Atlas Copco Air Motors

Sustainable Productivity

Atlas Copco

Atlas Copco – air motors

- Leading the industry in development and innovation.
- Offering a comprehensive range of standard air motors.
- A premier supplier of air motors engineered to meet customer requirements.
- Delivering orders, on time, to customer schedules.
- Offering a truly world-wide service.

Atlas Copco air motors – the natural choice for design engineers in the industry of today and tomorrow.

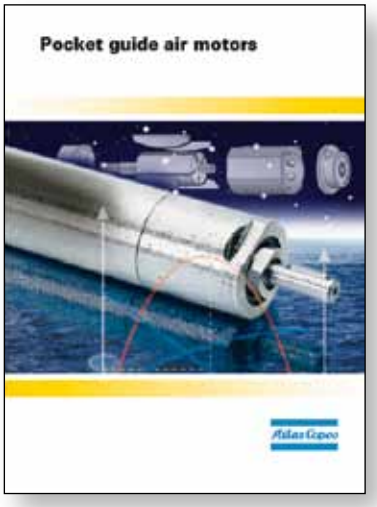
Air motor features and characteristics

- Air motors are compact and lightweight. An air motor weighs only a quarter as much and occupies only one sixth of the space of an electric motor of equivalent output power. Air motors develop far more power relative to size and weight than most other motor types.
- Air motors can be stalled indefinitely without overheating or sustaining any other damage. They can be started and stopped repeatedly to an unlimited extent.
- Torque, speed and direction of rotation can be changed easily using simple control methodes.
- Output that inherently adjusts to match the applied load.
- Controllable over a wide speed range.
- Virtually unaffected by hostile environment.
- Smooth start-up to minimize "shock" loading on transmission components.

Our air motors are available in explosion proof certified versions, in compliance with the European Union's ATEX Directive on equipment for potentially explosive environments.


FRESH

Additional information about air motors from Atlas Copco



Selecting the right motor has never been easier!

Only enter the required working point for the application and the most suitable motor will automatically be selected. For the selection you use the web based Atlas Copco selection tool.

Air motor selection program, available at www.atlascopco.com/airmotors

The pocket guide is for you who want to know more about air motors. In the pocket guide you find information about function, design, motor selection and installations. Use the Ordering No. 9833 9067 01.

Log in to www.atlascopco.com/airmotors 24-hour access

Visit our web site and browse through our on-line catalogue. You'll find comprehensive technical information as well as details of accessories, spare parts and dimensional drawings. You can also subscribe to our news.

Contents

Introducing the air motor

The air motor is one of the toughest and most versatile power units available to today´s design engineer. It is easy to control over a wide speed range, and it produces maximum torque where it is often most needed – at start up.

The performance of an air motor is dependant on the inlet pressure. At a constant inlet pressure, ungoverned air motors exhibit the characteristic linear output torque/speed relationship. Figure 1.

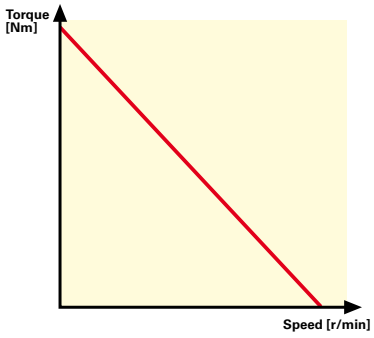


Figure 1

However, by simply regulating the air supply, using the techniques of throttling or pressure regulation, the output of an air motor can be easily modified.

The free speed and torque can be regulated down to 50% for an LZB air motor. The free speed for an LZL can be regulated down to 10% and the torque can be regulated down to 20%. The shaded areas in figure 2 illustrate this.

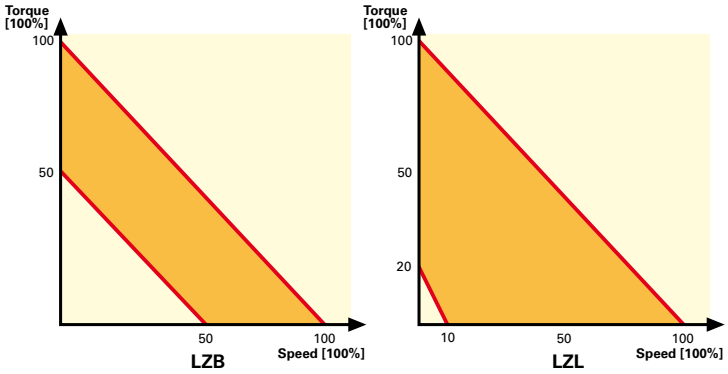


Figure 2

It should be noted that all vane air motors produce a variable starting torque, due to the position of the vanes in the motor when it is started. The variation differs between motor types and must be checked on an individual basis.

The power that an air motor produces is a function of torque and speed. All ungoverned air motors produce the same characteristic power curve, with maximum power occurring at around 50% of the free speed. The torque produced at this point is often referred to as "torque at maximum output."

The performance curves for an ungoverned air motor operating at a constant air pressure are illustrated in figure 3.

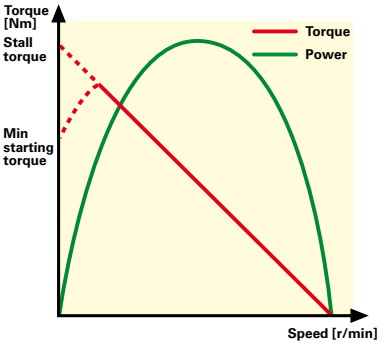


Figure 3

The use of gear units

Air motors operate at high speed and, although they can be controlled over a wide speed range, the output characteristics are not always suitable for the application. To achieve the required output an appropriate gear unit can be selected. The ability to change the output by use of a gear unit is illustrated in figure 4.

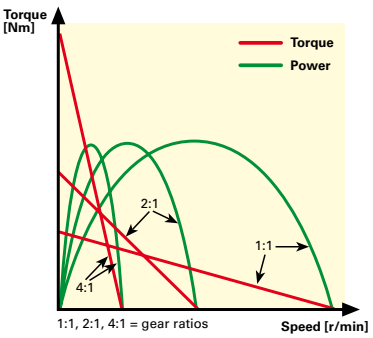


Figure 4

The planetary and helical gear units used by Atlas Copco have a high level of efficiency that can be assumed to be 100%. The power output remains virtually unchanged also when gears are used.

Methods of modifying motor output

Throttling

A throttle is usually fitted into the motor´s inlet hose, although it can also be fitted into the exhaust hose. When it is desirable to maintain a high starting torque but reduce running speed – throttling is the best method of modifying the motor´s output, Figure 5.

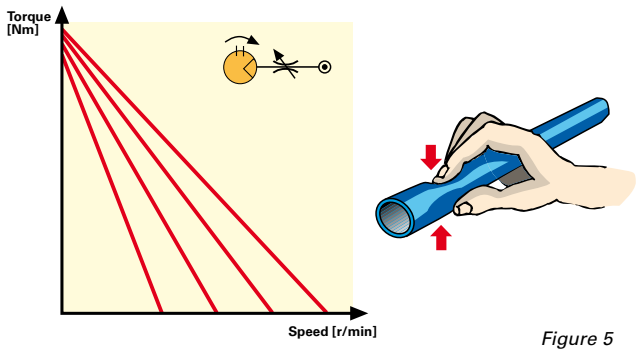


Figure 5

Pressure regulation

When using a pressure regulator it is mostly fitted into the motor´s inlet hose. The use of pressure regulation is ideal when control of the stall torque is required and a high starting torque is not so important, Figure 6.

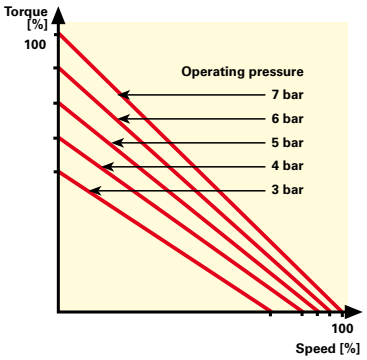


Figure 6

Using the catalogue

Motor data, specification and performance curves

For each Atlas Copco motor/gear unit combination the following information is presented in this catalogue.

1. Tabular Data – Summary of main performance parameters.
2. Dimensional drawings.
3. Performance curves.

Notes on performance data

The performance data stated in this catalogue is valid for an air supply pressure of 6.3 bar (91 psi), gauge. Air consumption values are for free air delivery – (ie, the volume the consumed air would occupy if allowed to expand to atmospheric pressure).

The direction of rotation for a motor is always stated looking from the back of the motor. Figure 7 illustrate clockwise rotation.

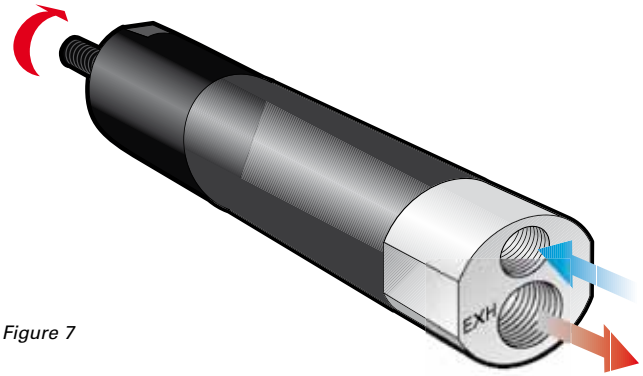


Figure 7

Understanding the performance curves

The output of an air motor is most clearly seen from its performance curves Figure 8. For each motor/gear unit the power, torque and air consumption are shown as a function of speed.

The diagrams shown apply to an inlet pressure of 6.3 bar, to calculate performance at other pressures refer to page 70 in this catalogue.

Motor selection

Guidelines on motor selection are given on page 70 in this catalogue – Choosing Your Motor.

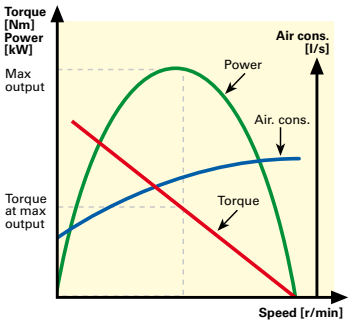


Figure 8

Note. The starting torque produced by an air motor is variable and depends on vane position. These diagrams do not indicate the starting torque – this can be obtained from data tables, where the minimum value is shown.

Installation

General installation recommendations are given on page 72. Details specific to a motor are shown in the section relevant to that motor type.

Introduction to Atlas Copco air motors and gear units

LZB Vane motors – 0.1 kW to 2.9 kW

Type LZB Atlas Copco vane motors are compact in design, light in weight, and available with a host of different gear ratios to meet a variety of speed and torque requirements. They are particularly suited to be built into hand held machines, or indeed any industrial equipment.

Planetary gear units

Atlas Copco planetary gear units are particularly suited for use with LZB vane motors. The gear and motor components can be accommodated within a single, extremely compact housing where they provide high torque capacity for their size and exceptional efficiency, Figure 9.

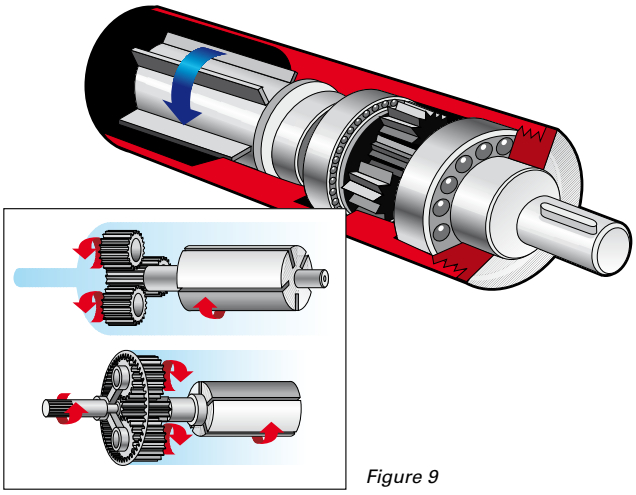


Figure 9

Stainless steel air motors

Atlas Copco's stainless steel motors enlarge the field of applications to areas where the environment is corrosive. This can be in the food processing industries where corroding detergents are used or in the chemical industry where the atmosphere as such is corrosive.

Atlas Copco's stainless steel motors have a "clean" design. Their smooth surfaces are cylindrical with no pockets where dirt can collect. The motors are easy to clean.

The motors have double seals in Viton at the shaft end to prevent water from entering the gears.

The grease in the motor complies with NSF H1 and FDA 21CFR § 178.3570.

Explosion proof

Our air motors are available in explosion proof certified versions, in compliance with the European Union.s ATEX Directive on equipment for potentially explosive environments.

Ex-Certified air motors are ideal in hazardous environments, where sparks or high outer temperatures might otherwise ignite explosive gases, vapour or dust.

Lubrication free air motors

Atlas Copco's lubrication free air motors are equipped with low-friction vanes, sealed bearings and vented cylinder plates. Since they release no lubricants into the air, they offer a viable drive solution for sensitive processes and hygienic environments where oil contamination would be at best a problem and, at worst, a catastrophe.

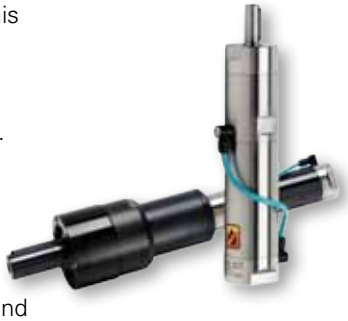
LZB 33 high torque – low speed air motors

Accomplishing high torques generally calls for very large motors with correspondingly high air consumption. The LZB 33 high torque/low speed air motors are based on the combination of LZB 33, the work horse in Atlas Copco´s air motor program, and the gears used in the large LZB 42-54 motors. This gives a compact motor/gear package. The gears are dimensioned to stand being loaded at full stall torque indefinitely. Competing low speed air motors often have to limit their output torques to prevent gear breakage.

LZB 22LR and 33LR – low speed airmotors

When there is a need for low speed only, the LR motors offer a complete and low price solution compared to the high torque LZB 33 airmotors.

Motors with brake



The most popular vane motors, LZB 33, are available with parking brake. This brake is located between the motor and the gear. It is a disc brake that is spring activated when the motor is not running. When the motor is started the brake is released by a built in pneumatic piston. The brake is used when it is important that the output shaft must not turn when the motor isn't running and a torque is applied on the shaft.

A:	Clockwise rotation
AR:	Reversible
AV:	Anti-clockwise rotation
L:	Lubrication free
LB:	With brake module
LR:	Low speed
R:	Stainless steel
RL:	Stainless steel, lubrication free
RLB:	Stainless steel, with brake module
RLR:	Stainless steel, low speed

Table 1 illustrates what features the letters in the motor designation stands for.

Table 1

LZL Vane motors – 1.3 kW to 6,5 kW

Type LZL Atlas Copco vane motors have been designed to offer outstanding starting and low speed performance. These general purpose motors are powerful, rugged and hard wearing, Figure 10.

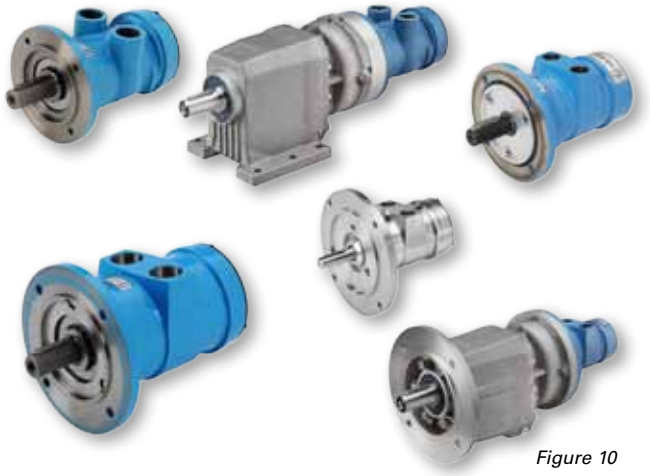
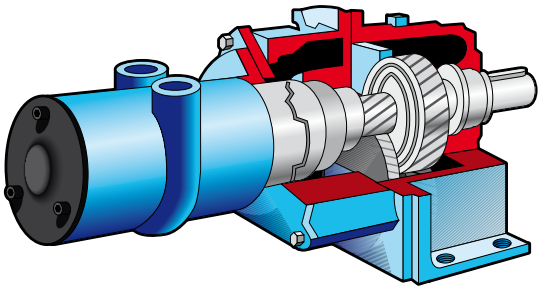


Figure 10

Helical gear units

Atlas Copco helical gear units are normally fitted to Type LZL vane motors. Standard units are highly efficient, providing speeds of 500 r/min down to 15 r/min at torques of up to 4500 Nm. The gear unit is flange-coupled to the motor and the shafts are joined by a flexible coupling, Figure 11.



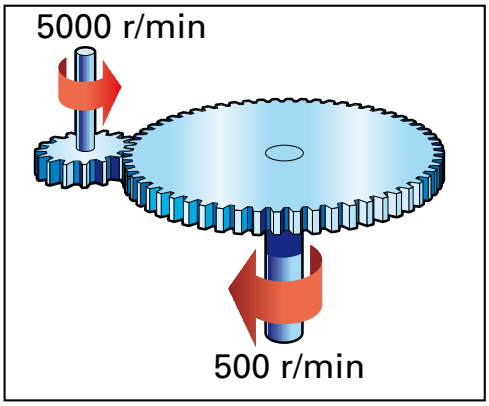


Figure 11


LZB

LZB Vane motors

Introduction

LZB vane motors are designed to provide high performance and high standards of reliability. Typically, they are characterized by a high power output and small physical size, Figure 12.

Figure 12

The design of the motor is chosen to be long and slim. This gives a number of advantages like a high power to volume ratio, a low air consumption and long vane life. All motors utilise five vanes, which are supplied with vane air, to ensure excellent starting and low speed performance. Multi-step planetary gears are used to meet the torque and speed requirements of the application, offering high efficiency with compact dimensions.

Shaft loading

The maximum allowable loads on a given motor´s output shaft are illustrated in Figure 14. The relevant load curve code for a motor is stated in the data tables for each specific motor designation, under the "Shaft load code" column. These values have been calculated for shaft and bearing working lives of 10 million turns. To achieve a working life of 100 million turns, the loading factor must be halved.

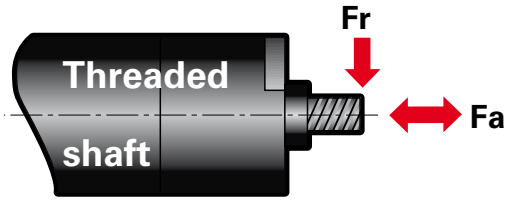
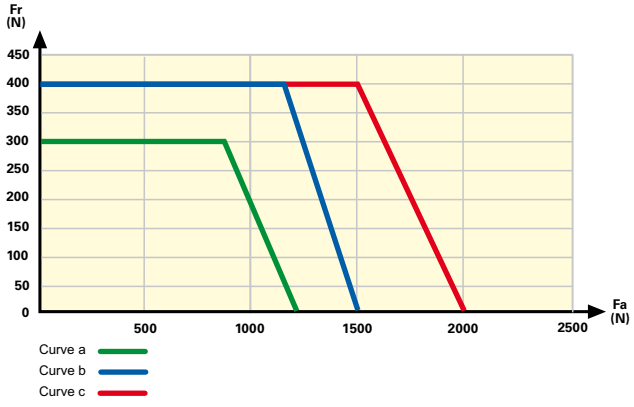
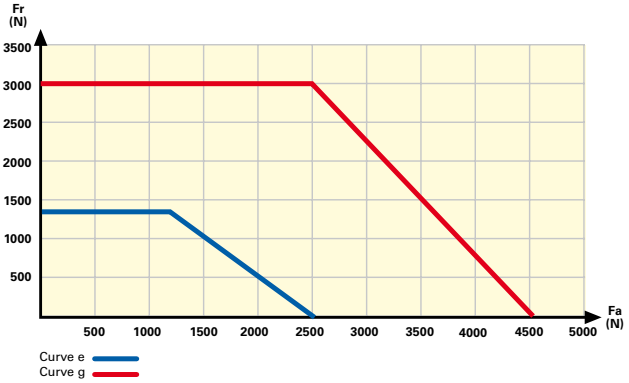
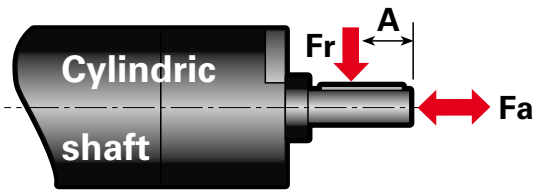


Figure 13







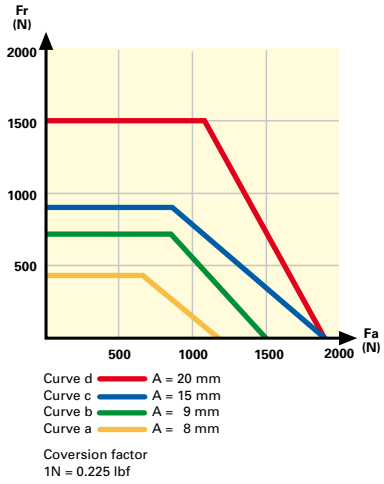
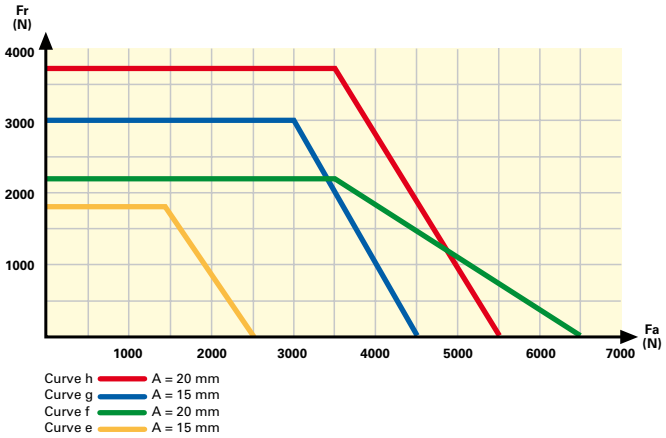


Figure 14



Mounting

Type LZB vane motors may be mounted in any position. To facilitate this, flange and foot mounting are available for each motor, Figure 15.

Figure 15

Connection

Non-Reversible Motor

When the compressed air supply is connected to the inlet, the direction of rotation will be as shown in Figure 16. If the exhaust air is to be piped away, a hose should be connected to the exhaust outlet. (EXH).

Certain models have a third outlet, which can be plugged without affecting the performance of the motor.

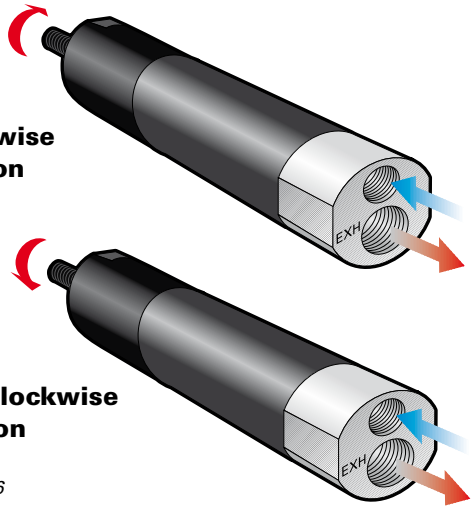


Figure 16

Reversible Motor

The compressed air supply should be connected to the inlet that gives the desired direction of rotation, Figure 17.

The inlet not in use functions as an additional outlet: it must not be plugged.

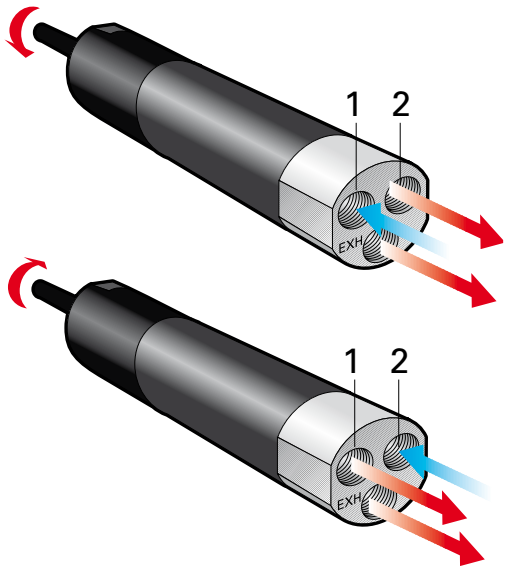


Figure 17

Hose dimensions

Information on hose dimensions recommended for use with type LZB air motors is detailed in Table 2. These dimensions are valid for hose lengths up to 3 m. If lengths above that are used, choose a one size larger hose.

Hose size up to 3m length.

Motor Type	Inlet connection thread (BSP)	Inlet connection thread (NPTF)	Exhaust connection thread (mm)	Inlet hose diameter (mm)	Exhaust hose diameter (Non-reversible) (mm)	Exhaust hose diameter (Reversible) (mm)
LZB 14	1/8"	–	1/8"	5.0	8.0	6.3
LZB 22	1/8"	–	1/4"	6.3	10.0	8.0
LZB 33	1/4"	–	1/4"	8.0	10.0	8.0
LZB 42	1/4"	–	1/2"	10.0	13.0	13.0
LZB 46	1/4"	–	1/2"	10.0	16.0	13.0
LZB 54	3/8"	–	1/2"	13.0	16.0	13.0
LZB 66	3/8"	–	3/4"	13.0	20.0	13.0
LZB 77	1/2"	1/2" - 14	–	16.0	–	16.0

Table 2

Vane motors LZB 14
Lubrication free versions
LZB 14L

0.10 – 0.16 kW
0.14 – 0.22 hp

For EX certification according to the ATEX directive
(Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00
(book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

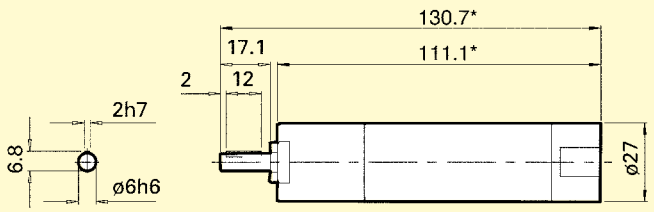
Data at air pressure 6.3 bar (91psi)

Type [1]	Ordering No. Keyed Shaft	Ordering No. Threaded Shaft	Type	Ordering No. Keyed Shaft	Ordering No. Threaded Shaft	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf.ft	Min starting torque Nm	Min starting torque lbf.ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code [2]
Clockwise rotation																		
	Standard			**Lubrication free**														
LZB 14			**LZB 14L**															
A190-	8411 0110 03	8411 0111 02	A190-	8411 0113 00	8411 0114 09	0.16	0.22	9100	0.17	0.12	0.26	0.19	19500	4.2	8.9	0.30	0.66	a
A048-	8411 0110 11	8411 0111 10	A048-	8411 0113 18	8411 0114 17	0.16	0.22	2200	0.70	0.50	1.0	0.73	4700	4.2	8.9	0.30	0.66	a
A029-	8411 0110 29	8411 0111 28	A029-	8411 0113 26	8411 0114 25	0.16	0.22	1400	1.1	0.78	1.7	1.2	2800	4.2	8.9	0.30	0.66	a
A012-	8411 0110 37	8411 0111 36	A012-	8411 0113 34	8411 0114 33	0.16	0.22	530	2.9	2.1	4.2	3.1	1100	4.2	8.9	0.33	0.73	a
A007-	8411 0110 45	8411 0111 44	A007-	8411 0113 42	8411 0114 41	0.16	0.22	330	4.7	3.4	7.0	5.1	690	4.2	8.9	0.33	0.73	a
Anti-clockwise rotation																		
LZB 14			**LZB 14L**															
AV190-	8411 0116 07	–	AV190-	8411 0117 06	–	0.16	0.22	9100	0.17	0.12	0.26	0.19	19500	4.2	8.9	0.30	0.66	a
AV048-	8411 0116 15	–	AV048-	8411 0117 14	–	0.16	0.22	2200	0.70	0.50	1.0	0.73	4700	4.2	8.9	0.30	0.66	a
AV029-	8411 0116 23	–	AV029-	8411 0117 22	–	0.16	0.22	1400	1.1	0.78	1.7	1.2	2800	4.2	8.9	0.30	0.66	a
AV012-	8411 0116 31	–	AV012-	8411 0117 30	–	0.16	0.22	530	2.9	2.1	4.2	3.1	1100	4.2	8.9	0.33	0.73	a
AV007-	8411 0116 49	–	AV007-	8411 0117 48	–	0.16	0.22	330	4.7	3.4	7.0	5.1	690	4.2	8.9	0.33	0.73	a
Reversible																		
LZB 14			**LZB 14L**															
AR140-	8411 0112 01	–	AR140-	8411 0115 08	–	0.10	0.14	6500	0.15	0.11	0.19	0.14	13000	3.6	7.6	0.30	0.66	a
AR034-	8411 0112 19	–	AR034-	8411 0115 16	–	0.10	0.14	1600	0.60	0.43	0.78	0.57	3100	3.6	7.6	0.30	0.66	a
AR020-	8411 0112 27	–	AR020-	8411 0115 24	–	0.10	0.14	950	1.0	0.72	1.3	0.95	1900	3.6	7.6	0.30	0.66	a
AR008-	8411 0112 35	–	AR008-	8411 0115 32	–	0.10	0.14	380	2.5	1.8	3.1	2.3	760	3.6	7.6	0.33	0.73	a
AR005-	8411 0112 43	–	AR005-	8411 0115 40	–	0.10	0.14	230	4.1	3.0	5.0	3.6	460	3.6	7.6	0.33	0.73	a

[1] Suffix. -11 = Keyed Shaft -12 = Threaded Shaft. [2] For Shaft loading curves, see page 12. NOTE: The lubrication free motors have 95% of shown free speed

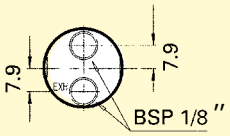
Dimensions (mm)

Keyed shaft (-11)

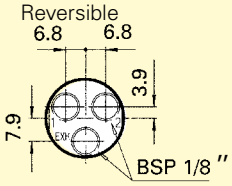


*) +9.8 mm for LZB 14 A012, A007, AR008, AR005, AV 012, AV 007

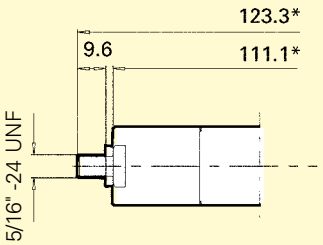
Non-Reversible

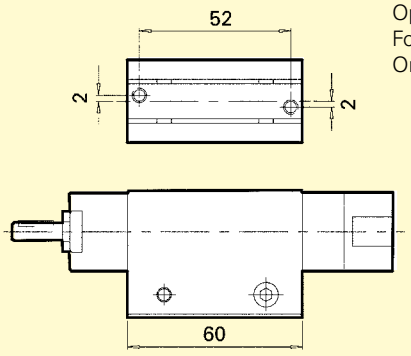


Reversible

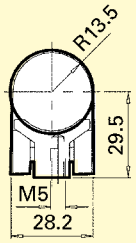


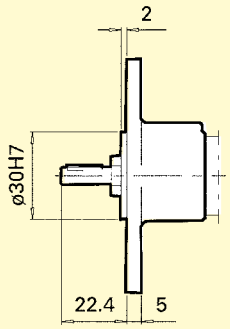
Threaded shaft (-12)



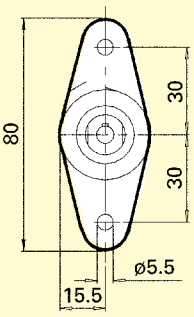


Optional Mountings
Foot
Ordering No. 4430 0189 80





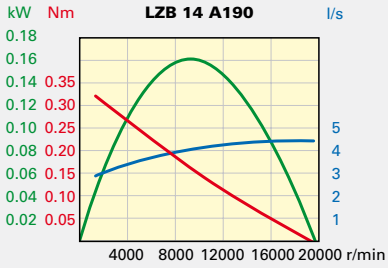
Flange
Ordering No. 4430 0165 85

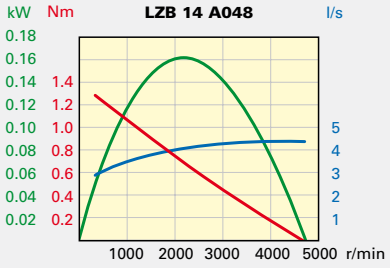


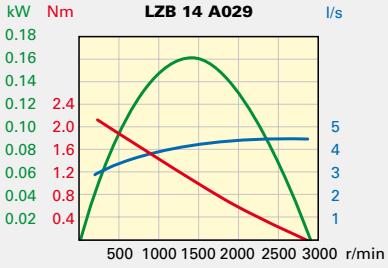
Optional accessories
page 46.

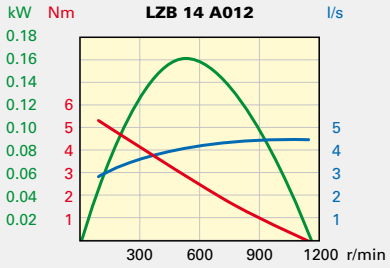
LZB 14 Performance curves at air pressure 6.3 bar (91psi)

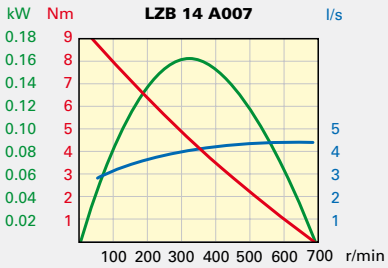
Non-Reversible



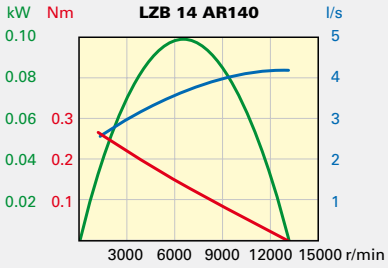


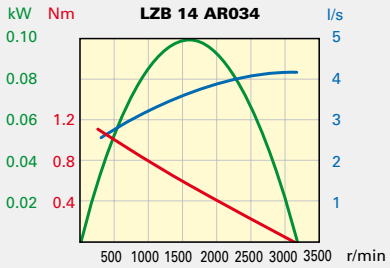


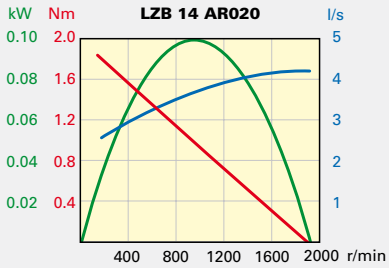


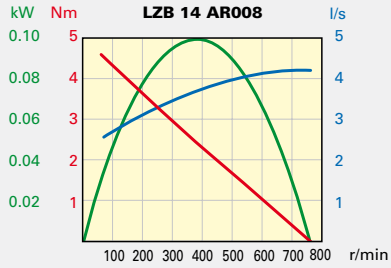


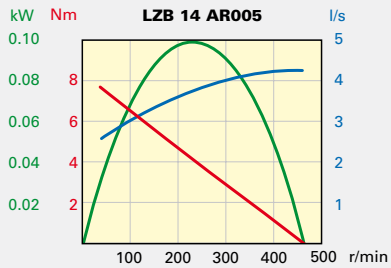
Reversible

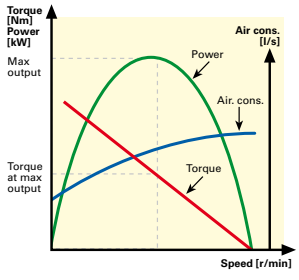












Conversion factors)*

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 more details, see page 7.*

For information about performance curves, see page 7.

Vane motors LZB 14R
Lubrication free versions LZB 14RL

0.10 – 0.16 kW
0.14 – 0.22 hp

For EX certification according to the ATEX directive (Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00 (book as one delivery together with motor).
The material used in the back head, casing and front part is stainless steel with the designation: ISO 683/XIII Type 17, SS 14 2346, DIN 17440 X12CrNiS188. The material used in the outgoing shaft and gear rim has the designation: ISO 683/XIII Type 9b, SS 14 2321, DIN 17440 X22CrNi17.

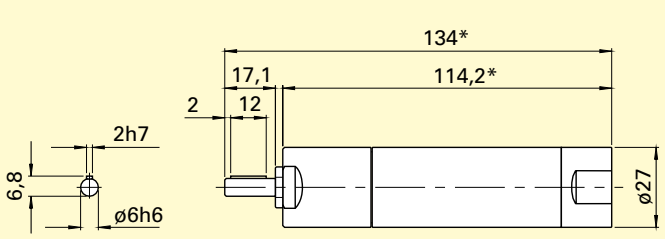
Data at air pressure 6.3 bar (91psi)

Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code [1]
Clockwise																
LZB 14R		**LZB 14RL**														
A190-11	8411 0121 00	A190-11	8411 0122 09	0.16	0.22	9100	0.17	0.12	0.26	0.19	19500	4.2	8.9	0.37	0.82	a
A048-11	8411 0121 18	A048-11	8411 0122 17	0.16	0.22	2200	0.70	0.50	1.0	0.73	4700	4.2	8.9	0.37	0.82	a
A029-11	8411 0121 26	A029-11	8411 0122 25	0.16	0.22	1400	1.1	0.78	1.7	1.2	2800	4.2	8.9	0.37	0.82	a
A012-11	8411 0121 34	A012-11	8411 0122 33	0.16	0.22	530	2.9	2.1	4.2	3.1	1100	4.2	8.9	0.40	0.88	a
A007-11	8411 0121 42	A007-11	8411 0122 41	0.16	0.22	330	4.7	3.4	7.0	5.1	690	4.2	8.9	0.40	0.88	a
Reversible																
LZB 14R		**LZB 14RL**														
AR140-11	8411 0121 59	AR140-11	8411 0122 58	0.10	0.14	6500	0.15	0.11	0.19	0.14	13000	3.6	7.6	0.37	0.82	a
AR034-11	8411 0121 67	AR034-11	8411 0122 66	0.10	0.14	1600	0.60	0.43	0.78	0.57	3100	3.6	7.6	0.37	0.82	a
AR020-11	8411 0121 75	AR020-11	8411 0122 74	0.10	0.14	950	1.0	0.72	1.3	0.95	1900	3.6	7.6	0.37	0.82	a
AR008-11	8411 0121 83	AR008-11	8411 0122 82	0.10	0.14	380	2.5	1.8	3.1	2.3	760	3.6	7.6	0.40	0.88	a
AR005-11	8411 0121 91	AR005-11	8411 0122 90	0.10	0.14	230	4.1	3.0	5.0	3.6	460	3.6	7.6	0.40	0.88	a

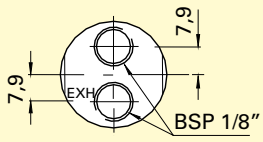
[1] *For Shaft loading curves, see page 12. NOTE: The lubrication free motors have 95% of shown free speed.*

Dimensions (mm)

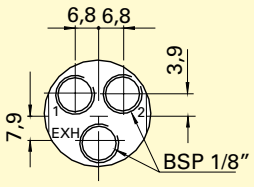
Conversion factor 1 mm = 0.04 inch



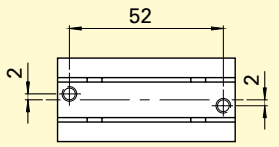
Non-Reversible



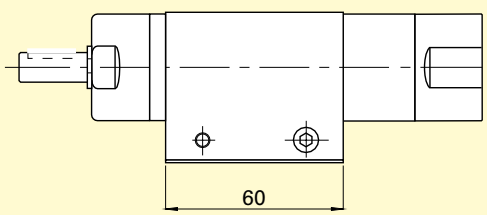
Reversible

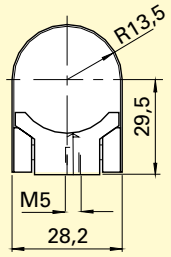


*) +9.8 mm for LZB 14R A012, A007, AR008, AR005

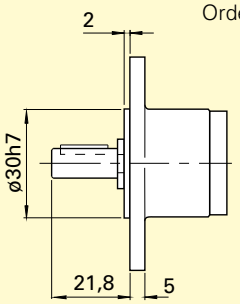


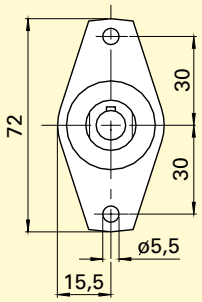
Optional Mountings
Foot
Ordering No. 4430 0923 80





Optional Mountings
Flange
Ordering No. 4430 0922 80

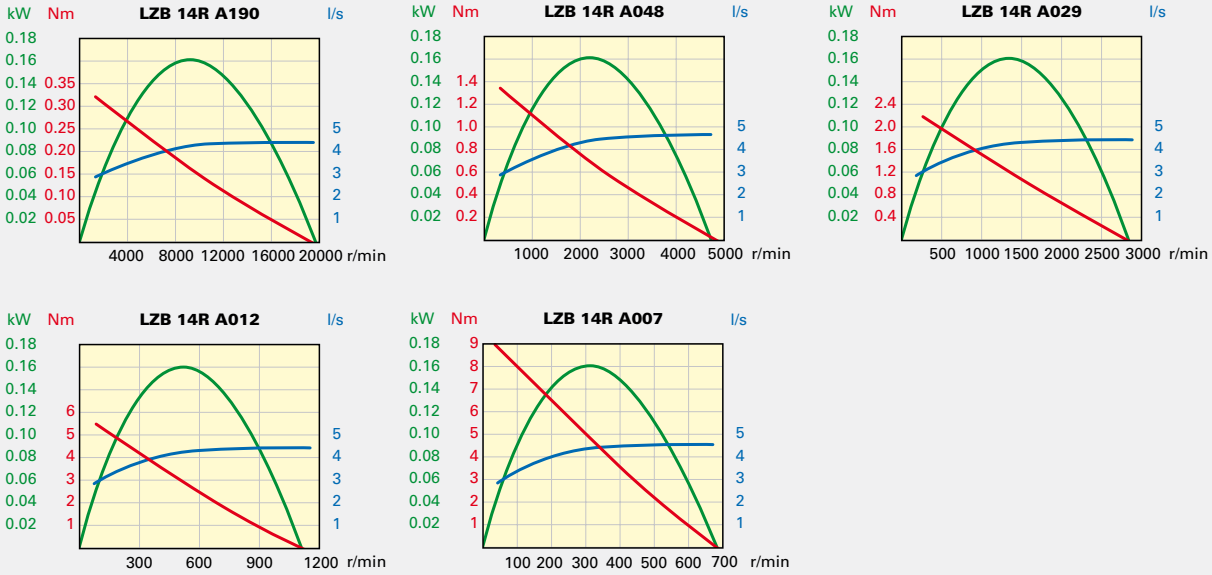




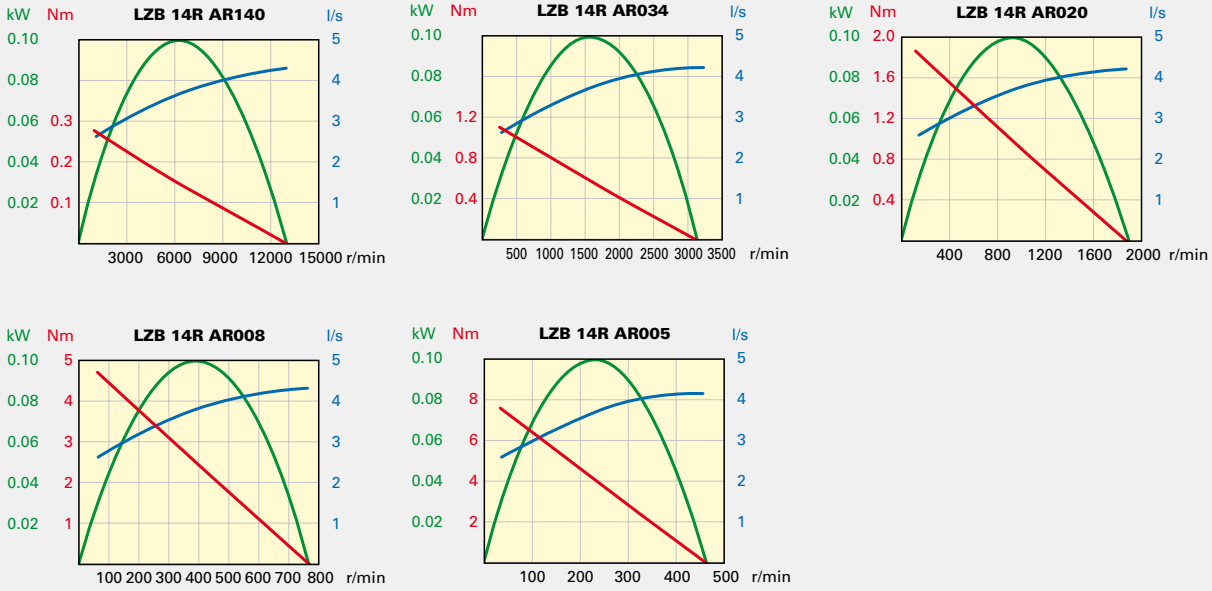
Optional accessories
page 46.

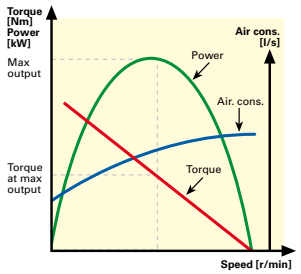
LZB 14R Performance curves at air pressure 6.3 bar (91psi)

Non-Reversible



Reversible





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 more details, see page 7.*

For information about performance curves, see page 7.

Vane motors LZB 22
Lubrication free versions
LZB 22L

0.16 – 0.25 kW
0.22 – 0.34 hp

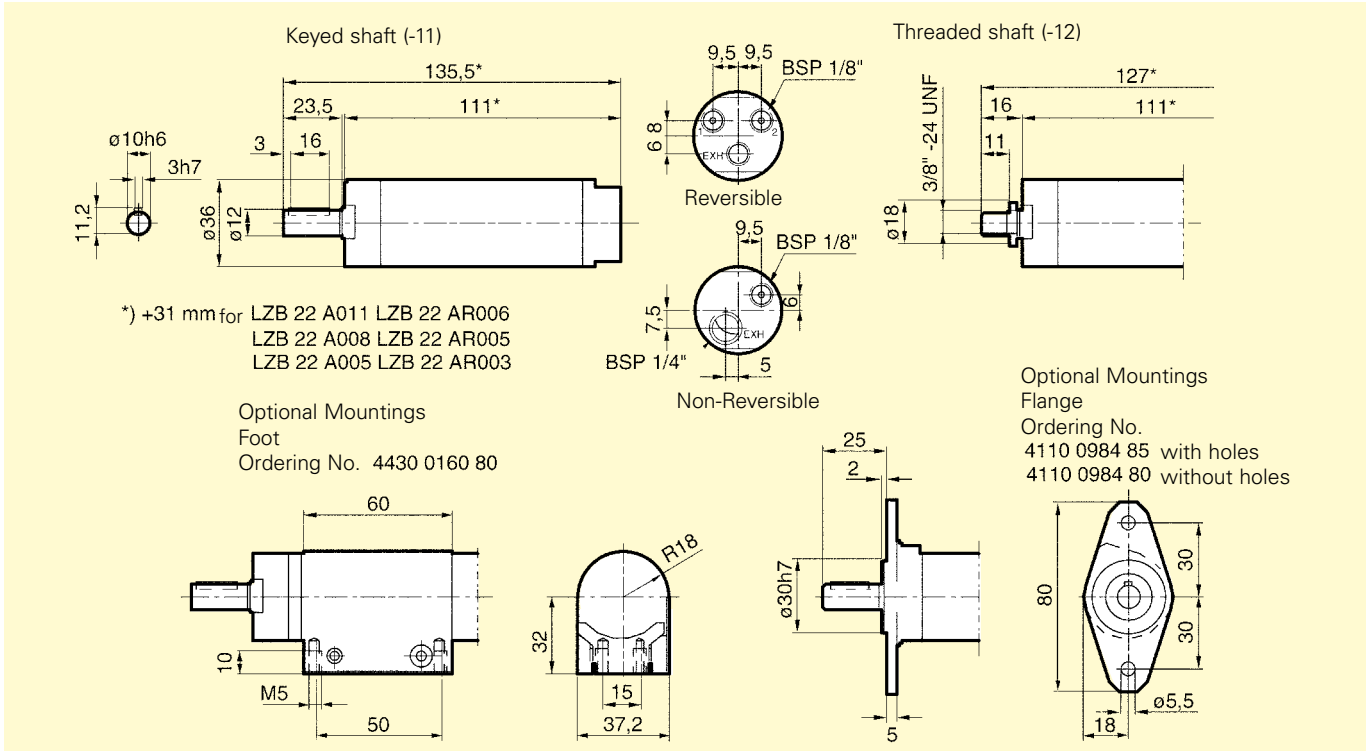
For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

Data at air pressure 6.3 bar (91psi)

Type [1]	Ordering No. Keyed Shaft	Threaded Shaft	Type	Keyed Shaft	Threaded Shaft	Max output kW	hp	Speed at max output r/min	Torque at max output Nm	lbf. ft	Min starting torque Nm	lbf.ft	Free speed r/min	Air cons. at max output l/s	cfm	Weight kg	lb	Shaft loading code [2]
Clockwise rotation																		
	Standard			**Lubrication free**														
LZB 22			**LZB 22L**															
A220-	8411 0201 37	8411 0202 36	A220-	8411 0214 08	8411 0214 73	0.25	0.34	9600	0.25	0.18	0.45	0.33	21500	5.3	11.2	0.55	1.21	b
A049-	8411 0201 29	8411 0202 28	A049-	8411 0214 16	8411 0214 81	0.25	0.34	2200	1.1	0.81	2.0	1.5	5000	5.3	11.2	0.55	1.21	b
A036-	8411 0201 52	8411 0202 51	A036-	8411 0214 24	8411 0214 99	0.25	0.34	1650	1.5	1.1	2.7	2.0	3750	5.3	11.2	0.55	1.21	b
A022-	8411 0201 11	8411 0202 10	A022-	8411 0214 32	8411 0215 07	0.25	0.34	1040	2.4	1.7	4.5	3.3	2250	5.3	11.2	0.55	1.21	b
A011-	8411 0201 03	8411 0202 02	A011-	8411 0214 40	8411 0215 15	0.24	0.32	535	4.3	3.2	8.0	5.9	1140	5.3	11.2	0.75	1.65	b
A008-	8411 0201 60	8411 0202 69	A008-	8411 0214 57	8411 0215 23	0.24	0.32	380	6.0	4.4	10.5	7.7	850	5.3	11.2	0.75	1.65	b
A005-	8411 0201 45	8411 0202 44	A005-	8411 0214 65	8411 0215 31	0.24	0.32	235	9.9	7.3	17.0	12.5	510	5.3	11.2	0.75	1.65	b
Reversible																		
LZB 22			**LZB 22L**															
AR126-	8411 0203 35	–	AR126-	8411 0215 49	–	0.16	0.22	6500	0.24	0.18	0.35	0.26	13800	5.0	10.6	0.55	1.21	b
AR028-	8411 0203 27	–	AR028-	8411 0215 56	–	0.16	0.22	1390	1.1	0.81	1.3	0.96	3000	5.0	10.6	0.55	1.21	b
AR021-	8411 0203 68	–	AR021-	8411 0215 64	–	0.16	0.22	1050	1.5	1.1	1.8	1.3	2200	5.0	10.6	0.55	1.21	b
AR013-	8411 0203 19	–	AR013-	8411 0215 72	–	0.16	0.22	650	2.4	1.7	3.0	2.2	1350	5.0	10.6	0.55	1.21	b
AR006-	8411 0203 01	–	AR006-	8411 0215 80	–	0.16	0.22	310	5.0	3.7	5.9	4.4	680	5.0	10.6	0.75	1.65	b
AR005-	8411 0203 50	–	AR005-	8411 0215 98	–	0.16	0.22	240	6.7	4.9	8.0	5.9	500	5.0	10.6	0.75	1.65	b
AR003-	8411 0203 43	–	AR003-	8411 0216 06	–	0.16	0.22	140	10.8	8.0	13.4	9.9	300	5.0	10.6	0.75	1.65	b

[1] Suffix. -11 = Keyed Shaft -12 = Threaded Shaft. 2) For Shaft loading curves, see page 12.
NOTE: The lubrication free motors have 95% of shown free speed.

Dimensions (mm)



Optional accessories

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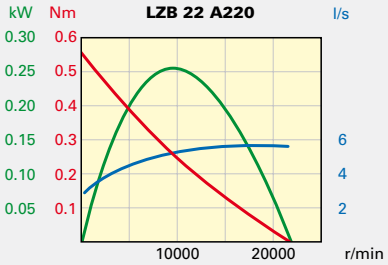
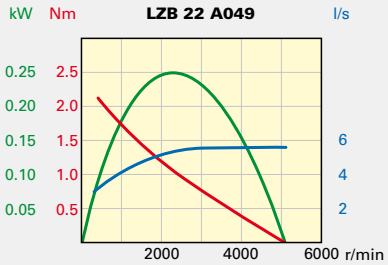
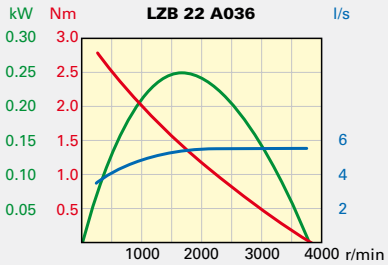
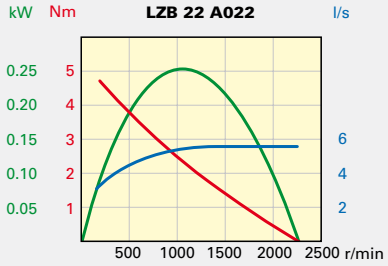
LZB 22, LZB 22R Performance curves at air pressure 6.3 bar (91psi)

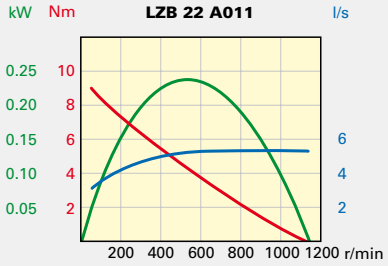
Non-Reversible

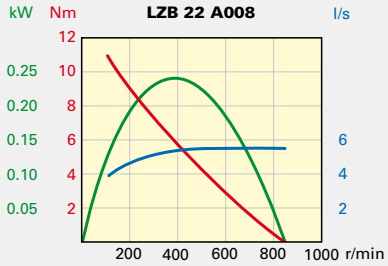


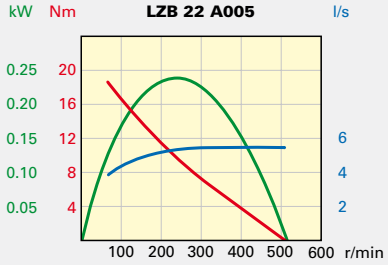




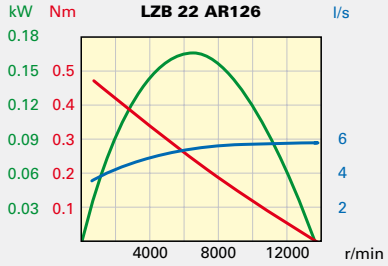


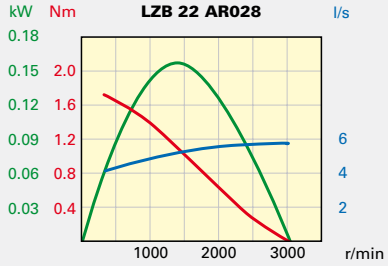


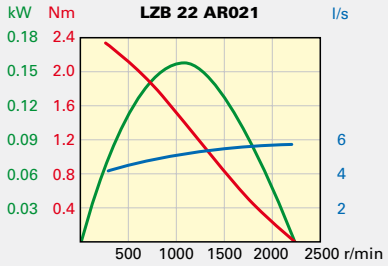


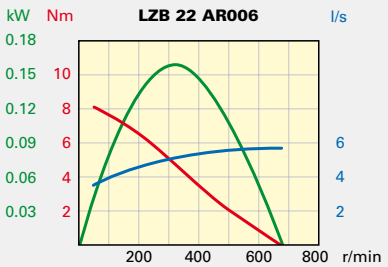


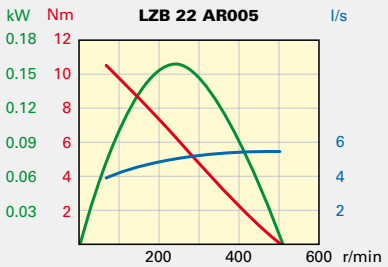
Reversible

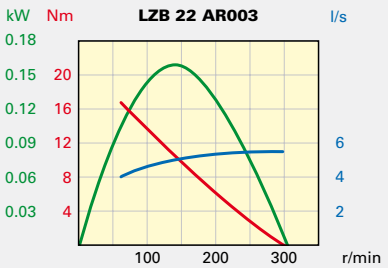


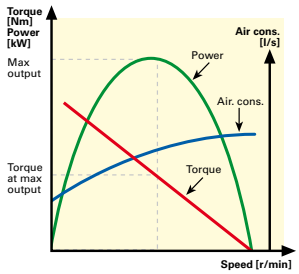












Conversion factors)*

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 more details, see page 7.*

For information about performance curves, see page 7.

Stainless steel vane motors LZB 22R
Lubrication free versions LZB 22RL

0.16 – 0.25 kW
0.22 – 0.34 hp

For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor).
The material used in the back head, casing and front part is stainless steel with the designation: ISO 683/XIII Type 17, SS 14 2346, DIN 17440 X12CrNiS188. The material used in the outgoing shaft and gear rim has the designation: ISO 683/XIII Type 9b, SS 14 2321, DIN 17440 X22CrNi17.

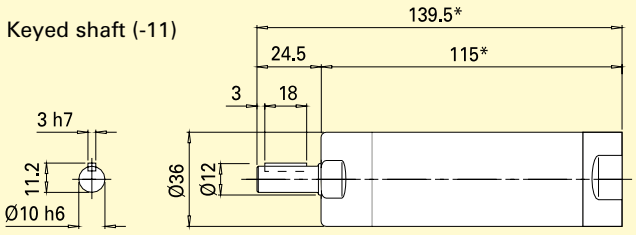
Data at air pressure 6.3 bar (91psi)

Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code [1]
Clockwise rotation																
LZB 22R		**LZB 22RL**														
A220-11	8411 0217 05	A220-11	8411 0219 11	0.25	0.34	9600	0.25	0.18	0.45	0.33	21500	5.3	11.2	0.63	1.21	b
A049-11	8411 0217 13	A049-11	8411 0219 29	0.25	0.34	2200	1.1	0.81	2.0	1.5	5000	5.3	11.2	0.63	1.21	b
A036-11	8411 0217 21	A036-11	8411 0219 37	0.25	0.34	1650	1.5	1.1	2.7	2.0	3750	5.3	11.2	0.63	1.21	b
A022-11	8411 0217 39	A022-11	8411 0219 45	0.25	0.34	1040	2.4	1.7	4.5	3.3	2250	5.3	11.2	0.63	1.21	b
A011-11	8411 0217 47	A011-11	8411 0219 52	0.24	0.32	535	4.3	3.2	8.0	5.9	1140	5.3	11.2	0.83	1.65	b
A008-11	8411 0217 54	A008-11	8411 0219 60	0.24	0.32	380	6.0	4.4	10.5	7.7	850	5.3	11.2	0.83	1.65	b
A005-11	8411 0217 62	A005-11	8411 0219 78	0.24	0.32	235	9.9	7.3	17.0	12.5	510	5.3	11.2	0.83	1.65	b
Reversible																
LZB 22R		**LZB 22RL**														
AR126-11	8411 0218 79	AR126-11	8411 0220 83	0.16	0.22	6500	0.24	0.18	0.35	0.26	13800	5.0	10.6	0.63	1.21	b
AR028-11	8411 0218 61	AR028-11	8411 0220 75	0.16	0.22	1390	1.1	0.81	1.3	0.96	3000	5.0	10.6	0.63	1.21	b
AR021-11	8411 0219 03	AR021-11	8411 0222 16	0.16	0.22	1050	1.5	1.1	1.8	1.3	2200	5.0	10.6	0.63	1.21	b
AR013-11	8411 0218 53	AR013-11	8411 0220 67	0.16	0.22	650	2.4	1.7	3.0	2.2	1350	5.0	10.6	0.63	1.21	b
AR006-11	8411 0218 46	AR006-11	8411 0220 59	0.16	0.22	310	5.0	3.7	5.9	4.4	680	5.0	10.6	0.83	1.65	b
AR005-11	8411 0218 95	AR005-11	8411 0222 08	0.16	0.22	240	6.7	4.9	8.0	5.9	500	5.0	10.6	0.83	1.65	b
AR003-11	8411 0218 87	AR003-11	8411 0220 91	0.16	0.22	140	10.8	8.0	13.4	9.9	300	5.0	10.6	0.83	1.65	b

[1] *For Shaft loading curves, see page 12.*
Performance curves are given on page 19. NOTE: The lubrication free motors have 95% of shown free speed.

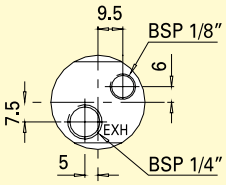
Dimensions (mm)

Keyed shaft (-11)

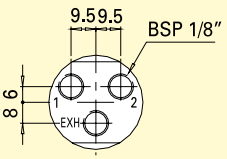


* +31.2 mm for LZB 22R A011 LZB 22R AR006
LZB 22R A008 LZB 22R AR005
LZB 22R A005 LZB 22R AR003

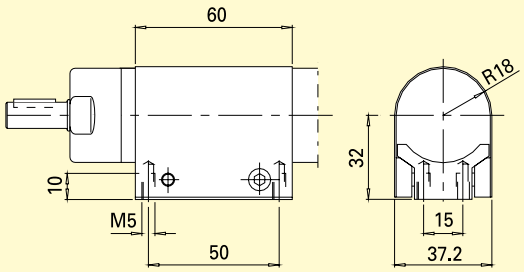
Non-Reversible



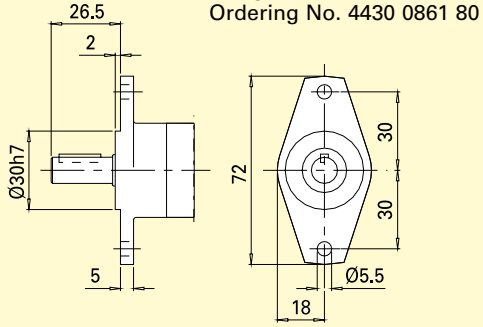
Reversible



Optional Mounting
Foot
Ordering No. 4430 0862 80



Optional Mounting
Flange
Ordering No. 4430 0861 80



Optional accessories
page 46.

Vane motors LZB 33
Lubrication free versions LZB 33L

0.23 – 0.39 kW
0.31 – 0.52 hp

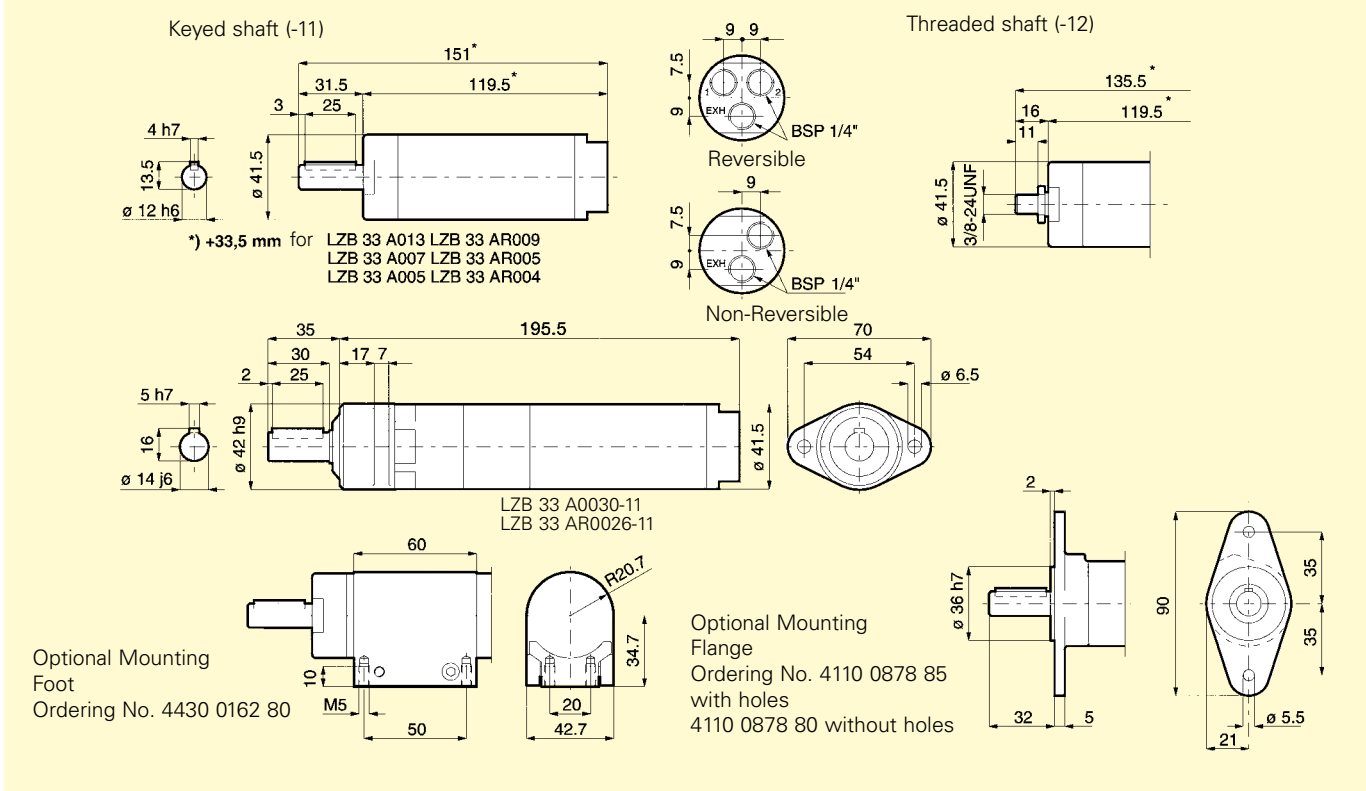
For EX certification according to the ATEX directive
(Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00
(book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

Data at air pressure 6.3 bar (91psi)

Type [1]	Ordering No. Keyed Shaft	Ordering No. Threaded Shaft	Type	Ordering No. Keyed Shaft	Ordering No. Threaded Shaft	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf.ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code [2]
Clockwise rotation																		
	Standard			**Lubrication free**														
LZB 33			**LZB 33L**															
A210-	8411 0301 51	8411 0302 50	A210-	8411 0306 07	8411 0306 80	0.39	0.52	9400	0.40	0.30	0.76	0.56	20000	8.3	17.6	0.75	1.65	c
A060-	8411 0301 44	8411 0302 43	A060-	8411 0306 15	8411 0306 98	0.39	0.52	2600	1.4	1.0	2.7	2.0	5600	8.3	17.6	0.75	1.65	c
A033-	8411 0301 36	8411 0302 35	A033-	8411 0306 23	8411 0307 06	0.39	0.52	1460	2.6	1.9	4.9	3.6	3100	8.3	17.6	0.75	1.65	c
A026-	8411 0301 28	8411 0302 27	A026-	8411 0306 31	8411 0307 14	0.39	0.52	1180	3.2	2.3	6.1	4.5	2500	8.3	17.6	0.75	1.65	c
A013-	8411 0301 10	8411 0302 19	A013-	8411 0306 49	8411 0307 22	0.38	0.51	580	6.3	4.6	12.0	8.9	1230	8.3	17.6	1.02	2.25	c
A007-	8411 0301 02	8411 0302 01	A007-	8411 0306 56	8411 0307 30	0.38	0.51	320	11.3	8.4	21.6	15.9	680	8.3	17.6	1.02	2.25	c
A005-	8411 0301 69	8411 0302 68	A005-	8411 0306 64	8411 0307 48	0.38	0.51	259	14.0	10.3	26.8	19.8	550	8.3	17.6	1.02	2.25	c
A0030-	8411 0301 77	–	A0030-	8411 0306 72	–	0.36	0.48	160	21.5	15.9	40.7	30.0	340	8.3	17.6	1.50	3.31	d
Reversible																		
LZB 33			**LZB 33L**															
AR150-	8411 0303 59	–	AR150-	8411 0307 63	–	0.24	0.32	7000	0.34	0.25	0.46	0.34	14000	7.8	16.5	0.75	1.65	c
AR043-	8411 0303 42	–	AR043-	8411 0307 71	–	0.24	0.32	1960	1.2	0.89	1.6	1.2	3840	7.8	16.5	0.75	1.65	c
AR024-	8411 0303 34	–	AR024-	8411 0307 89	–	0.24	0.32	1090	2.1	1.6	3.0	2.2	2090	7.8	16.5	0.75	1.65	c
AR019-	8411 0303 26	–	AR019-	8411 0307 97	–	0.24	0.32	880	2.7	2.0	3.7	2.7	1760	7.8	16.5	0.75	1.65	c
AR009-	8411 0303 18	–	AR009-	8411 0308 05	–	0.23	0.31	435	4.9	3.6	7.0	5.2	840	7.8	16.5	1.02	2.25	c
AR005-	8411 0303 00	–	AR005-	8411 0308 13	–	0.23	0.31	240	9.1	6.7	12.6	9.3	480	7.8	16.5	1.02	2.25	c
AR004-	8411 0303 67	–	AR004-	8411 0308 21	–	0.23	0.31	190	11.4	8.4	15.6	11.5	385	7.8	16.5	1.02	2.25	c
AR0026-	8411 0303 75	–	AR0026-	8411 0308 70	–	0.23	0.31	120	18.3	13.5	20.0	14.8	240	7.8	16.5	1.50	3.31	d

[1] Suffix. -11 = Keyed Shaft -12 = Threaded Sha 8411 *ft. [2] For Shaft loading curves, see page 12.*
NOTE: The lubrication free motors have 95% o 8411 *f shown free speed.*

Dimensions (mm)



Optional accessories
page 46.

Stainless steel vane motors LZB 34R
Lubrication free versions LZB 34RL

0.23 – 0.39kW
0.31 – 0.52 hp

For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor). The material used in the back head, casing and front part is stainless steel with the designation: ISO 683/XIII Type 17, SS 142346, DIN 17440 X12CrNiS188. The material used in the outgoing shaft and gear rim has the designation: ISO 683/XIII Type 9b, SS 142321, DIN 17440 X22CrNi17.

Data at air pressure 6.3 bar (91psi)

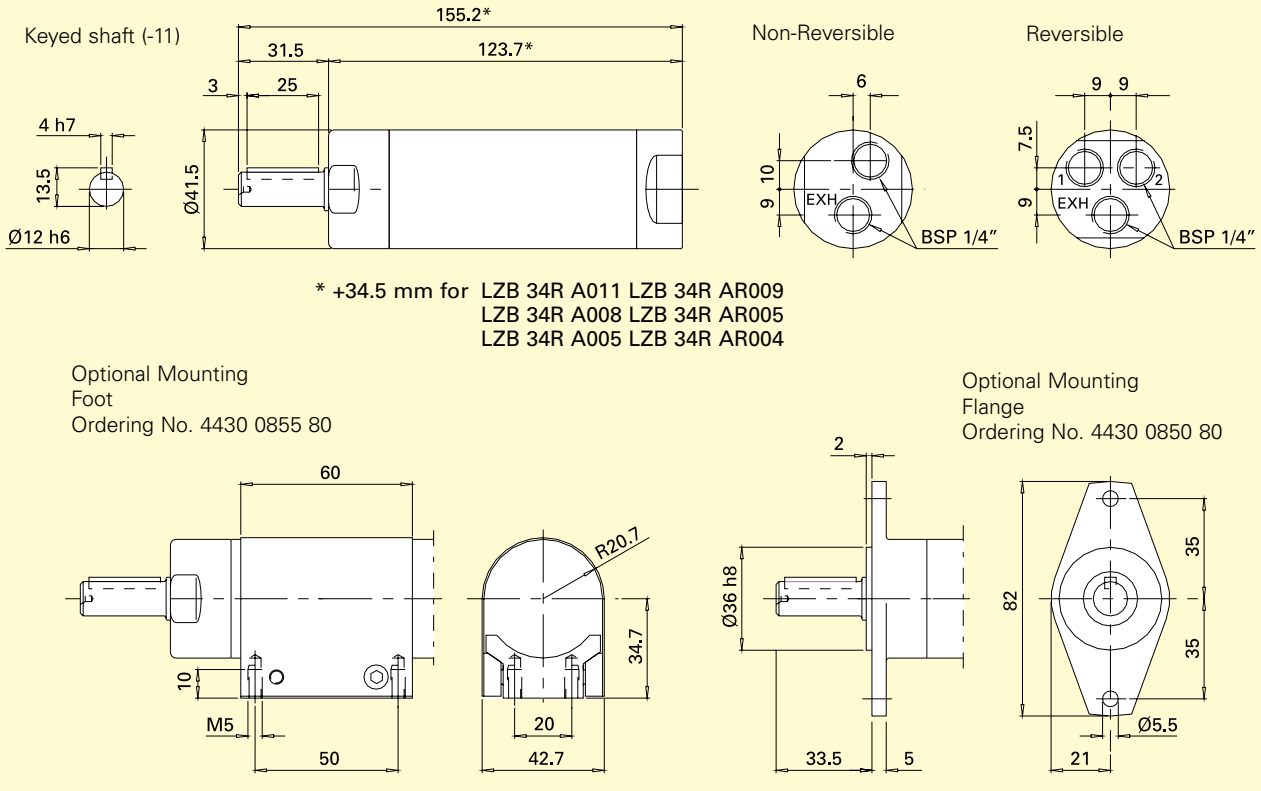
Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Clockwise rotation																
LZB 34R		**LZB 34RL**														
A210-11	8411 0337 00	A210-11	8411 0338 41	0.39	0.52	9400	0.40	0.30	0.76	0.56	20000	8.3	17.6	0.95	1.65	c
A060-11	8411 0337 18	A060-11	8411 0338 58	0.39	0.52	2600	1.4	1.0	2.7	2.0	5600	8.3	17.6	0.95	1.65	c
A033-11	8411 0337 26	A033-11	8411 0338 66	0.39	0.52	1460	2.6	1.9	4.9	3.6	3100	8.3	17.6	0.95	1.65	c
A026-11	8411 0337 34	A026-11	8411 0338 74	0.39	0.52	1180	3.2	2.3	6.1	4.5	2500	8.3	17.6	0.95	1.65	c
A013-11	8411 0337 42	A013-11	8411 0338 82	0.38	0.51	580	6.3	4.6	12.0	8.9	1230	8.3	17.6	1.2	2.25	c
A007-11	8411 0337 59	A007-11	8411 0338 90	0.38	0.51	320	11.3	8.4	21.6	15.9	680	8.3	17.6	1.2	2.25	c
A005-11	8411 0337 67	A005-11	8411 0339 08	0.38	0.51	259	14.0	10.3	26.8	19.8	550	8.3	17.6	1.2	2.25	c
Reversible																
LZB 34R		**LZB 34RL**														
AR150-11	8411 0337 75	AR150-11	8411 0339 16	0.24	0.32	7000	0.34	0.25	0.46	0.34	14000	7.8	16.5	0.95	1.65	c
AR043-11	8411 0337 83	AR043-11	8411 0339 24	0.24	0.32	1960	1.2	0.89	1.6	1.2	3840	7.8	16.5	0.95	1.65	c
AR024-11	8411 0337 91	AR024-11	8411 0339 32	0.24	0.32	1090	2.1	1.6	3.0	2.2	2090	7.8	16.5	0.95	1.65	c
AR019-11	8411 0338 09	AR019-11	8411 0339 40	0.24	0.32	880	2.7	2.0	3.7	2.7	1500	7.8	16.5	0.95	1.65	c
AR009-11	8411 0338 17	AR009-11	8411 0339 57	0.23	0.31	435	4.9	3.6	7.0	5.2	840	7.8	16.5	1.2	2.25	c
AR005-11	8411 0338 27	AR005-11	8411 0339 65	0.23	0.31	240	9.1	6.7	12.6	9.3	480	7.8	16.5	1.2	2.25	c
AR004-11	8411 0338 33	AR004-11	8411 0339 73	0.23	0.31	190	11.4	8.4	15.6	11.5	385	7.8	16.5	1.2	2.25	c

[1] *For Shaft loading curves, see page 12.*

Performance curves are given on page 23. NOTE: The lubrication free motors have 95% of shown free speed.

Dimensions (mm)

Conversion factor 1mm = 0.04 inch



Optional accessories

page 46.

Vane motors LZB 33 LR, LZB 34R LR

Low speed reversible

Maximum permitted torque 14 Nm (10.3 lbf.ft)

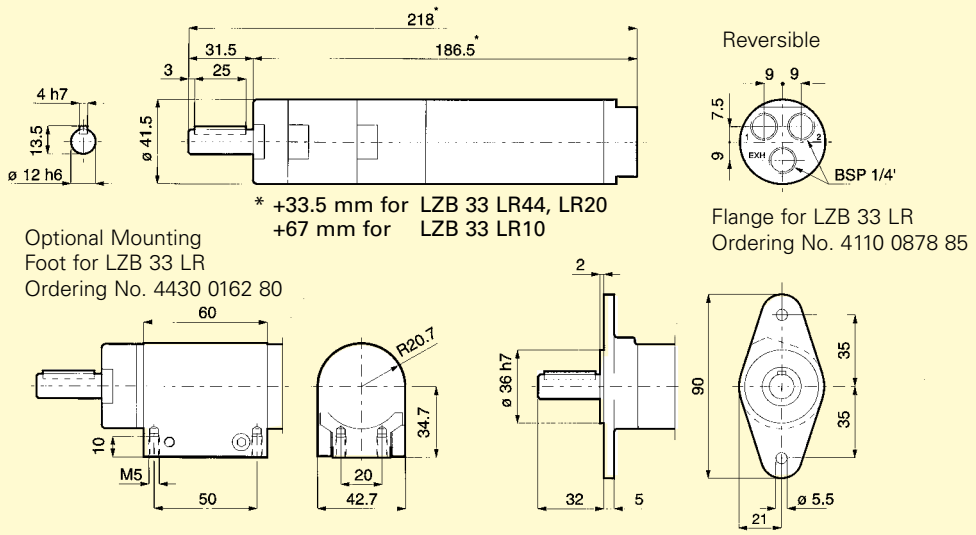
For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor). EX certification for LZB 33 LR valid for fixtured mounted use only. For applications where low speed and high torque are required the LZB 33 high torque/low speed motors should be considered, see page 26. Within their working range these motors have a very steep torque curve. Speed and air consumption is relatively constant regardless of the load.

Data at air pressure 6.3 bar (91psi)

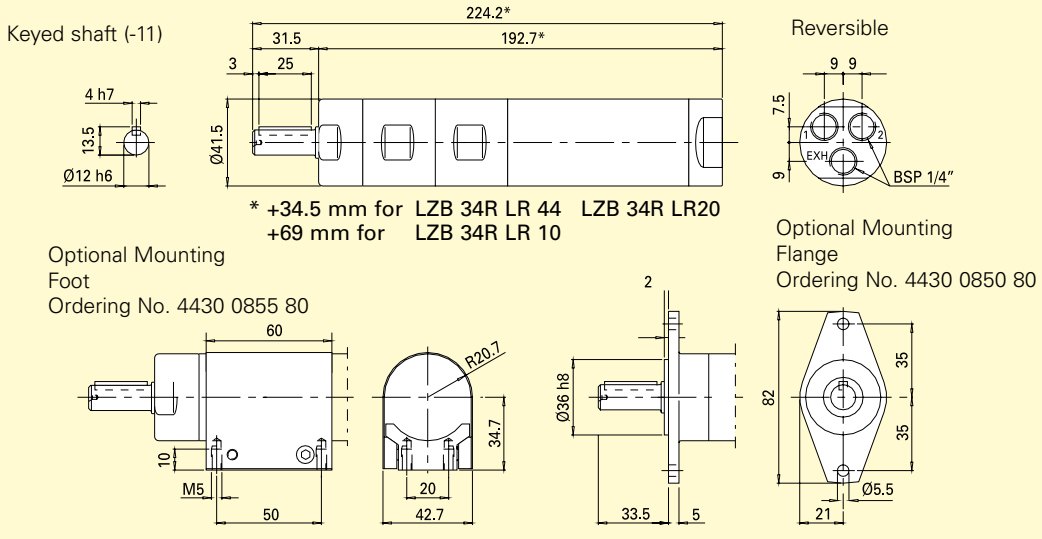
Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Free speed r/min	Air consumption l/s	Air consumption cfm	Weight kg	Weight lb	Shaft loading code [1]
LZB 33 LR200-11	8411 0314 31	LZB 33L LR200-11	8411 0308 62	200	9.9	21.0	1.25	2.78	c
LZB 33 LR44-11	8411 0314 23	LZB 33L LR44-11	8411 0308 54	44	9.9	21.0	1.55	3.44	c
LZB 33 LR20-11	8411 0314 15	LZB 33L LR20-11	8411 0308 47	20	9.9	21.0	1.55	3.44	c
LZB 33 LR10-11	8411 0314 07	LZB 33L LR10-11	8411 0308 39	10	9.9	21.0	1.80	4.00	c
Stainless steel									
LZB 34R LR200-11	8411 0343 02	LZB 34RL LR200-11	8411 0343 44	200	9.9	21.0	1.45	2.78	c
LZB 34R LR44-11	8411 0343 10	LZB 34RL LR44-11	8411 0343 51	44	9.9	21.0	1.75	3.44	c
LZB 34R LR20-11	8411 0343 28	LZB 34RL LR20-11	8411 0343 69	20	9.9	21.0	1.75	3.44	c
LZB 34R LR10-11	8411 0343 36	LZB 34RL LR10-11	8411 0343 77	10	9.9	21.0	2.0	4.00	c

[1] *For Shaft loading curves, see page 12.*

Dimensions LZB 33 LR (mm)



Dimensions LZB 34R LR (mm) **Conversion factor 1mm = 0.04 inch**



Optional accessories

page 46.

High torque LZB 33 vane motors

Lubrication free versions LZB 33L

0.23 – 0.36 kW
0.31 – 0.49 hp

For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

Data at air pressure 6.3 bar (91psi)

Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf.ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Clockwise rotation																
LZB 33		**LZB 33L**														
A0020-11	8411 0320 09	A0020-11	8411 0322 07	0.36	0.49	104	33	24	66	49	212	8.3	17.6	2.6	5.8	g
A0015-11	8411 0320 17	A0015-11	8411 0322 15	0.36	0.49	77	44	32	90	66	156	8.3	17.6	2.6	5.8	g
A0011-11	8411 0320 25	A0011-11	8411 0322 23	0.36	0.49	58	59	44	118	87	118	8.3	17.6	2.6	5.8	g
A0008-11	8411 0320 33	A0008-11	8411 0322 31	0.36	0.49	43	79	58	158	117	87	8.3	17.6	2.6	5.8	g
A0007-11	8411 0320 41	A0007-11	8411 0322 49	0.36	0.49	34	100	74	200	147	70	8.3	17.6	2.6	5.8	g
A0005-11	8411 0320 58	A0005-11	8411 0322 56	0.36	0.49	25	137	101	274	202	52	8.3	17.6	5.0	11.1	h
A0004-11	8411 0320 66	A0004-11	8411 0322 64	0.36	0.49	19	180	133	360	265	38	8.3	17.6	5.0	11.1	h
A0003-11	8411 0320 74	A0003-11	8411 0322 72	**0.36**	**0.49**	14	245	181	490	361	29	8.3	17.6	5.0	11.1	h
A0002-11	8411 0320 82	A0002-11	8411 0322 80	0.36	0.49	10	340	251	680	501	21	8.3	17.6	5.0	11.1	h
Reversible																
LZB 33		**LZB 33L**														
AR0015-11	8411 0321 08	AR0015-11	8411 0323 06	0.23	0.31	71	31	23	41	30	143	8.5	18.0	2.6	5.8	g
AR0011-11	8411 0321 16	AR0011-11	8411 0323 14	0.23	0.31	53	42	31	56	41	105	8.5	18.0	2.6	5.8	g
AR0008-11	8411 0321 24	AR0008-11	8411 0323 22	0.23	0.31	40	55	41	74	55	80	8.5	18.0	2.6	5.8	g
AR0006-11	8411 0321 32	AR0006-11	8411 0323 30	0.23	0.31	29	75	55	100	74	59	8.5	18.0	2.6	5.8	g
AR0005-11	8411 0321 40	AR0005-11	8411 0323 48	0.23	0.31	24	93	69	125	92	48	8.5	18.0	2.6	5.8	g
AR0004-11	8411 0321 57	AR0004-11	8411 0323 55	0.23	0.31	18	125	92	169	125	35	8.5	18.0	5.0	11.1	h
AR0003-11	8411 0321 65	AR0003-11	8411 0323 63	0.23	0.31	13	169	125	230	170	26	8.5	18.0	5.0	11.1	h
AR0002-11	8411 0321 73	AR0002-11	8411 0323 71	0.23	0.31	10	220	162	305	225	20	8.5	18.0	5.0	11.1	h
AR0001-11	8411 0321 81	AR0001-11	8411 0323 89	0.23	0.31	7	305	225	412	304	14	8.5	18.0	5.0	11.1	h

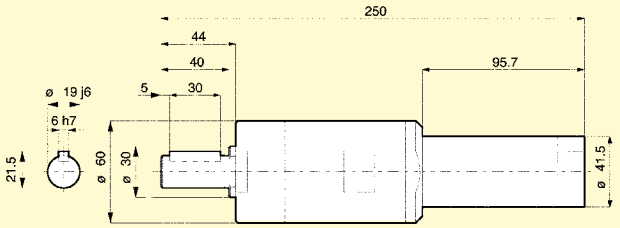
[1] *For Shaft loading curves, see page 12. NOTE: The lubrication free motors have 95% of shown free speed.*

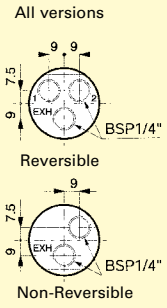
Dimensions (mm)

Conversion factor 1mm = 0.04 inch

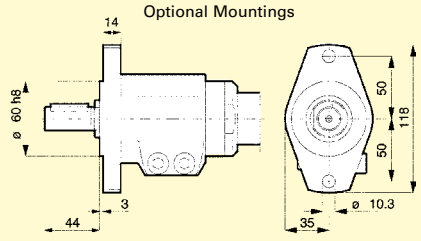
Lubricated ***Lubrication free***
Non reversible
LZB 33 A0020-11 *LZB 33L A0020-11*
LZB 33 A0015-11 *LZB 33L A0015-11*
LZB 33 A0011-11 *LZB 33L A0011-11*
LZB 33 A0008-11 *LZB 33L A0008-11*
LZB 33 A0007-11 *LZB 33L A0007-11*

Reversible
LZB 33 AR0015-11 *LZB 33L AR0015-11*
LZB 33 AR0011-11 *LZB 33L AR0011-11*
LZB 33 AR0008-11 *LZB 33L AR0008-11*
LZB 33 AR0006-11 *LZB 33L AR0006-11*
LZB 33 AR0005-11 *LZB 33L AR0005-11*

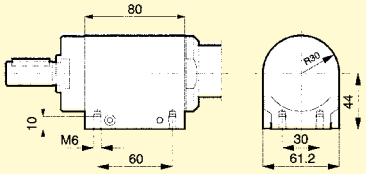


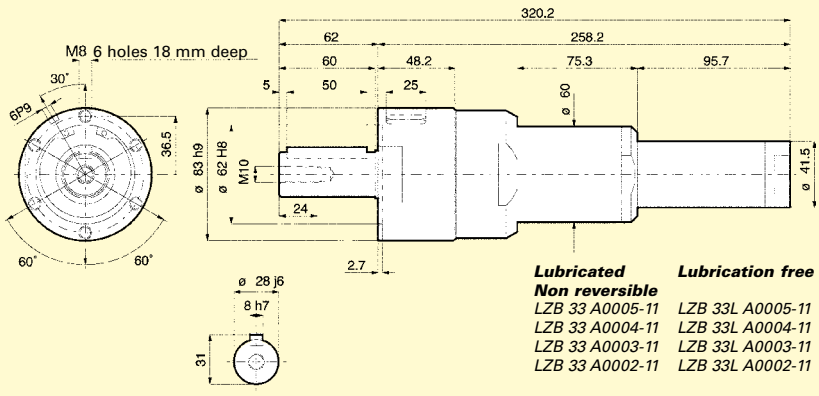


Optional Mountings



Flange Ordering No. 4430 0569 80





Lubricated ***Lubrication free***
Non reversible
LZB 33 A0005-11 *LZB 33L A0005-11*
LZB 33 A0004-11 *LZB 33L A0004-11*
LZB 33 A0003-11 *LZB 33L A0003-11*
LZB 33 A0002-11 *LZB 33L A0002-11*

Reversible
LZB 33 AR0004-11 *LZB 33L AR0004-11*
LZB 33 AR0003-11 *LZB 33L AR0003-11*
LZB 33 AR0002-11 *LZB 33L AR0002-11*
LZB 33 AR0001-11 *LZB 33L AR0001-11*

Optional accessories

page 46.

Vane motors LZB 33 LB, LZB 34RLB with brake module

Lubrication free and reversible

0.23-0.24 kW
0.31-0.32 hp

Braking torque from 0.55–520 Nm.
The brake is activated by spring force and released by air pressure.
For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

Data at air pressure 6.3 bar (91psi)

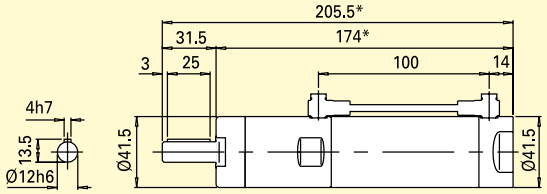
Designation Lubrication free	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Braking torque Nm	Braking torque lbf.ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
LZB 33LB AR150-11	8411 0340 05	0.24	0.32	7000	0.34	0.25	0.46	0.34	0.55	0.40	14000	7.8	16.5	1.35	2.97	c
LZB 33LB AR043-11	8411 0340 13	0.24	0.32	1960	1.2	0.89	1.6	1.2	2.0	1.5	3840	7.8	16.5	1.35	2.97	c
LZB 33LB AR024-11	8411 0340 21	0.24	0.32	1090	2.1	1.6	3.0	2.2	3.5	2.6	2090	7.8	16.5	1.35	2.97	c
LZB 33LB AR019-11	8411 0340 39	0.24	0.32	880	2.7	2.0	3.7	2.7	4.4	3.2	1760	7.8	16.5	1.35	2.97	c
LZB 33LB AR009-11	8411 0340 47	0.23	0.31	435	4.9	3.6	7.0	5.2	8.9	6.6	840	7.8	16.5	1.63	3.59	c
LZB 33LB AR005-11	8411 0340 54	0.23	0.31	240	9.1	6.7	12.6	9.3	16	12	480	7.8	16.5	1.63	3.59	c
LZB 33LB AR004-11	8411 0340 62	0.23	0.31	190	11.4	8.4	15.6	11.5	20	15	385	7.8	16.5	1.63	3.59	c
LZB 33LB AR0026-11	8411 0340 70	0.23	0.31	120	18.3	13.5	20.0	14.8	32	24	240	7.8	16.5	2.1	4,6	d
LZB 33LB AR0015-11	8411 0340 88	**0.23**	0.31	71	31	23	41	30	52	38	143	8.5	18.0	3.2	7.0	g
LZB 33LB AR0011-11	8411 0340 96	0.23	0.31	53	42	31	56	41	71	52	105	8.5	18.0	3.2	7.0	g
LZB 33LB AR0008-11	8411 0341 04	0.23	0.31	40	55	41	74	55	93	67	80	8.5	18.0	3.2	7.0	g
LZB 33LB AR0006-11	8411 0341 12	0.23	0.31	29	75	55	100	74	130	95	59	8.5	18.0	3.2	7.0	g
LZB 33LB AR0005-11	8411 0341 20	0.23	0.31	24	93	69	125	92	160	120	48	8.5	18.0	3.2	7.0	g
LZB 33LB AR0004-11	8411 0341 38	0.23	0.31	18	125	92	169	125	210	160	35	8.5	18.0	5.6	12.3	h
LZB 33LB AR0003-11	8411 0341 46	0.23	0.31	13	169	125	230	170	290	210	26	8.5	18.0	5.6	12.3	h
LZB 33LB AR0002-11	8411 0341 53	0.23	0.31	10	220	162	305	225	380	280	20	8.5	18.0	5.6	12.3	h
LZB 33LB AR0001-11	8411 0341 61	0.23	0.31	7	305	225	412	304	520	380	14	8.5	18.0	5.6	12.3	h
Stainless steel																
LZB 34RLB AR150-11	8411 0341 79	0.24	0.32	7000	0.34	0.25	0.46	0.34	0.55	0.40	14000	7.8	16.5	1.39	3.06	c
LZB 34RLB AR043-11	8411 0341 87	0.24	0.32	1960	1.2	0.89	1.6	1.2	2.0	1.5	3840	7.8	16.5	1.39	3.06	c
LZB 34RLB AR024-11	8411 0341 95	0.24	0.32	1090	2.1	1.6	3.0	2.2	3.5	2.6	2090	7.8	16.5	1.39	3.06	c
LZB 34RLB AR019-11	8411 0342 03	0.24	0.32	880	2.7	2.0	3.7	2.7	4.4	3.2	1760	7.8	16.5	1.39	3.06	c
LZB 34RLB AR009-11	8411 0342 11	0.23	0.31	435	4.9	3.6	7.0	5.2	9	6.6	840	7.8	16.5	1.66	3.65	c
LZB 34RLB AR005-11	8411 0342 29	0.23	0.31	240	9.1	6.7	12.6	9.3	16	12	480	7.8	16.5	1.66	3.65	c
LZB 34RLB AR004-11	8411 0342 37	0.23	0.31	190	11.4	8.4	15.6	11.5	20	15	385	7.8	16.5	1.66	3.65	c

[1] *For Shaft loading curves, see page 12.*
The brake needs minimum 3 bar to release. Performance curves are given on page 23 and 27.

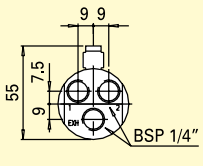
Dimensions (mm)

Conversion factor 1mm = 0.04 inch

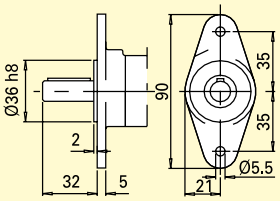
LZB 33LB AR150-11 * +33.5 mm for LZB 33LB AR009-11 * +4 mm for LZB 34RLB AR150-11 * +38.5 mm for LZB 34RLB AR009-11
LZB 33LB AR043-11 LZB 33LB AR005-11 LZB 34RLB AR043-11 LZB 34RLB AR005-11
LZB 33LB AR024-11 LZB 33LB AR004-11 LZB 34RLB AR024-11 LZB 34RLB AR004-11
LZB 33LB AR019-11 LZB 34RLB AR019-11



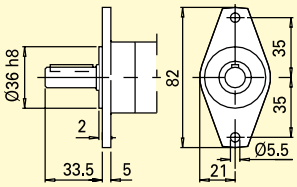
All versions



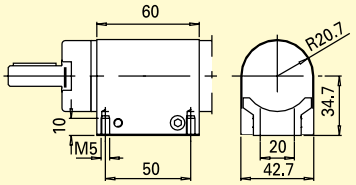
LZB 33LB, Flange Ordering No. 4110 0878 85



LZB 34RLB, Ordering No. 4430 0850 80



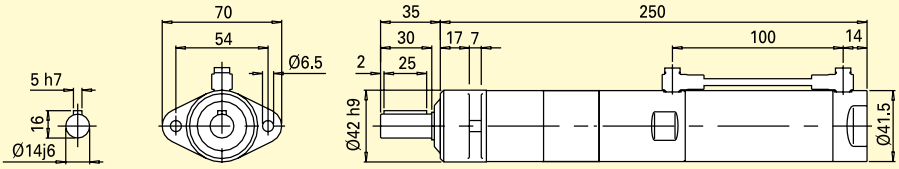
Foot ordering No. 4430 0162 80
Stainless foot Ordering No. 4430 0855 80



Optional accessories
page 46.

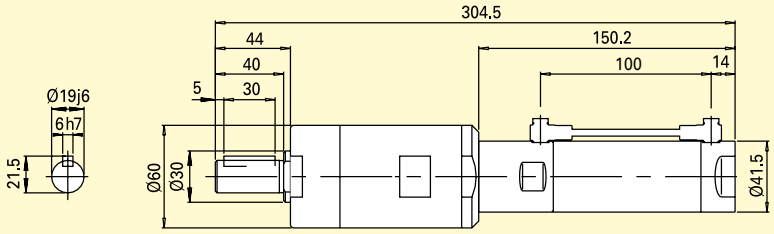
Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

LZB 33LB AR0026-11

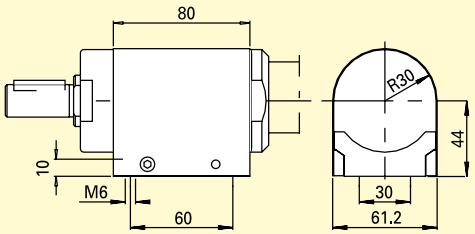


Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

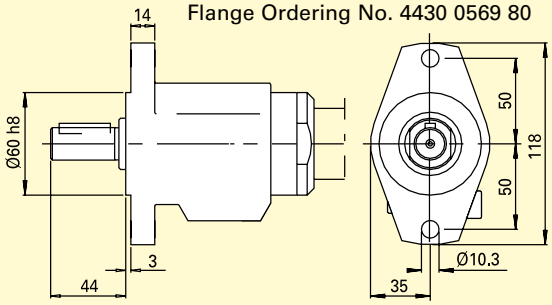
LZB 33LB AR0015-11
LZB 33LB AR0011-11
LZB 33LB AR0008-11
LZB 33LB AR0006-11
LZB 33LB AR0005-11



Foot Ordering No. 4430 0178 80



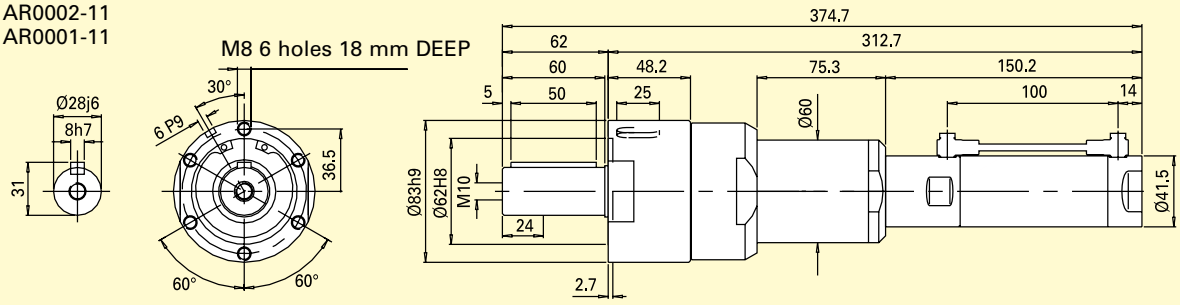
Flange Ordering No. 4430 0569 80



Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

LZB 33LB AR0004-11
LZB 33LB AR0003-11
LZB 33LB AR0002-11
LZB 33LB AR0001-11

M8 6 holes 18 mm DEEP



Vane motors LZB 42

0.50 – 0.65 kW
0.67 – 0.87 hp

For EX certification according to the ATEX directive
(Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00
(book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

For optional lubrication free vanes and/or threaded shafts see page 46.

Data at air pressure 6.3 bar (91psi)

Type	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Clockwise rotation														
LZB 42 A200-11	8411 0420 08	0.65	0.87	10500	0.59	0.44	1.1	0.8	20000	13	28	1.2	2.65	e
LZB 42 A065-11	8411 0420 16	0.65	0.87	3200	1.9	1.4	3.5	2.6	6200	13	28	1.2	2.65	e
LZB 42 A040-11	8411 0420 24	0.65	0.87	2000	3	2.2	5.5	4.1	4000	13	28	1.2	2.65	e
LZB 42 A025-11	8411 0420 32	0.65	0.87	1200	5	3.7	9	6.6	2400	13	28	1.2	2.65	e
LZB 42 A015-11	8411 0420 40	0.64	0.86	730	8.4	6.2	15	11.0	1400	13	28	1.25	2.80	e
LZB 42 A010-11	8411 0420 57	0.64	0.86	460	13	9.6	23	17.0	900	13	28	1.25	2.80	e
LZB 42 A005-11	8411 0420 65	0.64	0.86	280	22	16	40	30.0	550	13	28	1.25	2.80	e
LZB 42 A0030-11	8411 0420 73	0.62	0.83	160	37	27	65	48.0	300	13	28	2.65	5.80	g
LZB 42 A0020-11	8411 0420 81	0.62	0.83	100	59	44	105	77.1	200	13	28	2.65	5.80	g
LZB 42 A0012-11	8411 0420 99	0.62	0.83	60	98	72	175	130	115	13	28	2.65	5.80	g
LZB 42 A0008-11	8411 0421 07	0.61	0.82	39	150	110	275	200	70	13	28	4.85	10.70	h
LZB 42 A0005-11	8411 0421 15	0.61	0.82	25	236	174	430	315	45	13	28	4.85	10.70	h
Anti-clockwise rotation														
LZB 42 AV200-11	8411 0425 03	0.65	0.87	10500	0.59	0.44	1.1	0.8	20000	13	28	1.2	2.65	e
LZB 42 AV065-11	8411 0425 11	0.65	0.87	3200	1.9	1.4	3.5	2.6	6200	13	28	1.2	2.65	e
LZB 42 AV040-11	8411 0425 29	0.65	0.87	2000	3	2.2	5.5	4.1	4000	13	28	1.2	2.65	e
LZB 42 AV025-11	8411 0425 37	0.65	0.87	1200	5	3.7	9	6.6	2400	13	28	1.2	2.65	e
LZB 42 AV015-11	8411 0425 45	0.64	0.86	730	8.4	6.2	15	11.0	1400	13	28	1.25	2.80	e
LZB 42 AV010-11	8411 0425 52	0.64	0.86	460	13	9.6	23	17.0	900	13	28	1.25	2.80	e
LZB 42 AV005-11	8411 0425 60	0.64	0.86	280	22	16	40	30.0	550	13	28	1.25	2.80	e
LZB 42 AV0030-11	8411 0425 78	0.62	0.83	160	37	27	65	48.0	300	13	28	2.65	5.80	g
LZB 42 AV0020-11	8411 0425 86	0.62	0.83	100	59	44	105	77.1	200	13	28	2.65	5.80	g
LZB 42 AV0012-11	8411 0425 94	0.62	0.83	60	98	72	175	130	115	13	28	2.65	5.80	g
LZB 42 AV0008-11	8411 0426 02	0.61	0.82	39	150	110	275	200	70	13	28	4.85	10.70	h
LZB 42 AV0005-11	8411 0426 10	0.61	0.82	25	236	174	430	315	45	13	28	4.85	10.70	h
Reversible														
LZB 42 AR170-11	8411 0423 05	0.53	0.71	8100	0.62	0.46	0.7	0.52	15000	12.5	27	1.2	2.65	e
LZB 42 AR050-11	8411 0423 13	0.53	0.71	2500	2.0	1.5	2.2	1.60	4700	12.5	27	1.2	2.65	e
LZB 42 AR030-11	8411 0423 21	0.53	0.71	1600	3.1	2.3	3.5	2.60	3000	12.5	27	1.2	2.65	e
LZB 42 AR020-11	8411 0423 39	0.53	0.71	950	5.3	3.9	5.9	4.40	1800	12.5	27	1.2	2.65	e
LZB 42 AR010-11	8411 0423 47	0.52	0.70	560	8.9	6.6	9.7	7.20	1000	12.5	27	1.25	2.80	e
LZB 42 AR007-11	8411 0423 54	0.52	0.70	350	14	10	15	11.0	690	12.5	27	1.25	2.80	e
LZB 42 AR004-11	8411 0423 62	0.52	0.70	215	23	17	25	18.0	400	12.5	27	1.25	2.80	e
LZB 42 AR0025-11	8411 0423 70	0.51	0.68	120	40	30	44	32.0	225	12.5	27	2.65	5.80	g
LZB 42 AR0015-11	8411 0423 88	0.51	0.68	77	63	46	70	52.0	143	12.5	27	2.65	5.80	g
LZB 42 AR0010-11	8411 0423 96	0.51	0.68	46	105	77	115	85.0	86	12.5	27	2.65	5.80	g
LZB 42 AR0006-11	8411 0424 04	0.50	0.67	30	160	118	170	125	55	12.5	27	4.85	10.70	h
LZB 42 AR0004-11	8411 0424 12	0.50	0.67	19	250	184	270	200	35	12.5	27	4.85	10.70	h

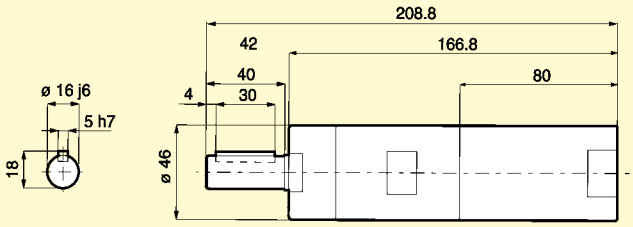
[1] *For Shaft loading curves, see page 12.*

Dimensions (mm)

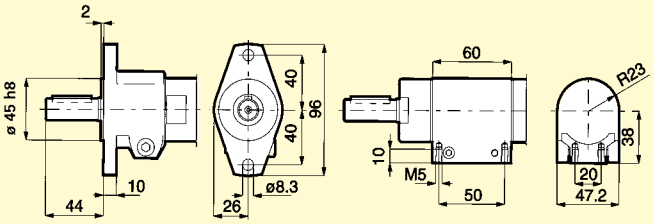
Conversion factor 1mm = 0.04 inch

Non reversible
LZB 42 A200-11
LZB 42 A065-11
LZB 42 A040-11
LZB 42 A025-11
LZB 42 A015-11
LZB 42 A010-11
LZB 42 A005-11
LZB 42 AV200-11
LZB 42 AV065-11
LZB 42 AV040-11
LZB 42 AV025-11
LZB 42 AV015-11
LZB 42 AV010-11
LZB 42 AV005-11

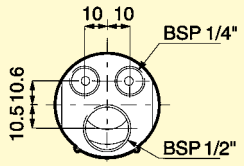
Reversible
LZB 42 AR170-11
LZB 42 AR050-11
LZB 42 AR030-11
LZB 42 AR020-11
LZB 42 AR010-11
LZB 42 AR007-11
LZB 42 AR004-11



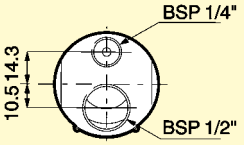
Optional Mountings



Flange Ordering No. 4430 0490 80 Foult Ordering No. 4430 0575 80



Reversible

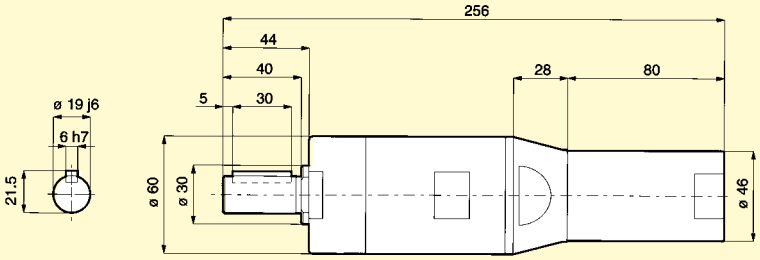


Non-Reversible

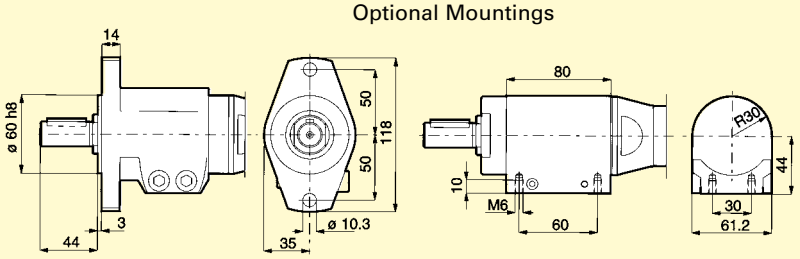
All versions

Non reversible
LZB 42 A0030-11
LZB 42 A0020-11
LZB 42 A0012-11
LZB 42 AV0030-11
LZB 42 AV0020-11
LZB 42 AV0012-11

Reversible
LZB 42 AR0025-11
LZB 42 AR0015-11
LZB 42 AR0010-11



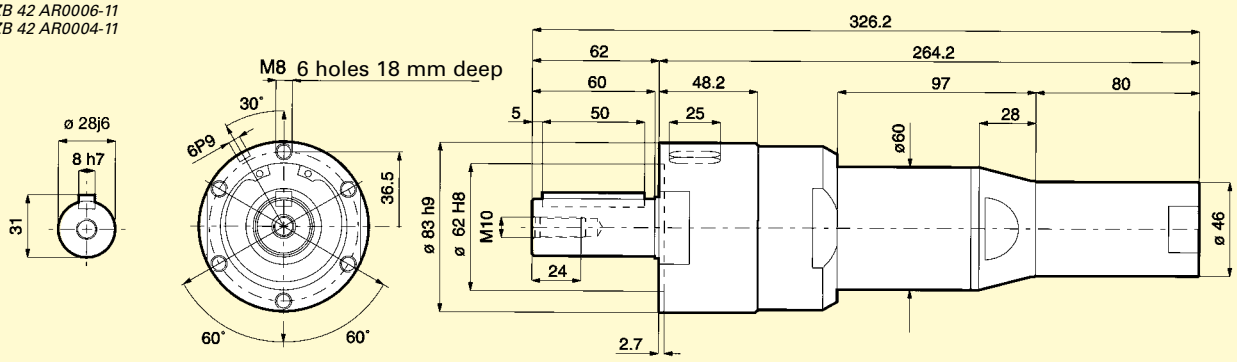
Optional Mountings



Flange Ordering No. 4430 0569 80 Foult Ordering No. 4430 0178 80

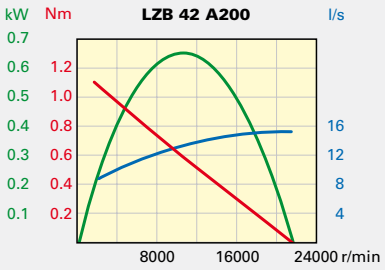
Non reversible
LZB 42 A0008-11
LZB 42 A0005-11
LZB 42 AV0008-11
LZB 42 AV0005-11

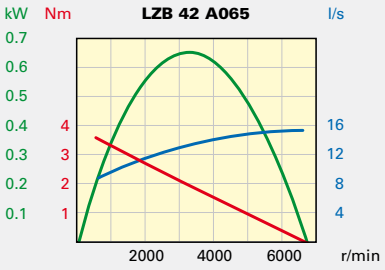
Reversible
LZB 42 AR0006-11
LZB 42 AR0004-11

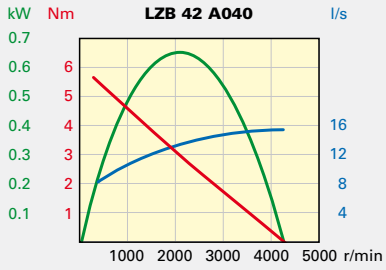


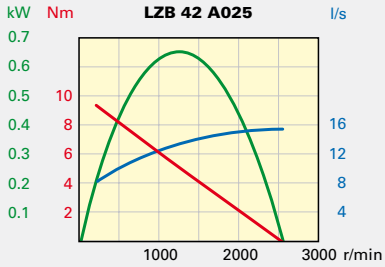
LZB 42 Performance curves at air pressure 6.3 bar (91psi)

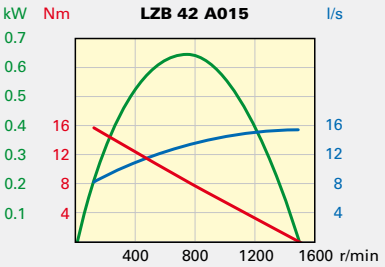
Non-Reversible

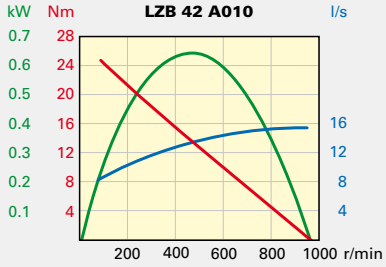


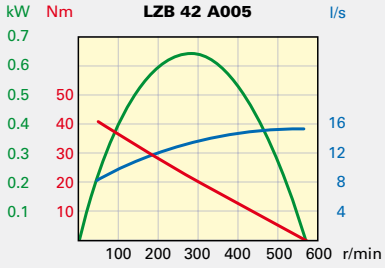


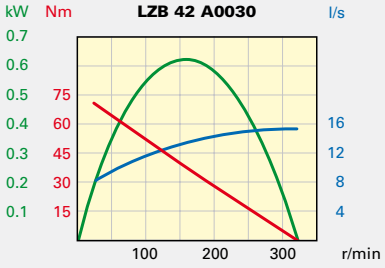


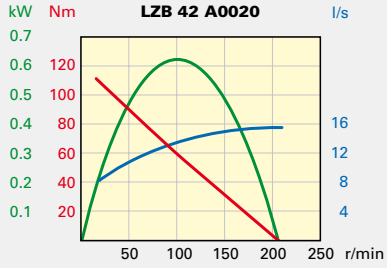


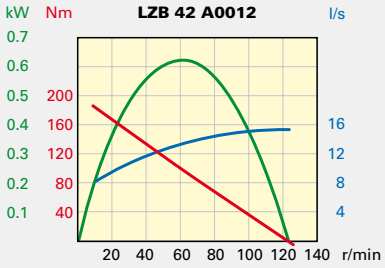


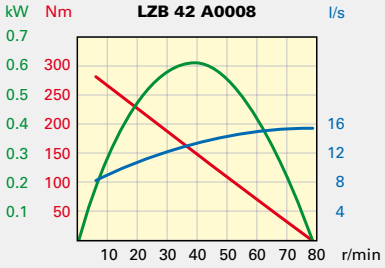


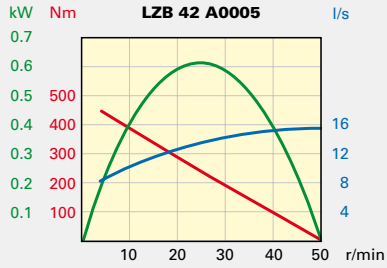


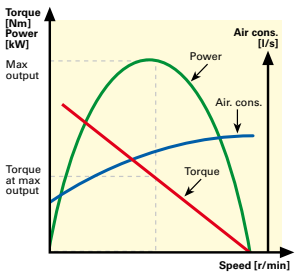












Conversion factors)*

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

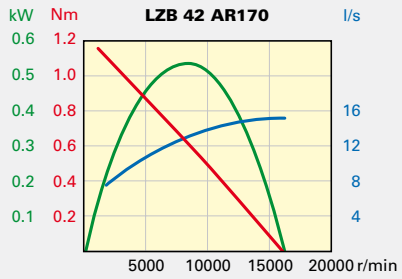
1 hp = 0.75 kW
1 lbf-ft = 1.36 Nm
1 cfm = 0.47 l/s

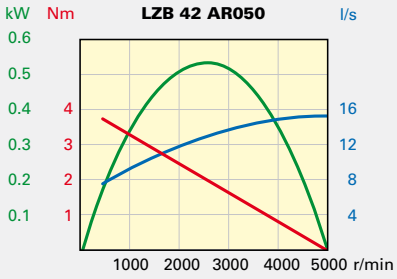
**) For more details, see page 7.*

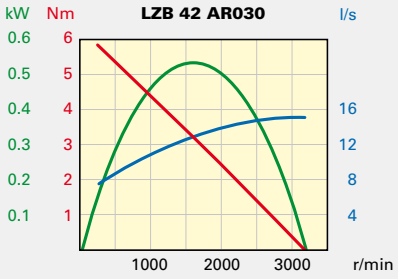
For information about performance curves, see page 7.

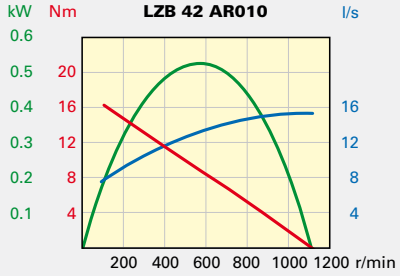
LZB 42 Performance curves at air pressure 6.3 bar (91psi)

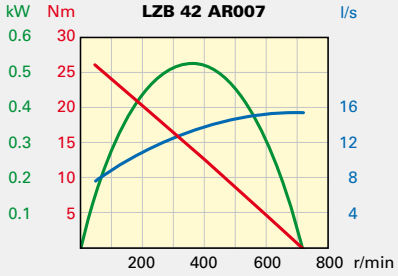
Reversible

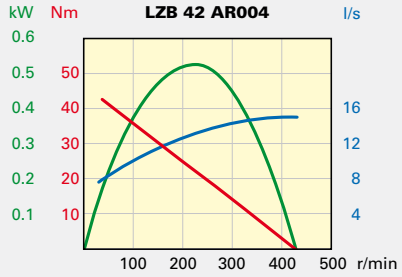


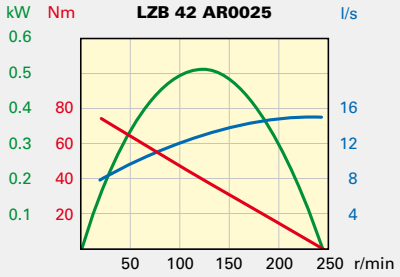


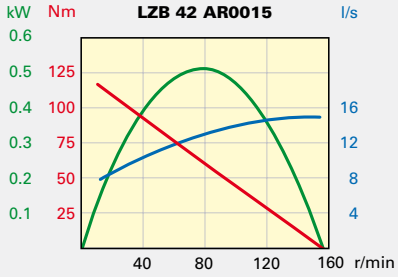


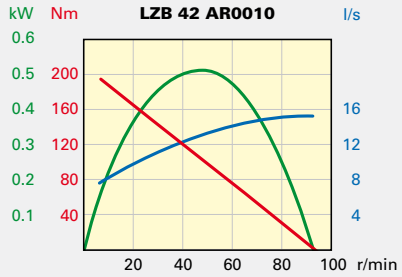


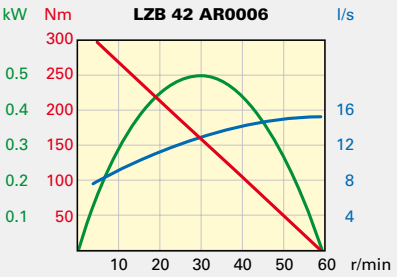


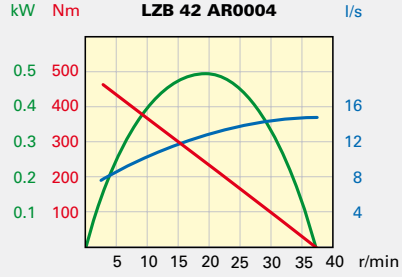


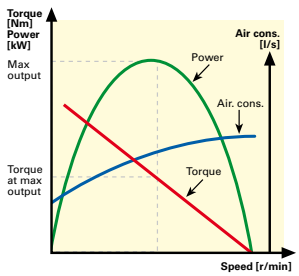












Conversion factors)*

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 more details, see page 7.*

For information about performance curves, see page 7.

Vane motors LZB 46

0.58 – 0.84 kW
0.78 – 1.13 hp

For EX certification according to the ATEX directive (Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00 (book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

For optional lubrication free vanes see page 42

Data at air pressure 6.3 bar (91psi)

Type [2]	Ordering No. Keyed Shaft	Ordering No. Threaded Shaft	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf.ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Clockwise rotation															
LZB 46 A200-	8411 0460 09	8411 0469 00	0.84	1.13	10800	0.74	0.55	1.2	0.88	21000	16.5	35	1.2	2.65	e
LZB 46 A065-	8411 0460 17	8411 0469 18	0.84	1.13	3300	2.4	1.8	3.9	2.9	6700	16.5	35	1.2	2.65	e
LZB 46 A040-	8411 0460 25	8411 0469 26	0.84	1.13	2100	3.8	2.8	6.2	4.6	4200	16.5	35	1.2	2.65	e
LZB 46 A025-	8411 0460 33	8411 0469 34	0.84	1.13	1280	6.3	4.6	10	7.4	2550	16.5	35	1.2	2.65	e
LZB 46 A015-	8411 0460 41	8411 0469 42	0.83	1.11	750	10.6	7.8	16	12	1500	16.5	35	1.3	2.9	e
LZB 46 A010-	8411 0460 58	8411 0469 59	0.83	1.11	480	17	12	25	18	960	16.5	35	1.3	2.9	e
LZB 46 A005-	8411 0460 66	8411 0469 67	0.83	1.11	290	27	20	45	33	570	16.5	35	1.3	2.9	e
LZB 46 A0030-	8411 0460 74	8411 0469 75	0.81	1.09	160	48	35	75	55	320	16.5	35	2.7	6.0	g
LZB 46 A0020-	8411 0460 82	8411 0469 83	0.81	1.09	100	75	55	120	88	200	16.5	35	2.7	6.0	g
LZB 46 A0012-	8411 0460 90	8411 0469 91	0.81	1.09	62	125	92	200	150	125	16.5	35	2.7	6.0	g
LZB 46 A0008-	8411 0461 08	–	0.79	1.06	40	190	140	310	230	80	16.5	35	4.9	10.8	h
LZB 46 A0005-	8411 0461 16	–	0.79	1.06	25	300	220	490	360	50	16.5	35	4.9	10.8	h

Type	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf.ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Anti-clockwise rotation														
LZB 46 AV200-11	8411 0465 04	0.84	1.13	10800	0.74	0.55	1.2	0.88	21000	16.5	35	1.2	2.65	e
LZB 46 AV065-11	8411 0465 12	0.84	1.13	3300	2.4	1.8	3.9	2.9	6700	16.5	35	1.2	2.65	e
LZB 46 AV040-11	8411 0465 20	0.84	1.13	2100	3.8	2.8	6.2	4.6	4200	16.5	35	1.2	2.65	e
LZB 46 AV025-11	8411 0465 38	0.84	1.13	1280	6.3	4.6	10	7.4	2550	16.5	35	1.2	2.65	e
LZB 46 AV015-11	8411 0465 46	0.83	1.11	750	10.6	7.8	16	12	1500	16.5	35	1.3	2.9	e
LZB 46 AV010-11	8411 0465 53	0.83	1.11	480	17	12	25	18	960	16.5	35	1.3	2.9	e
LZB 46 AV005-11	8411 0465 61	0.83	1.11	290	27	20	45	33	570	16.5	35	1.3	2.9	e
LZB 46 AV0030-11	8411 0465 79	0.81	1.09	160	48	35	75	55	320	16.5	35	2.7	6.0	g
LZB 46 AV0020-11	8411 0465 87	0.81	1.09	100	75	55	120	88	200	16.5	35	2.7	6.0	g
LZB 46 AV0012-11	8411 0465 95	0.81	1.09	62	125	92	200	150	125	16.5	35	2.7	6.0	g
LZB 46 AV0008-11	8411 0466 03	0.79	1.06	40	190	140	310	230	80	16.5	35	4.9	10.8	h
LZB 46 AV0005-11	8411 0466 11	0.79	1.06	25	300	220	490	360	50	16.5	35	4.9	10.8	h
Reversible														
LZB 46 AR170-11	8411 0463 06	0.62	0.83	8600	0.68	0.5	0.75	0.55	17000	14.5	31	1.2	2.65	e
LZB 46 AR050-11	8411 0463 14	0.62	0.83	2650	2.2	1.6	2.5	1.8	5250	14.5	31	1.2	2.65	e
LZB 46 AR030-11	8411 0463 22	0.62	0.83	1700	3.5	2.6	4.0	2.6	3350	14.5	31	1.2	2.65	e
LZB 46 AR020-11	8411 0463 30	0.62	0.83	1020	5.8	4.3	6.5	4.8	2000	14.5	31	1.2	2.65	e
LZB 46 AR010-11	8411 0463 48	0.61	0.82	600	9.8	7.2	10.5	7.7	1170	14.5	31	1.3	2.9	e
LZB 46 AR007-11	8411 0463 55	0.61	0.82	380	15	11	16	12	750	14.5	31	1.3	2.9	e
LZB 46 AR004-11	8411 0463 63	0.61	0.82	230	25	18	27	20	450	14.5	31	1.3	2.9	e
LZB 46 AR0025-11	8411 0463 71	0.60	0.80	130	44	32	48	35	250	14.5	31	2.7	6.0	g
LZB 46 AR0015-11	8411 0463 89	0.60	0.80	80	70	52	75	55	160	14.5	31	2.7	6.0	g
LZB 46 AR0010-11	8411 0463 97	0.60	0.80	50	115	85	125	92	95	14.5	31	2.7	6.0	g
LZB 46 AR0006-11	8411 0464 05	0.58	0.78	32	175	130	190	140	62	14.5	31	4.9	10.8	h
LZB 46 AR0004-11	8411 0464 13	0.58	0.78	20	275	200	300	220	40	14.5	31	4.9	10.8	h

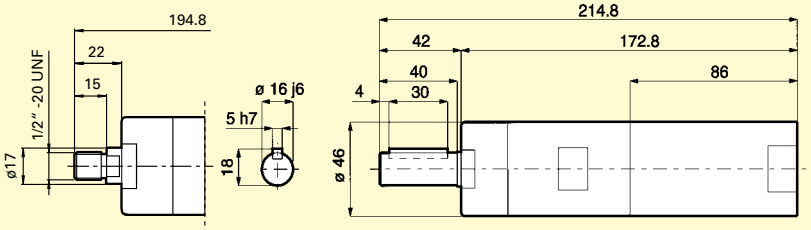
[1] For Shaft loading curves, see page 12. [2] Suffix. -11 = Keyed Shaft -12 = Threaded Shaft.

Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

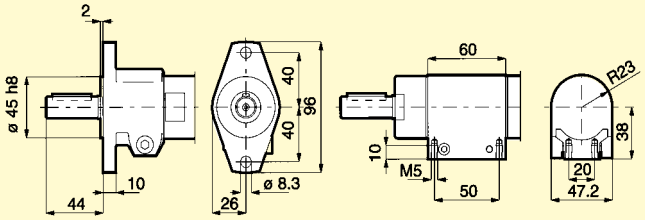
Non reversible
LZB 46 A200-11/12
LZB 46 A065-11/12
LZB 46 A040-11/12
LZB 46 A025-11/12
LZB 46 A015-11/12
LZB 46 A010-11/12
LZB 46 A005-11/12
LZB 46 AV200-11
LZB 46 AV065-11
LZB 46 AV040-11
LZB 46 AV025-11
LZB 46 AV015-11
LZB 46 AV010-11
LZB 46 AV005-11

Reversible
LZB 46 AR170-11
LZB 46 AR050-11
LZB 46 AR030-11
LZB 46 AR020-11
LZB 46 AR010-11
LZB 46 AR007-11
LZB 46 AR004-11

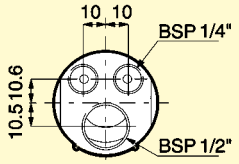
Threaded shaft ***Keyed shaft***



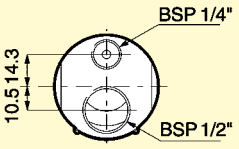
Optional Mountings



Flange Ordering No. 4430 0490 80 Foot Ordering No. 4430 0575 80



Reversible



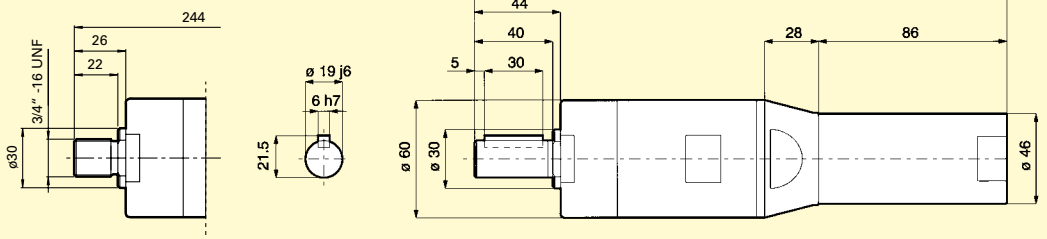
Non-Reversible

All versions

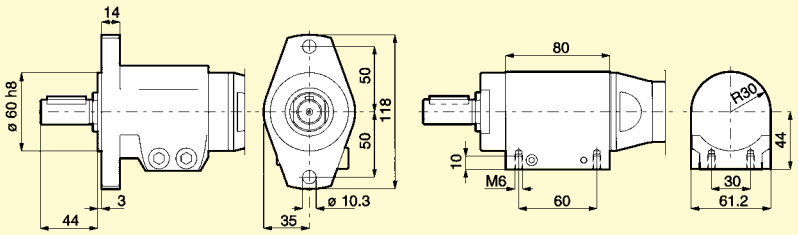
Non reversible
LZB 46 A0030-11/12
LZB 46 A0020-11/12
LZB 46 A0012-11/12
LZB 46 AV0030-11
LZB 46 AV0020-11
LZB 46 AV0012-11

Reversible
LZB 46 AR0025-11
LZB 46 AR0015-11
LZB 46 AR0010-11

Threaded shaft ***Keyed shaft***



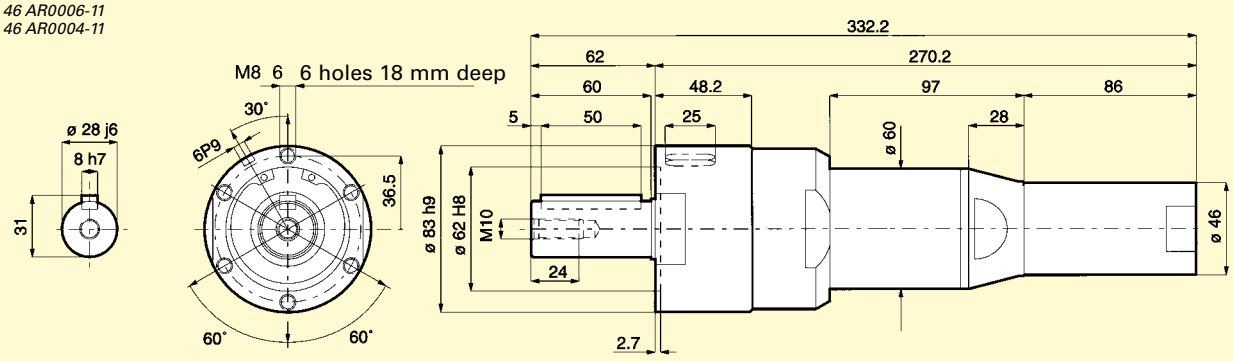
Optional Mountings



Flange Ordering No. 4430 0569 80 Foot Ordering No. 4430 0178 80

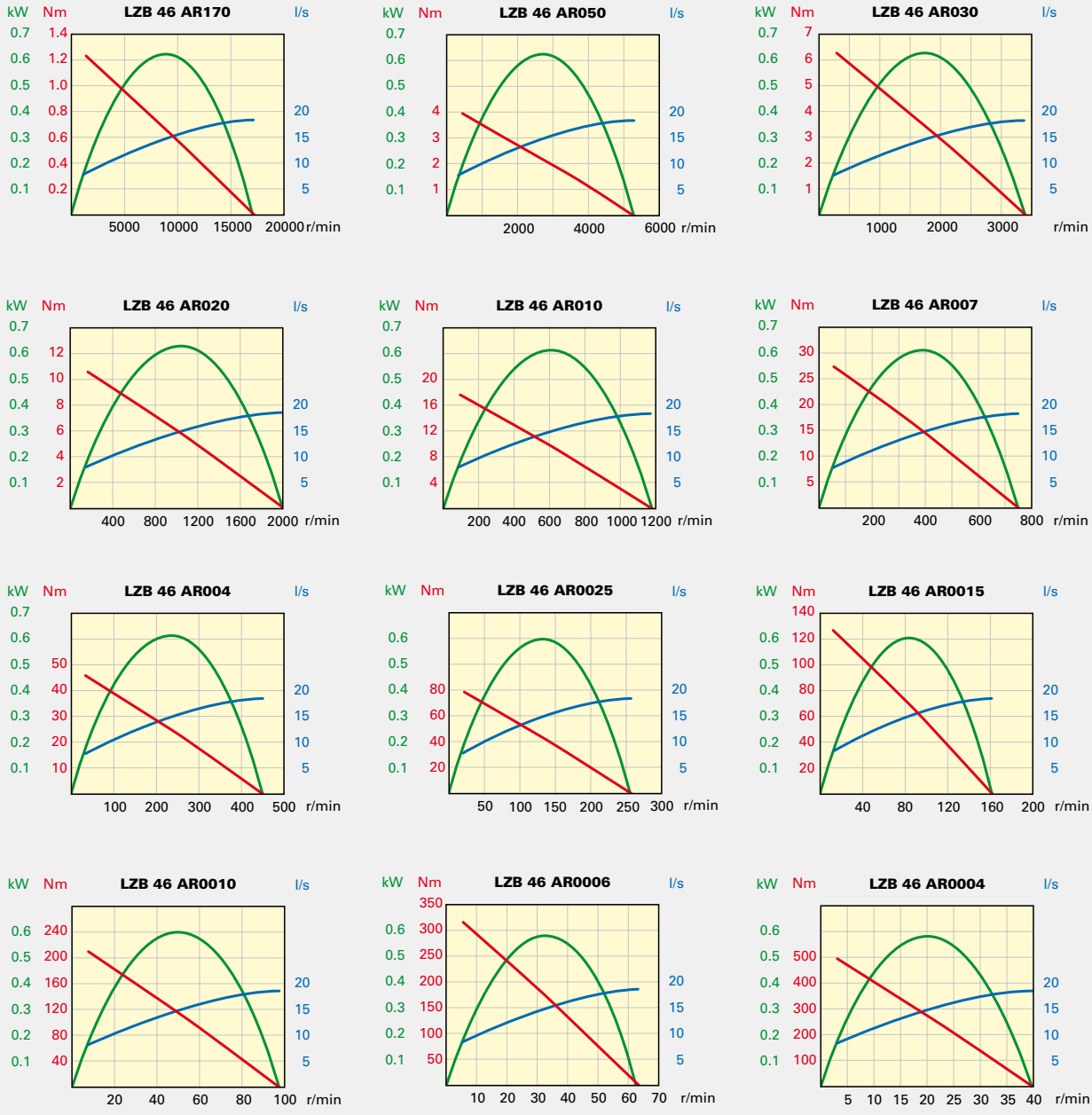
Non reversible
LZB 46 A0008-11-----
LZB 46 A0005-11
LZB 46 AV0008-11
LZB 46 AV0005-11

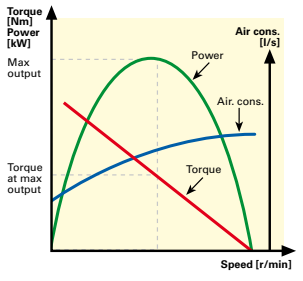
Reversible
LZB 46 AR0006-11
LZB 46 AR0004-11



LZB 46 Performance curves at air pressure 6.3 bar (91psi)

Reversible





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 more details, see page 7.*

For information about performance curves, see page 7.

Vane motors LZB 54

0.78 – 1.20 kW
1.05 – 1.61 hp

For EX certification according to the ATEX directive
(Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00
(book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

For optional lubrication free vanes and/or threaded shafts see page 46.

Data at air pressure 6.3 bar (91psi)

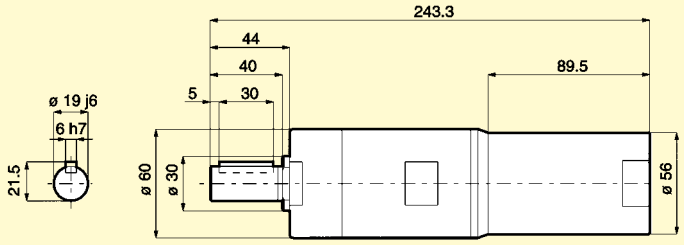
Type	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Clockwise rotation														
LZB 54 A180-11	8411 0560 08	1.2	1.61	9300	1.2	0.88	1.8	1.3	18000	22.5	53	2.35	5.2	g
LZB 54 A050-11	8411 0560 16	1.2	1.61	2700	4.3	3.2	6.5	4.8	5200	22.5	53	2.35	5.2	g
LZB 54 A030-11	8411 0560 24	1.2	1.61	1600	7.0	5.2	10	7.4	3100	22.5	53	2.35	5.2	g
LZB 54 A020-11	8411 0560 32	1.2	1.61	1200	9.5	7.0	13.5	10	2300	22.5	53	2.35	5.2	g
LZB 54 A010-11	8411 0560 40	1.17	1.57	590	19	14	28	21	1120	22.5	53	2.50	5.5	g
LZB 54 A007-11	8411 0560 57	1.17	1.57	360	31	23	47	35	680	22.5	53	2.50	5.5	g
LZB 54 A005-11	8411 0560 65	1.17	1.57	260	42	31	64	47	500	22.5	53	2.50	5.5	g
LZB 54 A0025-11	8411 0560 73	1.15	1.54	140	78	58	110	81	275	22.5	53	4.65	10.3	h
LZB 54 A0017-11	8411 0560 81	1.15	1.54	85	130	96	190	140	165	22.5	53	4.65	10.3	h
LZB 54 A0012-11	8411 0560 99	1.15	1.54	65	175	129	250	180	125	22.5	53	4.65	10.3	h
Anti-clockwise rotation														
LZB 54 AV180-11	8411 0564 04	1.2	1.61	9300	1.2	0.88	1.8	1.3	18000	22.5	53	2.35	5.2	g
LZB 54 AV050-11	8411 0564 12	1.2	1.61	2700	4.3	3.2	6.5	4.8	5200	22.5	53	2.35	5.2	g
LZB 54 AV030-11	8411 0564 20	1.2	1.61	1600	7.0	5.2	10	7.4	3100	22.5	53	2.35	5.2	g
LZB 54 AV020-11	8411 0564 38	1.2	1.61	1200	9.5	7.0	13.5	10	2300	22.5	53	2.35	5.2	g
LZB 54 AV010-11	8411 0564 46	1.17	1.57	590	19	14	28	21	1120	22.5	53	2.50	5.5	g
LZB 54 AV007-11	8411 0564 53	1.17	1.57	360	31	23	47	35	680	22.5	53	2.50	5.5	g
LZB 54 AV005-11	8411 0564 61	1.17	1.57	260	42	31	64	47	500	22.5	53	2.50	5.5	g
LZB 54 AV0025-11	8411 0564 79	1.15	1.54	140	78	58	110	81	275	22.5	53	4.65	10.3	h
LZB 54 AV0017-11	8411 0564 87	1.15	1.54	85	130	96	190	140	165	22.5	53	4.65	10.3	h
LZB 54 AV0012-11	8411 0564 95	1.15	1.54	65	175	129	250	180	125	22.5	53	4.65	10.3	h
Reversible														
LZB 54 AR130-11	8411 0563 05	0.82	1.10	6800	1.2	0.88	1.3	1.0	13000	17.5	37	2.35	5.2	g
LZB 54 AR035-11	8411 0563 13	0.82	1.10	1970	4.0	3.0	4.3	3.2	3850	17.5	37	2.35	5.2	g
LZB 54 AR020-11	8411 0563 21	0.82	1.10	1200	6.5	4.8	7.1	5.2	2350	17.5	37	2.35	5.2	g
LZB 54 AR015-11	8411 0563 39	0.82	1.10	890	8.8	6.5	9.6	7.1	1730	17.5	37	2.35	5.2	g
LZB 54 AR008-11	8411 0563 47	0.80	1.07	425	18	13	20	14	835	17.5	37	2.50	5.5	g
LZB 54 AR005-11	8411 0563 54	0.80	1.07	260	29	21	31	23	500	17.5	37	2.50	5.5	g
LZB 54 AR004-11	8411 0563 62	0.80	1.07	190	40	30	43	32	375	17.5	37	2.50	5.5	g
LZB 54 AR0020-11	8411 0563 70	0.78	1.05	100	74	55	80	59	200	17.5	37	4.65	10.3	h
LZB 54 AR0012-11	8411 0563 88	0.78	1.05	65	115	85	125	92	115	17.5	37	4.65	10.3	h
LZB 54 AR0009-11	8411 0563 96	0.78	1.05	45	165	122	179	132	90	17.5	37	4.65	10.3	h

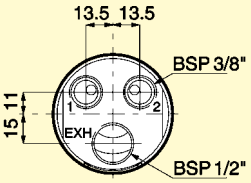
[1] *For Shaft loading curves, see page 12.*

Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

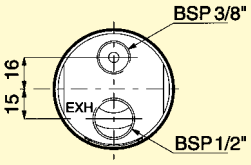
Non reversible
LZB 54 A180-11
LZB 54 A050-11
LZB 54 A030-11
LZB 54 A020-11
LZB 54 A010-11
LZB 54 A007-11
LZB 54 A005-11
LZB 54 AV180-11
LZB 54 AV050-11
LZB 54 AV030-11
LZB 54 AV020-11
LZB 54 AV010-11
LZB 54 AV007-11
LZB 54 AV005-11

Reversible
LZB 54 AR130-11
LZB 54 AR035-11
LZB 54 AR020-11
LZB 54 AR015-11
LZB 54 AR008-11
LZB 54 AR005-11
LZB 54 AR004-11





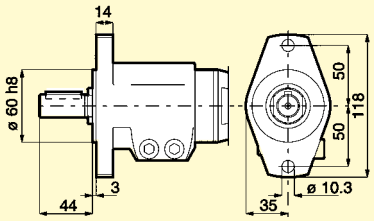
Reversible



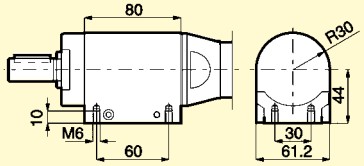
Non-Reversible

All versions

Optional Mountings



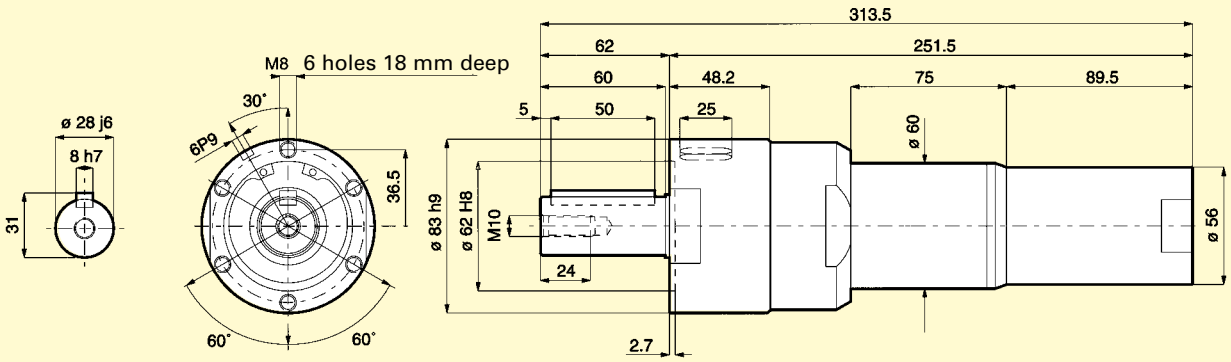
Flange Ordering No. 4430 0569 80



Foot Ordering No. 4430 0178 80

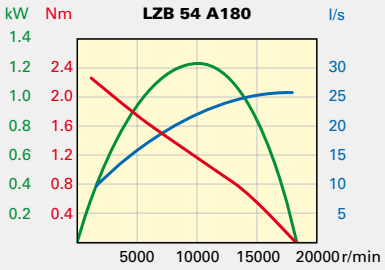
Non reversible
LZB 54 A0025-11
LZB 54 A0017-11
LZB 54 A0012-11
LZB 54 AV0025-11
LZB 54 AV0017-11
LZB 54 AV0012-11

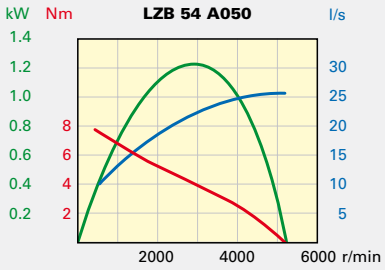
Reversible
LZB 54 AR0020-11
LZB 54 AR0012-11
LZB 54 AR0009-11

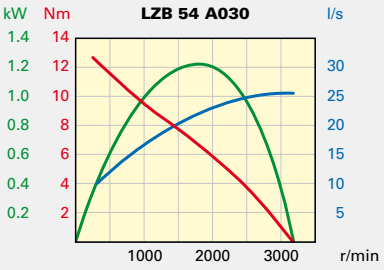


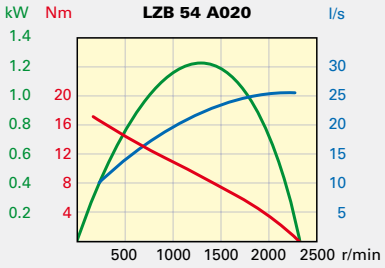
LZB 54 Performance curves at air pressure 6.3 bar (91psi)

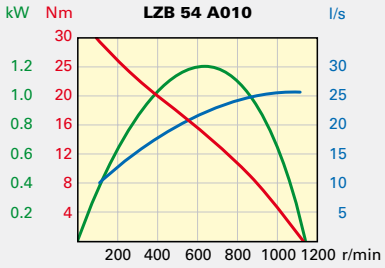
Non-Reversible

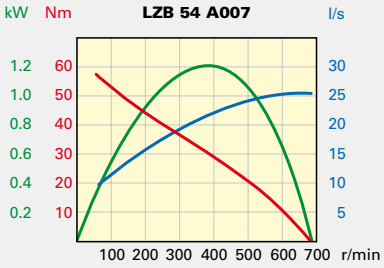


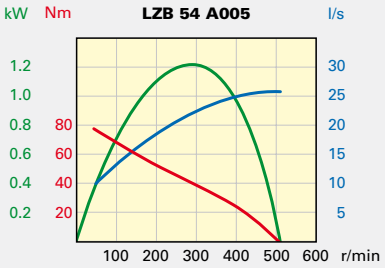


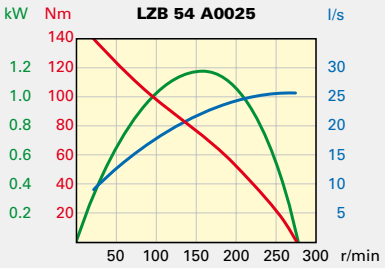


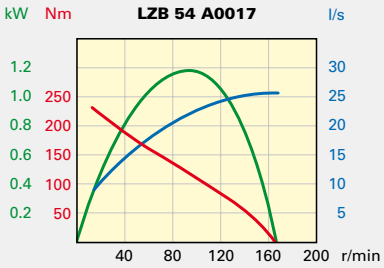


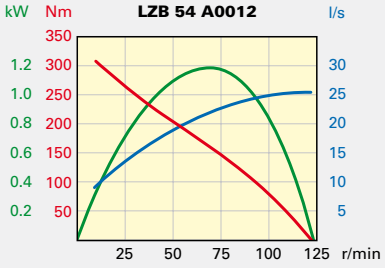


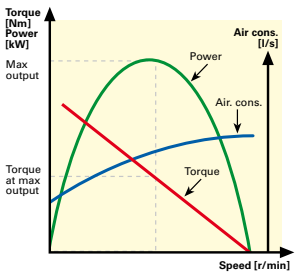












Conversion factors)*

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

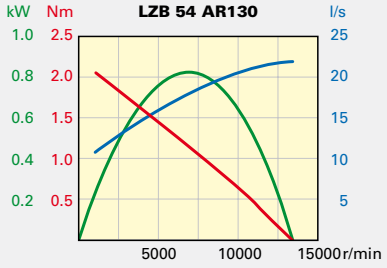
1 hp = 0.75 kW
1 lbf-ft = 1.36 Nm
1 cfm = 0.47 l/s

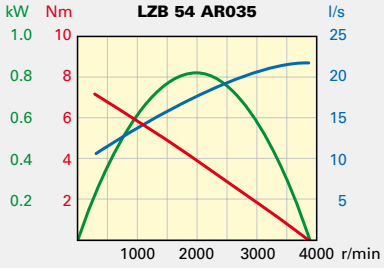
**) For more details, see page 7.*

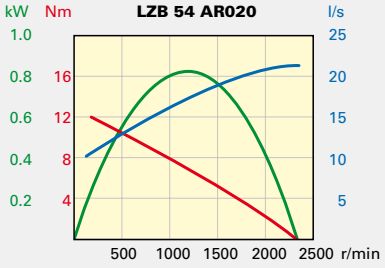
For information about performance curves, see page 7.

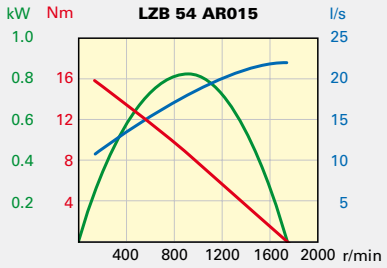
LZB 54 Performance curves at air pressure 6.3 bar (91psi)

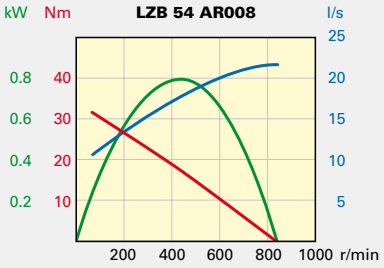
Reversible

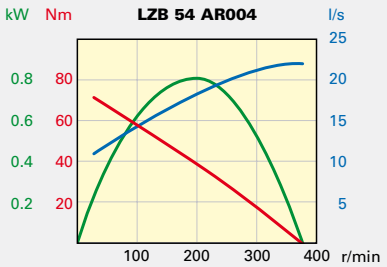


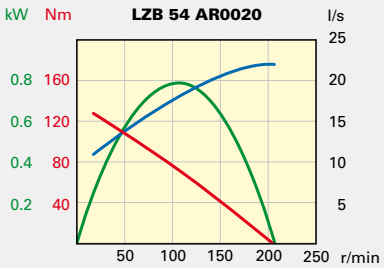


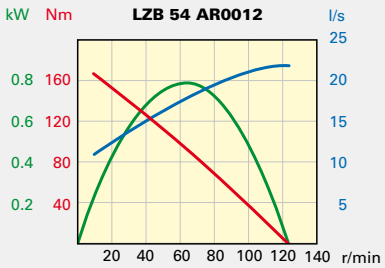


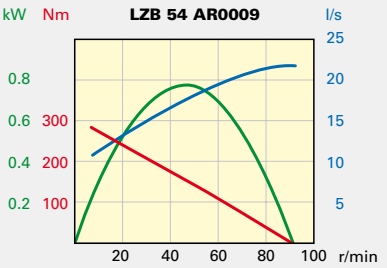


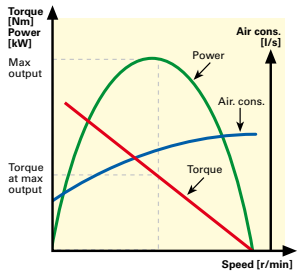












Conversion factors)*

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 more details, see page 7.*

For information about performance curves, see page 7.

Vane motors LZB 66

1.40 – 1.83 kW
1.88 – 2.45 hp

For EX certification according to the ATEX directive
(Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00
(book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

Data at air pressure 6.3 bar (91psi)

Type	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Clockwise rotation														
LZB 66 A010-11	8411 0600 59	1.83	2.45	524	33	24	52	39	1026	36	76.3	2.9	6.4	g
LZB 66 A007-11	8411 0600 67	1.83	2.45	319	55	41	86	64	614	36	76.3	2.9	6.4	g
LZB 66 A005-11	8411 0600 75	1.83	2.45	235	74	55	117	87	461	36	76.3	2.9	6.4	g
LZB 66 A0025-11	8411 0600 83	1.8	2.41	128	135	100	217	160	250	36	76.3	5.1	11.1	h
LZB 66 A0017-11	8411 0600 91	1.8	2.41	77	222	164	333	245	154	36	76.3	5.1	11.1	h
LZB 66 A0025-15	8411 0600 18	1.8	2.41	128	135	100	217	160	250	36	76.3	5.3	11.7	h
LZB 66 A0017-15	8411 0600 26	1.8	2.41	77	222	164	333	245	154	36	76.3	5.3	11.7	h
Reversible														
LZB 66 AR008-11	8411 0601 25	1.43	1.92	473	29	22	46	33	875	31	65.7	2.9	6.4	g
LZB 66 AR005-11	8411 0601 33	1.43	1.92	289	47	35	75	55	532	31	65.7	2.9	6.4	g
LZB 66 AR004-11	8411 0601 41	1.43	1.92	213	64	48	101	75	393	31	65.7	2.9	6.4	g
LZB 66 AR0020-11	8411 0601 58	1.4	1.88	115	116	86	187	138	213	31	65.7	5.1	11.1	h
LZB 66 AR0012-11	8411 0601 66	1.4	1.88	70	190	141	308	227	130	31	65.7	5.1	11.1	h
LZB 66 AR0020-15	8411 0601 09	1.4	1.88	115	116	86	187	138	213	31	65.7	5.3	11.7	h
LZB 66 AR0012-15	8411 0601 17	1.4	1.88	70	190	141	308	227	130	31	65.7	5.3	11.7	h

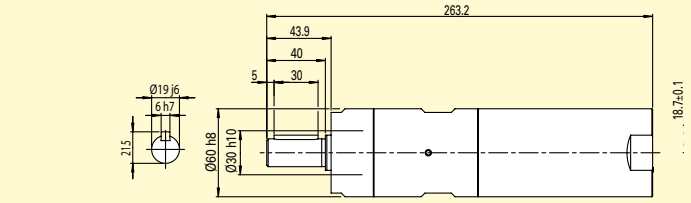
NOTE: The motors -15 have built-in silencers. [1] *For shaft loading kurves, see page 12.*

Dimensions (mm)

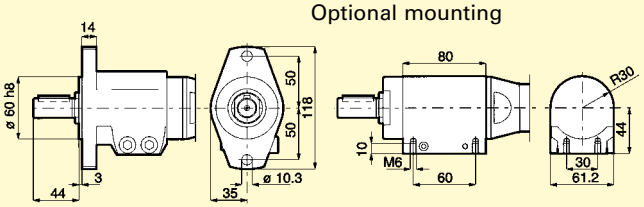
Conversion factor 1 mm = 0.04 inch

Non-Reversible
LZB 66 A010-11
LZB 66 A007-11
LZB 66 A005-11

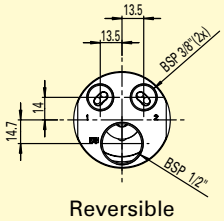
Reversible
LZB 66 AR008-11
LZB 66 AR005-11
LZB 66 AR004-11



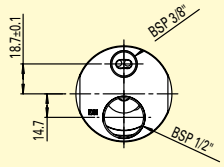
Optional mounting



Flange Ordering No. 4430 0569 80 Flange Ordering No. 4430 0178 80



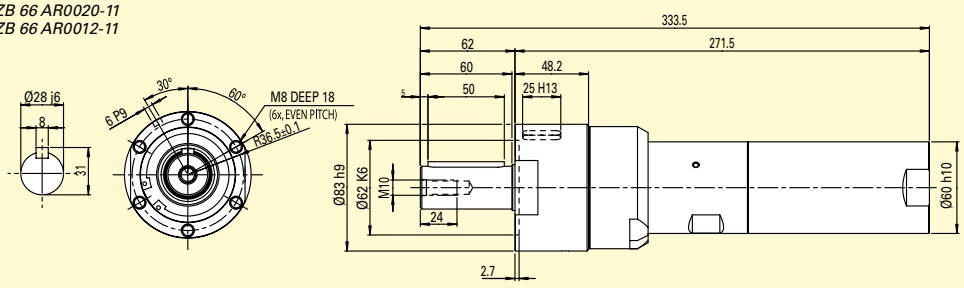
Reversible



Non-Reversible

Non-Reversible
LZB 66 A0025-11
LZB 66 A0017-11

Reversible
LZB 66 AR0020-11
LZB 66 AR0012-11

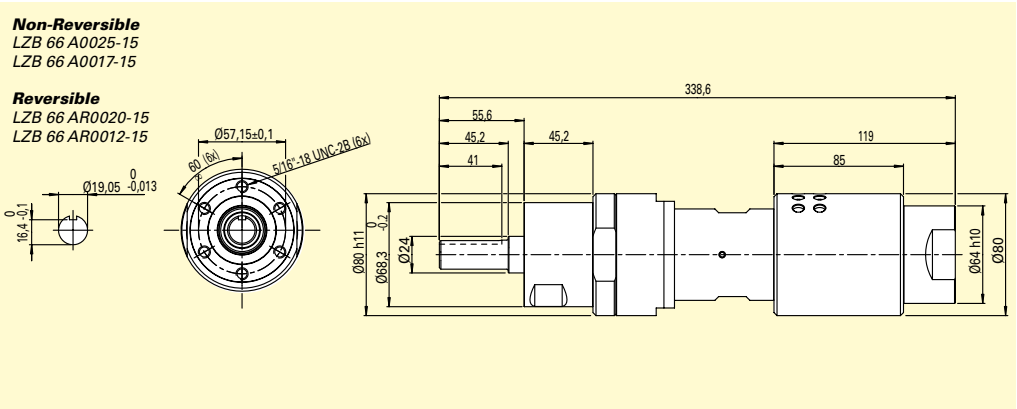


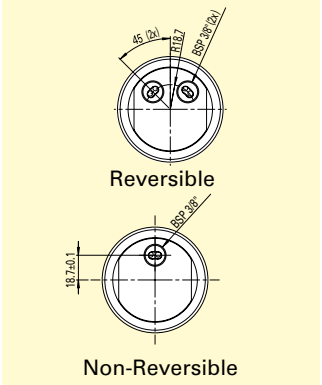
Dimensions (mm)

Conversion factor 1 mm = 0.04 inch

Non-Reversible
LZB 66 A0025-15
LZB 66 A0017-15

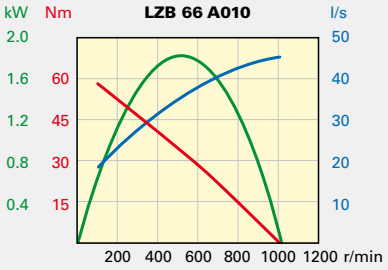
Reversible
LZB 66 AR0020-15
LZB 66 AR0012-15

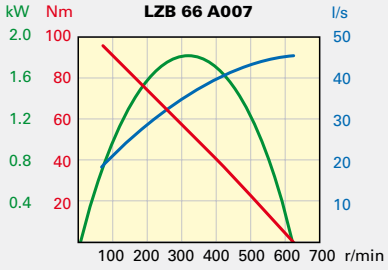


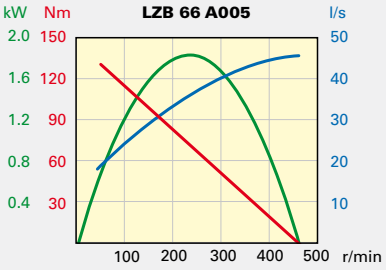


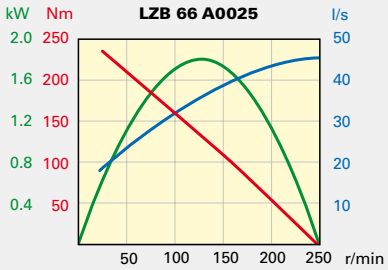
LZB 66 Performance curves at air pressure 6.3 bar (91 psi)

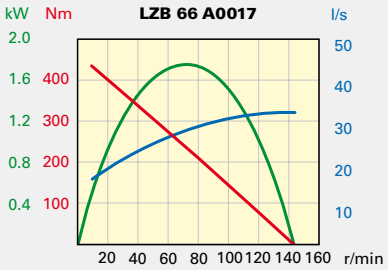
Non-Reversible



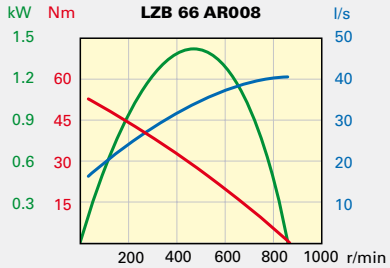


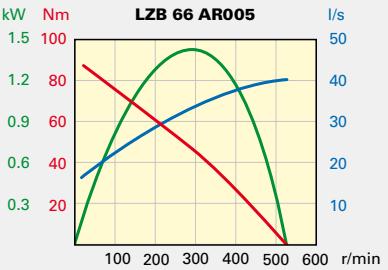


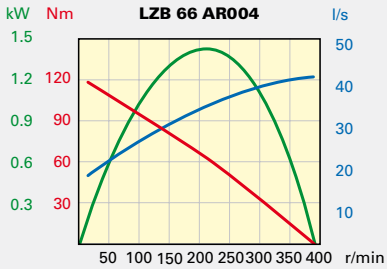


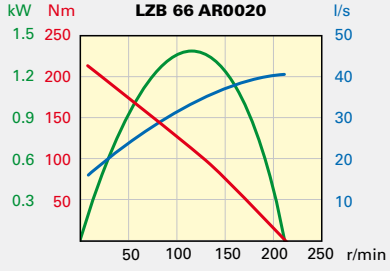


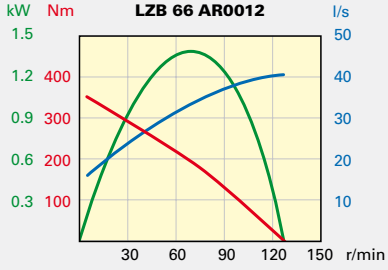
Reversible

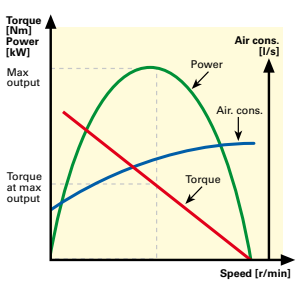












Conversion factors)*

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 more details, see page 7.*

For information about performance curves, see page 7.

Vane motors LZB 77

2.52 – 2.91 kW
3.38 – 3.90 hp

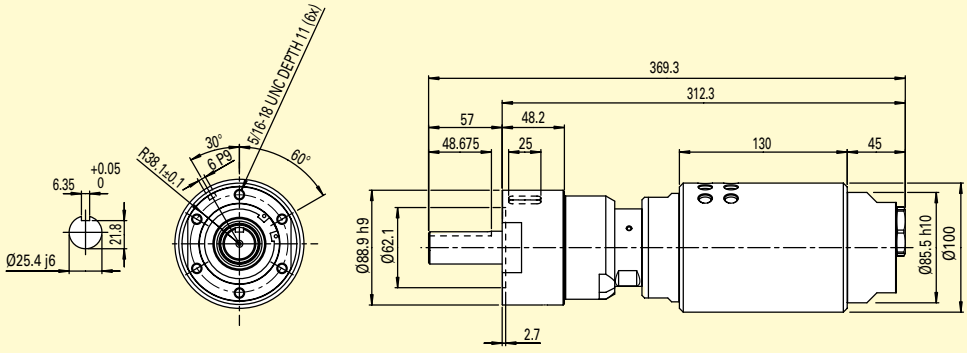
For EX certification according to the ATEX directive (Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00 (book as one delivery together with motor).
EX certification valid for fixtured mounted use only.

Data at air pressure 6.3 bar (91psi)

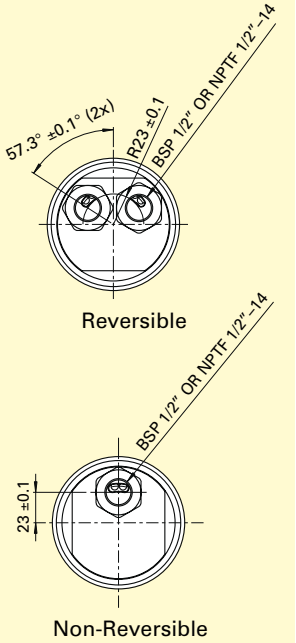
Type	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf. ft	Min starting torque Nm	Min starting torque lbf. ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code[1]
Clockwise rotation														
LZB 77 A027-15	8411 0700 25	2.91	3.9	1325	21	15.5	30	22	2660	55	116	8.4	18.5	h
LZB 77 A007-15	8411 0700 17	2.91	3.9	341	81	60	120	89	682	55	116	8.4	18.5	h
LZB 77 A0017-15	8411 0700 09	2.86	3.84	87	314	231	471	347	174	55	116	8.7	19.1	h
Reversible														
LZB 77 AR024-15	8411 0700 58	2.56	3.43	1250	20	15	29	21	2500	51	108	8.4	18.5	h
LZB 77 AR006-15	8411 0700 41	2.56	3.43	317	77	57	115	85	634	51	108	8.4	18.5	h
LZB 77 AR0015-15	8411 0700 33	2.52	3.38	79	304	224	456	336	158	51	108	8.7	19.1	h

NOTE: The motors have built-in silencers. [1] For shaft loading curves, see page 12.

Dimensions (mm)

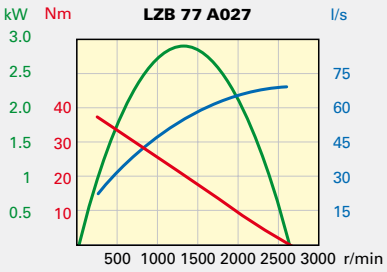


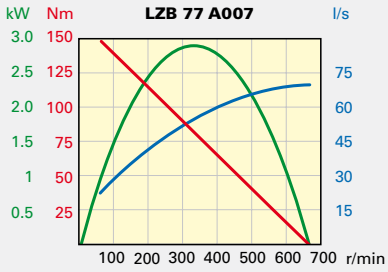
Conversion factor 1 mm = 0.04 inch

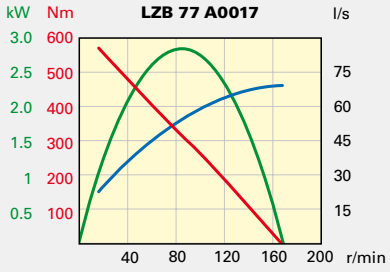


LZB 77 Performance curves at air pressure 6.3 bar (91 psi)

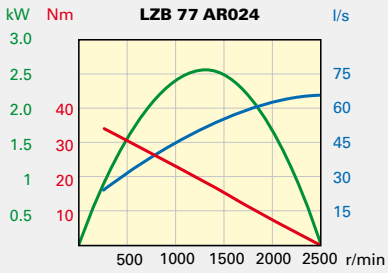
Non-Reversible

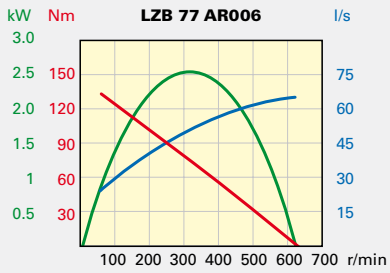


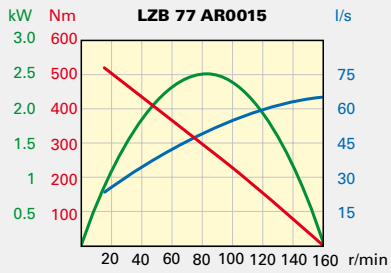


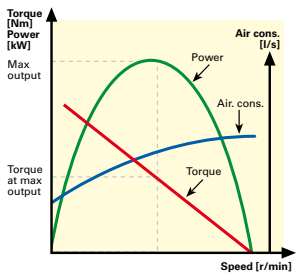


Reversible









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 more details, see page 7.*

For information about performance curves, see page 7.

Accessories for LZB air motors

Key chuck and quick chuck for LZB 22/33-12

Chuck type	Mount	Body diameter (mm)	Capacity (mm)	Ordering No.
Key chuck	3/8-24 UNF	30	0 - 6.5	4021 0283 00
Key chuck	3/8-24 UNF	36	2.0 - 10.0	4021 0416 00
Key chuck	3/8-24 UNF	46	2.0 - 13.0	4021 0289 00
Quick chuck	3/8-24 UNF	34	0 - 6.5	4021 0401 00
Quick chuck	3/8-24 UNF	36	0 - 10.0	4021 0402 00
Quick chuck	3/8-24 UNF	36	2.0 - 13.0	4021 0403 00

Threaded shafts for re-building standard motors

Motor	Thread dimension	Ordering No.
LZB 42 A200	1/2"–20 UNF	4430 0868 80
LZB 42 A065	1/2"–20 UNF	4430 0868 80
LZB 42 A040	1/2"–20 UNF	4430 0868 81
LZB 42 A025	1/2"–20 UNF	4430 0868 82
LZB 42 A015	1/2"–20 UNF	4430 0869 80
LZB 42 A010	1/2"–20 UNF	4430 0869 80
LZB 42 A005	1/2"–20 UNF	4430 0869 80
LZB 42 A0030	3/4"–16 UNF	4430 0870 80
LZB 42 A0020	3/4"–16 UNF	4430 0870 80
LZB 42 A0012	3/4"–16 UNF	4430 0870 80
LZB 54 A180	1/2"–20 UNF	4430 0871 80
LZB 54 A050	1/2"–20 UNF	4430 0871 80
LZB 54 A030	1/2"–20 UNF	4430 0871 81
LZB 54 A020	1/2"–20 UNF	4430 0871 82
LZB 54 A010	3/4"–16 UNF	4430 0870 80
LZB 54 A007	3/4"–16 UNF	4430 0870 80
LZB 54 A005	3/4"–16 UNF	4430 0870 80

Collet chuck and collets for LZB 22/33-12

Type	Capacity mm	Capacity in	Ordering No.
Collet holder cpl.			4110 0844 90
Collet	3		4150 0081 00
Collet	5		4150 0075 01
Collet	6		4150 0075 00
Collet	8	5/16	4150 0074 00
Collet		1/8	4150 0082 00
Collet		5/32	4150 0648 00
Collet		3/16	4150 0649 00
Collet		1/4	4150 0076 00

Lubrication free vane sets

Motor	Ordering No.
LZB 42	4430 0517 97
LZB 46	4430 0525 97
LZB 54	4430 0543 97

Silencers

Motor	A Sinter bronze Ordering No.	B LBB Ordering No.	C ECSB-2 Ordering No.
LZB 14	9090 0507 00	4250 1878 83	9090 2100 01
LZB 22	9090 0508 00	4250 1878 83	9090 2100 01
LZB 33	9090 0508 00	4250 1878 83	9090 2100 01
LZB 42	9090 0510 00	4250 1878 83	9090 2100 01
LZB 46	9090 0510 00	4250 1878 83	9090 2100 01
LZB 54	9090 0510 00	4250 1878 83	9090 2100 02
Noise damp dB(A)	15	20	25
Power loss %	10	10	7

Note: The noise damp and power loss values are approximate. The ECSB-2 silencer –01 has 1/2" and the –02 has 1" threaded port. They need to be connected to the motor via tube or hose with suitable connections. The LBB silencer has 3/8" threaded port. LZB 14, 22 and 33 need to be connected via tube or hose with suitable connections. For LZB 42, 46 and 54 a bushing has to be used, Ordering No. 9090 0797 00.


LZL

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.

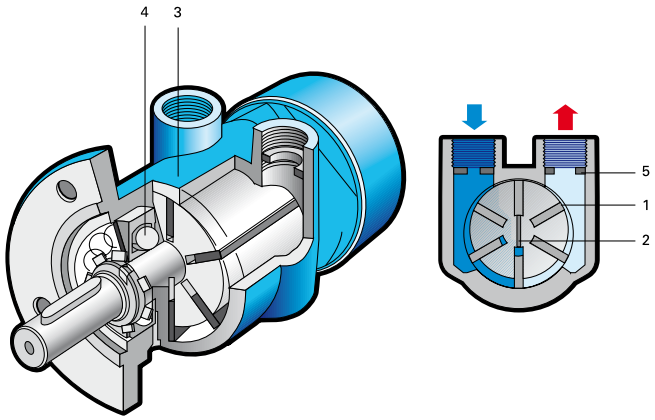


Figure 1

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.

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 refer to 'Installation Examples' on page 74.

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

Mounting

Type 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 each motor variant.

Connection

Type LZL motors are supplied with internal restrictors in the connection ports. As illustrated in Figure 3, one is larger than the other.

Anti-Clockwise rotation – the smaller restrictor (1) is fitted in the inlet port and the larger restrictor (2) in the outlet port (as shown).

Hose dimensions

Information on hose dimensions recommended for use with type LZL air motors is detailed in Table 2. These dimensions are valid for hose lengths up to 3 m. If lengths above that are used, choose a one size larger hose.

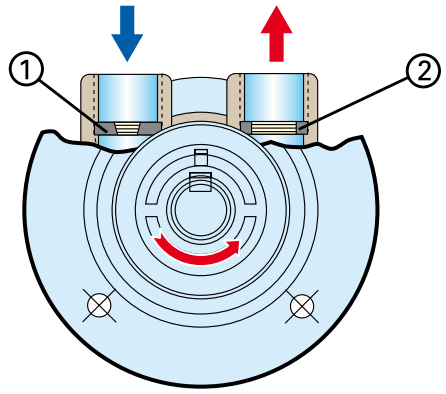
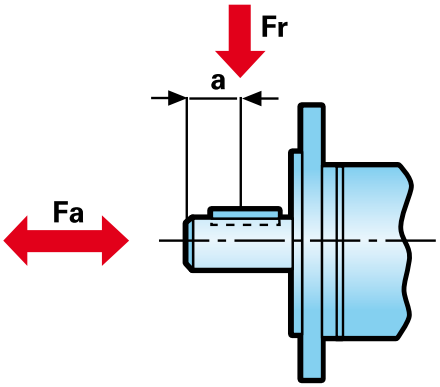


Figure 3



Motor type	Connection thread (BSP)	NON-REVERSIBLE DUTY		REVERSIBLE DUTY	
		Inlet hose diameter (mm)	Exhaust hose diameter (mm)	Inlet hose diameter (mm)	Exhaust hose diameter (mm)
LZL 03	3/8"	12.5	16	16	16
LZL 05	1/2"	12.5	20.0	20.0	20.0
LZL 15	3/4"	16.0	25.0	25.0	25.0
LZL 25	1"	20.0	32.0	32.0	32.0
LZL 35	1 1/4"	20.0	32.0	32.0	32.0

Table 2

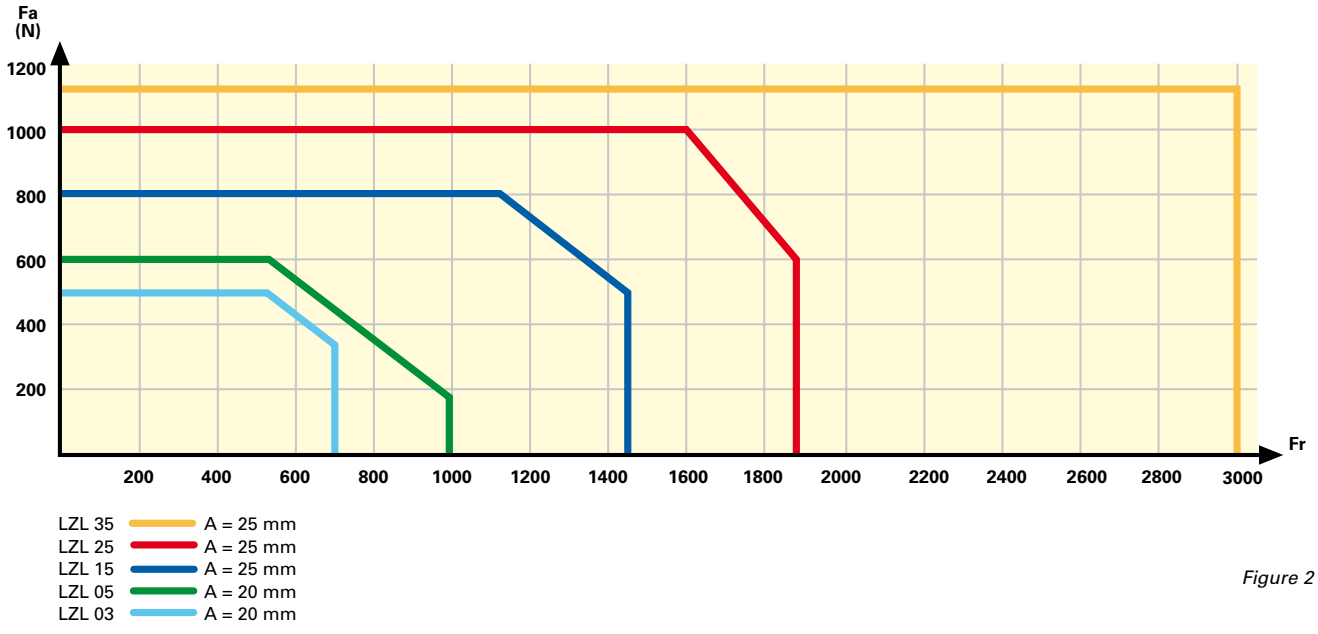


Figure 2

LZL Vane motors

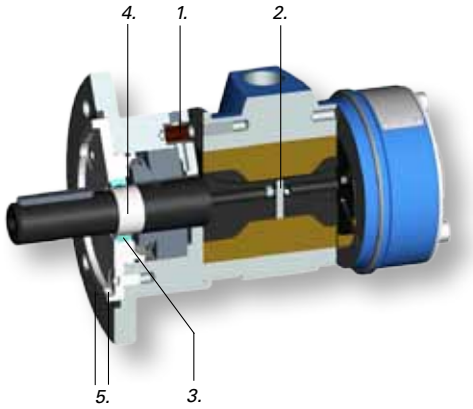
1.05 – 6.5 kW
1.4 – 8.7 hp

Power motors

The power motors come in all five sizes and are designed to give highest power and still maintain the good low speed characteristics. These motors need lubricated air.

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.
- They can be Ex certified to the ATEX. Class Ex II 2G T2 IIC D240° C.

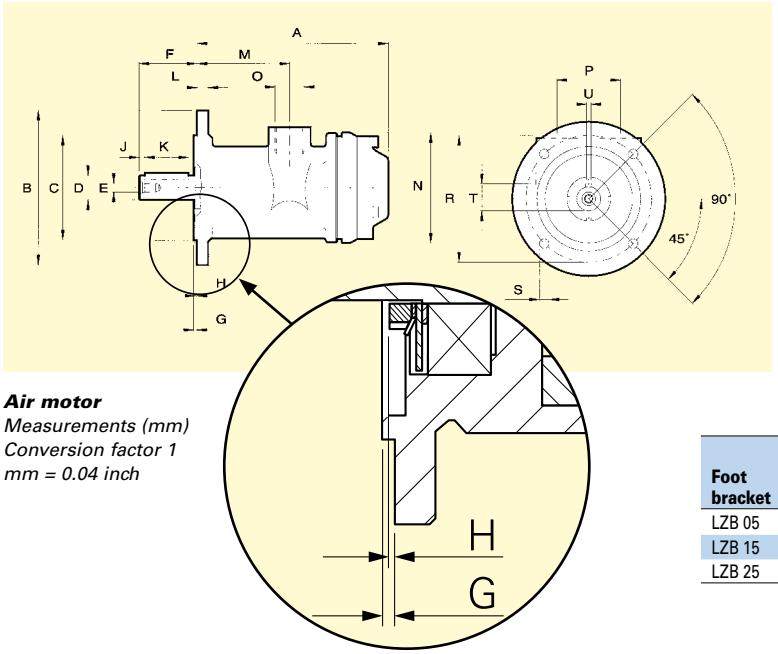


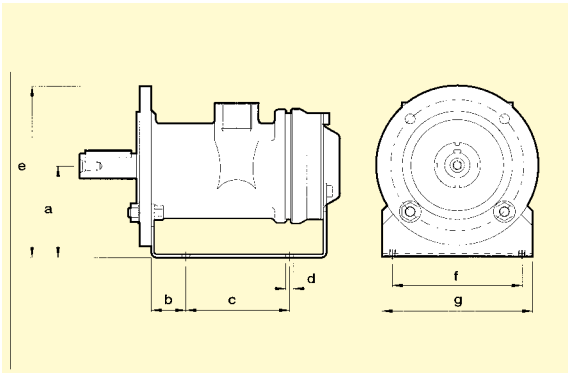
1. Rubber hose valves for venting bearing and seals.
2 Vane pins.
3. Double seals.
4. Stainless steel bushing.
5. Aluminum front with stainless steel screws.

Data at air pressure 6.3 bar (91psi)

Power Motors	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque max output Nm	Torque max output lbf.ft	Min starting torque Nm	Min starting torque lbf.ft	Free speed r/min	Max allowed speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb
LZL 03 S	8411 1006 32	1.05	1.4	5300	1.9	1.4	2.8	2.05	11000		29	61	2.9	6.4
LZL 03 S-IEC	8411 1007 15	1.05	1.4	5300	1.9	1.4	2.8	2.05	11000		29	61	3.8	8.4
LZL 03 S-NEMA	8411 1007 07	1.05	1.4	5300	1.9	1.4	2.8	2.05	11000		29	61	3.9	8.6
Unrestricted*		1.7	2.5	7500	2.2	1.6	3.0	2.2		11000	45	95		
LZL 05 S	8411 1007 56	1.3	1.7	4300	2.9	2.1	4.8	3.5	9000		37	78	3.9	8.6
LZL 05 S-IEC	8411 1007 72	1.3	1.7	4300	2.9	2.1	4.8	3.5	9000		37	78	4.8	10.6
LZL 05 S-NEMA	8411 1007 64	1.3	1.7	4300	2.9	2.1	4.8	3.5	9000		37	78	4.9	10.8
Unrestricted*		2.1	2.8	6300	3.1	2.3	4.8	3.5		9200	50	106		
LZL 15	8411 1005 17	2.3	3.1	3380	6.5	4.8	10.9	8.0	7000		61	129	7.1	15.7
Unrestricted*		3.2	4.3	4500	6.8	5.0	10.9	8.0		7200	87	184		
LZL 25	8411 1005 25	3.4	4.6	2800	11.6	8.5	18.0	13.2	5800		86	182	11.3	24.9
Unrestricted*		5.0	6.7	4000	12.0	8.8	18.0	13.2		6000	135	286		
LZL 35	8411 1005 74	5.2	7.0	2500	20.0	14.7	32.0	23.6	5000		130	275	20	44.1
Unrestricted*		6.5	8.7	3100	20.0	14.7	32.0	23.6		5000	160	339		

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





Air motor
Measurements (mm)
Conversion factor 1
mm = 0.04 inch

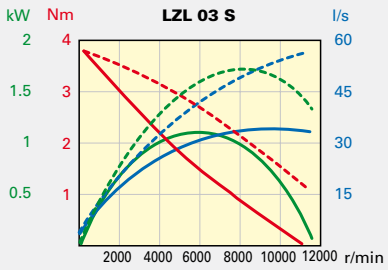
Foot bracket	Measurements (mm) a	b	c	d	e	f	g	Ordering No.
LZB 05	56	32	80	5.8	109	90	104	4430 0304 81
LZB 15	80	40	90	7	150	112	130	4430 0305 80
LZB 25	90	53	100	10	170	125	146	4430 0306 80

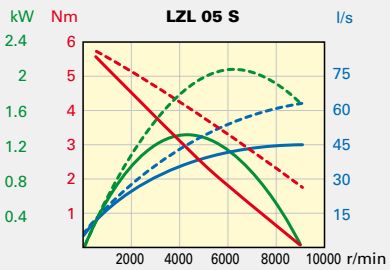
Air motor
Measurements (mm) Conversion factor 1 mm = 0.04 inch

Model		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U
LZL 03 M/S	[mm]	124	Ø105	Ø70 j6	Ø16 js7	–	40	2.5	1.5	2	30	8.5	65	Ø69	BSP 3/8"	36	Ø85	Ø7	18	5 h9
IEC	[mm]	124	Ø160	Ø110 j6	Ø14 js7	–	30	3.5	1.5	2	20	10	65	Ø69	BSP 3/8"	36	Ø130	Ø10	16	5 h9
NEMA	[mm]	124	Ø165.1	Ø114.3	Ø15.875	–	51.5	3	1.5	1.7	31.75	10	65	Ø69	BSP 3/8"	36	Ø149.4	3/8"-16 UNC	17.95	4.75
NEMA	[inch]	4.88	Ø6.5	Ø4.5	Ø0.625	–	2.03	0.12	0.06	0.07	1.25	0.39	2.56	Ø2.72	BSP 3/8"	1.42	Ø5.882	3/8"-16 UNC	0.706	0.187
LZL 05 S	[mm]	153	Ø105	Ø70 j6	Ø18 js7	–	40	2.5	0.8	3	30	8.5	81	Ø76	BSP 1/2"	44	Ø85	Ø7	20.5	6 h9
LZL 05 M	[mm]	153	Ø105	Ø70 j6	Ø16 js7	–	40	2.5	0.8	2	30	8.5	81	Ø76	BSP 1/2"	44	Ø85	Ø7	18	5 h9
IEC	[mm]	153	Ø160	Ø110 j6	Ø14 js7	–	30	3.5	0.8	2	20	10	81	Ø76	BSP 1/2"	44	Ø130	Ø10	16	5 h9
NEMA	[mm]	153	Ø165.1	Ø114.3	Ø15.875	–	51.5	3	0.8	1.7	31.75	10	81	Ø76	BSP 1/2"	44	Ø149.4	3/8"-16 UNC	17.95	4.75
NEMA	[inch]	6.02	Ø6.5	Ø4.5	Ø0.625	–	2.03	0.12	0.03	0.07	1.25	0.39	3.19	Ø3	BSP 1/2"	1.73	Ø5.882	3/8"-16 UNC	0.706	0.187
LZL 05R SL.-IEC	[mm]	146.7	Ø160	Ø110 j6	Ø14 js7	–	30	3.5	4.3	2	20	12.5	74.7	Ø83	BSP 1/2"	44	Ø130	Ø10	16	5 h9
LZL 05R SL.-NEMA	[mm]	146.7	Ø165.1	Ø114.3	Ø15.875	–	51.5	3	2.8	1.7	31.75	12.5	74.7	Ø83	BSP 1/2"	44	Ø149.4	3/8"-16 UNC	17.95	4.75 h9
LZL 05R SL.-NEMA	[inch]	6.02	Ø6.5	Ø4.5	Ø0.625	–	2.3	0.12	0.11	0.07	1.25	0.49	2.94	Ø3.27	BSP 1/2"	1.73	Ø5.882	3/8"-16 UNC	0.71	0.19
LZL 15	[mm]	174	140	95 j6	22 js7	M8	52.5	3	0	5	40	10	84	100	BSP 3/4"	58	115	8.8	24.5	6 h9
LZL 25	[mm]	206	160	110 j6	28 js7	M10	62.5	3.5	1.8	5	50	12	103	120	BSP 1"	70	130	8.8	31	8 h7
LZL 35	[mm]	238	200	130 j6	28 js7	M10	62.5	3.5	1.8	5	50	14	119	134	BSP 1 1/4"	70	165	12	31	8 h7

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

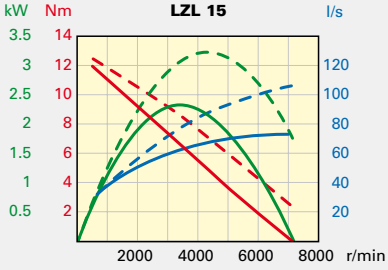
Power motors

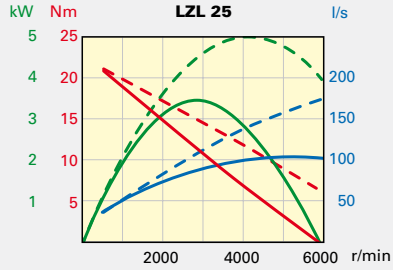


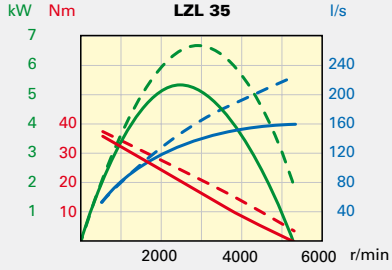


The solid lines represent restricted motors and the dotted lines unrestricted motors.

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

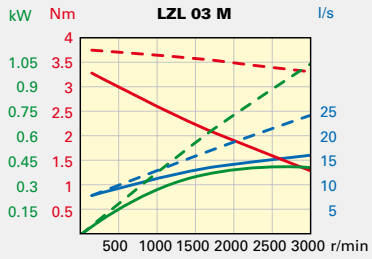


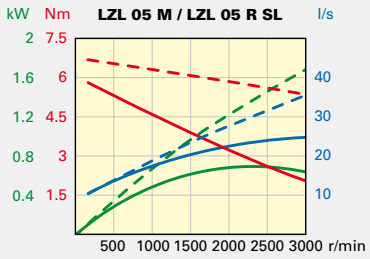


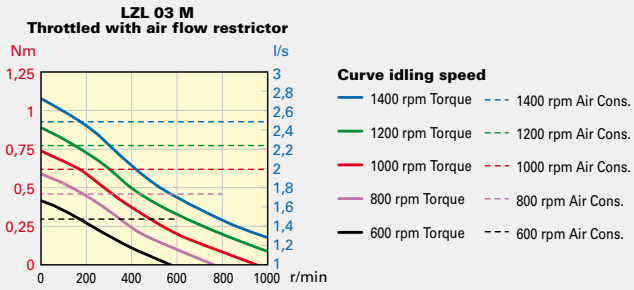


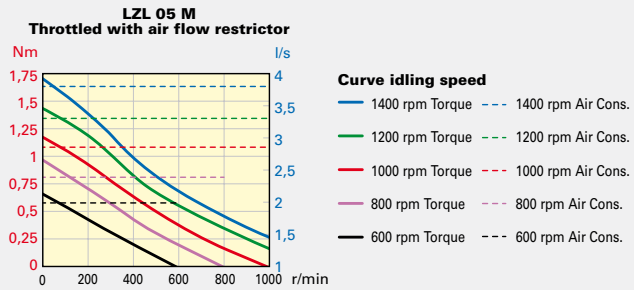
LZL Performance curves at air pressure 6.3 bar (91psi)

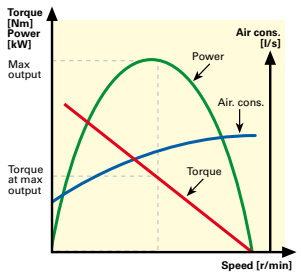
Lubrication free motors and stainless steel motors











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 more details, see page 7.*

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, type LZL vane air motors can be used over a very wide torque and speed range. Models are nominally available with gear ratios that range from 5:1 to 240:1, corresponding to a speed range of 500 to 18 r/min and an output torque of up to 2500 Nm at max output.

Helical gear units type BG.

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

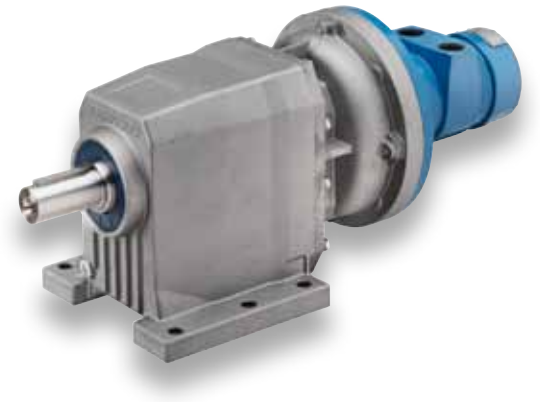


Figure 4

Shaft loading

The maximum allowable radial load on the output shaft of each gear unit, at the half way 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 fig.5.

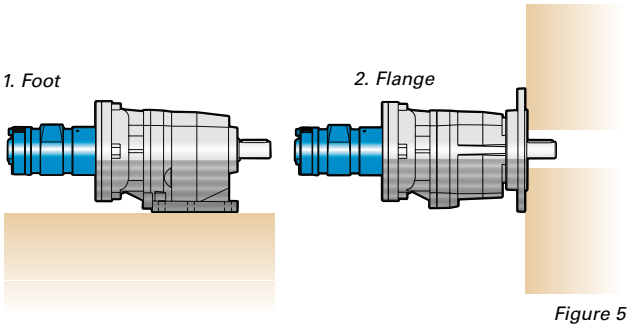


Figure 5

Temperature

The gear units can operate within an ambient temperature range of –20°C and +40°C.

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

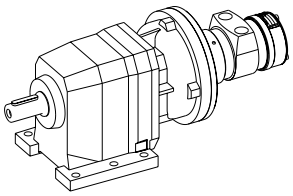
Mounting position/ordering procedure.

Depending on the mounting position of the motor with gear the amount of oil in the gear unit varies. Therefore the mounting position must be specified together with ordering number for motor/gear unit.

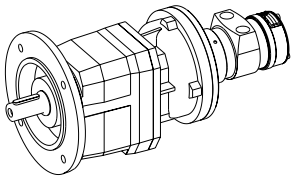
The mounting position is specified with the 10 digit numbers according to description below.

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

Position number: 8990 0020 01

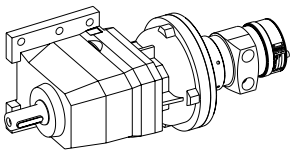


B3

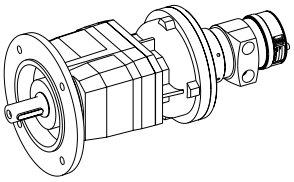


B5

Position number: 8990 0020 19



B6



B51

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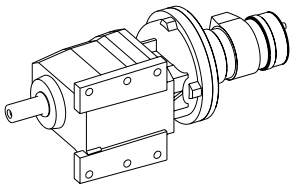
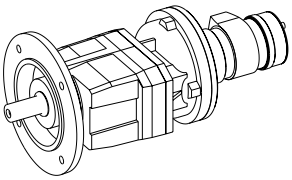
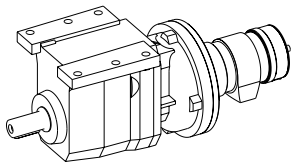


B7

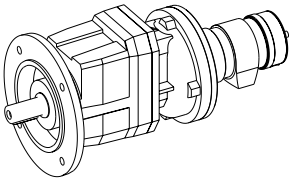


B53

Position number: 8990 0020 35

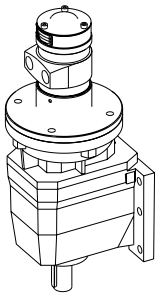


B8

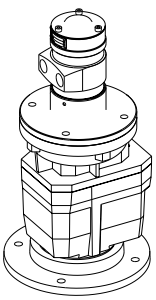


B52

Position number: 8990 0020 43

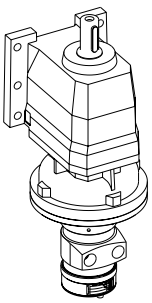


V5

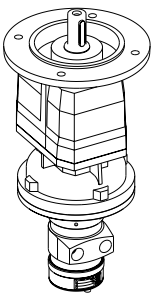


V1

Position number: Please contact your Atlas Copco representative.



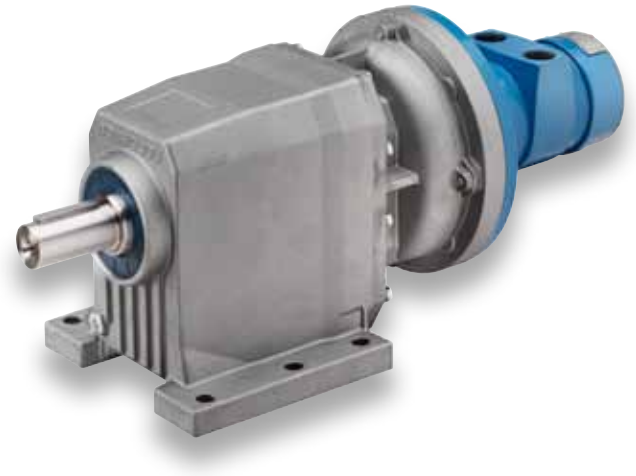
V6



V3

Air motors LZL 05
with helical gear units

1.3 – 1.6 kW
1.7 – 2.2 hp

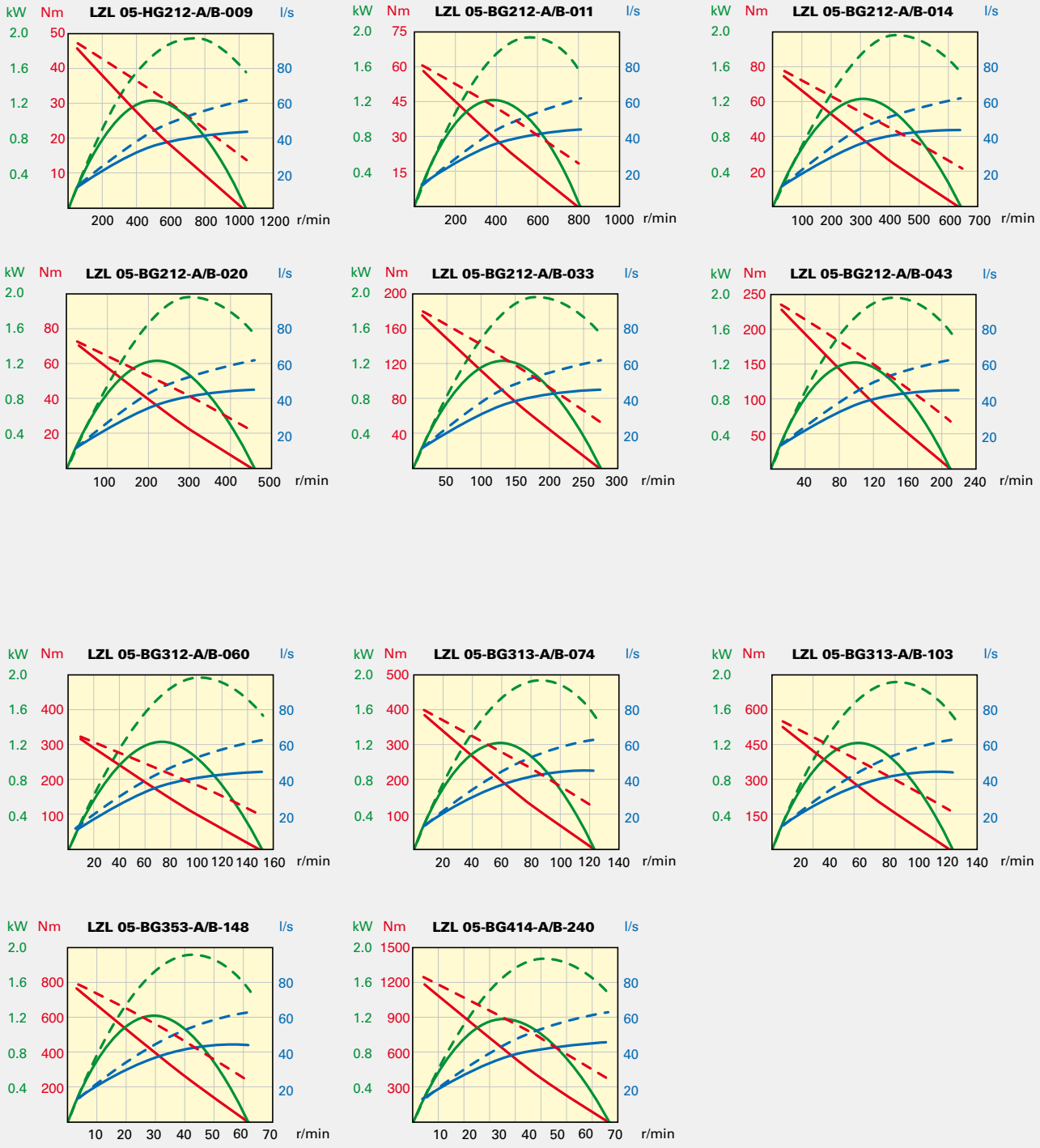


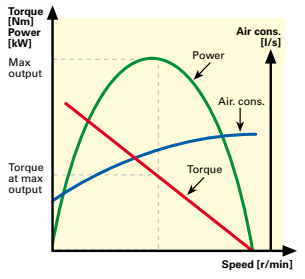
Data at air pressure 6.3 bar (91psi)

			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
Designation	Ordering No.	Ratio	kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	r/min	l/s	cfm	kg	lb	N
LZL 05-BG212-A-009	8411 1800 06	8.7	1.2	1.7	497	23.7	17.5	40	29	1050		36	76	11.8	26	1470
LZL 05-BG212-B-009	8411 1801 13	8.7	1.2	1.7	497	23.7	17.5	40	29	1050		36	76	11.8	26	1470
Unrestricted *		8.7	2.0	2.6	724	25.7	19.0	40	29		1050	54	114	11.8	26	1350
LZL 05-BG212-A-011	8411 1800 14	11.2	1.2	1.7	387	30.4	22.4	51	38	815		36	76	11.8	26	1600
LZL 05-BG212-B-011	8411 1801 21	11.2	1.2	1.7	387	30.4	22.4	51	38	815		36	76	11.8	26	1600
Unrestricted *		11.2	2.0	2.6	563	33.1	24.4	51	38		815	54	114	11.8	26	1470
LZL 05-BG212-A-014	8411 1800 22	14.3	1.2	1.7	303	38.8	28.6	65	48	640		36	76	11.8	26	1730
LZL 05-BG212-B-014	8411 1801 39	14.3	1.2	1.7	303	38.8	28.6	65	48	640		36	76	11.8	26	1730
Unrestricted *		14.3	2.0	2.6	441	42.3	31.2	65	48		640	54	114	11.8	26	1600
LZL 05-BG212-A-020	8411 1800 30	20	1.2	1.7	216	54.6	40.2	91	67	454		36	76	11.8	26	1920
LZL 05-BG212-B-020	8411 1801 47	20	1.2	1.7	216	54.6	40.2	91	67	454		36	76	11.8	26	1920
Unrestricted *		20	2.0	2.6	315	59.1	43.6	91	67		454	54	114	11.8	26	1800
LZL 05-BG212-A-033	8411 1800 48	33	1.2	1.7	131	90.2	66.5	151	111	275		36	76	11.8	26	2300
LZL 05-BG212-B-033	8411 1801 54	33	1.2	1.7	131	90.2	66.5	151	111	275		36	76	11.8	26	2300
Unrestricted *		33	2.0	2.6	190	97.9	72.2	151	111		275	54	114	11.8	26	2100
LZL 05-BG212-A-043	8411 1800 55	43	1.2	1.7	100	118	87.0	197	146	210		36	76	11.8	26	2500
LZL 05-BG212-B-043	8411 1801 62	43	1.2	1.7	100	118	87.0	197	146	210		36	76	11.8	26	2500
Unrestricted *		43	2.0	2.6	146	128	94.4	197	146		210	54	114	11.8	26	2300
LZL 05-BG312-A-060	8411 1800 63	60	1.2	1.7	72	164	121	275	202	150		36	76	13.8	30	4160
LZL 05-BG312-B-060	8411 1801 70	60	1.2	1.7	72	164	121	275	202	150		36	76	13.8	30	4160
Unrestricted *		60	2.0	2.6	105	178	131	275	202		150	54	114	13.8	30	3820
LZL 05-BG313-A-074	8411 1800 71	74	1.2	1.6	58	198	146	332	245	122		36	76	14.8	33	4570
LZL 05-BG313-B-074	8411 1801 88	74	1.2	1.6	58	198	146	332	245	122		36	76	14.8	33	4570
Unrestricted *		74	1.9	2.6	85	215	159	332	245		122	54	114	14.8	33	4150
LZL 05-BG313-A-103	8411 1800 89	103	1.2	1.6	42	275	203	461	340	88		36	76	14.8	33	5500
LZL 05-BG313-B-103	8411 1801 96	103	1.2	1.6	42	275	203	461	340	88		36	76	14.8	33	5500
Unrestricted *		103	1.9	2.6	61	299	221	461	340		88	54	114	14.8	33	4650
LZL 05-BG353-A-148	8411 1800 97	148	1.2	1.6	29	394	290	659	486	62		36	76	21.8	48	6450
LZL 05-BG353-B-148	8411 1802 04	148	1.2	1.6	29	394	290	659	486	62		36	76	21.8	48	6450
Unrestricted *		148	1.9	2.6	43	427	315	659	486		62	54	114	21.8	48	5730
LZL 05-BG414-A-240	8411 1801 05	240	1.2	1.6	18	619	457	1036	764	38		36	76	35.8	79	7000
LZL 05-BG414-B-240	8411 1802 12	240	1.2	1.6	18	619	457	1036	764	38		36	76	35.8	79	7000
Unrestricted *		240	1.8	2.5	26	672	496	1036	764		38	54	114	35.8	79	7000

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

Air motor LZL 05 with helical gear units type BG
Performance curves at air pressure 6.3 bar (91psi)





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 more details, see page 7.*

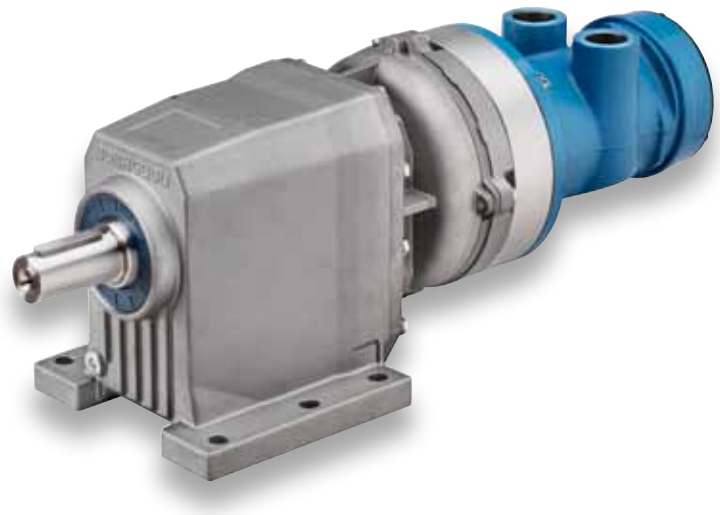
Performance with restrictors

Performance without restrictors, (unrestricted)

For information about performance curves, see page 7.

Air motors LZL 15
with helical gear units

2.2 – 3.1 kW
3.0 – 4.2 hp

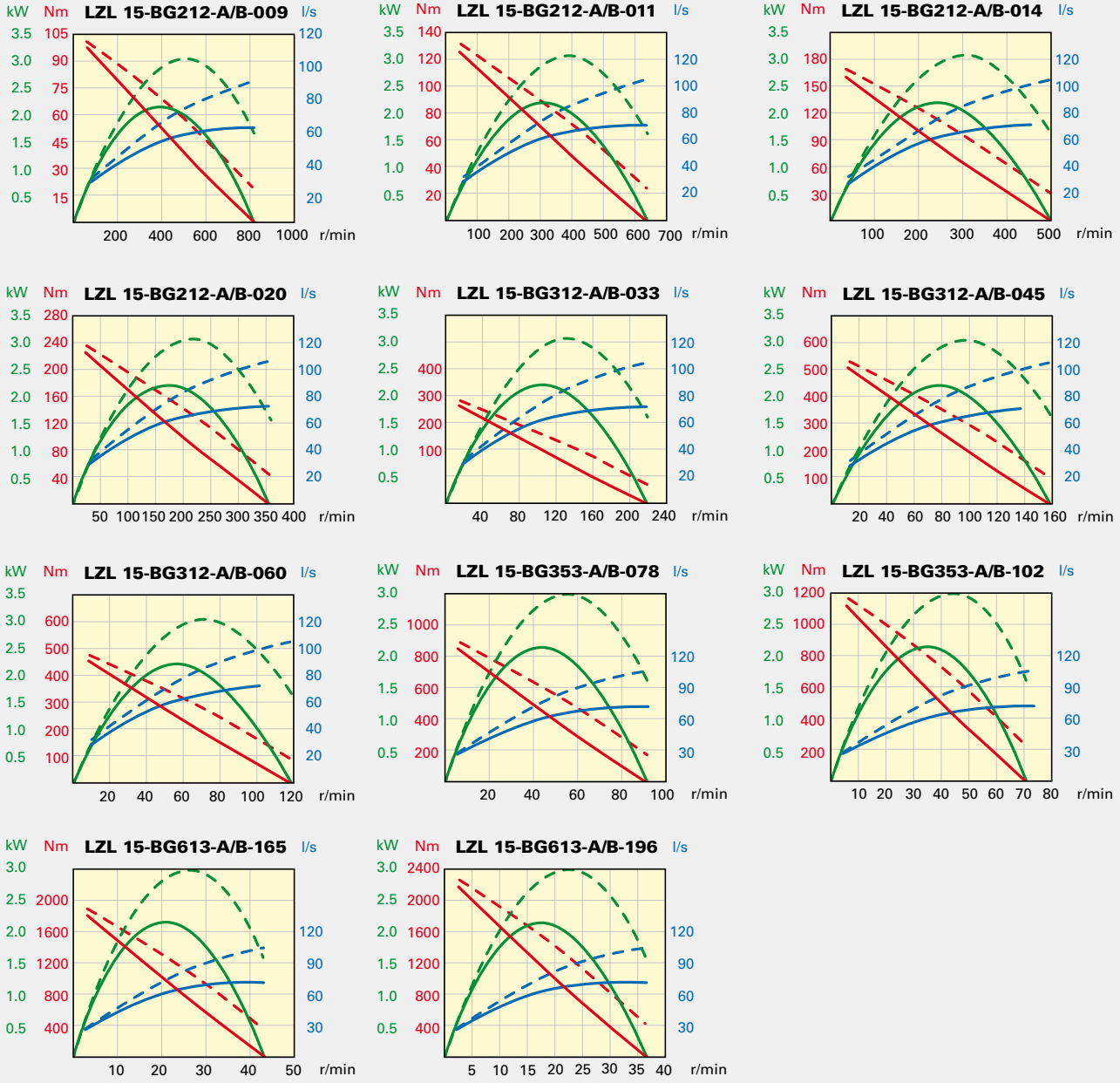


Data at air pressure 6.3 bar (91psi)

			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
Designation	Ordering No.	Ratio	kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	r/min	l/s	cfm	kg	lb	N
LZL 15-BG212-A-009	8411 1802 20	8.7	2.2	2.9	396	53	39	90	66	824		61	129	15	33	1580
LZL 15-BG212-B-009	8411 1803 37	8.7	2.2	2.9	396	53	39	90	66	824		61	129	15	33	1580
Unrestricted*		8.7	3.0	4.1	502	58	43	90	66		824	86	181	15	33	1460
LZL 15-BG212-A-011	8411 1802 38	11.2	2.2	2.9	308	68	50	116	86	641		61	129	15	33	1700
LZL 15-BG212-B-011	8411 1803 45	11.2	2.2	2.9	308	68	50	116	86	641		61	129	15	33	1700
Unrestricted*		11.2	3.0	4.1	390	74	55	116	86		641	86	181	15	33	1500
LZL 15-BG212-A-014	8411 1802 46	14.3	2.2	2.9	241	87	64	148	109	502		61	129	15	33	1870
LZL 15-BG212-B-014	8411 1803 52	14.3	2.2	2.9	241	87	64	148	109	502		61	129	15	33	1870
Unrestricted*		14.3	3.0	4.1	306	95	70	148	109		502	86	181	15	33	1690
LZL 15-BG212-A-020	8411 1802 53	20	2.2	2.9	172	122	90	207	153	357		61	129	15	33	2070
LZL 15-BG212-B-020	8411 1803 60	20	2.2	2.9	172	122	90	207	153	357		61	129	15	33	2070
Unrestricted*		20	3.0	4.1	218	133	98	207	153		357	86	181	15	33	1900
LZL 15-BG312-A-033	8411 1802 61	33	2.2	2.9	106	198	146	337	248	220		61	129	17	38	3600
LZL 15-BG312-B-033	8411 1803 78	33	2.2	2.9	106	198	146	337	248	220		61	129	17	38	3600
Unrestricted*		33	3.0	4.1	134	217	160	337	248		220	86	181	17	38	3290
LZL 15-BG312-A-045	8411 1802 79	45	2.2	2.9	76	276	204	469	346	158		61	129	17	38	4040
LZL 15-BG312-B-045	8411 1803 86	45	2.2	2.9	76	276	204	469	346	158		61	129	17	38	4040
Unrestricted*		45	3.0	4.1	96	302	223	469	346		158	86	181	17	38	3680
LZL 15-BG312-A-060	8411 1802 87	60	2.2	2.9	57	367	270	623	460	119		61	129	17	38	4570
LZL 15-BG312-B-060	8411 1803 94	60	2.2	2.9	57	367	270	623	460	119		61	129	17	38	4570
Unrestricted*		60	3.0	4.1	72	401	296	623	460		119	86	181	17	38	4040
LZL 15-BG353-A-078	8411 1802 95	78	2.1	2.9	44	463	341	787	580	92		61	129	25	55	5230
LZL 15-BG353-B-078	8411 1804 02	78	2.1	2.9	44	463	341	787	580	92		61	129	25	55	5230
Unrestricted*		78	3.0	4.0	56	506	373	787	580		92	86	181	25	55	4580
LZL 15-BG353-A-102	8411 1803 03	102	2.1	2.9	34	606	447	1030	760	70		61	129	25	55	5910
LZL 15-BG353-B-102	8411 1804 10	102	2.1	2.9	34	606	447	1030	760	70		61	129	25	55	5910
Unrestricted*		102	3.0	4.0	43	663	489	1030	760		70	86	181	25	55	5180
LZL 15-BG613-A-165	8411 1803 11	165	2.1	2.9	21	981	724	1668	1230	44		61	129	63	139	16000
LZL 15-BG613-B-165	8411 1804 28	165	2.1	2.9	21	981	724	1668	1230	44		61	129	63	139	16000
Unrestricted*		165	3.0	4.0	26	1073	791	1668	1230		44	86	181	63	139	16000
LZL 15-BG613-A-196	8411 1803 29	196	2.1	2.9	18	1168	861	1985	1464	37		61	129	63	139	16000
LZL 15-BG613-B-196	8411 1804 36	196	2.1	2.9	18	1168	861	1985	1464	37		61	129	63	139	16000
Unrestricted*		196	3.0	4.0	22	1277	942	1985	1464		37	86	181	63	139	16000

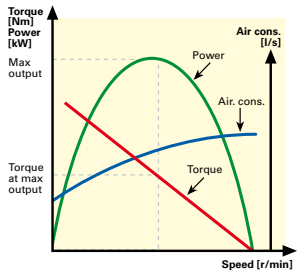
**) Unrestricted, the motors should not be run without load*
A = Foot mount
B = Flange mount

Air motor LZL 15 with helical gear units type BG
Performance curves at air pressure 6.3 bar (91psi)



Performance with restrictors

Performance without restrictors, (unrestricted)



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 more details, see page 7.*

For information about performance curves, see page 7.

Air motors LZL 25
with helical gear units

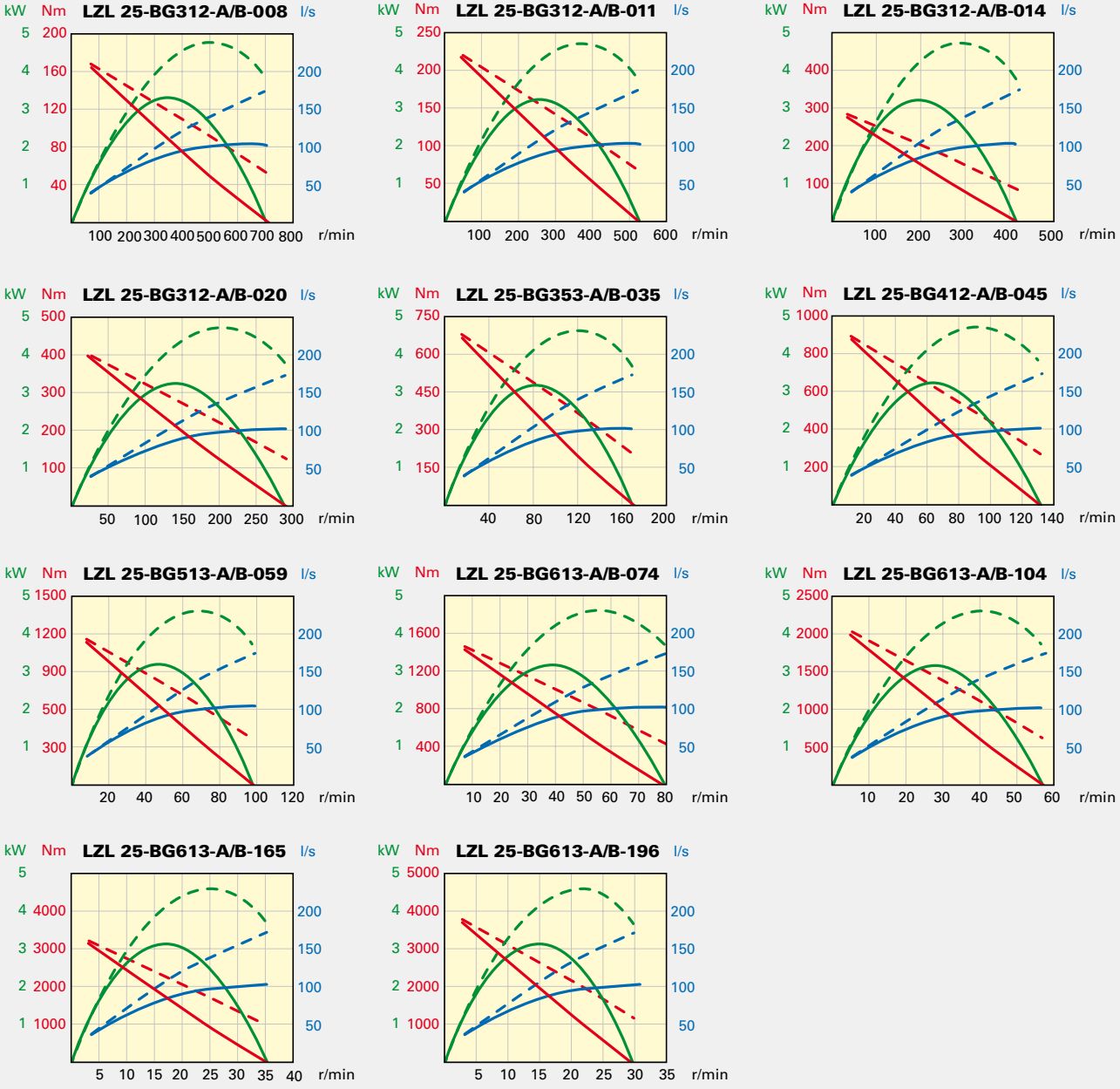
3.3 – 4.9 kW
4.4 – 6.5 hp

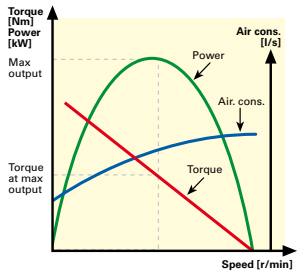
Data at air pressure 6.3 bar (91psi)

			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
Designation	Ordering No.	Ratio	kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	r/min	l/s	cfm	kg	lb	N
LZL 25-BG312-A-008	8411 1804 44	8.4	3.3	4.4	339	92	68	144	106	711		86	183	21.6	48	2490
LZL 25-BG312-B-008	8411 1805 50	8.4	3.3	4.4	339	92	68	144	106	711		86	183	21.6	48	2490
Unrestricted *		8.4	4.8	6.4	495	92	68	144	106		711	140	297	21.6	48	2100
LZL 25-BG312-A-011	8411 1804 51	11.1	3.3	4.4	256	122	90	190	140	536		86	183	21.6	48	2700
LZL 25-BG312-B-011	8411 1805 68	11.1	3.3	4.4	256	122	90	190	140	536		86	183	21.6	48	2700
Unrestricted *		11.1	4.8	6.4	373	122	90	190	140		536	140	297	21.6	48	2430
LZL 25-BG312-A-014	8411 1804 69	14	3.3	4.4	202	154	114	239	177	424		86	183	21.6	48	2930
LZL 25-BG312-B-014	8411 1805 76	14	3.3	4.4	202	154	114	239	177	424		86	183	21.6	48	2930
Unrestricted *		14	4.8	6.4	295	154	114	239	177		424	140	297	21.6	48	2620
LZL 25-BG312-A-020	8411 1804 77	20	3.3	4.4	141	154	114	344	254	296		86	183	21.6	48	3290
LZL 25-BG312-B-020	8411 1805 84	20	3.3	4.4	141	221	163	344	254	296		86	183	21.6	48	3290
Unrestricted *		20	4.8	6.4	206	221	163	344	254		296	140	297	21.6	48	2930
LZL 25-BG353-A-035	8411 1804 85	35	3.2	4.3	82	221	163	581	428	171		86	183	29.6	65	4110
LZL 25-BG353-B-035	8411 1805 92	35	3.2	4.3	82	373	275	581	428	171		86	183	29.6	65	4110
Unrestricted *		35	4.7	6.2	119	373	275	581	428		171	140	297	29.6	65	3680
LZL 25-BG412-A-045	8411 1804 93	45	3.3	4.4	63	492	363	766	565	133		86	183	40.6	90	5130
LZL 25-BG412-B-045	8411 1806 00	45	3.3	4.4	63	492	363	766	565	133		86	183	40.6	90	5130
Unrestricted *		45	4.8	6.4	92	492	363	766	565		133	140	297	40.6	90	4550
LZL 25-BG513-A-059	8411 1805 01	59	3.2	4.3	48	634	468	988	728	101		86	183	57.6	127	9760
LZL 25-BG513-B-059	8411 1806 18	59	3.2	4.3	48	634	468	988	728	101		86	183	57.6	127	9760
Unrestricted *		59	4.7	6.2	70	634	467	988	728		101	140	297	57.6	127	8710
LZL 25-BG613-A-074	8411 1805 19	74	3.2	4.3	38	798	588	1242	916	80		86	183	69.6	153	14100
LZL 25-BG613-B-074	8411 1806 26	74	3.2	4.3	38	798	588	1242	916	80		86	183	69.6	153	14100
Unrestricted *		74	4.7	6.2	56	798	588	1242	916		80	140	297	69.6	153	12400
LZL 25-BG613-A-104	8411 1805 27	104	3.2	4.3	27	1114	822	1734	1279	57		86	183	69.6	153	16000
LZL 25-BG613-B-104	8411 1806 34	104	3.2	4.3	27	1114	822	1734	1279	57		86	183	69.6	153	16000
Unrestricted *		104	4.7	6.2	40	1114	822	1734	1279		57	140	297	69.6	153	14000
LZL 25-BG613-A-165	8411 1805 35	165	3.2	4.3	17	1769	1305	2754	2031	36		86	183	69.6	153	16000
LZL 25-BG613-B-165	8411 1806 42	165	3.2	4.3	17	1769	1305	2754	2031	36		86	183	69.6	153	16000
Unrestricted *		165	4.7	6.2	25	1769	1305	2754	2031		36	140	297	69.6	153	16000
LZL 25-BG613-A-196	8411 1805 43	196	3.2	4.3	15	2105	1553	3278	2418	30		86	183	69.6	153	16000
LZL 25-BG613-B-196	8411 1806 59	196	3.2	4.3	15	2105	1553	3278	2418	30		86	183	69.6	153	16000
Unrestricted *		196	4.7	6.2	21	2105	1553	3278	2418		30	140	297	69.6	153	16000

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

Air motor LZL 25 with helical gear units type BG
Performance curves at air pressure 6.3 bar (91psi)





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 more details, see page 7.*

Performance with restrictors

Performance without restrictors, (unrestricted)

For information about performance curves, see page 7.

Air motors LZL 35
with helical gear units

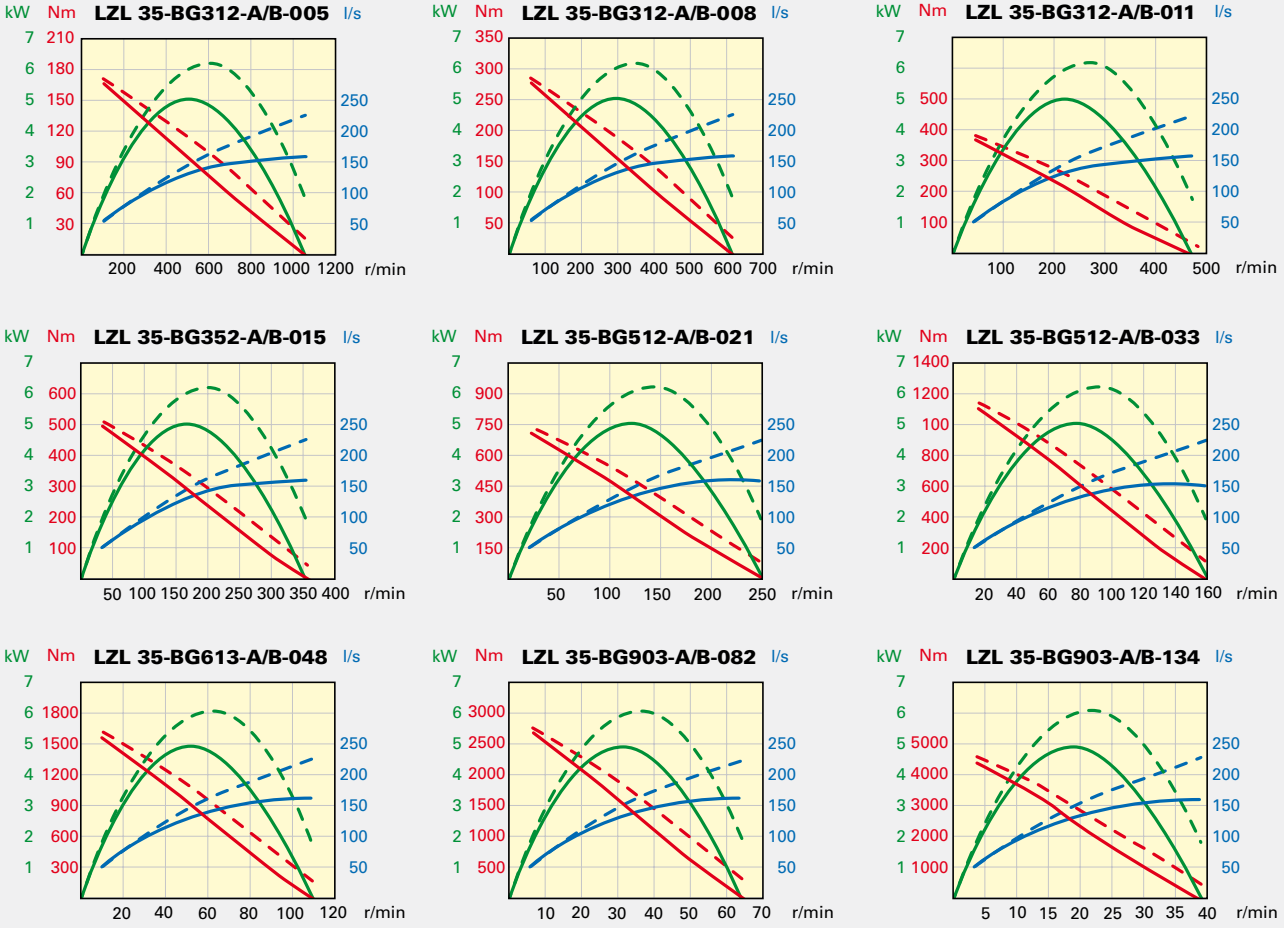
5.1 – 6.3 kW
6.8 – 8.4 hp

Data at air pressure 6.3 bar (91psi)

Designation	Ordering No.	Ratio	Max output kW	Max output hp	Speed at max output r/min	Torque max output Nm	Torque max output lbf.ft	Min starting torque Nm	Min starting torque lbf.ft	Free speed r/min	Max allowed speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Max radial load at max output N
LZL 35-BG312-A-005	8411 1806 67	5	5.0	6.7	503	95	70	152	112	1064		129	274	31.2	69	2070
LZL 35-BG312-B-005	8411 1807 58	5	5.0	6.7	503	95	70	152	112	1064		129	274	31.2	69	2070
Unrestricted *		5	6.2	8.3	590	100	74	152	112		1064	159	337	31.2	69	1940
LZL 35-BG312-A-008	8411 1806 75	8.4	5.0	6.7	298	161	119	255	188	630		129	274	31.2	69	2580
LZL 35-BG312-B-008	8411 1807 66	8.4	5.0	6.7	298	161	119	255	188	630		129	274	31.2	69	2580
Unrestricted *		8.4	6.2	8.3	349	170	125	255	188		630	159	337	31.2	69	2410
LZL 35-BG312-A-011	8411 1806 83	11.1	5.0	6.7	224	213	157	337	249	475		129	274	31.2	69	2820
LZL 35-BG312-B-011	8411 1807 74	11.1	5.0	6.7	224	213	157	337	249	475		129	274	31.2	69	2820
Unrestricted *		11.1	6.2	8.3	263	225	166	337	249		475	159	337	31.2	69	2630
LZL 35-BG352-A-015	8411 1806 91	14.8	5.0	6.7	169	284	209	450	332	357		129	274	39	86	2890
LZL 35-BG352-B-015	8411 1807 82	14.8	5.0	6.7	169	284	209	450	332	357		129	274	39	86	2890
Unrestricted *		14.8	6.2	8.3	198	299	220	450	332		357	159	337	39	86	2640
LZL 35-BG512-A-021	8411 1807 09	21	5.0	6.7	119	404	298	638	471	251		129	274	68	150	7160
LZL 35-BG512-B-021	8411 1807 90	21	5.0	6.7	119	404	298	638	471	251		129	274	68	150	7160
Unrestricted *		21	6.2	8.3	139	425	314	638	471		251	159	337	68	150	6630
LZL 35-BG512-A-033	8411 1807 17	33	5.0	6.7	75	634	468	1003	740	160		129	274	68	150	8660
LZL 35-BG512-B-033	8411 1808 08	33	5.0	6.7	75	634	468	1003	740	160		129	274	68	150	8660
Unrestricted *		33	6.2	8.3	89	669	493	1003	740		160	159	337	68	150	7770
LZL 35-BG613-A-048	8411 1807 25	48	4.9	6.6	52	896	661	1447	1067	111		129	274	82	181	12400
LZL 35-BG613-B-048	8411 1808 16	48	4.9	6.6	52	896	661	1447	1067	111		129	274	82	181	12400
Unrestricted *		48	6.1	8.1	61	944	696	1447	1067		111	159	337	82	181	11000
LZL 35-BG903-A-082	8411 1807 33	81	4.9	6.6	31	1528	1127	2468	1821	65		129	274	250	552	34800
LZL 35-BG903-B-082	8411 1808 24	81	4.9	6.6	31	1528	1127	2468	1821	65		129	274	250	552	34800
Unrestricted *		81	6.1	8.1	36	1610	1188	2468	1821		65	159	337	250	552	31900
LZL 35-BG903-A-134	8411 1807 41	134	4.9	6.6	19	2524	1861	4077	3007	39		129	274	250	552	43800
LZL 35-BG903-B-134	8411 1808 32	134	4.9	6.6	19	2524	1861	4077	3007	39		129	274	250	552	43800
Unrestricted *		134	6.1	8.1	22	2659	1961	4077	3007		39	159	337	250	552	40400

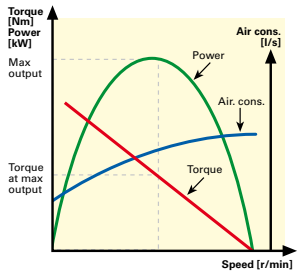
**) Unrestricted, the motors should not be run without load*
A = Foot mount
B = Flange mount

Air motor LZL 35 with helical gear units type BG
Performance curves at air pressure 6.3 bar (91psi)



Performance with restrictors

Performance without restrictors, (unrestricted)



Conversion factors)*

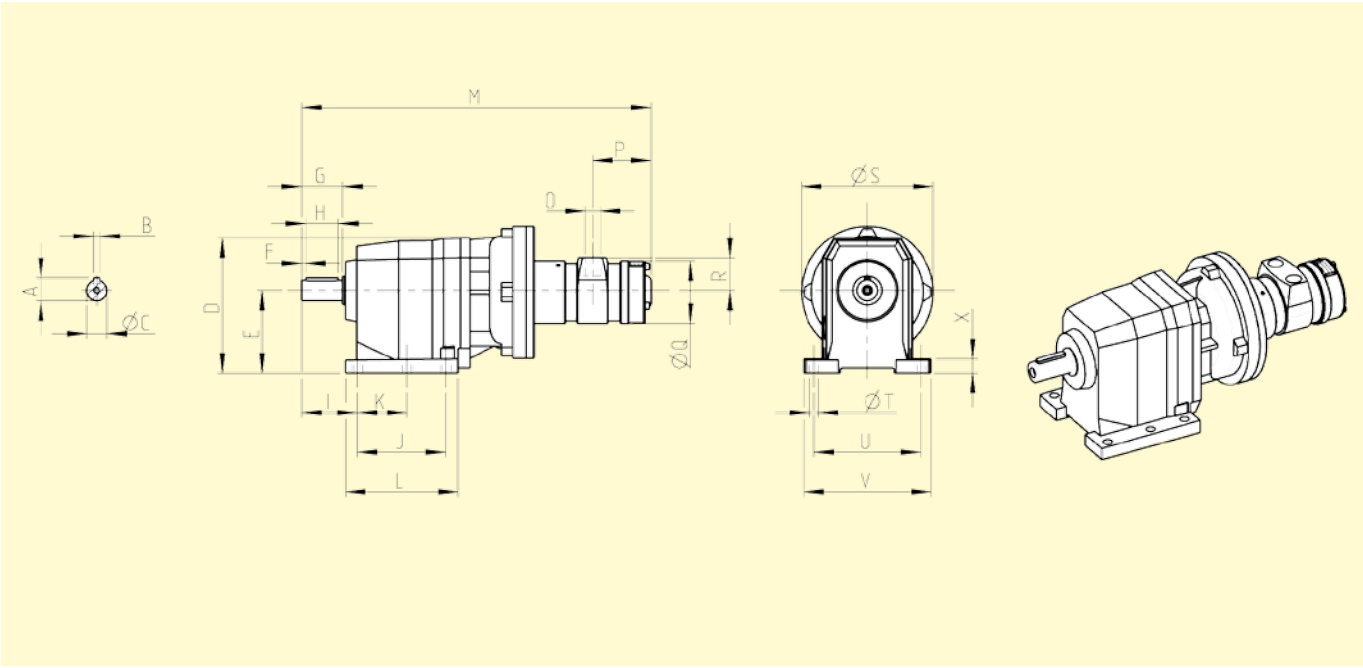
1 kW	*= 1.34 hp*
1 Nm	*= 0.74 lbf - ft*
1 l/s	*= 2.1 cfm*
1 hp	*= 0.75 kW*
1 lbf-ft	*= 1.36 Nm*
1 cfm	*= 0.47 l/s*

**) For more details, see page 7.*

For information about performance curves, see page 7.

Dimensions LZL with helical gear units, foot models

Conversion factor 1mm = 0.04 inch

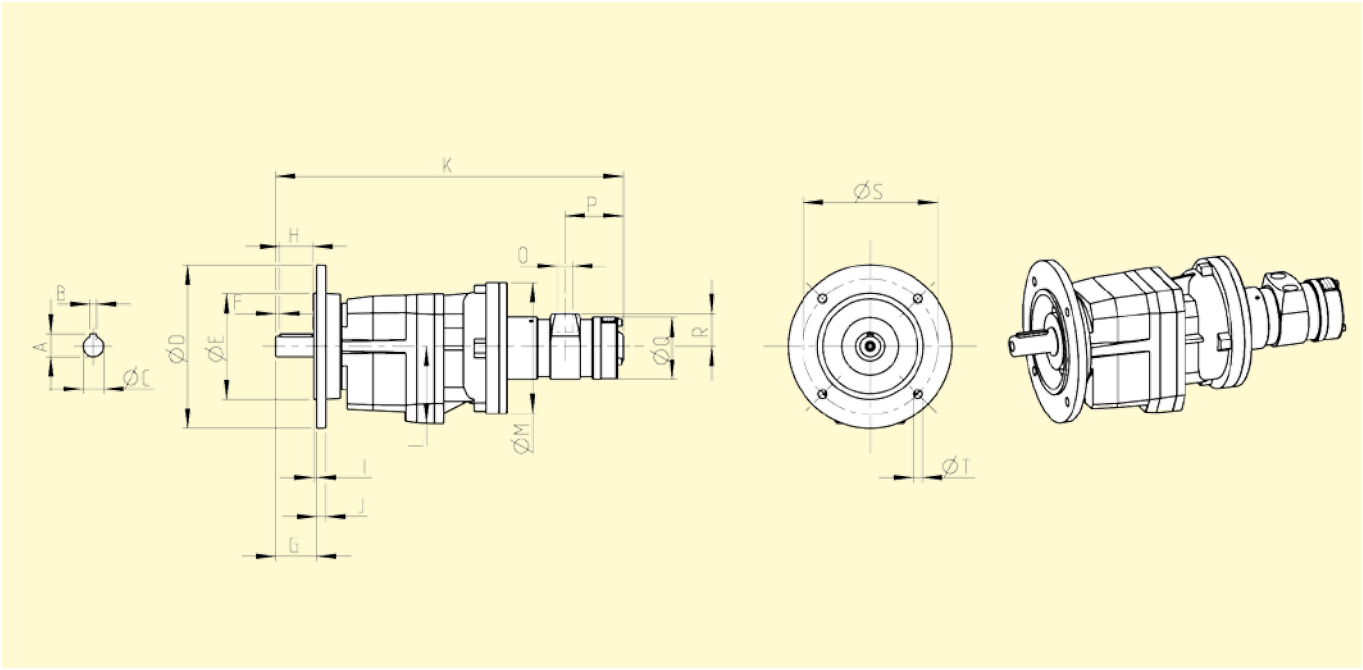


Measurements (mm)

Designation	A	B	C	D	E	F	G	H	I	J	K	L	M	O	P	Q	R	S	T	U	V	X
LZL 05-BG212-A-xxx	28	8h9	25h6	166	100	5	50	40	68	107.5	60	137	425	BSP 1/2 "	71	76	40	160	11	130	155	17
LZL 05-BG312-A-xxx	33	8h9	30h6	181	110	5	60	50	78	130	70	156	459.5	BSP 1/2 "	71	76	40	160	11	160	190	20
LZL 05-BG313-A-xxx	33	8h9	30h6	181	110	5	60	50	78	130	70	156	517	BSP 1/2 "	71	76	40	160	11	160	190	20
LZL 05-BG353-A-xxx	38	10h9	35h6	206	115	5	70	60	93.5	130		168	478	BSP 1/2 "	71	76	40	160	14	170	205	16
LZL 05-BG414-A-xxx	38	10h9	35h6	223	130	5	70	60	89.5	149.5		185.5	547	BSP 1/2 "	71	76	40	160	14	180	216	18
LZL 15-BG212-A-xxx	28	8h9	25h6	166	100	5	50	40	68	107.5	60	137	476.5	BSP 3/4 "	90	100	55	140	11	130	155	17
LZL 15-BG312-A-xxx	33	8h9	30h6	181	110	5	60	50	78	130	70	156	511	BSP 3/4 "	90	100	55	140	11	160	190	20
LZL 15-BG353-A-xxx	38	10h9	35h6	206	115	5	70	60	93.5	130		168	529.5	BSP 3/4 "	90	100	55	140	14	170	205	16
LZL 15-BG613-A-xxx	53.5	14h9	50h6	316	195	5	100	90	125	180		232	619	BSP 3/4 "	90	100	55	140	18	250	300	25
LZL 25-BG312-A-xxx	33	8h9	30h6	181	110	5	60	50	78	130	70	156	546	BSP 1 "	103	120	62	160	11	160	190	20
LZL 25-BG353-A-xxx	38	10h9	35h6	206	115	5	70	60	93.5	130		168	564.5	BSP 1 "	103	120	62	160	14	170	205	16
LZL 25-BG412-A-xxx	38	10h9	35h6	223	130	5	70	60	89.5	149.5		185.5	575	BSP 1 "	103	120	62	160	14	180	216	18
LZL 25-BG513-A-xxx	43	12h9	40h6	278	155	5	80	70	105	156		200	601	BSP 1 "	103	120	62	160	18	225	270	22
LZL 25-BG613-A-xxx	53,5	14h9	50h6	316	195	5	100	90	125	180		232	686	BSP 1 "	103	120	62	160	18	250	300	25
LZL 35-BG312-A-xxx	33	8h9	30h6	181	110	5	60	50	78	130	70	156	588	BSP 1 1/4 "	182	134	68	200	11	160	190	20
LZL 35-BG352-A-xxx	38	10h9	35h6	206	115	5	70	60	93.5	130		168	606.5	BSP 1 1/4 "	182	134	68	200	14	170	205	16
LZL 35-BG512-A-xxx	43	12h9	40h6	278	155	5	80	70	105	156		200	643	BSP 1 1/4 "	182	134	68	200	18	225	270	22
LZL 35-BG613-A-xxx	53.5	14h9	50h6	316	195	5	100	90	125	180		232	696	BSP 1 1/4 "	182	134	68	200	18	250	300	25
LZL 35-BG903-A-xxx	95	25h9	90h6	495	300	15	170	140	210	250		339	905	BSP 1 1/4 "	182	134	68	200	33	440	520	40

Air motor LZL with helical gear units, flange models

Conversion factor 1mm = 0.04 inch



Measurements (mm)

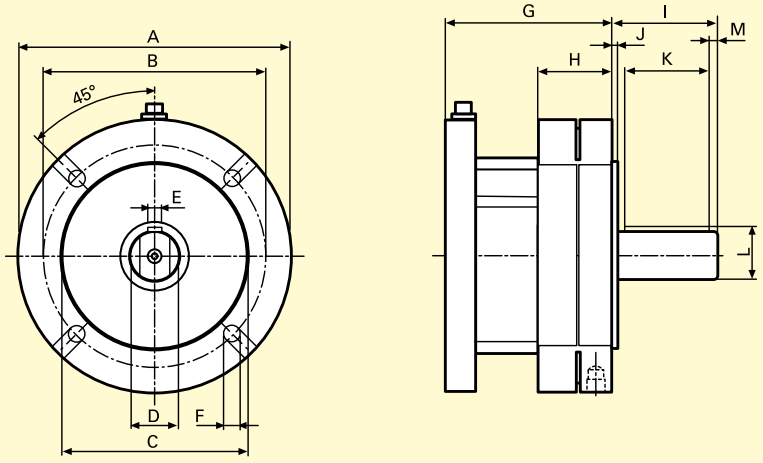
Designation	A	B	C	D	E	F	G	H	I	J	K	L	M	O	P	Q	R	S	T
LZL 05-BG212-B-xxx	28	8h9	25h6	200	130 f7	5	50	40	3.5	11	425	94	160	BSP 1/2 "	71	76	40	165	11
LZL 05-BG312-B-xxx	33	8h9	30h6	250	180 f7	5	60	50	4	13	459.5	108	160	BSP 1/2 "	71	76	40	215	14
LZL 05-BG313-B-xxx	33	8h9	30h6	250	180 f7	5	60	50	4	13	517	108	160	BSP 1/2 "	71	76	40	215	14
LZL 05-BG353-B-xxx	38	10h9	35h6	250	180 f7	5	70	60	4	14	478	111	160	BSP 1/2 "	71	76	40	215	14
LZL 05-BG414-B-xxx	38	10h9	35h6	250	180 f7	5	70	60	4	13	547	128	160	BSP 1/2 "	71	76	40	215	14
LZL 15-BG212-B-xxx	28	8h9	25h6	200	130 f7	5	50	40	3.5	11	476.5	94	140	BSP 3/4 "	90	100	55	165	11
LZL 15-BG312-B-xxx	33	8h9	30h6	250	180 f7	5	60	50	4	13	511	108	140	BSP 3/4 "	90	100	55	215	14
LZL 15-BG353-B-xxx	38	10h9	35h6	250	180 f7	5	70	60	4	14	529.5	111	140	BSP 3/4 "	90	100	55	215	14
LZL 15-BG613-B-xxx	53.5	14h9	50h6	300	230 f7	5	100	90	4	16	619	178.5	140	BSP 3/4 "	90	100	55	265	14
LZL 25-BG312-B-xxx	33	8h9	30h6	250	180 f7	5	60	50	4	13	546	108	160	BSP 1 "	103	120	62	215	14
LZL 25-BG353-B-xxx	38	10h9	35h6	250	180 f7	5	70	60	4	14	564.5	111	160	BSP 1 "	103	120	62	215	14
LZL 25-BG412-B-xxx	38	10h9	35h6	250	180 f7	5	70	60	4	13	575	128	160	BSP 1 "	103	120	62	215	14
LZL 25-BG513-B-xxx	43	12h9	40h6	250	180 f7	5	80	70	4	13	601	152	160	BSP 1 "	103	120	62	215	14
LZL 25-BG613-B-xxx	53,5	14h9	50h6	300	230 f7	5	100	90	4	16	686	178,5	160	BSP 1 "	103	120	62	265	14
LZL 35-BG312-B-xxx	33	8h9	30h6	250	180 f7	5	60	50	4	13	588	108	200	BSP 1 1/4 "	182	134	68	215	14
LZL 35-BG352-B-xxx	38	10h9	35h6	250	180 f7	5	70	60	4	14	606.5	111	200	BSP 1 1/4 "	182	134	68	215	14
LZL 35-BG512-B-xxx	43	12h9	40h6	300	230 f7	5	80	70	4	16	643	152	200	BSP 1 1/4 "	182	134	68	265	14
LZL 35-BG613-B-xxx	53.5	14h9	50h6	350	250 f7	5	100	90	5	18	696	178.5	200	BSP 1 1/4 "	182	134	68	300	18
LZL 35-BG903-B-xxx	95	25h9	90h6	450	350 f7	15	170	140	5	22	905	295	200	BSP 1 1/4 "	182	134	68	400	18

Brakes LPB 05/15/25/35 for LZL 05/15/25/35

The brakes are assembled on the output side of the motors and the output side of the brakes has the same flange and shaft dimensions as the motors. They can be used either together with bare LZL motors or together with LZL plus BG gears. The brakes are activated by springs and released by air pressure and they can hold at least the min. starting torque. The brakes are intended for holding or emergency use but not as dynamic brakes. LPB brakes are handled as accessories to the motors with separate product numbers so they shall be ordered together with a motor number and the assembly number 8990 0003 00. Please see to that these orders are not mixed with other products.

Designation	Ordering No.	Assembly No.	Braking torque Nm	Min release pressure bar	Max radial force N	Brake weight kg
LPB 05	8411 1008 51	8990 0003 00	14	3.5	2330	4.5
LPB 15	8411 1008 69	8990 0003 00	14	3.5	2330	4
LPB 25	8411 1007 98	8990 0003 00	18	3.5	2400	8.7
LPB 35	8411 1008 77	8990 0003 00	28	3.5	2400	11

Brake	A	B	C	D	E	F	G	H	I	J	K	L	M
LPB 05	Ø140	Ø85	Ø70j6	Ø18j6	6h9	Ø7	124	7.5	40	2.5	32	20.5	6
LPB 15	Ø140	Ø115	Ø95j6	Ø22j6	6h9	Ø8.8	105	43.5	52.5	3	26	24.5	0
LPB 25	Ø160	Ø130	Ø110j6	Ø28j6	8h9	Ø10	98	43.5	62.5	3.5	50	31	5
LPB 35	Ø200	Ø165	Ø130j6	Ø28j6	8h9	Ø12	145	13	62.5	3.5	31.8	31	0



Choosing your motor

The working point

When selecting an air motor for a certain application, the first step is to establish what is called the "working point". This is the point described by the desired operating speed for the motor and the torque required at that speed.

The wide operating range of the air motor makes it probable that a number of motors could run with the same working point. However, as it is most efficient to run an air motor at the maximum output speed, the motor that produces maximum power nearest to the working point should be selected.

The power required at the working point is calculated by:

$$\textbf{Power} = \pi \frac{\textbf{x M x n}}{\textbf{30}} \textbf{ [W]}$$

Where, M = Torque at working point (in Nm)
n = Speed at working point (in r/min)

Example:
A non-reversible motor is required to run at 300 r/min and produce a torque of 10 Nm. Selection of correct motor size is as follows:
Power required (W) = 3.14 x 10 x 300/30 = 314
From Table 5 the correct size of non-reversible motor for this application is the LZB 33.

Once the motor size has been identified, simply look at the performance curves for each motor variant and select the one with max output nearest to the working point. For the above example this would be the LZB 33 A007.

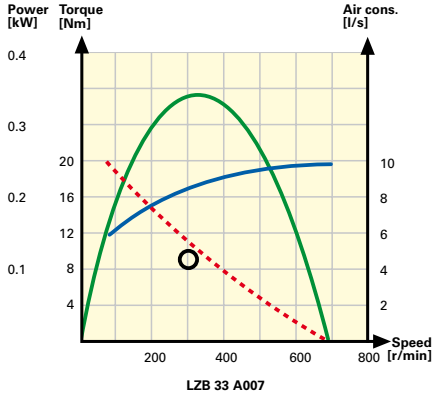


Figure 6

If necessary, one of the flow control methods can be used to modify the output of a motor to meet the working point exactly
(Figure 7).

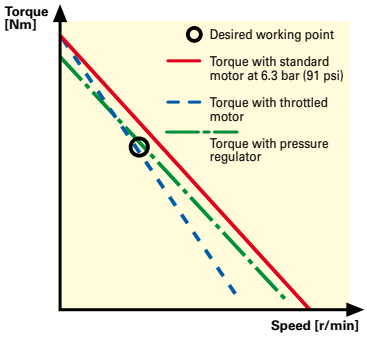


Figure 7

Pressure regulation

Sometimes the motor operates at other supply pressures than 6.3 bar. In these cases the performance of a motor must be re-calculated to ensure the working point can be achieved.

To calculate performance at supply pressures other than 6.3 bar, multiply the data at 6.3 bar by the correction factors shown in Table 6.

Correction factors					
Air Pressure					
(bar)	(psi)	Output	Speed	Torque	Air Consumption
7	101	1.13	1.01	1.09	1.11
6	87	0.94	0.99	0.95	0.96
5	73	0.71	0.93	0.79	0.77
4	58	0.51	0.85	0.63	0.61
3	44	0.33	0.73	0.48	0.44

Table 6

It is also easy to calculate the inlet pressure required to achieve a desired working point.

Example:
An LZB 22 A036 is required to run at 1155 r/min and produce 1.2 Nm; calculate the required inlet pressure to achieve this.
For this motor at maximum output the torque is 1.5 Nm and the speed is 1650 r/min.

M_1 = *desired torque*
n_1 = *desired speed*
M_2 = *torque at maximum output*
n_2 = *speed at maximum output*

Calculate the ratios M_1/M_2 *and* n_1/n_2
Therefore $M_1/M_2 = 0.8$ *and* $n_1/n_2 = 0.7$

Apply these values to the diagram in figure 8 and read off the pressure at the intersection point.
The required inlet pressure is 4.2 bar (61 psi)

Vane motors																					
	LZB 14		LZB 22		LZB 33/34		LZB 42		LZB 46		LZB 54		LZB 66		LZB 77		LZL 03	LZL 05	LZL 15	LZL 25	LZL 35
Non reversible	A		A		A		A		A		A		A		A						
Reversible	AR		AR		AR		AR		AR		AR		AR								
Output (kW)	0.10	0.16	0.16	0.25	0.23	0.39	0.50	0.65	0.58	0.84	0.78	1.20	1.40	1.80	2.50	2.90	1.0	1.30	2.30	3.40	5.20

Table 5

Shows the power output for all Atlas Copco vane motors. The correct motor size is determined by selecting a motor with a power output above that required at the working point.

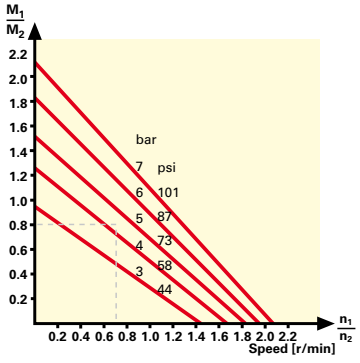


Figure 8

Starting torque and stall torque

Many applications demand that a motor produces a minimum torque at start up. In these a minimum starting torque, for a given motor, can be looked up in the tabular data. If it is necessary to modify the motor's output, but also maintain a high starting torque, the technique of throttling the air flow should be utilized.

Other applications require a certain stall torque. A motor's stall torque can be calculated by looking up the "torque at maximum output" and multiplying this value by two. Where it is desirable to control the stall torque, the technique of pressure regulation should be used.

Accelerating a load to speed

Certain applications require the acceleration of a load up to a given speed. In these cases, the choice of motor involves complex calculations. It is therefore recommended that you seek guidance from your nearest Atlas Copco representative before proceeding.

Shaft loading

Always ensure shaft loadings are within the stated allowable limits.

Silencing

The noise generated by an air motor is mainly caused by the exhaust air of the motor. The noise level increases with speed and is greatest at the free speed.

All Atlas Copco motors are supplied with a threaded exhaust port which, to reduce noise levels, can accept a screw in-silencer. However, an exhaust hose can also be fitted, and when used with a silencer, it can reduce noise levels even further. The effect of employing the various silencing techniques are indicated in Table 7.

Different noise reduction possibilities and the effects thereof:

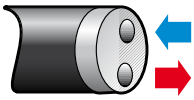
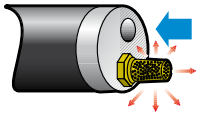
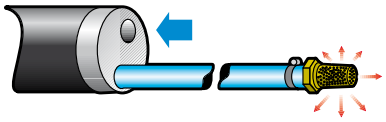
0.36 – kW motor No-load speed Anechoic room Interval of 1 m	*Measure*	*Noise Level dB (A)*
	*None*	*94*
	*Silencer Only*	*77*
	*Hose Only*	*84*
	*Hose with Silencer*	*75*

Table 7

Temperature

Atlas Copco air motors can reliably operate in ambient temperatures that range from –20°C to +60°C. However, below ambient temperatures of +5°C the compressed air may need to be dried to avoid freezing problems.

Please note it is often possible to operate these motors at much higher temperatures but this should not be attempted without first checking with your local Atlas Copco representative.

Hostile environments

Atlas Copco air motors are found in use in many hostile environments, often with little or no modification. These environments are typified as being:

Acidic – Explosive – Radioactive – High temperature – Moist – Dusty – Intense electric fields – Underwater – High humity.

It is also possible to power an air motor with many types of compressed gas, for example nitrogen or natural gas.

However, to ensure safe and reliable service, we recommend you always consult your local Atlas Copco representative before using an air motor in a hostile environment.

Atlas Copco Airmotor Selection Program

The Atlas Copco Air Motor Selection Program makes it very easy for you to select the right motor. The Windows based program stores data on all Atlas Copco air motors. Only specify the required torque and speed of the motor and the program will select the most suitable motor for your application. Available at www.atlascopco.com/airmotors

Installing your air motor

Airlines

The recommended dimensions of airlines is given in the introductory section to each motor type. Note that exhaust hose is larger than the inlet hose.

The recommendations are valid for hose lengths of up to 3 metres. For distances between 3 and 15 metres select a hose diameter one size up, and for distances between 15 and 50 metres select a hose diameter two sizes up.

It is important to note that the output of the motor will be reduced if these guidelines are not followed.

Recommended hose connectors

Because of the compact dimensions of the Atlas Copco vane motors, special hose connectors are available with small key width – facilitating easy installation. Table 8.

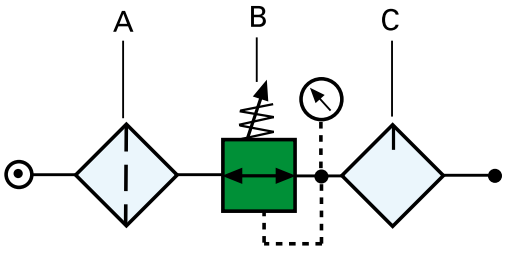
The hose connectors below can be ordered through your local Atlas Copco representative.

Air preparation

To ensure reliable service an air filter and lubricator should be fitted into the inlet airline – within 5 metres from the motor.

It is recommended that a pressure regulator is also incorporated into the air preparation package. This has the function of maintaining the desired working pressure, and can be used to modify the motor's output to meet the needs of the application.

When selecting an air preparation package, ensure all components have a flow capacity sufficient to meet the requirements of the motor. A typical arrangement of an air preparation installation is shown below, Figure 9.



A = filter
B = Pressure regulator
C = Oil fog lubricatior

Figure 9

Lubrication

Atlas Copco air motors LZB 14, 22 and LZB 33/34 are available as standard in lubricated free versions. To achieve optimum service life and performance of the lubricated airmotors they should be supplied with 50 mm3 of oil for each cubic metre (1000 litres) of air consumed (1 drop = 15 mm3).

Insufficient lubrication will result in accelerated vane wear and a reduction in performance.

The following example shows how to calculate the lubrication required by a motor running at a known output.

Example:
A non-reversible LZB 42 motor running at maximum output consumes 13 litres/sec of air.
In one minute it consumes 780 litres of air, therefore the lubrication required is:

$\frac{780}{1000} \times 50 = 39\ mm^3/min$

If an oil-fog lubricator was to be used it should be set to deliver 3 drops of oil a minute
(1 drop = 15 mm³).

The lubrication oil selected should have a viscosity which lies between 50 and 300 x 106 m2/s at the motor's working temperature.

However, if it is necessary to reduce the level of oil exhauset from the motor, and a piped-away or filtered exhaust is not acceptable, then the lubrication level can be reduced.

Although this will effect the motor, the performance may still be acceptable. Table 9 shows how reduced lubrication can affect service life and output.

Lubricant quantity (mm^3 oil m^3)	Service Life (hours)	Output power (%)
50	1000–3000	100
10	500–1000	100
1	200–500	90
0.1	100–300	80
0	10–30	30

1 drop of oil is appr. 15 mm^3

Table 9

It is also possible to fit lubrication free vanes to other air motors than LZB 14, 22 and LZB 33. However, that is only suitable under certain conditions. Check with your local Atlas Copco representative if you require further information.

If the supply air is very dry the idling speed of the lubrication free motors may degrade somewhat after running for longer periods, a decrease of 10–15% may be noticeable. The power of the motors is, however, generally not affected. To guarantee longer service intervals the lubricated, standard motors are still the best choice.

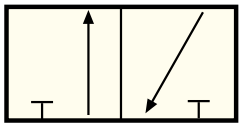
Thread in (in)	Hose size (mm)	Hose size (in)	Ordering No.	Thread in (in)	Hose size (mm)	Hose size (in)	Ordering No.
1/8 BSP	3.2	1/8	9000 0523 00	3/8 BSPT	10.0	3/8	9000 0242 00
1/8 BSP	5.0	3/16	4010 0031 00	3/8 BSPT	12.5	1/2	9000 0248 00
1/8 BSPT	6.3	1/4	9000 0240 00	1/2 BSPT	12.5	1/2	9000 0243 00
1/4 BSP	3.2	1/8	9000 0525 00	1/2 BSPT	16.0	5/8	9000 0244 00
1/4 BSPT	6.3	1/4	9000 0241 00	1/2 BSPT	20.0	3/4	4150 0429 00
1/4 BSPT	8.0	5/16	9090 1715 00	3/4 BSPT	20.0	3/4	9000 0245 00
1/4 BSPT	10.0	3/8	9000 0247 00	1 BSPT	25.0	1	9000 0246 00

Table 8

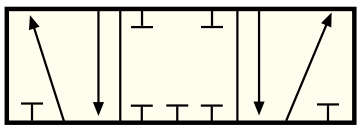
Directional control valves

These valves are used to start or stop a motor, or to change its direction of rotation. It is most usual to use what is termed a 5/3 valve' to control a reversible motor, and a 3/2 valve to control a non-reversible motor.

The valve designations refer to the number of connection ports and the number of operating positions the valve provides, for a 5/3 valve this is 5-connection port and 3 positions. When selecting any control valve it is important to ensure that it has a flow capacity that is sufficient to supply the requirements of the motor.



3/2 valve



5/3 valve

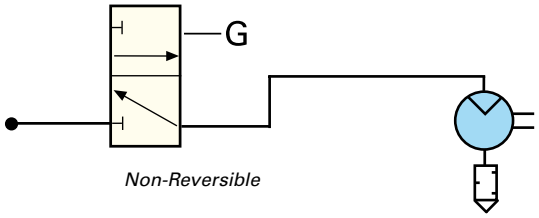
Figure 10

The symbols used to represent these valves in an installation diagram.

Installations examples

Typical installation diagrams for type LZB and LZL air motors, together with their associated control valves, filters, regulators lubricators and silencers.

LZB Circuits



Non-Reversible

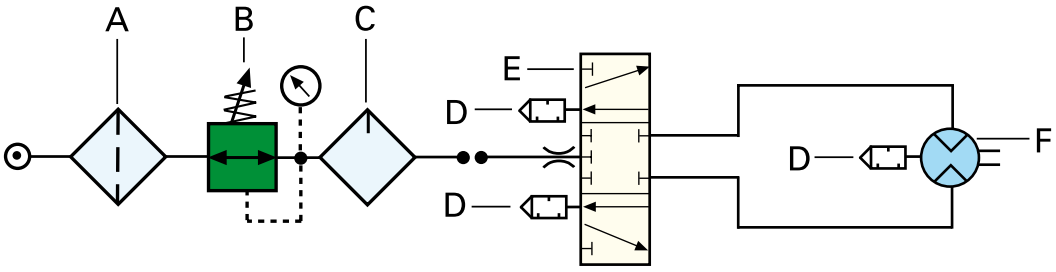


Figure 11

Reversible

A = Filter
B = Pressure regulator
C = Oil fog lubricator
D = Silencer
E = 5/3 valve
F = Air motor
G = 3/2 valve

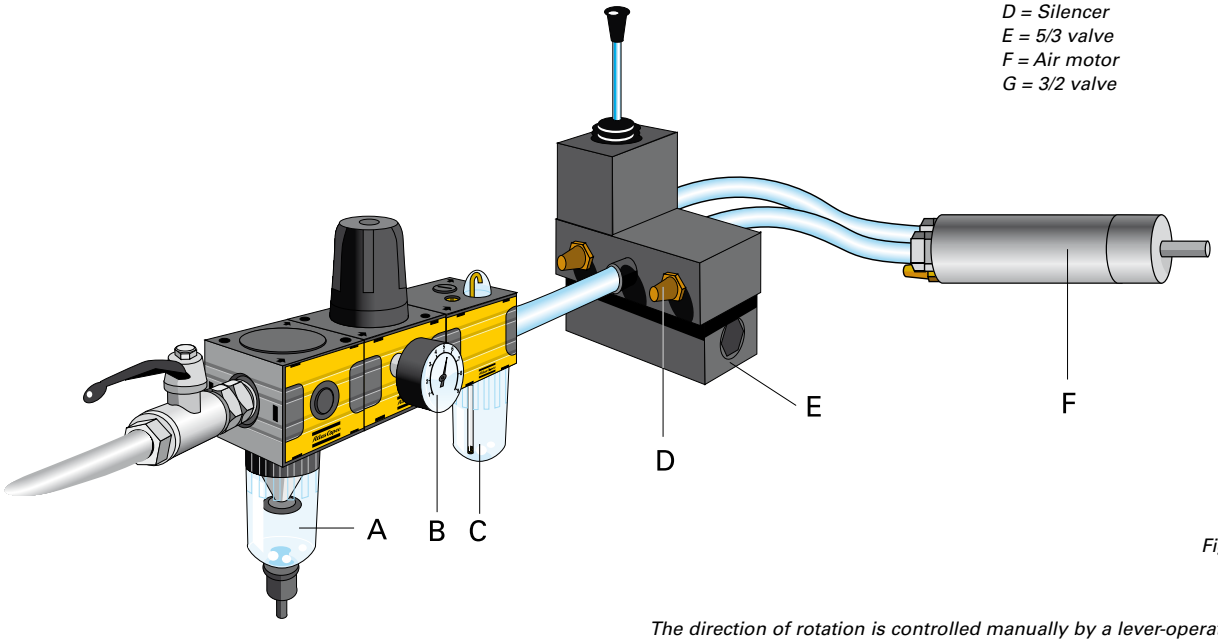


Figure 12

The direction of rotation is controlled manually by a lever-operated 5/3 valve. The air preparation unit ensures that the motor is supplied with clean air and lubrication. The built-in pressure regulator can also be used to modify the output of the motor.

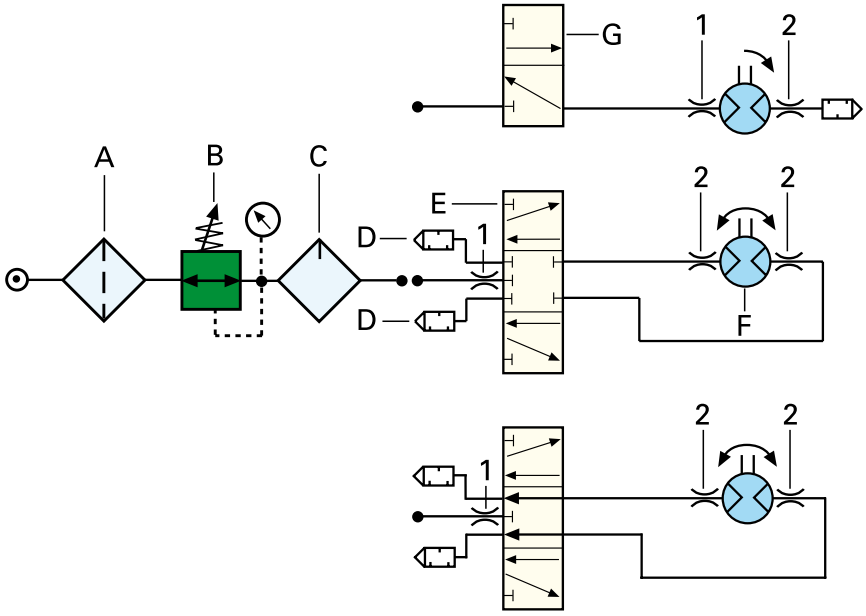
For LZL air motors it is important that an inlet restrictor is placed upstream the inlet. It must be placed so it does not affect the exhaust at reversible running. This means that it has to be placed before the control valve.

LZL Circuits

Non-Reversible duty with 3/ 2 valve

Reversible duty with 5/ 3 valve and closed mid position

Reversible duty with 5/ 3 valve and open mid position



A = Filter
B = Pressure regulator
C = Oil fog lubricator
D = Silencer
E = 5/3 valve
F = Air motor
G = 3/2 valve

1 = Inlet restrictor
2 = Outlet restrictor

Figure 13

Special motors

Atlas Copco is a premier supplier of air motors, manufactured to individual customer specification.

Particulary for "OEM" requirements a customized air motor can be the most efficient solution when integrating an air motor into a machine or tool. Typical examples of special motors are those having unique casing or mounting arrangements, motors utilizing non-standard materials or surface coatings and types designed to achieve a specific output.

Whatever the requirement, Atlas Copco welcomes the opportunity to work with its customers in finding the best solution to their needs.

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