

Vacuum Pumps for Lab & Industry

A range of vacuum pumps precisely tuned to your laboratory applications such as filtration, degassing, desiccation, distillation, concentration and drying



Fisherbrand vacuum pumps combine high-tech materials with outstanding engineering. They are designed to fit most laboratory applications, both routine and research.

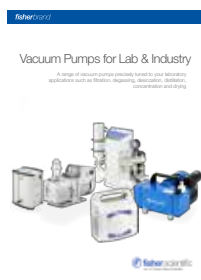
- High pumping speed
- Wide ultimate vacuum range
- Excellent chemical resistance
- Minimum maintenance
- Long lifetime
- Low consumption
- Small footprint
- Reduced noise level

When choosing a vacuum pump, consider application, sample composition and operating parameters.

Chemistry Applications

All pump materials must resist vapours from the application. Choose an appropriate chemical-duty pump that can achieve the necessary ultimate pressure in five minutes or less.

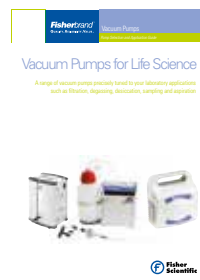
Evaporative procedures that give rise to significant continuous vapour loads require a pump with substantial pumping speed. However, less vacuum is needed for filtration or evaporation of very volatile substances.



Life Science Applications

Most life science vacuum applications generate aqueous vapours. Choose a general duty vacuum pump if chemical resistance is not needed.

See our dedicated Life Science brochure to choose the appropriate general duty pumps and aspiration/filtration stations for your application needs.



Quick Vacuum Pump/System Selection Guide

Operating vacuum range	Cat. No										see page
Pressure above atmospheric	✓	✓									3
Vacuum to 292mbar	✓										4
Vacuum to 100mbar		✓									4
Vacuum to 8mbar			✓	✓		✓					6
Vacuum to 2mbar					✓						6
Vacuum to 10 ⁻³ mbar							✓	✓	✓	✓	10



Our goal is to help you select vacuum technology that best suits your laboratory needs. If you require assistance in your product selection process, please see the back cover for your local Fisher Scientific office. Working in consultation with our supply partners, your local Fisher Scientific Representative and Technical Support Specialists will be pleased to assist you.

Quick Selection Chart for Common Lab Applications

Find the correct vacuum pump/system to address your application needs. The Fisherbrand product line offers a wide range of vacuum pumps – each expertly designed for optimum function in your application.

Cat. No	Applications		Principal Features	Pumping Speed and Vacuum	Model
12981131	<ul style="list-style-type: none"> General vacuum work 		Dry running pump, compact and portable	38L/min 8mbar	
12911151	<ul style="list-style-type: none"> Vacuum/pressure filtration Glass filtration assemblies 		Vacuum or pressure capability	15L/min 100mbar	
12911151	<ul style="list-style-type: none"> Degassing Dessication Solvent degasification 		Compact, portable and maintenance-free	15L/min 100mbar	
12981131	<ul style="list-style-type: none"> Rotary evaporator volatiles with low BP <100°C Samples up to 5L 		Powerful with optional vacuum regulation	38L/min 8mbar	
15168886	<ul style="list-style-type: none"> Rotary evaporator volatiles with low BP <100°C Samples up to 1L 		System with vacuum control package and solvent recovery	16L/min 8mbar	
12981131	<ul style="list-style-type: none"> Vacuum ovens Drying Degassing 		Aqueous, acidic or basic samples	38L/min 8mbar	
12991131	<ul style="list-style-type: none"> Vacuum concentrators 		Minimum maintenance	33L/min 2mbar	 
16234611			Cold trap required	85L/min 2 x 10 ⁻³ mbar	
16234611	<ul style="list-style-type: none"> Freeze dryers Lyophilizing 		Direct driven pump	85L/min 2 x 10 ⁻³ mbar	
16224611	<ul style="list-style-type: none"> Vacuum manifolds Schlenk lines 		Compact	40L/min 3 x 10 ⁻³ mbar	
15168886	<ul style="list-style-type: none"> Gel dryers 		Excellent chemical compatibility	16L/min 8mbar	
12981131	<ul style="list-style-type: none"> For replacement of water jet pumps 		Dry running pump, portable and compact	38L/min 8mbar	
12981131	<ul style="list-style-type: none"> For replacement of up to three vacuum ports 		Muti-user vacuum line for vacuum on demand	38L/min 8mbar	 
					15841252 12981131
16254611	<ul style="list-style-type: none"> Glove boxes 		High pumping speed for efficient pump-down	280L/min 3 x 10 ⁻³ mbar	
16264611	<ul style="list-style-type: none"> For replacement of mass spectrometer turbo pump 		Powerful two-stage rotary vacuum pump with exceptionally cool running	483L/min 3 x 10 ⁻³ mbar	

General Duty Vacuum Pumps

Fisherbrand general purpose oil-free piston pumps and diaphragm pumps are ideal for a variety of applications such as low-volume filtrations, degassing, gas transfer and sampling.

Piston Pump - Cat. No 11533485

Ideal for the basic filtration of non-aggressive solvents.

Design features:

- Lightweight, compact and portable
- Covers most standard applications
- Economically priced but with high performance
- Quick and simple to use with stylish design

Certification: CE marked



Diaphragm Pump - Cat. No 12911151

Oil-free dry pump helping you to simplify your filtration and sampling procedures.

Design features:

Improved chemical resistance

- Compact, lightweight and portable
- Improved chemical resistance
- Quiet operation and very low vibration

Certification: CE marked



For convenient filtrations where you can always rely on the necessary vacuum, Cat. No 12911151 is ideal. Cat. No 11533485 is ideal for non-aggressive solvents, but is not recommended for powerful acidic or other chemical vapours. For a chemical-duty model please see page 6.

Technical Features

Cat. No	11533485	12911151
Pumping speed @ 50/60Hz	9.2L/min	15L/min
Ultimate pressure	<292mbar	<100mbar
Max. overpressure	2.3bar	2.5bar
IN/EX hose connector	hose nozzle DN6	hose nozzle DN6, silencer
Sound level @ 50Hz	<56db (A)	<45db (A)
Motor power	max. 25W	20W
Type of protection (motor)	IP 48	IP 44
Weight	2.3kg	2.0kg
Overall dimensions (L x W x H), mm	194 x 114 x 191	144 x 127 x 196
Shipping weight	2.7kg	3.5kg
Shipping carton dimensions (L x W x H), mm	280 x 180 x 210	230 x 170 x 275

Ordering Information

Cat. No	Description
11533485	Fisherbrand FB 70155 Piston Pump, 230V, 50Hz, 1Ph, with EU (Schuko) and UK plugs
12911151	Fisherbrand Diaphragm Piston Pump, 90-260V, 50/60Hz with AC/DC adapter, EU (Schuko), UK and US power plug adapters

Accessories

Cat. No	Description
13504920	Filtration kit and dessicator kit with vacuum hose and In-line filter
13168266	Vacuum regulator with dial gauge for Cat. No 12911151

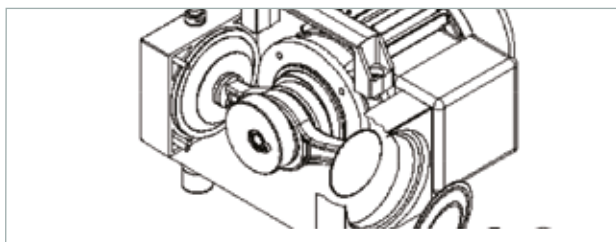


Chemical Duty Diaphragm Vacuum Pumps

This range of Fisherbrand diaphragm pumps is chemically resistant, making them ideal for applications involving aggressive solvents and acidic vapours. They are an excellent replacement for rotary vane pumps and water aspirators, especially in tough vacuum applications where corrosive vapours are encountered. They are also designed for easy operation with other equipment such as vacuum ovens, filtration devices, rotary evaporators and other laboratory apparatus requiring a general vacuum source.

Design Features:

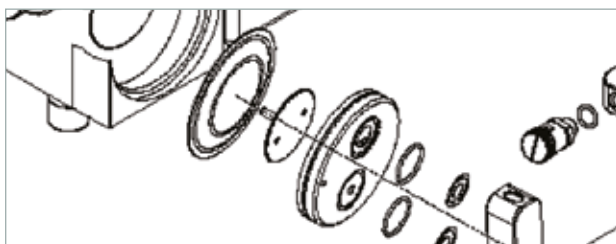
- Pumping speed to 38L/min
- Ultimate pressure to 2mbar



Construction Materials:

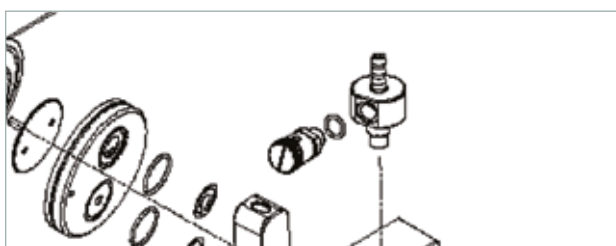
Pump heads made from PTFE with carbon fibre reinforcement to handle corrosive and aggressive vapours without damage.

Pumping chambers are hermetically separated from the drive space, ensuring extended life of mechanical parts.



PTFE Sandwiched Diaphragm:

PTFE diaphragms sandwiched to a strong non-wetted backing. PEEK valves have excellent resistance and are extremely hard wearing when compared to elastomer valves.



Gas Ballast Valve:

Gas ballast valve helps to preserve pump performance when working with condensable vapours.

Economic:

Low cost of ownership, minimal maintenance requirements and sensibly priced spare parts.

Compact Design:

Sits easily on a benchtop or in a fume hood with quick and easy setup and disassembly.



Cat. No 12981131

Pump Selection/Application Chart

		Cat. No		
Application		10287097	12981131	12991131
Desiccators and pistol drying				
Residual moisture level	Partial drying	✓		
	Full drying	✓	✓	
Rotary evaporators				
Boiling point of solvent used	Low boiling point	✓	✓	
	High boiling point (DMF)			✓
Centrifugal concentrators				
Boiling point of solvent used	Low boiling point		✓	
	High boiling point (DMF)			✓
Vacuum ovens				
Oven chamber volume	Around 25L		✓	
	Around 55L		✓	✓



Use oil-free diaphragm pumps with rotary evaporators, vacuum concentrators, vacuum ovens and filtration devices. They provide high pumping speed coupled with consistent vacuum while eliminating the mess of oil and the expense of using a water supply.

Chemical Duty Diaphragm Vacuum Pumps



Cat. No 10287097



Cat. No 12981131



Cat. No 12991131

Technical Features

Cat. No	10287097	12981131	12991131
Number of heads/stages	2/2	2/2	4/3
Pumping speed @ 50/60Hz	16/18L/min	38/41L/min	33/36L/min
Ultimate pressure	< 8mbar	< 8mbar	< 2mbar
Max. overpressure	1 bar	1 bar	1 bar
IN/EX hose connector	Hose nozzle DN8	Hose nozzle DN8	Hose nozzle DN8
Sound level @ 50Hz	<44db (A)	<44db (A)	<44db (A)
Motor power	60W	180W	90W
Type of protection (motor)	IP 54	IP 54	IP 54
Weight	6.5kg	11.2kg	10.3kg
Overall dimensions (L xW x H), mm	195 x 235 x 145	230 x 265 x 169	200 x 260 x 150
Shipping weight	9.0kg	14.0kg	13.0kg
Shipping carton dimensions (L x W x H), mm	410 x 260 x 250	480 x 320 x 300	410 x 260 x 250

Ordering Information

Cat. No	Cat. No	Cat. No	Description
10287097	12981131	12991131	Chemical duty pumps, 230V, 50/60 Hz, 1 Ph ¹
13191984	10245242	10402742	Service kits ²

¹ With EU (Schuko) and UK plug leads. Every pump is also supplied with ON/OFF switch, carrying handle, vibration isolating feet, DN8 hose nozzle, exhaust silencer and thermal protective switch for the motor. Comes pre-assembled. Certification: CE marked

² Service kits comprise spare wearable parts, including diaphragm, valves, and 'O' ring seals

See following page for accessories



Check the pump on a regular basis for unusual running noises and heat build-up on the surface. We recommend replacing parts using the service kit after 10,000 operating hours or less, depending upon the application.

Chemical Duty Pump Accessories

Accessory connection kits for chemical duty pumps Cat. Nos 10287097, 12981131, 12991131: choose the appropriate kit below for your specific application needs.

Cat. No	Connection Kits
13514920	Kit 1 - Rotary Evaporator Connection Kit <ul style="list-style-type: none"> • Easy connection of the pump to common rotary evaporator models • Kit includes: vacuum hose 18/8x5 (1.5m), cooling water & chiller connection hose and clamps
13554920	Kit 2 - Vacuum Oven Connection Kit for vacuum ovens with a DN 16 KF and DN 25 KF adapter <ul style="list-style-type: none"> • For standard vacuum oven connection • Kit includes: hose nozzle DN 16-8/25-8, clamping ring, centering ring and vacuum hose 18/8x5 (1.5m)
13564920	Kit 3 - Advanced Vacuum Oven Connection Kit for vacuum oven with DN 16 KF and DN 25 KF adapters <ul style="list-style-type: none"> • Prevents particles from entering the pump, specially recommended for dusty drying processes • Kit includes: hose nozzle DN16-8/25-8, dust filter, clamping ring, centering ring and vacuum hose 18/8x5 (1.5m)
13504920	Kit 4 - Filtration & Dessicator Connection Kit <ul style="list-style-type: none"> • Connect your manifold easily to the vacuum pump. An in-line filter protects liquid from entering the pump • Kit includes: vacuum hose and hydrophobic in-line filter (DN8)



Cat. No 13514920



Cat. No 13554920



Cat. No 13564920



Cat. No 13504920

Cat. No	Vacuum Hose
10061242	Thick walled hose for vacuum or pressure applications <ul style="list-style-type: none"> • Red rubber hose, 18/8 x 5mm - sold in 1 metre increments



Cat. No 10061242

Regulators and control boxes for chemical duty pumps Cat. Nos:10287097, 12981131, 12991131: - Choose the appropriate vacuum control package below for your specific application needs.

Cat. No	Vacuum Regulators with Dial Gauge
	<ul style="list-style-type: none"> • Regulator valve for intake allows the adjustment of the ultimate pressure • Dial gauge indicates the vacuum level • Air regulator valve mounted directly on the pump
15549632	Vacuum regulator with dial gauge for pump Cat. No 10287097 and 12991131
11896423	Vacuum regulator with dial gauge for pump Cat. No 12981131



Cat. No 15549632



Pump Cat. Nos 10287097 & 12991131 shown with dial gauge Cat. No15549632



Cat. No 11896423



Pump Cat. No 12981131 shown with dial gauge Cat. No 11896423

Cat. No	Digital Vacuum Control Box Model VCpro601
	The NEW vacuum control unit VCpro601 can be used to precisely and easily regulate pressures for your laboratory or industrial application from 1100 down to 1mbar. It is equipped with a highly resistant ceramic sensor to allow control of aggressive chemical processes. <ul style="list-style-type: none"> • Hi-Res display with dark and light modes which adapt to your working environment • Intuitive ICON-navigation with easy-to-understand active guidance • Intelligent and fully programmable modes for precise control • Vacuum and vent valves controls allow for pressure increases and decreases • Password-controlled security for administrators and users • Connectivity through LAN and RS232 (with free downloadable software) • Multiple languages: EN, DE, ES, FR, RU, ZH • All pump operations generates log files for easy traceability and review • Solvent library for quick selection of appropriate vacuum level
16675922	Specification Vacuum range: 1100 to 1mbar Accuracy (sum linearity, hysteresis and reproducibility): $\pm 0.3\%$ FS Vacuum connection: DN8 Inert gas/vent connection: DN4 Power: 40W Weight: 1.5kg Dimensions (l x w x h, mm): 195 x 178 x 105



Cat. No 16675922 (front)



Cat. No 16675922 (rear)

Exhaust - DN8
(for vacuum pump)
Intake - DN8
(for application)
Venting valve
RS232/LAN

Vacuum System for Rotary Evaporators

The perfect vacuum system for evaporation and distillation in combination with rotary evaporators and gel dryers. The diaphragm pump is dry-running and all components coming into contact with vapour are chemically resistant even against acidic, basic and organic solvents.

Design Features

Vapour recovery system protects lab air quality

Digital vacuum display for easy and precise vacuum readout

Vacuum regulator controls effective ultimate pressure

Gas ballast valve helps to preserve pump performance

Separator/liquid trap protects pump from liquid ingress

Chemical duty diaphragm pump for fast stripping of most common solvents



This Fisherbrand™ Vacuum System (Cat. No 15168886) is fitted with a powerful chemical duty two-stage vacuum pump, achieving <8mbar. It has been specifically designed for wet chemistry applications, such as distillation, evaporation and evacuation of acid and solvent vapours in chemical and pharmaceutical laboratories.

The manual vacuum regulator and digital vacuum gauge provides highly accurate control of the ultimate pressure to prevent bumping and foaming.

An inlet separator prevents particles and liquid droplets from reaching the pump, while the high efficiency emission condenser ensures solvent recovery close to 99%. The condenser can be cooled by tap water or a closed circuit chiller (not included).

A Service and Maintenance Kit (Cat. No 13191984) is also available, comprising replacement seals and wearable parts for this model and for other diaphragm pumps.

Scope of delivery:

This Vacuum System is supplied with a chemical duty diaphragm pump (230V, 50/60Hz 1 Ph), DN8 hose connector, manual vacuum regulator, digital gauge, solvent trap and plug leads (EU and UK)

Comes pre-assembled and ready to use.

Certification: CE marked



Use a flow control valve to adjust the vacuum until bubbles form in the evaporation flask - then back off slightly. Reduce vacuum for fast reaction to bumping and foaming

For accessory connection kit, see Cat. No 13514920 on page 7

Technical Features/Ordering Information

Cat. No	Pumping speed @ 50/60Hz	Ultimate pressure	Vacuum control	Vacuum gauge	Weight, kg	Overall dimensions (L x W x H), mm	Shipping weight	Shipping carton dimensions (L x W x H), mm
15168886	16/18L/min	< 8mbar	Manual	Digital	11.6	360 x 310 x 445	14kg	540 x 410 x 580

Two-Stage Rotary Vane Pumps

Rugged, must-have pumps for deep vacuum operation

These rugged Fisherbrand FRVP two-stage rotary vane pumps are characterised by their long service life, high reliability and low maintenance operation in a wide range of both laboratory and industrial applications. All pumps come with a wide range of accessories to suit your particular requirements.

Principal operating features

- Designed for longevity and reliability, with construction from high-grade materials and corrosion-resistant coating on internal surfaces
- Built for a cleaner working environment, these pumps have reduced oil mist emissions thanks to cool running temperatures with internal pre-filters and oil mist filters included (except FRVP28)
- Designed for quick and simple serviceability to keep down-times to an absolute minimum with mistake-proof 'poka-yoke' servicing design. Use Premium Oil for quick and simple oil changes with extended oil-change intervals. Oil levels are easily monitored through a large viewing port

Key applications

- Chemistry: Schlenk lines, glove boxes
- Life sciences: freeze dryers, vacuum concentrators, vacuum ovens (<0.1mbar)
- Industrial: vacuum furnaces, isolation vacuums
- Analytical: as replacement backing pumps for mass spectrometers
- General R&D: for evacuation of vacuum systems and chambers down to fine vacuum levels (10^{-3} mbar)



Rotary vane pumps are not recommended for filtration or drying applications which require basic unregulated vacuums. These pumps are not designed to operate continuously above 10mbar. A dry ice trap is recommended for vacuum concentrators and vacuum manifolds.

Pump Selection/Application Chart

Cat. No	16224611	16234611	16244611	16254611	16264611
Model	FRVP2	FRVP5	FRVP8	FRVP16	FRVP28
Freeze dryers					
Ice holding capacity	up to 2.5kg	✓	✓		
	up to 4.5kg		✓		
	up to 6kg			✓	
	up to 18kg				✓
Vacuum concentrators					
High boiling point			✓		
Glove boxes					
Standard for all sizes				✓	
Schlenk line/vacuum manifolds					
Single manifold	✓				
Double manifold		✓			
Vacuum ovens					
Up to 100L capacity			✓		
Up to 250L capacity				✓	
Mass spectrometry					
Replacement for turbo backing pump					✓

Two-Stage Rotary Vane Pumps

Fisherbrand FRVP Rotary Vane vacuum pumps are designed for easy use with applications like freeze dryers, vacuum concentrators and vacuum manifolds.



Cat. No 16224611



Cat. No 16234611/16244611



Cat. No 16254611/16264611



All Fisherbrand FRVP rotary vane pumps are supplied with triple-distilled Premium Oil which brings out the best possible performance from your pump. Premium Oil has a low vapour pressure and is more resistant to chemicals when compared to standard mineral oils. Other oils are available for more special applications. Please contact your local Fisher Scientific representative or Technical Support Specialist for further information.

Technical Features

Cat. No	16224611	16234611	16244611	16254611	16264611
Model	FRVP2	FRVP5	FRVP8	FRVP16	FRVP28
Pumping speed @ 50Hz, L/min	38	85	122	280	483
Ultimate pressure					
- Without gas ballast partial	3×10^{-4} mbar	5×10^{-4} mbar	5×10^{-4} mbar	3×10^{-4} mbar	3×10^{-4} mbar
- Without gas ballast total	3×10^{-3} mbar	2×10^{-3} mbar	2×10^{-3} mbar	3×10^{-3} mbar	3×10^{-3} mbar
- With gas ballast total	9×10^{-2} mbar	7×10^{-2} mbar	7×10^{-2} mbar	6×10^{-3} mbar	6×10^{-3} mbar
Connection flanges	DN 16 KF	DN 16 KF	DN 16 KF	DN 25 KF	DN 25 KF
Noise level, dB(A)	≤50	≤50	≤50	≤55	≤55
Motor power	290W	370W	370W	700W	700W
Motor speed, rpm	1440	1450	1450	1450	1450
Motor protection level	IP 54	IP 54	IP 54	IP 54	IP 54
Oil capacity, mL	450	1150	1000	2400	2100
Weight, kg	15	22	22.5	37	39.5
Dimensions (l x w x h), mm*	384 x 138 x 211	463 x 157 x 230	463 x 157 x 230	569 x 206 x 289	569 x 206 x 289
Accessories included					
- Premium Oil	1L	2L	2L	3L	3L
- Exhaust oil mist filter	✓	✓	✓	✓	Optional extra
- Hose nozzle adapter	8mm	8mm	8mm	20mm	Optional extra
- Centering and clamping rings	✓	✓	✓	✓	✓
Electrical requirements	230V 50/60Hz	230V 50/60Hz	230V 50/60Hz	230V 50/60Hz	230V 50/60Hz

*Dimensions quoted are without handle and accessories

See following page for for more optional accessories

Service Kits

Description	Cat. No	Cat. No	Cat. No	Cat. No	Cat. No
Model	FRVP2	FRVP5	FRVP8	FRVP16	FRVP28
Service Kits	16214621	16274611	16284611	16294611	16204621

Scope of delivery: Every pump is supplied complete with anti suck-back valve, gas ballast valve, vacuum oil (Premium Oil), centering ring, clamping ring and motor overload protection, EU (Schuko) and UK/IE power leads, plus accessories as detailed in the table above. Ready for use after oil filling. Certification: CE marked. Service Kits include all replaceable and wearable components and consumables such as O-rings, seals, vanes, valve components and oils

Two-Stage Rotary Vane Pumps - Accessories

Exhaust Oil Mist Filter Elements

All Fisherbrand FRVP rotary vane pumps (except for the FRVP28) are supplied with an oil mist filter as standard. These filters separate and collect any oil which gets expelled from the exhaust port of the pump during operation. The filter also reduces the noise level of the pump. It is always best practice to exchange the filter element every six months, or sooner if it becomes saturated.

Pump Cat. No	16224611	16234611	16244611	16254611	16264611
Pump Model	FRVP2	FRVP5	FRVP8	FRVP16	FRVP28
Oil mist filter	✓	✓	✓	✓	16605932
Replacement oil mist filter cartridge	10618812	10618812	10618812	10539492	16695922

✓ = Included with pump as standard

Premium Oil

- High quality, triple-distilled mineral oil designed especially for direct drive rotary pumps such as the FRVP series
- Use Premium Oil to reduce oil change cycles and maximise performance. Your warranty is also only effective when using Fisherbrand qualified vacuum pump oil
- Please note that for demanding applications not all types of Fisherbrand vacuum pump oil can be used. Please contact your local Fisher Scientific representative for further details



Cat. No	Pack Volume
16224591	1L
16234591	5L

Oil Change Kit

- Oil drain and change kit for all Fisherbrand FRVP pumps, includes oil drain valve and funnel

Cat. No	Description
16665922	Oil drain kit



Vacuum Pump Adapter Kits

Cat. No	Description	Size
10084924	Freeze dryer adapter kit, includes two-way ball valve, hose connector, hinge clamp ring, centering ring, oil mist separator (AKD) and 1.5m vacuum hose	DN 16 KF
15331461	Vacuum concentrator adapter kit, includes hose connector, hinge clamp ring, centering ring and 1.5m vacuum hose	DN 16 KF



KF Flange Connectors

For quick and easy connection of KF flanges. All Fisherbrand FRVP pumps have KF flanges for the inlet and exhaust connection.

Cat. No (DN 16 KF)	Cat. No (DN 25 KF)	Description
10625431	10221021	Clamping ring
10086521	10157881	External centering ring with Viton O-Ring
15159374	–	Adapter flange for 8mm hose nozzle, stainless steel
10673881	10484082	Adapter flange for 12mm hose nozzle, stainless steel
12724658	12714658	Adapter flange for 20mm hose nozzle, stainless steel
10270022	–	Adapter for Schlenk line NS14/23



Cold Traps

Protect your FRVP pump from chemical and solvent vapours using a cold trap. These KFG glass cold traps have a dewar vessel for liquid nitrogen and offer pre-pump protection for efficient trapping of vapours and other aggressive condensables. Can also be used with dry ice using the optional screen accessory.



Cat. No	Description
15383455	Vacuum Pump Protection kit; KFG16 glass cold trap, 500mm flexible stainless steel hose, clamps and centring rings
16685922	Dry ice screen for use with KFG16 cold trap

For the full range of Fisherbrand products, visit
www.eu.fishersci.com/go/fisherbrand

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