

# STOKES MICROVAC SERIES OIL SEALED ROTARY PISTON PUMPS MAXIMISE YOUR PRODUCTIVITY AND PERFORMANCE



The Stokes Microvac rotary piston pump has set the standard for performance, efficiency, reliability and repair ability in the industry for over 80 years. The Stokes Microvac J series rotary piston pump has been improved, upgraded, and fine-tuned to deliver even better dependability and productivity combined with minimal maintenance and process downtime. The 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. A wide range of versatile accessories are available along with the ability to integrate with a range of mechanical boosters making the Stokes Microvac easily adaptable to suit your application and pumping requirements.



## Features and Benefits

- **Reliable**
  - Over 80 years of time tested proven performance with experienced service and technical support
  - **Dependability** - low rotational speed enables longest pump life cycle
- **Robust**
  - **Easy on-site maintenance** - robust simple mechanism for high reliability and ease of rebuild
- **Flexible**
  - **Configured for you** - choice of pumping combinations available with a variety of boosters
- **Reassurance**
  - **Up to date technology** - continued investment in design and technology improvements
  - **No unplanned downtime** - worry free pumping backed by full warranty and after sales support

## Application

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

## Pump Range

- Stokes microvac
- 212J
  - 412J
  - 612J

# Performance Curves

## Stokes Microvac Model 212J

### 212J



#### Pumping Speed

234 m<sup>3</sup>h<sup>-1</sup>  
(138 ft<sup>3</sup>min<sup>-1</sup>)

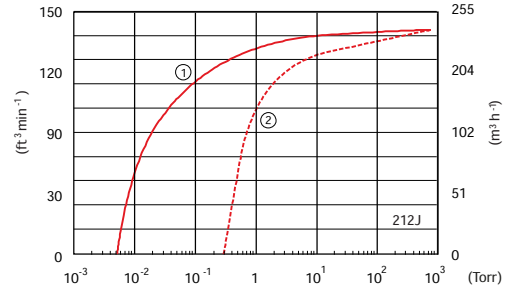
#### Displacement (swept volume)

255 m<sup>3</sup>h<sup>-1</sup>  
(150 ft<sup>3</sup>min<sup>-1</sup>)

#### Ordering information

Product description	Order no:
212J 230/460V, 3Ø, 60Hz (230/460V Coil)	900-212-014
212J 230/460V 3 PH 60Hz (230/460V Coil) with Water Miser	970-212-014
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

### 212J Performance Curve



- 1 Without gas ballast
- 2 With gas ballast

## Stokes Microvac Model 412J

### 412J



#### Pumping Speed

422 m<sup>3</sup>h<sup>-1</sup>  
(260 ft<sup>3</sup>min<sup>-1</sup>)

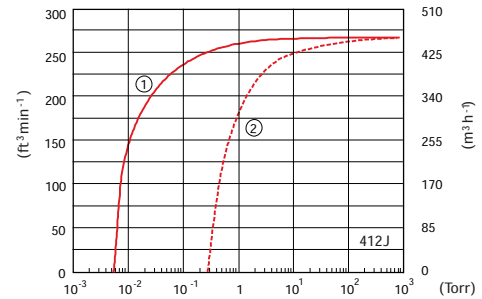
#### Displacement (swept volume)

510 m<sup>3</sup>h<sup>-1</sup>  
(300 ft<sup>3</sup>min<sup>-1</sup>)

#### Ordering information

Product description	Order no:
412J 230/460V, 3Ø, 60Hz (230/460V Coil)	900-412-014
412J 230/460V 3 PH 60Hz (230/460V Coil) with Water Miser	970-412-014
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

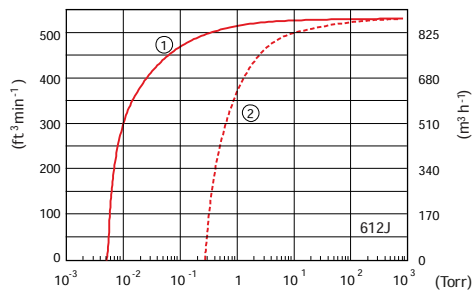
### 412J Performance Curve



- 1 Without gas ballast
- 2 With gas ballast

## 612J Performance Curve

612J



## Pumping Speed

884 m<sup>3</sup>h<sup>-1</sup>  
(520 ft<sup>3</sup>min<sup>-1</sup>)

## Displacement (swept volume)

1020 m<sup>3</sup>h<sup>-1</sup>  
(600 ft<sup>3</sup>min<sup>-1</sup>)



## Ordering information

- |   |                     |
|---|---------------------|
| 1 | Without gas ballast |
| 2 | With gas ballast    |

## Product description

612J 230/460V, 3-ph, 60Hz (230/460V Coil)

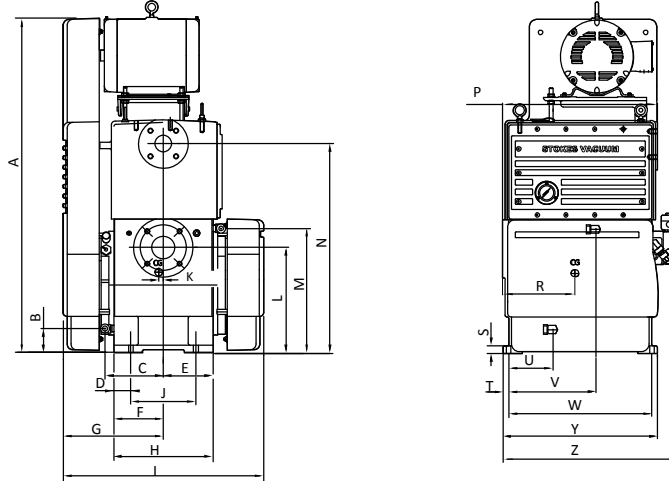
## Order no:

900-612-014



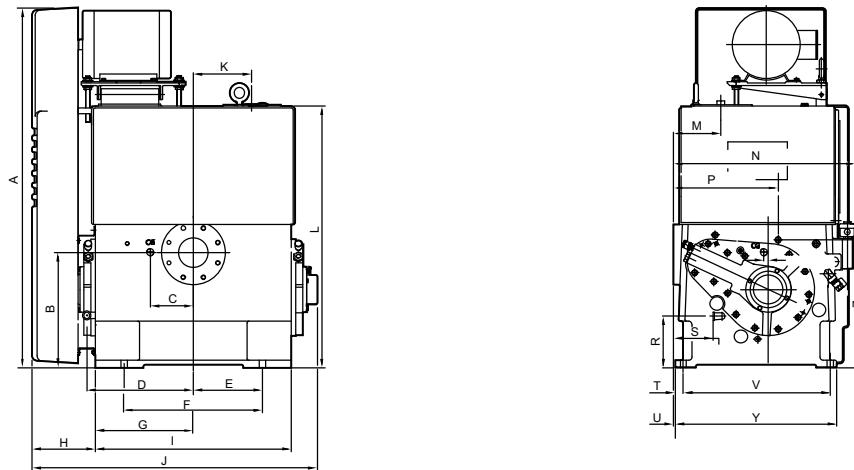
# Dimensions

## Stokes 212J Dimensions



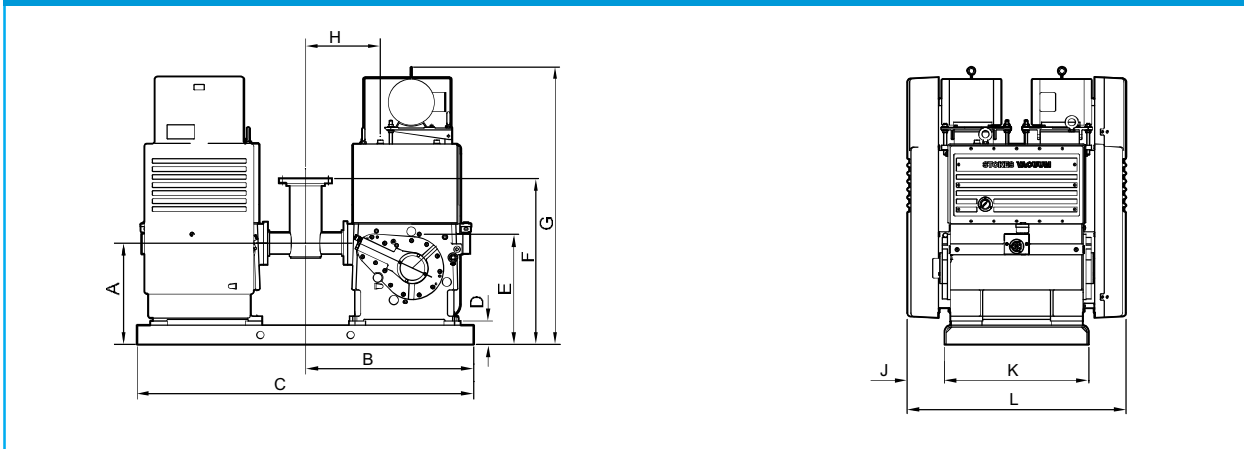
A	B	C	D	E	F	G	H	I	J	K	L
1111	79	194	57	192	165	333	330	667	216	16	349
M	N	P	R	S	T	U	V	W	Y	Z	
413	695	516	241	25	19	148	291	476	514	581	

## Stokes 412J Dimensions



A	B	C	D	E	F	G	H	I	J	K	L
1289	411	154	381	248	495	351	229	702	1022	210	940
M	N	P	R	S	T	U	V	Y	Z		
168	651	375	184	141	29	6	527	578	457		

## Stokes 612J Dimensions



A	B	C	D	E	F	G	H	J	K	L
535	889	1778	124	581	876	1464	394	197	762	1156

## Technical Data



	Units	212J	412J	612J
Displacement (swept volume)				
	m <sup>3</sup> h <sup>-1</sup> / ft <sup>3</sup> min <sup>-1</sup>	255 / 150	510 / 300	1020 / 600
Pumping Speed				
	m <sup>3</sup> h <sup>-1</sup> / ft <sup>3</sup> min <sup>-1</sup>	234 / 138	442 / 260	884 / 520
Ultimate vacuum (total pressure)				
without gas ballast	mbar / Torr	<3.3x10 <sup>-2</sup> mbar / <2.5x10 <sup>-2</sup>		
with gas ballast	mbar / Torr	<2.6x10 <sup>-2</sup> / <2x10 <sup>-2</sup>	<2.6x10 <sup>-1</sup> / <2x10 <sup>-1</sup>	
Motor size (TEFC)				
50Hz	Kw IEC (CE variant)	5.5	11	11 (x2)
60Hz	hp TEFC	7.5	10	10 (x2)
Motor speed				
	rpm	1800		
Inlet connection				
	inch ASA/ANSI flange	3	4	6
Exhaust connection				
		2 inch ASA/ANSI flange or 2 inch NPT	3 inch ASA/ANSI flange or 3 inch NPT	2 x 3 inch ASA/ANSI flange or 3 inch NPT
Water inlet/outlet connection				
	inch NPT	½	½	2 x ½
Recommended cooling flow @ 85°C / 30°F				
	lmin <sup>-1</sup> / galmin <sup>-1</sup>	5.7 / 1.5	7.6 / 1.5	7.6 / 1.5 (X2)
Water vapour pumping rate				
	kg h <sup>-1</sup> / 11 lb h <sup>-1</sup>	5	10.45 / 23	20.9 / 46
Oil capacity				
	litre / gal	15 / 4	46 / 12	92 / 24
Recommended oil				
		V lube F	V lube F	V lube F
Noise				
	Db(A)	<77	<83	<85
Weight				
	kg / lbs	431 / 950	794 / 1750	1724 / 3800

# Service, Spares and 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-612J	900-412-124

## 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	900-151-001
1	212J	900-151-002
2 or 4	412J / 612J	900-151-002

## 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" L X 13 1/4" H
Weight	50 lbs

### Ordering Information

Product Description	Order no:
Minimax Cooling System	900-170-116
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		085-021-473	900-291-021
291-50S	148H		085-021-474	900-291-022
291-100S	149H		085-021-475	900-291-023
291-150S	212H		085-052-035	900-291-024
291-150J	212J only		085-052-263	900-291-J24
291-300S	412H, 612H		085-052-036	900-291-025
291-300J	412J only		085-052-264	900-291-J25
291-750MB	612MB		085-021-478	900-291-027
Oil Mist Separator with Polypropylene Element				
291-30SO	146H		085-039-836	900-291-031
291-50SO	148H		085-039-837	900-291-032
291-100SO	149H		085-039-838	900-291-033
291-150SO	212H		085-039-839	900-291-034
291-300SO	412H, 612H		085-039-840	900-291-035
291-750SO	612MB		085-039-841	900-291-036
Heavy Duty Oil Mist Separators				
291- 150HD	212H and smaller	150	085-038-239	900-291-048
291-300HD	412H	300	085-038-125	900-910-049
291-600HD	612H	600	085-038-226	900-291-050
291-1000HD	Combinations	1000	085-044-934	900-291-054
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.

Ordering Information

Product Description	For Pump	Order no:
Oil Reservoir Heater	600w 120v	085-034-331

## 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	085-046-623
	All 110 V	085-046-998

## 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	900-318-005
2	900-318-006
3	900-318-007
4	900-318-008
6	900-318-010
8	900-318-011
10	900-318-012
12	900-318-013
14	900-318-014
16	900-318-015
18	900-318-016
20	900-318-017
24	900-318-018

## 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	For Pump	Order no:
Series 820 High Vacuum Hose		
Size		
2" x 20' long	085-100-28	900-820-220
3" x 20' long	023-001-141	900-820-220
4" x 20' long	023-001-129	900-820-208

## 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
- Convoluted 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	900-315-005
2	900-315-006
3	900-315-008
4	900-315-009
6	900-315-011
8	900-315-012
10	900-315-013
12	900-315-014

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	900-315-099
3	900-315-102
4	900-315-103
6	900-315-105

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	900-315-069
2	900-315-070
3	900-315-072
4	900-315-073
6	900-315-075
8	900-315-076
10	900-315-077
12	900-315-078

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	900-315-090
4	900-315-093
6	900-315-095
8	900-315-096
10	900-315-097
12	900-315-098

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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	900-315-080
3	900-315-082
4	900-315-083
6	900-315-085
8	900-315-086
12	900-315-088

## 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.
- 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:
<b>Intake Pipeline Filters</b>			
333-30A*	146H	30	900-333-031
333-50A	148H	50	900-333-032
333-100A	149H	100	900-333-033
333-165A	212J	165	900-333-034
333-330A	412J	400	900-333-035
333-750A	612J, 912J	850	900-333-036
333-1125A	1721, 1722, 1738	2000	900-333-037
333-2250A†	1739, 1733, 1754	2800	900-333-038
<b>Spares</b>		<b>Order No.</b>	
<b>Replacement Glastex Elements‡</b>			
333-30A*			085-032-573
333-50A			085-032-576
333-100A			085-032-579
333-165A			085-032-582
333-330A			085-032-585
333-750A			085-032-079
333-1125A			085-032-588**
333-2250A†			085-032-591**
<b>Replacement Polyester Elements‡</b>			
333-30A*			085-039-010
333-50A			085-039-011
333-100A			085-039-012
333-165A			085-039-013
333-330A			085-039-014
333-750A			085-039-077
333-1125A			085-039-015**
333-2250A†			085-039-016**

\* 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 adapter 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:
<b>Small Volume Inlet Filters</b>				
332-3	3"	212J	085-036-701	900-332003
332-4	4"	412J	085-036-702	900-332-004
332-6	6"	612J - 912J	085-036-703	900-332-006
332-8	8"	1721-1722	085-036-704	900-332-008

## 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 creating, 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.
<b>Vacuum Pump Oil Purifiers</b>				
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 (200/400 V, 3-ph, 50 Hz)	212, 412	2.3	1	900339030501
339-215 (115v 1 ph. 60 Hz)	All	1.5	2	900-339-215



Special Service (all pumps)

339-15 (115 V, 1-ph, 60 Hz)*	146, 148, 149	1.5	1	900-339-151
339-152 (115 V, 1-ph, 60 Hz)†	146-412	1.5	2	900-339-152
339-252 (115 V, 1-ph, 60 Hz)†	146-412	1.5	4	900-339-252
Spares		Order No.		
Standard 339 Filter Fullers Earth 10 microns		085-033-395		
Standard 339 Filter Pleated Paper 3 microns		085-039-432		
Standard 339 Filter Activated Alumna		085-039-890		
Special Service 339 Pleated Paper 3 microns		085-037-794		
Special Service 339 Activated Alumna		085-039-956		

Note: the 215 is the only one that is dual canister all the above are single canister

\* Single element canister

† Double element canister



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