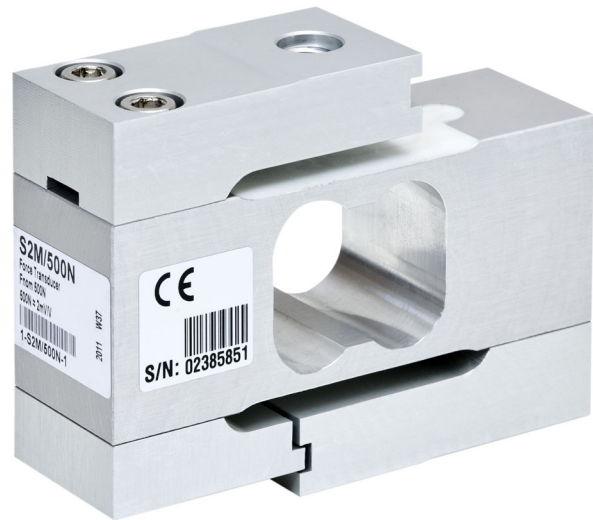


DATA SHEET

# S2M Force Transducer

## SPECIAL FEATURES

- Tensile/compressive force transducer
- Accuracy class 0.02
- Nominal (rated) forces: 10 N ... 1000 N
- High protection class (IP67)
- High lateral force stability
- Six-wire circuit
- Cable suitable for drag chains, resistant to most oils and operating materials

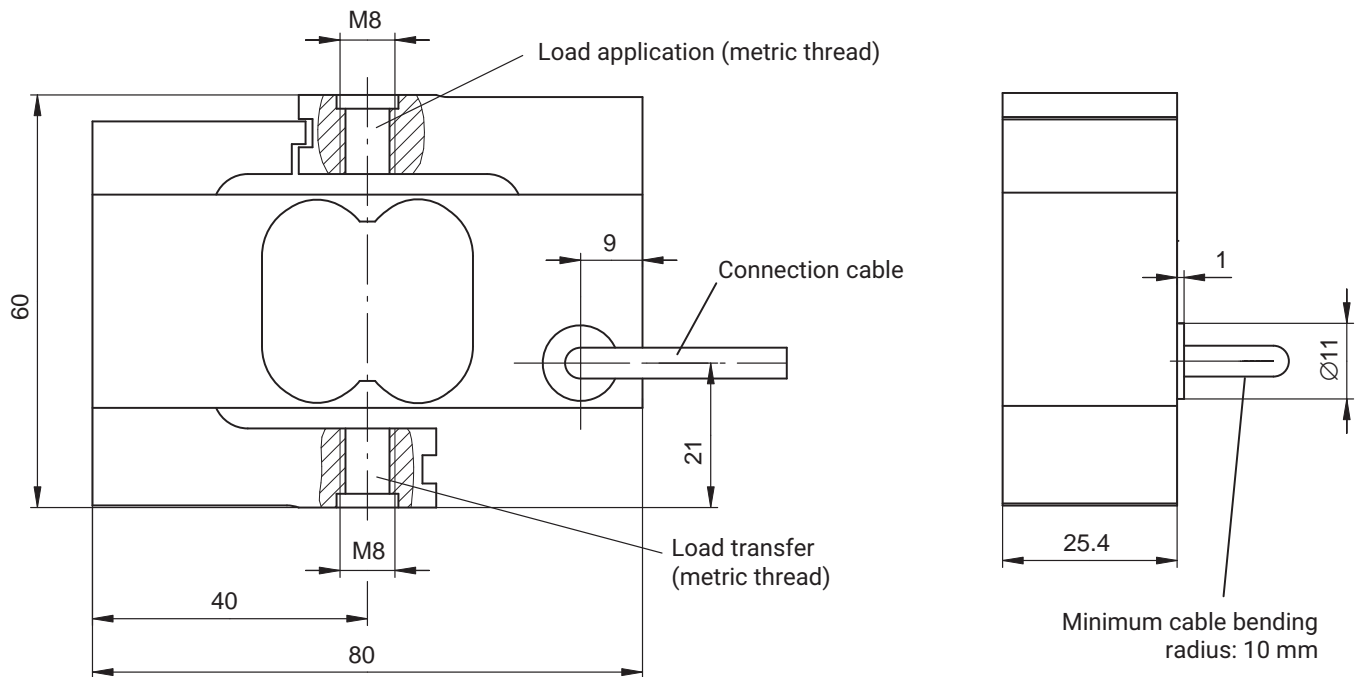


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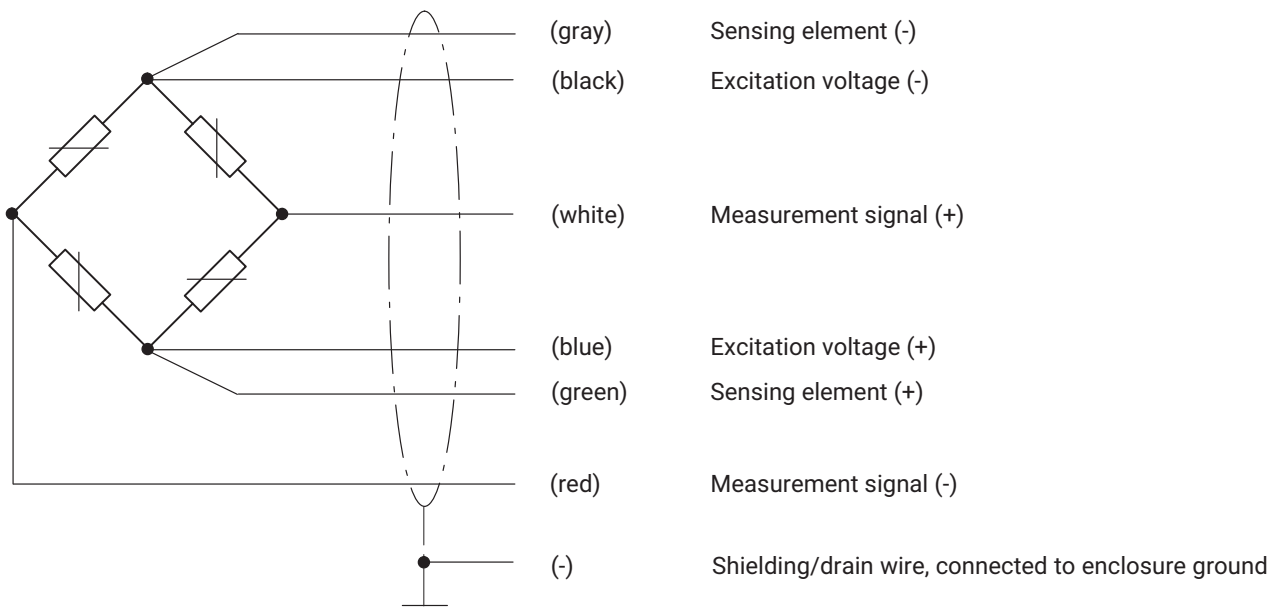
## DIMENSIONS AND PRINCIPLE OF THE S2M FORCE TRANSDUCER

Dimensions in mm (1 mm = 0.03937 inches)



## CABLE ASSIGNMENT (SIX-WIRE CONFIGURATION)

With this cable assignment, the output voltage at the measuring amplifier is positive in the pressure direction when the transducer is loaded.



SPECIFICATIONS (DATA PER VDI/VDE/DKD 2638 STANDARDS)

Type			S2M						
Nominal (rated) force	$F_{nom}$	N	10	20	50	100	200	500	1000
<b>Accuracy</b>									
Accuracy class			0.02						
Relative reproducibility and repeatability errors without rotation	$b_{rg}$	%	0.02						
Relative reversibility error	$v$		0.02						
Non-linearity	$d_{lin}$		0.02						
Relative creep over 30 min.	$d_{cr, F+E}$		0.02						
Effect of the bending moment at 10% $F_{nom}$ * 10 mm	$d_{Mb}$		0.02						
Effect of lateral forces (lateral force = 10% $F_{nom}$ )	$d_Q$		0.02						
Effect of temperature on sensitivity	$TK_C$	% / 10 K	0.02						
Effect of temperature on zero signal	$TK_0$		0.02						
<b>Electrical characteristic values</b>									
Nominal (rated) sensitivity	$C_{nom}$	mV/V	2						
Relative zero signal error	$d_{S,0}$	%	5						
Relative sensitivity error	$d_c$		0.25						
Rel. tensile/compression sensitivity variation	$d_{ZD}$		0.1						
Input resistance	$R_i$	$\Omega$	> 345						
Output resistance	$R_o$		350 ± 50						
Insulation resistance	$R_{is}$	G $\Omega$	> 2						
Operating range of the excitation voltage	$B_{U,G}$	V	0.5 ... 12						
Reference excitation voltage	$U_{ref}$		5						
Connection			Six-wire circuit						
<b>Temperature</b>									
Nominal (rated) temperature range	$B_{T,nom}$	$^{\circ}C$	-10 ... +45						
Operating temperature range	$B_{T,G}$		-10 ... +70						
Storage temperature range	$B_{T,S}$		-10 ... +85						
<b>Mechanical characteristic quantities</b>									
Max. operating force	$F_G$	%	150						
Limit force	$F_L$		1000						
Breaking force	$F_B$		1000						
Limit torque	$M_L$	Nm	4	8	25	28			
Limit bending moment	$M_{b,perm}$		6	25	34	50	71	95	125
Static lateral limit force	$F_Q$	% of $F_{nom}$	100						
Nominal (rated) displacement	$s_{nom}$	mm	0.27	0.21	0.18	0.15	0.14	0.16	0.21
Fundamental resonance frequency	$f_G$	Hz	113	187	321	426	545	649	665
Relative permissible oscillatory stress	$F_{rb}$	% of $F_{nom}$	140						
<b>General data</b>									
Degree of protection per EN 60529			IP 67						
Measuring body material			Aluminum						
Potting material			Silicone						
Cable			Six-wire circuit, PUR insulation, drag chain compliant						
Cable length		m	6						
Mass (with cable)	$m$	kg	0.5						

## VERSIONS AND ORDERING NUMBERS

Nominal (rated) force	Ordering number	
10 N	1-S2M/10N-1	<p>The ordering numbers shown in gray are preferred types. They can be delivered rapidly. All preferred types with 6 m cable, open ends and without TEDS.</p> <p>The ordering number for the preferred types is 1-S2M...</p> <p>The ordering number for customer-specific designs is K-S2M-MONT...</p> <p>The ordering number example <b>K-S2M-MONT-010N-03M0-M-T</b> shown below is a: S2M, with a nominal (rated) force of 10 N, 3 m cable, with M12 plug and TEDS.</p>
20 N	1-S2M/20N-1	
50 N	1-S2M/50N-1	
100 N	1-S2M/100N-1	
200 N	1-S2M/200N-1	
500 N	1-S2M/500N-1	
1000 N	1-S2M/1000N-1	

Nominal (rated) force	Cable length	Electrical output	Transducer identification
10 N <b>010N</b>	1,5 m <b>01M5</b>	Free ends <b>Y</b>	Without TEDS <b>S</b>
20 N <b>020N</b>	3 m <b>03M0</b>	D-sub-HD15, 15-pin <b>F</b>	With TEDS <b>T</b>
50 N <b>050N</b>	6 m <b>06M0</b>	HD-Sub plug, 15-pin <b>Q</b>	
100 N <b>100N</b>		ME3106PEMV plug <b>N</b>	
200 N <b>200N</b>		ODU plug, 14-pin <b>P</b>	
500 N <b>500N</b>		M12 plug, 8-pin <b>M</b>	
1000 N <b>001K</b>			

### Ordering example

<b>K-S2M-MONT-</b>	<b>010N-</b>	<b>03M0-</b>	<b>M-</b>	<b>T</b>
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<b>Cable length</b>	The S2M is equipped with a cable 6 m long in the standard version. You can also order the force transducer with cable lengths of 1.5 m or 3 m.
<b>Electrical output</b>	<p>We can mount one of the following plugs on the S2M, if requested:</p> <p>Y = free ends, no plug assembly</p> <p>F = D-sub-HD15, for connecting to MGC+ (e.g. AP01), Scout</p> <p>Q = HD-sub-HD15, for connecting to many HBK amplifiers of the Quantum series (MX410, Mx440, MX840)</p> <p>N = MS plug, for connecting to HBK measuring amplifiers, such as MGC+ (AP03), DMP or DK38</p> <p>P = ODU plug, 14-pin, degree of protection IP68, for connecting to all HBK measuring amplifiers of the SomatXR series that are suitable for measuring full bridge circuits</p> <p>M = M12 plug, 8-pin, suitable for measuring amplifiers digiBOX and DSE</p>
<b>Transducer identification</b>	<p>Integration of TEDS (Transducer Electronic Data Sheet) chip as per IEEE1451.4.</p> <p>If the relevant amplifier electronics are provided, the measurement chain will parameterize itself. TEDS is only possible when a plug is fitted, open ends and TEDS cannot be combined.</p>

## ACCESSORIES

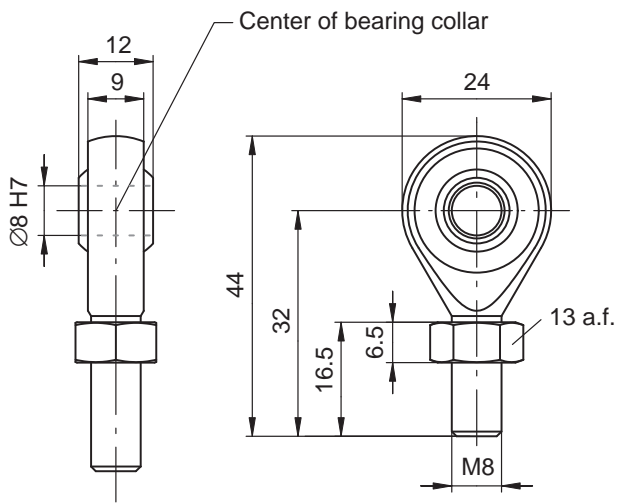
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Accessories not included in the scope of supply.

Accessories	Ordering number
Knuckle eye ZGW	1-UR/200KG/ZGW
Load button ZL	1-U1R-200KG/ZL
Thrust piece EDO3	1-EDO3/1KN
Ground cable (400 mm long)	1-EEK4
Ground cable (600 mm long)	1-EEK6
Ground cable (800 mm long)	1-EEK8

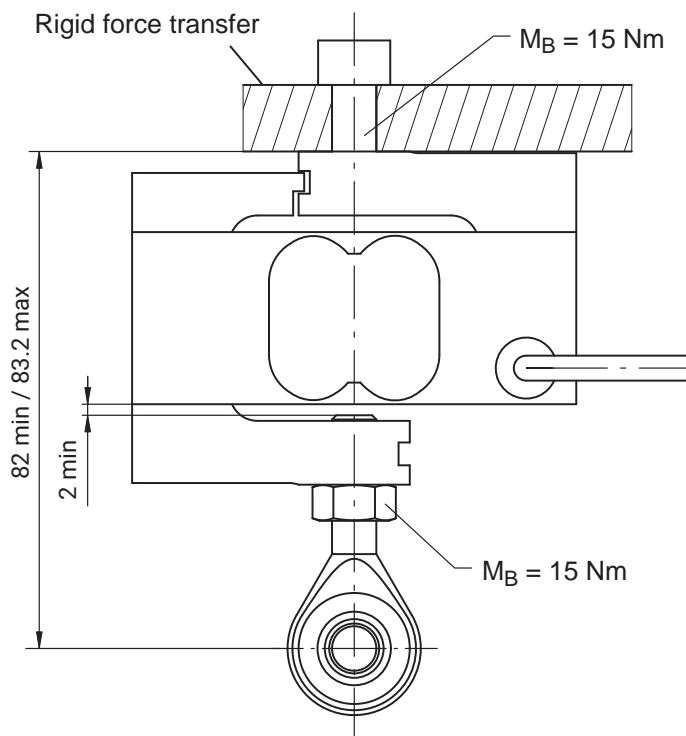
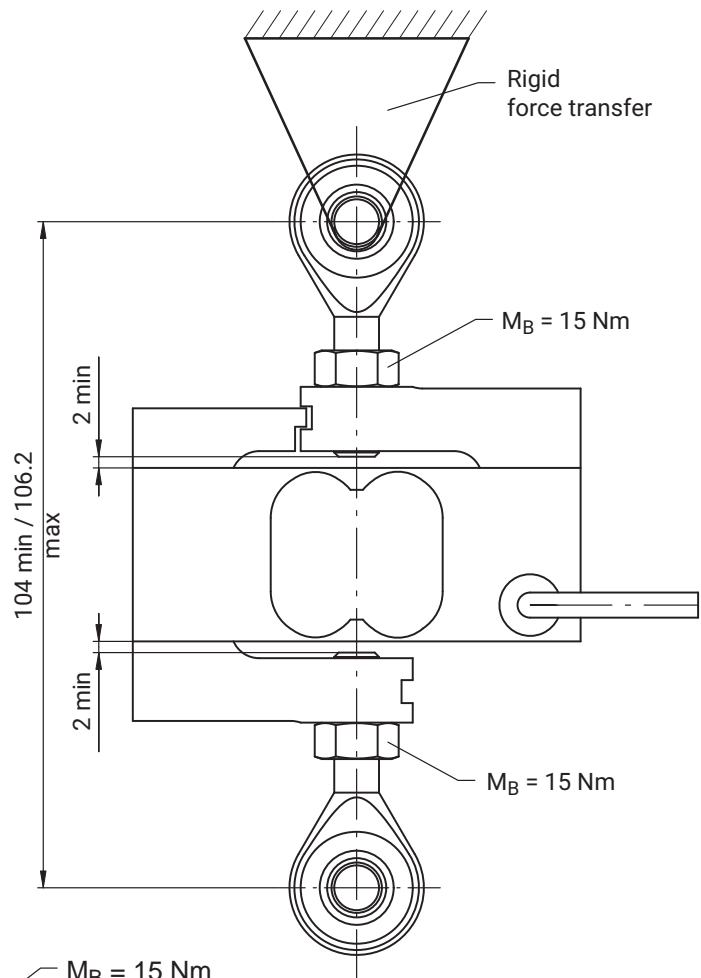
## Force application parts for tensile loading

Dimensions in mm (1 mm = 0.03937 inches)



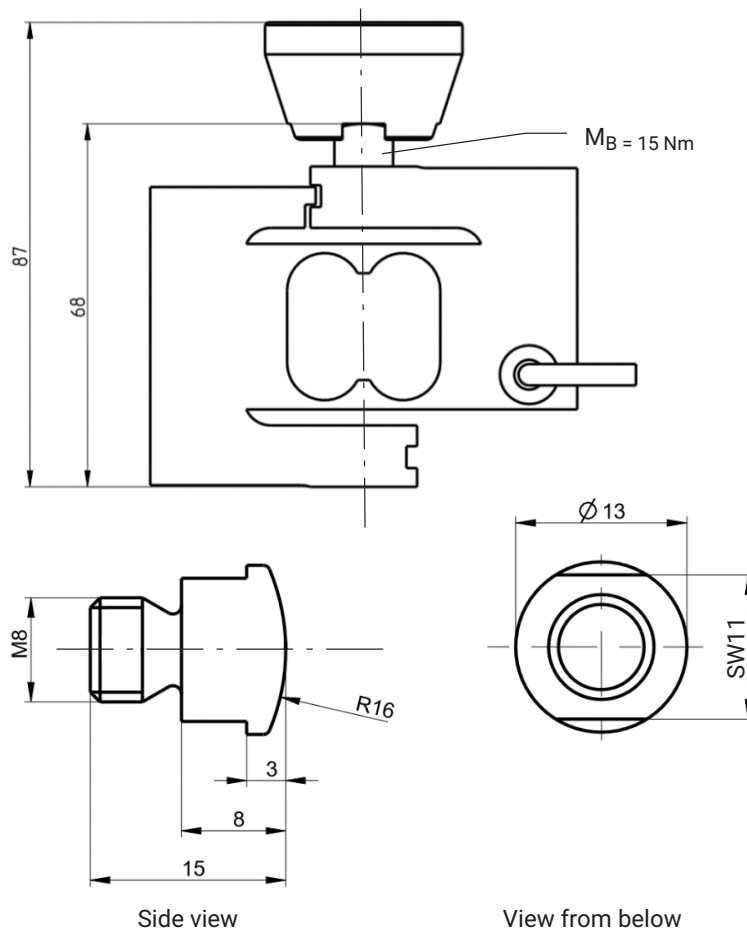
ZGW knuckle eye  
Order no. 1-U1R/200KG/ZGW

Material: Tempered steel, galvanized  
roller bearing steel  
PTFE/bronze corrugated foil



## Force application parts for compressive loading

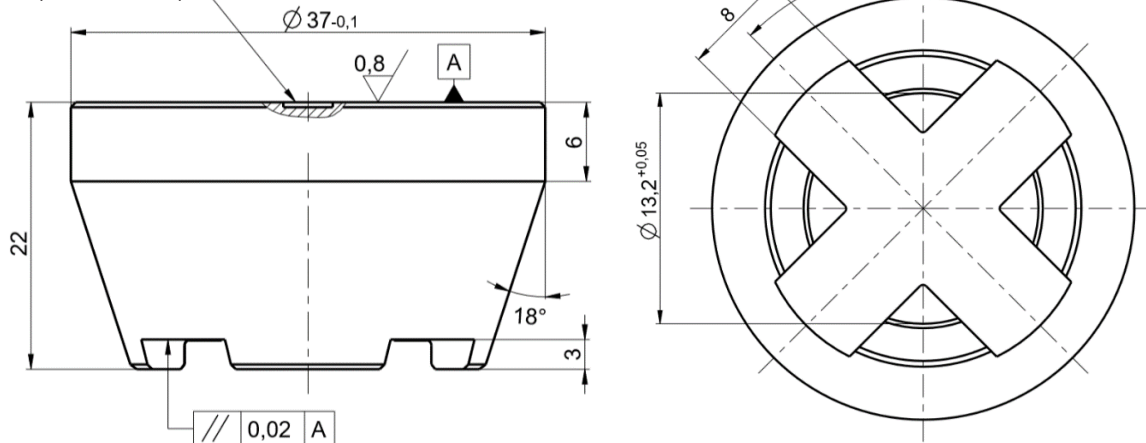
Dimensions in mm  
(1 mm = 0.03937 inches)



Load button  
Order no.: 1-U1R-200kg/ZL  
Material: stainless steel

Thrust piece ED03  
Order no.: 1-ED03/1kN  
Material: quenched and tempered steel  
For use with a load button

Screw-in depth  $\varnothing 5 \times 0.5$  deep



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