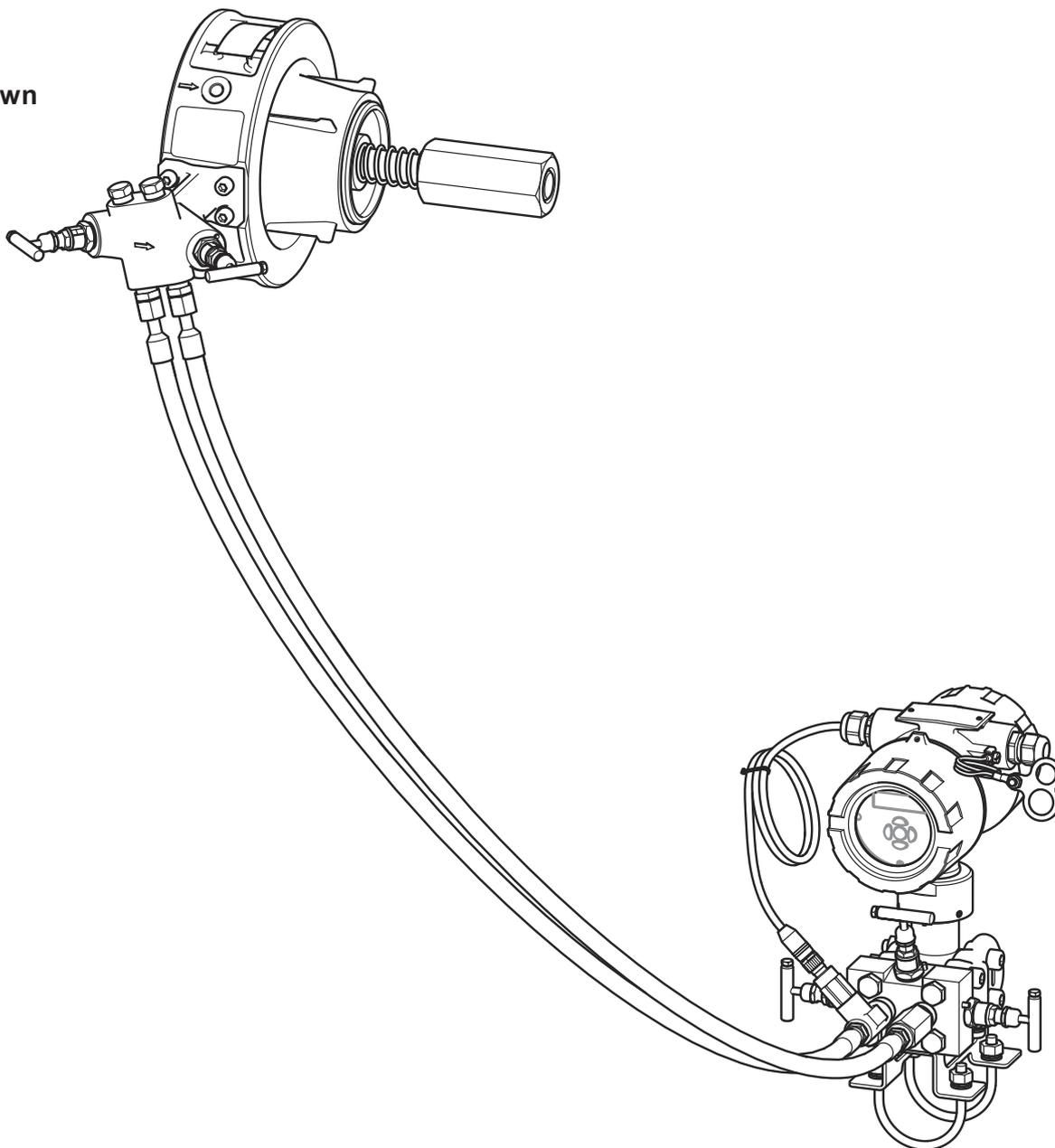




## ILVA20 Flowmeter and MVT10 Differential Pressure Transmitter for Saturated and Superheated Steam Service

DN150 shown



### Description

The Spirax Sarco DN150 to DN300 flowmeter with MVT10 is a calibrated system designed for use on saturated and superheated steam only, and can also be used as a net energy meter on steam applications. It operates on the spring loaded variable area principle and produces a differential pressure related to the rate of flow. The Electronics provide current loop, frequency, RS485 and Modbus outputs. Steam flow is density corrected. Pipeline pressure is also measured.

## Standards

This flowmeter complies with the requirements of the EU Pressure Equipment Directive/UK Pressure Equipment (Safety) Regulations, carries the  /  marks and falls within the following PED categories:

Product		Group 1 Gases	Group 2 Gases	Group 1 Liquids	Group 2 Liquids
ILVA20	DN150 - DN200	3	3	2	SEP
	DN250 - DN300	3	3	2	1

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IP rating	IP65 with correct cable glands
Electromagnetic Compatibility Directive	2014/30/EU
UK Electromagnetic Compatibility Regulations 2016	
Calibration	ISO 17025
Designed to ASME BPVC section V111	
Safety requirement for electrical equipment for measurement, control, and laboratory use	EN61010-1:2010 UL/CSA 61010-1:2012 (third edition)
IP Testing	EN60529:1992/A2:2013
Electromagnetic Compatibility – Emissions and Immunity	EN 61326-2-3:2013
Sine Vibration Sequence	EN61298-3:2008 Section 7
Transportation Vibration	EN60068-2-6:2008

## Certification

This product is available with certification to EN 10204 3.1.

**Note:** All certification/inspection requirements must be stated at the time of order placement.

## Sizes and pipe connections

Available in DN150, DN200, DN250 and DN300 pipeline sizes.

This flowmeter is a wafer design suitable for fitting between the following flanges:

- EN 1092-1 PN16, PN25 and PN40
- ASME B 16.5 Class 150 and 300
- Japanese Industrial Standard JIS 20
- Korean Standard KS 20

**Note:** The Spirax Sarco flowmeter should be installed in pipework manufactured to BS 1600, ASME B 36.10 Schedule 40 or EN 10216-2/EN10216-5 equivalent.

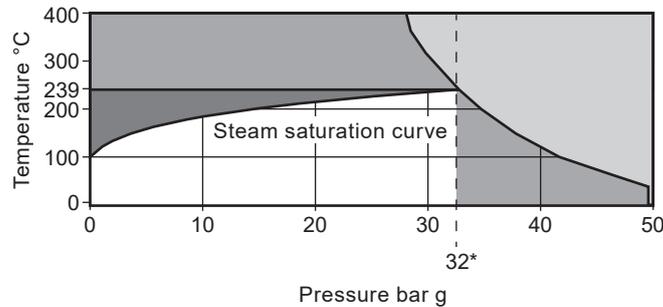
## Materials

Flowmeter body	Stainless steel	
Internals	Stainless steel	316
2 way manifold	Stainless steel	1.4408 CF8M
3 way manifold	Stainless steel	316L
Impulse hoses	Stainless steel	
MVT housing	Aluminium	Copper free aluminium, max 0.5 mg
Pressure sensor	Stainless steel	
Spring	Inconel X750	

## Technical data

Power supply	24 Vdc if it is loop powered
	24 Vdc, 0.25 A when using an RS 485
Outputs	4-20 mA loop (proportional to mass flow)
Pulsed output	V max. 28 Vdc, R min. 10 kΩ
Communications port	RS485/Modbus

## Pressure/temperature limits



- The product **must not** be used in this area.
- Outside of operating range.
- Steam is superheated in this area.

Maximum design pressure	49.6 bar g @ 21 °C
Maximum design temperature	400 °C @ 29.4 bar g
Minimum design temperature	0 °C (non-freezing)
Maximum operating pressure	* 32 bar g @ 239 °C
Minimum operating pressure	0.6 bar g
Maximum operating temperature (saturation)	239 °C
Minimum operating temperature	0 °C (non-freezing)
Maximum electronics ambient temperature	55 °C
Minimum ambient temperature	0 °C
Maximum electronics humidity level	90% RH (non-condensing)
Designed for a maximum cold hydraulic test pressure of:	50 bar g
Glass on the display is rated for impact of maximum	4J
Environment Protection	IP65

## Pressure drop

The maximum pressure drop across the ILVA pipeline unit is 498 mbar (200 ins water gauge) at maximum rated flow.

## Performance

The Flowmeter is a calibrated system and consists of two parts, the ILVA20 (pipeline element) and the MVT10 (differential pressure transmitter) that includes the electronics, display and static pressure transmitter.

The MVT10 flowmeter has inbuilt electronics which give a density compensated output. An LCD display is incorporated within the electronics head. The M750 display unit can be used to provide a remote display function if required, utilising the 4 - 20 mA output.

±2% of measured value from 12% to 100% of maximum rated flow.

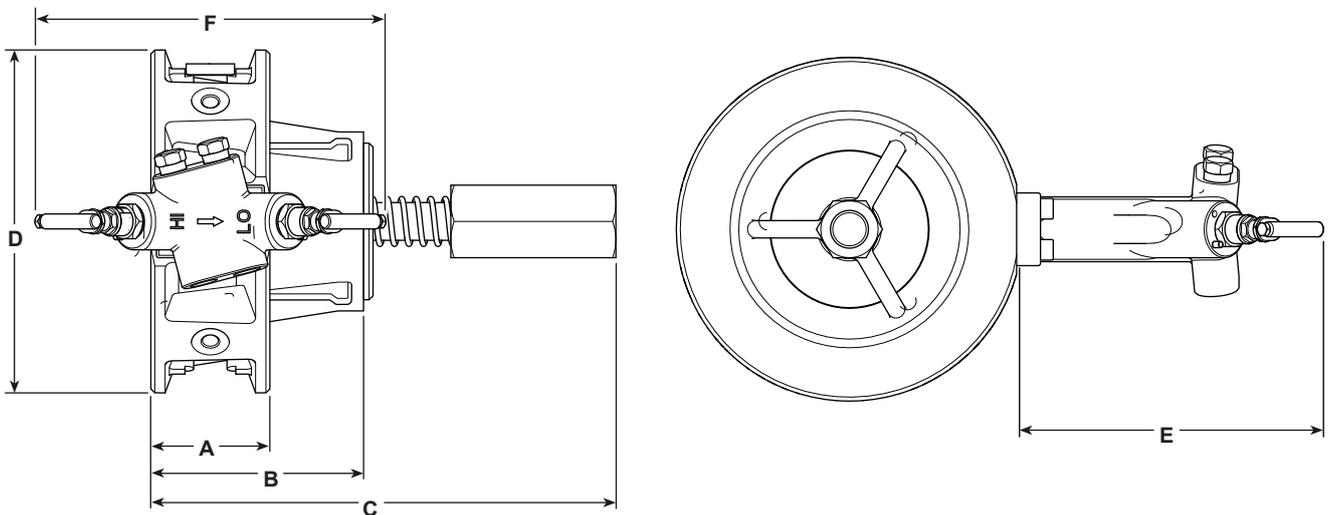
±0.5 %FSD from 2%-12% of flow.

**Turndown** 50:1 typical

**Flowmeter sizing** To view the sizing suite, please go to <http://prs.spiraxsarco.com/sizingsuite>.

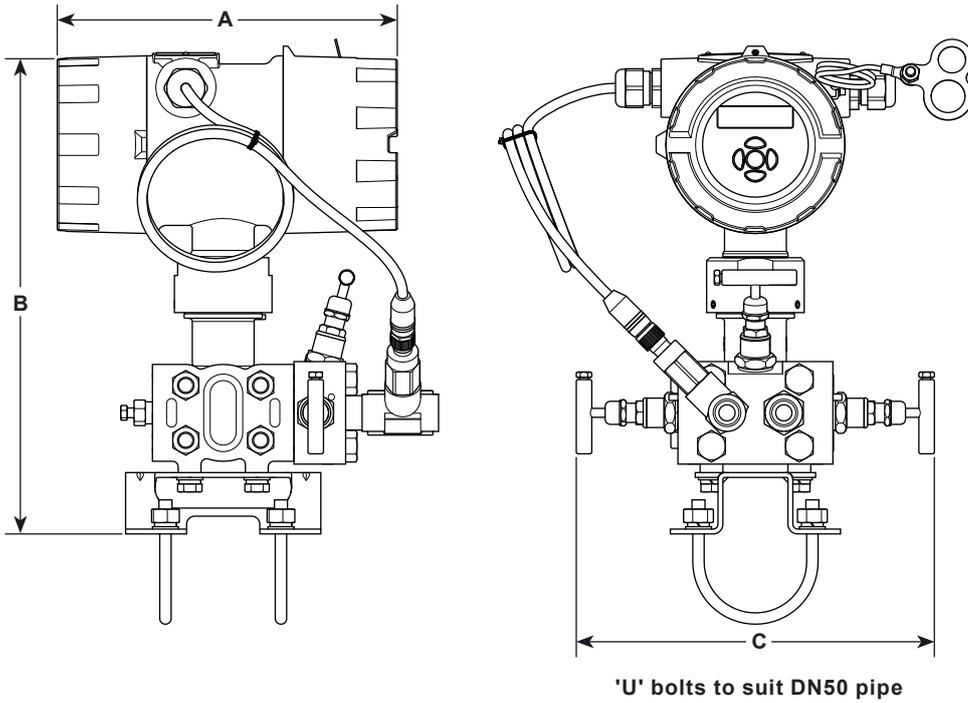
		Flow (kg/h)											
		Pressure bar g											
		0.6	1	3	5	7	10	12	15	20	25	30	32
DN150	Max	5386	5981	8301	10071	11562	13487	14631	16200	18538	20639	22573	23311
	Min	108	120	166	201	231	270	293	324	371	413	451	466
DN200	Max	10586	11757	16317	19795	22726	26509	28757	31840	36437	40566	44368	45817
	Min	212	235	326	396	455	530	575	637	729	811	887	916
DN250	Max	14393	15985	22185	26915	30899	36043	39099	43292	49541	55156	60325	62295
	Min	288	320	444	538	618	721	782	866	991	1103	1206	1246
DN300	Max	20382	22637	31417	38115	43758	51042	55369	61307	70157	78107	85428	88218
	Min	408	453	628	762	875	1021	1107	1226	1403	1562	1709	1764

## ILVA20 Dimensions/weights (approximate) in mm and kg



Size	A	B	C	D	E	F	Weight
DN150	75	134	293	218	193	221	18
DN200	85	161	354	273			28
DN250	104	204	443	330			47
DN300	120	250	540	385			70

**MVT10 Dimensions/weights (approximate) in mm and kg**



**MVT10 mass flow transmitter, manifold, impulse hoses and fixing clamp**

A	B	C	Weight
209	264	220	8

The ILVA20/MVT10 can be supplied with either 1 m or 2 m long impulse hoses, with 3/8" NPT screwed ends. It can also be supplied without hoses (Hard piping supplied by customer).

**Impulse hoses**

		Weight
3/8" NPT	1 m	0.5 (pair)
	2 m	1 (pair)

## Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P337-69) supplied with the product.

### Installation note

**The following main points are given here for guidance only:**

The flowmeter should be mounted 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 a single plain bend or an increase in nominal pipe diameter is required upstream of the flowmeter, the length of straight pipe should be increased to 12 diameters. Similarly, where a 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 upstream and 6 downstream.

It is important that the internal upstream and downstream diameters of pipe are smooth. Ideally seamless pipes should be used. It is recommended that slip-on flanges be used to avoid any intrusive weld beads on the internal diameter of the pipe.

Care should be taken to install the flowmeter concentrically in the line. If this is not done, flow measurement errors may occur.

The flowmeter should be mounted horizontally. For vertical installations, consult Spirax Sarco.

For steam applications, good basic steam engineering practices should be followed:

- Correct pipeline drainage through adequate trapping.
- Good alignment and support of associated pipework.
- Pipeline size changes achieved by the use of eccentric reducers.

### Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

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3374380 - Gasket and fastener spares kit

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3374381 - 2 way manifold and fastener spares kit

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3374382 - Pressure sensor and cable spares kit

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3374383 - Electronics spares kit

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3374384 - MVT10 spares kit (Option 1)

A new MVT10 with the original ILVA20 calibration data downloaded.

**Note:** The system accuracy cannot be guaranteed.

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3374385 - MVT10 spare (Option 2) - Full Recalibration (DN150)

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3374485 - MVT10 spare (Option 2) - Full Recalibration (DN200)

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3374585 - MVT10 spare (Option 2) - Full Recalibration (DN250)

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3374685 - MVT10 spare (Option 2) - Full Recalibration (DN300)

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The original ILVA20 returned for recalibration and a new MVT10 supplied with recalibration data.

### Disposal

The product is recyclable. No ecological hazard is anticipated with the disposal of this product providing due care is taken.

### How to order

**Example:** 1 off Spirax Sarco DN150 flowmeter for installation between EN 1092 PN40 flanges. The flow medium is saturated steam at 10 bar g, maximum flow 10 692 kg/h.