level Range are programmable.)

**PWR Level Change (Power Level Change)**

When checked, a write or read test can be performed while changing the output level of the RFID module, without changing the tag position. This enables finding the optimal output level for writing data onto the tag.

Setting range of the power level: B-SX704-RFID-U2-EU/AU/US/CN-R,
B-SX708-RFID-U2-EU/CN-R: 9 to 18
B-9704-RFID-U1-US/EU-R: 0 to 255

Start: Enables setting the value for the starting power level.

End: Enables setting the value for the starting power level.

Step: Enables setting the step value.

AGC Read Value:

When checked, the Advanced Gain Control (AGC) data is read every time a tag is written or read.

Rank Data: Rank Data is equal to the AGC threshold value of the printer.

Value Data: Value data is the value sent from the RFID module without any conversion. Usually, the rank data is used.

Reading range:

The read range of the tag is searched.

The positions where the error "e36" does not occur are considered as OK (readable).

The positions where no response is returned from the tag are considered as an error.

Error code: "e31": Timeout (Tag is existing.)

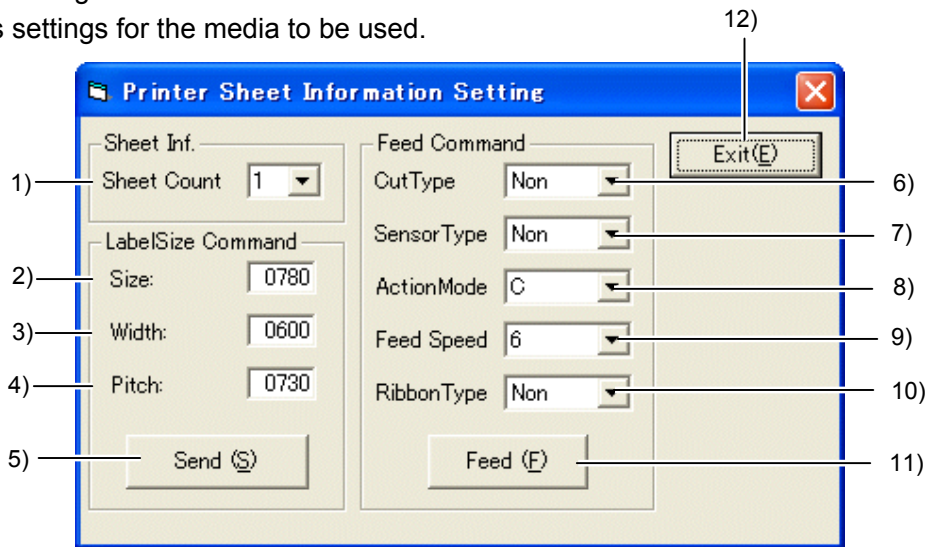
"e35": Data write failed. (Tag is existing.)

"e36": Tag is not existing.

"e37": Communication error (Tag is existing.)

(5) Sheet Setting

Makes settings for the media to be used.



Sheet Inf.

- 1) Sheet Count: The number of tags to be tested. (1 ~ 5)
After printing on one label, a next tag is automatically fed to continue the test.

LabelSize Command

- 2) Size: Label Length
3) Width: Label Width
4) Pitch: Effective print length
5) Send

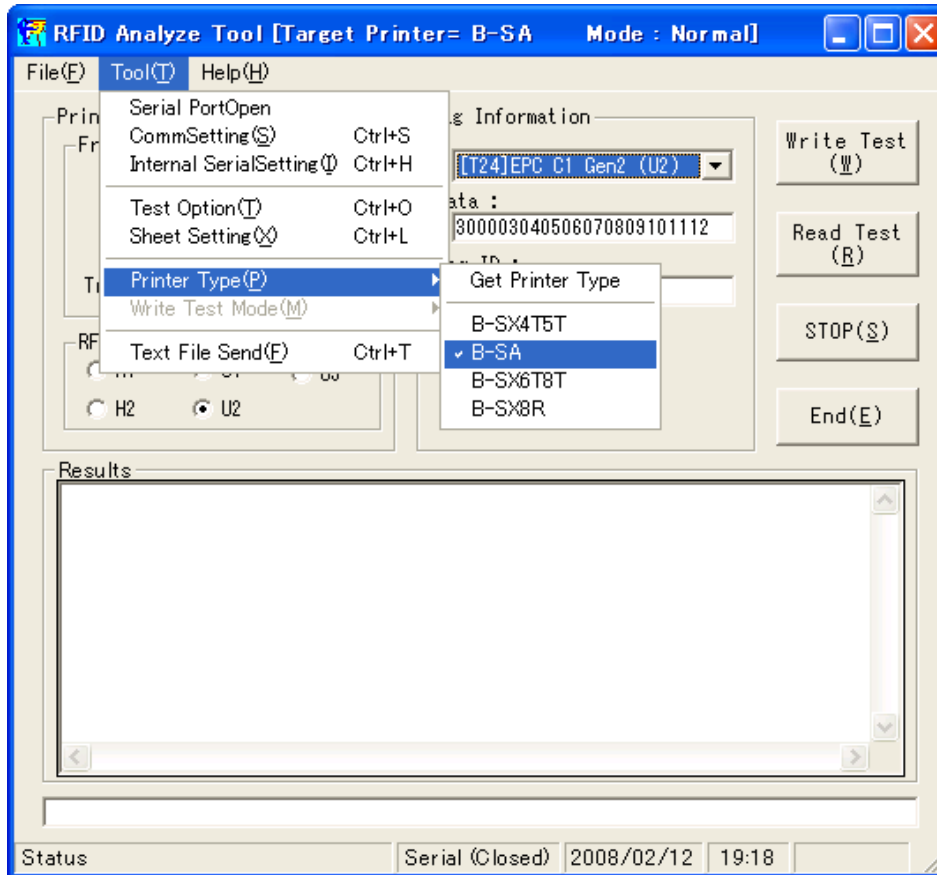
Sends the size, width, and pitch information of the tag to be tested. (This does not check a printer status.) Send the LabelSize Command when any of the size, width, or pitch value needs to be changed. These information are stored even after the printer power is turned off.

- 6) Cut Type: Non, Cut
7) Sensor Type:
Non: No Sensor
Ref.: Black Mark Sensor
Trans.: Feed Gap Sensor
Trans. Pre: Feed Gap Sensor when using preprinted label
Ref. Manual: Black Mark Sensor when using a manual threshold value
8) ActionMode:
C: Batch mode (Cut and feed when "Cut" is selected for Cut Type.)
D: Strip mode (with back feed)
E: Strip mode (with back feed, the strip sensor is ignored, the applicator supports this mode.)
9) Feed Speed (Unit: inch/second): 3, 5, 6, 8, A (10)
B-SX4T: 3, 6, A (10)
B-SX5T: 3, 5, 8
B-SX6T: 3, 4, 8
B-SX8T: 3, 4, 8
10) Ribbon Type: Non, Ribbon Save, Ribbon
11) Feed
Sends a Feed command to the printer. (Printer status is checked.)
When a printer error occurs, the corresponding error message is displayed.
12) Exit Button

(6) Text File Send

Sends a specified file from the PC to the printer. (This does not check a printer status.)
File data are not checked.
The size of the file to be sent must be 4 KB or less.

- (7) Select the printer model
Makes a choice of a printer model from Get Printer Type menu. Choose "B-SX6T/SX8T".

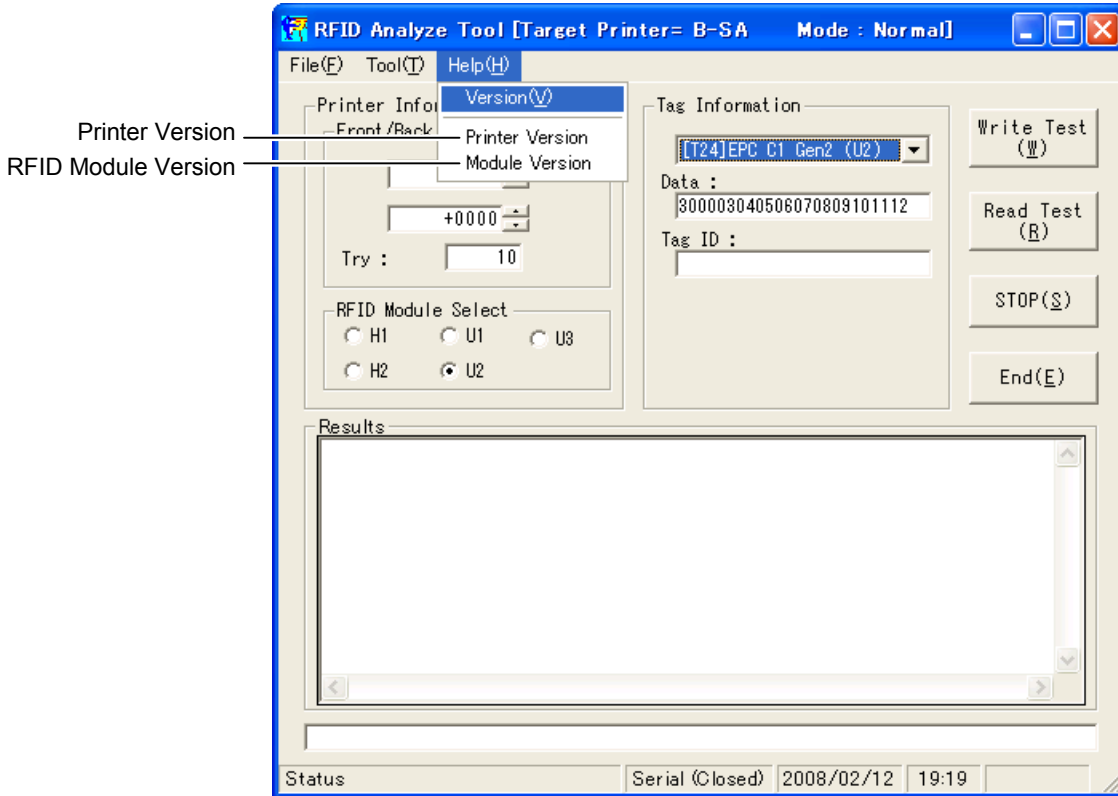


NOTE: This information can be saved by a parameter save function.

- (8) Select the test mode
This menu is not available.

5.3.4 Help Menu

Displays Printer Version and RFID Module Version.

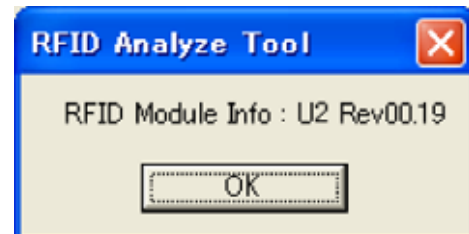


Example

Printer Version



RFID Module Version



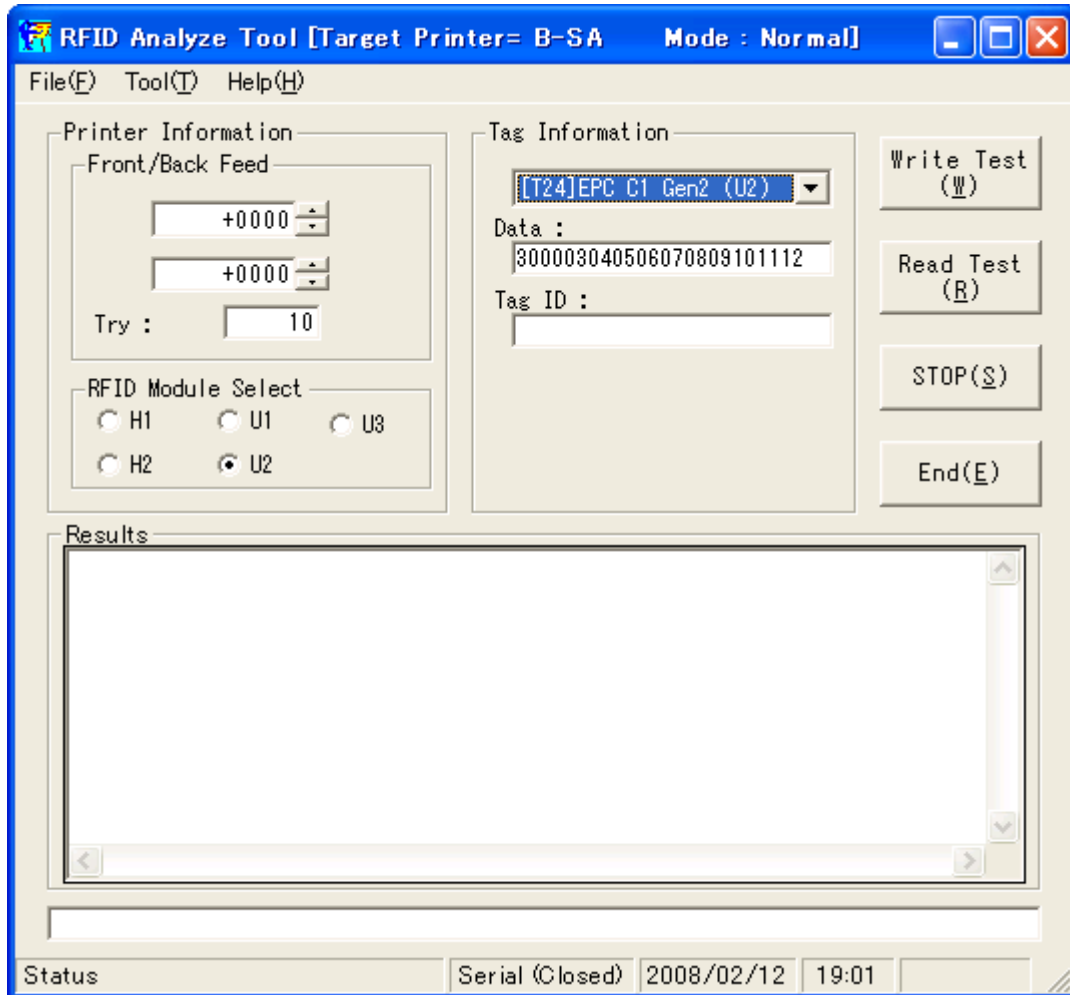
NOTE: Printer version and module version are indicated next to the date and time of Log file.

Example) CSV file information

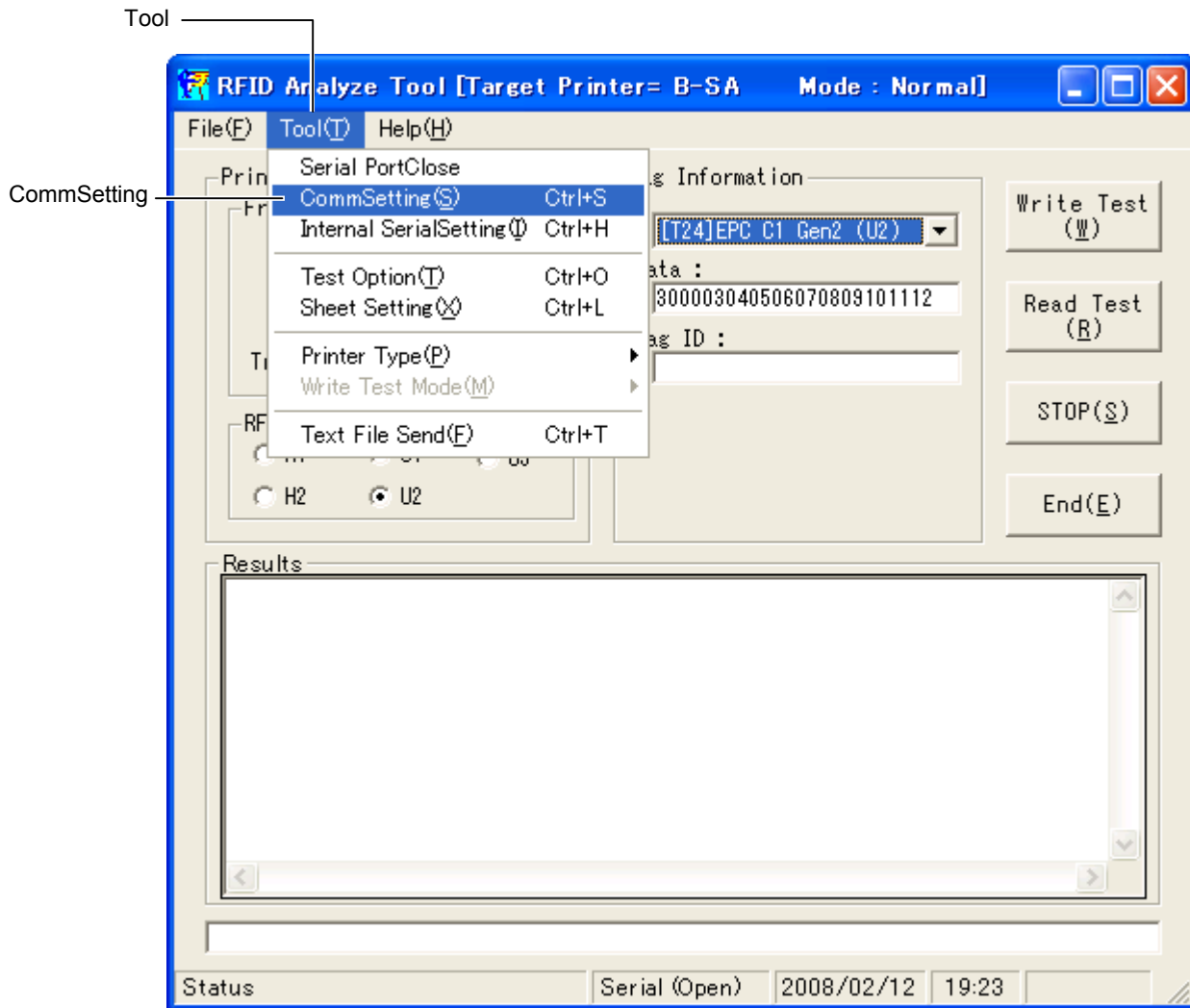
Date&Time = 07/10/16 09:47:24: Printer Information = B-SX4T Z4.4C 27SEP2007 Module Information = U2 JPN #00PV971

5.4 Operating Procedure

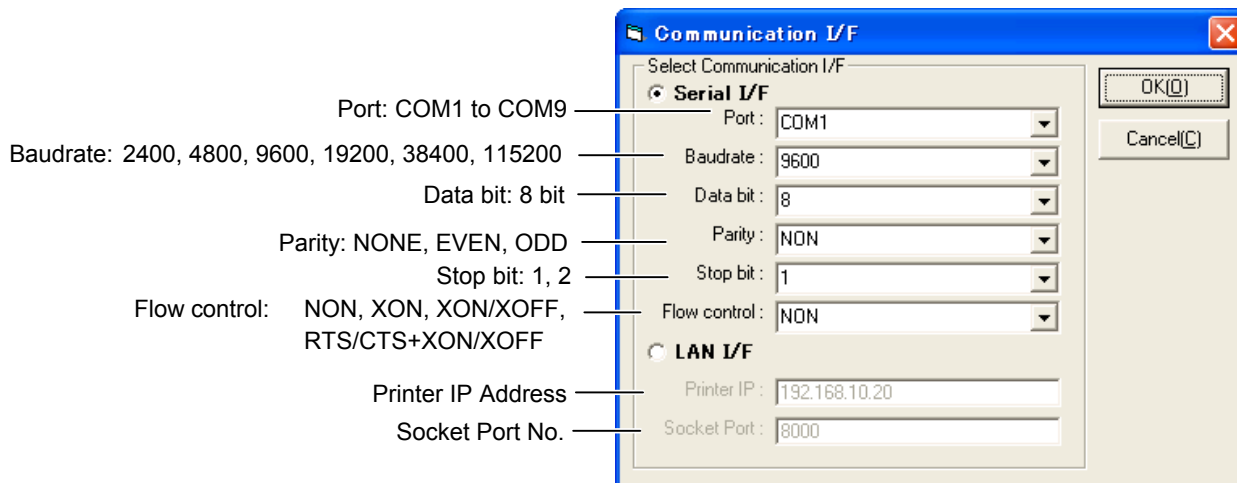
1. Connect the printer to the PC with the serial interface cable or LAN cable.
2. Start the “B-SX RFID Analyze Tool” application.



3. Click on the “Tool” menu, and choose “CommSetting”.



4. When the “CommSetting” screen appears, perform the serial port or LAN setting in accordance with the settings of the B-SX6T/SX8T printer.

**NOTES:**

1. Choose the port to which the printer is connected.
2. Choose “NON” for the Flow control of the RFID Analyze Tool. However, any flow control code of the printer is acceptable.
3. The data bit for the Analyze Tool is fixed to 8. Make sure that the data length for the printer is set to 8 bits.
4. The command flame for the Analyze Tool is “{ | }”. Make sure that the control code for the printer is set to “AUTO” or “{ | }”.
5. When the printer and the PC are connected via LAN, a printer IP address and socket port number need to be entered.

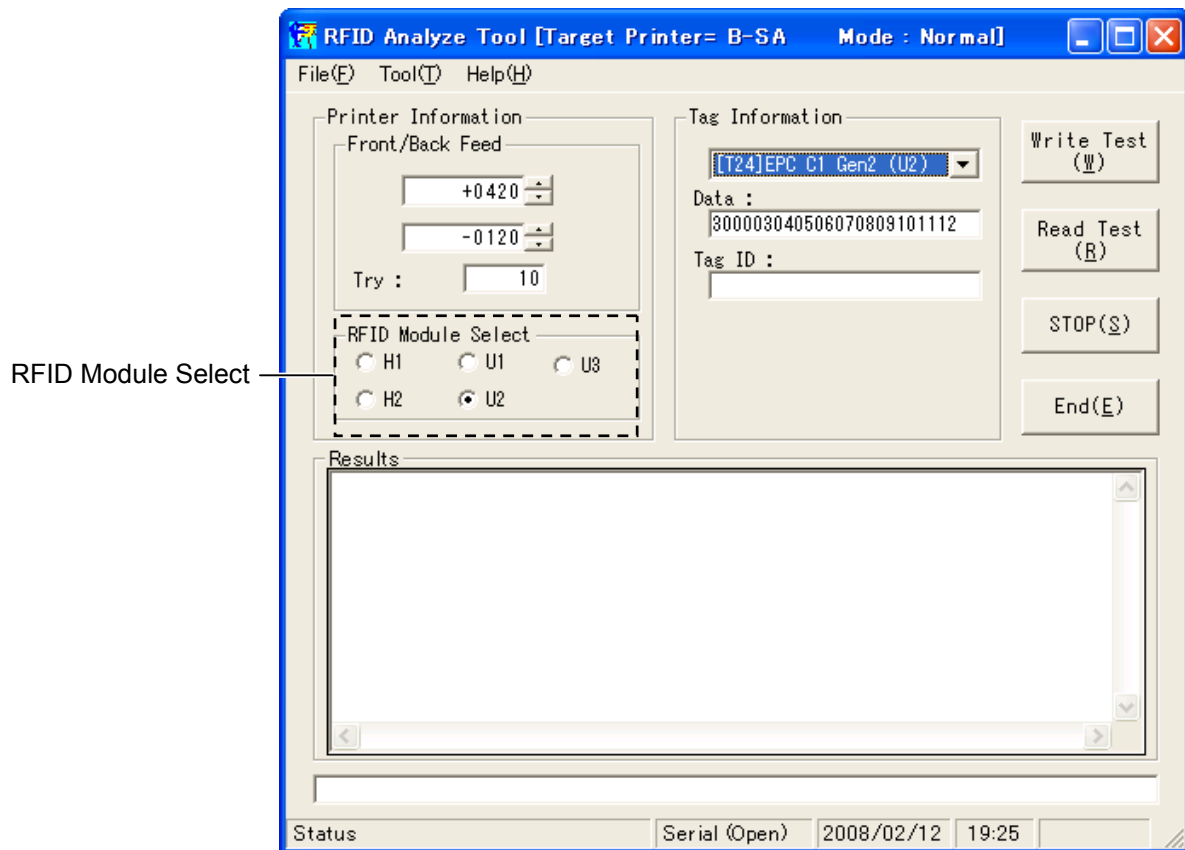
Default Printer IP Address: 192.168.10.20, Socket Port No.: 8000

4. Set the following parameters.

RFID module type to be analyzed (RFID Module Select)

Choose the RFID module to be used for the RFID Module Select parameter.

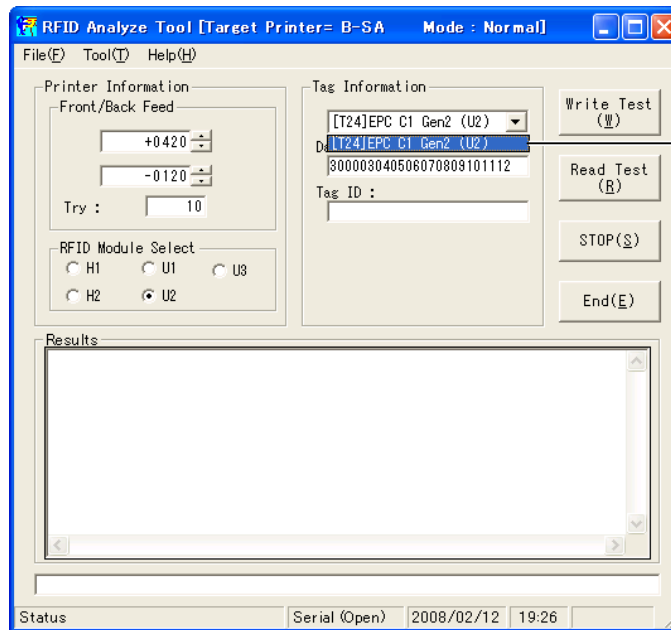
B-9704-RFID-U1-US/EU: "U1"
B-9704-RFID-H1-QM: "H1"
B-SX704-RFID-U2-EU/AU/US/CN-R: "U2"
B-SX708-RFID-U2-EU/CN-R: "U2"



RFID tag type to be analyzed (Tag type)

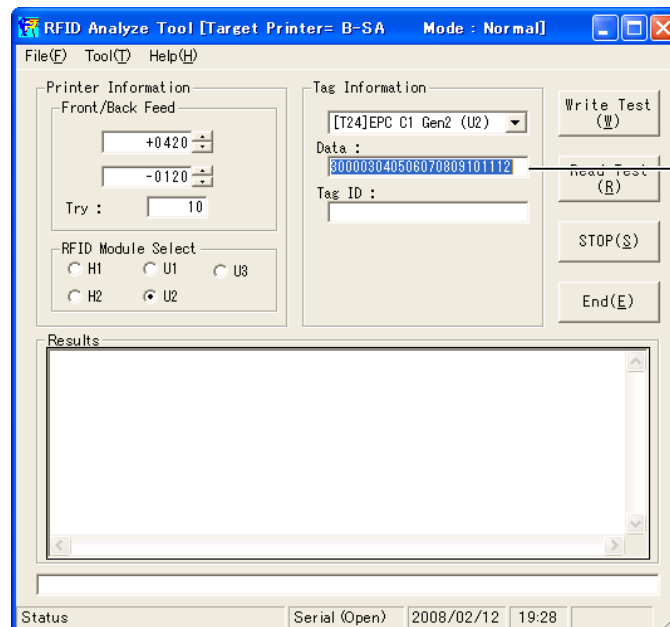
Selectable tag types are different depending on the RFID module types.

RFID module type	Tag type
U1: B-9704-RFID-U1-US/EU	ISO18000-6B (U1), EPC Class1 (U1), EPC C1 Gen2 (U1).
H1: B-9704-RFID-H1-QM	C220 (H1), I-Code (H1), ISO15693 (H1), Tag-it (H1) and C320 (H1)
U2: B-SA704-RFID-U2-EU/AU/US/CN-R B-SX708-RFID-U2-EU/CN-R	EPC C1 Gen2



Tag Type

Tag Data



Tag Data

Data to be written onto a tag is entered.

Data is different for each tag type. Please note the Analyze Tool program does not check the data to be written on to a tag.

NOTE: When the U2 type module tries to write same data that has already been written onto the same tag, a data write operation is not performed and results in OK. To properly perform a write test on the U2 type module, entered data to be written is automatically changed each time of a retry, by rotating the data in units of 2 digits.

Example) 1st try: 123456789012 → 2nd try: 345678901212 → 3rd try: 567890121234 ...

Feed amount range (Front/Back Feed)

Set the feed amount range where an RFID tag is analyzed.

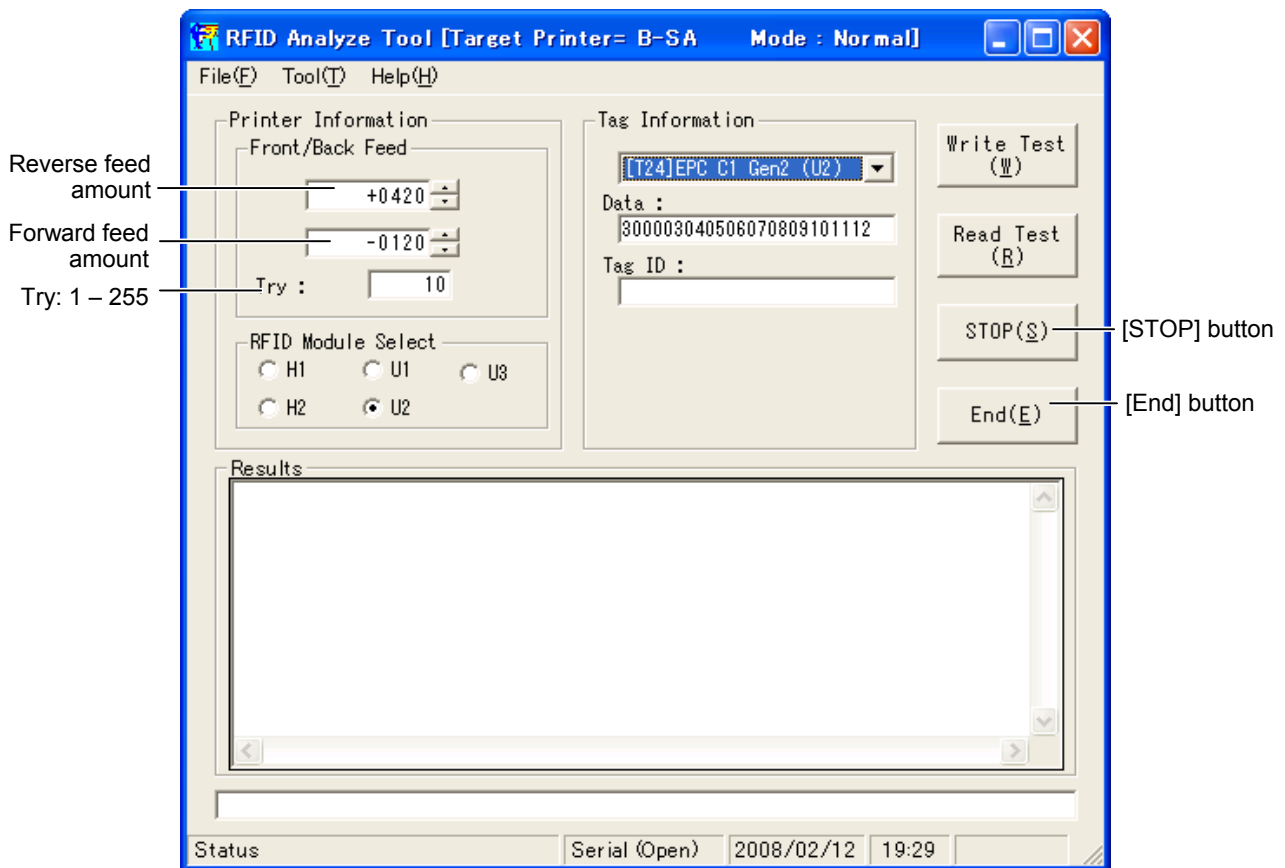
Upper limit (Reverse feed amount): 0 – 9990 (in units of 0.1 mm)

Lower limit (Forward feed amount): 0 – 9990 (in units of 0.1 mm)

The values can be entered by either pressing the “UP” or “DOWN” button or directly entering a number. While the printer feeds RFID tag media in the specified range, it stops feeding at 3-mm intervals and analyzes the read/write performance of tag.

The number of read/write times (Try)

Enter the number of times a data read/write is performed at each analysis position (1 – 255).



5. Perform a write test or read test.

Write test

Click on the "Write Test" button to start a write test.

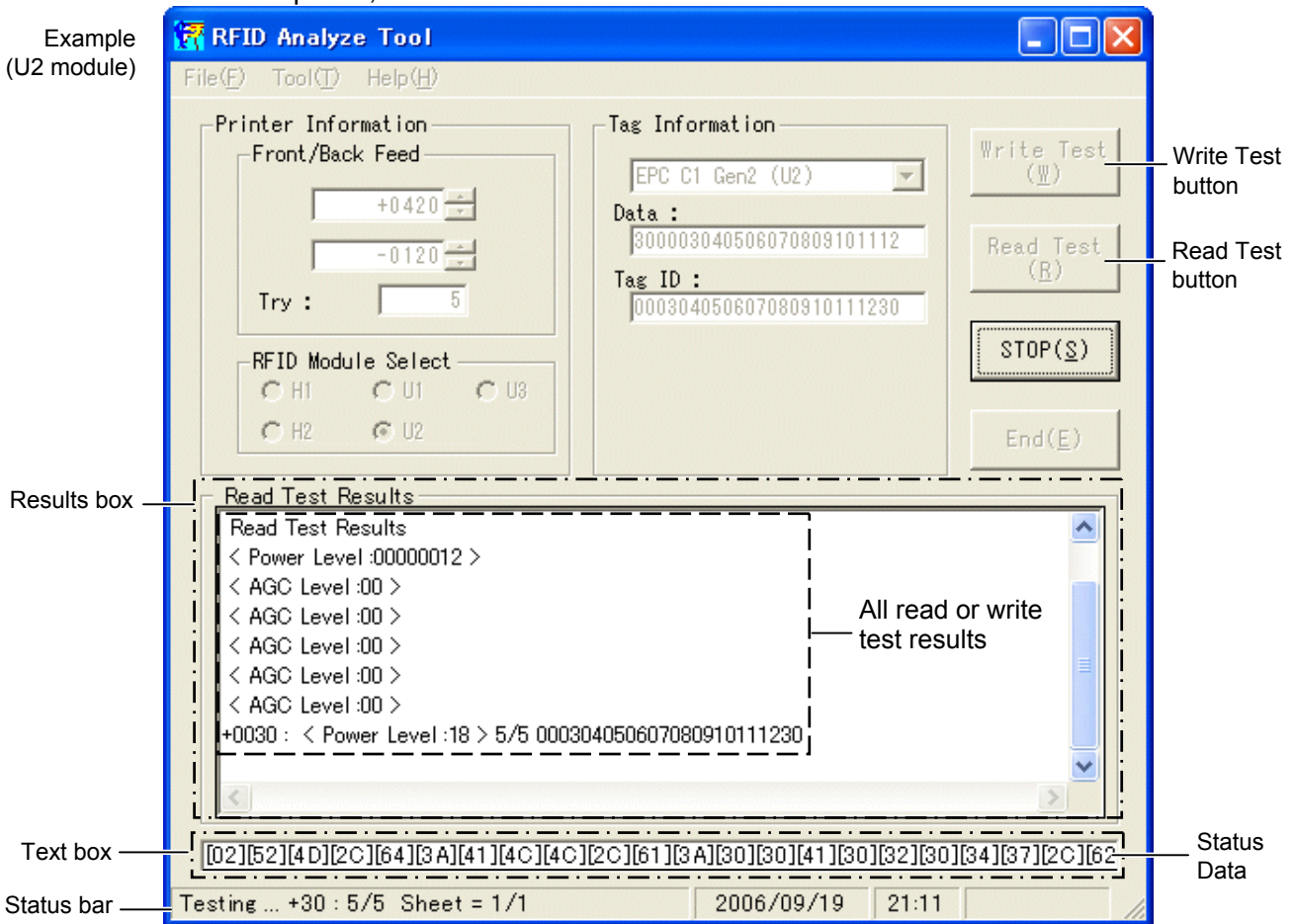
During the write test, total number of successful write and total number of write performed are shown in the status bar. In the text box above the status bar, status data sent from the RFID module is displayed. When the test is completed, all test results are shown in the "Results" box.

Read test

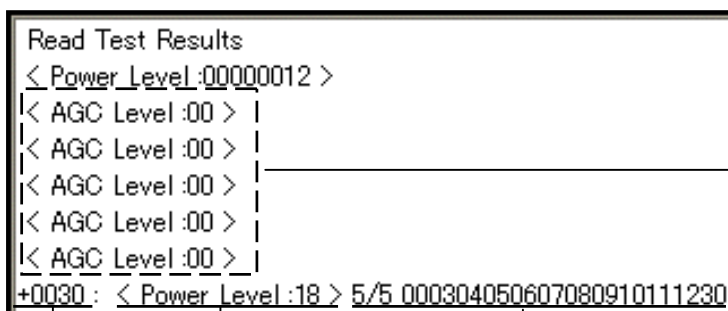
Click on the "Read Test" button to start a read test.

During the read test, total number of successful read and total number of read performed are shown in the status bar. In the text box above the status bar, status data sent from the RFID module is displayed. When the test is completed, all test results are shown in the "Results" box.

Example
 (U2 module)



Write/Read Results Box (When U2 is selected.)



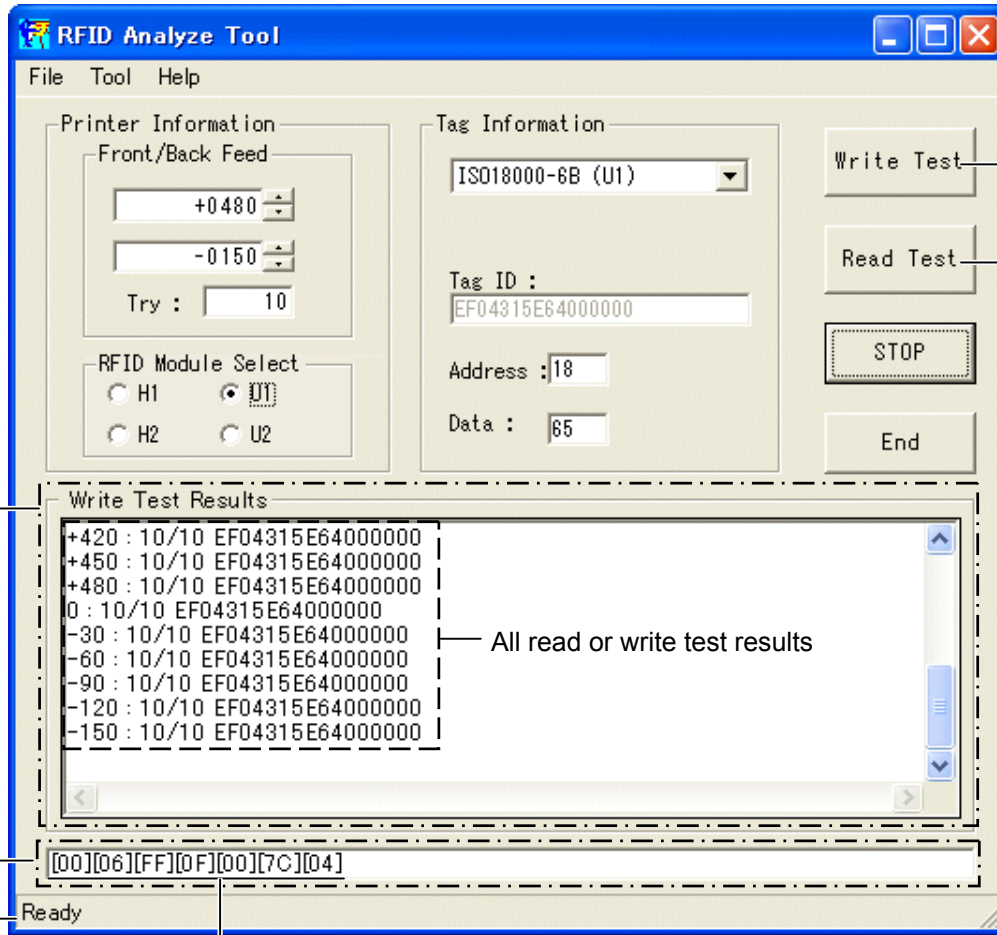
<AGC Level 00> AGC 1st data: Rank 00 level
 <AGC Level 00> AGC 2nd data: Rank 00 level
 <AGC Level 00> AGC 3rd data: Rank 00 level
 <AGC Level 00> AGC 4th data: Rank 00 level
 <AGC Level 00> AGC 5th data: Rank 00 level

Feed amount

Power Level

Number of times data read succeeded/Total number of read performed
 EPC Code (displayed only when a read test is performed.)

Example
 (U1 module)



Write Test button

Read Test button

Results box

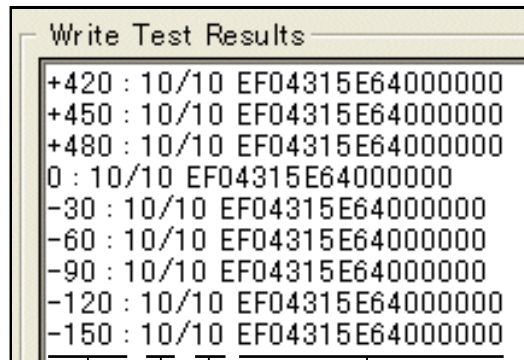
All read or write test results

Text box

Status bar

Status Data

Write/Read Results Box



Feed amount

Tag ID

Total number of succeeded tests

Total number of tests

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