LZL
VANE MOTORS

LZL VANE MOTORS

Introduction

LZL vane motors are available in five sizes, offering outputs of 1.05 kW, 1.3 kW, 2.3 kW, 3.4 kW and 5.2 kW, respectively.

They are designed to give outstanding starting and low speed performance. This is achieved by using a six vane motor and by optimum vane/cylinder sealing – obtained through a combination of 'vane air' and interconnecting pins.

Featuring few components, these motors are ruggedly constructed and offer a long service life.

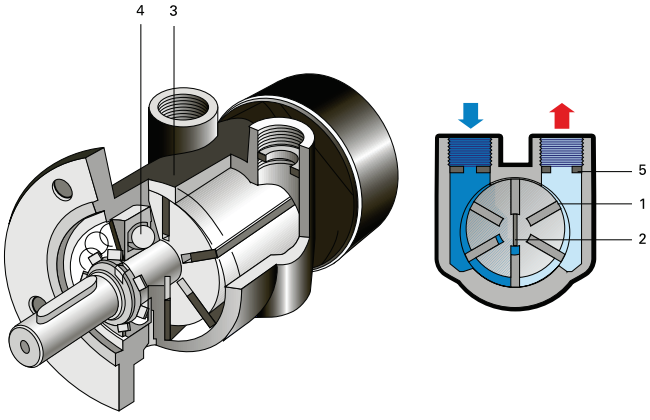


Figure 1

1. Six vanes for high starting torque.
2. Pins to force vanes out and provide starting reliability.
3. Cast iron housing.
4. Long life bearings.
5. Restriction at inlet and outlet ports.

Shaft loading

The permitted radial and axial shaft extension loadings are illustrated in Figure 2. These values have been calculated for shaft and bearing working lives of at least 1.000 hours at a speed that gives maximum output.

Restrictors

LZL vane motors are supplied with internal restrictors in the connection ports, to limit the maximum speed.

Clockwise rotation – the smaller restrictor (1) is fitted in the inlet port and the larger restrictor (2) in the outlet port (see Figure 3). This is how the motor is delivered.

Anti-clockwise rotation – the position of these restrictors must be reversed. Reversing duty – restrictor (1) must be replaced by a second restrictor of type (2). The restrictor (1) must then be fitted into the inlet to the control valve.

For further information, see page 11 chapter "Installation Examples".

It is permissible to remove these restrictors to increase motor output. However, the motor should not be run faster than max allowed speed (see data table).

Mounting

LZL vane motors may be mounted in any position. To facilitate this, a flange is integrated into the motor casing and a foot mounting is available for some motor variants.

Connection and hose dimensions

Information on connection size and recommended nipple and hose dimensions for use with LZL vane motors is shown in Table 2. These dimensions are valid for hose lengths up to 3 m. For lengths above 3 m, choose a hose one size larger.

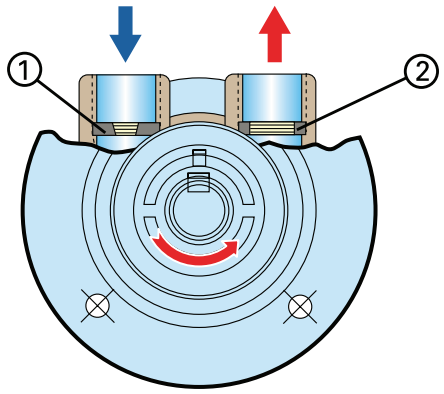
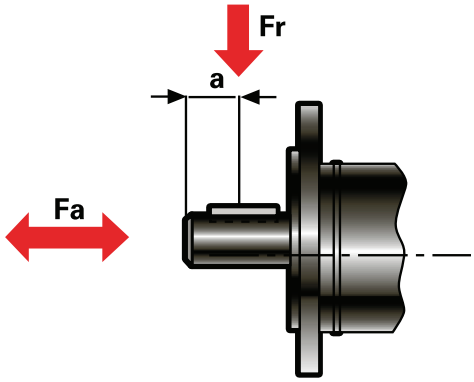


Figure 3



Hose size up to 3m length

Motor size	Used as	Inlet connec-tion thread BSP	Inlet hose* mm	Inlet nipple* dia mm	Outlet connec-tion thread BSP	Outlet hose* mm	Outlet nipple* dia mm
LZL03	Non-reversible	3/8	13	10.3	3/8	16	13.4
	Reversible	3/8	16	13.4	3/8	16	13.4
LZL05	Non-reversible	1/2	13	10.3	1/2	20	17
	Reversible	1/2	20	17	1/2	20	17
LZL15	Non-reversible	3/4	16	13.4	3/4	25	21.8
	Reversible	3/4	25	21.8	3/4	25	21.8
LZL25	Non-reversible	1	20	17	1	32	28
	Reversible	1	32	28	1	32	28
LZL35	Non-reversible	1 1/4	20	17	1 1/4	32	28
	Reversible	1 1/4	32	28	1 1/4	32	28

** Recommended minimum inner diameter*

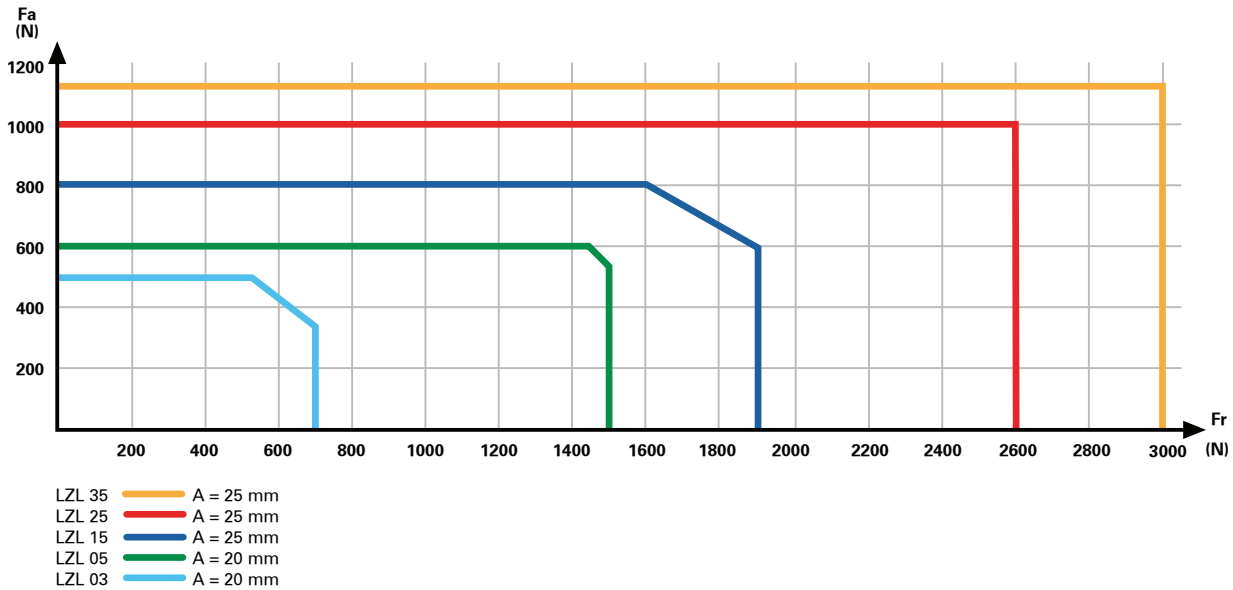


Figure 2

LZL VANE MOTORS

1.05 – 6.5 kW
1.4 – 8.7 hp

Power motors (P)

The power motors come in all five sizes and are designed to give highest power and still maintain good low speed characteristics. These motors are delivered with lube free vanes and can theretofore operate without lubrication.

Typically these motors are characterized by:

- Reliable starting.
- High starting torque and good low speed characteristics.
- Wide speed and torque range.
- Sturdy, compact construction to withstand rough treatment.
- Inlet and outlet port restrictors permit free speed running.
- Long working life and easy servicing.

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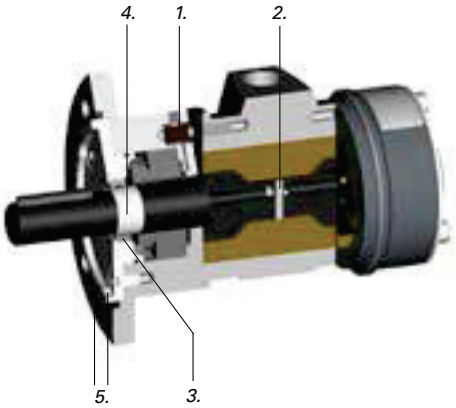

1. Rubber hose valves for venting bearing and seals.
2. Vane pins.
3. Double seals.
4. Stainless steel bushing.
5. Aluminum front with stainless steel screws.

Data at air pressure 6.3 bar (91 psi)

Model Lubricated	Max output kW	hp	Speed at max output r/min	Torque at max output Nm	lb-ft	Min starting torque Nm	lb-ft	Stall torque Nm	lb-ft	Free speed r/min	Max alloweed speed r/min	Air consump-tion at max output l/s	cfm	Weight kg	lb	ATEX code**	Ordering No.
LZL03-L-P-AC	1.05	1.4	5300	1.9	1.4	2.8	2.1	3.8	2.8	11000		29	61	2.9	6.4	Ex II 2GD c T6 IIC T85oC X	8411 1009 70
LZL03-L-P-IEC	1.05	1.4	5300	1.9	1.4	2.8	2.1	3.8	2.8	11000		29	61	3.9	8.6	Ex II 2GD c T6 IIC T85oC X	8411 1009 88
LZL03-L-P-NEMA	1.05	1.4	5300	1.9	1.4	2.8	2.1	3.8	2.8	11000		29	61	3.8	8.4	Ex II 2GD c T6 IIC T85oC X	8411 1009 96
Unrestricted*	1.7	2.5	7500	2.2	1.6	2.8	2.1	3.8	2.8		11000	45	95				
LZL05-L-P-AC	1.3	1.7	4300	2.9	2.1	4.8	3.5	5.8	4.3	9000		37	78	3.9	8.6	Ex II 2GD c T6 IIC T85oC X	8411 1010 30
LZL05-L-P-IEC	1.3	1.7	4300	2.9	2.1	4.8	3.5	5.8	4.3	9000		37	78	4.8	10.6	Ex II 2GD c T6 IIC T85oC X	8411 1010 48
LZL05-L-P-NEMA	1.3	1.7	4300	2.9	2.1	4.8	3.5	5.8	4.3	9000		37	78	4.9	10.8	Ex II 2GD c T6 IIC T85oC X	8411 1010 55
LZL05-L-P-HUB	1.3	1.7	4300	2.9	2.1	4.8	3.5	5.8	4.3	9000		37	78	3.8	8.4	Ex II 2GD c T6 IIC T85oC X	8411 1011 50
Unrestricted*	2.1	2.8	6300	3.1	2.3	4.8	3.5	5.8	4.3		9200	50	106				
LZL15-L-P-AC	2.3	3.1	3380	6.5	4.8	10.9	8.0	13	9.6	7000		61	129	7.1	15.7	Ex II 2GD c T6 IIC T85oC X	8411 1011 19
LZL15-L-P-IEC	2.3	3.1	3380	6.5	4.8	10.9	8.0	13	9.6	7000		61	129	8.3	18.3	Ex II 2GD c T6 IIC T85oC X	8411 1011 68
LZL15-L-P-NEMA	2.4	3.2	3381	6.6	4.9	10.10	8.1	14	9.7	7000		61	129	8.3	18.3	Ex II 2GD c T6 IIC T85oC X	8411 1011 92
Unrestricted*	3.2	4.3	4500	6.8	5.0	10.9	8.0	13	9.6		7200	87	184				
LZL25-L-P-AC	3.4	4.6	2800	11.6	8.5	18	13.2	23	17	5800		86	182	11.3	24.9	Ex II 2GD c T6 IIC T85oC X	8411 1011 27
LZL25-L-P-IEC	3.4	4.6	2800	11.6	8.5	18	13.2	23	17	5800		86	182	15.2	33.5	Ex II 2GD c T6 IIC T85oC X	8411 1011 76
Unrestricted*	5.0	6.7	4000	12.0	8.8	18	13.2	23	17		6000	135	286				
LZL35-L-P-AC	5.2	7.0	2500	20	14.7	32	23.6	40	30	5000		130	275	20	44.1	Ex II 2GD c T6 IIC T85oC X	8411 1011 35
LZL35-L-P-IEC	5.2	7.0	2500	20	14.7	32	23.6	40	30	5000		13	275	20	44.1	Ex II 2GD c T6 IIC T85oC X	8411 1011 84
Unrestricted*	6.5	8.7	3100	20	14.7	32	23.6	40	30		5000	160	339				

* Motors without restrictor plates in the air in- and outlet, the motor should not be run above max allowed speed.
** Max allowed speed for the specified ATEX code is 5000 rpm.

Low to medium speed motors (M)

These motors are, among other applications, ideal for mixing. To further ensure a clean and hygienic environment, a double shaft seal is used and all components that come in contact with the mixed medium are made of corrosion-resistant material. Thanks to the cylinder design and highly stable bearings, LZL motors require no extra drive shaft support and are ready for mounting without add-ons. For good adaptability, the motors are available with AC, IEC or NEMA.

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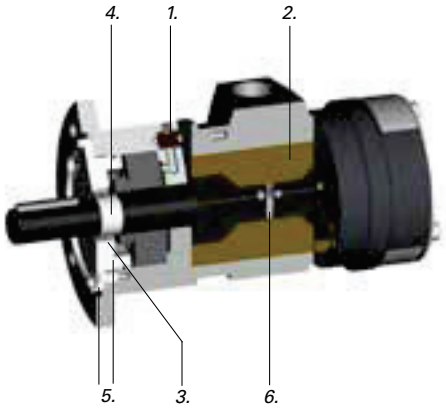

1. Rubber hose valves for venting bearing and seals.
2. Lube free vanes.
3. Double seals.
4. Stainless steel bushing.
5. Aluminum front with stainless steel screws.
6. Spring loaded pins.

Model	Power at 3000 rpm		Torque at 3000 rpm		Stall torque		Max allowed speed	Air consumption at 3000 rpm		Weight			
Lubrication free	kW	hp	Nm	lb-ft	Nm	lb-ft	r/min	l/s	cfm	kg	lb	ATEX code	Ordering No.
LZL03-L-M-AC	0.41	0.55	1.3	0.95	3.3	2.4	3000	16	34	2.9	6.4	Ex II 2GD c T6 IIC T85oC X	8411 1010 06
LZL03-L-M-IEC	0.41	0.55	1.3	0.95	3.3	2.4	3000	16	34	3.8	8.4	Ex II 2GD c T6 IIC T85oC X	8411 1010 14
LZL03-L-M-NEMA	0.41	0.55	1.3	0.95	3.3	2.4	3000	16	34	3.9	8.6	Ex II 2GD c T6 IIC T85oC X	8411 1010 22
Unrestricted*	1.0	1.3	3.3	2.4	3.8	2.8	3000	24	51				
LZL05-L-M-AC	0.63	0.84	2.0	1.5	5.8	4.3	3000	25	52	3.9	8.6	Ex II 2GD c T6 IIC T85oC X	8411 1010 63
LZL05-L-M-IEC	0.63	0.84	2.0	1.5	5.8	4.3	3000	25	52	4.8	10.6	Ex II 2GD c T6 IIC T85oC X	8411 1010 71
LZL05-L-M-NEMA	0.63	0.84	2.0	1.5	5.8	4.3	3000	25	52	4.9	10.8	Ex II 2GD c T6 IIC T85oC X	8411 1010 89
Unrestricted*	1.7	2.2	5.3	3.9	5.8	4.3	3000	35	74				

** Motor without restrictor plates in the air in- and outlet, the motors should not be run above max allowed speed.*

Stainless steel motors

Stainless steel motors are available in the size LZL05. They are lube free and have the same features as the other lube free motors. All external parts, including the output shaft, are made of stainless steel, which makes the motors very corrosion resistant and ideal for applications such as the food industry, corrosive mixing and the chemical industry.

The material used in all external parts is ISO 683/XIII Type 17, SS 14 2346, DIN 17440 X 12CrNiS188.

The material in the output shaft is ISO 683/XIII Type 9b, SS 14 2321, DIN 17440 X 22CrNi17.

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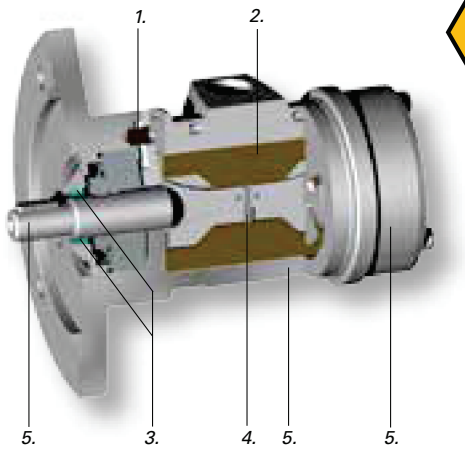
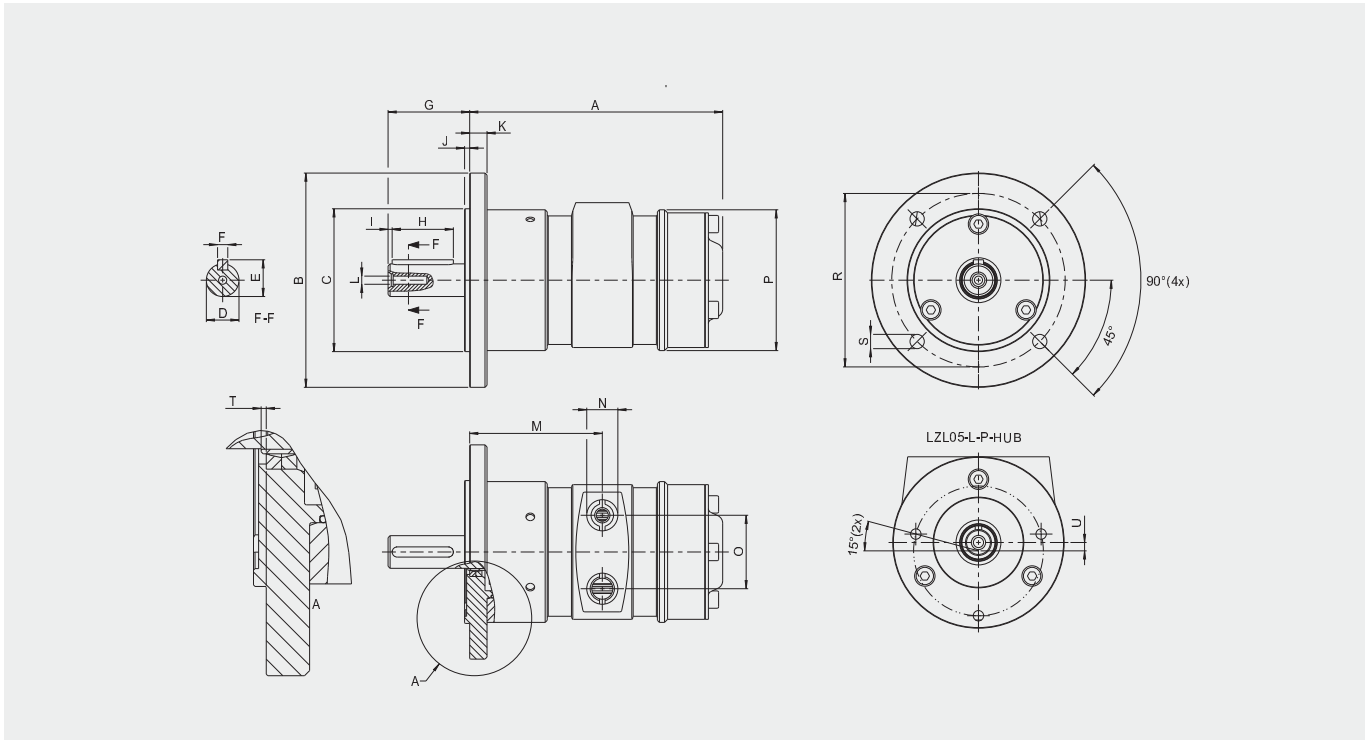


1. Rubber hose valves for venting bearing and seals.
2. Lube free vanes.
3. Double seals.
4. Vane pins.
5. Stainless steel.

Model	Power at 3000 rpm		Torque at 3000 rpm		Stall torque		Max allowed speed	Air consumption at 3000 rpm		Weight			
Lubrication free	kW	hp	Nm	lb-ft	Nm	lb-ft	r/min	l/s	cfm	kg	lb	ATEX code	Ordering No.
LZL05-RL-P-IEC	0.63	0.84	2.0	1.5	5.8	4.3	3000	25	52	6.1	13.4	Ex II 2GD c T4 IIC T110oC	8411 1010 97
LZL05-RL-P-NEMA	0.63	0.84	2.0	1.5	5.8	4.3	3000	25	52	6.1	13.4	Ex II 2GD c T4 IIC T110oC	8411 1011 01
Unrestricted*	1.7	2.2	5.3	3.9	5.8	4.3	3000	35	74				

** Motor without restrictor plates in the air in- and outlet, the motors should not be run above max allowed speed.*



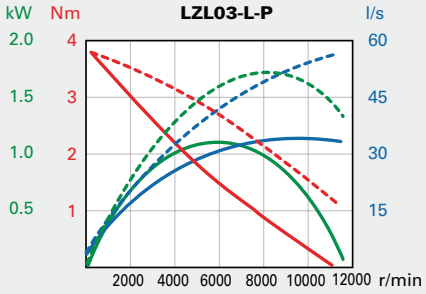
Model		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U
LZL03-L-M/P-AC	mm	124	Ø105	Ø70 j6	Ø16 j7	18	5 h9	40	30	2.0	2.5	8.5	M5x15	65	BSP ⅜"	36	Ø69	Ø85	Ø7	1	-
LZL03-L-M/P-IEC	mm	124	Ø160	Ø110 j6	Ø14 j7	16	5 h9	30	20	2.0	3.5	8.5	M5x15	65	BSP ⅜"	36	Ø69	Ø130	Ø10	-	-
LZL03-L-M/P-NEMA	mm	124	Ø165.1	Ø114.3	Ø15.875	17.85	4.75	51.5	31.75	1.7	3.175	10	M5x15	65	BSP ⅜"	36	Ø69	Ø149.225	⅜"-16 UNC	1	-
LZL03-L-M/P-NEMA	inch	4.88	Ø6.5	Ø4.5	Ø0.625	0.703	0.187	2.03	1.25	0.07	0.125	0.39	M5x15	2.56	BSP ⅜"	1.42	Ø2.72	Ø5.875	⅜"-16 UNC	0.04	-
LZL05-L-P-AC	mm	152	Ø105	Ø70 j6	Ø18 j7	20.5	6 h9	40	30	3.0	2.5	8.5	M5x15	81	BSP ½"	44	Ø76	Ø85	Ø7	-	-
LZL05-L-M-AC	mm	152	Ø105	Ø70 j6	Ø16 j7	18	5 h9	40	30	2.0	2.5	8.5	M5x15	81	BSP ½"	44	Ø76	Ø85	Ø7	0.5	-
LZL05-L-M/P-IEC	mm	152	Ø160	Ø110 j6	Ø14 j7	16	5 h9	30	20	2.0	3.5	8.5	M5x15	81	BSP ½"	44	Ø76	Ø130	Ø10	-	-
LZL05-L-M/P-NEMA	mm	152	Ø165.1	Ø114.3	Ø15.875	17.85	4.75	51.5	31.75	1	3.175	10	M5x15	81	BSP ½"	44	Ø76	Ø149.225	⅜"-16 UNC	0.5	-
LZL05-L-M/P-NEMA	inch	5.98	Ø6.5	Ø4.5	Ø0.625	0.703	0.187	2.03	1.25	0.04	0.125	0.39	M5x15	3.19	BSP ½"	1.73	Ø3	Ø5.875	⅜"-16 UNC	0.02	-
LZL05-L-P-HUB	mm	152	Ø84	Ø44.45 j6	Ø12.7	14.51	3.175 H7	45	12.3	6.8	16	8.5	-	81	BSP ½"	44	Ø76	Ø63.6	¼"-20 UNC	15.5	4.1
LZL05-L-P-HUB	inch	5.98	Ø3.31	Ø1.75	Ø0.5	0.57	0.125	1.77	0.5	0.3	0.63	0.335	-	3.19	BSP ½"	1.73	Ø3	Ø2.5	¼"-20 UNC	0.61	0.161
LZL05-RL-P-IEC	mm	152	Ø160	Ø110 j6	Ø14 j7	16	5 h9	30	20	2.0	3.5	8.5	M5x15	81	BSP ½"	44	Ø76	Ø130	Ø10	-	-
LZL05-RL-P-NEMA	mm	152	Ø165.1	Ø114.3	Ø15.875	17.85	4.75	51.5	31.75	1	3.175	10	M5x15	81	BSP ½"	44	Ø76	Ø149.225	⅜"-16 UNC	0.5	-
LZL05-RL-P-NEMA	inch	5.98	Ø6.5	Ø4.5	Ø0.625	0.703	0.187	2.03	1.25	0.04	0.125	0.39	M5x15	3.19	BSP ½"	1.73	Ø3	Ø5.875	⅜"-16 UNC	0.02	-
LZL15-L-P-AC	mm	181.5	Ø140	Ø95 j6	Ø22 j7	24.5	6 h9	52.5	40	5.0	3.0	12	M6x16	95	BSP 1"	54	Ø100	Ø115	Ø9	-	-
LZL15-L-P-IEC	mm	181.5	Ø200	Ø130 j6	Ø19 j6	21.5	6 h9	40.5	30	5.0	3.5	12	M6x16	95	BSP 1"	54	Ø100	Ø165	Ø12	-	-
LZL15-L-P-NEMA	mm	181.5	Ø165.1	Ø114.3	Ø15.875	17.85	4.75	51.5	31.75	1.5	3.175	12	M6x16	95	BSP 1"	54	Ø100	Ø149.225	⅜"-16 UNC	-	-
LZL15-L-P-NEMA	inch	7.15	Ø6.5	Ø4.5	Ø0.625	0.703	0.187	2.03	1.25	0.06	0.125	0.472	M6x16	3.74	BSP 1"	2.13	Ø3.94	Ø5.875	⅜"-16 UNC	-	-
LZL25-L-P-AC	mm	221	Ø160	Ø110 j6	Ø28 j7	31	8 h7	62.5	50	5.0	3	12	M10x22	118	BSP 1"	70	Ø120	Ø130	Ø10	-	-
LZL25-L-P-IEC	mm	221	Ø200	Ø130 j6	Ø24 j6	27	8 h7	49.5	40	5.0	3.5	12	M10x22	118	BSP 1"	70	Ø120	Ø165	Ø12	-	-
LZL35-L-P-AC	mm	248.5	Ø200	Ø130 j6	Ø28 j7	31	8 h7	60	50	5.0	3.5	14	M10x22	129	BSP 1¼"	70	Ø134	Ø165	Ø12	-	-
LZL35-L-P-IEC	mm	248.5	Ø250	Ø180 j6	Ø28 j6	31	8 h7	60	50	5.0	4.0	14	M10x22	129	BSP 1¼"	70	Ø134	Ø215	Ø14.5	-	-
LZL35-P-IEC	mm	248.5	Ø250	Ø180 j6	Ø28 j6	M10x22	60	4.0	-	5.0	50	14	129	134	BSP 1 1/4	70	Ø215	Ø14.5	31	8 h7	

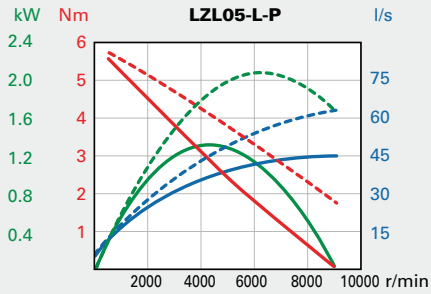
LZL motors with IEC interface

Model	Flange mounting	IEC frame	Flange No.
LZL03-L-M/P-IEC	B5	71	FF 130
LZL05-L-M/P-IEC	B5	71	FF 130
LZL05-RL-M/P-IEC	B5	71	FF 130
LZL15-L-P-IEC	B5	80	FF 165
LZL25-L-P-IEC	B5	80	FF 165
LZL35-L-P-IEC	B5	100	FF 215

LZL: Performance curves at air pressure 6.3 bar (91 psi)

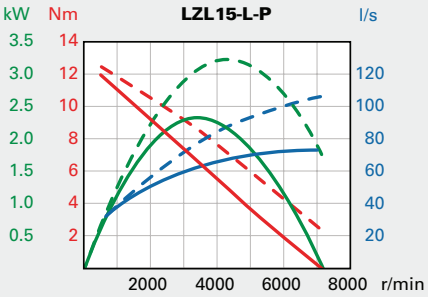
Power motors

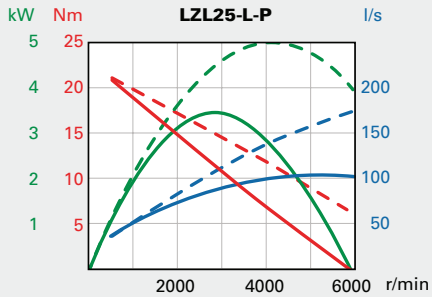


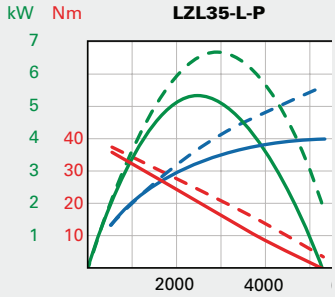


The solid lines represent restricted motors and the dotted lines unrestricted motors.

The restricted motors are guaranteed not to exceed the ATEX speed limit when running at 6.3 bar or below.

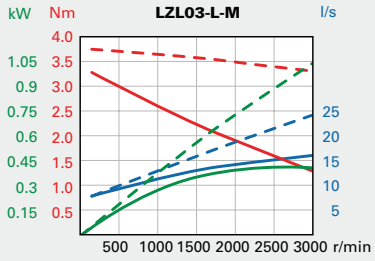


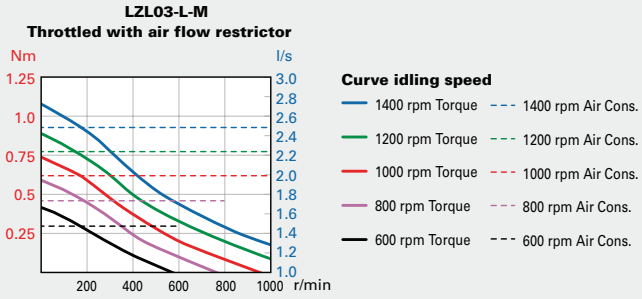


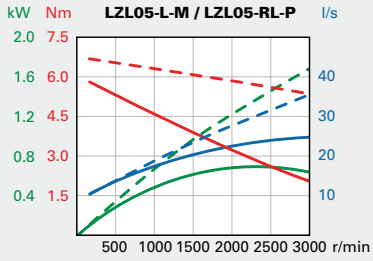


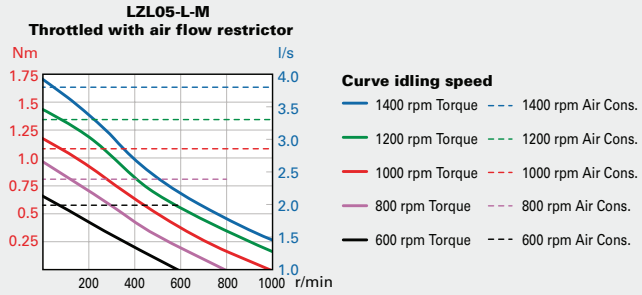
LZL: Performance curves at air pressure 6.3 bar (91 psi)

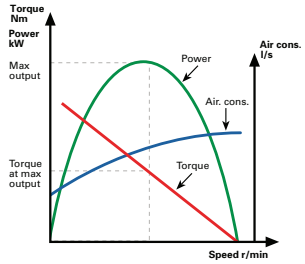
Low to medium speed











Conversion factors
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

1 hp = 0.75 kW
1 lbf-ft = 1.36 Nm
1 cfm = 0.47 l/s

For information about performance curves, see page 7.

Performance with restrictors

Performance without restrictors, (unrestricted)

LZL VANE MOTOR/GEAR UNIT COMBINATIONS

Combined with helical gear units, LZL vane motors can be used over a very wide torque and speed range. Gears have a ratio range between 6.3:1 to 164.5:1, corresponding to a speed range of 512 to 17 r/min and output torque up to 1836 Nm at max. output.

Helical gear units, type BF

Helical gear units are available in 2, 3, or 4-stage configurations. They deliver high efficiency levels and are available in a wide choice of ratios, Figure 4.

Figure 4

Shaft loading

The maximum allowable radial load on the output shaft of each gear unit, at the halfway point on the shaft can be obtained from the data tables for each model.

The maximum permitted axial load is 20% of the table value for radial load if full permitted radial load is occurring. If there is no radial load the maximum permissible axial load is 50% of the table value for radial force.

Calculating sprocket or gearwheel dimensions

If it is intended to fit a sprocket, gearwheel or pulley onto the output shaft, the radial load generated when running must be within the permitted level.

The following formula is used to calculate the minimum diameter of these components, to ensure the radial load does not exceed this limit.

$$D_{min} = \frac{2 \times M \times kt}{F} \; [m]$$

where M = *load torque in Nm*
F = *permitted radial force halfway along the shaft extension*
kt = *1.0 for sprocket*
1.3 for gear wheel
1.5 for pulley

Operating speed

To avoid damage to seals the gear units should not be run continuously above 4200 rpm.

Mounting

There are two options of mounting arrangement:
Foot or Flange as illustrated in Figure 5.

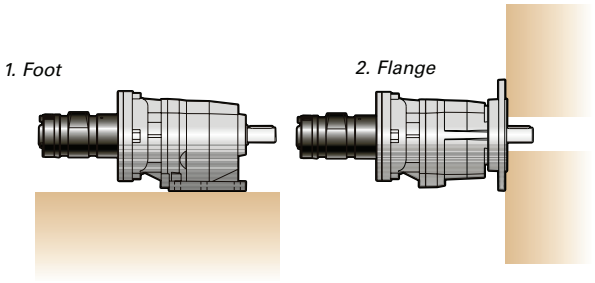


Figure 5

Temperature

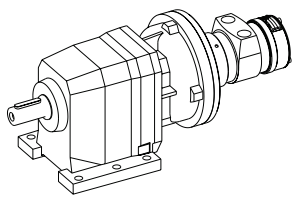
The gear units can operate within an ambient temperature range of –20°C (–4°F) and +40°C (104°F).

If it is required to use a gear unit outside these temperature limits please consult your local Atlas Copco representative.

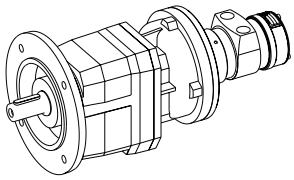
Mounting position

Allowed mounting positions are shown below. Installing the motor underneath the gear unit is not allowed.

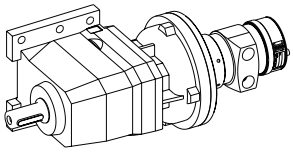
The alphanumeric numbers B3, B5, etc., are referred to in the product information enclosed at delivery.



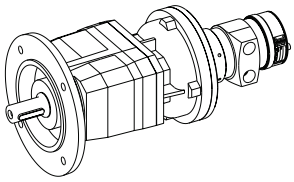
B3



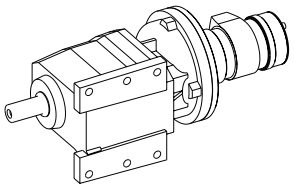
B5



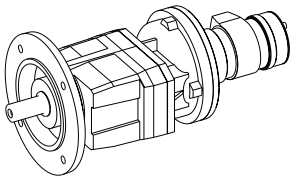
B6



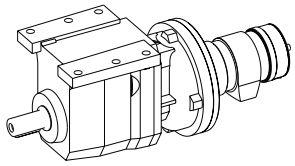
B51



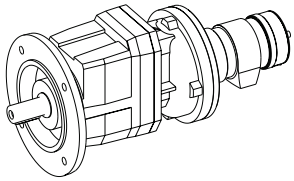
B7



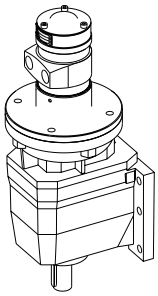
B53



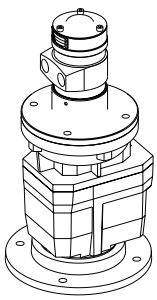
B8



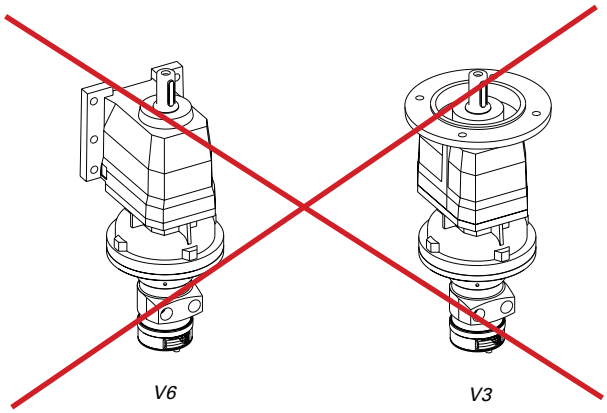
B52



V5



V1



V6

V3

NOTE: For some positions additional oil needs to be added to the gear box, see service instructions for details

AIR MOTORS LZL05
with helical gear units

1.2 – 2.0 kW
1.7 – 2.6 hp

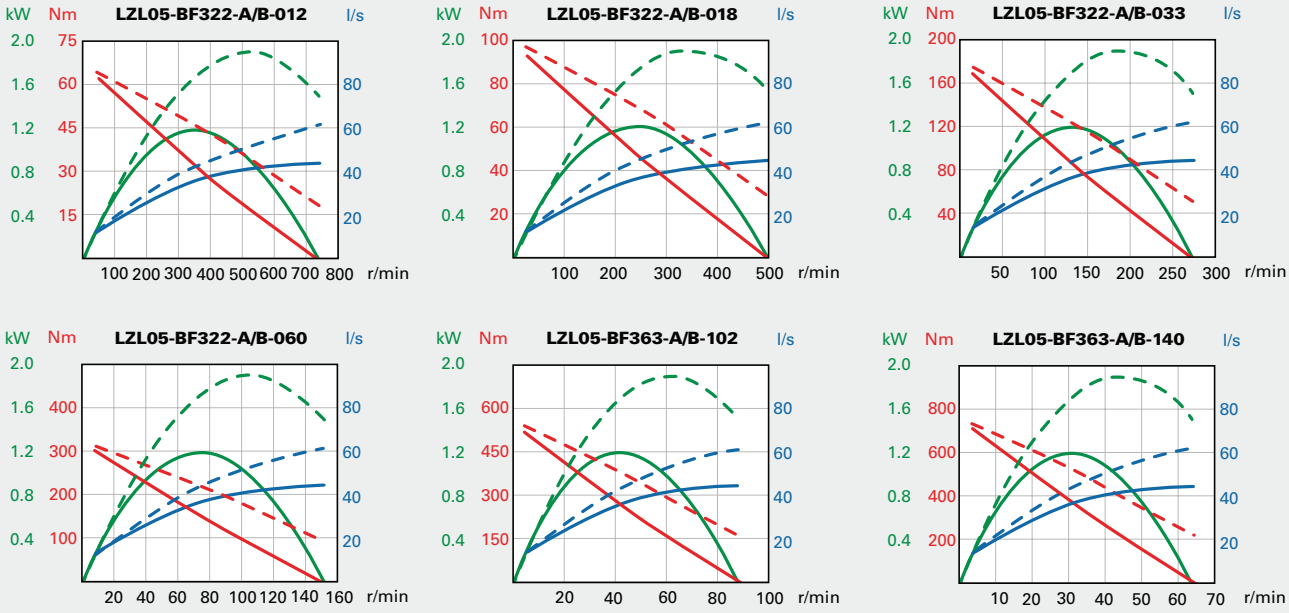
The LZL motor connects to the helical gear through an IEC interface

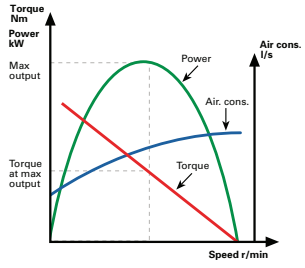
Data at air pressure 6.3 bar (91 psi)

		Max output		Speed at max output	Torque max output		Min starting torque		Free speed	Max allowed speed	Air consump-tion at max output		Weight		Max radial load at max output	
Model	Ratio	kW	hp	r/min	Nm	lb-ft	Nm	lb-ft	r/min	r/min	l/s	cfm	kg	lb	N	Ordering No.
LZL05-BF322-A-012	12.3	1.2	1.7	352	33	25	56	41	740		36	77	14	31	2360	8411 1808 40
LZL05-BF322-B-012	12.3	1.2	1.7	352	33	25	56	41	740		36	77	14	31	2360	8411 1808 57
Unrestricted*	12.3	2.0	2.6	512	36	27	56	41		740	54	114	14	31	2100	
LZL05-BF322-A-018	18.2	1.2	1.7	238	49	36	83	61	500		36	77	14	31	2770	8411 1808 65
LZL05-BF322-B-018	18.2	1.2	1.7	238	49	36	83	61	500		36	77	14	31	2770	8411 1808 73
Unrestricted*	18.2	2.0	2.6	346	54	40	83	61		500	54	114	14	31	2450	
LZL05-BF322-A-033	33.1	1.2	1.7	131	90	66	151	111	275		36	77	14	31	3370	8411 1808 81
LZL05-BF322-B-033	33.1	1.2	1.7	131	90	66	151	111	275		36	77	14	31	3370	8411 1808 99
Unrestricted*	33.1	2.0	2.6	190	97	72	151	111		275	54	114	14	31	3000	
LZL05-BF322-A-060	59.4	1.2	1.7	73	161	119	271	200	153		36	77	14	31	4800	8411 1809 07
LZL05-BF322-B-060	59.4	1.2	1.7	73	161	119	271	200	153		36	77	14	31	4800	8411 1810 15
Unrestricted*	59.4	2.0	2.6	106	174.9	129	271	200		153	54	114	14	31	4280	
LZL05-BF363-A-102	102.2	1.2	1.6	42	272	200	456	336	89		36	77	22	49	5650	8411 1810 23
LZL05-BF363-B-102	102.2	1.2	1.6	42	272	200	456	336	89		36	77	22	49	5650	8411 1810 31
Unrestricted*	102.2	1.9	2.6	62	295	217	456	336		89	54	114	22	49	5020	
LZL05-BF363-A-140	139.8	1.2	1.6	31	372	274	624	460	65		36	77	22	49	5690	8411 1810 49
LZL05-BF363-B-140	139.8	1.2	1.6	31	372	274	624	460	65		36	77	22	49	5690	8411 1810 56
Unrestricted*	139.8	1.9	2.6	45	403	297	624	460		65	54	114	22	49	5060	

**) Unrestricted, the motors should not be run without load*
A = Foot mount
B = Flange mount

Air motor LZL05 with helical gear units type BF: Performance curves at air pressure 6.3 bar (91 psi)





Conversion factors

1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

1 hp = 0.75 kW
1 lbf-ft = 1.36 Nm
1 cfm = 0.47 l/s

For information about performance curves, see page 7.

Performance with restrictors

Performance without restrictors (unrestricted)

AIR MOTORS LZL15
with helical gear units

2.1 – 3.0 kW
2.9 – 4.1 hp

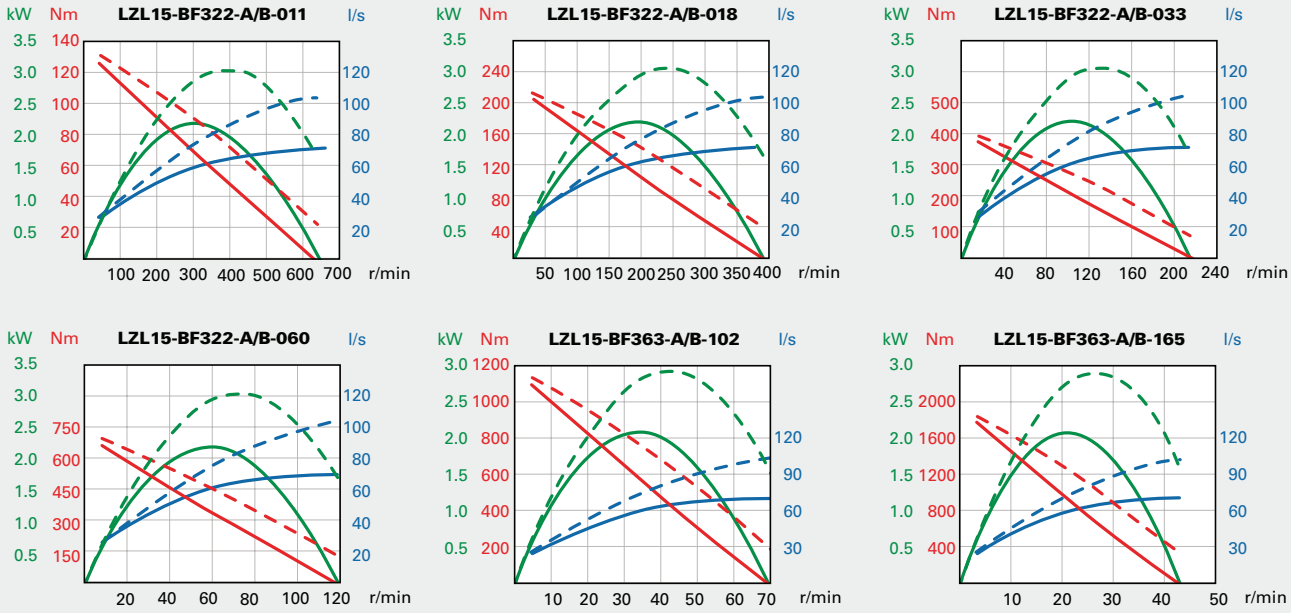
The LZL motor connects to the helical gear through an IEC interface.

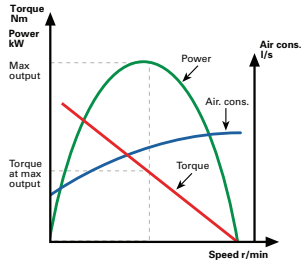
Data at air pressure 6.3 bar (91 psi)

		Max output		Speed at max output	Torque max output		Min starting torque		Free speed	Max allowed speed	Air consumption at max output		Weight		Max radial load at max output	
Model	Ratio	kW	hp	r/min	Nm	lb-ft	Nm	lb-ft	r/min	r/min	l/s	cfm	kg	lb	N	Ordering No.
LZL15-BF322-A-011	11.2	2.2	2.9	307	68	50	116	86	639		61	129	19	42	2530	8411 1810 61
LZL15BF322-B-011	11.2	2.2	2.9	307	68	50	116	86	639		61	129	19	42	2530	8411 1810 79
Unrestricted*	11.2	3.0	4.1	389	74	55	116	86		639	86	181	19	42	2310	
LZL15-BF322-A-018	18.2	2.2	2.9	189	111	82	188	139	393		61	129	19	42	2970	8411 1810 87
LZL15-BF322-B-018	18.2	2.2	2.9	189	111	82	188	139	393		61	129	19	42	2970	8411 1810 95
Unrestricted*	18.2	3.0	4.1	239	121	89.3	188	139		393	86	181	19	42	2710	
LZL15-BF322-A-033	33.1	2.2	2.9	104	202	149	343	253	216		61	129	19	42	3600	8411 1811 03
LZL15-BF322-B-033	33.1	2.2	2.9	104	202	149	343	253	216		61	129	19	42	3600	8411 1811 11
Unrestricted*	33.1	3.0	4.1	132	220	162	343	253		216	86	181	19	42	3300	
LZL15-BF322-A-060	59.4	2.2	2.9	58	362	267	615	454	120		61	129	19	42	5150	8411 1811 29
LZL15-BF322-B-060	59.4	2.2	2.9	58	362	267	615	454	120		61	129	19	42	5150	8411 1811 37
Unrestricted*	59.4	3.0	4.1	73	395	291	615	454		120	86	181	19	42	4710	
LZL15-BF363-A-102	102.2	2.1	2.9	34	609	449	1036	764	70		61	129	27	60	6040	8411 1811 45
LZL15-BF363-B-102	102.2	2.1	2.9	34	609	449	1036	764	70		61	129	27	60	6040	8411 1811 52
Unrestricted*	102.2	3.0	4.0	43	665	491	1036	764		70	86	181	27	60	5520	
LZL15-BF613-A-165	164.5	2.1	2.9	21	981	723	1668	1230	43		61	129	70	154	15000	8411 1811 60
LZL15-BF613-B-165	164.5	2.1	2.9	21	981	723	1668	1230	43		61	129	70	154	15000	8411 1811 78
Unrestricted*	164.5	3.0	4.0	26	1071	790	1668	1230		43	86	181	70	154	15000	

**) Unrestricted, the motors should not be run without load*
A = Foot mount
B = Flange mount

Air motor LZL15 with helical gear units type BF: Performance curves at air pressure 6.3 bar (91 psi)





Conversion factors

1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

1 hp = 0.75 kW
1 lbf-ft = 1.36 Nm
1 cfm = 0.47 l/s

For information about performance curves, see page 7.

Performance with restrictors

Performance without restrictors, (unrestricted)

AIR MOTORS LZL25
with helical gear units

3.3 – 4.8 kW
4.4 – 6.4 hp

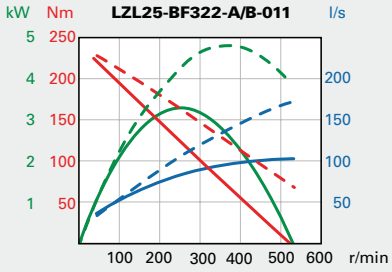
The LZL motor connects to the helical gear through an IEC interface.

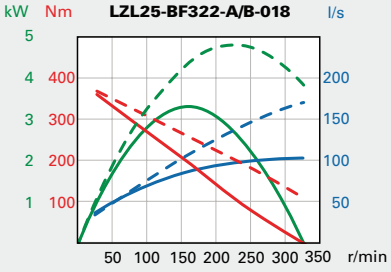
Data at air pressure 6.3 bar (91 psi)

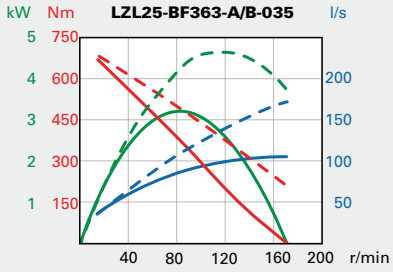
		Max output		Speed at max output	Torque max output		Min starting torque		Free speed	Max allowed speed	Air consumption at max output		Weight		Max radial load at max output	
Model	Ratio	kW	hp	r/min	Nm	lb-ft	Nm	lb-ft	r/min	r/min	l/s	cfm	kg	lb	N	Ordering No.
LZL25-BF322-A-011	11.2	3.3	4.4	254	123	91	192	141	531		86	183	26	57	2700	8411 1811 86
LZL25-BF322-B-011	11.2	3.3	4.4	254	123	91	192	141	531		86	183	26	57	2700	8411 1811 94
Unrestricted*	11.2	4.8	6.4	370	128	94	192	141		531	140	297	26	57	2430	
LZL25-BF322-A-018	18.2	3.3	4.4	156	201	148	311	230	327		86	183	26	57	3170	8411 1812 02
LZL25-BF322-B-018	18.2	3.3	4.4	156	201	148	311	230	327		86	183	26	57	3170	8411 1812 10
Unrestricted*	18.2	4.8	6.4	227	207	153	311	230		327	140	297	26	57	2860	
LZL25-BF363-A-035	34.6	3.2	4.3	82	373	275	579	427	172		86	183	34	75	4100	8411 1812 28
LZL25-BF363-B-035	34.6	3.2	4.3	82	373	275	579	427	172		86	183	34	75	4100	8411 1812 36
Unrestricted*	34.6	4.7	6.2	120	386	285	579	427		172	140	297	34	75	3700	
L25-BF613-A-059	58.6	3.2	4.3	48	632	466	981	724	101		86	183	77	170	13000	8411 1812 44
LZL25-BF613-B-059	58.6	3.2	4.3	48	632	466	981	724	101		86	183	77	170	13000	8411 1812 51
Unrestricted*	58.6	4.7	6.2	71	654	482	981	724		101	140	297	77	170	11700	
LZL25-BF613-A-114	113.6	3.2	4.3	25	1226	904	1902	1403	52		86	183	77	170	16000	8411 1812 69
LZL25-BF613-B-114	113.6	3.2	4.3	25	1226	904	1902	1403	52		86	183	77	170	16000	8411 1812 77
Unrestricted*	113.6	4.7	6.2	36	1268	935	1902	1403		52	140	297	77	170	16000	
LZL25-BF613-A-165	164.5	3.2	4.3	17	1775	1309	2754	2031	36		86	183	77	170	16000	8411 1812 85
LZL25-BF613-B-165	164.5	3.2	4.3	17	1775	1309	2754	2031	36		86	183	77	170	16000	8411 1812 94
Unrestricted*	164.5	4.7	6.2	25	1836	1354	2754	2031		36	140	297	77	170	16000	

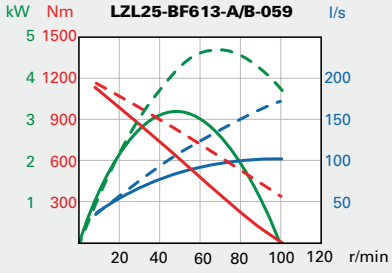
**) Unrestricted, the motors should not be run without load*
A = Foot mount
B = Flange mount

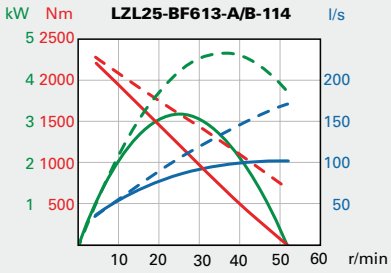
Air motor LZL25 with helical gear units type BF: Performance curves at air pressure 6.3 bar (91 psi)

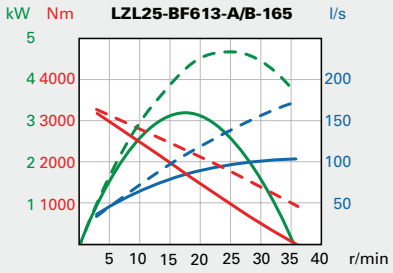


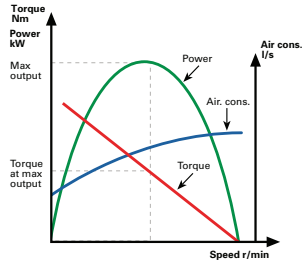












Conversion factors

1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

1 hp = 0.75 kW
1 lbf-ft = 1.36 Nm
1 cfm = 0.47 l/s

For information about performance curves, see page 7.

Performance with restrictors

Performance without restrictors, (unrestricted)

AIR MOTORS LZL35
with helical gear units

5.1 – 6.3 kW
6.8 – 8.4 hp

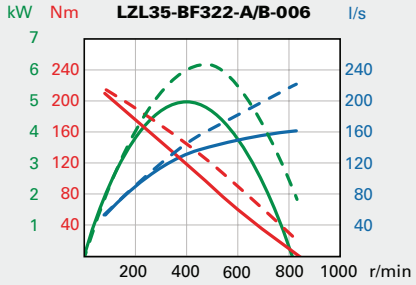
The LZL motor connects to the helical gear through an IEC interface.

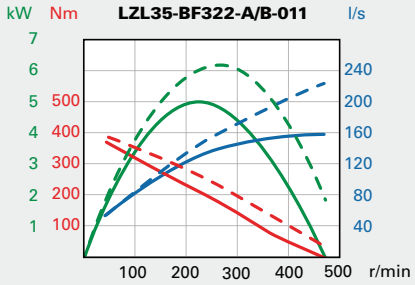
Data at air pressure 6.3 bar (91 psi)

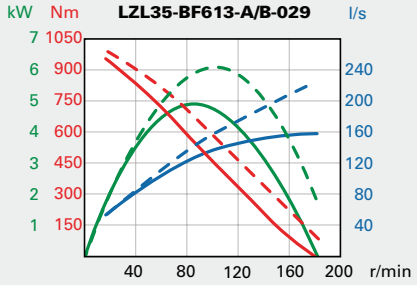
		Max output		Speed at max output	Torque max output		Min starting torque		Free speed	Max allowed speed	Air cons. at max output		Weight		Max radial load at max output	
Model	Ratio	kW	hp	r/min	Nm	lb-ft	Nm	lb-ft	r/min	r/min	l/s	cfm	kg	lb	N	Ordering No.
LZL35-BF322-A-006	6.3	5.0	6.7	394	121	90	192	141	838		129	273	34	75	2360	8411 1813 01
LZL35-BF322-B-006	6.3	5.0	6.7	394	121	90	192	141	838		129	273	34	75	2360	8411 1813 19
Unrestricted*	6.3	6.2	8.3	464	128	94	192	141		838	159	337	34	75	2230	
LZL35-BF322-A-011	11.2	5.0	6.7	221	216	159	340	251	471		129	273	34	75	2810	8411 1813 27
LZL35-BF322-B-011	11.2	5.0	6.7	221	216	159	340	251	471		129	273	34	75	2810	8411 1813 35
Unrestricted*	11.2	6.2	8.3	261	227	167	340	251		471	159	337	34	75	2650	
LZL35-BF613-A-029	29.4	4.9	6.6	84	555	409	875	645	180		129	273	85	187	10600	8411 1813 43
LZL35-BF613-B-029	29.4	4.9	6.6	84	555	409	875	645	180		129	273	85	187	10600	8411 1813 50
Unrestricted*	29.4	6.1	8.1	99	583	430	875	645		180	159	337	85	187	10000	
LZL35-BF613-A-048	47.6	4.9	6.6	52	899	663	1417	1045	111		129	273	85	187	12100	8411 1813 68
LZL35-BF613-B-048	47.6	4.9	6.6	52	899	663	1417	1045	111		129	273	85	187	12100	8411 1813 78
Unrestricted*	47.6	6.1	8.1	61	944	696	1417	1045		111	159	337	85	187	11400	

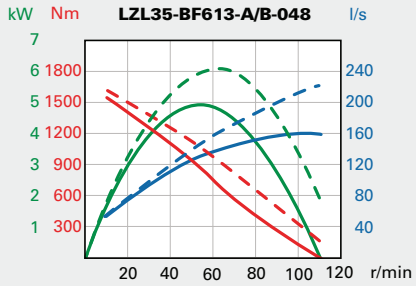
**) Unrestricted, the motors should not be run without load*
A = Foot mount
B = Flange mount

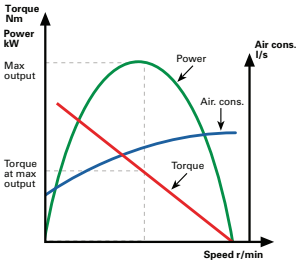
Air motor LZL35 with helical gear units type BF: Performance curves at air pressure 6.3 bar (91 psi)











Conversion factors

1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

1 hp = 0.75 kW
1 lbf-ft = 1.36 Nm
1 cfm = 0.47 l/s

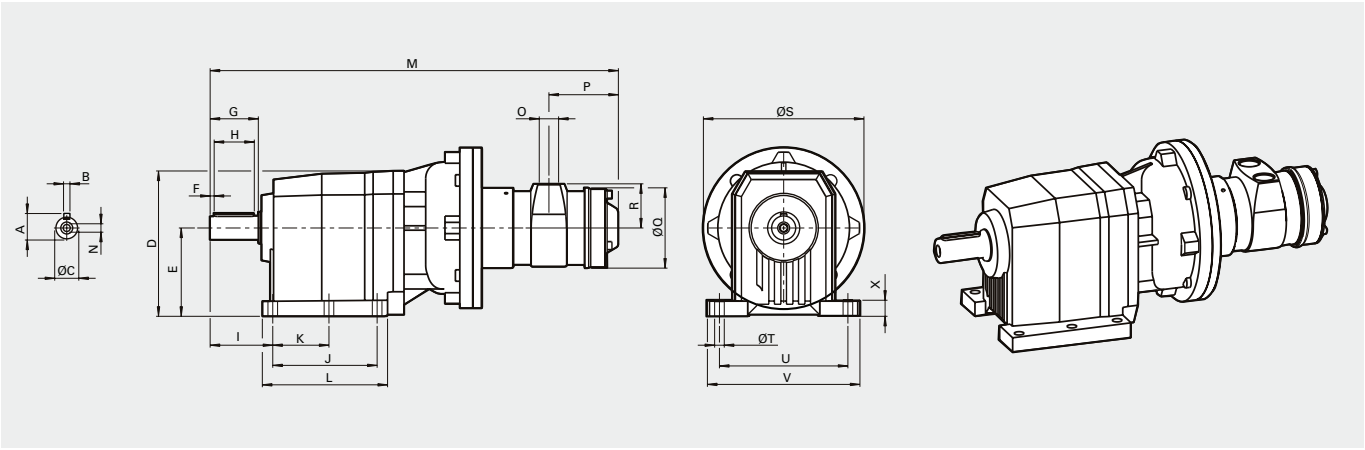
For information about performance curves, see page 7.

Performance with restrictors

Performance without restrictors, (unrestricted)

DIMENSIONS LZL WITH HELICAL GEAR UNITS
Foot models

Conversion factor 1 mm = 0.04 inch

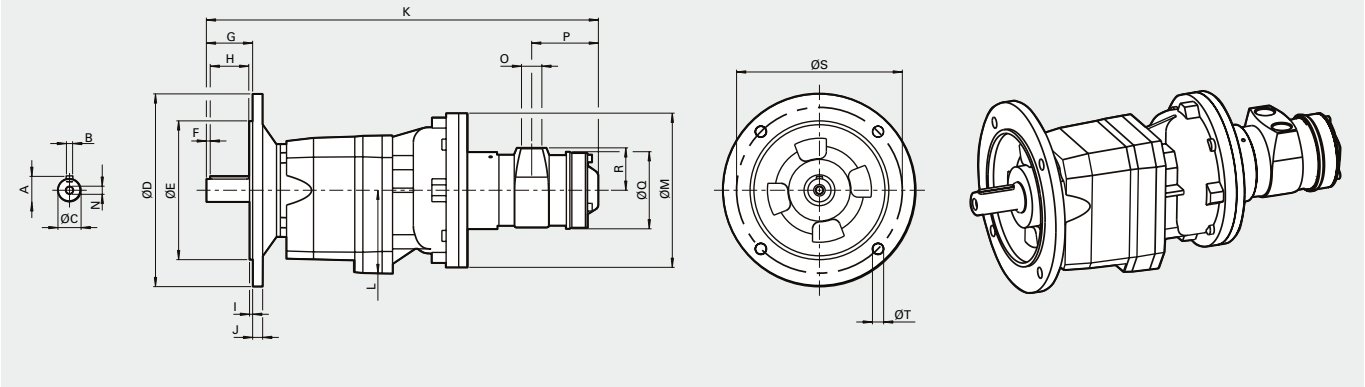


LZL type BF FOOT

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	X
LZL05-BF322-A-xxx	33	8 h9	30 h6	181	110	5.0	60	50	78	130	70	156	459.5	M10x22	BSP 1/2	71	Ø76	42	Ø160	Ø11	160	190	20
LZL05-BF363-A-xxx	38	10 h9	35 h6	206	115	5.0	70	60	93.5	130	N/A	168	478	M10x22	BSP 1/2	71	Ø76	42	Ø160	Ø14	170	205	16
LZL15-BF322-A-xxx	33	8 h9	30 h6	181	110	5.0	60	50	78	130	70	156	509	M10x22	BSP 3/4	86.5	Ø100	55	Ø200	Ø11	160	190	20
LZL15-BF363-A-xxx	38	10 h9	35 h6	206	115	5.0	70	60	93.5	130	N/A	168	527.5	M10x22	BSP 3/4	86.5	Ø100	55	Ø200	Ø14	170	205	16
LZL15-BF613-A-xxx	53.5	14 h9	50 h6	316	195	5.0	100	90	125	180	N/A	232	617	M16x36	BSP 3/4	86.5	Ø100	55	Ø200	Ø18	250	300	25
LZL25-BF322-A-xxx	33	8 h9	30 h6	181	110	5.0	60	50	78	130	70	156	547.5	M10x22	BSP 1	103	Ø120	62	Ø200	Ø11	160	190	20
LZL25-BF363-A-xxx	38	10 h9	35 h6	206	115	5.0	70	60	93.5	130	N/A	168	566	M10x22	BSP 1	103	Ø120	62	Ø200	Ø14	170	205	16
LZL25-BF613-A-xxx	53.5	14 h9	50 h6	316	195	5.0	100	90	125	180	N/A	232	655.5	M16x36	BSP 1	103	Ø120	62	Ø200	Ø18	250	300	25
LZL35-BF322-A-xxx	33	8 h9	30 h6	181	110	5.0	60	50	78	130	70	156	585.5	M10x22	BSP 1 1/4	119.5	Ø134	68	Ø250	Ø14	160	190	20
LZL35-BF613-A-xxx	53.5	14 h9	50 h6	316	195	5.0	100	90	125	180	N/A	232	692.5	M16x36	BSP 1 1/4	119.5	Ø134	68	Ø250	Ø18	250	300	25

DIMENSIONS LZL WITH HELICAL GEAR UNITS
Flange models

Conversion factor 1 mm = 0.04 inch



LZL type BF FLANGE

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
LZL05-BF322-B-xxx	33	8 h9	30 h6	Ø250	Ø180 f7	5.0	60	50	4.0	13	459.5	108	Ø160	M10x22	BSP 1/2	71	Ø76	42	Ø215	Ø14
LZL05-BF363-B-xxx	38	10 h9	35 h6	Ø250	Ø180 f7	5.0	70	60	4.0	14	478	111	Ø160	M10x22	BSP 1/2	71	Ø76	42	Ø215	Ø14
LZL15-BF322-B-xxx	33	8 h9	30 h6	Ø250	Ø180 f7	5.0	60	50	4.0	13	509	108	Ø200	M10x22	BSP 3/4	86.5	Ø100	55	Ø215	Ø14
LZL15-BF363-B-xxx	38	10 h9	35 h6	Ø250	Ø180 f7	5.0	70	60	4.0	14	527.5	111	Ø200	M10x22	BSP 3/4	86.5	Ø100	55	Ø215	Ø14
LZL15-BF613-B-xxx	53.5	14 h9	50 h6	Ø300	Ø230 f7	5.0	100	90	4.0	16	617	178.5	Ø200	M16x36	BSP 3/4	86.5	Ø100	55	Ø265	Ø14
LZL25-BF322-B-xxx	33	8 h9	30 h6	Ø250	Ø180 f7	5.0	60	50	4.0	13	547.5	108	Ø200	M10x22	BSP 1	103	Ø120	62	Ø215	Ø14
LZL25-BF363-B-xxx	38	10 h9	35 h6	Ø250	Ø180 f7	5.0	70	60	4.0	14	566	111	Ø200	M10x22	BSP 1	103	Ø120	62	Ø215	Ø14
LZL25-BF613-B-xxx	53.5	14 h9	50 h6	Ø300	Ø230 f7	5.0	100	90	4.0	16	655.5	178.5	Ø200	M16x36	BSP 1	103	Ø120	62	Ø265	Ø14
LZL35-BF322-B-xxx	33	8 h9	30 h6	Ø250	Ø180 f7	5.0	60	50	4.0	13	585.5	108	Ø250	M10x22	BSP 1 1/4	119.5	Ø134	68	Ø215	Ø14
LZL35-BF613-B-xxx	53.5	14 h9	50 h6	Ø300	Ø230 f7	5.0	100	90	4.0	16	692.5	178.5	Ø250	M16x36	BSP 1 1/4	119.5	Ø134	68	Ø265	Ø14

EXPLOSION PREVENTION GUIDELINES

In addition to the product instructions for air motors, the following guidelines apply to explosion protected air motors.

Temperatures

- The maximum surrounding temperature for which the certification is valid is 40°C (104°F).
- 40°C (104°F) is also the maximum allowed temperature of the compressed air when it enters the motor.
- If the motor is installed in a equipment, the entire equipment has to correspond to the guidelines 2014/35/EU.
- Make sure that the compressed air fulfill our quality demands (quality classes 2.4.3. and 3.4.4 respectively 3.5.4 acc. to ISO/DIS 8573-1).
- Do not exceed maximum pressure of 6.3 bar, or as stated on the motor nameplate. Exceeding the operating pressure can increase the surface temperature due to higher rotating speed and the motor can become an ignition source.

ATEX CODE DEFINITION

ATEX certificate:

For information about the ATEX certificate, refer to the ATEX Technical File, 9836 4610 00.
If the product is part of an assembly where the components have different ATEX codes, the component with the lowest level of safety defines the ATEX code of the whole assembly.

Description	Value	Definition
Equipment group	I	Mining applications
	II	Surface industry
Equipment category Group I	M1	May continue to operate when a potentially explosive atmosphere is present
	M2	Shall not operate when a potentially explosive atmosphere is present.
Equipment category Group II	1	Very high level of protection • zone 0 (gas) • zone 1 (gas) • zone 2 (gas) • zone 20 (dust) • zone 21 (dust) • zone 22 (dust)
	2	High level of protection • zone 1 (gas) • zone 2 (gas) • zone 21 (dust) • zone 22 (dust)
	3	Normal level of protection • zone 2 (gas) • zone 22 (dust)
Atmosphere	G	Atmosphere containing Gas, Vapors or Mist
	D	Atmosphere containing Dust
Safety design	c	Constructional safety
Type of protection	Ex nL	Explosion protection. Type: “Energy limited apparatus and circuits”
Gas group	IIA	Propane/Acetone/Ammonia
	IIB	Ethylene
	IIC	Hydrogen/Acetylene
Max surface temperature in Gas		T1 = 450°C (848°F) T2 = 300°C (572°F) T3 = 200°C (392°F) T4 = 135°C (275°F) T5 = 100°C (212°F) T6 = 85°C (185°F)
Max surface temperature in Dust		Example temperatures: T85°C (185°F) T110°C (230°F) T120°C (248°F) T125°C (257°F) T240°C (464°F)
Ambient temperature range	Ta	Example: 20°C Ta +40°C