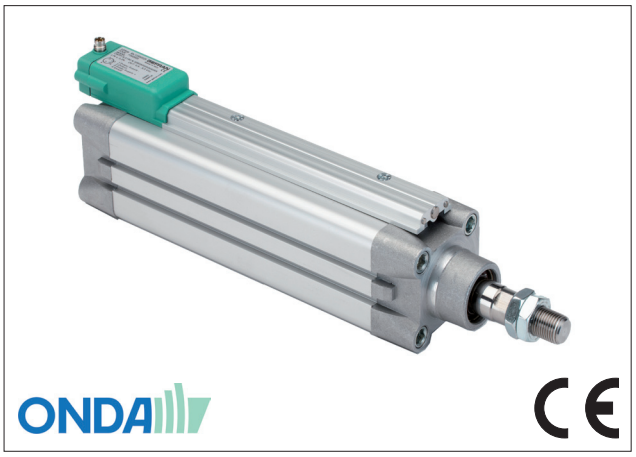
GEFRAN

ONPP-A (for pneumatic cylinders)

CONTACTLESS MAGNETOSTRICTIVE LINEAR POSITION TRANSDUCER WITH GEFRAN ONDA TECHNOLOGY (ANALOG OUTPUT)



Main characteristics

- *Strokes from 50 to 900mm*
- *Orientation detection of the magnet inside the cylinder*
- *Direct analog output for displacement*
- *Working temperature: 0...+50°C*
- *IP65 protection*
- *Power supply 24Vdc ±20%*
- *COPS-1 signal calibrator (optional)*

Contactless linear position transducer with innovative GEFRAN ONDA magnetostrictive technology for longer lifetime.
The absence of electrical contact on the cursor eliminates all wearing and guarantees almost unlimited life. The new ONDA technology solution (patented by Gefran) allows to obtain an essential modular structure with compact size for simple installation.

TECHNICAL DATA

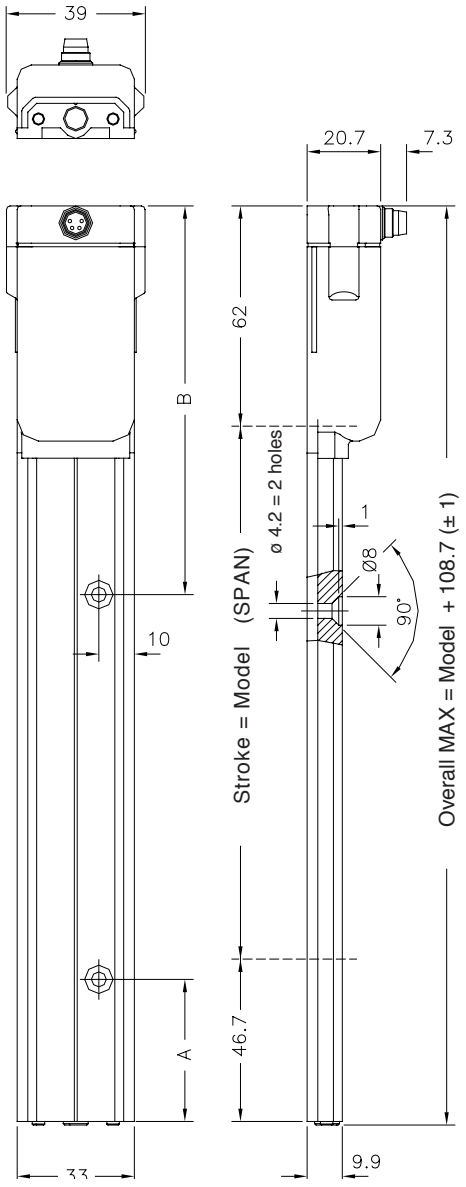
Model	from 50 to 900 mm
Measurement taken	Displacement
Position read sampling time (typical)	see table
Shock test DIN IEC68T2-27	100g - 11ms - single shock
Vibrations DIN IEC68T2-6	12g / 10...2000Hz
Displacement speed	≤10 m/s
Max. acceleration	≤ 100 m/s² displacement
Resolution	INFINITE (only limited from the electrical noise)
Cursor (*)	Compatibility is tested with ISO15552 cylinders with bore from 16 to 63 mm and a single magnet mounted inside
Working temperature	0...+50°C
Storage temperature	-40...+100°C
Coefficient of temperature	≤ 0.01% f.s. / °C (min. 0,015mm/°C)
Protection	IP65

(*) The generated field must have intensity greater than 45 Gauss.
Correct recognition of the signal, initial zero value, deviation span compared to nominal value, and correct sensor function depend on the shape of the magnetic field generated by the magnet in the cylinder. The shape of the magnetic field depends on the physical and geometric characteristics of the magnet. Preliminary testing of the magnet is recommended.

ELECTRICAL DATA

Output signal	**0,5...9,5 V (N)**	**4,8...19,2 mA (E)**
Electrical zero	0,5...0,8 V	4,8...5,3 mA
Span	9 Vdc ± 100 mV max	14,4 ± 0,2 mA
Nominal power supply	24 Vdc ±20%	24 Vdc ±20%
Max. power ripple	1 Vpp	1 Vpp
Output current consumption	35 mA	60 mA
Output load	≥10 KΩ	50...500 Ω
Max. output value	12 V	35 mA
Alarm output value	10.5 V	21 mA
Electrical isolation	50 V	50 V
Prot. against polarity inversion	Yes	Yes
Prot. against overvoltage	Yes	Yes
Prot. against power supply in output	Yes	Yes

MECHANICAL DIMENSIONS



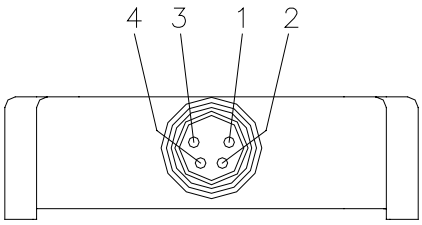
For details about the correct installation on the pneumatic cylinder, refer to the section CYLINDER MOUNTING

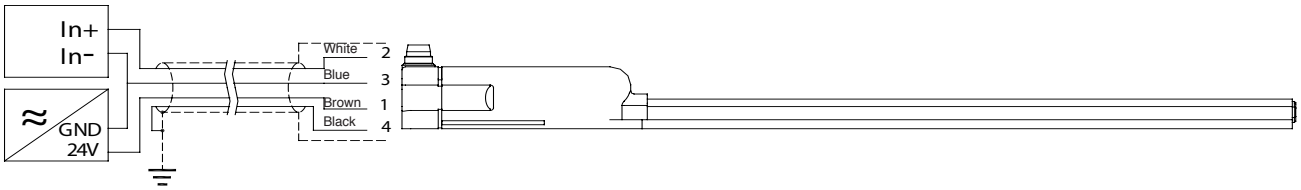
ELECTRICAL / MECHANICAL DATA

Model		50	75	100	130	150	175	200	225	250	300	350	360	400	450	500	550	600	650	700	750	800	850	900
Sampling time	ms	1																	1.5					
Electrical stroke (E.S.)	mm	Model																						
Independent linearity		≤ ± 0,2% FS (min ± 1 mm)																						
Max. dimensions	mm	Model + 108,7 (±1)																						
Fixing hole position (B)	mm	84.5		109.5																				
Fixing hole position (A)	mm	35		40																				
Repeatability	mm	≤ 0,05 (max)																						
Hysteresis	mm	≤ 0,2 (max)																						

ELECTRICAL CONNECTIONS

PIN	FUNCTION
1	Power supply +
2	Output
3	Power supply -
4	Shield





"The diagram shows the ideal wiring conditions, for the noise reduction, with the cylinder housing not connected to the ground.
In the case the cylinder housing is connected to the ground, be sure the sensor is isolated from the cylinder housing."

ORDER CODE

Position transducer **O N P P A** _ _ _ _ _ _

Analog output	**A**

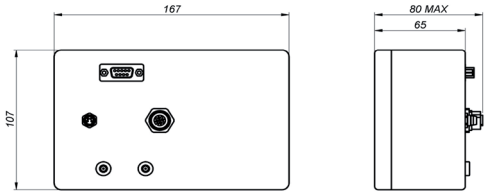
Connector	
4 pin M8x1 connector output	**S**

Model

Output (see electrical data)		
0,5...9,5 Vd.c	1 cursor only for direct output	**N**
4,8...19,2 mA	1 cursor only for direct output	**E**

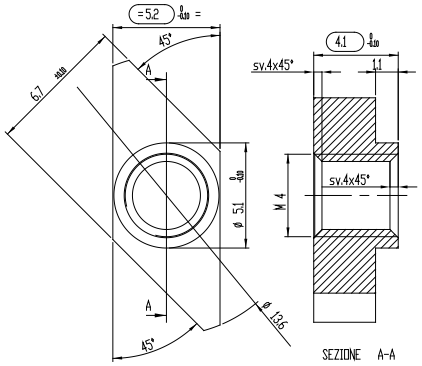
COPS-1 CALIBRATOR

The COPS-1 calibrator lets you set the Full-Scale Zero signal of the ONPP-A transducer installed on the cylinder to the value you want. The output signal is set with the resolution of the mV exactly at the two ends of the piston stroke. The maximum correction window of the two signals (Zero and FS) is 10% of FS indicative.



See the datasheet and the user manual for detailed information on the COPS-1 calibrator.

MOUNTING KIT PKIT083 (order separately)



In the KIT

2 beackets
2 screws M4x14
TSPEI UNI5933

CABLES (order separately)

Cable with M8, 4 pin axial connector, 2 meters, PUR, shielded	**PCAV331**
Cable with M8, 4 pin axial connector, 5 meters, PUR, shielded	**PCAV332**
Cable with M8, 4 pin 90° connector, 2 meters, PUR, shielded	**PCAV333**
Cable with M8, 4 pin 90° connector, 5 meters, PUR, shielded	**PCAV334**
Magnetic pen	**PKIT312**

SENSOR INSTALLATION PROCEDURE AND AUTOZERO FUNCTION ACTIVATION

The cylinder/sensor matching can generate zero offset reading. For sensors with standard configuration the offset can be eliminated through the Autozero function.
Such a function is enabled by using the magnetic pen that is provided in the scope of delivery of the sensor (PKIT312) Figure 1.

Sensor installation procedure and Autozero function activation

1) Mount the sensor on the cylinder (without applying any voltage supply), aligning it to the cylinder body as shown in Figure A.

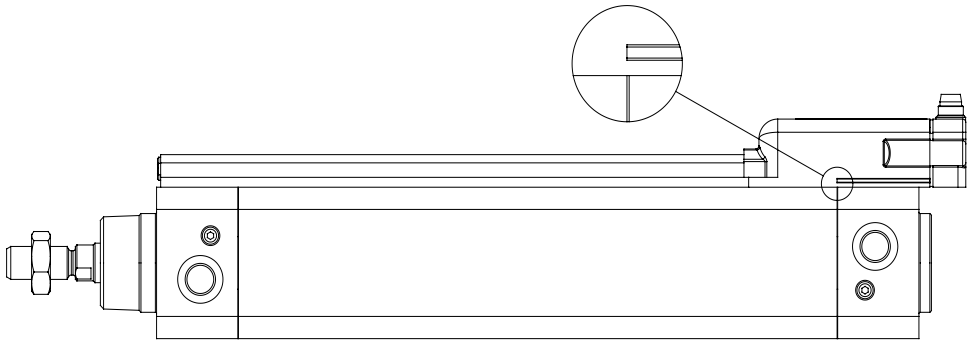


Figure A

2) Apply voltage supply
3) Detect and note the transducer output signal
4) Activate the Autozero function. The Autozero function is enabled by positioning the magnetic pen in contact with the plastic sensor housing, perpendicular to the housing it self, in the Autozero area shown on the product label (Figure 2). The contact has to be continuosly mantained for a time period between 2 to 5 sec. (see Figure 3).
5) Detect and note the transducer output signal
6) Compare the two output signals. The correct value is the most closely value to the zero signal (0.5V for voltage output, 4.8mA for current output).
7) In case the correct value was that one detected at step 3, enable again the Autozero function (see step 4.)
   In this manner the output signal will be correctly set to the value measured at step 3. In case the correct value was that one detected at step 5, keep the existing zero offset (it is not necessary to enable again the Autozero).

Figure 1

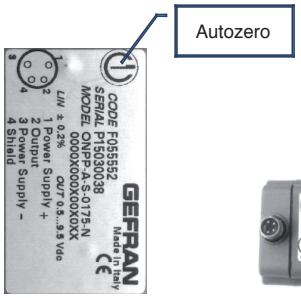


Figure 2

Figure 3

Figure 1: represents the “magnetic pen”

Figure 2: represent the Autozero function label on the sensor housing

Area activation Autozero

Figure 3: shows the position of the pen on the shell while activating the autozero function

In order to avoid undesiderable interferences on the position measurement during the operative use of the sensor, it is necessary that the magnetic pen is positioned away from the sensor housing

SENSOR INSTALLATION FOR VERSION WITHOUT AUTOZERO OPTION

On the sensor versions not equipped with Autozero function, tipically defined with XL....., it is possible to change the zero offset following the installation procedure below specifiied:

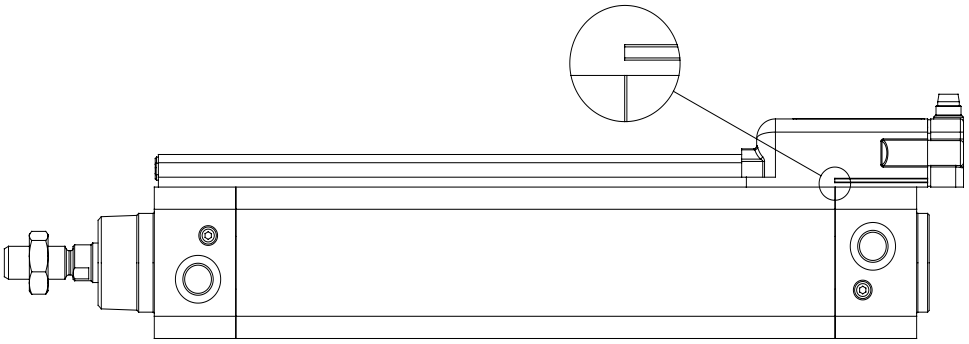


Figure A

1) mount the sensor on the cylinder (without apply any voltage supply) aligning it to the cylinder body as shown in Fig. A., without fixing it.
2) apply voltage supply and verify that the zero signal value is between 0,5V and 0,8V (voltage version) or between 4,8mA and 5,3mA (current version).
3) if the read value is below 0.5V/4,8mA, adjust the position of the sensor until you obtain a signal of 0.5V/4,8mA
4) if the read value is above 0.8V/5,3mA, adjust the position of the sensor until you obtain a signal of 0.8V/5,3mA
5) fix the sensor by tightening the screws

Depending on the cylinder bore, maximum sensor projection from the cylinder (A) is given by the following formula:
A (mm) = 43 mm – thickness of cylinder head (mm) (see Fig. B).

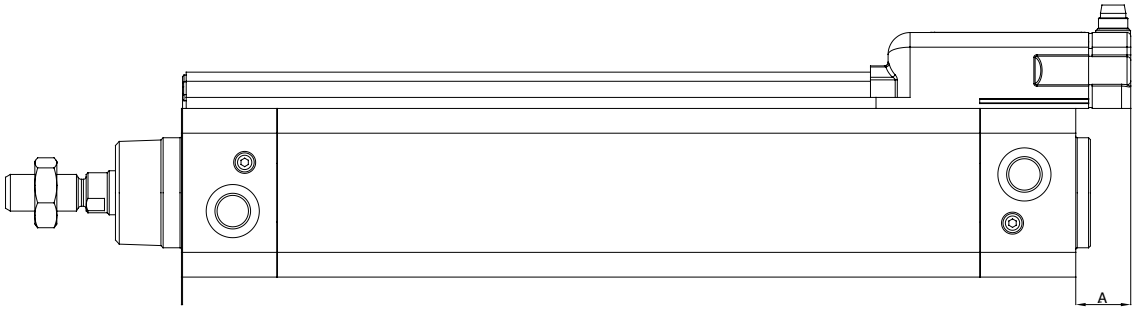


Figure B

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