
PRO CAN PUMP(PRO-CP20/30)



USER MANUAL

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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
<ol style="list-style-type: none"> 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
<ol style="list-style-type: none"> 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
<ol style="list-style-type: none"> 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
<ol style="list-style-type: none"> 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



Cautions	
	<ol style="list-style-type: none"> 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°C or less. Overheating may cuase fire or other accidents.

Precautions for use



Caution	
	<ol style="list-style-type: none"> 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	
	<ol style="list-style-type: none"> 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
<ol style="list-style-type: none"> 1. When cleaning or repairing the equipment, be sure to turn off the power and check the internal power supply for complete dispensing, and then have it carried out by a qualified maintenance specialist. Maintenance by non-experts can cause breakdown. 2. If there is a breakdown of the equipment, do not disassemble the equipment. Please contact our customer support team. 3. If dust accumulates on the equipment, it may cause malfunction. Clean up the equipment periodically. When cleaning, please shut off the external power completely and check whether the equipment has been fully dispensed. There is a danger of electric shock.

Disposal notice



Caution
<ol style="list-style-type: none"> 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

Phone : +82(0)31 552 5300

Fax : +82(0)31 552 5400

Email : taeha@taehacorp.com

www.taehacorp.com

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 specified 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 Specification of PRO-CP20/30

3.1 Specification

Table 1. Specification of PRO-CP20/30

Item		Specification	
Model	PRO-CP20	PRO-CP30	
Can size	20kg	30kg	
Weight	≒ 150kg		
Used air pressure	0.4 ~ 0.5MPa (Humidity less than 5%, Air Filter less than 5μ)		
Input power	AC220V (±10%), 50/60Hz		
Power consumption	Max. 2.6kW		
Display	5 inch TFT LCD		
Operation	Touch screen, Button s/w		
Operatin mode	Auto / Manual / Test		
Viscosity range	1 ~ 500,000cPs		
Shot pressure(Max.)	5.0MPa		
Displacement	5.0 ml/rev		
Flow rate	Max. 300 ml/min		
Precision	± 1%		
Min. Dosing rate	25.0 ml/min		
Motor speed	1 ~ 150rpm(Recommended : 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°C (Avoid direct sunlight)		
Operating humidity	10 ~ 85%RH (No condensation)		
Vibration	Less than 0.5G		
Comm. connector	LAN(Modbus TCP), RS485(Modbus RTU) external connection		
Follower plate	WP (Wiper plate) / DP (Disposal plate) / NP (None plate)		

3.2 Dimension

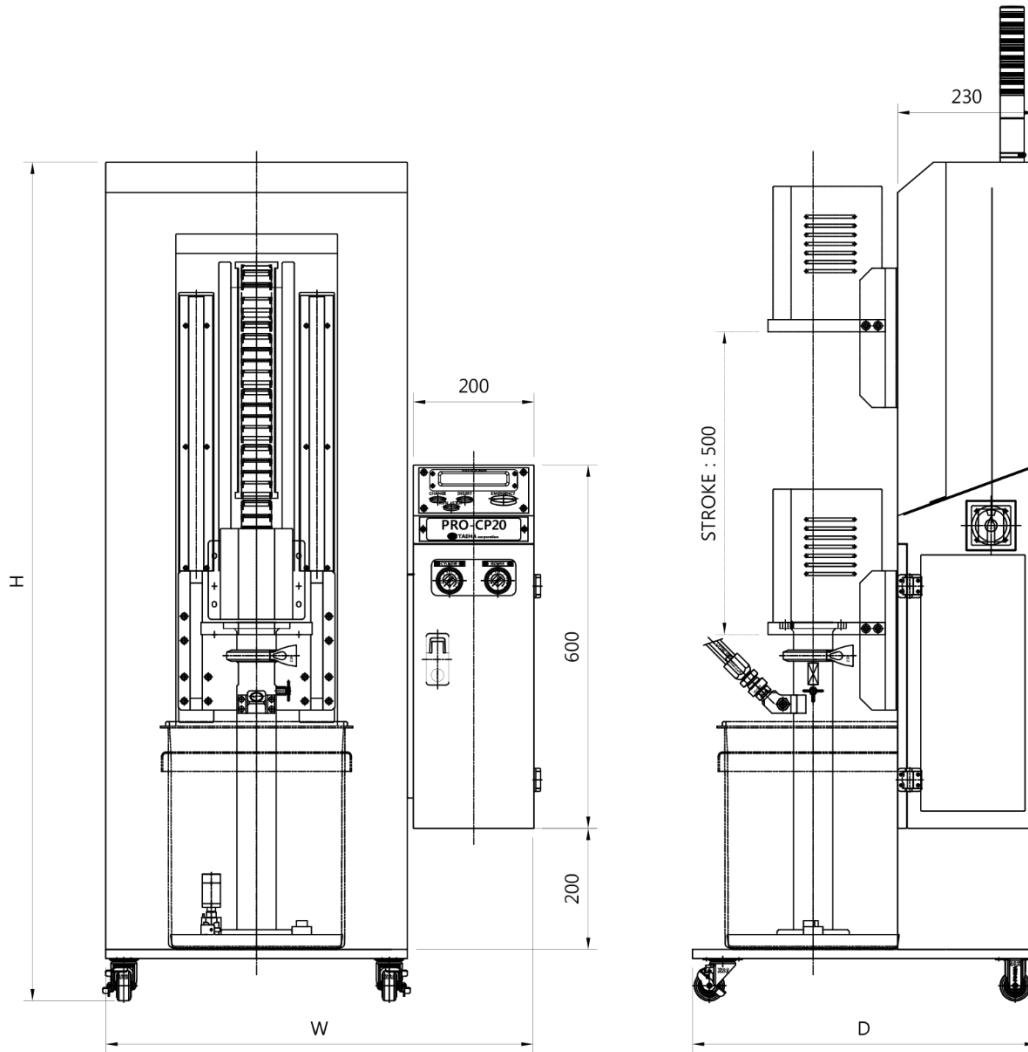


Figure 1. Dimension of PRO-CP20/30

Size(mm)	PRO-CP20/30
W	708.5
H	1385
D	570

Table 1. Dimension of PRO-CP20/30

4 Operation of PRO-CP20/30

4.1 Name and function

4.1.1 Front panel

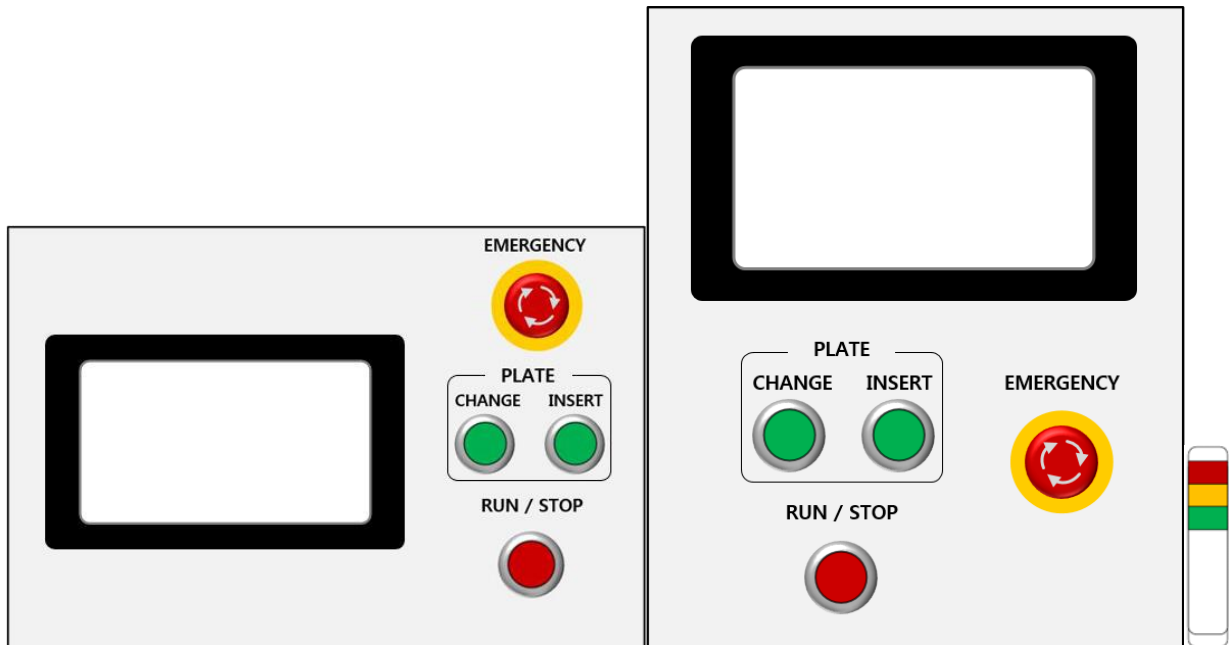
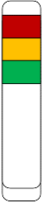







Figure 2. Front panel of PRO-CP20/30

Table 2. Description of front panel

Name and display	Description
 <p data-bbox="284 1541 453 1574">Signal Tower</p>	<p data-bbox="620 1417 1358 1496">This is a warning light indicating the status of PRO-CP20/30 operation,</p>
 <p data-bbox="284 1843 453 1877">Touch Screen</p>	<p data-bbox="620 1697 1335 1776">The setting value and operation elements to operate the equipment can be easily operated using the touch screen.</p>

<p>EMERGENCY</p> 	<p>This button is for emergency situations during operation of the equipment.</p> <ul style="list-style-type: none"> ➔ Press the button to stop the operation of elements. ➔ Not available in test mode.
<p>CHANGE</p> 	<p>This button is for raising the cylinder.</p> <p>The operation is different depending on the setting mode of the button.</p> <ul style="list-style-type: none"> ➔ 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
<p>INSERT</p> 	<p>This button is for lowering the cylinder.</p> <p>The operation is different depending on the setting mode of the button.</p> <ul style="list-style-type: none"> ➔ 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
<p>RUN / STOP</p> 	<p>This button is for operating material supply.</p> <p>For supply start, the pail must be combined (changed pail on) to operate, and supply start conditions are required as below.</p> <ul style="list-style-type: none"> ➔ Auto Mode : Feeding can be started in pail combined state. ➔ Manual Mode : Feeding can be started when INSERT button is ON in pail coupled state(manually coupled)

4.1.2 External connector

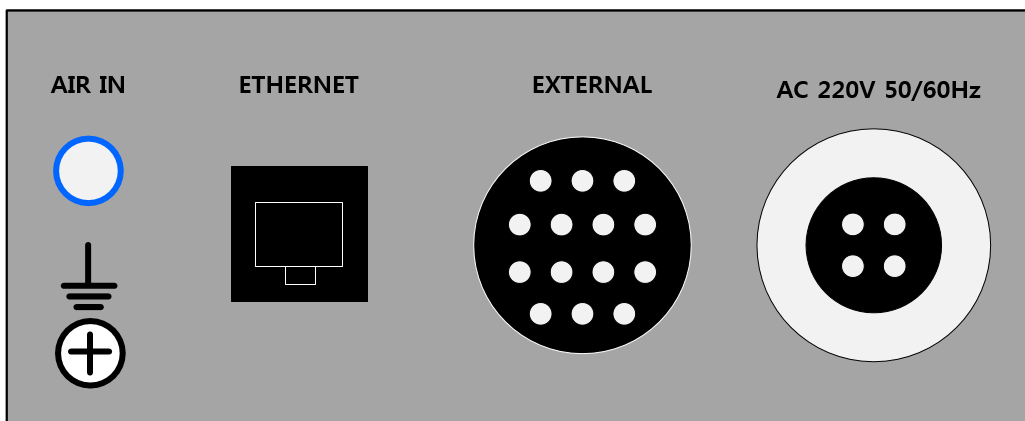
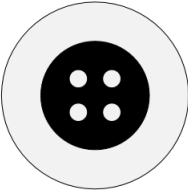
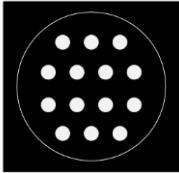
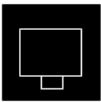


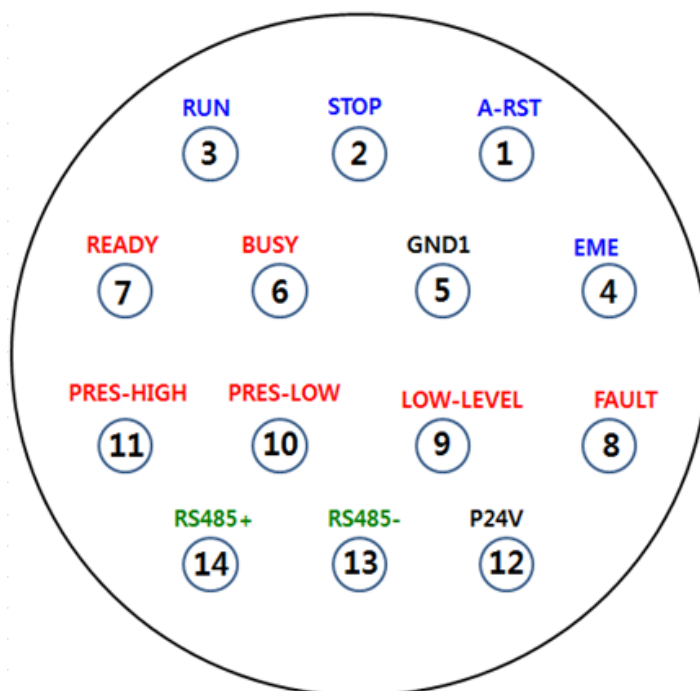


Figure 3. External connector of PRO-CP20/30

Table 3. Description of external connector

Name and display	Description
<p>AC 220V 50/60Hz</p> 	<p>This is a power connector for power supply. → The dedicated power cable is provided.</p>
<p>EXTERNAL</p> 	<p>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.</p>
<p>ETHERNET</p> 	<p>This is connected when using external ethernet communication for the material supply device. → RJ45 connector</p>
<p>AIR IN</p> 	<p>This is a main air in port for material supply. → ø8 Air hose</p>
 <p>Frame Ground</p>	<p>This is external frame grounding for material supply.</p>



<External Connector Pin Map>

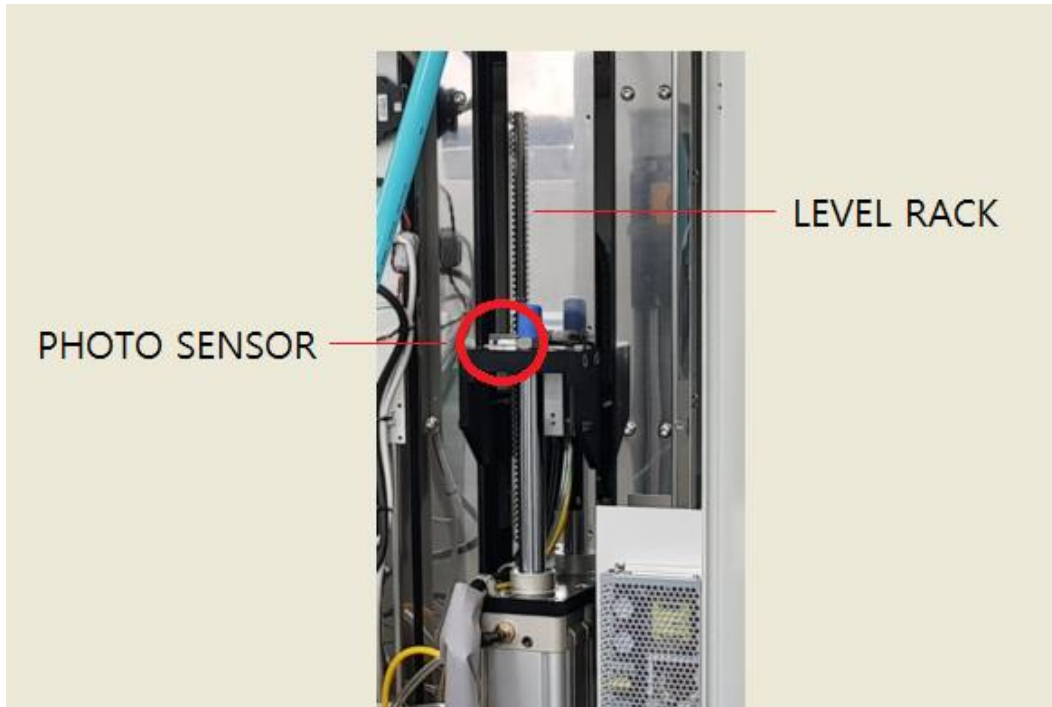
Pin map applied when using external I/O connector.

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.
<p>➔ Remote control operation RUN/STOP is possible only when both resin and hardener are in AUTO operation mode</p> <p>➔ Do not change to MANUAL/TEST mode when in remote mode</p>	
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 changing time for PAIL (new material)

4.2.1 How to detect the residual quantity of material

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



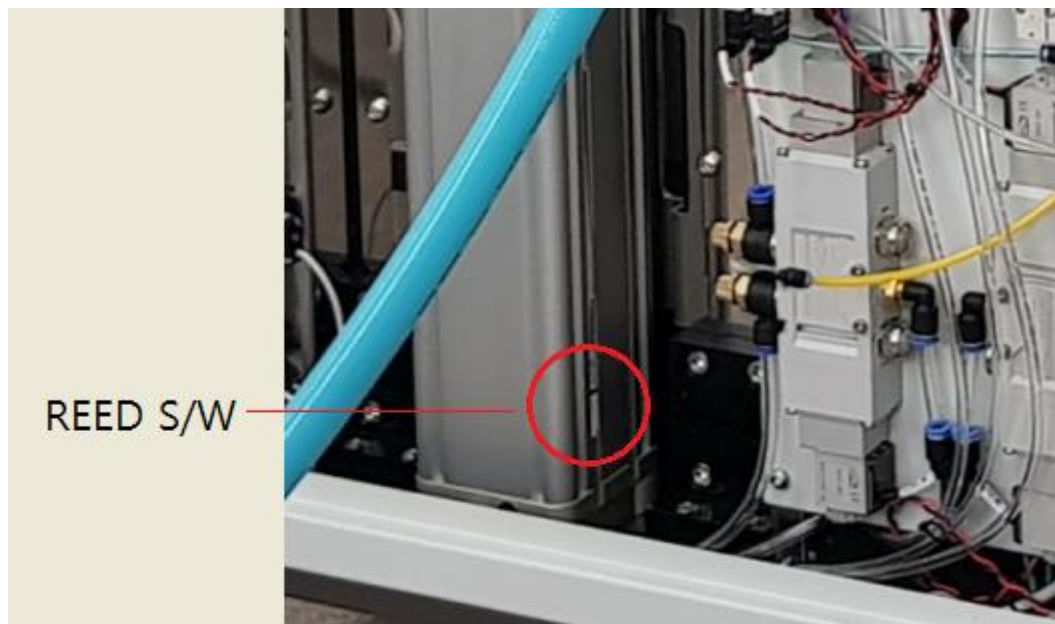
You can see a level sensor as above.



You can check the pail level on HMI.

4.2.2 When we need to change the Material by Alarm

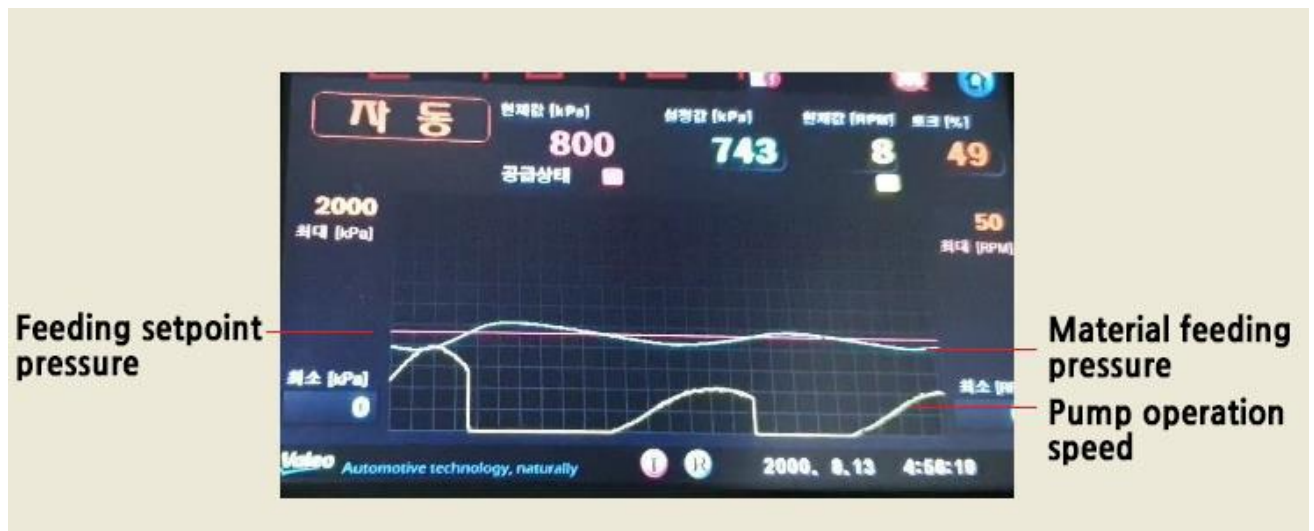
- 1) Pre-low alarm : The alarm occurs with message "level 5%" on HMI display -> the User needs to prepare the new material
- 2) Low alarm : The alarm occurs after setting for Pump head up/down cylinder's REED S/W.
-> Pump stop, Material feeding stop -> the User needs to change the new material



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.)

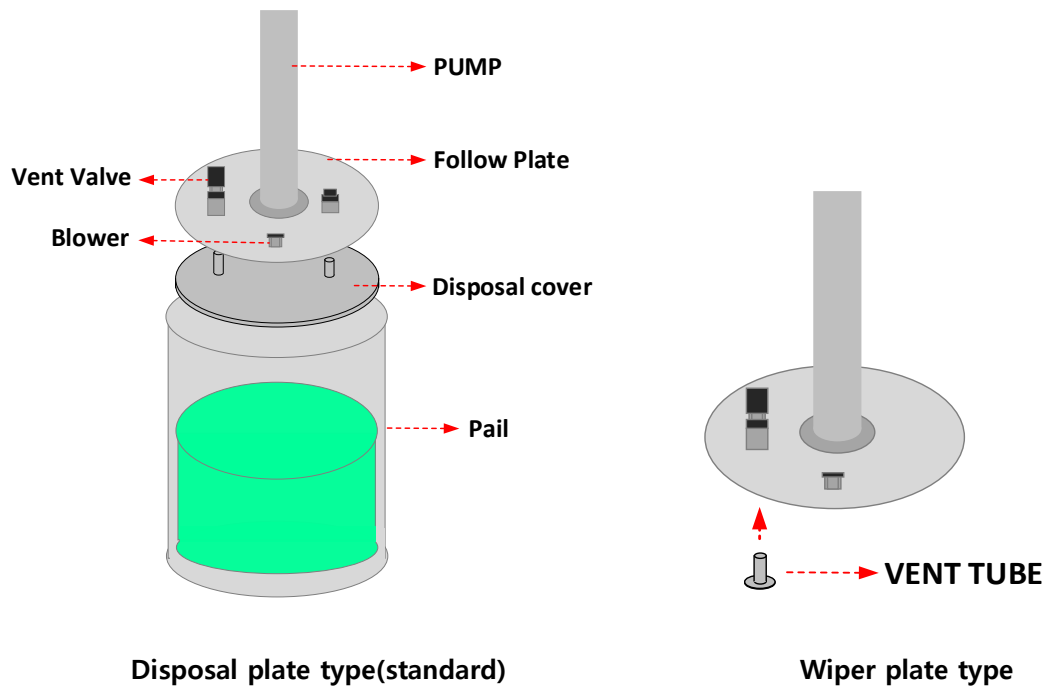


(Example: Real display for feeding setpoint pressure, material feeding pressure and pump operation speed)

4.3 Material container (Can) replacement procedure

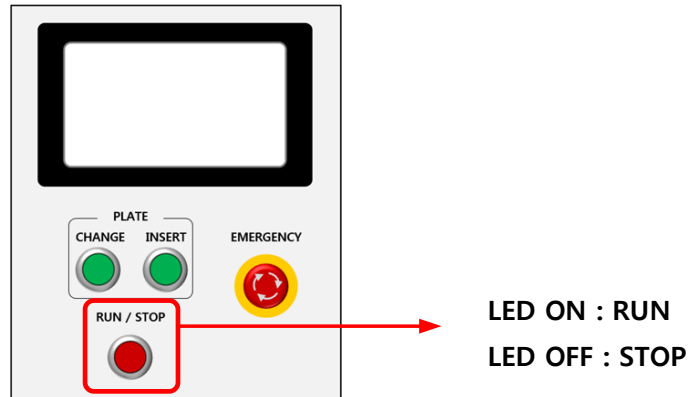
4.3.1 Names of each part

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.

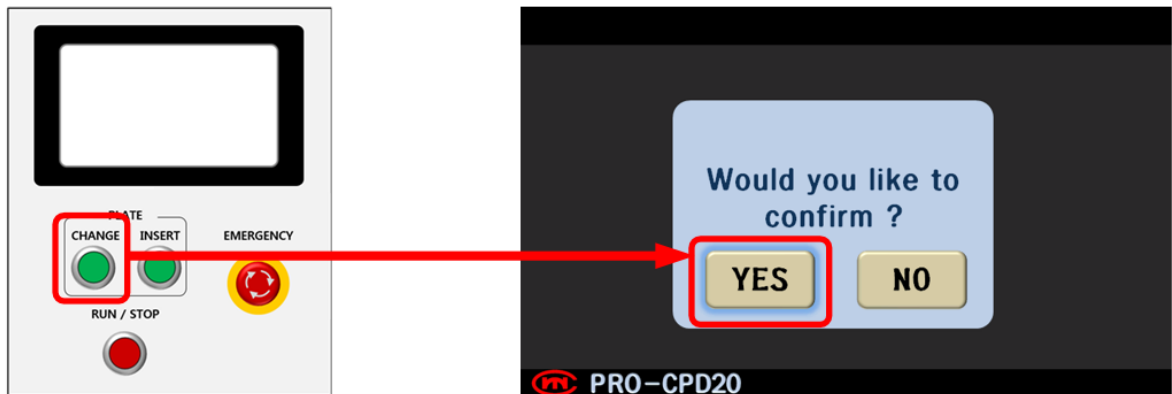


4.3.2 Change procedure

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

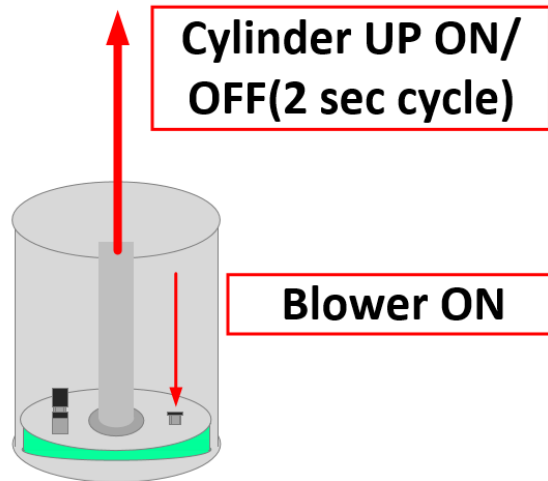


- 2) Press the Change button.
At this time, select "YES" when the confirm pop-up is displayed.



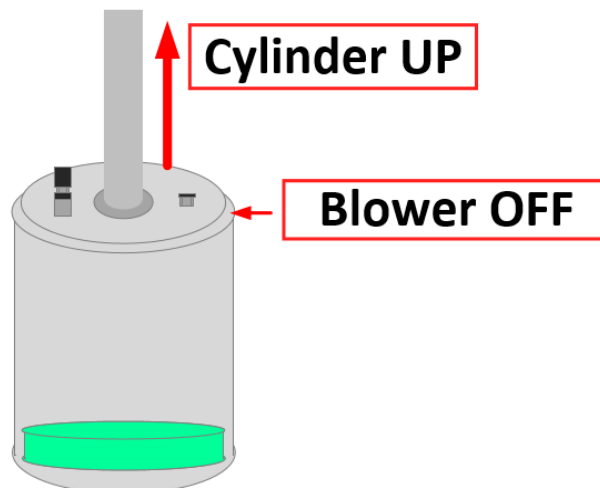
- 3) Blower is turned on and air is supplied to the inside of the pail. As the cylinder rises in stages, the follower plate begins to rise.

(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.)

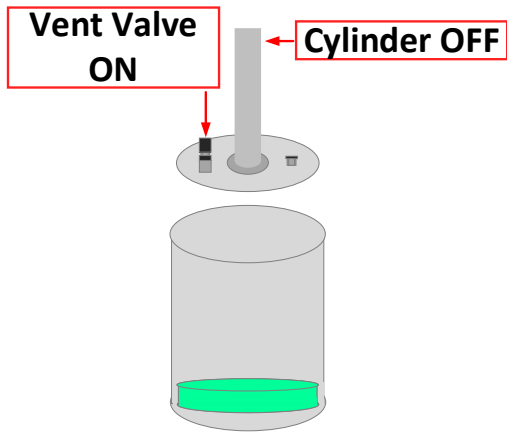


- 4) When the Follower plate reaches the top of the pail, the blower turns off and rises until the cylinder detects a high sensor.

(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.

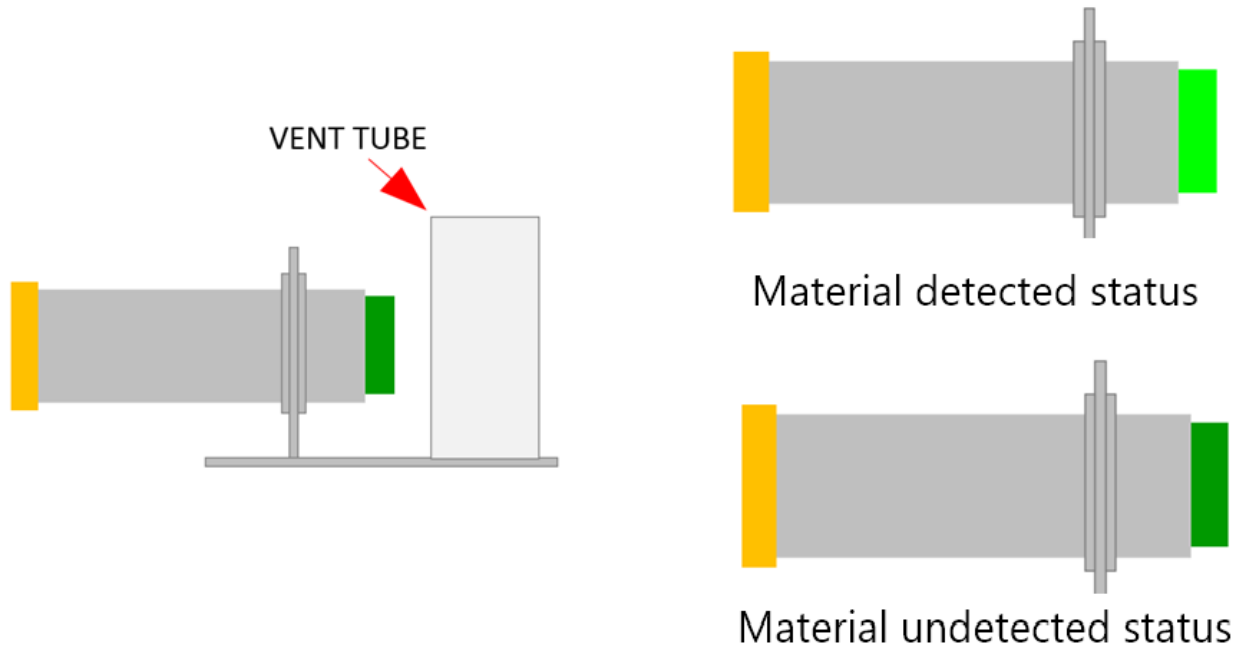


1> VENT VALVE : "ON"
2> LEVEL : "???"

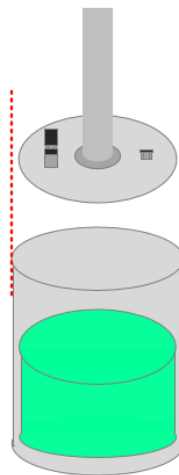
6) Remove Pail.

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.

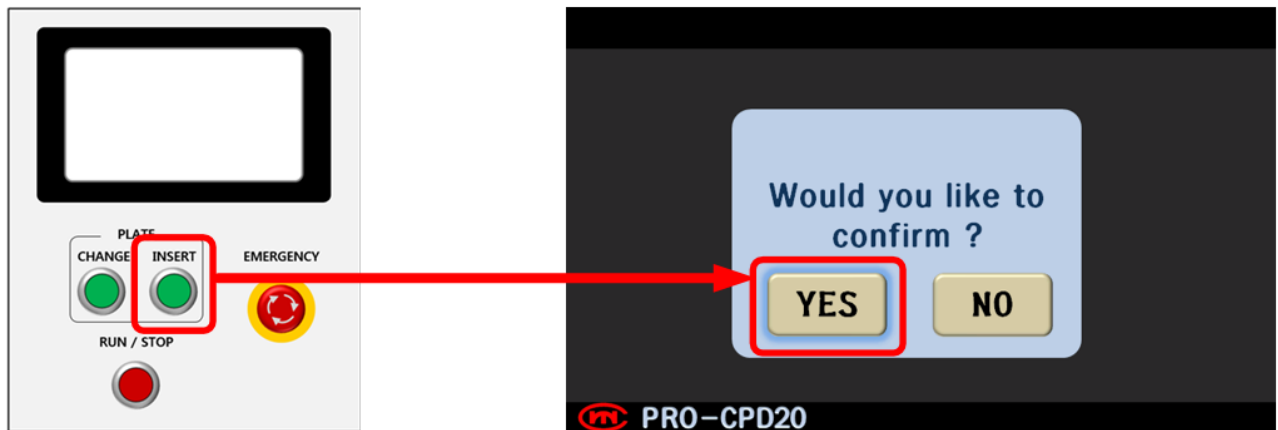


- 2) After inserting the Pail, make sure that the pail and follower plate are centered on each other.
If the center position does not match, use the pail guide to adjust.



- 3) Press the Insert button.

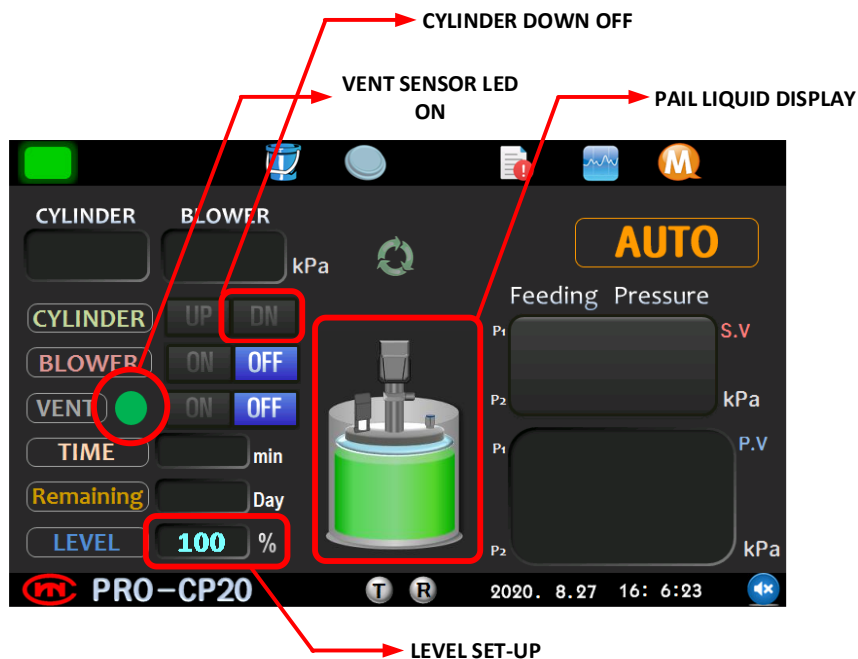
At this time, select "YES" when the confirm pop-up is displayed.



- 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.

5 HMI screen

5.1 Operating description

5.1.1 Changing page

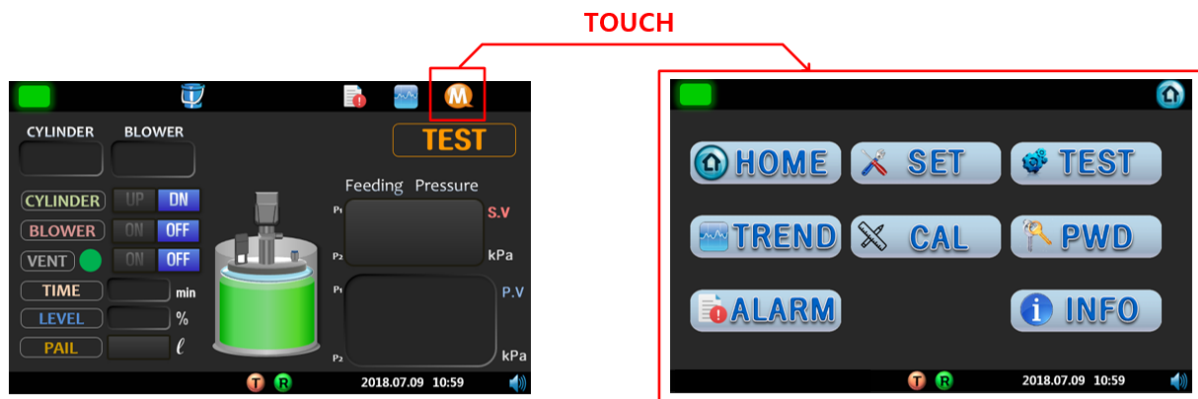


Figure 4. How to change the page_1

If you touch the desired screen icon like the screen icon, you go to that screen.

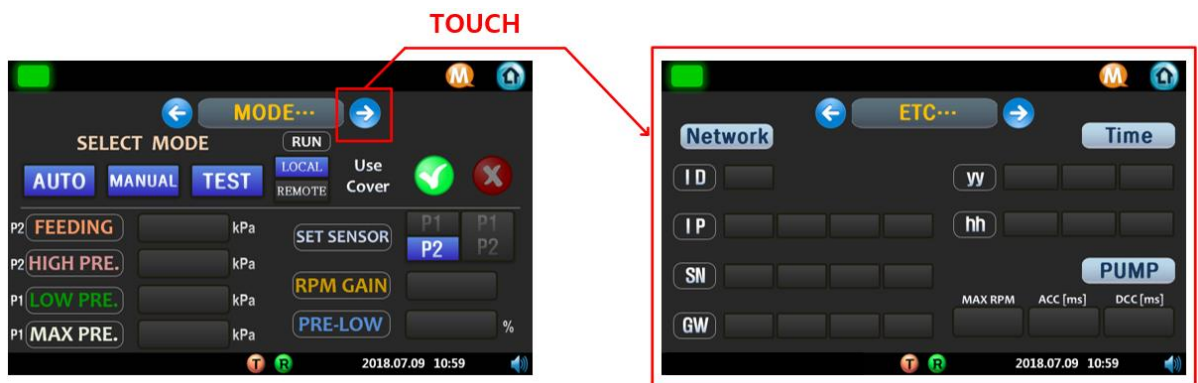


Figure 5. How to change the page_2

If you touch the arrow direction on the screen as shown in Fig. 5, you go to the next screen of that item.

5.1.2 Changing setting



Figure 6. Example of changing the setting value

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



Figure 7. Example of changing setting

When changing the settings on the mode screen, touch Yes in the confirmation window.
 (However, it cannot be changed while in the control operation.)

5.2 HMI screen structure

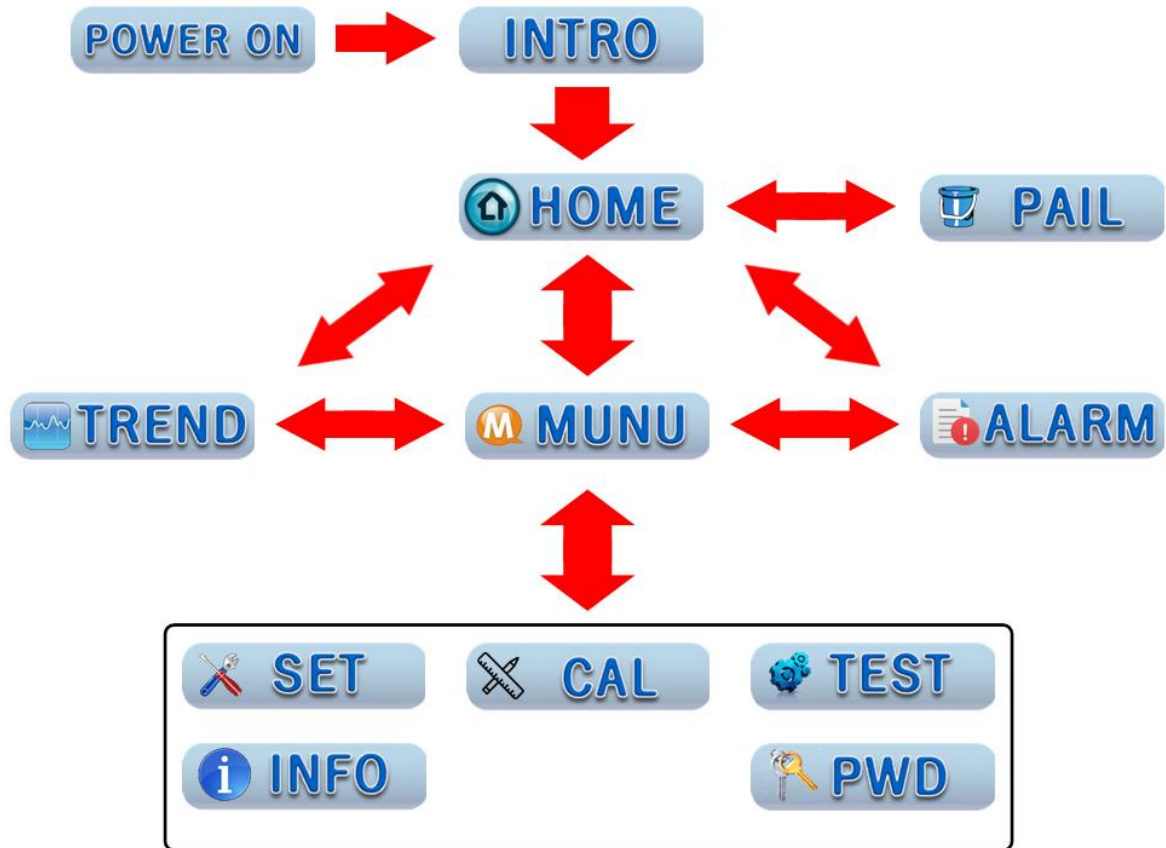








Figure 8. HMI screen structure

5.2.1 Page icon

Table 4. Description of page icon

Icon	Page name	Description
	Home	This is the main screen to display the operation and information of PRO-CP20/30.
	Manual Operation	This is the PRO-CP20/30 manual operation screen. → Cylinder level operation: 
	Menu	This is an intermediate screen to go to each important page.
	Setting	This is the screen to set the condition values applied when operating the equipment. → Mode setting screen → Other screens
	Test	This is a screen to test the equipment. → Pump operation test → I/O test
	Graph	This is a screen to check supply (pumping) pressure, pump RPM and torque value during materials transfer via graphs.
	Calibration	This is a screen to calibrate the cylinder, blower, and supply pressure sensor, and to initialize pump information and equipment information.
	Password	This is a screen to change user passwords through the user and administrator password.
	Alarm	This is a screen to display an alarm list when an alarm occurs during operation of the equipment.
	Information	This is a screen to display ID, IP, firmware version and pump life information for external communication.

5.3 Description of operation mode

5.3.1 Auto mode

- Based on the operation switch process, container replacement and materials transfer can be operated only via the PRO-CP20/30 front panel.

5.3.2 Manual mode

- The PRO-CP20/30 can be operated manually based on the HMI and operation switches.

5.3.3 Test mode

- This mode is for testing pump and I/O contact points prior to delivery of PRO-CP20/30.
 - ➔ Pump Test
 - ➔ Input Test
 - : Check the input contact point (switch and sensor pressure value) and analog input of PRO-CP20/30.
 - ➔ Output Test
 - : Check the output contact point (button lamp, solenoid valve, warning light) and analog output of PRO-CP20/30.

6 Operation of the PRO-CP20/30

6.1 Initial power input

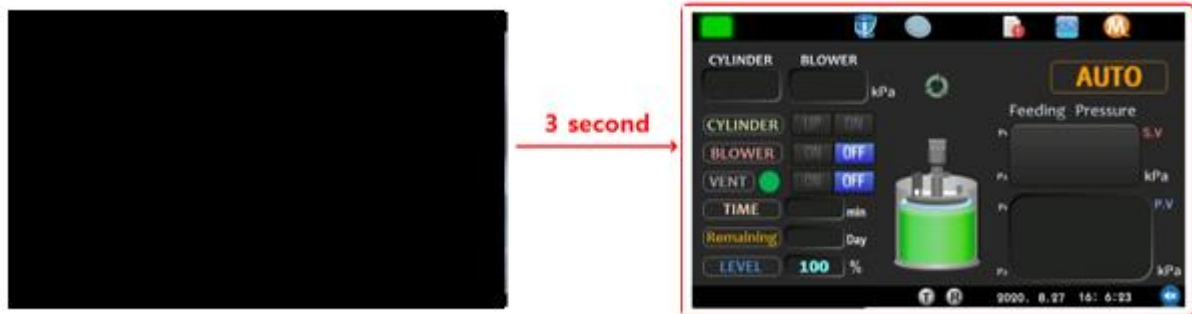


Figure 9. Initial power input screen

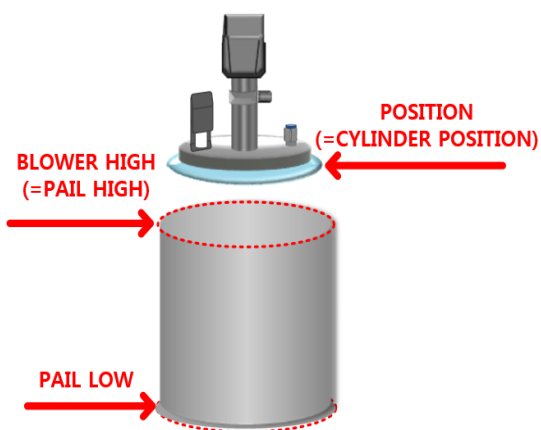
If power is applied after connecting the power connector of the equipment, the display moves to the home screen after the introduction screen is displayed for 3 seconds as follows, and information is activated on each display window.

6.2 Initial can 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 the concept of the cylinder position value, the top and bottom values of the material container must be understood.



<Pail set-up Example>

- **Position value(=cylinder position value)**
-> The position value of the bottom of the current cylinder is indicated
- **Top value of the material container**
-> This is defined as the top end of the material container.
- **Bottom value of the material container**
-> It is defined as the bottom end of the material container.



Figure 10. Material container preparation

After going to setting screen and changing to manual mode, touch cylinder level operation icon on manual operation page to prepare initial material container setting.

➔ The initial password is 0000 when entering the setting screen.



Figure 11. Cylinder position value at initial container setting

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 Container top set-up

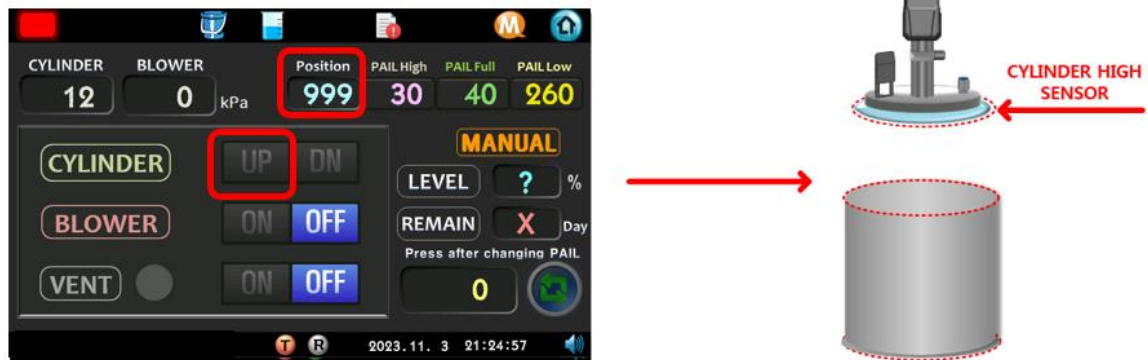


Figure 12. Initialization of cylinder position value

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 becomes zero.



Figure 13. Container top set-up

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 Container bottom set-up

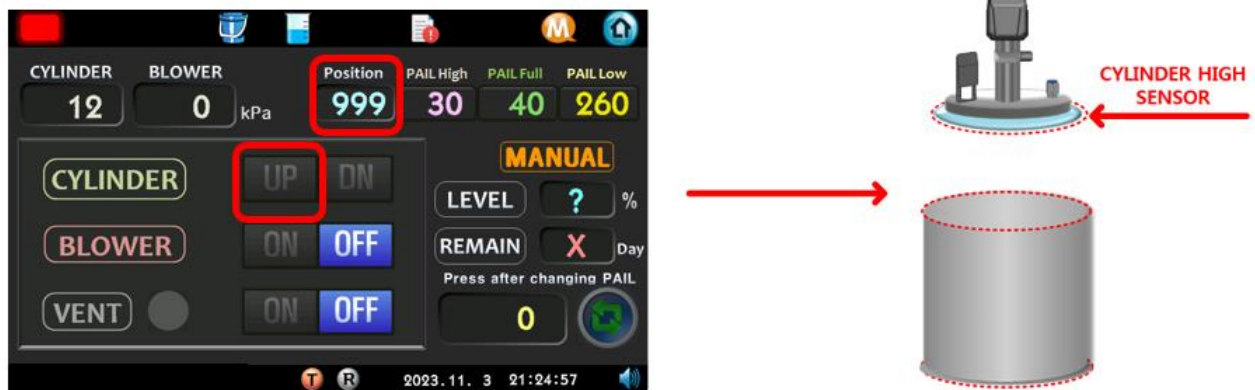


Figure 14. Initialization of cylinder position value

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.



Figure 15. Container bottom set-up

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.
- ➔ In this case, although it is possible to proceed without a container, fill in the numerical value of -5 considering the distance between the bottom and bottom of the container.

6.2.3 Pail Level 설정



Figure 16. PAIL LEVEL 100% setting

After the Pail coupling is complete, you can specify the current position as the 100% point in manual mode.

The PAIL LEVEL setting allows you to specify the remaining amount of the current PAIL location. Level normal indication requires the measured PAIL FULL and PAIL LOW values to be entered.

Brief description

1. Complete the PAIL combining by referring to the [6.3 Mounting of Container](#).
2. If combined, enter the current position value in PAIL FULL.
3. As of that point, LEVEL is 100%, and based on the same amount, it will be recognized as 100% at the same point..
4. The LEVEL display may differ due to the position value error, and if it is more than 100%, it will be displayed as X..

LEVEL formula

$$\text{LEVEL} = (\text{PAIL_LOW} - \text{POSITION}) * 100 / (\text{PAIL_LOW} - \text{PAIL_FULL})$$

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

$$\text{LEVEL} = (260 - 60) * 100 / (260 - 60) = 100\%$$

6.3 Mounting of material containers

6.3.1 Auto mode



Figure 17. Auto mode setting

Refer to Fig. 15 and change the current setting mode to automatic mode and then combine the material containers.

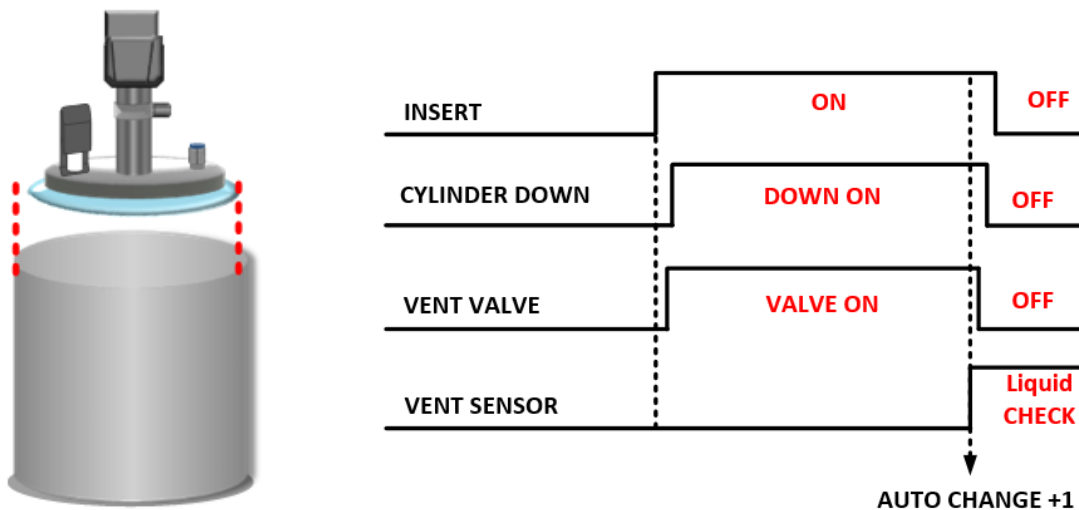


Figure 18. Replacement of material containers(auto mode)

Figure 17 shows the elements that are combined by touching down button in the auto mode.

- ① Touch the down button ->
- ② Vent valve, cylinder down ->
- ③ Contact with follow plate liquid ->
- ④ Liquid rise into vent liquid tube ->
- ⑤ Vent sensor liquid detection ->
- ⑥ Vent valve, cylinder down stop ->
- ⑦ Complete automatic replacement

6.3.2 Manual mode

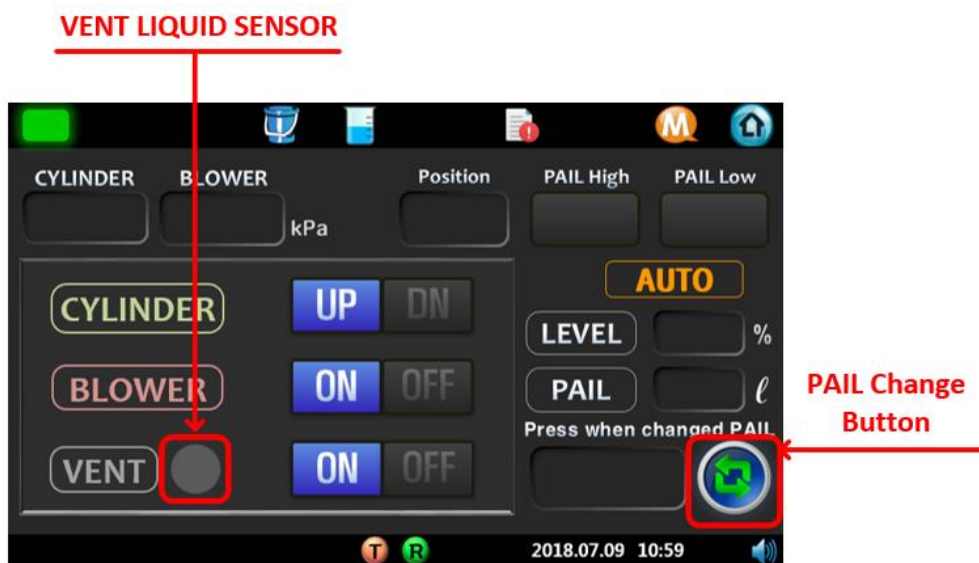


Figure 19. Manual operation screen

Change the current setting mode to manual mode and then combine the material containers. Align the material container with the Follow Plate at the top, and operate it manually on the manual operation screen. (The operation can be performed with the front panel display and operation buttons.)

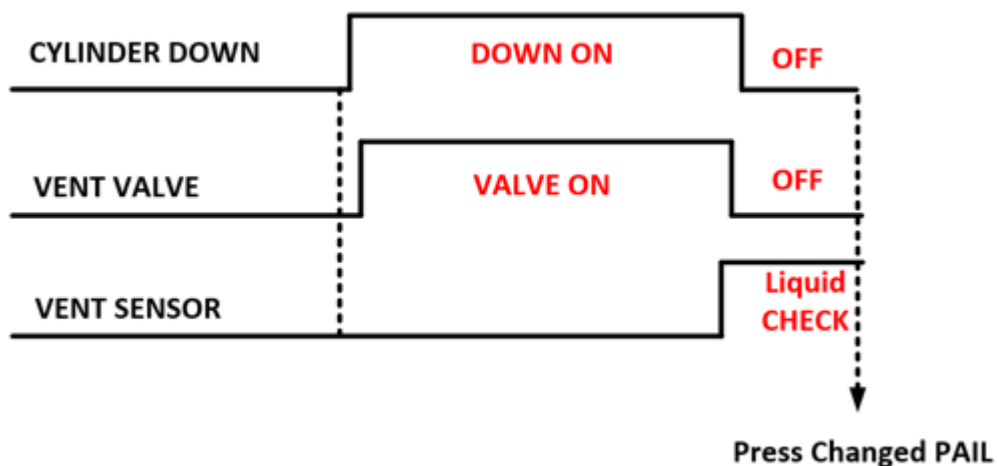


Figure 20. Replacement of material containers(manual mode)

- ① Vent valve, cylinder down operation ->
- ② Contact with follow plate liquid ->
- ③ Liquid rise into vent liquid tube ->
- ④ Check the vent sensor liquid detection visually or on screen vent liquid detection sensor ->
- ⑤ Vent valve, cylinder down stop ->
- ⑥ Touch container completion button ->
- ⑦ Confirmation window ->
- ⑧ Touch Yes button ->
- ⑨ Complete manual replacement

6.4 Material feeding condition setting

6.4.1 Set expiration date

The expiration date setting function sets the expiration date for the combined liquid..

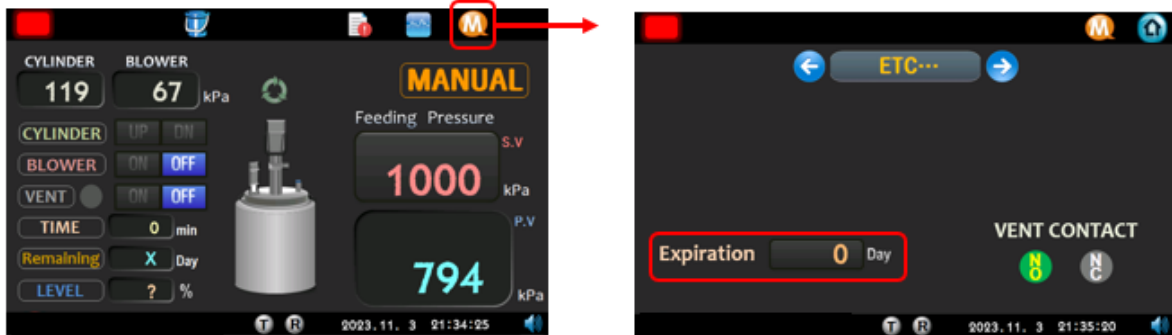


Figure 21. Set expiration date(HOME – Remaining) display(SET ETC – EXPIRATION)

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.)



Figure 22. EXPIRATION alarm occurrence screen

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



Figure 23. Setting material transfer conditions

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

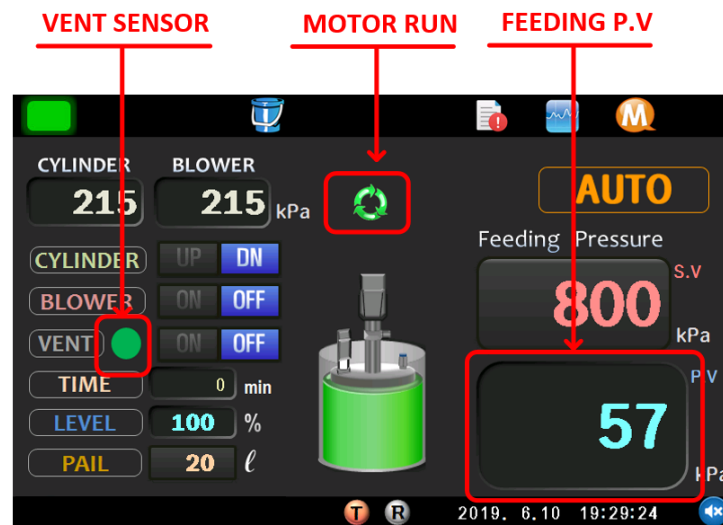


Figure 24. Auto mode screen

This is how to start the liquid transfer in the automatic mode.

After checking the vent liquid detection indication, if you touch the supply start button on the front panel to operate the supply start button LED is on and the pump operation on the home screen will be displayed. The current supply pressure value will go up after a certain time.

- ➔ If the vent liquid is not detected, check whether liquid is present in the vent tube.
- ➔ If the material supply operation is executed, the warning light turns on every 400 ms.

6.4.3 Manual mode

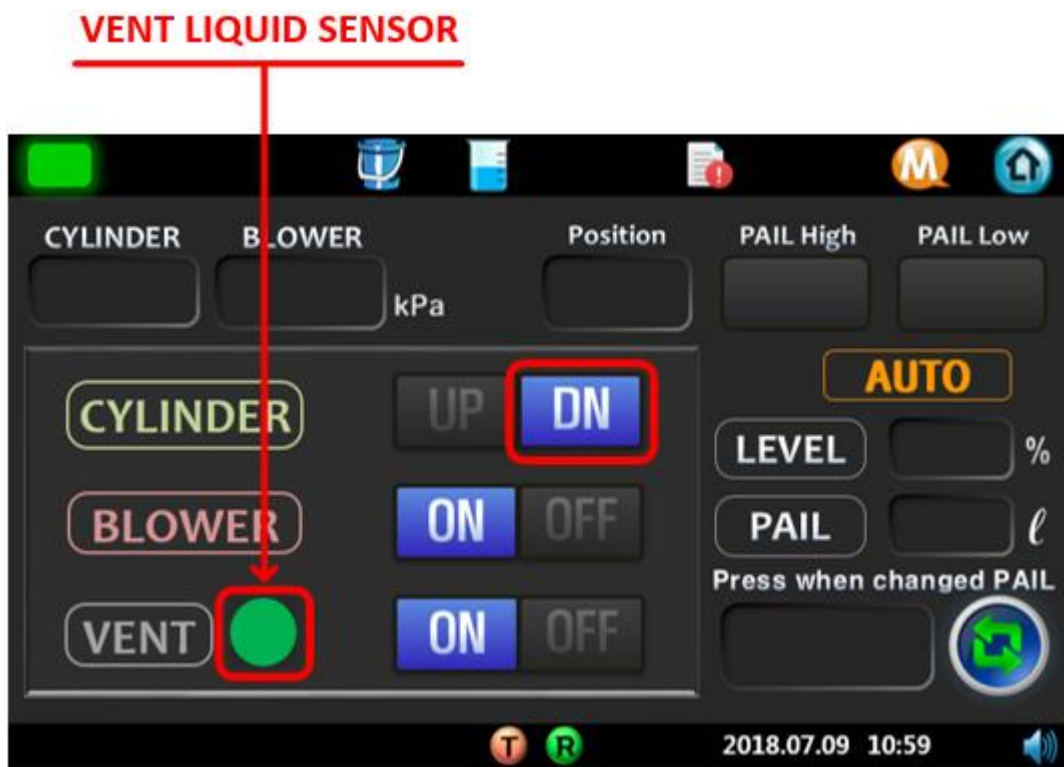


Figure 25. Manual operation screen

This is how to start the liquid transfer in the manual mode.

If you touch the down button on the front panel or the start/stop button on the front panel after the cylinder down operation on the manual operation screen, the materials transfer starts along with the button LED.

- ➔ To operate manually, the cylinder must be kept in the down position.
- ➔ If the materials transfer operation is executed, the warning light turns on every 400 ms.

6.5 Material container replacement

6.5.1 Material container replacement in auto mode



Figure 26. Home screen

If you touch the up button on the front panel when the material container is automatically replaced, the sequence until the plate is removed from the container is executed, and the sequence contents are as follows.

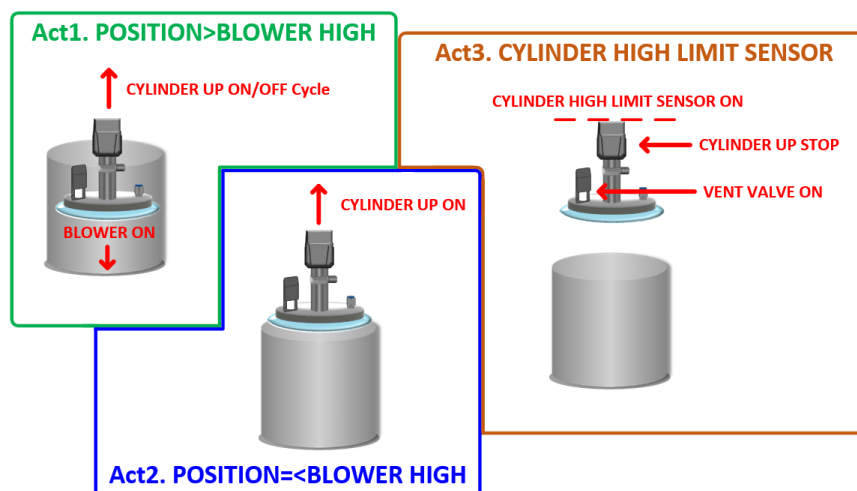


Figure 27. Follower plate position

When the Change button is pressed in Auto mode, it is divided into three action sequences.

Act1. Cylinder position greater than 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 the Change button is pressed, the blower is always turned on as shown in Act1 on the left. Cylinder up repeats on/off to raise the follow plate.

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

Act3. Afterwards, when the cylinder upper limit contact sensor is detected, stop cylinder operation and vent valve on.

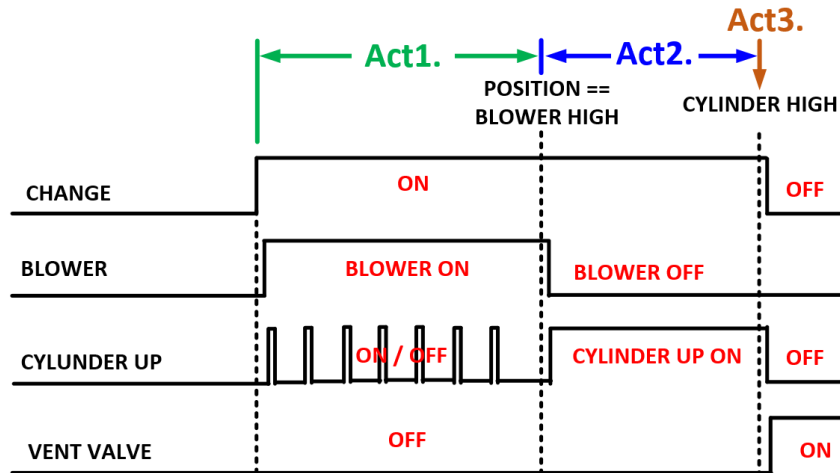


Figure 28. Auto mode pail replacement timing chart

6.5.2 Material container replacement in manual mode



Figure 29. Manual operation screen

When manually replacing the material container, go to the manual operation screen and operate manual replacement using Sequence Table in Auto Mode and operation buttons.

7 HMI screen description



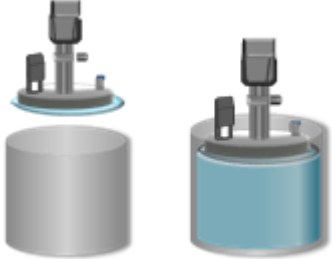

7.1 Home screen 



Figure 30. Home screen

The list displayed on the home screen is indicative of the status and is described below.

Table 5. Description of home screen

Item	Description
	Displays the operation status. ■ : Normal operation ■ : Operation error alarm or preliminary alarm ■ : Occurs when control operation is no longer possible.
	Displays the currently selected MODE. → Current auto mode
	Displays the combination state of material containers. → Left : Not replaced → Right : Replaced
	Displays the pump running/stopped status during machine operation. → Left : Feeding / Right : Feeding stop




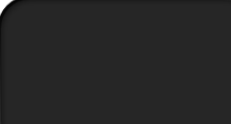









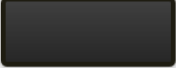


<p>CYLINDER BLOWER</p> 	<p>Displays the pressure of the cylinder and blower pressure regulator on the front of the equipment.</p>
<p>Feeding Pressure</p> <p>P1  S.V</p> <p>P2  kPa</p> <p>P1  P.V</p> <p>P2  kPa</p>	<p>Displays supply pressure information.</p> <ul style="list-style-type: none"> ➔ Setting value : Set supply pressure value ➔ Current value : Current supply pressure value <p>P 1, 2 -> The reference is displayed according to the detection sensor setting for detecting the supply pressure.</p>
<p>CYLINDER </p> <p>BLOWER </p> <p>VENT  </p>	<p>Each list displays an indication of operation.</p> <ul style="list-style-type: none"> ➔ Cylinder : Displays cylinder up/down status. ➔ Blower : Displays blower open/close status. ➔ Vent : Displays vent valve open/close status. ➔  /  : Displays detection/non detection of vent sensor liquid.
<p>TIME  min</p>	<p>Displays the length of time the equipment has been on since the container was replaced.</p>
<p>LEVEL  %</p>	<p>When the container is replaced, the remaining liquid level is displayed.</p> <ul style="list-style-type: none"> ➔ The remaining liquid is displayed as ??? before the container is replaced.
<p>PAIL </p>	<p>Displays the capacity value of the set container.</p>
<p></p>	<p>Displays communication status between the control board and the LCD.</p> <ul style="list-style-type: none"> ➔ 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
<p>2018.07.09 10:59</p>	<p>Displays the current time.</p> <ul style="list-style-type: none"> ➔ Needs to be set at the beginning. (Set page -> ETC)
<p></p>	<p>Turns the alarm sound of the SIGNAL TOWER buzzer ON/OFF by touching this icon.</p>

Table 7. Home page Details

7.2 Manual operation screen

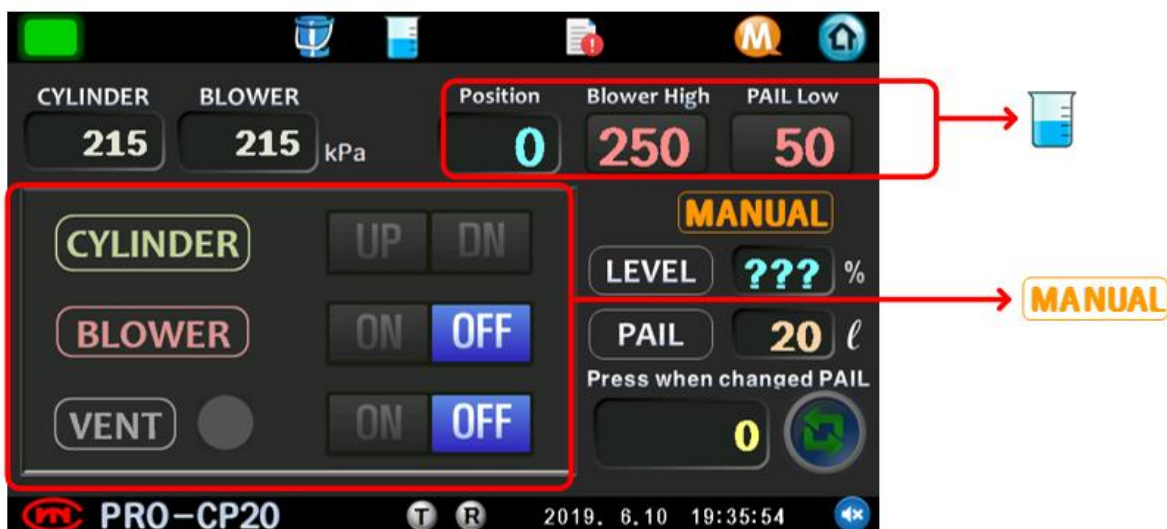


Figure 31. Manual operation screen

Manual operation screen is a screen for manual operation and initial container position value setting by touch screen operation.

Table 8. Description of manual operation screen

Item	Description
	<p>Each list is manually operated.</p> <p>Note that it can be operated when setting mode is in manual mode.</p> <ul style="list-style-type: none"> ➔ Cylinder : cylinder up/down operation button. ➔ Blower : Blower open/close operation button. ➔ Vent : Vent valve open/close operation button. ● / ● : Displays detection/non detection of vent sensor liquid.
	<ul style="list-style-type: none"> ➔ Level : When the container is replaced, the remaining liquid level is displayed.(The remaining liquid is displayed as ??? before the container is replaced.) ➔ Pail : The capacity value of the set container is displayed.
<p>Press when changed PAIL</p>	<p>This is a completion button that displays the completion of manual replacement of the PAIL.</p> <ul style="list-style-type: none"> ➔ : Replacement completed : Incomplete replacement ➔ : Displays the number of PAIL replacements
	<p>This is the remaining liquid setting required for initial container setting.</p> <p>(If the setting is not normal, it may affect the automatic replacement, remaining liquid check, and pump operation.)</p>

7.3 Menu screen



Figure 32. Menu screen

You can go to the corresponding screen for each icon and each important page on the main screen.

Table 9. Description of menu screen

Item	Description
	Button to go to the home screen
	Button to go to the setting screen → User or administrator password is required when going to the setting screen.
	Button to go to the test screen → After changing to test mode on the setting screen, it is possible to enter with the administrator password.
	Button to go to the graph screen
	Button to go to the calibration screen → Administrator password is required to go to the calibration screen
	Button to go to the password screen
	Button to go to the alarm screen
	Button to go to the information screen

7.4 Setting(MODE) screen

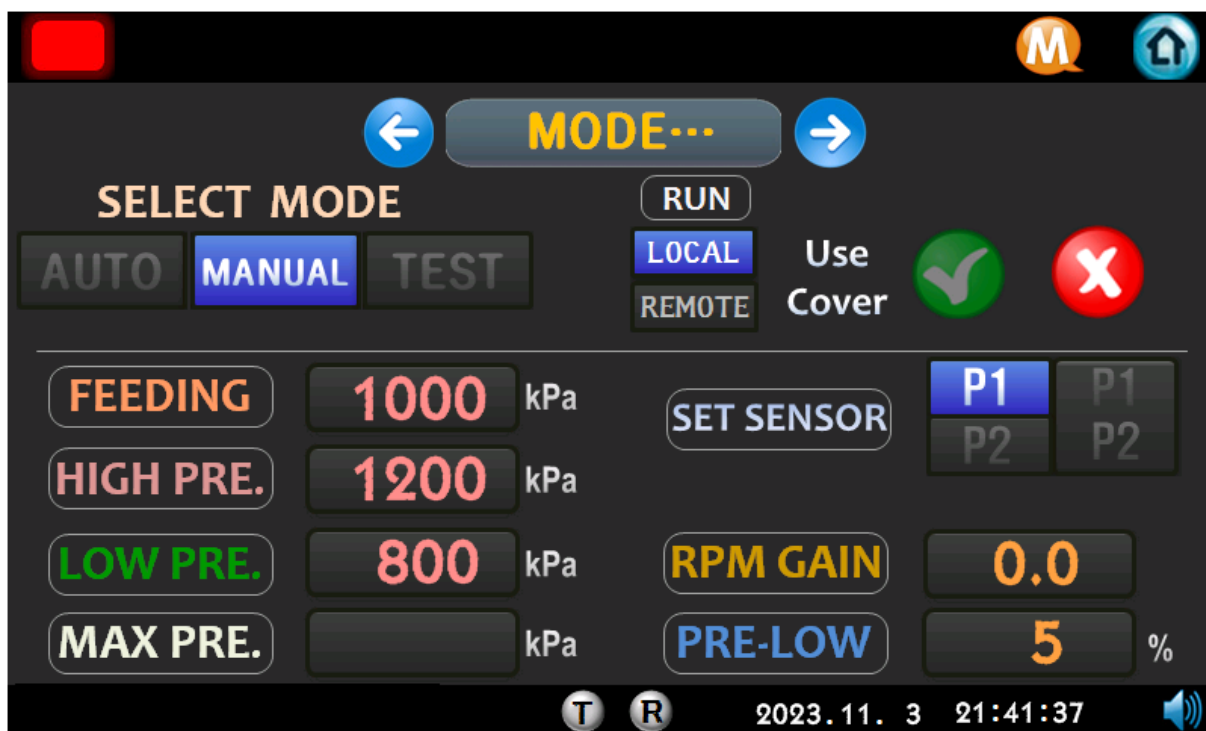


Figure 33. Setting(MODE) screen

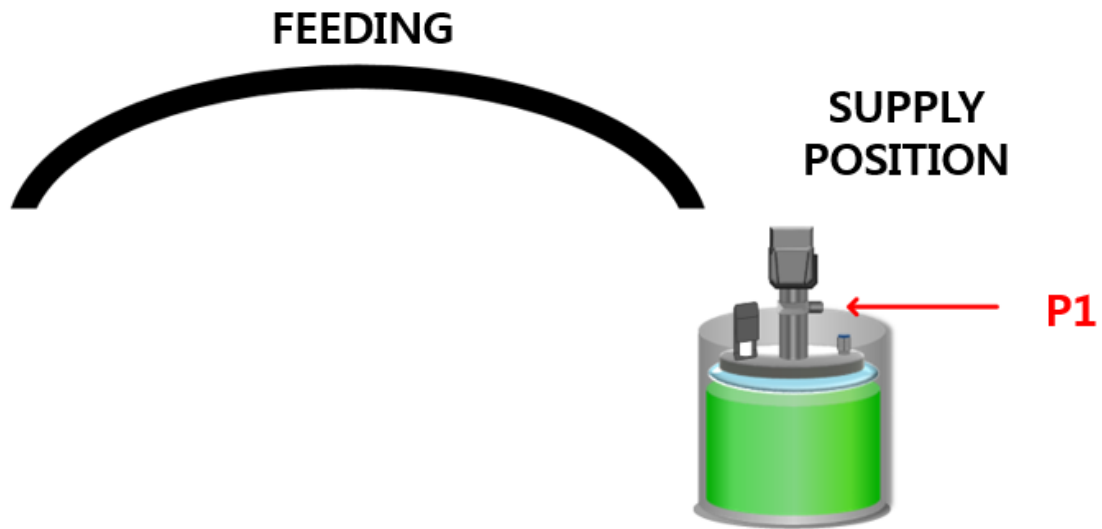
This screen is for setting material supply operation.

Table 6. Description of setting screen

Item	Description
AUTO MANUAL TEST	You can select auto/manual/test mode.
SET SENSOR	Selecting supply pressure detection reference (option) Sensor selection to set pressure detection reference. → Ref 1 : Using PLATE supply pressure position. → Ref 2 : Using the optional position (dispensing unit) sensor → Ref1+Ref2 : Using by linking PLATE supply pressure with optional dispensing pressure
FEEDING	Setting supply pressure (materials transfer unit) Sets the pressure of material supply unit. The position of the supply pressure unit varies. Depending on the reference sensor Ref 1 : Setting the pressure of plate supply pressure unit Ref 2 : Setting the pressure of dispensing unit → Ref1+Ref2 : Setting the pressure of dispensing unit

<p style="text-align: center;">HIGH PRE.</p>	<p>Setting the top limit of pressure</p> <ul style="list-style-type: none"> ➔ Sets 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. <p>The top limit detection position of pressure depending on reference sensor setting</p> <ul style="list-style-type: none"> ➔ Ref 1 : Detecting the top limit of plate supply unit pressure ➔ Ref 2 : Detecting the top limit of dispensing unit pressure ➔ Ref 2 : Detecting the top limit of dispensing unit pressure
<p style="text-align: center;">LOW PRE.</p>	<p>Setting the bottom limit of pressure</p> <ul style="list-style-type: none"> ➔ Sets 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. <p>The top limit detection position of pressure depending on reference sensor setting.</p> <ul style="list-style-type: none"> ➔ Ref 1 : Detecting the top limit of plate supply unit pressure ➔ Ref 2 : Detecting the top limit of dispensing unit pressure ➔ Ref 2 : Detecting the top limit of dispensing unit pressure
<p style="text-align: center;">MAX PRE.</p>	<p>Maximum pressure set-up</p> <ul style="list-style-type: none"> ➔ Sets the maximum pressure value for the reference 1 materials transfer when the reference sensor 1 + 2 are interlocked. ➔ It is activated when using reference 1 + reference 2.

7.4.1 When using reference sensor 1



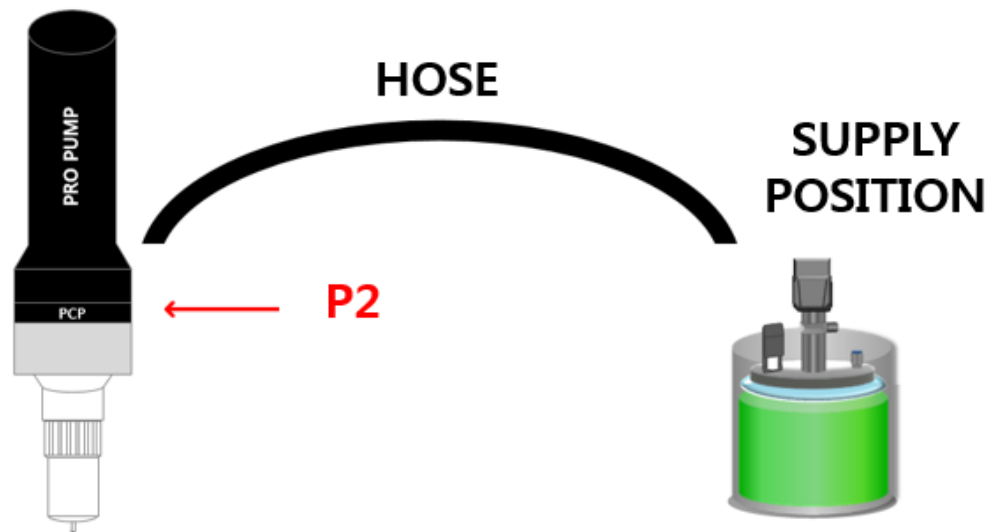
The above figure is to understand the concept of reference sensor.

→ After setting reference 1, the material is supplied based on the reference 1 sensor for dispensing.

Item	Description
P1 FEEDING	Sets the pressure value of the reference 1 supply unit.
P1 HIGH PRE.	If the pressure value of the reference 1 supply unit exceeds the top limit of pressure, the liquid transfer stops and an alarm occurs.
P1 LOW PRE.	If the pressure value of the reference 1 supply unit drops below the bottom limit of pressure, the liquid transfer stops and an alarm occurs.

7.4.2 When using reference sensor 2

DISPENSE



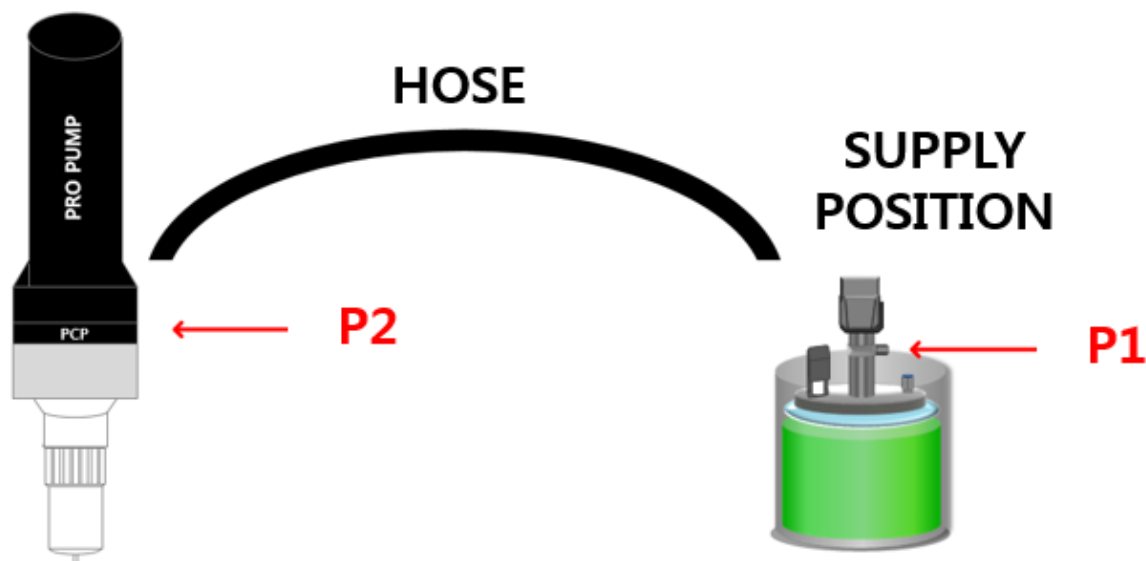
The above figure is to understand the concept of reference sensor.

➔ After setting reference 2, the material is supplied based on the reference 2 sensor for dispensing.

Item	Description
P2 FEEDING	Sets the pressure value of the reference 2 dispensing unit.
P2 HIGH PRE.	If the pressure value of the reference 2 supply unit exceeds the top limit of pressure, the liquid transfer stops and an alarm appears.
P2 LOW PRE.	If the pressure value of the reference 2 supply unit drops below the bottom limit of pressure, the liquid transfer stops and an alarm occurs.

7.4.3 When using reference sensor 1+2

DISPENSE



→ When setting reference 1 + reference 2, the mode setting screen and supply pressure setting screen are changed as follows.

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

Item	Description
P2 FEEDING	Sets the pressure value of the reference 2 dispensing unit.
P2 HIGH PRE.	If the pressure value of reference 2 dispensing unit exceeds the top limit of pressure, the liquid transfer stops and an alarm occurs.
P1 LOW PRE.	If the pressure value of reference1 supply unit drops below the bottom limit of pressure, the liquid transfer stops and an alarm occurs.
P1 MAX PRE.	Sets the pressure value of the reference 1 supply unit.




7.4.4 Description of pump operation in reference 1+2 linked control

The operation proceeds with reference to reference 2 supply pressure and reference 1 maximum pressure setting value and current value.

Ref 1 setting pressure = Ref 1 maximum pressure

Ref 2 setting pressure = Ref 2 supply pressure

- ➔ Ref2 current pressure > Ref2 setting pressure : motor stop
- ➔ Ref2 C.P < Ref2 S.P , Ref1 C.P > Ref1 S.P : motor stop
- ➔ Ref2 C.P < Ref2 S.P , Ref1 C.P < Ref1 S.P : motor operation
- ➔ Ref2 C.P > Ref1 C.P : alarm warning

Item	Description
<p>PRE-LOW  %</p>	<p>This is a setting that sets off an alarm before the material is exhausted.</p> <ul style="list-style-type: none"> ➔ When 5% is set, an alarm displays when the remaining liquid reaches 5%
<p>RPM GAIN</p>	<p>Sets the pump control method.</p> <ul style="list-style-type: none"> ➔ PID control proceeds if RPM gain value is 0 ➔ If RPM gain value is not 0, RPM gain value is RPM value operated per second. <p>Ex) If RPM gain value is 1, motor operation increases by 1 RPM per second</p> <p>Ex) The RPM will reach the MAX RPM</p>
<p></p>	<p>Control operation type can be set through external communication.</p> <p>Local : PRO-CP20/30 front panel Button control</p> <p>Remote : PRO-CP20/30 operation control by external signal</p>
<p></p>	<p>Currently not in use.</p>

7.5 ETC. screen (1)

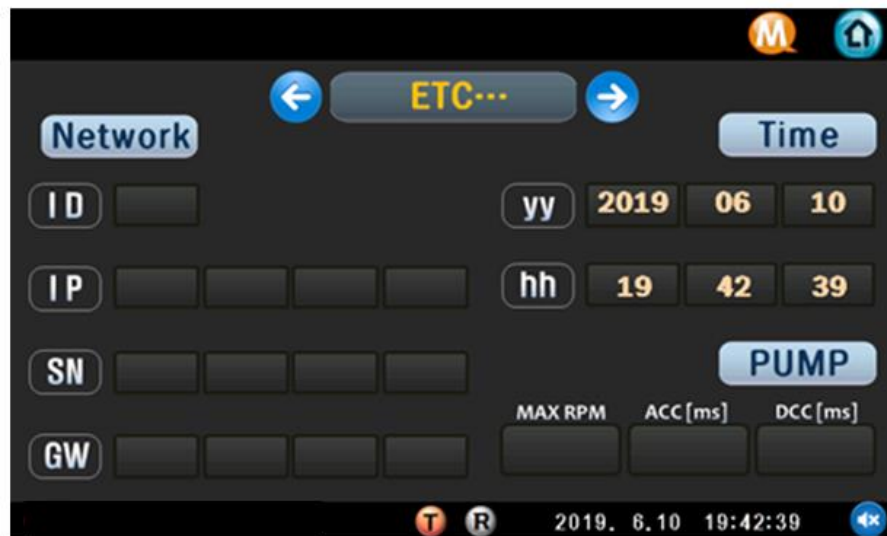


Figure 34. ETC. screen (1)

This screen is for other setting upper communication, time and pump speed.

Table 7. Description of etc.screen

Item	Description
<p>Network</p> <p>ID <input type="text"/></p> <p>IP <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>SN <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>GW <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>	<p>It is possible to set ID and address value for upper LAN communication (RJ45).</p>
<p>Time</p> <p>yy <input type="text"/> <input type="text"/> <input type="text"/></p> <p>hh <input type="text"/> <input type="text"/> <input type="text"/></p>	<p>It is possible to set the equipment screen time.</p> <p>→ YY : year/month/day</p> <p>→ HH : hours/minutes/seconds</p>
<p>PUMP</p> <p>MAX RPM <input type="text"/> ACC [ms] <input type="text"/> DCC [ms] <input type="text"/></p>	<p>This is the setting for the pump speed used for the operation of the equipment.</p> <p>→ Max rpm : Allows you to set the maximum RPM the pump can deliver during operation.</p> <p>→ ACC : It is the time consumed when the pump reaches the set RPM during initial operation.</p> <p>→ DCC : It is the time consumed when the pump stops when the pump operation stops.</p>

7.6 ETC. screen (2)

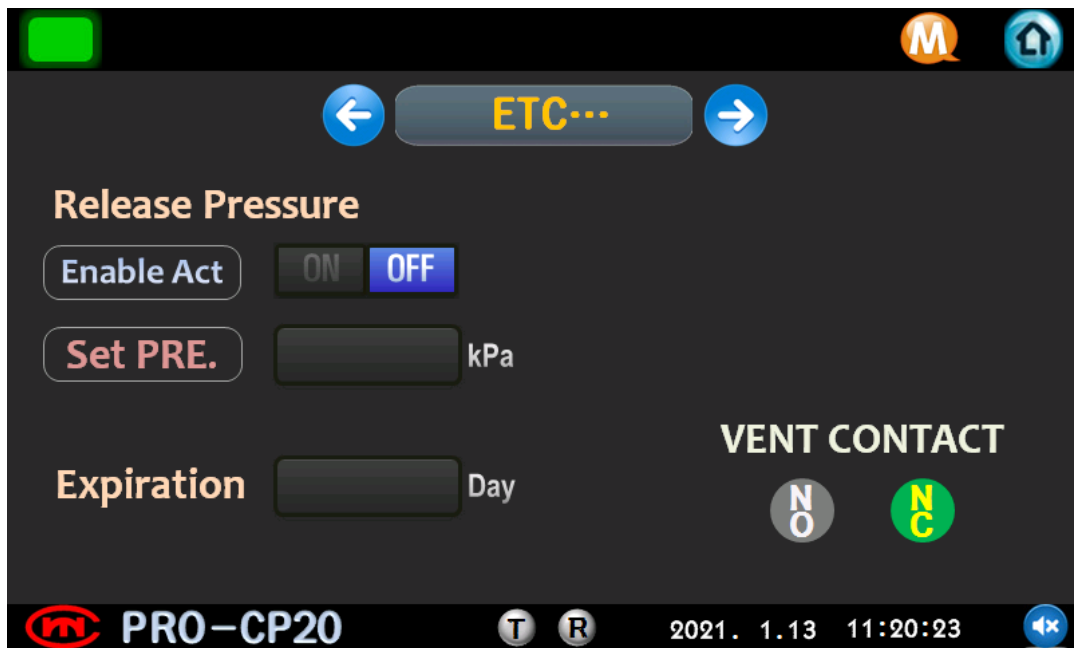


Figure 35. ETC. screen (2)

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

7.7 Pump test screen

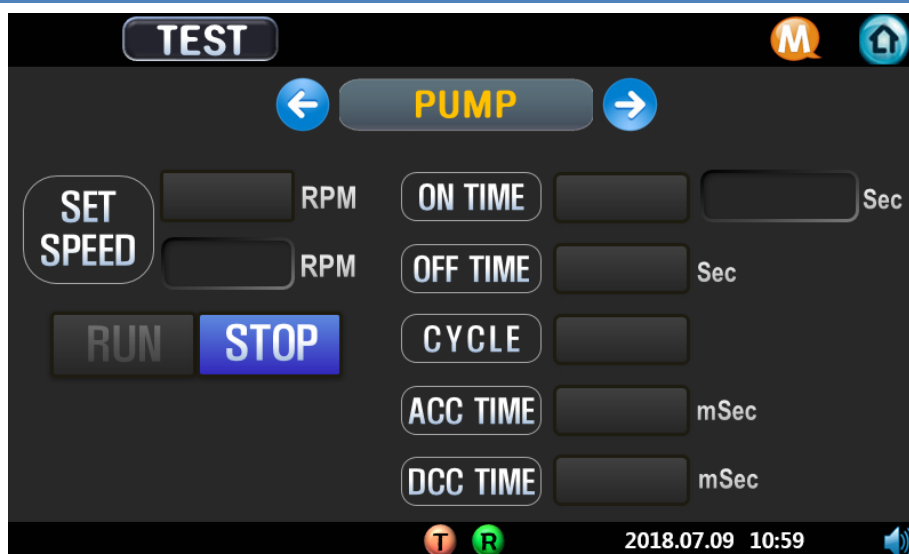


Figure 36. Pump test screen

This is the screen for the pump test. The screen can be changed to the test mode and entered with the administrator password.

Table 8. Description of pump test screen

Item	Description
	<p>It can be operated by setting the pump speed.</p> <ul style="list-style-type: none"> → RPM : Displays RPM setting and setting value → RPM : Displays pump operation feedback value → : Pump operation/Stop button
	<p>Elements for repeating the pump operation.</p> <ul style="list-style-type: none"> → ON Time : Setting pump operation time → OFF Time : Setting stop time after completing pump operation → Cycle : Setting the repeating number of operation and stop → Each setting value can be configured, and all three values must be set for repeating operation.
	<p>Acceleration time until normal PUMP operation is achieved.</p>
	<p>Deceleration time until the PUMP stops.</p>

7.8 Input test screen

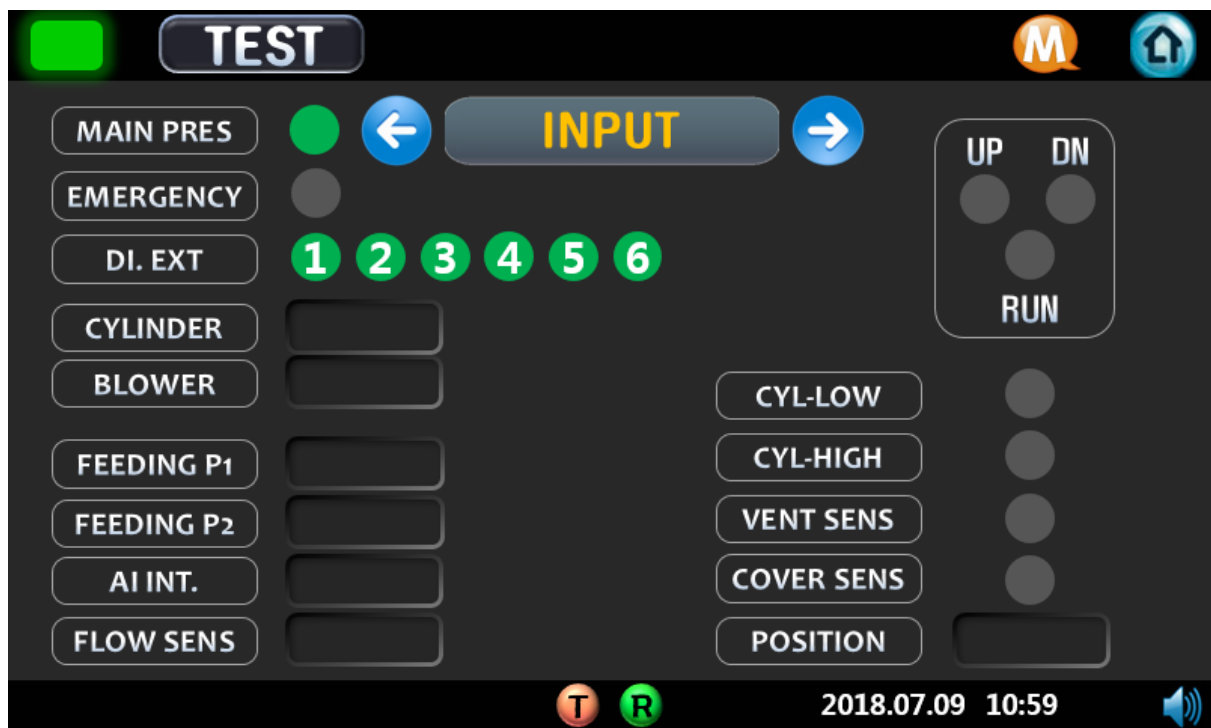



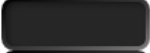


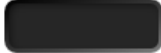


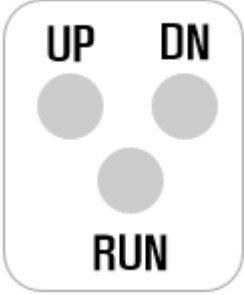



Figure 37. Input test screen

This is the screen to check the equipment input contact point and sensor value.

Table 9. Description of input test screen

Item	Description
<p>MAIN PRES </p>	<p>Checks the main pressure contact point. → If the main pressure is 4 Bar or less, the contact point is displayed (in green).</p>
<p>EMERGENCY </p>	<p>Check the emergency button contact point. → It responds to the emergency button on the front panel.</p>
<p>DI. EXT </p>	<p>Checks the external input contact point. → It responds to the external contact point in connection with an external connector.</p>
<p>CYLINDER </p> <p>BLOWER </p>	<p>Displays cylinder and blower sensor input values as decimal numbers.</p>
<p>FEEDING P1 </p> <p>FEEDING P2 </p> <p>AI INT. </p> <p>FLOW SENS </p>	<p>Displays the sensor and internal analog input value applied to the equipment in decimal.</p>

 <p>The diagram shows a rounded rectangular panel with three circular buttons. The top-left button is labeled 'UP', the top-right button is labeled 'DN', and the bottom-center button is labeled 'RUN'.</p>	<p>Checks the front panel button contact point.</p> <ul style="list-style-type: none"> ➔ It is the name of the front panel that matches the figure on the left. ➔ If you touch the corresponding button on the front panel to turn on the LED.
 <p>The diagram shows five rectangular buttons stacked vertically on the left, labeled 'CYL-LOW', 'CYL-HIGH', 'VENT SENS', 'COVER SENS', and 'POSITION'. To the right of these buttons is a vertical column of four circular LEDs and a wider rectangular LED at the bottom, corresponding to the buttons.</p>	<p>Checks the contact point sensor used in equipment.</p> <ul style="list-style-type: none"> ➔ CYL-LOW : ON when cylinder reaches the bottom limit ➔ CYL-HIGH : ON when cylinder reaches the top limit ➔ VENT SENS : ON when liquid is detected in VENT HOSE unit. ➔ COVER SENS : ON when COVER vacuum value is reached. (option) ➔ Displays the cylinder position value. <p>When the cylinder top limit sensor is ON, the position value is 0, as the cylinder descends, the position value increases.</p>

7.9 Output test screen

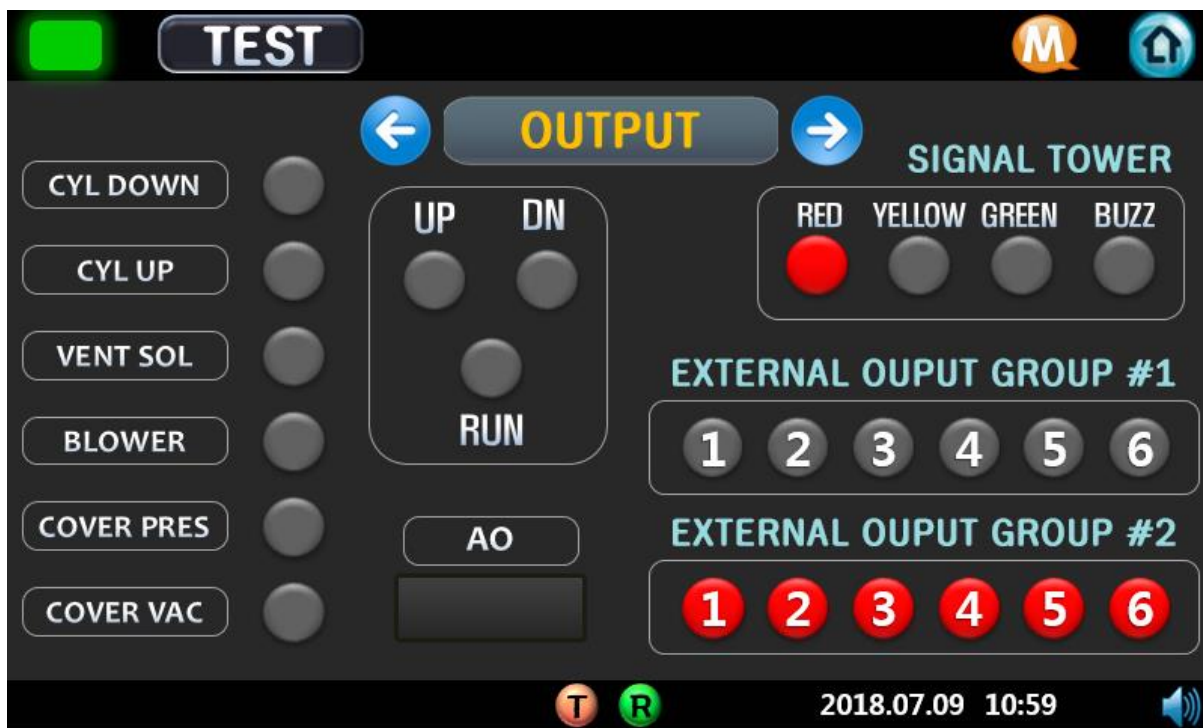
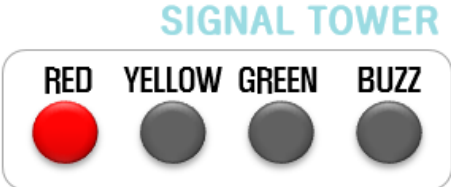
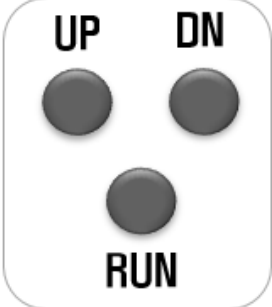
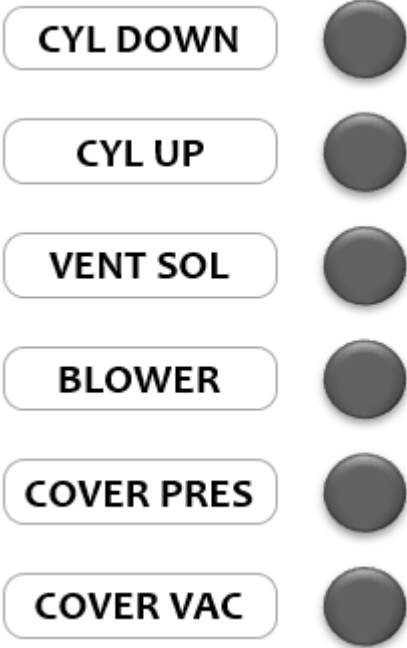





Figure 38. Output test screen

This is the screen to test all output.

Table 10. Description of output test screen

Item	Description
	<p>Warning light test buttons.</p> <ul style="list-style-type: none"> ➔ Red → Warning light in red on/off ➔ Yellow → Warning light in yellow on/off ➔ Green → Warning light in green on/off ➔ Buzz → Buzzer on/off
	<p>Front panel button LED test.</p> <ul style="list-style-type: none"> ➔ UP BUTTON → CHANGE LED ON/OFF ➔ DN BUTTON → INSERT LED ON/OFF ➔ START BUTTON → RUN/STOP LED ON/OFF

	<p>Equipment operation test</p> <ul style="list-style-type: none"> ➔ CYL DOWN → Cylinder down on/off ➔ CYL UP → Cylinder up on/off ➔ VENT SOL → Vent valve open/close ➔ Blower → Blower open/close ➔ COVER PRES/VAC → Unuse
<p>EXTERNAL OUPUT GROUP #1</p>  <p>EXTERNAL OUPUT GROUP #2</p> 	<p>장비 외부 커넥터 출력 테스트입니다.</p> <ul style="list-style-type: none"> ➔ 각각의 버튼을 누를 시 출력됩니다.
	<p>Analog value output test.</p>

7.10 Graph screen

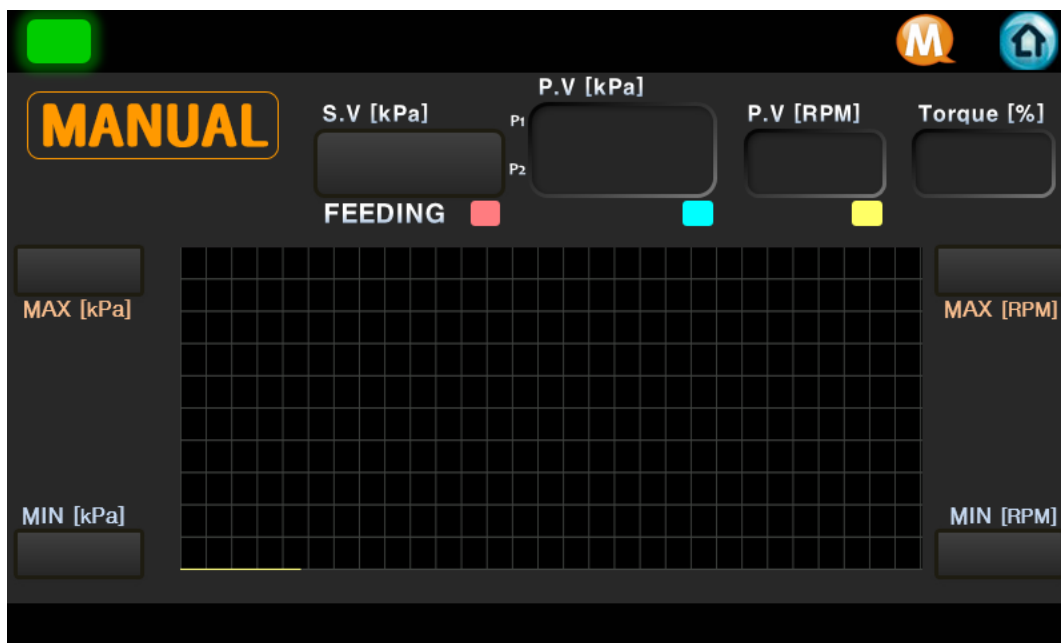
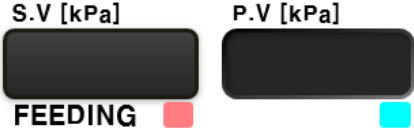

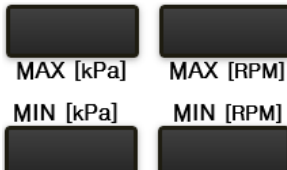


Figure 39. Graph screen

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

Table 11. Description of graph screen

Item	Description
	Displays supply pressure information. → S.V → Set supply pressure value → P.V → Current supply pressure value Ref 1, 2 : The reference is displayed depending on the detection sensor setting for detecting the supply pressure.
	Displays PRO-CP20/30 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 Calibration(cylinder, blower) screen

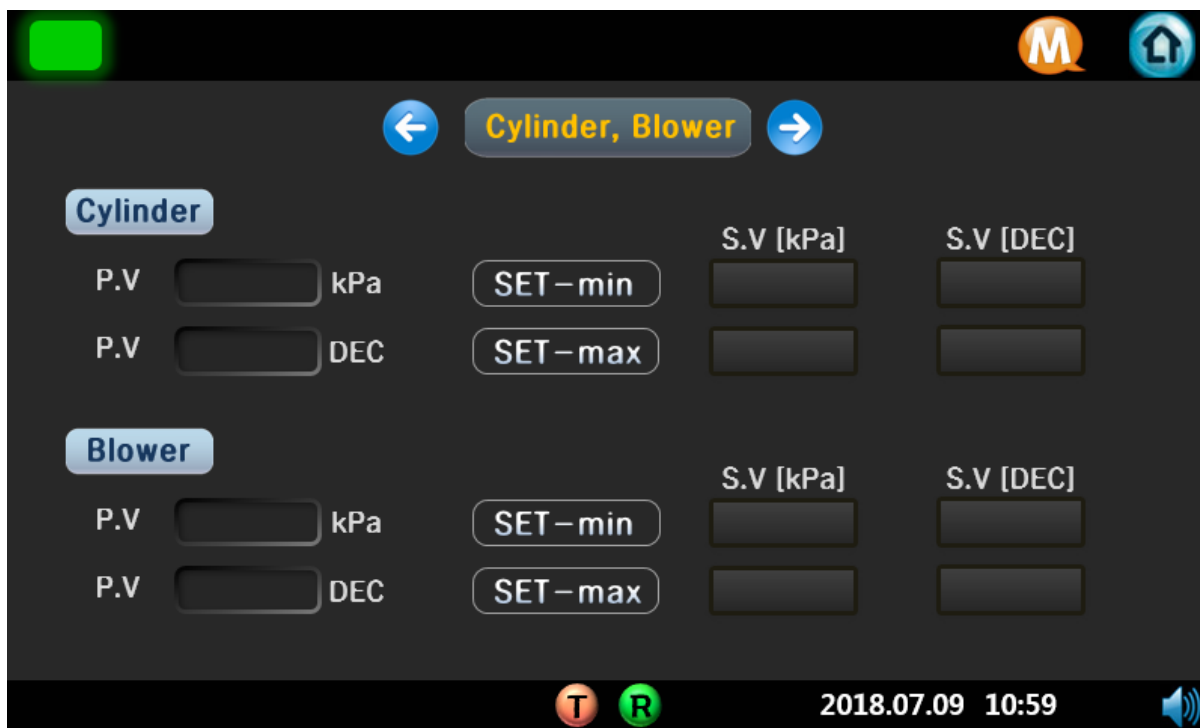


Figure 40. Calibration(cylinder, blower) screen

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

Table 12. Description of calibration(cylinder, blower) screen

Item	Description
<p>P.V <input type="text"/> kPa</p>	<p>The calibrated current pressure value is displayed.</p>
<p>P.V <input type="text"/> DEC</p>	<p>The calibrated actual pressure value is displayed as the DEC value.</p>
<p> <input type="text"/> S.V [kPa] <input type="text"/> S.V [DEC] <input type="button" value="SET-min"/> <input type="button" value="SET-max"/> </p>	<p>Input the calibration value</p> <ul style="list-style-type: none"> ➔ SET-min : Calibration minimum pressure value ➔ SET-max : Calibration maximum pressure value ➔ S.V[kPa] : Input the pressure value to be calibrated ➔ S.V[DEC] : Input the current value by giving the pressure value to be calibrated

7.12 Calibration(Feeding) screen



Figure 41. Calibration(feeding) screen

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

Table 13. Description of calibration(feeding) screen

Item	Description
<p>P.V <input type="text"/> kPa</p>	<p>The calibrated current pressure value is displayed.</p>
<p>P.V <input type="text"/> DEC</p>	<p>The calibrated actual pressure value is displayed as the DEC value.</p>
<p> S.V [kPa] S.V [DEC] <input type="text"/> <input type="text"/> SET-min SET-max <input type="text"/> <input type="text"/> </p>	<p>Input the calibration value</p> <ul style="list-style-type: none"> ➔ SET-min : Calibration minimum pressure value ➔ SET-max : Calibration maximum pressure value ➔ S.V[kPa] : Input the pressure value to be calibrated ➔ S.V[DEC] : Input the current value by giving the pressure value to be calibrated.

7.12.1 Calibration details

The calibration applied to the current equipment is a method of compensating the pressure value by extracting the AD conversion value based on the pressure value of two points.

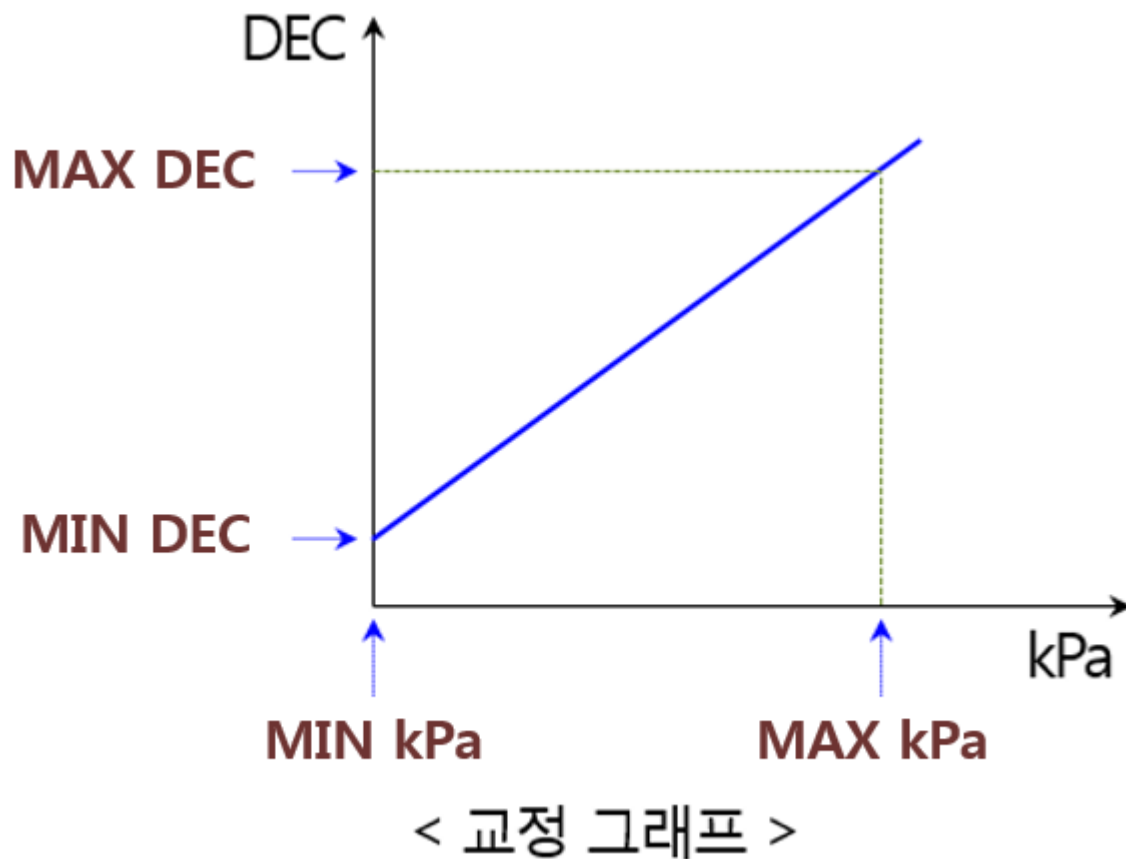


Figure 42. Minimum value setting and maximum value setting position depending on the pressure value and AD conversion value

- The minimum setting value is recommended as the minimum pressure value (0 Bar).
- The maximum setting value is recommended as the minimum pressure value (0 Bar).
- The minimum setting value should not exceed the maximum setting value and the maximum setting value should not be lower than the minimum setting value as well.

7.13 Calibration(Initialization) screen

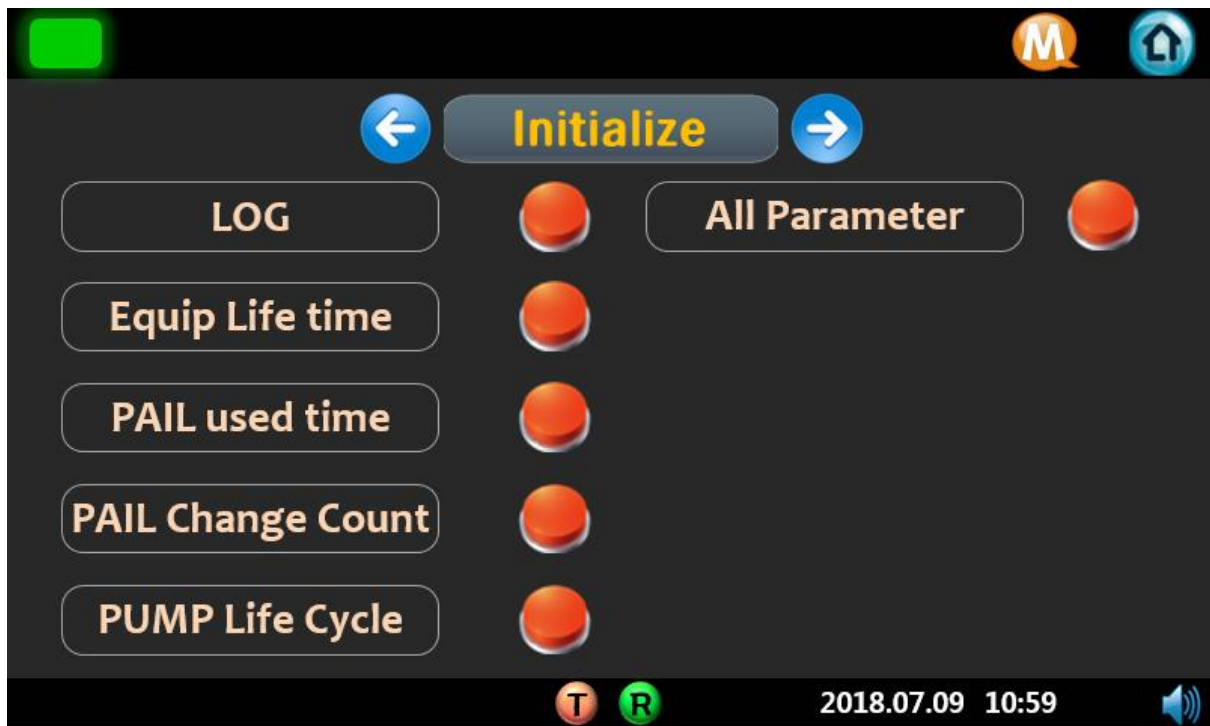


Figure 43. Calibration(Initialization) screen

This screen is for initialization after parts replacement.

Table 14. Description of calibration(initialization) screen

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

7.14 Password screen

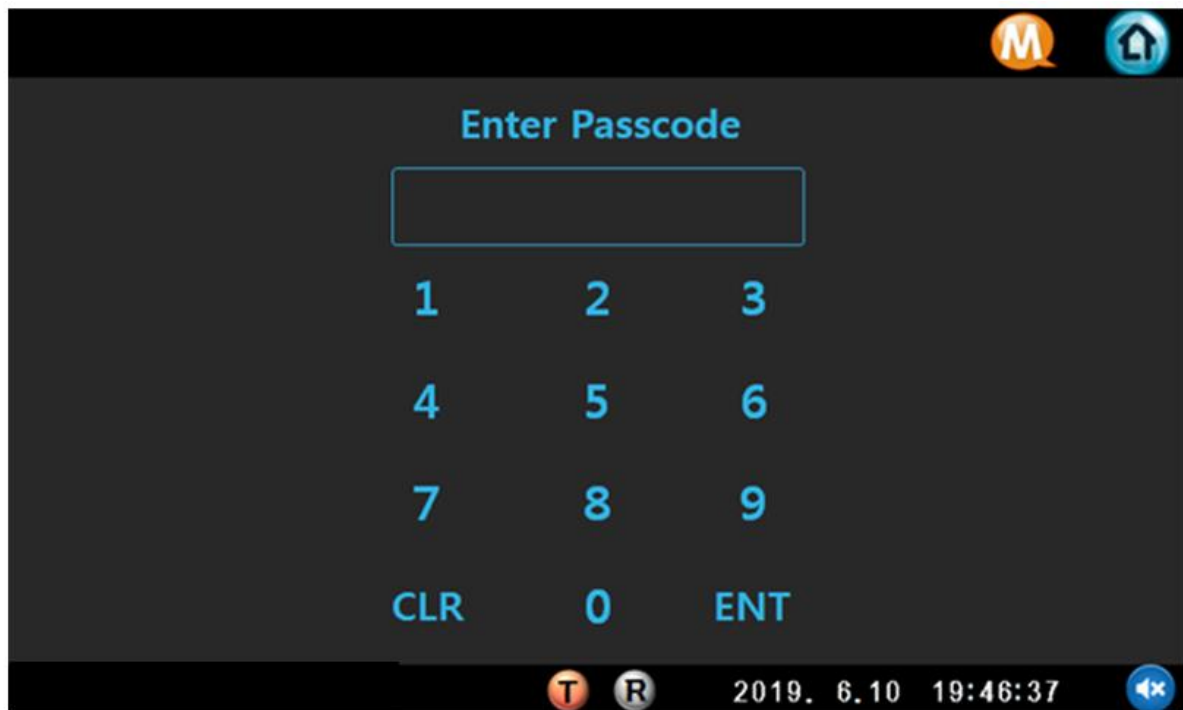


Figure 44. Password screen

This screen is for changing user password.

You can change your password by entering your password on the password screen.

Table 15. Description of password screen

Item	Description
<p>Enter the passocde</p>	<p>Passcode-related messages</p> <ul style="list-style-type: none"> ➔ Enter password ➔ Password mismatch ➔ Enter password to change ➔ Re-enter password to change ➔ Password change completed

7.15 Alarm screen

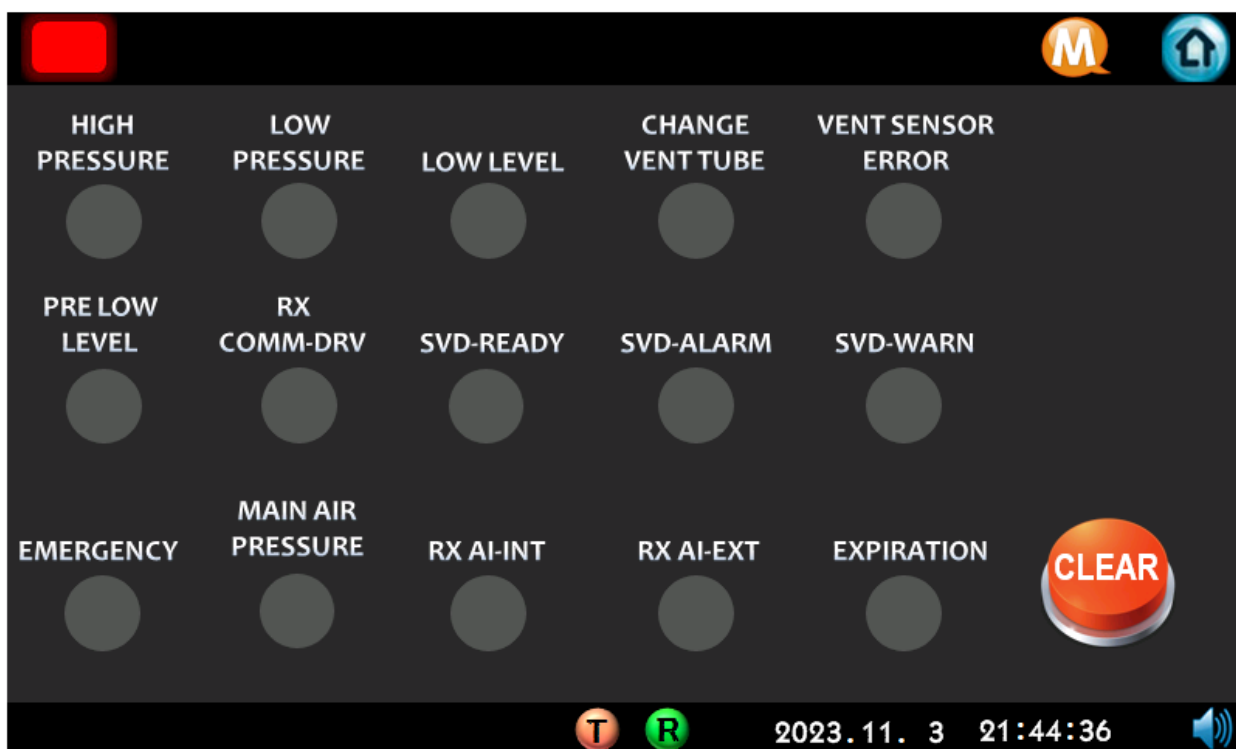










Figure 45. Alarm screen

This is the screen that displays the alarm depending on the problem in use, and alarm description and action for each problem are as follows.

Table 16. Description of alarm screen

Tower	Alarm	Description	Cause
	1. Emergency	The EMERGENCY stop button has been pressed.	
	2. Main air pressure	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	During feeding operation, the measurement value is kept below 80% of the pressure setting value	When status is detected for about five consecutive seconds

	7. Low Level	When there is no remaining liquid during feeding operation	When the cylinder bottom limit is detected by sensor
	8. Change vent tube	When the vent sensor tube is filled during auto rise operation	
	9. Vent sensor error	When there is no vent sensor input and there is cylinder bottom limit sensor input during auto rise operation	
	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 there is no ready input signal of 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

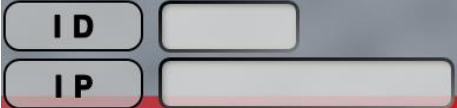


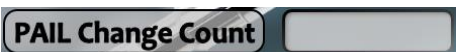

15 – Check the expiration date of liquid containers applied by PAIL

7.16 Information screen



Figure 46. Info page

Table 17. Description of info page

Item	Description
	Displays ID, IP information which are required for external ethernet communication.
	Displays the firmware version for the board.
	Displays the number of pump cycles.
	Displays the number of pail change count.
	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 Checks and actions

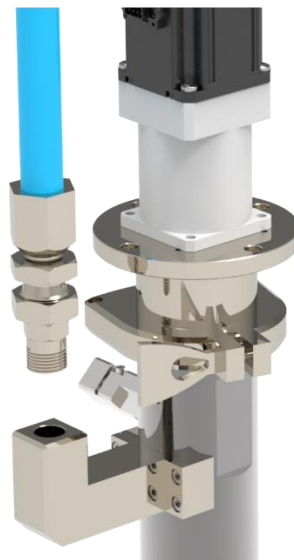
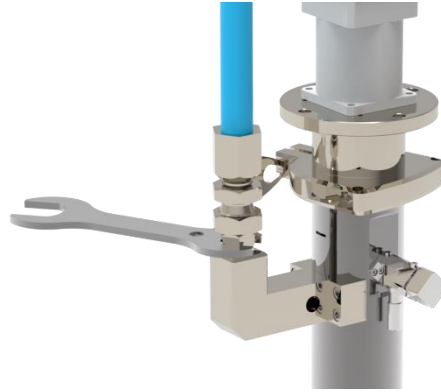
Table 18. Checks and actions

Checklist	Check 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.	
Cables	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	<ul style="list-style-type: none"> - Fastening condition of fasteners and fasteners in equipment - Wiring fastening and fastening state - Arrangement and arrangement around equipment 	

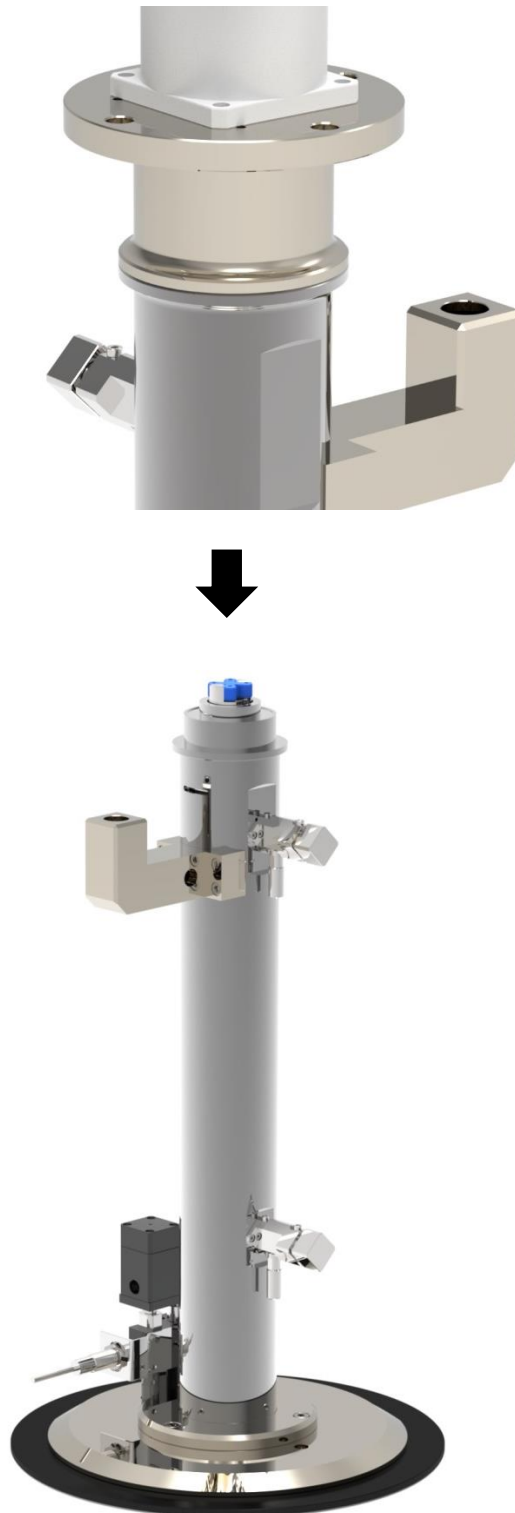
8.3 Disassembly of pro can pump

This explains the disassembly method for maintenance of PRO-CP20/30.

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



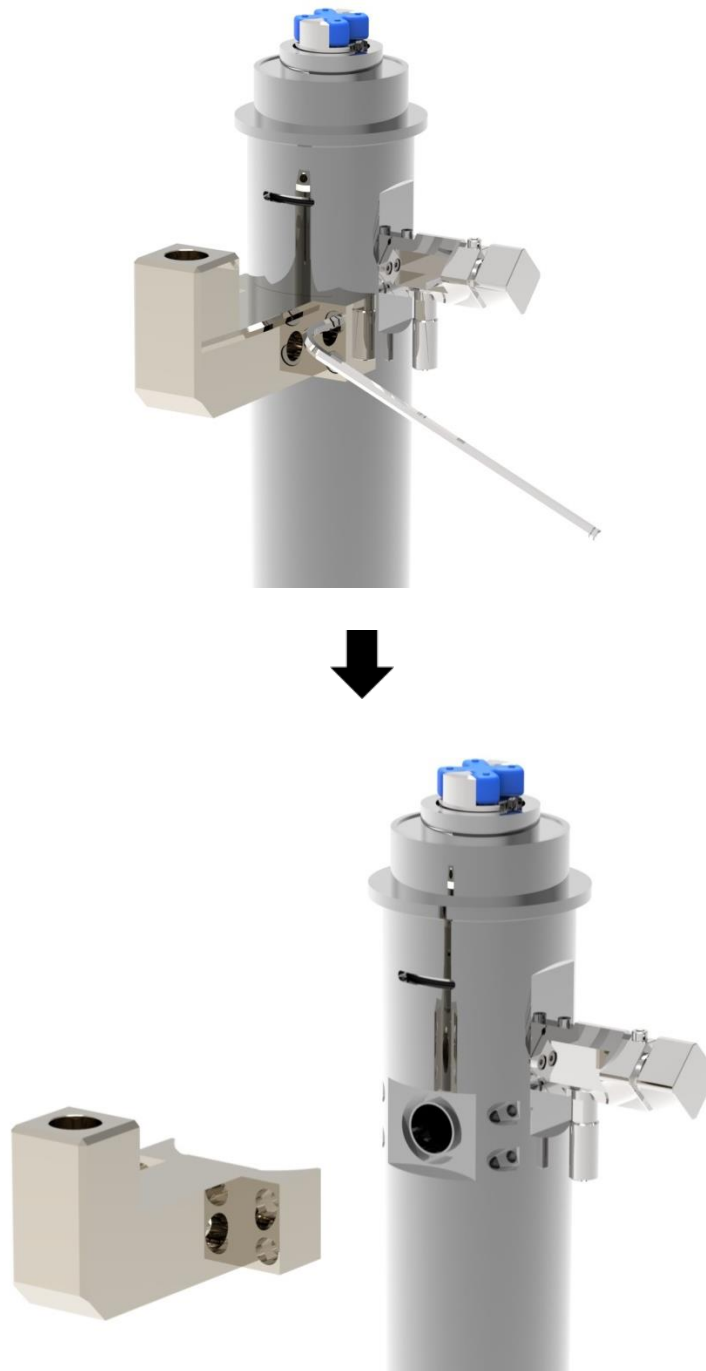
- 2) After disassembling the upper clamp, disassemble the material chamber by turning it to the left or right.



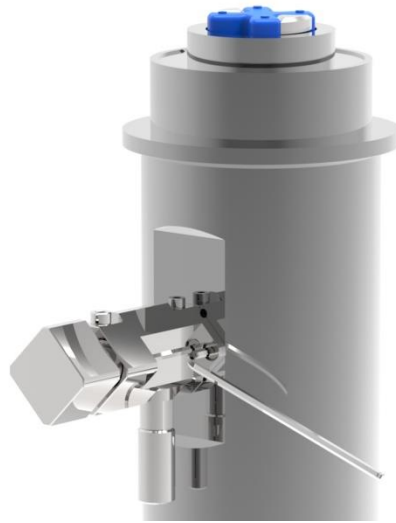
- 3) After disassembling the lower clamp, remove the bolt fastened to the hub and disassemble the hub and the follow plate.



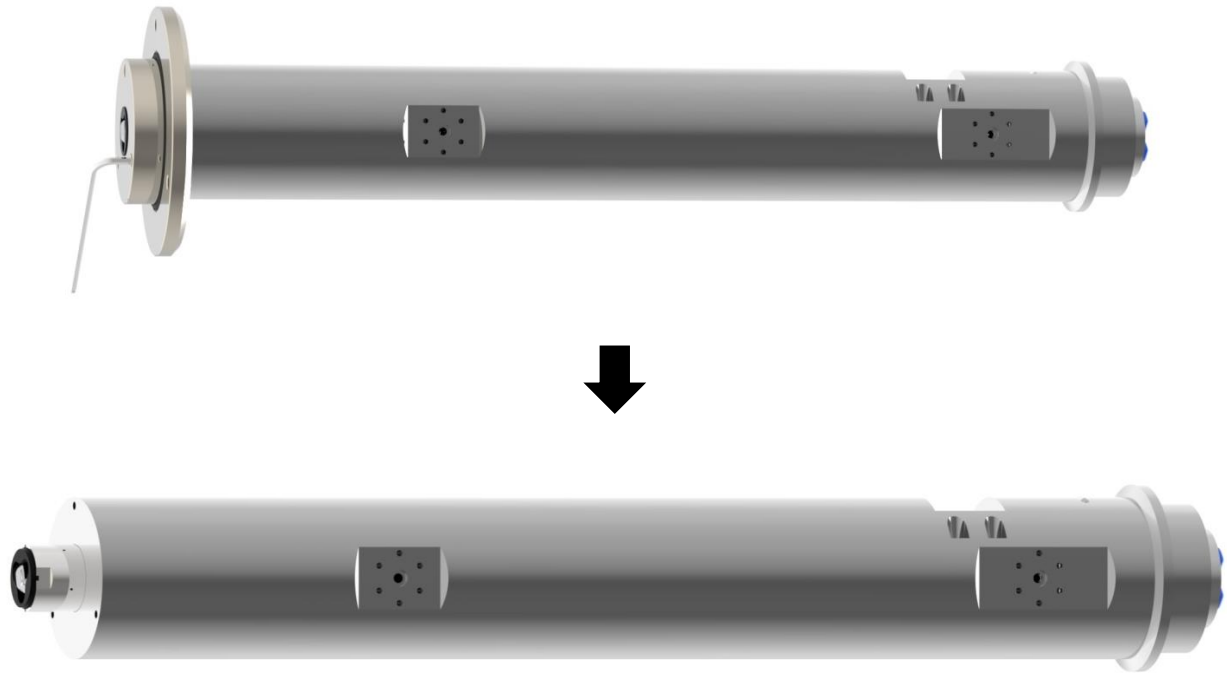
- 4) Disassemble outlet port and pressure gauge on the front of material chamber.



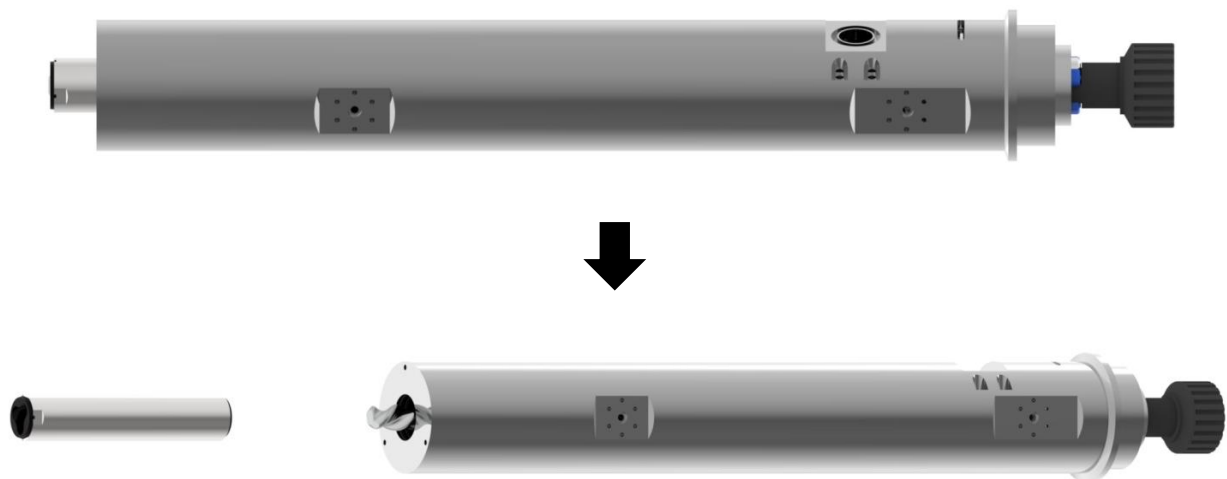
- 5) Remove the drain valve to remove the air bubbles on the right side of the material chamber.



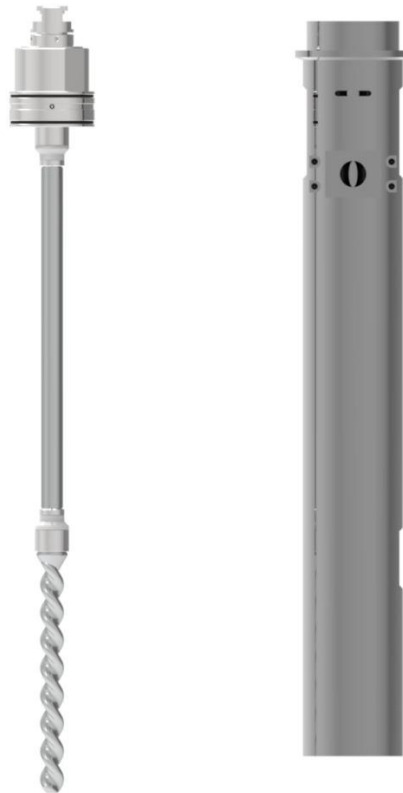
6) Disassemble hub and chamber.



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.



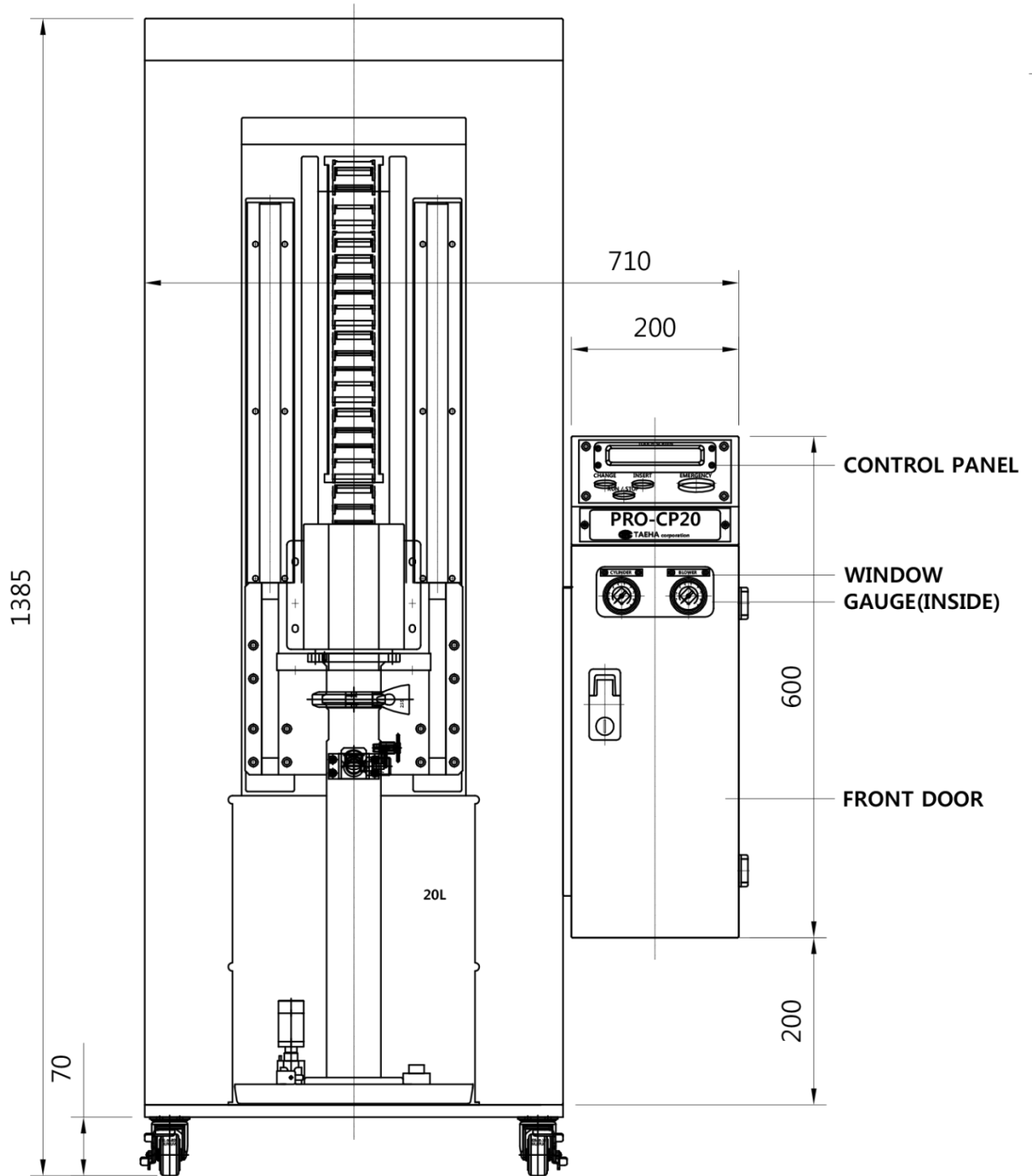
Danger
Be sure to take necessary measures such as manual, emergency stop, power off, etc. before performing maintenance and inspection. When the power is not turned off, the sensor may be activated by any object or inspectors inside the equipment. It may also cause electric shock.

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

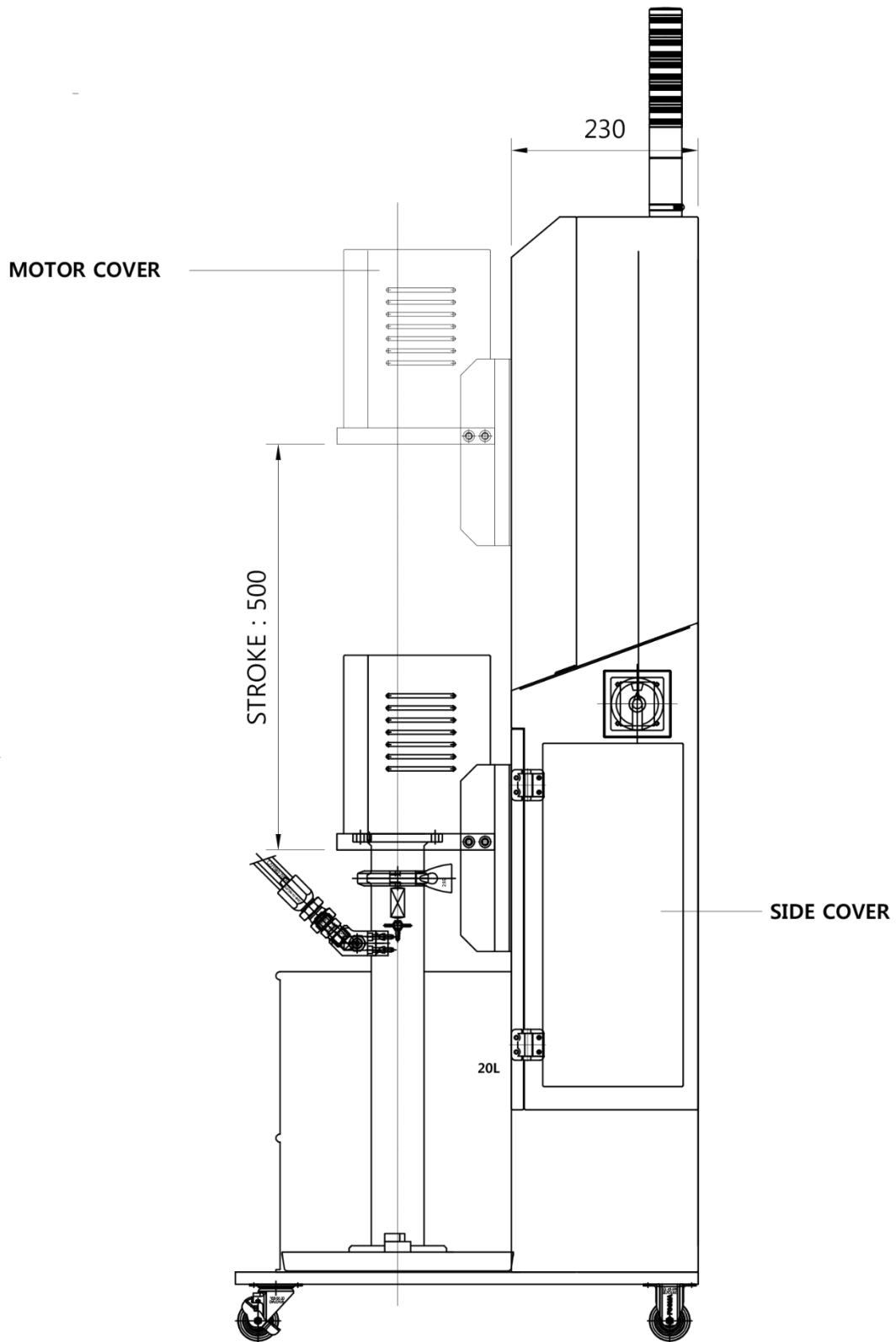
Liquid leaks around follow plate	Check wear status of wiper	Replace wiper with a new one
	High cylinder pressure	Lower cylinder pressure
	Check container size(taper)	Resize to fit the container(wiper).
The cylinder does not descend.	Check container size(taper)	Resize to fit the container(wiper)
	Low 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)
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

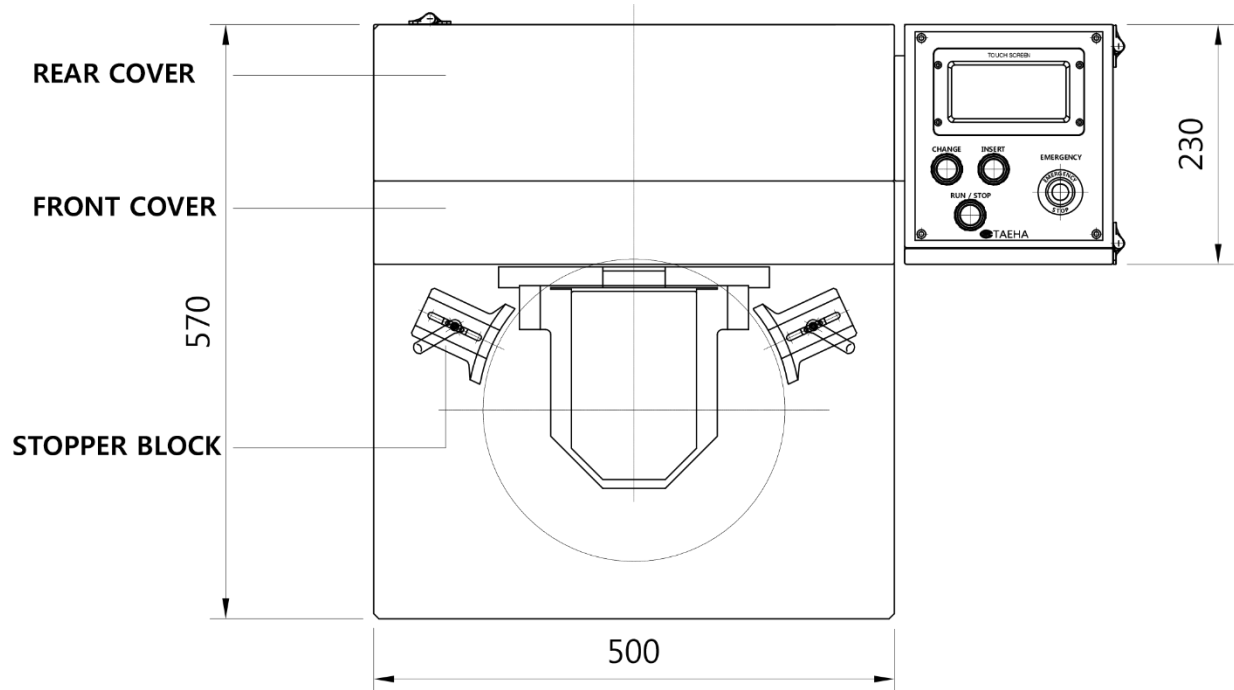
9.1 Front view



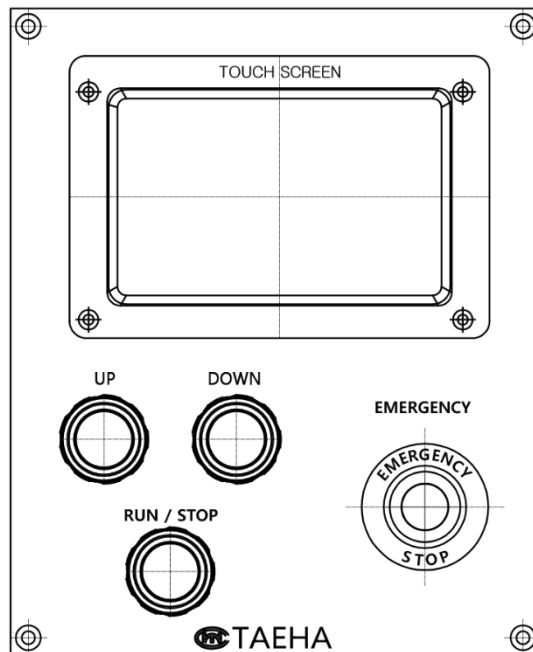
9.2 Right side view



9.3 Top view



9.4 Control Panel

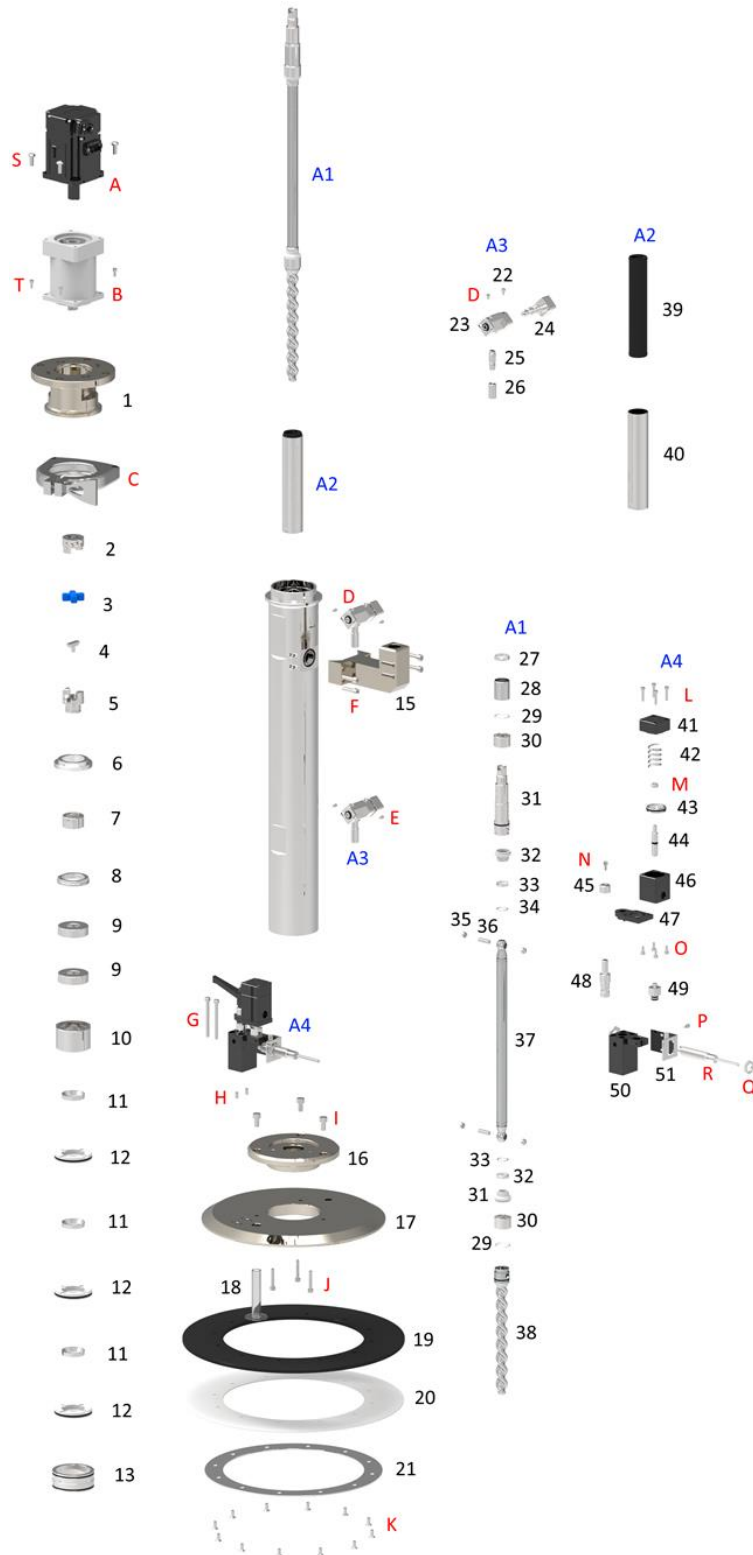


CONTROL PANEL

10 PRO-CP Spare part list

10.1 Pump part

10.1.1 PRO-CP20/30-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(ZrO 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-CP20/30-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-CP20/30-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
	T022001-A38B	Disposal cover(dc290c)	1	PP
	T022001-A38C	Disposal cover(dc285a)	1	PP
	T022001-A38D	Disposal cover(dc285c)	1	PP
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(ZrO 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-CP20/30-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

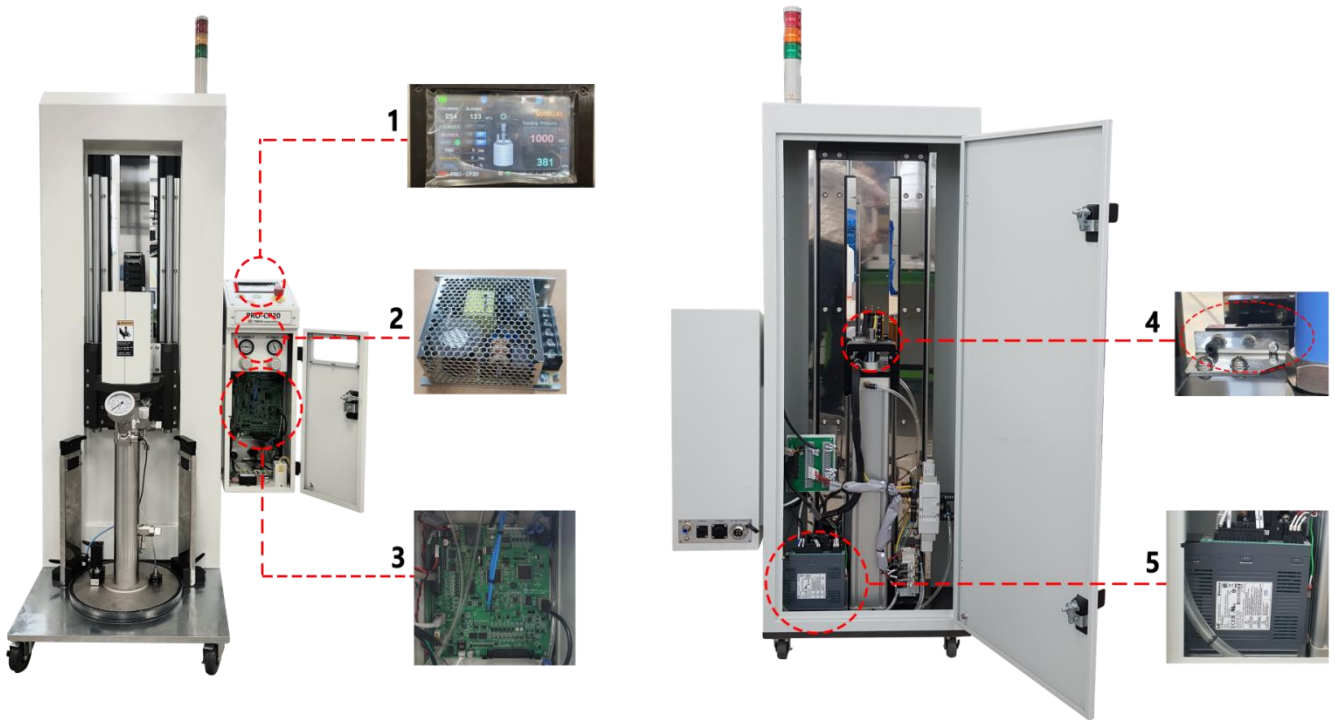
10.1.3 PRO-CP20/30-NP



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(ZrO 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-CP20/30-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-CP20/30-E1	Touch LCD	1	- Dimension(WxDxH) : 133.5mm x 84mm x 5.4mm - Resolution : 800x480 pixel
2	PRO-CP20/30-E2	SMPS	1	- Dimension(WxDxH) : 129mm x 98mm x 38mm - DC Output : 24V - Rated current : 3.2A
3	PRO-CP20/30-E3	Main board	1	- Dimension(WxDxH) : 170mm x 200mm x 28.6mm(Board : 1.6T)
4	PRO-CP20/30-E4	Photo sensor	1	- Transmissive type(photo-IC output type) - Gap width : 5.0mm
5	PRO-CP20/30-E5	Servo driver	1	- Input power : AC 200~230V - Rated current : 3A - Capacity : 400W