Atlas Copco air motors

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.

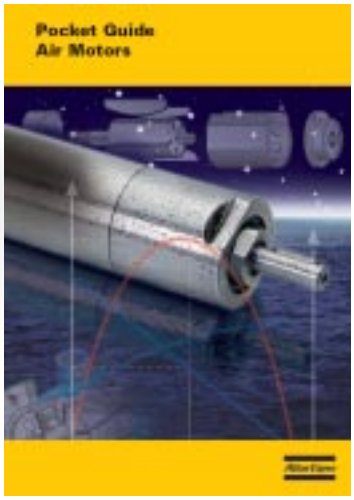
Atlas Copco air motors – the natural choice for design engineers in the industry of today and tomorrow.

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 proofcertified versions, in compliance with the European Union’s ATEX Directive on equipment for potentially explosive environments.

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 either use the web based Atlas Copco selection tool or the windows based selection CD.

Air motor selection program, Ordering No: 9833 9093 00

www.atlascopco.com/selectiontool

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 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.

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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.

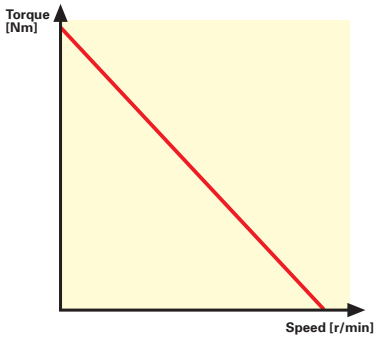


Figure 1

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.

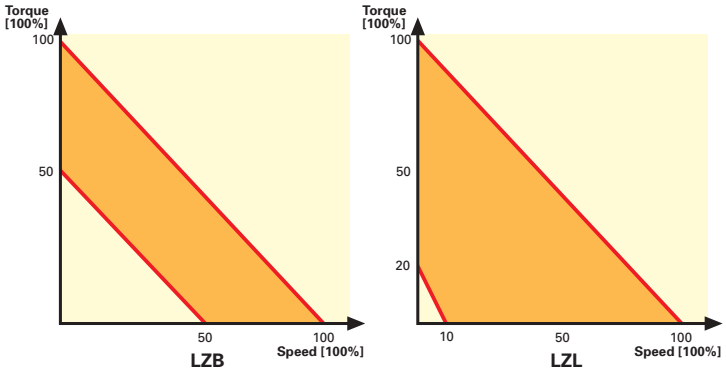


Figure 2

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.

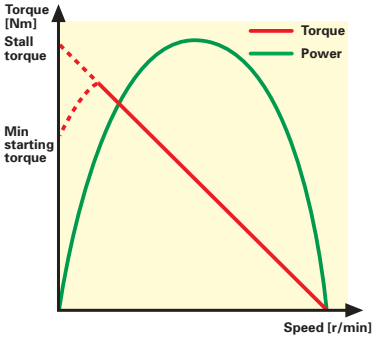


Figure 3

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.

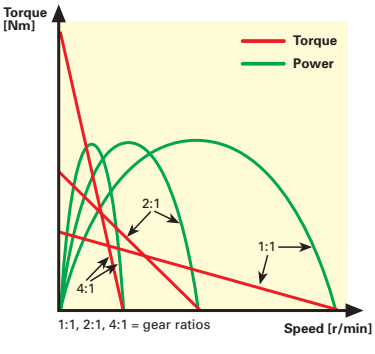


Figure 4

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.

Note. The above does not apply to worm drive gear units, which can have high frictional losses and, therefore, loss of power output.

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.

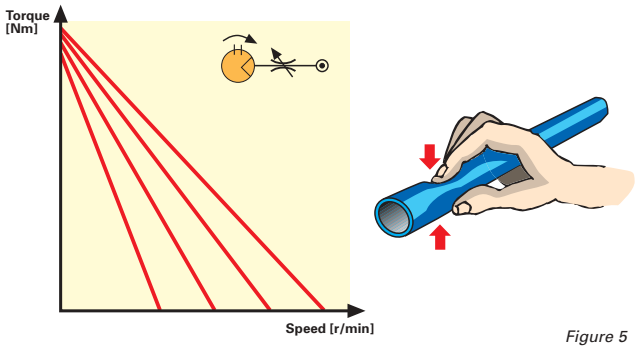


Figure 5

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.

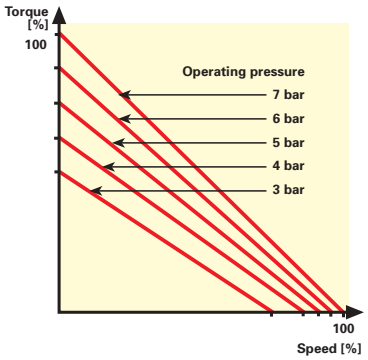


Figure 6

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.

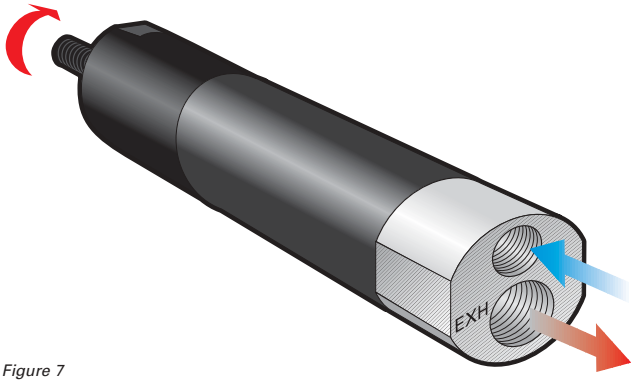


Figure 7

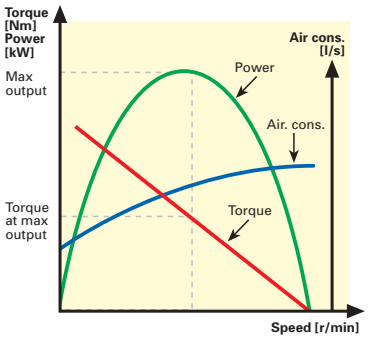
Understanding the performance curves

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.



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.

Figure 8

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 1.2 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 10.

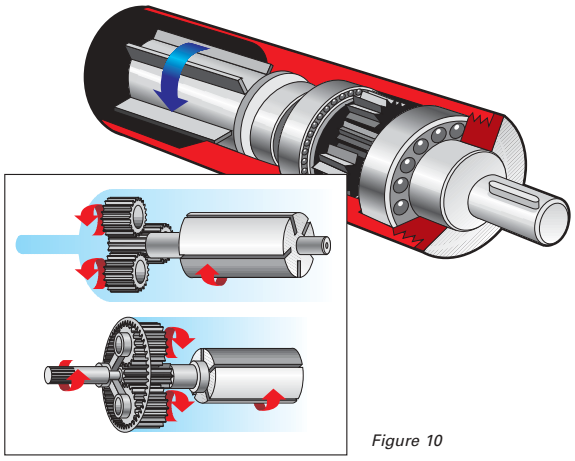


Figure 10

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.

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 11.

Figure 11

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 12.

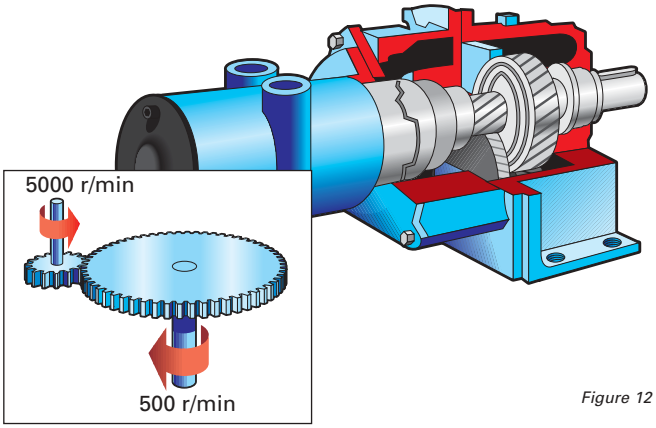


Figure 12

Worm gear units

The LZL vane motors can also be supplied with worm gear units. In this configuration, they will deliver speeds of 500 r/min down to 45 r/min at torques of up to 570 Nm. Worm gear units have a self-braking action that can be beneficial in certain applications. The worm gear unit is flange-coupled to the motor and the shafts are linked by a flexible coupling, Figure 13.

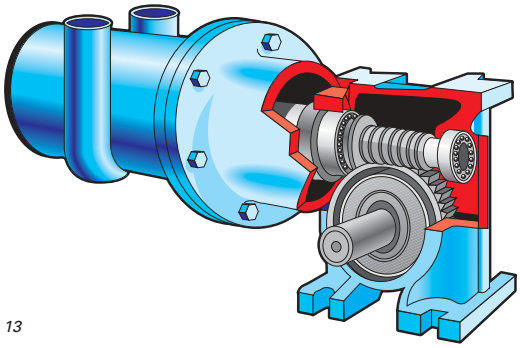


Figure 13


MOTOMAN


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 14.

Figure 14

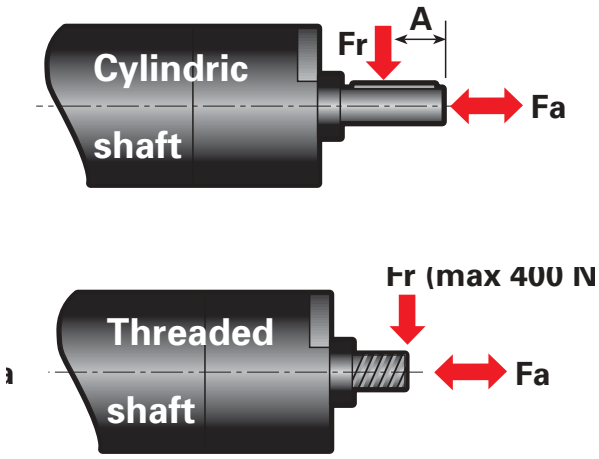
The design of the motor is chosen to be long and slim. This gives a number of advantages like a high power to volume ratio, a low air consumption and long vane life. All motors utilise five vanes, which are supplied with vane air, to ensure excellent starting and low speed performance. Multi-step planetary 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 15. 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.

The diagrams are valid for motors with cylindric or threaded shafts. However there are limitations on radial forces for some motors with threaded shafts as described below.

Air motor	Fr max
LZB 22A---12	400 N
LZB 33A---12	400 N
LZB 46A065-12	1 300 N
LZB 46A040-12	1 300 N
LZB 46A025-12	1 300 N
LZB 46A015-12	1 300 N
LZB 46A010-12	1 300 N
LZB 46A005-12	1 300 N



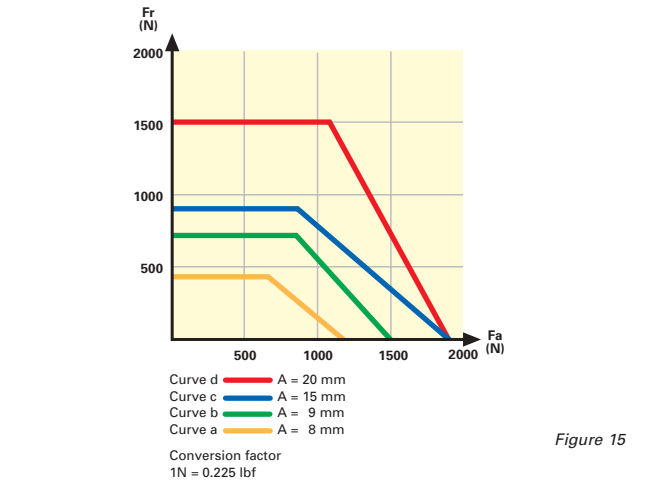
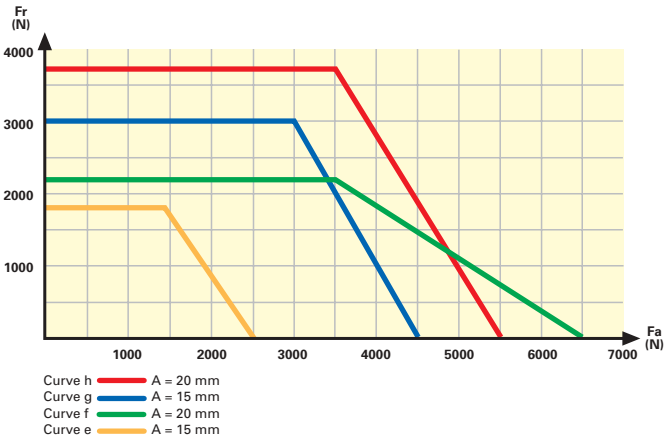


Figure 15



Mounting

Type LZB vane motors may be mounted in any position. To facilitate this, flange and foot mounting are available for each motor, Figure 16.

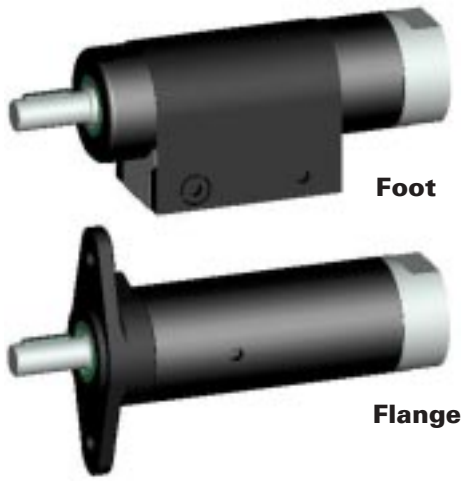


Figure 16

Connection

Non-Reversible Motor

When the compressed air supply is connected to the inlet, the direction of rotation will be as shown in Figure 17. 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.

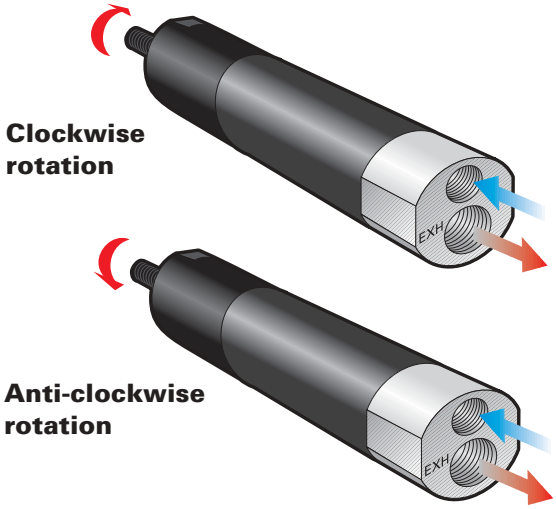


Figure 17

Reversible Motor

The compressed air supply should be connected to the inlet that gives the desired direction of rotation, Figure 18.

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

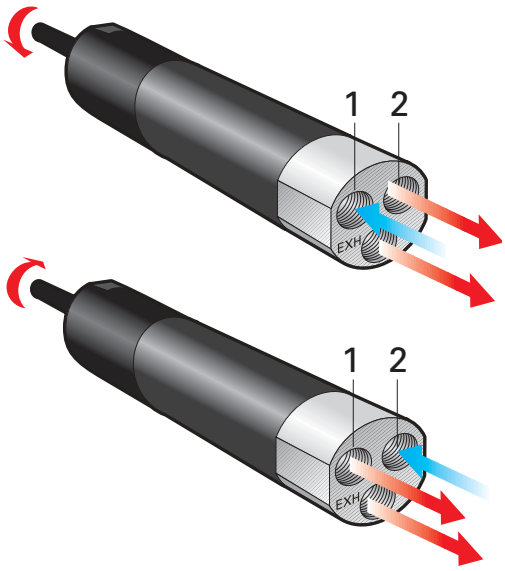


Figure 18

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)	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

Table 2

Vanemotor LZB 14
Lubrication free versions
LZB 14L

0.10 – 0.16 kW
0.14 – 0.22 hp

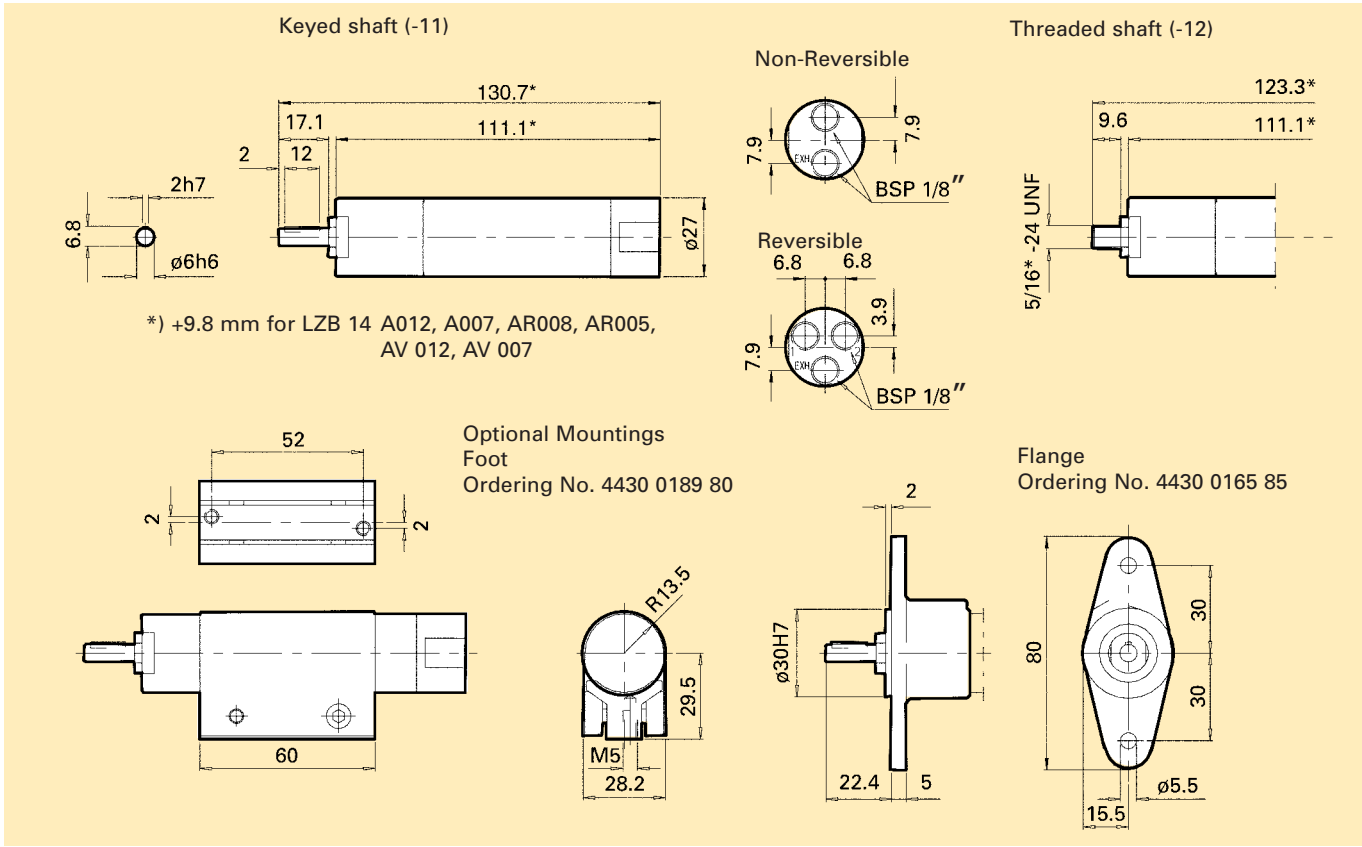
For EX certification according to the ATEX directive (Ex II 2G T4 IIC D110°C) use Ordering No. 9834 1107 00 (book as one delivery together with motor).

Data at air pressure 6.3 bar (91psi)

Ordering No.								Speed	Torque		Min			Air cons.				
						Max		at max	at max		starting		Free	at max				Shaft
Type [1]	Keyed	Threaded	Type	Keyed	Threaded	output		output	output		torque		speed	output		Weight		loading
	Shaft	Shaft		Shaft	Shaft	kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	code [2]
	Standard		**Lubrication free**															
LZB 14	**8411-**	**8411-**	**LZB 14L**	**8411-**	**8411-**	**Clockwise rotation**												
A190-	0110 03	0111 02	A190-	0113 00	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-	0110 11	0111 10	A048-	0113 18	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-	0110 29	0111 28	A029-	0113 26	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-	0110 37	0111 36	A012-	0113 34	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-	0110 45	0111 44	A007-	0113 42	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
LZB 14	**8411-**	**8411-**	**LZB 14L**	**8411-**	**8411-**	**Anti-clockwise rotation**												
AV190-	0116 07	–	AV190-	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-	0116 15	–	AV048-	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-	0116 23	–	AV029-	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-	0116 31	–	AV012-	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-	0116 49	–	AV007-	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
LZB 14	**8411-**	**8411-**	**LZB 14L**	**8411-**	**8411-**	**Reversible**												
AR140-	0112 01	–	AR140-	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-	0112 19	–	AR034-	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-	0112 27	–	AR020-	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-	0112 35	–	AR008-	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-	0112 43	–	AR005-	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)

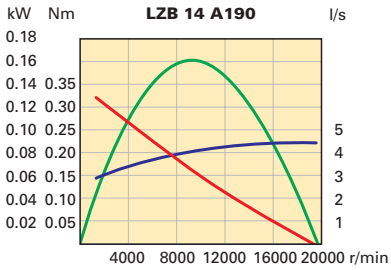


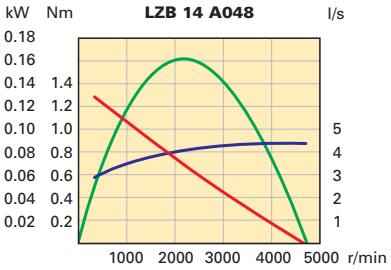
Optional accessories

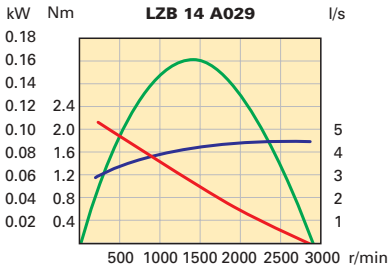
page 42.

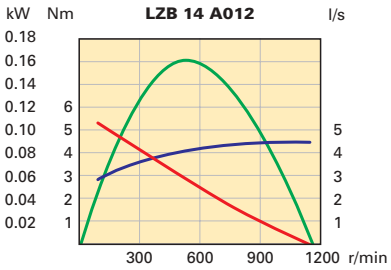
LZB 14 Performance curves at air pressure 6.3 bar (91psi)

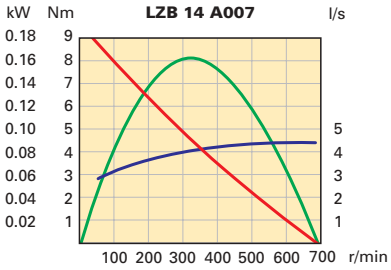
Non-Reversible



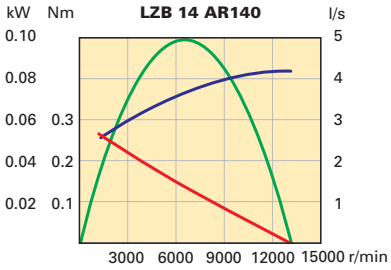


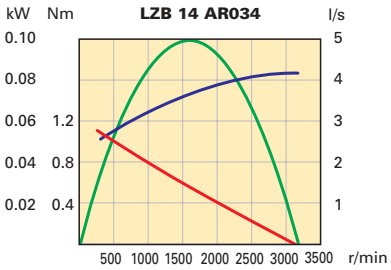


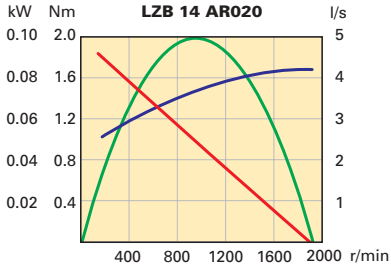


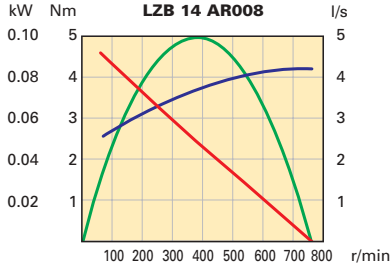


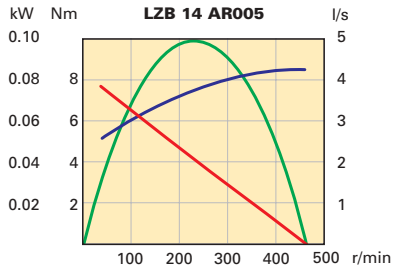
Reversible











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.*

Vanemotor 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/XII Type 17, SS 14 2346, DIN 17440 X12CrNiS188. The material used in the outgoing shaft and gear rim has the designation: ISO 683/XII Type 9b, SS 14 2321, DIN 17440 X22CrNi17.

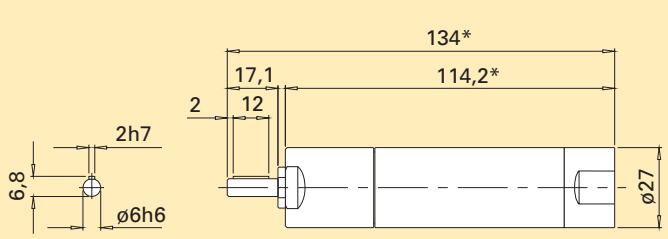
Data at air pressure 6.3 bar (91psi)

Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Max output kW	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 [1]
LZB 14R	**8411-**	**LZB 14RL**	**8411-**	**Clockwise rotation**												
A190-11	0121 00	A190-11	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	0121 18	A048-11	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	0121 26	A029-11	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	0121 34	A012-11	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	0121 42	A007-11	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
LZB 14R	**8411-**	**LZB 14RL**	**8411-**	**Reversible**												
AR140-11	0121 59	AR140-11	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	0121 67	AR034-11	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	0121 75	AR020-11	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	0121 83	AR008-11	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	0121 91	AR005-11	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

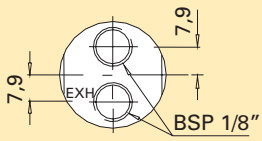
[1] *For Shaft loading curves, see page 12. NOTE: The lubrication free motors have 95% of shown free speed.*

Dimensions (mm)

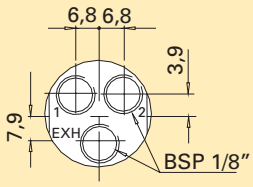
Conversion factor 1 mm = 0.04 inch



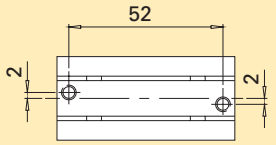
Non-Reversible



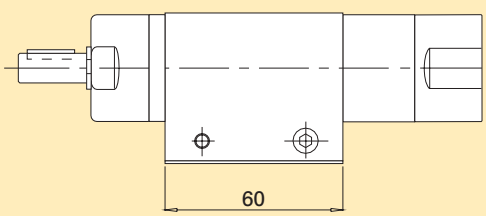
Reversible

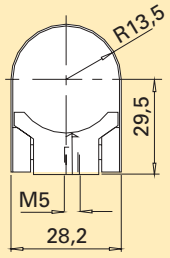


*) +9.8 mm for LZB 14R A012, A007, AR008, AR005

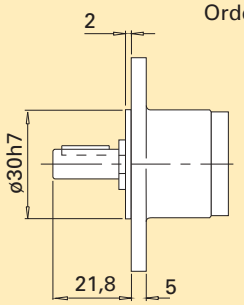


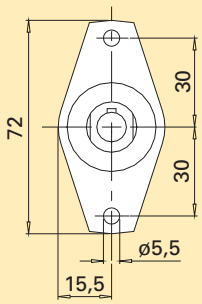
Optional Mountings
Foot
Ordering No. 4430 0923 80





Optional Mountings
Flange
Ordering No. 4430 0922 80

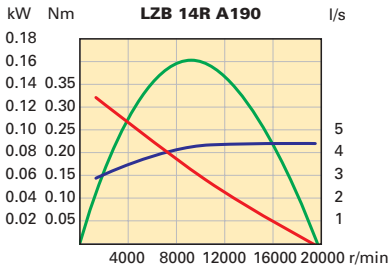


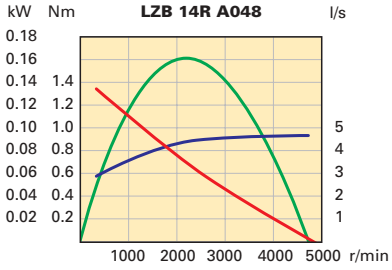


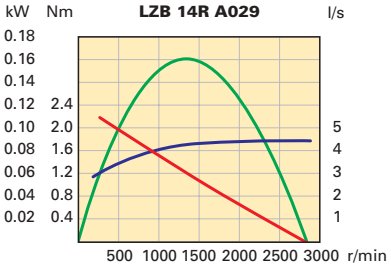
Optional accessories
page 42.

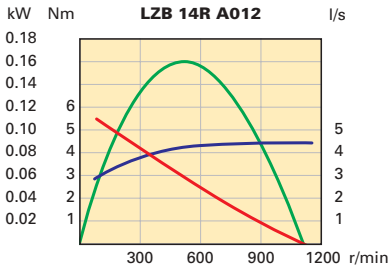
LZB 14R Performance curves at air pressure 6.3 bar (91psi)

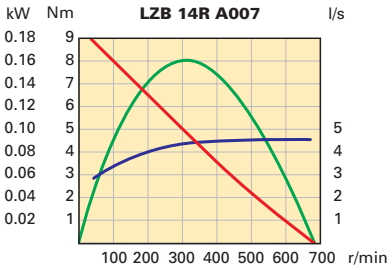
Non-Reversible



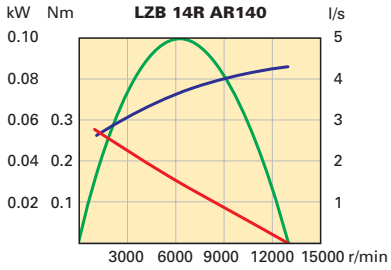


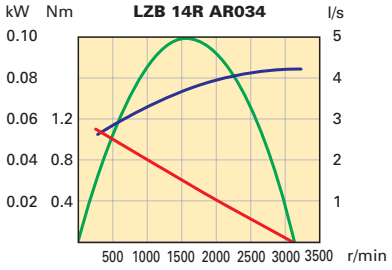


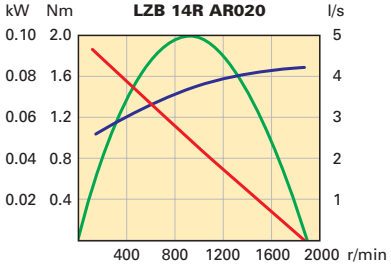


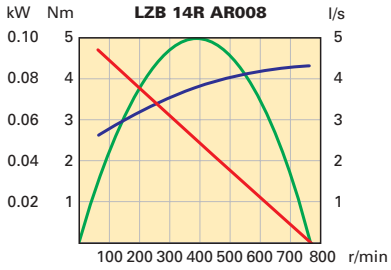


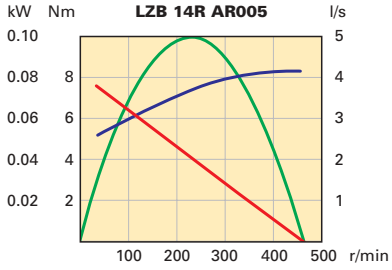
Reversible











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.*

Vanemotor LZB 22
Lubrication free versions
LZB 22L

0.16 – 0.25 kW
0.22 – 0.34 hp

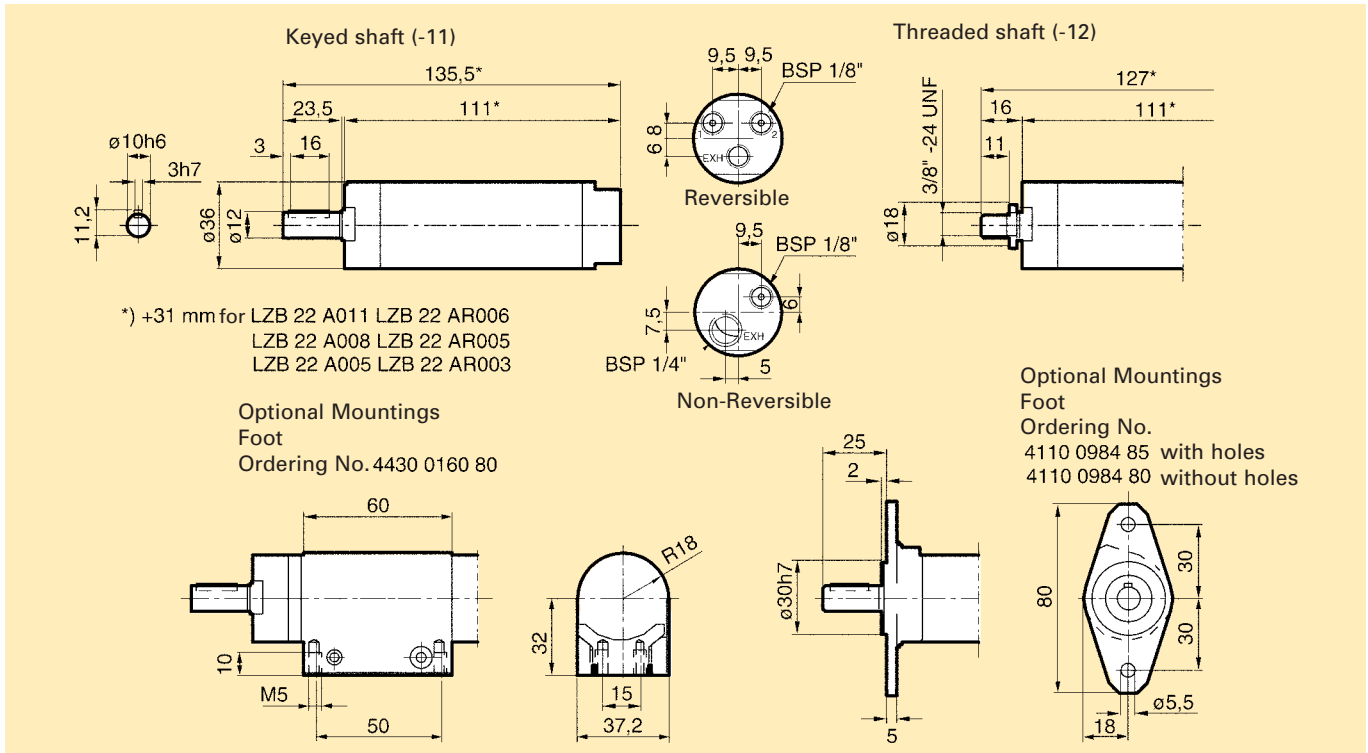
For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor).

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]
	Standard		**Lubrication free**															
LZB 22	**8411-**	**8411-**	**LZB 22L**	**8411-**	**8411-**	**Clockwise rotation**												
A220-	0201 37	0202 36	A220-	0214 08	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-	0201 29	0202 28	A049-	0214 16	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-	0201 52	0202 51	A036-	0214 24	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-	0201 11	0202 10	A022-	0214 32	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-	0201 03	0202 02	A011-	0214 40	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-	0201 60	0202 69	A008-	0214 57	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-	0201 45	0202 44	A005-	0214 65	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
LZB 22	**8411-**	**8411-**	**LZB 22L**	**8411-**	**8411-**	**Reversible**												
AR126-	0203 35	–	AR126-	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-	0203 27	–	AR028-	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-	0203 68	–	AR021-	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-	0203 19	–	AR013-	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-	0203 01	–	AR006-	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-	0203 50	–	AR005-	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-	0203 43	–	AR003-	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)

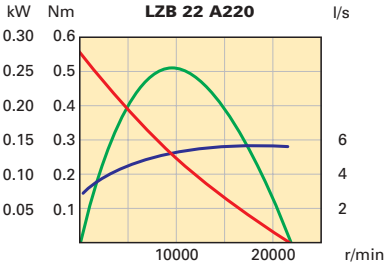


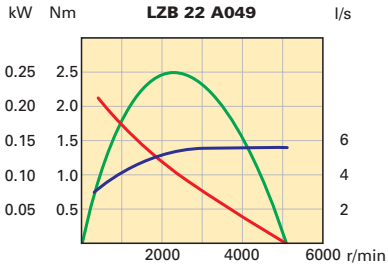
Optional accessories

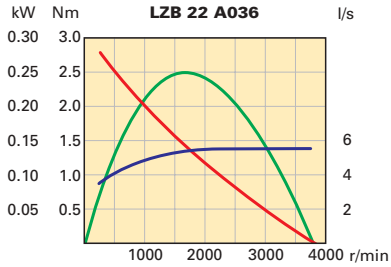
page 42.

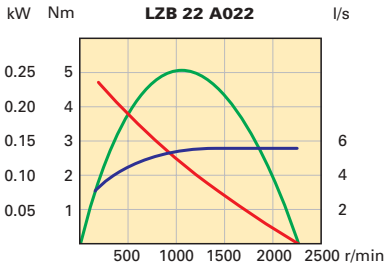
LZB 22, LZB 22R Performance curves at air pressure 6.3 bar (91psi)

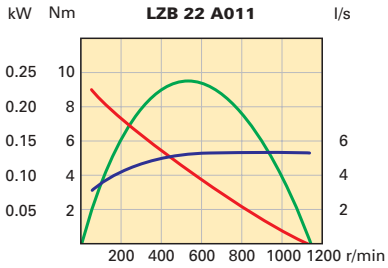
Non-Reversible

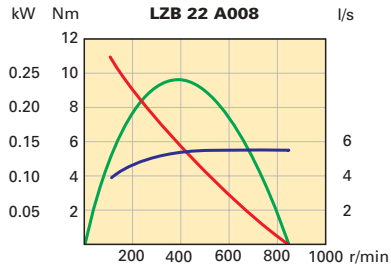


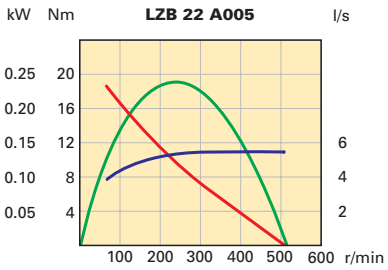




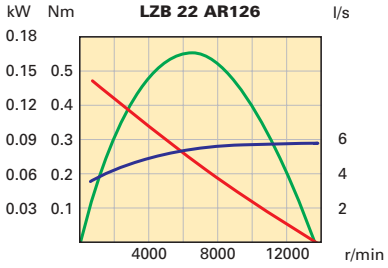


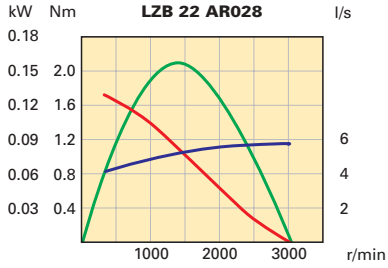


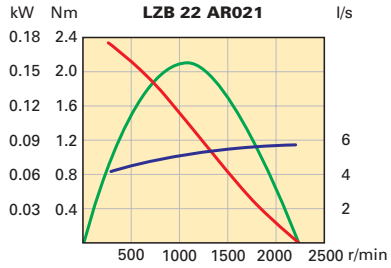


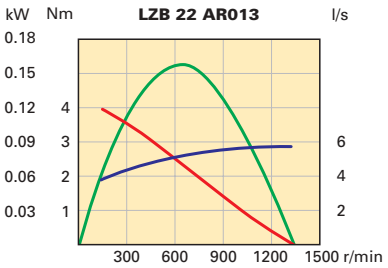


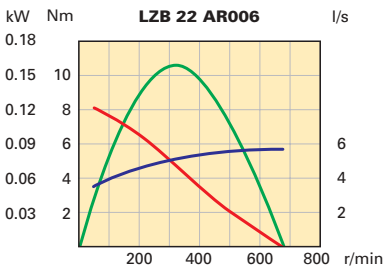
Reversible

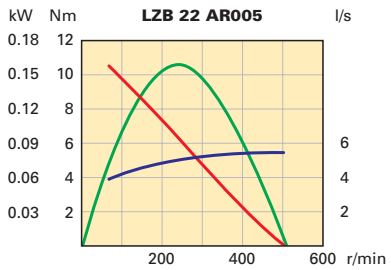


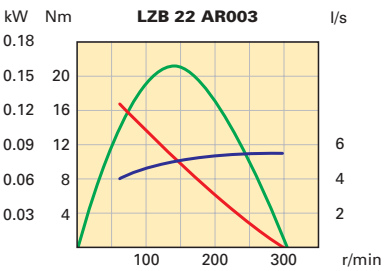












Conversion factors)*
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

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

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

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

0.16 – 0.25 kW
0.22 – 0.34 hp

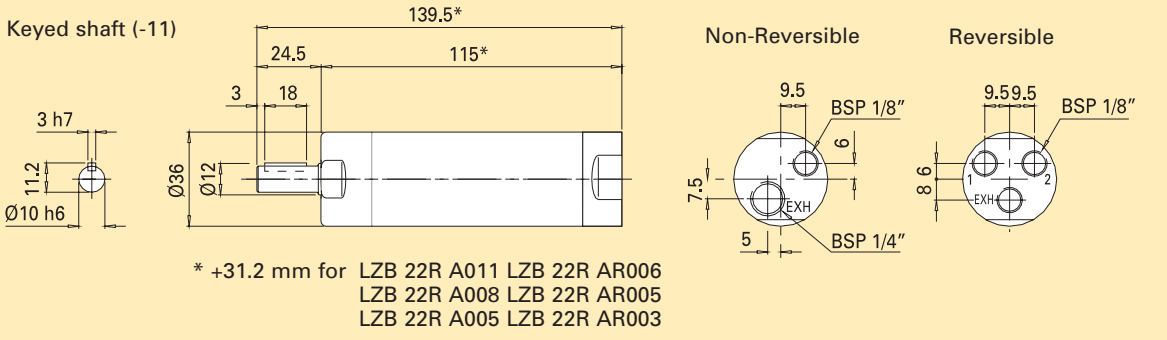
For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor).
The material used in the back head, casing and front part is stainless steel with the designation: ISO 683/XII Type 17, SS 14 2346, DIN 17440 X12CrNiS188. The material used in the outgoing shaft and gear rim has the designation: ISO 683/XII 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]
LZB 22R		**LZB 22RL**	**Clockwise rotation**													
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
LZB 22R		**LZB 22RL**	**Reversible**													
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

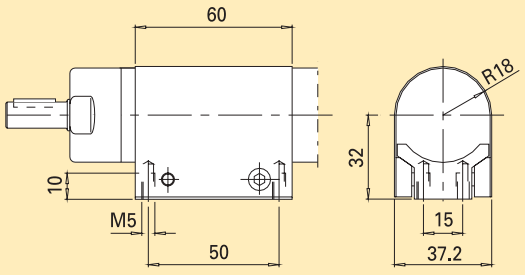
1) For Shaft loading curves, see page 12.
Performance curves are given on page 19. NOTE: The lubrication free motors have 95% of shown free speed.

Dimensions (mm)

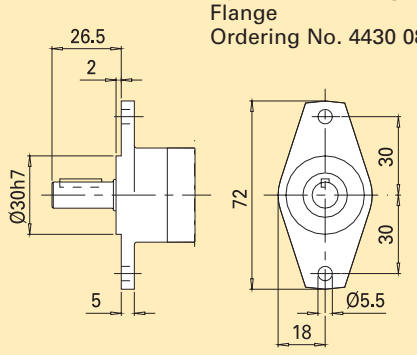


* +31.2 mm for LZB 22R A011 LZB 22R AR006
LZB 22R A008 LZB 22R AR005
LZB 22R A005 LZB 22R AR003

Optional Mounting
Foot
Ordering No. 4430 0862 80



Optional Mounting
Flange
Ordering No. 4430 0861 80



Optional accessories
page 42.

Vane motors LZB 22 LR, LZB 22R LR
Low speed reversible

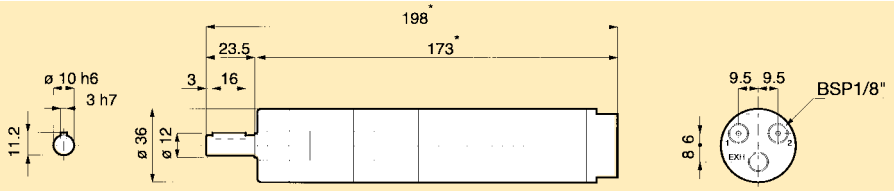
Maximum permitted torque 9 Nm (6.6 lbf.ft).
For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor).
Within their working range these motors have a very steep torque curve. Speed and air consumption is relatively 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 consumtion l/s	cfm	Weight kg	lb	Shaft loading code [1]
LZB 22 LR100-11	8411 0212 18	LZB 22L LR100-11	8411 0216 22	100	5.8	12.3	0.95	2.11	b
LZB 22 LR5-11	8411 0212 00	LZB 22L LR5-11	8411 0216 14	5	5.8	12.3	1.35	3.00	b
Stainless steel									
LZB 22R LR100-11	8411 0222 24	LZB 22RL LR100-11	8411 0222 40	100	5.8	12.3	1.03	2.11	b
LZB 22R LR5-11	8411 0222 32	LZB 22RL LR5-11	8411 0222 57	5	5.8	12.3	1.43	3.00	b

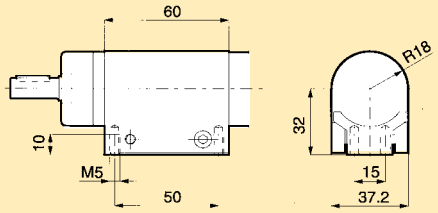
1) For Shaft loading curves, see page 12.

Dimensions LZB 22 RL (mm)

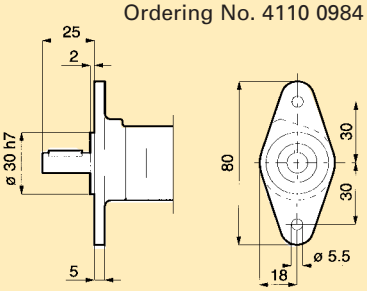


*) +62 mm for LZB 22 LR5.

Optional Mountings
Foot for LZB 22 LR
Ordering No. 4430 0160 80



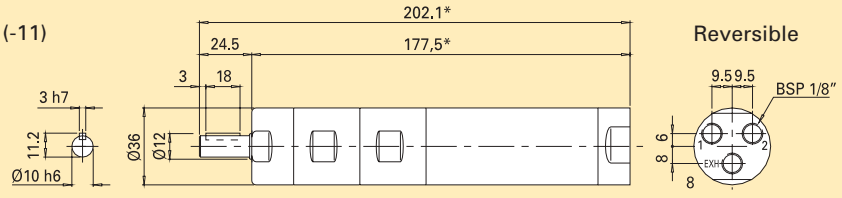
Flange for LZB 22 LR
Ordering No. 4110 0984 85



Dimensions LZB 22R LR (mm)

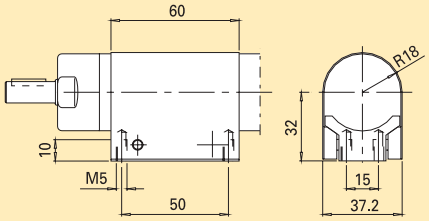
Conversion factor 1mm = 0.04 inch

Keyed shaft (-11)

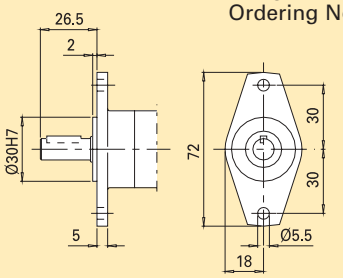


* +62.4 mm for LZB 22R LR5

Optional Mounting
Foot
Ordering No. 4430 0862 80



Optional Mounting
Flange
Ordering No. 4430 0861 80



Optional accessories

page 42.

Vane motors LZB 33
Lubrication free versions LZB 33L

0.23 – 0.39 kW
0.31 – 0.52 hp

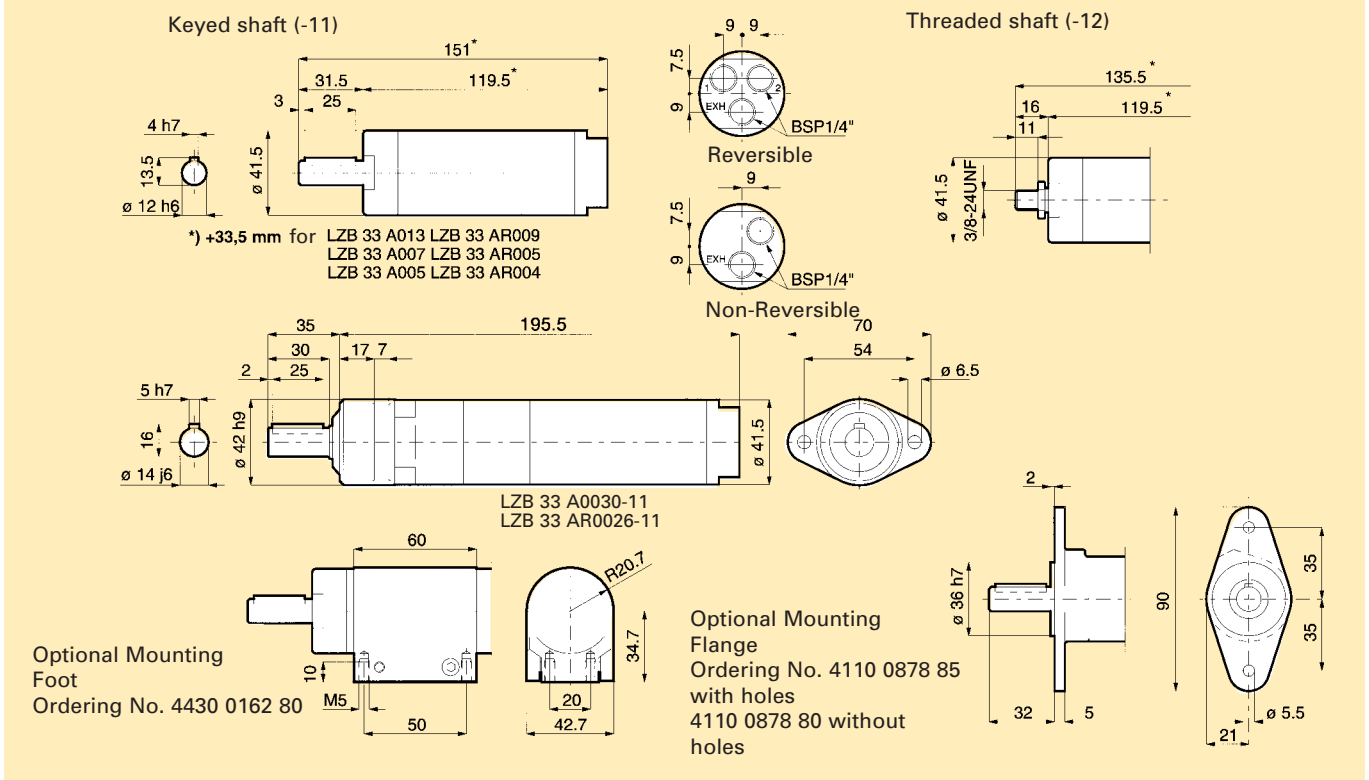
For EX certification according to the ATEX directive
(Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00
(book as one delivery together with motor).

Data at air pressure 6.3 bar (91psi)

	Ordering No.							Speed	Torque		Min			Air cons.				
						Max		at max	at max		starting		Free	at max				Shaft
Type[1]	Keyed	Threaded	Type	Keyed	Threaded	output		output	output		torque		speed	output		Weight		loading
	Shaft	Shaft		Shaft	Shaft	kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	code [2]
	Standard		**Lubrication free**															
LZB 33	**8411-**	**8411-**	**LZB 33L**	**8411-**	**8411-**	**Clockwise rotation**												
A210-	0301 51	0302 50	A210-	0306 07	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-	0301 44	0302 43	A060-	0306 15	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-	0301 36	0302 35	A033-	0306 23	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-	0301 28	0302 27	A026-	0306 31	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-	0301 10	0302 19	A013-	0306 49	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-	0301 02	0302 01	A007-	0306 56	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-	0301 69	0302 68	A005-	0306 64	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-	0301 77	–	A0030-	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
LZB 33	**8411-**	**8411-**	**LZB 33L**	**8411-**	**8411-**	**Reversible**												
AR150-	0303 59	–	AR150-	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-	0303 42	–	AR043-	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-	0303 34	–	AR024-	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-	0303 26	–	AR019-	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-	0303 18	–	AR009-	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-	0303 00	–	AR005-	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-	0303 67	–	AR004-	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-	0303 75	–	AR0026-	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 Shaft. [2] For Shaft loading curves, see page 12.
NOTE: The lubrication free motors have 95% of shown free speed.

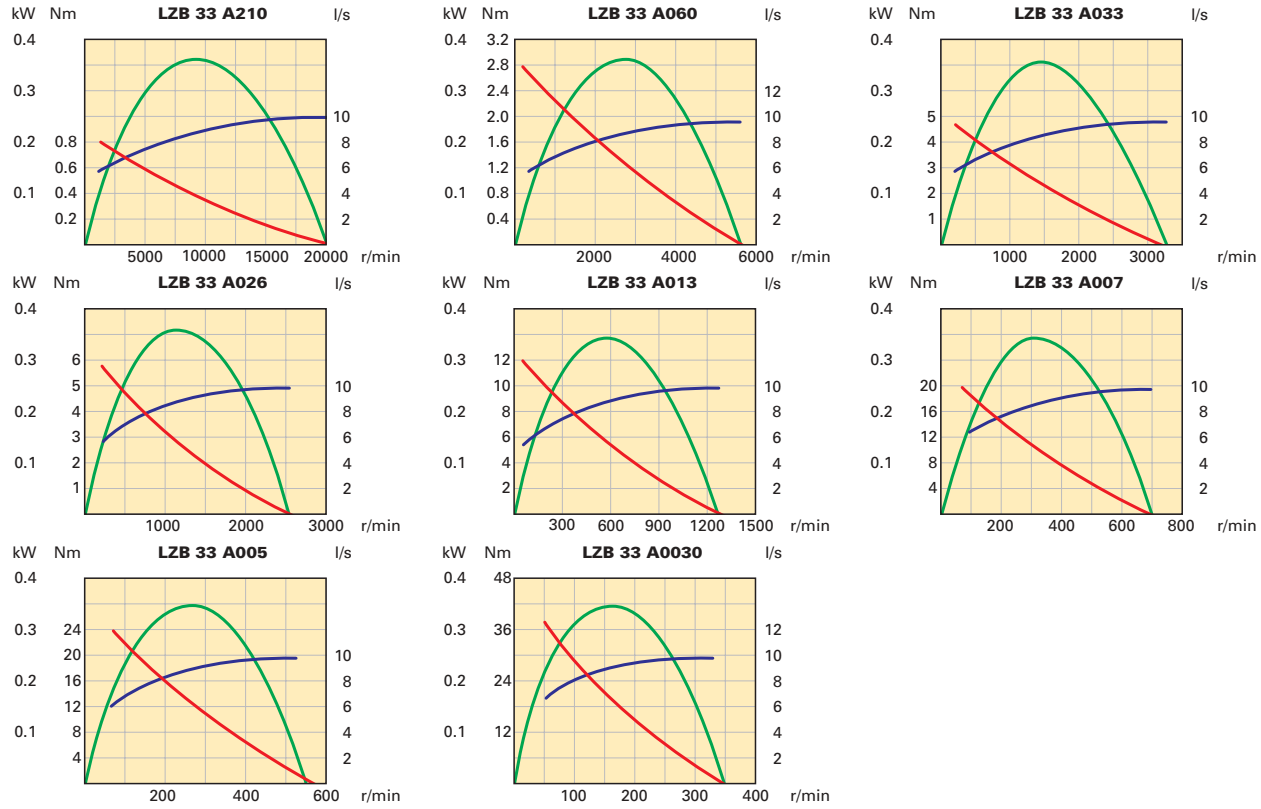
Dimensions (mm)



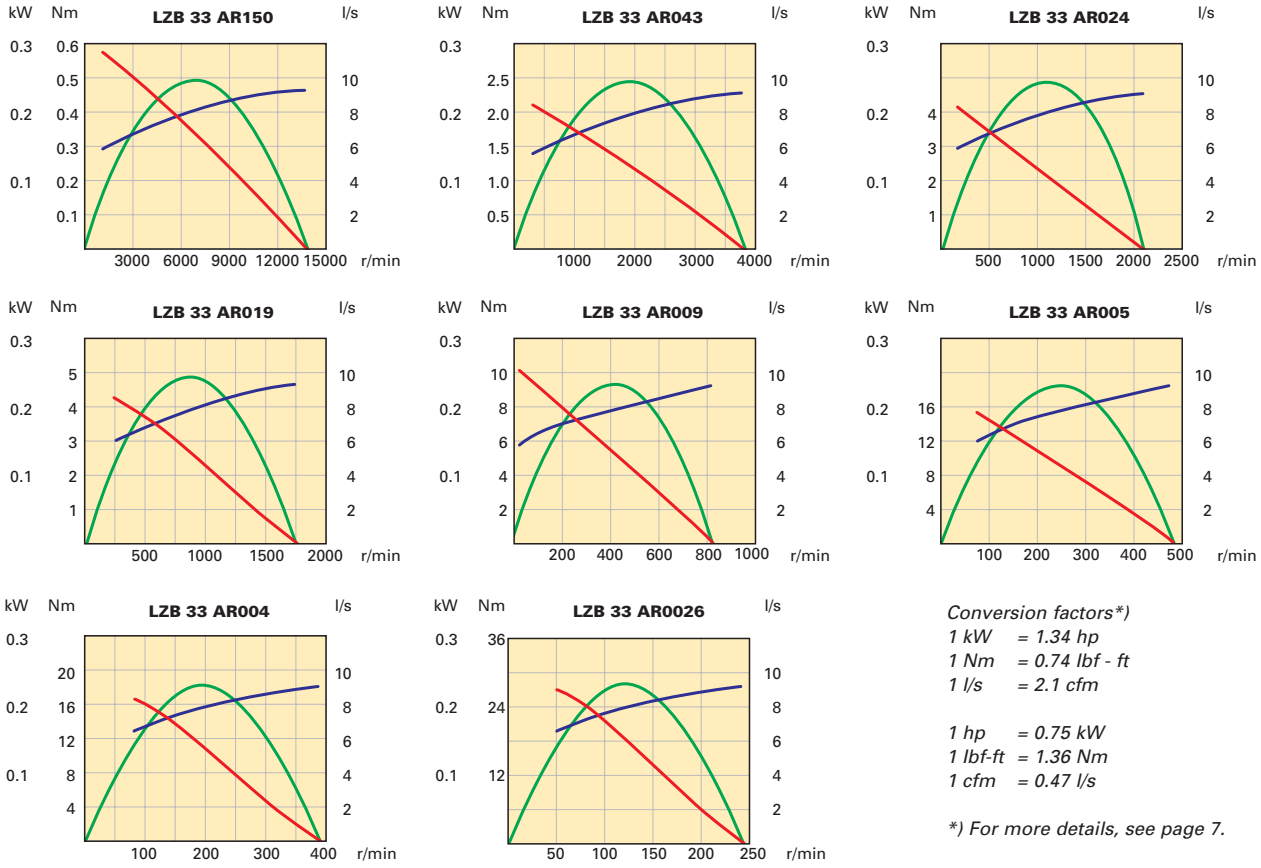
Optional accessories
page 42.

LZB 33, LZB 34R 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.*

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/XII Type 17, SS 142346, DIN 17440 X12CrNiS188. The material used in the outgoing shaft and gear rim has the designation: ISO 683/XII Type 9b, SS 142321, DIN 17440 X22CrNi17.

Data at air pressure 6.3 bar (91psi)

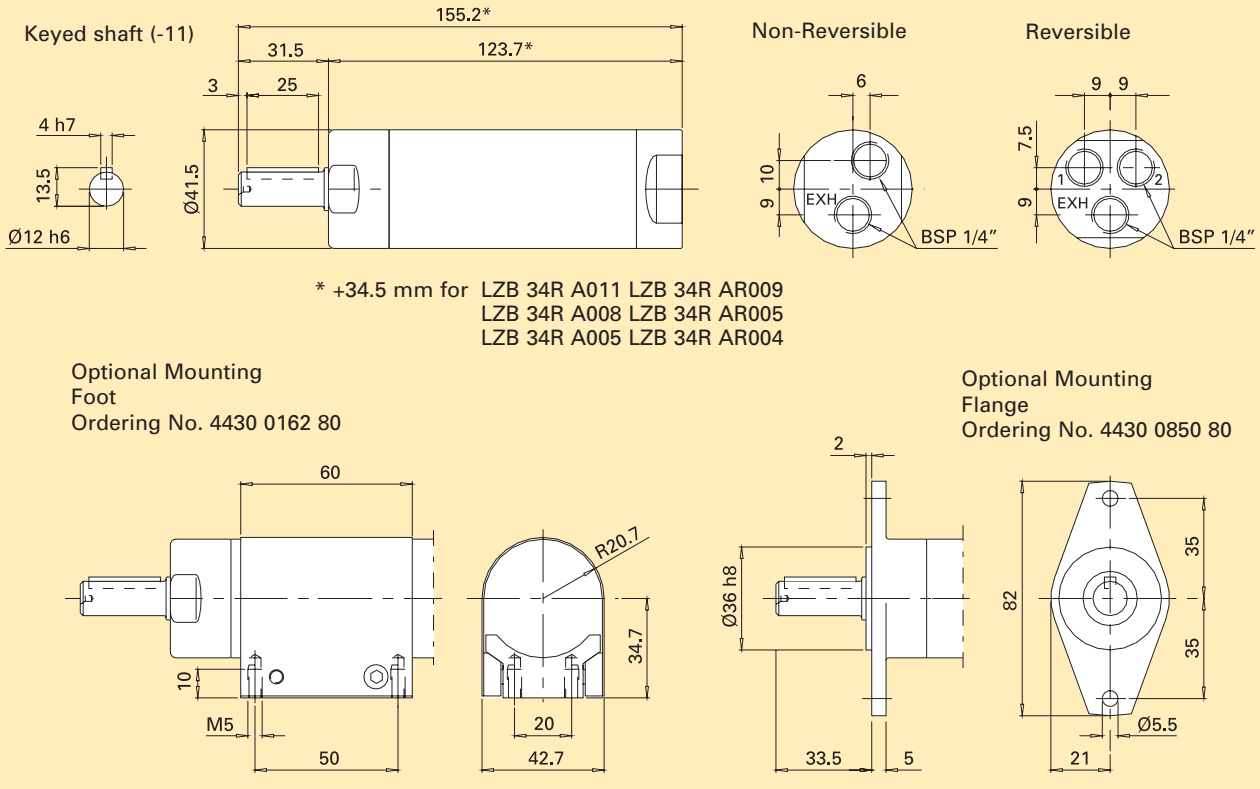
Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf.ft	Min starting torque Nm	Min starting torque lbf.ft	Free speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Shaft loading code [1]
LZB 34R		**LZB 34RL**		**Clockwise rotation**												
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
LZB 34R		**LZB 34RL**		**Reversible**												
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 42.

Vane motor LZB 33 LR, LZB 34R LR

Low speed reversible

Maximum permitted torque 14 Nm (10.3 lbf.ft)

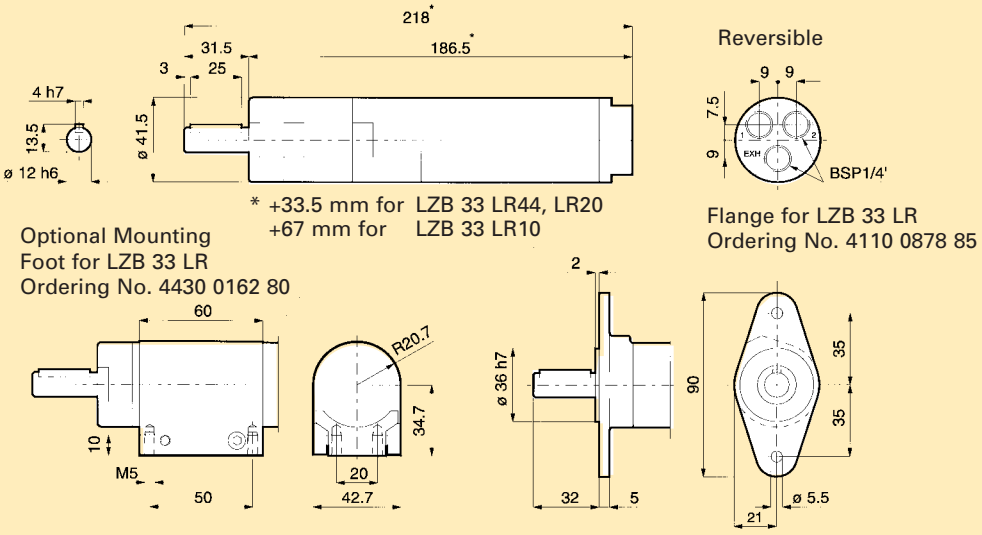
For EX certification according to the ATEX directive (Ex II 2G T5 IIC D85°C) use Ordering No. 9834 1108 00 (book as one delivery together with motor). For applications where low speed and high torque are required the LZB 33 high torque/low speed motors should be considered, see page 26. Within their 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)

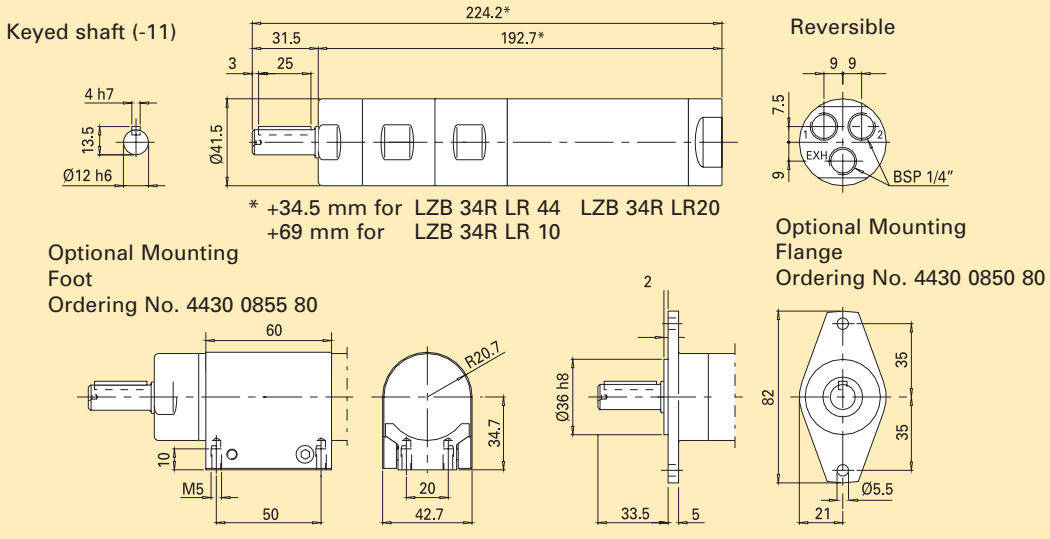
Designation Lubricated	Ordering No.	Designation Lubrication free	Ordering No.	Free speed r/min	Air consumtion l/s	Air consumtion cfm	Weight kg	Weight lb	Shaft loading code [1]
LZB 33 LR200-11	8411 0314 31	LZB 33L LR200-11	8411 0308 62	200	9.9	21.0	1.25	2.78	c
LZB 33 LR44-11	8411 0314 23	LZB 33L LR44-11	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 42.

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).

Data at air pressure 6.3 bar (91psi)

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

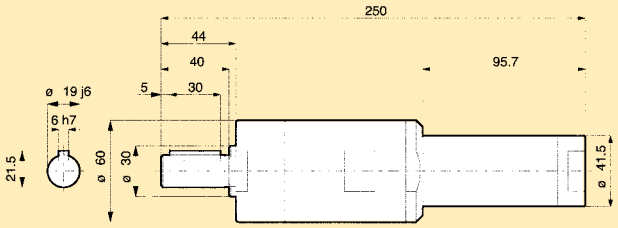
NOTE: The lubrication free motors have 95% of shown free speed.

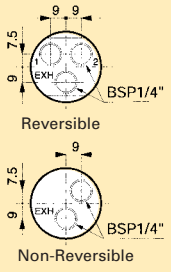
Dimensions (mm)

Conversion factor 1mm = 0.04 inch

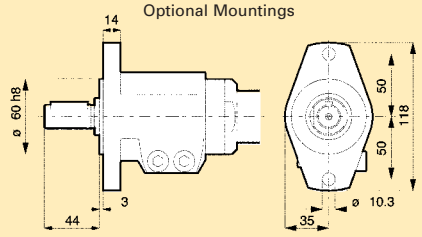
Lubricated ***Lubrication free***
Non reversible
LZB 33 A0020-11 *LZB 33L A0020-11*
LZB 33 A0015-11 *LZB 33L A0015-11*
LZB 33 A0011-11 *LZB 33L A0011-11*
LZB 33 A0008-11 *LZB 33L A0008-11*
LZB 33 A0007-11 *LZB 33L A0007-11*

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*

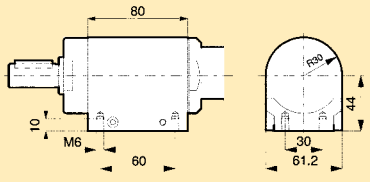




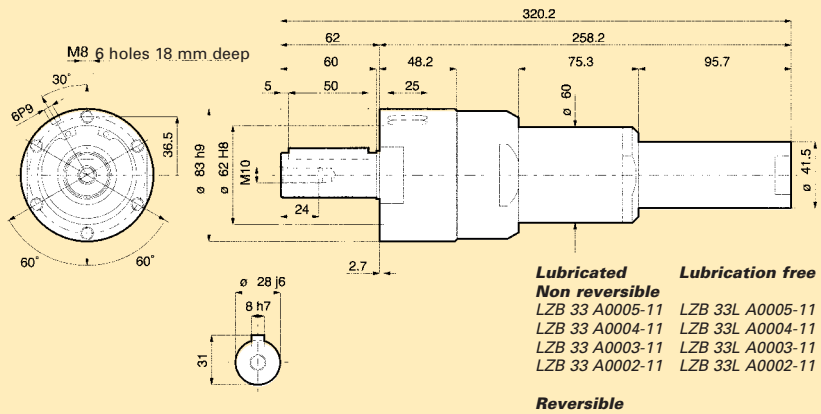
Optional Mountings



Flange Ordering No. 4430 0569 80



Foot Ordering No. 4430 0178 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*

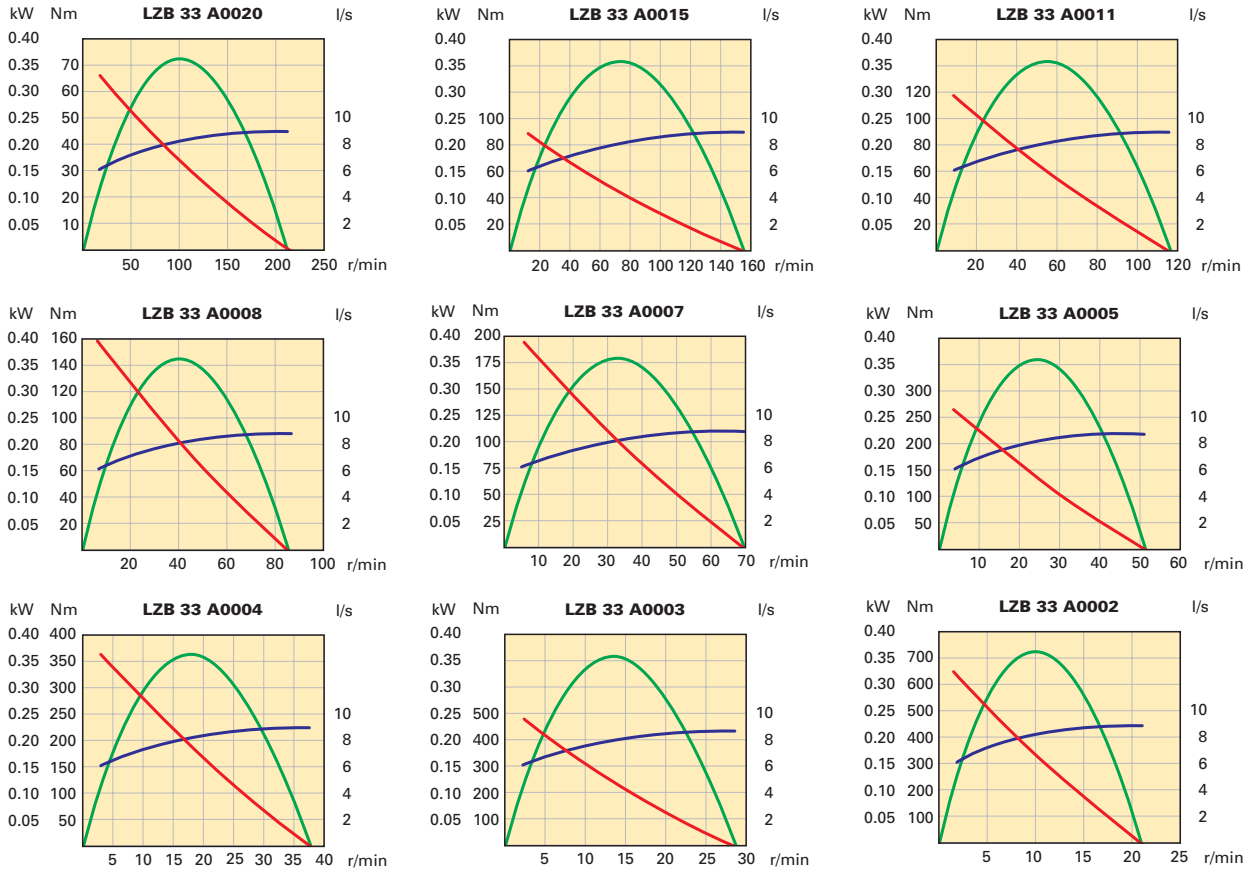
Reversible
LZB 33 AR0004-11 *LZB 33L AR0004-11*
LZB 33 AR0003-11 *LZB 33L AR0003-11*
LZB 33 AR0002-11 *LZB 33L AR0002-11*
LZB 33 AR0001-11 *LZB 33L AR0001-11*

Optional accessories

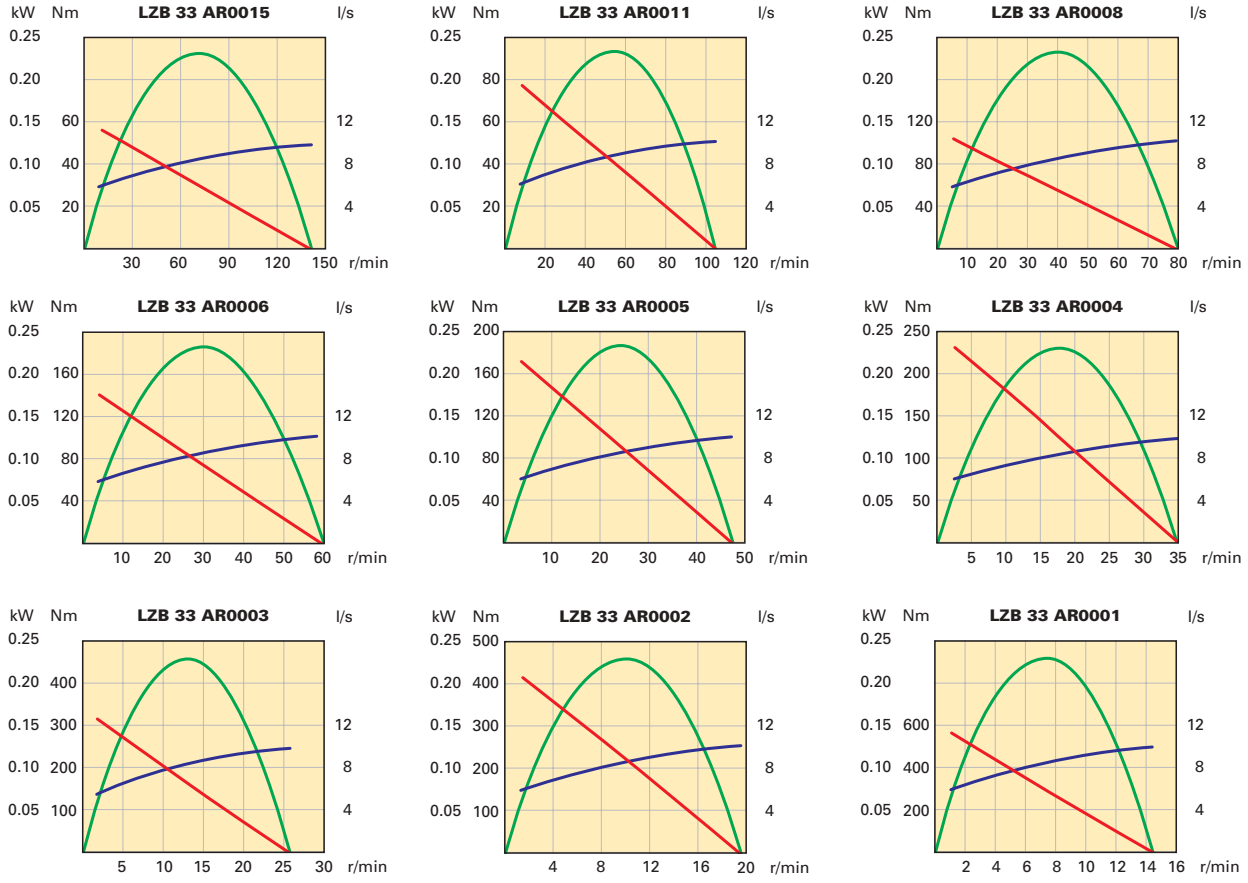
page 42.

LZB 33 high torque motors Performance curves at 6.3 bar (91 psi)

Non-Reversible



Reversible



Conversion factors see page 23.

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).

Data at air pressure 6.3 bar (91psi)

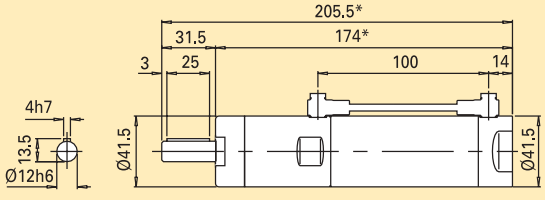
Designation	Ordering	Max output		Speed at max output	Torque at max output		Min start torque		Braking torque		Free speed	Air cons. at max output		Weight		Shaft loading
Lubrication free	No.	kW	hp	r/min	Nm	lbt.ft	Nm	lbt.ft	Nm	lbt.ft	r/min	l/s	cfm	kg	lb	code [1]
LZB 33LB AR150-11	8411 0340 05	0.24	0.32	7000	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.

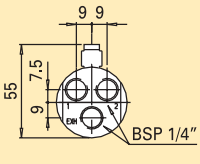
Dimensions (mm)

Conversion factor 1mm = 0.04 inch

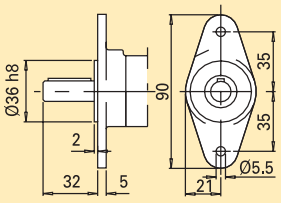
LZB 33LB AR150-11 * +33.5 mm for LZB 33LB AR009-11 * +4 mm for LZB 34RLB AR150-11 * +38.5 mm for LZB 34RLB AR009-11
LZB 33LB AR043-11 LZB 33LB AR005-11 LZB 34RLB AR043-11 LZB 34RLB AR005-11
LZB 33LB AR024-11 LZB 33LB AR004-11 LZB 34RLB AR024-11 LZB 34RLB AR004-11
LZB 33LB AR019-11 LZB 34RLB AR019-11



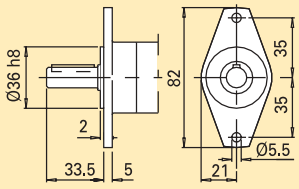
All versions



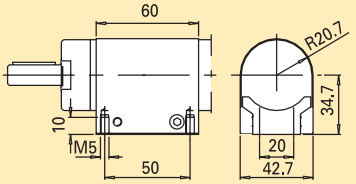
LZB 33LB, Flange Ordering No. 4110 0878 85



LZB 34RLB, Ordering No. 4430 0850 80



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

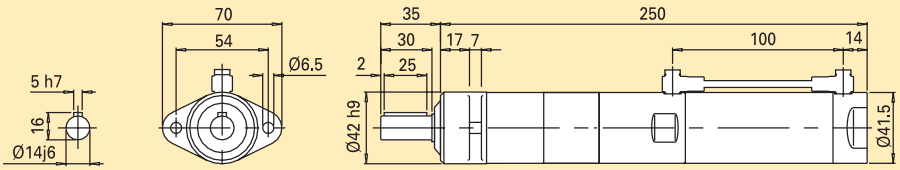


Optional accessories

page 42.

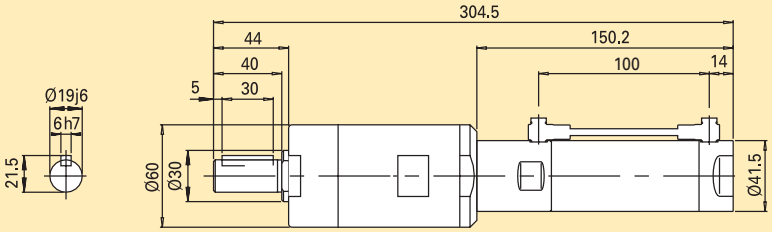
Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

LZB 33LB AR0026-11

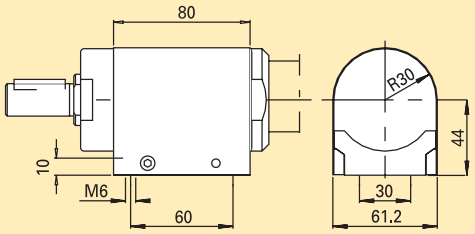


Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

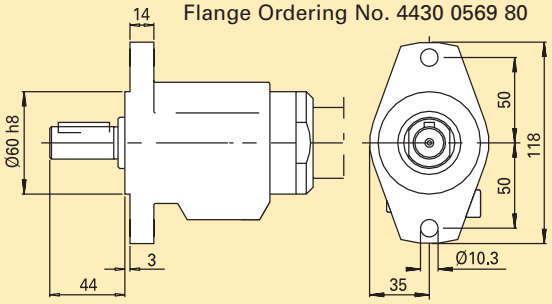
LZB 33LB AR0015-11
LZB 33LB AR0011-11
LZB 33LB AR0008-11
LZB 33LB AR0006-11
LZB 33LB AR0005-11



Foot Ordering No. 4430 0178 80



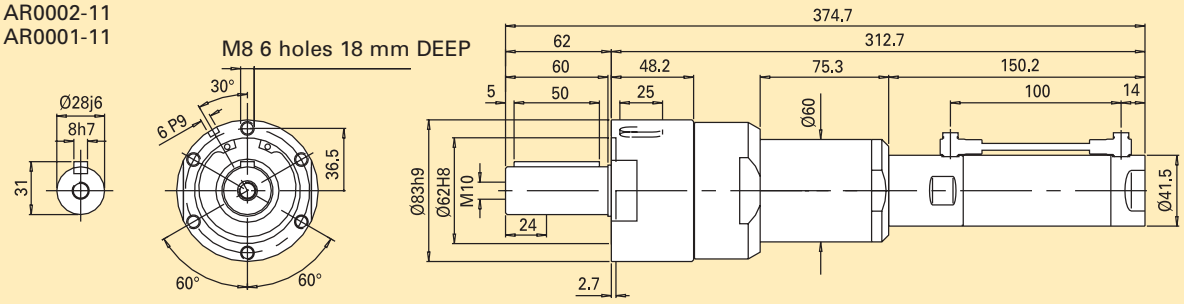
Flange Ordering No. 4430 0569 80



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 motor 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).

For optional lubrication free vanes and/or threaded shafts see page 42

Data at air pressure 6.3 bar (91psi)

Type	Ordering No.	Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Air cons. at max output		Weight		Shaft loading code [1]
		kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	
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

Type	Ordering No.	Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Air cons. at max output		Weight		Shaft loading code [1]
		kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	
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

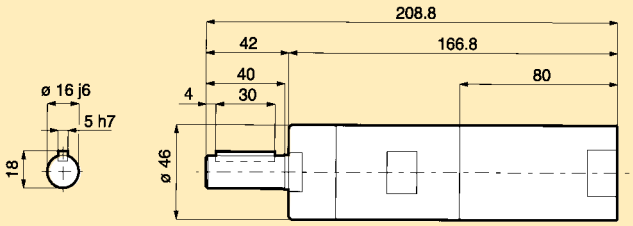
Type	Ordering No.	Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Air cons. at max output		Weight		Shaft loading code [1]
		kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	
Reversible														
LZB 42 AR170-11	8411 0423 05	0.53	0.71	8100	0.62	0.46	0.7	0.52	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.*

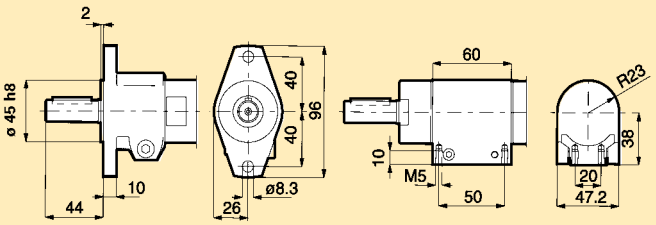
Dimensions (mm) **Conversion factor 1mm = 0.04 inch**

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

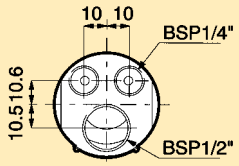
Reversible
LZB 42 AR170-11
LZB 42 AR050-11
LZB 42 AR030-11
LZB 42 AR020-11
LZB 42 AR010-11
LZB 42 AR007-11
LZB 42 AR004-11



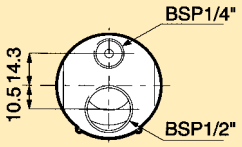
Optional Mountings



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



Reversible

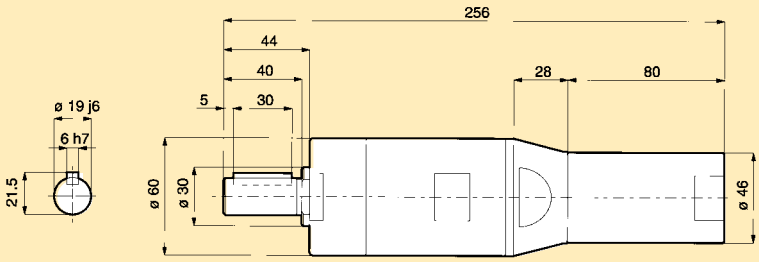


Non-Reversible

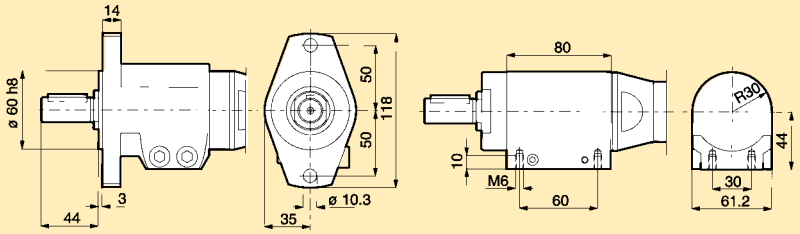
All versions

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



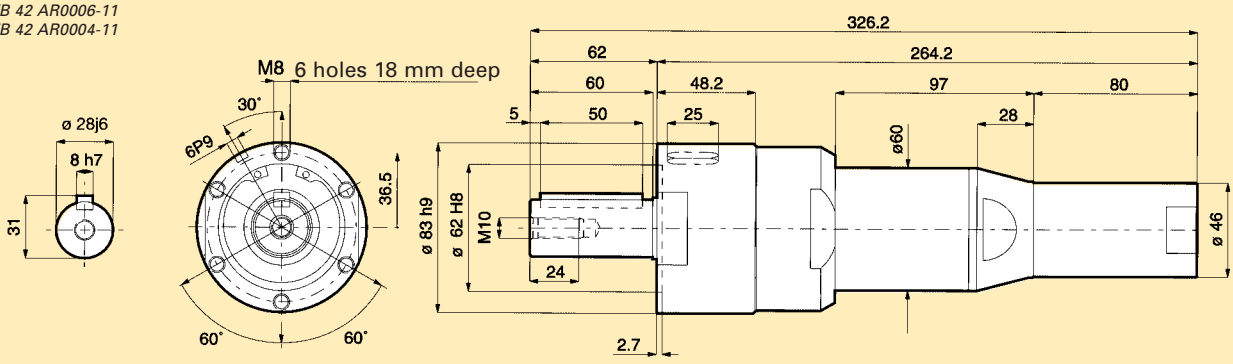
Optional Mountings



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

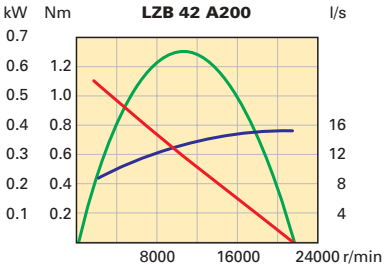
Non reversible
LZB 42 A0008-11
LZB 42 A0005-11
LZB 42 AV0008-11
LZB 42 AV0005-11

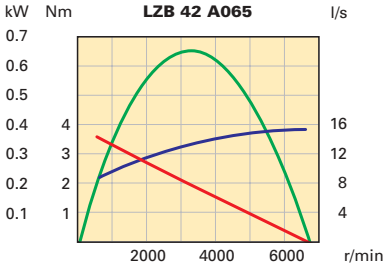
Reversible
LZB 42 AR0006-11
LZB 42 AR0004-11

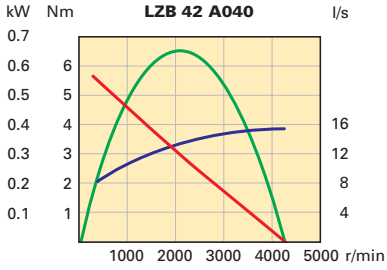


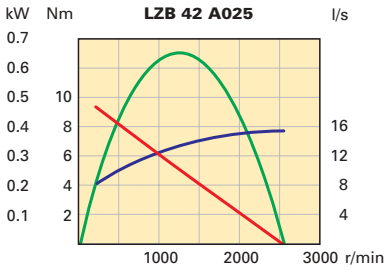
LZB 42 Performance curves at air pressure 6.3 bar (91psi)

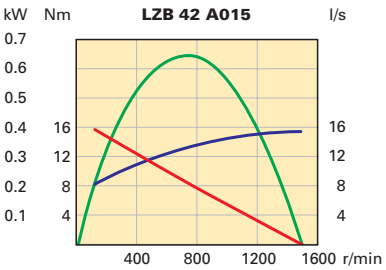
Non-Reversible

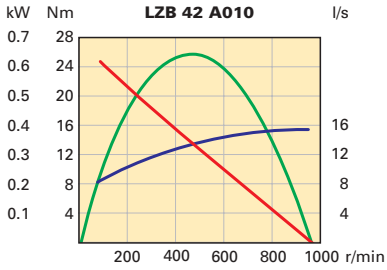


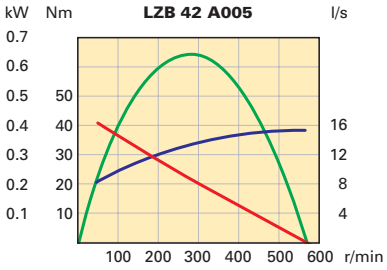


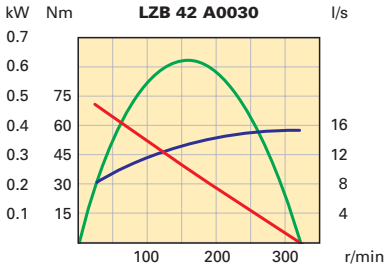


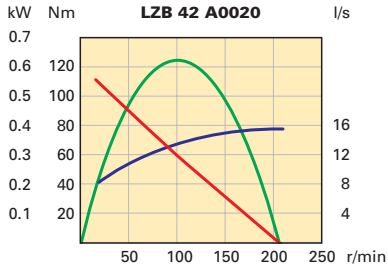


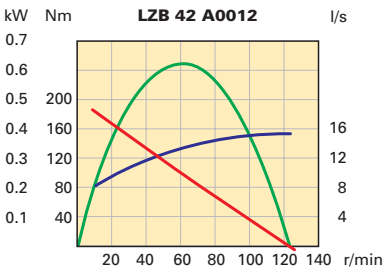


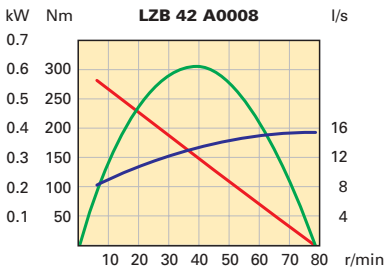


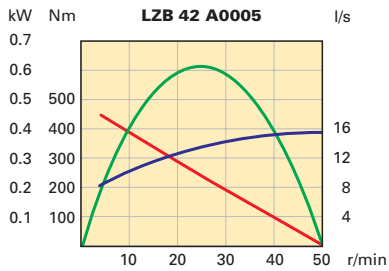






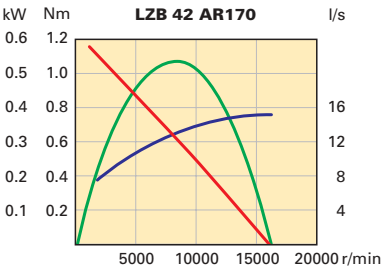


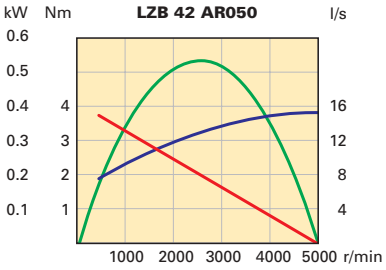


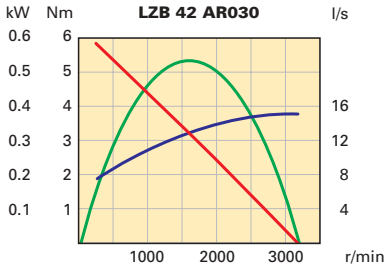


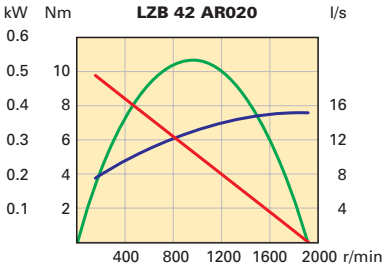
LZB 42 Performance curves at air pressure 6.3 bar (91psi)

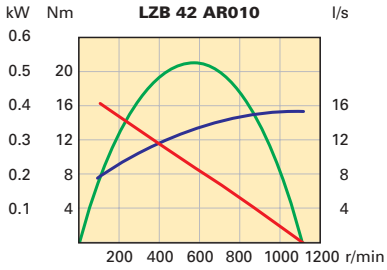
Reversible

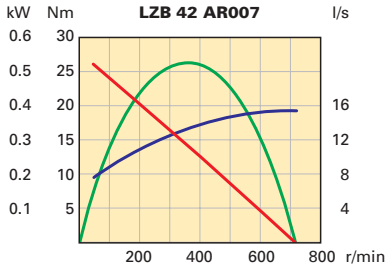


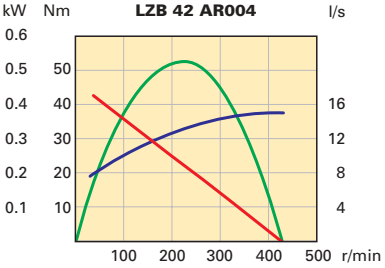


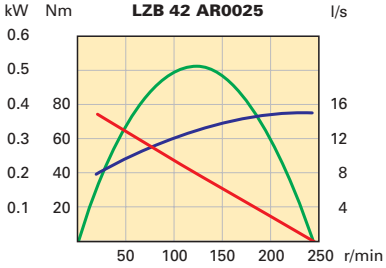


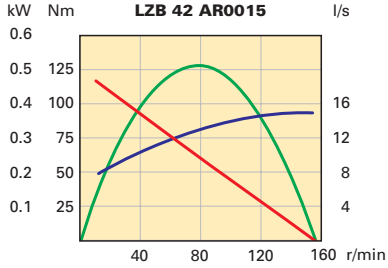


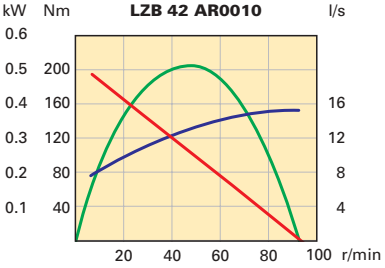


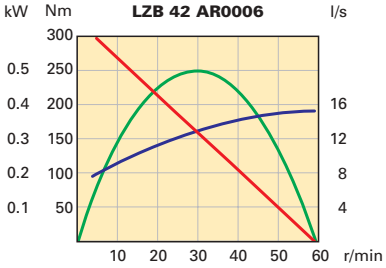


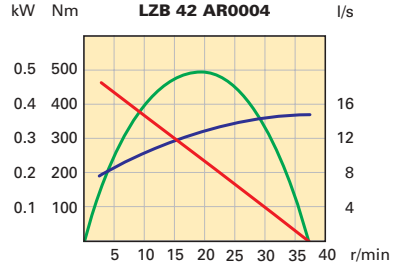












Conversion factors)*
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

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

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

Vane motor 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).

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]
LZB 46	8411-	8411-													
Clockwise rotation															
A200-	0460 09	0469 00	0.84	1.13	10800	0.74	0.55	1.2	0.88	21000	16.5	35	1.2	2.65	e
A065-	0460 17	0469 18	0.84	1.13	3300	2.4	1.8	3.9	2.9	6700	16.5	35	1.2	2.65	e
A040-	0460 25	0469 26	0.84	1.13	2100	3.8	2.8	6.2	4.6	4200	16.5	35	1.2	2.65	e
A025-	0460 33	0469 34	0.84	1.13	1280	6.3	4.6	10	7.4	2550	16.5	35	1.2	2.65	e
A015-	0460 41	0469 42	0.83	1.11	750	10.6	7.8	16	12	1500	16.5	35	1.3	2.9	e
A010-	0460 58	0469 59	0.83	1.11	480	17	12	25	18	960	16.5	35	1.3	2.9	e
A005-	0460 66	0469 67	0.83	1.11	290	27	20	45	33	570	16.5	35	1.3	2.9	e
A0030-	0460 74	0469 75	0.81	1.09	160	48	35	75	55	320	16.5	35	2.7	6.0	g
A0020-	0460 82	0469 83	0.81	1.09	100	75	55	120	88	200	16.5	35	2.7	6.0	g
A0012-	0460 90	0469 91	0.81	1.09	62	125	92	200	150	125	16.5	35	2.7	6.0	g
A0008-	0461 08	–	0.79	1.06	40	190	140	310	230	80	16.5	35	4.9	10.8	h
A0005-	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

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]
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

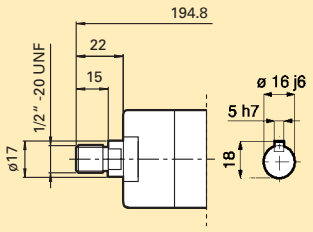
[1] For Shaft loading curves, see page 12. [2] Suffix. -11 = Keyed Shaft -12 = Threaded Shaft.

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

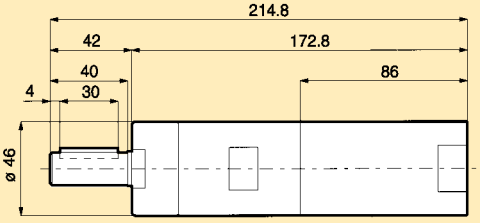
Non reversible
LZB 46 A200-11/12
LZB 46 A065-11/12
LZB 46 A040-11/12
LZB 46 A025-11/12
LZB 46 A015-11/12
LZB 46 A010-11/12
LZB 46 A005-11/12
LZB 46 AV200-11
LZB 46 AV065-11
LZB 46 AV040-11
LZB 46 AV025-11
LZB 46 AV015-11
LZB 46 AV010-11
LZB 46 AV005-11

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

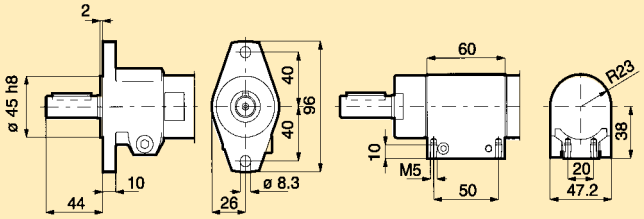
Threaded shaft



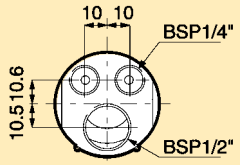
Keyed shaft



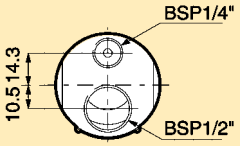
Optional Mountings



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



Reversible



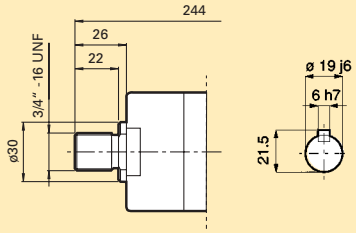
Non-Reversible

All versions

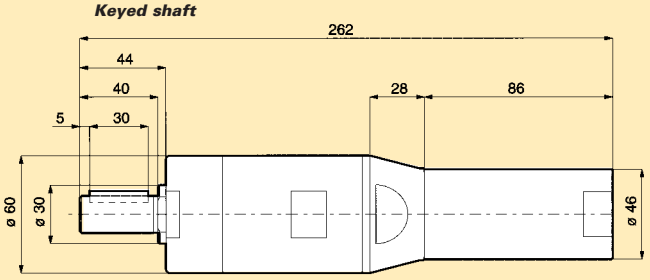
Non reversible
LZB 46 A0030-11/12
LZB 46 A0020-11/12
LZB 46 A0012-11/12
LZB 46 AV0030-11
LZB 46 AV0020-11
LZB 46 AV0012-11

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

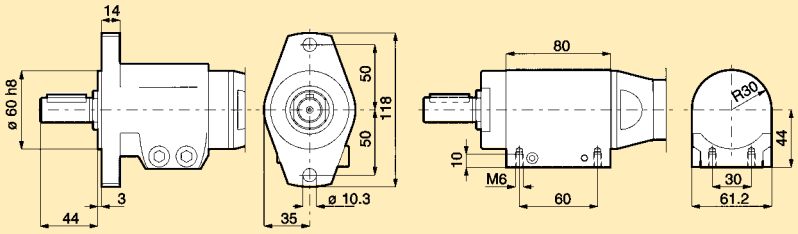
Threaded shaft



Keyed shaft



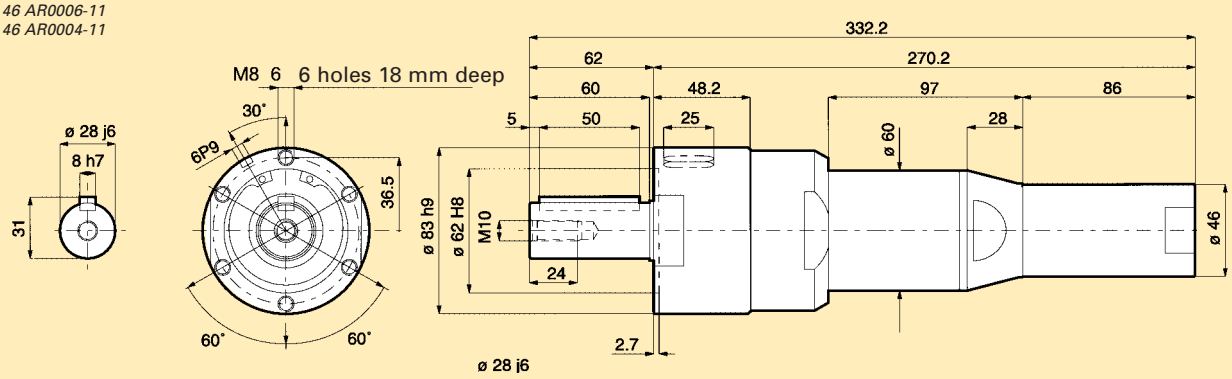
Optional Mountings



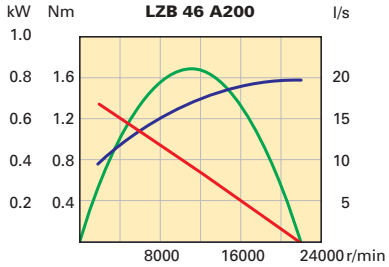
Flange Ordering No. 4430 0569 80 Foot Ordering No. 4430 0178 80

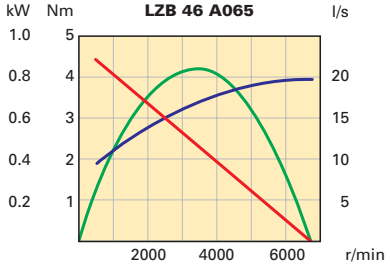
Non reversible
LZB 46 A0008-11
LZB 46 A0005-11
LZB 46 AV0008-11
LZB 46 AV0005-11

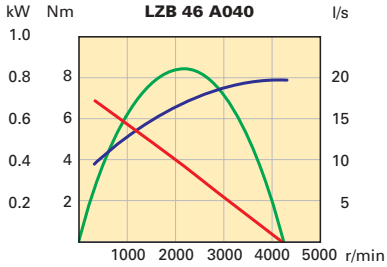
Reversible
LZB 46 AR0006-11
LZB 46 AR0004-11

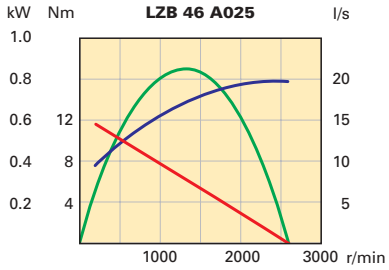


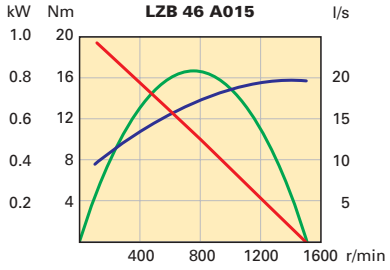
LZB 46 Performance curves at air pressure 6.3 bar (91psi)
Non-Reversible

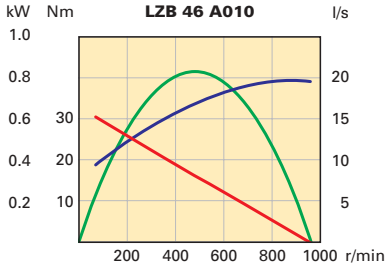


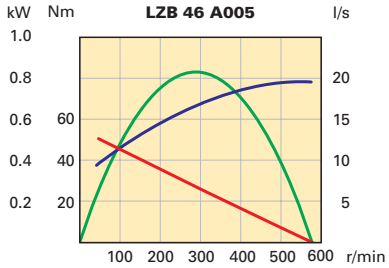


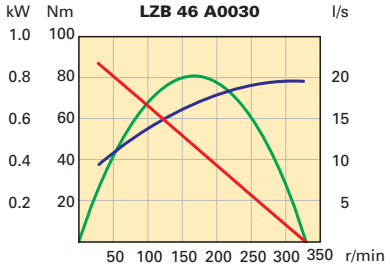


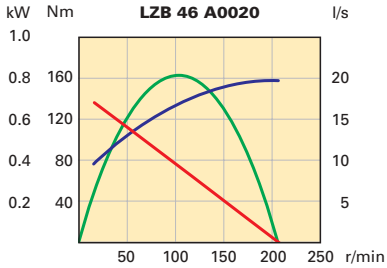


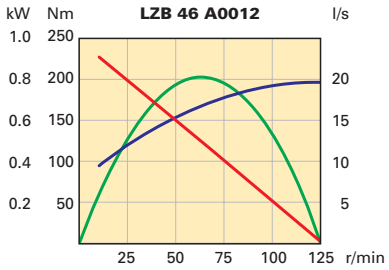


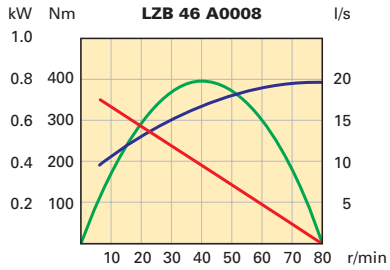


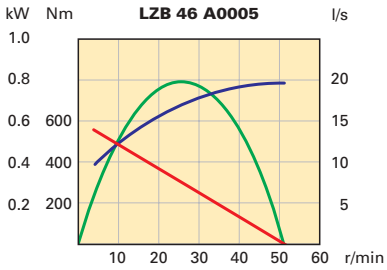






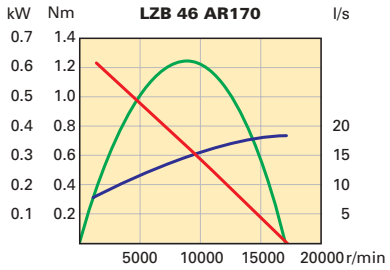


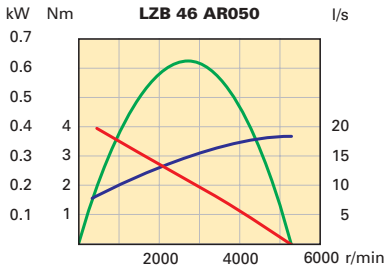


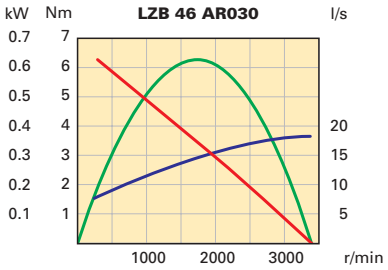


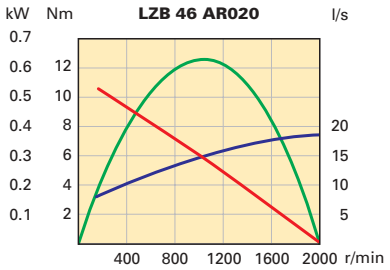
LZB 46 Performance curves at air pressure 6.3 bar (91psi)

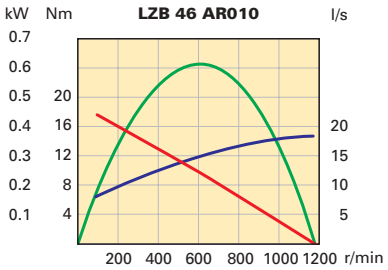
Reversible

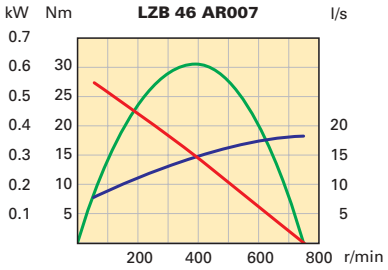


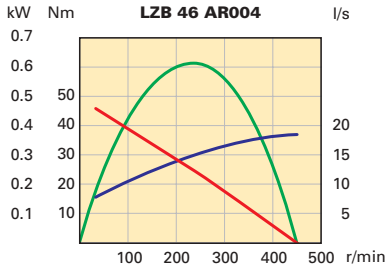


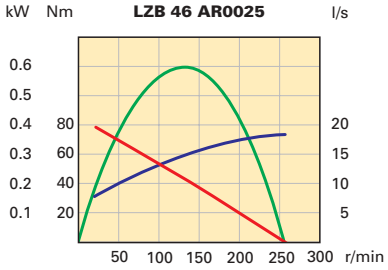


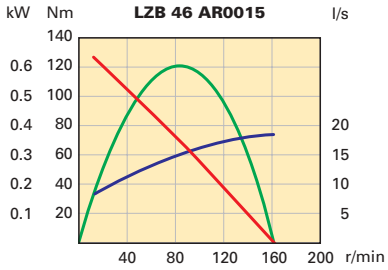


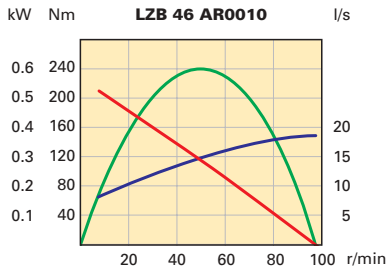


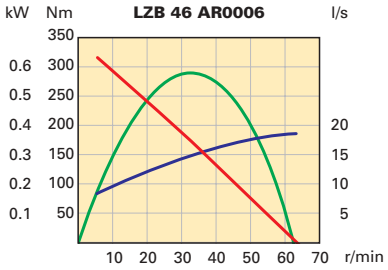


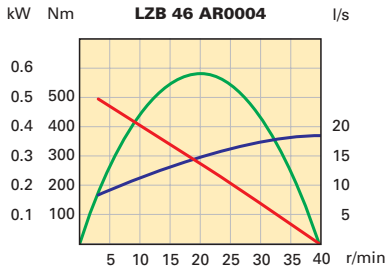












Vane motor LZB 54

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).

For optional lubrication free vanes and/or threaded shafts see page 42

Data at air pressure 6.3 bar (91psi)

Type	Ordering No.	Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Air cons. at max output		Weight		Shaft loading code [1]
		kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	
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

Type	Ordering No.	Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Air cons. at max output		Weight		Shaft loading code [1]
		kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	
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

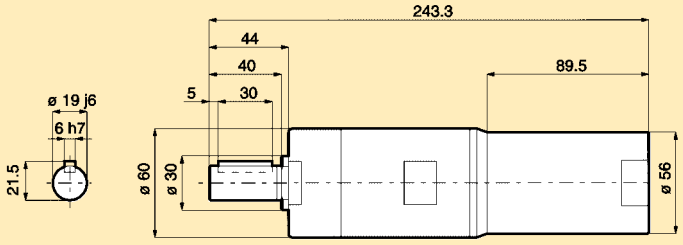
Type	Ordering No.	Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Air cons. at max output		Weight		Shaft loading code [1]
		kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	l/s	cfm	kg	lb	
Reversible														
LZB 54 AR130-11	8411 0563 05	0.82	1.10	6800	1.2	0.88	1.3	1.0	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

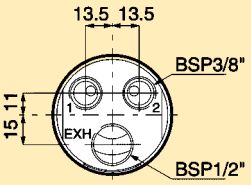
[1] *For Shaft loading curves, see page 12.*

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

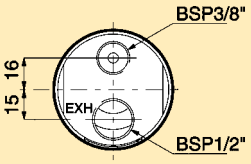
Non reversible
LZB 54 A180-11
LZB 54 A050-11
LZB 54 A030-11
LZB 54 A020-11
LZB 54 A010-11
LZB 54 A007-11
LZB 54 A005-11
LZB 54 AV180-11
LZB 54 AV050-11
LZB 54 AV030-11
LZB 54 AV020-11
LZB 54 AV010-11
LZB 54 AV007-11
LZB 54 AV005-11

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





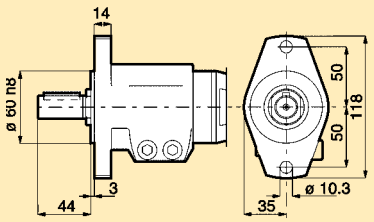
Reversible



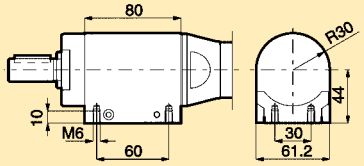
Non-Reversible

All versions

Optional Mountings



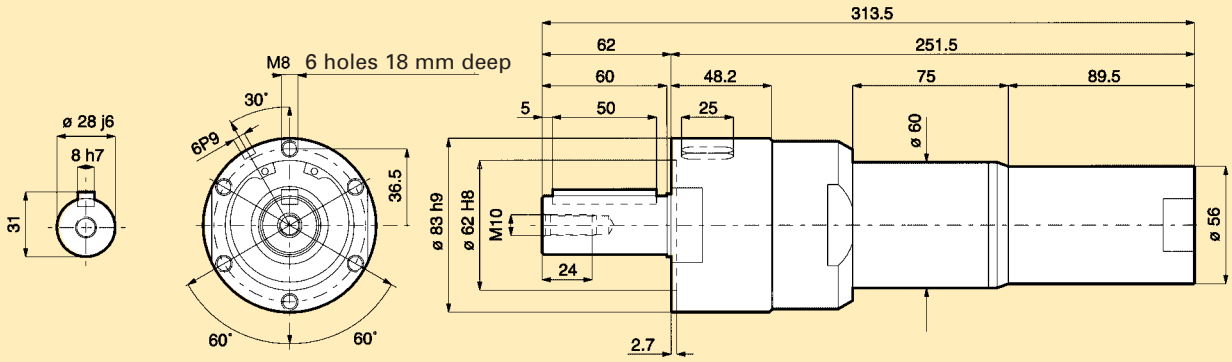
Flange Ordering No. 4430 0569 80



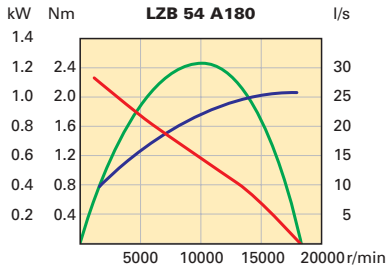
Foot Ordering No. 4430 0178 80

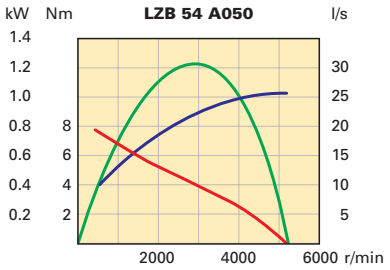
Non reversible
LZB 54 A0025-11
LZB 54 A0017-11
LZB 54 A0012-11
LZB 54 AV0025-11
LZB 54 AV0017-11
LZB 54 AV0012-11

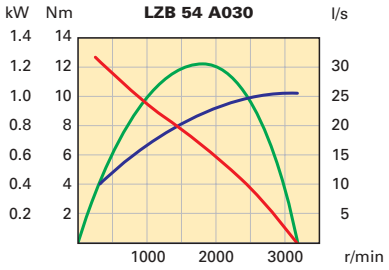
Reversible
LZB 54 AR0020-11
LZB 54 AR0012-11
LZB 54 AR0009-11

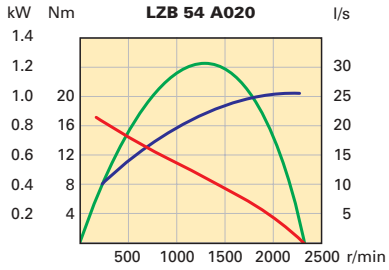


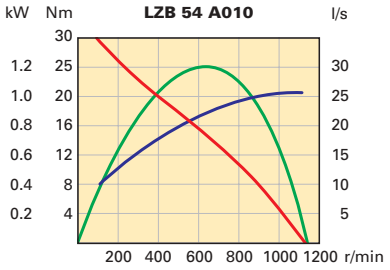
LZB 54 Performance curves at air pressure 6.3 bar (91psi)
Non-Reversible

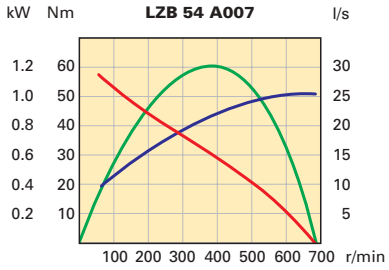


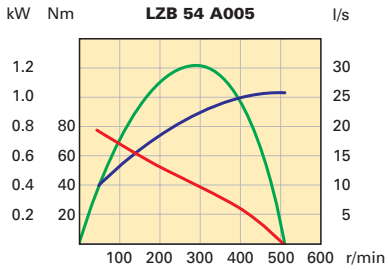


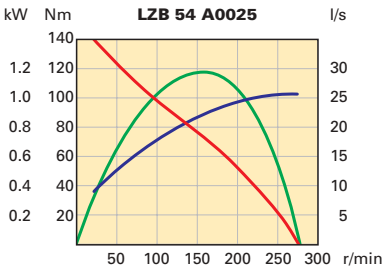


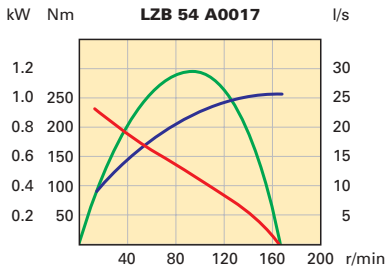


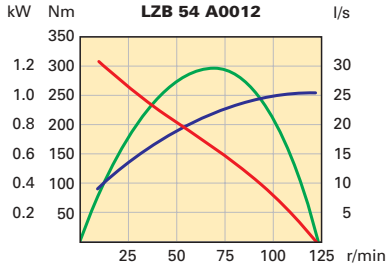






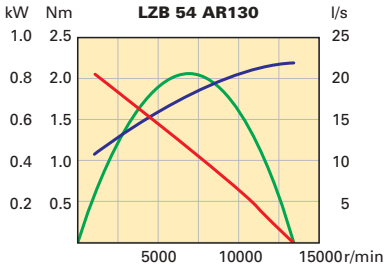


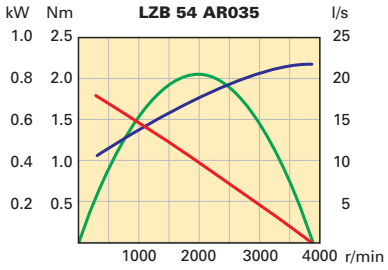


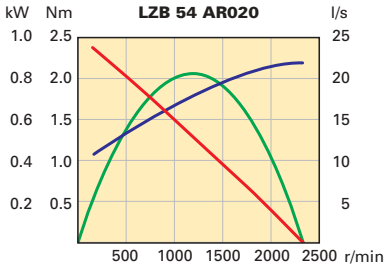


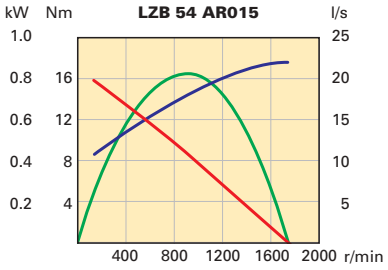
LZB 54 Performance curves at air pressure 6.3 bar (91psi)

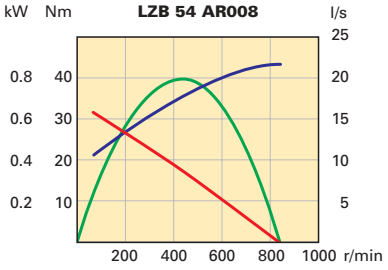
Reversible

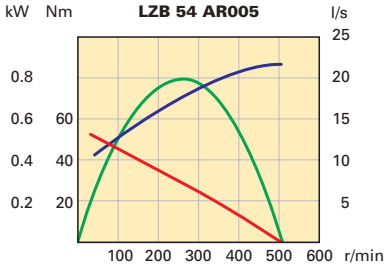


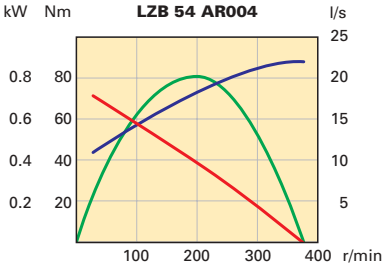


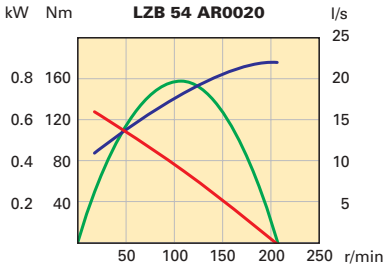


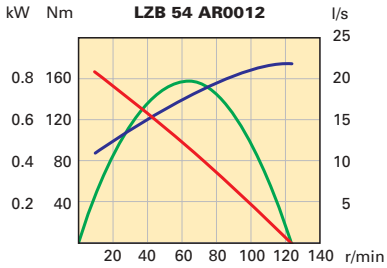


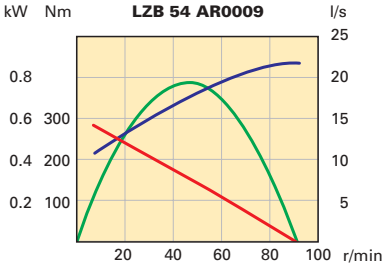












Conversion factors)*
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

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

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

Accessories for LZB air motors

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

Chuck type	Mount	Body diameter	Capacity (mm)	Ordering No. (mm)
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

	Capacity		Ordering No.
	mm	in	
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

	A	B	C
	Sinter bronze	LBB	ECSB-2
Motor			
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 0508 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 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.


ATLAS COPCO
442 PC


BZL

LZL Vane motors

Introduction

LZL vane motors 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 only 21 components, these motors are ruggedly constructed and offer a long service life.

Type LZL vane motors are available in four sizes, offering outputs of 1.3 kW, 2.3 kW, 3.4 kW and 5,2 kW respectively. 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.

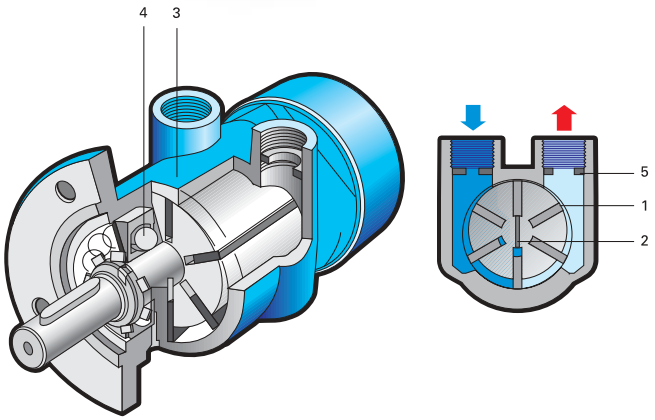


Figure 19

The general configuration and key design featurs of the Type LZL large vane motor are illustrated in Figure 19.

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 20. These values have been calculated for shaft and bearing working lives of at least 1,000 hours at a speed that gives maximum output.

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 21, 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).

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).

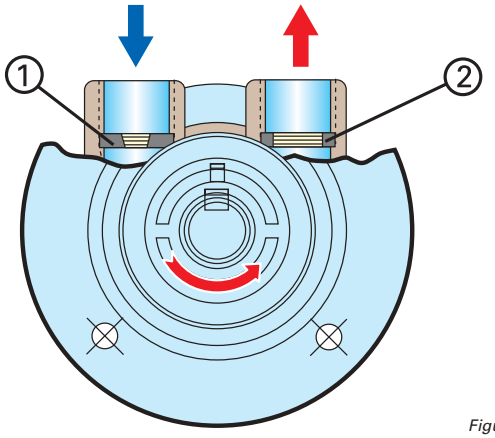
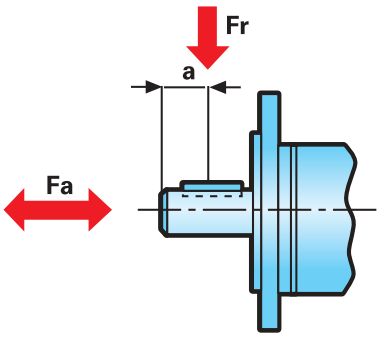


Figure 21



		NON-REVERSIBLE DUTY		REVERSIBLE DUTY	
Motor type	Connection thread (BSP)	Inlet hose diameter (mm)	Exhaust hose dimaeter (mm)	Inlet hose diameter (mm)	Exhaust hose diameter (mm)
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

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.

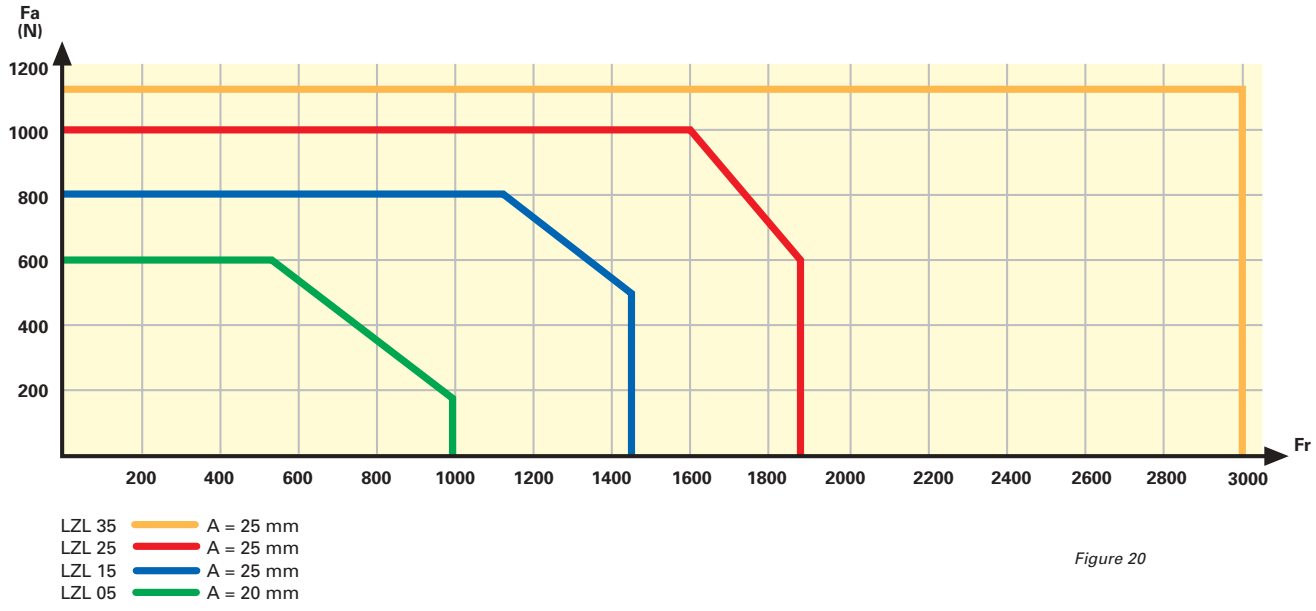


Figure 20

LZL Vane motors

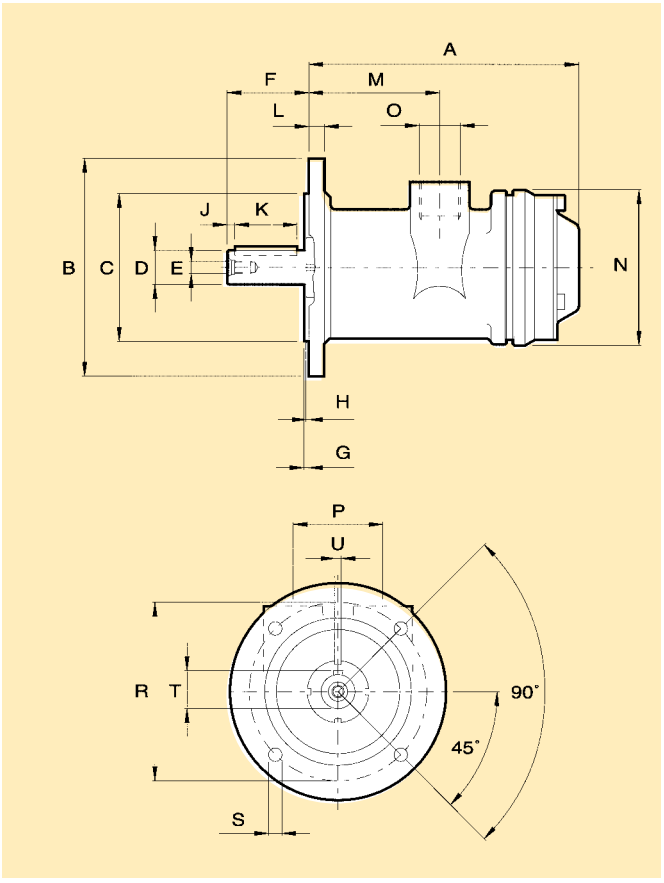
1.3 – 6.5 kW
1.7 – 8.7 hp

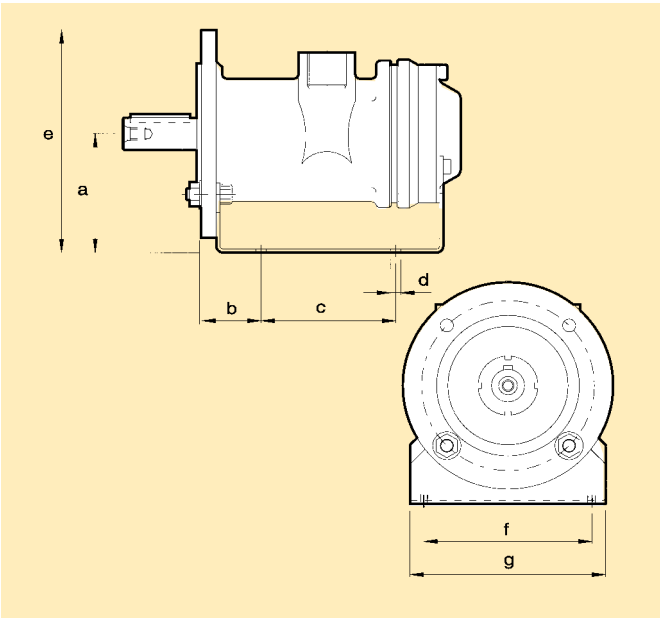
For EX certification according to the ATEX directive (Ex II 2G T2 IIC D240°C) use Ordering No. 9834 1109 00 (book as one delivery together with motor).
LZL 35 is not avalible Ex certified.

Data at air pressure 6.3 bar (91psi)

Type	Ordering N	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	Max allowed speed r/min	Air cons. at max output l/s	cfm	Weight kg	lb
LZL 05	8411 1005 09	1.3	1.7	4200	3.0	4.0	4.8	6.5	9000		37	78	3.9	8.6
Unrestricted*		1.7	2.3	5400	3.0	4.1	4.8	6.5		9200	50	106	3.9	8.6
LZL 15	8411 1005 17	2.3	3.1	3380	6.5	8.8	10.9	14.8	7000		61	129	7.1	15.7
Unrestricted*		3.2	4.3	4500	6.8	9.2	10.9	14.8		7200	87	184	7.1	15.7
LZL 25	8411 1005 25	3.4	4.6	2800	11.6	15.7	18	24.4	5800		86	182	11.3	24.9
Unrestricted*		5.0	6.7	4000	12.0	16.3	18	24.4		6000	135	286	11.3	24.9
LZL 35	8411 1005 74	5.2	7.0	2500	20.0	27.1	32	43.4	5000		130	275	20	44.1
Unrestricted*		6.5	8.7	3100	20.0	27.2	32	43.4		5000	160	339	20	44.1

*) *Unrestricted, the motors should not be run above max allowed speed*





Foot bracket	LZL 05	LZL 15	LZL 25
Ordering No.	4430 0304 80	4430 0305 80	4430 0306 80

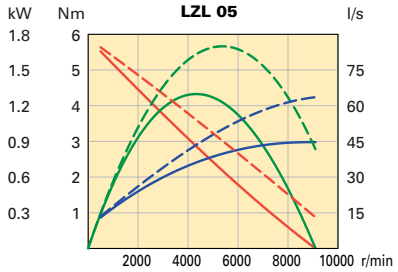
Foot bracket
Measurements (mm)

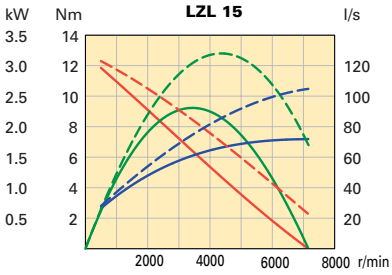
Type	a	b	c	d	e	f	g
LZL 05	56	32	71	5.8	109	90	104
LZL 15	80	40	90	7	150	112	130
LZL 25	90	53	100	10	170	125	146

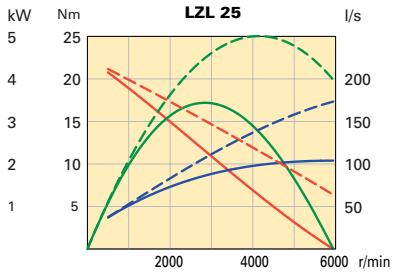
Air motor
Measurements (mm) Conversion factor 1 mm = 0.04 inch

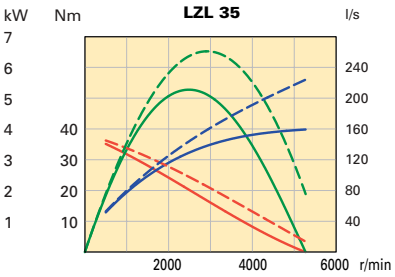
Type	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U
LZL 05	141	105	70j6	18j6	M5	44	2.5	2.5	5	30	8	69	83	G 1/2"	44	85	6.7	20.5	6h9
LZL 15	174	140	95j6	22j6	M8	52.5	3	0	5	40	10	84	100	G 3/4"	58	115	8.8	24.5	6h9
LZL 25	206	160	110j6	28j6	M10	62.5	3.5	1.8	5	50	12	103	120	G 1"	70	130	8.8	31	8h7
LZL 35	238	200	130j6	28j6	M10	62,5	3,5	1,8	5	50	14	119	134	G 1 1/4"	70	165	12	31	8h7

LZL 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.*

LZL Vane motor/gear unit combinations

Combined with helical or worm 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 8:1 to 240:1, corresponding to a speed range of 460 to 10 r/min and an output torque of up to 5000 Nm.

Helical gear units type HG.

Helical gear units are available in 2-stage and 3-stage configurations. They deliver high efficiency levels and are available in wide choice of ratios, Figure 22.

Figure 22

Worm gear units type BS

Worm gear units are smaller and lighter in operation than helical gear units. However, they offer lower levels of efficiency. Where the highest gear ratios are required, it should be noted that starting efficiency can be as low as 30% , Figure 23.

A hollow shaft can be obtained by taking out the cylindrical output shaft for BS 50, BS 63 and BS 71.

Figure 23

Note. Gear units with different reduction ratios can be supplied to special order. For comprehensive information on these versions, please contact your local Atlas Copco representative.

Shaft loading

Motors with helical gear units

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 50% of the radial load.
All units will accept 100% momentary overloads on above stated capacities

Motors with worm gear units

Worm gear units have individual output shafts and the allowable radial load is therefore different for each version. The maximum allowable radial load, at the half way point on the shaft, is stated in the worm gear data tables on page 62, 64 and 66.
If the load is applied at another point on the shaft, the allowable radial load can be calculated by multiplying the stated value by the factor indicated by Figure 25. The permitted axial load is 40% of the radial load.

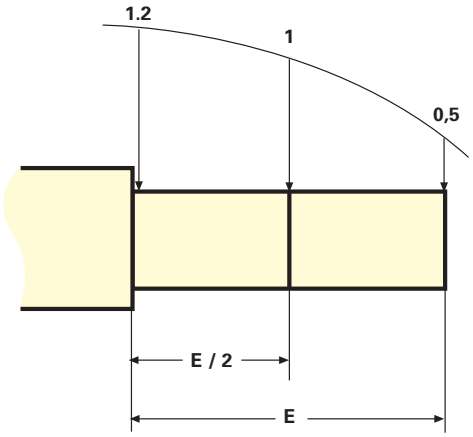


Figure 25

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 the following speeds;

Helical gear units

Motor plus gear	Max input speed r/min
LZL 05-HG222	6300
LZL 05-HG432	6300
LZL 05-HG632	6300
LZL 15-HG222	6300
LZL 15-HG422	4300
LZL 15-HG432	4300
LZL 15-HG632	4300
LZL 15-HG832	4300
LZL 25-HG422	4300
LZL 25-HG522	4300
LZL 25-HG622	4300
LZL 25-HG732	4300
LZL 25-HG832	4300
LZL 35-HG422	4300
LZL 35-HG522	4300
LZL 35-HG622	4300
LZL 35-HG722	4300
LZL 35-HG822	4300
LZL 35-HG931	4300

Worm gear units

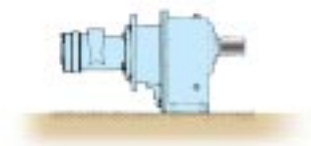
Gear unit type	Max input speed r/min
BS 50	5500
BS 63	5000
BS 71	4500
BS 88	4000
BS 112	3000

Mounting

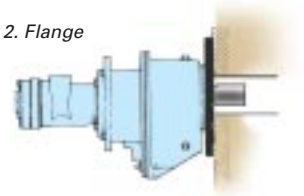
Motors with helical gear units

These units can be supplied with two different types of mounting arrangement: Foot or Flange as illustrated in fig. 26. The type required must be specified when ordering.

1. Foot



2. Flange



Mounting position

Figure 26

Motors with worm gear units

Suggested mounting arrangements are illustrated in Figure 27. Figure 28 shows how the units can be mounted if the mounting brackets are relocated. When the units are to be mounted vertically, the motor should point upwards.

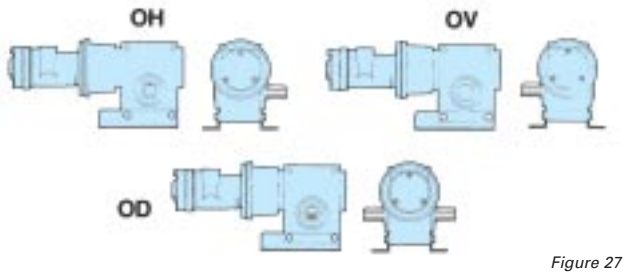


Figure 27

The worm gears are available in different dispositions.

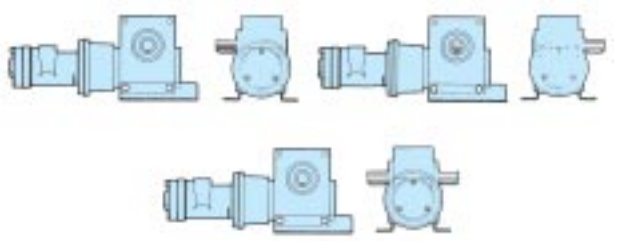


Figure 28

The dispositions are achieved by turning the motor 180° and for BS 50, -63, -71 by moving the attachment brackets.

Temperature

Helical gear units can operate within an ambient temperature range of –30°C and +60°C.

It is recommended that worm gear units are only operated within an ambient temperature range of –30°C and +30°C.

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

Air motor LZL 05
with helical gear units

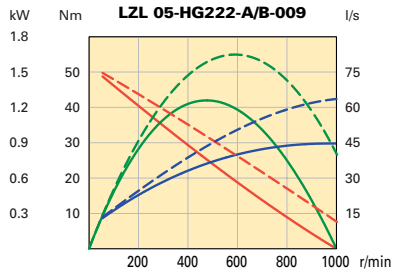
1.3 – 1.6 kW
1.7 – 2.2 hp

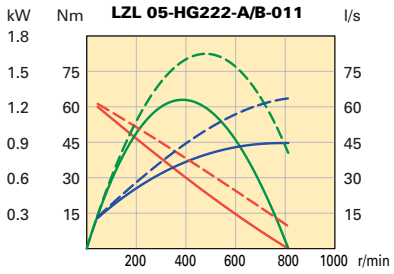
Performance at 6.3 bar (91 psi)

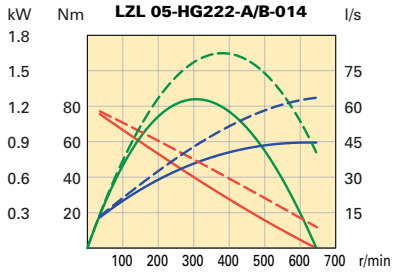
Designation	Ordering No.	Ratio	Max output kW	hp	Speed at max output r/min	Torque at max output Nm	lbf.ft	Min starting torque Nm	lbf.ft	Free speed r/min	Max allowed speed r/min	Air cons. at max output l/s	cfm	Weight kg	lb	Max radial load at max output N
LZL 05-HG222-A-009	8411 1700 07	9.1	1.3	1.7	462	26	19	42	31	990		37	78	21.3	47	3660
LZL 05-HG222-B-009	8411 1701 06	9.1	1.3	1.7	462	26	19	42	31	990		37	78	19.3	43	3660
Unrestricted*		9.1	1.6	2.2	594	26	20	42	31		1012	50	106	19.3	43	3660
LZL 05-HG222-A-011	8411 1700 15	11.2	1.3	1.7	377	32	24	52	38	807		37	78	21.3	47	3740
LZL 05-HG222-B-011	8411 1701 14	11.2	1.3	1.7	377	32	24	52	38	807		37	78	19.3	43	3740
Unrestricted*		11.2	1.6	2.2	484	32	24	52	38		825	50	106	19.3	43	3740
LZL 05-HG222-A-014	8411 1700 23	14.1	1.3	1.7	299	40	30	65	48	640		37	78	21.3	47	3880
LZL 05-HG222-B-014	8411 1701 22	14.1	1.3	1.7	299	40	30	65	48	640		37	78	19.3	43	3880
Unrestricted*		14.1	1.6	2.2	384	41	30	65	48		655	50	106	19.3	43	3880
LZL 05-HG222-A-020	8411 1700 31	20.2	1.3	1.7	208	58	43	94	69	445		37	78	21.3	47	4000
LZL 05-HG222-B-020	8411 1701 30	20.2	1.3	1.7	208	58	43	94	69	445		37	78	19.3	43	4000
Unrestricted*		20.2	1.6	2.2	267	59	43	94	69		455	50	106	19.3	43	4000
LZL 05-HG222-A-032	8411 1700 49	31.7	1.3	1.7	133	91	67	148	109	284		37	78	21.3	47	4000
LZL 05-HG222-B-032	8411 1701 48	31.7	1.3	1.7	133	91	67	148	109	284		37	78	19.3	43	4000
Unrestricted*		31.7	1.6	2.2	170	92	68	148	109		290	50	106	19.3	0	4000
LZL 05-HG222-A-041	8411 1700 56	41.5	1.3	1.7	101	120	88	193	143	217		37	78	21.3	47	4000
LZL 05-HG222-B-041	8411 1701 55	41.5	1.3	1.7	101	120	88	193	143	217		37	78	19.3	43	4000
Unrestricted*		41.5	1.6	2.2	130	121	89	193	143		222	50	106	19.3	43	4000
LZL 05-HG432-A-058	8411 1702 05	58.4	1.2	1.7	72	166	122	268	198	154		37	78	33.3	73	6400
LZL 05-HG432-B-058	8411 1703 04	58.4	1.2	1.7	72	166	122	268	198	154		37	78	31.3	69	6400
Unrestricted*		58.4	1.6	2.2	92	170	125	268	198		158	50	106	31.3	69	6400
LZL 05-HG432-A-074	8411 1702 13	74.0	1.2	1.7	57	210	155	339	250	122		37	78	33.3	73	6760
LZL 05-HG432-B-074	8411 1703 12	74.0	1.2	1.7	57	210	155	339	250	122		37	78	31.3	69	6760
Unrestricted*		74.0	1.6	2.2	73	215	159	339	250		124	50	106	31.3	69	6760
LZL 05-HG432-A-097	8411 1702 21	96.5	1.2	1.7	44	274	202	443	327	93		37	78	33.3	73	7160
LZL 05-HG432-B-097	8411 1703 20	96.5	1.2	1.7	44	274	202	443	327	93		37	78	31.3	69	7160
Unrestricted*		96.5	1.6	2.2	56	281	207	443	327		95	50	106	31.3	69	7160
LZL 05-HG632-A-143	8411 1704 03	143.4	1.2	1.7	29	407	300	658	485	63		37	78	35.3	78	7200
LZL 05-HG632-B-143	8411 1705 02	143.4	1.2	1.7	29	407	300	658	485	63		37	78	32.3	71	7200
Unrestricted*		143.4	1.6	2.2	38	417	308	658	485		64	50	106	32.3	71	7200
LZL 05-HG632-A-242	8411 1704 11	242.4	1.2	1.7	17	688	507	1112	820	37		37	78	35.3	78	7200
LZL 05-HG632-B-242	8411 1705 10	242.4	1.2	1.7	17	688	507	1112	820	37		37	78	32.3	71	7200
Unrestricted*		242.4	1.6	2,.2	22	705	520	1112	820		38	50	106	32.3	71	7200

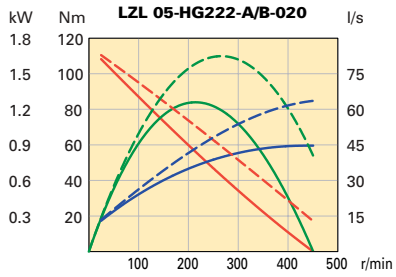
**) Unrestricted, the motors should not be run without load*

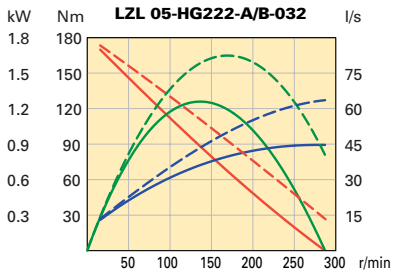
Air motor LZL 05 with helical gear units type HG
Performance curves at air pressure 6.3 bar (91psi)

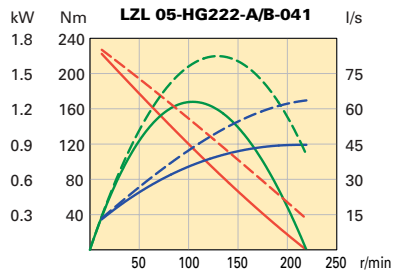


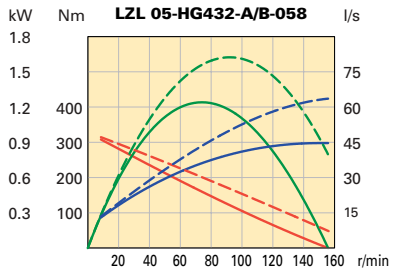


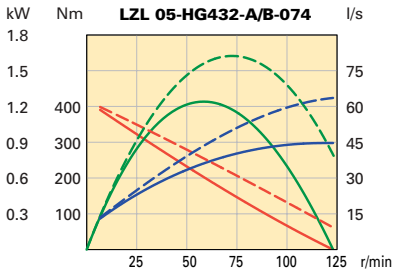


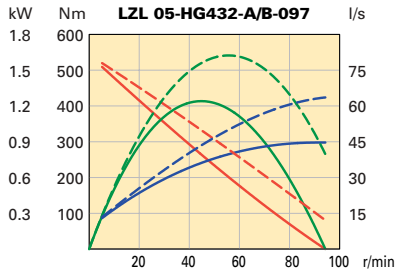


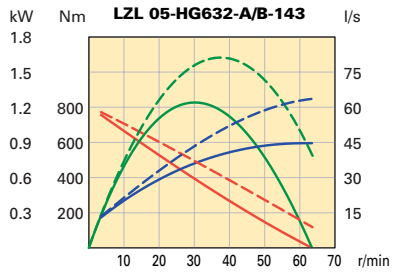


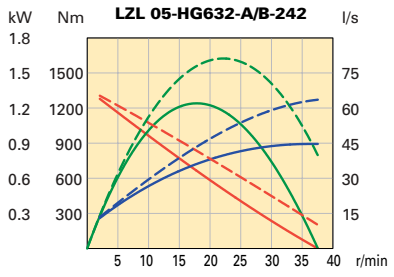












Performance with restrictors

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.*

Air motor LZL 15
with helical gear units

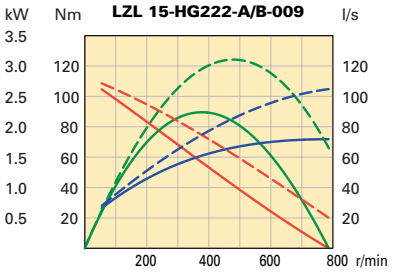
2.2 – 3.1 kW
3.0 – 4.2 hp

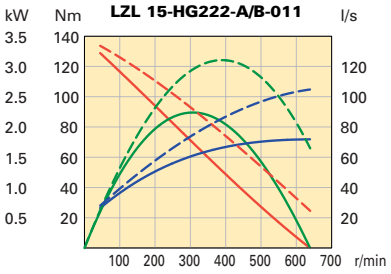
Performance at 6.3 bar (91 psi)

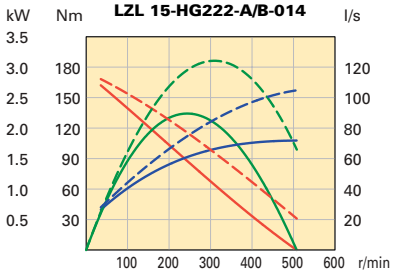
			Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Max allowed speed	Air cons. at max output		Weight		Max radial load at max output
Designation	Ordering No.	Ratio	kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	r/min	l/s	cfm	kg	lb	N
LZL 15-HG222-A-009	8411 1706 01	9.1	2.2	3.0	371	58	42	96	71	770		61	129	24.1	53.1	3570
LZL 15-HG222-B-009	8411 1707 00	9.1	2.2	3.0	371	58	42	96	71	770		61	129	22.1	48.7	3570
Unrestricted*		9.1	3.1	4.2	495	60	44	96	71		792	87	184	22.1	48.7	3570
LZL 15-HG222-A-011	8411 1706 19	11.2	2.2	3.0	303	71	52	118	87	628		61	129	24.1	53.1	3650
LZL 15-HG222-B-011	8411 1707 18	11.2	2.2	3.0	303	71	52	118	87	628		61	129	22.1	48.7	3650
Unrestricted*		11.2	3.1	4.2	403	74	54	118	87		646	87	184	22.1	48.7	3650
LZL 15-HG222-A-014	8411 1706 27	14.1	2.2	3.0	240	89	66	149	110	498		61	129	24.1	53.1	3730
LZL 15-HG222-B-014	8411 1707 26	14.1	2.2	3.0	240	89	66	149	110	498		61	129	22.1	48.7	3730
Unrestricted*		14.1	3.1	4.2	320	93	68	149	110		512	87	184	22.1	48.7	3730
LZL 15-HG222-A-020	8411 1706 35	20.2	2.2	3.0	167	128	95	214	158	346		61	129	24.1	53.1	3290
LZL 15-HG222-B-020	8411 1707 34	20.2	2.2	3.0	167	128	95	214	158	346		61	129	22.1	48.7	3290
Unrestricted*			3.1	4.2	222	133	98	214	158		356	87	184	22.1	48.7	3290
LZL 15-HG422-A-032	8411 1708 09	32.2	2.2	3.0	105	204	150	340	251	217		61	129	33.1	73.0	5360
LZL 15-HG422-B-032	8411 1709 08	32.2	2.2	3.0	105	204	150	340	251	217		61	129	31.1	68.6	5360
Unrestricted*		32.2	3.1	4.2	140	212	157	340	251		224	87	184	31.1	68.6	5360
LZL 15-HG422-A-043	8411 1708 17	43.2	2.2	3.0	78	274	202	457	337	162		61	129	33.1	73.0	5600
LZL 15-HG422-B-043	8411 1709 16	43.2	2.2	3.0	78	274	202	457	337	162		61	129	31.1	68.6	5600
Unrestricted*		43.2	3.1	4.2	104	285	210	457	337		167	87	184	31.1	68.6	5600
LZL 15-HG432-A-058	8411 1710 05	58.4	2.2	3.0	58	364	269	617	455	120		61	129	36.1	79.6	5910
LZL 15-HG432-B-058	8411 1711 04	58.4	2.2	3.0	58	364	269	617	455	120		61	129	34.1	75.2	5910
Unrestricted*		58.4	3.1	4.2	77	385	284	617	455		123	87	184	34.1	75.2	5910
LZL 15-HG532-A-074	8411 1712 03	74.0	2.2	3.0	46	461	340	782	577	95		61	129	36.1	79.6	4550
LZL 15-HG532-B-074	8411 1713 02	74.0	2.2	3.0	46	461	340	782	577	95		61	129	34.1	75.2	4550
Unrestricted*		74.0	3.1	4.2	61	488	360	782	577		97	87	184	34.1	75.2	4550
LZL 15-HG632-A-100	8411 1714 01	99.5	2.2	3.0	34	621	458	1053	776	70		61	129	38.1	84.0	7200
LZL 15-HG632-B-100	8411 1715 00	99.5	2.2	3.0	34	621	458	1053	776	70		61	129	35.1	77.4	7200
Unrestricted*		99.5	3.1	4.2	45	657	484	1053	776		72	87	184	35.1	77.4	7200
LZL 15-HG832-A-160	8411 1716 09	160.4	2.2	3.0	21	1001	738	1697	1251	44		61	129	81.1	178.8	20000
LZL 15-HG832-B-160	8411 1717 08	160.4	2.2	3.0	21	1001	738	1697	1251	44		61	129	77.1	170.0	20000
Unrestricted*		160.4	3.1	4.2	28	1059	781	1697	1251		45	87	184	77.1	170.0	20000
LZL 15-HG832-A-202	8411 1716 17	201.8	2.2	3.0	17	1259	929	2134	1574	35		61	129	81.1	178.8	19600
LZL 15-HG832-B-202	8411 1717 16	201.8	2.2	3.0	17	1259	929	2134	1574	35		61	129	77.1	170.0	19600
Unrestricted*		201.8	3.1	4.2	22	1331	982	2134	1574		36	87	184	77.1	170.0	19600

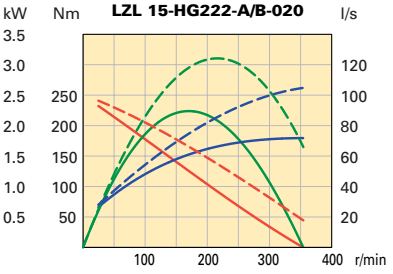
**) Unrestricted, the motors should not be run without load*

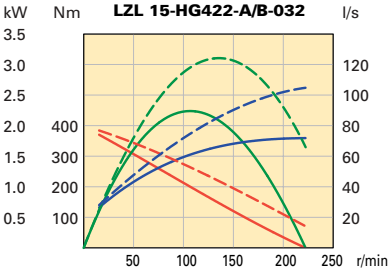
Air motor LZL 15 with helical gear units type HG
Performance curves at air pressure 6.3 bar (91psi)

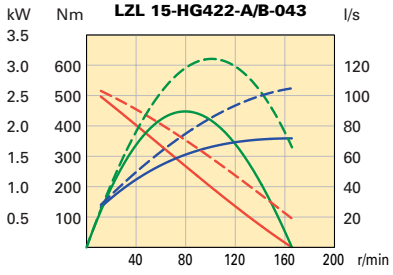


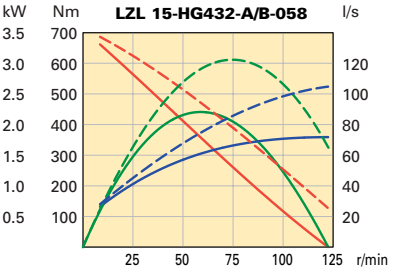


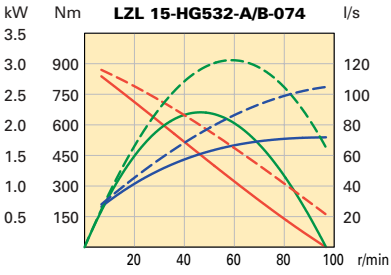


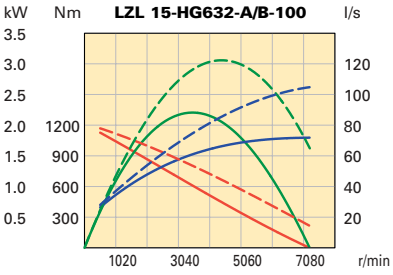


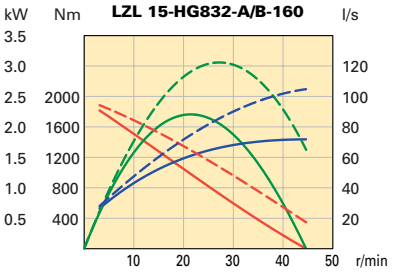


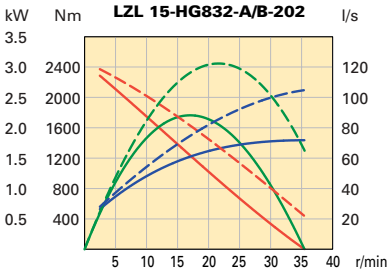












Performance with restrictors

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.*

Air motor LZL 25
with helical gear units

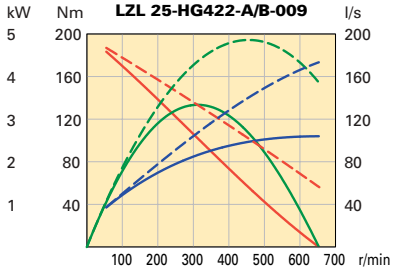
3.3 – 4.9 kW
4.4 – 6.5 hp

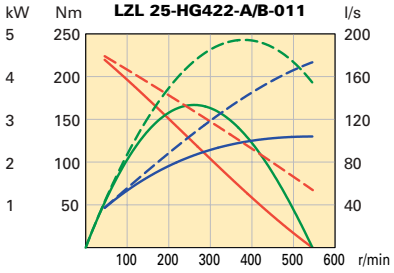
Performance at 6.3 bar (91 psi)

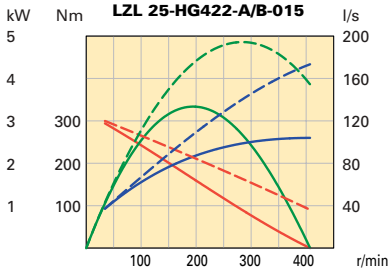
			Max output		Speed at max output	Torque at max output		Min starting torque		Free speed	Max allowed speed	Air cons. at max output		Weight		Max radial load at max output
Designation	Ordering No.	Ratio	kW	hp	r/min	Nm	lbf.ft	Nm	lbf.ft	r/min	r/min	l/s	cfm	kg	lb	N
LZL 25-HG422-A-009	8411 1718 07	9.1	3.3	4.4	306	103	76	159	118	635		86	182	37.3	82.2	4490
LZL 25-HG422-B-009	8411 1719 06	9.1	3.3	4.4	306	103	76	159	118	635		86	182	35.3	77.8	4490
Unrestricted*		9.1	4.9	6.5	438	106	78	159	118		657	135	286	35.3	77.8	4490
LZL 25-HG422-A-011	8411 1718 15	10.9	3.3	4.4	257	123	91	190	140	533		86	182	37.3	82.2	4580
LZL 25-HG422-B-011	8411 1719 14	10.9	3.3	4.4	257	123	91	190	140	533		86	182	35.3	77.8	4580
Unrestricted*		10.9	4.9	6.5	367	127	93	190	140		551	135	286	35.3	77.8	4580
LZL 25-HG422-A-015	8411 1718 23	14.6	3.3	4.4	192	165	121	255	188	398		86	182	37.3	82.2	4690
LZL 25-HG422-B-015	8411 1719 22	14.6	3.3	4.4	192	165	121	255	188	398		86	182	35.3	77.8	4690
Unrestricted*		14.6	4.9	6.5	274	170	125	255	188		412	135	286	35.3	77.8	4690
LZL 25-HG422-A-021	8411 1718 31	20.6	3.3	4.4	136	233	172	360	265	281		86	182	37.3	82.2	4760
LZL 25-HG422-B-021	8411 1719 30	20.6	3.3	4.4	136	233	172	360	265	281		86	182	35.3	77.8	4760
Unrestricted*		20.6	4.9	6.5	194	240	177	360	265		291	135	286	35.3	77.8	4760
LZL 25-HG522-A-032	8411 1720 05	32.2	3.3	4.4	87	364	268	562	415	180		86	182	37.3	82.2	4630
LZL 25-HG522-B-032	8411 1721 04	32.2	3.3	4.4	87	364	268	562	415	180		86	182	35.3	77.8	4630
Unrestricted*		32.2	4.9	6.5	124	375	276	562	415		186	135	286	35.3	77.8	4630
LZL 25-HG622-A-044	8411 1722 03	43.6	3.3	4.4	64	493	364	762	562	133		86	182	39.3	86.6	7200
LZL 25-HG622-B-044	8411 1723 02	43.6	3.3	4.4	64	493	364	762	562	133		86	182	36.3	80.0	7200
Unrestricted*		43.6	4.9	6.5	92	508	375	762	562		137	135	286	36.3	80.0	7200
LZL 25-HG732-A-059	8411 1724 01	59.0	3.3	4.4	47	656	484	1014	748	98		86	182	53.3	118.0	8940
LZL 25-HG732-B-059	8411 1725 00	59.0	3.3	4.4	47	656	484	1014	748	98		86	182	49.3	109.0	8940
Unrestricted*		59.0	4.9	6.5	68	686	506	1014	748		102	135	286	49.3	109.0	8940
LZL 25-HG832-A-075	8411 1726 09	74.7	3.3	4.4	37	831	613	1285	948	78		86	182	88.3	195.0	20000
LZL 25-HG832-B-075	8411 1727 08	74.7	3.3	4.4	37	831	613	1285	948	78		86	182	84.3	186.0	20000
Unrestricted*		74.7	4.9	6.5	54	870	641	1285	948		80	135	286	84.3	186.0	20000
LZL 25-HG832-A-102	8411 1726 17	102.2	3.3	4.4	27	1137	839	1758	1297	57		86	182	88.3	195.0	20000
LZL 25-HG832-B-102	8411 1727 16	102.2	3.3	4.4	27	1137	839	1758	1297	57		86	182	84.3	186.0	20000
Unrestricted*		102.2	4.9	6.5	39	1190	878	1758	1297		59	135	286	84.3	186.0	20000
LZL 25-HG832-A-160	8411 1726 25	160.4	3.3	4.4	17	1785	1316	2760	2036	36		86	182	88.3	195.0	13200
LZL 25-HG832-B-160	8411 1727 24	160.4	3.3	4.4	17	1785	1316	2760	2036	36		86	182	84.3	186.0	13200
Unrestricted*		160.4	4.9	6.5	25	1868	1378	2760	2036		37	135	286	84.3	186.0	13200
LZL 25-HG832-A-202	8411 1726 33	201.8	3,.3	4.4	14	2244	1655	3471	2560	29		86	182	88.3	195.0	6540
LZL 25-HG832-B-202	8411 1727 32	201.8	3,.3	4.4	14	2244	1655	3471	2560	29		86	182	84.3	186.0	6540
Unrestricted*		201.8	4.9	6.5	20	2349	1733	3471	2560		30	135	286	84.3	186.0	6540

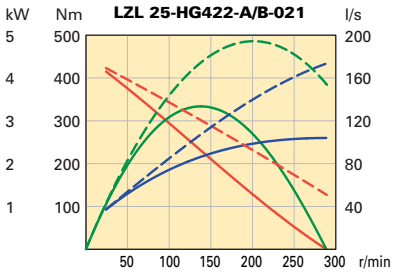
**) Unrestricted, the motors should not be run without load*

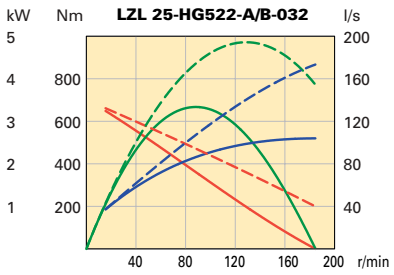
Air motor LZL 25 with helical gear units type HG
Performance curves at air pressure 6.3 bar (91psi)

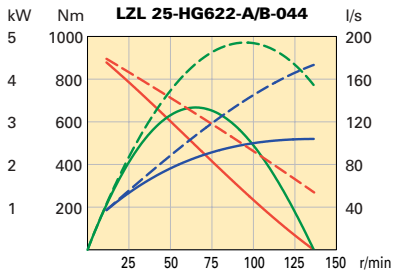


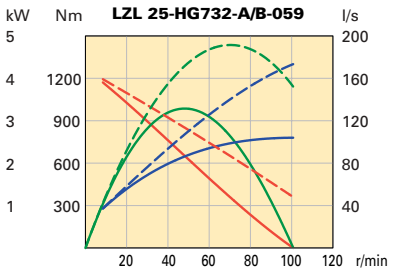


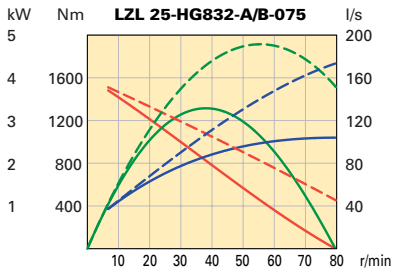


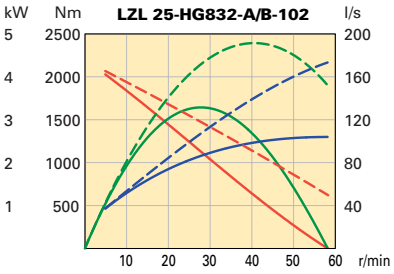


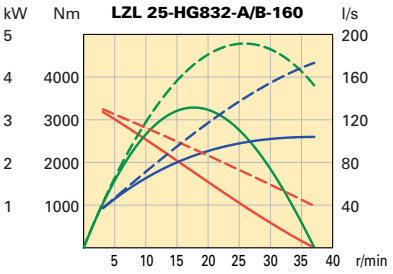


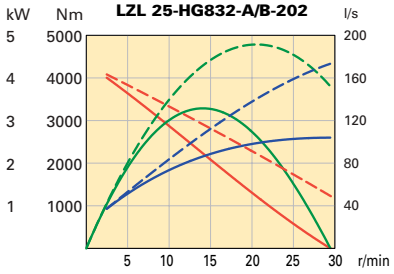












Performance with restrictors

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.*

Air motor LZL 35
with helical gear units

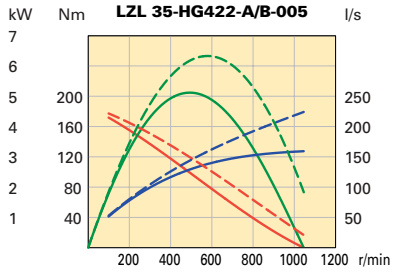
5.1 – 6.3 kW
6.8 – 8.4 hp

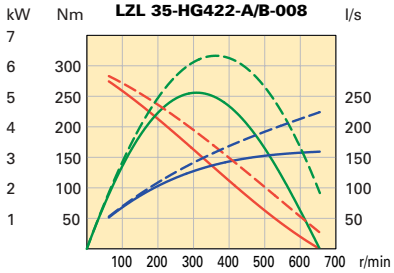
Performance at 6.3 bar (91 psi)

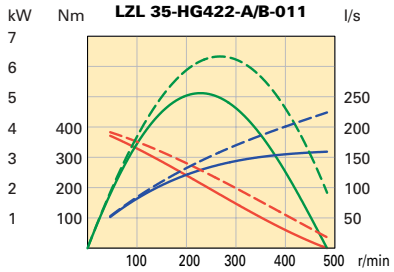
Designation	Ordering No.	Ratio	Max output kW	Max output hp	Speed at max output r/min	Torque at max output Nm	Torque at max output lbf.ft	Min starting torque Nm	Min starting torque lbf.ft	Free speed r/min	Max allowed speed r/min	Air cons. at max output l/s	Air cons. at max output cfm	Weight kg	Weight lb	Max radial load at max output N
LZL 35-HG422-A-005	8411 1728 05	5.0	5.1	6,.8	496	98	72	156	115	992		130	275	43.7	96.3	4130
LZL 35-HG422-B-005	8411 1729 04	5.0	5.1	6,.8	496	98	72	156	115	992		130	275	46.7	103.0	4130
Unrestricted*		5.0	6.3	8.4	615	98	72	156	115		992	160	339	46.7	103.0	4130
LZL 35-HG422-A-008	8411 1728 13	8.1	5.1	6.8	311	156	115	250	184	621		130	275	43.7	96.3	4210
LZL 35-HG422-B-008	8411 1729 12	8.1	5.1	6.8	311	156	115	250	184	621		130	275	46.7	103.0	4210
Unrestricted*		8.1	6.3	8.4	385	156	115	250	184		621	160	339	46.7	103.0	4210
LZL 35-HG422-A-011	8411 1728 21	10.9	5.1	6.8	230	211	156	338	249	459		130	275	43.7	96.3	4250
LZL 35-HG422-B-011	8411 1729 20	10.9	5.1	6.8	230	211	156	338	249	459		130	275	46.7	103.0	4250
Unrestricted*		10.9	6.3	8.4	285	211	156	338	249		459	160	339	46.7	103.0	4250
LZL 35-HG522-A-015	8411 1730 01	14.6	5.1	6.8	171	283	209	453	334	343		130	275	44.7	98.5	4060
LZL 35-HG522-B-015	8411 1731 00	14.6	5.1	6.8	171	283	209	453	334	343		130	275	48,.7	107.0	4060
Unrestricted*		14.6	6.3	8.4	213	283	209	453	334		343	160	339	48,.7	107.0	4060
LZL 35-HG622-A-020	8411 1732 09	20.2	5.1	6.8	124	392	289	627	463	248		130	275	49.7	110.0	7200
LZL 35-HG622-B-020	8411 1733 08	20.2	5.1	6.8	124	392	289	627	463	248		130	275	49.7	110.0	7200
Unrestricted*		20.2	6.3	8.4	153	392	289	627	463		248	160	339	49.7	110.0	7200
LZL 35-HG722-A-032	8411 1734 07	32.1	5.1	6.8	78	623	460	997	735	156		130	275	60.7	134.0	6640
LZL 35-HG722-B-032	8411 1735 06	32.1	5.1	6.8	78	623	460	997	735	156		130	275	60.7	134.0	6640
Unrestricted*		32.1	6.3	8.4	97	623	460	997	735		156	160	339	60.7	134.0	6640
LZL 35-HG822-A-048	8411 1736 05	48.4	5.1	6.8	52	939	693	1503	1108	103		130	275	98.6	217.0	17800
LZL 35-HG822-B-048	8411 1737 04	48.4	5.1	6.8	52	939	693	1503	1108	103		130	275	98.6	217.0	17800
Unrestricted*		48.4	6.3	8.4	64	939	693	1503	1108		103	160	339	98.6	217.0	17800
LZL 35-HG931-A-083	8411 1738 03	82.5	5.0	6.7	30	1577	1163	2523	1861	61		130	275	152.6	336.0	28800
LZL 35-HG931-B-083	8411 1739 02	82.5	5.0	6.7	30	1577	1163	2523	1861	61		130	275	155.6	343.0	28800
Unrestricted*		82.5	6.2	8.3	38	1577	1163	2523	1861		61	160	339	155.6	343.0	28800
LZL 35-HG931-A-129	8411 1738 11	128.7	5.0	6.7	19	2459	1814	3935	2902	39		130	275	152.6	336.0	28200
LZL 35-HG931-B-129	8411 1739 10	128.7	5.0	6.7	19	2459	1814	3935	2902	39		130	275	155.6	343.0	28200
Unrestricted*		128.7	6.2	8.3	24	2459	1814	3935	2902		39	160	339	155.6	343.0	28200

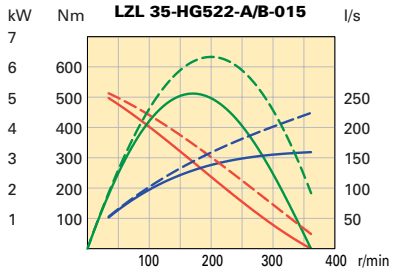
**) Unrestricted, the motors should not be run without load*

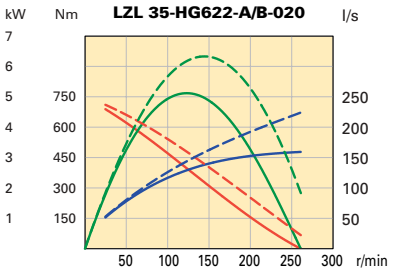
Air motor LZL 35 with helical gear units type HG
Performance curves at air pressure 6.3 bar (91psi)

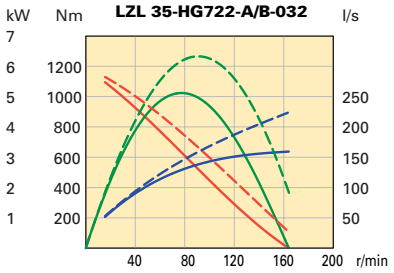


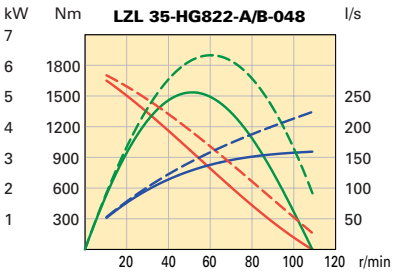


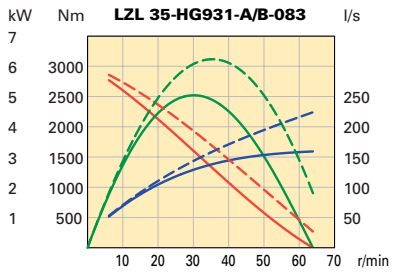


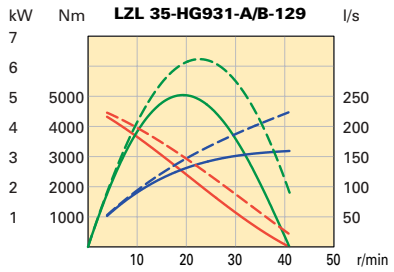












Performance with restrictors

Performance without restrictors, (unrestricted)

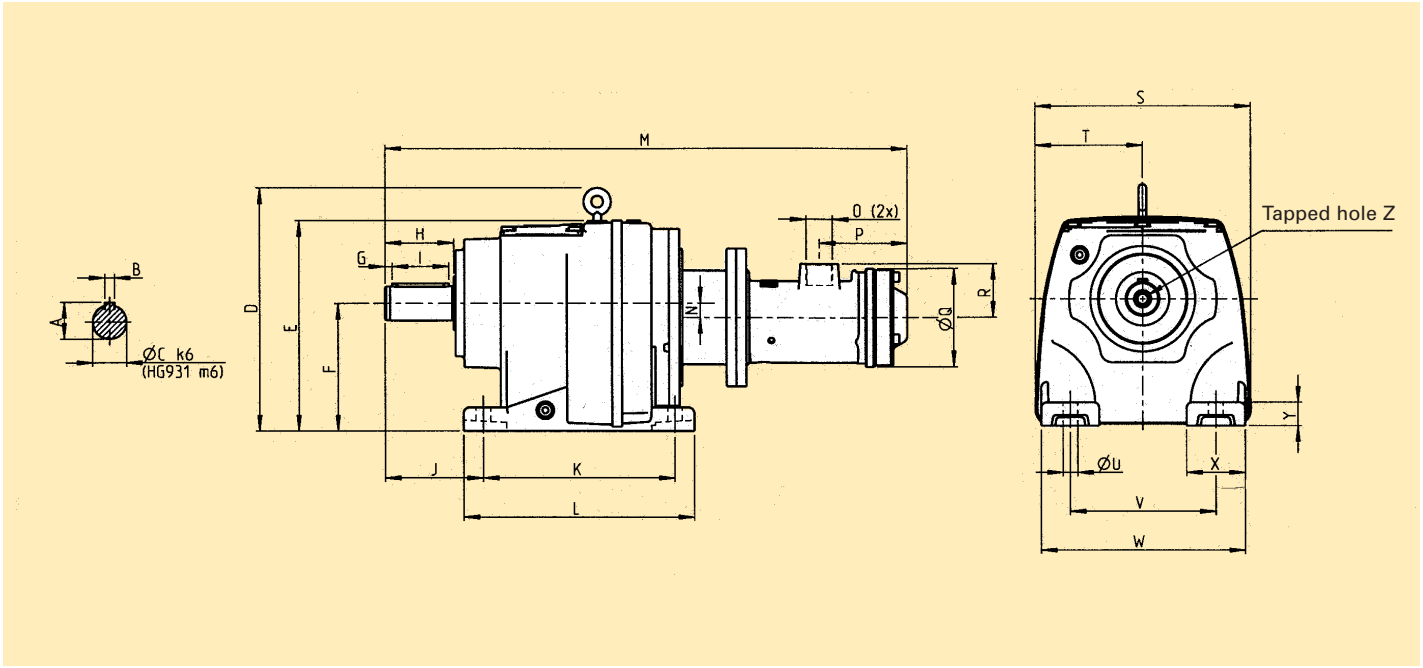
Conversion Factors)*
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

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

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

Dimensions LZL with helical gear units, foot models

Conversion factor 1mm = 0.04 inch

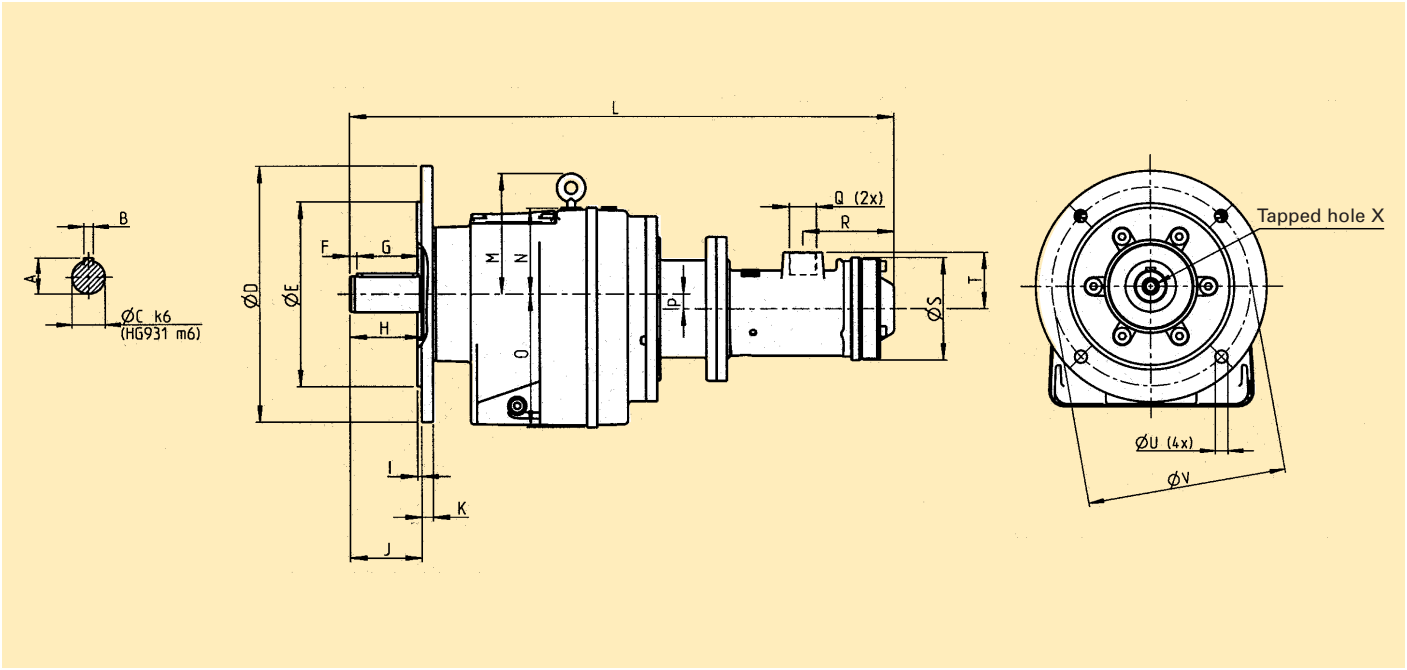


Measurements (mm)

Designation	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
LZL 05-HG222-A-XXX	28	8	25	–	180	90	4	50	40	75	130	152	419	–	G1/2″	72	83	41	170	84	10	110	145	35	16	M10x1.5 Deep 22
LZL 05-HG432-A-XXX	33	8	30	–	208	115	4	60	50	90	165	200	479	–	G1/2″	72	83	41	204	97	15	135	190	55	20	M10x1.5 Deep 22
LZL 05-HG632-A-XXX	38	8	35	246	214	130	7	70	60	100	195	235	510	14.5	G1/2″	72	83	41	220	110	15	150	210	60	24	M10x1.75 Deep 28
LZL 15-HG222-A-XXX	28	8	25	–	180	90	4	50	40	75	130	152	419	–	G3/4″	90	100	55	170	84	10	110	145	35	16	M10x1.5 Deep 22
LZL 15-HG422-A-XXX	33	8	30	–	208	115	4	60	50	90	165	200	478	–	G3/4″	90	100	55	204	97	15	135	190	55	20	M10x1.5 Deep 22
LZL 15-HG432-A-058	33	8	30	–	208	115	4	60	50	90	165	200	501	–	G3/4″	90	100	55	204	97	15	135	190	55	20	M10x1.5 Deep 22
LZL 15-HG532-A-074	38	10	35	–	208	115	7	70	60	100	165	200	511	–	G3/4″	90	100	55	204	97	15	135	190	55	20	M12x1.75 Deep 28
LZL 15-HG632-A-100	38	10	35	246	214	130	7	70	60	100	195	235	532	14.5	G3/4″	90	100	55	220	110	15	150	210	60	24	M12x1.75 Deep 28
LZL 15-HG832-A-XXX	53.5	14	50	360	310	180	10	100	80	140	260	310	648	–	G3/4″	90	100	55	320	167	19	215	290	75	35	M16x2.0 Deep 36
LZL 25-HG422-A-XXX	33	8	30	–	208	115	4	60	50	90	165	200	537	–	G 1″	103	120	62	204	97	15	135	190	55	20	M10x1.5 Deep 22
LZL 25-HG522-A-032	38	10	35	–	208	115	7	70	60	100	165	200	547	–	G 1″	103	120	62	204	97	15	135	190	55	20	M12x1.75 Deep 28
LZL 25-HG622-A-044	38	10	35	246	214	130	7	70	60	100	195	235	568	14.5	G 1″	103	120	62	220	110	15	150	210	60	24	M12x1.75 Deep 28
LZL 25-HG732-A-059	43	12	40	295	250	140	5	80	70	115	205	245	592	–	G 1″	103	120	62	252	119	19	170	230	60	25	M16x2.0 Deep 36
LZL 25-HG832-A-XXX	53.5	14	50	360	310	180	10	100	80	140	260	310	692	–	G 1″	103	120	62	320	167	19	215	290	75	35	M16x2.0 Deep 36
LZL 35-HG422-A-XXX	33	8	30	–	208	115	4	60	50	90	165	200	585	–	G1 1/4″	120	134	68	204	97	15	135	190	55	20	M10x1.5 Deep 22
LZL 35HG522-A-015	38	10	35	–	208	115	7	70	60	100	165	200	595	–	G1 1/4″	120	134	68	204	97	15	135	190	55	20	M12x1.75 Deep 28
LZL 35HG622-A-020	38	10	35	246	214	130	7	70	60	100	195	235	616	14.5	G1 1/4″	120	134	68	220	110	15	150	210	60	24	M12x1.75 Deep 28
LZL 35-HG722-A-032	43	12	40	295	250	140	5	80	70	115	205	245	641	–	G1 1/4″	120	134	68	252	119	19	170	230	60	25	M16x2.0 Deep 36
LZL 35-HG822-A-048	53.5	14	50	360	310	180	10	100	80	140	260	310	707	–	G1 1/4″	120	134	68	320	167	19	215	290	75	35	M16x2.0 Deep 36
LZL 35-HG931-A-XXX	64	18	60	433	394	225	10	120	100	160	310	365	814	–	G1 1/4″	120	134	68	372	200	23	250	340	90	40	M20x2.5 Deep 42

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	N	O	P	Q	R	S	T	U[a)]	V	X
LZL 05-HG222-B-XXX	28	8	25	200	130	4	40	50	3.5	50	10	419	–	90	91	–	G 1/2"	72	83	41	11	165	M10x1.5 Deep 22
LZL 05-HG432-B-XXX	33	8	30	250	180	4	50	60	4	60	11	479	–	93	115	–	G 1/2"	72	83	41	13.5	215	M10x1.5 Deep 22
LZL 05-HG632-B-XXX	38	10	35	250	180	7	60	70	4	70	11	510	116	84	130	14.5	G 1/2"	72	83	41	13.5	215	M12x1.75 Deep 28
LZL 15-HG222-B-XXX	28	8	25	200	130	4	40	50	3.5	50	10	441	–	90	91	–	G 3/4"	90	100	55	11	165	M10x1.5 Deep 22
LZL 15-HG422-B-XXX	33	8	30	250	180	4	50	60	4	60	11	478	–	93	115	–	G 3/4"	90	100	55	13.5	215	M10x1.5 Deep 22
LZL 15-HG432-B-058	33	8	30	250	180	4	50	60	4	60	11	501	–	93	115	–	G 3/4"	90	100	55	13.5	215	M10x1.5 Deep 22
LZL 15-HG532-B-074	38	10	35	250	180	7	60	70	4	70	11	511	–	93	115	–	G 3/4"	90	100	55	13.5	215	M12x1.75 Deep 28
LZL 15-HG632-B-100	38	10	35	250	180	7	60	70	4	70	11	532	116	84	130	14.5	G 3/4"	90	100	55	13.5	215	M12x1.75 Deep 28
LZL 15-HG832-B-XXX	53.5	14	50	300	230	10	80	100	4	100	17	648	180	130	182	–	G 3/4"	90	100	55	13.5	265	M16x2.0 Deep 36
LZL 25-HG422-B-XXX	33	8	30	250	180	4	50	60	4	60	11	537	–	93	115	–	G 1"	103	120	62	13.5	215	M10x1.5 Deep 22
LZL 25-HG522-B-032	38	10	35	250	180	7	60	70	4	70	11	547	–	93	115	–	G 1"	103	120	62	13.5	215	M12x1.75 Deep 28
LZL 25-HG622-B-044	38	10	35	250	180	7	60	70	4	70	11	568	116	84	130	14.5	G 1"	103	120	62	13.5	215	M12x1.75 Deep 28
LZL 25-HG732-B-059	43	12	40	250	180	5	70	80	4	80	11	592	155	110	140	–	G 1"	103	120	62	13.5	215	M16x2.0 Deep 36
LZL 25-HG832-B-XXX	53.5	14	50	300	230	10	80	100	4	100	17	692	180	130	182	–	G 1"	103	120	62	13.5	265	M16x2.0 Deep 36
LZL 35-HG422-B-XXX	33	8	30	250	180	4	50	60	4	60	11	585	–	94	115	–	G1 1/4"	120	134	68	13.5	215	M10x1.5 Deep 22
LZL 35-HG522-B-015	38	10	35	250	180	7	60	70	4	70	11	595	–	93	115	–	G1 1/4"	120	134	68	13.5	215	M12x1.75 Deep 28
LZL 35-HG622-B-020	38	10	35	300	230	7	60	70	4	70	11	616	116	84	130	14.5	G1 1/4"	120	134	68	13.5	265	M12x1.75 Deep 28
LZL 35-HG722-B-032	43	12	40	300	230	5	70	80	4	80	11	641	155	110	140	–	G1 1/4"	120	134	68	13.5	265	M16x2.0 Deep 36
LZL 35-HG822-B-048	53.5	14	50	350	250	10	80	100	5	100	17	709	180	130	182	–	G1 1/4"	120	134	68	17.5	300	M16x2.0 Deep 36
LZL 35-HG931-B-XXX	64	18	60	450	350	10	100	120	5	140	18	814	198	150	230	–	G1 1/4"	120	134	68	18	400	M20x2.5 Deep 42

a) 8 holes LZL 35-HG931-B-XXX

Air motor LZL 05
with worm gear units type BS

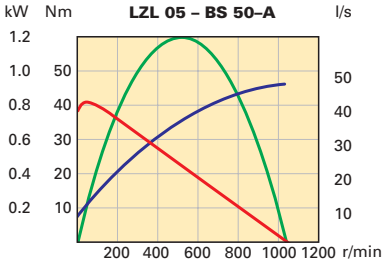
1.0 kW
1.4 hp

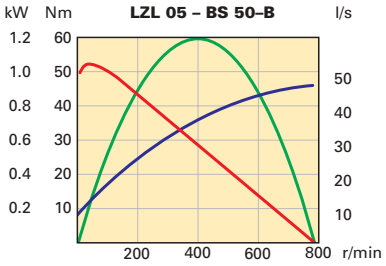
Air motor LZL 05 with worm gear units type BS
Performance at 6.3 bar (91 psi)

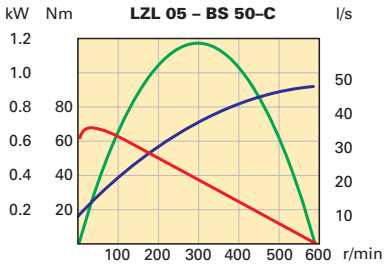
Designation	Ordering No.	Ratio	Max output kW	hp	Speed at max output r/min	Torque at max output Nm	lbf.ft	Free speed r/min	Air cons. at max output l/s	cfm	Weight kg	lb	Max radial load N
LZL 05-BS50-A-OH	8411 1645 70	8.0	1.0	1.4	525	19	14	1030	37	78.4	10.9	24.0	1700
LZL 05-BS50-A-OV	8411 1646 38	8.0	1.0	1.4	525	19	14	1030	37	78.4	10.9	24.0	1700
LZL 05-BS50-A-OD	8411 1646 95	8.0	1.0	1.4	525	19	14	1030	37	78.4	10.9	24.0	1700
LZL 05-BS50-B-OH	8411 1645 88	10.5	1.0	1.4	400	24	18	780	37	78.4	10.9	24.0	1900
LZL 05-BS50-B-OV	8411 1646 46	10.5	1.0	1.4	400	24	18	780	37	78.4	10.9	24.0	1900
LZL 05-BS50-B-OD	8411 1647 03	10.5	1.0	1.4	400	24	18	780	37	78.4	10.9	24.0	1900
LZL 05-BS50-C-OH	8411 1645 96	14.0	1.0	1.3	300	31	23	590	37	78.4	10.9	24.0	2200
LZL 05-BS50-C-OV	8411 1646 53	14.0	1.0	1.3	300	31	23	590	37	78.4	10.9	24.0	2200
LZL 05-BS50-C-OD	8411 1647 11	14.0	1.0	1.3	300	31	23	590	37	78.4	10.9	24.0	2200
LZL 05-BS50-E-OH	8411 1646 12	24.0	0.95	1.3	175	52	38	390	37	78.4	10.9	24.0	2700
LZL 05-BS50-E-OV	8411 1646 79	24.0	0.95	1.3	175	52	38	390	37	78.4	10.9	24.0	2700
LZL 05-BS50-E-OD	8411 1647 37	24.0	0.95	1.3	175	52	38	390	37	78.4	10.9	24.0	2700
LZL 05-BS63-F-OH	8411 1647 86	29.0	0.94	1.3	145	62	46	280	37	78.4	13.3	29.3	3300
LZL 05-BS63-F-OV	8411 1648 44	29.0	0.94	1.3	145	62	46	280	37	78.4	13.3	29.3	3300
LZL 05-BS63-F-OD	8411 1649 01	29.0	0.94	1.3	145	62	46	280	37	78.4	13.3	29.3	3300
LZL 05-BS63-G-OH	8411 1648 02	43.0	0.90	1.2	98	88	65	190	37	78.4	13.3	29.3	3800
LZL 05-BS63-G-OV	8411 1648 69	43.0	0.90	1.2	98	88	65	190	37	78.4	13.3	29.3	3800
LZL 05-BS63-G-OD	8411 1649 27	43.0	0.90	1.2	98	88	65	190	37	78.4	13.3	29.3	3800
LZL 05-BS71-I-OH	8411 1649 68	63.0	0.82	1.1	67	117	87	130	37	78.4	17.2	37.9	5600
LZL 05-BS71-I-OV	8411 1650 07	63.0	0.82	1.1	67	117	87	130	37	78.4	17.2	37.9	5600
LZL 05-BS71-I-OD	8411 1650 49	63.0	0.82	1.1	67	117	87	130	37	78.4	17.2	37.9	5600

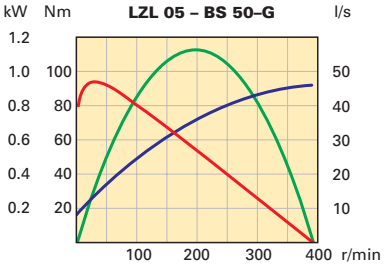
Mounting arrangement is stated by OH, OV or OD acc. to page 51.

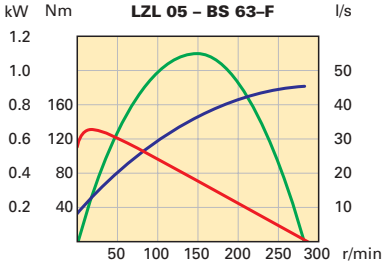
Air motor LZL 05 with worm gear units type BS
Performance curves at air pressure 6.3 bar (91psi)

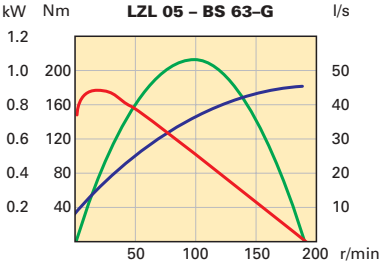


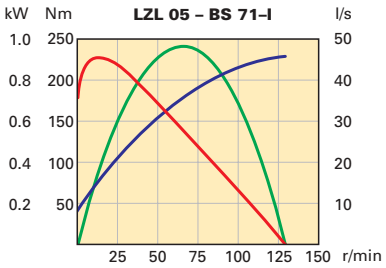












Conversion Factors)*
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

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

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

Air motor LZL 15
with worm gear units type BS

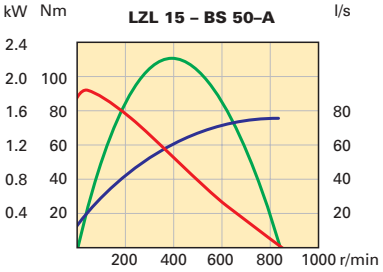
2.0 kW
2.7 hp

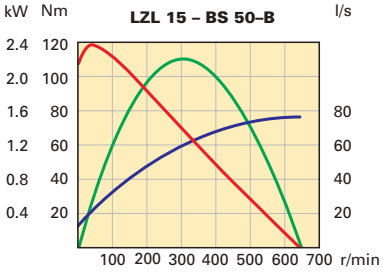
Air motor LZL 15 with worm gear units type BS
Performance at 6.3 bar (91 psi)

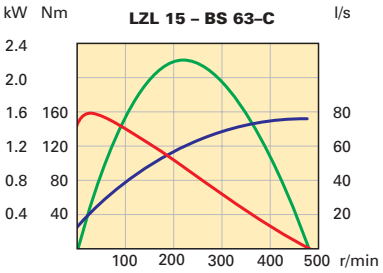
Designation	Ordering No.	Ratio	Max output kW	hp	Speed at max output r/min	Torque at max output Nm	lbf.ft	Free speed r/min	Air cons. at max output l/s	cfm	Weight kg	lb	Max radial load N
LZL 15-BS50-A-OH	8411 1650 56	8.0	2.0	2.7	422	46	34	840	61	129.0	14.4	31.7	1800
LZL 15-BS50-A-OV	8411 1650 72	8.0	2.0	2.7	422	46	34	840	61	129.0	14.4	31.7	1800
LZL 15-BS50-A-OD	8411 1650 98	8.0	2.0	2.7	422	46	34	840	61	129.0	14.4	31.7	1800
LZL 15-BS50-B-OH	8411 1650 64	10.5	2.0	2.7	321	59	43	640	61	129.0	14.4	31.7	2100
LZL 15-BS50-B-OV	8411 1650 80	10.5	2.0	2.7	321	59	43	640	61	129.0	14.4	31.7	2100
LZL 15-BS50-B-OD	8411 1651 06	10.5	2.0	2.7	321	59	43	640	61	129.0	14.4	31.7	2100
LZL 15-BS63-C-OH	8411 1651 30	14.0	2.0	2.7	241	78	58	480	61	129.0	16.6	36.6	2600
LZL 15-BS63-C-OV	8411 1651 71	14.0	2.0	2.7	241	78	58	480	61	129.0	16.6	36.6	2600
LZL 15-BS63-C-OD	8411 1652 13	14.0	2.0	2.7	241	78	58	480	61	129.0	16.6	36.6	2600
LZL 15-BS71-E-OH	8411 1652 54	21.0	1.9	2.6	161	113	83	320	61	129.0	20.4	45.0	3700
LZL 15-BS71-E-OV	8411 1652 96	21.0	1.9	2.6	161	113	83	320	61	129.0	20.4	45.0	3700
LZL 15-BS71-E-OD	8411 1653 38	21.0	1.9	2.6	161	113	83	320	61	129.0	20.4	45.0	3700
LZL 15-BS71-F-OH	8411 1652 62	28.0	1.9	2.5	121	148	109	240	61	129.0	20.4	45.0	4000
LZL 15-BS71-F-OV	8411 1653 04	28.0	1.9	2.5	121	148	109	240	61	129.0	20.4	45.0	4000
LZL 15-BS71-F-OD	8411 1653 46	28.0	1.9	2.5	121	148	109	240	61	129.0	20.4	45.0	4000
LZL 15-BS88-G-OH	8411 1653 95	39.0	1.7	2.3	87	193	142	130	61	129.0	54.5	120.0	8300
LZL 15-BS88-G-OV	8411 1654 60	39.0	1.7	2.3	87	193	142	130	61	129.0	54.5	120.0	8300
LZL 15-BS88-G-OD	8411 1655 36	39.0	1.7	2.3	87	193	142	130	61	129.0	54.5	120.0	8300
LZL 15-BS88-J-OH	8411 1654 11	58.0	1.7	2.3	58	279	206	115	61	129.0	54.5	120.0	9900
LZL 15-BS88-J-OV	8411 1654 86	58.0	1.7	2.3	58	279	206	115	61	129.0	54.5	120.0	9900
LZL 15-BS88-J-OD	8411 1655 51	58.0	1.7	2.3	58	279	206	115	61	129.0	54.5	120.0	9900

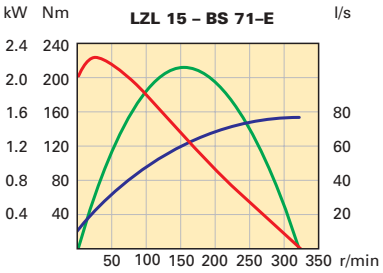
Mounting arrangement is stated by OH, OV or OD acc. to page 51.

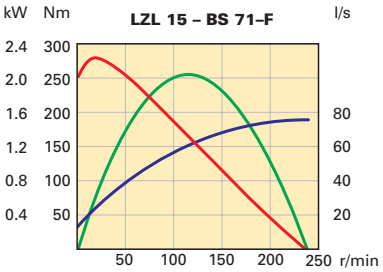
Air motor LZL 15 with worm gear units type BS
Performance curves at air pressure 6.3 bar (91psi)

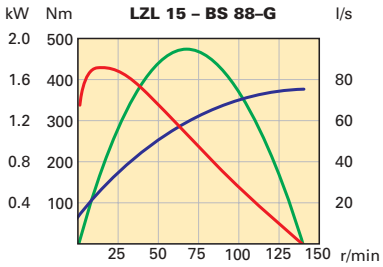


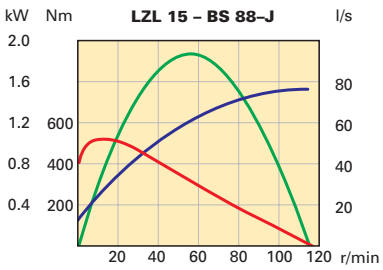












Conversion Factors)*
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

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

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

Air motor LZL 25
with worm gear units type BS

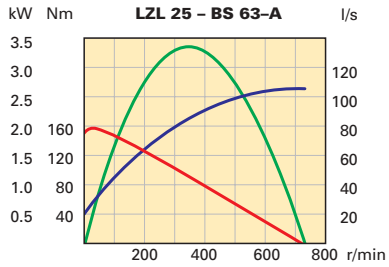
3.1 kW
4.1 hp

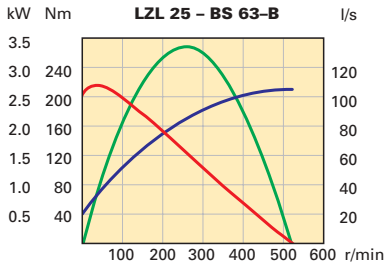
Air motor LZL 25 with worm gear units type BS
Performance at 6.3 bar (91 psi)

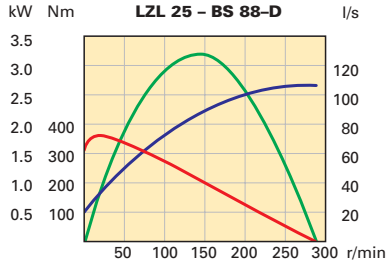
Designation	Ordering No.	Ratio	Max output kW	hp	Speed at max output r/min	Torque at max output Nm	lbf.ft	Free speed r/min	Air cons. at max output l/s	cfm	Weight kg	lb	Max radial load N
LZL 25-BS63-A-OH	8411 1655 69	7.75	3.1	4.1	361	82	60	740	86	182.0	21.0	46.3	2100
LZL 25-BS63-A-OV	8411 1655 85	7.75	3.1	4.1	361	82	60	740	86	182.0	21.0	46.3	2100
LZL 25-BS63-A-OD	8411 1656 01	7.75	3.1	4.1	361	82	60	740	86	182.0	21.0	46.3	2100
LZL 25-BS63-B-OH	8411 1655 77	11.0	3.1	4.1	254	115	85	520	86	182.0	21.0	46.3	2400
LZL 25-BS63-B-OV	8411 1655 93	11.0	3.1	4.1	254	115	85	520	86	182.0	21.0	46.3	2400
LZL 25-BS63-B-OD	8411 1656 19	11.0	3.1	4.1	254	115	85	520	86	182.0	21.0	46.3	2400
LZL 25-BS88-D-OH	8411 1657 34	1.5	2.9	3.9	143	195	144	290	86	182.0	58.5	129.0	6700
LZL 25-BS88-D-OV	8411 1658 09	1.5	2.9	3.9	143	195	144	290	86	182.0	58.5	129.0	6700
LZL 25-BS88-D-OD	8411 1658 74	1.5	2.9	3.9	143	195	144	290	86	182.0	58.5	129.0	6700
LZL 25-BS88-E-OH	8411 1657 42	23.5	2.9	3.9	119	232	171	240	86	182.0	58.5	129.0	7300
LZL 25-BS88-E-OV	8411 1658 17	23.5	2.9	3.9	119	232	171	240	86	182.0	58.5	129.0	7300
LZL 25-BS88-E-OD	8411 1658 82	23.5	2.9	3.9	119	232	171	240	86	182.0	58.5	129.0	7300
LZL 25-BS88-F-OH	8411 1657 59	29.0	2.8	3.7	96	273	201	190	86	182.0	58.5	129.0	7800
LZL 25-BS88-F-OV	8411 1658 25	29.0	2.8	3.7	96	273	201	190	86	182.0	58.5	129.0	7800
LZL 25-BS88-F-OD	8411 1658 90	29.0	2.8	3.7	96	273	201	190	86	182.0	58.5	129.0	7800
LZL 25-BS112-H-OH	8411 1659 65	46-.0	2.7	3.6	61	422	311	120	86	182.0	73.5	162.0	14700
LZL 25-BS112-H-OV	8411 1660 21	46-.0	2.7	3.6	61	422	311	120	86	182.0	73.5	162.0	14700
LZL 25-BS112-H-OD	8411 1660 88	46-.0	2.7	3.6	61	422	311	120	86	182.0	73.5	162.0	14700
LZL 25-BS112-J-OH	8411 1659 73	63.0	2.7	3.6	44	571	421	90	86	182.0	73.5	162.0	15000
LZL 25-BS112-J-OV	8411 1660 39	63.0	2.7	3.6	44	571	421	90	86	182.0	73.5	162.0	15000
LZL 25-BS112-J-OD	8411 1660 96	63.0	2.7	3.6	44	571	421	90	86	182.0	73.5	162.0	15000

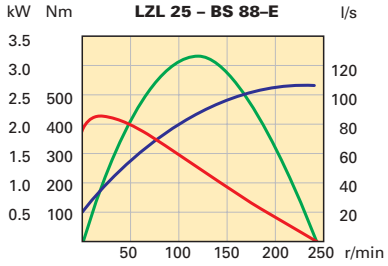
Mounting arrangement is stated by OH, OV or OD acc. to page 51.

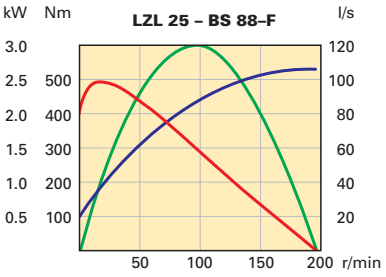
Air motor LZL 25 with worm gear units type BS
Performance curves at air pressure 6.3 bar (91psi)

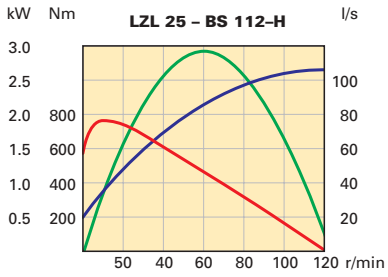


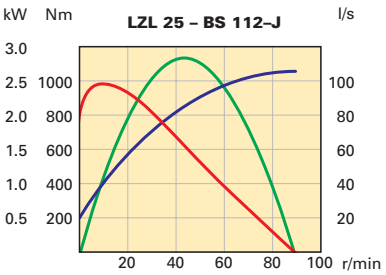












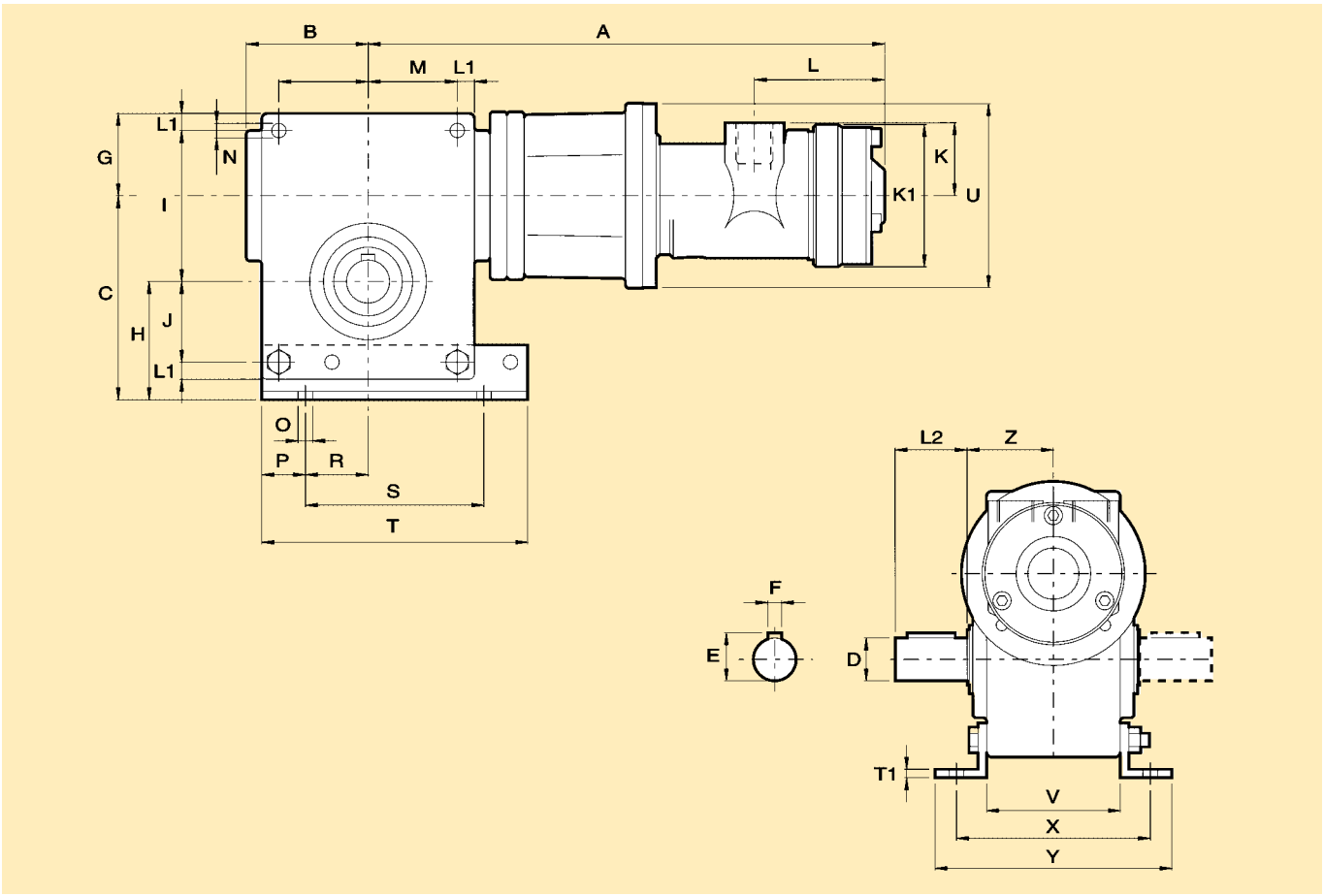
Conversion Factors)*
1 kW = 1.34 hp
1 Nm = 0.74 lbf - ft
1 l/s = 2.1 cfm

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

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

Dimensions LZL with worm gear units type BS

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

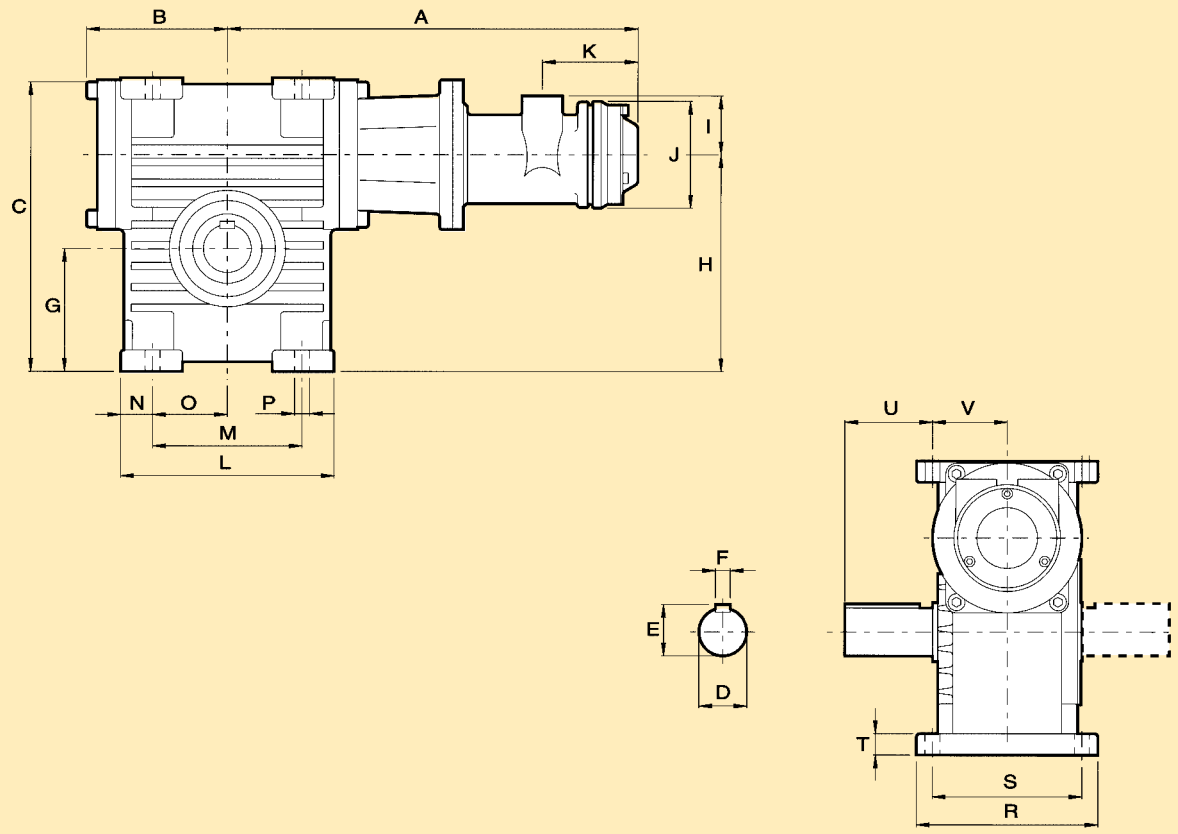


BS 50, -63, -71

Measurements (mm)

Gear Unit Type	Air Motor Type	A	B	C	D	E	F	G	H	I	J	K	K1	L	L1	L2	M	N	O	P	R	S	T	T1	U	V	X	Y	Z
BS 50	LZL 05 LZL 15	300 344	71	119	25j6	28	8h9	48	69	88	47	41 55	83 100	72 90	10	42	52	8.5	8.5	25.5	36.5	104	155	4	113	78	113	138	50
BS 63	LZL 05 LZL 15 LZL 25	312 355 398	82	142	30j6	33	8h9	53	79	106	57	41 55 62	83 100 120	72 90 103	10	58	63	10.5	11	28.5	44.5	126	183	5	108 140 160	82	121	146	52
BS 71	LZL 05 LZL 15 LZL 25	328 371 414	86	153.5	35j6	38	10h9	63	82.5	120	61	41 55 62	83 100 120	72 90 103	14	58	68.5	12.5	12.5	36	46.5	137	209	6	160	102	144	170	62.5

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



BS 88 and 112

Measurements (mm)

Gear Unit Type	Air Motor Type		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U	V
BS 88	LZL 15 LZL 25		397 439.5	122	275	45k6	48	14h9	115	203 +0 −0.5	55 62	100 120	90 103	200	140	30	70	14	170	140	20	82	70
BS 112	LZL 25	i<60 i>60	473 460.5	143	340	55k6	59	16h9	140	252 +0 −0.5	62	120	103	250	175	37.5	87.5	18	210	175	23	82	82

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:

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

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.

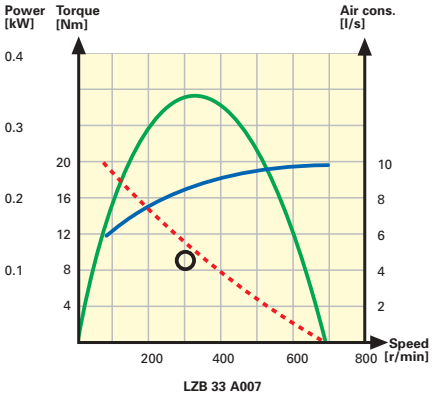


Figure 29

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 30).

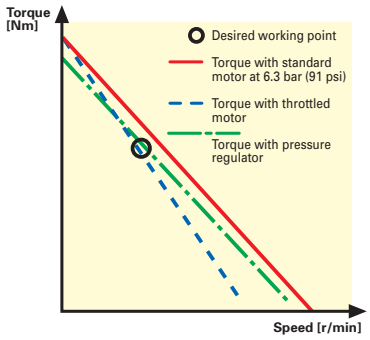


Figure 30

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.
Therefore M1/M2 = 0.8 and n1/n2 = 0.7
The required inlet pressure is 4.2 bar (61 psi)

M1 = desired torque
n1 = desired speed
M2 = torque at maximum output
n2 = speed at maximum output
Calculate the ratios M1 and n1
M2 and n2

Apply these values to the diagram in figure 31 and read off the pressure at the intersection point.

Vane motors																
	LZB 14		LZB 22		LBZ 33/34		LZB 42		LZB 46		LZB 54		LZL 05	LZL 15	LZL 25	LZL 35
Non reversible	A		A		A		A		A		A					
Reversible	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	1.3	2.3	3.4	5,2

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.

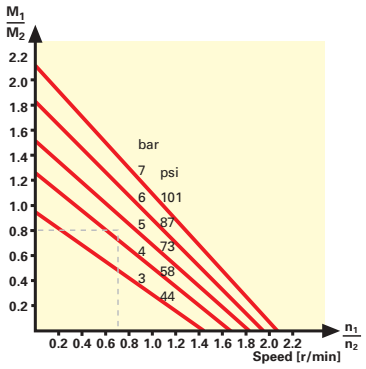


Figure 31

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:

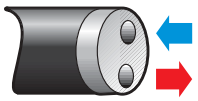
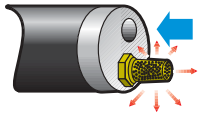
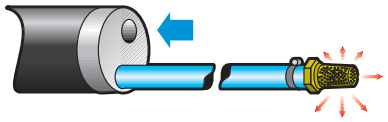
0.36 – kW motor No-load speed Anechoic room Interval of 1 m	*Measure*	*Noise Level dB (A)*
	*None*	*94*
	*Silencer Only*	*77*
	*Hose Only*	*84*
	*Hose with Silencer*	*75*

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.
Ordering No. 9833 9093 00.

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.

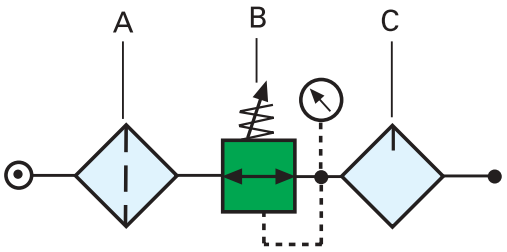
The hose connectors below can be ordered through your local Atlas Copco representative.

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 32.



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

Figure 32

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 mm^3 of oil for each cubic metre (1000 litres) of air consumed (1 drop = 15 mm^3).

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 870 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 mm^3).

The lubrication oil selected should have a viscosity which lies between 50 and 300 x 10^6 m^2/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.

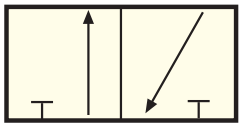
Thread in (in)	Hose size (mm)	(in)	Ordering No.	Thread in (in)	Hose size (mm)	(in)	Ordering No.
1/8 BSP	3.2	1/8	9000 0523 00	3/8 BPST	10.0	3/8	9000 0242 00
1/8 BSP	5.0	3/16	4010 0031 00	3/8 BSPT	12.5	1/2	9000 0248 00
1/8 BSPT	6.3	1/4	9000 0240 00	1/2 BSPT	12.5	1/2	9000 0243 00
1/4 BSP	3.2	1/8	9000 0525 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

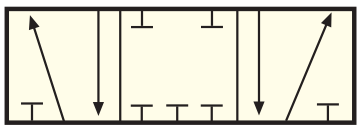
Directional control valves

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 33

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

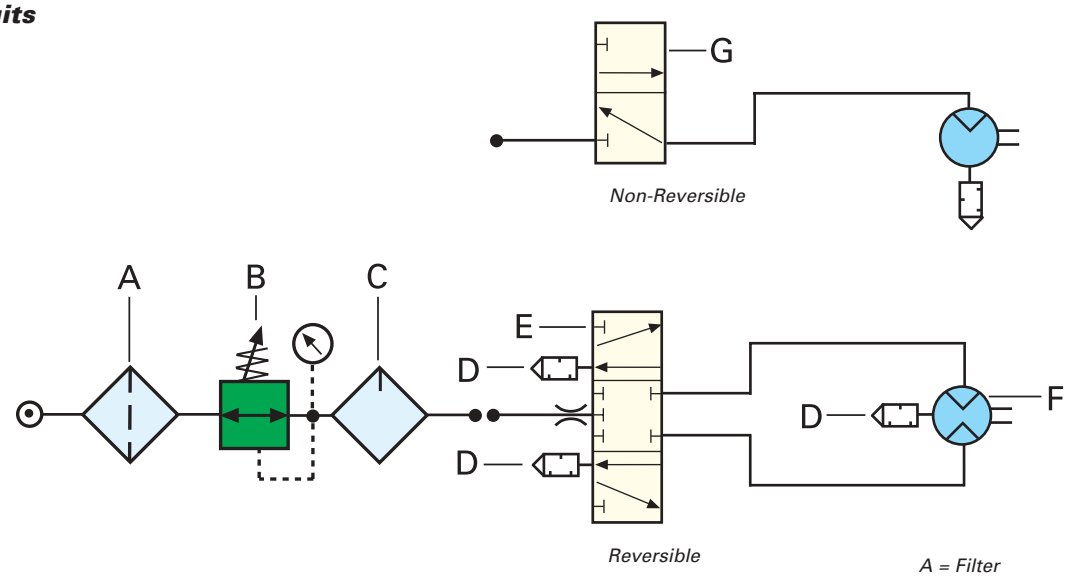


Figure 34

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

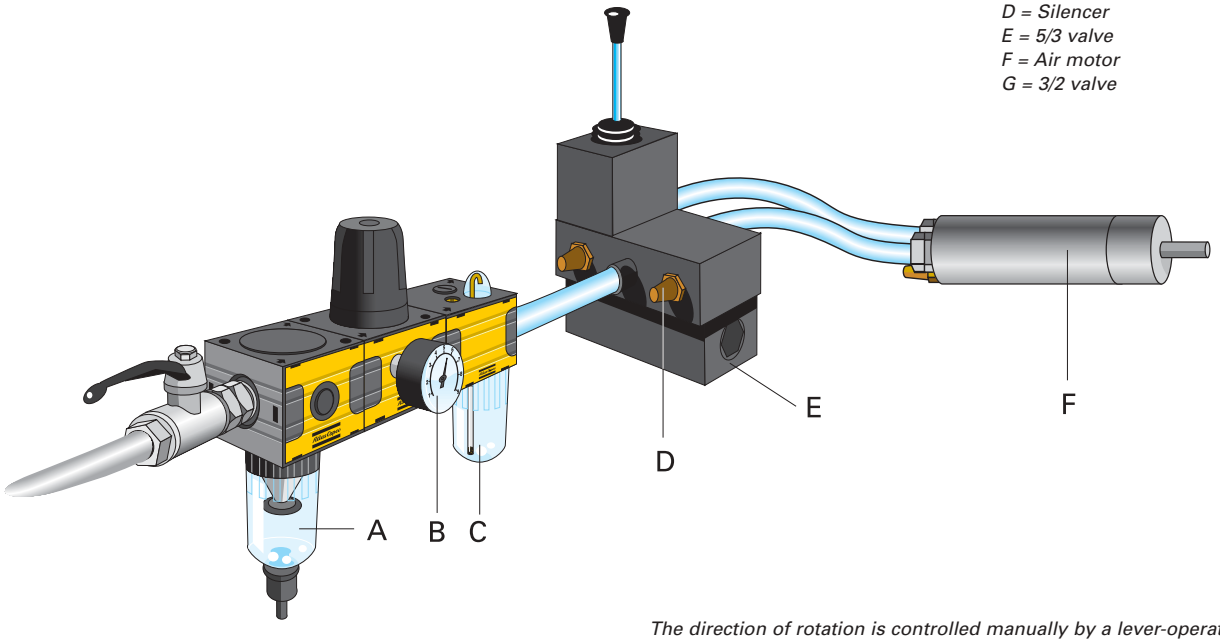


Figure 35

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.

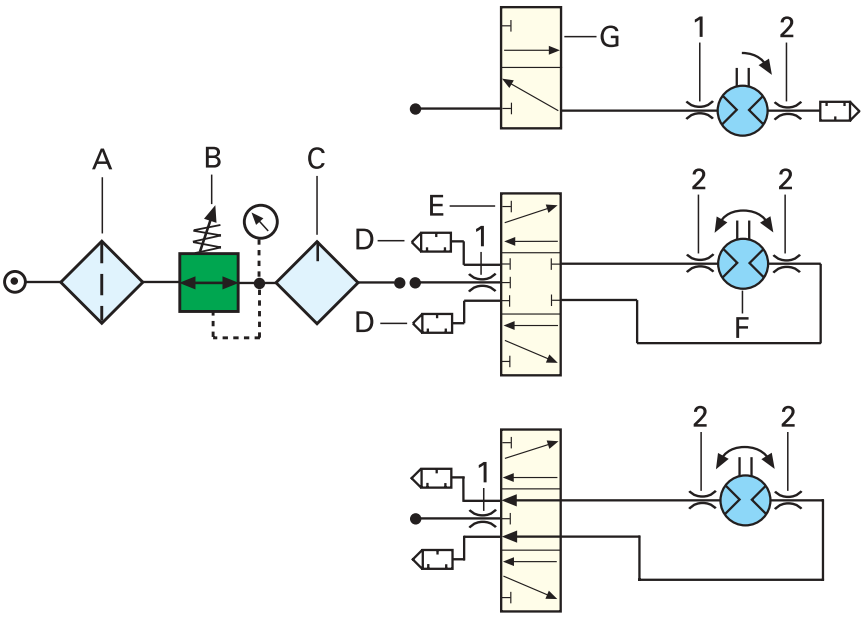
For LZL air motors it is important that an inlet restrictor is placed upstream the inlet. It must be placed so it does not affect the exhaust at reversible running. This means that it has to be placed before the control valve.

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 36

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.

9833 8998 01 Recyclable paper. 2004-2. Jetlag Holding 2004.

Atlas Copco

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