

Instruction Manual

Alfa Laval Rotacheck Sensor and Relay for Alfa Laval Rotary Jet Heads

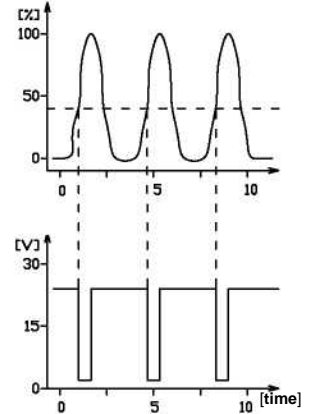
IM-TE91A663-EN1

Function:

The Rotacheck sensor and relay are used in conjunction with Alfa Laval's injector tank cleaning system to verify that the nozzle rotates and the entire internal tank surface is cleaned.

The water-driven injector in the tank cleaner system rotates on two axes during the course of the cleaning process, ensuring that the entire internal tank surface is flushed a predetermined number of times.

The water jet will hit the Rotacheck sensor membrane at set intervals. The impulse from the sensor membrane will trigger an electric output signal from the sensor. This is passed to the Rotacheck relay where it is converted to an "open collector" signal on terminals 28, 29 and 30, and a relay signal (switch contact) on terminals 23, 24 and 25 respectively.



The Rotacheck relay is supplied from 230 V mains terminals 16 and 19 (alternatively 115 V terminals 16 and 18 or 24 V terminals 16 and 17). The relay contains the necessary zener barriers needed to make the system intrinsically safe.

Precautions when installing in Ex (explosive) zones

The Rotacheck sensor must always be supplied through the Rotacheck relay, as the system's Ex-safety is based on the relay limiting the current and voltage to the levels acceptable within Ex zones.

The Rotacheck sensor must be permanently mounted in the tank, and always on the welded nozzle shown in the attached drawing 52E058inst. The nozzle can be supplied as an optional extra part.

The Rotacheck sensor must be mounted in Ex Zone I and Zone II, and form a partition between EX zone 0 and Zone 1, when the requirements in this installation guide are met.

The sensor is marked with the following specifications:



The Rotacheck relay, which must be remote from Ex Zone I and Ex Zone II, has the following specifications:



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In an Ex environment, the sensor and relay must be used within temperature range -20 to +40°C.

Maximum length of the cable linking the relay and sensor can be calculated as follows:

$$\text{Length C} = \frac{C_o[\text{nF}] - C_i[\text{nF}]}{\text{Cable capacity per m}[\text{nF}]}$$

$$\text{Length L} = \frac{L_o[\text{mH}] - L_i[\text{mH}]}{\text{cable induction per m}[\text{mH}]}$$

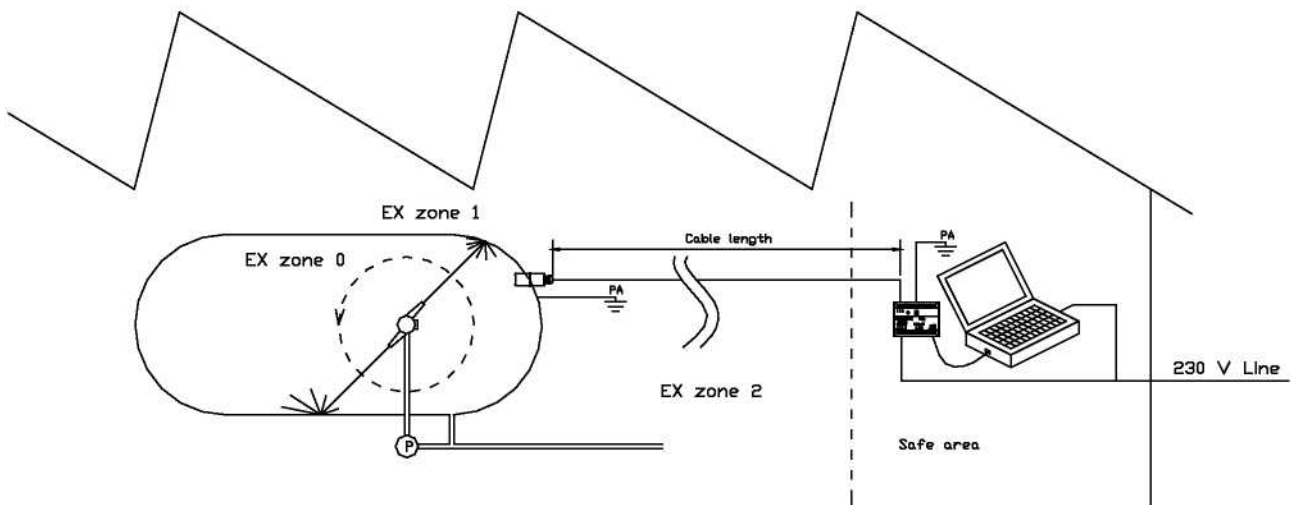
Maximum cable length between sensor and relay must be less than the shortest length 1 or 2 above.

Batch code and production year can be seen on the labels for sensor and relay in the following format WWYY, where WW is production week and YY is production year.

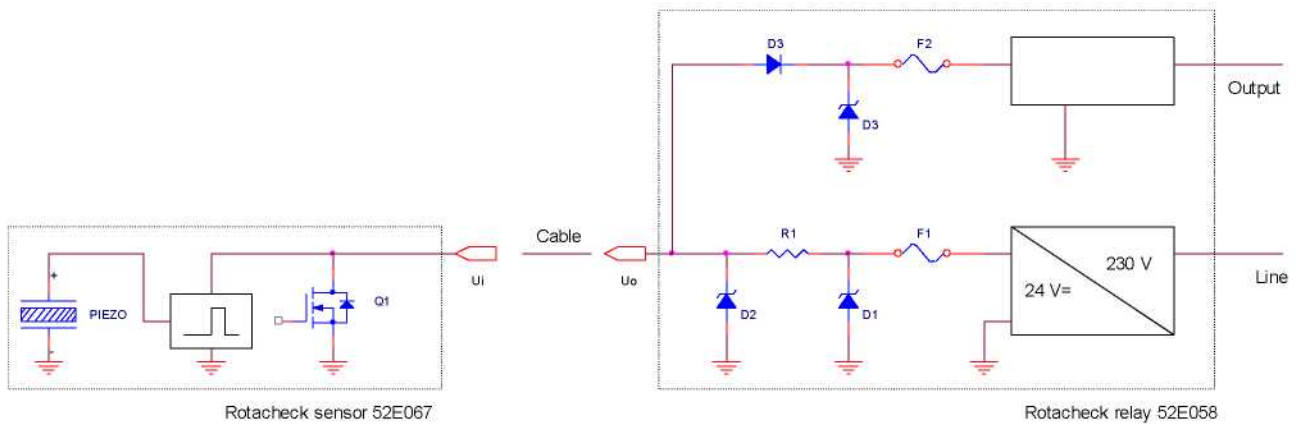
Product repair requires return to the factory at the following address: Alfa Laval Tank Equipment, Baldershøj 19, DK2635 Ishøj, Denmark.

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Example of installation of Rotacheck system with sensor mounted in tank, relay installed in control room.



Principle diagram of electrical circuit for intrinsic safety.



Technical specification giving Ex safety.

Sensor 52E067			Cable		52E058		
EEx ib IIC T6					[EEx ib IIC]		
U_i	10,6	V	0,6	$\mu\text{H/m}$	U_o	10,6	V
I_i	15	mA	0,2	nF/m	I_o	15	mA
L_i	100	μH			L_o	100	mH
C_i	10	nF			C_o	2,3	μF

Example: :

$$C = (2,3 \mu\text{F} - 10 \text{nF}) / 0,2 \text{nF/m} = 114.500 \text{ m}$$

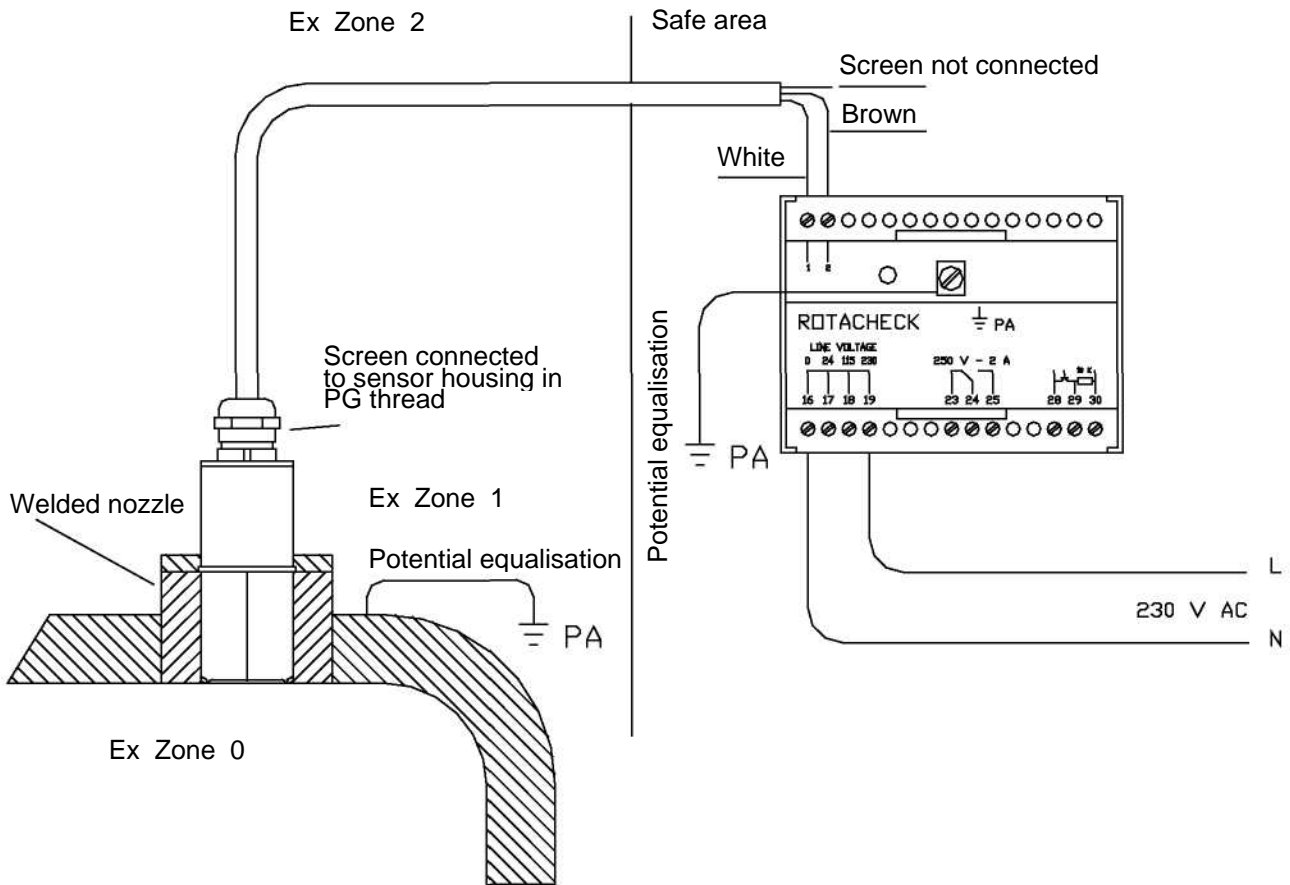
$$L = (100 \text{ mH} - 0,1 \text{ mH}) / 0,0006 \text{ mH/m} = 166.500 \text{ m}$$

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Connecting sensor to relay



Note: The illustrations and specifications contained in this manual were effective at the date of printing. However, as continuous improvement is the policy of Alfa Laval Tank Equipment A/S, we reserve the right to alter or modify any unit specification on any product without notice or any obligation.

How to Contact Alfa Laval Tank Equipment A/S

For further information please feel free to contact:

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