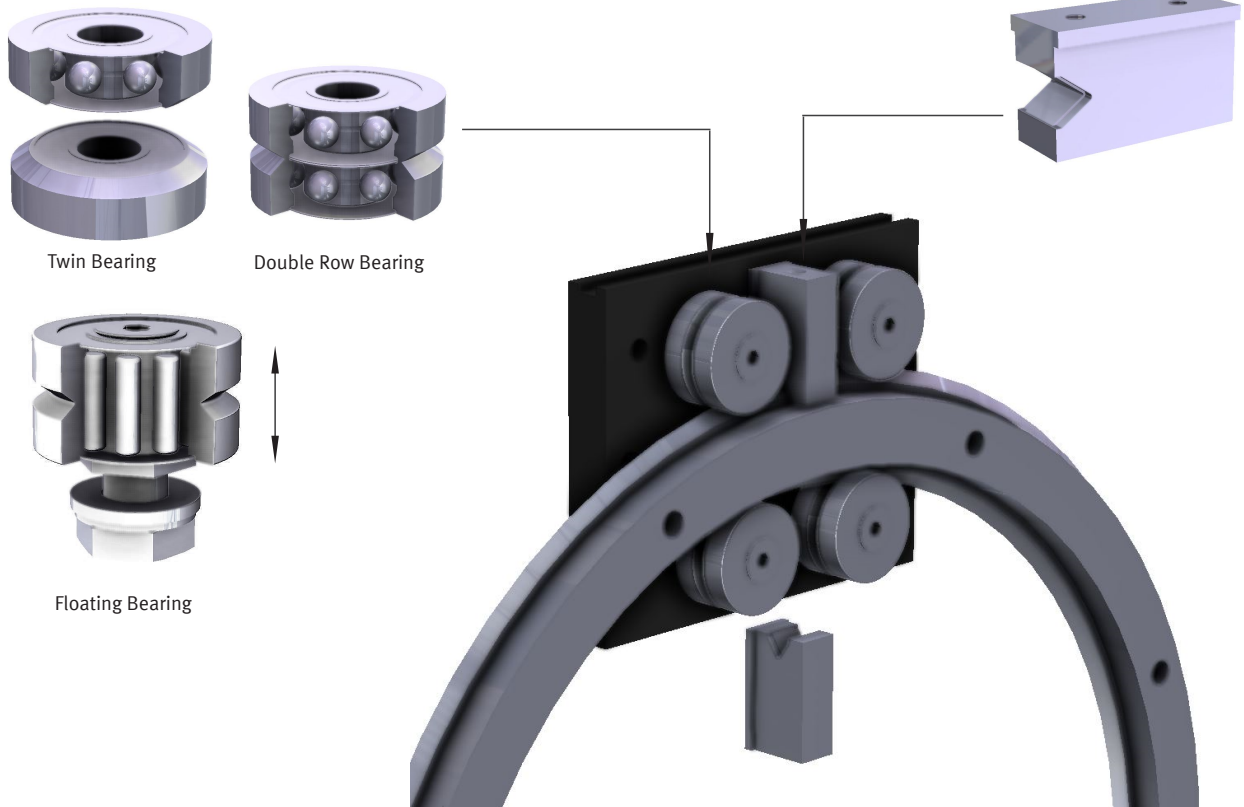


Ring & Track Motion Components

Construction: This system includes Double Edge Ring Rail, Concentric Bearings, Eccentric Bearings and Lubricators.
The Rail, bearings and other components are designed to be interchangeable with all international standard suppliers

Concentric, Eccentric & Floating Bearings: Manufactured from high quality bearing steel. Whole body hardened for high wear resistance. Can be supplied as either Twin Double Row or Floating Bearings. All bearings are supplied as standard with shot fixing bolts, longer fixing bolts available on request.

Lubricated Wiper: The Lubricated felt wiper contacts the rails working surface to increase load capacity and life of the system. The felt wiper is pressed lightly by a small spring on to the rails working surface to ensure minimal friction. Lubricant is re-filled through a fill hole on back of the unit.



V Edge Ring Rail: Manufactured from high quality bearing steel. Deep hardened on the rails running surface for increased wear resistance. All surfaces including mount surface ground for precision. The 70° Double V running surfaces are ground together to ensure parallelism. Wide range of standard sizes available to suit most applications. All ring rails can be cut into segments, to suite customers design. Additionally Double Edge ring segments can be combined with linear Double Edge Rails to create Track Systems



Motion Options for Rings

Double V-Edge Ring Rail With Carriage



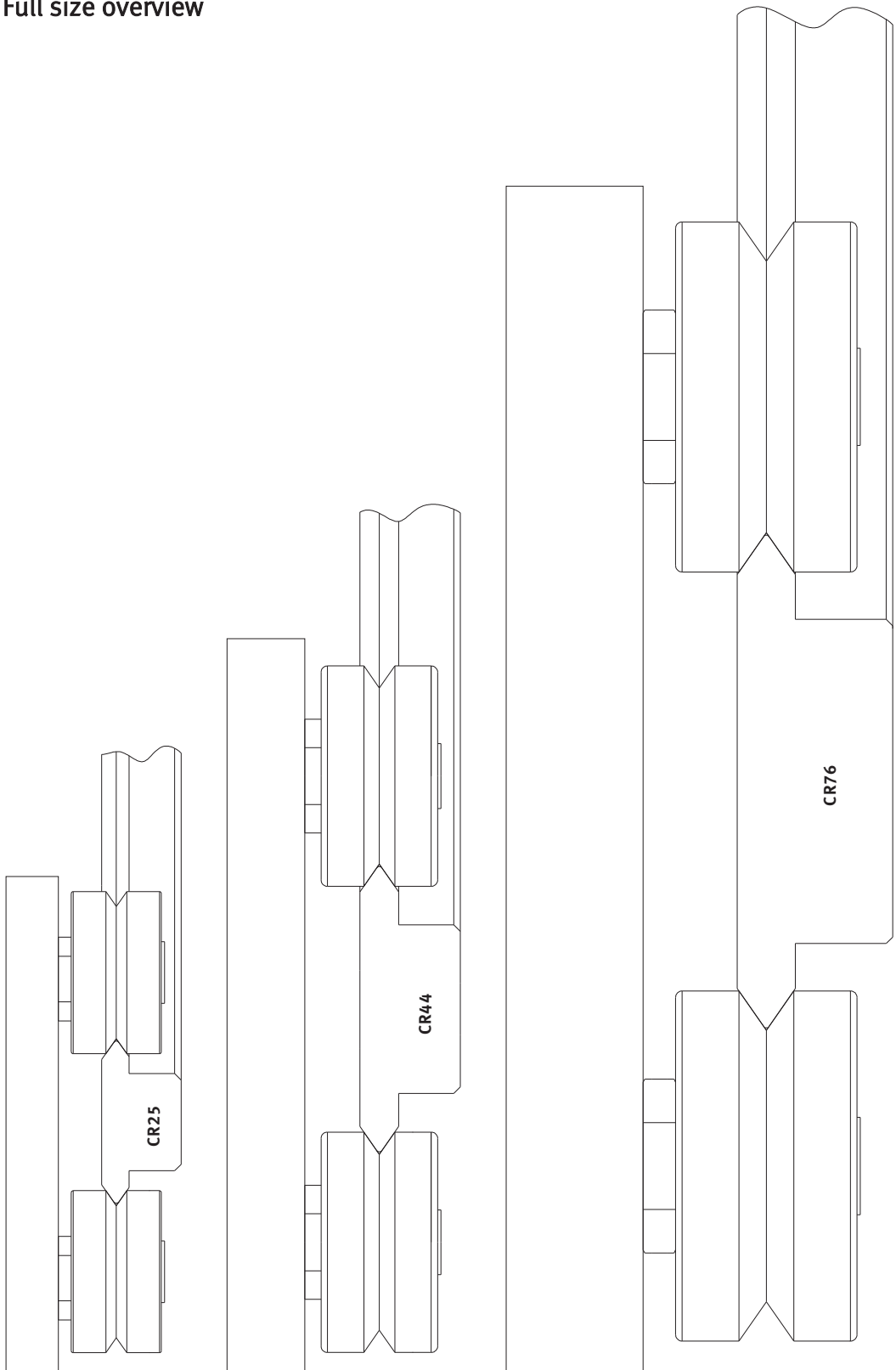
External Gear Double V-Edge Ring

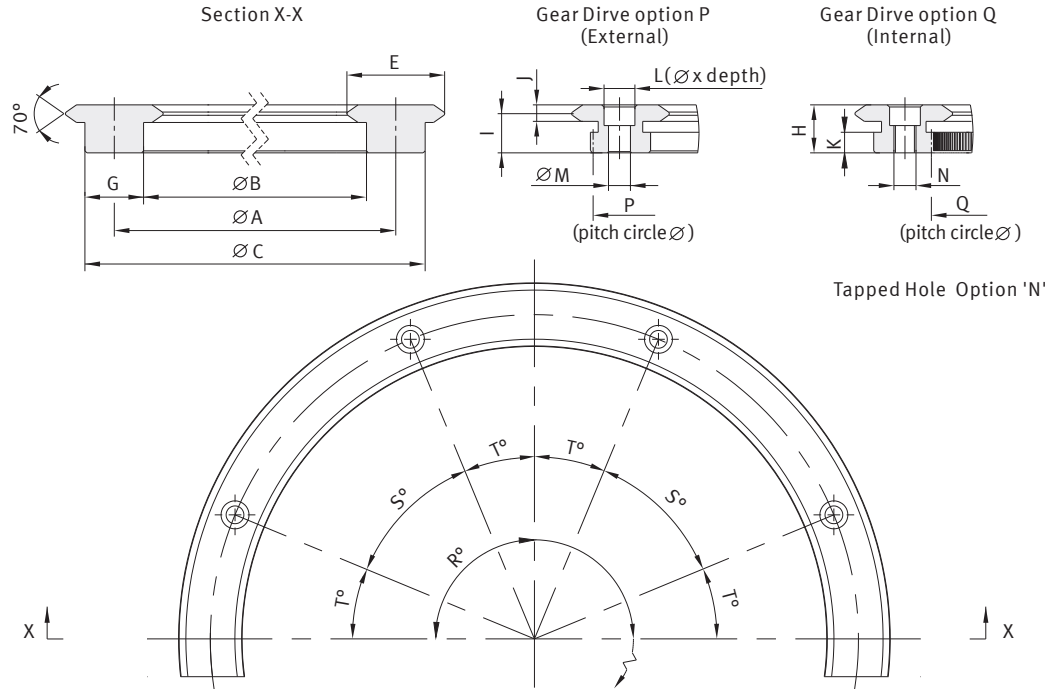


Internal Gear Single V-Edge Ring



Full size overview





Type Code Details

CR25 351 R180 (P) (Q) (N)

Screw holes option

Internal gear option

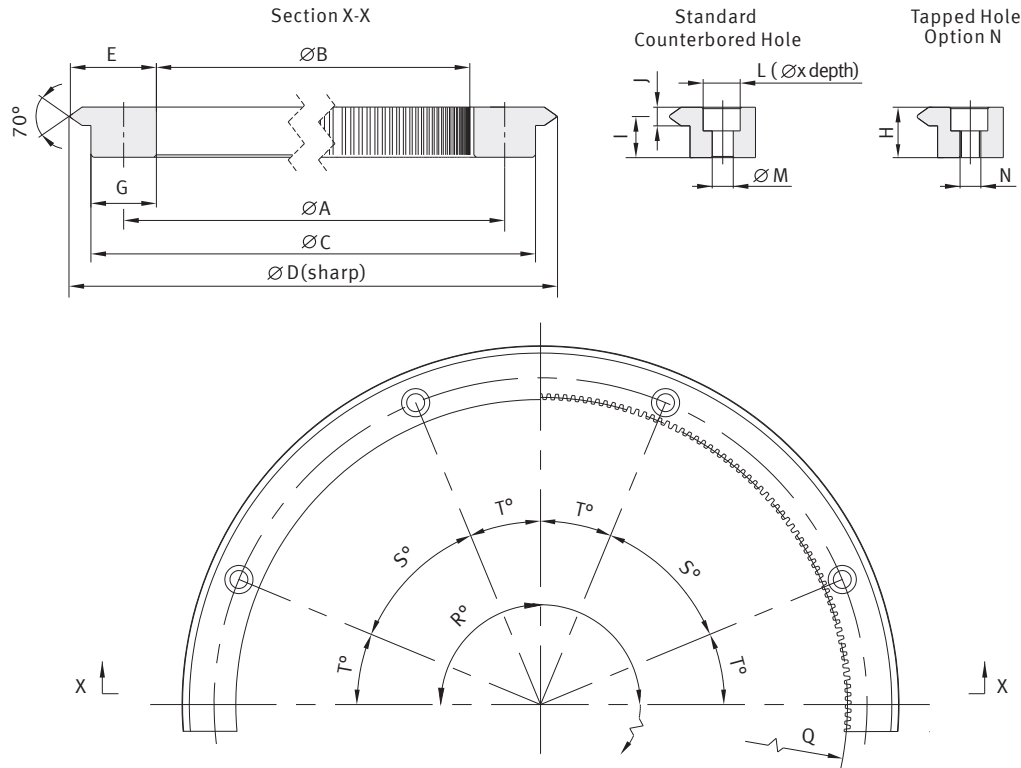
External gear option

Segment angular 90° , 180° , full 360° Ring

Ring rail size

| Type | Applicable Bearing | A | B | C | E | G | H | I | J | K | L (Ø x depth) | M | N | External Gear | | | Internal Gear | | | Hole number (R=360°) | Holes' Position ±0.2 | | Weight (kg) (R=360°) |
|------------------|--------------------|------|--------|--------|----|----|-------|------|-----|------|---------------|-----|-----|---------------|-----|--------------------|---------------|-----|--------------------|----------------------|----------------------|-------|----------------------|
| | | | | | | | | | | | | | | P | m | Teeth Qty (R=360°) | Q | m | Teeth Qty (R=360°) | | S° | T° | |
| CR25 159 | SVR-25 | 159 | 143.6 | 174.4 | 25 | 15 | 12.25 | 10 | 4.2 | 5.25 | 9x6 | 5.5 | M8 | 172.8 | 0.8 | 216 | 145.6 | 0.8 | 182 | 8 | 45 | 22.5 | 0.77 |
| CR25 255 | SVR-25 | 255 | 239.6 | 270.4 | 25 | 15 | 12.25 | 10 | 4.2 | 5.25 | 9x6 | 5.5 | M8 | 268.8 | 0.8 | 336 | 241.6 | 0.8 | 302 | 8 | 45 | 22.5 | 1.2 |
| CR25 351 | SVR-25 | 351 | 335.6 | 366.4 | 25 | 15 | 12.25 | 10 | 4.2 | 5.25 | 9x6 | 5.5 | M8 | 364.8 | 0.8 | 456 | 337.6 | 0.8 | 422 | 12 | 30 | 15 | 1.65 |
| CR44 468 | SVR-34 | 468 | 442 | 494 | 44 | 26 | 15.5 | 12.5 | 6 | 7 | 11x7 | 7 | M8 | 492 | 1 | 492 | 444 | 1 | 444 | 12 | 30 | 15 | 5.1 |
| CR44 612 | SVR-34 | 612 | 586 | 638 | 44 | 26 | 15.5 | 12.5 | 6 | 7 | 11x7 | 7 | M8 | 636 | 1 | 636 | 588 | 1 | 588 | 16 | 22.5 | 11.25 | 6.7 |
| CR76 799 | SVR-54 | 799 | 748.5 | 849.5 | 76 | 50 | 24 | 19.5 | 9 | 12 | 20x13 | 11 | M16 | 846 | 1.5 | 564 | 751.5 | 1.5 | 501 | 16 | 22.5 | 11.25 | 25 |
| CR76 1033 | SVR-54 | 1033 | 982.5 | 1083.5 | 76 | 50 | 24 | 19.5 | 9 | 12 | 20x13 | 11 | M16 | 1080 | 1.5 | 720 | 985.5 | 1.5 | 657 | 20 | 18 | 9 | 32 |
| CR76 1267 | SVR-54 | 1267 | 1216.5 | 1317.5 | 76 | 50 | 24 | 19.5 | 9 | 12 | 20x13 | 11 | M16 | 1314 | 1.5 | 876 | 1219.5 | 1.5 | 813 | 20 | 18 | 9 | 41 |
| CR76 1501 | SVR-54 | 1501 | 1450.5 | 1551.5 | 76 | 50 | 24 | 19.5 | 9 | 12 | 20x13 | 11 | M16 | 1548 | 1.5 | 1032 | 1453.5 | 1.5 | 969 | 20 | 18 | 9 | 48.7 |

Components: External Single Edge Ring



Type Code Details

CES 376 R180 (Q) (N)

Screw holes option

Internal gear option

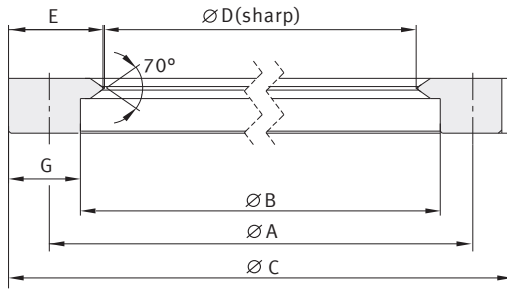
Segment angular 90°、180°、full 360° Ring

Ring rail size

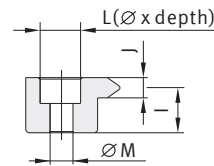
| Type | Applicable Bearing | A | B | C | D | E | G | H | I | J | L (Ø×depth) | M | N | Internal Gear | | | Hole number (R=360°) | Holes' Position ±0.2 | | Weight (kg) (R=360°) |
|----------------|--------------------|-------|-------|-------|--------|------|----|-------|------|-----|----------------|-----|-----|---------------|------|-----------------------|-------------------------|-------------------------|-------|----------------------------|
| | | | | | | | | | | | | | | Q | m | Teeth Qty (R=360°) | | S° | T° | |
| CES 184 | SVR-25 | 159 | 142 | 174 | 184.74 | 20.8 | 16 | 12.25 | 10 | 4.5 | 10×5.5 | 5.5 | M8 | 144 | 1 | 144 | 8 | 45 | 22.5 | 0.78 |
| CES 280 | SVR-25 | 255 | 238 | 270 | 280.74 | 20.8 | 16 | 12.25 | 10 | 4.5 | 10×5.5 | 5.5 | M8 | 240 | 1 | 240 | 8 | 45 | 22.5 | 1.27 |
| CES 376 | SVR-25 | 351 | 334 | 366 | 376.74 | 20.8 | 16 | 12.25 | 10 | 4.5 | 10×5.5 | 5.5 | M8 | 336 | 1 | 336 | 12 | 30 | 15 | 1.75 |
| CEM 505 | SVR-34 | 468.5 | 447.5 | 487.5 | 506.24 | 28.8 | 20 | 15.5 | 12.5 | 6 | 11×6.5 | 7 | M8 | 450 | 1.25 | 360 | 12 | 30 | 15 | 3.93 |
| CEM 655 | SVR-34 | 618.5 | 597.5 | 637.5 | 656.24 | 28.8 | 20 | 15.5 | 12.5 | 6 | 11×6.5 | 7 | M8 | 600 | 1.25 | 480 | 16 | 22.5 | 11.25 | 5.18 |
| CEM 874 | SVR-54 | 820 | 788 | 848 | 874.74 | 42.8 | 30 | 24 | 19.5 | 9 | 18×10.5 | 11 | M16 | 792 | 2 | 396 | 16 | 22.5 | 11.25 | 15.64 |

Components: Internal Single Edge Ring

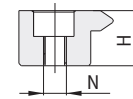
Section X-X



Standard Counterbored Hole



Tapped Hole Option N



Type Code Details

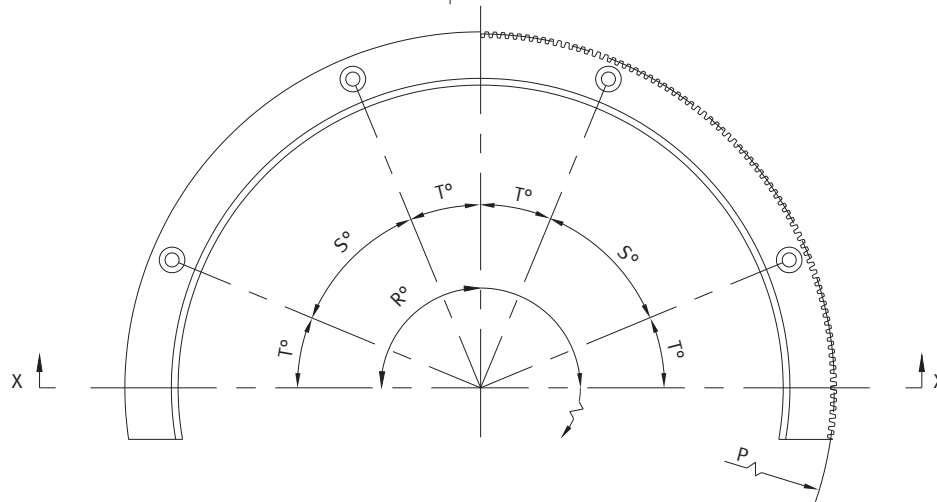
CIS 374 R180 (P) (N)

Screw holes option

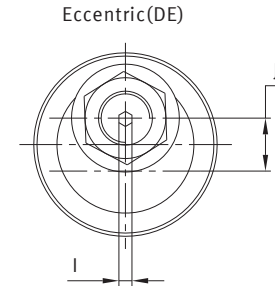
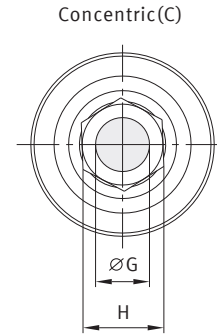
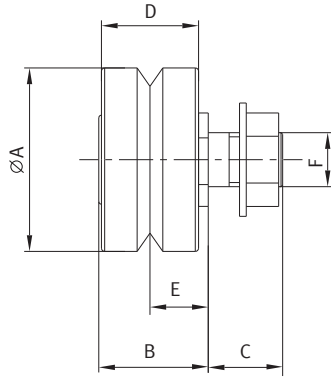
External gear option

Segment angular 90°、180°、full 360° Ring

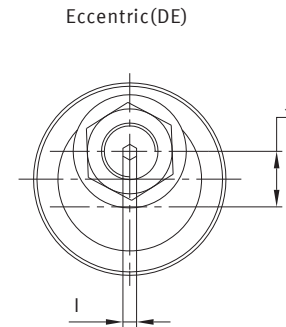
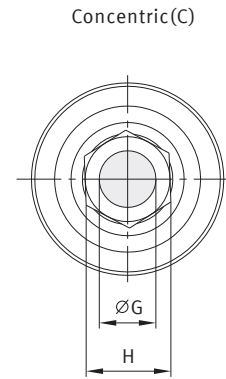
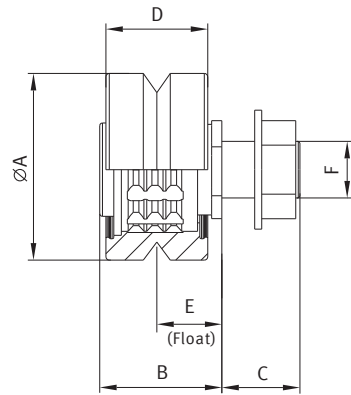
Ring rail size



| Type | Applicable Bearing | A | B | C | D | E | G | H | I | J | L | M | N | External Gear | | | Hole number (R=360°) | Holes' Position ±0.2 | | Weight (kg) (R=360°) |
|----------------|--------------------|-------|-------|-------|--------|------|----|-------|------|-----|---------|-----|-----|---------------|------|-----------------------|-------------------------|-------------------------|-------|----------------------------|
| | | | | | | | | | | | | | | P | m | Teeth Qty (R=360°) | | S° | T° | |
| CIS 182 | SVR-25 | 165 | 150 | 182 | 139.26 | 20.8 | 16 | 12.25 | 10 | 4.5 | 10x5.5 | 5.5 | M8 | 180 | 1 | 180 | 8 | 45 | 22.5 | 0.78 |
| CIS 278 | SVR-25 | 261 | 246 | 278 | 235.26 | 20.8 | 16 | 12.25 | 10 | 4.5 | 10x5.5 | 5.5 | M8 | 276 | 1 | 276 | 8 | 45 | 22.5 | 1.27 |
| CIS 374 | SVR-25 | 357 | 342 | 374 | 331.26 | 20.8 | 16 | 12.25 | 10 | 4.5 | 10x5.5 | 5.5 | M8 | 372 | 1 | 372 | 12 | 30 | 15 | 1.75 |
| CIM 482 | SVR-34 | 461.5 | 442.5 | 482.5 | 423.76 | 28.8 | 20 | 15.5 | 12.5 | 6 | 11x6.5 | 6.8 | M8 | 480 | 1.25 | 384 | 12 | 30 | 15 | 3.93 |
| CIM 627 | SVR-34 | 606.5 | 587.5 | 627.5 | 568.76 | 28.8 | 20 | 15.5 | 12.5 | 6 | 11x6.5 | 6.8 | M8 | 625 | 1.25 | 500 | 16 | 22.5 | 11.25 | 5.18 |
| CIL 820 | SVR-54 | 788 | 760 | 820 | 733.26 | 42.8 | 30 | 24 | 19.5 | 9 | 18x10.5 | 11 | M16 | 816 | 2 | 408 | 16 | 22.5 | 11.25 | 15.64 |

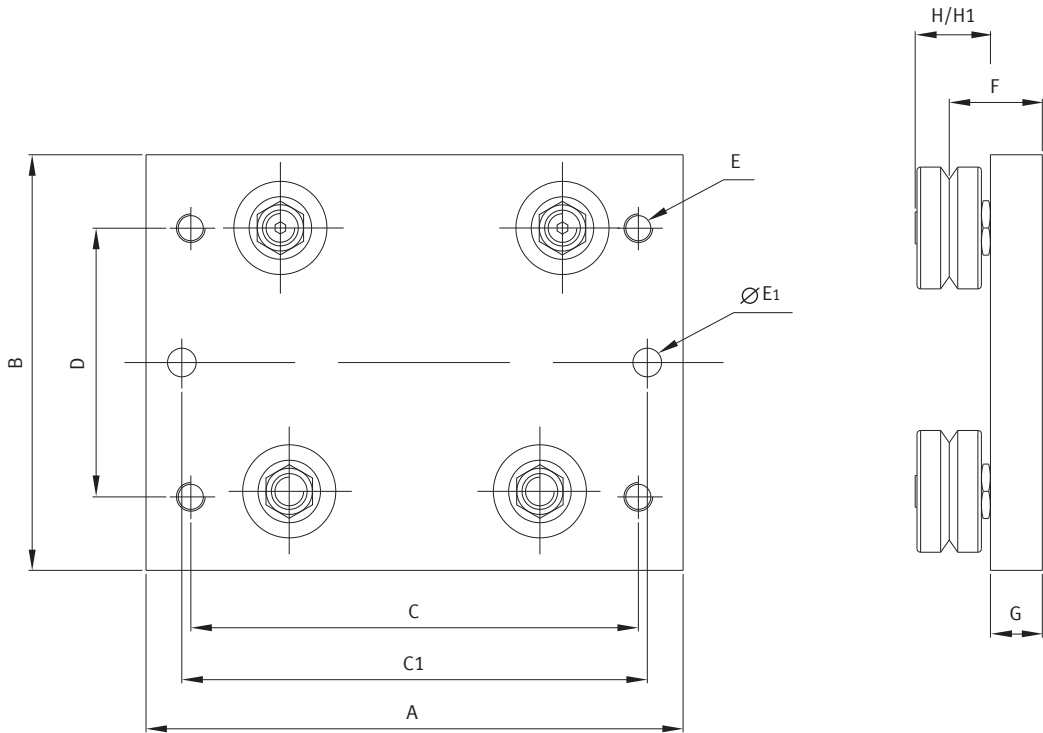


| Type | Dimension | | | | | | | | | | Max working load capacities(N) | | | | Bearing Static(Co)and Dynamic(C) Load Capacities(N) | | | | | | | |
|-----------------|-----------|------|------|----|------|-----|----|----|---|---|--------------------------------|-------|-------------------------|------|---|-------|-------------------------------|------|-------------|-------|------|------|
| | A | B | C | D | E | F | G | H | I | J | Double Row Bearings | | For Double Row Bearings | | | | For Each of Two Twin Bearings | | | | | |
| | | | | | | | | | | | Radial | Axial | Radial loads | | Axial Loads | | Radial loads | | Axial Loads | | | |
| | | | | | | | | | | | | | Co | C | Co | C | Co | C | Co | C | | |
| SVR-25C | 25 | 16.5 | 11.3 | 14 | 9 | M8 | 8 | 13 | 3 | - | 1500 | 400 | 600 | 320 | 2646 | 5214 | 821 | 1618 | 1333 | 3237 | 326 | 791 |
| SVR-25DE | | | | | | | | | | | | | | | | | | | | | | |
| SVR-34C | 34 | 21 | 14.3 | 18 | 11.5 | M10 | 10 | 15 | 4 | - | 3000 | 900 | 1400 | 800 | 5018 | 9293 | 1362 | 2523 | 2600 | 5291 | 557 | 1270 |
| SVR-34DE | | | | | | | | | | | | | | | | | | | | | | |
| SVR-54C | 54 | 33.5 | 19.8 | 28 | 19 | M14 | 14 | 27 | 6 | - | 5000 | 2500 | 3200 | 1800 | 12899 | 21373 | 2777 | 4601 | 6657 | 13595 | 1136 | 2320 |
| SVR-54DE | | | | | | | | | | | | | | | | | | | | | | |



| Type | Dimension | | | | | | | | | | | Bearing Static(C_0) and Dynamic(C) Load Capacities(N) | | Max working load capacities(N) |
|-----------------|-----------|------|------|----|------|------|-----|----|----|---|-----|---|-------|--------------------------------|
| | A | B | C | D | E | | F | G | H | I | J | C_0 | C | |
| | | | | | Max | Min | | | | | | | | |
| FSVR-25C | 25 | 18.1 | 11.3 | 14 | 10.5 | 9 | M8 | 8 | 13 | 3 | — | 6100 | 4900 | 1500 |
| FSVR-25E | | | | | | | | | | | 2 | | | |
| FSVR-34C | 34 | 23.2 | 14.3 | 18 | 13.5 | 11.5 | M10 | 10 | 15 | 4 | — | 12500 | 11500 | 3000 |
| FSVR-34E | | | | | | | | | | | 2.5 | | | |
| FSVR-54C | 54 | 37.2 | 19.8 | 28 | 21.6 | 19 | M14 | 14 | 27 | 6 | — | 28900 | 21500 | 5000 |
| FSVR-54E | | | | | | | | | | | 5.5 | | | |

Components: Fixed Centre Carriage Dimension



| Type | A | B | C | C1 | D | E | E1 | F | G | H | H1 | Weight (kg) |
|-------------------|-----|-----|-----|-----|-----|-------|------|------|------|------|------|-------------|
| SRC25 159 | 95 | 80 | 85 | 80 | 50 | 4×M6 | 2×6 | 20.5 | 11.5 | 16.6 | 18.1 | 0.4 |
| SRC25 255 | 100 | 80 | 80 | 85 | 50 | 4×M6 | 2×6 | 20.5 | 11.5 | 16.6 | 18.1 | 0.41 |
| SRC25 351 | 105 | 80 | 85 | 90 | 50 | 4×M6 | 2×6 | 20.5 | 11.5 | 16.6 | 18.1 | 0.42 |
| SRC44 468 | 145 | 116 | 120 | 125 | 75 | 4×M8 | 2×8 | 26 | 14.5 | 21.3 | 23.2 | 1.08 |
| SRC44 612 | 150 | 116 | 125 | 130 | 75 | 4×M8 | 2×8 | 26 | 14.5 | 21.3 | 23.2 | 1.1 |
| SRC76 799 | 190 | 185 | 160 | 165 | 100 | 4×M10 | 2×10 | 39 | 20 | 34.7 | 37.2 | 3.46 |
| SRC76 1033 | 210 | 185 | 180 | 185 | 100 | 4×M10 | 2×10 | 39 | 20 | 34.7 | 37.2 | 3.66 |
| SRC76 1267 | 250 | 185 | 205 | 225 | 100 | 4×M10 | 2×10 | 39 | 20 | 34.7 | 37.2 | 4.05 |
| SRC76 1501 | 270 | 185 | 225 | 245 | 100 | 4×M10 | 2×10 | 39 | 20 | 34.7 | 37.2 | 4.25 |

Load / Life Calculation

Due to the hardness of the railway and fatigue analysis of railway and roller, the railway's life does not determine the system life. It is determined by roller's life. Load capacity of the motion guide system varies mainly by the size of bearing and railway, lubricated or not, and the load magnitude and direction. Other factors include speed and acceleration and environment etc. To calculate system life, loading factor LF should be calculated firstly. Here we provide two methods to calculate the loading factor.

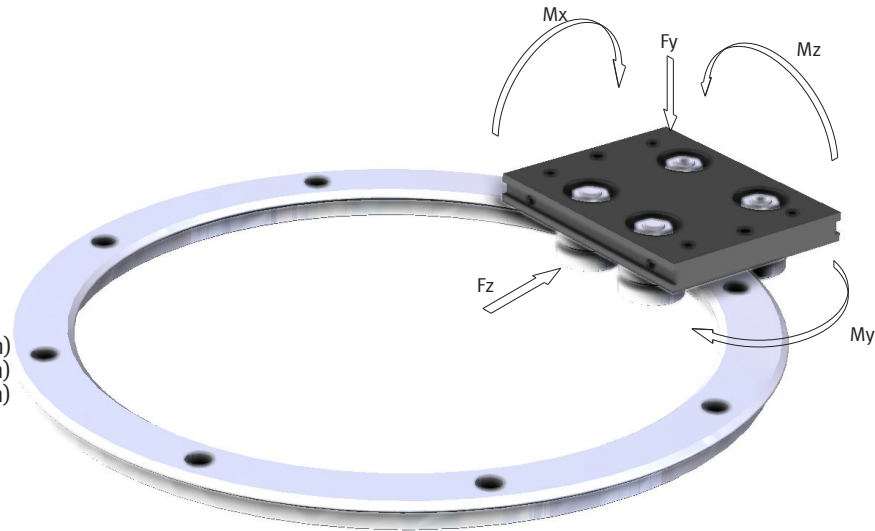
If the system use SAIBO standard 4 bearings carriage, then calculation can use below formula.

Standard 4 Bearings Carriage:

- Fy - Actual load in Y direction. (N)
- Fz - Actual load in Z direction. (N)
- Mx - Actual moment in X direction. (N·m)
- My - Actual moment in Y direction. (N·m)
- Mz - Actual moment in Z direction. (N·m)

Below parameters can be taken from the table of Load capacity.

- Fy max - Max load capacity in Y direction. (N)
- Fz max - Max load capacity in Z direction. (N)
- Mx max - Max moment capacity in X direction. (N·m)
- My max - Max moment capacity in Y direction. (N·m)
- Mz max - Max moment capacity in Z direction. (N·m)



Life Capacity Calculation:

$$LF = \frac{Fy}{Fymax} + \frac{Fz}{Fzmax} + \frac{Mx}{Mxmax} + \frac{My}{Mymax} + \frac{Mz}{Mzmax}$$

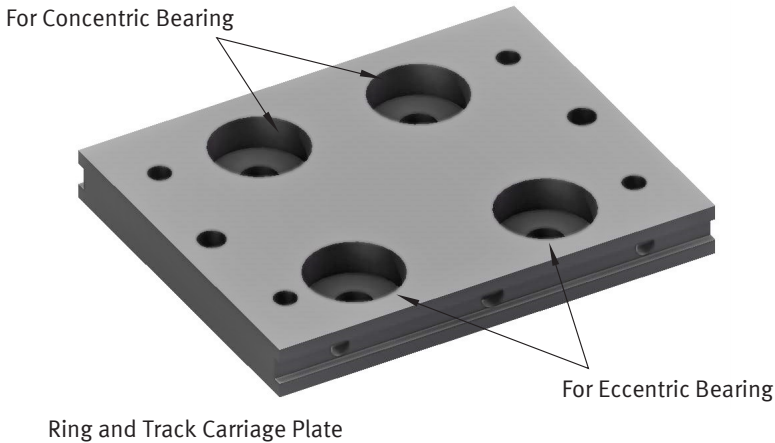
LF should not exceed 1 for any combination of loads.

Maximum Load Capacity:

| Carriage Type | Dry system Double Row Bearings and Twin Bearings | | | | | Lubricated system/Twin Bearings | | | | | Lubricated system/Double Row Bearings | | | | |
|-------------------|---|------|-----|-----|-----|---------------------------------|------|-----|-----|-----|---------------------------------------|-------|-----|-----|-----|
| | Fy | Fz | Mx | My | Mz | Fy | Fz | Mx | My | Mz | Fy | Fz | Mx | My | Mz |
| | N | N | Nm | Nm | Nm | N | N | Nm | Nm | Nm | N | N | Nm | Nm | Nm |
| SRC25 159 | 400 | 400 | 4.5 | 8.5 | 8.5 | 1280 | 1200 | 14 | 25 | 27 | 1600 | 3000 | 18 | 64 | 33 |
| SRC25 255 | 400 | 400 | 4.5 | 8 | 8 | 1280 | 1200 | 14 | 23 | 25 | 1600 | 3000 | 18 | 60 | 31 |
| SRC25 351 | 400 | 400 | 4.5 | 8.5 | 8.5 | 1280 | 1200 | 14 | 24 | 27 | 1600 | 3000 | 18 | 63 | 33 |
| SRC44 468 | 800 | 800 | 16 | 28 | 28 | 3200 | 2800 | 64 | 95 | 110 | 3600 | 6000 | 73 | 210 | 120 |
| SRC44 612 | 800 | 800 | 16 | 29 | 29 | 3200 | 2800 | 64 | 100 | 115 | 3600 | 6000 | 73 | 220 | 130 |
| SRC76 799 | 1800 | 1800 | 64 | 85 | 85 | 7200 | 6400 | 250 | 300 | 340 | 10000 | 10000 | 360 | 470 | 470 |
| SRC76 1033 | 1800 | 1800 | 64 | 105 | 105 | 7200 | 6400 | 250 | 360 | 410 | 10000 | 10000 | 360 | 570 | 570 |
| SRC76 1267 | 1800 | 1800 | 64 | 120 | 120 | 7200 | 6400 | 250 | 420 | 480 | 10000 | 10000 | 360 | 670 | 670 |
| SRC76 1501 | 1800 | 1800 | 64 | 140 | 140 | 7200 | 6400 | 250 | 480 | 550 | 10000 | 10000 | 360 | 770 | 770 |

V track bearing match carriage plate

Please mount the concentric bearing to one side of carriage plate, and eccentric bearing to the other side following the direction of railway. In case of ring type carriage, the concentric bearing should be mounted to the side where mounting-hole distance is shorter. Please refer to below picture.



Carriage assembly should be mounted from the end of railway. Please do not put any overstress when mounting.

Adjusting the Clearance Between the Bearings and Rail

- Tighten concentric bearings first.
- Then rotate eccentric bearing via rotate hexagonal key at the end of stud to adjust the clearance between railway and bearing.
- Adjust the clearance to zero.
- Slide the carriage by hand and adjust to the extent where there causes a slight slipping resistance.

Correct condition is where moving power becomes the recommended value as below table by putting load by push-pull gauge to the running direction of carriage.

Recommended Pre-Load by Push-Pull Gauge

| V track bearing size | Pre-load(N) |
|----------------------|-------------|
| 25 | 4 |
| 44 | 8 |
| 76 | 12 |

-Keep eccentric bearing's position and tighten the nut.

Important Note:

Appropriate pre-load provide the system rigidity. However, over preload will decrease system's life rapidly. Please be careful.

Technical Specifications

'V' Railways:

Material and Finish: High carbon bearing steel, hardened on 'V' faces to 58-62 Rockwell 'C' scale.
Those areas which are ground have N5 surface finish.

Bearings:

Material and Finish: Carbon-chromium bearing steel, hardened and tempered.
Nitrile Rubber Seals
Plastic Cage
High Tensile Steel Studs, Chemical black finish
Temperature Range; -20degC to +120degC

Carriage Plate:

Material and Finish: High Strength Aluminum Alloy
High Gloss Black Anodised

Lubricators:

Material: Impact Resistant Thermoplastic Elastomer
Felt Wipers.
Temperature Range; -20degC to +60degC

Frictional Resistance for 'V' Railways:

Coefficient of friction (without Lubricators) = 0.02 Cap Seals
and Lubricators add friction as below:

2 off Lubricators per carriage: VLB25 = 2.5N
VLB44 = 3N
VLB76 = 4N

External Lubrication:

NLGI consistency No.2 grease should be used for all Cap Seals
68 cSt viscosity or similar oil should be for all Lubricators
Both Cap Seals and Lubricator can be supplied 'dry' for customers to use there own lubricant.

Maximum Linear Speed:

Non Lubricated 'V' rail systems = 2 m/s
Lubricated 'V' rail system = 8 m/s

Higher speeds are possible however, speed is dependent upon stroke, duty and environmental conditions.
Please contact our offices for further assistance with specific applications.