

Agilent High Capacity RV Pumps & Roots Pumping Systems

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RPK-Series Roots Pumping Kits
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 *Agilent Technologies*
MS-301

Vacuum Products

The Measure of Confidence



Agilent Technologies

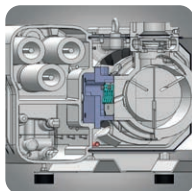
MS-Series Rotary Vane Pumps Features and Benefits

Agilent: a complete solution provider for the industrial vacuum equipment

Agilent MS-Series high capacity mono stage oil lubricated rotary vane pumps, from 70 to 630 m³/h.

- MS-Series pumps are robust, easy to install, and are ideal for use in many different applications.
- Because of their compact size, MS-Series pumps can easily replace other pumps of equivalent pumping speed.

Industry leading vacuum performance; more than 20,000 RV pumps in operation!



Shorter Cycle Times

- Smooth continuous operation, from atmospheric to base pressure.
- High pumping speed even at low pressure.



Industry Leading Vacuum Performance

- Pump design allows lowest base partial pressure: 8×10^{-2} mbar (6×10^{-2} Torr).



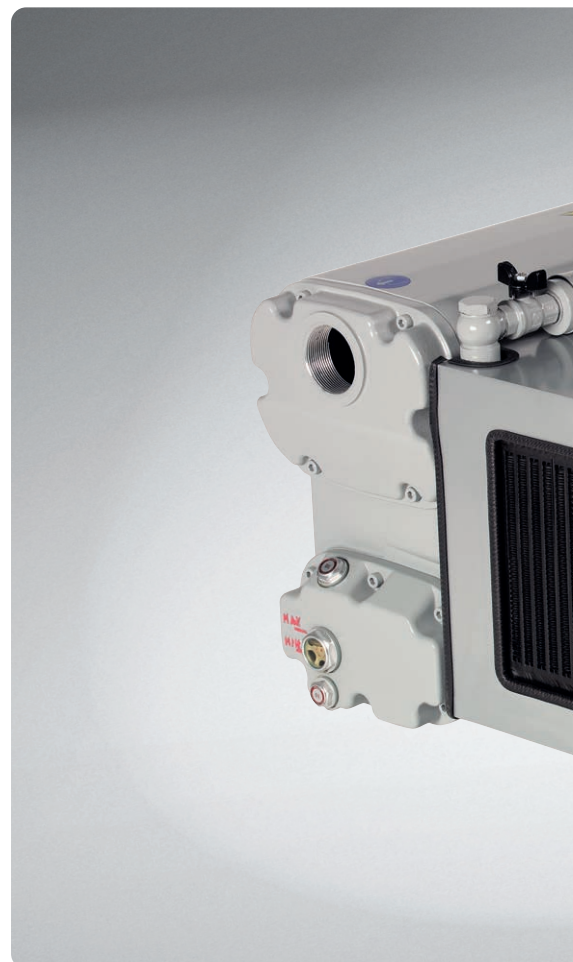
Highly Robust for Stringent Applications

- Steel rotor.
- Cast iron stator and cover.
- Special design carbon fiber vanes.
- Viton seals.
- Gas ballast valve, for pumping high water vapor content.
- Anti-suckback isolation inlet valve eliminates oil backstreaming and holds vacuum in case of power loss.

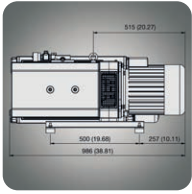


Environmentally Friendly

- A demister system limits oil exhaust over the entire range of working pressures.
- Floating valve for oil recovery.

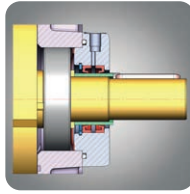


High Capacity MS-RPS Series



Compact and Easy to Install

- Air cooling
 - cover design optimizes cooling air channels
 - integrated heat exchanger carries excess heat away.
- Smaller than pumps of equivalent pumping speed.



Highly Reliable

- Highly efficient oil circulation system ensures perfect lubrication and sealing in all critical areas of the pump.
- Low noise and vibration.

High Capacity
MS-RPS Pumps



RPS-Series Roots Pumps & Pumping Systems (Features and Benefits)

RP-Series Roots Pumps

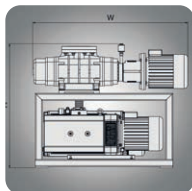
State-of-the-art, high performance Agilent Roots Pumps are ideal for use in demanding industrial applications.

RPS-Series Roots Pumping Systems

RPK-Series Roots Pumping Kits*

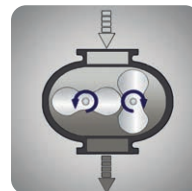
Agilent's RPS Systems combine the ruggedness and reliability of High Capacity MS-Series RVPs with wide range Roots Pumps.

More than 15,000 Roots pumps in operation!



Compact and Easy to Use

- Agilent Roots Pumps are simple to use and to install.
- Air cooling.



High Performance Roots Pumps

- Highest compression ratio.
- Agilent Roots Pumps can withstand high mechanical loads reducing pumpdown cycles.
- Lowest base pressure: 5×10^{-3} mbar (4×10^{-3} Torr).



Designed for Optimum System Integration

- Ideal combination for roughing down and backing Diffusion Pumps, Turbomolecular Pumps, and other HV pumps.
- Optional electronics for continuous operation and monitoring of Vacuum Systems.



Clean

Ideal for use in applications demanding the highest levels of cleanliness:

- Special labyrinth seal prevents contamination.
- A high capacity trap chamber captures condensation.
- Advanced shaft seal technology avoids contamination of the process chamber.



** Roots Pumping Systems (RPS) consist of one MS Rotary Vane Pump and one RP Roots Pump, assembled on a dedicated Frame, and connected in series with a flexible hose. Roots Pumping Kits (RPK) consist of one MS Rotary Vane Pump and one RP Roots Pump shipped in separate boxes.*

High Capacity MS-RPS Series



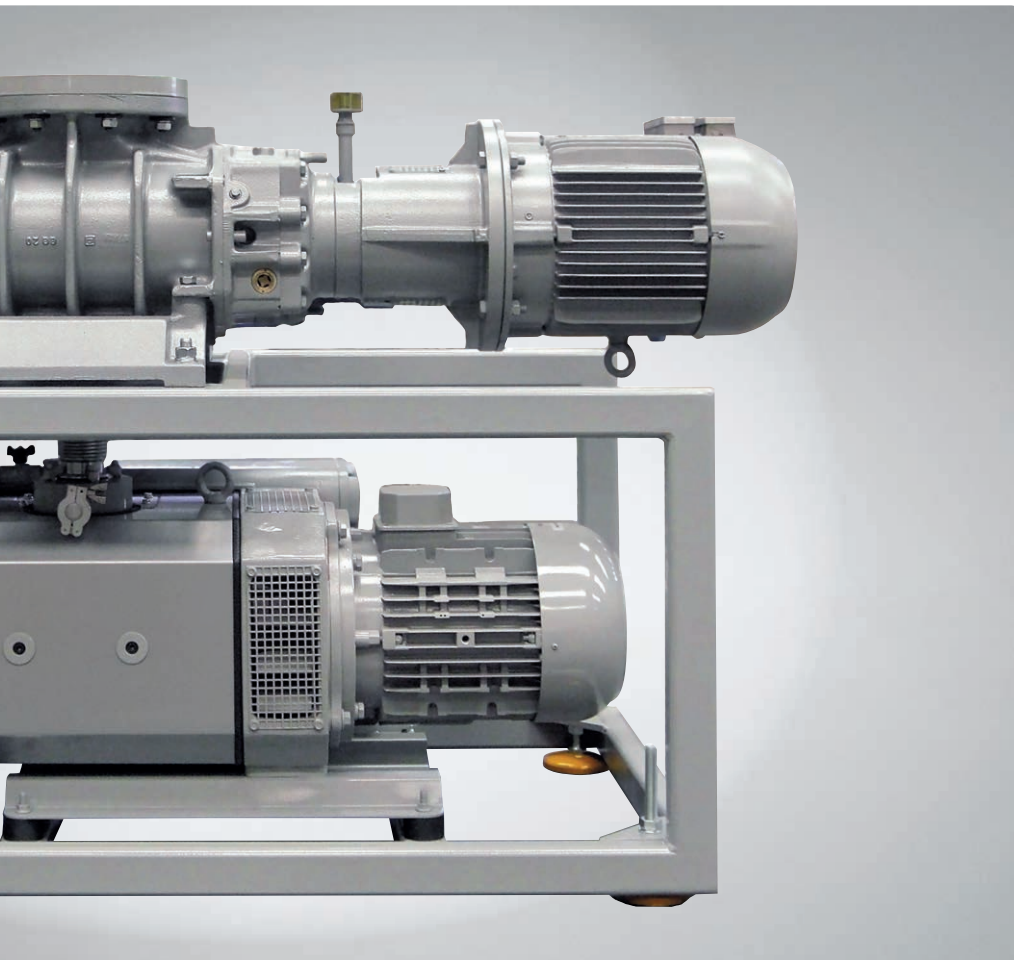
Rugged and Reliable

- Low noise and vibration, thanks to dynamically balanced rotors and precision ground gears.
- Long maintenance intervals.
- Air cooling.



Wide Product Range Offering

- Combining 5 MS-Series RVPs (from 70 to 630 m³/h) and 10 Roots Pumps (from 180 to 4000 m³/h) allows tailored solutions optimizing performances, cost and power consumption.



Typical Applications



Roughing and Backing High Vacuum Pumps

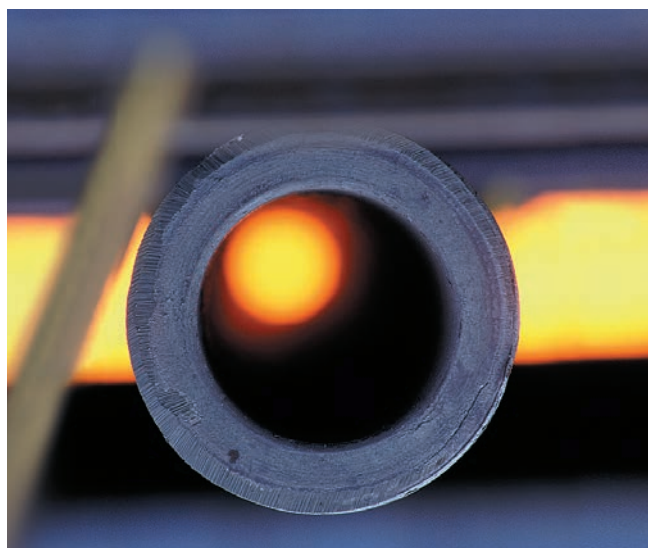
The new MS Pumps and RPS Systems are ideally suited for use in combination with Agilent Turbo-V and Diffusion pumps or with HV pumps of any other manufacturer.

Agilent: a total vacuum solution provider for the industrial high and medium vacuum equipment.



Surface Coating Systems

The most common application where the RPS are used are coaters of different dimensions, from small ones used in research fields to the very large ones used in industrial applications, including for instance glass coaters or coaters where large automotive or aircraft parts are treated. The ability to offer large RV pumps, up to 630 m³/h and Roots pumps up to 4000 m³/h make the Agilent offer in this range particularly interesting and able to satisfy different needs.



Metallurgy and Heat Treatment

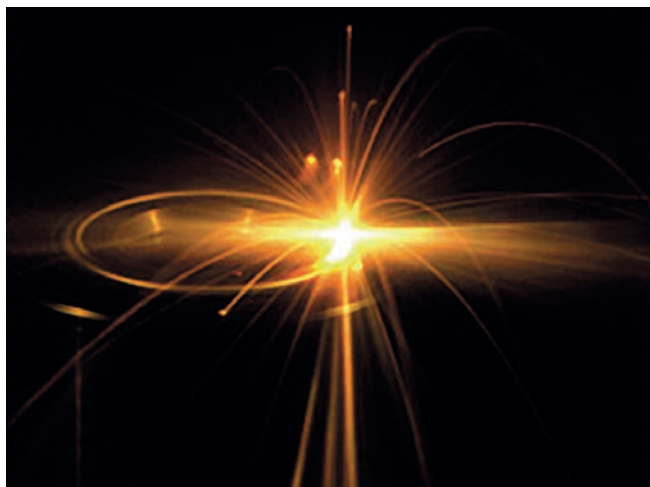
In this field Agilent has offered so far a very large number of Diffusion pumps, with sizes ranging up to 35,000 l/s. The availability now to provide the full vacuum system up to the atmospheric pressure is rapidly bringing this offer to satisfy most of the users, who are particularly interested in rapid cycle times and the excellent overall reliability of the Agilent solution.

High Capacity MS-RPS Series



Helium Leak Detection

When large volumes or short cycle are required for a process involving leak detection, typically but not only using helium, the Agilent RV pumps alone or in combination with the Roots pumps are an ideal solution to reach the parameters necessary for industrial applications. Agilent is well aware of technical aspects of this technology having been a pioneer in leak detection for several decades.



Electron Beam Welding

EBW equipment requires the use of both High Vacuum Pumps, during generation and running of the welding beam, and Medium Vacuum Pumps for the rest of the process taking place in the chamber where the parts to be welded are positioned. Thanks to the introduction of the new Roots Pumping Systems, today Agilent is in a position to offer the entire vacuum system, as a single supply source in this important industry.

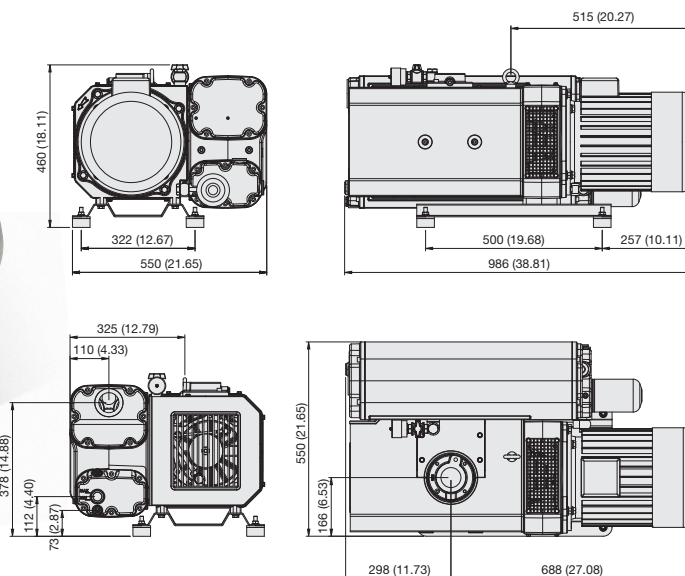


Other Industrial Applications

Agilent RV pumps and Roots Systems are suitable for use in many other applications, including lamps manufacturing, vacuum drying and degassing, gas recovery, packing industry, chemistry and process technology, PET processing, pharmaceutical industry, vacuum distillation, cryogenic vessel evacuation, and others.

Pump Models

Agilent MS-301



Dimensions: millimeters (inches)

Technical Specifications

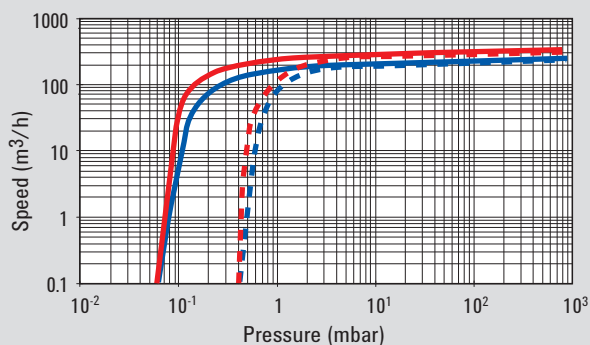
Free air displacement	60 Hz: 350 m ³ /hr, 210 cfm 50 Hz: 290 m ³ /hr, 170 cfm
Pumping speed*	60 Hz: 290 m ³ /hr, 170 cfm 50 Hz: 250 m ³ /hr, 150 cfm
Ultimate partial pressure (with gas ballast closed)	≤ 8 x 10 ⁻² mbar (≤ 6 x 10 ⁻² Torr)
Ultimate total pressure (with gas ballast open)	≤ 0,7 mbar (≤ 0,5 Torr)
Power	60 Hz: 7.5 kW (10.0 HP) 50 Hz: 5.5 kW (7.4 HP)
Power supply voltage	60 Hz: 208-230/460 V 50 Hz: 230/400 V 50 Hz: 400/690 V 50/60 Hz: 380-420/660-725 V
Revolutions number	60 Hz: 1750 RPM 50 Hz: 1450 RPM
Water vapor tolerance	60 Hz/50 Hz: 30/40 mbar (23/30 Torr)
Water vapor capacity	60 Hz/50 Hz: 5/7 kg/h (5.5/7.7 qt/hr)
Noise level**	60 Hz/50 Hz: 72/76 dB(A)
Inlet port	Flange DN 63 ISO-K / 2" gas / 2" NPT
Exhaust port	2" gas / 2" NPT
Oil	type MS-01, charge 7 liter (7.4 qt)
Working ambient temperature range	+12 +40 °C (+54 +105 F)
Storage temperature	-20 +70 °C (-4 +158 F)
Dimensions	60 Hz: 1015 x 550 x 460 mm (40.0 x 21.6 x 18.1 in.) 50 Hz: 986 x 550 x 460 mm (38.8 x 21.6 x 18.1 in.)
Total weight (with/without motor)	190/141 kg (420/310 lbs)

* According to PNEUROP 6602

** According to EN ISO 2151 (50/60 Hz)

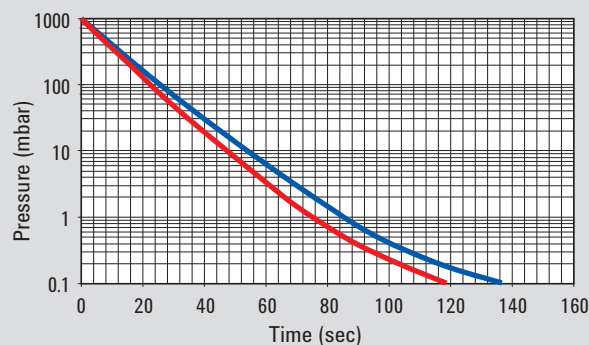
High Capacity MS-RPS Series

Single Stage Pump MS-301 - Pumping Speed



— 50 Hz w/o gasballast — 60 Hz w/o gasballast
- - 50 Hz with gasballast - - 60 Hz with gasballast

Single Stage Pump MS-301 - Pump Down



Volume 750 liters

— MS-301 50 Hz
— MS-301 60 Hz

Ordering Information

High Capacity Rotary Vane Pumps

	Part Number
MS-301 with motor 5.5 kW, 50 Hz, 230/400 V, inlet port 2" gas. Oil charge not included.	9495001
MS-301 with motor 5.5 kW, 50 Hz, 230/400 V, inlet flange DN 63 ISO-K. Oil charge not included.	9495201
MS-301 with motor 5.5 kW, 50 Hz, 400/690 V, inlet port 2" gas. Oil charge not included.	9495601
MS-301 with motor 5.5 kW, 50 Hz, 400/690 V, inlet flange DN 63 ISO-K. Oil charge not included.	9495701
MS-301 with motor 9 kW, 60 Hz, 208-230/460 V, inlet port 2" NPT. Oil charge not included.	9495101
MS-301 with motor 9 kW, 60 Hz, 208-230/460 V, inlet flange DN 63 ISO-K. Oil charge not included.	9495301
MS-301 with motor 7.5 kW, 50/60 Hz, 380-420/660-725 V, inlet port 2" gas. Oil charge not included.	9495401
MS-301 with motor 7.5 kW, 50/60 Hz, 380-420/660-725 V, inlet flange DN 63 ISO-K. Oil charge not included.	9495501

Oil and Accessories

	Part Number
MS-01 Oil charge for MS-301 (7 liters)	9495012
Inlet air filter with polyester cartridge, for 2" gas connection	9495059
Inlet air filter with polyester cartridge with DN 63 ISO-K flange	9495159
Connection fitting kit, for 2" gas connection	9495065
Connection fitting kit, for DN 63 ISO-K flange connection	9495165

Protective Accessories

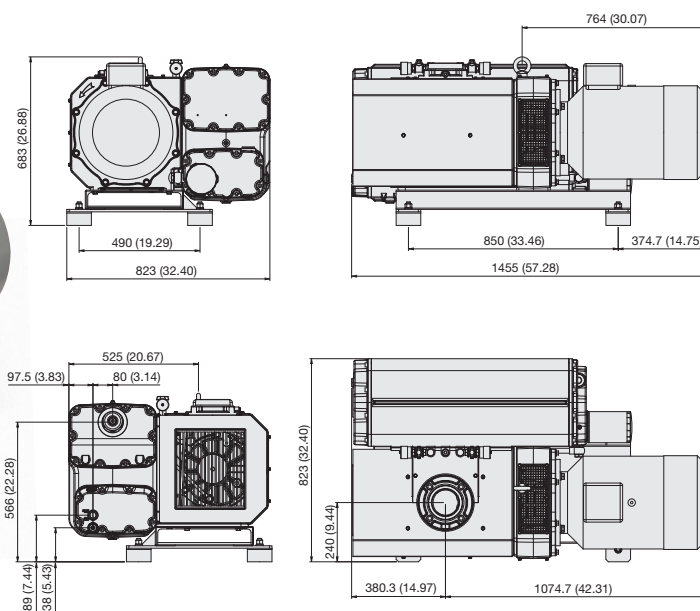
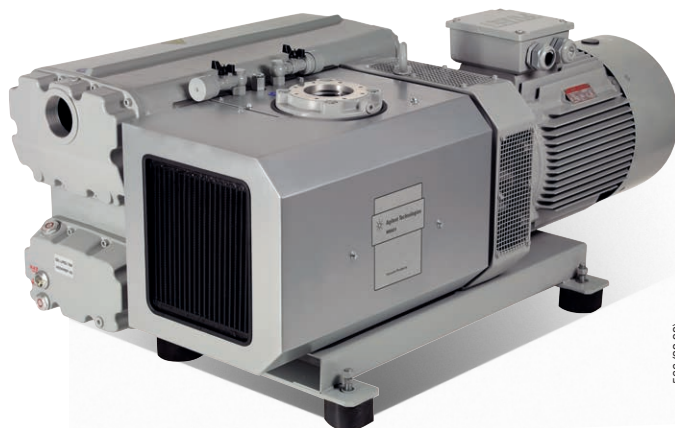
	Part Number
Pump thermal protection switch	9495076
Oil separator control pressure switch	9495077
MS-301 oil level protection switch	9495078

Spare Parts

	Part Number
MS-301 minor spare part kit	9495020
MS-301 major spare part kit	9495021
Oil filter (type A)	9495070
MS-301 inlet air filter polyester cartridge	9495083
MS-301 exhaust coalescent filter kit	SR03706308

Pump Models

Agilent MS-631



Dimensions: millimeters (inches)

Technical Specifications

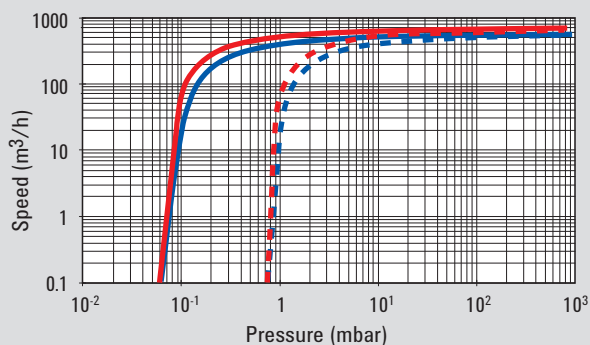
Free air displacement	60 Hz: 790 m ³ /hr, 465 cfm 50 Hz: 660 m ³ /hr, 390 cfm
Pumping speed*	60 Hz: 680 m ³ /hr, 400 cfm 50 Hz: 590 m ³ /hr, 350 cfm
Ultimate partial pressure (with gas ballast closed)	≤ 8 x 10 ⁻² mbar (≤ 6 x 10 ⁻² Torr)
Ultimate total pressure (with gas ballast open)	≤ 0,7 mbar (≤ 0,5 Torr)
Power	60 Hz: 18.5 kW (24.8 HP) 50 Hz: 15 kW (20.1 HP)
Power supply voltage	60 Hz: 440/480 V 50 Hz: 400/690 V 50/60 Hz: 380-420/660-725 V
Revolutions number	60 Hz: 1000 RPM 50 Hz: 820 RPM
Water vapor tolerance	60 Hz/50 Hz: 30/40 mbar (23/30 Torr)
Water vapor capacity	60 Hz/50 Hz: 20/30 kg/h (22.0/33.1 qt/hr)
Noise level**	60 Hz/50 Hz: 71/73 dB(A)
Inlet port	Flange DN 100 ISO-K / 4" gas / 4" NPT
Exhaust port	3" gas / 3" NPT
Oil	type MS-01, charge 22 liter (23.2 qt)
Working ambient temperature range	+12 +40 °C (+54 +105 F)
Storage temperature	-20 +70 °C (-4 +158 F)
Dimensions	60 Hz: 1480 x 823 x 683 mm (58.2 x 32.4 x 26.9 in.) 50 Hz: 1455 x 823 x 683 mm (57.3 x 32.4 x 26.9 in.)
Total weight (with /without motor)	575/385 kg (1270/850 lbs)

* According to PNEUROP 6602

** According to EN ISO 2151 (50/60 Hz)

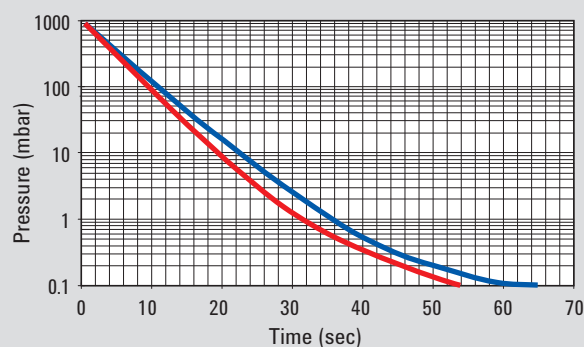
High Capacity MS-RPS Series

Single Stage Pump MS-631 - Pumping Speed



— 50 Hz w/o gasballast — 60 Hz w/o gasballast
- - 50 Hz with gasballast - - 60 Hz with gasballast

Single Stage Pump MS-631 - Pump Down



Volume 750 liters

— MS-631 50 Hz
— MS-631 60 Hz

Ordering Information

High Capacity Rotary Vane Pumps

	Part Number
MS-631 with motor 15.0 kW, 50 Hz, 400/690 V, inlet port 4" gas. Oil charge not included.	9495002
MS-631 with motor 15.0 kW, 50 Hz, 400/690 V, inlet flange DN 100 ISO-K. Oil charge not included.	9495202
MS-631 with motor 22 kW, 60 Hz, 440 - 480 V, inlet port 4" NPT. Oil charge not included.	9495102
MS-631 with motor 22 kW, 60 Hz, 440 - 480 V, inlet flange DN 100 ISO-K. Oil charge not included.	9495302
MS-631 with motor 18.5 kW, 50/60 Hz, 380-420/660-725 V, inlet port 4" gas. Oil charge not included.	9495402
MS-631 with motor 18.5 kW, 50/60 Hz, 380-420/660-725 V, inlet flange DN 100 ISO-K. Oil charge not included.	9495502

Oil and Accessories

	Part Number
MS-01 Oil charge for MS-631 (22 liters)	9495014
Inlet air filter with polyester cartridge, for 4" gas connection	9495062
Inlet air filter with polyester cartridge with DN 100 ISO-K flange	9495162
Connection fitting kit, for 4" gas connection	9495066
Connection fitting kit, for DN 100 ISO-K flange connection	9495166

Protective Accessories

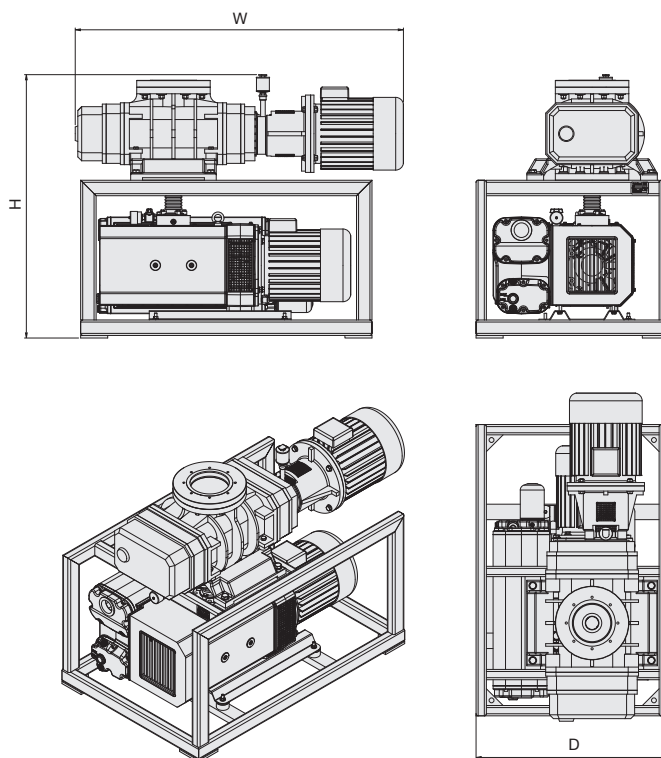
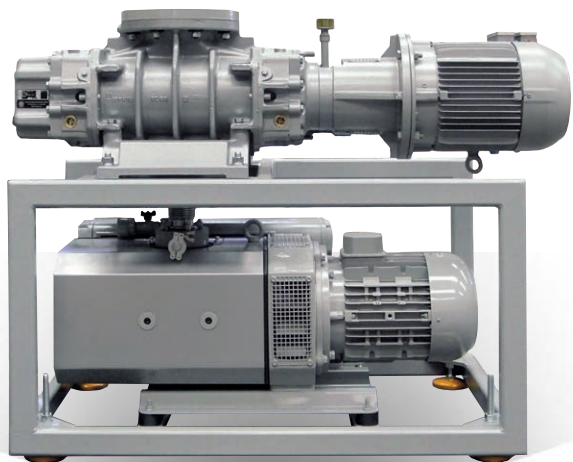
	Part Number
Pump thermal protection switch	9495076
Oil separator control pressure switch	9495077
MS-631 oil level protection switch	9495079

Spare Parts

	Part Number
MS-631 minor spare part kit	9495087
MS-631 major spare part kit	9495088
Oil filter (type B)	9495090
MS-631 inlet air filter polyester cartridge	9495089
MS-631 exhaust coalescent filter kit	SR03706207

RPS Pumping Systems Models and RPK Pumping Kits Models

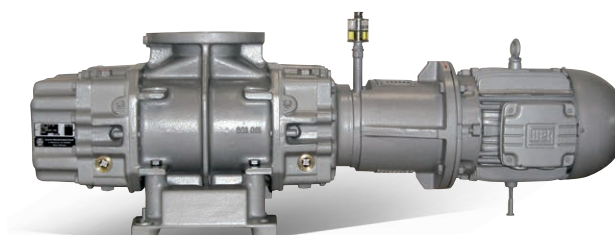
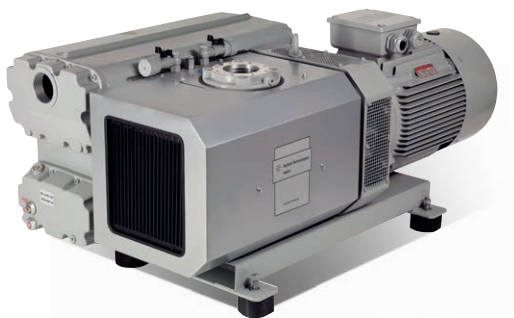
Agilent RPS-Series Roots Pumping Systems



Roots Pumping Systems (RPS) consist of one MS Rotary Vane Pump and one RP Roots Pump, assembled on a dedicated frame, and connected in series with a flexible hose. This assembly is shipped with the pumps mounted on the frame and leak checked. Both pumps are equipped with motor.

Photo and Outline Drawing: RPS-1401/301

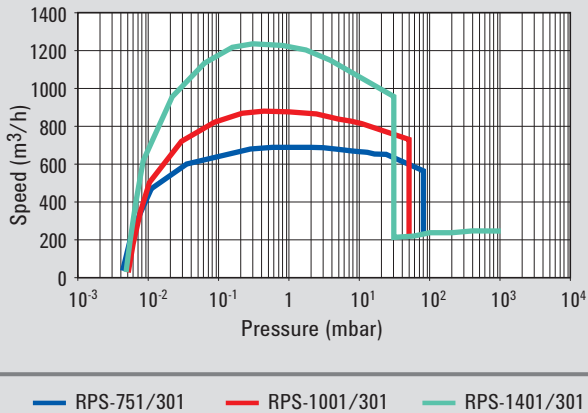
Agilent RPK-Series Roots Pumping Kits



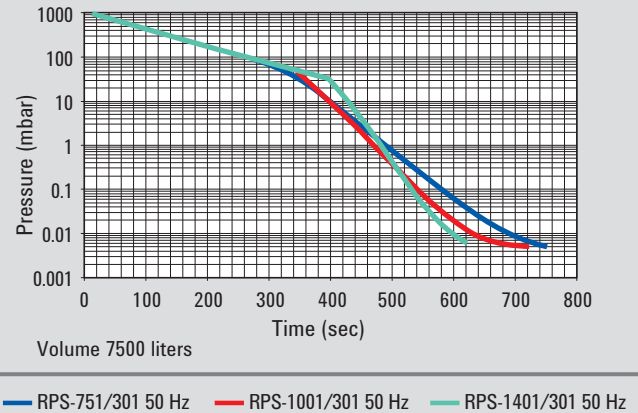
Roots Pumping Kits (RPK) consist of one MS Rotary Vane Pump and one RP Roots Pump shipped in separate boxes. In this case the customer is required to mount them on appropriate frames and to connect them with flexible hoses suitable for vacuum applications (following Agilent instruction manuals). Both pumps are equipped with motor.

High Capacity MS-RPS Series

RPS Systems / MS-301 - Pumping Speed



RPS Systems / MS-301 - Pump Down



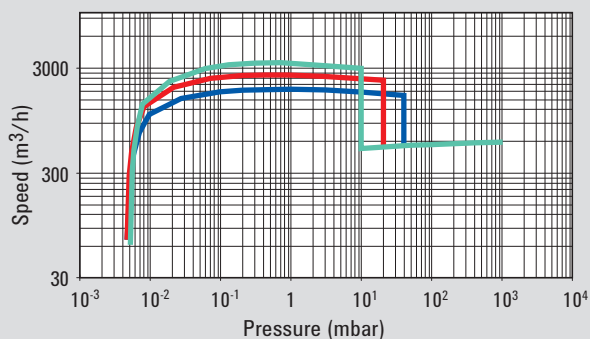
Technical Specifications

		RPS-751/301	RPS-1001/301
Nominal pumping speed	60 Hz	900 m³/h (530 cfm)	1200 m³/h (710 cfm)
	50 Hz	750 m³/h (440 cfm)	1000 m³/h (590 cfm)
Ultimate total pressure (gas ballast closed)		$\leq 5 \times 10^{-3}$ mbar ($\leq 4 \times 10^{-3}$ Torr)	$\leq 5 \times 10^{-3}$ mbar ($\leq 4 \times 10^{-3}$ Torr)
Roots pump start up pressure		≤ 80 mbar (≤ 60 Torr)	≤ 50 mbar (≤ 38 Torr)
Power	60 Hz	3.6 + 7.5 kW (4.8 + 10.0 HP)	4.8 + 7.5 kW (6.4 + 10.0 HP)
	50 Hz	3.0 + 5.5 kW (4.0 + 7.3 HP)	4.0 + 5.5 kW (5.3 + 7.3 HP)
Power supply voltage	60 Hz	440-480 V	440/480 V
	60 Hz	380 V	380 V
	50 Hz	400/690 V	400/690 V
Noise level*		74 / 76 dB(A)	74 / 76 dB(A)
Oil charge		1.5 + 7.0 liter (1.6 + 7.4 qt)	1.5 + 7.0 liter (1.6 + 7.4 qt)
Working ambient temperature range		+12 +40 °C (+54 +105 F)	+12 +40 °C (+54 +105 F)
Storage temperature		-20 +70 °C (-4 +158 F)	-20 +70 °C (-4 +158 F)
Dimensions D x W x H		750 x 1130 x 1175 mm (29.5 x 44.5 x 46.3 in.)	750 x 1153 x 1195 mm (29.5 x 45.4 x 47 in.)
Total weight	60 Hz	470 kg (1040 lbs)	530 kg (1170 lbs)
	50 Hz	450 kg (1000 lbs)	510 kg (1130 lbs)
		RPS-1401/301	
Nominal pumping speed	60 Hz	1700 m³/h (1000 cfm)	
	50 Hz	1430 m³/h (840 cfm)	
Ultimate total pressure (gas ballast closed)		$\leq 5 \times 10^{-3}$ mbar ($\leq 4 \times 10^{-3}$ Torr)	
Roots pump start up pressure		≤ 30 mbar (≤ 23 Torr)	
Power	60 Hz	6.3 + 7.5 kW (8.4 + 10.0 HP)	
	50 Hz	5.5 + 5.5 kW (7.3 + 7.3 HP)	
Power supply voltage	60 Hz	440/480 V	
	60 Hz	380 V	
	50 Hz	400/690 V	
Noise level*		74 / 76 dB(A)	
Oil charge		1.5 + 7.0 liter (1.6 + 7.4 qt)	
Working ambient temperature range		+12 +40 °C (+54 +105 F)	
Storage temperature		-20 +70 °C (-4 +158 F)	
Dimensions D x W x H		750 x 1289 x 1195 mm (29.5 x 50.7 x 47 in.)	
Total weight	60 Hz	590 kg (1300 lbs)	
	50 Hz	570 kg (1260 lbs)	

* Measured according to EN ISO 2151 (50/60 Hz)

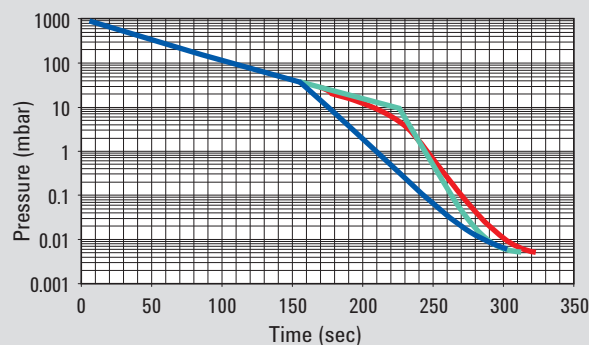
RPS Pumping Systems Models and RPK Pumping Kits Models

RPS Systems / MS-631 - Pumping Speed



— RPS-2001/631 — RPS-3001/631 — RPS-4001/631

RPS Systems / MS-631 - Pump Down



— RPS-2001/631 — RPS-3001/631 — RPS-4001/631

Technical Specifications

		RPS-2001/631		RPS-3001/631	
Nominal pumping speed	60 Hz	2400 m³/h (1415 cfm)		3450 m³/h (2030 cfm)	
	50 Hz	2000 m³/h (1180 cfm)		2900 m³/h (1710 cfm)	
Ultimate total pressure (gas ballast closed)		≤ 5 x 10 ⁻³ mbar (≤ 4 x 10 ⁻³ Torr)		≤ 5 x 10 ⁻³ mbar (≤ 4 x 10 ⁻³ Torr)	
Roots pump start up pressure		≤ 55 mbar (≤ 42 Torr)		≤ 30 mbar (≤ 23 Torr)	
Power	60 Hz	8.8 + 18.5 kW (11.8 + 24.8 HP)		12.5 + 18.5 kW (16.7 + 24.8 HP)	
	50 Hz	7.5 + 15.0 kW (10.0 + 20.1 HP)		11.0 + 15.0 kW (14.7 + 20.1 HP)	
Power supply voltage	60 Hz	440-480 V		440/480 V	
	60 Hz	380 V		380 V	
	50 Hz	400/690 V		400/690 V	
Noise level*		78 / 80 dB(A)		78 / 80 dB(A)	
Oil charge		2.5 + 22.0 liter (2.6 + 23.2 qt)		2.5 + 22.0 liter (2.6 + 23.2 qt)	
Working ambient temperature range		+12 +40 °C (+54 +105 F)		+12 +40 °C (+54 +105 F)	
Storage temperature		-20 +70 °C (-4 +158 F)		-20 +70 °C (-4 +158 F)	
Dimensions D x W x H		1050 x 1575 [1605 version 60 Hz] x 1516 mm (41.3 x 62 [63.2 version 60 Hz] x 59.7 in.)		1050 x 1615 x 1516 mm (41.3 x 63.6 x 59.7 in.)	
Total weight	60 Hz	1115 kg (2460 lbs)		1255 kg (2770 lbs)	
	50 Hz	1085 kg (2400 lbs)		1225 kg (2700 lbs)	
		RPS-4001/631			
Nominal pumping speed	60 Hz	4700 m³/h (2770 cfm)			
	50 Hz	3900 m³/h (2300 cfm)			
Ultimate total pressure (gas ballast closed)		≤ 5 x 10 ⁻³ mbar (≤ 4 x 10 ⁻³ Torr)			
Roots pump start up pressure		≤ 16 mbar (≤ 12 Torr)			
Power	60 Hz	12.5 + 18.5 kW (16.7 + 24.8 HP)			
	50 Hz	11.0 + 15.0 kW (14.7 + 20.1 HP)			
Power supply voltage	60 Hz	440/480 V			
	60 Hz	380 V			
	50 Hz	400/690 V			
Noise level*		79 / 81 dB(A)			
Oil charge		7.0 + 22.0 liter (7.4 + 23.2 qt)			
Working ambient temperature range		+12 +40 °C (+54 +105 F)			
Storage temperature		-20 +70 °C (-4 +158 F)			
Dimensions D x W x H		1050 x 1636 x 1576 mm (41.3 x 64.4 x 62 in.)			
Total weight	60 Hz	1380 kg (3050 lbs)			
	50 Hz	1340 kg (2960 lbs)			

* measured according to EN ISO 2151 (50/60 Hz)

High Capacity MS-RPS Series

Ordering Information

Roots Pumping Systems including: Roots Pump, RV Pump, Frame, Flexible Hose, Roots Pump Oil, Assembly, Testing and Packaging. MS Pump Oil Charge NOT included.	Part Number
RPS-751/301, with RP-751, MS-301. 50 Hz, 400/690 V	9496008
RPS-751/301, with RP-751, MS-301. 60 Hz, 440 - 480 V	9496106
RPS-751/301, with RP-751, MS-301. 60 Hz, 380 V	9496107
RPS-1001/301, with RP-1001, MS-301. 50 Hz, 400/690 V	9496001
RPS-1001/301, with RP-1001, MS-301. 60 Hz, 440 - 480 V	9496101
RPS-1001/301, with RP-1001, MS-301. 60 Hz, 380 V	9496108
RPS-1401/301, with RP-1401, MS-301. 50 Hz, 400/690 V	9496002
RPS-1401/301, with RP-1401, MS-301. 60 Hz, 440 - 480 V	9496102
RPS-1401/301, with RP-1401, MS-301. 60 Hz, 380 V	9496109
RPS-2001/631, with RP-2001, MS-631. 50 Hz, 400/690 V	9496003
RPS-2001/631, with RP-2001, MS-631. 60 Hz, 440 - 480 V	9496103
RPS-2001/631, with RP-2001, MS-631. 60 Hz, 380 V	9496110
RPS-3001/631, with RP-3001, MS-631. 50 Hz, 400/690 V	9496004
RPS-3001/631, with RP-3001, MS-631. 60 Hz, 440 - 480 V	9496104
RPS-3001/631, with RP-3001, MS-631. 60 Hz, 380 V	9496111
RPS-4001/631, with RP-4001, MS-631. 50 Hz, 400/690 V	9496005
RPS-4001/631, with RP-4001, MS-631. 60 Hz, 440 - 480 V	9496105
RPS-4001/631, with RP-4001, MS-631. 60 Hz, 380 V	9496112
Oil	
MS-01 Oil charge for MS-301 (7 liters)	9495012
MS-01 Oil charge for MS-631 (22 liters)	9495014

Roots Pumping Kits including: RV Pump and Roots Pumps in separate packages. MS Pump Oil Charge NOT included.	
RPK-751/301 Kit including Roots Pump RP-751 and RV Pump MS-301. 50 Hz, 400/690 V	9497013
RPK-751/301 Kit including Roots Pump RP-751 and RV Pump MS-301. 60 Hz, 440 - 480 V	9497002
RPK-751/301 Kit including Roots Pump RP-751 and RV Pump MS-301. 60 Hz, 380 V	9497014
RPK-1001/301 Kit including Roots Pump RP-1001 and RV Pump MS-301. 50 Hz, 400/690 V	9497003
RPK-1001/301 Kit including Roots Pump RP-1001 and RV Pump MS-301. 60 Hz, 440 - 480 V	9497004
RPK-1001/301 Kit including Roots Pump RP-1001 and RV Pump MS-301. 60 Hz, 380 V	9497015
RPK-1401/301 Kit including Roots Pump RP-1401 and RV Pump MS-301. 50 Hz, 400/690 V	9497005
RPK-1401/301 Kit including Roots Pump RP-1401 and RV Pump MS-301. 60 Hz, 440 - 480 V	9497006
RPK-1401/301 Kit including Roots Pump RP-1401 and RV Pump MS-301. 60 Hz, 380 V	9497016
RPK-2001/631 Kit including Roots Pump RP-2001 and RV Pump MS-631. 50 Hz, 400/690 V	9497007
RPK-2001/631 Kit including Roots Pump RP-2001 and RV Pump MS-631. 60 Hz, 440 - 480 V	9497008
RPK-2001/631 Kit including Roots Pump RP-2001 and RV Pump MS-631. 60 Hz, 380 V	9497017
RPK-3001/631 Kit including Roots Pump RP-3001 and RV Pump MS-631. 50 Hz, 400/690 V	9497009
RPK-3001/631 Kit including Roots Pump RP-3001 and RV Pump MS-631. 60 Hz, 440 - 480 V	9497010
RPK-3001/631 Kit including Roots Pump RP-3001 and RV Pump MS-631. 60 Hz, 380 V	9497018
RPK-4001/631 Kit including Roots Pump RP-4001 and RV Pump MS-631. 50 Hz, 400/690 V	9497011
RPK-4001/631 Kit including Roots Pump RP-4001 and RV Pump MS-631. 60 Hz, 440 - 480 V	9497012
RPK-4001/631 Kit including Roots Pump RP-4001 and RV Pump MS-631. 60 Hz, 380 V	9497019
Oil	
MS-01 Oil charge for MS-301 (7 liters)	9495012
MS-01 Oil charge for MS-631 (22 liters)	9495014