



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 ... 1×10^6 mm²/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 mm²/s have no effect on measurement results within the measuring accuracy.

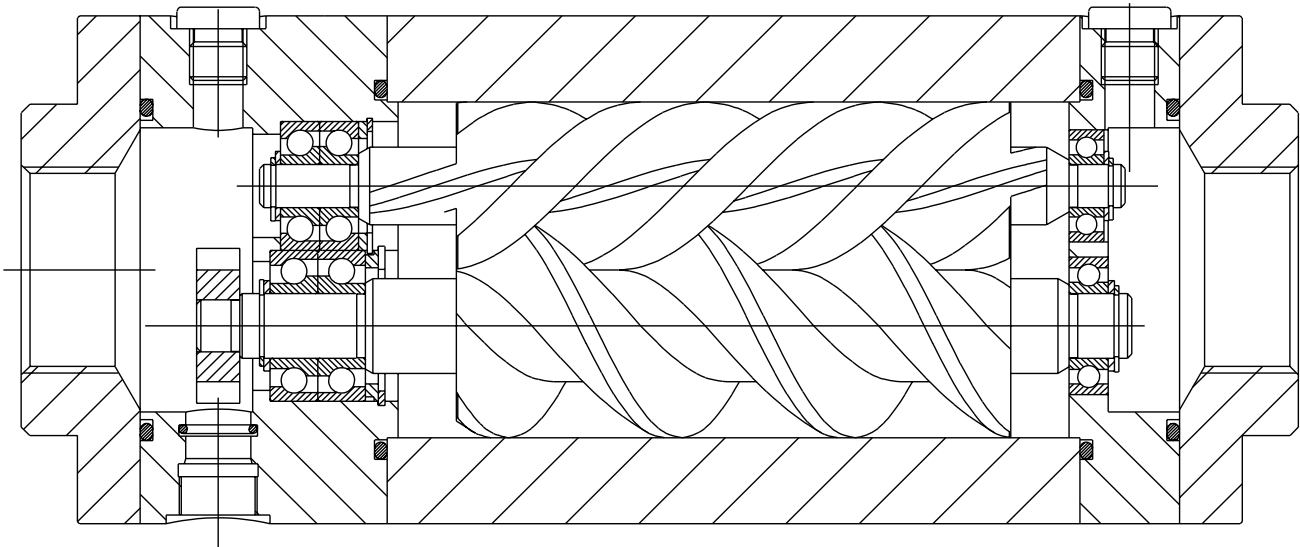
The KOBOLD screw-type volumetric flow meter satisfies the stringent demands for greater accuracy, reliability and economic efficiency. Two spindles with cycloidal profiles form the basis of the screw-type volumetric flow meter.

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 10⁶ mm²/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: FPM
- Bearings: steel or hybrid ball bearing
- Thread for sensors: M18x1 with O-ring in the case
- Viscosity range: 1 - 5000 mm²/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

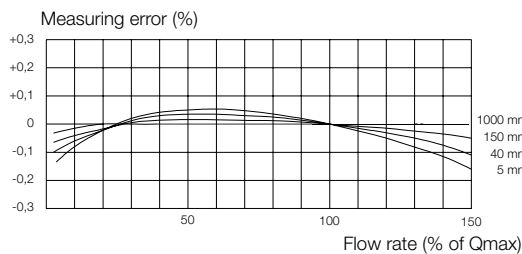
Order Details (Example: **OMG-15F1540/44**)

Flow rate [l/min]	Code	Process connection	p _{max} ¹⁾ [bar]	Pulses/L ²⁾	Frequency ²⁾ [Hz]	Pulse generator
0.1 - 10	OMG-15	R15 = G ½ F1540 = DN15/PN40 F151S = DN15/PN160 F152F = DN15/PN250	250	1216	2.0 - 203	/43 /44 /45
0.3 - 30	OMG-20	R20 = G ¼ F2040 = DN20/PN40 F151S = DN15/PN160 F152F = DN15/PN250	250	640	3.2 - 320	
1 - 100	OMG-25	R25 = G 1 F3240 = DN32/PN40 F251S = DN25/PN160 F252F = DN25/PN250	250	234	3.9 - 390	
3.5 - 350	OMG-40	R40 = G 1½ F4040 = DN40/PN40 F401S = DN40/PN160	160	71	4.1 - 414	
7 - 700	OMG-50	R50 = G 2 F5040 = DN50/PN40 F501H = DN50/PN100	100	39.8	4.6 - 464	
20 - 2000	OMG-1H	R1H = G 4 F1H16 = DN100/PN16 F1H40 = DN100/PN40	40	16.8	4.6 - 560	
50 - 5000	OMG-1F	R1F = G 6 F1F16 = DN150/PN16 F1F40 = DN150/PN40	40	8.85	7.4 - 738	

¹⁾ Please note limitations due to pulse generator and flange pressure rating.

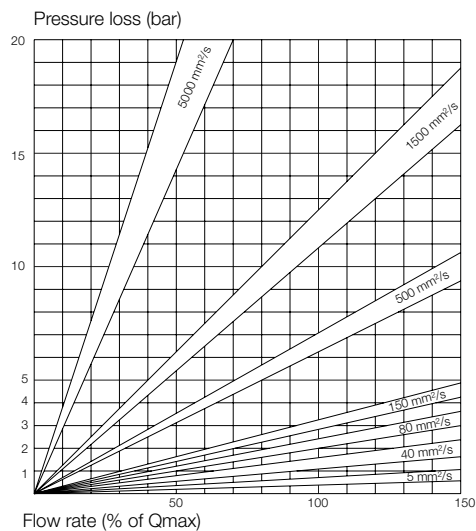
²⁾ Pulse generator 45 has higher Pulse/l and output frequency (for values see type plate and on request).

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

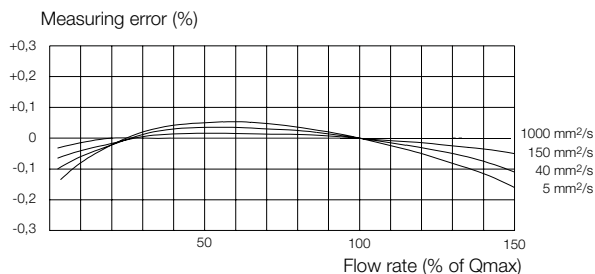
- Housing: standard: st. steel (material no. 1.4301)
option: st. steel (material no. 1.4435)
- Spindles: st. steel
- O-rings: FPM
- Bearings: sliding-contact bearings between spindle and case
- Thread for sensors: M18x1
with O-ring in the case
- Measuring accuracy: $\pm 0.3\%$ of span 1 : 100
- Viscosity range: 1 - 5000 mm²/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 F2040/44)

Flow rate [l/min]	Code	Process connection	p _{max} ¹⁾ [bar]	Pulses/L ²⁾	Frequency [Hz]	Pulse generator
0.6 - 30	OMS-20	R20 = G 3/4 F2040 = DN20/PN40	185	1200	4.0 - 200	/44
2 - 100	OMS-25	R25 = G 1 F3240 = DN32/PN40 F251S = DN25/PN160	185	640	6.4 - 320	
7 - 350	OMS-40	R40 = G 1 1/2 F4040 = DN40/PN40	120	230	7.7 - 383	

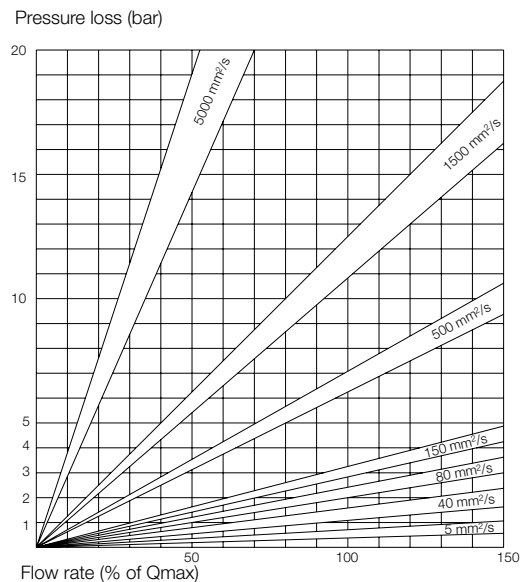
¹⁾ Please note limitations due to pulse generator and flange pressure rating.

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: FPM
 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 10⁶ mm²/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.)

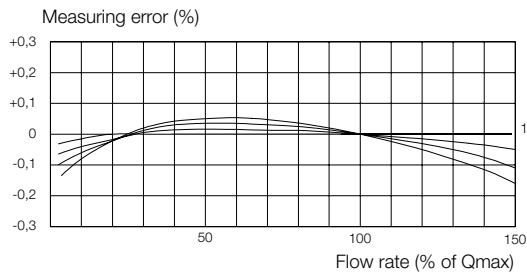
Order Details (Example: OMH-15F154H/44)

Flow rate [l/min]	Code	Process connection	p _{max} ¹⁾ [bar]	Pulses/L ²⁾	Frequency ²⁾ [Hz]	Pulse generator
0.1 - 10	OMH-15	R15 = G ½	420	2432	4.1 - 405	/44 /45
		F1532 = DN15/PN320	400			
		F154H = DN15/PN400	400			
0.3 - 30	OMH-20	R20 = G ¾	420	1280	6.4 - 640	
		F1532 = DN15/PN320	400			
		F154H = DN15/PN400	400			
1 - 100	OMH-25	R25 = G 1	420	468	7.4 - 780	
		F2532 = DN25/PN320	400			
		F254H = DN25/PN400	400			
3.5 - 350	OMH-40	R40 = G 1½	420	142	8.3 - 828	
		F4032 = DN40/PN320	400			
		F404H = DN40/PN400	400			
7 - 700	OMH-50	R50 = 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	R1H = G 4		250	33.6	11.2 - 1120
		F1H64 = DN100/PN64				
		F1H1H = DN100/PN100				
		F1H1S = DN100/PN160				
		F1H2F = DN100/PN250				

¹⁾ Please note limitations due to pulse generator and flange pressure rating.

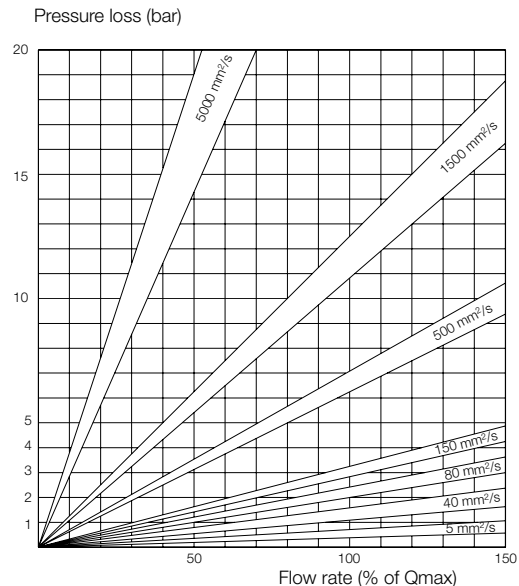
²⁾ Pulse generator 45 has higher Pulse/l and output frequency (for values see type plate and on request).

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

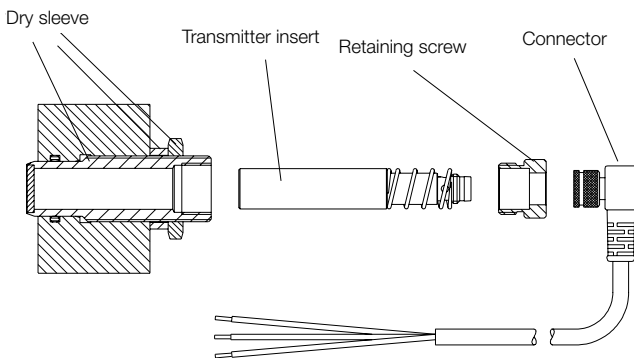


Method of Operation

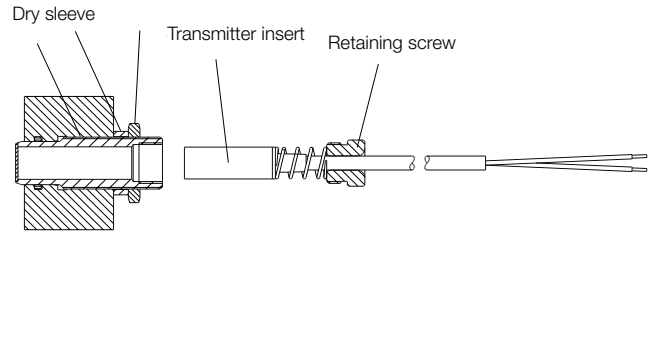
The rotor of the screw-type volumetric flow meter rotates at a precisely defined distance in front of the pulse generator. The pulse generator generates a pulse for every pole that moves past it.

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.

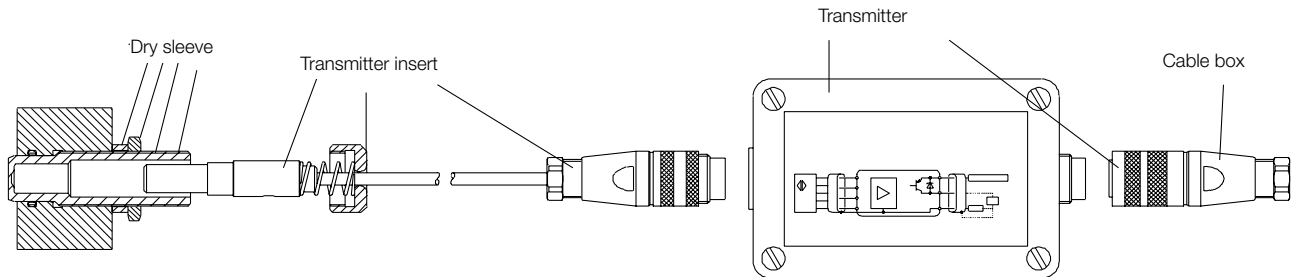
OM.../43



OM.../44



OM.../45



Technical Details Pulse Generators

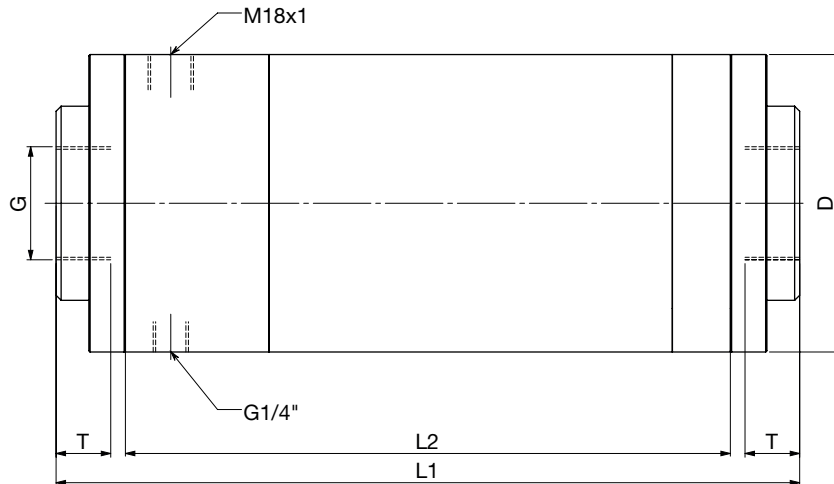
Model	System	Voltage	t_{max}	p_{max} face	Material dry sleeve	Electrical connection	Protection
43	inductive PNP	10 ... 30 V _{DC}	-20 ... +100 °C (-25 ... +90 °C) ¹⁾	250 bar	arcap/ ceramics	right-angle plug with LED and 3 m cable	IP 65
44	Hall-effect PNP	10 ... 30 V _{DC}	-40 ... +150 °C	420 bar	arcap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

¹⁾ Connector

²⁾ Transmitter

Dimensions and Weights

OMG/OMS Pipe thread version



OMG threaded connection

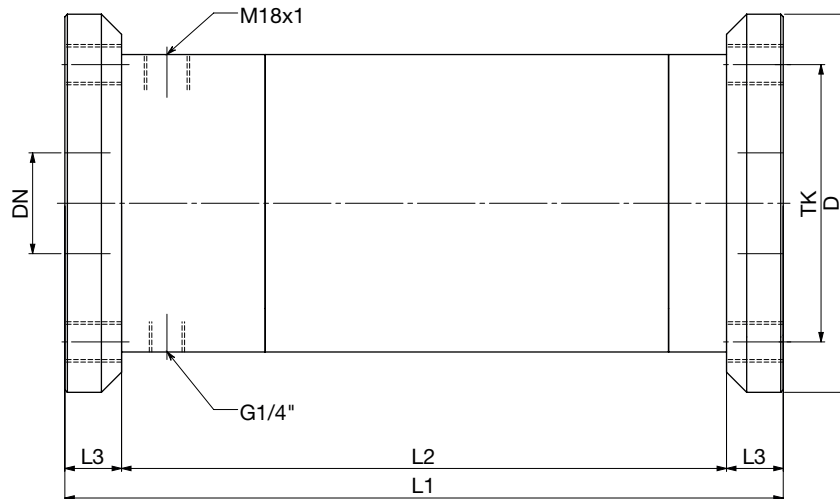
Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	T [mm]	Weight [kg]
OMG-15R15...	G $\frac{1}{2}$	250	90	145	94	16	4.6
OMG-20R20...	G $\frac{3}{4}$	250	74	145	145	16	4.1
OMG-25R25...	G1	250	104	215	215	18	11
OMG-40R40...	G1 $\frac{1}{2}$	160	118	295	240	27.5	18
OMG-50R50...	G2	100	138	355	295	30	29
OMG-1HR1H...	G4	40	188	480	400	40	70
OMG-1FR1F...	G6	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 $\frac{3}{4}$	185	74	145	145	16	4.1
OMS-25R25...	G1	185	104	215	215	18	11
OMS-40R40...	G1 $\frac{1}{2}$	120	118	295	240	27.5	18

Dimensions and Weights (continued)

OMG/OMS Flange version



OMG flange connection

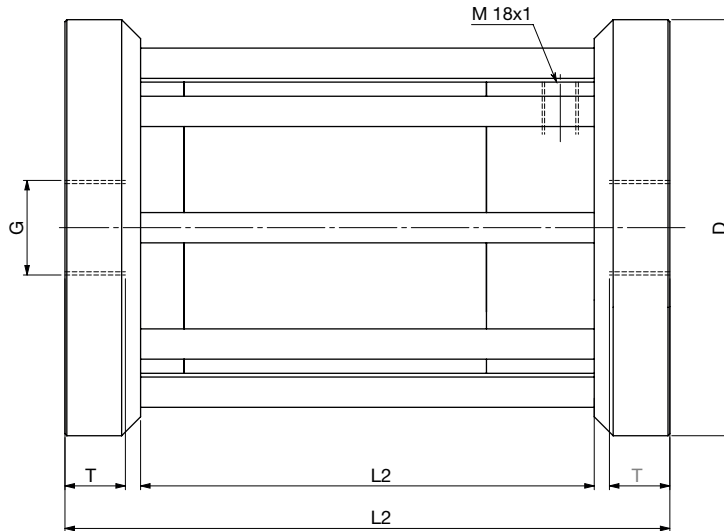
Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	L3 [mm]	TK [mm]	Weight [kg]
OMG-15F1540...	DN15	PN40	95	145	94	25.5*	65	4.7
OMG-15F151S...	DN15	PN160	105	145	94	25.5*	75	4.8
OMG-15F152F...	DN15	PN250	130	145	94	25.5	90	6
OMG-20F2040...	DN20	PN40	105	185	145	20	75	6
OMG-20F151S...	DN15	PN160	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

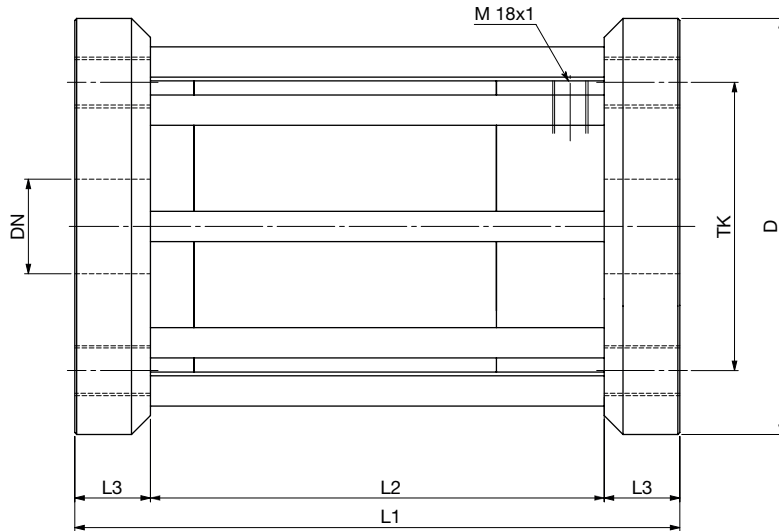


OMH threaded connection

Model	Connection	Pressure rating [bar]	D [mm]	L1 [mm]	L2 [mm]	T [mm]	Weight [kg]
OMH-15R15...	G 1/2	420	100	150	94	15	7
OMH-20R20...	G 3/4	420	145	185	115	16	12
OMH-25R25...	G 1	420	180	255	175	22	28
OMH-40R40...	G 1 1/2	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