

# U9C

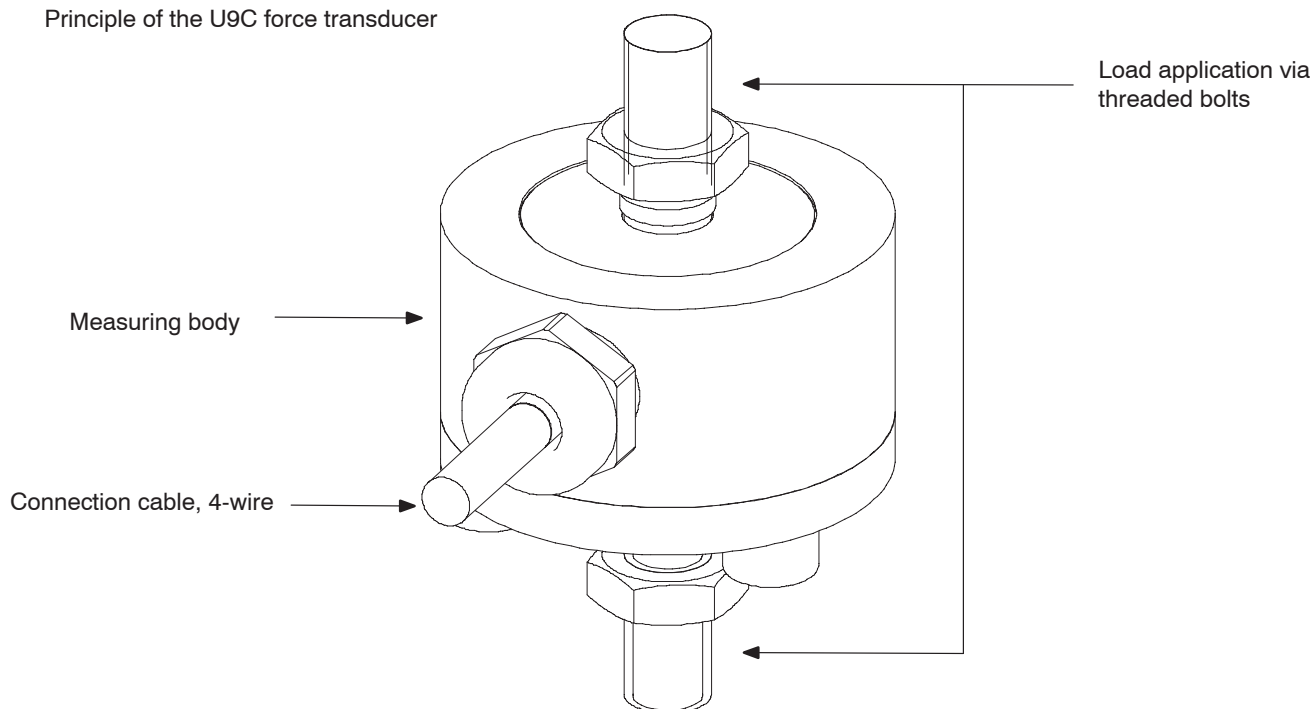
## Force Transducer



### Special features

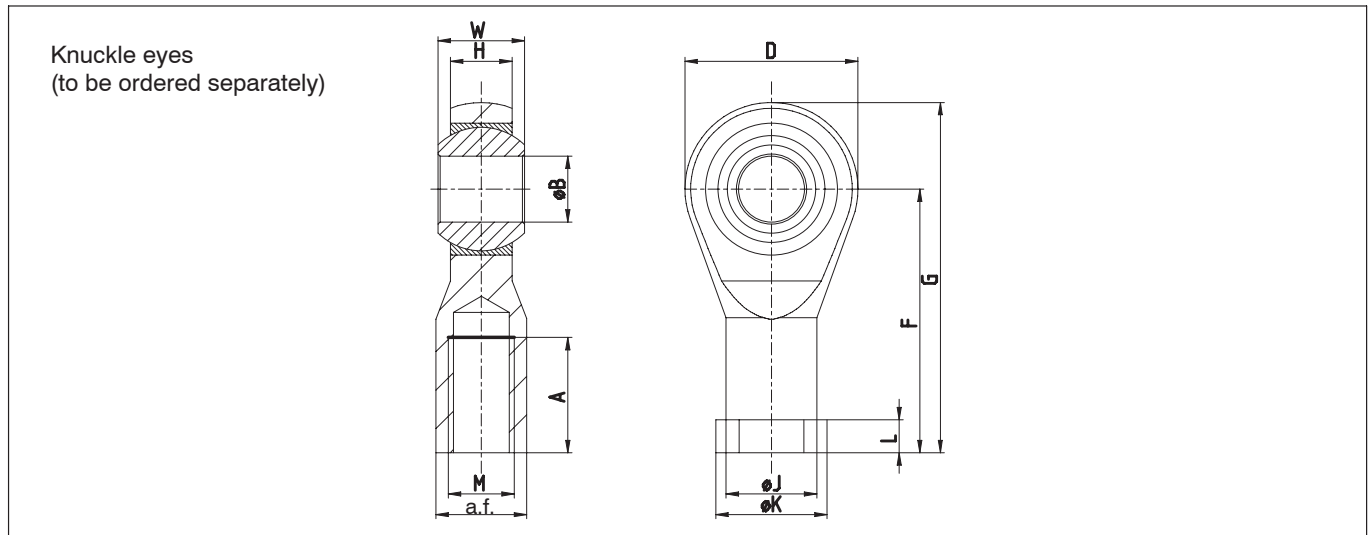
- Tensile/compressive force transducer
- Accuracy class 0.2
- Nominal (rated) forces 50 N – 50 KN
- Non-rusting, protection class IP67
- Configurable with different cable lengths, plug assembly on request

Principle of the U9C force transducer

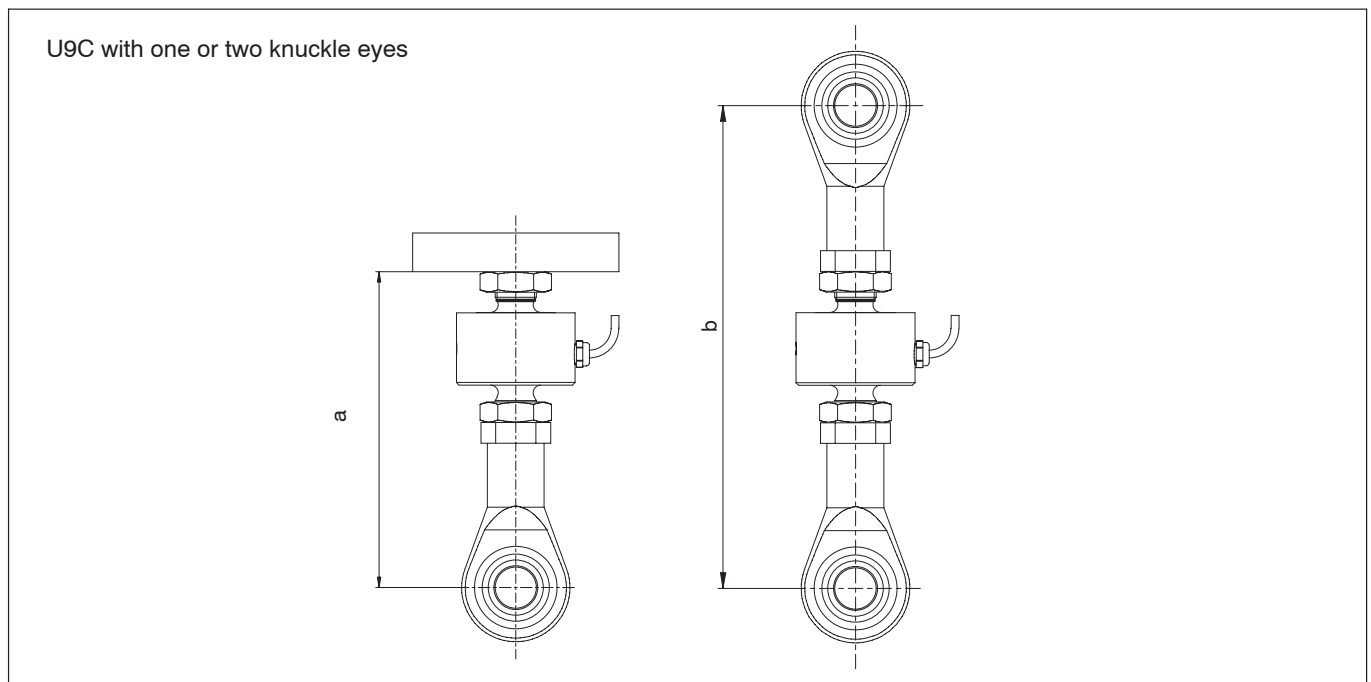




## Mounting accessories (dimensions in mm)



Nominal (rated) forces	Ordering number	A	B <sup>H7</sup>	D	F	G	H	J	K	L	M	a.f.	W
		[mm]											
50 N to 1 kN	1-Z8/100kg/ZGW	10	5	18	27	36	6	9	11	4	M5	9	8
2 kN to 20 kN	1-U9/20KN/ZGWR	20	10	28	43	57	10.5	15	19	6.5	M10	17	14
50 kN	1-U9a/50kN/ZGW	28	16	42	64	85	15	22	27	8	M16 x 1.5	22	21



Nominal (rated) force	a <sub>min</sub>	a <sub>max</sub>	b <sub>min</sub>	b <sub>max</sub>
	[mm]			
50 - 20 N	55	59	82	86
0.5 - 1 kN	56	61	83	88
2 - 20 kN	79	82	122	125
50 kN	116	116	180	180

Mounting dimensions of the U9C when using knuckle eyes  
B3812-1.0 en

# Specifications

Nominal (rated) force	F <sub>nom</sub>	N	50	100	200									
			kN				0.5	1	2	5	10	20	50	
<b>Accuracy</b>														
Accuracy class			0.2											
Relative reproducibility and repeatability errors without rotation	b <sub>rg</sub>	%	< 0.2											
Relative reversibility error	v <sub>0.5</sub>	%	< 0.2											
Non-linearity	d <sub>lin</sub>	%	< 0.2											
Relative creep (30 min)	d <sub>cr,F</sub>	%	< 0.2					< 0.1						
Effect of the bending moment at 10% F <sub>nom</sub> * 10 mm (typical)	d <sub>Mb</sub>	%	0.055	0.045	2.35					2.45	0.5			
<b>Effect of temperature on sensitivity</b>														
in the nominal (rated) temperature range	TK <sub>C</sub>	% / 10 K	0.2											
in the operating temperature range	TK <sub>C</sub>	% / 10 K	< 0.5											
<b>Effect of temperature on the zero signal</b>														
in the nominal (rated) temperature range	TK <sub>0</sub>	% / 10 K	< 0.2											
in the operating temperature range	TK <sub>0</sub>	% / 10 K	< 0.50											
<b>Electrical characteristics</b>														
Nominal (rated) sensitivity	C <sub>nom</sub>	mV/V	1											
Relative zero signal error	d <sub>s,0</sub>	mV/V	+/- 0.2											
Sensitivity error	d <sub>c</sub>	%	< +/-1 tensile , < +/-2 compressive											
Tensile/compressive sensitivity variation	d <sub>zd</sub>	%	< 2											
Input resistance	R <sub>i</sub>	Ω	300 - 400											
Output resistance	R <sub>o</sub>	Ω	> 350											
Insulation resistance	R <sub>is</sub>	Ω	> 1*10 <sup>9</sup>											
Operating range of the excitation voltage	B <sub>u,gt</sub>	V	0.5 - 12											
Reference excitation voltage	U <sub>ref</sub>	V	5											
Connection			4-wire circuit											
<b>Temperature</b>														
Reference temperature	t <sub>ref</sub>	°C	23											
Nominal (rated) temperature range	B <sub>t,nom</sub>	°C	-10 to +70											
Operating temperature range	B <sub>t,g</sub>	°C	-30 to +85											
Storage temperature range	B <sub>t,S</sub>	°C	-30 to +85											
<b>Characteristic mechanical quantities</b>														
Max. operating force	F <sub>G</sub>	% of F <sub>nom</sub>	200					150						
Limit force	F <sub>L</sub>		> 150											
Breaking force	F <sub>B</sub>		> 400											
Limit torque		Nm	1.7	3.4	2.5	3.7	4.5	28	23	11	11	35		
Limit bending moment when loading with nominal (rated) force		Nm	0.17	0.7	1.5	3.7	3.8	10.2	14.4	8.2	8.6	28.5		
Static lateral limit force when loading with nominal (rated) force <sup>2)</sup>	F <sub>q</sub>	% of F <sub>nom</sub>	100					50	100	50	18	6	8	
Nominal (rated) displacement		mm	0.008				0.018			0.03	0.05	0.09	0.14	
Fundamental resonance frequency		kHz	6.5	9.1	12.6	15.3	15.9	13.2	14.5	14.6	14.6	7.2		
Relative oscillation width		% of F <sub>nom</sub>	70					80					70	
<b>General information</b>														
Degree of protection per EN 60529 <sup>1)</sup>			IP67											
Spring element material			Steel											
Potting material			Silicone											
Cables			Four-wire circuit, PUR insulation											
Cable length		m	1.5, 3, 7, 12											
Weight		g	75					100					400	

<sup>1)</sup> 1 m water column; 0.5 h

<sup>2)</sup> Pure lateral force without bending moment

## Versions and ordering numbers

Code	Measuring range	Ordering number
<b>0050</b>	50 N	1-U9C/50N
<b>0100</b>	100 N	1-U9C/100N
<b>0200</b>	200 N	1-U9C/200N
<b>00K5</b>	0.5 kN	1-U9C/0.5KN
<b>01k0</b>	1 kN	1-U9C/1kN
<b>02k0</b>	2 kN	1-U9C/2kN
<b>05k0</b>	5 kN	1-U9C/5kN
<b>10k0</b>	10 kN	1-U9C/10kN
<b>20k0</b>	20 kN	1-U9C/20kN
<b>50k0</b>	50 kN	1-U9C/50kN

The ordering numbers shown in gray are preferred types, they can be delivered rapidly. All force transducers with 1.5 m cable, open ends and without TEDS.

The order no. for the preferred types is 1-U9C...

The order no. for customer-specific designs is K-U9C-...

The ordering number example **K-U9C-05k0-12m0-F-T** shown further below refers to a: U9C, 5 kN nominal (rated) force with 12 m cable, 15-pin Sub-D connector and TEDS

Cable length	Plug version	Transducer identification
1.5 m <b>01m5</b>	Free ends <b>Y</b>	With TEDS <b>T</b>
3 m <b>03m0</b>	15-pin Sub-D connector <b>F</b>	Without TEDS <b>S</b>
5 m <b>05m0</b>	MS3106PEMV connector <b>N</b>	
6 m <b>06m0</b>	15-pin Sub-HD connector <b>Q</b>	
7 m <b>07m0</b>		
12 m <b>12m0</b>		

K-U9C-	05k0-	12m0-	F-	T
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All cable lengths can be combined with all plugs.

TEDS can only be ordered in conjunction with a plug option. It is not possible to combine TEDS and free cable ends.

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