

Stokes Microvac Series Oil Sealed Rotary Piston Pumps



In today's globally competitive environment, the need for manufacturing and process equipment delivers maximum performance and reliability is greater than ever. Whether you operate at low pressure, handle large gas loads, or simply need increased capacity for your existing system, Edwards can help meet your pumping requirements.

Rugged, Reliable Operation

Every design consideration, feature and detail is thoroughly engineered to maximize uptime and extend operating life. Below are just a few features that testify to the integrity of these rugged multistage vacuum pumps.

- Efficient, time proven design to deliver ease of maintenance
- Low 500 rpm operation for longest pump life cycle
- Low ultimate blank-off – pressures down to $< 10^{-2}$ Torr
- Robust cast and ductile iron construction
- Hardened replaceable shaft sleeve enhances wear resistance
- Efficient design provides maximum uptime with minimal moving parts, low rotational speed and large clearance
- New valve design virtually eliminates valve maintenance and noise
- Application specific seals maximize resistance to heat and corrosion while providing protection from gas stream oil contamination
- Standard, totally enclosed fan-cooled motors
- Space saving design – saves up to 50% of valuable floor space
- Complete and self-contained – delivered and ready to install
- Automatic lubrication – system provides proper flow of oil to bearings and sealing surfaces, prevents back flow into system
- Controlled balancing – reduces vibration to a practical minimum
- Gas ballast- standard on all models
- Total capability – includes the manufacturing and service capabilities to keep your equipment in top operation – with a broad range of vacuum system accessories
- Oxygen service models available

Solutions to Fit Your Needs

Our total vacuum capabilities include a full line of pumping systems from 150 to 7880 ft³min⁻¹ capacities. Choose from Stokes microvac rotary piston pump (J series), Stokes 1700 series high capacity mechanical booster pump combinations, and MV Series Matrix selection series mechanical booster packages, or a custom designed package to meet all your pumping needs.

J Series Overview

The Stokes J series microvac rotary piston pump sets the standard for performance and reliability as the industry's most efficient, space-saving design. The Stokes microvac rotary piston pump has been improved, upgraded, and fine-tuned to deliver even better dependability and productivity combined with minimal maintenance and process downtime.

An integral oil distribution system eliminates external piping and delivers leak-free operation in a more stylized design for the J series. A larger oil sight glass and paddle wheel design flow indicator provides easier viewing of the oil system function. A stiffer motor mounting platform cuts flexibility to minimize motor belt wear. A stylized oil reservoir cover and side cover O-rings improve sealing to eliminate oil leakage. An integral gas ballast valve built into the side cover allows quick adaptation to automatic gas ballast.

Most importantly, these improvements don't increase the industry leading space saving footprint. Inlet, outlet and mounting dimensions are exactly the same as the H series microvac rotary piston pump.

Applications

- Automotive
- General applications
- Metallurgy
- Vacuum coating
- Vacuum melting
- Chemical processing
- Heat treatment
- Leak detection
- PET processing
- Pharmaceuticals
- Transformer drying and cable fluid conditioning

By combining over a century of technical experience with a global sales and service network, Edwards adds value to your process. Our applications specialists can offer advice on a single pump or component through to a complete pumping system, custom tailored to your specifications.

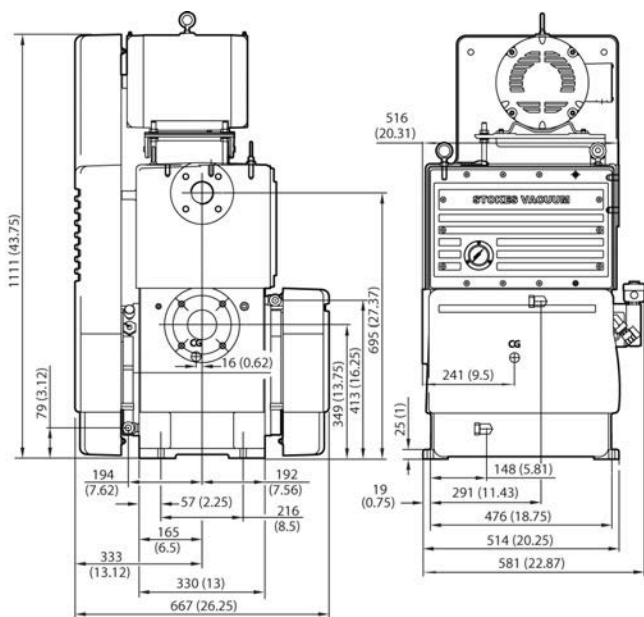
Stokes Microvac Model 212



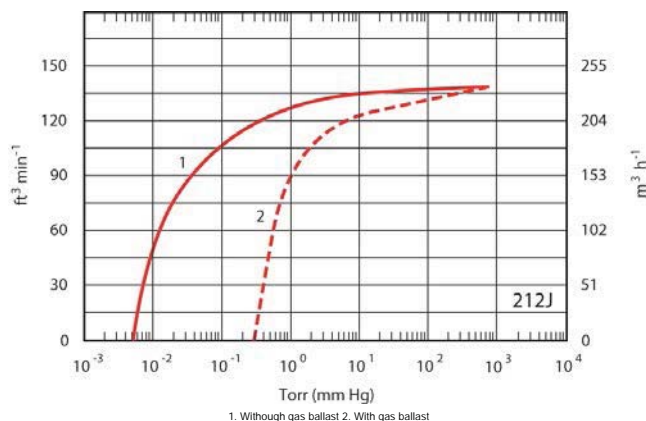
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Dimensions



Performance Curves



Technical Data

Displacement (swept volume)	255 m ³ h ⁻¹ / 150 ft ³ min ⁻¹
Pumping Speed	234 m ³ h ⁻¹ / 138 ft ³ min ⁻¹
Ultimate vacuum (total pressure)	
without gas ballast	<3.3x10 ⁻² mbar / <2.5x10 ⁻² Torr
with gas ballast	<2.6x10 ⁻² mbar / <2x10 ⁻² Torr
50Hz Motor size (TEFC)	5.5 kW IEC (CE variant)
60Hz Motor size (TEFC)	7.5 hp TEFC
Motor speed	1800 rpm
Inlet connection	3 inch ASA/ANSI flange
Exhaust connection	2 inch ASA/ANSI flange or 2 inch NPT
Water inlet/outlet connection	½ inch NPT
Recommended cooling flow @ 85°C / 30°F	5.7 lmin ⁻¹ / 1.5 galmin ⁻¹
Water vapour pumping rate	5 kg h ⁻¹ / 11 lb h ⁻¹
Oil capacity	15 litre / 4 gal
Recommended oil	V lube F
Noise	<77 dB(A)
Weight	431 kg / 950 lbs

Ordering Information

Product description	Order no.
212J 230/460V, 3Ø, 60Hz (230/460V Coil)	900212014
212J 400V, 3-ph, 50Hz, IEC motor, 380V Coil (CE compliant)	900212014501
212J 400V, 3-ph, 50Hz, IEC motor, 415V Coil (CE compliant)	900212014502
212J 400V, 3-ph, 50Hz, IEC motor, 380V Coil with Water Miser (CE compliant)	900212014503
212J 400V, 3-ph, 50Hz, IEC motor 415V Coil with Water Miser (CE compliant)	900212014504
Accessories Spares	Order no.
Replacement parts kit	429638016
Bearings	085019757
Valve deck assembly	607417001

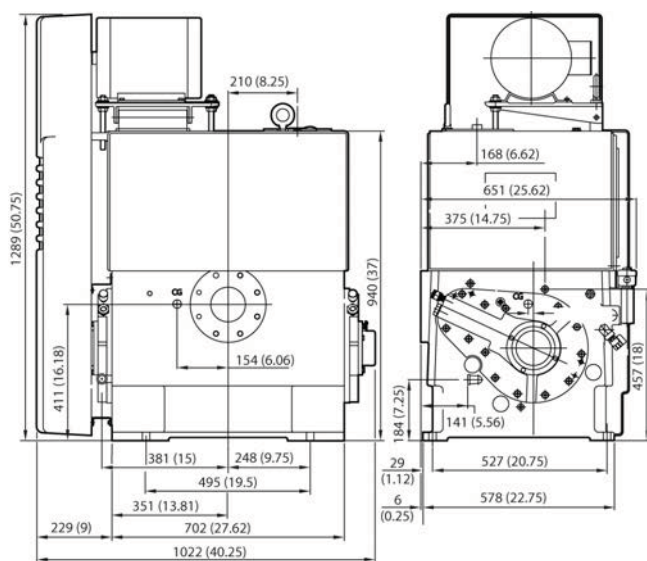
Stokes Microvac Model 412

The Stokes Microvac rotary piston pump sets the standard for performance and reliability as the industry's most efficient, space-saving design. The Stokes Microvac rotary piston pump has been improved, upgraded, and fine-tuned to deliver even better dependability and productivity combined with minimal maintenance and process downtime.

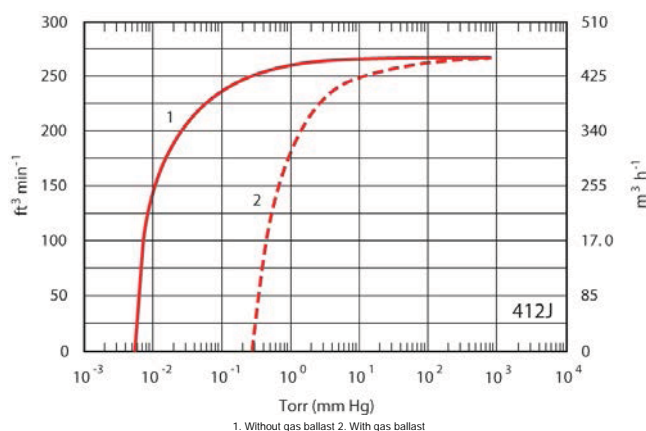
An integral oil distribution system eliminates external piping and delivers leak-free operation in a stylized design. A stiffer motor mounting platform cuts flexibility to minimize motor belt wear. A stylized oil reservoir cover and side cover O-rings improve sealing to eliminate oil leakage. An integral gas ballast valve built into the side cover allows quick adaptation to automatic gas ballast.



Dimensions



Performance Curves



Technical Data

Displacement (swept volume)(AVS)	510 m ³ h ⁻¹ / 300 ft ³ min ⁻¹
Pumping Speed	442 m ³ h ⁻¹ / 260 ft ³ min ⁻¹
Ultimate vacuum (total pressure)	
without gas ballast	<3.3x10 ⁻² mbar / <2.5x10 ⁻² Torr
with gas ballast	<2.6x10 ⁻¹ mbar / <2x10 ⁻¹ Torr
50Hz Motor size	11 kW IEC (CE variant)
60Hz Motor size	10 hp TEFC
Motor speed	1800 rpm
Inlet connection	4 inch ASA/ANSI flange
Exhaust connection	3 inch ASA/ANSI flange or 3 inch NPT
Water inlet/outlet connection	½ inch NPT
Recommended cooling flow @ 85°C / 30°F	7.6 lmin ⁻¹ / 1.5 galmin ⁻¹
Water vapour pumping rate	10.45 kg h ⁻¹ / 23 lb h ⁻¹
Oil capacity	46 litre / 12 gal
Recommended oil	V lube F
Noise level	<83 dB(A)
Weight	794 kg / 1750 lbs

Ordering Information

Product description	Order no.
412J 230/460V, 3Ø, 60Hz (230/460V Coil)	900412014
412J 400V, 3-ph, 50Hz, IEC motor 380V Coil (CE compliant)	900412014501
412J 400V, 3-ph, 50Hz, IEC motor 415V Coil (CE compliant)	900412014502
412J 400V, 3-ph, 50Hz, IEC motor, 380V Coil with Water Miser (CE compliant)	900412014503
412J 400V, 3-ph, 50Hz, IEC motor 415V Coil with Water Miser (CE compliant)	900412014504
Accessories Spares	Order no.
Replacement parts kit	429638015
Bearings	085019757
Valve deck assembly	607417001

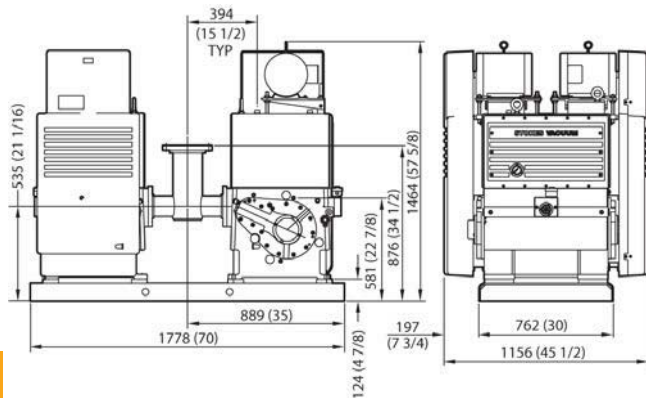
Stokes Microvac Model 612



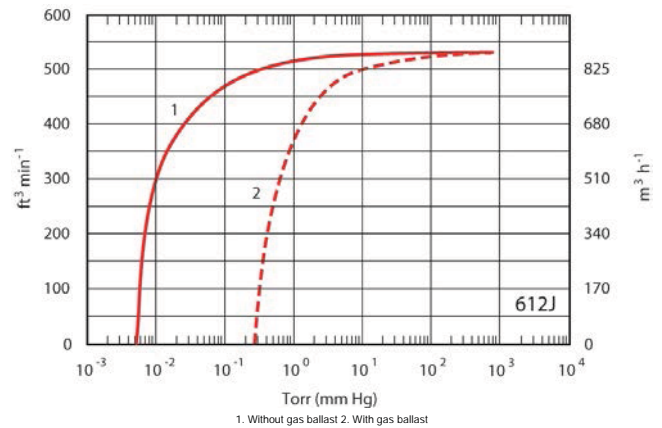
The Stokes Microvac rotary piston pump sets the standard for performance and reliability as the industry's most efficient, space-saving design. The Stokes Microvac rotary piston pump has been improved, upgraded, and fine-tuned to deliver even better dependability and productivity combined with minimal maintenance and process downtime.

An integral oil distribution system eliminates external piping and delivers leak-free operation in a stylized design. A stiffer motor mounting platform cuts flexibility to minimize motor belt wear. A stylized oil reservoir cover and side cover O-rings improve sealing to eliminate oil leakage. An integral gas ballast valve built into the side cover allows quick adaptation to automatic gas ballast.

Dimensions



Performance Curves



Technical Data

Displacement (swept volume)	1020 m ³ h ⁻¹ / 600 ft ³ min ⁻¹
Pumping speed	884 m ³ h ⁻¹ / 520 ft ³ min ⁻¹
Ultimate vacuum (total pressure)	
without gas ballast	<3.3 x 10 ⁻² mbar / <2.5 x 10 ⁻² Torr
with gas ballast	<2.6 x 10 ⁻¹ mbar / <2 x 10 ⁻¹ Torr
50Hz Motor size	11 kW IEC (CE variant) (x2)
60Hz Motor size	10 hp TEFC (x2)
Motor speed	1800 rpm
Inlet connection	6 inch ASA/ANSI flange
Exhaust connection	2 x 3 inch ASA/ANSI flange or 3 inch NPT
Cooling medium	Water
Water inlet/outlet connection	2 x 1/2 inch NPT
Recommended cooling flow @ 85°F / 30°C	7.6 lmin ⁻¹ / 1.5 galmin ⁻¹ (x2)
Water vapour pumping rate	20.9 kg h ⁻¹ / 46 lb h ⁻¹
Oil capacity	92 litre / 24 gal
Recommended oil	V lube F
Noise level	<85 dB(A)
Weight	1724 kg / 3800 lbs

Ordering Information

Product description	Order no.
612J 230/460V, 3-ph, 60Hz (230/460V Coil)	900612014
Accessories Spares	Order no.
Replacement parts kit	429638015
Bearings	085019757
Valve deck assembly	607417001

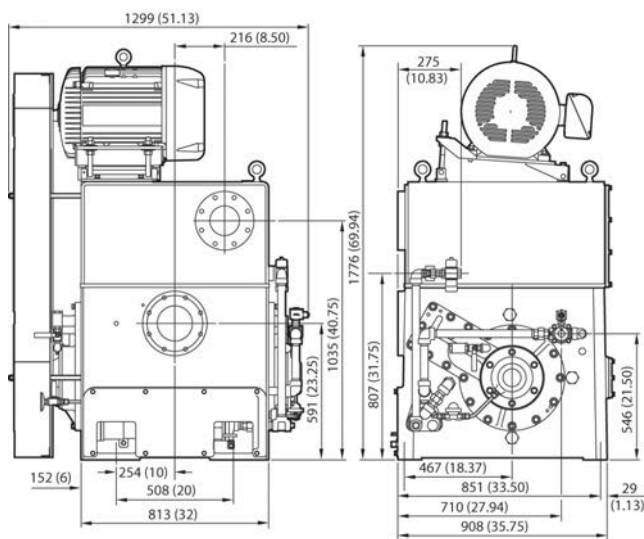
Stokes Microvac model 912

The Stokes Microvac rotary piston pump sets the standard for performance and reliability as the industry's most efficient, space-saving design. The Stokes Microvac rotary piston pump has been improved, upgraded, and fine-tuned to deliver even better dependability and productivity combined with minimal maintenance and process downtime.

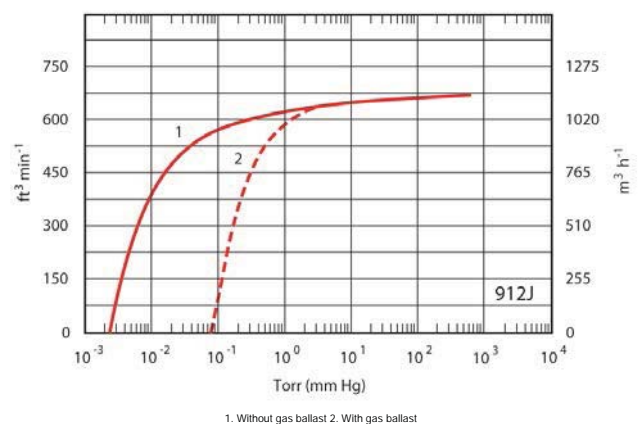
An integral oil distribution system eliminates external piping and delivers leak-free operation in a stylized design. A stiffer motor mounting platform cuts flexibility to minimize motor belt wear. A stylized oil reservoir cover and side cover O-rings improve sealing to eliminate oil leakage. An integral gas ballast valve built into the side cover allows quick adaptation to automatic gas ballast.



Dimensions



Performance Curves



1. Without gas ballast 2. With gas ballast

Technical Data

Displacement (swept volume)(AVS)	1240 m ³ h ⁻¹ / 728 ft ³ min ⁻¹
Pumping speed	1132 m ³ h ⁻¹ / 670 ft ³ min ⁻¹
Ultimate vacuum (total pressure)	
without gas ballast	<3.3 x 10 ⁻² mbar / <2.5 x 10 ⁻² Torr
with gas ballast	<2.6 x 10 ⁻¹ mbar / <2 x 10 ⁻¹ Torr
50Hz Motor size	22 kW TEFC
60Hz Motor size	30 hp TEFC
Motor speed	1800 rpm
Inlet connection	6 inch ASA/ANSI flange
Exhaust connection	5 inch NPT
Cooling medium	Water
Water inlet/outlet connection	1 inch NPT
Recommended cooling flow @ 85°C / 30°F	18.9 lmin ⁻¹ / (2) / 5 galmin ⁻¹
Water vapour pumping rate	27.27 kg h ⁻¹ / 60 lb h ⁻¹
Oil capacity	92 litre / 24 gal
Recommended oil	V lube F
Noise level	<85 dB(A)
Weight	2495 kg / 5500 lbs

Ordering Information

Product description	Order no.
912J 230/460V, 3-ph, 60Hz (230/460V Coil)	900912010
Accessories Spares	Order no.
Replacement roller bearing	085033795
Replacement oil seal	085018191
Roller bearing with adaptive sleeve	085033794
Valve deck stainless steel clappers	272963002
Valve deck springs	247172001

Stokes Microvac Accessories

Water Miser

Features Benefits

- Saves cooling water, improves efficiency
- Remote bulb temperature sensor in oil reservoir of vacuum pump
- Throttles valve on cooling water to control oil temperature
- Fits most water cooled vacuum pumps

Ordering Information

Product Description	For Pump	Order No.
Water Miser	149H-412J	900412124

Gas Ballast Silencer

Features Benefits

- Cuts noise level
- Simple thread-in unit reduces noise level
- Filters gas ballast intake air

Ordering Information

Product Description	For Pump	Order No.
151 Series Gas Ballast Silencer/Filter		
Required		
1	146H, 148H, 149H/S	900151001
1	212J	900151002
2 or 4	412J / 612J	900151002
2	912J	900151003

Min-Max Cooler

The Edwards Model 170-116 mini-max compact cooler provides closed circuit cooling specially designed for mobile pumping systems. It includes pump, radiator, fan, motor (115/60/1), on-off switch, connection kit for the microvac pumps, and has a cooling capacity of 14000 BTU/hr. The mini-max cooler is ideal when cooling water is not convenient or clean enough to ensure peak performance.

Technical Data

For use with Model 149, 212 412 Rotary Piston Pumps

Motor	1/4 hp (Pump and Fan)
Motor Voltage	115 V, 1-ph, 60 Hz 230 V, 1-ph, 60 Hz
Cooling Capacity	14000 BTU/hour
Hose Length	5 feet
Reservoir Tank Capacity	3 gallons
Overall Dimensions	12 1/4" W x 23 1/4" I X 13 1/4" H
Weight	50 lbs

Ordering Information

Product Description	Order No.
Minimax Cooling System	900170116
Includes: Pump, Radiator, Fan, Motors, On-Off Switch, Piping, Wiring and Hoses.	

Oil Mist Separators

The 291 series oil mist separators are high performance air/oil coalescing separators that will virtually eliminate all liquids and solids from a gas stream. These units produce exhaust liquid levels as low as 0.05 PPMW and solids removal in excess of 99.79% efficiency for particulate as small as 0.3 micron.

Features Benefits

- Clean pump exhaust, saves oil
- Two-stage design removes oil smog and traps particles as small as 0.3 microns
- Standard and heavy models available

Heavy Duty Oil Mist Filter

Heavy-duty oil mist separators are designed to handle the most severe oil exhaust situations from rotary oil sealed mechanical pumps. For true measure of efficiency, it is important to go beyond the weight to consider the actual number of particles collected. The heavy-duty oil mist separators efficiency by weight approaches 100% and total particle collection 97.8%. Edwards guarantees to collect and remove the stated percentage of particles by size, not by weight alone. The HD mist separator will effectively prevent fume emissions unlike existing separators that do not remove the sub micron particles.

Ordering Information

Product Description	For Pump	CFM	Replacement Elements	Order No.
Oil Mist Separators with Fiberglass Element				
291-30S	146H		085021473	900291021
291-50S	148H		085021474	900291022
291-100S	149H		085021475	900291023
291-150S	212H		085052035	900291024
291-150J	212J only		085052263	900291J24
291-300S	412H, 612H		085052036	900291025
291-300J	412J only		085052264	900291J25
291-750S	912J		085021478	900291026
291-750MB	612MB		085021478	900291027
Oil Mist Separator with Polypropylene Element				
291-30SO	146H		085039836	900291031
291-50SO	148H		085039837	900291032
291-100SO	149H		085039838	900291033
291-150SO	212H		085039839	900291034
291-300SO	412H, 612H		085039840	900291035
291-750SO	912J, 612MB		085039841	900291036
Heavy Duty Oil Mist Separators				
291-150HD	212H and smaller	150	085038239	900291048
291-300HD	412H	300	085038125	900291049
291-600HD	612H	600	085038226	900291050
291-1000HD	Combinations	1000	085044934	900291054
291-1500HD	Combinations	1500	085045429	900291055

Oil Reservoir Heater

Edwards model 212 and 412 oil reservoir heaters are recommended for pre-heating oil in the reservoir prior to pump start up at temperatures below 55 °F. Below 1 Torr., it will help maintain the oil at a temperature high enough to prevent condensation of water vapour in the oil when running with full gas ballast. The 212 and 412 oil reservoir heaters consist of an immersion heater to be inserted into the oil reservoir and an over-temperature switch with sensing bulb to control power to the heater. The heater arrangement can be factory or field installed.

Vacuum Break Solenoid

Features Benefits

- 2-way 240 V 3/8 inch FNPT
- 2-way 110 V 3/8 inch FNPT

Ordering Information

Product description	For pump	Order No.
Vacuum Break Solenoid	All 240 V	085046623
	All 110 V	085046998

Gask-O-Seal

Features Benefits

- For tight joint seals
- Combination anodised aluminium retainer with Buna-N seals
- Range to 0.0001 microns

Ordering Information

Product Description	Order No.
Gask-O-Seal	
Pipe Size (inch)	
1.5	900318005
2	900318006
3	900318007
4	900318008
6	900318010
8	900318011
10	900318012
12	900318013
14	900318014
16	900318015
18	900318016
20	900318017
24	900318018

Flex Hose

The model 820 high vacuum hose from Edwards is an all-plastic hose with aluminium flanges tough enough for easy handling streamline use. This rugged, reliable hose is suitable for use in a temperature range of -50 °F to 150 °F, tested to 10⁻² Torr absolute pressure

Ordering Information

Product Description	Flange Gasket	Order No.
Series 820 High Vacuum Hose		
Size		
2" x 20' long	08510028	900820220
3" x 20' long	023001141	900820206
4" x 20' long	023001129	900820208

Flex Connectors

Model 315 flexible connectors feature rugged type 321 stainless steel bellows to sharply ease potential alignment and thermal expansion problems, while significantly reducing vibration transmissions from other equipment. They are designed to provide years of trouble-free service.

Features Benefits

- Free-formed bellows minimise stress concentration
- Solve alignment problems
- Convuluted bellows of AISI 321 stainless steel
- ASA standard carbon steel flanges
- Sizes from 1.5 inch to 24 inch

Ordering Information

Product Description	Order No.
Type Standard: Flexible connector, vacuum service, convoluted, stainless steel bellows, carbon steel pipe flange, 150 ASA – both ends – 63 micro finish, Mass spec tested.	
Pipe Size (inch)	
1-1/2	900315005
2	900315006
3	900315008
4	900315009
6	900315011
8	900315012
10	900315013
12	900315014
Type CE: Flexible connector, vacuum service, convoluted, stainless steel bellows, carbon steel weld band – one end – to fit over ASA pipe for lap weld, carbon steel pipe flange, 150 ASA – one end – 63 micro finish, Mass spec tested.	
Pipe Size (inch)	
1-1/2	900315099
3	900315102
4	900315103
6	900315105
Type PP: Flexible connector, vacuum service, convoluted, stainless steel bellows, carbon steel pipe ends – both ends – for butt welding, Mass spec tested.	
Pipe Size (inch)	
1-1/2	900315069
2	900315070
3	900315072
4	900315073
6	900315075
8	900315076
10	900315077
12	900315078
Type EE: Flexible connector, vacuum service, convoluted, stainless steel bellows, carbon steel weld band – both ends – to fit over ASA pipe for lap weld, Mass spec tested.	
Pipe Size (inch)	
2	900315090
4	900315093
6	900315095
8	900315096
10	900315097
12	900315098
Type CP: Flexible connector, vacuum service, convoluted, stainless steel bellows, carbon steel pipe end – one end – for butt welding, carbon steel pipe flange, 150 ASA – one end – 63 micro finish, Mass spec tested.	
Pipe Size (inch)	
2	900315080
3	900315082
4	900315083
6	900315085
8	900315086
12	900315088

High Volume Inlet Filters

Features Benefits

- Traps particulates ahead of pump
- Recommended ahead of all vacuum pumps
- Provide protection to pump internals
- Extends the change interval up to 10 times
- Variety of filter elements available
- 146H pump has a 2 inch flange – 333-30A has a 1 inch flange. 333-100A (2 inch flange) can be used as an option
- 1754 and 1755 have 8 inch flange. Customer must supply an adaptor to mate with 10 inch flange on filter
- Polyester replacement element max temp 200 F, Glastex replacement element 450 F
- 1700 Series requires 2 replacement elements

Ordering Information

Product Description	For Pump	CFM	Order No.
Intake Pipeline Filters			
333-30A*	146H	30	900333031
333-50A	148H	50	900333032
333-100A	149H	100	900333033
333-165A	212J	165	900333034
333-330A	412J	400	900333035
333-750A	612J, 912J	850	900333036
333-1125A	1721, 1722, 1738	2000	900333037
333-2250A	1739, 1733, 1754	2800	900333038
Spares			Order No.
Replacement Glastex Elements			
333-30A*			085032573
333-50A			085032576
333-100A			085032579
333-165A			085032582
333-330A			085032585
333-750A			085032079
333-1125A			085032588**
333-2250A			085032591**
Replacement Polyester Elements			
333-30A*			085039010
333-50A			085039011
333-100A			085039012
333-165A			085039013
333-330A			085039014
333-750A			085039077
333-1125A			085039015**
333-2250A			085039016**

* 146H Pump has a 2" Flange, Filter 333-30A has a 1" Flange. Use Filter 333-100A w/2" Flange as an Option.
1754 and 1755 have 8" Flange. Customer must supply an adaptor to mate w/10" Flange on Filter.
Replacement Element is Polyester w/Maximum Temp of 200 F, Glastex has a Maximum Temp. of 450 F.
** Two Elements Are Required.

Small Volume Inlet Filter

Features Benefits

- For small volumes and fast pump down cycles
- Effective protection from harmful solid particles of 0.01 inch or larger
- Less expensive than conventional filters

Ordering Information

Product Description	Flange Size	For Pump	Replacement Elements	Order No.
Small Volume Inlet Filters				
332-3	3"	212J	085036701	900332003
332-4	4"	412J	085036702	900332004
332-6	6"	612J-912J	085036703	900332006
332-8	8"	1721-1722	085036704	900332008

Oil Purifiers

Oil purifiers continuously supply clean oil to the vacuum pump to assure peak uptime while prolonging the life of both the oil and the pump. Oil purifiers from Edwards are designed for use with rotary oil sealed pumps used in dirty applications or for corrosive and hazardous gases. These oil purifiers are commonly used in heat treating, annealing, sintering, brazing, nitriding, and metal melting. The Edwards models are available to handle hydrocarbon and inert oils for rotary oil sealed pumps up to 750 ft³min⁻¹ and can filter out solids to 3 microns.

Features Benefits

- Keep pump fluids cleaner
- Self-contained and portable
- Suitable for mechanical vacuum pumps up to 730 ft³min⁻¹
- Models available for hydrocarbon and inert oils

Ordering Information

Product Description	For Pump	GPM	Elements Required	Order No.
Vacuum Pump Oil Purifiers				
339-015 (115 V, 1-ph, 60 Hz)	146, 148, 149	1.5	1	900339015
339-015 CE (230 V, 1-ph, 50 Hz)	146, 148, 149	1.2	1	900339015501
339-015 CE (200/400 V, 3-ph, 50 Hz)	146, 148, 149	1.2	1	900339015502
339-030 (115 V, 1-ph, 60 Hz)	212, 412	3	1	900339030
339-030 CE (230 V, 1-ph, 50 Hz)	212, 412	2.3	1	900339030501
339-030 CE (200/400 V, 3-ph, 50 Hz)	212, 412	2.3	1	900339030502
339-150	All	1.5	2	900339150
339-215	All	1.5	2	900339215
339-070	912	7	2	900339070
Special Service (all pumps)				
339-15 (115 V, 1-ph, 60 Hz)*	146, 148, 149	1.5	1	900339151
339-152 (115 V, 1-ph, 60 Hz)	146-412	1.5	2	900339152
339-251 (115 V, 1-ph, 60 Hz)*	146-412	1.5	2	900339251
339-252 (115 V, 1-ph, 60 Hz)	146-412	1.5	4	900339252
Spares				Order No.
Model 339 Replacement Oil Purifier Elements				
Standard 339 Filter Fullers Earth 10 microns				085033395
Standard 339 Filter Pleated Paper 3 microns				085039432
Standard 339 Filter Activated Alumna				085039890
Special Service 339 Fullers Earth 10 microns				N/A (use 3 Microns Option)
Special Service 339 Pleated Paper 3 microns				085037794
Special Service 339 Activated Alumna				085039956

* Single element canister
** Double element canister