

SERIES

R10

Air-actuated motors

clockwise rotation
reversible
slow-speed rotation
counterclockwise rotation on request
mounting accessories
oil-free design on request



Application

Air-actuated vane motors are used in many technical areas, like for example:

- in mechanical engineering, where small installation dimensions are required
- in all industrial areas, in which ex-protection is required (e.g. chemical industry, mining and painting cabins)
- as drive motor in robot units
- as stirring device and drive motor
- as drilling unit, with narrow space situations
- as mixing motor for spray heads, with PU-foam units as linear drive for feed units

Technical data

The air-actuated vane motor is one of the most multi-functional and most robust drives, which is available for mechanical engineering. It can be regulated via a high rotational speed- and pressure range and has its highest torque when it is used – with starting.

All technical data given in the catalog refer to an operational pressure of 6 bar.

With some applications it may occur that 6 bar operational pressure may not be available. In these cases the power of the motor has to be converted.

For this purpose please pay attention to the conversion table.

Installation

For the mounting of the air-actuated vane motors please pay attention to the following:

- In order not to disguise the bearing clearance between the bearing shield and the rotor, the output shaft end must not be burdened with impacts.
- With axial applications, like e.g. agitator blades, the bearings of the shaft have to be arranged adequately and for the adaptation a flexible clutch has to be provided.
- The mounting position of the air-actuated motor is optional.
- The mounting is facilitated by a flange- or foot fastening, which is available for each motor.



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Features

- Elasticity
The air-activated lamella motor can adapt its velocity to different loads and it can even be blocked without being damaged.
- Adjustability
The simple restriction controls the air supply and makes possible the continuous variation of the rotational speed from a maximum value down to zero.
- Simple construction
The air-activated motors consist of a small number of flexible parts and mainly the lamellas are exposed to wear. Therefore the motors have a long service life and need only very little maintenance.
- Not influenced from outer conditions.
Since the pressure is higher on each motor part than in the surrounding area, the unavoidable clearances can only result in pressure drops, but not in the reception of foreign substances (contaminants). Therefore the air-activated motor, when it is already rotating, can also function under water. (For this application it is absolutely necessary to consult Timmer GmbH.)
- Security
The air-activated lamella motor when used with suitable applications, does not generate any explosions, sparks or any excessive heat. In the motor and in the providing system the generation of short-circuits is not possible. Thus there is not danger of electrical shocks.

Power output

The power of an air-actuated lamella motor results from the combination of rotational speed and torque.

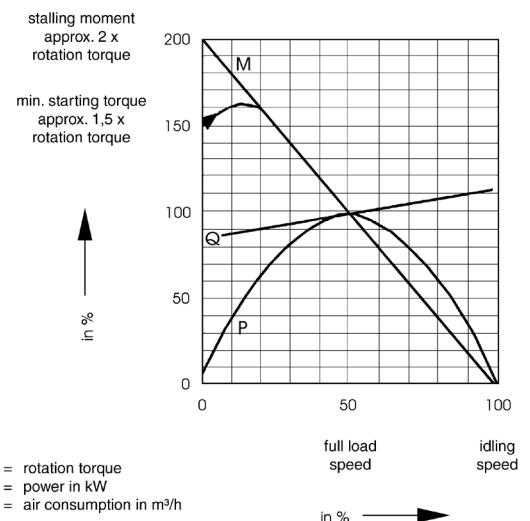
All air-actuated lamella motors have the same characteristic power curve, whereas the highest power is not reached before 50% of the idle-running speed.

The torque in this area is also called the load torque or the nominal torque.

If the motor is further loaded at the output end, the torque increases, whereas the power drops again to the value zero at rest period. The highest torque is reached shortly before the stop period of the motor and is approx. 200% of the indicated load torque.

The starting torque is approx. 150% of the indicated load torque and is reached when starting under max. load.

Power diagram torque — rotational speed

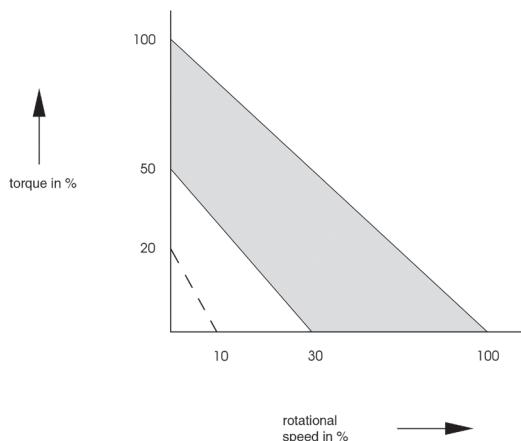


Characteristics

The air-actuated motor is one of the most multifunctional and most robust drives, which is available for mechanical engineering. It can be regulated via a high rotational speed- and pressure range and has its highest torque when it is used — with starting.

By the simple regulation of the flow (via throttles), resp. the regulation of the operating pressure (pressure controller), the capacity of the air-actuated lamella motor can be changed easily to the desired values.

Diagram about the control range of air-activated vane motors.



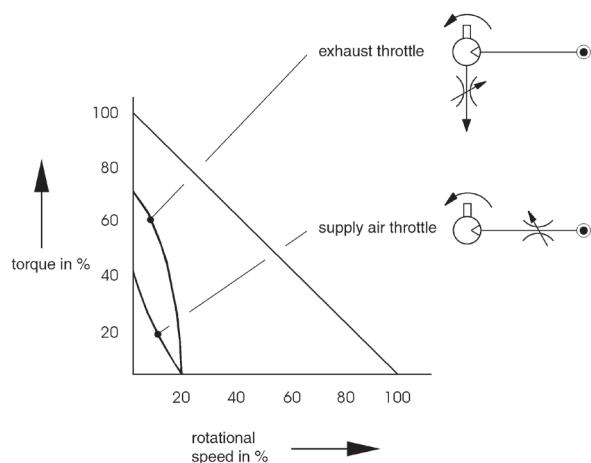
Methods for changing the motor power

Restriction:

“exhaust air restriction” should be applied when a high tightening torque should be kept and the rotational speed should be decreased.

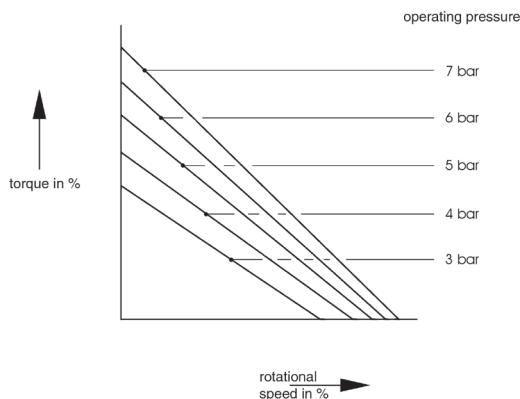
“supply air restriction” should be applied when a high tightening torque is of secondary importance and the rotational speed shall be decreased. The advantage here is that the air consumption is reduced.

Diagram of the control behaviour in case of supply air restriction/ exhaust air restriction



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Diagram of the control behaviour in case of pressure control by a pressure controller



Pressure control:

The pressure control should be applied in all cases when the torque should be regulated.

The pressure controller in principle has to be installed into the supply air pipe.

Different supply of compressed air

All specifications given in the catalog refer to an operational pressure of 6 bar.

With some applications it is possible that 6 bar operational pressure is not available. In these cases the motor power has to be converted.

The correction coefficients listed in the following table help you with the conversion of the technical data on the deviating operational pressures.

Conversion table for different operating pressures

operating pressure in bar	drive power	correction-coefficient			air consumption
		on-load speed	load torque		
7	1,21	1,03	1,17		1,15
6	1,00	1,00	1,00		1,00
5	0,77	0,95	0,83		0,82
4	0,55	0,87	0,67		0,65
3	0,37	0,74	0,50		0,47

Choice of the optimal motor

When choosing a suitable motor the required load torque and the required on-load speed has to be chosen from the available motors.

The power required under load is calculated as follows:

$$\text{load power (LL)} = \frac{\pi \times \text{load torque (M L)} \times \text{on-load speed (n)}}{30}$$

$$\text{LL} = \frac{3,14 \times M L \times n}{30}$$

example: a motor which is not reversible shall reach a load torque of 10 Nm with a rotational speed of 240 U/min.

$$\text{LL} = \frac{3,14 \times 10 \times 240}{30}$$

$$\text{LL} = \underline{\underline{251,2 \text{ Watt}}}$$

In this case the motor-type **RO-285-R-240-LGS5D** is chosen.

Maintenance

The air-actuated lamella motor shall be driven with purified, dried compressed air.

The ideal service life of the motor is reached when it is operated with 50 mm³ non-resinous pneumatic oil per m³ compressed air. (one drop corresponds to approx. 15 mm³.)

Insufficient lubrication causes too quick wear and reduces the power.

It is possible, in special application cases, to supply a motor for oil-free operation.

Connection

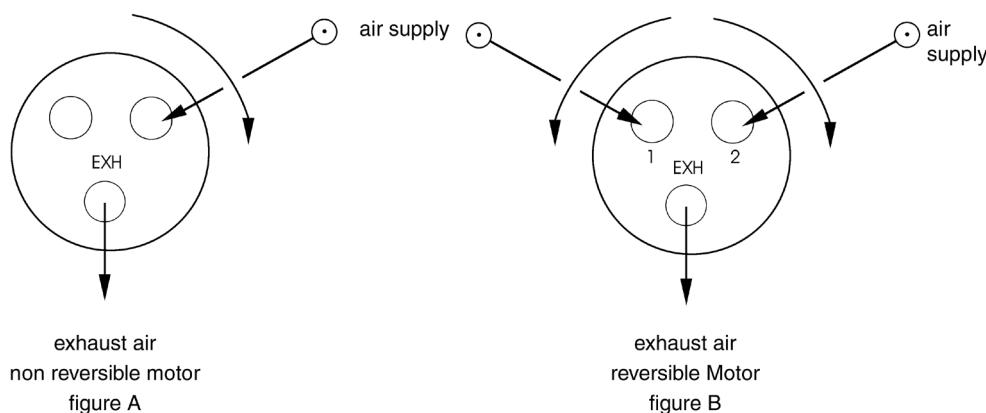
Non-reversible air-actuated lamella motor:

When the compressed air is connected at the inlet, the rotating direction is as indicated in fig. A.
In case the exhaust air is let off, the tube has to be connected to the exhaust air connection.

Some types have a third connection, which does not have any function and which can be closed with a blind plug without impairment of the motor power.

Reversible air-actuated lamella motor:

The compressed air pipe is to be connected to the inlet which determines the desired rotating direction. fig. B. The connection which is not used serves as additional exhaust air outlet:
This connection must not be closed with a blind plug.



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Air-actuated vane motor - clockwise rotation
 motor shaft cylindrical, with groove for flat key

110 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200405	RO-110-R-2300-LCY011D	4700	2300	0,4	0,6	340	143	42	0,30	1
40200406	RO-110-R-720-LCY022D	1500	720	1,3	2,1	340	156	55	0,35	1
40200407	RO-110-R-500-LCY044D	1000	500	1,8	3,0	340	156	55	0,35	1

Left-hand rotation on request!

Measured values at a pressure of 6 bar.

5 mm minimum diameter of the supply air hose.

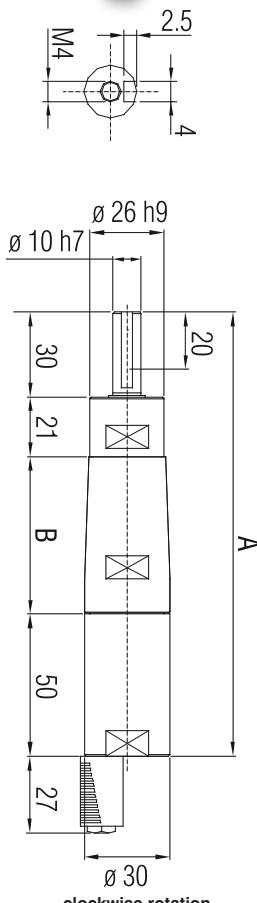
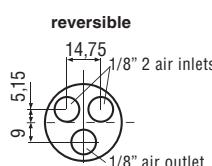
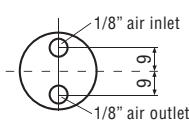
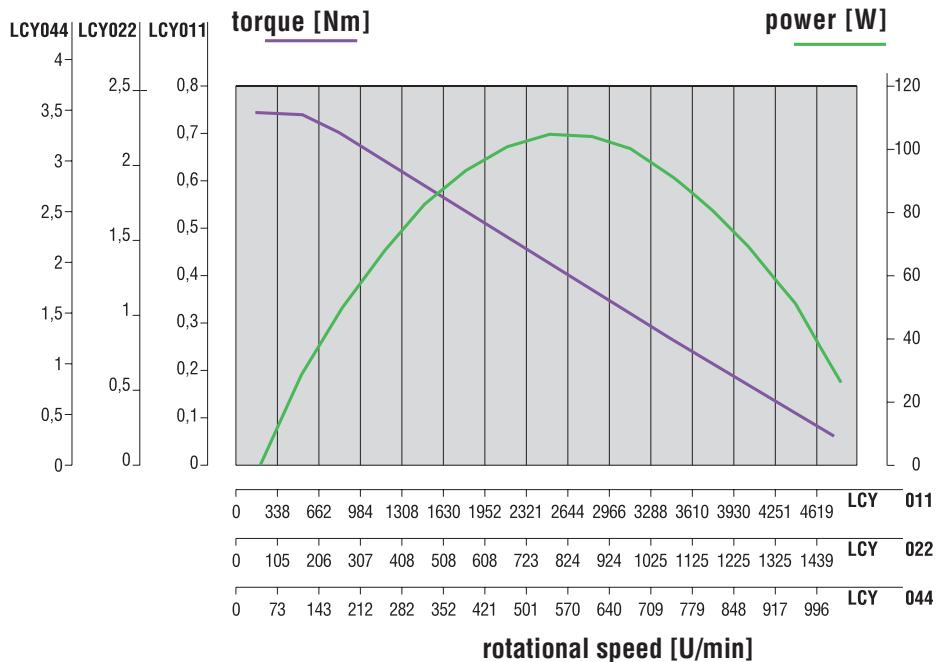
Air-actuated vane motor - reversible
 motor shaft cylindrical, with groove for flat key

110 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200408	RO-110-U-2300-LCY011R	4700	2300	0,4	0,6	340	143	42	0,30	1
40200409	RO-110-U-720-LCY022R	1500	720	1,3	2,1	340	156	55	0,35	1
40200411	RO-110-U-500-LCY044R	1000	500	1,8	3,0	340	156	55	0,35	1

Measured values at a pressure of 6 bar.

5 mm minimum diameter of the supply air hose.

**powersdiagramm**

Mounting brackets see page 247

Air-actuated vane motor

clockwise rotation
reversible

190 Watt
160 Watt

Series R10

Air-actuated vane motor - clockwise rotation motor shaft cylindrical, with groove for flat key

190 Watt

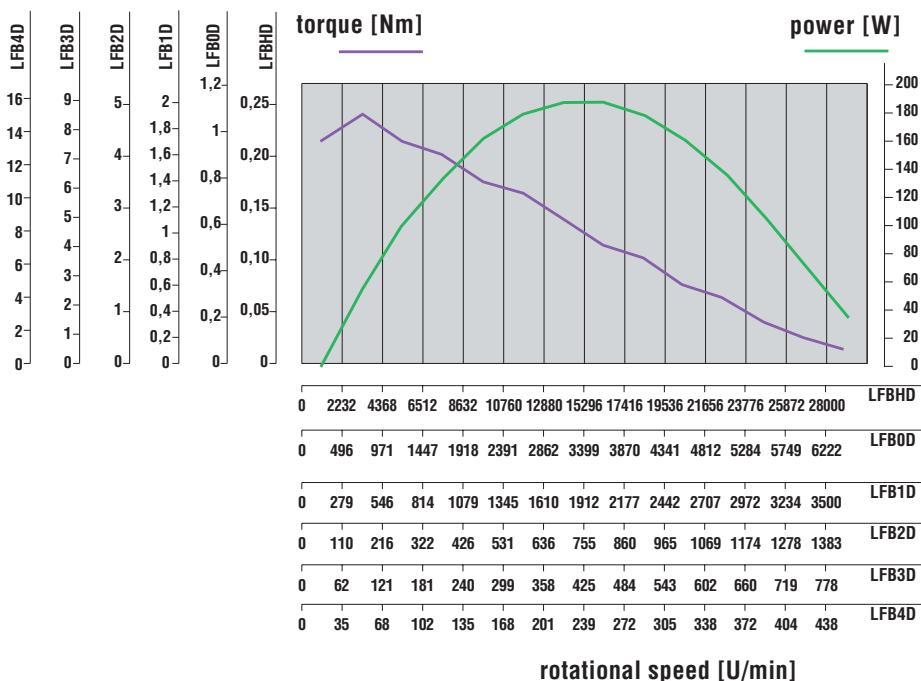
order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200020	RO-116-R-9970-LFBHD	28000	15000	0,11	0,23	480	136	22	0,5	1
40200021	RO-116-R-2200-LFB0D	6200	3300	0,51	1,05	480	136	22	0,5	1
40200022	RO-116-R-1250-LFB1D	3500	1900	0,90	1,90	480	136	22	0,5	1
40200023	RO-116-R-280-LFB3D	770	420	4,10	8,40	480	160,7	46,7	0,6	1
40200024	RO-116-R-160-LFB4D	430	230	8,20	15,0	480	160,7	46,7	0,6	1

Left-hand rotation on request!

*Without groove for flat key

Measured values at a pressure of 6 bar.

6 mm minimum diameter of the supply air hose.



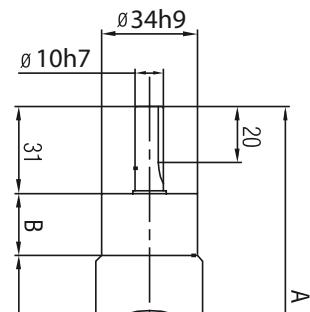
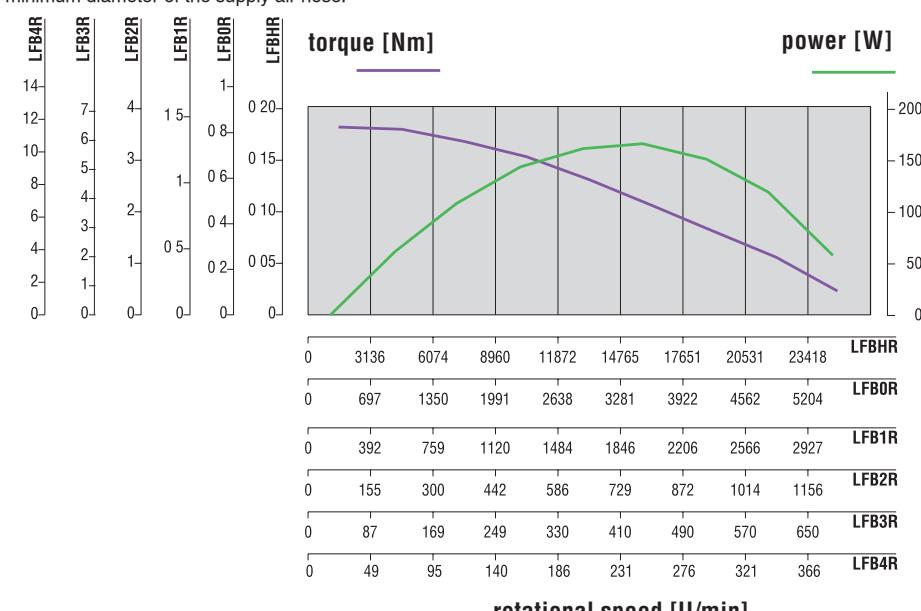
Air-actuated vane motor - reversible motor shaft cylindrical, with groove for flat key

160 Watt

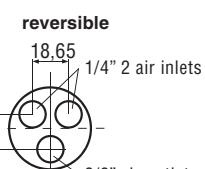
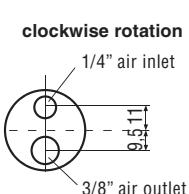
Measured values at a pressure of 6 bar.

*Without groove for flat key

6 mm minimum diameter of the supply air hose.

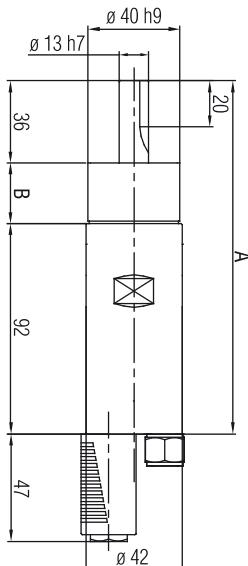


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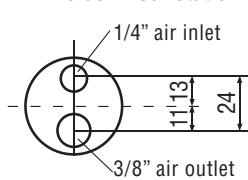


Mounting brackets see page 247

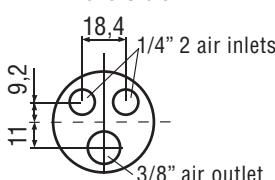
Technical and visual modifications are reserved.



clockwise rotation



reversible



Mounting brackets see page 247

Air-actuated vane motor - clockwise rotation
motor shaft cylindrical, with groove for flat key

430 Watt

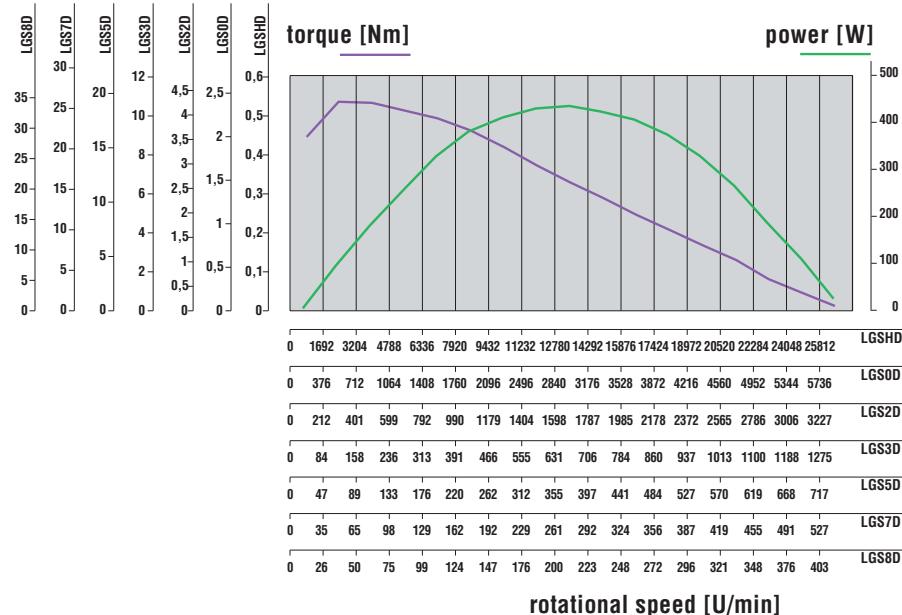
order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200040	RO-285-R-8720-LGSHD	26000	12800	0,32	0,53	600	154,5	26,5	0,75	1
40200041	RO-285-R-1940-LGS0D	5800	2800	1,46	2,40	600	154,5	26,5	0,75	1
40200042	RO-285-R-1090-LGS2D	3300	1600	2,59	4,24	600	154,5	26,5	0,75	1
40200043	RO-285-R-430-LGS3D	1300	630	6,55	10,74	660	179,5	51,5	0,90	1
40200044	RO-285-R-240-LGS5D	730	350	11,70	19,10	660	179,5	51,5	0,90	1
40200012	RO-285-R-180-LGS7D	540	260	15,86	25,98	600	179,5	51,5	0,90	1
40200001	RO-285-R-135-LGS8D	410	200	20,71	33,94	600	179,5	51,5	0,90	1

Left-hand rotation on request!

*Without groove for flat key

Measured values at a pressure of 6 bar.

8 mm minimum diameter of the supply air hose.

Air-actuated vane motor - reversible
motor shaft cylindrical, with groove for flat key

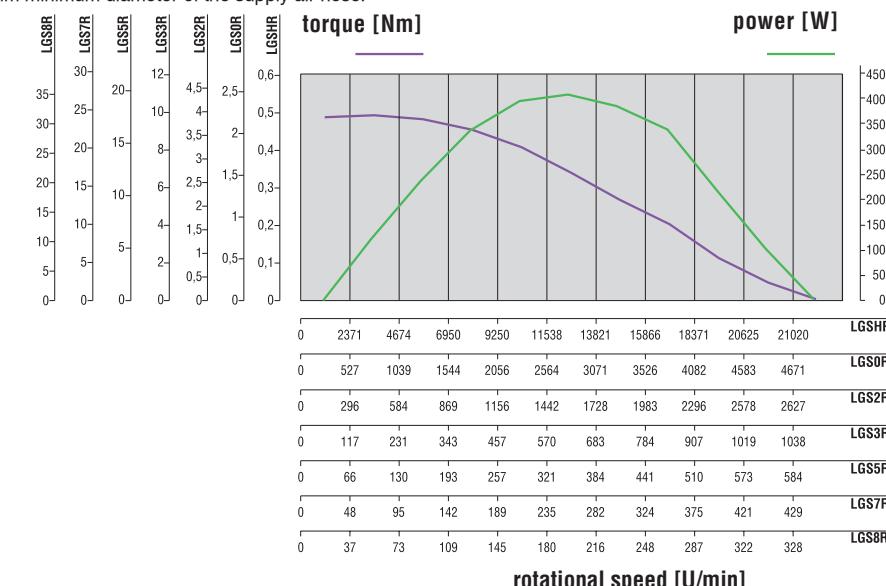
400 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200045	RO-180-U-5880-LGSHR	21000	11500	0,33	0,49	560	154,5	26,5	0,75	1
40200046	RO-180-U-1300-LGS0R	4600	2500	1,50	2,20	560	154,5	26,5	0,75	1
40200047	RO-180-U-735-LGS2R	2600	1450	2,70	3,90	560	154,5	26,5	0,75	1
40200003	RO-180-U-295-LGS3R	1000	570	6,80	9,90	560	179,5	51,5	0,90	1
40200048	RO-180-U-160-LGS5R	580	320	12,10	17,60	560	179,5	51,5	0,90	1
40200050	RO-180-U-120-LGS7R	420	230	16,40	24,00	560	179,5	51,5	0,90	1
40200049	RO-180-U-90-LGS8R	320	180	21,40	31,40	560	179,5	51,5	0,90	1

Measured values at a pressure of 6 bar.

*Without groove for flat key

8 mm minimum diameter of the supply air hose.



Air-actuated vane motor

**clockwise rotation
reversible**

640 Watt
570 Watt

Series R10

Air-actuated vane motor - clockwise rotation

motor shaft cylindrical, with groove for flat key

640 Watt

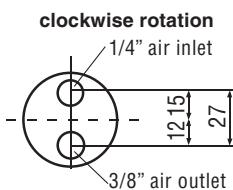
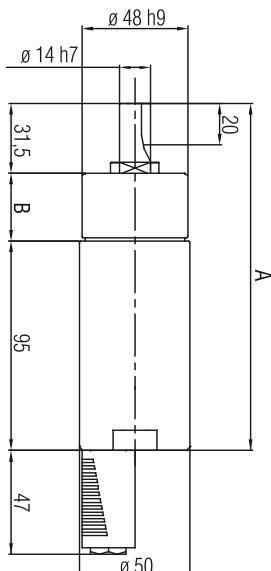
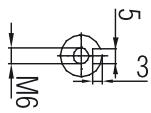
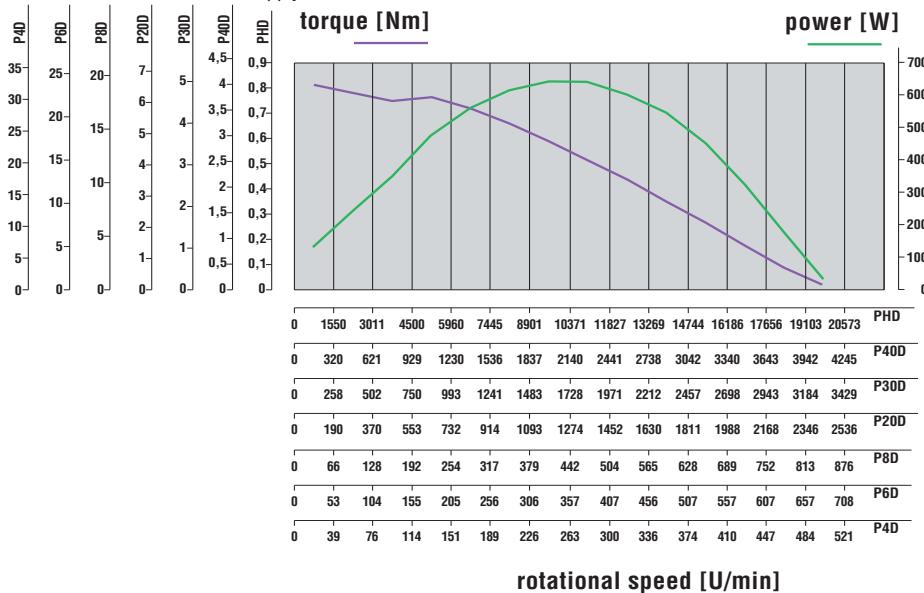
order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200060	RO-490-R-9500-PHD	20000	10300	0,59	0,81	950	157,5	31	1,15	1
40200061	RO-490-R-1950-P40D	4200	2100	2,85	4,80	950	157,5	31	1,15	1
40200062	RO-490-R-1550-P30D	3400	1700	3,53	4,86	950	157,5	31	1,15	1
40200063	RO-490-R-1150-P20D	2500	1250	4,79	6,60	950	157,5	31	1,15	1
40200064	RO-490-R-400-P8D	850	440	13,82	19,04	950	185,5	59	1,40	1
40200065	RO-490-R-325-P6D	700	350	17,11	23,57	950	185,5	59	1,40	1
40200066	RO-490-R-240-P4D	500	260	23,23	32,00	950	185,5	59	1,40	1

Left-hand rotation on request!

*Without groove for flat key

Measured values at a pressure of 6 bar.

10 mm minimum diameter of the supply air hose.



Air-actuated vane motor - reversible

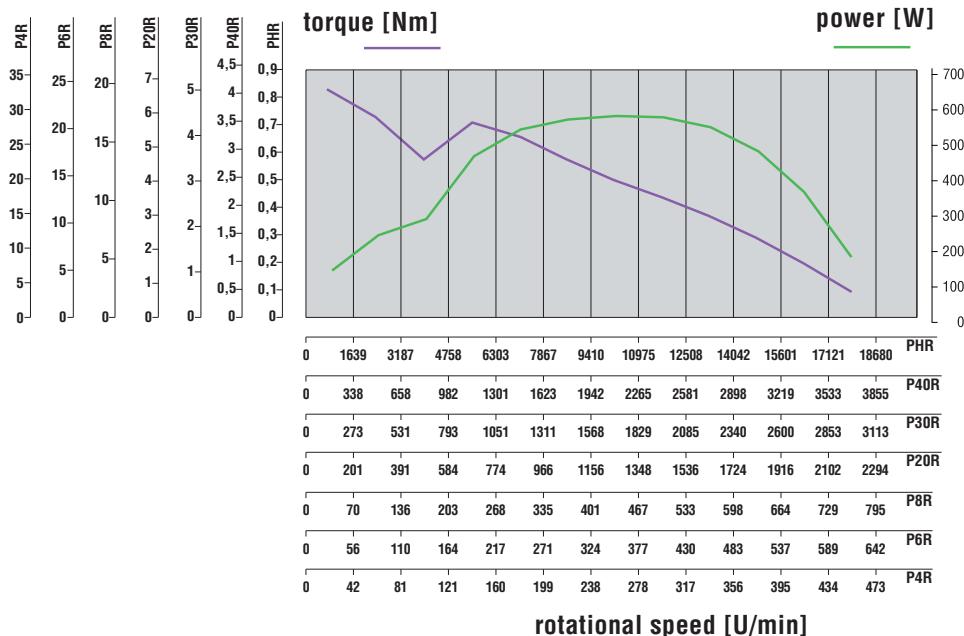
570 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nm/min	A mm	B mm	weight kg	VPE
40200067	RO-310-U-6780-PHR	19000	10950	0,50	0,82	830	157,5	31	1,15	1
40200068	RO-310-U-1400-P40R	4100	2250	2,43	4,00	830	157,5	31	1,15	1
40200069	RO-310-U-1130-P30R	3300	1820	3,00	4,93	830	157,5	31	1,15	1
40200070	RO-310-U-830-P20R	2400	1350	4,08	6,70	830	157,5	31	1,15	1
40200071	RO-310-U-290-P8R	800	450	11,76	19,32	830	185,5	59	1,40	1
40200072	RO-310-U-230-P6R	650	370	14,56	23,91	830	185,5	59	1,40	1
40200073	RO-310-U-170-P4R	400	270	19,76	32,46	820	185,5	59	1,40	1

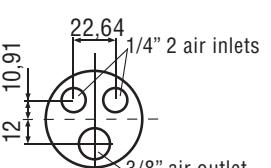
Measured values at a pressure of 6 bar.

*Without groove for flat key

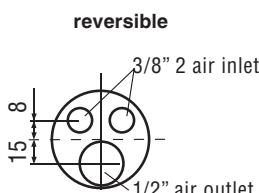
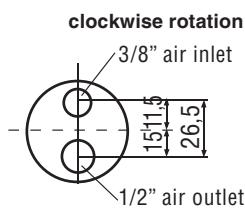
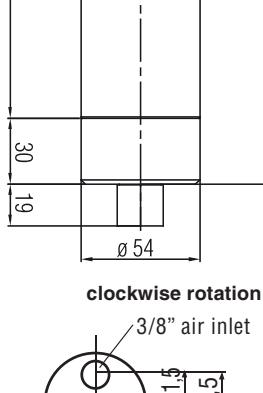
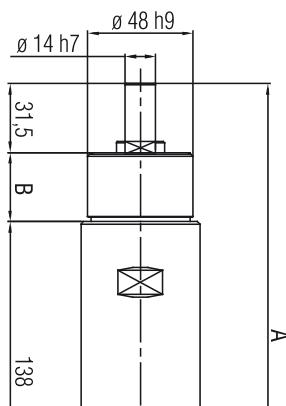
19 mm minimum diameter of the supply air hose.



reversible



Mounting brackets see page 247



Mounting brackets see page 247

Air-actuated vane motor - clockwise rotation motor shaft cylindrical, with groove for flat key

820 Watt

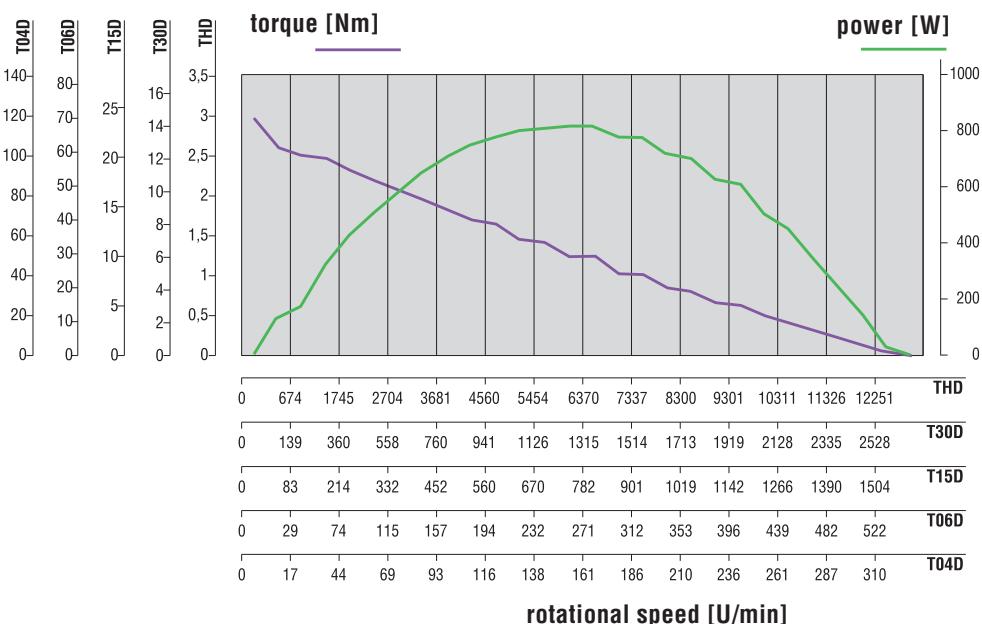
order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air consumption Nl/min	A mm	B mm	weight kg	VPE
40200080	RO-980-R-7200-THD	12500	6300	1,2	2,6	1300	231	31,5	1,8	1
40200081	RO-980-R-1550-T30D	2550	1300	6,0	13,0	1300	231	31,5	1,8	1
40200082	RO-980-R-850-T15D	1500	770	10,0	21,0	1300	231	31,5	1,8	1
40200083	RO-980-R-300-T06D	520	270	29,0	61,0	1300	257,5	58	2,1	1
40200084	RO-980-R-180-T04D	330	160	49,0	103,0	1300	257,5	58	2,1	1

Left-hand rotation on request!

Measured values at a pressure of 6 bar.

12 mm minimum diameter of the supply air hose.

*Without groove for flat key



Air-actuated vane motor - reversible motor shaft cylindrical, with groove for flat key

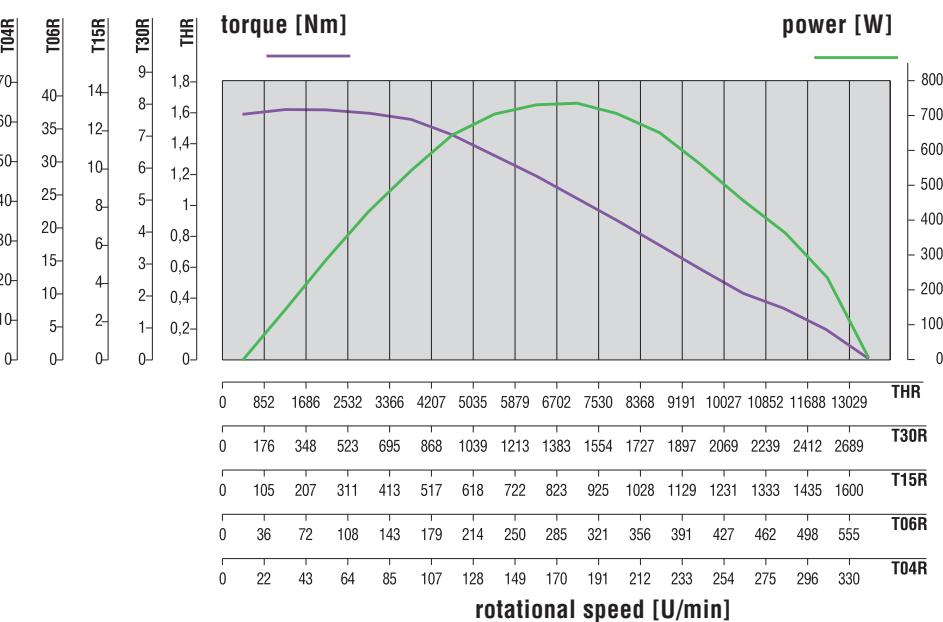
740 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air consumption Nl/min	A mm	B mm	weight kg	VPE
40200085	RO-740-U-5700-THR	13000	6700	1,0	1,6	1100	231	31,5	1,8	1
40200086	RO-740-U-1200-T30R	2600	1350	5,0	7,7	1100	231	31,5	1,8	1
40200087	RO-740-U-700-T15R	1600	820	8,5	13,0	1100	231	31,5	1,8	1
40200088	RO-740-U-240-T06R	550	280	24,5	37,4	1100	257,5	58	2,1	1
40200089	RO-740-U-140-T04R	330	170	41,0	62,8	1100	257,5	58	2,1	1

Measured values at a pressure of 6 bar.

12 mm minimum diameter of the supply air hose.

*Without groove for flat key



Air-actuated vane motor

clockwise rotation
reversible

1340 Watt
1070 Watt

Series R10

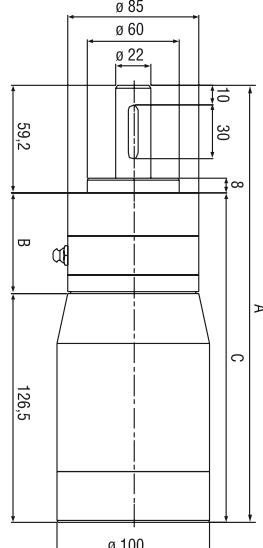
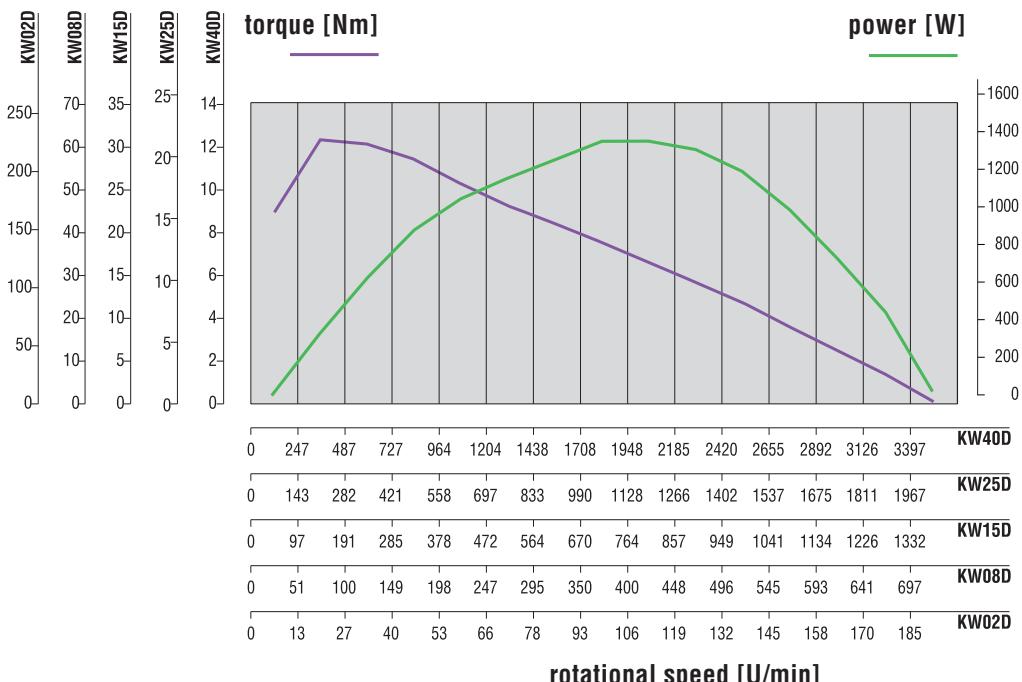
Air-actuated vane motor - clockwise rotation motor shaft cylindrical, with groove for flat key

1340 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200100	RO-1160-R-1900-KW40D	3500	1700	7,5	8,9	1400	240,5	54,8	5,9	1
40200101	RO-1160-R-1100-KW25D	2000	900	12,9	15,3	1400	240,5	54,8	5,9	1
40200102	RO-1160-R-750-KW15D	1350	670	19,1	22,7	1400	240,5	54,8	5,9	1
40200103	RO-1160-R-400-KW08D	700	350	36,5	43,4	1400	289,5	103,8	7,6	1
40200104	RO-1160-R-100-KW02D	190	90	137,5	163,3	1400	289,5	103,8	7,6	1

Measured values at a pressure of 6 bar.

13 mm minimum diameter of the supply air hose.



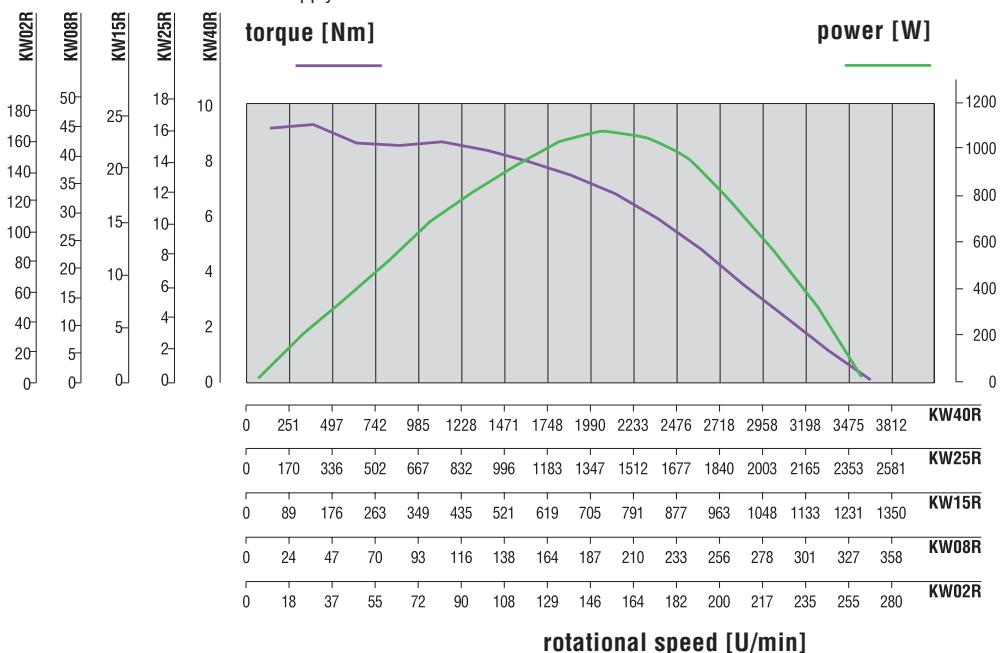
Air-actuated vane motor - reversible motor shaft cylindrical, with groove for flat key

1070 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	A mm	B mm	weight kg	VPE
40200105	RO-705-U-1300-KW40R	3400	1600	5	6	1600	240,5	54,8	5,9	1
40200106	RO-705-U-800-KW25R	1900	910	8,7	10,2	1600	240,5	54,8	5,9	1
40200107	RO-705-U-500-KW15R	1350	610	12,8	15,1	1600	240,5	54,8	5,9	1
40200108	RO-705-U-300-KW08R	700	320	24,5	28,8	1600	289,5	103,8	7,6	1
40200109	RO-705-U-70-KW02R	180	85	92,3	108,7	1600	289,5	103,8	7,6	1

Measured values at a pressure of 6 bar.

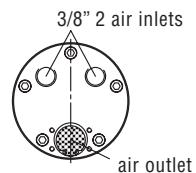
13 mm minimum diameter of the supply air hose.



clockwise rotation



reversible



Mounting brackets see page 247

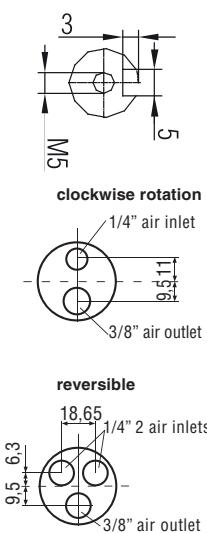
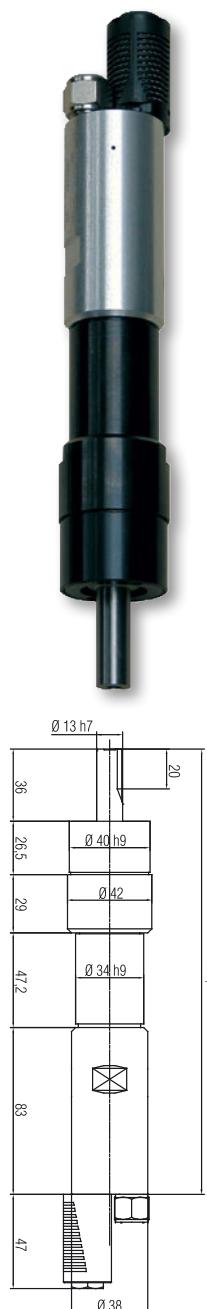
R10

Series R10

Air-actuated vane motor low rotational speed

clockwise rotation
reversible

190 Watt
160 Watt

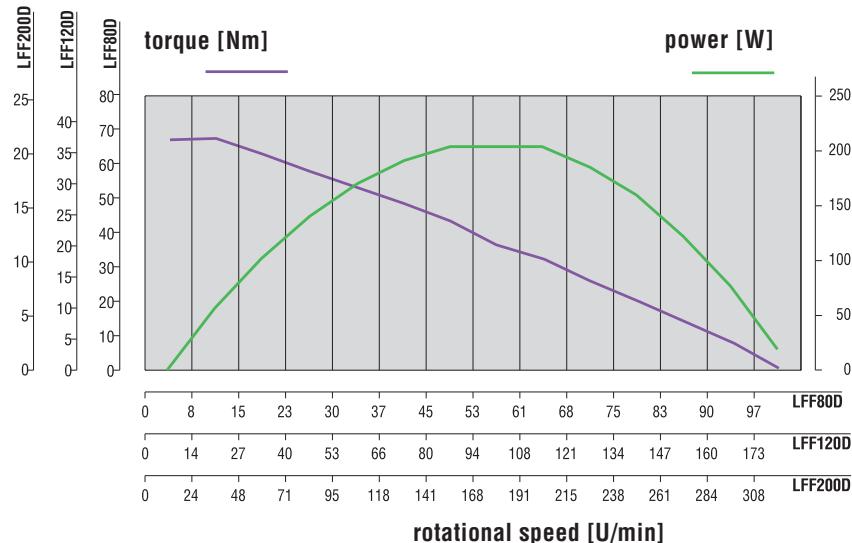


Air-actuated vane motor - clockwise rotation low rotational speed - motor shaft cylindrical, with groove for flat key

190 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air consump- tion Nm/min	weight kg	VPE
40200112	RO-116-R-220-LFF200D	300	170	11	21	480	1,1	1
40200111	RO-116-R-130-LFF120D	180	95	20	37	480	1,1	1
40200110	RO-116-R-75-LFF80D	100	50	36	67	480	1,1	1

Measured values at a pressure of 6 bar.
6 mm minimum diameter of the supply air hose.



Air-actuated vane motor - reversible low rotational speed - motor shaft cylindrical, with groove for flat key

160 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air consump- tion Nm/min	weight kg	VPE
40200115	RO-71-U-195-LFF200R	270	160	9	16	400	1,1	1
40200114	RO-71-U-110-LFF120R	150	90	16	29	400	1,1	1
40200113	RO-71-U-65-LFF80R	85	50	30	51	400	1,1	1

Measured values at a pressure of 6 bar.
6 mm minimum diameter of the supply air hose.



Mounting brackets see page 247

Air-actuated vane motor

low rotational speed

clockwise rotation
reversible

430 Watt
400 Watt

Series R10

Air-actuated vane motor - clockwise rotation

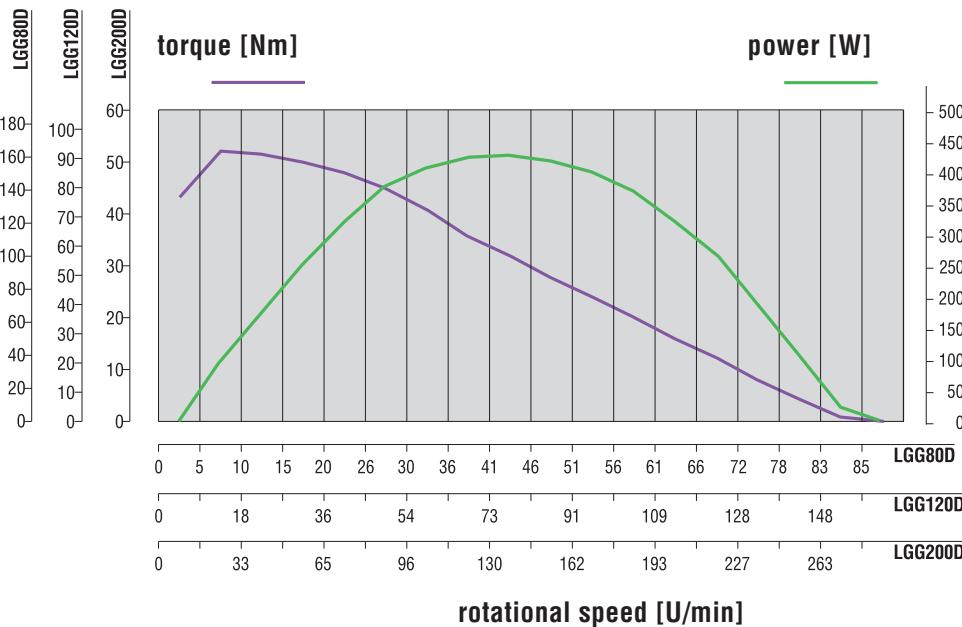
low rotational speed - motor shaft cylindrical, with groove for flat key

430 Watt

order-no.	type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air consump- tion Nl/min	weight kg	VPE
40200118	RO-285-R-195-LGG200D	260	130	31	43	600	1,5	1
40200117	RO-285-R-110-LGG120D	150	70	56	75	600	1,5	1
40200116	RO-285-R-62-LGG80D	85	40	100	135	600	1,5	1

Measured values at a pressure of 6 bar.

8 mm minimum diameter of the supply air hose.



430 Watt

400 Watt

**Application:**

This air vane motor is already running from a pressure of 0.5 bar and achieves an excellent torque. The completely sealed construction makes this motor interesting e.g. for the paint industry.

**Air-actuated vane motor - reversible
type PRT100**

340 Watt

order-no.	type	power Watt	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air con- sumption Nl/min	VPE
40200420	RO-340-U-4000-PRT100	340	4000	1700	1,8	3,4	570	1

**Application:**

These air vane motors are ideal for applications where a high starting torque combined with high reliability is required.

**Air-actuated vane motor - reversible
type MVR**

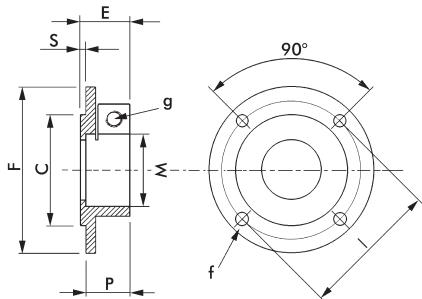
470 Watt

type	idle speed 1/min	on-load speed 1/min	load torque Nm	starting torque Nm	air consumption Nl/min
MVR4	280	150	30,6	48,4	600
MVR6	380	200	22,6	35,7	600
MVR8	450	250	18,2	28,8	600
MVR20	1300	700	6,4	10,0	600
MVR30	1800	980	4,6	7,4	600
MVR40	2200	1200	3,8	5,95	600
MVRH	10600	5800	0,8	1,3	600

Available on request!

Flange mounting for standard motors

order-no.	type	for air-actuated motor	VPE
40200200	RO-FL-92/60-LCYO	92/60 W - LCYO	1
40200201	RO-FL-116/71-LFB	116/71 W - LFB	1
40200202	RO-FL-285/180-LGS	285/180 W - LGS	1
40200203	RO-FL-490/310-980/740-P/T	490/310/980/740 W - P/T	1



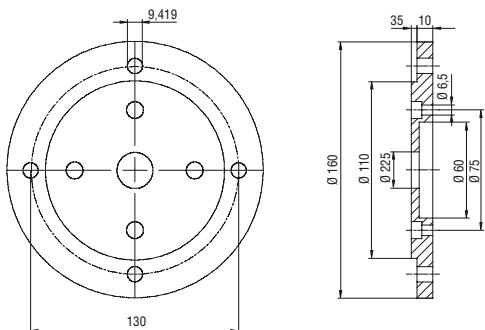
C	E	f	F	g	I	M	P	S
ø 40	18,0	ø 5	ø 60	M5	50	ø 26	16,0	2
ø 50	22,5	ø 5	ø 80	M6	65	ø 34	20,5	2
ø 60	26,0	ø 5	ø 90	M6	75	ø 40	24,0	2
ø 70	32,0	ø 5	ø 105	M8	85	ø 48	29,0	2



Attention: Due to the high torque, this mounting is only of limited use for low speed air motors (LFF and LGG)!

Flange mounting for standard motors

order-no.	type	for air-actuated motor	VPE
40200208	RO-FL-1160/705-KW	1160/705 W	1

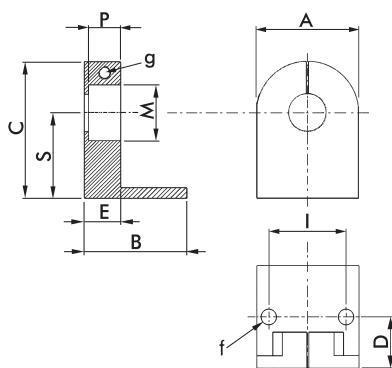


Attention: Due to the high torque, this mounting is only of limited use for low speed air motors (LFF and LGG)!

Foot mounting

R10

order-no.	type	for air-actuated motor	VPE
40200204	RO-FU-92/60-LCYO	92/60 W - LCYO	1
40200205	RO-FU-116/71-LFB	116/71 W - LFB	1
40200206	RO-FU-285/180-LGS	285/180 W - LGS	1
40200207	RO-FU-490/310-980/740-P/T	490/310/980/740 W - P/T	1



A	B	C	D	E	f	g	I	M	P	S
48	48	64	24	17	ø 6	M5	36	ø 26	15	40
58	58	85	29	21	ø 6	M6	46	ø 34	19	56
64	64	95	32	24	ø 8	M6	50	ø 40	22	63
80	80	111	40	30	ø 8	M8	65	ø 48	27	71



Attention: Due to the high torque, this mounting is only of limited use for low speed air motors (LFF and LGG)!

Notes

R10
