

## DIVA Saturated Steam Flowmeter

### Description

The DIVA flowmeter is designed for use on saturated steam only and operates by measuring the strain produced on a moving cone by an instantaneous flowrate. This strain is then converted into density compensated mass flowrate and is transmitted via a single loop powered 4 - 20 mA and pulsed output.

### Sizes and pipe connections

2", 3" and 4"

The DIVA is of wafer design, suitable for fitting between ANSI B 16.5 class 150 and 300 flanges

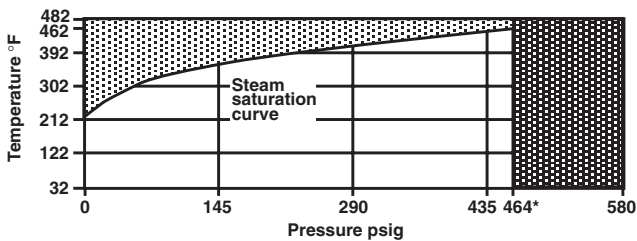
#### Note:

The DIVA flowmeter should be installed in pipework manufactured to BS1600 or ANSI /ASME B 36.10 Schedule 40. For systems with different standards / schedules, spool pieces manufactured from BS 1600 or ANSI/ASME B 36.10 Schedule 40 pipe should be used.

### Limiting Conditions

Minimum operating pressure:	2"	12.5 psig
	3" and 4"	9 psig
Maximum operating pressure:	Horizontal flow	464 psig
	Vertical flow	160 psig
Minimum operating temperature:		217°F
Maximum operating pressure (saturation):		462°F
Maximum allowable temperature:		482°F
Maximum electronic ambient temperature:		131°F
Maximum electronics humidity level:		90 RH (non condensing)

### Operating Range

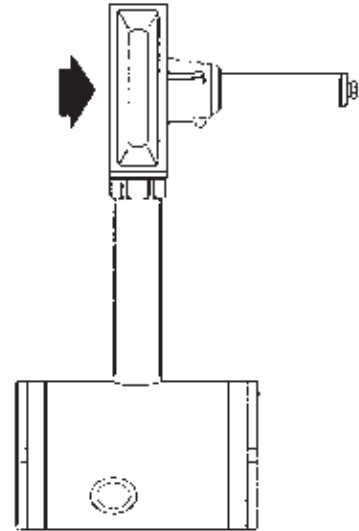


- The product must not be used in this region.
- The product should not be used in this region due to software limitations.

\*PMO Maximum operating pressure for steam service.

### Materials

Body	Stainless steel S.316
Internals	431 S29/S303/S304/S316
Spring	Inconel X750 or equivalent
Stem	Stainless steel 431 S29
Housing	Aluminum HE30



### Technical data

IP rating	IP65 with correct cable glands
Power supply	Loop powered nominal 24 Vdc
Outputs	4 - 20 mA (proportional to mass flow) Pulsed output (Vmax 28 Vdc Rmin 10 k)
Communication port	EIA 232C (RS 232)

### Performance

The DIVA flowmeter has inbuilt electronics which gives a density compensated output. A LCD display is incorporated within the electronics head, which is accessible via the screw cap. The M750 display unit can be used to provide a remote display if required, utilising the linear output.

#### System uncertainty, to 95% confidence (2 STD): (in accordance with ISO 17025)

± 2% of measured value from 10% to 100% of maximum rated flow.  
± 0.2% FSD, from 2% to 10% of maximum rated flow.  
Turndown : up to 50:1

As the DIVA is a self contained unit the uncertainty quoted is for the complete system. Many meters claim a pipeline unit uncertainty and for a true system uncertainty, the individual uncertainty values of any associated equipment, such as DP cells, need to be added to the pipeline value.

### Pressure drop

The pressure drop across the DIVA is nominally 300 inches water gauge (10.8 psig) at maximum rated flow for the 2" unit, and 200 inches water gauge (7.2 psig) for the 3" and 4" units.

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## Sizing the DIVA flowmeter for saturated steam - capacities lb/h

### Horizontal flow applications

Pressure in psig	14.5	29	43.5	58	72.5	87	101.5	116	130.5	145	159.5	174	188.5	203	217.5	232	
2"	Min. flow lb/h	32	39	45	50	55	59	63	66	70	73	76	79	82	85	88	90
	Max. flow lb/h	1048	1395	1670	1905	2113	2304	2477	2637	2793	2938	3076	3207	3330	3452	3576	3684
3"	Min. flow lb/h	70	85	98	109	119	128	137	145	152	160	167	173	179	185	192	197
	Max. flow lb/h	2780	3648	4341	4934	5461	5944	6383	6789	7187	7554	7907	8240	8554	8864	9181	9454
4"	Min. flow lb/h	108	131	151	168	183	197	210	222	234	245	256	266	275	285	294	303
	Max. flow lb/h	4968	6199	7206	8082	8867	9592	10254	10868	11472	12032	12569	13079	13559	14033	14520	14939

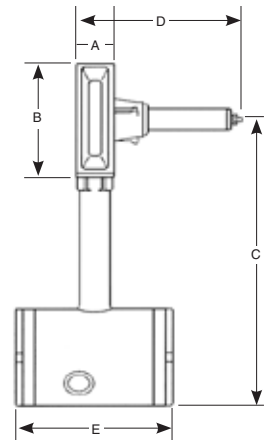
Pressure in psig	246.5	261	275.5	290	304.5	319	333.5	348	362.5	377	391.5	406	420.5	435	449.5	464	
2"	Min. flow lb/h	93	96	98	101	103	105	108	110	112	114	116	118	121	123	125	127
	Max. flow lb/h	3808	3904	4008	4117	4223	4321	4419	4520	4609	4701	4790	4881	4969	5052	5138	522
3"	Min. flow lb/h	204	208	214	219	225	230	235	240	245	249	254	258	263	267	272	276
	Max. flow lb/h	9770	10017	10280	10558	10830	11078	11328	11587	11815	12049	12277	12508	12733	12945	13164	13380
4"	Min. flow lb/h	313	320	328	337	345	353	360	368	375	383	390	397	404	410	417	424
	Max. flow lb/h	15426	15805	16210	16638	17058	17440	17826	18226	18578	18938	19291	19649	19996	20324	20662	20996

### Vertically up flow applications

Pressure in psig	14.5	29	43.5	58	72.5	87	101.5	116	130.5	145	159.5	
2"	Min. flow lb/h	35	46	56	63	70	77	83	88	93	98	103
	Max. flow lb/h	1048	1395	1670	1905	2113	2304	2477	2637	2793	2938	3076
3"	Min. flow lb/h	93	122	145	164	182	198	213	226	240	252	264
	Max. flow lb/h	2780	3648	4341	4934	5461	5944	6383	6789	7187	7554	7907
4"	Min. flow lb/h	166	207	240	269	296	320	342	362	382	401	419
	Max. flow lb/h	4968	6199	7206	8082	8867	9592	10254	10868	11472	12032	12569

### Vertically down flow applications

Pressure in psig	14.5	29	43.5	58	72.5	87	101.5	116	130.5	145	159.5	
2"	Min. flow lb/h	35	39	45	50	55	59	63	66	70	73	76
	Max. flow lb/h	1048	1395	1670	1905	2113	2304	2477	2637	2793	2938	3076
3"	Min. flow lb/h	93	85	98	109	119	128	137	145	153	160	167
	Max. flow lb/h	2780	3648	4341	4934	5461	5944	6383	6789	7187	7554	7907
4"	Min. flow lb/h	108	131	151	168	183	197	210	222	234	245	256
	Max. flow lb/h	4968	6199	7206	8082	8867	9592	10254	10868	11472	12032	12569



### Dimensions/weights (approximate) in inches and lbs

Size	A	B	C	D	E	Weight
2"	1.4	4.1	10.4	6.1	5.7	7.4
3"	1.8	5.4	11.2	5.9	5.7	11.6
4"	2.4	6.4	12.4	8.1	5.7	18.1

### DIVA flow capacities and pressure drops

Size	Maximum QE US Gal/min	Maximum DP "wg mbar
2"	80	300 750
3"	203	200 498
4"	317	200 498

### Safety Information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P337-18 and IM-P337-21) supplied with the product

The following main points are given for guidance only:

1. The DIVA 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 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 DIVA is installed downstream of two 90° bends in two planes, a pressure reducing valve or a partly open valve, 12 upstream pipe diameters should be allowed.
2. It is important that the internal upstream and downstream diameters of pipe are smooth. Ideally seamless pipes should be used and there should be no intrusive weld beads on the internal diameter. It is also recommended that slip-on flanges are used to avoid this.
3. Care should be taken to install the DIVA flowmeter concentrically in the line. If this is not done, flow measurement errors may occur.
4. As for all steam flowmetering installations, good basic steam engineering practices should be followed.

### How to Order

**Example:** 1 of 4" DIVA saturated steam flowmeter for installation between ANSI 300 flanges.

For use on saturated steam at 145 psig, maximum flow 12,059 lb.hr.

**Note:** For details of the optional remote display see the relevant M750 literature.

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