



Cert. No. LRQ 0963008

ISO 9001

spirax sarco

TI-P330-71
MI Issue 1

Flowin 2 Natural Gas Flowmeter

Description

The Spirax Sarco Flowin 2 flowmeter provides accurate flow measurement of dry natural gas. It can also be used on a variety of other industrial gases. Consult Spirax Sarco for further details.

Warning: The Flowin 2 is not suitable for use on oxygen or hydrogen applications.

The pipeline-mounted unit provides a compact, self-contained 4-20 mA loop powered metering solution with low power consumption. It automatically compensates for gas pressure and temperature variations. Flowin 2 is able to output 10 digits of totalised flow, instantaneous flowrate, gas pressure and temperature in metric or imperial units, via its built in, indexable LCD display. It is also able to transmit data via the 4-20 mA loop, pulse output connections and RJ11 communications port. Consult Spirax Sarco for further details.

The totaliser is resettable and password protected. Data is stored internally every 8 minutes to protect against loss.

Principle of operation

Flowin 2 operates by detecting the angular displacement of a flap caused by the momentum of the flowing gas. This angle measurement is combined with calibration data unique to each flowmeter, as well as measurements of gas temperature and pressure. The 'on board' flow computer then calculates the normalised gas flow in accordance with the (user modifiable) gas properties stored in its memory. This method of flow measurements results in very small 'overrun' errors, which can occur with other types of flowmeter under the 'start stop' conditions often experienced with gas boiler/burner controls.

Approvals:

Flowin 2 complies with the requirements of the European Pressure Equipment Directive 97/23/EC and carries the **CE** mark when so required. The product falls within the following pressure equipment directive categories.

Product	Group 1 Gases	Group 2 Gases	Group 1 Liquids	Group 2 Liquids
Flowin 2 natural gas flowmeter	1	SEP	-	-

The Flowin 2 has been designed broadly in accordance with ISO 23550 Safety and control devices for gas burners.

The Flowin 2 has been approved by Gastec at CRE as a non-fiscal flowmeter complying with the requirements of relevant sections of the Measuring Instruments (Gas meters) Regulations 2006. Flowin 2 complies with the requirements of the Electromagnetic Compatibility Directive 2004/108/EC by meeting the standards of:

EN 61010-1 :2001	Safety requirements of electrical equipment for measurement, control and laboratory use Part 1 general requirements.
EN 61326-1 :2006	Electrical equipment for measurement, control and laboratory use EMC requirements - All relevant parts.
ISO 23550 :2004	Safety and control devices for gas burning appliances Section 8 Assessment criteria 1 and 2 met where stated.
EN 61000-4-29 :2000	dc supply voltage dips, short interruptions and variations, including additional test.

Available types

Standard model	Range 1	Capacity 350 Nm ³ /h
Low pressure drop model	Range 2	Capacity 150 Nm ³ /h



Sizes and pipe connections

Body size	DN40
Flange specifications	JIS B2241 Class 10K* (Japanese aluminium flange std)

* Although direct physical connection is possible with flanges to the following specifications: DN40 JIS 10, JIS 16 and JIS 20 (Japanese), DN40 KS 10, KS 16 and KS 20 (Korean), and also 1½" BS 10 tables F, H and J (obsolete British), care must be taken not to exceed the allowable working pressure of the integral flanges of Flowin 2. (see the 'Pressure/temperature limits' below). On installations where other flange specifications are in use, Spirax Sarco recommends the use of adaptors (spool pieces).

Pressure / temperature limits

PMA	Maximum allowable pressure	700 kPa g
TMA	Maximum allowable temperature	60°C
	Minimum allowable pressure	0.5 kPa (5mbar) abs
	Minimum allowable temperature	0°C
PMO	Maximum operating pressure	300 kPa g
TMO	Maximum operating temperature	40°C
	Minimum operating pressure	50 kPa g
	Minimum operating temperature	5°C
	Maximum humidity level	95% RH (Non-condensing)

Local regulations may restrict the use of this product to below the conditions quoted.

In the interests of development and improvement of the product, we reserve the right to change the specification without notice.

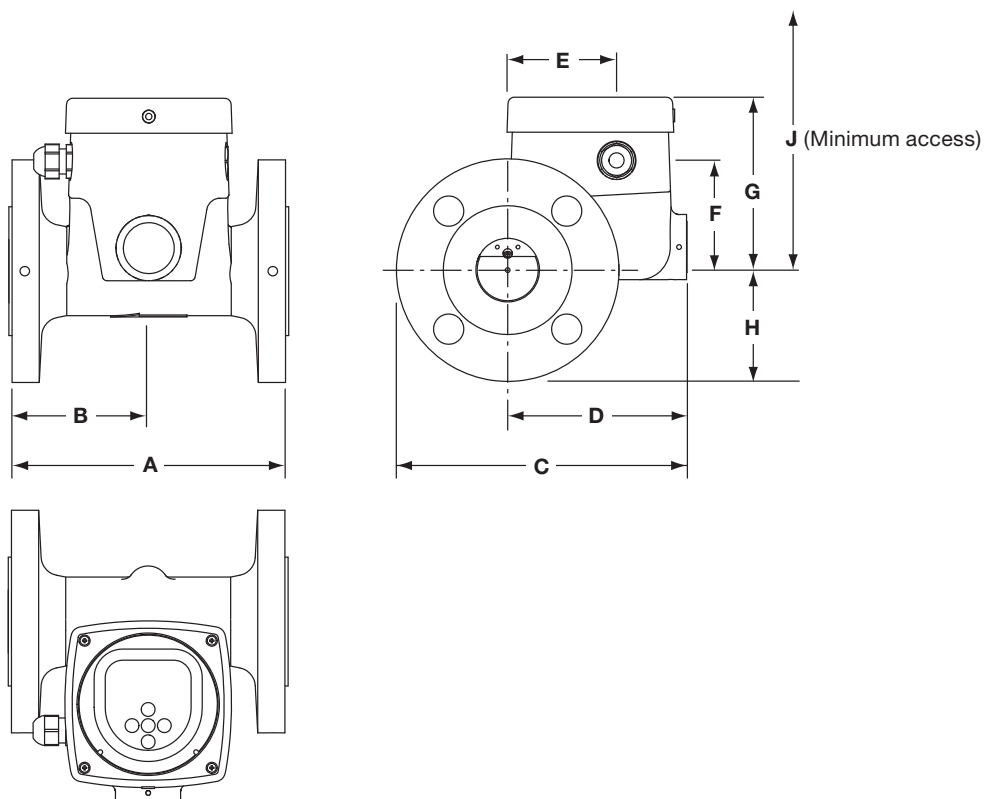
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Technical data

Enclosure IP rating	IP65			
Materials	Body material	Aluminium alloy - aerospace grade		
	Internals	Stainless steel, titanium, tungsten, samarium cobalt, polymer bearing material		
	Flange finish	Faces and bore - Alocrom 1200		
	Body finish	Powder coat paint 'Gentian blue' RAL5010		
Performance data	Rated capacity (At 40°C, 30 kPa g)	Range 1	350 Nm ³ /h	Note: Normalised to Japanese reference conditions 0°C at 1 bar absolute
		Range 2	150 Nm ³ /h	
	Turndown ratio (at 150 kPa, 20°C)	Range 1	22:1	
		Range 2	9:1	
	Maximum pressure drop across the flowmeter	Range 1	22 kPa	
Range 2		7 kPa		
System accuracy	±2% FSD			
Electrical data	Power supply	<p style="text-align: center;">9 - 28 volts dc</p> <p style="text-align: center;">FLOWIN 2 operating range</p> <p style="text-align: center;">$V = 0.022 R + 6$</p> <p style="text-align: center;">$9 V \leq V \leq 28 V$</p>		
	Maximum current drain	22 mA		
	Output 1	4 - 20 mA current proportional to maximum rated capacity. i.e. 4 mA = zero flow, 20 mA = maximum rated flow (user re-rangeable)		
	Output 2	Pulsed output Vmax 28 Vdc Rmin 10 kΩ		
		User modifiable parameters Volume per pulse 0.1, 1, 10, 100 or 1000 Nm ³		
		Pulse width 0.02 s to 0.2 s in 0.01 s increments		
	Error signal (programmable)	3.8 mA (LOW) or 22 mA (HIGH)		
Communications port	EIA 232C (RS232C) via RJ11 connector (Contact Spirax Sarco for further details)			

Dimensions/weight (approximate) in mm and kg

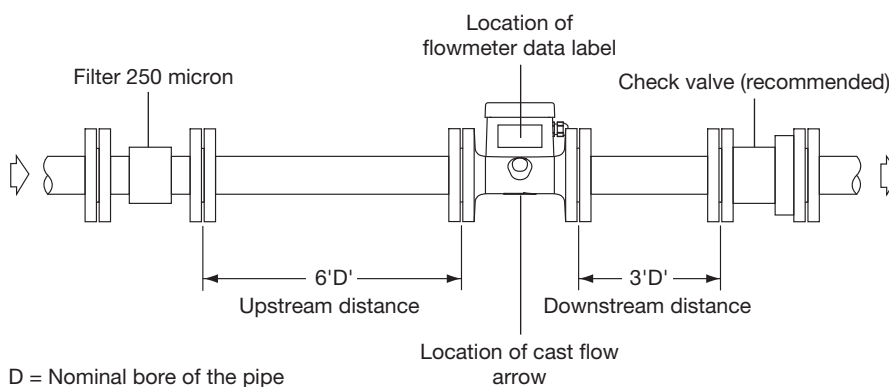
A	B	C	D	E	F	G	H	J	Weight
176	88	183	113	69	69	106	70	206 (min)	3.0



Safety information, installation and maintenance

Warning: This document does not provide enough information to install the product safely. For full details refer to the Installation and Maintenance Instructions supplied with each Flowin 2.

The Flowmeter may be installed in a horizontal or vertical pipeline, with flow either upwards or downwards. The preferred orientation for a Flowin 2 gas flowmeter is in a horizontal pipeline, with the flowmeter display facing upwards or downwards as illustrated below.



In order to maintain plant safety and optimum metering accuracy, Flowin 2 should be installed, commissioned and maintained by a suitably qualified person, fully in accordance with the details in the IMI.

Maintenance note: The Spirax Sarco Flowin Mk2 has no user serviceable parts.

Disposal: No ecological hazard is anticipated with the disposal of this product, providing due care is given.

How to order

Example 1 - 1 off Spirax Sarco DN40 Flowin 2 natural gas flowmeter - Range 1 (350 Nm³/h) - Part no. 3309894

Example 2 - 1 off Spirax Sarco DN40 Flowin 2 natural gas flowmeter - Range 2 (150 Nm³/h) - Part no. 3309895