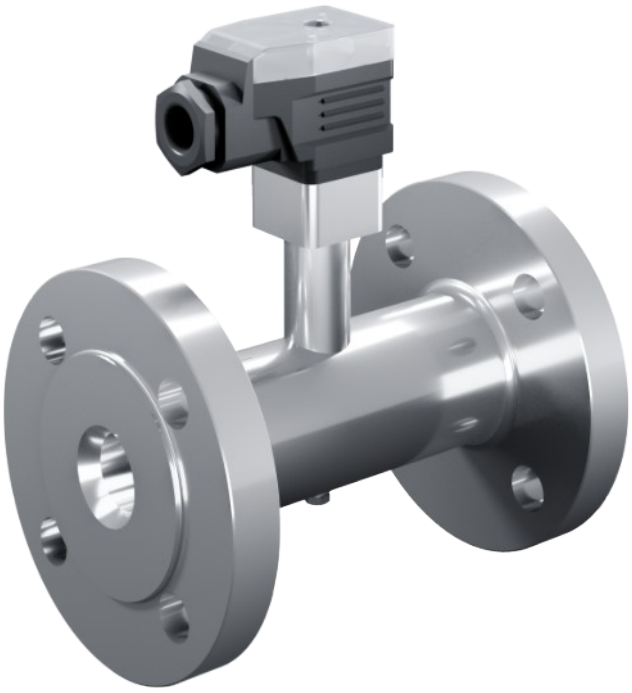
DR12

Precision Turbine Flowmeter

- **for low viscous media**
- **wetted parts all stainless steel**
- **accuracy: ± 0,5 % and ± 1% of measured value**
- **for pipe diameters from DN 10 to DN 50 for flow rates up to 68 m³/h**
- **version with thread or flange connection**
- **measuring ranges: 0,055...0,275 up to 13,6...68 m³/h**
- **P_{max}: 400 bar, T_{max}: 110 °C**



Description:

The flowmeters of the DR12 series are robust measuring turbines for mobile or stationary use. An axial flow turbine wheel rotates proportionally to the average flow velocity in the pipeline.
The turbine wheel is scanned by an inductive sensor (coil) without contact. The resulting output frequency is a measure of the flow rate.
The turbine body and measuring insert are made of stainless steel, the bearings optionally of tungsten carbide or PTFE. The instruments can be supplied with external thread (up to 2") or flange connection (up to DN 50).

Typical applications:

The DR12 turbine flowmeters are mainly used for the detection and measurement of low-viscosity media. The materials used, the high compressive strength and the wide measuring range allow the use of these devices in a wide variety of applications in mechanical engineering, chemicals, pharmaceuticals, food technology and much more.

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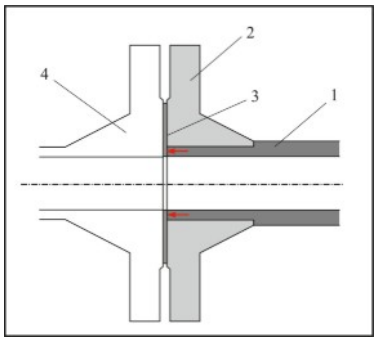
Subject to technical changes

Models:

The DR12 stainless steel turbine flow meters are available with threaded or flanged connections in sizes DN10 (3/8") to DN 50 (2").

The bearings are made of hard metal (tungsten carbide), optionally of PTFE.



In the flange version, the flanges are made of stainless steel 1.4541.

The flanges are welded to the base body in such a way that they do not come into contact with the medium.

1 = stainless steel housing DR12
2 = stainless steel flange
3 = seal
4 = counterflange

Sensor System:

Coil with preamplifier
Output: square wave signal, 3-wire,
PNP open collector, short-circuit proof
supply: 4,5...28 V_{DC}

Output Signal:

The DR12 provide an output frequency proportional to the flow rate, which is converted into a typical number of pulse liters for each measuring range (see table “Measuring ranges”).

Due to manufacturing, the final number of pulses per liter can differ by up to 10 % for the same measuring ranges. Each turbine is therefore calibrated before delivery and provided with an individual number of impulses liters.

Application Notes:

When using DR12 turbine flow meters, a number of factors must be taken into account to ensure trouble-free operation:

Chemical resistance:

The DR12 can be used for all liquids that do not attack the stainless steel used or the material of the bearings.

Viscosity:

Turbine flowmeters are generally viscosity dependent. Due to their design, however the DR12 can be used for media with a viscosity of max. 15 cST without any problems. The additional error due to the increased viscosity is less than 0,5 %.

Gas inclusions:

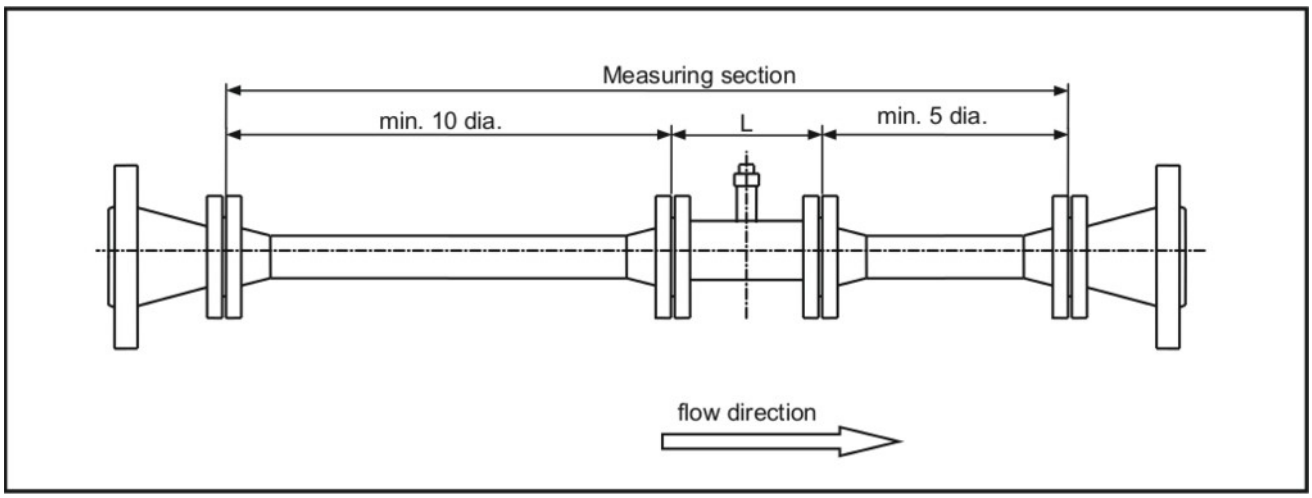
Air bubbles in the medium should be avoided at all costs. You can introduce an additional error into the measurement, which corresponds approximately to the volume of the air bubbles transported by the liquid.

Contamination:

The solids content in the medium can be up to 50 g/m^3 without affecting the measuring accuracy or the service life of the system. 80 % of the solids should not exceed a particle size of 50 µm, the remaining 20 % should be less than 500 µm.

Filamentous impurities in the medium must be avoided under all circumstances as they can lead to blockage of the rotor.

Installation Note:



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Measuring Ranges:

Code	Measuring range [m^3/h] water	Inner diameter [mm]	Pulses per liter	Pressure loss [bar]	Signal level (coil) [mV_{eff}]
01	0,055…0,275	6	17000	0,4	40
02	0,11…0,55	6	8500	0,4	40
03	0,22…1,1	12	4090	0,35	60
04	0,44…2,2	15	1960	0,35	80
05	0,8…4	15	1080	0,35	80
06	1,6…8	18	562	0,35	200
07	3,2…16	25	259	0,3	200
08	6,8…34	37	95,3	0,3	250
09	13,6…68	50	60,88	0,3	300

Process Connections:

inner diameter [mm]	connection type		
	male thread G or NPT	flange connection	
		DIN	ANSI
6	3/8"	DN 10	3/8" RF
12	1/2"	DN 15	1/2" RF
15	5/8"	DN 15	1/2" RF
18	3/4"	DN 20	3/4" RF
25	1"	DN 25	1" RF
37	1 1/2"	DN 40	1 1/2" RF
50	2"	DN 50	2" RF

Pressure Stages:

nominal size	pressure stages		
	thread G or NPT [bar]	DIN flange [PN]	ANSI flange [lbs.]
DN 10 / 3/8" - DN 15 / 5/8"	250 (160 für 5/8")	40 / 160 / 250 150 / 300 320 / 400	150 / 300 600 / 900 1500 / 2500
DN 20 / 3/4"	100	40	150 / 300
DN 25 1" - DN 40 / 1 1/2"	100	40 / 160 250 / 320 / 400	150 / 300 600 / 900 1500 / 2500
DN 50 / 2"	100	40 / 64 100 / 160 / 250 320 / 400	150 / 300 600 / 900 1500 / 2500

Order Code:

Order number: DR12. | V. | 09. | 050D40. | H. | V. | 0

Precision turbine flowmeter

Models:
R = stainless steel housing, threaded connection
V = stainless steel housing, stainless steel flanges

Measuring range:
01…09 = see table „Measuring ranges“

Process connection:
see separate order code „Process connection“

Bearing:
H = carbide bearing (not for measuring range 01 + 02)
P = PTFE bearing

Sensor system with connector plug EN 175301-803:
V = coil with preamplifier, 3-wire, 4,5...28 V_{DC} (standard)

Options:
0 = without
9 = please specify in plain text

Order Code Process Connection:

Connection code: 050 | D | 40.

Nominal size:
010 = DN 10 / 3/8"
015 = DN 15 / 1/2"
018 = DN 15 / 5/8"
020 = DN 20 / 3/4"
025 = DN 25 / 1"
040 = DN 40 / 1 1/2"
050 = DN 50 / 2"

Connection type (see table „Process connection“):
G = male thread G
N = male thread NPT (on request)
D = DIN flange
A = ANSI flange (on request)
S = special connection

Pressure stages (see table „Pressure stages“):
10…400 = 10…400 bar
150…2500 = 150…2500 lbs. (for ANSI flanges only)
320 = special version for threads up to 320 bar (only with metric high pressure fitting „S“ for measuring ranges 01…07)

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Technical Data:

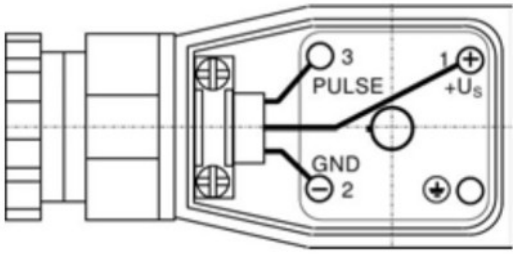
Materials:

base body:	stainless steel 1.4571
rotor:	stainless steel 1.4034
bearings:	hard metal (tungsten carbide), optional PTFE
flanges:	stainless steel 1.4541
Max. pressure:	according to table „Pressure stages“ and order code
Media temperature:	–40…+110 °C with plug acc. to EN 175301-803, form A
Ambient temperature:	–40…+60 °C
Accuracy:	
DR12.x.01…03:	± 1 % of measured value
DR12.x.04…09:	± 0,5 % of measured value
Power supply:	4,5...28 V_{DC}

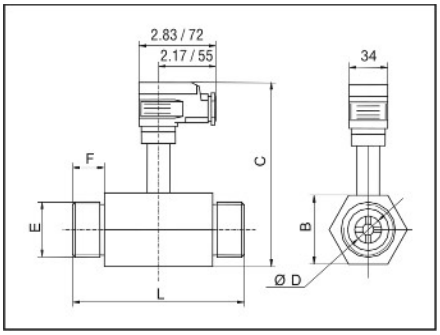
Electrical Connection:

Connector plug EN 175301-803, form A

3-wire with preamplifier



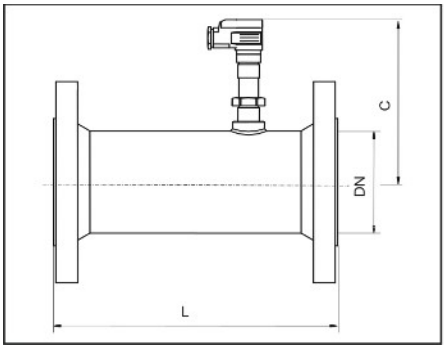
Dimensions:



Threaded connection:

Inner diameter Ø D [mm]	B [mm]	C [mm]	L [mm]	E (male thread G or NPT)	F [mm]
6	25	82	50,8	3/8"	12,7
12	25	86	63,5	1/2"	19
15	25	87	63,5	5/8"	19
18	38	89	82,6	3/4"	22
25	38	92	89	1"	23
37	56	99	114	1 1/2"	28
50	70	104	133	2"	29,5

Dimensions for metric high pressure couplings on request



Flange connection

Inner diameter Ø D [mm]	C [mm]	L [mm]
6	95	114
12	102	127
15	115	127
18	115	141
25	126	153
37	126	179
50	132	198

Dimensions valid for DIN flanges, ANSI flanges on request

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