CHARLATTE RESERVOIRS FAYAT GROUP

MAGNETIC SECURITY LEVEL GAUGE

1/ Method of operation

The stainless steel HYDROCHOC security level gauge makes it possible, thanks to the movable micro switches on the vertical part of the level gauge, to control the whole system automatically : the most common applications are control, regulation, monitoring, activation of alarms - remote and without human intervention- of pumps, solenoid valves and various other types of equipment.

This security level gauge also enables remote monitoring of the hydropneumatic bladder vessels, in particular in the event of a lack of water or air.

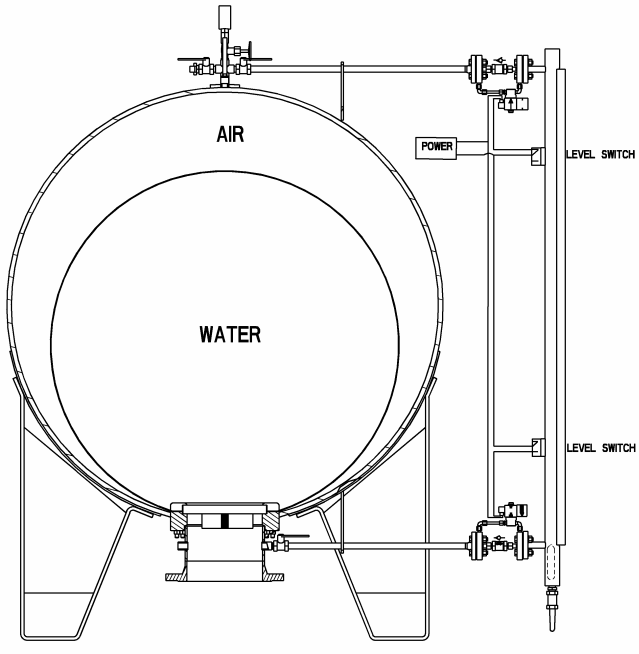
In the event of a large pressure drop or of a lack of water, a micro switch placed, for example, on the lower part of the level gauge, will enable the solenoid valve to close in order to prevent the compressed air in the vessel from escaping into the pipe.

As an option, it is possible to add some other switches (bistable inverter) witch will enable an alarm to be triggered off, to stop the pumps…

In the event of a high pressure rise or a lack of air, a micro switch positioned on the upper part of the level gauge will make it possible in the same conditions to close the solenoid valve in order to avoid water getting into the air part of the vessel.

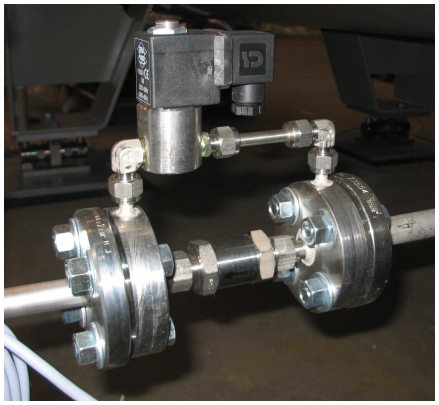
The height of the water present in the vessel is permanently visible on the level gauge.
Other applications can be carried out: the number of vertically movable switches is unlimited. Moreover, these electrical contactors can be moved without the system being put out of service.
The breaking capacity of these level switches is: 0.8 Amp at 220 volts.
Each level switch must operate with a relay, the type and characteristics of which must be established in relation to the power of the equipment concerned.

In standard version, the magnetic level gauge with security assemblies is supplied with two level switches dedicated only for the solenoid valves of the two safety security assemblies.
In order to monitor alarms, some other switches are required.



2/ Component detail

The Charlatte Magnetic Security Level gauge system is comprised of a stainless steel level gauge with external reading and two stainless steel security assemblies comprising of a solenoid valve and a non return valve

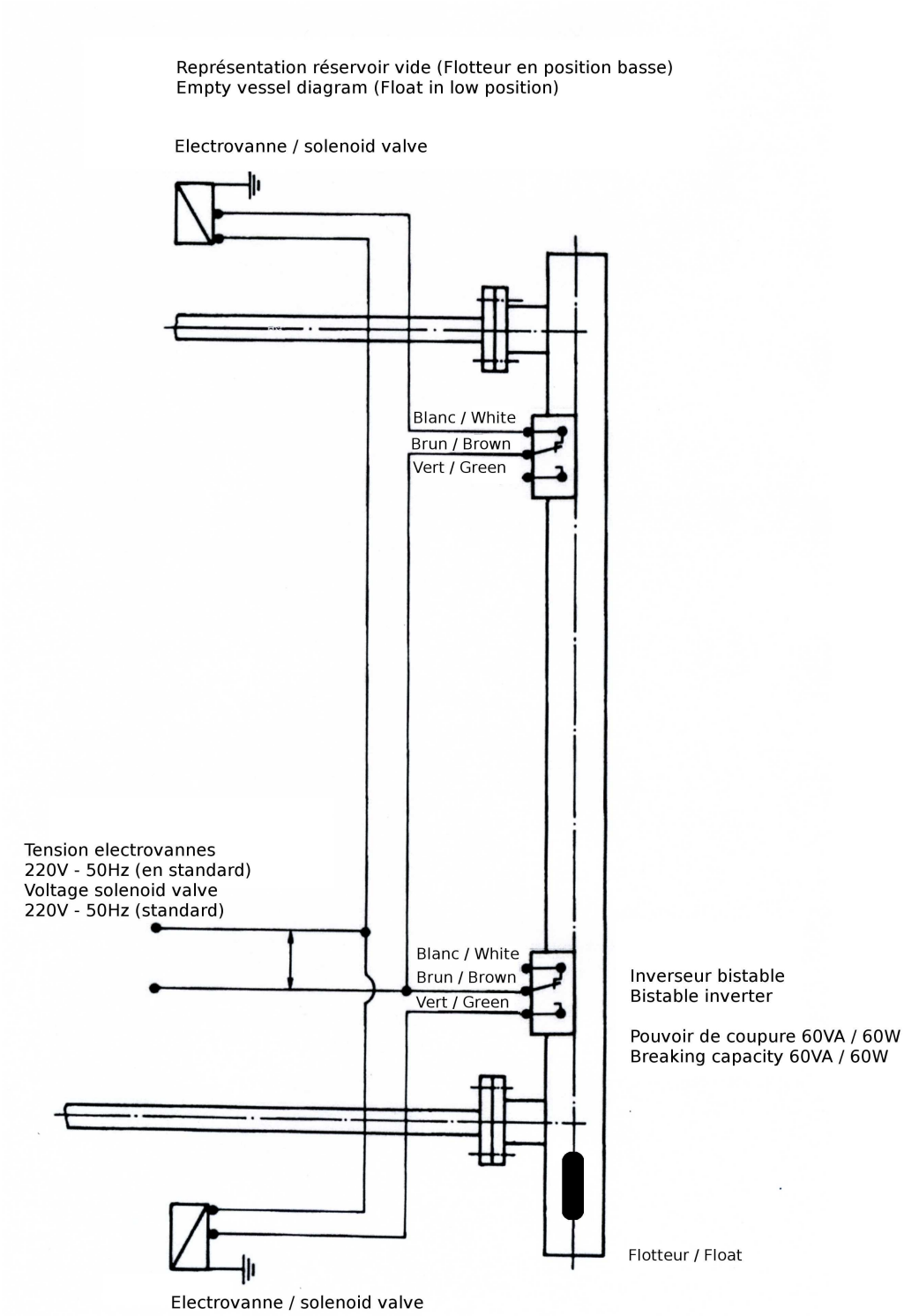


In standard version, the magnetic level gauge is supplied with two level switches dedicated only for the solenoid valves of the two safety security assemblies.

As an option it is possible to order extra level switches to monitor alarms and a level transmitter with a 4/20 mA outlet in order to transmit an analogical signal in relation to the water level

3/ Electrical connection diagram

Répresentation réservoir vide = Empty vessel diagram
Flotteur en position basse = Float in low position
Electrovanne normalement fermée = Solenoid Valve normally closed
Noir = Black ; Brun = Brown ; Bleu = Blue
Tension électrovanne standard 220 volts 50Hertz = Voltage Solenoid valve standard 220volts 50 hertz
Inverseur bistable = Bistable inverter
Pouvoir de coupure 60 VA/60W = Breaking capacity 60VA/60W



4/ Assembly Instructions.

VERY IMPORTANT : ALL SEALS MUST BE CARRIED OUT USING EITHER TEFLON LIQUID OR LOCTITE

1 - Remove 1/2“ plug on the top of the vessel

2 – Install the cross (for vertical vessels) equiped with the pressure gauge

3 – Install the upper 1/2" isolation valve

4 – Fit the 1/2" upper level arm

5 – Install the lower 1/2" isolation valve on the outlet

6 – Fit the 1/2" lower level arm

7 – Align the flange faces

8 – Assembly of upper and lower security system respecting the direction of the arrow on the non return valve (towards level gauge tube)

9 – Mounting of the level gauge tube (drain valve to the bottom)
- Take the floater out of its packing (caution fragile)

10- Insert the floater via the flange at the bottom of the level gauge tube

11- Fix the level switches on the opposite side of the tube to the level indicator (connecting cable towards the bottom) Normal assembly : taking into account the switching function specified on the identification plate (floater below the switch)
- 180° in relation to the indication rail with an authorized tolerance for the diameter of the tube
- Cable outlet towards the bottom

12- Presetting of the level switches on the tube (position a switch at a minimum distance of 200 mm from the top and the bottom of the tube)

13- Connection of the level switches via the solenoid valves (see sketch)

14- The power supply should be as per the voltage of the material supplied

15- Carry out the precharge of the vessel (air or nitrogen) leaving a drain valve open on the pipe

16- Open the 1/2" valve on the upper level gauge arm to pressurise with air

17- Check all the connections are airtight. If leakages appear , restart the procedure from the beginning and check for air tightness.
Close the upper and lower ½ isolation valve and then open the drain valve on the bottom of the level gauge.

18- Fill the vessel by gradually opening the isolation valve between the vessel and the system until the vessel is at static pressure
Warning for the commissioning of the level gauge:
-disconnect the electrical connection of the lower solenoid valve
-slightly open the lower ½ isolation valve in order to let some water get inside the level gauge
-make sure that the floater goes above the lower switch and then close the lower ½ isolation valve
-reconnect the lower solenoid valve and restart at the point number 19

19- Open the lower 1/2" valve of the level gauge to check the water level in the level gauge at the static pressure

20- Re check air tightness at static and dynamic pressure

Possible options:

- Extra level switches for external control and a 4/20mA outlet
- Transmitter, 2-wire, 4/20mA current outpout

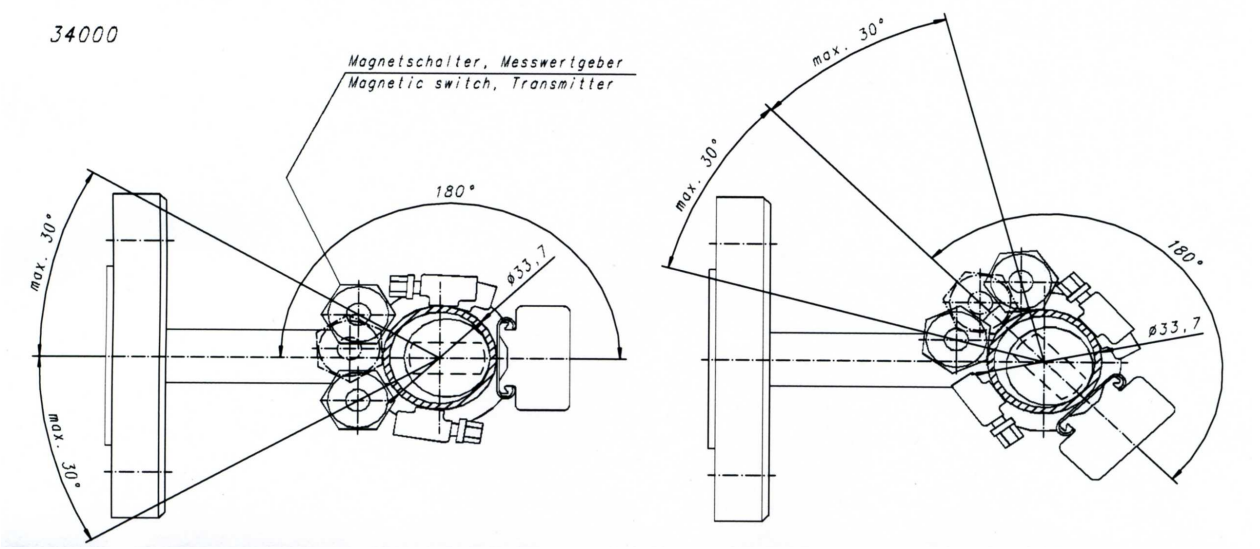
In the case of two detection points are close together, the level switches will be placed side by side as long as an angle of +/- 45° in relation to the center line of the level indicator is not exceeded

IMPORTANT: Air tightness must be verified.

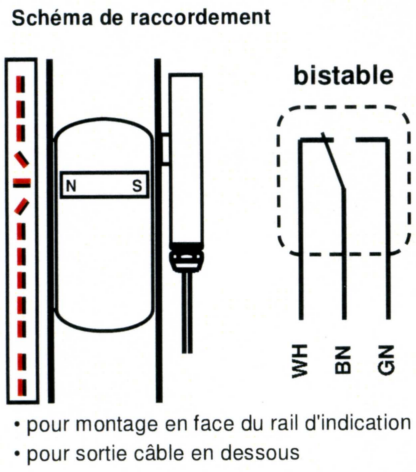
5/ Assembly instructions.

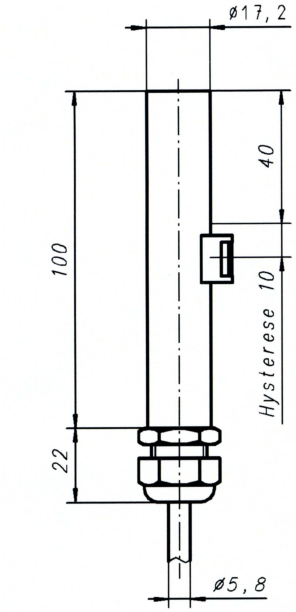
- Installation instructions for magnetic switches

Valid is the indicated switching function on the type label (float below switch)
-180 °C opposite of the indication rail with the permitted tolerance according to the tube diameter
-Cable exit downwards



The switch module is attached to the float chamber, diametrically opposite the indication rail, with cable-exit below. The float magnet activates the reed contact when the liquid in the float chamber reaches that level.
The switching logic is reversible by installing the switch module adjacent to the indication rail, or alternatively by inverting the switch module with cable-exit upwards.

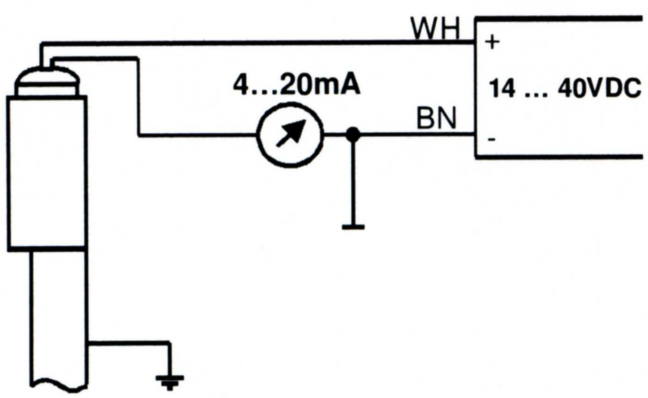




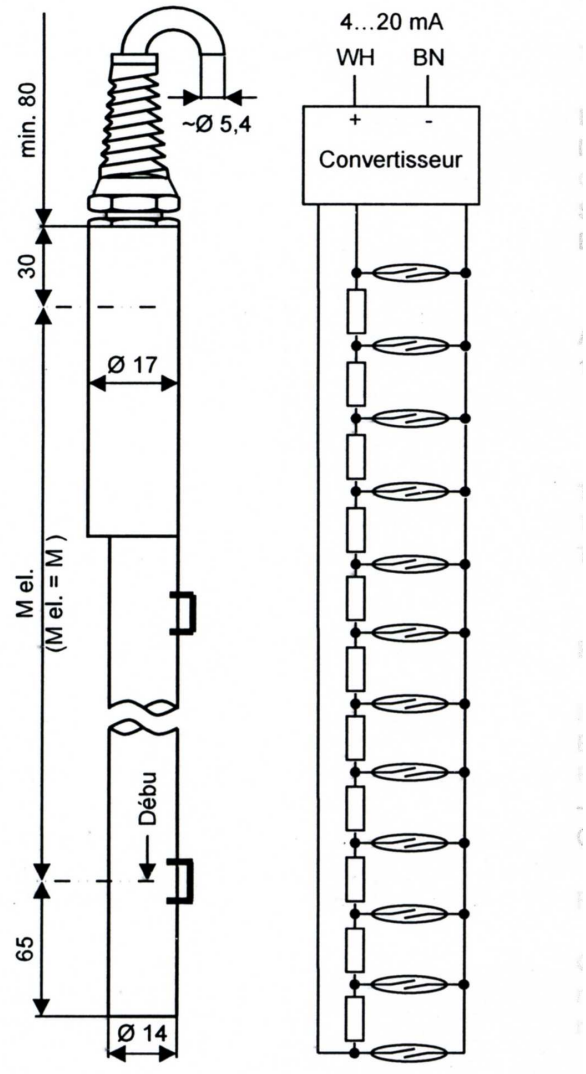
- **Installation instructions for transmitters with high-limit bi-stable reed switches**

A permanent magnet inside the float activates the transmitter's reed switches, depending on the vertical position of its float. This results in an electrical signal output proportional to the level of liquid in the indicator's float chamber.
If the float rises above the transmitter's measuring range (M el.), for any reason, the value of the transmitter's electrical signal output will jump to 115% of its measuring range.
This over-limit value of the signal will be constant for any level of the float above the upper end of the transmitter's measuring range (M el.).
Since the over-limit output signal represents an indefinable level, a second high-limit bi-stable reed-switch can be fitted to overcome this.
This second bi-stable reed-switch closes when the south pole of the float's magnet reaches the high limit level, stays closed while the float is at any level above this, and opens again when the float drops to this level again.

Schéma de raccordement



Fiche dimensionnelle **Schéma de raccordement**



For others information's, do not hesitate to contact us

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