

Data sheet

Force transfer standard

Series KTN-Z/D

(5 N – 1000 kN)



Benefits/Application

- Class 00 according to ISO 376 in the range 10 % to 100 %
- Especially to trace back Force Standard Machines
- Insensitive against parasitic forces and moments
- Little weight
- For static tensile and compressive forces
- Hermetically sealed
- Very small force application effect
- Standardised connection dimensions

Options/Accessories

- Second redundant measuring circuit - without crosstalk at different carrier frequencies
- Temperature measurement with PT 100
- Class 0,5 according to ISO 376 in the range 10 % to 100 %
- Bending moment circuits
- Mounting parts for tension and compression

Technical data

Class 00

| | Nominal force | F_{nom} | N | 5 | 10 | 20 | 50 | 100 | 200 | 500 | |
|-------------------|---|--------------|----------|-------------------|----|----|----|-----|-----|-----|-------|
| Metrological Data | Force measurement range | | % | 10 - 100 | | | | | | | |
| | Interpolation error | f_c | % | 0,02 | | | | | | | |
| | Reversibility error | v | % | 0,06 | | | | | | | |
| | Repeatability error in unchanged mounting position | b' | % | 0,023 | | | | | | | |
| | Reproducibility error in different mounting positions | b | % | 0,045 | | | | | | | |
| | Zero error | f_0 | % | 0,01 | | | | | | | |
| | Creep | | % | 0,01 | | | | | | | |
| | Temperature effect on characteristic value per 10 K | TK_c | %/10 K | 0,01 | | | | | | | |
| | Temperature effect on zero signal per 10 K | TK_0 | %/10 K | 0,01 | | | | | | | |
| | | | | | | | | | | | |
| Electrical Data | Rated characteristic value | C_{nom} | mV/V | 2 | | | | | | | |
| | Input resistance | R_e | Ω | 820 | | | | | | | > 500 |
| | Output resistance | R_a | Ω | 600 - 700 | | | | | | | > 450 |
| | Insulation resistance | R_{is} | Ω | > 10 ⁹ | | | | | | | |
| | Operating range of excitation voltage | $B_{U, G}$ | V | 5 - 12 | | | | | | | |
| | Protection (DIN EN 60529) | | | 54 | | | | | | | |
| Mechanical Data | Mass ¹⁾ | m | kg | 0,35 | | | | | | | 1,3 |
| | Mass ²⁾ | m | kg | 0,03 | | | | | | | 0,07 |
| | Mass ³⁾ | m | kg | 0,03 | | | | | | | 0,07 |
| | Force limit | | % | 110 | | | | | | | |
| | Breaking force | | % | 200 | | | | | | | |
| | Permissible eccentricity | e_G | mm | 2 | | | | | | | |
| | Rated temperature range | $B_{T, nom}$ | °C | 17 - 27 | | | | | | | |
| | Operating temperature range | $B_{T, G}$ | °C | 10 - 35 | | | | | | | |

1) Force transducer

2) Compression load transmission

3) Tension load transmission

Technical data

Class 00

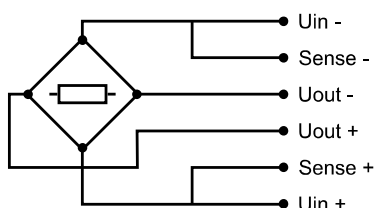
| | Nominal force | F_{nom} | kN | 1 | 2,5 | 5 | 10 | 20 | 50 | 100 | 200 | 500 | 1000 |
|---------------------------------------|---|----------------------------|-----------|-------------------|-----|--------|--------|----|-----|--------|--------|-----|--------|
| Metrological Data | Force measurment range | | % | 10 - 100 | | | | | | | | | |
| | Interpolation error | f_c | % | 0,02 | | | | | | | | | |
| | Reversibility error | v | % | 0,06 | | | | | | | | | |
| | Repeatability error in unchanged mounting position | b' | % | 0,023 | | | | | | | | | |
| | Reproducibility error in different mounting positions | b | % | 0,045 | | | | | | | | | |
| | Zero error | f_0 | % | 0,01 | | | | | | | | | |
| | Creep | | % | 0,01 | | | | | | | | | |
| | Temperature effect on characteristic value per 10 K | TK_C | %/10 K | 0,01 | | | | | | | | | |
| | Temperature effect on zero signal per 10 K | TK_0 | %/10 K | 0,01 | | | | | | | | | |
| | Electrical Data | Rated characteristic value | C_{nom} | mV/V | 2 | | | | | | | | |
| Input resistance | | R_e | Ω | > 500 | | > 1100 | > 1200 | | | > 1300 | | | |
| Output resistance | | R_a | Ω | > 450 | | > 900 | > 1000 | | | > 1100 | > 1000 | | > 1100 |
| Insulation resistance | | R_{is} | Ω | > 10 ⁹ | | | | | | | | | |
| Operating range of excitation voltage | | $B_{U, G}$ | V | 5 - 12 | | | | | | | | | |
| Protection (DIN EN 60529) | | | | 54 | | | | | | | | | |
| Mechanical Data | Mass ¹⁾ | m | kg | 1,4 | | 1,3 | 3,1 | | 3,5 | 10,5 | 10,1 | 45 | 100 |
| | Mass ²⁾ | m | kg | 0,08 | | | 0,13 | | | 0,5 | 0,9 | 5,5 | 5,5 |
| | Mass ³⁾ | m | kg | 0,2 | | 0,3 | 0,35 | | 0,5 | 1,7 | 3,9 | 17 | 31 |
| | Force limit | | % | 110 | | | | | | | | | |
| | Breaking force | | % | 200 | | | | | | | | | |
| | Permissible eccentricity | e_G | mm | 2 | | | | | | | | | |
| | Rated temperature range | $B_{T, nom}$ | °C | 17 - 27 | | | | | | | | | |
| | Operating temperature range | $B_{T, G}$ | °C | 10 - 35 | | | | | | | | | |

1) Force transducer

2) Compression load transducer

3) Tension load transducer

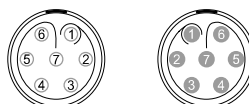
Cable connection



Connection
pluggable¹⁾²⁾

7-pin LEMO Series 0

Female: - Male:



End not connected

Grey cable

Ø 6,5 mm

6 x 0,25 mm²

Temperature range: -35 °C bis +90 °C

| Connection | | Pin | Wire colour |
|------------------------|-------------------|---------|-------------|
| Supply voltage (+) | U _{in+} | 3 | blue |
| Supply voltage (-) | U _{in-} | 2 | black |
| Measurement signal (+) | U _{out+} | 1 | white |
| Measurement signal (-) | U _{out-} | 4 | red |
| Sense (+) | Sense+ | 5 | green |
| Sense (-) | Sense- | 6 | grey |
| Shielding | | Housing | yellow |

1) View to weldingside

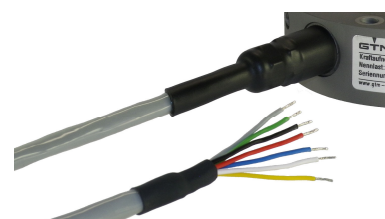
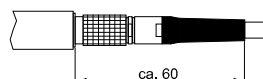
2) Female LEMO S.A. Typ: EGG.1B.307.CLL; Male: FGG.1B.307.CLA.D72



Pluggable cable connection
5 N to 100 N



Pluggable cable connection
from 200 N



End not connected
(optional)

- Cable is not standard scope of supply
- Cable length 5 m. Other cable lengths on request
- Other connector types on cable end: D-Sub 9; D-Sub 15; M-S 7pol
- Configuration with customer defined connection is possible
- Optional fixed cable possible (from 200 N)

Option: 2.Measuring circuit

- In case of two circuits the technical data are similarly valid for both circuits
- Available from 5 kN.

Option: Bending moment

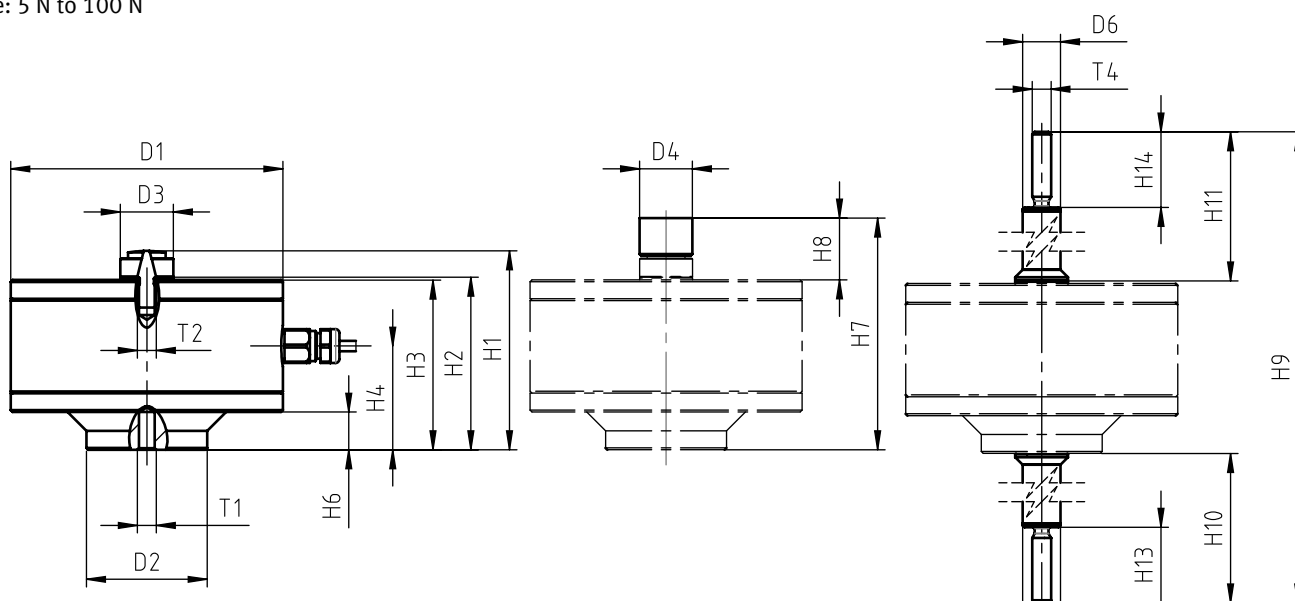
| | | | |
|--|-----------|----------|----------------------|
| Nominal force | F_{nom} | kN | 0,2 - 200 (2mV/V) |
| Temperature effect on characteristic value per 10 K | TK_C | %/10 K | 0,2 |
| Temperature effect on zero signal per 10 K | TK_0 | %/10 K | 0,2 |
| Input resistance | R_e | Ω | 400 |
| Operating range of excitation voltage | $B_{U,G}$ | V | 5 - 12 |

- Available from 5 kN.

Mating dimensions

up to 2500 N

Size: 5 N to 100 N

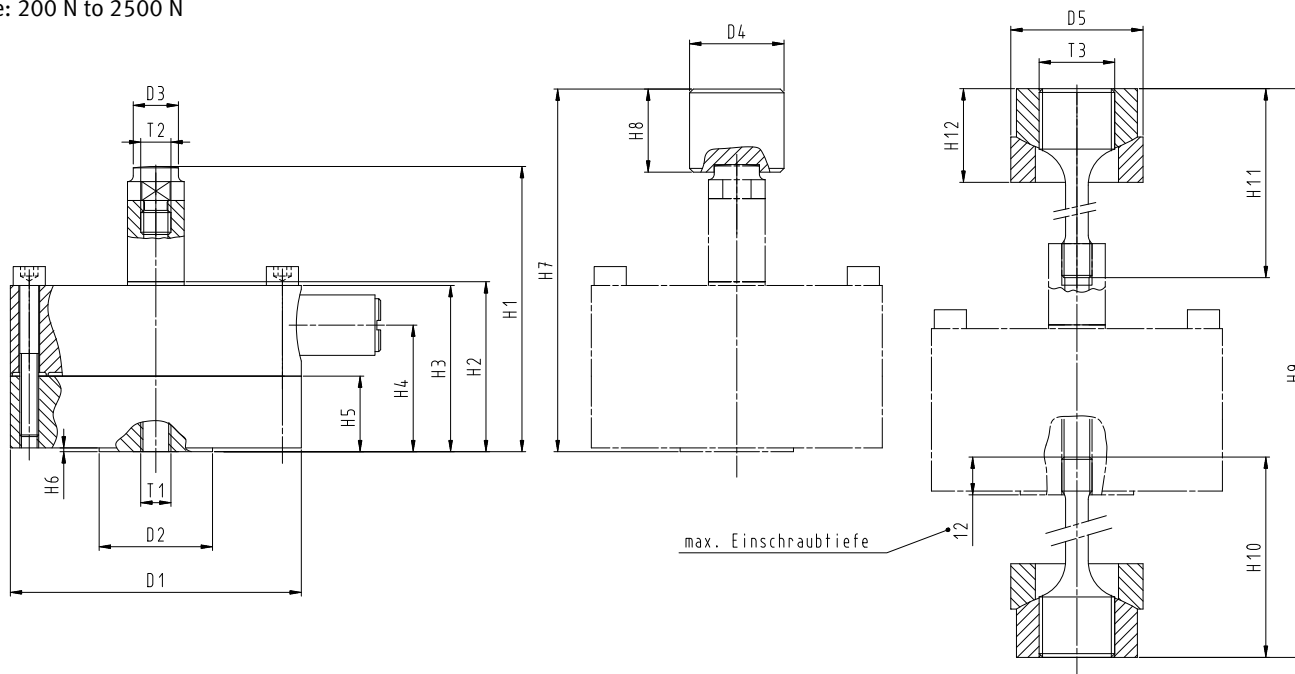


Standard scope of supply

Option: load button

Option: tension rod

Size: 200 N to 2500 N



Standard scope of supply

Option: load button

Option: tension rod

Mating dimensions

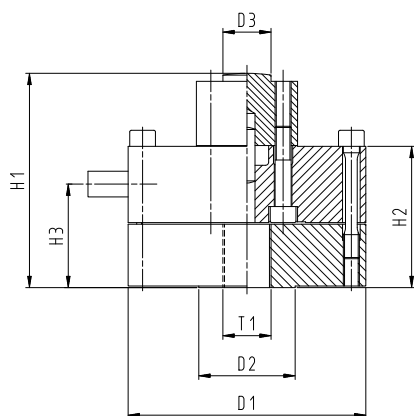
up to 2500 N

| Nominal force compression/tension | $\pm F_{nom}$ | N | 5 | 10 | 20 | 50 | 100 | 200 | 500 | 1000 | 2500 |
|--------------------------------------|-------------------|----|---|----|-------|----|-----|-----|-----|------------|------|
| Diameter | $\varnothing D_1$ | mm | | | 72 | | | | | 77 | |
| Diameter | $\varnothing D_2$ | mm | | | 32 | | | | | 30 | |
| Diameter | $\varnothing D_3$ | mm | | | 14 | | | | | 11,95-0,05 | |
| Diameter | $\varnothing D_4$ | mm | | | 14 | | | | | 25 | |
| Diameter | $\varnothing D_5$ | mm | | | 10 | | | | | 35 | |
| Diameter | $\varnothing D_6$ | mm | | | 10 | | | | | --- | |
| Thread | T_1 | | | | M5 | | | | | M8 | |
| Thread | T_2 | | | | M5 | | | | | M8 | |
| Thread | T_3 | | | | M5 | | | | | M20x1,5 | |
| Thread | T_4 | | | | M5 | | | | | --- | |
| Height | H_1 | mm | | | 52,7 | | | | | 74,5 | |
| Height | H_2 | mm | | | 45,7 | | | | | 44 | |
| Height | H_3 | mm | | | 45 | | | | | 43 | |
| Height | H_4 | mm | | | 27,5 | | | | | 32,5 | |
| Height | H_5 | mm | | | --- | | | | | 20 | |
| Height | H_6 | mm | | | 10 | | | | | 1 | |
| Height | H_7 | mm | | | 61,4 | | | | | 94,5 | |
| Height | H_8 | mm | | | 16,4 | | | | | 22 | |
| Height | H_9 | mm | | | 253,7 | | | | | 245,5 | |
| Height | H_{10} | mm | | | 104 | | | | | 100 | |
| Height | H_{11} | mm | | | 104 | | | | | 100 | |
| Height | H_{12} | mm | | | --- | | | | | 24,8 | |
| Height | H_{13} | mm | | | 20 | | | | | --- | |
| Height | H_{14} | mm | | | 20 | | | | | --- | |

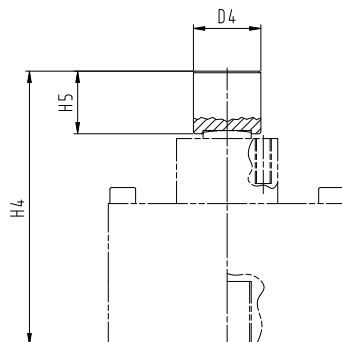
Mating dimensions

up to 500 kN

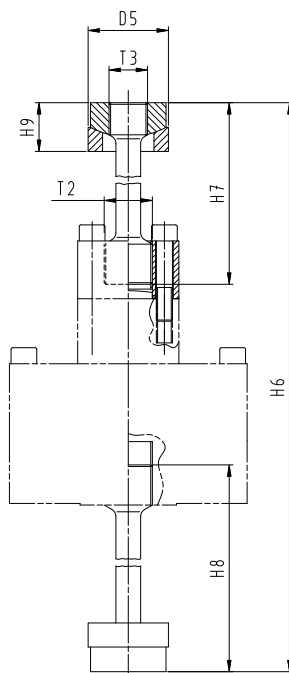
Size: 5 kN to 100 kN



Standard scope of supply

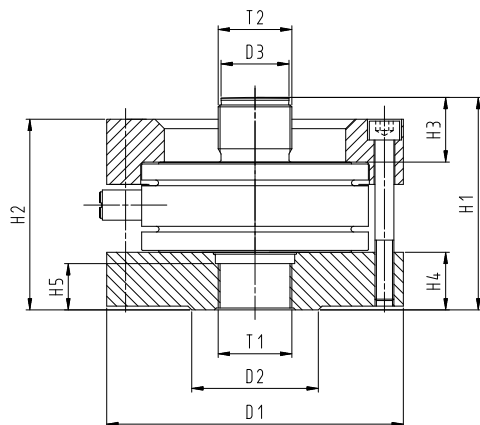


Option: load button

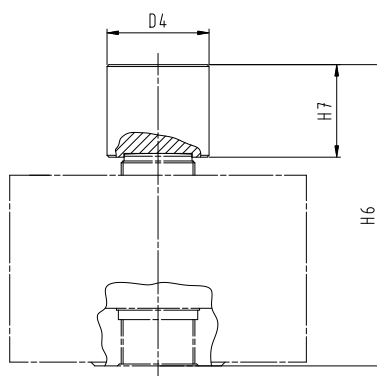


Option: tension rod

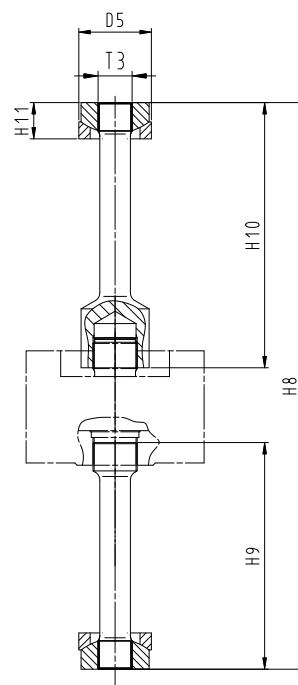
Size: 200 kN to 500 kN



Standard scope of supply



Option: load button

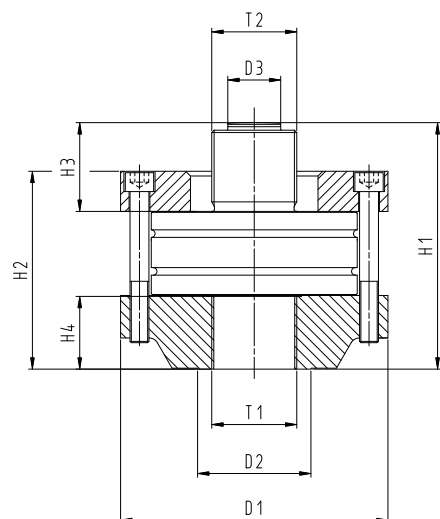


Option: tension rod

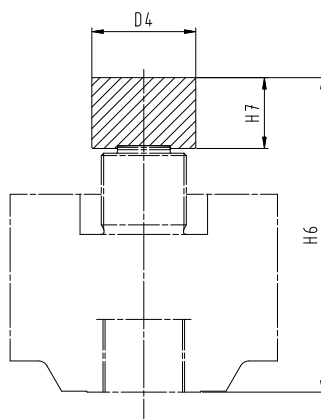
Mating dimensions

up to 1000 kN

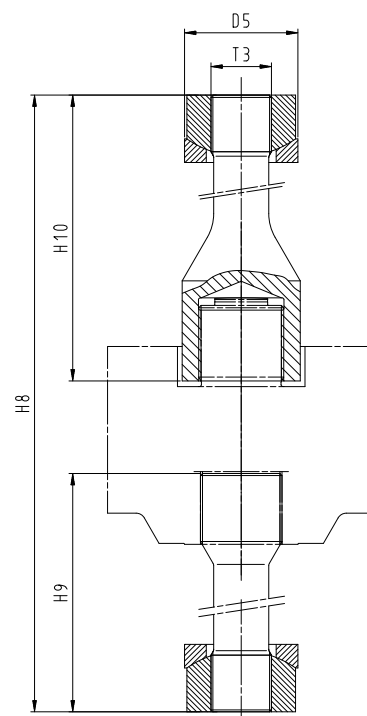
Size: 1000 kN



Standard scope of supply



Option: load button



Option: tension rod

Mating dimensions

up to 1000 kN

| Nominal force compression/tension | $\pm F_{nom}$ | kN | 5 | 10 | 20 | 50 | 100 | 200 | 500 | 1000 |
|--------------------------------------|-------------------|----|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|---------|------|
| Diameter | $\varnothing D_1$ | mm | 77 | 95 | 101 | 148 | 157 | 245 | 335 | |
| Diameter | $\varnothing D_2$ | mm | 30 | 40 | 50 | 60 | 67 | 140 | 120 | |
| Diameter | $\varnothing D_3$ | mm | 11,95-0,05 | 19,95-0,05 | | 25,95-0,05 | 35,95-0,05 | 56-0,05/-0,1 | 56-0,05 | |
| Diameter | $\varnothing D_4$ | mm | 25 | 30 | | 42 | 54 | 110 | | |
| Diameter | $\varnothing D_5$ | mm | 35 _{c11} | 45 _{c11} | 50 _{c11} | 64 _{c11} | 90 _{c11} | 120 _{c11} | | |
| Diameter | $\varnothing D_6$ | mm | --- | | | | | | | |
| Thread | T_1 | | M10x1 | M20x1,5 | M30x2 | M39x2 | M72x4 | M90x4 | | |
| Thread | T_2 | | M10x1 | M20x1,5 | M30x2 | M39x2 | M72x4 | M90x4 | | |
| Thread | T_3 | | M20x1,5 | M24x2 | M30x2 | M56x4 | M64x4 | | | |
| Thread | T_4 | | --- | | | | | | | |
| Height | H_1 | mm | 69 | 88 | 134 | 112,5 | 256 | 298 | | |
| Height | H_2 | mm | 46 | 61 | 89 | 101 | 218,5 | 236,5 | | |
| Height | H_3 | mm | 33 | 48 | 65 | 34 | 77 | 94 | | |
| Height | H_4 | mm | 89 | 111 | 171 | 30,5 | 77 | 76 | | |
| Height | H_5 | mm | 22 | 25 | 39 | 24,5 | --- | | | |
| Height | H_6 | mm | 354 | 374 | 412 | 159,5 | 328 | 370 | | |
| Height | H_7 | mm | 150 | | 49 | 75 | | | | |
| Height | H_8 | mm | 150 | | 500 | 800 | 840 | | | |
| Height | H_9 | mm | 24,8 | 25,4 | 30 | 210 | 356 | 340 | | |
| Height | H_{10} | mm | --- | | 234 | 342 | 370 | | | |
| Height | H_{11} | mm | --- | | 32 | 71,4 | | | | |

Änderungen vorbehalten. Alle Angaben beschreiben unsere Produkte in allgemeiner Form. Sie stellen keine vereinbarte Beschaffenheit im Sinne des § 434 Abs. 1 BGB dar.



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