

U9C

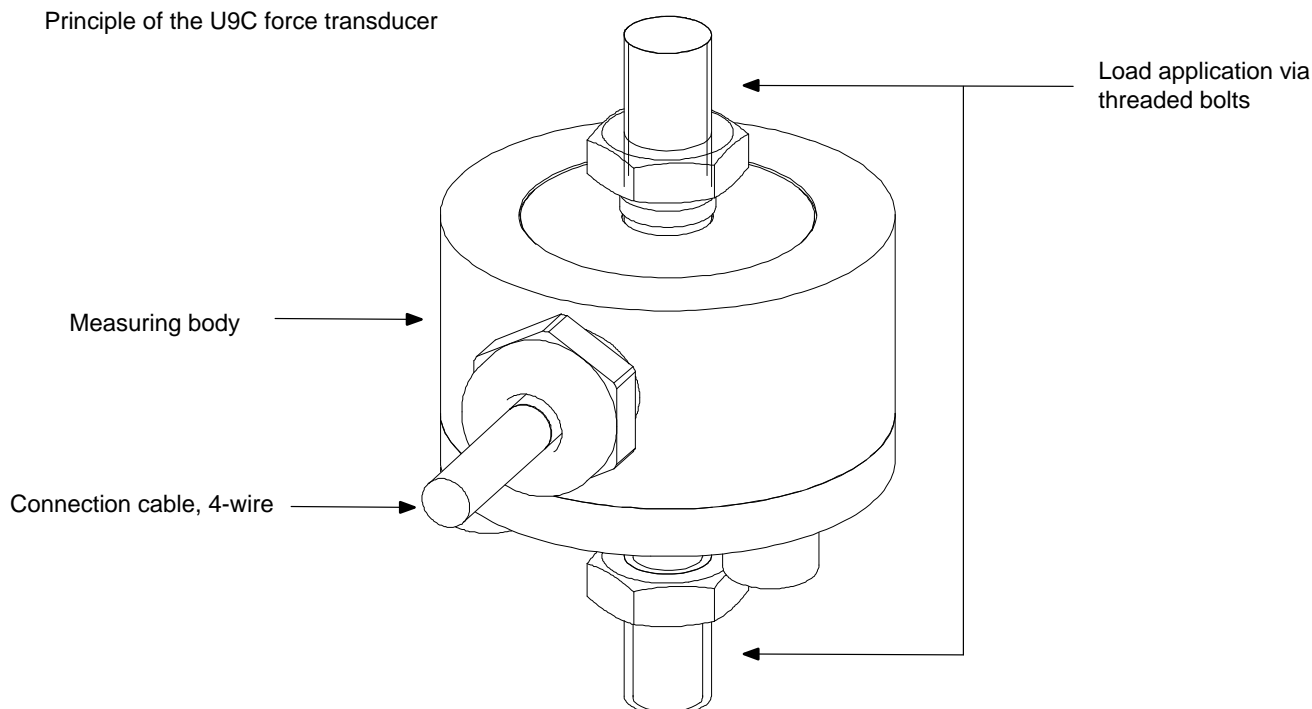
Force Transducer



Special features

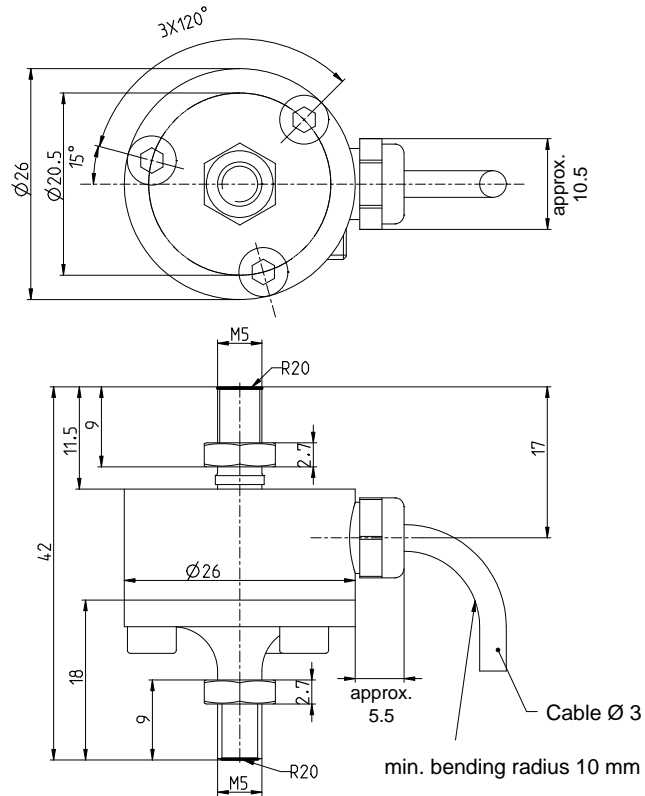
- Tensile/compressive force transducer
- Accuracy class 0.2
- Nominal (rated) forces 50 N – 50 KN
- Non-rusting, protection class IP67
- Configurable with different cable lengths, plug assembly on request
- High rigidity, particularly suited for dynamic measurement tasks

Principle of the U9C force transducer

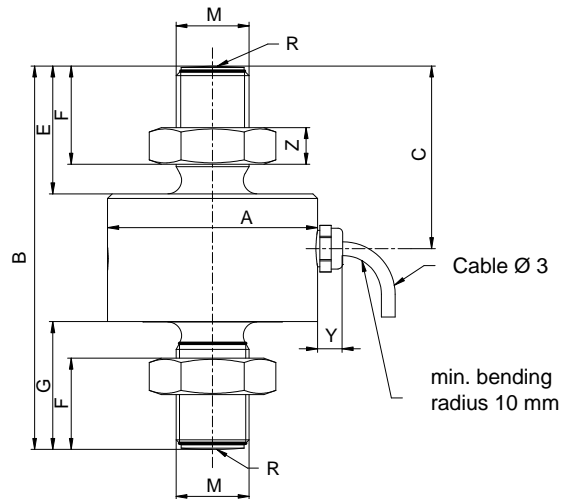


Dimensions (in mm)

U9C with nominal (rated) forces 50 N, 100 N and 200 N

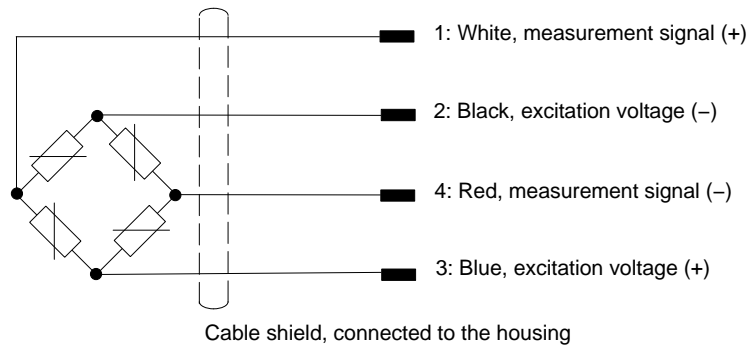


U9C with nominal (rated) forces 0.5 kN to 50 kN



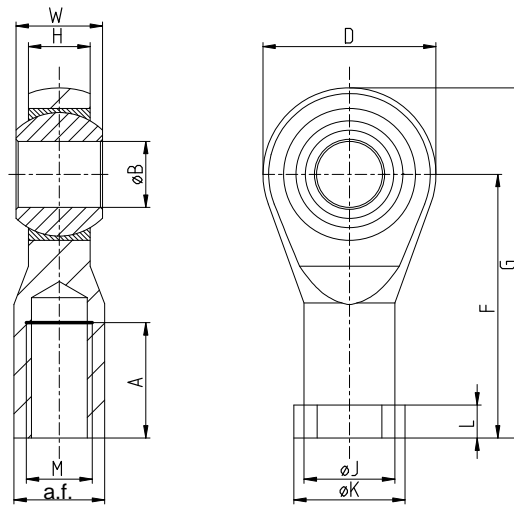
Nominal (rated) force of the U9C	A _{-0.1}	B	C	E	F	G	M	R	Y	Z
	[mm]									
0.5 kN to 1 kN	26	44.5	29.5	13	9.9	13.5	M5	20	approx. 5.5	2.7
2 kN to 20 kN	26	60	28.5	21	16	21	M10	40	approx. 5.5	5
50 kN	46	84	40	28	21.5	28	M16 x 1.5	80	approx. 5.5	8

U9C cable diagram



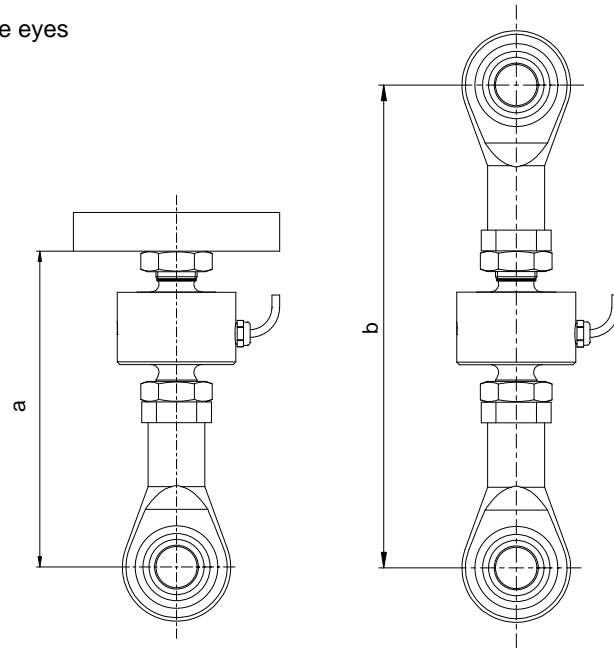
Mounting accessories (dimensions in mm)

Knuckle eyes
 (to be ordered separately)



Nominal (rated) forces	Ordering number	A	B ^{H7}	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

U9C with one or two knuckle eyes



Nominal (rated) force	a_{\min}	a_{\max}	b_{\min}	b_{\max}
	[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

Specifications

Nominal (rated) force	F _{nom}	N kN	50	100	200							
						0.5	1	2	5	10	20	50
Accuracy												
Accuracy class			0.2									
Relative reproducibility and repeatability errors without rotation	b _{rg}	%	< 0.2									
Relative reversibility error	v _{0.5}	%	< 0.2									
Non-linearity	d _{lin}	%	< 0.2									
Relative creep (30 min)	d _{cr,F}	%	< 0.2				< 0.1					
Effect of the bending moment at 10% F _{nom} * 10 mm (typical)	d _{Mb}	%	0.055	0.045	2.35				2.45	0.5		
Effect of temperature on sensitivity												
in the nominal (rated) temperature range	TK _C	% / 10 K	0.2									
in the operating temperature range	TK _C	% / 10 K	< 0.5									
Effect of temperature on the zero signal												
in the nominal (rated) temperature range	TK ₀	% / 10 K	< 0.2									
in the operating temperature range	TK ₀	% / 10 K	< 0.50									
Electrical characteristics												
Nominal (rated) sensitivity	C _{nom}	mV/V	1									
Relative zero signal error	d _{s,0}	mV/V	+/- 0.2									
Sensitivity error	d _c	%	< +/-1 tensile , < +/-2 compressive									
Tensile/compressive sensitivity variation	d _{zd}	%	< 2									
Input resistance	R _i	Ω	250 - 400				300 - 450					
Output resistance	R _o	Ω	200 - 400				145 - 450					
Insulation resistance	R _{is}	Ω	> 1*10 ⁹									
Operating range of the excitation voltage	B _{u,gt}	V	0.5 - 12									
Reference excitation voltage	U _{ref}	V	5									
Connection			4-wire circuit									
Temperature												
Reference temperature	t _{ref}	°C	23									
Nominal (rated) 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	-30 to +85									
Characteristic mechanical quantities												
Max. operating force	F _G	% of F _{nom}	200				150					
Limit force	F _L		> 200				> 150					
Breaking force	F _B		> 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 ²⁾	F _q	% of F _{nom}	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 _{nom}	70				80					70
General information												
Degree of protection per EN 60529 ¹⁾			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

1) 1 m water column; 0.5 h

2) Pure lateral force without bending moment

Versions and ordering numbers

Code	Measuring range	Ordering number
0050	50 N	1-U9C/50N
0100	100 N	1-U9C/100N
0200	200 N	1-U9C/200N
00K5	0.5 kN	1-U9C/0.5KN
01k0	1 kN	1-U9C/1KN
02k0	2 kN	1-U9C/2kN
05k0	5 kN	1-U9C/5kN
10k0	10 kN	1-U9C/10kN
20k0	20 kN	1-U9C/20KN
50k0	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 01m5	Free ends Y	With TEDS T
3 m 03m0	15-pin Sub-D connector F	Without TEDS S
5 m 05m0	MS3106PEMV connector N	
6 m 06m0	15-pin Sub-HD connector Q	
7 m 07m0		
12 m 12m0		

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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