

Vacuum Pump Exhaust Filters

Market Application Publication



Background:

In many packaging and manufacturing applications, the use of vacuum pump exhaust filters is quickly becoming the standard. 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:

Parker Hannifin Corporation
Filtration and Separation Division
242 Neck Road
Haverhill, MA 01835

phone 800 343 4048 or 978 858 0505
fax 978 478 2501

www.parker.com/balston

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 more and more 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 it's 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 very unique filter media, in replaceable cartridge form, that is capable of solving this difficult application.

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
Ma. Flow Rate	3 CFM	9 CFM
Materials of Construction		
Head	—	—
Bowl	304 Stainless Steel	304 Stainless Steel
Internals	304 Stainless Steel	304 Stainless Steel
Seals	None	None
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)

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

Model	Port Size	Max. Flow Rate	Materials of Construction				Max. Temp.	Max. Press.	Shipping Wt.	Dimensions
			Head	Bowl	Internals	Seals				
9955-12-371H	1/2" NPT	3 CFM	—	Nylon	Nylon	None	250°F (121°C)	15 PSIG (1.0 barg)	.25 lbs (0.1 kg)	2"Dia. X 3.7"H
9956-12-371H	KF-16	3 CFM	—	Nylon	Nylon	None	250°F (121°C)	15 PSIG (1.0 barg)	.25 lbs (0.1 kg)	2"Dia. X 3.7"H
AR-009-371H	3/4" NPT	9CFM	Aluminum	Aluminum	Alum./SS/Nylon	Viton	300°F(149°C)	15 PSIG (1.0 barg)	1.0lbs(0.45kg)	3.95"Dia.X5.13"H
AR-015-371H	3/4" NPT	15 CFM	Aluminum	Aluminum	Alum./SS/Nylon	Viton	300°F(149°C)	15 PSIG (1.0 barg)	1.25lbs (0.57kg)	3.95"Dia.X8.13"H
AR-0316-371H	1" NPT	20 CFM	Steel	Steel	Anod. Alum.	Buna/Neo	300°F (149°C)	15 PSIG (1.0 barg)	8 lbs (4 kg)	7.4"Dia. X 8.8"H
AR-0335-371H	1 1/2" NPT	43 CFM	Steel	Steel	Anod. Alum.	Buna/Neo	300°F (149°C)	15 PSIG (1.0 barg)	11 lbs (5 kg)	7.4"Dia. X 15"H
AR-0735-371H	3" NPT	100 CFM	Steel	Steel	Anod. Alum.	Buna/Neo	300°F (149°C)	15 PSIG (1.0 barg)	17 lbs (8 kg)	10"Dia. X 18"H
AR-0780-371H	3" NPT	200 CFM	Steel	Steel	Anod. Alum.	Buna/Neo	300°F (149°C)	15 PSIG (1.0 barg)	23 lbs (10 kg)	10"Dia. X 28"H
AR-1280-371H	4" Flg. (1)	300 CFM	Steel	Steel	Anod. Alum.	Buna/Neo	300°F (149°C)	15 PSIG (1.0 barg)	90 lbs (41 kg)	19"Dia. X 43"H (5)
AR-1680-371H	4" Flg. (1)	450 CFM	Steel	Steel	Anod. Alum.	Buna/Neo	300°F (149°C)	15 PSIG (1.0 barg)	100 lbs (45 kg)	19"Dia. X 43"H (5)
AR-3080-371H	6" Flg. (1)	850 CFM	Steel	Steel	Anod. Alum.	Buna/Neo	300°F (149°C)	15 PSIG (1.0 barg)	150 lbs (68kg)	23"Dia. X 43"H (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

Notes:

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

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

Max. Pump Flow Rate (CFM/m ³ /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)	AR-1680-371H
850 (1440)	AR-3080-371H

Ordering Information

Vacuum Pump Exhaust Filters for Hazardous/Corrosive Applications

for assistance, call 800-343-4048, 8 to 5 Eastern Time

Model	CV-0112-371H (1)	CV-0118-371H (1)
Number of Filter Cartridges Required	—	—
Replacement Filter Cartridges	—	—
Number of Pressure Relief Retainers #20222	—	—
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

for assistance, call 800-343-4048, 8 to 5 Eastern Time

Model	No. of 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-1680-371H	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.					

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.



Parker Hannifin Corporation
 Filtration and Separation Division
 242 Neck Road
 Haverhill, MA 01835
 phone 800 343 4048 or 978 858 0505
 fax 978 478 2501
www.parker.com/balston

