

# U10M

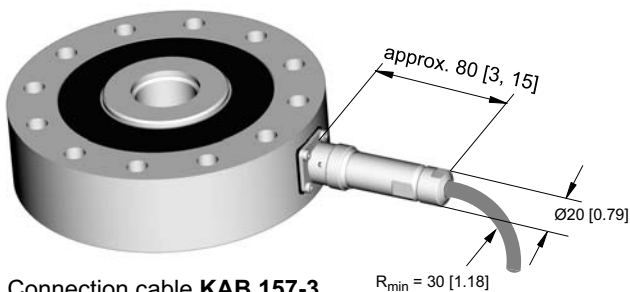
## Force Transducer

### Special features

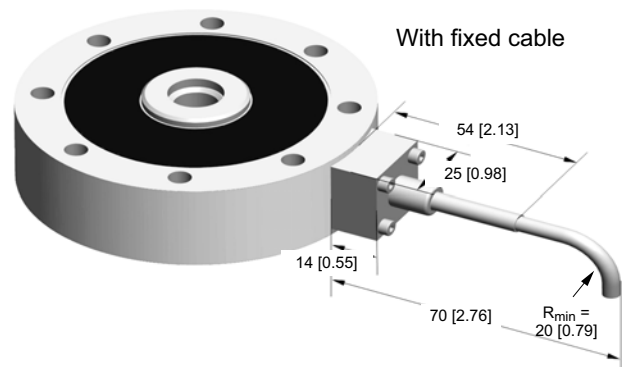
- Precise and robust tensile/compressive force transducer for static and dynamic measurement tasks
- High lateral force and bending moment stability, the effect of the bending moment is electrically compensated
- For forces up to 2.5 MN
- The numerous possible configurations (TEDS, double bridge, various electrical connections, etc.), mean that it can be flexibly adapted to many measurement tasks
- Made of rust-resistant materials, degree of protection IP68 on request
- High fundamental frequency - ideal for measuring fast processes



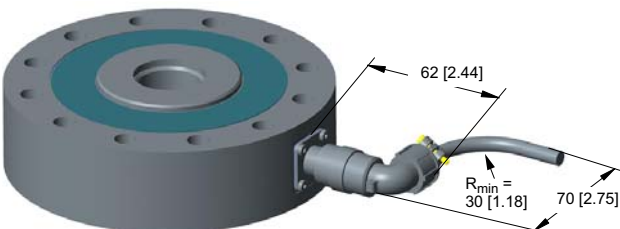
### Mounting dimensions of the connection variants in mm [inch]



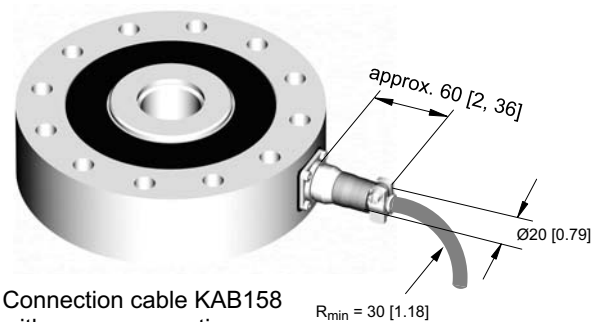
Connection cable **KAB 157-3** with **bayonet connection**, compatible with a MIL-C-26482 series 1 connector



With fixed cable

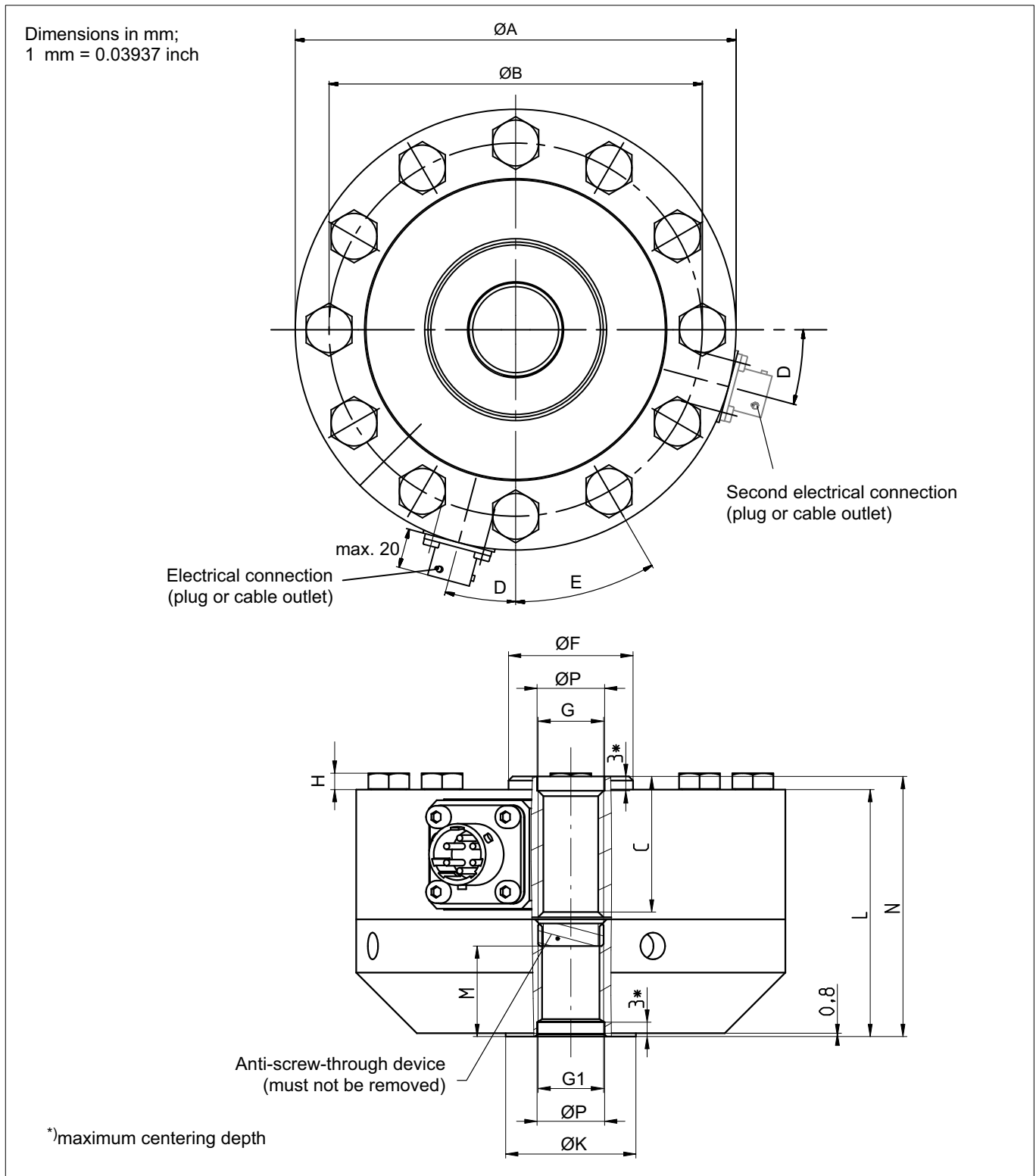


Configurable connection cable "K-KAB-F" with angled bayonet connector option, compatible with a MIL-C-26482 series 1 connector



Connection cable **KAB158** with screw connection, compatible with a MIL-C-26482 series1 connector

## Dimensions of U10M with foot adapter

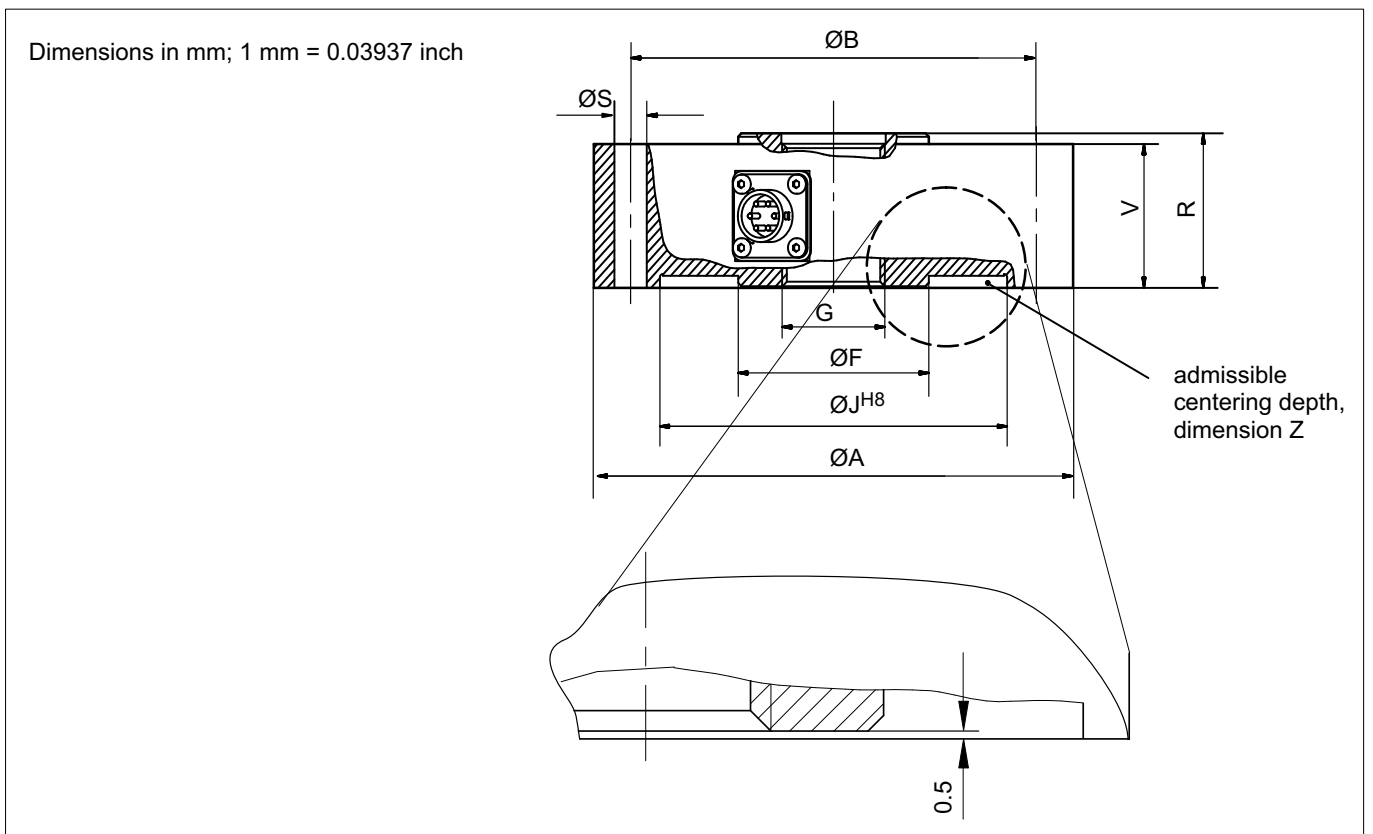


Nominal (rated) force:	Dimensions in	$\varnothing A$	$\varnothing B$	$C$	$D$	$E$	$\varnothing F$	$G$	$H$	$M$
		1.25 kN - 5 kN	mm	104.8	88.9	33.3	22.5°	45°	30.4	M16x2-4H
	inch	4.13	3.5	1.3	1.2	0.16				
12.5 kN - 25 kN	mm	104.8	88.9	33.3	22.5°	45°	31.5	M16x2-4H	4	22
	inch	4.13	3.5	1.3			1.24		0.16	
50 kN	mm	153.9	130.3	42.9	15°	30°	61.2	M33x2-4H	10	35.5
	inch	6.06	5.13	1.69			2.41		0.39	

Nominal (rated) force:	Dimensions in	ØA	ØB	C	D	E	ØF	G	H	M
125 kN	mm	153.9	130.3	42.9	15°	30°	67.3	M33x2-4H	10	35.5
	inch	6.06	5.13	1.69			2.65		0.39	
250 kN	mm	203.2	165.1	61.9	11.25°	22.5°	95.5	M42x2-4H	12	44
	inch	8.00	6.51	2.4			3.76		0.47	
500 kN	mm	279	229	87.3	11.25°	22.5°	122.2	M72x2-4H	16	69.5
	inch	10.98	9.02	3.4			4.81	M72x2-4H	0.63	
1.25 MN	mm	390	322	125	7.5°	15°	190	M120x4-4H	22	112
	inch	15.35	12.68	4.92			7.48		0.87	

Nominal (rated) force:	Dimensions in	G1	ØK	L	N	ØPH8
1.25 kN - 25 kN	mm	M16x2-4H 22.1 mm deep	31.8	60.3	63.5	16.5
	inch		1.25	2.37	2.5	0.65
50 kN - 125 kN	mm	M33x2-4H 35.6 mm deep	57.2	85.9	89	33.5
	inch		2.25	3.38	3.5	1.32
250 kN	mm	M42x2-4H 54.6 mm deep	76.2	108	114.3	43
	inch		3	4.25	4.5	1.69
500 kN	mm	M72x2-4H 82.6 mm deep	114	152.4	165.1	73
	inch		4.49	6	6.5	2.87
1.25 MN	mm	M120x4-4H, 125 deep	190	239	254	123
	inch		7.48	9.41	10.0	4.84

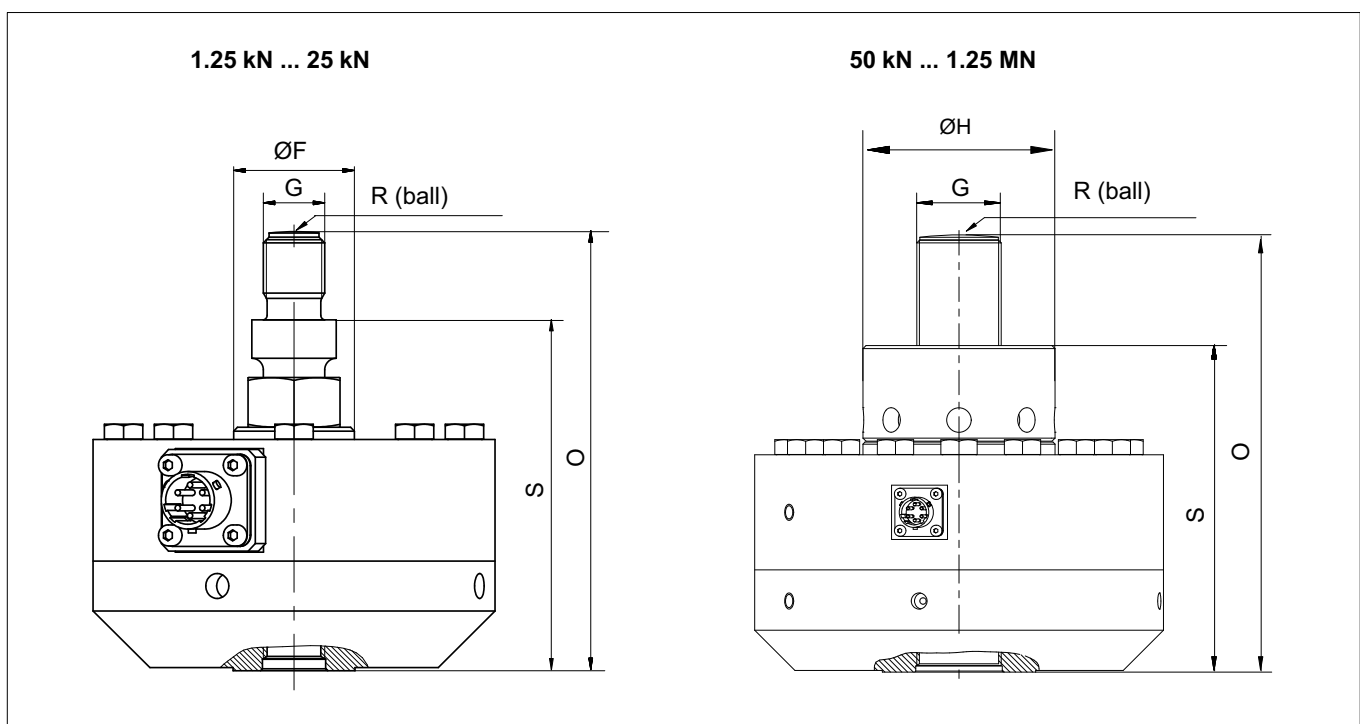
### Dimensions of U10M without foot adapter



Nominal (rated) force:	Dimensions in	ØA	ØB	ØS	ØF	G	ØJH8	V	R	Z
1.25 kN - 5 kN	mm	104.8	88.9	6.8	30.4	M16x2-4H	78	31.7	34.9	2.5
	inch	4.13	3.5	0.27	1.2		3.07	1.25	1.37	0.1
5 kN - 25 kN	mm	104.8	88.9	6.8	31.5	M16x2-4H	78	31.7	34.9	2.5
	inch	4.13	3.5	0.27	1.24		3.07	1.25	1.37	0.1

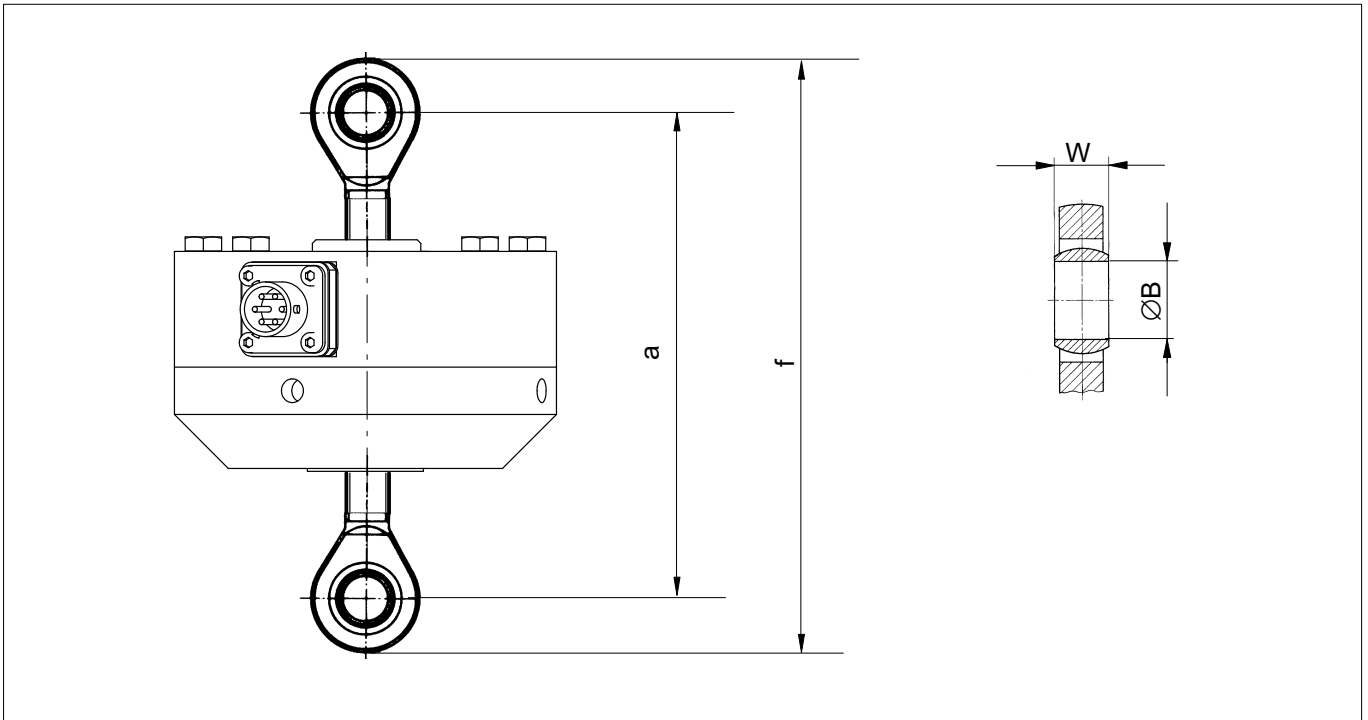
Nominal (rated) force:	Dimensions in	ØA	ØB	ØS	ØF	G	ØJH <sup>8</sup>	V	R	Z
50 kN	mm	153.9	130.3	10.4	61.2	M33x2-4H	111.5	41.4	44.5	2.5
	inch	6.06	5.13	0.41	2.41		4.39	1.63	1.75	0.1
125 kN	mm	153.9	130.3	10.4	67.3	M33x2-4H	111.5	41.4	44.5	2.5
	inch	6.06	5.13	0.41	2.65		4.39	1.63	1.75	0.1
250 kN	mm	203.2	165.1	13.5	95.5	M42x2-4H	143	57.2	63.5	3.5
	inch	8.00	6.51	0.53	3.76		5.63	2.25	2.5	0.14
500 kN	mm	279	229	16.8	122.2	M72x2-4H	175	76.2	88.9	6
	inch	10.98	9.02	0.66	4.81		6.89	3	3.5	0.24
1.25 MN	mm	390	322	23	190	M120x4-4H	262	112	127	6
	inch	15.35	12.68	0.91	7.48		10.31	4.41	5.08	0.24

## Dimensions of U10M with force application and foot adapter



Nominal (rated) force:	Dimensions in	ØF	G	ØH	S	O	R
1.25 kN - 5 kN	mm	30.4	M16x2	-	91.5	114.5	60
	inch	1.2			3.6	4.51	2.36
5 kN - 25 kN	mm	31.5	M16x2	-	91.5	114.5	60
	inch	1.24			3.6	4.51	2.36
50 kN	mm	61.2	M33x2-6 g	67.3	131.5	174.5	160
	inch	2.41		2.65	5.18	6.87	6.3
125 kN	mm	67.3	M33x2-6 g	67.3	131.5	174.5	160
	inch	2.65		2.65	5.18	6.87	6.3
250 kN	mm	95.5	M42x2-6 g	95.5	162.3	217.3	160
	inch	3.76		3.76	6.39	8.56	6.3
500 kN	mm	122.2	M72x2-6 g	135	230.1	307.3	400
	inch	4.81		5.31	9.06	12.1	15.75
1.25 MN	mm	190	M120x4-4G	190	351.5	465.3	600
	inch	7.48		7.48	13.84	18.32	23.62

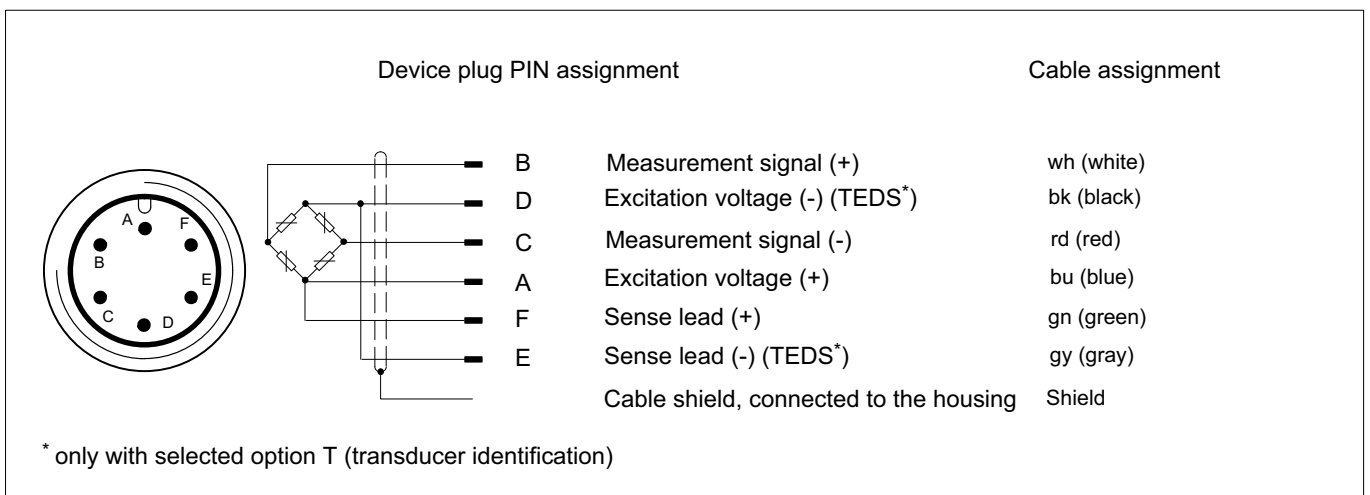
## Dimensions of U10M with knuckle eyes



Nominal (rated) force:	Ordering number for knuckle eye	a (approx.)		f (approx.)		W		ØB	
		mm	inch	mm	inch	mm	inch	mm	inch
1.25 kN - 25 kN	1-Z4/20kN/ZGUW	150	5.9	192	7.5	21	0.827	16	0.630
50 kN - 125 kN	1-ZGAM33F	263	10.35	392	15.4	35	1.387	50	1.969
250 kN	1-ZGAM42F	301	11.85	437	17.2	44	1.732	60	2.362
500 kN	1-ZGAM72F	439.5	17.3	643.5	25.3	60	2.362	90	3.543

Please note the information in the operating manual

## Pin and cable assignment



## Specifications (for 100% calibration)

Nominal (rated) force:	$F_{nom}$	kN	1.25	2.5	5	12.5	25	50	125	250	500	
		MN										
<b>Accuracy</b>												
<b>Accuracy class</b>			0.02			0.03		0.04			0.05	
<b>Relative reproducibility and repeatability errors without rotation</b>	$b_{rg}$	%	0.02									
<b>Hysteresis error at 0.4 <math>F_{nom}</math>, rel. to the full scale value</b>	$v_{0.4}$	%	0.02		0.03		0.04			0.05		
<b>Linearity deviation</b>	$d_{lin}$	%	0.02		0.025		0.035			0.05		
<b>Rel. zero point return</b>	$v_{w0}$	%	0.008									
<b>Relative creep</b>	$d_{cr, F+E}$	%	0.02									
<b>Effect of the bending moment at 10% <math>F_{nom} * 10mm</math></b>	$d_{Mb}$	%	0.01									
<b>Effect of lateral forces (lateral force = 10% of <math>F_{nom}</math>)</b>	$d_Q$	%	0.01									
<b>Temperature coefficient of the rated output</b>	$TC_S$	% / 10 K	0.015									
<b>Temperature coefficient of zero signal</b>	$TC_0$	% / 10 K	0.015									
<b>Rated electrical output</b>												
<b>Rated output (nominal)</b>	$C_{nom}$	mV/V	1				2					
<b>Relative zero signal error</b>	$d_{S,0}$	%	1									
<b>Deviation of the rated output (with "adjusted rated output" option)</b>	$d_C$	%	0.1									
<b>Rated output range (without "adjusted rated output" option)</b>	C	mV/V	1 ... 1.5				2 ... 2.5					
<b>Tension/compression rated output variation</b>	$d_{ZD}$	%	0.2									
<b>Input resistance</b>	$R_i$	$\Omega$	>345									
<b>Output resistance (without "adjusted rated output" option)</b>	$R_o$	$\Omega$	280 ... 360									
<b>Output resistance (with "adjusted rated output" option)</b>	$R_o$	$\Omega$	365									280 ... 360
<b>Tolerance of the output resistance in the "adjusted rated output" option</b>	$d_{Ra}$	%	$\pm 0.5 \Omega$									-
<b>Insulation resistance</b>	$R_{is}$	G $\Omega$	>2									
<b>Operating range of the excitation voltage</b>	$B_{U,G}$	V	0.5 ... 12									
<b>Reference excitation voltage</b>	$U_{ref}$	V	5									
<b>Connection</b>			6-wire circuit									

## Specifications (for 100% calibration)

<b>Nominal (rated) force:</b>	$F_{nom}$	kN	1.25	2.5	5	12.5	25	50	125	250	500	
		MN										
<b>Temperature</b>												
<b>Reference temperature</b>	$T_{ref}$	°C	23									
		°F	73.4									
<b>Nominal temperature range</b>	$B_{T,nom}$	°C	-10 ... +45									
		°F	14 ... 113									
<b>Operating temperature range</b>	$B_{T,G}$	°C	-30 ... +85									
		°F	-22 ... +185									
<b>Storage temperature range</b>	$B_{T,S}$	°C	-30 ... +85									
		°F	-22 ... +185									
<b>Characteristic mechanical quantities</b>												
<b>Maximum operating force</b>	$F_G$	% of $F_{nom}$	240									
<b>Force limit</b>	$F_L$		240									
<b>Breaking force</b>	$F_B$		>400									
<b>Torque limit</b>	$M_{G,max}$	N*m	30	60	125	315	635	1270	3175	5715	11430	28575
<b>Bending moment limit</b>	$M_{b,max}$		30	60	125	315	635	1270	3175	5715	11430	28575
<b>Static lateral force limit</b>	$F_Q$	% of $F_{nom}$	100									
<b>Nominal (rated) displacement</b>	$s_{nom}$	mm	0.02			0.03			0.04	0.05	0.06	0.09
<b>Fundamental frequency</b>	$f_G$	kHz	4.5	5.9	9.3	6.6	9.2	6.5	8.1	6.6	6.1	3.8
<b>Relative permissible oscillatory stress</b>	$f_{rb}$	% of $F_{nom}$	200									
<b>Rigidity</b>	F/S	$10^5$ N/mm	0.625	1.25	2.5	4.17	8.33	16.7	31.3	50	83.3	140
<b>General information</b>												
<b>Degree of protection as per EN 60529, with bayonet connector (standard version), socket connected to sensor</b>			IP67									
<b>Degree of protection as per EN 60529, with "threaded connector" option</b>			IP64									
<b>Degree of protection as per EN 60529, with "integrated cable" option</b>			IP67				IP68 <sup>1)</sup>					
<b>Spring element material</b>			Aluminum				Stainless steel					
<b>Measuring point protection</b>			Tightly sealed measuring body				Hermetically welded measuring body					
<b>Cable (only with "integrated cable" option)</b>			Six-wire connection, TPE electrical insulation. Outside diameter 5.4 mm									
<b>Cable length</b>		m	6 or 15									
<b>Mechanical shock resistance as per IEC 60068-2-6</b>												
<b>Number</b>		n	1000									
<b>Duration</b>		ms	3									
<b>Acceleration</b>		$m/s^2$	1000									
<b>Vibrational stress as per IEC 60068-2-27</b>												
<b>Frequency range</b>		Hz	5 ... 65									
<b>Duration</b>		min	30									
<b>Acceleration</b>		$m/s^2$	150									
<b>Weight (with adapter)</b>	m	kg	1.2			3		10		23	60	186
		lbs	2.65			6.61		22.05		50.71	132.28	409.2
<b>Weight (without adapter)</b>	m	kg	0.5			1.3		5		11	28	77
		lbs	1.1			2.87		11.02		24.25	61.73	169.4

<sup>1)</sup> Test condition: 1 m water column, 100 hours

## Specifications (for 200% calibration)

Nominal (rated) force:	$F_{nom}$	kN	1.25	2.5	5	12.5	25	50	125	250	500	
		MN										
Calibration force	$F_{cal}$	kN	2.5	5	10	25	50	100	250	500	1000	
		MN										
<b>Accuracy</b>												
Accuracy class			0.02			0.03		0.04			0.05	
Relative reproducibility and repeatability errors without rotation	$b_{rg}$	%	0.02									0.0
Hysteresis error at 0.4 $F_{cal}$	$v_{0.4}$	%	0.02			0.03		0.04			0.05	
Linearity deviation	$d_{lin}$	%	0.02			0.025		0.035			0.05	
Rel. zero point return			0.01									0.02
Relative creep	$d_{cr, F+E}$	%	0.02									
Effect of the bending moment at 10% $F_{cal}$ * 10mm	$d_{Mb}$	%	0.01									
Effect of lateral forces (lateral force = 10% of $F_{cal}$ )	$d_Q$	%	0.01									
Temperature coefficient of the rated output	$TC_S$	% / 10 K	0.015									
Temperature coefficient of zero signal	$TC_0$		0.0075									
<b>Rated electrical output</b>												
Rated output (nominal)	$C_{nom}$	mV/V	2				4					
Relative zero signal error	$d_{S,0}$	%	1									
Rated output range		mV/V	2 ... 3				4 ... 4.9					
Deviation of the rated output with "adjusted rated output" option	$d_C$	%	0.1									
Tension/compression rated output variation	$d_{ZD}$	%	0.2 (typ. 0.1)									
Input resistance	$R_i$	$\Omega$	>345									
Output resistance (without "adjusted rated output" option)	$R_o$	$\Omega$	280 ... 360									
Output resistance (with "adjusted rated output" option)	$R_o$	$\Omega$	365								280 ... 360	
Tolerance of the output resistance with "adjusted rated output" option	$d_{R_o}$	%	$\pm 0.5 \Omega$								-	
Insulation resistance	$R_{is}$	G $\Omega$	>2									
Operating range of the excitation voltage	$B_{U,G}$	V	0.5 ... 12									
Reference excitation voltage	$U_{ref}$	V	5									
Connection			6-wire circuit									
<b>Temperature</b>												
Reference temperature	$T_{ref}$	$^{\circ}C$	23									
		$^{\circ}F$	73.4									
Nominal temperature range	$B_{T,nom}$	$^{\circ}C$	-10 ... +45									
		$^{\circ}F$	14 ... 113									
Operating temperature range	$B_{T,G}$	$^{\circ}C$	-30 ... +85									
		$^{\circ}F$	-22 ... +185									
Storage temperature range	$B_{T,S}$	$^{\circ}C$	-30 ... +85									
		$^{\circ}F$	-22 ... +185									




## Specifications (for 200% calibration)

Nominal (rated) force:	$F_{nom}$	kN	1.25	2.5	5	12.5	25	50	125	250	500	
		MN										
Calibration force	$F_{cal}$	kN	2.5	5	10	25	50	100	250	500	1000	
		MN										
<b>Characteristic mechanical quantities</b>												
Maximum operating force	$F_G$	% of $F_{nom}$	240 (120% of the calibration force)									
Force limit	$F_L$		240 (120% of the calibration force)									
Breaking force	$F_B$		>400 (200% of the calibration force)									
Torque limit	$M_{G\ max}$	N*m	30	60	125	315	635	1270	3175	5715	11430	28575
Bending moment limit	$M_{b\ max}$		30	60	125	315	635	1270	3175	5715	11430	28575
Static lateral force limit	$F_Q$	% of $F_{nom}$	100									
Nominal (rated) displacement	$s_{nom}$	mm	0.02			0.03			0.04	0.05	0.06	0.09
Fundamental frequency	$f_G$	kHz	4.5	5.9	9.3	6.6	9.2	6.5	8.1	6.6	6.1	3.8
Relative permissible oscillatory stress	$f_{rb}$	% of $F_{nom}$	200 (100% of the calibration force)									
Rigidity	F/S	$10^5$ N/mm	0.625	1.25	2.5	4.17	8.33	16.7	31.3	50	83.3	140
<b>General information</b>												
Degree of protection as per EN 60529, with bayonet connector (standard version), socket connected to sensor			IP67									
Degree of protection as per EN 60529, with "threaded connector" option			IP64									
Degree of protection as per EN 60529, with "integrated cable" option			IP67				IP68 <sup>1)</sup>					
Spring element material			Aluminum				Stainless steel					
Measuring point protection			Tightly sealed measuring body				Hermetically welded measuring body					
Cable (only with "integrated cable" option)			Six-wire connection, TPE electrical insulation. Outside diameter 5.4 mm									
Cable length		m	6 or 15									
<b>Mechanical shock resistance as per IEC 60068-2-6</b>												
Number		n	1000									
Duration		ms	3									
Acceleration		m/s <sup>2</sup>	1000									
<b>Vibrational stress as per IEC 60068-2-27</b>												
Frequency range		Hz	5 ... 65									
Duration		min	30									
Acceleration		m/s <sup>2</sup>	150									
Weight (with adapter)	m	kg	1.2			3		10		23	60	186
		lbs	2.65			6.61		22.05		50.71	132.28	409.2
Weight (without adapter)	m	kg	0.5			1.3		5		11	28	77
		lbs	1.1			2.87		11.02		24.25	61.73	169.4

<sup>1)</sup> Test condition: 1 m water column, 100 hours

## U10M versions and ordering numbers

Code	Measurement range	Ordering number
1k25	1.25 kN	1-U10M/1.25kN
2k50	2.5 kN	1-U10M/2.5kN
5k00	5 kN	1-U10M/5kN
12k5	12.5 kN	1-U10M/12.5kN
25k0	25 kN	1-U10M/25kN
50k0	50 kN	1-U10M/ 50kN
125k	125 kN	1-U10M/125kN
250k	250 kN	1-U10M/250kN
500k	500 kN	1-U10M/500kN
1M25	1.25 MN	1-U10M/1.25MN

 Preferred version, available at short notice

The ordering number for the preferred types is 1-U10M..., the ordering number for customized versions is K-U10M...

No. of meas. bridges	Rated output	Calibration	Transducer identification	Mechanical design	Plug protection	El. connection Bridge A	El. connection Bridge B	Force application	Plug version for the Bridge A "fixed cable" option	Plug version for the Bridge B "fixed cable" option
Single bridge <b>SB</b>	Not adjusted <b>N</b>	100% (dyn.) <b>1</b>	Without TEDS <b>S</b>	With adapter <b>W</b>	Without <b>U</b>	Bayonet connector <b>B</b>		Without <b>O</b>		Free ends <b>Y</b>
Double bridge <b>DB</b>	Adjusted <b>J</b>	200% (stat.) <b>2</b>	With TEDS <b>T</b>	Without adapter <b>N</b>	With <b>P</b>	Threaded connector <b>G</b>		With <b>L</b>		D-sub connector, 15-pin <b>F</b>
						Fixed cable (6 m) <b>K</b>				HD-sub connector, 15-pin <b>Q</b>
						Fixed cable (15 m) <b>V</b>				Plug ME3106PEMV <b>N</b>
										ODU connector, 15-pin <b>P</b>
										M12 cable coupling, 8-pin <b>M</b>

Ordering example:

K-U10M-	25k0-	DB-	N-	2-	T-	N-	U-	V-	V-	O-	M-	M
U10, 25 kN nominal (rated) force		Double bridge	Not adjusted	Calibrated at 200% of nominal (rated) force	With TEDS	Without adapter	Without plug protecti- on	Bridge A: fixed cable, 15 m long	Bridge B: fixed cable, 15 m long	Without load application bolts	With M8 cable coupling (for connection to PAD)	With M8 cable coupling (for connection to PAD)

<b>Number of measuring bridges</b>	For reasons of redundancy, it is necessary in devices relevant to safety to check the plausibility of the measurement signal with a second measuring bridge (installed on the same measuring body). The signals are independently conditioned and evaluated using two separate measuring amplifiers. It is therefore also possible to connect two amplifiers with different characteristics.
<b>Rated output</b>	The exact rated output (nominal) is specified on the type plate. The transducer can also be adjusted to an exact rated output of 1.0 mV/V or 2.0 mV/V (if 200% calibration selected: 2 mV/V or 4 mV/V). The rel. rated output deviation is then 0.1% of the rated output (nominal). The rated output range of an unadjusted transducer lies between 1 and 1.5 or 2 and 2.5 mV/V. See Specifications for details.
<b>Calibration</b>	In the standard version, the transducer is designed for dynamic application up to an oscillation of $\pm 100\% F_{nom}$ . For quasi-static applications, the transducer can be used up to $200\% F_{nom}$ . The option is available to calibrate accordingly to $200\% F_{nom}$ .
<b>Transducer identification</b>	Integration of TEDS (integrated electronic data sheet) as per IEEE1451.4. If the relevant amplifier electronics are provided, the measuring chain will parameterize itself.
<b>Mechanical design</b>	The U10 can also be ordered as a flange assembly option. This version does not include a screwed-on adapter. During installation, please observe the instructions in the Operating Manual
<b>Plug protection</b>	Mechanical protection through the installation of an additional square profile around the connector. Dimensions in mm approx.: WxHxB: 30x30x20
<b>Electrical connection Bridge A</b>	The standard version is the device plug with a bayonet connection (PT02E10-6P-compatible). The option is also available to install a screw-fitting device plug (PC02E10-6P-compatible). A third variant where the force transducers are fitted with a fixed cable is also available. In this version, all U10 achieve degree of protection IP68 with a nominal (rated) force equal to or greater than 12.5 kN.
<b>Electrical connection Bridge B</b>	The standard version is the device plug with a bayonet connection (PT02E10-6P-compatible). The option is also available to install a screw-fitting device plug (PC02E10-6P-compatible). Both of the connection variants are often used for differentiation in the double-bridge version. A third variant where the force transducers are fitted with a fixed cable is also available. In this version, all U10 achieve degree of protection IP68 with a nominal (rated) force equal to or greater than 12.5 kN.

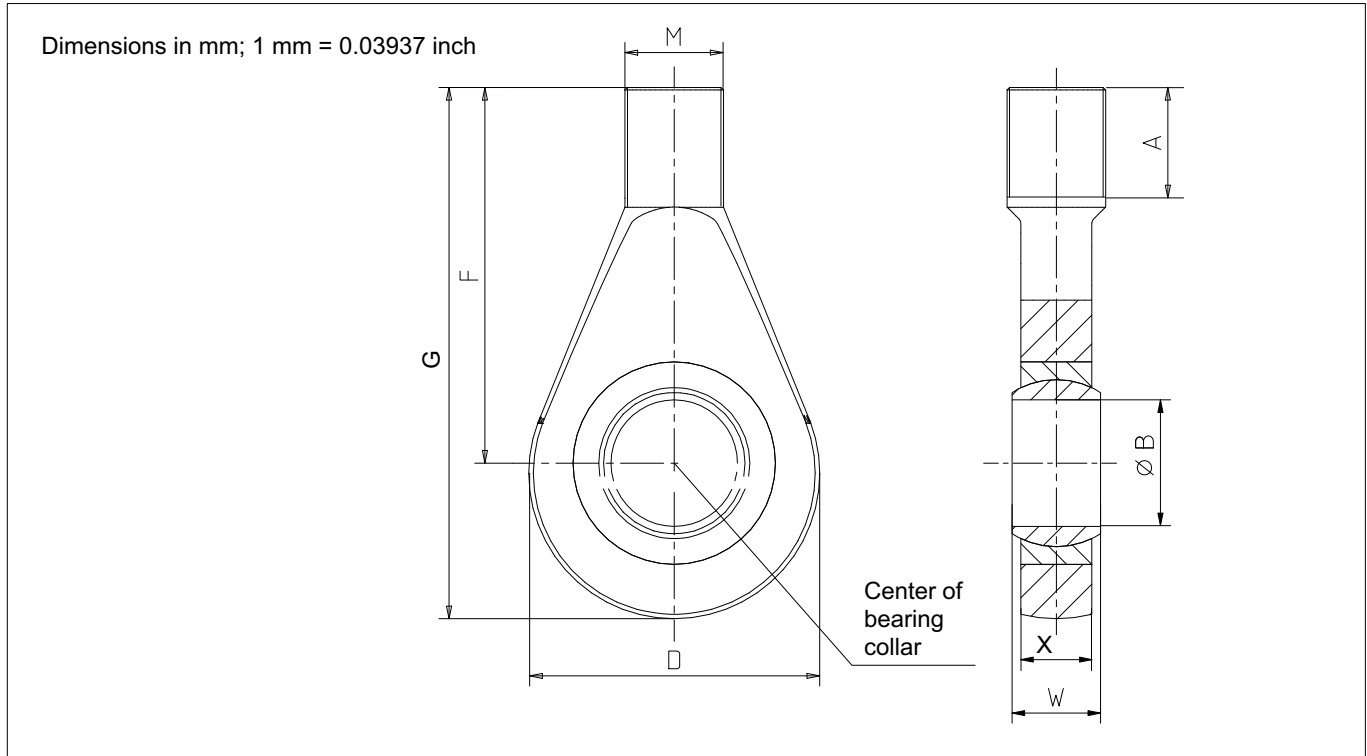
<b>Force application</b>	Mounted force application. Force application is not supplied as standard, although a force application bolt can be mounted upon request. Dimensions, see Page 4.
<b>Plug selection for the "fixed cable" option</b>	When ordering the U10M with an integrated cable, you can also order the connector assembly at the end of the cable, so that the force sensor can be directly connected to an amplifier. Y = free ends, no connector assembly F = D-sub connector, 15-pin, for connection to MGC+ (e.g. AP01) Scout Q = HD-sub connector, 15-pin, for connection to many HBM amplifiers of the Quantum series (MX410, Mx440, MX840) N = MS plug, for connection to HBM amplifiers such as MGC+ (Ap03) DMP or DK38 P = ODU connector, 14-pin. Degree of protection IP68. For connection to all HBM amplifiers of the Somat XR series suitable for measuring full bridge circuits. M = M8 cable coupling for connection to HBM PAD sensor-oriented electronics

## Accessories (to be ordered separately)

Cables/plugs	Ordering number
Connection cable KAB157-3; IP67 (with bayonet connection); 3 m long, TPE outer sheath; 6 x 0.25 mm <sup>2</sup> ; free ends, shielded, outside diameter 6.5 mm	1-KAB157-3
Connection cable KAB158-3; IP54 (with screw locking); 3 m long, TPE outer sheath; 6 x 0.25 mm <sup>2</sup> ; free ends, shielded, outside diameter 6.5 mm	1-KAB158-3
Cable, configurable with different plugs and lengths	K-KAB-F
Loose cable socket (bayonet connection)	3-3312.0382
Loose cable socket (screw locking)	3-3312.0354
Ground cable (400 mm long)	1-EEK4
Ground cable (600 mm long)	1-EEK6
Ground cable (800 mm long)	1-EEK8
Knuckle eye, M16 external thread	1-Z4/20kN/ZGUW
Knuckle eye, M33x2 external thread	1-ZGAM33F
Knuckle eye, M42x2 external thread	1-ZGAM42F
Knuckle eye, M72x2 external thread	1-ZGAM72F
Knuckle eye, M16 internal thread	1-Z4/20kN/ZGOW
Knuckle eye, M33x2 internal thread	1-ZGIM33F
Knuckle eye, M42x2 internal thread	1-ZGIM42F
Knuckle eye, M72x2 internal thread	1-ZGIM72F

## Accessories - Knuckle eyes

### ZGUW / ZGAM



Nominal (rated) force:	Knuckle eye ordering no.	A	$\varnothing B$	D	F	G	M	W	X	Weight
1.25 kN - 25 kN	1-Z4/20kN/ZGUW	41.7	16 <sup>+0.018</sup>	42	67.7	88.7	M16	21	15	0.2 kg
50 kN - 125 kN	1-ZGAM33F	35	50 <sup>-0.012</sup>	115	118	182.5	M33x2	35	28	2.5 kg
250 kN	1-ZGAM42F	45	60 <sup>-0.015</sup>	126	134	202	M42x2	44	36	3.8 kg
500 kN	1-ZGAM72F	70	90 <sup>-0.02</sup>	190	203	305	M72x2	60	50	12.6 kg

Knuckle eyes are only suitable for static tensile loading.

Subject to modifications.  
All product descriptions are for general information only. They are not to be understood as a guarantee of quality or durability.

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