

DATA SHEET

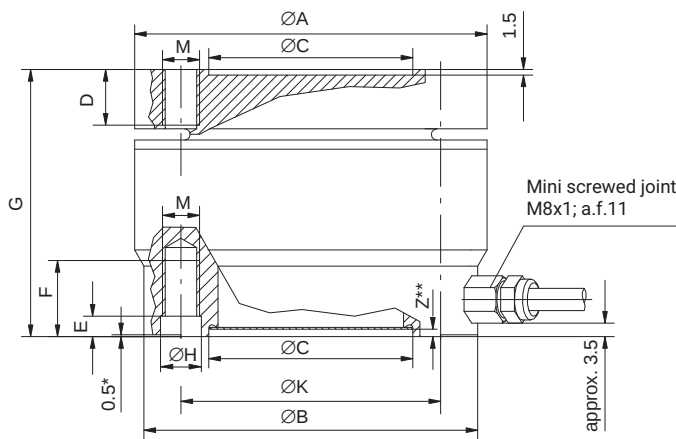
U3 Force Transducer

SPECIAL FEATURES

- Tensile / compressive force transducer
- Nominal forces 500 N ... 100 kN
- Integrated lateral force compensation
- Low overall height
- Flanged ends on both side
- Sturdy design through high dynamic load-carrying capacity
- Stainless steel housing



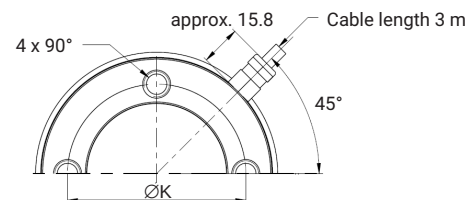
DIMENSIONS



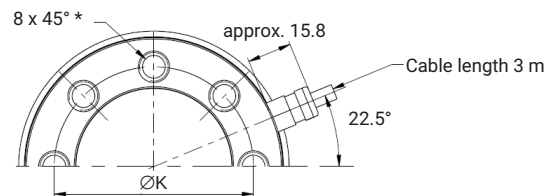
* Only at 50 kN and 100 kN

** Usable centering depth for $Z = 1$ mm

U3: 0.5 - 20 kN



U3: 50 kN/100 kN



Dimensions in mm (1 mm = 0.03937 inches)

Nominal force	$\varnothing A$	$\varnothing B$	$\varnothing C^{H8}$	D	E	F	G	$\varnothing H$	$\varnothing K^{+0.1}$	M	Z
U3/0.5-10 kN	54	50	34	8.5	5	13	47	5.5	42	M5	3
U3/20-100 kN	95	90.5	55	14	5.5	20.5	72	11	70	M10	

SPECIFICATIONS (VDI/VDE 2638)

Type			U3								
Nominal force	F _{nom}	kN	0.5	1	2	5	10	20	50	100	
Accuracy class			0.2								
Nominal sensitivity	C _{nom}	mV/ V	2								
Rel. sensitivity deviation compressive force	d _c	%	< ± 0.2								
Rel. tensile/compressive force sensitivity diff.	d _{zd}	%	<2	<1							
Relative zero signal deviation	d _{s,0}	%	<1								
Relative range of inversion (0.2*F _{nom} to F _{nom})	u _{0,5}	%	<0.2								
Linearity deviation compressive force	d _{lin}	%	<0.2								
Linearity deviation tensile force	d _{lin}	%	<0.3	<0.2							
Effect of temperature on sensitivity/10 K by reference to nominal sensitivity	TK _C	%	<0.2	<0.1							
Effect of temperature on zero signal/10 K by reference to nominal sensitivity	TK ₀	%	<0.1								
Effect of eccentricity at 1 mm	d _E	%	< ± 0.1								
Effect of transverse forces transverse force 10 % F _{nom} ¹⁾	d _Q	%	< ± 0.1								< ± 0.2
Relative creep over 30 min	d _{crF+E}	%	< ± 0.1								
Input resistance	R _e	Ω	>345								
Output resistance	R _a	Ω	300 - 400								
Isolation resistance	R _{is}	Ω	>2x 10 ⁹								
Reference excitation voltage	U _{ref}	V	5								
Operating range of the excitation voltage	B _{U,GT}	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								
Maximum operating force	F _G	%	130								
Limit force	F _L	%	130	150							130
Breaking force	F _B	%	>300								250
Static lateral limit force ¹⁾⁾	F _Q	%	100							80	50
Permissible eccentricity	e _G	mm	25					40	32	20	
Nominal displacement	S _{nom}	mm	<0.08					<0.1			
Fundamental resonance frequency	F _G	kHz	1.3	2.1	3.1	5.2	7.1	3.7	5.7	7.25	
Relative permissible vibrational stress	F _{rb}	%	100	160							
Weight		kg	approx. 0.6					approx. 2.5			
Degree of protection to DIN EN60529			IP65								
Cable length, six-wire connection		m	3								

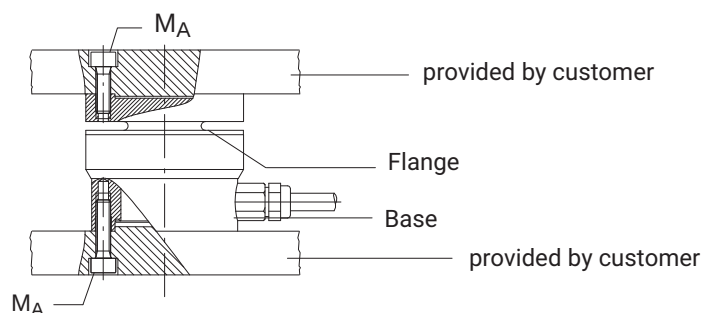
¹⁾ by reference to a force introduction point on the force-introduction surface

ACCESSORIES (TO ORDER)

'Complete adapter' for knuckle eye mounting		Knuckle eye 1-ZGUW	
0.5-10 kN	Order no. 2-9289.1956	0.5-10 kN	Order no. 1-U2A/1t/ZGUW
20 kN	Order no. 2-9289.1957	20 kN	Order no. 1-U2A/2t/ZGUW
50 kN	Order no. 2-9289.1958	50 kN	Order no. 1-U2A/5t/ZGUW
100 kN	Order no. 2-9289.2280	100 kN	Order no. 1-Z4/100kN/ZGUW

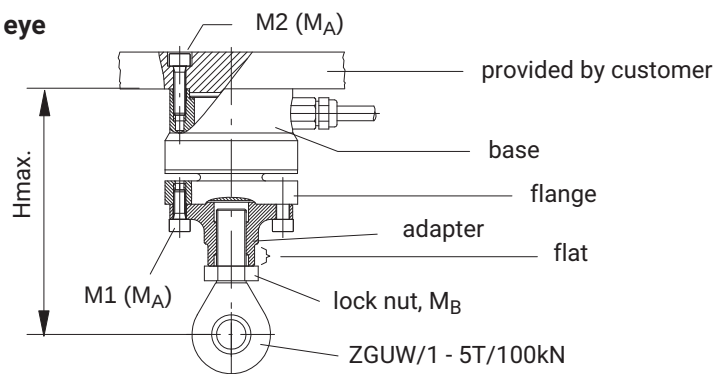
INSTALLATION AND ACCESSORIES

Installation without Adapter

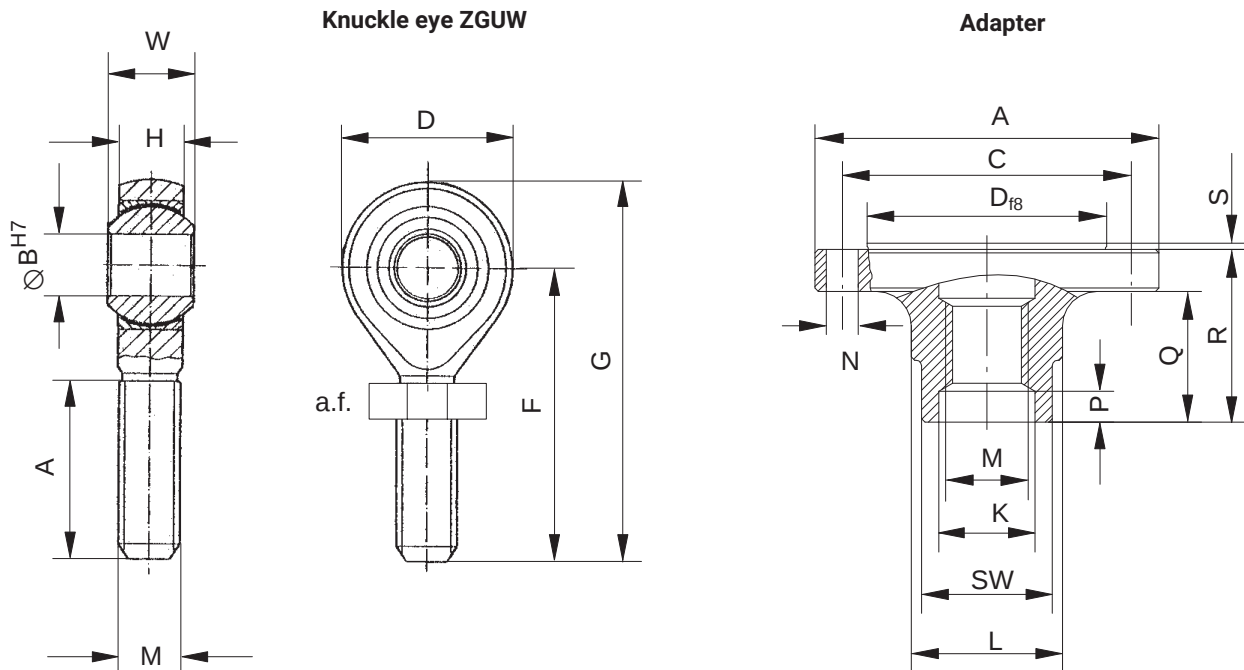


Nominal force (kN)	Starting torque M_A (N·m)	Thread
0.5 - 10	5	4 x M5
20	40	4 x M10
50	40	8 x M10
100	94	8 x M10-12.9 DIN912 galvanised

Installation with adapter and knuckle eye



Nominal force (kN)	H_{max} (mm)	Starting torque M_A (N·m)	Starting torque M_B (N·m)	Screws for adapter mounting	
				M1	M2
0.5 - 10	108	5	60	M5x12	M5
20	170	40	300	M10x25	M10
50	180	40	500	M10x25	M10
100	187	94	1000	M10x25	M10



Material: tempering steel, galvanised; rolled steel and PTFE/bronze fabric foil

KNUCKLE EYE

Nominal force (kN)	A	ØB ^{H7}	D	F	G	H	M	X	W	a./f.	Weight (kg)
0.5...10	33	12	32	54	70	12	M12	7	16	19	0.1
20	47	20	50	78	103	18	M20x1.5	9	25	30	0.4
50	57	25	60	94	124	22	M24x2	10	31	36	0.6
100	66	30 ^{H7}	70	110	145	25	M30x2	24	37	46	1.1

ADAPTER

Nominal force (kN)	ØA	ØC	ØD ^{f8}	M	ØK	ØL	ØN	P	Q	R	S	a./f.	Weight ¹⁾ (kg)
0.5...10	50	42	34	M12	14	22	4x5.5	4.5	19	25.1	0.9	19	0.15
20	90	70	55	M20x1.5	22	34	4x11	4.5	15	40.1	0.9	30	1.3
50	90	70	55	M24x2	26	42	8x11	6	20	45.1	0.9	36	1.45
100	90	70	55	M30x2	32	47	8x11	6	20	45.1	0.9	41	1.45

¹⁾ including screws