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** |

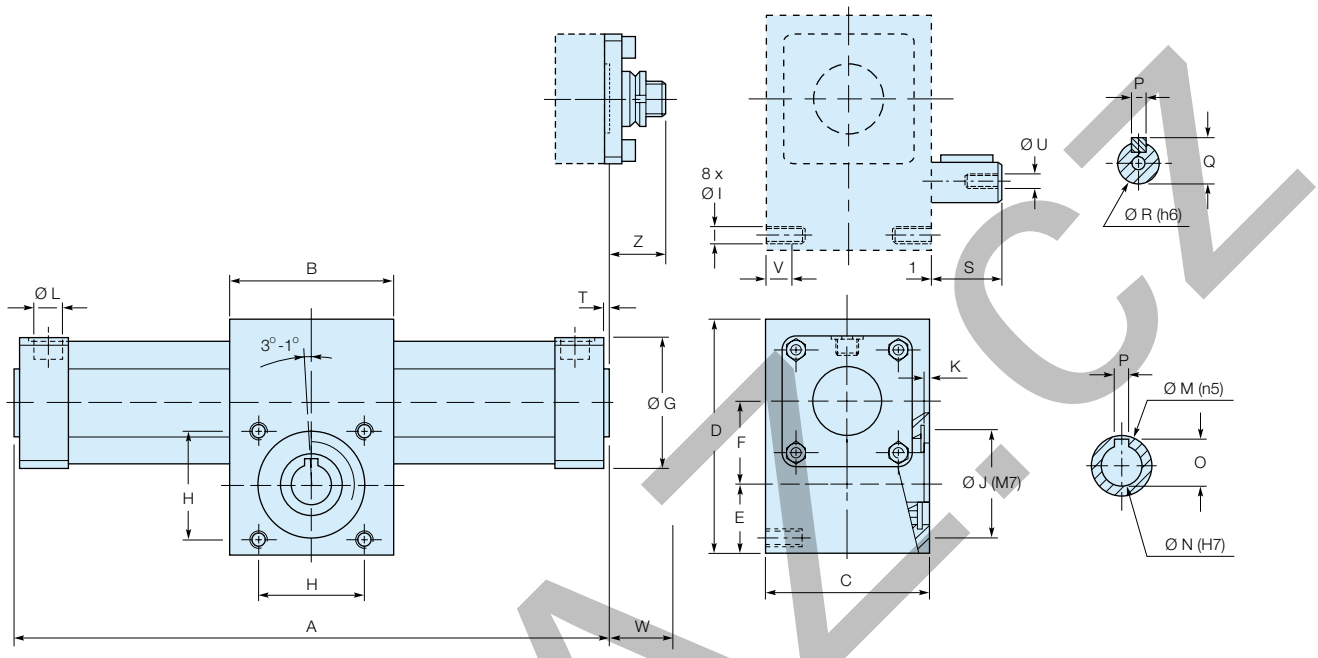
## VRS - Magnetic, Female shaft, No end adjustment

| 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°

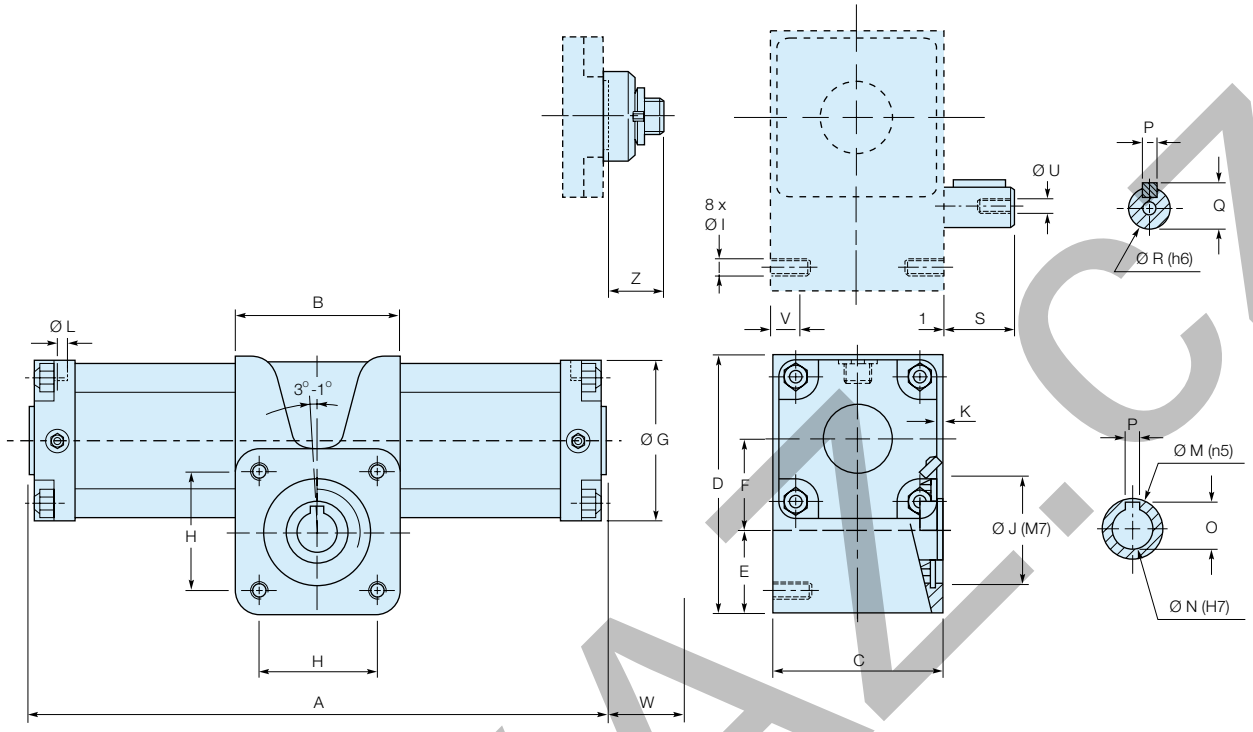
| Ø | A* | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 128 + 0.523 Ω | 50 | 50 | 72 | 25.0 | 24.0 | 45 | 35 | M6 | 35 | 2.0 | G1/8" |
| 40 | 163 + 0.6981 Ω | 65 | 65 | 95 | 32.5 | 29.5 | 52 | 47 | M8 | 47 | 3.0 | G1/4" |
| 50 | 163 + 0.6981 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<br>(14°F to 140°F) | |
| Pressure range<br>(bar) | 0.5 to 10<br>7 to 145 psi) | 0.3 to 10<br>(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.m³) | | 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° |