

Thermo Electron offers three different two-stage, oil-sealed, rotary vane vacuum pumps specifically designed for standard freeze drying applications. Each pump comes complete with a GBORK (Gas Ballast Oil Return Kit) and an Oil Mist Filter (EMF10). The GBORK allows the user to apply full gas ballast to keep the oil clean, without losing oil. The EMF10 filters the exhaust to keep the air clean.

For applications involving aggressive solvents that might damage ordinary pumps, Thermo Electron recommends the LyoPump, VLP195FD. In addition to the GBORK and oil mist filter, the two-stage, oil-sealed, rotary vane LyoPump™ includes an active oil filtration system (VPOF110) that dramatically extends the life of the pump.



#### Product Features

- Three models to choose from
- Low noise level, 48 dBA
- High quality cast iron shafts & rotors
- Thermal overload switches with automatic reset
- Complete with gas ballast oil return & mist filter

#### Technical Specifications

Model	FDP80	FDP120	FDP200 or VLP195FD
Displacement	76 l/min @ 60Hz	116 l/min @ 60Hz	195 l/min @ 60Hz
Maximum Vacuum	1.5 mtorr / 1.95 x 10 <sup>3</sup> mbar	1.5 mtorr / 1.95 x 10 <sup>3</sup> mbar	1.5 mtorr / 1.95 x 10 <sup>3</sup> mbar
Oil Capacity	0.7 litres	0.7 litres	0.75 litres, 1.75 litres for VLP195FD
Dimensions H x W x D	230 x 160 x 420 (mm) 9 x 6 x 17 (in)	230 x 160 x 420 (mm) 9 x 6 x 17 (in)	230 x 160 x 470 (mm) 9 x 6 x 19 (in)
Weight kg (lbs)	22 (48)	22 (48)	26 (57), 35 (77) for VLP195FD
Power Requirements	120V 60Hz, 5A 230V 50Hz, 3A	120V 60Hz, 5A 230V 50Hz, 3A	120V 60Hz, 8A, 12A for VLP195FD 230V 50Hz, 4A
Vacuum Inlet Fitting (mm)	12.7 O.D.	12.7 O.D.	12.7 O.D.

Note :- VLP195FD includes VPOF110 oil filtration system.

#### Ordering Information and Specifications

Cat No.	Description
FDP80-115	Vacuum Pump with GBORK & EMF10 filter
FDP80-230	Vacuum Pump with GBORK & EMF10 filter
FDP120-115	Vacuum Pump with GBORK & EMF10 filter
FDP120-230	Vacuum Pump with GBORK & EMF10 filter
FDP200-115	Vacuum Pump with GBORK & EMF10 filter
FDP200-230	Vacuum Pump with GBORK & EMF10 filter
FDP195FD-115	Vacuum Pump with GBORK, EMF10 filter and VPOF filter
FDP195FD-230	Vacuum Pump with GBORK, EMF10 filter and VPOF filter

#### Accessories

Cat No.	Description
SPO1	Case of 12 one litre bottles of vacuum pump oil
SPO1-B	One litre of vacuum pump oil
SFF1	Case of 12 one litre bottles of vacuum pump flushing fluid
SFF1-B	One litre of vacuum pump flushing fluid
MF10	Odor filter element for EMF10
PF10	Oil mist filter for EMF10, 5/pk
AQ310	Replacement oil filter cartridge for VPOF110
M30-0007-02	4 foot length of 1/2" I.D. vacuum tubing
M30-0007-03	8 foot length of 1/2" I.D. vacuum tubing
BV130	1/2" O.D. bleeder valve
M60-0044-11	1/2" O.D. polypropylene 90° elbow fitting
M60-0044-14	1/2" O.D. polypropylene straight fitting
CC120/DX	Deluxe convenience cart - 61 x 91.4 x 96.5 mm
203-1009-00	Additional vacuum connection kit for non-Thermo Electron pumps

All Heto PowerDry freeze dryers are designed for use with our high-quality rotary vane pumps, which offer a capacity of either 2, 5 or 8 m<sup>3</sup> per hour.



### Ordering Information

Cat No.	Description	LL1500	LL3000 & PL3000
88900065	RZ 2, Rotary Vane Pump, 115V / 60 Hz	*	*
88900062	RZ 2, Rotary Vane Pump, 230 V	*	*
88900067	RZ 5, Rotary Vane Pump, 115V / 60 Hz	*	*
88900066	RZ 5, Rotary Vane Pump, 230 V	*	*

### Connection Kits for Accessories

Cat No.	Description	LL1500	LL3000 & PL3000
88902922	Kit number 22	*	*
88902933	Kit number 23	*	*
88900125	FORE2 oil mist eliminator for RZ 5	*	*

