PRO CAN PUMP DUAL (PRO-CPD20)

User manual

TAEHA Corporation

Contents

1 Safety precautions

This manual is applied to products manufactured and sold by Taeha Co., Ltd. (here in after referred to as "TAEHA"), so it can not be partially copied without our permission.

This manual explains the specifications, installation, wiring, maintenance and inspection, abnormal phenomena and measures of our products. When using this product, be sure to read this manual thoroughly and handle it properly.

For safety precautions, precautions are classified into danger and caution.

"**Danger**" : Hazardous situations can arise if you handle it incorrectly, there is a risk of death or serious injury.

"**Caution**" : Hazardous situations may occur if handled incorrectly, you may get serious injury or physical damage.

In addition, even if it is described as a caution, it may lead to serious consequences depending on the situation. Please follow the instruction manual because it is important for the safety or the user.

Precautions for electric shock

Danger
1. This equipment is kept under high pressure for a while even after the main power supply is cut off. When performing wiring work or touching all terminals of the terminal block, leave it for 5 minutes or more after shutting off the power. 2. To prevent electric shock and prevent erroneous operation, use a Class 3 grounding wire (less than 100 , wire diameter 1.6mm or more). 3. Inspection and maintenance of this equipment should be performed by a qualified technician. 4. Do not check the equipment with wet hands, or if the floor is wet or damp. It may cause electric shock. 5. Be careful not to damage the cable, place heavy objects on it, or fold it. Damage may cause electric shock.

Cautions for fire occurrence

Danger
1. Do not install near flammable or combustible organic solvents or vapors around this equipment. Heat and electrical action may cause fire. 2. If this equipment malfunctions, disconnect the main power supply of the equipment. Large currents may flow and cause a fire.

Wiring precautions

Danger
1. Be sure to shut off anyh external power supply used by the equipment before carrying out wiring work for maintenance. 2. Failure to do so may result in electric shock or equipment damage. 3. To supply or operate the power supply after wiring, attach the cover inside and outside the equipment. 4. Failure to attach the cover may result in personal injury or electric shock.

Caution
1. Do not apply main power supply other than the voltage specified in this user's manual. It may cause malfunction.

2. Connect the terminals and wiring correctly. If not, it mayh cause malfunction.
3. Do not change wiring or attach or detach the connector while the power is on. It may cause injury or equipment failure.
4. Failure to do so may result in injury or equipment failure. Please be careful.

Installation notes

Caution
1. Do not install or store this product in a location exposed to conductive dust, corrosive gas, flammable gas, high temperature, condensation, or wind and rain. 2. Exposure to direct sunlight for a long time will reduce the accuracy of the equipment. Do not install or store the product in a place with direct sunlight. 3. When installing in a confined space, install a cooling fan to allow outside air to flow in and out, so that the temperature around the equipment remains at 40℃ or less. Overheating may cause fire or other accidents.

Precautions for use

Caution
1. Never modify this equipment. It may cause electric shock, injury, fire or breakdown. 2. Modificdation of this equipment is not covered by our warranty for defects. 3. Before use, be sure to check that all covers are properly installed and that there is no foreign substance inside the equipment. In some cases, unexpected operation may occur and injury may result. 4. If an alarm occurs during use, remove the cause of the alarm, check the safety, and reuse it

Danger
1. Please be sure to install a safety net in the robot operation area during use, and never approach the operation area during operation, because it includes robots(articulated robots, rectangular coordinate robots, desktop robots). 2. Our equipment includes driving and rotating parts. Please install a safety net on the rotating part and ever approach it during operation.

Precautions for maintenance and inspection

Caution
1. In case of cleaning or maintenance, be sure to turn off the power and check the internal power supply for complete dispense before carrying out maintenance work. Maintenance by non-experts will cause failure. 2. Please do not disassemble the equipment if it breaks down. In this case, please contact our customer support team. 3. If the dust accumulates on the equipment, it may cuase malfunction. Please periodically perform this cleaning. Please be sure to shut off the external power completely and check the dispense completely before cleaning. If not, there is a danger of electric shock.

Disposal notes

Caution
1. Dispose of this equipment as industrial waste.

2 General information

2.1 General information

This user manual provides you and the equipment maintenance specialist with essential information for operating the unit. It is therefore highly recommended that you thoroughly familiarize yourself with this user manual.
In order to be able to access this user's manual easily, it should be placed in a prominent place inside and outside of the equipment so that it can be easily accessed.

2.2 Warranty

Except for a separate contract and the following cases, the warranty period is 1 year.(Excluding consumables)

- Following -

1. When changing equipment without permission of Taeha Co., Ltd.
2. If a person other than Taeha's technical support person fixes the equipment or repairs without using the specified parts
3. If any part other than specification specified by Taeha Co., Ltd. Is used in the product
4. Due to intentional breakage
5. Due to natural disasters or fire

2.3 Technical support

If necessary, our technical service support will be provided for you. You will need to contact us by phone or fax.

Contact us
Phone : +82(0)31 552 5300
Fax : +82(0)31 552 5400

2.4 Precautions

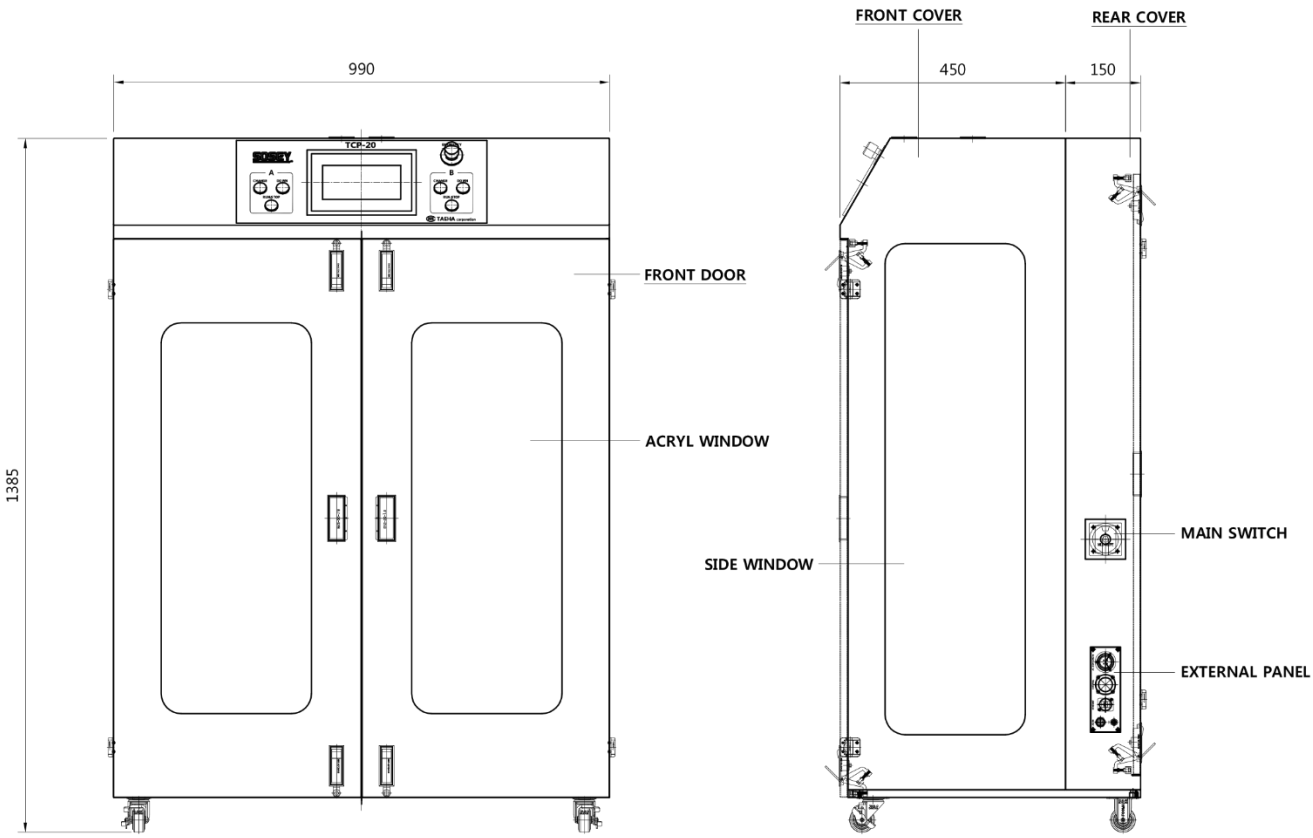
Danger
1. Be sure to use the specified power source. The basic power of the equipment is specified as AC220V 50/60Hz. 2. Be sure to use the specifed air pressure. The basic air pressure of the equipment is specified as 5kgf/cm2. 3. Do not operate with wet hands. There is a risk of electric shock. 4. Do not turn off the power or cut off the air pressure if the equipment is not in danger/caution during operation. Serious problems with the use of the equipment may occur. 5. If a serious error occurs in the equipment, please contact us.

3 Features

3.1 Specification

Item	Specification
Apply can size	20kg
Weight	≒ 320kg
Operating air pressure	0.4 ~ 0.5MPa (Humidity less than 5%, Air Filter less than 5μ)
Input power	AC 200~240V, 50/60Hz
Power consumption	5.2kW
Display	7 inch TFT LCD
Operation	Touch screen, Button s/w
Operation mode	Auto / Manual / Test
Viscosity range	1 ~ 500,000 cPs
Dispense pressure(Max.)	5.0MPa
Displacement	5.0 ㎖/rev
Flow rate(Max.)	300 ㎖/min
Precision	±1%
Min. dispensing rate	25.0 ㎖/min
Motor speed	1 ~ 150rpm (Recommend : 60rpm)
Air in port	One touch fitting PC(Ø8)
Material out port	BSPT 3/8", 1/2", 3/4", 1"
Stator material	FFKM / EPDM
Operating temperature	0 ~ 50℃ (Avoid direct sunlight)
Operating humidity	10 ~ 85%RH (No condensation)
Vibration	Less than 0.5G
Comm. connector	LAN(Modbus TCP), RS485(Modbus RTU) external wiring
Follower plate	**WP**(Wiper plate) / **DP**(Disposal plate) / **NP**(None plate)

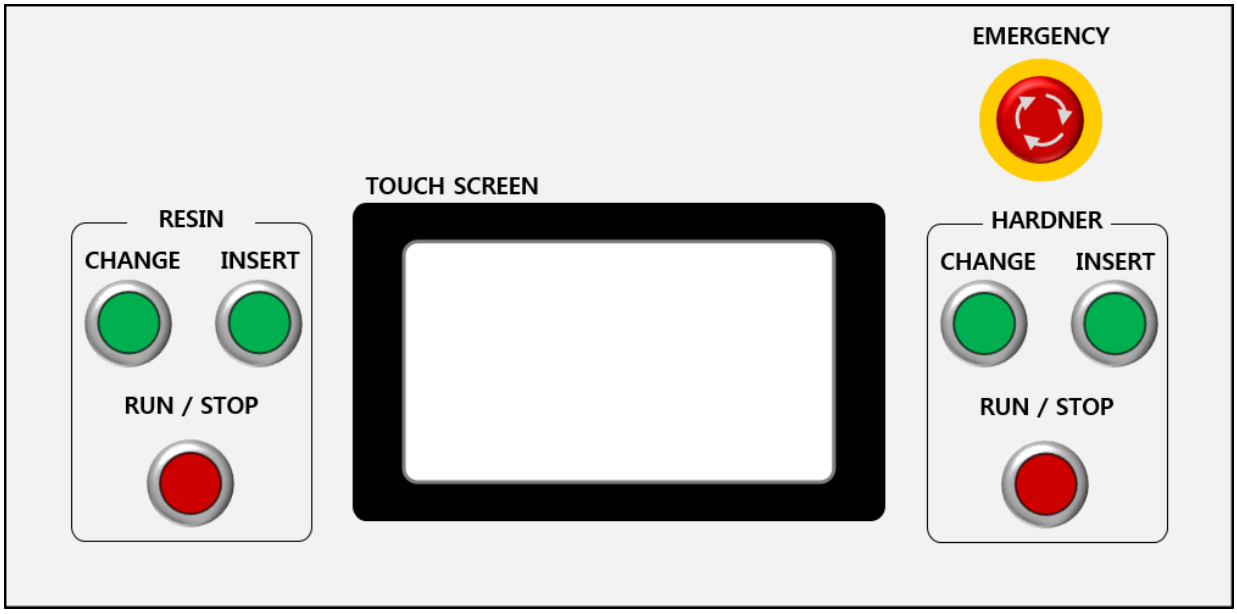
3.2 Appearance

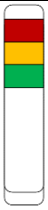


4 Operation of equipment

4.1 Names and functions

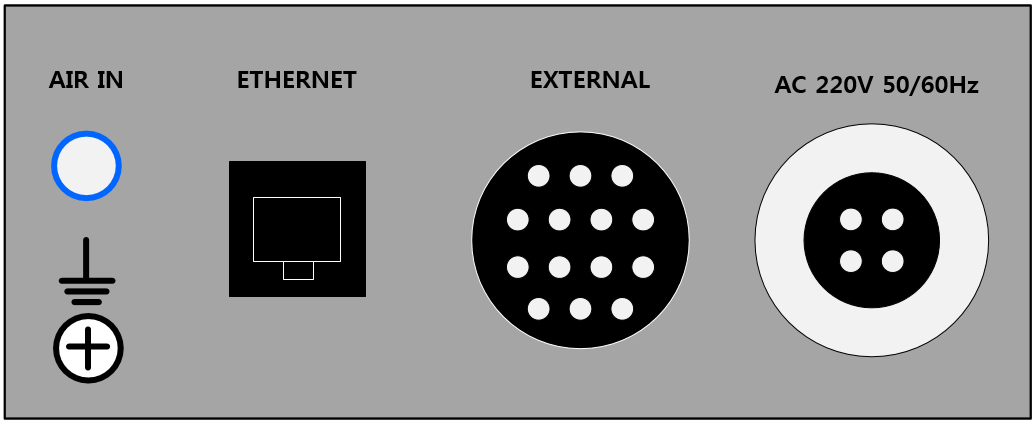
4.1.1 Front panel

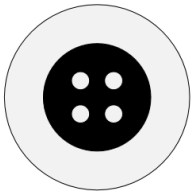
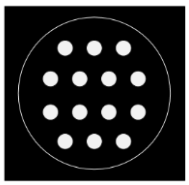
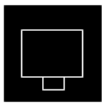


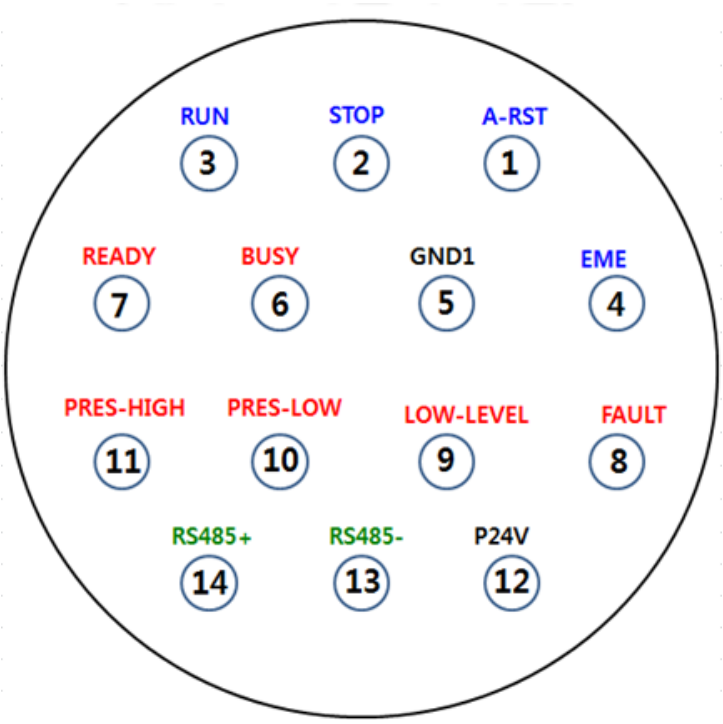
Names and display	Function and description
 **Signal Tower**	The signal tower indicates the PRO-CPD20's operating status,
 **Touch Screen**	The setting value and operation elements to operate the equipment can be easily operated using the touch screen.

EMERGENCY 	The EMERGENCY is used for an emergency during the operation of the equipment. ➔ Touch the Switch to stop all active elements. ➔ Not possible in test mode
CHANGE 	The Change is used to raise the cylinder. The operation is different depending on the setting mode of the button ➔ Auto mode : The operation macro for rising is executed. ➔ Manual mode : Raise the cylinder ➔ Test mode : Test input page – Check the button input contact point Test output page – Check the button LED output
INSERT 	The INSERT button is to lower the cylinder. The operation is different depending on the setting mode of the button. ➔ Auto mode : The macro operation for lowering is executed. ➔ Manual mode : Lower the cylinder ➔ Test mode : Test input page – Check the button input contact point Test output page – Check the button LED output
RUN / STOP 	This button is for operating material supply. In order to use the supply start, the PAIL must be combined (changed to PAIL ON) to operate, and the supply start condition is required as below. Auto mode : Supply can be started when the replacement complete button is ON. ➔ Manual mode : The supply can be started when the replacement button and INSERT button are ON

4.1.2 External connector



Names and display	Description
AC 220V 50/60Hz 	This is a power connector for power supply. ➔ The dedicated power cable is provided.
EXTERNAL 	This is an external connector connected to an external high signal. ➔ I / O signal of the material supply device can be checked from the high signal.
ETHERNET 	This is connected when using external ETHERNET communication for the material supply device. ➔ RJ45 connector
AIR IN 	This is a main air port for material supply. ➔ ⌀8 Air hose
 **Frame Ground**	This is external frame grounding for material supply.



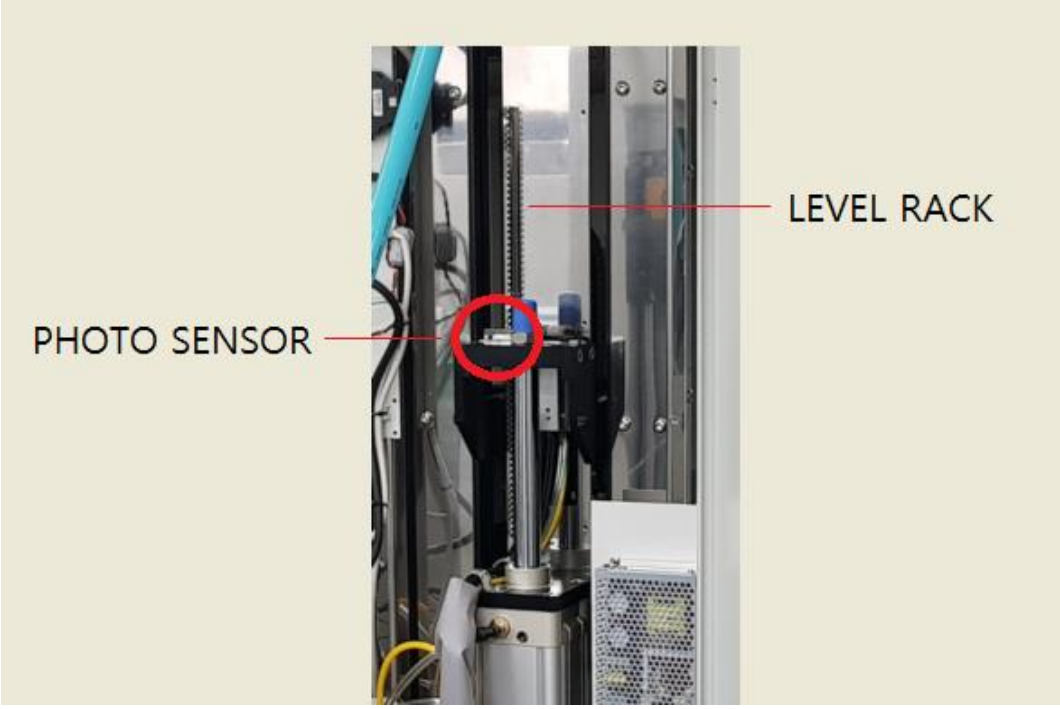
Pin map applied when using external I/O connector.

category	content
A-RST	After the PRO-CPD20 alarm action, the alarm can be cleared through the A-RST signal.
STOP	When in REMOTE mode and in operation, the material supply can be interrupted through the stop signal.
RUN	When in REMOTE mode, the material supply can be started through RUN.
EME	Emergency operation is performed with EME signal in case of emergency during equipment operation.
➔ Remote control operation RUN/STOP is possible only when both resin and hardener are in AUTO operation mode ➔ Do not change to MANUAL/TEST mode when in remote mode	
READY	ON when control operation is possible
BUSY	ON when in control operation
PRES-LOW	OFF if the feed pressure is lower than the lower limit setting during material supply
PRES-HIGH	OFF if the supply pressure exceeds the upper limit setting
LOW-ALM	Off if material is insufficient
FAULT	Off in case of equipment abnormality

4.2 How to check the replacement time for pail

4.2.1 How to detect the residual quantity of material

1) There are a photo sensor and rack bar for 20liter height sensction, and these parts could detect the residual quantity with % unit displaying.



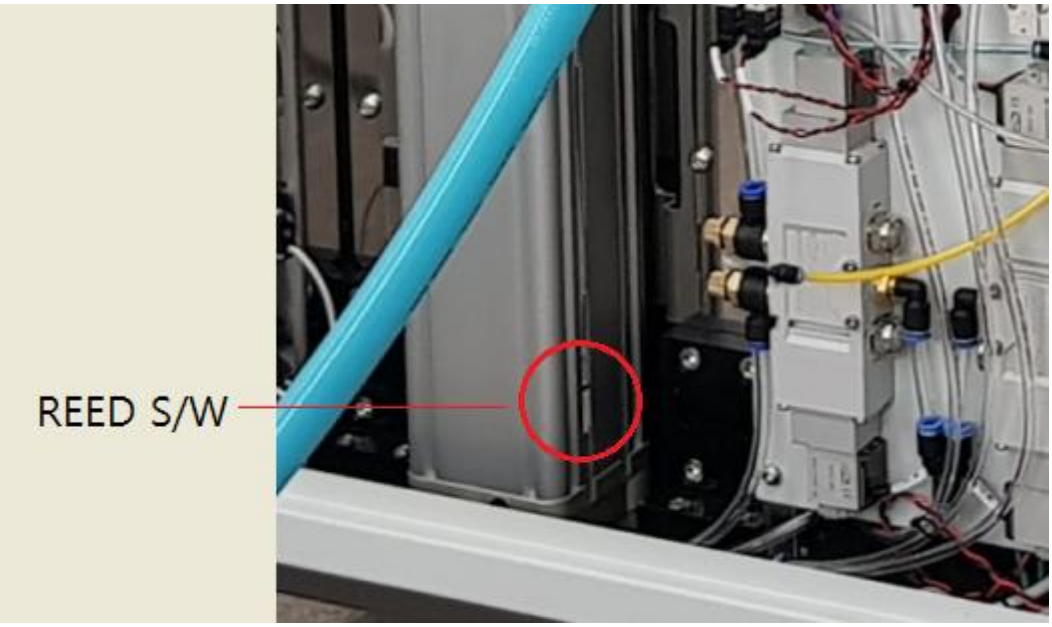
You can see a level sensor as above.

You can check the pail level on HMI.

4.2.2 Notification of when to replace material

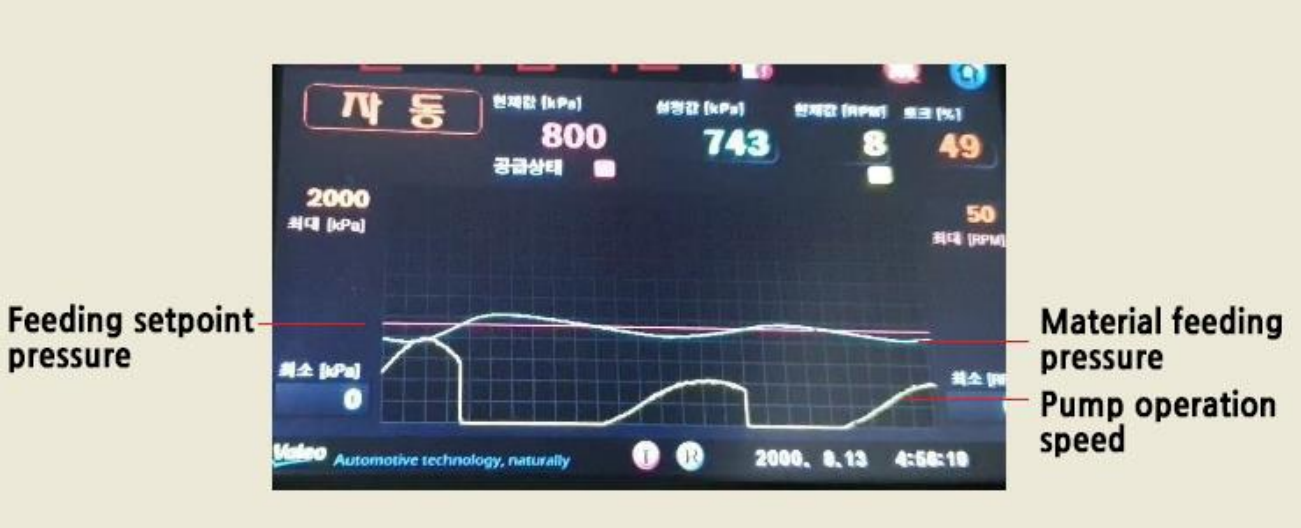
1) Pre-low alarm : The alarm occurs with message "level 5%" on HMI display -> the User needs to prepare the new material.

2) Low alarm : The alaram occurs after sensing for Pump head up/down cylinder's REED S/W. -> Pump stop, Material feeding stop -> the User needs to change the new material



4.2.3 Safety device to prevent the unlimited pump working

Based on normal pump operation, the specific setpoint pressure +/-50%(User setpoint) of material feeding is gotten out of, the alarm occurs for abnormal material feeding and executing stop working of pump operation.
(insufficient material feeding inside of hose or blocked or prevenitng unlimited pump working by empty material in container.)



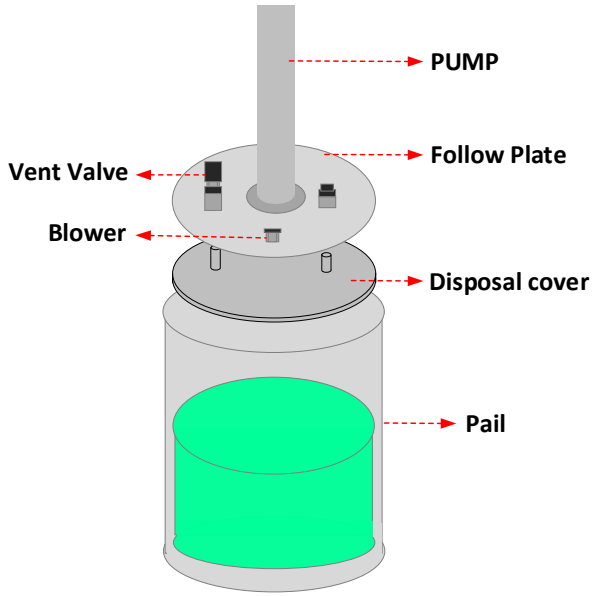
(Example: Real disply for feeding setpoint pressure, material feeding pressure and pump operation speed)

4.3 Material container(can) replacement procedure

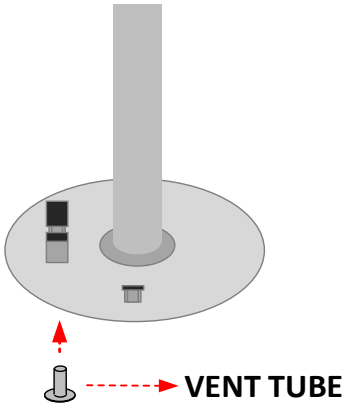
The following describes the simple replacement procedure for the material container.
For detailed setting method, refer to 6. Operation method.

4.3.1 Names of each part

Familiarize yourself with the name of the pail. Follow the pail replacement procedure described below.
There are disposal type and wiper type in Follower plate, and the usage is the same.



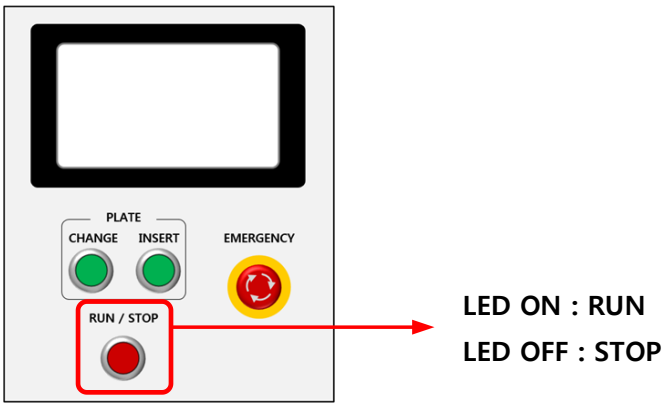
Disposal plate type(standard)



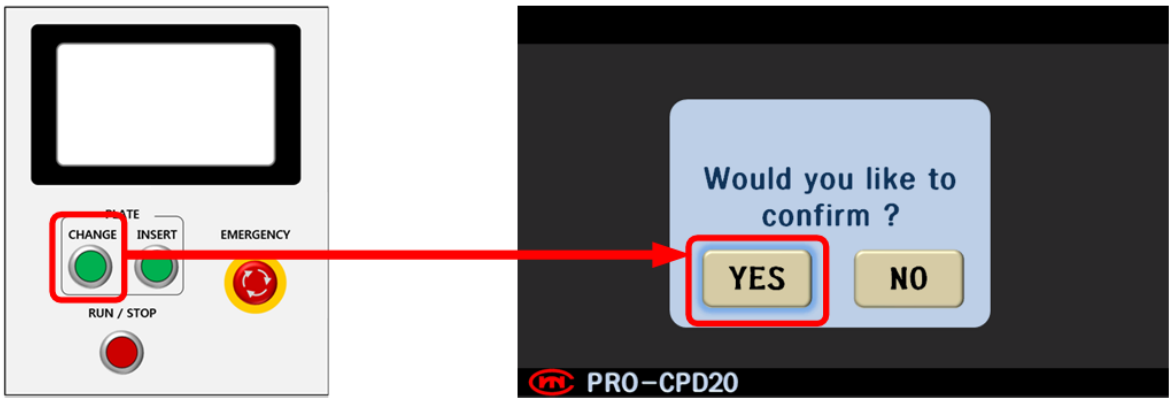
Wiper plate type

4.3.2 Change procedure

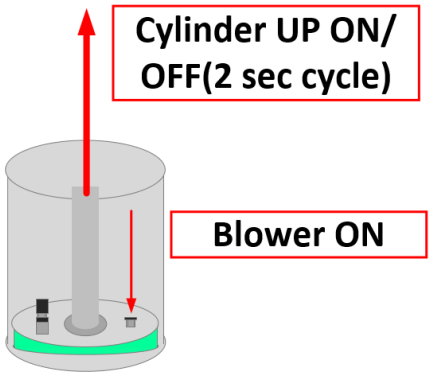
1) Use the RUN / STOP button from the control panel to stop the equipment operation.



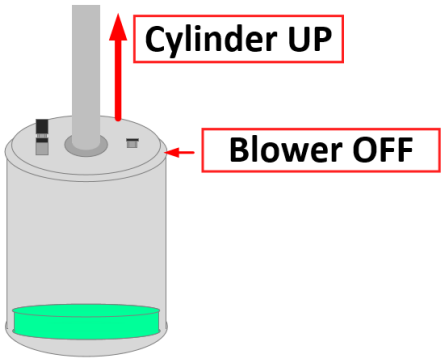
2) Press the Change button.
At this time, select "YES" when the confirm pop-up is displayed.



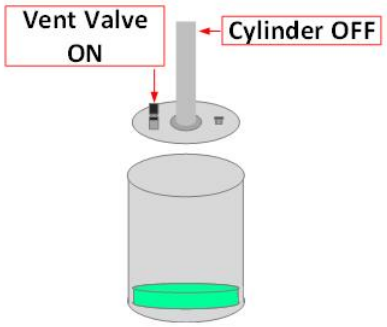
3) Blower is turned on and air is supplied to the inside of the pail. As the cylinder rises in stages, the follower plate begins to rise.
(At this time, the disposal cover is usually separated inside the pail, but if it is not separated from the follower plate and rises together, hop directly.)



4) When the Follower plate reaches the top of the pail, the blower turns off and rises until the cylinder detects a high sensor.
(At this time, do not press the change button before the cylinder detects the high sensor. When the cylinder detects the high sensor, the LED of the change button will automatically turn off.)



5) Check the control screen when the LED of the Change button turns off.

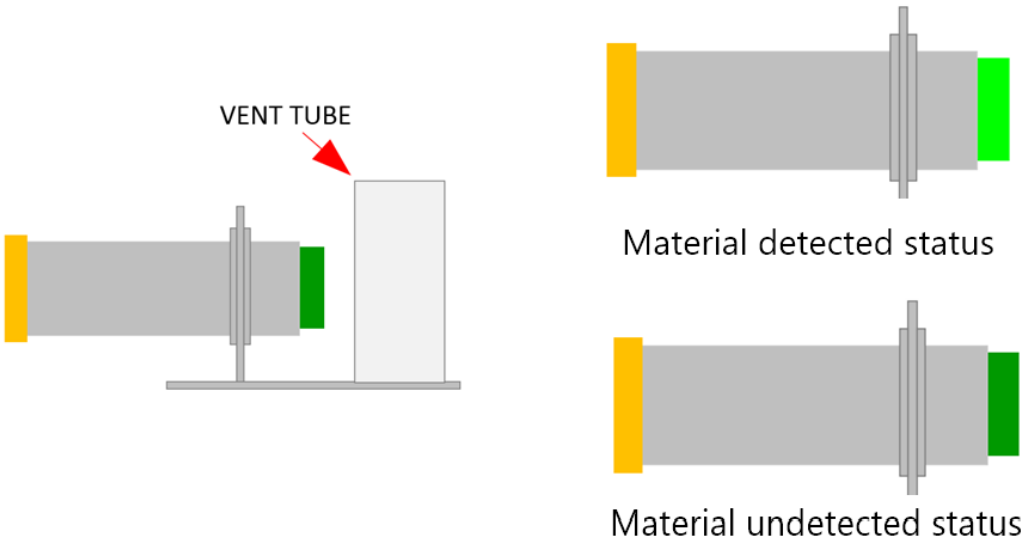


Vent valve is turned off automatically, and Level is displed as "???"

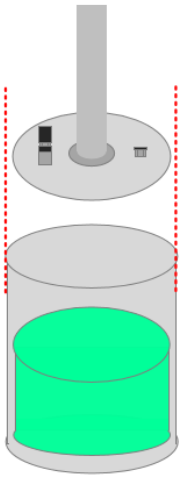
6) Remove the pail.

4.3.3 Insert procedure

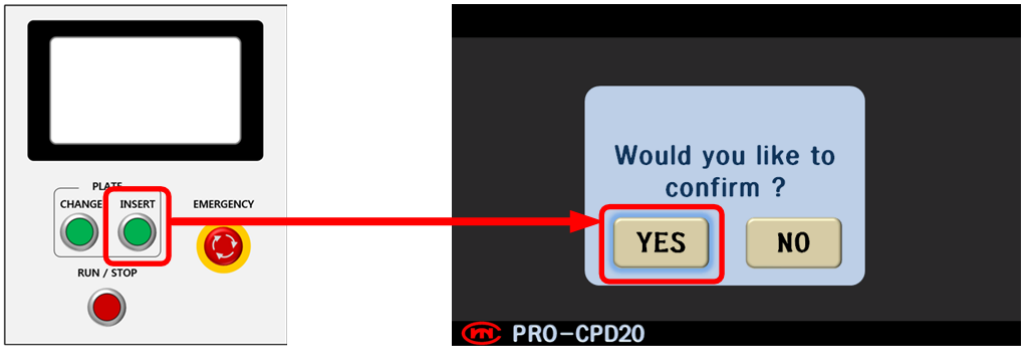
1) Insert an uncontaminated disposal cover or vent tube into the Follower plate.
The sensors with and without material detected are as follows.



2) After inserting the Pail, make sure that the pail and follower plate are centered on each other.
If the center position does not match, use the pail guide to adjust.

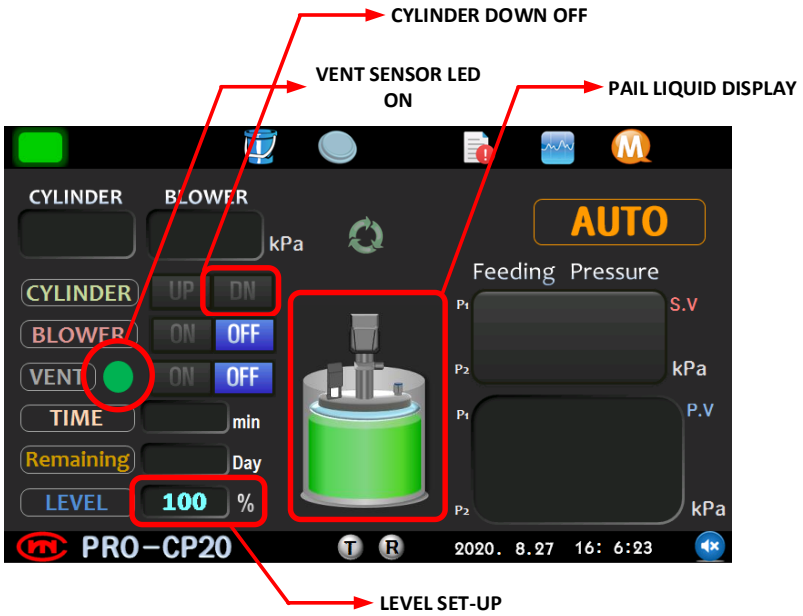


3) Press the Insert button.
At this time, select "YES" when the confirm pop-up is displayed.



4) When the vent valve detects the material after the follower plate is lowered and the bond with the pail is completed, the vent valve is turned off.

Material detected status



5) Pail replacement completed.
Use the RUN / STOP buttons from the control panel to drive the equipment.
For Level settings, see 6-2 Pail Settings.

5 HMI screen operation

5.1 Description

5.1.1 Changing screen

Touch the icon to move to the screen.

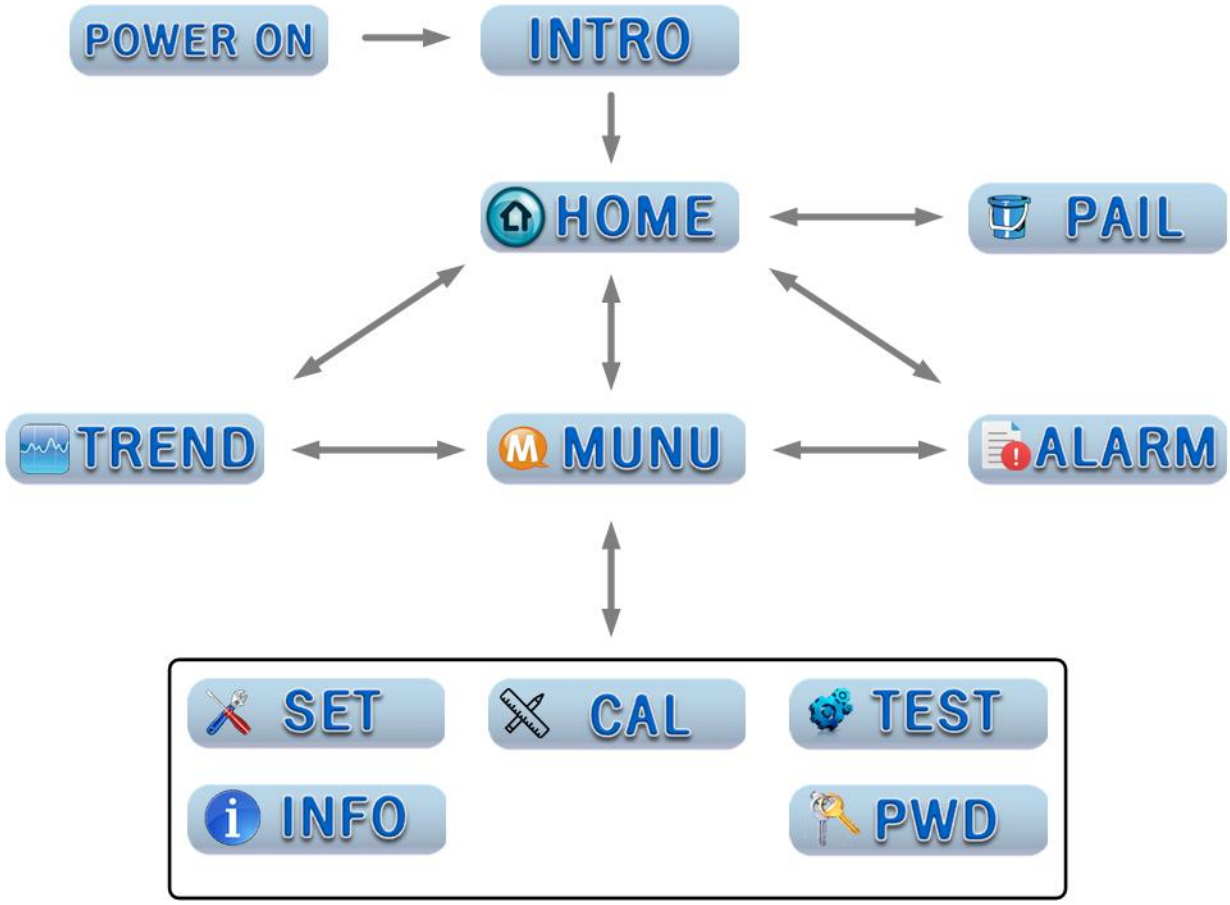
If you touch the arrow direction on the screen, you go to the next screen of that item.

5.1.2 Changing settings

When changing the condition value in the SETTING screen, enter the numerical value.
(However, it cannot be changed while in the control operation.)

When changing the setting in the SETTING PAGE, touch YES in the Confirm window.
(However, it cannot be changed while in the control operation.)

5.2 HMI screen structure



5.2.1 Page icon

Icon	Page name	Description
	Home page	The main screen that displays the operation and operation information of the PRO-CPD20.
	Pail page	PRO-CPD20 manual operation page ➔ Cylinder level operation <  >
	Menu page	Central PAGE for switching between each main page.
	Set page	Set page for equipment operation ➔ Mode setting page ➔ ETC setting page
	Test page	Page for equipment test ➔ Pump test page ➔ I/O test page
	Trend page	Page to check feeding (pumping) pressure, pump RPM and Torque value during material transfer
	Cal page	Page for cylinder, blower, feeding pressure sensor calibration pages and pump and equipment information reset.
	Pwd page	Page to change user password through user and administrator passwords.
	Alarm page	Page that displays alarm list if alarm occurs during equipment operation.
	Info page	Page that shows the ID/IP or external communications, firmware version and pump life cycle.

5.3 Operation mode

5.3.1 Auto mode

- Based on the operation switch process, the PAIL replacement and materials transfer can be performed only with the PRO-CPD20 front panel.

5.3.2 Manual mode

- The PRO-CPD20 equipment can be operated manually based on the HMI and operation switches.

5.3.3 Test mode

- PRO-CPD20 This mode is for pump and input / output contact test before feeding.
  - ➔ Pump test
  - ➔ Input test
    : Check input contact points (switch, sensor pressure value) and analog input of the PRO-CPD20.
  - ➔ Output Test
    : Check output contact points (button lamp, brush valve, signal tower) and analog output of the PRO-CPD20.

6 Operation method

6.1 Initial power input

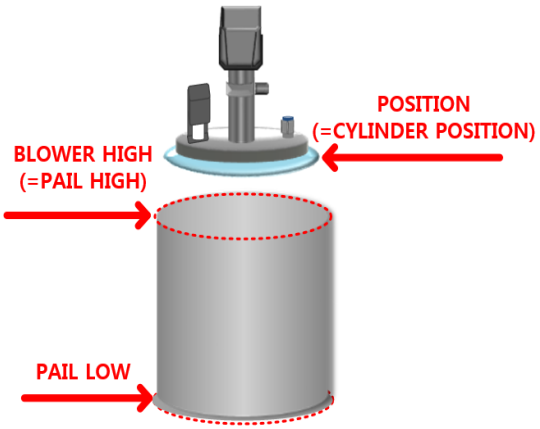
If power is applied after connecting the PRO-CPD20 power connector, the display will show the home screen after the intro screen display for 3 seconds as follows, and information will be activated on each display window.

6.2 Pail set-up

You need to set up a new container to operate the equipment.

➔ When using the same container, it is not changed after the initial setting.

In order to join the initial material container, it is necessary to proceed without equipment alarms and understand the concepts of cylinder position, blower high (= pail high) and pail low.



Pail set-up

- **Position(=Cylinder position)**
  -> Defined as follower plate position.
- **Blower High(=Pail high)**
  -> Defined as pail top end.
- **Pail low**
  -> Defined as pail bottom end.

Go to the setting mode as below, switch to manual mode, and touch the cylinder level operation icon on the manual operation page to prepare the initial material container setting.

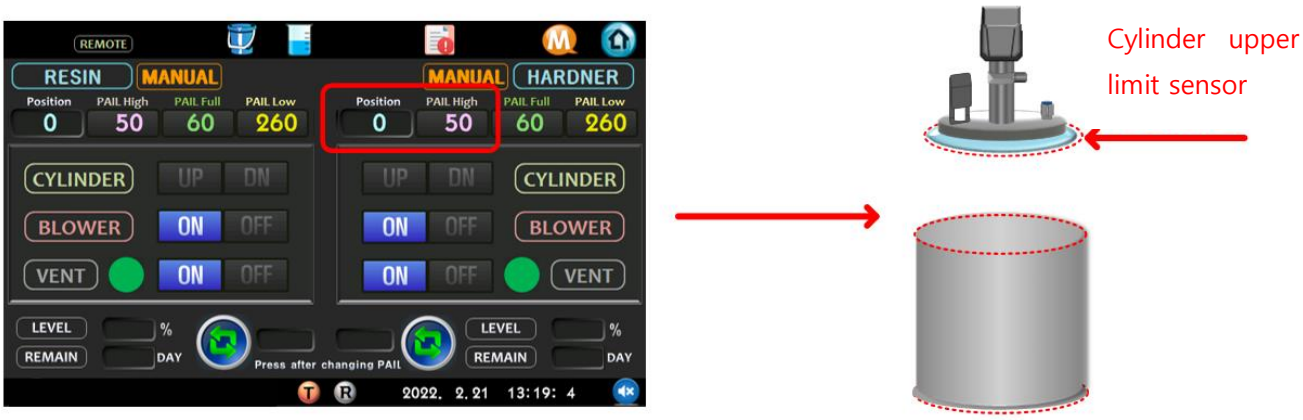
(The initial password when entering the SET PAGE is 0000.)

The initial container setting is not completed.

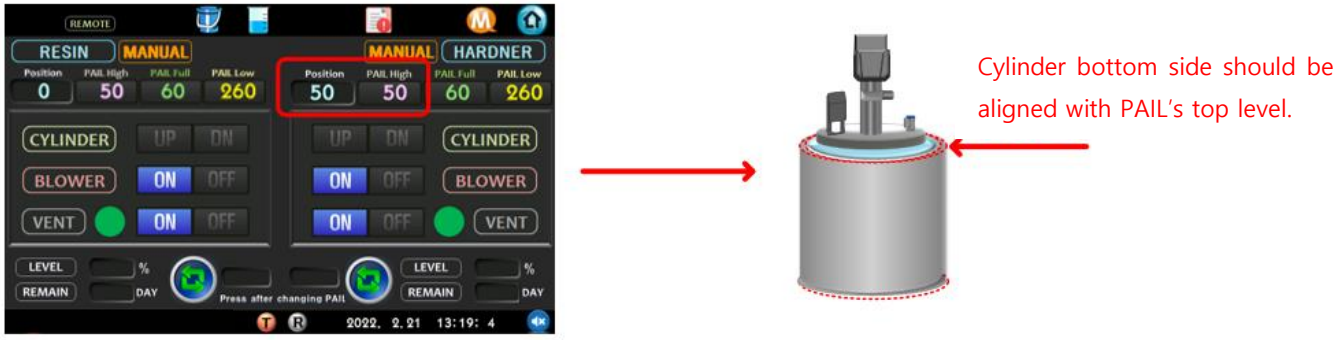
The position value shows the current position of the cylinder. The position value is 0 when it meets the cylinder top sensor.

If the numerical value at the top and bottom of the container is 0, the initial container is not set.

6.2.1 Pail high setting



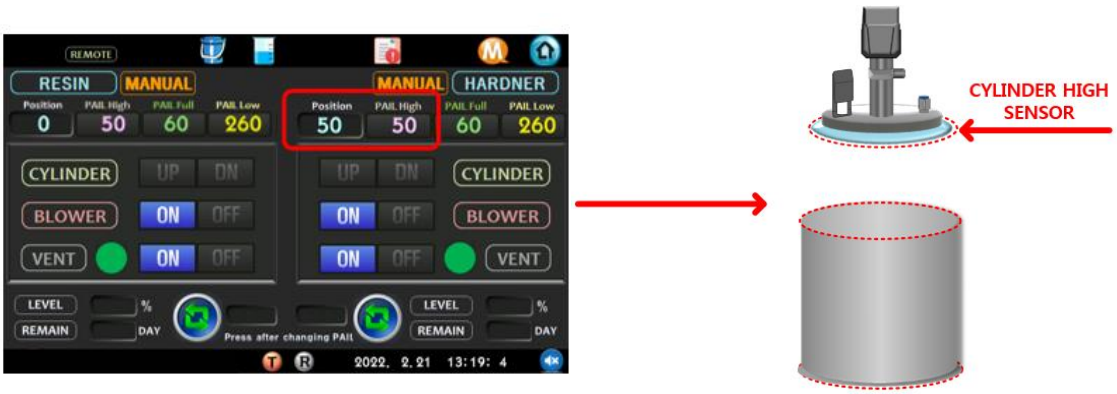
Raise the cylinder on the manual operation screen to reach the cylinder top sensor.
When the cylinder top sensor is reached, rising cylinder stops and the cylinder position value becomes zero.



Lower cylinder operation pressure to minimum (150 ~ 200kPa) to minimize cylinder movement speed.

- ➔ If the cylinder minimum pressure is changed to the minimum, combine the container to be used with the equipment.
- ➔ The cylinder position value increases when the cylinder is lowered, and the bottom of the cylinder is made identical to the top of the container (cylinder lowering operation is required).
- ➔ Type the position value on the top value of the container.

6.2.2 Pail low setting

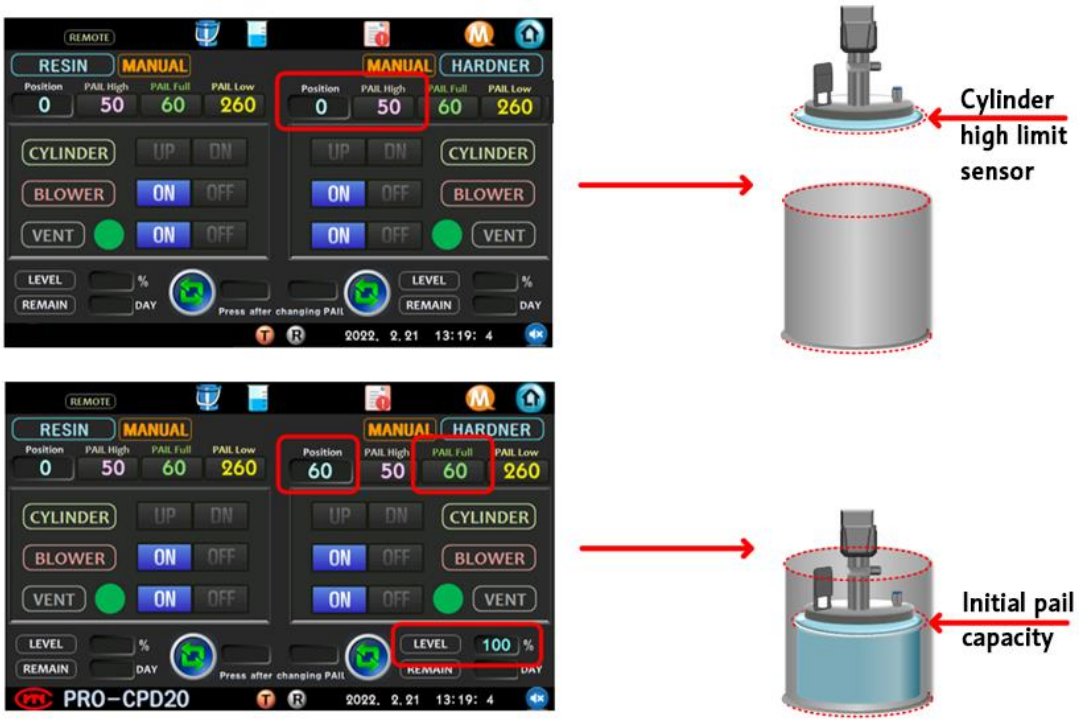


Raise the cylinder on the manual operation screen to reach the cylinder top sensor.
When the cylinder top sensor is reached, rising cylinder stops and the cylinder position value becomes zero.

Lower cylinder operation pressure to minimum (150 ~ 200kPa) to minimize cylinder movement speed.

- ➔ If the cylinder minimum pressure is changed to the minimum, combine the container to be used with the equipment.
- ➔ The cylinder position value increases when the cylinder is lowered, and the bottom of the cylinder is made identical to the bottom of the container. (cylinder lowering operation is required)
- ➔ Enter the position value on the bottom value of the container.
- ➔ At this time, it is possible to proceed without a container, but enter a numerical value of about -5, taking into account the distance between the bottom of the container and the bottom.

6.2.3 Pail Level 설정



Pail 결합이 완료된 후 수동모드로 현 Position 을 100% 지점으로 지정할 수 있습니다.
PAIL LEVEL 세팅으로 현 PAIL 위치의 잔량을 지정할 수 있습니다.
Level 정상 표시는 측정된 PAIL FULL 과 PAIL Low 값이 입력되어야 합니다.

간략설명

1. 6.3 Pail 결합 항목을 참고하여 PAIL 결합을 완료합니다.
2. 결합이 되었다면, 현재 Position 값을 참고로 PAIL FULL 에 입력합니다.
3. 해당 기점으로 LEVEL 은 100%이며, 동일액 기준 같은지점 100%로 인식하게 됩니다.
4. Position 값 오차로 LEVEL 표시가 상이할 수 있으며, 100% 이상일 경우 X 로 표시됩니다.

LEVEL 산출공식

LEVEL = (PAIL_LOW-POSITION)*100/(PAIL_LOW-PAIL_FULL)

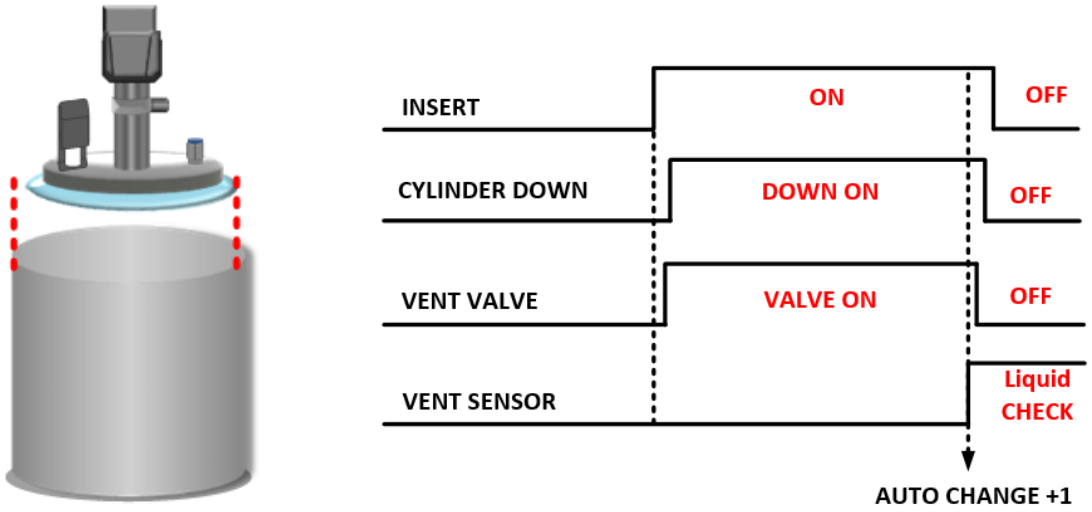
Ex) Position 60 / PAIL Full 60 / PAIL LOW 260

LEVEL = (260-60)*100/(260-60) = 100%

6.3 Pail mounting

6.3.1 Auto mode

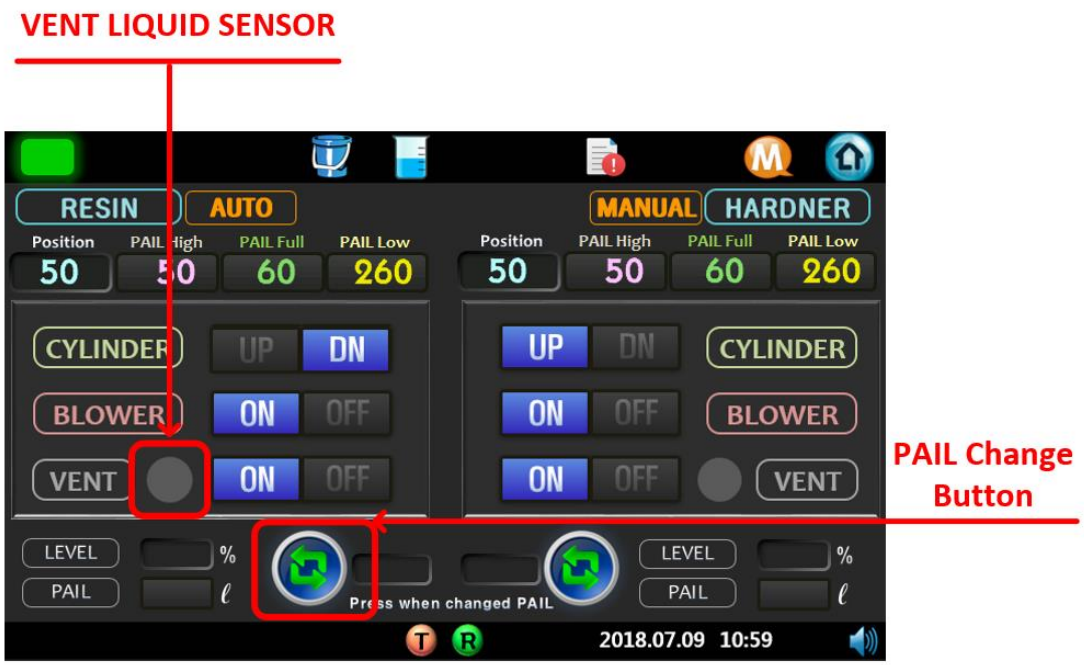
Refer to figure above, change the current setting mode to auto mode, then assemble the pail.



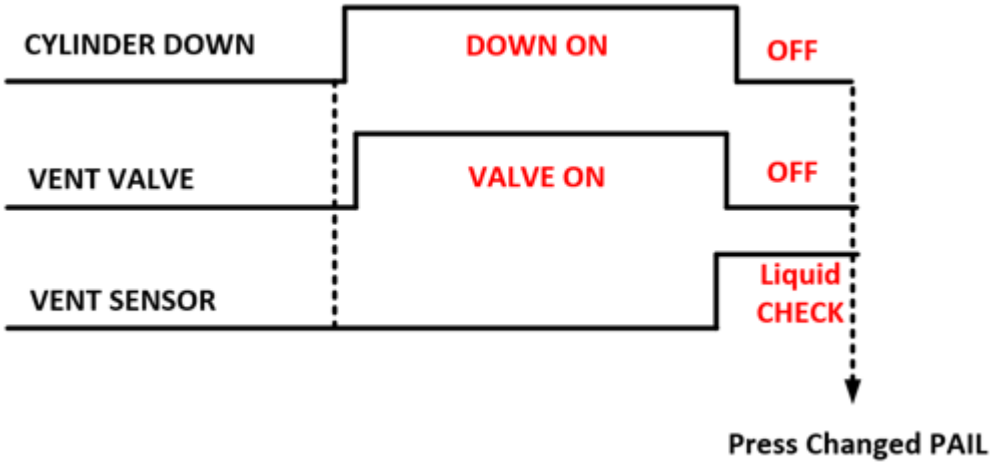
Refer to the figure above, align the Pail in the same way as the upper follow plate, and then click the insert button in the auto mode state.

① Insert button push -> ② Vent valve, cylinder down ON -> ③ Contact with follow plate liquid -> ④ Liquid rise with vent hose -> ⑤ Vent sensor liquid detection -> ⑥ Vent valve, Cylinder down OFF -> ⑦ Auto change completed

6.3.2 Manual mode



Change the current setting mode to manual mode, and then assemble the pail.
Align the pail with the top follow plate, then run it manually on the pail page.



① Vent valve, cylinder down ON -> ② Follow plate makes contact with liquid -> ③ Liquid rises to vent hose -> ④ Confirm vent sensor detection with eyes or through HMI vent sensor -> ⑤ Vent valve, Cylinder down OFF -> ⑥ Pail change button -> ⑦ Confirm -> ⑧ Yes -> ⑨ Manual change complete

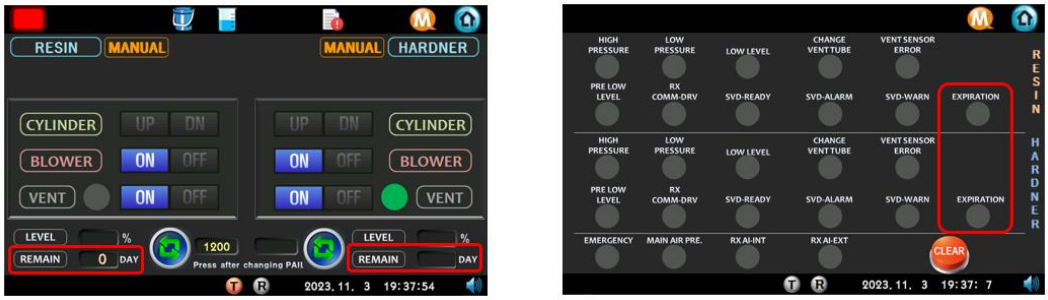
6.4 Condition setting and material feeding

6.4.1 Set expiration date

The expiration date setting function sets the expriation date for the combined material

1. Enter the current time on the SET ID Page.
2. Enter the Liquid Expiration date (D-day) EXPIRATION value on the SET MODE page.

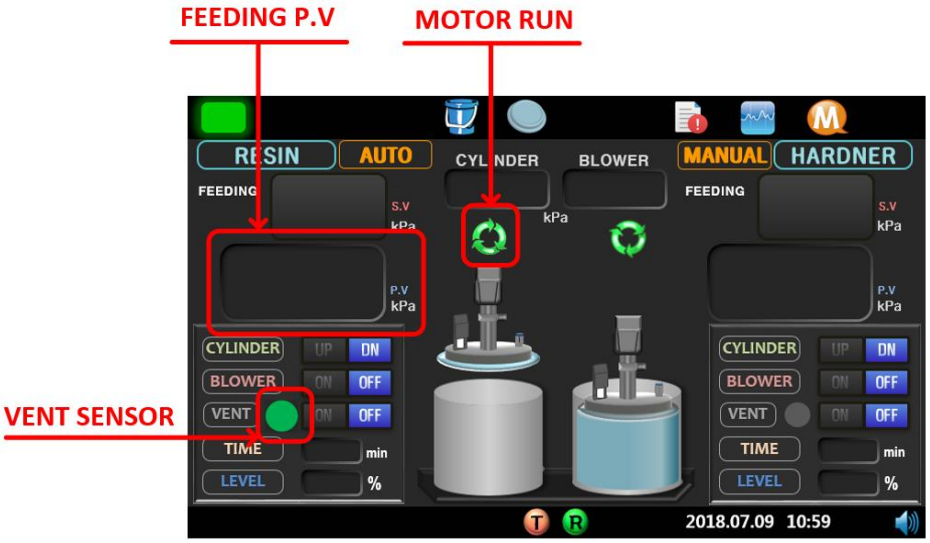
If you enter the current time and EXPIRATION value, the HOME screen Remaining value will be displayed, and the Remaining value will decrease over time, and an alarm will occur when 0 is reached. (If you do not use the function, you can enter 0 in Expiration.)



After the remaining time period, the manual home screen displays an alarm after the date.

Once the material container has been combined, set the liquid transfer conditions as shown above and proceed to the Home screen to prepare for the start of liquid transfer.

6.4.2 Auto mode

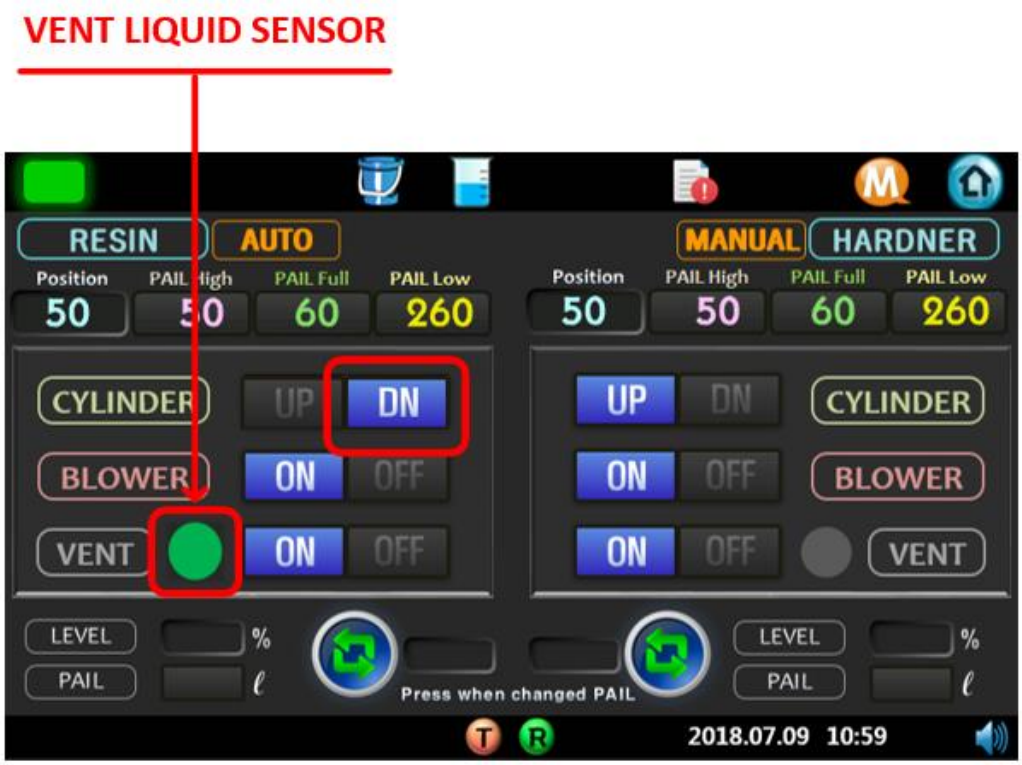


This is how to start supplying materials in auto mode.

Confirm that the vent sensor led is on and press the run button on the front panel to activate HMI motor run on the home page along with the button led on. After a set period of time, the feeding PV value will increase.

- If vent sensor led is off, the vent hose must be checked.
- If the material supply is operated, the signal tower turns on about 400ms.

6.4.3 Manual mode

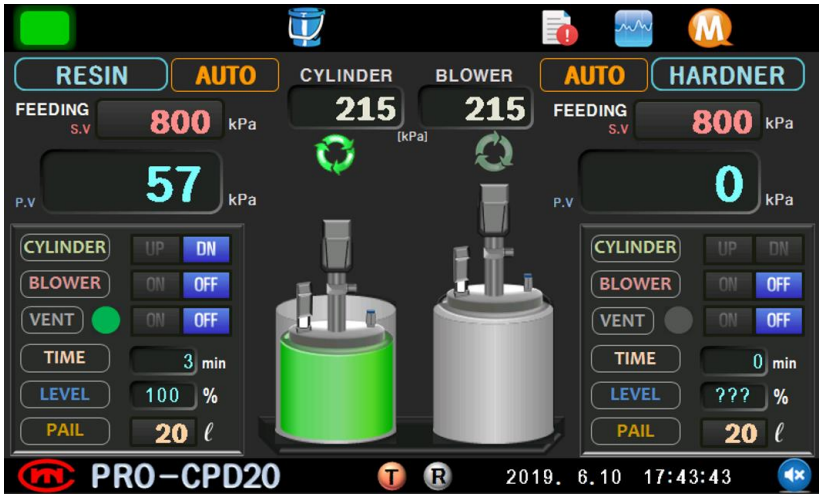


This describes how to commence materials transfer in manual mode.
If the run button on the front panel is pressed after the panel insert button or HMT cylinder down on on the pail page, materials transfer will commence with the button led on.

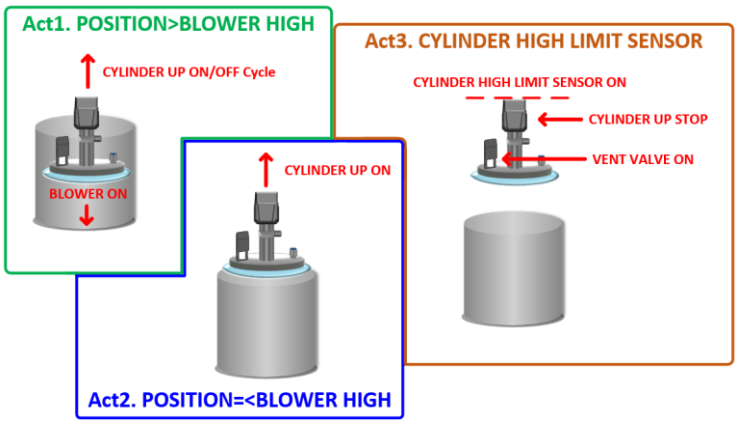
- For manual operation, the cylinder must be maintained in the down state.
- If the material transfer operation is executed, the signal tower will flash with a cycle of about 400 ms.

6.5 Pail replacement

6.5.1 Auto mode



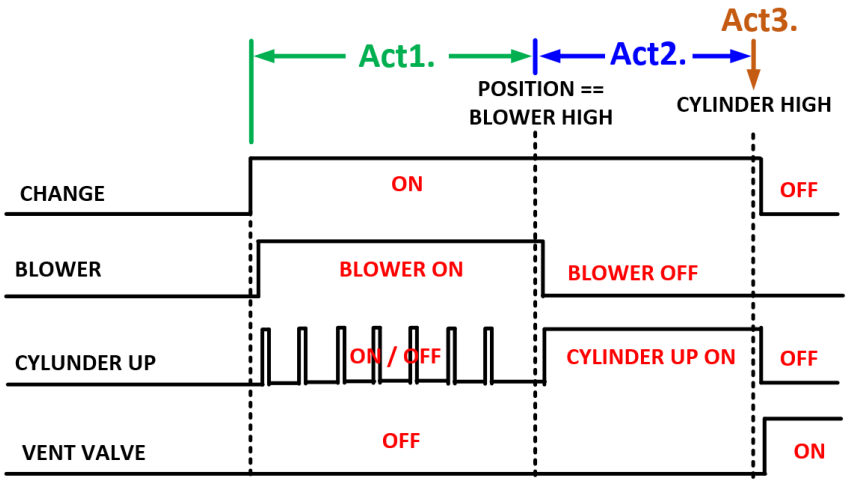
When replacing the pail in auto mode, pressing the change button on the front panel will execute the sequence in which the plate is removed from the pail, and the explanation for this sequence is as follows.



When you touch change in auto mode, it is divided into three operation sequences as follows.
Act1. When the cylinder position is greater than the blower high value.
Act2. When the cylinder position is less than or equal to the blower high value
Act3. When the cylinder high limit sensor is on.
When you touch the change button, as shown in Act1 on the left, the blower is always on, and the cylinder up repeatedly turns on/off to raise the follow plate.

Act2. When the cylinder position is equal to or less than the set-up blower high value, it becomes blower off and makes the cylinder up.

Act3. After that, when the cylinder top limit contact point sensor is detected, the cylinder operation stops to make the vent valve on.



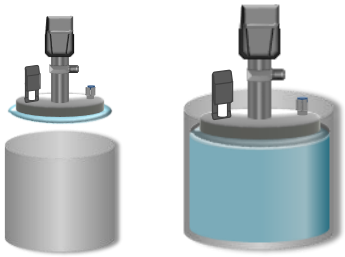
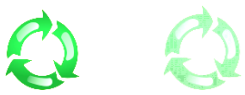
6.5.2 Manual mode

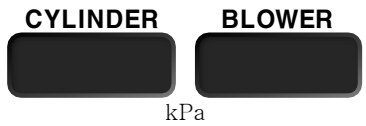
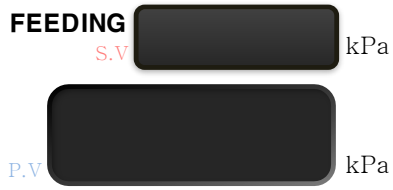
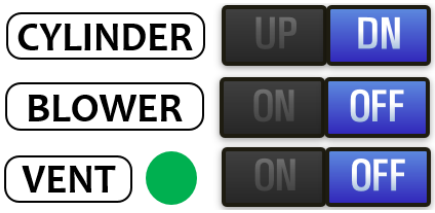
During manual replacement of pail, the replacement can proceed to manual mode by referring to the auto mode sequence on pail page.

7 HMI Screen

7.1 Home page

The items are displayed in Home page, is just showed with current status, and the description is as below.

List	Description
	Displays the PRO-CPD20 operating status. : Normal operation : Operation error alarm or perliminary alarm : Occurs when control operation is no longer possible
	Displays the configured resin mode on the left. ➔ Auto mode
	Displays the configured hardner mode on the right. ➔ Manual mode
	Displays the assembly status of the pail. ➔ Left : Pail not replaced. ➔ Right : Pail replacement complete
	Displays run/stop status of the pump during equipment operation. ➔ Left : Pump run ➔ Right : Pump stop

	Displays the pressure of the cylinder and blower pressure regulator on the inside front of the PRO-CPD20.
	Displays the PRO-CPD20 feeding pressure. ➔ S.V(Set Value) : Setting feeding pressure value ➔ P.V(Present Value) : Present feeding pressure value
	Each list displays an indication of operation. ➔ Cylinder : Cylinder up/down status display ➔ Blower : Blower on/off status display ➔ Vent : Vent valve on/off status display ➔ ● / ● : Indication of vent liquid detection on/off
	Indicates the time the equipment stays on after pail replacement.
	Indicates liquid levels upon pail replacement. ➔ Prior to pail set-up, the remaining amount is expressed as '???'.
	Displays the set pail capacity value.
	Displays communication status between the control board and the LCD. ➔ T : Blinks when the LCD is sending a signal to the control board. ➔ R : Blinks when the LCD is receiving a signal from the control board
12018.07.09 10:59	Displays the current time. ➔ Needs to be set at the beginning. (Set page -> ETC)
	Turns the alarm sound of the signal tower buzzer on/off by touching this icon.

7.2 Pail page

The pail page is a page for the manual operation the set-up of the pail. It is possible to operate the screen touch and the switch of the front panel of the equipment on the pail page.

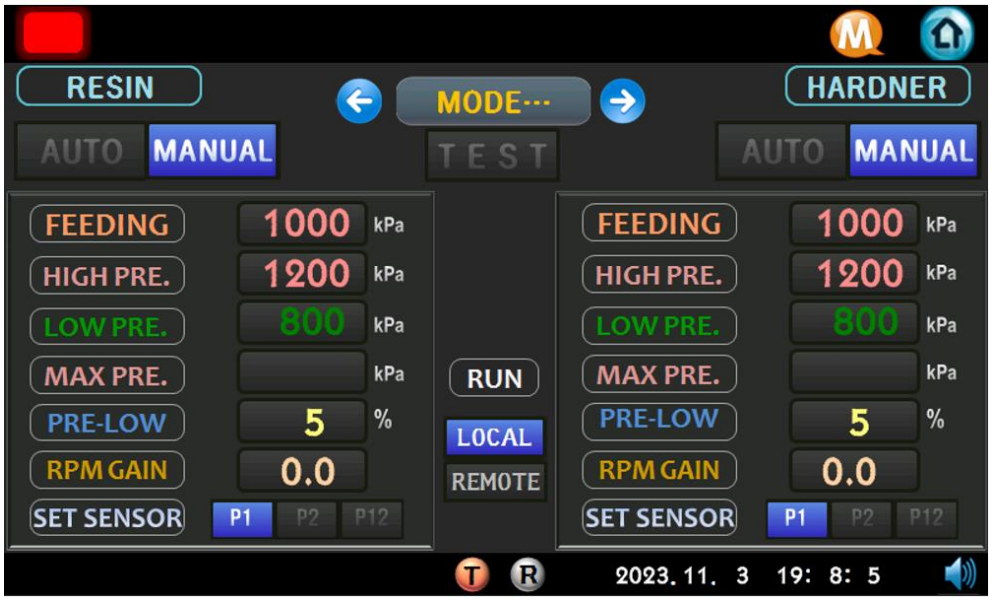
List	Description
CYLINDER UP DN BLOWER ON OFF VENT ON OFF	Each list is manually operated. Note that operation is possible when the equipment is set to manual mode. ➔ Cylinder : Cylinder up/down operation button ➔ Blower : Blower on/off operation button ➔ Vent : Vent valve on/off operation button ● / ● : Indicates vent liquid detection on/off status
LEVEL % PAIL	➔ Level : Indicates the liquid level upon pail replacement. (Prior to pail set-up, the remaining amount is expressed as ???.) ➔ Pail : Displays the set PAIL capacity value.
Press when changed PAIL	This is a completion button that displays the completion of manual replacement of the pail. ➔ : Replaced ➔ : Not replaced ➔ : Number of pail replacement
Position PAIL High PAIL Low	This is the pail level setting required for the initial set-up. (If set-up is not done properly, auto change, residual check and pump operation will be affected.)

7.3 Menu page

On this menu page, it is possible to switch between each menu icon touch, and the menu page is the page to move to each main page.

List	Description
	Go to home page button
	Go to set page button ➔ User or administrator password is required when switching to set page
	Go to test page button ➔ After changing from the set page to test mode, you can enter the administrator password
	Go to trend page button
	Go to cal page button ➔ Administrator password is required when switching to cal page
	Go to pwd page button
	Go to alarm page button
	Go to info page button

7.4 Set(mode) page

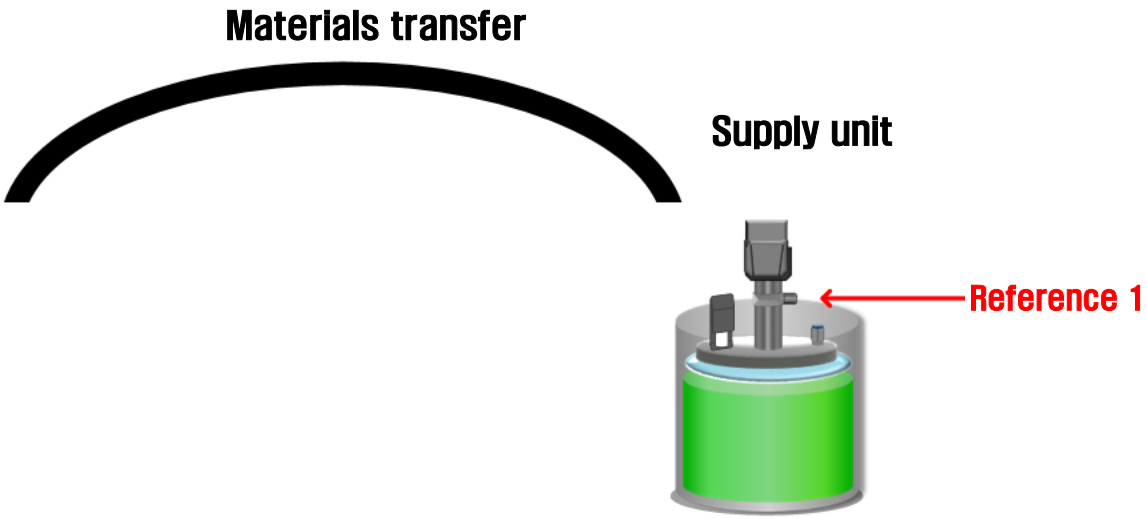


This is the set page (mode) for material supply operation.

List	Description
AUTO MANUAL TEST	Auto / Manual / Test mode can be set individually. ➔ The test mode can be changed for resin and hardner.
SET SENSOR	Sensor position selection(option) Sensor selection for pressure detection. ➔ P1 : Use sensor at feeding position. ➔ P2 : Use sensor at option position. ➔ P1+P2 : Link plate supply pressure with optional dispensing pressure
FEEDING	Setting supply pressure(Material supply unit) ➔ Set the pressure of material supply unit. ➔ The position of the supply pressure unit varies depending on the reference sensor. Supply pressure setting position according to reference sensor setting ➔ P1 : Set the pressure of plate supply pressure unit. ➔ P2 : Set the pressure of the dispensing unit. ➔ P1+P2 : Set the pressure of the dispensing unit.

HIGH PRE.	Setting the top pressure limit ➔ Set the top limit of control pressure to prevent excessive supply pressure. ➔ The alarm and pump will stop when the pressure rises. ➔ The top limit detection position of pressure varies depending on the reference sensor. The top limit detection position of pressure depending on reference sensor setting ➔ P1 : Detect the top pressure limit of plate supply pressure unit. ➔ P2 : Detect the top limit of the dispensing unit. ➔ P2 : Detect the top limit of the dispensing unit.
LOW PRE.	Setting the bottom limit of pressure ➔ Set the bottom limit of pressure to detect if the supply is not smooth because the supply pressure drops to the bottom limit during normal operation. ➔ The alarm and pump stop when the bottom limit of pressure is maintained for a certain time. The top limit detection position of pressure depending on reference sensor setting ➔ P1 : Detect the top pressure limit of plate supply pressure unit. ➔ P2 : Detect the top limit of the dispensing unit. ➔ P2 : Detect the top limit of the dispensing unit.
MAX PRE.	Maximum pressure set-up ➔ Set maximum pressure value of P1 materials transfer when reference sensor P1 + P2 is linked. ➔ Activated when P1 + P2 is used.

7.4.1 When using the reference sensor P1

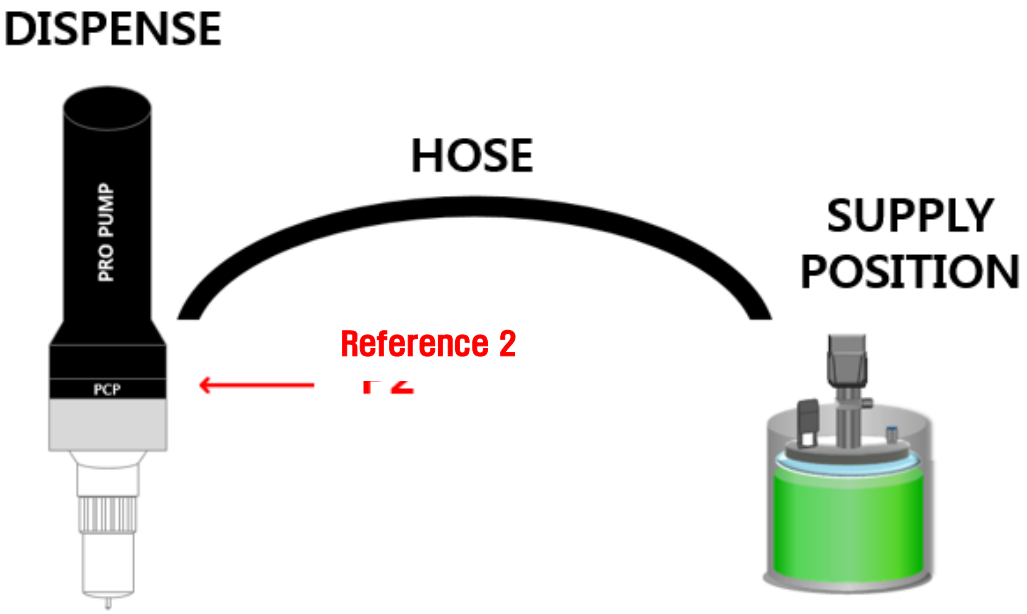


The above figure is to understand the concept of the reference sensor.

➔ During dispensing after P1 setting, the material is supplied based on the P1 sensor.

List	Description
P1 FEEDING	Set the pressure value of the P1 supply unit.
P1 HIGH PRE.	If the pressure value in the P1 supply unit exceeds the top pressure limit, the liquid transfer stops and an alarm is triggered.
P1 LOW PRE.	If the pressure value in the P1 supply unit drops below the pressure bottom limit, the liquid transfer stops and an alarm is triggered.

7.4.2 When using the reference sensor P2

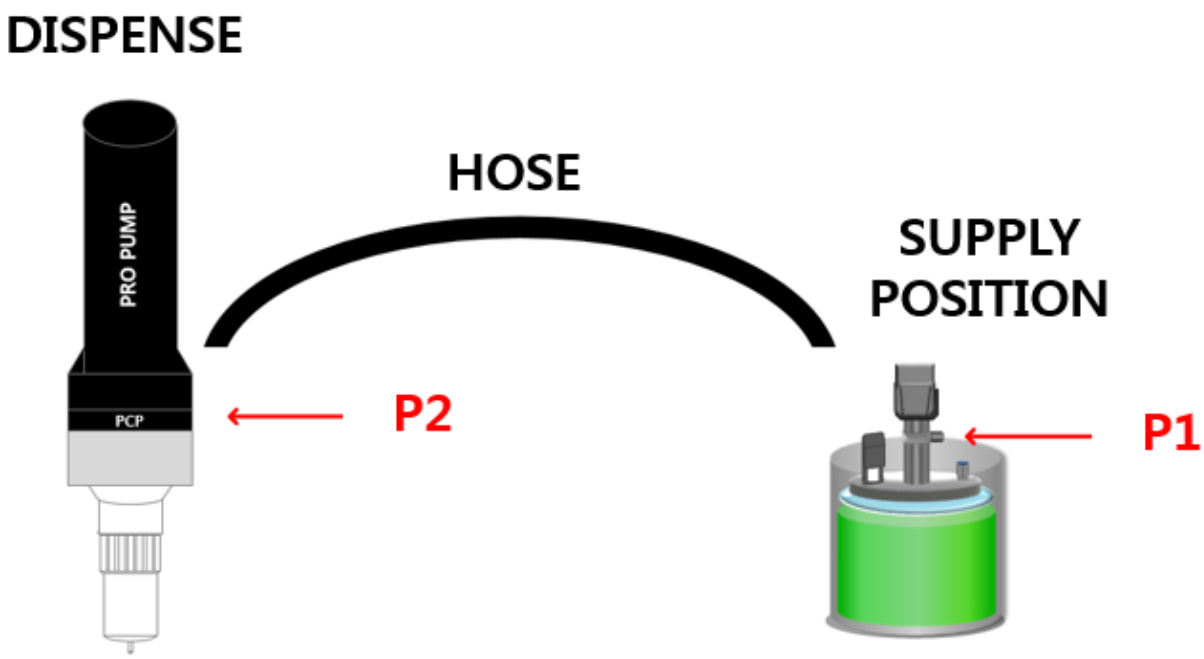


The above figure is to understand the concept of the reference sensor.

➔ During dispensing after setting P2, material is supplied based on P2 sensor.

List	Description
P2 FEEDING	Sets the pressure value of the P2 dispensing unit.
P2 HIGH PRE.	If the pressure value in the P2 supply unit exceeds the pressure top limit, the liquid transfer stops and an alarm is triggered.
P2 LOW PRE.	If the pressure value in the P2 supply unit drops below the pressure bottom limit, the liquid transfer stops and an alarm is triggered.

7.4.3 When using the reference sensor P1+P2



➔ When P1 + P2 is set, the mode setting screen and supply pressure setting window are changed as shown below.

This is a control method that consists of reference 1 and 2 sensors at the same time to prevent an excessive pressure rise in the dispensing unit and supply unit.

➔ The reference 1 sensor is given the maximum pressure / bottom limit of pressure as shown below.

➔ The reference 2 sensor is given the supply pressure / top limit of pressure as shown below.

List	Description
P2 FEEDING	Set the pressure value of P2 dispensing unit.
P2 HIGH PRE.	If the pressure value in the P2 dispensing unit exceeds the top pressure limit, the liquid transfer stops and an alarm is triggered.
P1 LOW PRE.	If the pressure value in the P1 supply unit drops below the bottom pressure limit, the liquid transfer stops and an alarm is triggered.
P1 MAX PRE.	Set the pressure value of the P1 supply unit.

7.4.4 Description of pump operation in P1+P2 interlock control

The operation proceeds with reference to the P2 supply pressure, P1 maximum pressure setting value and current value.

P1 set pressure = P1 maximum pressure

P2 set pressure = P2 supply pressure

➔ (P2 C.V > P2 S.V) : Stops the motor.

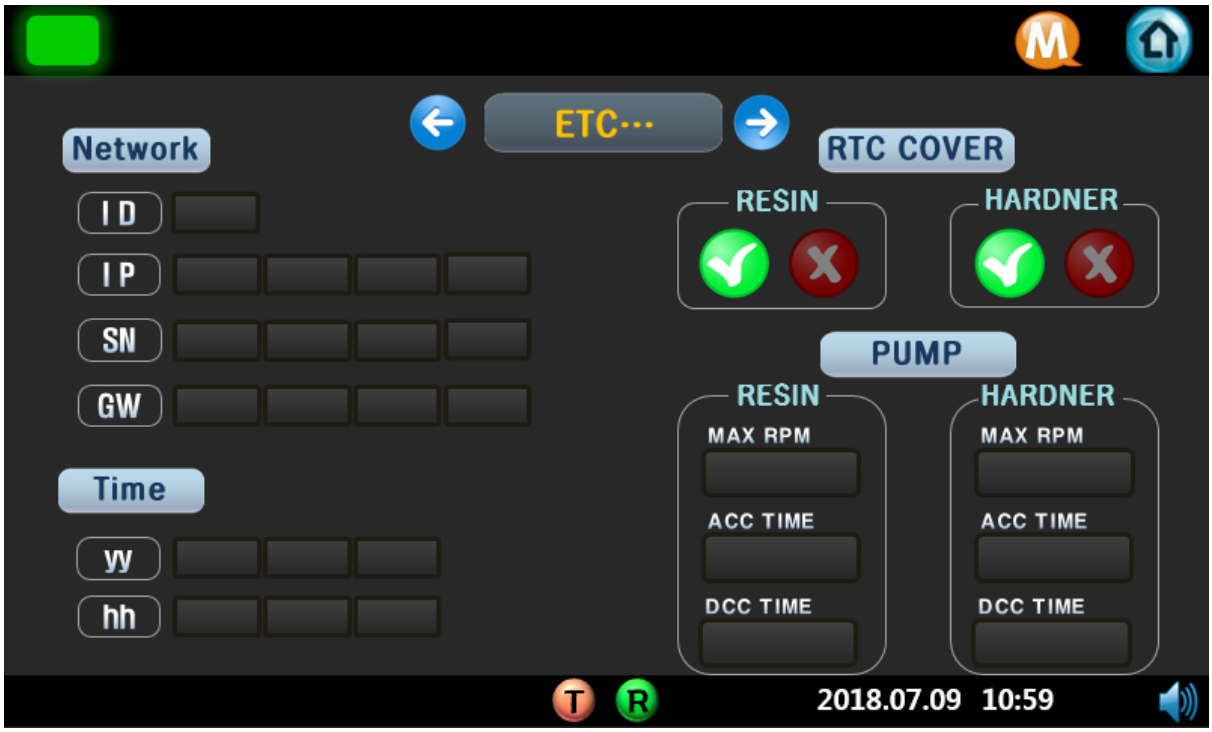
➔ (P2 C.V < P2 S.V) and (P1 C.V > P1 S.V) : Stops the motor.

➔ (P2 C.V < P2 S.V) and (P1 C.V < P1 S.V) : Motor operation.

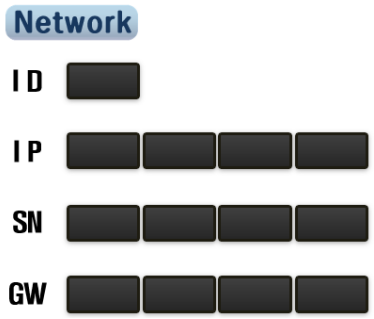
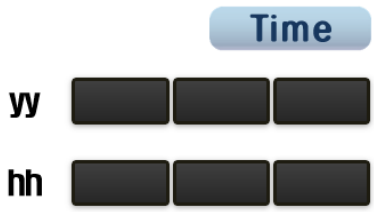
➔ (P2 C.V > P1 C.V) : Alarm triggered

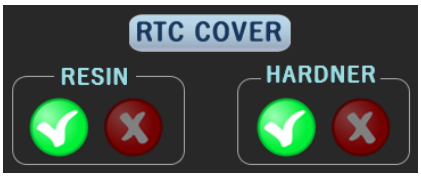
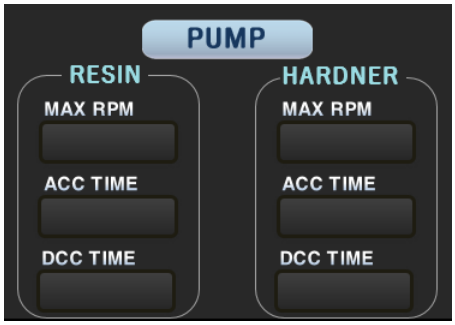
List	Description
	This is a setting that sets off an alarm before the material is exhausted. ➔ When set to 5%, an ALARM occurs when the remaining material reaches 5%
	Sets the pump control method. ➔ PID control progress when RPM gain value is 0. ➔ When the RPM gain value is not 0, the RPM gain value is the RPM value operated per second. Ex) If the RPM gain value is 1, the motor operation increases by 1 RPM per second.
	Control operation type can be set through external communication. ➔ LOCAL : PRO-CPD20 front panel button control ➔ REMOTE : PRO-CPD20 operation control by external signal

7.5 Set(etc) page (1)

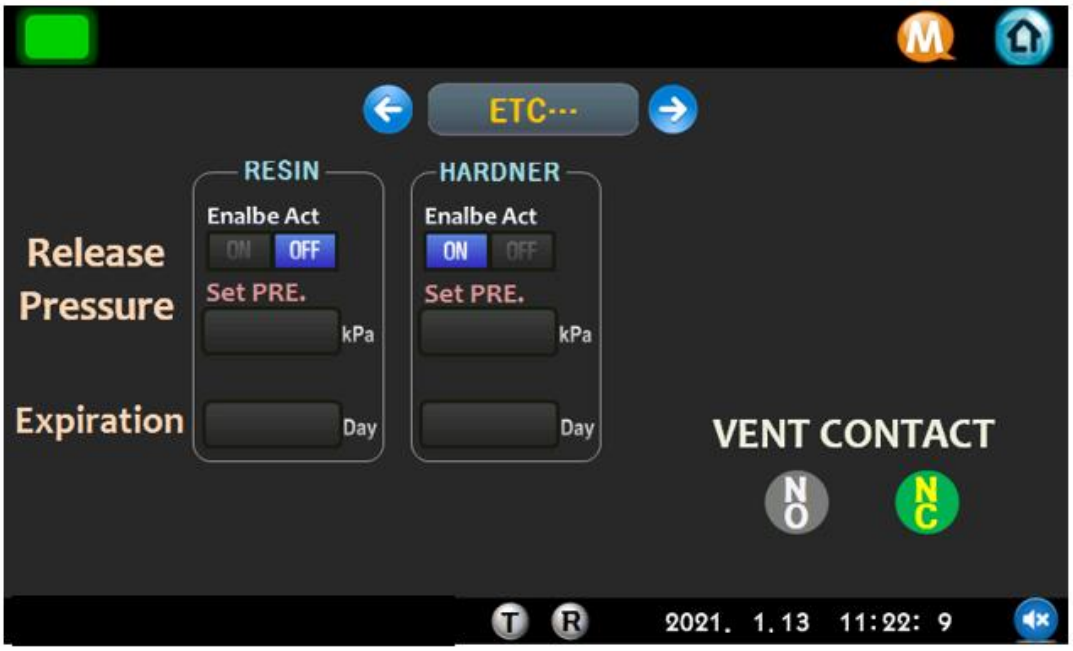


This is the set page(etc.) for setting upper-level communications, RTV cover selection (vacuum type), time setting and pump speed setting.

List	Description
	It is possible to set ID and address value for upper LAN communication (RJ45).
	PRO-CPD20 HMI time setting is possible. ➔ YY : Year / Month / Day ➔ HH : Hour / Minute / Second

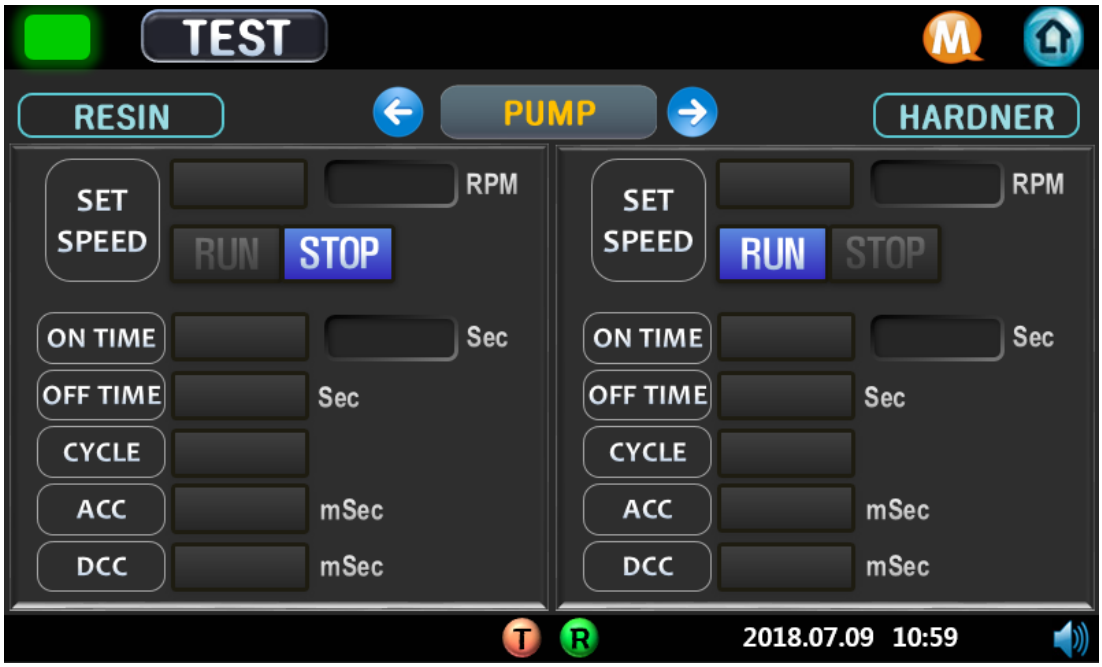
	It is possible to check whether or not the vacuum type RTV cover is used. ➔ : The RTV cover can be used. When either of the two is selected, the cover icon appears at the top of the home page. ➔ : This button is for choosing not to use the RTV cover. **Currently not used.**
	This is the setting for the pump speed used for the operation of the equipment. ➔ Max. rpm : It is possible to set the speed to the maximum rpm of the pump during equipment operation. ➔ Acc time : It is the time consumed when the pump reaches the set RPM during initial operation. ➔ Dcc time : This is the time that the pump takes to stop when the pump decelerates to stop the operation.

7.6 Set(etc) page (2)



Release Pressure function (option), Expiration (liquid expiration date Japan-Korea) function, Vent contact setting (setting before factory shipment) screen.

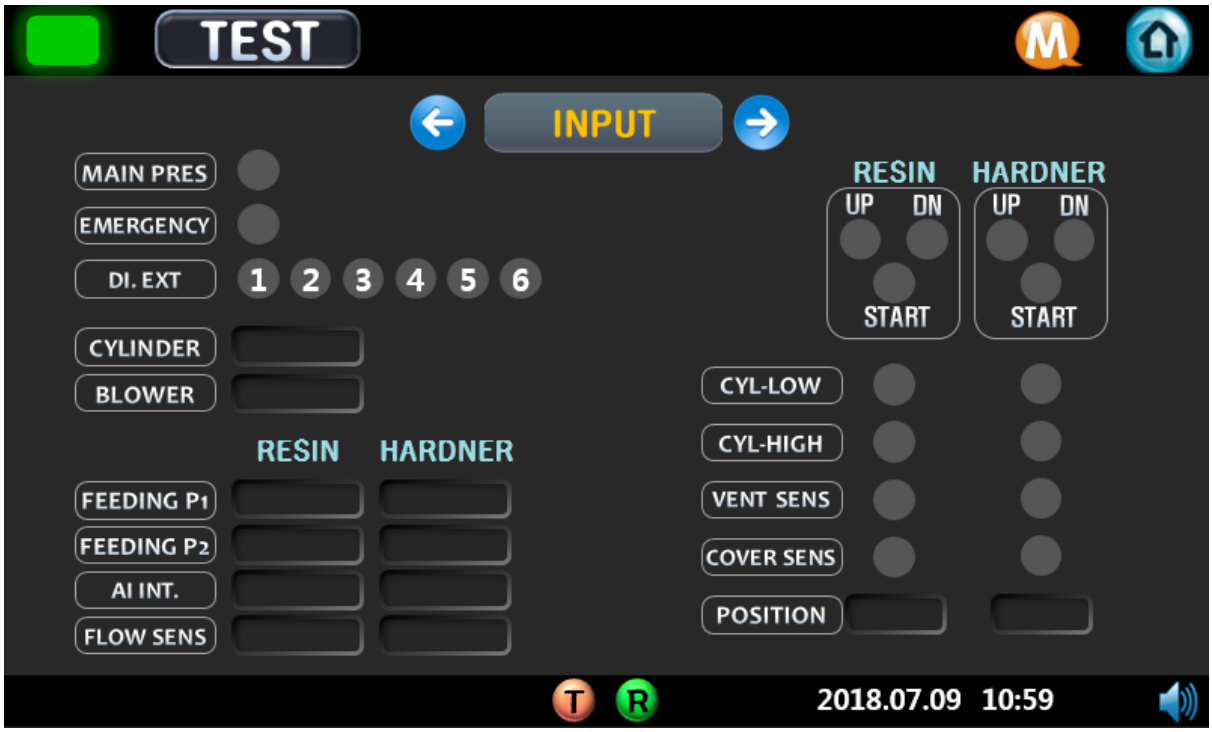
7.7 Test pump page



This page is the page for executing pump test. The equipment can be switched to test mode from this test page, and this page can be accessed with the administrator password.

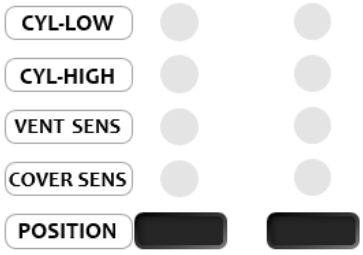
List	Description
SET SPEED [ ] RPM [ ] RPM RUN STOP	Pump rpm can be configured and operated. ➔ [ ] : Displays rpm setting and setting value. ➔ [ ] : Displays pump run rpm feedback value. ➔ RUN STOP : Pump run/stop button
ON TIME [ ] [ ] Sec OFF TIME [ ] Sec CYCLE [ ]	These are the settings for repeating pump operation. ➔ On time : Pump operation time ➔ Off time : Stop time after completion of pump operation ➔ Cycle : Number of on/off repetitions ➔ Each setting value can be configured, and all three values must be set for repeating operation.
ACC TIME [ ] mSec	Acceleration time until normal pump operation is achieved.
DCC TIME [ ] mSec	Deceleration time until the pump stops.

7.8 Test input page

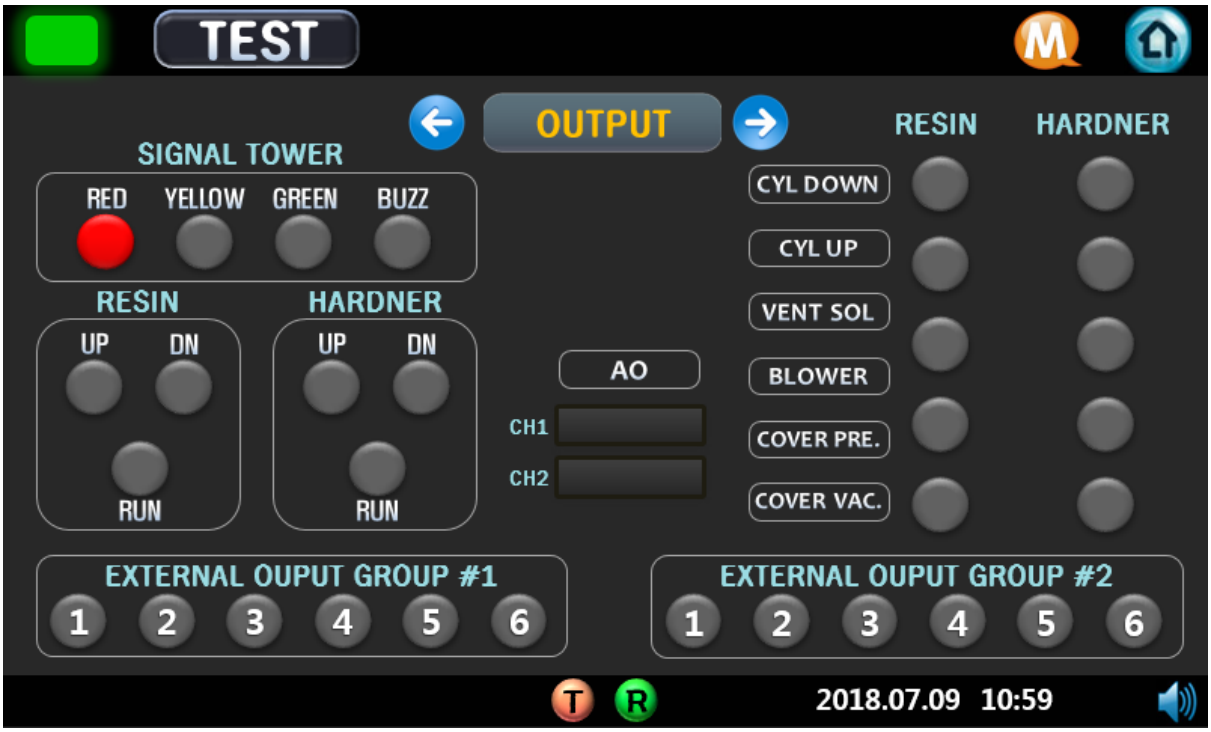


This page is to check PRO-CPD20 input contact point and sensor value.

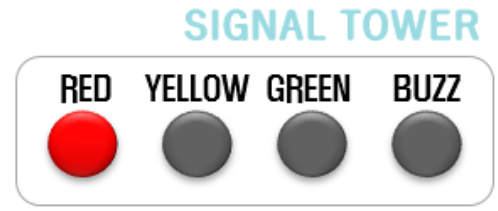
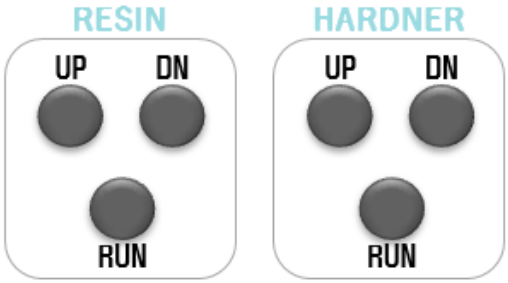
List	Description
MAIN PRES	List of checking PRO-CPD20 main pressure contact point. ➔ If the main pressure is 4 bar or less, the contact point will turn on (green)니다.
EMERGENCY	List of checking PRO-CPD20 emergency contact point. ➔ Responds to the PRO-CPD20 front panel emergency button.
DI. EXT 1 2 3 4 5 6	List of checking PRO-CPD20 external input contact point. ➔ Connects with the external connector to react with the external contact point.
CYLINDER BLOWER	Displays the cylinder and blower sensor input values as decimal numbers.
RESIN HARDNER FEEDING P1 FEEDING P2 AI INT. FLOW SENS	Displays the sensor and internal analog input values applied to the PRO-CPD20 in decimal.

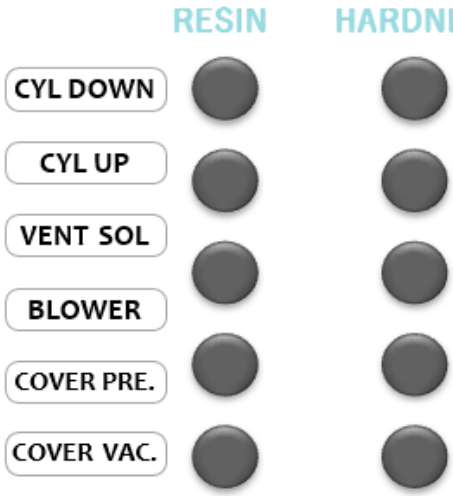
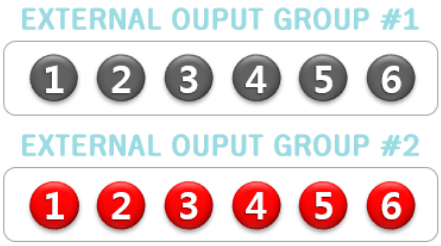
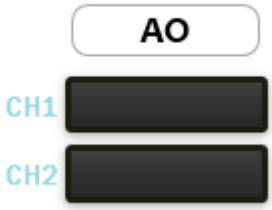
	List of checking PRO-CPD20 Front Panel button contact point. ➔ This is the name of the front panel of the PRO-CPD20 that matches the figure on the left. ➔ UP : CHANGE ➔ DN : INSERT ➔ START : RUN/STOP
	List of checking the contact point sensor used for PRO-CPD20. ➔ CYL-LOW : On when the cylinder reaches the bottom limit. ➔ CYL-HIGH : On when the cylinder reaches the top limit. ➔ VENT SENS : ON when liquid is detected in vent hose unit. ➔ COVER SENS : On when the cover vacuum value is reached(Option). ➔ POSITION : Displays the cylinder position value. When the cylinder-high sensor is on, the position value is 0, and the position value increases as the cylinder comes down.

7.9 Test output page

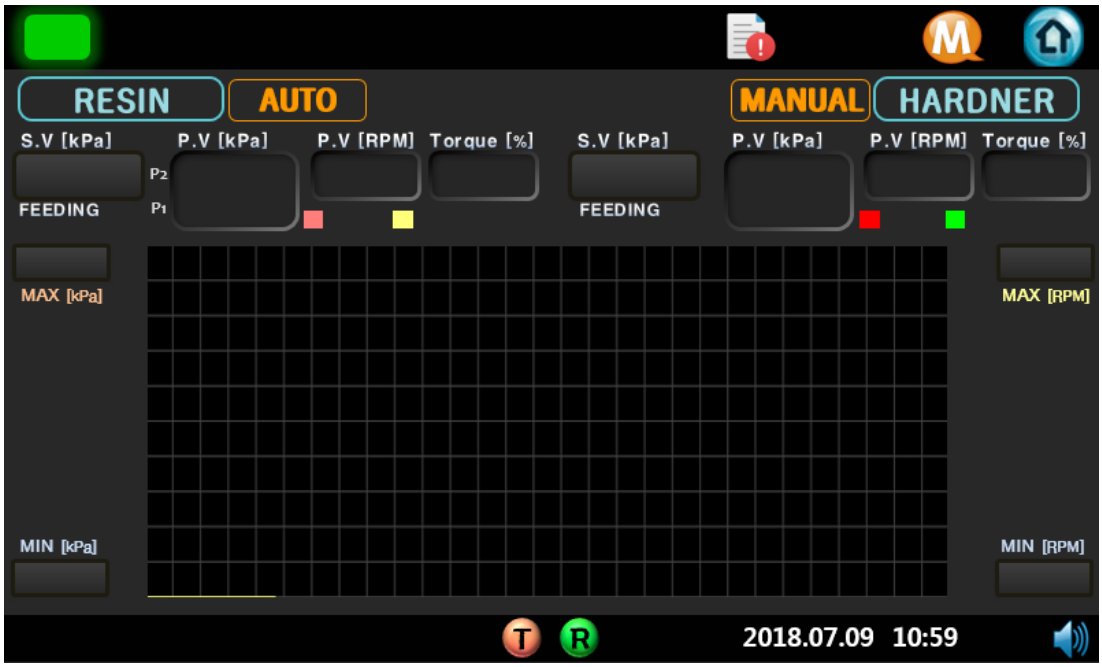


This page is to test all output operations of PRO-CPD20.

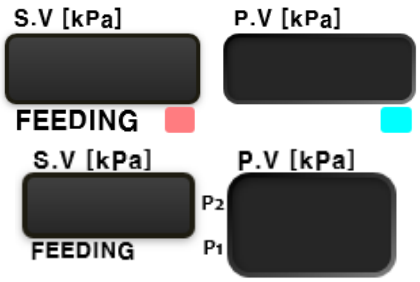
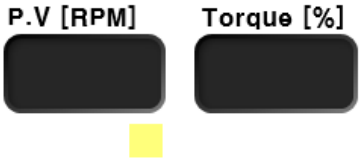
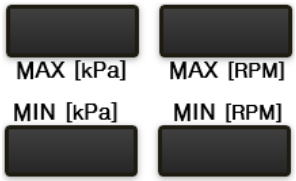
List	Description
	PRO-CPD20 SIGNAL TOWER OUTPUT TEST ➔ RED BUTTON → RED LED ON/OFF ➔ YELLOW BUTTON → YELLOW LED ON/OFF ➔ GREEN BUTTON → GREEN LED ON/OFF ➔ BUZZ BUTTON → BUZZ ON/OFF
	PRO-CPD20 front panel BUTTON LED TEST ➔ UP BUTTON → CHANGE LED ON/OFF ➔ DN BUTTON → INSERT LED ON/OFF ➔ START BUTTON → RUN/STOP LED ON/OFF

	PRO-CPD20 operation test ➔ CYL DOWN BUTTON → CYLINDER DOWN ON/OFF ➔ CYL UP BUTTON→ CYLINDER UP ON/OFF ➔ VENT SOL BUTTON → VENT VALVE ON/OFF ➔ BLOWER BUTTON → BLOWER SOL ON/OFF ➔ COVER PRE. → COVER PRESSURE SOL ON/OFF (OPTION) ➔ COVER VAC. → COVER VACUUM SOL ON/OFF (OPTION)
	PRO-CPD20 external output I/O output test ➔ 1 to 6 ON/OFF for each external group #1 and #2
	External analog output test. ➔ There are two channels in total: CH1 and CH2.

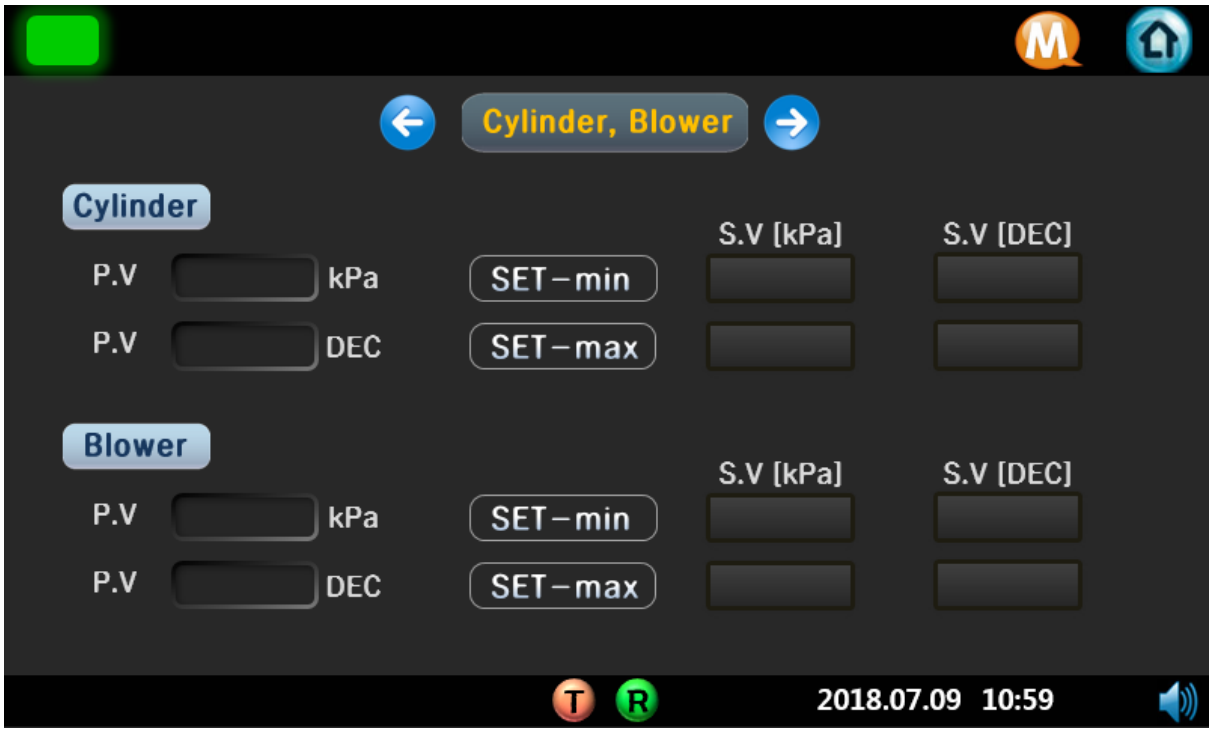
7.10 Trend page



When operating the equipment, you can check the supply pressure and motor information via a real time graph.

List	Description
	Displays the PRO-CPD20 feeding pressure. ➔ S.V(Set Value) → Set supply pressure value ➔ P.V(Present Value) → Current supply pressure value ➔ P1, P2 : The reference is displayed depending on the detection sensor setting for detecting the supply pressure.
	Displays PRO-CPD20 motor rpm and torque.
	The min/max values can be input for the feeding pressure graph. The min/max values can be input for the motor rpm graph.

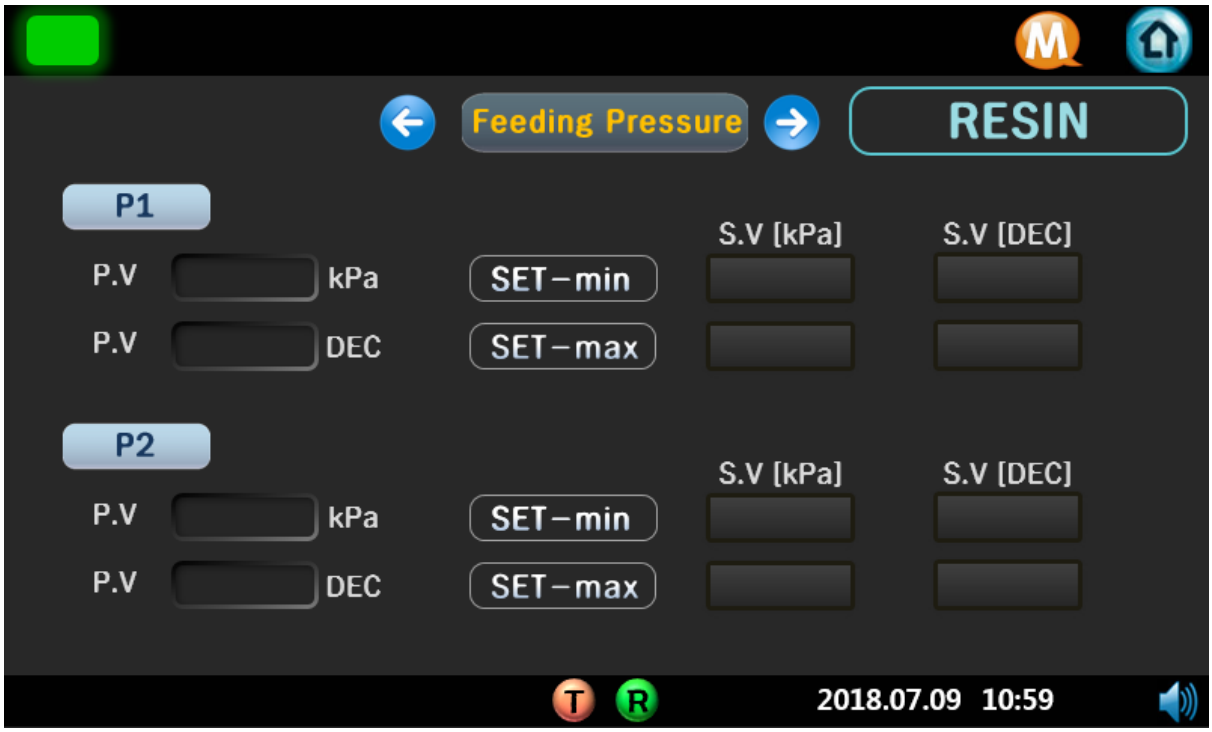
7.11 Cal page(cylinder, blower)



This page is to set the information required for the PRO-CPD20 sensor. (It will be shipped after setting is completed.)

List	Description
P.V kPa	The calibrated current pressure value is displayed.
P.V DEC	The calibrated actual pressure value is displayed as the DEC value.
SET−min / SET−max, S.V [kPa], S.V [DEC]	Input the calibration value. ➔ SET-min : Calibration minimum pressure value ➔ SET-2 : Maximum calibration pressure value ➔ SV.kpa[kPa] : Input pressure value to calibrate ➔ S.Vraw[DEC] : Input the current value by giving the pressure value to calibrate

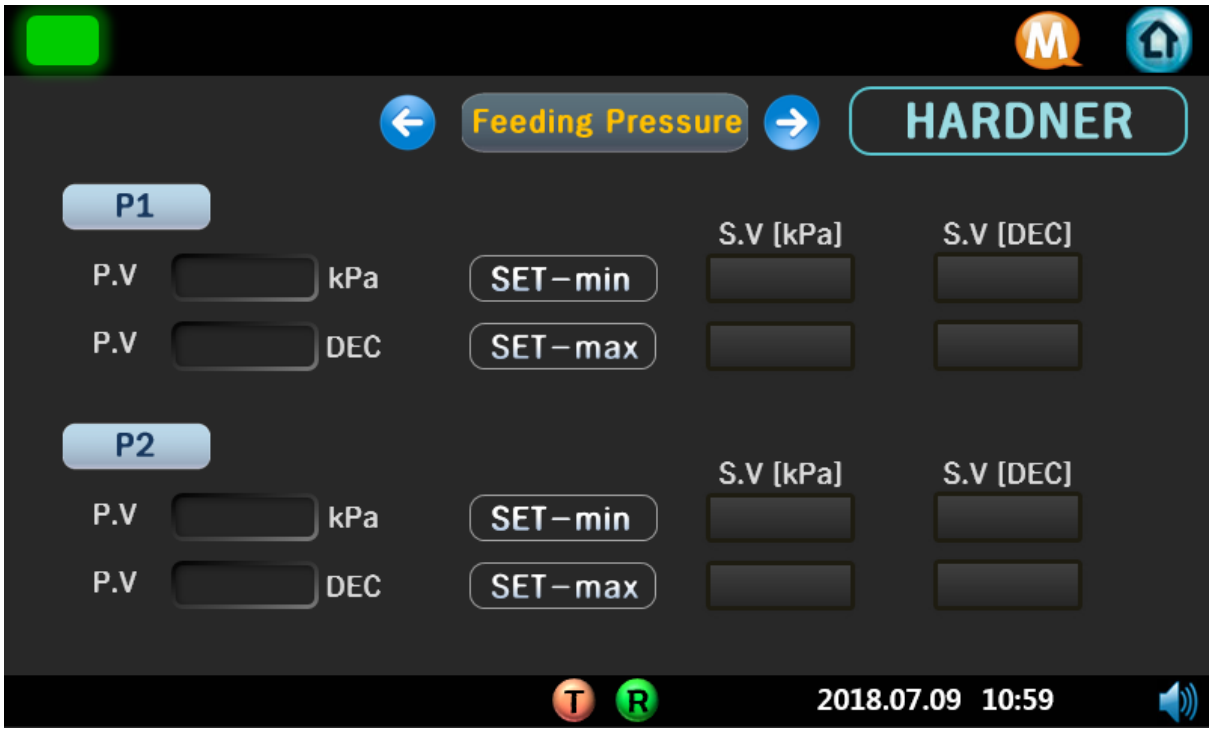
7.12 Cal page(Resin)



This screen is for calibrating to set the information required for the sensor. (It will be shipped after setting is completed.)

List	Description
P.V [ ] kPa	The calibrated current pressure value is displayed.
P.V [ ] DEC	The calibrated actual pressure value is displayed as the DEC value.
SET−min / SET−max with S.V [kPa] and S.V [DEC]	Input the calibration value. ➔ SET-min : Calibration minimum pressure value ➔ SET-2 : Maximum calibration pressure value ➔ SV.kpa[kPa] : Input pressure value to calibrate ➔ S.Vraw[DEC] : Input the current value by giving the pressure value to calibrate

7.13 Cal page(Hardner)

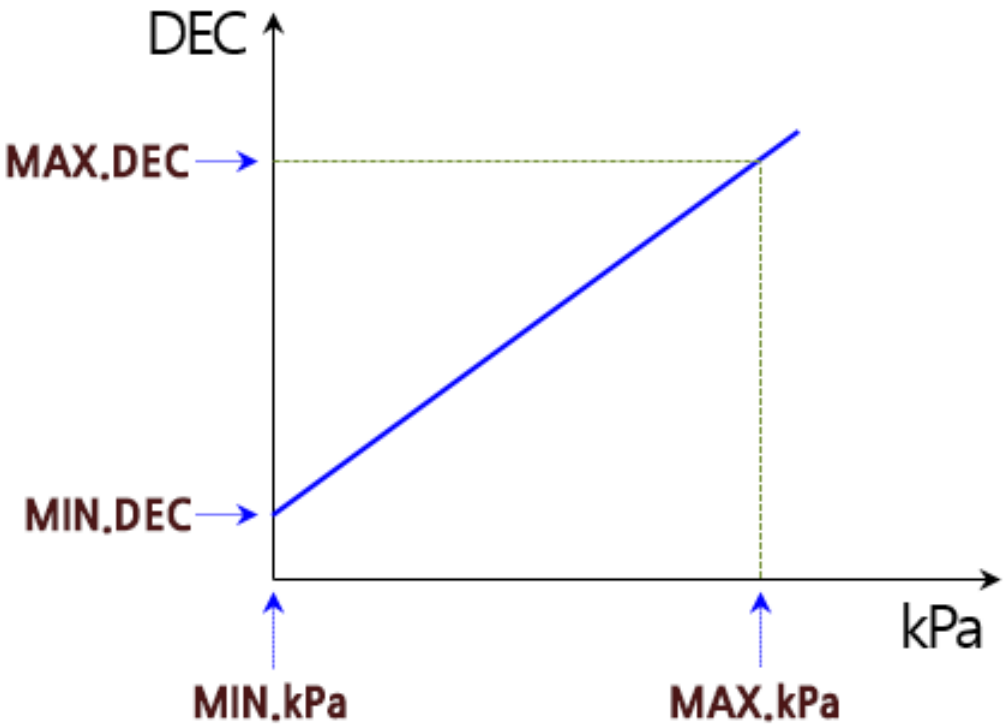


This screen is for calibrating to set the information required for the sensor. (It will be shipped after setting is completed.)

List	Description
P.V kPa	The calibrated current pressure value is displayed.
P.V DEC	The calibrated actual pressure value is displayed as the DEC value.
SET−min / SET−max, S.V [kPa], S.V [DEC]	Input the calibration value. ➔ SET-min : Calibration minimum pressure value ➔ SET-2 : Maximum calibration pressure value ➔ SV.kpa[kPa] : Input pressure value to calibrate ➔ S.Vraw[DEC] : Input the current value by giving the pressure value to calibrate

7.13.1 Calibration 상세 설명

Calibration is the process of matching the actual pneumatic value(kPa) with the digital value(DEC) converted by the pressure sensor



<Calibration Graph>

< Set-min, Set-max positions according to the pressure value and AD conversion value **>**

- Set the minimum kPa to 0 kPa.
- For maximum kPa, apply the maximum pressure that can be set or apply a high pressure.
- DEC is a digital conversion value, ranging from 0~65535(16bits).

7.13.2 Calibration

Min Value Setting

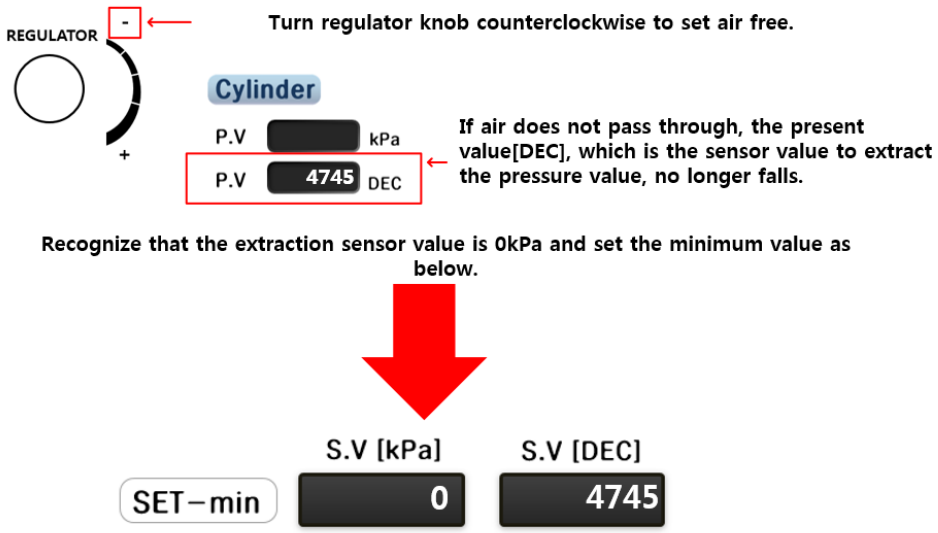


그림 1. SET-min calibration

Max value setting

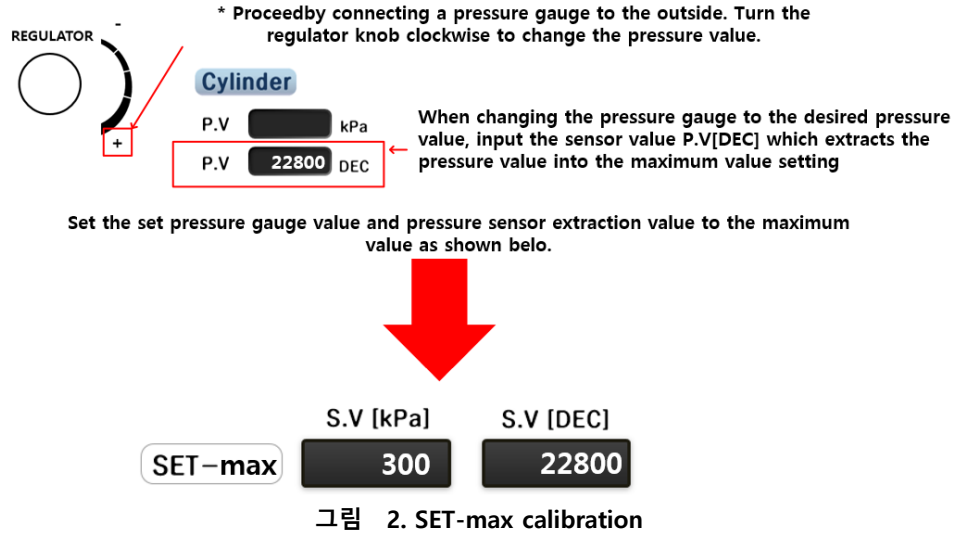
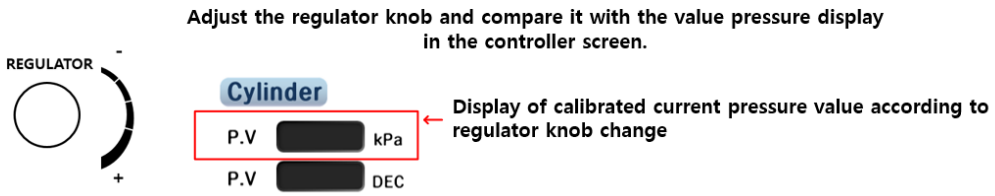
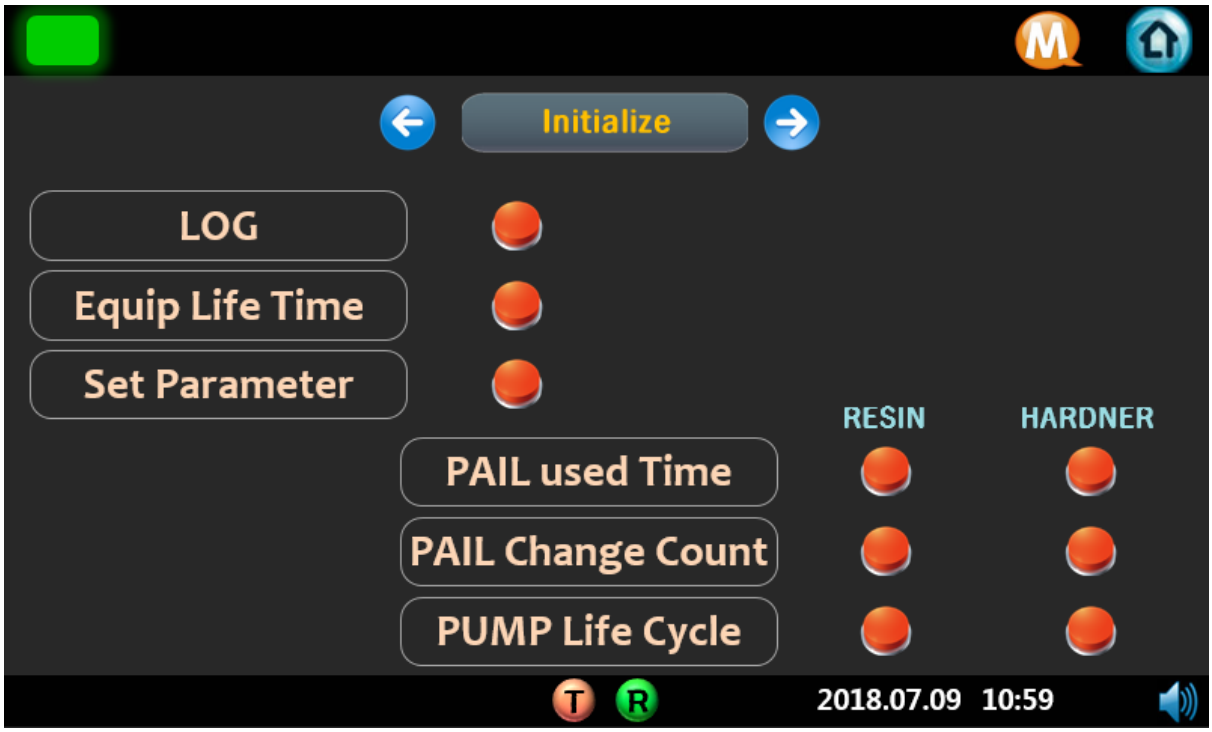


그림 2. SET-max calibration

CAL Check



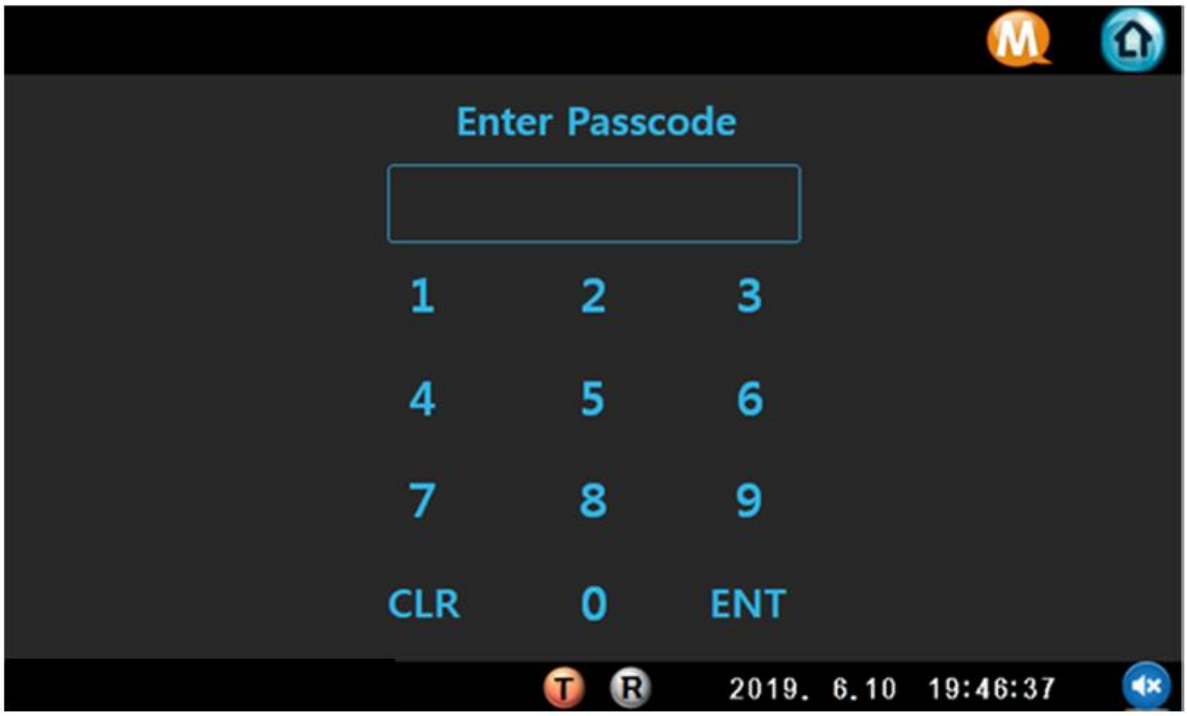
7.14 Cal-Initialize page



This page is to initialize after PRO-CPD20 parts replacement.

List	Description
LOG	Initializes the record.
Equip Life time	Initializes the equipment operation time.
PAIL used time	Initializes the material container usage time.
PAIL Change Count	Initializes the container change count.
PUMP Life Cycle	Initializes the pump cumulative revolution count.
All Parameter	Initializes all parameters. (Not recommended.)

7.15 PWD page

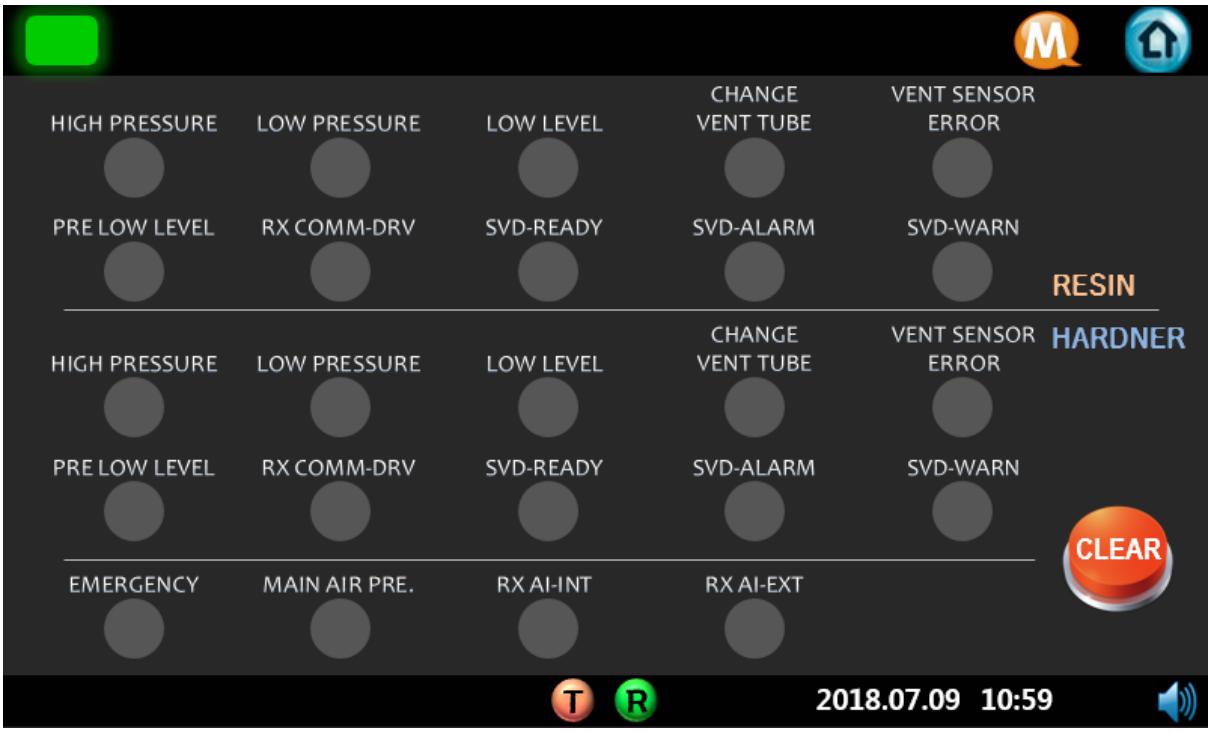


This page is to change PRO-CPD20 user password.

If the user password is input after entering the PWD page, the password can be changed.

List	Description
Enter the passocde	Passcode messages ➔ Enter the passcode : Enter your password ➔ Wrong Pascode : Incorrect password entered ➔ Enter New Passcode : Enter new password ➔ Confirm New Passcode : Retype the new password ➔ Changed Your Passcode!! : Password change complete

7.16 Alarm page



This page shows the alarm when there is a problem with using PRO-CPD20. The alarm description and action for each item are as follows.

타워	알람 목록	내용	원인
	1. Emergency	The emergency stop button has been pressed.	
	2. Main Air Press	Alarm for main pressure reaching lower limit.	When status is detected for about four consecutive seconds.
	3. RX-AI-INT	Error regarding monitoring operation within the board.	
	4. RX-AI-EXT	Error regarding monitoring operation within the board.	
	5. High Pressure	When the measurement value is higher than the setting value of over pressure.	When status is detected for about 400 ms
	6. Low Pressure	When feeding operation is run, if measured value is kept below 80% of the configured pressure value	When status is detected for about five consecutive seconds

	7. Low Level	When remaining material level is low while feeding operation is run.	When the cylinder bottom limit is detected by sensor.
	8. Change Vent Tube	When vent sensor tube is locked during automatic change operation.	
	9. Vent Sensor Error	When no vent sensor tube input is present during Automatic Change Operation, while cylinder lower limit sensor input is present	
	10. Pre Low Level	When remaining liquid is less than the setting value for alarm.	
	11. RX Comm-Drv	When initial communication link is established and no communication is active with a motor driver.	
	12. SVD-Ready	When no ready input signal is present from the motor driver.	
	13. SVD_Alarm	When motor-related, overcurrent / motor disconnection / encoder cable disconnection occurs.	
	14. SVD-Warn	When motor-related, main power phase loss / operation overload / driver motor combination error occurs	

The following are response measures for each of the alarm items above.

3, 4 – Replace the board

6 – Check motor, sensor, board

7- Replace pail

8 – Replace the vent tube

9 – Check vent sensor/tube, cylinder sensor

11, 12, 13, 14 – Check motor driver-related parts

7.17 Info page

그림 3. Info 화면

List	Description
I D I P	Displays ID, IP information which are required for external ethernet communication.
VERSION	Displays the firmware version for the board.
PUMP Life Cycle	Displays the number of pump cycles.
PAIL Change Count	Displays the number of pail change count.
Equip Life Time	Displays the usage time of the equipment.

8 Maintenance

In order to prevent malfunctions caused by various factors, please perform occasional(user-determined) and periodic(less than 1 year) inspections.

Danger
Be sure to take necessary measures such as manual, emergency stop, power off, etc. before performing maintenance and inspection. When the power is not turned off, the sensor may be activated by any object or inspectors inside the equipment.

8.1 Alarm indication and action

If an alarm occurs in the H/W protection system during operation, the output of the pump is cut off. To restart the operation, remove the cause of the alarm and release it.

Caution
For some alarms, the alarm is not released after reset. In this case, you must reboot (Power ON/OFF) after completing action for the error.

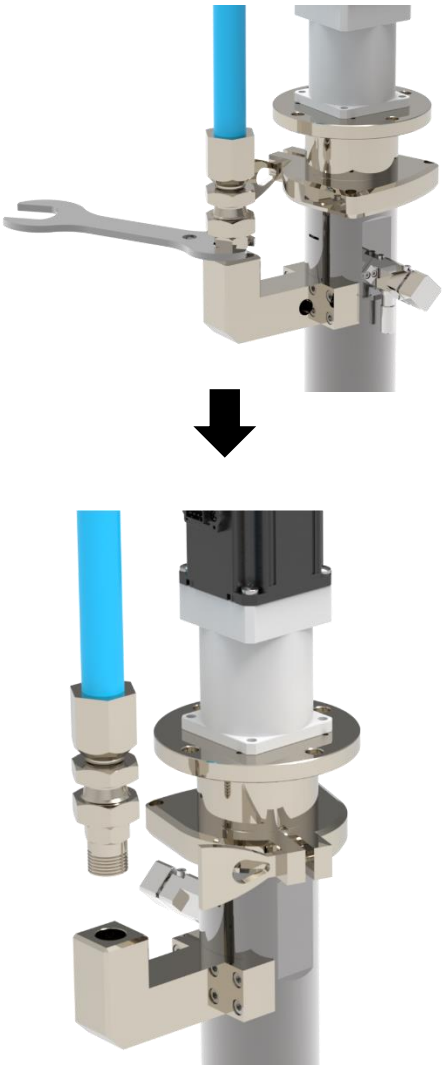
8.2 Check and Actions

Checklist	Cycle	What to check and what to do	Remarks
Environment	Occasional	Please confirm that it meets the usage standards of the equipment.	
Power supply voltage	Occasional	Please check if the power is AC220V, 50/60Hz.	
Appearance of equipment	Routine	Check that the connection part(connector, terminal block, etc.) is loose, and firmly tighten the loose parts.	
Calbes	Routine	Please check if there is peeling or severe bending of the sheath.	
Internal state of equipment	Routine	Maintain the cleaning status so that it does not cause interference with equipment operation due to contamination of dust or coating liquid.	
Supply air	Occasional	Check that there is no piping connection, joint, or leakage so that the supplied air maintains normal pressure.	
Purge status	Occasional	If you stop the machine for more than 10 minutes, please dispense a certain amount of fluid according to the set time so that hardening does not occur at the end of the valve.	
Other checks	Routine	- Fastening condition of fasteners and fasteners in equipment - Wiring fastening and fastening state - Arrangement and arrangement around equipment	

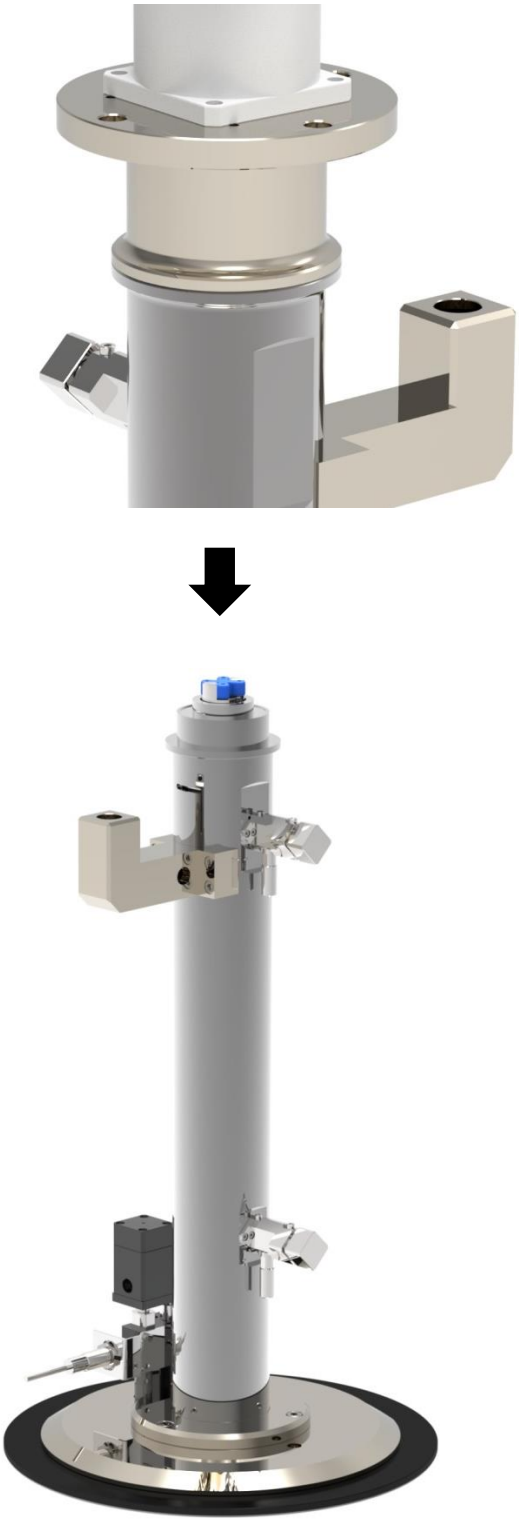
8.3 Disassembly of PRO-CPD20

This explains the disassembly method for maintenance of PRO-CP20.

1) Use the spanner to disassemble the right high-pressure hose, then disassemble the upper sensor and air hose.

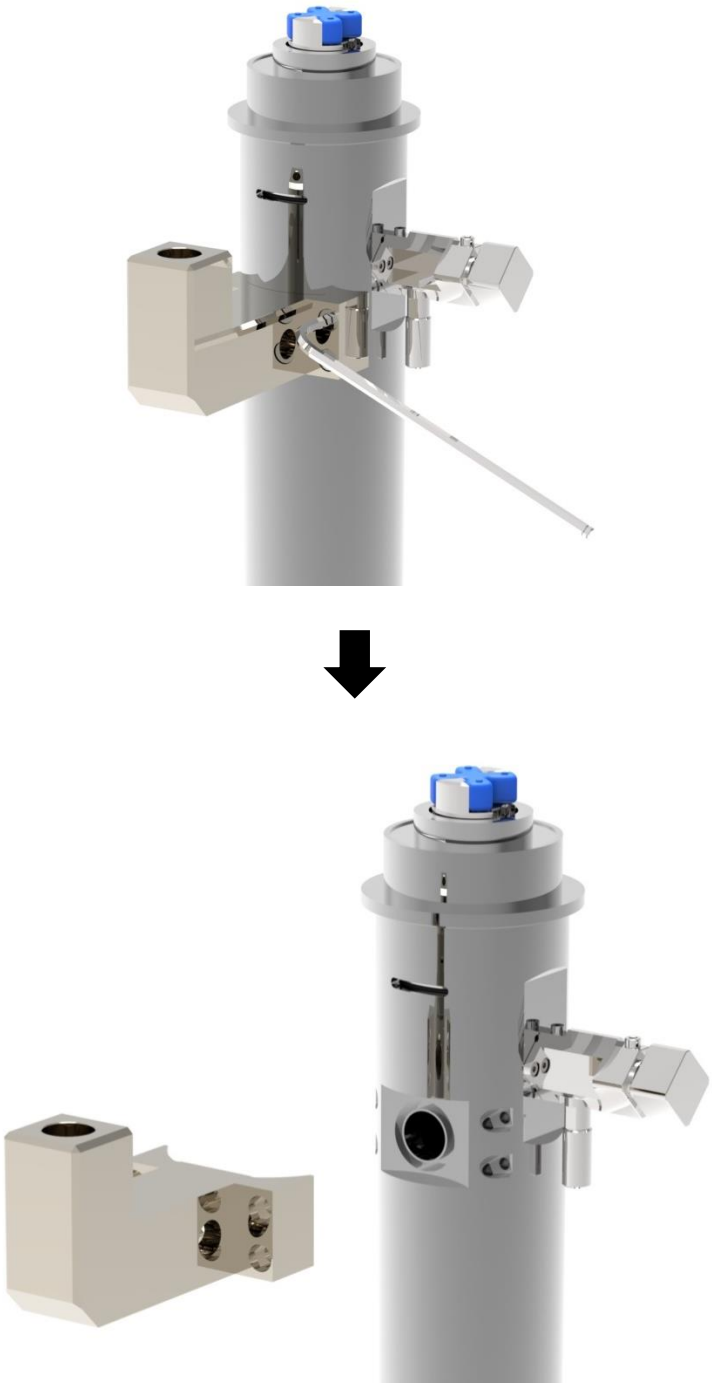


2) After disassembling the upper clamp, disassemble the material chamber by turning it to the left or right.



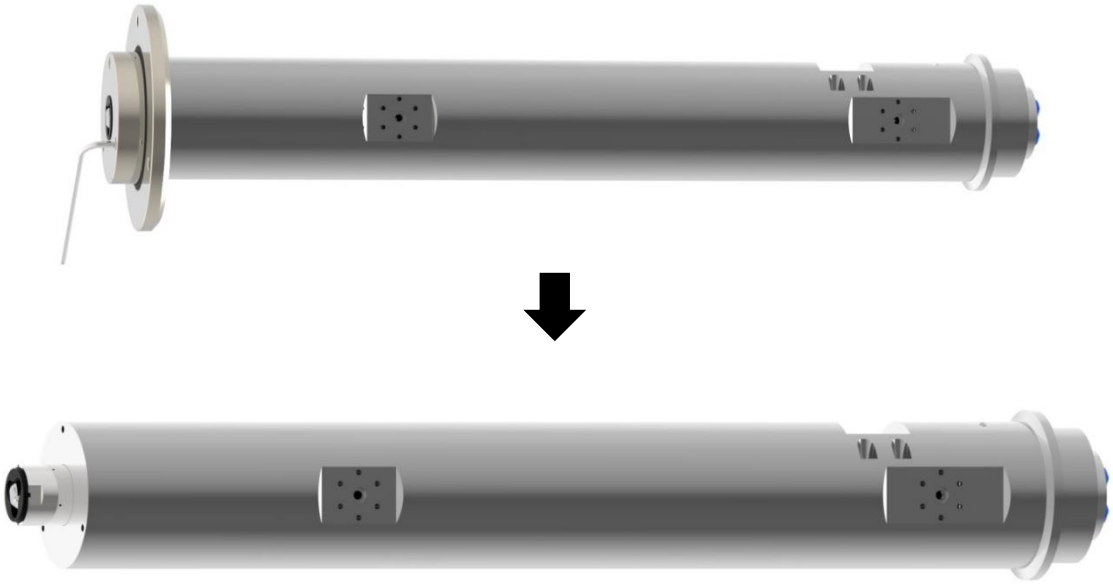
3) After disassembling the lower clamp, remove the bolt fastened to the hub and disassemble the hub and the follow plate.

4) Disassemble outlet port and pressure gauge on the front of material chamber.

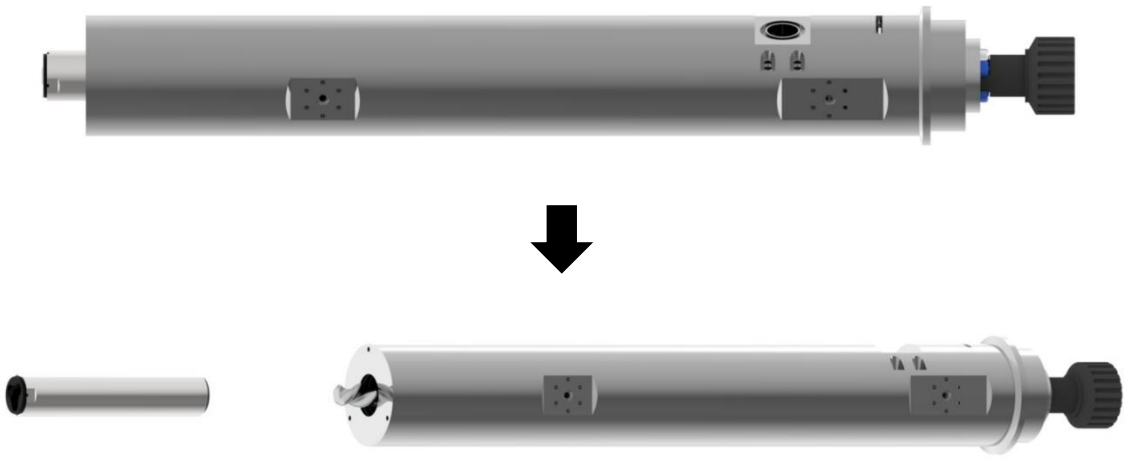


5) Remove the drain valve to remove the air bubbles on the right side of the material chamber.

6) Disassemble hub and chamber.



7) Fix the repair tool on the rear side and turn the front stator counterclockwise to disassemble.



8) Fix the material chamber and disassemble the rotor and chamber cap.

8.4 Trouble Shooting

Describes various symptoms and causes that can occur when using the equipment and how to take measures to fix them. If a problem occurs, take action according to the measures for each item, normalize it, then use the equipment.

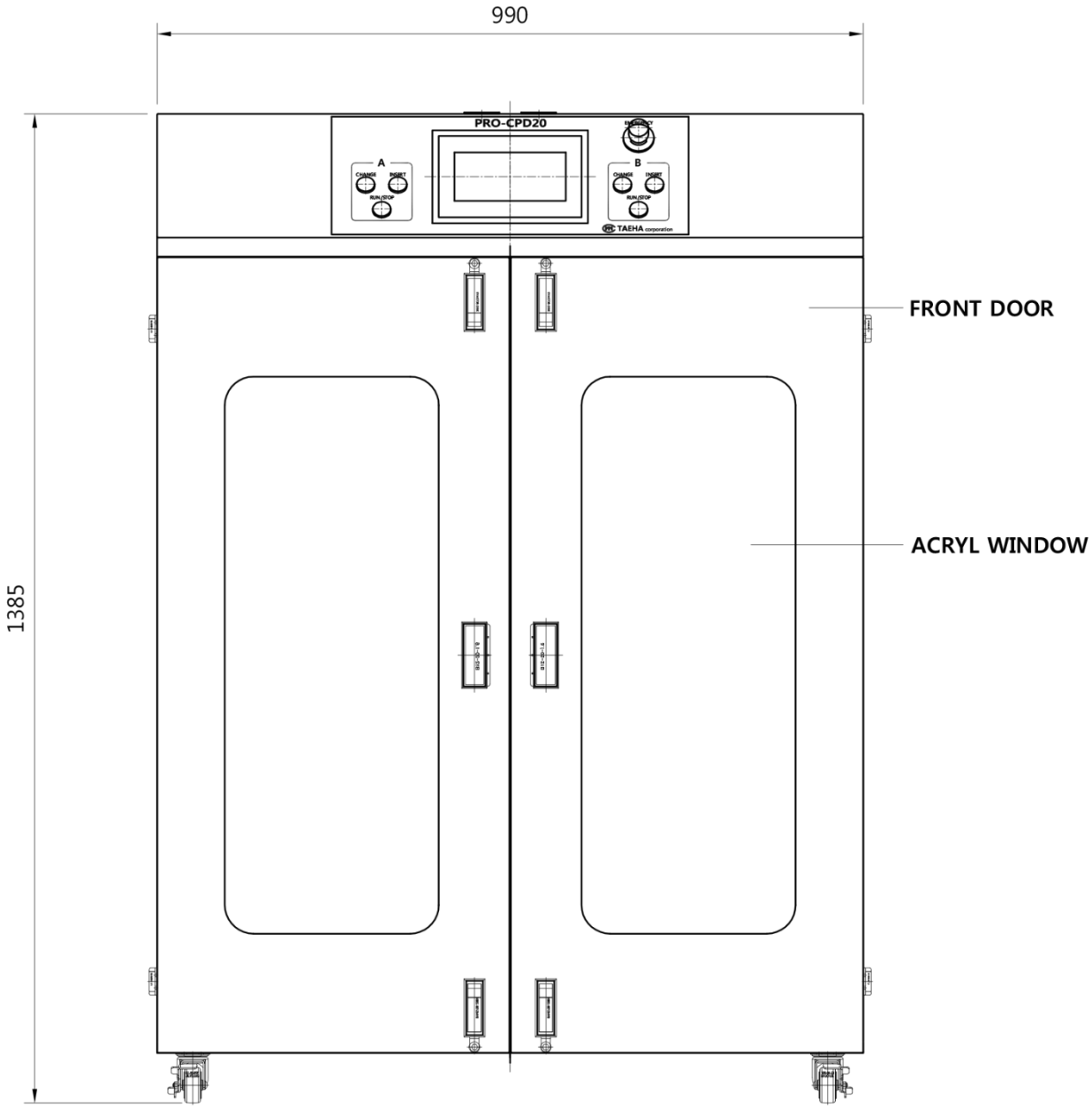
Danger
Be sure to take necessary measures such as manual, emergency stop, power off, etc. before performing mainenance and inspection. When the power is not turned off, the sensor may be activated by any object or inspectors inside the equipment. It may also cause electric shock.

Status	Cause	Solutions
Pump does not work	Abnormal power supply	Check the input power.
	Touch screen check	Check the error message and take action according to the message status. DC 24V power supply in the control panel outputs
	Motor check	Check if the motor is rotating.
	Check sensor	Check that the sensor parameter is set correctly.
	DC power check	Check the operation of the internal DC 24V power supply.
	Checking the pressure sensor	Check that the pressure sensor always displays the maximum pressure.
Back flow phenomenon	Packing(Lip-seal) wear condition	Replace lip-seal with a new one
		Check the tightening condition of packing nut
	Wear status of link rod	Check the status of link rod replace it with a new one
The pump does not dispense liquid	Checking the container condition(empty container)	Check empty container and replace with new container
	Confirm symptom of clogging of liquid dispense nozzle	Disassemble / clean and replace clogged work
Dispense is not smooth..	Checking the container condition(empty container)	Check empty container and replace with new container
	Liquid contact with wiper	Open vent valve to remove residual pressure and air bubbles
	Wear condition of packing (Lip-seal)	Replace lip-seal with a new one
Liquid leaks around follow plate	Check wear status of wiper	Replace wiper with a new one
	High cylinder pressure	Lower cylinder pressure
	Check container size(taper)	Resize to fit the container(wiper).
The cylinder does not descend.	Check container size(taper)	Resize to fit the container(wiper)
	Low cylinder pressure	Increase cylinder pressure.
	Check down button	Check the operation status of the down button.
When the actual remaining amount inside the pail is more than the remaining amount on the screen	Pail level set-up does not work properly	Pail level set-up needs re-progress

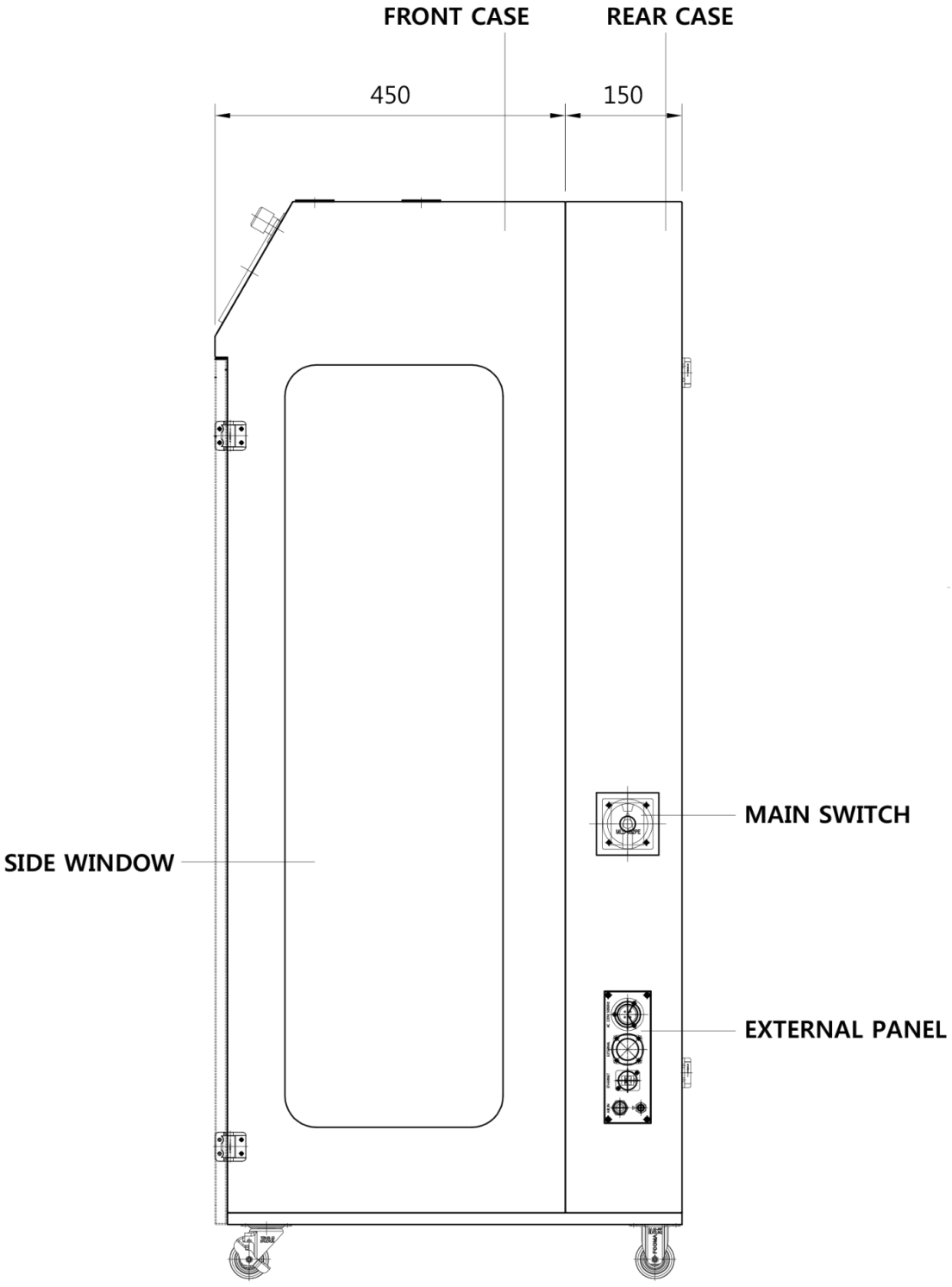
When the actual remaining amount inside the pail is less than the remaining amount on the screen	If you proceed with the pail replacement work as soon as the follower plate passes the top of the pail.	Pail replacement refer to the contents and proceed with the pail replacement procedure
Pail when the actual remaining amount is exhausted, but the remaining amount on the screen is displayed at 100%	Level sensor undetectable phenomenon (Undetected / fixed part undetected due to mechanical error between rack for remaining amount measurement and contact sensor position)	Rack and contact sensor position
	Suspected level sensor failure	Level sensor needs to be replaced.
When the pressure does not rise even after a certain period of time has passed during the run operation after combining with pail	When joining the pail internal material when it is not flat, the material reaches the vent valve first and the bonding ends, leaving an empty space inside.	Proceed to the bubble removal work. Pay attention to the flatness of the inner material of the pail when joining in the future.
When an alarm occurs during automatic coupling	Change vent tube alarm generated	1. Liquid removal from Vent sensor 2. Check the setting of HMI ETC Page vent contact "NC"

9 Appearance

9.1 Front view



9.2 Right side view



9.3 Top view

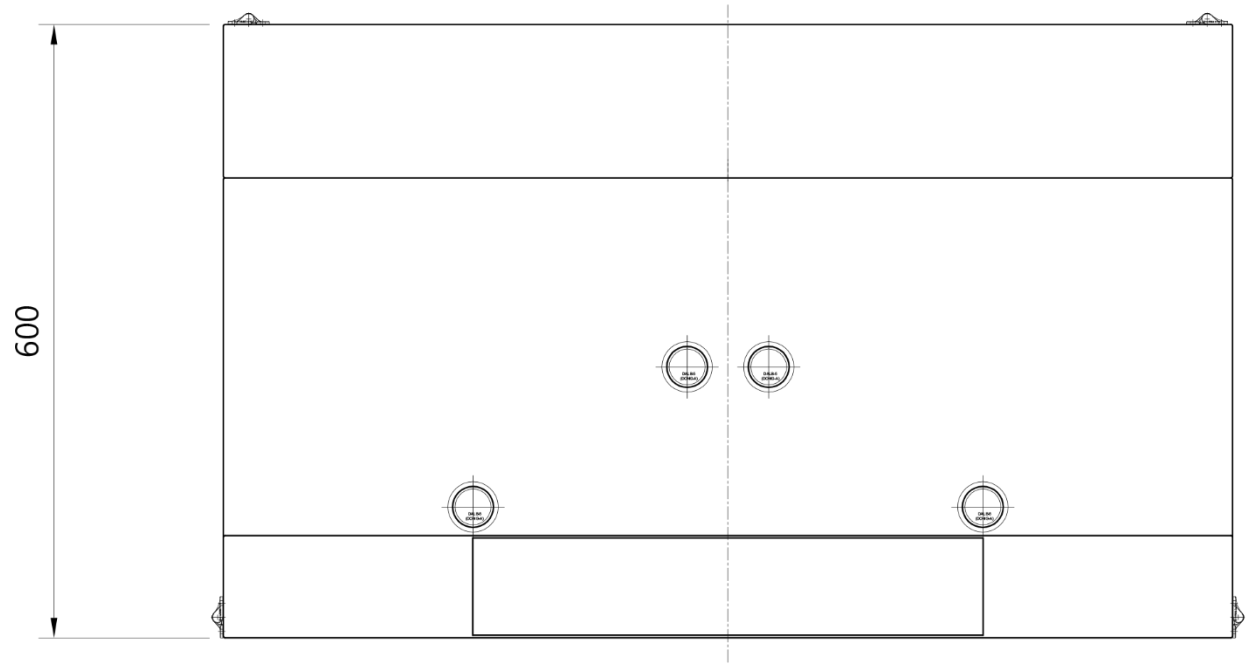
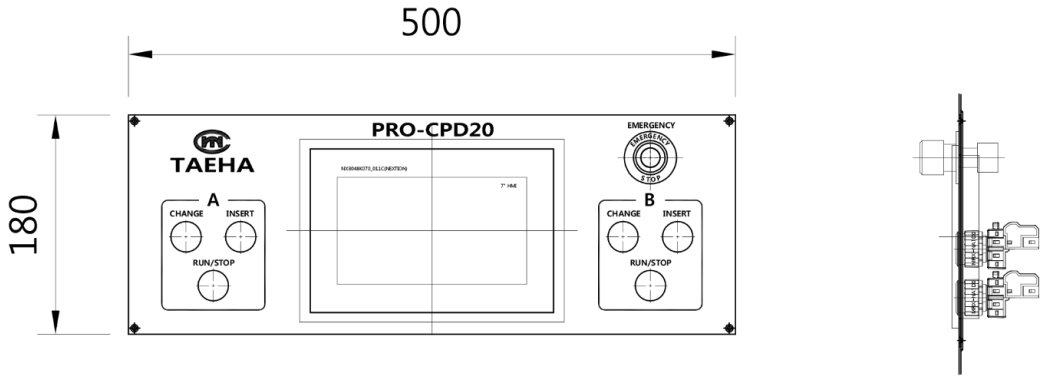


그림 1. 평면도

9.4 Control Panel

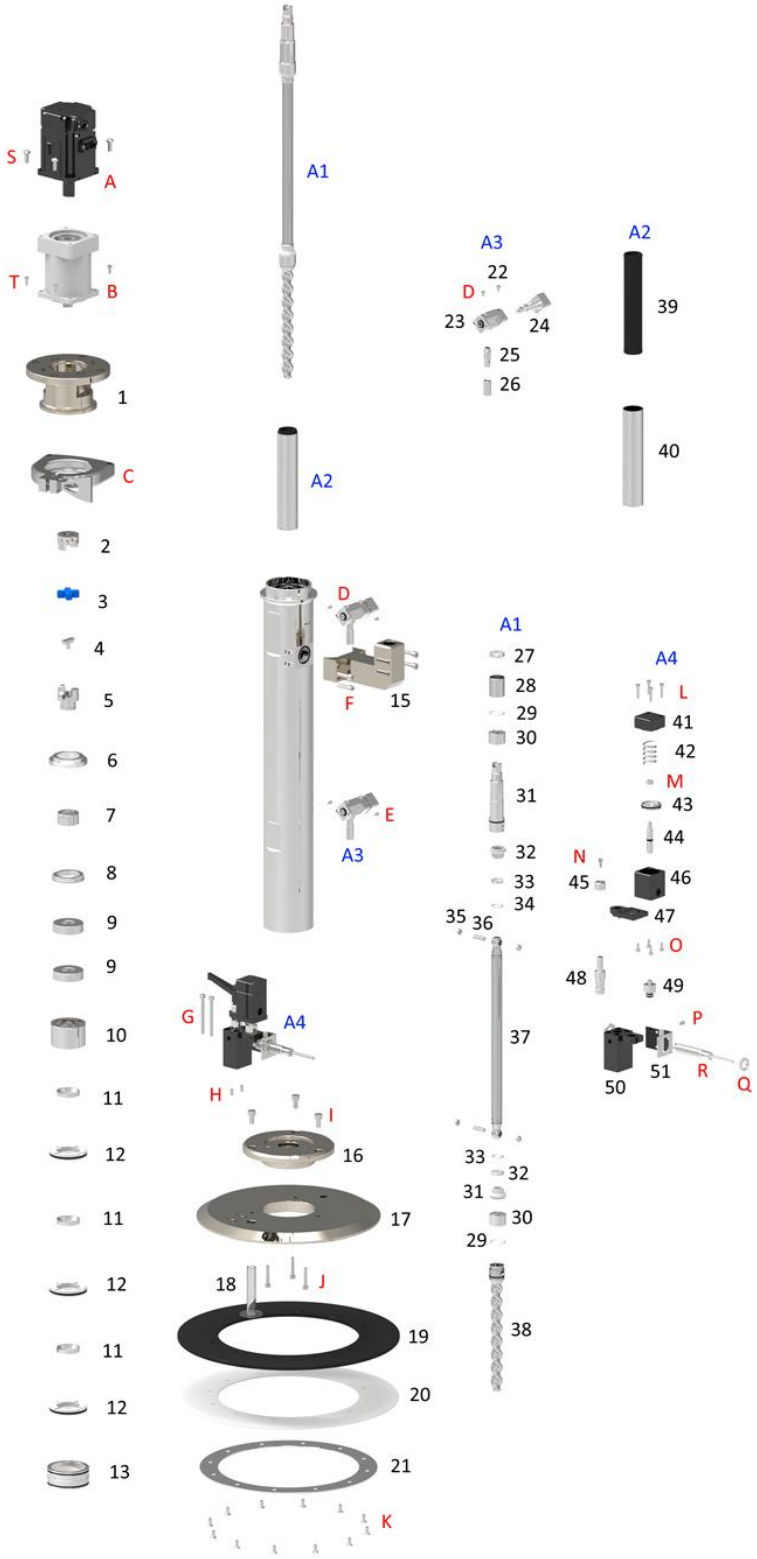


CONTROL PANEL

10 Part List

10.1 Pump part

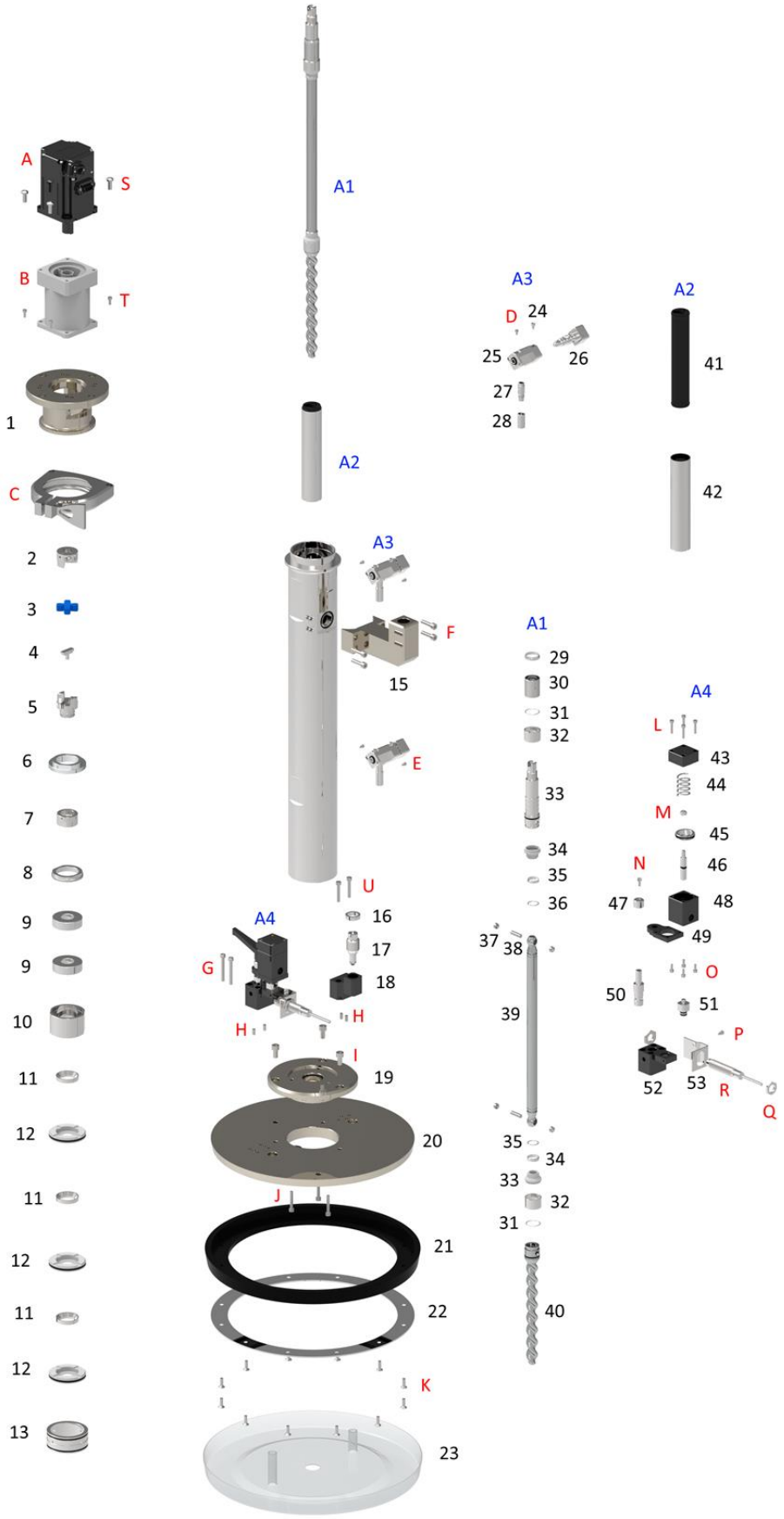
10.1.1 PRO-CPD20-WP



No.	Part No.	Item Name	Q'ty	Material
A1	SCP-20WP-A2	Rotor ass'y		
A2	SCP-20WP-A1	Stator ass'y		
A3	SCP-20WP-A3	Drain valve ass'y		
A4	SCP-20WP-A4	Air vent ass'y		
1	501001-A3-01	Motor block	1	AL6061
2	101010-A3-01	Drive coupling	1	SUS303
3	101010-10	Coupling joint	1	Urethan
4	101010-A2-09	Tee key	1	SUS303
5	101010-A2-07	Idle coupling	1	SUS303
6	101010-12	Chamber cap	1	SUS303
7	101010-A2-08	Coupling sleeve	1	SUS303
8	101010-A2-06	Bearing cap	1	SUS303
9	SCP-20WP-H	Bearing	2	6203ZZ
10	101012-A2-05	Bearing block	1	SUS303
11	101010-09	Back up ring	3	SUS303
12	101012-08	Rotary seal	3	UHMW-PE
13	101010-07	Seal block	1	SUS303
14	501001-05-A	Material chamber DP5K	1	SUS303
	501001-05-C	Material chamber DP15K	1	SUS303
15	T022001-A43A	Outlet port t04b	1	AL6061
	T022001-A44A	Outlet port t05, t06	1	AL6061
	T022001-A47A	Outlet port t04a	1	AL6061
16	501001-A4-01-A	Follow plate hub 5K	1	AL6061
	501001-A4-01-B	Follow plate hub 15K	1	AL6061
17	T022001-A08A	Wiper plate	1	AL6061
18	T022001-AA1A	Vent tube	1	PP
19	T022001-A09B	Wiper	1	SILICONE
20	T022001-A10A	Insulation sheet a	1	PTFE
21	T022001-A11B	Wiper fixer	1	SUS304
22	T022003-A16A	Drain valve stopper	2	SUS303
23	T022003-A14A	Drain valve body	2	SUS303
24	T022003-A15A	Drain valve plug	2	SUS303
25	T022003-A17A	Drain nozzle	2	SUS303
26	T022003-A18A	Drain nozzle cap	2	SUS303
27	101010-A2-04	Ceramic sleeve cap	1	SUS303
28	101010-A2-03-B	Ceramic sleeve	1	Zirconia($Zr0_2$)
29	101010-A2-13	Stop ring(l)	2	SUS304
30	101010-A2-10	Joint sleeve(l)	2	SUS303
31	101010-A2-03-A	Driving shaft	1	SUS303
32	101010-A2-15	Joint tube	2	FFKM
33	101010-A2-11	Joint sleeve(s)	2	SUS303
34	101010-A2-14	Stop ring(s)	2	SUS304
35	101010-A2-12	Joint ball	4	SUS303
36	SCP-20WP-A2-A	Joint pin	2	Ø5XL18 (KN-601)
37	501001-A2-06-A	Rod shaft 5K	1	SUS303
	501001-A2-06-B	Rod shaft 15K	1	SUS303
38	101010-A2-01	Rotor	1	SUS303
39	SCP-20WP-A1-1	Stator	1	FFKM/EPDM
40	101010-A1-01-A	Stator housing	1	SUS303
41	T022001-A20A	Air vent end cap	1	AL6061
42	SCP-20WP-A4-11	Air vent spring	1	SWP 2.0
43	T022001-A21A	Air vent piston	1	SUS303
44	T022001-A21A	Air vent piston rod	1	SUS303
45	T022001-A17A	Air vent hinge cap	1	SUS303

46	T022001-A19A	Air vent cylinder	1	AL6061
47	T022001-A15B	Air vent turn table	1	AL6061
48	T022001-A16A	Air vent hinge	1	SUS303
49	T022001-A18D	Air vent plug	1	SUS303
50	T022001-A14B	Air vent base 50l(wiper)	1	AL6061
51	T022001-A42B	Air blower sensor bracket	1	SUS304
A	PRO-CP20-P5	Motor ass'y	1	APMC-FBL04AMK-TH02
B	SCP-20WP-B	Reducer	1	B3110103C14
C		Ferrule clamp	1	2.5S
D		Wrench bolt(M2.5x4)	2	STEEL ALLOY
E		Wrench bolt(M3x8)	4	STEEL ALLOY
F		Wrench bolt(M5x20)	4	STEEL ALLOY
G		Wrench bolt(M4x50)	4	STEEL ALLOY
H		Pin(ø4x10)	2	SUS303
I		Wrench bolt(M6x12)	3	STEEL ALLOY
J		Wrench bolt(M4x25)	3	STEEL ALLOY
K		Flat head wrench bolt(M4x12)	12	STEEL ALLOY
L		Wrench bolt(M3x12)	4	STEEL ALLOY
N		Wrench bolt(M4x10)	1	STEEL ALLOY
M		Nut(M5x5)	1	STEEL ALLOY
O		Wrench bolt(M3x6)	4	STEEL ALLOY
P		Wrench bolt(M3x5)	1	STEEL ALLOY
Q		Nut(M12x1, SW17)	2	STEEL ALLOY
R		Sensor	1	KCR E411
S		Wrench bolt(M5x13)	4	STEEL ALLOY
T		Wrench bolt(M5x15)	4	STEEL ALLOY

10.1.2 PRO-CPD20-DP



No.	Part No.	Item Name	Q'ty	Material
A1		Rotor ass'y		
A2		Stator ass'y		
A3		Drain valve ass'y		
A4		Air vent ass'y		
1	501001-A3-01	Motor block	1	AL6061
2	101010-A3-01	Drive coupling	1	SUS303
3	101010-10	Coupling joint	1	Urethan
4	101010-A2-09	Tee key	1	SUS303
5	101010-A2-07	Idle coupling	1	SUS303
6	101010-12	Chamber cap	1	SUS303
7	101010-A2-08	Coupling sleeve	1	SUS303
8	101010-A2-06	Bearing cap	1	SUS303
9	SCP-20WP-H	Bearing	2	6203ZZ
10	101012-A2-05	Bearing block	1	SUS303
11	101010-09	Back up ring	3	SUS303
12	101012-08	Rotary seal	3	UHMW-PE
13	101010-07	Seal housing	1	SUS303
14	501001-05-A	Material chamber DP5K	1	SUS303
	501001-05-C	Material chamber DP15K	1	SUS303
15	T022001-A43A	Outlet port t04b	1	Al6061
	T022001-A44A	Outlet port t05, t06	1	Al6061
	T022001-A47A	Outlet port t04a	1	AL6061
16	T022001-A42A	Air blower nut	1	SUS303
17	T022001-A41A	Air blower adapter	1	SUS303
18	T022001-A40C	Air blower block a	1	AL6061
19	501001-A4-01-A	Follow plate hub 5k	1	AL6061
	501001-A4-01-B	Follow plate hub 15k	1	AL6061
20	T022001-A36A	Disposal plate	1	AL6061
21	T022001-A37A-A	Disposal gasket wt	1	SILICONE(OIL BLEED)
	T022001-A37A-B	Disposal gasket sm	1	SILICONE(OIL BLEED)
	T022001-A37A-C	Disposal gasket m	1	SILICONE(OIL BLEED)
	T022001-A37A-D	Disposal gasket ml	1	SILICONE(OIL BLEED)
	T022001-A37A-E	Disposal gasket l	1	SILICONE(OIL BLEED)
	T022001-A37A-F	Disposal gasket t	1	SILICONE(OIL BLEED)
	T022001-A37A-G	Disposal gasket ts	1	SILICONE(OIL BLEED)
	T022001-A37A-H	Disposal gasket s	1	SILICONE(OIL BLEED)
22	T022001-A39B	Disposal gasket fixer	1	SUS304
23	T022001-A38A	Disposal cover(dc290a)	1	PP 투명
	T022001-A38B	Disposal cover(dc290c)	1	PP 투명
	T022001-A38C	Disposal cover(dc285a)	1	PP 투명
	T022001-A38D	Disposal cover(dc285c)	1	PP 투명
24	T022003-A16A	Drain valve stopper	2	SUS303
25	T022003-A14A	Drain valve body	2	SUS303
26	T022003-A15A	Drain valve plug	2	SUS303
27	T022003-A17A	Drain nozzle	2	SUS303
28	T022003-A18A	Drain nozzle cap	2	SUS303
29	101010-A2-04	Ceramic sleeve cap	1	SUS303
30	101010-A2-03-B	Ceramic sleeve	1	Zirconia($Zr0_2$)
31	101010-A2-13	Stop ring(l)	2	SUS304
32	101010-A2-10	Joint sleeve(l)	2	SUS303
33	101010-A2-03-A	Driving shaft	1	SUS303
34	101010-A2-15	Joint tube	2	FFKM

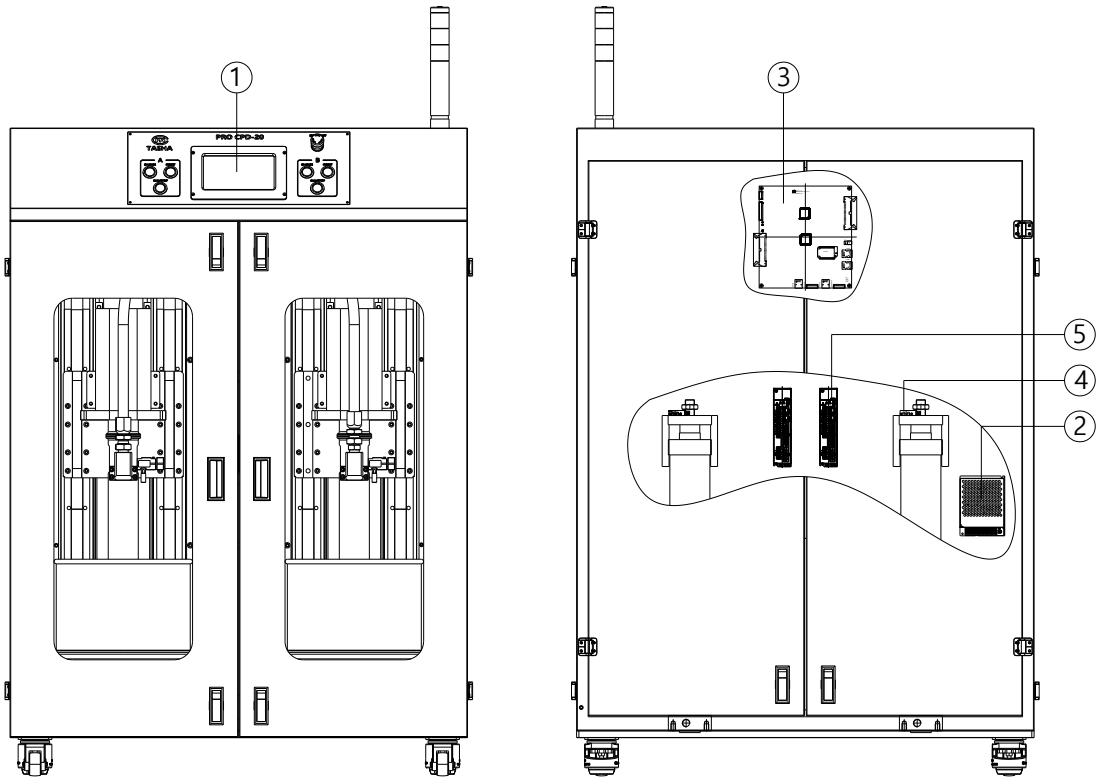
35	101010-A2-11	Joint sleeve(s)	2	SUS303
36	101010-A2-14	Stop ring(s)	2	SUS304
37	101010-A2-12	Joint ball	4	SUS303
38	SCP-20WP-A2-A	Joint pin	2	Ø5XL18 (KN-601)
39	501001-A2-06-A	Rod shaft 5K	1	SUS303
	501001-A2-06-B	Rod shaft 15K	1	SUS303
40	101010-A2-01	Rotor	1	SUS303
41	SCP-20WP-A1-1	Stator	1	FFKM/EPDM
42	101010-A1-01-A	Stator housing	1	SUS303
43	T022001-A20A	Air vent end cap	1	AL6061
44	SCP-20WP-A4-11	Air vent spring	1	SWP 2.0
45	T022001-A21A	Air vent piston	1	SUS303
46	T022001-A21A	Air vent piston rod	1	SUS303
47	T022001-A17A	Air vent hinge cap	1	SUS303
48	T022001-A19A	Air vent cylinder	1	AL6061
49	T022001-A15B	Air vent turn table	1	AL6061
50	T022001-A16A	Air vent hinge	1	SUS303
51	T022001-A18D	Air vent plug	1	SUS303
52	T022001-A14B	Air vent base	1	AL6061
53	T022001-A42B	Air blower sensor bracket	1	SUS304
A	PRO-CP20-P5	Motor ass'y	1	APMC-FBL04AMK-TH02
B	SCP-20WP-B	Reducer	1	B3110103C14
C		Ferrule clamp	1	2.5S
D		Wrench bolt(M2.5x4)	2	STEEL ALLOY
E		Wrench bolt(M3x8)	4	STEEL ALLOY
F		Wrench bolt(M5x20)	4	STEEL ALLOY
G		Wrench bolt(M4x35)	4	STEEL ALLOY
H		Pin(Ø4x10)	4	SUS303
I		Wrench bolt(M6x12)	3	STEEL ALLOY
J		Wrench bolt(M4x25)	3	STEEL ALLOY
K		Flat head wrench bolt(M4x12)	12	STEEL ALLOY
L		Wrench bolt(M3x12)	4	STEEL ALLOY
M		Nut(M5x5)	1	STEEL ALLOY
N		Wrench bolt(M4x10)	1	STEEL ALLOY
O		Wrench bolt(M3x6)	4	STEEL ALLOY
P		Wrench bolt(M3x5)	1	STEEL ALLOY
Q		Nut(M12x1, SW17)	2	STEEL ALLOY
R		Sensor	1	KCR E411
S		Wrench bolt(M5x15)	4	STEEL ALLOY
T		Wrench bolt(M4x24)	4	STEEL ALLOY

10.1.3 PRO-CPD20-NP

No.	Part No.	Item Name	Q'ty	Material
A1	SCP-20WP-A2	Rotor ass'y		
A2	SCP-20WP-A1	Stator ass'y		
A3	SCP-20WP-A3	Drain valve ass'y		
1	501001-A3-01	Motor block	1	AL6061
2	101010-A3-01	Drive coupling	1	SUS303
3	101010-10	Coupling joint	1	Urethan
4	101010-A2-09	Tee key	1	SUS303
5	101010-A2-07	Idle coupling	1	SUS303
6	101010-12	Chamber cap	1	SUS303
7	101010-A2-08	Coupling sleeve	1	SUS303
8	101010-A2-06	Bearing cap	1	SUS303
9	SCP-20WP-H	Bearing	2	6203ZZ
10	101012-A2-05	Bearing block	1	SUS303
11	101010-09	Back up ring	3	SUS303
12	101012-08	Rotary seal	3	UHMW-PE
13	101010-07	Seal housing	1	SUS303
14	501001-05-B	Material chamber NP5K	1	SUS303
	501001-05-D	Material chamber NP15K	1	SUS303
15	T022003-A16A	Drain valve stopper	1	SUS303
16	T022001-A43A	Outlet port t04b	1	Al6061
	T022001-A44A	Outlet port t05, t06	1	Al6061
	T022001-A47A	Outlet port t04a	1	AL6061
17	T022001-C03A	Pail cover clamp	1	AL6061
18	T022001-C04A	Pail cover window	1	GLASS
19	T022001-C02A	Pail cover	1	AL6061
20	T022001-C06A	Filter disk	1	SUS303
	T022001-C07A	Hole disk	1	SUS303
21	T022001-C05A	Suction adapter	1	SUS303
22	101010-A2-04	Ceramic sleeve cap	1	SUS303
23	101010-A2-03-B	Ceramic sleeve	1	Zirconia($Zr0_2$)
24	101010-A2-13	Stop ring(l)	2	SUS304
25	101010-A2-10	Joint sleeve(l)	2	SUS303
26	101010-A2-03-A	Driving shaft	1	SUS303
27	101010-A2-15	Joint tube	2	FFKM
28	101010-A2-11	Joint sleeve(s)	2	SUS303
29	101010-A2-14	Stop ring(s)	2	SUS304
30	SCP-20WP-A2-A	Joint pin	2	Ø5XL18 (KN-601)
31	101010-A2-12	Joint ball	4	SUS303
32	501001-A2-06-A	Rod shaft 5K	1	SUS303
	501001-A2-06-B	Rod shaft 15k	1	SUS303
33	101010-A2-01	Rotor	1	SUS303
34	SCP-20WP-A1-1	Stator	1	FFKM/EPDM
35	101010-A1-01-A	Stator housing	1	SUS303
36	T022003-A14A	Drain valve body	1	SUS303
37	T022003-A15A	Drain valve plug	1	SUS303
38	T022003-A17A	Drain nozzle	1	SUS303
39	T022003-A18A	Drain nozzle cap	1	SUS303
A	PRO-CP20-P5	Motor ass'y	1	APMC-FBL04AMK-TH02
B	SCP-20WP-B	Reducer	1	B3110103C14
C		Ferrule clamp	1	2.5S
D		Wrench bolt(M2.5x4)	1	STEEL ALLOY
E		Wrench bolt(M3x8)	4	STEEL ALLOY
F		Wrench bolt(M5x20)	4	STEEL ALLOY
G		Clamp	1	LNP6-20

H		Wrench bolt(M5x12)	3	STEEL ALLOY
I		Wrench bolt(M4x12)	7	STEEL ALLOY
J		Wrench bolt(M5x13)	4	STEEL ALLOY
K		Wrench bolt(M5x15)	4	STEEL ALLOY

10.2 Equipment part



No.	Part No.	Item Name	Q'ty	Specification
1	PRO-CP20-E1	Touch LCD	1	- Dimension(WxDxH) : 133.5mm x 84mm x 5.4mm - Resolution : 800x480 pixel
2	PRO-CP20-E2	SMPS	1	- Dimension(WxDxH) : 129mm x 98mm x 38mm - DC Output : 24V - Rated current : 3.2A
3	PRO-CP20-E3	Main board	1	- Dimension(WxDxH) : 170mm x 200mm x 28.6mm(Board : 1.6T)
4	PRO-CP20-E4	Photo sensor	1	- Transmissive type(photo-IC output type) - Gap width : 5.0mm
5	PRO-CP20-E5	Servo driver	1	- Input power : AC 200~230V - Rated current : 3A - Capacity : 400W

