

**HOTTINGER BALDWIN MESSTECHNIK**  
**HBM Mess- und Systemtechnik GmbH**



## ***Mounting instructions***

**Force Transducers**  
**U2B**

B 20.U2B.20 en



<b>Contents</b>	<b>page</b>
<b>Safety instructions</b> .....	<b>4</b>
<b>1 Instructions for use</b> .....	<b>6</b>
<b>2 Structure and operating mode</b> .....	<b>6</b>
2.1 Measuring device .....	6
2.2 Housing .....	7
2.3 Measurement process, output signal .....	7
2.4 Compensating for disturbance variables .....	8
<b>3 Operation on site</b> .....	<b>8</b>
3.1 Ambient temperature .....	8
3.2 Humidity .....	8
3.3 Ambient pressure .....	9
3.4 Chemical influences .....	9
3.5 Contamination .....	9
<b>4 Mechanical installation</b> .....	<b>10</b>
4.1 Important precautions during installation .....	10
4.2 General installation guidelines .....	10
4.3 U2B installation for tensile loading .....	11
4.4 U2B installation for tensile and compressive loading .....	12
<b>5 Electrical connection</b> .....	<b>13</b>
5.1 Notes on cabling .....	13
5.2 Six-wire connection .....	14
5.3 Four-wire connection .....	15
<b>6 Technical Data</b> .....	<b>16</b>
<b>7 Dimensions</b> .....	<b>17</b>
<b>8 Copy of Declaration of Conformity</b> .....	<b>20</b>

## Safety instructions

### Use in accordance with the regulations

The U2B force transducer is to be used *exclusively for force measurement tasks and directly related control tasks*. Use for any additional purpose shall be deemed to be **not** in accordance with the regulations.

In the interests of safety, the transducer should only be operated as described in the Mounting Instructions. It is also essential to observe the appropriate legal and safety regulations for the application concerned during use. The same applies to the use of accessories.

The transducer is not a safety element within the meaning of its use as intended. Proper and safe operation of this transducer requires proper transportation, correct storage, assembly and mounting and careful operation and maintenance.

### General dangers of failing to follow the safety instructions

The U2B force transducer corresponds to the state of the art and is fail-safe. The transducers can give rise to remaining dangers if they are inappropriately installed and operated by untrained personnel.

Everyone involved with the installation, commissioning, maintenance or repair of a force transducer must have read and understood the Mounting Instructions and in particular the technical safety instructions.

### Remaining dangers

The scope of supply and performance of the transducer covers only a small area of force measurement technique. In addition, equipment planners, installers and operators should plan, implement and respond to the safety engineering considerations of force measurement technique in such a way as to minimise remaining dangers. Prevailing regulations must be complied with at all times. There must be reference to the remaining dangers connected with force measurement technique.

In these mounting instructions remaining dangers are pointed out using the following symbols:



Symbol: **DANGER**

*Meaning:* **Maximum danger level**

Warns of an **imminently** dangerous situation in which failure to comply with safety requirements **will result in** death or serious physical injury.



Symbol: **WARNING**

*Meaning:* **Potentially dangerous situation**

Warns of a **potentially** dangerous situation in which failure to comply with safety requirements **can result in** death or serious physical injury.



Symbol: **CAUTION**

*Meaning:* **Possibly dangerous situation**

Warns of a **potentially** dangerous situation in which failure to comply with safety requirements **could result in** damage to property or some form of physical injury.



Symbol: **NOTE**

Means that important information about the product or its handling is being given.



Symbol: **CE mark**

The CE mark enables the manufacturer to guarantee that the product complies with the requirements of the relevant EC directives (see Declaration of Conformity at the end of this document).

## **Unauthorised conversions and modifications are prohibited**

The transducer must not be modified from the design or safety engineering point of view except with our express agreement. Any modification shall exclude all liability on our part for any damage resulting therefrom.

## **Qualified personnel**

These transducers are only to be installed and used by qualified personnel, strictly in accordance with the technical data and the safety requirements and regulations listed below. It is also essential to observe the appropriate legal and safety regulations for the application concerned. The same applies to the use of accessories.

Qualified personnel means persons entrusted with the installation, fitting, commissioning and operation of the product who possess the appropriate qualifications for their function.

## **Conditions on site**

Protect the transducer from damp and weather influences such as rain, snow, etc.

## **Maintenance**

The U2B force transducer is maintenance free.

## **Accident prevention**

Although the specified nominal force in the destructive range is several times the full scale value, the relevant accident prevention regulations from the trade associations must be taken into consideration.

## 1 Instructions for use

The U2B series of force transducers is suitable for measuring tensile forces and pressures. They measure static and dynamic forces with great accuracy and therefore require careful handling. Transport and installation of the devices require special attention for the same reason. Transducers can be permanently damaged if knocked or dropped.

These force transducers are manufactured from stainless steel and are suitable for use under harsh environmental conditions and severe operating constraints. They are maintenance free and can even be installed in places that are hard to reach. Their measuring signals can be transmitted to remote measuring equipment.

The perfect seal that protects the sensitive strain gauge applications has to be maintained by the housing in all conditions. The base of the housing must therefore be treated with special care, since it is very thin.

The permitted limits for mechanical, thermal and electrical loadings are given in the Technical Data. Please take these points into account whenever planning for measurement arrangements and when installing or operating the equipment.

## 2 Structure and operating mode

### 2.1 Measuring device

The measuring device is a stainless steel measuring spring to which strain gauges (SG) are applied. The measuring device simultaneously forms the upper part of the transducer housing (Fig. 2.1). The SGs are arranged so that four of them are stretched and the other four are compressed when a force is applied to the transducer. The transducer circuit contains correcting and compensating resistors, in order to reject undesirable influences on the zero signal and sensitivity.

## 2.2 Housing

The housing with its integral measuring spring is closed by a floor plate welded to its underside. The measuring spring on the force transducer has a threaded pin which acts as a force conductor. A removable adapter is screwed to the lower part of the housing and acts as a force conductor via jointed eyelets (see Section 7).

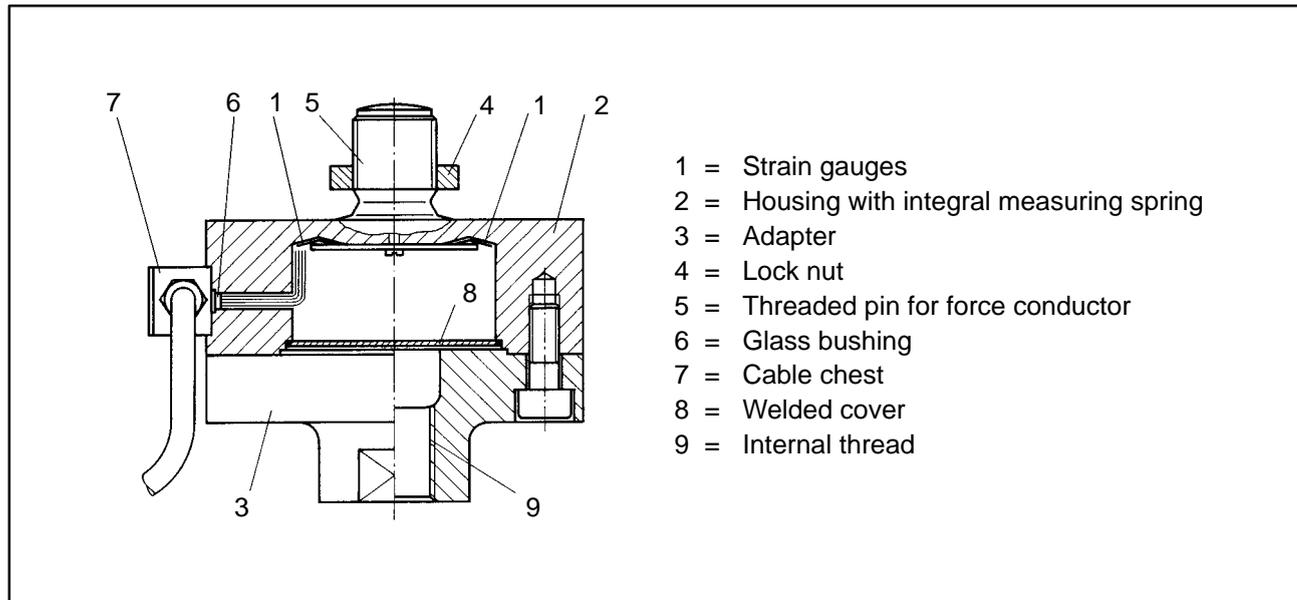


Fig. 2.1: Schematic diagram: U2B

## 2.3 Measurement process, output signal

A force acting upon the transducer will elastically deform the SGs applied to the measuring body. Their electrical resistance then changes in proportion to the change in their length. This disturbs the balancing of the measurement system wired in the form of a Wheatstone bridge, resulting in an output voltage  $U_A$  at contacts 1 and 4 if a bridge excitation voltage  $U_B$  is present at points 2 and 3 on the bridge.

The ratio between the voltages,  $U_A/U_B$ , expressed in mV/V, is a measure of the sensitivity of the force transducer. The change in output voltage  $U_A$  is linear to the acting force. Provided the force transducer is connected in accordance with Fig. 5.1 and as specified in the User Manual for the amplifier concerned, compressive forces are displayed with a positive operating sign and tensile forces are shown with a negative operating sign. The force transducer is electrically connected in 6-wire mode (see Section 5.2). To reverse the polarity, the white and red wires in the cable should be transposed.

## 2.4 Compensating for disturbance variables

The geometry of the measuring body and the positioning of the SGs ensure that the output signal from the transducer suffers only minimal distortion if the force being measured is affected by superimposed lateral forces and/or torsional and bending moments. The specifications for this can be found in the Technical Data. In the interests of greater accuracy, however, it is generally better to try to prevent spurious loadings of this kind altogether. The U2B also has separate lateral force compensation which reduces lateral force influences to a minimum (see Technical Data).

The influence of temperature on the zero signal and sensitivity are compensated. Changes in ambient pressure have the same effect as additive (subtractive) forces (see Section 3.3).

## 3 Operation on site

### 3.1 Ambient temperature

For optimum measurement results, keep to the rated temperature range. The best conditions are constant or very slowly changing temperatures. Measurement errors due to temperature are the result of uneven warming (e.g. radiant heat) or cooling. A radiation shield and all-round heat insulation provide noticeable improvements. However, they should not be allowed to form any kind of force leakage.

### 3.2 Humidity

Extremes of humidity or tropical conditions have no effect on the measurement capability of the transducer, provided they are within the specified limit values (protection system IP67 in accordance with DIN EN 60529).

**Note:**

Moisture should not be allowed to penetrate the free end of the connector cable.

### 3.3 Ambient pressure

Ambient pressure should be between 0 and 5 bar. Please note that changes of pressure alter the zero point:

Nennlast	20 kN	500 N	1 kN	2 kN	5 kN	10 kN
Zero point modification [% sensitivity/10 mbar]	$\leq \pm 0.004$	$\leq \pm 0.141$	$\leq \pm 0.071$	$\leq \pm 0.035$	$\leq \pm 0.014$	$\leq \pm 0.007$

Nennlast	50 kN	100 kN	200 kN
Zero point modification [% sensitivity/10 mbar]	$\leq \pm 0.002$		

### 3.4 Chemical influences

Transducer housings are manufactured from stainless steel. They can be used in a corrosive environment.

### 3.5 Contamination

Dust, dirt and other foreign bodies should not be allowed to accumulate to such an extent that part of the measured force is diverted to the housing so as to falsify the measured value (force leakage).

## 4 Mechanical installation

### 4.1 Important precautions during installation

- Handle the transducer carefully.
- Do not overload the transducer.
- During or directly after installation the transducer should be bridged with a 50 mm<sup>2</sup> stranded copper wire (a highly flexible earth cable (EEK) obtainable from the HBM delivery programme). The cable is screwed to the top and bottom of the transducer. This prevents welding current from flowing across the transducer and welding the force triggering point.
- Where there is a risk that the transducer might burst and endanger personal safety if overloaded, additional safety measures need to be taken.

### 4.2 General installation guidelines

The forces must as far as possible act on the transducer in precisely the direction of measurement. Torsional and bending moments, eccentric loadings and lateral forces lead to measurement errors, and if the limit values are exceeded the transducer can be destroyed. Lateral forces include components corresponding to process quantities that may be obliquely introduced. As an aid to installation, HBM supplies jointed eyelets for series U2B transducers as in Section 7. These aids to installation prevent the introduction of torsional and bending moments as well as lateral and oblique loadings into the transducer.

### 4.3 U2B installation for tensile loading

To introduce tensile loading, there is provision for a threaded pin on top of the housing and an internal thread on the adapter.

Jointed eyelets are suitable for use in the case of quasi-static loading (stress reversal  $\leq 10$  Hz). In the case of dynamic loading with a higher frequency, flexible tension bars should be used.

The adapter (3) can be removed by undoing the screws (5). The transducer can then be screwed onto the upper part for taking tensile measurements. Care must be taken to make the bearing surface on the mounting plate flat. For attachment use screws (5) of at least A2-70 quality (Fig. 4.1). To withdraw them again use torque  $M_{A(5)}$  (see dimension chart). When the adapter is removed the zero signal on the force transducer can change by  $\ll 1\%$ . Make compensating adjustments for this when connecting the electronics. When measuring dynamic forces, the screw connections to the threaded pin and internal thread must be properly pretightened when the transducer is free of load: the tightening torque  $M_{A(4)}$  is listed in the dimension chart. It may be exceeded by not more than 10%. If a lock-nut is used, the torque must on no account be conducted through the transducer.

U2B Rated force (kN)	Weight approx.	Starting torque	
		$M_{A(4)}$	$M_{A(5)}$
0.5 to 10	0.8kg	60Nm	5Nm
20	2.9kg	300Nm	35Nm
50	4.3kg	500Nm	60Nm
100	10.7kg	2500Nm	60Nm
200	15.9kg	4500Nm	150Nm

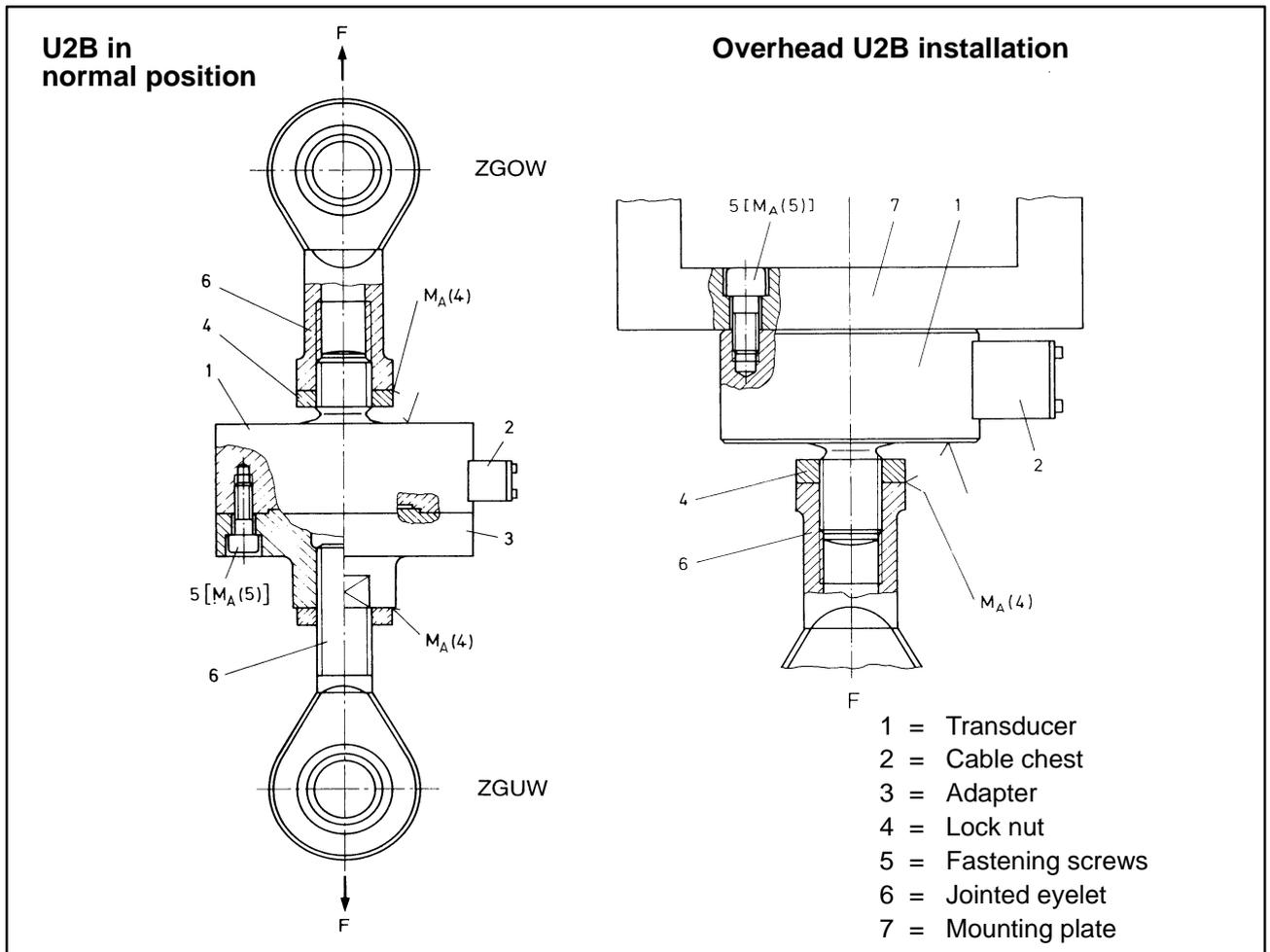


Fig. 4.1: Installing the U2B

#### 4.4 U2B installation for tensile and compressive loading

The transducers can measure axial forces in torsional as well as compressive directions. Alternating loads are also captured perfectly. For this purpose the transducer must be installed without axial play. For dynamic sustained loading the upper and lower threaded connectors must be pretightened with lock nuts to more than the maximum load. For this purpose tighten the lock nuts fully under nominal load in the tensile direction. If a lock-nut is used, the torque must on no account be conducted through the transducer.

## 5 Electrical connection

### 5.1 Notes on cabling

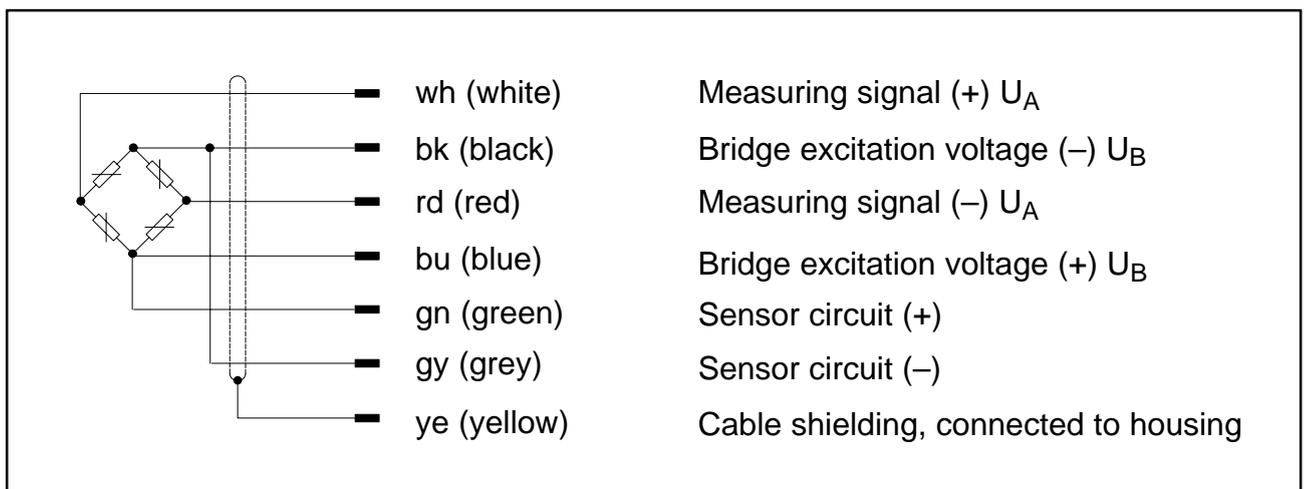
Electrical and magnetic fields often cause noise voltage induction in the measuring circuit. This interference arises most commonly from high-power transmission lines running parallel to the measuring circuits, but may also come from nearby protective contacts or electric motors. Noise voltage induction can also occur on galvanic paths, especially if the measuring equipment is earthed at several points.

Please note the following instructions:

- Use only shielded, low-capacitance measuring cable from HBM.
- Lay measuring cable so that it is not parallel to high-tension lines or control circuits. If this is not possible (e.g. in cable shafts), protect the measuring cable with e.g. steel conduit and keep it at least 50 cm away from the other cables. High-tension lines or control circuits should be twisted (15 turns per metre).
- Stray fields from transformers, motors and protective contacts must be avoided.
- Do not multi-earth transducers, amplifiers and display devices. All devices in the measuring system must be connected to the same protection circuit.
- Link the connector cable shield to the transducer housing.
- Connection diagram, earthing scheme (Green-Line)

## 5.2 Six-wire connection

The **grey** and **green** wires that are provided in addition to the conventional four-wire connection pick off the actual value of the bridge excitation voltage on the transducer and feeds it back to the appropriate measurement electronics. This then corrects the excitation voltage so that the set value is available to the transducer loss-free. Possible changes in the resistance of the cable due to temperature or a cable extension are therefore constantly corrected, even during a measurement. It is therefore possible to extend the cable without any problem.



**Fig. 5.1:** U2B pin assignment

### Earthing scheme (Green-Line)

The cable shielding is connected in accordance with the Greenline scheme. Under this scheme, the measuring system is enclosed in a Faraday cage. Inside this cage, electromagnetic interference has no effect on the measuring signal. The transformer section is protected from electromagnetic influences by special electronic coding procedures.

When there is interference due to potential differences (balance current), the connections between zero operating voltage and the body of the casing must be separated on the amplifier and a potential equalisation line must be fitted between the housing and the amplifier housing (highly flexible stranded wire, 10mm<sup>2</sup> line cross-section).

## 5.3 Four-wire connection

If the force transducers have to be operated with an amplifier in four-wire connection, then connect the **black** wire with the **grey** and the **green** wire with the **blue**. This changes transducer sensitivity by -0.022%. The change in the temperature coefficient of sensitivity ( $TK_C$ ) is negligible. Changing the cable length changes the sensitivity. There is no correction for the effects of temperature on the cable. In fact, even with four-wire connection the accuracy obtained is adequate for many measurement technology requirements.

## 6 Technical Data

### Technical Data in accordance with VDI/VDE 2638

Force transducer type	U2B											
	F <sub>nom</sub>	kN	0.5	1	2	5	10	20	50	100	200	
Rated force	F <sub>nom</sub>	kN	0.5	1	2	5	10	20	50	100	200	
Accuracy class			0.2	0.1								
Rated sensitivity	C <sub>nom</sub>	mV/V	2									
Rel. sensitivity variance Tension/compression	d <sub>C</sub>	%	<0.2/1.5	<0.2/0.5								
Rel. zero signal variance	d <sub>s,0</sub>	%	<<1									
Rel. inversion span (0.2F <sub>nom</sub> to F <sub>nom</sub> )	u	%	<0.2	<0.15								
Linearity variation	d <sub>lin</sub>	%	<<0.2	<<0.1								
Influence of temperature on sensitivity/10K relative to sensitivity	TK <sub>C</sub>	%	0.1									
Influence of temperature on the zero signal/10K relative to sensitivity	TK <sub>0</sub>	%	0.05									
Influence of eccentricity (1mm)	d <sub>E</sub>	%	0.05									
Influence of lateral force (Lateral force 10% F <sub>nom</sub> ) <sup>*</sup>	d <sub>Q</sub>	%	0.1									
Rel. leakage over 30 min	d <sub>crF+E</sub>	%	<<± 0.06									
Input resistance	R <sub>i</sub>	Ω	>345									
Output resistance	R <sub>o</sub>	Ω	300...400									
Insulation resistance	R <sub>is</sub>	Ω	>2·10 <sup>9</sup>									
Reference excitation voltage	U <sub>ref</sub>	V	5									
Service range of excitation voltage	B <sub>U,G,T</sub>	V	0.5...12									
Rated temperature range	B <sub>t,nom</sub>	°C	-10...+70									
Service temperature range	B <sub>t,G</sub>	°C	-30...+85 (120 <sup>***</sup> )									
Storage temperature range	B <sub>t,S</sub>	°C	-50...+85									
Reference temperature	t <sub>ref</sub>	°C	+23									
Max. operating force	(F <sub>G</sub> )	%	130	150								
Breaking force	(F <sub>B</sub> )	%	>300									
Static lateral force limit <sup>*</sup>	(F <sub>Q</sub> )	%	25 (100 <sup>**</sup> )									
Nominal displacement	S <sub>nom</sub>	mm	<<0.1					<<0.07		<<0.09		
Fundamental resonance frequency	f <sub>G</sub>	kHz	4	6	8.7	14	17.5	8	8.5	6	5.6	
Weight		kg	0.8					2.9	4.3	10.7	15.9	
Rel. permissible vibration loading	F <sub>rb</sub>	%	100	160								
Protection system in accordance with DIN EN 60529	IP67 (IP68 <sup>****</sup> )											
Length of cable, 6-wire connection <sup>*****</sup>	3m					6m			12m			

\* relative to a force triggering point 20mm over the membrane

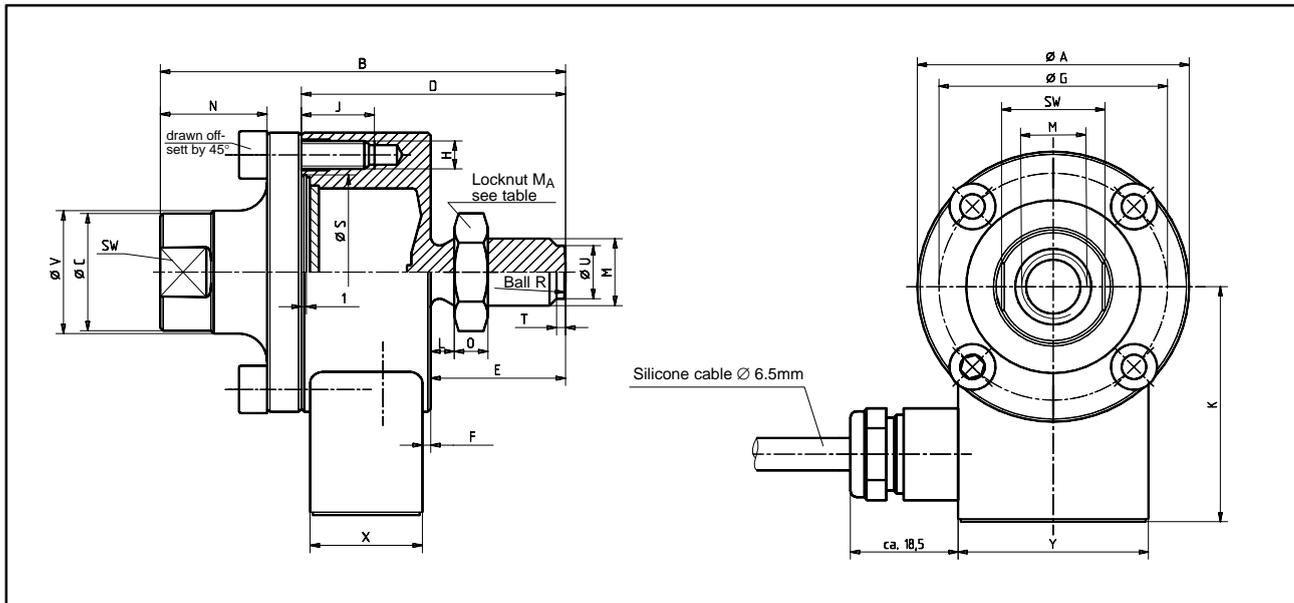
\*\* Mechanical lateral force compensator on request

\*\*\* Class 120 version optional

\*\*\*\* IP68 version optional

\*\*\*\*\* Cable shielding connected to housing

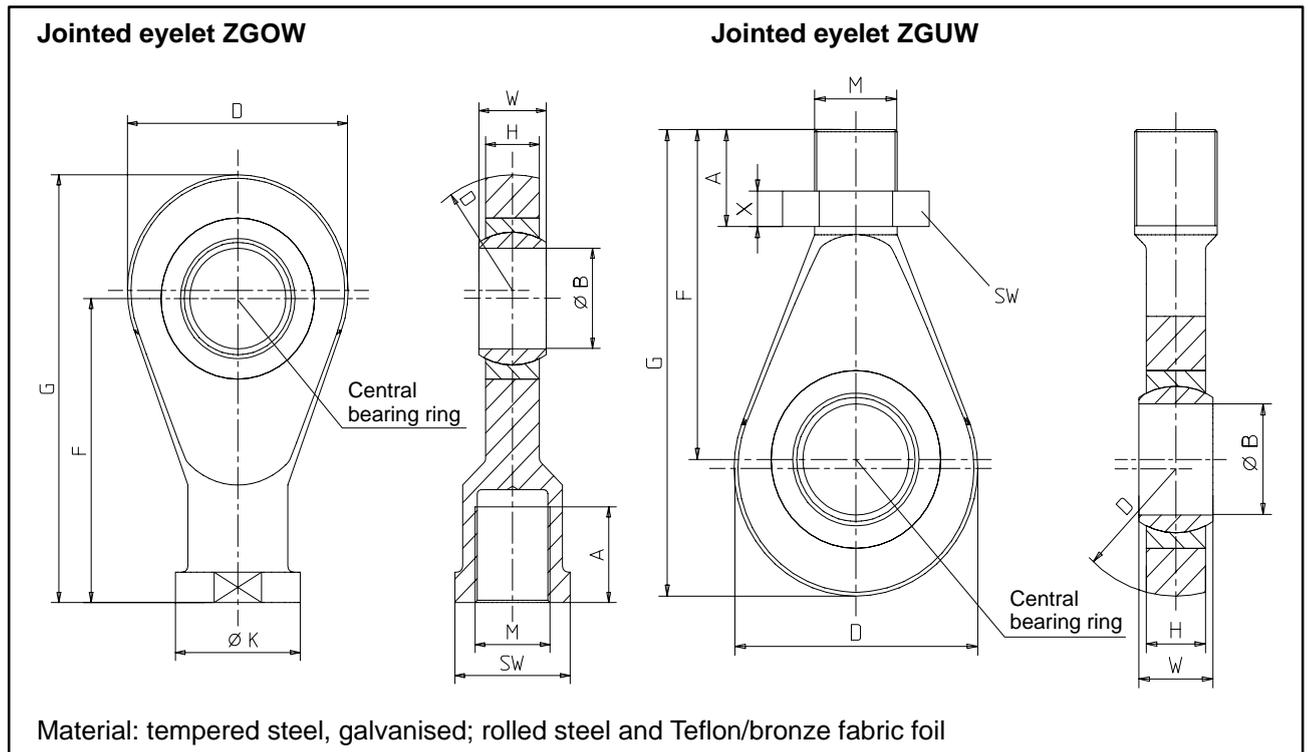
## 7 Dimensions



Rated force	$\varnothing A_{-0.2}$	B	$\varnothing C$	D	E	F	$\varnothing G$	H	J	K	L	M
0.5-5kN	50	72	21	47	24	1.5	42	4xM5	13	43.5	4.2	M12
10kN											7.6	
20kN	90	112	33	72	38	2	70	4xM10	20.5	63.5	10.6	M20x1.5
50kN	100	141	40	86	47	6	78	4xM12	19	68	13.2	M24x2
100kN	135	197	68	122	67	17	105	8xM12	16	85.5	19	M39x2
200kN	155	232	82	142	85	19	125	8xM16	26	95.5	24.2	M48x2

Rated force	N	O	$\varnothing S_{f8}^{H8}$	SW	T	$\varnothing U$	$\varnothing V$	X	Y	*M <sub>A</sub> (Nm)	Ball R
0.5-5kN	19	6	34	19	1.6	9.5	22	20	35	60	60
10kN										300	
20kN	15	10	55	30	2	17	34	30	50	500	100
50kN	20	12	61	36		20	42			2500	
100kN	29	19	79	60	2.2	36	70	43	84	4500	160
200kN	32	22	97	70		43	84			4500	

## Aid to installation

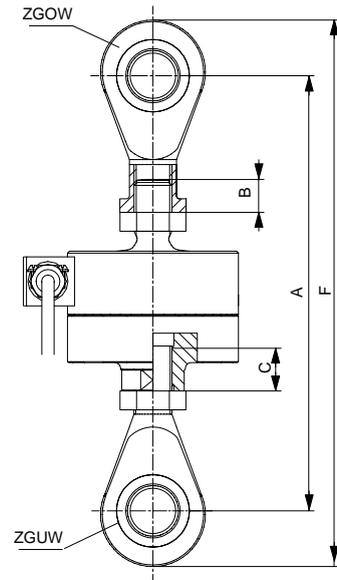


Rated force in kN	Order Nr. Jointed eyelet ZGOW	Weight in kg	A	ØB	D	F	G	H	ØK	M	SW	W
0.5...10	1-U2A/1t/ZGOW	0.2	22	12 <sup>H7</sup>	32	50	66	12	22	M12	19	16
20	1-U2A/2t/ZGOW	0.5	33	20 <sup>H7</sup>	50	77	102	18	34	M20x1.5	32	25
50	1-U2A/5t/ZGOW	0.8	42	25 <sup>H7</sup>	60	94	124	22	42	M24x2	36	31
100	1-U2A/10t/ZGOW	3.2	50	50 <sup>+0.002 -0.014</sup>	115	151	212.5	28	65	M39x2	60	35
200	1-U2A/20t/ZGOW	4.8	60	60 <sup>+0.003 -0.018</sup>	126	167	235	36	82	M48x2	70	44

Rated force in kN	Order Nr. Jointed eyelet ZGUW	Weight in kg	A	ØB	D	F	G	H	M	SW	W	X
0.5...10	1-U2A/1t/ZGUW	0.1	33.5	12 <sup>H7</sup>	32	54.5	70.5	12	M12	19	16	7
20	1-U2A/2t/ZGUW	0.2	48.8	20 <sup>H7</sup>	50	79.8	104.8	18	M20x1.5	30	25	9
50	1-U2A/5t/ZGUW	0.4	57.5	25 <sup>H7</sup>	60	94.5	124.5	22	M24x2	36	31	10
100	1-U2A/10t/ZGUW	1.1	65.5	50 <sup>+0.002 -0.014</sup>	115	148.5	210	28	M39x2	60	35	16
200	1-U2A/20t/ZGUW	3.2	80	60 <sup>+0.003 -0.018</sup>	126	168	236	36	M48x2	75	44	18

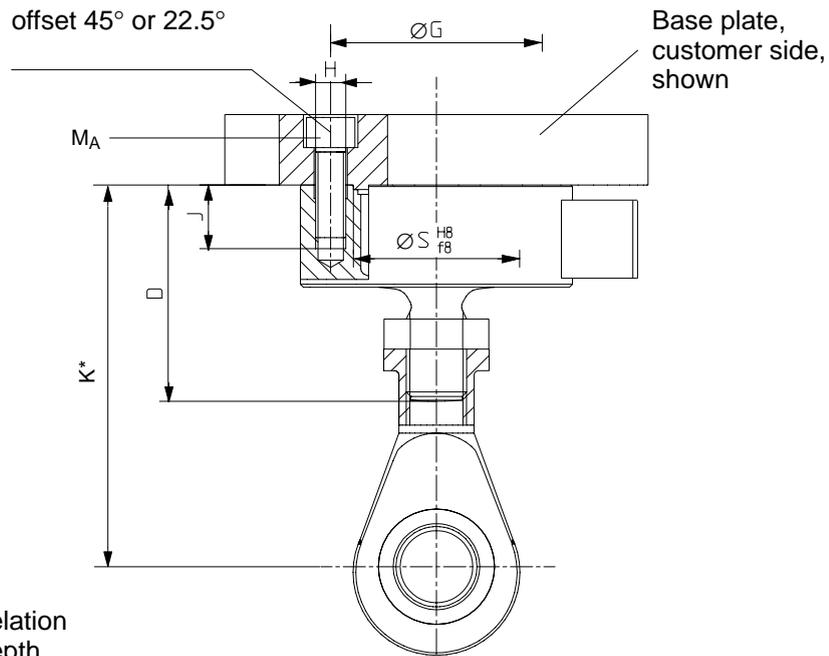
### U2B force transducer complete with jointed eyelets ZGOW, ZGUW

Rated force in [kN]	A <sub>min</sub>	A <sub>max</sub>	F <sub>min</sub>	F <sub>max</sub>	Minimum screwed-in depth		Maximum screwed-in depth
					B	C	
0.5...10	139	156	171	188	9.6	9.6	25
20	212	234	262	284	16	16	40
50	260	288	320	348	19.2	19.2	55
100	418	436	541	559	27	31.2	75
200	466	489	602	625	36.6	38.4	90



### Aid to installation

#### U2B, with ZGOW, without adapter



\* Recommended mass in relation to minimum screwed-in depth

Rated force in kN	D	ØG	H	J	K	ØS	MA <sup>1)</sup> [Nm]
<b>0.5...10</b>	47	42	4xM5	13	84...86.4	34	5
<b>20</b>	72	70	4xM10	20.5	131.6	55	35
<b>50</b>	86	78	4xM12	19	158.2	61	60
<b>100</b>	122	105	8xM12	16	244	79	60
<b>200</b>	142	125	8xM16	26	270.2	97	150

<sup>1)</sup> Recommended values when using a torque wrench on dry thread

# 8 Copy of Declaration of Conformity



**HOTTINGER  
BALDWIN  
MESSTECHNIK**

**HOTTINGER BALDWIN MESSTECHNIK GMBH**  
Im Tiefen See 45 - D-64293 Darmstadt  
Tel. ++49/6151/803-0, Fax. ++49/6151/894896

**Konformitätserklärung**

**Declaration of Conformity**

**Déclaration de Conformité**

Document: 064/05.1996

Wir,

We,

Nous,

**Hottinger Baldwin Messtechnik GmbH, Darmstadt**

erklären in alleiniger Verantwortung, daß das Produkt

declare under our sole responsibility that the product

déclarons sous notre seule responsabilité que le produit

**Kraftaufnehmer der Typenreihe U2A (U2B, C2 und Sondertypen)**

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt (siehe Seite 2) gemäß den Bestimmungen der Richtlinie(n)

to which this declaration relates is in conformity with the following standard(s) or other normative document(s) (see page 2) following the provisions of Directive(s)

auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s) (voir page 2) conformément aux dispositions de(s) Directive(s)

89/336/EWG - Richtlinie des Rates vom 3. Mai 1989 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit, geändert durch 91/263/EWG, 92/31/EWG und 93/68/EWG

Die Absicherung aller produkt-spezifischen Qualitätsmerkmale erfolgt auf Basis eines von der DQS (Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagementsystemen) seit 1986 zertifizierten Qualitätsmanagementsystems nach DIN ISO 9001 (Reg.Nr. DQS-10001).

Die Überprüfung der sicherheits-relevanten Merkmale (Elektromagnetische Verträglichkeit, Sicherheit elektrischer Betriebsmittel) führt ein von der DATech erstmals 1991 akkreditiertes Prüflaboratorium (Reg.Nr. DAT-P-006 und DAT-P-012) unabhängig im Hause HBM durch.

All product-related features are secured by a quality system in accordance with DIN ISO 9001, certified by DQS (Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagementsystemen) since 1986 (Reg. No. DQS-10001). The safety-relevant features (electromagnetic compatibility, safety of electrical apparatus) are verified at HBM by an independent testing laboratory which has been accredited by DATech in 1991 for the first time (Reg. Nos. DAT-P-006 and DAT-P-012).

Chez HBM, la détermination de tous les critères de qualité relatifs à un produit spécifique est faite sur la base d'un protocole DQS (Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagementsystemen) certifiant, depuis 1986, notre système d'assurance qualité selon DIN ISO 9001 (Reg.Nr. DQS-10001).

De même, tous les critères de protection électrique et de compatibilité électromagnétique sont certifiés par un laboratoire d'essais indépendant et accrédité depuis 1991 (Reg.Nr. DAT-P-006 et DAT-P-012).

Darmstadt, 10.05.96

Seite 2 zu

Page 2 of

Page 2 du

Document:

064/05.1996

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, beinhaltet jedoch keine Zusicherung von Eigenschaften.  
Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.

This declaration certifies conformity with the Directives listed above, but is no asseveration of characteristics.  
Safety directions of the delivered product documentation have to be followed.

Cette déclaration atteste la conformité avec les directives citées mais n'assure pas un certain caractère.  
S.v.p. observez les indications de sécurité de la documentation du produit ajoutée.

Folgende Normen werden zum Nachweis der Übereinstimmung mit den Vorschriften der Richtlinie(n) eingehalten:

The following standards are fulfilled as proof of conformity with the provisions of the Directive(s):

Pour la démonstration de la conformité aux disposition de(s) Directive(s) le produit satisfait les normes:

**EN 50082-2 : 1995**

**Elektromagnetische Verträglichkeit (EMV); Fachgrundnorm Störfestigkeit; Teil 2: Industriebereich; Deutsche Fassung**





**|| OTTINGER || ALDWIN || ESSTECHNIK**  
**HBM Mess- und Systemtechnik GmbH**  
Postfach 10 01 51, D-64201 Darmstadt  
Im Tiefen See 45, D-64293 Darmstadt  
Tel.: +49/ 61 51/ 8 03-0; Fax: +49/ 61 51/ 89 48 96; [www.hbm.de](http://www.hbm.de)  
e-mail: [TSC@hottinger-baldwin.com](mailto:TSC@hottinger-baldwin.com)

Modifications reserved.  
All details describe our products in general form only.  
They are not to be understood as express warranty and do not constitute any liability whatsoever.

IM-C 05.00-POD