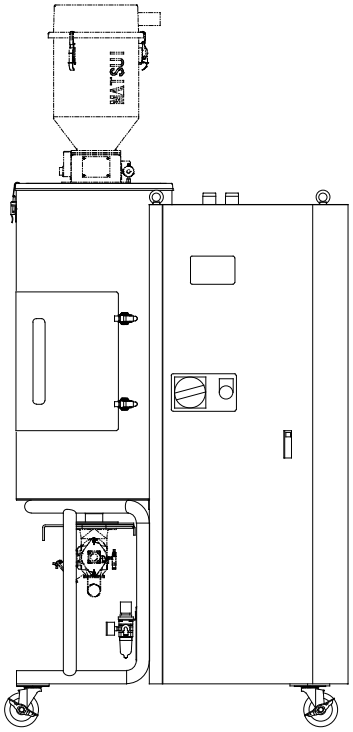
MATSUI GLOBAL DRYER

MGD-15～300J

Instruction Manual

⚠ WARNING

You must properly use your MATSUI GLOBAL DRYER by thoroughly reading this manual.
Keep this manual near the MATSUI GLOBAL DRYER so that it can be easily accessed whenever necessary.



MATSUI®

Issued in January 2021

Product Warranty

Thank you very much for purchasing our product. Please carefully read this instruction manual for correct and safe use. In addition, this page of this instruction manual serves as the product warranty. Make sure to carefully store the instruction manual after reading it.

1. Warranty period

   Warranty of this product warrants repair or replacement of parts free of charge if any failure occurs even when this product is normally used according to the operation procedures, etc., within the warranty period of the product warranty.

   In addition, failure products shall be returned to us.

   1) The warranty term of the product is 12 months after the initial operation, but shall not exceed 15 months after the date of shipment of the product.
   2) The warranty period for parts replaced during repairs shall be three months from the date of repairs.

2. Scope of Warranty

   The following items, if applicable, are not covered by the free warranty even within the warranty period.

   1) Failure or damage caused by modifications or repairs carried out by any person other than us
   2) Failure or damage caused by natural disasters such as earthquake, typhoon, flooding, etc., and accident or fire
   3) Failure or damage caused by use exceeding the limit of the specifications described in this instruction manual, catalog, etc., or by installation environment
   4) Failure or damage caused by improper use or handling
   5) Effect on products caused by external factors
      (Paint peeling due to generated gas, malfunction due to electrical noise, etc.)
   6) Failure or damage caused by use of parts other than genuine parts (oil, medium, filter, etc.)
   7) Consumables (hoses, filters, packings, O-rings, electric magnet contactors, mechanical seals, etc.)
   8) When the product is transferred or leased to third party

   ● The scope of warranty includes up to repair or replacement of parts of our products, and does not include products manufactured by use of our products and damage to other products due to failure or use of our products. In addition, “transportation expenses,” “customs duties,” “travel expenses” and “commuting expenses” associated with the repair or replacement of parts shall be separately paid.

   ● The product price does not include the following service expenses. They are separately charged. (However, this does not apply if the contract includes the following)
      1) Technical guidance and technical education
      2) Installation adjustment guidance and trial operation attendance
      3) Maintenance and inspection, adjustment and repair

3. After expiration of the warranty period

   If performance can be maintained by repairs, we shall repair the equipment for a fee at your request.

4. Parts supply period

   Functional parts for repairs can be supplied until about eight years after the end of production of the equipment. However, some parts can be supplied even after the lapse of the period. Please contact our service division for information.

5. Others

   For technical information, refer also to the maintenance and inspection procedures, and troubleshooting on our website (http://matsui.net/jp/troubleshooting/).

Contents

The chapters identified with the mark ⚠ contain critical information. You must carefully read and well understand them before you can start using MATSUI GLOBAL DRYER.

Chapter 1 Safety Precautions

This chapter describes the hazardous levels and their marks on the products, which call for your particular precaution in performing the operations, maintenance, and services for the safe use of the products.

⚠ WARNING

In performing the operations, maintenance, and services of the products, be sure to observe the safety precaution included in this document.
We shall take no responsibility and/or liability for any injury or accident attributable to your failure in observing such precaution.

1. Hazardous Level Marks and Their Meanings

This manual uses the following convention for the hazardous level marks:

Mark	Description
⚠ DANGER	Improper handling might lead to your death. This mark is followed by the information provided to avoid such result.
⚠ WARNING	Improper handling might lead to your serious injury. This mark is followed by the information provided to avoid such result.
⚠ CAUTION	Improper handling might lead to your slight injury or a damage on the products. This mark is followed by the information provided to avoid such result.
NOTE	This mark is followed by the information provided to call for your particular attention in the context of operation procedures and explanatory statements.
⚠	This mark is used to indicate a point to which you should pay particular attention in handling something.
※	This mark is used to indicate an exceptional condition or description in figures and tables.

2. Safety Precautions

⚠ Be sure to observe the following precautions when operating this equipment. This equipment has a hot part in during operating. Therefore, don't touch the warning label part of " HOT CAUTION " with a hand.

Precaution item	Description
Equipment use	This equipment is designed for drying resin pellets. Drying of any other material may be the cause of equipment failure. Trouble resulting use with materials other than resin pellets is not covered by the warrantee.
	Do not use this equipment for drying materials with volatile components or materials that are flammable. Use with such materials may result in an explosion or fire.
	As for the material of possibility that gas occurs in drying, The exhaust filter causes blocked mesh and the drying capacity is downed.
	As for the material of possibility that gas occurs in drying, refer to **Chapter 9 Technical Manual-3**.
Using environment	・Please use this equipment indoors. ・Please use this equipment at a place where the ambient temperature is between 0℃ and 40℃ and an ambient humidity of 25-85%. ・There is possibility that the performance of equipment can not be sufficiently shown in the fresh air condition (dew point). As for relation between the containing percentage and the dry time of dew point changing, refer to **Chapter 9 Technical Manual-4**.
Drying temperature	Set within the maximum operating temperature range as noted in the specifications. Do not use temperatures exceeding the maximum operating temperature. Otherwise, failure or an accident may result.
Precautions during operation	Supplies the injection-molding machine with material after fixed dry time passes.
	Do not open the vertical body, the cleaning port, or the residual resin removal port. Resin and hot air will blow out – extremely dangerous.
	Do not open the door of operation panel in during operation.
Control panel Temperature controller	Do not apply strong shock to or spill water on control panel or temperature controller. Otherwise failure or fire may result.
	Only open the door when absolutely necessary. Otherwise, failure or accident may result.
Overheat protection device ⚠ CAUTION	This equipment is provided with a safety device (overheat protection device). When the safety device is activated, the power sources to the heater and the blower are turned off and the heater may reach very high temperatures. Before re-starting, make sure the heater has cooled sufficiently and the temperature setting is adjusted so that the overheat protection device will not be activated again. See **Chapter 4 Preparation for Operation** for details.

Precaution item	Description
Opening and closing the vertical body and the cleaning port	Please incline it until being affix the hand to the vertical body soon without fail so as not to give the impact after the thing that there is no material in the inside is confirmed from the level window, and stopping slowly when opening and shutting.
Maintenance	Before performing maintenance procedures, be sure to turn the circuit breaker on the right side of the control panel to "**OFF**".
	When there is equipment that uses the compressor air, performed to maintain after stopping the compressor air and pulling out the rest pressure in the pipe.
	Even if it stops the operation, for a while, the hot condition continues. Until the equipment gets cold sufficiently, wait for the work. (You make a 5 h elapse a standard by the nature cooling). Also, even if the equipment outside is cold, a still hot part is sometimes left about the equipment inside or the dry material. Therefore, when touching equipment, wear a glove and a protection tool. Then, be sure to do not touch the equipment in a bare hands and skin.
	Do not ride and hang a leg on the equipment. It is very dangerous.
	The cleaning of each filter is indispensable to maintain the equipment performance. Performs the regular cleaning and don't operate with the dirty filter. As for contents of cleaning, refer to **Chapter 6 Maintenance**.
	During the equipment operation, don't do the removal of filter and the cleaning absolutely. It causes trouble and accident. Also, install the filter surely right.
	The breaker points of electromagnetic contact unit wears away when using the equipment among long-term. Then, the breaker point does deposit and the heater always becomes the turning on condition. Of this has a possibility to cause important accidents such as the fire. Therefore, before the equipment starts, always perform to check the electromagnetic contact unit. For the check details, refer to **Chapter 6 Maintenance**.
Remodeling of equipment	Don't use in the remodeling of equipment. This causes trouble and accident. Also, we cannot do warranty to the trouble in use of the remodeled equipment.
Warning labels Name plate	According to the dangerous level, label affixes to caution part in the product. Performs to operate after understanding the contents of warning or caution sufficiently.
	Keep legible until this equipment is disposed of. Benzene, paint thinner, scouring powders, etc. will damage the surface. To clean dirty equipment, wipe with a soft cloth which has been soaked in water at 40°C and wrung out well.
Wiping clean	Do not wipe with petroleum solvents. Benzene, paint thinner, scouring powders, etc. will damage the surface. To clean dirty equipment, wipe with a soft cloth which has been soaked in water at 40°C and wrung out well.

Precaution item	Description
Maintenance and Repair	There is high voltage, hot part in the equipment. In performs maintenance or repair after disassembles the equipment, one who doesn't have the knowledge of mechanical electricity doesn't do absolutely because there are trouble and danger. Don't do a check and replace work more absolutely except our service division or one who has the knowledge of mechanical electricity of yours.
	Recommends safety check and overhaul (paid) in once of 4-5 years by our service division for the equipment to be using among long-term. Contact our service division about checks and overhaul.
When disposing of product and parts	When disposing of them, obeys law in the applicable use country after use in product and parts.

Chapter 2　Explanation Equipment

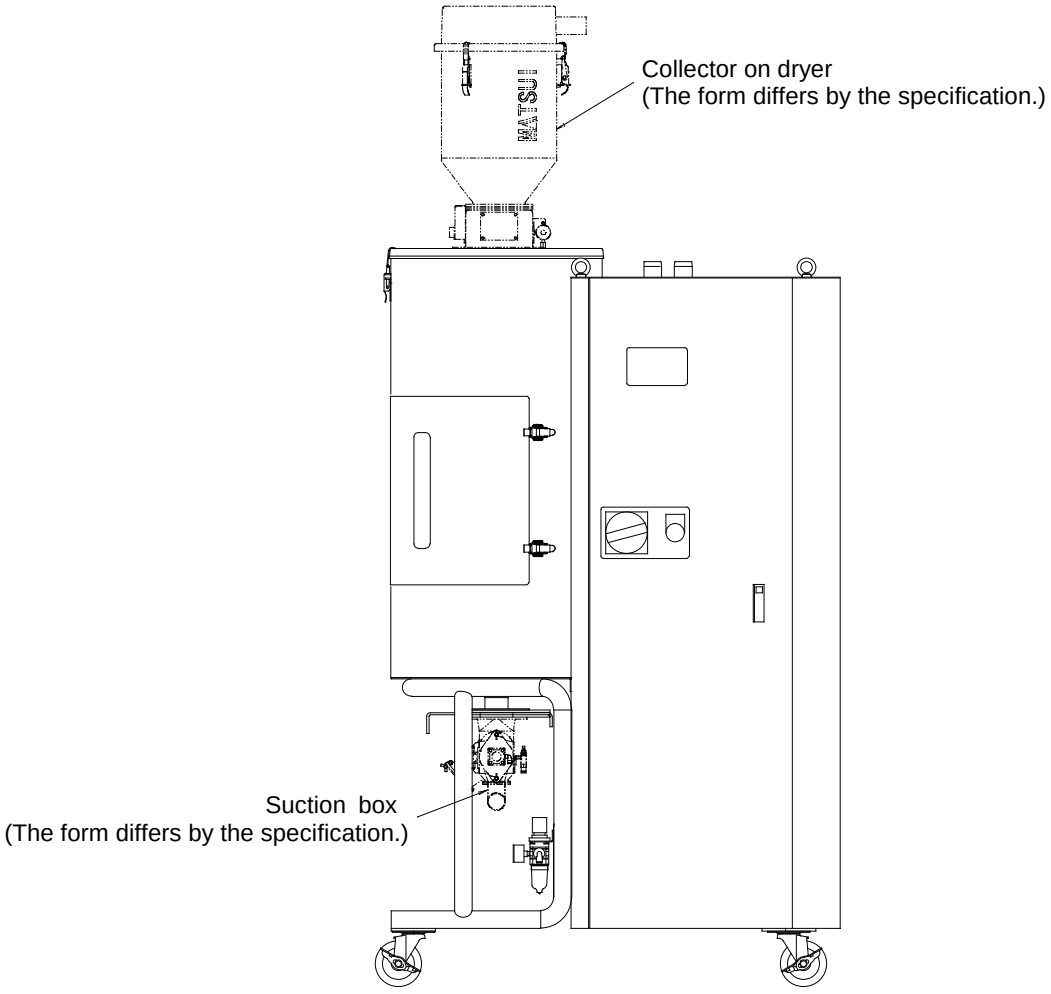
1. Overview of the equipment

This equipment is designed for drying resin pellets.
This equipment is dry up a resin in the hopper by air's overheating and feeding into the hopper.
Also, this equipment is having convey unit with the internal organs.
This unit is performed primary convey for feeding to the hopper dryer and secondary convey for material supply to collection unit on the molding unit.
(Changes the specification of attached convey unit by the specified contents.)

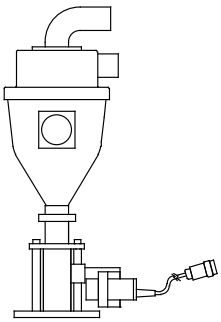
2. The packing confirmation

Please confirm whether or not there is all purchase unit in the packing.

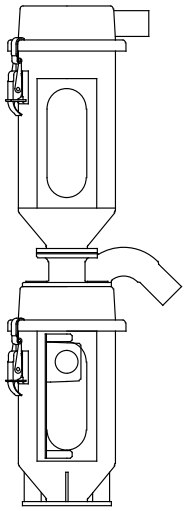
○ Unit body (Packing conditions)



○ Hopper on the molding unit (Packing conditions)



Suction hopper specifications



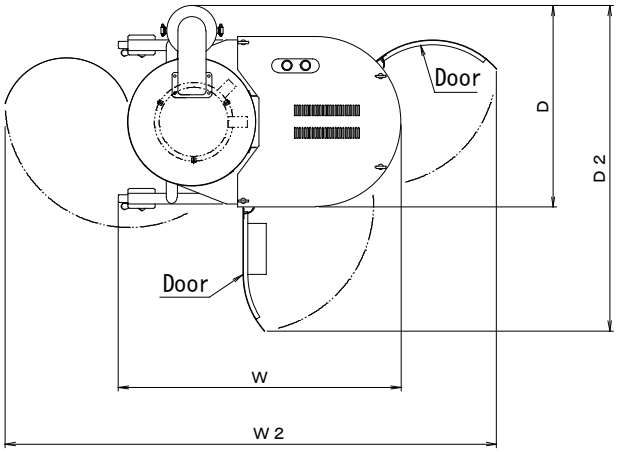
Aero power hopper specifications

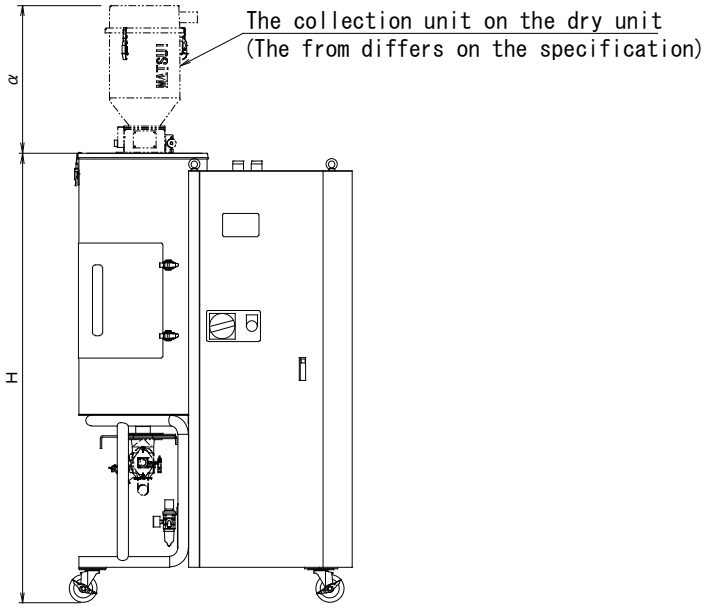
※The form changes in the specification.

Attachment	MGD-15～150	MGD-200～300
PVC hose (For primary convey)	φ３８×１０m	φ５０×１０m
PVC hose (For secondary convey)	φ３８×５m	φ５０×１０m
Suction nozzle (Aluminum)	φ３８	φ５０
Hose band (For GL hose)	ＡＫ－１０４５	ＡＫ－１０５８
GL hose (For white color suction)	φ３８×５m	φ６５×１０m
Cuff (White color rubber)	φ３８	φ６５
Hose band (For GL hose)	ＡＫ－１０４５	ＡＫ－１０７３

※ Changes attached good's quantity, hose length etc. by attached convey unit, option and special specification.

3. Outer dimensions (mm)



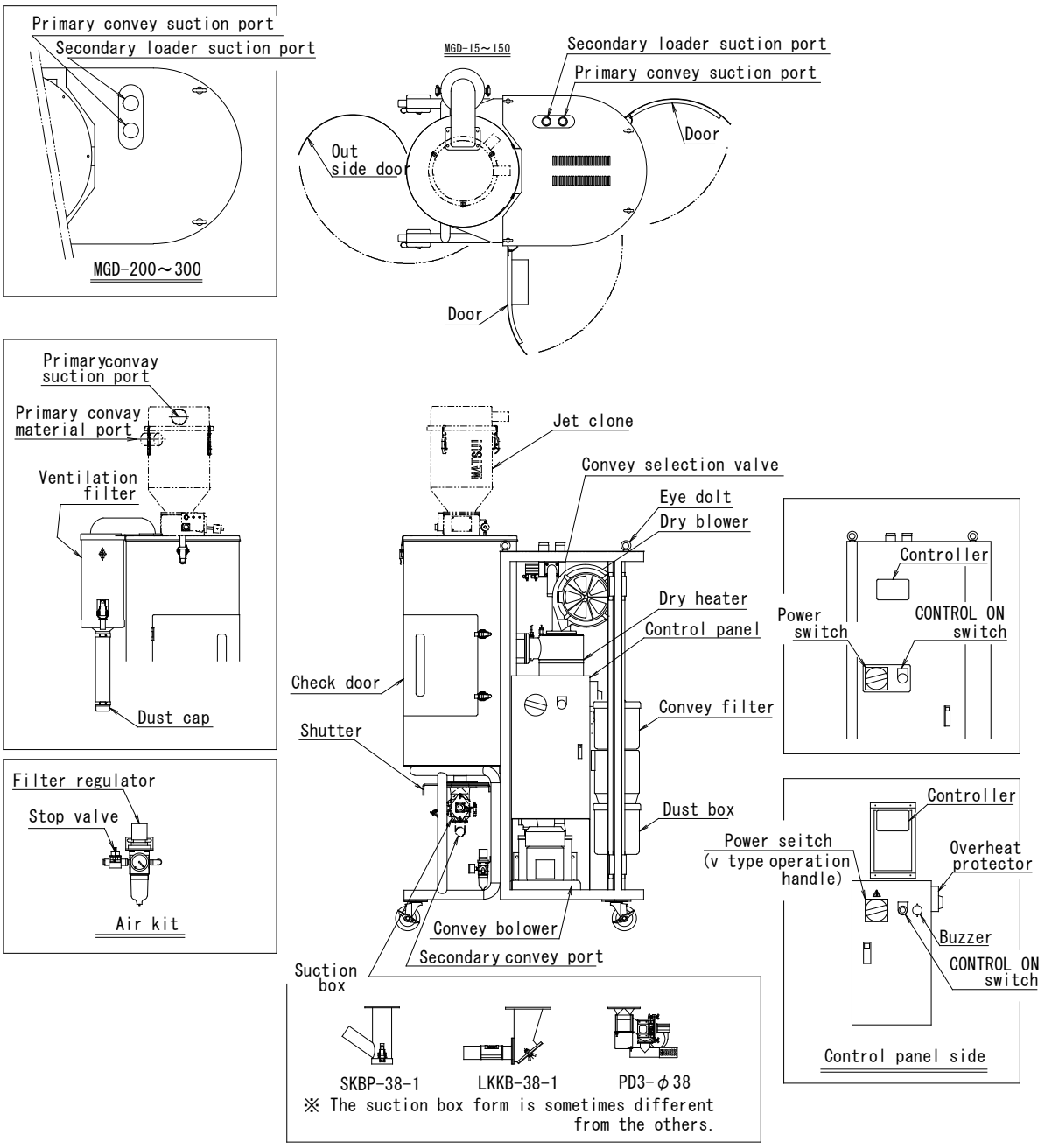


Model	W (mm)	W2(mm)	D (mm)	D2 (mm)	H (mm)	Outline mass (kg)
MGD-15J	878	1472	604	1149	1258+ α	150
MGD-25J	878	1472	606	1149	1508+ α	170
MGD-50J	1000	1737	723	1152	1597+ α	210
MGD-75J	1000	1737	723	1152	1897+ α	230
MGD-100J	1097	1954	781	1216	1729+ α	240
MGD-150J	1097	1954	781	1216	2118+ α	270
MGD-200J	1450	1940	706	1246	2036+ α	400
MGD-250J	1658	2236	863	1379	1886+ α	580
MGD-300J	1658	2236	863	1379	2036+ α	600

※ The mass doesn't include the weight of material.

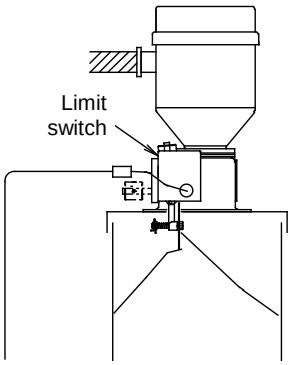
4. Name of each part

Inside unit

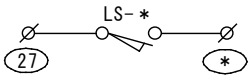


5. Wiring diagram to level sensor for the collective unit at end of the convey

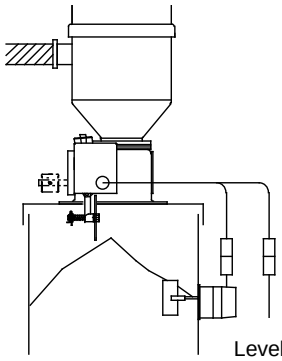
[Wiring point of JC limit control]



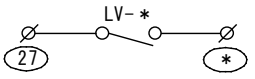
Wiring line number

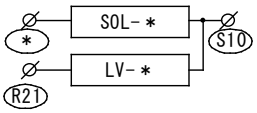


[Wiring point of JC level gage control]

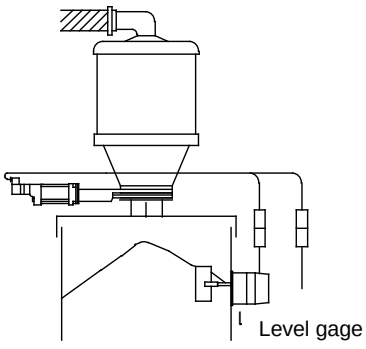


Wiring line number

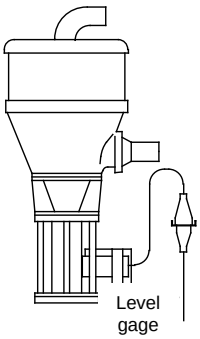




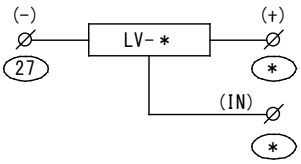
[Wiring point of ASD level gage control]



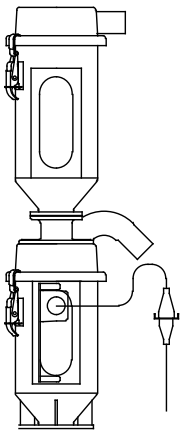
[Wiring point of M.EGVH-E2K control]



Wiring line number

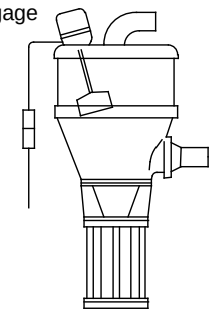


[Wiring point of APH-E3Z control]

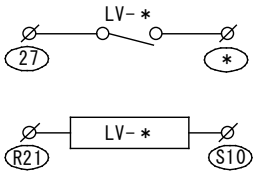


[Wiring point of LGVH level gage control]

Level gage



Wiring line number



6. Precautions every unit equipment

The handling explanation (particularly precautions) every unit equipment that is incorporated into this unit is described.
Conform and operate the specified precautions for this unit and unit equipment.

【Model name: Push damper】(Type: PD3-φ38(φ50))

1. Precautions on operation

⚠ WARNING

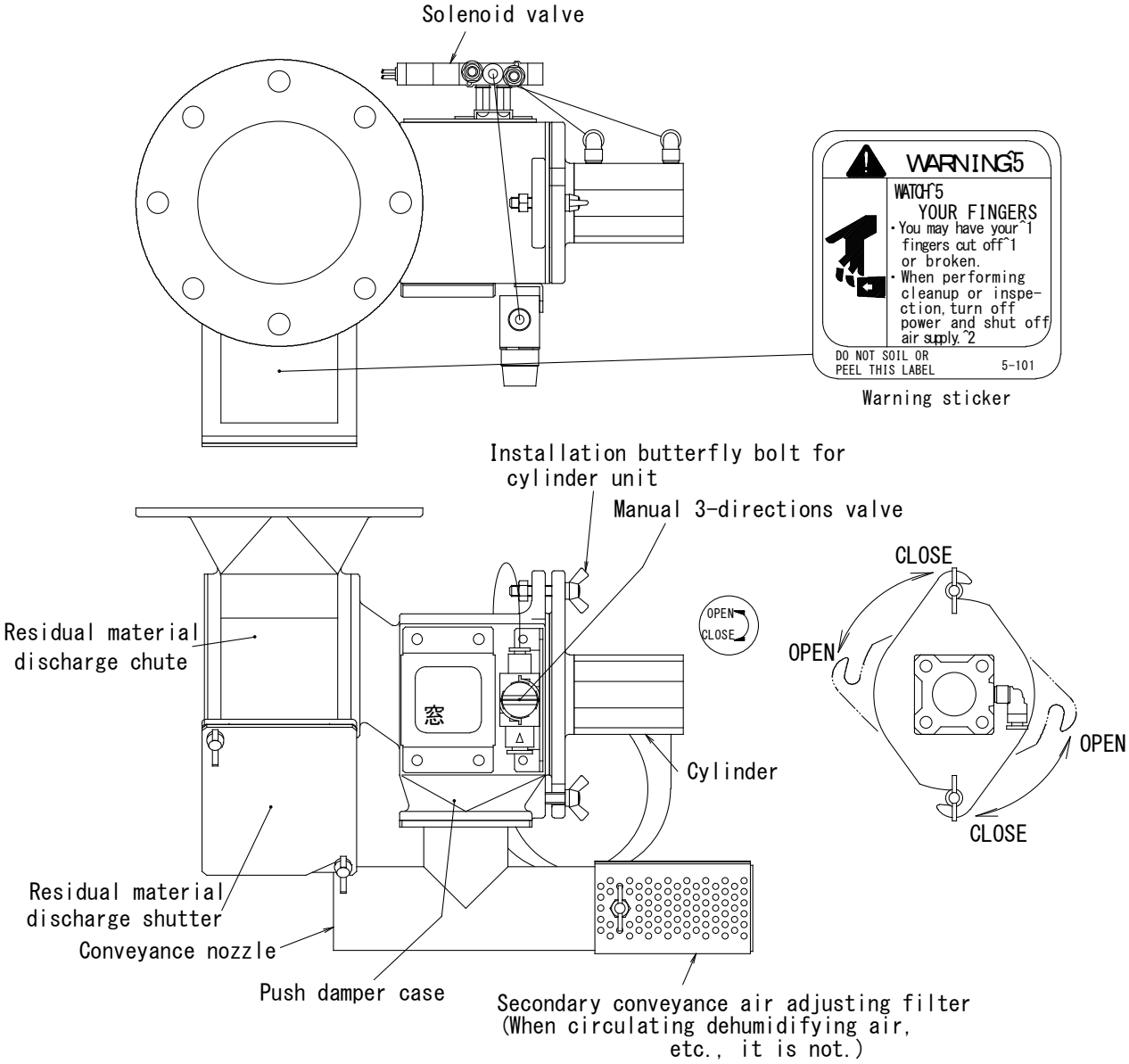
●Cautions for finger cutting	As there is possibility of the cutting, the bone fracture and the lacerations for a finger and a hand, etc., in case of power supply, in compressor air supply, never put a finger and a hand into push damper case.
●Maintenance and repair	Never perform maintenance and repair except who has a well knowledge of this equipment, because it may includes the failure or danger.
●Maintenance and check	In case of check, cleaning and part replace, turn "OFF" the power for control panel which is controlling the push damper, and works after making the manual 3-direction valve to be installing in push damper "CLOSE" and release rest pressure in the cylinder. (Refer to "Name of each part and removal method for cylinder unit " of item 2.) (Refer to applicable instruction manual about the control panel which is controlling push damper.) **After check, cleaning and part replace, always fastens up cylinder unit installation bolt and each bolt surely.** The maintenance and the repair contact our service division.

⚠ CAUTION

●Alarm label	Keep labels legible until you dispose of this equipment.

※ "Spilling" for material pretty occurs at damper CLOSE by the use material, but this equipment is not abnormality.

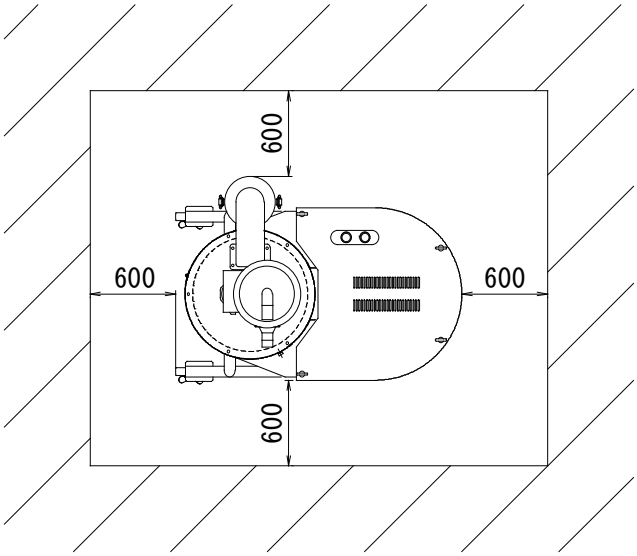
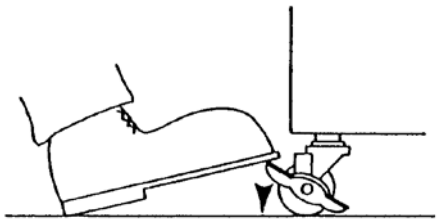
2. Name of each part and removal method for cylinder unit

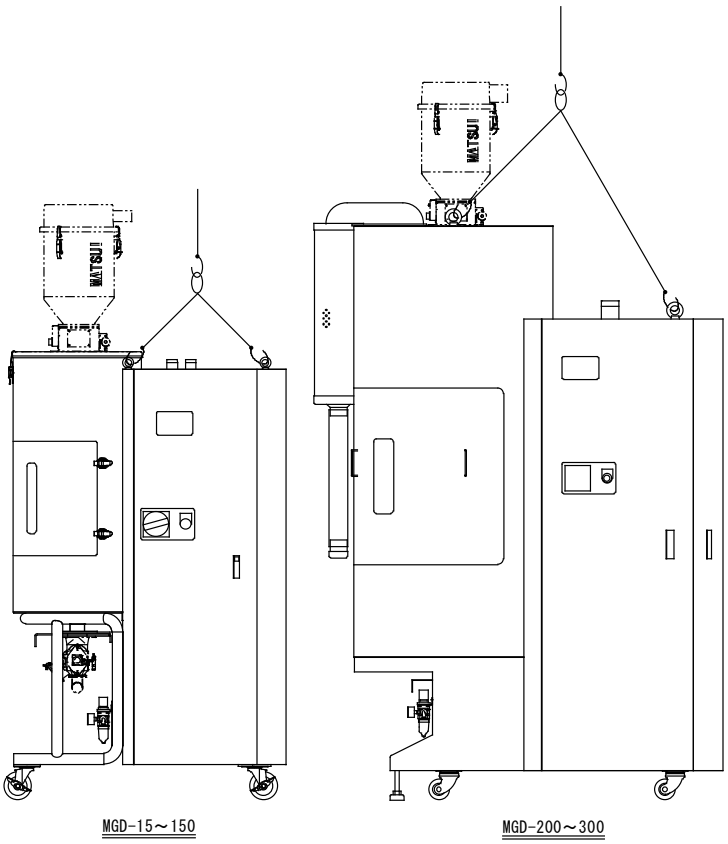


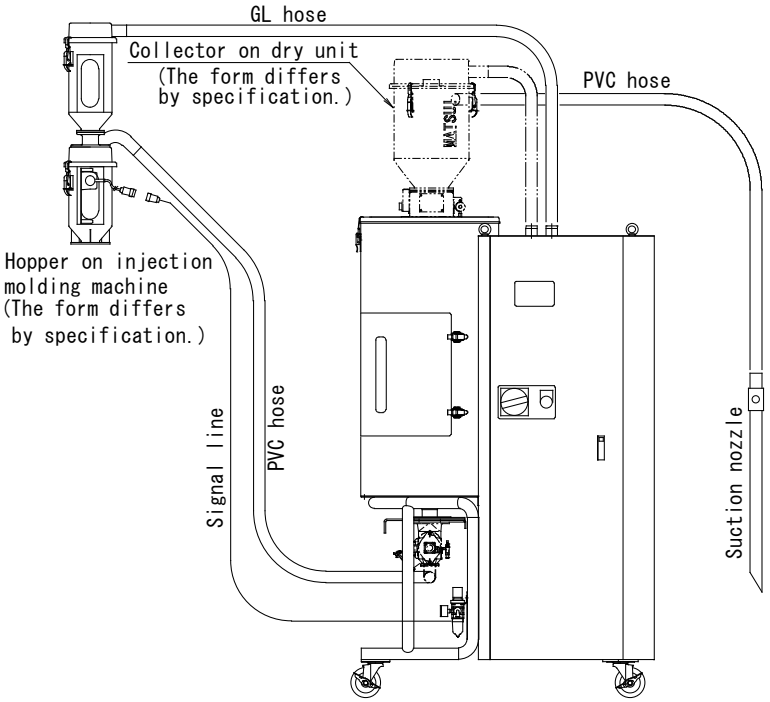
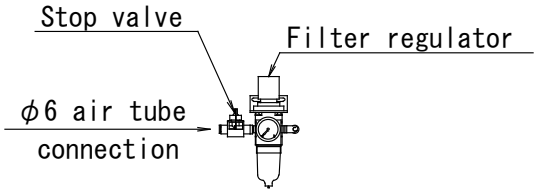
[Removal method for cylinder unit]
Loosen the installation butterfly bolt for cylinder unit, and turn the cylinder unit to left and pull out it.
(In installation, doing reverse of above step.)

Chapter 3 Installation

1.Installation for equipment

Step	Item	Description
1	Installation	Install on the levelly stable floor. As shown in figure, make sure the installation location gives space to perform maintenance. 
2	Caster brake	As shown in figure, apply the brake of the caster with brake. Please do not step on the brakes excessively. Please do not move the equipment with locking brakes. 

Step	Item	Description
2	Moving the unit	As shown the figure, when lifting and moving this unit, confirm the protest condition of the installation eye bolt in the upper part. Then, hang and move a hoisting rope (with hook) in the lift with the your plant's crane. And, make material in the hopper certainly empty.  MGD-15～150 MGD-200～300 **⚠ CAUTION** Be sure to use a hoisting rope (with hook) which can withstand the mass of the unit.

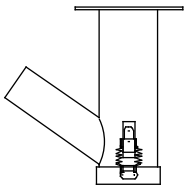
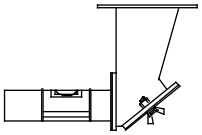
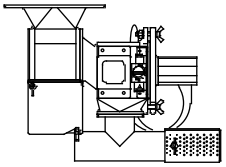
tep	Item	Description
3	Installation of the hopper on the molding unit and connection of the hose.	<In case of primary convey> ・Connect the primary side PVC hose and the convey hose port (suction nozzle etc.). Fasten up the connection part surely by the hose band. <In case of secondary convey> ・Connect the secondary side PVC hose. Fasten up the connection part surely by the hose band. ・Connect the secondary side GL hose. Installed the molding unit on the hopper of molding unit. As without the air leak, fasten up surely by the gasket and bolts. ※As for kind of the using hose, refer to "Chapter 2. Explanation Equipment; Item 2. The packing confirmation. 
4	Connection of the air compressor	Connect the air compressor with the connection port of filter regulator.  ※In only the conveying direction is one direction, In case of does not installed the profile damper (Push damper) to the suction box, it is unnecessary.

2.Power supply connection

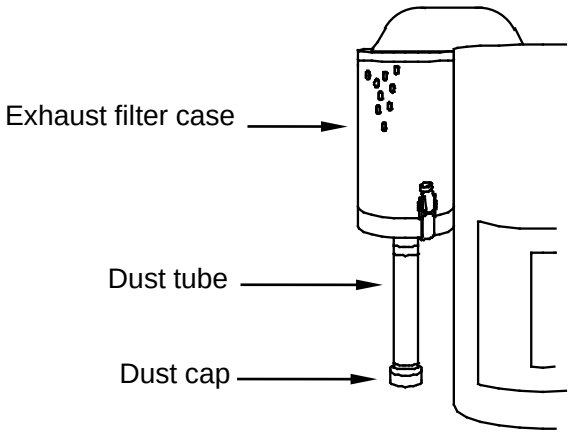
Step	Item	Description
1	Connection of power cord	Connect to your power breaker with the power code. 3 phase alternating current power R:S:T: Earth **⚠ CAUTION** ・Before connecting a power code, surely make a power breaker OFF. ・Fasten up tightly for there not to be loosening of the connection part. ・The earth surely connect.

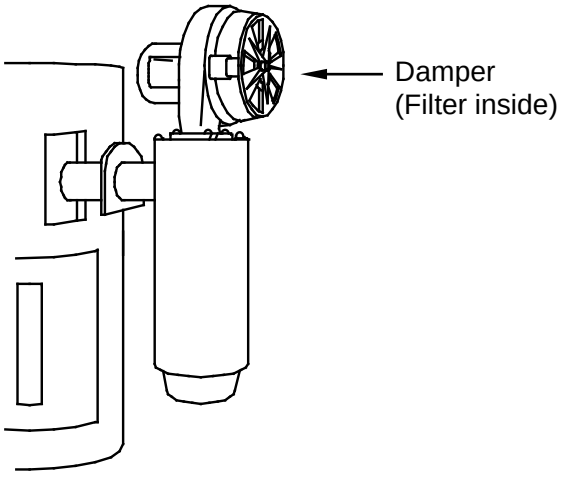
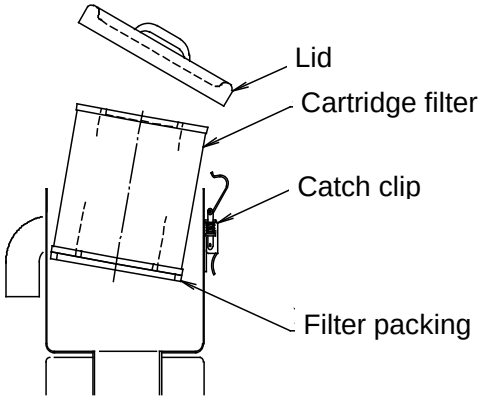
Chapter 4　Preparation for Operation

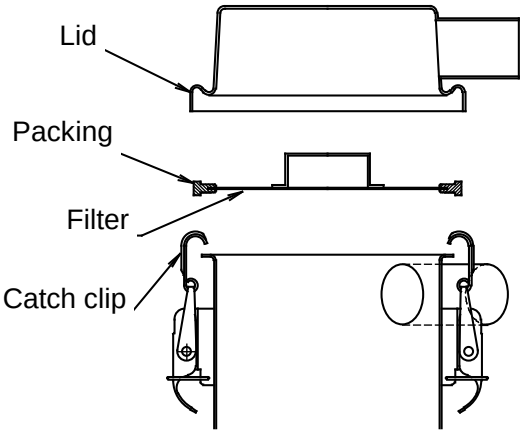
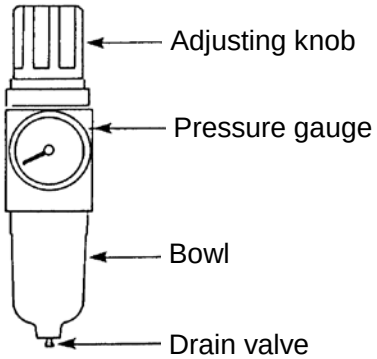
1.Inspecting inside of the hopper

Step	Description
1	Open the checking door after confirming that a resin isn't included inside the dry hopper. Confirm whether or not there is not foreign material inside the hopper.
2	Confirm whether the shutter in the lower part of the dry hopper and the material pullout port are closed. Shutter: Push→Close・Pull→Open  SKBP-38-1  LKKB-38-1  PD3 ※The suction box under the dry unit is be changed by the specification.

2. Condition confirmation of each unit and feeding of the resin

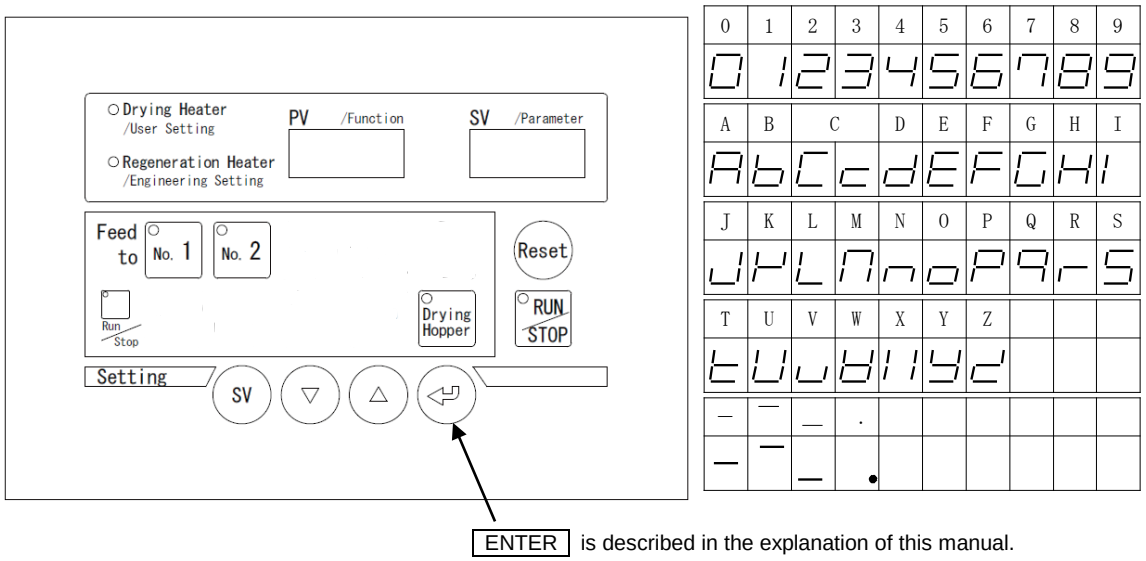
Unit name	Confirmation unit and checking item
Exhaust filter case	・Confirm the setting of exhaust filter in the exhaust filter case. ・Confirm the installation of the sure dust cap. 

Unit name	Confirmation unit and checking item
Blower suction port	・Confirm the setting of the filter. ・Confirm the complete is opened of the damper.  **⚠ CAUTION** When operating a damper in the incomplete opening condition, it becomes a cause for overheat (upper limit alarm) with dry temperature from the suction airflow rate lack. Surely, perform in the completely opening condition.
Convey filter	The filter sets packing in the underside, put it on the bottom of the filter case and closes a lid. Then, set to fix fast with the catcher clip and for there not to be air leak. 

Unit name	Confirmation unit and checking item
Jet Clone filter Collection unit on each molding unit	Sets a filter surely and confirm whether or not there is not a packing slip. 
Hose	Confirm whether or not each hose installation is connected as the manual. Specifically, confirm the fastening-up condition of the hose band to prevent an air leak.
Filter regulator Pressure setting	Fully open the stops valve on the air kit and send dry, compressed air at 0.5 MPa minimum from the compressed air source. ⇩ Use the filter regulator on the air kit to control the secondary air pressure within the range from 0.4 to 0.5 MPa. ① Pull up the control knob on the filter regulator to unlock it. ② Turning the control knob clockwise or counterclockwise, control the pressure value read from the pressure gauge within the range from 0.4 to 0.5 MPa. Turning it clockwise will increase the value, while turning it counterclockwise will decrease the value. ③ Push in the control knob to lock it. 

Unit name	Confirmation unit and checking item
	NOTE Obtain 0.5 MPa minimum for the pressure of dry, compressed air from the compressed air source. Use clean, dry air that was treated with the air dryer and the air filter. In particular, the wastewater must be completely drained to prevent it from being frozen in a cold district.

3. Name and the function of each controller part



ENTER is described in the explanation of this manual.

Indicator

Drying Heater / User Setting ..... Indicator of drying heater operation
(Blinking in user setting.)

Regeneration Heater / Engineering Setting..... Indicator of regeneration heater operation
(Blinking in engineering setting.)

- The regeneration heater isn't installed in this equipment.
- This lamp always turns on. Then, in case of unit start-up, sometimes lights up.
  But, it isn't abnormal.

PV/Function..... Display present temperature and alarm error code (Character of each item in settings)

SV/Parameter..... Display set temperature
(Set value corresponding to each item in settings)

Indicator , Switch

Feed to [No.1] ~ [No.2] …….. Start/Stop switch and indicator for No. 1-2 direction in secondary conveying

Feed to [Drying Hopper] ..... Start/Stop switch and indicator for the primary (To dryer) conveying

[RUN/STOP] ..... Drying start/stop switch and indicator

Switch

[Reset] ..... Reset alarm and stop buzzer

[SV] ..... Select parameter in settings

[△] ..... Increase set value

[▽] ..... Decrease set value

[Enter] ..... Move to settings change mode and confirm set value

3-1.Controller setting

Step	Contents
Power supply ON	Turn on power switch on the front panel.
Preparations for operation	Press [CONTROL ON] switch on the front panel. Temperature appears on the control panel.
Dry temperature setting	Press [SV] button until 「SV」 appears on the PV display. The display alternates between "SV" and present value. ⇩ Press [Enter] button and drying set value flashes on the SV display. ⇩ Press [▲] or [▼] buttons to change the set value. Press once to change the value by one. Press and hold to change the value continuously. ⇩ Push [Enter] button to confirm set value. New value is not set unless this step is carried out. Standard specifications 1.Setting range……0～130℃ 2. Factory set value……80℃ 3.Standard setting value…….80～130℃ High temperature specifications 1.Setting range……0～160℃ 2. Factory set value……80℃ 3.Standard setting value…….80～160℃

Step	Contents
Automatic drying start Timer setting	Press [SV] button until "dLY" appears. Display alternates between "dLY" and present value. ⇩ Press [Enter] button. Present set value flashes on the SV display. ⇩ Set the time until start of drying operation. Press [▲] or [▼] buttons to change the set value. Press once to change the value by one. Press and hold to change the value continuously. ⇩ Push [Enter] button to confirm set value. New value is not set unless this step is carried out. 1.Setting range……OFF,0.0-99.5 time (0.1 equals 10 minutes) 2. Factory set value ……OFF 3.Start timer will not run automatically after a power failure. Startup manually. Refer to the later part on Operating Procedure for manual startup.

Step	Contents
Conveying time setting for loading to dryer hopper	Press [SV] button until "FdP" appears on PV display. ⇩ Press the [Enter] button. Present set value flashes on SV display. ⇩ Conveying time changes according to distance and material type. Set conveying time to fill loading hopper to near full level. Press the [▲] or [▼] buttons to change the set value. Press once to change the value by one. Press and hold to change the value continuously. ⇩ Push [Enter] button to confirm set value. New value is not set unless this step is carried out. MGD-15～150 1.Setting range……999 sec. 2. Factory set value……20 sec. MGD-200～300 1.Setting range……999 sec. 2. Factory set value……25sec. ※When there is a secondary airflow intake which adjusts the material mixing volume to convey source, the inside of collection unit (jet clone, etc.) on the dryer becomes full by the convey time when throttling secondary airflow too much and the material is sometimes clogged up in the conveying hose. Therefore, be careful for the adjustment of secondary airflow intake volume enough.

Step	Contents
	NOTE Initializes the convey timer in 25 seconds so as not for the convey blower to be able to start up above 60 times per hour for to protect of the convey blower about MGD-200-300. In under the condition of the conveying distance, the collection unit capacity, etc., the adjustment to make short is necessary when 25 seconds is long. However, in operation that starts up above 60 times per hour, it is careful because there is possibility to give the damage to the product cycle of the convey blower.
Conveying time setting for loading to dryer hopper (No.1-2 conveying)	Press [SV] button until either one of "Fd1~Fd2" appears on the PV display. ⇩ Press the [Enter] button. Present set value flashes on SV display. ⇩ Conveying time changes according to distance and material type. Set a time that ensures no material is left in the hose after every loading cycle. Press the [▲] or [▼] buttons to change the set value. Press once to change the value by one. Press and hold to change the value continuously. ⇩ Push [Enter] button to confirm set value. New value is not set unless this step is carried out.

Step	Contents
	MGD-15～150 1.Setting range……999 sec. 2.Factory set value……15sec. 3.Standard setting value In case of the suction box installing without the profile damper….15 sec. In case of the suction box installing with the profile damper…. Material cutting down time of following + 5 sec. MGD-200～300 1.Setting range……999 sec. 2.Factory set value……25sec. 3.Standard setting value In case of the suction box installing without the profile damper….25 sec. In case of the suction box installing with the profile damper…. (Material cutting down time of following) + (More than 5 sec≧25 sec. ※When there is a secondary airflow intake which adjusts the material mixing volume, the inside of collection unit (jet clone, etc.) on the injection mold becomes full by the convey time when throttling secondary airflow too much and the material is sometimes clogged up in the conveying hose under the conditions that the suction box in the lower part of dryer doesn't have the damper for the material cut-off. Therefore, be careful for the adjustment of secondary airflow intake volume enough. **NOTE** Initializes the convey timer in 25 seconds so as not for the convey blower to be able to start up above 60 times per hour for to protect of the convey blower about MGD-200-300. In under the condition of the conveying distance, the collection unit capacity, etc., the adjustment to make short is necessary when 25 seconds is long. However, in operation that starts up above 60 times per hour, it is careful because there is possibility to give the damage to the product cycle of the convey blower.

Step	Contents
Discharge time setting for loading to dryer (Time to drop material into drying hopper)	Press [SV] button until "dCP" appears on the PV display. ⇩ Press the [Enter] button. Present set value flashes on SV display. ⇩ Set a time that allows material in the hopper to discharge completely. Press the [▲] or [▼] buttons to change the set value. Press once to change the value by one. Press and hold to change the value continuously. ⇩ Push [Enter] button to confirm set value. New value is not set unless this step is carried out. 1. Setting range ・・・・・・・・・999 sec. 2. Factory set value ・・・・・ 25 sec.

Step	Contents
Discharge time setting for loading to injection molding machine (Secondary conveying No. 1-2)	Press [SV] button until either one of "dC1~dC2" appears on the PV display. ⇩ Press the [Enter] button. Present set value flashes on SV display. ⇩ Discharge time changes according to hopper type and capacity. Set a time that allows material in the hopper to discharge completely. Press the [▲] or [▼] buttons to change the set value. Press once to change the value by one. Press and hold to change the value continuously. ⇩ Push [Enter] button to confirm set value. New value is not set unless this step is carried out. 1.Setting range……999 sec. 2.Factory set value……25 sec. 3.Standard setting value…… Hopper on the molding unit without discharge valve…3 sec. Hopper on the molding unit with discharge valve……25 sec.

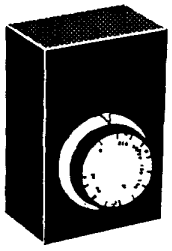
Step	Contents
Batch time setting for loading to injection molding machine (No. 1-2 conveying)	Press [SV] button until either one of "bt1~bt2" appears on the PV display. ⇩ Press the [Enter] button. Present set value flashes on SV display. ⇩ Batch time changes according to conveying distance and material type. Set a time that fills loading hopper to near full level. Press the [▲] [▼] buttons to change the set value. Press once to change the value by one. Press and hold to change the value continuously. ⇩ Push [Enter] button to confirm set value. New value is not set unless this step is carried out. 1.Setting range……0.0～99.9 sec. 2.Factory set value……2.0 sec. 3.Standard setting value. In case of the suction box installing without the profile damper….0 sec. In case of the suction box installing with the profile damper…….2 sec.

3 - 2. Check Temperature

Step	Contents
Check drying temperature	PV display shows the present temperature at the measurement point of drying temperature when power to the controller is turned on. SV display shows the present set value of drying temperature. Both SV and PV switch to their specific display when automatic drying startup timer is running and parameters are being set. It also occurs when the regeneration temperature is displayed.

4.Setting the overheat protector

For safety, this unit has an overheat protector as standard equipment. If the sensor (temperature detector) reaches a temperature higher than the temperature setting of the overheat protection device, the power supplies to the heater is cut off.

Step	Description
1	Set the temperature setting of the overheat protector to a value 20°C higher than the drying temperature (SV temperature setting). When temperature set up revision is needed, rotate dial to 220℃ firstly, then to needed temperature. For standard specifications, set the temperature setting of the overheat protector to or less than 180°C. Dry overheat setting unit  Setting temperature Dry temperature +20℃ 【REMARKS】 The temperature controller has high and low limit alarm settings. When the high limit alarm occurs, the heater is turned **OFF** and, after the cooling time has elapsed, the blower is turned **OFF**, operation stops. (Both the high and low limits are set to 10°C at the factory before shipping.)
2	Because the operation power is blocked off when a sensor (measurement temperature part) is heated by the setting temperature of overheat protector, the heater and blower stops and turn off a indicator, too. After cooling the heater part sufficiently, press CONTROL ON switch and restart the unit. (Refer to **CHAPTER 5. Operating Procedures**). If the measurement temperature part of overheat protector doesn't become below the setting temperature, even if press CONTROL ON switch, because the operation power doesn't pull in, be careful.

NOTE

When a safety device is activated, the heater requires about one hour to cool. If the dryer is restarted before the heater has finished cooling, heat remaining in the heater may cause the overheat protector to trip again. Take sufficient care regarding the temperature setting when re-starting.

5. Jet Clone operation explanation

When the start / stop Feed to NO,1 switch of the line installed Jet clone is “ON”, the discharge timer is working and the blower rotates in the time up. The damper of the collection unit closes at the same time.

↓

The materials of convey timer (Fd1) in the setting time is conveyed into the collection unit.

↓

The blower stops by time up of the convey timer.
The damper of collection unit opens when the suction pressure declines and discharges material for the setting time of discharge timer (dc1) to the dry hopper in the lower part.

↓

Repeats above operation.

↓

When the dry hopper becomes a material full condition, it stops convey with the full signal of attached limit switch of the collection unit.

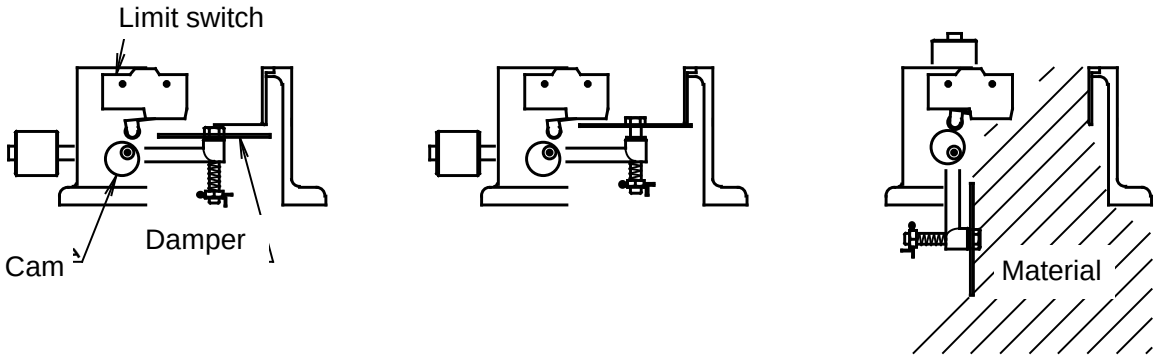
↓

After this, the material decreases and emits the request signal of limit switch.
However, after delayed No.1 request delay timer (L1d) only for the setting time, the blower starts up.
In this thing, it is possible to do the prevention of the insertion of the damper part.

<Damper operations>

(1) Normal condition **(2) Close condition (suction type)** **(3) Material full condition**

(Operates limit SW, stops material convey)



6. Outline of Aero Power Hopper

This is a material conveyance hopper installed onto the molding machine.

This has the following features by flowing conveying material in hopper.

① Fine powders and particles are separated and removed.

② If crushed material is compounded, natural pellets and crushed material are mixed.

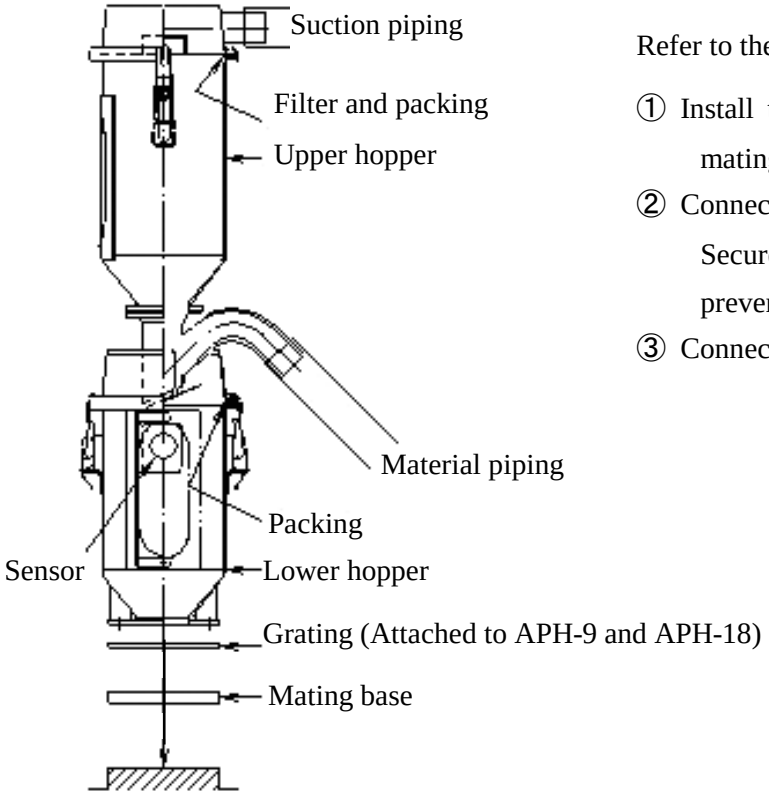
1. Inspection before use

①Check that there is no unnecessary material in the hopper.

②Check that the filter and packing are correctly installed with reference to the attached drawings at end.

2. Installation to molding machine

Overview



Molding machine

Refer to the overview (Referential example APH-3)

① Install this hopper onto molding machine via the mating base with bolts.

② Connect the suction piping and material piping. Securely fix the piping using hose bands so as to prevent air leakage.

③ Connect electric wires to the sensor.

3. Test run adjustment

1. Sensor sensitivity adjustment (Proximity switch E2K type)

If the presence or absence of the material is not correctly detected, adjust the sensitivity of the proximity switch by the following procedure.

(1) Remove the material in the hopper.

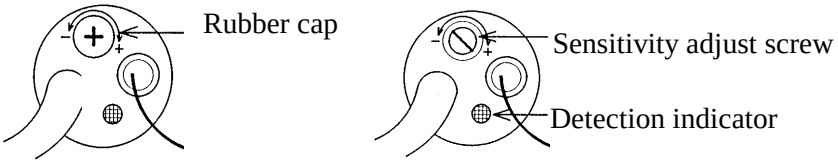
Turn "ON" the power for the conveying origin unit.

<Also, refer to the instruction manual of the conveying origin unit (such as MJ3, MGD).>

(2) Check whether there is clearance of 1mm or more between the end of the sensor and hopper peep hole.

In the case of clearance, loosen the tightening screws (two pieces) for the proximity switch fixing bracket, and adjust the distance between the end of the sensor and hopper peep hole to about 1mm and fix them.

(3) Remove the rubber cap on the back of the proximity switch.



(4) Adjust the sensitivity adjust screw with the included screw driver and perform operations in the following ①, ② and ③.

① Adjust the screw to a point where the sensor turns OFF from ON with no material (Detection indicator lights off).

② Adjust the screw to a point where the sensor turns ON from OFF with material being loaded (Detection indicator lights up).

③ Set the sensitivity adjust screw to a middle point between ① of turning OFF from ON with no material and ② of turning ON from OFF with material being loaded.

Note: Adjust with material to be actually used. Also, in the case of various materials, perform the operations of ①, ② and ③ with material whose apparent specific gravity is lightest.

(- side)←——②————————③————————①——→ (+ side)

With material ON(lights up) ▲Set point Without material OFF(lights off)

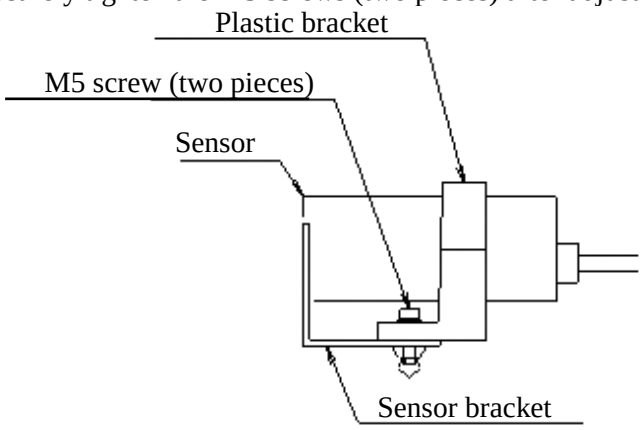
(5) Install the rubber cap removed in procedure (3).

Convey material to check that the presence or absence of material is correctly detected.

2. Adjustment of sensor installing position (Not applicable to APH-1 type)

The sensor can be moved up and down by slightly loosening the M5 screws (two pieces) fixing the sensor bracket and plastic bracket.

Securely tighten the M5 screws (two pieces) after adjustment.



(1) When conveying material from one conveying origin unit to one molding machine (One-by-one conveyance)

Adjust the sensor position so that conveyance starts at any material amount according to the material consumption of the molding machine.

For dried material, quality of the molded product is generally improved with a shorter dwelling time on the molding machine.

<Material conveying amount for one time can be adjusted by the conveying origin unit. Adjust it to a conveying amount equal to or less than the maximum conveying amount of the applicable model. For the maximum conveying amount, refer to 7. Specifications. Also, refer to the instruction manual of the conveying origin unit (such as MJ3, MGD, etc.)>

(2) When conveying material from one conveying origin unit to two molding machines (One-by-two conveyance)

Adjust the sensor position so that the entire conveying material amount is reliably loaded into the lower hopper and conveyance starts.

<Material conveying amount for one time can be adjusted by the conveying origin unit. Adjust it to a conveying amount equal to or less than the maximum conveying amount of the applicable model. For the maximum conveying amount, refer to 7. Specifications. Also, refer to the instruction manual of the conveying origin unit (such as MJ3, MGD, etc.)>

NOTE

A damper is provided between the upper hopper and the lower hopper. When conveying material remains in the damper part, conveyance failure result.

4. Maintenance and check

1. Cleaning of filter

A filter (porous plate made of stainless steel) is provided in the upper hopper. As it is clogged with fragments of crushed material, regularly remove them.

2. Damper

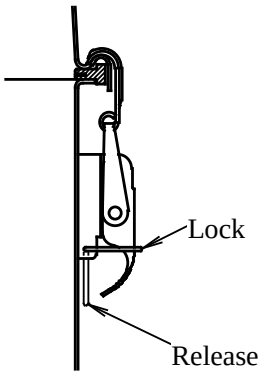
A damper is incorporated in the upper hopper discharge part. This damper is suspended by two stainless steel wires of 0.5mm.

These wires have sufficient strength and will not be cut during normal use, however, regularly check them when cleaning.

The conveyed material flows in the upper hopper in a normal state, however, if the above wires are cut, the conveyed material directly falls into the lower hopper. If such a state is observed, also check the wires.

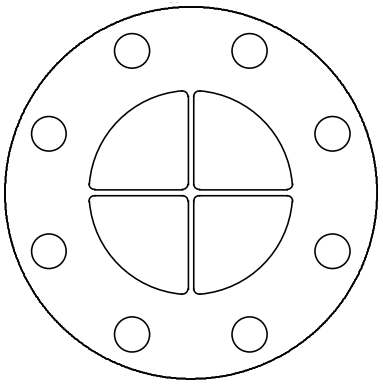
5. Precautions

1. Lock for catch clip



A lock mechanism is provided to prevent catch clips (6 locations) from being released due to vibration of molding machine or unintended operation. Be sure to lock when using the clips.

2. Grating



A grating is attached to APH-9 and APH-18. This is for preventing the damper from falling into the hopper opening of the molding machine even if the wires are cut. Be sure to install the grating to the hopper opening of the molding machine, and attach it even when relocating.

6. Specifications

Model APH-	1	3	3W	6	6W	9	18
Conveying pipe caliper (mm)	38	38	38	50	50	50	50
Suction pipe caliper (mm)	38	38	38	65	65	65	65
Maximum conveying amount (kg)	1	1	1	2	2	3	6
Conveying hopper capacity (L)	4	4	4	8	8	12	24
Conveying hopper diameter (mm)	140	140	140	200	200	245	300
Charge hopper capacity (L) (Demand level switch)	0.8	3	3 +allowance 2	6	6 +allowance 4	9	18
Charge hopper diameter (mm)	50A pipe	140	200	200	245	245	300

Applicable unit model / MJ3 MGD(*1) These are general guidelines and it is absolutely necessary to calculate from the molding cycle time and weight per one shot. Selected on the assumption that the drying time is three hours.

Secondary conveyance one direction	15/25	15～150	—	200/300	—	200/300	—
Secondary conveyance two directions	—	15～75	100/150	200	300	200/300	—

Applicable unit model/ DMD4 (*1)(*2) When applied to DMD4, it is necessary to be compatible with optical specifications.

Secondary conveyance one direction	—	25～200	—	—	—	—	—
Secondary conveyance two directions	—	25/50	100/200	—	—	—	—

Chapter 5 Operating Procedures

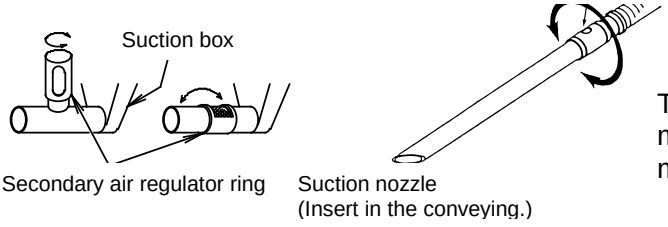
1. Operation

Step	Operation	Description
1	Power ON	Set the power breaker in front to “ON”.
2	Preparations for operation	Press the [CONTROL ON] switch in the front. The display of controller lights up.
3	Conveying to dryer	1. Presses [Drying Hopper] switch of a controller on the control panel and make to display a lamp in upper left of the switch. Raw materials are supplied to the Drying hopper to the fixed volume with the level control.
4	Setting confirming	1. Confirm if the dry temperature that is displayed in SV of a controller on the control panel is adjusted to the fixed value. When not adjusted to the fixed dry temperature, refer to " Controller setting " at front and adjusts.
5	Dry operation starting	1. After setting in the setting time with the automatic start timer, when starting the dryness automatically, refer to " Controller setting " at front. Then, presses [RUN/STOP] switch of controller after "Setting of a dry automatic start timer ". The count down of timer is displayed in PV display. Starts the dry operation after timer up. 2. If you want to start drying before the set time, press the [Reset] switch and [Enter] switch at the same time. 3. When not using the automatic start timer, starts the dry operation as soon as "Setting of dry automatic start timer dLY" presses a controller [RUN/STOP] switch in "0.0" condition.
6	Conveying to collection unit on injection molding machine	1. Pressing the direction switch to support the injection-molding machine to want to feed the materials in Feed to [No.1]-[No, 2] switch of controller on the control panel and makes display a lamp in the upper left of switch. 2. When the relay box of collection unit on the injection molding machine has "Feed ON-OFF" switch (Option), makes them, too, "ON". When the relay box (Option) of collection unit on the injection-molding machine has a switch of [Conveying ON-OFF], it doesn't conveyed the operation condition to support "Feed to [No.1]-[No, 2] of this dryer on the control panel when the switch, too, is not in 「ON」 condition. In the condition not to be operating dryly, don't operate in "Material Feed to [No.1]-[No, 2] to the injection-molding machine.

Step	Operation	Description
7	Operation stops (Raw material supply stop to the dryer)	Pressing "Feed to [Drying Hopper] switch of controller on the control panel and makes a turn off or a quick blink (In feeding) do a lamp in the upper left of switch.
	(Raw material supply stop to the collection unit on the injection molding machine)	Pressing the switch to support the injection-molding machine to want to stop the material feed in "Feed to [No.1]-[No, 2] switch of controller on the control panel and makes a turn off or a quick blink (In feeding) do a lamp in the upper left of switch. Also, the convey stops when setting [Conveying ON-OFF] switch of the installed relay box (Option) of collection unit on the injection molding machine to "OFF".
	(Dry stop)	Pressing the [RUN/STOP] switch of controller on the control panel and switches a lamp in the upper left of switch to the blink. After cooling a heater in the fixed time (10 minutes of standards) and turns off a lamp in the upper left of switch and stops the dryness.
8	Power off	After ending the stop operation of procedure 7, set the front power breaker to “OFF”. **⚠ CAUTION** In the stop operation of procedure 7, during blower operation, don't make a power breaker “OFF”. When setting a power breaker “OFF” during blower operation, the blower stops to direct and the unit is filled with heat in the heater part. Then, the trouble of unit and the material sometimes becomes firming cause.
9	Recovery in power failure	During unit operation, in case of the power failure, the operation stops. In case of more than 40 msec. power failures, the unit stops. After the recovery in the power failure, confirm that problem doesn't occur with restart and restart the unit according to need.

【Adjusting the amount of secondary air sucked by the suction nozzle】

Put the suction nozzle into the material and adjust the secondary air regulator to achieve smooth material conveyance.



NOTE

Throttling secondary airflow excessively may cause the hose to be clogged with material.

2. Operation in alarm occurrence

Step	Operation items	Operation contents
1	Alarm	when the alarm occurs, displays "E 0"-"E29" characters to support each alarm for PV display of controller on the control panel and does alarm with the buzzer. The alarm contents to support each character refer to " Alarm function". When more than one piece of alarm occurs at same time, it switching every one second and displays. The buzzer stops when pressing [Reset] switch of controller on the control panel. Refer to "Troubleshooting " about each alarm contents, cause and remedy.

Chapter 6 Maintenance

This chapter describes the possible causes of troubles you may encounter and the actions to be taken against them.

⚠ WARNING

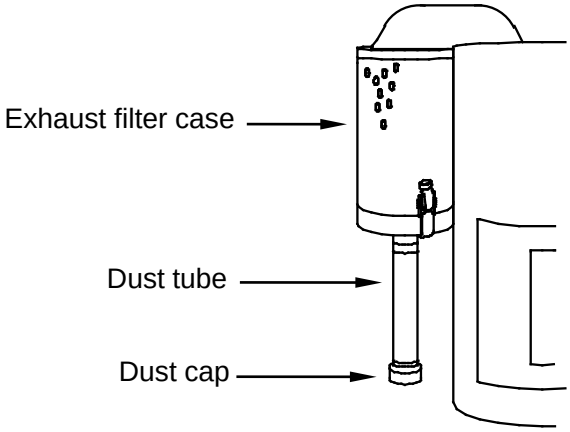
Never fail to examine the causes of any trouble and take remedies after allowing the molder to cool for 5 hr after stopping. (Use gloves.)
It is very dangerous during and immediately after operations becomes it is very hot.
Should any burn occur due to negligence of the above, immediately cool the very part with cold fresh water and seek prompt medical treatment.
Checking operations should be made only by authorized personnel.

1. Daily maintenance

Maintenance item	Description
Check of the electromagnetic contact unit (heater relay) **※Confirms the condition (deposit) of breaker points.**	When the breaker points does deposit, it causes fire occurrence and becomes an terrible dangerous condition. If the electromagnetic contact unit becomes the condition of figure, quickly, replaced to new parts. And, until the parts replace completes, don't start the unit ever. The condition as the center section was hollow when the unit stops.  Normal condition　　Abnormal deposit condition **NOTE** 1. The form sometimes differs on the model. 2. The above figure is the figure condition that saw the electromagnetic contact unit from diagonal front. 3. Even if there is not abnormal, the switching times of the breaker points replace at 1,000,000 times or within1 year of using term.

<table>
<tr><th>Maintenance item</th><th>Description</th></tr>
<tr><td>Discharge of dust from dust tube</td><td>Discharge the dust that has clogged in the dust tube.
Remove the dust cap on the bottom of the dust tube and discharge the dust.

NOTE
After discharging, be sure to refasten the dust cap securely.

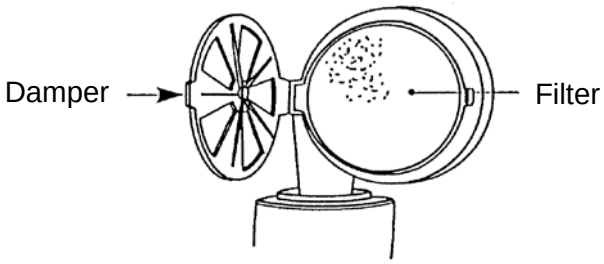
 

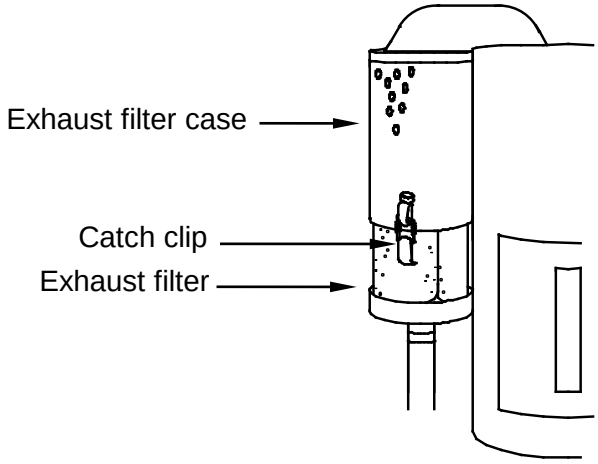
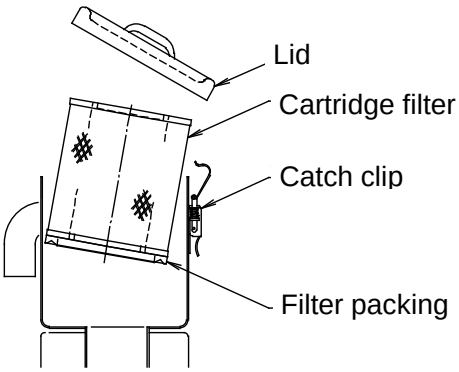
⚠ WARNING
During continuous operation, the surface of the exhaust filter case reaches high temperatures (exceeding 130°C). Avoid direct contact with the skin.</td></tr>
<tr><td>Temperature confirmation</td><td>Confirm whether dry temperature is controlled at the setting temperature of controller.

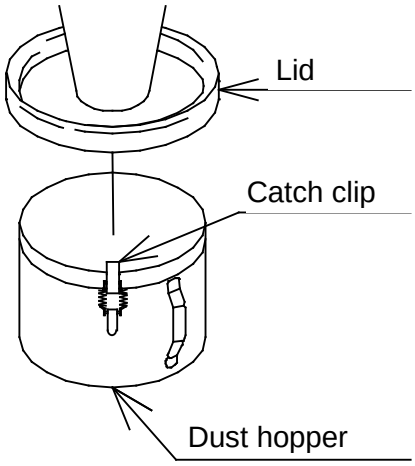
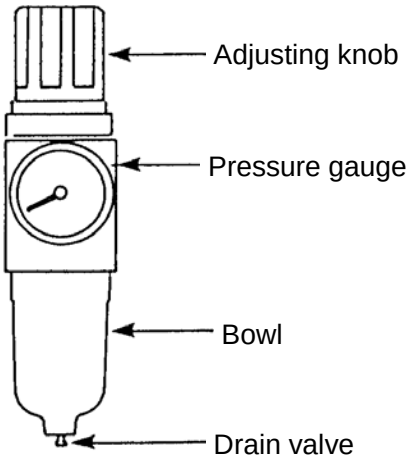
＜Confirming method＞

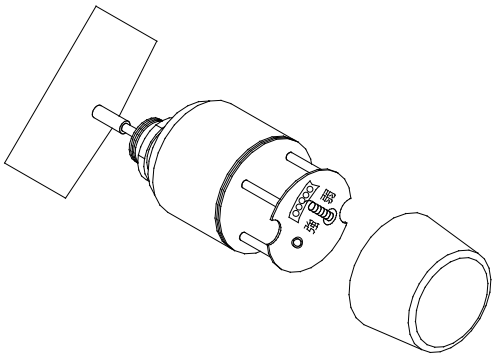
【In case of dry temperature】
1. After pushing the SV switch of the controller once, do the『ＳＶ』 indicator light up and confirm a setting value with dry temperature.
↓
2. Pressing SV switch, do display the dry temperature and compare it with the setting value.
↓
3. If the setting value is a degree as±2～3℃, the dry temperature is normal.</td></tr>
</table>

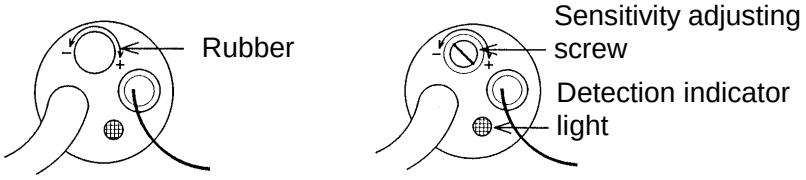
2. Weekly maintenance

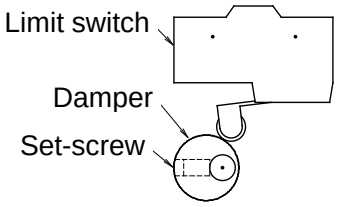
Maintenance item	Description
Filter cleaning	**⚠ CAUTION** 1. Use a mask because the clinging particles of the filter spray the spraying clean of dry air in the air. 2. When a filter is clogged, it does the looseness of operation temperature and airflow rate. Then, be careful because it causes the fire. ・When a filter is clogged, remove a filter and blow clean dry air and remove clinging particles. ・With the around environment of the unit body, the dirty condition of filter changes. Perform the checking and cleaning. ・After check, set the filter in original condition and fasten surely. ・When the filter clogging is terrible, exchange for the new filter.
Filter for blower suction port	Open the damper of the blower suction port and make sure the filter is not clogged. If the filter is clogged, remove it and blow it with clean, dry air to remove clinging particles.  **NOTE** Do not remove the metal screen on the inside.

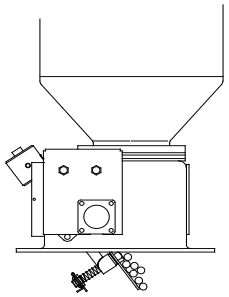
Maintenance item	Description
Exhaust filter of exhaust filter case inside	Remove the catch clips (2) on the bottom of the exhaust filter case and remove the exhaust filter. Blow clean dry air inside the exhaust filter and remove clinging particles.  After cleaning, roll the exhaust filter into a cylindrical shape and insert it into the exhaust filter case without wrinkling it.
Cleaning for convey filter	Removing a filter, check and clean up the filter clogging. 

Maintenance item	Description
Dust hopper for air source unit	Remove the dust hopper and remove the fine particle that is stagnant inside.  ※The degradation of packing be terrible and exchange for the new packing when being transformed, discoloring and becoming solid.
Air kit	Draw up the adjusting knob of the filter regulator and remove a lock. Then, turn the adjusting knob to the left and confirm whether or not the instruction pressure of pressure gauge becomes "0 (zero)". And, discharge drain that is stagnant in the bowl. The discharge forms if pressing the drain valve in lower part of the bowl. Receive the drain with the can. 

Maintenance item	Description
Sensitivity adjustment by the paddle type level gage (Using the paddle –type level gage)	When the level gage doesn't sense correctly by the kind of material, the sensitivity adjustment is necessary. 【Adjusting method】 Adjust sensitivity at the specific gravity of convey material. ①After turning the lid of the level gage, and remove. ②Change the position of the installation hole of spring. When moving a spring to the low position, the sensitivity up. And, when moving a spring to the high position the sensitivity down. 

Maintenance item	Description
Weigh request gauge (Proximity switch) Sensitivity adjustment method	When not measuring the full material correctly, adjust the sensitivity of the proximity switch by the following procedure. (1) Remove material in the glass tube. (2) Confirm there is no between the end of proximity switch and glass tube. If th is a gap between them, loosen fastening screws (2pcs.) of proximity switch fitting bracket and fix proximity switch with its end touching glass tube. (3) Remove the rubber cap at the back of proximity switch.  (4) The following ①, ②, ③ and ④ operations are perform with the attached screwdriver. ①Confirm the "lights-OFF" of detection indicator light under the condition without material. (When lighting ON, the sensitivity adjustment screw of inside is turned to the – direction (Left rotation). Then, stopped in the "lights-OFF" position.) ②Next, in the condition of ①, turn the sensitivity adjustment screw to the + direction (Right rotation) slowly. Then, stopped in the "lights-ON" position of the motion indicator. (The position of the sensitivity adjustment screw is memorized.) ③The material is supplied under the condition of ①, and the sensitivity adjustment screw is turned to the – direction (Left rotation) slowly. Then, stopped in the "lights-OFF" position of the motion indicator. ④The position of sensitivity adjustment screw is stopped in middle of ② and ③. (The sensitivity setting is completed.) NOTE (1) Perform the sensitivity setting with the actual using material. And, when there are various material, the ② and ③ operation are perform with light material of appearance specific gravity. ←——①————③————④————②——→ Without material [Lights-OFF] / With material [Lights-OFF] / Middle of ②and③ ▲Setting point / Without material (memory) [Lights-ON] (5) The rubber cap removed in the step 3 is installed. Perform the material conveyance and confirm that the detection indicator lights up.

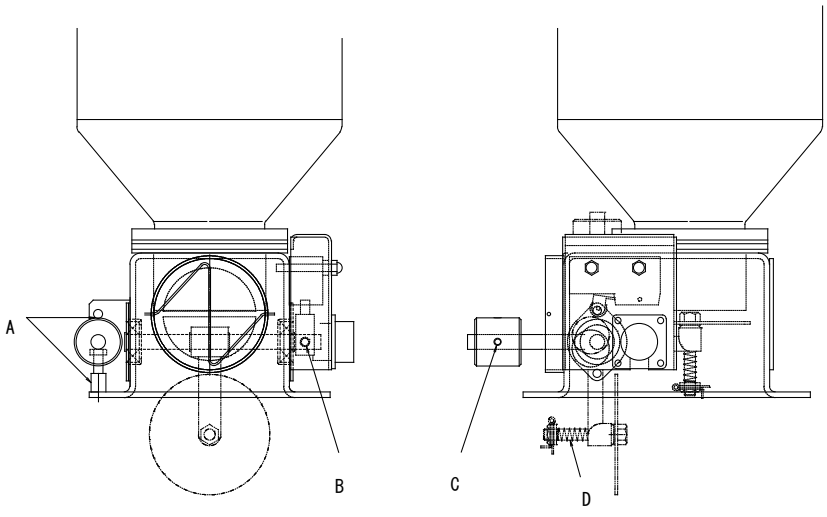
<table>
<tr><th>Maintenance item</th><th>Description</th></tr>
<tr><td>Adjustment for the Jet Clone damper cam in upper part of the dry hopper
(In case of using Jet clone)</td><td>When the damper doesn't open until the full signal appears on, adjust a damper cam by following procedure.
 

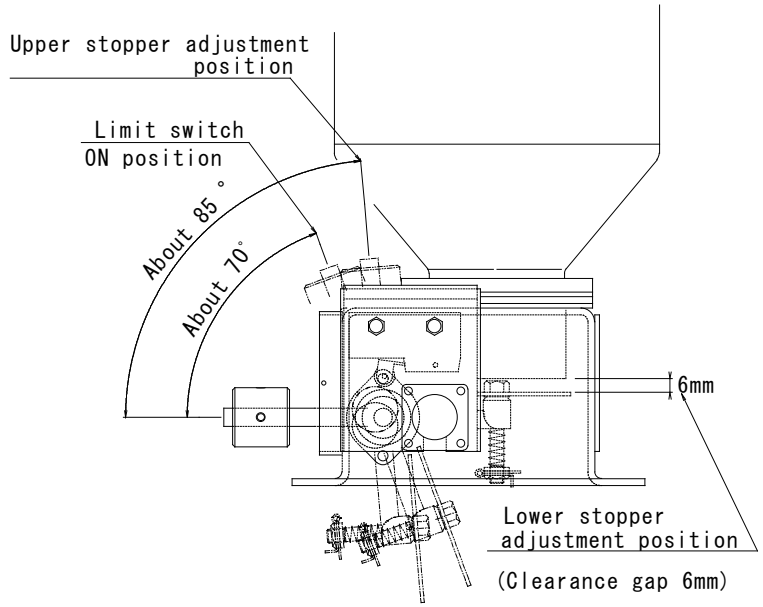
<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>1</td><td>Loosen the setscrew with a hexagon rod spanner (2.5mm).</td></tr>
<tr><td>2</td><td>Adjust the damper position for limit switch to become ON at the position where the damper fell from the horizontal 45°- 50°.</td></tr>
<tr><td>3</td><td>After adjusting the cam, secure it by tightening the setscrew.</td></tr>
</table></td></tr>
<tr><td>Dry hopper upper part
Jet clone
Control for balance weight</td><td>When the material adheres to damper by static electricity, etc., the case become the right-figure condition is sometimes.
In such a case, loosen the setscrew×2 for balance weight until and slide every about 5 mm back and adjust until the damper becomes horizontal. Tighten a screw if the adjustment ends and fix it.
  </td></tr>
<tr><td>Removing and
air leak of hose</td><td>Check the removing and air leak of hose.
※At time of the air leak, exchange to the new hose.

[Example of the checking method for the air leak]
In the checking method, hang a string or a thread near the hose.
In the shaking condition of a string or a thread, the air leak can be confirmed.</td></tr>
<tr><td>Switch unit
for electromagnetic valve
and Contact unit</td><td>Confirm whether or not there is not the dissolution and consumption in point of tact by installation the switch unit for electromagnetic and contact unit in the control panel.
※ When there is the dissolution and consumption of the setting, exchange a part.

⚠ CAUTION
The check is after stop the unit, always perform after turned “OFF” the power breaker in the front.</td></tr>
</table>

3. Monthly maintenance

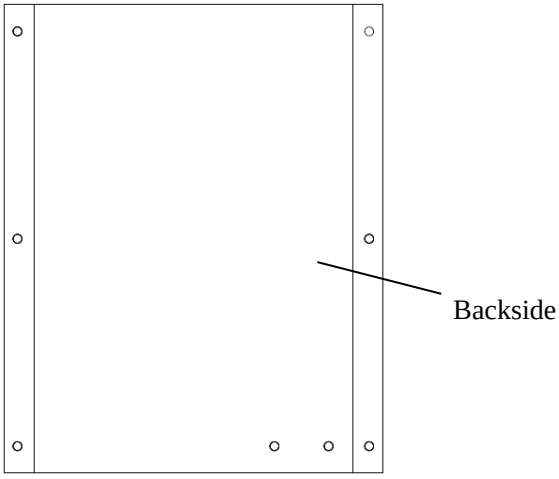
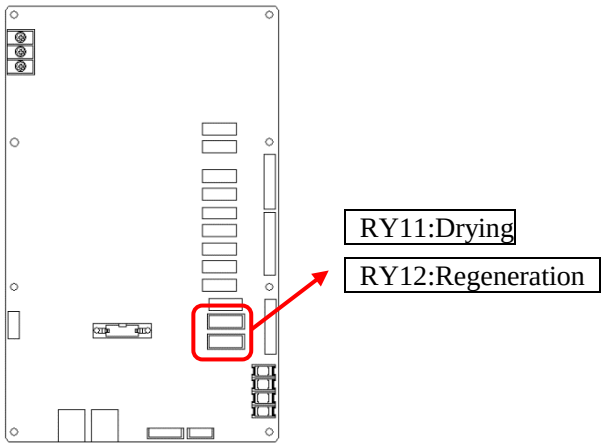
Maintenance item	Description
Rising fastens for the terminal	Confirm the loosening of the wiring connection part of the electronics equipment inside the control panel and in the unit. And, perform the rising fastens in the connection part. **⚠ CAUTION** The check is after stop the unit, always perform after turned “OFF” the power breaker in the front.
Check for each jet clone part	A: Check if the two upper and lower stoppers (M6) aren't loosened. ※When it loosened, refer to next page "Stopper adjustment figure" and tighten up it once more. B : Remove a cover and check if the hexagon socket head set screw for cam isn't loosened. Make open/close the damper at the same time and check if the limit switch is no error. ※When it loosened, refer to next page "Stopper adjustment figure" and tighten up it once more. C : Check if the hexagon socket head set screw which stops balance weight isn't loosened. ※When loosened, fasten up and fix a screw. D: Check if there is not an error in spring, bolt, nut and split pin. ※When making an error, replace to new article. 

Maintenance item	Description
Check for each jet clone part	 Stopper adjustment figure

4. Every six months maintenance

Maintenance item	Description
Bolt and Nat in each unit part	Check about whether there is not loosening of bolt and Nat at each part of the unit. Then, perform rising fastens.

7. Every year maintenance

Maintenance item	Description
Controller main circuit board	Replace the drying heater output relay. 1.Turn STOP the operation RUN/STOP switch of the device, and open the control panel of the device after turning “OFF” the power breaker on the right side of the control panel. ⇓  2. Remove the cover (screwed at three points) on the back side of the control panel. ⇓ 3.The second lowest relay is a relay for the drying heater. (RY2: Drying heater) ⇓  4. Remove the relay and replace with a new one. 5. Install the backside cover after replacement.

Chapter 7 Alarms Function

⚠ CAUTION

Before doing the check of the malfunction cause and recovery, always perform the power breaker of control panel “OFF”.
The work with power “ON”, causes the trouble and the accident.
Don't do absolutely.

When the malfunction occurs during operation of the equipment, the protection unit operates, the alarm character is displayed in the control panel and the alarm buzzer sounds and informs the malfunction.

When pushing [Reset] key, the buzzer stops.

Alarm indication	Description	Remedy
Memory error (E 0)	Can not to read right the setting value that was memorized on the controller.	Once, tune on power once again after power being downed.
Negative phase (E1)	It is in wrong phase operation. Or, it is doing missing phase.	3-phase power is not missing phase and it confirms power supplying. Makes the primary side power OFF and connecting and changing R phase (Red) and T phase (Black) of power code.
A dryer is overloaded (E 2)	The thermal relay of solenoid switch unit for the Drying blower trips.	Turn OFF the electric power supply, and check for foreign object intruded in the movable part of blower body. Check filter for clog or dust accumulation. Check if the material and the foreign material is blockaded the conveying pipe inside. Press the solenoid switch reset button in the panel, and use the “RESET” switch in the alarm screen to restore the condition.
Conveying blower over load (E 3)	Thermal relay in the solenoid switch for conveying Blower failed.	Turn OFF the electric power supply, and check for foreign object intruded in the movable part of blower body. Check filter for clog or dust accumulation. Check for clogged material or foreign object congestion in conveying pipes.Press the solenoid switch reset button in the panel, and use the “RESET” switch in the alarm screen to restore the condition.

Alarm indication	Description	Remedy
Overheat (E4)	The attached thermostats of heater detected overheat.	Confirms whether or not that solid State contactor (SSR-1,2) is stopping, too, is not in ON condition. Replaces if it does ON condition. Refer to "Blower doesn't rotate", "A little air flow rate of blower" of "CHAPTER. Troubleshooting".
	Occurs when the drying heater reaches an abnormally high temperature. The unit is automatically shut off. **⚠ DANGER** The E4 alarm is an important alarm that detects abnormally high temperatures and automatically shuts the unit off. If improper measures such as modifying the unit to prevent the E4 alarm from being triggered are taken, the unit will continue to operate in a state of abnormally high temperature for a long period of time, which is extremely dangerous. Be sure to follow the correct measures as described in the column at the right. Replacement of parts should be conducted by a certified electrical engineer after turning off the power breaker.	After cooling for one hour or longer, press the CONTROL ON button. If the E4 alarm triggers again, the overheat protector is defective. Replace the drying overheat protector. Press the RUN/STOP key to operate the unit. Inspect the drying blower and replace the blower if it does not rotate. If the cause is not identified and the E4 alarm triggers again, an inspection by a service engineer is necessary. Contact our Service Division to request an inspection.

Alarm indication	Description	Remedy
Disconnection of the dry temperature sensor (E5)	A sensor for the dry temperature control was broken or the temperature detection became abnormal.	Confirm that it is normal to connect for the dry temperature sensor (Thermocouple).Also, confirm the short circuit and the disconnection.Replace a dry temperature sensor (Thermocouple) by need.
Disconnection of the dry loop (E 7)	It reports when the dry heater condition of 100 % of output continues in the setting time after the dry start-up (The condition where the dry hot air temperature doesn't rise even if it operates in the heating) when set to the detection time "dLP" of the dry loop disconnection in the time.	Confirm if the setting value of dry loop disconnection detection time "dLP" is short. Confirm if the dry ventilator (Blower) is fanning normally. The recovery of disconnection and replaces the defective parts after making the power OFF and confirming thermocouple (K1), heater (EH1), heater drive contactor (MC-0, SSR-1), disconnection of connection wire and defective operation.
Upper limit temperature is Abnormal (E 9)	Emits when detection temperature "PV" of dryness exceeds the deviation level with upper limit temperature setting value (Dry side "dUS") from setting value "SV" during dry operation. The operation has a standby sequence.When the setting value "SV" is downed, too, functions after once downed to the setting temperature.	The dryness and the setting temperature "SV" setting confirm whether the dryness, and "dUS" setting of the deviation with the temperature upper limit of appropriate in the standard setting range. Check if the dryness or the fanning by the ventilator (Blower) is normal. Also, checks the filter clogging. Returns to normal temperature and resets with Reset switch operating.
Lower limit temperature is abnormal (E10)	Emits when the detection temperature "PV" of dryness downs at the deviation above lower limit temperature provision fixed command (Dry side "dLS") than setting value "SV" during dry operating. As the operation attaches to the standby sequence, when ups the setting value "SV", too, it functions after reaching the setting temperature once.	Confirms the dryness the setting temperature "SV" .Checks the disconnection of heater.To dry or fanning of the ventilator (Blower) is normal or confirms the filter clogging. Resets automatically when returns to normal temperature.

Alarm indication	Description	Remedy
Dust cleaning (E15)	Emits when the number of times of conveyances (dust cleaning count monitor “dUP”) exceeds the dust cleaning counter set value “dUC.”	Clean the filter and dispose of powder dust in the dust box. (Refer to Chapter 6 Maintenance.) Set the dust cleaning count monitor “dUP” to “0” and reset.
The dry hopper conveyance is abnormal (E 20)	Emits when the drying hopper remains empty although the primary conveying operation was performed up to the number of times of primary conveyance abnormal detection “LCt,” when the drying hopper raw material level switch does not become empty although secondary side conveying operation of any of No.1 to No.9 was performed up to the number of times set in the number of times of secondary conveyances “FCt” at the time when the primary side was full, or when the conveyance abnormal detection delay time “PEd” elapsed with the raw material empty condition of the drying hopper maintained during conveyance to the dryer.	Feeds after confirms with or without of the materials of material tank. Confirms the feeding condition to the Drying hopper and Checks the normal conveying condition. Checks the installing of level switch connector. Checks the trouble of level switch. Resets automatically with abnormal recovery.
No.1 conveyance is abnormal. (E 21)	The delay time "1Ed" of abnormal convey detection passed by the raw material empty condition of hopper on the injection molding machine during convey starting to No.1 injection molding machine.	Confirms the feeding condition to hopper on the injection molding machine and checks normal conveying. Correcting if there is the damage, the material blockade, and failure in a pipe and a hose. Check whether the connector for level switch doesn't fail.Correcting it when there are the failure and the damage of the level switch connection.Checking the trouble of level switch and replace it when having the trouble.

Alarm indication	Description	Remedy
No.2 conveyance is abnormal. (E 22)	The delay time "2Ed" of abnormal convey detection passed by the raw material empty condition of hopper on the injection molding machine during convey starting to No.2 injection molding machine.	Confirms the feeding condition to hopper on the injection molding machine and checks normal conveying. Correcting if there is the damage, the material blockade, and failure in a pipe and a hose. Check whether the connector for level switch doesn't fail.Correcting it when there are the failure and the damage of the level switch connection.Checking the trouble of level switch and replace it when having the trouble.

Chapter 8 Troubleshooting

This chapter describes the possible causes of troubles you may encounter and the actions to be taken against them. Check the following troubleshooting table before requesting our service.
When a problem cannot be solved even after taking the actions described here, contact the nearest our service division. (see back page) and request service.

⚠ CAUTION

Operate the stop of the equipment before working in the check. And, after the confirmation in the full stop of the equipment. Check after making a breaker “OFF” and heating part temperature's falling to the temperature that doesn't get a burn. And refer to Chapter 6. “Maintenance and Check" about the filter removal method.

The Convey blower does not rotate.		
Check point	Remedy	Note
Confirm whether or not the indicator of the controller lights up.	Set the primary power and a front power breaker in ON. Press [CONTROL ON] switch.	When the following disposal doesn't correct dispose by CHAPTER8. [The indicator with the PV value of the controller doesn't display the condition of “ON” in primary power].
Confirm whether or not the Feed to [No,1] indicator of the controller lights up.	When not lighting up, press Feed to [No,1] switch. When the indicator doesn't light up even if it pushes the switch, exchange a controller.	Inspection and replacement by persons who have not enough knowledge about electricity may cause failure and danger. Ask our service department to inspect and replace.
Open the door of control panel and are there not dissolving and consumption of the magnet point of the electromagnetic switch unit, and At the time of power “ON”, check the opening and shutting motion for the magnet.	When the dissolving, the consumption condition, and the normal operation are impossible, exchange the electromagnetic switch unit.	Tolerance: 2.000.000 times
Confirm whether or not the malfunction character of 『E3』 isn't displayed at the controller indicator.	In the cause of the over load of blower, after repair, open the control panel door and press the reset button of thermal relay.	As for the overloaded cause of the blower, refer to CHAPTER8. [The blower does overloaded operation and the thermal relay trips].

The Convey blower does not rotate.		
Check point	Remedy	Note
Confirm whether or not the limit switch of jet clone at the end of convey doesn't become “ON” in spite of not being in the full material condition.	At the time of "ON", refer to the full signal adjustment of jet clone-type of chapter 6 "Maintenance and Check " and adjust the limit switch.	When a right adjustment isn't performed, the convey stop becomes impossible in the full material condition. Therefore, be careful.
Confirm the sensitivity of the level gage of the end convey hopper.	Refer to the sensitivity adjustment for paddle-type level switch and proximity switch of chapter 6 "Maintenance and Check" and adjust the sensitivity for level switch.	When a right adjustment isn't performed, the convey stop becomes impossible in the full material condition. Therefore, be careful.

The dry blower does not rotate.		
Check point	Remedy	Note
Confirm whether or not the indicator of the controller lights up.	Set the primary power and the front power breaker in ON.	When the following disposal doesn't correct dispose by CHAPTER8. [The indicator with the PV value of the controller doesn't display the condition of “ON” in primary power].
Confirm whether or not the RUN/STOP indicator of the controller lights up.	When not lighting up, press RUN/STOP switch. When the indicator doesn't light up even if it pushes the switch, exchange a controller.	When the start timer is set, after the setting time, the dry operation is started.
Open the door of control panel and are there not dissolving and consumption of the magnet point of the electromagnetic switch unit, and At the time of power “ON”, check the opening and shutting motion for the magnet.	When the dissolving, the consumption condition, and the normal operation are impossible, exchange the electromagnetic switch unit.	Tolerance: 2.000.000 times
Confirm whether or not the malfunction character of 『E2』 isn't displayed at the controller indicator.	In the cause of the over load of blower, after repair, open the control panel door and press the reset button of thermal relay.	As for the overloaded cause of the blower, refer to CHAPTER8. [The blower does overloaded operation and the thermal relay trips].

The blower does overloaded operation and the thermal relay trips.		
Check point	Remedy	Note
Remove the cartridge filter in the filter case of the convey line and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the cartridge filter and remove the clinging particles.	When the degradation of cartridge filter progresses and it isn't possible to remove clinging particles, exchange at the new cartridge filter.
Remove the dry filter and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.
Open the door of control panel and are there not dissolving and consumption of the magnet point of the electromagnetic switch unit, and At the time of power "ON", check the opening and shutting motion for the magnet.	When the normal operation are impossible, exchange the electromagnetic switch unit.	Tolerance: 2.000.000 times
Check whether or not the thermal in control panel is set to the standard value.	Refer to [The thermal setting value of every model] and set a thermal to the standard value.	Work after setting primary power to "OFF".

A little airflow rate of the blower.		
Check point	Remedy	Note
Remove the cartridge filter in the convey filter case and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the cartridge filter and remove the clinging particles.	When the degradation of cartridge filter progresses and it isn't possible to remove clinging particles, exchange at the new cartridge filter.
Remove the filter in the dry blower and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.

A little air flow rate of the blower.		
Check point	Remedy	Note
Confirm whether or not the damper for airflow adjustment of the dry blower is open.	Full opens a damper.	When operating in the closed condition, in the insufficiency in the suction airflow, the overheat (upper limit alarm) with dry temperature occurs. Always, use by the full open.
Remove the exhaust filter and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.
Check whether there are not a burst of connection hose and the connection's loosening in the unit.	When the hose damages, exchange at the new hose. When there is loosening in the hose connection, tighten up a hose band surely.	If finding the part of air leak, stop the unit and repair.

The change of the dry temperature is large.		
Check point	Remedy	Note
Remove the filter in the dry blower and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.
Remove the exhaust filter and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.
Refer to the technical manual and confirm each setting of a controller special mode.	When mistaking by the setting value, change to the right setting value.	

The dry temperature doesn't up and down.		
Check point	Remedy	Note
Check that the dry heater is broken.	When a heater is broken, exchange a heater.	After the unit stops, making a power breaker "OFF", and work after downed with the range of the heating part temperature that doesn't get burned.
Check whether or not to mistake by the setting value of the protector of the dry overheat. Setting value: Dry temperature＋20℃	When mistaking by the setting value, set a right value.	For the prevention of being shocked, work after performing the power breaker "OFF".
Check whether or not to open the control panel door and whether or not the electromagnetic contact unit is operating normally or there is turning on.	When finding the malfunction, exchange electromagnetism contact unit	As for the exchange and the model, inquire to our service division. Because there are the trouble and danger, request to our service division about the check and the exchange that doesn't have electric knowledge more.

The indicator with the PV value of the controller doesn't display the condition of "ON" in primary power and pushes the CONTROL ON switch.		
Check point	Remedy	Note
Check whether or not the front power breaker of the control panel becomes "ON".	When not becoming "ON", perform the power breaker "ON" and press CONTROL ON switch once again.	Durable switching times: 10,000 If switching function does not operate properly, replace power breaker.
Check whether or not the circuit protector (CP-1)of the control panel does not become "OFF".	After check of electric wiring and the part in the control panel, set to "ON".	After setting the primary power and the front power breaker to "OFF", check.

The power breaker trips.		
Check point	Remedy	Note
Check whether or not the circuit does not the short circuit.	Remove the short circuit.	Inspection and replacement by persons who have not enough knowledge about electricity may cause failure and danger. Ask our service department to inspect and replace.

The upper limit alarm with dry temperature occurs.		
Check point	Remedy	Note
Remove the filter in the dry blower and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.
Confirm whether or not the setting value of the upper limit temperature alarm (deviation with dry temperature) is right. (10℃ setting in case of shipment)	When the setting value is small, refer to “CHAPTER 9. Technical Manual” and set once again.	When the upper limit alarm still occurs after setting, refer to CHAPTER 9 of “The start-up method for the auto tuning” and perform it. (set in the hopper under (You set in the hopper in the material feeding condition). the material feeding condition).

The overheat alarm occurs.		
Check point	Remedy	Note
Remove the exhaust filter and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.
Remove the filter in the dry blower and check the filter stuff.	When there are dirt and stuff, blow the clean dry air into the filter and remove the clinging particles.	When the degradation of filter progresses and it isn't possible to remove clinging particles, exchange at the new filter.
Confirm whether or not the dry blower is rotating.	When not rotating, dispose of the reference in CHAPTER 8 of "The dry blower does not rotate".	Request blower replaces of us.
Confirm whether or not setting value of the overheat protector is proper.	Set the dry temperature to +20℃.	For the details, refer to " CHAPTER 4. Preparation for operation; item 4. Setting the overheat protector " and set.
Open the door of the control panel, and inspect whether the drying heater output relay (RY2) in the main circuit board located on the backside of the controller is operating normally.	Replace the drying heater output relay (RY2).	Switching endurance: 5 million times or 1 year

Chapter 9 Technical Manual

1. The shipment setting value for the controller

The parameter for the user setting mode

The parameter display switches in the following order every time presses SV switch. But, shifts to the engineering setting mode when pressing over SV switch over 5 seconds. Be careful.

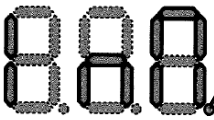
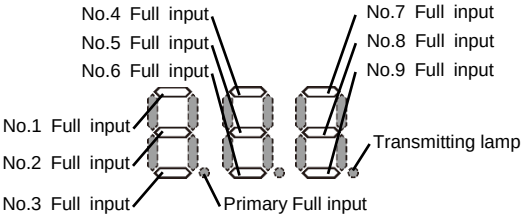
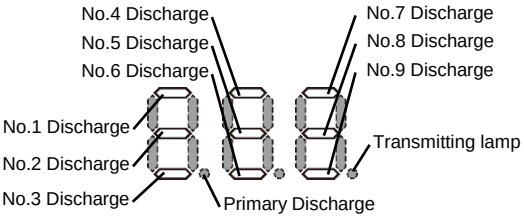
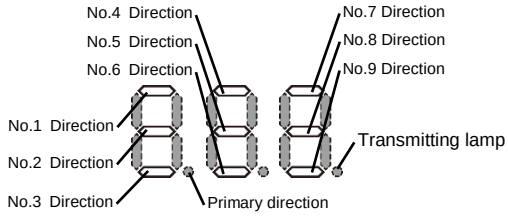
Use	Character	Setting range	Initial setting value	Remark
Dry temperature	SV	Standard 0～130°C or 32～266°F	80°C or 176°F	
		High temperature 0～160°C or 32～320°F		
Automatic start timer	dLY	oFF, 0.1 – 99.5 hours	0.0 hours	Stops function in " oFF ".
Feed conveying time for dryer *1	FdP	0 - 999 sec.	MGD-15～150 20 sec.	
			MGD-200～300 25 sec.	
No.1 Conveying time *1	Fd1	0 - 999 sec.	MGD-15～150 15 sec.	
			MGD-200～300 25 sec.	
No.2 Conveying time *1	Fd2	0 - 999 sec.	MGD-15～150 15 sec.	
			MGD-200～300 25 sec.	
No.3 Conveying time *1, *2	Fd3	0 - 999 sec.	15 sec.	
No.4 Conveying time *1, *2	Fd4	0 - 999 sec.	15 sec.	
No.5 Conveying time *1, *2	Fd5	0 - 999 sec.	15 sec.	
No.6 Conveying time *1, *2	Fd6	0 - 999 sec.	15 sec.	
No.7 Conveying time *1, *2	Fd7	0 - 999 sec.	15 sec.	
No.8 Conveying time *1, *2	Fd8	0 - 999 sec.	15 sec.	
No.9 Conveying time *1, *2	Fd9	0 - 999 sec.	15 sec.	

Use		Character	Setting range	Initial setting value	Remark
Feed discharging time for dryer	*1	dCP	0 - 999 sec.	25 sec.	
No.1 Discharging time	*1	dC1	0 - 999 sec.	25 sec.	
No.2 Discharging time	*1	dC2	0 - 999 sec.	25 sec.	
No.3 Discharging time	*1, *2	dC3	0 - 999 sec.	25 sec.	
No.4 Discharging time	*1, *2	dC4	0 - 999 sec.	25 sec.	
No.5 Discharging time	*1, *2	dC5	0 - 999 sec.	25 sec.	
No.6 Discharging time	*1, *2	dC6	0 - 999 sec.	25 sec.	
No.7 Discharging time	*1, *2	dC7	0 - 999 sec.	25 sec.	
No.8 Discharging time	*1, *2	dC8	0 - 999 sec.	25 sec.	
No.9 Discharging time	*1, *2	dC9	0 - 999 sec.	25 sec.	
No.1 Material beginning time	*1	bt1	0.0～99.9 sec.	2.0 sec.	
No.2 Material beginning time	*1	bt2	0.0～99.9 sec.	2.0 sec.	
No.3 Material beginning time	*1, *2	bt3	0.0～99.9 sec.	2.0 sec.	
No.4 Material beginning time	*1, *2	bt4	0.0～99.9 sec.	2.0 sec.	
No.5 Material beginning time	*1, *2	bt5	0.0～99.9 sec.	2.0 sec	
No.6 Material beginning time	*1, *2	bt6	0.0～99.9 sec.	2.0 sec.	
No.7 Material beginning time	*1, *2	bt7	0.0～99.9 sec.	2.0 sec.	
No.8 Material beginning time	*1, *2	bt8	0.0～99.9 sec.	2.0 sec.	
No.9 Material beginning time	*1, *2	Bt9	0.0～99.9 sec.	2.0 sec.	
Dust cleaning counter setting	*2	dUC	oFF, 1-999 times	oFF	Stops function in " oFF "
Dust cleaning counter monitor	*2	dUP	0.0～999	0	
Conveying destination full status check monitor		InM	-	-	Reffer to *3
General-purpose output ① monitor		o1M	-	-	Reffer to *3
General-purpose output ② monitor		o2M	-	-	Reffer to *3

*1. The setting of material supplying relation isn't displayed when setting the function that supports by each conveying function (「PEn」,「1En」～「9En」) of the engineering setting to 「oFF」 (Function stop).

*2. It isn't sometimes displayed by the unit composition.

*3. Segments of the Conveying destination full status check monitor and general-purpose output monitor

	PV Display digit (Red)	SV Display digit (Green)
Conveying destination full status check monitor		 *The light does not illuminate the direction that is not selected.
General-purpose output ① monitor		
General-purpose output ② monitor		

Parameter of engineering setting mode

Shifts to the engineering setting mode when pressing SV switch over 5 seconds. The character switches in following order every time presses SV switch by the engineering setting mode.

Name		Character	Setting range	Initial setting value	Remark
Dryer feeding function		PEn	on/oFF	on	
No.1 feeding function		1En	on/oFF	on	
No.2 feeding function		2En	on/oFF	on	
No.3 feeding function	*2	3En	on/oFF	on	
No.4 feeding function	*2	4En	on/oFF	on	
No.5 feeding function	*2	5En	on/oFF	on	
No.6 feeding function	*2	6En	on/oFF	on	
No.7 feeding function	*2	7En	on/oFF	on	
No.8 feeding function	*2	8En	on/oFF	on	
No.9 feeding function	*2	9En	on/oFF	on	
Dryer level switch Request delay	*1	LPd	0 - 999 sec.	15 sec.	
No.1 level switch Request delay	*1	L1d	0 - 999 sec.	15 sec.	
No.2 level switch Request delay	*1	L2d	0 - 999 sec.	15 sec.	
No.3 level switch Request delay	*1,*2	L3d	0 - 999 sec.	15 sec.	
No.4 level switch Request delay	*1,*2	L4d	0 - 999 sec.	15 sec.	
No.5 level switch Request delay	*1,*2	L5d	0 - 999 sec.	15 sec.	
No.6 level switch Request delay	*1,*2	L6d	0 - 999 sec.	15 sec.	
No.7 level switch Request delay	*1,*2	L7d	0 - 999 sec.	15 sec.	
No.8 level switch Request delay	*1,*2	L8d	0 - 999 sec.	15 sec.	
No.9 level switch Request delay	*1,*2	L9d	0 - 999 sec.	15 sec.	
Secondary conveying start conditions	*2	2nd	0:have no startup condition 1: activated during drying operation 2: activated after drying completion	1	

Name		Character	Setting range	Initial setting value	Remark
Abnormal detection time for dryer conveying		LCt	oFF, 1 - 999 times	100 times	Stops function in " oFF ".
Abnormal detection time for dryer level switch		FCt	oFF, 1 - 999 times	20 times	Stops function in " oFF ".
Abnormal detection for dryer conveying Detection delay time	*1	PEd	oFF, 1 - 999 min	120 min	Stops function in " oFF ".
No.1 Convey abnormal Detection delay time	*1	1Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.2 Convey abnormal Detection delay time	*1	2Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.3 Convey abnormal Detection delay time	*1,*2	3Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.4 Convey abnormal Detection delay time	*1,*2	4Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.5 Convey abnormal Detection delay time	*1,*2	5Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.6 Convey abnormal Detection delay time	*1,*2	6Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.7 Convey abnormal Detection delay time	*1,*2	7Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.8 Convey abnormal Detection delay time	*1,*2	8Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
No.9 Convey abnormal Detection delay time	*1,*2	9Ed	oFF, 1 - 999 sec.	180 sec.	Stops function in " oFF ".
Feeding discharge valve for dryer Biting insert prevention motion Times		PEr	oFF, 1-10 times	oFF	Stops function in "oFF".
Feeding discharge valve for dryer insert prevention motion Opening time		PEo	1-10 sec.	2 sec.	
Feeding discharge valve for dryer Biting insert prevention motion Closing time		PEC	1-10 sec.	2 sec.	
Collection unit discharging valve on injection-molding machine Biting insert prevention motion Times		SEr	oFF, 1-10 times	oFF	Stops function in "oFF".
Collection unit discharging valve on injection-molding machine Biting insert prevention motion Opening time		SEo	1-10 sec.	2 sec.	
Collection unit discharging valve on injection-molding machine Biting insert prevention motion Closing time		SEC	1-10 sec.	2 sec.	

Name	Character	Setting range	Initial setting value	Remark
Discharge valve Before conveying Opening time	Pdt	oFF, 1-10 sec.	oFF	Stops function in "oFF".
Convey starting Delay time	Pdd	1-10 sec.	1 sec.	
Convey air blower starting Delay time	PdH (PdW)	1-10 sec.	1 sec.	
Tank material low Detection delay time	TTEt (MEt)	oFF, 0 - 999 sec.	60 sec.	Stops function in " oFF ".
Detection delay for material residual	rTTd (rMd)	oFF, 1 - 999 sec.	oFF	Stops function in " oFF ".
Drying completion time	dEd	oFF, 0.1 – 99.5 h	oFF	Stops function in " oFF "
Upper limit temperature alarm Detection delay time	ULt	0 - 999 sec.	5 sec.	
Upper limit deviation of dry temperature	dUS	oFF, 1 – 40℃ or 1-72°F	10℃ or 18°F	Stops function in " oFF ".
Upper limit deviation of regeneration temperature	rUS	oFF, 1 – 40℃ or 1-72°F	10℃ or 18°F	Stops function in " oFF ".
Lower limit deviation of dry temperature	dLS	oFF, 1 – 40℃ or 1-72°F	10℃ or 18°F	Stops function in " oFF ".
Lower limit deviation of regeneration temperature	rLS	oFF, 1 – 40℃ or 1-72°F	20℃ or 36°F	Stops function in " oFF ".
Detection time of dry loop disconnection	dLP	oFF, 1 - 999 min.	0 min.	Stops function in " oFF ".
Detection time of regeneration loop disconnection	rLP	oFF, 1 - 999 min.	0 min.	Stops function in " oFF ".
Reverse phase/Missing phase Detection function	rSt	on/oFF	1	Stops function in " oFF ".

*1. The setting of material supplying relation isn't displayed when setting the function that supports by each conveying function (「PEn」,「1En」～「9En」) of the engineering setting to 「oFF」 (Function stop).

*2. It isn't sometimes displayed by the unit composition.

2. The start-up method for the auto tuning

This controller doesn't display an auto tuning error. Therefore, don't to do the display and the alarm motion by a buzzer when the auto tuning error (Sensor disconnection or auto tuning time passes over 3 hours) occurs. Also, when the auto tuning error occurs once. The auto tuning can not be resumed in the power unless doing turn on again.

The regeneration temperature is adjusted at the time of shipment.

Normally, it is not necessary to perform auto tuning.

The regeneration temperature controller may notify the lower limit temperature alarm "E10" immediately after auto tuning, but it is not abnormal. .

Stop the buzzer with the [Reset] switch.

Once the control status is stable, the alarm will be automatically canceled.

1) While the dryer is running with the measured drying temperature displayed, press and hold the [▲] switch for 5 seconds to start the auto tuning of the drying temperature controller.
Also, press and hold the [▼] switch for 5 seconds to start auto tuning of regeneration temperature control
(During auto tuning, displays the measurement temperature and "At" alternately in 1-second cycle.)

2) Returns to usual PV display when the auto tuning ends. Then, starting PID control by the adjusting result.

3) The operation when doing auto tuning in the forced outage is operation that is same as
(Not changed into the setting value that is P.I.D. in this case because it is the setting that is same as before auto tuning.)

3. About influence of gas that occurs from the resin

The information on influence of gas that occurs from the resin

The unit sometimes can not function normally with influence of gas that occurs from the resin.
As for the resin that has this possibility, the compatible to suppress influence of gas becomes necessary.
There are one-pass methods and methods of installing the gas gathering unit etc. in compatible method. However, the method must be chosen by the dry material.
Also, there is not the complete measure to all resins in the present.
Therefore, depending on the using resin, the constant regular maintenance and the parts replace of consumables become necessary.
When the following phenomenon is confirmed in during use, there is possibility that the unit undergoes influence by gas. In such case, please consult to us.

1) The liquid of oily oozes from the filter box, the pipe connection part and the Drying hopper etc.
2) There is discoloration in the filter box. Or, adheres to oil.
3) Oil dirties the whole unit.
4) Oil adheres to the floor.

As for the resin that influence of gas is estimated, refer to the list of next page.

○The resin list which needs the unit measure that the influence of gas is estimated

The resin that gas compatible column in the table had ○ mark needs compatible.
× mark is unnecessary but depending on kind of the compounding material, it has possibility that the compatible becomes necessary.

(Research in 2002)

Resin name	Necessity of gas compatible	Resin name	Necessity of gas compatible	Resin name	Necessity of gas compatible
ABS	×	PAR		PPO	×
ABS+PBT		PBT	○	PPS	○
APEL		PBT+PC		PSF	
A-PET		PBT+PET		PTFE	
AS	×	PC	×	PU	○
BTP		PC+ABS		PUR	
CA		PC+PET		PVC Special grade	○
CAB		PCT+PET		SPS	
CAP		PCTFE		TPE	
CN		PC Optical grade	×	TPO	
COP		PDAP		TPX	
CP		PEEK		Reinforcement PET	○
DL		PEI		Flame resisting ABS	○
EC		PES			
EVA		PETG			
EVOH		PET Bottle grade	×		
LCP		PET Fiber grade	×		
MTPA		PFA			
PA+POM		PMMA	×		
PA+Carbon fiber		PMMA Optical	×		
PA6,66	×	POAM			
PA6,66+G	○	POLYSUL			
PA612		POM	×		
PAMXD6		PP+Filler	○		
PAN		PPE			

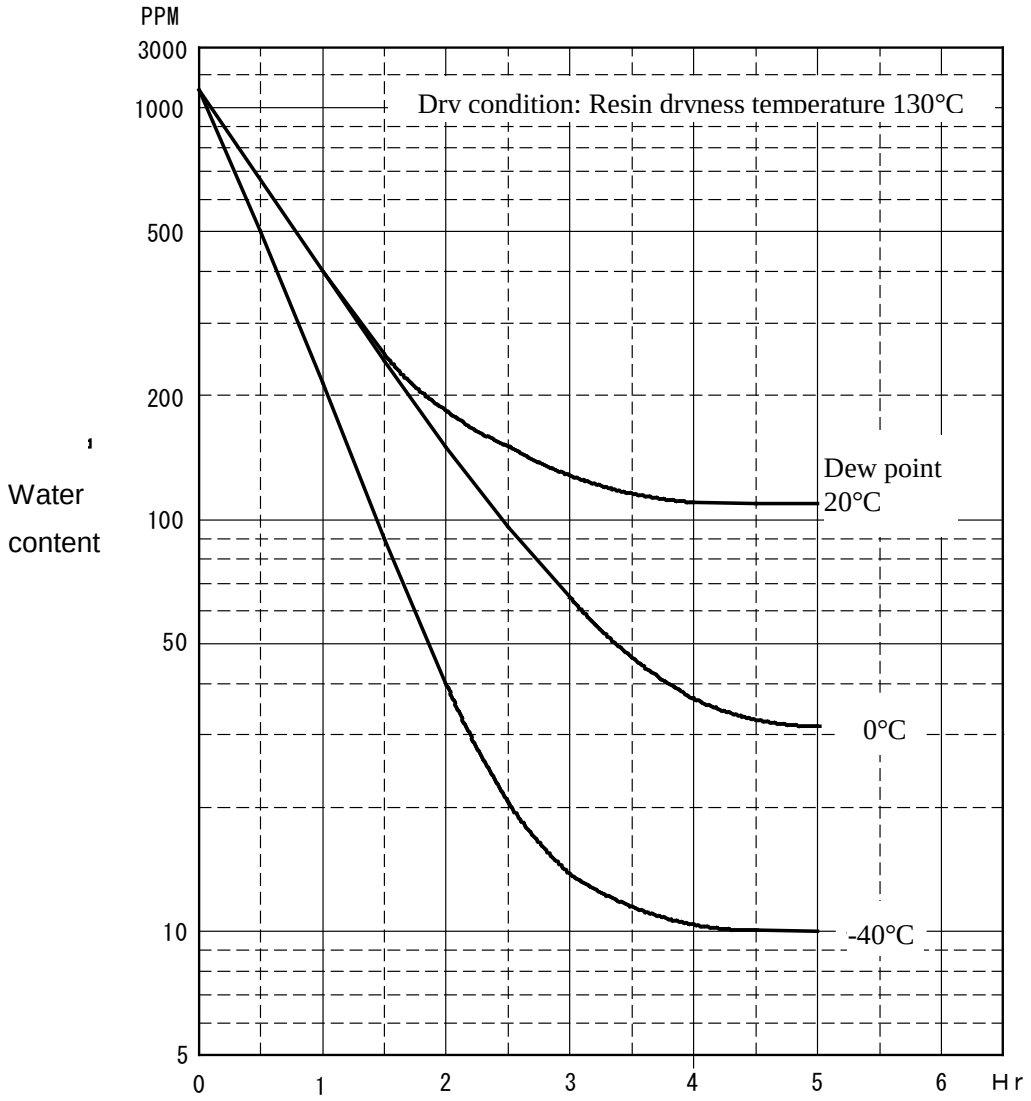
4. The relation between dew point and dryness under the fresh air condition

The dry air dew point changes in the fresh air-condition (dew point and humidity).
Be careful because doesn't down to fix moisture content when the dry air dew point becomes wrong.
The following graph shows the change of dry air dew point and dry curve in under our dry unit.

NOTE

The dew point sometimes becomes 25°C in the fresh air condition (specifically the rainy season time), too.

○ Dry curve by dew point changing



Chapter 10　Consumable Parts List

1. MGD-15J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:00611	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:20677	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00427	PVC hose W-38	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26605	Magnetic switch（200-220V）	1	1year
8	CODE:26611	Magnetic switch（200-220V）	1	1year
9	CODE:26613	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

2. MGD-25J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:00612	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:20677	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00427	PVC hose W-38	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26634	Magnetic switch（200-220V）	1	1year
8	CODE:26611	Magnetic switch（200-220V）	1	1year
9	CODE:26747	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

3. MGD-50J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:00612	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:14400	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00427	PVC hose W-38	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26634	Magnetic switch（200-220V）	1	1year
8	CODE:26611	Magnetic switch（200-220V）	1	1year
9	CODE:26641	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

4. MGD-75J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:00612	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:14400	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00427	PVC hose W-38	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26634	Magnetic switch（200-220V）	1	1year
8	CODE:26611	Magnetic switch（200-220V）	1	1year
9	CODE:26621	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

5. MGD-100J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:00612	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:14400	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00427	PVC hose W-38	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26634	Magnetic switch（200-220V）	1	1year
8	CODE:26611	Magnetic switch（200-220V）	1	1year
9	CODE:26621	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

6. MGD-150J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:11598	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:14401	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00427	PVC hose W-38	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26598	Magnetic switch（200-220V）	1	1year
8	CODE:26611	Magnetic switch（200-220V）	1	1year
9	CODE:23537	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

7. MGD-200J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:11598	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:14401	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00428	PVC hose W-50	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26598	Magnetic switch（200-220V）	1	1year
8	CODE:26602	Magnetic switch（200-220V）	1	1year
9	CODE:23545	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

8. MGD-250J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:11598	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:14401	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00428	PVC hose W-50	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26598	Magnetic switch（200-220V）	1	1year
8	CODE:26602	Magnetic switch（200-220V）	1	1year
9	CODE:23546	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

9. MGD-300J

No,	Parts code／Drawing number-Item No.	Parts name	Qty	Recommended replacement cycle
Machine				
1	CODE:11598	Dry filter	1	1year
2	CODE:21614	Convey filter	1	1year
3	CODE:14401	Exhaust filter	1	1year
4	CODE:00552	U type packing	2	1year
5	CODE:00428	PVC hose W-50	1	1year
6	CODE:15265	Dry overheat setting unit	1	3year
Electrical				
7	CODE:26598	Magnetic switch（200-220V）	1	1year
8	CODE:26602	Magnetic switch（200-220V）	1	1year
9	CODE:23546	Magnetic contactor（200-220V）	1	1year
10	CODE:25202	Relay (RY-2) ※Controller main circuit board	1	1 year

⚠ CAUTION

1. The recommended replacement cycle is use environment, it will vary depending on usage.

2. Item 8, 9 if that is the exchange of over-temperature prevention instrument, will be the safety device parts always nearest because Please contact the Corporation Matsui SDI (back cover).

Chapter 11　Options

1. The short circuit breaker

Install a short circuit breaker on the power breaker.

Then, protect earth fault, overload, and short circuit and prevent from a short circuit.

Symbol	Name	Maker	Model
ＥＬＢ－１	Short circuit breaker	Mitsubishi Electric.	Refer to chapter 12 "Change part list by using voltage".

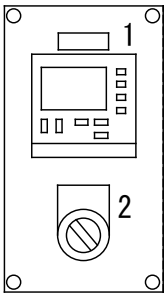
※No fuse breaker (NFB-1) isn't installed in the installation of the short circuit breaker.

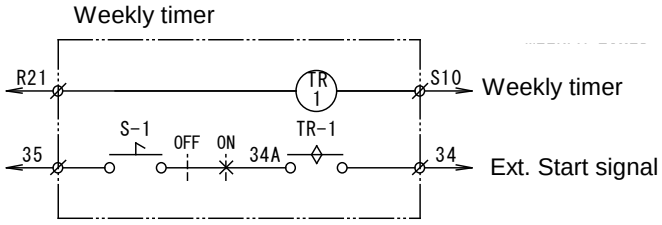
2. The weekly timer

By setting of a weekly timer, this dryer does "Automatic start " or "Automatic stop ". When making a selection switch in "ON" by the weekly timer setting, it does "Start" and "Stop " in automatically. As for the weekly timer, refer to the manufacturer instruction manual (OMRON, H5S-A time switch).

NOTE

When not using a weekly timer, make the selection switch (S-1) in "OFF".





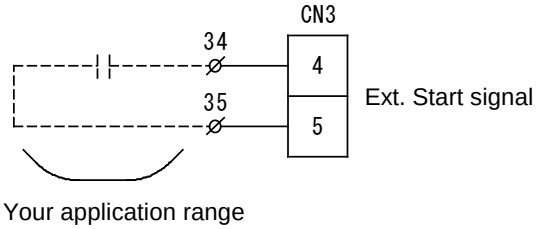
No	Symbol	Name	Maker	Model
1	ＴＲ－１	Weekly timer	OMRON	Ｈ５Ｓ－ＷＡ２
2	Ｓ－１	Select switch	Fuji Electric.	ＡＲ３０ＰＲ－２１０Ｂ

3. The extension starting stop

Performed to do this dryer in "Operation-Stop" by the extension signal.

(The extension start signal prepare A breaker points of voltageless)

The extension start signal connects a signal line to the terminal board in the control panel.
The extension start signal starts in "ON" and stops at "OFF".



NOTE

During extension start input, cannot to do the stop of the dryer with the control panel.

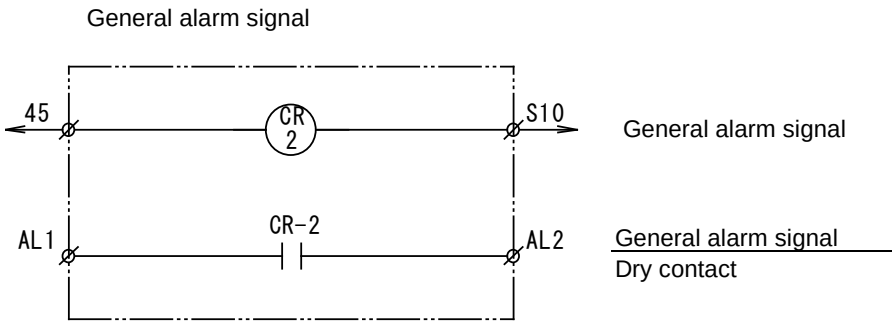
(Make the extension start signal in "OFF" and stop the dryer)

4. The general alarm output

Output the general alarm from terminal board in the control panel.

As for the breaker points, the alarm output time becomes in "ON" condition.

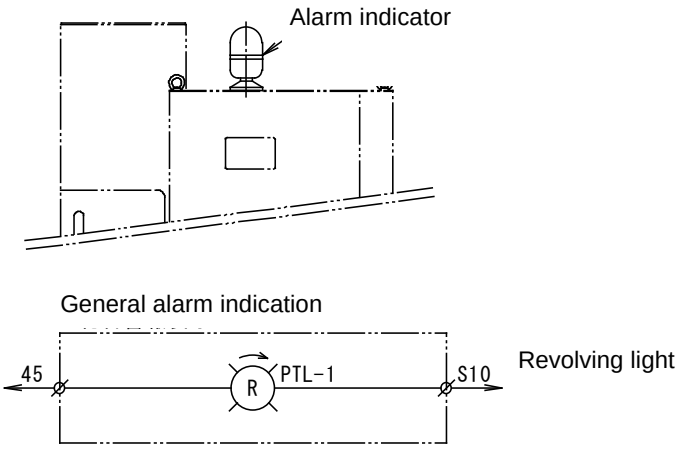
(Voltageless relay output, Resistance load 250 V 5A Max.)



5. The alarm indicator

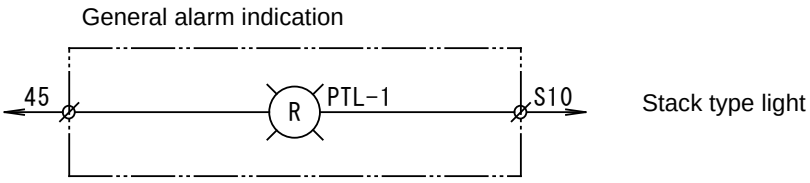
1) Revolving light

Possible to confirm in the wide range by lighting up at all alarms operating.



2) Stack type light

Possible to confirm in the wide range by lighting up at all alarms operating.
More than two kinds of individual displays of the special order are possible.



6. Difference voltage compatible

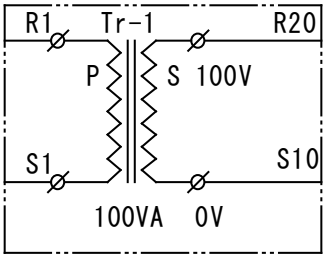
This dryer can do compatible with difference voltage in the option.

(You consult, being special about compatible in orders and the remodeling of the delivery number).

7. The operating power 100V

This dryer can correspond to 100 V of operating powers with the option.

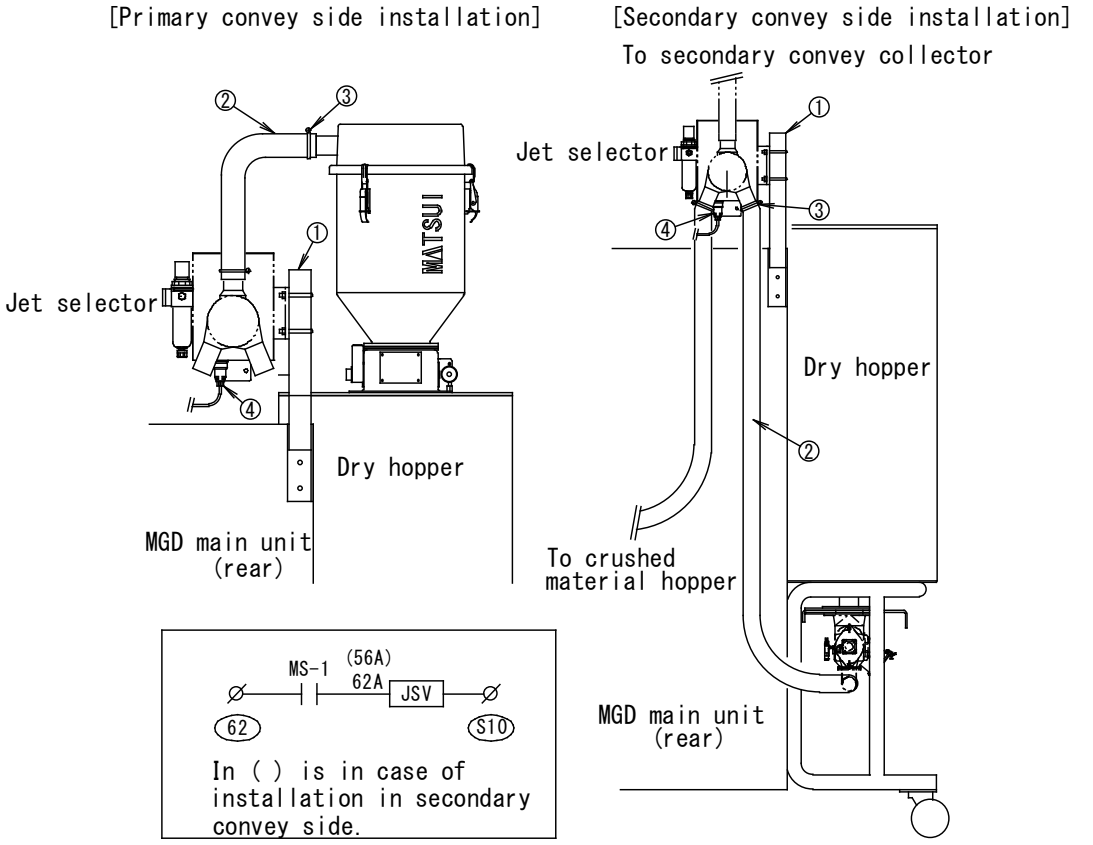
*5: Control circuit AC 100V



Symbol	Name	Maker	Model
Ｔｒ－１	Transformer	Commercial	Ｖ／１００Ｖ，１００ＶＡ

8. Connection for Jet selector

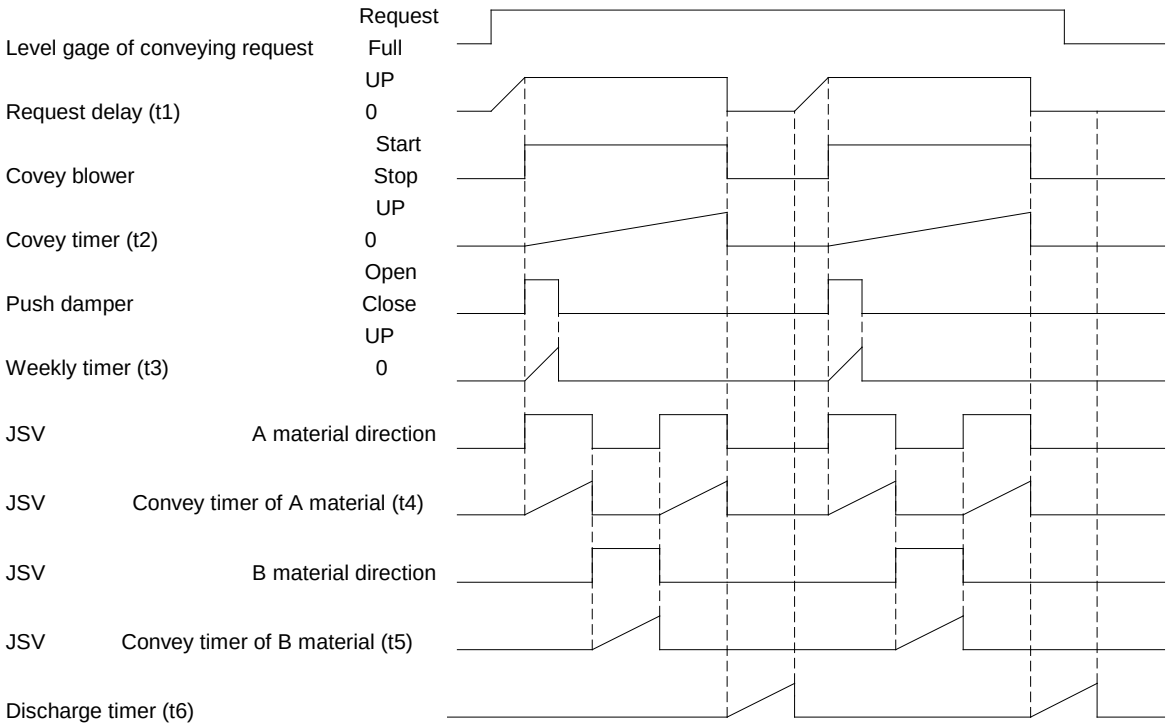
Combine Jet selector (available separately) and mixes principal material and crushed material simply.



No.	Name	Maker	Model	Q'ty
1	Ball of installing JSV	Matsui	For installing JSV	1
2	PVC hose	Tigers Polymer	W－３８×１～２m (MGD-15～150)	1
			W－５０×１～２m (MGD-200～300)	
3	Hose band	Commercial	ＡＫ－１０４５	2
			ＡＫ－１０５８	2
4	Metal plug	Nanaboshi Kagaku	ＮＪＣ－２０２	1

Install JSV to the secondary convey side and in case of performed the specification with the profile damper (Push damper) to the suction box, performs the timer setting in according to the following point

(Time chart)



No.	Timer name	Setting place	Initial setting value(sec.)
t 1	Request delay	MGD control panel (Engineering setting mode) L2D	15
t 2	Covey timer	MGD control panel (User setting mode) FD2	35
t 3	Weekly timer	MGD control panel (User setting mode) BT2	2
t 4	Convey timer of A material	JSV control panel	15
t 5	Convey timer of B material	JSV control panel	5
t 6	Discharge timer	MGD control panel (User setting mode) DC2	25

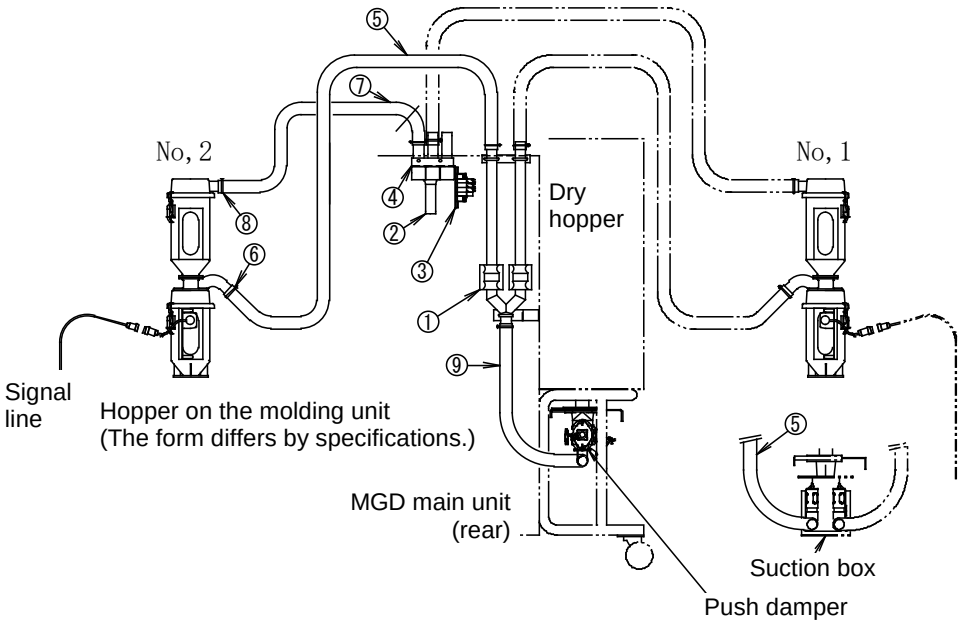
※Setting method for each timer refer to the each unit instruction manual.

(Precautions about the timer setting value)

○Performs to short t3 weekly timer than t4 convey timer of A material.
○t2 convey timer sets over total times of (t3 weekly timer)+(t4 convey timer of A material)×2+(t5 convey timer of B material).
○Adjusts the setting value for t3 weekly timer and t5 convey timer of B material for the collection unit on conveying to become a the right amount.

9. The secondary convey: 2 directions

The molding unit with 2 units can be supplied with the material from the dryer with 1 unit. Connect a hose as following figure. Connect a hose with the convey port position of Feed to No,1 , NO,2 of the control panel correctly.



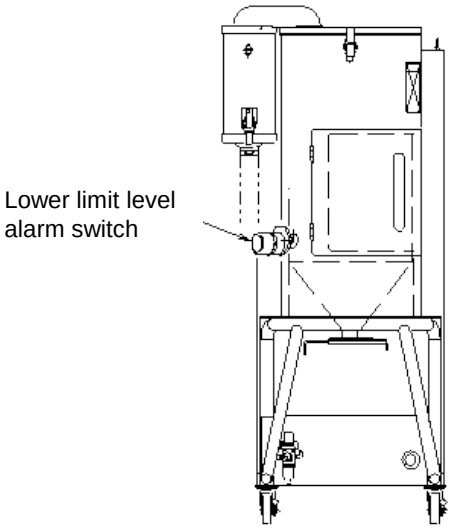
※1, 9 is installed in case of specification with the profile damper (Push damper).

No.	Name	Maker	Model	Q'ty
1	2 direction branch unit Install in case of the suction box is specification with the profile damper (Push damper).	Matsui Mfg.	ϕ 38×L700×2-direction (MGD-15～150)	1 unit
			40×L900×2-direction (MGD-200～300)	1 unit
2	3 direction select valve	Matsui Mfg.	3VN-ϕ 38（MGD-15～150）	1
			3VN-ϕ 63（MGD-200～300）	1
3	Manifold electromagnetism valve	Matsui Mfg.	For 3VN	1
4	3 direction valve mounting bracket	Matsui Mfg.	3VN-ϕ 38（MGD-15～150）	1
			3VN-ϕ 63（MGD-200～300）	1
5	PVC hose	Tigers Polymer	W-38×5m（MGD-15～150）	1
			W-50×10m（MGD-200～300）	1
6	Hose band (For PVC hose)	Commercial	AK-1045（MGD-15～150）	4
			AK-1058（MGD-200～300）	4
7	GL hose	Tigers Polymer	GL-ϕ 38×5m（MGD-15～150）	1
			GL-ϕ 65×10m（MGD-200～300）	1
8	Hose band (For GL hose)	Commercial	AK-1045（MGD-15～150）	2
			AK-1073（MGD-200～300）	2
9	PVC hose Install in case of the suction box is specification with the profile damper (Push damper).	Tigers Polymer	W-38×1m（MGD-15～150）	1
			W-50×1m（MGD-200～300）	1

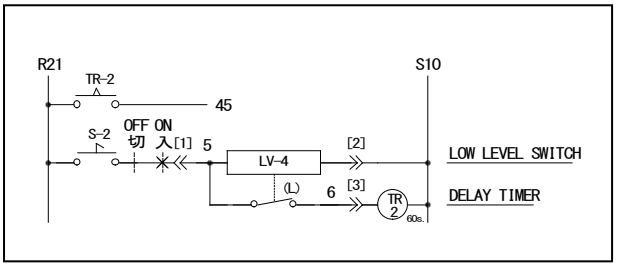
※Change the hose length by specification

10. Lower limit level alarm switch

With lower limit level alarm switch to be installing in the hopper, we report material low level.
Use with the option of alarm indicator light(Rotating lamp、Laminating lamp).

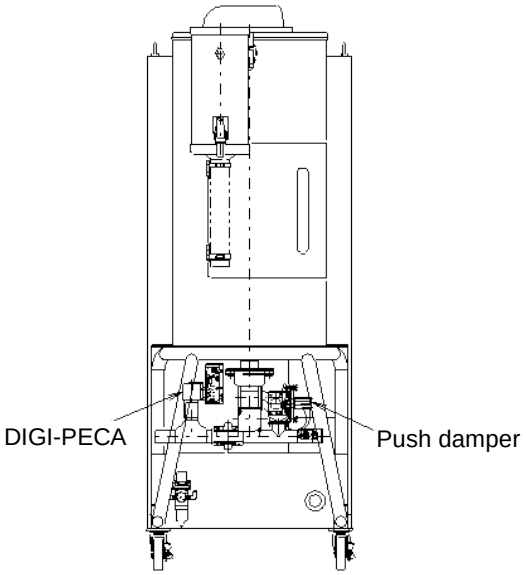


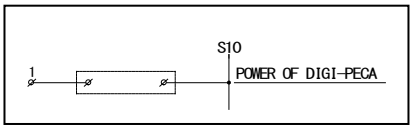
	Referential remnant
MGD-15J	7.5 L
MGD-25J	
MGD-50J	16 L
MGD-75J	
MGD-100J	30 L
MGD-150J	
MGD-200J	70 L
MGD-250J	115 L
MGD-30J	



11. It installs DIGI-PECA

By installing DIGI-PECA (sold separately), when not using secondary conveying of visceral, too, opening and shutting control of push damper can be done.





Chapter 12 Specifications

Equipment model			15J	25J	50J	75J	100J	150J	200J	250J	300J
Dry hopper	liter		28	44	90	125	170	250	350	425	500
	kg/BD:0.6		16	26	54	75	102	150	210	255	300
	kg/BD:0.8		22	35	72	100	136	200	280	340	400
	Thermal		Glass wool heat cut + Exterior board								
Dry temp.	℃	Standard	～130								
		High temp.	～160								
Dry blower	Model		RS-205	RS-301		RS-302N		NB-5		NK-5	
	Motor output W		28/34	130/200		135/195		300		400	
Dry heater	Capacity KW	Standard	1.5	3.6	4.0	5.4	6.3	10.8	12.4	17.1	
		High temp.	2.1	4.0	5.4	6.3	7.5	12.4	17.1	19.8	
Compressed air	Pressure MPa		0.5								
	Flow rate 1/h		10								
Convey	Primary m		10								
	Secondary m		5						10		
Convey pipe			ϕ 38PVC hose						ϕ 50PVC hose		
Convey blower	Model		RB40-620						RB50-620		
	Designing air flow rate m^3/min		1.7						2.9		
	Motor output KW		1.1/1.5						2.2/2.55		
Control	Dry temp conditioner		PID control								
	Auto dry starting timer		Setting time range: 10 minutes～50 minutes in 99 hours								
	Alarm and Protection circuit		Overheat								
			Motor over load								
			Prevention for motor reverse								
	3-phases power supply	50Hz	Refer to Plan								
		60Hz									
	Operating Circuit voltage		AC200V、1P: Standard (AC 100V, 1P: Option)								
	Power breaker Capacity A	Standard	Refer to Plan								
		High temp.									