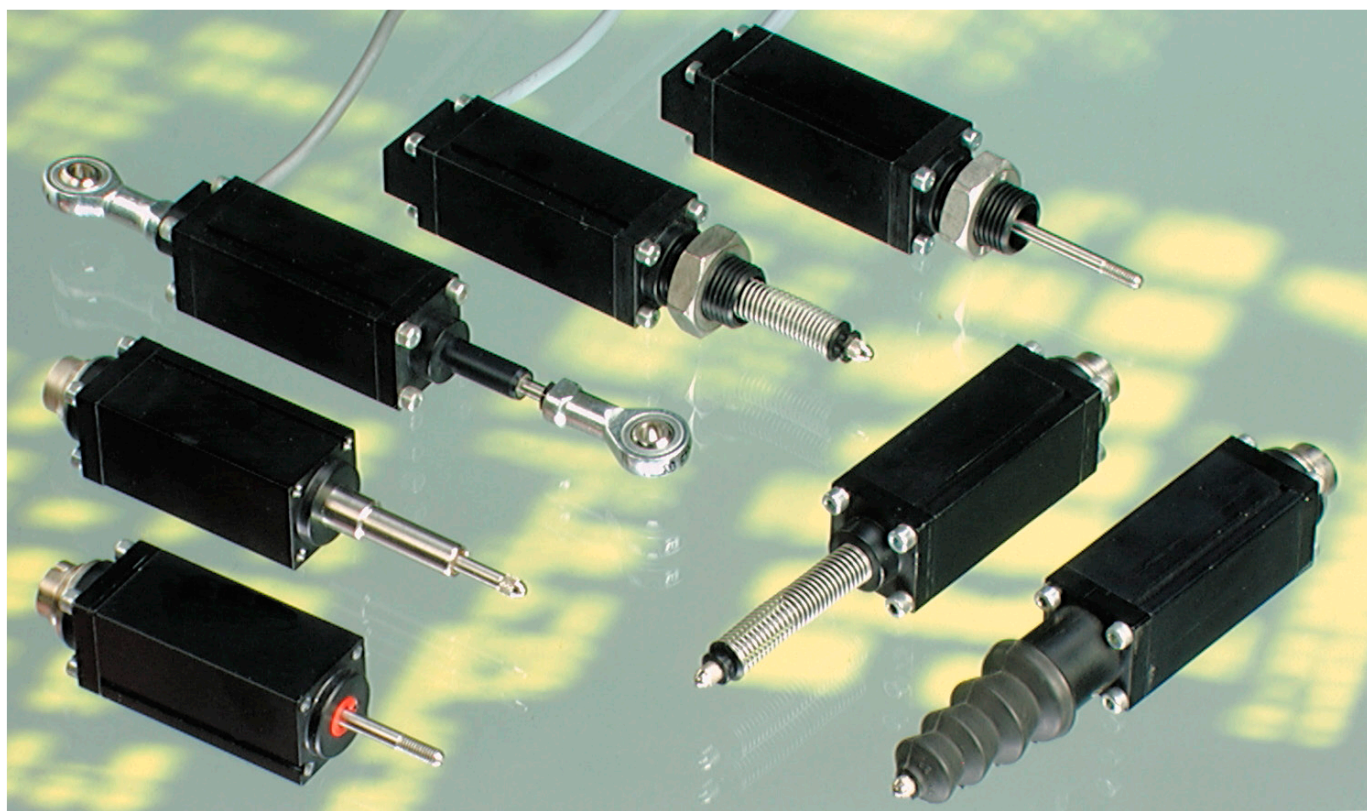
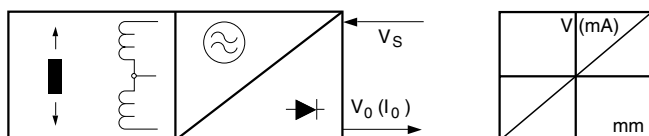


- Calibrated output signals:
0(4) to 20 mA, ± 10 VDC, or 0 to 10 VDC
- Integral electronics for DC in / DC out
- Contactless, robust sensor system
- Definite repeatability
- Protection class IP 66



Construction and operating principle

The displacement transducer operates according to the principle of the differential choke, i.e. an inductive half bridge. It consists of two coils which are encapsulated in a square shaped aluminium housing. A mu-metal plunger core causes opposing changes of inductance when it is displaced through the centre of the coils. These changes are converted by the integral electronic circuit into a signal proportional to the displacement. The circuit contains an oscillator, demodulator, amplifier and in some cases, a current output source. It is short-circuit proof and protected against reverse polarity.



The transducers are completely sealed to ensure positive protection against vibration, shock, humidity, oil and corrosive matter. They can be supplied either with lead or connector exit.

Standard measuring strokes: 5, 10 and 15 mm

Independently of the measuring stroke the mechanical travel of the plunger is 18 mm. The measuring stroke is located within the range of the travel.

Standard versions and calibration

Type	Output Signal *	Vs **	Center-point at
IW 151	0 ... 20 mA	21,5 ... 32 V	10 mA
IW 153	4 ... 20 mA	21,5 ... 32 V	12 mA
IW 155	± 10 VDC	± 13 ... ± 16 V	0 V
IW 15A	0 ... 10 VDC	21,5 ... 32 V	5 V
IW 159	Special variants		

* Increasing signal when the plunger is moved in the direction towards the electrical connections.

** Other supply voltages on request.

The transducers can be fixed either by lateral clamps, threaded front holes, front plates, threaded front cylinders or by ball joints. For gauge applications they can be fitted with return springs either with or without protective bellows. (For details see pages 3 and 4).

Technical Data

- Supply voltage V_S :
 - unsymmetrical 21.5 to 32 VDC or
 - symmetrical ± 13 to ± 16 VDC
- Accuracy : 0.5% or 0.25%
- Temperature drift : $\leq \pm 0.008\%/^{\circ}\text{C}$
- Stability : $\leq 0.1\%$ in 24 hours
- Measurement frequency : ≤ 100 Hz
- Operating temperature range : -10°C to $+80^{\circ}\text{C}$
- Storage temperature range : -30°C to $+80^{\circ}\text{C}$
- Resistance to shock : 250g SRS at 20 to 2000 Hz
- Resistance to vibration : 20g at 20 to 2000 Hz (50g peak)
- Protection class : IP 66

Current output (IW 151 and 153)

- Current signal : 0 to 20 mA or 4 to 20 mA
- Supply current I_S : 60 mA max.
- Load resistance R_L :
 - at $V_S = 21.5$ to 32 VDC 0 to 500 Ω
- Ripple : < 0.005 mA_{P-P}
- Dependence on R_L : $< 0.001\%$ for $\Delta R_L = 100 \Omega$
- Dependence on V_S : $< 0.05\%$ for $\Delta V_S = 1$ V
- Maximum output current : 25 mA

Voltage output (IW 155 and 15A)

- Voltage signal : ± 10 VDC or 0 to 10 VDC *
 - Supply current I_S : 50 mA max.
 - Permissible load R_L : 2 k Ω (short-circuit proof)
 - Ripple : < 5 mV_{P-P}
 - Dependence on V_S : $< 0.05\%$ for $\Delta V_S = 1$ V
- * max. residual (voltage 0.1 VDC)

Note: Unless otherwise stated, all values are valid at $+20^{\circ}\text{C}$ ambient temperature and 24 VDC or ± 15 VDC supply voltage, starting 10 minutes after switch-on.

Examples of complete ordering codes

IW 151/5 - 0.25 - OK1 - KF - KH :

0 to 20 mA output, 5 mm stroke, 0.25 % accuracy, cable exit, ball joint on plunger with shaft guide, ball joint on end of case.

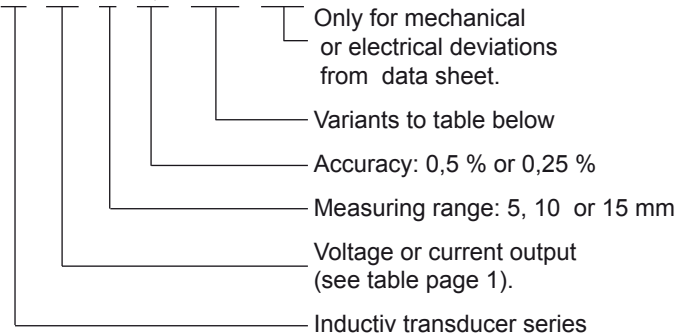
IW 15A/10 - 0.5 - S - GV-T :

0 to 10 VDC output, 10 mm range, 0.5 % accuracy, plug exit, threaded front cylinder, gauge M16 type with spring return without bellow.

Model **IW 250** and **IW 260** transducers are available with measuring ranges up to **360 mm** (Data sheets IW 10225 and 10505).

Order code format

IW 150 / 5 - 0,5 - X - X - A01



Electrical connections

(view onto the connecting pins)

3-way output (3PS)				4-way output (4PS)			
current signal	voltage signal		voltage signal				
IW 151, 153	IW 15A		IW 155				
plug	lead		plug	lead			
+ V _S	1	brown	+ V _S	1	brown		+ V _S
- V _S (0V)	2	white	- V _S (0V)	2	yellow		0V
I ₀	3	green	V ₀	3	white		- V _S
				4	green	V ₀	

Mating plugs

- Female plug Bi 681 (IP40), to be ordered separately.
- Female plug Bi 723 M/3 PS or / 4 PS (IP66), to be ordered separately.
- All contacts are gold plated.

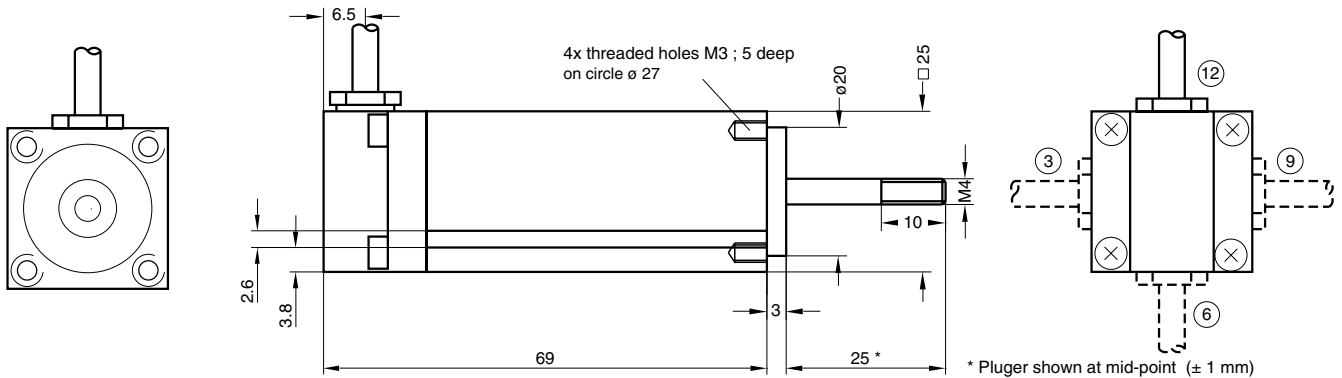
Variants and possible combinations

Codes and description		OK1	S	F	GV	KV	KF	KH	T	B
OK1	Cable exit, 1 m long	—	—	●	●	●	●	●	●	●
S	Plug exit	—	—	●	●	●	●	—	●	●
F	Front plate	●	●	—	—	●	—	—	—	—
GV	Threaded front cylinder M16	●	●	—	—	●	—	—	●	—
KV	Ball joint on plunger, w/o guide	●	●	●	●	—	—	—	—	—
KF	Ball joint on plunger, with guide	●	●	—	—	—	—	●	—	—
KH	Ball joint on end of case	●	—	—	—	—	—	●	—	—
T	Gauge type, w/o bellow	●	●	—	●	—	—	—	—	—
B	Gauge type, with bellow	●	●	—	—	—	—	—	—	—

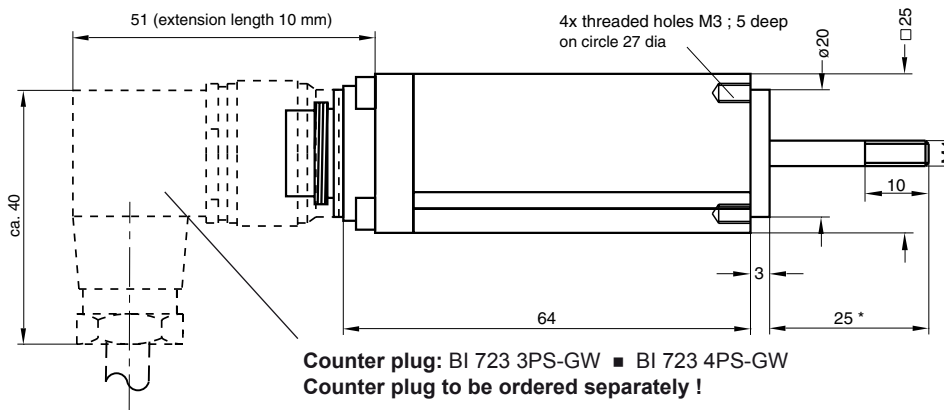
● = Can be combined, — = Can not be combined

Dimensions in mm

Standard version with cable exit (OK1), 1m length, in position 12 if not otherwise specified. - For fixing by 4 threaded front holes or by 2 lateral clamps. The plunger is calibrated along with the sensor system and is free to move.

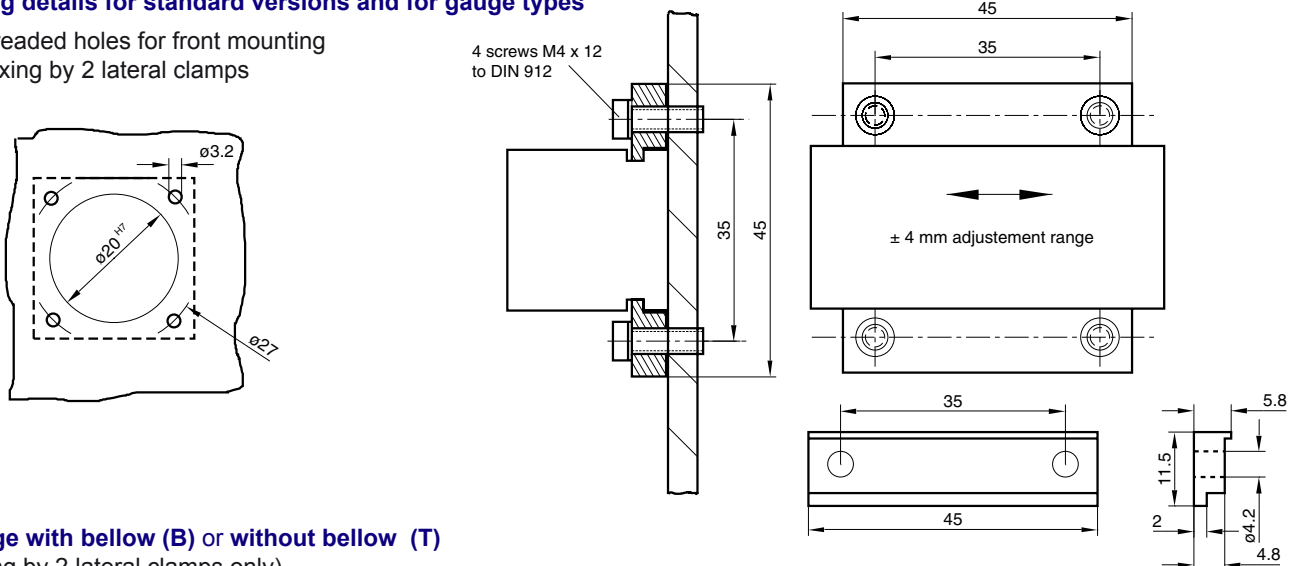


Standard version with plug (S), all other data as above



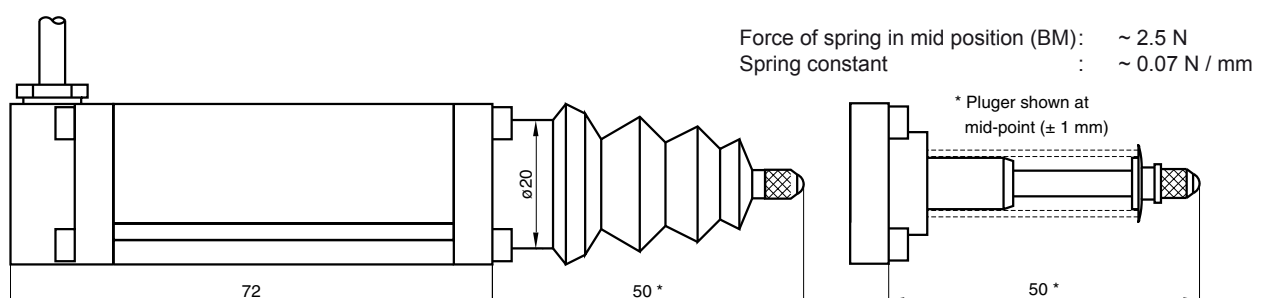
Fixing details for standard versions and for gauge types

- Treaded holes for front mounting
- Fixing by 2 lateral clamps



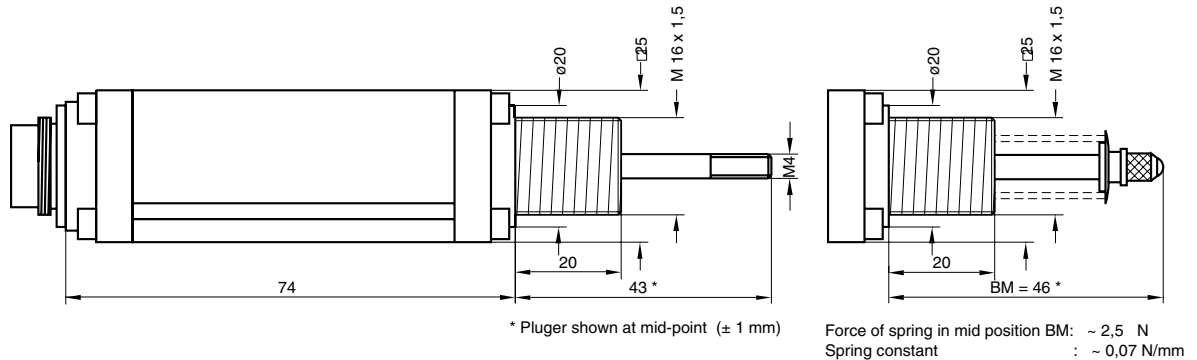
Gauge with bellow (B) or without bellow (T)

(Fixing by 2 lateral clamps only)

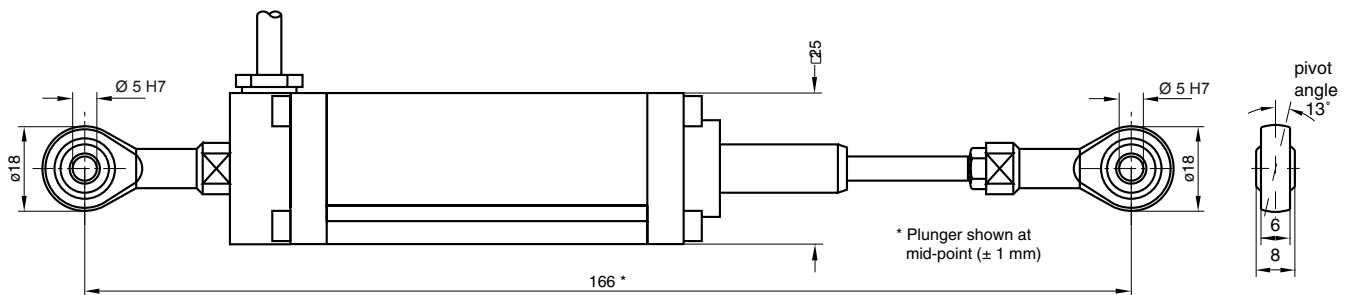


Dimensions in mm

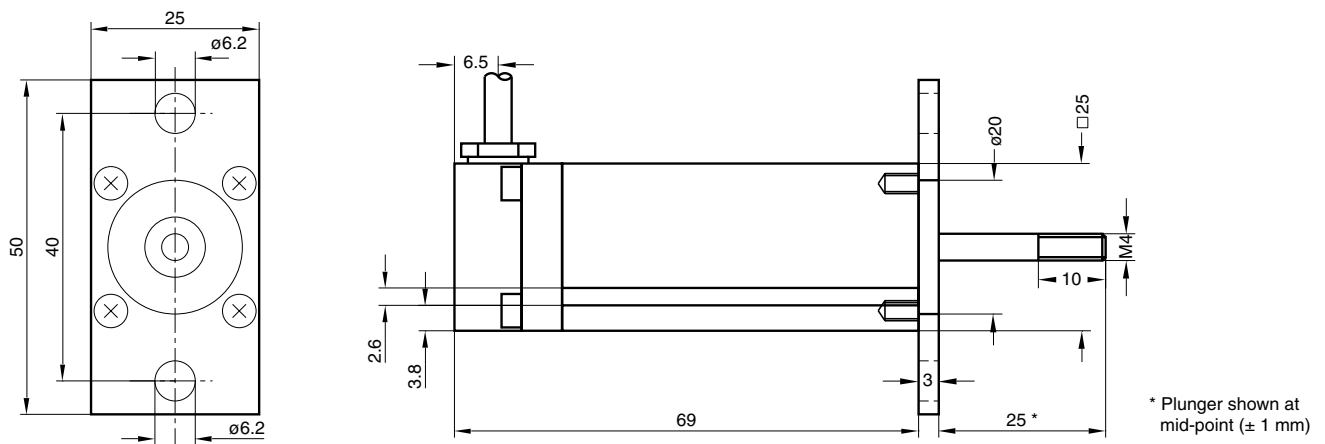
Version with threaded front cylinder (GV). The plunger is calibrated along with the sensor system and is free to move. Alternatively as gauge type with return spring and captivated plunger (GV - T). With plug (S) or cable exit (OK1) as for standard version. (One M16 x 1.5 nut to DIN 936, with 24 mm size of flats is supplied with each item).



Version with ball joint (KF), with guided and captivated plunger, and with ball joint on end of case (KH). Cable exit in position 12 if not otherwise specified (see top of page 3).

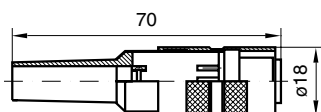


Standard version with front plate (F). The plunger is calibrated along with the sensor system and is free to move. With plug (S) or cable exit (OK1) as for standard version.

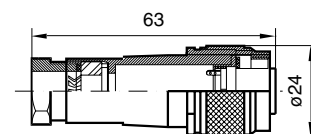


Note : All standard versions as well as the variant with threaded front cylinder M16 can be fitted with ball joints on plunger (KV). The plunger is always calibrated along with the sensor system and remains free to move.

Mating Plugs



Metal case with rubber bush (to be ordered separately)
BI 681 3PS or 4PS (IP40).



Metal case with outer ring connected to ground (to be ordered separately), screw type entry for cable dias from 5 to 8 mm. BI 723M 3PS or 4PS (IP66).