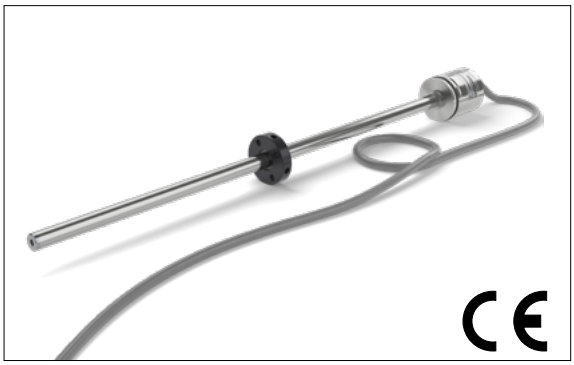
GEFRAN

RK-2

CONTACTLESS MAGNETOSTRICTIVE LINEAR POSITION TRANSDUCER WITH FLANGED HEAD (ANALOG OR START/STOP OUTPUT)



Main characteristics

- *Absolute transducer*
- *Strokes from 50 to 2500 mm (RK-2-_ _ _ _ -N/E/S)*
- *Digital output RS422 Start/Stop (RK-2-_ _ _ _ -S)*
- *Direct analog output (RK-2-_ _ _ _ -N/K/E)*
- *Operating temperature: -30...+90°C*
- *Resistance to vibration (DIN IEC68T2/6 20g)*
- *Power supply 18Vdc...30Vdc*
- *Optional 12Vdc power supply (RK-2-_ _ _ _ -K)*

Contactless linear position transducer with magnetostrictive technology: the absence of electrical contact on the cursor eliminates problems of wear and consumption and guarantees almost unlimited life.

The head's flanged shape and small size make the RK-2 series ideal for applications requiring installation completely inside the hydraulic cylinder.

The overall dimensions of the sensor are among the smallest available on the market.

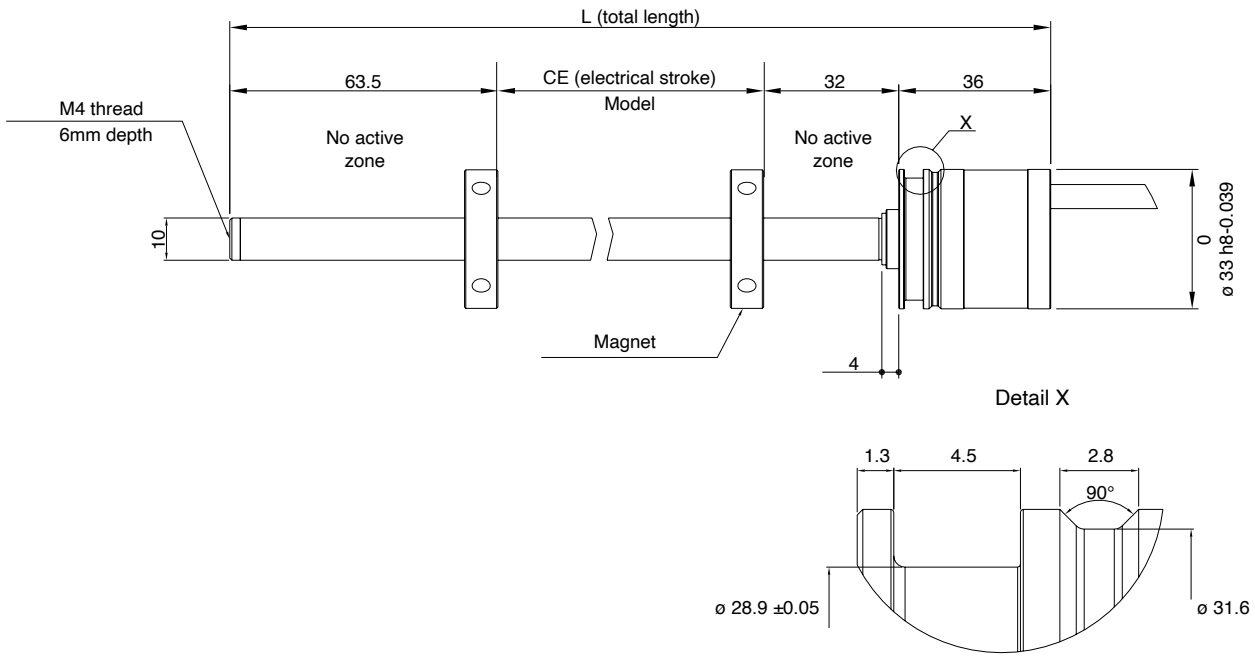
For the interface signal, you can choose between a start/stop interface (which allows the use of multiple cursors) and an analog interface that gives the displacement of a single cursor (available in the several ranges in Voltage or Current).

Excellent linearity, repeatability, resistance to mechanical vibrations and shocks complete the product's specifications overview.

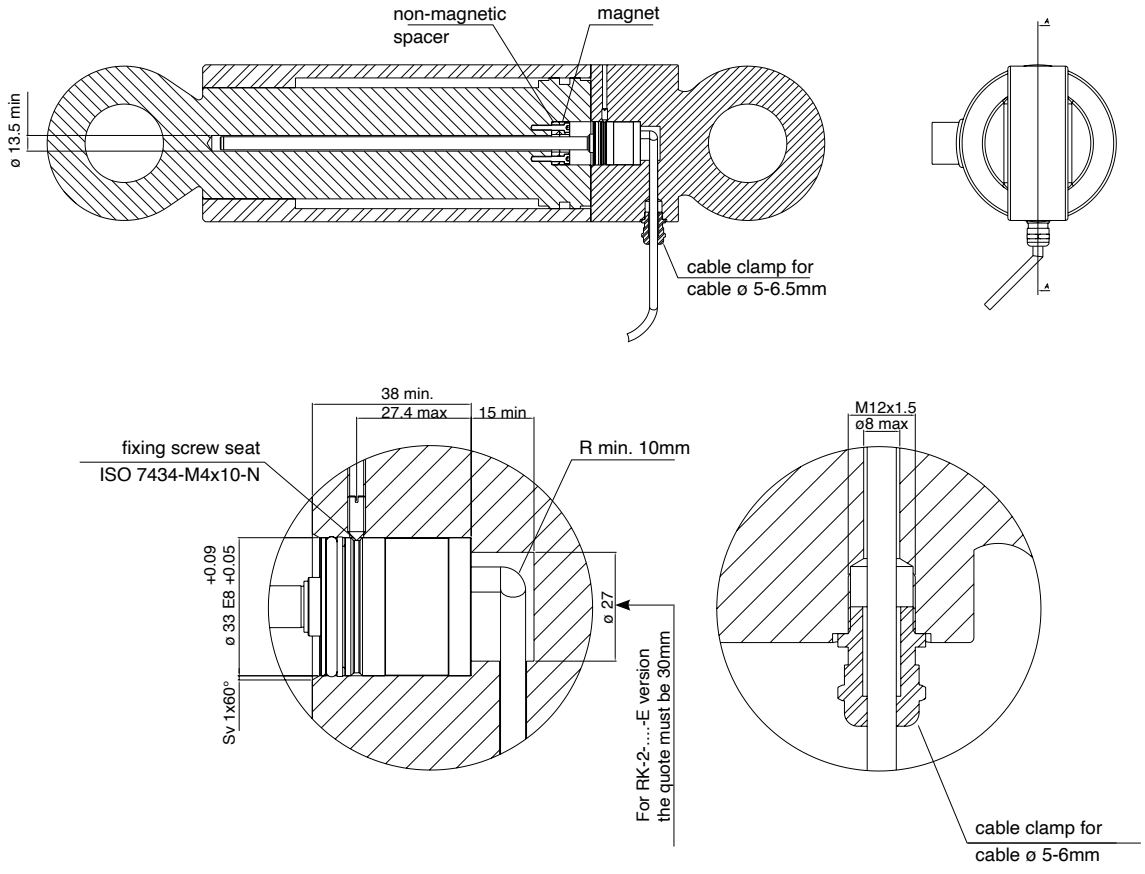
TECHNICAL DATA

Model
from 50 to 2500 mm (max. 1200 mm RK-2-_ _ _ _-K)
Measurement taken
Displacement
Position read sampling time (typical)
1 ms
Shock test DIN IEC68T2-27
100g - 11ms - single shock
Vibrations DIN IEC68T2-6
20g / 10...2000Hz
Displacement speed
≤ 10 m/s
Max. acceleration
≤ 100 m/s² displacement
Resolution
Infinite, limited by noise (10μm)
Working pressure
350 bar (peak max 500 bar)
Nominal power supply
18...30Vdc opz. 12Vdc (RK-2-_ _ _ _-K)
Max. power ripple
1Vpp
Output signal
Start/Stop (RK-2-_ _ _ _ -S) 0,1...10,1Vdc (RK-2-_ _ _ _ -N) 0,1...5,1Vdc (RK-2-_ _ _ _ -K) 4...20mA (RK-2-_ _ _ _ -E)
Max. analog output load
5KΩ
Output current consumption
max 40 mA (load on start/stop output:300 Ω)
Electric isolation
100 Vdc
Protection against polarity inversion
YES
Protection against overvoltage
YES
Protection in hydraulic circuit area
IP67
Operating temperature
-30°…+90°C for strokes ≤ 2500mm and power supply ≤ 24 Vcc otherwise -30...+70°C
Storage temperature
-40°…+100°C
Coefficient temperature
Typical 0.005% FS / °C

MECHANICAL DIMENSIONS



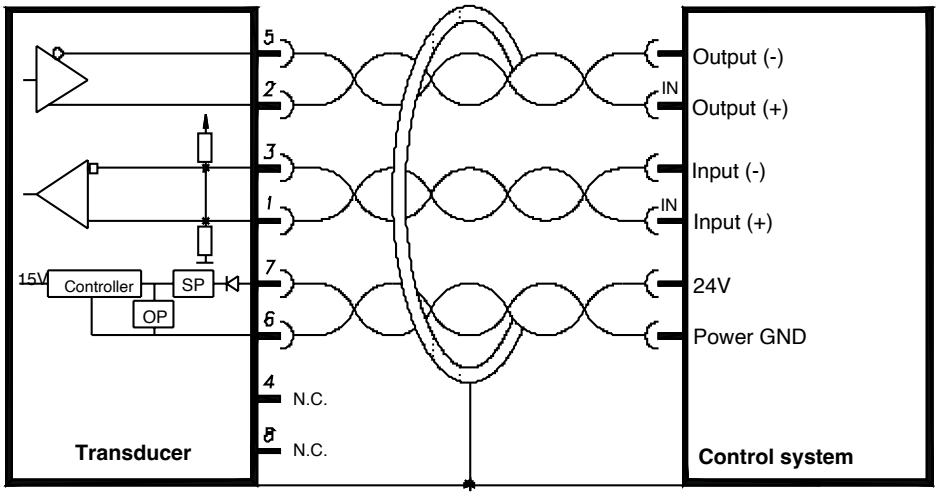
MOUNTING INSIDE A CYLINDER



ELECTRICAL / MECHANICAL DATA

Model		50	100	130	150	200	225	300	400	450	500	600	700	750	800	900	1000
		1250	1500	1750	2000	2250	2500										
Electrical stroke (C.E.)	mm	**Model**															
Independent linearity	% FS	Typical ≤ 0.02% FS (Min. ± 0.060 mm)															
Max. dimensions (L)	mm	**Model +** 131.5 (excluding cable)															
Repeatability	mm	Typical ≤ 0,01 (limited by the resolution of the output value)															
Hysteresis		Typical ≤ ±0,005% FS (min 0,025 mm)															
Sampling time	ms	**1** (**1.5** for strokes from 1100 to 2000) (**2** for strokes from ≥ 2000)															

ELECTRICAL CONNECTIONS (RK- 2 - _ _ _ _ - S)



RK-2-_ _ _ _ -S	Cable
Output (+)	Gray
Output (-)	Green
Input (+)	Yellow
Input (-)	Pink
Power supply +	Brown
Power supply GND	Blue

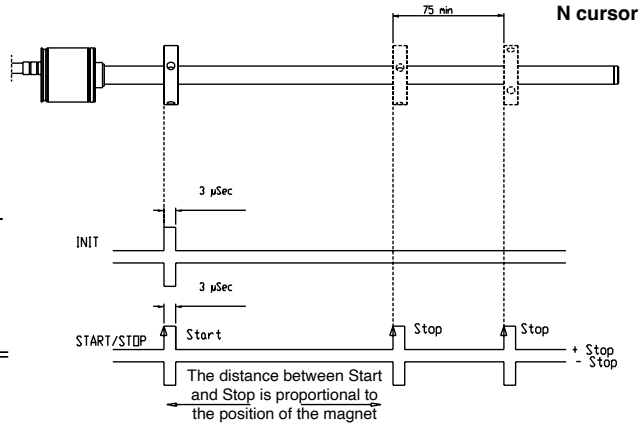
ELECTRICAL CONNECTIONS (RK- 2 - _ _ _ _ - N/K/E)

RK-2-_ _ _ _ -N	RK-2-_ _ _ _ -K	RK-2-_ _ _ _ -E	Cable
Output 0.1...10.1Vdc	Output 0.1...5.1Vdc	Output 4...20mA	Yellow
Output GND	Output GND	Output GND	Pink
Power supply +	Power supply +	Power supply +	Brown
Power supply GND	Power supply GND	Power supply GND	Blue

IMPORTANT: in case of cable lenggth shortening, after cutting the cable take care of soldering and insulating the green and grey wires together

DIGITAL OUTPUT RK- 2 - _ _ _ _ - S

Series RK-2-_ _ _ _ -S magnetostrictive transducers supply digital outputs in START/STOP format with RS422 differential serial transmission.
The transducer requests an Initialisation pulse that launches sampling. The following pulses are transmitted on the outputs:
Start: the Initialisation pulse retransmitted
Stop: the pulse corresponding to the position of each magnet.
The time between the Start pulse and the subsequent Stop pulses is proportional to the position of each magnet according to the "Magnetostrictive wave propagation speed" constant, equal to about 2900 m/Ssec.



P= Time * 2900m/Sec

The correct propagation speed for each product is shown on the product label.
Resolution in terms of metres is linked to the resolution used to measure time

1 μSec (1MHz) ==> 2.9 mm
10 nSec (100 MHz) ==> 0.029mm
1 nSec (1GHz) ==> 2.9 μm

The measurement reference is the leading edge of the pulse.
Optimum width of the interrogation pulse is 3μSec, but the transducer works correctly for times from 1.5 to 5μSec

ORDER CODE

Position transducer R K 2 ☐ ☐ ☐ ☐ ☐

Model

Output		
Start/Stop	Start/Stop interface	**S**
Analog	0.1...10.1Vdc interface (power supply 18...30Vdc)	**N**
Analog	0.1...5.1Vdc interface (power supply 12Vdc)	**K**
Analog	4...20mA interface (power supply 18...30Vdc)	**E**

0 0 0 0 X 0 0 0 X ☐ ☐ X 0 X X

Connection cable to remote element (PUR)

00 = 1 mt **02** = 2 mt **03** = 3 mt
04 = 4 mt **05** = 5 mt **10** = 10 mt
15 = 15 mt

Mechanical and/or electrical characteristics differing from those in the standard version may be arranged on request.

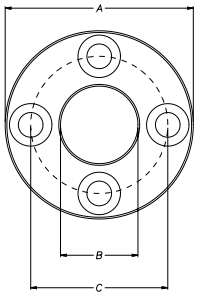
FLOATING CURSOR (to order separately)

P C U R ☐ ☐ ☐

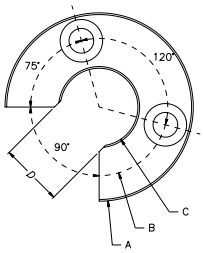
Cursors	
Cursor diameter 32.8	**022**
Cursor diameter 32.8 with 90° slit	**023**
Cursor diameter 25.4	**024**

Dimensions	A	B	C	Thickness
PCUR022	32.8	13.5	23.9	7.9
PCUR023				
PCUR024	25.4	13.5	-	

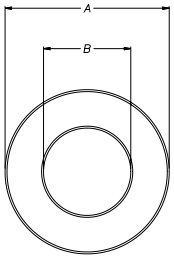
PCUR022



PCUR023



PCUR024



The **PCUR022** is supplied with:

N° 8 Brass nuts M4
N° 8 Brass washers D4
N° 4 Brass screws M4x25

The **PCUR023** is supplied with:

N° 4 Brass nuts M4
N° 4 Brass washers D4
N° 2 Brass screws M4x25

OPTIONAL ACCESSORIES (to order separately)

Cable clamp	**PRE060**

Sensors are manufactured in compliance with:
- EMC 2014/30/EU compatibility directive
- RoHS 2011/65/EU directive

Electrical installation requirements and Conformity certificate are available on our web site: www.gefran.com

GEFRAN spa reserves the right to make any kind of design or functional modification at any moment without prior notice.

GEFRAN spa
via Sebina, 74
25050 PROVAGLIO D'ISEO (BS) - ITALIA
ph. 0309888.1 - fax. 0309839063
Internet: http://www.gefran.com