

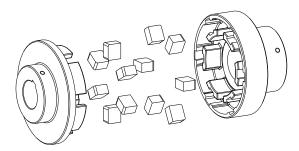
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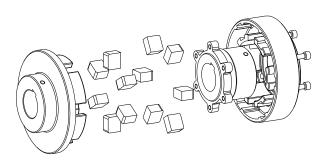
POLY

Torsionally flexible, shear type jaw coupling types PKZ, PKD, PKA along with their combinations

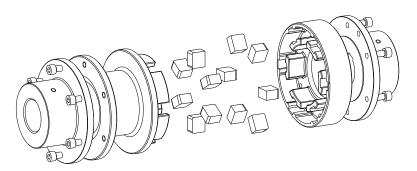
according to directive 2014/34/EU and UK directive SI 2016 No. 1107



Type PKZ



Type PKD



Type PKA

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POLY is a torsionally flexible shear type jaw coupling. It is able to compensate for shaft displacement, e. g. caused by manufacturing inaccuracies, thermal expansion, etc. with short shaft distance dimension.

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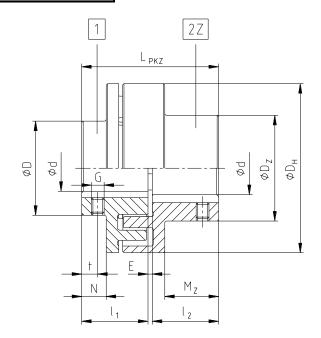
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1 Technical data



Components:

- 1 Cam section
- 2Z Pocket section (to be used preferably on driving side)

Illustration 1: POLY, type PKZ

Table 1: Dimensions - type PKZ

| | Finish | bore 1) | | | | | Dim | ensions [| mm] | | | | | |
|------|-------------------|-------------------|----------------|-----|-----|---------------------------------|------|-----------|-----|------------------|-----|----------|------------------------|-----------|
| Size | $d_{\text{max.}}$ | [mm] | | | | Ger | eral | | | | | Setscrew | 1 | Weight 2) |
| Size | Compo- nent 1 | Compo- nent 2Z | D _H | D | Dz | l ₁ , l ₂ | Mz | N | Е | L _{PKZ} | G | t | T _A [Nm] | [kg] |
| 8 | 20 | 28 | 86 | 43 | 50 | 35 | 26 | 3 | 3 | 73 | M5 | 18 | 2 | 1.47 |
| 9 | 28 | 38 | 97 | 55 | 65 | 40.5 | 30 | 7 | 3 | 84 | M8 | 23 | 10 | 2.22 |
| 10 | 32 | 42 | 107 | 60 | 70 | 45 | 35 | 10 | 4 | 94 | M8 | 27 | 10 | 2.86 |
| 12 | 38 | 48 | 131 | 70 | 80 | 55 | 43 | 12 | 4 | 114 | M8 | 30 | 10 | 4.80 |
| 14 | 45 | 55 | 142 | 80 | 93 | 60 | 46 | 17 | 4 | 124 | M8 | 10 | 10 | 6.26 |
| 15 | 50 | 60 | 157 | 90 | 100 | 65 | 52 | 21 | 4 | 134 | M8 | 15 | 10 | 7.97 |
| 17 | 60 | 65 | 176 | 100 | 110 | 70 | 56 | 26 | 4 | 144 | M8 | 15 | 10 | 10.43 |
| 19 | 75 | 75 | 195 | 125 | 125 | 75 | 63 | 27 | 4 | 154 | M8 | 15 | 10 | 14.02 |
| 20 | 65 | 75 | 205 | 115 | 127 | 80 | 65 | 23 | 4 | 164 | M8 | 15 | 10 | 17.17 |
| 22 | 85 | 85 | 224 | 140 | 140 | 90 | 75 | 38 | 4 | 184 | M10 | 20 | 17 | 21.23 |
| 25 | 90 | 90 | 257 | 150 | 150 | 100 | 84 | 43 | 5 | 205 | M12 | 20 | 40 | 29.19 |
| 28 | 100 | 100 | 288 | 165 | 165 | 110 | 90 | 44 | 5 | 225 | M12 | 20 | 40 | 42.29 |
| 30 | 110 | 110 | 308 | 180 | 180 | 130 | 108 | 58 | 5 | 265 | M16 | 20 | 80 | 54.70 |

- 1) Bores H7 with keyway to DIN 6885 sheet 1 [JS9] and setscrew on the keyway
- 2) Weights apply for max. bore diameters with feather keyway according to DIN 6885 sheet 1

Table 2: Torque and speed

| Size | | 8 | 9 | 10 | 12 | 14 | 15 | 17 | 19 | 20 | 22 |
|-----------------|-------------------|------|------|------|------|------|------|------|------|------|------|
| Torque [Nm] | T _{KN} | 42 | 72 | 100 | 170 | 210 | 320 | 400 | 660 | 820 | 1100 |
| rorque [mm] | T _{Kmax} | 84 | 144 | 200 | 340 | 420 | 640 | 800 | 1320 | 1640 | 2200 |
| Max. speed 1) r | n [rpm] | 5000 | 5000 | 5000 | 5000 | 4800 | 4300 | 3800 | 3500 | 3300 | 3000 |

| Size | | 25 | 28 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
|-----------------|-----------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Torque [Nm] | T _{KN} | 1600 | 2500 | 3950 | 6100 | 9000 | 14300 | 21500 | 27000 | 34000 | 46000 |
| rorque [mm] | T_{Kmax} | 3200 | 5000 | 7900 | 12200 | 18000 | 28600 | 43000 | 54000 | 68000 | 92000 |
| Max. speed 1) r | n [rpm] | 2700 | 2350 | 2200 | 1850 | 1600 | 1400 | 1300 | 1150 | 1050 | 980 |

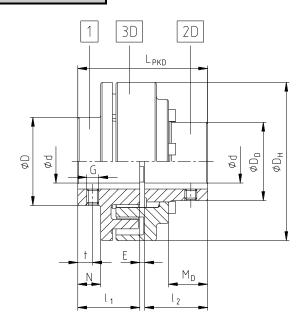
1) For peripheral speeds exceeding v = 30 m/s dynamic balancing is necessary.

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Technical data



Components:

- Cam section (to be used preferably on driving side)
- Flange hub
- 3D Cam ring

Illustration 2: POLY type PKD

Table 3: Dimensions - type PKD

| | | Finish | bore 1) | | | | | Dime | ensions [| [mm] | | | | | |
|------|-------|-------------------|-------------------|----------------|-----|----------------|---------------------------------|---------|-----------|------|------------------|-----|----------|------------------------|-----------|
| Size | Pilot | $d_{\text{max.}}$ | [mm] | | | | Ger | neral | | | | 9 | Setscrev | V | Weight 2) |
| Size | bore | Compo- nent 1 | Compo- nent 2D | D _H | D | D _D | l ₁ , l ₂ | M_{D} | Ζ | Е | L _{PKD} | G | t | T _A [Nm] | [kg] |
| 15 | - | 50 | 50 | 157 | 90 | 74.5 | 65 | 33 | 21 | 4 | 134 | M8 | 15 | 10 | 8.42 |
| 17 | - | 60 | 60 | 176 | 100 | 87 | 70 | 43.5 | 26 | 4 | 144 | M8 | 15 | 10 | 10.37 |
| 19 | = | 75 | 70 | 195 | 125 | 106 | 75 | 48 | 27 | 4 | 154 | M8 | 15 | 10 | 14.42 |
| 20 | - | 65 | 70 | 205 | 115 | 104 | 80 | 45 | 23.5 | 4 | 164 | M8 | 15 | 10 | 17.18 |
| 22 | - | 85 | - | 224 | 140 | 129 | 90 | 59 | 38 | 4 | 184 | M10 | 20 | 17 | 21.66 |
| 25 | - | 90 | 95 | 257 | 150 | 138 | 100 | 67 | 43 | 5 | 205 | M12 | 20 | 40 | 29.75 |
| 28 | - | 100 | 110 | 288 | 165 | 160 | 110 | 65 | 44 | 5 | 225 | M12 | 20 | 40 | 44.32 |
| 30 | - | 110 | 110 | 308 | 180 | 165 | 130 | 89 | 58 | 5 | 265 | M16 | 20 | 80 | 55.64 |
| 35 | 60 | 130 | 145 | 373 | 210 | 205 | 160 | 102 | 70 | 5 | 325 | M16 | 25 | 80 | 103.78 |
| 40 | 70 | 145 | 145 | 423 | 240 | 240 | 180 | 115 | 85 | 5 | 365 | M16 | 25 | 80 | 146.66 |
| 45 | 80 | 160 | 160 | 473 | 270 | 270 | 180 | 110 | 74 | 6 | 366 | M16 | 30 | 80 | 197.35 |
| 50 | 90 | 170 | 170 | 543 | 290 | 290 | 200 | 130 | 80 | 6 | 406 | M16 | 30 | 80 | 287.36 |
| 55 | 100 | 180 | 180 | 580 | 310 | 310 | 200 | 120 | 74 | 8 | 408 | M16 | 30 | 80 | 327.12 |
| 60 | 110 | 200 | 190 | 630 | 350 | 330 | 230 | 135 | 85 | 8 | 468 | M16 | 30 | 80 | 446.05 |
| 65 | 120 | 210 | 200 | 685 | 360 | 340 | 250 | 150 | 90 | 10 | 510 | M16 | 30 | 80 | 565.78 |

- Bores H7 with keyway to DIN 6885 sheet 1 [JS9] and setscrew on the keyway
 Weights apply for max. bore diameters with feather keyway according to DIN 6885 sheet 1

Table 4: Cap screws DIN EN ISO 4762

| Size | 15 | 17 | 19 | 20 | 22 | 25 | 28 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
|--|----|----|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Number of cap screws DIN EN ISO 4762 1) | 6 | 6 | 6 | 6 | 8 | 8 | 8 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Screw size | M8 | M8 | M8 | M10 | M8 | M10 | M10 | M12 | M12 | M16 | M16 | M16 | M16 | M16 | M20 |
| Screw length | 30 | 25 | 25 | 30 | 30 | 30 | 40 | 40 | 55 | 55 | 60 | 65 | 70 | 75 | 75 |
| Tightening torque T _A [Nm] | 25 | 25 | 25 | 49 | 25 | 49 | 49 | 86 | 86 | 295 | 210 | 210 | 210 | 210 | 410 |

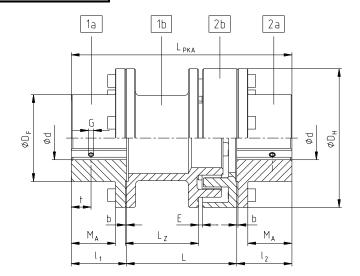
1) Number for complete coupling

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1 Technical data



Components:

1a / 2a Coupling flange

1b Spacer2b Driving flange

Component 1a and 1b to be used preferably on driving side.

Illustration 3: POLY type PKA

Table 5: Dimensions - type PKA

| | Finish bore 1) | | | | | | Dimensi | ons [mm |] | | | | | |
|------|------------------------|----------------|----------------|---------------------------------|-----|----------------|---------|--------------------------|--------------------------|-------------------------|-----|----------|------------------------|----------------------------------|
| Size | d _{max.} [mm] | | | | | General | | | | | , | Setscrew | | Weight 2) |
| Size | Component 1a/2a | D _H | D _F | l ₁ , l ₂ | b | M _A | E | L | L _{PKA} | L _Z | G | t | T _A [Nm] | [kg] |
| 8 | 40 | 86 | 55 | 35 | 1.5 | 25.5 | 3 | 100 | 170 | 66 | M5 | 15 | 2 | 3.04 |
| 9 | 50 | 97 | 70 | 41 | 1.5 | 30.5 | 3 | 100 140 | 182 222 | 63 103 | M8 | 15 | 10 | 4.26 4.66 |
| 10 | 55 | 107 | 78 | 46 | 1.5 | 35.5 | 4 | 100 140 | 192 232 | 61 101 | M8 | 20 | 10 | 5.42 5.88 |
| 12 | 70 | 131 | 95 | 55 | 1.5 | 43.0 | 4 | 100 | 210 250 | 55 95 | M8 | 20 | 10 | 9.49 10.15 |
| | | | | | | | | 180 100 | 290 220 | 135 54 | | | | 10.86 11.46 |
| 14 | 75 | 142 | 105 | 60 | 1.5 | 48.0 | 4 | 140 180 | 260 300 | 94 134 | M8 | 25 | 10 | 12.16 13.01 |
| 15 | 80 | 157 | 110 | 65 | 1.5 | 49.5 | 4 | 100 140 180 | 230 270 310 | 53 93 133 | M8 | 25 | 10 | 14.77 15.63 16.50 |
| 17 | 90 | 176 | 125 | 70 | 1.5 | 54.5 | 4 | 250 100 140 180 | 380 240 280 320 | 203 53 93 133 | M8 | 25 | 10 | 18.01 18.79 19.60 20.41 |
| 19 | 90 | 195 | 135 | 75 | 1.5 | 59.5 | 4 | 250 140 180 250 | 390 290 330 400 | 203 91 131 201 | M8 | 30 | 10 | 21.83 24.63 25.91 28.15 |
| 20 | 110 | 205 | 150 | 80 | 2.0 | 61.0 | 4 | 140 180 250 | 300 340 410 | 81 121 191 | M8 | 30 | 10 | 30.96 32.18 34.79 |
| 22 | 105 | 224 | 160 | 90 | 2.0 | 71.0 | 4 | 180 250 | 360 430 | 127 197 | M10 | 35 | 17 | 37.79 39.94 |
| 25 | 140 | 257 | 195 | 100 | 2.0 | 81.0 | 5 | 140 180 250 | 340 380 450 | 81 121 191 | M12 | 40 | 40 | 54.73 56.50 59.60 |
| 28 | 140 | 288 | 215 | 110 | 2.0 | 91.0 | 5 | 140 180 250 | 360 400 470 | 74 114 184 | M12 | 45 | 40 | 75.22 77.84 82.41 |

- 1) Bores H7 with keyway to DIN 6885 sheet 1 [JS9] and setscrew on the keyway
- 2) Weights apply for max. bore diameters with feather keyway according to DIN 6885 sheet 1

Table 6: Cap screws DIN EN ISO 4762

| Size | 8 | 9 | 10 | 12 | 14 | 15 | 17 | 19 | 20 | 22 | 25 | 28 |
|--|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| Number of cap screws DIN EN ISO 4762 1) | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 8 | 8 | 8 |
| Screw size | M6 | M6 | M6 | M8 | M8 | M10 | M10 | M10 | M10 | M10 | M10 | M12 |
| Screw length | 16 | 18 | 18 | 20 | 20 | 25 | 25 | 25 | 30 | 30 | 30 | 30 |
| Tightening torque T _A [Nm] | 10 | 10 | 10 | 25 | 25 | 49 | 49 | 49 | 49 | 49 | 49 | 86 |

¹⁾ each coupling flange

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1 Technical data

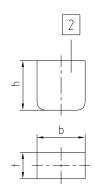


Illustration 4: POLY, elastomer set NBR (Perbunan) 90 ShA

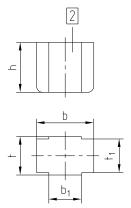


Illustration 5: POLY, excessive elastomer set NBR (Perbunan) 90 ShA

Table 7: Dimensions of elastomer set (see illustration 4)

| Size | | 8 | 9 | 10 | 12 | 14 | 15 | 17 | 19 | 20 | 22 |
|--------------|--------|---|------|----|----|-----|----|-----|------|------|------|
| Number of se | ets 1) | 8 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 16 |
| Size of se | et | | 1 | | 2 | 2 | ; | 3 | 3a | 4 | 3b |
| Dimensions | b | | 18.4 | | 24 | 1.9 | 27 | 7.2 | 27.7 | 34.9 | 29.6 |
| Dimensions | t | | 10.0 | | 15 | 5.3 | 16 | 6.1 | 18.4 | 19.6 | 18.4 |
| [mm] | h | | 18.9 | | 23 | 3.9 | 24 | 1.6 | 26.8 | 34.6 | 29.6 |

| Size | | 25 | 28 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
|--------------|--------|------|------|------|------|------|------|------|------|------|-------|
| Number of se | ets 1) | 16 | 16 | 16 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Size of se | et | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Dimensions | b | 34.9 | 40.0 | 43.7 | 45.7 | 52.1 | 58.1 | 70.1 | 75.5 | 91.5 | 103.0 |
| | t | 19.6 | 22.2 | 23.7 | 21.8 | 28.6 | 29.3 | 36.3 | 41.3 | 44.3 | 48.5 |
| [mm] | h | 34.6 | 40.6 | 42.4 | 60.0 | 59.7 | 69.0 | 79.0 | 81.0 | 98.2 | 108.1 |

¹⁾ Number for complete coupling

Table 8: Dimensions of excessive elastomer sets (see illustration 5)

| Size | | 8 | 9 | 10 | 12 | 14 | 15 | 17 | 20 | 25 | 28 | 30 | 35 |
|--------------------|----------------|---|------|----|----|-----|----|-----|----|-----|------|------|------|
| Number of se | ets 1) | 8 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 16 | 16 | 16 | 20 |
| Size of se | et | | 1ü | | 2 | !ü | 3 | ü | 4 | ü | 5ü | 6ü | 7ü |
| | b | | 18.2 | | 25 | 5.0 | 28 | 3.0 | 34 | 1.9 | 40.9 | 43.7 | 45.7 |
| Dimensions | b_1 | | 7.5 | | 14 | 1.5 | 16 | 6.0 | 15 | 5.0 | 17.5 | 21.5 | 22.5 |
| Dimensions [mm] | t | | 10.5 | | 11 | 1.7 | 16 | 6.4 | 22 | 2.5 | 22.7 | 28.6 | 24.1 |
| נוווווון | t ₁ | | 11.8 | | 17 | 7.5 | 18 | 3.7 | 20 |).1 | 23.9 | 23.7 | 21.8 |
| | h | | 18.7 | · | 24 | 1.2 | 24 | 1.3 | 34 | 1.6 | 39.4 | 42.4 | 60.0 |

¹⁾ Number for complete coupling



POLY couplings with attachments that can generate heat, sparks and static charging (e. g. combinations with brake drums, brake disks, overload systems such as torque limiters, fan impellers etc.) are <u>not</u> permitted for the use in potentially explosive atmospheres. A separate analysis must be performed.

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2 Advice

2.1 General advice

Please read through these operating/assembly instructions carefully before you start up the coupling. Please pay special attention to the safety instructions!



The **POLY** coupling is suitable and approved for the use in potentially explosive atmospheres. When using the coupling in potentially explosive atmospheres, observe the special advice and instructions regarding safety in enclosure A.

The operating/assembly instructions are part of your product. Please store them carefully and close to the coupling. The copyright for these operating/assembly instructions remains with KTR.

2.2 Safety and advice symbols



Warning of potentially explosive atmospheres

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death caused by explosion.



Warning of personal injury

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death.



Warning of product damages

This symbol indicates notes which may contribute to preventing material or machine damage.



General advice

This symbol indicates notes which may contribute to preventing adverse results or conditions.



Warning of hot surfaces

This symbol indicates notes which may contribute to preventing burns with hot surfaces resulting in light to serious bodily injuries.

2.3 General hazard warnings



With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is secured against accidental switch-on. You may be seriously hurt by rotating parts. Make absolutely sure to read through and observe the following safety indications.

- All operations on and with the coupling have to be performed taking into account "safety first".
- Make sure to switch off the power pack before you perform your work on the coupling.
- Secure the power pack against accidental switch-on, e. g. by providing warning signs at the place of switch-on or removing the fuse for current supply.
- Do not reach into the operating area of the coupling as long as it is in operation.
- Please secure the coupling against accidental contact. Please provide for the necessary protection devices and covers.

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2 Advice

2.4 Proper use

You may only assemble, operate and maintain the coupling if you

- have carefully read through the operating/assembly instructions and understood them
- are technically qualified and specifically trained (e. g. safety, environment, logistics)
- are authorized by your company

The coupling may only be used in accordance with the technical data (see chapter 1). Unauthorized modifications on the coupling design are not admissible. We will not assume liability for any damage that may arise. In the interest of further development we reserve the right for technical modifications.

The **POLY** described in here corresponds to the state of the art at the time of printing of these operating/assembly instructions.

2.5 Coupling selection



For a permanent and failure-free operation of the coupling it must be selected according to the selection instructions (according to DIN 740 part 2) for the particular application (see catalogue drive technology "POLY").

If the operating conditions (performance, speed, modifications on engine and machine) change, the coupling selection must be reviewed.

Make sure that the technical data regarding torque refer to the elastomer sets only. The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

For drives subject to torsional vibrations (drives with cyclic stress due to torsional vibrations) it is necessary to perform a torsional vibration calculation to ensure a reliable selection. Typical drives subject to torsional vibrations are e. g. drives with diesel engines, piston pumps, piston compressors etc. If requested, KTR will perform the coupling selection and the torsional vibration calculation.

2.6 Reference to EC Machinery Directive 2006/42/EC

The couplings supplied by KTR should be considered as components, not machines or partly completed machines according to EC Machinery Directive 2006/42/EC. Consequently KTR does not have to issue a declaration of incorporation. For details about safe assembly, start-up and safe operation refer to the present operating/assembly instructions considering the warnings.

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3 Storage, transport and packaging

3.1 Storage

The coupling hubs are supplied in preserved condition and can be stored in a dry and roofed place for 6 - 9 months.

The features of the elastomer sets remain unchanged for up to 5 years with favourable storage conditions.



The storage rooms must not include any ozone-generating devices like e. g. fluorescent light sources, mercury-vapour lamps or electrical high-voltage appliances. Humid storage rooms are not suitable.

Make sure that condensation is not generated. The best relative air humidity is less than 65 %.

3.2 Transport and packaging



In order to avoid any injuries and any kind of damage always make use of proper transport and lifting equipment.

The couplings are packed differently each depending on size, number and kind of transport. Unless otherwise contractually agreed, packaging will follow the in-house packaging specifications of KTR.

4 Assembly

The coupling is generally supplied in individual parts. Before assembly the coupling has to be inspected for completeness.

4.1 Components of the coupling

Components of POLY type PKZ

| Component | Quantity | Description | Material | Balancing condition |
|-----------|-------------|---------------------------|--------------------------|-------------------------------------|
| 1 | 1 | Cam section | EN-GJL-250 | According to customer specification |
| 2 | see table 9 | Elastomer sets | NBR (Perbunan) 90 ShA | |
| 2Z | 1 | Pocket section | EN-GJL-250 | According to customer specification |
| 4 | 2 | Setscrews DIN EN ISO 4029 | Steel | • |

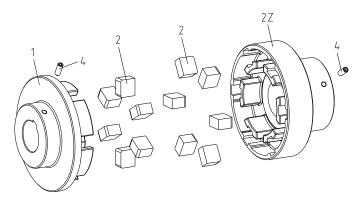


Illustration 6: POLY, type PKZ

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4 Assembly

4.1 Components of the coupling

Components of POLY type PKD

| Component | Quantity | Description | Material | Balancing condition 1) |
|-----------|-------------|----------------------------|---|-------------------------------------|
| 1 | 1 | Cam section | EN-GJL-250 | According to customer specification |
| 2 | see table 9 | Elastomer sets | NBR (Perbunan) | |
| 2 | see lable 9 | Elasionel seis | 90 ShA | |
| 2D | 1 | Flange hub | EN-GJL-250/ EN-GJS-400-15/ S355J2 | According to customer specification |
| 3D | 1 | Cam ring | EN-GJL-250 | |
| 4 | 2 | Setscrews DIN EN ISO 4029 | Steel | |
| 5 | see table 9 | Cap screws DIN EN ISO 4762 | Steel | |

¹⁾ Components 2D, 3D and 5 are balanced when mounted

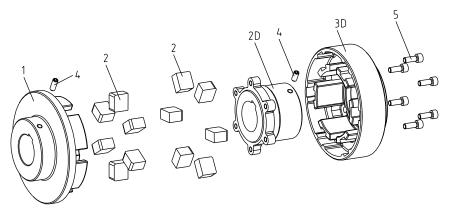


Illustration 7: POLY type PKD

Components of POLY type PKA

| Component | Quantity | Description | Material | Balancing condition |
|-----------|-------------|----------------------------|--------------------------|---|
| 1a/2a | 2 | Coupling flange | EN-GJL-250/ S355J2 | Balanced on request |
| 1b | 1 | Spacer | EN-GJL-250 | Balanced from a drop-out center design length of 100 mm |
| 2 | see table 9 | Elastomer sets | NBR (Perbunan) 90 ShA | |
| 2b | 1 | Driving flange | EN-GJL-250 | Generally balanced |
| 4 | 2 | Setscrews DIN EN ISO 4029 | Steel | |
| 5 | see table 9 | Cap screws DIN EN ISO 4762 | Steel | |

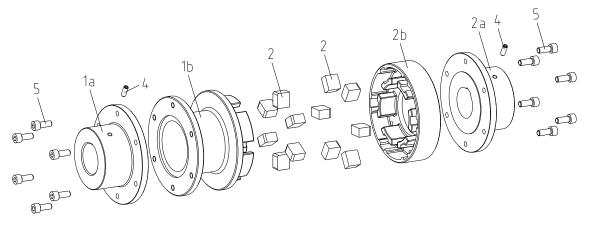


Illustration 8: POLY type PKA

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Assembly

Components of the coupling

Table 9: Number of elastomer sets and cap screws

| Size | 8 | 9 | 10 | 12 | 14 | 15 | 17 | 19 | 20 | 22 |
|---|---|----|----|----|----|----|----|----|----|----|
| Number of sets 1) | 8 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 16 |
| Size of set | | 1 | | 2 | 2 | 3 | 3 | 3a | 4 | 3b |
| Number of cap screws DIN EN ISO 4762 ²⁾ | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 8 |

| Size | 25 | 28 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
|---|----|----|----|----|----|----|----|----|----|----|
| Number of sets 1) | 16 | 16 | 16 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Size of set | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Number of cap screws DIN EN ISO 4762 ²⁾ | 8 | 8 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |

- Number for complete coupling (dimensions of elastomer sets see table 7 and 8)
- each coupling flange

Advice for finish bore



The maximum permissible bore diameters d (see chapter 1 - technical data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause danger to life.

- Hub bores machined by the customer have to observe concentricity resp. axial runout (see illustration 9).
- Make absolutely sure to observe the figures for Ød.
- Carefully align the hubs when the finish bores are drilled.
- Provide for a setscrew according to DIN EN ISO 4029 with a cup point or an end plate to fasten the hubs axially. For dimensions G and t see the respective table of the particular type (see chapter 1).

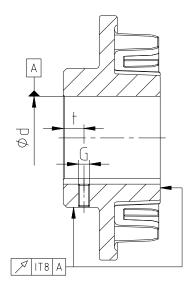


Illustration 9: Concentricity and axial runout



The customer bears the sole responsibility for all machining processes performed subsequently on unbored or pilot bored as well as finish machined coupling components and spare parts. KTR does not assume any warranty claims resulting from insufficient remachining.



KTR supplies unbored or pilot bored coupling components and spare parts only upon explicit request of the customer. These parts are additionally marked with the symbol **①**.

Reference to unbored resp. pilot bored coupling components with explosion protection marking:

Basically the company KTR Systems GmbH supplies couplings resp. coupling hubs with explosion protection marking as an unbored or pilot bored type only on explicit request of the customer. The prerequisite is a declaration of exemption submitted by the customer assuming any responsibility and liability for respective remachining performed on the product of KTR Systems GmbH.

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4 Assembly

4.2 Advice for finish bore

Table 10: Recommended fit pairs acc. to DIN 748/1

| Bore | [mm] | Shaft tolerance | Poro toloranos | | | |
|-------|-------|-----------------|----------------|--|--|--|
| above | up to | Shall tolerance | Bore tolerance | | | |
| | 50 | k6 | H7 | | | |
| 50 | | m6 | (KTR standard) | | | |

If a feather keyway is intended to be used in the hub, it should correspond to the tolerance ISO JS9 (KTR standard) with standard operating conditions or ISO P9 with sophisticated operating conditions (frequently alternating torsional direction, shock loads, etc.). The keyway should preferably be located between the cams. With axial fastening by the setscrew the tapped hole should be located on the keyway.

The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

4.3 Assembly of the coupling (general)



We recommend to inspect bores, shaft, keyway and feather key for dimensional accuracy before assembly.



Heating the hubs or coupling flanges lightly (approx. 80 °C) allows for an easier mounting on the shaft.



Please pay attention to the ignition risk in potentially explosive atmospheres!



Touching the heated hubs causes burns. Please wear safety gloves.



With the assembly make sure that the dimension s resp. L (see table 1 to 8 of the respective type) is observed so that the coupling components are not in contact with each other during the operation.

Disregarding this advice may cause damage to the coupling.



If used in potentially explosive atmospheres the setscrews to fasten the hubs as well as all screw connections must be secured against working loose additionally, e. g. conglutinating with Loctite (average strength).

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4 Assembly

4.4 Assembly of type PKZ

 Mount the cam and pocket section on the shaft of the driving and driven side (see illustration 10).

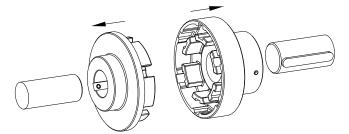


Illustration 10: Assembly of cam and pocket section

- Insert the elastomer sets in the cam or pocket section (see illustration 11).
- Applying for the cam section size 8 to 12 only!
 Fasten the cam section by tightening the setscrew
 DIN EN ISO 4029 via a cup point (tightening torque see table 1).

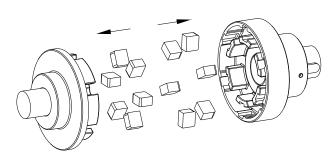


Illustration 11: Assembly of elastomer sets

- Shift the power packs in axial direction until the distance dimension E has been achieved (see illustration 12).
- If the power packs have already been firmly assembled, shifting the cam or pocket section axially on the shafts allows for adjusting the dimension E (see illustration 12).
- Fasten the cam or pocket section by tightening the setscrews DIN EN ISO 4029 with a cup point (tightening torque see table 1).

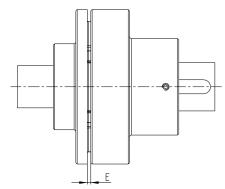


Illustration 12: Assembly of coupling

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4 Assembly

4.5 Assembly of type PKD

- Plug the flange hub and the cam ring together (see illustration 13).
- Hand-tighten the components first.

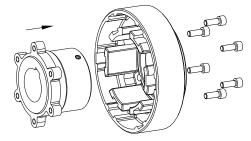


Illustration 13: Assembly of flange hub with cam ring

- Mount the cam section and flange hub with cam ring on the shaft of driving and driven side (see illustration 14).
- Tighten the screws at the tightening torques T_A specified in table 4 by means of a suitable torque key.

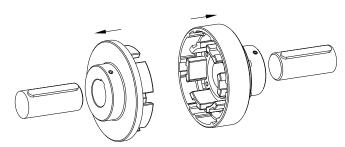


Illustration 14: Assembly of cam section and flange hub with cam ring

 Insert the sets in the cam section or cam ring (see illustration 15).

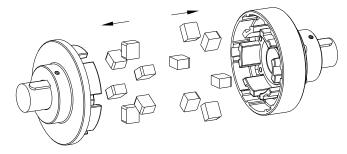


Illustration 15: Assembly of sets

- Shift the power packs in axial direction until the distance dimension E has been achieved (see illustration 16).
- If the power packs have already been firmly assembled, shifting the hubs axially on the shafts allows for adjusting the dimension E (see illustration 16).
- Fasten the hubs by tightening the setscrews DIN EN ISO 4029 with a cup point (tightening torque see table 3).

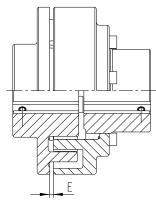


Illustration 16: Assembly of coupling



Having started up the coupling, the wear of the elastomer sets has to be inspected at regular maintenance intervals and the elastomer sets has to be replaced, if necessary.

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4 Assembly

4.6 Assembly of type PKA

- Mount the coupling flanges on the shaft of driving and driven side (see illustration 17).
- The internal sides of the coupling flanges must be flush with the front sides of the shafts.
- Shift the power packs in axial direction until the distance dimension L has been achieved (see table 5).
- Fasten the coupling flanges by tightening the setscrews DIN EN ISO 4029 with a cup point (tightening torque see table 5).

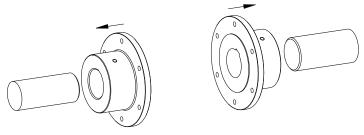


Illustration 17: Assembly of coupling flanges

• Plug the driving flange, the spacer and the sets together (see illustration 18).

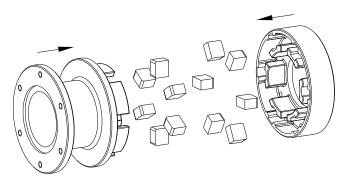


Illustration 18: Assembly of driving flange, spacer and elastomer sets

- Put the components plugged together between the coupling flanges (see illustration 19).
- Hand-tighten the components first.
- Tighten the screws at the tightening torques T_A specified in table 6 by means of a suitable torque key.
- Check the dimension L resp. E (see illustration 19 and table 5).

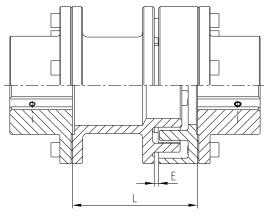


Illustration 19: Assembly of coupling



Having started up the coupling, the wear of the elastomer sets has to be inspected at regular maintenance intervals and the elastomer sets has to be replaced, if necessary.

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4 Assembly

4.7 Displacements - alignment of the couplings

The displacement figures specified in table 11 provide for sufficient safety to compensate for external influences like, for example, thermal expansion or foundation settling.



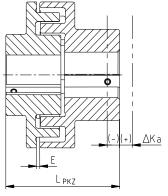


In order to ensure a long service life of the coupling and avoid dangers with the use in potentially explosive atmospheres, the shaft ends must be accurately aligned. Please absolutely observe the displacement figures specified (see table 11). If the figures are exceeded, the coupling will be damaged.

The more accurate the alignment of the coupling, the longer is its service life. If used in potentially explosive atmospheres for explosion group IIC, only half of the displacement figures (see table 11) are permissible.

Please note:

- The displacement figures specified in table 11 are maximum figures which must not arise in parallel. If radial
 and angular displacement occurs at the same time, the sum V of the displacement figures must not exceed
 ΔK_r or ΔK_w.
- Inspect with a dial gauge, ruler or feeler gauge whether the permissible displacement figures specified in table
 11 can be observed.

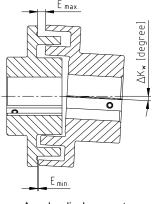


Axial displacements

 $L_{PKZ perm.} = L_{PKZ} + \Delta K_a$

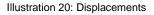


Radial displacements



Angular displacements

 $\Delta K_w = E_{max.} - E_{min.}$ [mm]



Examples of the displacement combinations specified in illustration 21:

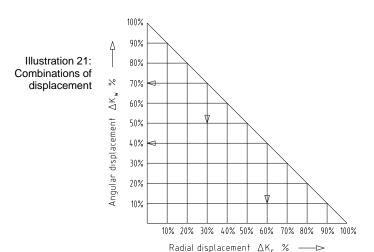
Example 1: $\Delta K_r = 30 \%$

 $\Delta K_{\rm w} = 70~\%$

Example 2:

 $\Delta K_r = 60 \%$ $\Delta K_w = 40 \%$

 $\Delta K_{\text{total}} = \Delta K_r + \Delta K_w \le 100 \%$



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4 Assembly

4.7 Displacements - alignment of the couplings

Table 11: Displacement figures

| Size | | 8 | 9 | 10 | 12 | 14 | 15 | 17 | 19 | 20 | 22 |
|--|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Max. axial displace | ment ΔK _a [mm] | ±1 | ±1 | ±1 | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 |
| Max. radial displacement ΔK_r [mm] | n= up to 750 rpm | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| or | n=1000 rpm | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| max. angular displacement ΔK _w | n=1500 rpm | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| [mm] or sum V | n=3000 rpm | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |

| Size | | 25 | 28 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
|---|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Max. axial displacer | ment ∆K _a [mm] | ±2 | ±2 | ±2 | ±3 | ±3 | ±3 | ±3 | ±4 | ±4 | ±4 |
| Max. radial displacement ΔK _r [mm] | n= up to 750 rpm | 1.0 | 1.0 | 1.0 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| or | n=1000 rpm | 0.9 | 0.9 | 0.9 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| max. angular displacement ΔK_w | n=1500 rpm | 0.7 | 0.7 | 0.7 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| [mm] or sum V | n=3000 rpm | 0.5 | 0.5 | 0.5 | - | - | - | - | - | - | - |

5 Start-up

Before start-up of the coupling, inspect the tightening of the setscrews in the cam or pocket sections, the alignment and the distance dimension E and adjust, if necessary, and also inspect all screw connections for the tightening torques specified.



If used in potentially explosive atmospheres the setscrews to fasten the hubs as well as all screw connections must be secured against working loose additionally, e. g. conglutinating with Loctite (average strength).

Finally the coupling protection against accidental contact must be fitted. It is required in accordance with DIN EN ISO 12100 (Safety of Machinery) and directives 2014/34/EU and SI 2016 No. 1107 and must protect against

- access with the little finger
- · falling down of solid foreign objects.

The coupling protection is not part of KTR's scope of delivery and is the customer's responsibility. It must have sufficient distance to the rotating components to avoid contact safely. Depending on the outside diameter DH of the coupling, we recommend the following minimum distance:

 $\emptyset DH$ to 50 mm = 6 mm, $\emptyset DH$ 50 mm to 120 mm = 10 mm, $\emptyset DH$ from 120 mm = 15 mm.

Please check if a proper enclosure (ignition protection, coupling protection, contact protection) has been mounted and the operation of the coupling is not affected by the enclosure. The same applies for test runs and rotational direction inspections.

The cover may provide for openings intended for necessary heat dissipation. These openings have to comply with DIN EN ISO 13857.

The cover must be electrically conductive and included in the equipotential bonding. Bellhousings (magnesium share below 7.5 %) made of <u>aluminium</u> and damping rings (NBR) are permitted as connecting element between pump and electric motor. The cover may only be taken off with standstill of the unit.

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5 Start-up



If the couplings are used in locations subject to dust explosion and in mining the user must make sure that there is no accumulation of dust in a dangerous volume between the cover and the coupling. The coupling must not operate in an accumulation of dust.

For covers with unlocked openings on the top face no light metals must be used if the couplings are used as equipment of equipment group II (if possible, from stainless steel). If the couplings are used in mining (equipment group I M2), the cover must not be made of light metal. In addition, it must be resistant to higher mechanical loads than with use as equipment of equipment group II.

During operation of the coupling, please pay attention to

- different operating noise
- vibrations occurring.



If you note any irregularities with the coupling during operation, the drive unit must be switched off immediately. The cause of the breakdown must be specified by means of the table "Breakdowns" and, if possible, be eliminated according to the proposals. The potential breakdowns specified can be hints only. To find out the cause all operating factors and machine components must be considered.

Coating of coupling:



If coated (priming, paintings, etc.) couplings are used in potentially explosive atmospheres, the requirements on conductibility and coating thickness must be considered. With paintings up to 200 µm electrostatic load does not have to be expected. If thicker paintings resp. coatings up to a layer thickness of a maximum of 2.0 mm are applied, the couplings are not permissible for gases and vapours of category IIC in potentially explosive areas, but only for gases and vapours of category IIA and IIB.

This also applies for multiple coatings exceeding an overall thickness of 200 μ m. Make sure with painting or coating that the coupling components are conductively connected with the device/devices to be connected so that the equipotential bonding is not impeded by the paint or coat applied. Basically painting of the elastomer sets is not admitted to ensure an equipotential bonding.

In addition, make sure that the marking of the coupling remains legible.

6 Breakdowns, causes and elimination

The below-mentioned failures can lead to a use of the **POLY** coupling other than intended. In addition to the specifications given in these operating/assembly instructions make sure to avoid such failures. The errors listed can only be clues to search for the failures. When searching for the failure the adjacent components must generally be considered.



If used other than intended the coupling can become a source of ignition. Directive 2014/34/EU and UK directive SI 2016 No. 1107 require special care by the manufacturer and the user.

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6 Breakdowns, causes and elimination

General failures with use other than intended

- Important data for the coupling selection are not forwarded.
- The calculation of the shaft-hub-connection is not considered.
- Coupling components with damage occurred during transport are assembled.
- If the heated hubs are assembled, the permissible temperature is exceeded.
- The clearance of the components to be assembled is not coordinated with one another.
- Tightening torques have been fallen below/exceeded.
- Components are mixed up by mistake/assembled incorrectly.
- · Wrong or no elastomers are inserted in the coupling.
- No original KTR components (purchased parts) are used.
- Old/already worn out elastomers or those stored for too long are used.
- Maintenance intervals are not observed.

| Misalignment Ignition risk due to sparking Misalignment Ignition risk due to sparking Mear of elastomer set, transmission of low/no vibrations occurring cams are slipping Mear of elastomer set, transmission of low/no torque, since coupling cams are slipping Mear of elastomer set, transmission of low/no torque, since coupling cams are slipping Mear of elastomer set, transmission of low/no torque, since coupling cams are slipping Mear of elastomer set, transmission of low/no torque, since coupling cams are slipping Mear of elastomer set, transmission of low/no torque, since coupling cams are slipping Mear of elastomer set, transmission of low/no torque, since coupling components and replace coupling components that have been damaged 4) Insert elastomer sets, mount coupling components and replace coupling components that have been damaged 5) Inspect alignment of coupling components and replace coupling components that have been damaged Fracture of elastomer sets due to high impact energy/overload, coupling cams are slipping Shearing of elastomer sets Shearing of elastomer sets Operating parameters do not meet with the Danger of ignition due to hot surfaces Danger of ignition due | Breakdowns | Causes | Hazard notes for potentially explosive | Elimination |
|--|--------------|---|--|--|
| Misalignment Mear of elastomer set, transmission of low/no to wear see chapter 10.2 Marger of ignition due to sparking Mear of elastomer sets Mear of elastomer set, transmission of low/no toque, since coupling components that have been damaged Misart elastomer sets, mount coupling components and replace coupling components that have been damaged Misart elastomer sets Misalignment Mear of elastomer sets Mear of elastomer set, transmission of low/no toque, since coupling components and replace coupling components that have been damaged Misart elastomer sets Misart elastomer Mear of | | | atmospheres | |
| Different operating noise and/or vibrations occuring noise and/or vibrations occuring Wear of elastomer set, transmission of low/no torque, since coupling cams are slipping Screws for axial fastening of hubs working loose Fracture of elastomer sets due to high impact energy/overload, coupling cams are slipping Shearing of elastomer sets Shearing of elastomer sets Operating parameters do not meet with the Danger of ignition due to hot surfaces 1) Set the unit out of operation Disassemble the coupling components and replace coupling components that have been damaged Shearing of elastomer sets Shearing of elastomer Shearing of ignition due to hot surfaces Sheari | | Misalignment | | Eliminate the reason for the misalignment (e. g. loose foundation bolts, fracture of the engine mount, heat expansion of unit components, modification of the installation dimension E of the coupling) Inspect coupling components and replace coupling components that have been damaged |
| Screws for axial fastening of hubs working loose Ignition risk due to sparking Ignition deamaged Inspect coupling components Ignition deamaged Ignition risk due to sparking Ignition risk due to sparking Ignition deamaged Ignition risk due to sparking Ignition risk data Ignition risk due to sparking Ignition risk due to sparki | noise and/or | transmission of low/no torque, since coupling | | Set the unit out of operation Disassemble the coupling, remove remainders of the elastomer sets Inspect coupling components and replace coupling components that have been damaged Insert elastomer sets, mount coupling components |
| Fracture of elastomer sets due to high impact energy/overload, coupling cams are Shearing of elastomer sets Shearing of elastomer sets Shearing of elastomer sets Operating parameters do not meet with the Fracture of elastomer sets and replace remainders of the elastomer sets Inspect coupling components that have been damaged Insert elastomer sets, mount coupling components Insert elastomer sets, mount coupling components Si Find out the reason for overload Set the unit out of operating parameters and select | | fastening of hubs | | 2) Inspect alignment of coupling 3) Tighten the screws to fasten the hubs and secure against working loose 4) Inspect coupling components and replace coupling components that have been damaged |
| coupling/coupling 3) Assemble new coupling size | <u> </u> | sets due to high impact energy/overload, coupling cams are slipping Operating parameters do not meet with the performance of the | | Disassemble the coupling, remove remainders of the elastomer sets Inspect coupling components and replace coupling components that have been damaged Insert elastomer sets, mount coupling components Find out the reason for overload Set the unit out of operation Review the operating parameters and select a bigger coupling (consider mounting space) |

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6 Breakdowns, causes and elimination

| | | Hazard notes for | | |
|---------------------------------|---|----------------------------------|------------|---|
| Breakdowns | Causes | potentially explosive | | Elimination |
| Di oundo mio | Guado | atmospheres | | |
| | | u | 1) | Set the unit out of operation |
| | | | | Disassemble the coupling, remove |
| | | | | remainders of the elastomer sets |
| | Operating error of the | D (: :::). | 3) | |
| Shearing of elastomer | unit/ | Danger of ignition due to | - / | coupling components that have been |
| sets | coupling cams are | hot surfaces | | damaged |
| | slippping | | 4) | Insert elastomer sets, mount coupling |
| | | | | components |
| | | | 5) | |
| | | | | Set the unit out of operation |
| | | | 2) | Eliminate the reason for the misalignment |
| | | | | (e. g. loose foundation bolts, fracture of the |
| | | | | engine mount, heat expansion of unit |
| | Misalignment | | | components, modification of the installation dimension E of the coupling) |
| | | | 3) | |
| | | | 3) | coupling components that have been |
| | | | | damaged |
| | | | 4) | For inspection of wear see chapter 10.2 |
| | | | 1) | |
| | o a contact with | | 2) | Disassemble the coupling, remove |
| | e. g. contact with aggressive liquids/oils, | | | remainders of the elastomer sets |
| | influence by ozone, too | | 3) | Inspect coupling components and replace |
| | high/low ambient | | | coupling components that have been |
| Early wear of | temperatures etc. | | 4 | damaged |
| elastomer sets | causing a physical | | 4) | Insert elastomer sets, mount coupling |
| | modification of the | | 5 \ | components |
| | elastomer sets | | 5) | Inspect alignment, adjust if necessary Make sure that further physical modifications |
| | | | 0) | of the elastomer sets are excluded |
| | | | 1) | |
| | | | 2) | · |
| | May parmissible | | | remainders of the elastomer sets |
| | Max. permissible ambient/contact | | 3) | Inspect coupling components and replace |
| | temperatures which | | | coupling components that have been |
| | are impermissibly high | | | damaged |
| | for the elastomer sets | | 4) | Insert elastomer sets, mount coupling |
| | -30 °C/+75 °C | | 5 \ | components Inspect alignment, adjust if necessary |
| | | | | Inspect and adjust ambient/contact |
| | | Danger of ignition due to | 0) | temperature |
| | | hot surfaces | 1) | Set the unit out of operation |
| | | | 2) | |
| F (| | | _/ | remainders of the elastomer sets |
| Early wear of elastomer sets | | | 3) | Inspect coupling components and replace |
| (hardening/embrittlem | Vibrations of drive | | | coupling components that have been |
| ent of the elastomer | v ibrations of drive | | | damaged |
| set) | | | 4) | Insert elastomer sets, mount coupling |
| 33., | | | | components |
| | | | 5) | |
| | | | 6) | |
| Fracture of cams or | Blockado by damaged | lanition rick due to | 1) | · |
| hub | Blockade by damaged elastomer sets | Ignition risk due to sparking | (2) (3) | |
| Hub | GIGSTOTHEL 2012 | spaining | 4) | |
| | l | | ٦) | i ma out the educe, chiminate chois |



If you operate with worn elastomer sets (see chapter 10.3) proper operation is not ensured.

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7 Disposal

In respect of environmental protection we would ask you to dispose of the packaging resp. products on termination of their service life in accordance with the legal regulations resp. standards that apply.

Metal

Any metal components have to be cleaned and disposed of by scrap metal.

Nylon materials

Nylon materials have to be collected and disposed of by a waste disposal company.

8 Maintenance and service

POLY is a low-maintenance coupling. We recommend to perform a visual inspection on the coupling **at least once a year**. Please pay special attention to the condition of the elastomer sets of the coupling.

- Since the flexible machine bearings of the driving and driven side settle during the course of load, inspect the alignment of the coupling and re-align the coupling, if necessary.
- The coupling components have to be inspected for damages.
- The screw connections have to be visually inspected.



With the use in potentially explosive atmospheres observe chapter 10.2 "Inspection intervals for couplings in a potentially explosive atmospheres".

9 Spares inventory, customer service addresses

We recommend to store major spare parts on site to ensure the readiness for use of the machine in case if a coupling fails.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage at www.ktr.com.



KTR does not assume any liability or warranty for the use of spare parts and accessories which are not provided by KTR and for the damages which may incur as a result.

KTR Systems GmbH

Carl-Zeiss-Str. 25 D-48432 Rheine

Phone: +49 5971 798-0 E-mail: mail@ktr.com

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10 Enclosure A

Advice and instructions regarding the use in



potentially explosive atmospheres

Types available:

PKZ, PKD and PKA

POLY type PKA only with spacer made of EN-GJL-250 or EN-GJS-400-15.



Conditions of operation in potentially explosive atmospheres

The POLY couplings are suitable for the use according to directives 2014/34/EU and SI 2016 No. 1107.

- Protection against hazards arising from lightning must follow the lightning protection concept of the machine or plant. The relevant regulations and policy for lightning protection must be observed.
- The equipotential bonding of the couplings is made by metal contact between coupling hub and shaft. This equipotential bonding must not be affected.

1. Industry (with the exception of mining)

- Equipment group II of category 2 and 3 (coupling is not approved/not suitable for equipment group 1)
- Substance group G (gases, fogs, vapours), zone 1 and 2 (coupling is not approved/not suitable for zone 0)
- Substance group D (dusts), zone 21 and 22 (coupling is not approved/not suitable for zone 20)
- Explosion group IIC (gases, fogs, vapours) (explosion groups IIA and IIB are included in IIC) and explosion group IIIC (dusts) (explosion groups IIIA and IIIB are included in IIIC)

Temperature class:

| Temperature class | Ambient or operating temperature T _a 1) | Max. surface temperature 2) |
|-------------------|--|-----------------------------|
| T5 | -30 °C to +75 °C | +95 °C |
| T6 | -30 °C to +60 °C | +80 °C |

Explanation:

The maximum surface temperatures each result from the maximum permissible ambient or operating temperature T_a plus the maximum temperature increase ΔT of 20 K to be considered. For the temperature class a safety margin subject to standard of 5 K is added.

- 1) The ambient or operating temperature T_a is limited to +80 °C due to the permissible permanent operating temperature of the elastomers used.
- 2) The maximum surface temperature of +95 °C applies for the use in locations which are potentially subject to dust explosion.

In potentially explosive atmospheres

- the ignition temperature of dusts generated must at least be 1.5 times the surface temperature to be considered
- the glow temperature must at least be the surface temperature to be considered plus a safety distance of 75 K.
- the gases and vapours generated must amount to the temperature class specified.

2. Mining

Equipment group I of category M2 (*coupling is <u>not</u> approved/<u>not</u> suitable for equipment group M1*). Permissible ambient temperature -30 °C to +75 °C.

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10 Enclosure A

Advice and instructions regarding the use in



potentially explosive atmospheres

10.2 Inspection intervals for couplings in



potentially explosive atmospheres

| Equipment category | Inspection intervals |
|--|--|
| M2 2G 2D No gases and vapours of explosion group IIC | The torsional backlash of the coupling (see chapter 10.3) according to directive 2014/34/EU only has to be inspected if wear of the elastomer sets (component 2) and consequently a standstill of the drive causes hazard of explosion. We recommend a preventing inspection of torsional backlash. An inspection of the torsional backlash and a visual inspection of the elastomer set must be performed after 3,000 operating hours for the first time, at the latest after 6 months after start-up of the coupling. If you note insignificant or no wear on the elastomer set upon this initial inspection, further inspections can each be performed after 6,000 operating hours or at the latest after 18 months, provided that the operating parameters remain the same. If you note significant wear during the initial inspection so that it would be recommendable to replace the elastomer set, find out the cause according to the table "Breakdowns", if possible. The maintenance intervals must be adjusted to the modified operating parameters without fail. |
| 2G 2D Gases and vapours of explosion group IIC | The torsional backlash of the coupling (see chapter 10.3) according to directive 2014/34/EU only has to be inspected if wear of the elastomer sets (component 2) and consequently a standstill of the drive causes hazard of explosion. We recommend a preventing inspection of torsional backlash. An inspection of the torsional backlash and a visual inspection of the elastomer set must be performed after 2,000 operating hours for the first time, at the latest after 3 months after start-up of the coupling. If you note insignificant or no wear on the elastomer set upon this initial inspection, further inspections can each be performed after 4,000 operating hours or at the latest after 12 months, provided that the operating parameters remain the same. If you note significant wear during the initial inspection so that it would be recommendable to replace the elastomer set, find out the cause according to the table "Breakdowns", if possible. The maintenance intervals must be adjusted to the modified operating parameters without fail. |

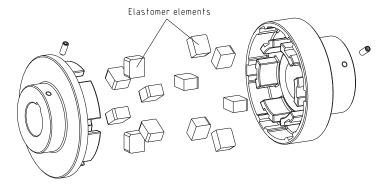


Illustration 22: POLY, type PKZ

Inspection of torsional backlash

Here the clearance between the coupling cams and the elastomer sets must be inspected by means of reversing backlash. The friction/wear may not exceed 20 % or the original thickness of the elastomer set before the elastomer sets have to be replaced. When reaching the limit of wear and tear $\Delta s_{\text{max.}}$, the elastomer sets must be replaced immediately, irrespective of the inspection intervals.

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Advice and instructions regarding the use in



potentially explosive atmospheres

10.3 Standard values of wear

Reaching the limits for replacing depends on the operating conditions and the existing operating parameters. With a torsional backlash $\geq \Delta s_{max.}$ in mm the elastomer sets need to be replaced. Wear \geq 20 % of the original thickness of the elastomer sets requires replacement.



When replacing the elastomer sets, only those sets having the same Shore hardness have to be used.



In order to ensure a long service life of the coupling and avoid dangers with the use in potentially explosive atmospheres, the shaft ends must be accurately aligned. Please absolutely observe the displacement figures specified (see table 11). If the figures are exceeded, the coupling will be damaged.

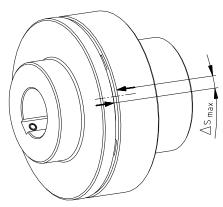


Illustration 23: Inspection of the limit of wear

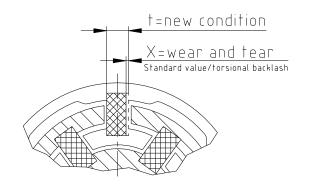


Illustration 24: Wear of elastomer set

Table 12: Limits of wear

| | | Standard type | | | w backlash type sive elastomer se | ts) |
|------|---------------------------------|--------------------------------|--|---------------------------------|--------------------------------------|--|
| Size | Thickness of elastomer set [mm] | Wear X _{max.} [mm] | Torsional backlash ∆S _{max.} [mm] | Thickness of elastomer set [mm] | Wear X _{max.} [mm] | Torsional backlash ∆S _{max.} [mm] |
| 8 | 10.0 | 2.0 | 5.0 | 11.8 | 2.4 | 3.6 |
| 9 | 10.0 | 2.0 | 5.1 | 11.8 | 2.4 | 3.5 |
| 10 | 10.0 | 2.0 | 5.3 | 11.8 | 2.4 | 3.5 |
| 12 | 15.3 | 3.0 | 7.5 | 17.5 | 3.5 | 5.2 |
| 14 | 15.3 | 3.0 | 7.7 | 17.5 | 3.5 | 5.2 |
| 15 | 16.1 | 3.0 | 8.2 | 18.7 | 3.8 | 5.5 |
| 17 | 16.1 | 3.0 | 8.7 | 18.7 | 3.8 | 5.5 |
| 19 | 18.4 | 3.5 | 9.7 | - | - | - |
| 20 | 19.6 | 4.0 | 10.3 | 22.9 | 4.6 | 6.7 |
| 22 | 18.4 | 3.5 | 10.3 | - | - | - |
| 25 | 19.6 | 4.0 | 9.4 | 22.9 | 4.6 | 6.8 |
| 28 | 22.2 | 4.0 | 10.6 | 23.9 | 4.8 | 7.3 |
| 30 | 23.7 | 4.5 | 11.3 | 28.6 | 5.7 | 8.4 |
| 35 | 21.8 | 4.0 | 9.4 | 24.8 | 4.8 | 7.8 |

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Enclosure A 10

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marking of coupling for potentially explosive atmospheres

The explosion protection marking of the POLY coupling is applied on the outer sheath or on the front side. The elastomer sets are not marked.

For the complete marking refer to the operating/assembly instructions and/or the delivery note/package.

Marking is as follows:

X X Ex h ... T5 IIC T6 II 2G Ex h Gb Ex h IIIC T80 °C ... T95 °C -30 °C ≤ T_a ≤ +60 °C ... +75 °C Х Db <Year> KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine

Short marking:

(A short marking is only made if not possible differently for reason of space or functioning.)

POLY <Year>









Deviating marking applied until 31st October 2019:

Short marking: (standard)





II 2GD c IIC T X/I M2 c X

Complete marking:





II 2G c IIC T6 resp. T5 -30 °C \leq Ta \leq +65 °C resp. +80 °C II 2D c T 100 °C/I M2 c -30 °C \leq Ta \leq +80 °C



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marking of coupling for potentially explosive atmospheres

Comments on marking

| Equipment group I | Mining | | | |
|--|---|--|--|--|
| Equipment group II | Non-mining | | | |
| Equipment category 2G | Equipment ensuring a high level of safety, suitable for zone 1 | | | |
| Equipment category 2D | Equipment ensuring a high level of safety, suitable for zone 21 | | | |
| Equipment category M2 | Equipment ensuring a high level of safety must be able to be switched off | | | |
| | when an explosive atmosphere occurs | | | |
| D | Dust | | | |
| G | Gases and vapours | | | |
| Ex h | Nonelectrical explosion protection | | | |
| IIC | Gases and vapours of class IIC (including IIA and IIB) | | | |
| IIIC | Electrically conductive dusts of class IIIC (including IIIA and IIIB) | | | |
| <u>T6 T5</u> | Temperature class to be considered, depending on the ambient temperature | | | |
| T80 °C T95 °C | Maximum surface temperature to be considered, depending on the ambient | | | |
| | temperature | | | |
| -30 °C ≤ T _a ≤ +60 °C +75 °C or | Permissible ambient temperature from -30 °C to +60 °C resp. | | | |
| -30 °C ≤ T _a ≤ +75 °C | -30 °C to +75 °C | | | |
| Gb, Db, Mb | Equipment protection level, analogous to the equipment category | | | |
| X | For a safe use of the couplings particular conditions apply | | | |

If the symbol a was punched in addition to marking a, the coupling component was supplied by KTR as an unbored or pilot bored version (see chapter 4.2 of the present operating/assembly instructions).

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10 Enclosure A

Advice and instructions regarding the use in



potentially explosive atmospheres

10.5 EU Certificate of conformity

EU Declaration of Conformity resp. Certificate of Conformity

corresponding to EU directive 2014/34/EU dated 26 February 2014 and to the legal provisions adopted for its implementation

The manufacturer - KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine - states that the

POLY couplings

in an explosion-proof design described in these assembly instructions are equipment resp. components corresponding to article 2, 1. of directive 2014/34/EU and comply with the general safety and health specifications according to enclosure II of directive 2014/34/EU.

This declaration of conformity resp. certificate of conformity is issued under the sole responsibility of the manufacturer KTR Systems GmbH.

The coupling described in here complies with the specifications of the following standards/rules:

EN ISO 80079-36:2016-12 EN ISO 80079-37:2016-12 EN ISO/IEC 80079-38:2017-10 IEC/TS 60079-32-1:2020-01-24

The POLY is in accordance with the specifications of the directive 2014/34/EU.

According to article 13 (1) b) ii) of directive 2014/34/EU the technical documentation is deposited with the notified body (type examination certificate IBExU02ATEXB007_05 X):

IBExU

Institut für Sicherheitstechnik GmbH Identification number: 0637

Fuchsmühlenweg 7

09599 Freiberg

Rheine, 2022-07-05 Place Date

Reinhard Wibbeling Engineering/R&D Michael Brüning Product Manager



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10.6 UK Declaration of conformity

UK Declaration of Conformity resp. Certificate of Conformity

corresponding to UK directive SI 2016 No. 1107 dated 26 February 2014 and to the legal provisions adopted for its implementation

The manufacturer - KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine - states that the

POLY couplings

in an explosion-proof design described in these assembly instructions are equipment resp. components corresponding to directive SI 2016 No. 1107 and comply with the general safety and health requirements according to directive SI 2016 No. 1107.

This declaration of conformity resp. certificate of conformity is issued under the sole responsibility of the manufacturer KTR Systems GmbH.

The coupling described in here complies with the specifications of the following standards/rules:

EN ISO 80079-36:2016-12 EN ISO 80079-37:2016-12 EN ISO/IEC 80079-38:2017-10 IEC/TS 60079-32-1:2020-01-24

The POLY is in accordance with the specifications respectively the applicable specifications of directive SI 2016 No. 1107.

According to directive SI 2016 No. 1107 the technical documentation is deposited with the notified body:

Eurofins CML

Identification number: 2503

Rheine, 2022-07-05 Place Date

Reinhard Wibbeling Engineering/R&D

Michael Brüning Product Manager

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