# *Swivel joints*
# *Swivel joints systems*
# *Rotary connections*

MARLIA
Ingenieros

# Contents

# 1. Introduction

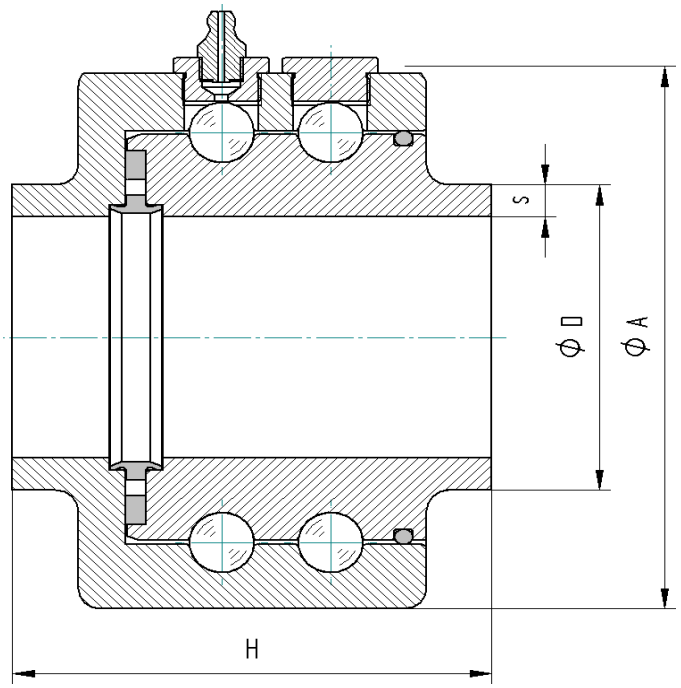
The TSR brand stands for the manufacture of certified swivel joints, flexible swivel joint systems and rotary connections. We are the right partner for your company, from the initial enquiry and engineering design, all the way to production and delivery. The items we manufacture range from standard products that we keep in stock, all the way to special designs of any kind. We are totally focused on perfect solutions, product quality, reliability and customer satisfaction.

Swivel joints are used in almost every branch of industry where there is a need for moveable connecting pipes between two plant components that move relative to each other. Our swivel joints are developed for slow rotational movements and operate in the entire range from negative pressure to high positive pressure.

Our components absorb external forces with ease, and almost any kind of motion can be realised. Our qualified employees have over 30 years of experience in the field of swivel joint and sealing technology, and will find a dependable and precise solution for your application, too.

The cooperation with our international customers, sometimes also including joint development work, makes us the market leader in many sectors.

## 2. Swivel joint type IFG




**Dimensions and weights**

| DN | ØD | ØA | H | Weight |
|---|---|---|---|---|
| 20 | 26,9 | 84 | 90 | 2,60 |
| 25 | 33,7 | 84 | 90 | 2,60 |
| 32 | 42,4 | 96 | 90 | 3,30 |
| 40 | 48,3 | 96 | 90 | 3,30 |
| 50 | 60,3 | 115 | 110 | 5,60 |
| 65 | 76,1 | 135 | 110 | 7,00 |
| 80 | 88,9 | 144 | 110 | 7,50 |
| 100 | 114,3 | 167 | 110 | 9,00 |
| 125 | 139,7 | 198 | 140 | 15,00 |
| 150 | 168,3 | 225 | 140 | 17,90 |
| 200 | 219,1 | 288 | 152 | 31,20 |
| 250 | 273,0 | 344 | 152 | 39,20 |
| 300 | 323,9 | 400 | 160 | 49,50 |
| 350 | 355,6 | 432 | 160 | 54,00 |
| 400 | 406,4 | 488 | 160 | 62,3 |
| 500 | 508,0 | 582 | 170 | 75,5 |
| 600 | 610,0 | 684 | 170 | 92,2 |

**'s' for nominal diameter DN and nominal pressure PN**

| | | PN | DN | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 500 | 600 |
| Stainless steel | St 52-3 | 6 | 2,3 | 2,6 | 2,6 | 2,6 | 2,9 | 2,9 | 3,2 | 3,6 | 4,0 | 4,5 | 5,9 | 6,3 | 7,1 | 7,1 | 7,1 | 7,1 | 7,1 |
| | | 10 | | | | | | | | | | | | | | | | | 8,0 |
| | | 16 | | | | | | | | | | | | | | 8,0 | 8,0 | 8,0 | 8,8 |
| | | 25 | | | | | | | | | | | 6,3 | 7,1 | 8,0 | | 8,8 | 10,0 | 11,0 |
| | | 40 | | | | | | | | | | | | | | 8,8 | 11,0 | 14,2 | 16,0 |
| | | 63 | 2,6 | | 2,9 | 2,9 | | 3,2 | 3,6 | 4,0 | 4,5 | 5,6 | 7,1 | 8,8 | 11,0 | 12,5 | 14,2 | | |
| | | 100 | | | | | 3,2 | 3,6 | 4,0 | 5,0 | 6,3 | 7,1 | 10,0 | 12,5 | 14,2 | 16,0 | | | |
| | | 160 | 2,9 | 2,9 | 3,6 | 3,6 | 4,0 | 5,0 | 6,3 | 8,0 | 10,0 | 12,5 | 16,0 | 20,0 | 22,2 | | | | |
| | | 250 | 3,2 | 3,6 | 4,0 | 5,0 | 6,3 | 8,0 | 11,0 | 14,2 | 16,0 | 17,5 | 25,0 | 32,0 | | | | | |
| | | 320 | 4,0 | 5,0 | 5,0 | 6,3 | 8,0 | 11,0 | 12,5 | 16,0 | 20,0 | 25,0 | 30,0 | 40,0 | | | | | |
| | | 420 | 5,0 | 6,3 | 7,1 | 8,8 | 10,0 | 16,0 | 17,5 | 22,2 | 30,0 | 35,0 | 40,0 | | | | | | |

### Nominal diameters
- De DN 20 a DN 800 (de ¾" a 32")

### Standard version
- Two ball races

- Axial seal
- External seal
- Grease nipple

### Special version
- Without grease nipple, for use in medium
- Internal scraper (for abrasive constituents)
- Leakage control bore
- *Custom versions*

### Design
- Max. pressure 420 bar
- Max. temperature 260°C
- Maximum values may not coincide

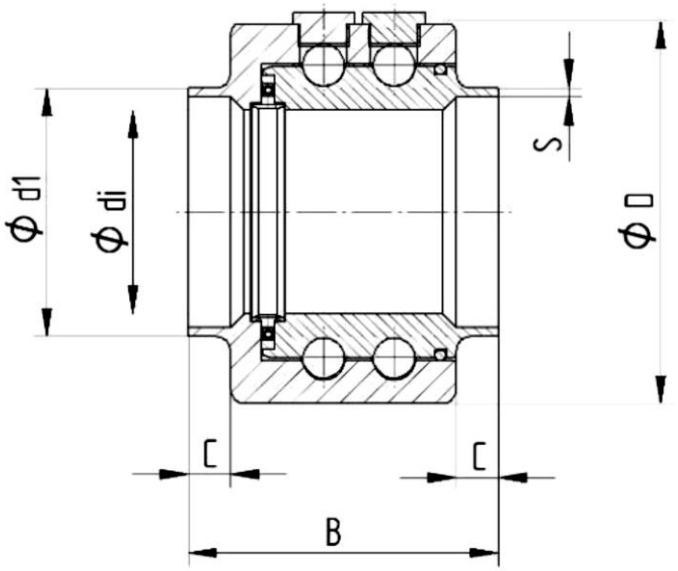
### Standard materials:
Outer and inner part
- Nicotrated / Steel St 52-3
- Stainless steel 1.4571 / 1.4571
- *Other materials on request*

Axial seal
- PTFE
- Hastelloy spring

# 2.1 Swivel joint type RDK

**Dimensions and weights**

| DN | Ød1 | S | Ødi | ØD | B | C | Peso | Pmax | Pmax |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 26,9 | 3,9 | 18,0 | 72 | 90 | 12,5 | 1,70 | 350 bar | 100 bar |
| 25 | 33,7 | 4,6 | 23,0 | 78 | 90 | 12,5 | 2,20 | | |
| 32 | 42,4 | 4,9 | 31,2 | 88 | 90 | 12,5 | 2,70 | | |
| 40 | 48,3 | 5,1 | 36,9 | 104 | 90 | 12,5 | 3,20 | | |
| 50 | 60,3 | 5,5 | 48,5 | 118 | 100 | 13,5 | 4,70 | | |
| 65 | 76,1 | 7,0 | 59,0 | 133 | 110 | 13,5 | 6,60 | 250 bar | |
| 80 | 88,9 | 7,6 | 73,7 | 139 | 110 | 13,5 | 6,90 | | |
| 100 | 114,3 | 8,6 | 97,1 | 175 | 110 | 14,5 | 10,5 | | |
| 125 | 141,3 | 6,6 | 124,0 | 197 | 125 | 17,5 | 12,1 | 40 bar | 40 bar |
| 150 | 168,3 | 7,1 | 150,0 | 223 | 135 | 22,5 | 13,5 | | |
| 200 | 219,1 | 8,2 | 198,7 | 277 | 135 | 22,5 | 19,8 | | |
| 250 | 273,0 | 9,3 | 250,4 | 325 | 135 | 22,5 | 23,1 | | |
| 300 | 323,9 | 11,5 | 301,0 | 390 | 140 | 25,0 | 33,4 | | |
| 350 | 355,6 | 8,0 | 335,0 | 420 | 140 | 25,0 | 34,5 | 16 bar | 6 bar |
| 400 | 406,4 | 8,8 | 384,8 | 470 | 140 | 25,0 | 39,8 | | |
| 500 | 508,0 | 9,5 | 485,0 | 590 | 140 | 25,0 | 58,0 | | |




### Nominal diameters
- De DN20 a DN500 (de ¾" a 20")

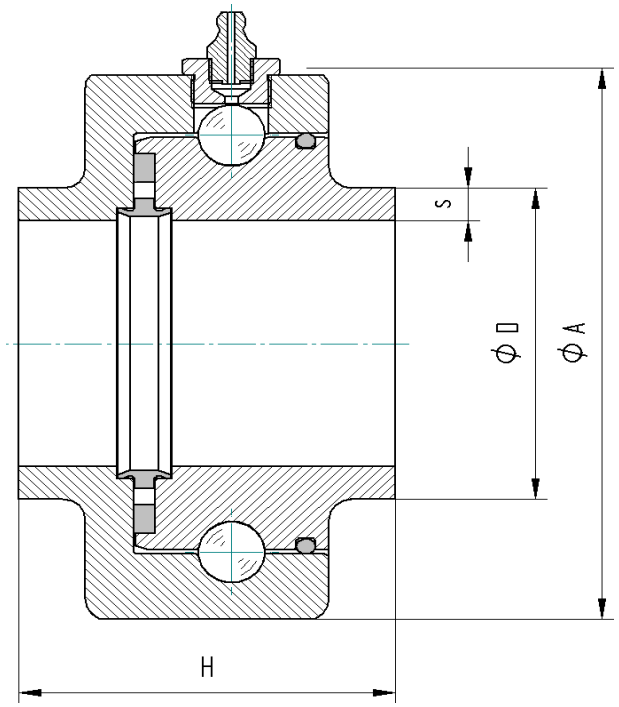
### Standard version
- Two ball races
- Axial seal
- O-Ring

### Special version
- With grease nipple
- Without grease nipple, for use in medium
- Internal scraper (for abrasive constituents)
- Leakage control bore
- *Custom versions*

### Design
- Max. pressure 350 bar
- Max. temperature 260° C
- Maximum values may not coincide

### Materials
- Body
  - Steel 42CrMo4 (1.7225 - AISI4140)
  - Steel St 52-3 (1.0570)
  - Stainless steel AISI 316Ti (1.4571)
  - Steel 1.4462
  - *Other materials on request*
- Axial seal
  - PTFE compound
  - Hastelloy spring

# 3. Swivel joint type IFGL




**Dimensions and weights**

| DN | ØD | ØA | H | Weight |
|---|---|---|---|---|
| 20 | 26,9 | 84 | 70 | 2,60 |
| 25 | 33,7 | 84 | 70 | 2,60 |
| 32 | 42,4 | 96 | 70 | 3,30 |
| 40 | 48,3 | 96 | 70 | 3,30 |
| 50 | 60,3 | 115 | 85 | 4,20 |
| 65 | 76,1 | 135 | 85 | 5,30 |
| 80 | 88,9 | 144 | 85 | 5,60 |
| 100 | 114,3 | 167 | 85 | 6,70 |
| 125 | 139,7 | 198 | 110 | 10,70 |
| 150 | 168,3 | 225 | 110 | 12,30 |
| 200 | 219,1 | 288 | 112 | 21,70 |
| 250 | 273,0 | 344 | 112 | 27,10 |
| 300 | 323,9 | 400 | 120 | 34,10 |
| 350 | 355,6 | 432 | 120 | 37,40 |
| 400 | 406,4 | 488 | 120 | 44,60 |

**'s' for nominal diameter DN and nominal pressure PN**

| | | PN | DN | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 |
| Stainless steel | St 52-3 | 6 | 2,3 | 2,6 | 2,6 | 2,6 | 2,9 | 2,9 | 3,2 | 3,6 | 4,0 | 4,5 | 5,9 | 6,3 | 7,1 | 7,1 | 7,1 |
| | | 10 | | | | | | | | | | | | | | | |
| | | 16 | | | | | | | | | | | | | | 8,0 | 8,0 |
| | | 25 | | | | | | | | | | | 6,3 | 7,1 | 8,0 | | 8,8 |
| | | 40 | | | | | | | | | | | | | | 8,8 | 11,0 |
| | | 63 | 2,6 | | 2,9 | 2,9 | | 3,2 | 3,6 | 4,0 | 4,5 | 5,6 | 7,1 | 8,8 | 11,0 | 12,5 | 14,2 |
| | | 100 | | | | | 3,2 | 3,6 | 4,0 | 5,0 | 6,3 | 7,1 | 10,0 | 12,5 | 14,2 | 16,0 | |

## Nominal diameters
- DN 20 to DN 400 ( ¾" to 16")

## Standard version
- One ball race

- Axial seal
- External seal
- Grease nipple

## Special version
- Without grease nipple, for use in medium
- Internal scraper (for abrasive constituents)
- Leakage control bore
- *Custom versions*

## Design
- Max. pressure 100 bar
- Max. temperature 260° C
- Maximum values may not coincide

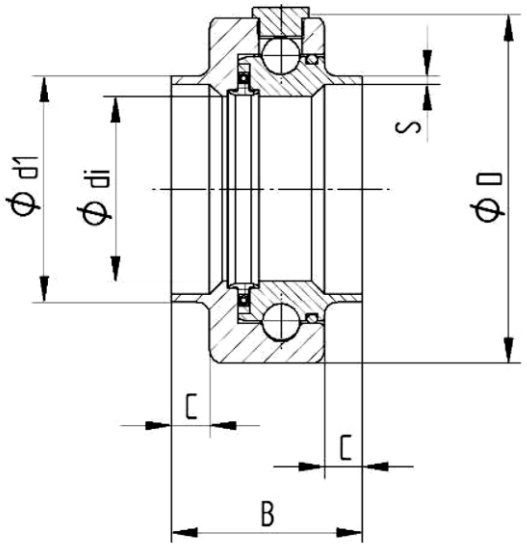
## Standard materials
Outer and inner part
- Nicotrated / Steel St 52-3
- Stainless steel 1.4571 / 1.4571
- *Other materials on request*

Axial seal
- PTFE compound
- Hastelloy spring

## 3.1 Swivel joint type RDKL

**Dimensions and weights**

| DN | Ød1 [mm] | S [mm] | Ødi [mm] | ØD [mm] | B [mm] | C [mm] | Peso [kg] | Pmax Steel 42CrMo4 (1.7225) | Pmax Stainless steel AISI 316Ti (1.4571) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 26,9 | 2,9 | 17,0 | 72 | 55 | 9 | 1,10 | 100 bar | 40 bar |
| 25 | 33,7 | 3,4 | 23,0 | 78 | 60 | 10 | 1,35 | | |
| 32 | 42,4 | 3,6 | 31,2 | 88 | 60 | 10 | 1,70 | | |
| 40 | 48,3 | 3,7 | 36,9 | 96 | 60 | 10 | 1,80 | | |
| 50 | 60,3 | 3,9 | 48,5 | 118 | 70 | 12 | 3,10 | | |
| 65 | 73,0 | 5,2 | 58,6 | 133 | 75 | 15 | 3,70 | | |
| 80 | 88,9 | 5,5 | 73,9 | 139 | 75 | 15 | 3,70 | | |
| 100 | 114,3 | 6,0 | 98,0 | 164 | 75 | 15 | 4,70 | | |




### Nominal diameters
- DN20 to DN100 (¾" to 4")

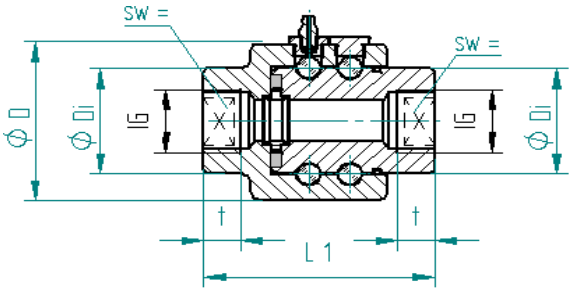
### Standard version
- One ball race
- Axial seal
- External seal

### Special version
- With grease nipple
- Without grease nipple, for use in medium
- Internal scraper (for abrasive constituents)
- Leakage control bore
- *Custom versions*

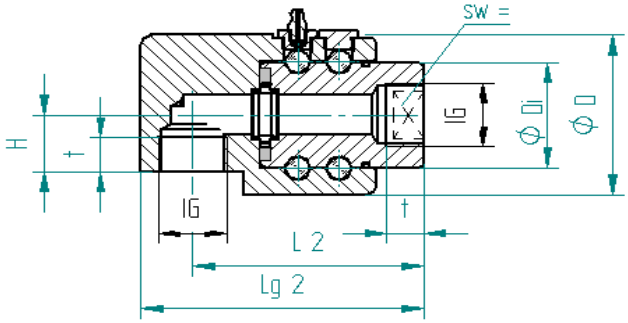
### Design
- Max. pressure 100 bar
- Max. temperature 260° C
- Maximum values may not coincide

### Standard materials
- Body
  - Steel 42CrMo4 (1.7225 - AISI4140)
  - Steel St 52-3 (1.0570)
  - Stainless steel AISI 316Ti (1.4571)
  - Steel 1.4462
  - *Other materials on request*
- Axial seal
  - PTFE compound
  - Hastelloy spring

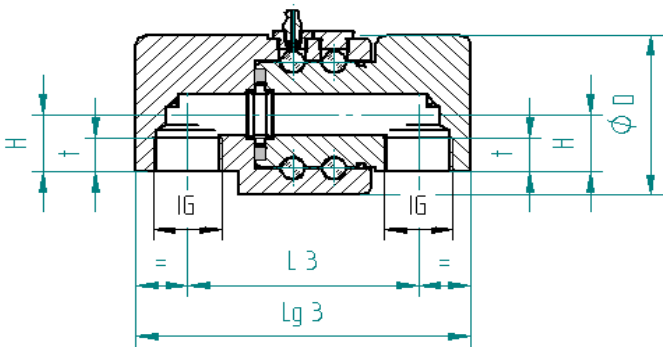
# 4. Swivel joint type IFGM




**BA 1**




**BA 2**




**BA 3**

### Nominal diameters
DN 08 to DN 50 (¼" to 2")

### Standard version
- Two ball races
- Axial sea
- External seal
- Grease nipple

### Design
- Max. pressure 420 bar
- Max. temperature 260°C
- Maximum values may not coincide

### Standard materials
Outer and inner part
- Nicotrated / Steel St 52-3
- *Otros materiales bajo petición*

Axial seal
- PTFE
- Hastelloy spring

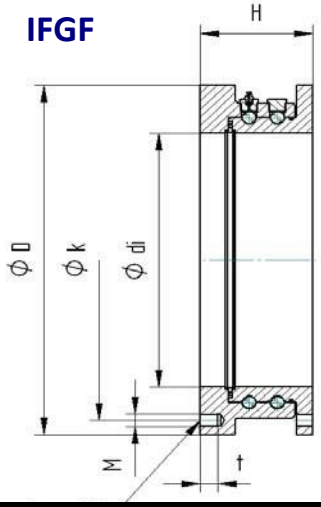
### Special version
- Without grease nipple, for use in medium
- Internal scraper for protection against abrasive constituents
- Leakage control bore
- *Custom versions*

**Dimensions and weights**

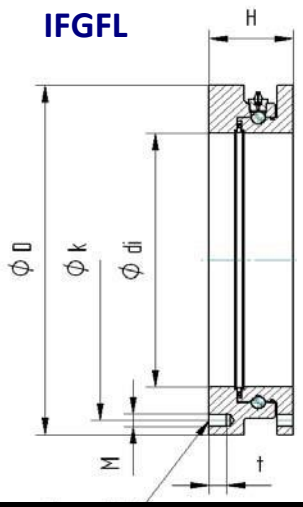
| DN | IG | L1 | L2 | L3 | t | sw | H | D | Di | LG 2 | LG 3 | BA 1 | BA 2 | BA 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 | G 1/4" / NPT 1/4" | 100 | 100 | 100 | 12 | 32 | 26 | 70 | 41,5 | 120 | 140 | 2,1 | 3,0 | 3,8 |
| 12 | G 3/8" / NPT 3/8" | 100 | 100 | 100 | 12 | 32 | 26 | 70 | 41,5 | 120 | 140 | 2,1 | 3,0 | 3,8 |
| 15 | G 1/2" / NPT 1/2" | 100 | 100 | 100 | 14 | 32 | 26 | 70 | 41,5 | 120 | 140 | 2,1 | 3,0 | 3,8 |
| 20 | G 3/4" / NPT 3/4" | 100 | 100 | 100 | 16 | 50 | 30 | 84 | 55,5 | 120 | 140 | 3,0 | 4,1 | 5,1 |
| 25 | G 1" / NPT 1" | 112 | 112 | 112 | 18 | 50 | 30 | 84 | 55,5 | 137 | 162 | 3,1 | 4,5 | 5,8 |
| 32 | G 1 1/4" / NPT 1 1/4" | 122 | 137 | 142 | 20 | 60 | 37,5 | 96 | 67,5 | 172 | 212 | 4,1 | 7,2 | 9,8 |
| 40 | G 1 1/2" / NPT 1 1/2" | 122 | 137 | 142 | 22 | 60 | 37,5 | 96 | 67,5 | 172 | 212 | 4,1 | 7,2 | 9,8 |
| 50 | G 2" / NPT 2" | 145 | 160 | 165 | 24 | 70 | 45 | 115 | 81,5 | 200 | 240 | 6,4 | 11,0 | 15,1 |

# 5. Swivel joint type IFGF / IFGFL

**IFGF**




**IFGFL**




| DN | PN | ØD | Ødi | Øk | M | t | Z | H IFGF | H IFGFL |
|---|---|---|---|---|---|---|---|---|---|
| | 10 | | | | | | | 120 | 95 |
| | 16 | | | | | | | | |
| 50 | 40 | 165,0 | 54,5 | 125,0 | | | | | |
| | 150 lbs | 152,4 | | 120,7 | | | 4 | | |
| 2" | 300 lbs | 165,1 | 52,6 | 127,0 | M16 | 20 | 8 | | |
| | 10 | | | | | | 4 | 120 | 95 |
| | 16 | | | | | | | | |
| 65 | 40 | 185,0 | 70,3 | 145,0 | | | 8 | | |
| | 150 lbs | 177,8 | | 139,7 | M16 | | 4 | | |
| 2 1/2" | 300 lbs | 190,5 | 62,7 | 149,3 | M20 | 20 | 8 | | |
| | 10 | | | | | | | 130 | 105 |
| | 16 | | | | | | | | |
| 80 | 40 | 200,0 | 82,5 | 160,0 | | | 8 | | |
| | 150 lbs | 190,5 | | 152,4 | M16 | | 4 | | |
| 3" | 300 lbs | 209,5 | 78,0 | 168,1 | M20 | 20 | 8 | | |
| | 10 | | | | | | | 130 | 105 |
| | 16 | 220,0 | | 180,0 | M16 | | | | |
| 100 | 40 | 235,0 | 107,1 | 190,0 | M20 | | | | |
| | 150 lbs | 228,6 | | 190,5 | M16 | | | | |
| 4" | 300 lbs | 254,0 | 102,4 | 200,1 | M20 | 20 | 8 | | |
| | 10 | | | | | | | 130 | 105 |
| | 16 | 250,0 | | 210,0 | M16 | | | | |
| 125 | 40 | 270,0 | 131,7 | 220,0 | M24 | | | | |
| | 150 lbs | 254,0 | | 215,9 | | | | | |
| 5" | 300 lbs | 279,4 | 128,3 | 234,9 | M20 | 25 | 8 | | |
| | 10 | | | | | | | 140 | 110 |
| | 16 | 285,0 | | 240,0 | M20 | | | | |
| 150 | 40 | 300,0 | 159,3 | 250,0 | M24 | | | | |
| | 150 lbs | 279,4 | | 241,3 | | | 8 | | |
| 6" | 300 lbs | 317,5 | 154,2 | 269,7 | M20 | 25 | 12 | | |
| | 10 | | | | | | 8 | 150 | 110 |
| 200 | 16 | 340,0 | 207,3 | 295,0 | | | 12 | | |
| | 150 lbs | 342,9 | | 298,5 | M20 | | 8 | | |
| 8" | 300 lbs | 381,0 | 202,7 | 330,2 | M24 | 25 | 12 | | |
| | 10 | 395,0 | | 350,0 | M20 | | | 150 | 110 |
| 250 | 16 | 405,0 | 260,4 | 355,0 | | | | | |
| | 150 lbs | 406,4 | | 362,0 | M24 | | 12 | | |
| 10" | 300 lbs | 444,5 | 254,5 | 387,3 | M27 | 30 | 16 | | |
| | 10 | 445,0 | | 400,0 | M20 | | | 150 | 110 |
| 300 | 16 | 460,0 | 309,7 | 410,0 | | | | | |
| | 150 lbs | 482,6 | | 431,8 | M24 | | 12 | | |
| 12" | 300 lbs | 520,7 | 304,8 | 450,8 | M30 | 30 | 16 | | |

**Nominal diameters**

•DN 50 to DN 1.200 (2" to 48")

**Standard version**

- IFGF with two ball races
- IFGFL with one ball race
- Axial seal
- External seal
- Grease nipple

**Design**

- Max. pressure according to flange
- Max. temperature 260°C
- Maximum values may not coincide

**Standard materials:**

- Stainless steel 1.4301 (AISI 304)
- Stainless steel 1.4404 (AISI 316L)
- Stainless steel 1.4571 (AISI 316Ti)
- Steel 42CrMo4
- Carbon steel St 52-3
- *Other materials on request*

Axial seal

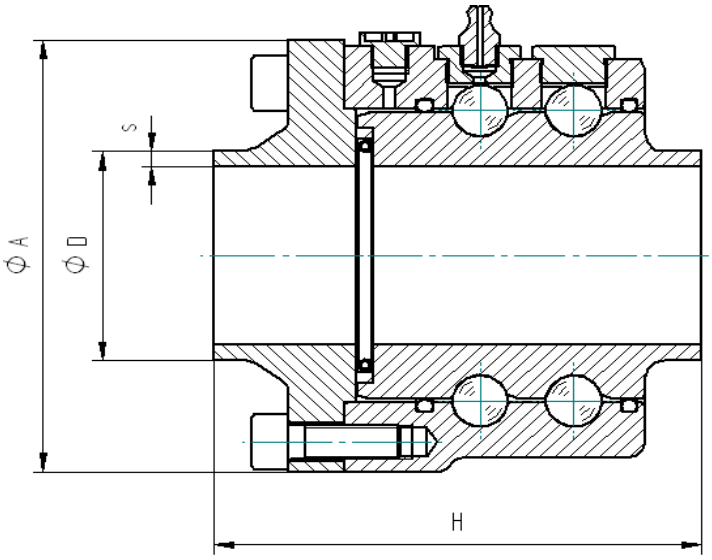
- PTFE
- Hastelloy spring

**Special version**

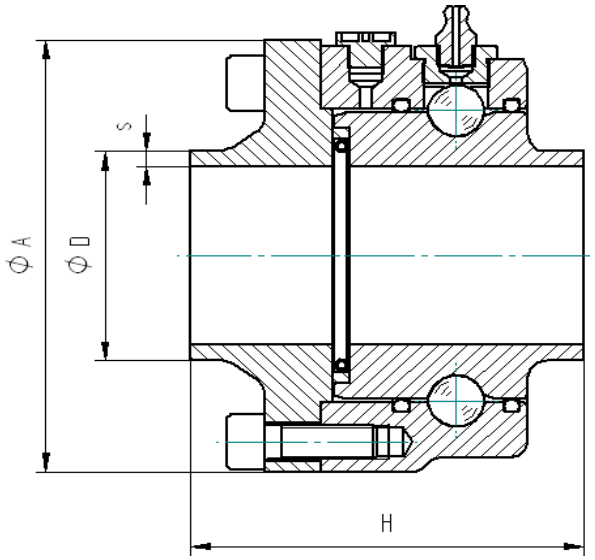
- Without grease nipple, for use in medium
- Internal wiper for protection against abrasive constituents
- Leakage control bore
- *Custom versions*

# 6. Swivel joint type VAG / VAGL

## VAG




## VAGL




| Dimensions and weights | | | | VAG | | VAGL | |
|---|---|---|---|---|---|---|---|
| DN | ØD | s | ØA | H | Weight | H | Weight |
| 25 | 33,7 | 3,6 | 92 | 120 | 3,7 | 100 | 2,9 |
| 32 | 42,4 | 3,6 | 102 | 120 | 4,4 | 100 | 3,5 |
| 40 | 48,3 | 4,0 | 102 | 120 | 4,4 | 100 | 3,5 |
| 50 | 60,3 | 4,5 | 125 | 130 | 6,8 | 105 | 5,3 |
| 65 | 76,1 | 4,5 | 147 | 130 | 8,7 | 105 | 6,8 |
| 80 | 88,9 | 4,0 | 157 | 130 | 9,4 | 105 | 7,3 |
| 100 | 114,3 | 4,0 | 186 | 130 | 11,7 | 105 | 9,6 |
| 125 | 139,7 | 4,0 | 220 | 140 | 16,8 | 115 | 13,9 |
| 150 | 168,3 | 4,5 | 247 | 140 | 19,2 | 115 | 15,6 |
| 200 | 219,1 | 6,3 | 295 | 150 | 29,7 | 115 | 21,8 |

### Nominal diameters

•DN 25 to DN 200 (de 1" a 8")

### Standard version

- VAG with two ball races
- VAGL with one ball race

- Axial seal
- External seal
- Grease nipple
- Leakage control bore

### Special version

- Internal scraper (for abrasive constituents)
- *Otros diseños bajo petición*

### Design

- Max. pressure 40 bar
- Max. temperature 260°C
- Maximum values may not coincide

### Standard materials

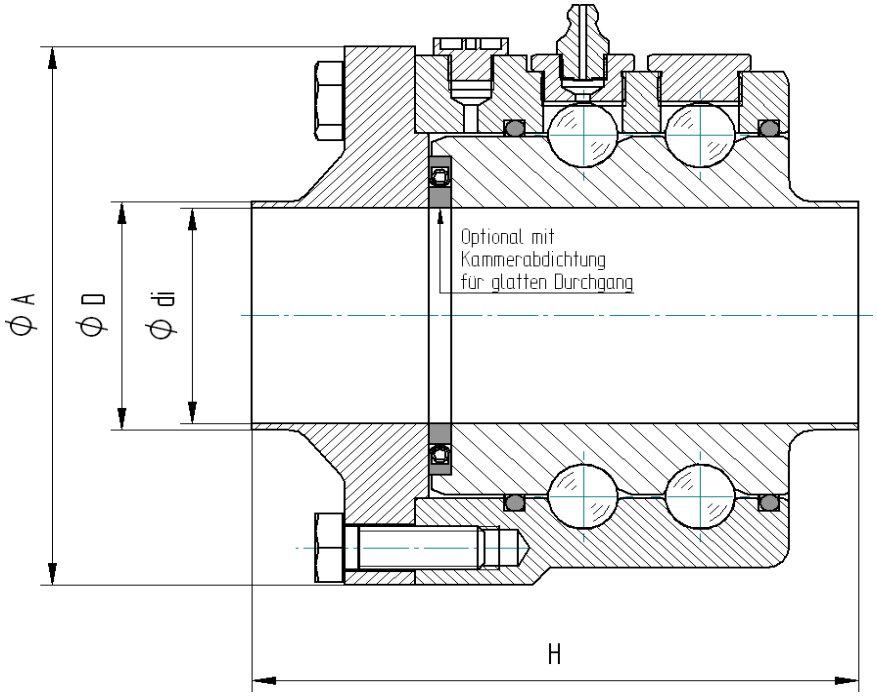
Outer and inner part

- Nicotrated / Steel St 52-3
- Stainless steel 1.4571 / 1.4571
- *Other materials on request*

Axial seal

- PTFE
- Hastelloy spring

# 7. Swivel joint type LG3H in stainless steel




| Dimensions and weights | | | | | |
|---|---|---|---|---|---|
| **DN** | **ØD** | **Ødi** | **ØA** | **H** | **Weight** |
| 25 | 29 | 26 | 92 | 120 | 3,8 |
| 32 | 35 | 32 | 102 | 120 | 4,5 |
| 40 | 41 | 38 | 102 | 120 | 4,5 |
| 50 | 53 | 50 | 125 | 130 | 6,9 |
| 65 | 70 | 66 | 147 | 130 | 8,8 |
| 80 | 85 | 81 | 157 | 130 | 9,6 |
| 100 | 104 | 100 | 186 | 130 | 12,0 |
| 125 | 129 | 125 | 220 | 140 | 17,2 |
| 150 | 154 | 150 | 247 | 140 | 20,8 |

**Nominal diameters**

- DN 25 to DN 150 (1" to 6")

**Versión estándar**

- Dos pistas de rodadura

- Junta de producto
- Junta tórica o retén de grasa
- Tapón de engrase
- Tapón para el control de fugas

**Opcionales**

- Chamber seal for smooth passage
- Custom versions

**Design**

- Max. pressure 10 bar
- Max. temperature 260° C
- Maximum values may not coincide

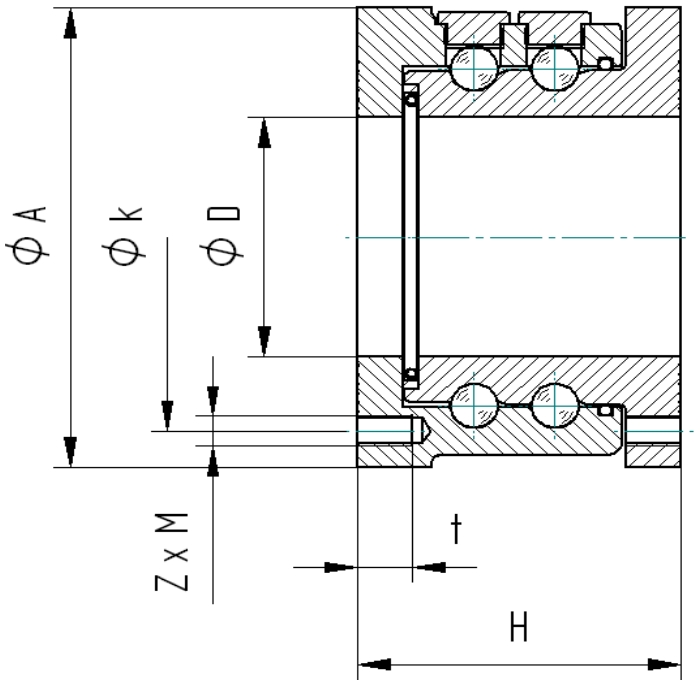
**Standard materials**

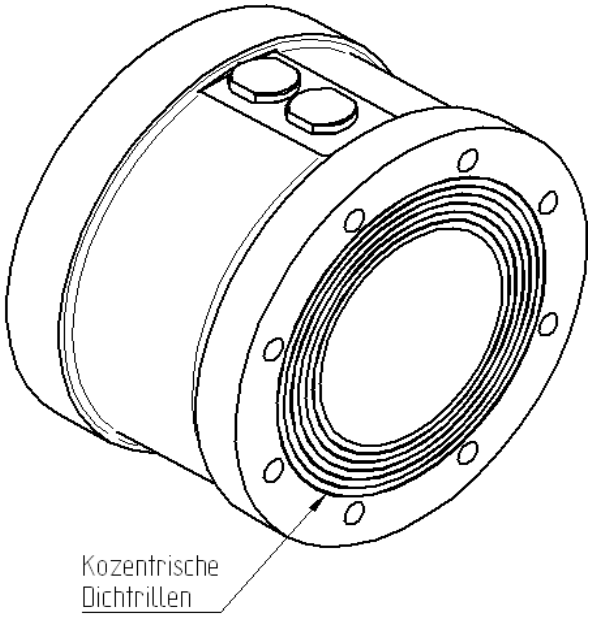
Outer part
- Acero inoxidable 1.4571

Inner part, flange
- Acero inoxidable 1.4404
- *Otros materiales bajo petición*

Axial seal
- PTFE
- Hastelloy spring

# 8. Custom versions AL-F in aluminium




| Dimensions and weights | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DN | ØD | ØA | Øk | H | Z | M | t | Weight |
| 50 | 50 | 154 | 130 | 100 | 8 | M 10 | 17 | 3,3 |
| 65 | 68 | 154 | 130 | 100 | 8 | M 10 | 17 | 3,5 |
| 80 | 80 | 154 | 130 | 100 | 8 | M 10 | 17 | 3,6 |
| 100 | 100 | 174 | 150 | 100 | 8 | M 12 | 17 | 4,0 |
| 125 | 125 | 204 | 176 | 100 | 8 | M 12 | 17 | 5,5 |
| 150 | 150 | 240 | 210 | 120 | 12 | M 12 | 22 | 8,2 |

**Nominal diameters**
- DN 50 to DN 150 (2" to 6")

**Versión estándar**
- Dos pistas de rodadura

- Conexión para camiones
- Junta de producto
- Junta tórica o retén de grasa

**Opcionales**
- Brida de conexión PN6
- Brida de conexión PN10/16
- Tapón de engrase

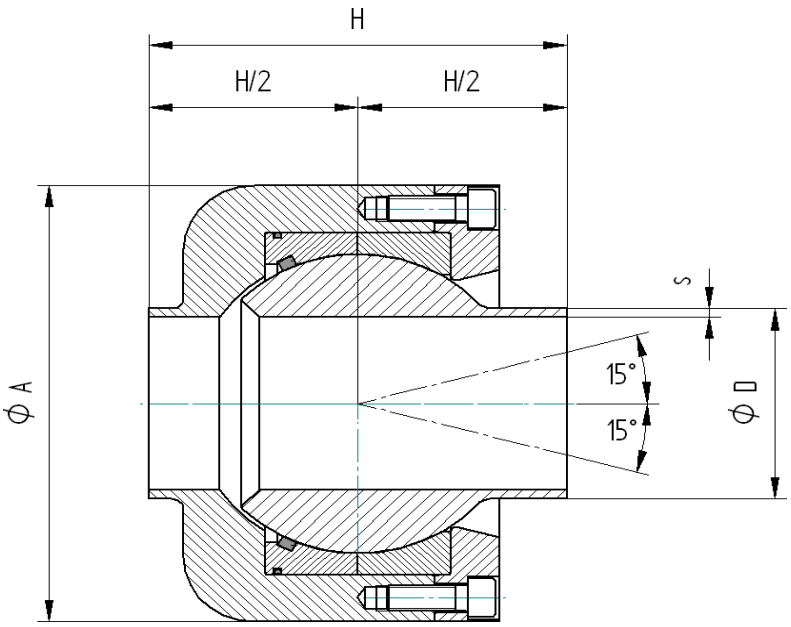
**Design**
- Max. pressure 10 bar
- Max. temperature 100° C
- Maximum values may not coincide

**Standard materials**

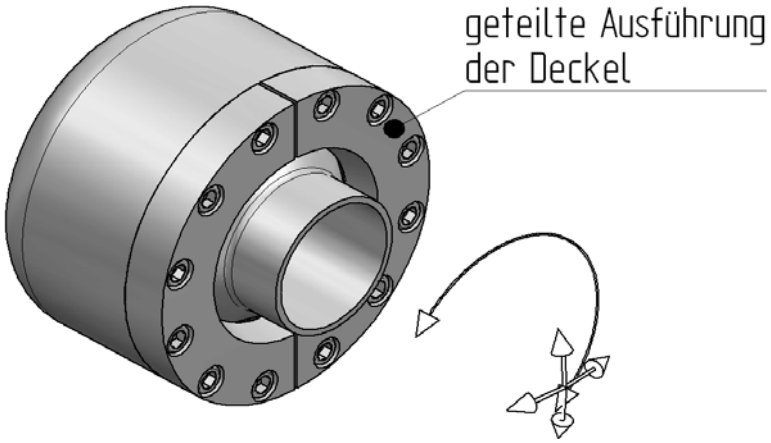
Outer part/inner part
- Aluminium AlMg4,5Mno,7

Axial seal
- PTFE
- Hastelloy spring

# 9. Junt Swivel joint head-ball joint type




| Dimensions and weights | | | | | |
|---|---|---|---|---|---|
| **DN** | **ØD** | **s** | **ØA** | **H** | **Peso** |
| 32 | 42,4 | 3,6 | 135 | 110 | 6,6 |
| 40 | 48,3 | 3,6 | 135 | 110 | 6,6 |
| 50 | 60,3 | 4,0 | 150 | 120 | 9,8 |
| 65 | 76,1 | 4,0 | 184 | 160 | 18,5 |
| 80 | 88,9 | 4,0 | 204 | 180 | 24,8 |
| 100 | 114,3 | 4,0 | 242 | 200 | 37,5 |
| 125 | 139,7 | 4,0 | 296 | 240 | 67,0 |
| 150 | 168,3 | 4,5 | 335 | 280 | 92,0 |
| 200 | 219,1 | 6,3 | 410 | 340 | 160,0 |




**Nominal diameters**
- DN 32 to DN 200 (1 ¼" to 8")

**Standard version**
- Guía de PTFE grafito

**Design**
- Max. pressure 40 bar
- Max. temperature 260°C
- Maximum values may not coincide

**Standard materials**

Outer part/inner part
- Nicotriert / Carbon stee St 52-3
- Stainless steel 1.4571 / 1.4571
- *Other materials on request*

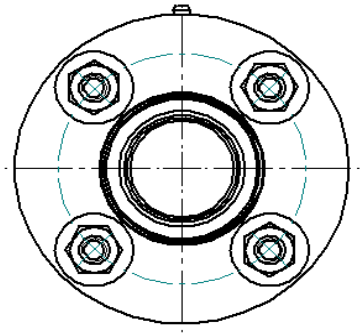
*Axial seal*
- PTFE
- Hastelloy spring

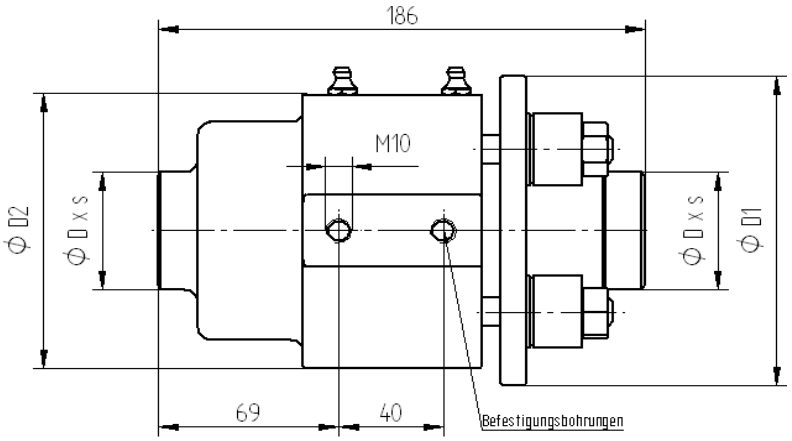
**Special version**
- For pressures > 40bar
- For nominal diameter > DN 200

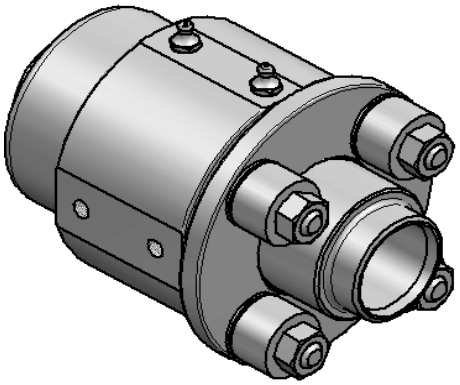
In combination with flexible swivel joint systems, ball joints are suitable for use in moving piping systems that are exposed to strong oscillations, vibrations or other tumbling movements as a result of unfavourable operating parameters. Ball joints are in a positions to compensate and absorb these movements.

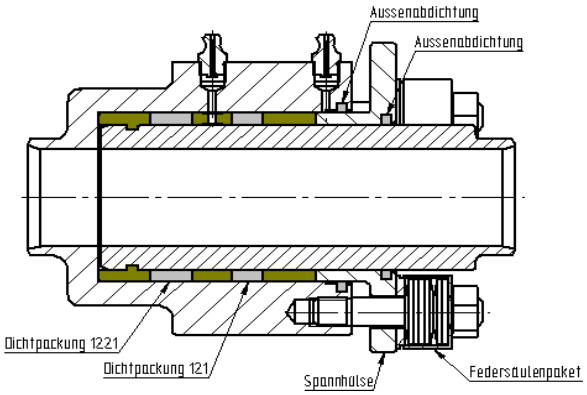
This results in less stress on the remainder of the piping system and thus a longer service life.

# 10. Swivel joint type THER-EX 450 for high temperatures








| Dimensions and weights | | | | |
|---|---|---|---|---|
| **DN** | **D tubería** | **ØD1** | **ØD2** | **Peso** |
| **25** | Ø33,7x2,9 | 108 | 94 | 5,8 |
| **40** | Ø48,3x2,9 | 128 | 114 | 8,3 |
| **50** | Ø60,3x2,9 | 138 | 124 | 9,1 |
| **65** | Ø76,1x2,9 | 153 | 139 | 11,2 |
| **80** | Ø88,9x3,2 | 168 | 154 | 12,9 |
| **100** | Ø114,3x4,0 | 193 | 179 | 15,6 |

**Nominal diameters**
- DN 25 to DN 100 (1" to 4")

**Standard version**
- Conexión con extremos para soldar

- Junta deslizante
- Junta radial

**Special version**
- Con conexiones bridadas
- Con extremos para soldar

**Medium**
- Thermal oil
- Steams
- Others

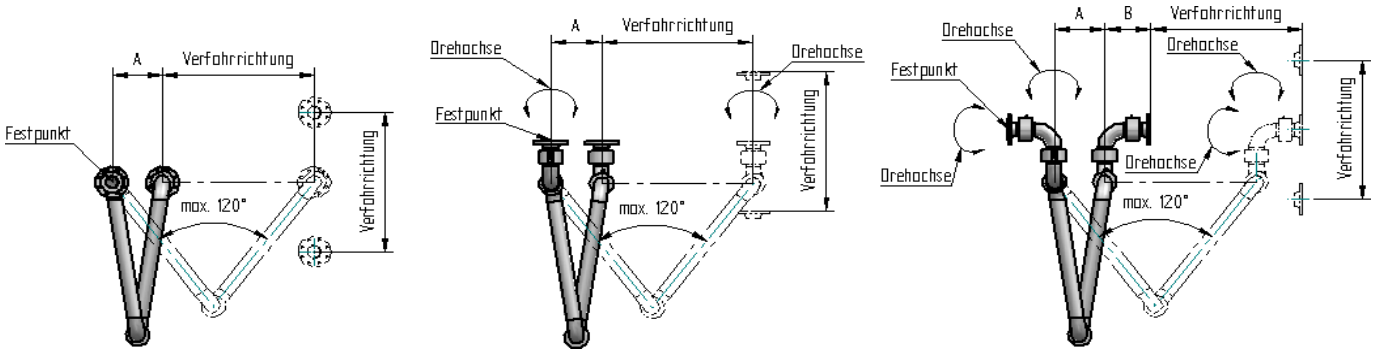
**Design**
- Max. pressure 40 bar
- Temperature: -10ºC to 450°C
- Slow rotary and/or swivelling motion

**Standard materials**
- Stainless steel
- Carbon steel

**Seal**
- PTFE compund
- Leakage rate: 0,01 mbar/l

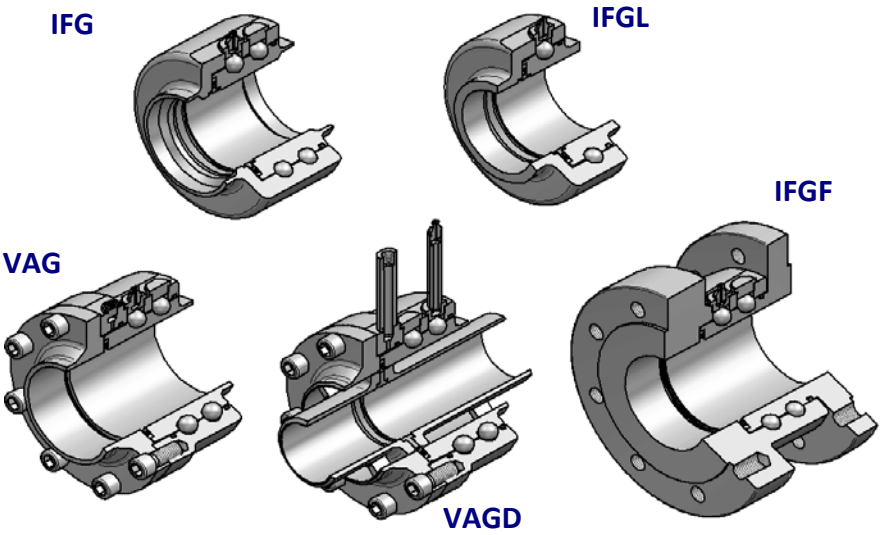
# 11. Swivel joint systems

Swivel joints systems are composed of combinations of swivel joints interconnected by pipes. Appropiate selection of the swivel joint layouts makes it possible to achieve any desired motions of two points relative to each other (1-, 2- and 3- dimensional).



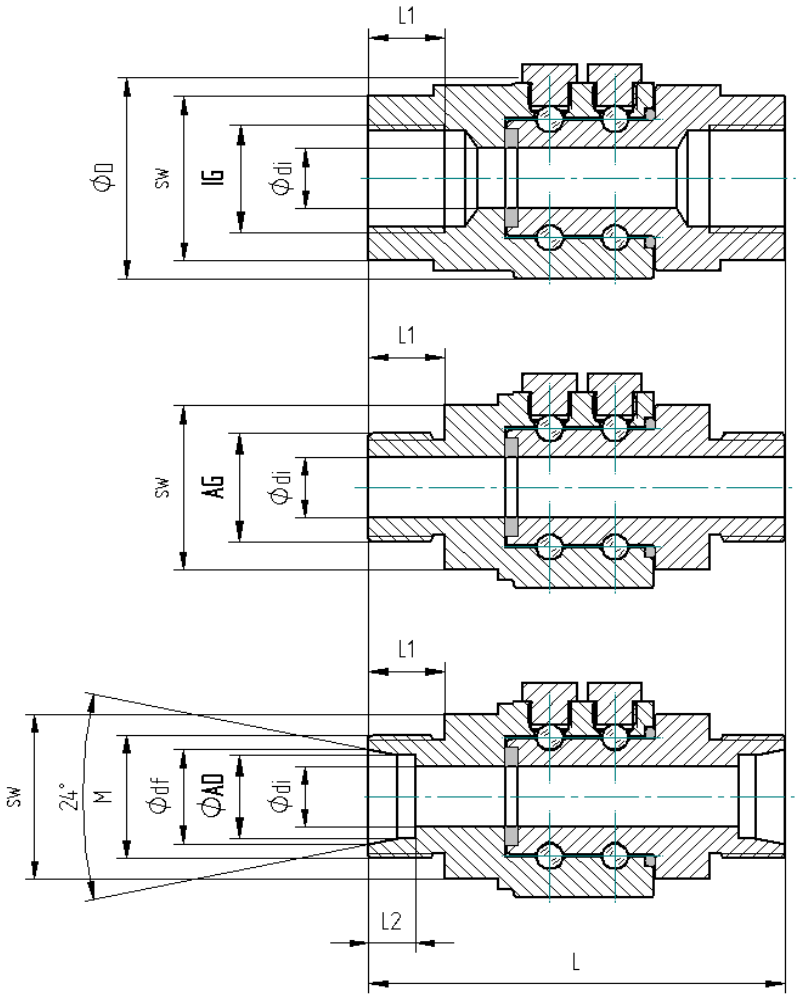

The design of the swivel joint systems is governed by the customer specific requirements and conditions, the nature of the connections, the distance between the connections and other operating parameters. Type IFG and IFGL swivel joint heads are used as standard for swivel joint systems. Appropriate versions of the swivel joints are used for special applications.


VdS
Zertifikat
über die
Anerkennung
von
Bauteilen und Systemen
EZM Industrie- und Fördertechnik GmbH
Bärenstein 5
DE-58791 Werdohl
G 410021 4 03.05.2010 02.05.2014
Rohrdrehgelenk
Typ "IFG"
in ortsfesten Wasserlöschanlagen
Verfahrensrichtlinien - VdS 2344 (2005-12)
Köln, den 03. Mai 2010
Schüngel
i.V. Hesels




VdS approval of Type IFG swivel joints in sizes DN 25 to DN 200 means that all nominal diameters of relevance for moveable high-bay warehouses are covered.
Swivel joint systems are used in stationary fire-fighting installations to supply fire-extinguishing agent to moveable high-bay warehouses. The prerequisite for use of swivel joint systems in these fire-fighting installations is their approval by VdS-Schadensverhütung.

## 12. Swivel joint type DV1




**Nominal diameters**
- DN 08 to DN 40 (¼" to 1 ½")

**Standard version**
- Two ball races
- Axial seal

**Special version**
- With external seal

**Design**
- Max. pressure 420 bar
- Max. temperature 260°C
- Maximum values may not coincide
- Medium may not contain abrasive constituents

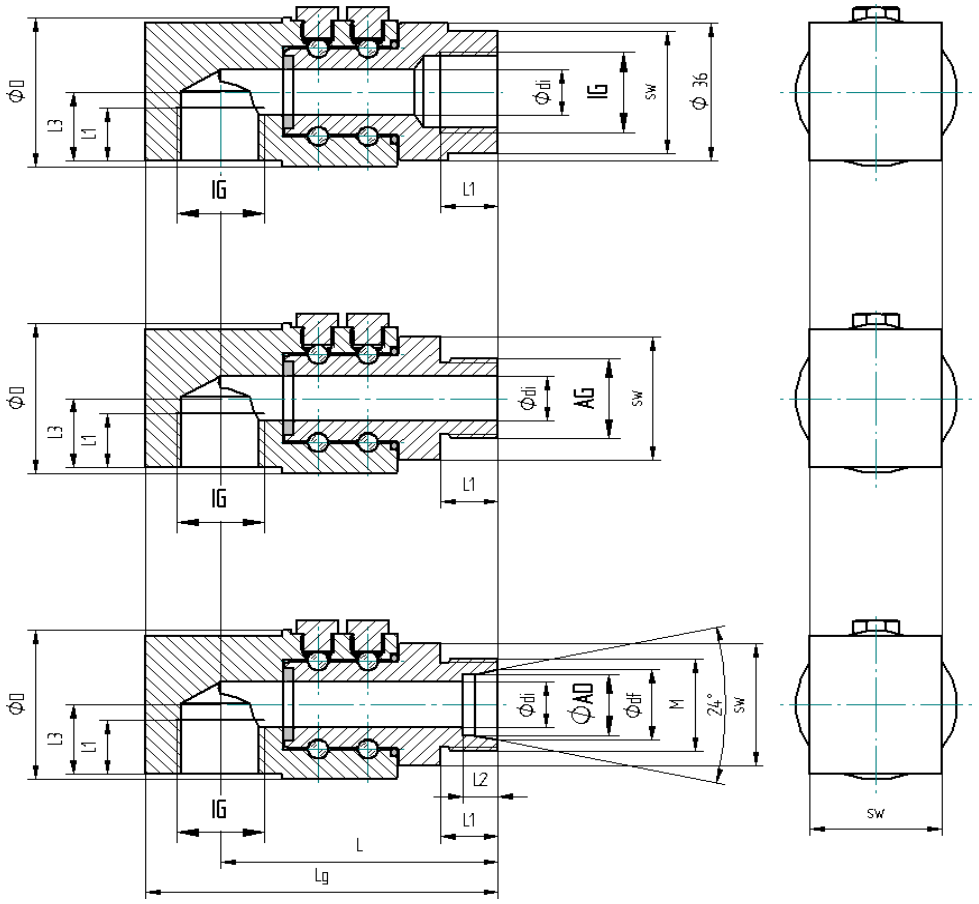
**Standard materials**

Outer and inner part
- Steel 42CrMo4 / Nicotrated
- *Other materials on request*

Axial seal
- PTFE
- Elgiloy spring

| | Connection | | Dimensions and weights | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thread | Pipe | | | | | | | | | | |
| DN | IG / AG | AD | M | L1 | di | df | L2 | D | L | sw | Peso | |
| 08 | G 1/4" | | | 12 | 7 | | | 39 | 77 | 32 | 0,6 | All parts can be combined with each other |
| | | 8 | M16x1,5 | 12 | 7 | 10,1 | 7,6 | 39 | 77 | 32 | 0,5 | |
| | | 10 | M18x1,5 | 12 | 7 | 12,3 | 7,6 | 39 | 77 | 32 | 0,5 | |
| 12 | G 3/8" | | | 12 | 9 | | | 39 | 77 | 32 | 0,6 | |
| | | 12 | M20x15 | 12 | 9 | 14,3 | 7,6 | 39 | 77 | 32 | 0,5 | |
| | | 14 | M22x1,5 | 12 | 9 | 16,3 | 7,6 | 39 | 77 | 32 | 0,5 | |
| 15 | G 1/2" | | | 14 | 12 | | | 39 | 77 | 32 | 0,6 | |
| | | 16 | M24x1,5 | 14 | 12 | 18,3 | 8,6 | 39 | 77 | 32 | 0,5 | |
| 20 | G 3/4" | | | 16 | 16 | | | 61 | 100 | 50 | 1,6 | All parts can be combined with each other |
| | | 20 | M30x2 | 16 | 16 | 22,9 | 10,5 | 61 | 100 | 50 | 1,3 | |
| 25 | G 1" | | | 18 | 20 | | | 61 | 100 | 50 | 1,6 | |
| | | 25 | M36x2 | 18 | 20 | 27,9 | 12,1 | 61 | 100 | 50 | 1,3 | |
| 32 | G 1 1/4" | | | 20 | 25 | | | 61 | 100 | 50 | 1,6 | |
| | | 30 | M42x2 | 20 | 25 | 33 | 13,6 | 61 | 100 | 50 | 1,3 | |
| 40 | G 1 1/2" | | | 22 | 32 | | | 69 | 110 | 55 | 1,7 | |
| | | 38 | M52x2 | 22 | 32 | 41 | 16,1 | 69 | 110 | 55 | 1,5 | |

# 13. Swivel joint type DV2




**Nominal diameters**
- DN 08 a DN 40 (De ¼" a 1 ½")

**Nominal diameters**
- Two ball races
- Axial seal

**Design**
- Max. pressure 420 bar
- Max. temperature 260°C
- Maximum values may not coincide
- Medium may not contain abrasive constituents

**Standard materials**

Outer and inner part
- Steel 42CrMo4 / Nicotrated
- *Other materials on request*

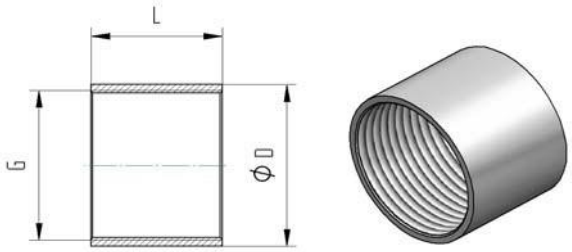
Axial seal
- PTFE
- Elgiloy spring

**Special version**
- With external seal

| | Connection | | Dimensions and weights | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thread | Pipe | | | | | | | | | | | | |
| DN | IG / AG | AD | M | L1 | di | df | L2 | D | L | Lg | L3 | sw | Weight | |
| 08 | G 1/4" | | | 12 | 7 | | | 39 | 77 | 85 | 18 | 32 | 0,7 | All parts can be combined with each other |
| | | 8 | M16x1,5 | 12 | 7 | 10,1 | 7,6 | 39 | 77 | 85 | 18 | 32 | 0,7 | |
| | | 10 | M18x1,5 | 12 | 7 | 12,3 | 7,6 | 39 | 77 | 85 | 18 | 32 | 0,7 | |
| 12 | G 3/8" | | | 12 | 9 | | | 39 | 77 | 85 | 18 | 32 | 0,7 | |
| | | 12 | M20x15 | 12 | 9 | 14,3 | 7,6 | 39 | 77 | 85 | 18 | 32 | 0,7 | |
| | | 14 | M22x1,5 | 12 | 9 | 16,3 | 7,6 | 39 | 77 | 85 | 18 | 32 | 0,7 | |
| 15 | G 1/2" | | | 14 | 12 | | | 39 | 77 | 85 | 18 | 32 | 0,7 | |
| | | 16 | M24x1,5 | 14 | 12 | 18,3 | 8,6 | 39 | 77 | 85 | 18 | 32 | 0,7 | |
| 20 | G 3/4" | | | 16 | 16 | | | 61 | 100 | 130 | 30 | 50 | 2,5 | All parts can be combined with each other |
| | | 20 | M30x2 | 16 | 16 | 22,9 | 10,5 | 61 | 100 | 130 | 30 | 50 | 2,5 | |
| 25 | G 1" | | | 18 | 20 | | | 61 | 100 | 130 | 30 | 50 | 2,5 | |
| | | 25 | M36x2 | 18 | 20 | 27,9 | 12,1 | 61 | 100 | 130 | 30 | 50 | 2,5 | |
| 32 | G 1 1/4" | | | 20 | 25 | | | 61 | 100 | 130 | 30 | 50 | 2,5 | |
| | | 30 | M42x2 | 20 | 25 | 33 | 13,6 | 61 | 100 | 130 | 30 | 50 | 2,5 | |
| 40 | G 1 1/2" | | | 22 | 32 | | | 69 | 110 | 145 | 35 | 55 | 2,7 | |
| | | 38 | M52x2 | 22 | 32 | 41 | 16,1 | 69 | 110 | 145 | 35 | 55 | 2,7 | |

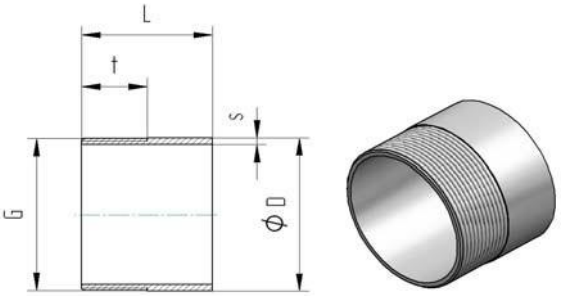
# 14. Connecting components for swivel joints

**Sockets to DIN 2986**
with Whitworth parallel pipe thread to DIN 2999



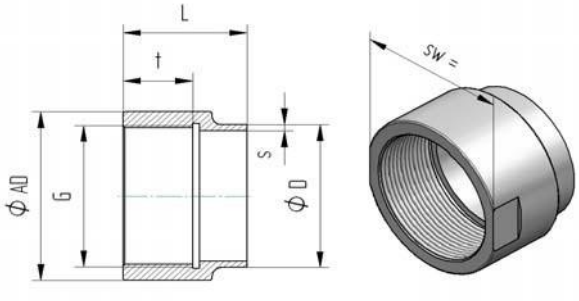

| DN | G | ØD | L |
|---|---|---|---|
| **20** | 3/4" | 31 | 36 |
| **25** | 1" | 38 | 43 |
| **32** | 1 1/4" | 47 | 48 |
| **40** | 1 1/2" | 53 | 48 |
| **50** | 2" | 66 | 56 |
| **65** | 2 1/2" | 83 | 65 |
| **80** | 3" | 95 | 71 |
| **100** | 4" | 125 | 83 |
| **125** | 5" | 148 | 92 |
| **150** | 6" | 175 | 92 |

**Weld-on nipples**
with Whitworth tapered pipe thread to DIN 2982



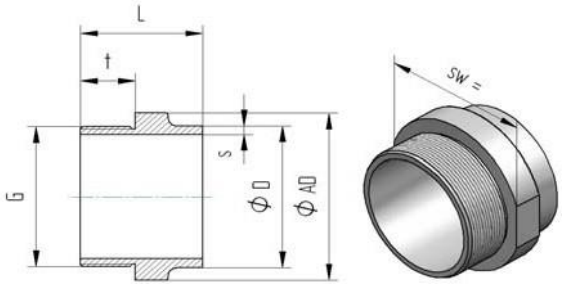

| DN | G | t | ØD | s | L |
|---|---|---|---|---|---|
| **20** | 3/4" | 14,5 | 26,9 | 2,6 | 40 |
| **25** | 1" | 16,8 | 33,7 | 3,2 | 40 |
| **32** | 1 1/4" | 19,1 | 42,4 | 3,2 | 50 |
| **40** | 1 1/2" | 19,1 | 48,3 | 3,2 | 50 |
| **50** | 2" | 23,4 | 60,3 | 3,6 | 50 |
| **65** | 2 1/2" | 26,7 | 76,1 | 3,6 | 60 |
| **80** | 3" | 29,8 | 88,9 | 4,0 | 70 |
| **100** | 4" | 35,8 | 114,3 | 4,6 | 80 |
| **125** | 5" | 40,1 | 139,7 | 5,0 | 90 |
| **150** | 6" | 40,1 | 168,3 | 5,0 | 100 |

**Sockets with wrench flat with Whitworth parallel pipe thread to DIN 228-1**



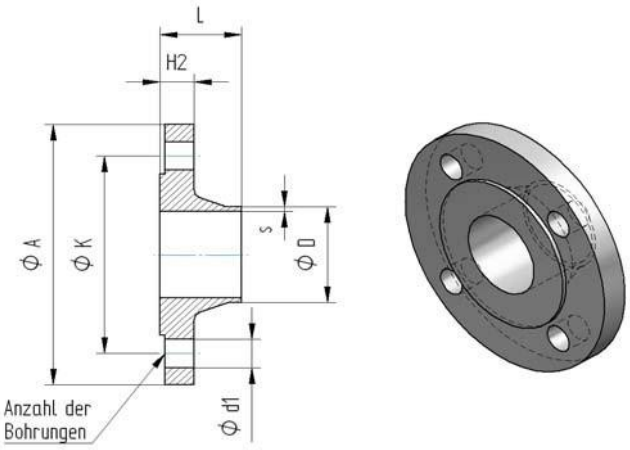

| DN | G | t | ØD | s | L | AD | sw* |
|---|---|---|---|---|---|---|---|
| **20** | 3/4" | 16 | 26,9 | Según la presión nominal | 36 | 35 | 32 |
| **25** | 1" | 18 | 33,7 | | 43 | 45 | 41 |
| **32** | 1 1/4" | 20 | 42,4 | | 48 | 55 | 50 |
| **40** | 1 1/2" | 22 | 48,3 | | 48 | 60 | 55 |
| **50** | 2" | 24 | 60,3 | | 56 | 75 | 70 |
| **65** | 2 1/2" | 34 | 76,1 | | 65 | 90 | 85 |
| **80** | 3" | 40 | 88,9 | | 71 | 105 | 100 |
| **100** | 4" | 50 | 114,3 | | 83 | 130 | 125 |
| **125** | 5" | 55 | 139,7 | | 92 | 160 | 150 |
| **150** | 6" | 55 | 168,3 | | 92 | 190 | 180 |

**Weld-on nipples with wrench flat with Whitworth parallel pipe thread to DIN 228-1**




| DN | G | t | ØD | s | L | AD | sw* |
|---|---|---|---|---|---|---|---|
| **20** | 3/4" | 16 | 26,9 | Según la presión nominal | 40 | 35 | 32 |
| **25** | 1" | 18 | 33,7 | | 40 | 45 | 41 |
| **32** | 1 1/4" | 20 | 42,4 | | 50 | 55 | 50 |
| **40** | 1 1/2" | 22 | 48,3 | | 50 | 60 | 55 |
| **50** | 2" | 24 | 60,3 | | 50 | 75 | 70 |
| **65** | 2 1/2" | 34 | 76,1 | | 60 | 90 | 85 |
| **80** | 3" | 40 | 88,9 | | 70 | 105 | 100 |
| **100** | 4" | 50 | 114,3 | | 80 | 130 | 125 |
| **125** | 5" | 55 | 139,7 | | 90 | 160 | 150 |
| **150** | 6" | 55 | 168,3 | | 100 | 180 | 180 |

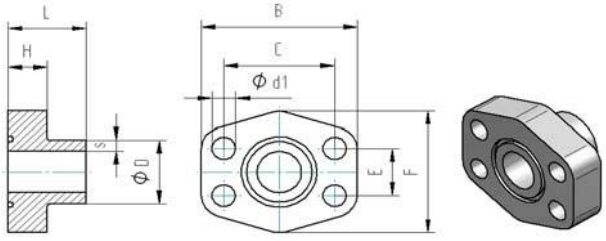
**** sw:*** *wrench size*



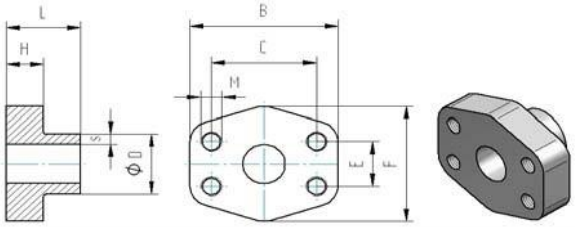

| Welding neck flanges to DIN | |
|---|---|
| DIN 2631 | PN 6 |
| DIN 2632 | PN 10 |
| DIN 2633 | PN 16 |
| DIN 2634 | PN 25 |
| DIN 2635 | PN 40 |
| DIN 2636 | PN 64 |
| DIN 2637 | PN 100 |
| DIN 2638 | PN 160 |
| DIN 2628 | PN 250 |
| DIN 2629 | PN 320 |
| DIN 2627 | PN 400 |

| Welding neck flanges to ANSI B 16.5 | | |
|---|---|---|
| 150 lb/in $^2$ | 600 lb/in $^2$ | 1500 lb/in $^2$ |
| 300 lb/in $^2$ | 900 lb/in $^2$ | 2500 lb/in $^2$ |
| 400 lb/in $^2$ | | |

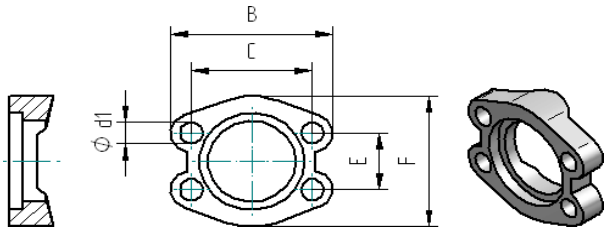
| Type 11 welding neck flanges to EN 1092-1 | | |
|---|---|---|
| PN 6 | PN 40 | PN250 |
| PN 10 | PN 63 | PN 320 |
| PN 16 | PN 100 | PN 400 |
| PN 25 | PN 160 | |



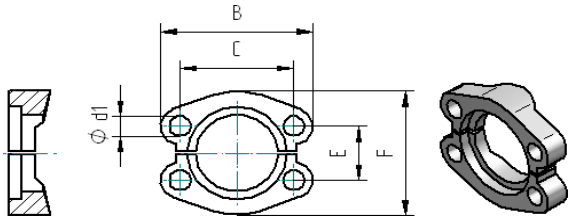

**SAE weld-on flange groove**



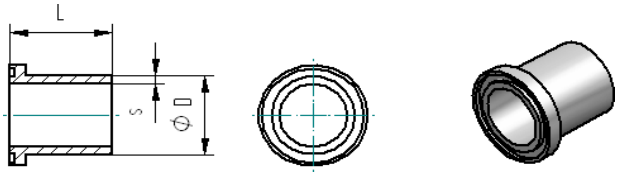

**SAE weld-on counterflangewith O-ring**



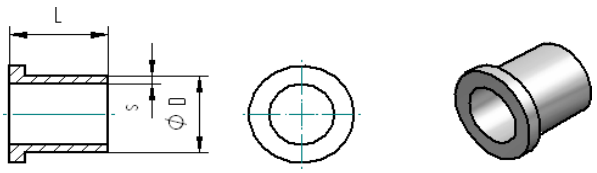

**SAE loose full flange**




**SAE 2-split**




**SAE welding head with O'ring groove**

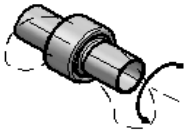



**SAE welding head**

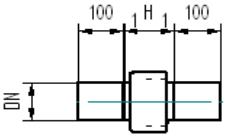
# 15. Swivel joints with welded connections

## Standard version with IFG joint head and pipe bend to standard 3S

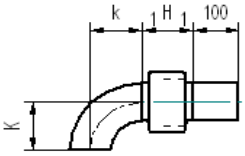
**1 axis of rotation**



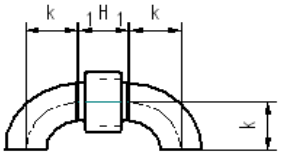
**Type 1**



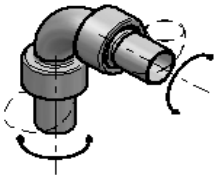

**Type 2**



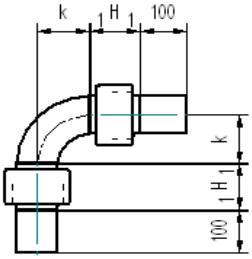

**Type 3**



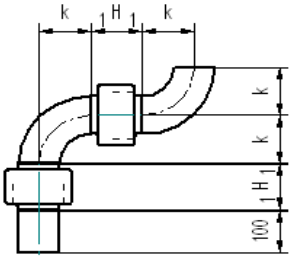

**2 axis of rotation**



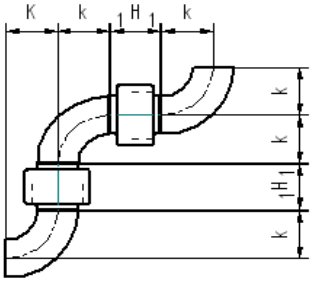
**Type 4**



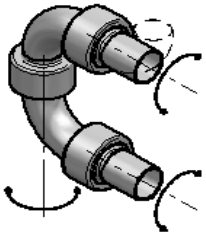

**Type 5**



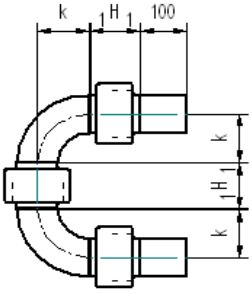

**Type 6**



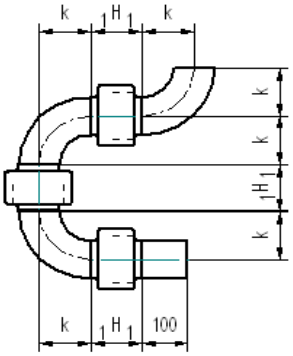

**3 axis of rotation**



**Type 7**

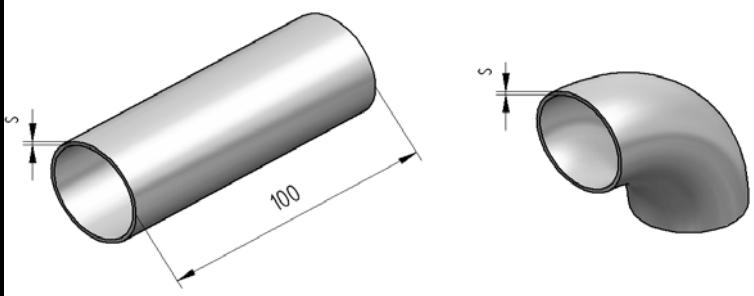



**Type 8**




| DN | Ø | H | s | k |
|---|---|---|---|---|
| 20 | 26,9 | H = En función de la junta rotativa | s = En función de la presión nominal | 29 ±2,5 |
| 25 | 33,7 | | | 38 ±2,5 |
| 32 | 42,4 | | | 48 ±2,5 |
| 40 | 48,3 | | | 57 ±3,0 |
| 50 | 60,3 | | | 76 ±3,0 |
| 65 | 76,1 | | | 95 ±3,0 |
| 80 | 88,9 | | | 114 ±3,0 |
| 100 | 114,3 | | | 152 ±3,0 |
| 125 | 139,7 | | | 190 ±4,0 |
| 150 | 168,3 | | | 229 ±4,0 |
| 200 | 219,1 | | | 305 ±4,0 |
| 250 | 273,0 | | | 381 ±5,0 |
| 300 | 323,9 | | | 457 ±5,0 |
| 350 | 355,6 | | | 533 ±10,0 |
| 400 | 406,4 | | | 610 ±10,0 |
| 500 | 508,0 | | | 762 ±25,0 |
| 600 | 610,0 | | | 914 ±25,0 |

**Welded connection with weld steam preparation to EN ISO 9692, part 1-2003.**

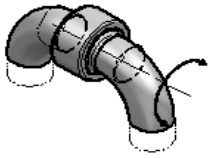



***Special versions to customer specifications.***

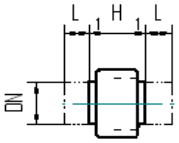
# 16. Swivel joints with connecting components

## Standard version with IFG joint head and pipe bend to standard 3S

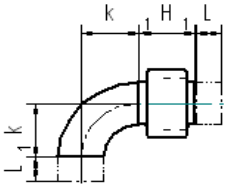
**1 axis of rotation**



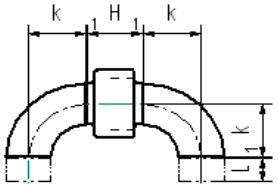
**Type 1**



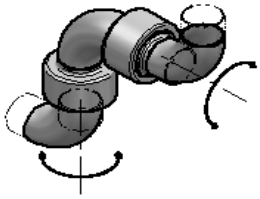

**Type 2**



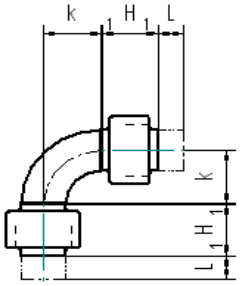

**Type 3**



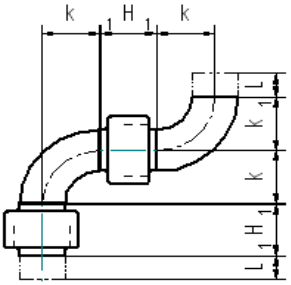

**2 axis of rotation**



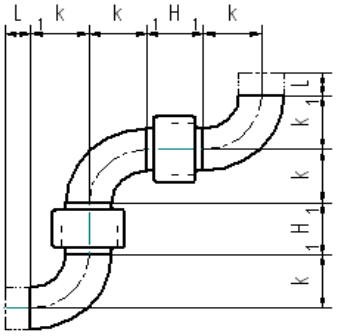
**Type 4**



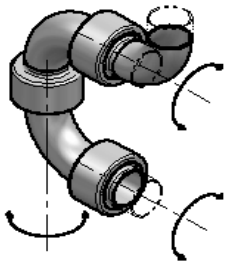

**Type 5**



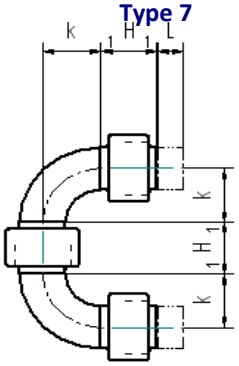

**Type 6**



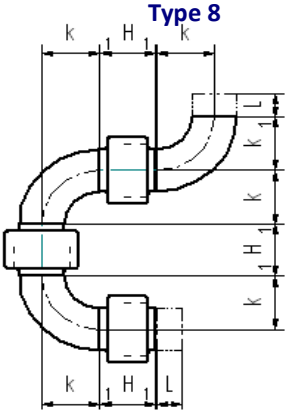

**3 axis of rotation**



**Type 7**

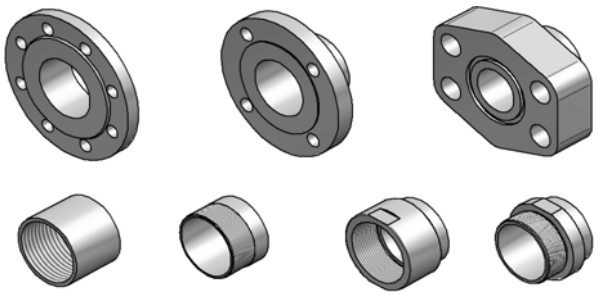



**Type 8**




| DN | Ø | H | L | k |
|---|---|---|---|---|
| 20 | 26,9 | H = According to swivel joint head | L = According to connecting components | 29 ±2,5 |
| 25 | 33,7 | | | 38 ±2,5 |
| 32 | 42,4 | | | 48 ±2,5 |
| 40 | 48,3 | | | 57 ±3,0 |
| 50 | 60,3 | | | 76 ±3,0 |
| 65 | 76,1 | | | 95 ±3,0 |
| 80 | 88,9 | | | 114 ±3,0 |
| 100 | 114,3 | | | 152 ±3,0 |
| 125 | 139,7 | | | 190 ±4,0 |
| 150 | 168,3 | | | 229 ±4,0 |
| 200 | 219,1 | | | 305 ±4,0 |
| 250 | 273,0 | | | 381 ±5,0 |
| 300 | 323,9 | | | 457 ±5,0 |
| 350 | 355,6 | | | 533 ±10,0 |
| 400 | 406,4 | | | 610 ±10,0 |
| 500 | 508,0 | | | 762 ±25,0 |
| 600 | 610,0 | | | 914 ±25,0 |

**Connection components: flanges to DIN, ANSI, SAE-sockets, nipples with threads to DIN/ISO 228.**

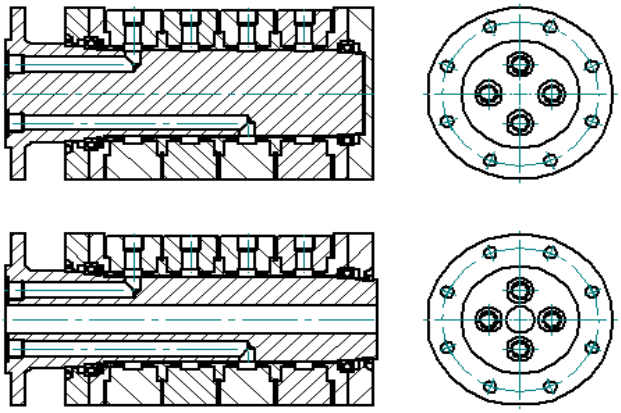


***Special connecting component versions to customer specifications.***

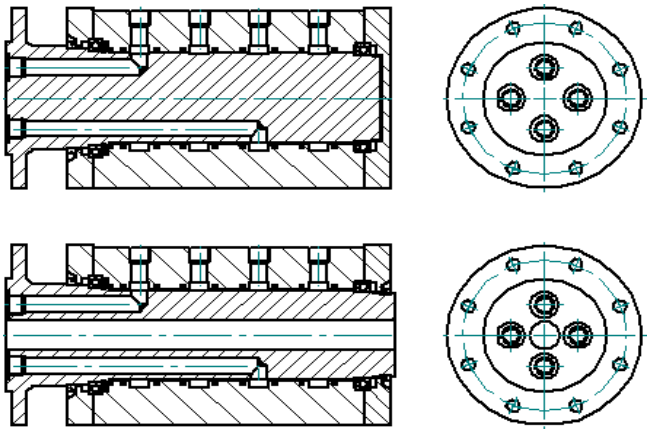
# 17. Rotary connections

EZM INDUSTRIE- UND FÖRDERTECHNIK

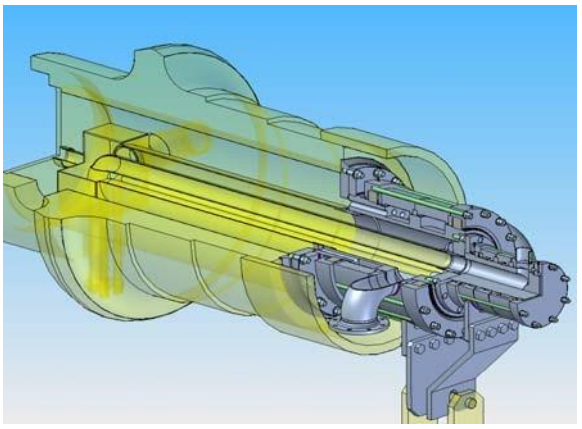
## Segmental design



## Compact design



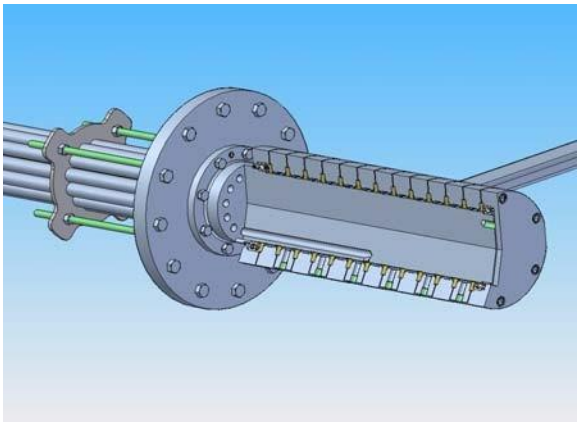
Multiple rotary connections are used to transport one or more liquid or gaseous media between two points that move in relation to each other.
Sealing systems separate the individual channels from each other.



### Versions

Rotary connections are developed and manufactured according to customer-defined specifications, the individual versions being adapted to the respective operating parameters.

- Media
- Presión de trabajo
- Temperatura de trabajo
- Speed (rpm)
- Connections
- Nuber of channels
- Nominal diameter of the channels
- Arrangement of the channels

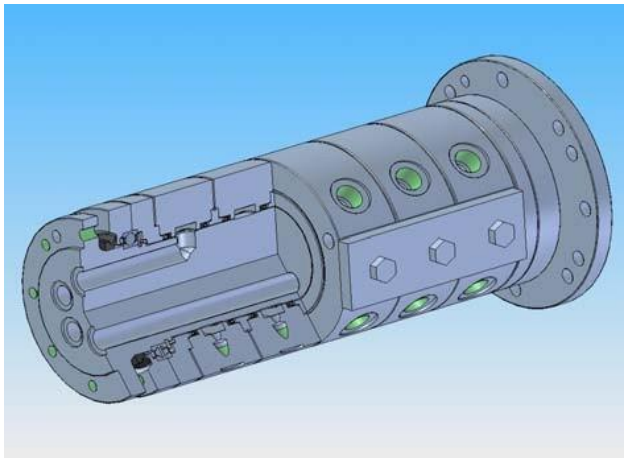


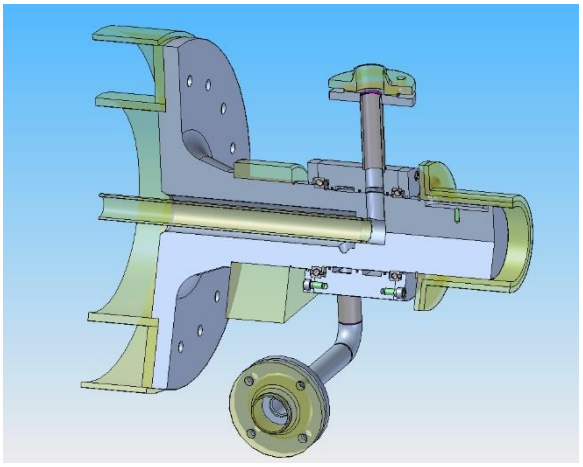
### Design

- Pressure up to 2.000bar
- Vacuum
- Temperature up to 320ºC
- Speed up to 3.000rpm
- Maximum values may not coincide

### Materials

- SS 1.4301 (AISI 304)
- SS 1.4404 (316L)
- SS 1.4571 (AISI 316Ti)
- Steel 42CrMo4
  Carbon steel St 52-3
- *Other materials*





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# FORMULARIO DE PETICIÓN / ENQUIRY

Medio / *Medium* Abrasivo / *Abrasive* ☐ Sí / *Yes* ☐ No / *No*

Diámetro nominal / *Nominal diameter*

Presión de trabajo / *Operating pressure*

Presión de prueba / *Test pressure*

Temperatura de trabajo / *Operating temperature*

Material / *Material*

Tipo / *Type*

¿La junta está en contacto con el medio? / *Is the Joint in the medium?* ☐ Sí / *Yes* ☐ No / *No*

¿Se va a conectar a una manguera? / *Is a hose to be connected?* ☐ Sí / *Yes* ☐ No / *No*

**Conexiones / *Connections***

| | | | |
|---|---|---|---|
| ☐ | Junta rotativa / *Swivel joint* | ☐ | Brida ANSI + Presión nominal / *ANSI flange + Nominal pressure* |
| ☐ | Boquilla / *Nipple* | ☐ | Brida SAE + Presión nominal / *SAE flange + Nominal pressure* |
| ☐ | Casquillo / *Socket* | ☐ | Extremos para soldar / *Welded connection* |
| ☐ | Brida DIN + Presión nominal / *DNI flange + Nominal pressure* | ☐ | Conexión especial según las especificaciones del cliente / *Customer specification* |

Tipo de movimiento / *Type of motion* Rotación / *Rotation*

Movimiento giratorio / *Swivelling motion*

Número de revoluciones / Movimientos por unidad de tiempo
*Number of revolutions / Movements per unit of time*

| **Certificados de materiales / *Material certificate*** | | **Certificados de inspección / *Inspection certificate*** | |
|---|---|---|---|
| ☐ | EN 10204 3.1 | ☐ | EN 10204 3.1 |
| ☐ | EN 10204 3.2 | ☐ | EN 10204 3.2 |
| ☐ | Ninguno / *None* | ☐ | Ninguno / *None* |
| ☐ | Certificado especial / *Special acceptance* (TÜV, Germanischer Lloyd, etc.) | ☐ | Certificado especial / *Special acceptance* (TÜV, Germanischer Lloyd, etc.) |

Unidades / *Quantity required*

Comentarios / *Remarks*

EZM INDUSTRIE- UND FÖRDERTECHNIK

## Applications

- Plant construction
- Automotive industry
- Construction Machinery industry
- Fire protection
- Chemical industry
- Aircraft fuelling
- Glass industry
- Metallurgical industry
- Power station construction
- Painting facilities
- Mechanical engineering
- Food industry
- Offshore industry
- Paper and wood industry
- Petrochemical industry
- Recycling industry
- Pipeline construction
- Shipbuilding
- Steelworks industry
- Fuelling vehicle components
- Loading equipment

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**Fax:** (+34) 93 308 36 78