

Operation Manual

PRODUCT NAME

Micro Mist Separator

MODEL / Series / Product Number

AMD30-(F,N)02~(F,N)03(B,C,D)(-2,6,8,J,R,W,Z)-D

SMC Corporation

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Micro Misto Separator 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: Manipulating industrial robots -Safety.

Varning

Danger

etc.



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

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.



Micro Misto Separator Safety Instructions

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 1.5 years after the product is delivered, whichever is first.*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. This limited warranty applies only to our 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.

*2) 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.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

🕂 Warning

- 1) Consult SMC if no leakage is allowed due to the environment, or if the operating fluid is not air.
- 2) Polycarbonate resin is used for the external parts including the bowl. Organic solvents including synthetic fluid, chemicals including acetone, alcohol, ethylene chloride, sulphuric acid, nitrate, hydrochrolic acid, cutting oil, kerosene, gasoline, lock material of screw are harmful. Do not use the product where these are present. Suitability of organic solvents, chemical atmospheres and chemicals in contact with resin parts. (reference)

| Turne | Oh emised serves | Application eventual | Material | | | | | | |
|---|---|---|---------------|-------|--|--|--|--|--|
| туре | Chemical name | Application examples | Polycarbonate | Nylon | | | | | |
| Acid | Hydrochloric acid Sulfuric acid, Phosphoric acid Chromic acid | Acid washing liquid for metals | | × | | | | | |
| Alkaline | Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slack lime) Ammonia water Carbonate of soda | Degreasing of metals Industrial salts Water-soluble cutting | × | 0 | | | | | |
| Inorganic salts | Sodium sulfide Sulfate of potash Sulfate of soda | _ | × | | | | | | |
| Chlorine solvents | Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride | Cleansing liquid for metals Printing ink Dilution | × | Δ | | | | | |
| Aromatic series | Benzene Toluene Paint thinner | Coatings Dry cleaning | × | Δ | | | | | |
| Ketone | Acetone Methyl ethyl ketone Cyclohexane | Photographic film Dry cleaning Textile industries | × | × | | | | | |
| Alcohol | Ethyl alcohol IPA Methyl alcohol | Antifreeze Adhesives | | × | | | | | |
| Oil | Gasoline Kerosene | | × | 0 | | | | | |
| Ester | Phthalic acid dimethyl Phthalic acid diethyl Acetic acid | Synthetic oil Anti-rust additives | × | 0 | | | | | |
| Ether | Methyl ether Ethyl ether | Brake oil additives | × | 0 | | | | | |
| Amino | Methyl amino | Cutting oil Brake oil additives Rubber accelerator | × | × | | | | | |
| Others | Thread-lock fluid Seawater Leak tester | _ | × | | | | | | |
| O: Essentially safe Δ : Some effects may occur x: Effects will occur | | | | | | | | | |

When the above factors are present, or there is some doubt, use a metal bowl for safety.

 Avoid the application where charge and discharge of pressure to the resin bowl is switched frequently. This may damage the bowl. A metal bowl is recommended in these cases.

4) Protect from ultra violet ray and radiation heat by shield.



3) Connect piping/fittings using the recommended torque while holding the female thread side tightly. Insufficient tightening torque can cause loose piping or sealing failure. Over tightening may break the screw. If the female side is not held while tightening, excessive force will be applied to the bracket directly, causing breakage.

| Recommended tightening torque Unit: N · r | | | | | | | |
|---|--------|----------|----------|----------|--|--|--|
| Connection thread | 1/8 | 1/4 | 3/8 | 1/2 | | | |
| Torque | 7 to 9 | 12 to 14 | 22 to 24 | 28 to 30 | | | |

- 4) When a SMC one-touch fitting is used, refer to the operation manual for the one-touch fitting.
- 5) Do not apply torsion or bending moment other than the weight of the product itself. External piping needs to be supported separately. Hard piping like steel tube is susceptible to excessive moment load or vibration. Insert the flexible tube to cancel the influence.
- 6) Drain guide is not equipped with valve function. Be sure to connect piping for drain. No piping for drain allows the drain and compressed air to exhaust freely. Also, the piping should be performed with drain guide held by spanner to prevent breakage of bowl. Otherwise, the bowl might be broken.
- The piping for drain from auto drain should be connected under the following requirements to avoid operating failure. Tube I.D. ø4 (ø3/16") or larger for AD37, ø 6.5 (ø1/4") or larger for AD38. Length: 5m (200 inch) or less.
- 8) Pipework for auto drain discharge which is higher than the auto drain outlet should be avoided. It may cause the the auto drain operation to fail.

Air Supply

Warning

- 1) Use clean air. Compressed air containing chemicals, organic solvent, synthetic oil or corrosive gas may lead to cause breakage of parts or malfunction.
- 2) Air containing too much moisture may deteriorate the performance. Install the refrigerated air dryer or aftercooler before the product.
- 3) Make sure that the operating pressure is not below the minimum operating pressure. If it is used at the minimum operating pressure or less, pressure resistance increase, leading to the decrease of operation or operation failure.

Caution

1) Install the mist separator AFM series or AM series as a pre-filter to the inlet of the product in order to avoid the clogging of early stage.

Maintenance

<u>/!</u> Warning

- 1) Release the pressure in the product to the atmosphere before replacing parts or removing piping.
- Maintenance and checks should be done by following the procedure in the operation manual. Incorrect handling of the product may cause breakage or malfunction of the equipment or device.
- 3) Do not touch the product when operating at high temperature (40 to 60°C). The operators may get burnt. Be sure to confirm that the temperature of the container or operating part is reduced to 40 degrees or less to prevent burns.
- 4) Perform periodical check to find cracks, flaws or other deterioration on resin bowl. If any of them is seen, as malfunction is caused, replace with new bowl or metal bowl. Investigate and/or review the operating conditions if necessary.

- 5) Check for dirt in resin bowl periodically. If any dirt is seen, replace with new bowl. And if removing off the dirt by washing instead of using a replacement, never use washing material other than neutral detergent. Otherwise, the bowl is damaged.
- 6) Open and close drain cock by hand. The use of tools can result in damage to the product.
- 7) The element should be replaced within 2 years from strat of use, when the pressure drop (difference between the inlet pressure and outlet pressure) reaches 0.1 MPa or if the element is broken.
- 8) Check the bowl regularly. Discharge it before it reaches the element. Refer to section 8. Operation and Adjustment (P15 to P16) for discharging of drain. When a resin bowl or a bowl with level gauge is used, discharge the drain before the drain reaches the MAX. DRAIN LEVEL.

▲ Caution

- 1) Check the element periodically and replace it with a new one if necessary. If it is found that outlet pressure drops or the flow is restricted, check the condition of the element.
- 2) For the N.O. type auto drain, when there is no pressure, condensate which does not operate the auto drain mechanism will remain in the bowl. It is recommended to release the residual condensate manually at the end of the working day.

2. Application

This product aims at eliminating oil mist and solid foreign matter in the air line.

3. Standard specifications

| Model | AMD30 |
|--|---------------------------------|
| Port size | 1/4, 3/8 |
| Fluid | Air |
| Ambient and fluid temperatures | -5 to 60°C (With no freezing) |
| Proof pressure | 1.5MPa |
| Maximum operating pressure | 1.0MPa |
| Minimum operating pressure | 0.05MPa |
| Nominal filtration rating ^{Note1)} | 0.01µm |
| | (Filtration efficiency:99.9%) |
| Outlet side oil mist concentration ^{Note2)} | Max. 0.1mg/m ³ (ANR) |
| Rated flow ^{Note3)} | 750L/min(ANR) |
| Drainage capacity | 25cm ³ |
| Bowl material | Polycarbonate |
| Bowl guard | Polycarbonate |
| Weight | 0.39kg |

Note 1) Filtration efficiency for conditions below in addition to the rated conditions above [Test condition ISO12500-3:2009 compliant].

Condition 1: The amount of process air, inlet pressure, and concentration of particles of the product inlet side are stable.

Condition 2: New element

- Note 2) Outlet side oil mist concentration for conditions below in addition to the Rated condition above [ISO12500-1:2007 compliant]
 - Condition 1: Outlet side oil mist concentration at the inlet = $1 \text{mg/m}^3(\text{ANR})$

Condition 2: Inlet temperature 25°C

Condition 3: Flow capacity, inlet pressure, inlet temperature, and the Inlet side oil mist concentration at the product inlet are stable.

Condition 4: New element

Note 3) Input pressure 0.7 MPa;

4. How to order



When specifying more than one option, indicate the number first and then symbols alphabetically.

Note1) Option in packaged together, but not assembled . (Note: for B only)

5. Construction / Options / Replacement parts



Table of replacement part

| part | description | part number |
|--------|------------------------------------|--|
| number | | AMD30 |
| 1 | Element assembly | AMD34P-060AS |
| 2 3 | Bowl seal | C3SFP-260S |
| | Bowl assembly | |
| 4 | Auto drain (N.C.) | Refer to [6.Bowl assembly specifications](P11 to P13). |
| | Auto drain (N.O.) | |
| Niete) | The survey have by the table and a | exercises and consistent with the same of [40. Deale consect work] |

Note) The numbers in the table and construction are consistent with the number in [10. Replacement work procedure](P18 to 21) and [11. Disassembly Drawing](P22).

Option

| part number | description | part number |
|----------------|------------------------------------|-------------|
| | | AMD30 |
| 5 | Bracket assembly ^{Note1)} | AF34P-070AS |
| | | |

Note) The numbers in the table and construction are consistent with the number in [10. Replacement work procedure](P18 to 21) and [11. Disassembly Drawing](P22).

Note1) Assembly of the mounting bracket (2 types) and set screw (2pcs.).

6. Bowl assembly specifications

1) AMD30 bowl assembly / auto drain







Note1) Min. operating pressure is 0.1 MPa.

Note2) (4)Part number includes (3) Bowl seal. Refer to [11. Disassembly Drawing](P22).

Note3) [Z] in (4) Part number indicates standard specifications. The unit of pressure is psi and $^{\circ}F$.

Note4) Refer to [4. How to Order](P9) for symbol for options and semi-standard.

7. Assembly of Optional parts

1) Bracket



8. Operation and Adjustment



2)Manual discharge of the auto drain

- Pressurize the inside with air when discharging, otherwise the drain will not discharge properly.
- To discharge the auto drain by hand, follow the procedure below.
 After discharging the drain, rotate the drain cock to the opposite direction by hand to close the drain valve.
 Use of a tool can damage the product.



AMD30: Auto drain

9. Troubleshooting

| Refer to [10. | Replacement wor | k procedure](P18 to 2 | 21) and 11. Disasse | embly Drawing](P22). |
|---------------|-----------------|-----------------------|---------------------|----------------------|
| | | 1 | , | |

| | Failure | | Countermocource | Page for |
|-----------|---|--|--|------------------------|
| Category | Phenomenon | Possible causes | Countermeasures | reference |
| Flow rate | As pressure drop is large, fluid does not flow. | 1. Clog of the element. | Replace the element. | P18 to 19 |
| | Air leakage from between the body and fitting. | 1. Breakage of joint seal. | Replace the bowl packing. | P18 to 19 |
| | Air leaks between the joint and the bowl. | 1. Breakage of the bowl seal. | Replace the bowl packing. | P20 to 21 |
| | Air leakage from the bowl. | 1. Bowl is damaged. | Replace the bowl assembly. (If the solvent is considered to be harmful, replacement to the metal bowl is recommended) | P20 to 21 |
| | Air leaks from the drain cock. | 1. The foreign matter caught in the valve of the drain cock. | Open the drain cock for a few seconds for blowing. | P15 to 16 |
| Air lea | | 2. Breakage of the seating part of the drain cock. | Replace the bowl assembly. | P20 to 21 |
| ks | Drainage or air continues blowing out of | 1. Low supply pressure. | Ensure that the ball valve of the auto drain is opened. | P11 to 13 |
| | the drain discharge of the float type | 2. The product is not mounted correctly. | Install the drain exhaust so that it will face vertically downward. | - |
| | auto drain. | 3. Foreign matter is caught at the main valve of the auto drain. | Remove the dust by manual drain discharge. | P15 to 16 |
| | | 4. Main valve of the auto drain is broken. | Replace the bowl assembly. | P20 to 21 |
| | | 5. Drain piping is long, or I.D. of the piping is small. (Back pressure is applied) | Be sure to connect the appropriate piping for drain. | P5 to 6 |
| | | Drain exhaust and bowl seat were broken. | Replace the bowl assembly. | P20 to 21 |
| Opera | Drain is not discharging when the drain cock opens. | 1. Blockage of outlet of the drain cock due to solid foreign matter etc. | Replace the bowl assembly. | P20 to 21 |
| ability | Too much drain comes from the piping of outlet side. | 1. Drain level reaches the bottom of the element. | Open the drain cock for draining and replace the element. | P15 to 16 P18 to 19 |

Note) Fluorine grease is recommended when applying additional grease.

10. Replacement work procedure

Before replacement, ensure that this equipment is not pressurized.

After replacement, ensure that specified function is satisfied and external leakage is not found before starting operation.

1-1) Element Replacement - disassembly [AMD30]



1-2) Element Replacement - Assembly [AMD30]



10. Replacement work procedure

2-1) Bowl Replacement - Disassembly [AMD30]

Step 1



10. Replacement work procedure

2-2) Bowl Replacement - Assembly [AMD30]



11. Exploded Drawing 1) Exploded drawing of AMD30





12. Dimensions



| Model | Semi-standard | | | | | | В | racket | mount | ing din | nensio | ns | | | | |
|-------|---------------|----|-------|------|------|----|----|--------|-------|---------|--------|-----|----|----|-----|----|
| | Р | Α | В | С | D | Е | G | J | М | Ν | Q | R | S | Т | U | V |
| AMD30 | 1/4•3/8 | 53 | 178.1 | 21.5 | 26.5 | 30 | 35 | 26.5 | 41 | 35 | 25 | 6.5 | 13 | 71 | 2.3 | 32 |

Auto drian/semi-standard bowl

| Model | | Auto drair | า | | Sem | Semi-standard specification | | | | |
|-------|---------------|---------------|------------------------|-----------------|------------------------|-----------------------------|------------------------|-----------------------|------------------------|--|
| | | | Metal bowl | PC/P/ | A bowl | Meta | l bowl | Meta with leve | l bowl el gauge | |
| | PC/PA bowl | Metal bowl | with level gauge | Barb fitting | With drain guide | With drain cock | With drain guide | With drain cock | With drain guide | |
| | В | В | В | В | В | В | В | В | В | |
| AMD30 | 219.8 | 219.8 | 219.8 | 186.6 | 184.9 | 180.6 | 185.1 | 200.6 | 205.1 | |

Revision history

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