

Vacuum Pump Exhaust Filters

Market Application Publication



The use of vacuum pump exhaust filters is quickly becoming the standard in many packaging and manufacturing applications. With heightened regulations from OSHA and the EPA, it is absolutely necessary to use filtration on the exhaust side of vacuum pump systems. Vacuum pumps without exhaust filters will allow oil, used to lubricate the pump, to vent to atmosphere. In this situation, the oil will deposit and collect in the surrounding area, resulting in quality issues and health related issues. Exhausting the oil mist and smoke to the outdoors will increase the risk of ductwork fires, damage to roofs and to the surrounding environment – both soil and groundwater.



Contact Information

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Features and benefits

- Eliminate 99.9% oil mist and smoke from vacuum pump exhaust
- Prevent oil accumulation in ductwork
- Flows to 850 cfm
- Recover expensive lubricating oils, and automatically return filtered oil to pump
- Eliminate potential OSHA and EPA violations

Case Study

Many manufacturing applications require the use of vacuum pumps. Vacuum pumps by nature produce high levels of oil mist and smoke that violate E.P.A. regulations which are becoming increasingly stringent.

M.S. Kennedy Manufactures hybrid electronics for various applications including several military applications requiring a "clean room" environment in order to meet ISO 14644-1 (formerly FED STD 209E) standards. M.S. Kennedy uses several vacuum pumps on vacuum ovens and plasma cleaning systems in their clean room. Inside the clean room, M.S. Kennedy must meet ISO class 8 specifications, and to accomplish this, they use Balston high efficiency coalescing filters to remove the oil mist and smoke coming from the exhaust ports of the pumps.

Before purchasing vacuum exhaust filters, M.S. Kennedy had visible oil mist and smoke in the atmosphere and heavy deposits of oil in the ceiling tiles and on the roof. Since installing Balston vacuum exhaust filters, the presence of oil mist and smoke has been eliminated from the air in the M.S. Kennedy plant. M.S. Kennedy has also seen a reduction in their particle count in the clean room, as well as the elimination of collected oil on the facilities' roof. Parker Balston vacuum exhaust filters help M.S. Kennedy to supply high quality electronics to its customers while meeting ISO and E.P.A. standards.

Application

The contaminants emitted from the exhaust of a vacuum pump are submicron in size and are typically at elevated temperatures. Filters designed to remove all visible oil mist and smoke from vacuum pump exhaust must be capable of trapping submicron size particles of oil and smoke at a very low pressure drop at elevated temperatures. Parker Balston offers a unique filter media in replaceable cartridge form, capable of solving this difficult problem.

The high efficiency filter cartridge is comprised of a matrix of borosilicate fiber offering high flow capacities with very minimal pressure drop.

It is designed to continuously drain the collected oil, allowing the user to recover expensive lubricating liquid. The exhaust filters can either be incorporated into a ducting system or vented into the immediate work area (in the absence of toxic vapors). Parker Balston offers a complete line of filter assemblies for virtually all vacuum pumps with flow ratings ranging from 3 cfm to 850 cfm.



Principal Specifications

Vacuum Pump Exhaust Filters for Hazardous/Corrosive Applications

| Model | CV-0112-371H | CV-0118-371H |
|----------------------------------|-----------------------------------|------------------------------------|
| Port Size | 1/2" NPT | 1/2" NPT |
| Max. Flow Rate | 3 CFM | 9 CFM |
| Maximum Temperature | 250°F (121°C) | 250°F (121°C) |
| Maximum Pressure | 15 psig | 15 psig |
| Shipping Weight | 0.5 lbs. (0.2 kg) | 0.8 lbs. (0.4 kg) |
| Dimensions | 2.9" Dia. x 4.2"H (7cm x 11cm) | 4.0" Dia. x 5.3"H (10cm x 13cm) |
| Materials of Construction | | |
| Head | - | - |
| Bowl | 304 Stainless Steel | 304 Stainless Steel |
| Internals | 304 Stainless Steel | 304 Stainless Steel |
| Seals | None | None |

Vacuum Pump Exhaust Filters for Non-Hazardous/Non-Corrosive Applications

| Model | Port Size | Max. Flow Rate (CFM) | Materials of Construction | | | | Max. Temp | Max. Press | Shipping Weight (lbs (kg)) | Dimensions (Diameter x Height) |
|--------------|-------------|----------------------|---------------------------|----------|----------------|----------|---------------|--------------------|----------------------------|--------------------------------|
| | | | Head | Bowl | Internals | Seals | | | | |
| 9955-12-371H | 1/2" NPT | 3 | -- | Nylon | Nylon | None | 250°F (121°C) | 15 PSIG (1.0 barg) | .25 (0.1) | 2" X 3.7" |
| 9956-12-371H | KF-16 | 3 | -- | Nylon | Nylon | None | 250°F (121°C) | 15 PSIG (1.0 barg) | .25 (0.1) | 2" X 3.7" |
| AR-009-371H | 3/4" NPT | 9 | Aluminum | Aluminum | Alum./SS/Nylon | Viton | 300°F(149°C) | 15 PSIG (1.0 barg) | 1.0 (0.45) | 3.95"X5.13" |
| AR-015-371H | 3/4" NPT | 15 | Aluminum | Aluminum | Alum./SS/Nylon | Viton | 300°F(149°C) | 15 PSIG (1.0 barg) | 1.25 (0.57) | 3.95"X5.13" |
| AR-0316-371H | 1" NPT | 20 | Steel | Steel | Anod. Alum. | Buna/Neo | 300°F(149°C) | 15 PSIG (1.0 barg) | 8 (4) | 7.4" X 8.8" |
| AR-0335-371H | 1 1/2" NPT | 43 | Steel | Steel | Anod. Alum. | Buna/Neo | 300°F(149°C) | 15 PSIG (1.0 barg) | 11 (5) | 7.4" X 8.8" |
| AR-0735-371H | 3" NPT | 100 | Steel | Steel | Anod. Alum. | Buna/Neo | 300°F(149°C) | 15 PSIG (1.0 barg) | 17 (8) | 10" X 18" |
| AR-0780-371H | 3" NPT | 200 | Steel | Steel | Anod. Alum. | Buna/Neo | 300°F(149°C) | 15 PSIG (1.0 barg) | 23 (10) | 10" X 18" |
| AR-1280-371H | 4" Flg. (1) | 300 | Steel | Steel | Anod. Alum. | Buna/Neo | 300°F(149°C) | 15 PSIG (1.0 barg) | 90 (41) | 19" X 43"(5) |
| AR-1680-371H | 4" Flg. (1) | 450 | Steel | Steel | Anod. Alum. | Buna/Neo | 300°F(149°C) | 15 PSIG (1.0 barg) | 100 (45) | 19" X 43"(5) |
| AR-3080-371H | 6" Flg. (1) | 850 | Steel | Steel | Anod. Alum. | Buna/Neo | 300°F(149°C) | 15 PSIG (1.0 barg) | 150 (68) | 23" X 43"(5) |

Filter Selection Chart for Hazardous/Corrosive Applications

| Max. Pump Flow Rate (CFM) | Recommended Filter Model Number |
|---------------------------|---------------------------------|
| 3 | CV-0112-371H |
| 9 | CV-0118-371H |

Filter Selection Chart for Non-Hazardous/Non-Corrosive Applications

| Max. Pump Flow Rate (CFM/m³/h) | Recommended Filter Model Number |
|--------------------------------|---------------------------------|
| 3 (5) | 9955-12-371H, 9956-12-371H |
| 9 (15) | AR-009-371H |
| 15 (25) | AR-015-371H |
| 20 (34) | AR-0316-371H |
| 43 (73) | AR-0335-371H |
| 100 (170) | AR-0735-371H |
| 200 (340) | AR-0780-371H |
| 300 (510) | AR-1280-371H |
| 450 (765) | 450 (765) |
| 850 (1440) | AR-3080-371H |

Notes

1. ANSI 150 lb. hole pattern.
2. Cover does not provide leak tight seal.
3. Filter cartridge is permanently sealed into housing. The entire unit is disposable.
4. Pressure relief filter tube retainer not available in these models.
5. Height dimension represents filter housing alone. When assembled with a stand, the height is adjustable from 46" to 56" (117cm to 142 cm).
6. This model comes in box of 2, not box of 3.

Ordering Information for assistance, call 800-343-4048

Vacuum Pump Exhaust Filters for Hazardous/Corrosive Applications

| Model | CV-0112-371H (1) | CV-0118-371H (1) |
|--------------------------------------|---|------------------|
| Number of Filter Cartridges Required | - | - |
| Replacement Filter Cartridges | - | - |
| Optional Accessories | #11015 Back Pressure Gauge, Stainless Steel, 0-15 psi rating, 1/4" NPT fitting. Vacuum Pump-to-Filter Adaptors: See Bulletin FNS for ordering information. | |

Notes

1. Filter cartridge is permanently sealed into housing. The entire unit is disposable. Pressure relief filter tube retainer not available in these models.

Vacuum Pump Exhaust Filters for Non-Hazardous/Non-Corrosive Applications

| Model | No. Filter Cartridges Required | Replacement Filter Cartridges | | | Cover (2) (Optional) | No. Pressure Relief Retainers #20222 |
|----------------------|---|-------------------------------|---------------|----------------|----------------------|--------------------------------------|
| | | Box of 3 | Box of 7 | Box of 10 | | |
| 9955-12-371H (3) | 1 | 3/9955-12-371H | -- | 9955-12-371H | -- | (4) |
| 9956-12-371H (3) | 1 | 3/9956-12-371H | -- | 9956-12-371H | -- | (4) |
| AR-009-371H | 1 | 2/BE200-168-371H (6) | -- | BE200-168-371H | -- | (4) |
| AR-015-371H | 1 | 2/BE200-248-371H (6) | -- | BE200-248-371H | -- | (4) |
| AR-0316-371H | 3 | 3/200-16-371H | -- | -- | 19158 | 1 |
| AR-0335-371H | 3 | 3/200-35-371H | -- | -- | 19158 | 1 |
| AR-0735-371H | 7 | -- | 7/200-35-371H | -- | 19206 | 2 |
| AR-0780-371H | 7 | -- | 7/200-80-371H | -- | 19206 | 2 |
| AR-1280-371H | 12 | -- | -- | 200-80-371H | Included | 4 |
| AR-1280-371H | 16 | -- | -- | 200-80-371H | Included | 4 |
| AR-3080-371H | 30 | -- | -- | 200-80-371H | Included | 6 |
| Optional Accessories | #20222 Pressure Relief Filter Cartridge Retainer, 4-7 psig (0.3-0.5 barg). #20217 Pressure Relief Valve, 3-7 psig (0.2-0.5 barg), 1/4" NPT male fitting. #11010 Pressure Gage, 0-15 psig (0-1.0 barg), 1/4" male fitting (incl. on Type AR Filter Assemblies) Vacuum pump-to-filter adaptors: refer to pages 141-142 of Bulletin FNS. #19291 Stand for AR-1680-371H, #19290 Stand for AR-3080-371H. #19202 Weather Cap for AR-0735-371H, AR-0780-371H. #A05-0097 Seal Set for AR-009-371H, AR-015-371H. | | | | | |

