CHAPTER 16: TEST MODE

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Test Mode

1. Procedures

1) Start-up Procedure

Switch on the power while pressing the “Master/Print” and “Text/Photo” keys simultaneously.

2) Operating Procedure

Test mode numbers can be entered (selected) either via “Key entry” or “Menu selection.”

a) Key entry procedure

(1) Enter the number of the test mode to be run using the numeric keys while in standby mode. If a mistake is made when entering, entry can be repeated by pressing the “C” key.

(2) Press the “Start” key to start the Test mode operation.

(3) Press the “Stop” or “Start” key to end the Test mode operation and return to standby mode.

* When setting data, pressing the “Start” key confirms the data changes and returns you to standby mode. Pressing the “Stop” key cancels the settings before returning to standby mode.

b) Menu selection method

(1) While in standby mode, select the unit containing the test item to be run from the Test mode menu.

- Highlight the unit name using the up/down keys or function keys, and then press the “Enter” key.
- The Test mode sub-menu appears.

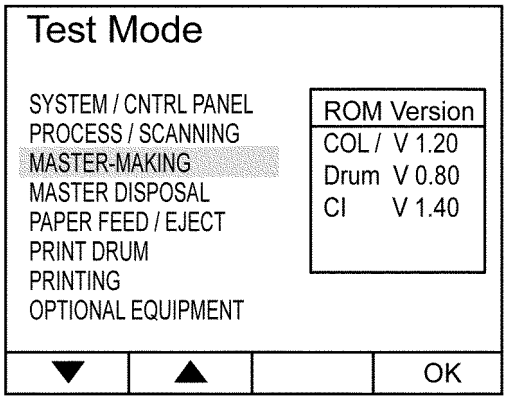
(2) Select the test item to be run from the Test mode sub-menu.

- Highlight the test item using the cursor keys or function keys, and then press the “Enter” key.

(3) Press the “Start” key to start the Test mode operation.

(4) Press the “Stop” or “Start” key to end the Test mode operation and return to standby mode.

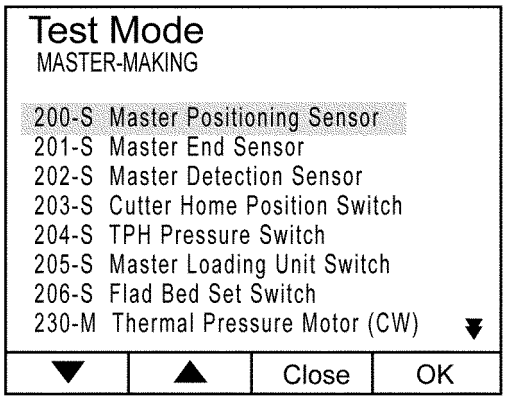
Test mode menu display



“Enter” key ON →

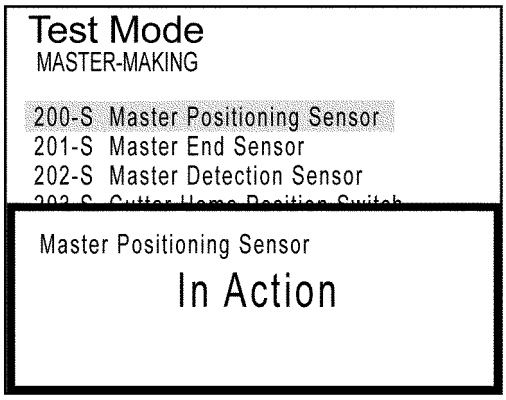
← “Close” key ON

Test mode sub-menu display

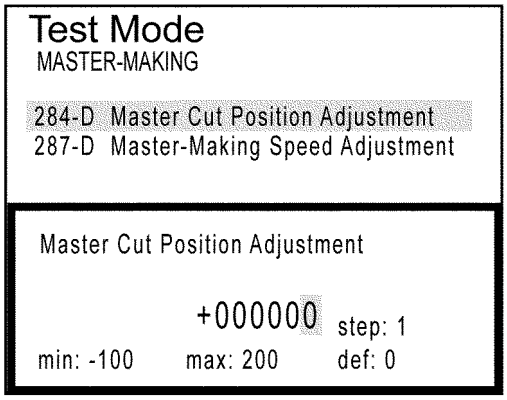


Display during Test mode operation

Display during check operation



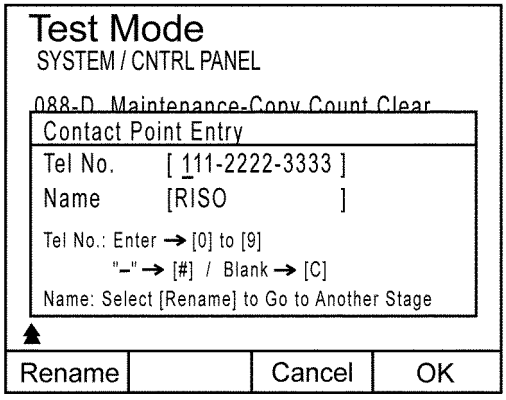
Display during data setting



Technician contact entry screen display (Test mode No. 091)

Entering/editing telephone number

- Enter digits using the numeric keys, hyphens using the "*" key, and spaces using the "C" key.
- Edit by moving the cursor to the character to be corrected using the left and right cursor keys, and then overwrite.

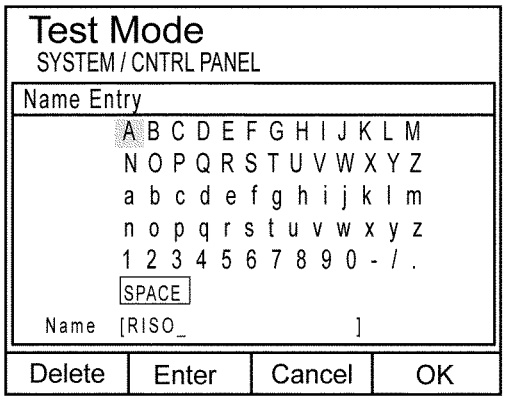


"Change name" key ON

"Enter" key, "Cancel" key ON

Entering/editing retailer name

- Select the character to be entered using the cursor keys, and press the "Input" key to input the character at the cursor position in the label.
- To edit, press "Back" to delete characters one by one from the current cursor position, and then enter the new characters. (Correction midway is not possible.)
- Press "Cancel" to cancel all input and return to the previous screen.
- When input is complete, press "Enter" to return to the previous screen.



3) Ending Procedure

To end Test mode, press the "All Reset" key for 1 second in Test mode standby or in Test mode operation standby.

2. Checking Sensors and Switches

Indicates sensor and switch status using audible beeps.

- Detected: 0.1 second interval sound (short beeps)
- Not detected: 0.5 second interval sound (long beeps)

No.	Test item	Detection status
100	Image scanner ADF shading sensor	Blocked (shading plate present)
101	Flat bed original detection sensor	Open (original present)
110	ADF original registration sensor	Blocked
111	ADF original IN sensor	Blocked (reflection blocked)
112	Original OUT sensor	Blocked
113	ADF original detection sensor	Open (original present)
117	Cover open sensor	Blocked
119	ADF unit detection signal	Signal present (ADF connected)
200	Master positioning sensor	Open (master present)
201	Master end sensor	Blocked (master end label detected)
202	Master detection sensor	Open (master present)
203	Cutter home position switch	Switch OFF
204	TPH pressure sensor	Blocked (TPH pressure plate closed)
205	Master loading unit sensor	Blocked (master loading unit closed)
206	Flat bed set switch	Switch ON
300	Master removal sensor	Blocked (master present)
301	Master compression sensor	Blocked (master compression plate present)
302	Disposal-box-full sensor	Blocked
303	Disposal box safety switch	Switch ON
400	Paper detection sensor	Open (paper present)
401	Paper size detection sensor	Open (paper present)
402	Upper limit sensor	Blocked (shading plate present)
404	Lower limit sensor	Blocked (shading plate present)
405	Paper sensor	Open (paper present)
406	Paper receiving sensor	Blocked (paper present)
408	Paper feed tray lower safety switch	Switch ON
409	Elevator down switch	Switch ON
412	Encoder sensor (paper ejec. motor)	Blocked (shading plate present)

No.	Test item	Detection status
500	Position A sensor	Blocked (shading plate present)
502	Main motor encoder sensor	Blocked (shading plate present)
503	Clamp sensor A	Blocked (shading plate present)
504	Clamp sensor B	Blocked (shading plate present)
506	Master sensor	Open (master present)
509	Ink sensor	In contact with ink
510	Overflow sensor	In contact with ink
511	Ink cartridge set switch 1	Switch ON
512	Ink cartridge set switch 2	Switch ON
513	Ink cartridge set switch 3	Switch ON
514	Ink cartridge set switch 4	Switch ON
515	Ink cartridge set switch 5	Switch ON
516	Print drum free rotation switch	Switch ON
517	Front cover set switch	Switch ON
518	Print drum release switch	Switch ON
519	Print drum set sensor	Blocked (shading plate present)
520	Print drum safety switch	Switch ON
600	Print pressure control sensor	Blocked (shading plate present)
601	Vertical centering sensor	Blocked (shading plate present)

3. Checking Motors and Solenoids

Press the “Start” key to switch ON, and either the “Start” or “Stop” key to switch OFF.

No.	Test item	Remarks
030	Audible beep check 1	0.1 second interval
031	Audible beep check 2	0.5 second interval
130	CCD lamp	Illuminates
132	ADF read pulse motor (CW)	
133	ADF read pulse motor (CCW)	
230	Thermal pressure motor (CW)	
231	Thermal pressure motor (CCW)	
232	Write pulse motor (feed)	CW
233	Write pulse motor (return)	CCW
234	Load pulse motor (feed)	CW
235	Load pulse motor (return)	CCW
237	Cutter motor	
238	TPH thermal power	
330	Master removal motor	CW
430	Paper ejection motor	
431	Suction fan	
432	Separation fan	
530	Main motor (15 rpm)	
531	Main motor (30 rpm)	
532	Clamp motor (forward)	CCW
533	Clamp motor (reverse)	CW (Only in Test mode)
535	Print drum release switch-LED	

4. Checking Unit Operations

(1) Press the “Start” key to switch ON and start the unit operation. Error checks are performed basically the same as for normal operation. Some operations stop once the sequence is complete, and some operations continue until a key is pressed.

(2) A continuous audible tone is given if an error occurs. To cancel errors, press the “Reset” key.

No.	Test mode details
050	Print test A (checker flag pattern) Creates a master for test pattern 1.
051	Print test B (mesh pattern) Creates a master for test pattern 2.
056	Paper passage test (continuous printing) Passes paper through. * "Speed" key can be used.
057	Low-speed printing Prints at 15 rpm.
059	Auto power off signal Switches off power.
060	Key check Pressing a key displays a specified number on the Print quantity LED.
061	LCD check Displays check pattern on LCD.
062	LED check LEDs blink alternately
063	Unit initialization Rests mechanical components to their home positions. (clamps, vertical position, thermal print head, master compression plate)
150	Shading operation Runs shading operation.
151	Scanner home position reset Returns scanner to home position.
152	Scanner 1 cycle Performs one scanner operation cycle. * Adjusts speed according to the variation rate in Test mode No. 192.
153	Scanner ADF scanning position movement Moves scanner to ADF scanning position.
154	Scanner lock mode Moves scanner to lock position for transporting. * Error occurs.
155	Undo scanner lock mode Cancels error status set in Test mode No. 154.
156	ADF original feed 1 cycle Performs paper passage test for ADF unit alone.
157	ADF original feed operation Performs ADF original transport operation. * Adjusts speed according to the variation rate in Test mode No. 192.

No.	Test mode details
250	Cutter motor 1 cycle operation Performs cutting operation.
251	TPH compress operation Moves TPH to compress position.
252	TPH release operation Moves TPH to release position.
350	Master compression plate home position reset Returns the master compression plate to the home position.
351	Master compression 1 cycle operation Performs one master compression cycle.
352	Master compression 1 step (compress direction) Performs one step (500 ms) of master compression in the direction of compression. * Note that error checking is not performed here.
353	Master compression 1 step (return direction) Performs one step (500 ms) of master compression in the return direction. * Note that error checking is not performed here.
450	Paper width VR Adjustment (105 mm) Sets VR value of 105 mm. * Perform before Test mode No. 451.
451	Paper width VR Adjustment (210 mm) Sets VR value of 210 mm. * Perform after Test mode No. 450.
452	Paper feed tray Up/Down Raises and lowers the paper feed tray repeatedly. * Starts by raising, except when at the upper limit. * Stops when the "Stop" key is pressed. * Stops for 1 s at the upper and lower limits.
453	Elevator servo Performs servo operation.
454	Feed motor + suction fan Activates feed motor and suction fan simultaneously.
550	Print drum speed control Use speed keys to rotate the print drum. * Same operation as for normal printing.
551	Position A operation Stops the print drum at position A. * Position including adjustment values.
553	Clamp home position reset Resets clamp to home position.
554	Clamp movement (3 steps) Press the "Start" key to switch on, and then perform the following operations for each step. Step 1: Release master clamp. Step 2: Open clamp. Step 3: Close clamp.
557	Inking operation Rotates the print drum and inks until the ink sensor goes ON.
558	Ink-free printing operation Performs printing without inking.

No.	Test mode details
650	Vertical positioning home position reset Resets the print drum to the vertical center position.
651	Vertical positioning 1 cycle Performs one vertical positioning cycle.
654	Print pressure home position reset Resets print pressure to home position.
655	Print pressure 1 cycle Performs one print pressure change cycle.
656	Print adjustment paper passage test Performs paper passage operation. * Speed keys can be used. Vertical movement is possible using the vertical position keys.
657	Print adjustment low-speed printing Prints at 15 rpm. * Vertical movement is possible using the vertical position keys.
750	CI firmware download Enables the execution program stored on CI flash memory to be overwritten. * Connection to PC required.
751	CI test print Prints the test pattern specified at the time of CI connection.

5. Data Check

Press the “Start” key to display data.

* Data check only displays the various settings, and does not allow them to be changed.

No.	Data	Display details
070	Data setting change confirmation	Lists Test mode No. and setting for non-default items during data setting.
071	Set switch history	Displays error code (D**) for set switch that caused operation to stop. (Most recent item)
072	Error history	Lists error codes for error codes occurring recently in normal mode. (Max 8 codes)
073	Maintenance count	Displays current maintenance count. * Master count is in units of 100 (9999 = 999900). Total count and print drum count are in units of 1000 (9999 = 9999000).
074	Battery voltage (A/D)	Displays residual battery voltage as (A/D).
075	Batter voltage (V)	Displays residual battery voltage as (V) * 1000.
270	TPH thermistor (A/D)	Displays TPH thermistor AD value.
271	TPH thermistor (°C)	Displays TPH thermistor AD value converted to temperature * 100.
371	Removed master software count	Displays stored count.
470	Paper width (A/D)	Displays 10-bit data after A/D conversion.
471	Paper width (mm)	Displays paper width (mm) after adjustment.
570	Print drum encoder count	Displays encoder value.
571	Print drum angle	Displays print drum angle.
572	Ink temperature sensor (A/D)	Displays ink thermistor A/D value.
573	Ink temperature sensor (°C)	Displays ink thermistor A/D value converted to °C * 100.

6. Data Setting

(1) Press the “Start” key to display and operate the data currently set.

(2) Change data using the numeric keys. Switch to the ± display using the “*” key.

(3) Once settings have been changed, press the “Enter” or “Start” key to confirm the data and return to standby.

* Settings will be changed to their default values if values outside the setting ranges are entered.

No.	Name	
080	Jam clear	
	Description	Forcibly clears jam. Consumable errors cannot be cleared.
	Setting	None
081	Memory clear (user area)	
	Description	Resets settings (memory, user mode, timers) other than Test mode data settings, type codes, print drum codes, and ink codes to their default values. * Always save data before resetting.
	Setting	None
082	Test mode data setting clear	
	Description	Resets all settings set in Test modes to defaults values. * Always save data before resetting.
	Setting	None
083	Maintenance master count setting	
	Description	Sets the number of masters at which the call-technician message is displayed.
	Setting	Range: 0 - 9999 (*100) Units: 1 (*100) Default: 0
084	Maintenance main unit print count setting	
	Description	Sets the number of main unit prints at which the call-technician message is displayed.
	Setting	Range: 0 - 9999 (*1000) Units: 1 (*1000) Default: 0
085	Maintenance print-drum print count setting	
	Description	Sets the number of print-drum prints at which the call-technician message is displayed. (Set for each print drum.)
	Setting	Range: 0 - 9999 (*1000) Units: 1 (*1000) Default: 0
087	Maintenance count clear (master creation)	
	Description	Clears the master count (within software) for displaying technician call message the call-technician message.
	Setting	None
088	Maintenance count clear (printing)	
	Description	Clears the print count (within software) for displaying technician call message the call-technician message.
	Setting	None
089	Maintenance count clear (print drum)	
	Description	Clears the print-drum print count (within software) for displaying technician call message the call-technician message.
	Setting	None

DATA SETTING

No.	Name	
091	Technician contact setting	
	Description	Sets technician contact address and retailer name for displaying on error screens.
	Setting	* Set using special technician contact setting screen. Space if not set.
094	Minimum print number setting enable	
	Description	Sets the minimum print number set in user mode to Enabled/Disabled.
	Setting	Range: 1 (Enabled), 0 (Disabled) Default: 1 (Enabled)
095	Solenoid counter enable/disable setting	
	Description	Sets solenoid counter to Enabled/Disabled.
	Setting	Range: 1 (Enabled), 0 (Disabled) Default: 1 (Enabled) * This setting is reset to default (solenoid enabled) when power is switched on.
180	FB horizontal scanning position adjustment	
	Description	Adjusts the original horizontal scan position using the image sensor.
	Setting	Range: -35 - +40 (-3.5 mm - +4.0 mm) * (+ is to left) Units: 5 (0.5 mm) Default: 0 mm
181	FB scan start position adjustment	
	Description	Adjusts original scanning start position using the image sensor.
	Setting	Range: -60 - +60 (-6.0 mm - +6.0 mm) * (+ is downward) Units: 1 (0.1 mm) Default: 0 mm
182	FB scan image elongation and shrinkage adjustment.	
	Description	Adjusts the original scanning speed using the image sensor. (Image sensor travel speed)
	Setting	Range: -100 - +100 (-10.0% - +10.0%) * (+ elongates) Units: 1 (0.1%) Default: 0%
184	ADF-ABC mirror position adjustment	
	Description	hanges the ABC scanning position for ADF scanning using mirror position adjustment.
	Setting	Range: -20 - +20 (-2.0 mm - +2.0 mm) Units: 1 (0.1 mm) * (+ brings forward scanning start position.) Default: 0 mm
185	ADF horizontal scanning position adjustment	
	Description	Adjusts original horizontal scan position using the image sensor.
	Setting	Range: -35 - +40 (-3.5 mm - +4.0 mm) * (+ is to left) Units: 5 (0.5 mm) Default: 0 mm
186	ADF scan start position adjustment	
	Description	Adjusts original scanning start position using ADF.
	Setting	Range: -60 - +60 (-6.0 mm - +6.0 mm) * (+ is downward) Units: 1 (0.1 mm) Default: 0 mm
187	ADF scan image elongation and shrinkage adjustment.	
	Description	Adjusts original scanning speed using ADF. (Transport motor speed)
	Setting	Range: -100 - +100 (-10.0% - +10.0%) * (+ elongates) Units: 1 (0.1%) Default: 0%

No.	Name	
188	Slice level setting	
	Description	Sets text mode slice level. (Finer for larger values)
	Setting	Range: -16 - +16 Units: 1 Default: 0
189	ABC slice level setting	
	Description	Sets ABC (automatic base control) slice level. (Finer for larger values)
	Setting	Range: -16 - +16 Units: 1 Default: 0
192	Scanning speed (for 1 cycle)	
	Description	Sets the change rate for setting FB and ADF scanning pulse motor speeds.
	Setting	Range: 50% - 200% Units: 1% Default: 100%
193	ADF registration loop amount	
	Description	Adjusts slack when feeding into ADF.
	Setting	Range: -30 - +30 (-3.0 mm - +3.0 mm) Units: 1 (0.1 mm) Default: 0 mm

No.	Name	
280	Master setting adjustment	
	Description	Adjusts a small amount of return movement after the master positioning sensor goes ON for inching operation during master setting or after master cutting.
	Setting	Range: 0 - 50 (0 mm - 5.0 mm) Units: 1 (0.1 mm) Default: 20 (2.0 mm)
281	Master creation start position adjustment	
	Description	Adjusts the master creation start position (distance from master positioning sensor ON to read/write signal ON).
	Setting	Range: -30 - +50 (-3.0 mm - +5.0 mm) * (+ is downward) Units: 1 (0.1 mm) Default: 0 mm
282	Master creation length adjustment	
	Description	Adjusts the master creation area (width scanning length).
	Setting	Range: -100 - +100 (-10.0 mm - +10.0 mm) * (+ increases length) Units: 1 (0.1 mm) Default: 0 mm
283	Clamp range adjustment	
	Description	Adjusts master clamp range when loading master.
	Setting	Range: -100 - +100 (-10.0 mm - +10.0 mm) * (+ increases clamp range) Units: 1 (0.1 mm) Default: 0 mm
284	Master overall length adjustment (cutting angle)	
	Description	Adjusts the length of one master (cutting timing).
	Setting	Range: -100 - +200 (-10.0° - +20.0°) * (+ increases master length) Units: 1 (0.1°) Default: 0°
287	Master creation image elongation and shrinkage adjustment	
	Description	Adjusts frequency setting for the master creation pulse motor.
	Setting	Range: -100 - +100 (-10.0%- +10.0%) * (+ elongates) Units: 1 (0.1%) Default: 0%

No.	Name	
380	Jam removal detection angle 1	
	Description	Sets the first print drum angle for checking jam removal.
	Setting	Range: 0 - 3600 (0° - 360°) Units: 10 (1°) Default: 700 (70°)
381	Jam removal detection angle 2	
	Description	Sets the second print drum angle for checking jam removal.
	Setting	Range: 0 - 3600 (0° - 360°) Units: 10 (1°) Default: 900 (90°)
382	Master removal motor stop timing	
	Description	Sets master-removal-motor stop timing after the print drum stops at position A.
	Setting	Range: 0 - 2000 (0 s - 2 s) Units: 10 (0.01 s) Default: 0 s
384	Master compression plate return timing	
	Description	Sets master-compression-plate stop timing after moving to the compression position until it starts to return.
	Setting	Range: 0 s - 100 s Units: 1 s Default: 1 s
386	Master disposal box count	
	Description	Sets count for full master disposal box.
	Setting	Range: 40 - 50 Units: 1 Default: 50
387	Master removal print drum speed	
	Description	Sets the print drum speed for master removal. * Master removal feed motor speed is fixed.
	Setting	Range: 10 - 60 rpm Units 5 rpm Default: 15 rpm
389	Software count clear	
	Description	Clears program count for removed masters.
	Setting	None

No.	Name	
481	Paper feed clutch ON angle adjustment	
	Description	Adjusts angle timing for activating paper feed clutch.
	Setting	Range: -200 - +200 (-20.0° - +20.0°) * (+ delays ON timing) Units: 2 (0.2°) Default: 0°
482	Paper feed clutch OFF angle adjustment (standard)	
	Description	Adjusts angle timing for deactivating the paper feed clutch according to the paper type (standard).
	Setting	Range: -150 - +150 (-15.0° - +15.0°) * (+ delays OFF timing) Units: 2 (0.2°) Default: 0°
483	Paper feed clutch OFF angle adjustment (card)	
	Description	Adjusts angle timing for deactivating the paper feed clutch according to the paper type (card).
	Setting	Range: -150 - +150 (-15.0° - +15.0°) * (+ delays OFF timing) Units: 2 (0.2°) Default: 0°
484	Paper feed clutch OFF angle adjustment (thin paper)	
	Description	Adjusts angle timing for deactivating paper the feed clutch according to the paper type (thin paper).
	Setting	Range: -150 - +150 (-15.0° - +15.0°) * (+ delays OFF timing) Units: 2 (0.2°) Default: 0°
485	Paper feed clutch OFF angle adjustment (special)	
	Description	Adjusts angle timing for deactivating the paper feed clutch according to the paper type (special).
	Setting	Range: -150 - +150 (-15.0° - +15.0°) * (+ delays OFF timing) Units: 2 (0.2°) Default: 0°
486	First stage paper feed jam detection angle adjustment	
	Description	Sets angle timing for detecting the first-stage paper feed jam.
	Setting	Range: -200 - +200 (-20.0° - +20.0°) * (+ delays detection) Units: 2 (0.2°) Default: 0°
487	Paper ejection IN jam detection angle adjustment	
	Description	Adjusts the angle used to detect paper jams during paper ejection.
	Setting	Range: -150 - +150 (-15.0° - +15.0°) * (+ delays detection) Units: 2 (0.2°) Default: 0°
488	Paper ejection IN jam detection angle adjustment	
	Description	Adjusts the angle used to detect paper jams during paper ejection.
	Setting	Range: -150 - +150 (-15.0° - +15.0°) * (+ delays detection) Units: 2 (0.2°) Default: 0°

No.	Name	
580	Master detection angle adjustment	
	Description	Adjusts the angle used to detect master loading.
	Setting	Range: -200 - +100 (-20.0° - +10.0°) * (+ delays detection) Units: 2 (0.2°) Default: 0°
581	Position A stop position adjustment	
	Description	Adjusts the print drum position A stop position.
	Setting	Range: -40 - +40 (-4.0° - +4.0°) * (+ increases distance from stop) Units: 2 (0.2°) Default: -20 (-2.0°)
583	No ink time (normal)	
	Description	Sets no ink detection time.
	Setting	Range: 1 - 127 s Units: 1 s Default: 20 s
584	No ink time (at replacement)	
	Description	Sets no-ink detection time after replacing the ink cartridge.
	Setting	Range: 1 - 127 s Units: 1 s Default: 40 s
585	Overflow detection cycles	
	Description	Sets detection cycles for the overflow sensor to determine that an overflow has occurred. (This data is stored on print drum EEPROM.)
	Setting	Range: 1 - 200 cycles Units: 1 cycle Default: 50 cycles
586	Minimum print drum speed for inking	
	Description	Sets the minimum print drum speed for inking.
	Setting	Range: 5 - 100 rpm Units: 5 rpm Default: 15 rpm
588	Print drum code	
	Description	Sets the print drum code. (See page 16-18 for print drum code settings.)
	Setting	Range: 0 - 16 Units: 1 Default: 0 * Run Test mode No. 557 (inking operation) after setting.
589	Proof-read print speed table (black ink)	
	Description	Sets speed table for determining speed proof-read print.
	Setting	Range: 0 (slow), 1 (normal), 2 (fast) Default: 1 (normal)
590	Proof-read print speed table (color ink)	
	Description	Sets the speed table for determining the speed proof-read print.
	Setting	Range: 0 (slow), 1 (normal), 2 (fast) Default: 1 (normal)

No.	Name	
680	Vertical print home position adjustment	
	Description	Sets offset for vertical print home position.
	Setting	Range: -100 - +500 (-10.0 mm - +50.0 mm) * (+ is upwards) Units: 1 (0.1 mm) Default: 0
682	Print pressure home position adjustment	
	Description	Sets offset for print pressure home position
	Setting	Range: -50 - +50 pulses * (+ compresses) Units: 1 pulse Default: 0 pulses

Print Drum Code Settings

Code	Size	Type	Compatible machines
1	A3	Black	
2		Color	
3	B4	Black	RN2050 / RN2150
4		Color	
5	A4	Black	RN2000 / RN2100
6		Color	
7	A4R	Black	
8		Color	
9	Ledger	Black	
10		Color	
11	Legal	Black	RN2030 / RN2130
12		Color	
13	Letter	Black	
14		Color	
15	Spare	Black	
16		Color	