

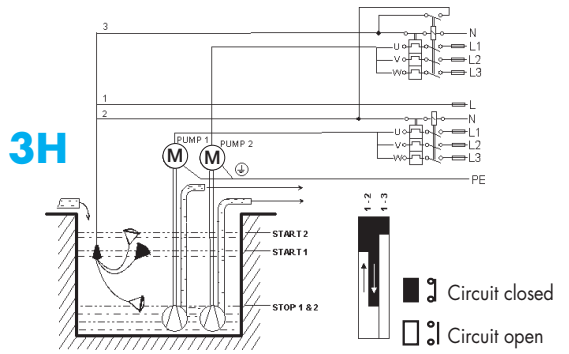
## SINGLE VERSUS DUAL POINT CONTROL

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



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 performed 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.



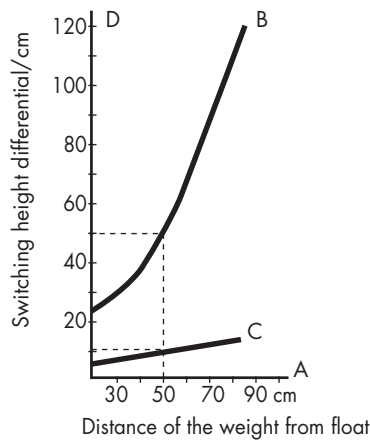
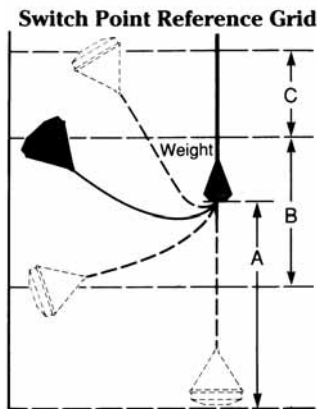
## KARI MINI FLOAT SWITCHES, CIRCUIT DIAGRAMS

| 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                              |

|   |  |
|---|--|
| <p><b>M1C</b></p> <p>CHANGE OVER SWITCH</p>                       | <p><b>M1H</b></p> <p>ALARM FROM HIGH LEVEL</p>                             |
| <p><b>M1L</b></p> <p>ALARM FROM LOW LEVEL</p>                     | <p><b>M2H</b></p> <p>WIRING FOR EMPTYING OF SUMP PUMP WATER PUMPS ETC.</p> |
| <p><b>M2L</b></p> <p>WIRING FOR FILLING OF STORAGE TANKS ETC.</p> |  |

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



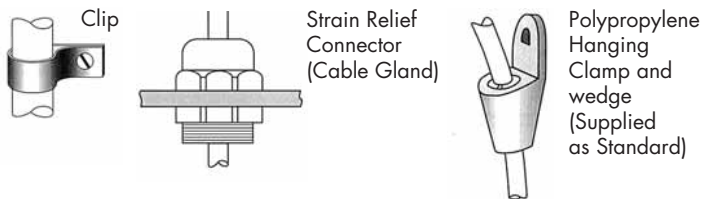
Curve B shows the starting and stop height differential of the Kari Float Switch in relationship to the distance of the weight from the float. Curve C shows the equivalent differential between starting and alarm levels. For example: On type 3H, if distance of the weight from float (A) is about 50 cm,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

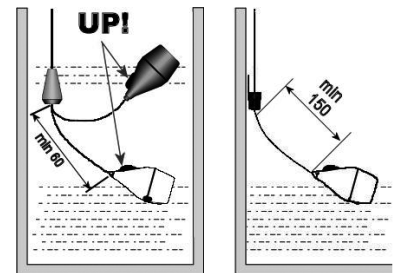
### HEIGHT FIXING

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.



It is recommended that

- Types M1H, M1L and M1C: at least 150 mm is left between float and attachment point
- Types M2H and M2L: at least 60 mm is left between float and the cable weight
- 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

- 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.
- Do not put the line voltage across a contact without a load attached. Shorting out the power across the microswitch will destroy it.
- 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.
- If the viscosity of the liquid is high, we recommend an extra weight on the cable.
- Note that it is extremely important that the junction box is in dry environment. If this is not possible the ends of float switch wires must be covered with e.g. protective grease.**



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