Instruction Manual

DV04

High precision gear wheel counter for viscous liquids

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Table of Contents

Safety Information

General Instructions

To ensure safe operation, the device should only be operated according to the specifications in the instruction manual. The requisite Health & Safety regulations for a given application must also be observed. This statement also applies to the use of accessories.
Every person who is commissioned with the initiation or operation of this device must have read and understood the operating instructions and in particular the safety instructions!
The work safety instructions in this manual as well as the safety, accident prevention and environmental protection regulations generally valid for the work area must be observed.

The liability of the manufacturer expires in the event of damage due to improper use, non-observance of this operating manual, use of insufficiently qualified personnel and unauthorized modification of the device.

Proper Usage

The flow meters DV04 are designed to monitor continuous flow rates of liquids which do not attack the device materials. All other usage is regarded as being improper and outside the scope of the device.

In particular, applications in which shock loads occur (for example, pulsed operation) should be discussed and checked in advance with our technical staff.

The series DV04 flow meter devices should not be deployed as the sole agents to prevent dangerous conditions occurring in plant or machinery. Machinery and plant need to be designed in such a manner that faulty conditions and malfunctions do not arise that could pose a safety risk for operators.

Dangerous substances

For dangerous media such as e.g. Oxygen, Acetylene, flammable or toxic substances as well as refrigeration systems, compressors, etc. must comply with the relevant regulations beyond the general rules.

Qualified Personnel

The DV04 devices may only be installed by trained, qualified personnel who are able to mount the devices correctly. Qualified personnel are persons, who are familiar with assembling, installation, placing in service and operating these devices and who are suitably trained and qualified.

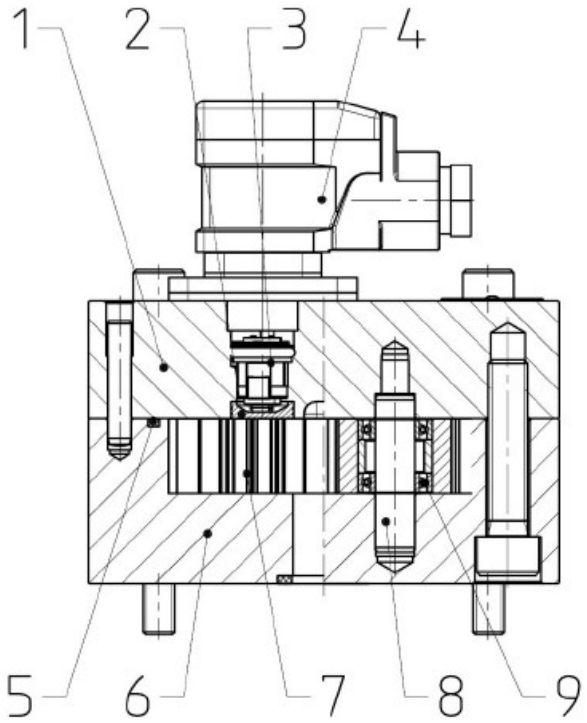
Inward Monitoring

Please check directly after delivery the device for any transport damages and deficiencies. Additional with reference to the accompanying delivery note the number of parts must be checked.
Claims for replacement or goods which relate to transport damage can only be considered valid if the delivery company is notified without delay.

Functional principle and construction

Within the DV04 there two gearwheels that are supported in low-friction bearings. During operation, the gearwheels are driven by the flowing liquid. The movement of the gearwheels is sensed by two non-contact sensors located in the cover and converted into electrical signals.
Between the sensor area and the measuring chamber there is a pressure-resistant antimagnetic separator. The signals are transmitted to the connected display device.

1: Cover
2: A-magenetic divider
3: Sensor
4: Equipment plug/socket
5: O-Ring
6: Housing
7: Measurement unit
8 Bearing jounal
9 Bearing



Special Conditions

Special conditions and/or limitations apply to the safe application of gearwheel flow meters in the approved operating environment. These conditions and/or limitations must be met by the customer and/or system operator by means of appropriate technical and/or organizational measures.

- Gearwheel flow meters must only be operated in the specified environment and under the specified ambient conditions.
- Gearwheel flow meters must only be used if the materials used in their construction are resistant to mechanical and/or chemical influences or corrosion under the given service conditions.
- The fluid must at least have minimum lubricating properties (lubricity).
- Gearwheel flow meters are intended for use with liquids. Dry operation is not approved.
- Operation outside of the specified parameters is not allowed.
- If necessary, a filter must be installed to prevent the gearwheel from being blocked by foreign objects.
- The specified installation, service and maintenance schedules must be strictly followed.
- Gearwheel flow meters must only be used in closed operation and not be subject to excessive vibration.
- Only genuine spare parts must be used for service and maintenance.

Corrosion Protection

All gearwheel flow meters are checked for proper function at the factory with mineral-based hydraulic oil. Following testing, the connections are sealed with plugs so that the internal parts are protected against corrosion for a moderate amount of time.
During transport and storage, gearwheel flow meters must not be exposed to the harmful effects of ambient weather conditions and great variations in temperature. They must be stored under dry conditions.
If a gearwheel flow meter is to be stored for a longer period of time, both its interior and exterior must be protected by application of a suitable anti-corrosion oil. In addition, it must be protected from humidity by means of a desiccant material.
If high humidity or other unfavorable (aggressive, polluted) ambient conditions are expected to be encountered during transport, appropriate steps must be taken to prevent corrosion of the gearwheel flow meter.

Attention:
When preserving, check whether the preservative is compatible with the materials and elastomers used in the gearwheel flow meter. Furthermore, compatibility with the pumped medium must be ensured.

Installation

This gearwheel flow meter was thoroughly tested and checked at the factory before shipment. It will be fully functional and immediately ready for use after it has been installed in position and the electrical lines have been connected. The space required by the installed device is specified in the "Dimensions" section. Once installed, the measuring device should also be accessible for safe, visual inspection at any time.

Caution:
To prevent possible damage to the gearwheel flow meter, a pressure regulating device must be present in the installation to prevent the maximum permissible pressure from being exceeded in the volume sensor or other parts of the installation (pressure-limiting valves). During transport and installation, the gearwheel flow meter must only be held by its housing; must never be suspended from the plugged-in connector!

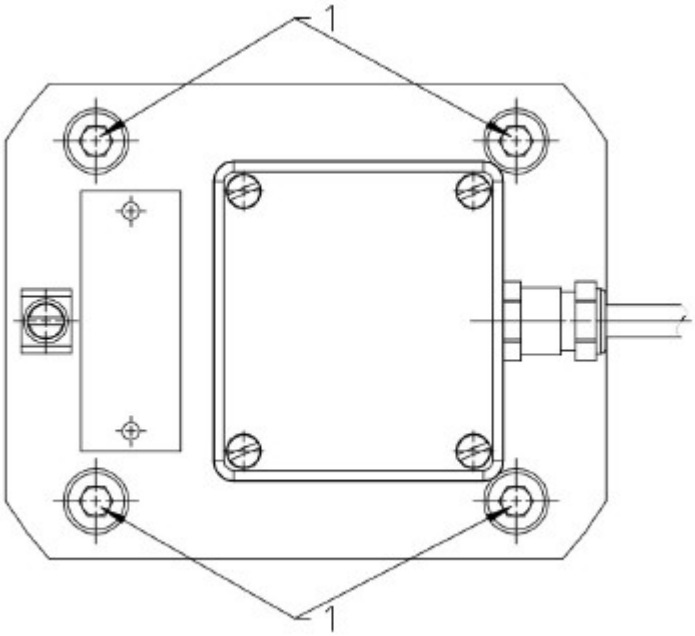
Preparation:

1. Check the product for transport damage and contamination.
2. Remove any preservative present.
   Only use cleaning agents that are compatible with the materials used.
   Do not use cleaning wool.
3. Compare the environmental and ambient conditions at the place of use with the permissible conditions.
   Expose the product only to low vibrations, see IEC 60034-14.
   Ensure sufficient accessibility for maintenance and repair.
   Comply with the manufacturer's information.
   Do not use any sealing materials such as hemp, Teflon tape or putty.

Installation with plate connection:

1. Before installing the device, check the connection faces of the device for dirt or small parts and clean if necessary.
2. Attach the connection plate to the intended position in the system.
   Attention: Make sure that the seals are seated correctly! The connection surface must be free of dirt and paint residues, etc. when mounting!
3. Position the housing on the connection plate.
4. tighten all fastening screws crosswise to the prescribed torque.
   Make sure that the product is not distorted.
   Ensure sufficient screw-in depth of the fastening screws.

1: fastening screws



Tightening torques Fastening screws					
Nominal size	**0.025 – 0.2**		**0.4 - 1**	**3 - 5**	**12 - 16**
Screw size	M6		M8	M12	M20
Strength class	8.8	10.9 – 12.9	10.9 – 12.9	10.9 – 12.9	8.8 – 10.9 – 12.9
Tightening torques	10 Nm	14 Nm	35 Nm	120 Nm	400 Nm

Installation on connection plates not supplied with the device or on valve manifolds

Be sure to observe the specified values for surface flatness and surface roughness.

Nominal Size	**DV04.2-6**	**DV04.7-8**
Surface roughness R_t, 1/1000 mm	0,01	0,02
Surface flatness, 1/1000 mm	10	10

In this case, the gearwheel flow meter must also be installed as described above.

Installation on pipe

1. Clean all lines.
   Do not use cleaning wool.
   Pickle and flush welded pipes.
2. Remove the protective plugs.
3. Mount the lines.
   Comply with the manufacturer's information.
   Do not use any sealing materials such as hemp, Teflon tape or putty.
4. After the gearwheel flow meter is installed and the piping system is placed back in service, check all connections for leakage.

Electrical connection

Preamplifier

A 24V (DC) line (± 20 %) must be provided to supply power to the pre-amplifier.

The terminal assignment for channel 1 or 2 has an influence on the displayed direction of rotation of the gearwheels, and thus on the preceding sign (+ or -) that is used when displaying the measured volumetric flow rate on the evaluation device.

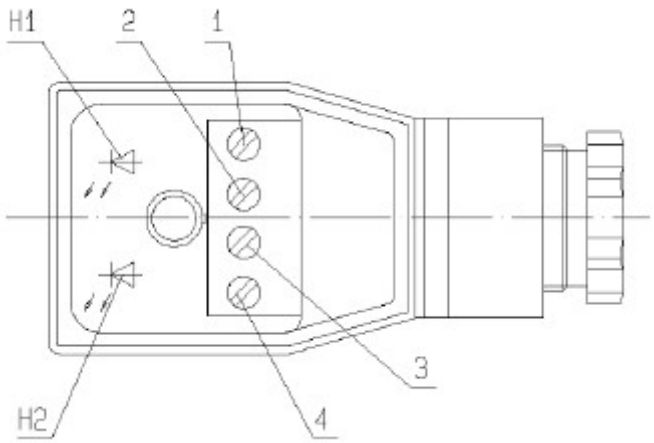
Number of measuring channels	2
Operating voltage	U_B = 24 V_{DC} +/- 20%, protected against polarity reversal
Pulse amplitude	U_A >/= 0,8 U_B
Pulse from with symmetric output signal	Square-wave pulse, scanning ratio/channel 1:1 +/- 15 %
Pulse offset between both channels	90° +/- 30°
Power consumption	$P_{b\,max}$ = 0,9 W
Output power / channel	$P_{a\,max}$ = 0,3 W, short circuit proof
Protection type	IP65 (DIN 40500)

Attention:

Damage by overvoltage
Excessive voltage can cause damage and dysfunction to the product.
a) Use the product only with the correct voltage.
b) Please consult the manufacturer in cases of doubt.

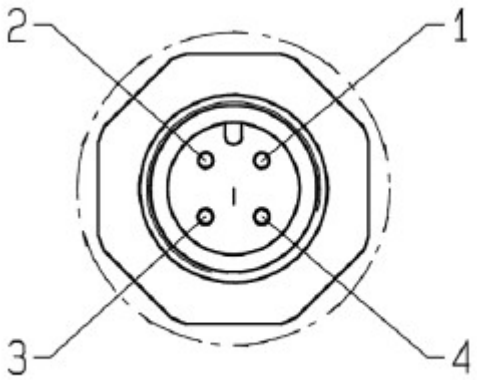
The power supply line must match the used preamplifier.

Plug assignment



1: U_B (brown)
2: Channel 1 (green)
3: Channel 2 (yellow)
4: 0 Volt (white)
H1: Transmitter channel 1 (red)
H2: transmitter channel 2 (red)

Circular plug connector M12x1 (for high temperature up to 220 °C)



1: U_B (brown)
2: Channel 1 (white)
3: 0 Volt (blue)
4: Channel 2 (black)

Operation start-up

- Before starting the product, make sure that a sufficient quantity of the service fluid is extant to avoid dry running. This must be taken into account especially with large line volumes.
- Check all fastening screws on the product.
- Fill the unit with media.

- Open existing shut-off elements upstream and downstream of the device.
- Adjust pressure relief valves in the system installed for lowest opening pressure.
- Run the device for a few minutes depressurised or with low pressure.
- Vent the system at the highest possible point.
- Gradually increase the pressure load up to the desired operating pressure.
- Operate the system for so long until the final operating state is achieved.
- Check the operating data.
- Document the operating data of the initial start-up for later comparison.
- Check the level of the operating medium in the system.
- Check the device for leaks.
- Check all threaded connections for leaks and retighten if necessary.

During operation, the two LED displays in the equipment plug flash as long as there is a continual flow of fluid through the measuring unit.

Maintenance and Cleaning

Gearwheel flow meters are generally maintenance-free. However, if fluids that can leave deposits flow through the device, cleaning may be necessary. Otherwise, the device can be cleaned with the rest of the system during the standard cleaning procedure. Indications of wear may be evident by a change in measuring accuracy. It is recommended the device be inspected regularly.

Caution:
If fluids harden in the gearwheel flow meter, it must be cleaned as quickly as possible with suitable cleaning agents.

The mounting screws must be regularly checked for tightness. If necessary, retighten them (in such case, observe the tightening torque specified in the section ”Installation”).

Caution:
Be sure to relieve the pressure in the piping before performing any work on the gearwheel flow meter or removing it. The gaskets in the joints between the gearwheel meter and the piping system must be checked regularly for leakage.

Removal:

1. Depressurise and de-energize the system.
2. Close existing shut-off elements upstream and downstream of the device.
3. Open existing drain elements and loosen connection lines. Collect and dispose of discharging medium so that no hazard arises for persons or environment.
4. Dismantle the device.
   Pull the plug off the housing.
   Plate connection: Release the unit from the connection plate.
   Pipe connection: Loosen the pipe connections from the unit and, if applicable, take the unit off the holding fixture.
5. Clean the device
6. Close the device connections and lines to prevent dirt penetration.

Cleaning:

Devices in series 1, 2, 6, and 8:
These devices must never be opened by the customer. They must only be opened by trained service personnel because only such specialists can reassemble them properly so that they will function correctly.

Devices in series 4 and 5:
If due care is used, these devices may be opened and cleaned by the customer.

Caution:
Be sure to relieve the pressure in the piping and ensure that the electrical supply is de-energized before opening and cleaning the device. The device and the piping may still contain the transported fluid or a cleaning agent. All guidelines governing the handling of the fluid that was last sent through the system must be followed. Before opening the system, make sure that containers of sufficient capacities are available to catch any escaping fluid. If necessary, the work area must also be sufficiently ventilated.

- Removing the gearwheel flow meter
- Drain the measuring device.
- Loosen the screws that hold the two halves of the housing together bolts.
- The 4 or 8 internal hexagon drive screws ("Allen screws) are accessible from the bottom of the housing.
  Caution: When removing the upper half of the gearwheel flow meter, do not pry the halves apart at the joint with screwdrivers or similar tools. The gearwheels must not be removed from the housing with pliers or similar tools.
- Clean the interior of the housing, the gearwheels and the bearings with a suitable cleaning agent.
- Insert both gearwheels with the bearings in the lower housing.
- Position the o-ring in the grooved seat in the housing.
- Place the upper part of the housing on the bottom part (insert the locating pins).
- Insert the screws and snug them down crossways. Then tighten them crossways to the specified torque (see below).

Caution:
All parts being assembled must be free of dirt and deposits. During installation of the gear-wheel flow meter, make sure that no foreign objects enter the assembly.

Tightening torques housing with thread connection:

Type	**DV04.2**	**DV04.4**	**DV04.5**	**DV04.6**	**DV04.7**	**DV04.8**
Nominal size	0,025	0,2	0,4	1	3	5
Model	5	4, 5	4	4, 5	4, 5	4, 5
Tightening torques M_A	40 Nm		65 Nm		145 Nm	

Failure table

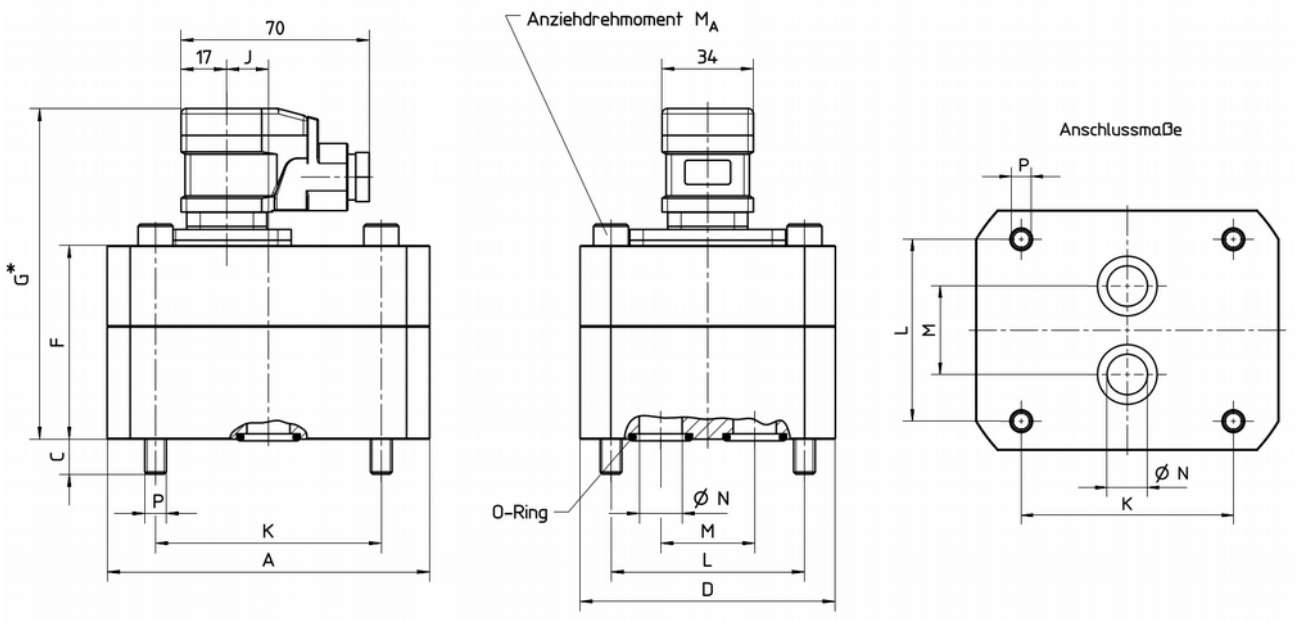
FaultPotential causes	Mögliche Ursache	Possible measures
LED display		
Both LED displays flash -however, false values are-displayed in the overrid-ing controller	Connection between the devic eplug and the overriding controller is loose/defective	Check the connection and re-place the cable or plug if necessary
An LED display does not illuminate	Wire break	Repairs by manufacturer
	Soldering point defective	
	Sensor defective	
No LED display illuminates	Power failure	Check the supply cable Check the fuses
	Measuring unit is blocked	Put the device out of operation immediately! Send devices of model 1, 2, 6 and 8 to manufacturer to be repaired Devices of model 4 and 5 can be cleaned by user
Seal failure / Leakage		
Leakage	O-Ring in the device is defective	Send devices of model 1, 2, 6 and 8 to manufacturer to be repaired Devices of model 6 and 8: Check seal compatibility, if necessary consult the manufacturer and install a new seal set (obtain from the manufacturer).
	O-ring between housing and connection plate defective	Replace O-ring.
Defective values in the overriding controller		
Reduction of measuring accuracy	Wear	Check the measuring device or send it to the manufacturer for repair.

Dimensions

Models 1, 2, 4, measuring ranges 2 - 8
Cast iron version, mounting plate
Electronic-Version: Standard, high temperature up to 150 °C, ATEX

Type	dimensions [mm]											torque [Nm]	weight
	A	C	D	F	G*	J	K	L	M	N	P	M_A	[kg]
DV04.2	85	10	60	50	101	-	70	40	20	6,7	M 6	14	1,8
DV04.3	85	9	60	56	107	-	70	40	20	6,7	M 6	14	2,0
DV04.4	85	13	60	57	108	-	70	40	20	9	M 6	14	2,0
DV04.5	100	17	90	63	114	-	80	38	34	16	M 8	35	3,7
DV04.6	120	13	95	72	123	15,5	84	72	35	16	M 8	35	5,2
DV04.7	170	18	120	89	140	46,5	46	95	50	25	M 12	120	9,0
DV04.8	170	22	120	105	156	46,5	46	95	50	25	M 12	120	13,0

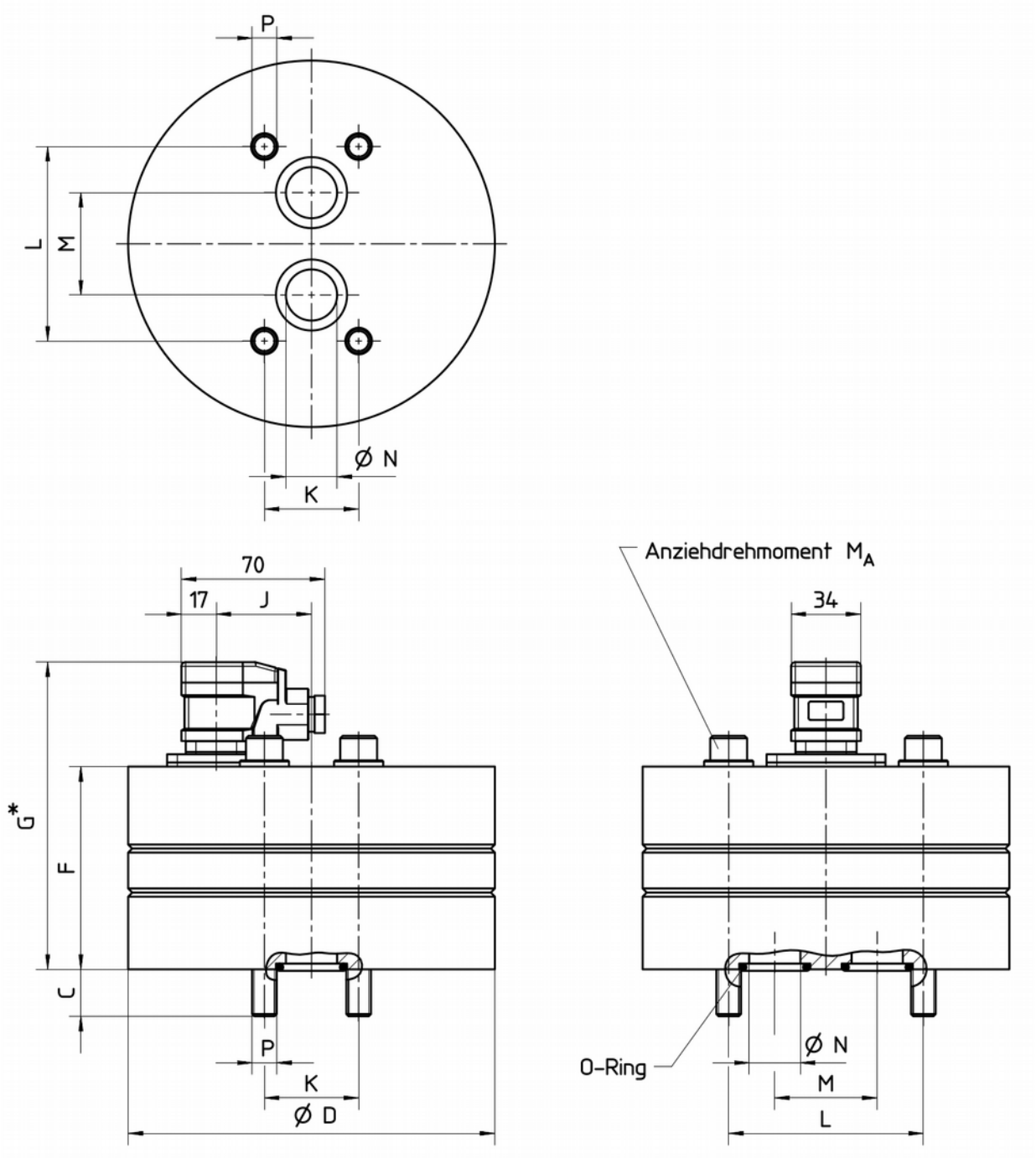
* plus 12 mm for electronic version H1 (high temperature up to 150 °C)
plus 6 mm for electronic version X (ATEX)



Models 1, 2, 4, measuring ranges 9, 10
Cast iron version, mounting plate
Electronic-Version: Standard, high temperature up to 150 °C, ATEX

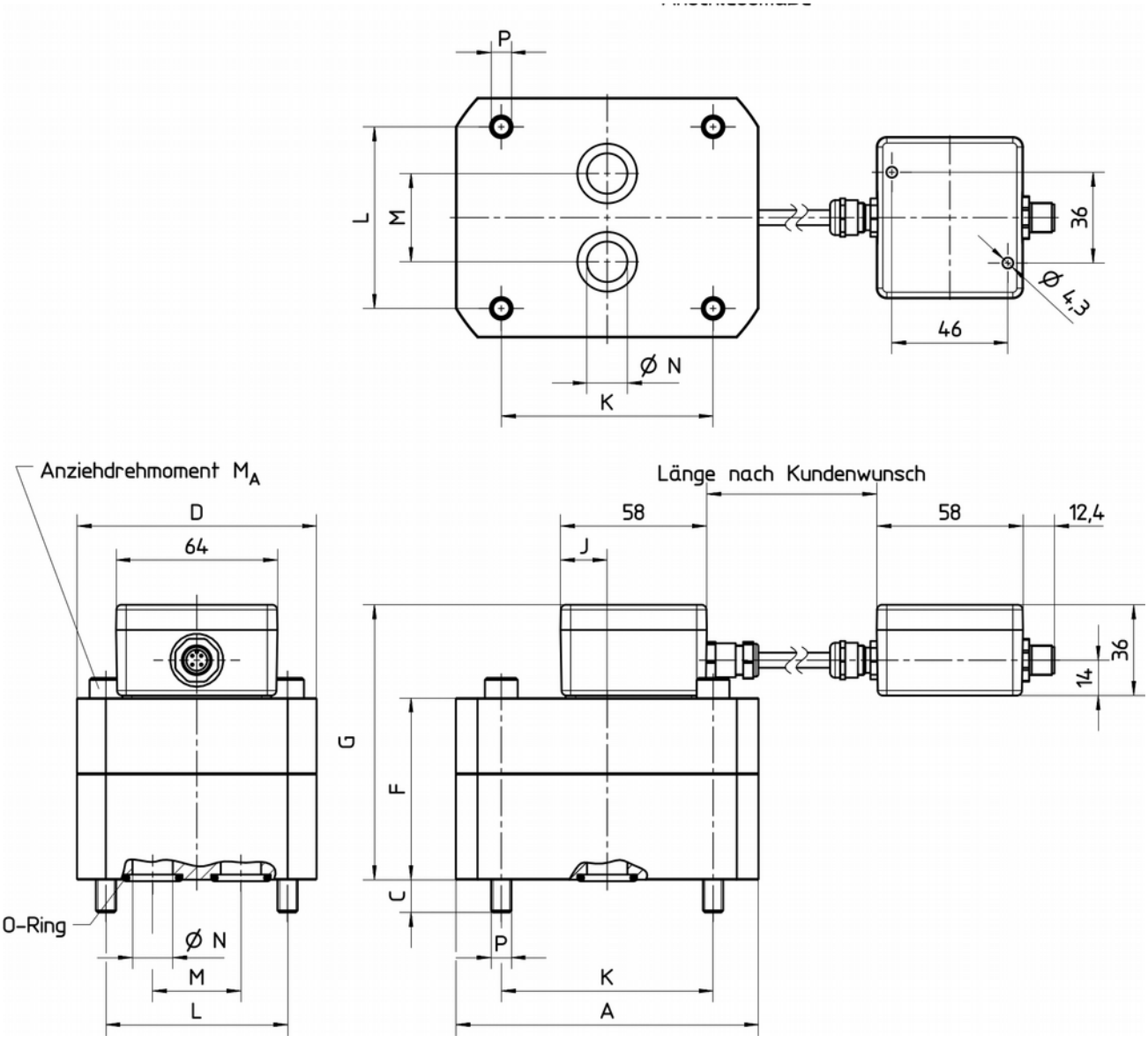
Type	dimensions [mm]											torque [Nm]	weight
	A	C	D	F	G*	J	K	L	M	N	P	M_A	[kg]
DV04.9	-	44	249	168	219	78	120	140	70	38	M 20	400	53,5
DV04.10	-	38	249	184	235	78	120	140	70	38	M 20	400	57,4

* plus 12 mm for electronic version H1 (high temperature up to 150 °C)
plus 6 mm for electronic version X (ATEX)



Models 1, 2, 4
Cast iron version, mounting plate
Electronic-Version: High temperature up to 210 °C

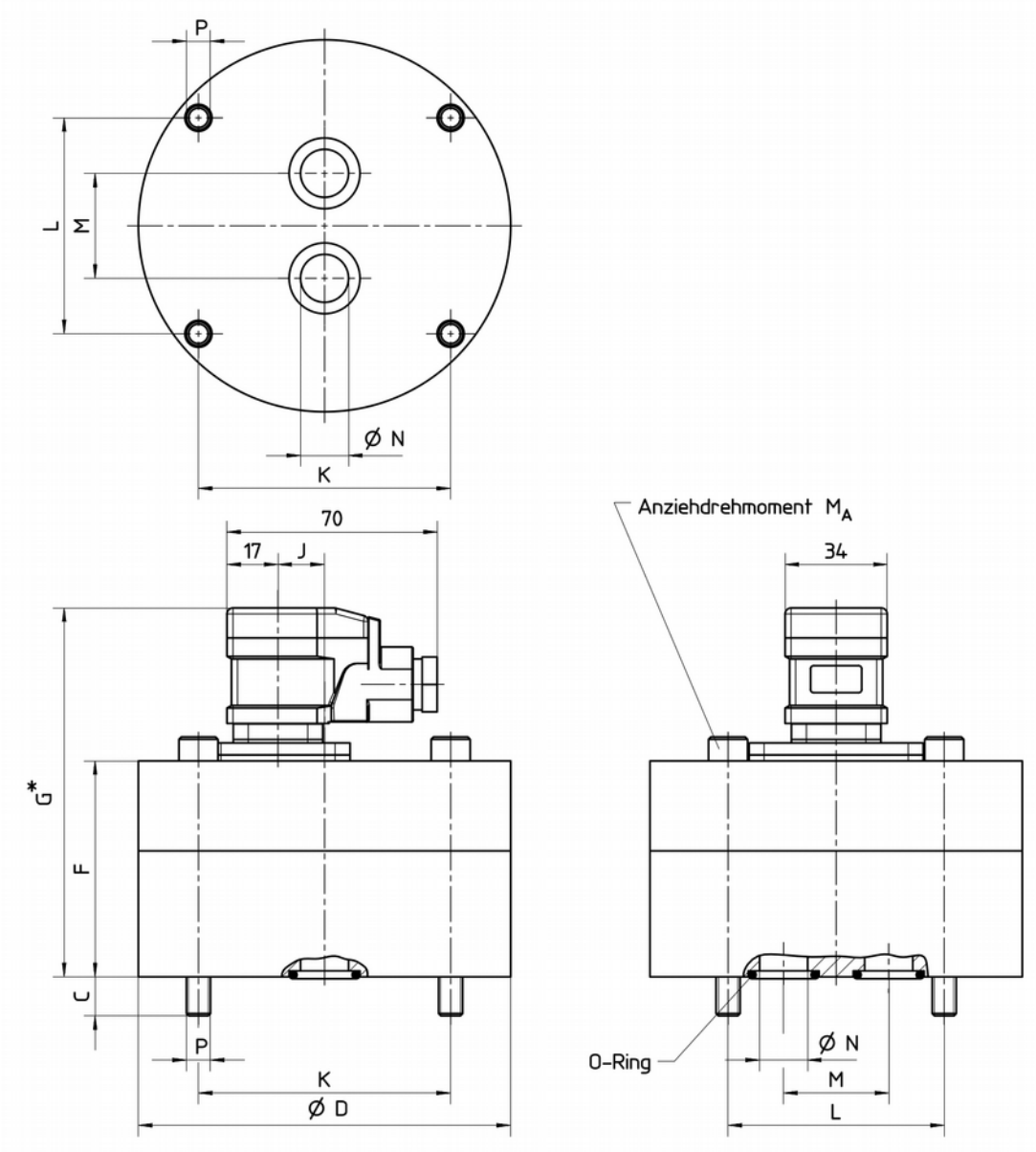
Type	dimensions [mm]											torque [Nm]	weight
	A	C	D	F	G	J	K	L	M	N	P	M_A	[kg]
DV04.2	85	10	60	50	87	-	70	40	20	6,7	M 6	14	1,8
DV04.3	85	9	60	56	93	-	70	40	20	6,7	M 6	14	2,0
DV04.4	85	13	60	57	94	-	70	40	20	9	M 6	14	2,0
DV04.5	100	17	90	63	100	-	80	38	34	16	M 8	35	3,7
DV04.6	120	13	95	72	109	18,5	84	72	35	16	M 8	35	5,2
DV04.7	170	18	120	89	126	11	46	95	50	25	M 12	120	9,0
DV04.8	170	22	120	105	142	11	46	95	50	25	M 12	120	13,0



Models 5, 6, 8
Stainless steel version, mounting plate
Electronic-Version: Standard, high temperature up to 150 °C, ATEX

Type	dimensions [mm]											torque [Nm]	weight
	A	C	D	F	G*	J	K	L	M	N	P	M_A	[kg]
DV04.2	-	10	94	55	106	-	70	40	20	6,7	M 6	14	3
DV04.3	-	9	94	56	107	-	70	40	20	6,7	M 6	14	3
DV04.4	-	13	94	57	108	-	70	40	20	9	M 6	14	3,1
DV04.5	-	17	118	63	114	-	80	38	34	16	M 8	35	4,8
DV04.6	-	13	124	72	123	15,5	84	72	35	16	M 8	35	7
DV04.7	-	18	170	89	140	46,5	46	95	50	25	M 12	120	15,9
DV04.8	-	22	170	105	156	46,5	46	95	50	25	M 12	120	18,7

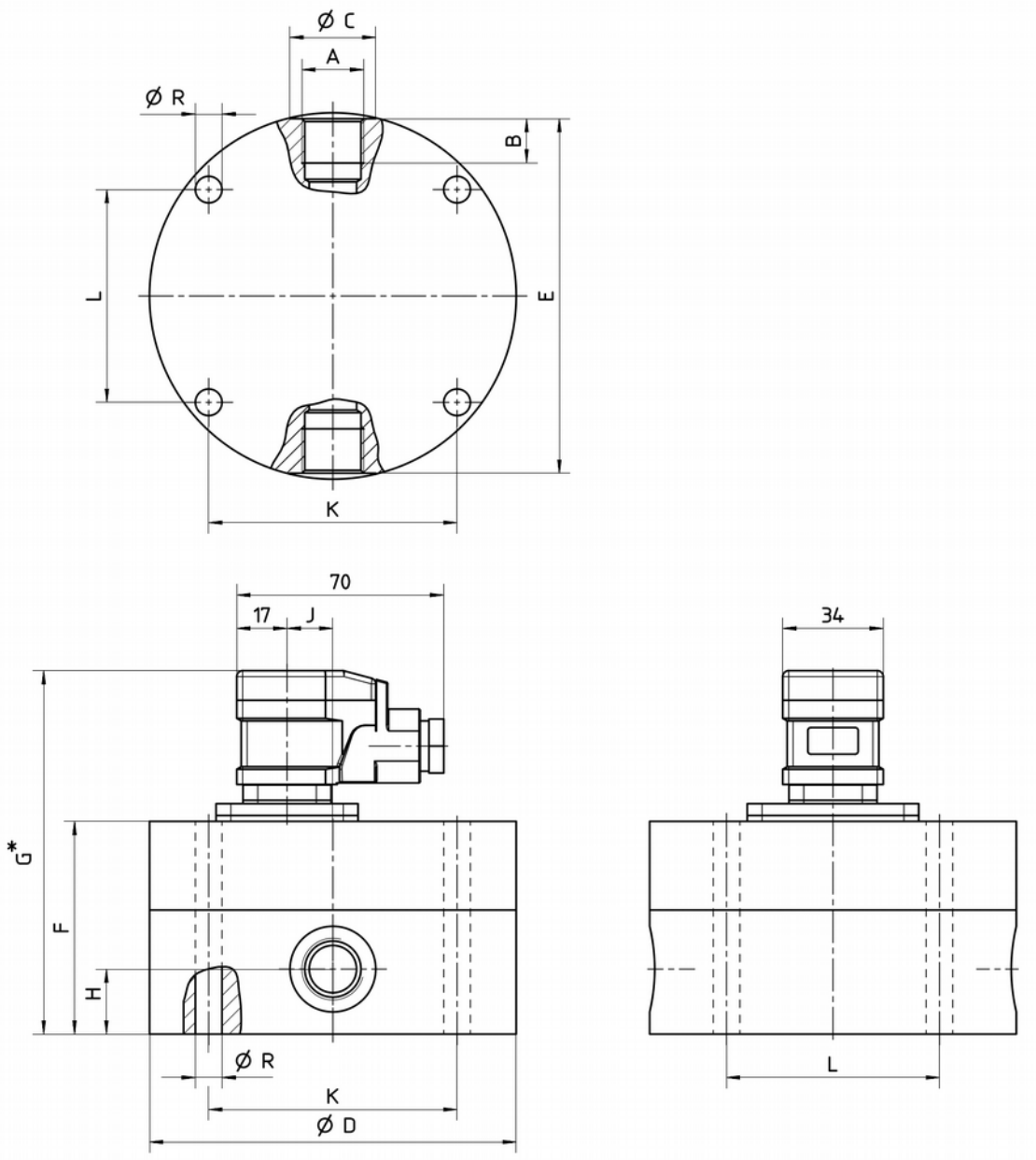
* plus 12 mm for electronic version H1 (high temperature up to 150 °C)
plus 6 mm for electronic version X (ATEX)



Models 5, 6, 8
Stainless steel version, pipe mounting version
Electronic-Version: Standard, high temperature up to 150 °C, ATEX

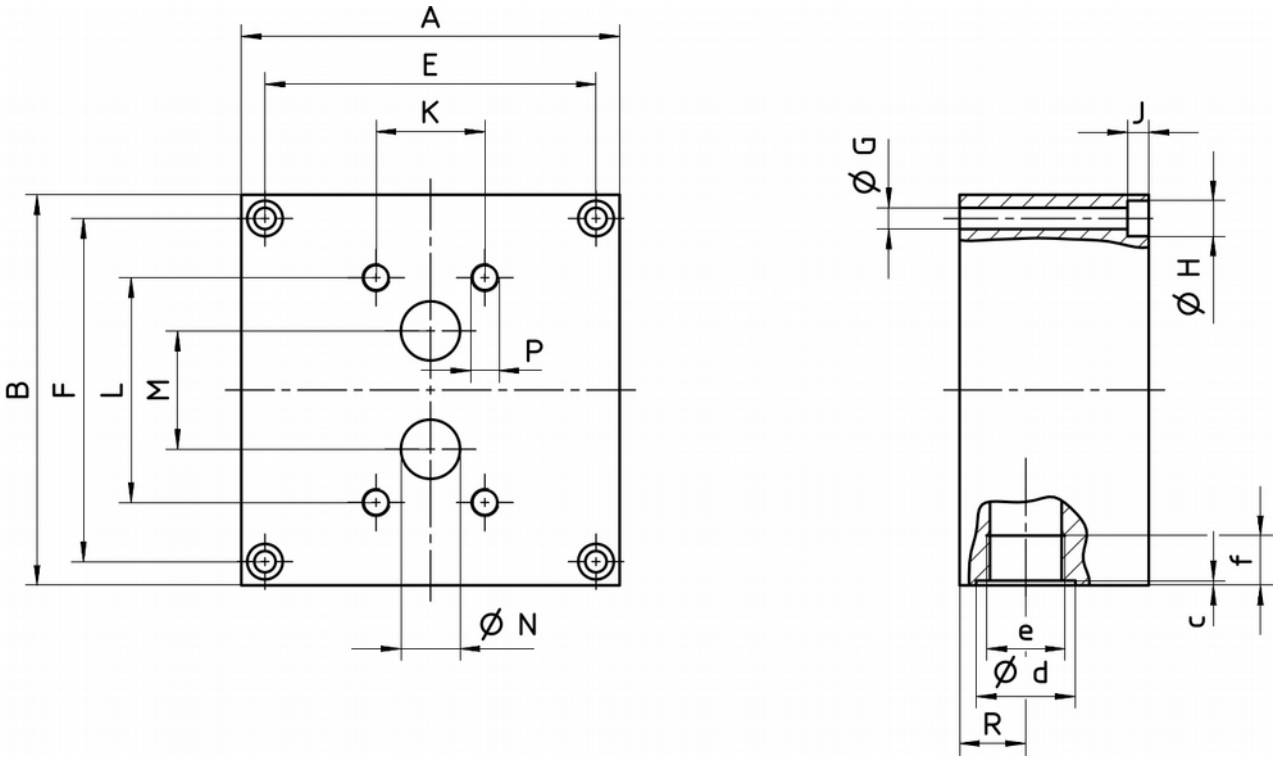
Type	dimensions [mm]												weight
	A	B	C	D	E	F	G*	H	J	K	L	R	[kg]
DV04.2	G 1/8	9	17	94	90	55	106	15	-	70	40	6,7	3
DV04.3	G 1/4	13	21	94	90	56	107	15	-	70	40	6,7	3
DV04.4	G 3/8	13	25	94	90	57	108	16	-	70	40	6,5	3,1
DV04.5	G 1/2	15	29	118	114	63	114	17,5	-	80	38	9	4,8
DV04.6	G 1/2	15	29	124	120	72	123	22	15,5	84	72	9	7
DV04.7	G 1	19	51,5	170	162	89	140	30	46,5	46	95	13	15,9
DV04.8	G 1	19	42	170	162	105	156	30	46,5	46	95	13	18,7

* plus 12 mm for electronic version H1 (high temperature up to 150 °C)
plus 6 mm for electronic version X (ATEX)



Mounting plates (cast iron), thread connection on site

Type	dimensions [mm]																		weight
	e	A	B	C	E	F	G	H	J	K	L	M	N	P	R	c	d	f	[kg]
DV04.2 DV04.3 DV04.4	G 3/8	85	90	35	65	76	7	11	7	70	40	20	6,5	M6	17	0,7	25	13	1,8
DV04.5	G 1/2	100	110	37	86	96	7	11	7	80	38	34	16	M8	18,5	0,7	29	15	2,7
DV04.6	G 1/2	100	120	37	80	106	7	11	7	84	72	35	12	M8	17,5	0,7	29	15	2,9
DV04.7	G 1	100	120	65	80	106	7	11	8	84	72	35	13	M8	32,5	1	42	19	4,9
DV04.8	G 1	160	165	80	140	145	9	15	9	46	95	50	25	M12	28	1	42	19	14



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

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20230920
Subject to technical changes

Model (table. 1):

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

Model	Material	Min. viscosity [mm²/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	low/medium	good
4	GJS-400	100	± 0,5	medi./high	good
5	st. steel 1.4404	100	± 0,5 DV04.2: ± 3	medi./high	low
6	st. steel 1.4404	20	± 0,3	low/medium	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
Ex-version: with separate switching amplifier

Power supply: 12…30 VDC, 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

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