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ISO 9001

spirax/sarco

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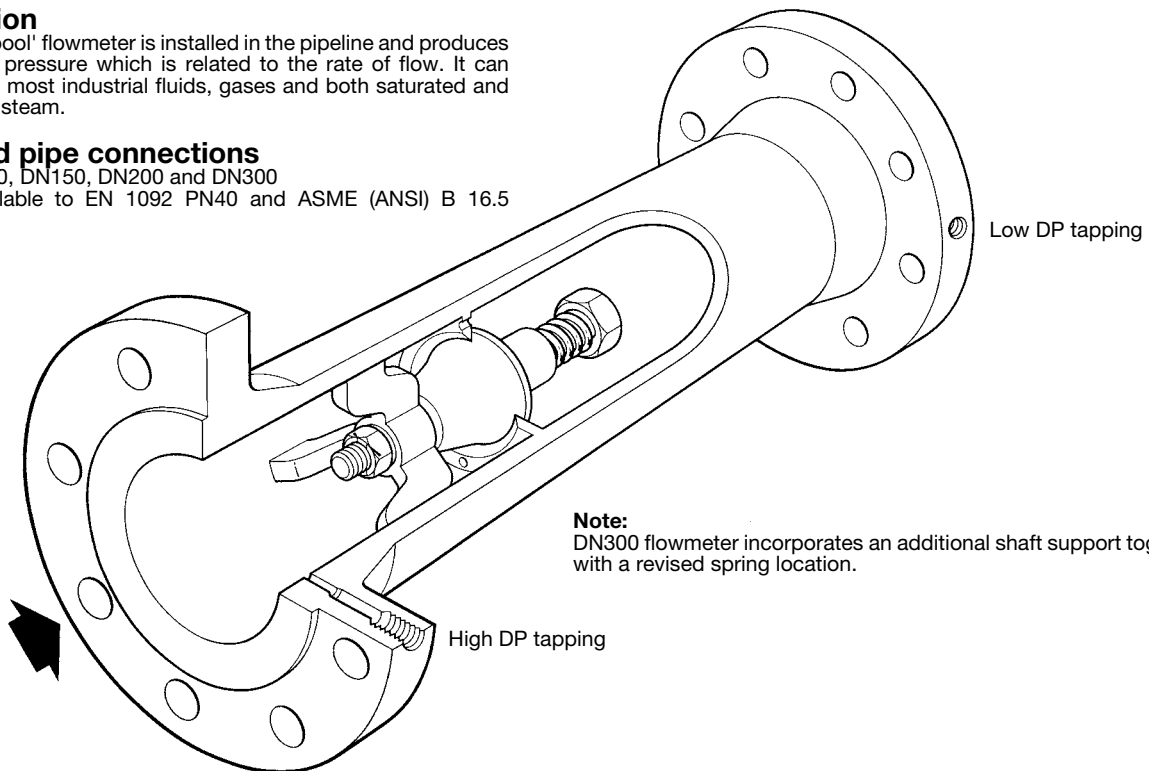
Gilflo 'Spool' Flowmeter Pipeline Unit

Description

The Gilflo 'Spool' flowmeter is installed in the pipeline and produces a differential pressure which is related to the rate of flow. It can be used with most industrial fluids, gases and both saturated and superheated steam.

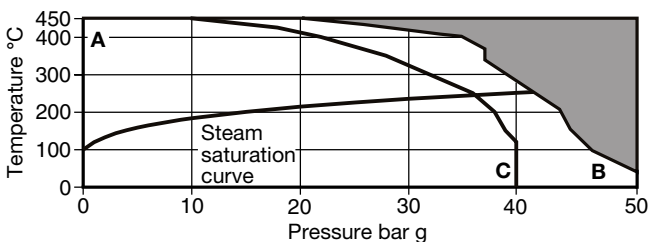
Sizes and pipe connections

DN80, DN100, DN150, DN200 and DN300
Flanges available to EN 1092 PN40 and ASME (ANSI) B 16.5 Class 300.



Note:
DN300 flowmeter incorporates an additional shaft support together with a revised spring location.

Pressure/temperature limits



The product **must not** be used in this region.

A - B Flanged ASME (ANSI) 300
A - C Flanged PN40

Body design conditions	ASME (ANSI) 300
PMA Maximum allowable pressure	50 bar g @ 50°C
TMA Maximum allowable temperature	450°C @ 20 bar g
Minimum allowable temperature	0°C
PMO Maximum operating pressure	50 bar g @ 50°C
Minimum operating pressure	0.6 bar g
TMO Maximum operating temperature	450°C @ 20 bar g
Minimum operating temperature	0°C
Note: For lower operating temperatures consult Spirax Sarco.	
Maximum viscosity	30 centipoise
ΔPMX Maximum differential pressure	349 m bar
Designed for a maximum cold hydraulic test pressure of:	ASME (ANSI) 300 78 bar g PN40 60 bar g

Materials

Part	Material
Body	Carbon steel ASTM A105 / A106 / A234
Internals	Mostly stainless steel S304 / S316
Spring	Inconel X750

Performance

When used in conjunction with an M800 series flow computer, Scanner 2000 steam mass flow transmitter or M750 display unit, accuracy is better than ±1% of actual flow from 5% to 100% of maximum rated flow. For flows from 1% to 5% of maximum rated flow, accuracy will be better than ±0.1% FSD. Repeatability is better than 0.25%. **Note:** The accuracy figures quoted are for the pipeline unit only. **Caution: Scanner 2000 steam mass flow transmitters** are uniquely configured at the factory to work with a single specific Gilflo flowmeter. For correct operation the configured Scanner 2000 transmitter must always be installed with its allocated flowmeter. Labels on the packaging give the serial numbers of the matched products.

Pressure drop

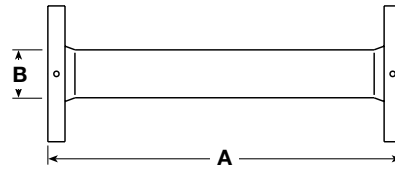
Less than 349 m bar (140 inches H₂O) at rated capacity.

Flow capacity

To determine the maximum flow capacity of a Gilflo 'Spool', it is necessary to calculate the equivalent water flowrate (Q_E). See under section "Sizing the Gilflo 'Spool' flowmeter".

Dimensions/weights (approximate) in mm and kg

Size	A	B	Weight
DN80	327	89	17
DN100	543	114	37
DN150	716	168	76
DN200	797	219	87
DN300	990	324	109



H.P. and L.P. pressure tapings are threaded 1/4" NPT (female).

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions supplied with the product

Installation note:

The following main points are given for guidance:

- The Gilflo flowmeter should be installed with a minimum of 6 straight pipe diameters upstream and 3 downstream. No valves, fittings or cross sectional changes are permitted within these pipe lengths. Where an increase in pipe diameter is necessary upstream of a Gilflo flowmeter, the length of straight pipe should be increased to 12 diameters. Similarly, where a Gilflo flowmeter is installed downstream of two 90° bends in two planes, a pressure reducing valve or a partially open valve, 12 pipe diameters should be allowed.
- The Gilflo flowmeter should normally be mounted horizontally. Vertical installation (with flow vertically downward) is also permissible and must be specified at the time of ordering. Ensure flow is in the correct direction and avoid reverse flow.
- For steam applications, good basic steam engineering practice should be followed:
 - Ensure all pipework is adequately lagged.
 - Ensure correct line drainage through adequate trapping.
 - Where practicable, fit a steam separator upstream of the flowmeter. This should be drained using a float trap set.
 - Ensure good alignment and support of all associated pipework.
 - Achieve line size reduction by the use of eccentric reducers.
 - Avoid close installation (less than 25 pipe diameters) upstream or downstream of a pressure reducing valve or modulating valve.
- See the 'Gilflo flowmeters - system overview', TI-S41-10 which provides information on the installation of a Gilflo flowmetering system.

Maintenance note:

There are no user serviceable parts within the Gilflo 'Spool' flowmeter.

Sizing the Gilflo 'B' flowmeter

In order to determine the flow capacity of a Gilflo 'B' flowmeter for a particular application, it is necessary to calculate the equivalent water flowrate (Q_E) based on the maximum anticipated actual flow.

	Mass flow units	Volumetric units
Liquids	$Q_E = \frac{q_m}{\sqrt{SG}}$	$Q_E = Q_L \sqrt{SG}$
Gases and steam actual flow conditions	$Q_E = q_m \sqrt{\frac{1000}{D_F}}$	$Q_E = Q_F \sqrt{\frac{D_F}{1000}}$
Gases standard conditions	$Q_E = \frac{q_m}{\sqrt{\frac{D_S}{1000} \times \frac{P_F}{P_S} \times \frac{T_S}{T_F}}}$	$Q_E = Q_S \sqrt{\frac{D_S}{1000} \times \frac{P_S}{P_F} \times \frac{T_F}{T_S}}$

Where:

Q_E = Equivalent water flowrate (litres / min)

q_m = Mass flowrate (kg / min)

Q_L = Maximum liquid flowrate (litres/min)

Q_S = Maximum gas flowrate at standard conditions (litres / min)

Q_F = Maximum gas flowrate at actual flow conditions (litres / min)

SG = Specific gravity

D_S = Density of gas at standard conditions (kg/m³)

D_F = Density of gas at actual flow conditions (kg/m³)

P_S = Standard pressure (atmospheric) = 1.013 bar a

= 1.033 kg/cm² a

= 14.70 psi a

P_F = Actual flow pressure in same absolute units as P_S

T_S = Standard temperature (K) = °C + 273

T_F = Actual flow temperature (K) = °C + 273

Sizing - Gilflo 'Spool' flowmeter minimum and maximum saturated steam flowrates in kg / h

Notes:

- The equivalent water flowrate litres/min for a Gilflo Spool. These equivalent water flowrates are based on a differential pressure across the flowmeter of 349 m bar (140 inches H₂O).
- Minimum flow is 1% of maximum (100:1 turndown).
- The table below is a guide only.

Size	Q_E	Steam pressure bar g											
		1	3	5	7	10	12	15	20	25	30	40	
DN80	Max.	365	753	1045	1268	1455	1698	1841	2039	2333	2598	2841	3285
	Min.	4	8	10	13	15	17	18	20	23	26	28	33
DN100	Max.	940	1939	2691	3264	3748	4372	4742	5251	6009	6690	7317	8460
	Min.	9	19	27	33	37	44	47	53	60	67	73	85
DN150	Max.	1660	3424	4752	5765	6618	7720	8374	9273	10611	11814	12922	14940
	Min.	17	34	48	58	66	77	84	93	106	118	129	149
DN200	Max.	3940	8127	11279	13683	15709	18324	19875	22009	25186	28040	30668	35461
	Min.	39	81	113	137	157	183	199	220	252	280	307	355
DN300	Max.	7380	15222	21126	25620	29424	34323	37232	41225	47176	52522	57445	66422
	Min.	74	152	211	256	294	343	372	412	472	525	574	664

How to order example: 1 off Spirax Sarco DN150 Gilflo 'Spool' flowmeter flanged to EN 1092 PN40.