Installation, operation and maintenance of KMA/GS KMA/DS KMA/W meters

CRAIND®
via Sandro Pertini NR 25/27 26019 VAILATE (CR)
Tel. 02 5462113 r.a. - Fax 02 5450303
www.craind.it - E-mail: craind@craind.it

The KMA-GS KMA-DS KMA-W meters should be installed normally in a horizontal position. They can be installed also in upward vertical position but, a low flow rates, registration is slightly increased.

For a suitable operation of the meter and for its easy maintenance a gate valve should be installed upstream and dowstream the meter. Besides, the meter must be installed in a straight pipe section of the same size and located so that the arrow on the body indicates the flow direction.

Thoroughly clean the two pipe ends across which the meter is to be installed.

Since meter accuracy and life can be adversely affested by an unsuitable installation and since all devices installed upstream the meter affect advesely the accuracy of registration, for the best working conditions, besides complying with mentioned instructions shown in the following pages.

Electrical Connections

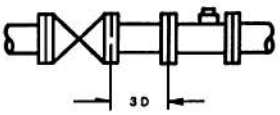
Electrical connections between the meter and the indicating of control instrument shall be made using screened cable. The reed switch assembly is provided with a short length of flying lead. The reed switch is encapsulated in hermetically epoxy resin. The switch withstand temperature up 100°C and is completely waterproofed. The maximum recommended lenght of cable is 100 metres.

REED switch characteristics

Contact type	N.O.
VA max.	10
A max.	0,2
V max.	30
T max.	100 °C

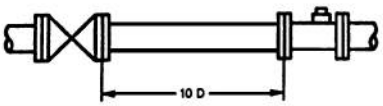
The life expectancy of a reed switch is dipendent on the application specific loading and can be as hight as 107 to 108 operations.

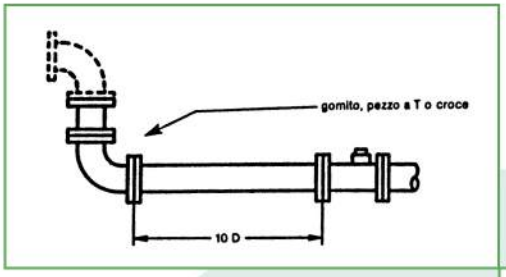
COMMON METER INSTALLATION



A) Gate, ball valves and cockes (wide open)

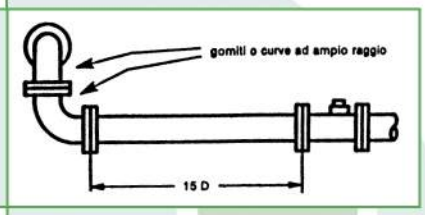
B) Control , check and globe valve, ball valve and cocks (partially open)

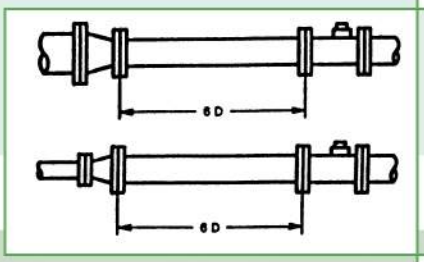




c) Single or multiple fittings in same plane

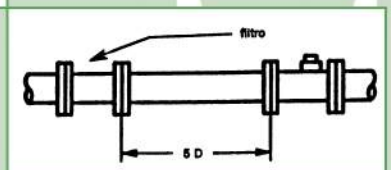
d) Multiple fittings in different planes

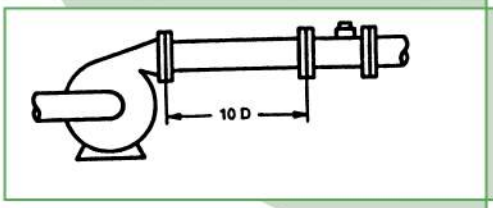




e) Reducers and increasers

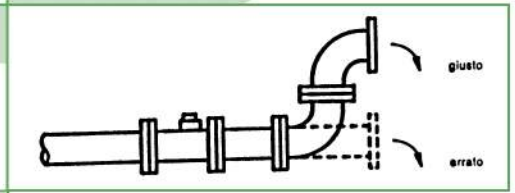
f) Strainers

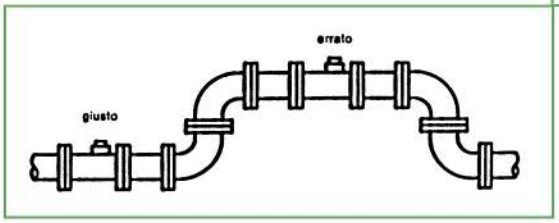




g) Centrifugal pump

h) Free discharge pipe





i) vertically bent section

The meter should be placed at a lower level than the discharge end, thus to be always full of water and prevent air from entering into it. Air affects meter accuracy and life adversely.

Since the meter schould always be full of water both when metering and when steady, it should be installed in the lowest position and not at the top of vertical sections where air might easly get trapped and affect meter accuracy and life.

Required lenght of stright pipe downstream the meter

The fittigs, valves etc. shown above, when installed downstream the meter, do not effect remarkably the accuracy.
Anyhow, a straight pipe with leight of 3D at least installed downstream the meter is advisable.

FAULT FINDING

If the metering system is not functioning correctly:

- First check the operation of the indicator or control instrument correctly:
Disconnect the signal input connections to the instrument and simulate the pulsations of the reed switch at the meter by intermittently short circuiting the input signal terminals at the rear of the instrument. If the appropriate pulses are not riceived on the indicating or control equipment, then these units must be checked as described in the appropriate instruction manual. If pulses are riceived and indicated then re-connect a signal input cable.

- Check that the interconnection cable is satisfactory by:
Disconnecting the other end of the cable from the reed switch connection. Short circuit the conductors and see whether or not pulses are received on the control equipment at the other end of signal cable. If pulses are not received then there is a break somewhere in the inter-connection cable and it should be replaced. If pulses are received re-connect the cable.

- Check the operation of the reed switch by:
Remove the reed switch assembly from the meter and connect a battery ohm meter. Pass a normal magnet across the bottom of the reed switch and if the resistance changes from at least 1 megohm to less than 1 ohm due to the movement of the magnet, the reed switch is op-erative.

- To check that the turbin is rotating.
If all the previously mentioned checks prove satisfactory then the meter must be removed from the line and dismantled and inspected as detailed in maintenance sections.

- Possible causes of imperfect operation are:

1) A fractured turbin allowing the passing of unmetered fluid.

2) Resistance to motion of the turbin due to:

- Particles of foreign matter embedded in the working surfaces of the meter.

- A "gummed up" meter due to ineffective temperature control or settling out during "shut off".

- A distorted turbin due to operation at temperatures in excess of the maximum permitted.

CHANGING THE BATTERY

- Unscrew the closing ring nut

- Remove the fixing screws of the electronic card

- Unsolder the rhephores of the battery

- Place the new battery paying attention not to compress wires coming from the sensor

- Screw the closing ring nut placing correctly the OR

OPERATION TEMPERATURE

The KMA-GS KMA-DS and KMA-W meters are supplied in two series suitable to diferent temperature of operatrion 35°C or max 90°C
The two series can be simply recognized by the colours of meters:

- RED meter or ring nut: MAX 90°C
- all the other colours (if not diferently described): MAX 35°C

INSTALATION IN PLACES IN DANGER OF INTENSE COLD

If the temperature can fall below 0°C is absolutely necessary to place a drain cock to empty the meter. This operation must be done during the periods of inactivity to prevent the making of ice and the inevitable breaking of the meter.

MAINTENANCE

Remove the meter from the pipe and replace with a short tube of the same lenght (if necessary do not interrupt the water supply).
Open the meter to enter the measure chamber. For KMA-GS meters it is enough to unscrew the closing ring nut.

As far as KMA-DS A.C. and KMA/W meters is concerned, after released the fairlead nut, it is necessary to unscrew the four tightening screws at the

bottom of the head containing the REED group.

KMA-GS and KMA-DS A.F. meters: remove the metering system, remove the closing plate of the measure chamber, clean and replace

any weard part.
Reassemble the meter paying attention to place correctly the OR and the REED switch.

KMA/DS and KMA/W meters: remove the closing and then the REED-gears group.
To replace the REED plate it is necessary to unscrew the three screws at the bottom of the gears group, to remove the

closing disks and the gears and to unscrew the screws of the REED plate.

Replace all the parts paying attention to place gears in their own places.

KMA/W meters: to remove the turbin, unscrew the screws of the radially bearings. Check the wear of bushings, of the tubin