KARI
FLOAT SWITCH

NO LEAD
NO MERCURY

ALL IN ONE!

- alarm
- start
- stop
- alarm

Finnish quality product,
exported to over 30 countries
including U.S.A. and Japan.

Gold medal at the 1977 "Brussels International Inventors Fair".

At the same time presented with the "City of Brussels" medal

CE

FI

NRTL /C
File no. 237484
(USA models)

Over 40 years experience in float switches

KARI-FINN OY
Sireenintie 24, FI-15230 Lahti, Finland
Tel. (03) 876 810, Fax +358 3 784 1332
Internet: http://www.kari-finn.fi
E-mail: kari-finn@kari-finn.fi

KARI FLOAT SWITCH

The Kari Float Switch is a control device for filling and discharging pumps, motor and magnetic valves. It is also an alarm device at certain pre-determined surface levels. SGS FIMKO OY (the Finnish Electrical Inspectorate) has performed the tests according to the Low Voltage Directive (LVD) and approved the Kari Float Switch for use in non-flammable liquids at 250 Volts. In dangerous environments (e.g. wells and pumping stations) we recommend 24 V voltage. In potentially explosive dangerous atmospheres (e.g. oil tanks) the Kari Float Switch can be used in connection with Exi-isolator switch units. Due to its large float casing the Kari Float Switch has a buoyancy which guarantees smooth, trouble-free operation under all conditions.

SELECTING THE RIGHT SWITCH

The following procedure should be used to select the optimum switch or switch combination:

1. Determine the number of control points needed; for example, one point for alarm, two points for empty/fill, etc.
2. Select required model(s) from the circuit diagrams on following pages. If necessary, special switches may be ordered with nonstandard switching logic.
3. The smaller, lower cost Mini Float switches may be used if the three following conditions are met:
   a. No solid floating materials are present
   b. The specific gravity of the liquid is greater than 0.95
   c. No more than one on/off or change-over switch funtion is needed.

This publication describes how the switching levels are related and how they are adjusted. If it is found that the required levels cannot be accommodated by standard units, a special switch can be ordered. For use in still liquids, a two-level switch with a smaller differential than the standard minimum may be ordered. Sometimes a combination of switches needs to be used to achieve the required switching heights or range of adjustment capabilities. For example, type 3HE can be replaced by type 2H plus a separate type 1H, or type 2HL by type 1H plus type 1L. We are pleased to assist users to select the best types/versions for their particular needs.

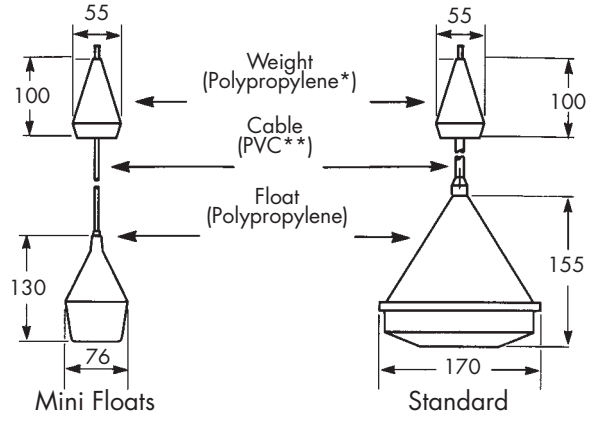
STANDARD SWITCH TYPES ø 170 mm

TYPE:	DISCHARGE	TYPE:	CHARGE
1H	High level alarm or magnetic valve control	1L	Low level alarm or magnetic valve control
2H	Discharging pump control or dry running prevention	2L	Charging pump control
2Y	Discharging pump control or dry running prevention	2A	Charging pump control
3H	Discharging pump control + high level alarm	3L	Charging pump control + low level alarm
3HE	Discharging pump control + isolated high level alarm	3LE	Charging pump control + isolated low level alarm
3Y	Discharging pump control + high level alarm	3A	Charging pump control + low level alarm
3YE	Discharging pump control + isolated high level alarm	3AE	Charging pump control + isolated low level alarm
4H	Discharging pump control + high and low level alarms	4L	Charging pump control + high and low level alarms
4Y	Discharging pump control + high and low level alarms	4A	Charging pump control + high and low level alarms
1C	Change over contact, alarm unit	2HL	Alarm unit for expansion vessels, high and low alarm

TECHNICAL INFORMATION
for Standard and Mini Float Switches

Switching element	micro switch
Rated voltage	6...250 V AC
Rated current	min. 100 mA, max. 6A res. 3A ind.
	min. 1 mA with gold plated contacts (option)
Pressure rating	200 kPa (2kp/cm^2)
Heat rating	+55° C (Special type +75° C)
Range of adjustment (standard)	20 cm to120 cm
Standard cable length	5 m
Weight	0.55 kg to 2 kg according to type
Buoyancy (standard)	6 N (600 g)
Buoyancy (mini floats)	2 N (200 g)
Float material	Polypropen (PP)
Protection class	IP 67
Cable insulation	PVC (standard)
	by request: Rubber, PTFE (Teflon) or oil resistant TPU

DIMENSIONS AND CONSTRUCTION MATERIALS



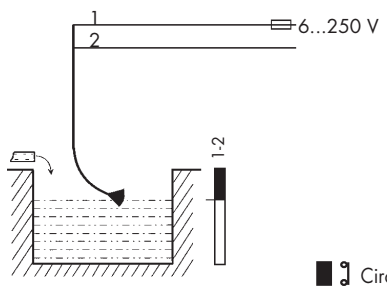
*Att: There is no weight in types 1H, 1L, 1C, M1H, M1L, M1C
**by request: Rubber, PTFE (Teflon) or oil resistant TPU

NO LEAD!
NO MERCURY!

KARI

CIRCUIT DIAGRAMS

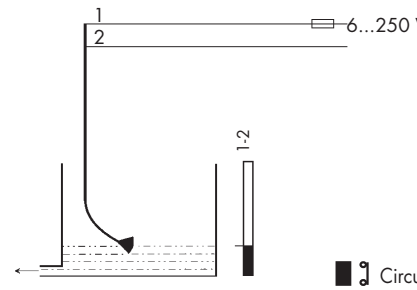
1H



ALARM FROM HIGH LEVEL

Circuit closed
Circuit open

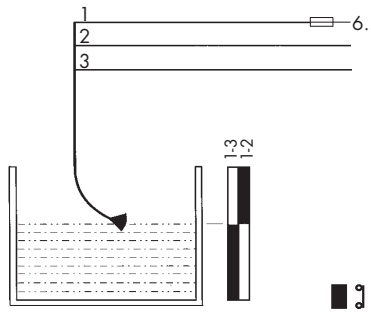
1L



ALARM FROM LOW LEVEL

Circuit closed
Circuit open

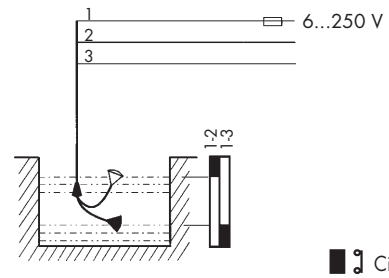
1C



CHANGE OVER CONTACT

Circuit closed
Circuit open

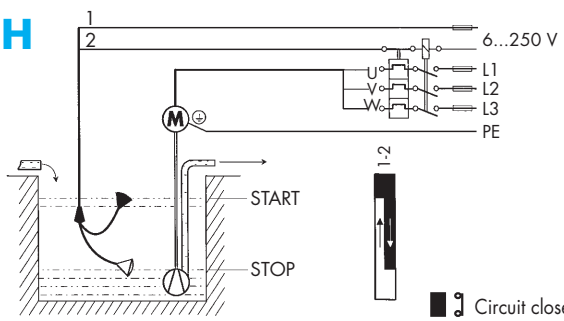
2HL



ALARM FROM HIGH AND LOW LEVEL

Circuit closed
Circuit open

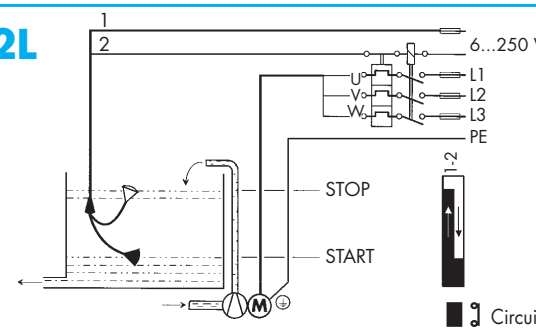
2H



WIRING FOR EMPTYING OF SUMP PUMP WATER PUMPS ETC.

Circuit closed
Circuit open

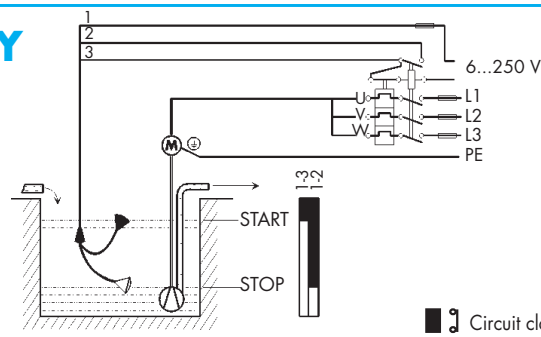
2L



WIRING FOR FILLING OF STORAGE TANKS ETC.

Circuit closed
Circuit open

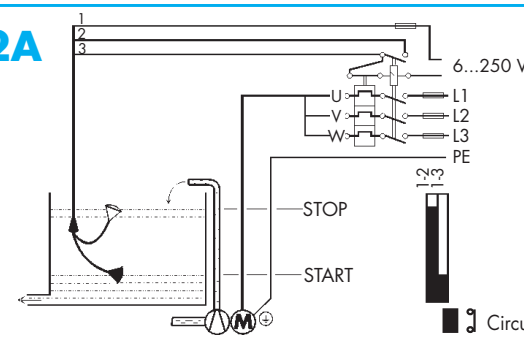
2Y



WIRING FOR EMPTYING OF SUMP PUMP WATER PUMPS ETC.

Circuit closed
Circuit open

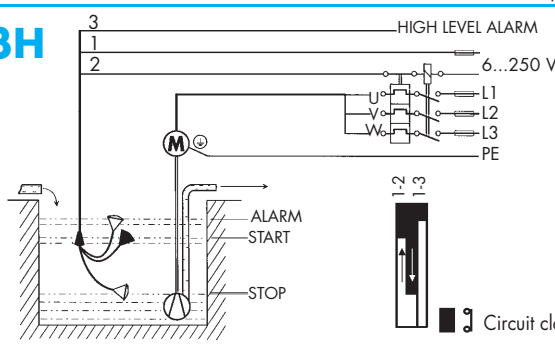
2A



WIRING FOR FILLING OF STORAGE TANKS ETC.

Circuit closed
Circuit open

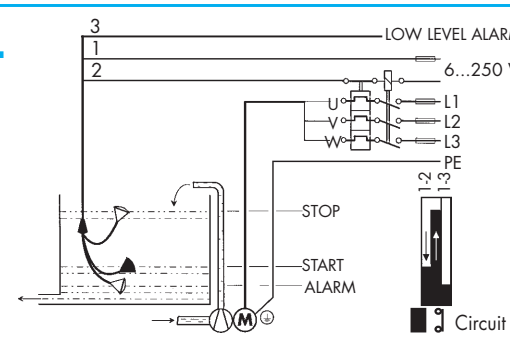
3H



WIRING FOR EMPTYING + HIGH LEVEL ALARM

Circuit closed
Circuit open

3L

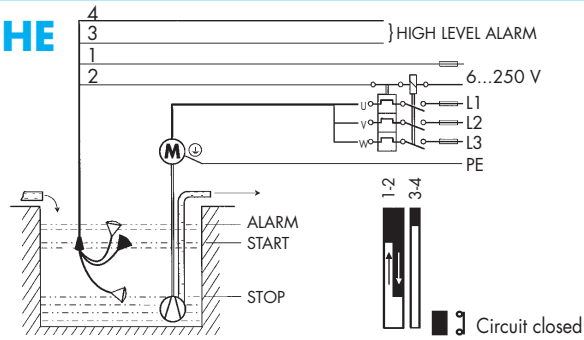


WIRING FOR FILLING + LOW LEVEL ALARM

Circuit closed
Circuit open

If our switches do not meet your specific needs we can design a non standard Float Switch to meet your requirements.

3HE

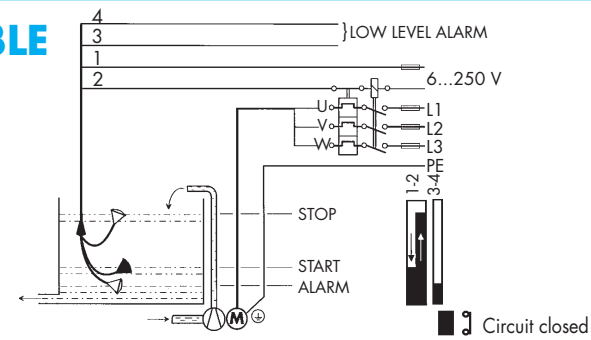


Circuit closed

Circuit open

WIRING FOR EMPTYING + INSULATED ALARM CURCUIT

3LE

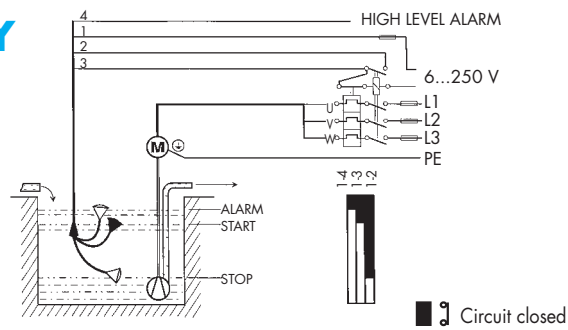


Circuit closed

Circuit open

WIRING FOR FILLING + INSULATED ALARM CURCUIT

3Y

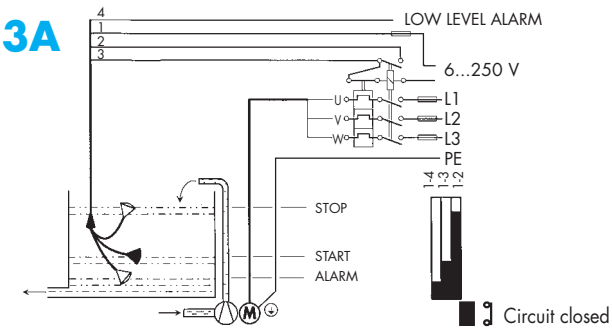


Circuit closed

Circuit open

WIRING FOR EMPTYING + HIGH LEVEL ALARM

3A

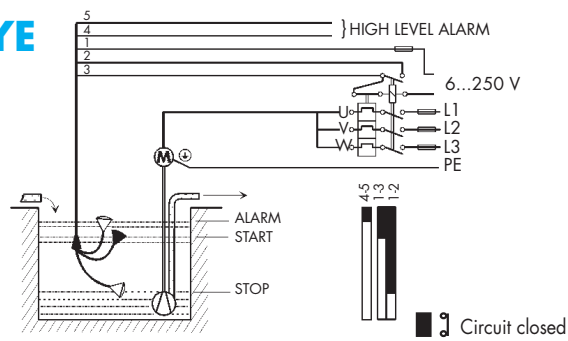


Circuit closed

Circuit open

WIRING FOR FILLING + LOW LEVEL ALARM

3YE

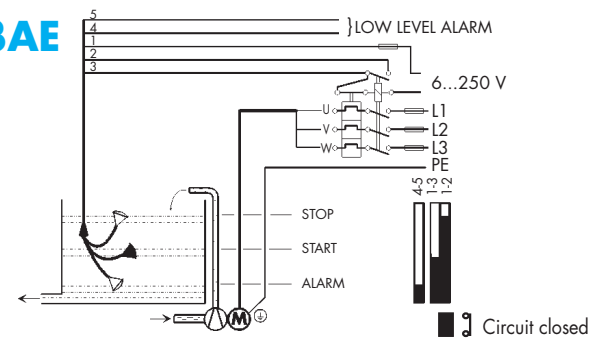


Circuit closed

Circuit open

WIRING FOR EMPTYING + INSULATED ALARM CIRCUIT

3AE

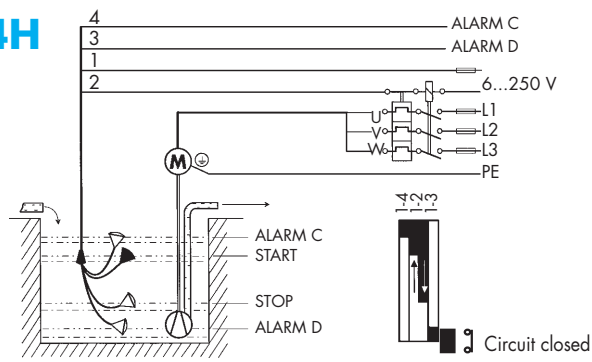


Circuit closed

Circuit open

WIRING FOR FILLING + INSULATED ALARM CIRCUIT

4H

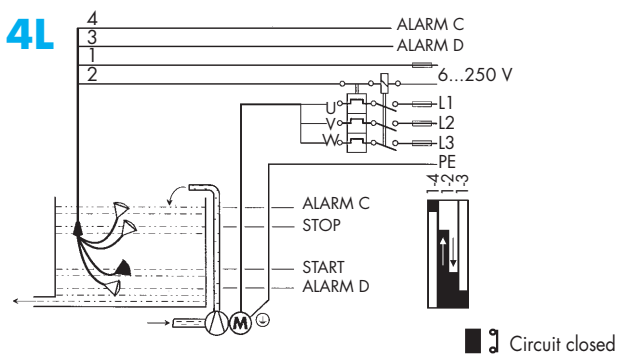


Circuit closed

Circuit open

WIRING FOR EMPTYING + HIGH AND LOW LEVEL ALARMS

4L

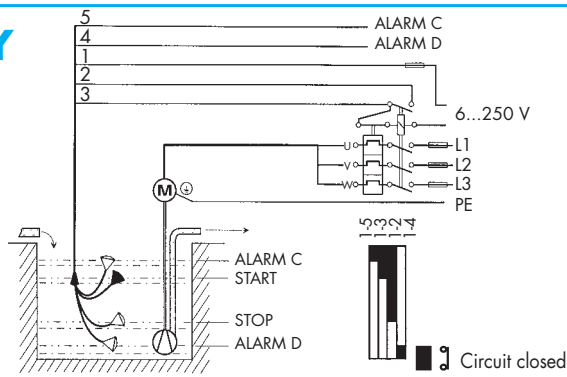


Circuit closed

Circuit open

WIRING FOR FILLING + HIGH AND LOW LEVEL ALARMS

4Y

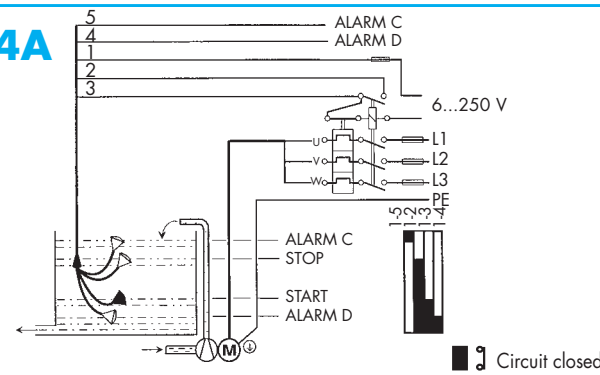


Circuit closed

Circuit open

WIRING FOR EMPTYING + HIGH AND LOW LEVEL ALARMS

4A



Circuit closed

Circuit open

WIRING FOR FILLING + HIGH AND LOW LEVEL ALARMS

If our switches do not meet your specific needs we can design a non standard Float Switch to meet your requirements.

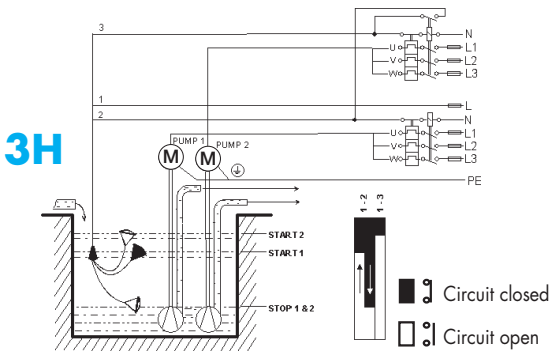
SINGLE VERSUS DUAL POINT CONTROL

The simplest single level KARI float switches (Types 1L or 1H) have no differential ("hysteresis"). They switch on and off at one level point. Such switches work well as alarm point indicators but are unsuitable for automatic maintenance of the level of liquids in containers.

Usually, tank levels are maintained by pumps or electrically-controlled solenoid valves in the supply or drain lines. The normal practice is to have two control levels involved. At one level the pump or valve is turned on and at the other level it is turned off.

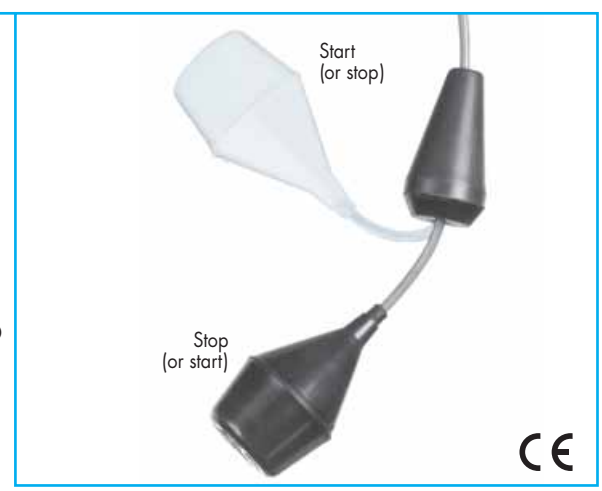
With KARI float switches, one float switch (Type 2L or 2H) can provide "on" and "off" level controls. The absolute height and separation ("hysteresis") of these points can be easily adjusted by moving the weight along the cable. The "hysteresis" is supplied by the float switch. Other KARI float switches provide additional facilities for high and low alarms or control of duplex pump systems.

EXAMPLE: CONTROL OF TWO PUMPS BY USING TYPE 3H



KARI MINI FLOAT

The Kari Mini Float Switch is a control device for filling and discharging pumps, motor and magnetic valves. It is also an alarm device at certain pre-determined surface levels. SGS FIMKO OY (The Finnish Electrical Inspectorate) has perfomed the tests according Low Voltage Directive (LVD) and approved the Kari Mini Float Switch for use in non-flammable liquids at 250 Volts. For its small size (ø 76 mm) the Kari Mini Float can be used in narrow places.

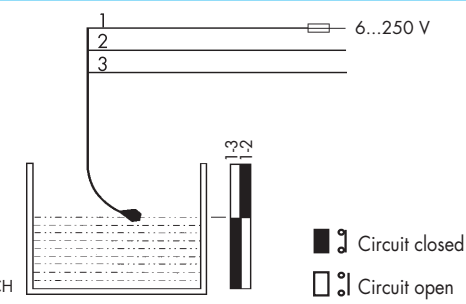


KARI MINI FLOAT SWITCHES, CIRCUIT DIAGRAMS

MINI FLOAT SWITCH ø 76 mm

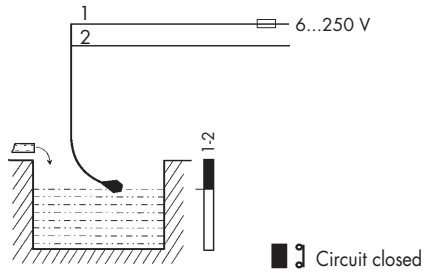
TYPE	OPERATION
M1C	Change over contact (alarms etc.)
M1H	High level alarm or magnetic valve control
M1L	Low level alarm or magnetic valve control
M2H	Discharging pump control or dry running prevention
M2L	Charging pump control

M1C



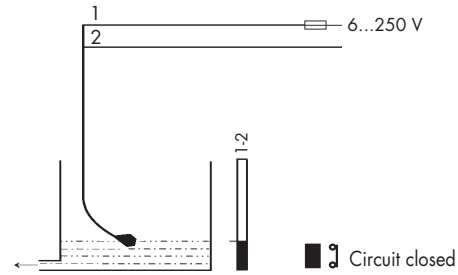
CHANGE OVER SWITCH

M1H



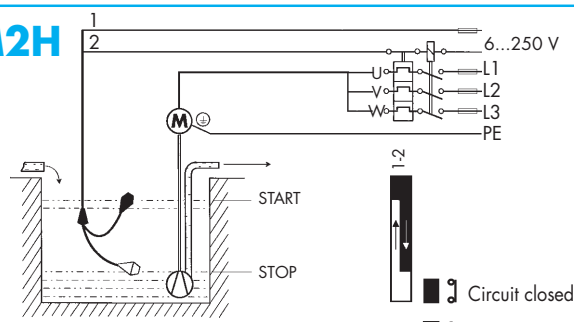
ALARM FROM HIGH LEVEL

M1L



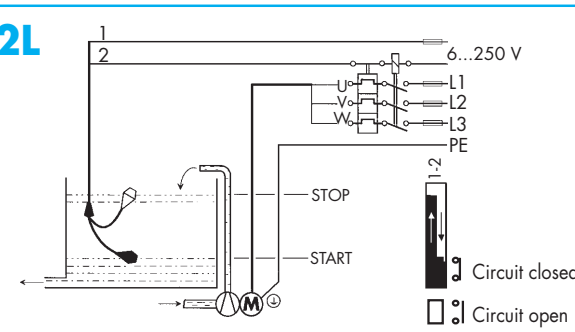
ALARM FROM LOW LEVEL

M2H



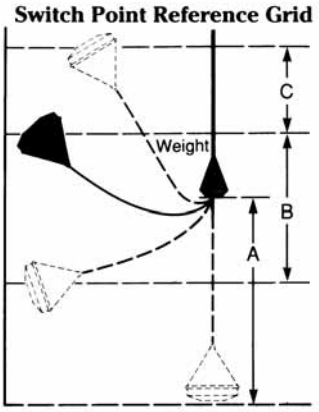
WIRING FOR EMPTYING OF SUMP PUMP WATER PUMPS ETC.

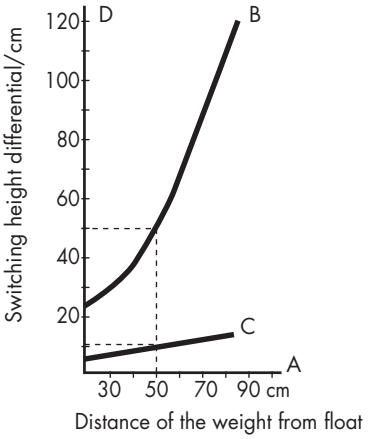
M2L



WIRING FOR FILLING OF STORAGE TANKS ETC.

SWITCHING HEIGHT DIFFERENTIAL IN RELATIONSHIP TO THE WEIGHT FROM THE FLOAT.





Curve B shows the starting and stop height differential of the Kari Float Switch in relationship to the distance of the weight from the float. Curve C shows the equivalent differential between starting and alarm levels. For example: On type 3H, if distance of the weight from float (A) is about 50 cm, then the start / stop differential is about 50 cm and the start / alarm differential is about 12 cm.

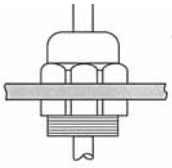
INSTALLATION

The Kari Float Switch is positioned at the right level in the tank by hanging it from the cable so that the float follows the movement of the liquids surface. The switching height differential is adjusted by moving the weight along the cable. The differential is on minimum, when the weight is nearest to the float. Wiring diagrams are also separately available on request and on our website **http://www.kari-finn.fi**.

HEIGHT FIXING

There are several methods that can be used to fasten the cable so that the float is positioned at the right level in the tank. The three most commonly used are illustrated below.

Clip



Strain Relief Connector (Cable Gland)

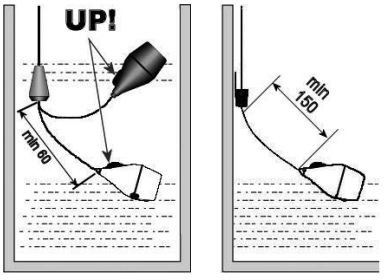
Polypropylene Hanging Clamp and wedge (Supplied as Standard)

It is recommended that

a) Types M1H, M1L and M1C: at least 150 mm is left between float and attachment point

b) Types M2H and M2L: at least 60 mm is left between float and the cable weight

c) Note the "UP" mark: install the float so that it can settle to its natural orientation



VERIFYING OPERATION

KARI float switches are highly reliable. However, if a check on the operation of a particular switch is needed, it is first necessary to ascertain where the keel weight is located in order to find the "top" point when the float is in the liquid. A good way to do this is to put the float switch on a flat surface so that it can roll freely to the working orientation (just like it does in the liquid). A continuity meter should then be attached to the circuit to be tested. Testing is then performed by tilting the float up and down in the vertical plane determined by the working orientation. At the appropriate angle, the switch circuit being tested should open or close.

VALUABLE TIPS

1. Do not be concerned if you hear a clacking sound when the float is shaken - it is only the microswitch acting. It is extremely unusual to find any leakage in these floats.
2. Do not put the line voltage across a contact without a load attached. Shorting out the power across the microswitch will destroy it.
3. Do not tether the floats tightly on a short cable or make them jiggle and "dance" in a high pressure washdown hose stream. The continuous "working" of a particular point in the cable will break the wires. When the hanging clamp is used, the cable wedge must be pushed down tightly to ensure the cable doesn't slip.
4. If the viscosity of the liquid is high, we recommend an extra weight on the cable.
5. **Note that it is extremly important that the junktion box is in dry environment. If this is not possible the ends of float switch wires must be covered with e.g. protective grease.**

(03) 876 810

GUARANTEE
Each KARI unit carries a 12 month guarantee which covers raw materials and workmanship.
© 2007 Kari-Finn Oy. All Rights Reserved.

30288 MARKPRINT OY, FINLAND, 5.2009

HEMOMATIK
Länna, S-142 50 SKOGÅS
Stockholm, Sweden
Ordertel 08-771 00 04
Orderfax 08-771 62 00
Växel 08-771 02 20
Teknisk 08-771 35 80
Email info@hemomatik.se
Internet www.hemomatik.se