Refrigerated Air Dryer
Large Size Series
Tolerant of high temperature environment!
Top of its class in the industry for the large air-cooled type
Ambient temperature 45°C [Conventional large type: 40°C]
Inlet air temperature 60°C [Conventional large type: 50°C]
Energy saving design
(SMC’s original new design!) [Patent Pending]
Exhaust heat reduced by 25%
Ambient temperature increase suppressed (Air-cooled type)
Facility water reduced (Water-cooled type)

Maintenance
• Dustproof filter
• With a lamp to indicate when to check the dustproof filter
• Only access from front side is required to check electrical equipment and dustproof filter.

Selection of layout [Air-cooled type]
Exhausting direction can be selected from four directions!!

Space saving
One side can be installed flat against a wall!
Installation space reduced by 1.5 m² at max!! (IDF100F)

Series IDF100F
Stainless steel heat exchanger Refrigerant R407C (HFC)

<table>
<thead>
<tr>
<th>Model</th>
<th>Refrigeration method</th>
<th>Rated inlet condition</th>
<th>Air flow capacity (m³/min ANR)</th>
<th>Applicable air compressor (kW)</th>
<th>Refrigerant</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDF100F-30</td>
<td>Air-cooled</td>
<td>40°C 0.7 MPa</td>
<td>50 Hz: 16 60 Hz: 18.8 50 Hz: 16.7 60 Hz: 19.6</td>
<td>100</td>
<td>R407C (HFC)</td>
<td>R2</td>
</tr>
<tr>
<td>IDF100F-30-W</td>
<td>Water-cooled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Refrigerated Air Dryer

Tolerant of high temperature environment (ambient temperature 45°C), Energy saving design!

- Air-cooled type can be used at ambient temperature 45°C.
  - Reduces load to condenser and warms compressed air on the outlet side.
  - Helping the heat radiation of the condenser allows use at ambient temperature 45°C.

- Energy saving design: Reduces exhaust heat from dryer by 25%
  - Suppresses ambient temperature increase (air-cooled type), Reduces amount of facility water (water-cooled type).
  - Secondary heater reduces the load to the condenser, and reduces exhaust heat from dryer by 25% (comparison with other SMC products).

- Reduction of exhaust heat achieves downsizing and energy saving operation of the air conditioner!

Features 1

[Diagram of New dryer and Conventional dryer]

Patent Pending

[Diagram of Exhust heat from dryer]
- **Maintenance**
  - Dustproof filter
  - Only access from front side is required to check electrical equipment and dustproof filter.

- **Selection of layout**
  - **[Air-cooled type]**
    - Exhausting direction can be selected from four directions!!
    - Auto drain tube can be connected in two directions, left or right.
  - **[Water-cooled type]**
    - Facility water piping port can be selected from two directions!!

- **Space saving**
  - Either the left or right can be installed flat against a wall!!
  - Installation space reduced by 1.5 m² at max!!

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### SMC Air Dryer Variations

#### Large size Series **IDF100F/D/B**

The IDF100F series is added to the large size air dryer series!!

**Tolerant of high temperature environment!!**
Can be used with ambient temperature 45°C and inlet air temperature 60°C, making it top of its class in the industry for the large air-cooled type.

**Energy saving design**
Exhaust heat reduced by 25%
Ambient temperature increase suppressed (Air-cooled type)
Facility water reduced (Water-cooled type)

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated inlet condition</th>
<th>Applicable air compressor (kW)</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDF100F</td>
<td>40°C 0.7 MPa</td>
<td>100</td>
<td>R2</td>
</tr>
</tbody>
</table>

The large size series will be remodeled as the **IDF100F** series in the future.

#### Standard Series **IDF100F/IDU100F**

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated inlet condition</th>
<th>Applicable air compressor (kW)</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDF1E</td>
<td>35°C 0.7 MPa</td>
<td>0.75</td>
<td>Rc 3/8</td>
</tr>
<tr>
<td>IDF2E</td>
<td>35°C 0.7 MPa</td>
<td>1.5</td>
<td>Rc 1</td>
</tr>
<tr>
<td>IDF3E</td>
<td>35°C 0.7 MPa</td>
<td>2.2</td>
<td>Rc 1 1/2</td>
</tr>
<tr>
<td>IDF4E</td>
<td>35°C 0.7 MPa</td>
<td>3.7</td>
<td>Rc 1 1/2</td>
</tr>
<tr>
<td>IDF6E</td>
<td>35°C 0.7 MPa</td>
<td>5.5</td>
<td>Rc 1 1/2</td>
</tr>
<tr>
<td>IDF8E</td>
<td>35°C 0.7 MPa</td>
<td>7.5</td>
<td>Rc 3/4</td>
</tr>
<tr>
<td>IDF11E</td>
<td>35°C 0.7 MPa</td>
<td>11</td>
<td>R 1</td>
</tr>
<tr>
<td>IDF15E</td>
<td>35°C 0.7 MPa</td>
<td>15</td>
<td>R 1 1/2</td>
</tr>
<tr>
<td>IDF22E</td>
<td>35°C 0.7 MPa</td>
<td>22</td>
<td>R 1</td>
</tr>
<tr>
<td>IDF37E</td>
<td>35°C 0.7 MPa</td>
<td>37</td>
<td>R 1 1/2</td>
</tr>
<tr>
<td>IDF55E</td>
<td>35°C 0.7 MPa</td>
<td>55</td>
<td>R 2</td>
</tr>
<tr>
<td>IDF75E</td>
<td>35°C 0.7 MPa</td>
<td>75</td>
<td>R 2</td>
</tr>
<tr>
<td>IDU1E</td>
<td>55°C 0.7 MPa</td>
<td>2.2</td>
<td>R 0 3/8</td>
</tr>
<tr>
<td>IDU3E</td>
<td>55°C 0.7 MPa</td>
<td>3.7</td>
<td>R 0 3/4</td>
</tr>
<tr>
<td>IDU6E</td>
<td>55°C 0.7 MPa</td>
<td>5.5</td>
<td>R 0 3/4</td>
</tr>
<tr>
<td>IDU10E</td>
<td>55°C 0.7 MPa</td>
<td>7.5</td>
<td>R 0 3/4</td>
</tr>
<tr>
<td>IDU15E</td>
<td>55°C 0.7 MPa</td>
<td>11</td>
<td>R 0 3/4</td>
</tr>
<tr>
<td>IDU22E</td>
<td>55°C 0.7 MPa</td>
<td>22</td>
<td>R 0 3/4</td>
</tr>
<tr>
<td>IDU37E</td>
<td>55°C 0.7 MPa</td>
<td>37</td>
<td>R 0 3/4</td>
</tr>
<tr>
<td>IDU55E</td>
<td>55°C 0.7 MPa</td>
<td>55</td>
<td>R 0 3/4</td>
</tr>
<tr>
<td>IDU75E</td>
<td>55°C 0.7 MPa</td>
<td>75</td>
<td>R 0 3/4</td>
</tr>
</tbody>
</table>

Note: For air-cooled type, leave a space of at least 600 mm between the heat exhausting face and the wall.
For water-cooled type, leave a space at least 600 mm between the facility water piping side and the wall.
Leave at least 600 mm on the sides indicated with .

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*The separate catalog for dryer models conforming with foreign standards (CE and UL) is available.*
# Series IDF100F
## Model Selection

The corrected air flow capacity, which considers the user’s operating conditions, is required for selecting an air dryer. Select using the following procedures.

1. **Read the correction factors.**
   Obtain the correction factors A to D suitable for your operating condition from the below table.

2. **Check the coefficient.**
   - **Correction factor** $= 0.92 \times 0.98 \times 1 \times 0.93 = 0.84$
   - Max. coefficient value is 1.5. Correction factor is 1.5 when the calculation result is 1.5 or greater.

3. **Calculate the corrected air flow capacity.**
   - **Corrected air flow capacity** $= 12 \text{ m}^3/\text{min} \div (0.92 \times 0.98 \times 1 \times 0.93) = 14.3 \text{ m}^3/\text{min}$

4. **Select the model.**
   Select the model with air flow capacity which exceeds the corrected air flow capacity from the specification table. (For air flow capacity, refer to the below data E.)

5. **Options**
   Refer to page 6.

6. **Finalize the model number.**
   Refer to page 2.

7. **Select the optional accessories.**
   Refer to page 7.

### Correction Factors

#### Data A: Inlet Air Temperature

<table>
<thead>
<tr>
<th>Inlet air temp. (°C)</th>
<th>Correction factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 30</td>
<td>1.41</td>
</tr>
<tr>
<td>35</td>
<td>1.21</td>
</tr>
<tr>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>0.92</td>
</tr>
<tr>
<td>50</td>
<td>0.75</td>
</tr>
<tr>
<td>55</td>
<td>0.63</td>
</tr>
<tr>
<td>60</td>
<td>0.53</td>
</tr>
</tbody>
</table>

#### Data B: Ambient Temperature

<table>
<thead>
<tr>
<th>Ambient temp. (°C)</th>
<th>Correction factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 to 25</td>
<td>1.06</td>
</tr>
<tr>
<td>30</td>
<td>1.02</td>
</tr>
<tr>
<td>32</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>0.99</td>
</tr>
<tr>
<td>40</td>
<td>0.98</td>
</tr>
<tr>
<td>45</td>
<td>0.92</td>
</tr>
</tbody>
</table>

#### Data C: Outlet Air Pressure Dew Point

<table>
<thead>
<tr>
<th>Outlet air pressure dew point (°C)</th>
<th>Correction factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0.55</td>
</tr>
<tr>
<td>5</td>
<td>0.7</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>1.4</td>
</tr>
</tbody>
</table>

#### Data D: Inlet Air Pressure

<table>
<thead>
<tr>
<th>Inlet air pressure (MPa)</th>
<th>Correction factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>0.84</td>
</tr>
<tr>
<td>0.3</td>
<td>0.87</td>
</tr>
<tr>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td>0.5</td>
<td>0.93</td>
</tr>
<tr>
<td>0.6</td>
<td>0.96</td>
</tr>
<tr>
<td>0.7</td>
<td>1</td>
</tr>
<tr>
<td>0.8</td>
<td>1.03</td>
</tr>
<tr>
<td>0.9</td>
<td>1.06</td>
</tr>
<tr>
<td>1 to 1.6</td>
<td>1.09</td>
</tr>
</tbody>
</table>

#### Data E: Air Flow Capacity

<table>
<thead>
<tr>
<th>Air flow capacity m³/min (ANR)</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Hz</td>
<td>IDF100F</td>
</tr>
<tr>
<td>60 Hz</td>
<td>16</td>
</tr>
<tr>
<td>50 Hz</td>
<td>18.8</td>
</tr>
</tbody>
</table>

Note) For water-cooled type, the correction factor should be 1 for 2 to 45°C.
Refrigerant R407C (HFC)

Series IDF100F

Applicable Compressor Size: 100 kW
(Max. inlet air temperature: 60°C, Max. ambient temperature: 45°C)

How to Order

**Air-cooled IDF100F - 30**

<table>
<thead>
<tr>
<th>Size</th>
<th>Air compressor size [kW]</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

**Voltage**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Three-phase 200 VAC (50 Hz) 200/220 VAC (60 Hz)</td>
</tr>
</tbody>
</table>

**Option**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>None</td>
</tr>
<tr>
<td>B</td>
<td>Anti-corrosive treatment</td>
</tr>
<tr>
<td>C</td>
<td>Easy outdoor installation specification (Air-cooled type only)</td>
</tr>
<tr>
<td>K</td>
<td>Moderate pressure specification</td>
</tr>
<tr>
<td>P</td>
<td>With a metal name plate</td>
</tr>
<tr>
<td>R</td>
<td>With a circuit breaker</td>
</tr>
<tr>
<td>V</td>
<td>With a timer controlled solenoid valve type auto drain</td>
</tr>
</tbody>
</table>

Note) Enter alphabetically when multiple options are combined.

Note 1) The following combination is not available:
- Option B and heat exhausting direction 3 (Heat exhaust from the top cannot be achieved with easy outdoor installation specification.)
- Heat exhausting face can be specified on one side only.

Note 2) The combination of 1, 2 and 3 is not available.

**Water-cooled IDF100F - 30**

<table>
<thead>
<tr>
<th>Size</th>
<th>Air compressor size [kW]</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

**Voltage**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Three-phase 200 VAC (50 Hz) 200/220 VAC (60 Hz)</td>
</tr>
</tbody>
</table>

**Option**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>None</td>
</tr>
<tr>
<td>C</td>
<td>Anti-corrosive treatment</td>
</tr>
<tr>
<td>D</td>
<td>Easy outdoor installation specification (Water-cooled type only)</td>
</tr>
<tr>
<td>K</td>
<td>Moderate pressure specification (1.6 MPa)</td>
</tr>
<tr>
<td>P</td>
<td>With a metal name plate</td>
</tr>
<tr>
<td>R</td>
<td>With a circuit breaker</td>
</tr>
<tr>
<td>V</td>
<td>With a timer controlled solenoid valve type auto drain</td>
</tr>
</tbody>
</table>

Note) Enter alphabetically when multiple options are combined.

Note) The combination of 4 and 5 is not available.

Note) The above value is for reference only. Check the actual compressor capacity.
Hot and humid air entering the air dryer is cooled down by the cooler re-heater (heat exchanger). The moisture which is condensed and separated is automatically exhausted by the auto drain. The air which has had its moisture removed is heated in two stages by the re-heater (heat exchanger) in the cooler re-heater and by the secondary heater, and is supplied to the outlet side as warm and dry air.

**IDF100F**

Compressed air from which drainage has been exhausted exchanges heat with refrigerant which has been compressed by the refrigerator, to give the following effects:

1. The outlet air temperature increases, preventing condensation of the piping on the outlet side.
2. The amount of heat exhausted from the condenser is reduced.
3. Energy saving operation of the dryer is achieved by reducing the amount of heat exhausted from the condenser.
Construction (Air/Refrigerant Circuit)

Hot and humid air entering the air dryer is cooled down by the cooler re-heater (heat exchanger). The moisture which is condensed and separated is automatically exhausted by the auto drain. The air which has had its moisture removed is heated in two stages by the re-heater (heat exchanger) in the cooler re-heater and by the secondary heater, and is supplied to the outlet side as warm and dry air.

Secondary heater

Compressed air from which drainage has been exhausted exchanges heat with refrigerant which has been compressed by the refrigerator, to give the following effects:

1. The outlet air temperature increases, preventing condensation of the piping on the outlet side.
2. The amount of heat exhausted from the condenser is reduced.
3. Energy saving operation of the dryer is achieved by reducing the amount of heat exhausted from the condenser.
Series IDF100F

Dimensions

IDF100F: Air-cooled type

IDF100F-W: Water-cooled type

Operating Parts

Air-cooled type
- Illuminated switch
- Air pressure gauge
- Evaporation thermometer
- Condensed pressure gauge
- Operating time accumulator
- Reset switch
- Filter check lamp

Water-cooled type
- Illuminated switch
- Air pressure gauge
- Evaporation thermometer
- Condensed pressure gauge
- Operating time accumulator
**Series IDF100F Options**

Refer to “How to Order” page 2 for optional models.

**B Option symbol**

**Easy outdoor installation specification**

It can be installed outdoors under the eaves of a building, by mounting louvers at the ventilation air inlet and on the side in the heat exhausting direction and drip proof covers over the switch, etc. However, the product should be installed in a location where it will not come into direct contact with rain or snow.

**Dimensions for installation under the eaves**

<Reference>

<table>
<thead>
<tr>
<th>Ventilation direction</th>
<th>Approx.</th>
<th>Approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(from the left)</td>
<td>670</td>
<td>67</td>
</tr>
<tr>
<td>(from the right)</td>
<td>57</td>
<td>1120</td>
</tr>
<tr>
<td>Ventilation air inlet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Air-cooled type only**

<table>
<thead>
<tr>
<th>Ventilation direction</th>
<th>Approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Left)</td>
<td>1 m</td>
</tr>
<tr>
<td>(Right)</td>
<td>1 m</td>
</tr>
</tbody>
</table>

**Water-cooled type only**

Same dimensions as the standard specifications

**C Option symbol**

**Anti-corrosive treatment**

This minimizes the corrosion of the copper and copper alloy parts when the air dryer is used in an atmosphere containing hydrogen sulfide or sulfuric acid gas. (Corrosion cannot be completely prevented.)

Special epoxy coating: Copper tube and copper alloy parts

The coating is not applied on the heat exchanger or around electrical parts, where operation may be affected by the coating.

* Corrosion is not covered under warranty.

**D Option symbol**

**Moderate pressure specification**

The maximum operating pressure is 1.6 MPa.

The internal drain piping material is changed from nylon to metal.

**Specifications**

1. Maximum operating pressure: 1.6 MPa
2. Dimensions – same as standard products

**P Option symbol**

**With a metal name plate**

The label identifying the model and specifications of the product is changed to a metal plate which has better endurance.
Optional Accessories

Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Features</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separately installed power transformer</td>
<td>Power supply voltage for those other than the standard specifications</td>
<td>Max. ambient temperature 40°C (Relative humidity at 85% or less)</td>
</tr>
<tr>
<td>Foundation bolt set</td>
<td>Bolts for fixing air dryer to the foundations</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Piping adapter</td>
<td>Adapter for converting the thread type of an IN/OUT fitting for air dryer from Rc to NPT</td>
<td>Copper alloy</td>
</tr>
<tr>
<td>Panel for changing heat exhausting direction</td>
<td>Panel for changing the heat exhausting direction of the air-cooled type on site. A slit panel and a panel without slit are used in combination.</td>
<td>Refer to the operation manual for details.</td>
</tr>
</tbody>
</table>

Dimensions

[Separately installed power transformer]
IDF-TR7000-8

Specifications/Dimensions

<table>
<thead>
<tr>
<th>Transformer</th>
<th>Applicable dryer</th>
<th>Capacity</th>
<th>Type</th>
<th>Inlet voltage</th>
<th>Outlet voltage</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDF-TR7000-8</td>
<td>IDF100F</td>
<td>7 kVA</td>
<td>Three-phase</td>
<td>220, 240, 380, 400, 415, 440 V (50/60 Hz)</td>
<td>200 V (50/60 Hz)</td>
<td>360</td>
<td>540</td>
<td>400</td>
<td>260</td>
<td>300</td>
<td>11</td>
<td>30</td>
<td>94 kg</td>
</tr>
</tbody>
</table>

[Foundation bolt set]
IDF-AB501

[Optional Accessories]

- Power supply voltage for those other than the standard specifications
- Bolts for fixing air dryer to the foundations
- Easy to secure by striking the axle
- Adapter for converting the thread type of an IN/OUT fitting for air dryer from Rc to NPT
- Panel for changing the heat exhausting direction of the air-cooled type on site. A slit panel and a panel without slit are used in combination.
- Refer to the operation manual for details.
Condensed Water Calculation

Data

Dew Point Conversion Chart

How to read the dew point conversion chart
Example) To obtain the atmospheric pressure dew point at a pressure dew point 10°C, and a pressure 0.7 MPa.
1. Trace the arrow mark starting from the point A at a pressure dew point 10°C to obtain the intersection B on the pressure characteristic line for 0.7 MPa.
2. Trace the arrow mark starting from the point B to obtain the intersection C at the dew point under atmospheric pressure.
3. The intersection C is the conversion value -17°C under atmospheric pressure dew point.

How to calculate the amount of condensed water
Example) To obtain the amount of condensed water when the pressure is applied to air up to 0.7 MPa with an air compressor, then cooled down to 25°C. Given an ambient temperature at 30°C and a relative humidity at 60%.
1. Trace the arrow mark from the point A at an ambient temperature 30°C to obtain the intersection B on the curved line for the relative humidity 60%.
2. Trace the arrow mark from the intersection B to obtain the intersection D on the pressure characteristic line for 0.7 MPa.
3. Trace the arrow mark from the intersection D to obtain the intersection E.
4. The intersection E is the dew point under pressure 0.7 MPa with an ambient temperature at 30°C and a relative humidity at 60%. The value for E is at 62°C.
5. Trace the intersection E upward, and trace from the intersection D leftward to obtain the intersection C.
6. The intersection C is the amount of moisture included in the compressed air 1 m³ at 0.7 MPa, and a pressure dew point 62°C. The amount of moisture is 18.2 g/m³.
7. Trace the arrow mark, starting from F for cooling temperature 25°C (pressure dew point 25°C) to obtain the intersection G on the pressure characteristic line for 0.7 MPa.
8. From the intersection G, trace the arrow mark to obtain the intersection H on the vertical axis.
9. The intersection H is the amount of moisture included in the compressed air 1 m³ at 0.7 MPa, and a pressure dew point 25°C. The amount of moisture is 3.0 g/m³.
10. Therefore, the amount of condensed water is as follows (per 1 m³):
The amount of moisture at the intersection C = the amount of moisture at the intersection H = the amount of condensed water 18.2 – 3.0 = 15.2 g/m³
Series IDF100F Specific Product Precautions 1

Be sure to read before handling. Refer to back cover for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for Air Preparation Equipment Precautions.

Installation

⚠️ Caution
- Avoid locations where the air dryer will be in direct contact with wind and rain. (Places where relative humidity is greater than 85%)
- Avoid exposure to direct sunlight.
- Avoid locations that contain much dust, corrosive gases, or flammable gases. Failure due to corrosion is not covered under warranty. However, when the risk of corrosion is high, select the option C (copper tube with anti-corrosive treatment).
- Avoid locations of poor ventilation and high temperature.
- Avoid locations where the air dryer is too close to a wall, etc. Leave sufficient room between the air dryer and the wall according to the “Maintenance Space” in the operation manual.
- Avoid locations where the air dryer could draw in high temperature air that is exhausted from an air compressor or other dryer.

Air Piping

⚠️ Caution
- Be careful to avoid an error in connecting the air piping at the compressed air inlet (IN) and outlet (OUT).
- Install a bypass piping since it is needed for maintenance.
- When tightening the inlet/outlet air piping, hold the dryer-side piping firmly in place with a pipe wrench.
- The piping surface may reach temperatures around 60°C depending on usage conditions. When adjusting valves or performing other such operations, a temperature check is necessary, wear gloves before proceeding.
- Vibration resulting from the air compressor should not be transmitted through air piping to the air dryer.
- Do not allow the weight of the piping to lie directly on the air dryer.

Protection Circuit

⚠️ Caution
If the air dryer is operated under the following stated conditions, the protection circuit will be activated, the lamp will be turned off and operation will stop.
- The compressed air temperature is too high.
- The ambient temperature is too high. (over 45°C)
- The fluctuation of the power supply is beyond the rated voltage ±10%.
- The air dryer is drawing in high temperature air that is exhausted from an air compressor or other dryer.
- The ventilation port is obstructed by a wall or clogged with dust.

Transportation and Installation

⚠️ Warning
Be sure to follow the below instructions for transporting the product.
- The product is filled with refrigerant. Transport it (by land, sea or air) in accordance with laws and regulations specified.
- When carrying the product, be careful not to let it drop or fall over. Lift it by using a fork lift or rope and lifting hook. The lifting angle should be 45° or more.
- Do not lift the product by holding the panel, fittings or piping.
- Never lay the product down for transportation. This may lead to damage to the product.

- The product is heavy and has potential dangers in transportation. Be sure to follow the above instructions.
- Be sure to use a fork lift or lifting hook for transporting the product.

Drain Tube

⚠️ Caution
- A polyurethane tube is attached as a drain tube for the IDF100F. Use this tube to discharge drainage.
- Do not use the drain tube in an upward direction. Do not bend or crush the drain tube. (Because the auto drain will not be activated, resulting in water vapor discharging through the air outlet.) If it is unavoidable that the tube goes upwards, make sure it only goes as far as the position of the auto drain.

Power Supply

⚠️ Caution
<200 VAC>
- Connect the power supply to the terminal block.
- Install a circuit breaker suitable to each model for the power supply.
- The voltage fluctuation should be maintained within ±10% of the rated voltage.
Note) Select a circuit breaker with a sensitivity current of 30 mA. As regards rated current, refer to “Applicable circuit breaker capacity” on pages 3 and 4.

When the voltage is different from the standard specifications, use a separately installed power transformer. (Page 7)
Compressor Air Delivery

**Caution**

Use an air compressor with an air delivery of 50 l/min or larger.

Since the auto drain is designed in such a way that the valve remains open unless the air pressure rises to 0.05 MPa or higher, air will blow out from the drain discharge port at the time of air compressor start up until the pressure increases. Therefore, if an air compressor has a small air delivery, the pressure may not be sufficient.

**Auto Drain**

**Caution**

The auto drain may not function properly, depending on the quality of the compressed air. Check the operation once a day.

Cleaning of Ventilation Area (Air-cooled Type)

**Caution**

Remove dust from the ventilation area once a month using a vacuum cleaner or an air blow nozzle. The dustproof filter cleaning indication lamp indicates the timing for cleaning. (It turns on after 300 hours of operation.)

Time Delay for Restarting

**Caution**

Allow at least three minutes before restarting the air dryer. If the air dryer is restarted within three minutes after being stopped, the protection circuit will be activated, the lamp will be turned off and the air dryer will not be activated.

Modifying the Standard Specifications

**Caution**

The heat exhausting direction of the air-cooled type can be changed using the “panel for changing heat exhausting direction” which is sold separately. Refer to the operation manual. Other optional specifications cannot be retrofitted after the product is delivered. Check the specifications carefully before selecting air dryer.

Facility Water Supply (Water-cooled Type)

**Warning**

1. Be certain to supply the facility water.
   1. Prohibition of water-cut operation, very low flow rate of water operation.
   2. Actions to be taken when an emergency stop occurs due to high temperature.

Facility Water Quality Standard

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Standard value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (at 25°C)</td>
<td></td>
<td>6.5 to 8.2</td>
</tr>
<tr>
<td>Electrical conductivity (25°C)</td>
<td>[μS/cm]</td>
<td>≤ 1000</td>
</tr>
<tr>
<td>Chloride ion (Cl–)</td>
<td>[mg/L]</td>
<td>200 or less</td>
</tr>
<tr>
<td>Sulfuric acid ion (SO42–)</td>
<td>[mg/L]</td>
<td>200 or less</td>
</tr>
<tr>
<td>Acid consumption amount at pH 6</td>
<td>[mg/L]</td>
<td>100 or less</td>
</tr>
<tr>
<td>Total hardness</td>
<td>[mg/L]</td>
<td>200 or less</td>
</tr>
<tr>
<td>Calcium hardness (CaCO3)</td>
<td>[mg/L]</td>
<td>150 or less</td>
</tr>
<tr>
<td>Ionic state silica (SiO2)</td>
<td>[mg/L]</td>
<td>50 or less</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>[mg/L]</td>
<td>1.0 or less</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>[mg/L]</td>
<td>0.3 or less</td>
</tr>
<tr>
<td>Sulfide ion (S2–)</td>
<td>[mg/L]</td>
<td>Should not be detected</td>
</tr>
<tr>
<td>Ammonium ion (N4H+)</td>
<td>[mg/L]</td>
<td>1.0 or less</td>
</tr>
<tr>
<td>Residual chlorine (Cl)</td>
<td>[mg/L]</td>
<td>0.3 or less</td>
</tr>
<tr>
<td>Free carbon (CO2)</td>
<td>[mg/L]</td>
<td>4.0 or less</td>
</tr>
</tbody>
</table>

* In the case of [MΩ·cm], it will be 0.00125 to 0.01.
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.

\(\text{\textbf{Caution}}\)

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

\(\text{\textbf{Warning}}\)

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

\(\text{\textbf{Danger}}\)

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.

Safety Instructions

Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

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 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".

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.\(^2\)

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.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

\(\text{\textbf{Compliance Requirements}}\)

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 regulations 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.

\(\text{\textbf{Note}}\)

During the warranty period, any failures in the product must be reported to SMC. The warranty will be void if failures due to unauthorized modifications or damage caused by acts of God, etc.

\(\text{\textbf{Note}}\)

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

\(\text{\textbf{Note}}\)

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.

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