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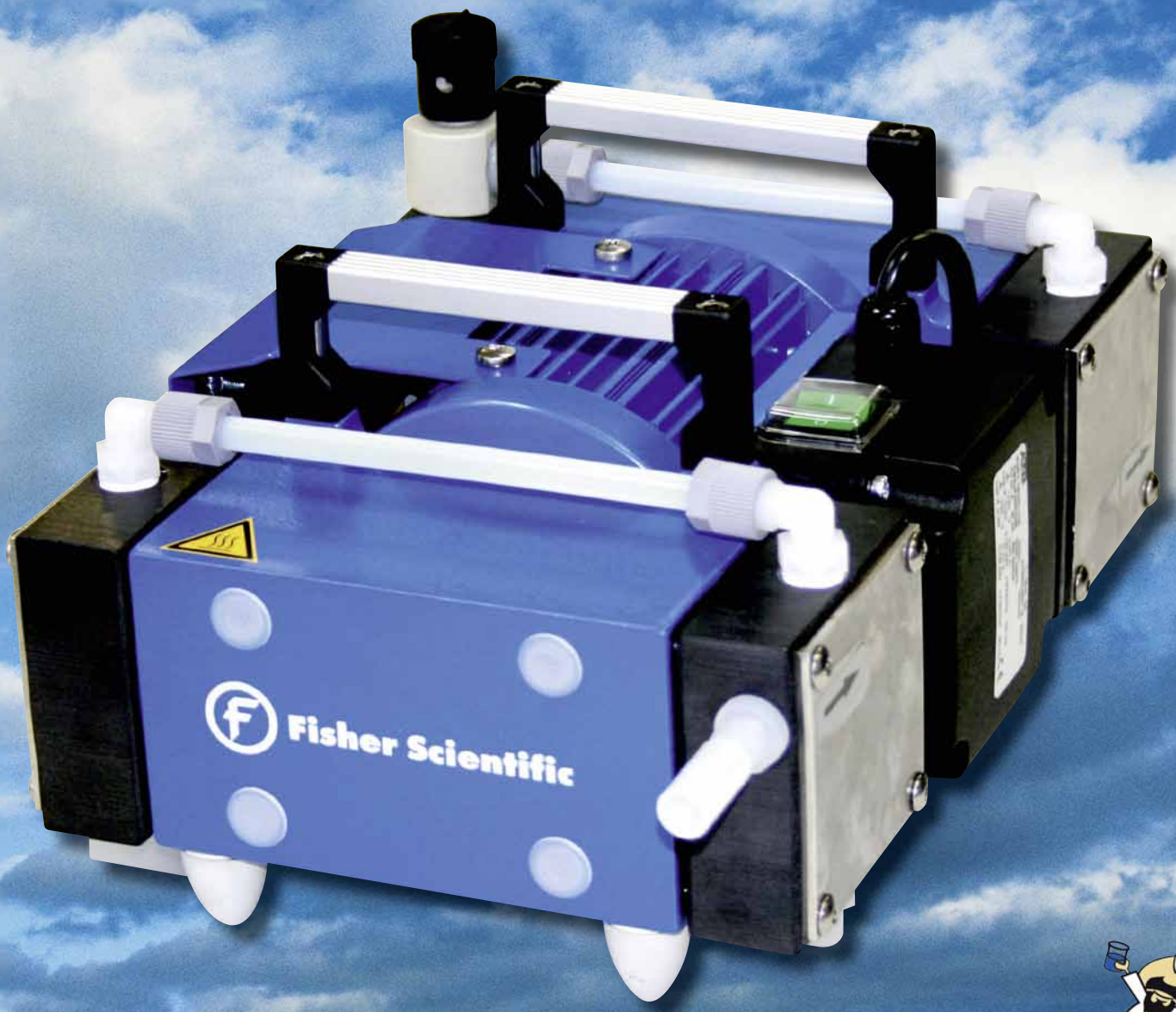
Vacuum Pumps

Fisher Scientific
Part of Thermo Fisher Scientific

For filtration, degassing, desiccation, distillation, concentration, drying...
Precisely tuned to your laboratory applications.



Fisher Scientific presents:
Dr Blue

Fisher Scientific Vacuum Pumps

Pump Selection and Application Guide

Perfectly tuned for

- Filtration
- Degassing
- Desiccation
- Distillation
- Concentration
- Drying ...

Innovative Technology: Fisher Scientific vacuum pumps combine high tech materials with outstanding engineering to provide:

- Long lifetime
- Low consumption
- Small footprint
- Reduced noise level

For Multiple Apps: Fisher Scientific vacuum pumps are designed to fit most laboratory applications, both routine and research.

- High pumping speed
- Wide ultimate vacuum range
- Excellent chemical resistance
- Minimum maintenance

Quick Vacuum Pump Selection and Application Guide

General application Selecting factor	Ultimate vacuum	FB65540	FB65451	FB65452	FB65453	FB65454	FB65458	FB65459	FB65460	FB65461	FB65464	see page
Operating vacuum range	Pressure above atmospheric	X										3
	Vacuum to 290 mbar	X										3
	Vacuum to 60 mbar		X									4
	Vacuum to 8 mbar			X	X							4
	Vacuum to 2 mbar					X						4
	Vacuum to 10^{-2} mbar						X					5
	Vacuum to 10^{-3} mbar							X	X	X	X	5

Dr Blue says...
This guide covers most standard applications for vacuum pumps. However, if your application is not mentioned, we may still have a pump to meet your requirement. Please contact your local Fisher Scientific representative or Technical Support.

Pump Selection / Application Chart

Application		FB65540	FB65451	FB65452	FB65453	FB65454	FB65458	FB65459	FB65460	FB65461	FB65464	see page
Filtration												
Vacuum or pressure method	Pressure method	X										3
	Vacuum method	X	X									3
Gas transfer												
Low volume		X	X									3
Desiccators and pistol drying												
Residual moisture level	Partial drying	X										3
	Full drying		X	X								3
Rotary evaporator												
Boling point of solvent used	Low boiling point			X	X							4
	High boiling point (DMF)					X						4
Centrifugal concentrator												
Boling point of solvent used	Low boiling point				X							4
	High boiling point (DMF)					X						4
Vacuum oven												
Oven chamber volume	Around 25 liters				X							4
	Around 55 liters				X	X						4
Freeze dryer												
Ice holding capacity	up to 2 kg							X				5
	up to 4 to 6 kg								X			5
	up to 8 kg									X		5
	up to 16 kg										X	5
Glove box												
Standard for all sizes										X		5
High vacuum distillation												
Standard for all sizes							X	X				5

Fisher Scientific Vacuum Pumps

General Duty Fisher Scientific Vacuum Pumps

Fisher Scientific oil-free piston pumps and diaphragm pumps for a variety of applications such as filtration of low volumes, degassing, gas transfer and sampling.

Piston Pump - FB65540

The FB65540 piston pump is ideal for the basic filtration of non-aggressive solvents.

Features:
- Lightweight and compact
- Covers most standard applications
- Economically priced but with high performance
- Quick and simple to use due to stylish design
- Portable
- Certifications: CE marked, UL/CSA approved

Diaphragm Pump - FB65451

The FB65451 double head diaphragm pump offers a choice of two speeds for softer filtration and is also ideal for drying and gas transfer.

Features:
- Two speed performance for a gentle vacuum
- Compact, lightweight and portable
- Quiet operation and very low vibration
- Use in lab or field
- Certifications: CE marked, UL/CSA approved

Technical Features:

Type	FB65540	FB65451
Ultimate vacuum	< 290 mbar	< 60 mbar
Pumping speed at 50/60Hz	9.2 l/min	10 l/min
max. overpressure	2.3 bar	0.3 bar
Inlet and outlet connection	hose nozzle DN 6	hose nozzle DN 6/8, silencer
Sound level	< 56 db (A)	< 42 db (A)
Motor power	max. 160 W	20 W
Type of protection (motor)	IP 48	IP 44
Weight	2.3 kg	2.3 kg
Overall dimensions	191/102/183 mm	115/165/145 mm

Ordering Information:

Type	Cat. No.
Piston pump 230 V 50 Hz	FB65540
Piston pump 115 V 50/60 Hz	FB65540A
Diaphragm pump 90-240 V 50/60 Hz, incl. AC/DC adapter	FB65451
Maintenance kit	402031

Dr Blue says…

For a convenient filtration process where you always have the right vacuum, the FB65451 is ideal.
FB65540 and FB65451 are not recommended for acid and strong chemical vapors.
For a chemical resistant model please see page 4.

Fisher Scientific Vacuum Pumps

Chemical Resistant Diaphragm Vacuum Pumps

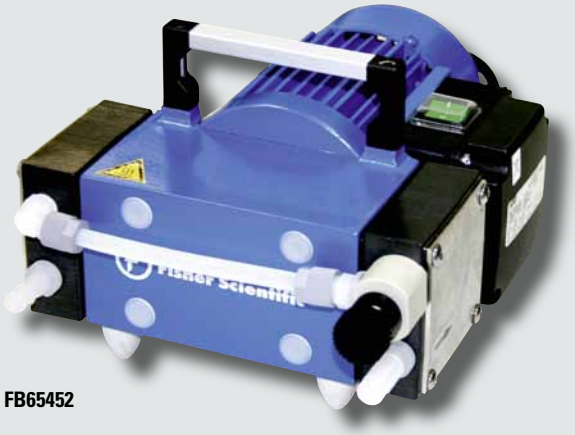
This range of Fisher Scientific diaphragm pumps is chemically resistant, making it ideal for applications involving aggressive solvents and acidic vapors. They are an excellent replacement for rotary vane pumps and water aspirators, especially in rough vacuum applications where corrosive vapors are encountered. The diaphragms and all gas-contaminated parts are made from PTFE and PTFE compound.

The pumps and connection heads are carbon fiber reinforced to provide electrical conductivity and prevent electrostatic charging. A long lifetime and minimal maintenance make these pumps a great choice. Other features include an integrated protective switchgear for the motor, hose nozzles for 8 mm ID tubing and vibration damping feet.

Features:
- Handle corrosive and aggressive vapour without damage
- Clean, reliable vacuum pumps to suit your needs
- Innovative design for excellent running
- Compact and easy to use
- Certifications: CE marked, UL/CSA approved

FB65453

FB65454



FB65452

Technical Features:

Type	FB65452	FB65453	FB65454
Number of heads / stages	2/2	2/2	4/3
Ultimate vacuum	< 8 mbar	< 8 mbar	< 2 mbar
Pumping speed at 50/60Hz	16/18 l/min	38/41 l/min	33/36 l/min
Max. overpressure	1 bar	1 bar	1 bar
Inlet and outlet connection	Hose nozzle DN 8	Hose nozzle DN 8	Hose nozzle DN 8
Sound level	< 44 db (A)	< 44 db (A)	< 44 db (A)
Motor power	60W	180 W	90 W
Type of protection (motor)	IP 54	IP 54	IP 54
Weight	6.5 kg	11.2 kg	10.3 kg
Overall dimensions (W/D/H)	195/235/145 mm	230/265/169 mm	200/260/150 mm

Dr Blue says…

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

Ordering Information:

For accessories see page 6.

Type	Cat. No.	Cat. No.	Cat. No.
Diaphragm Vacuum Pump 230 V 50/60 Hz	**FB65452**	**FB65453**	**FB65454**
Diaphragm Vacuum Pump 115 V 50/60 Hz	**FB65452A**	**FB65453A**	**FB65454A**
Maintenance kit	**402008**	**402041**	**402015**

Fisher Scientific Vacuum Pumps

Two Stage Rotary Vane Vacuum Pumps

These two-stage rotary vane pumps provide a high water vapor tolerance. They are designed for a wide range of laboratory applications and continuous running. The low weight, the small footprint and the high pumping speed, as well as the increased chemical resistance are advantageous features in research and routine processes.

Features:
- New compact design, low weight and easy to use
- Quiet running and excellent ultimative vacuum
- Active corrosion protection
- Easy maintenance
- Certifications: CE marked, UL/CSA approved

FB65459 / FB65460

FB65458

FB65461 / FB65464

Dr Blue says…

All Fisher Scientific rotary vane pumps are supplied with oilfilling of Labovac 10 oil. This enables best performance from your pump. Labovac 10 oil has a low vapor pressure and is perfect for general use.
Other oils are available for more special applications. Please contact your local Fisher Scientific representative or Technical Support.

Technical Features:

Type	FB65458	FB65459	FB65460	FB65461	FB65464
Number of stages	2	2	2	2	2
Ultimate vacuum					
- without gas ballast total	1 x 10^{-2} mbar	2 x 10^{-3} mbar	2 x 10^{-3} mbar	2 x 10^{-3} mbar	2 x 10^{-3} mbar
- with gas ballast total	0.5 mbar	1 x 10^{-2} mbar	1 x 10^{-2} mbar	1 x 10^{-2} mbar	2 x 10^{-2} mbar
Pumping speed at 50/60Hz	30/36 l/min	77/92 l/min	97/110 l/min	120/143 l/min	183/220 l/min
Max. allowed inlet / outlet pressure	1 bar	1 bar	1 bar	1 bar	1 bar
Inlet and outlet connection	DN 16 KF	DN 16 KF	DN 16 KF	DN 25 KF	DN 25 KF
Sound level	< 48 db (A)	< 49 db (A)	< 49 db (A)	< 49 db (A)	< 49 db (A)
Motor power	120 W	200 W			550 W
Type of protection (motor)	IP 54	IP 54			IP 54
Water vapor tolerance	33 mbar	60 mbar			35 mbar
Oil capacity	250 ml	530 ml	550 ml	600 ml	1000 ml
Weight	8.0 kg	17.5 kg	19.5 kg	21.5 kg	35.0 kg
Overall dimension (W/D/H)	300/120/150 mm	415/150/235 mm	430/150/235 mm	445/150/235 mm	540/170/260 mm

Ordering Information:

For accessories see page 6.

Type	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Rotary Vane Vacuum Pump 100-120 V/200-240 V 50/60 Hz		**FB65459**[1]	**FB65460**[1]	**FB65461**[1]	**FB65464**[1]
Rotary Vane Vacuum Pump 230 V 50/60 Hz	**FB65458**[2]				
Rotary Vane Vacuum Pump 115 V 50/60 Hz	**FB65458A**[2]				
Maintenance kit	**302012-1**	**302075**	**302076**	**302077**	**302079**

Included in the delivery range:
[1] Two-stage rotary vane vacuum pump complete with anti-suction back valve, gas ballast valve, oil charging, centering ring, clamping ring and motor overload protection
[2] Two-stage rotary vane vacuum pump with oil charging, clamping ring, centering ring, motor protection

Accessories for Chemical Resistant Diaphragm Vacuum Pumps

Fitting sets for Chemically Resistant Diaphragm Pumps FB65452, FB65453, FB65454:
- All in one kits, e.g. for connection to a vacuum oven with DN 16 KF or DN 25 KF flange. Each kit comes ready to use.

Type	Connection flange	Cat. No.
Fitting Set 1 consisting of - hose nozzle DN 16-8 - centering ring, clamping ring DN 16 KF - vacuum tube 18/8x5 (2.5 m)	DN 16 KF	**404002**
Fitting Set 2 consisting of - hose nozzle DN 16-8 - centering ring, clamping ring DN 25 KF - vacuum tube 18/8x5 (2.5 m)	DN 25 KF	**404004**

Fitting set

Accessories for Two Stage Rotary Vane Vacuum Pumps

Fitting sets for Two Stage Rotary Vane Vacuum Pumps FB65459, FB65460, FB65461, FB65464:
- All in one kits, e.g. for connection to freeze dryers with DN 16 KF or DN 25 KF flange. Each kit comes ready to use.

Type	Connection flange	Cat. No.
Fitting Set 1 consisting of - 2 way ball valve - clamping ring, centering ring DN 16 KF - PVC tubing (1.5 m) - condenser AKD 16	DN 16 KF	**330001**
Fitting Set 2 consisting of - 2 way ball valve - clamping ring, centering ring DN 25 KF - PVC tubing (1.5 m) - condenser AKD 25	DN 25 KF	**330002**

Fitting set

Exhaust filters for Two Stage Rotary Vane Vacuum Pumps FB65458, FB65459, FB65460, FB65461, FB65464:
These compact filters can be simply mount on the exhaust port to collect oil expelled during operation and to reduce pump noise.
A replaceable filter element within the oil filter separates the oil from particles to collect them in the filter housing. When the filter element becomes satured simply unscrew the filter for easy replacement.
- Condenser AKD for effective oil mist elimination (not for FB65458)
- Oil mist filter OME for economical oil mist elimination

Type	Connection flange	Cat. No.
Condenser AKD 16	DN 16 KF	**300883**
Condenser AKD 25	DN 25 KF	**300885**
Oil mist filter OME 10/16	DN 16 KF	**700010**
Oil mist filter OME 10/25	DN 25 KF	**700011**

Condenser AKD

Oil mist filter OME

Dr Blue says…

Looking for further accessories such as inlet separators, cold traps, vacuum gauges and sensors etc?
If so, please contact your local Fisher Scientific representative or Technical Support and they will be happy to help.

1. Characteristic of the application	Specify type and/or size
Rotary evaporator	
Vacuum oven	
Vacuum concentrator	
Freeze dryer	
High Vacuum distillation	
Vacuum filtration	
Pressure filtration	
Desiccators and pistol drying	
Glove boxes	
Others	

Company	
Name	
Address	
ZIP / City	
Country	
Phone / Fax	
E-mail	

Dr Blue says…

If the above pumps still do not meet your requirements, then please send us full details of your application using the Pump Questionnaire. If you have a drawing or other details, feel free to send them with the questionnaire.
Alternatively, please contact your local Fisher Scientific representative or Technical Support. We will then endeavor to find a pump to meet your requirement.

2. Characteristic of the gas	Description
Description of the gas	
Temperature of the gas	
Volume of the gas	

3. Characteristic of the pump	Description
Pumping speed	
Ultimate vacuum to	
Connection of the vacuum – inlet and outlet	
Voltage and frequency of the motor	
Protection class of the motor	

4. Remarks

Fisher Scientific Vacuum Pumps

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