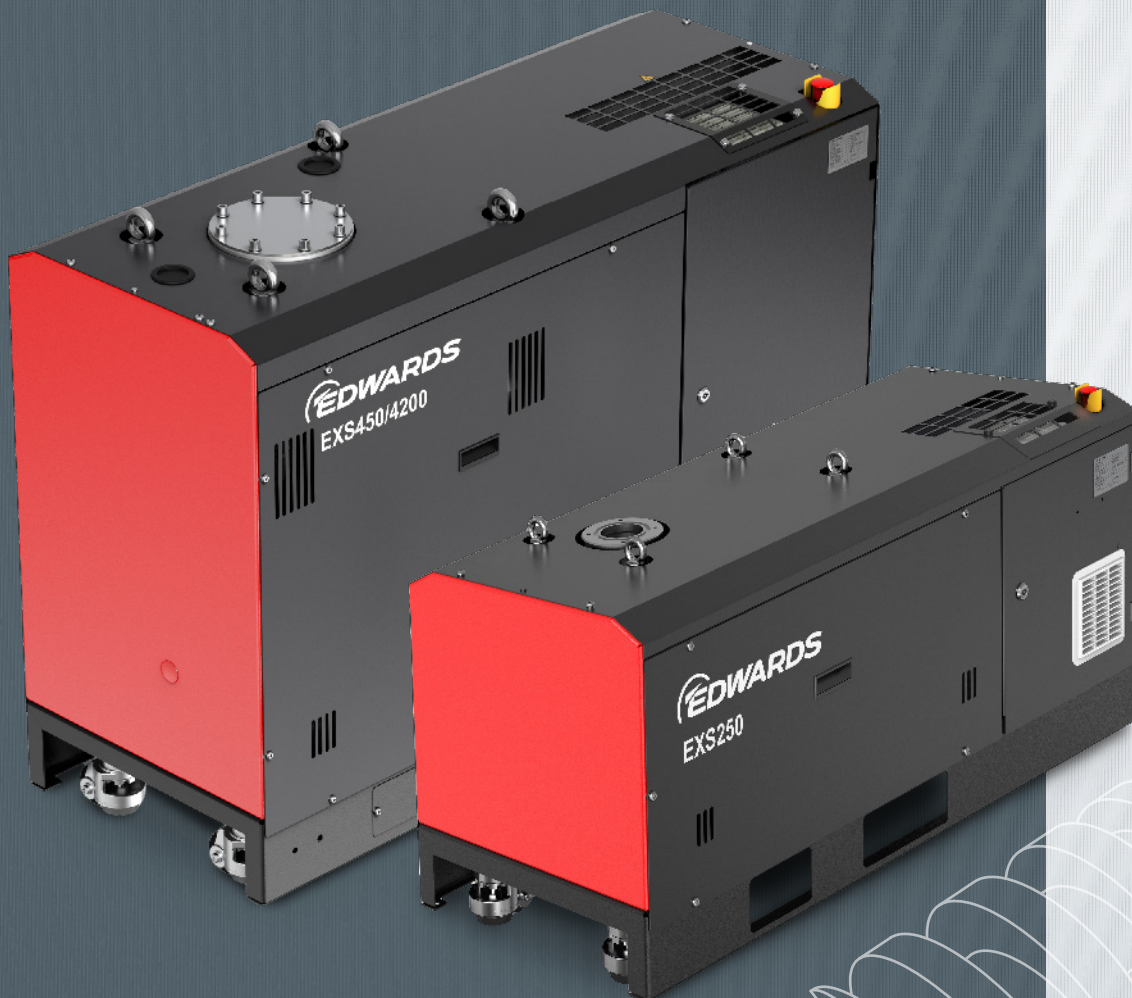


# EXS DRY SCREW VACUUM PUMP



# EXS DRY SCREW VACUUM PUMP

Our EXS dry screw vacuum pumps take our industry proven screw vacuum technology to the next level. Based around the same technology that we use in our GXS pumps, the EXS has been designed to bring the advantages of our market leading technology in a package that focuses on simplicity and robustness. With more performance, simple control philosophy and low maintenance costs, the EXS will deliver reliable performance for many years to come. Our EXS series of dry screw vacuum pumps are available in EXS160~750 and booster combinations.



## EDWARDS THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps for industrial applications with over 100 years' history.

We believe in delivering results that bring value to our customers by using our breadth of industry experience to identify and apply solutions. Using the most innovative and up-to-date modelling techniques, we can optimise the pumping configuration for customers to provide a system design giving the maximum performance in the most reliable and cost-effective way.



- PROVEN** – Based on existing GXS technology
- Huge install base on hundreds of applications
  - Optimised design enables enhanced performance



- ENVIRONMENTAL** – Smooth, quiet running with low power and utilities consumption
- Small carbon footprint
  - **Easy on environment:** No contaminated or dirty disposable oil



- ECONOMICAL** – Affordable capital investment and low cost of ownership
- **Substantial savings:** Low utilities and energy usage costs for substantial savings
  - **Save on space:** Compact design to get the most of your storage, transportation and facility space



- ROBUST** – Reliable operation even in harsh industrial applications
- **Low maintenance cost:** No unplanned down times reduces maintenance costs
  - **Increased productivity:** Longer intervals between service increases productivity



- FAST** – Increased pumping speed at high pressures and low ultimate performance
- **Increased productivity:** 450 and 750 dry pump with additional blow-off-valve for improved roughing speed, faster processing and pump down time
  - **Low ultimate pressure:** Dry pump down to  $1 \times 10^{-2}$  mbar ultimate vacuum and booster combinations attain  $1 \times 10^{-3}$  mbar



- EASE OF USE** - Simplified control and extensive connectivity
- **VFD (Variable frequency drive):** Supports speed control, suited to different industrial processes and enables energy savings
  - **Connectivity:** Enable effective communication to various plant management systems for smart manufacturing

# FEATURES AND INNOVATIVE SCREW TECHNOLOGY

## Simple electrical strategy

- In-built, off-shelf inverter for simple connection and communication
- Protection sensors fitted, electrical cabinet design for reliability and safety
- Basic control philosophy for ease of installation and operation

## Advanced core technology

- Non-contacting long-life seals with integral oil blocking labyrinth seal provides highly effective sealing
- Combined with a six litre per minute seal purge the gearbox is protected from contamination and the vacuum space is kept free of oil
- Industry proven on hundreds of applications
- Uses advanced quality bearings and special purpose oil with low vapour pressure for application compatibility and improved service life
- Non-cantilever design provides secure rotor support for extremely low vibration and superior starting reliability, especially on harsh processes
- Superior liquid and powder handling thanks to a sealing solution that is industry proven in many applications



## Compact and robust design features

- Delivers the benefit of a simple and economical installation
- Reliable constant flow cooling system
- Dependable new gas system with manual gas ballast control
- Sleek sheet metal protective enclosure
- Patented tapered variable pitch Quinby profile screw

## Detailed data insight

- **Local monitoring:** Any device can quickly connect to the pump and gain operational data visualisation
- **Remote monitoring:** Support a wide range of fieldbus protocols and achieve real time status tracking and alerts notification
- **IoT (Internet of Things):** GENIUS factory variants enable easy security and 24x7 remote access to the pump's conditions through the Edwards GENIUS Portal

## Flexible communication and control

- **I/O:** Digital and analog signal input & output allow variable speed control
- **Modbus RTU** included as standard and offer more flexibilities for remote control
- **Communication cards (optional):** Fitted on the drive and support multi protocols fieldbus communication

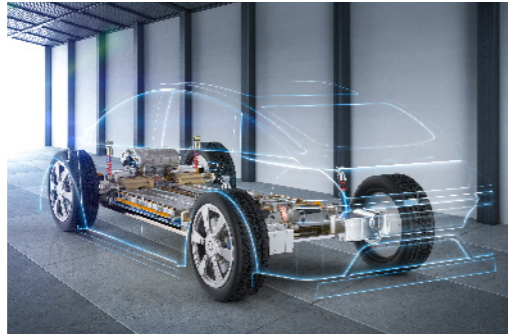


## APPLICATIONS

The EXS pump is suitable for a range of applications in various industries including:

### Lithium-ion battery

- Electrode drying
- Electrolyte filling
- Formation



### Vacuum chamber evacuation

- Space simulation chambers
- Gas recovery/circulation
- Load lock chambers

### Metallurgy

- Vacuum brazing
- E-beam welding
- Nitrocarburising
- Low pressure nitriding
- Low pressure carburising
- Carbon vapour impregnation
- Sintering
- Metal injection moulding
- Precision investment casting
- Vacuum arc refining
- Steel degassing



### Plasma processes

- Plasma welding
- Plasma nitriding



### Solar

- Silicon crystal-pulling
- PV lamination

### Coating

- Roll web coating
- Hard coating (CVD/DLC)
- Surface activation
- Plasma spray
- Glass coating

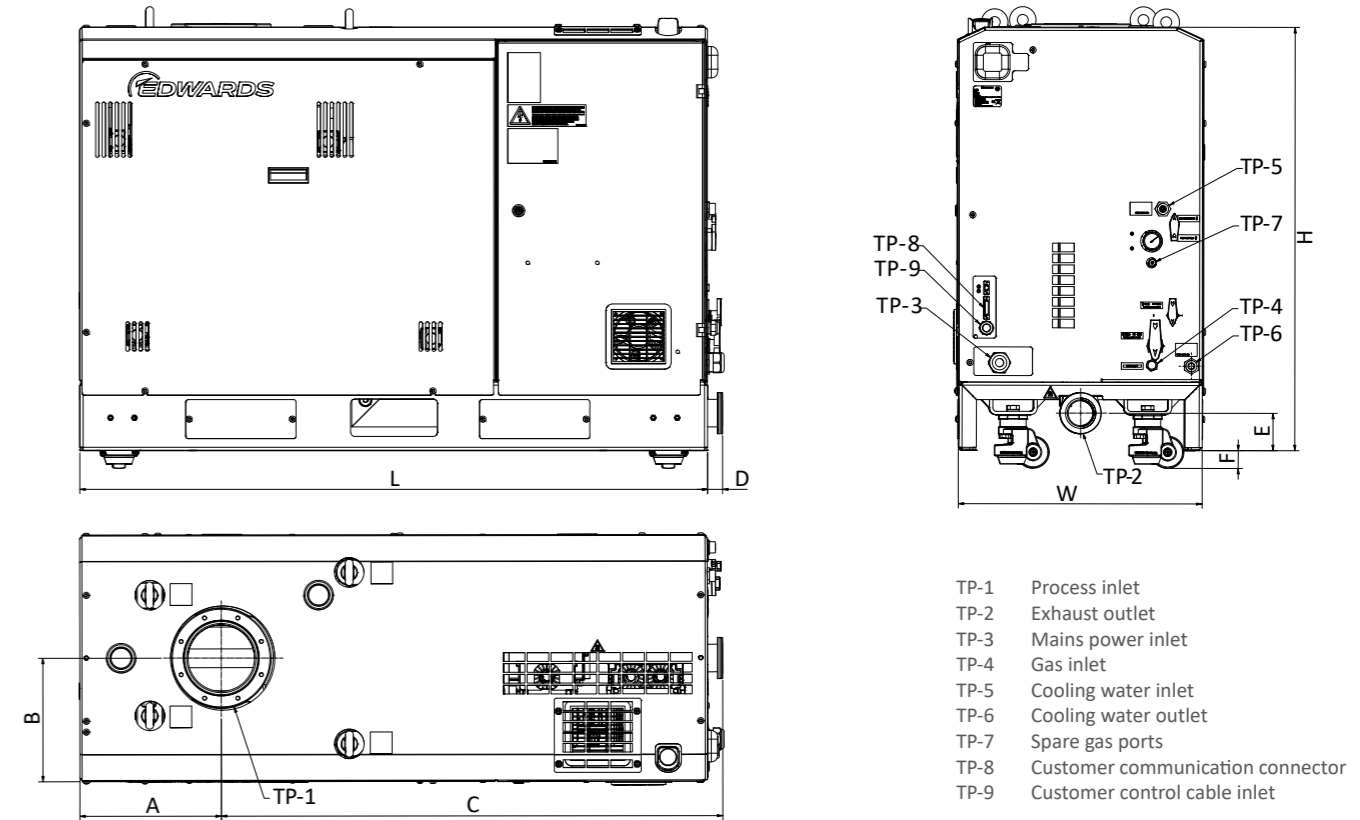


## TECHNICAL SPECIFICATIONS

Specification	Unit	EXS160	EXS160/1750	EXS250	EXS250/2600	
General	Ultimate vacuum	mbar (Torr)	1 x10 <sup>-2</sup> (8x10 <sup>-3</sup> )	<1 x10 <sup>-3</sup> (<8x10 <sup>-4</sup> )	1 x10 <sup>-2</sup> (8x10 <sup>-3</sup> )	<1 x10 <sup>-3</sup> (<8x10 <sup>-4</sup> )
	Peak pumping speed	m <sup>3</sup> /hr (cfm)	160 (94)	1200 (706)	250 (147)	1900 (1118)
	Maximum rotor speed	Rev/min	6600	DP: 6600 MB: 6120	6600	DP: 6600 MB: 6120
	Inlet/Outlet		ISO63/NW40	ISO100/NW40	ISO63/NW40	ISO160/NW40
Electrical	Electrical supply	V	380-460V 3Ph 50/60Hz 200-240V 3Ph 50/60Hz	380-460V 3Ph 50/60Hz 200-240V 3Ph 50/60Hz	380-460V 3Ph 50/60Hz 200-240V 3Ph 50/60Hz	380-460V 3Ph 50/60Hz 200-240V 3Ph 50/60Hz
	Ultimate power	kW (hp)	3.8 (5.1)	5.1 (6.8)	4.0 (5.4)	5.3 (7.1)
	Full load power	kW (hp)	5.0 (6.7)	7.4 (9.9)	9.0 (12.1)	9.7 (13.0)
Cooling	Connection (User side)	inch	3/8" BSP male	3/8" BSP male	3/8" BSP male	3/8" BSP male
	Cooling flow (Always on)	l/min (gal/min)	4.0 (1.1)	7.0 (1.9)	4.0 (1.1)	7.0 (1.9)
	Minimum differential pressure	bar	1	1	1	1
	Maximum supply pressure	barg (psig)	6.9 (100)	6.9 (100)	6.9 (100)	6.9 (100)
	Temperature	°C (°F)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)
Purge	Connection (User side)	inch	1/2" BSP male	1/2" BSP male	1/2" BSP male	1/2" BSP male
	Pressure	barg (psig)	2.5-6.9 (36-100)	2.5-6.9 (36-100)	2.5-6.9 (36-100)	2.5-6.9 (36-100)
	Shaft seal flow (Always on)	l/min (gal/min)	12 (3.17)	12 (3.17)	12 (3.17)	12 (3.17)
	Gas ballast flow (Manual adj.)	l/min (gal/min)	0-50 (0-13.2)	0-50 (0-13.2)	0-50 (0-13.2)	0-50 (0-13.2)
Operation	Ambient temperature range	°C (°F)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)
	Noise level with silencer	dB(A)	<64	<64	<64	<64
	Maximum exhaust back pressure	bara (psig)	1.2 (17.4)	1.2 (17.4)	1.2 (17.4)	1.2 (17.4)
Lubrication	Oil		PFPE Drynert 25/6	PFPE Drynert 25/6	PFPE Drynert 25/6	PFPE Drynert 25/6
	Oil volume	l (gal)	0.7 (0.2)	1.4 (0.4)	0.7 (0.2)	1.4 (0.4)

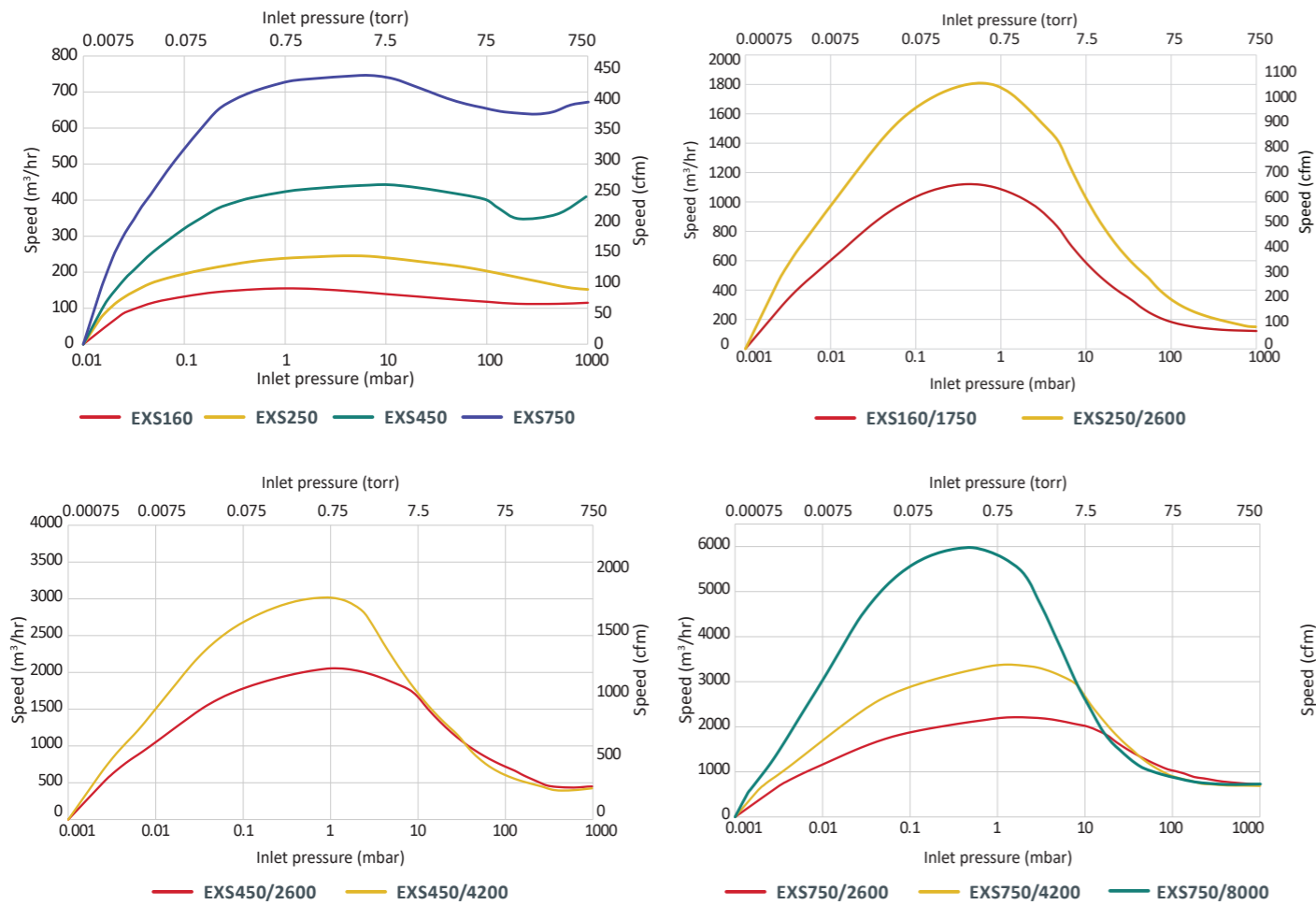
Specification		Unit	EXS450	EXS450/2600	EXS450/4200	EXS750	EXS750/2600	EXS750/4200	EXS750/8000
General	Ultimate vacuum	mbar (torr)	1 x10 <sup>-2</sup> (8x10 <sup>-3</sup> )	<1 x10 <sup>-3</sup> (<8x10 <sup>-4</sup> )	<1 x10 <sup>-3</sup> (<8x10 <sup>-4</sup> )	1 x10 <sup>-2</sup> (8x10 <sup>-3</sup> )	<1 x10 <sup>-3</sup> (<8x10 <sup>-4</sup> )	<1 x10 <sup>-3</sup> (<8x10 <sup>-4</sup> )	<1 x10 <sup>-3</sup> (<8x10 <sup>-4</sup> )
	Peak pumping speed	m <sup>3</sup> /hr (cfm)	450 (265)	2200 (1295)	3026 (1781)	740 (435)	2300 (1354)	3450 (2032)	5980(3520)
	Maximum rotor speed	Rev/min	6600	DP: 6600 MB: 6120	DP: 6600 MB: 6120	6600	DP: 6600 MB: 6120	DP: 6600 MB: 6120	DP: 6600 MB: 6300
	Inlet/Outlet		ISO100/ISO63	ISO160/ISO63	ISO160/ISO63	ISO100/NW50	ISO160/ISO63	ISO160/ISO63	ISO250/ISO63
Electrical	Electrical supply	V	380-460V 3Ph 50/60Hz 200-240V 3Ph 50/60Hz	380-460V 3Ph 50/60Hz 200-240V 3Ph 50/60Hz	380-460V 3Ph 50/60Hz 200-240V 3Ph 50/60Hz	380 - 460 3Ph 50/60Hz	380 - 460 3Ph 50/60Hz	380 - 460 3Ph 50/60Hz	380 - 460V 3Ph 50/60Hz
	Ultimate power	kW (hp)	7.2 (9.6)	8.8 (11.8)	9.4 (12.6)	10.5 (14)	11.1 (14.9)	12 (16)	12 (16)
	Full load power		17.3 (23.2)	16 (21.5)	18.5 (24.8)	22 (30)	24 (32.2)	24 (32.2)	24 (32.2)
Cooling	Connection (User side)	inch	¾" BSP male	¾" BSP male	¾" BSP male	¾" BSP male	¾" BSP male	¾" BSP male	¾" BSP male
	Cooling flow (Always on)	l/min (gal/min)	10 (2.6)	12 (3.2)	12 (3.2)	12 (3.2)	15 (4)	15 (4)	15 (4)
	Minimum differential pressure	bar	1	1	1	1	1	1	1
	Maximum supply pressure	barg (psig)	6.9 (100)	6.9 (100)	6.9 (100)	6.9 (100)	6.9 (100)	6.9 (100)	6.9 (100)
	Temperature	°C (°F)	5-40 (41-104)	5-40 (41-104)	5-40(41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)
Purge	Connection (User side)	inch	½" BSP male	½" BSP male	½" BSP male	½" BSP male	½" BSP male	½" BSP male	½" BSP male
	Pressure	barg (psig)	2.5-6.9 (36-100)	2.5-6.9 (36-100)	2.5-6.9 (36-100)	2.5-6.9 (36-100)	2.5-6.9 (36-100)	2.5-6.9 (36-100)	2.5-6.9 (36-100)
	Shaft seal flow (Always on)	l/min (gal/min)	12 (3.17)	12 (3.17)	12 (3.17)	12 (3.17)	12 (3.17)	12 (3.17)	12 (3.17)
	Gas ballast flow (Manual adj.)	l/min (gal/min)	0-130 (0-34.3)	0-130 (0-34.3)	0-130 (0-34.3)	0-130 (0-34.3)	0-130 (0-34.3)	0-130 (0-34.3)	0-130 (0-34.3)
Operation	Ambient temperature range	°C (°F)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)	5-40 (41-104)
	Noise level with silencer	dB(A)	<64	<64	<64	<70	<70	<70	<70
	Maximum exhaust back pressure	bara (psig)	1.2 (17.4)	1.2 (17.4)	1.2 (17.4)	1.2 (17.4)	1.2 (17.4)	1.2 (17.4)	1.2 (17.4)
Lubrication	Oil		PFPE Drynert 25/6	PFPE Drynert 25/6	PFPE Drynert 25/6	PFPE Drynert 25/6	PFPE Drynert 25/6	PFPE Drynert 25/6	PFPE Drynert 25/6
	Oil volume	l (gal)	1.8 (0.5)	2.5 (0.7)	3.6 (1.0)	2.4 (0.6)	3.1 (0.8)	4.3 (1.1)	4.3 (1.1)

## DIMENSIONS



	Dimensions									Mass
	Length (L) mm (in)	Width (W) mm (in)	Height (H) mm (in)	A mm (in)	B mm (in)	C mm (in)	D mm (in)	E mm (in)	F mm (in)	Kg (lbs)
EXS160	1265 (49.8)	520 (20.47)	539 (21.22)	290 (11.41)	307 (12.09)	995 (39.18)	20 (0.79)	76 (2.99)	27 (1.06)	305 (672)
EXS160/1750	1265 (49.8)	520 (20.47)	798 (31.42)	290 (11.41)	307 (12.09)	995 (39.18)	20 (0.79)	76 (2.99)	27 (1.06)	514 (1133)
EXS250	1265 (49.8)	520 (20.47)	539 (21.22)	315 (12.40)	307 (12.09)	969 (38.15)	20 (0.79)	76 (2.99)	27 (1.06)	315 (694)
EXS250/2600	1265 (49.8)	520 (20.47)	798 (31.42)	315 (12.40)	307 (12.09)	969 (38.15)	20 (0.79)	76 (2.99)	27 (1.06)	554 (1221)
EXS450	1445 (49.8)	567 (22.3)	763 (25.3)	314 (12.36)	284 (11.02)	1166 (45.9)	35 (1.40)	86 (3.40)	41 (1.61)	570 (1257)
EXS450/2600	1445 (56.9)	567 (22.3)	983 (38.68)	329 (12.95)	284 (11.02)	1151 (45.31)	35 (1.40)	86 (3.40)	41 (1.61)	816 (1799)
EXS450/4200	1445 (56.9)	567 (22.3)	983 (38.68)	329 (12.95)	284 (11.02)	1151 (45.31)	35 (1.40)	86 (3.40)	41 (1.61)	905 (1995)
EXS750	1650 (65)	567 (22.3)	642 (25.3)	949 (37.40)	284 (11.02)	737 (29)	35 (1.40)	86 (3.40)	22 (0.90)	650 (1433)
EXS750/2600	1895 (74.6)	567 (22.3)	983 (38.68)	824 (32.42)	284 (11.02)	1107 (43.58)	35 (1.40)	86 (3.40)	41 (1.61)	968 (2134)
EXS750/4200	1650 (65)	567 (22.3)	955 (37.6)	824 (32.42)	284 (11.02)	861 (33.88)	35 (1.40)	86 (3.40)	41 (1.61)	996 (2196)
EXS750/8000	1895 (74.6)	567 (22.3)	983 (38.68)	824 (32.42)	284 (11.02)	1107 (43.58)	35 (1.40)	86 (3.40)	41 (1.61)	1108 (2443)

## PERFORMANCE CURVES



## ORDERING INFORMATION

Part number	Pump description	High voltage (380-460V)	Low voltage (200-240V)	Side exhaust	Rear exhaust	Casters
A41860904	EXS160 HV MD RE CA	✓			✓	✓
A41860905	EXS160 LV MD RE CA		✓		✓	✓
A41860914	EXS160/1750 HV MD RE CA	✓			✓	✓
A41860915	EXS160/1750 LV MD RE CA		✓		✓	✓
A41850904	EXS250 HV MD RE CA	✓			✓	✓
A41850905	EXS250 LV MD RE CA		✓		✓	✓
A41850914	EXS250/2600 HV MD RE CA	✓			✓	✓
A41850915	EXS250/2600 LV MD RE CA		✓		✓	✓
A41840924	EXS450 HV MD RE CA	✓			✓	✓
A41840925	EXS450 LV MD RE CA		✓		✓	✓
A41840914	EXS450/2600 HV MD RE CA	✓			✓	✓
A41840915	EXS450/2600 LV MD RE CA		✓		✓	✓
A41840910	EXS450/4200 HV MD RE CA	✓			✓	✓
A41840911	EXS450/4200 LV MD RE CA		✓		✓	✓
A41870900	EXS750 HV MD SI	✓		✓		
A41870904	EXS750 HV MD RE CA	✓			✓	✓
A41870914	EXS750/2600 HV MD RE CA	✓			✓	✓
A41870910	EXS750/4200 HV RE CA	✓			✓	✓
A41870912	EXS750/8000 HV RE CA	✓			✓	✓

## ACCESSORIES AND SYSTEMISATION

There are a range of standard accessories available with the EXS to suit a variety of applications. All accessories can be fully integrated with EXS to provide an efficient and safe system. The accessories have been especially designed to match the pumping capacities of the EXS range and optimise performance. In addition to these standard accessories, full customer specific systems are also available on request.

	Description	Item number
Filter & separator	Inlet dust filter ISO63	M58810100
	Inlet dust filter ISO100	M58810101
	Inlet dust filter ISO160	M58810102
	Inlet dust filter ISO160	M58810103
	Inlet gas liquid separator ISO63	M58810120
	Inlet gas liquid separator ISO100	M58810121
	Inlet gas liquid separator ISO160	M58810122
	Inlet gas liquid separator ISO160	M58810123
Exhaust silencer & check valve	Exhaust check valve kit NW40	A50782000
	Exhaust check valve kit NW50	A50790000
	Cleanable silencer NW40	M58810140
	Cleanable silencer NW40 bottom drain	M58810142
	Cleanable silencer NW50	M58810141
	Cleanable silencer NW50 bottom drain	M58810143
	Cleanable, drainable silencer ISO63	M58810160
Inlet valve	Inlet valve ISO100 kit	M58810145
Purge & flush	Purge free kit	M58810144
Cooling connection	Quick connector 1/2" for cooling water	3002615139
Booster support & castors	EXS750 Booster support kit (EH2600&EH4200)	M58810148
	EXS450 Booster support kit (EH2600&EH4200)	M58810150
	Castors	M58810149
Communication	Multi-protocol card (without housing)	M58810169
	Multi-protocol module(with housing)	M58810170
	Profibus module for GA500	M58810147
	DB9 to Type C cable	M58810153
Electronics	EMC filter 11kW	M58810171
	EMC filter 18kW	M58810172

\* More details refer to dry pump accessory manual M58811880

## SERVICE AND SUPPORT

To ensure your EXS Dry Screw vacuum pump maintains optimal performance and reliability, we offer a wide range of service solutions, tailored to meet your needs. From Field Service intervention, Managed Maintenance agreements and Overhaul service in our Service Technology Centres (STC), we will take care of your pump to ensure that it continues to deliver clean, consistent, efficient performance, with lower running costs and optimum total cost of ownership for its operating life.

Selecting original spare parts, maintenance kits and oil means that every critical part performs as it was intended. Our services engineers only fit 100% genuine parts to ensure you receive the best result from each service.





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