SECTION 5 MAINTENANCE PROGRAMS

SECTION 5 MAINTENANCE PROGRAMS

5.1 SPECIAL MODES

The KX-21 program is provided with various types of special mode performing various functions. These are the following three modes, and this section explains only modes (2) and (3).

(1) Regular Mode
This mode is for the operator routine use. It is available when the instrument is powered up in the ordinal procedure.

(2) Maintenance Mode
This is for the Sysmex field service representatives in carrying out maintenance of the instrument.

(3) Factory Maintenance Mode
This is for adjustments, pre-shipment inspection and shipment preparation of the instrument performed by the production staffs. Also some menu are used by R&D staffs for investigation purpose.

5.2 ENTERING THE MAINTENANCE MODES

Use the following procedure to enter into the Maintenance mode and Factory Maintenance mode.

5.2.1 Maintenance Mode

– To enter the Maintenance mode;
Press [C] [9] [.] and [0] keys on the Panel Keyboard in this order.

[S] is displayed in the left corner of top line of the LCD display.

– To exit from the Maintenance mode;
Press [C] and [0] keys on the Panel Keyboard in this order.

[S] disappears and the system becomes the Regular mode.

5.2.2 Factory Maintenance Mode

– To enter the Factory Maintenance mode;
Press the Start Switch when turning ON the power switch, and keep it pressing until a beep sounds.

[D] is displayed in the left corner of top line of the LCD display.

– To exit from the Factory Maintenance mode;
Press [C] and [0] keys on the Panel Keyboard, or
Power OFF the instrument.

5.2.3 Access to Maintenance Modes

Press [SELECT] key on the Panel Keyboard.
From the Select menu, select 9: Service by pressing [9] key.
The Service menu will appear.

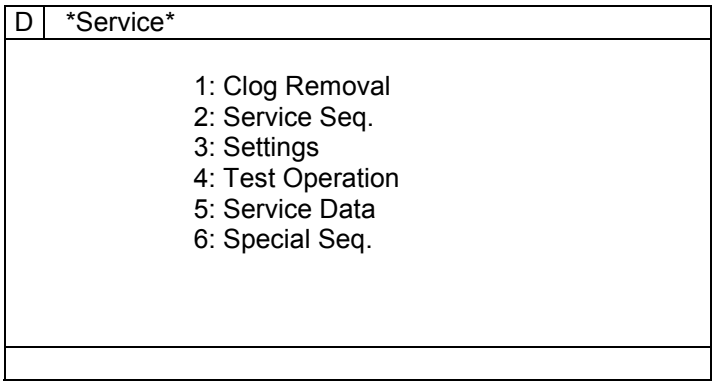
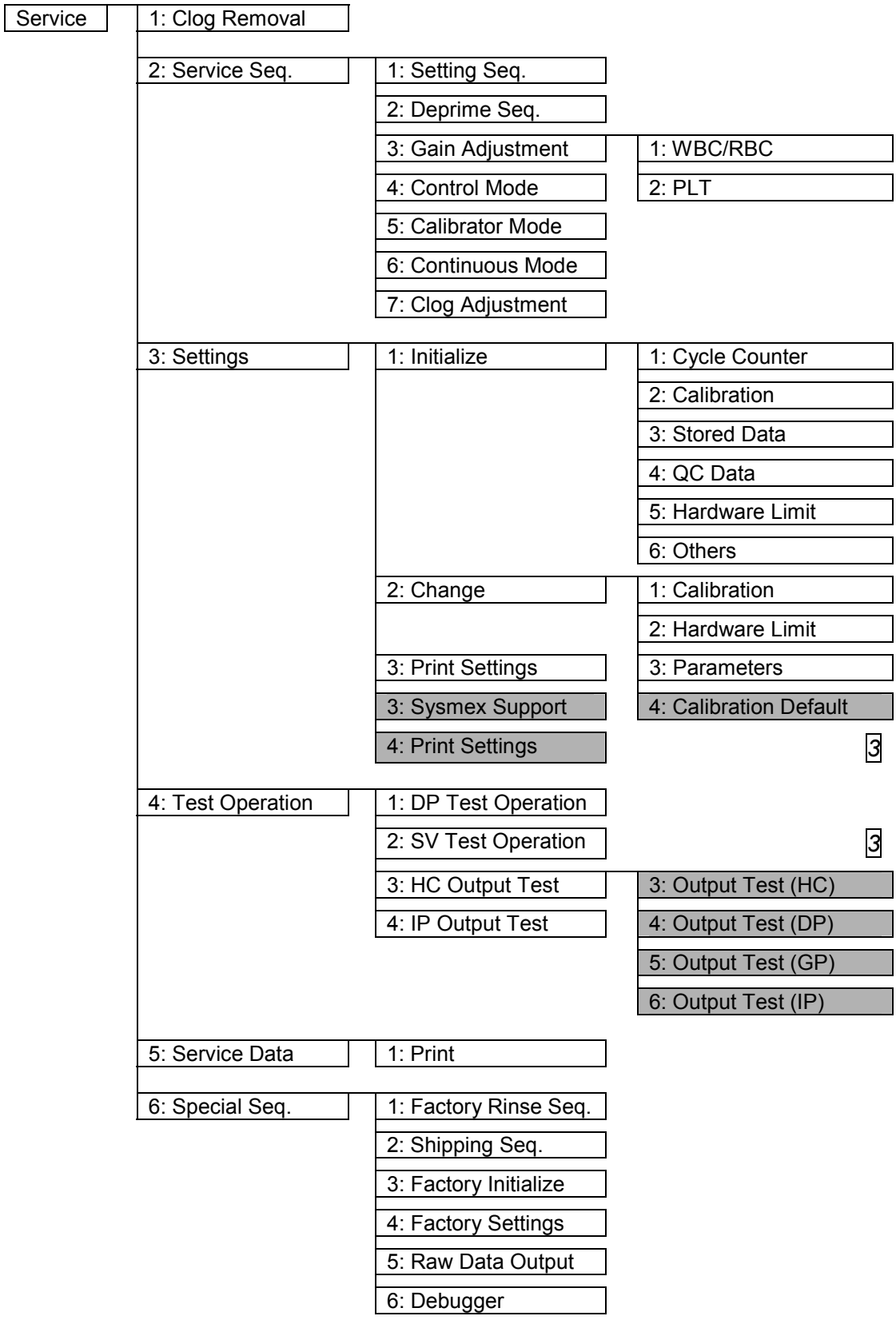


Figure 5-1: Service Menu Display (in Factory Maintenance Mode)

"*Service*" will appear in the system status area.
Note that "6: Special Seq." menu appears only in the Factory Maintenance mode.
Refer to the following sections for each menu.

5.3 MENU CONFIGURATION



: PROGRAMS FOR KX-21N ONLY 3

5.4 CLOG REMOVAL

Apply voltage to the transducer apertures, and execute the clog removal sequence.

(1) Select 9: Service from Select Menu.
(2) Select 1: Clog Removal from Service submenu. The clog removal sequence starts.

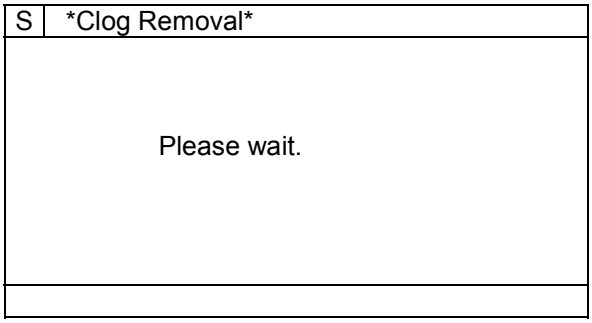


Figure 5-2: Clog Removal in Progress

(3) After completion of the sequence, return to the Ready Screen.

5.5 SERVICE SEQUENCE

Service sequence include the following functions:

1. Setting sequence
2. Deprime sequence
3. Gain adjustment sequence
4. Control mode
5. Calibrator mode
6. Continuous mode
7. Clog adjustment (clog voltage adjustment sequence)

(1) Select 9: Service from Select Menu.
(2) Select 2: Service Seq. from Service submenu. The Service Sequence submenu appears.

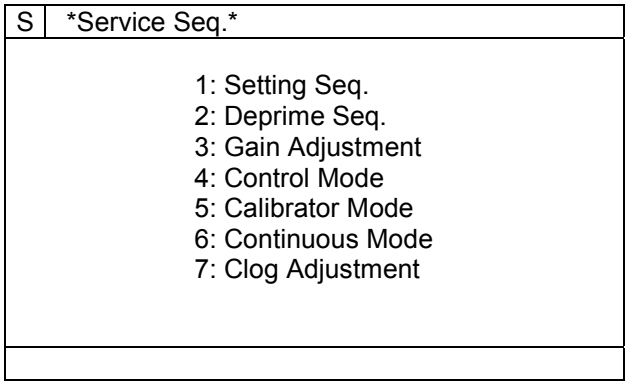


Figure 5-3: Service Seq. Menu

5.5.1 Setting Sequence

The setting sequence follows start-up when the system is installed.

(1) From the Service Seq. menu, select 1: Setting Seq.
"Press Start switch" message will be displayed.

(2) Press the Start Switch to start the setting sequence.
Press the [SELECT] key to cancel the program execution. The system will return to the Ready Screen.

(3) When the sequence is in progress, "Please wait." is displayed and the progress status will appear in the system status area.
Note that the sequence cannot be stopped after the sequence started.

(4) When the sequence is completed, the system will return to the Ready Screen.

5.5.2 Deprime Sequence

During this sequence, liquid is discharged from the hydraulic lines.

(1) From the Service Seq. menu, select 2: Deprime Seq.
Instruction message will appear in the data processing area as shown in Figure 5-4.

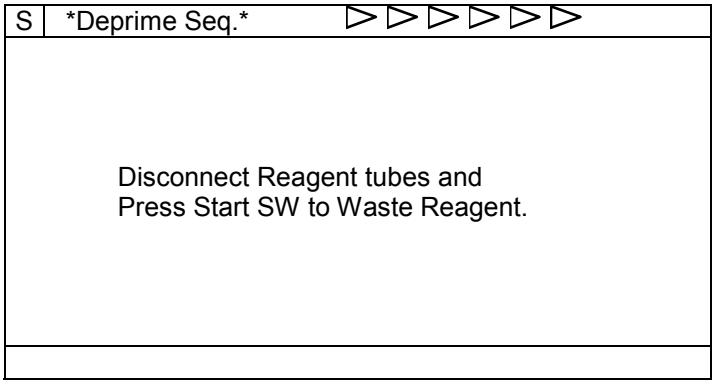


Figure 5-4: Deprime Sequence Screen

(2) Press the Start Switch to start the deprime sequence. The liquid will be deprimed.
Press the [SELECT] key to cancel the program execution. The system will return to the Ready Screen.

(3) When the sequence is in progress, "Please wait." is displayed and the progress status will appear in the system status area.
Note that the sequence cannot be stopped after the sequence started.

(4) When the sequence is completed, the system will return to the Ready Screen.

5.5.3 Gain Adjustment

During this sequence, the WBC, RBC, and PLT gain (sensitivity) is adjusted.
The WBC/RBC gain can be adjusted automatically by changing the resistance of the digital control (potentiometer) on the analog board, PCB No. 2135 (KX-21) or PCB No. 2150 (KX-21N) using standard substances such as CELLCHECK-400. The gain of PLT channel is adjusted by using the analog control volume.

3

(1) From the Service Seq. menu, select 3: Gain Adjustment. The Gain Adjustment menu will appear.

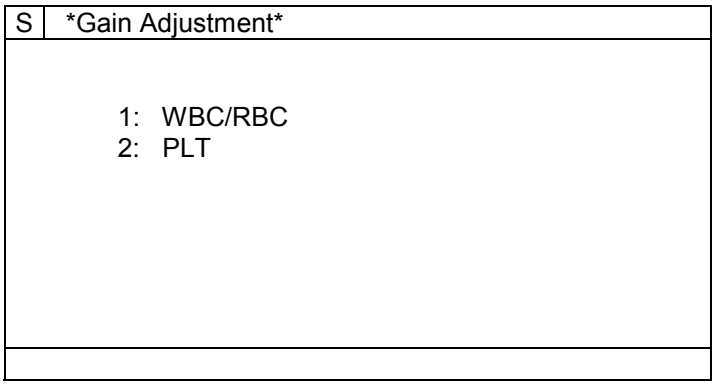


Figure 5-5: Gain Adjustment Menu

Refer to Section 4: Adjustment for the details.

5.5.4 Control Mode

Switch the system to Control Mode (control blood analysis mode).
In Control Mode, data analyses for control blood will be performed for normal analyses.

(1) From the Service Seq. menu, select 4: Control Mode.
In the system status area, "QC" will be displayed in reverse.

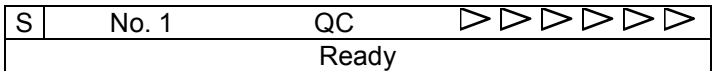


Figure 5-6: Control Mode

(2) To exit from control mode, select 4: Control Mode from the Service Seq. menu again.

5.5.5 Calibrator Mode

Switch the system to Calibrator Mode (calibrator analysis mode).
In Calibrator Mode, data analyses for calibrator will be performed for normal analyses.

(1) From the Service Seq. menu, select 5: Calibrator Mode.
In the system status area, "CL" will be displayed in reverse.

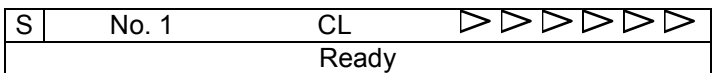


Figure 5-7: Calibrator Mode

(2) To exit from control mode, select 5: Calibrator Mode from the Service Seq. menu again.

5.5.6 Continuous Mode

Switch the system to Continuous Mode (continuous analysis mode).

(1) From the Service Seq. menu, select 6: Continuous Mode.
The analysis sequence will be repeated until the [SELECT] key is pressed.

(2) Press the [SELECT] key to stop the sequence and the system will enter the Ready status.
If an error that makes the analysis impossible occurs in continuous mode, the continuous sequence will stop.

5.5.7 Clog Adjustment (Clog Voltage Adjustment Sequence)

Adjust the voltage to detect the aperture clog.

(1) From the Service Seq. menu, select 7: Clog Adjustment.
The Clog Adjustment screen will appear. The clog voltage will appear in real time on the screen.

S	*Clog Adjustment*
	WBC CLOG 97 RBC CLOG 97 Completing automatically in 30 sec.
[SELECT] to exit.	

Figure 5-8: Clog Adjustment Screen

(2) Adjust the voltage. Refer to Section 4: Adjustment for the procedures.

(3) If you press the [SELECT] key, the Ready Screen will appear. Or after 30 seconds have passed, the Ready Screen will automatically appear.

5.6 SETTINGS

The Settings program is used to initialize, change and print out the service setting values using the following submenu:

1. Initialize
2. Change
3. Print Settings

(1) Select 9: Service from Select Menu.
(2) Select 3: Settings from Service submenu. The Settings submenu appears.

3

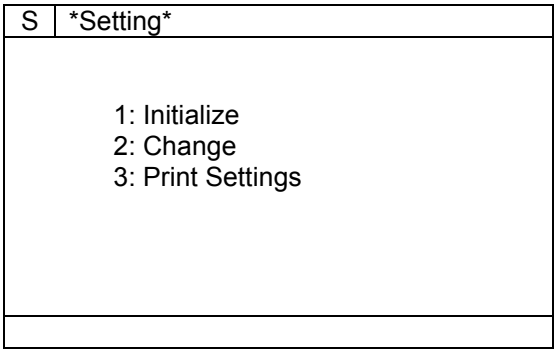


Figure 5-9-a: Settings Menu (KX-21)

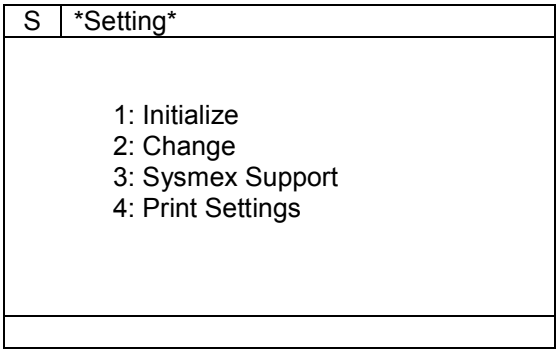


Figure 5-9-b: Settings Menu (KX-21N)

5.6.1 Initialize

Initialize the system settings.

(1) From the Settings menu, select 1: Initialize.
The Initialize menu will appear.

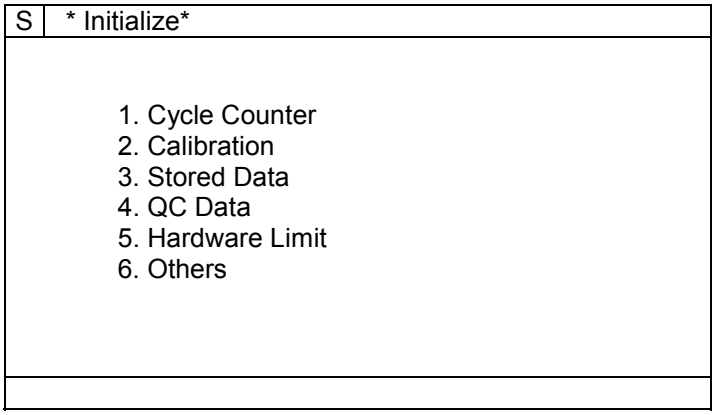


Figure 5-10: Initialize Menu

(2) Using the [↑] and [↓] keys, select the item you wish to initialize, and press [ENTER] key. Or use the numeric keys to select item.

Table 5-1: Initialize Item

	Menu	Parameter to Initialize
1	Cycle Counter	Instrument total cycle count Unit operations: Waste Chamber, Detector, SRV
2	Calibration	Gain adjustment parameters Calibration values (service) Calibration values (user)
3	Stored Data	Stored data
4	QC Data	QC data QC settings
5	Hardware Limit	Hardware limits
6	Others	Mark Limits Output Settings

(3) A confirmation message will appear in the menu display area.

Initialize. OK? Yes No

Figure 5-11: Initialize Confirmation Message

If you select [Yes], the settings will be initialized and the system will return to the Ready Screen. If you select [No], or press the [SELECT] key, the system will return to the Ready Screen without initializing.

5.6.2 Change

Change the system settings.

(1) From the Settings menu, select 2: Change.
The Change menu will appear.

3

S	*Change*
	1: Calibration 2: Hardware Limit 3: Parameters

Figure 5-12-a: Change Menu (KX-21)

S	*Change*
	1: Calibration 2: Hardware Limit 3: Parameters 4: Calibration Default

Figure 5-12-b: Change Menu (KX-21N)

(2) Using the [↑] and [↓] keys, select the item you wish to change, and press [ENTER] key. Or use the numeric keys to select item.

5.6.2.1 Calibration

(1) Using the [↑], [↓] and [ENTER] keys, move the cursor to the parameter you wish to change.

(2) Using the numeric keys and decimal key, enter the calibration value.
The acceptable range for each parameter is 0.0 to 999.9. If the input range is exceeded, an alarm will sound and the data entry is ignored.
For each parameter, numerals that are not significant digits will be cut off. For example, if the WBC calibration is entered as 97.55, the set value will be 97.5.

[C] key functions as backspace to delete one character.
If a calibration value has already been entered, the previous value will be deleted upon any key entry.

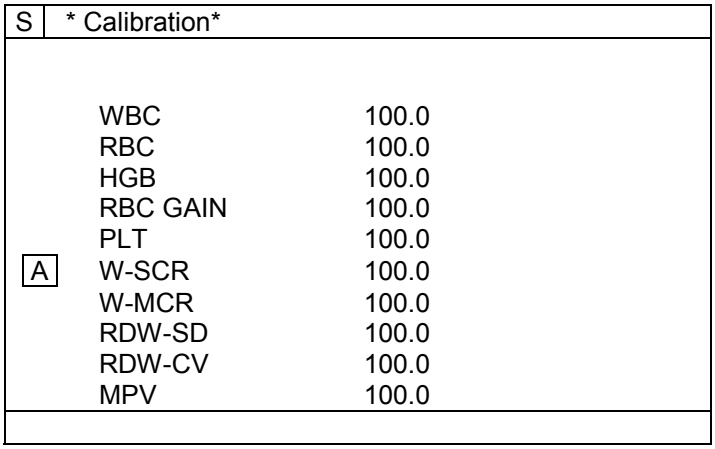


Figure 5-13: Change Calibration Menu

(3) When the cursor is on the bottom line, pressing the [↓] key will change the displayed parameters.

(4) If you press the [SELECT] key, the change confirmation message will appear in the menu display area.

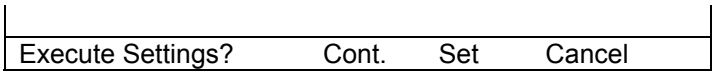


Figure 5-14: Change Confirmation Message

If you select [Cont.], you can continue to enter calibration values.
If you select [Set], the calibration value will be updated and the system will return to the Ready Screen.
If you select [Cancel] or press the [SELECT] key, the system will return to the Ready Screen without changing the settings.

The initial setting values will be as shown in the table below.

Table 5-2: Calibration Initial Setting Values

Parameter	Initial Value	Remarks
WBC-SENS	125	WBCch gain adjustment value
RBC-SENS	64	RBCch gain adjustment value
Others	100.0	

A By ECR 399L057

5.6.2.2 Hardware Limit

Use this program to change Hardware Limits.

(1) Using the [↑], [↓] and [ENTER] keys, move the cursor to the item you wish to change.

(2) Using the numeric keys and decimal key, enter the limit value.
For each parameter, numerals that are not significant digits will be cut off.
[C] key functions as backspace to delete one character.
If a limit value has already been entered, the previous value will be deleted upon any key entry.

S	*Hardware Limit*	
	PRESS SL	0.430
	PRESS SH	0.570
	PRESS ML	0.380
	PRESS MH	0.570
A	PRESS RL	0.200
	PRESS RH	0.600
	VAC SL	230
	VAC SH	270
	VAC ML	100
	VAC MH	270

S	*Hardware Limit*	
	PRESS SL	0.0390
	PRESS SH	0.0590
	PRESS ML	0.0300
	PRESS MH	0.0590
	PRESS RL	0.0200
	PRESS RH	0.0590
	VAC SL	0.0307
	VAC SH	0.0360
	VAC ML	0.0134
	VAC MH	0.0360

6 **Figure 5-15-a:** Change Hardware Limits Menu (KX-21) **Figure 5-15-b:** Change Hardware Limits Menu (KX-21N)

(3) When the cursor is on the bottom line, pressing the [↓] key will change the displayed parameters.

(4) If you press the [SELECT] key, the change confirmation message will appear in the menu display area.

Execute Settings?	Cont.	Set	Cancel

Figure 5-16: Change Confirmation Message

If you select [Cont.], you can continue to enter limit values.
If you select [Set], the limit value will be updated and the system will return to the Ready Screen.
If you select [Cancel] or press the [SELECT] key, the system will return to the Ready Screen without changing the settings.

6 **Table 5-3:** Hardware Limits Initial Set Values

Parameter	Initial Value (KX-21)	Initial Value (KX-21N)	Remarks
PRESS SL	0.430 (kg/cm^2)	0.0390 (Mpa) 6	Pressure monitor lower limit (in Ready)
PRESS SH	0.0590 (kg/cm^2)	0.0590 (Mpa) 6	Pressure monitor upper limit (in Ready)
PRESS ML	0.0300 (kg/cm^2)	0.0300 (Mpa) 6	Pressure monitor lower limit (during analysis)
PRESS MH	0.0590 (kg/cm^2)	0.0590 (Mpa) 6	Pressure monitor upper limit (during analysis)
PRESS RL	0.0200 (kg/cm^2)	0.0200 (Mpa) 6	Pressure monitor lower limit (reserve)
PRESS RH	0.0590 (kg/cm^2)	0.0590 (Mpa) 6	Pressure monitor upper limit (reserve)
VAC SL	0.0307 (mmHg)	0.0307 (Mpa) 6	Vacuum monitor lower limit (in Ready)
VAC SH	0.0360 (mmHg)	0.0360 (Mpa) 6	Vacuum monitor upper limit (in Ready)
VAC ML	0.0134 (mmHg)	0.0134 (Mpa) 6	Vacuum monitor lower limit (during analysis)
VAC MH	0.0360 (mmHg)	0.0360 (Mpa) 6	Vacuum monitor upper limit (during analysis)

(Continued)

A By TB99003

Table 5-3: Hardware Limits Initial Set Values (Continued)

Parameter	6 Initial Value (KX-21 and KX-21N)	Remarks
TEMP L	10.0 (°C)	Temperature monitor lower limit
TEMP H	40.0 (°C)	Temperature monitor upper limit
RES L	70	Electric conductivity monitor lower limit
RES H	150	Electric conductivity monitor upper limit
BLNK W	0.3 ($x10^3$/uL)	WBC background limit
BLNK R	0.02 ($x10^6$/uL)	RBC background limit
BLNK P	10 ($x10^3$/uL)	PLT background limit
BLNK H	0.1 (g/dL)	HGB background limit
CLOG W	130	WBC clog monitoring level
CLOG R	130	RBC clog monitoring level
CMP TIMER	15 (minutes)	Pneumatic Unit stop time
WH LIMIT	95 (times)	Lysing reagent monitoring limit
AG LMT B	200	AG flag detection limit. Number of cells at WBC lower discriminator and the lower 2 channels.
WL MSK B	95 (%)	WBC count masking limit due to WL flag. The height of valley bottom at WBC lower discriminator is relatively given when the WBC histogram peak is assumed as 100%.

5.6.2.3 Parameters (Other Settings)

Use this program to set the use of Calibrator, and the report of PDW/P-LCR parameters.

(1) Using the [↑], [↓] keys, move the cursor to the item you wish to change.
(2) Pressing the [←], [→] keys alternates “Use” and “Not Use”.

3

S	*Parameters*
Calibrator	Not Use
PDW, P-LCR	Use
QC Items	CBC8

S	*Parameters*
Calibrator	Not Use
PDW, P-LCR	Use
QC Items	Eightcheck 3WP

13 **Figure 5-17-a:** Change Parameters Menu (KX-21)

Figure 5-17-b: Change Parameters Menu (KX-21N)

The initial values are shown in the table below.

Table 5-4-1: Parameters Initial Settings

	Parameter	Initial Value	Remarks
	Calibrator	Not Use	Calibrator usage
	PDW, P-LCR	Use	PDW, P-LCR display
A	QC Items	CBC8	QC parameters can be selected among CBC8, USA or ALL. See Table 5-4-2.

A By TB99003
B By ECR399B093

Table 5-4-2: QC Parameters Settings [A]

Selected Parameters for QC	CBC8	USA	ALL
Number of parameter	8	17	21
CBC8	X	X	X
W-SCR	- - -	X	X
W-MCR	- - -	X	X
W-LCR	- - -	X	X
W-SCC	- - -	X	X
W-MCC	- - -	X	X
W-LCC	- - -	X	X
RDW-CV	- - -	X	X
RDW-SD	- - -	X	X
MPV	- - -	X	X
PDW	- - -	- - -	X
P-LCR	- - -	- - -	X
W-SMV	- - -	- - -	X
W-LMV	- - -	- - -	X

NOTE: "USA" setting is not available on KX-21N. [3]

(3) If you press the [SELECT] key, the change confirmation message will appear in the menu display area.

If you select [Cont.], you can continue settings.
If you select [Set], the setting will be updated and the system will return to the Ready Screen.
If you select [Cancel] or press the [SELECT] key, the system will return to the Ready Screen without changing the settings.

5.6.2.4 Calibration Default (KX-21N software only) [3]

For the future use only. Currently no function is available.

5.6.3 Sysmex Support (KX-21N software only) [3]

For the future use only. Currently no function is available.

5.6.4 Print Settings

See Section 5.10.

[A] By TB99003

5.7 TEST OPERATION

The mechanical and output test programs are available:

(1) Select 9: Service from Select Menu.
(2) Select 4: Test Operation from Service submenu. The Test Operation submenu appears.

3

S	*Test Operation*
	1: DP Test Operation 2: SV Test Operation 3: HC Output Test 4: IP Output Test

Figure 5-18-a: Test Operation Menu (KX-21)

S	*Test Operation*
	1: DP Test Operation 2: SV Test Operation 3: Output Test (HC) 4: Output Test (DP) 5: Output Test (GP) 6: Output Test (IP)

Figure 5-18-b: Test Operation Menu (KX-21N)

5.7.1 DP Test Operation

Diaphragm Pump operation is tested.

(1) From the Test Operation submenu, select 1: DP Test Operation.
"Press Start switch" message will be displayed.
(2) Press the Start Switch to start the DP test sequence.
(3) "Please wait" message is displayed during the sequence is in progress.
(4) After the test sequence is completed, the Ready Screen is displayed.
Or press [3] or [SELECT] key to stop the sequence.

5.7.2 SV Test Operation

Solenoid Valve single operation is tested.

(1) From the Test Operation submenu, select 2: SV Test Operation. The SV Test Screen will appear.

S	* SV Test*						
	1	O	11		21		
	2		12	O	22	O	
	3		13	O	23	O	
	4		14		24	O	
	5		15				
	6	O	16	O			
	7		17				
	8		18				
	9		19				
	10	O	20		SV No.	1	

Figure 5-19: SV Test Screen

(2) A circle (O) is displayed to the right of SV No. which is ON.
Input the SV No. you want to test using numeric keys, and press [ENTER].
Verify that ON/OFF is alternated for the selected SV.

(3) Press [SELECT] key to return to the Ready Screen.
The SV function will automatically reset to the status before tested.

5.7.3 HC Output Test (KX-21)/Output Test (HC) (KX-21N) 3

Send the dummy data for host communication test.

(1) From the Test Operation submenu, select 3: HC Output Test or 3: Output Test (HC).
The test data will be sent to the host computer.

(2) After the test data is output, Ready Screen will appear.

5.7.4 Output Test (DP) (KX-21N only) 3

Send the test characters to the data printer model DP-510.

(1) From the Test Operation submenu, select 4: Output Test (DP).
The DP-510 will print out the specified characters. Check the print quality and format.

(2) After the test data is output, Ready Screen will appear.

5.7.5 Output Test (GP) (KX-21N only) 3

Send the test characters to the graphic printer.

(1) From the Test Operation submenu, select 5: Output Test (GP).
The graphic printer will print out the specified characters. Check the print quality and format.

(2) After the test data is output, Ready Screen will appear.

5.7.6 IP Output Test (KX-21)/Output Test (IP) (KX-21N) 3

Send the test characters to the built-in printer (IP: Internal Printer).

(1) From the Test Operation submenu, select 4: IP Output Test or 6: Output Test (IP).
The built-in printer will print out the specified characters as shown in Figure 5-20.
Verify that there is no missing character or dot.

(2) After the test data is output, Ready Screen will appear.

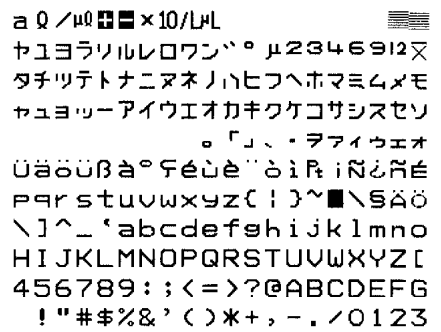


Figure 5-20: Built-in Printer Test Print

5.8 SERVICE DATA

Displays and prints out the Service Data.

(1) Select 9: Service from Select Menu.
(2) Select 5: Service Data from Service submenu. The Service Data Screen as shown in Figure 5-21 appears.

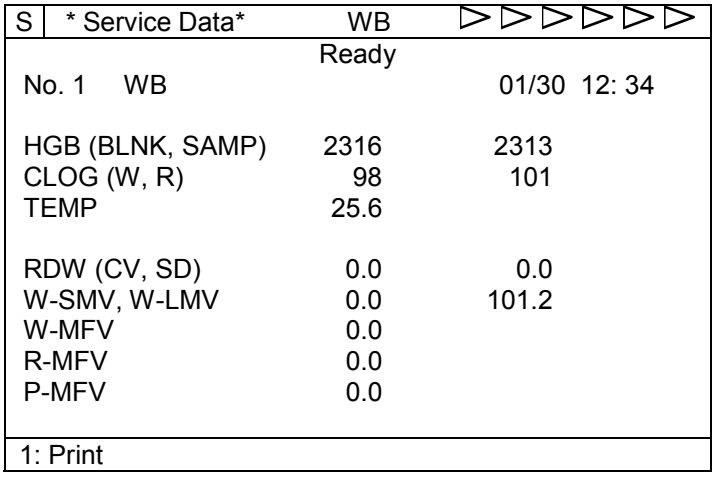


Figure 5-21: Service Data Screen -1

(3) There are 4 screens of Service Data. Pressing the [←], [→] keys change the displayed screens.

On Service Data Screen -1, following items are displayed:
- HGB convert values (BLANK and SAMPLE)
- Clog monitoring voltage (WBC, RBC)
- Temperature
- Sensitivity parameters (W-MFV, R-MFV, P-MFV)

On the other three screens, WBC Sampling Data, RBC Sampling Data and PLT Sampling Data are displayed respectively. Analysis is possible with the Sampling Data displayed on LCD.

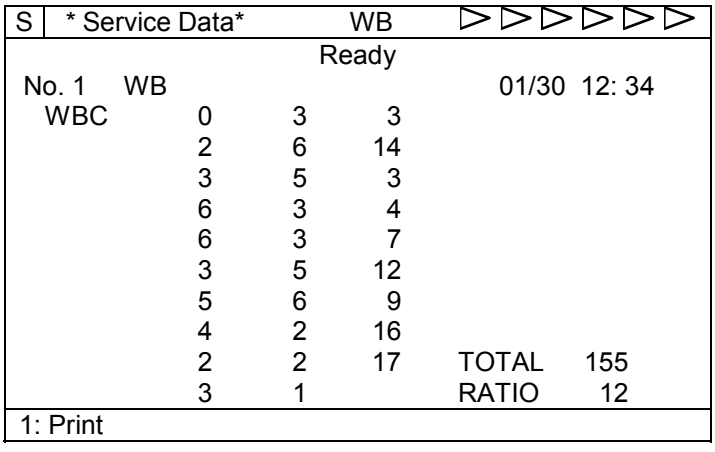


Figure 5-22: Service Data Screen -2 (WBC Sampling Data)

(4) If the built-in printer is used, the Service Data can be printed out. Press [1] key to print.
If the printing paper runs out or an error occurs during printing, printing will stop and the printer buffer will be cleared.
Note that Cycle Counter is also printed out as Service Data.

5.8.1 Status Display (Sensor & SV Status)

The real-rime ON/OFF status of sensors and solenoid valves can be displayed on Status Display screen.

(1) Select 7. Maintenance from Select Menu.

(2) Select 5. Status Display from Maintenance submenu. The Status Display screen appears.

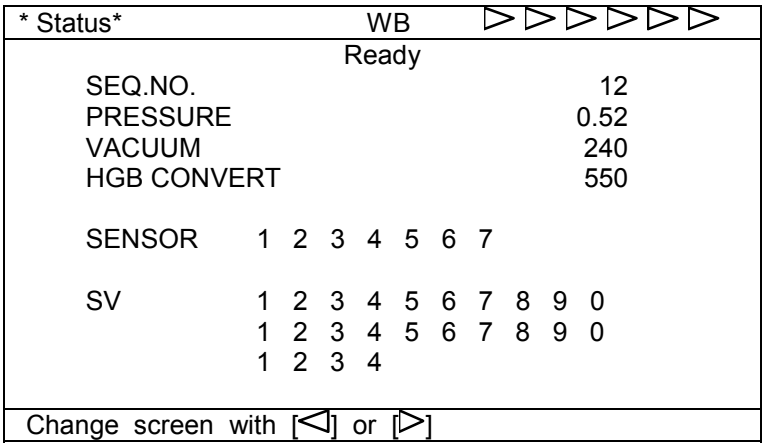


Figure 5-23: Status Display Screen -1

<Sensor Status>

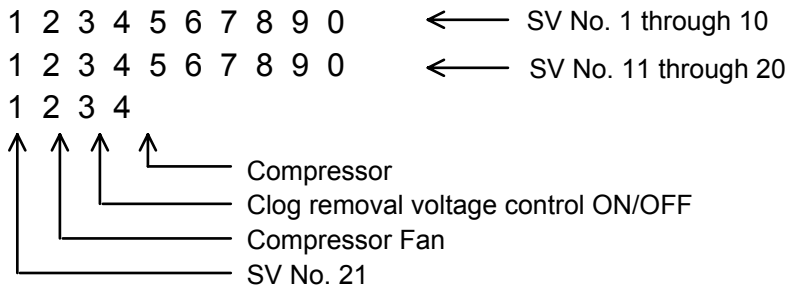
The displayed status of each sensor is shown in the table below.

Table 5-5: Sensor Status

No.	Monitored Sensor	Status when REVERSED
1	Waste Chamber Float SW	No liquid (float switch positions at lower end)
2	Diluent Chamber Float SW	No liquid (float switch positions at lower end)
3	(Not Used)	
4	Rinse Cup Limit SW	Limit SW is ON (positions at lower end)
5	Start SW	Start Switch is ON
6	(Not Used)	
7	Lyse Reagent Float SW	Lyse Reagent is connected. (Float SW connector is connected)

<SV Status>

The displayed status of each SV is shown in the table below.
The numbers 1 through 0 on the three lines correspond to each SV as below.



5.9 SPECIAL SEQUENCE

Special sequence is provided for the production and R&D use, including the submenu shown in Figure 5-23. This program can be accessed when the instrument is in the Factory Maintenance mode only.

(1) Select 9: Service from Select Menu.
(2) Select 6: Special Seq. from Service submenu. The Special Sequence submenu appears.

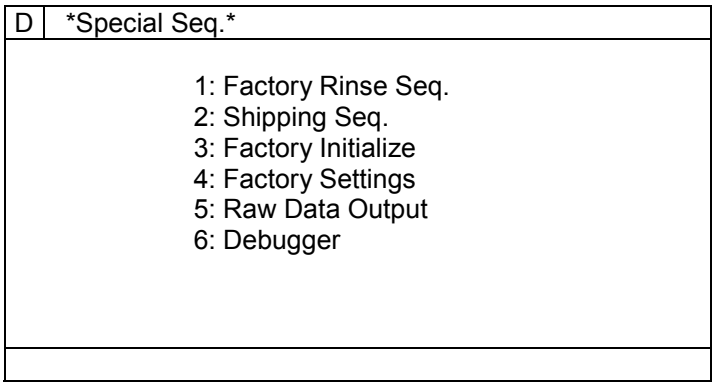


Figure 5-24: Special Seq. Menu

5.9.1 Factory Rinse Sequence

Rinse the hydraulic lines using special tools, SCAT, alcohol, PVA and CELLPACK.

5.9.2 Shipping Sequence

Rinse the hydraulic lines using special tools, CELLCLEAN and RO water before shipment.

5.9.3 Factory Initialize

Initialize setting values except CALIBRATION.
When this program is executed, the data stored in BBURAM are also initialized.
The system settings are reset to Japanese settings. To change the display language, follow the steps below.

(1) Start up the instrument in Factory Maintenance mode. The screen as shown below will be displayed for a second. The program version number is displayed on this screen as [00-XX].

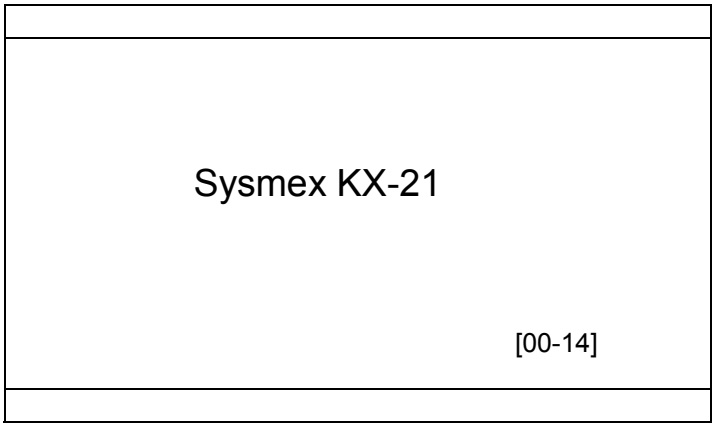


Figure 5-25: Sysmex Screen (KX-21) 3

(2) If power fail error occurred or shutdown sequence was properly executed when powered OFF, the screen as shown below will be displayed.

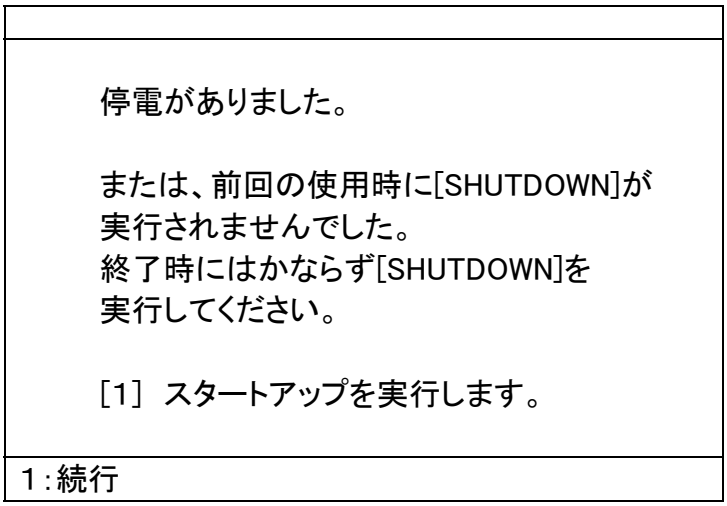


Figure 5-26: Power Fail Error Messages

(3) Press [1] key to continue start-up sequence. The message as below will be displayed until the Ready Screen appears.

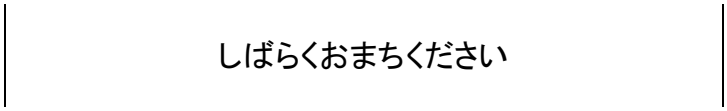


Figure 5-27: Message before Ready

(4) The maintenance instruction message screens as shown below may appear.

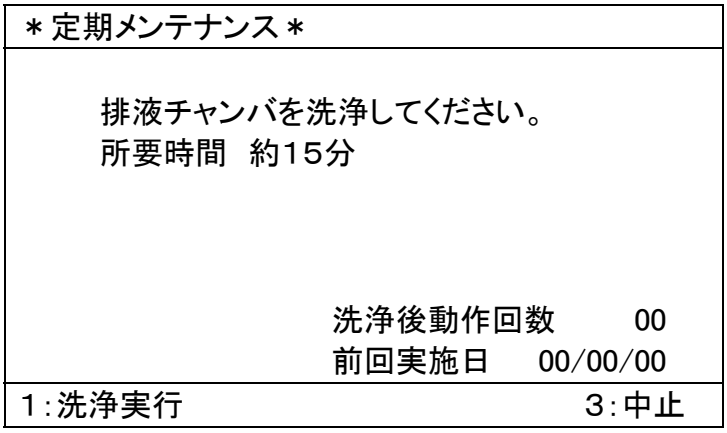


Figure 5-28: Example of Maintenance Instruction Screen

(5) Press [3] key to cancel. When the instrument becomes Ready, the message as below will be displayed.

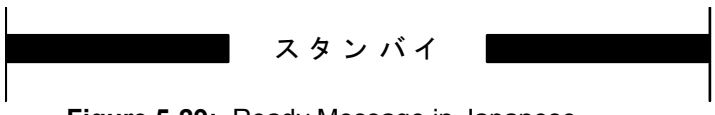


Figure 5-29: Ready Message in Japanese

(6) Select 9: Service from Select Menu.

(7) Select 6: Special Seq. from Service submenu. The Special Sequence submenu appears.

(8) Select 4: Factory Settings from submenu. Refer to Section 5.9.4 below for the settings.

NOTE: After the Factory Initialize program is executed, the maintenance instruction messages may be displayed at power ON. Press [3] key to proceed the start-up, and set the current date/time, then reset the cycle counter. Refer to Section 5.6.1 to reset the counter.

5.9.4 Factory Settings

Set up the system automatically depending on the requirement of each shipping destination (USA, Europe, China, Japan). The display language, units, parameters, etc. for the selected market are set up.

(1) Select 9: Service from Select Menu.

(2) Select 6: Special Seq. - 4: Factory Settings from submenu. The screen as below will appear.

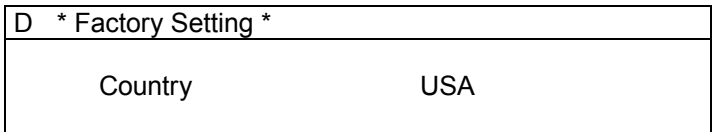


Figure 5-30: Factory Settings Screen

(3) Press [▷] key to select the desired setting.
Japan: For Japanese market (Japanese)
USA: For American market (English)
Europe: For European and Asian Pacific market (English)
China: For Chinese market (Chinese)

Refer to the Operator's Manual Chapter 10 for the details of each setting item. Also the factory default setting values are listed in the last pages of Chapter 10.
The followings are the different settings between KX-21 and KX-21N.

3 **Table 5-6:** Different Default Settings between KX-21 and KX-21N

	KX-21	**KX-21N**
Host Settings		
Output Format	K-1000	KX-21N
ID Padding	- - -	0 Padding
DP	- - -	Not Use
DP Auto Output	- - -	Off
GP/LP	- - -	Not Use
Printer type	- - -	Type 1 (printer of ESC/P system)
GP Auto Output	- - -	Off
ID Reader	- - -	Not Use

(4) Press [SELECT] and select "Set" and press [ENTER].
The built-in printer prints out the setting values and returns to the Ready screen.

5.9.5 Raw Data Output

Outputs raw data which has not been calibrated with coincidence error compensation.

5.9.6 Debugger

Checks the computer-related functions for debugging purpose.

5.10 PRINT SETTINGS

All settings made in the Service programs will be printed to the built-in printer.

(1) Select 9: Service from Select Menu.
(2) Select 3: Settings from Service submenu. The Settings submenu appears.
(3) From the Settings menu, select 3: Print Settings.

This is only effective if the built-in printer is connected.
If the printing paper runs out or an error occurs during printing, printing will stop and the printer buffer will be cleared.