Automated Hematology Slide Preparation Unit

SP-50

Troubleshooting

Read this manual when you encounter a problem, and to perform instrument maintenance.
The explanations in this manual assume that you have already read "General Information".

The following manuals are provided as Instructions for Use:

- General Information
- Basic Operation
- Troubleshooting

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Changes are listed below:

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Other changes:

- Improvement of text representation.

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Chapter 1 Troubleshooting

1.1 Error message list (in order of error code number)

The following is a list of error messages displayed by the instrument.

Note:

In the following situations, the instrument requires repair or components require replacement. Contact your authorized local Sysmex representative.

- An error message marked with ☎ (telephone mark) appears in the error message list.
- The error is not cleared or the error reoccurs even after taking the described remedial action.

Error code		Error message	Action
000001	☎	[Internal Error]	⇒ 61
000002		[Ink ribbon not loaded]	⇒ 69
000003		[Out of ink ribbon (failure)]	⇒ 70
000004	☎	[Slide printer error]	⇒ 69
000007		[Smear unit U/D motor error]	⇒ 46
000008		[Smear unit F/R motor error]	⇒ 46
000009		[Spreader glass dry unit motor error]	⇒ 46
000010		[Slide not placed on manual magazine holder]	⇒ 44
000011		[Prepared slide remains on slide setting area]	⇒ 45
000012		[Place empty magazine on manual magazine holder]	⇒ 55
000013		[Staining hand 1 U/D motor error]	⇒ 47
000014		[Staining hand 1 F/R motor error]	⇒ 47
000015		[Staining hand 1 L/R motor error]	⇒ 47
000016		[Staining hand 1 glass slide detection error]	⇒ 47
000017		[Staining hand 2 U/D motor error]	⇒ 47
000018		[Staining hand 2 F/R motor error]	⇒ 47
000019		[Staining hand 2 L/R motor error]	⇒ 47
000020		[Staining dry unit temperature is high]	⇒ 20

Error code		Error message	Action
000021		[Staining dry unit temperature is low]	⇒ 20
000022	☎	[Staining dry unit thermistor error]	⇒ 20
000023		[Environment temperature is high]	⇒ 20
000024		[Environment temperature is low]	⇒ 20
000025	☎	[Environment temperature thermistor error]	⇒ 21
000026		[Smear unit stopped]	⇒ 47
000027		[Staining hand 2 glass slide detection error]	⇒ 47
000028		[Staining hand 2 stopped]	⇒ 47
000029		[Unable to forcibly eject slides]	⇒ 45
000030		[Place empty magazine]	⇒ 55
000031		[Retrieve magazine containing slides.]	⇒ 56
000032		[Out of empty magazines]	⇒ 56
000033		[Magazine containing slides is full.]	⇒ 56
000034		[Magazine placed with remaining slide]	⇒ 56
000035		[Staining time extended]	⇒ 48
000036		[Magazine detection error (magazine holder)]	⇒ 56
000037		[Magazine detection error (magazine storage unit)]	⇒ 57
000038		[Magazine conveyance error (magazine holder stopper)]	⇒ 57
000039		[Magazine conveyance error (magazine shift unit)]	⇒ 57
000040		[Magazine conveyance error (magazine shift unit hold mechanism)]	⇒ 57
000041		[Remove glass slide]	⇒ 48
000042		[Out of methanol (when front is fixed)]	⇒ 25
000043		[Out of CELLPACK DCL]	⇒ 21
000044		[Out of stain 1 solution]	⇒ 21
000045		[Out of stain 2 solution]	⇒ 21
000046		[Out of rinse water]	⇒ 27
000047		[Concentrated phosphate buffer volume is low]	⇒ 21
000048		[Out of concentrated phosphate buffer]	⇒ 22

Error code		Error message	Action
000049		[Out of phosphate buffer]	⇒ 22
000050		[Out of ethanol (when rinsing)]	⇒ 25
000051		[Out of methanol (when rinsing)]	⇒ 25
000052		[CELLPACK DCL aspiration error]	⇒ 26
000053		[Rinse water aspiration error (chamber)]	⇒ 26
000054	☎	[Phosphate buffer chamber float switch failure]	⇒ 28
000055		[Phosphate buffer discharge error]	⇒ 28
000056		[Phosphate buffer aspiration error]	⇒ 29
000057	☎	[Chamber transfer error]	⇒ 29
000058		[Chamber transfer error 2]	⇒ 29
000060		[Place empty magazine (aspiration stopped)]	⇒ 55
000061		[Retrieve magazine containing slides (aspiration stopped).]	⇒ 56
000062		[Ink ribbon running low]	⇒ 69
000063		[Waste chamber 1 not draining]	⇒ 29
000064		[Waste chamber 2 not draining]	⇒ 29
000065		[Waste chamber 3 not draining]	⇒ 29
000066		[No Ink ribbon]	⇒ 70
000067		[Waste container 1 is full]	⇒ 30
000068		[Waste container 2 is full]	⇒ 30
000069		[Rinse water aspiration error (foam)]	⇒ 26
000070		[[RR] Insufficient chamber capacity]	⇒ 26
000071	☎	[[RR] Chamber float switch failure]	⇒ 28
000073		[Whole Blood aspiration motor error]	⇒ 36
000074		[Out of slides (right) (when ordered)]	⇒ 40
000075		[Out of slides (left) (when ordered)]	⇒ 40
000076		[Out of glass slide (when sample is picked up)]	⇒ 41
000077		[Out of slides (right) (when removed)]	⇒ 41
000078		[Out of slides (left) (when removed)]	⇒ 41
000079		[Out of glass slide (when removed)]	⇒ 41

Error code		Error message	Action
000080	☎	[0.25 MPa pressure sensor error]	⇒ 15
000081	☎	[0.07 MPa pressure sensor error]	⇒ 15
000082	☎	[-0.04 MPa pressure sensor error]	⇒ 15
000083		[Out of glass slide (right) (ongoing preparation)]	⇒ 40
000084		[Out of glass slide (left) (ongoing preparation)]	⇒ 40
000085		[Aspiration dispensing unit up-down motor error (when dispensing)]	⇒ 36
000086		[Unable to switch modes because instrument is busy.]	⇒ 48
000087		[Wait until new stain time setting is applied]	⇒ 48
000088		[Preparation stop error has occured (when stain cleaning)]	⇒ 48
000094		[Tube pickup error]	⇒ 54
000095		[Tube holder move error]	⇒ 54
000096		[Tube return error]	⇒ 54
000097		[Tube remains in tube holder]	⇒ 54
000098		[Two tubes are in tube holder]	⇒ 54
000099		[Aspiration dispensing unit up-down motor error]	⇒ 36
000100		[Dispensing unit left-right motor error]	⇒ 36
000101	☎	[Water leak detected (preparation not possible)]	⇒ 31
000102	☎	[Water leak sensor error]	⇒ 31
000103		[The sample must be remixed.]	⇒ 54
000104		[Stain 2 solution has expired]	⇒ 66
000105		[Blood cannot be aspirated.]	⇒ 37
000106		[Insufficient blood volume (short sample)]	⇒ 37
000107		[Aspiration sensor error]	⇒ 38
000108		[Insufficient blood volume]	⇒ 39
000109		[Blood cannot be aspirated (piercer clogged)]	⇒ 39
000110		[Spreader glass ultrasonic rinse unit error]	⇒ 39
000111		[Tube presence verification clamp error]	⇒ 54
000112		[Fixing clamp error during aspiration]	⇒ 55
000113		[-0.04 MPa pressure error]	⇒ 16
000114		[0.25 MPa pressure error]	⇒ 17

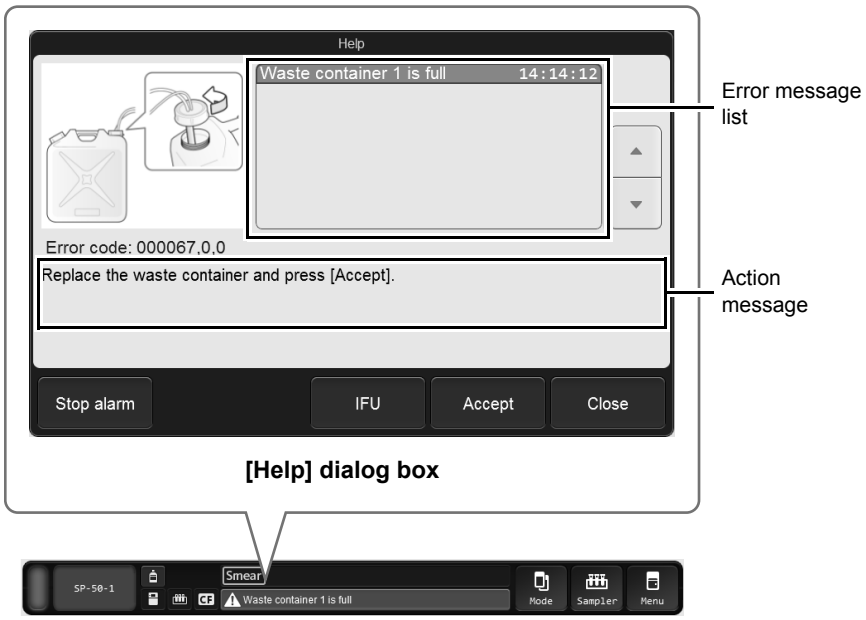
Error code		Error message	Action
000116		[0.07 MPa pressure error]	⇒ 17
000118		[Abnormal pressure loss]	⇒ 16
000121		[Rack feed-in error]	⇒ 51
000122		[Rack feed-in home position error]	⇒ 51
000126		[Rack ejection error]	⇒ 51
000127		[Rack ejection home position error]	⇒ 51
000133		[Sampler belt error]	⇒ 52
000134		[Rack not placed on feed-in table]	⇒ 52
000135		[Ejection table is full]	⇒ 52
000136		[Completed sampler preparation stop]	⇒ 52
000137		[Rack move home position error]	⇒ 53
000138		[Rack move error]	⇒ 53
000140		[Sampler smear mode preparation stopped]	⇒ 40
000141		[Sampler preparation stop error has occurred.]	⇒ 53
000142	☎	[Water leak detected]	⇒ 31
000143		[Rack removed]	⇒ 53
000148		[Sample hand up-down error]	⇒ 55
000149		[Mixing error]	⇒ 55
000150		[Sample hand open/close error]	⇒ 55
000170		[Slide holder motor error (left)]	⇒ 49
000171		[Slide holder motor error (right)]	⇒ 49
000172		[Slide conveyor F/R motor error (print unit)]	⇒ 49
000173		[Slide conveyor R/L motor error (print unit)]	⇒ 49
000174		[Slide conveyor U/D cylinder error (print unit)]	⇒ 49
000175		[Slide conveyor F/R motor error (smear dryer)]	⇒ 49
000176		[No slide (print unit)]	⇒ 43
000177		[No slide (smear dryer fan 1)]	⇒ 43
000178		[No slide (smear dryer fan 2)]	⇒ 43
000179		[Slide remains (print unit)]	⇒ 43

Error code		Error message	Action
000180		[Slide remains (smear dryer fan 1)]	⇒ 43
000181		[Slide remains (smear dryer fan 2)]	⇒ 43
000182		[Slide conveyor R/L motor error (smear dryer)]	⇒ 49
000188		[CELLCLEAN AUTO is not placed correctly]	⇒ 66
000190		[Unable to correctly detect CELLCLEAN AUTO.]	⇒ 66
000191		[CELLCLEAN AUTO has already been used.]	⇒ 66
000192		[Cannot recognize CELLCLEAN AUTO]	⇒ 67
000193		[CELLCLEAN AUTO has expired.]	⇒ 67
000198		[Concentrated phosphate buffer has expired]	⇒ 67
000205	☎	[Slide drying fan rotation error]	⇒ 50
000206	☎	[Drying pool fan rotation error]	⇒ 50
000207	☎	[Power fan rotation error]	⇒ 50
000208		[Smear unit cover open error]	⇒ 59
000209		[Smear unit cover is open]	⇒ 59
000211		[Stain unit cover open error]	⇒ 59
000212		[Stain unit cover is open]	⇒ 59
000213		[Front lower cover error open]	⇒ 60
000214		[Front lower cover is open]	⇒ 60
000215		[CF communication error]	⇒ 61
000216		[Conveyor error]	⇒ 61
000217	☎	[Barcode reader communication error at slide preparation unit]	⇒ 61
000218		[Host computer communication error]	⇒ 62
000219		[Conveyor communication error]	⇒ 62
000221		[Shutdown is required]	⇒ 63
000222		[Cleaning is required (warning)]	⇒ 63
000224		[Replace spreader glass]	⇒ 63
000225		[Glass slide remains in staining pool]	⇒ 44
000226		[Sample number not entered]	⇒ 58
000227		[Unable to read sample number (slide preparation unit).]	⇒ 58
000231		[Positive ID check error]	⇒ 58

Error code		Error message	Action
000232		[Unable to read sample number.]	⇒ 58
000233		[Manual magazine holder open error]	⇒ 60
000234		[Staining pool not set correctly]	⇒ 67
000235		[[RR] Rinse water is replenishing]	⇒ 27
000236	☎	[[RR] Water leak detected (preparation impossible)]	⇒ 31
000237	☎	[[RR] Water leak sensor error]	⇒ 31
000238	☎	[[RR] Water leak detected]	⇒ 31
000239		[[RR] Rinse water is draining]	⇒ 27
000240		[[RR] Check Elix]	⇒ 29
000242		[CELLPACK DCL has expired]	⇒ 68
000243		[Reagent replenishment inside staining pool reserved]	⇒ 68
000244		[Phosphate buffer has expired]	⇒ 68
000245		[Stain 1 solution has expired]	⇒ 66
000246		[[RU] Out of diluted CELLPACK DST]	⇒ 32
000247		[[RU] RU has stopped supplying reagent]	⇒ 34
000248		[[RU] Register CELLPACK DCL]	⇒ 34
000249		[[RU] CELLPACK DST has expired]	⇒ 34
000250		[[RU] CELLPACK aspiration error]	⇒ 35
000251		[[RU] Check RU-20]	⇒ 35
000252		[[RU] RU communication error]	⇒ 35
000253		[Press Start SW]	⇒ 50
000254		[STAT sample preparation completed]	⇒ 68

1.2 [Help] dialog box

When an error occurs, an alarm sounds and the [Help] dialog box is displayed.
If an error occurs while another dialog box is displayed, the error message will appear on the status area at the bottom of the screen. Close the displayed dialog box and touch the error message on the status area to display the [Help] dialog box.
When the instrument is connected to the CF-70, errors that occur on the CF-70 are also displayed. Errors that occur on the CF-70 are indicated by [CF] at the beginning of the error message. For error details, see the Instructions for Use for CF-70.



Error message list	Displays the current errors. If multiple errors exist, errors that have higher priority are displayed at the top.
[Error code]	Displays the error code for the selected error.
Action message	Displays the troubleshooting actions for the selected error. Depending on the type of error, this field may be blank.
[Stop alarm]	Touch to stop the alarm.
[IFU]	Touch to display the section of the manual that explains the selected error. This button cannot be selected if there are no relevant sections.
[Execute]/[Accept]	Depending on the error type, either the [Execute] button or the [Accept] button appears. Touch [Execute] to execute the action indicated in the action message field. Touch [Accept] to clear the error. Execute the action indicated in the action message.
[Close]	Touch to close the [Help] dialog box.

Note:

- After you have closed the [Help] dialog box by touching [Close], you can re-display the dialog box by touching the error message on the status area.
- Even when the [Help] dialog box is closed, you can stop the alarm by touching any part of the screen.

1.3 Causes of errors and remedial actions

Refer to the causes and actions described below and take appropriate action.
Take the remedial action in order from case 1 if there are multiple possible causes.

Risk of infection

Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

Errors related to pressure

000080
[0.25 MPa pressure sensor error]

000081
[0.07 MPa pressure sensor error]

000082
[-0.04 MPa pressure sensor error]

Probable cause	Action
The pressure sensor has malfunctioned.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000113 [-0.04 MPa pressure error]	
Probable cause	Action
Case 1: The power to the pneumatic unit is OFF.	Securely plug in the power cable of the pneumatic unit, and then turn ON the power.
Case 2: There is a foreign object pressing on the tube connected to the pneumatic unit, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube.
Case 3: The nipple on the pneumatic unit is loose.	Make sure that the tube is securely connected.
Case 4: The trap chamber is filled with water.	The trap chamber requires draining. Contact your authorized local Sysmex representative.

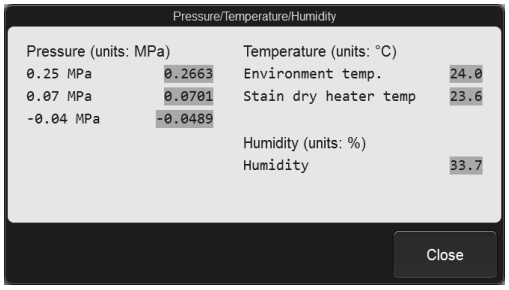
000118 [Abnormal pressure loss]	
Probable cause	Action
Case 1: The pneumatic unit has stopped.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. Check if the pneumatic unit's power cable is plugged in, if an object is pressing on a tube connected to the pneumatic unit, or if there is a kink in a tube. If the error does not clear when you turn the power back on, repair is necessary. Contact your authorized local Sysmex representative.
Case 2: The tube between the pneumatic unit and the main unit is disconnected.	Check the tube between the pneumatic unit and the main unit and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. If the error does not clear when you turn the power back on, repair is necessary. Contact your authorized local Sysmex representative.

000114 [0.25 MPa pressure error] **000116** [0.07 MPa pressure error]	
Probable cause	Action
Case 1: The power to the pneumatic unit is OFF.	Securely plug in the power cable of the pneumatic unit, and then turn ON the power.
Case 2: There is a foreign object pressing on the tube connected to the pneumatic unit, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube.
Case 3: The nipple on the pneumatic unit is loose.	Make sure that the tube is securely connected.
Case 4: The pressure value has fallen out of the monitored range over time.	Touch [Execute] in the [Help] dialog box, and adjust the pressure while viewing the [Pressure/Temperature/Humidity] dialog box. For details, see the following procedure. (➤**P.17** "Adjusting the 0.25 MPa pressure") (➤**P.18** "Adjusting the 0.07 MPa pressure")
Case 5: There is a problem in the regulator.	The instrument needs to be serviced. Contact your authorized local Sysmex representative.

Adjusting the 0.25 MPa pressure

1 Touch [Execute] in the [Help] dialog box.

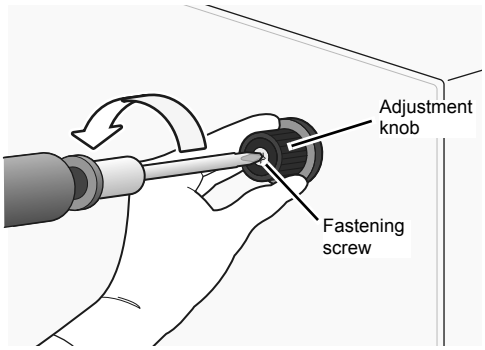
The [Pressure/Temperature/Humidity] dialog box appears.



[Pressure/Temperature/Humidity] dialog box

2 While holding the 0.25 MPa regulator adjustment knob on the front of the pneumatic unit, loosen the fastening screw.

Loosen the screw by turning it in the direction of the arrow with a Phillips-head screwdriver.



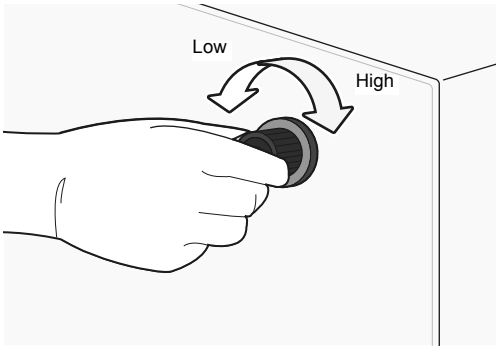
3 Adjust the pressure while checking the [0.25 MPa] value in the [Pressure/ Temperature/Humidity] dialog box.

⚠ Caution

- Always adjust the pressure by increasing it. If the pressure is too high, first lower it to a value that is below the adjustment range, and then slowly increase the pressure.
  If you adjust the pressure by decreasing it, there is a risk that the pressure cannot be adjusted correctly.
- When you adjust the pressure, the value of other pressures may change slightly. Adjust so that all pressure values are in the correct range.

Turn the adjustment knob to adjust the pressure to 0.25 MPa (adjustment range: 0.21 to 0.28 MPa).

The pressure increases when you turn the adjustment knob clockwise.



4 While holding the 0.25 MPa regulator adjustment knob, tighten the fastening screw.

Tighten the screw by turning it in the direction opposite to step 2.

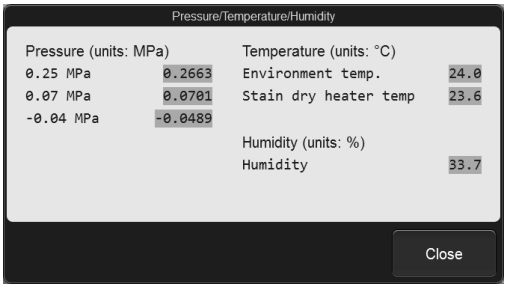
5 Touch [Close] in the [Pressure/ Temperature/Humidity] dialog box.

The dialog box closes and the error is cleared.

Adjusting the 0.07 MPa pressure

1 Touch [Execute] in the [Help] dialog box.

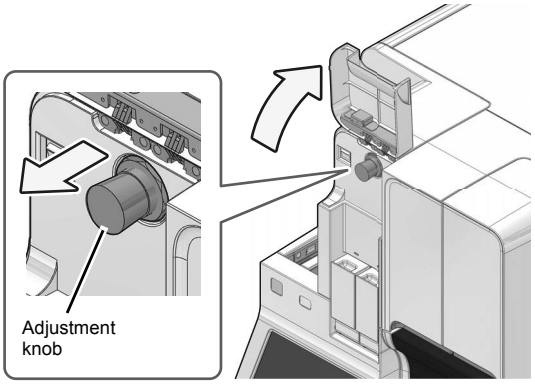
The [Pressure/Temperature/Humidity] dialog box appears.



[Pressure/Temperature/Humidity] dialog box

2 Open the main power switch cover, and unlock the 0.07 MPa pressure adjustment knob.

Pull the adjustment knob in the direction of the arrow.



3 Adjust the pressure while checking the [0.07 MPa] value in the [Pressure/ Temperature/Humidity] dialog box.

⚠ Caution

- Always adjust the pressure by increasing it. If the pressure is too high, first lower it to a value that is below the adjustment range, and then slowly increase the pressure. If you adjust the pressure by decreasing it, there is a risk that the pressure cannot be adjusted correctly.
- When you adjust the pressure, the value of other pressures may change slightly. Adjust so that all pressure values are in the correct range.

Turn the adjustment knob to adjust the pressure to 0.07 MPa (adjustment range: 0.06 to 0.08 MPa).

The pressure increases when you turn the adjustment knob clockwise.

4 Push in the 0.07 MPa pressure adjustment knob to lock it.

Take care that the adjustment knob does not turn.

5 Close the main power switch cover.

6 Touch [Close] in the [Pressure/ Temperature/Humidity] dialog box.

The dialog box closes and the error is cleared.

Errors related to temperature

000020 [Staining dry unit temperature is high] **000021** [Staining dry unit temperature is low]	
Probable cause	Action
The dryer unit temperature has fallen out of the monitored range.	Touch [Execute] in the [Help] dialog box, and wait until the temperature returns to the monitored range while viewing the [Pressure/Temperature/Humidity] dialog box. The instrument can be used on a temporary basis if the dry heater is changed to not used. For details, see "Basic Operation". (➤Basic Operation "Chapter 5: 5.5.7 Post-staining dry heater setting")

000022 [Staining dry unit thermistor error]	
Probable cause	Action
The dryer unit thermistor has failed or has a broken wire.	Touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000023 [Environment temperature is high] **000024** [Environment temperature is low]	
Probable cause	Action
The ambient temperature of the instrument has fallen out of the usable range.	Touch [Execute] in the [Help] dialog box, and wait until the temperature returns to the monitored range while viewing the [Pressure/Temperature/Humidity] dialog box.

000025 [Environment temperature thermistor error]	
Probable cause	Action
The environment temperature thermistor has failed or has a broken wire.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

Errors related to reagents and chambers

000043 [Out of CELLPACK DCL] **000044** [Out of stain 1 solution] **000045** [Out of stain 2 solution]	
Probable cause	Action
• There is a foreign object pressing on the tube connected to the reagent container, or there is a kink in the tube. • Reagent container is empty.	If an object is pressing on the tube, remove the object and straighten the tube. Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000047 [Concentrated phosphate buffer volume is low]	
Probable cause	Action
Concentrated phosphate buffer is low.	Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000048 [Out of concentrated phosphate buffer]	
Probable cause	Action
• There is a foreign object pressing on the tube connected to the reagent container, or there is a kink in the tube. • The concentrated phosphate buffer has run out.	If an object is pressing on the tube, remove the object and straighten the tube. Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000049 [Out of phosphate buffer]	
Probable cause	Action
• There is a foreign object pressing on the tube connected to the reagent container, or there is a kink in the tube. • The float of the float switch is in the way of the tube and cannot move. • Phosphate buffer container is empty.	If an object is pressing on the tube, remove the object and straighten the tube. If the float is caught on the tube, reorient the tube. Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

Replacing diluent, buffer or stain solution

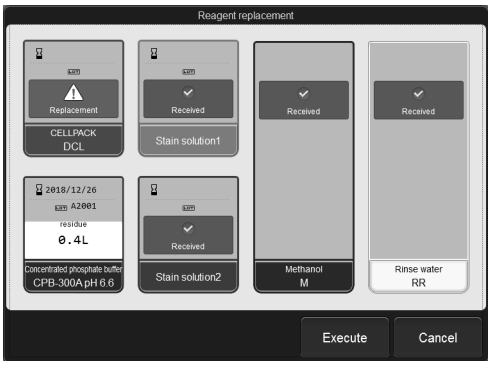
1 Prepare the new reagent.

Check that the reagent has not expired.

> **⚠ Caution**
> - Place the reagent container at a level no more than 1 meter above or below the bottom of the analyzer. Do not put reagents on top of the instrument.
> - The new reagent must be left for at least 24 hours at room temperature (15 to 30 °C).
> - If reagent spills, immediately wipe it off using wet cloth or the like.

2 Touch [Execute] in the [Help] dialog box.

The [Reagent replacement] dialog box appears.



[Reagent replacement] dialog box

3 Input the reagent information of the new reagent.

Input by barcode scanning

Scan the barcode on the outer box of the new reagent with a hand-held barcode reader. The barcode to be scanned varies by reagent type. Scan the appropriate barcode below for the reagent type.

Reagent	Barcode
CELLPACK DCL	Reagent Code
Concentrated phosphate buffer	

The barcode is as shown in the following illustration.

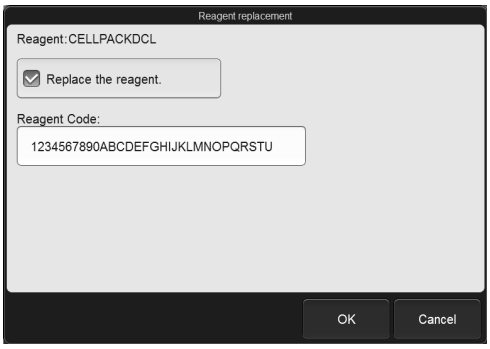
If the surface to be read is not straight, straighten before reading.

e.g. Reagent Code

When the Reagent information is input, [Received] appears in the reagent in the dialog box. The lot number and the expiration date of the new reagent are shown.

Note:

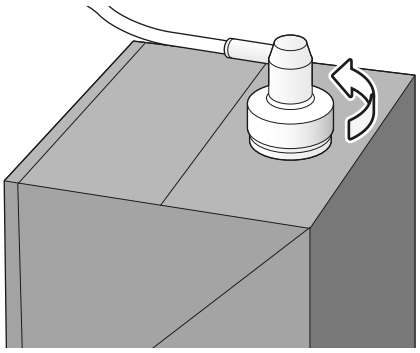
- To enter manually, touch the name of the reagent to be replaced in the [Reagent replacement] dialog box. The dialog box changes as shown below.



  Select the [Replace the reagent.] checkbox, enter the [Reagent Code], and touch [OK].
- When the RU-20 is connected, the reagent information and remaining volume of CELLPACK DST is displayed in the screen. For details on inputting reagent information and reagent replacement, see the XN series or RU-20 Instructions for Use.

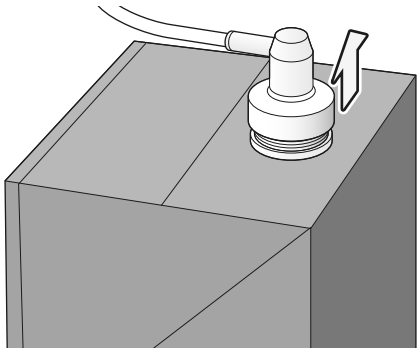
4 Remove the cap from the new reagent container.

5 Remove the cap from the old reagent container.



e.g. CELLPACK DCL

6 Pull out the spout set straight up.



e.g. CELLPACK DCL

> **⚠ Caution**
> Do not touch the aspiration nozzle of the spout set.
> Take care that dust does not get on the spout set.

7 Insert the spout set straight into the new reagent container and close the cap.

8 Touch [Execute].

The replacement of the reagent starts. Wait until it is complete. When the replacement is finished, the [Reagent replacement] dialog box closes and the error is cleared.

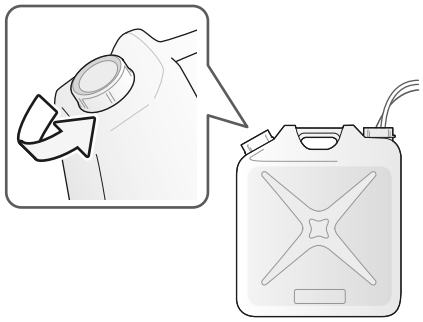
000042 [Out of methanol (when front is fixed)] **000051** [Out of methanol (when rinsing)]	
Probable cause	Action
The methanol container is empty.	Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Add the reagent. For details, see the following procedure. (➤**P.25** "Replenishing methanol/ethanol")

000050 [Out of ethanol (when rinsing)]	
Probable cause	Action
• There is a foreign object pressing on the tube connected to the reagent container, or there is a kink in the tube. • The ethanol has run out.	If an object is pressing on the tube, remove the object and straighten the tube. Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Add the reagent. For details, see the following procedure. (➤**P.25** "Replenishing methanol/ethanol")

Replenishing methanol/ethanol

> **⚠ Warning**
> Methanol/ethanol is flammable at room temperature.
> Read all warnings and any included documentation before using the reagent.

1 Remove the cap from the bottle that contains methanol/ethanol.

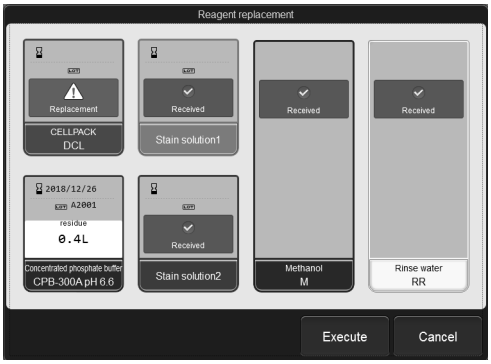


2 Fill the bottle with methanol/ethanol, or replace with a new bottle.

3 Cap the bottle.

4 Touch [Execute] in the [Help] dialog box.

The [Reagent replacement] dialog box appears.



[Reagent replacement] dialog box

5 Touch [Methanol]/[Ethanol].

6 Touch [Execute].

Methanol/ethanol replenishment starts. When replenishment is completed, the information in the [Reagent replacement] dialog box will be updated and the error is cleared.

7 Touch [Cancel].

The dialog box closes.

000052 [CELLPACK DCL aspiration error]	
Probable cause	Action
Case 1: There is a foreign object pressing on the tube connected to the reagent container, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube. Touch [Execute] in the [Help] dialog box. Reagent replenishment takes place.
Case 2: The tube connected to the reagent container is clogged.	Check the condition of the tube and then touch [Execute] in the [Help] dialog box. Reagent replenishment takes place.

000053 [Rinse water aspiration error (chamber)] **000069** [Rinse water aspiration error (foam)]	
Probable cause	Action
Case 1: There is a foreign object pressing on the tube connected to the container, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube. Touch [Execute] in the [Help] dialog box. Rinse water replacement takes place.
Case 2: The tube connected to the container is clogged.	Check the condition of the tube and then touch [Execute] in the [Help] dialog box. Rinse water replacement takes place.

000070 [[RR] Insufficient chamber capacity]	
Probable cause	Action
Rinse water in the RR-20 chamber is not sufficient.	Check the rinse water source.

000235 [[RR] Rinse water is replenishing]	
Probable cause	Action
Replenishment of rinse water in the RR-20 has not been completed.	Wait until replenishment of rinse water is completed. If replenishment does not complete even after you wait, check the rinse water source.

000239 [[RR] Rinse water is draining]	
Probable cause	Action
Draining of rinse water from the RR-20 has not been completed.	Wait until draining of rinse water is completed. If draining does not complete even after you wait, check the RR-20 tube.

000046 [Out of rinse water]	
Probable cause	Action
• The float of the float switch is in the way of the tube and cannot move. • The rinse water has run out.	Disentangle the tube. Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Add rinse water. For details, see the following procedure. (➤**P.27** "Replenishing rinse water")

Replenishing rinse water

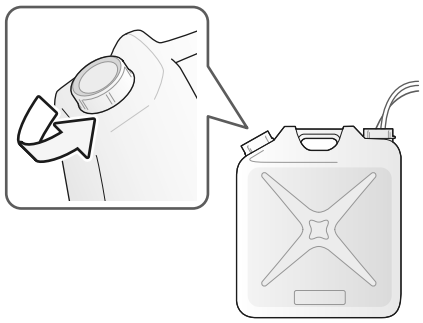
Caution

When replenishing rinse water, do not remove the float switch.
Otherwise, smear quality may not be suitable for microscopic examination.

Note:

When SP-Rinse is used, refilling of the bottle is not needed.

1 **Remove the cap from the bottle that contains rinse water.**

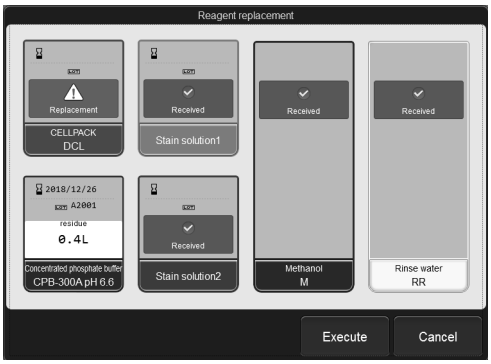


2 **Fill the bottle with rinse water.**

3 **Cap the bottle.**

4 Touch [Execute] in the [Help] dialog box.

The [Reagent replacement] dialog box appears.



[Reagent replacement] dialog box

5 Touch [Rinse water].

6 Touch [Execute].

Replenishment of rinse water starts. When replenishment is completed, the information in the [Reagent replacement] dialog box will be updated and the error is cleared.

7 Touch [Cancel].

The dialog box closes.

000054
[Phosphate buffer chamber float switch failure]

000071
[[RR] Chamber float switch failure]

Probable cause	Action
The float switch in the main unit or RR-20 has failed.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000055
[Phosphate buffer discharge error]

Probable cause	Action
There is a kink in the waste tube or it is blocked.	Straighten the waste tube, touch [Execute] in the [Help] dialog box. Reagent replacement takes place. If the error does not clear, contact your authorized local Sysmex representative.

000056 [Phosphate buffer aspiration error]	
Probable cause	Action
Case 1: There is a foreign object pressing on the tube connected to the container, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube. Touch [Execute] in the [Help] dialog box. Phosphate buffer replacement takes place.
Case 2: The tube connected to the container is clogged.	Check the condition of the tube and then touch [Execute] in the [Help] dialog box. Phosphate buffer replacement takes place.

000057 [Chamber transfer error]	
Probable cause	Action
The transfer process between chambers was not performed correctly.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000058 [Chamber transfer error 2]	
Probable cause	Action
The transfer process between chambers was not performed correctly.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box.

000063 [Waste chamber 1 not draining] **000064** [Waste chamber 2 not draining] **000065** [Waste chamber 3 not draining]	
Probable cause	Action
There is a kink in the waste tube or it is blocked.	Straighten the waste tube, touch [Execute] in the [Help] dialog box. Waste fluid is discharged from the waste fluid chamber.

000240 [[RR] Check Elix]	
Probable cause	Action
There is an error in the water purification system.	Check the water purification system.

000067
[Waste container 1 is full]

000068
[Waste container 2 is full]

Probable cause	Action
• The waste container is full. • The float of the waste sensor assembly is dirty and cannot move.	Replace the waste fluid tank and touch [Accept] in the [Help] dialog box. For details, see the following procedure. (➤**P.30** "Replacing the waste fluid tank")

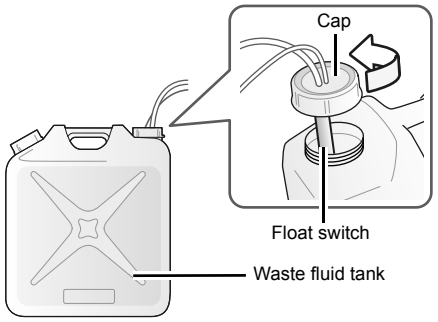
Replacing the waste fluid tank

Risk of infection
Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

1 Prepare an empty waste fluid tank and remove the cap.

2 Remove the cap from the waste fluid tank that has become full.

Turn the cap that is connected to the tube in the direction as illustrated by the arrow to remove, and remove the float switch.



3 Straightly insert the float switch on the new waste fluid tank.

4 Secure the cap of the waste fluid tank.

Install the float switch and then turn the cap clockwise to close.

Make sure the float switch is attached to the horizontal surface of the waste fluid tank.

5 Touch [Accept] in the [Help] dialog box.

The dialog box closes and the error is cleared.

000142
[Water leak detected]

000238
[[RR] Water leak detected]

Probable cause	Action
There is a water leak inside the instrument.	Touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative. If [Continue using instrument when leak detected] or [Continue using RR-20 when a leak is detected] is ON in [Sensor settings], smear preparation can be continued by touching [Close] in the [Help] dialog box.

000101
[Water leak detected (preparation not possible)]

000236
[[RR] Water leak detected (preparation impossible)]

Probable cause	Action
There is a water leak inside the instrument.	Touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000102
[Water leak sensor error]

000237
[[RR] Water leak sensor error]

Probable cause	Action
The water leak sensor has malfunctioned.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000246 [[RU] Out of diluted CELLPACK DST]	
Probable cause	Action
Case 1: There is a foreign object pressing on the tube connected to the RU-20, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube.
Case 2: Diluted CELLPACK DST in the RU-20 has run out.	Check the RU-20. If the RU-20 is diluting, wait for a while. By changing the diluent to CELLPACK DCL, you can also use the instrument. For details, see the following procedure. (➤**P.32** "Temporarily use CELLPACK DCL")

Temporarily use CELLPACK DCL

Information

- Temporary use of CELLPACK DCL is an emergency measure that is to be employed in the event that a problem occurs on the RU-20. If a problem occurs on the RU-20, contact your Sysmex service representative as soon as possible.
- When CELLPACK DCL is used on a temporary basis, the aspiration intake of the dispensing kit will not reach the bottom of the reagent container, and thus it will not be possible to use all the CELLPACK DCL in the container.
- If the CELLPACK DCL runs out or drops to a level that cannot be aspirated during temporary use of CELLPACK DCL, [CELLPACK DCL aspiration error] will appear. Replace the CELLPACK DCL container and then click [Execute] in the [Help] dialog box to replenish the reagent. After reagent replenishment is complete, execute reagent replacement from the [Reagent replacement] dialog box and register the reagent. This will take longer than regular reagent replacement.

1 Remove the dispensing set from the RU-20 supply tank.

2 Attach the dispensing set to the CELLPACK DCL.

Attach the dispensing set that you removed from the RU-20 supply tank to the CELLPACK DCL.

3 Touch [Maintenance] in the menu screen.

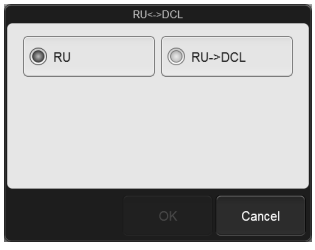
The [Maintenance] screen appears.

4 Touch [Replacement].

The [Replacement] dialog box appears.

5 Touch [RU<->DCL].

The [RU<->DCL] dialog box appears.



[RU<->DCL] dialog box

6 **Select [RU->DCL].**

7 **Touch [OK].**

The dialog box closes and a [[RU] Register CELLPACK DCL] error occurs.

8 **Touch [Back] in the [Replacement] dialog box.**

The dialog box closes.

9 **Touch [Help] in the [Execute] dialog box.**

The [Reagent replacement] dialog box appears.

Register the CELLPACK DCL.

End temporary use of CELLPACK DCL

1 **Remove the dispensing set from the CELLPACK DCL.**

2 **Attach the dispensing set to the RU-20 supply tank.**

Attach the dispensing set that you removed from the CELLPACK DCL to the RU-20 supply tank.

3 **Touch [Maintenance] in the menu screen.**

The [Maintenance] screen appears.

4 **Touch [Replacement].**

The [Replacement] dialog box appears.

5 **Touch [RU<->DCL].**

The [RU<->DCL] dialog box appears.

[RU<->DCL] dialog box

6 **Select [DCL->RU].**

7 **Touch [OK].**

The dialog box closes and the alarm sounds briefly.

End temporary use of CELLPACK DCL, and use RU-20.

8 **Touch [Back] in the [Replacement] dialog box.**

The dialog box closes.

000247 [[RU] RU has stopped supplying reagent]	
Probable cause	Action
Case 1: There is a foreign object pressing on the tube connected to the RU-20, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube.
Case 2: RU-20 has stopped supplying reagent.	Check the RU-20. By changing the diluent to CELLPACK DCL, you can also use the instrument. For details, see the following procedure. (➤**P.32** "Temporarily use CELLPACK DCL")

000248 [[RU] Register CELLPACK DCL]	
Probable cause	Action
CELLPACK DCL is enabled instead of the RU-20.	Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Insert the dispensing set that you removed from the RU-20 supply tank straight into the CELLPACK DCL, and replace the reagent. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000249 [[RU] CELLPACK DST has expired]	
Probable cause	Action
CELLPACK DST of the RU-20 has expired.	Replace the CELLPACK DST of the RU-20 with a new one. For details, see the RU-20 Instructions for Use. (➤Instructions for Use for RU-20 “6.3 Replacing the reagent”) By changing the diluent to CELLPACK DCL, you can also use the instrument. For details, see the following procedure. (➤**P.32** "Temporarily use CELLPACK DCL")

000250 [[RU] CELLPACK aspiration error]	
Probable cause	Action
Case 1: There is a foreign object pressing on the tube connected to the reagent container, or there is a kink in the tube.	Remove the object that is pressing on the tube, and straighten the tube. Touch [Execute] in the [Help] dialog box. Reagent replenishment takes place. By changing the diluent to CELLPACK DCL, you can also use the instrument. For details, see the following procedure. (➤**P.32** "Temporarily use CELLPACK DCL")
Case 2: The tube connected to the reagent container is clogged.	Check the condition of the tube and then touch [Execute] in the [Help] dialog box. Reagent replenishment takes place. By changing the diluent to CELLPACK DCL, you can also use the instrument. For details, see the following procedure. (➤**P.32** "Temporarily use CELLPACK DCL")

000251 [[RU] Check RU-20]	
Probable cause	Action
An error of the RU-20 occurs.	Clear the error of the RU-20 and touch [Accept] in the [Help] dialog box. For the action to clear the error, see the Instructions for Use for RU-20. (➤Instructions for Use for RU-20 “Chapter 7: Troubleshooting”) By changing the diluent to CELLPACK DCL, you can also use the instrument. For details, see the following procedure. (➤**P.32** "Temporarily use CELLPACK DCL")

000252 [[RU] RU communication error]	
Probable cause	Action
There was a communication error between the instrument and the RU-20.	Check the connection to the RU-20. By changing the diluent to CELLPACK DCL, you can also use the instrument. For details, see the following procedure. (➤**P.32** "Temporarily use CELLPACK DCL")

Errors related to motors

000073 [Whole Blood aspiration motor error]	
Probable cause	Action
An error occurred in the whole blood aspiration motor.	Remove the glass slide from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box. The operation test on the smear mechanism runs.

000085 [Aspiration dispensing unit up-down motor error (when dispensing)] **000099** [Aspiration dispensing unit up-down motor error]	
Probable cause	Action
An error occurred in the aspiration dispensing unit up-down motor.	Remove the glass slide from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box. The operation test on the smear mechanism runs.

000100 [Dispensing unit left-right motor error]	
Probable cause	Action
An error occurred in the dispensing unit left-right motor.	Remove the glass slide from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box. The operation test on the smear mechanism runs.

Errors related to sample aspiration and smearing

000105 [Blood cannot be aspirated.]	
Probable cause	Action
Case 1: The sample volume is less than required.	Set a new sample tube with the required volume of sample. Touch [Accept] in the [Help] dialog box and perform the slide preparation again. For the required volume of sample, see "Basic Operation". (➤Basic Operation "Chapter 3: 3.3 Preparing a sample")
Case 2: Blood aspiration line (tube) is clogged.	Touch [Accept] in the [Help] dialog box. After the instrument returns to the ready state, clean the whole blood aspiration tube. For details, see the following procedure. (➤**P.38** "Cleaning the smear unit")
Case 3: The blood aspiration sensor has malfunctioned.	Touch [Accept] in the [Help] dialog box. The blood aspiration sensor must be replaced. Contact your authorized local Sysmex representative. You can disable the blood aspiration sensor to temporarily use the instrument. For details, see "Basic Operation". (➤Basic Operation "Chapter 5: 5.6.4 Blood sensor/blood aspiration sensor/water leak sensor settings")

000106 [Insufficient blood volume (short sample)]	
Probable cause	Action
Case 1: The sample volume is less than required.	Set a new sample tube with the required volume of sample. Touch [Accept] in the [Help] dialog box and perform the slide preparation again. For the required volume of sample, see "Basic Operation". (➤Basic Operation "Chapter 3: 3.3 Preparing a sample")
Case 2: Blood aspiration line (piercer or tube) is clogged.	Touch [Accept] in the [Help] dialog box. After the instrument returns to the ready state, clean the whole blood aspiration tube. For details, see the following procedure. (➤**P.38** "Cleaning the smear unit") If the error is not cleared, the piercer must be replaced. Contact your authorized local Sysmex representative.
Case 3: The blood aspiration sensor has malfunctioned.	Touch [Accept] in the [Help] dialog box. The blood aspiration sensor must be replaced. Contact your authorized local Sysmex representative. You can disable the blood aspiration sensor to temporarily use the instrument. For details, see "Basic Operation". (➤Basic Operation "Chapter 5: 5.6.4 Blood sensor/blood aspiration sensor/water leak sensor settings")

000107 [Aspiration sensor error]	
Probable cause	Action
Case 1: The whole blood aspiration tube is dirty or blood aspiration line (piercer or tube) is clogged.	Touch [Accept] in the [Help] dialog box. After the instrument returns to the ready state, clean the whole blood aspiration tube. For details, see the following procedure. (➤**P.38** "Cleaning the smear unit") If the error is not cleared, the piercer must be replaced. Contact your authorized local Sysmex representative.
Case 2: The blood aspiration sensor has malfunctioned.	Touch [Accept] in the [Help] dialog box. The blood aspiration sensor must be replaced. Contact your authorized local Sysmex representative. You can disable the blood aspiration sensor to temporarily use the instrument. For details, see "Basic Operation". (➤Basic Operation "Chapter 5: 5.6.4 Blood sensor/blood aspiration sensor/water leak sensor settings")

Cleaning the smear unit

1 Touch [Accept] in the [Help] dialog box.

2 Touch [Maintenance] in the menu screen.

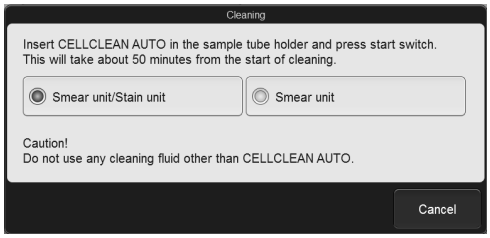
The [Maintenance] screen appears.

3 Touch [Rinse devices].

The [Rinse devices] dialog box appears.

4 Touch [Cleaning].

The [Cleaning] dialog box appears, and the sample holder slides out forward.

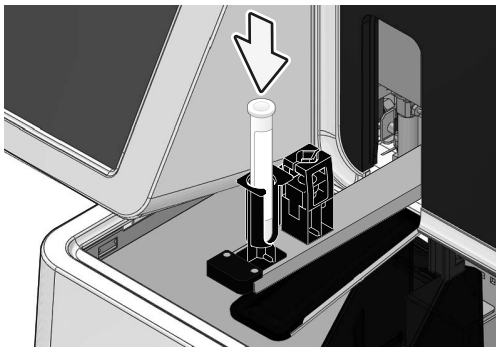


[Cleaning] dialog box

5 Touch [Smear unit].

6 Set CELLCLEAN AUTO in the sample holder.

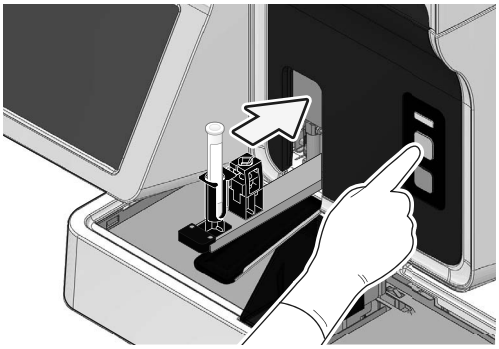
Set the CELLCLEAN AUTO in the regular sample tube holder, which is at the main unit front side.



⚠ Caution

Use 1 vial of CELLCLEAN AUTO for each cleaning. Do not reuse CELLCLEAN AUTO that has already been used.

7 Press the start switch on the main unit front side.



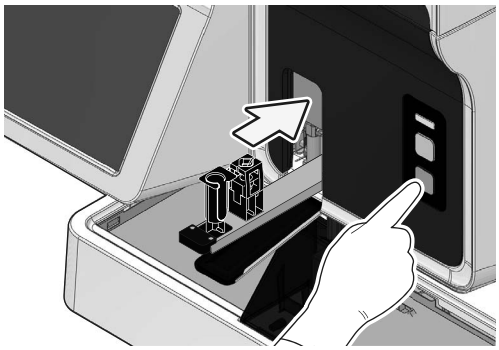
The sample holder retracts and aspiration begins. When the aspiration is finished, the sample holder is ejected out forward.

Cleaning takes approximately 15 minutes. When the cleaning is finished, the dialog box closes.

8 Remove the CELLCLEAN AUTO.

9 Press the mode switch on the main unit front side.

The sample holder retracted into the instrument.



000108 [Insufficient blood volume]	
Probable cause	Action
The sample volume is less than required.	Set a new sample tube with the required volume of sample. Touch [Accept] in the [Help] dialog box and perform the slide preparation again. For the required volume of sample, see "Basic Operation". (➤Basic Operation "Chapter 3: 3.3 Preparing a sample")

000109 [Blood cannot be aspirated (piercer clogged)]	
Probable cause	Action
Blood aspiration line (piercer) is clogged.	Touch [Execute] in the [Help] dialog box. Piercer rinsing takes place.

000110 [Spreader glass ultrasonic rinse unit error]	
Probable cause	Action
An error occurred in the ultrasonic spreader glass cleaning unit.	Remove the glass slide from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000140 [Sampler smear mode preparation stopped]	
Probable cause	Action
Preparation in sampler preparation [Smearing] mode has stopped due to some other error.	Remove the sample tube from the instrument, and touch [Execute] in the [Help] dialog box.

Errors related to glass slides

000074 [Out of slides (right) (when ordered)] **000075** [Out of slides (left) (when ordered)] **000083** [Out of glass slide (right) (ongoing preparation)] **000084** [Out of glass slide (left) (ongoing preparation)]	
Probable cause	Action
Case 1: The slide supply cassette (right) or slide supply cassette (left) is out of glass slides.	Load glass slides in the slide supply cassette (right) or slide supply cassette (left). For details, see the following procedure. (➤**P.42** "Loading glass slides in the slide set unit") Touch [Accept] in the [Help] dialog box and prepare the slide again.
Case 2: Glass slides that cannot be used are loaded in the slide supply cassette (right) or slide supply cassette (left).	Load glass slides that can be used in the slide supply cassette (right) or slide supply cassette (left). For details, see the following procedure. (➤**P.42** "Loading glass slides in the slide set unit") Touch [Accept] in the [Help] dialog box and prepare the slide again. For glass slides that can be used, see "General Information". (➤General Information "Chapter 5: 5.2 Usable sample tubes, sample racks, glass slides, and magazines")

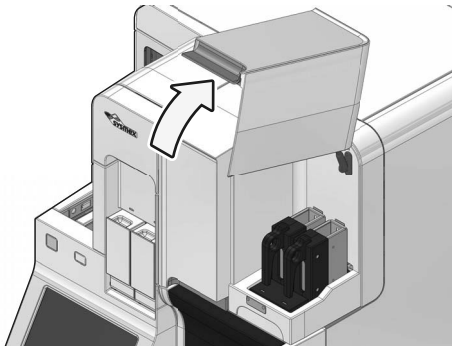
000076 [Out of glass slide (when sample is picked up)]	
Probable cause	Action
Case 1: The slide supply cassette (right) and slide supply cassette (left) are out of glass slides.	Load glass slides in the slide supply cassette (right) or slide supply cassette (left). For details, see the following procedure. (➤**P.42** "Loading glass slides in the slide set unit") Touch [Accept] in the [Help] dialog box and prepare the slide again.
Case 2: Glass slides that cannot be used are loaded in the slide supply cassette (right) and slide supply cassette (left).	Load glass slides that can be used in the slide supply cassette (right) or slide supply cassette (left). For details, see the following procedure. (➤**P.42** "Loading glass slides in the slide set unit") Touch [Accept] in the [Help] dialog box and prepare the slide again. For glass slides that can be used, see "General Information". (➤General Information "Chapter 5: 5.2 Usable sample tubes, sample racks, glass slides, and magazines")

000077 [Out of slides (right) (when removed)] **000078** [Out of slides (left) (when removed)] **000079** [Out of glass slide (when removed)]	
Probable cause	Action
Case 1: The slide supply cassette (right) or slide supply cassette (left) is out of glass slides.	Load glass slides in the slide supply cassette (right) or slide supply cassette (left). For details, see the following procedure. (➤**P.42** "Loading glass slides in the slide set unit") Touch [Execute] in the [Help] dialog box and prepare the slide again.
Case 2: Glass slides that cannot be used are loaded in the slide supply cassette (right) or slide supply cassette (left).	Load glass slides that can be used in the slide supply cassette (right) or slide supply cassette (left). For details, see the following procedure. (➤**P.42** "Loading glass slides in the slide set unit") Touch [Execute] in the [Help] dialog box and prepare the slide again. For glass slides that can be used, see "General Information". (➤General Information "Chapter 5: 5.2 Usable sample tubes, sample racks, glass slides, and magazines")

Loading glass slides in the slide set unit

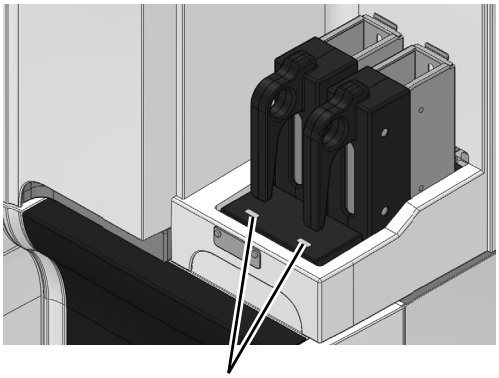
1 Open the slide set unit cover.

Lift the cover up until it locks into place.



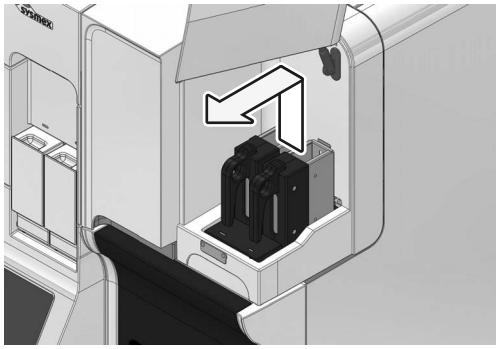
2 Make sure that the status display LED on the slide set unit lights in green or red.

Wait until the status display LED turns if it not lit in green or red.

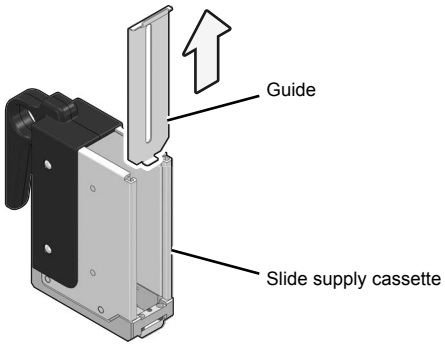


3 Remove the slide supply cassette from the slide set unit.

The slide set unit has left and right holders, allowing separation of the glass slides to meet your laboratory's needs.

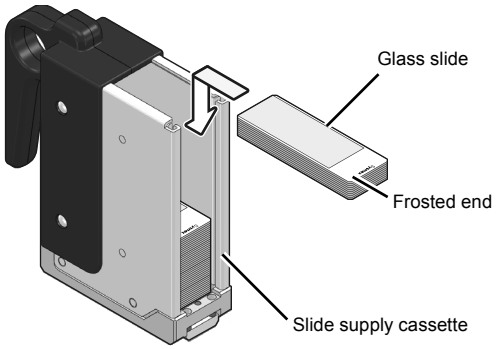


4 Remove the slide supply cassette guide.



5 Load the new glass slide.

As illustrated in the figure below, load the glass slide so that the frosted end faces upwards in the slide supply cassette.



6 Install the slide supply cassette guide.

7 **Install the slide supply cassette.**

8 **Close the slide set unit cover.**

Lightly press the cover to unlock and then close the cover.

9 **Touch [Accept] in the [Help] dialog box.**

The dialog box closes and the error is cleared.

000176 [No slide (print unit)]	
Probable cause	Action
Unable to detect glass slide in the print unit.	Remove the glass slide from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.

000177 [No slide (smear dryer fan 1)] **000178** [No slide (smear dryer fan 2)]	
Probable cause	Action
Unable to detect glass slide in the smear drier unit.	Remove the glass slide from inside the smear and print block, and smear conveyance block. Close the cover and touch [Execute] in the [Help] dialog box.

000179 [Slide remains (print unit)]	
Probable cause	Action
Glass slide remains in the print unit.	Remove the glass slide from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.

000180 [Slide remains (smear dryer fan 1)] **000181** [Slide remains (smear dryer fan 2)]	
Probable cause	Action
Glass slide remains in the smear drier unit.	Remove the glass slide from inside the smear and print block, and smear conveyance block. Close the cover and touch [Execute] in the [Help] dialog box.

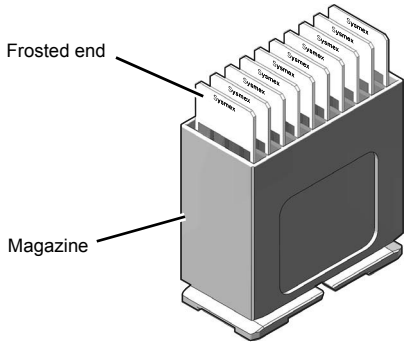
000225 [Glass slide remains in staining pool]	
Probable cause	Action
Glass slide remains in the staining pool.	Open the stain unit cover and remove the glass slide from inside the staining pool. Close the cover and touch [Execute] in the [Help] dialog box.

000010 [Slide not placed on manual magazine holder]	
Probable cause	Action
A glass slide has not been loaded in the manual magazine holder in [Staining] mode.	Load the glass slide to be stained in the manual magazine holder. Press the start switch to prepare the slide again. For details, see the following procedure. (➤**P.44** "Loading glass slides in the manual magazine holder")

Loading glass slides in the manual magazine holder

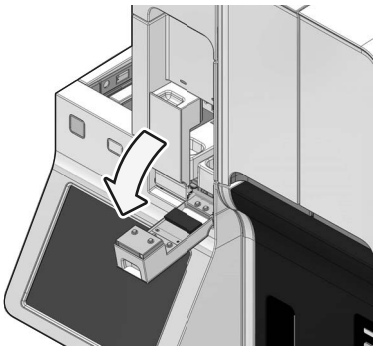
1 Load smeared glass slides to the magazine.

Load glass slides so that they face the same direction. With the frosted end of the slide facing to the front, the slide is successively stained from the front.

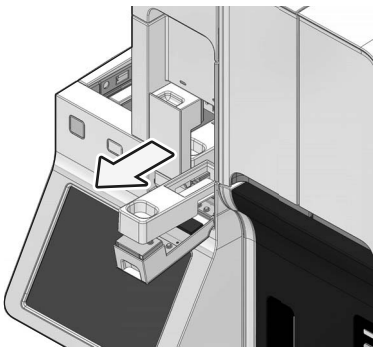


2 Open the manual magazine holder cover.

Open the cover forward. The staining process will start regardless of which of the right and left manual magazine holder the magazine was loaded. If both manual magazine holders were loaded, the left magazine will be processed first.

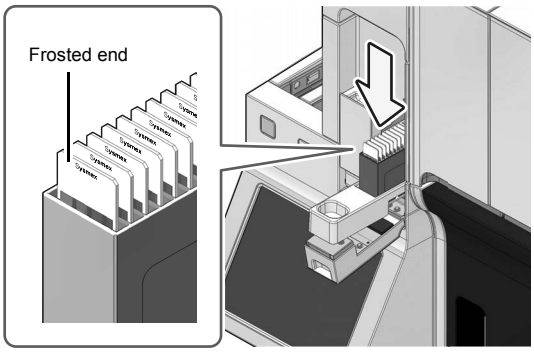


3 **Pull out the manual magazine holder.**



4 **Load the magazine that holds the glass slides in the manual magazine holder.**

Load glass slides so that the frosted end faces forward.



5 **Push in the manual magazine holder.**

6 **Close the manual magazine holder cover.**

7 **Touch [Accept] in the [Help] dialog box.**

The dialog box closes and the error is cleared.

000011 [Prepared slide remains on slide setting area]	
Probable cause	Action
A prepared glass slide remains in the manual magazine holder in [Smearing] or [Print] mode.	Remove the prepared glass slide from the manual magazine holder.

000029 [Unable to forcibly eject slides]	
Probable cause	Action
The glass slide could not be forcibly ejected due to some other error.	Remove all glass slides from the instrument. Touch [Execute] in the [Help] dialog box.

Errors related to slide preparation

000007 [Smear unit U/D motor error]	
Probable cause	Action
Case 1: The spreader glass is not installed correctly.	Remove the glass slide from inside the smear and print block. Install the spreader glass correctly. Close the cover and touch [Execute] in the [Help] dialog box.
Case 2: There is a foreign object in the range of movement of the smearing unit mechanism.	Remove the foreign object from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.
Case 3: A wire is in the way of the smearing unit mechanism.	Organize the wires and tubes that are caught, and touch [Execute] in the [Help] dialog box.

000008 [Smear unit F/R motor error]	
Probable cause	Action
Case 1: The spreader glass is not installed correctly.	Remove the glass slide from inside the smear and print block. Install the spreader glass correctly. Close the cover and touch [Execute] in the [Help] dialog box.
Case 2: A wire is in the way of the smearing unit mechanism.	Organize the wires and tubes that are caught, and touch [Execute] in the [Help] dialog box.

000009 [Spreader glass dry unit motor error]	
Probable cause	Action
Case 1: The spreader glass is not installed correctly.	Remove the glass slide from inside the smear and print block. Install the spreader glass correctly. Close the cover and touch [Execute] in the [Help] dialog box.
Case 2: There is a foreign object in the range of movement of the spreader glass dryer unit mechanism.	Remove the foreign object from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.
Case 3: A wire is in the way of the spreader glass dryer unit mechanism.	Organize the wires and tubes that are caught, and touch [Execute] in the [Help] dialog box.

000013 [Staining hand 1 U/D motor error] **000014** [Staining hand 1 F/R motor error] **000015** [Staining hand 1 L/R motor error] **000016** [Staining hand 1 glass slide detection error]	
Probable cause	Action
Staining hand 1 has stopped operating.	Remove all glass slides other than the slide in the stain dryer. Close the cover and touch [Execute] in the [Help] dialog box.

000017 [Staining hand 2 U/D motor error] **000018** [Staining hand 2 F/R motor error] **000019** [Staining hand 2 L/R motor error] **000027** [Staining hand 2 glass slide detection error] **000028** [Staining hand 2 stopped]	
Probable cause	Action
Staining hand 2 has stopped operating.	Remove all glass slides from the instrument. Touch [Execute] in the [Help] dialog box.

000026 [Smear unit stopped]	
Probable cause	Action
Smear unit operation could not continue due to a stain unit error.	Remove all glass slides from inside the smear and print block, and smear conveyance block. Close the cover and touch [Execute] in the [Help] dialog box.

000035 [Staining time extended]	
Probable cause	Action
Staining time is prolonged due to an interruption of instrument operation, or an operation interruption occurred during smear preparation.	Touch [Accept] in the [Help] dialog box. Because there is a risk of degradation of smear quality, check the slide preparation order information in the [Work list] screen. For details, see "Basic Operation". (➤Basic Operation "Chapter 2: 2.7 [Work list] screen")

000041 [Remove glass slide]	
Probable cause	Action
A smear was not prepared properly.	Touch [Accept] in the [Help] dialog box. Check the slide preparation order information in the [Work list] screen. For details, see "Basic Operation". (➤Basic Operation "Chapter 2: 2.7 [Work list] screen") If the smear will not be analyzed on the DI-60, remove the glass slide from the magazine.

000086 [Unable to switch modes because instrument is busy.]	
Probable cause	Action
Mode switch has been pressed during slide preparation.	Touch [Accept] in the [Help] dialog box and wait until the slide preparation is completed. You can also switch the slide preparation mode by canceling the slide preparation.

000087 [Wait until new stain time setting is applied]	
Probable cause	Action
Change of staining time setting is not applied yet.	Touch [Accept] in the [Help] dialog box and wait until the setting is applied. You can also resume the slide preparation by undoing the change of staining time setting.

000088 [Preparation stop error has occured (when stain cleaning)]	
Probable cause	Action
A stop error has occurred during slide preparation.	Remove all glass slides from the instrument. Touch [Execute] in the [Help] dialog box.

000170
[Slide holder motor error (left)]

000171
[Slide holder motor error (right)]

Probable cause	Action
Case 1: There is a foreign object in the range of movement of the slide dispenser mechanism of the slide set unit.	Remove the glass slide and foreign object from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.
Case 2: A wire is in the way of the slide dispenser mechanism of the slide set unit.	Organize the wires and tubes that are caught, and touch [Execute] in the [Help] dialog box.

000172
[Slide conveyor F/R motor error (print unit)]

000173
[Slide conveyor R/L motor error (print unit)]

Probable cause	Action
• There is a foreign object in the print unit. • There is abnormal motor operation in the glass slide conveyance in the print unit.	Remove the glass slide and foreign object from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.

000174
[Slide conveyor U/D cylinder error (print unit)]

Probable cause	Action
• There is a foreign object in the print unit. • There is abnormal pneumatic operation in the glass slide conveyance in the print unit.	Remove the glass slide and foreign object from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.

000175
[Slide conveyor F/R motor error (smear dryer)]

000182
[Slide conveyor R/L motor error (smear dryer)]

Probable cause	Action
There is abnormal motor operation in the glass slide conveyance in the smear drier unit.	Remove the foreign object and glass slide from inside the smear and print block, and smear conveyance block. Close the cover and touch [Execute] in the [Help] dialog box.

000205 [Slide drying fan rotation error]	
Probable cause	Action
The drying fan in the smear drier unit is not operating correctly.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative. The instrument can be used on a temporary basis if the dry fan is changed to not used. For details, see "Basic Operation". (➤Basic Operation "Chapter 5: 5.5.6 Smear drying fan settings")

000206 [Drying pool fan rotation error]	
Probable cause	Action
The fan in the stain drier unit is not operating correctly.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative. The instrument can be used on a temporary basis if the dry heater is changed to not used. For details, see "Basic Operation". (➤Basic Operation "Chapter 5: 5.5.7 Post-staining dry heater setting")

000207 [Power fan rotation error]	
Probable cause	Action
The power fan or ventilation fan is not operating correctly.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000253 [Press Start SW]	
Probable cause	Action
Case 1: 5 hours have elapsed since the instrument entered the standby state in the manual preparation mode.	Press the start switch. Cleaning of the smear unit starts.
Case 2: 5 hours have elapsed since the instrument entered the standby state in the sampler preparation mode.	Perform sampler preparation.

Errors related to samplers

000121
[Rack feed-in error]

000122
[Rack feed-in home position error]

Probable cause	Action
Case 1: There is a foreign object in the movement path of the racks in the right sampler pool.	Remove the sample rack and sample tubes from the sample holder and measurement line, and remove the foreign object from the right sampler pool. Touch [Execute] in the [Help] dialog box. The rack feed-in mechanism is initialized.
Case 2: The sample rack is not placed correctly.	Remove the sample rack and sample tubes from the sample holder and measurement line, and touch [Execute] in the [Help] dialog box. The rack feed-in mechanism is initialized.
Case 3: Dirt on the rack feed-in position sensor.	Remove the sample rack and sample tubes from the sample holder and measurement line, and clean the sensor. Touch [Execute] in the [Help] dialog box. The rack feed-in mechanism is initialized.
Case 4: The sample rack moved unexpectedly during sampler preparation.	Remove the sample rack and sample tubes from the sample holder and measurement line, and touch [Execute] in the [Help] dialog box. The rack feed-in mechanism is initialized. The sample number and the slide preparation information may not be correctly matched. In the [Work list] screen, check the slide preparation information of all samples set on the sample rack on the measurement line. For details, see "Basic Operation". (➤Basic Operation "Chapter 2: 2.7 [Work list] screen")

000126
[Rack ejection error]

000127
[Rack ejection home position error]

Probable cause	Action
Case 1: There is a foreign object in the movement path of the rack feed-out lever.	Remove the sample rack and sample tubes from the sample holder and measurement line, and remove the foreign object from the rack feed-out lever area. Touch [Execute] in the [Help] dialog box. The rack discharge mechanism is initialized.
Case 2: There is a foreign object in the movement path of the racks in the left sampler pool.	Remove the sample rack and sample tubes from the sample holder and measurement line, and remove the foreign object from the left sampler pool. Touch [Execute] in the [Help] dialog box. The rack discharge mechanism is initialized.
Case 3: The feed-out movement of the sample rack was blocked.	Remove the sample rack and sample tubes from the sample holder and measurement line, and touch [Execute] in the [Help] dialog box. The rack discharge mechanism is initialized.
Case 4: The sample rack is not moving properly because the table surface of the left sampler pool is dirty.	Remove the sample rack and sample tubes from the sample holder and measurement line, and clean the table of the left sampler pool. Touch [Execute] in the [Help] dialog box. The rack discharge mechanism is initialized.

000133 [Sampler belt error]	
Probable cause	Action
A sample rack was detected on the measurement line while initializing the measurement line.	Remove the sample rack from the measurement line and touch [Accept] in the [Help] dialog box.

000134 [Rack not placed on feed-in table]	
Probable cause	Action
Case 1: The sample rack is not placed correctly.	Touch [Accept] in the [Help] dialog box, place the sample rack on the rack feed-in table again, and start sampler preparation.
Case 2: The rack feed-in position sensor in the right sampler pool has malfunctioned due to dust or other particulate matter.	Remove the dust and/or other particles from the rack feed-in position sensor in the right sampler pool and touch [Accept] in the [Help] dialog box.

000135 [Ejection table is full]	
Probable cause	Action
Case 1: The left sampler pool is full with sample racks.	Remove the sample rack.
Case 2: There is a foreign object in the movement path of the racks in the left sampler pool.	Remove the foreign object from the left sampler pool.
Case 3: The left sampler pool rack full sensor is not operating correctly due to dust and/or other particles.	Remove the dust and/or other particles from the left sampler pool rack full sensor.

000136 [Completed sampler preparation stop]	
Probable cause	Action
Sampler preparation stopped.	Touch [Accept] in the [Help] dialog box.

000137
[Rack move home position error]

000138
[Rack move error]

Probable cause	Action
Case 1: There is a foreign object in the movement path of the rack on the sampler's measurement line.	Remove the sample rack and sample tubes from the sample holder and measurement line, and remove the foreign object. Touch [Execute] in the [Help] dialog box. The rack move mechanical unit is initialized.
Case 2: The sample rack is not placed correctly.	Remove the sample rack and sample tubes from the sample holder and measurement line, and touch [Execute] in the [Help] dialog box. The rack move mechanical unit is initialized.

000141
[Sampler preparation stop error has occurred.]

Probable cause	Action
An interruption error occurred during sampler preparation.	Clear all errors and touch [Accept] in the [Help] dialog box.

000143
[Rack removed]

Probable cause	Action
The sample rack is removed during sample preparation.	Touch [Accept] in the [Help] dialog box, place the sample rack on the rack feed-in table again, and start sampler preparation.

Errors related to the hand and sample holder

000094 [Tube pickup error] **000095** [Tube holder move error] **000096** [Tube return error]	
Probable cause	Action
The sample tube is not set properly.	Remove the sample tube from the instrument, and touch [Execute] in the [Help] dialog box.

000097 [Tube remains in tube holder]	
Probable cause	Action
When manual preparation was switched to sampler preparation, a sample tube was found left in the sample holder.	Remove the sample tube from the sample holder, and touch [Accept] in the [Help] dialog box.

000098 [Two tubes are in tube holder]	
Probable cause	Action
During manual preparation, sample tubes were set in both the regular sample tube holder and the micro collection sample tube holder.	Set only the sample tube to be used for smear preparation in the sample holder, and touch [Accept] in the [Help] dialog box.

000103 [The sample must be remixed.]	
Probable cause	Action
The set time (60 seconds) elapsed after an order information query was sent to the host computer during manual preparation.	Re-mix the sample. Touch [Accept] in the [Help] dialog box and prepare the slide again.

000111 [Tube presence verification clamp error]	
Probable cause	Action
The sample tube presence verification clamp did not operate correctly.	Remove the sample tube from the instrument, and touch [Execute] in the [Help] dialog box.

000112 [Fixing clamp error during aspiration]	
Probable cause	Action
The fixing clamp did not operate correctly during the aspiration process.	Remove the sample tube from the instrument, and touch [Execute] in the [Help] dialog box.

000148 [Sample hand up-down error] **000149** [Mixing error] **000150** [Sample hand open/close error]	
Probable cause	Action
A hand did not operate correctly	Remove the sample tube from the instrument, and touch [Execute] in the [Help] dialog box.

Errors related to magazine

000012 [Place empty magazine on manual magazine holder]	
Probable cause	Action
An empty magazine has not been loaded in the manual magazine holder in [Smearing] or [Print] mode.	Load an empty magazine in either the left or right manual magazine holder.

000030 [Place empty magazine] **000060** [Place empty magazine (aspiration stopped)]	
Probable cause	Action
There are no empty magazines in the magazine holder (right pool).	Load an empty magazine from the front of the magazine holder (right pool).

000031
[Retrieve magazine containing slides.]

000061
[Retrieve magazine containing slides (aspiration stopped).]

Probable cause	Action
The magazine storage unit (left pool) is full.	Collect the magazines that have glass slides stored from the front of the magazine storage unit (left pool).

000032
[Out of empty magazines]

Probable cause	Action
The prepared glass slide could not be stored, and staining stopped.	Load an empty magazine from the front of the magazine holder (right pool).

000033
[Magazine containing slides is full.]

Probable cause	Action
The prepared glass slide could not be stored, and staining stopped.	Collect the magazines that have glass slides stored from the front of the magazine storage unit (left pool).

000034
[Magazine placed with remaining slide]

Probable cause	Action
There is a glass slide in the magazine that was loaded in the magazine holder (right pool).	Load an empty magazine into the magazine holder (right pool). Touch [Execute] in the [Help] dialog box and eject the magazine that has glass slides stored.

000036
[Magazine detection error (magazine holder)]

Probable cause	Action
The magazine could not be detected by the magazine holder (right pool).	Remove the magazines from both the magazine holder (right pool) and storage unit (left pool). Touch [Execute] in the [Help] dialog box. A magazine conveyance test runs.

000037 [Magazine detection error (magazine storage unit)]	
Probable cause	Action
The magazine could not be detected by the magazine holder (left pool).	Remove the magazines from both the magazine holder (right pool) and storage unit (left pool). Touch [Execute] in the [Help] dialog box. A magazine conveyance test runs.

000038 [Magazine conveyance error (magazine holder stopper)]	
Probable cause	Action
The magazine could not be detected by the stopper in the magazine holder (right pool).	Remove the magazines from both the magazine holder (right pool) and storage unit (left pool). Touch [Execute] in the [Help] dialog box. A magazine conveyance test runs.

000039 [Magazine conveyance error (magazine shift unit)]	
Probable cause	Action
The magazine could not be detected by the feeder in the magazine storage unit (left pool).	Remove the magazines from both the magazine holder (right pool) and storage unit (left pool). Touch [Execute] in the [Help] dialog box. A magazine conveyance test runs.

000040 [Magazine conveyance error (magazine shift unit hold mechanism)]	
Probable cause	Action
The magazine could not be detected by the feeder retention mechanism in the magazine storage unit (left pool).	Remove the magazines from both the magazine holder (right pool) and storage unit (left pool). Touch [Execute] in the [Help] dialog box. A magazine conveyance test runs.

Errors related to sample numbers and rack numbers

000226 [Sample number not entered]	
Probable cause	Action
No sample number was specified at the time of manual preparation.	Touch [Accept] in the [Help] dialog box. Enter the sample number and prepare the slide again.

000227 [Unable to read sample number (slide preparation unit).] **000232** [Unable to read sample number.]	
Probable cause	Action
• The barcode label on the sample is dirty. • The print quality of the barcode label on the sample is poor. • The position of the barcode label on the sample is off.	Check the barcode label position and check for dirt, and touch [Accept] in the [Help] dialog box.

000231 [Positive ID check error]	
Probable cause	Action
Case 1: The barcode read by the sampler was different from that read by the main unit.	Re-load the sample rack containing the samples in the right sampler pool. Touch [Accept] in the [Help] dialog box, and repeat sampler preparation.
Case 2: There is a foreign object in the instrument.	Remove the foreign object from the instrument. Touch [Accept] in the [Help] dialog box, and repeat sampler preparation.

Errors related to covers

000208 [Smear unit cover open error]	
Probable cause	Action
The smear unit cover opened during smear preparation.	Remove the sample tube from the instrument, and remove the glass slide from inside the smear and print block, and smear conveyance block. Close the cover and touch [Execute] in the [Help] dialog box.

000209 [Smear unit cover is open]	
Probable cause	Action
Case 1: The smear unit cover is open.	Close the smear unit cover and touch [Accept] in the [Help] dialog box.
Case 2: The sensor on the smear unit cover has malfunctioned.	Touch [Accept] in the [Help] dialog box. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000211 [Stain unit cover open error]	
Probable cause	Action
The stain unit cover opened during smear preparation.	Remove the sample tube and all glass slides from the instrument. Close the cover and touch [Execute] in the [Help] dialog box.

000212 [Stain unit cover is open]	
Probable cause	Action
Case 1: The stain unit cover is open.	Close the stain unit cover and touch [Accept] in the [Help] dialog box.
Case 2: The sensor on the stain unit cover has malfunctioned.	Touch [Accept] in the [Help] dialog box. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000213 [Front lower cover error open]	
Probable cause	Action
The front-lower cover opened during slide preparation.	Remove the sample tube from the instrument, and remove the glass slide from inside the smear and print block. Close the cover and touch [Execute] in the [Help] dialog box.

000214 [Front lower cover is open]	
Probable cause	Action
Case 1: The front-lower cover is open.	Close the front-lower cover and touch [Accept] in the [Help] dialog box.
Case 2: The sensor on the front-lower cover has malfunctioned.	Touch [Accept] in the [Help] dialog box. The instrument needs to be serviced. Contact your authorized local Sysmex representative.

000233 [Manual magazine holder open error]	
Probable cause	Action
The manual magazine holder opened during smear preparation.	Remove the sample tube and all glass slides from the instrument. Close the cover and touch [Execute] in the [Help] dialog box.

Errors related to the system

000001 [Internal Error]	
Probable cause	Action
An error occurred in the operation of the program.	Turn OFF the power of the instrument. Contact your authorized local Sysmex representative.

000215 [CF communication error]	
Probable cause	Action
There was a communication error between the instrument and the CF-70.	Check the connection to the CF-70.

000216 [Conveyor error]	
Probable cause	Action
There is an error in the conveyor.	Clear the conveyor error.

000217 [Barcode reader communication error at slide preparation unit]	
Probable cause	Action
There was a communication error between the main unit and the barcode reader.	Remove the sample tube and all glass slides from the instrument, and touch [Execute] in the [Help] dialog box. The instrument power turns OFF. The instrument needs to be serviced. Contact your authorized local Sysmex representative. The instrument can be used on a temporary basis if the barcode reader is changed to not used. For details, see "Basic Operation". (➤Basic Operation "Chapter 5: 5.6.3 Barcode reader setting")

000218 [Host computer communication error]	
Probable cause	Action
Case 1: The power of the host computer is turned off.	Turn on the host computer power, and then follow the instructions in the action message to reset.
Case 2: The cable that connects to the host computer is disconnected.	Reconnect the host computer cable, and then follow the instructions in the action message to reset.
Case 3: The cable that connects to the host computer has a broken wire.	Follow the instructions in the action message to reset.
Case 4: There is an error in the host computer.	Resolve the error in the host computer, and then follow the instructions in the action message to reset.

000219 [Conveyor communication error]	
Probable cause	Action
Case 1: There is an error in the conveyor.	Clear the conveyor error.
Case 2: The conveyor power is turned OFF.	Turn ON the power of the conveyor.
Case 3: The cable that connects to the conveyor is disconnected.	Reconnect the cable that connects to the conveyor.
Case 4: The cable that connects to the conveyor has a broken wire.	Contact your authorized local Sysmex representative.

Errors related to user maintenance and warnings

000221 [Shutdown is required]	
Probable cause	Action
It is time to perform shutdown.	Touch [Execute] in the [Help] dialog box. The [Shutdown] dialog box appears. For details, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

000222 [Cleaning is required (warning)]	
Probable cause	Action
It is time to perform [Shutdown 2].	Touch [Execute] in the [Help] dialog box. The [Shutdown] dialog box appears. For details, see the following procedure. (➤**P.81** "Chapter 2: 2.4 Performing [Shutdown 2]")

000224 [Replace spreader glass]	
Probable cause	Action
It is time to replace the spreader glass.	Touch [Execute] in the [Help] dialog box and replace the spreader glass. For details, see the following procedure. (➤**P.64** "Replacing the spreader glass")

Replacing the spreader glass

Risk of infection

Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

1 Touch [Execute] in the [Help] dialog box.

A dialog box appears.

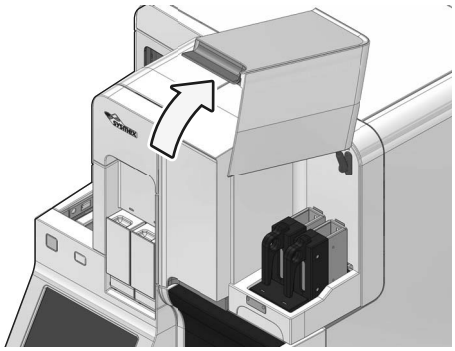
2 Make sure that the smear unit cover is closed.

3 Touch [OK].

The smear unit moves to the position at which the spreader glass can be replaced. Wait until the smear unit cover unlocks once the smear unit stops moving.

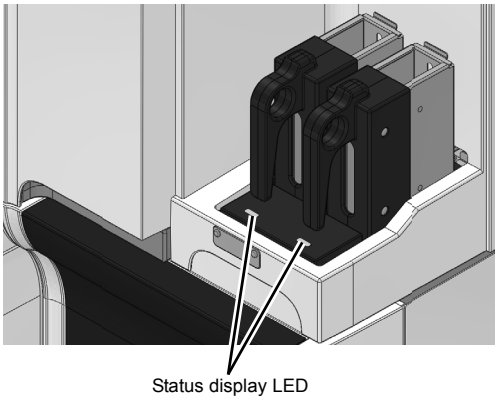
4 Open the slide set unit cover.

Lift the cover up until it locks into place.



5 Make sure that the status display LED on the slide set unit lights in green or red.

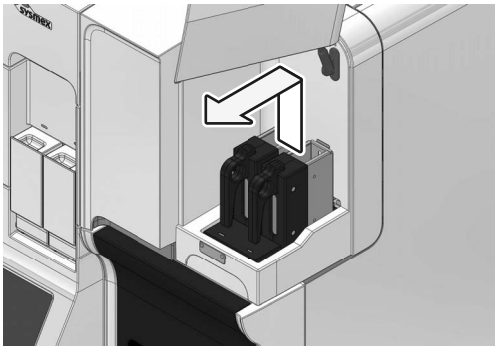
Wait until the status display LED turns if it not lit in green or red.



Status display LED

6 Remove the slide supply cassette from the slide set unit.

Remove both the left and right slide supply cassettes.

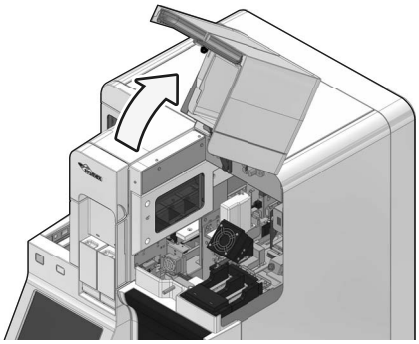


7 Close the slide set unit cover.

Lightly press the cover to unlock and then close the cover.

8 Open the smear unit cover.

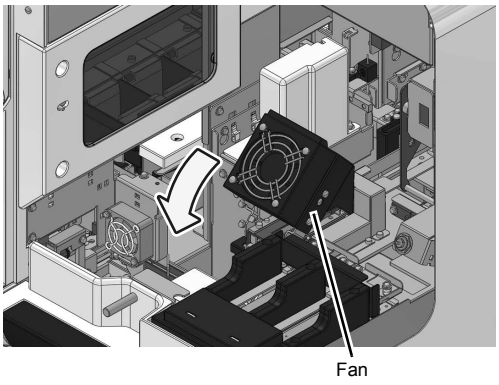
Lift the cover up until it locks into place.



⚠ Warning

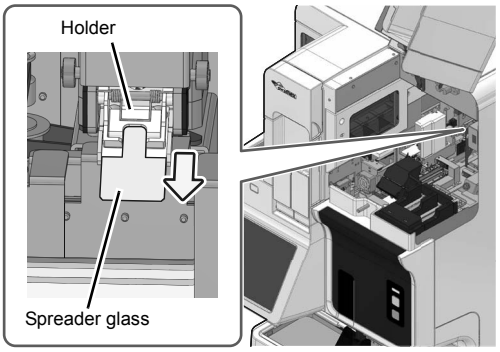
Be sure to open the smear unit cover until it locks in place.
Otherwise the cover may fall and cause injury.

9 Rotate the fan forward and down.



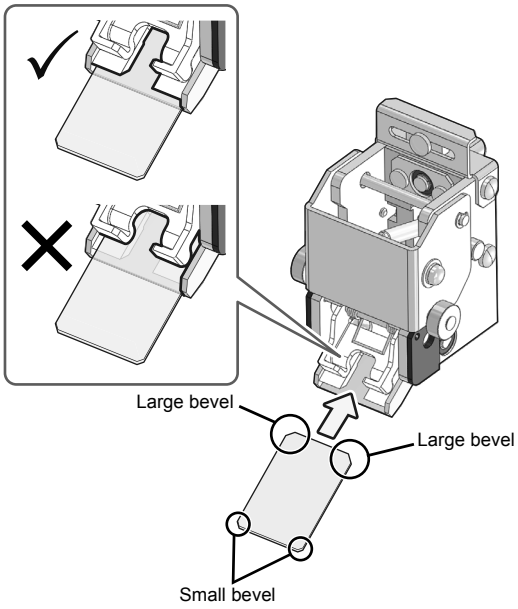
10 Remove the spreader glass from the holder.

To remove, grasp the spreader glass and pull it forward.



11 Set the new spreader glass in the holder.

Set the spreader glass so that the edge with the smaller chamfer faces forward.
Insert the spreader glass all the way into the spreader glass holder until it stops.



⚠ Caution

Insert the spreader glass into the position shown in the figure.
If inserted in the wrong position, smears will not be prepared correctly.

12 Replace the fan in its original position.

13 Close the smear unit cover.

Lightly press the cover to unlock and then close the cover.

14 Open the slide set unit cover.

15 Install the slide supply cassette.

16 Close the slide set unit cover.

17 Touch [OK].
The smear unit returns to its home position.

18 Touch [OK].
The dialog box closes.

Note:
If [OK] is touched, the spreader glass operation count is reset after replacing the spreader glass.

000104
[Stain 2 solution has expired]

000245
[Stain 1 solution has expired]

Probable cause	Action
The stain solution has expired.	Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000188
[CELLCLEAN AUTO is not placed correctly]

Probable cause	Action
The CELLCLEAN AUTO is not placed correctly.	Place CELLCLEAN AUTO correctly and touch [Accept] in the [Help] dialog box. For details, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

000190
[Unable to correctly detect CELLCLEAN AUTO.]

Probable cause	Action
The CELLCLEAN AUTO information read by the sampler does not match the CELLCLEAN AUTO information read by the main unit.	Place CELLCLEAN AUTO again and touch [Accept] in the [Help] dialog box. For details, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

000191
[CELLCLEAN AUTO has already been used.]

Probable cause	Action
Used CELLCLEAN AUTO is placed.	Replace the CELLCLEAN AUTO, and touch [Accept] in the [Help] dialog box. For details, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

000192 [Cannot recognize CELLCLEAN AUTO]	
Probable cause	Action
The barcode label on the CELLCLEAN AUTO is dirty or out of position.	Check the barcode label position and check for dirt, and touch [Accept] in the [Help] dialog box. For details, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

000193 [CELLCLEAN AUTO has expired.]	
Probable cause	Action
The CELLCLEAN AUTO has expired.	Replace the CELLCLEAN AUTO, and touch [Accept] in the [Help] dialog box. For details, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

000198 [Concentrated phosphate buffer has expired]	
Probable cause	Action
The concentrated phosphate buffer is past its expiration date.	Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000234 [Staining pool not set correctly]	
Probable cause	Action
The staining pool is not installed.	Open the stain unit cover, install the staining pool, and close the cover.

000242 [CELLPACK DCL has expired]	
Probable cause	Action
The CELLPACK DCL has expired.	Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000243 [Reagent replenishment inside staining pool reserved]	
Probable cause	Action
Time to replace the stain.	Touch [Accept] in the [Help] dialog box. When the instrument enters the ready state, reagent replacement will take place automatically.

000244 [Phosphate buffer has expired]	
Probable cause	Action
The phosphate buffer has expired.	Touch [Execute] in the [Help] dialog box. The [Reagent replacement] dialog box appears. Replace the reagent with a new one. For details, see the following procedure. (➤**P.22** "Replacing diluent, buffer or stain solution")

000254 [STAT sample preparation completed]	
Probable cause	Action
The slide preparation of an urgent sample has completed.	Touch [Accept] in the [Help] dialog box.

Errors related to the printer

000004 [Slide printer error]	
Probable cause	Action
There is an error in the printer.	Touch [Execute] in the [Help] dialog box. The instrument power turns OFF. If the error has not cleared after turning ON the main power again, contact your authorized local Sysmex representative. Slide preparation can be resumed in [Staining] mode only by touching [Close] in the [Help] dialog box.

000062 [Ink ribbon running low]	
Probable cause	Action
There is little ink left in the ink ribbon.	Touch [Accept] in the [Help] dialog box and prepare a new ink ribbon.

000002 [Ink ribbon not loaded]	
Probable cause	Action
The ink ribbon is not set properly.	Remove the glass slide from inside the smear and print block, and set the ink ribbon correctly. For details, see the following procedure. (➤**P.71** "Replacing the ink ribbon") Close the cover and touch [Execute] in the [Help] dialog box. The operation test on the smear mechanism runs.

000003 [Out of ink ribbon (failure)]	
Probable cause	Action
Case 1: Out of ink ribbon.	Remove the glass slide from inside the smear and print block, and replace the ink ribbon. For details, see the following procedure. (➤**P.71** "Replacing the ink ribbon") Close the cover and touch [Execute] in the [Help] dialog box. The operation test on the smear mechanism runs.
Case 2: The ink ribbon has been severed.	Remove the glass slide from inside the smear and print block, and repair or replace the ink ribbon. For details, see the following procedure. (➤**P.71** "Replacing the ink ribbon") Close the cover and touch [Execute] in the [Help] dialog box. The operation test on the smear mechanism runs.
Case 3: The ink ribbon is in the way of the mechanical unit.	Remove the glass slide from inside the smear and print block, and repair or replace the ink ribbon. For details, see the following procedure. (➤**P.71** "Replacing the ink ribbon") Close the cover and touch [Execute] in the [Help] dialog box. The operation test on the smear mechanism runs.

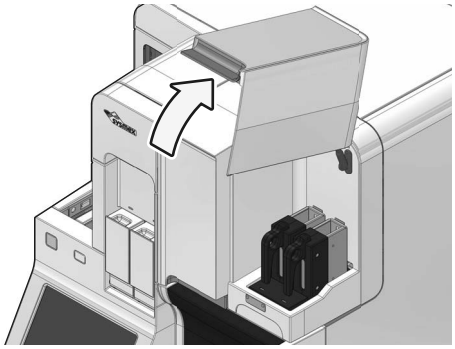
000066 [No Ink ribbon]	
Probable cause	Action
Case 1: Out of ink ribbon.	Replace the ink ribbon with a new one and touch [Accept] in the [Help] dialog box. For details, see the following procedure. (➤**P.71** "Replacing the ink ribbon")
Case 2: The ink ribbon has been severed.	Repair or replace the ink ribbon and touch [Accept] in the [Help] dialog box. For details, see the following procedure. (➤**P.71** "Replacing the ink ribbon")
Case 3: The ink ribbon is in the way of the mechanical unit.	Repair or replace the ink ribbon and touch [Accept] in the [Help] dialog box. For details, see the following procedure. (➤**P.71** "Replacing the ink ribbon")

Replacing the ink ribbon

When replacing ink ribbon, wipe off dirt on the printer.
(➤**P.110** "Chapter 2: 2.14 Wiping off dirt on the printer")

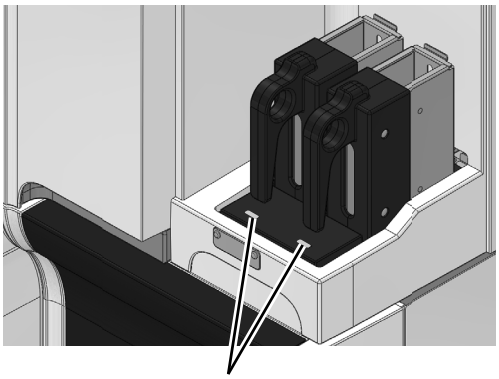
1 Open the slide set unit cover.

Lift the cover up until it locks into place.



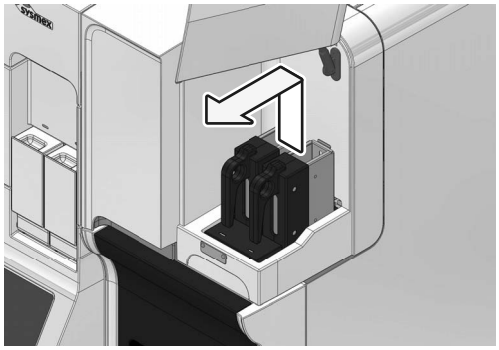
2 Make sure that the status display LED on the slide set unit lights in green or red.

Wait until the status display LED turns if it not lit in green or red.



3 Remove the slide supply cassette from the slide set unit.

Remove both the left and right slide supply cassettes.



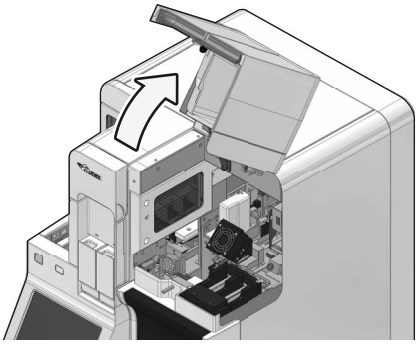
4 Close the slide set unit cover.

Lightly press the cover to unlock and then close the cover.

If sample preparation is in progress, wait until the smear unit cover unlocks after all samples have been fed into the stain unit.

5 Open the smear unit cover.

Lift the cover up until it locks into place.



⚠ Warning

Be sure to open the smear unit cover until it locks in place.
Otherwise the cover may fall and cause injury.

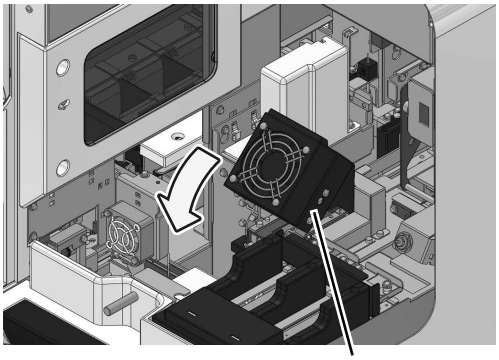
Note:

Printouts will be output for all samples that have been aspirated even when [No Ink ribbon] appears.
Printouts will not be correctly output for samples in the following scenarios.

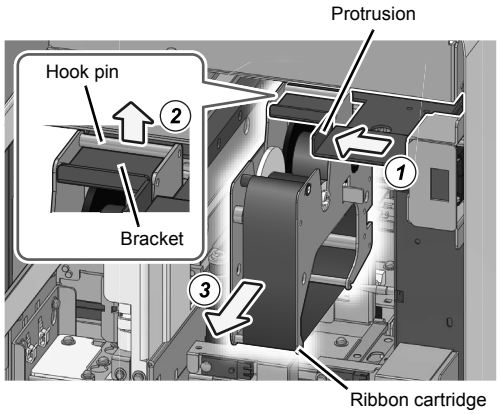
- The ink ribbon has been severed.
- The ink ribbon has jammed in the mechanical unit.

Follow the instructions of the action message to remove the glass slide.

6 Rotate the fan forward and down.



7 Remove the ribbon cartridge.

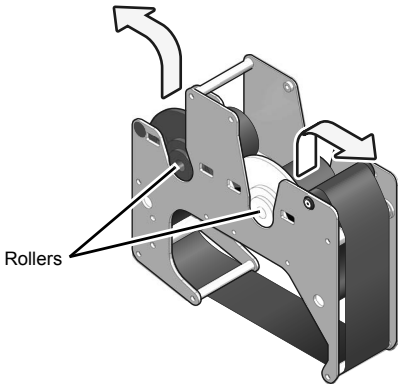


1 **Grasp the protrusion, slide the bracket to the left, and move the ribbon cartridge to the removal position.**

2 **Lift the ribbon cartridge and remove the hook pin from the bracket.**

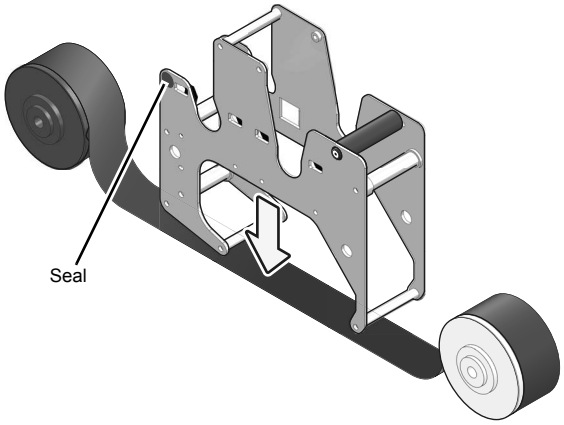
3 **Remove the ribbon cartridge.**

8 Lift both rollers of the ink ribbon and remove the used ink ribbon.

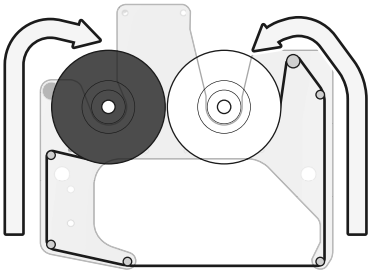


9 Insert the new ink ribbon down into the ribbon cartridge.

Make sure the ink side of the ink ribbon faces downward. Place the blue shaft on the side with the seal, and the white shaft on the opposite side.

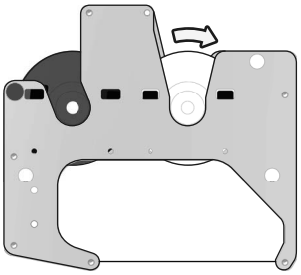


10 Mount the ink ribbon into the ribbon cartridge.

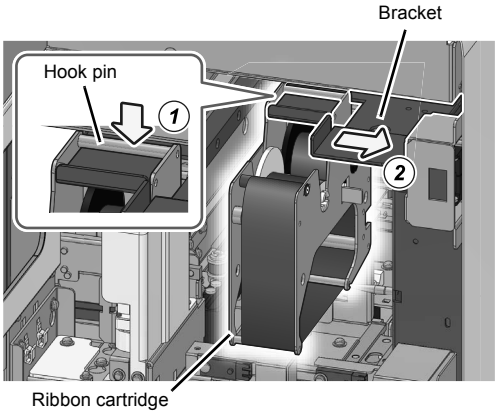


11 Remove the slack in the ribbon.

Turn the white roller in the direction of the arrow illustrated in the figure.



12 Install the ribbon cartridge.



1 **Catch the ribbon cartridge hook pin on the bracket.**

2 **Slide the bracket to the right and mount the ribbon cartridge.**

13 Replace the fan in its original position.

14 Close the smear unit cover.

Lightly press the cover to unlock and then close the cover.

15 Open the slide set unit cover.

16 Install the slide supply cassette.

17 Close the slide set unit cover.

Chapter 2 Maintenance

This chapter describes the procedures for maintenance, replacing and replenishing supplies, and checking instrument operation.

2.1 List of maintenance tasks

To maintain optimum instrument performance, periodic maintenance must be executed.
When using the instrument on a continuous basis, perform "Daily maintenance" once every 24 hours.
Execute maintenance according to the schedule below. Record the maintenance tasks that are executed in the maintenance and inspection checklist. (➤**P.128** "2.23 Maintenance and inspection checklist")

Risk of infection

Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

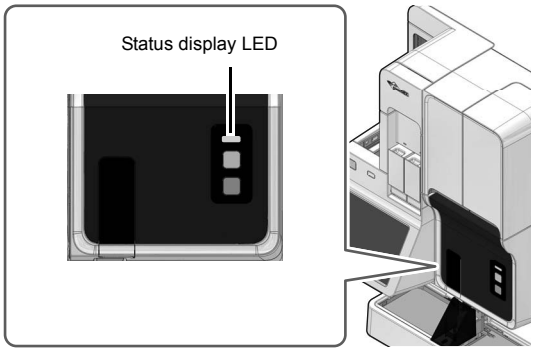
Maintenance task		
Daily maintenance	Shutdown	➤Basic Operation "Chapter 1:1.3 Shutdown"
Weekly maintenance	Wipe dirt off spreader glass	➤**P.107**
Monthly maintenance	Performing [Shutdown 2]	➤**P.81**
As-needed maintenance	Loading glass slides	➤**P.85**
	Replacing the reagent	➤**P.87**
	Replacing the spreader glass	➤**P.94**
	Replacing the fuse	➤**P.97**
	Replacing the ink ribbon	➤**P.100**
	Replenishing the reagent	➤**P.103**
	Cleaning the staining pool	➤**P.104**
	Cleaning the smear/stain unit	➤**P.106**
	Wiping off dirt on the printer	➤**P.110**
	Replacing the waste fluid tank	➤**P.127**

2.2 Displaying the maintenance screen

Specific maintenance tasks, operation checks, and operation tests are performed by displaying the various screens for maintenance from the [Maintenance] screen.

1 Make sure that the instrument is in the ready state.

If the status display LED is not lit green, wait until it lights.



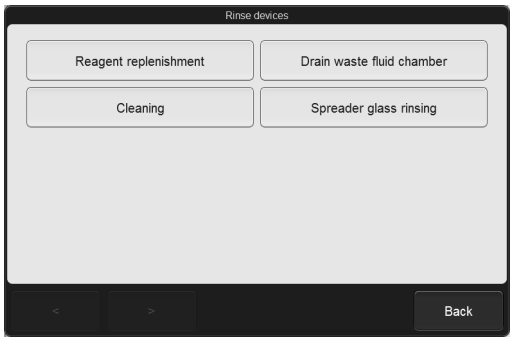
2 Touch [Maintenance] in the [Menu] screen.

The [Maintenance] screen appears.

[Maintenance] screen

3 Touch the icon of the desired maintenance item.

The menu dialog box of the maintenance item appears.



e.g. [Rinse devices] dialog box

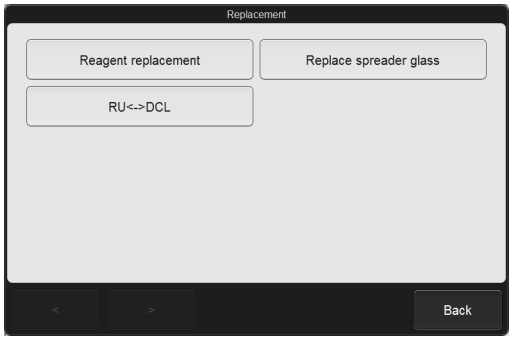
2.3 [Maintenance] screen

Touch [Maintenance] in the [Menu] screen to display the [Maintenance] screen. Display the menu dialog box of the desired maintenance item from the [Maintenance] screen.

[Maintenance] screen

[Replacement]	Touch to display the [Replacement] dialog box for selecting a replacement target. (➤**P.78** "2.3.1 [Replacement] dialog box")
[Rinse devices]	Touch to display the [Rinse devices] dialog box for selection of the unit to be rinsed and the rinse method. (➤**P.78** "2.3.2 [Rinse devices] dialog box")
[Operation test]	Touch to display the [Operation test] dialog box for selecting a unit to check for its operations. (➤**P.79** "2.3.3 [Operation test] dialog box")
[Check status]	Touch to display the [Check status] dialog box for checking the status. (➤**P.80** "2.3.4 [Check status] dialog box")
[Version Information]	Touch to display the [Version Information] dialog box.
[System configuration]	Touch to display a dialog box, which allows you to check the system configuration.
[Check CF status]	Touch to display the [Check CF status] dialog box for checking the CF-70 status. (➤**P.80** "2.3.5 [Check CF status] dialog box")
[Back]	The screen returns to the [Menu] screen.

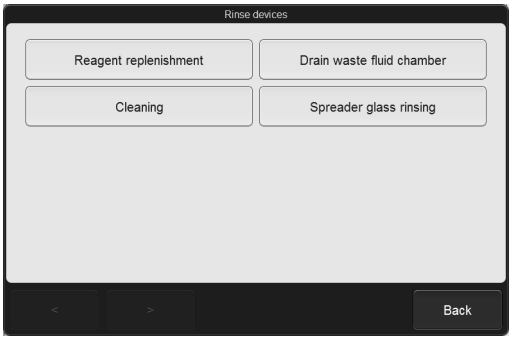
2.3.1 [Replacement] dialog box



[Replacement] dialog box

[Reagent replacement]	Touch to replace the reagent. (➤**P.87** "2.6 Replacing the reagent")
[Replace spreader glass]	Touch to replace the spreader glass. (➤**P.94** "2.7 Replacing the spreader glass")
[RU<->DCL]	Touch to switch between CELLPACK DST and CELLPACK DCL. (➤**P.92** "2.6.5 Temporarily use CELLPACK DCL") (➤**P.93** "2.6.6 End temporary use of CELLPACK DCL")

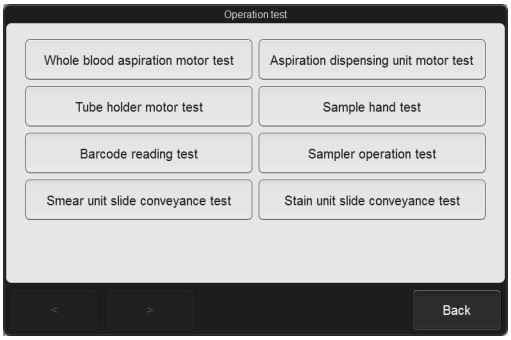
2.3.2 [Rinse devices] dialog box



[Rinse devices] dialog box

[Reagent replenishment]	Touch to replenish a reagent. (➤**P.103** "2.10 Replenishing the reagent")
[Drain waste fluid chamber]	Touch to discharge waste fluid that has collected in the waste fluid chamber.
[Cleaning]	Touch to clean smear unit and stain unit. (➤**P.106** "2.12 Cleaning the smear/stain unit")
[Spreader glass rinsing]	Touch to wipe dirt off the spreader glass. (➤**P.107** "2.13 Wipe dirt off spreader glass")

2.3.3 [Operation test] dialog box

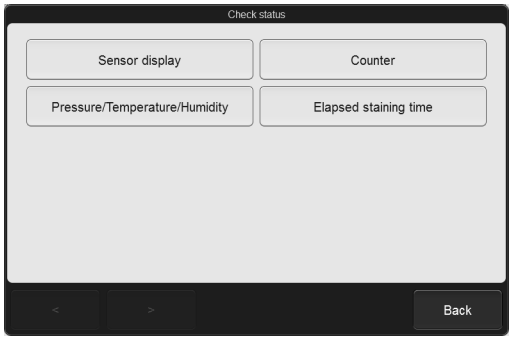


[Operation test] dialog box

[Whole blood aspiration motor test]	Touch to run an operation test on the whole blood aspiration motor. (➤**P.114** "2.15.1 Operation test on the motor")
[Aspiration dispensing unit motor test]	Touch to run an operation test on the aspiration dispensing unit motor. (➤**P.114** "2.15.1 Operation test on the motor")
[Tube holder motor test]	Touch to perform an operation test on the sample holder motor. (➤**P.114** "2.15.1 Operation test on the motor")
[Sample hand test]	Touch to run an operation test on the sample hand. (➤**P.114** "2.15.2 Operation test on the sample hand")
[Barcode reading test]	Touch to run a reading test on the barcode reader in the instrument. (➤**P.115** "2.15.3 Reading test on the barcode reader")
[Sampler operation test]*	Touch to run an operation test on the sampler. (➤**P.116** "2.15.4 Operation test on the sampler")
[Smear unit slide conveyance test]	Touch to run an operation test of glass slide conveyance in the smear unit. (➤**P.117** "2.15.5 Smear unit slide conveyance test")
[Stain unit slide conveyance test]	Touch to run an operation test of glass slide conveyance in the stain unit. (➤**P.119** "2.15.6 Stain unit slide conveyance test")

* This is not displayed in some instrument configurations.

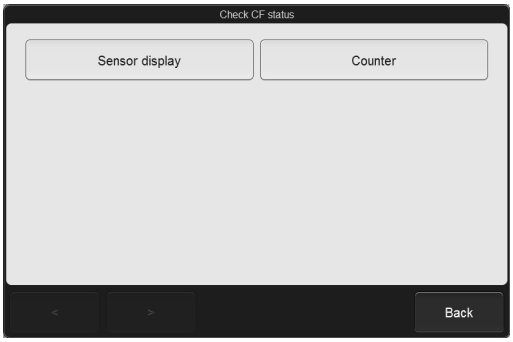
2.3.4 [Check status] dialog box



[Check status] dialog box

[Sensor display]	Touch to check the status of each sensor. (➤**P.121** "2.16 Checking the status of the instrument (sensor)")
[Counter]	Touch to check the number of smears prepared and the operation count of each unit. (➤**P.122** "2.17 Checking the operation count (counter)")
[Pressure/ Temperature/ Humidity]	Touch to check the pressure, temperature and humidity inside the instrument. (➤**P.123** "2.18 Confirming the instrument pressure/temperature/ humidity")
[Elapsed staining time]	Touch to check the elapsed time since startup or replacing reagent in the staining pool. (➤**P.124** "2.19 Checking the elapsed staining time")

2.3.5 [Check CF status] dialog box



[Check CF status] dialog box

[Sensor display]	Touch to check the status of CF-70 sensor. (➤**P.125** "2.20 Checking the CF-70 status (sensor)")
[Counter]	Touch to check the count that the CF-70 transports glass slide. (➤**P.126** "2.21 Checking the operation count of the CF-70 (counter)")

2.4 Performing [Shutdown 2]

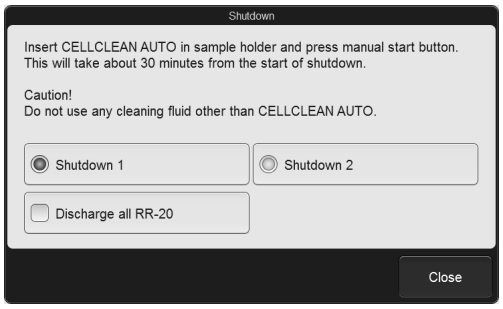
Perform [Shutdown 2] once a month or when instrument will not be used for 1 week or more after the day's work. [Shutdown 2] cleans the hydraulic line, and cleans the stain chamber with methanol/ethanol. [Shutdown 2] ends by filling the stain chamber with methanol/ethanol, and fills the chamber with stain the next time the power is turned on.

2.4.1 Performing [Shutdown 2] using the sample holder

The sample holder can be used to perform a shutdown when the sampler or transportation system cannot be used due to a failure, or when the instrument is not configured to read sample barcodes.

1 Touch [Shutdown] in the [Menu] screen.

The [Shutdown] dialog box appears, and the sample holder slides out forward.



[Shutdown] dialog box

[Shutdown 1]/ [Shutdown 2]	You can select the shutdown type.
[Discharge all RR-20]	Displayed only when the instrument is connected to the RR-20. Select this checkbox to drain all of the pure water in chambers of the RR-20.

Note:

[Shutdown 2] is selected in the following cases.

- The instrument was started on the day of the week set in [Shutdown 2 settings]
- More than 40 days has elapsed since the last time [Shutdown 2] was performed

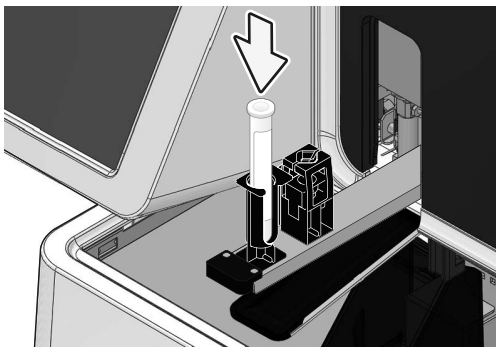
2 If [Shutdown 1] is selected, touch [Shutdown 2]

This step is not necessary if [Shutdown 2] is selected. Go to the step 3.

3 Select the [Discharge all RR-20] checkbox if the instrument will not be used for a long time after shutdown.

4 Set CELLCLEAN AUTO in the sample holder.

Set the CELLCLEAN AUTO in the regular sample tube holder, which is at the main unit front side.



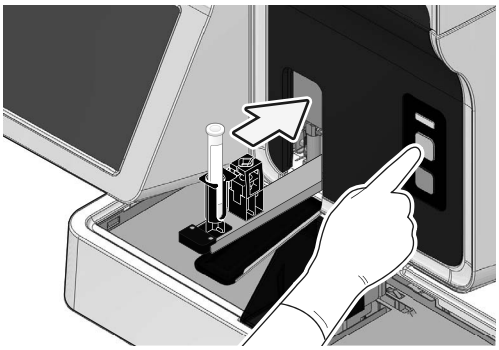
Caution

- Use 1 vial of CELLCLEAN AUTO for each instrument. Do not reuse CELLCLEAN AUTO that has already been used.
- During shutdown, other sample tubes are not accepted.

5 Press the start switch on the main unit front side.

The [Shutdown] dialog box closes, and the sample holder retracted into the instrument.

If a sample is being prepared, the instrument will enter the shutdown ready state. When all operations are finished, CELLCLEAN AUTO aspiration starts.



- **If you want to cancel shutdown**

  Shutdown can be canceled while the instrument is in the shutdown ready state.

1 Touch [Scheduled shutdown] in the status area.

The confirmation dialog box appears.

2 Touch [Yes].

The dialog box closes and shutdown will be canceled.

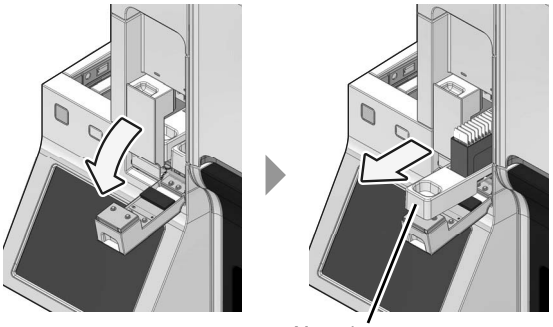
6 Shutdown is automatically performed.

Shutdown takes approximately 20 minutes after CELLCLEAN AUTO aspiration starts. The sample holder will be ejected forward once the CELLCLEAN AUTO aspiration finishes.

7 Remove the glass slide used for cleaning.

The cleaned glass slide will be stored in the magazine in the manual magazine holder.

Remove the magazine used for cleaning from the manual magazine holder.



Caution

When removing the magazine, do not grab the glass slide. Remove the magazine one by one, and take care not to drop the glass slides. Otherwise the glass slides may break up and cause injury.

8 Remove the CELLCLEAN AUTO.

When all operations are finished, the sample holder automatically retracts into the main unit, and the instrument power turns OFF.

Note:

If the CELLCLEAN AUTO is not removed before shutdown finishes, a notification that a sample tube remains in the sample holder will appear at the next startup.

2.4.2 Performing [Shutdown 2] using a sample rack

A sample rack can be used to perform a shutdown. If a sample rack with a sample that is undergoing sampler preparation is in the right pool, shutdown can be performed after sampler preparation.

Caution

If you will use a sample rack for shutdown, set the instrument so that it uses sample barcodes. For details, see "Basic Operation".
(➤Basic Operation "Chapter 5: 5.6.3 Barcode reader setting")

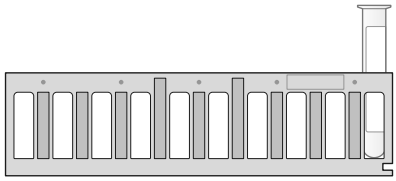
Note:

[Shutdown 2] is selected in the following cases.
- The instrument was started on the day of the week set in [Shutdown 2 settings]
- More than 40 days has elapsed since the last time [Shutdown 2] was performed

1 Place CELLCLEAN AUTO in the sample rack.

Place CELLCLEAN AUTO in position 10 of the sample rack.

1 2 3 4 5 6 7 8 9 10

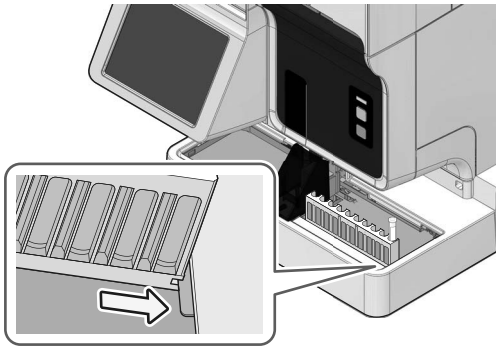


Caution

- Use 1 vial of CELLCLEAN AUTO for each instrument. Do not reuse CELLCLEAN AUTO that has already been used.
- Do not mix normal samples together with CELLCLEAN AUTO.

2 Place the sample rack in the right sampler pool.

Align the groove in the sample rack onto the raised portion on the right side as viewed when facing the instrument.



- **When the sampler is in operation**

  Next after the sample rack with sample tubes, set the sample rack containing CELLCLEAN AUTO at the very front of the right sampler pool.

  Once the CELLCLEAN AUTO barcode is read, the instrument enters the shutdown ready state.

- **When the sampler is stopped**

1 Touch [Sampler] in the status area.

A dialog box appears.

2 Touch [OK].

The dialog box closes, and the sample rack transportation starts.

When the CELLCLEAN AUTO barcode is read, the instrument will enter the shutdown ready state if a sample is being prepared.

Information

The sample preparation process will not be performed for any sample racks containing sample tubes loaded after the sampler rack containing CELLCLEAN AUTO.

- **If you want to cancel shutdown**

  Shutdown can be canceled while the instrument is in the shutdown ready state.

1 Touch [Scheduled shutdown] in the status area.

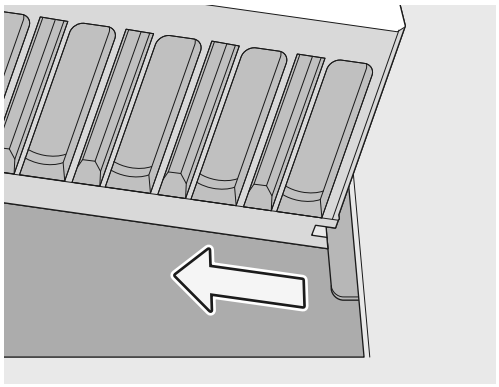
The confirmation dialog box appears.

2 Touch [Yes].

The dialog box closes and shutdown will be canceled.

3 Remove the sample rack whose CELLCLEAN AUTO has been aspirated.

The finished sample racks are transported to the left sampler pool. When removing the sample rack, check that the protrusion has cleared the groove, and then remove the sample rack.



4 Shutdown is automatically performed.

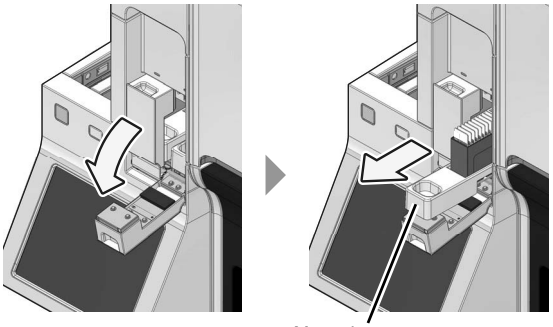
When all operations are finished, CELLCLEAN AUTO aspiration starts.

Shutdown takes approximately 20 minutes after CELLCLEAN AUTO aspiration starts.

5 Remove the glass slide used for cleaning.

The cleaned glass slide will be stored in the magazine in the manual magazine holder.

Remove the magazine used for cleaning from the manual magazine holder.



⚠ Caution

When removing the magazine, do not grab the glass slide. Remove the magazine one by one, and take care not to drop the glass slides. Otherwise the glass slides may break up and cause injury.

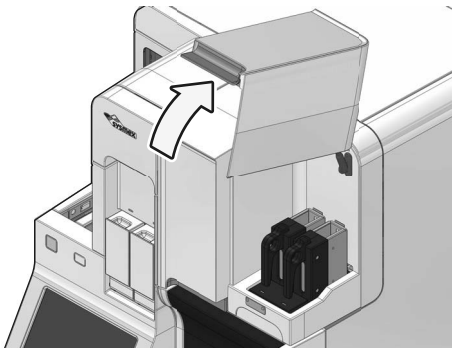
2.5 Loading glass slides

Information

Make sure that there are no oily substances such as sebum and no dirt or debris on the frosted end of glass slides.
Ink will not transfer to the glass slide and printing will not be possible.

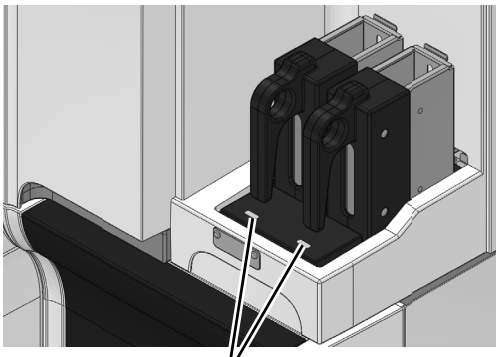
1 Open the slide set unit cover.

Lift the cover up until it locks into place.



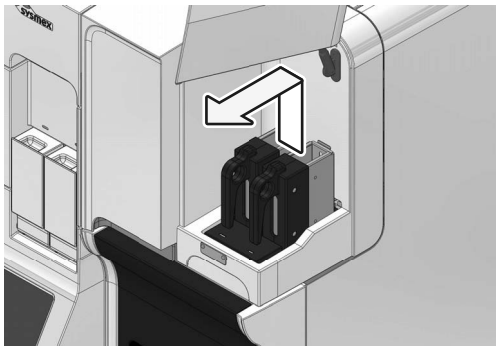
2 Make sure that the status display LED on the slide set unit lights in green or red.

Wait until the status display LED turns if it not lit in green or red.

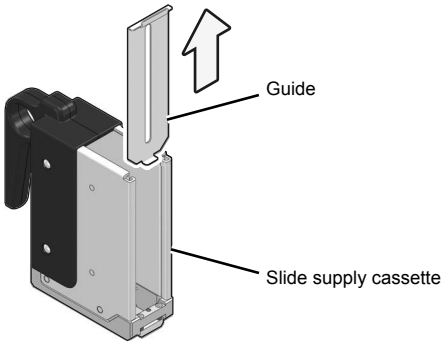


3 Remove the slide supply cassette from the slide set unit.

The slide set unit has left and right holders, allowing separation of the glass slides to meet your laboratory's needs.

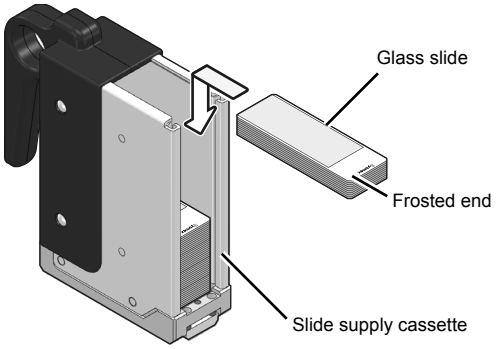


4 Remove the slide supply cassette guide.



5 Load the new glass slide.

As illustrated in the figure below, load the glass slide so that the frosted end faces upwards in the slide supply cassette.



6 Install the slide supply cassette guide.

7 Install the slide supply cassette.

8 Close the slide set unit cover.

Lightly press the cover to unlock and then close the cover.

2.6 Replacing the reagent

Display the [Reagent replacement] dialog box while replacing reagent.

2.6.1 [Reagent replacement] dialog box

You can check reagent levels and replace reagent from the [Reagent replacement] dialog box.

1 Touch [Maintenance] in the menu screen.

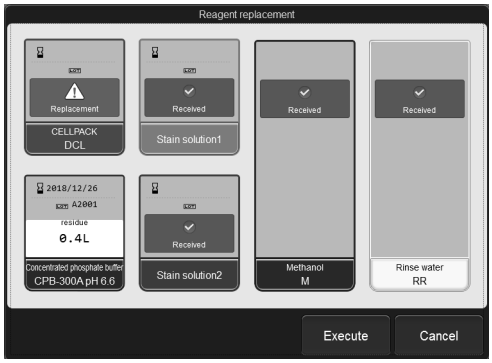
The [Maintenance] screen appears.

2 Touch [Replacement].

The [Replacement] dialog box appears.

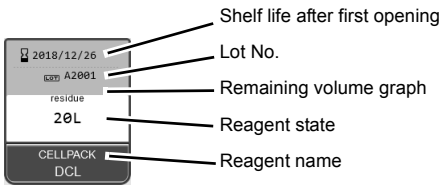
3 Touch [Reagent replacement].

The [Reagent replacement] dialog box appears.



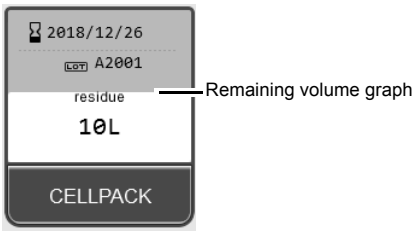
[Reagent replacement] dialog box

The dialog box displays the reagent information and reagent remaining volume.



Shelf life after first opening	Displays the shelf life of the reagent after first opening. This is not displayed if the reagent has not been registered. When the shelf life after first opening has expired, it is displayed in white letter on a red background.
Lot No.	Displays the lot number of the reagent. This is not displayed if the reagent has not been registered.
Reagent state	For CELLPACK DCL and concentrated phosphate buffer, the reagent level is shown. This is not displayed if the reagent has not been registered. When the reagent runs low, the background becomes yellow. During CELLPACK DCL replacement, progress is indicated as "0 to 100 %".
Reagent name	Displays the reagent name.
Remaining volume graph	The remaining CELLPACK DCL and concentrated phosphate buffer reagent appears as a graph. This is not displayed if the reagent has not been registered, or if the reagent has run out.

When the RU-20 is connected, the remaining volume of CELLPACK is displayed as below. The remaining volume is displayed according to the 4-grade system.



Note:

The [Reagent replacement] dialog box can also be displayed by touching the reagent status in the status area.
If a reagent replacement error message appears, this can be displayed by touching [Execute] in the [Help] dialog box. A [Received] checkmark appears next to the error reagent. In this case, only the reagent with the error can be replaced. Even if an error does not occur, the reagent can be replaced by putting a checkmark manually.

2.6.2 Replacing diluent, buffer or stain solution

Risk of infection

Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

1 Prepare the new reagent.

Check that the reagent has not expired.

Caution

- Check the reagent to be replaced.
  If a wrong reagent is replaced, smear quality may not be suitable for microscopic examination.
- Place the reagent container at a level no more than 1 meter above or below the bottom of the analyzer. Do not put reagents on top of the instrument.
- The new reagent must be left for at least 24 hours at room temperature (15 to 30 °C).
- If reagent spills, immediately wipe it off using wet cloth or the like.

2 Display the [Reagent replacement] dialog box.

(➤**P.87** "2.6.1 [Reagent replacement] dialog box")

3 Input the reagent information of the new reagent.

Input by barcode scanning

Scan the barcode on the outer box of the new reagent with a hand-held barcode reader. The barcode to be scanned varies by reagent type. Scan the appropriate barcode below for the reagent type.

Reagent	Barcode
CELLPACK DCL	Reagent Code
Concentrated phosphate buffer	

The barcode is as shown in the following illustration.

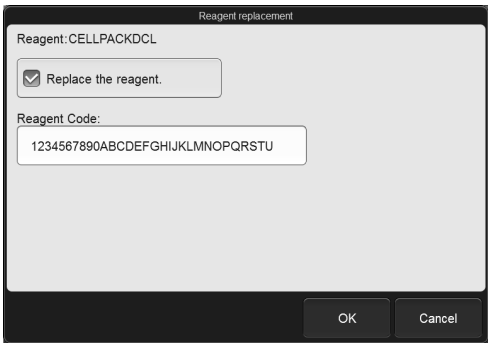
If the surface to be read is not straight, straighten before reading.

e.g. Reagent Code

When the Reagent information is input, [Received] appears in the reagent in the dialog box. The lot number and the expiration date of the new reagent are shown.

Note:

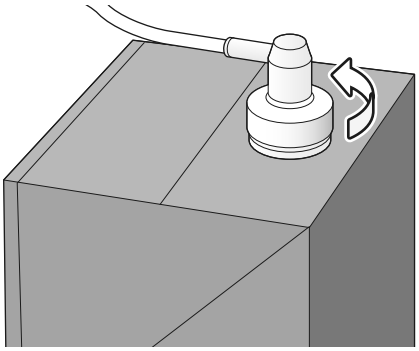
- To enter manually, touch the name of the reagent to be replaced in the [Reagent replacement] dialog box. The dialog box changes as shown below.



  Select the [Replace the reagent.] checkbox, enter the [Reagent Code], and touch [OK].
- When the RU-20 is connected, the reagent information and remaining volume of CELLPACK DST is displayed in the screen. For details on inputting reagent information and reagent replacement, see the XN series or RU-20 Instructions for Use.

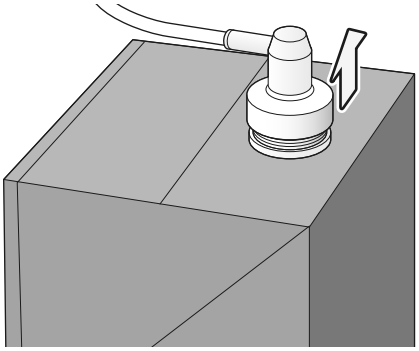
4 **Remove the cap from the new reagent container.**

5 **Remove the cap from the old reagent container.**



e.g. CELLPACK DCL

6 **Pull out the spout set straight up.**



e.g. CELLPACK DCL

> **⚠ Caution**
> Do not touch the aspiration nozzle of the spout set.
> Take care that dust does not get on the spout set.

7 **Insert the spout set straight into the new reagent container and close the cap.**

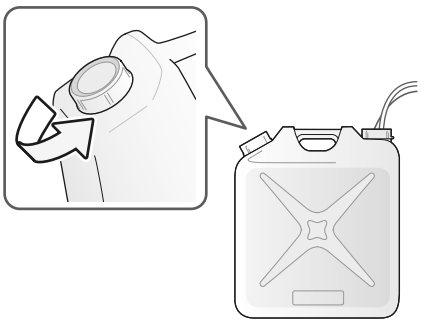
8 **Touch [Execute].**

The replacement of the reagent starts. Wait until it is complete. When the replacement is finished, the [Reagent replacement] dialog box closes.

2.6.3 Replenishing rinse water

> **⚠ Caution**
> When replenishing rinse water, do not remove the float switch.
> Otherwise, smear quality may not be suitable for microscopic examination.

1 **Remove the cap from the bottle that contains rinse water.**



> **Note:**
> When SP-Rinse is used, refilling of the bottle is not needed.

2 **Fill the bottle with rinse water.**

3 **Cap the bottle.**

4 **Display the [Reagent replacement] dialog box.**

(➤**P.87** "2.6.1 [Reagent replacement] dialog box")

5 **Touch [Rinse water].**

6 **Touch [Execute].**

Rinse water replenishment starts. When replenishment is completed, the information in the [Reagent replacement] dialog box will be updated.

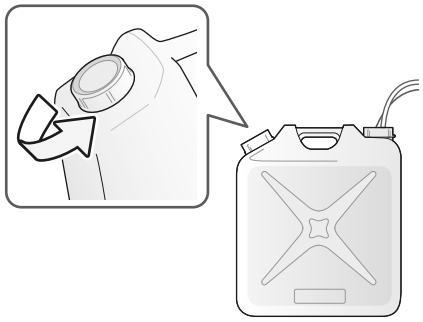
7 **Touch [Cancel].**

The dialog box closes.

2.6.4 Replenishing methanol/ ethanol

> **Warning**
> Methanol/ethanol is flammable at room temperature.
> Read all warnings and any included documentation before using the reagent.

1 **Remove the cap from the bottle that contains methanol/ethanol.**



2 **Fill the bottle with methanol/ethanol, or replace with a new bottle.**

3 **Cap the bottle.**

4 **Display the [Reagent replacement] dialog box.**

(➤**P.87** "2.6.1 [Reagent replacement] dialog box")

5 **Touch [Methanol]/[Ethanol].**

6 **Touch [Execute].**

Methanol/ethanol replenishment starts. When replenishment is completed, the information in the [Reagent replacement] dialog box will be updated.

7 **Touch [Cancel].**

The dialog box closes.

2.6.5 Temporarily use CELLPACK DCL

When the RU-20 cannot be used due to a failure or other problem, you can temporarily use CELLPACK DCL.

Information

- Temporary use of CELLPACK DCL is an emergency measure that is to be employed in the event that a problem occurs on the RU-20. If a problem occurs on the RU-20, contact your Sysmex service representative as soon as possible.
- When CELLPACK DCL is used on a temporary basis, the aspiration intake of the dispensing kit will not reach the bottom of the reagent container, and thus it will not be possible to use all the CELLPACK DCL in the container.
- If the CELLPACK DCL runs out or drops to a level that cannot be aspirated during temporary use of CELLPACK DCL, [CELLPACK DCL aspiration error] will appear. Replace the CELLPACK DCL container and then click [Execute] in the [Help] dialog box to replenish the reagent. After reagent replenishment is complete, execute reagent replacement from the [Reagent replacement] dialog box and register the reagent. This will take longer than regular reagent replacement.

1 Remove the dispensing set from the RU-20 supply tank.

2 Attach the dispensing set to the CELLPACK DCL.

Attach the dispensing set that you removed from the RU-20 supply tank to the CELLPACK DCL.

3 Touch [Maintenance] in the menu screen.

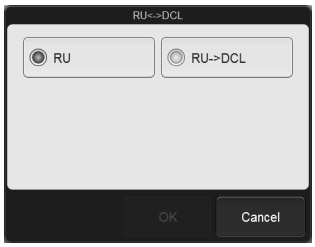
The [Maintenance] screen appears.

4 Touch [Replacement].

The [Replacement] dialog box appears.

5 Touch [RU<->DCL].

The [RU<->DCL] dialog box appears.



[RU<->DCL] dialog box

6 Select [RU->DCL].

7 Touch [OK].

The dialog box closes.

8 Display the [Reagent replacement] dialog box.

(➤**P.87** "2.6.1 [Reagent replacement] dialog box")

Register the CELLPACK DCL.

2.6.6 End temporary use of CELLPACK DCL

To reset the RU-20, end temporary use of CELLPACK DCL.

1 Remove the dispensing set from the CELLPACK DCL.

2 Attach the dispensing set to the RU-20 supply tank.

Attach the dispensing set that you removed from the CELLPACK DCL to the RU-20 supply tank.

3 Touch [Maintenance] in the menu screen.

The [Maintenance] screen appears.

4 Touch [Replacement].

The [Replacement] dialog box appears.

5 Touch [RU<->DCL].

The [RU<->DCL] dialog box appears.

[RU<->DCL] dialog box

6 Select [DCL->RU].

7 Touch [OK].

The dialog box closes and the alarm sounds briefly.

End temporary use of CELLPACK DCL, and use RU-20.

8 Touch [Back] in the [Replacement] dialog box.

The dialog box closes.

2.7 Replacing the spreader glass

When the error message [Replace spreader glass] appears, the spreader glass must be replaced.

> **Risk of infection**
>
> Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
> There is a risk of infection.

1 **Touch [Maintenance] in the menu screen.**

The [Maintenance] screen appears.

2 **Touch [Replacement].**

The [Replacement] dialog box appears.

3 **Touch [Replace spreader glass].**

A dialog box appears.

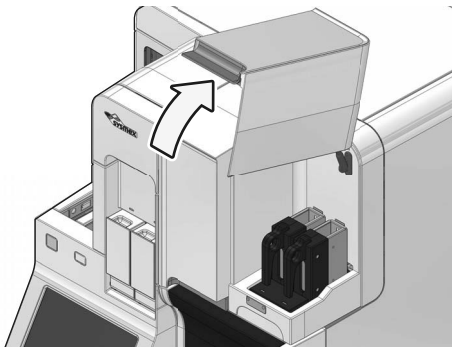
4 **Make sure that the smear unit cover is closed.**

5 **Touch [OK].**

The smear unit moves to the position at which the spreader glass can be replaced. Wait until the smear unit cover unlocks once the smear unit stops moving.

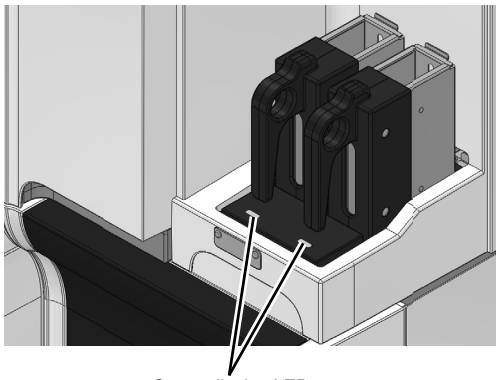
6 **Open the slide set unit cover.**

Lift the cover up until it locks into place.



7 **Make sure that the status display LED on the slide set unit lights in green or red.**

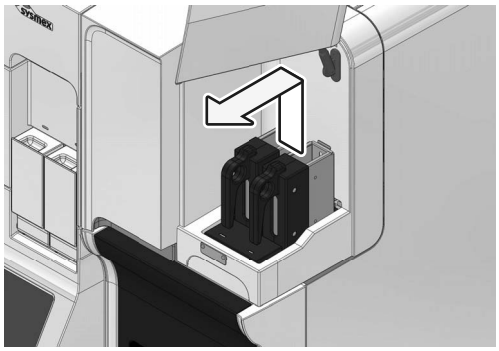
Wait until the status display LED turns if it not lit in green or red.



Status display LED

8 **Remove the slide supply cassette from the slide set unit.**

Remove both the left and right slide supply cassettes.

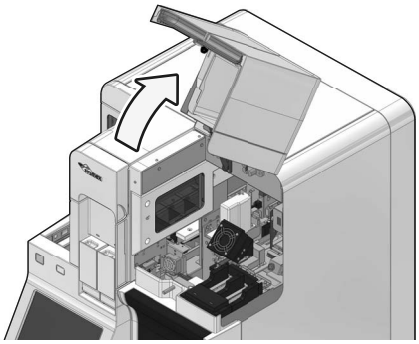


9 **Close the slide set unit cover.**

Lightly press the cover to unlock and then close the cover.

10 Open the smear unit cover.

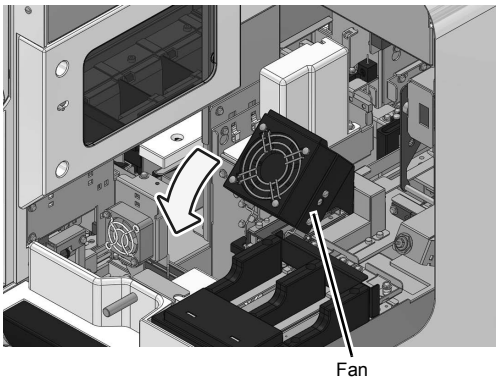
Lift the cover up until it locks into place.



⚠ Warning

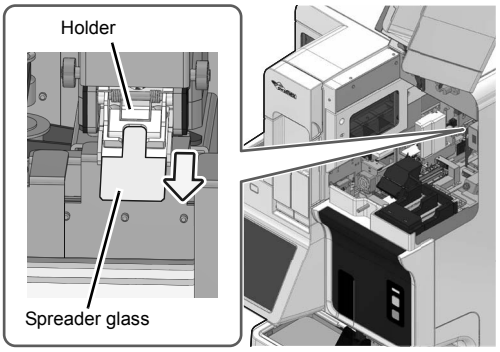
Be sure to open the smear unit cover until it locks in place.
Otherwise the cover may fall and cause injury.

11 Rotate the fan forward and down.



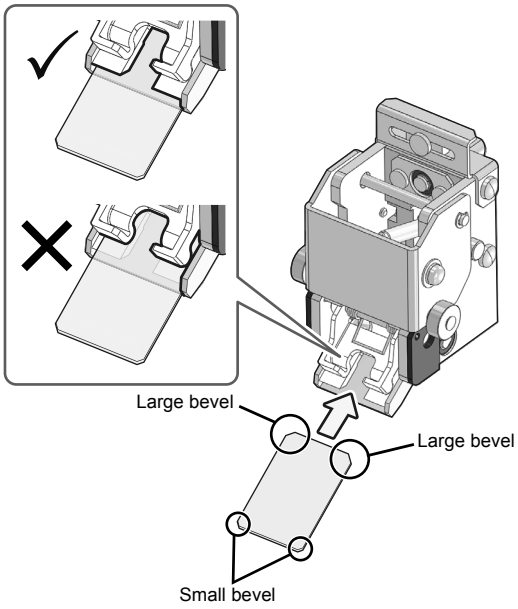
12 Remove the spreader glass from the holder.

To remove, grasp the spreader glass and pull it forward.



13 Set the new spreader glass in the holder.

Set the spreader glass so that the edge with the smaller chamfer faces forward.
Insert the spreader glass all the way into the spreader glass holder until it stops.



⚠ Caution

Insert the spreader glass into the position shown in the figure.
If inserted in the wrong position, smears will not be prepared correctly.

14 Replace the fan in its original position.

15 Close the smear unit cover.

Lightly press the cover to unlock and then close the cover.

16 **Open the slide set unit cover.**

17 **Install the slide supply cassette.**

18 **Close the slide set unit cover.**

19 **Touch [OK].**

The smear unit returns to its home position.

20 **Touch [OK].**

The dialog box closes.

Note:

If [OK] is touched, the spreader glass operation count is reset after replacing the spreader glass.

2.8 Replacing the fuse

Over-current protection fuses are used in the main unit and pneumatic unit. If a fuse blows, replace the fuse immediately.

Warning

- Be sure to unplug the power cable before replacing a fuse.
  This is to avoid the risk of electrical shock.
- Make sure to only use a fuse of the specified type and rating.
  There is a risk of smoke emission and fire.

Information

If a fuse blows immediately after being replaced, the instrument may have a problem. Contact your authorized local Sysmex representative.

Note:

A fuse used in a pneumatic unit differs depending on countries and regions. Contact your authorized local Sysmex representative.

Fuse used in the main unit

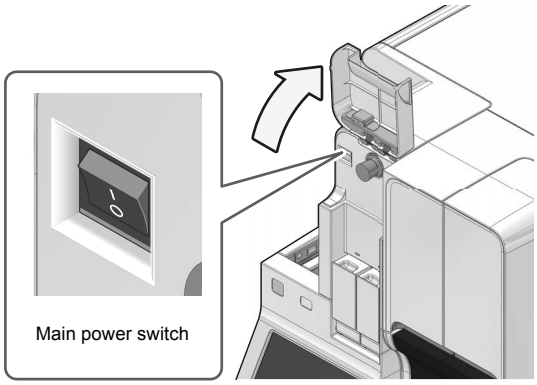
Product code	Item name	Rating	Type	Number used
26677681	Fuse 50T100H	250 V 10 A	Time Lag	2

2.8.1 Replacing a fuse in the main unit

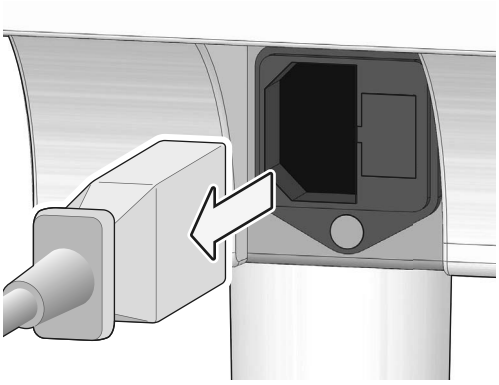
1 **Shutdown the instrument.**

For the shutdown procedure, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

2 **Open the main power switch cover, and turn OFF the main power switch.**



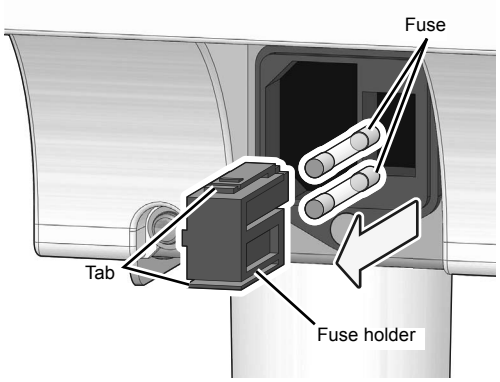
3 **Unplug the power cable from the rear side of the main unit.**



4 **Remove the old fuse.**

1 **On the rear of the unit, pinch the tabs of the fuse holder and pull out forward.**

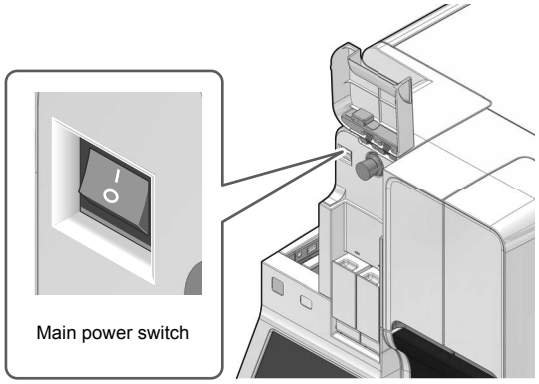
2 **Remove the old fuse from the fuse holder.**



5 **Set a new fuse into the fuse holder, and insert it into the unit.**

6 **Plug in the power cable.**

7 **Turn ON the main power switch.**



8 **Close the main power switch cover.**

9 **Turn ON the power to the instrument.**

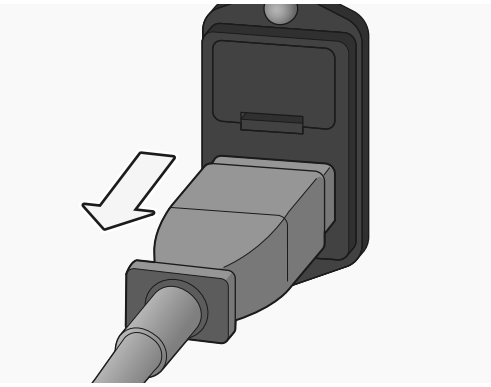
For how to turn ON the power, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.2.2 Turning ON the power")

2.8.2 Replacing a fuse in the pneumatic unit

1 **Shutdown the instrument.**

For the shutdown procedure, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.3 Shutdown")

2 **Unplug the power cable from the rear side of the pneumatic unit.**

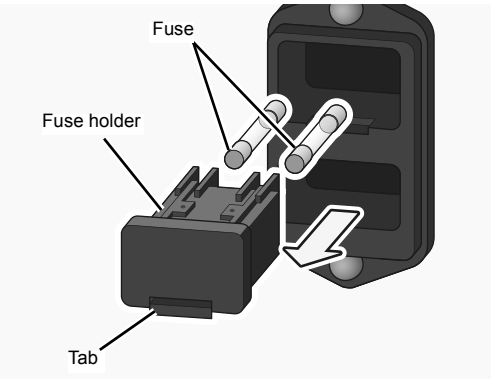


3 **Remove the old fuse.**

1 **On the rear of the pneumatic unit, pull out the fuse holder forward.**

Use a flathead screwdriver to push up on the hook part of the fuse holder, and withdraw the fuse holder.

2 **Remove the old fuse from the fuse holder.**



4 **Set a new fuse into the fuse holder, and insert it into the pneumatic unit.**

5 **Plug in the power cable.**

6 **Turn ON the power to the instrument.**

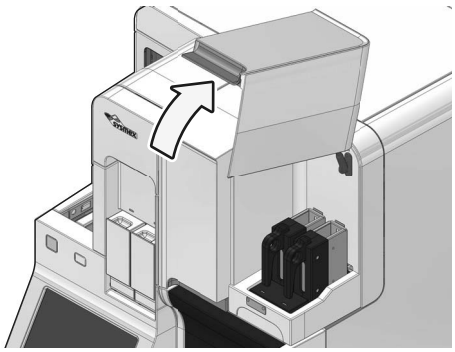
For how to turn ON the power of the instrument, see "Basic Operation". (➤Basic Operation "Chapter 1: 1.2.2 Turning ON the power")

2.9 Replacing the ink ribbon

When the error message [No Ink ribbon] appears, replace the ink ribbon. When replacing ink ribbon, wipe off dirt on the printer. (➤**P.110** "2.14 Wiping off dirt on the printer")

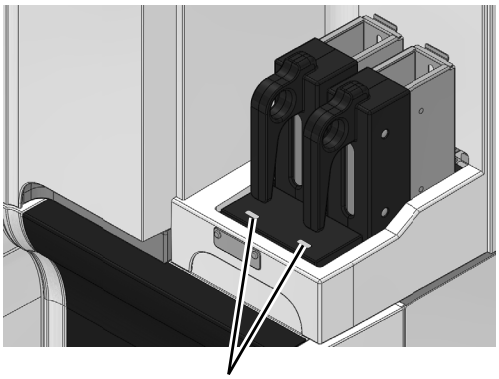
1 Open the slide set unit cover.

Lift the cover up until it locks into place.



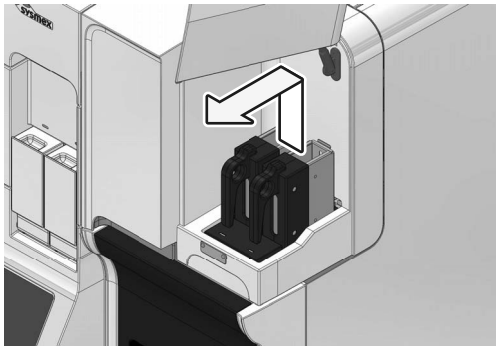
2 Make sure that the status display LED on the slide set unit lights in green or red.

Wait until the status display LED turns if it not lit in green or red.



3 Remove the slide supply cassette from the slide set unit.

Remove both the left and right slide supply cassettes.



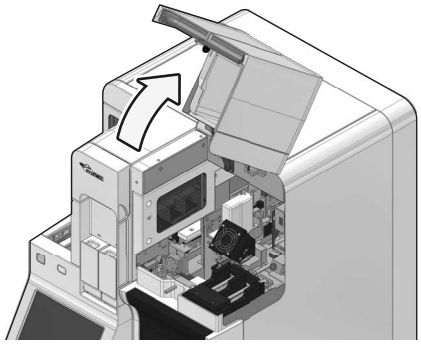
4 Close the slide set unit cover.

Lightly press the cover to unlock and then close the cover.

If sample preparation is in progress, wait until the smear unit cover unlocks after all samples have been fed into the stain unit.

5 Open the smear unit cover.

Lift the cover up until it locks into place.



⚠ Warning

Be sure to open the smear unit cover until it locks in place.
Otherwise the cover may fall and cause injury.

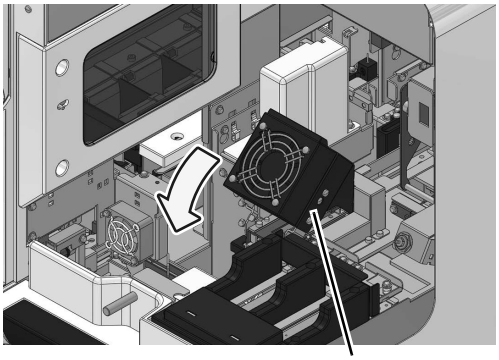
Note:

Printouts will be output for all samples that have been aspirated even when [No Ink ribbon] appears.
Printouts will not be correctly output for samples in the following scenarios.

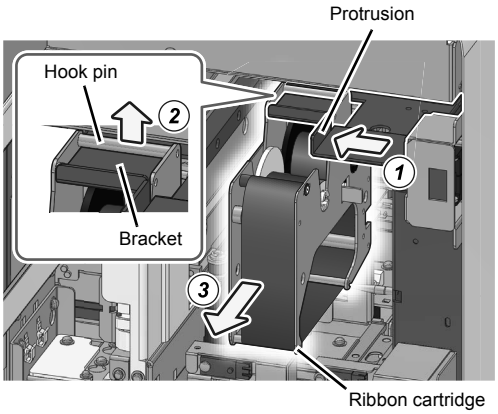
- The ink ribbon has been severed.
- The ink ribbon has jammed in the mechanical unit.

Follow the instructions of the action message to remove the glass slide.

6 Rotate the fan forward and down.



7 Remove the ribbon cartridge.

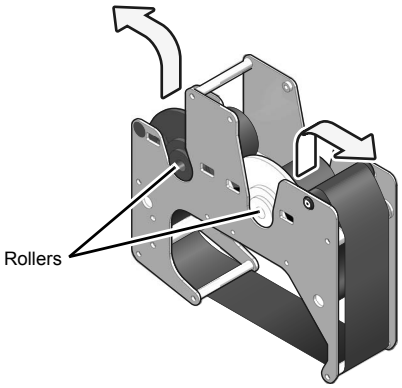


1 **Grasp the protrusion, slide the bracket to the left, and move the ribbon cartridge to the removal position.**

2 **Lift the ribbon cartridge and remove the hook pin from the bracket.**

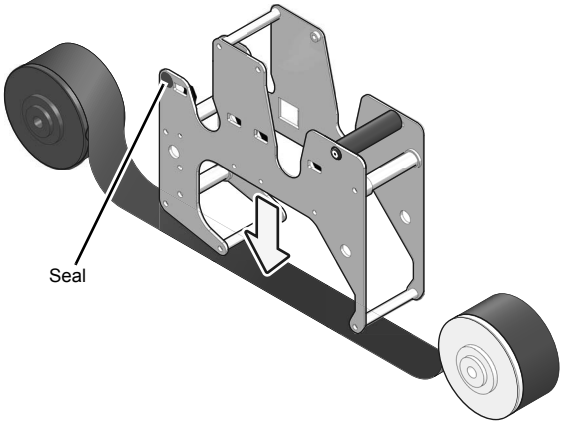
3 **Remove the ribbon cartridge.**

8 Lift both rollers of the ink ribbon and remove the used ink ribbon.

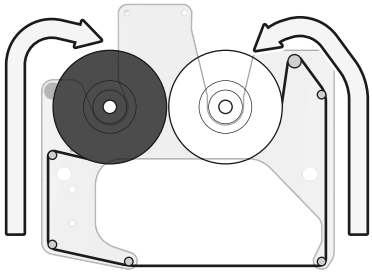


9 Insert the new ink ribbon down into the ribbon cartridge.

Make sure the ink side of the ink ribbon faces downward. Place the blue shaft on the side with the seal, and the white shaft on the opposite side.

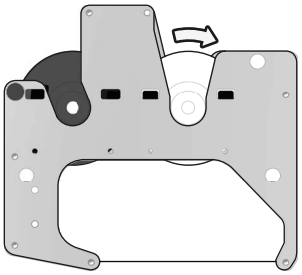


10 Mount the ink ribbon into the ribbon cartridge.

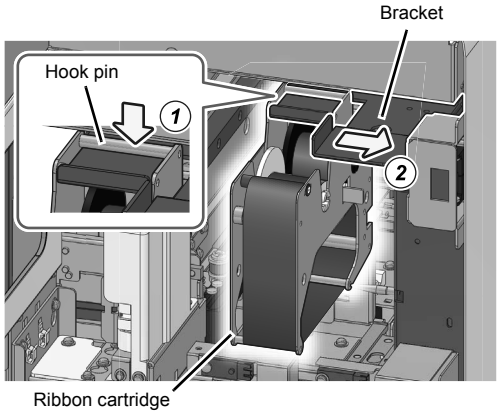


11 Remove the slack in the ribbon.

Turn the white roller in the direction of the arrow illustrated in the figure.



12 Install the ribbon cartridge.



1 **Catch the ribbon cartridge hook pin on the bracket.**

2 **Slide the bracket to the right and mount the ribbon cartridge.**

13 Replace the fan in its original position.

14 Close the smear unit cover.

Lightly press the cover to unlock and then close the cover.

15 Open the slide set unit cover.

16 Install the slide supply cassette.

17 Close the slide set unit cover.

2.10 Replenishing the reagent

If you encounter an error related to reagents, or if you set the wrong reagent, you can replenish the reagent in a flow path.

1 Make sure that the reagent you want to use is connected.

2 Touch [Maintenance] in the menu screen.

The [Maintenance] dialog box appears.

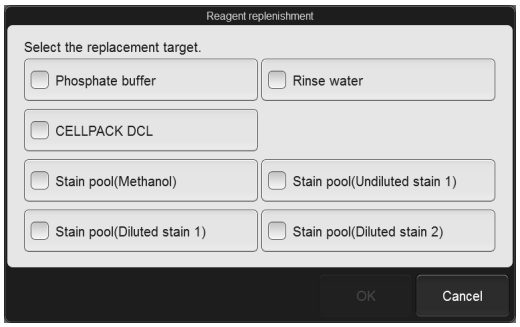
3 Touch [Rinse devices].

The [Rinse devices] dialog box appears.

4 Touch [Reagent replenishment].

The [Reagent replenishment] dialog box appears.

The items displayed depend on your instrument configuration.



[Reagent replenishment] dialog box

5 Select a checkbox of the reagent you want to replenish.

Multiple selections can be made.

6 Touch [OK].

A progress dialog box appears and reagent replenishment begins. When the replenishment is finished, the dialog box closes.

2.11 Cleaning the staining pool

When there is a dirt on the staining pool, remove the staining pool for cleaning. Methanol, ethanol, and lukewarm water can be used as the rinse fluid. Lukewarm water is not as effective as other rinse fluids. Use methanol or ethanol for the rinse process when the staining pool is noticeably dirty.

Risk of infection

Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

Warning

- Methanol/ethanol is flammable at room temperature.
  Read all warnings and any included documentation before using the reagent.
- When using methanol or ethanol, perform the procedure in a well-ventilated area and use as little fluid as necessary to avoid inhaling large amounts of methanol or ethanol vapor.
  If you feel unwell, stop the procedure immediately and rest in a well-ventilated area.
- When using lukewarm water, the temperature of the rinse water must be lower than 45 °C.
  There is a risk of burns.

Note:

- Ethanol has good cleaning effect when diluted with rinse water to a ratio of approximately 70 %.
- Using methanol or ethanol as rinse fluid reduces soaking and cleaning time and also helps prevent rust as it quickly dries after the cleaning process completes.

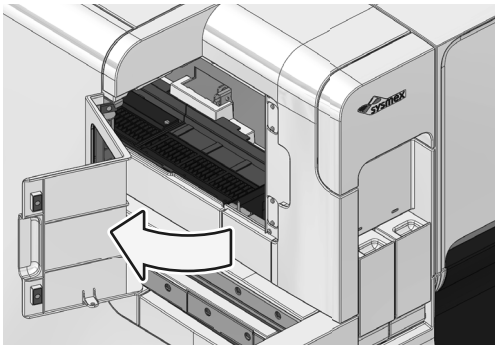
1 **Prepare a container to use for the cleaning process.**

Select a container made from material, such as glass, stainless steel, fluororesin, etc., that has suitable chemical resistance to the chemicals used as rinse fluid.

2 **Shutdown the instrument.**

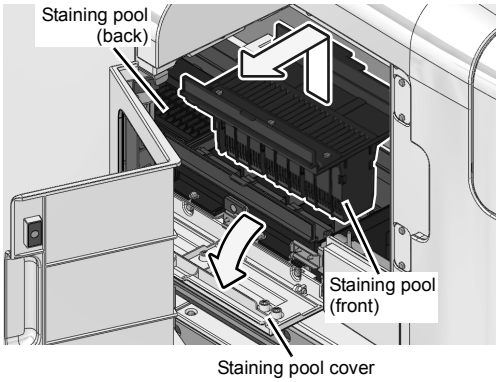
For the shutdown procedure, see "Basic Operation".
(➤Basic Operation "Chapter 1: 1.3 Shutdown")

3 **Open the stain unit cover.**



4 Open the staining pool cover forward and down, and lift and remove the staining pools.

There are 2 staining pools. Remove both pools.



Caution

Do not remove screws of the staining pool. Otherwise, smear quality may not be suitable for microscopic examination.

5 Insert the staining pool into the cleaning container.

6 Add rinse fluid to the container.

Add enough rinse fluid so that the staining pool is completely submerged.

7 Clean the staining pool in the container.

Wear protective gloves and lightly stir to clean.

Caution

Do not soak the staining pool for more than 30 minutes.
Doing so may cause deformation or alteration of the staining pool.

8 Dry the staining pool.

Allow the staining pool to dry naturally.

If you need to wipe off moisture, use a non-woven cloth or other cloth that will not leave fibers.

Make sure that the staining pool is completely dry before mounting it back into the instrument.

Caution

- Allow the staining pool to completely dry before use.
  If moisture remains in the staining pool, the smear sample may experience hemolysis in the staining pool, which may render the smear quality unsuitable for microscopic examination.
- If using warm air to dry the staining pool, ensure that the temperature does not exceed 50 °C. Doing so may cause deformation or alteration of the staining pool.

Information

Extended use of the instrument may result in rust forming on metallic areas of the staining pool but this is normal and will not affect instrument functionality.

9 Install the staining pool.

10 Replace the staining pool cover and close the stain unit cover.

2.12 Cleaning the smear/stain unit

Use CELLCLEAN AUTO to clean the smear unit and stain unit, or the smear unit only.

1 Touch [Maintenance] in the menu screen.

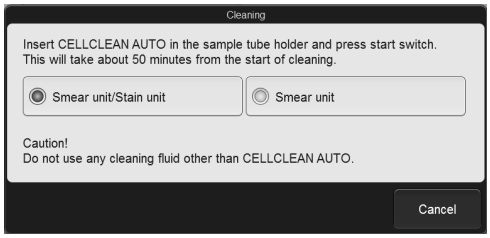
The [Maintenance] screen appears.

2 Touch [Rinse devices].

The [Rinse devices] dialog box appears.

3 Touch [Cleaning].

The [Cleaning] dialog box appears, and the sample holder slides out forward.

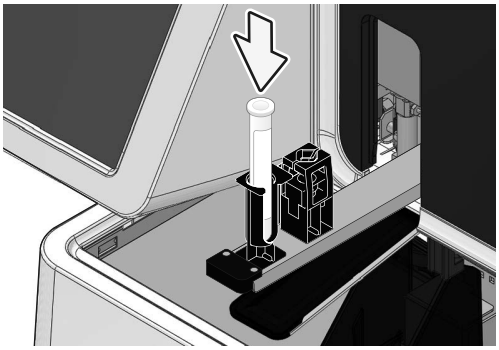


[Cleaning] dialog box

4 Select the part that you want to clean.

5 Set CELLCLEAN AUTO in the sample holder.

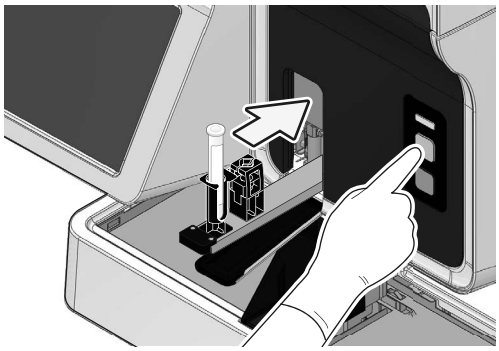
Set the CELLCLEAN AUTO in the regular sample tube holder, which is at the main unit front side.



⚠ Caution

Use 1 vial of CELLCLEAN AUTO for each cleaning. Do not reuse CELLCLEAN AUTO that has already been used.

6 Press the start switch on the main unit front side.

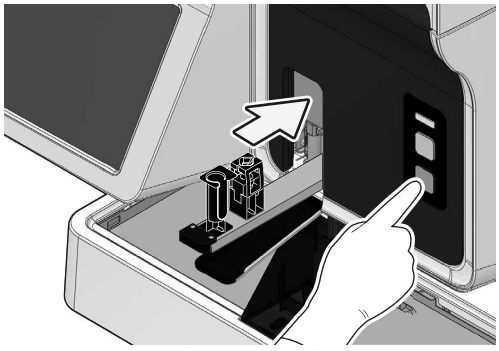


The sample holder retracts and aspiration begins.
When the aspiration is finished, the sample holder is ejected out forward.
The time for cleaning is as shown below.
[Smear unit/Stain unit]: About 50 minutes
[Smear unit]: About 15 minutes
When the cleaning is finished, the dialog box closes.

7 Remove the CELLCLEAN AUTO.

8 Press the mode switch on the main unit front side.

The sample holder retracted into the instrument.



2.13 Wipe dirt off spreader glass

To maintain smear quality for a longer period, the instrument cleans the spreader glass with CELLCLEAN AUTO each time shutdown is performed. However, spreader glass dirt should be manually wiped off once a week. Dirty spreader glass reduces smear quality.
Replace the spreader glass when smear quality does not improve after wiping off the spreader glass dirt or when the spreader glass is damaged or cracked. (➤**P.94** "2.7 Replacing the spreader glass")

Risk of infection

Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

Warning

CELLCLEAN is strong alkaline cleaning fluid. Avoid contact with skin and clothing.
In case of contact, flush with copious amounts of water.

Caution

There is a risk of skin injury and damage to clothing.
Thoroughly wipe any parts of the instrument that come in contact with CELLCLEAN.

1 **Touch [Maintenance] in the menu screen.**

The [Maintenance] screen appears.

2 **Touch [Rinse devices].**

The [Rinse devices] dialog box appears.

3 **Touch [Spreader glass rinsing].**

A dialog box appears.

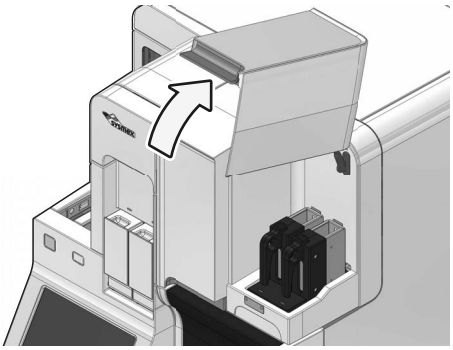
4 **Make sure that the smear unit cover is closed.**

5 **Touch [OK].**

The smear unit moves to the position at which the spreader glass can be wiped. Wait until the smear unit cover unlocks once the smear unit stops moving.

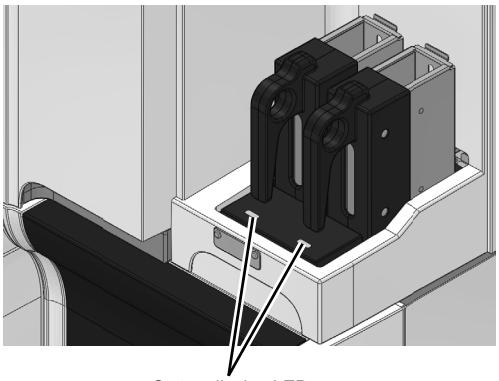
6 Open the slide set unit cover.

Lift the cover up until it locks into place.



7 Make sure that the status display LED on the slide set unit lights in green or red.

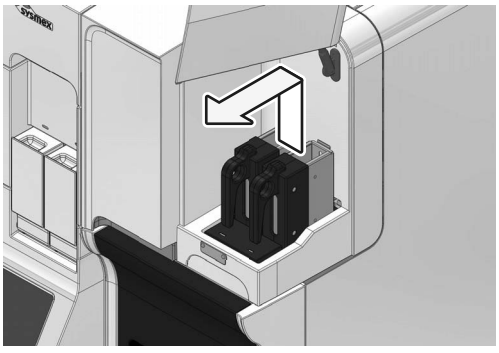
Wait until the status display LED turns if it not lit in green or red.



Status display LED

8 Remove the slide supply cassette from the slide set unit.

Remove both the left and right slide supply cassettes.

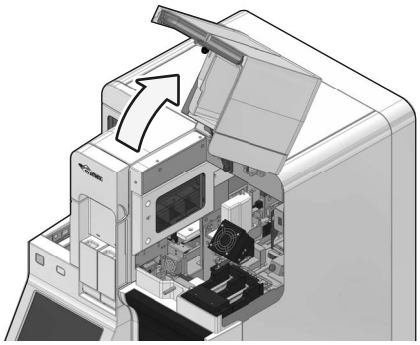


9 Close the slide set unit cover.

Lightly press the cover to unlock and then close the cover.

10 Open the smear unit cover.

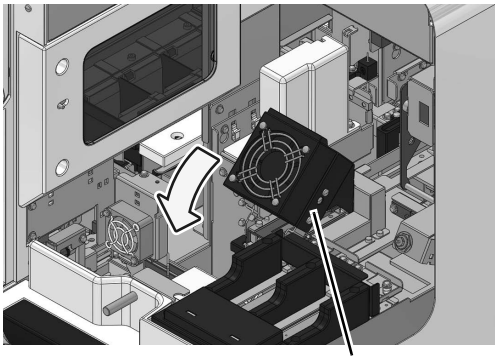
Lift the cover up until it locks into place.



⚠ Warning

Be sure to open the smear unit cover until it locks in place.
Otherwise the cover may fall and cause injury.

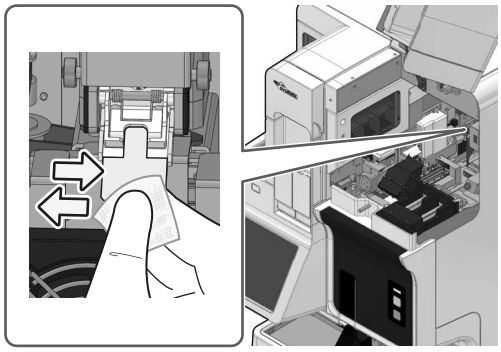
11 Rotate the fan forward and down.



Fan

12 Wipe the surface of the spreader glass with gauze moistened with ethanol.

Sandwich the spreader glass between the gauze and wipe from left to right.



Note:

When wiping the spreader glass, the holder may move horizontally or vertically. This is not a problem, so wipe the spreader glass in the position that you find easiest.

13 To remove stubborn dirt, wipe with gauze moistened with CELLCLEAN.

Caution

If CELLCLEAN is used, make sure to rinse off the CELLCLEAN with rinse water as the final step.

Note:

Using CELLCLEAN easily removes foreign matter and dirt.

14 Replace the fan in its original position.

15 Close the smear unit cover.

Lightly press the cover to unlock and then close the cover.

16 Open the slide set unit cover.

17 Install the slide supply cassette.

18 Close the slide set unit cover.

19 Touch [OK].

The dialog box closes.

2.14 Wiping off dirt on the printer

If the printing on the slide is faint, or when replacing the ink ribbon, wipe off any dirt on the ribbon roller and the printer head. Use ethanol to wipe off.

⚠ Warning

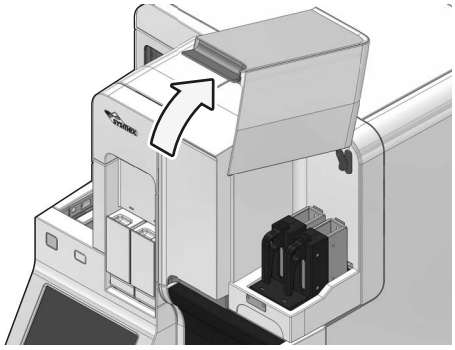
Ethanol is flammable at room temperature.
Read all warnings and any included documentation before using the reagent.

⚠ Caution

- Use disinfecting ethanol with a purity of at least 70 %.
- When wiping off dirt, make sure that no dust or other dirt remains.

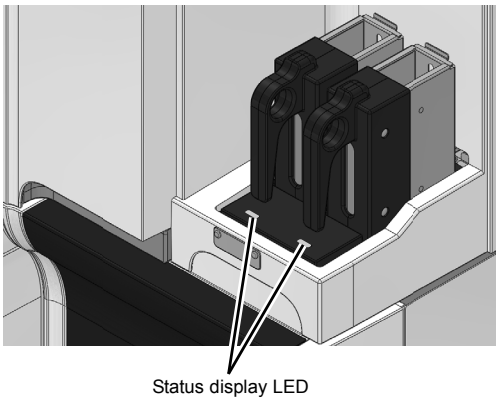
1 Open the slide set unit cover.

Lift the cover up until it locks into place.



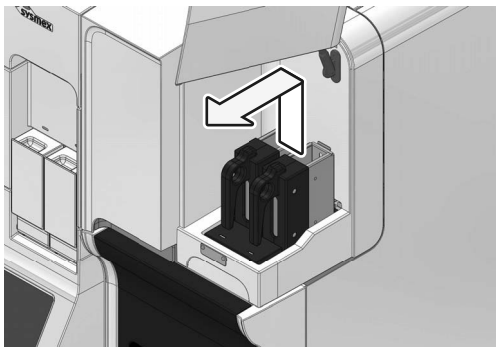
2 Make sure that the status display LED on the slide set unit lights in green or red.

Wait until the status display LED turns if it not lit in green or red.



3 Remove the slide supply cassette from the slide set unit.

Remove both the left and right slide supply cassettes.



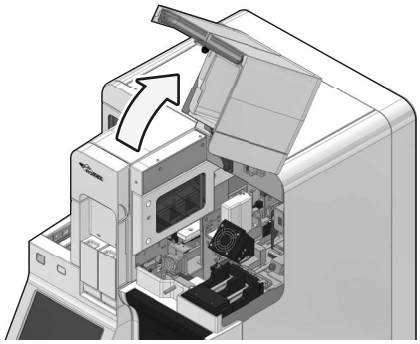
4 Close the slide set unit cover.

Lightly press the cover to unlock and then close the cover.

If sample preparation is in progress, wait until the smear unit cover unlocks after all samples have been fed into the stain unit.

5 Open the smear unit cover.

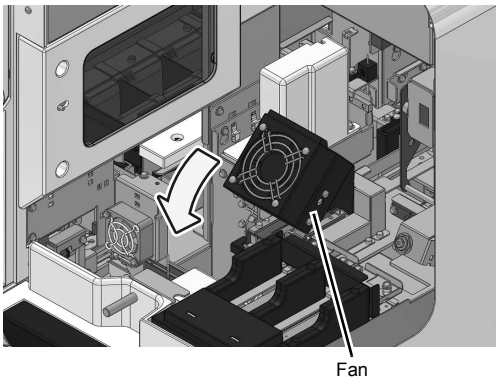
Lift the cover up until it locks into place.



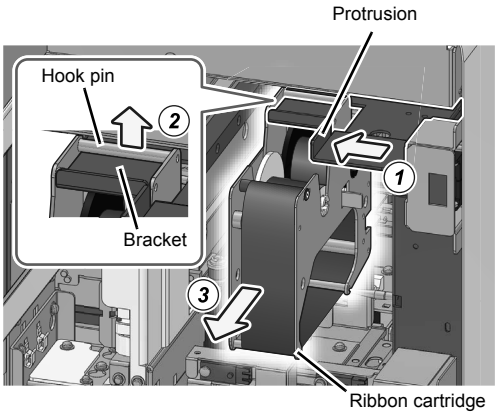
Warning

Be sure to open the smear unit cover until it locks in place.
Otherwise the cover may fall and cause injury.

6 Rotate the fan forward and down.



7 Remove the ribbon cartridge.

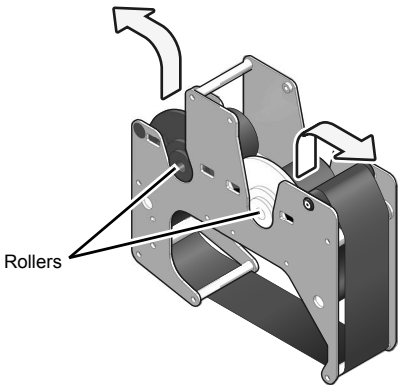


1 **Grasp the protrusion, slide the bracket to the left, and move the ribbon cartridge to the removal position.**

2 **Lift the ribbon cartridge and remove the hook pin from the bracket.**

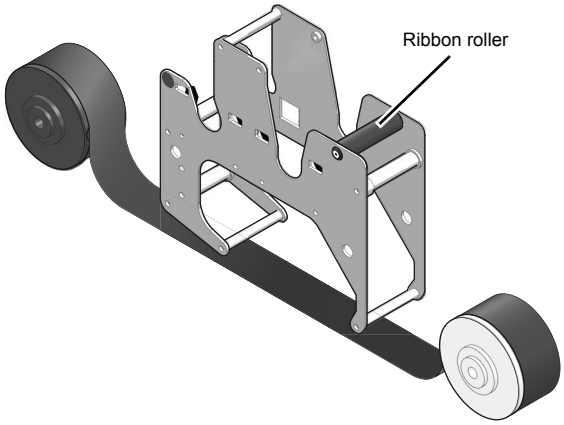
3 **Remove the ribbon cartridge.**

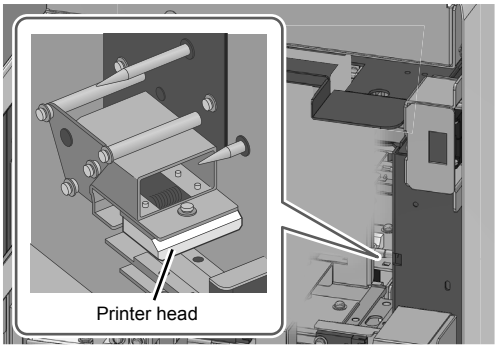
8 Lift both rollers of the ink ribbon and remove the used ink ribbon.



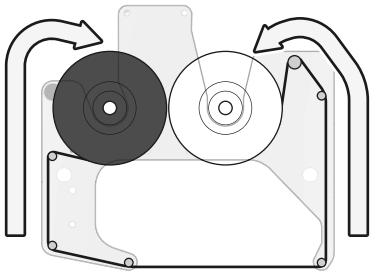
9 Clean the ribbon roller and printer.

Wipe the ribbon roller and slide printer head with a cotton swab, absorbent cotton, or non-woven fabric moistened with disinfecting ethanol.



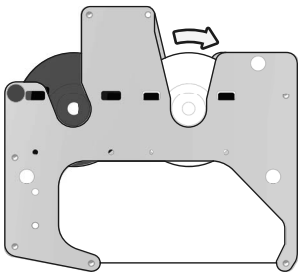


10 Mount the ink ribbon into the ribbon cartridge.

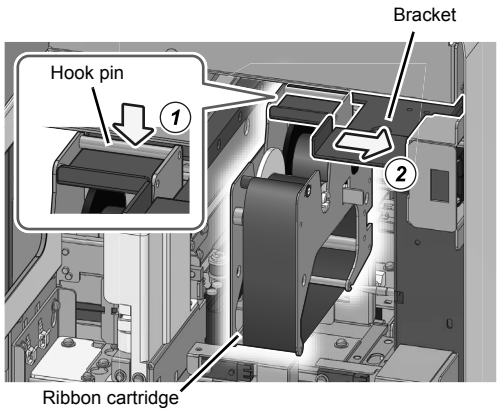


11 Remove the slack in the ribbon.

Turn the white roller in the direction of the arrow illustrated in the figure.



12 Install the ribbon cartridge.



1 **Catch the ribbon cartridge hook pin on the bracket.**

2 **Slide the bracket to the right and mount the ribbon cartridge.**

13 Replace the fan in its original position.

14 Close the smear unit cover.

Lightly press the cover to unlock and then close the cover.

15 **Open the slide set unit cover.**

16 **Install the slide supply cassette.**

17 **Close the slide set unit cover.**

2.15 Testing proper operation of the instrument

The operation of each unit can be tested. These procedures can be used to identify the cause of an error.
The instrument must be in ready state to perform operation tests. Operation tests cannot be performed when the instrument is in any other state. Samples cannot be prepared during the operation test.

2.15.1 Operation test on the motor

The operation of the following motors can be tested.

Name	Operation
Whole blood aspiration motor	Sample aspiration/discharge
Aspiration dispensing unit motor	Up-down operation of aspiration unit, left-right movement of dispensing unit
Sample holder motor	Ejection/Retraction of sample holder

1 Touch [Maintenance] in the [Menu] screen.

The [Maintenance] screen appears.

2 Touch [Operation test].

The [Operation test] dialog box appears.

3 Touch the button for the operation test of the motor.

The operation test begins and a dialog box appears. Wait until it is complete. When the operation test is finished, the dialog box closes.

When an error occurred during the operation test, the error message appears.

2.15.2 Operation test on the sample hand

If an error related to sample hand operation occurs, run an operation test on the sample hand to identify the cause of the error.

1 Touch [Maintenance] in the [Menu] screen.

The [Maintenance] screen appears.

2 Touch [Operation test].

The [Operation test] dialog box appears.

3 Touch [Sample hand test].

The operation test begins and a dialog box appears. Wait until it is complete. When the operation test is finished, the dialog box closes.

When an error occurred during the operation test, the error message appears.

2.15.3 Reading test on the barcode reader

If a barcode reading error occurs, run a barcode reader reading test to identify the cause of the error.

1 Touch [Maintenance] in the [Menu] screen.

The [Maintenance] screen appears.

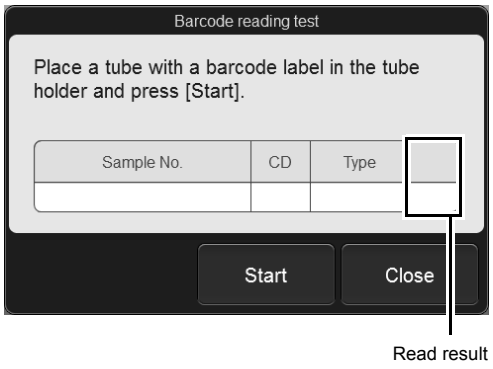
2 Touch [Operation test].

The [Operation test] dialog box appears.

3 Touch [Barcode reading test].

If the sample holder is retracted, the sample holder slides out forward.

The following dialog box appears.



[Sample No.]	Displays the sample number that was read from the barcode.
[CD]	Displays the check digit of the barcode.
[Type]	Displays the type of barcode.
Read result	Displays the result from the barcode read operation. One of the following symbols is displayed, depending on the result. If there was no problem with reading, nothing is displayed. [E]: Reading error or invalid check digit. [+]: A value that is longer than the specified number of digits was read. [-]: A value that is shorter than the specified number of digits was read.

4 Set the sample tube into the sample holder, with the barcode affixed.

5 Touch [Start].

The sample holder retracts and the read test begins.

If a previous test result was displayed, it is cleared when the test begins. Wait until it is complete. When the read test completes, the result is displayed.

The sample holder slides out forward.

6 Verify the result.

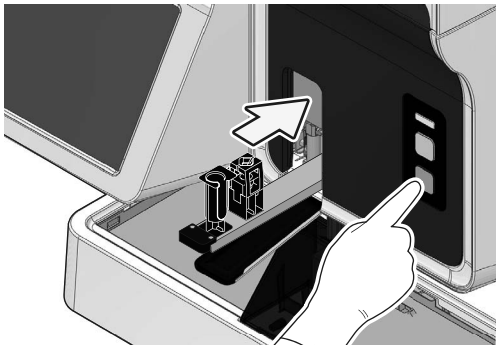
7 Touch [Close].

The dialog box closes.

8 Remove the sample tube from the sample holder.

9 Press the mode switch on the main unit front side.

The sample holder retracted into the instrument.



2.15.4 Operation test on the sampler

If an error related to sampler operation occurs, run an operation test on the sampler to identify the cause of the error.

1 Touch [Maintenance] in the [Menu] screen.

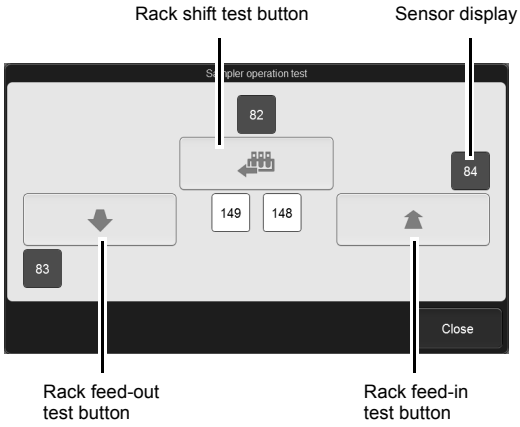
The [Maintenance] screen appears.

2 Touch [Operation test].

The [Operation test] dialog box appears.

3 Touch [Sampler operation test].

The following dialog box appears.



Sensor display	Displays the status of each sensor. Red: ON White: OFF
Rack shift test button	Touch to run a sample rack shift test.
Rack feed-out test button	Touch to run a sample rack feed-out test.
Rack feed-in test button	Touch to run a sample rack feed-in test.

4 Place the sample rack in the right sampler pool.

5 Touch the button for the test-target operation.

The operation test begins. Wait until it is complete.

6 Verify the result.

7 Touch [Close].

The dialog box closes.

8 Remove the sample rack.

2.15.5 Smear unit slide conveyance test

If an error related to glass slide transport occurs, run a smear unit glass slide conveyance test to identify the cause of the error.

1 Touch [Maintenance] in the [Menu] screen.

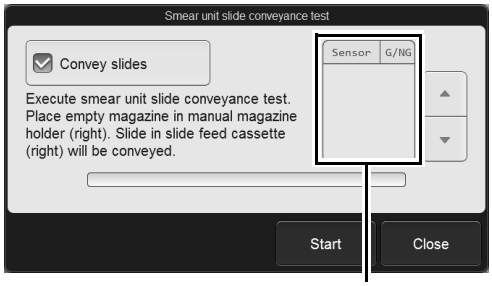
The [Maintenance] screen appears.

2 Touch [Operation test].

The [Operation test] dialog box appears.

3 Touch [Smear unit slide conveyance test].

The following dialog box appears.



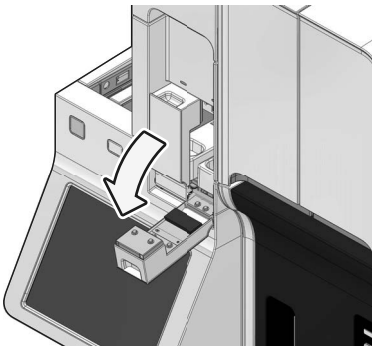
Conveyance test result

[Convey slides]	Select this checkbox to run a conveyance test using a glass slide.
Conveyance test result	The result of the slide conveyance test appears. [G]: Pass [NG]: Fail (error occurred)

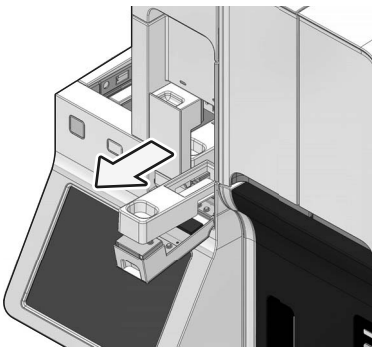
4 If you selected the [Convey slides] checkbox, open the manual magazine holder cover (right).

Open the cover forward.

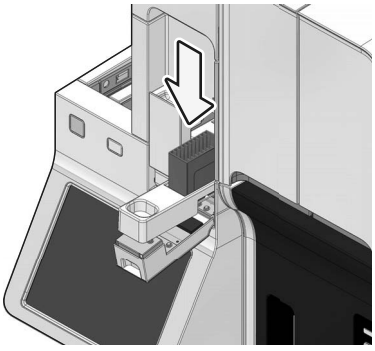
This step is not necessary if you did not select [Convey slides] or an empty magazine is already loaded. Go to the step 9.



5 Pull out the manual magazine holder.



6 Load an empty magazine in the manual magazine holder.



7 Push in the manual magazine holder.

8 Close the manual magazine holder cover.

9 Touch [Start].

The operation test begins. Progress is shown in a progress bar at the bottom of the dialog box. Wait until it is complete. When the operation test completes, the result is displayed.

10 Verify the result.

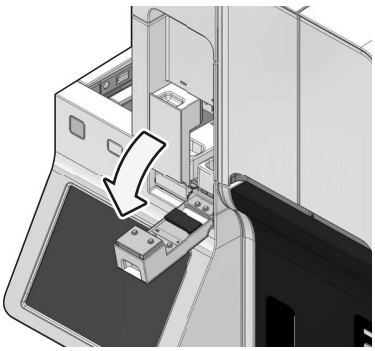
11 Touch [Close].

The dialog box closes.

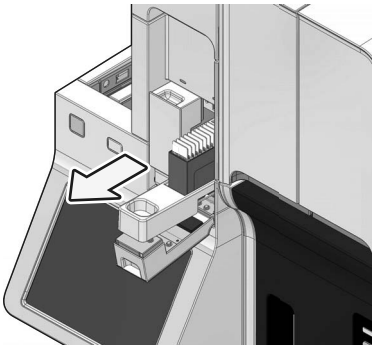
12 If you selected the [Convey slides] checkbox, open the manual magazine holder cover.

Open the cover forward.

This step is not necessary if you did not select [Convey slides].

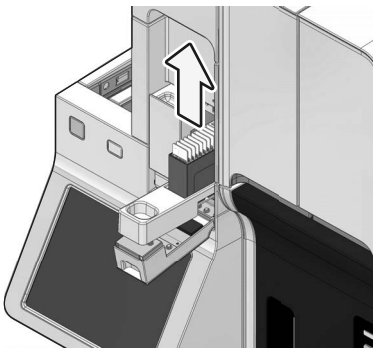


13 Pull out the manual magazine holder.



14 Remove the magazine from the manual magazine holder.

The tested glass slide will be stored in the magazine in the manual magazine holder.



Caution

When removing the magazine, do not grab the glass slide. Remove the magazine one by one, and take care not to drop the glass slides. Otherwise the glass slides may break up and cause injury.

15 Push in the manual magazine holder.

16 Close the manual magazine holder cover.

Information

A slide that has been used for a test cannot be reused for smear preparation.

2.15.6 Stain unit slide conveyance test

If an error related to glass slide transport occurs, run a stain unit glass slide conveyance test to identify the cause of the error.

1 **Touch [Maintenance] in the [Menu] screen.**

The [Maintenance] screen appears.

2 **Touch [Operation test].**

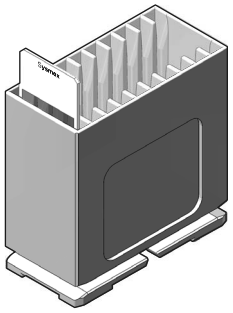
The [Operation test] dialog box appears.

3 **Touch [Stain unit slide conveyance test].**

A dialog box appears.

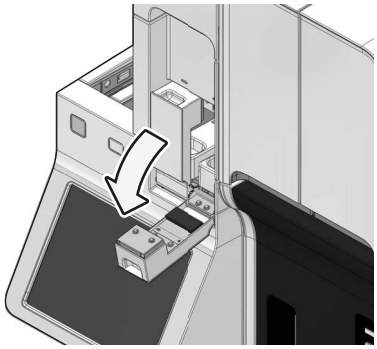
4 **Load the new glass slides to the magazine.**

Load the slides at the front.

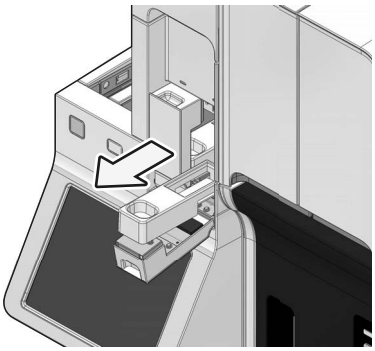


5 **Open the manual magazine holder cover (right).**

Open the cover forward.

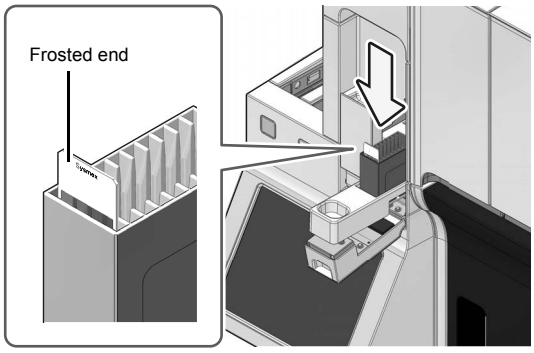


6 **Pull out the manual magazine holder.**



7 **Load the magazine that holds the glass slide in the manual magazine holder.**

Load glass slides so that the frosted end faces forward.



8 **Push in the manual magazine holder.**

9 **Close the manual magazine holder cover.**

10 **Touch [Start].**

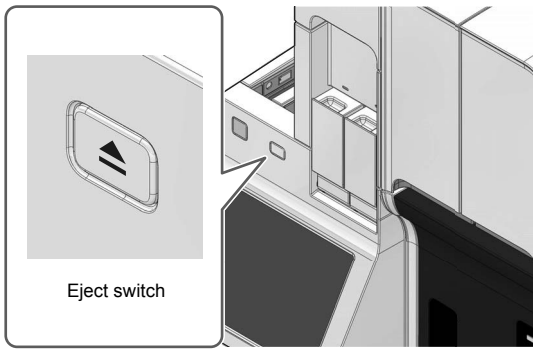
The operation test begins. Progress is shown in a progress bar at the bottom of the dialog box. Wait until it is complete.

11 **Touch [Close].**

The dialog box closes.

12 Press the eject switch.

The magazine is fed out into the magazine storage unit.

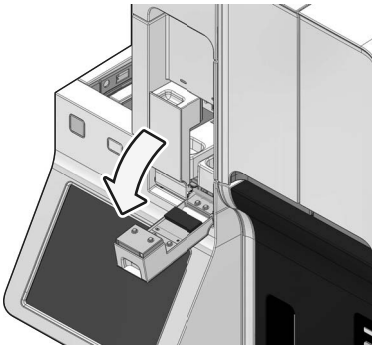


13 Collect the magazine fed out into the magazine storage unit.

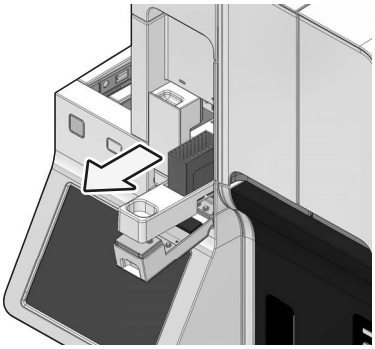
The tested glass slide will be stored in the magazine fed out into the magazine storage unit.

14 Open the manual magazine holder cover.

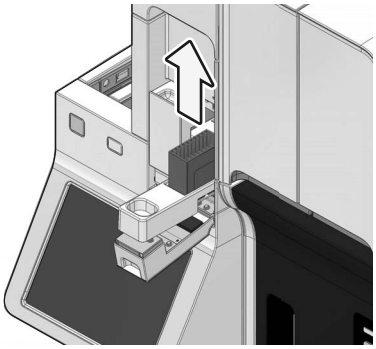
Open the cover forward.



15 Pull out the manual magazine holder.



16 Remove the magazine from the manual magazine holder.



17 Push in the manual magazine holder.

18 Close the manual magazine holder cover.

Information

A slide that has been used for a test cannot be reused for smear preparation.

2.16 Checking the status of the instrument (sensor)

You can check the statuses of sensors in each part. The information displayed is updated every second.

1 Touch [Maintenance] in the [Menu] screen.

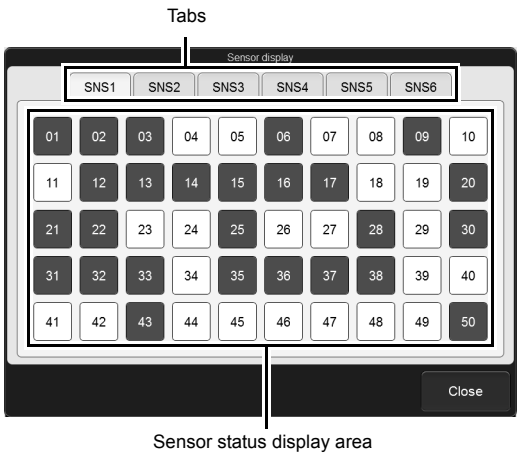
The [Maintenance] screen appears.

2 Touch [Check status].

The [Check status] dialog box appears.

3 Touch [Sensor display].

The [Sensor display] dialog box appears.



[Sensor display] dialog box

Tabs	Touch to switch to a different sensor status display area.
Sensor status display area	Displays the status of each sensor. Red: ON White: OFF

4 Touch [Close].

The dialog box closes.

2.17 Checking the operation count (counter)

You can check the number of slides prepared in each slide preparation mode and the operation count of each unit. You can also reset an operation count.

2.17.1 Checking the operation count

1 **Touch [Maintenance] in the [Menu] screen.**

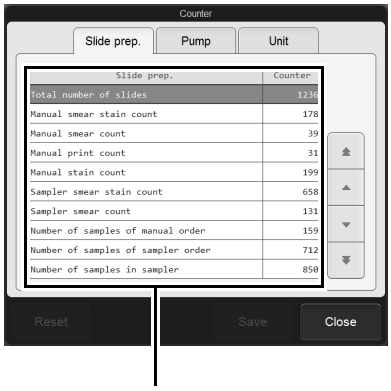
The [Maintenance] screen appears.

2 **Touch [Check status].**

The [Check status] dialog box appears.

3 **Touch [Counter].**

The [Counter] dialog box appears.
Select the tabs to check the number of smears prepared, the pump operation count, and the operation counts of other units.



[Counter] dialog box

[Slide prep.] tab	Displays the operation count of each unit and the number of slides.
[Pump] tab	Displays the operation count by pump.
[Unit] tab	Displays the operation count by unit.
Operation count list	Lists the operation counts.

4 **Touch [Close].**

The dialog box closes.

2.17.2 Resetting an operation count

1 **Touch [Maintenance] in the [Menu] screen.**

The [Maintenance] screen appears.

2 **Touch [Check status].**

The [Check status] dialog box appears.

3 **Touch [Counter].**

The [Counter] dialog box appears.

4 **Select [Spreader glass] or [Ink ribbon].**

5 **Touch [Reset].**

The [Counter] of the selected operation changes to [0].

6 **Touch [Save].**

The settings are saved.

7 **Touch [Close].**

The dialog box closes.

2.18 Confirming the instrument pressure/temperature/humidity

You can check the internal pressure, temperature and humidity of each parts. The information displayed is updated every second.

1 Touch [Maintenance] in the [Menu] screen.

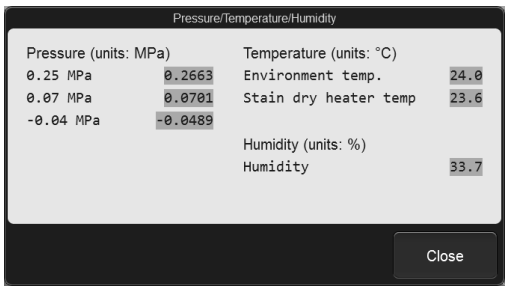
The [Maintenance] screen appears.

2 Touch [Check status].

The [Check status] dialog box appears.

3 Touch [Pressure/Temperature/Humidity].

The [Pressure/Temperature/Humidity] dialog box appears.



[Pressure/Temperature/Humidity] dialog box

[Pressure (units: MPa)]	The pressure of the instrument units appears here.
[0.25 MPa]	The 0.25 MPa pressure value appears here.
[0.07 MPa]	The 0.07 MPa pressure value appears here.
[-0.04 MPa]	The vacuum pressure appears here.
[Temperature (units: °C)]	The temperature of instrument units appears here.
[Environment temp.]	The temperature of the operating environment appears here.
[Stain dry heater temp]	The temperature of the stain dry heater appears here.
[Humidity (units: %)]	The humidity of the operating environment appears here.

4 Touch [Close].

The dialog box closes.

2.19 Checking the elapsed staining time

You can check the elapsed time since startup or replacing reagent in the staining pool.

1 Touch [Maintenance] in the [Menu] screen.

The [Maintenance] screen appears.

2 Touch [Check status].

The [Check status] dialog box appears.

3 Touch [Elapsed staining time].

The [Elapsed staining time] dialog box appears.

[Elapsed staining time] dialog box

[Reagent]	Displays the name of the reagent used in the staining pool.
[Time (HH:mm)]	Displays the elapsed time since reagent replacement.

4 Touch [Close].

The dialog box closes.

2.20 Checking the CF-70 status (sensor)

You can check the status of CF-70 sensor. The information displayed is updated every 0.1 second.

1 Touch [Maintenance] in the [Menu] screen.

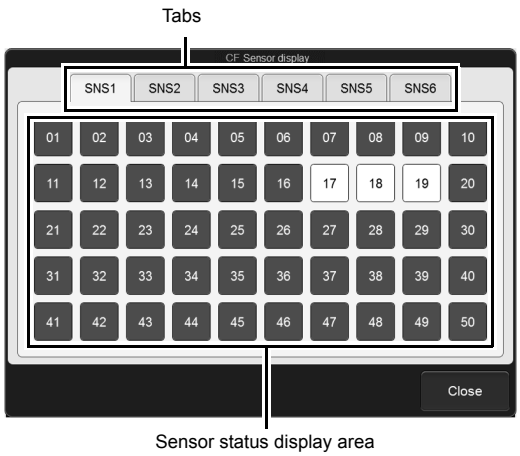
The [Maintenance] screen appears.

2 Touch [Check CF status].

The [Check CF status] dialog box appears.

3 Touch [Sensor display].

The [CF sensor display] dialog box appears.



[CF sensor display] dialog box

Tabs	Touch to switch to a different sensor status display area.
Sensor status display area	Displays the status of CF-70 sensor. Red: ON White: OFF

4 Touch [Close].

The dialog box closes.

2.21 Checking the operation count of the CF-70 (counter)

The operation status of the CF-70 can be viewed. You can also reset an operation count.

2.21.1 Checking the operation count of the CF-70

1 **Touch [Maintenance] in the [Menu] screen.**

The [Maintenance] screen appears.

2 **Touch [Check CF status].**

The [Check CF status] dialog box appears.

3 **Touch [Counter].**

The [Counter] dialog box appears.

[Counter] dialog box

[Transport glass slide] tab	Displays the count that the CF-70 transports glass slide.
Operation count list	Lists the operation counts.

4 **Touch [Close].**

The dialog box closes.

2.21.2 Resetting an operation count

1 **Touch [Maintenance] in the [Menu] screen.**

The [Maintenance] screen appears.

2 **Touch [Check CF status].**

The [Check CF status] dialog box appears.

3 **Touch [Counter].**

The [Counter] dialog box appears.

4 **Touch [Reset].**

The [Counter] of the selected operation changes to [0].

5 **Touch [Save].**

The settings are saved.

2.22 Replacing the waste fluid tank

This work is necessary when a waste fluid tank is used. When the waste fluid tank becomes full, replace it. If the waste fluid tank becomes full, the [Help] dialog box shows [Waste container 1 is full] and [Waste container 2 is full]. Replace the waste fluid tank after setting the instrument in ready state.

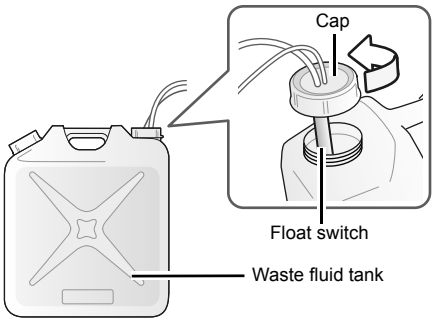
Risk of infection

Be sure to wear adequate personal protective equipment, such as protective gloves, a protective mask, protective eyewear, and a lab coat when working. Wash your hands with antiseptic solution after completing the task.
There is a risk of infection.

1 Prepare an empty waste fluid tank and remove the cap.

2 Remove the cap from the waste fluid tank that has become full.

Turn the cap that is connected to the tube in the direction as illustrated by the arrow to remove, and remove the float switch.



3 Straightly insert the float switch on the new waste fluid tank.

4 Secure the cap of the waste fluid tank.

Install the float switch and then turn the cap clockwise to close.

Make sure the float switch is attached to the horizontal surface of the waste fluid tank.

5 Touch [Accept] in the [Help] dialog box.

The dialog box closes and the error is cleared.

2.23 Maintenance and inspection checklist

e.g.

Daily maintenance task

Year Month

Day / Maintenance task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Shutdown																															
Signed																															

Weekly maintenance task

Maintenance task	M/D Signed	M/D Signed
Wipe dirt off spreader glass		

Monthly maintenance task

Maintenance task	M/D Signed	M/D Signed
Performing [Shutdown 2]		

As-needed maintenance

Maintenance task	M/D Signed	M/D Signed
Loading glass slides		
Replenishing rinse water		
Replacing the reagent		
Cleaning the staining pool		
Cleaning the smear/stain unit		
Wiping the printer		
Replacing the waste fluid tank		

Reagents and supply parts replacement

Maintenance task	M/D Signed	M/D Signed
Replenishing the reagent (CELLPACK DCL)		
Replenishing the reagent (Stain solution 1, Stain solution 2)		
Replenishing the reagent (Phosphate buffer)		
Replenishing methanol/ethanol		
Replacing the fuse		
Replacing the ink ribbon		
Replacing the spreader glass		

* We recommend that our customers prepare a checklist that suits their operating environment.

Chapter 3 Checking Logs

3.1 Logs and how to use them

The following logs can be viewed.

- Audit log: Displays a log of operations.
- Error log: Displays a log of errors that occurred, and information at the time of occurrence and clearance.
- Maintenance log: Displays a log of maintenance tasks executed, and information at the time of execution.
- Reagent replacement log: Displays a log of reagent replacement, and any information that was entered at the time of replacement.

Note:

A maximum of 5,000 entries are saved in each log. When the maximum number of entries is reached in a log, each new entry automatically deletes the oldest entry.

3.1.1 Checking a log

1 Touch [Log] in the menu screen.

The [Log] menu screen appears.

[Log] menu screen

2 Touch the button of the log you want to view.

The selected log screen appears.

3 Check the log.

For details, see the following.

(➤**P.131** "3.2 Log screen")

3.1.2 Adding comments to logs

Information

Entered comments cannot be edited or deleted. Any new comments entered are appended after the previously entered comment.

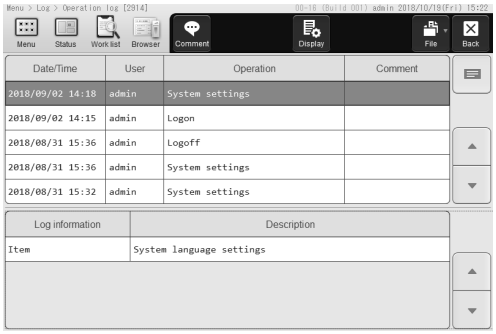
1 Touch [Log] in the menu screen.

The [Log] menu screen appears.

2 Touch the button of the log to which you want to add comments.

The selected log screen appears.

3 Select the log to which you want to add a comment.



e.g. [Operation log] screen

4 Touch [Comment] on the toolbar.

The software keyboard appears.

5 Enter a comment.

You can enter up to 100 characters.

> **Note:**
> Following characters cannot be used for a comment.
> | \ ^ &

6 Touch [OK].

A comment is added.

3.1.3 Saving a log in CSV format

You can save the log list as a CSV file in a USB memory stick.

1 Touch [Log] in the menu screen.

The [Log] menu screen appears.

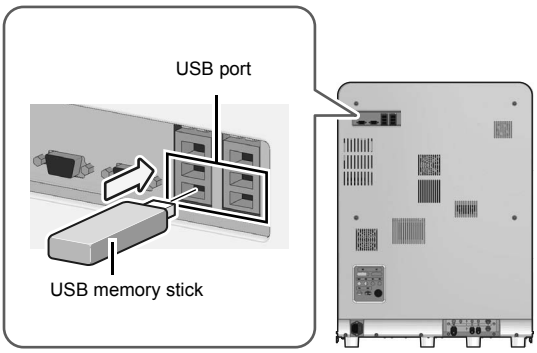
2 Touch the button of the log you want to save.

The selected log screen appears.

3 Insert the USB memory stick.

Insert the memory stick into a free USB port on the back of the instrument.

A USB memory stick with a password lock function cannot be used.



4 Touch [File] on the toolbar and touch [Output in CSV format].

The save starts and the [Waiting for completion of execution...] dialog box appears.

When the dialog box closes, it indicates that the save has been completed.

5 Remove the USB memory stick.

Save location/file name

When you execute save, the file is saved with the following file name in the Log folder inside the folder with the instrument ID as the folder name*.

Audit log:
SP-50^PS Code^Serial_IPU Version_AUDITLOG.csv

Error log:
SP-50^PS Code^Serial_IPU Version_ERRORLOG.csv

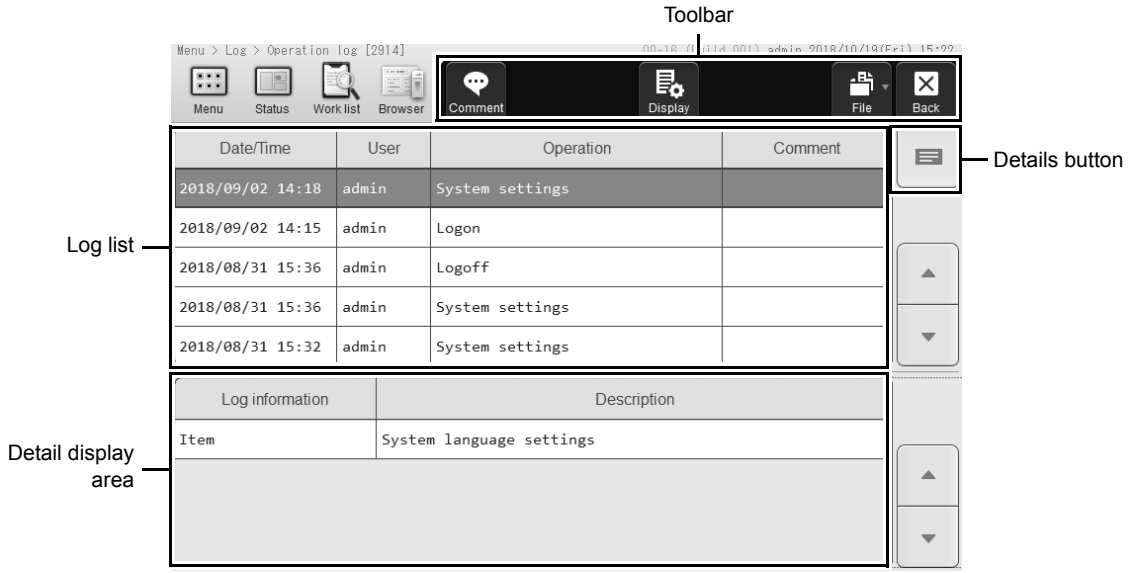
Maintenance log:
SP-50^PS Code^Serial_IPU Version_ MAINTENANCELOG.csv

Reagent replacement log:
SP-50^PS Code^Serial_IPU Version_ REAGENTLOG.csv

e.g. SP-50^BX765805^11111_00-09_ MAINTENANCELOG.csv

* If a folder with the instrument ID as the name does not exist in the USB memory stick, the folder is automatically created when the file is saved.

3.2 Log screen



e.g. [Operation log] screen

Toolbar	Displays buttons for each function.
[Comment]	Touch to display a software keyboard, which allows you to enter a comment. (➤**P.129** "3.1.2 Adding comments to logs")
[Display]	Touch to display a dialog box, which allows you to view a log of a specified period. (➤**P.134** "3.2.2 Viewing a period of time of a log")
[File]	Touch to display a submenu, which allows you to save the log list. (➤**P.130** "3.1.3 Saving a log in CSV format")
Log list	Displays a list of the logs.
Details button	Touch to show or hide the detail display area.
Detail display area	Displays the detailed information of the log selected in the log list.

3.2.1 Contents of log lists and details

● [Operation log] screen

[Date/Time]	Displays the date and time at which the log data was registered.
[User]	Displays the user name that was logged in when the log data was registered.
[Operation]	Displays the name of the operation performed.
[Comment]	Displays comments.

The log list displays the following operations with under respective conditions.

Operation names	Display condition
[Logon]	When a user logs on.
[Logoff]	When a user logs off.
[Modify order]	When an order is modified.
[Delete order]	When an order is deleted. A deletion is not logged if data was automatically deleted because the maximum number of registered data was exceeded.
[Modify Sample No.]	When the sample number of an order is modified.
[Modify settings]	When a setting is changed.
[Restore Settings]	When a saved setting is restored.
[Initialize settings]	When the instrument settings are initialized.

● [Error log] screen

[Date/Time]	Displays the date and time at which the log data was registered.
[Status]	Displays the status of the error that occurred. [Occurred]: Error [Cleared]: Error cleared
[Error code]	Displays the error code of the error that occurred.
[Error message]	Displays the message of the error that occurred.
[Comment]	Displays comments.
[User]	Displays the user name that was logged in when the log data was registered.

● [Maintenance log] screen

[Date/Time]	Displays the date and time at which the log data was registered.
[User]	Displays the user name that was logged in when the log data was registered.
[Maintenance items name]	Displays the name of the maintenance task executed.
[Comment]	Displays comments.

● [Reagent Repl. Log] screen

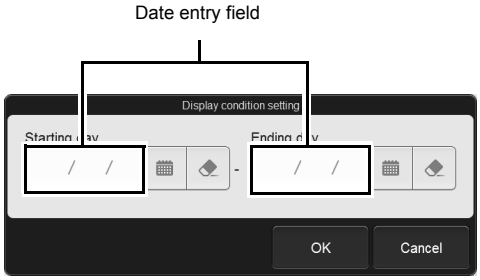
[Date/Time]	Displays the date and time at which the log data was registered.
[User]	Displays the user name that was logged in when the log data was registered.
[Reagent name]	Displays the name of the replaced reagent.
[Lot No.]	Displays the lot number of the replaced reagent.
[Use-by date]	Displays the use-by date of the replaced reagent.

3.2.2 Viewing a period of time of a log

You can specify a starting day and an ending day to view the entries in that period.

1 Touch [Display] on the toolbar.

The following dialog box appears.



2 Set the items.

[Starting day]/ [Ending day]	Enter the date in the format "Year (4 digits)/Month (2 digits)/Day (2 digits)" in the date entry area. You can also touch the button at the right of the entry field to select the date from a calendar.

3 Touch [OK].

The dialog box closes, and the display condition is set.

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