



## Screw-Type Volumetric Flow Meter

for viscous media



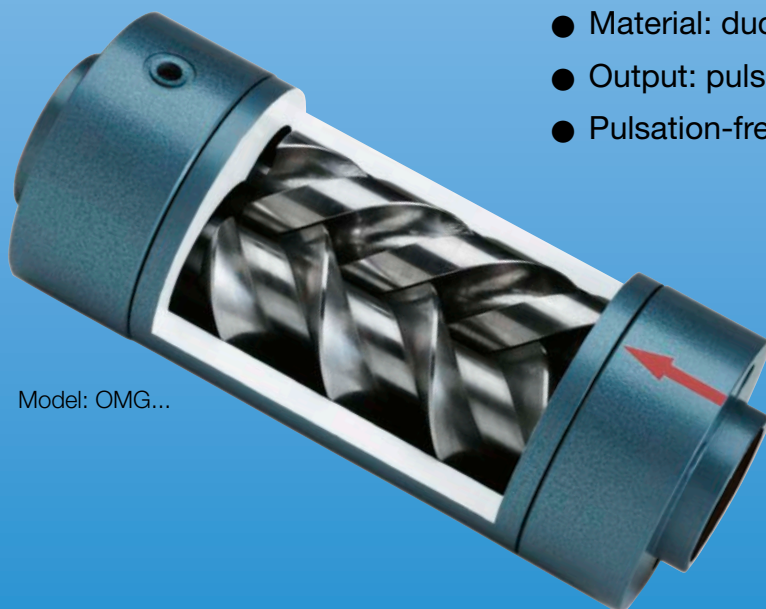
measuring  
•  
monitoring  
•  
analysing

OM...



Model: ADI-1...

- Measuring ranges:  
0.1-10 ... 50-5000 l/min liquid
- Measuring accuracy:  
± 0.1% of span 1:100  
± 0.3% of span 1:150
- $p_{\max}$ : 420 bar;  $t_{\max}$ : 200 °C
- Viscosity range: 1 ...  $1 \times 10^6$  mm<sup>2</sup>/s
- Connection: G 1/2 ... G 6 female,  
flange DN 15 ... DN 150
- Material: ductile iron or stainless steel
- Output: pulses
- Pulsation-free principle of measurement



Model: OMG...



S4

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## Description

The KOBOLD screw-type volumetric flow meter based on the principle of positive displacement was developed in response to the need to measure and control viscous media.

It was specially designed to measure viscous media with non-abrasive properties. Variations in viscosity in the range 1 to 5000 mm<sup>2</sup>/s have no effect on measurement results within the measuring accuracy.

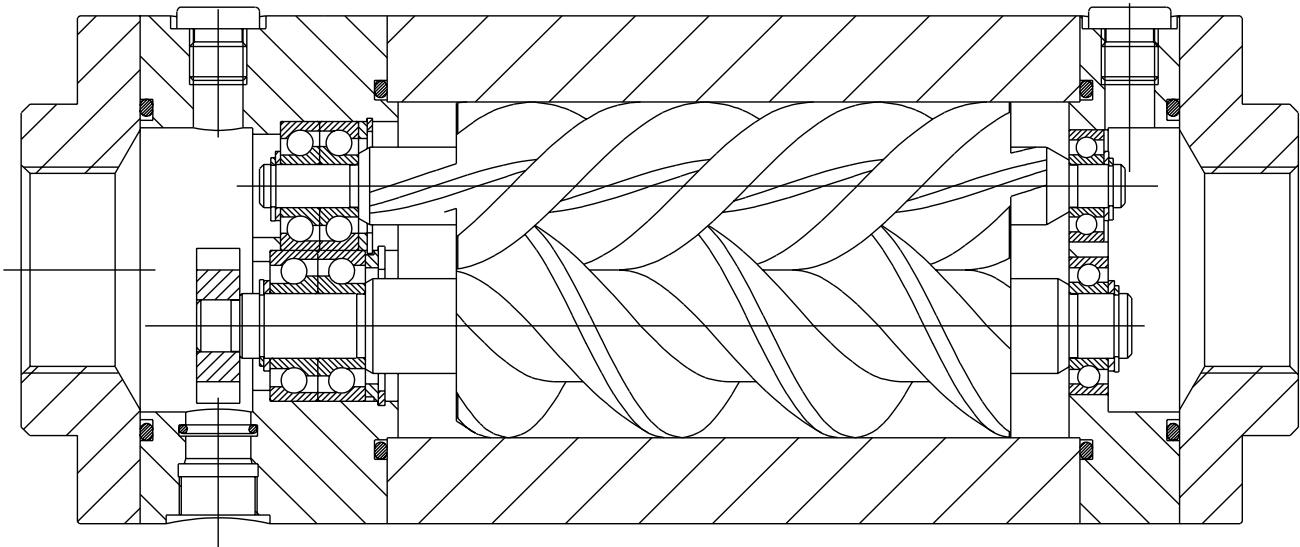
The KOBOLD screw-type volumetric flow meter satisfies the stringent demands for greater accuracy, reliability and economic efficiency. Two spindles with cycloidal profiles form the basis of the screw-type volumetric flow meter.

Spindles manufactured with extreme precision are supported at each end with a ball bearing/rolling bearings (depends on size).

The axially forced measuring medium causes the spindles to rotate uniformly.

The rotary motion is picked off with sensors and converted to a frequency signal. An exact measurement of the delivered flow volume is obtained with the volumetrically defined measuring chambers.

Combined with downstream evaluation electronics, the KOBOLD screw-type volumetric flow meter becomes a flexible measurement and control system for viscous media.



## Benefits

- Greater viscosity range (1 ... 1 x 10<sup>6</sup> mm<sup>2</sup>/s)
- Greater measuring accuracy (max. 0.3% of span)
- Greater measuring span: (1:100 with 0.1% accuracy)  
(1:150 with 0.3% accuracy)
- Almost viscosity independent
- Greater flow rate combined with minimum space requirements
- High degree of operational reliability and long service life
- Pulsation-free principle of measurement
- Self-cleaning measuring chambers
- Choice of installation position
- No inlet/outlet runs
- Optional temperature measurement with additional sensor

## Areas of Application

- **Furnaces**  
EL heating oil, S heating oil, diesel oil
- **Hydraulics, test stands**  
Hydraulic oil, lubricating oil, gear oil
- **Mixing and dosing systems**  
Polyhydroxy alcohol, isocyanate  
Additives for gasoline, cement...
- **Lacquers and fills, printing inks**
- **Chemical industry**  
Acids and lyes, ethyl alcohol, freon
- **Food industry**  
Margarine, fats, liqueur, oils



**Material**

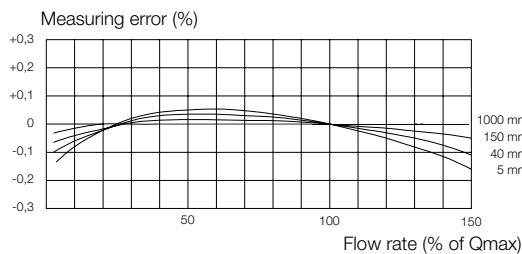
Housing: ductile iron EN-GJS-400  
 Spindles: steel nitrated  
 O-rings: FKM or EPDM  
 Bearings: steel or hybrid ball bearing  
 Thread for sensors: M18x1 with O-ring in the case  
 Viscosity range: 1 - 5000 mm<sup>2</sup>/s  
 Flange: steel (material no. 1.7139), sealing face form C, according to DIN 2526  
 Pole wheel: steel  
 Operating temperature: -20 ... +200 °C (Please note limitation due to pulse generator.)  
 Application: lubricating liquids

**Order Details** (Example: **OMG-15F15401H4**)

Flow rate [l/min]	Code	Process connection	p <sub>max</sub> <sup>1)</sup> [bar]	Pulses/L <sup>2)</sup>	Frequency <sup>2)</sup> [Hz]	Gasket	Bearings	Pulse generator <sup>3)</sup>
0.1 - 10	OMG-15	R1500 = G 1/2 F1540 = DN15/PN40 F151S = DN15/PN160 F152F = DN15/PN250	250	1216	2.0 - 203	1 = FKM 2 = EPDM	S = steel ball bearing	3 = model 43 4 = model 44 5 = model 45
0.3 - 30	OMG-20	R2000 = G 3/4 F2040 = DN20/PN40 F151S = DN15/PN160 F152F = DN15/PN250	250	640	3.2 - 320		H = hybrid ball bearing	
1 - 100	OMG-25	R2500 = G 1 F3240 = DN32/PN40 F251S = DN25/PN160 F252F = DN25/PN250	250	234	3.9 - 390		H = hybrid ball bearing	
3.5 - 350	OMG-40	R4000 = G 1 1/2 F4040 = DN40/PN40 F401S = DN40/PN160	160	71	4.1 - 414		S = steel ball bearing	
7 - 700	OMG-50	R5000 = G 2 F5040 = DN50/PN40 F501H = DN50/PN100	100	39.8	4.6 - 464		S = steel ball bearing	
20 - 2000	OMG-1H	R1H00 = G 4 F1H16 = DN100/PN16 F1H40 = DN100/PN40	40	16.8	4.6 - 560		1 = FKM	
50 - 5000	OMG-1F	R1F00 = G 6 F1F16 = DN150/PN16 F1F40 = DN150/PN40	40	8.85	7.4 - 738	1 = FKM		

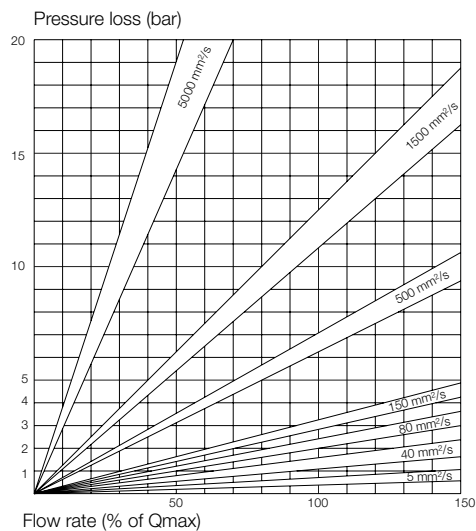
<sup>1)</sup> Please note limitations due to pulse generator and flange pressure rating.  
<sup>2)</sup> Pulse generator 45 has higher Pulse/l and output frequency (for values see type plate and on request).  
<sup>3)</sup> Specifications see table "Technical Details Pulse Generators".

**Accuracy Diagram**



The measuring error refers to the actual flow rate. The diagram shows the characteristic for the OMG-... screw-type volumetric flow meter. A test certificate is available because every device delivered is slightly different.

**Pressure Loss Diagram**





**Material**

Housing: standard: st. steel (material no. 1.4301)  
option: st. steel (material no. 1.4435)

Spindles: st. steel

O-rings: FKM

Bearings: stainless steel ball bearing for low viscosities, ceramic sliding bearing for high viscosities

Thread for sensors: M18x1  
with O-ring in the case

Measuring accuracy:  $\pm 0.3\%$  of span 1 : 100

Viscosity range: 1 - 5000 mm<sup>2</sup>/s

Flange: st. steel (material no. 1.4435), sealing face form C, according to DIN 2526

Pole wheel: st. steel

Operating temperature: -20 ... +150 °C  
(Please note limitation due to pulse generator)

Application: lubricating and non-lubricating liquids

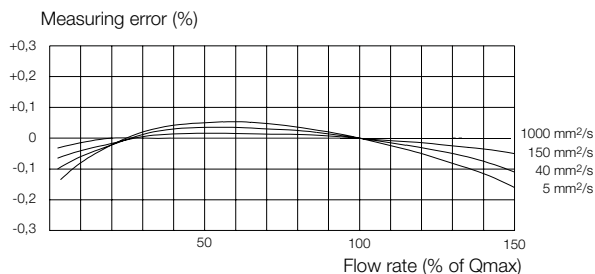
**Order Details** (Example: OMS-20 F2040 1 S 4)

Flow rate [l/min]	Code	Process connection	p <sub>max</sub> <sup>1)</sup> [bar]	Pulses/L	Frequency [Hz]	Gasket	Bearing	Pulse generator <sup>2)</sup>
0.6 - 30	OMS-20	R2000 = G 3/4 F2040 = DN20/PN40	185	1200	4.0 - 200	1 = FKM	S = stainless steel ball bearing K = ceramic sliding bearing	4 = model 44
2 - 100	OMS-25	R2500 = G 1 F3240 = DN32/PN40 F251S = DN25/PN160	185	640	6.4 - 320			
7 - 350	OMS-40	R4000 = G 1 1/2 F4040 = DN40/PN40	120	230	7.7 - 383			

<sup>1)</sup> Please note limitations due to pulse generator and flange pressure rating.

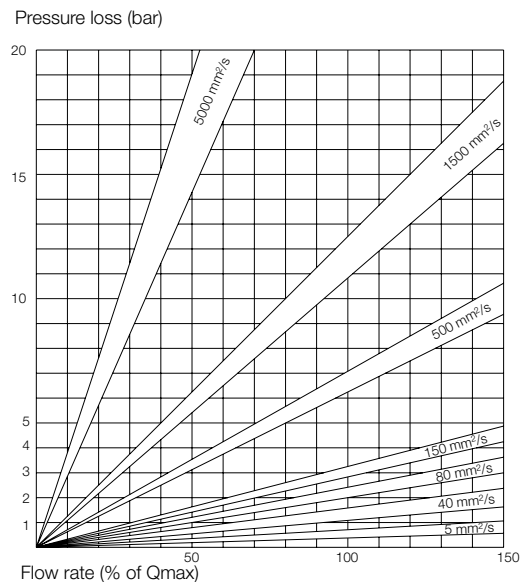
<sup>2)</sup> Specifications see table "Technical Details Pulse Generators".

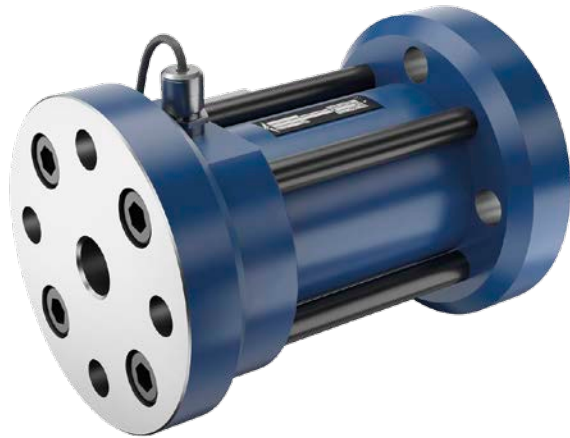
**Accuracy Diagram**



The measuring error refers to the actual flow rate. The diagram shows the characteristic for the OMS-... screw-type volumetric flow meter. A test certificate is available because every device delivered is different.

**Pressure Loss Diagram**





**Material**

Housing: ductile iron  
 Spindles: nitrated steel  
 O-rings: FKM  
 Bearings: deep-grooved ball bearings with metal retainers  
 Thread for sensors: M18 x 1 with O-ring in the case  
 Viscosity range: 1 ... 1 x 10<sup>6</sup> mm<sup>2</sup>/s  
 Flange: steel (material no. 1.7139), Sealing face form C, acc. to DIN 2526  
 Operating temperature: -20 ... +200 °C (Please note limitation due to pulse generator.)

**Order Details** (Example: OMH-15F154H1 S4)

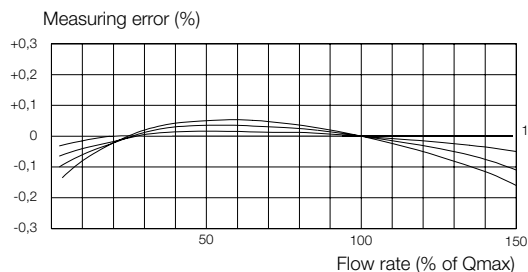
Flow rate [l/min]	Code	Process connection	p <sub>max</sub> <sup>1)</sup> [bar]	Pulses/l <sup>2)</sup>	Frequency <sup>2)</sup> [Hz]	Gasket	Bearing	Pulse generator <sup>3)</sup>
0.1 - 10	OMH-15	R1500 = G ½	420	2432	4.1 - 405	1 = FKM	S = steel ball bearing	4 = model 44 5 = model 45
		F1532 = DN15/PN320	400					
		F154H = DN15/PN400	400					
0.3 - 30	OMH-20	R2000 = G ¾	420	1280	6.4 - 640			
		F1532 = DN15/PN320	400					
		F154H = DN15/PN400	400					
1 - 100	OMH-25	R2500 = G 1	420	468	7.4 - 780			
		F2532 = DN25/PN320	400					
		F254H = DN25/PN400	400					
3.5 - 350	OMH-40	R4000 = G 1½	420	142	8.3 - 828			
		F4032 = DN40/PN320	400					
		F404H = DN40/PN400	400					
7 - 700	OMH-50	R5000 = G 2	420	79,6	9.3 - 929			
		F501S = DN50/PN160	400					
		F502F = DN50/PN250						
		F5032 = DN50/PN320						
		F504H = DN50/PN400						
20 - 2000	OMH-1H	R1H00 = G 4		250	33,6	11.2 - 1120		
		F1H64 = DN100/PN64						
		F1H1H = DN100/PN100						
		F1H1S = DN100/PN160						
		F1H2F = DN100/PN250						

<sup>1)</sup> Please note limitations due to pulse generator and flange pressure rating.

<sup>2)</sup> Pulse generator 45 has higher Pulse/l and output frequency (for values see type plate and on request).

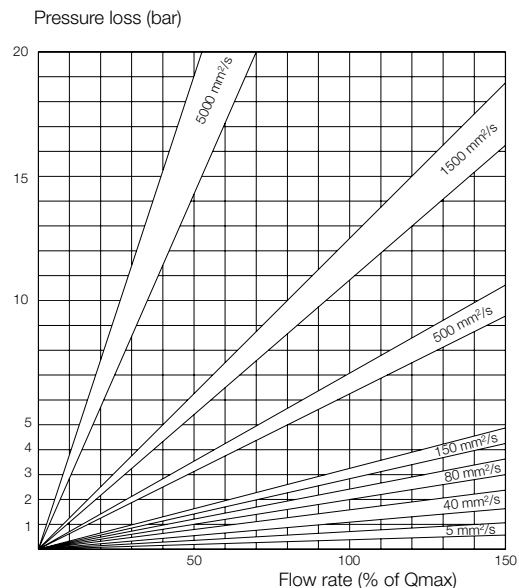
<sup>3)</sup> Specifications see table "Technical Details Pulse Generators".

**Accuracy Diagram**



The measuring error refers to the actual flow rate. The diagram shows the characteristic for the OMH-... screw-type volumetric flow meter. A test certificate is available because every device delivered is different.

**Pressure Loss Diagram**

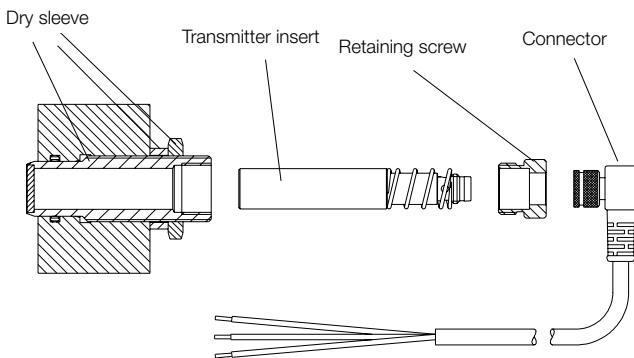


### Method of Operation

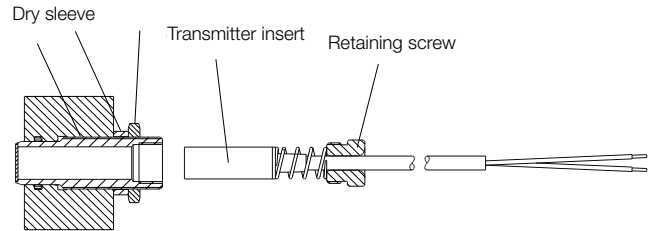
The rotor of the screw-type volumetric flow meter rotates at a precisely defined distance in front of the pulse generator. The pulse generator generates a pulse for every pole that moves past it.

The screw-type volumetric flow meter is checked and delivered with a built-in dry sleeve. The transmitter insert for the pulse generator can be replaced online in a full line, without having to re-adjust the clearance to the rotor.

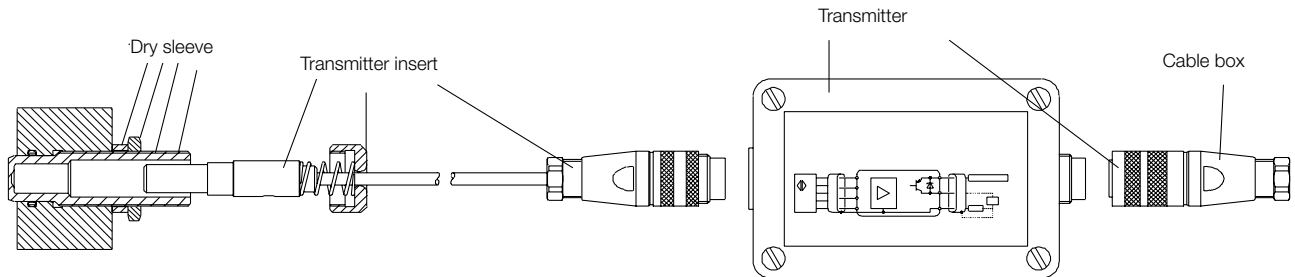
#### OM.../43



#### OM.../44



#### OM.../45



### Technical Details Pulse Generators

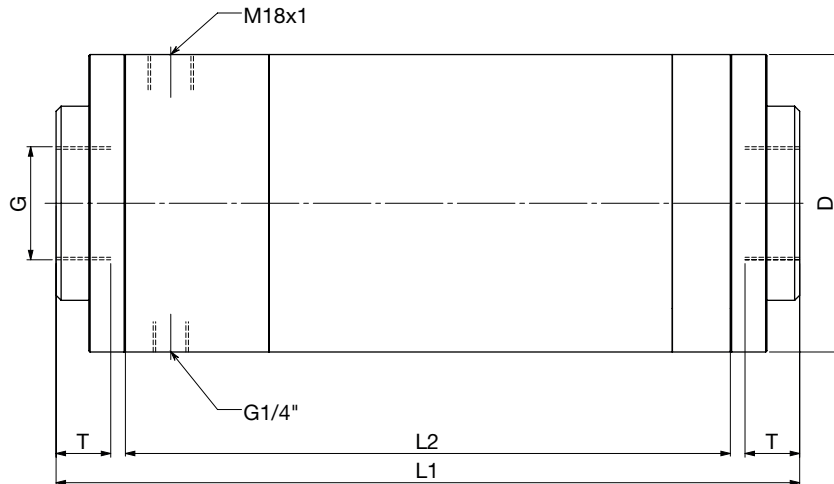
Model	System	Voltage	$t_{max}$	$p_{max}$ face	Material dry sleeve	Electrical connection	Protection
43	inductive PNP	10 ... 30 V <sub>DC</sub>	-20 ... +100 °C (-25 ... +90 °C) <sup>1)</sup>	250 bar	arcap/ ceramics	right-angle plug with LED and 3 m cable	IP 65
44	Hall-effect PNP	10 ... 30 V <sub>DC</sub>	-40 ... +150 °C	420 bar	arcap	3 m PTFE cable	IP 67
45	magnetic PNP	10 ... 30 V <sub>DC</sub>	-40 ... +250 °C (0 ... +50 °C) <sup>2)</sup>	420 bar	arcap	incl. transmitter / cable box with 1 m PTFE cable	IP 65

<sup>1)</sup> Connector

<sup>2)</sup> Transmitter

**Dimensions and Weights**

**OMG/OMS Pipe thread version**



**OMG threaded connection**

Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	T [mm]	Weight [kg]
OMG-15R15...	G 1/2	250	90	145	94	16	4.6
OMG-20R20...	G 3/4	250	74	145	145	16	4.1
OMG-25R25...	G 1	250	104	215	215	18	11
OMG-40R40...	G 1 1/2	160	118	295	240	27.5	18
OMG-50R50...	G 2	100	138	355	295	30	29
OMG-1HR1H...	G 4	40	188	480	400	40	70
OMG-1FR1F...	G 6	40	267	645	537	54	180

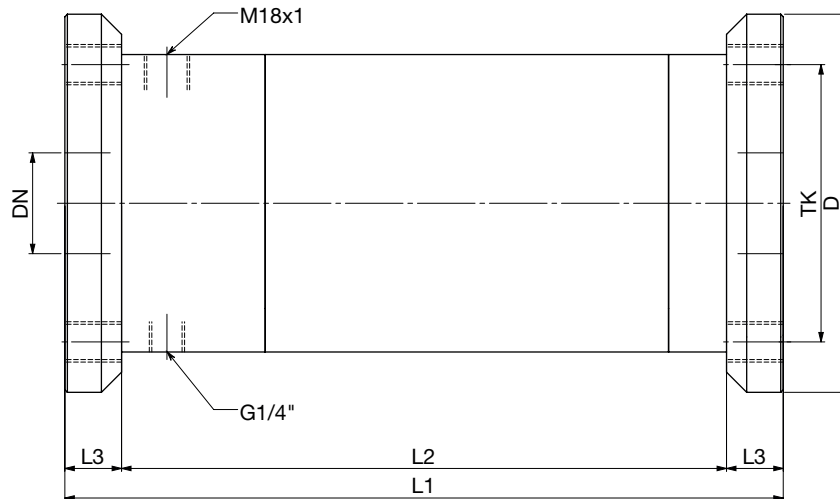
**OMS threaded connection**

Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	T [mm]	Weight [kg]
OMS-20R20...	G 3/4	185	74	145	145	16	4.1
OMS-25R25...	G 1	185	104	215	215	18	11
OMS-40R40...	G 1 1/2	120	118	295	240	27.5	18



Dimensions and Weights (continued)

OMG/OMS Flange version



OMG flange connection

Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	L3 [mm]	TK [mm]	Weight [kg]
OMG-15F1540...	DN15	PN40	95	145	94	25.5*	65	4.7
OMG-15F151S...	DN15	PN160	105	145	94	25.5*	75	4.8
OMG-15F152F...	DN15	PN250	130	145	94	25.5	90	6
OMG-20F2040...	DN20	PN40	105	185	145	20	75	6
OMG-20F151S...	DN15	PN160	105	185	145	20	75	6
OMG-20F152F...	DN15	PN250	130	195	145	25	90	8.1
OMG-25F3240...	DN32	PN40	140	265	215	25	100	16
OMG-25F251S...	DN25	PN160	140	265	215	25	100	16
OMG-25F252F...	DN25	PN250	150	275	215	30	105	19
OMG-40F4040...	DN40	PN40	150	285	240	22.5	110	21
OMG-40F401S...	DN40	PN160	170	295	240	27.5	125	23
OMG-50F5040...	DN50	PN40	165	340	295	22.5	125	31
OMG-50F501H...	DN50	PN100	195	355	295	30	145	37
OMG-1HF1H16...	DN100	PN16	220	450	400	25	180	65
OMG-1HF1H40...	DN100	PN40	235	460	400	30	190	70
OMG-1FF1F16...	DN150	PN16	285	600	537	31.5	240	170
OMG-1FF1F40...	DN150	PN40	300	610	537	36.5	250	180

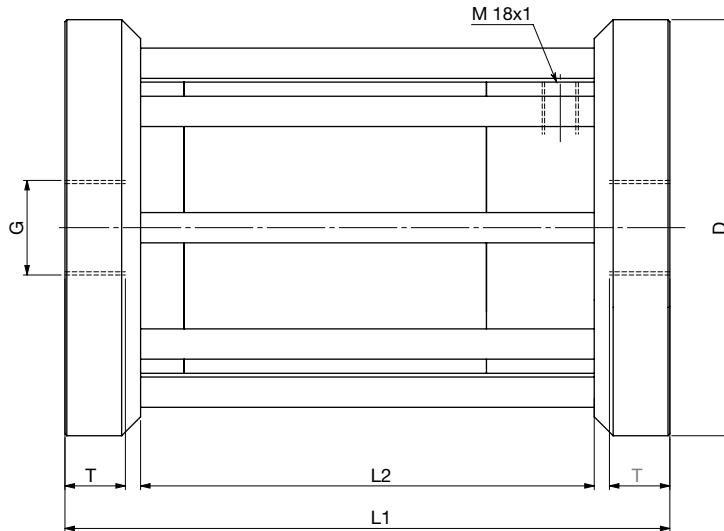
OMS flange connection

Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	L3 [mm]	TK [mm]	Weight [kg]
OMS-20F2040...	DN20	PN40	105	185	145	20.5	75	6
OMS-25F3240...	DN32	PN40	140	265	215	25	100	16
OMS-25F251S...	DN25	PN160	140	265	215	25	100	16
OMS-40F4040...	DN40	PN40	150	285	240	22.5	110	21



**Dimensions and Weights** (continued)

**OMH Pipe thread version**

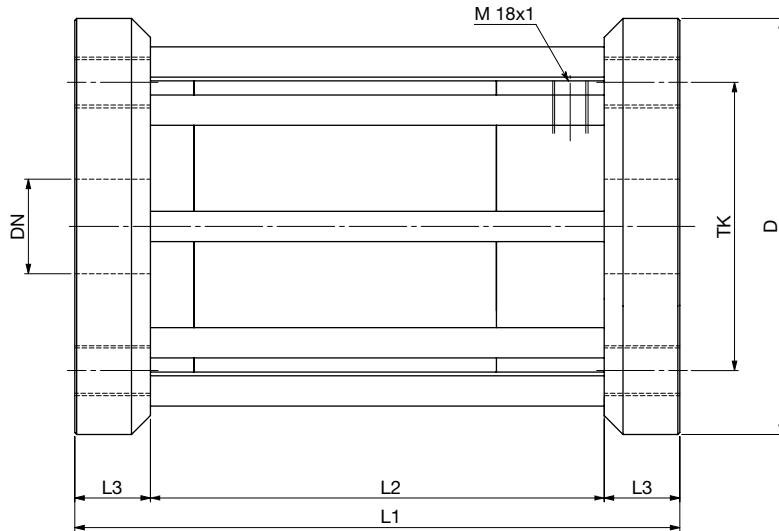


**OMH threaded connection**

Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	T [mm]	Weight [kg]
OMH-15R15...	G ½	420	100	150	94	15	7
OMH-20R20...	G ¾	420	145	185	115	16	12
OMH-25R25...	G 1	420	180	255	175	22	28
OMH-40R40...	G 1 ½	420	220	320	240	34	54.5
OMH-50R50...	G 2	420	235	385	295	36	80.5
OMH-1HR1H...	G 4	250	247	500	400	44	148

Dimensions and Weights (continued)

OMH Flange version



OMH flange connection

Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	L3 [mm]	TK [mm]	Weight [kg]
OMH-15F154H...	DN15	PN400	145	150	94	28	100	9.5
OMH-20F154H...	DN15	PN400	145	185	115	35	100	12
OMH-25F254H...	DN25	PN400	180	255	175	40	130	28
OMH-4HF404H...	DN40	PN400	220	320	240	40	165	54
OMH-50F504H...	DN50	PN400	235	385	295	45	180	80
OMH-1HF1H2F...	DN100	PN250	300	500	400	50	235	170