

# DV04

## High-precision Gearwheel flow meter for viscous liquids

- For fluids with viscosities of at least 20 cSt
- Very cost effective
- Cast iron or stainless steel designs available
- Accuracy better than 0.3% of measured value
- High resolution
- Pressure-proof construction withstands up to 400 bar
- Small installation dimensions



### Description:

The measuring mechanism in the DV04 flow meter consists of a pair of gearwheels that are driven by the fluid stream, much like a gearwheel pump. The measuring mechanism is supported by sleeve bearings or ball bearings. Two anti-magnetic sensors, with a relative phase offset of 90° and hermetically isolated from the measuring chamber, sense the movement of the gear wheels. This two-channel sensing system used with appropriate electronics permits a higher measurement resolution as well as detection of flow direction. All flow meters are optionally available in an explosion-proof design with a separate switching amplifier. The DV04 gearwheel flow meter features very low resistance to flow and particularly low sound pressure levels.

### Applications:

Their outstanding measuring accuracy and high resolution make these devices particularly suitable for use in test stands when measuring small and very small flow volumes.

Other areas of application:

- Measuring consumption rates
- Controlling and regulating filling processes
- Dosing of oils and chemicals
- Flow measurement of paints and varnishes
- Controlling the ratio of polyalcohol/polyhydroxy alcohol and isocyanate

## Designs (table 1)

Depending on application and medium properties, the DV04 is available in 8 different model ranges:

Series	Material	Minimum viscosity (mm <sup>2</sup> /s)	Accuracy (% of measured value)	Medium properties	
				Viscosity	Lubricity
1	GGG40	20	+/- 0.3	low	good
2	GGG40	50	+/- 0.5	average	good
3	GGG40	100	+/- 1.0	high	good
4	GGG40	100	+/- 0.5	average	low
5	stainless steel 1.4404	100	+/- 0.5 DV04.2: +/- 3	average	low
6	stainless steel 1.4404	20	+/- 0.3	low	good
7	GGG40	20	+/- 1	low	low
8	stainless steel 1.4404	20	+/- 1	low	low

## Process connection (table 2)

Baureihe	1	2	3	4	5	6	7	8
bearing Type	ball-bearing	ball-bearing	bronze sleeve-bearing	Hard alloy sleeve-bearing	Hard alloy sleeve-bearing	ball-bearing	Hybrid-ball bearing	Hybrid-ball bearing
DV04.2	G 3/8	-	-	-	G 1/8	G 1/8	G 3/8	G 1/8
DV04.3	G 3/8	-	-	-	-	G 1/4	G 3/8	G 1/4
DV04.4	G 3/8	G 3/8	-	G 3/8	G 3/8	G 3/8	G 3/8	G 3/8
DV04.5	G 1/2 or G 3/4	-	-	G 1/2 or G 3/4	-	-	-	-
DV04.6	G 1/2 or G 3/4	G 1/2 or G 3/4	G 1/2 or G 3/4	G 1/2 or G 3/4	G 1/2	G 1/2	G 1/2 or G 3/4	G 1/2
DV04.7	G 1	G 1	-	G 1	G 1	G 1	-	-
DV04.8	G 1	G 1	G 1	G 1	G 1	G 1	-	-
DV04.9	G 1 1/2	-	-	-	-	-	-	-
DV04.10	G 1 1/2	-	-	-	-	-	-	-

## Measuring ranges in l/min (table 3)

Model	Range							
	1	2	3	4	5	6	7	8
DV04.2	0,008-2	-	-	-	0,02 - 2	0,008-2	0,008-2	0,008-2
DV04.3	0,02-4	-	-	-	-	0,02-4	0,02-4	0,02-4
DV04.4	0,16-16	0,16-16	-	0,16-16	0,16-16	0,16-16	0,16-16	0,16-16
DV04.5	0,2-40	-	-	0,2-30	-	-	-	-
DV04.6	0,4-80	0,4-80	0,6-40	0,3-60	0,3-60	0,4-80	0,4-80	0,4-80
DV04.7	0,6-160	0,6-160	-	0,6-100	0,6-100	0,6-160	-	-
DV04.8	1-250	1-250	1,2-80	1-160	1-160	1-250	-	-
DV04.9	2-600	-	-	-	-	-	-	-
DV04.10	3-700	-	-	-	-	-	-	-

## Parameters (table 4)

Model	Maximum pressure (bar)	Peak pressure (bar)	Sound pressure level (dB(A))	Resolution impulses / l
DV04.2	400	480	< 60	40.000
DV04.3	400	480	< 60	25.000
DV04.4	400	480	< 60	4.081,63
DV04.5	400	480	< 70	2.500
DV04.6	400	480	< 70	965,25
DV04.7	315	350	< 70	333,33
DV04.8	315	350	< 72	191,5
DV04.9	400	480	< 80	83,33
DV04.10	400	480	< 80	62,5

## Model coding:

Order number: DV04 3. 1. F. PS.. 3. S. 0

Gearwheel flow meter

Measuring ranges:  
2...9 = as per table 3

Series:  
1...8 = as per table 1

Seal:  
F = Viton  
E = EPDM  
P = PTFE / Kalrez

Connection:  
PS = with mounting plate, connection at the side  
PU = with mounting plate, connection at bottom  
R = without mounting plate, connection at the side (model ranges 5, 6, 8 only)

Process connection:

04 = G 1/8 IG  
05 = G 1/4 IG  
10 = G 3/8 IG  
15 = G 1/2 IG  
20 = G 3/4 IG  
25 = G 1 IG  
40 = G 1 1/2 IG

Electronics:

S = Standard  
H1 = High-temperature-design up to 150 °C  
H2 = High-temperature-design up to 220°C (FEP-Gasket and clamp-connection)  
X = Intrinsically safe with separate switching amplifier (Ex ia IIC)

Special features:

0 = None  
1 = Please specify in writing

## Technical details:

Viscosity range: 20 to 100000 mm<sup>2</sup>/s  
Pressure loss: depends on viscosity and load on the device (exact values available upon request)

Temperature range:  
Standard design: -30... +120 °C  
High-temperature design: -30...+150 °C

Materials:  
Series 1-4, 7: housing GGG 40, GGG60 (DV04.9, DV04.10)  
Measuring mechanism 1.7139  
Series 5, 6, 8: housing stainless steel 1.4404  
Measuring mechanism stainless steel 1.4462

Electronics:  
Standard: 2 sensors, 90° phase offset  
Ex-design: with separate switching amplifier  
Supply voltage: 12...30 VDC, Protected against polarity reversal  
Output signal: Square-wave pulse, minimum 0.8\*UB, Scanning ratio 1:1 (+/- 15%)  
Protection type: IP 65