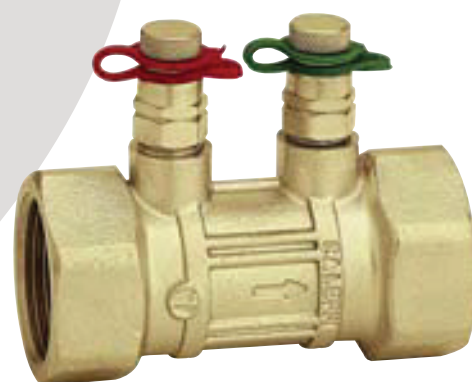


683

flow measure device



altecnic
CALEFFI group

683 flow measuring device



Function

The Altecnic 683 flow measuring devices can be used to measure the flow rate within a circuit.

When used in a heating system it allows the monitoring of the thermal power supplied to the circuits.

They can also be used in water treatment systems and industrial chemical or textile plants etc., to continuously monitor the water flowing through the circuits.

The Altecnic 683 flow measuring devices are equipped with quick-fit ports for easier differential pressure measurement.

Product Range

Product Code	Body Material	Size	Connection
683	Brass	¾" & 1"	screwed
683	Steel	DN32 to DN100	flanged PN6
683	Steel	DN125 to DN200	flanged PN16

Construction Details

Component

Screwed	Material	Grade
Body	Brass	BS EN 12165 CW617N
Pressure test port	Brass	BS EN 12164 CW614N
Test port seal	Elastomer	EPDM

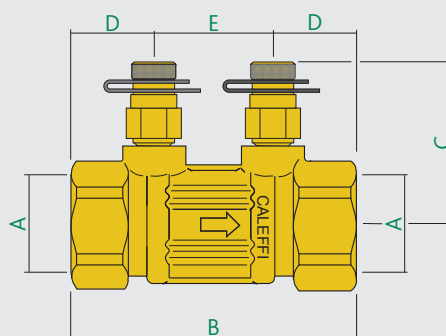
Flanged

Body	Steel - coated	
Gasket	Asbestos free NBR fibre	
Bolts	Steel	
Nuts	Steel	
Pressure test port	Brass	BS EN 12164 CW614N
Test port seal	Elastomer	EPDM

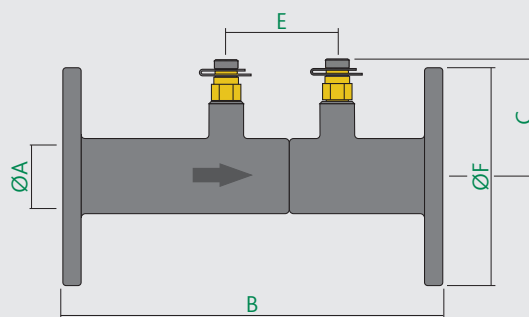
Technical Data

Medium:		water - glycol solution
Max. percentage of glycol:		50%
Working temperature range:		-5 to 110°C
Max. working pressure:	¾" & 1"	10 bar
	DN32 to 100	6 bar
	DN125 to 200	16 bar
Min. Δp for measurement:		1 kPa
Connections:	¾" & 1"	female screwed
Counter flanges	DN32 to 100	PN6 to BS EN 1092 -1
	DN125 to 200	PN16 to BS EN 1092 -1
Pressure test ports:	¼"F	

Dimensions



Code	A	B	C	D	E	kg
683005	G¾	78	51	23	32	0.30
683006	G1	90	54	29	32	0.43



Code	A	B	C	E	F	kg
683030	32	205	74	64	120	5.55
683040	40	230	77	71	130	6.27
683050	50	307	83	88	140	7.56
683060	65	390	90.5	110	160	10.43
683080	80	451	101	140	190	16.03
683100	100	530	106	182	210	20.06
683120	125	275	145	75	250	48.0
683150	150	300	160	80	285	61.0
683170	175	325	175	85	315	74.0
683200	200	350	185	100	340	96.0

Operating Principle

The Altecnic 683 flow measuring device operation is based on the Venturi effect.

The measuring device contains an orifice feature that by restricting the cross-section of the flow path, speeds up the medium and generates an increased Δp (for measurement) at the ends, in order to create precise flow rate measuring.

Each differential pressure value (measured at the ends of the orifice feature) has a corresponding accurate flow rate value, with the device Kv noted.

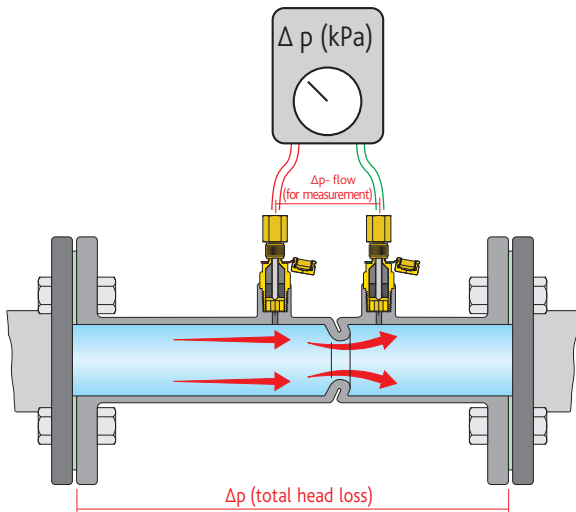
The total head loss for the measuring device is very low since the length of the pipe downstream from the orifice feature allows the medium to slow down and restore the pressure.

683 flow measuring device

Differential Pressure Measurement

The differential pressure often known as the flow measurement signal can be measured using any pressure gauge or manometer capable of operating within the range 0–10 kPa (0–1000 mm w.g.; see adjacent figure).

Whichever method or instrument is used, the air must be vented from the connection pipes to prevent errors when reading the differential pressure values.



Flow Characteristic Kvs and Kv Values

Valve Size	Kvs Values Signal	Kv Values Pressure Drop
¾"	4.64	5.54
1"	8.24	9.83
DN32	12.1	14.5
DN40	19.2	22.9
DN50	35.6	42.6
DN65	59.5	71.2
DN80	87.8	104.9
DN100	145.0	176.9
DN125	352.2	838.4
DN150	406.4	1049
DN200	812.9	2101

$$Kvs \text{ or } Kv = \frac{Q}{\sqrt{\Delta p}}$$

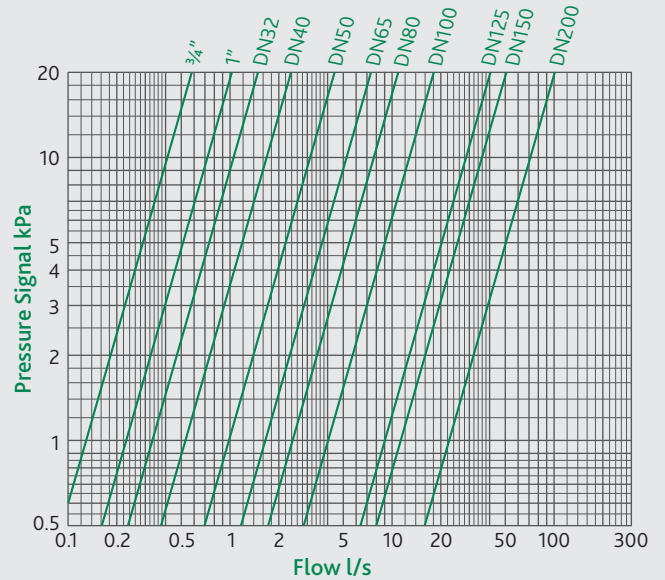
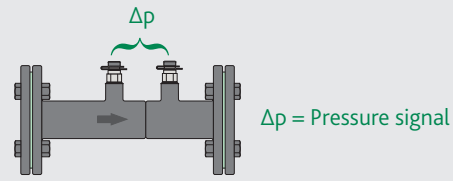
Where Kvs = Co-efficient factor to measure flow rate in m³/hr

Kv = Co-efficient factor to measure flow rate in m³/hr

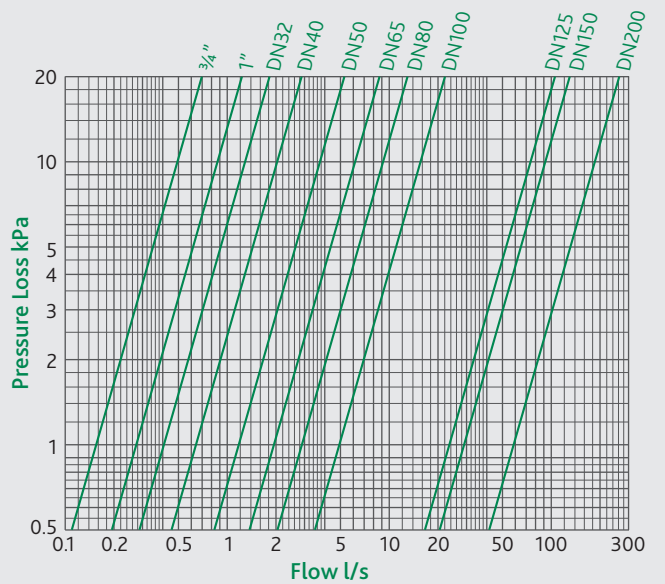
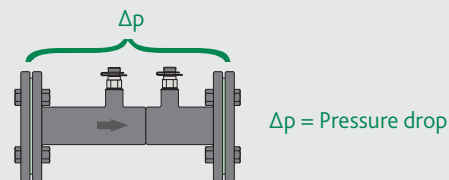
Q = flow rate in m³/hr

Δp = pressure drop in bar

Flow Measurement



Pressure Drop



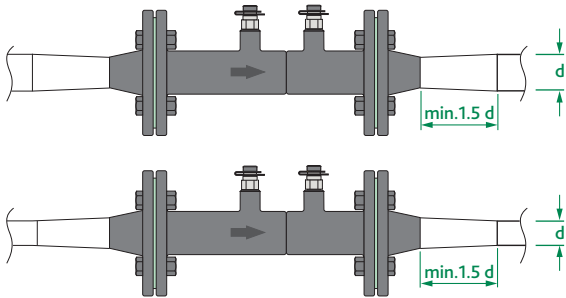
683 flow measuring device

Sizing

The size of the flow measuring device should be selected so that, when operating at the design flow rate, it has a corresponding **MINIMUM** measured Δp of 1 kPa.

Sometimes, to achieve this condition, it may be necessary to use a metering device with a diameter which is different to that of the pipe.

In this case, a tapered fitting should be used as illustrated below.



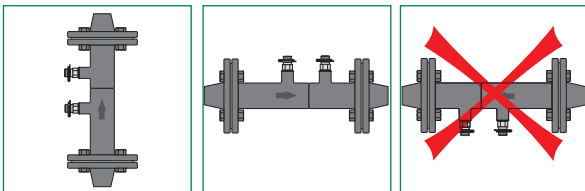
Installation

The flow measuring device should be installed into the pipe observing the flow direction indicated on the body and in accordance with the following instructions:

- Installation in the return pipe, in a position where it can be easily accessed for measurement purposes, with the pressure test ports facing upwards in order to prevent impurities from building up.

The return water temperature has fewer variations, which increases measurement accuracy.

- Installation in a straight length of piping, either horizontally or vertically but not turned upside down, well away from twists or devices which may disrupt flow, particularly at the inlet, during measurement.



In heating or chilled water systems, the flow measuring device can be installed in systems with several risers, branches or zones, to monitor the value of the individual flow rates or wherever metering of heating costs are required.

The rapid flow rate monitoring keeps the system at optimal running conditions, making it possible to identify balancing variations caused by adjusting balancing valves, other regulating devices, or by tampering.


The application diagrams at the end of the brochure indicate the optimal points for flow rate monitoring:

- 1 Installation on the boiler circuit
- 2 Installation on each riser, for system balancing monitoring
- 3 Installation on the horizontal sections of supply columns, as an alternative to point 2
- 4 Installation on each zone, for balancing throughout the system.

Accessories

130 Flomet



Flow rate and differential pressure electronic measuring station. Supplied complete with shut-off and connection fittings. Measurement range: 0.05 to 200 kPa. Differential P_{max} : 250 kPa. 

Code

130000 Supply voltage 230V (ac)

130001 Battery operated

100 Probes for measuring station



Pair of angled probes for connection to pressure test ports.

Female 1/4" threaded connection.

Max. working pressure: 10 bar.

Max. working temperature: 110°C

Code


100010 Pair of angled probes


100 Test ports



Pair of pressure/temperature test ports. Their special construction allows rapid and accurate measurements, guaranteeing a perfect hydraulic seal.

Cap lanyard available in the following colours:

 Red for upstream pressure test port.

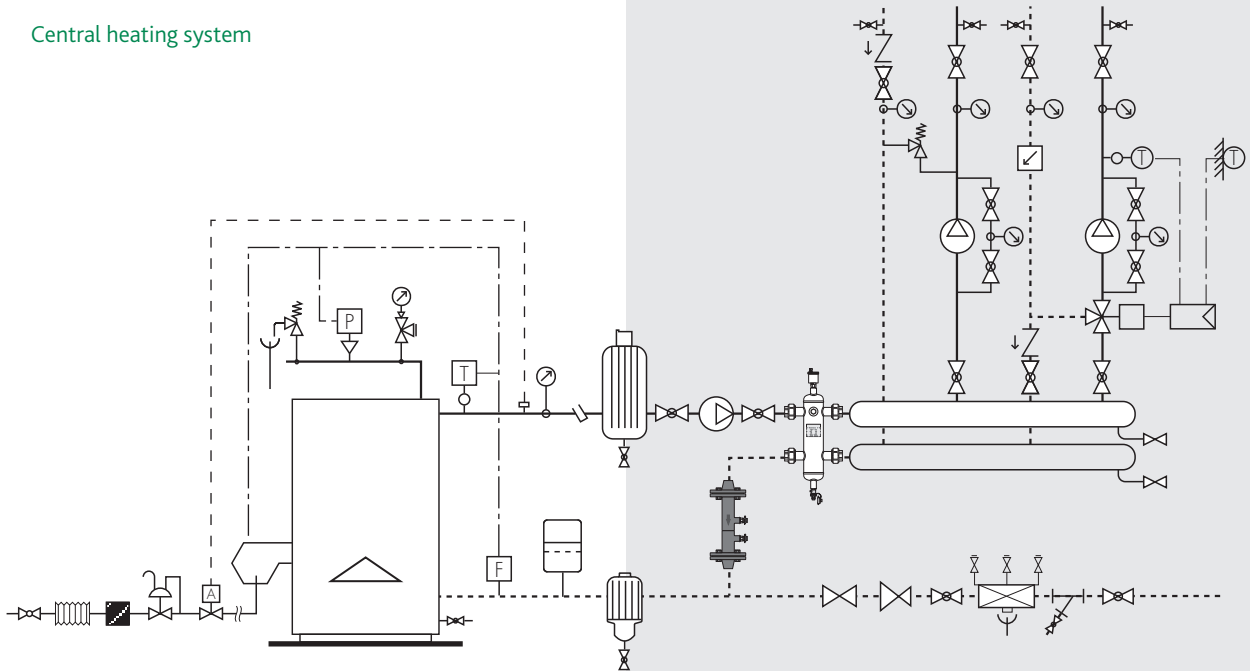
 Green for downstream pressure test port.








Code








10000 Pair of pressure test ports








Typical Installations







Central heating system



-  Shut-off valve
-  Ball valve
-  BALLSTOP
-  Temperature gauge
-  Differential by-pass valve
-  Flow switch
-  Backflow preventer

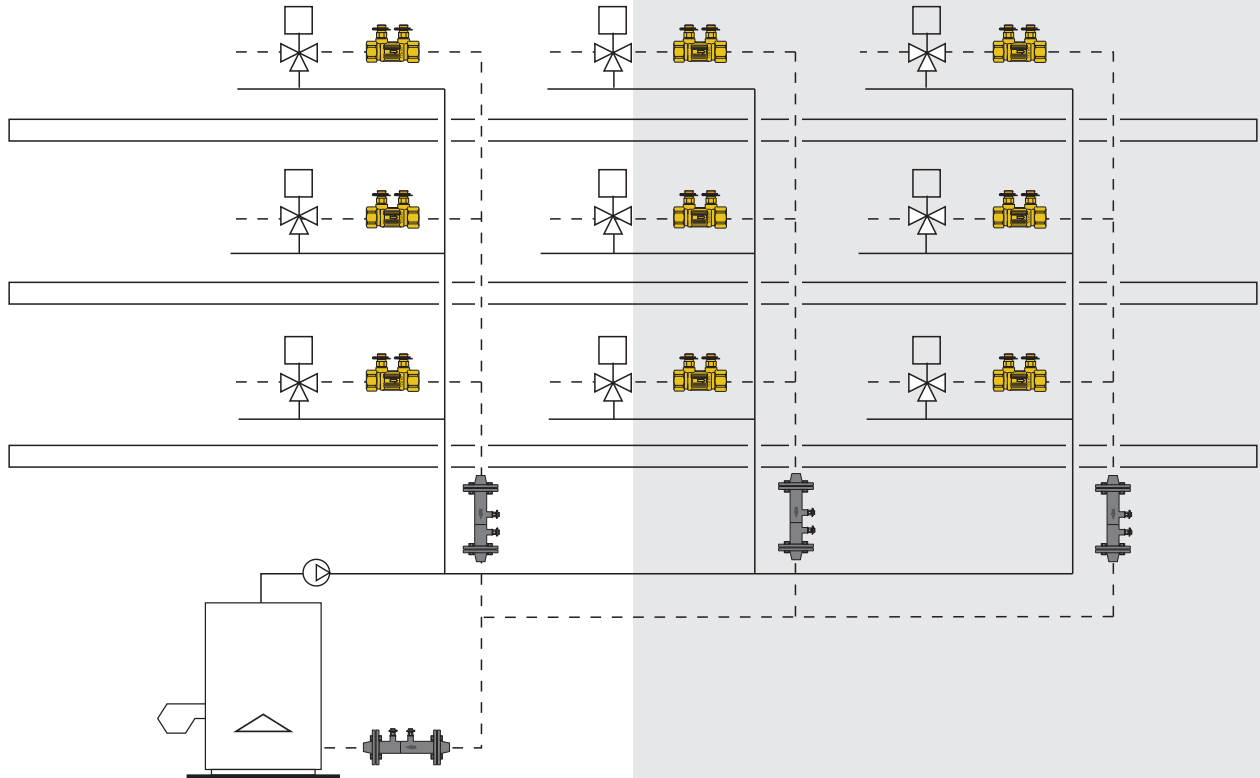
-  Zone valve
-  Pump
-  AUTOFLOW
-  Dirt separator
-  Temperature probe
-  Safety thermostat
-  Temperature controller

-  Expansion vessel
-  3-way cock
-  Pressure switch
-  Inspection pocket
-  Gas filter
-  Gas regulator
-  Pressure reducing valve

-  Deaerator
-  Fuel shut-off valve
-  Anti-vibration joint
-  Pocket
-  Safety valve
-  Y-strainer

Typical Installations Continued

Riser and zone systems



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