

Procedure

TROUBLESHOOTING

Goal	- Evaluate problem and solve it
User	- Sales Representatives / End users
Indication	- After questions / complains
Possible actions	- Send in unit for repair / maintenance

Needed items

BioCon-500 Cubescan	: BC500-1
Calibration phantom	: BC5C-0008
Protocol	: L-BS-S03 Procedure calibration check
User's Manual	: P-BS-P01
Service Manual	: P-BS-S01
Service request form.	: L-BS-03 A

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1. System does not start up

1	Is POWER key pressed for more than 1 second?	The system operates when pressing the POWER key for more than 1 second.	P-BS-P01 Users manual P-BS-P02 Users protocol
2	Measure the voltage of battery module.	More than +7V	Medical Technical Department. Renew Battery Article: BC5C-0005
3	Is battery module connected?	If not connected, connect the battery module.	P-BS-S01 P. 22 Back side main unit In compartment

2. System can't be turned off

1	Is POWER key pressed more than 1 second?	The system operates when pressing POWER key for more than 1 second.	P-BS-P01 Users manual P-BS-P02 Users protocol
2	Is the system not turned off even when pressing the Power key for more than 1 second?	Turn the power off by removing the battery module from the system. And exchange control boards.	Medical Technical Department. P-MC-C01 Catalogue Article: BC5J-0001 ~ 0007

3. Initial screen is not displayed when turning on the system

1	Is the backlight flickering on the LCD screen ?	The system is too cold. Should be between (10 ° ~ 40 ° C)	Wait until the unit has warmed up. (18 ° C)
2	Is the screen very dark or bright. ?	Adjust the brightness	See point E. P-BS-P01 P.26
3	System starts up with white and black squares	System is in the Maintenance Mode	Change system to patient mode See procedure L-BS-S03
4	Is backlight on in LCD?	Check if the connector for backlight of LCD is connected properly.	Medical Technical Department. P-BS-S01
5	Is the FPC connector to the LCD module well connected?	Check if the connector is connected properly.	Medical Technical Department. P-BS-S01
6	Check the voltage between the Control board ground and 12th pin of JP5.	Check if -22V (+/-1V).	Medical Technical Department. P-BS-S01
7	Check the voltage between the Control board ground and 13th pin of JP5.	Check if -21V (+/-1V).	Medical Technical Department. P-BS-S01
8	Is the system turned off?	Try again after replacing the LCD module.	Medical Technical Department. P-BS-S01

9	The system is not turned off.	Test again after replacing the Control board.	Medical Technical Department. P-BS-S01
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4. The green LED is not turned on when the power adapter is connected

1	Is green LED not turned on even when the system is OFF?	Yes -> Refer to item 2. No -> Refer to item 4	Medical Technical Department. P-BS-S01
2	Green LED is not turned on when the system (power adapter) is connected to power	Check if connection of the charger in rolling cart or extension cord in the case is OK	See procedure P-BS-S03 Rolling cart assembling
3	Is the 4 pin connector connecting the Keyboard and Charging board connected?	Check the connection status and if not connected, connect 4 pin connector.	Medical Technical Department. P-BS-S01
4	Green LED is not turned on even when the system is OFF?	Replace charging board.	Medical Technical Department. P-BS-S01
5	Green LED is on when the system is OFF, but it is turned off when the system is ON.	No problem. Because of charging control in Control board sometime Green LED is off when system is on.	P-BS-P01 Users manual

5. No Scan head message is displayed during / before scanning

1	Is the ultrasonic probe connected well to the main body?	If not, NO SCANHEAD message is displayed when the scan button is pushed.	(Re-)Connect the Scan head / Probe P-BS-P01 Users manual
2	Is open between the the 3rd and 6th pin of the probe connector?	Test again after replacing with other ultrasonic probe	Medical Technical Department. P-BS-S01
3	The message is displayed when the 3rd and 6th pin of Probe connector is short	Request service from the headquarter	Medical Technical Department. P-BS-S01

6. No Paper message is displayed during printing / no printed image

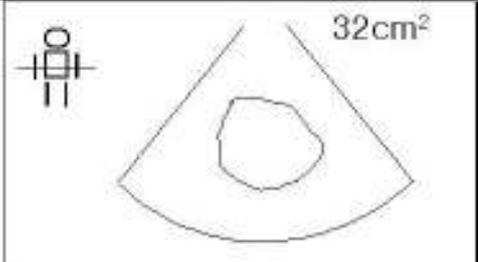
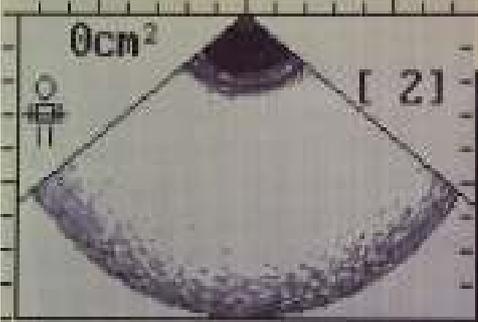
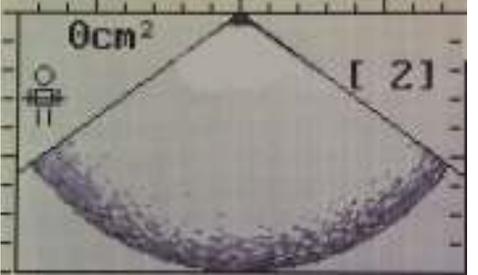
1	Does printer module have thermal paper?	If not, insert thermal paper.	P-BS-P01 Users manual Page 27
2	No image printed on the thermal paper	Check if the right side up of the thermal paper is placed in the printer	Turn the paper roll and try again or adjust Print Density : Medical Technical Department. P-BS-S01
3	Paper roll does not fit in the printer	Check dimensions of the paper roll	P-MC-C01 Catalogue Article:BC5C-0002

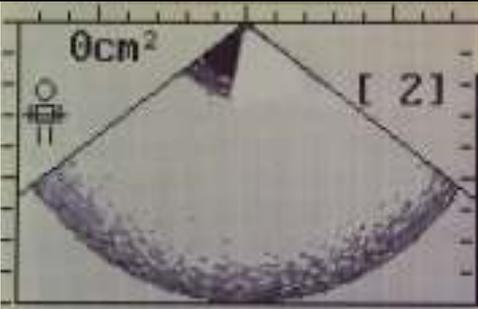
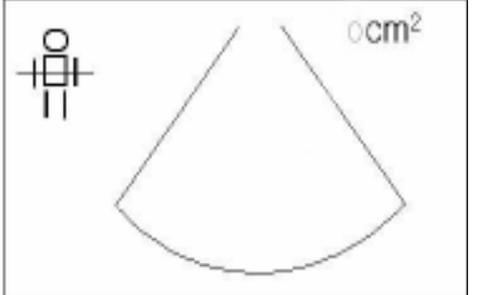
4	Does message still appears even when there is paper?	Try again after replacing the control board.	Medical Technical Department. P-BS-S01
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7. The system turns off while in use

1	Is auto power-off function active (on) in the setup menu of the Maintenance mode?	When auto power-off function is active, system will be turned off if no key input is made during the fixed time.	Medical Technical Department. P-BS-S01
2	Is the system turned off with the message of "BATTERY LOW, SYSTEM WILL BE TURNED OFF"?	Turn off the system to protect the battery module if the power is insufficient. Try again after charging.	If the system turns off after a few scans and the battery has been charged: renew the battery P-MC-C01 Catalogue Article:BC5C-0005

8. No image is displayed after scanning

	Image	Description	
1		In this case, the mode showing the scan result is set as CONTOUR.	This can be changed into B-mode image See : P-BS-S01 Page 41
2		Normal Image Scanned image from open object(in air) No bladder volume (empty bladder 0 ml)	Make sure that the probe (dome) is faced downwards during scanning in air (as when you scan a patient)
3		Image ,when the transducer connection is open. Check the resistance from the ultrasonic probe connector to the 18th and 20th pin	Medical Technical Department. P-BS-S01

4		<p>Error in transducer connection. Retry after replacing the probe</p>	<p>Same result: Medical Technical Department. P-BS-S01</p>
5		<p>Check if 'SCAN RESULT' is set as 'CONTOUR'. Yes, retry after setting as 'B-MODE'. No, request service from the headquarter.</p>	<p>Changing into B-mode image See : P-BS-S01 Page 42 Same result: Medical Technical Department. P-BS-S01</p>

9. Error in printing (No feeding)

1	Thermal Paper	No paper. Properly inserted.	P-BS-P01 Users manual Page 27
2	Motor sound?	Yes, go to 1 No, check the printer connector	P-BS-P01 Users manual Page 27
3	Not solved?	Replace control board or printer	Medical Technical Department. P-BS-S01

10. System starts up with white and black squares

1	System starts up with white and black squares	System is in the Maintenance Mode	Change system to patient mode See procedure L-BS-S03
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11. Measurements (scanned volumes) are not accurate

1	One displayed image (bladder) is not seen on the screen	Re-angle the probe or move the probe away from the pubic bone	See procedures : P-BS-P01 Training : T-BS-03
2	One displayed image (bladder) is not seen on the screen	Check image with point 8.	Medical Technical Department. P-BS-S01
3	Scanned volume is different from catheterized volume	Accuracy of the system is $\pm 20\%$ (0~699 ml) Make sure that the images on the screen are correct and that the bladder is shown in the centre of the scanning	See procedures : P-BS-P01 Training : T-BS-03 - P-BS-P02 Users protocol

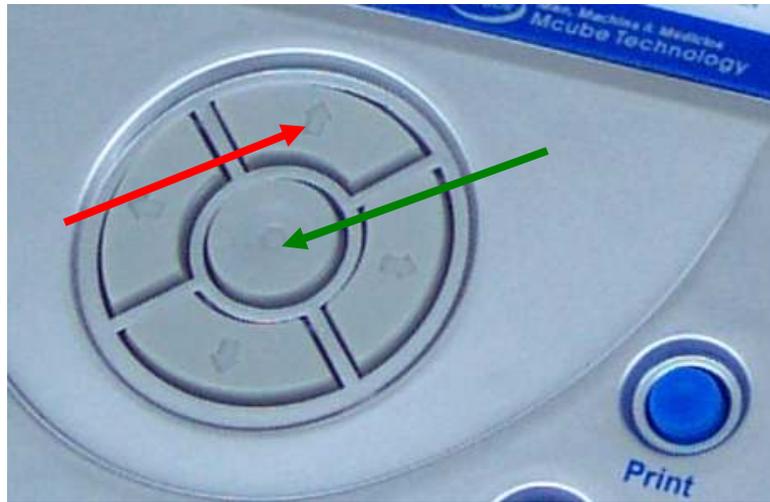
3	Scanned volume is different from catheterized volume	<p>area (targeting circle)</p> <p>The probe should be placed 4 cm above the pubis on the midline (lower abdomen)</p> <p>Apply ultrasonic gel on probe cap evenly (no air trapped in Gel)</p> <p>Obese patients: Probe below belly</p> <p>The scan button on the probe should be on the right side of the patient</p> <p>The gender should be selected</p> <p>Perform a Calibration Check (between 121 ~ 139 ml)</p> <p>result Negative ▶</p> <p>Send unit to Medical Technical Department for Calibration</p>	<p>- P-BS-P03 Protocol for ward</p> <p>- P-BS-P04 Quick reference</p> <p>- P-BS-P05 ~ 14 Protocols per ward</p> <p>- T-BS-07 Learning package</p> <p>- L-BS-S03 Calibration check</p> <p>Medical Technical Department. P-BS-S01</p>
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12. Error Messages

NO DATA AVAILABLE	No measured data or viewing B-mode image	See point 8.
BATTERY LOW. RECHARGE BEFORE NEXT USE SYSTEM WILL BE TURNED OFF	Power shortage	See point 7.
NO PAPER	No printer paper	See point 6 & 9
NO SCANHEAD	No connecting probe	See point 5.

A. How can I change the Time & Date (in Standard Mode)

Reference: P-BS-P01 / Users manual / Page 13



To enter the SETUP mode, push UP KEY (red arrow)

<pre> ► Set Date/Time 2003/08/15 19:00 System Mode Standard Print Option Value Only Exit </pre> <p>SCAN GEN. (←) RESET(→) PRINT SETUP(↑)</p>	<p>a. Move the cursor at Set Date/Time by up or down key</p> <p>b. Push the (green arrow) Enter key</p>
<pre> Set Date/Time ►2003/08/15 19:00 System Mode Standard Print Option Value Only Exit </pre> <p>SCAN GEN. (←) RESET(→) PRINT SETUP(↑)</p>	<p>c. Move the cursor to the position by left or right arrow key, push up or down key for selecting digits.</p> <p>d. Push the Enter key (green Arrow) after changing date / time.</p>
<pre> Set Date/Time 2003/08/15 19:00 System Mode Advanced Print Option Value Only ► Exit </pre> <p>SCAN GEN. (←) RESET(→) PRINT SETUP(↑)</p>	<p>e. Move the cursor to Exit by down arrow key. Push the Enter key (green Arrow) to exit setup page</p>

B. How can I put in the Hospital Name (in Advanced Mode only)

Reference: P-BS-P01 / Users manual / Page 16

To put in the hospital name the system should be in the advanced mode

To enter the SETUP mode, push UP KEY (red arrow)



<p>Set Date/Time 2003/08/15 19:00 ▶ System Mode Standard Print Option Value Only Exit</p> <p>SCAN GEN. (←) RESET(↔) PRINT SETUP(↑)</p>	<p>a. Move the cursor to System Mode by up or down key b. Push the Enter key (inside arrow keys)</p>
<p>Set Date/Time 2003/08/15 19:00 System Mode ▶ Standard Print Option Value Only Exit</p> <p>SCAN GEN. (←) RESET(↔) PRINT SETUP(↑)</p>	<p>c. Push the left or right arrow key to select a desired mode - Standard - Advanced</p>
<p>Set Date/Time 2003/08/15 19:00 System Mode ▶ Advanced Print Option Value Only Exit</p> <p>SCAN GEN. (←) RESET(↔) PRINT SETUP(↑)</p>	<p>d. Push the Enter key after changing system mode.</p>
<p>Set Date/Time 2003/08/15 19:00 System Mode Advanced Print Option Value Only ▶ Exit</p> <p>SCAN GEN. (←) RESET(↔) PRINT SETUP(↑)</p>	<p>e. Move the cursor to Exit by down arrow key. Push the Enter key to exit setup page</p>

To enter the SETUP mode / Advanced, push UP KEY (red arrow)



<pre> Hospital Name Set Date/Time 2003/08/15 19:00 System Mode Advanced Scan Result Contour Print Option Value Only Flash Store On Test Print Exit </pre>	<p>a. Move the cursor at Hospital Name by up or down key b. Push the Enter key (inside arrow keys)</p>
<pre> << Setting Hospital Name >> [] A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9 _ - # BackSpace Space DONE </pre>	<p>c. Move the cursor to a desired position and push the Enter key. (e.g. M) d. After finish input the name, move the cursor to DONE. Push the Enter key.</p>
<pre> << Setting Hospital Name >> MCUBE TECHNOLOGY A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9 _ - # BackSpace Space DONE </pre>	
<pre> Hospital Name MCUBE TECHNOLOGY Set Date/Time 2003/08/15 19:00 System Mode Advanced Scan Result Contour Print Option Value Only Flash Store On Test Print ▶ Exit </pre>	<p>e. Move the cursor to Exit by down arrow key. Push the Enter key to exit setup page.</p>

C. How can I change the print options (in Standard Mode)

Reference: P-BS-P01 / Users manual / Page 15

To enter the SETUP mode, push UP KEY (red arrow)



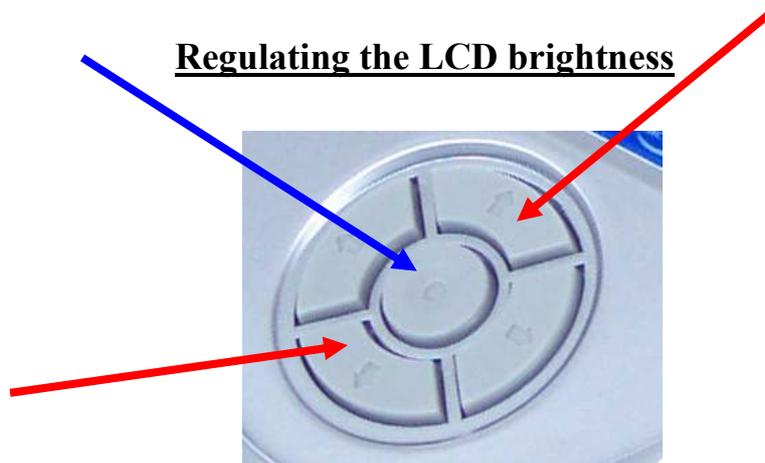
<p>Fig. 3.17</p>	<p>a. Move the cursor at Print Option by up or down key b. Push the Enter key (inside arrow keys)</p>
	<p>c. Push the left or right arrow key to select a desired mode.</p> <ul style="list-style-type: none"> - Value Only - Raw Image - Walls - All Planes <p>d. Push the Enter key to finish print option change.</p>
	<p>e. Move the cursor to Exit by down arrow key. Push the Enter key to exit setup page.</p>

D. How can I change thermal paper in the printer
Reference: P-BS-P01 / Users manual / Page 27

		<p>a. Open the printer cover as the left image.</p>
		<p>b. Grab a printer paper in one hand as the left image and slightly pull out the paper to insert in the paper cart by using the other hand. Make sure that the printable side is facing the print head (see left image)</p>
		<p>c. Close the printer cover after inserting papers in printer cart.</p>

E. How can I change the brightness of the LCD screen

Reference: P-BS-P01 / Users manual / Page 26



Press the enter button in the centre (see blue arrow) and at the same time
the arrow button pointed upwards (=brighter)

or

the arrow button pointed downwards (=darker) (see red arrows)

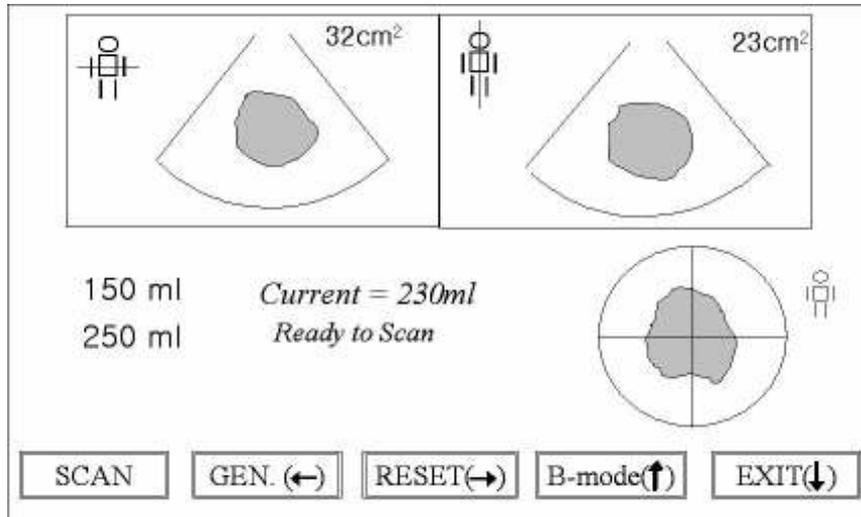
Short key functions

Short key	Function	Remark
Enter + →	Turns over another images of 12 images	Displays 2 images on LCD
Enter + ←	Regulates contrast of images on 4 steps	Rotates 4 steps
Enter + ↑	Regulates LCD brightness to brighter	
Enter + ↓	Regulates LCD brightness to darker	

F. How can I review all 12 scanning images

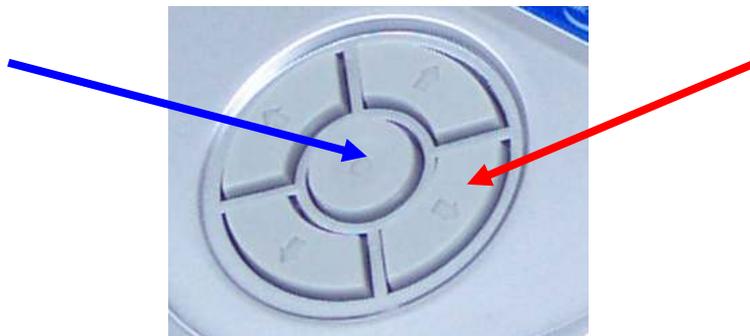
Reference: P-BS-P01 / Users manual / Page 26

After having a scan result on the LCD screen (see below)



SCAN result (B-Mode)

Review other images, displayed per 2 images on LCD Screen



Short key functions

Short key	Function	Remark
Enter + →	Turns over another images of 12 images	Displays 2 images on LCD
Enter + ←	Regulates contrast of images on 4 steps	Rotates 4 steps

G. 1. How can I only store the last scanned value in stead of highest value
(see also G. 2. below) (in Advanced Mode only)

- ON**
1. Stores the maximum SCAN RESULT of one session in Flash memory
 2. SCAN RESULT will not be deleted if the power is put off and back on

- OFF**
1. Flash memory does not store any data

To enter the SETUP mode / Advanced, push UP KEY (red arrow)



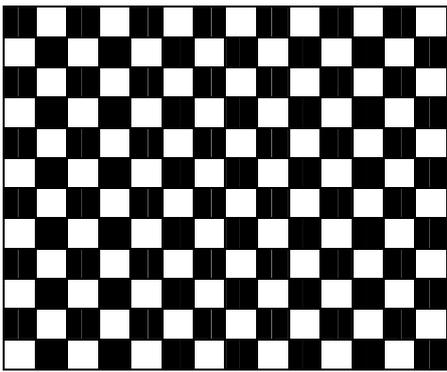
<pre> Hospital Name MCUBE TECHNOLOGY Set Date/Time 2003/08/15 19:00 System Mode Advanced Scan Result B-Mode Print Option Value Only Flash Store On Test Print Exit </pre> <p>SCAN PRINT SETUP</p>	<p>a. Move the cursor at Flash Store by up or down key b. Push the Enter key (inside arrow keys)</p>
<pre> Hospital Name MCUBE TECHNOLOGY Set Date/Time 2003/08/15 19:00 System Mode Advanced Scan Result B-Mode Print Option Value Only Flash Store On Test Print Exit </pre> <p>SCAN PRINT SETUP</p>	<p>c. Move the cursor by left or right key to on or off and push the Enter key.</p>
<pre> Hospital Name MCUBE TECHNOLOGY Set Date/Time 2003/08/15 19:00 System Mode Advanced Scan Result B-Mode Print Option Value Only Flash Store Off Test Print Exit </pre> <p>SCAN PRINT SETUP</p>	
<pre> Hospital Name MCUBE TECHNOLOGY Set Date/Time 2003/08/15 19:00 System Mode Advanced Scan Result Contour Print Option Value Only Flash Store On Test Print Exit </pre> <p>SCAN PRINT SETUP</p>	<p>d. Move the cursor to Exit by down arrow key. Push the Enter key to exit setup page.</p>

**G. 2. How can I only store the last scanned value in stead of highest value
(in Maintenance Mode only)**

** For this input ask your Medical Technical Department*

Maintenance Mode

Maintenance mode can be used to adjust the system variables. Set-up of those variables follows the procedure below.

1	<p>Check ID OK!!! Erase Sector OK!!! Blank Check OK!!! Program OK!!! Verify OK!!! Programming is completed!!!</p>	<p>To enter the Maintenance mode, push LEFT key with ENTER key being pushed and then push PRINT key after the system is turned on and the initial screen is displayed. At this time, the information as left is displayed on the screen.</p>
2		<p>Turn off the system and again turn it on to have the checkers as shown left on LCD.</p>
3	<p><<MAINTENANCE MODE>></p> <p>Maintenance mode should be accessed by only qualified person.</p> <ol style="list-style-type: none"> 1. To go to maintenance mode press ENTER key. 2. To return top menu press DOWN key. 	<p>The initial screen of the system is displayed after approximately 10 seconds of the appearance of checkers. At this time, push RIGHT key with LEFT key being pushed together to display the screen as left.</p> <p>Push ENTER key to display maintenance setup menu, DOWN key to return to the previous page.</p>

4	<p>► Calibrat.(M2) Return Min. Contrast 2 Max. Contrast 8 Store Mode Current Auto Power 5 minutes Print Density 8 Scan Status on Exit</p>	<p>Push ENTER key from the screen 3 above to display maintenance set-up menu as left.</p> <p>*) Key manipulation Use up/down key to move menu items from the menu.</p> <p>► appears beside the current menu item. To replace the item value, push ENTER key while the ► is still displayed for the corresponding item. To change the item value, scroll until the desired value appears by using left/right value and push ENTER key.</p> <p>*) Refer to the table below for the details.</p>
5	<p>Check ID OK!!! Erase Sector OK!!! Blank Check OK!!! Program OK!!! Verify OK!!! Programming is completed!!!</p>	<p>When the set-up is done, push LEFT key with ENTER key being pushed and then push LEFT key to display the initial screen without having the checkers during rebooting. At this time, the information as left is displayed on the screen. And then turn the system off.</p>

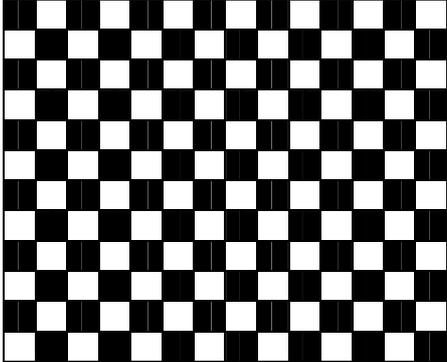
<p>Store Mode</p>	<p>Appoints which one to store from the current session. In case of current, the last scanned value is stored. And in case of maximum, the image data with maximum volume is stored.</p> <p>Inapplicable at present but an upgrade is scheduled in the near future.</p>
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H. How can I display the scan status (in Maintenance Mode only)

** For this input ask your Medical Technical Department*

Maintenance Mode

Maintenance mode can be used to adjust the system variables. Set-up of those variables follows the procedure below.

1	<p>Check ID OK!!! Erase Sector OK!!! Blank Check OK!!! Program OK!!! Verify OK!!! Programming is completed!!!</p>	<p>To enter the Maintenance mode, push LEFT key with ENTER key being pushed and then push PRINT key after the system is turned on and the initial screen is displayed. At this time, the information as left is displayed on the screen.</p>
2		<p>Turn off the system and again turn it on to have the checkers as shown left on LCD.</p>
3	<p><<MAINTENANCE MODE>></p> <p>Maintenance mode should be accessed by only qualified person.</p> <ol style="list-style-type: none"> 1. To go to maintenance mode press ENTER key. 2. To return top menu press DOWN key. 	<p>The initial screen of the system is displayed after approximately 10 seconds of the appearance of checkers. At this time, push RIGHT key with LEFT key being pushed together to display the screen as left.</p> <p>Push ENTER key to display maintenance setup menu, DOWN key to return to the previous page.</p>

4	<p>► Calibrat.(M2) Return Min. Contrast 2 Max. Contrast 8 Store Mode Current Auto Power 5 minutes Print Density 8 Scan Status on Exit</p>	<p>Push ENTER key from the screen 3 above to display maintenance set-up menu as left.</p> <p>*) Key manipulation Use up/down key to move menu items from the menu.</p> <p>► appears beside the current menu item. To replace the item value, push ENTER key while the ► is still displayed for the corresponding item. To change the item value, scroll until the desired value appears by using left/right value and push ENTER key.</p> <p>*) Refer to the table below for the details.</p>
5	<p>Check ID OK!!! Erase Sector OK!!! Blank Check OK!!! Program OK!!! Verify OK!!! Programming is completed!!!</p>	<p>When the set-up is done, push LEFT key with ENTER key being pushed and then push LEFT key to display the initial screen without having the checkers during rebooting. At this time, the information as left is displayed on the screen. And then turn the system off.</p>

Scan Status	On/off control scan status information which shows how much current scan is centered.
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