



1. **Delivery and packing**

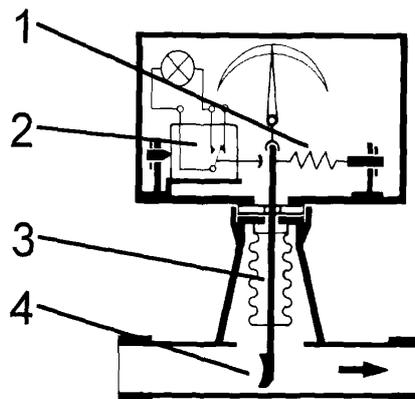
All instruments delivered are ready for operation. Avoid rough handling in order to prevent damage to the sensitive built-in measuring and indication mechanism. There is no security fixing for transportation.

2. **Function**

HSW Flow-Switches and Flow-Meters of the described types work on the principle of dynamic pressure.

The flow medium works against a target plate (4), which causes the system to swing against a tension spring (1). A bellows system made from stainless steel (3) seals the indicator and switch equipment against the flowing liquid. Connection between the target plate and the evaluating system is made by a lever arm. A microswitch (2) is actuated whenever the preselected low or high flow switch-points are passed.

Depending from type additionally a control-lamp and a indication system for the actual flow will be actuated.



3. **Mounting**

3.1 **Mounting orientation**

HSW Flow-Switches and Flow-Meters are designed to be installed directly in a pipe system. Make sure that the instruments are installed according the information on the type plate. The flow-direction correlates to the direction of the pipe. Inaccuracy of the instrument will result from incorrect mounting.

3.2 **Flow direction**

It is essential that the unit is mounted so that flow is as indicated by the arrow on the body. The unit will not operate unless installed correctly in this way.

3.3 **Position of mounting**

To avoid damages at the measuring system it is especially important to have the biggest possible distance from magnet valves and ball valves. If it is not possible to have a big distance, the valves have to be installed **after** the instruments. To avoid pressure shocks it is very important to open the valves slowly.

It is advantageous to install the unit in a straight piece of pipe and to choose a place of mounting which has the biggest possible distance from elbows, valves etc.

In order to have an accurate function of the device we recommend a straight length of  $10 \times d$  at input side and  $5 \times d$  at the output side ( $d$ = internal diameter of pipe)

3.4 **Mounting at the tube**

3.4.1 **Items with welded socket**

The complete flange with screws and sealing is delivered with the instrument.

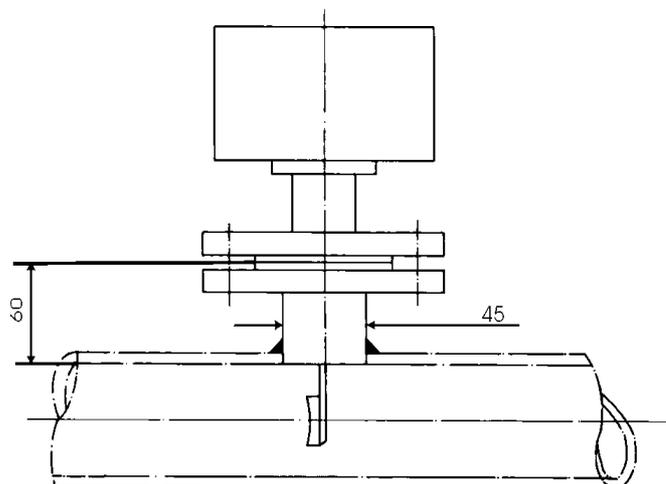
The distance 60mm has to be kept exactly, because this directly affects the calibration of the instrument.

Drill a ridgeless hole in the pipe and weld on the socket.

Use the enclosed sealing.

Please keep the flow direction in consideration during mounting procedure (arrow).

The pipe must be free from pollution.





**3.4.2 Items with tread connection**

We recommend sealing all threads with PTFE sealing tape. Ensure no excess of tape is left protruding into the pipe.

**3.4.3 Items with flange connection**

A approved flange seal or gasket must be used. Neither this nor the required fixing bolts are included in the delivery.

**4. Electrical connection**

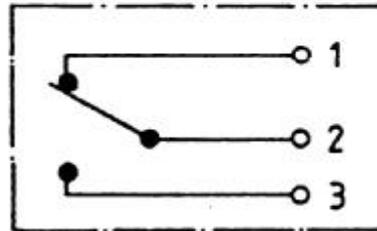
**4.1 Connecting type DW-P**

Removing the enclosure to gain access to the three polar connector block.

The max. switching performance is up to 230V/5A AC.

Please connect the device to ground with help of the designated screw.

Circuit diagram type DW-P



**3.2 Connecting Type DW-U and DW-N**

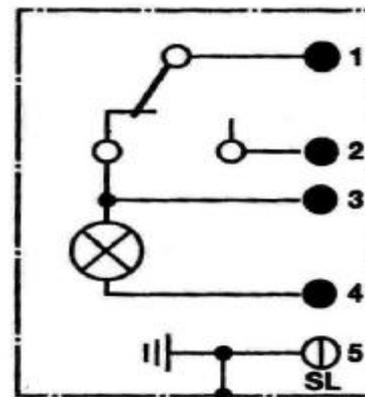
Removing the enclosure to gain access to the four polar connector block.

Additionally to the micro-switch a control lamp is installed. This lamp is for optical control of switch status of the micro-switch.

The current which is necessary for the lamp is indicated at the label. The max. switching performance is up to 230V/10A AC.

Please connect the device to ground with help of the screw near cable entry .

Circuit diagram type DW-U/DW-N

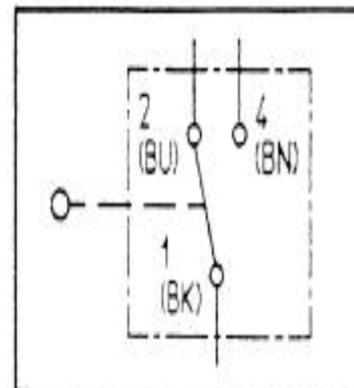


**4.3 Connecting Type DW-U-EX and DW-N-EX**

The device will be connected at the end of the cable. The connection must be done in a area which is not endangered by explosion (use EX cable gland), or in a special EX connection enclosure.

The max. switching performance is up to 230V/10A AC.

Circuit diagram type DWU-EX/DW-N-EX





5. **Calibration dates**

Calibration dates, type of device and serial number are indicated at the label. Changes of medium, pressure and position of mounting will influence accuracy.

6. **Switch-point**

Type DW-P

The switchpoint is fixed by the manufacturer according to customer's request. Changes can only be made by the supplier.

Type DW-N, DW-N-EX Alternations of the switchpoint can be made by the customer within the limits indicated on the scale.

Type DW-U, DW-U-EX Alternations of the switchpoint can be made by the customer within the limits indicated on the scale.

The actual flow is indicated at front side of the unit.

7. **Maintenance.**

The mentioned HSW instruments are almost maintenance-free. In case of mal-function first of all check the pipe system for calcification or other obstruction.

For cleaning do not use sharp-edged tools. Damaged instruments can only be repaired in our factory, because they have to be re-calibrated.

Damaged items should send back to the manufacturer because it is only there possible to do the re-calibration which is necessary.

Unscrewing screws, changing tension spring or bellow system changes calibration and will invalidate the guarantee.

**HENKE SASS WOLF GMBH**