

# INSTRUCTION MANUAL

	IDG3	,	IDG3H
	IDG3M3	,	IDG3HM3
	IDG3V3	,	IDG3HV3
	IDG5	,	IDG5H
	IDG5M3	,	IDG5HM3
<b>MODEL</b>	IDG5V3	,	IDG5HV3

## MEMBRANE AIR DRYER MEMBRANE AIR DRYER UNIT

Before operating, you should first thoroughly read this manual. Keep this instruction manual. Specification and equipment are subject to change without any obligation on the part of the manufacturer.

### Safety cautions

Each and individual product have its own operating specification. Operate product with out of specification conditions could lead to failure of product. Follow product specification and cautionary points before & during installation and operation.

### ! Caution

Ignoring of emphasized notification could cause mis-handle of product which may lead to the injured of people and the damage of things.

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### ! Caution Operation

- Make sure to operate with in specifications. (Refer to P.7.)
- Any of substances in table 1 should not be contained in compressed air and surrounding.  
[If any of them is contained, it causes the damage of case.]

Table 1. Harmful substances

Type	Harmful substances
Solvent	Acetone, benzene, phenol, toluene, trichloroethylene, cresol, thinner, aniline, chloroform, methyl, alcohol, dioxane, tetrahydrofuran, methylene chloride, xylene, cyclohexanone, carbon tetrachloride, etc.
Acid	Sulfuric acid, nitric acid, hydrochloric acid, acetic acid, lactic acid, chromic acid, etc.
Gas	Chlorine, sulfurous acid, hydrogen sulfide, bromine, etc.
Oil	Hydraulic fluid (Phosphatic ester), fuel oil, kerosene, water soluble cutting fluid (alkaline), etc.

- Do not use it as breathing air dehumidifier.
- In case of using modular connecting mist separator or micro mist separator {IDG3\*M(V), IDG5\*M(V)}, make sure that equipment is depressurized to zero before operation and case is locked with a click before operation.
- Operating pressure should be below 0.85MPa.
- Working fluid and ambient temperature should be between -5°C and 55°C. (Not frozen)

# ⚠ Caution Installation

- On inlet side of membrane air dryer, surely install mist separator and micro mist separator. [Without them, it does not perform well because water and oil flow in.]

Table 2. Recommendable separators

Description	Model number
Mist separator	AM150C-□□C AFM20-□□-C
Micro mist separator	AMD150C-□□C AFD20-□□-C

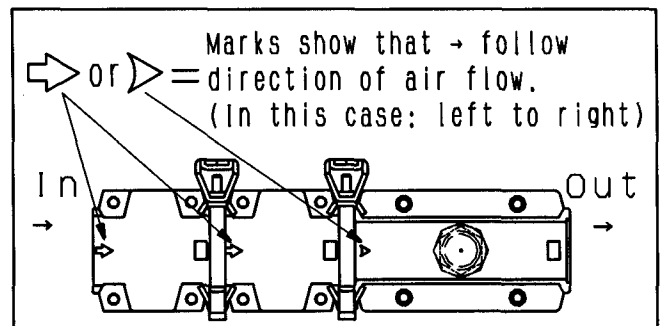
For details of each separator, refer to our catalogues of "Air cleaning equipment" "Mist separator" and "Micro mist separator".

- Do not raise or bend drain pipes of mist separator and micro mist separator on inlet side of membrane air dryer. [If do so, drain flows in without exhausting, and it lowers the performance.]

Drain pipes should be I.D. min 2.5mm, and max. 5m in length.

- Install pressure reducing valve on outlet side of membrane air dryer. [If it is installed on inlet side, performance goes down due to pressure down.]
- Do not cover outlet portion of purging air with others. (Refer to P.9.) [If this portion is covered, it lowers performance.]
- Keep minimum clearance of 100mm under this equipment. (Refer to P.7,8.)

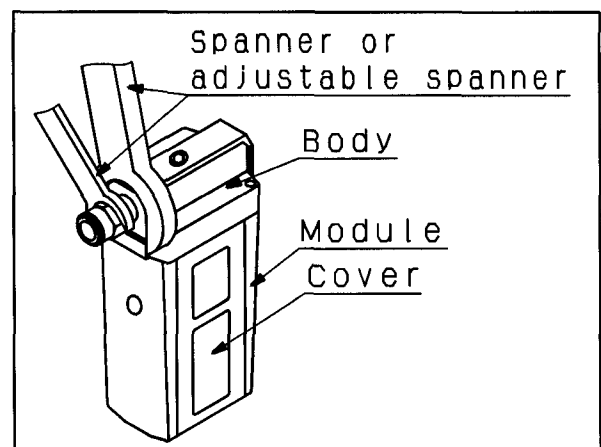
- Flush pipes before installation.
- Install 1DG3\*M3(V3), 1DG5\*M3(V3) in vertical direction. (1DG3\*, 1DG5\* can be install in any direction.)
- Do not confuse inlet and outlet of compressed air. [If compressed air does not flow in correct direction, performance can not be proper.]



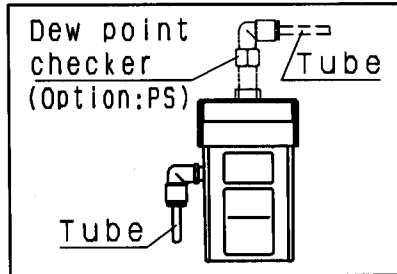
- Install where rainwater and direct sunlight are shutted out.
- Do not install in places subjected to vibration.
- Tighten pipes fixing body with spanner or adjustable spanner. Must not turn over it holding case by hands. [If not, it causes the damage of case.]

Table 3. Tightening torque

Port size	Tightening torque N·m
1/8	7~9
1/4	12~14



- Tube size with one touch fitting (Option P,PS) for purging use please refer to P.7 for purging air tube size and length of tube should be 5m and below. For purging air tube 5m and above, please do not install valve if tube is bend or constructed. If the dehumidifying performance will lower.



### ⚠ Caution Maintenance

- Make sure that equipment is depressurized to zero before maintenance.

[It is dangerous resulting in damage and slipping out of parts.]

#### <Daily maintenance>

- Ensure that drain, which gather in internal mist separator and micro-mist separator installed of inlet side, does not go beyond the maximum drain level during operation. [Going over the maximum drain level, drain flows in and causes drop in performance.]
- Check that the mist separator and micro-mist separator at the inlet work smoothly they regularly exhaust drainage before operating the membrane air dryer unit. Maintain the auto drain with the following procedure if any failures such as exhausting failure or leakage occur.
- Confirm normal performance of membrane membrane air dryer by color of grains inside the dew point checker. (Option:S,PS)

Table 4.

Condition of membrane air dryer

Color of dew point checker	Condition of function
Blue	Functioning normally
Pink, white, brown, black	Performance is going down

(When color of grains turns pink, white brown or black, refer to P.6)  
 Note: It takes approximately one hour after supplying air for grains dew point checker to react.

#### <Bi-yearly maintenance>

- Replace the element of the mist separator and micro-mist separator at the inlet after 2 years of operation using the procedure shown in "Replacement of Element"(P.5). However, if the pressure drop of each separator of the membrane air dryer unit reaches 0.1 MPa replace the element even if the unit has not been operated for 2 years.

#### <Maintenance:Once in 10 years>

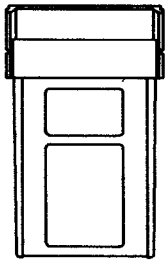
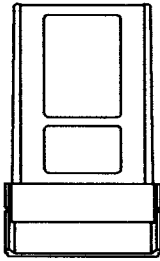
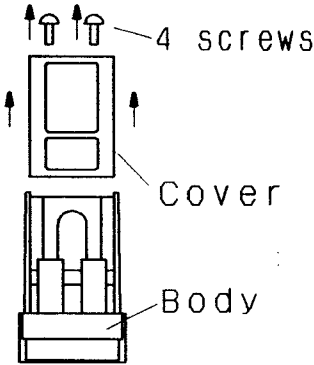
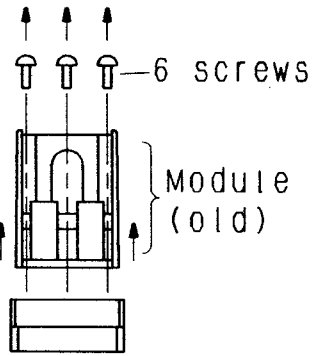
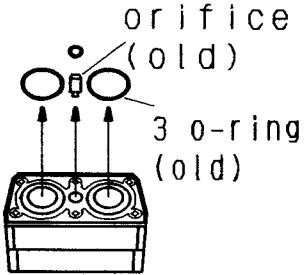
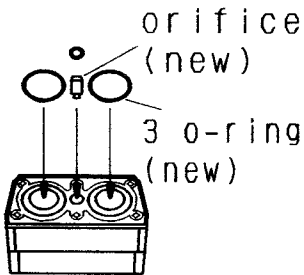
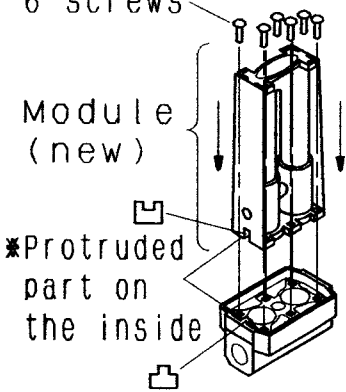
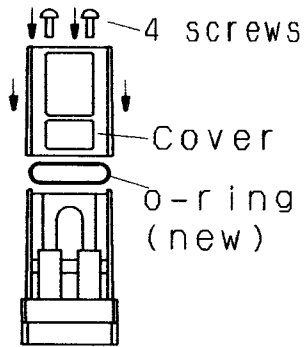
- Basically the membrane module set should be replaced based on section C of "2-1 Daily Maintenance." However, if the membrane module set is regularly replaced, the reference of the replacement interval should be 10 years, although this interval varies depending on the operating conditions. The above mentioned interval is applicable if the membrane module set is provided with the micro-mist separator at the upstream side. However, if the color of the dew point indicator changes to the color shown in section C of "2-1 Daily Maintenance" within 10 years, replace the membrane module set as shown in "Replacement of Module Set" on page 4.

#### <Discoloration of hollow fiber membrane>

When the hollow fiber membrane comes in contact with air, it discolors from a milky color to light brown and then dark brown. The closer to the inlet the hollow fiber membrane is, the greater the discoloration becomes due to temperature and humidity. As this phenomenon occurs because of a natural reaction between components in the air and the hollow fiber membrane, it is not a failure nor does it indicate performance deterioration.

## Replacement of module set

- ① Make sure that equipment is depressurized to zero before maintenance.
- ② Invert the module set before dismantling.
- ③ Remove 4 screws attaching case to body and remove the case vertically.
- ④ Remove 6 screws attaching module to body, then remove module set (old) from body.
- ⑤ Remove o-ring (3pcs.) and orifice from body.
- ⑥ first, install new orifice. Then, install 3pcs. of new o-ring in body.
- ⑦ Install Membrane module on body with 6pcs. of screws.  
Note: Ensure the protrusion at body fix properly at slot of Membrane module.
- ⑧ Install new o-ring at below of module. Then, insert cover and fasten it with 4 screws from the below of cover.

<p>① <b>Depressurize to zero!</b></p>  <p>Membrane air dryer</p>	<p>② Invert before dismantling.</p> 	<p>③ Unscrew the cover.</p> 	<p>④ Remove the module set.</p> 
<p>⑤ Dismantle the o-ring and orifice.</p> 	<p>⑥ Re-install the o-ring and orifice.</p> 	<p>⑦ Insert to module set.</p> 	<p>⑧ Re-install the cover.</p> 

## Replacement of element

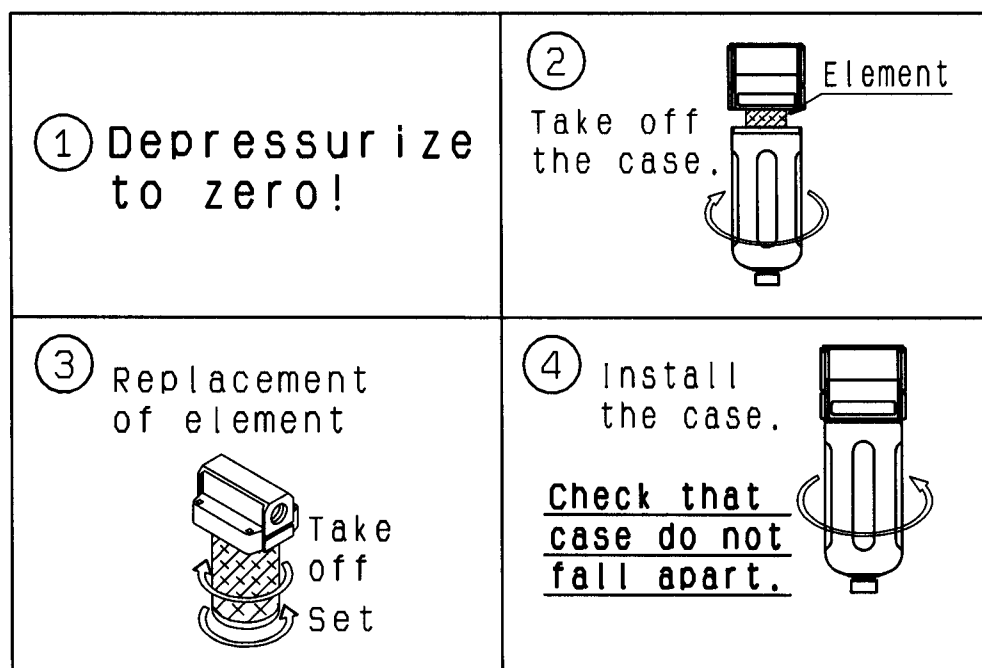
- The reference of the replacement interval for the element of each separator in the membrane air dryer unit is 2 years of operation. The replacement should follow the following procedure. However, if the pressure drop of each filter reaches 0.1MPa within 2 years, replace it.

Table 5. Parts no. for spare element

Description & model	Part no. for element	Qty
Mist separator (AFM20)	AFM20P-060AS	1
Micro-mist separator (AFD20)	AFD20P-060AS	1

## Replacing procedure

- ① Make sure that equipment is depressurized to zero.
- ② Take off the case by turning of it.
- ③ turn old element counterclockwise to take body. Install new element
- ④ Assemble the case by turning of it. Then, check whether body and case is in firmly attached.



## Troubleshooting

●If something abnormal has occurred by any possibility, examine it following the table below. And yet if it cannot be handled, contact any selling agency or our office located nearest you. [Make sure that equipment is depressurized to zero before maintenance or repair.]

Situations	Causes	Solutions
<p>●When there is moisture and oil mist flowing out from membrane air dryer's out port. [Color of grains in dew point checker is turning pink, white, brown or black.]</p>	<p>●Water and oil flow into membrane air dryer.</p>	<p>●Check the operation condition of the mist separator and micro-mist separator. If any failure is found, repair it. ●Check drain piping of mist each separators. If they rise or bend, remove rising parts and straighten drain piping. ●If elements of each separators are not replaced properly, install again with correct method. (Refer to P.5.) Note: If color of grains inside dew point checker is brown or black, the dew point checker and module set should be replaced.</p>
<p>●Performance is unsatisfactory. [Color of grains in dew point checker is turning pink or white.]</p>	<p>●Inlet air temperature is high.</p>	<p>●Improve ventilation to lower the ambient temperature of where air compressor is installed. (Lower inlet air temperature.) ●Install after cooler or something substituted for on inlet side of membrane air dryer to lower air temperature.</p>
	<p>●Ambient temperature is high.</p>	<p>●Improve ventilation to lower the ambient temperature.</p>
	<p>●Air flow rate is large.</p>	<p>●Check the specifications, reduce the flow rate to lower than rated flow rate.</p>
	<p>●Inlet air pressure is low.</p>	<p>●Check the specifications, raise the pressure to more than minimum working pressure.</p>
	<p>●Purging air volume is small.</p>	<p>●Check outlet for purging air. ●Check the purging air piping. a. Remove any block on bend on the purging air piping. b. Piping for purging air is reduce or longer than specified length, refer to P.2,7 for correction. c. Do not merge purging air line piping flow.</p>
<p>●[Grains in dew point checker are crushed.]</p>	<p>●Water flow into membrane air dryer.</p>	<p>●Replace dew point checker.</p>

[ ]: When dew point checker is attached.

# Specifications

Standard dew point		-20 °C		-15 °C	
Model		IDG3(M3,V3)	IDG5(M3,V3)	IDG3H(M3,V3)	IDG5H(M3,V3)
Condition	Max.working press.	0.85MPa			
	Min.working press.	0.3 MPa			
	Working fluid	Compressed air			
	Ambient and working fluid temp.	-5~55°C(Not frozen)			
Performance	Outlet air dew point (Atmospheric press.)	-20 °C		-15 °C	
	Inlet air flow rate L/min(ANR) Note1 Note2	31(32)	62(63)	28(29)	56(57)
	Outlet air flow rate L/min(ANR)	25	50	25	50
	Outlet air flow rate L/min(ANR) Note2	6(7)	12(13)	3(4)	6(7)
	Inlet air press.	0.7MPa			
	Inlet air temp.	25°C(Saturated)			
	Ambient temp.	25°C			
Regulator structure (Note3)		Type relief			
Port size(Keys nominal B)		1/8, 1/4			

Note1: ANR means flow rate converted into values at atmospheric pressure of 20°C.

Note2: Value specified within ( ) is for IDG with Dew Point Checker.

Note3: Type V3

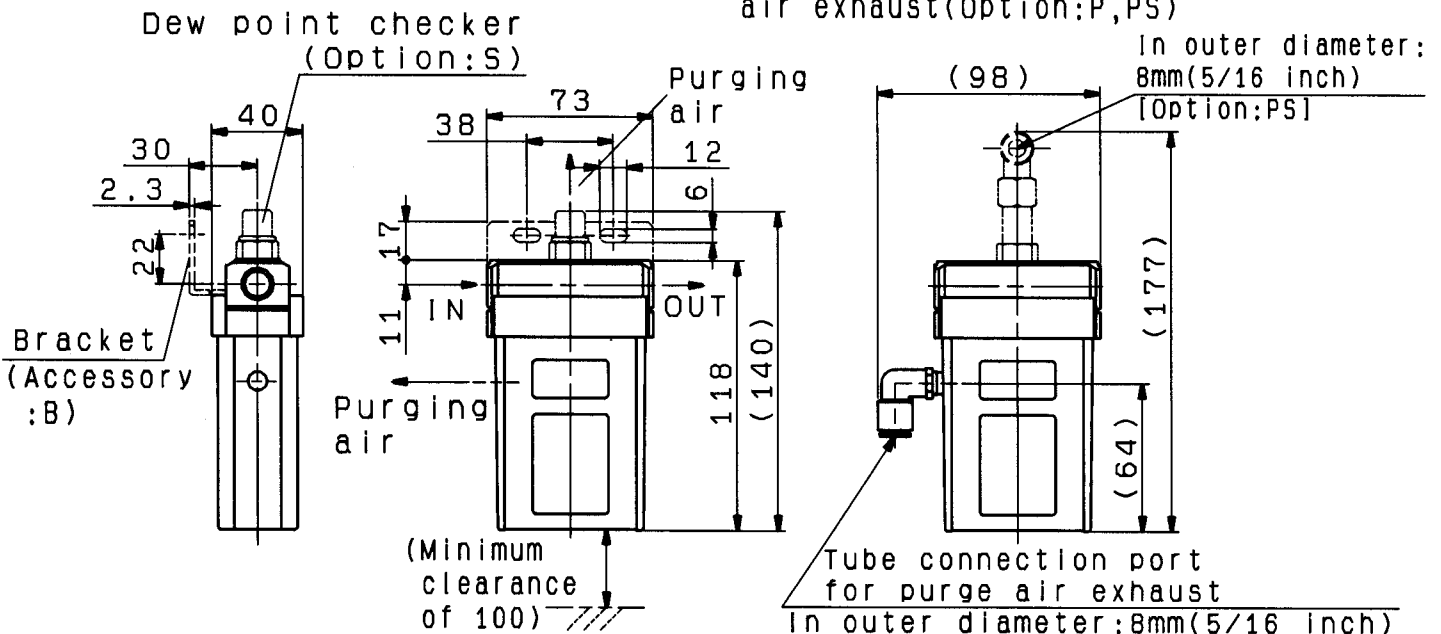
Model	IDG3*, IDG5*	IDG3*M3, IDG5*M3	IDG3*V3, IDG5*V3
Mass kg	0.25kg (With Bracket: 0.31kg)	0.83kg (With Auto Drain: 0.9kg)	1.28kg (With Auto Drain: 1.35kg)

## Dimensions

IDG3\*, IDG5\*

IDG3\*-P, IDG5\*-P(-PS)

One touch fitting for purge air exhaust (Option: P, PS)



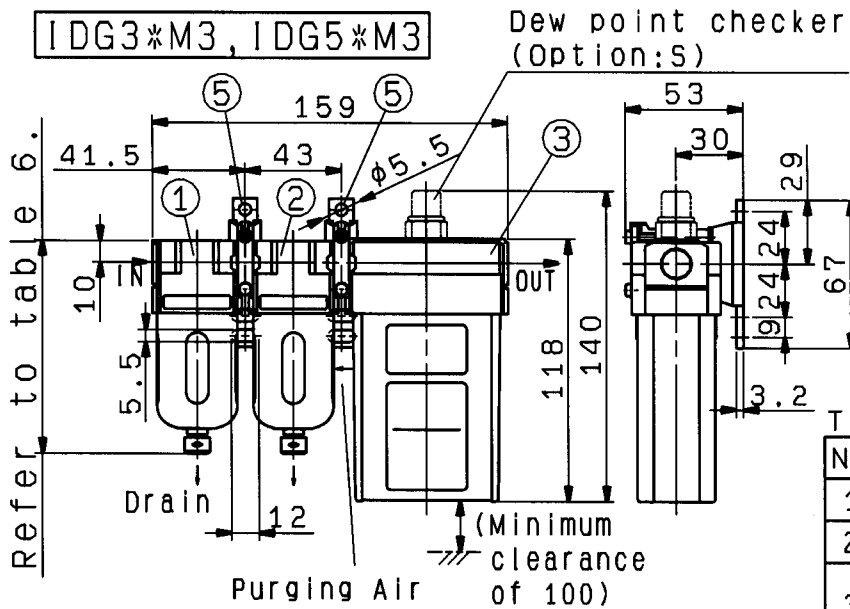


Table 6. Exhausting method

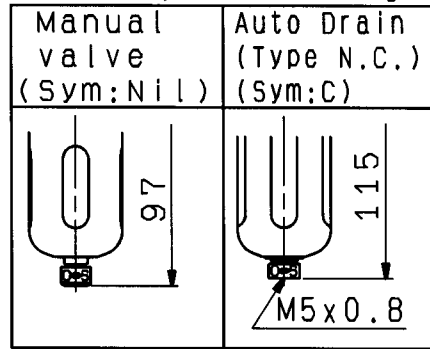


Table 7. Component equipments

No	Model	Description	Qty
1	AFM20	Mist separator	1
2	AFD20	Micro mist separator	1
3	IDG3, 3H IDG5, 5H	Membrane air dryer	1
4	AR20	Regulator	1
5	Y200T	Spacer with L shaped bracket	2
6	Y200	Spacer	1
7	E20L-01,02	Piping adaptor	1
8	1/8, 1/4	Nipple	1

Note: No. 4, 6: Only type V3  
No. 7, 8: Only type M3-P

**IDG3\*M3-P, IDG5\*M3-P (-PS)**

One touch fitting for purge air exhaust (Option: P, PS)

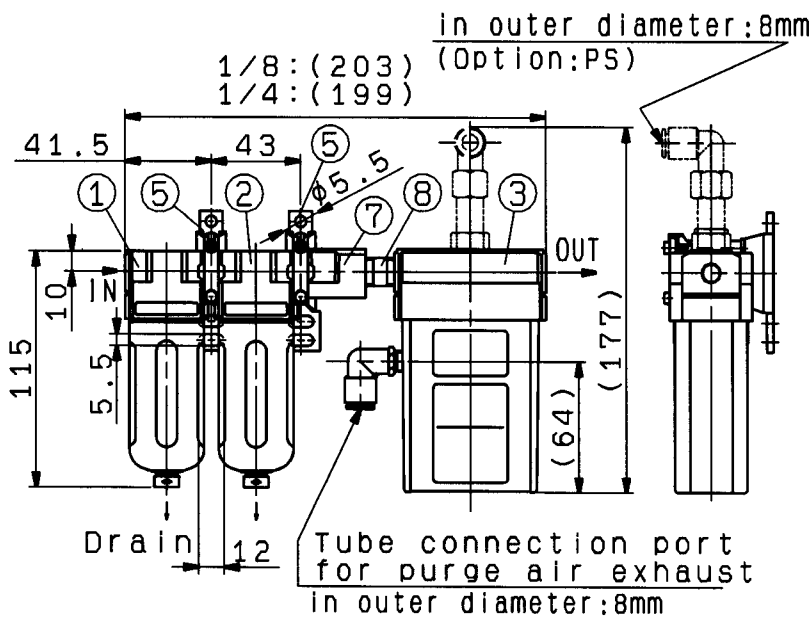


Table 8. Spare parts

Part no.	Part name	Qty	
AFM20P-060AS	Element	1	
AFD20P-060AS	Element	1	
C2SF-C	Case assembly	2	
AD27-C	Auto drain	2	
IDG-EL3	Module set	For IDG3	1
IDG-EL3H		For IDG3H	1
IDG-EL5		For IDG5	1
IDG-EL5H		For IDG5H	1

