



Data Sheet 6.16 Issue A



Electromagnetic Flow Meter Model: Mag-Flux T4

General Description

The meter assembly consists of a sensor plus a mag-flux T4 transmitter. This unit has been specifically designed for liquid flow measurement. The mag-flux T4 transmitter generates the inductive current necessary for the magnetic field and pre processes the induced voltage at the electrodes.

The measuring principle is based upon Faraday's law of electromagnetic induction. A conductive liquid flowing through the sensor's magnetic field generates voltage which is directly proportional to the flow velocity.

Features

- VdS approved
- Fully welded steel design for robust, error-free operation
- Fast signal processing with 16-bit micro controller
- Pre-configured measurement ranges
- Grooved end connections for ease of installation
- M12 plug for simple electrical connection
- 4 – 20 mA output

Technical Data

Connections	Grooved Connection DN50/2" - DN250/10" Threaded Connection G 1/2 - G 2 Flange Connection EN1092-1 DN15 - DN250 Flange Connection ANSI B16.5 150RF 1/2" - 10"
Maximum Working Pressure	Grooved Connection: 16 bar Flange Connection $\leq$ DN50/2" : 20 bar Flange Connection $>$ DN50/2" : 16 bar Threaded Connection : 20 bar
Inflow Path	5 x nominal diameter
Outflow Path	2 x nominal diameter
Measuring Accuracy	$\pm 0,5 \%$ of the measured value from 1 m/s to 10 m/s $\pm 0,4 \%$ of the measured value + 1mm/s to < 1 m/s $\pm 0,15 \%$ of the measured value form 0,5 m/s to 10 m/s
Medium Temperature	+4°C to 50°C (39°F to 122°F)
Minimum Flow Rate	0.1 - 10 m/s
Electrical output	1 x circular plug-in connector M12 x 1 (5 pol) with 5 m cable
Power Supply	24 V DC; $\pm 15 \%$
Power Consumption	10 W
Minimum Conductivity	$> 50 \mu\text{S/cm}$



Materials Specifications

Description	Material
Housing	Die-cast aluminum
Measuring Tube	Stainless Steel
Solenoid Chamber	Steel
Lining	Hard rubber / PTFE
Electrodes Material	Stainless Steel
Filter	Stainless Steel
Seal	NBR

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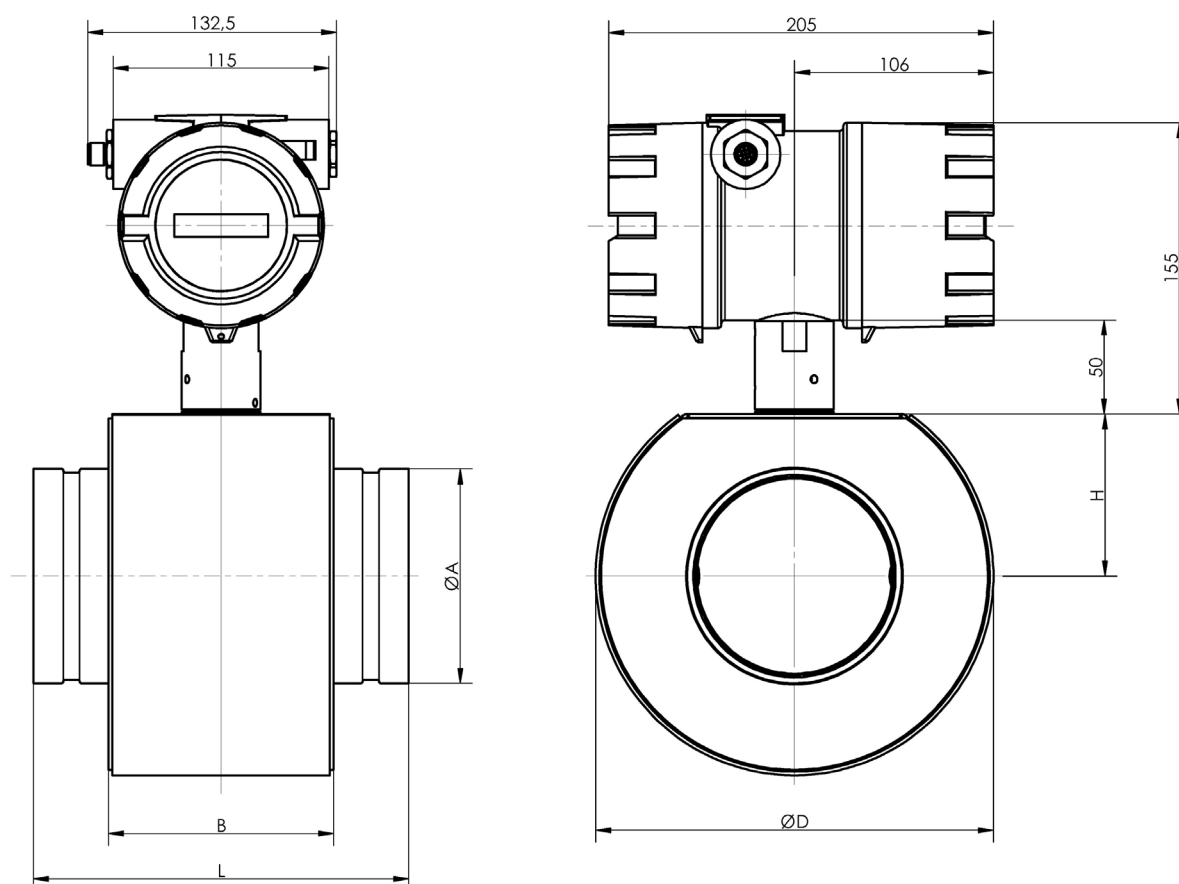
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Electromagnetic Flow Meter

Model: Mag-Flux T4

Dimensions and weights

Hard rubber with grooved connections



Nominal Diameter		ØA	Build-in-length		Dimensions of Housing			Weight in kg
			L	Tolerance	B	D	H	
DN50	2"	60.3	150	+0 / -2	80	140	57	6.5
DN65	2 1/2"	76.1	150	+0 / -2	80	155	63	7.0
DN80	3"	88.9	150	+0 / -2	80	170	70	9.0
DN100	4"	114.3	200	+0 / -2	120	210	86	10.0
DN125	5"	139.7	200	+0 / -2	120	240	98	10.5
DN150	6"	168.3	200	+0 / -2	120	285	117	13.5
DN200	8"	219.1	300	+0 / -2	200	350	143	21.5
DN250	10"	273.0	300	+0 / -3	200	440	180	32.0

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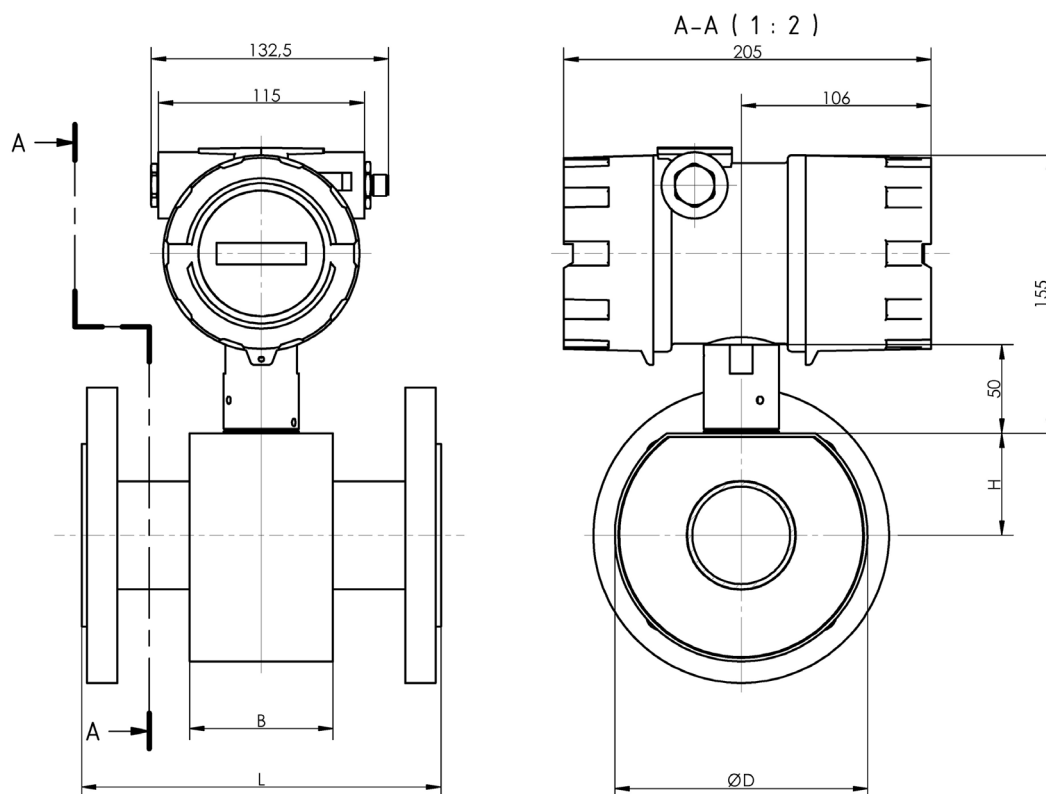
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Electromagnetic Flow Meter

Model: Mag-Flux T4

Dimensions and weights

Hard rubber and PTFE with flanged connections



Nominal Diameter		Build-in-length		Dimensions of Housing			Weight in kg
		L	Tolerance	B	D	H	
DN15	1/2"	200	+0 / -2	80	130	53	5.0
DN20	3/4"	200	+0 / -2	80	130	53	5.5
DN25	1"	200	+0 / -2	80	130	53	6.0
DN32	1 1/4"	200	+0 / -2	80	130	53	7.0
DN40	1 1/2"	200	+0 / -2	80	130	53	7.5
DN50	2"	200	+0 / -2	80	140	57	9.0
DN65	2 1/2"	200	+0 / -2	80	155	63	10.0
DN80	3"	200	+0 / -2	80	170	70	13.0
DN100	4"	250	+0 / -2	120	210	86	15.0
DN125	5"	250	+0 / -2	120	240	98	19.0
DN150	6"	300	+0 / -2	120	285	117	23.0
DN200	8"	350	+0 / -2	200	350	143	36.0
DN250	10"	450	+0 / -3	200	440	180	52.0

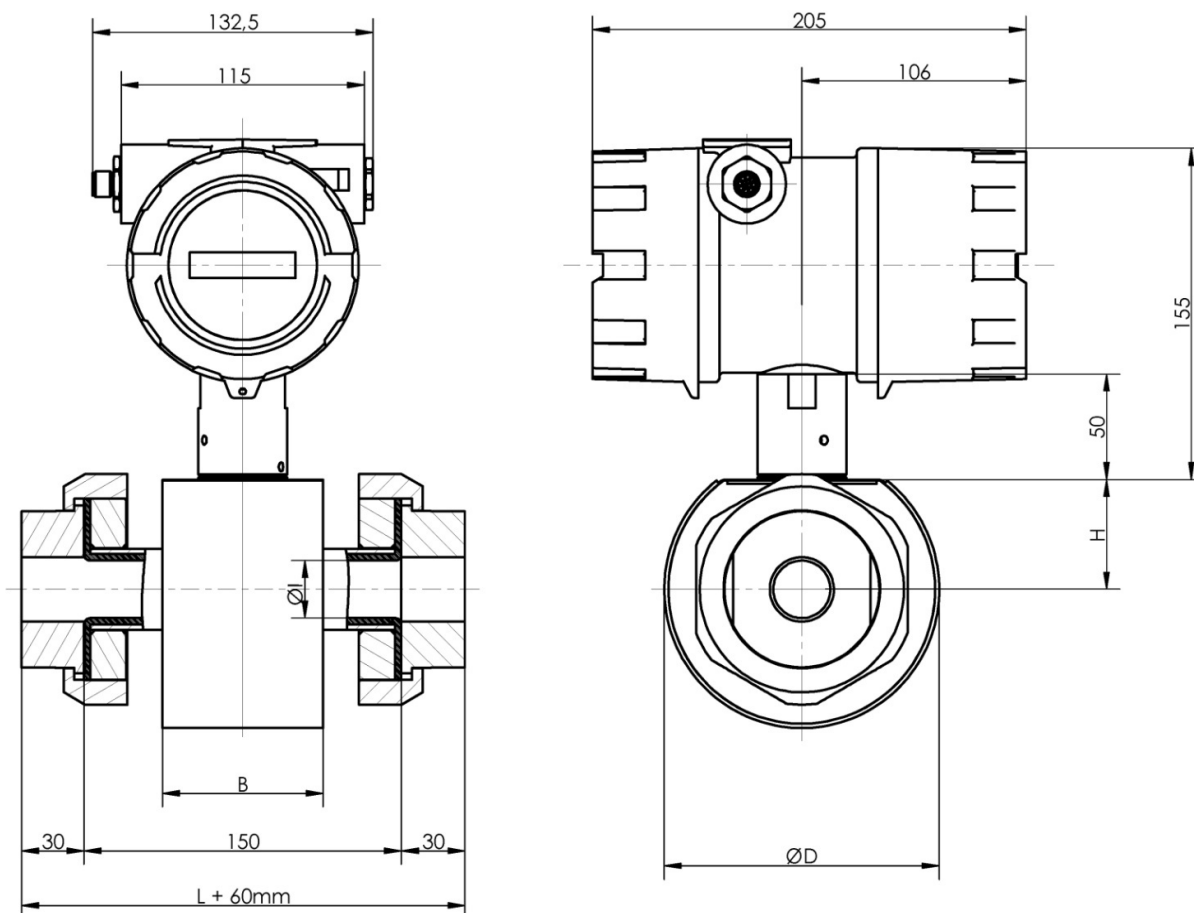
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Electromagnetic Flow Meter

Model: Mag-Flux T4

Dimensions and weights

PTFE with threaded connections



Nominal Diameter		Build-in-length		Dimensions of Housing			Weight in kg
		L	Tolerance	B	D	H	
G 1/2	14	150	+0 / -2	80	130	53	5.0
G 3/4	19	150	+0 / -2	80	130	53	5.5
G 1	27	150	+0 / -2	80	130	53	6.0
G 1 1/4	33	150	+0 / -2	80	130	53	7.0
G 1 1/2	38	150	+0 / -2	80	130	53	7.5
G2	48.5	150	+0 / -2	80	130	53	9.0

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Electromagnetic Flow Meter Model: Mag-Flux T4

Installation Instructions

The sensor must be installed in a pipeline with sufficient straight section, both before and after the measuring point. For best results an inflow path of 5x nominal pipe diameter and an outflow path of 3x nominal pipe diameter are required.

In order to avoid turbulence from pipe fittings and valves, it is recommended not to install these in the inflow path straight section. However, if site conditions dictate otherwise, then appropriate adjustments must be taken to normalize the flow profile, for example

- Increasing the inflow and outflow zones
- Using flow conditioners

Installation in horizontal and vertical pipeline

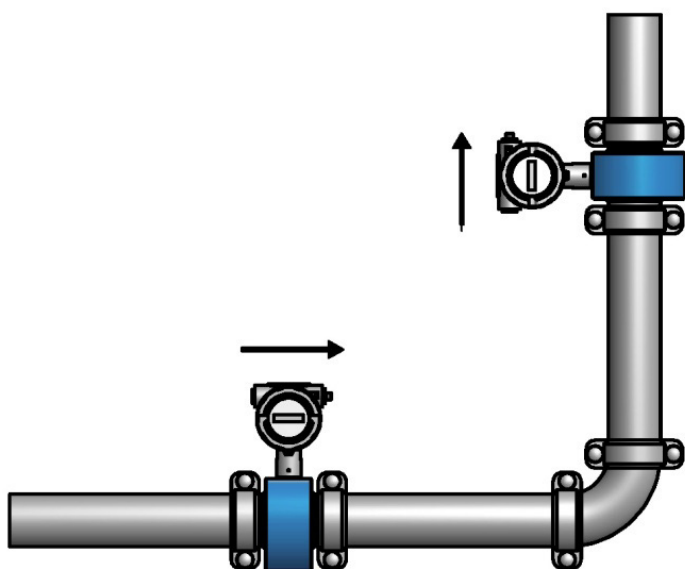


Fig.1

The sensors may be installed either horizontally or vertically, however, the axes of the electrodes must be running horizontally (see directional arrow on the electrode). This will avoid erroneous measurements due to deposits or air bubbles on the electrodes.

Installation in risers and down pipes

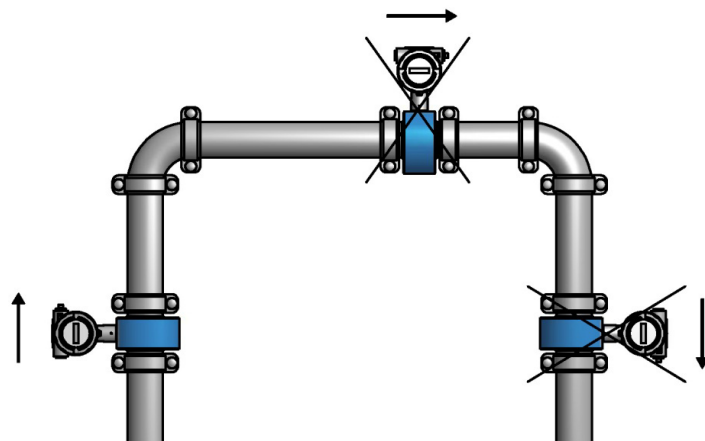


Fig.2

Do not install the sensor in a drainage area or pipeline (e.g. open down pipe). If site conditions dictate that the sensor must be installed in a drainage pipe, it is essential that this portion of the pipeline remains 100% filled with liquid at all times. This can be achieved by configuring the pipework to create a siphon with trapped water (Fig. 3).

Installation in a pipeline which is always filled with media

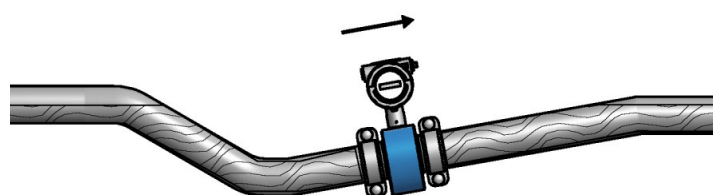


Fig.3

Electromagnetic Flow Meter Model: Mag-Flux T4

Installation between tees, valves and pumps

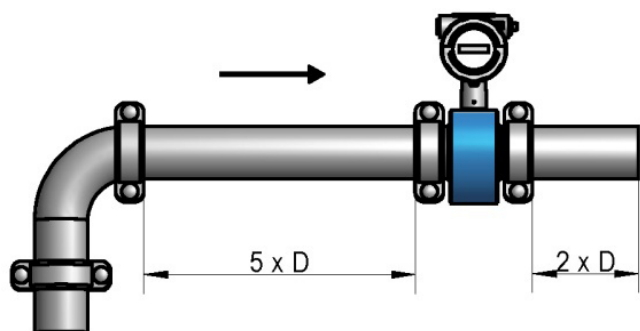


Fig.4

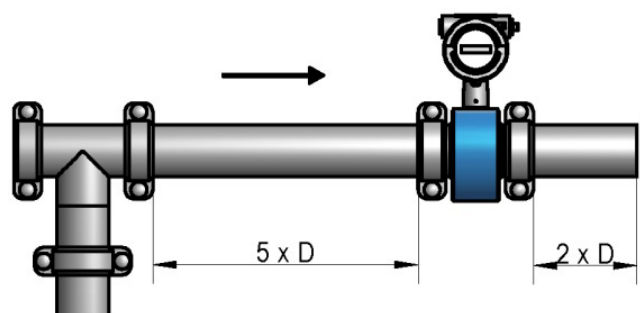


Fig.5

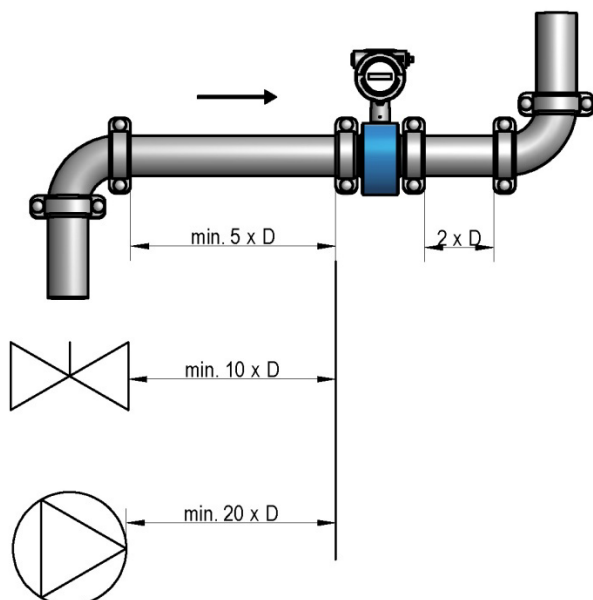


Fig.6

Always maintain the distance of the pipe's straight run (Fig. 4.). If these distances cannot be maintained, flow conditioners must be installed. If several sensors are to be installed in series, the distance between each sensor must be equal to the length of one sensor. If two or more sensors are to be installed in parallel, the distance between sensors must be at least 1 m.

Installation at highest point

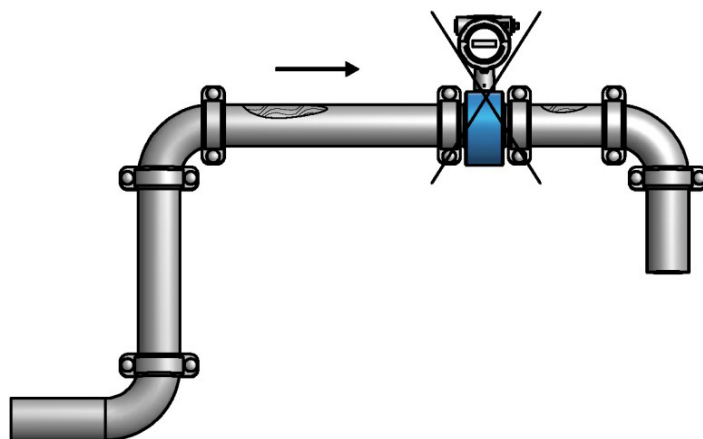


Fig.7

Due to possible accumulation of gases, the sensor must not be installed at the highest point of a pipeline.

Storage

Store the device in a dry and dust-free place.

Keep away from direct and permanent UV rays and heat sources.

Avoid external load to the device.

The storage temperature range for standard devices with electrical components is -20°C to $+60^{\circ}\text{C}$.

Maintenance

The transmitter mag-flux T4 is designed for maintenance-free performance. It contains no parts, which need to be replaced or adjusted annually.

Although the devices are maintenance-free, it is recommend to check the flow meter annually for signs of corrosion, mechanical wear or damage at regular intervals.

For a detailed inspection and cleaning the device is required to be removed from the pipe.



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Electromagnetic Flow Meter

Model: Mag-Flux T4

With hard rubber lining

Size	Process Connection	Measuring Ranges	
		l/min	USgpm
DN50	Groove connection	0 - 1180	0 - 310
DN65	Groove connection	0 - 2000	0 - 525
DN80	Groove connection	0 - 3000	0 - 800
DN100	Groove connection	0 - 4700	0 - 1250
DN100	Groove connection	0 - 7350	0 - 1950
DN150	Groove connection	0 - 10600	0 - 2800
DN200	Groove connection	0 - 18850	0 - 5000
DN250	Groove connection	0 - 29500	0 - 7800
DN15	Flange connection EN 1092-1 PN 40	0 - 106	0 - 28
DN20	Flange connection EN 1092-1 PN 40	0 - 188	0 - 50
DN25	Flange connection EN 1092-1 PN 40	0 - 295	0 - 78
DN32	Flange connection EN 1092-1 PN 40	0 - 480	0 - 128
DN40	Flange connection EN 1092-1 PN 40	0 - 750	0 - 200
DN50	Flange connection EN 1092-1 PN 40	0 - 1180	0 - 310
DN65	Flange connection EN 1092-1 PN 16	0 - 2000	0 - 525
DN80	Flange connection EN 1092-1 PN 16	0 - 3000	0 - 800
DN100	Flange connection EN 1092-1 PN 16	0 - 4700	0 - 1250
DN125	Flange connection EN 1092-1 PN 16	0 - 7350	0 - 1950
DN150	Flange connection EN 1092-1 PN 16	0 - 10600	0 - 2800
DN200	Flange connection EN 1092-1 PN 16	0 - 18850	0 - 5000
DN250	Flange connection EN 1092-1 PN 16	0 - 29500	0 - 7800
1/2"	Flange connection ANSI B16.5 150RF	0 - 106	0 - 28
3/4"	Flange connection ANSI B16.5 150RF	0 - 188	0 - 50
1"	Flange connection ANSI B16.5 150RF	0 - 295	0 - 78
1 1/4"	Flange connection ANSI B16.5 150RF	0 - 480	0 - 128
1 1/2"	Flange connection ANSI B16.5 150RF	0 - 750	0 - 200
2"	Flange connection ANSI B16.5 150RF	0 - 1180	0 - 310
2 1/2"	Flange connection ANSI B16.5 150RF	0 - 2000	0 - 525
3"	Flange connection ANSI B16.5 150RF	0 - 3000	0 - 800
4"	Flange connection ANSI B16.5 150RF	0 - 4700	0 - 1250
5"	Flange connection ANSI B16.5 150RF	0 - 7350	0 - 1950
6"	Flange connection ANSI B16.5 150RF	0 - 10600	0 - 2800
8"	Flange connection ANSI B16.5 150RF	0 - 18850	0 - 5000
10"	Flange connection ANSI B16.5 150RF	0 - 29500	0 - 7800

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With PTFE lining

Size	Process Connection	Measuring Ranges	
		l/min	USgpm
G 1/2	Threaded connection	0 - 106	0 - 28
G 3/4	Threaded connection	0 - 188	0 - 50
G 1	Threaded connection	0 - 295	0 - 78
G 1 1/4	Threaded connection	0 - 480	0 - 128
G 1 1/2	Threaded connection	0 - 750	0 - 200
G 2	Threaded connection	0 - 1180	0 - 310
DN15	Flange connection EN 1092-1 PN 40	0 - 106	0 - 16
DN20	Flange connection EN 1092-1 PN 40	0 - 188	0 - 30
DN25	Flange connection EN 1092-1 PN 40	0 - 295	0 - 45
DN32	Flange connection EN 1092-1 PN 40	0 - 480	0 - 75
ODN40	Flange connection EN 1092-1 PN 40	0 - 750	0 - 120
DN50	Flange connection EN 1092-1 PN 40	0 - 1180	0 - 190
DN65	Flange connection EN 1092-1 PN 16	0 - 2000	0 - 300
DN80	Flange connection EN 1092-1 PN 16	0 - 3000	0 - 480
DN100	Flange connection EN 1092-1 PN 16	0 - 4700	0 - 750
DN125	Flange connection EN 1092-1 PN 16	0 - 7350	0 - 1150
DN150	Flange connection EN 1092-1 PN 16	0 - 10600	0 - 1700
DN200	Flange connection EN 1092-1 PN 16	0 - 18850	0 - 3000
DN250	Flange connection EN 1092-1 PN 16	0 - 29500	0 - 4600
1/2"	Flange connection ANSI B16.5 150RF	0 - 106	0 - 28
3/4"	Flange connection ANSI B16.5 150RF	0 - 188	0 - 50
1"	Flange connection ANSI B16.5 150RF	0 - 295	0 - 78
1 1/4"	Flange connection ANSI B16.5 150RF	0 - 480	0 - 128
1 1/2"	Flange connection ANSI B16.5 150RF	0 - 750	0 - 200
2"	Flange connection ANSI B16.5 150RF	0 - 1180	0 - 310
2 1/2"	Flange connection ANSI B16.5 150RF	0 - 2000	0 - 525
3"	Flange connection ANSI B16.5 150RF	0 - 3000	0 - 800
4"	Flange connection ANSI B16.5 150RF	0 - 4700	0 - 1250
5"	Flange connection ANSI B16.5 150RF	0 - 7350	0 - 1950
6"	Flange connection ANSI B16.5 150RF	0 - 10600	0 - 2800
8"	Flange connection ANSI B16.5 150RF	0 - 18850	0 - 5000
10"	Flange connection ANSI B16.5 150RF	0 - 29500	0 - 7800

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