

DV04

High Precision Gear Wheel Counter for Viscous Liquids

- for media with viscosities starting from 20 cSt
- excellent price / performance ratio
- cast iron or stainless steel version
- accuracy better than 0,3 % of m.v.
- high definition
- pressure resistant up to 400 bar
- small installation dimensions
- measuring ranges: 0,008...2 l/min bis 3...700 l/min
- P_{max} : 480 bar, T_{max} : 210 °C



Description:

The measuring mechanism of the flow meter DV04 consists of a pair of gears which are driven by the liquid flow according to the operating principle of a gear pump.

The movement bearing is designed as plain bearing or ball bearing. The movement of the gears is scanned by two magnetoresistive sensors, which are hermetically separated from the measuring chamber and phase-shifted by 90°.

This two-channel scanning enables a higher measured value resolution as well as the detection of the flow direction by means of suitable electronics. As an option, all devices are available in explosion-proof design with separate switching amplifier. The gearwheel flow meter DV04 is characterized by very low flow resistance and particularly low sound pressure level.

Typical applications:

Due to the outstanding measuring accuracy, combined with the high resolution, these devices are particularly suitable for use in test benches for measuring small and very small flow rates.

Further fields of application:

- consumption measuring
- control of filling processes
- dosage of oils and chemicals
- flow measurement of paints and varnishes
- ratio control of polyol and isocyanate

Model (table. 1):

Depending on the field of applications and media properties, the DV04 available in 6 different models:

Model	min. viscosity y [mm ² /s]	Accuracy [% of measured value]	Bearings	Material	
				Housing	Gear wheels
1	20	± 0,3	Ball bearing	GJS 400*	Steel
2	50	± 0,5	Ball bearing, enlarged scope	GJS-400	Steel
4	100	± 0,5	Carbide plain bearing-	GJS-400	Steel
5	100	± 0,5 DV04.2: ± 3	Carbide plain bearing-	St. steel 1.4404	St. steel
6	20	± 0,3	Ball bearing	St. steel 1.4404	St. steel
8	20	± 1	Hybrid ball bearing	St. steel 1.4404	St. steel

*for measuring range 9 and 10 GJS 600

Process connection (table. 2):

Model	1	2	4	5	6	8
MB-Code	Ball bearing	Ball bearing enlarged scope	Carbide plain bearing	Carbide plain bearing	Ball bearing	Hybrid ball bearing
DV04.2	G 3/8	-	-	G 1/8	G 1/8	G 1/8
DV04.3	G 3/8	-	-	-	G 1/4	G 1/4
DV04.3A	G 3/8	-	G 3/8	-	G 3/8	G 3/8
DV04.4	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	G 1/2	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	-
DV04.9	SAE ^{*)}	-	-	-	-	-
DV04.10	SAE ^{*)}	-	-	-	-	-

*SAE flange, d = 38 mm

Measuring ranges [l/min] (Tab. 3):

MB-Code	Model					
	1	2	4	5	6	8
DV04.2	0,008-2	-	-	0,02-2	0,008-2	0,008-2
DV04.3	0,02-4	-	-	-	0,02-4	0,02-4
DV04.3A	0,04-8	-	0,04-8	-	0,04-8	0,04-8
DV04.4	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	0,3-60	0,3-60	0,4-80	0,4-80
DV04.7	0,6-160	-	0,6-100	0,6-100	0,6-160	-
DV04.8	1-250	1-250	1-160	1-160	1-250	-
DV04.9	2-600	-	-	-	-	-
DV04.10	3-700	-	-	-	-	-

Order Code:

Order number: DV04. 2. 1. F. PS. 10. S. 0. 0

Gear wheel counter

Measuring ranges:
2...10 = see table 3

Model:
1...8 = see table 1

Gasket:
F = FKM (standard)
E = EPDM
P = FEP
K = FFKM

Connection type:
PS = with mounting plate, connection at side (standard, not for models 5, 6, 8)
PU = with mounting plate, connection bottom (not for models 5, 6, 8)
R = without mounting plate, connection at side (models 5, 6, 8 only)

Process connection: (see table 2)

04 = G 1/8 female thread
06 = G 1/4 female thread
10 = G 3/8 female thread
15 = G 1/2 female thread
20 = G 3/4 female thread
25 = G 1 female thread
40 = SAE flange, d = 38 mm

Electronic version:

S = standard
H1 = high temperature version up to 150 °C
H2 = high temperature version up to 210 °C (FEP gasket and terminal box)
X = intrinsically safe with separate switching amplifier (EEx ia IIC)

Display:

0 = without display
DVA = prepared for plug-on display DVA (date sheet on the following pages)

Options:

0 = without
1 = please specify in plain text

Parameters (Tab. 4):

MB-Code	Max. pressure [bar]	Sound pressure level [dB(A)]	Resolution [Imp./l]
DV04.2	480	< 65	40.000
DV04.3	480	< 65	25.000
DV04.3A	480	< 65	10.000
DV04.4	480	< 65	4.081,63
DV04.5	480	< 65	2.500
DV04.6	480	< 65	965,25
DV04.7	350	< 65	333,33
DV04.8	350	< 65	191,5
DV04.9	480	< 65	83,33
DV04.10	480	< 65	62,5

Technical Data:

Viscosity range: 20...100.000 mm²/s
Pressure drop: depending on viscosity and load of the devices
(exact values on request)

Medium temperature range:
standard version: -40 °C...+120 °C
high temp. version: -30 °C...+150 °C, (210 °C)

Materials:
models 1, 2, 4: housing GJS-400-15,
GJS-600 (DV04.9, DV04.10)
measuring unit steel 1.7139
models 5, 6, 8: housing st. steel 1.4404
measuring unit st. steel 1.4462

Electronic:
standard: 2 sensors, 90° phase-shifted
Ex-version: with separate switching amplifier

Power supply: 12...30 V_{DC},
protected against polarity reversal

Power consumption: 0,9 W

Output signal: square-wave pulses, min. 0,8 x UB,
duty cycle 1:1 (± 15 %)

Protection class: IP65

Application examples and selection guide:

Model	Typical media	Typical media characteristics	Typical application of the flow/volume measurement
1	Oil Braking fluid Diesel Skydrol	Lubricating fluids low to medium viscosity	Hydraulic systems Test bench construction Cylinder stroke measurement
2	Gear oil	Lubricating fluids medium viscosity	Oil filling (metering systems)
4	Offset ink Polyol Isocyanate Glue Resin Silicone	Lubricating fluids medium to high viscosity	Consumption measuring (printing machines)
5	Polyol Isocyanate Glue Resin Silicone	Poor lubricating fluids medium to high viscosity	Ratio control (2-component systems)
6	Clear varnish Cavity sealing wax	Lubricating fluids low to medium viscosity	Dosing control (paint-spray lines) test bench construction
8	Urea (adBlue) Solvents Petrol	Poor lubricating fluids low viscosity	Flow measurement (paint-spray lines) Test bench construction Dosing