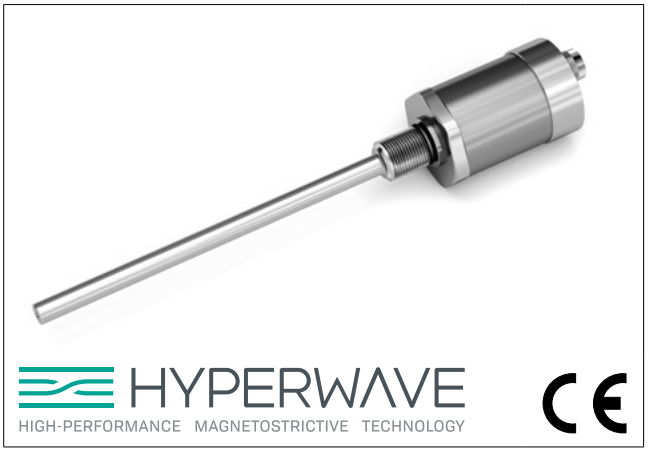
GEFRAN

WRA-S

CONTACTLESS MAGNETOSTRICTIVE LINEAR POSITION TRANSDUCER (SYNCHRONOUS SERIAL OUTPUT)



Main characteristics

- *Optimized mechanical structure*
- *Strokes from 50 to 4000 mm*
- *Wide range of connectors for the electrical connection*
- *Rod, nipple, exagonal flange AISI 316*
- *Power supply 10....32 Vdc*
- *Resistance to vibration (DIN IEC68T2/6 15g)*
- *Protection IP67*
- *Work temperature: -30°…+90°C*
- *Synchronous Serial Interface direct to controllers*
- *Output data resolution available from 0.5 to 40µm*
- *Data format: binary or Gray code; incremental/decremental*
- *Electromagnetic compatibility EMC 2014/30/EU*
- *Compliant to the directive RoHS 2011/65/EU*

Contactless linear position transducer with HYPERWAVE magnetostrictive technology with RS422-SSI digital output interface. Housing closure with removable ring nut to allow the whole electronics and sensing element replacement.

The absence of electrical contact on the cursor eliminates all wear and guarantees almost unlimited life.

High accuracy of the mesurement with reference to the non linearity, repeatability and hysteresis. High resistance to vibrations, mechanical shocks for use in a harsh industrial environment.

TECHNICAL DATA

Model	from 50 to 4000 mm
Measurement taken	Displacement
Position read sampling time (typical)	1 ms
Shock test DIN IEC68T2-27	100g - 11ms - single shock
Vibrations DIN IEC68T2-6	15g / 10...2000Hz
Displacement speed	≤ 10 m/s
Max acceleration	≤ 100 m/s² displacement
Output data resolution available	0.5.....40µm
Cursor (see note)	Floating magnet
Working temperature	-30...+90°C
Storage temperature	-40...+100°C
Coefficent of temperature	20ppm F.S./°C
Protection	IP67
Operative pressure	350 bar (peak max. 500 bar(**)
(**) The operating and max. peak pressure, can only be reached by following the installation guide specified on the data sheet (see section “INSTALLATION INSIDE A CYLINDER”).	

ELECTRICAL DATA

Output signal	Synchronous Serial (SSI); Binary/Gray; Incremental/Decremental
Data length	24 - 25 bit
Nominal power supply	10... 32 Vdc
Max. power ripple	1Vpp
Max. input	50mA
Output load	RS422/485 standard
Electrical isolation	500 V (*) (D.C. supply / earth)
Protection agains polarity inversion	Yes
Protection against overvoltage	Yes
Self-resetting internal fuse	Yes
(*) it includes a 50V 2J voltage suppressor	

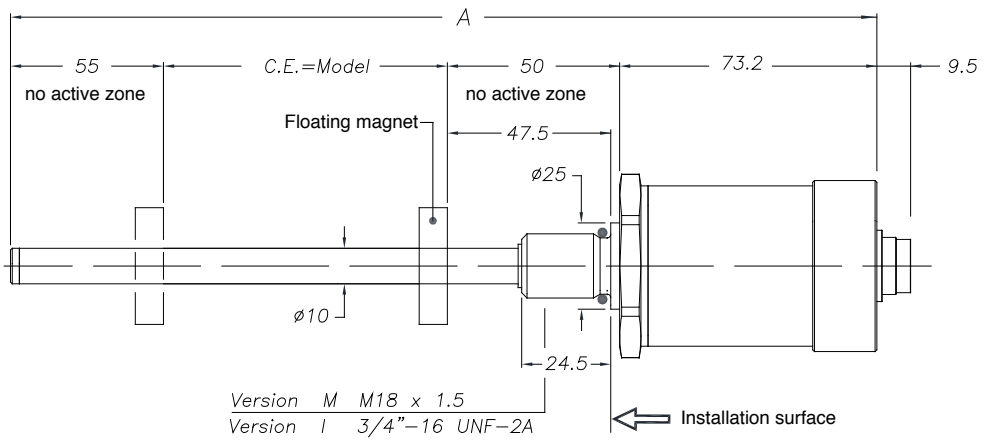
Note: For multi-cursor versions, the cursors have to work under the same distance and temperature conditions

ELECTRICAL / MECHANICAL DATA

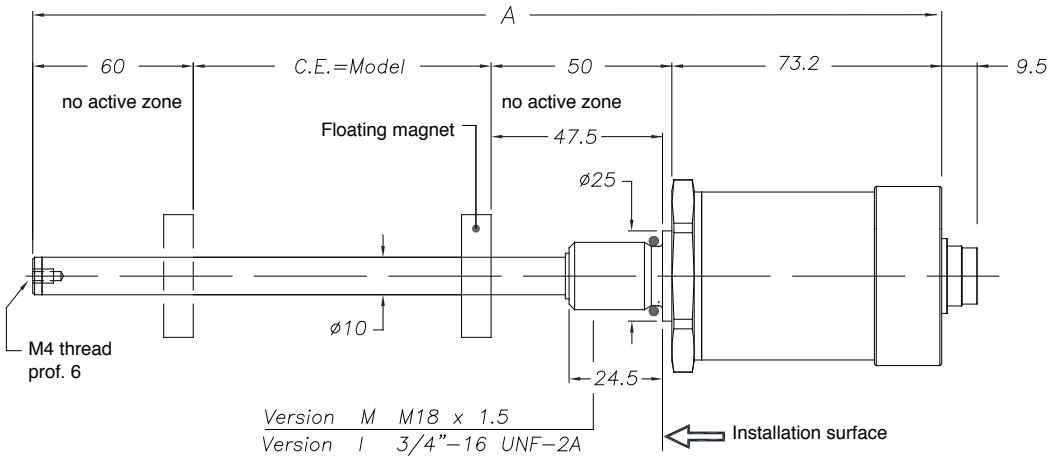
Model		50	75	100	130	150	175	200	225	250	300	350	360	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1250	1300	1400	1500
																				1750		2000		2250		2500	2750	3000	3250	3500	3750	4000
Electrical stroke (E.S)	mm	Model																														
Independent linearity	± %F.S.	≤ ± 0,01 %FS (min ± 0,060mm)																														
Max. dimensions (A)	mm	< 1250 mm = Model + 178.2mm ; ≥ 1250mm = Model +183.2mm																														
Repeatability	mm	< 0,01 (limited by the resolution of the output value)																														
Hysteresis		< ± 0,005% FS (min 0,010 mm)																														
Sampling time	ms	**1** (for stroke from 1000) **2** (for stroke from 1100 to 2000) **4** (for stroke >2000)																														

MECHANICAL DIMENSIONS

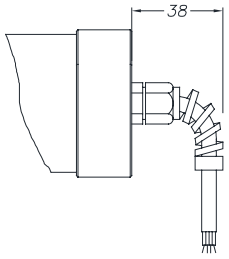
Strokes from 50 to 1000 mm



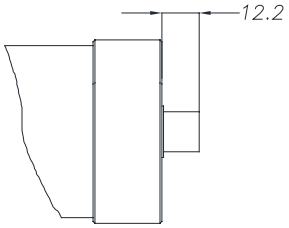
Strokes from 1100 to 4000 mm



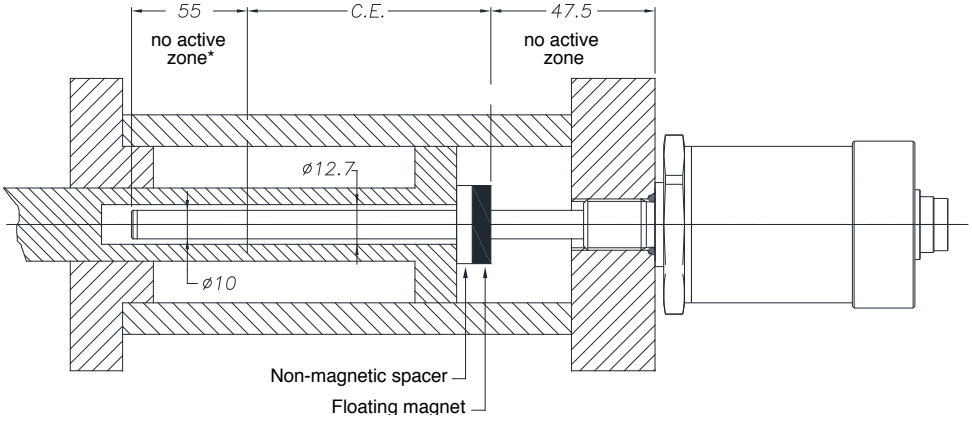
WRA-S-F/R cable output



WRA-S-B/D connector output

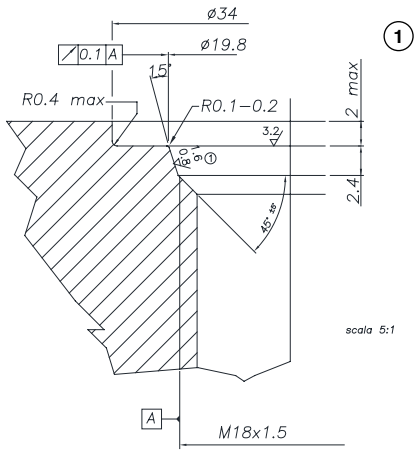


MOUNTING INSIDE A CYLINDER



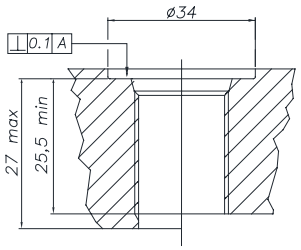
* for stroke up to 1000 mm (included) – over 1000 mm, the non-active zone becomes 60 mm because the tip includes a M4 threaded hole

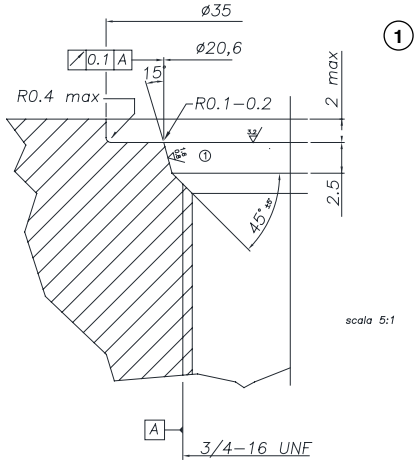
INSTALLATION INSIDE A CYLINDER



① **THREAD M18x1,5**
The sealing surface must be free from scratches longitudinal or spiral
Ro 1.6 µm for sealing with NON-pulsating pressure
Ro 0.8 µm for seals with pulsating pressure

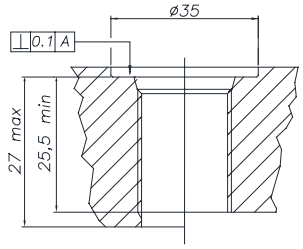
Suggested o-ring:
PARKER 6-349 15,4x2,1
Material: Viton 90° Shore-A
Mixes: PARKER N552-90





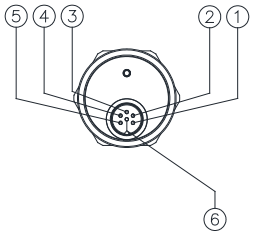
① **THREAD 3/4"-16UNF**
The sealing surface must be free from scratches longitudinal or spiral
Ro 1.6 µm for sealing with NON-pulsating pressure
Ro 0.8 µm for seals with pulsating pressure

Suggested o-ring:
PARKER 3-908 16,36x2,21
Material: Viton 90° Shore-A
Mixes: PARKER N552-90

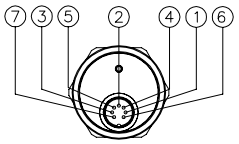


ELECTRICAL CONNECTIONS

OUTPUT WRA-S-B



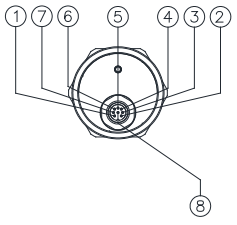
OUTPUT WRA-S-D



OUTPUT WRA-S-F/R



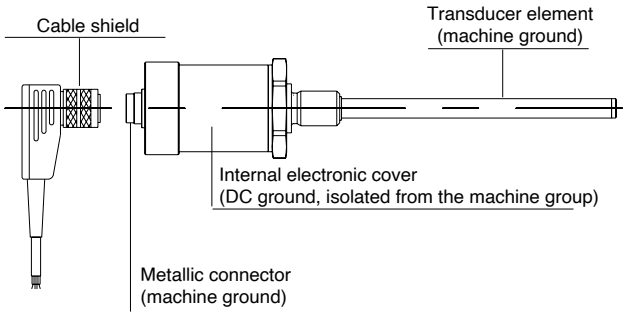
OUTPUT WRA-S-H



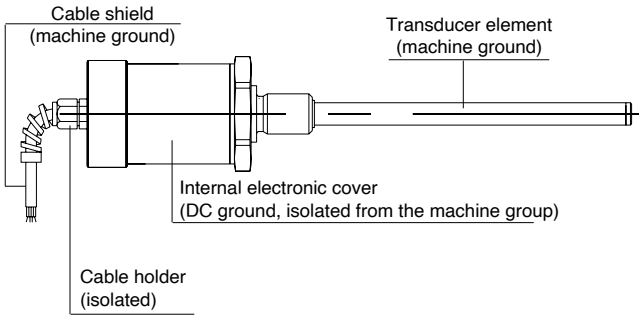
Function	WRA-S-B	WRA-S-D	WRA-S-F	WRA-S-R	WRA-S-H
	6-pin M16	*7-pin M16*	*Cable output*	*PUR cable output*	*8-pin M12*
Data -	1	1	Orange	Pink	5
Data +	2	2	Orange / White	Blue	2
Clock +	3	3	Green / White	Gray	3
Clock -	4	4	Green	Yellow	1
Power supply +	5	5	Blue / White	Green	7
Power supply GND	6	6	Blue	Brown	6
n.c.	-	7	-	-	8
n.c.	-	-	-	-	4

GROUNDING WRA-S

Connector output **WRA-S-B/D/H**



Wire output WRA-S-F/R



ORDER CODE

Position transducer W R A S ☐ ☐ ☐ ☐ ☐ ☐ ☐ — 0 0 0 0 ☐ ☐ X X X ☐ ☐ ☐ 0 X X

SSI digital output	S

Connector	
DIN45322 6-pin connector output	**B**
DIN45322 7-pin connector output	**D**
M12 8 pin output connector	**H**
Available on request	
Cable output PVC	**F**
Cable output PUR high flexibility	**R**

Model

Output	
Binary data code output	**B**
Gray data code output	**G**

Data length	
Data lenght 24 bit	**3**
Data lenght 25 bit	**4**
Data lenght 21+1 bit (FM357)	**5**

Data resolution	
0.002 mm	**0**
0.005 mm (standard)	**1**
0.010 mm	**2**
0.020 mm	**3**
0.040 mm	**4**
0.001 mm	**5**
0.0005 mm	**6**

Scale orientation	
Ascending (standard)	**1**
Descending	**2**
Ascending (over sampling refresh output 4 KHz)	**4**

Thread	
M18x1,5 (standard)	**M**
3/4" 16UNF	**I**

Outputs	
Output **B**	**00**
F/R outputs cables length	
1 mt (standard)	**00**
2 mt	**02**
3 mt	**03**
4 mt	**04**
5 mt	**05**
10 mt	**10**
15 mt	**15**

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

▶ **Included in the supply**
- Series WR position transducer
- OR 15.4x2.1 thread M18x1.5 code: **GUA064**
- OR 16.36x2.21 thread 3/4" - 16 UNF code: **GUA065**

▶ **Magnetic cursors must be ordered separately**

Ex.: WRA-S-B-0400-B-3 000011XXX00M0XX

Transducer model WRA, SSI output, connector B, model 400mm, thread M18x1,5, binary data code output, data length 24 bit, system resolution 0.005mm, scale orientation ascending.

FLOATING CURSOR

P C U R □ □ □

Cursors	
Cursor Diameter 32.8	**095**
Cursor Diameter 32.8 with 90° slit	**096**
Cursor Diameter 25.4	**097**
Floating cursor for liquids with hole diameter 12	**098**

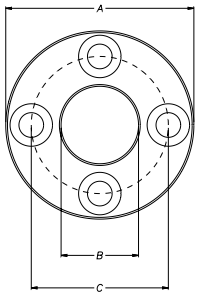
The **PCUR095** is supplied with:
N° 8 Brass nuts M4
N° 8 Brass washers D4
N° 4 Brass screws M4x25

The **PCUR096** is supplied with:
N° 4 Brass nuts M4
N° 4 Brass washers D4
N° 2 Brass screws M4x25

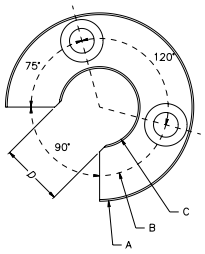
Dimensions	A	B	C	D	Thickness
PCUR095	32.8	13.5	23.9	-	7.9
PCUR096				11	
PCUR097	25.4	13.5		-	

Model		PCUR098
Length A	mm	52.4
Diameter B (hole)	mm	12
Diameter C	mm	44
Material		AISI 316

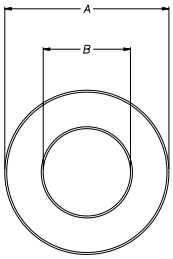
PCUR095



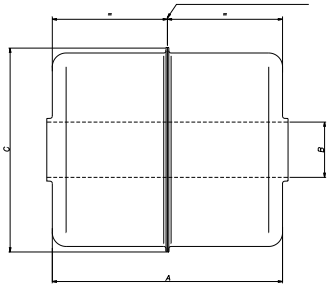
PCUR096



PCUR097



HEIGHT DETECTION POSITION



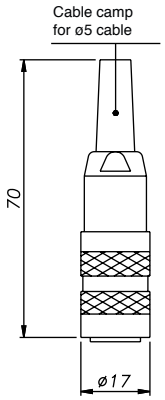
Note: PCUR098 is supplied with kit **PKIT036** for floating cursor for liquids.

OPTIONAL CONNECTORS

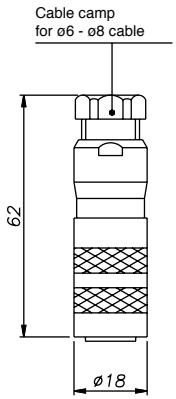
For outputs **B-D**, M16 connector thread

Codes: **CON021** 6-pin (WRA-S-B)
CON022 6-pin (WRA-S-B)
CON023 6-pin (WRA-S-B)
CON026 7-pin (WRA-S-D)
CON027 7-pin (WRA-S-D)
CON028 7-pin (WRA-S-D)

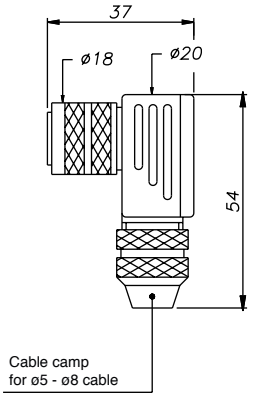
Connector extraction length: 10mm



CON021
CON026
IP40 - EMC



CON022
CON027
IP67 - EMC



CON023
CON028
IP67 - EMC

Note:
The IP rating specified in this document normally applies with the suitable female connector plugged-in and properly wired.

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

GEFRAN spa reserves the right to make aesthetic or functional changes at any time and without notice

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