

HOT MELT APPLICATOR SYSTEM

BSDM 5



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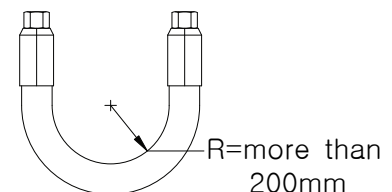
◆ Please make sure to observe it! ◆

© If not observed, failure and accident may occur.

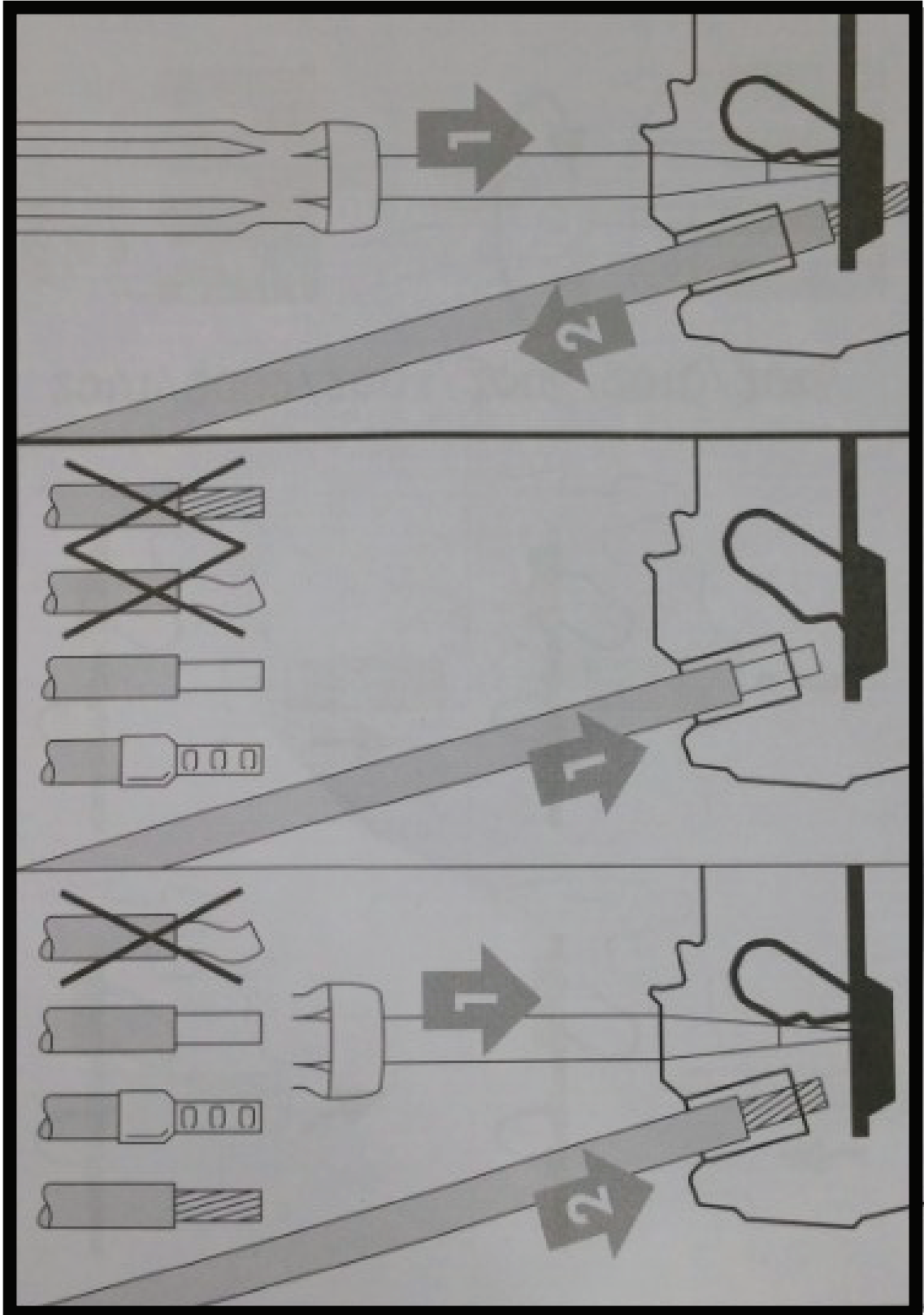
1. Electric Specification

VAC                      Hz                      Kw

2. Do not turn the pump switch ON until it reached to the set temperature.
3. Switch off the power before the panel is opened.
4. Please make sure to read the operating manual before the installation and operation of the system.
5. At time of equipment maintenance and repair, switch off the MAIN power and wait until the temperature is dropped.
6. At time of equipment operation, do not use the pressure higher than required.  
(Do not operate the machine in a manner prohibited or not instructed in the manual.)
7. At time of filter change, change it after removing the pressure with the pump switch OFF.
8. As the surface of TANK and GUN is so hot and may cause burns, so never fail to wear a cotton gloves to touch it.
9. When the HOSE is connected to the TANK or GUN, the radius should be more than 200 mm, and fasten it rightly not to be twisted.



◆ 터미널 전원 연결 방법 ◆



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## 1. CAUTIONS FOR SAFE USE

Thank you very much for purchasing this product from Phal Bok System Co., LTD. It is important that you read the manual to the end and follow the instructions, as Phal Bok System's HOT MELT APPLICATOR uses hot melt in high temperature, high pressure, and in high speed. There can be physical damage or damage to the product if instruction is not followed accordingly.

### (1) GENERAL CAUTIONS

- \* Install, operate, maintain the product after reading this manual.
- \* Only instructed personnel should operate this machine.
- \* If the machinery has a problem or malfunctions, stop the equipment immediately and contact Phal Bok System for technical support.
- \* Do not operate the equipment other than the way instructed in this manual.
- \* Phal Bok System is not responsible for breakdowns and/or injuries during installation, operation, and maintenance, caused by not following the instructions properly. Please contact Phal Bok System if any questions arise for information that is not included in this manual.



Warns on direct danger.  
Can cause serious injury or even death.



Displays potential warning.  
Can cause serious injury or equipment breakdown.



Displays potential warning.  
Can cause slight injury or equipment breakdown.



Displays necessary and/or useful information for operation and maintenance.

### (2) PREREQUISITES FOR EQUIPMENT OPERATOR

- \* Only an operator who are applicable to all of the below can operate the equipment.
  - ① Certified Operator
  - ② Authorized Operator
  - ③ Operator who received training

## (3) IMPORTANT SAFETY SIGNS

### ◆ MOVING THE EQUIPMENT



© Do not lift or move the equipment without without a mechanical lift.

### ◆ WEARING PROTECTIVE GEARS



© Always wear safety goggles, leather gloves and safety clothes when installing, operating, and maintaining HOT MELT APPLICATOR.

### ◆ HIGH PRESSURE CAUTION



© High pressurized melted resin can cause burns.

No not operate the equipment in a way not instucted by this manual and/or in a way this manual prohibits.

### ◆ DO NOT MANIPULATE THE EQUIPMENT



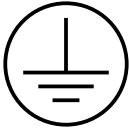
© Personnel who did not receive professional training on this equipment should not operate the equipment.

### ◆ SAFETY COVER



© Stop the equipment before opening the cover.

◆ GROUND



◆ HAZARDOUS



- ⦿ CONTACT MAY CAUSE ELECTRIC SHOCK OR BURN.
- ⦿ TURN OFF AND LOCKOUT POWER BEFORE SERVICING

◆ READ OPERATOR'S MANUAL.



- ⦿ READ AND UNDERSTAND THE MANUAL BEFORE USING THIS MACHINE.

◆ BURN HAZARD. DO NOT TOUCH.



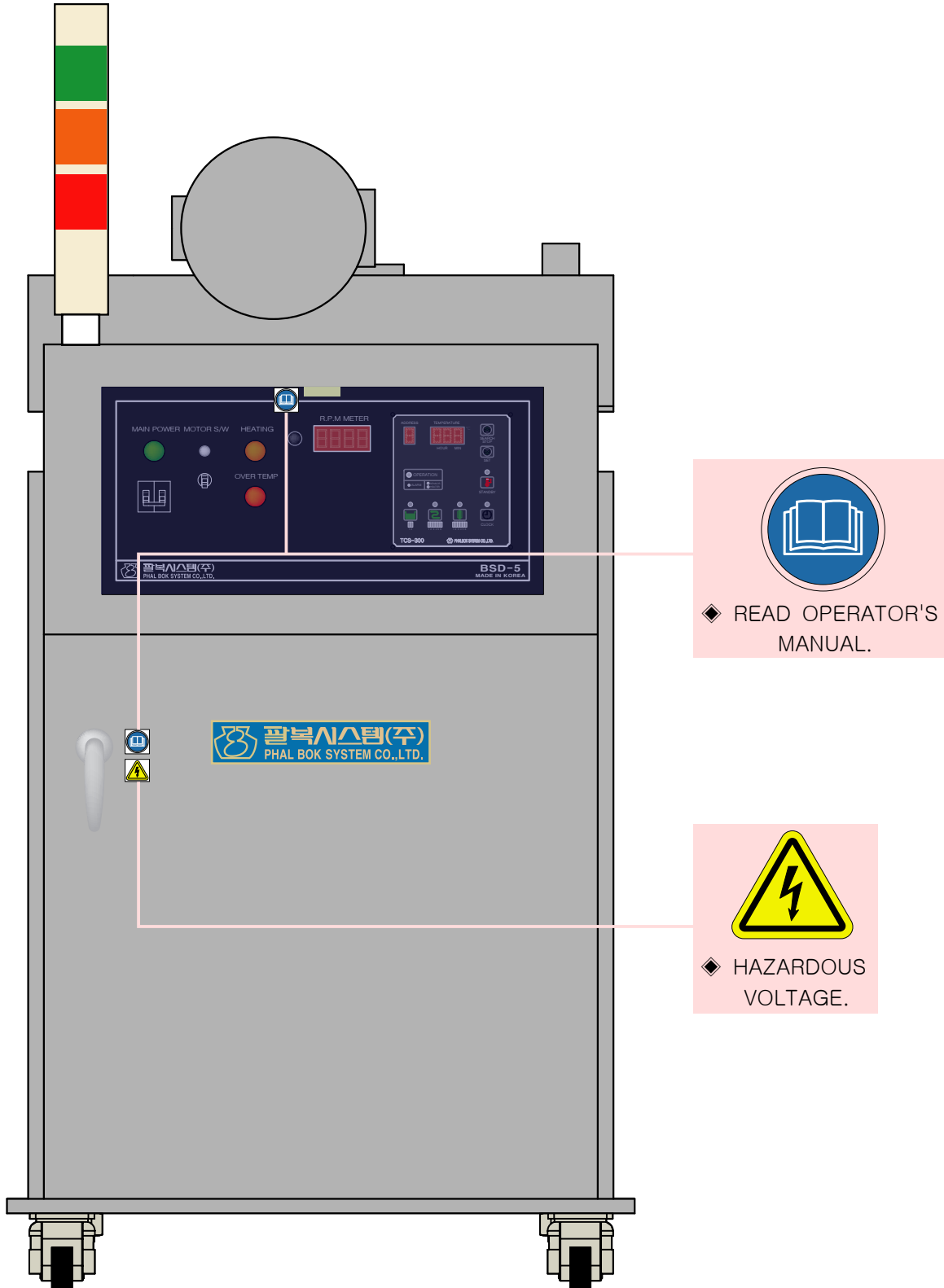
- ⦿ TURN OFF POWER AND ALLOW TO COOL BEFORE SERVICING.

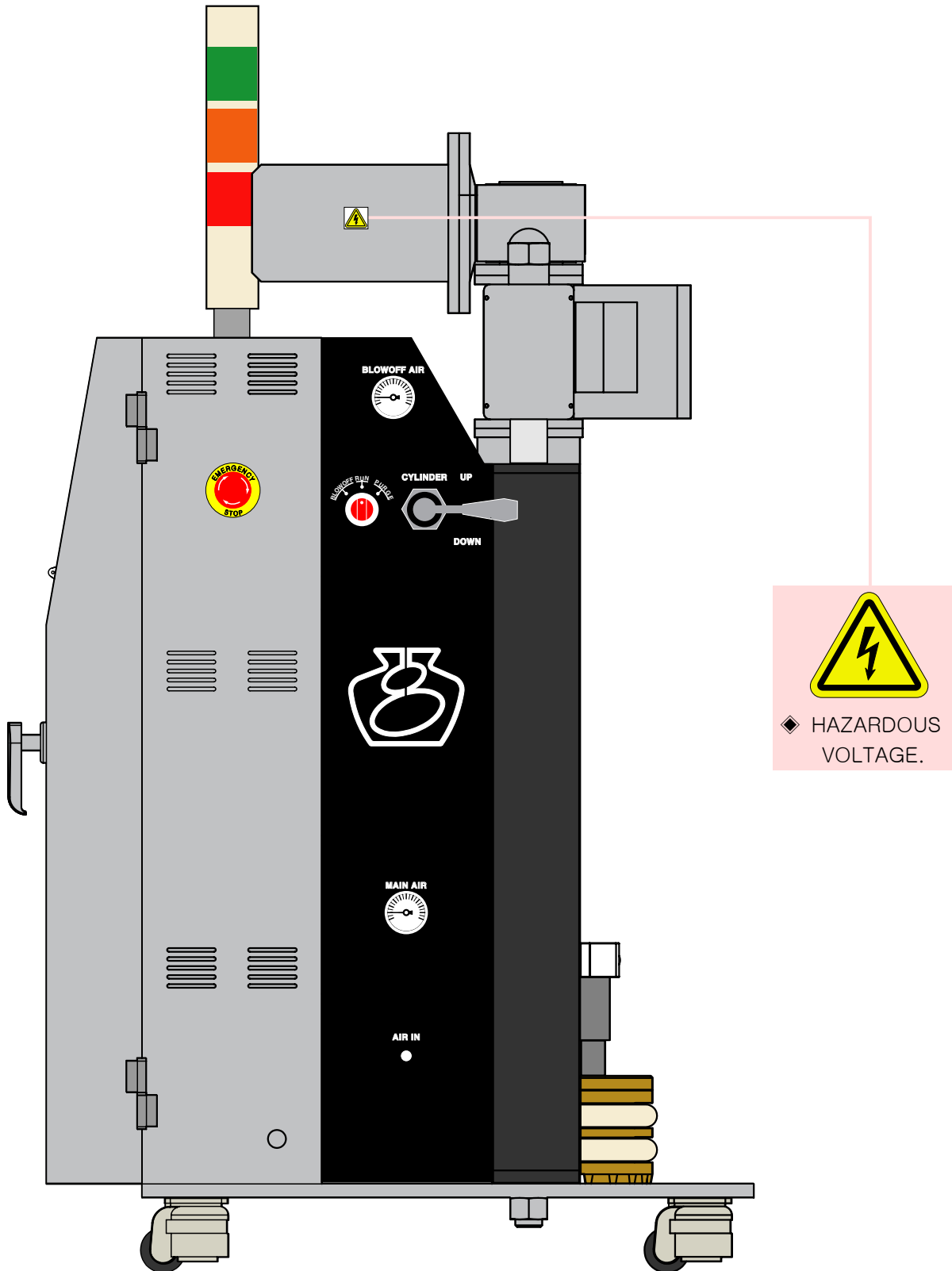
◆ WARNING

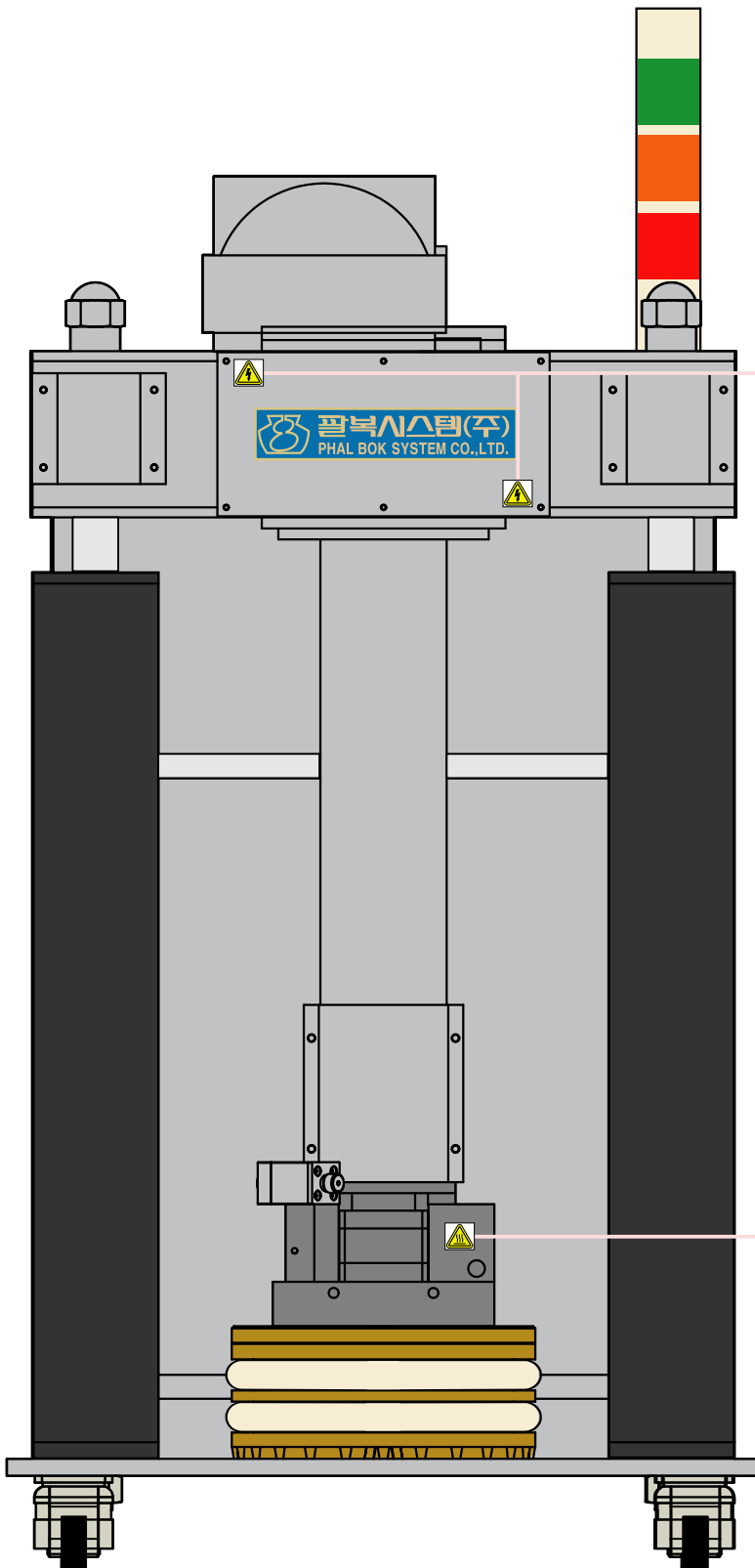


- ⦿ CONTENTS AT HIGH TEMPERATURE AND PRESSURE.
- ⦿ REMOVE PRESSURE BEFORE OPENING FILLTER OR DRAIN VALVE.
- ⦿ DO NOT TOUCH HOT SURFACES.
- ⦿ FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SEVERE BURNS.

(4) LABEL POSITION.







◆ HAZARDOUS VOLTAGE.



◆ BURN HAZARD. DO NOT TOUCH.

## 2. SUMMARY ON BSDM SERIES HOT MELT DRUM UNLOADER

Phal Bok System's BSDM SERIES dissolves adhesives in the DRUM from 5(55) gallon bucket. Using the pumping function, this highly effective UNLOADER administrates directly and is suitable for adhesion/sealing through automatic/manual spray.



BSD SERIES consists of PLATEN which dissolves adhesives, GEARED MOTOR and GEAR PUMP for pumping, temperature controller and electrical equipments(ELECTRICAL CONTROL BOX, AIR CONTROL BOX).

- \* BSDM SERIES can melt and apply pumping to thermoplastics (PUR, EVA, RUBBER, POLYURETHANE, POLYAMIDE, POLYESTER).
- \* There's TEFLON COATING on the surface of PLATEN to ease adhesiveness of the matter properties/carbonization. MELT GRIDE increases the thermal conductivity.
- \* PUMPING SYSTEM operate GEAR PUMP in GEARED MOTOR and controls pressure and flux through FLOW CONTROL VALVE.
- \* PLATEN increases/decreases by the cylinder. AIR insertion/discharge is performed by AIR SO L circuit.
- \* TEMP CONTROLLER(TCS-400N SERIES) of BSDM SERIES can each use 1~2 HOSES AND GUNS.
- \* Temperature CONTROL SYSTEM uses RTD SENSOR, and temperature for each part are digitalized. They are caterogized into: MAIN BREAKER, PUMP BREAKER, Temperature CONTROL SYSTEM. It uses QUICK CONNECT to easily connect the wires with HOSE.
- \* CONTROLLER BOX of BSD SERIES has circuit breaker, magnetic switch, and other electrical control parts used for electrical connections.
- \* MAIN Power and Spray CONTROL Device should be supplied by the user.
- \* BSDM SERIES UNIT has the following built-in safety devices.

### ◆ OVERHEATING PROTECTION AUTOMATIC POWER SHUT-OFF

1. If temperature declination (+10℃,TEMP CONTROLLER breakdown, Each ZONE'S overheat becomes coause) occurs to TEMP CONTROLLER MAIN MAGNET cut-off
2. PLATEN OVERHEATING PROTECTION (OVER TEMP S/W)  
When become OVER HEATING (damage of TEMP CONTROLLER or electricity parts becomes cause), if become 230℃, RELAY point of contact becomes automatic OFF, and ALARM LAMP of CONTROLLER front panel operates.

### ◆ INSPECTION ◆

If need checking from such problem, First, JUMPING NUMBER  and  on TERMINAL and inspect ZONE that become problem. And remove a JUMPING segment if checking finishes.

### 3. INSTALLING BSDM SERIES DRUM UNLOADER

#### (1) INSTALLING DRUM UNLOADER.

- ① DRUM UNLOADER should be installed at a horizontal place without any vibrations, where it's easy to install and operate. (Install firmly so it does not move)
- ② DRUM UNLOADER should be installed at a place not affected by outer wind. e.g.) Avoid place near the window where there's direct wind.  
Avoid air conditioner, fans, and controller fans.

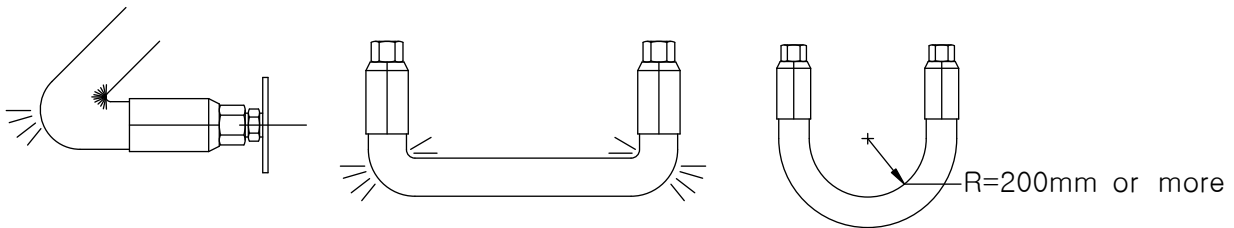
#### (2) INSTALLING HOT MELT HOSE.

- ① In order to protect HOT MELT Supply HOSE, do not bend the hose. The hose should be attached or detached after HOT MELT is heated.
- ② When installing HOT MELT HOSE to BSD SERIES, always place PLATEN in a high ground so it can be near MANIFOLD. Do not try to change HOT MELT HOSE after putting PLATEN in the DRUM.
- ③ HOSE should not be twisted when installing and/or uninstalling.
- ④ The bended radius of HOSE should be 200mm or more when installing. (Inner parts, HEATER, and SENSOR could be damaged or misplaced if the radius is less than 200mm.)
- ⑤ When hanging the HOSE to a ceiling or a pole, it should not be too tight and also should not interfere the heating. (Use HOSE BAND in this case)

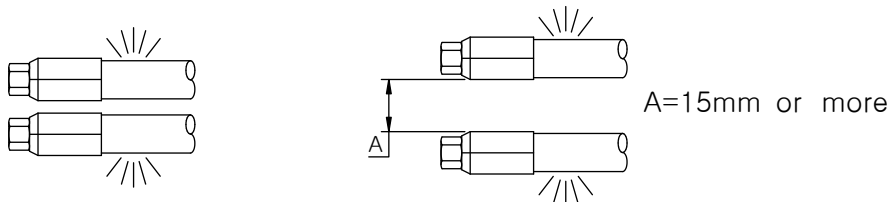
**MEMO**

## \*\*\*\* CAUTIONS WHEN INSTALLING HOT MELT HOSE \*\*\*\*

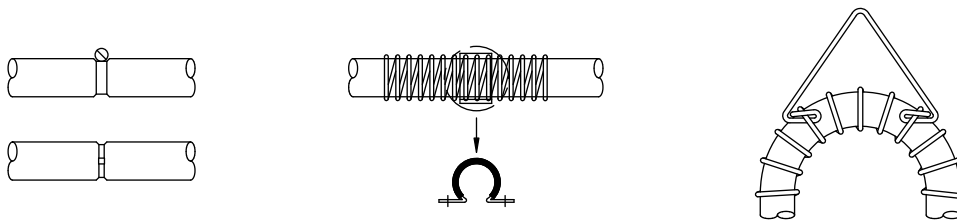
1) Hose should be installed and not be bended more than 200mm.



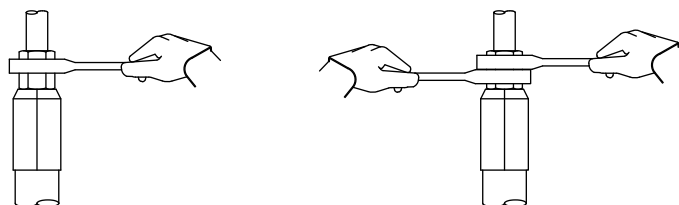
2) It's safe to separate the hoses at least 15mm when using more than 2.



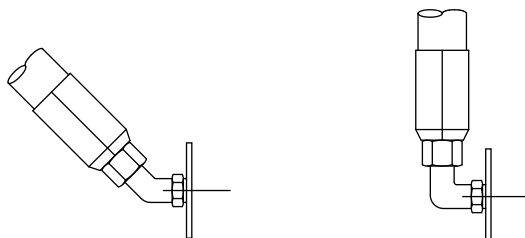
3) When trying the hose, it should not be too tight or interrupt the heat.



4) When connecting the hose to the tank or the gun, grab the nipples on both sides. Grabbing just one could cause damages to the equipment by getting twisted.



5) Choose the appropriate nipple when connecting the hose.

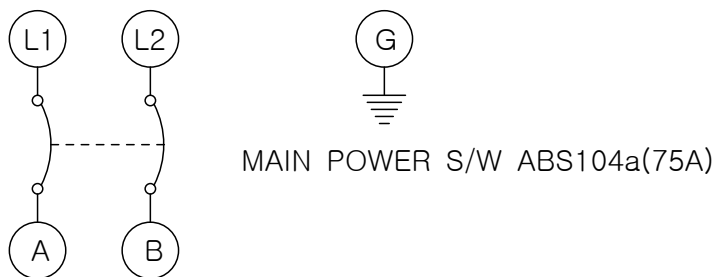


## 4. ELECTRIC WIRING

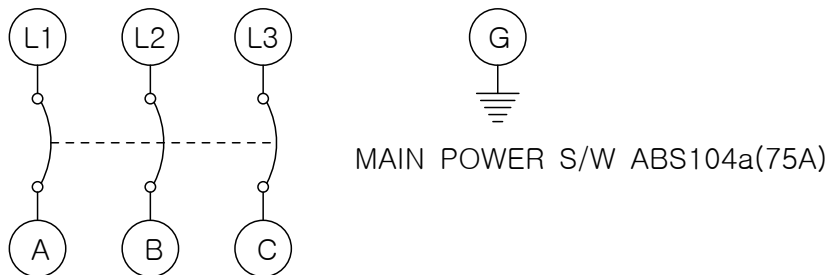
### (1) CONNECTING MAIN POWER WIRES

- ① BSD-SERIES has to supply power to single phase 220VAC, 3-phase 380VAC(4-wire) 60Hz and should be grounded for safety.
- ② Wires connected to MAIN power should have thickness depending on the capacity of BSD-SERIES.
- ③ Connecting MAIN power .

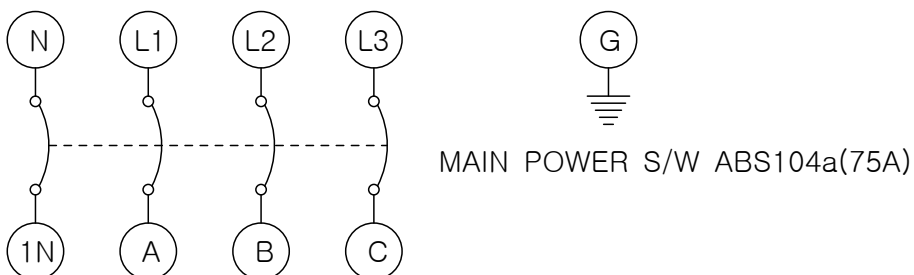
#### ● Connecting single phase 220VAC



#### ● Connecting 3-phase 220VAC MAIN



#### ● Connecting 3-phase 4-wire 380VAC MAIN



## 5. OPERATION

### (1) CAUTIONS BEFORE OPERATING .

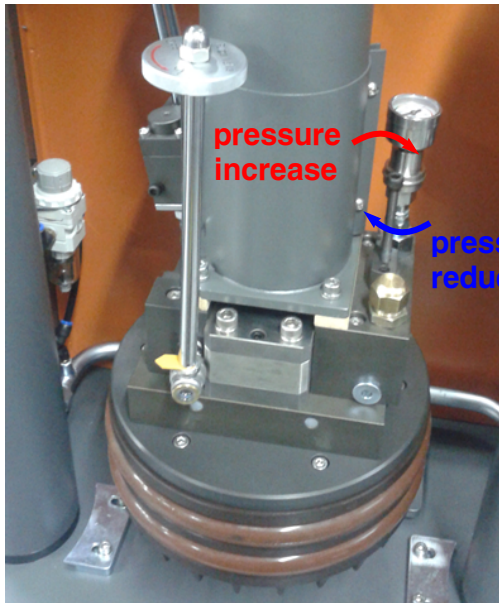
- ① Check the installation status and electrical circuit of PLATEN, HOSE, and GUN before installing.
- ② Remove inflammable objects near HOT MELT SYSTEM TANK.
- ③ Get advice from the manufacturer before using HOT MELT (adhesive).
- ④ After PLATEN, HOSE, and GUN temperature SETTING, turn on the MAIN POWER S/W in MELT UNIT. Generally, Phal Bok recommends HOSE to have 5~10°C lower temperature than GUN, and PLATEN to have 5~10°C lower SETTING than HOSE.
- ⑤ Warm up the equipment for 30~60 minutes after turning it on. Warm up time depends on the voltage, surrounding temperature, type of HOT MELT ADHESIVE (BASE POLYMERS such as PUR, EVA, POLYAMIDE, POLYESTER, APP, POLYURETHANE, RUBBER)
- ⑥ Changing HOT MELT and/or inserting cleaner could cause heat, flame, toxic gas and degraded adhesiveness. Therefore, contact the manufacturer before changing HOT MELT or inserting any cleaners.
- ⑦ Liquid or gas used for cleaning or decarbonization should not be inflammable in the operating temperature .

### ● CAUTIONS & NOTES

- ① Refrain from unnecessary warm ups as HOT MELT ADHESIVE changes chemically slowly as time passes. (Delays carbonization & saves energy)
- ② Refer to the designated temperature by the manufacturer and set the temperature as low as possible for HOT MELT ADHESIVE.
- ③ Minimize the amount of HOT MELT ADHESIVES in the FLOW CONTROL VALVE. (Preventing MOTOR overload and friction)
- ④ POLYURETHANE HOT MELT tends to stiffen after reacting to moisture. Do not expose it to the air .

## (2) OPERATION.

- ① Check if the SETTING temperature has been reached for PLATEN , HOSE , and GUN.
- ② Turn on PUMP SWITCH if ① is completed.
- ③ Operate automatically or manually.
- ④ Turn off the PUMP S/W and MAIN SWITCH after operation is complete.
- ⑤ Controlling amount of HOT MELT ADHESIVE spray.



○ Too little spray : Turn F.C.V clockwise with 6mm L wrench to increase the amount.

○ Too much spray : Turn F.C.V counterclockwise with 6mm L wrench to decrease the amount.

※ PUMP can get damaged due to excessive

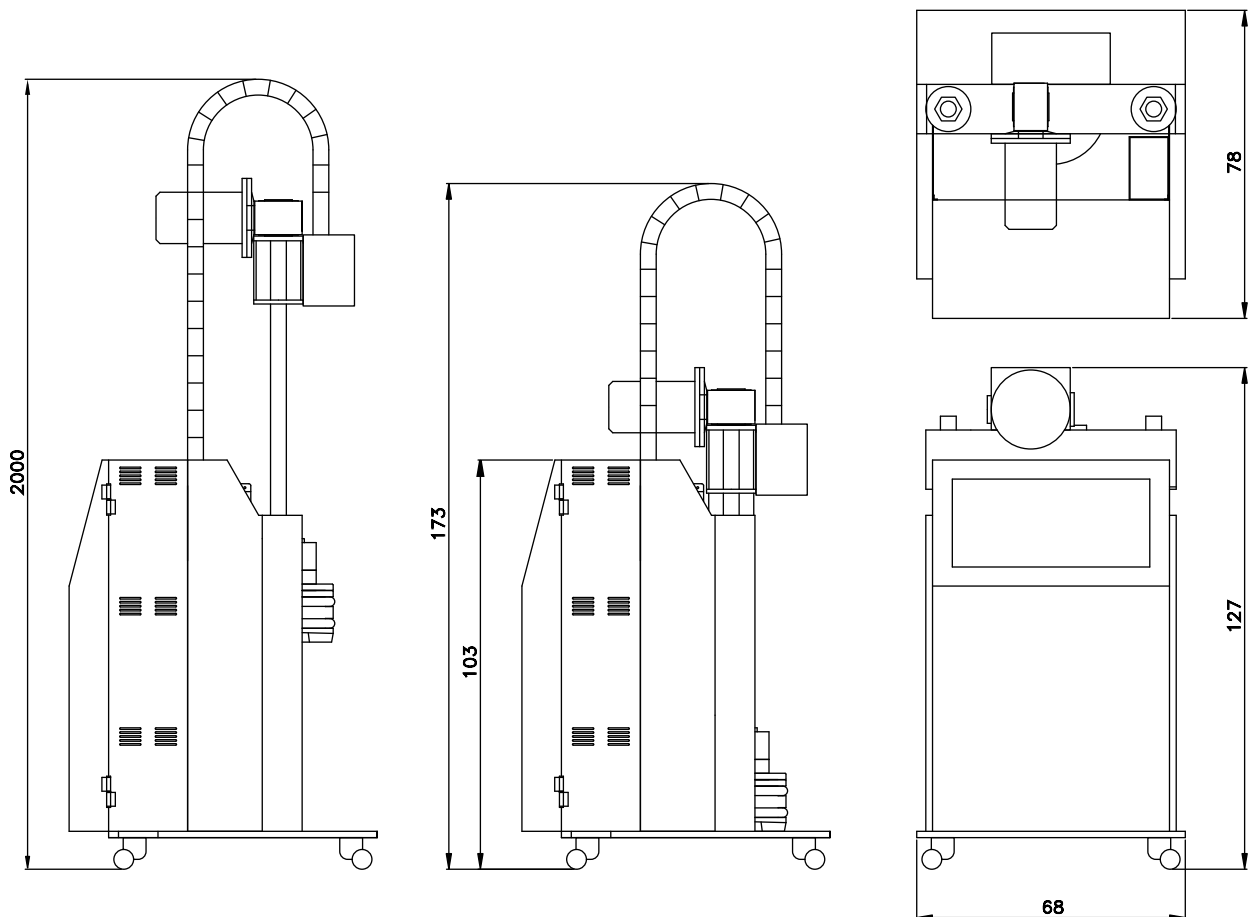
- ⑥ Increase the amount of PUMPING by increasing the INVERTER Hz.

### ※ CAUTION

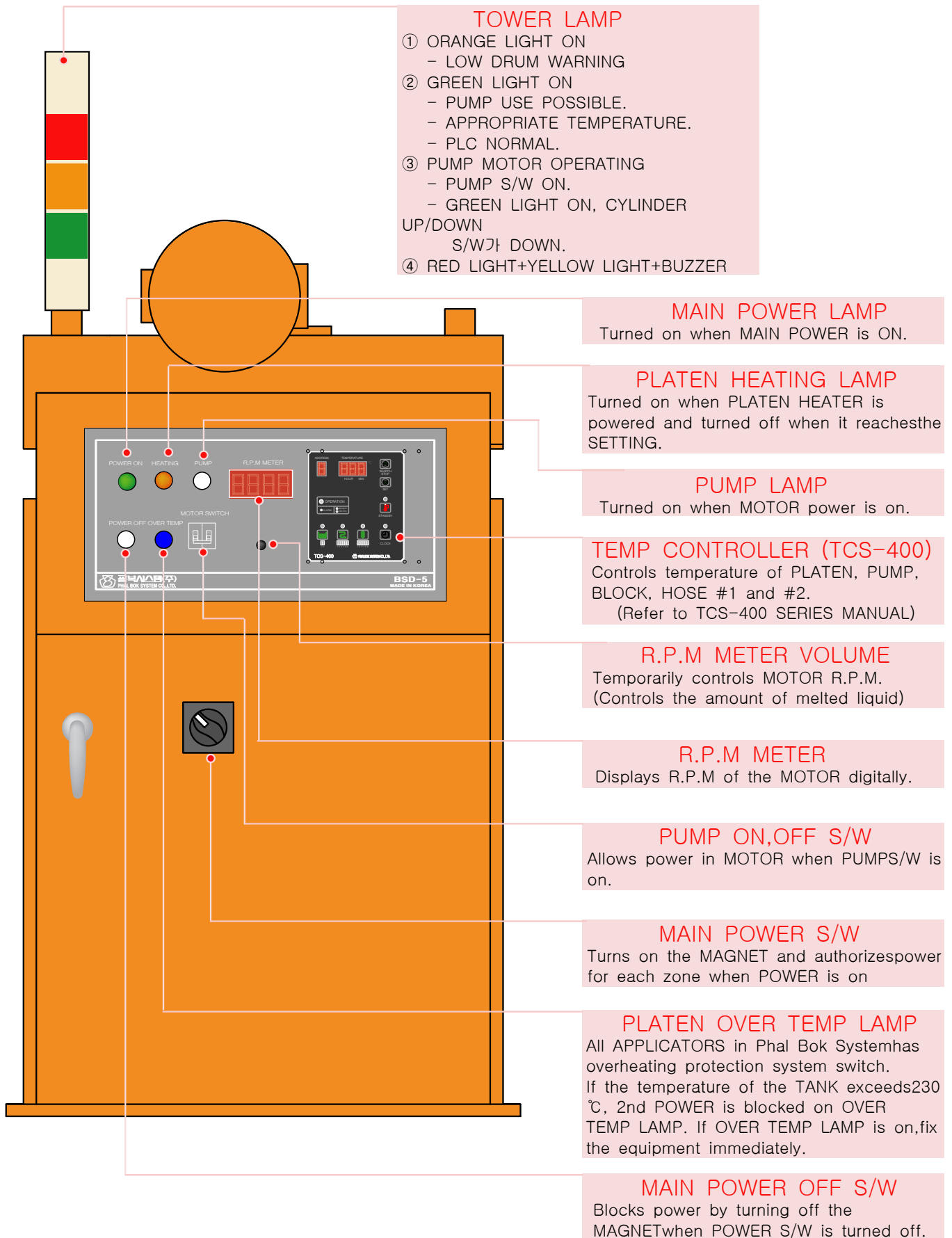
Do not completely lock the F.C.V BOLT.

## 6. MODEL BSDM-5 SPECIFICATION

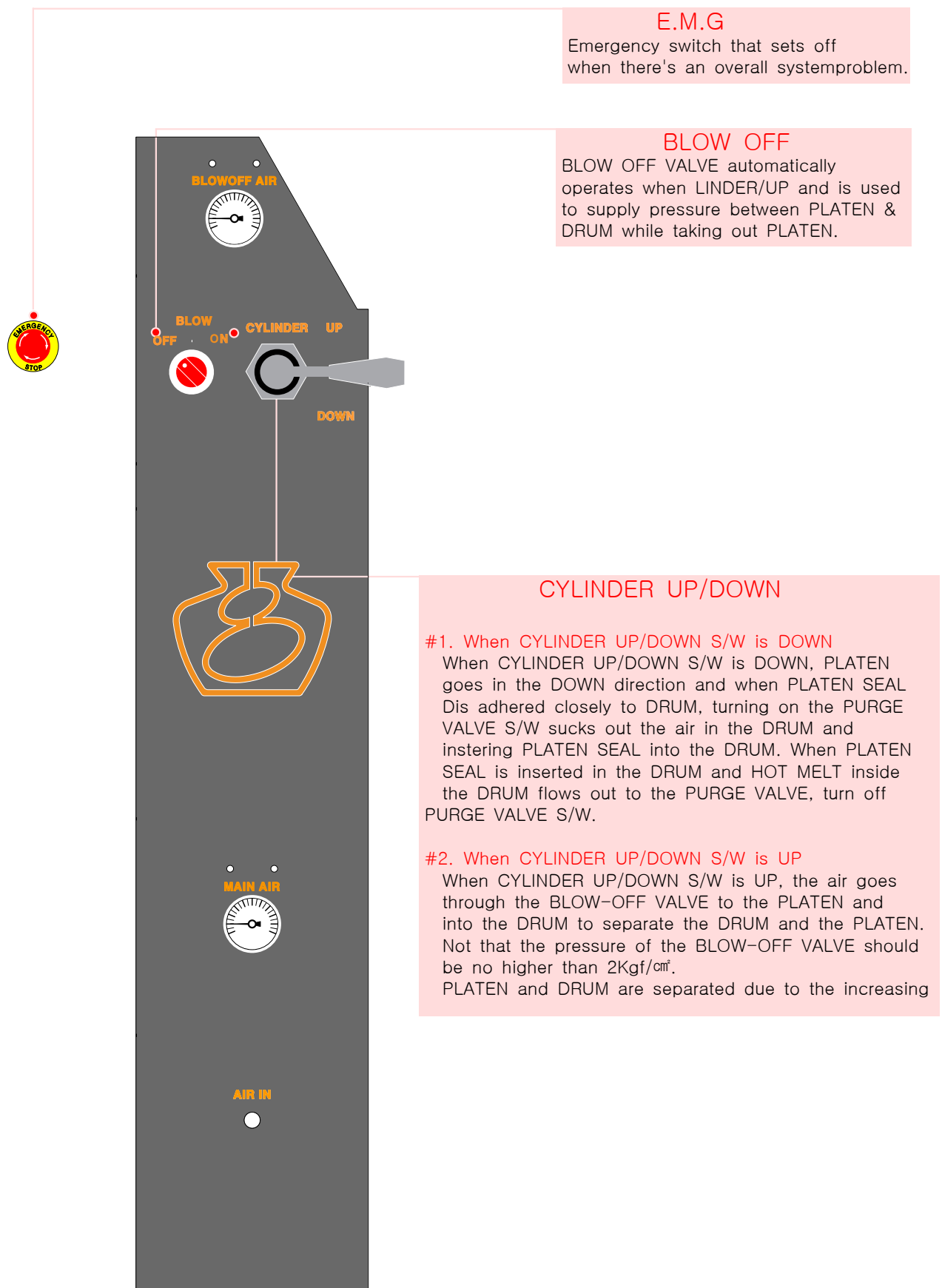
* VISCOSITY	:	1,000 – 100,000	CPS
* DRUM CAPACITY	:	5	GAL ( 20L )
* MELT RATE	:	20	Kgf/hr ( E.V.A )
* MAX OPERATING TEMP	:	230	°C
(OPERATING TEMPERATURE RANGE)			
* TEMPERATURE VARIATION	:	± 1	°C
* PUMP PRESSURE	:	0 – 70	Kgf/cm <sup>2</sup> (MAX)
* NO. OF HOSES	:	1 – 2	EA (OPTIONAL)
* ELECTRICAL SPEC	:	1 FIG	, 220VAC , MAX 8KW
* MELT UNIT WEIGHT	:	120	Kg
* MELT UNIT SPEC'			



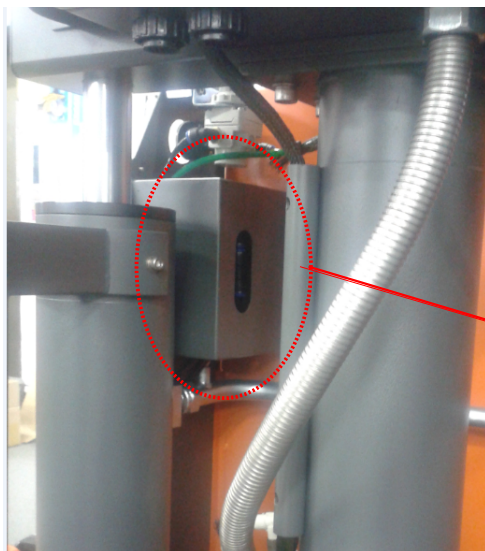
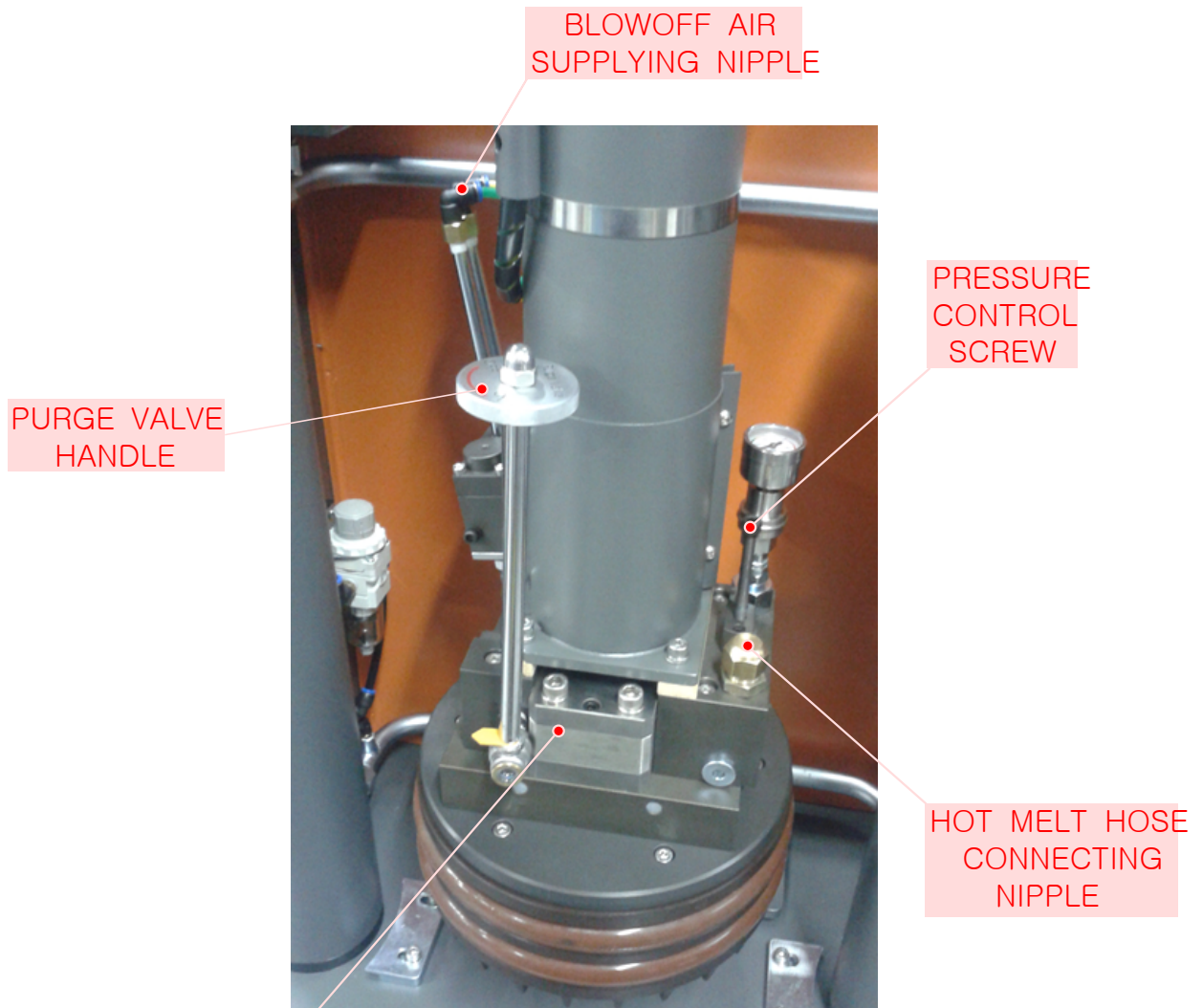
## 7-1. BSDM-5 FRONT PANEL CONTROLLER & PARTS



## 7-2. BSD-5 SIDE PANEL CONTROLLER & PARTS

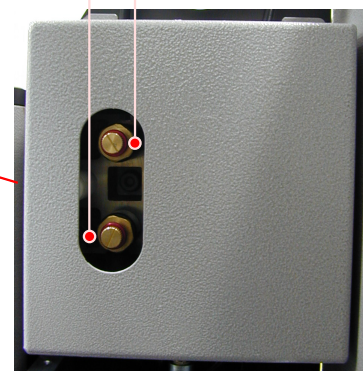


7-3. BSD-5 PLATEN CONTROLLER & PARTS



CYLINDER "DOWN"  
SPEED CONTROL VALVE

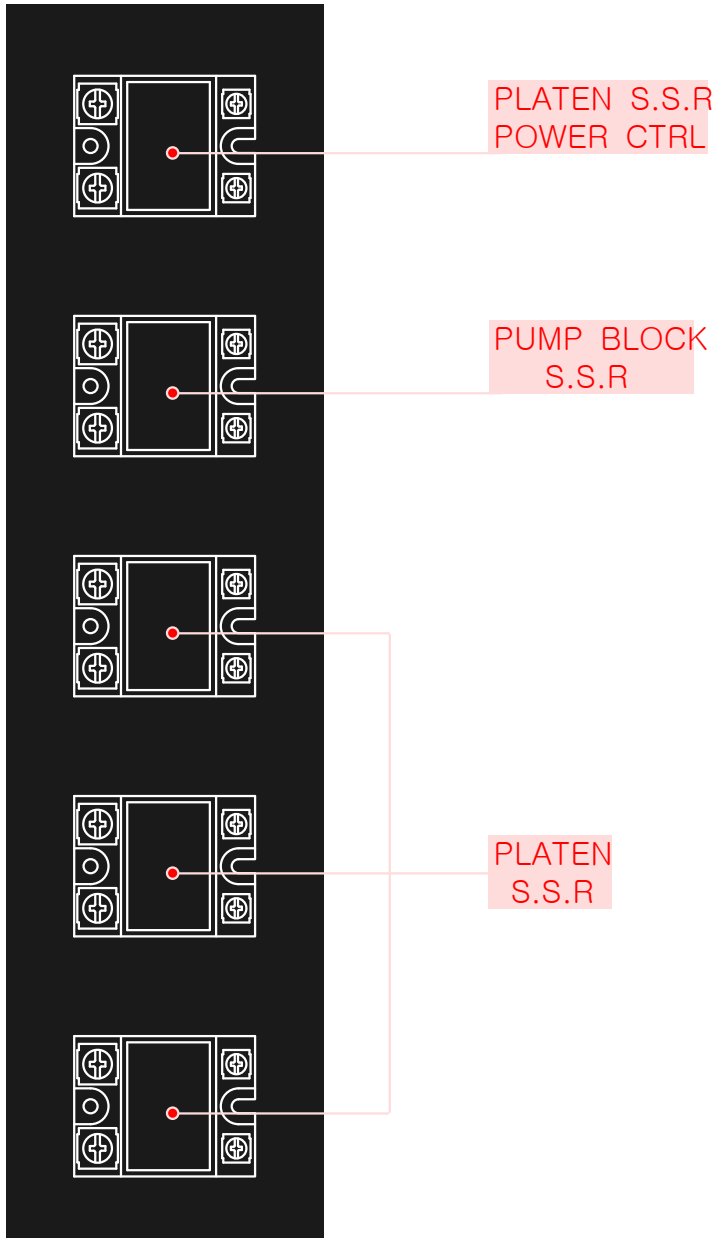
CYLINDER "UP"  
SPEED CONTROL VALVE



7-4. BSD-5 INNER PANEL CONTROLLER & PARTS.



(2) INNER SIDE PANEL.



## 7-5. TEMPERATURE CONTROLLER (TCS-400N)

### 1. SUMMARY

Phal Bok System's TCS-400N SRRIE TEMP' CONTROLLER is a TEMP' CONTROLLER that enables ON TIMER preheating function necessary for HOT MELT adherent machinery operation and contains various features such as manual operation and self-diagnosis.

### 2. PRE-INSTALLATION NOTE

Carefully read the manual enclosed with the Phal Bok System's TCS-400N series. Turn off the main power and connect the power to HOT MELT APPLICATOR and use after setting to the appropriate temperature for HOT MELT.

### 3. OPERATING NOTE

⊙ Take note of the directions for safety before usage. Please abide by the directions written, which contain important information related to safety. The safety precautions are divided into these parts: Danger, Warning, and Caution.



Keep conductible materials and bodies out of the way as the Input/Output CONNECTOR has electrical hazards.



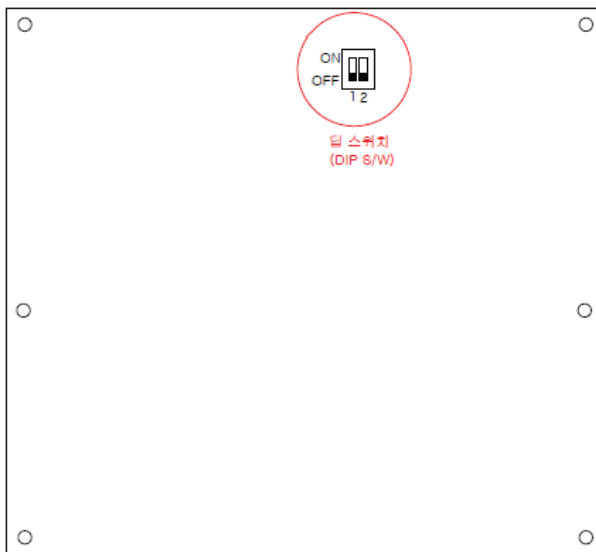
- ① If there are possibilities of major damages caused by a fault in the machinery or any of its defects, please install appropriate protection circuits on the outside.
- ② Install a separate power switch on the outside, as TCS-400 SERIES does not come with one. (When used on its own)
- ③ Provide the appropriate electrical power to prevent damages and breakdowns.
- ④ Do not provide power until all wiring is completed to prevent electrocution and breakdowns.
- ⑤ Do not use in places surrounded by inflammable and explosive gas (not resistant).
- ⑥ Never disassemble, process, edit, or repair. There's danger of malfunction, electrocution, and fire.
- ⑦ Attach and detach after turning OFF the power to prevent electrocution and machine defects.
- ⑧ To use the equipment for purposes other than those specified by the maker can result in injuries and/or property damages.

## 4. Specification

- 1) Input power: Single phase 220[VAC], 50/60Hz
- 2) Temperature stability:  $\pm 1^{\circ}\text{C}$
- 3) Temperature range:  $20^{\circ}\text{C} \sim 230^{\circ}\text{C}$ ,  $250^{\circ}\text{C}$ (for high temperature)
- 4) Temperature adjustment zone: TANK 3units, HOSE 6units, GUN 6units  
(Maximum 15 zones)

## 5. Heating sequence

As shown in the picture below, TEMP. CONTROLLER MAIN BOARD has a DIP S/W with which you can select the individual heating mode or the simultaneous heating mode.



DIP 1	DIP 2	Explanation
OFF	OFF	Individual heating mode by $^{\circ}\text{C}$
OFF	ON	Simultaneous heating mode by $^{\circ}\text{C}$
ON	OFF	Individual heating mode by $^{\circ}\text{F}$
ON	ON	Simultaneous heating mode $^{\circ}\text{F}$

### A. Individual heating mode

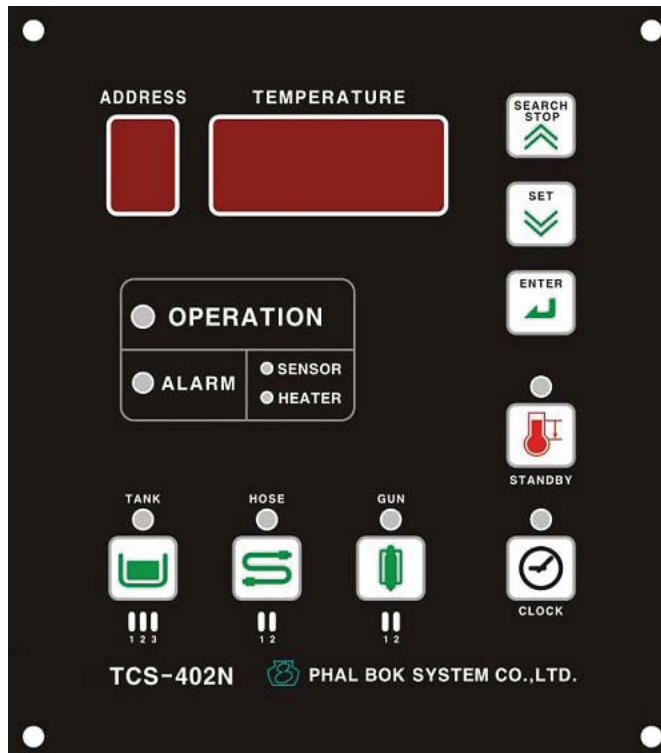
If the dip 2 switch is in the “OFF” position, it is the individual heating mode. If the power is on in this mode, both the tank and the hose start heating at the same time. When a desired temperature is reached, the gun starts heating. If the tank, the hose, and the gun reach a desired temperature respectively, the operation LED turns on and operation is output.




### B. Simultaneous heating mode










If the Dip 2 switch is in the “ON” position, it is the simultaneous heating mode. This mode is the basic setup method in which the tank, the hose, and the gun start heating at the same time only when the values of the function mode 8 and the function mode 9 are “0.”

On the other hand, The setting values of the function mode 8 and the function mode 9 are more than “1”, the heating of the hose and the gun is delayed. The function mode 8 delays the heating of the hose after completing the heating of the tank, and the function mode 9 delays the heating of the gun after completing the heating of the hose.

## 6. Descriptions on each part



- ◎  It indicates the addresses of the tank, the hose, and the gun.
- ◎  It indicates the setting temperature, current temperature, current time, on-time, and standby temperature setting for each part of the tank, the hose, and the gun respectively.
- ◎  This is the selection S/W for the Tank Zone.  
If you press the S/W, the tank Zone is selected and the LED of tank zone turns on. Depending on the times of pressing the S/W, the zone moves up to 1~3.

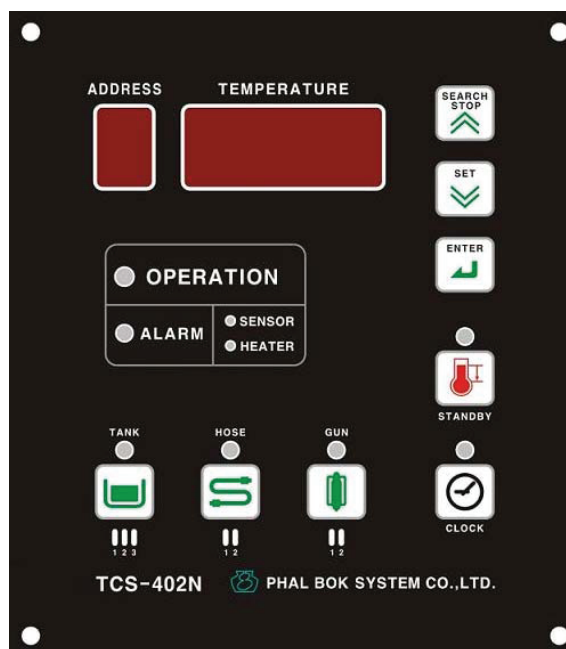
- ◎  Selection of the HOSE zone's address  
If you press the S/W, the tank zone is selected and the led of the hose zone turns on. Depending on the times of pressing the S/W, the zone moves up to 1~6.
- ◎  Selection of the gun zone's address  
If you press the S/W, the tank zone is selected and the LED of the gun zone turns on. Depending on the times of pressing the S/W, the zone moves up to 1~6.
- ◎  It serves as a upward S/W at the time of searching, stopping, temperature controlling, and time setting of the TANK zone, the HOSE zone, and the GUN zone.
- ◎  It serves as a downward S/W at the time of temperature controlling and time setting, and converts the mode into the setting mode at the time of setting.
- ◎  At the function mode entry and input mode, it plays a role in saving data.
- ◎  It is a STANDBY Setting S/W. (Keep pressing it for 3 seconds to make it work.)  
==> When releasing, simply touch it.
- ◎  It is an ON-TIME Motion S/W. (Keep pressing it for 3 seconds to make it work.)  
==> When releasing, simply touch it.
- ◎  **OPERATION** : When the temperatures of the TANK, the HOSE, and the GUN reach desired values, this LED turns on and operation is output.
- ◎  **ALARM** : This is the LED which turns on when any of the sensor alarm and the heater alarm of the TANK, the HOSE, and the GUN sounds.

- ① **SENSOR** : This is the LED which turns on when any of electric wires for the sensor of the TANK, the HOSE, and the GUN is disconnected.
- ② **HEATER** : This is the LED which turns on when any of electric wires for the heater of the TANK, the HOSE, and the GUN is disconnected, or when the TANK, the HOSE, or the GUN is heated over the setting temperature.


## 7. How to operate TCS-400N SERIES



### 1) How to set the current time

The current time setting for the hot melt application system should be done to use reservation function. If you use the system with reservation function without setting the current time, you may cause accidents and/or damages as it will be operated with the existing setting time.




① Keep pressing the SET  switch for about 5 seconds and wait.

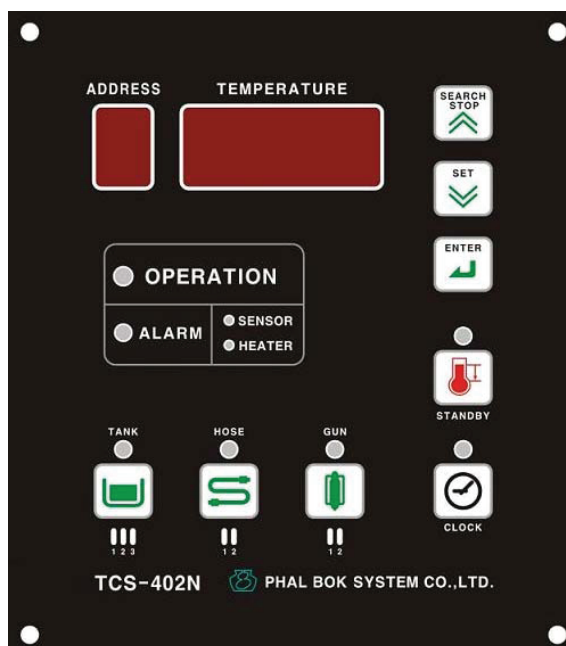
② The current time is shown as 00:00 on the temperature  display.

③ By using the upward  switch and the downward  switch, set the time as you want from 00:00 to 23:59.


If you keep pressing the upward switch or the downward switch in the time setting mode, the time increases or decreases rapidly so that you can easily input the time.


④ If you press the Enter  switch after completing the setting and there is no other manipulation for 5 seconds, it is converted into the operation mode and the setting value is automatically stored.



2) How to set the temperature of the TANK, the HOSE, and the GUN





① keep pressing the SET  switch for 5 seconds and wait.

② The current time appears on the temperature  display.


③ If you press the Tank  switch at the time of setting the tank temperature, the number 1 will appear on the Address zone and the current set temperature will be displayed.


If you want to change the set temperature, adjust the setting value to obtain a desired temperature by the upward  switch and the downward  switch .

④ As the Tank zone moves from 1 up to 3 whenever you press the TANK  switch, set the temperature in the same way as mentioned in the No. ③ by selecting the Address 2 ~ 3.

⑤ If you press the Hose  switch at the time of setting the Hose temperature, the number 1 appears on the Address zone and the current set temperature is displayed.

If you want to change the set temperature, adjust the set value to a desired temperature by using the upward S/W and the downward S/W.


⑥ As the Hose zone moves from 1 up to 6 whenever you press the Hose  switch, set the temperature in the same way as mentioned in the No. ⑤ by selecting the Address 2 ~ 6.

⑦ If you press the Gun  switch at the time of setting the GUN temperature, the number 1 appears on the Address zone and the current set temperature is displayed.

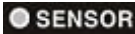

If you want to change the set temperature, adjust the set value to a desired temperature by using the upward S/W and the downward S/W.

⑧ As the Gun zone moves from 1 up to 6 whenever the GUN S/W, set a desired

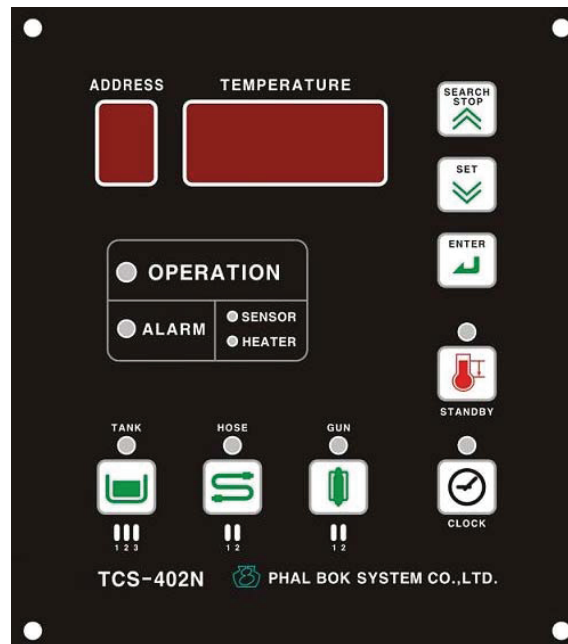
temperature by selecting the Address 2 ~ 6 in the same way as mentioned in No. ⑦.

⑨ If you press the enter  switch after changing all zones' temperatures as required and there is no other manipulation for 5 seconds, it is converted into the operation mode and the setting value is automatically stored.

\* If the hose and the gun are electrically connected , but the hose and the gun are not actually attached, the temperature should be set at 000°C by selecting the unused zone in the same way as mentioned in No. ③ ⑤ & ⑦.

If it is not done like that, the sensor is out of order, and the Sensor  LED and the Alarm  LED will turn on, sending an alarm output.

3) How to set the standby temperatures of the TANK, the HOSE, and the GUN




① The STANDBY temperature applies to all the zones of the TANK, the HOSE, and the GUN.

② The STANDBY temperature cannot be set individually for the TANK, the HOSE, and the GUN.

③ Press the SET  S/W for about 5 seconds and wait.


④ The current time appears.



⑤ If you press the STANDBY  S/W, the currently set STANDBY temperature is displayed.

If you want to change the set standby temperature, adjust the temperature as you want by using the upward S/W and the downward S/W.

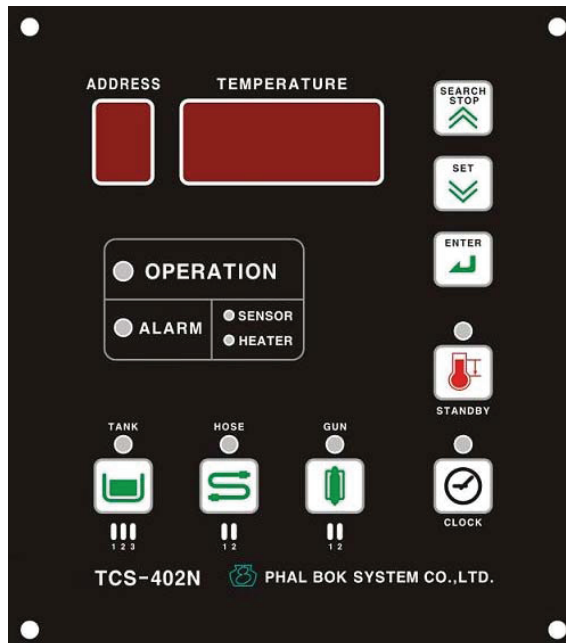
However, as mentioned in the No. ①, the Tank, the Hose, and the Gun are controlled equally by one temperature when the standby temperature is set.

⑥ At the time of setting the STANDBY temperature, set it 20 °C ~ 40 °C lower than the usually used set temperature.

⑦ If you press the Enter  switch after adjusting the STANDBY temperature and there is no other manipulation for 5 seconds, it is converted into the operation mode, and the Standby value is automatically stored.


⑧ If you press the Standby  S/W one time for 3 seconds at the normal operation mode, it is converted into the STANDBY temperature. (If you want to start a normal work in the STANDBY state, press the Standby  S/W one more time to return to the normal temperature.)

#### 4) GUN heating TUNING method



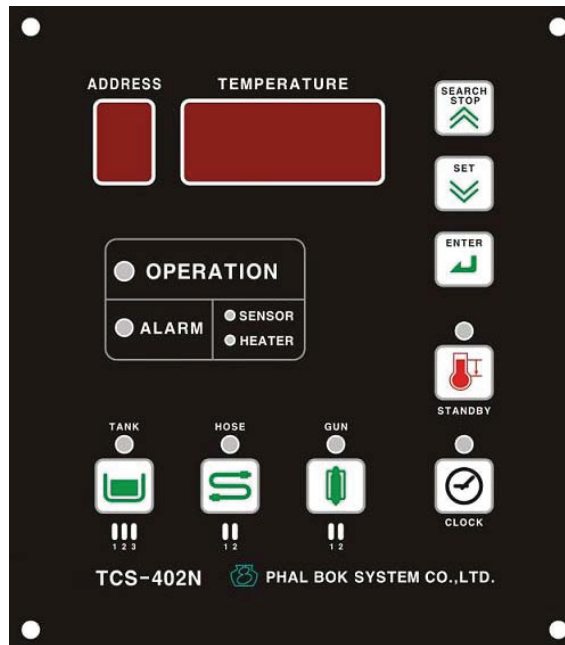
Depending on a type of the gun, the temperature of the Gun changes rapidly or very slowly from the set temperature when it is heated up to the set temperature. It is because the heat value is different depending on a type of the gun. Therefore, by setting a Gun heating tuning mode, the characteristics of heating can be automatically obtained and stored depending on the a type of the Gun. In this way, after completing the setting of the Gun heating tuning mode, you can heat depending on the optimized characteristics of the Gun. So, it can be controlled precisely up to the set temperature.









\* How to set the GUN heating tuning mode

- ① Only when the current temperature of the Gun is at least 10°C lower than the set temperature of the Gun, it is possible to set the Gun heating tuning mode. (For example, you can set the Gun heating tuning mode only when the set temperature of the Gun is 160°C and the current temperature of the Gun is less than 150°C.)
- ② When the current temperature of the GUN is 10°C lower than the set temperature of the Gun, press the GUN  S/W for about 10 seconds and wait.
- ③ “When ”Feep“ sound is heard, it is set to the Gun heating tuning mode.
- ④ When the current temperature of the Gun reaches the set temperature of the Gun, the Gun heating tuning mode is completed and the data is automatically stored. As the Gun can be heated with an appropriate heat value after the Gun heating tuning mode is completed, it can be controlled precisely up to the set temperature.
- ⑤ If you turn off and then turn on the power when the GUN heating tuning mode is set, the Gun heating tuning mode is released.


## 8. How to set the TCS-400N SERIES TIMER


- 1) The ON/OFF Time of TCS-400N SERIES can be controlled on a daily or weekly basis.
- 2) Before setting the TIMER, check if the set time for the product coincides with the current time. If it does not coincide with the current time, it must be corrected.
- 3) If it is not corrected to the current time, the product will be operated on the basis of the set time for the product. In that case, it may cause an accident or damage.
- 4) How to set the daily ON/OFF TIME





- ① Press the SEARCH STOP  S/W for 5 seconds.
- ② Check if “0” is displayed on the  address.
- ③ If “0” is not displayed, Set it to “0” by using the upward  S/W and the downward  S/W.
- ④ If you press the Enter  Switch after setting and there is no other manipulation for 5 seconds, it is converted into the operation mode, and the set value is automatically stored.
- ⑤ For ON-TIME setting, press the SET S/W for about 2 seconds and wait.
- ⑥ The current time appears.
- ⑦ If you press the CLOCK  S/W, the on-time   , which is currently set, is displayed on the TEMPERATURE LCD screen.


The currently set ON-TIME can be adjusted to the ON-TIME as required by using the

upward S/W and the downward S/W. ( means "ON".)

⑧ If you press the Clock  S/W one more time after adjusting the ON-TIME, the

OFF-TIME   is displayed. The OFF-TIME set time can be adjusted by

using the upward S/W and the downward S/W. ( means OFF.)

⑨ If you press the Enter  switch after setting the ON & OFF TIME and there is no

other manipulation for 5 seconds, it is converted into the operation mode, and the set value is automatically stored.

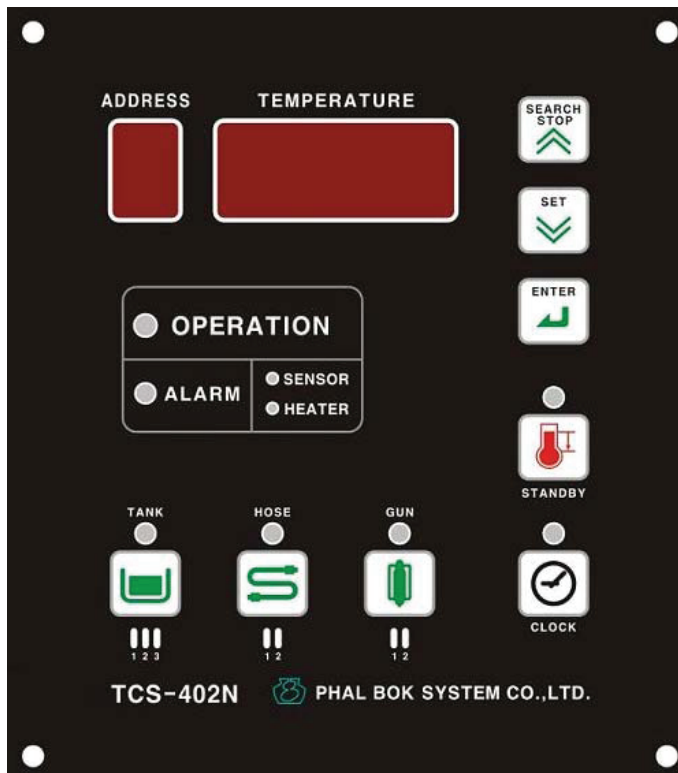
⑩ If you press the CLOCK S/W for 5 seconds in the operation mode, the power turns ON/OFF in accordance with the daily set timer.

⑪ If you press the CLOCK S/W one more time, the daily set timer is released.

\* If you do not use the TIMER, set the ON/OFF TIME to  in the same way

as mentioned in No. ⑦ and ⑧, or set the ON/OFF TIME to the same value.


5) How to set the weekly ON/OFF TIME





(1) How to set a day of week


① In the same way as in the daily TIMER, check first of all if the current time is correct.

② In the normal operation mode, press the SEARCH STOP  S/W for 5 seconds.

③  is displayed on the TEMPERATURE LCD screen.




④ If you press the upward  S/W one time,  is displayed.

(Figure 1 means Sunday.)


⑤ If you press the upward S/W one moer time,  is displayed.

(Figure 2 means Monday.)









⑥ Whenever the upward S/W is pressed as mentioned in No. ④ & ⑤, Figures from 1 to 7

are displayed on  and the TEMPERATURE window changes from  to .














⑦ The relevant day of week is set as mentioned above.

⑧ If you press the Enter  switch after setting and there is no other manipulation for 5 seconds, it is converted into the operation mode and the set value is automatically stored.

⑨ When setting a day of week, how to display “FND” related to the day of week is as follows.

No.	FND Display	Description
0		Daily ON/OFF TIME setting.
1		Weekly ON/OFF TIME setting. Set as SUNDAY
2		Weekly ON/OFF TIME setting. Set as MONDAY
3		Weekly ON/OFF TIME setting. Set as TUESDAY
4		Weekly ON/OFF TIME setting. Set as WEDNESDAY
5		Weekly ON/OFF TIME setting. Set as THURSDAY
6		Weekly ON/OFF TIME setting. Set as FRIDAY
7		Weekly ON/OFF TIME setting. Set as SATURDAY

## (2) How to set time

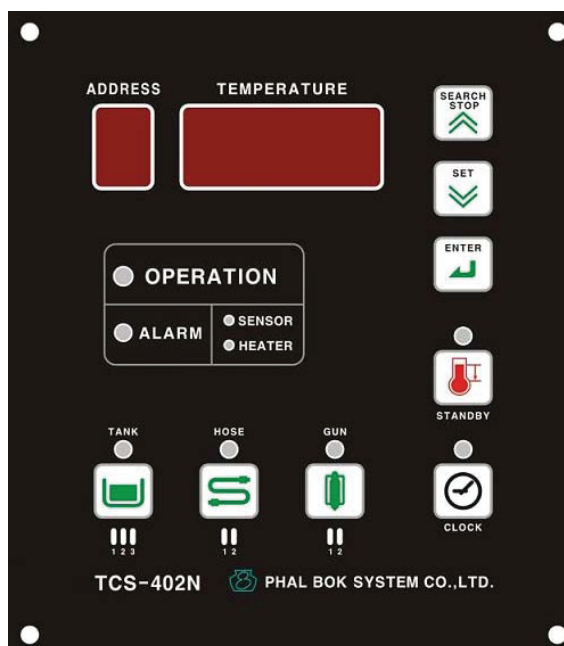
- ① Press the SET  S/W for 5 seconds.
- ② Press the CLOCK  S/W.
- ③  and  are repeatedly displayed on the ADDRESS window. (“0” means ON TIME and “1” means Sunday.)
- ④ Set the ON TIME by using the upward  S/W and the downward  S/W.
- ⑤ Press the CLOCK  S/W.
- ⑥  and  are repeatedly displayed. (“1” means OFF TIME and “1” means Sunday.)
- ⑦ Set the OFF TIME in the same way as mentioned in No. ④.
- ⑧ Press the CLOCK S/W.
- ⑨  and  are repeatedly displayed on the ADDRESS window. (“0” means ON TIME and “2” means Monday.)
- ⑩ Set the ON TIME in the same way as mentioned in No. ④.
- ⑪ As explained above, depending on the times of pressing the CLOCK S/W,  displays 1 ~ 7. When it displays Sunday ~ Saturday, you can set the ON TIME and the OFF TIME as you want, on the basis of the day of the week.
- ⑫ If you press the Enter  switch after setting and there is no other manipulation for 5

seconds, it is converted into the operation mode, and the set value is automatically stored.



⑬ If you press the Clock S/W for more than 2 seconds in the normal operation mode, the CLOCK S/W LED turns on, and the power turns ON/OFF depending on the set weekly timer schedule.

⑭ If you do not use the TIMER, press the CLOCK S/W one time to release it.



## 9. How to set the TCS-400N SERIES environment





### (1) How to set the FUNCTION MODE

① In order to set the function mode of TCS-400N Series, press the ENTER  Switch for 10 seconds to enter the Function mode. At that time, the ADDRESS  blinks and the value "0" of the Function mode is displayed on the Temperature

 indicator.

② You can change the Function mode from 0 to F by using the upward  switch and the downward  switch.

③ If you press the Enter  switch in the function mode you are going to change, the temperature  indicator blinks and it is converted into the function input mode.

④ In the function input mode, use the upward switch and the downward switch to change the function value, store it by pressing the Enter switch, and get out of the function input mode.

⑤ If there is no other manipulation for 5 seconds after completing the setting, it is converted into the operation mode.

⑥ (Caution) If there is no other manipulation for 5 seconds in the function input mode, it is converted into the operation mode, and the current function value is not stored.

⑦ The function mode is explained as shown in the following table.


No.	Function mode	Description	Setting range	Default value
0.	OP. ON Set temperature	If the temperature of the TANK, the HOSE, and the GUN is equal to or higher than the set temperature of the TANK, the HOSE, and the GUN minus the set temperature of OPERATION ON, then the OPERATION becomes ON.  Ex) OP. ON set temperature: -3°C, TANK, HOSE, GUN set temperature: 160°C In that case, the temperature when the OPERATION becomes ON is 157°C (160°C-3°C).	-1 ~ -20°C	-3°C
1.	OP. ON Delay time (Hour: Minute)	It is a delay time to put off OPERATION ON.	00:00 ~ 05:00	00:00
2.	OP. OFF Set temperature	If the TANK 1 temperature is lower than the TANK 1 set	-1 ~ -20°C	-20°C

		<p>temperature minus the set temperature of OPERATION OFF, then the OPERATION becomes OFF.</p> <p>Ex) OP. OFF set temperature:-20°C, TANK 1 set temperature:160°C The temperature when the OPERATION becomes OFF is 140°C (160°C-20°C).</p>		
3.	<p>OP. OFF Delay time (Hour: Minute)</p>	<p>It is a delay time to put off OPERATION OFF.</p>	<p>00:00 ~ 05:00</p>	<p>00:00</p>
4.	<p>Abnormal over set temperature</p>	<p>If the temperature of the TANK, the HOSE, and the GUN is equal to or higher than the set temperature of the TANK, the HOSE, and the GUN plus the abnormal over set temperature, then the Heater alarm of the relevant zone becomes ON.</p> <p>Ex) Abnormal over set temperature:15°C, TANK, HOSE, GUN set temperature:160°C The temperature when the HEATER alarm becomes ON is 175°C (160°C+15°C).</p>	<p>0 ~ 50°C</p>	<p>15°C</p>
5.	<p>Delay time of abnormal over temperature (Minute: Second)</p>	<p>It is a delay time to put off the Heater Alarm ON when the abnormal over temperature alarm occurs.</p>	<p>00:00 ~ 20:00</p>	<p>00:10</p>
6.	<p>Abnormal low set temperature</p>	<p>If the temperature of the TANK, the HOSE, and the GUN is lower than the set temperature of the TANK, the HOSE, and the GUN minus the abnormal over set temperature, then the Heater alarm of the relevant zone becomes ON.</p>	<p>-0 ~ -50°C</p>	<p>-5°C</p>

		temperature is too slow or fast.		
d.	Level alarm ON TIME (Minute: Second)	It is executed only when the level sensor is used. When the level sensor is in the "Low" position, set the time when the Low alarm output turns ON.  While the Low alarm output is on, the alarm sounds.	00:00 ~ 20:00	00:10
E.	BUZZER OFF/ON	It has the function of making the buzzer sound or not whenever pressing the switch of the control panel.	0(OFF) / 1(ON)	1(ON)
F.	Setting value initialization	It has the function of initializing the temperature setting value, the standby temperature value, and the Clock & function mode setting value.	0 / 1 (Initialization)	0

## (2) How to set the PARAMETER

① TCS-400N Series have very important parameters which are not frequently used.

In order to set the parameters, turn on the power and keep pressing the Tank 



switch for 3 seconds to enter into the Parameter setting mode.

Then, the ADDRESS  and  blink repeatedly and the value of the parameter

0 mode is displayed on the temperature  indicator.

② By using the upward  switch and the downward  switch, you can change the

parameter mode from 0 through 4.

③ If you press the Enter  switch when it is in the parameter mode you want to change, the temperature  indicator blinks and it is converted into the parameter input mode.

④ By using the upward S/W and the downward S/W in the parameter input mode, change the parameter value, store it by pressing the Enter switch, and get out of the parameter input mode.

⑤ If there is no other manipulation for 5 seconds after completing the setting, it is converted into the operation mode.

⑥ (Caution) If there is no other manipulation in the parameter input mode, it is converted into the operation mode, and the current parameter value will not be stored.

⑦ The parameter modes are explained as shown in the following table.

No.	Parameter mode	Descriptions		Setting range	Default value
0.	TCS-400D Program version	It indicates the program version of FND DISPLAY CONTROLLER BOARD. The parameter value cannot be changed.			
1.	TCS-400N Program version	It indicates the program version of TEMP. CONTROLLER MAIN BOARD. The parameter value cannot be changed.			
2.	Parameter setting of the maximum service temperature	It is the parameter which selects the maximum service temperature of 230°C or 250°C.		230°C/250°C	230°C
3.	Selection of the kinds of the TANK, the HOSE, and the GUN	t122	TANK:1unit, HOSE: 2units, GUN:2units	t122 ~ t366	t344
		t144	TANK:1unit, HOSE:4units, GUN:4units		
		t166	TANK:1unit, HOSE:6units, GUN:6units		

		t222	TANK:2units, HOSE:2units, GUN:2units		
		t244	TANK:2units, HOSE:4units, GUN:4units		
		t266	TANK:2units, HOSE:6units, GUN:6units		
		t322	TANK:3units, HOSE:2units, GUN:2units		
		t344	TANK:3units, HOSE:4units, GUN:4units		
		t366	TANK:3units, HOSE:6units, GUN:6units		
4.	Level sensor (Used/Not used)	TCS-400 SERIES TEMP' CONTROLLER has no level sensor.		0(Not used) /1(Used)	0
5.	Forced output time of HEATER	<p>At the temperature of lower than -15'C, the power is regarded as being cut off. So, the Heater cannot be heated. Therefore, the function of forcibly heating the Heater has been added. Only when the temperature of the Tank, the Hose, and the Gun is lower than 0'C, the Heater of the Tank, the Hose, and the Gun can be forcibly heated during the forced output time of the Heater.</p> <p>(Caution) For safety, check whether or not the temperature sensor is electrically well connected.</p>		0~9999 (About 4 minutes)	0

## 7-6. EACH ELECTRIC PART EXPLAIN

### ◆ PLATEN HEATER

**"INSERT TYPE"**

#### ◆ HEATER SPEC'

- ELECTRICAL : 220 VAC
- HEATING POWER (W) : 1500W x 1  
2500W x 1

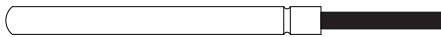
### ◆ PUMP MANIFOLD HEATER



#### ◆ HEATER SPEC'

- ELECTRICAL : 220 VAC
- HEATING POWER (W) : 1000W x 2
- LENGHT (L) : (1/2 inch) 110 mm

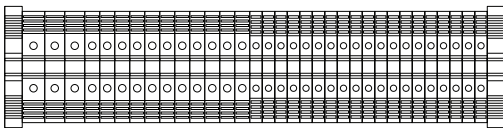
### ◆ RTD SENSOR



#### ◆ SENSOR SPEC'

- TYPE : PT TYPE
- LENGHT (L) : 45 mm

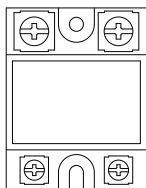
### ◆ TERMINAL (BSDM-5)



#### ◆ TERMINAL SPEC'

- MAIN TERMINAL
  - ELECTRICAL POWER : 630 VAC
  - ELECTRICAL CURRENT : 57[A]
- SPARE #1 TERMINAL
  - ELECTRICAL POWER : 630 VAC
  - ELECTRICAL CURRENT : 41 [A]
- SPARE #2 TERMINAL
  - ELECTRICAL POWER : 750 VAC
  - ELECTRICAL CURRENT : 32 [A]
- SPARE #3 TERMINAL
  - ELECTRICAL POWER : 750 VAC
  - ELECTRICAL CURRENT : 24 [A]
- SPARE #4 TERMINAL
  - ELECTRICAL POWER : 500 VAC
  - ELECTRICAL CURRENT : 17.5 [A]
- SPARE #5 TERMINAL
  - ELECTRICAL POWER : 500 VAC
  - ELECTRICAL CURRENT : 6.3 [A]

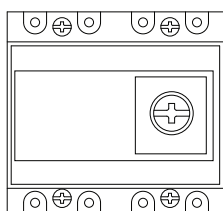
◆ S . S . R



◆ TANK S.S.R SPEC'

- INPUT POWER : 3 - 32 VDC
- ELECTRICAL POWER : 240 VAC
- ELECTRICAL CURRENT : 50 [A]

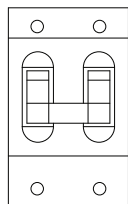
◆ MCCB ( MOLDED CASE  
CIRCUIT BREAKER)



◆ MCCB SPEC'

- ELECTRICAL POWER : 220 VAC
- ELECTRICAL CURRENT : 50 [A]
- TYPE : ABS 53b (LS)

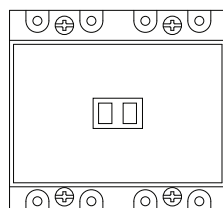
◆ PUMP SWITCH



◆ PUMP SWITCH SPEC'

- ELECTRICAL POWER : 220 VAC
- ELECTRICAL CURRENT : 4 [A]
- TYPE : MS TYPE

◆ CONTACTOR



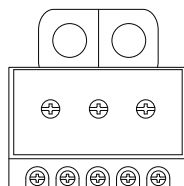
◆ CONTACTOR #1 SPEC'

- ELECTRICAL POWER : 220 VAC
- ELECTRICAL CURRENT : 50 [A]
- TYPE : GMC-50 (LS)

◆ CONTACTOR #2 SPEC'

- ELECTRICAL POWER : 220 VAC
- ELECTRICAL CURRENT : 20 [A]
- TYPE : GMC-22 (LS)

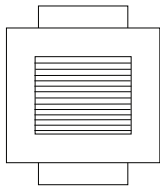
◆ EMPR



◆ EMPR SPEC'

- ELECTRICAL POWER : 220 VAC
- ELECTRICAL CURRENT : 6 [A]
- FREWUENCY : 50/60Hz
- TYPE : GMP 60T (LS)

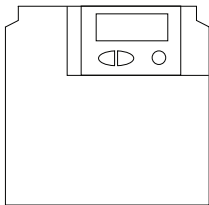
◆ TRANSFORMER



◆ TRANSFORMER SPEC'

o INPUT POWER	:	220 VAC
o OUTPUT POWER	:	220 VAC
o TYPE	:	22-220 [AF]

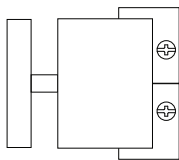
◆ INVERTER



◆ INVERTER SPEC'

o POWER	:	1.5 [Kw]
o INPUT	:	13 [A]
o OUTPUT	:	8 [A]
o TYPE	:	FR-E520-1.5K (MITSHBISHI)

◆ EMG (EMERGENY S/W)



◆ EMG SWITCH SPEC'

o ELECTRICAL POWER	:	220 VAC
o COLOR	:	RED

◆ TOP LAMP



◆ TOP LAMP SPEC'

o INPUT	:	24 VAC
o POWER	:	10W
o COLOR	:	GREEN, YELLOW, RED

◆ SURGE UNIT

◆ SURGE UNIT SPEC'

o ELECTRICAL POWER	:	200-240 V
o TYPE	:	AS-13 (LS)

◆ NOISE FILTER

◆ NOISE FILTER SPEC'

o ELECTRICAL POWER	:	250 V
o ELECTRICAL CURRENT	:	6 [A]
o TYPE	:	SN-M6N-CM (FINE SUNTRONIX)

◆ POWER SUPPLY

◆ POWER SUPPLY SPEC'

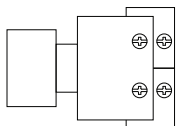
o INPUT POWER	:	240 VAC
o OUTPUT POWER	:	DC 24 V
o TYPE	:	MSF 35-24 (FINE SUNTRONIX)

◆ MOTOR

◆ MOTOR SPEC'

o ELECTRICAL POWER	:	220 V
o POWER	:	1HP
o FREWUENCY	:	Ø3 ,50/60Hz

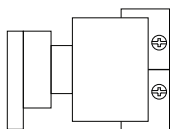
◆ POWER SWITCH (OFF)



◆ POWER SWITCH SPEC'

- ELECTRICAL POWER : 220 VAC
- COLOR : BLUE

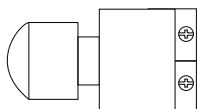
◆ PUMP SWITCH



◆ POWER SWITCH SPEC'

- ELECTRICAL POWER : 220 VAC
- COLOR : BLACK

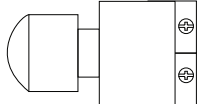
◆ POWER LAMP (ON)



◆ POWER LAMP SPEC'

- ELECTRICAL POWER : 220 VAC
- COLOR : GREEN

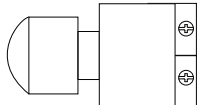
◆ PUMP LAMP



◆ PUMP LAMP SPEC'

- ELECTRICAL POWER : 220 VAC
- COLOR : WHITE

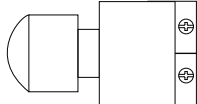
◆ OVERTEMP LAMP



◆ OVERTEMP LAMP SPEC'

- ELECTRICAL POWER : 220 VAC
- COLOR : GREEN

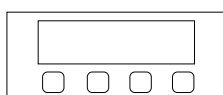
◆ HEATING LAMP



◆ HEATING LAMP SPEC'

- ELECTRICAL POWER : 220 VAC
- COLOR : YELLOW

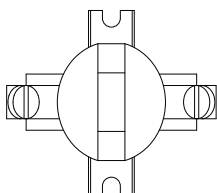
◆ R.P.M METER



◆ R.P.M METER SPEC'

- INPUT POWER : 220 VAC
- OUTPUT POWER : DC 10 V

◆ OVERTEMP SWITCH



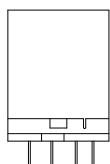
◆ OVERTEMP SWITCH

- TEMP REACH AT 450°F IS OFF
- IF S/W I OFF, COTOFF TANK HEATER POWER, TURNON THE SAFETY DEGREE.
- PREPARE TO TANK OVER HEATING

◆ RELAY

◆ RELAY

- WHEN INOUT OPERATION SIGNAL USING OF EARTH.
- ELECTRICAL POWER : AC 220



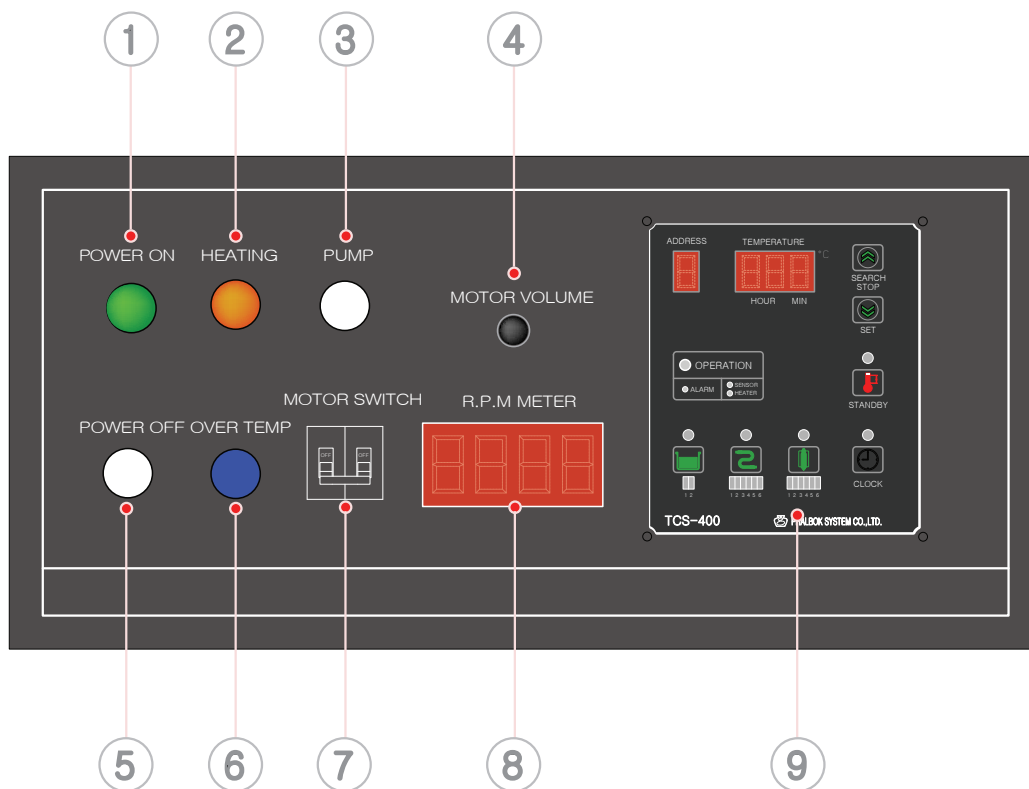
◆ TEFRON WIRE

◆ TEFRON WIRE

- THIS TEFRON WIRE IS OVERCOME IN THE HIGH TEMPERATURE

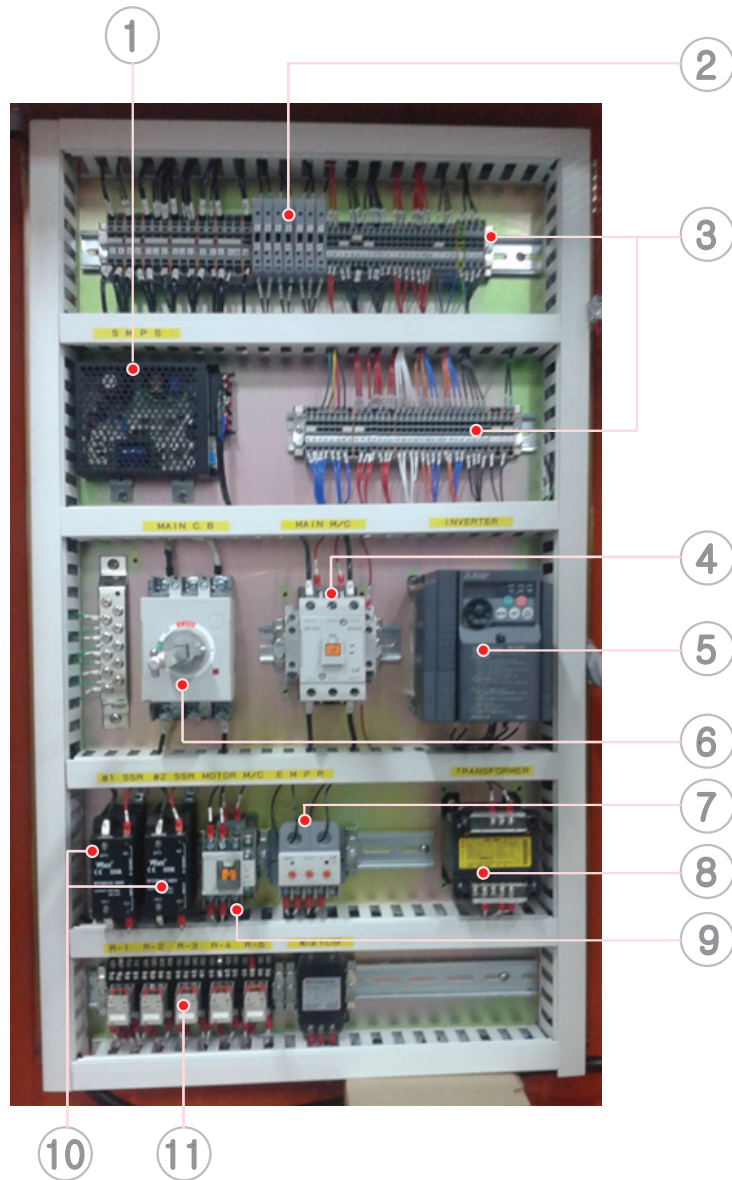
## 8. PART LIST

### (1) BSDM-5 FRONT PANEL.



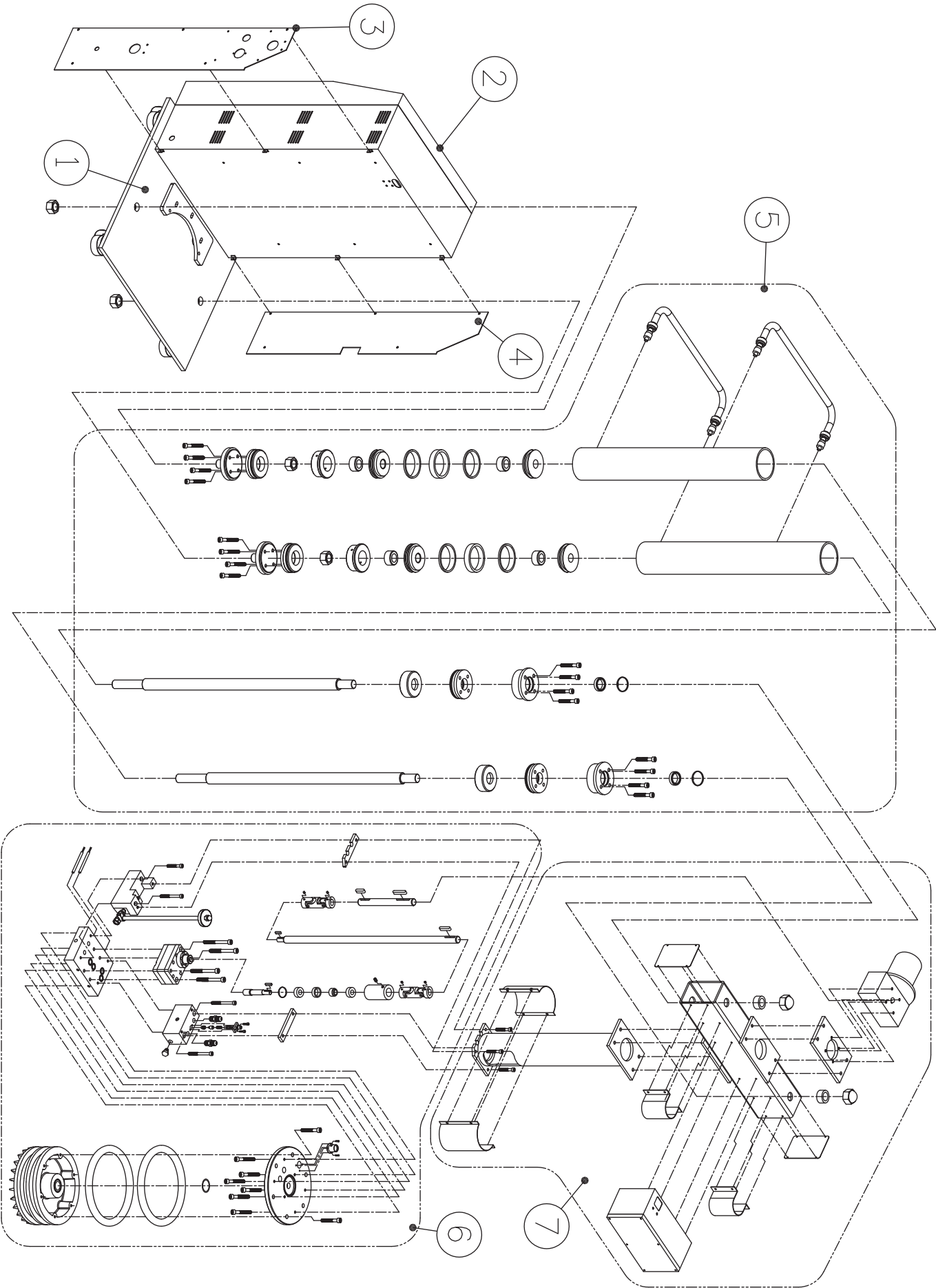
NO	PART NO	INDIBATOR
1	DM0508-1	MAIN POWER LAMP
2	DM0508-2	HEATING LAMP
3	DM0508-3	PUMP LAMP
4	DM0508-4	R.P.M METER VOLUME
5	DM0508-5	POWER OFF SWITCH
6	DM0508-6	OVER TEMP LAMP
7	DM0508-7	MOTOR SWITCH
8	DM0508-8	R.P.M METER
9	DM0508-9	TEMP CONTROLLER (TCS-400N)

## (2) BSDM-5 FRONT INNER PANEL.



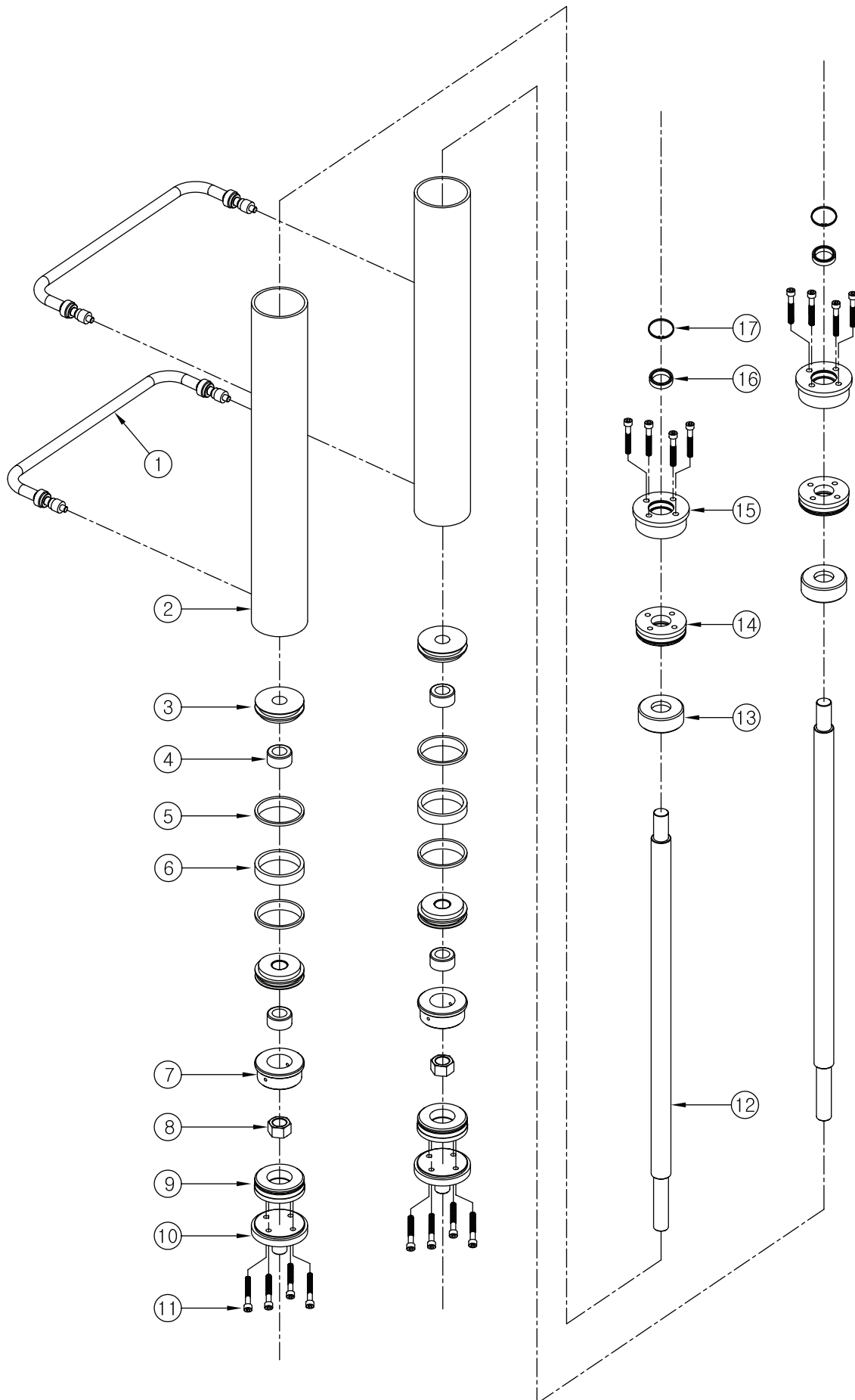
NO	PART NO	INDIBATOR
1	DM0509-1	POWER SUPPLY
2	DM0509-2	TERMINAL BLOCK FUSE
3	DM0509-3	TERMINAL BLOCK
4	DM0509-4	MAIN MAGNET
5	DM0509-5	MOTOR INVERTER
6	DM0509-6	MAIN 누전차단기
7	DM0509-7	MOTOR 과부하계전기
8	DM0509-8	TRANSFORMER
9	DM0509-9	MOTOR MAGNET
10	DM0509-10	RELAY
11	DM0509-11	SSR

(3) BSDM-5 DEAL DRAWING & SPEC.



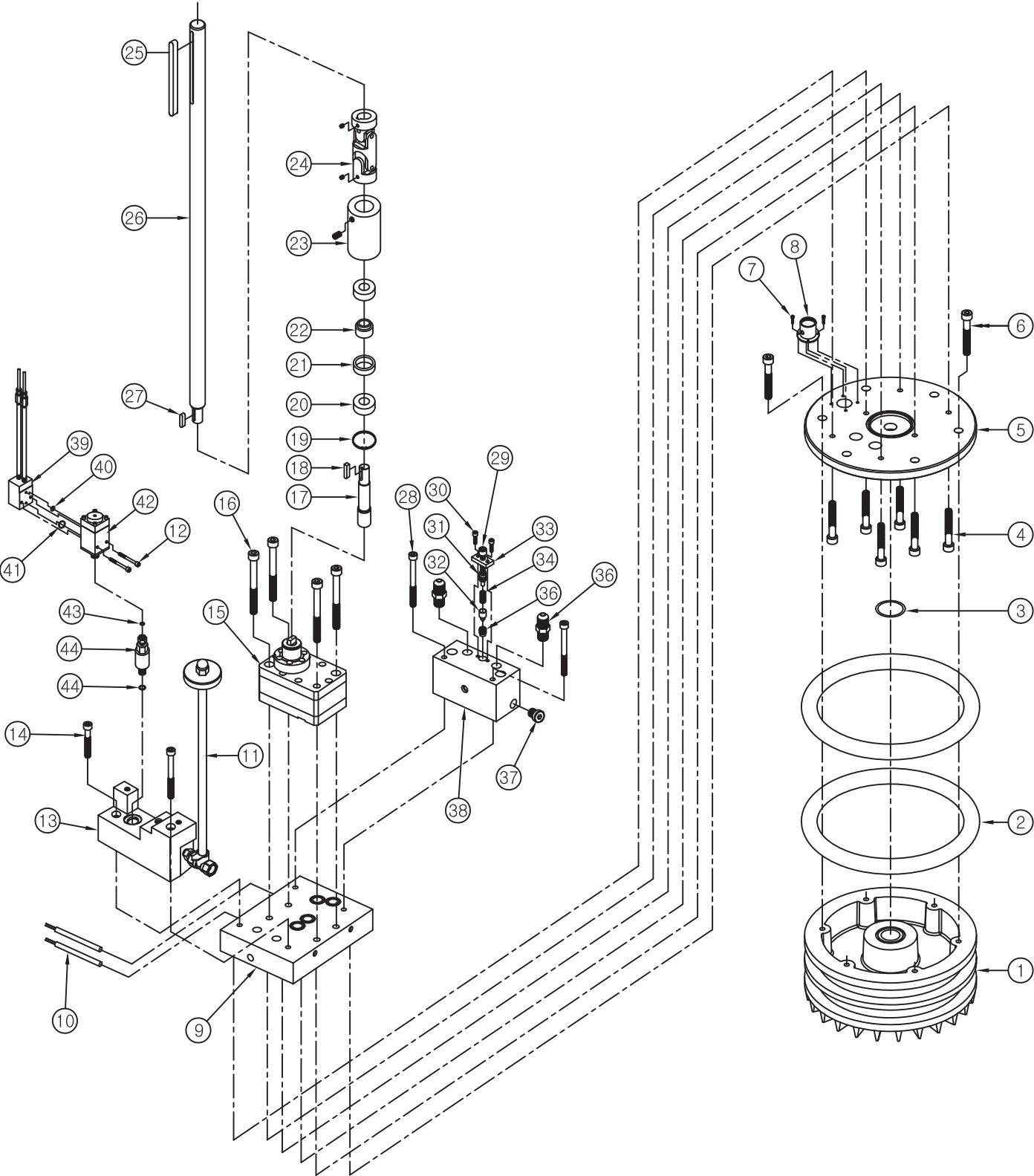


## (4) AIR CYLINDER DEAL DRAWING & SPEC.





(5) PLATEN & PUMP BLOCK DEAL DRAWING & SPEC.



◆ PLATEN & PUMP BLOCK DEAL DRAWING & SPEC.

NO	Q'TY	PART / NO	CONTENT / SPEC'
1	1	DM0506-01	PLATEN
2	2	DM0506-02	O-RING
3	1	DM0506-03	O-RING (G40)
4	6	DM0506-04	WRENCH BOLT
5	1	DM0506-05	PUMP BLOCK
6	6	DM0506-06	WRENCH BOLT
7	4	DM0506-07	WRENCH BOLT (M8 x 35L)
8	1	DM0506-08	FLEXIBLE HOLDER
9	1	DM0506-09	FILTER BLOCK
10	1	DM0506-10	HEATER
11	1	DM0506-50	PURGE ON/OFF HANDLE
12	2	DM0506-12	WRENCH BOLT (M6 x 50L)
13	1	DM0506-51	PURGE BLOCK
14	2	DM0506-14	WRENCH BOLT
15	1	DM0506-15	GP4 PUMP
16	4	DM0506-16	WRENCH BOLT (M10x 80L)
17	1	DM0506-17	JOINT SHAFT
18	1	DM0506-18	KEY
19	1	DM0506-19	SNAP RING
20	2	DM0506-20	BEARING (6003)
21	1	DM0506-21	SPACER
22	1	DM0506-22	STOP RING
23	1	DM0506-23	B.G HOLDER
24	1	DM0506-24	UNIVERSAL JOINT (1)
25	1	DM0506-25	KEY
26	1	DM0506-26	UNIVERSAL JOINT SHAFT

◆ PLATEN & PUMP BLOCK DEAL DRAWING & SPEC.

NO	Q'TY	PART / NO	CONTENT / SPEC'
27	1	DM0506-27	KEY
28	1	DM0506-32	WRENCH BOLT (M8 x 70L)
29	1	DM0506-33	F. C. V BOLT
30	1	DM0506-34	WRENCH BOLT (M5 x 15L)
31	1	DM0506-35	O-RING (AN012)
32	2	DM0506-36	DEMPER
33	1	DM0506-37	F. C. V BOLT BRACKET
34	2	DM0506-38	SPRING
35	2	DM0506-39	SEAT
36	1	DM0506-40	HOSE NIPPLE
37	1	DM0506-41	BLANK (PS3/8")
38	1	DM0506-42	F. C. V BLOCK
39	1	DM0506-43	BLOW BLOCK
40	2	DM0506-44	O-RING
41	1	DM0506-45	O-RING
42	1	DM0506-46	BLOW MODULE
43	1	DM0506-47	O-RING (P9)
44	1	DM0506-48	BLOW MODULE NIPPLE
45	1	DM0506-49	O-RING (P14)

## 9. INSTALLATION AND OPERATION CAUTIONS

### 9-1. HOT MELT SUPPLY HOSE

- 1) To prevent damage to the HOT MELT SUPPLY HOSE, do not bend the HOT MELT SUPPLY HOSE when the temperature is cold. HOT MELD SUPPLY HOSE should have 200mm bending-radius (operation temperture). If less, there can be permanent damage.
- 2) HOT MELT SUPPLY HOSE must be heated before it is loosened or tightened. Or else, there can be damage done to the HOSE. A new, clean SUPPLY HOSE does not need to be heated.
- 3) PLATEN must be placed on the ascending position and the MANIFOLD (steam pipes) must have easy access to it when installing HOT MELT SUPPLY HOSE on BSD-SERIES DRUM UNLOADER.
- 4) If HOT MELT SUPPLY HOSE is not supported appropriately, the SUPPLY HOSE will be damaged or may pose danger to the installer. Support the HOSE so that it does not bend too much. HOT MELT SUPPLY HOSE should not be fixed or supported where it is hot as it may cause damages or fire from overheating.
- 5) After installation of a used HOT MELT SUPPLY HOSE or a new one, the temperature scale on HOT MELT SUPPLY HOSE must be regularly checked. HOT MELT SUPPLY HOSE may be changed and each HOSE may show different temperature results.

### 9-2. STARTING/OPERATING BSD-SERIES DRUM UNLOADER

#### 1) WARNING

If the materials used outside and inside the HOT MELT SUPPLY equipments do not satisfy the following requirements, there are risks of fire, explosion, injuries and damages.

- A. Equipment used on lowest ignition temp. should be at least 50°F(28°C) above operating temperature.
- B. Liquid and gas should not be inflammable or toxic in the operating temperature.
- C. Mixture of materials (e.g: Cleaning and adhering , or adherents from different brands) should not react violently under the following circumstances:
  - \* Heat or flame (inflammatory reactions)
  - \* Toxic gas as a byproduct of a reaction
  - \* Cross-linking or neutralization of the property of an adherent that melts in certain temperatures.
- D. Properties of HOT MELT must not deteriorate, wear out or weaken HOT MELT equipment itself. Always check information provided by the manufacturer.
  - \* Always be aware of controlling HOT MELT supply equipment.
  - \* Wire connecting HOT MELT supply equipment must always be one that is specified.
  - \* Operate PLATEN HEATER on CONTROL PANEL to give 45 minutes of warm up time.
  - \* See HOT MELT SUPPLY HOSE and PLATEN to the temperature you wish. (See maker's advice on temperature of materials) If lowered, it will increase the pot durability of the material. Some cause oxidation and lower the value of overtime.

#### 2) CAUTION

Do not switch to a different HOT MELT without testing outdoors.  
Some chemicals tend to turn into jelly or become denser. Move the DRUM if necessary.

## 9-3. PAIL INSERTION & DETACHING.

External diameter of PLATEN with SEAL attached is slightly bigger than internal diameter of the standard 5(55)gallon PAIL. So it is fit in by force and is sealed tightly during operation. This type of sealing is necessary for the inside of the PAIL to be unpolluted and for PAIL LOADER to function properly.  
Take care not to damage the PAIL or the UNIT.

### 1) WARNING

Insertion of a disfigured PAIL LOADER requires caution. Too much pressure can blow up the PAIL. With many motions, slowly lower PLATEN into the PAIL until appropriate sealing forms. Do not try to insert PLATEN into a heavily deformed PAIL.  
This can cause physical injuries.

### 2) WHEN INSERTING PLATEN INTO THE PAIL

1. Press UP on the cylinder UP/DOWN switch. PLATEN must be "UP".
2. push PLATEN pollution pedestal to PLATEN lower part inside.
3. Separate PAIL lid and raised it in position among PLATEN lower part.
4. move PLATEN pollution pedestal to side.
5. Make AIR 3 stages switch to "ON" (to PURGE direction).
6. Cylinder UP, DOWN switch to DOWN. Insert PLATEN to PAIL
7. When PLATEN O-RING is inserted to PAIL inside, insert controlling cylinder UP, DOWN switch to STOP and DOWN direction.
8. About 10 minutes and after, do 3 stages switch to "ON" to PURGE direction. if ADHESIVE flow out by PURGE VALVE. make the 3 stages switch to RUN position and works. This time, cylinder SWITCH must be "DOWN" position.

### 3) PUMPING INGREDIENTS

Now PLATEN is appropriately inserted into the PAIL and the ingredients are PUMPING out of the PAIL.

1. Turn ON the PUMP S/W on the CONTROL PANEL.
2. Leave for 10~25 minutes for appropriate amount of ingredients to melt.
3. As the system first starts pumping, the air still left in the PAIL and the hose.

#### 4) WHEN DETACHING PLATEN FROM THE PAIL

1. Turn the cylinder's UP/DOWN control to UP
2. Move to 3 stages switch's BLOW OFF direction, External AIR enters PLATEN and PAIL inside, This time, air separates PLATEN and PAIL.

#### ◆ NOTICE ◆

If separate PAIL at a time, big noise can produce because vacuum state occure.  
To prevent this, Extract doing two-way removal to RUN direction whith 3 stages switch's BLOW OFF

## 10. PROBLEM SOLVING FOR DRUM UNLOADER

[ TABLE 1-1 ]

	SOLUTION											
	PLATEN NOT HEATED	PLATEN HEATED SLOWLY	PLATEN OVERHEATED	SYSTEM HEATED SLOWLY	PLATEN · HOSE NOT HEATED	HOSE OVERHEATED	PUMP NOT OPERATING	PUMP MOTOR STOPPED	PUMP MOTOR OVERLOADED	PLATEN NOT DESCENDED	DRUM NOT INSERTED	DRUM NOT SEPARATED
1. INCOMING VOLTAGE	○	○		○	○	○	○					
2. MAIN CIRCUIT BREAKER	○				○		○					
3. POWER CORD	○				○							
4. SYSTEM WIRING & FUSE	○				○		○					
5. T-300 CONTROLLER	○	○	○	○	○	○	○	○				
6. OVERHEATING S/W	○		○									
7. PLATEN HEATER	○	○	○		○			○				
8. SUPPLY HOSE HEATER					○							
9. PUMP S/W BLOCKER							○	○	○			
10. FLOW CONTROL VALVE							○	○	○			
11. PUMP							○	○	○			
12. PUMP MOTOR							○	○	○			
13. FOREIGN SUBSTANCE IN THE PUMP							○	○	○			
14. PCSV										○	○	
15. DRUM BLOWOFF VALVE												○
16. PLATEN SEAL											○	○
17. DAMAGED DRUM											○	○

## ⌘ PROBLEM SOLVING ⌘

The following solutions share the same problem solving as [Table 1-1].

Insufficient voltage levels can cause this problem. It's a common problem observed with electronic devices, so it's recommended to use a voltmeter to check the power levels being fed to the unit. Also, voltage levels for each part must be suitable.

(Refer to electrical wiring & drawing)

- \*. Problem D – Check the voltage levels for the APPLICABLE heater and HOT MELT feed hose and check FUSE for each part.
- \*. Problem G – Check the exact voltage levels and pump motor's frequency displayed.

### 1. INCOMING VOLTAGE

In accordance with customer requests, required voltage for the system is single phase 220VAC, 3-phase 220VAC, and 3-phase 380VAC (3-phase, 4-wire system).

### 2. MAIN CIRCUIT BREAKER

Check for any faults in the electric system, and mechanical system of the BSDM-SERIES unloader. It also checks for correct connections between parts and for faulty wiring. In addition, it checks the main power supply wiring as well.

### 3. POWER CORD

Check for correct connections between parts and for faulty wiring. Also, it checks the main power supply wiring.

- \* Check if the input hose power connector is installed correctly. The connector wiring pin is either placed in the wrong place or unplugged slightly. It also checks the power connector of output hose. This must be set up in strided with the power connector on top of PLATEN.

### 4. SYSTEM WIRING

Check the electrical network diagram to see the melting unit is correctly wired up, and check each connection. If the problem persists, check each part's condition with a voltmeter (if the system is powered) or with a OHM meter (if not powered).

### 5. TCS-400N TEMPERATURE CONTROLLER

#### PROBLEM SOLVING FOR TCS-400N TEMPERATURE CONTROLLER

This is to see if the system has an error by checking whether the display is showing the correct temperature or not. If the controller does not work, RTD sensor or controller needs to be replaced. Turn the system off and use the OHM meter to check the consistency of 100 OHM sensor. Display must show a number from 106~110 OHM. (Sensor should show 0~100 OHM). Replace sensor if necessary. (Refer to TCS-400N manual for details)

- \*. If TCS-400N TEMPERATURE CONTROLLER is broken, overheat THERMO switch takes over the control of PLATEN heater. Overheat switch was designed to prevent PLATEN from reaching dangerous temperature levels. If the switch opens, SHUT DOWN DELAY TIME operates and the system turns off after designated cool down.
- \*. When TCS-400N is broken, overheat THERMO S/W takes over the PLATEN heater. Overheat switch is designed to prevent PLATEN from reaching dangerous temperature levels. If switch opens, SHUT DOWN DELAY TIME operates and the system turns off after designated cool down period.
- \*. Problem T – If thermo switch opens when PLATEN is at SETTING temperature or lower, THERMO switch is set at levels that are too low or thermo switch must be broken. In these two cases, thermo switch must be replaced.

## 6. OVERHEATING SWITCH

When overheat switch operates, the warning light(red) and audible alarm are turned on. Designated MAIN OFF DELAY TIMER(60 seconds ) operates ad after designated time "T", main power is cutt off. To turn the system back on, open the controller box and turn the main cutoff switch "OFF" and back "ON" again. If this is done during DELAY TIME, warning signs will turn off and system will operate normally.

## 7. PLATEN HEATER

PLATEN HEATER is a one-piece component and each heater has a heating capacity of 240V 8Kw. HEATER CHECK can be checked in the electrical connection box on top of PLATEN.

## 8. SUPPLY HOSE HEATER

Check SUPPLY HOSE and HEATER 1~3, 6.  
If the problem persists, detach the incoming power connector and with OHM meter, check the resistance. If the HOSE heater is broken, it must be replaced.

## 9. PUMP S/W BLOCKAGE

PUMP S/W is connected in the following order: POWER → FUSE → MAGNET → MOTOR PROTECTION RELAY → INVERTER → MOTOR

\*. Current levels for the realy can be designated.

## 10. FLOW CONTROLLER VALVE

Performance of DRUM UNLOADER can be maximized by setting up F.C.V correctly. If F.C.V does not work, it must be replaced.

## 11. PUMP

PUMPING BY BSD-SERIES:

- \*. Problem A – Check PURGE VALVE and make sure it's closed.
- \*. Problem B – Move the DRUM and check PLATEN. Check if there are any foreign substances near the input/output areas. Gear pump can wear out with use and must be repaired or replaced in this case. Check the input/output of the gear pump and remove any foreign objects.
- \*. Problem C – If there's any HOT MELT spillage between PUMP and PLATEN, tighten the bolts that are fixing F.C.V. Replace the O-Ring if problem persists.
- \*. Problem D – Pump must be seriously worn out in this case. Check the condition of the PUMP by removing it from PLATEN, and if necessary, replace the pump.

## 12. PUMP MOTOR

Generally, PUMP MOTOR is the last item on checklist when there's a problem with the system. Each motor is heat-shielded. Turn the PUMP S/W to "OFF" position and cool the motor for 20 minutes, and turn it back on. If it still does not work, it must be replaced.

## 13. FOREIGN SUBSTANCE IN THE PUMP

Remove any foreign substances inside GEAR PUMP. If needed, use STRIP-N-CLEAN to clean the system.

2. In case that a platen and a can do not separate  
(When a blow does not operate)
  - 1) After separating the can fixing bracket assembling conversely that the round-processed part faces inside as [Fig. 3] and [Fig. 4], assemble it for both sides to fasten to the bottom of can tightly.
  - 2) Make a hole at the bottom of the can using a sharp pointed stuff such as a awl. (In order to let air flow into the can when the platen and can separate)
  - 3) Lift up the platen.
  - 4) After separating the platen and can, use it after repairing or cleaning so that the blow pipe line operates normally.

\* Use this way to separate a platen and a can only,  
and use it fastening it usually as [Fig. 1] and [Fig. 2].



[Fig. 3]

Can Fixing Bracket



[Fig. 4]

## 16. PLATEN SEAL

- \* Check if the SEAL is worn out of broken.
- \* This should go under maintenance regularly.

## 17. PHYSICALLY DAMAGED DRUM

- \* Check for dents and holes on the DRUM.
- \* If there are any deformations or holes, they may cause problems to the entire system. Exercise extreme caution if operating under these conditions.

## 11. TESTING/PROTECTING DRUM UNLOADER

BSD-SERIES DRUM UNLOADER requires periodical temperature check, as stated in this manual..

If parts become black, or HOT MELT physically changes, use cleaner such as "Strip-N-Clean" to clean it. Follow the following warnings before maintenance.

### 1) WARNING

HOT MELT ingredients can cause serious burns that may lead to tissue damages/loss of eyesight.

1. Always wear protective goggles and protective suits.
2. Turn the PUMP S/W off.
3. Always cool the unit before maintenance, if not stated otherwise in the manual.
4. Disconnect electrical connectors from HOT MELT SUPPLY HOSE.

### 2) CAUTION

To prevent damage to HOT MELT SUPPLY HOSE, PLATEN, GEAR PUMP and the entire system, always heat the system to about 250 °F (120°C) before disassembling/assembling and modifications. When dealing with heating components, always be careful for compressed glue inside the system which may lead to serious combustion.

Component heating is done as follows:

- \* Supply the unit with electricity
- \* Use a hand-held hot air gun
- \* Fit the component onto HOT PLATE

### 3) GENERAL TEST

All industrial machinery tend to wear out after use, and BSD-SERIES DRUM UNLOADER is not an exception. Components that require periodical maintenance and replacement/repair are listed below.

1. Check for excess abrasion and damage to exposed parts of PLATEN SEAL.  
Replace it if necessary .
2. Check if the connections to CONTROLLER BOX and JUMP BOX are loose.  
Fasten them if necessary .
3. Check for leaks in various air-related components and valves. Replace/Repair as needed.

## 4) HOT MELT SUPPLY HOSE TEST

1. Check if the HOT MELT SUPPLY HOSE is properly supported, and not overly pressured by other components. It must be bent at least 200mm in radius.
2. Check the temperature of HOT MELT SUPPLY HOSE and adjust as necessary.
3. Check the temperature of HOT MELT SUPPLY HOSE only when it's not heated properly. To check the temperature, check near the end of the HOSE. HOT MELT SUPPLY HOSE is hooked up to the unit and electricity, so exercise caution when doing so.
4. To check the temperature of HOT MELT SUPPLY HOSE, place PLATEN in "UP" position and turn CONTROLLER BOX's PUMP S/W to "OFF" position.
5. After PLATEN is removed from the DRUM, insert thermometer into the HOSE about 1m. Connect the input power connector for the supply hose. Check the temperature of the HOSE and adjust the temperature as necessary. Stabilize temperature of HOT MELT SUPPLY HOSE and remove the thermometer. Reconnect HOT MELT SUPPLY HOSE.

## 5) PLATEN TEST

1. Move the DRUM from the system to check any excessive surface burns on the exterior of PLATEN. Carefully wipe the "heated" surface with clean cloth and cleaner such as "Strip-N-Clean". Dip the entire PLATEN into a container filled with cleaning fluid if there are a lot of stains. Never use a sharp object to PLATEN as it can scratch teflon coating of PLATEN.
2. Check surface temperature of PLATEN and adjust as necessary.

## 6) PLATEN SEAL CHANGE

1. Move PLATEN from the DRUM and set PLATEN to operational temperature.
2. Lift the SEAL from the groove it's fixed into using 2 screwdrivers. Pull it out to the end of the PLATEN.
3. Clean the surface of the PLATEN before replacing the SEAL.
4. Turn off PLATEN HEATER and cool it down.
5. Roll on the new SEAL from the back of PLATEN and fix it onto the groove on PLATEN. It's also possible to hook the SEAL up with wires on both sides and pull them from the front of PLATEN. After fixing the new SEAL onto PLATEN, wires need to be cut off.