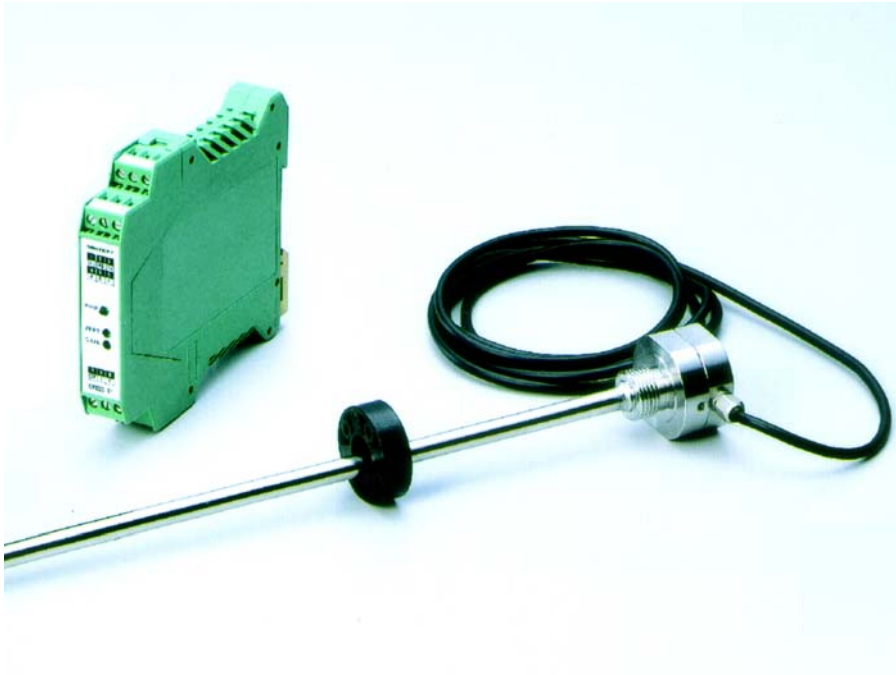
REGASENSE

GYGS/GYGCC-01

Manual



The GYGS-sensor is with its small size an ideal solution where a small built-in dimension is required. Still offering strokes up to 3500 mm.

The GY-series from Regal Components offer sensors that meet the highest demands on the market from one of the leading suppliers in Japan. Decades of experience ensures you highest quality.

The GY-series are designed for mount in hydraulic and pneumatic cylinders but can also be used in other applications such as liquid level detection.

The magnetostrictive principle, non-contact, offers very high performance and linearity combined with extreme long lifetime.

Simple mount and sealed with O-ring

Electrical specifications

Supply voltage	*24 VDC ±2V 0,01A*
Linearity	*±0,025% FS*
Resolution	*<0,01% FS*
Repeatability	*<±0,01% FS*
Temperature drift	*<40 ppm FS/°C*
Frequency response	*1 kHz / 1 ms (std)*
Output signal	*4-20 mA (load <500Ω)*

Mechanical specifications

Stroke length		*10-3000 mm*
Temperature	**operating**	*-20°C- +80°C*
	electronics	*0°C- +60°C*
	storage	*-40°C- +80°C*
Material	**probe head**	*Plastic*
	probe rod	*Stainless steel SS304*
Vibration		*6G (or 40 Hz 2 mmp-p)*
Shock		*50G (2 ms)*
Protection class		*IP 67 (10 kPa, 30 min)*
Working pressure		*max 350 bar (5000 psi)*

Order information

GYGS - □□□□ - G□ - □ / GYGSC-01- □ - □□□□ - □

Sensor probe

1= *Stroke (mm), max 3500*

2= *Cable length*, m (1,5 m std)*

3= *Cable direction*

- *L: Radial, adjustable (std)*
- *S: Axial*

**Please note: Cable length is sensitive, do not use longer cable than ordered*

Electronics

4= *Output*

- *A: 0-10 V*
- *B: 4-20 mA*

5= *Stroke (mm, max 3500)*

6= *Direction of output, when moved to rod tip side*

- *D: Increase*
- *R: Decrease*

More alternatives available, as well as different magnets and floats. Please contact Regal Components if you have any questions.

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ISO 9001 BUREAU VERITAS Certification

Specifications subject to change without notice.

Regal
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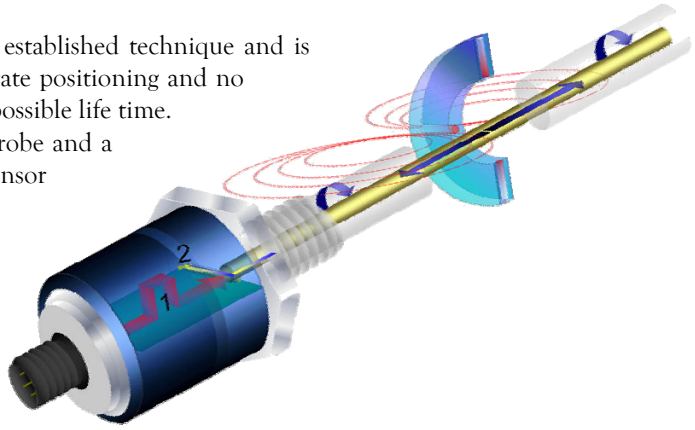
GYGS-sensor is one of the successful models in the GY-series, especially when small mounting dimensions are required. The magnetostrictive technique offers best possible performance combined with small dimensions. GYGS is easy to mount in cylinders. Stroke lengths are offered up to 3500 mm.

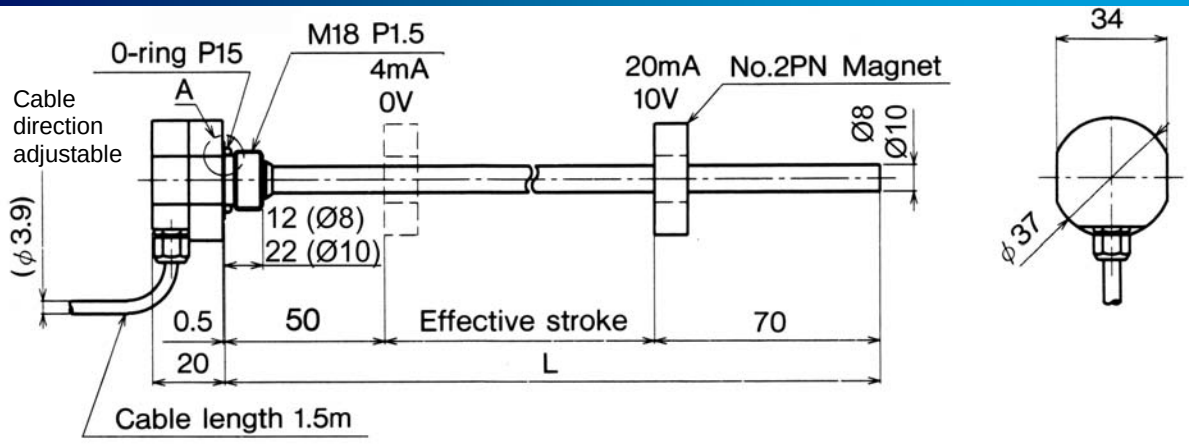
Following information is very important for best function. In case of wrong mounting/connection, there will be no warranty or we can not take any responsibility for problems caused by the sensor. If you have any questions, please contact Regal Components: +46-18-657000, info@regal.se, www.regal.se.

Technical principle

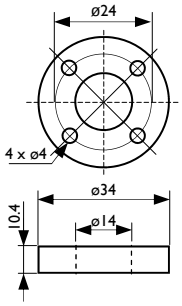
The so called magnetostrictive principle is since long time an established technique and is used in many areas to detect a position. It enables a very accurate positioning and no moving parts is in contact with each other, which gives longest possible life time. Simply described the sensor contains of electronics, a sensor probe and a magnet. The electronics sends an electrical pulse along the sensor probe which contains the wave guide. It moves along the wave guide until it hits the magnetic field caused by the magnet around the probe. The pulse is then returned to the electronics with the speed of sound, where it is detected and calculated to a position, as the speed and time is known. The returned wave/pulse can be detected in different ways. Our sensors always uses the best solution to give a reliable and accurate signal to your application.



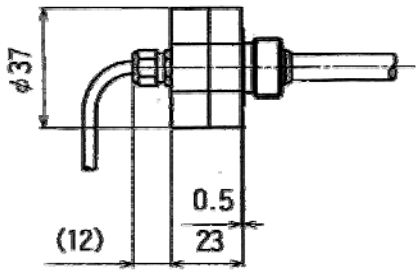
Dimensions



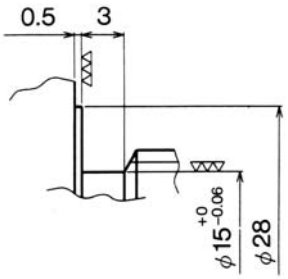
Magnet 2PN



Axial cable (option)



Detail A



There is "dead-zones" on the sensor closest to the electronics and at the opposite end of the sensor probe. The linearity is valid within the electrical stroke length. The signal will not disappear immediately outside the electrical stroke, but might have worse linearity. The length of these dead zones is a combination of the used magnet. As standard the area closest the electronics/header is 50 mm and the opposite end 70 mm. Without any extra cost we can offer as short as 25 mm closest the header and with an additional cost down to 40 mm on the probe end.

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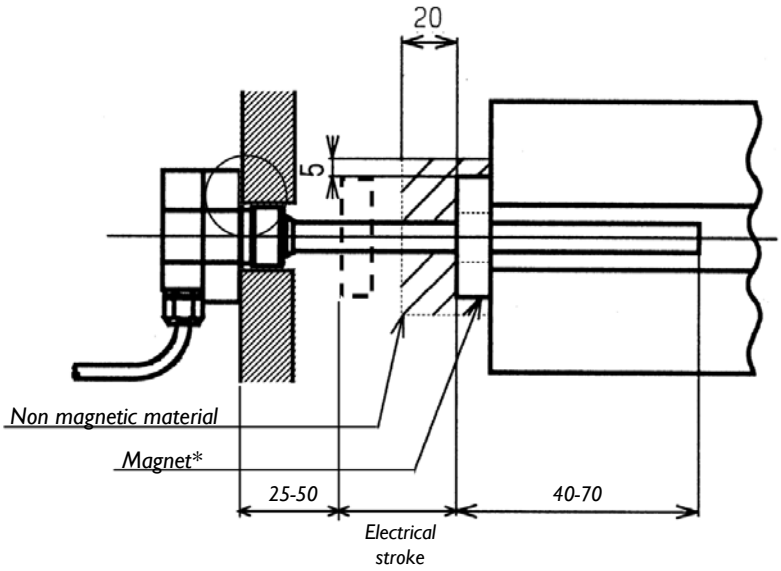
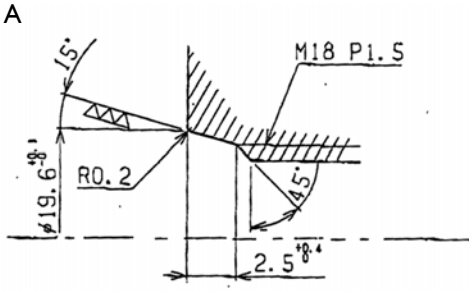
Montering

GYLT/GYLS Is designed for integration in hydraulic and pneumatic cylinders, but mounting elsewhere is of course possible to measure linear movements/ positions. The sensor should be mounted in appropriate way in the cylinder bottom enabling the probe in a hole in the piston rod.
Please pay attention to the requested non magnetic area in front of the magnet or float, check the drawing. If the magnet is fastened with screws, these can be any screw type and don't have to be non magnetic.

There are a "dead-zone" on both ends of the sensor probe. The output signal range and linearity is guaranteed inside the active electrical stroke. The output don't disappear immediately outside the electrical stroke. The length of the two dead zones is a combination of the used magnet. Please see the magnet/float-page. As standard the dead zone closest the sensor head is 50 mm, and on the probe end 70 mm. Shortening of the dead zones are possible. The probe end can be shortened to 40 mm at an extra charge, but the 50 mm closest to the sensor head can be shortened to 25 mm at no extra charge.

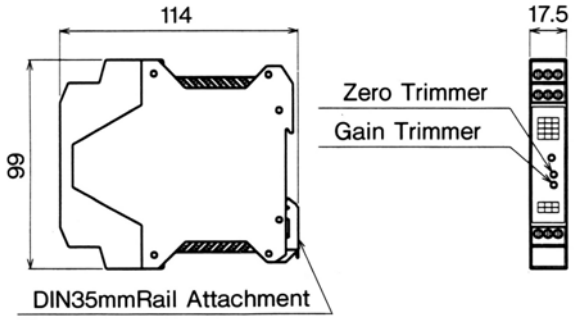


A

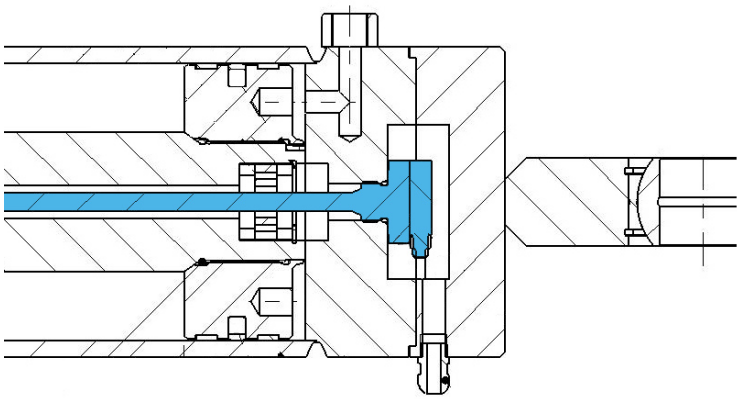


Please note that some magnets / floats have a mark on one side, which should be mounted against the sensor header.

GYGSC-01 Electronic box (included)



Mounting suggestion



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Electrical connections / calibration

The GYGS sensor offer analogue 4-20 mA output or voltage output. Maximum allowed load is 500 Ohm. If the load exceeds the maximum, the accuracy will decrease. Please make sure all specifications are correct.
The sensor is calibrated prior to delivery. If adjustment is needed we recommend to use external electronics or on the GYGSC-01 electronic box (zero/gain).

Connecting the sensor/electronic box

Connect all cables to the electronic box GYGSC-01 according to the table to the right. "0V" and "COM" are connected in the sensor. Please note that supplied cable length from the sensor shall not be jointed to be longer, this is factory calibrated.
Please make sure to use screened cables and connect the screen to ground. Sometimes it might be important to separate supply cables from signal cables.
A stable 24 VDC should be used as supply. If the supply is varying too much, it may cause output problem or no output. Allowed supply is 22-26 V.

Cable size:	0.3-2.5 mm^2
Stripping length:	7 mm
Mounting torque:	0.5-0.6 Nm
Screw driver:	3 mm

Pin number	Terminal	Connection / wiring
1	SHLD	Shield of probe
2	GND	0 V
3	24V	+24 VDC
4	W	White wire from sensor
5	B	Black wire from sensor
6	R	Red wire from sensor
7	COM	COM
8	I	Current output
9	V	Voltage output, 0-10 V (pin 7 to 9)

Before switching on the supply

1. Make sure all cables are correctly connected.
2. Make sure correct supply voltage is used.
3. Make sure there is a magnet or float mounted, some magnets needs to be mounted only one direction. If magnet is missing the current might increase and destroy the controller.

Adjustment/calibration

Please follow these steps to calibrate the min/max value from the electronic box (zero/full). Please note that this can be done after power has been switched on for 15 min.

1. Place the magnet/piston rod at zero position
2. Adjust the ZERO-screw to achieve 0 V (4 mA for current output)
3. Place the magnet/piston rod at full position.
4. Adjust the GAIN-screw to achieve 10 V (20 mA for current output)
5. Repeat step 1-4 to check the settings. Readjust if necessary.

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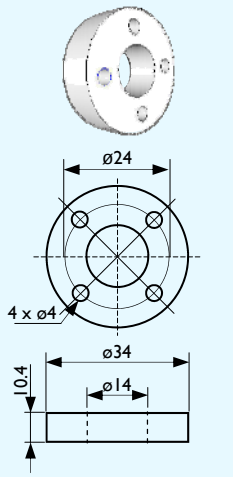
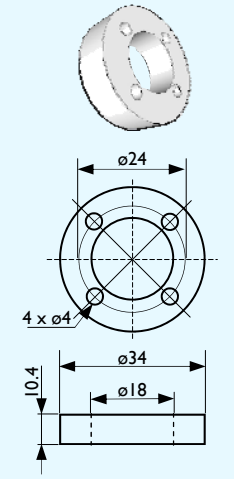
Magnets

We offer you several alternatives of magnets and floats. These are made of plastic or metal wherein some permanent magnets are mounted. Size, design and material are chosen to offer best possible features in most applications and environments.
The permanent magnets are used to detect the position in the sensor and to create the phenomena called magnetostriction.
All magnets below can be used with the GYGS-sensor. Please see below for dimensions. If needed we can also offer special dimensions.
Our magnets do not need any non magnetic spacer inside the magnet when mounted, but can be mounted direct according to the mounting drawing.
Please contact Regal Components if you have any questions.

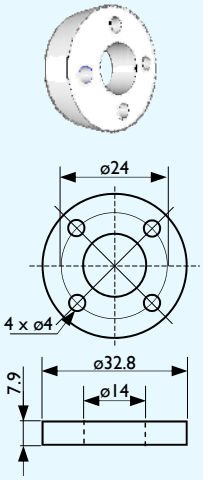
No 2PN (Nylon)



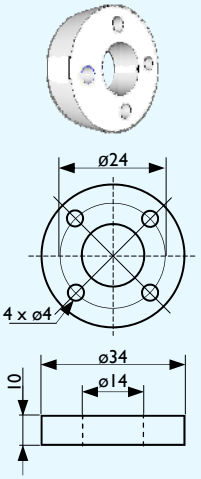
No 2KN



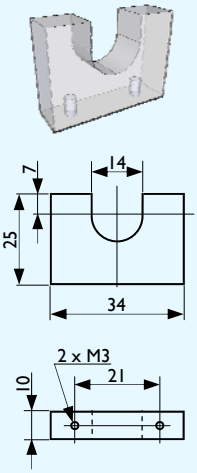
No 2TN



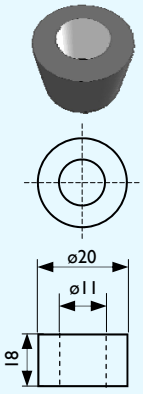
No 2SN-14



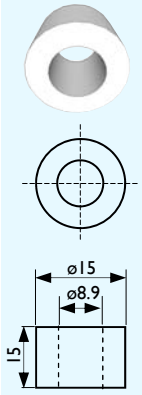
No 11N(MC Nylon)



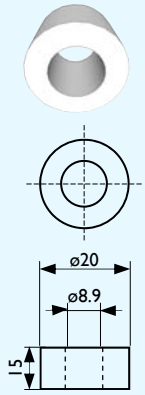
No 3



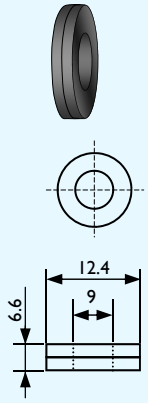
No 0SPM



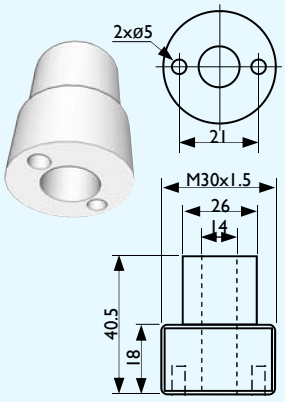
No 0LPM



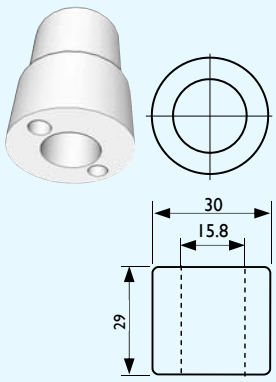
Ringmagnet



No T14-M4



No T16-M3



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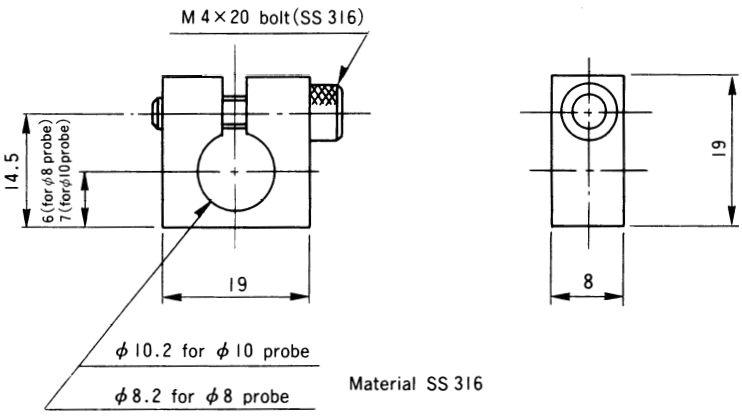
Floats

An other perfect use of the GY-series is level detection. The sensor probe is made of stainless steel and thus fits most liquids, like water, oil, chemicals etc.
We offer several sizes and materials of floats to fit the actual liquid/density and pressure. If you need support to find the right floats, please contact us with information about density and pressure, and we will suggest the best float.
Permanent magnets are mounted in the floats to detect the position in the magnetostrictive material. These are designed for our sensors and for use in many different applications.

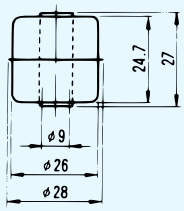
Below you find drawings of our standard versions with dimensions. Please do not forget to order float stopper, which disable the float to fell off in the tank while mounting/demounting.

Please contact Regal Components if you have any questions.

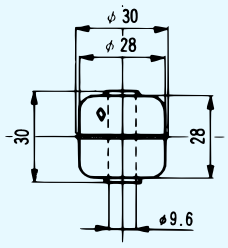
Float stopper



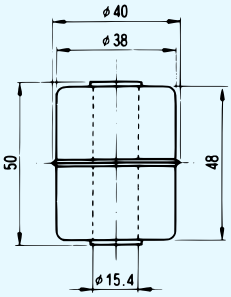
Ø28 SS316)



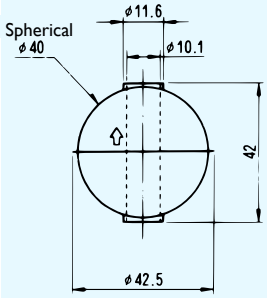
Ø30 (SS316)



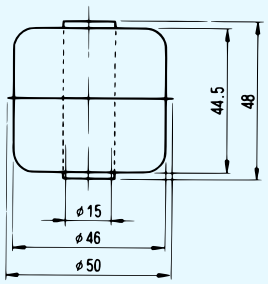
Ø40 (SS316)



Ø42.5 (SS316)



Ø50 (SS316)



More alternatives available. Please contact Regal Components if you have any questions.

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