



Air Preparation Equipment Precautions 1

Be sure to read this before handling products.

Design/Selection

Warning

1. Confirm the specifications.

Products represented in this catalog are designed only for use in compressed air systems (including vacuum). Do not operate at pressures, temperatures, etc., beyond the range of specifications, as this can cause damage or malfunction. (Refer to the specifications.) We do not guarantee against any damage if the product is used outside of the specification range.

2. To select equipment, thoroughly confirm the purpose, specification requirements, and the operating conditions, such as pressure, flow rate, temperature, environment, and power supply. Then, make a selection based on the latest catalog, making sure not to exceed the specification ranges.

3. Provide a design that prevents high temperature compressed air from flowing into the outlet side of cooling equipment.

If the flow of the cooling water in a water-cooled aftercooler is stopped, or if the fan motor of an air-cooled aftercooler is stopped, the hot compressed air will flow to the outlet side of the cooling equipment, causing the equipment on the outlet side to break or malfunction.

4. Provide a design in which interruptions in the supply of compressed air are taken into consideration.

There are cases in which compressed air cannot flow due to the freezing of a refrigeration air dryer or the malfunction of a heatless dryer in the switching valve.

5. Do not use this product for caisson shielding, breathing, medical use, or medicine that is injected by humans.

The air preparation equipment has been designed exclusively for industrial compressed air, and it should not be used for any other purpose.

6. Do not use this product on board a vehicle or a vessel.

This product must not be installed and used on board a conveyance, such as a vehicle or a vessel, since it may become damaged due to vibrations.

7. Do not disassemble the product or make any modifications, including additional machining.

Doing so may cause human injury and/or an accident.

Caution

1. Design a layout in which the leakage of cooling water and the dripping of condensation are taken into consideration.

With a water-cooled aftercooler that uses cooling water, water leakage may occur due to freezing. Depending on the operating conditions, a refrigerated air dryer and its downstream pipes may drip water due to condensation formed by supercooling. Please attach a thermal insulator, etc.

2. Provide a design that prevents back pressure and backflow.

The generation of back pressure and backflow could lead to equipment damage. Take appropriate safety measures and follow proper installation procedures.

Caution

3. Do not introduce an air flow that is greater than the rated flow rate.

If the rated flow rate is exceeded even momentarily, it could cause insufficient moisture elimination, drainage or oil splash on the outlet side, or lead to equipment damage.

4. Do not use with low air pressure (blower).

The air preparation equipment, which operates at a specific minimum operating pressure in accordance with the equipment to be used, is designed to be used exclusively with compressed air. Using it below the minimum operating pressure could lower its performance or cause a malfunction.

Mounting

Warning

1. Operation manual

Install the products and operate them only after reading the operation manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.

2. Ensure sufficient space for maintenance activities.

When installing the products, allow access for maintenance and inspection.

3. Tighten threads with the proper tightening torque.

When installing the products, follow the listed torque specifications.

Caution

1. Confirm the installation position.

Because the installation position differs by model, refer to the catalog or the operation manual for confirmation. If the equipment is installed slanted, it could lead to improper drainage, causing the auto drain to malfunction or damage to the equipment.

2. Provide ventilation space.

Unless the necessary ventilation space for each piece of equipment is provided, the air-cooled aftercooler or the refrigerated air dryer's cooling performance could decline or the equipment could stall.

Piping

Warning

1. Hold the female thread side and tighten to the recommended torque when screwing in the piping material.

Insufficient tightening torque may cause loosening or defective sealing. Excessive tightening torque may damage the thread, etc. If it is tightened without holding the female thread side, excessive force will be directly applied to the piping bracket, resulting in a product failure.

Recommended Torque

Unit: N·m

Connection thread	1/8	1/4	3/8	1/2	3/4	1	1 1/2	2
Torque	7 to 9	12 to 14	22 to 24	28 to 30	28 to 30	36 to 38	48 to 50	48 to 50

* After tightening by hand, use a tightening tool to tighten an additional 1/6 turn.



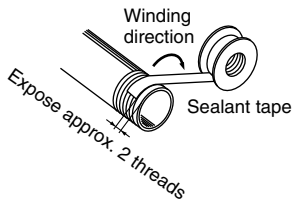
Air Preparation Equipment Precautions 2

Be sure to read this before handling products.

Piping

⚠ Caution

1. Refer to the **Fittings and Tubing Precautions (pages 52 to 56)** for handling **One-touch fittings**.
2. **Preparation before piping**
Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil, and other debris from inside the pipe.
3. **Winding of sealant tape**
When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not enter the piping. Also, if sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



4. **Take measures to prevent drainage from accumulating in the piping.**
Design the piping so that a drain relief is provided at the bottom of a riser pipe, or a slight taper is provided along the flow to prevent drainage from accumulating.
5. **Confirm the IN and OUT sides.**
When connecting the piping, do not mistake the IN side for the OUT side or vice versa.

Wiring

⚠ Warning

1. **Mounting a dedicated breaker**
To operate air preparation equipment that uses electricity (such as an air-cooled aftercooler or air dryer), install a leakage breaker with an appropriate leakage sensitivity and load capacity on the power supply side to prevent electric shocks or motor damage. Refer to the breaker specifications in the catalog or in the operation manual.
2. **Confirm the power supply voltage.**
Operating the equipment with a voltage that is out of specification could lead to a fire or a malfunction. Confirm the power supply and the voltage before wiring. The voltage fluctuation must be within $\pm 10\%$ of the specified value.
3. **Handle the wires carefully.**
To prevent fire or electric shocks, do not bend, twist, or pull on the power supply cords or wires.
4. **Wire with an appropriate size terminal.**
When connecting a power supply cord to equipment with a terminal box, use a terminal applicable to the terminal box. If an incorrect terminal size is used, it may cause a fire.
5. **Have the wiring done by a qualified professional.**
Only a qualified professional should perform wiring, such as mounting the breaker, wiring the breaker to other equipment, or connecting to the terminal block.

Wiring

⚠ Caution

1. **Installing ground**
To operate air preparation equipment that uses electricity (such as an air-cooled aftercooler or air dryer), provide a ground connection to prevent earth leakage. Do not connect the ground wire to a water pipe or a gas pipe due to the risk of explosion.
2. **Confirm the color of the wires and terminal numbers before wiring.**
Before connecting the wires, confirm the color of the wires and terminal numbers in the operation manual or on the electrical wiring diagram name plate. Improper wiring could cause the electrical parts to become damaged, malfunction, or operate improperly.
3. **Precautions for connecting a 3-phase power supply**
Make sure to correctly connect the R, S, and T terminals to equipment that uses a 3-phase power supply. If the terminals are connected improperly, the fan of the air-cooled aftercooler will rotate in reverse, and the refrigerated air dryer will not operate because the reverse phase relay will trip. In such cases, interchange two of the three power supply wires (except IDF370B).

Air Supply

⚠ Warning

1. **Type of fluids**
Be sure to use compressed air for the fluid.

⚠ Caution

1. **Do not use compressed air that contains chemicals, organic solvents, or corrosive gases.**
Do not use compressed air that contains chemicals, organic solvents, salt, or corrosive gases, as it can cause damage or malfunction.



Air Preparation Equipment Precautions 3

Be sure to read this before handling products.

Operating Environment

⚠ Warning

- 1. Do not operate under the conditions listed below due to a risk of malfunction.**
 - 1) In locations containing corrosive gases, organic solvents, and chemical solutions, or in locations in which these elements are likely to adhere to the equipment
 - 2) In locations in which sea water, water, or water steam could come in contact with the equipment
 - 3) In locations that are exposed to direct sunlight (Shield the equipment from sunlight to prevent its resin material from ultraviolet ray degradation or overheating.)
 - 4) In locations that have a heat source and poor ventilation (Shield the equipment from heat sources to protect it from softening degradation due to radiated heat.)
 - 5) In locations that are exposed to shocks and vibrations
 - 6) In locations with high humidity or large amounts of dust
- 2. Do not operate this equipment outdoors.**

All air preparation equipment is generally designed for indoor use. Exposing the equipment to rain could lead to electrical shock, equipment damage, or malfunction.
- 3. Adhere to the specified fluid temperature and ambient temperature ranges.**

The fluid temperature and the ambient temperature are established according to the equipment. Using the equipment outside of its specification range could cause it to be damaged, malfunction, or operate improperly.

Maintenance

⚠ Warning

- 1. Perform maintenance and inspection according to the procedures indicated in the operation manual.**

If handled improperly, malfunction or damage of machinery and equipment may occur.
- 2. Maintenance work**

If handled improperly, compressed air can be dangerous. Assembly, handling, repair, and element replacement of pneumatic systems should be performed by a knowledgeable and experienced person.
- 3. Removal of equipment, and supply/exhaust of compressed air**

Before components are removed, first confirm that measures are in place to prevent workpieces from dropping, run-away equipment, etc. Then, cut off the supply pressure and electric power, and exhaust all compressed air from the system using the residual pressure release function.

When the equipment is operated after remounting or replacement, first confirm that measures are in place to prevent the lurching of actuators, etc. Then, confirm that the equipment is operating normally.
- 4. If an abnormal condition occurs, turn off the power supply and stop the flow of compressed air.**

If an abnormal condition occurs, such as smoke, foul smell, or noise, immediately turn off the power supply, stop the flow of compressed air, and set the pressure of the compressed air to zero because there is a possible risk of electrical shock or fire.
- 5. Do not place your hands or foreign matter inside the unit.**

When operating air preparation equipment (such as an air-cooled aftercooler or air dryer) to which power is supplied, do not place your hands or foreign matter inside the unit, as there is a danger of electrical shock, burns, or injury. If the equipment must be used under such conditions due to unavoidable circumstances, turn off the power supply of the equipment, and confirm that it has stopped.

Maintenance

⚠ Warning

- 6. For inspection, disengage the breaker or pull out the power supply plug.**

To prevent electrical shock, burns, or injury during inspection, disengage the breaker or disconnect the power supply plug before inspecting the equipment.
- 7. Do not touch high-temperature areas.**

Do not touch the aftercooler (through which high-temperature compressed air flows), the refrigeration unit of the refrigerated air dryer, or refrigerant piping because each generates high heat and poses a risk of burns.
- 8. Set the pressure of the compressed air to zero before an inspection.**

Before disassembling the equipment on the compressed air side to inspect the auto drain or replace the filter element, confirm that the pressure is set to zero.
- 9. Periodical voluntary inspection of class-2 pressure vessels is required by the Ordinance on Safety of Boilers and Pressure Vessels. Conduct the inspection according to the mentioned ordinance.**

⚠ Caution

- 1. Do not place a heavy object on top of equipment or use it as a step stool.**

Failure to observe this precaution could cause the equipment to become deformed or damaged, and a loss of balance could cause a fall or injury.
- 2. Discharge the drainage on a regular basis.**

If drain remains accumulated in the equipment or in the piping, it could cause the equipment to operate improperly, or the drain could splash to the outlet side, leading to unforeseen accidents. Therefore, check the drainage volume and the operation of the auto drain on a daily basis.
- 3. Additional tightening of the screws for the wire connection terminals**

Depending on the operating conditions, the screws for the wire connection terminals could loosen, leading to overheating or a fire. As a preventive measure, tighten the screws on a regular basis.
- 4. Use sufficient care in the disposal of refrigeration type air dryers.**

Some refrigerated air dryers use a refrigerant that destroys the ozone layer. Please consult with a professional contractor when collecting a refrigerant or disposing of such equipment.
- 5. Turn off the power supply at the source if the equipment will not be used for long periods of time.**

To prevent accidents, turn off the power supply at the source if the equipment will not be used for long periods of time.
- 6. Keep the Class-2 Pressure Vessel Certificate in a safe place.**

Large refrigerated air dryers (IDF190D and larger), large AFF and AMD (AFF220A, AMD900/1000), and air tanks comply with class-2 pressure vessel requirements. A Class-2 Pressure Vessel Certificate will be sent to you in 2 to 4 weeks after the product is shipped. Keep this certificate in a safe place.