

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 | Material | Min. viscosity [mm ² /s] | Accuracy [% of measured value] | Media properties | |
|-------|------------------|-------------------------------------|--------------------------------|------------------|------------------------|
| | | | | Viscosity | Lubricating properties |
| 1 | GJS-400/600 | 20 | ± 0,3 | low | good |
| 2 | GJS-400 | 50 | ± 0,5 | intermediate | good |
| 4 | GJS-400 | 100 | ± 0,5 | intermediate | low |
| 5 | st. steel 1.4404 | 100 | ± 0,5 DV04.2: ± 3 | intermediate | low |
| 6 | st. steel 1.4404 | 20 | ± 0,3 | low | good |
| 8 | st. steel 1.4404 | 20 | ± 1 | low | low |

Process connection (table. 2):

| Model | 1 | 2 | 4 | 5 | 6 | 8 |
|---------|-------------------|----------------|-----------------------|-----------------------|--------------|---------------------|
| MB-Code | Ball bearing | Ball bearing | 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 | - | - | - | - | - |

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 |

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

(not for models 5, 6, 8)

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 with separate switching amplifier
Ex-version:

Power supply:

12...30 VDC, protected against polarity reversal 0,9 W

Power consumption:

Output signal:

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

Protection class:

IP65

