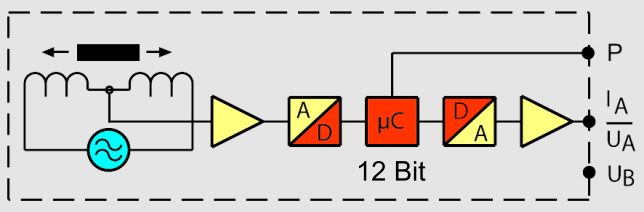
- **Contactless, robust sensor system**
- **Inductive half bridge type with integrated electronics and 12-bit A/D converter**
- **Programmable with teach-in mode**
- **Calibrated voltage or current outputs available**
- **Mounting with mounting blocks or ball joints**
- **Available as gauge type with spring return stroke of up to 100 mm**
- **Electrical connections via connector or cable**
- **Protection class IP 66 (with connector)**
  IP 69K (with cable)



Design and function

The IW 25P / IW 26P models are derived from model series IW 250 / IW 260 (see data sheets IW 10225 / IW 10505). With the exception of the electrical connections, the mechanical dimensions and the electrical data are identical.

In comparison with the **IW 25P** versions, the **IW 26P** versions is characterised by a more favourable measuring range to housing length ratio (dimension L2 in the table on page 2) The sensor system is completely cast and is therefore protected against dirt, moisture, shock and vibration. The linear transducers can also be used underwater.

The above block diagram shows the electrical function.

Standard-measuring range

- **IW 25P models: 20, 40, 100, 200 mm**
- **IW 26P models: 80, 170, 240, 360 mm**

Unless otherwise agreed, the output signals for these measuring ranges are calibrated during production. The signal ascends positively when the plunger is moved in the direction of the electrical connections.

Available output signals

A: 0 – 20 mA (UB 21.5 – 32 VDC)
B: 4 – 20 mA (UB 21.5 – 32 VDC)
C: 0 – 10 VDC (UB 21.5 – 32 VDC)
D: ± 10 VDC (UB ± 13 – ± 16 VDC)

The code letters are noted in the order numbers (page 2)

Programming by the user

The teach-in mode can be used to redefine the start and end point within the standard measuring range. The minimum and maximum values (e.g. 4 mA and 20 mA) remain in existence outside of the programmed points. The programming is stored in a non-volatile memory and can be changed as required. Reversal of the measurement direction is additionally possible (descending output signal).

Technical data

Operating voltage range U_B: (pol. reversal-resistant)	21.5 to 32 VDC or ± 13 to ± 16 VDC
Accuracy:	0.5% or 0.25%
Temperature drift:	< 0.01%/°C
Stability:	< 0.1% in 24 hours
Meas. frequency:	Max. 100 Hz
Operating temp.range:	-10°C to +80°C
Storage temp. range:	-30°C to +80°C
Shock resistance:	250 g SRS 20 - 2000 Hz
Vibration resistance:	20 g rms (50 g peak) 20 – 2000 Hz
Protection class:	IP 66 with connector IP 69K with cable

Remark: Unless otherwise noted, the specified values apply at an ambient temperature of 20°C and a supply voltage of 24 VDC or ± 15 VDC after a duty cycle of 10 min.

Current outputs A and B

Output signal:	0 ... 20 mA or 4 ... 20 mA
Operating current I_B:	Max. 60 mA
App. ohmic resistance R_L:	0 ... 500 Ω
Residual ripple:	< 0.005 mA_{ss}
Dependency on R_L:	< 0.001% at Δ R_L = 100 Ω
Dependency on U_B:	< 0.05% at Δ U_B = 1 V
Max. output current:	25 mA

Current outputs C and D

Output signal:	± 10 VDC or 0 ... 10 VDC *
Operating current I_B:	Max. 50 mA
Permissible load R_L:	2 kΩ (short-circuit-resistant)
Residual ripple:	< 5 mV_{ss}
Dependency on U_B:	< 0.05% at Δ U_B = 1 V

* Max. residual voltage 0.1 VDC

Attaching parts and accessories

Design form KV:	With ball joint M5 on the plunger
Design form KFN:	With ball joint M5 on the plunger and special plunger guide
Design form KHN:	With ball joint M5 on the housing (connector side), can be combined with KFN or KV
Design form T:	Gauge type with spring return (measuring stroke up to 100 mm)
MB25:	Mounting block with clamp fastening (to be ordered separately)
PMA-K8-01:	Manual programming device with connector M12x1, 8-pin (also see data sheet PMA 11443 for analogue manual programming device model PMA-01)
STK8GS54	matting plug 8 pin socket (to be ordered separately)

Protective tube according to data sheet SR 11537.

For particularly tough applications, the linear transducers can be equipped with a GFRP or stainless steel protective tube. This protects the plunger against lateral pressure and prevents the ingress of coarse Dirt.

Design form KGM:	GFRP protective tube (glass fibre-reinforced plastic)
Design form KSR8:	With ball joint M8 on the plunger and on the housing
Design form TSR:	As a gauge type with spring (measuring stroke up to 100 mm)

Order code format

IW 25P / 20 - 0.25 - KV - KHN - K X - A 01

- Electrical and mechanical variants*
- Output
  A = 0 ... 20 mA
  B = 4 ... 20 mA
  C = 0 ... 10 VDC
  D = -10 ... +10 VDC
- Cable length (m)
- Connection
  K = cable
  S = connector
- Ball joint on rear of housing
- Attaching parts on plunger
  KV, KFN, T
  Stainless steel guide tube
  KSR8,TSR,
  GFRP guide tube,
  KGM, TGM
- Linearity
  0.5 - 0.25 - (0.1%)
- Measuring range 20 mm
- Model series IW 25P

* The basic versions according to the data sheet have the number 01. Deviations are identified with a variant number and are documented in the factory.

Connection assignment – outputs A, B and C

Pin	Wire	Signal
1	pink	+ U_B (21,5 ... 32 VDC)
2	brown	- U_B (0 V)
3	white	Analogue output 0(4) … 20 mA, 0 … 10 V)
4	grey	Analogue GND (connected to PIN 2)
5	green	Multi-function pin 0 (MFP 0)
6	yellow	Multi-function pin 1 (MFP 1)
7	-	Not used
8	-	Not used

Connection assignment – output D

Pin	Wire	Signal
1	pink	+ U_B (+13 ... +16 VDC)
2	brown	- U_B (-13 ... -16 VDC)
3	white	Analogue output (-10 … +10 V)
4	grey	Analogue GND
5	green	Multi-function pin 0 (MFP 0)
6	yellow	Multi-function pin 1 (MFP 1)
7	-	Not used
8	-	Not used

Standard measuring ranges, lengths and weights

Model / mm	L1 mm	L2 mm	W/o plunger/g	Indiv. plunger/g
IW 25P / 20	40	110	210	15
IW 25P / 40	50	140	240	19
IW 25P / 100	80	250	380	31
IW 25P / 200	130	500	720	56
IW 26P / 80	70	140	240	19
IW 26P / 170	115	250	380	31
IW 26P / 240	150	350	540	40
IW 26P / 360	210	500	720	56

* L1 = Plunger in centre position: IA = 10 (12) mA, or UA = 0 (5) V.

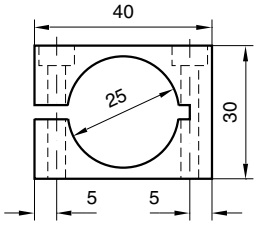
Calibration

The sensor system in the housing and the plunger are always calibrated together and bear the same serial No.

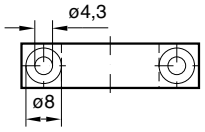
Materials IW 25P / 26P

- Outer and inner tube: Stainless steel 1.4301
- Plunger and gauge head: Stainless steel 1.4305
- Core: Mu metal (NiFe)
- Connector housing: Brass, nickel-plated
- Spring: Stainless steel 1.4310

MB 25 mounting block, nickel-plated brass
(to be ordered separately)



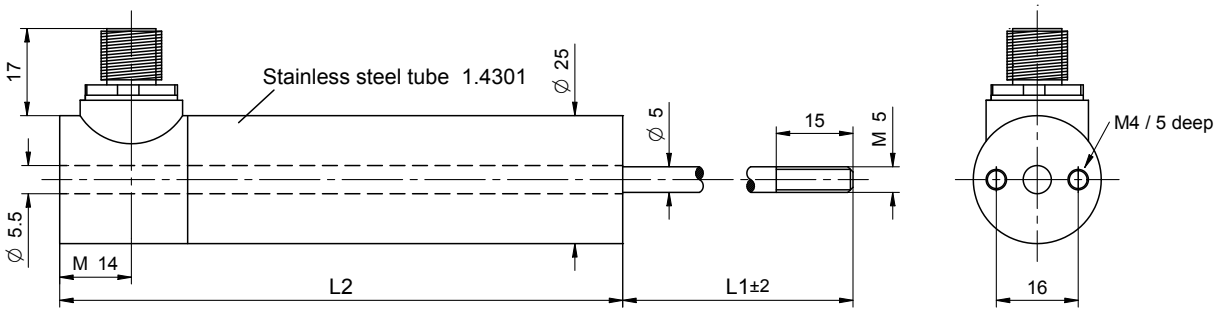
Mass: ca. 60 g



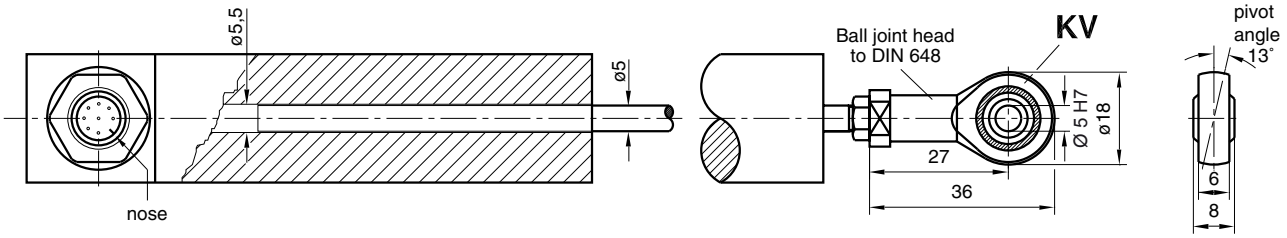
2 Allen head screws M4 x 35 mm (DIN 912, A2) and 2 spring rings (DIN 127, A2) form part of the MB25's scope of delivery.

Dimensions in mm

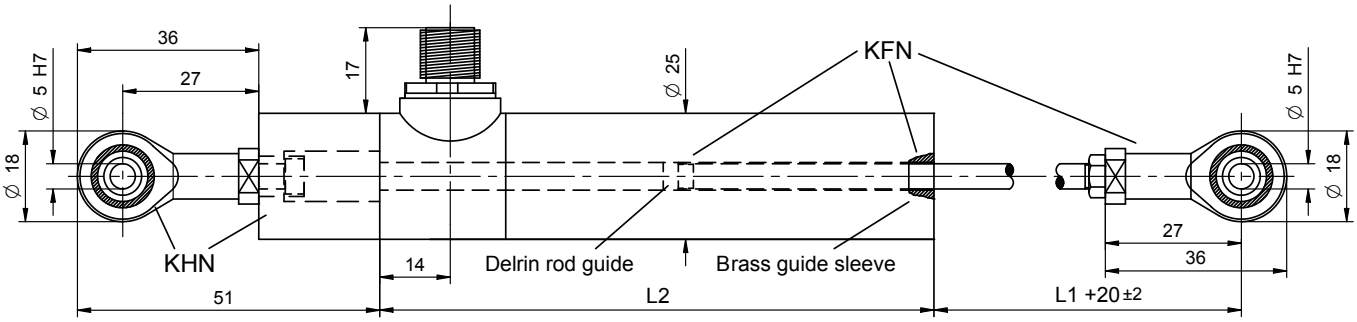
Standard version (without rod guide)



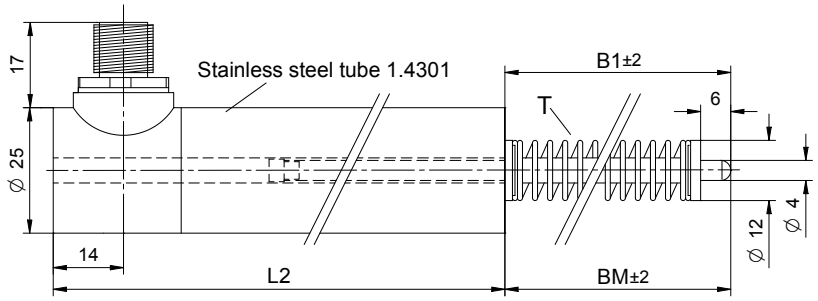
Version with ball joint on plunger (KV) (without rod guide)

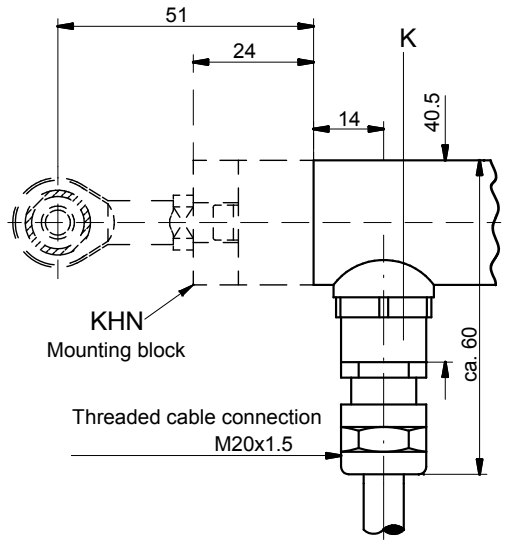


Version with ball joints on plunger (KFN) and on end of case (KHN) (with rod guide for plunger)



Gauge version (T) with return spring (up to 100 mm stroke)





Measuring stroke [mm]	BM [mm]	B1 [mm]	FM [N]	Fc [N/mm]
20	70	85	4	0.14
40	70	98	4	0.07
100	140	198	4	0.03

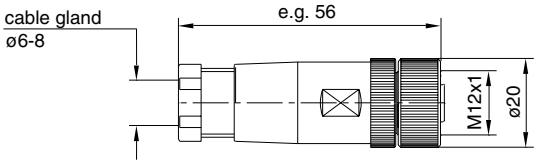
Model IW 25P ... T ...

BM = Plunger in centre position
B1 = Plunger fully extended
FM = Spring pre-tension in centre position
Fc = Spring constant

Mating connector M12x1, 8-pin, straight

(To be ordered separately)

- **Order No. STK8GS54:** Metal housing, shielding on the housing

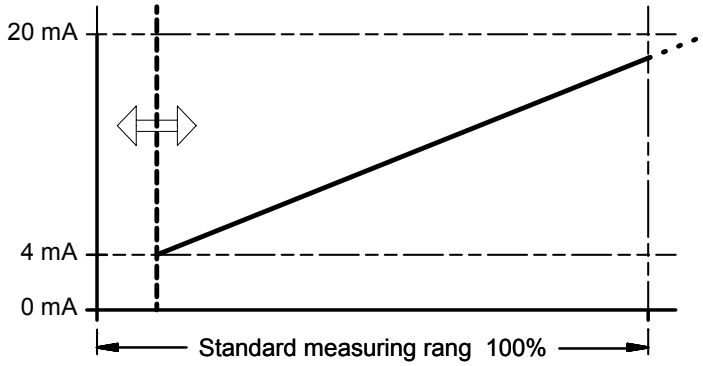


Programming:

It must generally be noted that both the new starting position and the end position always lie within the standard measuring range.

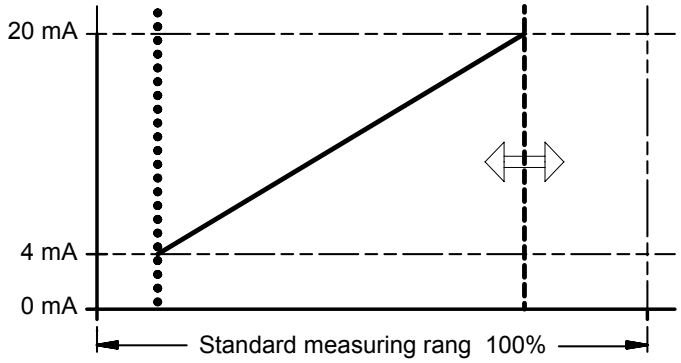
Start of measuring range (zero point)

Mechanically move the plunger to the desired starting position. Connect the multi-function input 0 (MFP 0) contact to $-U_B$ or analogue GND* for at least 2 seconds.
The measuring stroke and the signal path remain unchanged in this case, unless the measuring stroke is so large that it is pushed out of the standard measuring range if the starting position is shifted excessively.



End of measuring range (end value)

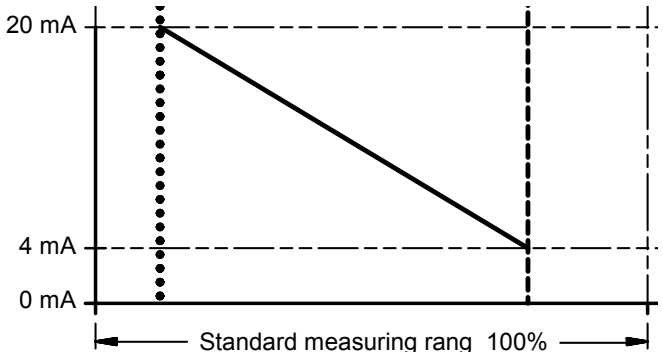
Mechanically move the plunger to the desired end position. Connect the multi-function input 1 (MFP 1) contact to $-U_B$ or analogue GND* for at least 2 seconds.
The measuring stroke changes according to the programming The limit lies at 1/20 of the original measuring stroke. The resolution is also reduced if the measuring stroke is reduced. The fact that the resolution and linearity always refer to the full measuring stroke (see factory programming) must be noted.



Reversal of the signal path

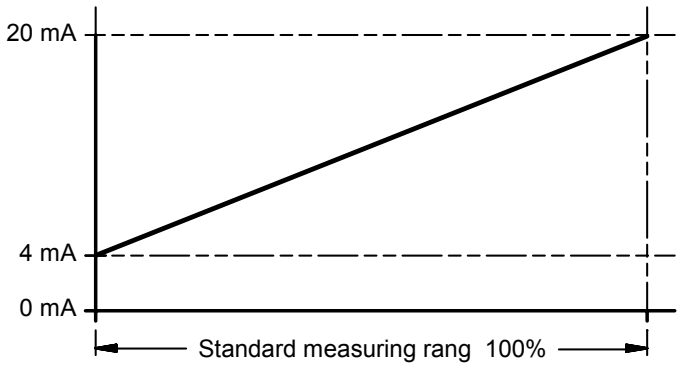
1) Reversal of the signal path with simultaneous measuring stroke change by shifting the new end value past the zero point. In order to save the new position, MFP must be connected to $-U_B$ or analogue GND* for at least 2 seconds. The zero point remains unchanged in this case. Due to the fact that the end value and zero point have swapped positions, the IWP then has a descending analogue output signal.

2) Reversal of the code direction whilst the measuring stroke remains the same is also possible. To do this, the new end value is shifted to the old zero point's position. The condition is that the new end value may deviate from the old zero point by fewer than 200 digits (< 1/20 of the measuring stroke programmed in the factory). In order to save the code direction reversal, MFP must be connected to $-U_B$ or analogue GND* for at least 2 seconds. The new zero point is then set to the position of the old end value and vice-versa. The measuring stroke remains unchanged in this case.



Resetting factory programming

Simultaneously connect the MFP 0 and MFP 1 contacts to $-U_B$ or analogue GND* for at least 2 seconds. The factory programming is reset.



* Depending on asymmetrical or symmetrical supply voltage