
MATERIAL FEEDING DUO SYSTEM

MFS-VDC3030 Series (0505/1010/2020/3030)



USER MANUAL

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1 Safety precaution

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

This manual explains the specifications, installation, writing, maintenance and inspection, abnormal phenomenon, 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 of 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 any external power supply used by the equipment before carrying out wiring work for maintenance. Failure to do so may result in electric shock or equipment damage. 2. To supply or operate the power supply after wiring, attach the cover inside and outside the equipment. 3. Failure to attach the cover may result in personal injury or electric shock.



Cautions
<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 may 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

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 cause fire or other accidents.

Precautions for use



Cautions

1. Never modify this equipment. It may cause electric shock, injury, fire or breakdown.
2. Modification 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



Cautions	
	<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 Introduction and Features of the Material Feeding Duo System

3.1 2K Material Feeding Duo System (MFS-VDC3030 Series)

Since Taeha Corporation's MFDSS always maintains the Tank in a vacuum state, it has the following advantages.

- (1) It minimizes the exposure of material to moisture in the atmosphere.
- (2) It minimizes production latency caused by degassing.
- (3) It is very safe for Tank safety accidents. (No industrial safety certification.)
- (4) Its simple configuration makes it easy to use and maintain.

3.2 Dimension and Specifications MFS-VDC3030

3.2.1 Dimension

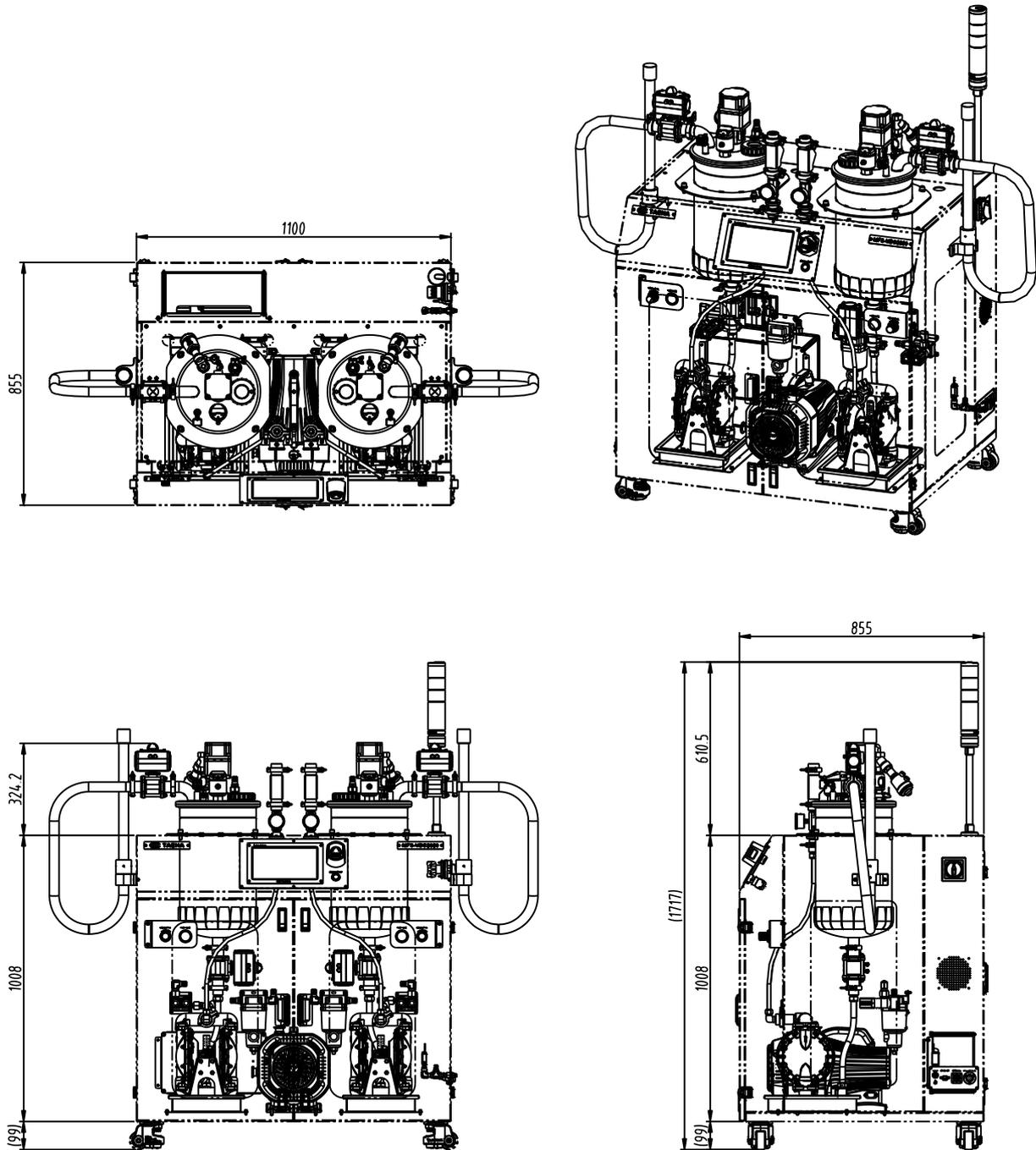


Figure 1. Dimension of MFS-VDC3030

3.2.2 Specifications

Item	Descriptions	Remark
Model	MFS-VDC3030	
Dimensions (HxWxD)[mm]	1100 X 855 X 1717	
Weight	≈ 280kg	
Input Air Pressure	5 ~ 6kg/cm ²	
Tank Q'ty	2	
Tank Capacity (Liter)	20	
Viscosity (cPs)	Max 1,000,000 cPs	
Mixing Speed(rpm)	60 (Max.)	30 (Recommend)
Control Unit	MFC-100	
User Interface	LCD Monitor (Touch Screen)	
Power	AC 220V 50/60Hz	
Power Consumption	About 10A	
Operating Temperature	10 ~ 40°C	Avoid direct sunlight
Operating Humidity	10 ~ 85%RH	No condensation
Vibration resistance	Less than 0.5G	

Table 1. Specifications of MFSS2-V3030

3.3 Main Part and Functions of the MFS-VDC3030

3.3.1 Mechanical Parts and functions

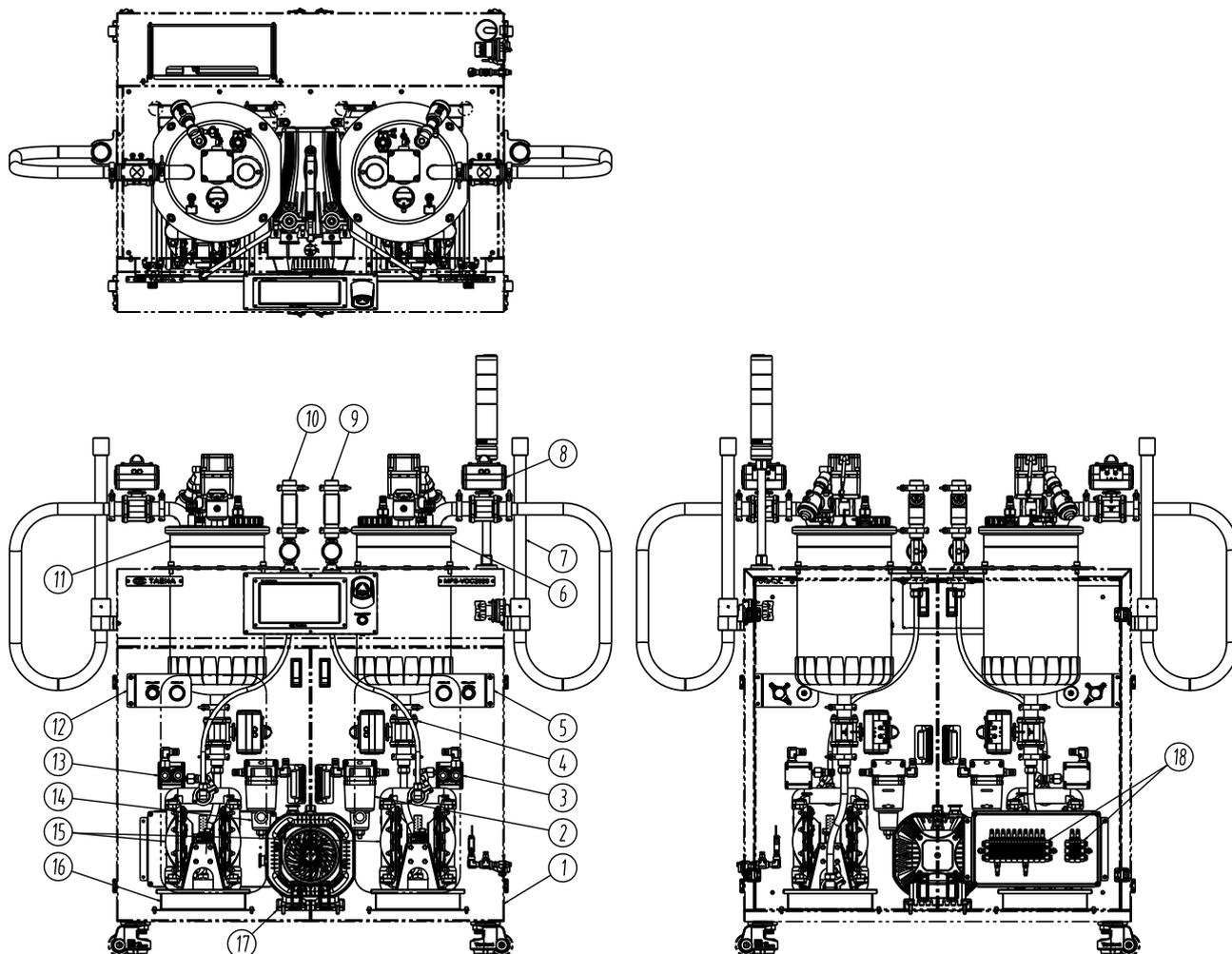


Figure 2. Mechanical parts and functions

No	DESCRIPTION	FUNCTION	No	DESCRIPTION	FUNCTION
1	MAIN CASE		11	FEEDING TANK ASS'Y(R)	STORAGE RESIN
2	WATER SEPARATOR(H)		12	REGULATOR & GAUGE(R)	CONTROL RESIN PUMP
3	AUTO EV VALVE(H)	VACUUM ON/OFF(H)	13	AUTO EV VALVE(R)	VACUUM ON/OFF(R)
4	PNEUMATIC BALL VALVE	FOR MATERIAL FEED	14	WATER SEPARATOR(R)	
5	REGULATOR & GAUGE(H)	CONTROL HARDENER PUMP	15	DIAPHRAGM PUMP	MATERIAL(R&H) FEEDING PUMP
6	FEEDING TANK ASS'Y(H)	STORAGE HARDENER	16	OIL PAN, welding	OIL TRAY
7	SUCTION PIPE ASS'Y	INPUT MATERIAL	17	VACUUM PUMP	
8	PNEUMATIC BALL VALVE	OPEN/CLOSE INPUT MATERIAL	18	SOLENOID VALVE ASS'Y	PUMP/VALVE ON/OFF
9	MATERIAL OUTLET(H)	Hardener Out Port			
10	MATERIAL OUTLET(R)	Resin Out Port			

3.3.2 Electrical parts and functions

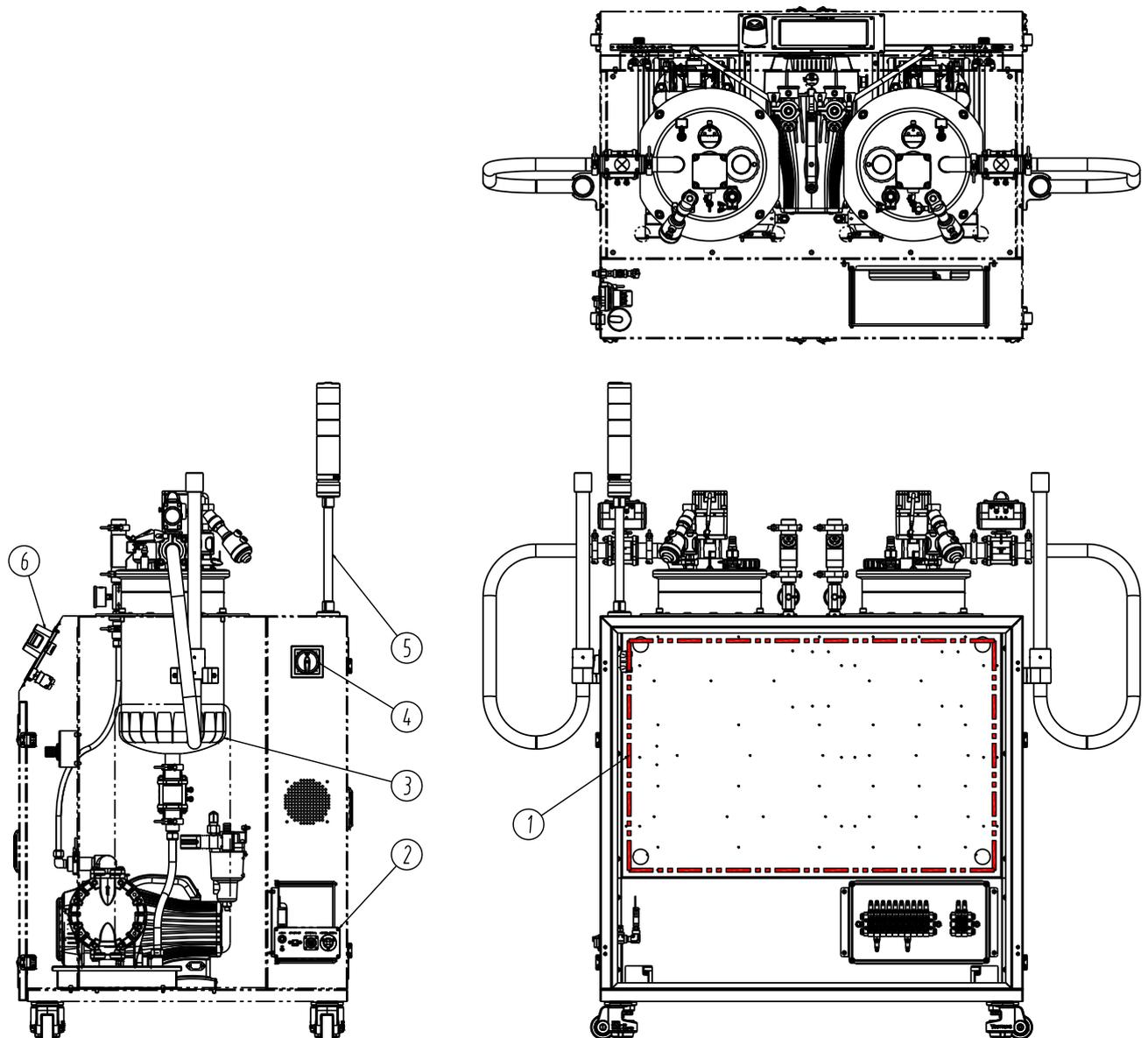


Figure 3. Electrical parts and functions

No	DESCRIPTION	FUNCTION
1	MAIN ELECTRICAL COMPONENT	
2	EXTERNAL PORT ASS'Y	POWER SUPPLY/AIR/SIGNAL INPUT AND OUTPUT
3	SILICONE RUBBER HEATER	Resin & Hardener TANK Heating
4	MAIN POWER SWITCH	POWER SUPPLY ON/OFF
5	SIGNAL TOWER LIGHT	Display the status of machine
6	OPERATION PANEL	Machine Control

3.3.3 Main Case of parts and functions

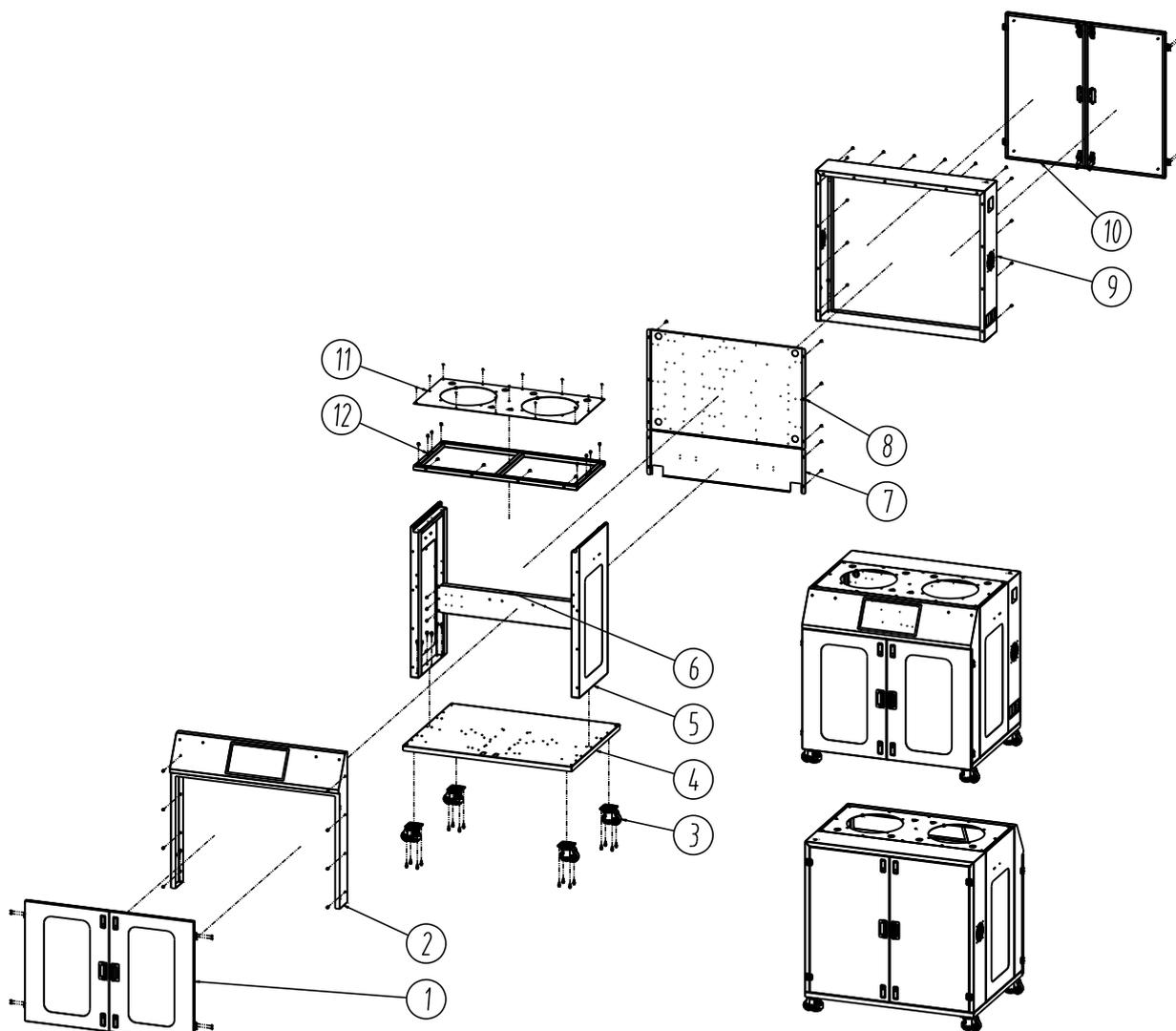


Figure 4. Main case parts and functions

No	DESCRIPTION	FUNCTION
1	FRONT DOOR ASS'Y, LH/RH	Monitoring and Maintenance of mechanical part
2	FRONT COVER, welded	OPERATION PANEL
3	CASTER	Facilitates the movement/deployment of equipment
4	BASE FRAME, welded	Equipment base function and PUMP attachment
5	SIDE COVER ASS'Y, LH/RH	Support of tank base frame and Attaching the Regulator/Gauge/Suction pipe
6	MIDDLE CENTER BRACKET	Attaching Auto EV valve/Water separator
7	PARTITION PANEL	Attaching the SOLENOID VALVE ASS'Y, FILTER-REGULATOR
8	ELECTRIC PANEL	Attaching the electrical parts
9	REAR COVER, welded	Attaching the External port/Main power switch/Signal tower light
10	REAR DOOR ASS'Y, LH/RH	Maintenance for Electrical parts and Solenoid valve
11	TANK BASE PLATE, nut welded	Attaching and support the Tank, Attaching the Material outlet assy
12	TANK BASE FRAME, welded	Support the Tank base plate (SQ PIPE)

3.3.4 Main parts and function of 20L Tank

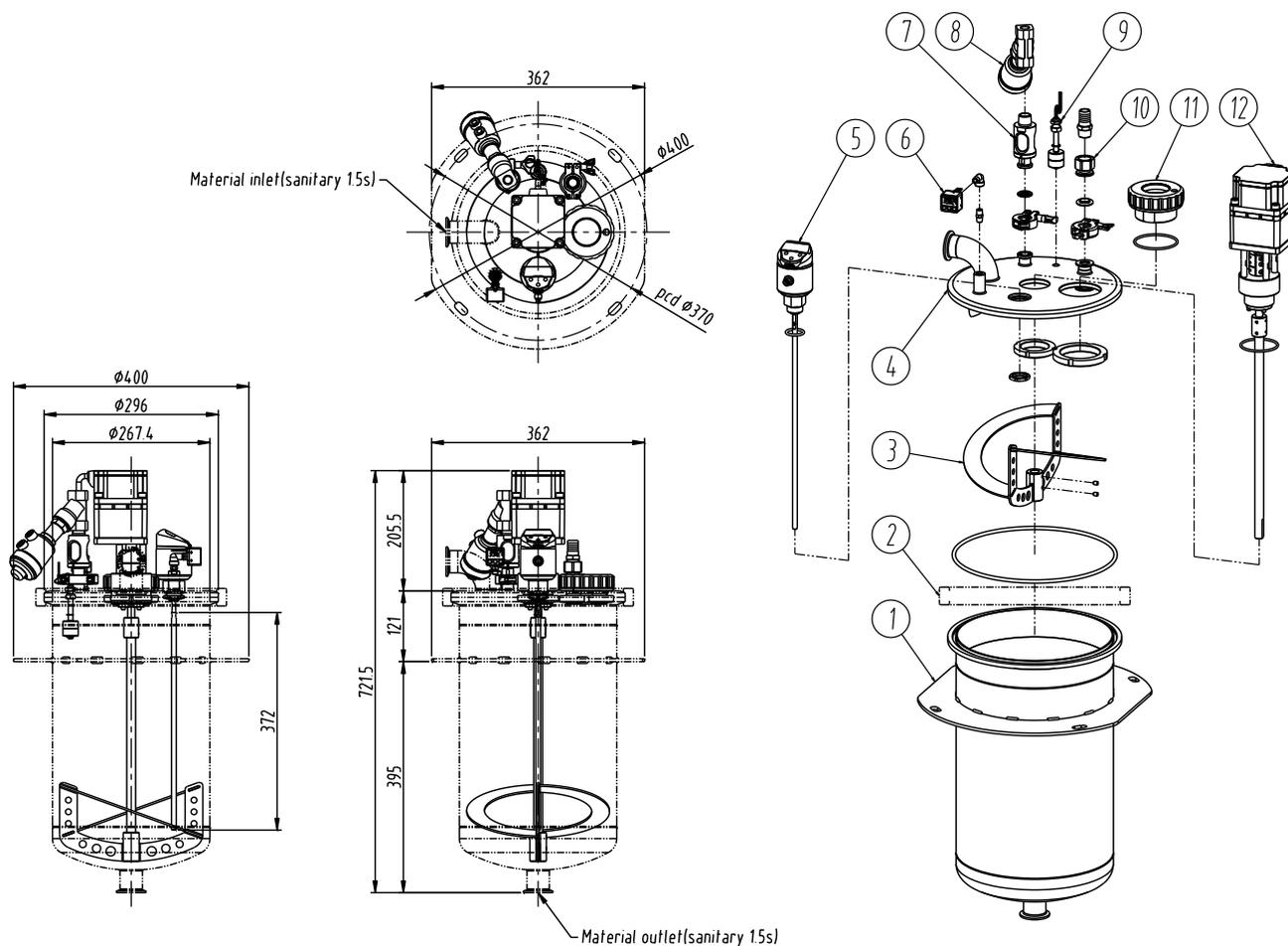


Figure 5. Main parts and function of 30L Tank

No	DESCRIPTION	FUNCTION
1	30L TANK BODY ASS'Y, welding	Storage material
2	SANITARY FERRULE CLAMP (10S)	For airtightness of tank
3	20L IMPELLER ASS'Y, welding	Material-stirring in tank (Double helix type)
4	TANK LID ASS'Y, welding	Airtightness of tank and assembly
5	PULSE LEVEL SENSOR ASS'Y	Material level sensing in the tank
6	PRESSURE SENSOR	Display the vacuum pressure in the tank
7	CIRCULATION SIGHT GLASS ASS'Y	Visual inspection of material circulation conditions
8	ANGLE SEAT VALVE	Material circulation ON/OFF valve
9	FLOATING SWITCH	Floating sensing in the tank
10	VACUUM PORT FITTING	Adapter for vacuum piping
11	SIGHT GLASS ASS'Y	Visual inspection of material conditions in the tank (LED light)
12	20L AGITATOR ASS'Y	BLDC MOTOR, Input power supply DC

4 HMI (Human Machine Interface) Screen Operations Descriptions

4.1 Material Feeding System

4.1.1 Simplified Screen

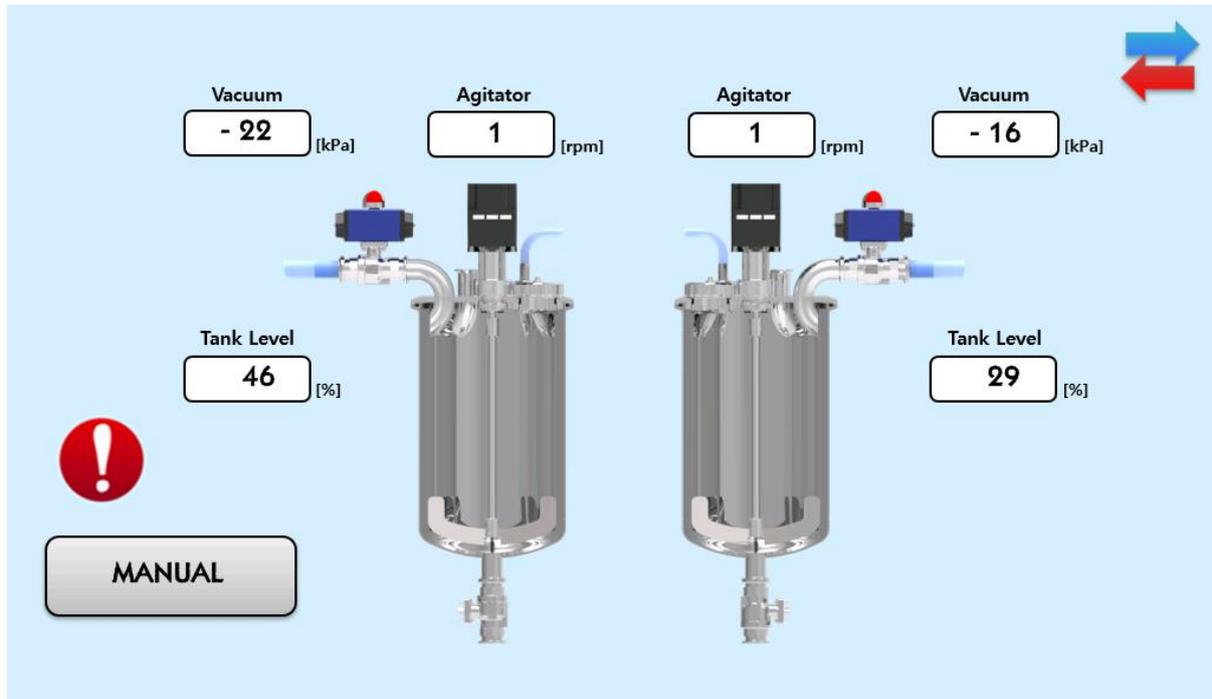


Figure 6. Simplified Screen

The Simplified Screen is the first screen displayed when the material feeding device is powered on. The information provided on the Simplified Screen includes the material filling status (Tank Level) of the two tanks of the material feeding device in %, and additionally the vacuum level (kPa) and the rotation speed (rpm) of the agitator.

4.1.2 Main Screen

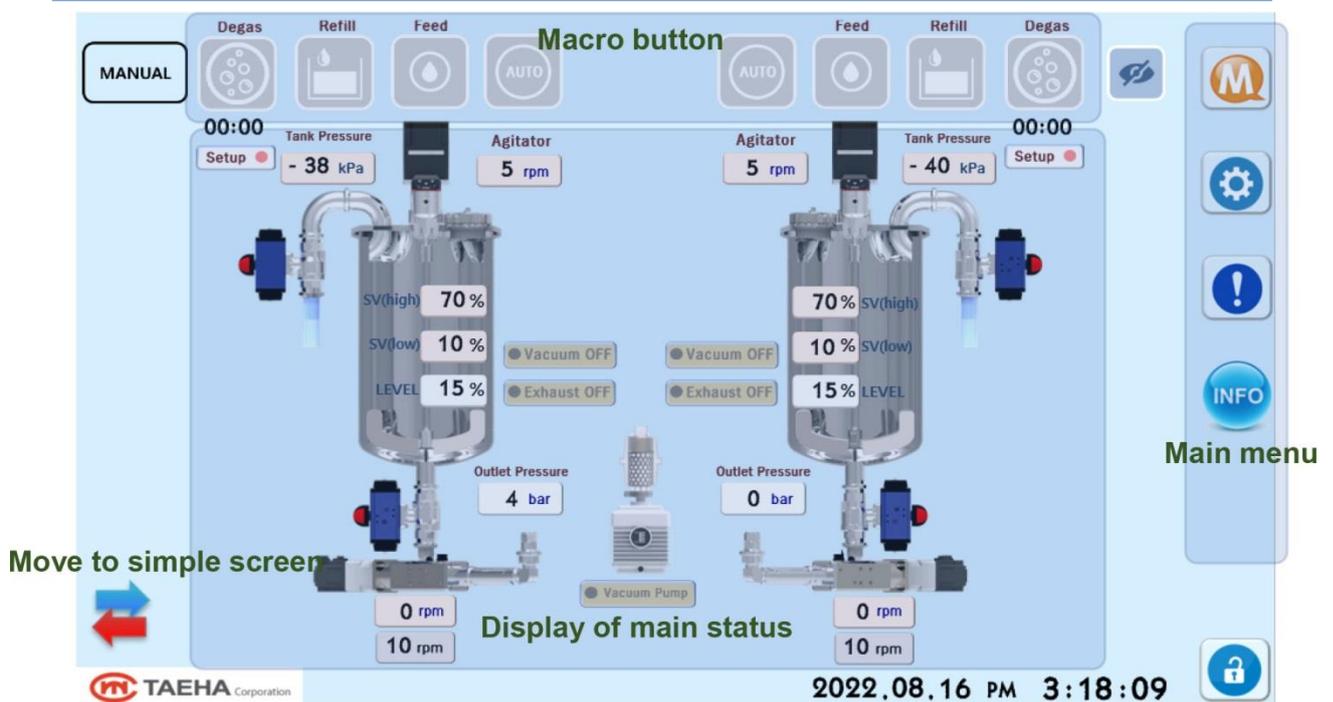


Figure 7. Main Screen

The Main Screen is a screen that displays the operation information of the material feeding device and provides a button to return to the Simplified Screen.

From the top, the Main Screen consists of macro-operation buttons, a main status display part, and a menu button on the right.

Macro buttons: Execute the main functions of the material feeding device (Degas, Refill, Feed)

Menu: Parameter setting / Sensor calibration / Communication setting / Go to I/O Test Screen

You cannot go to the menu screen when the sign  at the bottom right is displayed as the lock setting . To unlock the lock setting, press the button to move to the lock setting release screen.

The default password is 0000, and you can unlock the menu after entering the password.

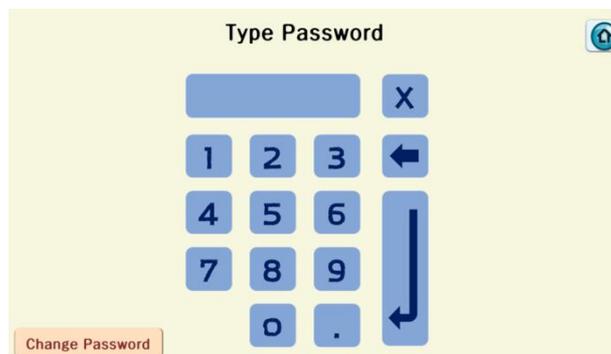


Figure 8. Lock Setting Screen

You can change the current password by clicking the Change Password button at the bottom left.

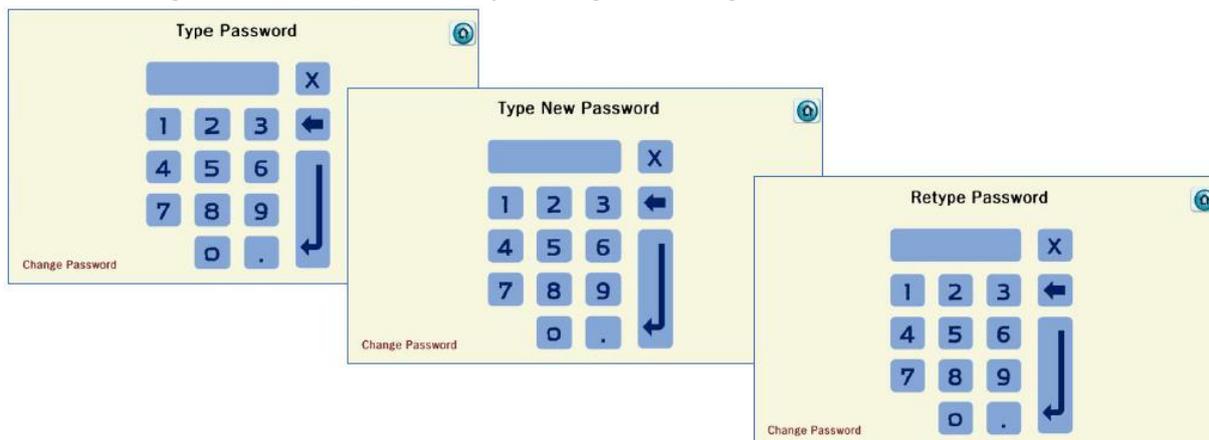


Figure 9. Locking setting steps

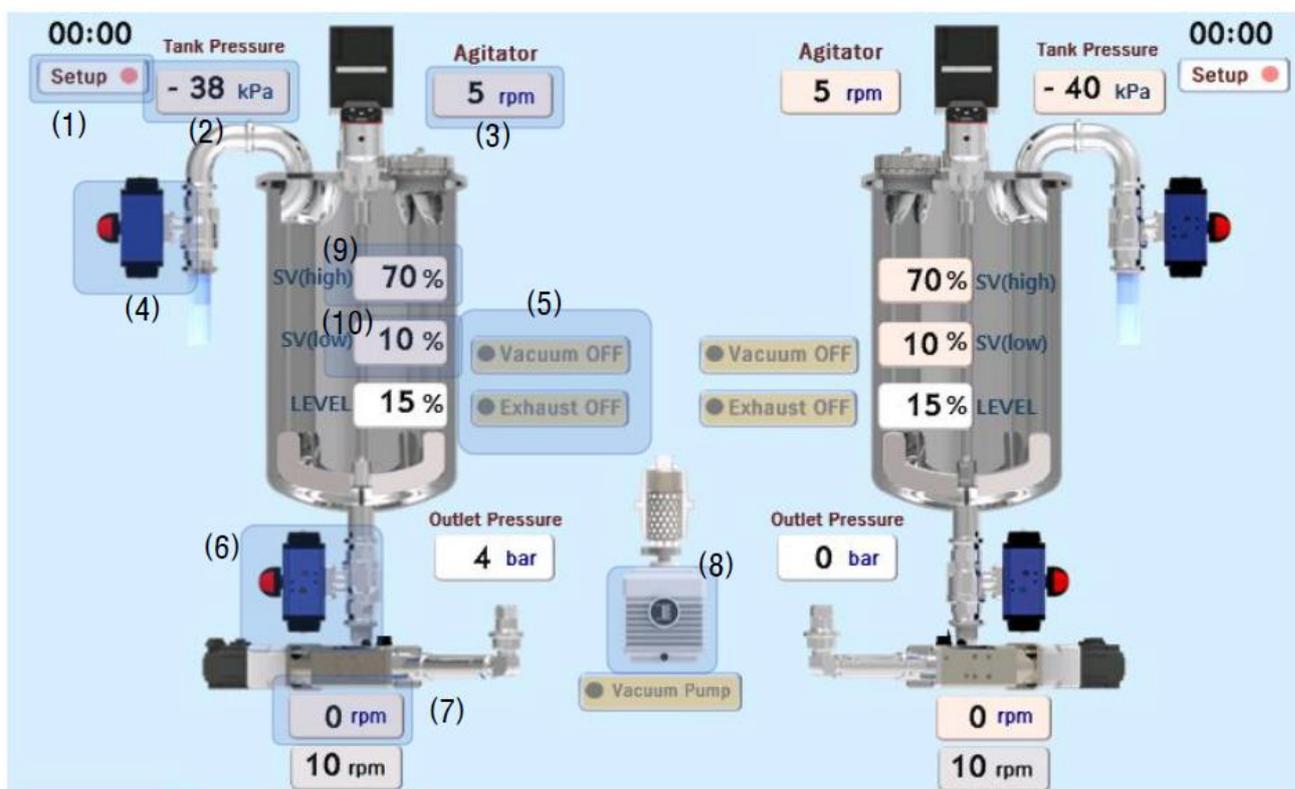


Figure 10. Main Status Display Touch Area

- (1) Move to the Degas Setup Screen
- (2) Adjust the tank pressure to the input value
- (3) Change the operating speed of the agitator to the input value
- (4) Open/Close the inlet valve function
- (5) Open/Close the vacuum valve/exhaust valve
- (6) Open/Close the outlet valve
- (7) Adjust the operating speed of the outlet pump to the input value
- (8) Turn on/off the vacuum pump
- (9), (10) Set an upper and lower limit for the water level

* (1)~(8) Operation conditions: Manual Mode MANUAL
 * Touch the area assigned to the same location for each tank

4.1.3 Menu Screen

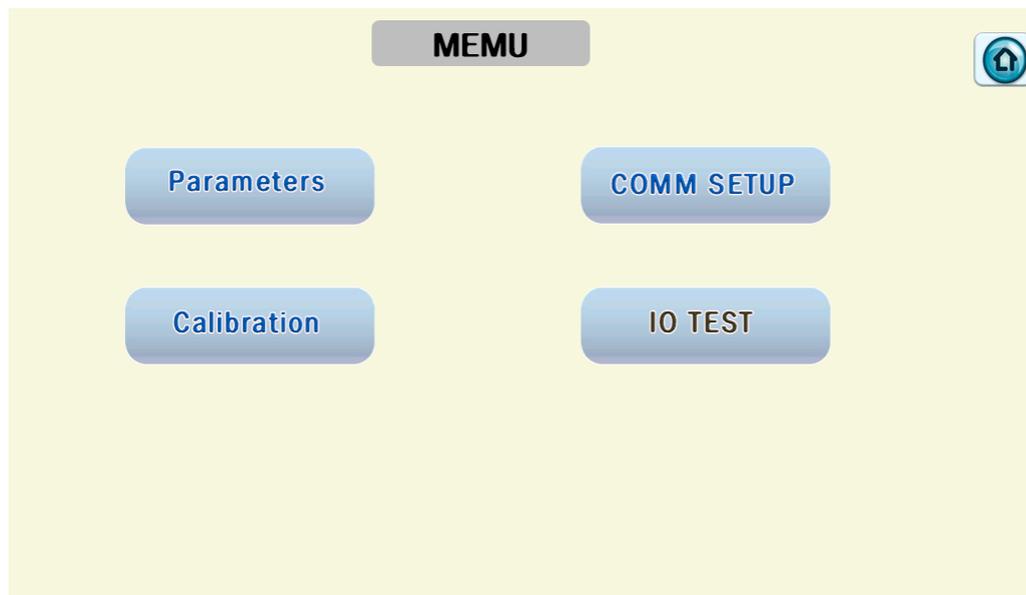


Figure 11. Menu Screen

The Menu Screen consists of four items: Parameters to set various setting values, COMM SETUP to set communication, Calibration to adjust the sensor setting values, and IO TEST to test the IO.

4.1.4 Parameters

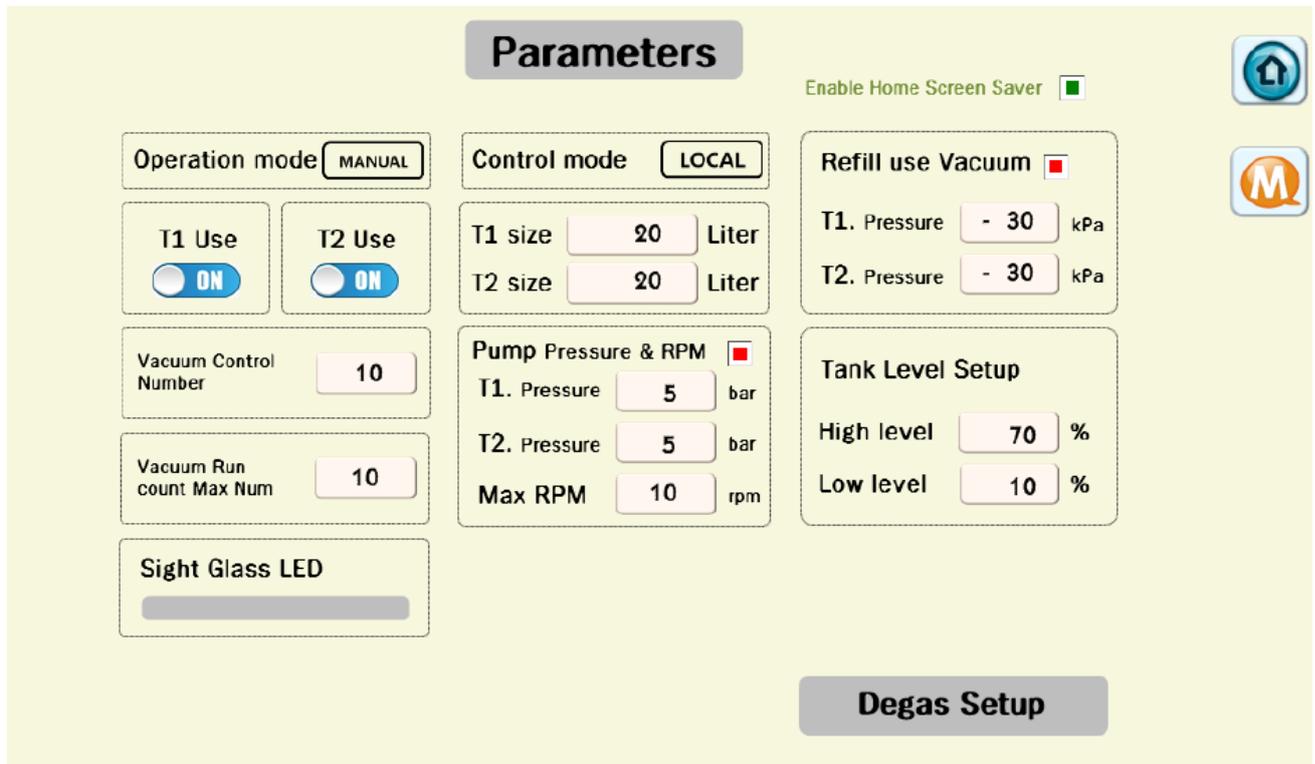


Figure 12. Parameters Screen

Operation mode: Auto/Manual mode can be selected as the operation mode.

Control mode: Local/Remote mode can be selected.

-Local mode: You can operate the equipment by directly manipulating the LCD.

-Remote mode: You can operate the equipment remotely using TCP/IP.

Feeding mode Circulation : The ability to circulate the material when it is not filled.

T1 /T2 Use: In the Tank #1/Tank #2 use settings, always set to "ON".

T1/T2 Size: Set and operate 20 liters/20 liters as the tank capacity setting.

Refill Use Vacuum: A vacuum pump is used for refilling.

You can refill T1/T2 by setting the vacuum level (kPa) for each.

When refilling is performed by setting the vacuum level, the material feeding device first operates the vacuum pump for the set vacuum level, and when the set vacuum level is reached, the refill valve is opened to suck the material into the tank.

High/Low Level : Sets the upper/lower limit of the material level in the tank.

When the water level reaches the upper limit, material filling stops if filling a material, the vacuum stops if degassing, and the exhaust valve operates temporarily.

Vacuum Control Number : A number used to control the vacuum pressure of the tank.

If the vacuum control number is 10, when the difference from the target vacuum pressure is greater than 10, operate the vacuum pump or open the exhaust valve to set the vacuum pressure.

Vacuum Run Count Max Num : Memorizes the number of times the vacuum pump is turned on/off, and when the number of times the vacuum pump is turned on/off within 1 minute exceeds the Vacuum Run Count Max Number, an error occurs.

Sight Glass LED : If you touch the green bar, it adjusts the brightness when the LED of the Sight Glass window is On.

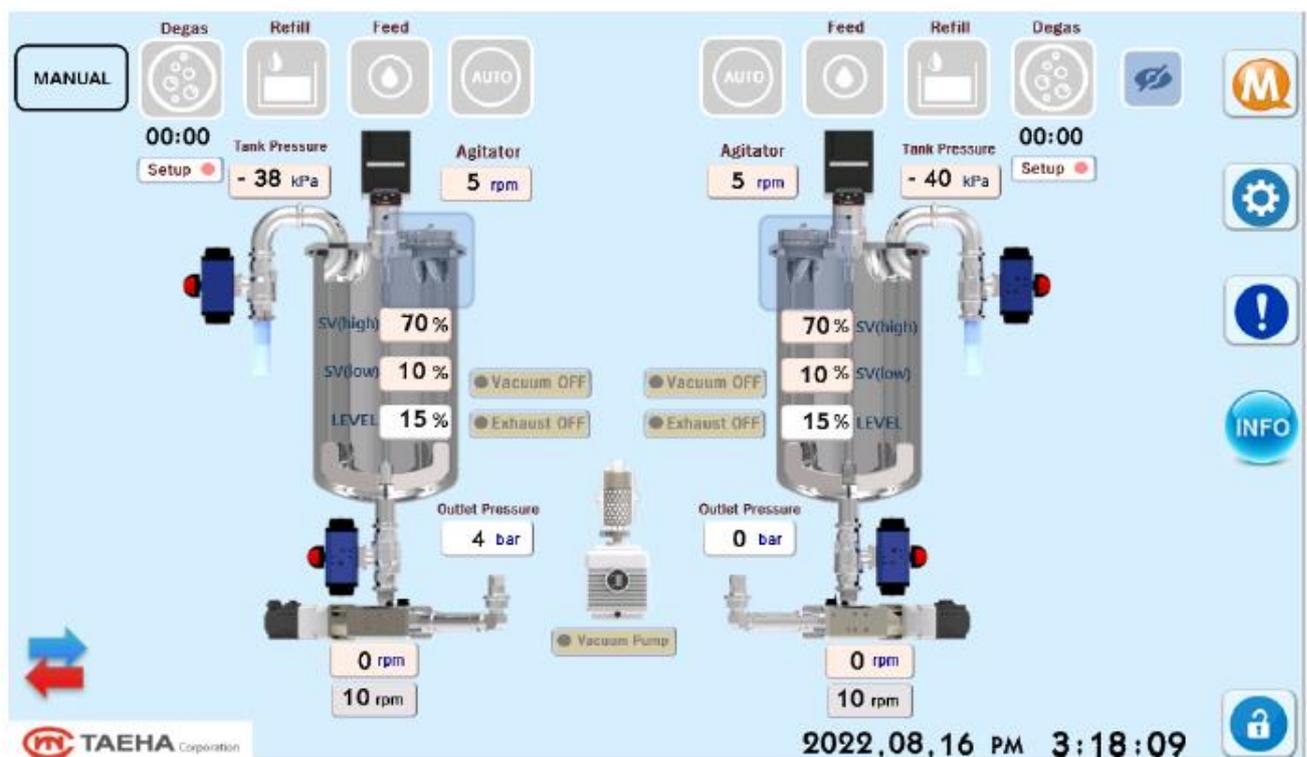


Figure 13. Sight Glass LED Operation Touch Area

Degas Setup: You can move to the Degas Screen.

You can move to Degas Setup with the shortcut button (Setup) below.

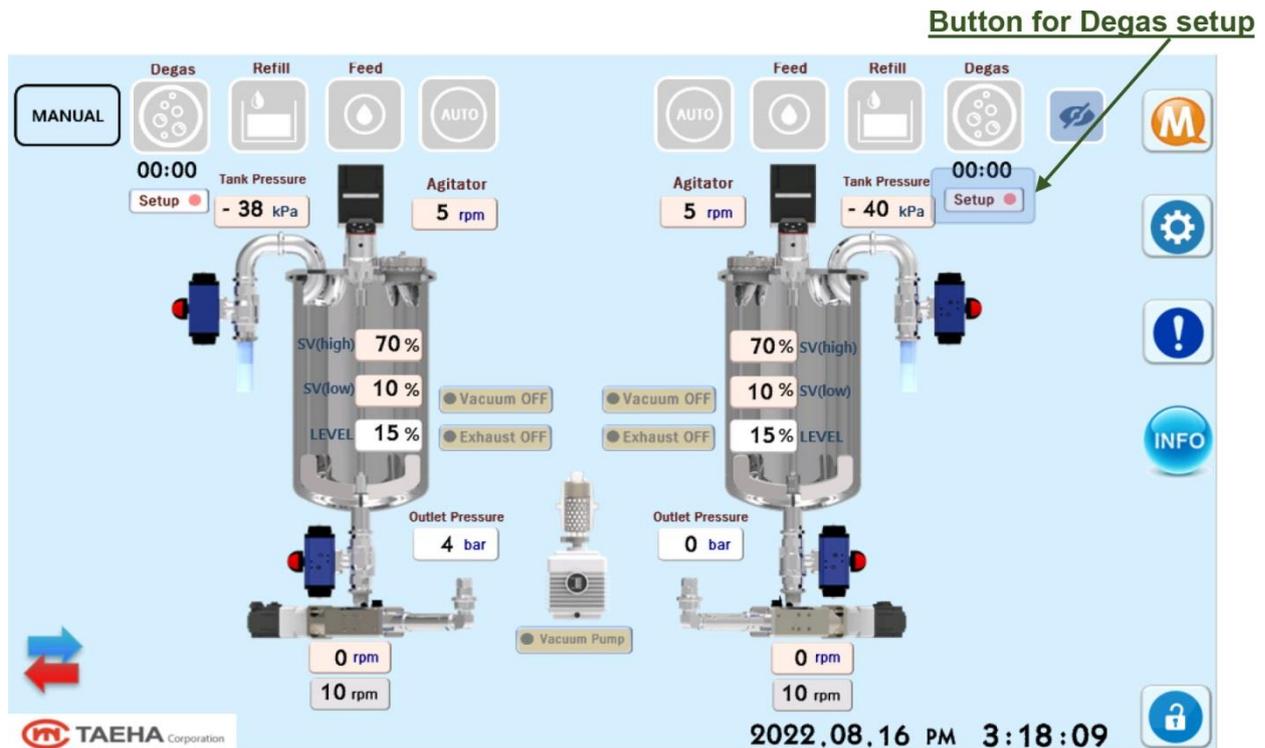


Figure 14. Move to Degas Button

Enable Home Screen Saver : Applies the screen saver function to the Home Screen.

(If there is no screen input for five minutes, the LCD backlight brightness is automatically dimmed to 30%.)

4.1.5 Degas Setup Screen

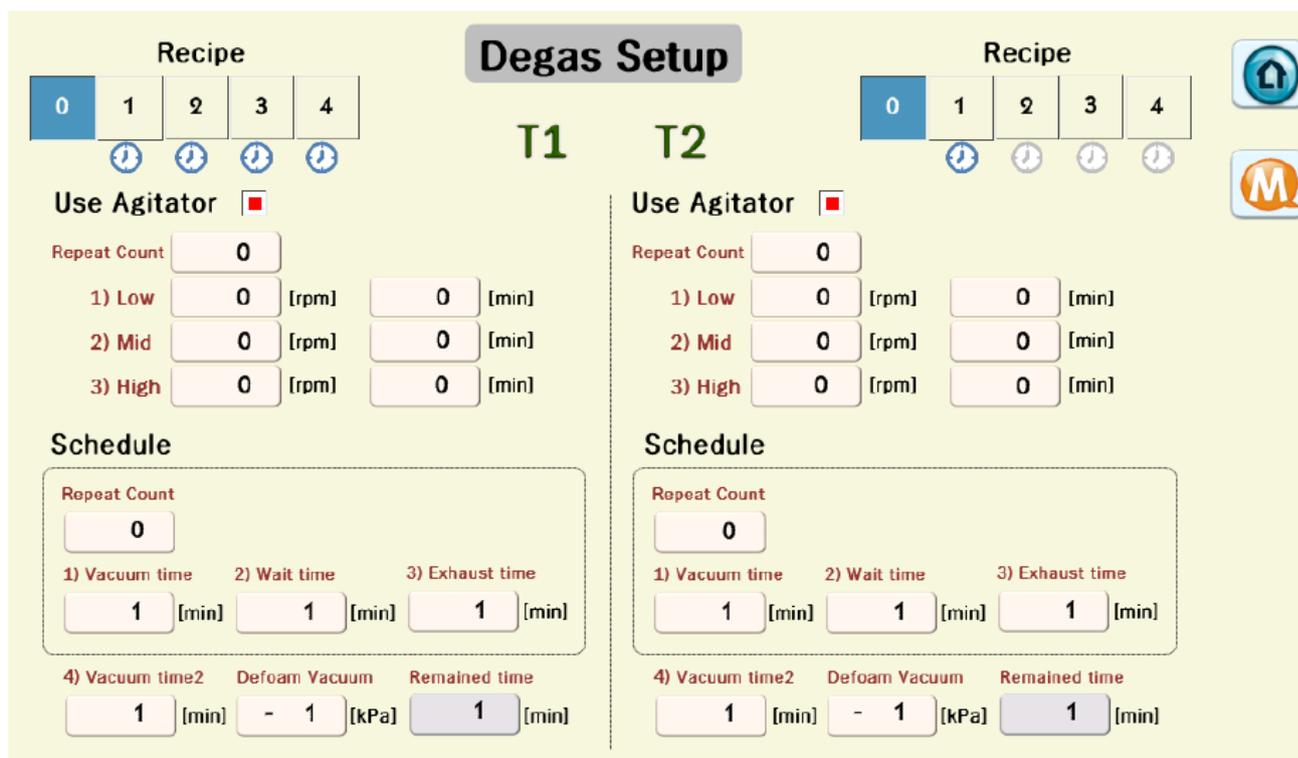


Figure 15. Degas Setting Screen

Use Agitator : Sets the use of the agitator when running degas.

- Repeat Count: You can set the agitator motor rotation speed and operation time in three steps (low-middle-high). At this time, the motor speed and operation time set in step 3 can be repeatedly executed.

Schedule : For each tank, the vacuum level setting and degassing related to exhaust can be performed.

- Vacuum time/Vacuum time 2: Vacuum level holding time
- Wait time : Waiting time
- Defoam Vacuum : Value at the set vacuum level while maintaining the vacuum level (kPa)
- Remaining Time : Display the overall progress time of the schedule, and the remaining time when degas is in progress



Figure 16. Recipe Setting Screen

Recipe: Degas settings can consist of up to five recipes.

Recipe No. 0 is executed only in "Auto" mode.

Recipe changes can be set by pressing the five buttons on the Recipe Settings Screen.

Activated recipes proceed in the order of 1->2->3->4->0 when the Degas macro button is pressed, and non-activated recipes are not executed.

To activate a recipe, press the Recipe button to change the status of the icon at the bottom of the button.

(Active status: )

4.1.6 Alarm Screen

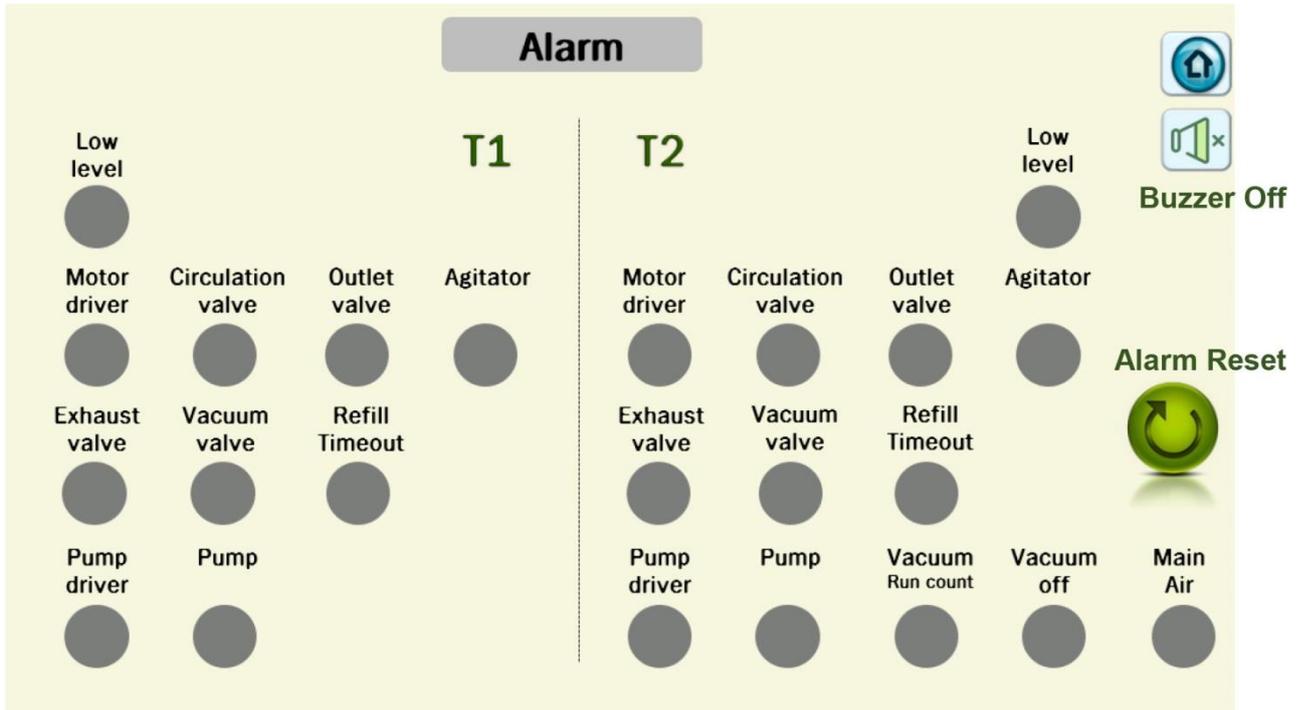


Figure 17. Alarm Screen

The grayed out part indicates that an alarm has occurred.

Low level : The water level of the material reaches the lower limit

Motor driver : Communication with the agitator motor driver is not possible

Circulation valve : When there is a material circulation function (option), the circulation valve is abnormal

Outlet valve : Malfunction of the outlet valve at the bottom of the tank

Agitator : Agitator motor malfunction (motor disconnection, overload, etc.)

Exhaust valve : Exhaust valve malfunction

Vacuum valve : Malfunction of the valve connected to the vacuum pump

Pump driver : Unable to communicate with feeding pump motor driver

Pump : Feeding pump motor malfunction

Refill Timeout : When refilling, the amount of filling is checked every three minutes, and an error occurs when filling more than 2% is not possible.

Vacuum Run Count : Monitors the number of times the vacuum pump is turned on/off every one minute, and an error occurs when it is more than 10

Vacuum off : Vacuum pump off input (user provided input)

Main Air : Main pneumatic not connected

4.1.7 Info Screen

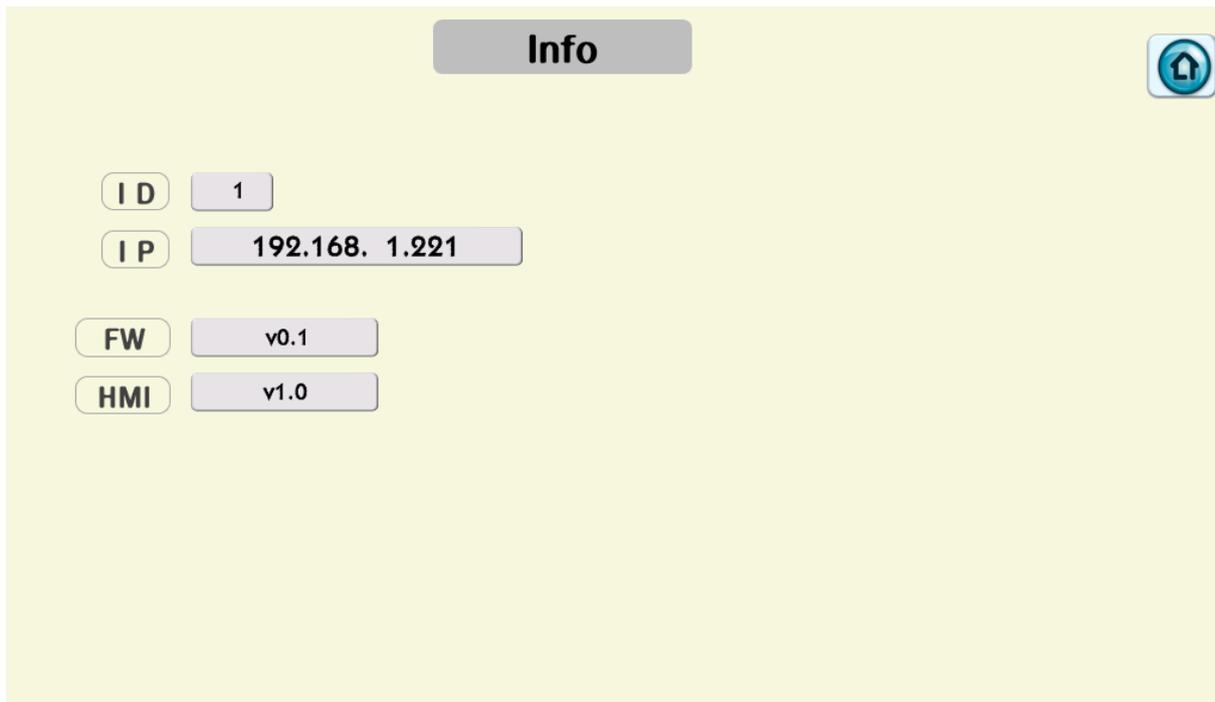


Figure 18. Info Screen

Displays the device name (ID), IP, and software information of the material feeding device.

4.1.8 I/O Test Screen

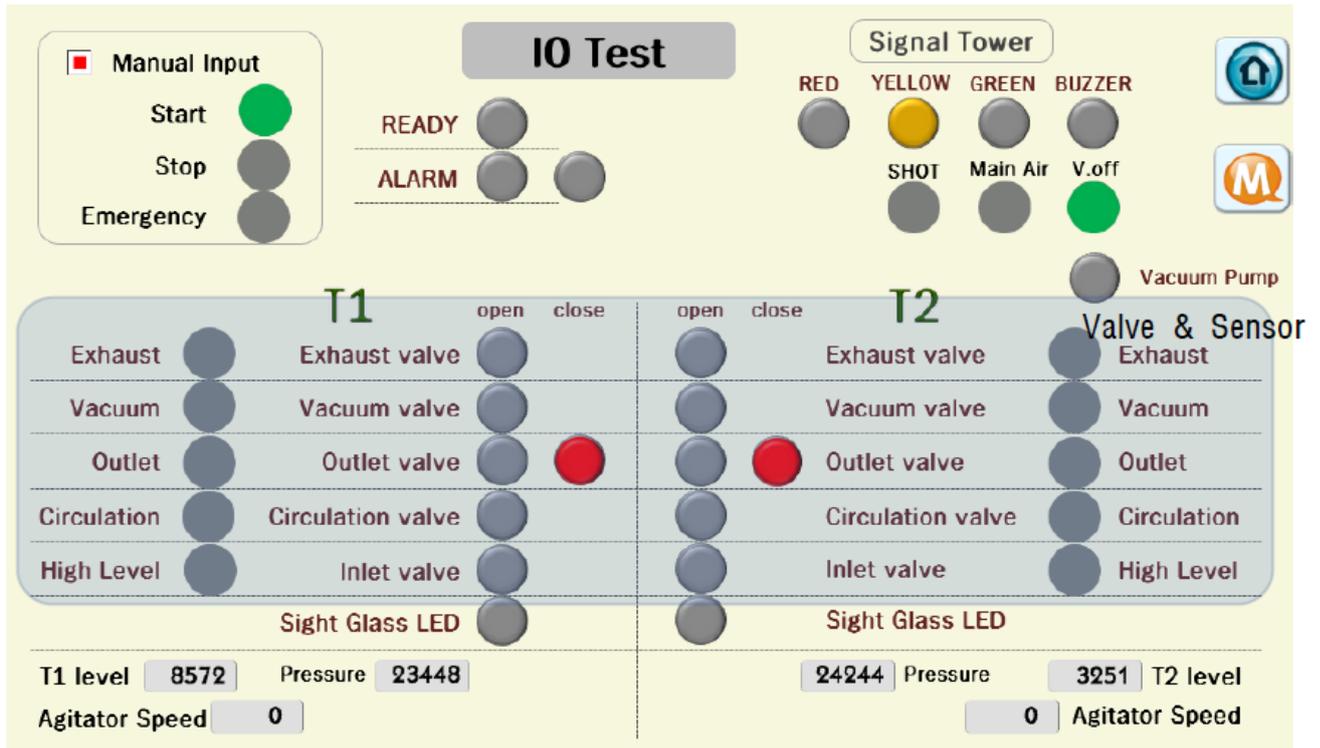


Figure 19. I/O Test Screen

Manual Input: Used to set the operation setting of the material feeding device to external input or local input. Manual Input and Start must be green for the material feeding device to work. (Manual Input: Red check mark, Start: Green button)

READY: This is the output transmitted to the upper level equipment when the material feeding device is in "Auto" mode and there is no alarm. If READY is not displayed as a red button, the material feeding device does not feed.

ALARM: When the material feeding device alarm occurs, it is displayed with a red button. After removing the cause of the alarm and pressing the Reset button on the Alarm Screen, all alarms must be cleared before material supply can proceed. The first Alarm button means an alarm related to Tank #1, and the second Alarm button means an alarm related to Tank #2.

Valve & Sensor: Test the valve operation and sensor input of the material supply device. When there is a sensor input, the gray button is activated as a green button.

Vacuum pump: Tests the vacuum pump On/Off.

V.off: Displays the external input signal, vacuum pump Off. (Indicated in green when there is no problem with the vacuum pump)

Main Air: Displays the main pneumatic input status. (Indicated in green when supplying main air normally)

T1/T2 Level: Displays the input from the water level sensor as a digital value.

Pressure: Displays the current vacuum level from the vacuum level measurement sensor as a digital value.

Agitator Speed: Displays the speed of the agitator motor received from the motor driver.

4.1.9 Calibration Screen

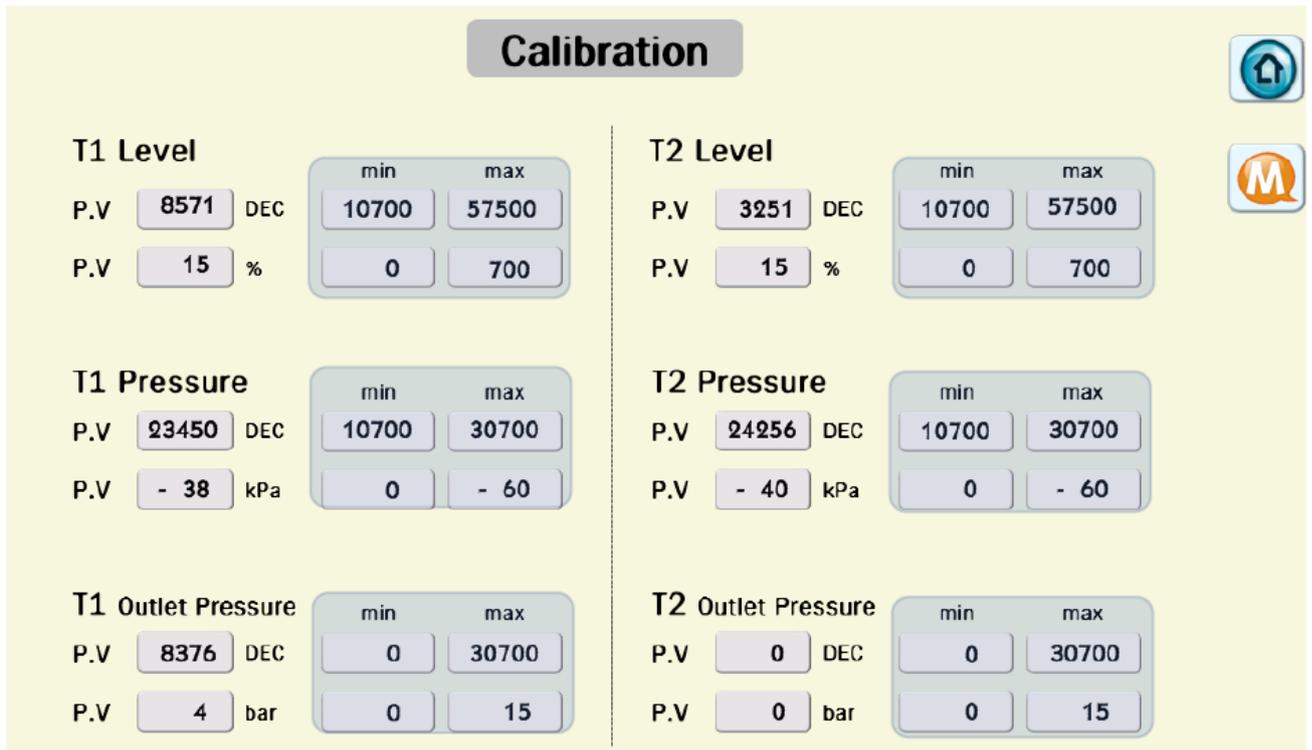


Figure 20. Calibration Screen

Set to convert the digital input value from the sensor used in the material feeding device to the water level and vacuum level values.

Only input in the shaded area is required for each sensor.

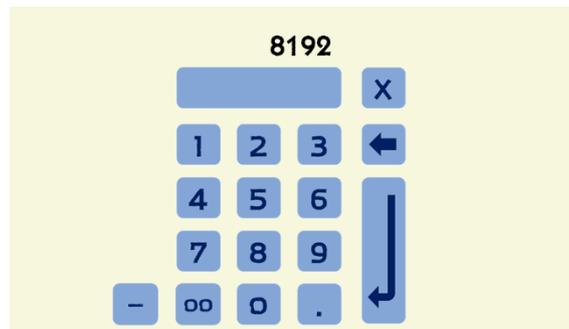


Figure 21. User Input Screen

If you touch the shaded button, the currently entered value is displayed at the top and the entered value is displayed at the bottom, as shown in the picture on the left. Press the  button to complete the input.

T1/T2 Level :



Figure 22. Level sensor setting

PV XXXX DEC: Digital value received from the level sensor

PV XXXX mm: Value automatically changed to the level unit (mm)



Level lower limit : When the water level is the lowest, input the digital value received from the level sensor.

Level upper limit : When the water level is the highest, input the digital value received from the level sensor.

Level lower limit conversion value : When the level is the lowest, input the converted value displayed on the sensor display.

Level upper limit conversion value : When the level is the highest, input the converted value displayed on the sensor display.

T1/T2 Pressure and T1/T2 Outlet Pressure: In the same way as T1/T2 Level, input the sensor lower/upper limit values and the values read from the unit-converted sensor display.

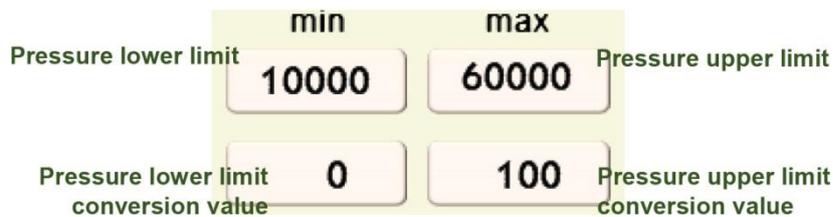
T1/T2 Tank Pressure :



Figure 23. Pressure sensor setting

PV XXXX DEC: Digital value received from the tank pressure sensor

PV XXXX mm: Value automatically changed to pressure unit (kPa)



Pressure lower limit: When the pressure is the lowest, input the digital value received from the pressure sensor.

Pressure upper limit: When the pressure is the highest, input the digital value received from the pressure sensor.

Pressure lower limit conversion value: When the pressure is the lowest, input the actual pressure value that the digital value received from the sensor indicates.

Pressure upper limit conversion value: When the pressure is the highest, input the actual pressure value that the digital value received from the sensor indicates.

T1/T2 Outlet Pressure:

Enter the same as the T1/T2 tank pressure and use the received digital value and actual pressure when the pressure sensor connected to the outlet detects the upper/lower pressure.

5 Alarm and Maintenance



Danger
Be sure to take necessary measures such as using the manual mode of the equipment, emergency stop, power off, etc., before performing maintenance and inspection. If the power is not turned off, the sensor may detect a random object inside the equipment or the inspector. This can cause an action.

As the functional usage time of the parts increases, aging may occur and this may cause a failure of the equipment. Check regularly to prevent problems and preserve the equipment, and if there's any abnormality, replace the parts.

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