



AARO Sensors and Magnets User Manual

Software Version 2.00 Issued 12/2003

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E104004 (M)



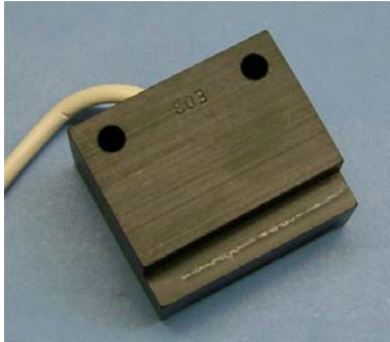
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Certificate No. FM21410
BS EN ISO 9001

Sensors

SR0421 – Reed Switch Sensor



Description

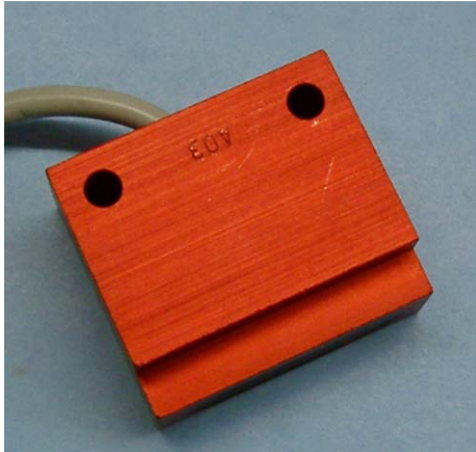
The SR0421 reed switch sensor is encapsulated into a rugged weather proof housing to IP67. The sensor has a 2 metre flying lead attachment and 20mm conduit entry at the back. This 2 wire sensor works in conjunction with a permanent magnet to provide volt free contact signals to an AARO controller. The normal arrangement is to mount the bipole magnet (type MG0150) on the end of a shaft to be monitored for speed and the sensor on a fixed bracket facing the rotating magnet, separated by a gap of up to 19mm. For each rotation, the sensor generates one electrical impulse to the AARO control unit

Specification

Speed Range	:	0-125 rpm
Voltage	:	N/A
Current	:	10mA approx.
Temperature Range	:	-20°C to +85°C
Maximum Sensor Gap	:	19mm
Conduit Entry	:	20mm tapped
Dimensions	:	50mm x 58mm x 31mm
Weight	:	300 grams
Connections to AARO	:	2 metre – 3 core flying lead : (blue to terminal 4) : (brown to terminal 5)
MTBF	:	750 million operations

Note – The SR0421 Reed sensor operational life is subject to the effects of cable length which acts to reduce the electrical life expectancy and follows a logarithmic scale. For high speed applications above 125 rpm we would advise that either the hall effect sensor SR0531 or the inductive sensor SR0422 be used.

SR0531 – Solid State Sensor



Description

The SR0531 solid state sensor contains a Hall effect magnetic field detector and works in conjunction with a permanent magnet to provide signals of speed to an AARO controller. The normal arrangement is to mount the bipole magnet (type MG0150) on the end of a shaft to be monitored for speed and the sensor on a fixed bracket facing the rotating magnet, separated by a gap of up to 19mm. For each rotation, the sensor generates one electrical impulse to the AARO control unit

Specification

Speed Range	:	0-100,000 rpm
Voltage	:	12V dc supplied from AARO Controller
Current	:	10mA approx.
Temperature Range	:	-20°C to +85°C
Maximum Sensor Gap	:	19mm
Conduit Entry	:	20mm tapped
Dimensions	:	50mm x 58mm x 31mm
Weight	:	300 grams
Connections to AARO	:	2 metre – 3 core flying lead
	:	(blue to terminal 4)
	:	(black to terminal 5)
	:	(brown to terminal 6)

SR0422 – Inductive Proximity Switch Sensor



Description

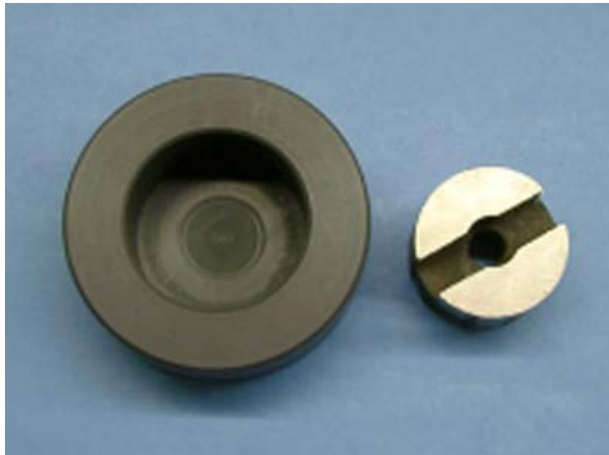
The SR0422 inductive proximity switch is an M18 short barrel sensor with solid potted internal circuitry to withstand shocks and water washdown to IP67. The thick nickel plated barrel has wrench flats for easy installation and a high visibility LED indicator for sensor operation. The sensor works in conjunction with a rotating flag or bolt head to provide signals of speed to an AARO controller. The normal arrangement is to mount a ferrous flag or bolt head on the end of a rotational shaft or drum and the sensor on a fixed bracket facing the rotating flag. The maximum sensing distance is 5mm. The sensor generates one electrical impulse each time actuation occurs via the rotating flag/bolt head to the AARO control unit

Specification

Response frequency	:	0.6 K Hz
Voltage	:	12V dc supplied from AARO Controller
Current	:	13mA approx.
Output Configuration	:	NPN – Normally Open Contact
Temperature Range	:	-40°C to +85°C
Maximum Sensor Gap	:	5mm +/- 10%
Circuit Protection	:	reverse connection, surge absorber, load short circuit protection.
Dimensions	:	M18 x 50mm
Weight	:	160 grams
Connections to AARO	:	2 metre – 3 core flying lead : (blue to terminal 4) : (black to terminal 5) : (brown to terminal 6)

Magnets and magnet shrouds

MG1050 – Magnets



The MG1050 is a powerful permanent magnet 38mm in diameter with a 8mm fixing hole. The magnet can be mounted on the end of a rotating shaft or drum and is used in conjunction with a reed switch sensor (SR0421) or a Solid State Sensor (SR0531).

Note – Permanent magnets are brittle objects and care should be taken when handling, installing or maintaining rotating equipment that are fit with MG1050 magnets.

A plastic magnetic shroud MG1150 is available that not only offers a degree of mechanical protection but also permits easier periodic removal of ferrous particles where there are heavy ferrous dust concentrations.

Shaft Mounting

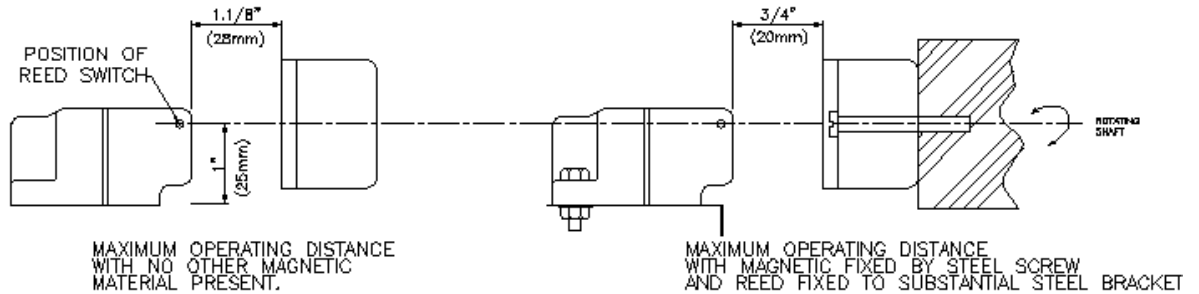
When a single magnet is positioned on the center line of a rotating shaft the sensor will produce 2 pulses per revolution. The maximum flux gap, that is the distance between the sensor and the rotating magnet, should not exceed 19mm.

Drum mounting

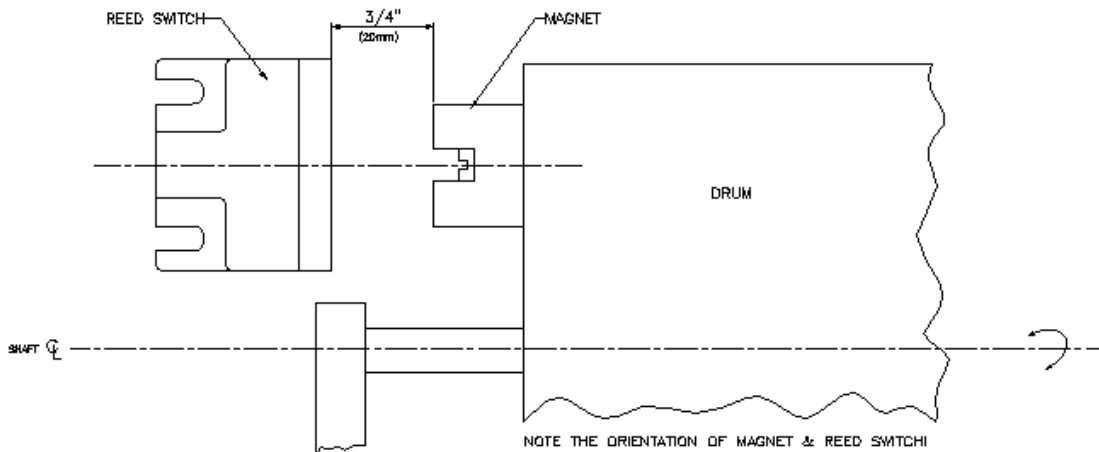
When 2 magnets diametrically opposed are fitted to a rotating drum the sensor will produce 2 pulses per revolution. The maximum flux gap should not exceed 19mm.

**NOTES ON INSTALLATION OF MAGNET & REED SWITCH
FOR CAT 3 ZONE 22 APPLICATIONS THE SENSOR WIRING SHOULD BE INSTALLED
USING FLEXIBLE CONDUIT**

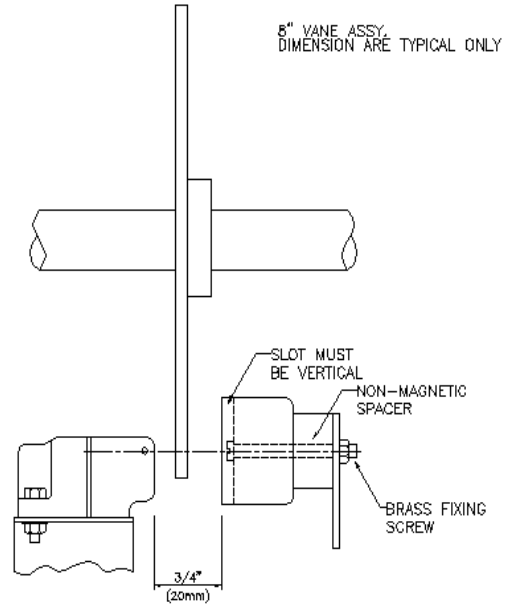
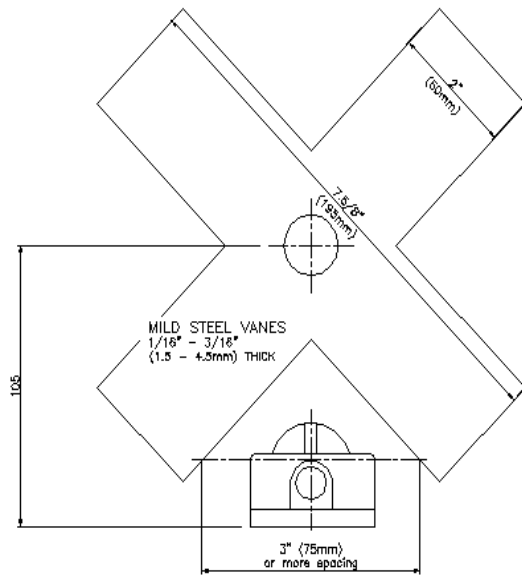
A. MAGNET MOUNTED ON SHAFT \varnothing (REED SWITCH GIVES 2 PULSES/REV)



B. MAGNET MOUNTED ON FACE OF DRUM (REED SWITCH GIVES 1 PULSE/REV)

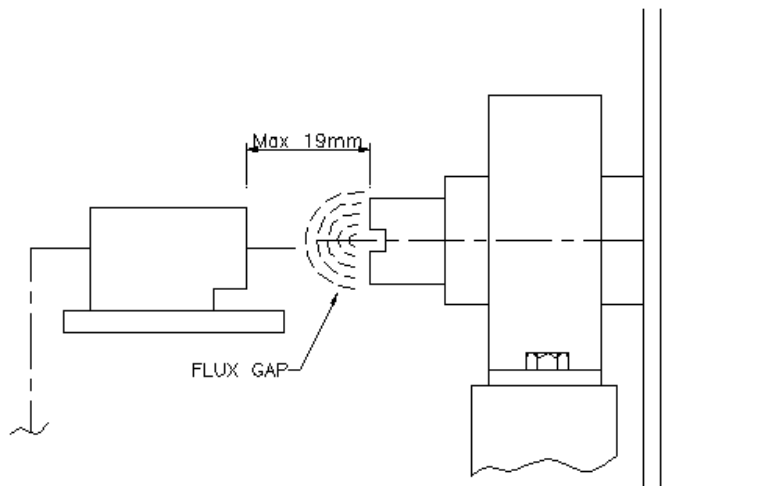


C. VANE SWITCHING WITH MAGNET AND REED SWITCH STATIONARY
(FOR SPEEDS LESS THAN 5RPM OR WHEN SHAFT END NOT AVAILABLE)



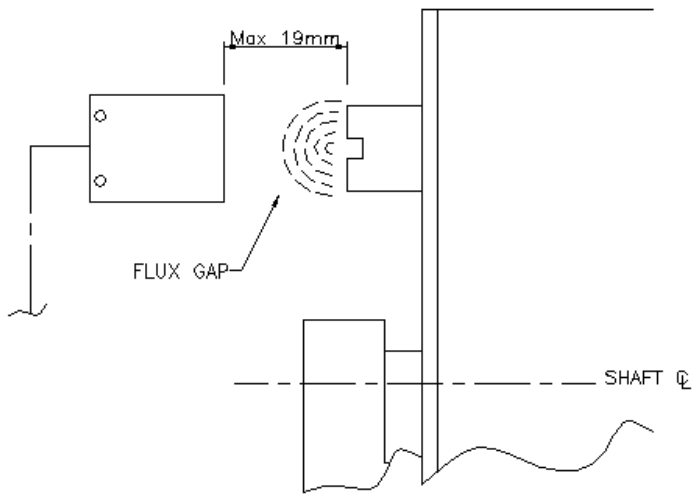
NOTE - MAGNET FIXING SCREW 1/4" DIA. MAX. CHEESE HEAD OR 5/16" DIA. MAX. SOCKET HEAD.

REED SWITCH SENSOR



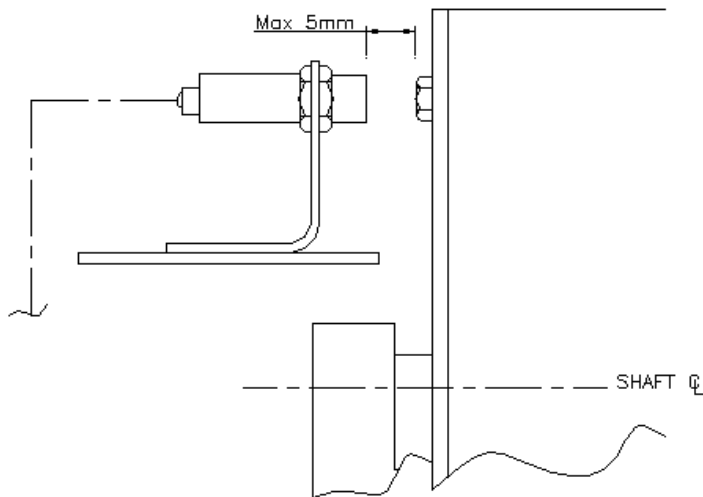
MAGNET FITTED TO ROTATING SHAFT ON CENTRE LINE AND PRODUCES 2 PULSES / REV.

REED SWITCH SENSOR



2 MAGNETS FITTED TO ROTATING DRUM
DIAMETRICALLY OPPOSED PRODUCE 2 PULSES / REV.

INDUCTIVE PROXIMITY SENSOR



2 BOLT HEADS PROJECTING FROM ROTATING DRUM
DIAMETRICALLY OPPOSED PRODUCE 2 PULSES / REV.

SR0421 Reed switch Sensor and SR0531 solid state sensor dimensions

