



Dry Compressing Vacuum Pumps

Dry Com

ECODRY plus

Multi-Stage Roots Vacuum Pumps

Contents

Dry Compressing Vacuum Pumps

Global Versions

Diaphragm Vacuum Pumps **DIVAC** 4

General

DIVAC Program Overview 4

The customized Diaphragm Pump and the Accessories recommended for your Applications 5

Modular Diaphragm Pump System for the Chemical Laboratory 5

Products

Diaphragm Vacuum Pumps for the Chemical Laboratory 6

Dual-Stage Diaphragm Vacuum Pumps

DIVAC 0.6 L, 1.2 L, 2.2 L 6

Three-Stage Diaphragm Vacuum Pumps

DIVAC 1.4 HV3C 8

Dry Compressing Backing Pumps for Turbomolecular Pumps 10

DIVAC 0.8 T and 0.8 LT 12

DIVAC 1.4 HV3 and 3.8 HV3. 14

DIVAC 4.8 VT 16

Scroll Vacuum Pumps **SCROLLVAC** 18

Products

Oil-free Scroll Vacuum Pumps SCROLLVAC 7 plus to 18 plus 18

Oil-free Scroll Vacuum Pumps SCROLLVAC SC 30 D to SC 60 D 22

Multi-Stage Roots Vacuum Pumps **ECODRY plus**. 26

General

Applications for ECODRY plus Pumps 26

Products

ECODRY 40 plus, ECODRY 65 plus 27

Screw Vacuum Pumps LEYVAC	31
General	
Applications for LEYVAC Pumps	31
Products	
LEYVAC LV 80 to LV 250	32
Screw Vacuum Pumps SCREWLINE	37
General	
Applications for SCREWLINE Pumps	37
Products	
SCREWLINE SP 250 to SP 630 (F)	38
Screw Vacuum Pumps DRYVAC	48
General	
Applications for DRYVAC Pumps	48
Oil for DRYVAC pumps, for different pump types	48
Oil for DRYVAC pumps, for different fields of application	49
Products	
DRYVAC DV 450 to DV 1200 -i	50
Dry Claw Pumps CLAWVAC	58
General	
Applications for CLAWVAC Pumps	58
Products	
Vacuum Pumps CLAWVAC CP 65 to CP 300	58
Overpressure Pumps CLAWVAC OP 150 to OP 300	58

Applications for ECODRY plus Pumps

Pumps	ECODRY 40 plus	ECODRY 65 plus
Application		
Mass spectrometry	■	■
Electron microscopy	■	■
Vacuum drying	■	■
Particle accelerators / Synchrotron	■	■
Spectroscopy	■	■
Regeneration of cryo pumps	■	■
Backing pumps for turbomolecular pumps	■	■
Surface analysis	■	■

Products

ECODRY plus multi-stage Roots vacuum pumps

ECODRY 40 plus, ECODRY 65 plus



The ECODRY plus is a newly developed family of dry-compression multi-stage Roots vacuum pumps, which sets new standards in noise reduction. The pumps have been specially designed for use in quiet and clean environments, such as analysis and research laboratories.

Operating principle

The multi-stage Roots pump is a further development of the tried-and-tested Roots pump principle. Two contactless rotating rotors turn in contrary motion within a single pump housing. The rotors do not come into contact with one another, or with the pump housing. Through their rotation, they convey the gas from the intake flange on the upper side to the outlet aperture on the underside of the suction chamber. In the multi-stage Roots pump ECODRY plus, there are eight pump chambers in succession along the same axis. The outlet apertures are connected to the respective intake aperture of the ensuing chamber via channels in the pump housing. The pump's operating range extends from the medium vacuum range to ambient pressure.

Short channels between the compression stages, combined with a high rotational speed of 12,600 rpm, make a compact construction with simultaneously high suction capacity possible. Lubrication takes place only in the shaft bearing regions. These are separated from the suction chamber by means of a wear-free sealing system, such that no lubricant can find its way into the suction chamber or into the vacuum chamber.

Low-noise operation

During the design phase, particular emphasis was placed on reducing the pumps' noise levels. The rotors' high manufacturing quality guarantees that the pumps will run with a low level of vibration, and consequently with a low level of noise, even at high inlet pressures. Efficient noise insulation is integrated within the pump housing, to shield the user from residual noise. The silencer integrated within the exhaust region further serves to minimize noise, even at high gas flow rates. These measures combine to achieve a noise level of less than 52 dB(A) – quieter than a normal conversation

Clean environment

Thanks to the oil-free suction chamber, no lubricant can enter the vacuum chamber or the area surrounding the pump from the interior of the pump. Furthermore, because the rotors operate contact-free, no abrasion debris are created in the form of particles, which could contaminate the vacuum chamber. In the case of the pump itself, this guarantees long-term stable operation with no deterioration in final pressure or suction capacity.

Ease of commissioning

The ECODRY plus models have a compact housing and are simple to operate. With integrated castors and their low weight, they can be easily rolled out of their packaging and on to their installation location. There is no need for elaborate power cabling, as the pumps can be connected directly to a single-phase electricity supply. The pumps are air-cooled, and therefore require no connection to a water supply for the purposes of cooling.

Maintenance-free operation

ECODRY plus features a friction-free operating principle, so their components are not exposed to wear in any way. The ECODRY plus's shaft bearings are designed for up to five years' operation. Maintenance measures such as replacing seals or changing the oil are not required during that time.

High water vapour tolerance

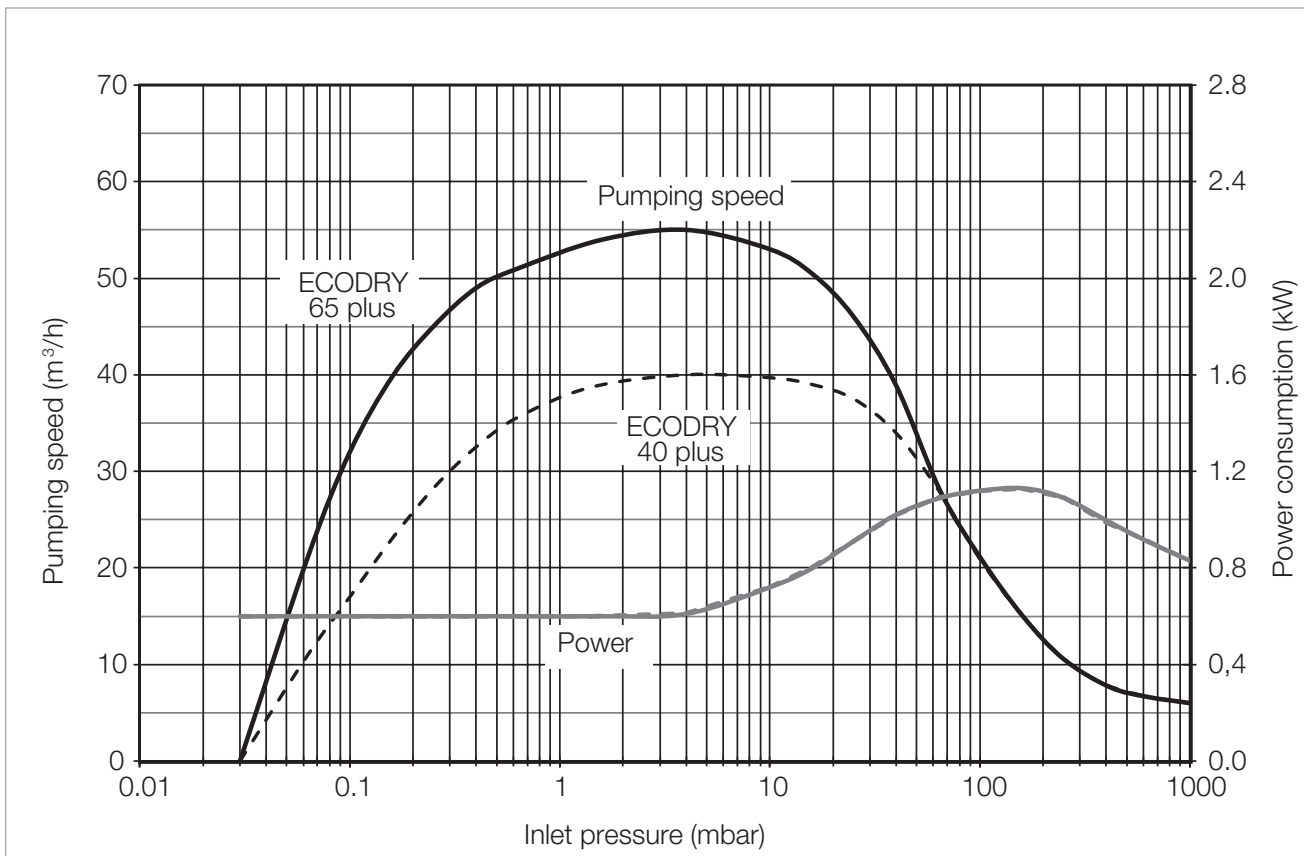
In drying applications, such as cryo-pump regeneration, or when pumping out vacuum chambers with large surface areas, high quantities of water vapour may accrue. Not every pump can handle this without difficulty, as condensation in the pump can lead to corrosion and pump failure. However, with its gas ballast valve open, the ECODRY plus can pump water vapour at rates of up to 500 g/h without internal condensation. Because the manually operated gas ballast inlet has an integrated silencer, the pump is quieter than any of its competitors in these applications also.

Benefits at a glance

- Quietest pump in its class – it won't disturb your work
- Clean vacuum generation with no contamination of workstation or vacuum chamber
- Many years of maintenance-free operation without deterioration of vacuum parameters

Typical applications

- Mass spectrometry
- Electron microscopy
- Backing pump for turbomolecular pumps
- Drying
- Accelerator/synchrotron
- Spectroscopy
- Regeneration of cryopumps
- Surface analysis



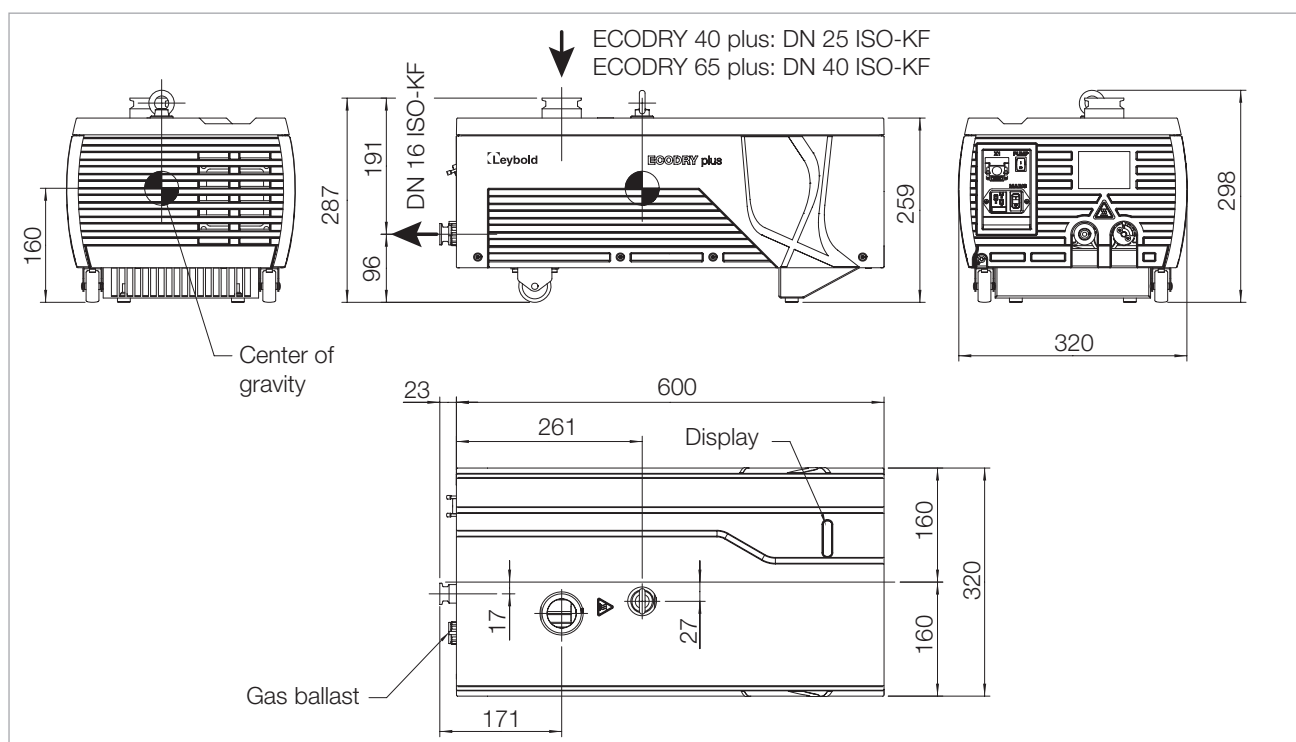
Pumping speed curves for the ECODRY plus - pumps

Technical Data

ECODRY 40 plus

ECODRY 65 plus

Maximum pumping speed without gas ballast	m ³ /h	40	55
Ultimate pressure without gas ballast	mbar	< 0.03	< 0.03
Ultimate pressure with gas ballast	mbar	< 0.1	< 0.1
Leak rate	mbar l/s	< 10 ⁻⁵	< 10 ⁻⁵
Water vapour tolerance with gas ballast	mbar	20	20
Water vapour capacity with gas ballast	g/h	300	500
Maximum permissible inlet pressure	mbar	1050	1050
Permissible ambient temperature	°C	+5 to +40	+5 to +40
Max. installation height (up to NHN)	m	2000	2000
Cooling		Air	Air
Mains voltage	V	200 – 240 ± 10%	200 – 240 ± 10%
Frequency	Hz	50/60	50/60
Phases		1-ph	1-ph
Max. power consumption	W	1200	1200
Power consumption at ultimate pressure	W	600	600
Plug connector for power supply		C 20 acc. to IEC 60320	C 20 acc. to IEC 60320
Rotational speed	rpm	12600	12600
Protection class	IP	42	42
Intake flange		DN 25 ISO-KF	DN 40 ISO-KF
Outlet flange		DN 16 ISO-KF	DN 16 ISO-KF
Weight, approx.	kg	43	43
Dimensions (L x W x H)	mm	623 x 320 x 298	623 x 320 x 298



Dimensional drawing for the ECODRY plus – pumps, all dimensions in mm

Ordering Information

ECODRY 40 plus

ECODRY 65 plus

	Part No.	Part No.
Dry Compressing Vacuum Pump ECODRY plus	161 040 V01	161 065 V01
Accessories		
Mains cable (required for pump operation)		
Mains cable Europe CEE 7/7 (Schuko) – IEC-60320 C19 Length 2.0 m	161 810 EU	
Mains cable Great Britain BS 1363 – IEC-60320 C19 Length 2.0 m	161 810 UK	
Mains cable US NEMA 6-15P – IEC-60320 C19 Length 2.5 m	161 810 US	
Optional accessories		
Inlet screen DN 25 ISO-KF	E41170206	-
Inlet screen DN 40 ISO-KF	-	E41170121
Casing assembly mounting kit and earthquake protection	161 831 A	
RS485/USB connecting cable for X104 interface, 1.8 m	161 820 USB	
LEYASSIST software	230 439 V01	
Replacement control interface jumper	161 823 A	