



# SIZES FROM 2,000 - 165,000 Nm SAFETY COUPLINGS

## GENERAL INFORMATION ABOUT R+W SAFETY COUPLINGS:



### SERVICE LIFE

When properly installed and handled these couplings are completely wear and maintenance free.

### FIT CLEARANCE

Overall shaft / hub clearance of 0.02 - 0.07 mm

### TEMPERATURE RANGE

-30 to +120° C

### SPECIAL SOLUTIONS

Automatic re-engagement, special materials, special flanges, bore profiles, etc. are available on request.





### ATEX (Optional)

For use in hazardous areas available upon request.

### DISENGAGEMENT BEHAVIOR

Full disengagement / manual reset is standard.

## TORSIONALLY STIFF SAFETY COUPLINGS SIZES FROM 2 – 165 KNm

| MODEL  | FEATURES   |         |
|--|--|---------|
| <div>ST1</div>    | <p><b>with simple keyway mounting for indirect drives from 2 - 165 KNm</b></p> <ul style="list-style-type: none"> <li>▶ compact, simple design</li> <li>▶ precise overload protection</li> <li>▶ torsionally stiff</li> <li>▶ integral bearing for overhung load support</li> </ul>  | Page 40 |
| <div>STN</div>  | <p><b>with conical clamping ring for indirect drives from 2 - 165 KNm</b></p> <ul style="list-style-type: none"> <li>▶ high shaft clamping pressure</li> <li>▶ compact, simple design</li> <li>▶ precise overload protection</li> <li>▶ torsionally stiff</li> <li>▶ integral bearing for overhung load support</li> </ul> | Page 41 |
| <div>ST2</div>  | <p><b>with simple keyway mounting and elastic coupling from 2 - 165 KNm</b></p> <ul style="list-style-type: none"> <li>▶ vibration damping</li> <li>▶ compensation for misalignment</li> <li>▶ precise overload protection</li> <li>▶ elastomer segments resistant to oil and dirt</li> <li>▶ press fit design</li> </ul>  | Page 42 |
| <div>ST4</div>  | <p><b>with simple keyway mounting and crowned gear coupling from 2 - 165 KNm</b></p> <ul style="list-style-type: none"> <li>▶ high power density</li> <li>▶ compensation for misalignment</li> <li>▶ precise overload protection</li> <li>▶ low reaction loads on shaft bearings</li> <li>▶ torsionally stiff</li> </ul>   | Page 44 |

# GENERAL INFORMATION

## SAFETY COUPLINGS

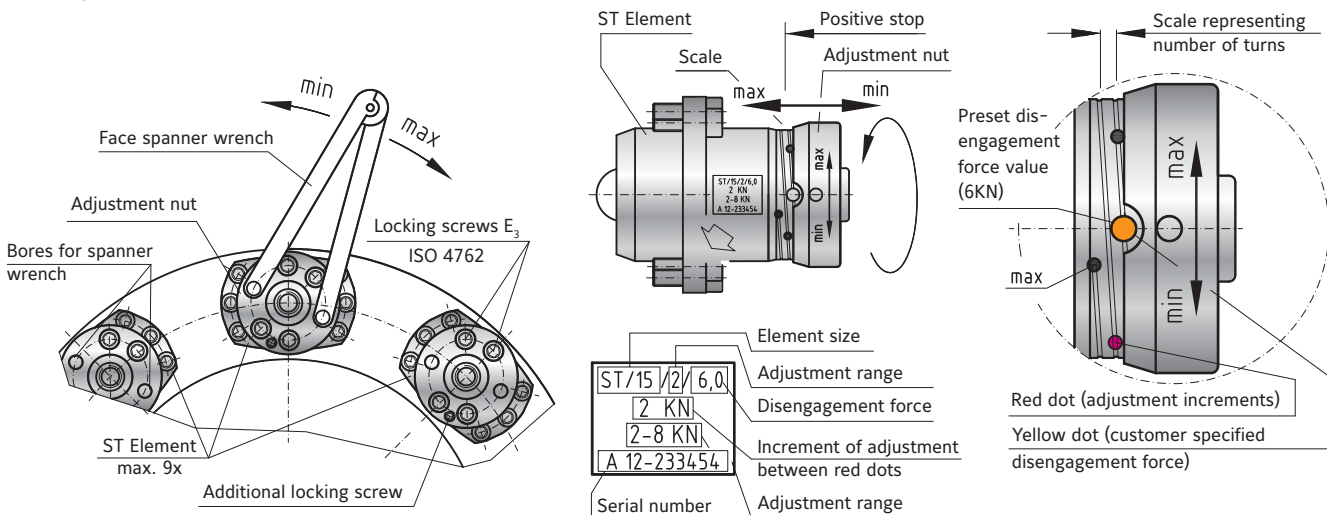
ST1

STN

ST2

ST4

### TORQUE ADJUSTMENT



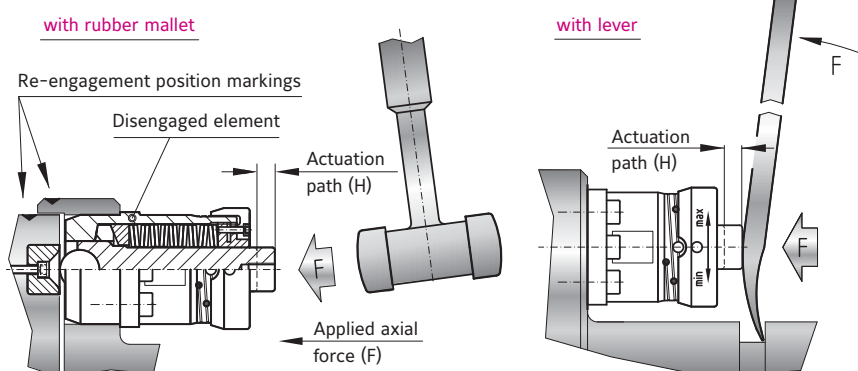
After loosening (approx. 1 rotation) the locking screws (E<sub>3</sub>), the adjustment nut can be turned to adjust the disengagement setting. Incremental values are marked on the adjustment scale. After adjustment, the torque setting is secured by tightening the locking screws (E<sub>3</sub>).

#### Note

All safety elements must be set to the same value.

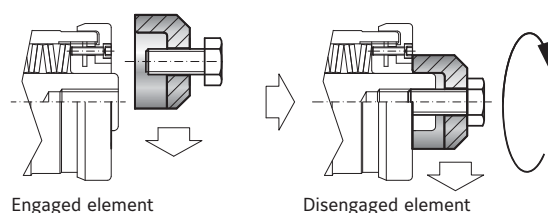
### RE-ENGAGEMENT OF THE SAFETY ELEMENTS

After the overload has been cleared, the drive or driven side must be rotated until the re-engagement position markings are lined up. The elements can only be re-engaged in this position. The element is re-engaged through applying an axial force to the plunger. Re-engagement is audible. Once this is complete, the torque limiter is ready for operation.



### MANUAL DISENGAGEMENT OF ELEMENTS

Prior to machine start-up, the individual elements can be manually disengaged. A manual disengagement tool is available from R+W (see page 13).



# GENERAL INFORMATION

## SAFETY COUPLINGS

### RELIABLE TORQUE OVERLOAD PROTECTION

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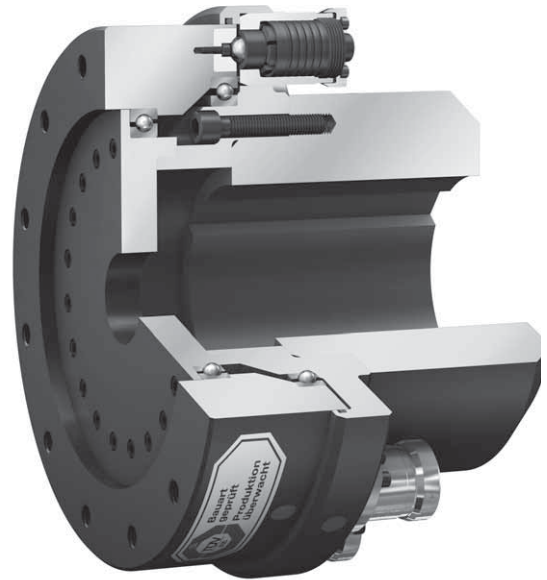
**ST series safety couplings are designed to decouple machine drives in the event of torque overload, preventing damage and downtime.**

A series of ball bearings are spring loaded into detents on an otherwise freely spinning output plate. In the case of the ST series, these ball bearings are mounted onto plungers which are individually loaded in order to generate high clutching forces while maintaining a relatively small profile.

The transmittable torque is determined by the number and force setting of the safety elements and their distance from the center of the rotational axis. In the event of an overload, the force applied by the detents causes the plungers to overcome the spring loading and retract into the housings, resulting in a complete separation of the driving and driven hubs.

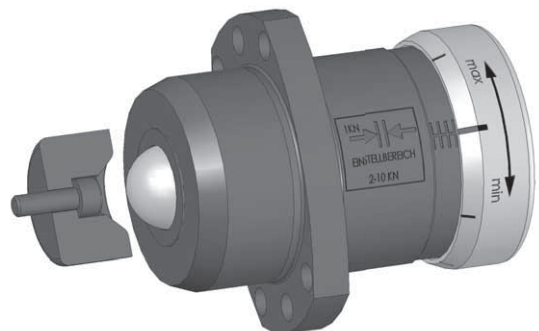
They will not re-engage automatically. After the overload condition has passed, an axial force must be applied in order to re-engage the safety elements into the detents of the output plate.

This is normally accomplished without any special tools, simply requiring a mallet or pry bar.



The safety elements consist of two components: the detent receptacle and the adjustable plunger mechanism.

The force setting is clearly marked on an adjusting scale.



# GENERAL INFORMATION

## SAFETY COUPLINGS

### OPTION: HYDRAULIC ACTUATED RE-ENGAGEMENT

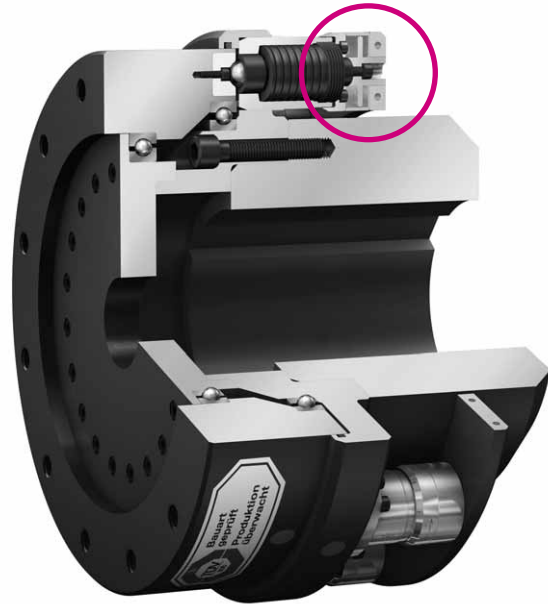
**With a new combination of hydraulic and mechanical components, the special SH version is available for automatic re-engagement.**

The SH system is available to be incorporated into all of the standard ST series safety couplings, from 2,000 - 165,000 Nm.

After an overload the coupling can be slowly rotated in reverse to cause the safety elements to automatically engage upon reaching the next set of detent receptacles.

This reduces downtime in heavy equipment by allowing for remote re-engagement of the safety coupling.

Incorporation of the SH system into any standard ST model has no impact on the overall space envelope requirements.



**ST1**

# WITH SIMPLE KEYWAY MOUNTING

## 2 - 165 KNm



### ABOUT

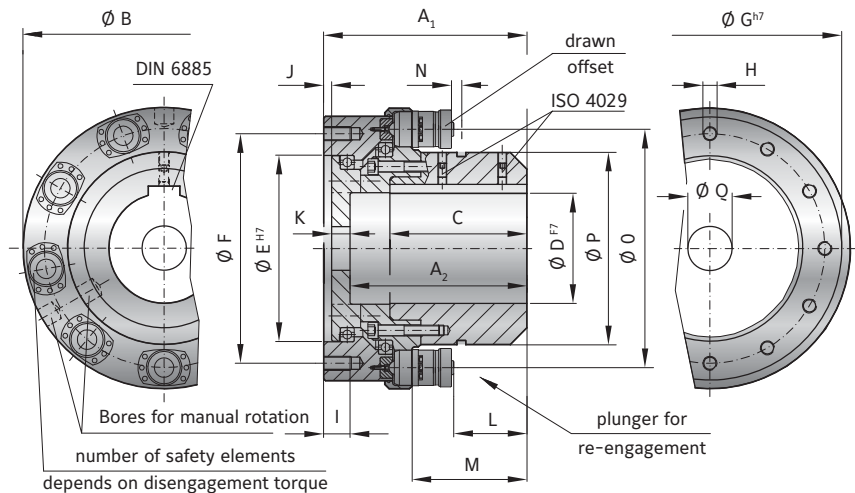
**MATERIAL**  
Hardened steel (nitrocarburized surface)

► Driven side: output flange with 12x fastening threads and integral bearings

### DESIGN

► Drive side: coupling hub with keyway connection (spline profile on request)

► Safety elements: evenly spaced around the circumference; externally adjustable



## MODEL ST1

| SIZE   |       |                | 10         |           |           | 25         |           |           | 60         |           |           | 160        |           |           |
|--|-------|----------------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|
| Adjustment range available from - to                                   | (KNm) |                | 2-6        | 4-12      | 6-18      | 3-8        | 5-16      | 10-25     | 11-20      | 22-40     | 35-60     | 25-55      | 50-110    | 80-165    |
|  |       |                | 3 x ST 15  | 6 x ST 15 | 9 x ST 15 | 3 x ST 15  | 6 x ST 15 | 9 x ST 15 | 3 x ST 30  | 6 x ST 30 | 9 x ST 30 | 3 x ST 70  | 6 x ST 70 | 9 x ST 70 |
| Overall length   | (mm)  | A <sub>1</sub> | 183        |           |           | 230        |           |           | 320        |           |           | 410        |           |           |
| Bore depth   | (mm)  | A <sub>2</sub> | 158        |           |           | 200        |           |           | 275        |           |           | 360        |           |           |
| Flange outside diameter  | (mm)  | B              | 270        |           |           | 318        |           |           | 459        |           |           | 648        |           |           |
| Fit length   | (mm)  | C              | 120        |           |           | 155        |           |           | 220        |           |           | 290        |           |           |
| Bore diameter possible Ø to Ø F7                                       | (mm)  | D              | 40-110     |           |           | 60-140     |           |           | 80-200     |           |           | 100-290    |           |           |
| Flange centering diameter H7   | (mm)  | E              | 170        |           |           | 210        |           |           | 300        |           |           | 450        |           |           |
| Bolt circle diameter ±0.3  | (mm)  | F              | 220        |           |           | 260        |           |           | 360        |           |           | 570        |           |           |
| Outside diameter h7  | (mm)  | G              | 259        |           |           | 298        |           |           | 418        |           |           | 618        |           |           |
| Fastening threads  |       | H              | 12 x M16   |           |           | 12 x M16   |           |           | 12 x M20   |           |           | 12 x M24   |           |           |
| Thread depth   | (mm)  | I              | 25         |           |           | 30         |           |           | 35         |           |           | 40         |           |           |
| Fit length   | (mm)  | J              | 6          |           |           | 8          |           |           | 8          |           |           | 10         |           |           |
| Wall thickness   | (mm)  | K              | 17         |           |           | 20         |           |           | 30         |           |           | 38         |           |           |
| Distance   | (mm)  | L              | 45         |           |           | 83         |           |           | 96         |           |           | 136        |           |           |
| Distance   | (mm)  | M              | 95         |           |           | 130        |           |           | 165        |           |           | 225        |           |           |
| Actuation path   | (mm)  | N              | 4          |           |           | 4          |           |           | 7,5        |           |           | 10         |           |           |
| Mounting diameter - elements   | (mm)  | O              | 220        |           |           | 270        |           |           | 376        |           |           | 532        |           |           |
| Hub outside diameter   | (mm)  | P              | 170        |           |           | 218        |           |           | 295        |           |           | 418        |           |           |
| Bore for fastening screw   | (mm)  | Q              | max. Ø 110 |           |           | max. Ø 140 |           |           | max. Ø 200 |           |           | max. Ø 290 |           |           |
| Moment of inertia (approx.) D max.(10 <sup>-3</sup> kgm <sup>2</sup> ) |       |                | 370        |           |           | 780        |           |           | 4600       |           |           | 24600      |           |           |
| Speed max.   | (rpm) |                | 4200       |           |           | 3800       |           |           | 2500       |           |           | 2000       |           |           |
| Allowable max. radial force standard*                                  | (KN)  |                | 40         |           |           | 60         |           |           | 100        |           |           | 200        |           |           |
| Approx. weight at D max.   | (kg)  |                | 40         |           |           | 63         |           |           | 179        |           |           | 463        |           |           |

\* larger radial loads possible with special bearings

| ORDERING EXAMPLE  | ST1 | 025 | 5-16 | 12 | 117.48 | 25.4 | XX |
|---|-----|-----|------|----|--------|------|----|
| Model   | ●   |     |      |    |        |      |    |
| Size  |     | ●   |      |    |        |      |    |
| Adjustment range (KNm)  |     |     | ●    |    |        |      |    |
| Disengagement torque (KNm)  |     |     |      | ●  |        |      |    |
| Bore diameter D F7  |     |     |      |    | ●      |      |    |
| Bore for fastening screw in shaft end (Q)   |     |     |      |    |        | ●    |    |
| For custom features place an XX at the end of the part number and describe the special requirements (e.g. ST1 / 025 / 5-16 / 12 / 117.48 / 25.4 / XX) |     |     |      |    |        |      |    |



## ABOUT

## MATERIAL

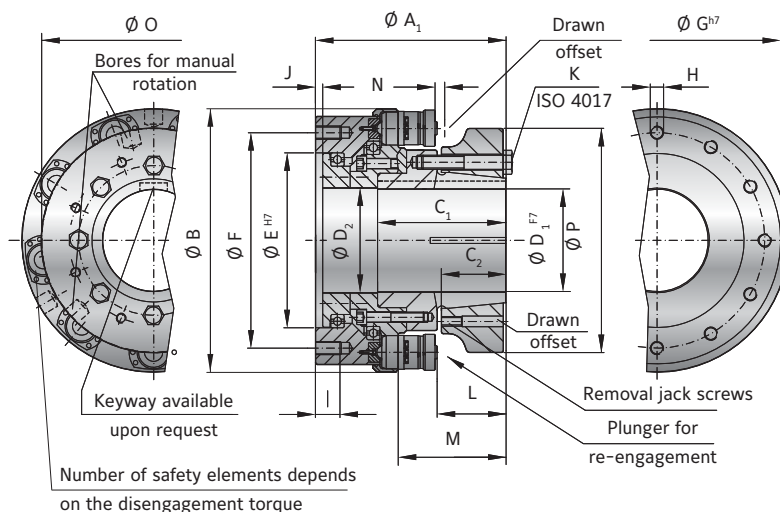
Hardened steel (nitrocarburized surface)

## DESIGN

► Drive side: coupling hub with conical clamping ring connection (spline profile on request)

► Driven side: output flange with 12x fastening threads and integral bearings

► Safety elements: evenly spaced around the circumference; externally adjustable



## MODEL STN

| SIZE  |       | 10             |           |           | 25        |           |           | 60        |           |           | 160       |           |           |
|---|-------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Adjustment range available from - to (KNm)                              |       | 2-6            | 4-12      | 6-18      | 3-8       | 5-16      | 10-25     | 11-20     | 22-40     | 35-60     | 25-55     | 50-110    | 80-165    |
|   |       | 3 x ST 15      | 6 x ST 15 | 9 x ST 15 | 3 x ST 15 | 6 x ST 15 | 9 x ST 15 | 3 x ST 30 | 6 x ST 30 | 9 x ST 30 | 3 x ST 70 | 6 x ST 70 | 9 x ST 70 |
| Overall length  | (mm)  | A <sub>1</sub> | 210       |           |           | 227       |           |           | 318       |           |           | 425       |           |
| Flange outside diameter   | (mm)  | B              | 270       |           |           | 318       |           |           | 459       |           |           | 648       |           |
| Fit length / keyway length  | (mm)  | C <sub>1</sub> | 147       |           |           | 152       |           |           | 218       |           |           | 305       |           |
| Effective clamping length   | (mm)  | C <sub>2</sub> | 62        |           |           | 67        |           |           | 93        |           |           | 125       |           |
| Bore diameter possible Ø to Ø F7  | (mm)  | D <sub>1</sub> | 65 - 110  |           |           | 70 - 150  |           |           | 80 - 200  |           |           | 140 - 290 |           |
| Bore diameter max. Ø F7 with keyway                                     | (mm)  | D <sub>1</sub> | 100       |           |           | 140       |           |           | 180       |           |           | 270       |           |
| Inside diameter   | (mm)  | D <sub>2</sub> | 110,2     |           |           | 140,2     |           |           | 200,2     |           |           | 290,2     |           |
| Flange centering diameter H7  | (mm)  | E              | 170       |           |           | 210       |           |           | 300       |           |           | 450       |           |
| Bolt circle diameter ±0.3   | (mm)  | F              | 220       |           |           | 260       |           |           | 360       |           |           | 570       |           |
| Outside diameter h7   | (mm)  | G              | 259       |           |           | 298       |           |           | 418       |           |           | 618       |           |
| Fastening threads   | H     |                | 12 x M16  |           |           | 12 x M16  |           |           | 12 x M20  |           |           | 12 x M24  |           |
| Thread depth  | (mm)  | I              | 25        |           |           | 30        |           |           | 35        |           |           | 40        |           |
| Fit length  | (mm)  | J              | 6         |           |           | 8         |           |           | 8         |           |           | 10        |           |
| Tightening screw ISO 4017   | K     |                | 8 x M16   |           |           | 9 x M16   |           |           | 8 x M20   |           |           | 8 x M24   |           |
| Tightening torque   | (Nm)  |                | 180       |           |           | 180       |           |           | 570       |           |           | 710       |           |
| Distance  | (mm)  | L              | 72        |           |           | 80        |           |           | 94        |           |           | 151       |           |
| Distance  | (mm)  | M              | 122       |           |           | 127       |           |           | 163       |           |           | 240       |           |
| Actuation path  | (mm)  | N              | 4         |           |           | 4         |           |           | 7,5       |           |           | 10        |           |
| Mounting diameter - elements  | (mm)  | O              | 220       |           |           | 270       |           |           | 376       |           |           | 532       |           |
| Hub outside diameter  | (mm)  | P              | 218       |           |           | 278       |           |           | 378       |           |           | 535       |           |
| Moment of inertia (approx.) D max. (10 <sup>-3</sup> kgm <sup>2</sup> ) |       |                | 446       |           |           | 789       |           |           | 5700      |           |           | 30700     |           |
| Speed max.  | (rpm) |                | 4200      |           |           | 3800      |           |           | 2500      |           |           | 2000      |           |
| Allowable max. radial force standard*                                   | (kN)  |                | 40        |           |           | 60        |           |           | 100       |           |           | 200       |           |
| Approx. weight at D max.  | (kg)  |                | 50        |           |           | 65        |           |           | 200       |           |           | 550       |           |

\* larger radial loads possible with special bearings

| ORDERING EXAMPLE  | STN | 025 | 5-16 | 12 | 117.48 | 25 | XX   |
|---|-----|-----|------|----|--------|----|--|
| Model   | ●   |     |      |    |        |    | Special designation only (e.g. custom output flange) |
| Size  |     | ●   |      |    |        |    |  |
| Adjustment range (KNm)  |     |     | ●    |    |        |    |  |
| Disengagement torque (KNm)  |     |     |      | ●  |        |    |  |
| Bore diameter D F7  |     |     |      |    | ●      |    |  |
| Bore for fastening screw in shaft end (Q)   |     |     |      |    |        | ●  |  |
| For custom features place an XX at the end of the part number and describe the special requirements (e.g. STN / 025 / 5-16 / 12 / 117.48 / 25 / XX) |     |     |      |    |        |    |  |

# ST2

## WITH SIMPLE KEYWAY MOUNTING

2 - 165 KNm



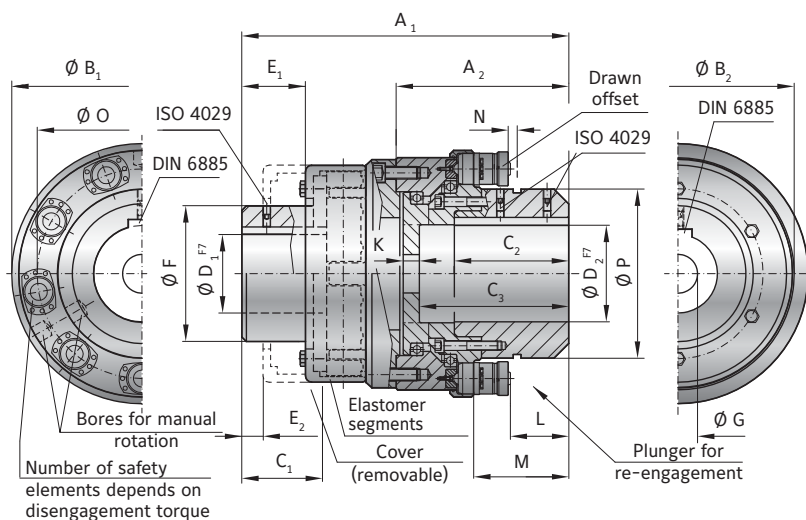
### ABOUT

#### MATERIAL

- **Safety coupling portion:** hardened steel (nitrocarburized surface)
- **Elastomer segments:** precision molded, wear resistant rubber compound (75-80 Shore A)
- **Elastomer coupling:** hubs made from coated high strength cast steel

#### DESIGN

With keyway connection (spline profile on request). Elastomer segments compensate for misalignment and absorb vibration. Safety elements evenly spaced around the circumference. Field adjustable within the specified range.



### MODEL ST2

| SIZE  |                | 10        |           |           | 25        |           |           | 60        |           |           | 160       |           |           |
|---|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Adjustment range available from - to (KNm)  |                | 2-6       | 4-12      | 6-18      | 3-8       | 5-16      | 10-25     | 11-20     | 22-40     | 35-60     | 25-55     | 50-110    | 80-165    |
|   |                | 3 x ST 15 | 6 x ST 15 | 9 x ST 15 | 3 x ST 15 | 6 x ST 15 | 9 x ST 15 | 3 x ST 30 | 6 x ST 30 | 9 x ST 30 | 3 x ST 70 | 6 x ST 70 | 9 x ST 70 |
| Overall length ±2 (mm)  | A <sub>1</sub> | 360       |           |           | 437       |           |           | 580       |           |           | 730       |           |           |
| Length of torque limiting portion (mm)  | A <sub>2</sub> | 183       |           |           | 230       |           |           | 320       |           |           | 410       |           |           |
| Flange outside diameter (ST portion) (mm)   | B <sub>1</sub> | 270       |           |           | 318       |           |           | 459       |           |           | 648       |           |           |
| Flange outside diameter (elastomer portion) (mm)  | B <sub>2</sub> | 290       |           |           | 330       |           |           | 432       |           |           | 553       |           |           |
| Fit length/keyway length D1 (mm)  | C <sub>1</sub> | 97        |           |           | 116       |           |           | 160       |           |           | 230       |           |           |
| Fit length/keyway length D2 (mm)  | C <sub>2</sub> | 120       |           |           | 155       |           |           | 220       |           |           | 290       |           |           |
| Bore depth (torque limiting portion) (mm)   | C <sub>3</sub> | 158       |           |           | 200       |           |           | 275       |           |           | 360       |           |           |
| Bore diameter (elastomer portion) Ø - Ø F7 (mm)   | D <sub>1</sub> | 40-105*   |           |           | 60-130*   |           |           | 80-160*   |           |           | 100-200*  |           |           |
| Bore diameter (torque limiting portion) Ø - Ø F7 (mm)                                       | D <sub>2</sub> | 40-110*   |           |           | 60-140*   |           |           | 80-200*   |           |           | 100-290*  |           |           |
| Length to cover (mm)  | E <sub>1</sub> | 70        |           |           | 87        |           |           | 112       |           |           | 152       |           |           |
| Length to (cover removed) (mm)  | E <sub>2</sub> | 22        |           |           | 26        |           |           | 40        |           |           | 65        |           |           |
| Hub diameter (mm)   | F              | 160       |           |           | 200       |           |           | 255       |           |           | 300       |           |           |
| Bore for fastening screw (mm)   | G              | max. 110  |           |           | max. 140  |           |           | max. 200  |           |           | max. 290  |           |           |
| Distance (mm)   | L              | 45        |           |           | 83        |           |           | 96        |           |           | 136       |           |           |
| Distance (mm)   | M              | 95        |           |           | 130       |           |           | 165       |           |           | 225       |           |           |
| Actuation path (mm)   | N              | 4         |           |           | 4         |           |           | 7.5       |           |           | 10        |           |           |
| Mounting diameter - elements (mm)   | O              | 220       |           |           | 270       |           |           | 376       |           |           | 532       |           |           |
| Hub outside diameter (mm)   | P              | 170       |           |           | 218       |           |           | 295       |           |           | 418       |           |           |
| Moment of inertia (approx.) D max. (10 <sup>-3</sup> kgm <sup>2</sup> )                     |                | 854       |           |           | 1850      |           |           | 8960      |           |           | 36858     |           |           |
| Speed max. (rpm)  |                | 2700      |           |           | 2300      |           |           | 1800      |           |           | 1500      |           |           |
| Approx. weight at D max. (kg)   |                | 80        |           |           | 115       |           |           | 287       |           |           | 729       |           |           |
| Axial (mm)  |                | 1.5       |           |           | 1.5       |           |           | 2         |           |           | 2.5       |           |           |
| Lateral (mm)  |                | 0.4       |           |           | 0.5       |           |           | 0.6       |           |           | 0.7       |           |           |
| Angular (Grad)  |                | 1         |           |           | 1         |           |           | 1         |           |           | 1         |           |           |
| Dynamic torsional stiffness at T <sub>KN</sub> (Standard A Insert) (10 <sup>3</sup> Nm/rad) |                | 145       |           |           | 230       |           |           | 580       |           |           | 1000      |           |           |

\* larger bore diameters upon request.

THE ELASTOMER SEGMENT

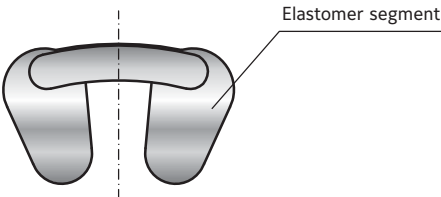
The compensating elements of the ST2 safety couplings are the elastomer segments. They transmit torque while damping vibration and compensating for lateral, axial

and angular misalignment. Three different versions are available with version A being supplied unless otherwise specified.

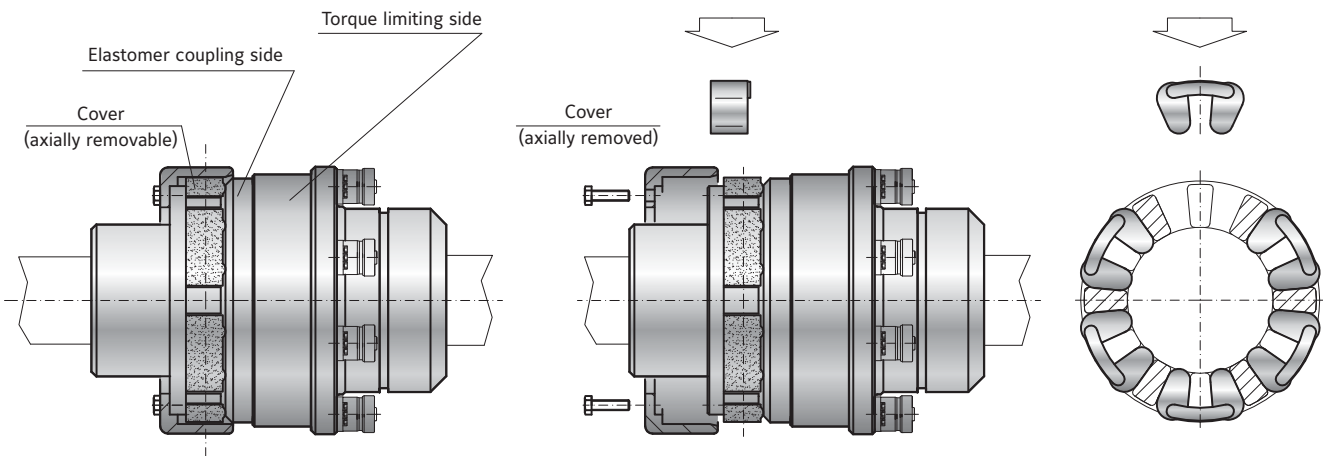
| Type         | Relative damping (ψ) | Temperature range constant peak | Material                     | Shore hardness | Features                         |
|--------------|----------------------|---------------------------------|------------------------------|----------------|----------------------------------|
| A (Standard) | 1.0                  | -40°C to +80°C +90°C            | Natural and synthetic rubber | 75-80 Shore A  | Very high wear resistance        |
| B            | 1.0                  | -40°C to +100°C +120°C          | Synthetic rubber             | 73-78 Shore A  | Resistant to many oils and fuels |
| C            | 1.0                  | -70°C to +120°C +140°C          | Silicone rubber              | 70-75 Shore A  | High temperature range           |

► Note

Elastomer segments can be easily changed after installation. Every coupling utilizes 6x elastomer segments. The elastomer segments do not need to be installed prior to coupling mounting.



CHANGING THE ELASTOMER SEGMENTS



For easier handling, the coupling will be shipped unassembled.

| ORDERING EXAMPLE  | ST2 | 025 | 10-25 | 15 | 127 | 117.48 | XX   |
|---|-----|-----|-------|----|-----|--------|--|
| Model   | ●   |     |       |    |     |        | Special designation only (e.g. custom output flange) |
| Size  |     | ●   |       |    |     |        |  |
| Adjustment range (KNm)  |     |     | ●     |    |     |        |  |
| Disengagement torque (KNm)  |     |     |       | ●  |     |        |  |
| Bore Ø D1 F7  |     |     |       |    | ●   |        |  |
| Bore Ø D2 F7  |     |     |       |    |     | ●      |  |
| For custom features place an XX at the end of the part number and describe the special requirements (e.g. ST2 / 025 / 10-25 / 15 / 127 / 117.48 / XX) |     |     |       |    |     |        |  |

# ST4

## WITH SIMPLE KEYWAY MOUNTING

2 - 165 KNm



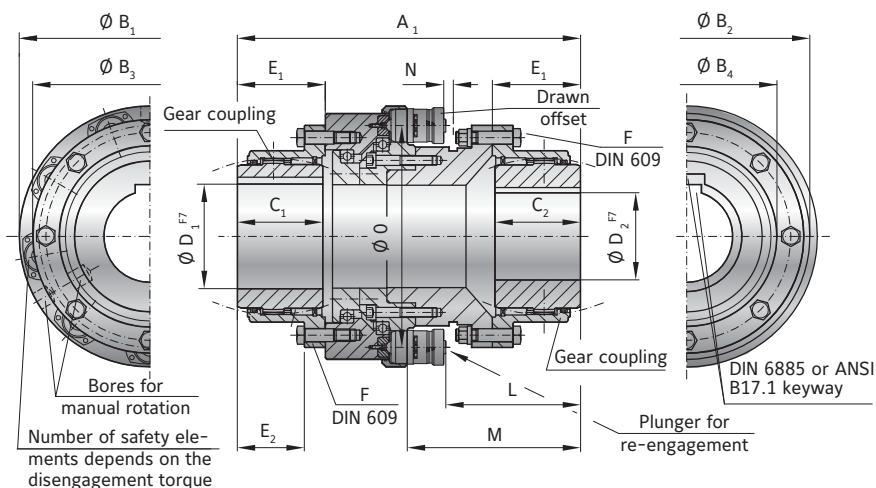
### ABOUT

#### MATERIAL

- **Safety coupling portion:** hardened steel (nitrocarburized surface)
- **Gear coupling portion:** wear resistant high strength alloy steel (nitrocarburized surface)

#### DESIGN

With keyway connection (spline profile on request). Gear coupling for misalignment compensation. Safety elements evenly spaced around the circumference. Field adjustable within the specified range.



### MODEL ST4

| SIZE  |                  | 10        |           |           | 25        |           |           | 60        |           |           | 160       |           |           |
|---|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Adjustment range available from - to (KNm)                              |                  | 2-6       | 4-12      | 6-18      | 3-8       | 5-16      | 10-25     | 11-20     | 22-40     | 35-60     | 25-55     | 50-110    | 80-165    |
|   |                  | 3 x ST 15 | 6 x ST 15 | 9 x ST 15 | 3 x ST 15 | 6 x ST 15 | 9 x ST 15 | 3 x ST 30 | 6 x ST 30 | 9 x ST 30 | 3 x ST 70 | 6 x ST 70 | 9 x ST 70 |
| Overall length (mm)   | A <sub>1</sub>   | 377       |           |           | 430       |           |           | 615       |           |           | 850       |           |           |
| Flange outside diameter (ST portion) (mm)                               | B <sub>1</sub>   | 270       |           |           | 318       |           |           | 459       |           |           | 648       |           |           |
| Mounting flange outside diameter (ST portion) (mm)                      | B <sub>2</sub>   | 259       |           |           | 298       |           |           | 418       |           |           | 618       |           |           |
| Flange outside diameter (gear coupling) (mm)                            | B <sub>3</sub>   | 234       |           |           | 274       |           |           | 380       |           |           | 506       |           |           |
| Hub diameter (gear coupling) (mm)                                       | B <sub>4</sub>   | 181       |           |           | 209       |           |           | 307       |           |           | 426       |           |           |
| Fit length/keyway length (mm)   | C <sub>1/2</sub> | 90        |           |           | 105       |           |           | 150       |           |           | 220       |           |           |
| Bore diameter Ø bis Ø F7 (mm)   | D <sub>1/2</sub> | 40-112*   |           |           | 55-132*   |           |           | 90-198*   |           |           | 150-275*  |           |           |
| Length (mm)   | E <sub>1</sub>   | 92.5      |           |           | 108       |           |           | 154       |           |           | 225       |           |           |
| Length (mm)   | E <sub>2</sub>   | 70        |           |           | 79        |           |           | 116       |           |           | 196       |           |           |
| Screw DIN 609 12.9 (mm)   | F                | 8 x M16   |           |           | 8 x M20   |           |           | 10 x M20  |           |           | 16 x M24  |           |           |
| Tightening torque (mm)  |                  | 280       |           |           | 650       |           |           | 650       |           |           | 1100      |           |           |
| Distance (mm)   | L                | 146       |           |           | 172       |           |           | 237       |           |           | 320       |           |           |
| Distance (mm)   | M                | 196       |           |           | 222       |           |           | 306       |           |           | 412       |           |           |
| Actuation path (mm)   | N                | 4         |           |           | 4         |           |           | 7.5       |           |           | 10        |           |           |
| Mounting diameter - elements (mm)                                       | O                | 220       |           |           | 270       |           |           | 376       |           |           | 532       |           |           |
| Moment of inertia (approx.) D max. (10 <sup>-3</sup> kgm <sup>2</sup> ) |                  | 545       |           |           | 1298      |           |           | 7547      |           |           | 39742     |           |           |
| Speed max. (rpm)  |                  | 2700      |           |           | 2300      |           |           | 1800      |           |           | 1500      |           |           |
| Approx. weight at D max. (kg)   |                  | 69        |           |           | 115       |           |           | 325       |           |           | 870       |           |           |
| Axial (mm)  |                  | 4         |           |           | 5         |           |           | 6         |           |           | 8         |           |           |
| Lateral (mm)  |                  | 6         |           |           | 7         |           |           | 8         |           |           | 10        |           |           |
| Angular (Degrees)   |                  | 1.2       |           |           | 1.2       |           |           | 1.2       |           |           | 1.2       |           |           |

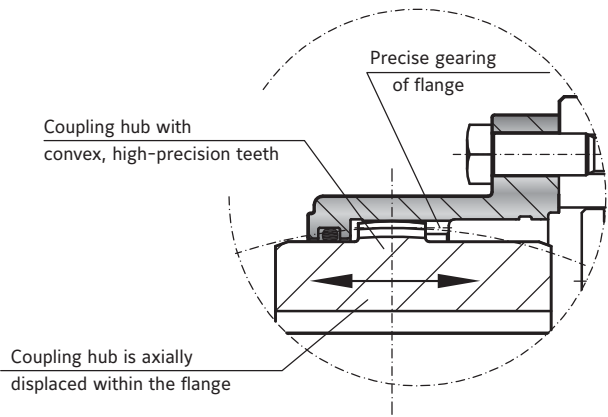
\* larger bore diameters upon request.

FUNCTION OF THE GEAR COUPLING

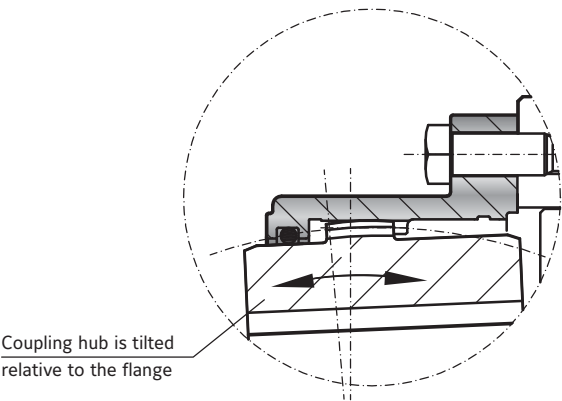
The high precision gearing of the coupling compensates for lateral, angular, and axial misalignment. The gearing transmits torque with minimal backlash and a high degree

of torsional rigidity. The precise geometry of the gearing ensures the performance of the coupling.

Axial misalignment



Angular and lateral misalignment



SAFETY COUPLINGS  
ST

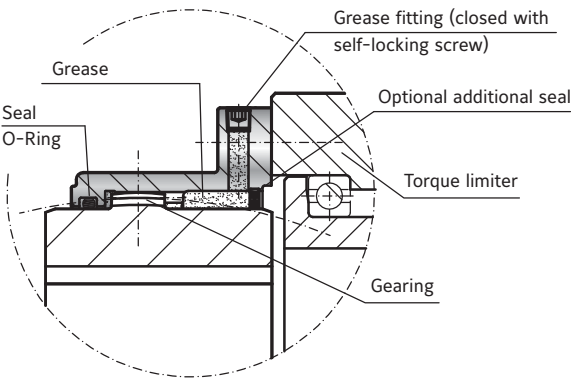
MAINTENANCE AND LUBRICATION

► **Note:** Lubrication of the gearing is very important to the service life of the coupling. An additional seal (optional) ensures the lubrication of the gearing over a long period of time.

Use only high performance grease

RECOMMENDED LUBRICANTS

| Normal speed |                               | High speed |                      |
|--------------|-------------------------------|------------|----------------------|
| Castrol      | Impervia MDX                  | Caltex     | Coupling Grease      |
| Esso         | Fibrax 370                    | Klüber     | Klüberplex GE 11-680 |
| Klüber       | Klüberplex GE 11-680          | Mobil      | Mobilgrease XTC      |
| Mobil        | Mobilux EPO                   | Shell      | Albida GC1           |
| Shell        | Alvania grease EP R-O or ER 1 | Texaco     | Coupling Grease      |
| Total        | Specis EPG                    |            |                      |



For easier handling, the coupling will be shipped unassembled.

| ORDERING EXAMPLE   | ST4 | 025 | 10-25 | 15 | 100 | 120 | XX   |
|--|-----|-----|-------|----|-----|-----|--|
| Model  | ●   |     |       |    |     |     | Special designation only (e.g. custom output flange) |
| Size   |     | ●   |       |    |     |     |  |
| Adjustment range (KNm)   |     |     | ●     |    |     |     |  |
| Disengagement torque (KNm)   |     |     |       | ●  |     |     |  |
| Bore Ø D1 F7   |     |     |       |    | ●   |     |  |
| Bore Ø D2 F7   |     |     |       |    |     | ●   |  |
| For custom features place an XX at the end of the part number and describe the special requirements (e.g. ST4 / 025 / 10-25 / 15 / 100 / 120 / XX) |     |     |       |    |     |     |  |



# SAFETY COUPLING ACCESSORIES



## ABOUT

## MATERIAL

Hardened steel (nitrocarburized surface)

## DESIGN

Two part assembly for installation into prefabricated coupling components.

Part 1: detent receptacle

Part 2: self-contained, spring loaded plunger module.

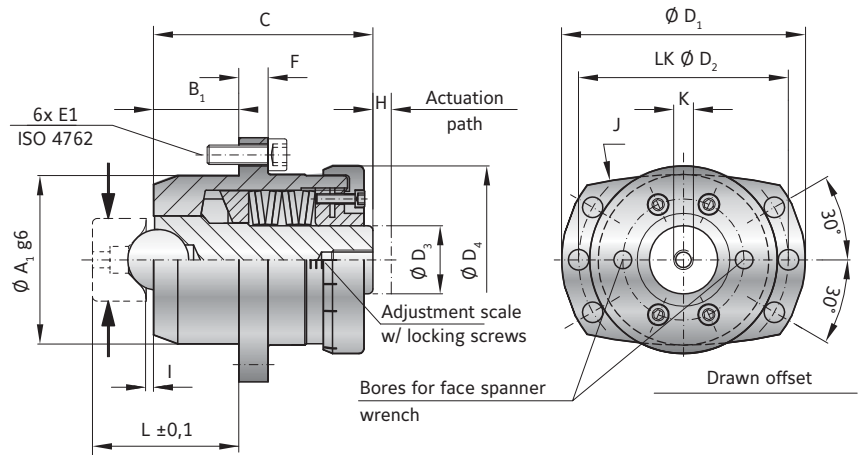
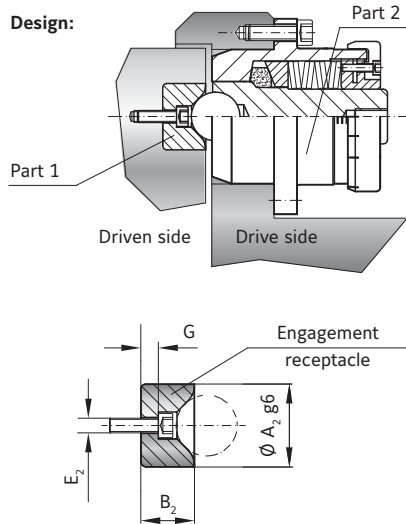
The spring force setting is adjustable in the field, with the settings clearly marked on an adjustment scale.

## FIT TOLERANCE

For insertion of the safety elements H7 precision holes should be used for all centered components.

## RE-ENGAGEMENT

When properly located over the detent receptacle the safety element can be re-engaged through the application of pressure to the back side of the plunger core.



## MODEL ST

| SIZE   |                |                     | 15   | 30                  | 70                    |
|--|----------------|---------------------|------|---------------------|-----------------------|
| Tangential force (KN)<br>Adjustment range available from - to (ranges) | 1              |                     | 1-4  | 5-10                | 8-20                  |
|  | 2              |                     | 2-8  | 10-20               | 15-40                 |
|  | 3              |                     | 6-20 | 20-35               | 30-70                 |
| Centering diameter of safety element g6 (mm)                           | A <sub>1</sub> |                     | 40   | 70                  | 90                    |
| Centering diameter engagement receptacle g6 (mm)                       | A <sub>2</sub> |                     | 24   | 34                  | 44                    |
| Centering length of safety element (mm)                                | B <sub>1</sub> |                     | 20   | 35                  | 45                    |
| Centering length engagement receptacle (mm)                            | B <sub>2</sub> |                     | 14   | 22                  | 30                    |
| Overall length (mm)  | C              |                     | 70   | 103                 | 135                   |
| Outside diameter (mm)  | D <sub>1</sub> |                     | 59   | 100                 | 129                   |
| Bolt circle diameter (mm)  | D <sub>2</sub> |                     | 50   | 86                  | 110                   |
| Diameter plunger (mm)  | D <sub>3</sub> |                     | 16   | 28                  | 35                    |
| Diameter adjustment nut (mm)   | D <sub>4</sub> |                     | 44   | 75                  | 92                    |
| Screw / Tightening torque ISO 4762 (mm)                                | E <sub>1</sub> | 6 x M5 x 16 / 10 Nm |      | 6 x M8 x 25 / 40 Nm | 6 x M12 x 35 / 120 Nm |
| Screw / Tightening torque ISO 4762 (mm)                                | E <sub>2</sub> | M4 x 14 4.5 Nm      |      | M6 x 20 15.5 Nm     | M8 x 25 38 Nm         |
| Flange thickness (mm)  | F              |                     | 7    | 12                  | 16                    |
| Distance (mm)  | G              |                     | 5    | 8                   | 10                    |
| Actuation path (mm)  | H              |                     | 4    | 7.5                 | 10                    |
| Distance (mm)  | I              |                     | 2    | 3                   | 4                     |
| Radius (mm)  | J              |                     | 110  | 200                 | 250                   |
| Inner thread (mm)  | K              | M8 x 15             |      | M10 x 25            | M16 x 30              |
| Distance ± 0,1 (mm)  | L              |                     | 36   | 60                  | 79                    |
| Weight (kg)  |                |                     | 0.65 | 2.7                 | 6                     |

axial spring force = tangential force/1.4

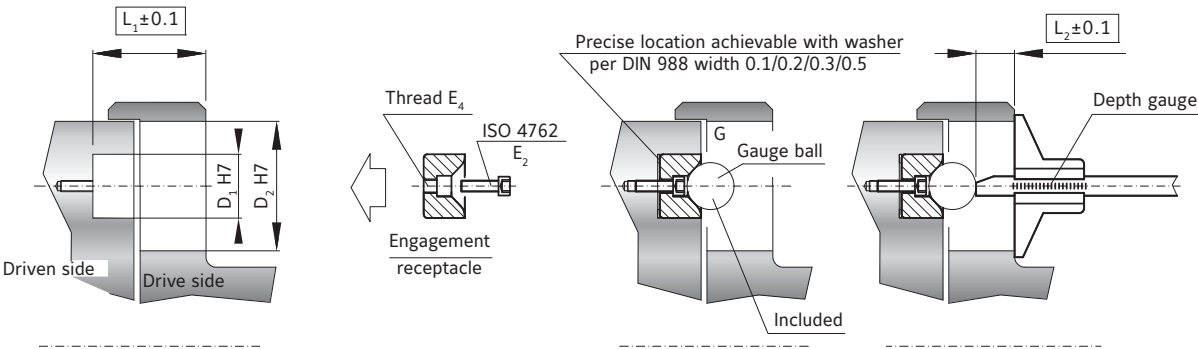
MAINTENANCE

The ST elements are lubricated and sealed for life. Routine maintenance is not required. While the safety elements have an extreme service life, they should be periodically checked to ensure proper functionality.

MOUNTING INSTRUCTIONS ST

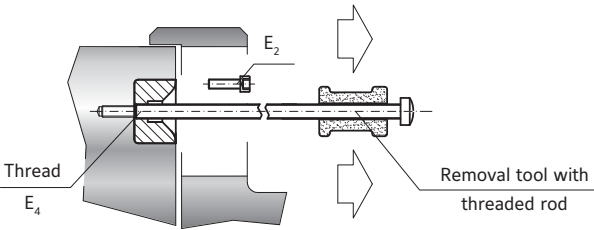
MOUNTING ENGAGEMENT RECEPTACLE

**Note:** Measurements L1 and L2 must be checked prior to installing the safety elements.



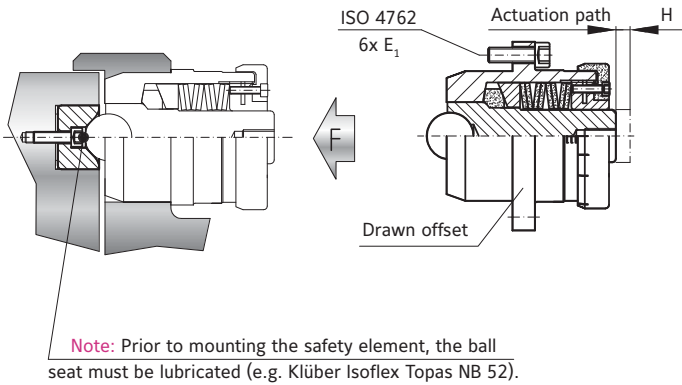
DISMOUNTING OF ENGAGEMENT RECEPTACLE

After loosening the mounting screw E2, the engagement receptacle can be dismantled with a removal tool.



MOUNTING OF SAFETY ELEMENT

| SIZE                       | 15                 | 30                 | 70                  |
|----------------------------|--------------------|--------------------|---------------------|
| Screws E1                  | 6 x M5 x 16 (12.9) | 6 x M8 x 25 (12.9) | 6 x M12 x 35 (12.9) |
| Tightening torque          | 10 Nm              | 40 Nm              | 120 Nm              |
| Screws E2                  | 1 x M4 x 12        | 1 x M6 x 20        | 1 x M8 x 25         |
| Tightening torque          | 4.5 Nm             | 15.5 Nm            | 38 Nm               |
| Screws E3                  | 4 x M4 x 14        | 4 x M4 x 16        | 4 x M5 x 20         |
| Tightening torque          | 4.5 Nm             | 4.5 Nm             | 10 Nm               |
| Thread E4                  | M5                 | M8                 | M10                 |
| Actuation path H           | 4 mm               | 7.5 mm             | 10 mm               |
| Restoring force F          | max. 2 kN          | max. 4 kN          | max. 6 kN           |
| Fit length L1 ± 0,1        | 36                 | 60                 | 79                  |
| Depth measurement L2 ± 0,1 | 10                 | 20.5               | 29                  |
| Gauge ball Ø G             | 16                 | 25                 | 30                  |



| ORDERING EXAMPLE   | ST | 30 | 2 | 12 | XX  |
|--|----|----|---|----|---|
| Model  | ●  |    |   |    |   |
| Size   |    | ●  |   |    |   |
| Adjustment range 1/2/3   |    |    | ● |    |   |
| Tangential force (kN)  |    |    |   | ●  |   |
| For custom features place an XX at the end of the part number and describe the special requirements (e.g. ST / 30 / 2 / 12 / XX) |    |    |   |    |   |
|  |    |    |   |    | Special designation only (e.g. stainless steel) |

# ST ACCESSORIES

## SAFETY COUPLINGS

### ENGAGEMENT AND DISENGAGEMENT



### ORDER NUMBER

| SIZE | ENGAGEMENT / DISENGAGEMENT TOOL |
|------|---------------------------------|
| 15   | Order number AV/0015            |
| 30   | Order number AV/0030            |
| 70   | Order number AV/0070            |

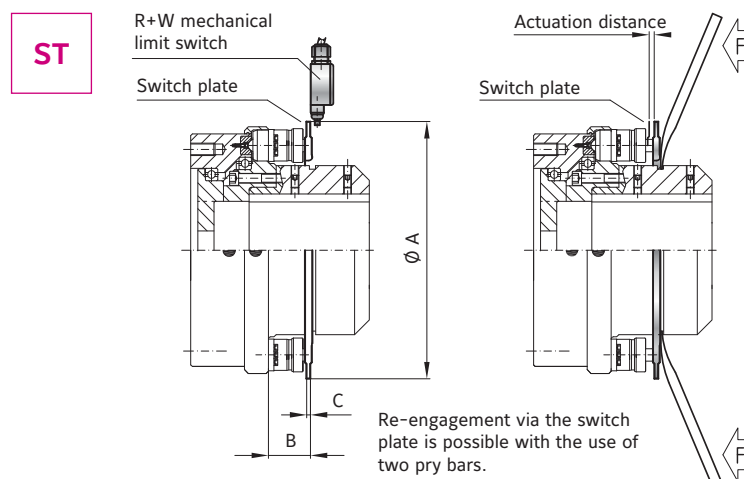
### ADJUSTMENT WRENCH



### ORDER NUMBER

| SIZE | ADJUSTMENT WRENCH     |
|------|-----------------------|
| 15   | Order number SLS/0015 |
| 30   | Order number SLS/0030 |
| 70   | Order number SLS/0070 |

### SWITCH PLATE

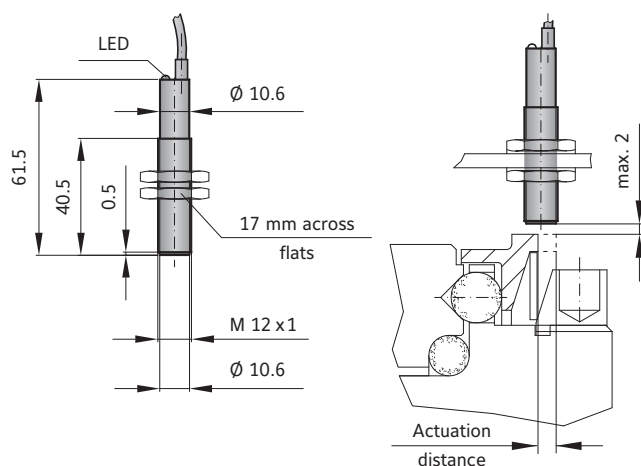


| SIZE             |   | 10  | 25  | 60         | 160        |
|------------------|---|-----|-----|------------|------------|
| Outside diameter | A | 278 | 328 | on request | on request |
| Distance         | B | 57  | 57  | on request | on request |
| Thickness        | C | 4.5 | 4.5 | on request | on request |

It is important the switches be 100% tested for proper functioning after mounting with safety coupling.

## PROXIMITY SWITCH (E-STOP FUNCTION)

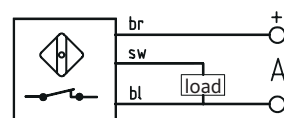
ST



ORDER NUMBER 650.2703.001

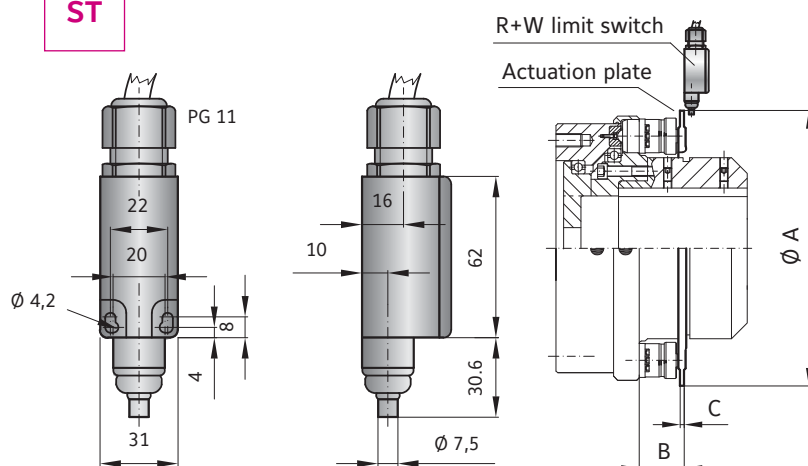
| TECHNICAL DATA        | ST             |
|-----------------------|----------------|
| Voltage               | 10 to 30 V DC  |
| Max. output current   | 200 mA         |
| Max. switch frequency | 800 KHz        |
| Temperature range     | -25° to +70° C |
| Protective system     | IP 67          |
| Switch type           | normally open  |
| Max. detection gap    | max. 2 mm      |

### SWITCH DIAGRAM SK, ES2



## MECHANICAL LIMIT SWITCH (E-STOP FUNCTION)

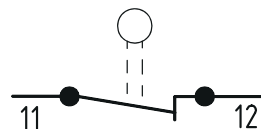
ST



ORDER NUMBER 618.6740.644

| TECHNICAL DATA         | ST                         |
|------------------------|----------------------------|
| Max. voltage           | 250 V AC                   |
| MAX. CONSTANT CURRENT: | 2.5h A                     |
| Protective system      | IP 65                      |
| Contact system         | Opener (forced separating) |
| Temperature range      | -30° to +80° C             |
| Actuation              | Plunger (metal)            |

### SWITCH DIAGRAM ST



The switch plunger (pictured above and right) should be located as close to the actuation ring / limit switch plate as possible (approximately 0.1-0.2mm).

