

U5

Force Transducer

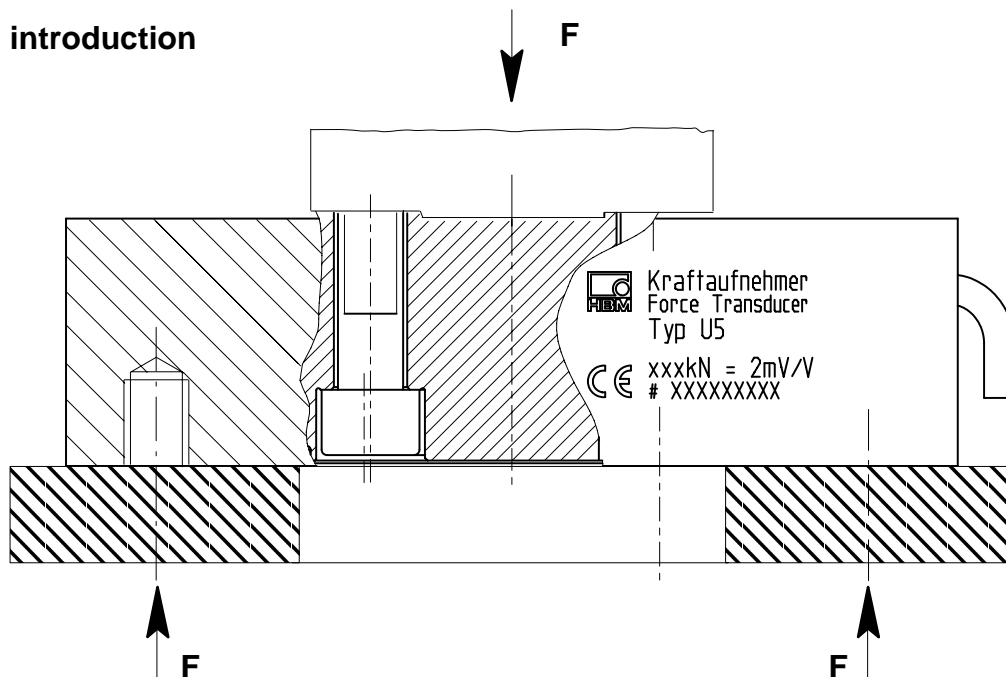


View from below

Special features

- Tensile / compressive force transducers
- Nominal forces 100 kN ... 500 kN
- Variable installation options
- Flange connection can be centered on both sides
- Low overall height
- High transverse force stability

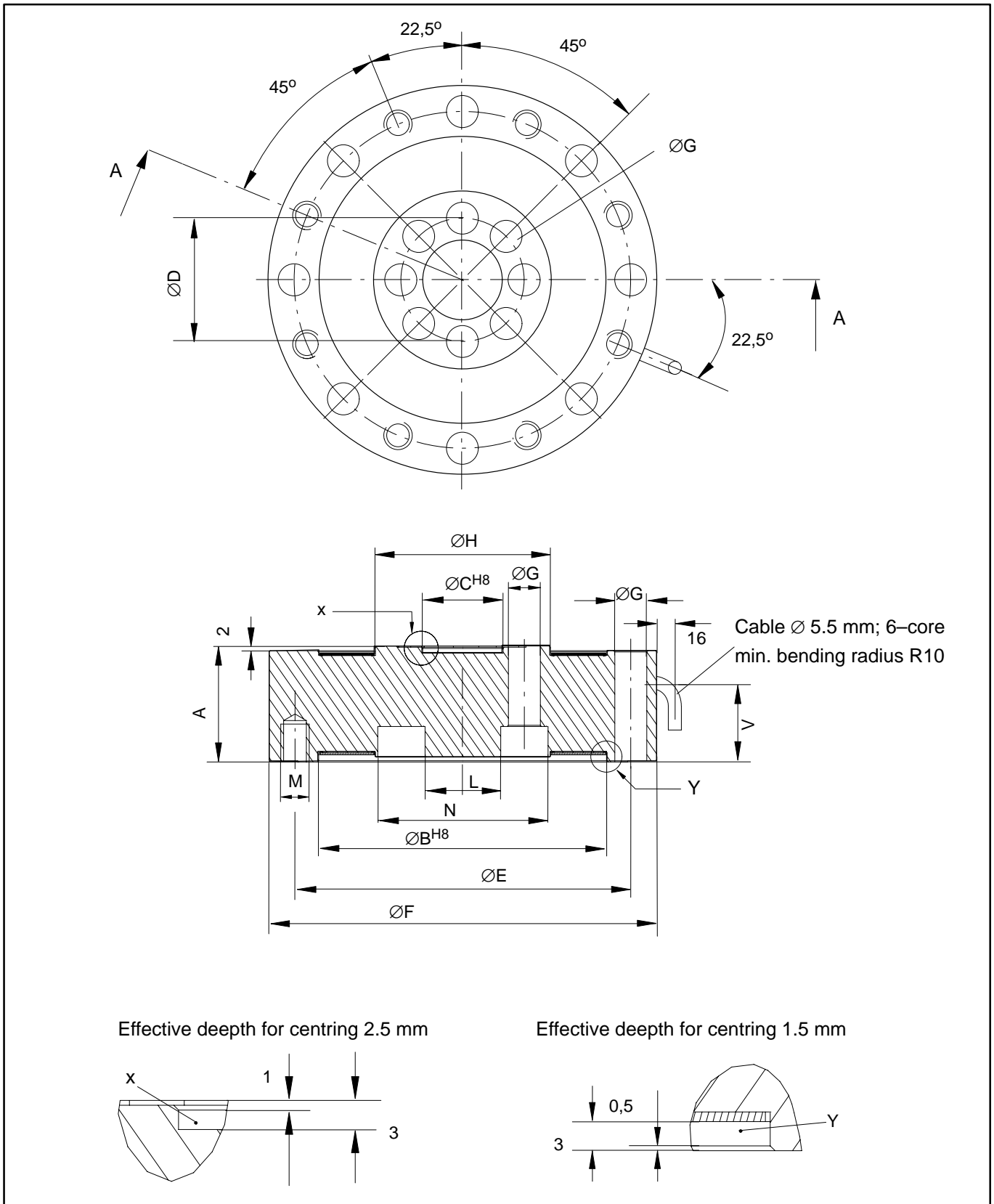
Force introduction



Specifications (VDI/VDE 2638)

| Nominal force | F_{nom} | kN | 100 | 200 | 500 |
|---|-------------|------|-----------------------------|-----------------------------|-------------------------|
| Accuracy class | | | 0.1 | | 0.3 |
| Nominal sensitivity | C_{nom} | mV/V | 2 | | |
| Rel. sensitivity deviation compressive force | d_C | % | < ± 0.25 | | |
| Rel. tensile/compressive force sensitivity difference | d_{zd} | % | < ± 0.2 (typically 0.07) | < ± 0.5 (typically 0.02) | < ± 2 (typically 1) |
| Compressive force sensitivity difference when using through-holes on the outer ring | d_{dd} | % | < ± 0.2 (typically 0.07) | | < +1 (typically 0.5) |
| Rel. deviation from zero | $d_{s,0}$ | % | < 1 | | |
| Rel. range of inversion ($0.5F_{nom}$) | $u_{0,5}$ | % | < 0.2 | | |
| Linearity deviation compressive force | d_{lin} | % | < 0.1 | | |
| Linearity deviation tensile force | d_{lin} | % | < 0.1 | | < 0.3 |
| Effect of temperature on sensitivity/10K by reference to sensitivity | TK_C | % | 0.1 | | |
| Effect of temperature on zero signal/10K by reference to sensitivity | TK_0 | % | 0.1 | | |
| Effect of transverse forces (t. force 10 % F_{nom})* | d_Q | % | < ± 0.1 | | |
| Effect of eccentricity / mm | | % | < ± 0.1 | | |
| Rel. creep over 30 min | d_{crF+E} | % | < ± 0.05 | | |
| Input resistance | R_e | Ω | > 345 | | |
| Output resistance | R_a | Ω | 300 – 400 | | |
| Isolation resistance | R_{is} | Ω | > 2×10^9 | | |
| Reference excitation voltage | U_{ref} | V | 5 | | |
| Operating range of the excitation voltage | $B_{U,G,T}$ | V | 0.5 to 12 | | |
| Nominal temperature range | $B_{t,nom}$ | °C | -10 to +70 | | |
| Operating temperature range | $B_{t,G}$ | °C | -30 to +85 | | |
| Storage temperature range | $B_{t,S}$ | °C | -50 to +85 | | |
| Reference temperature | t_{ref} | °C | +23 | | |
| Max. operational force | (F_G) | % | 150 | | |
| Limit force | (F_L) | % | 150 | | |
| Breaking force | (F_B) | % | > 300 | > 250 | |
| Static lateral limit force | (F_Q) | % | 60 | 50 | |
| Per. torque | M_g | kN·m | 1 | 2 | 5 |
| Nominal displacement | S_{nom} | mm | 0.09 | 0.11 | 0.16 |
| Fundamental resonance frequency | f_G | kHz | 4.8 | 4.3 | 3.3 |
| Weight | | kg | 5 | 7 | 17 |
| Rel. permissible vibrational stress | F_{Tb} | % | 160 | | 100 |
| Degree of protection to DIN EN 60529 | | | IP65 | | |

* by reference to a force introduction point on the force-introduction surface



| Nominal force | A | ØB ^{H8} | ØCH ⁸ | ØD | ØE | ØF | ØG | ØH | V | M | L | N |
|---------------|----|------------------|------------------|-----|-----|-----|------|-----|------|-----------------|----|-----|
| 100 kN | 49 | 122 | 34 | 52 | 142 | 164 | 13.5 | 74 | 33.5 | M12 x 15.5 deep | 32 | 72 |
| 200 kN | 55 | 144 | 43 | 67 | 166 | 190 | 17 | 96 | 37.5 | M16 x 19 deep | 41 | 93 |
| 500 kN | 65 | 186 | 76 | 104 | 225 | 260 | 21 | 140 | 48 | M20 x 23 deep | 72 | 136 |

Order code:

| Code | Option 1: Measuring range |
|------|---------------------------|
| 100K | Measuring range 100 kN |
| 200K | Measuring range 200 kN |
| 500K | Measuring range 500 kN |

| Code | Option 2: Electrical connection |
|------|--|
| K | with cable, 6 m, free ends |
| M | with cable, 6 m, MS connector (male) |
| D | with cable, 6 m, D15 connector |
| Y | with cable, any length, max. 20 m, free ends |
| N | with cable, any length, max. 20 m, MS connector (male) |
| F | with cable, any length, max. 20 m, D15 connector |
| P | with Binder 723 connector |

K-U5- [] [] [] [] - [] [] [] m

Accessories (also available):

Cable / Connector

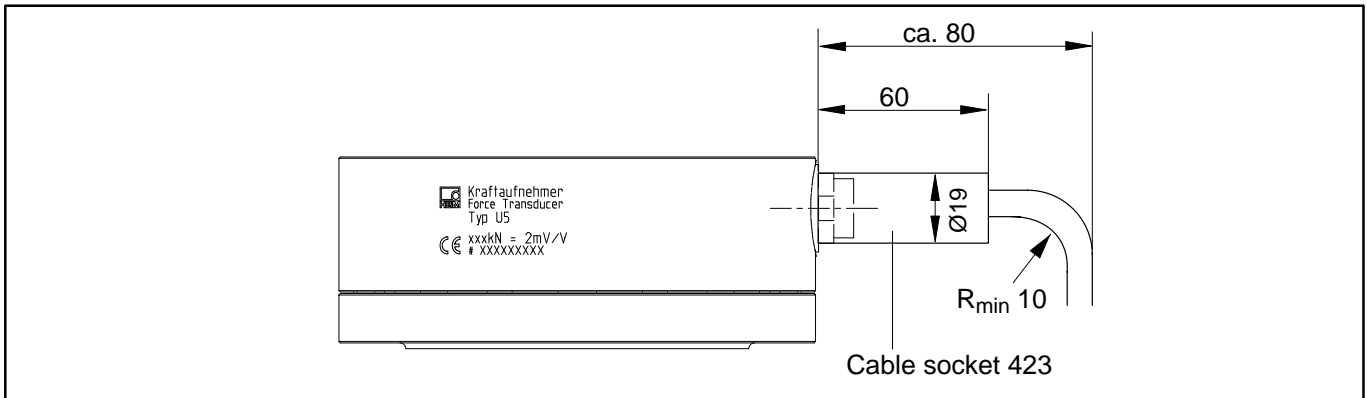
Connection cable Kab139A-6, 6 m, with cable socket 423 and free ends

Order number: 1-KAB139A-6

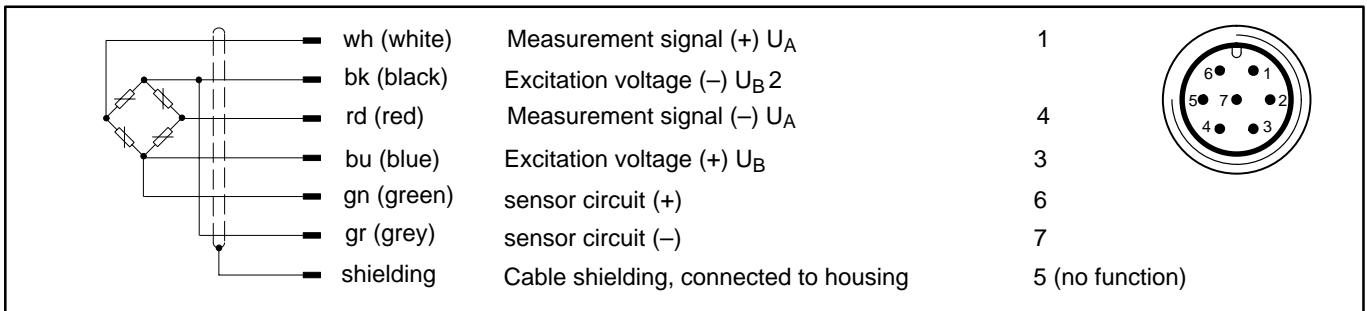
Connector MS3106PEMV, mounted on Kab139A-6 15-pin D-connector, mounted on Kab139A-6

Order number: D-MS/MONT

Order number: D-15D/MONT

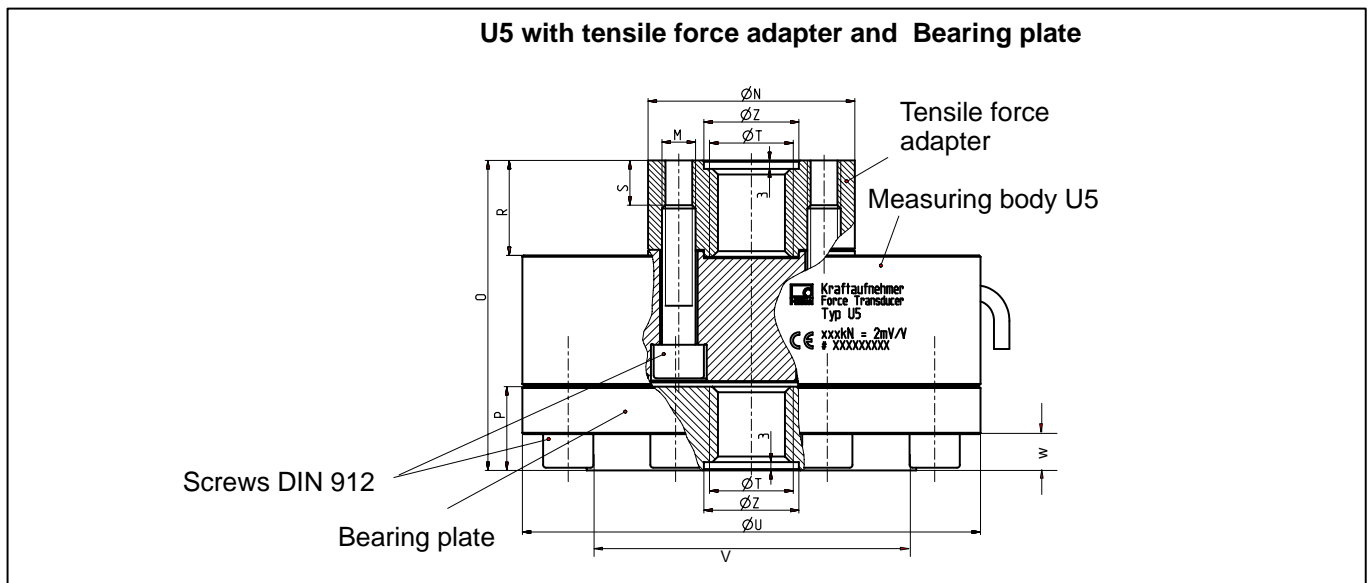


Space required for cable socket



Pin assignment

Mounting accessories



Mounting accessory for measurement of tensile force (tensile force adapter)

| Nominal force | Ø N | M | O | P | R | S | ØT | ØU | V | W | ØZ+0,1 |
|---------------|-----|-----|-------|----|------|------------|-------|-----|-----|----|--------|
| 100 kN | 74 | M12 | 111 | 30 | 34 | approx. 16 | M30x2 | 164 | 118 | 13 | 34 |
| 200 kN | 96 | M16 | 137 | 40 | 44 | approx. 20 | M39x2 | 190 | 136 | 17 | 43 |
| 500 kN | 138 | M20 | 224.5 | 80 | 81.5 | approx. 55 | M72x4 | 260 | 190 | 95 | 76 |

Adapter

100 kN:

Tensile force adapter each with 8 screws (M12 x 50)

Order no. 2-9278.0350

Bearing plate each with 8 screws (M12 x 30)

Order no. 2-9278.0351

200 kN:

Tensile force adapter each with 8 screws (M16 x 55)

Order no. 2-9278.0353

Bearing plate each with 8 screws (M16 x 40)

Order no. 2-9278.0354

500 kN:

Tensile force adapter each with 8 screws (M20 x 65)

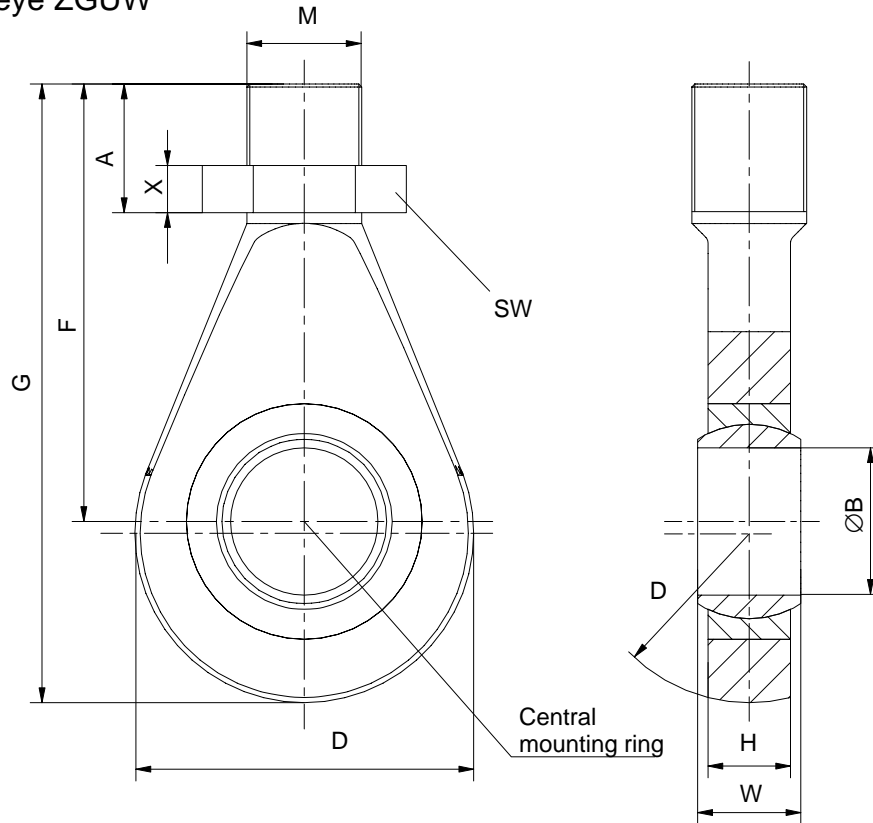
Order no. 2-9278.0356

Bearing plate each with 8 screws (M20 x 65)

Order no. 2-9278.0357

Mounting accessories (Dimensions in mm)

Knuckle eye ZGUW



Material: tempered steel, galvanised; rolled steel and Teflon/bronze fabric foil

| Nominal force kN | Order no. Knuckle eye ZGUW | Weight kg | A | ØB | D | F | G | H | M | SW | W | X |
|------------------|----------------------------|-----------|------|---------------------------------|-----|-------|-------|----|-------|-----|----|----|
| 100 | 1-Z4/100kN/ZGUW | 1.3 | 66.5 | 30 ^{H7} | 70 | 110.5 | 145.5 | 25 | M30x2 | 46 | 37 | 24 |
| 200 | 1-U2A/20t/ZGUW | 3.2 | 80 | 60 ^{+0.003 -0.018} | 126 | 168 | 210 | 36 | M48x2 | 75 | 44 | 18 |
| 500 | 1-Z4/500kN/ZGUW | 12.5 | 80 | 60 ^{+0.003 -0.018} | 180 | 175 | 352 | 36 | M72x4 | -*) | 44 | |

* secured with 2 screws to prevent rotation

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