

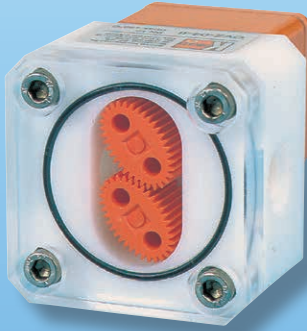
# Economical Oval-Gear Flow Meter

For Viscous Oils



measuring  
•  
monitoring  
•  
analyzing

OVZ



- Suitable for Clean, Lubricating Oils
- Maintains Precision with Viscosity Change
- Five Material Combinations Available
- Economically Priced
- Easy to Maintain
- Optional Analog Output, Frequency Output or Digital Indicating Output Options



KOBOLD companies worldwide:

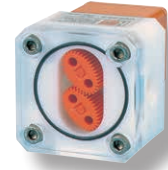
AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHINA, CZECHIA, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, RUSSIA, SPAIN, SWITZERLAND, THAILAND, TUNISIA, TURKEY, USA, VIETNAM

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Description

KOBOLD OVZ flowmeters offer the advantages of positive displacement technology at a rotameter price. Suitable for viscous media ranging from hydraulic oils to light gear oils, the OVZ eliminates problems associated with viscosity changes during operation. The OVZ's cost conscious design allows for easy maintenance. Since the only wear components are the gears and their axles, a two step rebuild process can be performed in a few minutes with no recalibration required. The OVZ is available with either Hall-effect or inductive sensors, and a selection of output signals. NPN, PNP, or NAMUR configurations are ideal for connecting to a wide variety of controller devices, including KOBOLD's full line of frequency input devices. The OVZ is also available with analog, frequency, or digital indication output options. Typical applications for the OVZ include central lubrication systems for paper machines, filling transmission fluid into gearboxes, and low pressure hydraulic systems.



Specifications

<b>Accuracy:</b>	± 2.5% of f. s.
<b>Turn-Down:</b>	10:1
<b>Viscosity Range:</b>	10...800 cSt
<b>Required Filtration:</b>	30 micron filter recommended
<b>Temp. Range:</b>	14...176 °F
<b>Maximum Pressure Limits</b>	
<b>Differential:</b>	15 PSI
<b>Static</b>	
<b>Material I:</b>	145 PSIG
<b>Material II:</b>	145 PSIG
<b>Material III:</b>	230 PSIG
<b>Material IV:</b>	230 PSIG
<b>Material V:</b>	580 PSIG
<b>Wetted Parts</b>	
<b>Oval Gears:</b>	POM
<b>Axle:</b>	Stainless steel
<b>Housing:</b>	POM or aluminum
<b>Housing Cover:</b>	POM, PMMA, aluminum, or polysulfone
<b>O-Ring:</b>	NBR, FKM, or EPDM

Electronics

<b>Frequency Output (..I401; ..I302; ..I303)</b>	
<b>Power Supply:</b>	5-24 V <sub>DC</sub>
<b>Power Consumption:</b>	Typically 10 mA
<b>Pulse Output:</b>	Hall effect sensor NPN, asymmetrical, open collector, max. 15 mA
<b>Electr. Connection:</b>	Connector socket DIN 43650 (..I401) aluminum adapter box with cable connection (..I302) aluminum cover box with circular connector M12x1 (..I303)

<b>Frequency Output (..I304)</b>	
<b>Power Supply:</b>	18-30 V <sub>DC</sub>
<b>Power Consumption:</b>	Typically 10 mA
<b>Pulse Output:</b>	PNP, asymmetrical, open collector max. 120 mA
<b>Electr. Connection:</b>	2 m PVC cable
<b>Frequency Output (..I305)</b>	
<b>Power Supply:</b>	Nominal 8.2 V <sub>DC</sub>
<b>Pulse Output:</b>	NAMUR, asymmetrical, max. approx. 3.5 mA (typ. 0.5 mA)
<b>Electr. Connection:</b>	2 m PVC cable
<b>Frequency Output (..F300)</b>	
<b>Power Supply:</b>	12-28 V <sub>DC</sub>
<b>Power Consumption:</b>	10 mA
<b>Pulse Output:</b>	PNP, open collector, max. 25 mA
<b>Electr. Connection:</b>	Connector M12x1
<b>Frequency Output with Frequency Divider (..F390)</b>	
<b>Power Supply:</b>	24 V <sub>DC</sub> ±20%
<b>Power Consumption:</b>	15 mA
<b>Pulse Output:</b>	PNP, open collector, max. 25 mA
<b>Electr. Connection:</b>	Connector M12x1
<b>Divisional Factor:</b>	Acc. to customer specification
<b>Analog Output (..L343, ..L443)</b>	
<b>Power Supply:</b>	24 V <sub>DC</sub> ±20%
<b>Output:</b>	4-20 mA, 3-wire
<b>Max. Load:</b>	500 Ω
<b>Electr. Connection:</b>	Connector M12x1 or DIN 43650
<b>Option:</b>	Plug-on display AUF-3000 (with DIN connector only)
<b>Compact Electronics</b>	
<b>Display:</b>	3-digit LED
<b>Analog Output:</b>	4...20 mA adjustable, max. 500 Ω
<b>Switching Outputs:</b>	1 (2) semiconductor PNP or NPN, factory setting
<b>Contact Operation:</b>	N/C, N/O programmable
<b>Setting:</b>	Via 2 keys
<b>Power Supply:</b>	24 V <sub>DC</sub> ±20%, 3-wire, appr. 100 mA
<b>Electr. Connection:</b>	Connector M12x1

\*\*Totalizing and Batching Electronics available upon request\*\*



**Order Details for POM Plastic Housing** (Example: **OVZ-U2 1 N2 N I304**)

Rated Measuring Range <sup>1)</sup> (GPM)				Pulses/ Gallon <sup>2)</sup>	Model Number	Cover Material	Connection (NPT)	Connection (G)	O-ring Material
10 cSt	100 cSt	320 cSt	800 cSt						
0.08...2.1	0.08...2.1	0.05...1.3	0.03...0.53	1623	OVZ-U2..	..1 = POM ..2 = PMMA	..N2 = 1/4" NPT	..G2 = G 1/4	..N.. = NBR
0.11...2.6	0.11...2.6	0.08...2.1	0.04...1.1	847	OVZ-U3..		..N2 = 1/4" NPT	..G2 = G 1/4	..V.. = FKM
0.26...6.6	0.26...6.6	0.26...6.6	0.11...2.6	199	OVZ-U5..		..N4 = 1/2" NPT	..G4 = G 1/2	..E.. = EPDM
0.42...10.6	0.42...10.6	0.42...10.6	0.25...6.34	106	OVZ-U7 <sup>3)</sup> ..		..N5 = 3/4" NPT	..G5 = G 3/4	

<sup>1)</sup> Maximum pressure loss at maximum rated flow is 14.5 PSIG <sup>2)</sup> Hz = Pulses/Gallon x Gallon/min/60 <sup>3)</sup> Calibration report only up to 6.6 GPM

**Order Details for Aluminum Housing** (Example: **OVZ-U2 5 N2 V I303**)

Rated Measuring Range <sup>1)</sup> (GPM)				Pulses/ Gallon <sup>2)</sup>	Model Number	Cover Material	Connection (NPT)	Connection (G)	O-ring Material
10 cSt	100 cSt	320 cSt	800 cSt						
0.08...2.1	0.08...2.1	0.07...1.74	0.03...0.79	1379	OVZ-U2..	..3 = PMMA	..N2 = 1/4" NPT	..G2 = G 1/4	..N.. = NBR
0.11...2.6	0.11...2.6	0.11...2.64	0.07...1.19	768	OVZ-U3..	..4 = PSU	..N2 = 1/4" NPT	..G2 = G 1/4	..V.. = FKM
0.26...6.6	0.26...6.6	0.24...6.08	0.13...3.30	176	OVZ-U5..		..N4 = 1/2" NPT	..G4 = G 1/2	..E.. = EPDM
0.42...10.6	0.42...10.6	0.34...8.85	0.21...5.28	98	OVZ-U7 <sup>3)</sup> ..	..5 = ALU	..N5 = 3/4" NPT	..G5 = G 3/4	

<sup>1)</sup> Maximum pressure loss at maximum rated flow is 14.5 PSIG <sup>2)</sup> Hz = Pulses/Gallon x Gallon/min/60 <sup>3)</sup> Calibration report only up to 6.6 GPM

**Order Details for Outputs and Electronics**

Frequency Output			
	..I401	Frequency Output NPN	DIN Connector 43650
	..I302	Frequency Output NPN	Cable Connection
	..I303 <sup>1)</sup>	Frequency Output NPN	Connector M12x1
	..I304 <sup>2)</sup>	Frequency Output PNP	2 m PVC Cable
	..F300	Frequency Output PNP	Connector M12x1
	..F390	Frequency Divider Adjusted PNP	Connector M12x1
Analog Output			
	..L343	4-20 mA output, 3-wire	M12x1 Connector
	..L443	4-20 mA output, 3-wire	DIN Connector 43650
Compact Electronics <sup>3)</sup>			
	..C30R	LED display, 2x open collector, PNP	M12x1 Connector
	..C30M	LED display, 2x open collector, NPN	M12x1 Connector
	..C34P	LED display, 4-20 mA, Open collector, PNP	M12x1 Connector
	..C34N	LED display, 4-20 mA, Open Collector, NPN	M12x1 Connector
<b>Accessories: P/N 807.037 = 4-Pin Micro-DC Connector with 6-foot Cable for Output Types I303, F3xx, &amp; L343 P/N 807.007 = 5-Pin Micro-DC Connector with 6-foot Cable for Output Types C3xx &amp; Z340</b>			

<sup>1)</sup> Available only in aluminum housing models

<sup>2)</sup> Available only in POM housing models

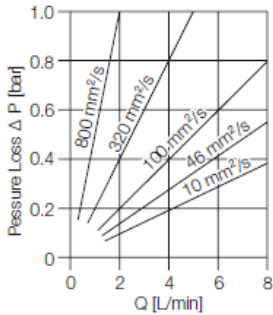
<sup>3)</sup> When ordering, please specify the direction of flow

**Order Details: Accessory AUF-3000**

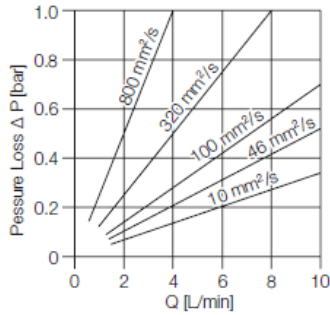
Order Number	Description
AUF-3000	Plug-in display for <b>OVZ...L443</b>
	3 Position LED
	DIN Connector 43650
	3-wire, Power through Analog Output

Pressure Losses (POM Plastic Housing)

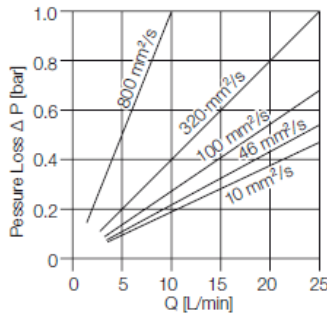
OVZ-U2..



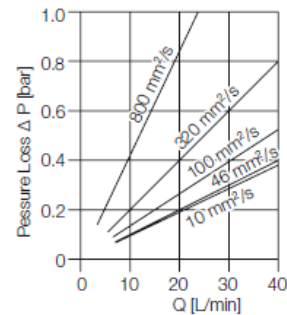
OVZ-U3..



OVZ-U5..

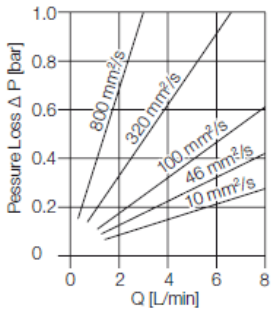


OVZ-U7..

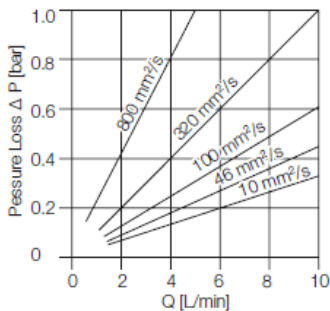


Pressure Losses (Aluminum Housing)

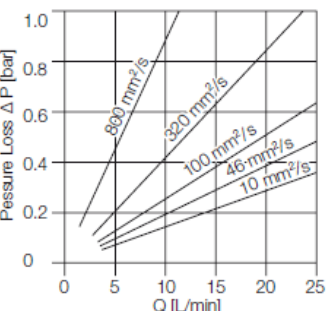
OVZ-U2..



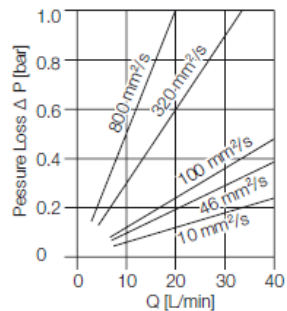
OVZ-U3..



OVZ-U5..

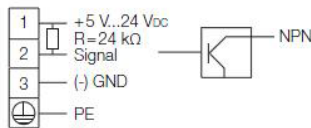


OVZ-U7..

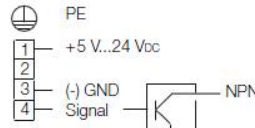


Electrical Connection

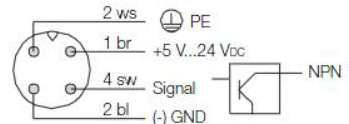
OVZ-..I401



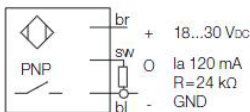
OVZ-..I302



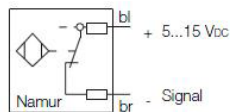
OVZ-..I303



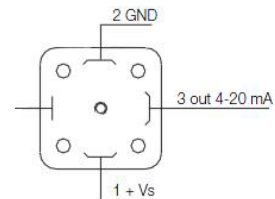
OVZ-..I304



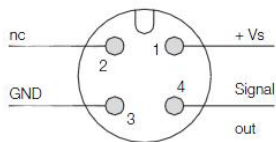
OVZ-..I305



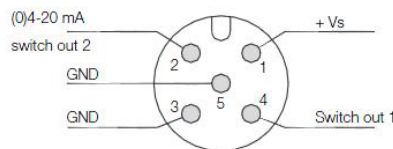
OVZ-..L443



OVZ-..F., OVZ-..L3..

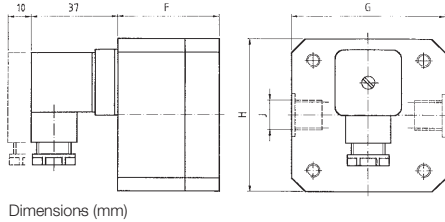


OVZ-..C..



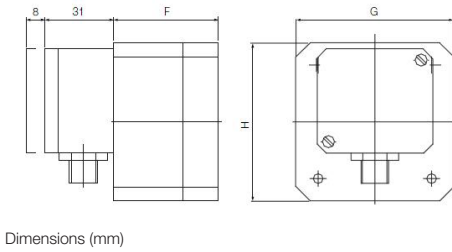
**Dimensions**

**OVZ-..I401**



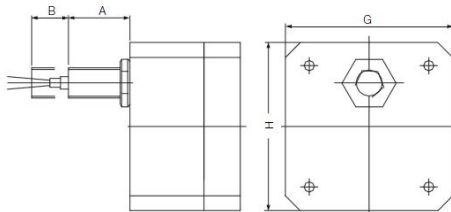
Range	G	H	F (per Body Materials)			
			1	2	3/4	5
OVZ-U2	2.67"	2.67"	1.77"	1.77"	1.71"	1.61"
OVZ-U3	2.67"	2.67"	1.93"	1.93"	1.85"	1.75"
OVZ-U5	3.90"	3.90"	2.80"	2.87"	2.80"	2.60"
OVZ-U7	4.59"	4.59"	3.33"	3.44"	3.39"	3.13"

**OVZ-..I302, OVZ-..I303**



Range	G	H	F (per Body Materials)			
			1	2	3/4	5
OVZ-U2	2.67"	2.67"	1.77"	1.77"	1.71"	1.61"
OVZ-U3	2.67"	2.67"	1.93"	1.93"	1.85"	1.75"
OVZ-U5	3.90"	3.90"	2.80"	2.87"	2.80"	2.60"
OVZ-U7	4.59"	4.59"	3.33"	3.44"	3.39"	3.13"

**OVZ-..I304, OVZ-..I305**

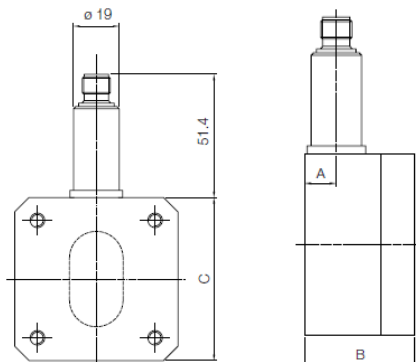


Range	PNP		NAMUR		PNP/NAMUR	
	A	B	C	D	G	H
OVZ-U2	0.85"	0.53"	0.65"	0.53"	2.67"	2.67"
OVZ-U3	0.83"	0.55"	0.63"	0.55"	2.67"	2.67"
OVZ-U5	0.75"	0.63"	0.55"	0.63"	3.90"	3.90"
OVZ-U7	0.67"	0.71"	0.47"	0.71"	4.59"	4.59"

**OVZ with Frequency or Analog Output**

OVZ-..L3..

OVZ-..F3..



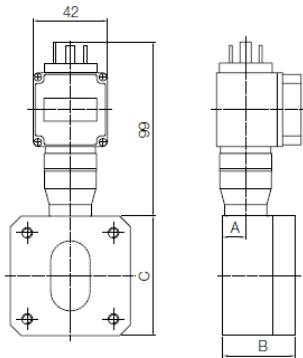
**Plastic Housing (POM)**

Description	A	B	C
OVZ-U2 1 = POM	0.51"	1.77"	2.68"
OVZ-U2 2 = PMMA	0.51"	1.77"	2.68"
OVZ-U3 1 = POM	0.54"	1.93"	2.68"
OVZ-U3 2 = PMMA	0.54"	1.93"	2.68"
OVZ-U5 1 = POM	0.62"	2.80"	3.90"
OVZ-U5 2 = PMMA	0.62"	2.87"	3.90"
OVZ-U7 1 = POM	0.69"	3.33"	4.69"
OVZ-U7 2 = PMMA	0.69"	3.44"	4.69"



**Dimensions**

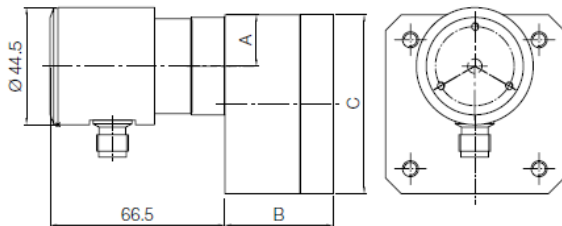
**OVZ with Frequency or Analog Output  
OVZ-..L443 with AUF-3000**



**Aluminum Housing (ALU)**

Description	A	B	C
OVZ-U2 3 = PMMA	0.45"	1.72"	2.68"
OVZ-U2 4 = PSU	0.45"	1.72"	2.68"
OVZ-U2 5 = ALU	0.45"	1.62"	2.68"
OVZ-U3 3 = PMMA	0.45"	1.85"	2.68"
OVZ-U3 4 = PSU	0.45"	1.85"	2.68"
OVZ-U3 5 = ALU	0.45"	1.75"	2.68"
OVZ-U5 3 = PMMA	0.53"	2.80"	3.90"
OVZ-U5 4 = PSU	0.53"	2.80"	3.90"
OVZ-U5 5 = ALU	0.53"	2.60"	3.90"
OVZ-U7 3 = PMMA	0.62"	3.39"	4.69"
OVZ-U7 4 = PSU	0.62"	3.39"	4.69"
OVZ-U7 5 = ALU	0.62"	3.13"	4.69"

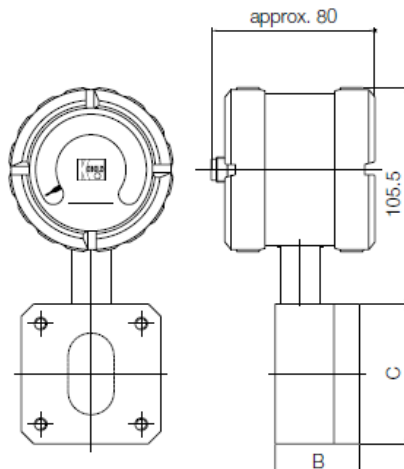
**OVZ with Compact Electronic OVZ-..C3..**



**Plastic Housing (POM)**

Description	A	B	C
OVZ-U2 1 = POM	0.77"	1.77"	2.68"
OVZ-U2 2 = PMMA	0.77"	1.77"	2.68"
OVZ-U3 1 = POM	0.67"	1.93"	2.68"
OVZ-U3 2 = PMMA	0.67"	1.93"	2.68"
OVZ-U5 1 = POM	0.83"	2.80"	3.90"
OVZ-U5 2 = PMMA	0.83"	2.87"	3.90"
OVZ-U7 1 = POM	0.91"	3.33"	4.69"
OVZ-U7 2 = PMMA	0.91"	3.44"	4.69"

**OVZ-..Z3..**



**Aluminum Housing (ALU)**

Description	A	B	C
OVZ-U2 3 = PMMA	0.77"	1.72"	2.68"
OVZ-U2 4 = PSU	0.77"	1.72"	2.68"
OVZ-U2 5 = ALU	0.77"	1.62"	2.68"
OVZ-U3 3 = PMMA	0.77"	1.85"	2.68"
OVZ-U3 4 = PSU	0.77"	1.85"	2.68"
OVZ-U3 5 = ALU	0.77"	1.75"	2.68"
OVZ-U5 3 = PMMA	0.83"	2.80"	3.90"
OVZ-U5 4 = PSU	0.83"	2.80"	3.90"
OVZ-U5 5 = ALU	0.83"	2.60"	3.90"
OVZ-U7 3 = PMMA	0.91"	3.39"	4.69"
OVZ-U7 4 = PSU	0.91"	3.39"	4.69"
OVZ-U7 5 = ALU	0.91"	3.13"	4.69"