TOSHIBA

TOSHIBA Bar Code Printer

B-SA4T Series

Supply Specification

First Edition: Aug. 4, 2005
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TOSHIBA TEC CORPORATION

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1. SCOPE

This manual describes the supplies for the B-SA4T series bar code printers.

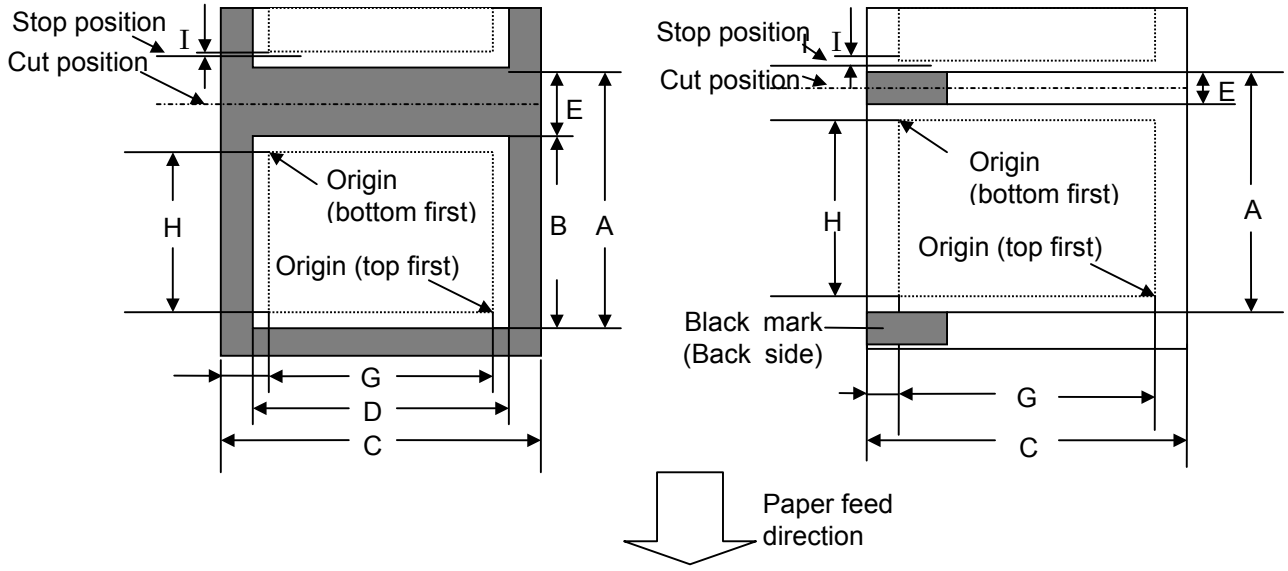
2. PAPER

2.1 TYPES OF PAPER

Two types of paper are available, labels and tags, each being further divided into the direct thermal type and thermal transfer type. The approved paper must be used.

Use of any non-approval paper may cause problems.

2.2 PAPER SIZE AND SHAPE



[Labels] **[Tags]**

[mm]

Item			B-SA4T*-G/T***-** (203 dpi, 300 dpi)			B-SA4TM-H***-** (600 dpi)		
Issue type			Batch	Strip	Cut	Batch	Strip	Cut
A	Label pitch	Direct thermal	10 – 999	19 – 999	19 – 999	–	–	–
		Transfer thermal	15 – 999			TBD	TBD	TBD
B	Label length	Direct thermal	8 – 997	17 – 997	16 – 996	–	–	–
		Transfer thermal	13 – 997			TBD	TBD	TBD
C	Tag width Backing paper width	Direct thermal	25 – 118					
		Transfer thermal	25 – 114					
D	Label width	Direct thermal	22– 115					
		Transfer thermal	22 – 111					
E	Label-to-label gap		2 –20	2 –5	3 –20	TBD	TBD	TBD
F	Black mark length		2 –10			TBD	TBD	TBD
G	Max. effective print width		G (200 dpi): 104 mm, T (300 dpi): 105.7 mm			TBD	TBD	TBD

Item				B-SA4T*-G/T***-** (203 dpi, 300 dpi)			B-SA4TM-H***-** (600 dpi)		
Issue type				Batch	Strip	Cut	Batch	Strip	Cut
H	Effective print length	Label	Direct thermal	6 – 995	15 – 995	14 – 994	–	–	–
			Transfer thermal	11 – 995			TBD	TBD	TBD
		Tag	Direct thermal	8 – 997		17 – 997	–	–	–
			Transfer thermal	13 – 997			TBD	TBD	TBD
I	Slow-up and down area			1 mm for each			TBD		
J	Thickness		Direct thermal	80 – 170 µm (Max. 263 µm for tag width 25 – 50 mm) *Approved media only	130 – 170 µm *Approved media only	80 – 170 µm (Max. 263 µm for tag width 25 – 50 mm) *Approved media only	TBD	TBD	TBD
			Transfer thermal	100 – 170 µm (Max. 263 µm for tag width 25 – 50 mm) *Approved media only	130 – 170 µm *Approved media only	100 – 170 µm (Max. 263 µm for tag width 25 – 50 mm) *Approved media only	TBD	TBD	TBD
K	Max. Roll Diameter		4TM	Ø200			TBD		
			4TP	Ø152.4 (6")			–	–	–
L	Rolling-up Method			Inside/outside wound			TBD		
M	Paper Core			ID Ø38, 40, 42, 76.2 mm ± 0.3			TBD		

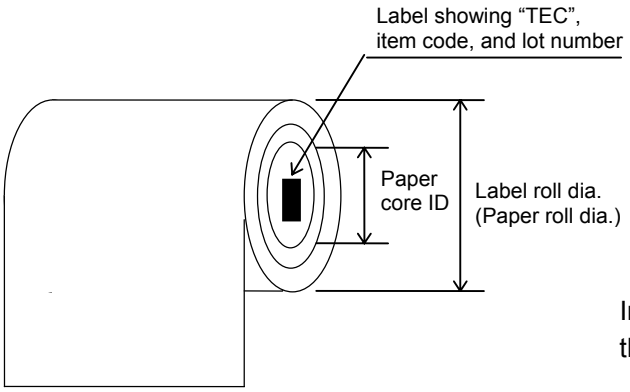
NOTES:

1. *The ratio of "Label length" to "Gap length" must be 3:1 or more.*
2. *The backing paper is approved together with label.*
3. *Labels must have a 1.5 mm or more backing paper area at right/left side.*
4. *The backing paper to be used must be glassine paper (7K or 8K, white) or equivalent, and must have a transmission factor of 22% or more.*

5. *A label showing "TEC", item code, and lot number must be attached to the paper core inside.*

   For reference:

   Relationship between Paper Roll Length and Paper Core Diameter



$$L = \frac{(D^2 - d^2)\,\pi}{4t}$$

L: Paper length
D: Paper roll diameter
d: Paper core outside diameter
t: Paper thickness

In calculation, the unit of each factor must be the same.

6. *When the perforated label or tag is used, it is necessary to test and confirm the cutting performance in cut issue mode beforehand.*
7. *The cut position must be finely adjusted so that the cutter cuts the label at a specified position.*
8. *When the stop position is not proper, the print stop position should be changed by the strip position fine adjustment.*
9. *When the gap between labels is 5 mm or more, the effective print length should be set to the maximum value (Label pitch minus 2 mm), then the print stop position should be changed by the strip position fine adjustment.*
10. *If paper is jammed at the platen when cut issue is performed, enable the forward feed function ("FORWARD WAIT") in system mode.*
11. *When a label is used with the forward feed function ("FORWARD WAIT") enabled in order to ease manually cut the label, the label is fed in a manner so that the gap stops at the edge of the strip shaft after printing the last label to be printed. Please note that with this setting, issuing a next label without cutting the label may cause the label to be removed when a back feed is performed, which may cause a printer problem.*
12. *Head position adjustment depending on paper thickness*
    When using labels and tags of 150 µm or less, move the head pressure adjustment lever toward the front (2 places). If printing blurs when printing on a tag of 150 µm or more, move the lever toward the back of the printer.
13. *Using tags, of which width 25 mm to 50 mm and thickness 171 to 263 µm, may shorten the life of the platen faster than usual.*
14. *Cutting labels (label and backing paper) in cut issue mode may shorten the life of the cutter due to glue used for the labels.*
15. *The glue of the label shall be equivalent to that of C6NS. Use of other glues requires an evaluation test separately. * Adhesion (JIS Z0237)*
16. *The glue shall be applied to the entire surface of the label. Other labels are not acceptable.*
17. *Use of the labels of which adhesion has been reduced in advance is not acceptable.*
18. *Use of fanfold paper is not acceptable.*

19. For the thermal paper of which width is 60mm or narrower, the following platen kits for narrow paper are optionally available

Option name	B-SA704-PK60-R (Platen kit 60 for narrow paper)	B-SA704-PK-40-R (Platen kit 40 for narrow paper)
Applicable paper width	36mm to 60mm	25mm or greater and less than 36mm

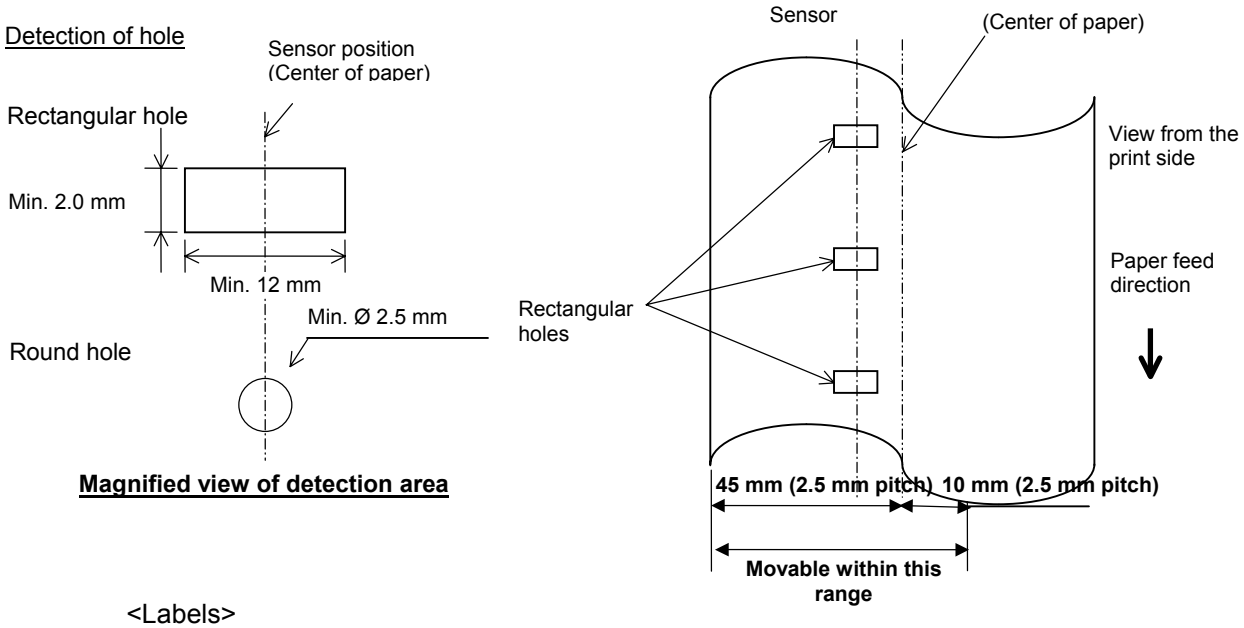
When using the thermal paper of which pitch is 22mm or less, replace the print head with the one supplied with the above platen kits. (B-SA704-DTPH3)

2.3 DETECTION AREA ON LABELS AND TAGS

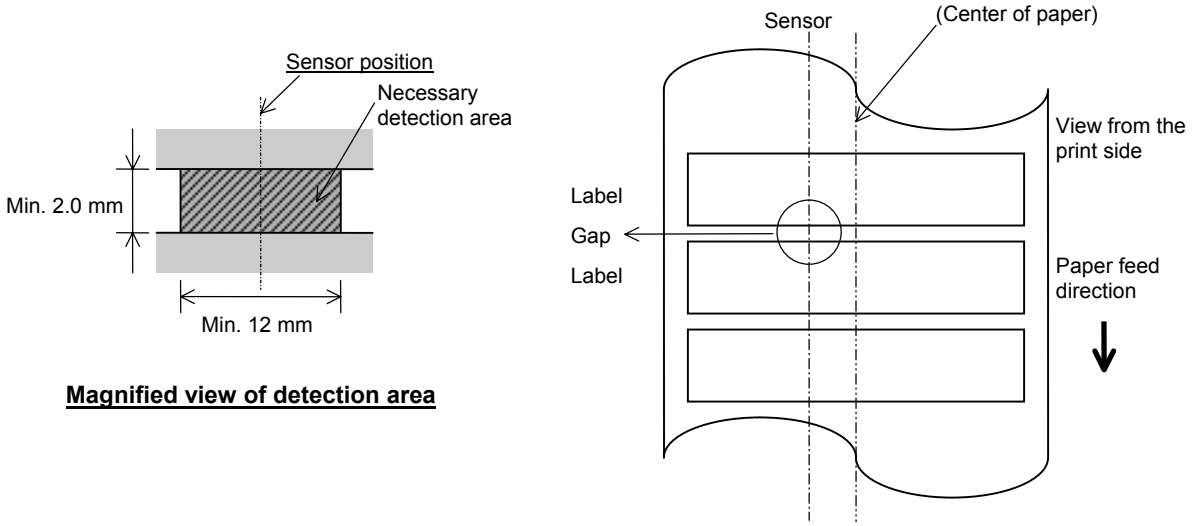
2.3.1 Detection Area of Transmissive Sensor

- The sensor is movable in the range from the center of the paper in 2.5 mm pitch.
- **Align the upper and lower sensor positions.**
- **The center of the round hole must align with the center of the paper with a tolerance of ±0.2 mm.**
- **When using the narrow paper (especially 32 mm or narrower paper) with rectangular holes, the specification of such paper may not comply with the following conditions.**

<Tags>

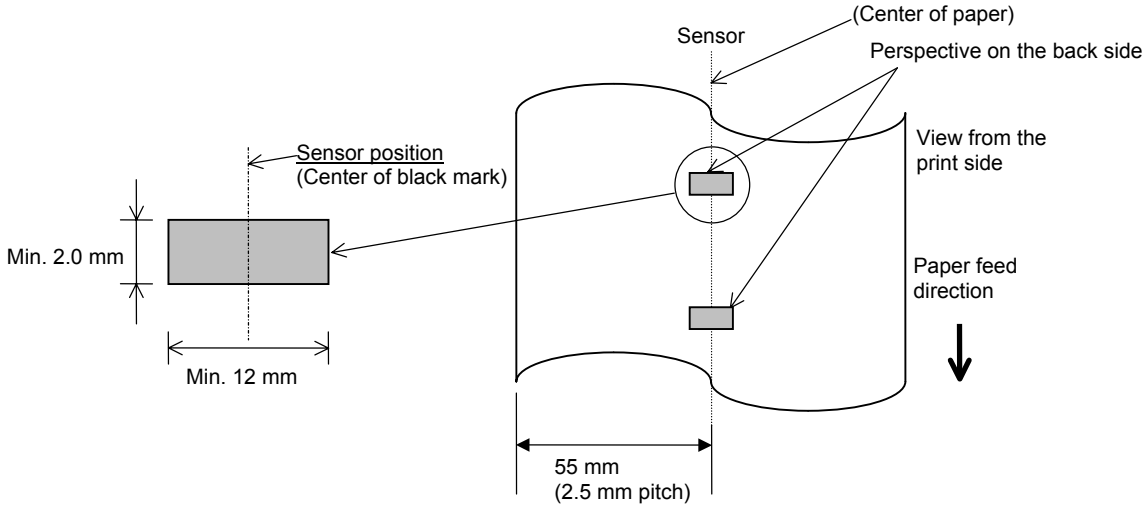


<Labels>



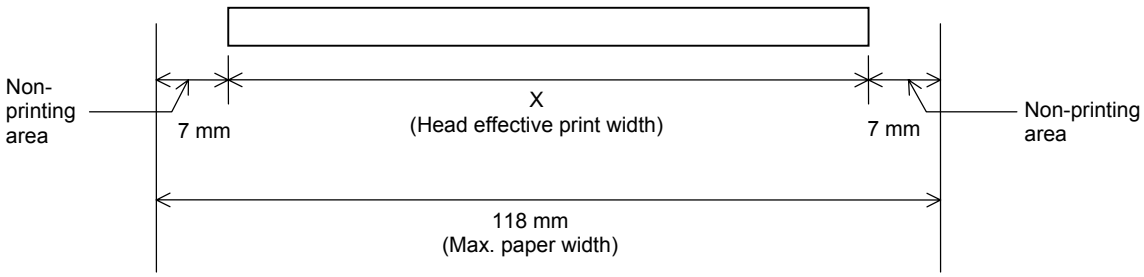
2.3.2 Detection Area of Reflective Sensor

- The sensor is movable in the range from the center of the paper in 2.5 mm pitch.
- The reflectance of the black mark must be 10% or less with a waveform length of 950 nm.
- The sensor detects at the center of the black mark.
- The black marks, if necessary, must be printed on the labels in the gap areas. (See (5) in section 2.4.4.)
- Rectangular holes can substitute the black marks, on the condition that nothing is printed on the back side. Round holes cannot be detected by the reflective sensor.



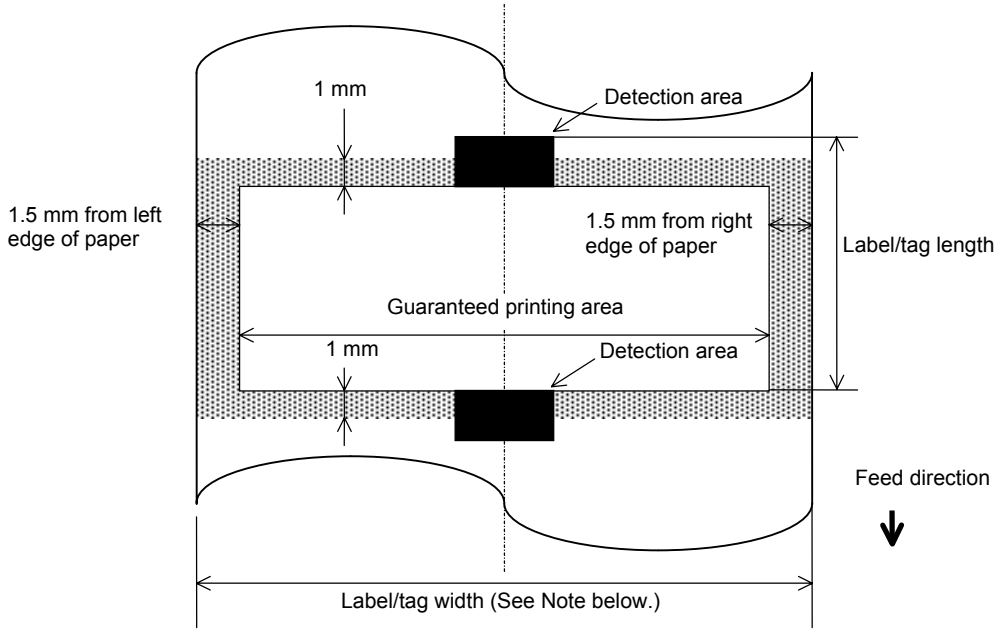
2.4 EFFECTIVE PRINT AREA OF PAPER

2.4.1 Relationship between Print Head Effective Print Width and Paper Width



Resolution (Series)	G (203 dpi)	T (300 dpi)	H (600 dpi)
X	104 mm	105.7 mm	TBD
Y	7 mm	6.15 mm	TBD

2.4.2 Effective Print Area of Tags and Labels



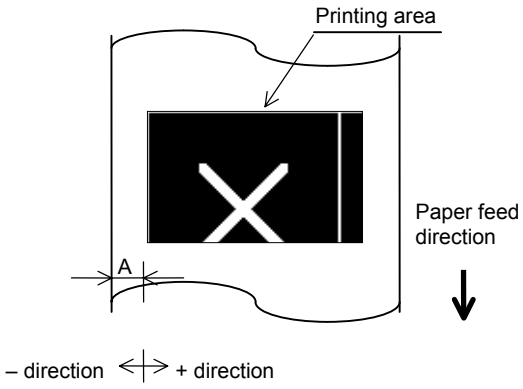
NOTE: *Print quality in the shaded area is not guaranteed.*
If printing is performed in the shaded area, the ribbon may wrinkle. This may affect the print quality of the guaranteed printing area.
The print quality is not guaranteed in the area 3 mm from the head stop position (including 1-mm unprintable area for the slow-up).

2.4.3 Print Position Misalignment

(1) Horizontal (Meandering)

Horizontal misalignment due to repetition:
A = ±1.0 mm

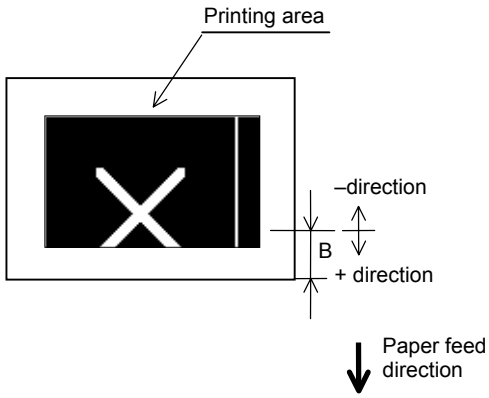
To determine the reference value for A, make a print test 10 times or more using the specified label or tag, and adjust the print position using the average value of the variations to the programmed print position.



(2) Vertical (Feed Direction)

Vertical misalignment due to repetition: B
B = ±1.0 mm

To determine the reference value for B, make a print test 10 times or more using the specified label or tag, and adjust the print position using the average value of the variations to the programmed print position. B has a ±3% variation to the programmed value.



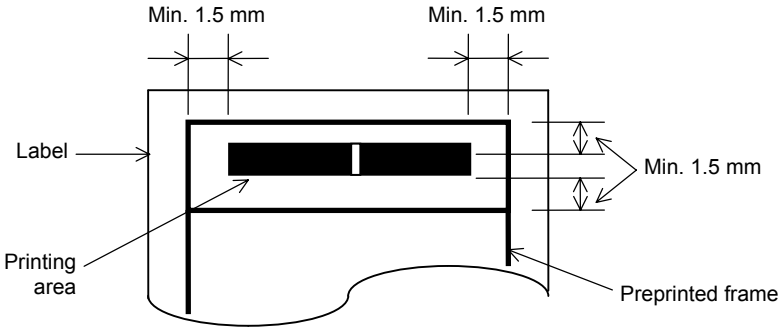
(3) Variation among machines

Variation among machines is ±1.0 mm in both horizontal and vertical directions, which can be adjusted by print position fine adjustment and X-coordinate fine adjustment (X ADJUST). For details, refer to the B-SA4T Key Operation Specification (RAA-2166).

Precaution for Preprinting

Preprinting should be performed in the area at least 1.5 mm from the printing area, taking the print position variation into consideration.

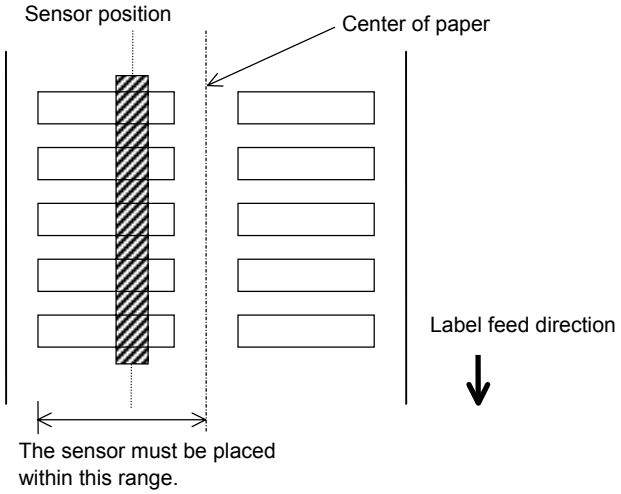
(Example)



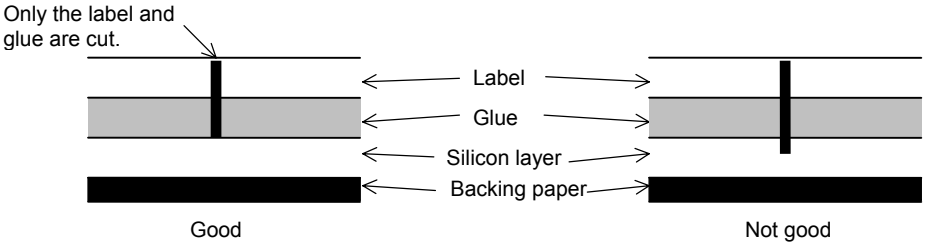
2.4.4 Suggestions for Designing Labels

(1) Suggestions for Multiple-piece Labels

To properly detect each label by the transmissive sensor, the necessary detecting area that is specified in section 2.3.1 should be provided. At the same time, the shaded area shown below must be non-transmissive, excluding the necessary detecting area.

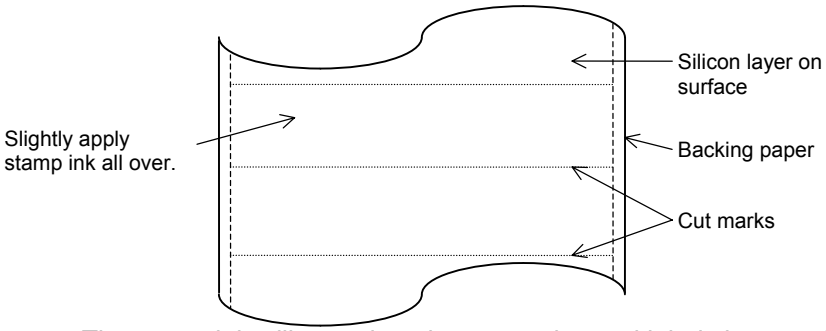


(2) Use a label of which silicon layer at the die-cut part is not damaged.



[Judgment Method]

Remove some labels from the backing paper, slightly apply stamp ink all over the backing paper surface. Judge the cut condition by observing the darkness of the ink.



The stamp ink will enter into the cut marks, and label shapes will emerge.

① If the back of the backing paper is saturated with ink, this means the silicon layer is damaged. The label is unacceptable.

② If the darkness of the cut marks is clearly uneven, the label is unacceptable.

③ If the entire cut marks look light, the label is acceptable.

(3) Note on Perforation

Labels and tags must always be perforated from the printing side.

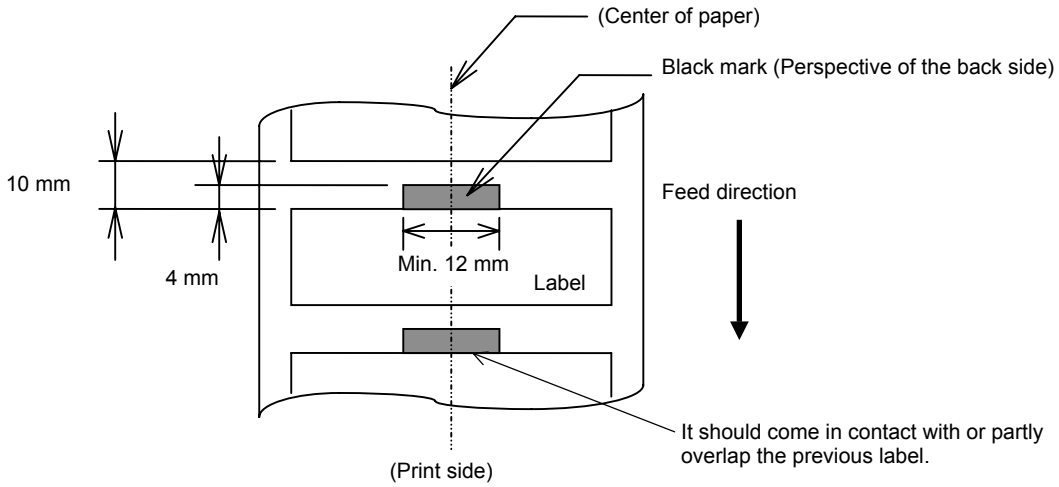
(4) Note on Preprinting

The print head may be abnormally worn depending on the ink to be used. Ink which do not contain materials of high hardness, such as, calcium carbonate and kaolin, should be used for preprinting.

(5) Notes on Printing Black Marks on the Label

The black marks should be printed on the back of the gaps.
The black marks should be positioned so that they come in contact with or partly overlap the previous label. (See the figure below.)

(Example) Gap length: 10 mm
Black mark: 4 mm



2.5 APPROVED PAPER

Approved papers are shown in ATTACHMENT-1. Use the approved paper that matches the approved ribbon.
The manufacturer type number of approved papers must be handled carefully and must not be revealed.

3. RIBBON

3.1 RIBBON

The approved ribbon must be used.

Use of any non-approved ribbon may cause problems.

3.2 SHAPE AND SIZE OF RIBBON

No.	Item		Specification
1	Ribbon Shape		Spool type
2	Ribbon Width		60 mm to 110 mm (TEC standard 60, 90, 110 mm)
	Ribbon Width Tolerance		± 1 mm
	Ribbon Winding Width		Ribbon width: $^{+1}_{-0}$ mm
3	Max. Ribbon Length		450 m (Ø 75 mm or less)
4	Max. Ribbon OD		Ø 75 mm
5	Back Treatment		Coated
6	Ribbon Core	Material	Paper
		Shape	See Fig. 1.
7	Leader Tape		Polyester film (opaque), 260 ± 5 mm long
8	End Tape		None
9	Winding Method		The ribbon is wound outside. For the core and ribbon winding positions, see Fig. 2.

NOTES: *1. The ribbon type number and the lot No. should be stamped with black indelible ink on the edge surface of the paper core. (When they cannot be stamped on the edge surface of the paper core by the manufacturer, a location where they should be stamped must be separately specified.)*

2. The ribbon must be wider than the paper width by 5 mm or more.

- *When the difference between the ribbon width and the paper width is too large, the ribbon may wrinkle.*
  Be careful of the upper limit of the ribbon width. For details, refer to ***3.3 NOTES ON USING RIBBON****.*

Fig. 1: Core Shape

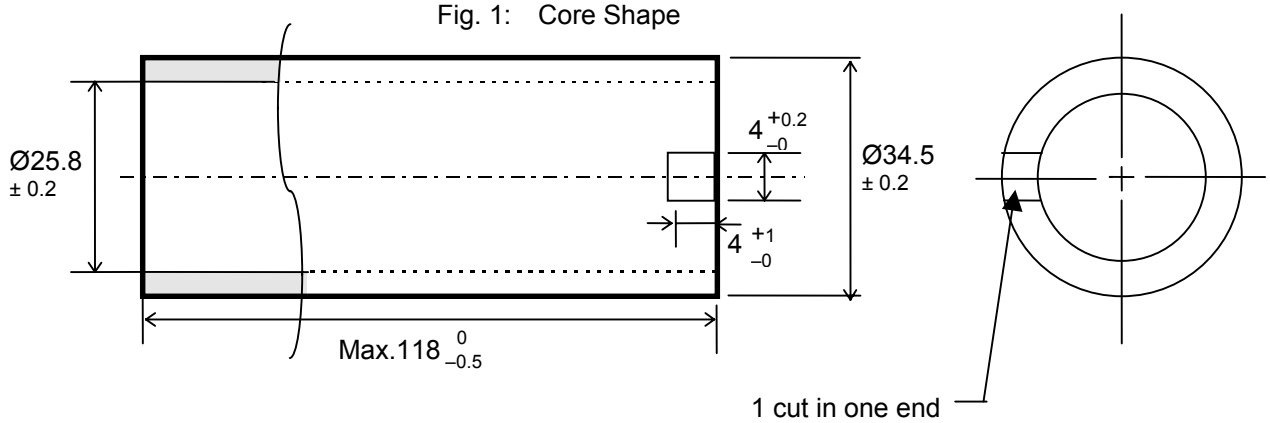
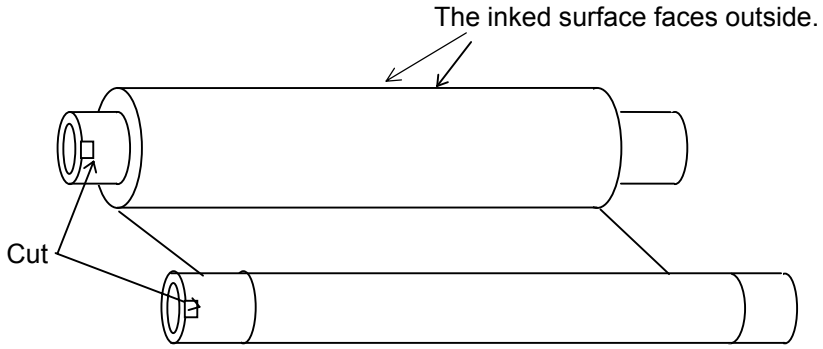
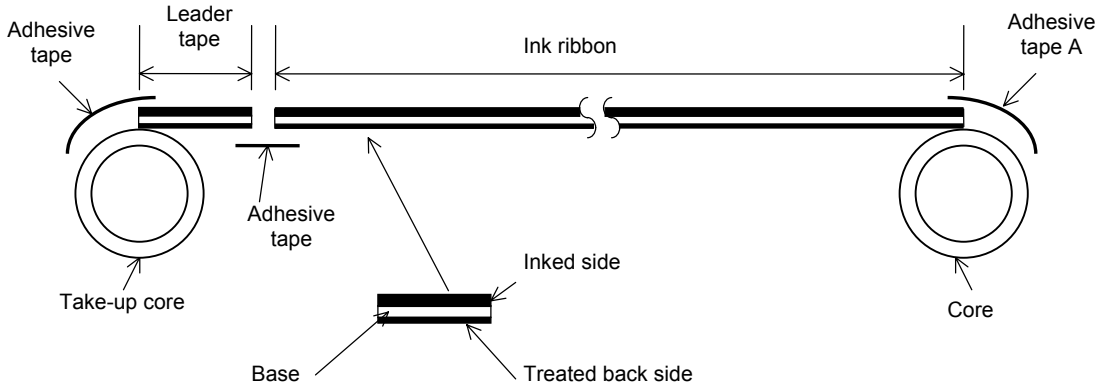


Fig. 2: Positional Relationship between Core and Ribbon



Wind the ink ribbon so that the ribbon center aligns with the core center **with a tolerance of ±1 mm.**

Fig. 3: Connection between Leader Tape and Ribbon



NOTES:

1. *The ink ribbon must be wound at a right angle to the core. The ribbon type number and the lot No. should be stamped with a black indelible ink on the leader tape.*
2. *The adhesive tape A must be applied at the both ends (2 places) and its tensile strength when peeled off from the core must be 200 g or less.*
3. *The length of the adhesive tape A is 20 mm or less and the length that is applied on the core (in feed direction) must be 10 mm or less.*
4. *Instead of using the adhesive tape, other materials such as double-sided adhesive tape can be used between the ink ribbon and the core as long as tensile strength when peeled off from the core is 200 g or less.*

3.3 NOTES ON USING RIBBON

If the difference between the ribbon width and the paper width is too large, the ribbon may wrinkle. Refer to the table below and choose the paper appropriate to the ribbon width. Do not use a ribbon of which width is narrower than that of paper. Paper width here means the width of tags or labels (not backing paper).

Ribbon width	60 mm	90 mm	110 mm
Appropriate paper width	25 to 55 mm	55 to 85 mm	85 to 105 mm

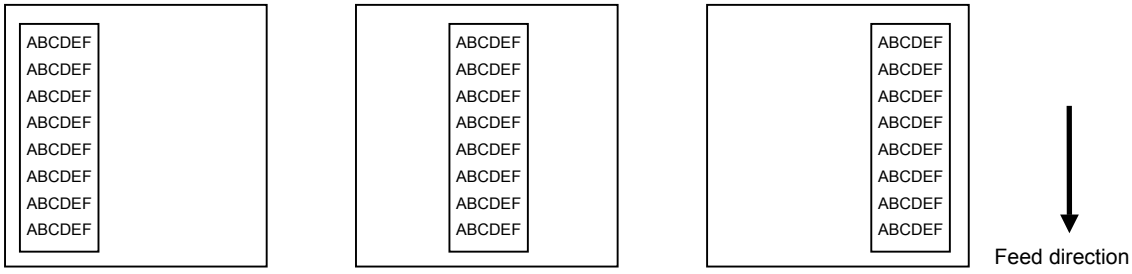
Note: If the ribbon wrinkles or the printed image shrinks or extends when using 60-mm or 90-mm wide ribbon, both the ribbon feed motor voltage and the ribbon take-up motor voltage should be decreased in the system mode.

3.4 APPROVED RIBBON

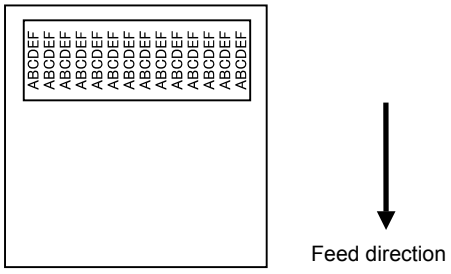
The approved ribbons are shown in ATTACHMENT-2.
The manufacturer ink names must be handled carefully and must not be revealed.

3.5 NOTES

3.5.1 If printing is performed using only a narrow range of the ribbon as shown below, the ribbon may wrinkle.



Not preferable Not preferable Not preferable



Preferable

3.5.2 When a ribbon error occurs, the ribbon tension value for the ribbon feed motor should be adjusted in the negative (−) direction. For details regarding the fine adjustment of the ribbon motor drive voltage, refer to the Key Operation Specification (TAA-2166).

4. PRINT CONDITIONS

4.1 PRINT QUALITY OF BAR CODE

Head Resolution	Bar code	Speed	NB	NS	WB	WS	CS	Criteria		Criteria 2*1
B-SA4T*-G***_** (203 dpi)	Parallel	2”/sec.	2	2	5	5	2	Readable	Grade C	
		4”/sec.	2	2	5	5	2	Readable	Grade C	
		6”/sec.	2	2	5	5	2	Readable	Grade C	
	Serial	2”/sec.	2	2	5	5	2	Readable	(Grade C)	
		4”/sec.	2	2	5	5	2	Readable	(Grade C)	
		6”/sec.	2	2	5	5	2	Readable	(Grade C)	
B-SA4T*-T***_** (300 dpi)	Parallel	2”/sec.	3	3	8	8	3	Readable	Grade C	Grade C
		4”/sec.	3	3	8	8	3	Readable	Grade C	Grade C
		6”/sec.	3	3	8	8	3	Readable	Grade C	Grade C
	Serial	2”/sec. (TT)	3	3	8	8	3	Readable	(Grade C)	Grade F
		2”/sec. (DT)	3	3	8	8	3	Readable	(Grade C)	---
		4”/sec. (TT)	3	3	8	8	3	Readable	(Grade C)	Grade F
		4”/sec. (DT)	3	3	8	8	3	Readable	(Grade C)	---
		6”/sec. (TT)	3	3	8	8	3	Readable	(Grade C)	Grade F
		6”/sec. (DT)	3	3	8	8	3	Readable	(Grade C)	---
B-SA4T*-H***_** (600 dpi)	Parallel	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	
		TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	
	Serial	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	
		TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	

NB: Narrow bar width, NS: Narrow space width, WB: Wide bar width, WS: Wide space width,
CS: Space between characters, Bar code type: CODE39, Number of digits: 10
TT: Thermal transfer, DT: Direct thermal

NOTES:

1. Serial bar codes may not be readable depending on the number of bar code digits, supplies used or print density fine adjustment, even if the above conditions are satisfied. When the number of digits exceeds 10, the spaces (NS, WS) should be increased, or the print density should be turned down.
2. If print data of high printing ratio, like serial bar codes, continues, spots may be printed where the print head stops due to accumulated heat in the print head. In this case, take the following action:
   1) In case of printing labels, set the effective print length to the max. value (label pitch minus 2 mm) so that the print head stops on the gap.
   2) In case of printing tags in the cut mode, set the effective print length to the max. value (tag pitch minus 2 mm) so that the tag will be cut at the stop position.

3) In case of printing perforated tags, change the stop position by the fine adjustment so that it is just on the perforations.

4) If the problem cannot be eliminated by the above 1) to 3), lower the print speed, lower the print density using the fine adjustment, or change the print pattern.

*1: Criteria 2 are the criteria for approval of 3M labels.

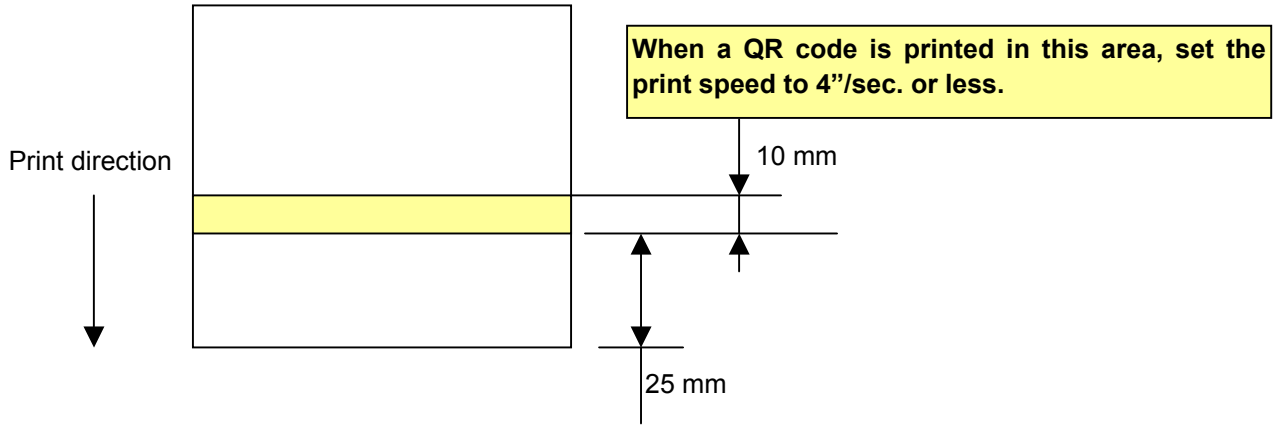
4.2 PRINT QUALITY OF QR CODE

Print speed	2"/sec.	4"/sec.	6"/sec.
1 cell	3 dots or more	3 dots or more	4 dots or more
Criteria (Grade)	D (1.0) or greater	D (1.0) or greater	D (1.0) or greater

Note: JIS X 05109 (2-D code symbol QR code Basic Specification)

1) Adjust the print tone according to the print formats and supplies used.

When the QR code is regarded as important, adjust the print density in the negative (–) direction.



4.3 PRINT RATIO

Maximum print ratio is 30% of paper area.

4.4 LINE PRINTING

Line printing is guaranteed for minimum of 3 dots up to 10 mm. The minimum pitch for 10 mm horizontal line is 30 mm. (Print ratio must be 30% or less.)

4.5 PRINT DENSITY

The print density should be adjusted according to print data and supplies used, as indicated in ATTACHMENT-4.

When the serial bar code is regarded as important, adjust the print density in the negative (–) direction, and when the horizontal line is regarded as important, adjust the print density in the positive (+) direction. If void printing occurs, adjust the print density in the positive (+) direction, and if reverse thermal transfer or ribbon wrinkles occur, adjust the print density in the negative (–) direction.

4.6 DURABILITY

If the printout is used in an environment where its surface may be rubbed, confirm the durability of the printout before it is used. Basically rubbing the printout surface deteriorates the quality. The supply that is suitable for that particular environment should be used.

4.7 OTHER CAUTIONS

(1) The thermal paper used for direct thermal printing must not have specifications that exceed Na^+ 800 ppm, K^+ 250 ppm and Cl^- 500 ppm.

(2) Use of paper containing SiO_2 talc which may cause abnormal abrasion of the print head protection layer should be avoided.

(3) If the ribbon and paper are left under the print head's pressure for a long period of time, the ribbon may stick to the paper. When printing is resumed, a problem may occur.

(4) If a cut issue is performed for perforated paper, adjust the cut position by the fine adjustment so that the paper is cut on the perforations or a little behind the perforations.

ATTACHMENT-1 APPROVED PAPERS/RECOMMENDED PAPERS

<For internal use>

Type		Item Code	Manufacturer Type No.	Paper Thickness (μm) For labels, backing paper is not included.	Manufacturer	Remarks	Applicable Models (indicated with ○)		
							G	T	H
Label	Direct thermal type		135LSB		RICOH	Outside Japan only	○	○	
			Intermec440		Intermec	Recommended paper (EU only)	○		
			150UTB		RICOH	Outside Japan only	○	○	
			VTNS	80	OSAKA SEALING PRINTING		○	○	
			PTNS	78	OSAKA SEALING PRINTING		○	○	
			150LA-1	82	RICOH		○	○	
			150LHB	79	RICOH		○	○	
			130LHB	80	RICOH			○	
			SP TACK (coated)		SP TACK			○	
			GFNS (Star)	79	OSAKA SEALING PRINTING	Star thermal (NOTE 3)		○	
			NQNS (Yupo)	80	OSAKA SEALING PRINTING	Yupo thermal (NOTE 4)	○	○	
			GINS	86	OSAKA SEALING PRINTING	High-sensitive Star thermal (NOTE 3)	○	○	
			FS600/P22/G7W	82	Oji Trading			○	
			V8NS		OSAKA SEALING PRINTING			○	
			HE90/P22/G7W		Oji Trading			○	
	Thermal transfer type		C6NS	66	OSAKA SEALING PRINTING		○	○	
			K8NS	93	OSAKA SEALING PRINTING			○	
			VES-85 (Yupo)	85	OSAKA SEALING PRINTING	Super premium ribbon used		○	
		FR-1412-50	White PET	50	LINTEC			○	
		FR-1815	Gloss silver PET	50	LINTEC			○	
		FR-1615-50	Silver chemical mat	50	LINTEC			○	
		FR-1225-50	Transparent PET	50	LINTEC			○	
			IKNS	80	OSAKA SEALING PRINTING			○	
			Vellum (Uncoated)		Raflatac	Recommended paper (Outside Japan only)	○	○	
			HGW (Coated, High gloss)		Fasson		○	○	
			Transtherm 1C (Coated, gloss)		Fasson		○	○	

Type		Item Code	Manufacturer Type No.	Paper Thickness (μm) For labels, backing paper is not included.	Manufacturer	Remarks	Applicable Models (indicated with ○)		
							G	T	H
			Transfer Matt (Coated, matt)		Raflatac		○	○	
			Thermfile 21944E		Flexcon	Recommended paper (Outside Japan only) Super premium ribbon used	○	○	
			7860(E)		3M		○	○	
		MP3PETMW	7874E		3M	Mat white PET		○	
		M5PETMW	7815EH		3M	Mat white PET		○	
		M-ACBW	3690E		3M	Bright white acrylate		○	
		M0PETGW	D85YB		3M	Gloss white PET		○	
		M0PETGC	76991		3M	Gloss clear PET		○	
		M1PETMC	76500		3M	Mat clear PET		○	
		M-PAGW	7000		3M	Gloss white paper		○	
		M0PPGW	76710		3M	Gloss white PP		○	
		M0PEMW	76998		3M	Mat white PE		○	
		MMMPETMW	5770		3M	Mat white PET		○	
		M-ACMW	3922		3M	Mat white acrylic		○	
		M-DPEMW	3812		3M	Mat white destructible polyurethane		○	
		MMDMPVOMW	7380		3M	Mat white PET VOID		○	
		M-DPVCMW	7613		3M	Mat white destructible PVC		○	
		M2PETGW	7816EH		3M	Gloss white PET		○	
		M4PETMS	G36CB		3M	Mat silver PET		○	
Tag	Direct thermal type		130LAB-150	150	RICOH		○	○	
			130LHB-150	150	RICOH		○	○	
			FS600 1K	100	Oji Trading			○	
			FS600 1N	120	Oji Trading			○	
	Thermal transfer type	IS53	I-BEST W	263	OSAKA SEALING PRINTING	Only 25 to 50 mm width papers		○	
		IS50	I-BEST S	164	OSAKA SEALING PRINTING		○	○	

NOTES:

1. Print conditions may differ for each direct thermal paper. Refer to ATTACHMENT-3.
2. Print conditions may differ for each thermal transfer paper depending on the ribbon used together. Refer to ATTACHMENT-4.
3. In the case the Star thermal or high-sensitive star thermal paper is used, the print head life is supposed to be 30km.
4. In the case the Yupo thermal paper is used, the print head life is supposed to be 10km.

ATTACHMENT -1 APPROVED PAPERS/RECOMMENDED PAPERS

<For dealers and users>

Type		Item Code	Manufacturer Type No.	Paper Thickness (μm) For labels, backing paper is not included.	Remarks	Applicable Models (indicated with ○)		
						G	T	H
Label	Direct thermal type		135LSB		Outside Japan only	○	○	
			Intermec440		Recommended paper (EU only)	○		
			150UTB		Outside Japan only	○	○	
			VTNS	80	For Japanese model	○	○	
			PTNS	78	For Japanese model	○	○	
			150LA-1	82	For Japanese model	○	○	
			150LHB	79	For Japanese model	○	○	
			130LHB	80	For Japanese model		○	
			SP TACK (coated)		For Japanese model		○	
			GFNS (Star)	79	Star thermal (NOTE 3) For Japanese model		○	
			NQNS (Yupo)	80	Yupo thermal (NOTE 4) For Japanese model	○	○	
			GINS	86	High-sensitive Star thermal (NOTE 3) For Japanese model	○	○	
			FS600/P22/G7W	82	For Japanese model		○	
			V8NS		For Japanese model		○	
			HE90/P22/G7W		For Japanese model		○	
	Thermal transfer type		C6NS	66	For Japanese model	○	○	
			K8NS	93	For Japanese model		○	
			VES-85 (Yupo)	85	Super premium ribbon used For Japanese model		○	
		FR-1412-50	White PET	50			○	
		FR-1815	Gloss silver PET	50			○	
		FR-1615-50	Silver chemical mat	50			○	
		FR-1225-50	Transparent PET	50			○	
			IKNS	80			○	
			Vellum (Uncoated)		Recommended paper (Outside Japan only)	○	○	
			HGW (Coated, High gloss)			○	○	
			Transtherm 1C (Coated, gloss)			○	○	
			Transfer Matt (Coated, matt)			○	○	
			Thermfile 21944E		Recommended paper (Outside Japan only) Super premium ribbon used	○	○	
			7860(E)			○	○	
		MP3PETMW			Mat white PET		○	
		M5PETMW			Mat white PET		○	
		M-ACBW			Bright white acrylate		○	
		M0PETGW			Gloss white PET		○	
		M0PETGC			Gloss clear PET		○	
		M1PETMC			Mat clear PET		○	
		M-PAGW			Gloss white paper		○	
		M0PPGW			Gloss white PP		○	
		M0PEMW			Mat white PE		○	

Type		Item Code	Manufacturer Type No.	Paper Thickness (μm) For labels, backing paper is not included.	Remarks	Applicable Models (indicated with ○)		
						G	T	H
		MMMPETMW			Mat white PET		○	
		M-ACMW			Mat white acrylic		○	
		M-DPEMW			Mat white destructible polyurethane		○	
		MMDMPVOMW			Mat white PET VOID		○	
		M-DPVCMW			Mat white destructible PVC		○	
		M2PETGW			Gloss white PET		○	
		M4PETMS			Mat silver PET		○	
Tag	Direct thermal type		130LAB-150	150	For Japanese model	○	○	
			130LHB-150	150	For Japanese model	○	○	
			FS600 1K	100	For Japanese model		○	
			FS600 1N	120	For Japanese model		○	
	Thermal transfer type	IS53	I-BEST W	263	Only 25 to 50 mm width papers For Japanese model		○	
		IS50	I-BEST S	164	For Japanese model	○	○	

NOTES:

5. Print conditions may differ for each direct thermal paper. Refer to ATTACHMENT-3.
6. Print conditions may differ for each thermal transfer paper depending on the ribbon used together. Refer to ATTACHMENT-4.
7. In the case the Star thermal or high-sensitive star thermal paper is used, the print head life is supposed to be 30km.
8. In the case the Yupo thermal paper is used, the print head life is supposed to be 10km.

ATTACHMENT-2 APPROVED RIBBONS

<For internal use> Type: W: Wax SR: Semi-resin R: Resin

Item Code	Manufacturer Ink Name	Ink Thickness	Base Thickness (μm)	Manufacturer	Type	Remarks	Applicable Models (indicated with ○)		
							G	T	H
BR-****W10	AWR406		4.5	ARMOR	W		○	○	
BR-****A11	APR5		4.5	ARMOR	SR		○	○	
BR-****A14	APR4		4.5	ARMOR	SR	For Japanese model	○	○	
BR-****A21	AXR7＋		4.5	ARMOR	R		○	○	
BR-****W05	AWR470		4.5	ARMOR	W		○	○	
BR-****A06	AWX500plus		4.5	ARMOR	W	For Japanese mode	○	○	
	TR4085plus		4.5	Sony Chemicals	W	For Japanese mode	○	○	
	TR6075		4.5	Sony Chemicals	R	For Japanese mode	○	○	
	TR6080		4.5	Sony Chemicals	SR	For Japanese mode	○	○	
BR-****R1	B-110A		4.5	RICOH	SR			○	
BR-****R2	B-110C		4.5	RICOH	R		○	○	
BR-****W10	AWR406		4.5	TOSHIBA TEC	W			○	
BR-****A11	APR5		4.5	TOSHIBA TEC	SR			○	
BR-****A21	AXR7＋		4.5	TOSHIBA TEC	R			○	
BR-****F11	TTM-84	2.65g/m^2	4.5	Fuji Copian	SR	For Japanese mode		○	
BR-****F21	TTM-164	1.60g/m^2	4.5	Fuji Copian	R	For Japanese mode		○	
BR-****F12	TTM-39	2.90g/m^2	4.5	Fuji Copian	W	For Japanese mode		○	
BR-****F10	TRX-21	2.50g/m^2	4.5	Fuji Copian	W	For Japanese mode		○	
BR-****F13	TTM-130	3.05g/m^2	4.5	Fuji Copian	SR	For Japanese model		○	
BR-****R2S	B110CR		4.5	RICOH	R		○	○	
BR-****R1N	TI-1		4.5	RICOH	SR	For Japanese mode		○	
BR-****F14	TTM-233	3.10g/m^2	4.5	Fuji Copian	SR	For Japanese mode		○	
BR-****R1S	B110AXS		4.5	RICOH	SR	For Japanese mode		○	
	APR6		4.5	ARMOR	SR			○	
	TR4085D		4.5	DNP	W	For Japanese mode		○	
	TR6080D		4.5	DNP	SR	For Japanese mode		○	
	TR6075		4.5	DNP	R	For Japanese mode		○	
	AWS	3.5μm	4.5	ARMOR	W			○	
	AWX-FH	4μm	4.5	ARMOR	W			○	

NOTE:

Print conditions and paper to be used may differ for each ribbon. Refer to ATTACHMENT-4.

ATTACHMENT-2 APPROVED RIBBONS

<For dealers and users> Type: W: Wax SR: Semi-resin R: Resin

Item Code	Manufacturer Ink Name	Ink Thickness	Base Thickness (μm)	Type	Remarks	Applicable Models (indicated with ○)		
						G	T	H
AW1			4.5	W		○	○	
AG2			4.5	SR		○	○	
BR-****A14			4.5	SR	For Japanese model	○	○	
AS1			4.5	R		○	○	
AW1			4.5	W		○	○	
BR-****A06			4.5	W	For Japanese model	○	○	
	TR4085plus		4.5	W	For Japanese model	○	○	
	TR6075		4.5	R	For Japanese model	○	○	
	TR6080		4.5	SR	For Japanese model	○	○	
RG2			4.5	SR			○	
RS1			4.5	R		○	○	
AW1			4.5	W			○	
AG2			4.5	SR			○	
AS1			4.5	R			○	
BR-****F11		2.65g/m^2	4.5	SR	For Japanese model		○	
BR-****F21		1.60g/m^2	4.5	R	For Japanese model		○	
BR-****F12		2.90g/m^2	4.5	W	For Japanese model		○	
BR-****F10		2.50g/m^2	4.5	W	For Japanese model		○	
BR-****F13		3.05g/m^2	4.5	SR	For Japanese model		○	
RS3			4.5	R		○	○	
BR-****R1N			4.5	SR	For Japanese model		○	
BR-****F14		3.10g/m^2	4.5	SR	For Japanese model		○	
BR-****R1S			4.5	SR	For Japanese model		○	
AG3			4.5	SR			○	
	TR4085D		4.5	W	For Japanese model		○	
	TR6080D		4.5	SR	For Japanese model		○	
	TR6075		4.5	R	For Japanese model		○	
AW4		3.5μm	4.5	W	For Japanese model		○	
AW5		4μm	4.5	W			○	

NOTE:

Print conditions and paper to be used may differ for each ribbon. Refer to ATTACHMENT-4.

ATTACHMENT-3 PRINT CONDITIONS BY DIRECT THERMAL PRINTING SPEED

<For internal use>

203 dpi Direct thermal papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LSB	OK		Unusable.	
2	130LAB-150	OK		Unusable.	For Japanese model
3	Intermec440	OK			
4	150UTB	OK			
5	VTNS	OK			For Japanese model
6	PTNS	OK			For Japanese model
7	150LA-1	OK			For Japanese model
8	150LHB	OK			For Japanese model
9	130LHB-150	OK			For Japanese model
10	NQNS (Yupo)	OK			For Japanese model
11	GINS	OK			For Japanese model
12	SP TACK (Coated)	Unusable.		OK	For Japanese model

NOTES:

1. “OK” in the table above indicates “Approved”.
2. For some papers, 6-ips speed is not available.

300 dpi Direct thermal papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LAB-150	OK		Unusable.	For Japanese model
2	PTNS	OK			For Japanese model
3	150LA-1	OK			For Japanese model
4	150LHB	OK			For Japanese model
5	130LSB	OK		Unusable.	
6	130LHB	OK		Unusable.	For Japanese model
7	130LHB-150	OK			For Japanese model
8	150UTB	OK		Unusable.	
9	SP TACK (Coated)	OK		Unusable.	For Japanese model
10	VTNS	OK		Unusable.	For Japanese model
11	GFNS (Star)	OK			For Japanese model
12	NQNS (Yupo)	OK			For Japanese model
13	GINS	OK			For Japanese model
14	FS600 P22/G7W	OK			For Japanese model
15	FS600 1K	OK			For Japanese model
16	FS600 1N	OK			For Japanese model
17	V8NS	OK			For Japanese model Refer to Conditions 2 and 3.
18	HE90 P22/G7W	OK			For Japanese model Refer to Condition 3.

NOTES:

1. “OK” in the table above indicates “Approved”.
2. For some papers, 6-ips speed is not available.

CONDITION:

1. If a serial barcode has a bleeding problem, the spaces can be widened by 2 dots using the flexible barcode setting. This can improve the quality of the serial barcode.
2. Serial bar code cannot be used at 2 ips.
3. Serial bar code cannot be used at 6 ips.

ATTACHMENT-3 PRINT CONDITIONS BY DIRECT THERMAL PRINTING SPEED

<For dealers and users>

203 dpi Direct thermal papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LSB	OK		Unusable.	
2	130LAB-150	OK		Unusable.	For Japanese model
3	Intermec440	OK			
4	150UTB	OK			
5	VTNS	OK			For Japanese model.
6	PTNS	OK			For Japanese model
7	150LA-1	OK			For Japanese model
8	150LHB	OK			For Japanese model
9	130LHB-150	OK			For Japanese model.
10	NQNS (Yupo)	OK			For Japanese model
11	GINS	OK			For Japanese model
12	SP TACK (Coated)	Unusable.		OK	For Japanese model

NOTES:

1. “OK” in the table above indicates “Approved”.
2. For some papers, 6-ips speed is not available.

300 dpi Direct thermal papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LAB-150	OK		For Japanese model	For Japanese model
2	PTNS	OK			For Japanese model
3	150LA-1	OK			For Japanese model
4	150LHB	OK			For Japanese model
5	130LSB	OK			
6	130LHB	OK		For Japanese model	
7	130LHB-150	OK			For Japanese model
8	150UTB	OK			
9	SP TACK (Coated)	OK		For Japanese model	
10	VTNS	OK		For Japanese model	
11	GFNS (Star)	OK			For Japanese model
12	NQNS (Yupo)	OK			For Japanese model
13	GINS	OK			For Japanese model
14	FS600 P22/G7W	OK			For Japanese model
15	FS600 1K	OK			For Japanese model
16	FS600 1N	OK			For Japanese model
17	V8NS	OK			For Japanese model Refer to Conditions 2 and 3.
18	HE90 P22/G7W	OK			For Japanese model Refer to Condition 3.

NOTES:

1. “OK” in the table above indicates “Approved”.
2. For some papers, 6-ips speed is not available.

CONDITION:

1. If a serial barcode has a bleeding problem, the spaces can be widened by 2 dots using the flexible barcode setting. This can improve the quality of the serial barcode.
2. Serial bar code cannot be used at 2 ips.
3. Serial bar code cannot be used at 6 ips.

ATTACHMENT-4 THERMAL TRANSFER PRINT CONDITIONS BY PRINT SPEED

<For internal use>

203 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AWR470	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable	OK	Unusable	Refer to Condition 2.
	IKNS	Unusable	OK		Refer to Condition 2.
	VES-85 (Yupo)	Unusable	OK		
	* Vellum	OK			Refer to Condition 2.
	* HGW	OK			Refer to Condition 2.
	* Transtherm 1C	OK			Refer to Condition 2.
	* Transfer Matt	OK			Refer to Condition 2.
AWR406	I-BSET S	OK			Refer to Condition 1.
	I-BEST W	Unusable.			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable.	OK		
	* Vellum	OK			Refer to Condition 1.
	* HGW	OK			Refer to Condition 1.
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK		Unusable.	Refer to Condition 1.
AWX500+	I-BSET S	OK			Refer to Condition 1.
	I-BEST W	Unusable.	OK		
	K8NS	OK			
	C6NS	Unusable.	OK	Unusable.	
	IKNS	Unusable.	OK		
	VES-85 (Yupo)	OK			
	* Vellum	Unusable.			
	* HGW	Unusable.			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			Refer to Condition 1.
APR5	I-BSET S	Unusable.			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	Unusable.			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK		Unusable.	
APR4	I-BSET S	OK	Unusable		
	I-BEST W	OK			
	K8NS	Unusable	OK		
	C6NS	Unusable	OK		
	IKNS	Unusable	OK		
	VES-85 (Yupo)	Unusable	OK		
	* Vellum	OK	Unusable		Refer to Condition 1.
	* HGW	OK			
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK		Unusable	
B110A	I-BSET S	OK.			Refer to Condition 1.
	I-BEST W	OK			
	K8NS	Unusable.			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable.	OK		
	* Vellum	OK			Refer to Condition 1.
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK		Unusable.	
TI-1	I-BEST W	OK			
	K8NS	Unusable	OK		
	C6NS	Unusable	OK	Unusable.	
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	Unusable	OK		
	* Transfer Matt	Unusable	OK		
TRX-21	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable.			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-84	I-BEST W	OK			
	K8NS	OK	Unusable		
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable	OK		
TTM-39	I-BEST W	OK		Unusable.	
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK	Unusable.		
TTM-130	I-BEST W	OK			
	K8NS	OK		Unusable	
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable	OK		
TR4085+	I-BSET S	OK			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	Unusable.	OK		
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK		Unusable.	Refer to Condition 1.
	* HGW	OK			Refer to Condition 1.
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK			Refer to Condition 1.
TR6080	I-BSET S	Unusable.			
	I-BEST W	Unusable.	OK	Unusable.	
	K8NS	OK			
	C6NS	Unusable.	OK		
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* HGW	OK			Refer to Condition 1.
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK			Refer to Condition 1.
AXR7+	VES-85 (Yupo)	OK	Unusable		
	Transparent PET (FR-1225)	OK			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	Unusable.	OK		
	Gloss silver PET (FR-1815)	OK			
	* 21944E	OK			Refer to Condition 3.
	* 3M 7860(E)	OK			Refer to Conditions 1 and 3.
B110C	VES-85 (Yupo)	Unusable	OK		
	Transparent PET (FR-1225)	Unusable			
	White PET (FR-1412)	Unusable			
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	OK	Unusable	
	* 21944E	OK		Unusable.	Refer to Condition 3.
	* 3M 7860(E)	OK		Unusable.	Refer to Conditions 1 and 3.
B110CR	VES-85 (Yupo)	Unusable	OK		
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	Unusable	OK		
	Silver chemical mat (FR-1615)	Unusable.			
	* 21944E	OK			
	* 3M 7860(E)	OK			
TTM-164	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	Unusable	OK		
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	OK		
TR6075	VES-85 (Yupo)	Unusable.	OK		
	Transparent PET (FR-1225)	Unusable.	OK		
	White PET (FR-1412)	Unusable.	OK		
	Silver chemical mat (FR-1615)	Unusable.	OK		
	Gloss silver PET (FR-1815)	Unusable.	OK		
	* 21944E	OK			Refer to Conditions 1 and 3.
	* 3M 7860(E)	OK			Refer to Conditions 1 and 3.

NOTES:

1. “OK” in the table above indicates “Approved”, except for the papers marked with an asterisk (*) which are recommended papers.
2. For some papers, 6-ips speed is not available.
3. Unspecified combinations of thermal transfer paper and ribbon in the table above are not approved.

CONDITIONS:

1. If a serial barcode has a bleeding problem, the spaces can be widened by 2 dots using the flexible barcode setting. This can improve the quality of the serial barcode.
2. Serial barcode is not available.
3. When using the resin ribbon, it is recommended to print at a low speed (4 ips or less) to improve scratch resistance.

300 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AWR470	I-BEST	OK			
	I-BEST W	OK		Unusable.	
	K8NS	Unusable.			
	C6NS	Ok		Unusable.	Refer to Condition 4.
	IKNS	OK			Refer to Condition 4.
	VES-85 (Yupo)	OK			Refer to Condition 4.
	* Vellum	OK			Refer to Condition 4.
	* HGW	OK			Refer to Condition 4.
	* Transtherm 1C	OK			Refer to Condition 4.
	* Transfer Matt	OK			Refer to Condition 4.
AWR406	I-BSET S	OK			
	I-BEST W	OK		Unusable.	
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
AWX500+	I-BSET S	OK		Unusable.	
	I-BEST W	Unusable.	OK		
	K8NS	Unusable.		OK	
	C6NS	OK			
	IKNS	OK		Unusable.	
	VES-85 (Yupo)	OK			Refer to Condition 3.
	* Vellum	OK			Refer to Condition 3.
	* HGW	OK			Refer to Condition 4.
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
APR5	I-BSET S	Unusable.			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	Unusable.			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
APR4	I-BSET S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK		Unusable.	
	C6NS	Unusable.	OK		
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK		Unusable.	
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
B110A	I-BSET S	OK			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
B110AXS	I-BSET S	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TI-1	I-BEST S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TRX-21	I-BEST S	OK		Unusable.	
	I-BEST W	Unusable.			
	K8NS	Unusable.	OK		
	C6NS	OK		Unusable.	
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-84	I-BEST S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-39	I-BEST S	OK			
	I-BEST W	OK			
	K8NS	OK			Refer to Condition 3.
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-130	I-BEST S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK		Unusable.	Refer to Condition 3.
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-233	I-BEST S	OK		Unusable.	
	I-BEST W	Unusable.			
	K8NS	OK			
	C6NS	OK			
	IKNS	Unusable.			
	VES-85 (Yupo)	OK			
TR4085+	I-BSET S	OK			
	I-BEST W	OK	Unusable		
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
TR6080	I-BSET S	Ok		Unusable.	
	I-BEST W	OK		Unusable.	
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK		Unusable.	
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
AXR7+	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Condition 1.
	* 21944E	OK			
	* 3M 7860(E)	OK			
B110C	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			Refer to Condition 4.
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Conditions 1 and 4.
	* 21944E	OK			Refer to Condition 4.
	* 3M 7860(E)	OK			Refer to Condition 4.
B110CR	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	* 21944E	OK			
	* 3M 7860(E)	OK			
TTM-164	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Condition 1.
TR6075	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Condition 1.
	* 21944E	OK			
	* 3M 7860(E)	OK			
AXR7+	7874E	OK		Unusable.	Refer to Condition 5.
	7815EH	OK			Refer to Condition 5.
	3690E	OK		Unusable.	Refer to Condition 5.
	D85YB	OK			Refer to Condition 5.
	76991	OK			Refer to Condition 5.
	76500	OK			Refer to Condition 5.
	7000	OK	Unusable.		Refer to Condition 5.
	76710	OK			Refer to Condition 5.
	76998	OK			Refer to Condition 5.
	5770	OK			Refer to Condition 5.
	3922	OK	Unusable.		Refer to Condition 5.
	3812	OK	Unusable.		Refer to Condition 5.
	7613	OK	Unusable.		Refer to Condition 5.
	7816EH	OK			Refer to Condition 5.
	G36CB	OK	Unusable.		Refer to Condition 5.

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
APR6	7874E	OK			Refer to Condition 5.
	7815EH	OK			Refer to Condition 5.
	3690E	OK			Refer to Condition 5.
	D85YB	OK			Refer to Condition 5.
	76991	OK			Refer to Condition 5.
	76500	OK			Refer to Condition 5.
	7000	OK			Refer to Condition 5.
	76710	Unusable.		OK	Refer to Condition 5.
	76998	OK			Refer to Condition 5.
	5770	OK			Refer to Condition 5.
	3922	OK			Refer to Condition 5.
	3812	OK			Refer to Condition 5.
	7613	OK			Refer to Condition 5.
	7816EH	Unusable.	OK		Refer to Condition 5.
	G36CB	OK			Refer to Condition 5.
TR4085D	C6NS	OK*2	OK	Unusable.	*2: Refer to Condition 4.
TR6080D	C6NS	OK*2		Unusable.	*2: Refer to Condition 4.
	VES-85 (Yupo)	OK*2	Unusable.	OK*2	*2: Refer to Condition 4.
TR6075	Silver chemical mat (FR-1615)	Ok		Unusable.	
	VES-85 (Yupo)	OK			
	White PET (FR-1412-50)	Unusable.	OK*3	OK	*3: Refer to Condition 7.
AWS	C6NS	OK*1	OK	OK	*1: Refer to Condition 6.
	VES-85 (Yupo)	OK*1	OK*2	OK	*1: Refer to Condition 6. *2: Refer to Condition 4.
AWX-FH	C6NS	OK*1	OK		*1: Refer to Condition 6.

NOTES:

1. “OK” in the table above indicates “Approved”, except for the papers marked with an asterisk (*) which are recommended papers.
2. For some papers, 6-ips speed is not available.
3. Unspecified combinations of thermal transfer paper and ribbon in the table above are not approved.

CONDITIONS:

1. Neither serial nor parallel barcode is available because bar codes are not readable due to gloss silver paper.
2. When using the resin ribbon, it is recommended to print at a low speed (4 ips or less) to improve scratch resistance.
3. If a serial barcode has a bleeding problem, the spaces can be widened by 2 dots using the flexible barcode setting. This can improve the quality of the serial barcode.
4. Serial barcode is not available.
5. There are restrictions on use depending on the ambient temperatures. For details, refer to ATTACHMENT-5.
6. The grade of the serial bar code shall be ANSI Grade F or greater.
7. In the case of solid patterns, the ribbon ink tends to be hard to fix to the paper.

ATTACHMENT-4 THERMAL TRANSFER PRINT CONDITIONS BY PRINT SPEED

<For dealers and users>

203 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AW1	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable	OK	Unusable	Refer to Condition 2.
	IKNS	Unusable	OK		Refer to Condition 2.
	VES-85 (Yupo)	Unusable	OK		
	* Vellum	OK			Refer to Condition 2.
	* HGW	OK			Refer to Condition 2.
	* Transtherm 1C	OK			Refer to Condition 2.
	* Transfer Matt	OK			Refer to Condition 2.
AW1	I-BSET S	OK			Refer to Condition 1.
	I-BEST W	Unusable.			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable.	OK		
	* Vellum	OK			Refer to Condition 1.
	* HGW	OK			Refer to Condition 1.
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK		Unusable.	Refer to Condition 1.
AWX500+ (For Japanese model)	I-BSET S	OK			Refer to Condition 1.
	I-BEST W	Unusable.	OK		
	K8NS	OK			
	C6NS	Unusable.	OK	Unusable.	
	IKNS	Unusable.	OK		
	VES-85 (Yupo)	OK			
	* Vellum	Unusable.			
	* HGW	Unusable.			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			Refer to Condition 1.
AG2	I-BSET S	Unusable.			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	Unusable.			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK		Unusable.	
APR4 (For Japanese model)	I-BSET S	OK	Unusable		
	I-BEST W	OK			
	K8NS	Unusable	OK		
	C6NS	Unusable	OK		
	IKNS	Unusable	OK		
	VES-85 (Yupo)	Unusable	OK		
	* Vellum	OK	Unusable		Refer to Condition 1.
	* HGW	OK			
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK		Unusable	
RG2	I-BSET S	OK.			Refer to Condition 1.
	I-BEST W	OK			
	K8NS	Unusable.			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable.	OK		
	* Vellum	OK			Refer to Condition 1.
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK		Unusable.	
TI-1 (For Japanese model)	I-BEST W	OK			
	K8NS	Unusable	OK		
	C6NS	Unusable	OK	Unusable.	
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	Unusable	OK		
	* Transfer Matt	Unusable	OK		
TRX-21 (For Japanese model)	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable.			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-84 (For Japanese model)	I-BEST W	OK			
	K8NS	OK	Unusable		
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable	OK		
TTM-39 (For Japanese model)	I-BEST W	OK		Unusable.	
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK	Unusable.		
TTM-130 (For Japanese model)	I-BEST W	OK			
	K8NS	OK		Unusable	
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	Unusable	OK		
TR4085+ (For Japanese model)	I-BSET S	OK			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	Unusable.	OK		
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK		Unusable.	Refer to Condition 1.
	* HGW	OK			Refer to Condition 1.
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK			Refer to Condition 1.
TR6080 (For Japanese model)	I-BSET S	Unusable.			
	I-BEST W	Unusable.	OK	Unusable.	
	K8NS	OK			
	C6NS	Unusable.	OK		
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* HGW	OK			Refer to Condition 1.
	* Transtherm 1C	OK			Refer to Condition 1.
	* Transfer Matt	OK			Refer to Condition 1.
AS1	VES-85 (Yupo)	OK	Unusable		
	Transparent PET (FR-1225)	OK			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	Unusable.	OK		
	Gloss silver PET (FR-1815)	OK			
	* 21944E	OK			Refer to Condition 3.
	* 3M 7860(E)	OK			Refer to Conditions 1 and 3.
RS1	VES-85 (Yupo)	Unusable	OK		
	Transparent PET (FR-1225)	Unusable			
	White PET (FR-1412)	Unusable			
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	OK	Unusable	
	* 21944E	OK		Unusable.	Refer to Condition 3.
	* 3M 7860(E)	OK		Unusable.	Refer to Conditions 1 and 3.
RS3	VES-85 (Yupo)	Unusable	OK		
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	Unusable	OK		
	Silver chemical mat (FR-1615)	Unusable.			
	* 21944E	OK			
	* 3M 7860(E)	OK			
TTM-164 (For Japanese model)	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	Unusable	OK		
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	OK		
TR6075 (For Japanese model)	VES-85 (Yupo)	Unusable.	OK		
	Transparent PET (FR-1225)	Unusable.	OK		
	White PET (FR-1412)	Unusable.	OK		
	Silver chemical mat (FR-1615)	Unusable.	OK		
	Gloss silver PET (FR-1815)	Unusable.	OK		
	* 21944E	OK			Refer to Conditions 1 and 3.
	* 3M 7860(E)	OK			Refer to Conditions 1 and 3.

NOTES:

1. “OK” in the table above indicates “Approved”, except for the papers marked with an asterisk (*) which are recommended papers.
2. For some papers, 6-ips speed is not available.
3. Unspecified combinations of thermal transfer paper and ribbon in the table above are not approved.

CONDITIONS:

1. If a serial barcode has a bleeding problem, the spaces can be widened by 2 dots using the flexible barcode setting. This can improve the quality of the serial barcode.
2. Serial barcode is not available.
3. When using the resin ribbon, it is recommended to print at a low speed (4 ips or less) to improve scratch resistance.

300 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AW1	I-BEST	OK			
	I-BEST W	OK		Unusable.	
	K8NS	Unusable.			
	C6NS	Ok		Unusable.	Refer to Condition 4.
	IKNS	OK			Refer to Condition 4.
	VES-85 (Yupo)	OK			Refer to Condition 4.
	* Vellum	OK			Refer to Condition 4.
	* HGW	OK			Refer to Condition 4.
	* Transtherm 1C	OK			Refer to Condition 4.
	* Transfer Matt	OK			Refer to Condition 4.
AW1	I-BSET S	OK			
	I-BEST W	OK		Unusable.	
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
AWX500+ (For Japanese model)	I-BSET S	OK		Unusable.	
	I-BEST W	Unusable.	OK		
	K8NS	Unusable.		OK	
	C6NS	OK			
	IKNS	OK		Unusable.	
	VES-85 (Yupo)	OK			Refer to Condition 3.
	* Vellum	OK			Refer to Condition 3.
	* HGW	OK			Refer to Condition 4.
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
AG2	I-BSET S	Unusable.			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	Unusable.			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
APR4 (For Japanese model)	I-BSET S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK		Unusable.	
	C6NS	Unusable.	OK		
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK		Unusable.	
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
RG2	I-BSET S	OK			
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
B110AXS (For Japanese model)	I-BSET S	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TI-1 (For Japanese model)	I-BEST S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TRX-21 (For Japanese model)	I-BEST S	OK		Unusable.	
	I-BEST W	Unusable.			
	K8NS	Unusable.	OK		
	C6NS	OK		Unusable.	
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-84 (For Japanese model)	I-BEST S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-39 (For Japanese model)	I-BEST S	OK			
	I-BEST W	OK			
	K8NS	OK			Refer to Condition 3.
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-130 (For Japanese model)	I-BEST S	OK		Unusable.	
	I-BEST W	OK			
	K8NS	OK		Unusable.	Refer to Condition 3.
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
TTM-233 (For Japanese model)	I-BEST S	OK		Unusable.	
	I-BEST W	Unusable.			
	K8NS	OK			
	C6NS	OK			
	IKNS	Unusable.			
	VES-85 (Yupo)	OK			
TR4085+ (For Japanese model)	I-BSET S	OK			
	I-BEST W	OK	Unusable		
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK			
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
TR6080 (For Japanese model)	I-BSET S	Ok		Unusable.	
	I-BEST W	OK		Unusable.	
	K8NS	OK			
	C6NS	OK			
	IKNS	OK			
	VES-85 (Yupo)	OK			
	* Vellum	OK		Unusable.	
	* HGW	OK			
	* Transtherm 1C	OK			
	* Transfer Matt	OK			
AS1	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Condition 1.
	* 21944E	OK			
	* 3M 7860(E)	OK			
RS1	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			Refer to Condition 4.
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Conditions 1 and 4.
	* 21944E	OK			Refer to Condition 4.
	* 3M 7860(E)	OK			Refer to Condition 4.
RS3	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	* 21944E	OK			
	* 3M 7860(E)	OK			
TTM-164 (For Japanese model)	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Condition 1.
TR6075 (For Japanese model)	VES-85 (Yupo)	OK			
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	OK			
	Silver chemical mat (FR-1615)	OK			
	Gloss silver PET (FR-1815)	OK			Refer to Condition 1.
	* 21944E	OK			
	* 3M 7860(E)	OK			
AS1	MP3PETMW	OK		Unusable.	Refer to Condition 5.
	M5PETMW	OK			Refer to Condition 5.
	M-ACBW	OK		Unusable.	Refer to Condition 5.
	M0PETGW	OK			Refer to Condition 5.
	M0PETGC	OK			Refer to Condition 5.
	M1PETMC	OK			Refer to Condition 5.
	M-PAGW	OK	Unusable.		Refer to Condition 5.
	M0PPGW	OK			Refer to Condition 5.
	M0PEMW	OK			Refer to Condition 5.
	MMMPETMW	OK			Refer to Condition 5.
	M-ACMW	OK	Unusable.		Refer to Condition 5.
	M-DPEMW	OK	Unusable.		Refer to Condition 5.
	M-DPVCMW	OK	Unusable.		Refer to Condition 5.
	M2PETGW	OK			Refer to Condition 5.
	M4PETMS	OK	Unusable.		Refer to Condition 5.

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AG3	MP3PETMW	OK			Refer to Condition 5.
	M5PETMW	OK			Refer to Condition 5.
	M-ACBW	OK			Refer to Condition 5.
	M0PETGW	OK			Refer to Condition 5.
	M0PETGC	OK			Refer to Condition 5.
	M1PETMC	OK			Refer to Condition 5.
	M-PAGW	OK			Refer to Condition 5.
	M0PPGW	Unusable.		OK	Refer to Condition 5.
	M0PEMW	OK			Refer to Condition 5.
	MMMPETMW	OK			Refer to Condition 5.
	M-ACMW	OK			Refer to Condition 5.
	M-DPEMW	OK			Refer to Condition 5.
	M-DPVCMW	OK			Refer to Condition 5.
	M2PETGW	Unusable.	OK		Refer to Condition 5.
	M4PETMS	OK			Refer to Condition 5.
TR4085D (For Japanese model)	C6NS	OK*2	OK	Unusable.	*2: Refer to Condition 4.
TR6080D (For Japanese model)	C6NS	OK*2		Unusable.	*2: Refer to Condition 4.
	VES-85 (Yupo)	OK*2	Unusable.	OK*2	*2: Refer to Condition 4.
TR6075 (For Japanese model)	Silver chemical mat (FR-1615)	Ok		Unusable.	
	VES-85 (Yupo)	OK			
	White PET (FR-1412-50)	Unusable.	OK*3	OK	*3: Refer to Condition 7.
AW4	C6NS	OK*1	OK	OK	*1: Refer to Condition 6.
	VES-85 (Yupo)	OK*1	OK*2	OK	*1: Refer to Condition 6. *2: Refer to Condition 4.
AW5	C6NS	OK*1	OK		*1: Refer to Condition 6.

NOTES:

1. “OK” in the table above indicates “Approved”, except for the papers marked with an asterisk (*) which are recommended papers.
2. For some papers, 6-ips speed is not available.
3. Unspecified combinations of thermal transfer paper and ribbon in the table above are not approved.

CONDITIONS:

1. Neither serial nor parallel barcode is available because bar codes are not readable due to gloss silver paper.
2. When using the resin ribbon, it is recommended to print at a low speed (4 ips or less) to improve scratch resistance.
3. If a serial barcode has a bleeding problem, the spaces can be widened by 2 dots using the flexible barcode setting. This can improve the quality of the serial barcode.
4. Serial barcode is not available.
5. There are restrictions on use depending on the ambient temperatures. For details, refer to ATTACHMENT-5.
6. The grade of the serial bar code shall be ANSI Grade F or greater.
7. In the case of solid patterns, the ribbon ink tends to be hard to fix to the paper.

ATTACHMENT-5 PRINT DENSITY FINE ADJUSTMENT VALUES ACCORDING TO SUPPLIES

<For internal use>

203 dpi Direct thermal papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LSB	+4	+6	Unusable.	
2	130LAB-150	+6	+6	Unusable.	For Japanese model
3	Intermec440	+3	+4	+6	
4	150UTB	+2	+6	+6	
5	VTNS	+5	+5	+6	For Japanese model
6	PTNS	-2	0	+2	For Japanese model
7	150LA1	0	0	+2	For Japanese model
8	150LHB	+2	+2	+4	For Japanese model
9	130LHB-150	+2	+2	+6	For Japanese model
10	NQNS (Yupo)	0	+4	+6	For Japanese model
11	GINS	-2	-2	+6	For Japanese model
12	SP TACK (Coated)	Unusable.	Unusable.	+4	For Japanese model

300 dpi Thermal transfer papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LAB-150	+2	+8	Unusable.	For Japanese model
2	PTNS	-4	-4	+4	For Japanese model
3	150LA-1	0	0	0	For Japanese model
4	150LHB	+2	+2	+2	For Japanese model
5	130LSB	0	+4	Unusable.	
6	130LHB	+4	+6	Unusable.	For Japanese model
7	130LHB-150	0	0	0	For Japanese model
8	150UTB	-2	0	Unusable.	
9	VTNS	+2	+4	Unusable.	For Japanese model
10	SP TACK (Coated)	0	+6	Unusable	For Japanese model
11	GFNS (Star)	0	+4	+6	For Japanese model
12	NQNS (Yupo)	0	0	0	For Japanese model
13	GINS	-2	-2	0	For Japanese model
14	FS600 P22/G7W	+2	+2	+2	For Japanese model
15	FS600 1K	-4	0	-8	For Japanese model
16	FS600 1N	0	0	-7	For Japanese model
17	V8NS	+3	+4	-2	For Japanese model
18	HE90 P22/G7W	-2	0	+2	For Japanese model

203 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AWR470	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable	+4	Unusable	Serial bar code printed at 4 ips is unusable.
	IKNS	Unusable	0	+2	Serial bar code printed at 6 ips is unusable
	VES-85 (Yupo)	Unusable	-8	-6	
	* Vellum	0	+2	0	
	* HGW	+2	+2	+1	
	* Transtherm 1C	-2	-4	-2	
	* Transfer Matt	+4	+2	+4	
AWR406	I-BSET S	+2	+2	+2	
	I-BEST W	Unusable.			
	K8NS	+4	+4	+4	
	C6NS	+4	+2	+2	
	IKNS	-2	-2	-2	
	VES-85 (Yupo)	Unusable.	-4	-4	
	* Vellum	+4	+6	+6	
	* HGW	+4	+4	+4	
	* Transtherm 1C	-2	-2	0	
	* Transfer Matt	+4	+6	Unusable.	
AWX500+ (For Japanese model)	I-BSET S	-2	-2	0	
	I-BEST W	Unusable.	-2	-2	
	K8NS	Unusable.			
	C6NS	Unusable.	+4	Unusable.	
	IKNS	Unusable	0	0	
	VES-85 (Yupo)	-8	-10	-8	
	* Vellum	Unusable.			
	* HGW	Unusable.			
	* Transtherm 1C	-5	-2	-4	
	* Transfer Matt	-2	+4	+4	
APR5	I-BSET S	Unusable.			Poor print
	I-BEST W	+6	+2	+4	
	K8NS	+2	+2	+4	
	C6NS	+6	+4	+6	
	IKNS	0	0	0	
	VES-85 (Yupo)	-4	-6	-4	
	* Vellum	Unusable.			
	* HGW	+2	+4	+4	
	* Transtherm 1C	+4	+4	+4	
	* Transfer Matt	+6	+8	Unusable.	
APR4 (For Japanese model)	I-BSET S	0	Unusable		
	I-BEST W	+4	+6	+6	
	K8NS	Unusable.	+6	+4	
	C6NS	Unusable.	+6	+6	
	IKNS	Unusable.	+4	+2	
	VES-85 (Yupo)	Unusable.	-4	-2	
	* Vellum	+4	Unusable.	Unusable.	
	* HGW	+4	+4	+4	
	* Transtherm 1C	+6	0	+2	
	* Transfer Matt	+6	+6	Unusable.	
B110A	I-BSET S	+2	+2	+2	
	I-BEST W	+4	+4	+2	
	K8NS	Unusable.			
	C6NS	+4	+4	+6	
	IKNS	0	+4	+4	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	VES-85 (Yupo)	Unusable.	-2	-2	
	* Vellum	0	+4	+6	Refer to Condition 1.
	* HGW	+2	+6	+6	
	* Transtherm 1C	0	+2	0	
	* Transfer Matt	0	0	Unusable.	
TI-1 (For Japanese model)	I-BEST W	+4	+4	+4	
	K8NS	Unusable	+6	+8	
	C6NS	Unusable	+4	Unusable.	
	IKNS	-2	+2	+4	
	VES-85 (Yupo)	-6	-8	-6	
	* Vellum	0	+2	+2	
	* HGW	+2	+4	+4	
	* Transtherm 1C	Unusable.	-4	-2	
	* Transfer Matt	Unusable.	+2	+4	
TRX-21 (For Japanese model)	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable.			
	IKNS	-2	0	0	
	VES-85 (Yupo)	-4	-2	-4	
TTM-84 (For Japanese model)	I-BEST W	0	+2	+2	
	K8NS	+4	Unusable.		
	C6NS	+6	+6	+6	
	IKNS	-4	+2	0	
	VES-85 (Yupo)	Unusable.	0	-4	
TTM-39 (For Japanese model)	I-BEST W	0	0	Unusable.	
	K8NS	+2	+4	+4	
	C6NS	0	+4	+4	
	IKNS	-2	0	0	
	VES-85 (Yupo)	-6	Unusable		
TTM-130 (For Japanese model)	I-BEST W	+2	0	+2	
	K8NS	+8	+6	Unusable.	
	C6NS	+6	+6	+6	
	IKNS	-2	0	0	
	VES-85 (Yupo)	Unusable	-2	-4	
TR4085+ (For Japanese model)	I-BSET S	-2	-2	0	
	I-BEST W	-2	0	0	
	K8NS	+2	+2	+4	
	C6NS	Unusable.	+2	+2	
	IKNS	-2	0	-2	
	VES-85 (Yupo)	-8	-2	-2	
	* Vellum	+4	+4	Unusable.	
	* HGW	0	+2	+2	
	* Transtherm 1C	0	-2	-2	
	* Transfer Matt	-2	+2	+2	
TR6080 (For Japanese model)	I-BSET W	Unusable.	+2	Unusable.	
	K8NS	+2	+6	+6	
	C6NS	Unusable.	+6	+6	
	IKNS	-2	0	0	
	VES-85 (Yupo)	-8	-6	-6	
	* HGW	0	0	+2	
	* Transtherm 1C	-6	-6	-4	
	* Transfer Matt	0	0	+2	
AXR7+	VES-85 (Yupo)	+4	Unusable.		
	Transparent PET (FR-1225)	+6	+6	+6	
	White PET (FR-1412)	+8	+6	+6	
	Silver chemical mat (FR-1615)	Unusable.	+8	+8	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	Gloss silver PET (FR-1815)	+6	+4	+4	
	* 21944E	+6	+6	+6	
	* 3M 7860(E)	+6	+6	+6	
B110C	VES-85 (Yupo)	Unusable.	+6	+6	
	Transparent PET (FR-1225)	Unusable			
	White PET (FR-1412)	Unusable			
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	+8	Unusable	
	* 21944E	+8	+8	Unusable.	
	* 3M 7860(E)	+8	+8	Unusable.	
B110CR	VES-85 (Yupo)	Unusable	OK		
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	Unusable	OK		
	Silver chemical mat (FR-1615)	Unusable.			
	* 21944E	OK		Unusable.	
	* 3M 7860(E)	OK		Unusable.	
TTM-164 (For Japanese model)	VES-85 (Yupo)	+10	+6	+4	
	Transparent PET (FR-1225)	+8	+6	+8	
	White PET (FR-1412)	Unusable.	+8	+8	
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	+4	+6	
TR6075 (For Japanese model)	VES-85 (Yupo)	Unusable.	+6	+6	
	Transparent PET (FR-1225)	Unusable.	+4	+4	
	White PET (FR-1412)	Unusable.	+4	+6	
	Silver chemical mat (FR-1615)	Unusable.	+6	+6	
	Gloss silver PET (FR-1815)	Unusable.	+6	+6	
	* 21944E	+6	+6	+6	
	* 3M 7860(E)	+6	+6	+6	

300 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AWR470	I-BEST	-2	-2	-2	
	I-BEST W	-6	-6	Unusable.	
	K8NS	Unusable.			
	C6NS	-2	-2	Unusable.	
	IKNS	-4	-6	-5	
	VES-85 (Yupo)	-8	-10	-10	
	* Vellum	-4	-2	-4	Serial bar code printed at 4 ips or 6 ips is unusable.
	* HGW	-4	-4	-2	
	* Transtherm 1C	-6	-6	-6	
	* Transfer Matt	-2	-2	0	
AWR406	I-BSET S	+2	+2	+6	
	I-BEST W	-2	-2	Unusable.	
	K8NS	0	-2	0	
	C6NS	0	0	+2	
	IKNS	-4	-4	-2	
	VES-85 (Yupo)	-6	-6	-6	
	* Vellum	-2	-2	-2	
	* HGW	-2	-2	0	
	* Transtherm 1C	-6	-4	-4	
	* Transfer Matt	-2	-4	-2	
AWX500+ (For Japanese model)	I-BSET S	-5	-2	Unusable.	
	I-BEST W	Unusable.	-6	-4	
	K8NS	Unusable.		+2	
	C6NS	-2	-2	0	
	IKNS	-4	-6	Unusable.	
	VES-85 (Yupo)	-6	-10	-10	
	* Vellum	-2	-2	-2	
	* HGW	-2	-2	0	Serial bar code printed at 6 ips is unusable.
	* Transtherm 1C	-6	-6	-6	
	* Transfer Matt	-4	-4	+2	
APR5	I-BSET S	Unusable.			Poor print
	I-BEST W	0	+2	+2	
	K8NS	-2	-2	0	
	C6NS	0	+2	+2	
	IKNS	-4	-2	-2	
	VES-85 (Yupo)	-6	-8	-6	
	* Vellum	Unusable.			Poor print
	* HGW	-2	-2	0	
	* Transtherm 1C	-2	0	0	
	* Transfer Matt	0	+4	+6	
APR4 (For Japanese model)	I-BSET S	0	0	Unusable.	
	I-BEST W	+2	+4	+6	
	K8NS	-2	0	Unusable.	
	C6NS	Unusable.	0	0	Sticking occurs at 2 ips.
	IKNS	-4	-2	0	
	VES-85 (Yupo)	-8	-6	-6	
	* Vellum	-2	-2	Unusable.	
	* HGW	-2	+2	+4	
	* Transtherm 1C	-4	-4	+2	
	* Transfer Matt	-2	+2	+6	
B110A	I-BSET S	-2	-2	-2	
	I-BEST W	0	0	+6	
	K8NS	+2	+2	+6	
	C6NS	0	0	+4	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	IKNS	-4	-4	-2	
	VES-85 (Yupo)	-6	-6	-6	
	* Vellum	-2	-4	-2	
	* HGW	-4	-4	+2	
	* Transtherm 1C	-4	-4	-4	
	* Transfer Matt	-2	-2	+2	
B110AXS (For Japanese model)	I-BSET S	-2	+2	-2	
	K8NS	0	+1	+1	
	C6NS	-3	-3	-2	
	IKNS	-4	-4	-4	
	VES-85 (Yuop)	-7	-9	-9	
TI-1 (For Japanese model)	I-BEST S	-2	-2	Unusable.	
	I-BEST W	-2	-2	0	
	K8NS	0	0	+4	
	C6NS	-2	0	+2	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-8	-8	-8	
TRX-21 (For Japanese model)	I-BEST S	-4	-2	Unusable.	
	I-BEST W	Unusable.			
	K8NS	Unusable.	+4	+4	
	C6NS	-2	0	Unusable.	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-6	-6	-6	
TTM-84 (For Japanese model)	I-BEST S	-2	-2	Unusable.	
	I-BEST W	+2	+4	+4	
	K8NS	0	0	+2	
	C6NS	0	0	0	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-4	-6	-8	
TTM-39 (For Japanese model)	I-BEST S	-2	-2	-2	
	I-BEST W	-4	-4	-2	
	K8NS	0	+2	+2	
	C6NS	-2	0	+2	
	IKNS	-4	-4	+2	
	VES-85 (Yupo)	-8	-8	-8	
TTM-130 (For Japanese model)	I-BEST S	-2	-2	Unusable.	
	I-BEST W	0	0	0	
	K8NS	0	+4	Unusable.	
	C6NS	-2	-2	+2	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-6	-8	-8	
TTM-233 (For Japanese model)	I-BEST S	-1	0	Unusable.	
	I-BEST W	Unusable.			
	K8NS	-3	-3	-4	
	C6NS	-1	-1	-1	
	IKNS	Unusable.			
	VES-85 (Yupo)	-8	-8	-9	
TR4085+ (For Japanese model)	I-BSET S	-2	-2	0	
	I-BEST W	-4	-2	Unusable.	
	K8NS	-2	-2	+2	
	C6NS	-3	-3	+4	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-8	-8	-8	
	* Vellum	-4	-4	-6	
	* HGW	-4	-4	-2	
	* Transtherm 1C	-4	-4	-4	
	* Transfer Matt	-2	-2	0	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
TR6080 (For Japanese model)	I-BSET S	-4	-4	Unusable.	
	I-BEST W	-4	-2	Unusable.	
	K8NS	0	0	+2	
	C6NS	-2	0	+4	
	IKNS	-2	-4	-2	
	VES-85 (Yupo)	-8	-8	-8	
	* Vellum	-4	-2	Unusable.	
	* HGW	-4	-2	+2	
	* Transtherm 1C	-6	-6	-4	
	* Transfer Matt	-2	-2	+4	
AXR7+	VES-85 (Yupo)	0	+3	+6	
	Transparent PET (FR-1225)	+2	+4	+6	
	White PET (FR-1412)	+2	+2	+4	
	Silver chemical mat (FR-1615)	+2	+4	+6	
	Gloss silver PET (FR-1815)	+2	+6	+6	
	* 21944E	0	+2	+2	
	* 3M 7860(E)	+2	+2	+2	
B110C	VES-85 (Yupo)	+2	+4	+4	
	Transparent PET (FR-1225)	+3	+5	+6	Serial bar code printed at 6 ips is unusable.
	White PET (FR-1412)	+5	+4	+4	
	Silver chemical mat (FR-1615)	+6	+5	+7	
	Gloss silver PET (FR-1815)	+5	+6	+6	Serial bar code printed at 4 or 6 ips is unusable.
	* 21944E	+2	+2	+6	Serial bar code printed at 6 ips is unusable.
	* 3M 7860(E)	+2	+2	+6	Serial bar code printed at 6 ips is unusable.
B110CR	VES-85 (Yupo)	+2	0	0	
	Transparent PET (FR-1225)	0	0	+6	
	White PET (FR-1412)	+2	+2	+2	
	Silver chemical mat (FR-1615)	+2	+2	+6	
	Gloss silver PET (FR-1815)	+4	+4	+6	
	* 21944E	+2	+2	+2	
	* 3M 7860(E)	+2	+2	+2	
TTM-164 (For Japanese model)	VES-85 (Yupo)	0	0	+4	
	Transparent PET (FR-1225)	+2	+2	+4	
	White PET (FR-1412)	+4	+4	+4	
	Silver chemical mat (FR-1615)	+4	+4	+4	
	Gloss silver PET (FR-1815)	+4	+4	+6	
TR6075 (For Japanese model)	VES-85 (Yupo)	+6	+6	+4	
	Transparent PET (FR-1225)	0	+2	+2	
	White PET (FR-1412)	+2	+2	+2	
	Silver chemical mat (FR-1615)	+4	+4	+6	
	Gloss silver PET (FR-1815)	+4	+4	+4	
	* 21944E	+2	+2	+2	
	* 3M 7860(E)	+2	+2	+2	
AXR7+	7874E	+6	+6	Unusable.	
	7815EH	0	+2	+6	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	3690E	+2	+4	Unusable.	This combination is not acceptable in the case of 2 or 4 ips and low temperature environment.

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	D85YB	-2	0	+4	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	76991	-2	+2	+4	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	76500	+2	+2	+6	In the case of 6 ips and low temperature environment, a print tone adjustment is required.
	7000	+4	Unusable.		This combination is not acceptable in the case of 2 ips and low temperature environment.
	76710	-4	-4	0	
	76998	0	+2	+6	In the case of 6 ips and low temperature environment, a print tone adjustment is required.
	5770	0	+4	+6	This combination is not acceptable in the case of 6 ips and low temperature environment. In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	3922	+6	Unusable.		
	3812	+6	Unusable.		
	7613	+6	Unusable.		This combination is not acceptable in the case of 2 ips and low temperature environment.
	7816EH	-2	0	+6	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	G36CB	+8	Unusable.		
APR6	7874E	-8	-6	-2	In the case of 4 ips and high temperature environment requires a print tone adjustment.
	7815EH	-8	-8	-4	This combination is not acceptable in the case of 2, 4, or 6 ips and high temperature environment.
	3690E	-4	-4	0	
	D85YB	-8	-8	-4	
	76991	-8	-8	-2	
	76500	-6	-6	-2	
	7000	-6	0	+6	This combination is not acceptable in the following cases: 2 ips and high orlow temperature environment 4 or 6 ips and high temperature environment In the case of 6 ips and low temperature environment, a print tone adjustment is required.

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	76710	Unusable.		-6	This combination is not acceptable in the case of 6 ips and high temperature environment.
	76998	-8	-8	-4	This combination is not acceptable in the case of 2, 4, or 6 ips and high temperature environment.
	5770	-6	-4	0	This combination is not acceptable in the following cases: 2 ips and high or low temperature environment 4 or 6 ips and high temperature
	3922	-2	0	+6	
	3812	-2	0	+6	This combination is not acceptable in the case of 2 or 4 ips and high temperature environment. In the case of 6 ips and high temperature environment, a print tone adjustment is required.
	7380	-4	-2	0	
	7613	-2	+2	+6	
	7816EH	Unusable.	-8	-2	This combination is not acceptable in the case of 4 or 6 ips and high temperature environment.
	G36CB	-6	-2	0	
TR4085D (For Japanese model)	C6NS	-4	-2	Unusable.	
TR6080D (For Japanese model)	C6NS	-6	-4	Unusable.	In the case of 2 or 4 ips and low temperature environment, a print tone adjustment is required.
	VES-85 (Yupo)	-8	Unusable.	-8	
TR6075 (For Japanese model)	Silver chemical mat (FR-1615)	6	6	Unusable.	
	VES-85 (Yupo)	6	6	8	
	White PET (FR-1412-50)	Unusable.	4	6	
AWS	C6NS	5°C: -4 20°C: -4 40°C: -4	5°C: 2 20°C: -4 40°C: -4	5°C: 4 20°C: 2 40°C: -2	Print tone adjustment is required in the case of 4 or 6 ips.
	VES-85 (Yupo)	-8	-8	-8	
AWX-FH	C6NS	5°C: 0 20°C: -2 40°C: -4	5°C: 2 20°C: 2 40°C: -4	5°C: 8 20°C: 2 40°C: 0	Print tone adjustment is required.

ATTACHMENT-5 PRINT DENSITY FINE ADJUSTMENT VALUES ACCORDING TO SUPPLIES

<For dealers and users>

203 dpi Direct thermal papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LSB	+4	+6	Unusable.	
2	130LAB-150	+6	+6	Unusable.	For Japanese model
3	Intermec440	+3	+4	+6	
4	150UTB	+2	+6	+6	
5	VTNS	+5	+5	+6	For Japanese model
6	PTNS	-2	0	+2	For Japanese model
7	150LA1	0	0	+2	For Japanese model
8	150LHB	+2	+2	+4	For Japanese model
9	130LHB-150	+2	+2	+6	For Japanese model
10	NQNS (Yupo)	0	+4	+6	For Japanese model
11	GINS	-2	-2	+6	For Japanese model
12	SP TACK (Coated)	Unusable.	Unusable.	+4	For Japanese model

300 dpi Thermal transfer papers

	Paper	2 ips	4 ips	6 ips	Remarks
1	130LAB-150	+2	+8	Unusable.	For Japanese model
2	PTNS	-4	-4	+4	For Japanese model
3	150LA-1	0	0	0	For Japanese model
4	150LHB	+2	+2	+2	For Japanese model
5	130LSB	0	+4	Unusable.	
6	130LHB	+4	+6	Unusable.	For Japanese model
7	130LHB-150	0	0	0	For Japanese model
8	150UTB	-2	0	Unusable.	
9	VTNS	+2	+4	Unusable.	For Japanese model
10	SP TACK (Coated)	0	+6	Unusable	For Japanese model
11	GFNS (Star)	0	+4	+6	For Japanese model
12	NQNS (Yupo)	0	0	0	For Japanese model
13	GINS	-2	-2	0	For Japanese model
14	FS600 P22/G7W	+2	+2	+2	For Japanese model
15	FS600 1K	-4	0	-8	For Japanese model
16	FS600 1N	0	0	-7	For Japanese model
17	V8NS	+3	+4	-2	For Japanese model
18	HE90 P22/G7W	-2	0	+2	For Japanese model

203 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AW1	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable	+4	Unusable	Serial bar code printed at 4 ips is unusable.
	IKNS	Unusable	0	+2	Serial bar code printed at 6 ips is unusable
	VES-85 (Yupo)	Unusable	-8	-6	
	* Vellum	0	+2	0	
	* HGW	+2	+2	+1	
	* Transtherm 1C	-2	-4	-2	
	* Transfer Matt	+4	+2	+4	
AW1	I-BSET S	+2	+2	+2	
	I-BEST W	Unusable.			
	K8NS	+4	+4	+4	
	C6NS	+4	+2	+2	
	IKNS	-2	-2	-2	
	VES-85 (Yupo)	Unusable.	-4	-4	
	* Vellum	+4	+6	+6	
	* HGW	+4	+4	+4	
	* Transtherm 1C	-2	-2	0	
	* Transfer Matt	+4	+6	Unusable.	
AWX500+ (For Japanese model)	I-BSET S	-2	-2	0	
	I-BEST W	Unusable.	-2	-2	
	K8NS	Unusable.			
	C6NS	Unusable.	+4	Unusable.	
	IKNS	Unusable	0	0	
	VES-85 (Yupo)	-8	-10	-8	
	* Vellum	Unusable.			
	* HGW	Unusable.			
	* Transtherm 1C	-5	-2	-4	
	* Transfer Matt	-2	+4	+4	
AG2	I-BSET S	Unusable.			Poor print
	I-BEST W	+6	+2	+4	
	K8NS	+2	+2	+4	
	C6NS	+6	+4	+6	
	IKNS	0	0	0	
	VES-85 (Yupo)	-4	-6	-4	
	* Vellum	Unusable.			
	* HGW	+2	+4	+4	
	* Transtherm 1C	+4	+4	+4	
	* Transfer Matt	+6	+8	Unusable.	
APR4 (For Japanese model)	I-BSET S	0	Unusable		
	I-BEST W	+4	+6	+6	
	K8NS	Unusable.	+6	+4	
	C6NS	Unusable.	+6	+6	
	IKNS	Unusable.	+4	+2	
	VES-85 (Yupo)	Unusable.	-4	-2	
	* Vellum	+4	Unusable.	Unusable.	
	* HGW	+4	+4	+4	
	* Transtherm 1C	+6	0	+2	
	* Transfer Matt	+6	+6	Unusable.	
RG2	I-BSET S	+2	+2	+2	
	I-BEST W	+4	+4	+2	
	K8NS	Unusable.			
	C6NS	+4	+4	+6	
	IKNS	0	+4	+4	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	VES-85 (Yupo)	Unusable.	-2	-2	
	* Vellum	0	+4	+6	Refer to Condition 1.
	* HGW	+2	+6	+6	
	* Transtherm 1C	0	+2	0	
	* Transfer Matt	0	0	Unusable.	
TI-1 (For Japanese model)	I-BEST W	+4	+4	+4	
	K8NS	Unusable	+6	+8	
	C6NS	Unusable	+4	Unusable.	
	IKNS	-2	+2	+4	
	VES-85 (Yupo)	-6	-8	-6	
	* Vellum	0	+2	+2	
	* HGW	+2	+4	+4	
	* Transtherm 1C	Unusable.	-4	-2	
	* Transfer Matt	Unusable.	+2	+4	
TRX-21 (For Japanese model)	I-BEST W	Unusable.			
	K8NS	Unusable.			
	C6NS	Unusable.			
	IKNS	-2	0	0	
	VES-85 (Yupo)	-4	-2	-4	
TTM-84 (For Japanese model)	I-BEST W	0	+2	+2	
	K8NS	+4	Unusable.		
	C6NS	+6	+6	+6	
	IKNS	-4	+2	0	
	VES-85 (Yupo)	Unusable.	0	-4	
TTM-39 (For Japanese model)	I-BEST W	0	0	Unusable.	
	K8NS	+2	+4	+4	
	C6NS	0	+4	+4	
	IKNS	-2	0	0	
	VES-85 (Yupo)	-6	Unusable		
TTM-130 (For Japanese model)	I-BEST W	+2	0	+2	
	K8NS	+8	+6	Unusable.	
	C6NS	+6	+6	+6	
	IKNS	-2	0	0	
	VES-85 (Yupo)	Unusable	-2	-4	
TR4085+ (For Japanese model)	I-BSET S	-2	-2	0	
	I-BEST W	-2	0	0	
	K8NS	+2	+2	+4	
	C6NS	Unusable.	+2	+2	
	IKNS	-2	0	-2	
	VES-85 (Yupo)	-8	-2	-2	
	* Vellum	+4	+4	Unusable.	
	* HGW	0	+2	+2	
	* Transtherm 1C	0	-2	-2	
	* Transfer Matt	-2	+2	+2	
TR6080 (For Japanese model)	I-BSET W	Unusable.	+2	Unusable.	
	K8NS	+2	+6	+6	
	C6NS	Unusable.	+6	+6	
	IKNS	-2	0	0	
	VES-85 (Yupo)	-8	-6	-6	
	* HGW	0	0	+2	
	* Transtherm 1C	-6	-6	-4	
	* Transfer Matt	0	0	+2	
AS1	VES-85 (Yupo)	+4	Unusable.		
	Transparent PET (FR-1225)	+6	+6	+6	
	White PET (FR-1412)	+8	+6	+6	
	Silver chemical mat (FR-1615)	Unusable.	+8	+8	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	Gloss silver PET (FR-1815)	+6	+4	+4	
	* 21944E	+6	+6	+6	
	* 3M 7860(E)	+6	+6	+6	
RS1	VES-85 (Yupo)	Unusable.	+6	+6	
	Transparent PET (FR-1225)	Unusable			
	White PET (FR-1412)	Unusable			
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	+8	Unusable	
	* 21944E	+8	+8	Unusable.	
	* 3M 7860(E)	+8	+8	Unusable.	
RS3	VES-85 (Yupo)	Unusable	OK		
	Transparent PET (FR-1225)	OK			
	White PET (FR-1412)	Unusable	OK		
	Silver chemical mat (FR-1615)	Unusable.			
	* 21944E	OK		Unusable.	
	* 3M 7860(E)	OK		Unusable.	
TTM-164 (For Japanese model)	VES-85 (Yupo)	+10	+6	+4	
	Transparent PET (FR-1225)	+8	+6	+8	
	White PET (FR-1412)	Unusable.	+8	+8	
	Silver chemical mat (FR-1615)	Unusable.			
	Gloss silver PET (FR-1815)	Unusable	+4	+6	
TR6075 (For Japanese model)	VES-85 (Yupo)	Unusable.	+6	+6	
	Transparent PET (FR-1225)	Unusable.	+4	+4	
	White PET (FR-1412)	Unusable.	+4	+6	
	Silver chemical mat (FR-1615)	Unusable.	+6	+6	
	Gloss silver PET (FR-1815)	Unusable.	+6	+6	
	* 21944E	+6	+6	+6	
	* 3M 7860(E)	+6	+6	+6	

300 dpi Combination of thermal transfer paper and ribbon

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
AW1	I-BEST	-2	-2	-2	
	I-BEST W	-6	-6	Unusable.	
	K8NS	Unusable.			
	C6NS	-2	-2	Unusable.	
	IKNS	-4	-6	-5	
	VES-85 (Yupo)	-8	-10	-10	
	* Vellum	-4	-2	-4	Serial bar code printed at 4 ips or 6 ips is unusable.
	* HGW	-4	-4	-2	
	* Transtherm 1C	-6	-6	-6	
	* Transfer Matt	-2	-2	0	
AW1	I-BSET S	+2	+2	+6	
	I-BEST W	-2	-2	Unusable.	
	K8NS	0	-2	0	
	C6NS	0	0	+2	
	IKNS	-4	-4	-2	
	VES-85 (Yupo)	-6	-6	-6	
	* Vellum	-2	-2	-2	
	* HGW	-2	-2	0	
	* Transtherm 1C	-6	-4	-4	
	* Transfer Matt	-2	-4	-2	
AWX500+ (For Japanese model)	I-BSET S	-5	-2	Unusable.	
	I-BEST W	Unusable.	-6	-4	
	K8NS	Unusable.		+2	
	C6NS	-2	-2	0	
	IKNS	-4	-6	Unusable.	
	VES-85 (Yupo)	-6	-10	-10	
	* Vellum	-2	-2	-2	
	* HGW	-2	-2	0	Serial bar code printed at 6 ips is unusable.
	* Transtherm 1C	-6	-6	-6	
	* Transfer Matt	-4	-4	+2	
AG2	I-BSET S	Unusable.			Poor print
	I-BEST W	0	+2	+2	
	K8NS	-2	-2	0	
	C6NS	0	+2	+2	
	IKNS	-4	-2	-2	
	VES-85 (Yupo)	-6	-8	-6	
	* Vellum	Unusable.			Poor print
	* HGW	-2	-2	0	
	* Transtherm 1C	-2	0	0	
	* Transfer Matt	0	+4	+6	
APR4 (For Japanese model)	I-BSET S	0	0	Unusable.	
	I-BEST W	+2	+4	+6	
	K8NS	-2	0	Unusable.	
	C6NS	Unusable.	0	0	Sticking occurs at 2 ips.
	IKNS	-4	-2	0	
	VES-85 (Yupo)	-8	-6	-6	
	* Vellum	-2	-2	Unusable.	
	* HGW	-2	+2	+4	
	* Transtherm 1C	-4	-4	+2	
	* Transfer Matt	-2	+2	+6	
RG2	I-BSET S	-2	-2	-2	
	I-BEST W	0	0	+6	
	K8NS	+2	+2	+6	
	C6NS	0	0	+4	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	IKNS	-4	-4	-2	
	VES-85 (Yupo)	-6	-6	-6	
	* Vellum	-2	-4	-2	
	* HGW	-4	-4	+2	
	* Transtherm 1C	-4	-4	-4	
	* Transfer Matt	-2	-2	+2	
B110AXS (For Japanese model)	I-BSET S	-2	+2	-2	
	K8NS	0	+1	+1	
	C6NS	-3	-3	-2	
	IKNS	-4	-4	-4	
	VES-85 (Yuop)	-7	-9	-9	
TI-1 (For Japanese model)	I-BEST S	-2	-2	Unusable.	
	I-BEST W	-2	-2	0	
	K8NS	0	0	+4	
	C6NS	-2	0	+2	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-8	-8	-8	
TRX-21 (For Japanese model)	I-BEST S	-4	-2	Unusable.	
	I-BEST W	Unusable.			
	K8NS	Unusable.	+4	+4	
	C6NS	-2	0	Unusable.	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-6	-6	-6	
TTM-84 (For Japanese model)	I-BEST S	-2	-2	Unusable.	
	I-BEST W	+2	+4	+4	
	K8NS	0	0	+2	
	C6NS	0	0	0	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-4	-6	-8	
TTM-39 (For Japanese model)	I-BEST S	-2	-2	-2	
	I-BEST W	-4	-4	-2	
	K8NS	0	+2	+2	
	C6NS	-2	0	+2	
	IKNS	-4	-4	+2	
	VES-85 (Yupo)	-8	-8	-8	
TTM-130 (For Japanese model)	I-BEST S	-2	-2	Unusable.	
	I-BEST W	0	0	0	
	K8NS	0	+4	Unusable.	
	C6NS	-2	-2	+2	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-6	-8	-8	
TTM-233 (For Japanese model)	I-BEST S	-1	0	Unusable.	
	I-BEST W	Unusable.			
	K8NS	-3	-3	-4	
	C6NS	-1	-1	-1	
	IKNS	Unusable.			
	VES-85 (Yupo)	-8	-8	-9	
TR4085+ (For Japanese model)	I-BSET S	-2	-2	0	
	I-BEST W	-4	-2	Unusable.	
	K8NS	-2	-2	+2	
	C6NS	-3	-3	+4	
	IKNS	-4	-4	-4	
	VES-85 (Yupo)	-8	-8	-8	
	* Vellum	-4	-4	-6	
	* HGW	-4	-4	-2	
	* Transtherm 1C	-4	-4	-4	
	* Transfer Matt	-2	-2	0	

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
TR6080 (For Japanese model)	I-BSET S	-4	-4	Unusable.	
	I-BEST W	-4	-2	Unusable.	
	K8NS	0	0	+2	
	C6NS	-2	0	+4	
	IKNS	-2	-4	-2	
	VES-85 (Yupo)	-8	-8	-8	
	* Vellum	-4	-2	Unusable.	
	* HGW	-4	-2	+2	
	* Transtherm 1C	-6	-6	-4	
	* Transfer Matt	-2	-2	+4	
AS1	VES-85 (Yupo)	0	+3	+6	
	Transparent PET (FR-1225)	+2	+4	+6	
	White PET (FR-1412)	+2	+2	+4	
	Silver chemical mat (FR-1615)	+2	+4	+6	
	Gloss silver PET (FR-1815)	+2	+6	+6	
	* 21944E	0	+2	+2	
	* 3M 7860(E)	+2	+2	+2	
RS1	VES-85 (Yupo)	+2	+4	+4	
	Transparent PET (FR-1225)	+3	+5	+6	Serial bar code printed at 6 ips is unusable.
	White PET (FR-1412)	+5	+4	+4	
	Silver chemical mat (FR-1615)	+6	+5	+7	
	Gloss silver PET (FR-1815)	+5	+6	+6	Serial bar code printed at 4 or 6 ips is unusable.
	* 21944E	+2	+2	+6	Serial bar code printed at 6 ips is unusable.
	* 3M 7860(E)	+2	+2	+6	Serial bar code printed at 6 ips is unusable.
RS3	VES-85 (Yupo)	+2	0	0	
	Transparent PET (FR-1225)	0	0	+6	
	White PET (FR-1412)	+2	+2	+2	
	Silver chemical mat (FR-1615)	+2	+2	+6	
	Gloss silver PET (FR-1815)	+4	+4	+6	
	* 21944E	+2	+2	+2	
	* 3M 7860(E)	+2	+2	+2	
TTM-164 (For Japanese model)	VES-85 (Yupo)	0	0	+4	
	Transparent PET (FR-1225)	+2	+2	+4	
	White PET (FR-1412)	+4	+4	+4	
	Silver chemical mat (FR-1615)	+4	+4	+4	
	Gloss silver PET (FR-1815)	+4	+4	+6	
TR6075 (For Japanese model)	VES-85 (Yupo)	+6	+6	+4	
	Transparent PET (FR-1225)	0	+2	+2	
	White PET (FR-1412)	+2	+2	+2	
	Silver chemical mat (FR-1615)	+4	+4	+6	
	Gloss silver PET (FR-1815)	+4	+4	+4	
	* 21944E	+2	+2	+2	
	* 3M 7860(E)	+2	+2	+2	
AS1	MP3PETMW	+6	+6	Unusable.	
	M5PETMW	0	+2	+6	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	M-ACBW	+2	+4	Unusable.	This combination is not acceptable in the case of 2 or 4 ips and low temperature environment.

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	M0PETGW	-2	0	+4	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	M0PETGC	-2	+2	+4	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	M1PETMC	+2	+2	+6	In the case of 6 ips and low temperature environment, a print tone adjustment is required.
	M-PAGW	+4	Unusable.		This combination is not acceptable in the case of 2 ips and low temperature environment.
	M0PPGW	-4	-4	0	
	M0PEMW	0	+2	+6	In the case of 6 ips and low temperature environment, a print tone adjustment is required.
	MMMPETMW	0	+4	+6	This combination is not acceptable in the case of 6 ips and low temperature environment. In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	M-ACMW	+6	Unusable.		
	M-DPEMW	+6	Unusable.		
	M-DPVCMW	+6	Unusable.		This combination is not acceptable in the case of 2 ips and low temperature environment.
	M2PETGW	-2	0	+6	In the case of 2 ips and low temperature environment, a print tone adjustment is required.
	M4PETMS	+8	Unusable.		
AG3	MP3PETMW	-8	-6	-2	In the case of 4 ips and high temperature environment requires a print tone adjustment.
	M5PETMW	-8	-8	-4	This combination is not acceptable in the case of 2, 4, or 6 ips and high temperature environment.
	M-ACBW	-4	-4	0	
	M0PETGW	-8	-8	-4	
	M0PETGC	-8	-8	-2	
	M1PETMC	-6	-6	-2	
	M-PAGW	-6	0	+6	This combination is not acceptable in the following cases: 2 ips and high orlow temperature environment 4 or 6 ips and high temperature environment In the case of 6 ips and low temperature environment, a print tone adjustment is required.

Ribbon	Paper	2 ips	4 ips	6 ips	Remarks
	M0PPGW	Unusable.		-6	This combination is not acceptable in the case of 6 ips and high temperature environment.
	M0PEMW	-8	-8	-4	This combination is not acceptable in the case of 2, 4, or 6 ips and high temperature environment.
	MMMPETMW	-6	-4	0	This combination is not acceptable in the following cases: 2 ips and high or low temperature environment 4 or 6 ips and high temperature
	M-ACMW	-2	0	+6	
	M-DPEMW	-2	0	+6	This combination is not acceptable in the case of 2 or 4 ips and high temperature environment. In the case of 6 ips and high temperature environment, a print tone adjustment is required.
	M-DPVCMW	-4	-2	0	
	M2PETGW	-2	+2	+6	
	M4PETMS	Unusable.	-8	-2	This combination is not acceptable in the case of 4 or 6 ips and high temperature environment.
	MP3PETMW	-6	-2	0	
TR4085D (For Japanese model)	C6NS	-4	-2	Unusable.	
TR6080D (For Japanese model)	C6NS	-6	-4	Unusable.	In the case of 2 or 4 ips and low temperature environment, a print tone adjustment is required.
	VES-85 (Yupo)	-8	Unusable.	-8	
TR6075 (For Japanese model)	Silver chemical mat (FR-1615)	6	6	Unusable.	
	VES-85 (Yupo)	6	6	8	
	White PET (FR-1412-50)	Unusable.	4	6	
AW4	C6NS	5°C: -4 20°C: -4 40°C: -4	5°C: 2 20°C: -4 40°C: -4	5°C: 4 20°C: 2 40°C: -2	Print tone adjustment is required in the case of 4 or 6 ips.
	VES-85 (Yupo)	-8	-8	-8	
AW5	C6NS	5°C: 0 20°C: -2 40°C: -4	5°C: 2 20°C: 2 40°C: -4	5°C: 8 20°C: 2 40°C: 0	Print tone adjustment is required.

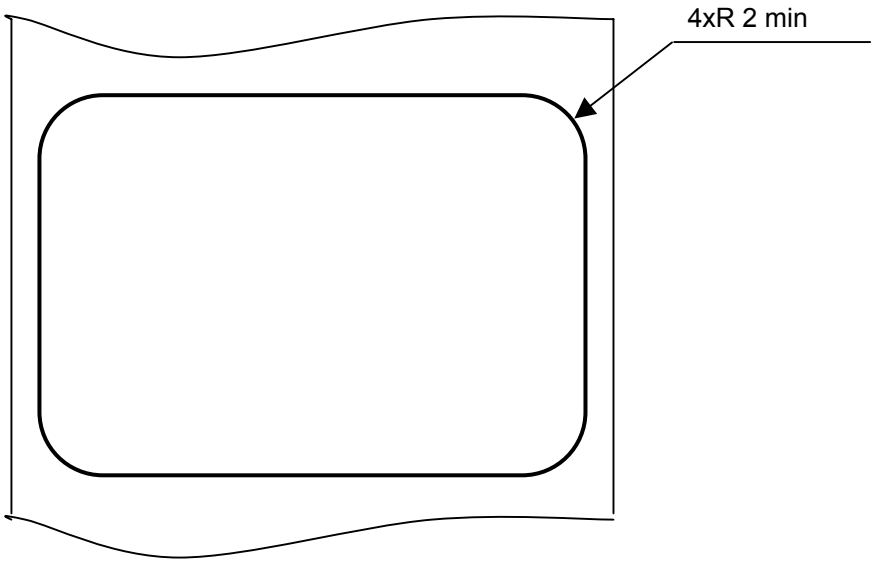
ATTACHMENT-6 RIBBON TENSION SETTING VALUE AND ACCEPTABLE PAPER WIDTH

Model	Item Code	Ribbon Width	Take-up	Feed	Acceptable paper width (mm)	Note

ATTACHMENT-7 STRIP SPECIFICATIONS

1	Temperature	5 to 40°C
2	Humidity	25 to 85 %
3	Print speed	2 ips, 4 ips, 6 ips
4	Inner core diameter (mm)	38, 40, 42, 76.2±0.3
5	Roll direction	Both inside wound and outside wound are available.
6	Paper type	Approved papers or recommended papers *Printer system mode settings are required depending on the paper types. For details, refer to ATTACHMENT 7-1 and 7-2. PET (Thickness: 50µm or more) YUPO (Thickness: 80µm or more)
7	Backing paper	Glassine paper (7K) or equivalent Glassine paper (8K) for PET or Yupo paper types (No damages of the silicon layer at the die-cut part)
8	Peel-off interval	Time from the end of printing until this label is removed.: 2 sec. (Applicable in the case of continuous peel-off by an applicator or equivalent device.)

NOTE: If the labels on the glassine paper 8K have rounded corners (∅ 2mm or more) as shown below, the labels are considered as removable.



ATTACHMENT-7-1 STRIP MODULE SYSTEM MODE SETTING BY LABEL TYPES

	Item Code	Manufacturer Type No.	Pre-strip	Fine adjustment	Strip motor torque
1		130LSB	OFF	—	R0
2		130LAB-1	OFF	—	R0
3		Intermec440	OFF	—	R0
4		150UTB	OFF	—	R0
5		VTNS	OFF	—	R0
6		PTNS	OFF	—	R0
7		150LA-1	OFF	—	R0
8		150LHB	OFF	—	R0
9		130LHB	OFF	—	R0
10		GFNS	OFF	—	R0
11		SP TACK (Coated)	OFF	—	R0
12		NQNS	OFF	—	R0
13		GINS	OFF	—	R0
14		C6NS	OFF	—	R0
15		K8NS	OFF	—	R0
16		VES-85 (Yupo)	OFF	—	R0
17	FR-1412-50	White PET	ON	Fine adjustment is required.	R3
18	FR-1815	Gloss silver PET	ON	Fine adjustment is required.	R3
19	FR-1615-50	Silver chemical mat	ON	Fine adjustment is required.	R3
20	FR-1225-50	Transparent PET	ON	Fine adjustment is required.	R3
21		IKNS	OFF	—	R0
22		Vellum (Uncoated)	OFF	—	R0
23		HGW (Coated, High gloss)	OFF	—	R0
24		Transtherm 1C (Coated, gloss)	OFF	—	R0
25		Transfer Matt (Coated, matt)	OFF	—	R0
26		Thermfile 21944E	OFF	—	R0
27		7860(E)	OFF	—	R0
28		FS600 P22/G7W	OFF	—	R0
29		V8NS	OFF	—	R0
30		HE90 P22/G7W	OFF	—	R0

For the parameter setting procedure and how to fine adjust the feed amount, refer to ATTACHMENT-7-2.

ATTACHMENT-7-2 SYSTEM MODE PARAMETER SETTING

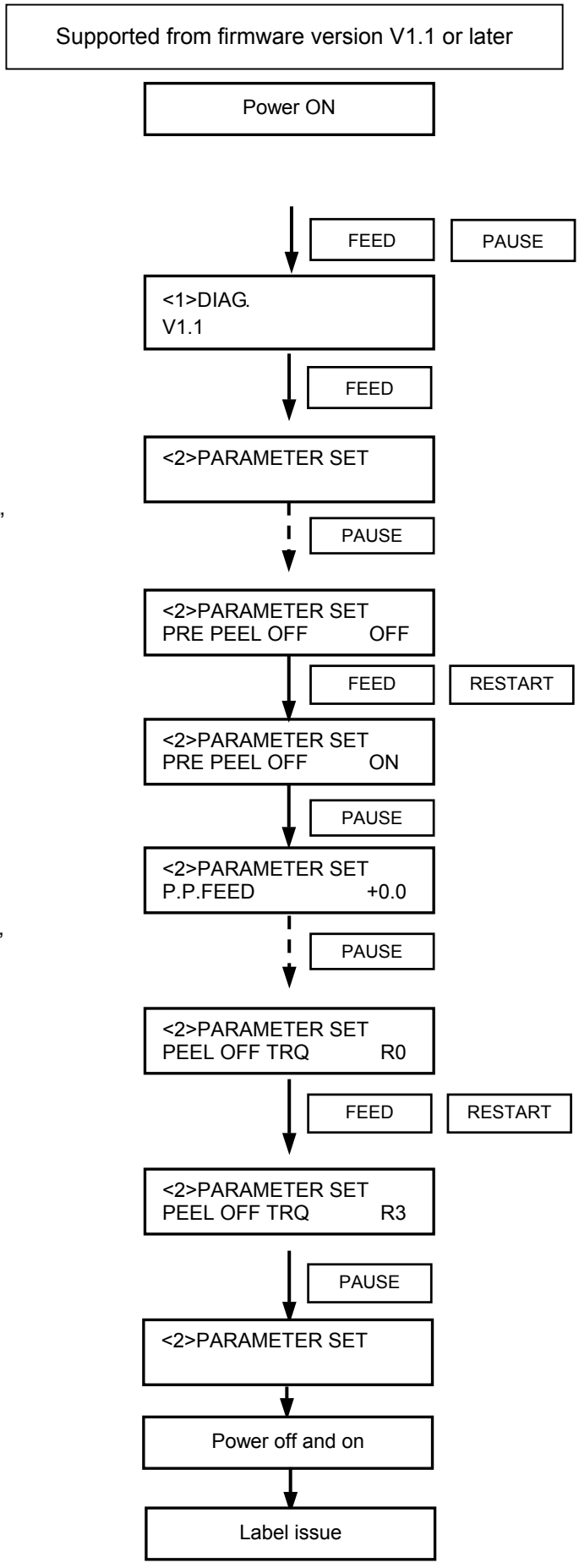
When using the PET media (with 8K backing paper) in the strip mode, the following setting and fine adjustment will be required.

1. Connect the printer to the PC.
2. Load the media into the printer.
3. Turn on the printer while holding down the [FEED] and [PAUSE] keys at the same time.
4. When “<1>DIAG.” is displayed on the LCD, press the [FEED] key to show “<2>PARAMETER SET”.
5. Press the [PAUSE] key until “PRE PEEL OFF” is displayed.
6. Press the [FEED] or [RESTART] key to choose “PRE PEEL OFF ON” to enable the pre-strip function, then press the [PAUSE] key.
7. The “P.P.FEED”, which enables the fine adjustment of the pre-strip amount, is shown on the LCD.

   At this stage, skip the fine adjustment and press the [PAUSE] key until “PEEL OFF TRQ” is displayed. This parameter enables selecting the strip motor torque.
8. The factory default is set to “R0”, so press the [FEED] or [RESTART] key until “R3” is displayed. Then, press the [PAUSE] key.

Strip motor torque	Value
Low	R0
↕	R1
↕	R2
High	R3

9. Turn off the printer, then back to on.
10. Initiate a label issue.



11. Check the print result. If necessary, fine adjust the print position or strip position.

    - It is recommended to make a fine adjustment on the actual operating conditions, such as the supplies, print speed, and print format.
    - When using short-pitch labels, the print position on the first few labels misaligns. Discard the labels positioned between the strip shaft and the media sensor.

12. Repeat the Steps 9 to 11 until the proper positions are obtained.

13. Return to the “P.P FEED” in the <2>PARAMETER SET menu.

14. Set the fine adjustment value for the pre-strip amount by using the [FEED] or [RESTART] key.

15. When the [PAUSE] key is pressed, a pre-strip function test is performed.

    If the label stops with its top edge aligning with the strip shaft edge, the adjustment value has been properly set.

    If not, press the [RESTART] key to return to Step 13 and repeat the adjustment value setting.

16. When the position has been properly set, press the [PAUSE] key twice to finish the setting.

17. Perform and check the strip issue.