Rotary Actuators

Rotary actuators are an efficient and easy way to generate torque from compressed air, in a very compact size. They are ideal for the compact applications in a wide range of industries such as, packaging, process, electronics etc.

- Compact design
- Durable construction
- Long maintenance-free life
- High output torque/weight ratio
- Wide choice of torques available (up to 247 Nm)
- Range of mounting option, hydro-cushioning and position sensors

Operating information

Working pressure: Max 10 bar
Permissible fluid: Filtered (<5µ) with or without lubrication
Standard working temperature:
PRN/PRO 3 to 20 -5°C to +80°C
Other models -5°C to +60°C

Prelubricated, further lubrication is not normally necessary. If additional lubrication is introduced it must be continued.

For more information see www.parker.com/euro_pneumatic

PRN miniature (fixed oscillating angle)

Single vane	Torque at 6 bar (N.m)	Oscillating reference point 45°	90°	Oscillating angle 90°	180°	270°
PRNA1S	0,16		X	**PRNA1S-90-90**	**PRNA1S-180-90**	
PRNA3S	0,38		X	**PRNA3S-90-90**	**PRNA3S-180-90**	
PRNA10S	1,20		X	**PRNA10S-90-90**	**PRNA10S-180-90**	
PRNA20S	2,10		X	**PRNA20S-90-90**	**PRNA20S-180-90**	
PRN30SE	4,10	X		**PRN30SE-90-45**	**PRN30SE-180-45**	**PRN30SE-270-45**
Double vane						
PRNA3D	0,65			**PRNA3D-90-45**		
PRNA10D	2,54			**PRNA10D-90-45**		
PRNA20D	4,70			**PRNA20D-90-45**		
PRN30DE	9,50			**PRN30DE-90-45**		

PRO (adjustable oscillating angle)

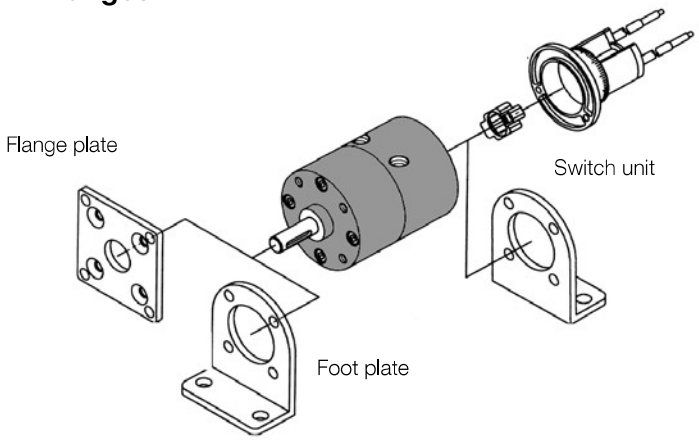
Torque at 6bar (N.m)	Oscillating angle	Order code	Torque at 6bar (N.m)	Oscillating angle	Order code
Single vane		**Double vane**			
0,38	30 to 180°	**PROA3S-0-90**	0,65	30 to 90°	**PROA3D-0-45**
1,20	30 to 180°	**PROA10S-0-90**	2,54	30 to 90°	**PROA10D-0-45**
2,10	30 to 180°	**PROA20S-0-90**	4,70	30 to 90°	**PROA20D-0-45**
4,10	30 to 270°	**PRO30SE-0-45**	9,50	30 to 90°	**PRO30DE-0-45**

PRN high torque range (fixed oscillating angle)

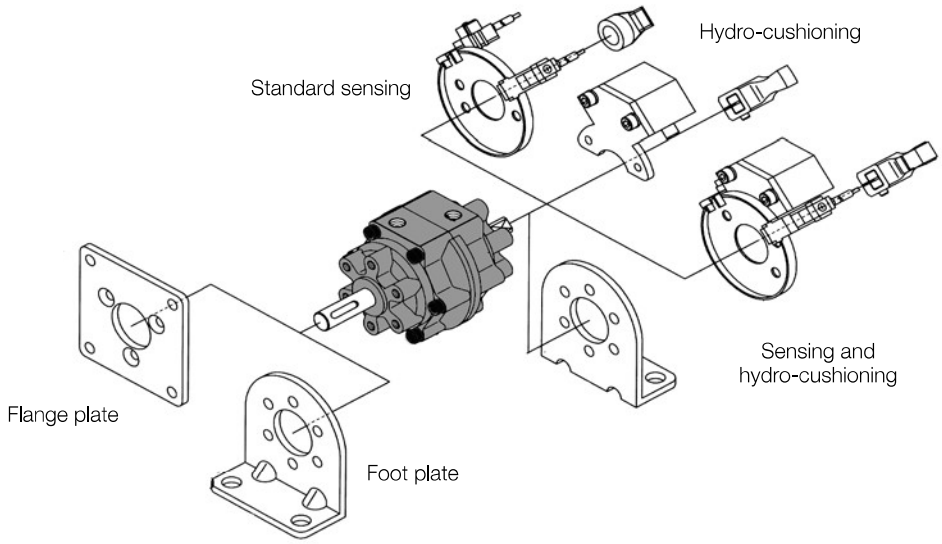
Single vane	Torque at 6 bar (N.m)	90°	Oscillating angle 180°	270°
PRN50SE	5,9	**PRN50SE-90-45**	**PRN50SE-180-45**	**PRN50SE-270-45**
PRN150SE	18,0	**PRN150SE-90-45**	**PRN150SE-180-45**	**PRN150SE-270-45**
PRN300SE	34,5	**PRN300SE-90-45**	**PRN300SE-180-45**	**PRN300SE-270-45**
PRN800SE	123,0	**PRN800SE-90-45**	**PRN800SE-180-45**	**PRN800SE-270-45**
Double vane (oscillating angle 45°)				
PRN50DE	12,8	**PRN50DE-90-45**		
PRN150DE	41,5	**PRN150DE-90-45**		
PRN300DE	83,0	**PRN300DE-90-45**		
PRN800DE	247,0	**PRN800DE-90-45**		

Design Variants

PRO and miniature PRN ranges



PRN high torque range



Hydro-cushion for PRN050 to PRN800 rotary actuators

Rotary actuator	Hydro-cushion	Claw for hydro-cushion - Oscillating angle		
		90°	180°	270°
PRN50S	**CRN50**	**CRN50-90-45-T**	**CRN50-180-45-T**	**CRN50-270-45-T**
PRN150S	**CRN150**	**CRN150-90-45-T**	**CRN150-180-45-T**	**CRN150-270-45-T**
PRN300S	**CRN300**	**CRN300-90-45-T**	**CRN300-180-45-T**	**CRN300-270-45-T**
PRN50D	**CRN50**	**CRN50-90-45-T**		
PRN150D	**CRN150**	**CRN150-90-45-T**		
PRN300D	**CRN300**	**CRN300-90-45-T**		

Vane actuators provide the maximum amount of output torque from the smallest possible envelope size. They convert pneumatic pressure into rotary motion for a wide variety of industrial applications.

Two basic styles are available. Single vane models with a maximum rotation of 280°, while the double vane units produce twice the torque output from identical envelope dimensions and have a maximum rotation of 100°.

- Double acting actuators
- Single or double vane
- Compact smooth design
- Uniform torque in both directions
- Angle adjustment and sensors available.

Operating information

Type		Double acting actuation
Standard rotation (tolerance ±1°)	Single vane	0 to 275°, size 10 to 11 0 to 280°, size 22 to 23
	Double vane	0 to 95°, size 10 to 11 0 to 100°, size 22 to 23
Temperature		-10°C to +80°C
Air supply		Lubricated or non-lubricated
Pressure range		2 to 10 bar max

Basic Unit

Size	Max.rotation	Type	Shaft	Order code.
10	275°	Single	Not through rod	**6V5100010F-275**
	95°	Double		**6V5100010F-095**
11	275°	Single		**6V5200010F-275**
	95°	Double		**6V5200010F-095**
22	280°	Single	Through rod	**6V1300030F-280**
	100°	Double		**6V1300030F-100**
33	280°	Single		**6V2400030F-280**
	100°	Double		**6V2400030F-100**

Angle adjustment and sensor kits

Size	Options	Order code.
22	Angle adjustment kit	**6V03570**
	Angle adjustment kit with sensors PNP	**6V03575**
	Angle adjustment kit with sensors NPN	**6V03576**
33	Angle adjustment Kit	**6V04570**
	Angle adjustment kit with sensors PNP	**6V04575**
	Angle adjustment kit with sensors NPN	**6V04576**

Complete with angle adjustment and sensors

Size	Max.rotation	Type	Shaft	Order code.
22	220°	Single	Angle adjustment kit	**6V1357630F-220**
	100°	Double		**6V1357730F-100**
	220°	Single	As above + PNP Sensors + plug	**6V1357635F-220**
	100°	Double		**6V1357735F-100**
	220°	Single	As above + NPN Sensors + plug	**6V1357636F-220**
	100°	Double		**6V1357736F-100**
33	220°	Single	Angle adjustment kit	**6V2457630F-220**
	100°	Double		**6V2457730F-100**
	220°	Single	As above + PNP Sensors + plug	**6V2457635F-220**
	100°	Double		**6V2457735F-100**
	220°	Single	As above + NPN Sensors + plug	**6V2457636F-220**
	100°	Double		**6V2457736F-100**

The RA is a double-acting rotary actuator of very compact design. It has a high torque and small installation dimensions.
The actuator has double pistons, which transmits the turning moment to the output shaft. The toothed piston rods act on the output shaft in a rack-and-pinion type arrangement. Each piston and toothed rod is of integral construction.
The rack-and-pinion type arrangement gives an even turning moment throughout the rotation movement.

- 5 unit sizes
- Torque from 20 to 200 Nm
- Turning angles of 90° or 180°
- Keyway output shaft
- Direct Namur valve connection

Operating information

Working medium:	dry, filtered compressed air
Working pressure:	Max, 10 bar
Working temperature:	-20°C to +80°C

Prelubricated, further lubrication is not normally necessary.
If additional lubrication is introduced it has to be continued.

Ordering information for RA

Angle	Order code
90°	**RA2-90**
180°	**RA2-180**
90°	**RA4-90**
180°	**RA4-180**
90°	**RA8-90**
180°	**RA8-180**
90°	**RA12-90**
180°	**RA12-180**
90°	**RA20-90**
180°	**RA20-180**

Material specification

Cylinder block / end covers	Anodised aluminium, natural/black
Pistons	Aluminium
Relief surface bars	Stainless steel
Shaft	Zinc-plated steel
End cover screws	Zinc-plated steel
Seals	Nitrile rubber, NRB
Piston bearings	POM
Shaft bearings	Polyethene MOS2

Transforms the rectilinear motion of two single acting opposite cylinders into rotary motion via a rack and pinion drive contained within the cylinder body.

- VRA version (Ø32 to Ø80mm)
- VRA standard version (Ø32 to Ø125mm) for corrosive environments
- Rotation angles of 96°, 186° or 366°
- Optional magnetic version
- Several options are available; rotative angle adjustable stop, male shaft or female shaft (through)

Operating information

Working pressure:	Max, 10 bar
Standard working temperature:	-10°C to +60°C

Prelubricated, further lubrication is not normally necessary.
If additional lubrication is introduced it has to be continued.

VRA - Magnetic, Female shaft, No end adjustment

Bore	Rotation Angle (°)	Order code
32	96	**VRAM032-96FNN**
32	186	**VRAM032-186FNN**
32	366	**VRAM032-366FNN**
40	96	**VRAM040-96FNN**
40	186	**VRAM040-186FNN**
40	366	**VRAM040-366FNN**
50	96	**VRAM050-96FNN**
50	186	**VRAM050-186FNN**
50	366	**VRAM050-366FNN**
63	96	**VRAM063-96FNN**
63	186	**VRAM063-186FNN**
63	366	**VRAM063-366FNN**
80	96	**VRAM080-96FNN**
80	186	**VRAM080-186FNN**
80	366	**VRAM080-366FNN**

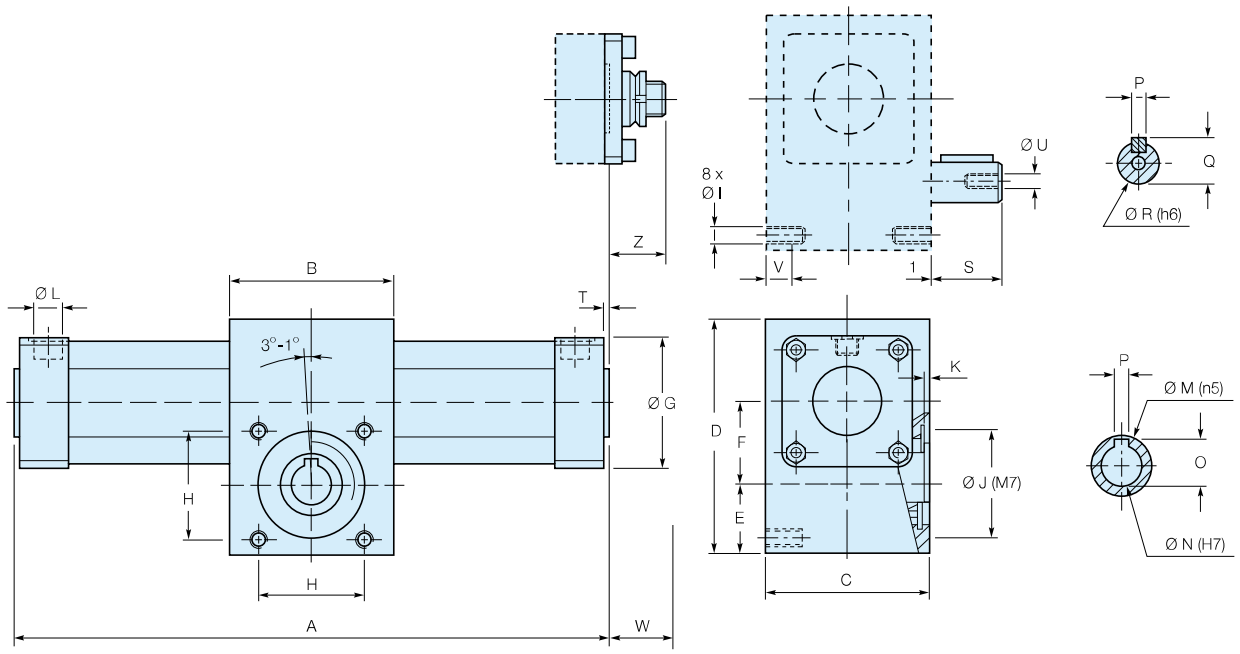
VRS - Magnetic, Female shaft, No end adjustment

Bore	Rotation Angle (°)	Order code
32	96	**VRSM032-96FNN**
32	186	**VRSM032-186FNN**
32	366	**VRSM032-366FNN**
40	96	**VRSM040-96FNN**
40	186	**VRSM040-186FNN**
40	366	**VRSM040-366FNN**
50	96	**VRSM050-96FNN**
50	186	**VRSM050-186FNN**
50	366	**VRSM050-366FNN**
63	96	**VRSM063-96FNN**
63	186	**VRSM063-186FNN**
63	366	**VRSM063-366FNN**
80	96	**VRSM080-96FNN**
80	186	**VRSM080-186FNN**
80	366	**VRSM080-366FNN**
100	96	**VRSM100-96FNN**
100	186	**VRSM100-186FNN**
100	366	**VRSM100-366FNN**
125	96	**VRSM125-96FNN**
125	186	**VRSM125-186FNN**
125	366	**VRSM125-366FNN**

For more options consult techinical catalogue

Dimensions (mm)

Cylinder bores Ø 32 to 80mm



The location of the shaft key is indicated when the pistons are on the left.
First rotation as indicated (clockwise).

Ω : Rotative angle 96°, 186° or 360°

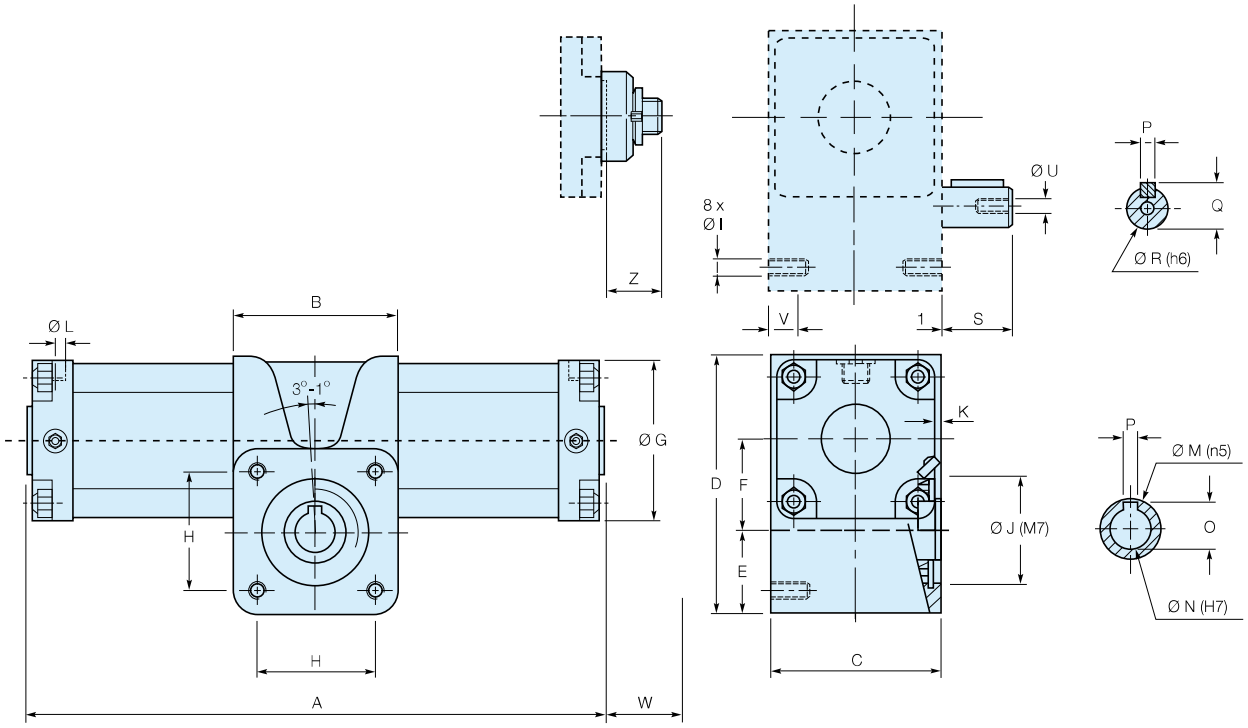
Ø	A*	B	C	D	E	F	G	H	I	J	K	L
32	128 + 0.523 Ω	50	50	72	25.0	24.0	45	35	M6	35	2.0	G1/8"
40	163 + 0.6981 Ω	65	65	95	32.5	29.5	52	47	M8	47	3.0	G1/4"
50	163 + 0.6981 Ω	65	65	95	32.5	29.5	65	47	M8	47	3.0	G1/4"
63	209 + 0.9424 Ω	95	95	126	40.0	38.0	75	62	M10	62	3.5	G3/8"
80	209 + 0.9424 Ω	95	95	126	40.0	38.0	95	62	M10	62	3.5	G3/8"

Ø	M	N	O	P	Q	R	S	T	U	V	W*	Z
32	17	10	11.7	4	13.5	12	20	2	M4 x 10	10	22	31
40	25	15	17.2	5	18.0	16	30	3	M5 x 15	12	24	35
50	25	15	17.2	5	18.0	16	30	3	M5 x 15	12	29	35
63	35	24	27.2	8	27.0	24	40	3	M8 x 20	15	32	32
80	35	24	27.2	8	27.0	24	40	3	M8 x 20	15	32	32

* Add W to A for the magnetic version (magnet on right hand side as standard).

Dimensions (mm)

Cylinder bores Ø 100 to 125mm



The location of the shaft key is indicated when the pistons are on the left.
First rotation as indicated (clockwise).

Ω : Rotative angle 96°, 186° or 360°

Ø	A*	B	C	D	E	F	G	H	I	J	K	L
100	304 + 1.309 Ω	130	142	188	64.0	53.5	115	90	M14	90	4.5	G1/2"
125	304 + 1.309 Ω	130	142	188	64.0	53.5	140	90	M14	90	4.5	G1/2"

Ø	M	N	O	P	Q	R	S	U	V	W*	Z
100	55	35	38.7	10	38.5	35	50	M12 x 20	24	4	38
125	55	35	38.7	10	38.5	35	50	M12 x 20	24	4	38

* Add W to A for the magnetic version (magnet on right hand side as standard).

Material specification

	VRS	VRA
Rack	XC40 steel	XC40 steel
Floating piston	Aluminium	Aluminium
Magnet (***M version)	Magnetic elastomer	Magnetic elastomer
Piston seals	Polyurethane	Polyurethane
Rack and pinion gear seals		Silicone
Body	Anodised aluminium	Anodised aluminium
Integrated tie rods, nuts, circlips, screws	Zinc plated steel	303 stainless steel
Body	Hard anodised aluminium extrusion	Hard anodised aluminium extrusion
End caps	Anodised aluminium	Anodised aluminium
Male or female transmission shaft	XC40 steel	304 stainless steel (female)
Cushion sleeve	Brass	Brass
Clearance adjusting block (Ø 32 to 80mm)	Acetal	Acetal
Adjusting screw blanking plate		Aluminium + silicone seal

Condition of use

	Ø 32 to 80mm	Ø 100 and 125mm
Temperature range	-10°C to +60°C (14°F to 140°F)	
Pressure range (bar)	0.5 to 10 7 to 145 psi)	0.3 to 10 (4 to 145 psi)
Air condition	Filtered air 40µ, lubricated or non lubricated, dry or non dry	

Theoretical torque

Ø Bore mm	Pinion Module	ØPm	Torque (N.m) 2 bar	4 bar	6 bar	8 bar	10 bar
32	1.5	20	2.4	4.8	7.2	9.6	12
40	2	40	5.0	10.0	15.0	20.0	25
50	2	40	8.0	16.0	24.0	32.0	40
63	3	54	17.0	34.0	51.0	68.0	85
80	3	54	27.0	54.0	81.0	108.0	135
100	5	75	58.0	116.0	174.0	232.0	290
125	5	75	92.0	184.0	276.0	368.0	460

The table above shows the theoretical torque at different pressures. A maximum efficiency of 80% should be assured due to functional losses.

Technical data

Bore (mm)		32	40	50	63	80	100	125
Maximum load (N)	Axial	110	350	350	1050	1050	2500	2500
	Radial	35	220	220	900	900	2000	2000
Cushion angle (°)		50	45	45	32	32	30	30
Nominal moment of inertia (kg.m²)		0.003	0.01	0.02	0.1	0.2	0.3	0.4
Rotative angle (-1°)					96°, 186°, 366°			
Angular tolerance		0°10'	0°10'	0°10'	0°10'	0°10'	1°	1°