Discontinue

CKD

INSTALLATION MANUAL

PRECISION DRYER

RD-1.5E-PRT
RD-2.2E-PRT
RD-5.5E-PRT
RD-7.5E-PRT
RD-11-PRT

- Be sure to read this manual before installing and operating your dryer.
- Keep this manual within the reach of an operator all the time.

CKD Corporation
06-07 12th EDITION SM-11425-A

Thank you for adopting Precision control Dryer.

Read this booklet and understand idea for efficient utilization of Precision control Dryer and its proper operation as we have lined up fundamental suggestions regarding its installation,operation and maintenance.

Keep this booklet handy for quick reference.

Discontinue

Safety instructions

This manual is intended for personnel who are familiar with basic knowledge about electricity, compressed air, fluid, piping, and refrigerant. CKD shall not be held responsible for troubles or accidents that result from installation, operation or repairs made by personnel who are not qualified or trained for the above subjects.
Improper handling may cause the machine not to be operated at its maximum performance level or lead to accidents or personal injury.
Always confirm the machine specification and operate the machine in the correct manner designated by CKD.
This machine is equipped with various safety and other protective devices.
However, improper handling of the machine may cause personal injury and/or damage to the machine.
Read this operation manual carefully and fully comprehend its contents before operation.
Read the contents of the following warning labels, as well as cautions stated in the operation manual, and follow the instructions contented therein.
Keep this operation manual near the machine where all concerned personnel have easy access to it.

Safety precautions

Safety precautions are classified into the following groups, WARNING and CAUTION.

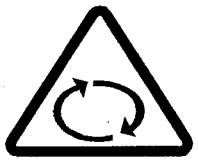
WARNING CAUTION

WARNING This denotes hazards which COULD result in severe personal injury or death, if not avoided.

CAUTION This denotes hazards which COULD result in minor personal injury and/or product or property damage, if not avoided.

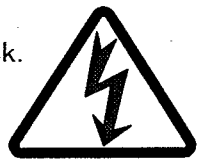
WARNING : Rotating device

★Fan may suddenly start rotating, causing personal injury.
Do not put your hand or foreign object in this part.
●Always shut-down the power before starting inspection.



WARNING : Electric shock hazard

★Power terminal block and switches are electrically live.
Do not touch any part. Doing so may cause an electric shock.
●Always shut-down the power before starting inspection.
Do not inspect the machine with wet hand.

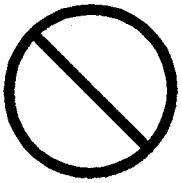


CAUTION : Hot surface

★Surface is hot during operation or immediately after the machine operation is stopped.
●Always shut-down the power and confirm that the surface is cooled before starting inspection.

CAUTION : Falling hazard

★Do not step on the panel. Doing so may fall.
●Never step on the panel.



Ground connection

★To prevent any electric shock hazard, firmly connect the ground cable.

This machine is designed for industrial use. Always carefully handle the machine in the correct manner.

Discontinue

INDEX

Precision Dryer

SM-11425-A

Discontinue

1. PRODUCTS

1-1. Specifications

Items \ Model code		RD-1.5E-PRT	RD-2.2E-PRT	RD-5.5E-PRT	RD-7.5E-PRT	RD-11-PRT
Pipe for air inlet and outlet (Rc)		3/8	3/8	1/2	3/4	1
Applicable air compressor (kW)		1.5	2.2	5.5	7.5	11
Air flow rate	Air volume (ℓ/min, atmospheric pressure conversion)	120	350	600	1000	1500
	Recommended Fluid (ℓ/min) (atmosphoric pressure converation)	90～120	120～350	350～600	600～1000	1000～1500
	Outlet pressure dew point	10				
	Outlet pressure adjusting range (MPa)	0.02～0.87				
	Outlet pressure adjusting accuracy (MPa)	Set value within ±0.002		Set value within ±0.005		
	Outlet temperature adjusting range (℃)	16～30				
	Outlet temperature adjusting accuracy (℃)	Set value ±0.3 (Highest value ±0.1)				
	Oil removal	0.1PPM W/W (At inlet air temperature30℃)				
Using condition range	Fluid used	Compressed air				
	Inlet air Temperature (℃)	5～40				
	Ambient temp (℃)	20～25				
	Operating pressure (MPa)	0.2～0.97				
Electrical Speciti-Cation	Power source (V)	Single phase AC100V 50/60Hz		Single phase AC200V 50/60Hz		
	Compressor imput (W)	180/220	190/200	220/250	345/385	635/765
	Heater input (W)	200	200	400	600	900
	Current (A)	4.0/4.3	4.0/4.3	3.3/3.3	5.1/5.3	12.7/12.9
Particulare	Condenser	Fin and tube type forced air cooling system				
	Refrigerant control	Capillary tube				
	Capacity control	Hot gas bypassing valve				
	Refrigerant	HCFC22				
	Outlet temperature control	Heater heating, PID control, Upper and lower limit alarm, thermostat				
	Air filter	Filter type				
	Outlet pressure control	Precision reducing valve (constant bleed type)				
Mass (kg)		38	38	48	100	110
Pipe size of drain discharging (Rc)		1/4			3/8	

Note1: The air flow is the flow rate at air dew point at the outlet.10℃(under pressure), ambient temperature: 0.7 MPa Consult our agents when the flow rate differs depending on the operating conditions.

Note2: The heater input and current values are,at maximum and can be made smaller according to the temperature within the temperature adjusting range at the outlet.(PRT series)

Note3: Painting color is Quality cool white (Munsell No. 5GY7.5/0.5) .

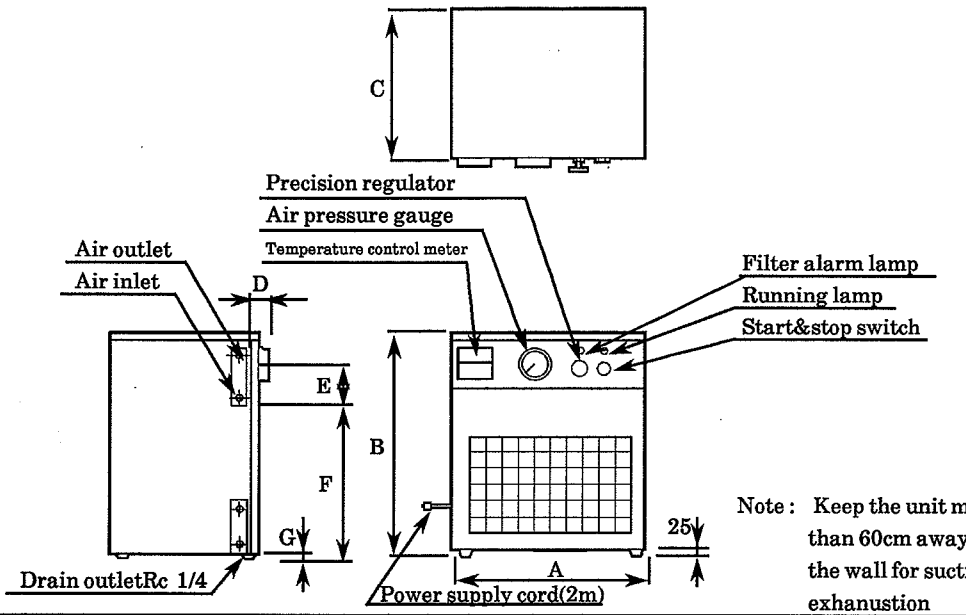
Note4; Outlet pressure adjusting accuracy value is conditioned by different pressure between inlet and outlet.

Note5: The exit air temperature setting value of 0.3℃ is a value at the time of using it under rated conditions (performance).
When there is load change, exit air temperature accuracy can't be uniformly.

[SM-11425-A]

1-2. External dimensions

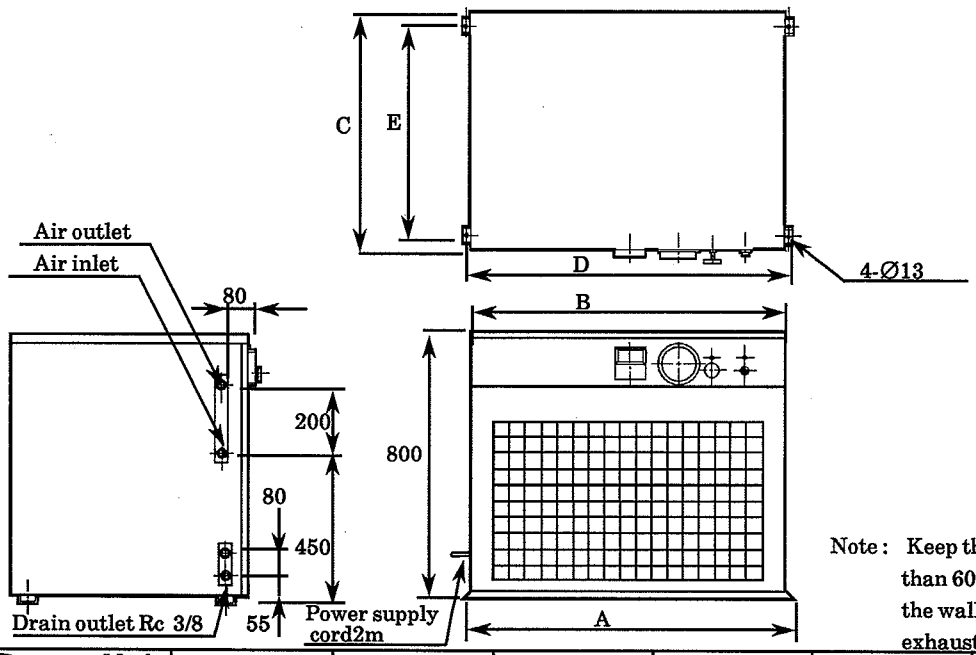
RD-1.5E · 2.2E · 5.5E-PRT



Note : Keep the unit more than 60cm away from the wall for suction and exhanustion

Model \ Mark	A	B	C	D	E	F	G	Pipe Size
RD-1.5E-PRT	500	600	300	65	100	330	55	Rc 3/8
RD-2.2E-PRT	500	600	300	65	100	330	55	Rc 3/8
RD-5.5E-PRT	600	700	500	65	130	390	45	Rc 1/2

RD-7.5E · 11-PRT

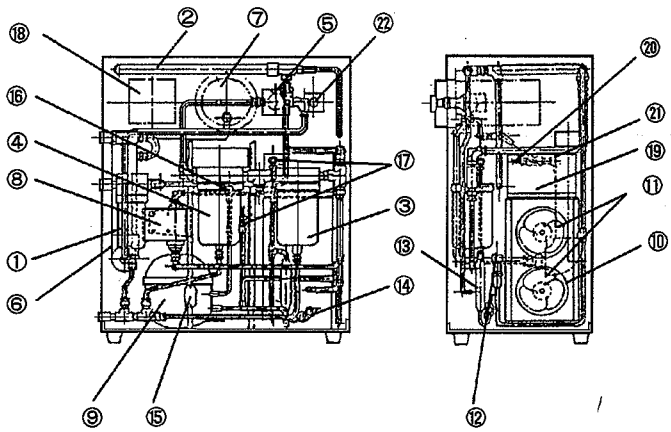


Note : Keep the unit more than 60cm away from the wall for suction and exhaustion

Model \ Mark	A	B	C	D	E	Pipe Size
RD-7.5E-PRT	842	800	600	820	520	Rc 3/4
RD-11-PRT	992	950	700	970	620	Rc 1

1-3. Internal stauctur diagram

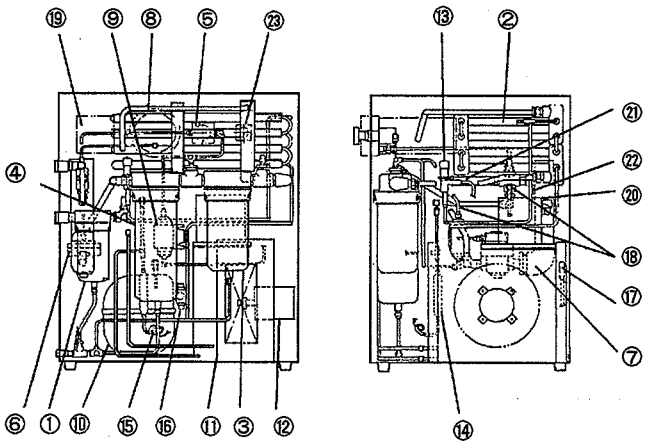
RD-1.5E·2.2E-PRT



※1. Onefanmoter for RD-1.5E-PRT.
※2. Microalescer is 1237-3C-S411 for RD-2.2E-PRT and 1244-2C-JS411 for RD-1.5E-PRT

Part No.	Part name	Q'ty	Remarks
1	5μm air filter	1	F4000-10-S411
2	Evaporatar	1	
3	Submicron air filter	1	1137-3C-FYS83
4	Maicro alescer	1	※2
5	Precision regulator	1	11-018-110
6	Heater	1	200W
7	Air pressure gauge	1	Grade 0.6
8	Differential switch	1	
9	Compressor	1	
10	Condenser	1	
11	Fan motor	2	※1
12	Hot gas valve	1	
13	Filter dryer	1	
14	Capillary tube	1	
15	Fan control switch	1	
16	Charge valve (low pressure)	1	
17	Charge valve (high pressure)	1	
18	Temperature controller	1	
19	Thyristor unit	1	
20	Platinum sonometric body	1	
21	Thermostat	1	
22	Selector Switch	1	

RD-5.5E·7.5E·11-PRT



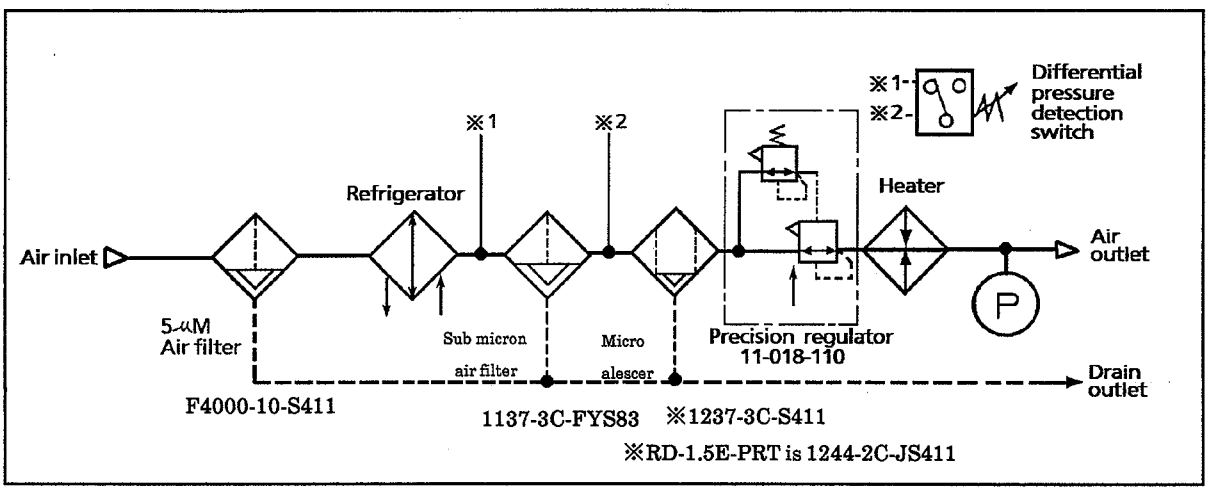
Part No.	Part name	Q'ty	Remarks
1	5μm air filter	1	※1
2	Evaporater	1	
3	Submicron air filter	1	※2
4	Maicr alescer	1	※3
5	Precision regulator	1	RP2000-8-08
6	Main regulator	1	※4
7	Heater	1	※5
8	Air pressre gauge	1	Grade 0.6
9	Differential switch	1	
10	Compressor	1	
11	Condenser	1	
12	Fan motor	1	
13	Hot gas valve	1	
14	Filter dryer	1	
15	Capillary tube	1	
16	Fan control switch	1	
17	Charge valve (low pressure)	1	
18	Charg valve (high pressure)	1	
19	Temperature controller	1	
20	Thyristor unit	1	
21	Platinum sonometric body	1	
22	Thermostat	1	
23	Selector Switch	1	

Model No.	※1	※2	※3	※4	※5
RD-5.5E-PRT	1137-4C-S311	1138-6C-FYS38	1238-6C-S411	R53-401-M0B0	400W
RD-7.5E-PRT	1138-6C-S311	1138-8C-FYS38	1226-8C-S411	R58-603-M0B0	600W
RD-11-PRT	1138-8C-S311	1126-10C-FYS25	1226-8C-S411	R58-803-M0B0	900W

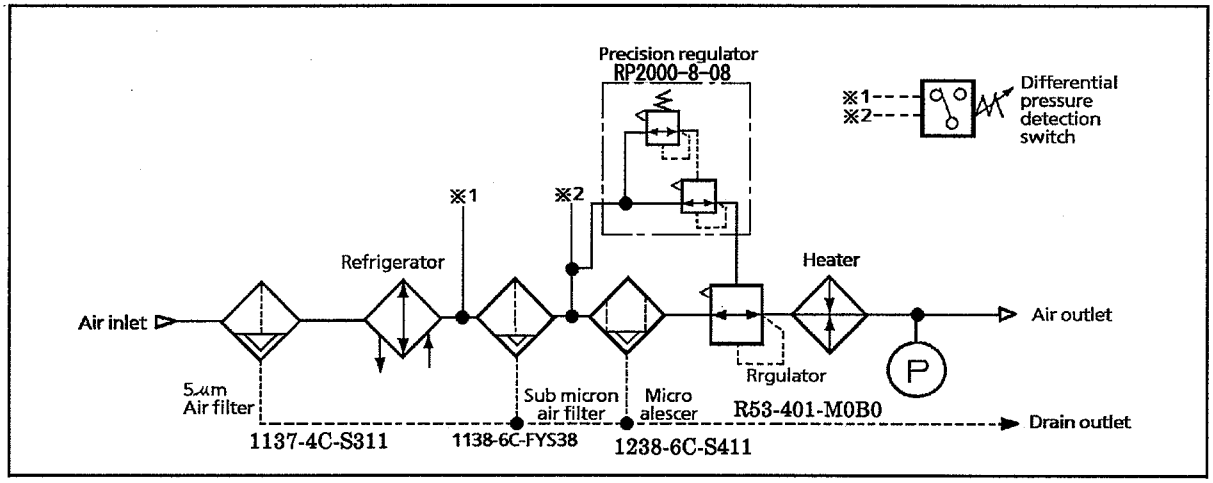
Discontinue

1-4.Pneumatic circuit diagram

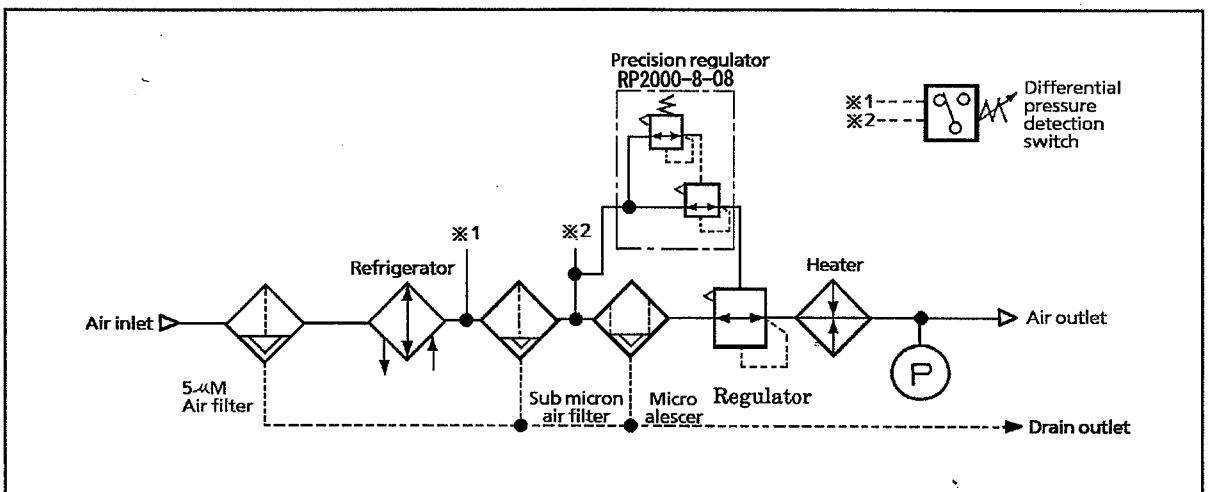
RD-1.5E·2.2E-PRT



RD-5.5E-PRT

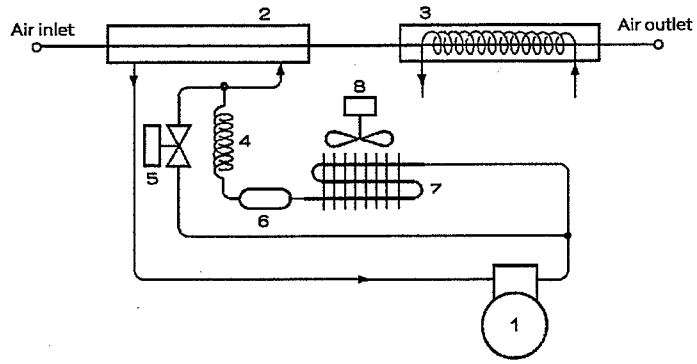


RD-7.5E·11-PRT



	5㎛mAir filter	Sub micron air filter	Micro alescer	Main regulator
RD-7.5E-PRT	1138-6C-S311	1138-8C-FYS38	1226-8C-S411	R58-603-M0B0
RD-11-PRT	1138-8C-S311	1126-10C-FYS25	1226-8C-S411	R58-803-M0B0

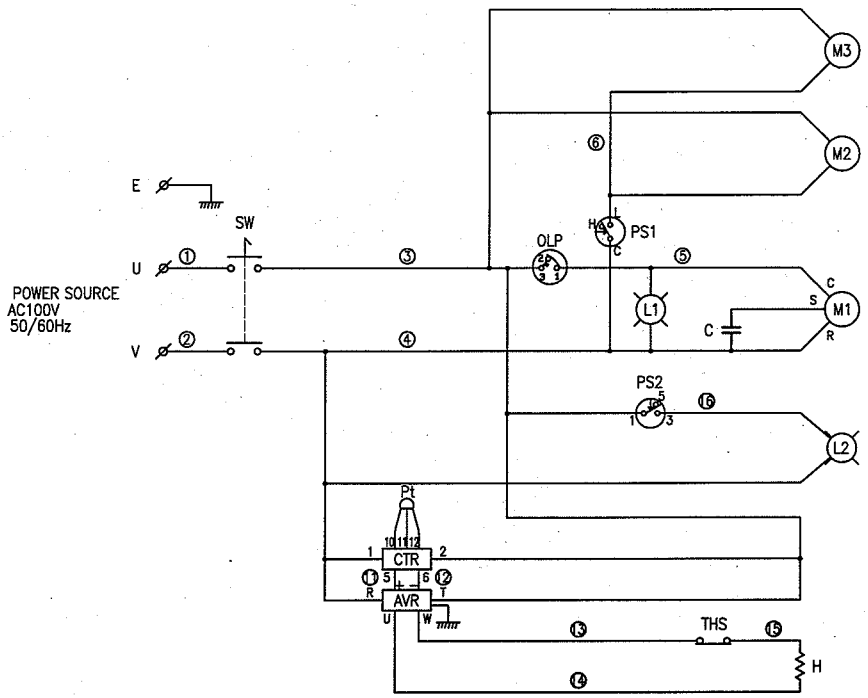
1-5. Refrigerant circuit diagram



1 Compressor for refrigerating
2 Refrigerator
3 Heater
4 Capillary tube
5 Hot gas bypass valve
6 Filter dryer
7 Condenser
8 Condenser fan motor

1-6. Electric circuit diagram

RD-1.5E-PRT·RD-2.2E-PRT

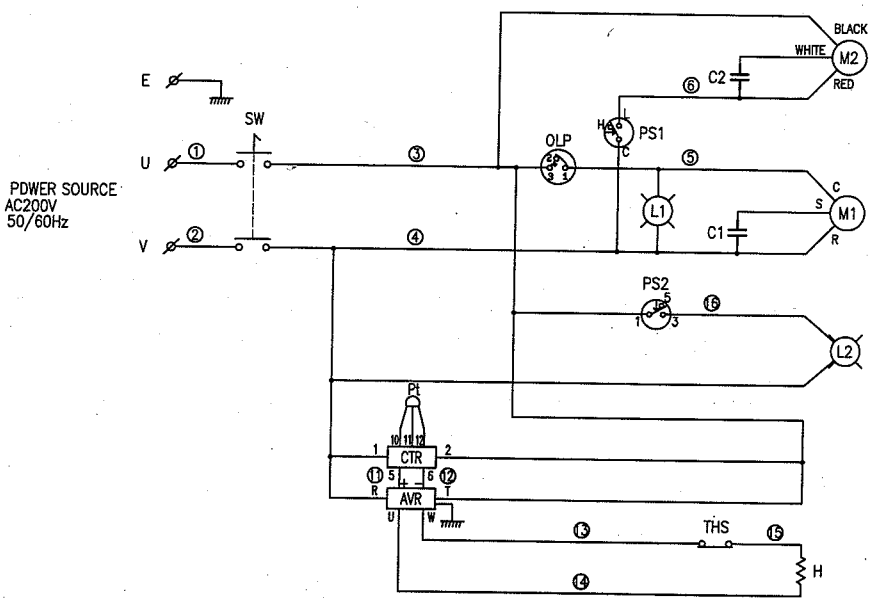


Symbol	Contents
PS1	ON with 1.7MPa OFF with 1.2MPa
OLR	OFF With 2.1A (at100℃)
PS2	ON with 0.07MPa OFF with 0.044MPa
THS	OFF with 50℃ ON with 35℃

Part No,	Part name	Q'ty
OLP	Overload protector	1
SW	Start and stop switch	1
M1	Refrigerator motor	1
C	Running capacitor	1
M2	Fan motor	1
M3	Fan motor ※	1
PS1	Fan control switch	1
CTR	Temperature controller	1
AVR	Thyristor unit	1
H	Heater	1
Pt	Platinum sonometric body	1
PS2	Differential switch	1
TH6	Thermostat	1
L1	Running lamp	1
L2	Filter alarm lamp	1

NOTE
1) The dryer RD-2.2E-PRT is equipped with Part No. 3.

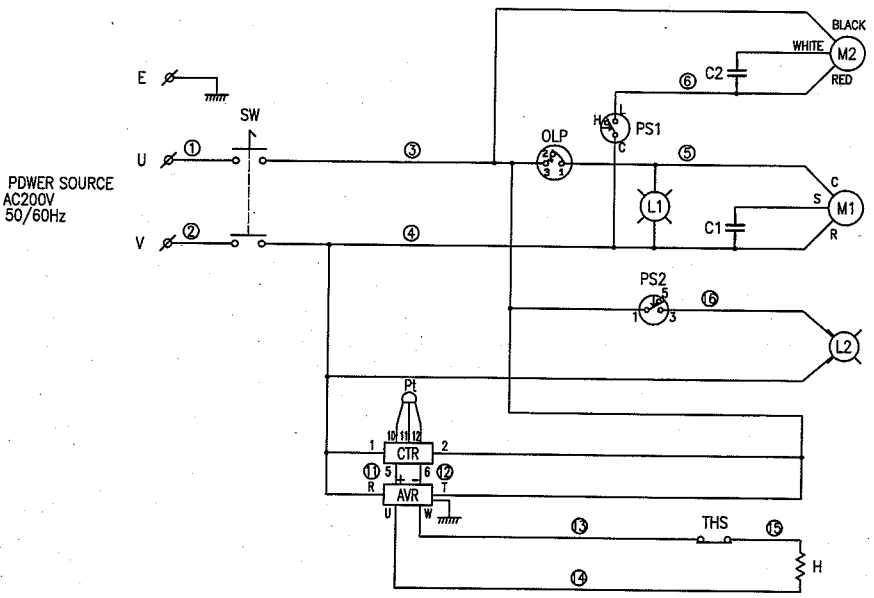
RD-5.5E-PRT



Symbol	Contents
PS1	ON with 1.7MPa OFF with 1.2MPa
OLR	OFF With 1.6A (at100℃)
PS2	ON with 0.07MPa OFF with 0.044MPa
THS	OFF with 50℃ ON with 35℃

Part No,	Part name	Q'ty
OLP	Overload protector	1
SW	Start and stop switch	1
M1	Refrigerator motor	1
M2	Fan heater	1
C1	Running capacitor	1
C2	Running capacitor	1
PS1	Fan control switch	1
CTR	Temperature controller	1
AVR	Thyristor unit	1
H	Heater	1
Pt	Platiunm sonometric body	1
PS2	Differential switch	1
THS	Thermostat	1
L1	Running lamp	1
L2	Filter alarm lamp	1

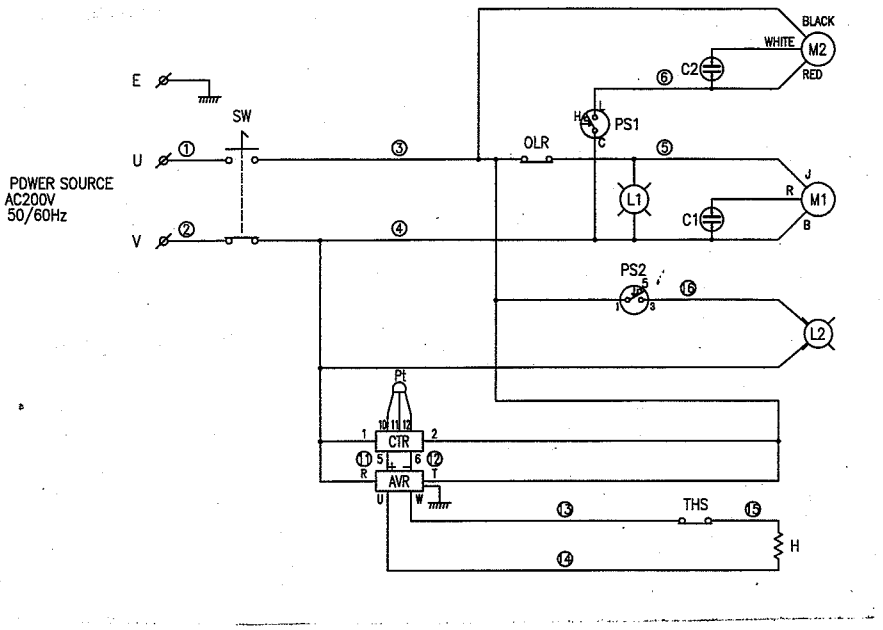
RD-7.5E-PRT



Symbol	Contents
PS1	ON with 1.7MPa OFF with 1.2MPa
OLR	OFF With 3.0A (at100℃)
PS2	ON with 0.07MPa OFF with 0.044MPa
THS	OFF with 50℃ ON with 35℃

Part No,	Part name	Q'ty
OLP	Overload protector	1
SW	Start and stop switch	1
M1	Refrigerator motor	1
M2	Fan heater	1
C1	Running capacitor	1
C2	Running capacitor	1
PS1	Fan control switch	1
CTR	Temperature controller	1
AVR	Thyristor unit	1
H	Heater	1
Pt	Platiunm sonometric body	1
PS2	Differential switch	1
THS	Thermostat	1
L1	Operation lamp	1
L2	Filter alarm lamp	1

RD-11-PRT



Symbol	Contents
PS1	ON with 1.7MPa OFF with 1.2MPa
OLR	OFF With 4.5A (at100℃)
PS2	ON with 0.07MPa OFF with 0.044MPa
THS	OFF with 50℃ ON with 35℃

Part No,	Part name	Q'ty
OLR	Overload protector	1
SW	Start and stop switch	1
M1	Refrigerator motor	1
M2	Fan heater	1
C1	Running capacitor	1
C2	Running capacitor	1
PS1	Fan control switch	1
CTR	Temperature regulator	1
AVR	Thyristor unit	1
H	Heater	1
Pt	Platiunm sonometric body	1
PS2	Differential switch	1
THS	Thermostat	1
L1	Running lamp	1
L2	Filter alarm lamp	1

2. CAUTIONS

2-1. Cautions for operation

- Install at a place with good ventilation and no dust.
- Take sufficient space around the refrigeration type air dryer for maintenance and ventilation.
- For outdoor installation, see to it that the rain water does not fall directly on the dryer.
- Install on the steady and flat floor with no vibration.
- Do not use the dryer in a place with direct sun light, powder dust, heat producing objects, corrosive gas, explosive gas, ignitable gas or combustible gas.
  *Break-down, explosion, or fire may result.

2-2. Operating conditions

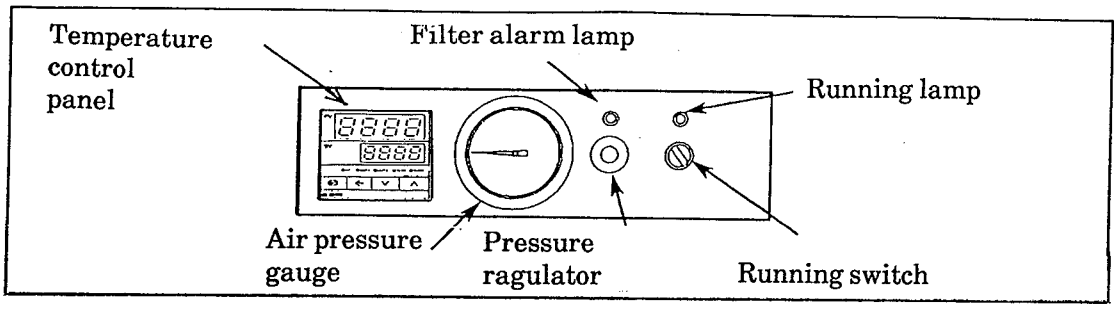
- Use with the range of specified conditions of inlet air temperature, ambient temperature, flow rate, power voltage, etc. Using the equipment beyond the specified range may cause trouble in the refrigerator.
- Make use of the dryer within the operating flow-rate range and on the non-flow fluctuation. Output temperature can not be controlled, when the dryer is used without operating flow-rate range as well as on large flow fluctuation.

2-3. Others

- Wait for 3 minutes for restart of the machine from when the machine is stopped.
  Frequent turning ON and OFF of the switch will lead to malfunction.
- Run the machine within the power voltage from 90 to 110V (RD-1.5E, 2.2E-PRT) and from 180 to 220V (RD-5.5E, 7.5E, 11-PRT).
- The valve opening and closing will be made from the inlet side gradually. Sudden opening and closing of it will cause malfunction.
- Do not use the dryer to remove humidity of except compressed air.
  * Break-down, explosion, or fire may result.
- Install an earth leakage breaker at power supply.
  *Electric shock may result.
- Ground to earth.
  *Causes of an electric shock or a fire.
- Do not turn on the power supply without the panel on.
  *Electric shock or heat injury may result, or rotation parts could hurt workers.
- Remove drain before it enters the dryer when drain flows into the dryer with compressed air.
  *Drain could leak to the secondary side of the dryer.
- Don't carry out reconstruction of this machine.
  *It becomes an unexpected accident and the cause of a life fall.
- Do not use the dryer for pneumatic caisson shield or respiratory medical equipment.
  *It could cause an accident includes injury.
- Do not use the dryer for transportation devices such as automobile, ship etc.
  * Vibration could be a cause of break down of the internal components.

3. OPERATION

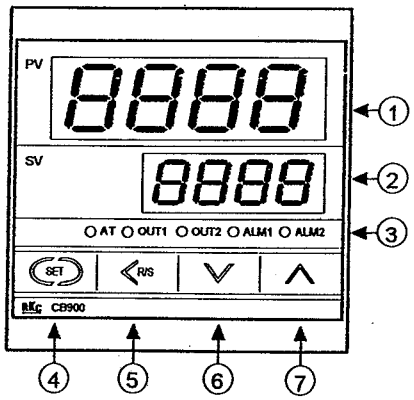
3-1. Operating procedures



(1) Set the start switch to ON.
(2) Then let flow the compressed air.
(3) Set to the required pressure with the pressure regulator.
(4) Make a temperature setting on the outlet in accordance with the procedure for temperature control panel.

3-2. Operating procedures for temperature control panel

(1) Name of parts.



Autotuning (AT) lamp [Green]
Flashes during autotuning execution.

Control output lamps (OUT1,OUT2) [Green]
OUT1: Lights when control output is turned on. **
OUT2: Lights when cool-side control output is turned on.**
** Lamp indication becomes as follows for continuous output.
For an output of less than 0 % : Extinguished
For an output of more than 100 % : Lit
For an output of more than 0 % but less than 100 % : Dimly lit.

① Measured value (PV) display unit [Green]
- Displays measured value (PV).
- Displays various parameter symbols depending on the instrument.

② Set value (SV) display unit [Orange]
- Displays set value (SV).
- Displays various parameters set value (or CT input value) depending on the instrument.

③ Indication lamps
Alarm output lamps (ALM1,ALM2) [Red]
ALM1: Lights when first alarm output is turned on.
ALM2: Lights when second alarm output is turned on.

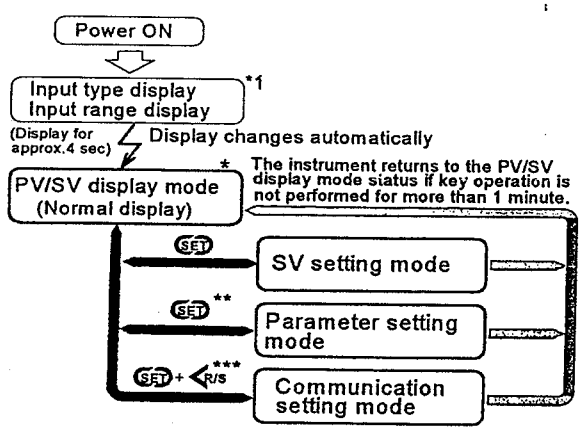
④ Set key (SET)
Used for parameter registration/calling up.

⑤ Shift & R/S key <R/S
- Used to shift the digit when the setting is changed.(Shift key)
- Used to select the RUN/STOP function. (R/S key)

⑥ DOWN key ∨
Used to decrease numerals.

⑦ UP key ∧
Used to increase numerals.

(2) Calling up procedure of each mode.

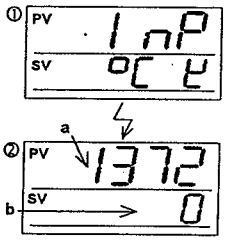


* The RUN/STOP function can be selected.The RUN/STOP function can be selected every time the <R/S key is pressed for 1 sec.
** Press the SET key for more than 2 sec.
***Press the <R/S key while pressing the SET key.

***1. Input type and input range display**

This instrument immediately confirms input type and range following power on.

Example: For a controller with the K thermocouple input type and range from 0 to 1372 °C.



① Input type display
1nP :Input symbol
°C :Engineering unit
~~(°C :°F)~~
~~[Voltage/current input: No display]~~
U :Input type
(See table **A.)

② Input range display
a : Input range high
b : Input range low

****A: Input type table**

Display	U	J	r	S	b	E	r	n	P	ū	UL	JPt	Pt	U
Input type	Thermocouple (TC)											RTD		Voltage (Current)
	K	J	R	S	B (•)	E	T	N	PL II	W5Re/W26Re (•)	U	L	JPt 100	Pt 100	

(•) : This input type is not displayed in the Z-1021 specification.

(3) Detail of each mode.

■ PV/SV display mode

Display measured value (PV) on the PV display unit and set value (SV) on the SV display unit. Usually the control is set to this mode excepting that the set value (SV) and/or the parameter set value are changed.
In addition, in this mode, RUN/STOP can be selected.

■ SV setting mode

This is the mode used to set the set value (SV).

Factory set value: 3 0℃

■ Parameter setting mode

This is the mode used to set the various parameters such as alarms, PID constants, etc.
The following parameter symbols are displayed one by one every time the SET key is pressed.

■ Communication setting mode

This is the mode to conduct settings relating to the communication function. It is displayed for the instrument with the communication function. For details on protocol, identifiers and communication setting mode, see the separate instruction manual for "Communication" (IMCB03-E□).

Parameter table

#1:Factory set value

Symbol	Name	Setting range	Description	#1
CT 1	Current transformer input 1 (CT1)	0.0 to 100.0 A [Only display]	Display input value from the current transformer. [Displayed only when the instrument has the heater break alarm]	
AL 1	First alarm (ALM 1) Deviation low alarm	-199.9~+199.9℃	Set the first alarm set value and second alarm set value.	−1.0
AL2	Second alarm (ALM 2) Deviation high alarm		Alarm differential gap: 0.5℃	+1.0
HbA 1	Heater break alarm 1 (HBA)	0.0 to 100.0 A	Alarm value is set by referring to input value from the current transformer (CT). Used only for single-phase.	0.0
LbA	Control loop break alarm (LBA)	0.1 to 200.0 min. (0.0 can not be set.)	Set control loop break alarm set value.	8.0
Lbd	LBA deadband (LBD)	Temperature input: 0 to 9999 °C[°F] Voltage/current inputs: 0 to 100 % of span	Set the area of not outputting LBA. No LBA deadband functions with "0" set. Differential gap : Temperature input 0.8 °C[°F] Voltage/current inputs 0.8 % of span	0
ArU	Autotuning (AT)	0: AT end or AT suspension 1: AT start	Turns the autotuning ON/OFF.	0

(Continued on the next page.)

#1:Factory set value

Symbol	Name	Setting range	Description	#1
STU	Self-tuning (ST)	0: ST suspension 1: ST start	Turns the self-tuning ON/OFF.	0
P	Proportional band (P)	Temperature input: 1(0.1) to span or 9999(999.9) °C[°F] Voltage/current inputs: 1 to 100.0 % of span	Set when PI,PD or PID control is performed. For heat/cool PID action: Proportional band setting on the heat-side. *ON/OFF action control when set to "0(0.0)." Differential gap : Temperature input 2 or 2.0°C[°F] Voltage/current inputs 0.2 % of span	10
I	Integral time (I)	1 to 3600 sec *PD control when set to 0 sec.	Set the time of integral action which eliminates the offset occurring in proportional control.	60
d	Derivative time (D)	1 to 3600 sec *PI control when set to 0 sec.	Set the time of derivative action which prevents ripples by predicting output changes and thus improves control stability.	30
Ar	Anti-reset windup (ARW)	1 to 100 % of heat-side proportional band. *"0" setting: integral action OFF	Overshooting and undershooting are restricted by the integral effect.	100
T	Heat-side proportioning cycle (T)	1 to 100 sec (0 can not be set.) *Not displayed if the control output is current output.	Set control output cycle. For heat/cool PID action: Heat-side proportioning cycle	See *3.
Pc	Cool-side proportional band (Pc)	1 to 1000 % of heat-side proportional band. (0 can not be set.)	Set cool-side proportional band when heat/cool PID action.	100
db	Deadband (db)	Temperature input: -10 to +10 °C[°F] or -10.0 to +10.0 °C[°F] Voltage/current inputs: -10.0 to +10.0 % of span	Set control action deadband between heat-side and cool-side proportional bands. Minus (-) setting results in overlap.	0 or 0.0
t	Cool-side proportioning cycle (t)	1 to 100 sec (0 can not be set.) *Not displayed if the control output is current output.	Set control cool-side output cycle for heat/cool PID action.	See *4.
Pb	PV bias (Pb)	Temperature input: -1999 to +9999 °C[°F] or -199.9 to +999.9 °C [°F] Voltage/current inputs: -span to +span	Sensor correction is made by adding bias value to measured value (PV).	0 or 0.0
LCK	Set data lock function (LCK)	See *5.	Performs set data change enable/disable.	0001

NOTE Some parameter symbols may not be displayed depending on the specification.

*3: Relay contact output : 20 sec, Voltage pulse output/Trigger output for triac driving/Triac output : 2 sec

*4: Relay contact output : 20 sec, Voltage pulse output/Triac output : 2 sec

***5: Details of set data lock level selection**

Setting	Details of lock level	Setting	Details of lock level
0000	SV and parameter can be set.	0011	Only SV can be set.
→ 0001	Only SV and alarms (ALM1, ALM2) can be set.	0101	Only alarms (ALM1, ALM2) can be set.
0010	Only setting items other than alarms (ALM1, ALM2) can be set.	0110	Only setting items other than SV and alarms (ALM1, ALM2) can be set.
0100	Only setting items other than SV can be set.	0111	SV and parameter cannot be set.

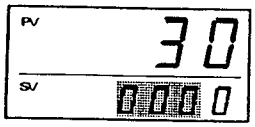
- Each locked setting item can only be monitored.
- Each alarm setting item [HBA, LBA, LBD] can be locked when any of "0001," "0011," "0101" and "0111" is set.

(4) Parameter setting procedure.

■ Setting set value (SV)

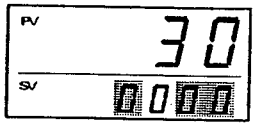
Example: Following is an example of set value (SV) to 200 °C

① Set to the SV setting mode



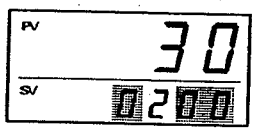
Press the **SET** key to enter the SV setting mode. The digit which light brightly is settable.

② Shift of the digit brightly lit



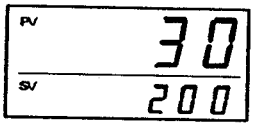
Press the **<R/S** key to shift the digit which lights brightly up to the hundreds digit.

③ Numeric value change



Press the **UP** key to set "2." Pressing the **UP** key increase numerals, and pressing the **DOWN** key decrease numerals.

④ Set value entry



After finishing the setting, press the **SET** key. All of the set value digits light brightly and as a result the instrument returns to the PV/SV display mode.

■ Setting parameters other than set value (SV)

The setting procedures are the same as those of example (2) to (4) in the above "**■Setting set value (SV).**" Pressing the SET key after the setting end shifts to the next parameter. When no parameter setting is required, return the instrument to the PV/SV display mode.

⚠ Key operational cautions

- Even if the displayed value is changed, it is not registered. To register it, press the SET key.
- If the key is not operated for more than 1 minute, the present mode returns to the PV/SV display mode.

(5) Set data lock(LCK) function.

The set data lock function is used to prevent misoperation by not setting any parameter which is not used frequently. The parameter thus locked cannot be set or changed, but can only be monitored.

(6) Autotuning(AT) function.

The AT function automatically measures, computes and sets the optimum PID and LBA constants. This function is activated after-ON, during temperature rise and/or when control is stabilized from any process state.

■ Requirements for AT start

Start AT when all the following conditions are satisfied:

- Prior to starting the AT function, end all the parameter settings other than PID and LBA.
- Confirm the LCK function has not been engaged.

■ Requirements for AT suspension

The AT function is suspended if any of the following conditions is established:

- When the SV is changed.
- When the PV bias value is changed.
- When the RUN/STOP function is changed to the "STOP."
- When the PV becomes abnormal. (According to the burnout.)
- When the power is turned on.
- When a power failure longer than 20 ms occurs.
- When the AT function does not end in about 9 hours after tuning started.

(7) Operation and Stop

(1) Before starting operation, it checks that a setup of attachment, wiring, setting value (SV), and settings of various parameter has ended.

(2) Since there is no power supply switch in this apparatus, operation will be started if it is made a power supply ON. The setup at the time of shipment is "RUN (operation execution)."

(3) Display and output, etc. are as follows if it switches to an operation stop (STOP).

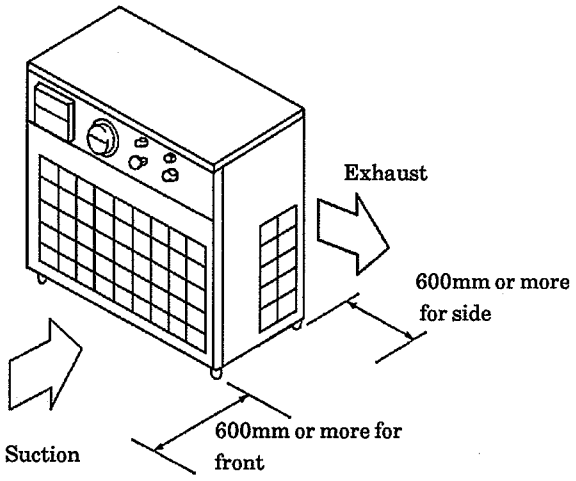
- Display: "STOP" is displayed on PV display machine.
- Output: Control output OFF, alarm output OFF.
- In autotuning, it is stopped. (PID constant is not updated.)
- In selftuning, it is in a stop state. (it is restarted by RUN.)

(4) This apparatus holds data in front of a power supply OFF.

For example, when it is made a power supply OFF in the state of STOP, and it is again made a power supply ON, it starts in the state of STOP.

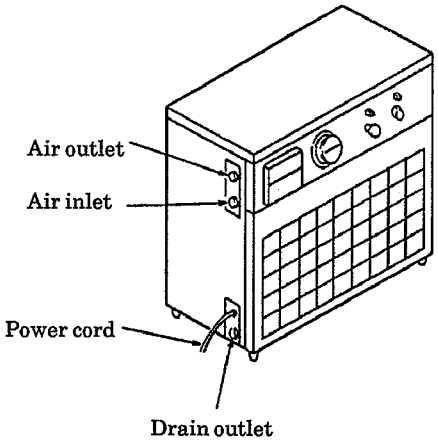
4. INSTALLATION

4-1. Installation



- Check the following before installation
  - Check the model unmber of the machine.
  - Install the machine on the rigid and level floor with less vibration.
  - Install the machine in a well ventilated plate.Since this machine employs the air cooling system,keep enough space from the wall,as shown in the figure above.
  - Avoid installing the machine in dusty place.
  - Avoid the place close to the heat source.
  - Avoid the place exposed to direct sun light or rain water.
  - Use the machine with the ambient temperature around 20 to 25°C range.
  - Install the machine where piping and maintenance can be easily made.

4-2. Piping



- Connect the pipes for air inlet and outlet respectively on the left side.Do not make connection with the pipes reversed.
- Connect and fix the flexible tube with the drain outlet.If it is not fixed firmly , the tube may vibrate when discharging the drain manually.
- Take a measure so that the vibrations generated from the compressor does not transmit to the machine.
- Piping shall be so made that the weight of pipe does not apply to the machine.
- The piping on the air outlet side shall be made as short as possible.Recommend the use of insulation material for heat insulation.
- Use a pipe on the air outlet side with good temperature presevation.

[SM-11425-A]

4-3. Electric wiring

- The capacity of power cord is as shown below.

Model	RD-1.5E~2.2E-PRT	RD-5.5E,7.5E,11-PRT
Power	Single 100V50/60Hz	Single 200V50/60Hz
Power cord	2.0mm^2 or over	
Breaking capacity	15A	

- Be sure to provide a leakage breaker for protection from overload and leakage.
- Ground the wire electric shock prevention.The terminal No.E is for grounding.(Green wire is for grounding.)

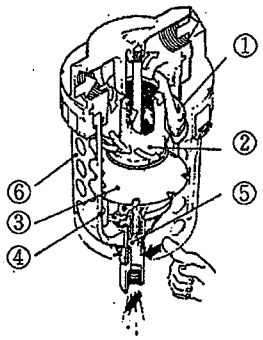
5.MAINTENANCE

Inspection and cleaning of the filter when the filter alarm lamp is lit are as shown below.

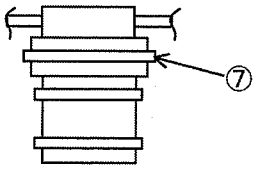
(1) Close the stop valve for air inlet.

(2) Remove the front panel.

(3) Push the drain discharge port on the bottom of 5 μm filter with finger. Make sure that all air pressure in the unit is discharged completely.



① Louver deflector
② Element
③ Buffle
④ Bowl
⑤ Auto drain
⑥ Bowl guard
⑦ Insulock tie



(4) Please move insulock tie, and expose filter one-touch ring.

(5) Then pinching the section marked PUSH on filter one-touch ring, turn about 15 degrees in clockwise direction and pull it down to remove.

(6) Turn the filter buffle (3) counterclockwise by hand to remove.

(7) Remove the filter element(2).

If the filter element is 5 μm one, wash it in water with neutral detergent. If it is too dirty, replace the element with new one.

(8) Follow above steps in reverse manner when assembled. Apply air after confirming the section marked PUSH is in the spacer recessed portion.

Model coding	5 μm Filter model No.	Part No. of element for replacement
RD-1.5E～2.2E-PRT	RD-QF4000-10-S411	F4000-ELEMENT
RD-5.5E-PRT	RD-Q1137-4C-S311	1137-ELEMENT
RD-7.5E-PRT	RD-Q1138-6C-S311	1138-ELEMENT
RD-11-PRT	RD-Q1138-8C-S311	1138-ELEMENT

If the sub micron filter element is used, replace it with new one.

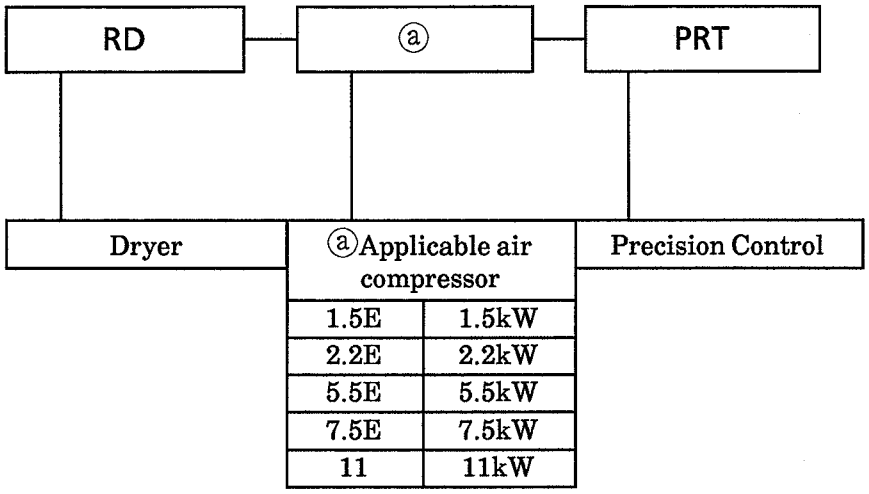
Model coding	sub micron filter model No.	Part No. of element for replacement
RD-1.5E～2.2E-PRT	RD-Q1137-3C-FYS83	RD-Q85-5259
RD-5.5E-PRT	RD-Q1138-6C-FYS38	RD-Q85-5333
RD-7.5E-PRT	RD-Q1138-8C-FYS38	RD-Q85-5333
RD-11-PRT	RD-Q1126-10C-FYS25	RD-Q85-5334

If the Microalescer element is used, replace it once in four times of replacement of sub micron filter element.

Model coding	Microalescer model No.	Part No. of element for replacement
RD-1.5E-PRT	RD-Q1244-2C-JS411	1244-MANTLE-ASSY
RD-2.2E-PRT	RD-Q1237-3C-S411	1237-MANTLE-ASSY
RD-5.5E-PRT	RD-Q1238-6C-S411	1238-MANTLE-ASSY
RD-7.5E～11-PRT	RD-Q1226-8C-S411	1226-MANTLE-ASSY

Discontinue

6. MODEL CODING



ⓐApplicable air compressor	
1.5E	1.5kW
2.2E	2.2kW
5.5E	5.5kW
7.5E	7.5kW
11	11kW

7. AFTER CERVICE

Should any abnormality be found during operation.Check in accordance with the items given in the table below.Also inform us of the following.

- Model No.
- Serial No.
- Date of installation
- Dealer name
- Condition abnormality

Condition	Cause	Measure
Water comes out from the machine.	1 See if the plug is firmly connected to the outlet. 2 See if the switch is turned on. 3 See if the fuse in the breaker is not burnt out. 4 See if ambient temperature is abnormaly high. 5 See if any foroign matter,dust,etc, is stuck to the condenser. 6 See if the auto drain is filled with water. 7 See if the running lamp is lit. 8 See if the condenser is clogged.	1 Connect it firmly. 2 Turn it ON. 3 Replace the fuse. 4 Lower temperature. 5 Clean 6 Manually discharge. 7 Check for the power 8 Well ventilate the suction port and discharge port on the front panel.
Output pressure of dryer does not increase.	1 Filter alarm lamp is lit. 2 See if ambient temperature is less than 2℃	1 Clean or replace the filter. 2 Raise the temperature to more than 2℃
Air device is cold.	1 See if the switch on the air temperature adjuster is on. 2 See if the fuse for thyristor is not burnt out. 3 See if the resistance Bulbs is not broken. 4 See if the thermostat is not off.	1 Turn on. 2 Replace the fuse. 3 Repair or replace. 4 Replace the thermostat.
Air device is hot.	1 See if the setting of air temperature adjuster is correct or not. 2 See if the thermostat is short circuited.	1 Reset 2 Replace the thermostat.