



Operation Manual

Product Name

Membrane Air Dryer

Model / Series / Product Number

IDG1-C06 Series
IDG1-C06-P Series

SMC Corporation

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Membrane Air Dryer Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.”

They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

*1) ISO 4414: Pneumatic fluid power -- General rules relating to systems

ISO 4413: Hydraulic fluid power -- General rules relating to systems

IEC 60204-1: Safety of machinery -- Electrical equipment of machines (Part 1: General requirements)

ISO 10218-1992: Manipulating industrial robots -Safety etc.



Caution

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



Warning

Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



Danger

Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.

The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly.

The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.



Membrane Air Dryer Safety Instructions

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited Warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

[Limited Warranty and Disclaimer]

- 1. The warranty period of the product is 1 year in service or within 1.5 years after the product is delivered, whichever is earlier.** *3) Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- 2. For any failure or damage reported within the warranty period, which is clearly our responsibility, a replacement product or necessary parts will be provided.**
This limited warranty applies only to the SMC product independently, and not to any other damage incurred due to the failure of the product.
- 3. Prior to using SMC products please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.**

3) Vacuum pads are excluded from this 1 year warranty. A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

[Compliance Requirements]

- 1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction(WMD) or any other weapon is strictly prohibited.**
- 2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulation of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.**

Caution

SMC products are not intended for use as instruments for legal metrology.
For products that SMC manufactures or sells are not measurement instruments that are qualified by pattern approval tests relating to the measurement laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the measurement laws of each country.

2. Handling precautions

Design

Caution

1. Connect the piping in consideration of the purge air outlet port position.

Purge air is moist. Connect the piping to avoid troubles which are corrosion of peripheral devices or malfunction caused by purge air.

2. When very clean air is required.

(Supply to the air bearing, semiconductor blow etc.)

Connect micro mist separator or super mist separator to the outlet (in the end) of this product.

3. Time to reach the rated dew point.

A certain amount of time is required to achieve the rated dew point after the air begins to flow.

Refer to the time below as a guide, to begin operating outlet side equipment after the rated dew point is achieved.

Standard dew point -20°C : approx. 10 minutes

4. Ensure that intermittent pressure is not applied to the product.

(e.g.: Mount a solenoid valve on the inlet and operate it frequently.)

It is possible to damage the product if pressure is applied intermittently.

5. Install a regulator on the outlet side of the product.

If it is installed on the inlet side, dehumidification performance will be reduced.

6. Do not use the product for applications that requires bending and stretching repeatedly.

The product might be damaged.

7. With fittings for purge air discharge (Option: P).

The dehumidification capacity decreases in proportion to the length of the tube for discharging purge air. Use the one-touch fitting including in the packaging and the tube specified size and keep its length within 5 m.

8. Keep the specified speed for operation.

Operation outside of the specified range may cause damage to the product.

9. Consider the purge air flow rate.

Find the purge air flow rate from the charts and calculate the 'required outlet air flow + purge air flow rate'. The air supply capacity must be at least equal to the calculated flow or the required outlet air flow rate cannot be obtained.

Mounting and Piping

Caution

1. Do not obstruct the purge air discharge ports.

If purge air back pressure becomes too high or purge air stops flowing, dehumidification performance will decrease or may become impossible.

2. Make sure to install a mist separator and a micro mist separator or a micro mist separator with Pre-filter on the primary side.

If the inlet air contains oil or water droplets etc., performance will reduce and might be damaged.

3. Large quantities of dust (solid foreign matters) or water droplets are present in the supply air.

When there is a large quantities of dusts (solid foreign matters) in the supply air, follow above No.2, and mount the air filter or main line filter in the primary side of mist separator. When there are large quantities of water droplets, follow above No.2, and mount the water separator in the primary side of mist separator.

4. Do not use fixtures to the tubes.

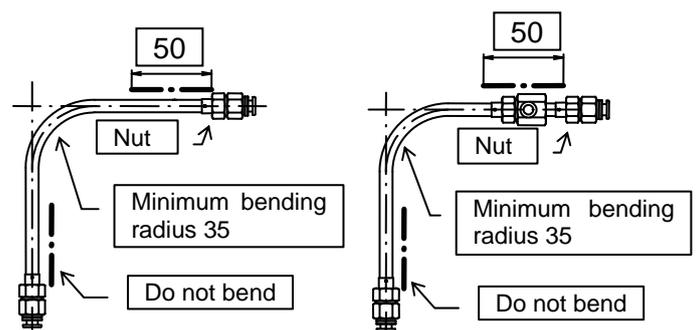
Using fixtures on tubes may cause damage to the product.

5. Flush the piping before installing.

Before piping, please make sure to remove debris, cutting oil, and dusts by performing air blow (flushing). If foreign matter enters the equipment, it may cause malfunction and damage of equipment.

6. Do not bend piping less than the minimum bending radius.

Minimum bending radius of tubes is 35mm and bending angle is 90 degrees or less. Do not bend the part of 50mm from the nut end. Also do not twist.



7. Separate the purge air line and compressed air line.

Do not blend purge air with compressed air line, condensate piping, or exhaust air line of other equipment. If the purge air will not flow, it may cause dehumidification performance decline and damage of equipment.

8. Refer to the catalog how to install / remove tube.

When you install / remove tube, follow the Fittings and Tubing Precautions on catalog. Use tubes in the catalog.

2. Handling Precaution

Air Supply

Caution

1. Compressed air supply capacity.

Air source, which have supply capacity more than "required outlet air flow rate (dry air flow rate) + purge air flow rate" is required. See the purge air flow rate diagram on the catalog for the purge air flow rate.

2. Chemical substances, which have an adverse effect on the product.

The chemical substances stated in the table below can reduce the performance or damage the equipment. Do not use in an environment containing these chemical substances.

Type	Substances which must not be present
Solutions	Acetone, benzene, phenol, toluene, trichlen, xylene, cresol, thinner, aniline, chloroform, chlorobenzene, trichloroethane, ethyl benzene, ethanol, methanol, isopropyl alcohol (IPA), hexafluoroisopropanol, dioxane, tetrahydrohuran, methylene chloride, cyclohexane, carbon tetrachloride, methyl ketone, ethyl ketone, etc.
Acids	Sulfuric acid, nitric acid, hydrochloric acid, acetic acid, lactic acid, chromic acid, etc.
Gases	Chlorine gas, sulfurous acid gas, hydrogen sulfide, bromine, ozone, ammonia, etc.
Oils	Phosphate ester type hydraulic fluid, fuel oil, aqueous cutting oil (alkaline), kerosene, etc.
Strong base type	Lithium hydroxide, sodium hydroxide, potassium hydroxide, calcium hydroxide, etc.
Others	Anaerobic adhesive, anaerobic sealant, etc.

Operating Environment

Caution

1. Do not operate the product at temperature outside the operating temperature range (fluid and ambient temperature) of the specifications.

The membrane module (element) of this product is resin. Operation at high temperature will lead to damage of the membrane module. Especially when the product is installed after the reciprocation air compressor, be sure to check that the fluid temperature is not outside of the operating condition range.

2. Inlet air temperature should be lower than ambient temperature.

When this product is cooled by ambient air, water droplets accumulate inside. It may cause the decrease of dehumidification performance or flowing water droplets to the secondly side of this product.

3. Maintenance

Maintenance

Warning

1. Do not remove parts or piping while pressure is applied to the product.

During maintenance, set air pressure to zero.

Caution

1. Mount pressure gauge.

During a maintenance, mount pressure gauges to both inlet / outlet sides for confirming the residual pressure.

2. Standard replacement period.

As a guideline the unit should be replaced after 10 years of use (10 hours/day).

3. Membrane module cannot be replaced by part.

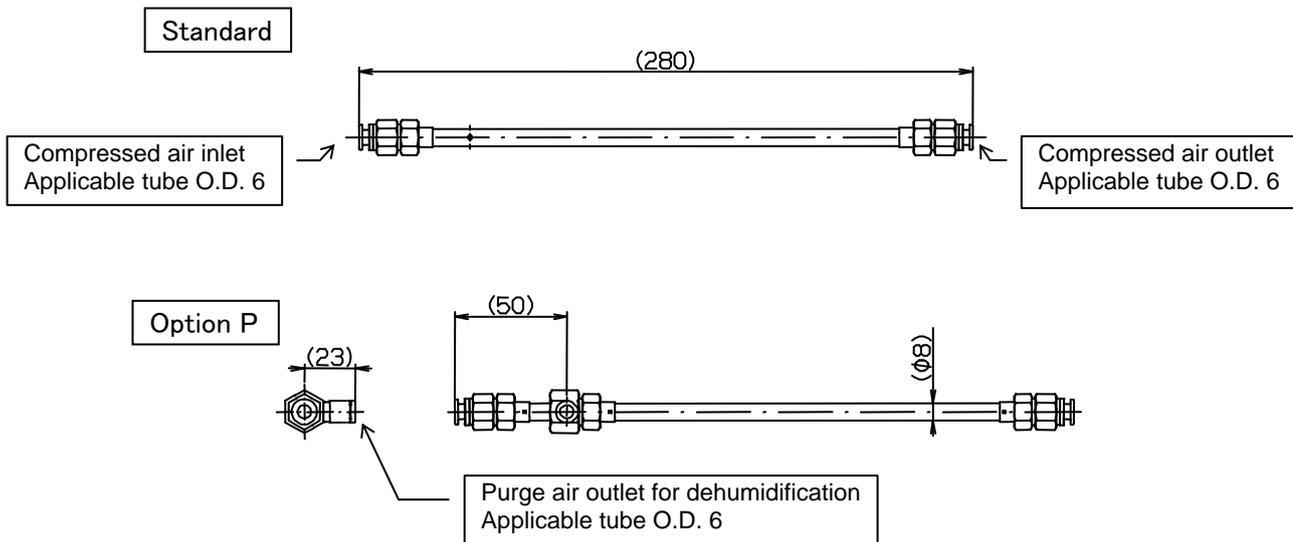
Replace the whole product when replacement is necessary.

4. Specifications

Model		IDG-C06	IDG-C06-P
Operating conditions range	Fluid	Compressed air	
	Inlet air pressure MPa	0.3 to 0.85	
	Inlet air temperature °C *1	-5 to 55	
	Ambient temperature °C *1	-5 to 55	
Performance criteria	Outlet air atmospheric pressure dew point °C	-20	
	Conditions to achieve performance criteria		
Conditions to achieve performance criteria	Inlet air flow rate L/min (ANR) *2	12.5	
	Outlet air flow rate L/min (ANR) *2	10	
	Purge air flow rate L/min (ANR) *2	2.5	
	Inlet air pressure MPa	0.7	
	Inlet air temperature °C	25	
	Inlet air saturation temp. °C	25	
Ambient temperature °C	25		
Applicable tube O.D.		ø6	
Weight g		45	77

※1 There should be no water droplets entering the product when the temperature is -5 °C to 5 °C. (No freezing)

※2 ANR is the value at 20°C, atmospheric pressure, and relative humidity of 65%.



Revision history

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.

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