

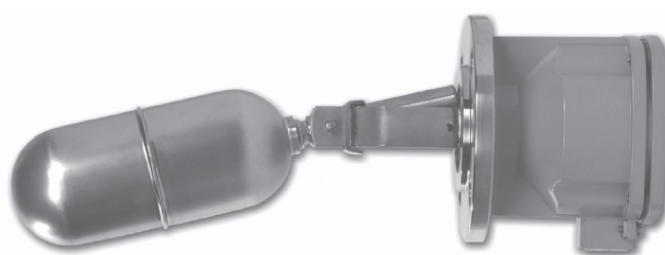
Magnetic Level Switches

Magnetic activated level switches for controlling liquid levels in most industrial applications. When they have been installed at the point of operation, they work as on/off switches and are used for full automatic management of tanks (including pressurised ones) allowing operations such as starting/stopping of pumps, opening/closing of solenoid valves and activation of alarm systems. One or more instruments can be used, depending on the number of operation points necessary.

The level switches can be equipped with electrical contacts, reed or micro switches along with various forms of protective housings to suit most environmental and safety conditions.

Standards and certifications

This product fully complies with the requirements of the European Directive ATEX 94 / 9 / EC, PED 97 / 23 / EC, RINA and M.M.I. approved.



RIL295 type A
with round flange and
weather-proof housing

Available types



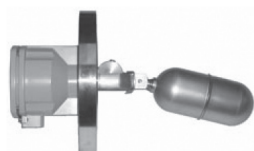
RIL295 A

Standard type for general purpose, used in most industrial applications. Horizontal mounting. One operation point. In the picture, the 100% stainless steel versions suitable for low temperatures, for installation in high saline concentration environments and for use in the food industry.



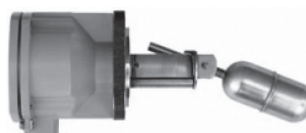
RIL295 DV

Type with differential range, adjustable in one direction, only 0 - 40°. Can be used as a start/stop with a single instrument. Vertical mounting. The differential increases depending on the length of the stem and there are 4 regulation points, every 15°.



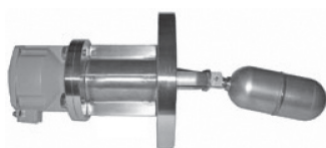
RIL295 CP

Type suitable for controlling liquid with specific gravity ≥ 0.5 kg/l. Horizontal mounting. Float with counterweight. One operation point.



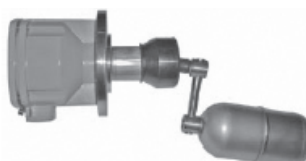
RIL295 AV

Specific type for high vibration with reed switch contact. Frequencies $5 \div 100$ Hz. Horizontal mounting. One operation point.



RIL295 AT

Type with cooling extension, to be used in applications with temperatures from 150°C to 350°C. It can also be assembled in types D, DV, L, S. Horizontal or vertical mounting. One operation point.



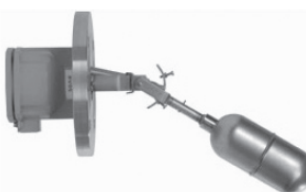
RIL295 M

Type equipped with protection bellow to avoid any deposits or inclusions present in the process liquid, eliminating risk of blockage. It can also be mounted on types D, DV, L and S. Horizontal mounting. One operation point. Stem length depending upon application.



RIL295 O

Type indicated for sunken or difficult to access tanks (high or low level). Vertical mounting on pole in open tanks or in tanks with manhole. Attention must be paid to the connection rating: float is 120 mm. One operation point, with field adjustable start/stop function. Stem length depending upon application.



RIL295 D

Type with differential range, adjustable $\pm 40^\circ$ in two directions. Can be used as a start/stop with a single instrument. Horizontal mounting. The differential increases depending on the length of the stem and there are 7 regulation points, every 15°.



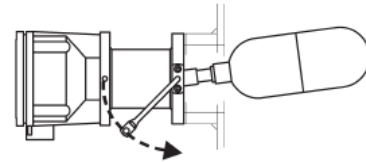
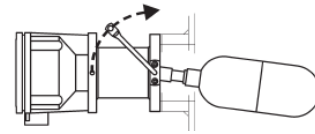
RIL295 PN

Pneumatic type, suitable in applications where electricity is not allowed.
Stainless steel body with three ways valve.
Horizontal or vertical mounting.
One operation point.



RIL295 T

Type equipped with a device for field verification (operation checking).
Mostly used in the naval industry.
Can also be made in types L and S.
Horizontal and vertical mounting.
One operation point.



Example of manual operation checking, to be carried out in the field



RIL295 L

Type recommended in applications containing foam, inclusions and viscous fluids, where conditions require that the fulcrum point is not in touch with the process liquid.
Vertical mounting.
One operation point.
Stem length depending upon application.



RIL295 S

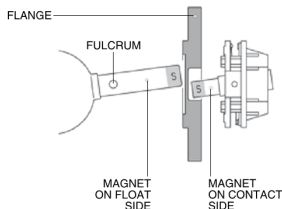
Type recommended in applications containing foam, inclusions and viscous fluids, where conditions require that the fulcrum point is not in touch with the process liquid.
Horizontal mounting.
One operation point.
Stem length depending upon application.



RIL295 MINI (MM)

Small dimension type.
Horizontal or vertical mounting.
One operation point.
IP54 and IP67 protection degree.

Operating principle



Two oscillating magnets on the same axis, one integral with the float and one integral with the electrical equipment, repel each other reciprocally through a non-magnetic material flange.
The flange separates the housing, containing the electrical equipment, from the float that is inserted in the tank.
The float automatically follows the level of the liquid, both in rising and in falling conditions.
The switching of the electrical contact is quick and reliable.

Specifications

Mounting

The Riels RIL295 series level switches can be installed horizontally or vertically directly in the tank, or externally in a chamber outside the tank. Square flange is specific for the naval industry.

Construction Features

Materials and sizing are defined in relation to the characteristics of the process fluid and conditions of the project.

Wetted parts

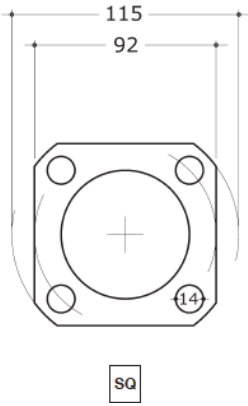
Flange					Float							
Steel	304SS	1	316SS	2	304SS	A	316SS	B	Monel	C	Hastelloy	D
Plastic	PVC	3	PP	4	PVDF	5	PVC	E	PP	F	PVDF	G

Float diameters

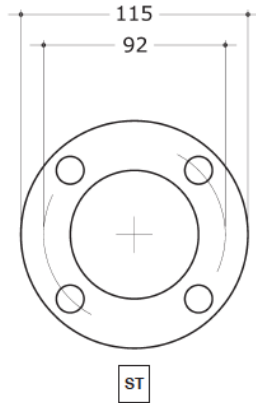
Steel	Ø 48	48	≥ DN50 - 2" ASME	Ø 63	63	≥ DN 65 - 2½" ASME
Plastic	Ø 50	50	≥ DN50 - 2" ASME	Ø 60	60	≥ DN 65 - 2½" ASME

Note: the size of the float is always subject to fluid specific gravity.

Naval industry flange



Flange standard



UNI and ASME (ANSI) flanges

UNI	PN 6	PN 10/ 16	PN 40	PN 64
DN 50	UA	UB	UC	UC
DN 65	UE	UF	UG	UH
DN 80	UI	UL	UM	UN
DN 100	UP	UQ	UR	US

ASME	150	300	600
2"	AA	AB	AC
2½"	AD	AE	AF
3"	AG	AJ	AH
4"	AI	AL	AM

Flanges are available in other sizes on request.

Design conditions

TMA - Maximum allowable temperature

Steel	-20 +150°C
Steel with cooling extension	-20 +350°C
Plastic - PVC	-20 +70°C
Plastic - PP	-20 +105°C
Plastic - PVDF	-20 +130°C

PMA - Maximum allowable pressure

Steel - Standard flange	< 16 bar
Steel - flange sized according to rating	< 100 bar
Plastic	6 bar

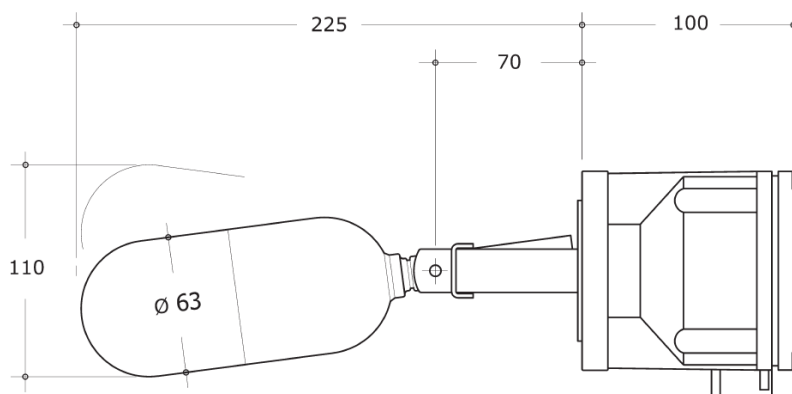
Fluid specific gravity

All models except model CP	≥ 0,8 kg/l
Only CP	≥ 0,5 kg/l

Differential

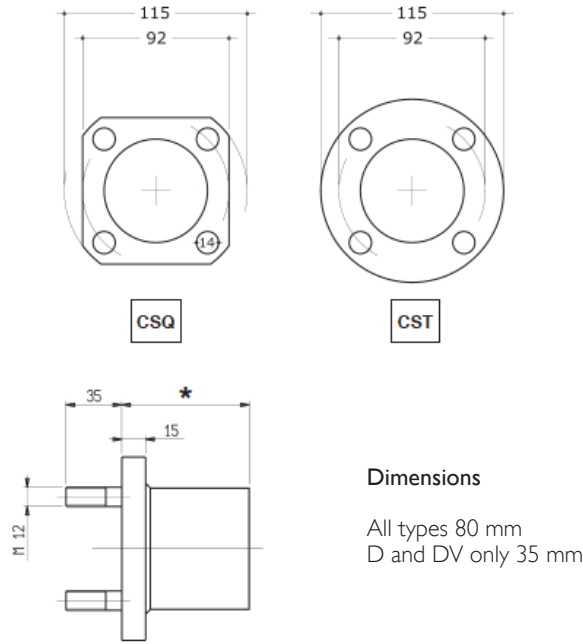
All models except model D e DV	fixed 15 mm
Only D and DV types	± 40°

RIL295 type A with round flange and weatherproof housing



Mounting accessories

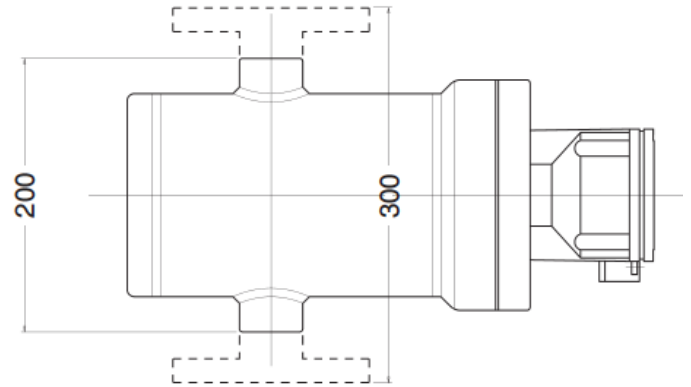
Counterflange (on request, also in other sizes)



Dimensions

All types 80 mm
D and DV only 35 mm

Chamber for installation outside the tank



Minimum distance between connections

Flange 300 mm
Output 200 mm

How to order spares

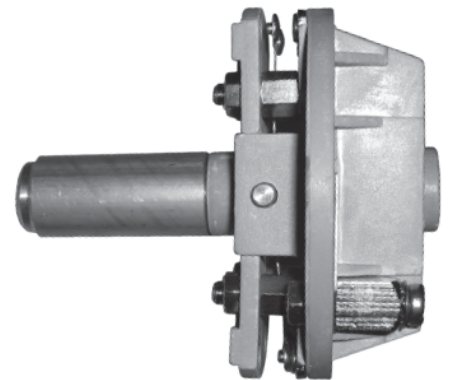
The components subject to wear or damage are possible:

- a. float
- b. crew electric

To apply you must provide the serial number of the instrument placed on the plate.

Riels electrical equipment and housings for RIL295

The electrical equipment on the Riels RIL295 series level switches comprises a support, including two contact holders, one fixed and one oscillating. Both parts are in polyester resin and high-insulation dielectric material with mould-resistant characteristics. The oscillating element includes a magnet whose south pole points towards the flange that separates the electrical equipment from the liquid contained in the tank. According to the buoyancy provided by the liquid in the tank the float works by pivoting a sealed cartridge containing a magnet, with south polarity on the end towards the flange. As the two magnets on the two oscillating devices repel each other, they are never in line on the same axis. Consequently, the status of the electrical equipment switches from the normally open (NO) to normally closed (NC) position or vice versa.



Electrical connections

The housings allow for two cable entry points which are available as follows:

Standard	G ½" F	A
Explosion-proof	Gk ½" F	B
On request	½" NPT F	C
On request	M 20x1,5	D
On request	PG 13,5	E

Electrical contact characteristics

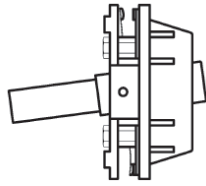
Standard (A)

Standard microswitch recommended for general purpose.
Gold plated contacts in open air.

Contact coating: Galvanic in gold:
- standard 2 μ
- special 5 μ

Mechanical life > 10⁶

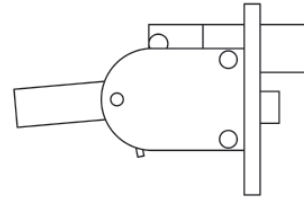
Electrical life > 10⁴



V	~	A	=	Load
220	3	2	Resistive	
	1,5	0,5		Inductive
30	6	3	Resistive	
	3	1,5	Inductive	

For oxidising environments (C)

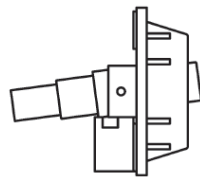
Microswitch indicated for oxidising or corrosive environments.
Goldplated contacts hermetically sealed in inert gas.



V	~	A	=	Load
220	1	-	Resistive	
	-	0,4		Inductive
30	3	-	Resistive	
	-	1,5	Inductive	

Weatherproof (B)

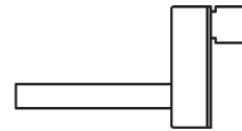
Weatherproof microswitch.
Goldplated contacts. IP66
Nominal current:
Minimum 10 mA - Maximum 400 mA
Nominal voltage:
Minimum 5 V - Maximum 30 V



V	~	A	=	Load
220	7	0,5	Resistive	
	5	0,03		Inductive
30	7	7	Resistive	
	5	5	Inductive	

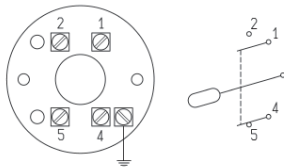
For high vibrations (D)

Reed switch contact indicated for high vibrations, resists from 5 to 100 Hz.
30g | 1ms. Goldplated contacts hermetically sealed in inert gas.

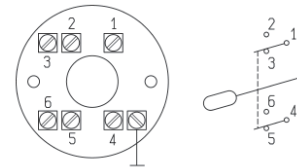


Interruption power	60 W / VA
Switchable current	1 A
Switchable voltage	250 V \approx

SPDT execution (1)



DPDT execution (two simultaneous SPDT contacts) (2)



Housings

The Riels RIL295 series magnetic level switch housings are available in various forms to meet all possible application needs and are suitable for most environmental and safety conditions. They are available in the weatherproof version for general use and the explosion-proof version for use in hazardous areas.

Weatherproof housing (1)

Type for general purpose, used in most industrial applications.
In pressure die-cast aluminium and protected with polyamide paint.
Protection degree IP67.
One cable entry point.



Weatherproof housing (2)

Special type adapted for low temperatures, installation in high concentration saline environments and for use in the food industry.
Entirely in stainless steel.
Protection degree IP67.
On request IP68.
Up to two cable entry points.



Explosion-proof housing (3)

ATEX certified II 1/2 G EEx d IIC T5 resp. T4 for use in hazardous areas.
In pressure die-cast aluminium with a polyamide paint coat. Protection degree IP67.
Up to two cable entry points.
Protection degree IP67.
Up to two cable entry points.

