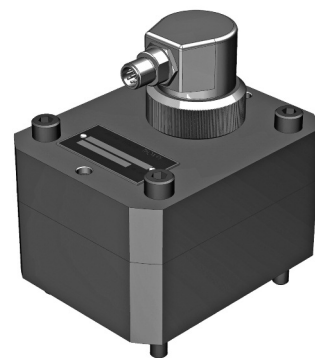


KRACHT



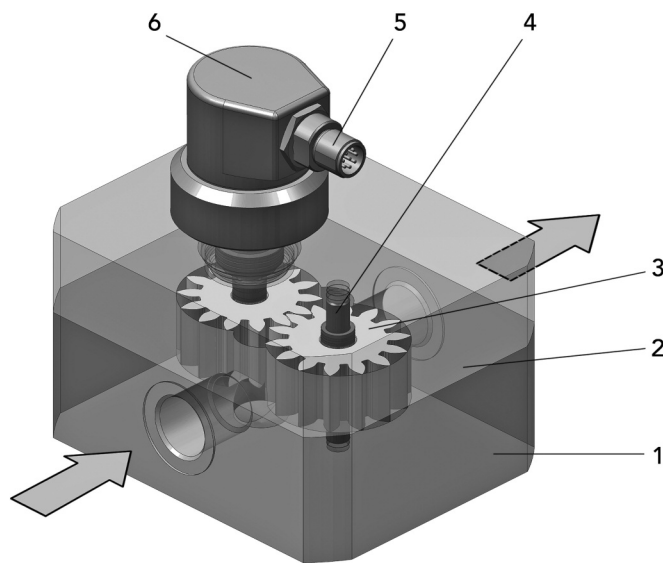
Gear Type
Flow Meter

VC PULSE

Description

The measuring unit is driven by the flow of fluid based on the principle of a gear motor. The gears run contactless in the measuring chamber. The low-friction plain bearings or ball bearings act as the bearing elements. The gear movement is sampled contactless through the sensor installed in the cover. Between the sensor cavity and the measuring chamber there is a

pressure-resistant amagnetic divider. A high-efficiency magnetic coupling transfers the rotation free from slip to a sensor assembly that is applied to the exterior of the unit. The signal is output as a square wave. The two-channel scanning facilitates a higher measuring resolution and detection of the direction of the flow rate.



- 1 Housing
- 2 Cover
- 3 Gear
- 4 Bearing
- 5 Sensor assembly
- 6 Plug

Product Characteristics

- Selectable high measurement value resolution
- Viscosity-independent measurements made in the frame of the stated ranges
- Low pressure drop
- Highly-dynamic measurements
- High compression strength
- Low noise emission
- Highly-accurate measurements with outstanding reproducibility
- Temperature-independent pulses in a large temperature range
- Great accuracy even at low flow rates in the lower measurement range
- Electronics has low susceptibility to disturbance
- Easy to install electronics connection
- Sensor system in EMC-compatible version

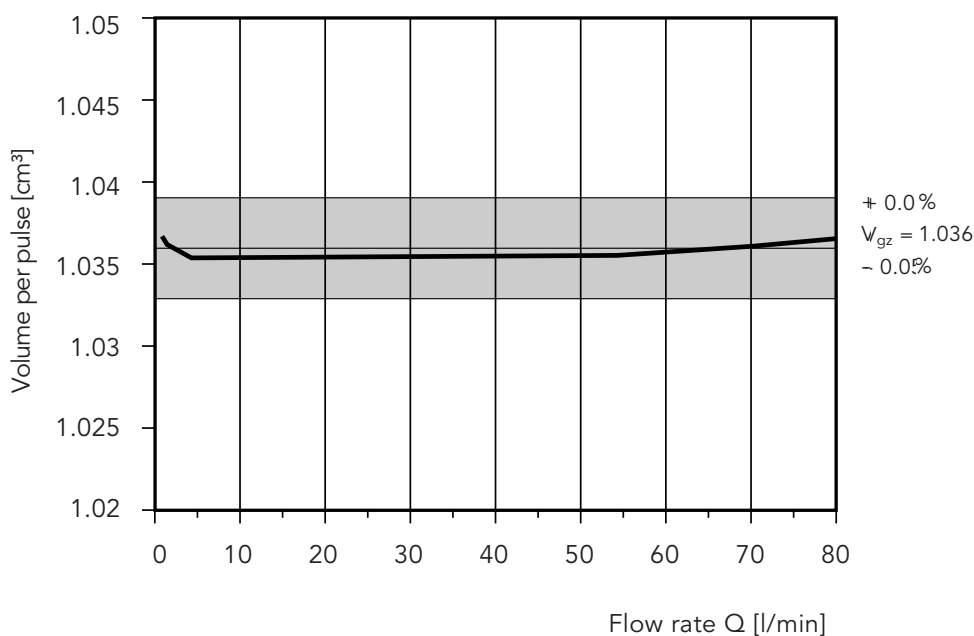
Typical Applications

Application	Medium	Version	Series
Flow rate measurement (hydraulic test bench)	oil, brake fluid, skydrol, diesel lubricating low viscosity	Spheroidal cast iron ball bearings minimal clearances	1
Ratio control (2 component plant)	Polyols + Isocyanate, glue, resin, silicon poor lubricating medium viscosity	Spheroidal cast iron tungsten carbide plain bearings enhanced play	4

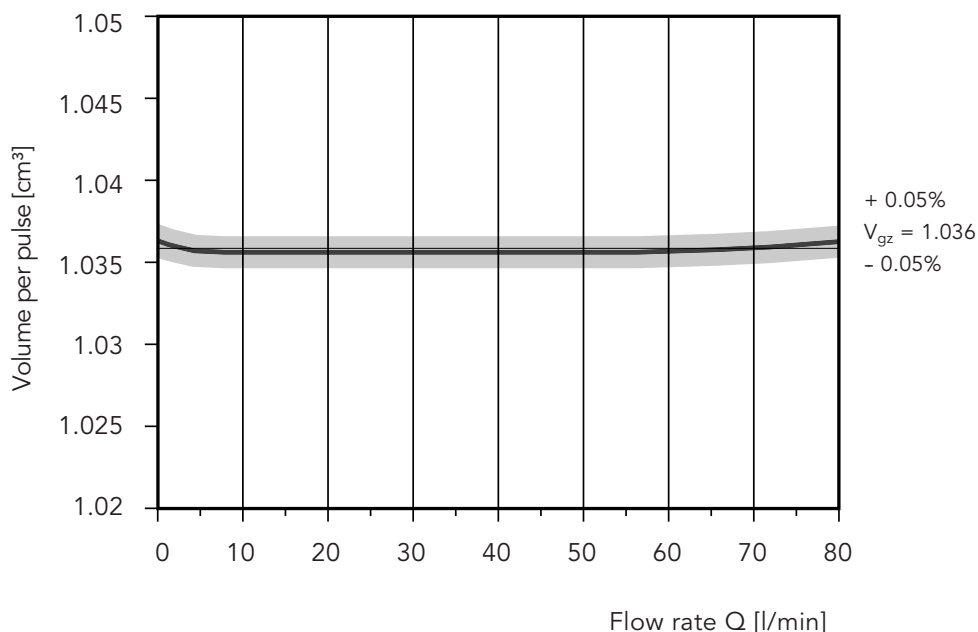
Accuracy Characteristics

- The accuracy values stated by KRACHT refer to the pulse volumes [cm³/Imp], i.e., the percentage deviation applies to each current measurement value.
- Repeat accuracy is +/- 0.05% under constant conditions
- The accuracy check is a component of every pre-delivery inspection.
- On request, we will calibrate in the factory and its result will be documented in the form of an accuracy characteristic curve.
- Such an accuracy characteristic curve is shown below for a VC 1 Series 1 as an example.
- The accuracy values stated by Kracht shall be confirmed by the DKD (Deutscher Kalibrierdienst).

Accuracy



Repeat accuracy



Characteristics

Mounting position	optional		
Flow direction	optional		
Connection type	Plate mounting / pipe thread		
max. operating pressure	p_{max}	= 400 bar	
Pressure peak	\hat{p}	= 480 bar	
Max. pressure drop	Δp_{max}	= Series 1 16 bar Series 4 16/40 bar (according to version)	
Viscosity	1...2.500.000 mm ² /s (according to series)		
Accuracy (of measurement value)	Series 1	+/- 0.3 % at ≥ 20 mm ² /s	
	Series 4	+/- 0.5 % at ≥ 100 mm ² /s	

Permitted Temperature Ranges

Sealing material	FKM	EPDM	FEP	FFKM
Ambient temperature	-15 °C ... 80 °C	-30 °C ... 80 °C	-30 °C ... 80 °C	-15 °C ... 80 °C
Media temperature	-15 °C ... 80 °C	-30 °C ... 80 °C	-30 °C ... 80 °C	-15 °C ... 80 °C

Series Selection

Nominal Size	Series	Starting point (l/min)	Measuring range (l/min)	Material housing	Material gears	Bearing	Type of connection	Perm. foreign body size in the medium (μ m)
0.04	1	0.004	0.02-4	Spheroidal cast iron	Steel	Ball bearing	Plate mounting	20
0.2	1	0.01	0.16-16	Spheroidal cast iron	Steel	Ball bearing	Plate mounting	20
1	1	0.02	0.4-80	Spheroidal cast iron	Steel	Ball bearing	Plate mounting	20
	4		0.3-60	Spheroidal cast iron	Steel	Low-friction plain bearing	Pipe connection	30

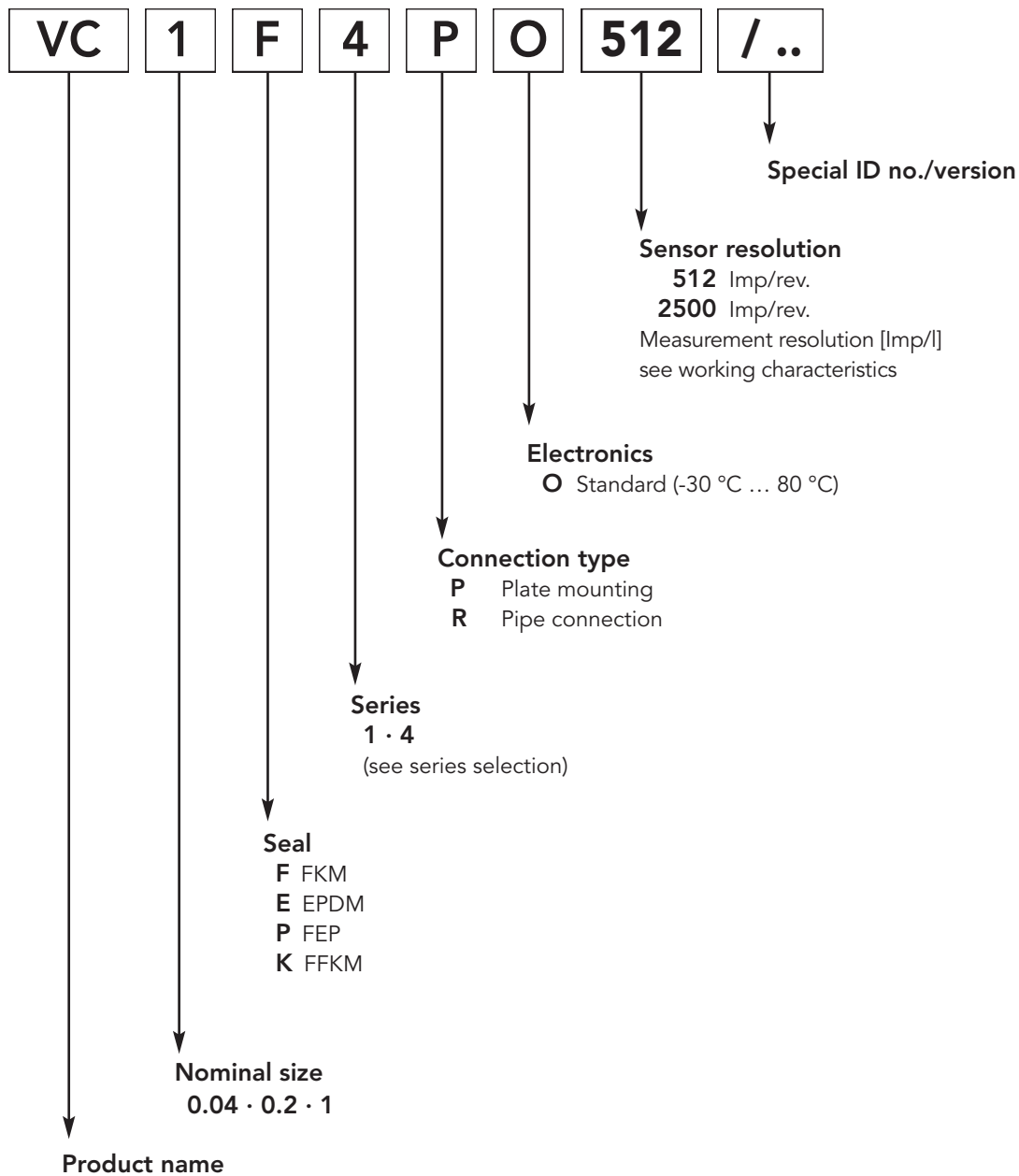
Working Characteristics

VC	Selectable sensor resolution [pulse/rev.]	Pulse volume [cm ³ /pulse]	Resolution [pulse/l]	Resolution (4-fold evaluation) [pulse/l]	Pulse frequency at Q_{nenn} [Hz]	Multiplication factor to standard VC [-]
VC 0.04	512	0.001484	673 684	2 694 737	44 912	27
	2 500	0.000304	3 289 474	13 157 896	219 298	132
VC 0.2	512	0.006699	149 271	597 084	39 806	37
	2 500	0.001372	728 863	2 915 452	194 363	179
VC 1	512	0.028328	35 301	141 204	47 067	37
	2 500	0.005802	172 366	689 464	229 822	179

Sensor resolutions 360 up to 2500 pulses/rev. available upon request.

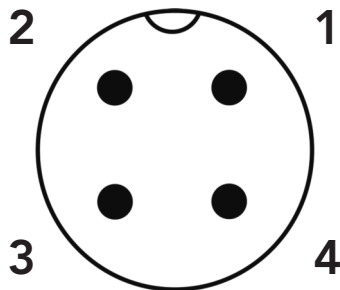
Type Key

Bestellbeispiel



Electrical Connection

Electronics: O



- 1 V_{cc} 11 ... 30 V DC
- 2 Channel 1
- 3 GND
- 4 Channel 2

Electrical Characteristics

Number of measuring channels	2	Pulse offset between both channels*	$90^\circ \pm 30^\circ$
Supply voltage	$U_B = 11 \dots 30$ V DC reverse-polarity protection	Maximum load	± 30 mA
Pulse amplitude	$U_A \geq 0,8 U_B$	Current consumption	Standard 45 mA Maximum 150 mA
Pulse form at symmetr. Output signal	square wave, pulse duty factor/ channel 1: $1:1 \pm 15\%$	Frequency	max. 200 kHz
Signal output	Push-Pull	Degree of protection	IP 65 DIN EN 60529

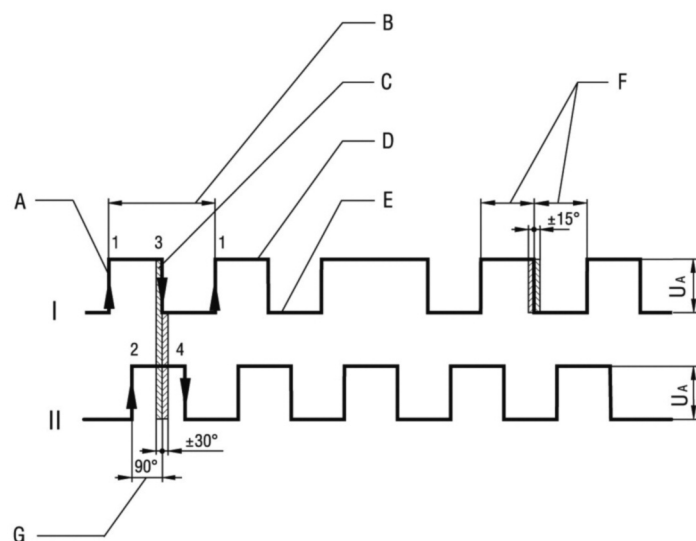
Signal Characteristics

Channel I

- A rising flank
- B one pulse
- C falling flank
- D ON phase
- E OFF phase
- F Pulse duty factor: $1:1 \pm 15\%$

Channel II*

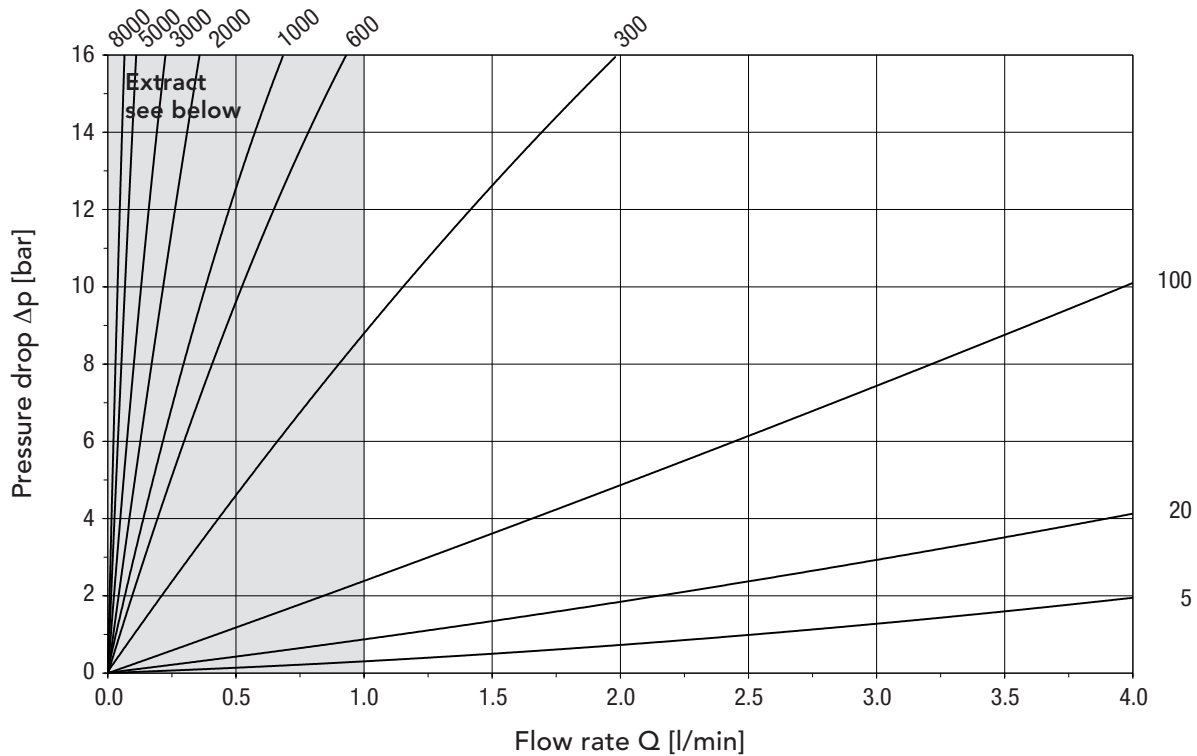
- G Channel offset



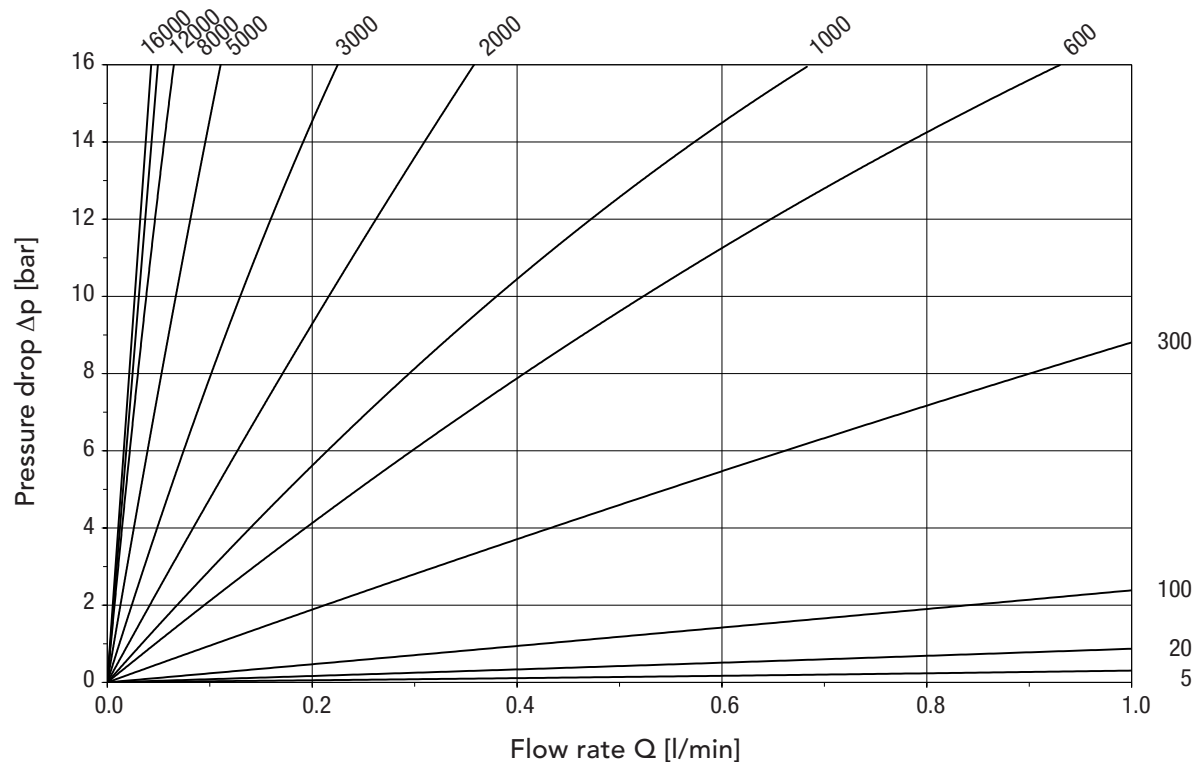
Pressure Drop Parameter: Viscosity (mm²/s)

Series 1

VC 0.04



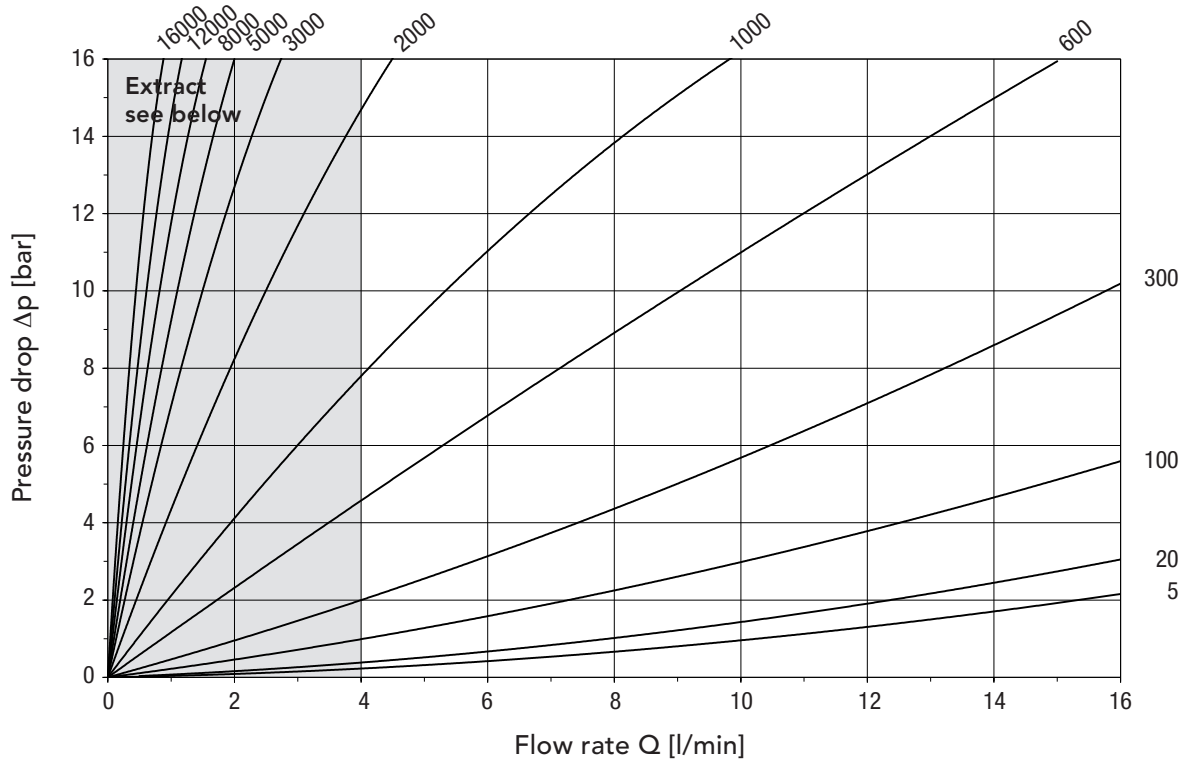
VC 0.04 (■ extract)



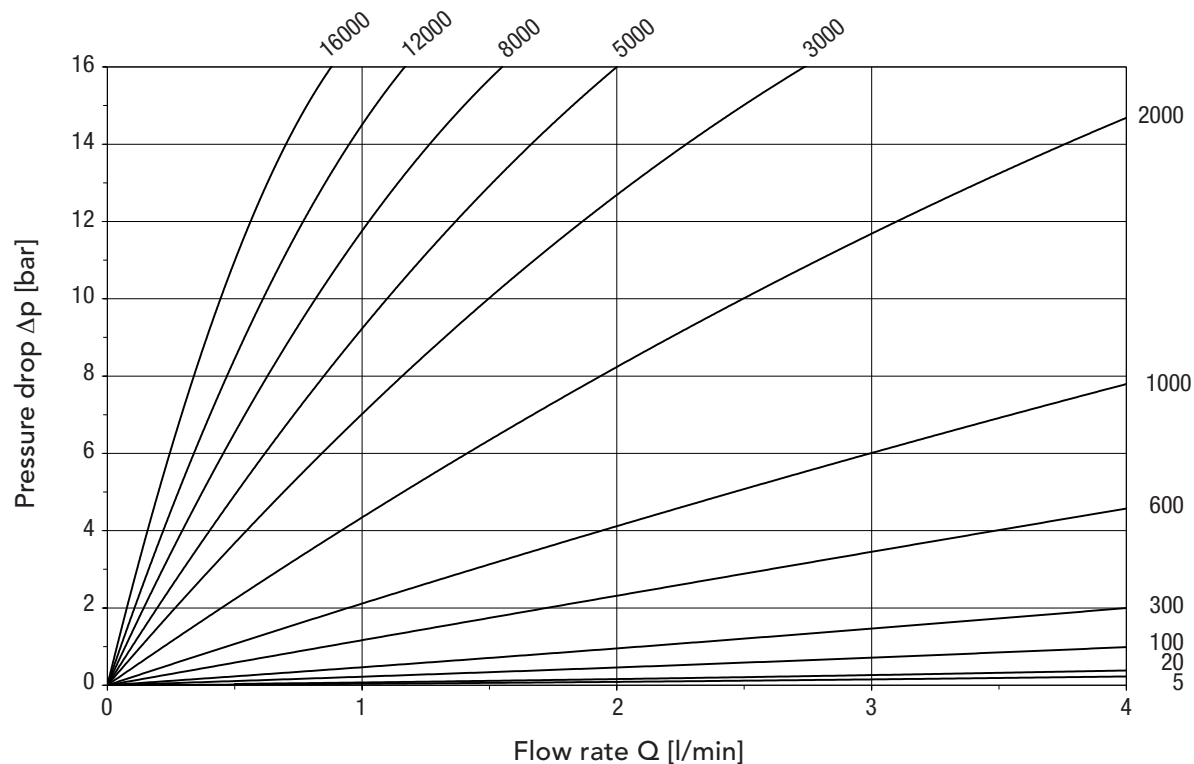
Pressure Drop Parameter: Viscosity (mm²/s)

Series 1

VC 0.2



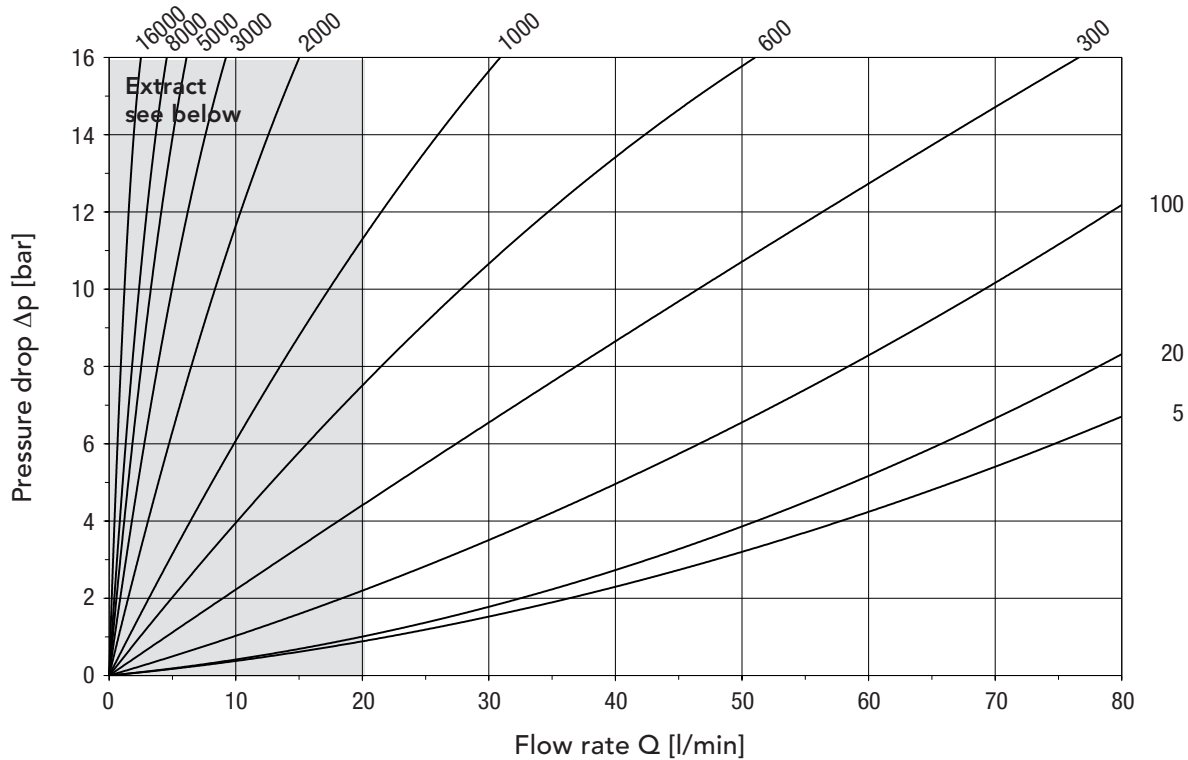
VC 0.2 (extract)



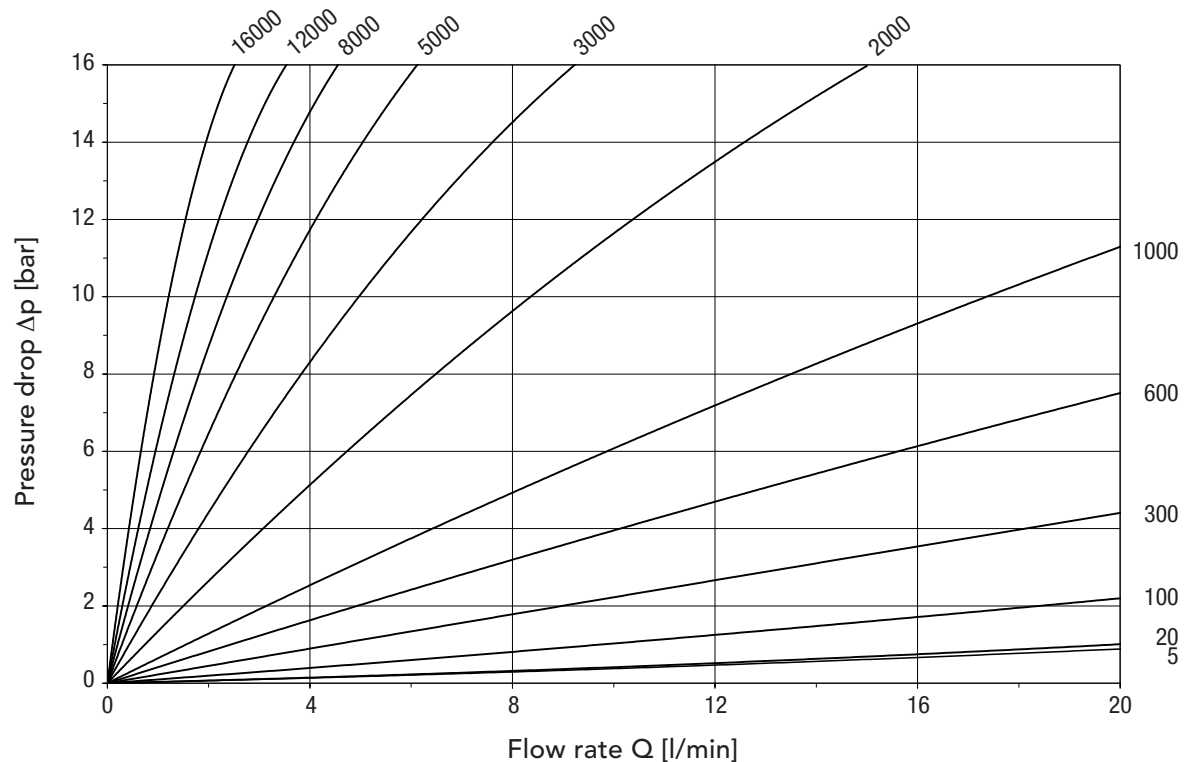
Pressure Drop Parameter: Viscosity (mm²/s)

Series 1

VC 1



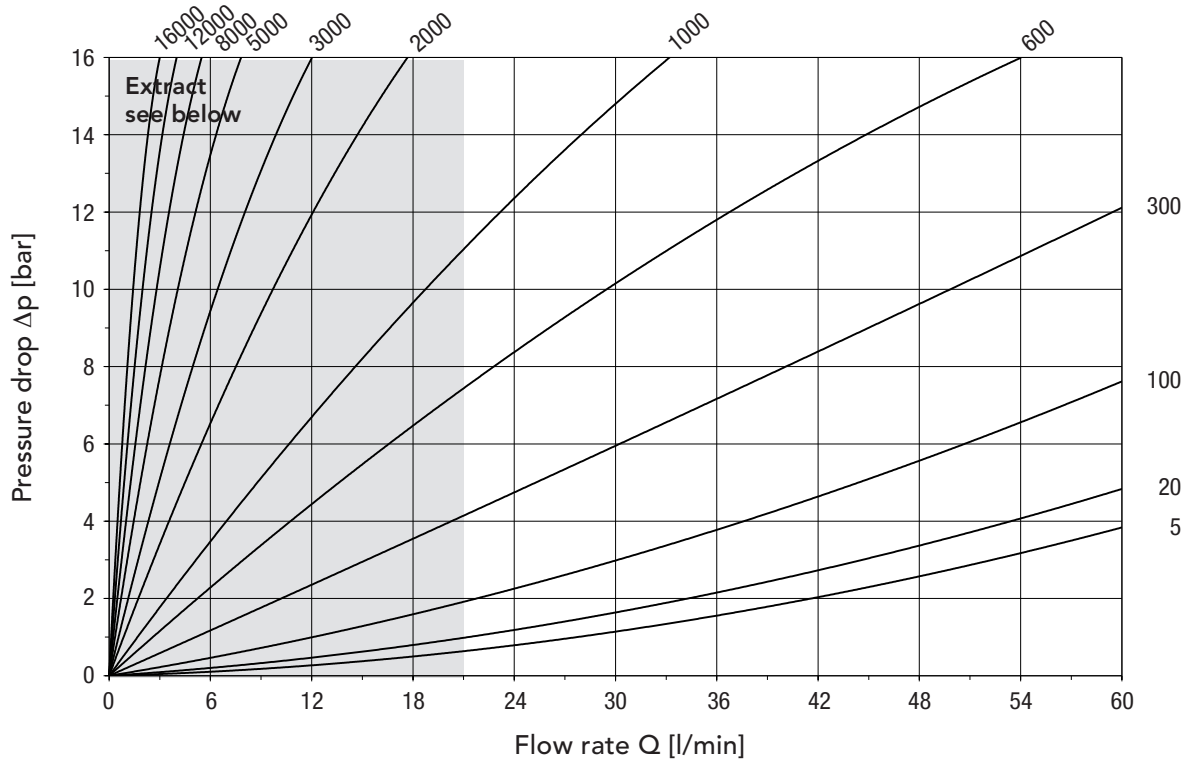
VC 1 (■ extract)



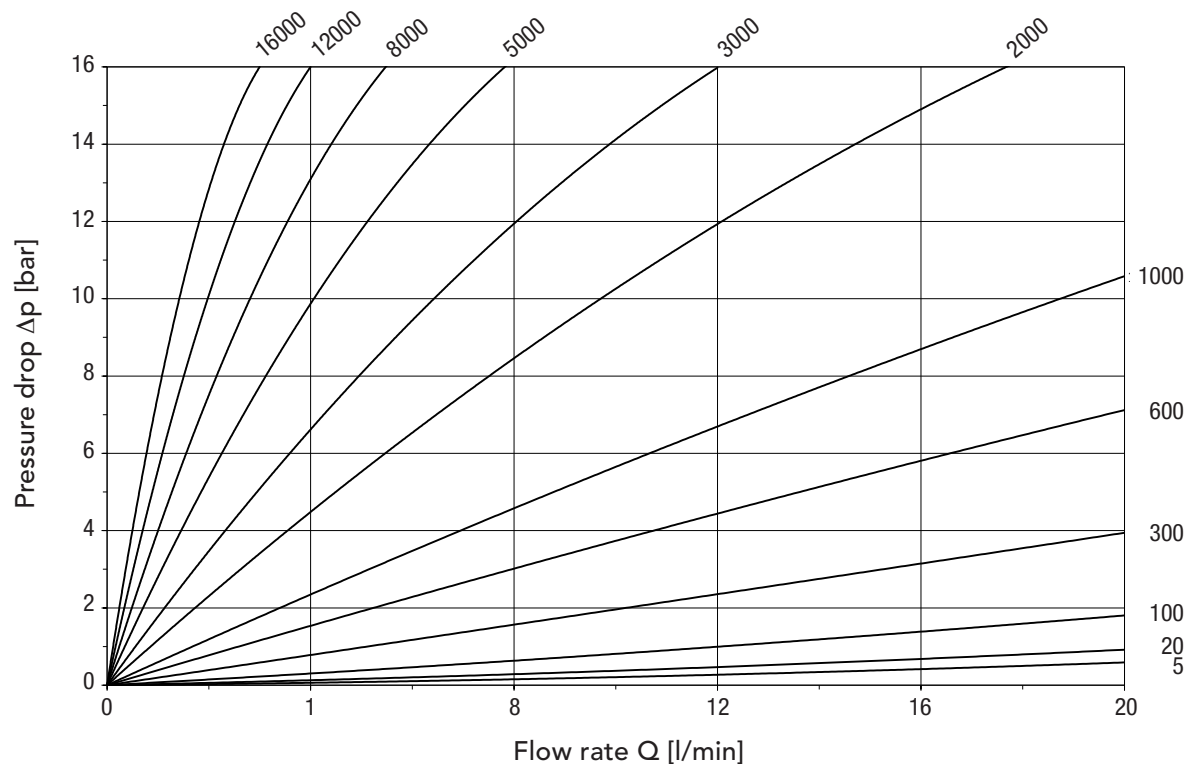
Pressure Drop Parameter: Viscosity (mm²/s)

Series 4

VC 1



VC 1 (■ extract)



Product Portfolio

Gear Pumps

Gear pumps for lubricating oil supply equipment, low pressure filling and feed systems, dosing and mixing systems.

Hydraulics

Single and multistage high pressure gear pumps and hydraulic motors for construction machinery, vehicle-mounted machines.

Flow Measurement

Gear, turbine and screw type flow meters and electronics for volume and flow metering technology in hydraulics, processing and laquering technology.

Valves

Cetop directional control and proportional valves, pressure, quantity and stop valves for pipe and slab construction.



VC PULSE/GB/07.19

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