

# U5

## Force Transducer

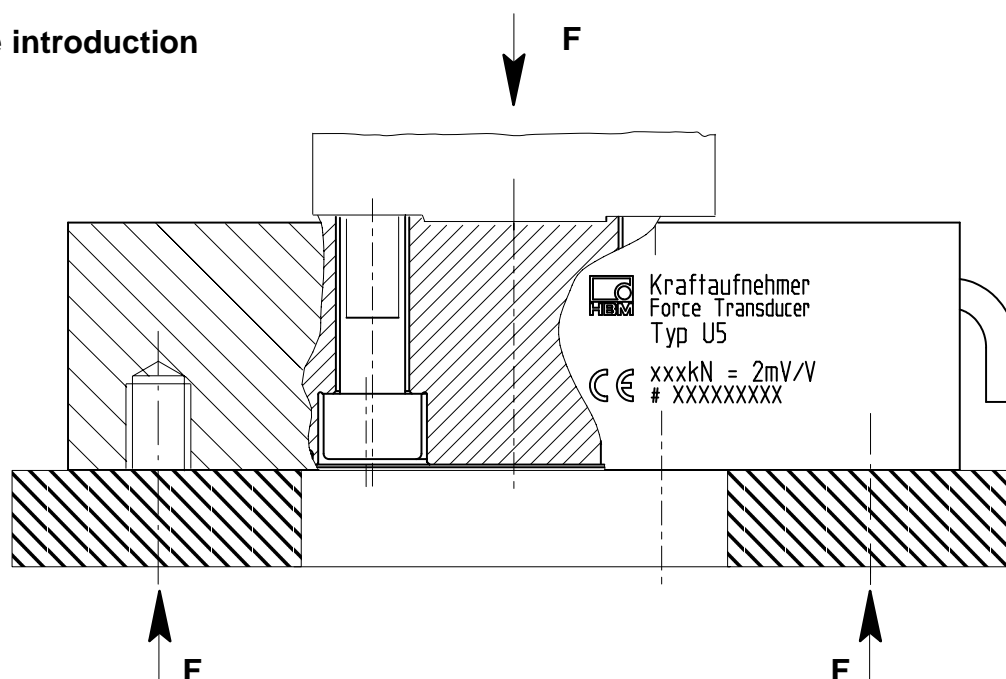


View from below

### 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

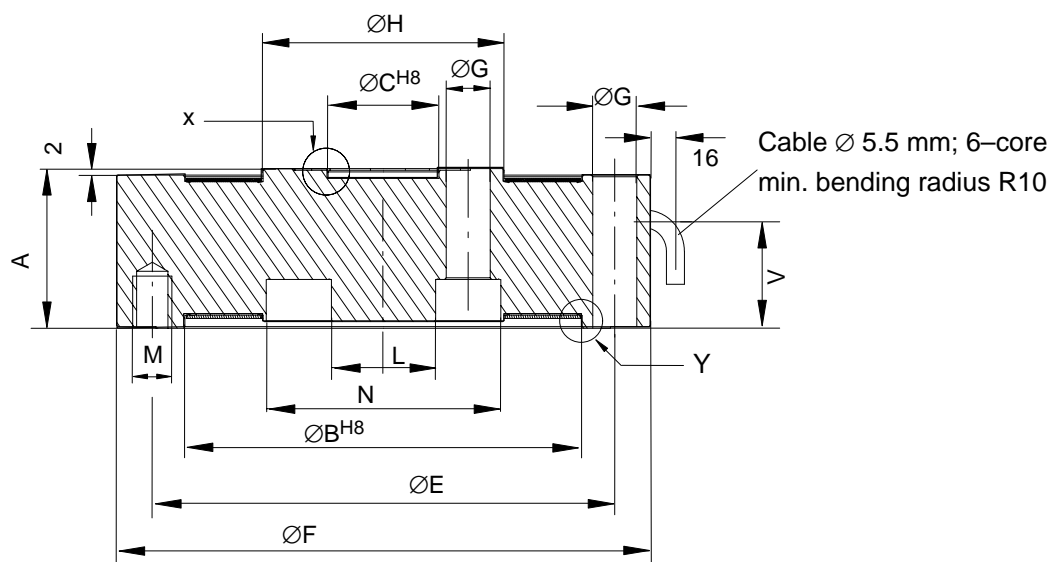
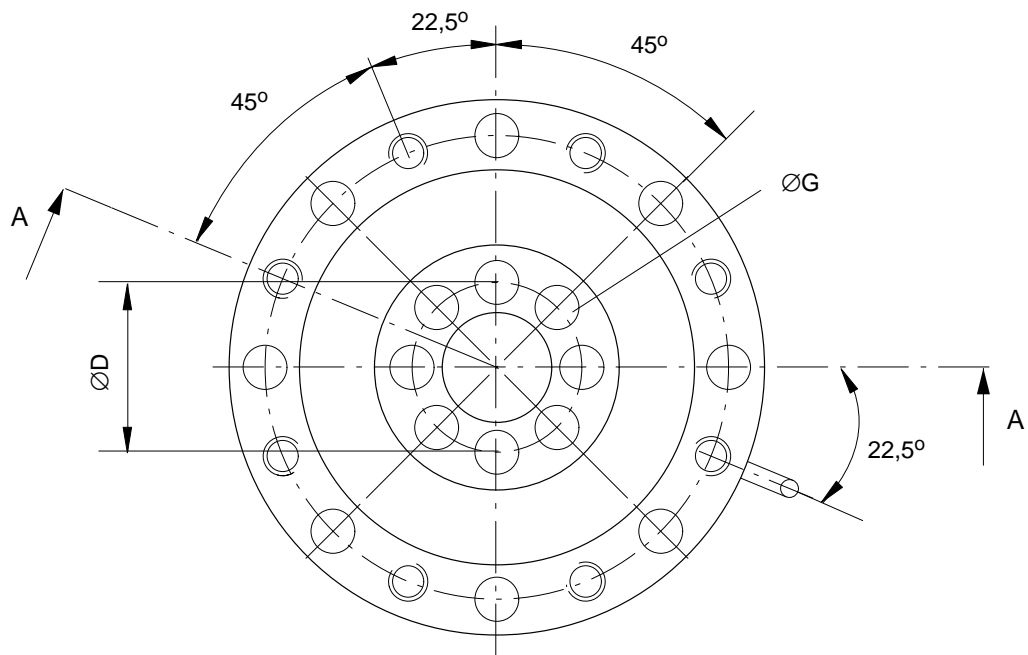
### Force introduction



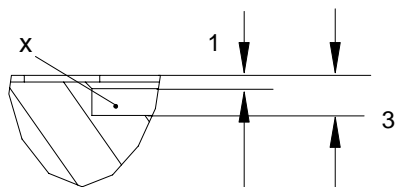
## Specifications (VDI/VDE 2638)

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	> $2 \times 10^9$		
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		

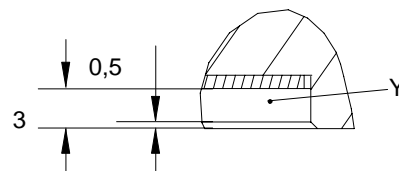
\* by reference to a force introduction point on the force-introduction surface



Effective depth for centring 2.5 mm



Effective depth for centring 1.5 mm



Nominal force	A	$\varnothing B^{H8}$	$\varnothing C^{H8}$	$\varnothing D$	$\varnothing E$	$\varnothing F$	$\varnothing G$	$\varnothing H$	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

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**Accessories (also available):**

**Cable / Connector**

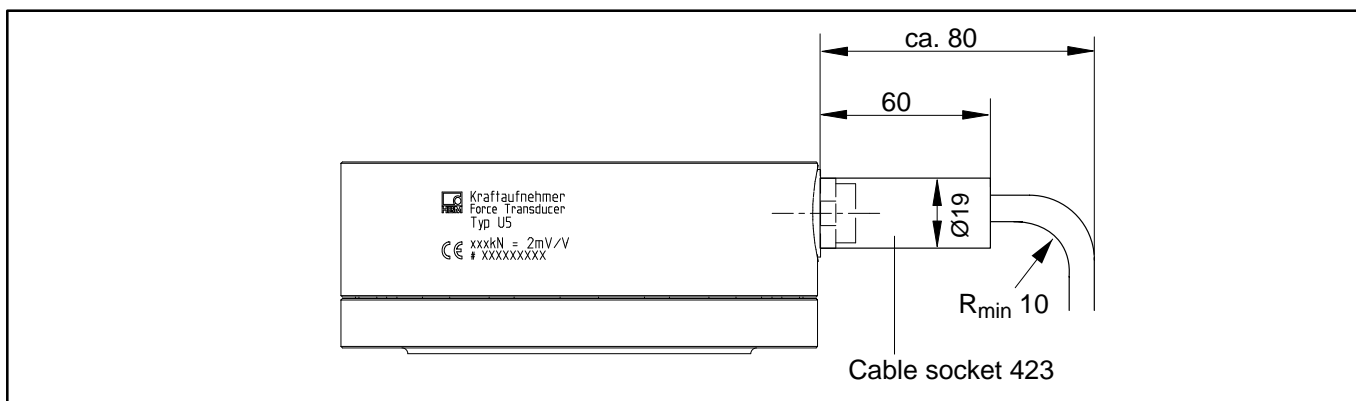
Connection cable Kab139A-6, 6 m, with cable socket 423 and free ends

Order number: 1-KAB139A-6

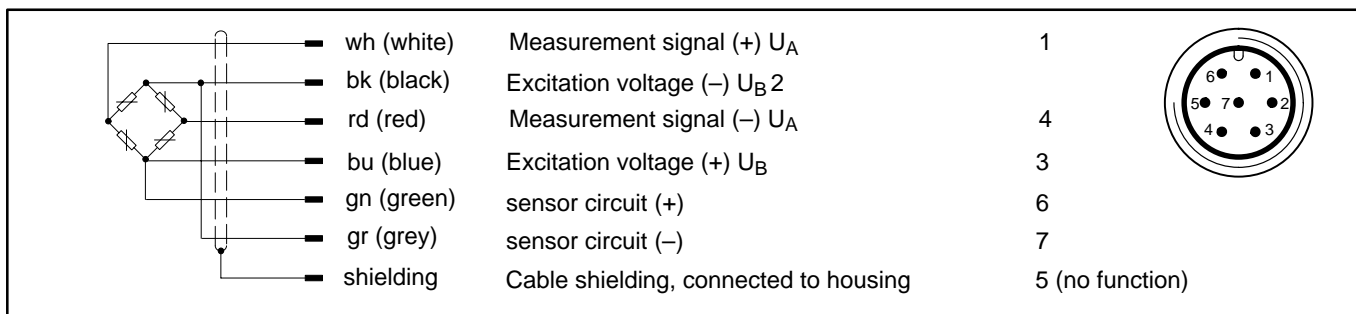
Connector MS3106PEMV, mounted on Kab139A-6 15-pin D-connector, mounted on Kab139A-6

Order number: D-MS/MONT

Order number: D-15D/MONT

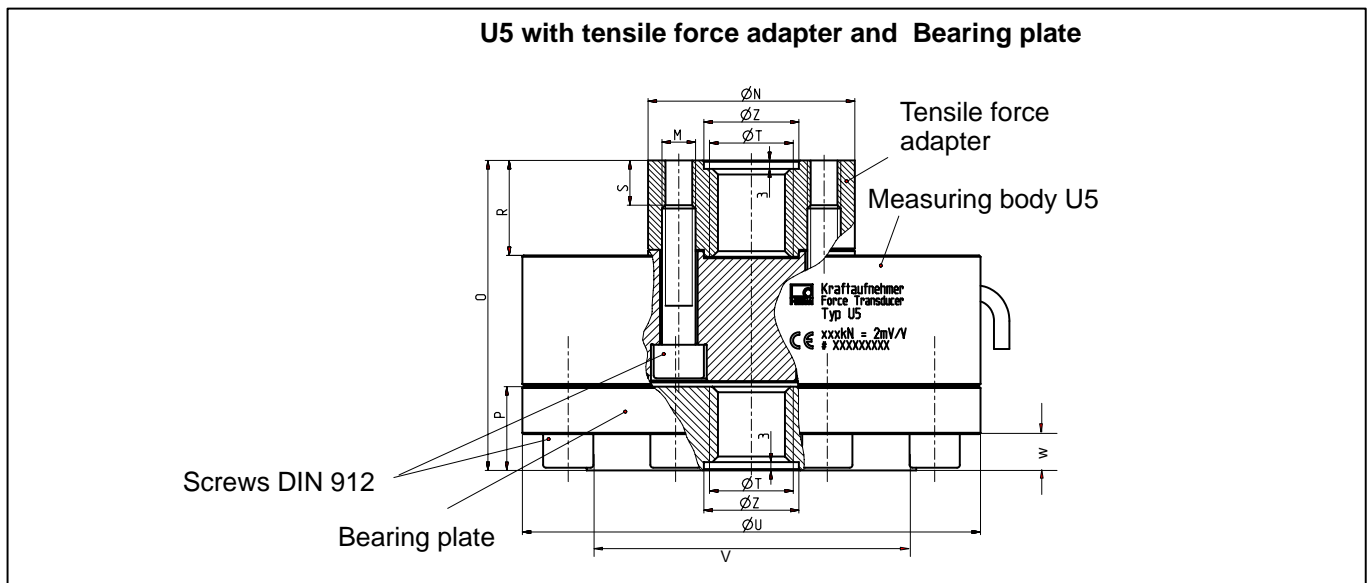


**Space required for cable socket**



**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)

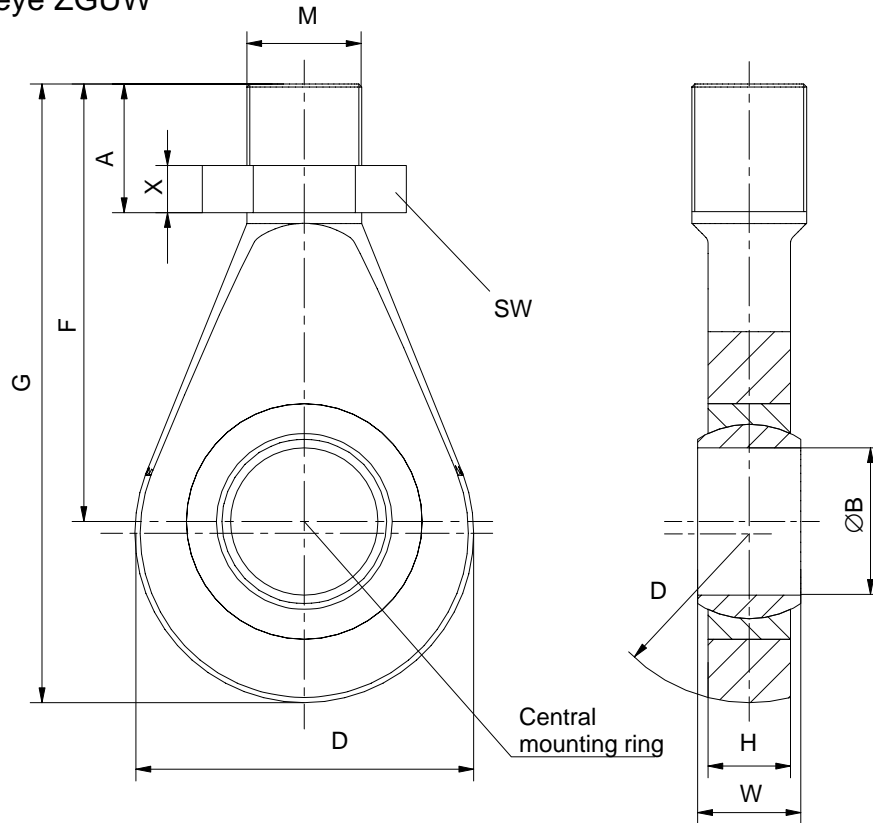
Order no. 2-9278.0356

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 <sup>H7</sup>	70	110.5	145.5	25	M30x2	46	37	24
200	1-U2A/20t/ZGUW	3.2	80	60 <sup>+0.003 -0.018</sup>	126	168	210	36	M48x2	75	44	18
500	1-Z4/500kN/ZGUW	12.5	80	60 <sup>+0.003 -0.018</sup>	180	175	352	36	M72x4	-*)	44	

\* secured with 2 screws to prevent rotation

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