Float flow meter

113 series

01236/13 GB

Function

The flow meter is a flow rate measuring device with float equipped with a regulating ball valve.
It is the basic balancing system, showing the easiest way to regulate and allowing a direct flow rate reading.
The indication range is 0,3–1,2 m³/h with a 10% accuracy on reading.

The 113 series shut-off valve can only be coupled to the 110 series geothermal manifold.

Product range

113 series Float flow meter — size DN 25-32 (Ø 25, Ø 32)
Code 113001 Insulation float flow meter

Technical specifications

Materials
Valve

Body:	brass EN 12165 CW617N
Ball:	brass EN 12164 CW614N
Ball control stem:	brass EN 12164 CW614N
Ball seal seat:	PTFE
Float:	brass EN 12165 CW614N
Float stem guide:	brass EN 12165 CW614N
Seals:	EPDM

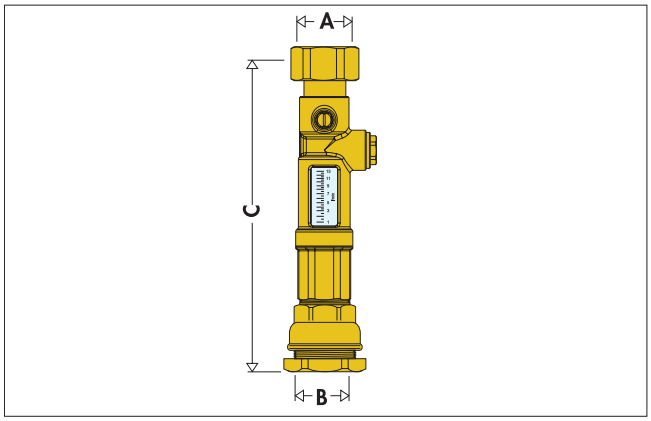
Performance

Medium:	water, glycol solutions, saline solutions
Max. percentage of glycol:	50%
Max. working pressure:	10 bar
Working temperature range:	-10–40°C
Flow rate range:	0,3–1,2 m³/h
Accuracy:	±10%
Control stem angle of rotation:	90°
Operating wrench:	9 mm
Threaded connections:	trapezoidal nut 42 p.2,5 TR

Insulation

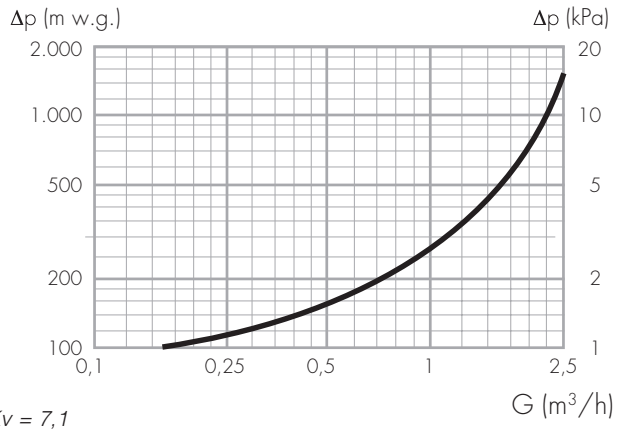
Material:		closed cell expanded PE-X
Thickness:		10 mm
Density:	- inner part:	30 kg/m³
	- outer part:	80 kg/m³
Thermal conductivity (ISO 2581):	- at 0°C:	0,038 W/(m·K)
	- at 40°C:	0,045 W/(m·K)
Coefficient of resistance to water vapour (DIN 52615):		> 1300
Working temperature range:		0–100°C
Reaction to fire (DIN 4102):		class B2

Dimensions



Code	A	B	C	Mass (kg)
113621	42 p.2,5 TR	Ø 25	189	1
113631	42 p.2,5 TR	Ø 32	192	1

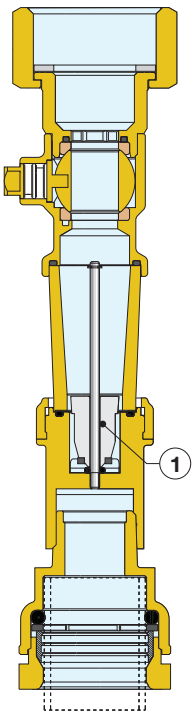
Hydraulic characteristics



Kv = 7,1

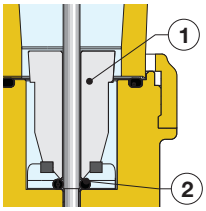
Operating principle

The flow meter (or variable cross-section flow meter) consists of a transparent, longitudinal tapered cross-section PSU pipe, containing a cylindrical-tapered floating device (1) featuring a slightly smaller diameter than the pipe's minimum diameter.
Operation is only permitted when the flow meter is vertical, with the widest internal diameter at the top.
The medium flows vertically from the bottom toward the top, exerting a pressure on the floating device, pushing it upwards until a balance is reached. The flow rate is indicated by the upper edge of the float and can be read using the graduated scale printed on the plastic pipe.



Construction details

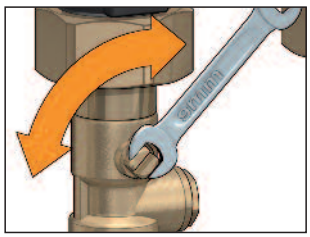
The float (1) has been designed with a notched washer (2) located in the lower part. This causes a continuous rotation when the medium is flowing.
This system prevents limescale from forming between the stem and the float, making it easier to clean the plastic pipe thanks to the fluid rotation.
Measurement accuracy is assured through careful float calibration. The pressure that the medium exerts depends on the shape and mass of the float as well as the speed and physical characteristics of the medium. The float was designed specifically for the flow rates usually found in geothermal systems, and allows regulation from 0,3 to 1,2 m³/h.

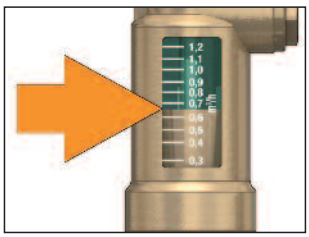


Adjustment

1) Adjust the flow rate by regulating the ball valve with a 9 mm hexagonal wrench.

2) The flow rate can be read on the graduated scale at the level of the upper edge of the float.





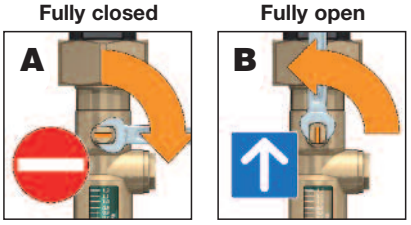
3) Balancing must be done for all circuits.

Correction for liquids with different densities

To obtain the actual flow rate when using glycol solutions at low temperature it is necessary to multiply the reading of the float flow meter by a correction factor of:
-0,9 for concentrations of 20-30%
-0,8 for concentrations of 40-50%.

Complete closing and opening of the valve

The valve can be completely opened or closed.
A slot on the obturator stem indicates the status of the valve.

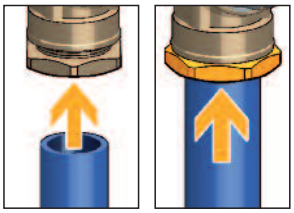


Installation

The flow meter must be installed on the flow manifold, meaning the one from the geothermal circuit to the heat pump.
The shut-off valves can be installed in the return circuit to close the circuit in the event of maintenance.
Since the flow meter must only be installed vertically, the geothermal manifold cannot be installed horizontally.

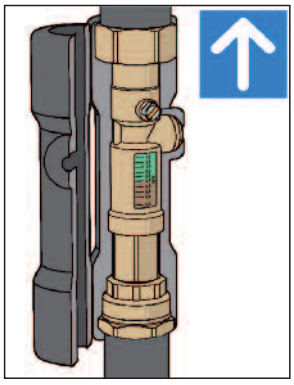
Circuit branching

The geothermal circuit pipe is connected directly to the flow meter by means of a DECA fitting, easy to fit. The pipe is fully inserted with the nut loosened, then the nut is retightened.



Insulation

The flow meter can be coupled to the insulation code 113001.
This closed cell expanded PE-X insulation provides perfect thermal insulation, which is particularly useful for limiting heat loss from geothermal installations.
To make it easier to read the flow rate and carry out maintenance on the flow meter, the insulation features a velcro opening thus avoiding the usual glueing.



SPECIFICATION SUMMARY

113 series
Float flow meter. Brass valve body. Female connections with captive nut 42 p.2,5 TR and fitting for Ø 25, Ø 32 polyethylene pipe. Maximum operating pressure 10 bar. Maximum system test pressure 10 bar. Working temperature range -10–40°C. Ambient temperature range -20–60°C. Medium water, saline solutions and glycol solutions with maximum glycol percentage of 50%. Accuracy ±10%.

Code 113001
Insulation for float flow meter. For size valve Ø 25, Ø 32. Closed cell expanded PE-X material. Thickness 10 mm. Density of inner part 30 kg/m³, outer part 80 kg/m³. Thermal conductivity (DIN 52612) at 0°C 0,038 W/(m·K), at 40°C 0,045 W/(m·K). Coefficient of resistance to water vapour (DIN 52615) > 1300. Working temperature range 0–100°C. Reaction to fire (DIN 4102) class B2.

CALEFFI Hydronic Solutions
Caleffi S.p.A.
S.R. 229 n. 25 · 28010 Fontaneto d'Agogna (NO) · Italy
Tel. +39 0322 8491 · Fax +39 0322 863723
info@caleffi.com · www.caleffi.com