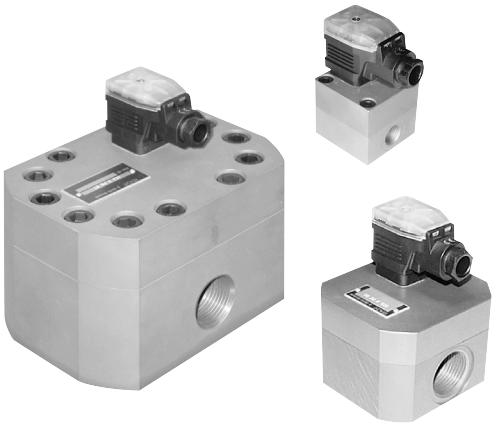
KRACHT®



Gear Type Flow Meters

VCA / VCN / VCG

Function.

The gear type flow meters of the type VCA/VCN/VCG are flow meters for liquids with a certain lubricity.

The measuring unit of the KRACHT volume counter consists of a pair of gears, driven by a liquid flow on the principle of a gear motor. The plain bearing provides both axial and radial support to the gears.

The movement of the gears is sampled without contact by a sensor located in the cover

Type Key

Ordering example

VCA	0.2	F	B	R	1	V	/	..

Product name
VCA
VCN only 0.04 • 0.2
VCG only 2 • 5

Type
0.04 • 0.1 • 0.2 • 2 • 5

Seal
F FKM

Measuring unit
B Plastic plain bearings / stainless steel measuring gears (VCA/VCN 0.2 / VCA 2)
C Multi component plain bearings (P 10) / steel measuring gears (VCA 2 / VCG 2 / VCG 5)
E Ball bearings / steel measuring gears (VCA 0.1 / VCA 5)
F Ball bearings / stainless steel measuring gears (VCA/VCN 0.04)

R Pipe connection
P Plate mounting (only VCA 2, VCG 2, VCG 5)

1 Sensor
2 Sensoren *****

without specification = standard electronic
V = without preamplifier (for SD 1)

Special ID no.
/40 = VCA 2..R.
with threaded connection G 1"

***** (only VCA 2 pipe connection and VCG 2 / VCG 5 plate mounting)

Material

	Housing and cover	Measuring gears	Bearing
VCA 0.04 FF R1	Aluminium AlMgSi F30	Stainless steel 1.4462	Ball bearings
VCN 0.04 FF R1	Stainless steel 1.4404	Stainless steel 1.4462	Ball bearings
VCA 0.1 FE R1	Aluminium AlMgSi F30	Steel 1.7139	Ball bearings
VCA 0.2 FB R1	Aluminium AlMgSi F30 (hardcoated)	Stainless steel 1.4462	Plastic plain bearings (Iglidur X)
VCN 0.2 FB R1	Stainless steel 1.4404	Stainless steel 1.4462	Plastic plain bearings (Iglidur X)
VCA 2 FC R(P)1	Aluminium AlMgSi F30 (hardcoated)	Steel 1.7139	Multicomponent plain bearings (P10)
VCA 2 FB R(P)1	Aluminium AlMgSi F30 (hardcoated)	Stainless steel 1.4462	Plastic plain bearings (Iglidur X)
VCG 2 FC P2	Spheroidal cast iron EN-GJS-400 (GGG 40)	Steel 1.7139	Multicomponent plain bearings (P10)
VCA 5 FE R1	Aluminium AlMgSi F30	Steel 1.7139	Ball bearings
VCG 5 FC P2	Spheroidal cast iron EN-GJS-400 (GGG 40)	Steel 1.7139	Multicomponent plain bearings (P10)

General Characteristics

Liquid temperature VCA/VCN
$\vartheta_{m\,min}$ = – 10 °C / 14 °F
$\vartheta_{m\,max}$ = + 80 °C / 176 °F

Liquid temperature VCG
$\vartheta_{m\,min}$ = – 15 °C / 5 °F
$\vartheta_{m\,max}$ = + 120 °C / 248 °F

Ambient temperature
$\vartheta_{u\,min}$ = – 10 °C / 14 °F
$\vartheta_{u\,max}$ = + 80 °C / 176 °F

Viscosity
ν_{min} = 20 cSt
ν_{max} = 4000 cSt

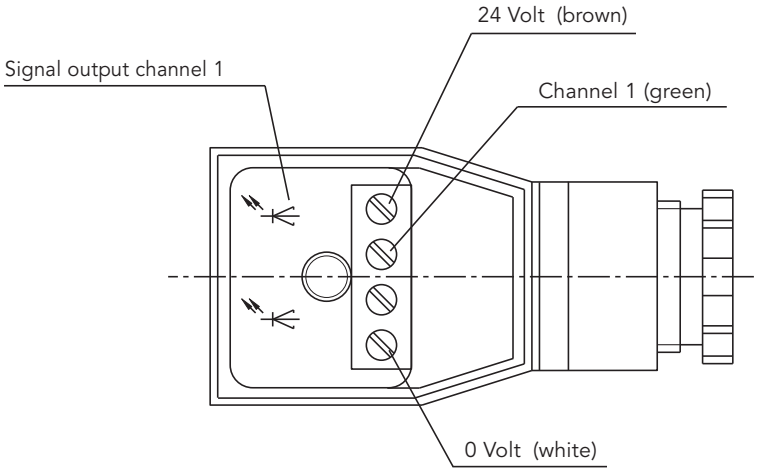
Mounting position: optional

Sound pressure level: L_A = < 60 dB (A)

Working Characteristics

Type	Geom. tooth-volume cm³	Measuring range l/min / gal/min	Starting point l/min / gal/min	Reso-lution lmp/l	Measuring accuracy (at flow range)	Working pressure bar / psi	Peak pressure bar / psi	Weight kg /lb
VCA 0.04 FF R1	0.04	0.02 – 4 / 0.005 – 1.06 (ν = 20 cSt)	0.004 / 0.001 (ν = 20 cSt)	25 000	± 2 % at 20 cSt	200 / 2901	240 / 3481	0.5 / 1.1
VCN 0.04 FF R1	0.04	0.02 – 4 / 0.005 – 1.06 (ν = 20 cSt)	0.004 / 0.001 (ν = 20 cSt)	25 000	± 2 % at 20 cSt	160 / 2321	190 / 2756	1.2 / 2.6
VCA 0.1 FE R1	0.1	0.08 – 10 / 0.02 – 2.64	0.008 / 0.002 (ν = 20 cSt)	10 000	± 2 % at 20 cSt	200 / 2901	240 / 3481	0.6 / 1.3
VCA 0.2 FB R1	0.2	0.25 – 10 / 0.07 – 2.64		5000	± 3 % at 20 cSt	160 / 2321	200 / 2901	0.5 / 1.1
VCN 0.2 FB R1	0.2	0.25 – 10 / 0.07 – 2.64		5000	± 3 % at 20 cSt	160 / 2321	200 / 2901	1.2 / 2.6
VCA 2 FC(B) R(P)1	2	1 – 65 / 0.26 – 17.2	0.12 / 0.03 (ν = 34 cSt) 0.04 / 0.01 (ν = 100 cSt)	500	± 2.5 % at 20 cSt	160 / 2321	200 / 2901	1.9 / 4.2
VCG 2 FC P2	2	1 – 65 / 0.26 – 17.2	0.12 / 0.03 (ν = 34 cSt) 0.04 / 0.01 (ν = 100 cSt)	500	± 2.5 % at 20 cSt	315 / 4569	350 / 5076	5 / 11.0
VCA 5 FE R1	5.222	1 – 200 / 0.26 – 52.8	0.1 / 0.03 (ν = 20 cSt)	191.5	± 1% at 20 cSt	80 / 1160	100 / 1450	6 / 13.2
VCG 5 FC P2	5.222	3 – 240 / 0.79 – 63.4	0.1 / 0.03 (ν = 20 cSt)	191.5	± 2.5 % at cSt	315 / 4569	350 / 5076	13.2 / 29.1

Electrical connection VCA/VCN

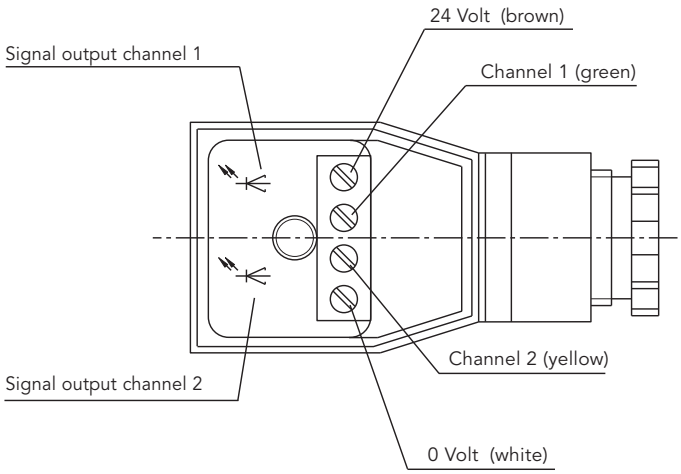


Electrical Characteristics

Number of measuring channels	1 (VCA 2 with pipe connection optional 2)
Working voltage	U_B = 12 ... 30 V DC polarized
Pulse amplitude	$U_A \geq 0.8\ U_B$
Pulse shape with symm. output signal	square wave pulse duty factor/channel 1 : 1 ± 15 %
Signal output	PNP / NPN
Power requirement	$P_{b\ max}$ = 0.6 W
Output power channel	$P_{a\ max}$ = 0.3 W short-circuit-proof
Degree of protection	IP 65 DIN 40050
Only for VCA 2 with 2 sensors *	pulse skew between both channels 90° ± 30°

* see electrical connection VCG

Electrical connection VCG



Electrical Characteristics

Number of measuring channels	2
Working voltage	U_{op} = 12 ... 30 VDC polarized
Pulse amplitude	$U_A \geq 0{,}8\ U_B$
Pulse shape with symm. output signal	square wave pulse duty factor / channe 1 : 1 ± 15 %
Signal output	PNP / NPN
Pulse offset between two channels	90° ± 30°
Power requirement	$P_{b\ max}$ = 0.9 W
Output power/channel	$P_{a\ max}$ = 0.3 W short-circuit-proof
Degree of protection	IP 65 DIN 40050

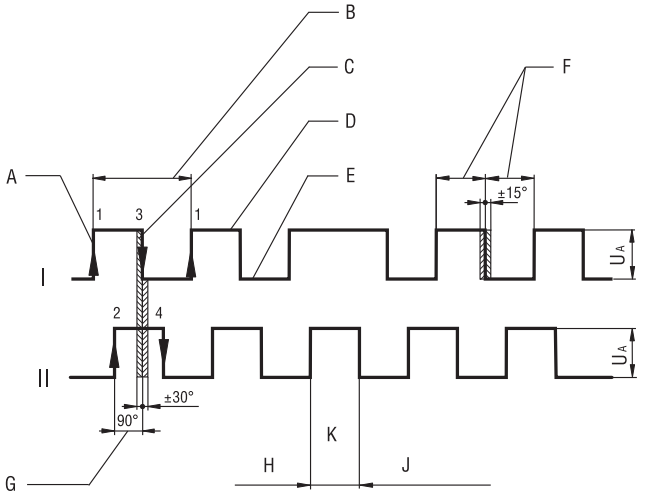
Signal Characteristics

Channel I

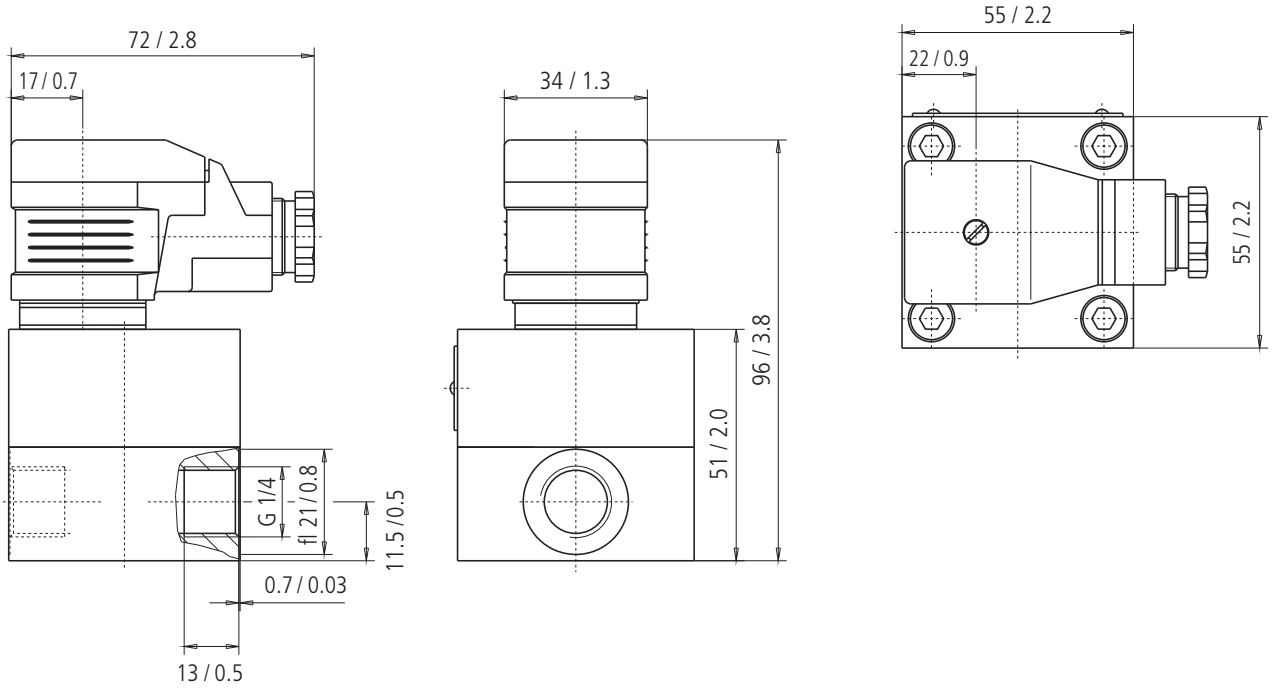
A rising edge
B one pulse
(corr. to flow rate of geom. tooth volume V_{gz})
C falling edge
D ON phase
E OFF phase
F pulse duty factor 1 : 1 ± 15 %

Channel II

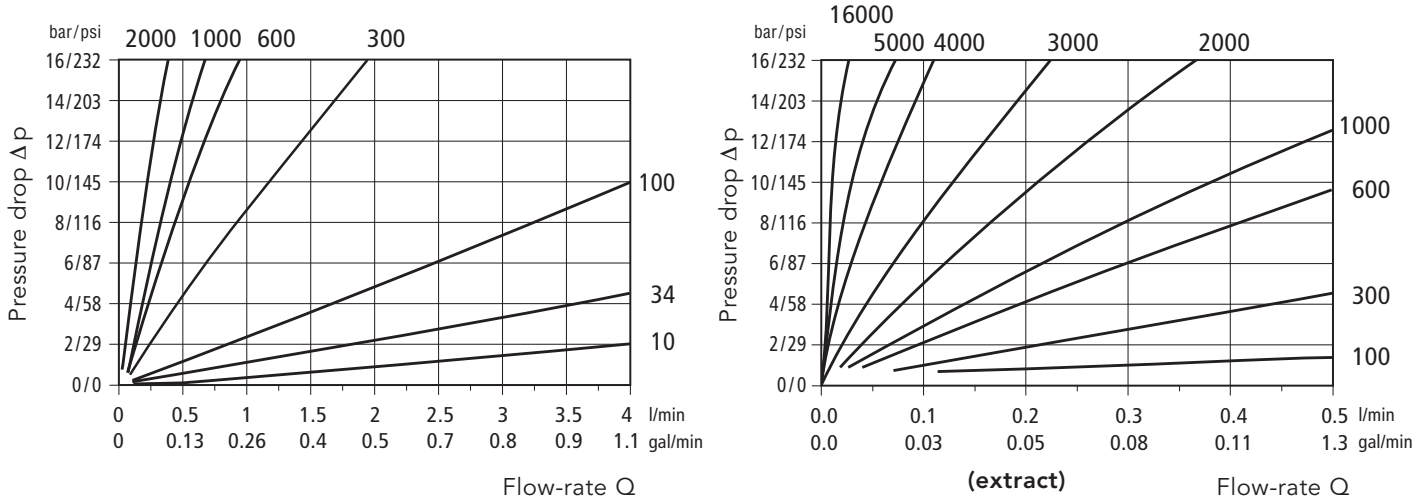
G channel offset
H flow direction 1
K reversal of flow direction
J flow direction 2



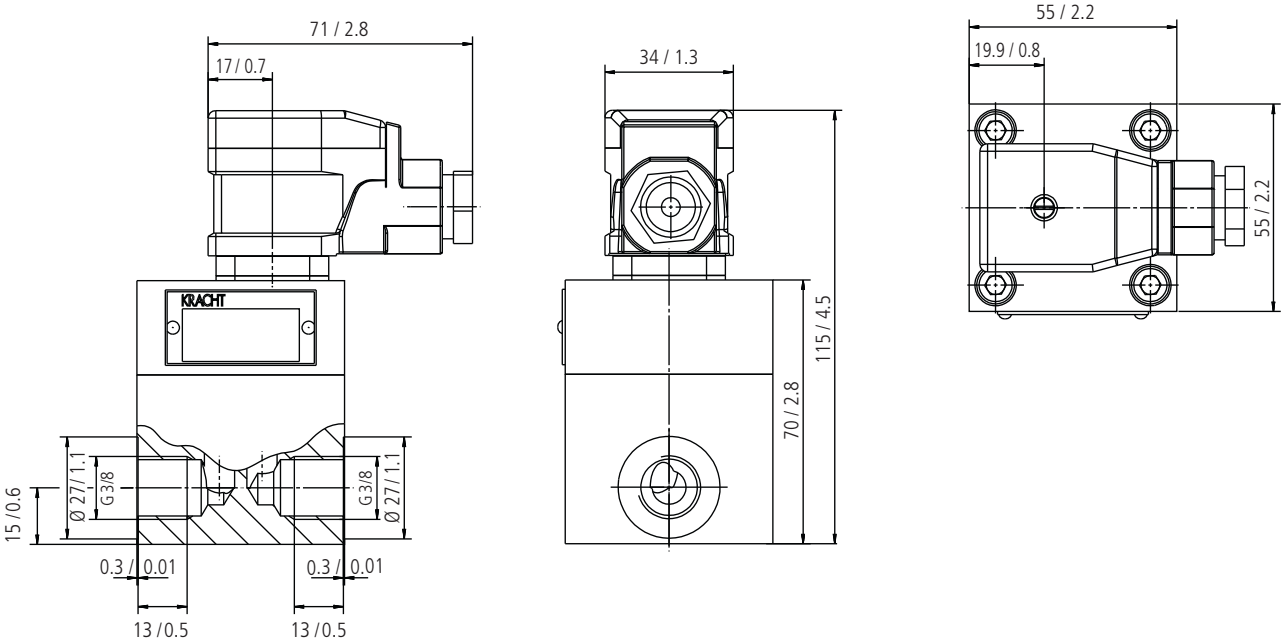
Dimensions VCA / VCN 0.04 FF R1 (in mm / inch)



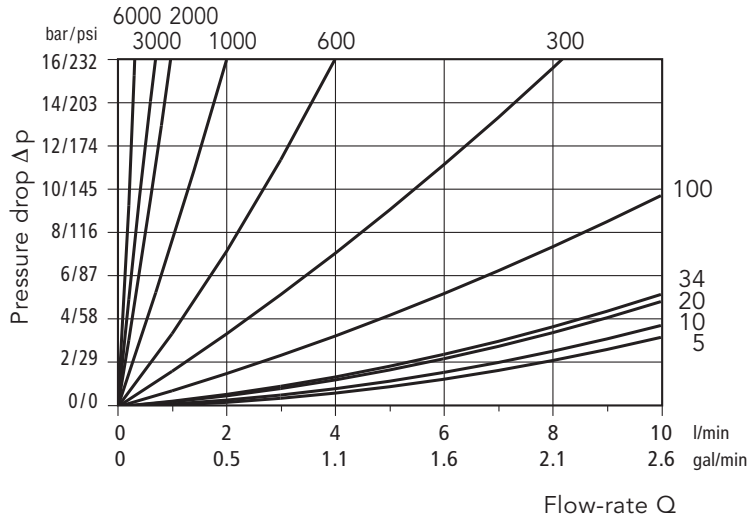
Flow resistance VCA / VCN 0.04 FF R1 Parameter: viscosity (cSt)



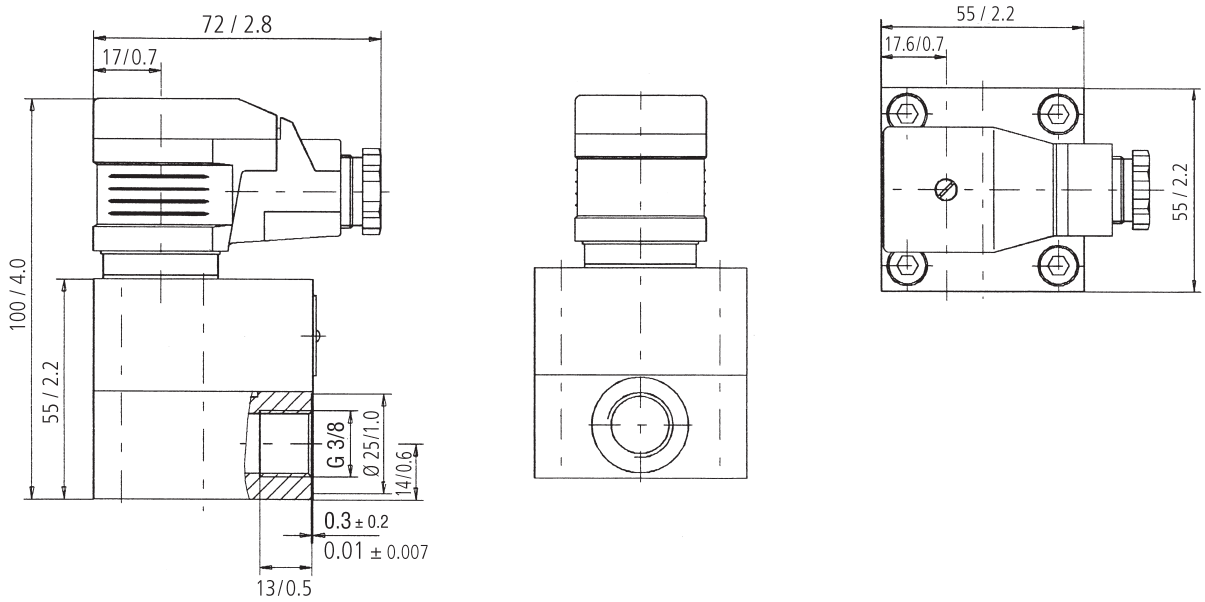
Dimensions VCA 0.1 (in mm / inch)



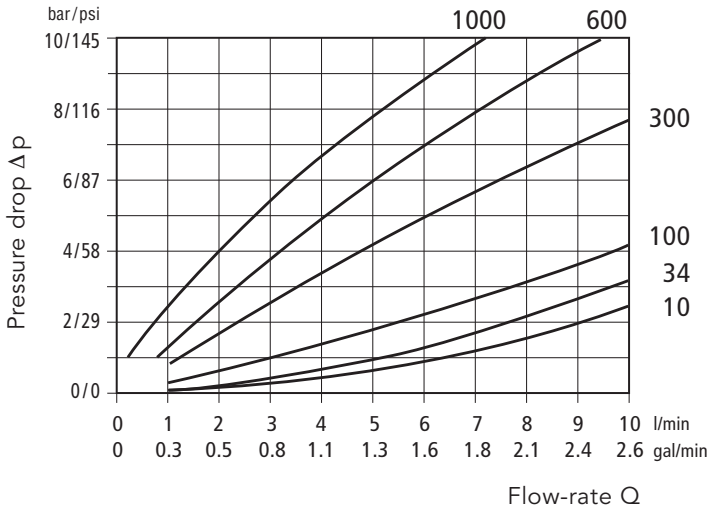
Flow resistance VCA 0.1 Parameter: viscosity (cSt)



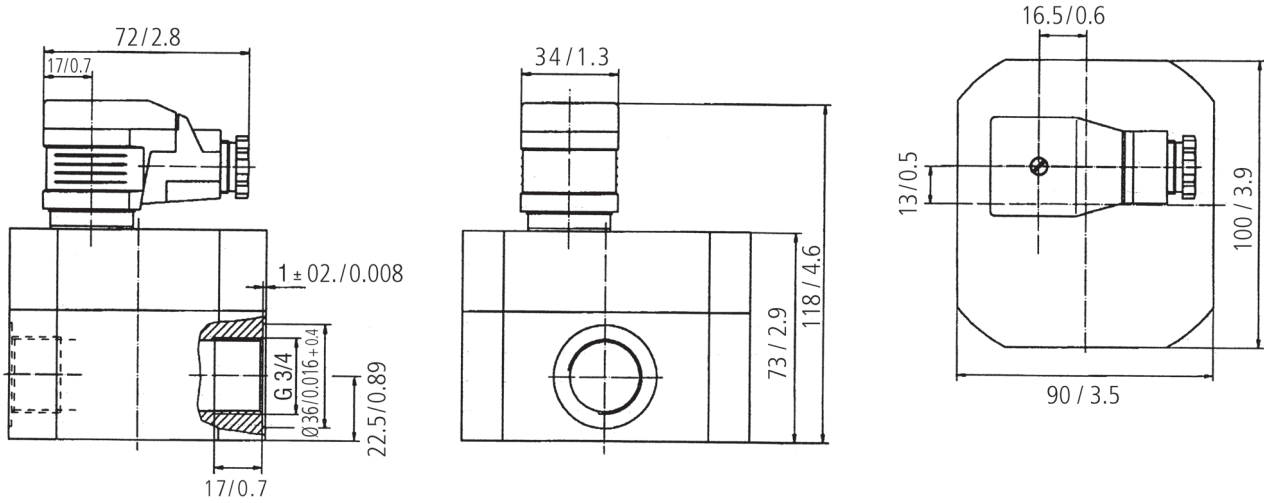
Dimensions VCA / VCN 0.2 (in mm / inch)



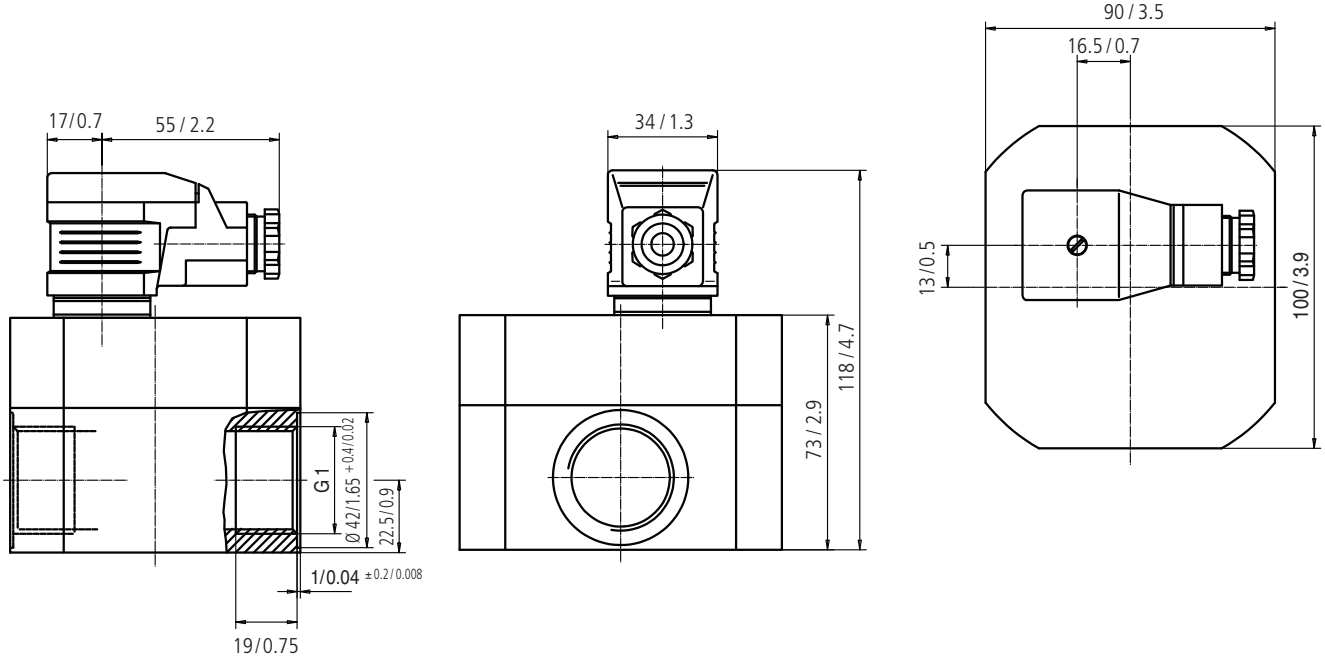
Flow resistance VCA / VCN 0.2 Parameter: viscosity (cSt)



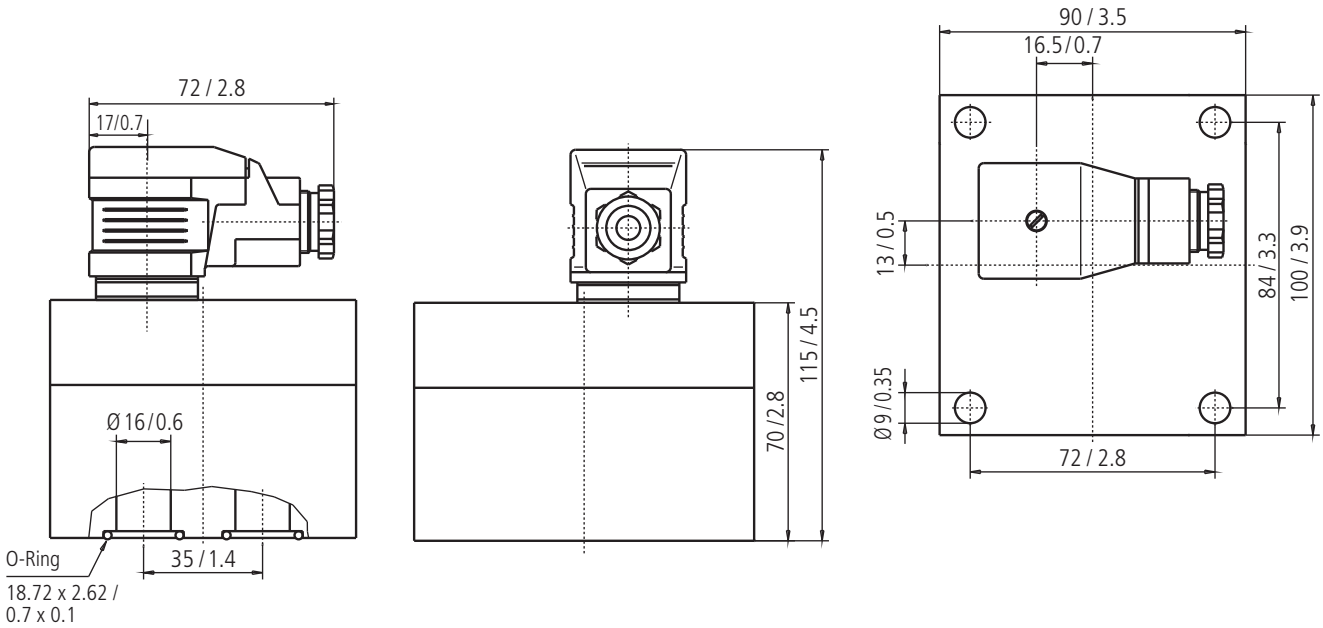
Dimensions VCA 2 FC R1 (in mm / inch)



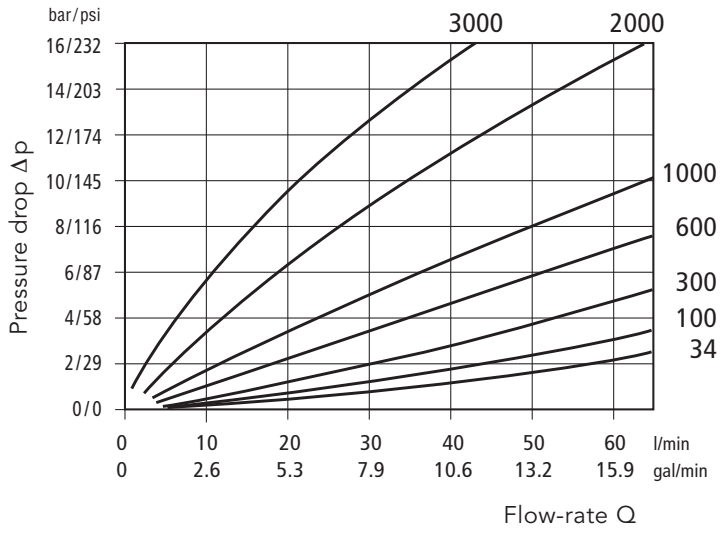
Dimensions VCA 2 FC R1/40



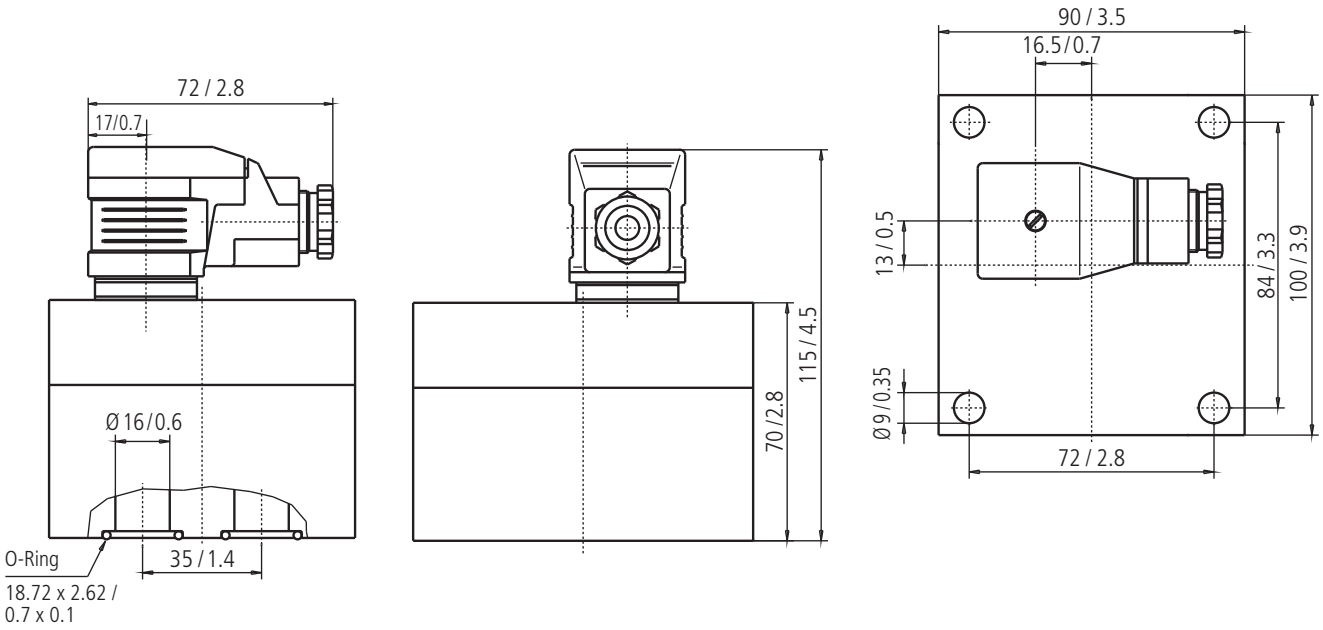
Dimensions VCA 2 FC P1 (in mm / inch)



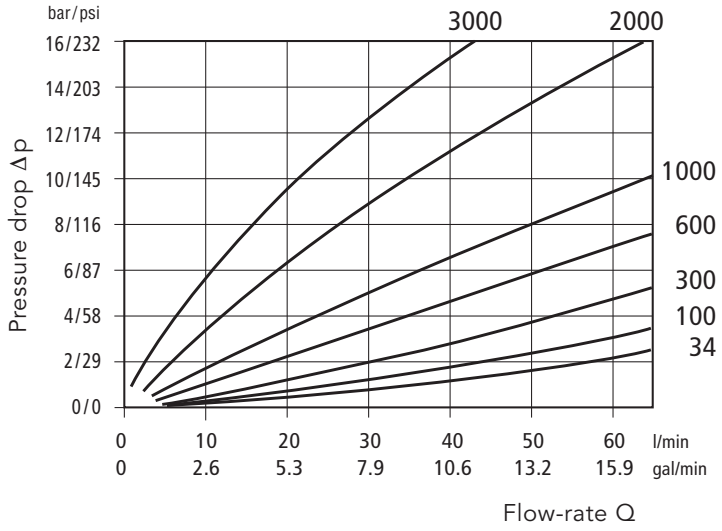
Flow resistance VCA 2 Parameter: viscosity (cSt)



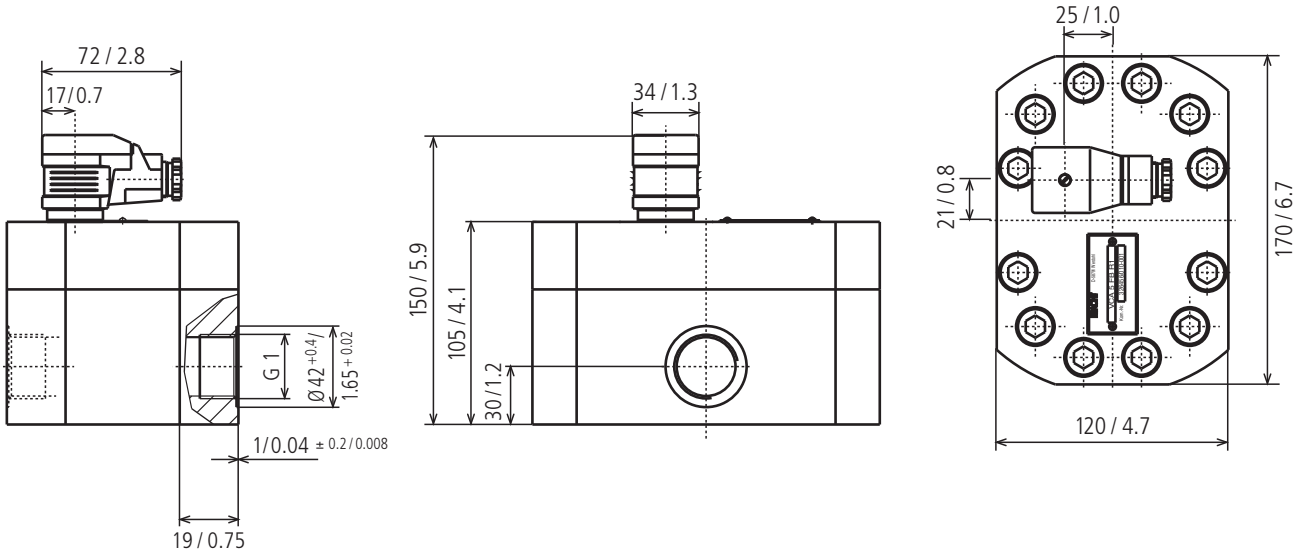
Dimensions VCG 2 FC P2 (in mm / inch)



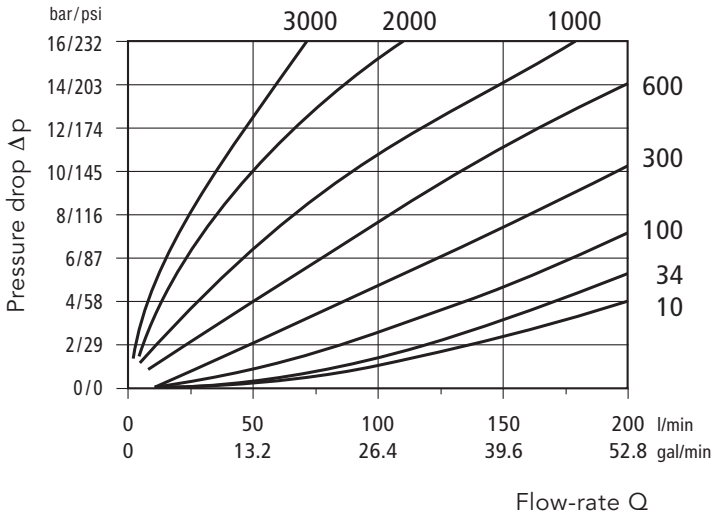
Flow resistance VCG 2 Parameter: viscosity (cSt)



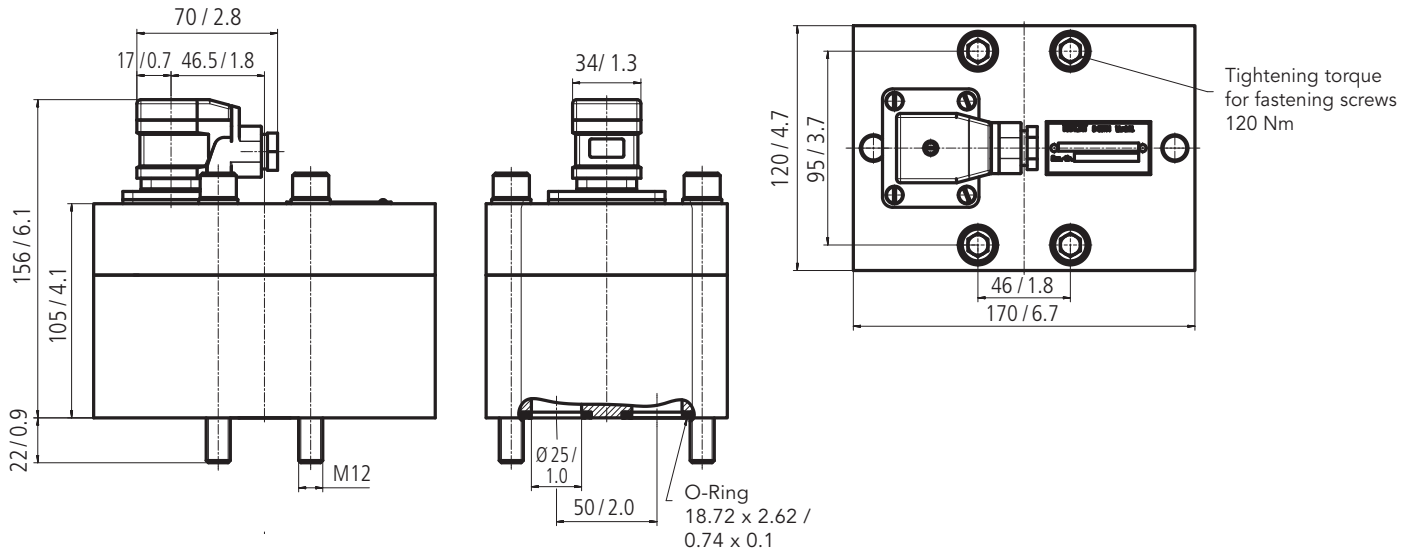
Dimensions VCA 5 FE R1 (in mm / inch)



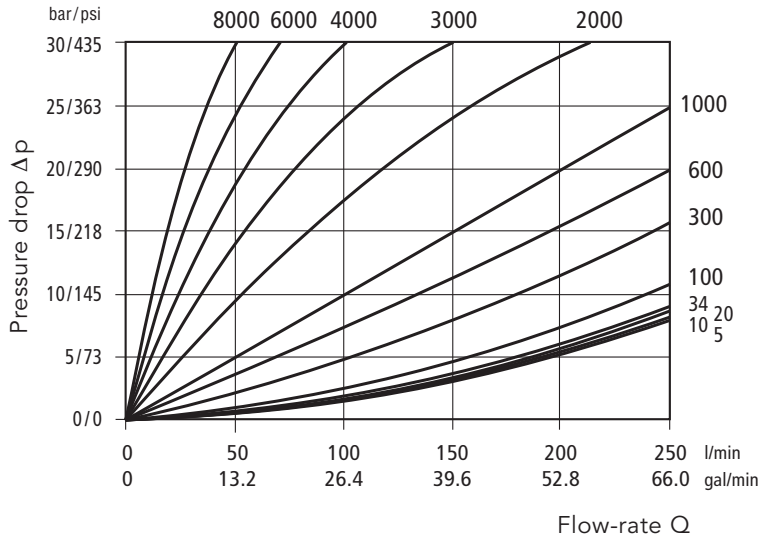
Flow resistance VCA 5 Parameter: viscosity (cSt)



Dimensions VCG 5 FC P2 (in mm / inch)



Flow resistance VCG 5 Parameter: viscosity (cSt)



Note

Note

Product Portfolio

Transfer Pumps

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

Mobile Hydraulics

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

Flow Measurement

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

Industrial Hydraulics / Test Bench Construction

Cetop directional control and proportional valves, hydraulic cylinders, pressure, quantity and stop valves for pipe and slab construction, hydraulic accessories for industrial hydraulics (mobile and stationary use).

Technology Test benches / Fluid Test benches.

VCA-VCN-VCG / USA / 01.12

KRACHT®

KRACHT CORP. · 8600 S Wilkinson Way Unit A · Perrysburg, OH 43551 · USA · P +1 419 874 1000 · F +1 419 874 1006
flowmeters@krachtcorp.com · www.krachtcorp.com