VSE.flow®

Solutions for Fluid Technology

INSTALLATION INSTRUCTIONS

For VTR flow meter

VTR FLOW METER INSTALLATION INSTRUCTIONS

1. DESCRIPTION OF FUNCTION

The VTR turbine flow meter consists of the measuring turbine and the externally attached measuring pick-up.

The measuring liquid flows into the turbine and starts the rotor moving. The characteristic inside diameter means that the rotary speed is directly proportional to the flow. The moving rotor blades are detected by the pick-up and converted to a pulse signal.

The pulse output signal is fed to an electronic measuring system which displays either the volume flow or a total of the measured volume.

The characteristic quantity, the K-factor (pulses/litre) separately calibrated for every measuring instrument, is specified on the type plate.

2. MECHANICAL INSTALLATION

The VTR flow meters are designed for high accuracy and long-term stability. To ensure the same accuracy in practice, the following items must be considered when installing the turbine:

2.1 FLUSHING THE PIPE

If the turbine is to be installed in a new pipe system, the pipes must be flushed before installing the turbine to remove slag (deposits), welding beads, sand or other residues. Otherwise the turbine could be damaged.

2.2 FLOW STABILISATION

If possible, a straight section of pipe should be installed before the turbine. The length of the section should be 10 times the nominal value and the diameter must be the same as the turbine. If the turbine is installed immediately behind a pump, the length of the infeed section should be twenty times the pipe diameter. The turbine should also not be installed immediately after an elbow in the pipe. If there is an elbow, the inside radius should be twice the inside diameter of the turbine. If it is not possible to installed the specified infeed sections, the installation of a stabilising section, e.g. with a cruciform cross-section, is recommended.

2.3 REDUCTION OF THE PIPE CROSS-SECTION

Conical pipe sections with a maximum angle of 20° should be used to reduce the pipe diameter.

2.4 INSTALLATION UNDER A TANK

If the diameter is installed at the bottom of a tank, a stabilising section with a cruciform cross-section (baffle plate) should be installed between the tank and turbine to prevent vortices in the turbine system.

2.5 AIR INCLUSIONS

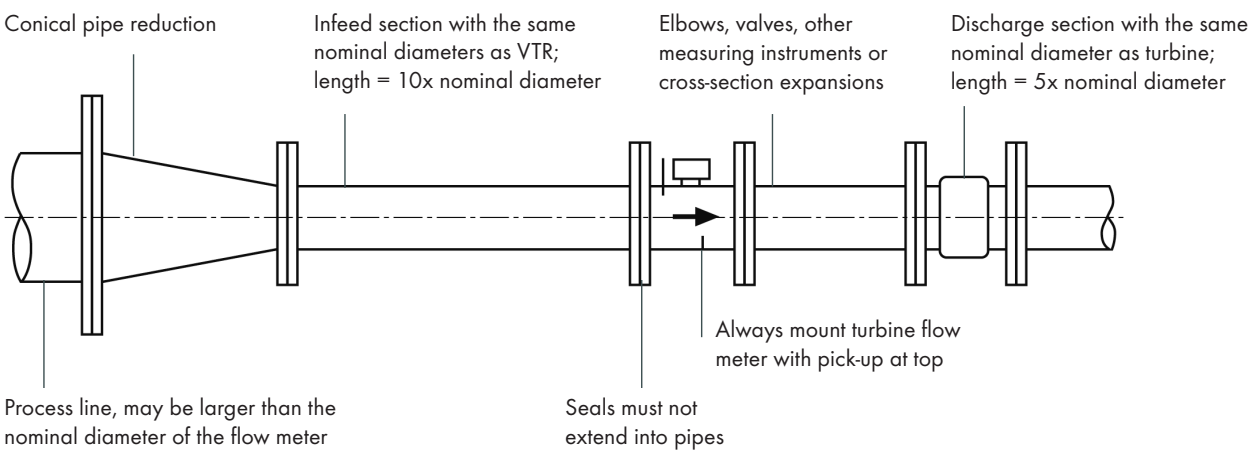
An air separator may be recommended to prevent falsification of the accuracy by air inclusions in the medium.

2.6 FILTERS

A screen filter should installed in the pipe to prevent damage to the diameter by solids or fibrous substances in the medium where contaminated liquids are involved. A fine filter is not required.

2.7 SYSTEM PRESSURE

The operating pressure behind the turbine sensor must be sufficient to prevent the medium from gassing out at elevated temperatures. The system pressure should be 2 bar above the corresponding vapour pressure.



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2.8 INFLUENCE OF VISCOSITY

VTR turbine flow meters are designed for measuring fluids similar to water. They are calibrated with water (viscosity 1 cSt). Fluids with a higher viscosity up to 5 cSt can be measured, but the following must be noted:

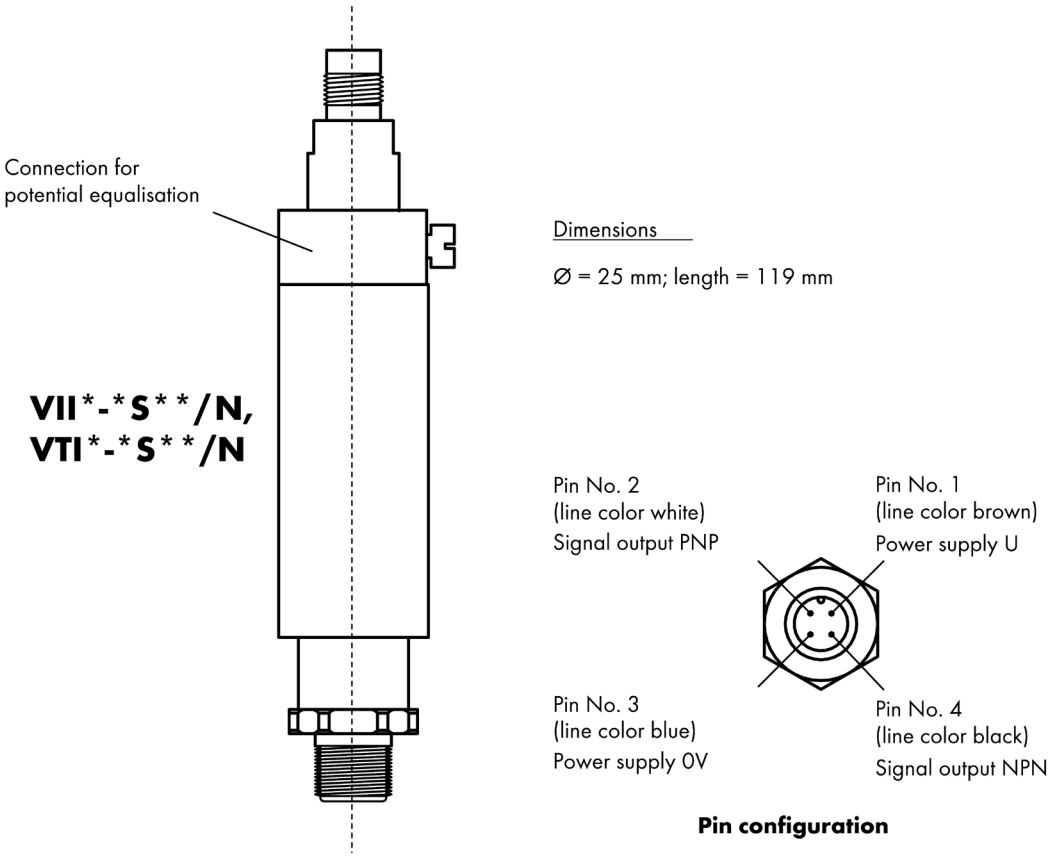
- The measurement range is reduced
- Linearity errors increase
- The output frequency is reduced

For exact information please contact VSE.

3. TECHNICAL DATA FOR VII*-*S**/N, VTI*-*S**/N SINGLE PICK-UPS

Supply voltage	U_b = 8 ... 30 V DC ±10%
Current consumption (idle)	I_b = ca. 4 mA (bei 30 V DC)
Signal output circuit	Transistor with series resistor R = 2 x 620 Ω PNP and NPN selectable
PNP signal output	High Signal: $U_S = U_b$ -1 V; I_S = 10 mA max.
NPN signal output	Low Signal: U_S = 0 V; I_S = 10 mA max.
Signal switching frequency	3 Hz – approx. 1000 Hz (*)
Electrical connection	VSE standard connector M 12
Medium temperature	-20°C ... +120°C (-4°F ... 248°F)
Ambient temperature	-20°C ... +60°C (-4°F ... 140°F)
Material	Stainless steel 1.4305
Weight	115 g

(*) Depends on the VHM flow meter size



Pin configuration

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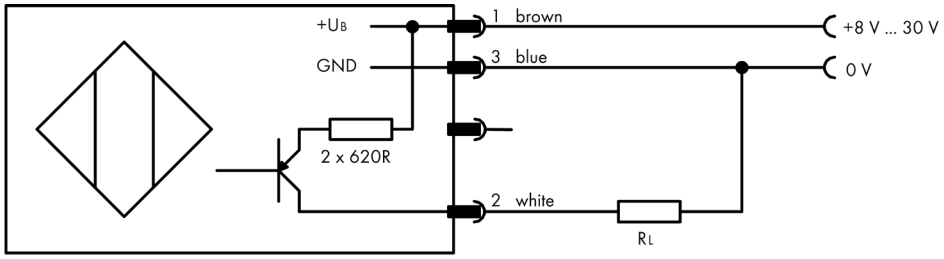
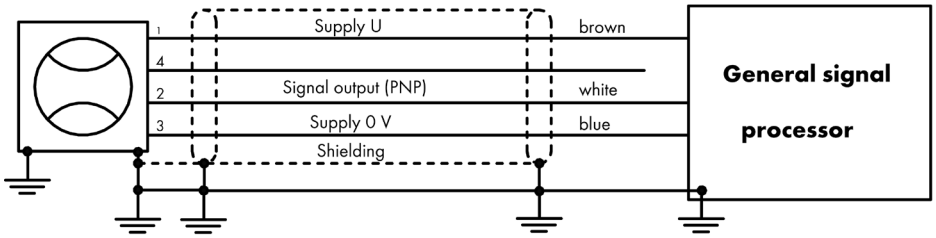
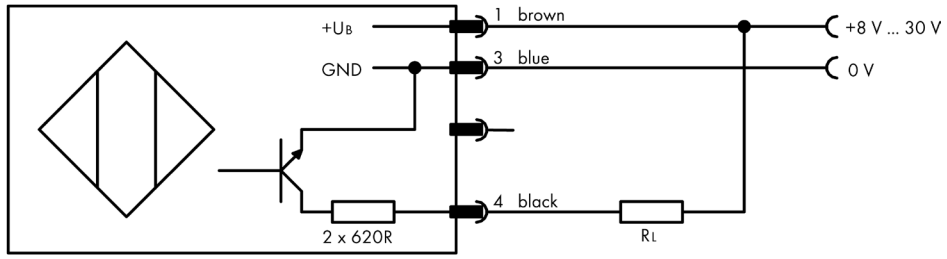
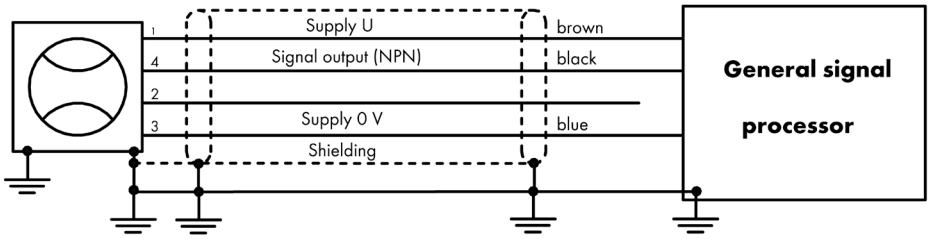
ELECTRONIC CONNECTION DATA FOR VII*-*S**/N, VTI*-*S**/N SINGLE PICK-UPS





Output signal PNP-switching





Signal output NPN-switching

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