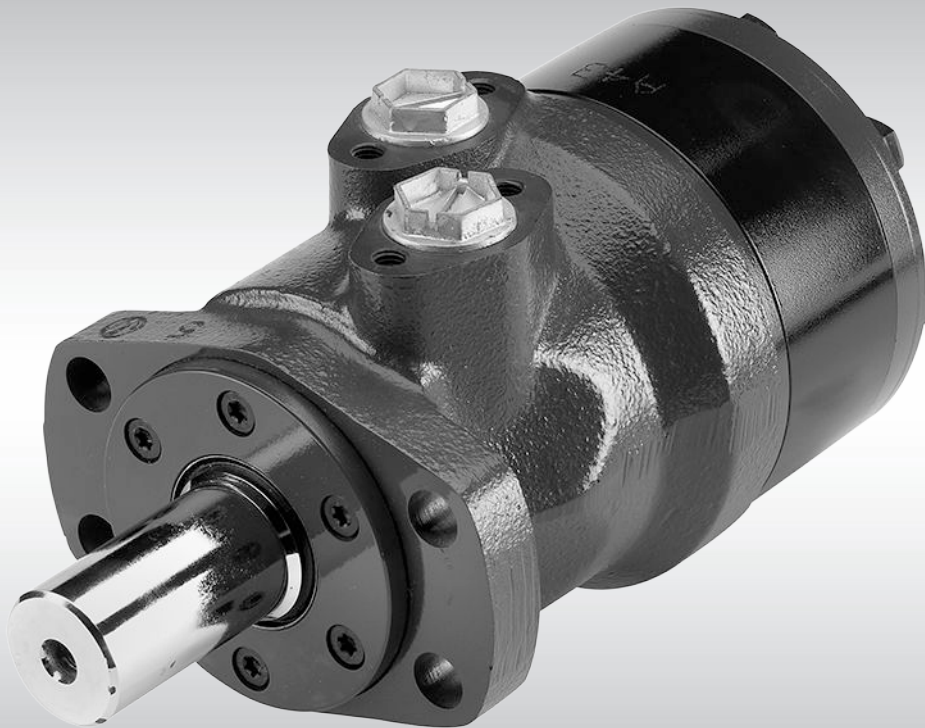




Technical Information

Orbital Motors

**Type OMP, OMR and OMH**



**Revision history***Table of revisions*

<b>Date</b>	<b>Changed</b>	<b>Rev</b>
November 2014	Converted to Danfoss layout - DITA CMS	DA
Nov 2012	Planetary Gears deleted	CF
Sep 2011	Typo	CE
Sep 2010	New back cover	CD
Mar 2010	Japan location	CC
Jun 2007	Major revision with new lit-number (minus OMEW, will be prepared separately)	CA
Mar 2006	Small updates	B

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**Technical Information    Orbital Motors Type OMP, OMR and OMH**


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**Technical Information    Orbital Motors Type OMP, OMR and OMH**

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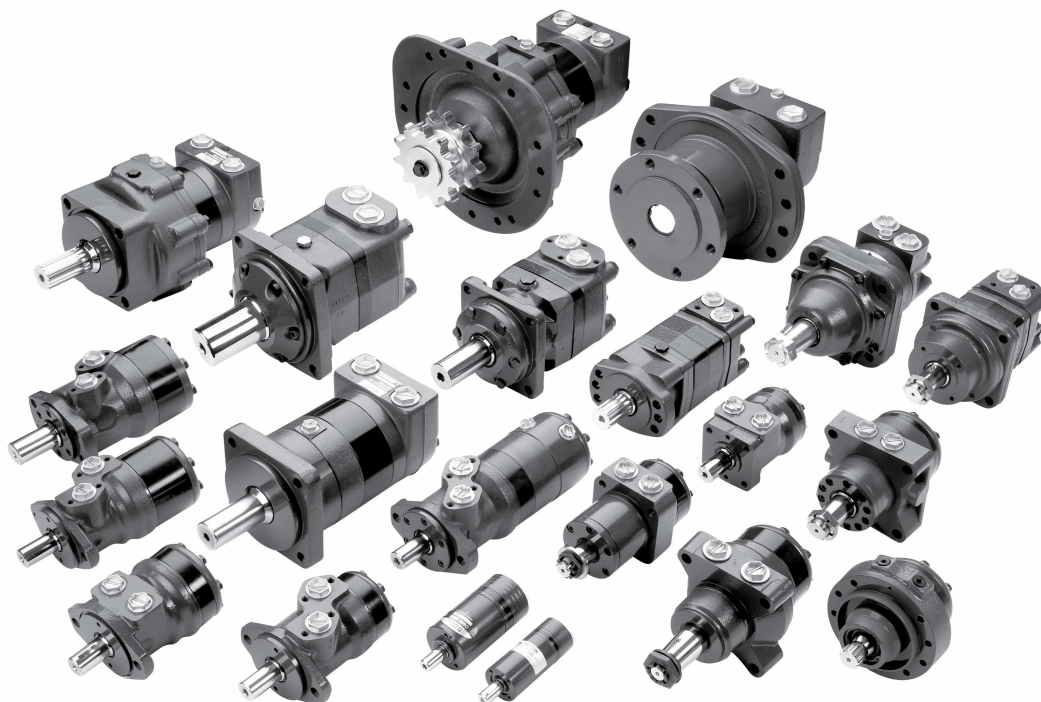
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## A Wide Range of Hydraulics Motors

### A Wide Range of Hydraulic Motors



Danfoss is a world leader within production of low speed hydraulic motors with high torque. We can offer more than 3000 different hydraulic motors, categorised in types, variants and sizes (incl. different shaft versions).

The motors vary in size (rated displacement) from 8 cm<sup>3</sup> [0.50 in<sup>3</sup>] to 800 cm<sup>3</sup> [48.9 in<sup>3</sup>] per revolution.

Speeds range up to approx. 2500 min<sup>-1</sup> (rpm) for the smallest type and up to approx 600 min<sup>-1</sup> (rpm) for the largest type.

Maximum operating torques vary from 13 Nm [115 lbf-in] to 2700 Nm [24.000 lbf-in] (peak) and maximum outputs are from 2.0 kW [2.7 hp] to 70 kW [95 hp].

Characteristic features:

- Smooth running over the entire speed range
- Constant operating torque over a wide speed range
- High starting torque
- High return pressure without the use of drain line (High pressure shaft seal)
- High efficiency
- Long life under extreme operating conditions
- Robust and compact design
- High radial and axial bearing capacity
- For applications in both open and closed loop hydraulic systems
- Suitable for a wide variety of hydraulics fluids

The programme is characterised by technical features appealing to a large number of applications and a part of the programme is characterised by motors that can be adapted to a given application. Adaptions comprise the following variants among others:

### A Wide Range of Hydraulics Motors

- Motors with corrosion resistant parts
- Wheel motors with recessed mounting flange
- OMP, OMR- motors with needle bearing
- OMR motor in low leakage version
- OMR motors in a super low leakage version
- Short motors without bearings
- Ultra short motors
- Motors with integrated positive holding brake
- Motors with integrated negative holding brake
- Motors with integrated flushing valve
- Motors with speed sensor
- Motors with tacho connection
- All motors are available with black finish paint

The Danfoss LSHT motors are used in the following application areas:

- Construction equipment
- Agricultural equipment
- Material handling & Lifting equipment
- Forestry equipment
- Lawn and turf equipment
- Special purpose
- Machine tools and stationary equipment
- Marine equipment

### Survey of Literature with Technical Data on Danfoss Hydraulic Motors

Detailed data on all Danfoss motors can be found in our motor catalogue, which is divided into 8 individual subcatalogues:

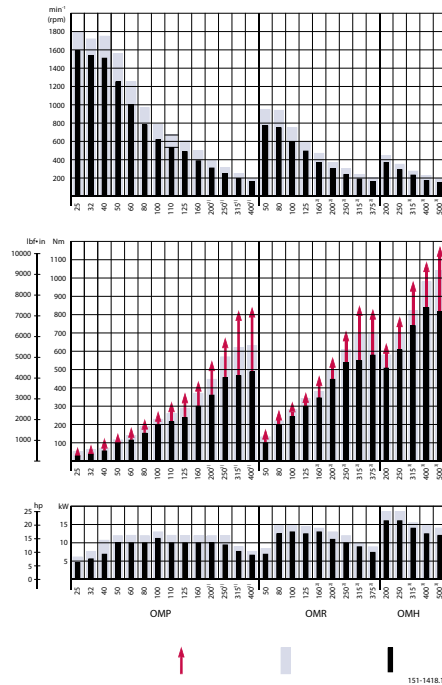
- General information on Danfoss hydraulic motors: function, use, selection of hydraulic motor, hydraulic systems, etc.
- Technical data on small motors: OML and OMM
- Technical data on medium sized motors: OMP, OMR and OMH
- Technical data on medium sized motors: DH and DS
- Technical data on medium sized motors: OMEW
- Technical data on large motors: OMS, OMT and OMV
- Technical data on large motors: TMK
- Technical data on large motors: TMT
- Technical data on large motors: TMVW

A general survey brochure on Danfoss hydraulic motors gives a quick motor reference based on power, torque, speed and capabilities.

**A Wide Range of Hydraulics Motors**

**Speed, Torque and Output**

*Max. speed, Max. torque, Max. output*



Peak value, Intermittend values, Continuous values

1. 1 1/4 in shaft
2. 1 1/4 in or 1 1/4 in tapered shaft
3. 1 1/4 in splined shaft

The bar diagrams above are useful for a quick selection of relevant motor size for the application. The final motor size can be determined by using the function diagram for each motor size.

- OMP and OMPW: see [Function Diagrams](#) on page 21
- OMR and OMRW: see [Function Diagrams](#) on page 51
- OMH: see [Function Diagrams](#) on page 88

The function diagrams are based on actual tests on a representative number of motors from our production. The diagrams apply to a return pressure between 5 and 10 bar.

[75 and 150 psi] when using mineral based hydraulic oil with a viscosity of  $35 \text{ mm}^2/\text{s}$

[165 SUS] and a temperature of  $50^\circ\text{C}$  [ $120^\circ\text{F}$ ]. For further explanation concerning how to read and use the function diagrams, please consult the paragraph "Selection of motor size" in the technical information *General Orbital Motors 520L0232 Rev. B*.



**Technical Information Orbital Motors Type OMP, OMR and OMH**
**Versions**
**Versions**

Mounting flange	Spigot diameter (front/rear end)	Bolt circle diameter (BC)	Shaft	Port size	EU	US	Side port	End port	Flange port	Std. shaft seal	High pressure shaft seal	Drain connection	Check valve	Main type designation		
2 hole oval flange (A2-flange)	Ø 82.5 mm [3.25 in]	Ø 106.4 mm [4.20 in]	Cyl. 25 mm	G ½	*		*				*	No	No	OMR		
				G ½	*		*				*	Yes	Yes	OMR		
				G ½	*			*			*	Yes	Yes	OMR		
			Cyl. 1 inch				G ½	*		*			*	No	No	OMR
							G ½	*		*			*	Yes	Yes	OMR
							7/8 - 14 UNF		*	*			*	Yes	Yes	OMR
			Splined 1 inch				G ½	*		*			*	No	No	OMR
							G ½	*		*			*	Yes	Yes	OMR
							7/8 - 14 UNF		*	*			*	Yes	Yes	OMR
			Cyl. 32 mm				G ½	*		*			*	Yes	Yes	OMR
Tap. 28.5 mm	G ½	*						*			*	Yes	Yes	OMR		
4 hole oval flange (A4-flange)	Ø 82.5 mm [3.25 in]	Ø 106.4 mm [4.20 in]	Cyl. 25 mm	G ½	*		*			*		Yes	Yes	OMR		
				Cyl. 32 mm	G ½	*		*			*	Yes	Yes	OMR		
				Cyl. 1¼ in	7/8 - 14 UNF		*	*			*	Yes	Yes	OMR		
Square flange (C-flange)	Ø 44.4 mm [1.75 in]	Ø 82.5 mm [3.25 in]	Cyl. 25 mm	G ½	*			*		*	Yes	Yes	OMR			
				Cyl. 1 in	7/8 - 14 UNF		*	*			*	Yes	Yes	OMR		
<b>OMR motors with corrosion resistant parts</b>																
2 hole oval flange (A2-flange)	Ø 82.5 mm [3.25 in]	Ø 106.4 mm [4.20 in]	Cyl. 25 mm	G ½	*		*			*		Yes	Yes	OMR C		
<b>OMR motors with needle bearings</b>																
2 hole oval flange (A2-flange)	Ø 82.5 mm [3.25 in]	Ø 106.4 mm [4.20 in]	Cyl. 25 mm	G ½	*		*			*		Yes	Yes	OMR N		
Wheel	Ø 82.5 mm [3.25 in]	Ø 147.6 mm [5.81 in]	Tap. 35 mm	G ½	*				*	*		Yes	Yes	OMRW N		
				Tap. 1¼ in	7/8 - 14 UNF		*	*		*	*	Yes	Yes	OMRW N		
<b>OMR motors with integrated brake</b>																
2 hole oval flange (A2-flange)	Ø 82.5 mm [3.25 in]	Ø 106.4 mm [4.20 in]	Cyl. 25 mm	G ½	*		*			*		Yes	Yes	OMR F		
<b>OMR motors with integrated brake and needle bearings</b>																
2 hole oval flange (A2-flange)	Ø 82.5 mm [3.25 in]	Ø 106.4 mm [4.20 in]	Cyl. 1 in	7/8 - 14 UNF		*	*			*		Yes	Yes	OMR NF		
Wheel	Ø 82.5 mm [3.25 in]	Ø 147.6 mm [5.81 in]	Tap. 35 mm	G ½	*				*	*		Yes	Yes	OMRW NF		

\* Version is available.

**Versions**

**Features available (options)**

Low leakage (low speed valve) Reverse rotation

Speed sensor Painted

Viton shaft seal

## Technical Information Orbital Motors Type OMP, OMR and OMH

### Code Numbers

#### Code Numbers

Code numbers	Displacement [cm <sup>3</sup> ]								
	50	80	100	125	160	200	250	315	375
151-	0410	0411	0412	0413	0414	0415	0416	0417	0418
151-	0710	0711	0712	0713	0714	0715	0716	0717	0718
151-	6190	6191	6192	6193	6194	6195	6196	6197	6198
151-	0400	0401	0402	0403	0404	0405	0406	0407	0408
151-	0700	0701	0702	0703	0704	0705	0706	0707	0708
151-	7240	7241	7242	7243	7244	7245	7246	7247	7248
151-	0420	0421	0422	0423	0424	0425	0426	0427	0428
151-	0720	0721	0722	0723	0724	0725	0726	0727	0728
151-	7250	7251	7252	7253	7254	7255	7256	7257	7258
151-	0248	0242	0243	0208	0244	0245	0247	0246	6294
151-	0265	0266	0267	6295	0268	0269	0271	0270	6296
151-	6010	6011	6012	6013	6014	6015	6016	6017	6018
151-	6000	6001	6002	6003	6004	6005	6006	6007	6008
151-	6110	6111	6112	6113	6114	6115	6116	6117	6118
151-	6210	6211	6212	6213	6214	6215	6216	6217	6218
151-	7260	7261	7262	7263	7264	7265	7266	7267	7269
<b>OMR motors with corrosion resistant parts</b>									
151-	1231	1232	1233	1238	1234	1235	1236	1237	1243
<b>OMR motors with needle bearings</b>									
151-	6380	6381	-	6383	6384	6385	6386	6387	6388
151-	6300	6301	6302	6303	6304	6305	6306	6307	6308
151-	6430	6431	6432	6433	6434	6435	6436	6437	6438
<b>OMR motors with integrated brake</b>									
151-	-	6461	6462	6463	6464	6465	6466	6467	6468
<b>OMR motors with integrated brake and needle bearings</b>									
151-	-	6471	6472	6473	6474	6475	6476	6477	6478
151-	-	-	6442	6443	6444	6445	-	-	-
	51	51	52	52	53	53	54	54	55

#### Ordering

Add the four digit prefix "151-" to the four digit numbers from the chart for complete code number.

Example:

151-6004 for an OMR 160 with A4 flange, cyl. 32 mm shaft, port size G 1/2 and side port version.

Orders will not be accepted without the four digit prefix.

**Technical Data**
**Technical data for OMR with 25 mm and 1 in cylindrical shaft**

Type			OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR
Motor size			50	80	100	125	160	200	250	315	375
Geometric displacement	cm <sup>3</sup> [inch]		51.6 [3.16]	80.3 [4.91]	99.8 [6.11]	125.7 [7.69]	159.6 [9.77]	199.8 [12.23]	249.3 [15.26]	315.7 [19.32]	372.6 [22.80]
Max. speed	min <sup>-1</sup>	cont.	775	750	600	475	375	300	240	190	160
	[rpm]	int. <sup>1)</sup>	970	940	750	600	470	375	300	240	200
Max. torque	N•m [lbf•in]	cont.	100 [890]	195 [1730]	240 [2120]	300 [2660]	300 [2660]	300 [2660]	300 [2660]	300 [2660]	300 [2660]
		int. <sup>1)</sup>	130 [1150]	220 [1960]	280 [2480]	340 [3010]	390 [3450]	390 [3450]	380 [3360]	420 [3720]	430 [3810]
		peak <sup>2)</sup>	170 [1510]	270 [2390]	320 [2830]	370 [3280]	460 [4070]	560 [4960]	600 [5310]	610 [5400]	600 [5310]
Max. output	kW [hp]	cont.	7.0 [9.4]	12.5 [16.8]	13.0 [17.4]	12.5 [16.8]	10.0 [13.4]	8.0 [10.7]	6.0 [8.1]	5.0 [6.7]	4.0 [5.4]
		int. <sup>1)</sup>	8.5 [11.4]	15.0 [20.1]	15.0 [20.1]	14.5 [19.4]	12.5 [16.8]	10.0 [13.4]	8.0 [10.7]	6.5 [8.7]	6.0 [8.1]
Max. pressure drop	bar [psi]	cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	130 [1890]	110 [1600]	80 [1160]	70 [1020]	55 [800]
		int. <sup>1)</sup>	175 [2540]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]	110 [1600]	100 [1450]	85 [1230]
		peak <sup>2)</sup>	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	200 [2900]	150 [2180]	130 [1890]
Max. oil flow	l/min [US gal/min]	cont.	40 [10.6]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
		int. <sup>1)</sup>	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. starting pressure with unloaded shaft	bar [psi]		10 [145]	10 [145]	10 [145]	9 [130]	7 [100]	5 [75]	5 [75]	5 [75]	5 [75]
Min starting torque	at max. press drop cont. N•m [lbf•in]		80 [710]	150 [1330]	200 [1770]	250 [2210]	240 [2120]	260 [2300]	240 [2120]	260 [2300]	240 [2120]
	at max. press.drop int. <sup>1)</sup> N•m [lbf•in]		100 [890]	170 [1510]	230 [2040]	280 [2480]	320 [2830]	330 [2920]	310 [2740]	350 [3100]	380 [3360]

<sup>1)</sup> Intermittent operation: the permissible values may occur for max. 10% of every minute.

<sup>2)</sup> Peak load: the permissible values may occur for max. 1% of every minute.

**Technical data for OMR with 1 in splined and 28.5 mm tapered shaft**

Type			OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR
Motor size			50	80	100	125	160	200	250	315	375
Geometric displacement	cm <sup>3</sup> [inch]		51.6 [3.16]	80.3 [4.91]	99.8 [6.11]	125.7 [7.69]	159.6 [9.77]	199.8 [12.23]	249.3 [15.26]	315.7 [19.32]	372.6 [22.80]
Max. speed	min <sup>-1</sup>	cont.	775	750	600	475	375	300	240	190	160
	[rpm]	int. <sup>1)</sup>	970	940	750	600	470	375	300	240	200

**Technical Information Orbital Motors Type OMP, OMR and OMH**
**Technical Data**

Type			OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR
Motor size			50	80	100	125	160	200	250	315	375
Max. torque	N·m [lbf·in]	cont.	100 [890]	195 [1730]	240 [2120]	300 [2660]	360 [3190]	360 [3190]	360 [3190]	360 [3190]	360 [3190]
		int. <sup>1)</sup>	130 [1150]	220 [1950]	280 [2480]	340 [3010]	430 [3810]	440 [3890]	470 [4160]	470 [4160]	460 [4070]
		peak <sup>2)</sup>	170 [1510]	270 [2390]	320 [2830]	370 [3280]	460 [4070]	560 [4960]	600 [5310]	610 [5400]	600 [5310]
Max. output	kW [hp]	cont.	7.0 [9.4]	12.5 [16.8]	13.0 [17.4]	12.5 [16.8]	12.5 [16.8]	10.0 [13.4]	7.0 [9.4]	5.0 [6.7]	5.0 [6.7]
		int. <sup>1)</sup>	8.5 [11.4]	15.0 [20.1]	15.0 [20.1]	14.5 [19.4]	14.0 [18.8]	13.0 [17.4]	9.5 [12.7]	8.0 [10.7]	7.0 [9.4]
Max. pressure drop	bar [psi]	cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	165 [2390]	130 [1890]	100 [1450]	85 [1230]	70 [1020]
		int. <sup>1)</sup>	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]	115 [1670]	90 [1310]
		peak <sup>2)</sup>	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	200 [2900]	150 [2180]	130 [1890]
Max. oil flow	l/min [US gal/min]	cont.	40 [10.6]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
		int. <sup>1)</sup>	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. starting pressure with unloaded shaft	bar [psi]		10 [145]	10 [145]	10 [145]	9 [130]	7 [100]	5 [75]	5 [75]	5 [75]	5 [75]
Min starting torque	at max. press drop cont. N·m [lbf·in]		80 [710]	150 [1330]	200 [1770]	250 [2210]	300 [2660]	300 [2660]	290 [2570]	315 [2790]	300 [2660]
	at max. press.drop int. <sup>1)</sup> N·m [lbf·in]		100 [890]	170 [1510]	230 [2040]	280 [2480]	350 [3100]	400 [3540]	400 [3540]	400 [3540]	380 [3360]

<sup>1)</sup> Intermittent operation: the permissible values may occur for max. 10% of every minute.

<sup>2)</sup> Peak load: the permissible values may occur for max. 1% of every minute.

**Technical data for OMR with 32 mm, 1 ¼ in cylindrical shaft and 35 mm, 1 ¼ in tapered shaft**

Type			OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR
Motor size			50	80	100	125	160	200	250	315	375
Geometric displacement	cm <sup>3</sup> [inch]		51.6 [3.16]	80.3 [4.91]	99.8 [6.11]	125.7 [7.69]	159.6 [9.77]	199.8 [12.23]	249.3 [15.26]	315.7 [19.32]	372.6 [22.80]
Max. speed	min <sup>-1</sup>	cont.	775	750	600	475	375	300	240	190	160
	[rpm]	int. <sup>1)</sup>	970	940	750	600	470	375	300	240	200
Max. torque	N·m [lbf·in]	cont.	100 [890]	195 [1730]	240 [2120]	300 [2660]	380 [3360]	450 [3980]	540 [4780]	550 [4870]	580 [5130]
		int. <sup>1)</sup>	130 [1150]	220 [1957]	280 [2480]	340 [3010]	430 [3810]	500 [4430]	610 [5400]	690 [6110]	690 [6110]
		peak <sup>2)</sup>	170 [1510]	270 [2390]	320 [2830]	370 [3280]	460 [4070]	560 [4960]	710 [6280]	840 [7440]	830 [7350]
Max. output	kW [hp]	cont.	7.0 [9.4]	12.5 [16.8]	13.0 [17.4]	12.5 [16.8]	12.5 [16.8]	11.0 [14.8]	10.0 [13.4]	9.0 [12.1]	7.5 [10.1]
		int. <sup>1)</sup>	8.5 [11.4]	15.0 [20.1]	15.0 [20.1]	14.5 [19.4]	14.0 [18.8]	13.0 [17.4]	12.0 [16.1]	10.0 [13.4]	9.0 [12.1]

## Technical Information Orbital Motors Type OMP, OMR and OMH

### Technical Data

Type			OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR	OMR	
Motor size			50	80	100	125	160	200	250	315	375	
Max. pressure drop	bar [psi]	cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	135 [1960]	115 [1670]	
		int. <sup>1)</sup>	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	150 [2180]
		peak <sup>2)</sup>	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	210 [3050]	175 [2540]
Max. oil flow	l/min [US gal/min]	cont.	40 [10.6]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	
		int. <sup>1)</sup>	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	
Max. starting pressure with unloaded shaft	bar [psi]		10 [145]	10 [145]	10 [145]	9 [130]	7 [100]	5 [75]	5 [75]	5 [75]	5 [75]	
Min starting torque	at max. press drop cont. N·m [lbf·in]		80 [710]	150 [1330]	200 [1770]	250 [2210]	320 [2830]	410 [3630]	500 [4430]	500 [4430]	470 [4170]	
	at max. press.drop int. <sup>1)</sup> N·m [lbf·in]		100 [890]	170 [1510]	230 [2040]	280 [2480]	370 [3280]	460 [4070]	550 [4870]	660 [5840]	570 [5050]	

<sup>1)</sup> Intermittent operation: the permissible values may occur for max. 10% of every minute.

<sup>2)</sup> Peak load: the permissible values may occur for max. 1% of every minute.

Type		Max. inlet pressure	Max.return pressure with drain line
OMR 50 - 375	bar [psi] cont	175 [2540]	175 [2540]
	bar int. <sup>1)</sup> [psi]	200 [2900]	200 [2900]
	bar peak <sup>2)</sup> [psi]	225 [3260]	225 [3260]

<sup>1)</sup> Intermittent operation: the permissible values may occur for max. 10% of every minute.

<sup>2)</sup> Peak load: the permissible values may occur for max. 1% of every minute.

### Technical Data for Parking Brake Motor OMR F, OMR NF and OMRW NF

Technical data for brake motor		
Holding torque 1)	N·m [lbf·in]	400 [3540]
Min. release pressure 2)	bar [psi]	21 [305]
Max. pressure in brake line	bar [psi]	200 [2900]

1) This brake is to be used only as a passive parking brake. It may not be used for dynamic braking.  
2) Brake motors must always have a drain line. The brake release pressure is the difference between the pressure in the brake release line and the pressure in the drain line.

### Function

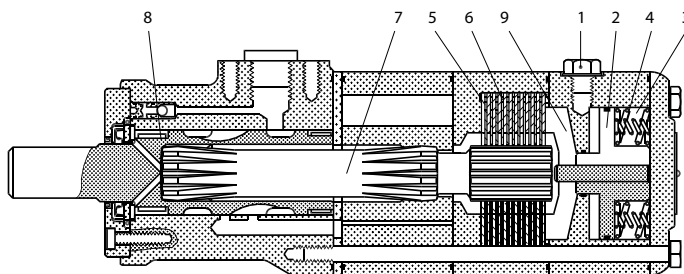
In normal condition where there is no pressure on the integrated brake in OMR, i.e. the brake is applied. The brake is released when hydraulic pressure of 21 bar [300psi] min. is applied to the brake release port (1).

**Technical Information**    **Orbital Motors Type OMP, OMR and OMH**

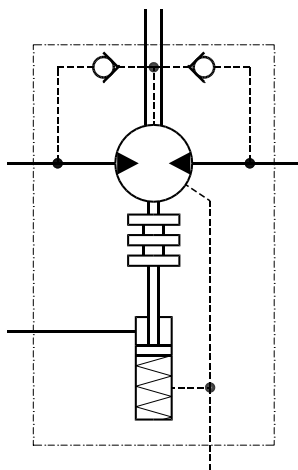
**Technical Data**

The pressure forces the piston (2) against the springs (3 and 4) disengaging the outer and inner discs (5 and 6) from each other so that the cardan shaft (7) and consequently output shaft (8) become free to rotate.

If the pressure on the brake release port is reduced to less than 21 bar [300psi], the springs force the piston and pressure pad (9) against the brake discs and the cardan shaft/output shaft begin to lock up.



151-1739.10.10



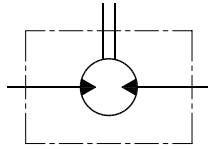
151-1726.10

**Technical Data - Max. Permissible Shaft Seal Pressure**

**OMR with High Pressure Shaft Seal (HPS)**

OMR with HPS, without check valves and without drain connection:

The shaft seal pressure equals the average of input pressure and return pressure



151-1743.10

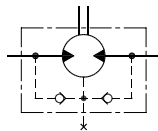
$$P_{\text{seal}} = \frac{P_{\text{in}} + P_{\text{return}}}{2}$$

OMR with HPS, check valves and with drain connection:

The shaft seal pressure equals the pressure in the drain line.

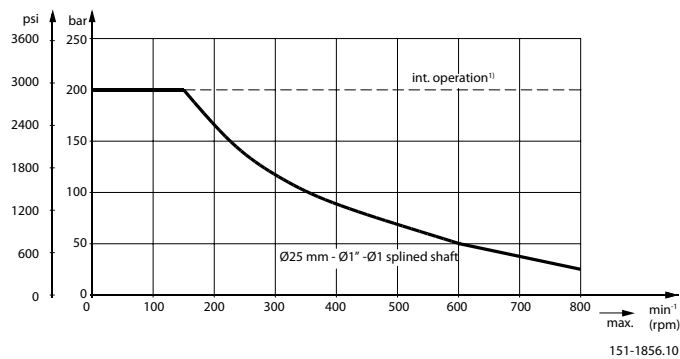
OMR with HPS, check valves and without drain connection:

The pressure on the shaft seal never exceeds the pressure in the return line.



151-320.10

*Max. permissible shaft seal pressure*

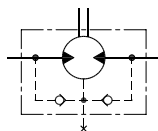


151-1856.10

**OMR with Standard Shaft Seal**

OMR with standard shaft seal, check valves and without use of drain connection:

The pressure on the shaft seal never exceeds the pressure in the return line



151-320.10

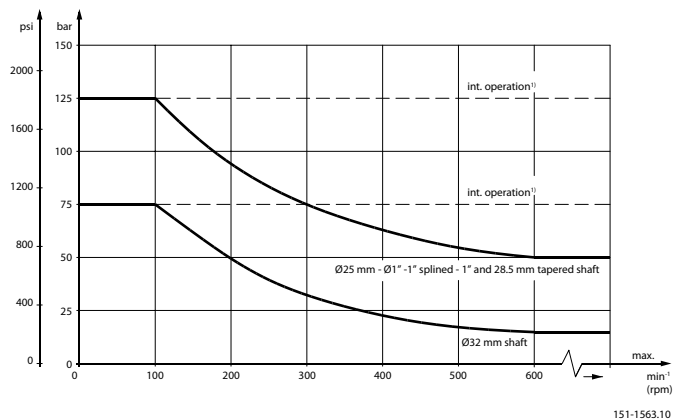
OMR with standard shaft seal, check valves and with drain connection:



**Technical Data - Max. Permissible Shaft Seal Pressure**

The shaft seal pressure equals the pressure on the drain line.

*Max. return pressure without drain line or max. pressure in the drain line*

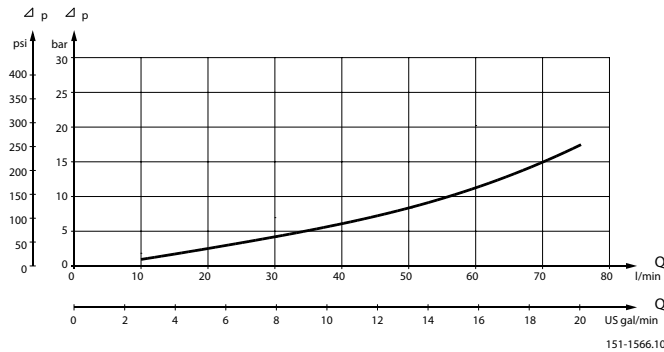


1) Intermittent operation: the permissible values may occur for max. 10% of every minute.

**Technical Data**

**Pressure Drop in Motor**

The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm<sup>2</sup>/s [165 SUS]

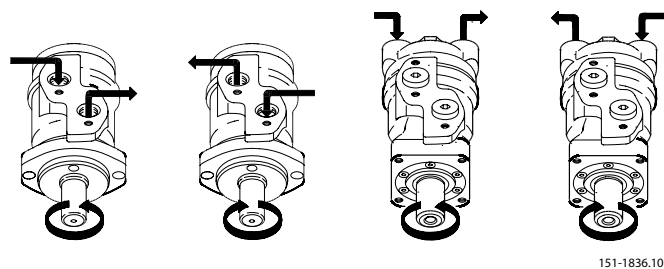


**Oil flow in drain line**

The table shows the max. oil flow in the drain line at a return pressure less than 5-10 bar [75-150 psi].

Pressure drop bar [psi]	Viscosity mm <sup>2</sup> /s [SUS]	Oil flow in drain line l/min [US gal/min]
100 [1450]	20 [100]	2.5 [0.66]
	35 [165]	1.8 [0.78]
140 [2030]	20 [100]	3.5 [0.93]
	35 [165]	2.8 [0.74]

**Direction of Shaft Rotation**



**Permissible Shaft Loads for OMR**

The permissible radial shaft load (PR) depends on

- Speed (n)
- Distance (L) from the point of load to the mounting flange
- Mounting flange version
- Shaft version

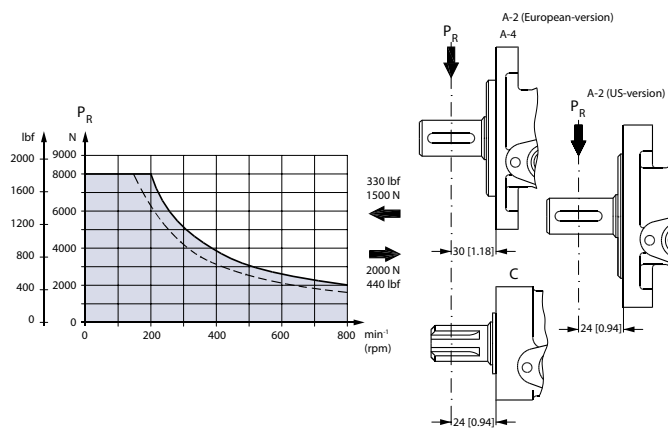
Mounting flange	4-oval flange** 2-hole oval flange (European version)	4-hole oval flange	Square flange** 2-hole oval flange (US-version)

## Technical Information    Orbital Motors Type OMP, OMR and OMH

### Technical Data

Shaft version	25 mm cylindrical shaft 1 in cylindrical shaft 1 in splined shaft	32 mm cylindrical shaft	25 mm cylindrical shaft
Permissible shaft load (PR) - I in mm	800 250000 N* n 95 + L	800 187500 N* n 95 + L	800 250000 N* n 101 + L
Permissible shaft load (PR) - I in inch	800 2215 lbf* n 3.74 + L	800 1660 lbf* n 3.74 + L	800 2215 lbf* n 3.98 + L

\*  $n \geq 200 \text{ min}^{-1}$  [rpm];  $\leq 55 \text{ mm}$  [2.2 in]  
 $n < 200 \text{ min}^{-1}$  [rpm];  $= > \text{PR}_{\text{max}} = 8000 \text{ N}$  [1800 lbf]  
 \*\* For both European and US-version



----- cylindrical shaft 32 mm [1.26 in]

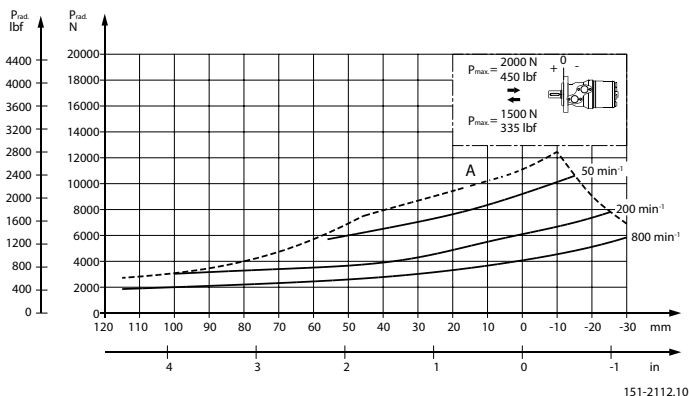
\_\_\_\_\_ other shaft versions

The curve shows the relation between PR and n

- when  $l = 30 \text{ mm}$  [1.18 in] for motors with A2 (European version) and A4 oval mounting flange
- when  $l = 24 \text{ mm}$  [0.94 in] for motors with square mounting flange and A2 (US version)
- (US version)

For applications with special performance requirements we recommend OMR with the output shaft running in needle bearings.

### Permissible Shaft Load for OMR N and OMR NF with Needle Bearings



**Technical Data**

The output shaft on OMR N and OMR NF runs in needle bearings. These bearings and the recessed mounting flange allow a higher permissible radial load in comparison to OMR motors with slide bearings.

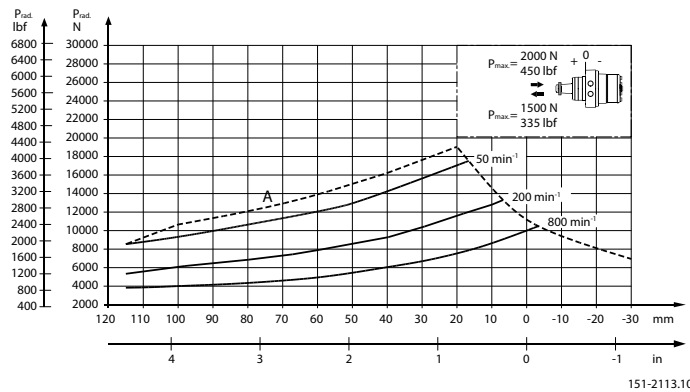
The permissible radial load on the shaft is shown for different speeds as a function of the distance from the mounting flange to the point of load application.

Curve A shows max. radial shaft load. Any shaft load exceeding the values quoted in the curve will involve a risk of breakage.

The other curves apply to a B10 bearing life of 2000 hours at the number of revolutions indicated by the curve letter. Mineral based hydraulic oil with a sufficient content of anti-wear additives must be used.

Bearing life calculations can be made using the explanation and formula provided in the chapter »Bearing dimensioning« in the technical information "General" DHMH.PK.100.G2.02 520L0232.

**Permissible Shaft Load for OMRW N and OMRW NF with Needle Bearings**



The output shaft on OMRW N runs in needle bearings. These bearings and the recessed mounting flange allow a higher permissible radial load in comparison to OMR motors with slide bearings.

The permissible radial load on the shaft is shown for different speeds as a function of the distance from the mounting flange to the point of load application.

Curve A shows max. radial shaft load. Any shaft load exceeding the values quoted in the curve will involve a risk of breakage.

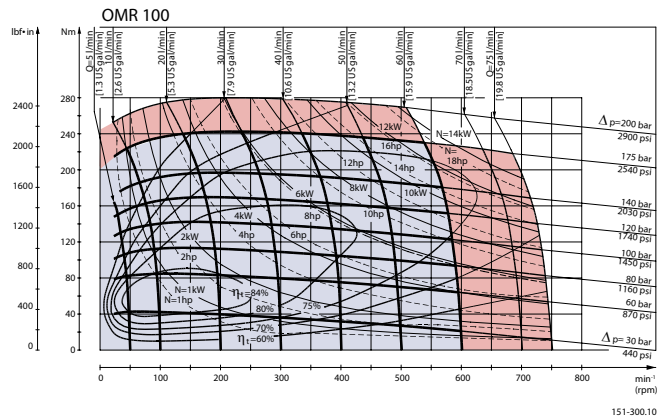
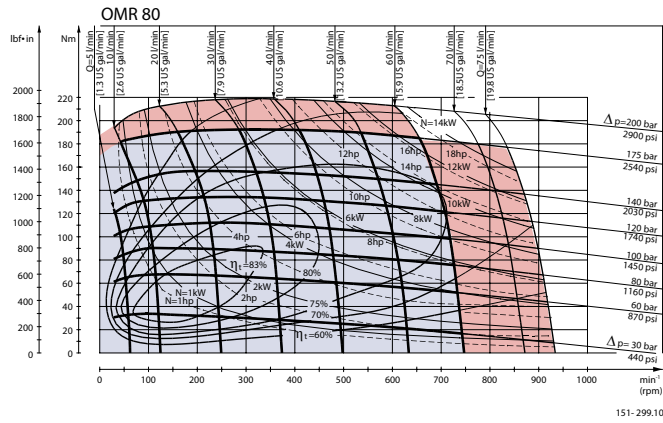
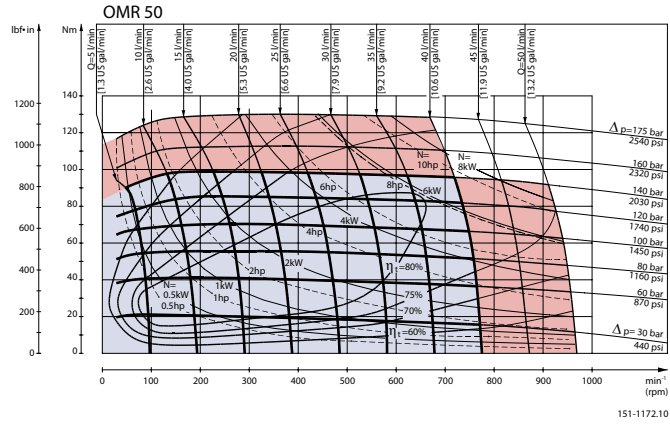
The other curves apply to a B10 bearing life of 2000 hours at the number of revolutions indicated by the curve letter. Mineral based hydraulic oil with a sufficient content of anti-wear additives must be used.

Bearing life calculations can be made using the explanation and formula provided in the chapter »Bearing dimensioning« in the technical information "General" DHMH.PK.100.G2.02 520L0232.

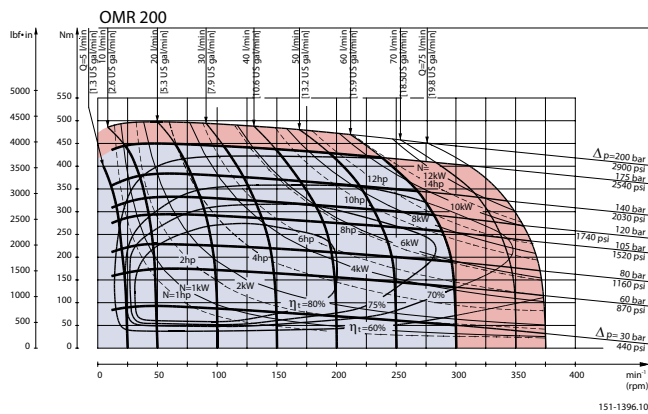
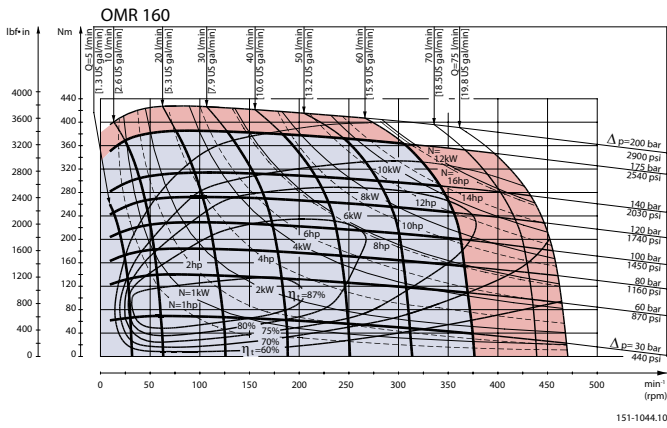
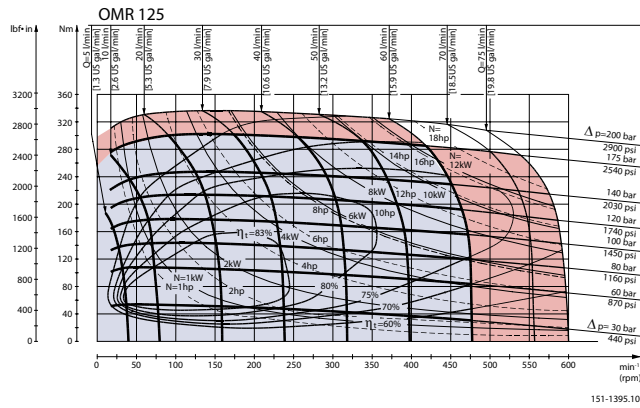
# Technical Information Orbital Motors Type OMP, OMR and OMH

## Function Diagrams

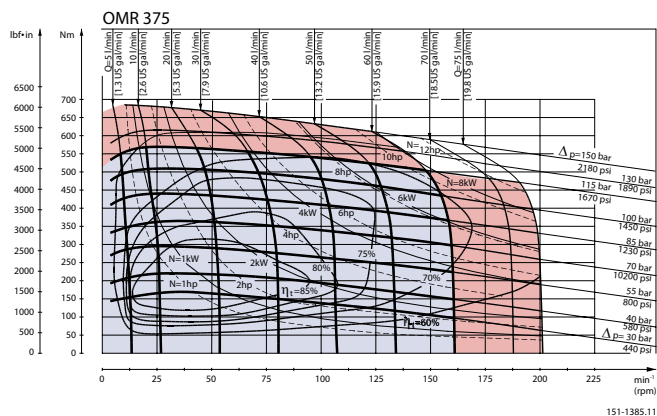
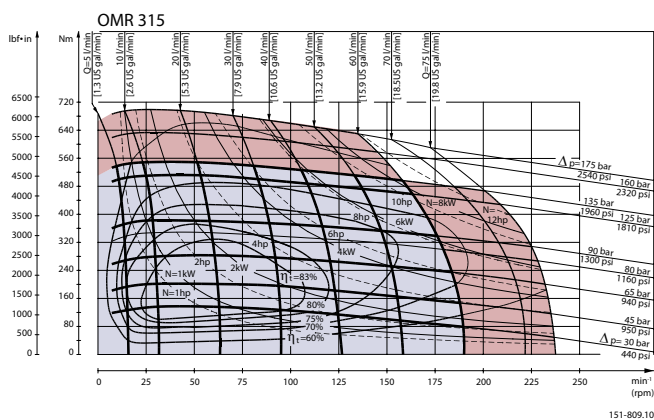
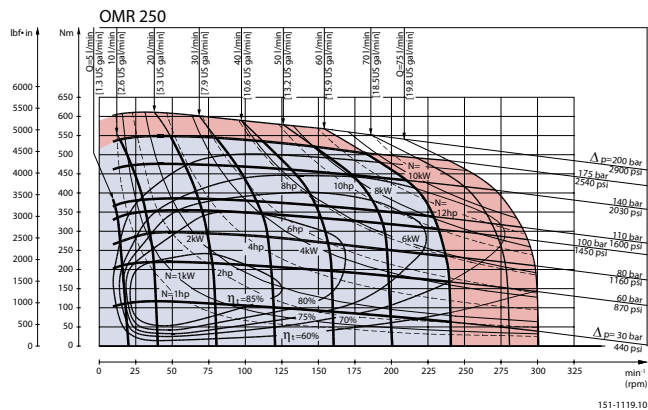
## Function Diagrams



Function Diagrams



Function Diagrams



Explanation of function diagram use, basis and conditions can be found in [Speed, Torque and Output](#) on page 8.

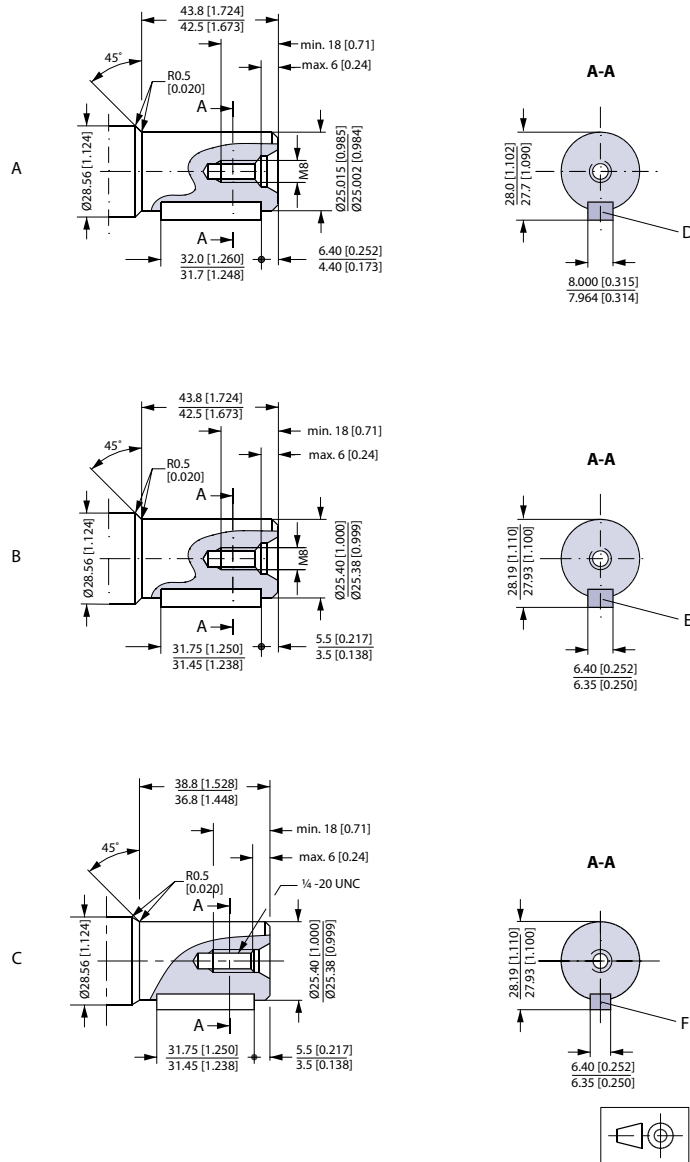
- Continuous range
- Intermittent range (max. 10% operation every minute)

Max. permissible continuous/intermittent pressure drop for the actual shaft version can be found in [Technical data for OMR with 25 mm and 1 in cylindrical shaft](#) on page 42.

Intermittent pressure drop and oil flow must not occur simultaneously.

Shaft Version

Shaft Version



151-1846.12

A: Cylindrical shaft  
25 mm

B: Cylindrical shaft 1 in

**US version**

C: Cylindrical shaft  
1 in

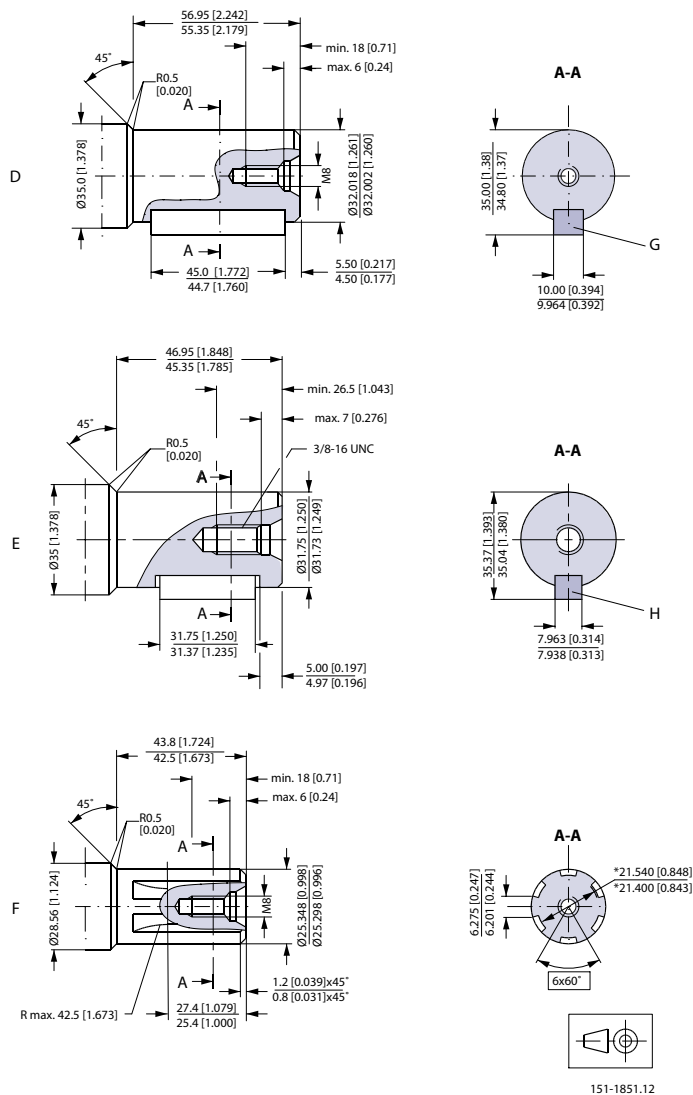
D: Parallel key  
A8 • 7 • 32  
DIN 6885

E: Parallel key  
1/4 • 1/4 • 1 1/4 in  
B.S. 46

F: Parallel key  
1/4 • 1/4 • 1 1/4 in  
B.S. 46



**Shaft Version**



D: Cylindrical shaft  
32 mm

G: Parallel key  
A10 • 8 • 45  
DIN 6885

**US version**

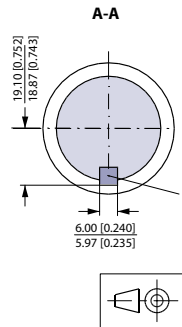
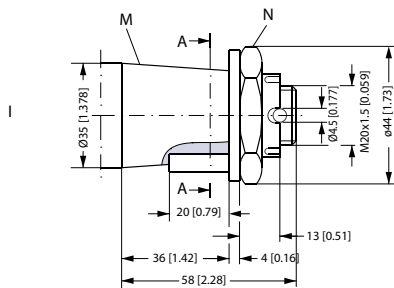
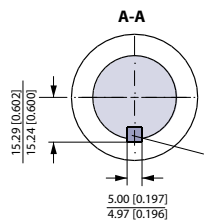
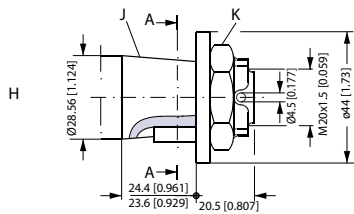
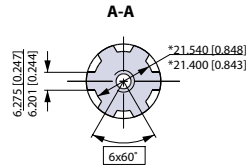
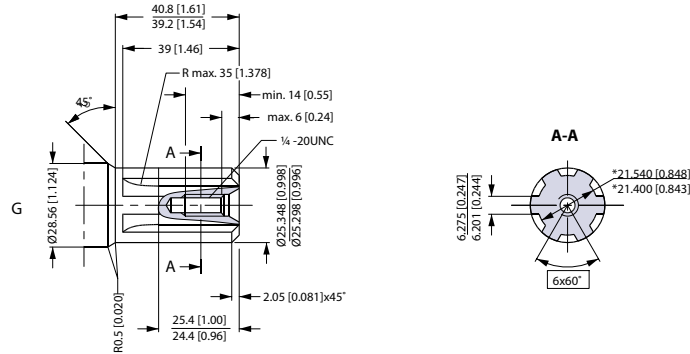
E: Cylindrical shaft  
1 1/4 in

H: Parallel key  
5/16 5/16 1 1/4 in  
B.S. 46

F: Involute splined shaft  
B.S. 2059 (SAE 6 B)  
Straight-sided,  
bottom fitting, deep.  
Fit 2  
Nom. size 1 in  
\*Deviates from  
B.S. 2059 (SAE 6 B)

151-1851.12

Shaft Version



151-1847.11

**US version**

G: Splined shaft  
SAE 6 B (B.S. 2059)  
Straight-sided,  
bottom fitting, deep.  
Fit 2; Nom. size 1 in  
\* Deviates from SAE 6 B (B.S. 2059)

H: Tapered shaft 28.5 mm  
(ISO/R775)

I: Tapered shaft 35 mm

K: DIN 937  
NV 30  
Tightening torque:  
100 ± 10 N·m  
[885 ± 85 lbf·in]

J: Taper 1:10

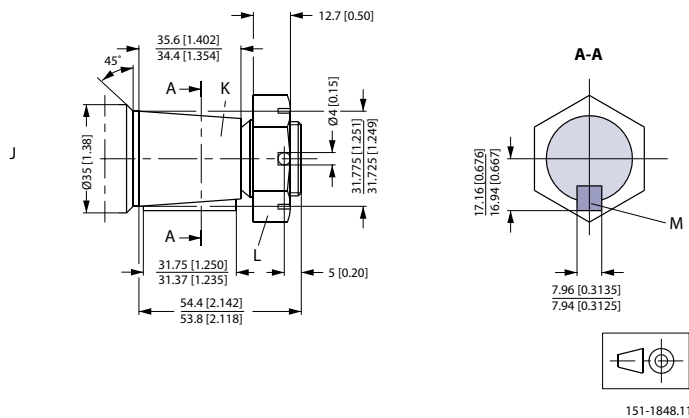
M: Taper 1:10

L: Parallel key  
B5 • 5 • 14  
DIN 6885

P: Parallel key  
B6 • 6 • 20  
DIN 6885

N: DIN 937  
NV 41  
Tightening torque:  
200 ± 10 N·m [1770 ± 85 lbf·in]

**Shaft Version**



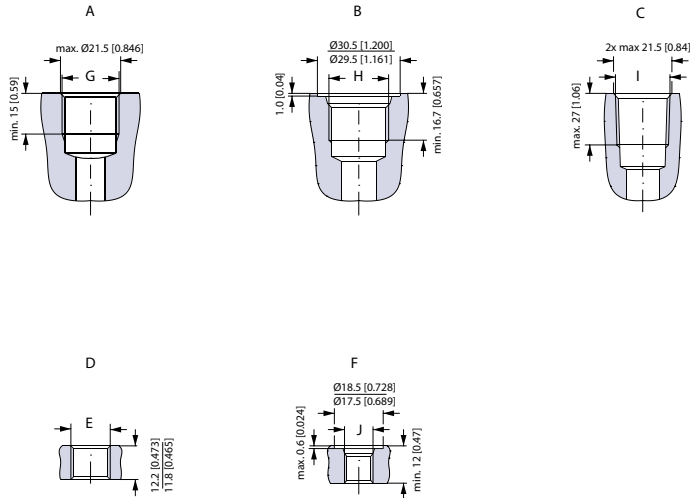
J: Tapered shaft 1 1/4 in

L: 1 - 20 UNEF  
 Across flats 1 7/16  
 Tightening torque:  
 200 ± 10 Nm [1770 ± 85 lbf-in]

K: Cone 1:8  
 SAE J501  
 M: Parallel key  
 5/16 • 5/16 • 1 1/4  
 SAE J501

Port Thread Versions

Port Thread Versions



151-1844.11

A: G main ports

B: UNF main ports

C: NPTF main ports

G: ISO 228/1 - G $\frac{1}{2}$

H: 7/8 - 14 UNF  
O-ring boss port

I:  $\frac{1}{2}$  - 14 NPTF

D: G drain port

F: UNF drain port

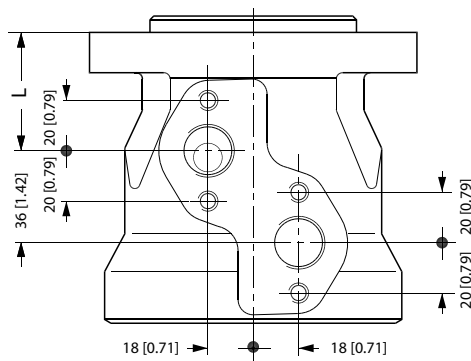
E: ISO 228/1 - G $\frac{1}{4}$

J: 7/16 - 20 UNF

O-ring boss port

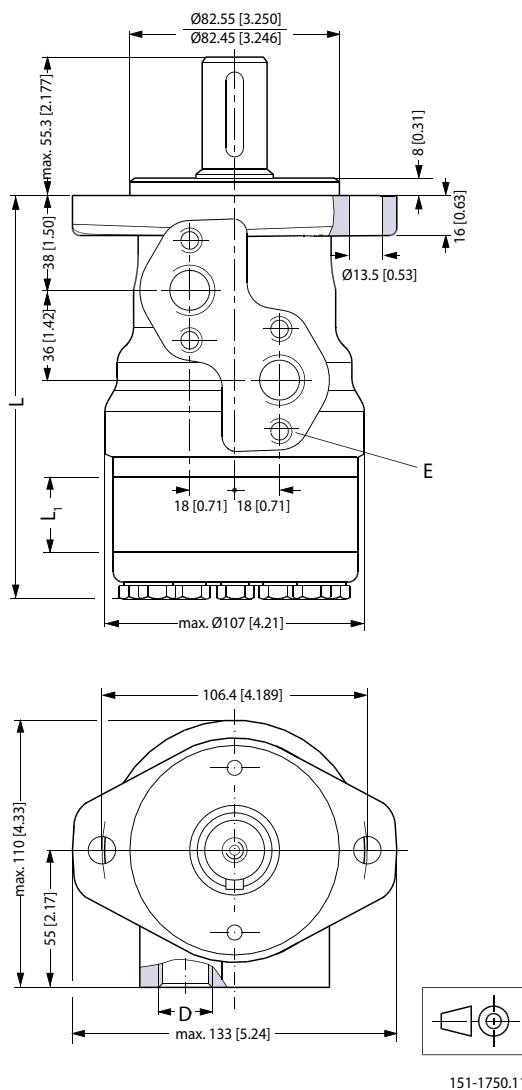
Manifold Mount

European version



151-2135.10

L: see dimensional drawing for given OMR motor: [Dimensions-European version](#) on page 59 and [Dimension-US Version](#) on page 65

**Dimensions-European version**
**Dimensions**
*Side port version with 2-hole oval mounting flange (A2 flange). With high pressure shaft seal*


D: G ½; 15 mm [0.59 in] deep

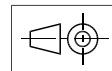
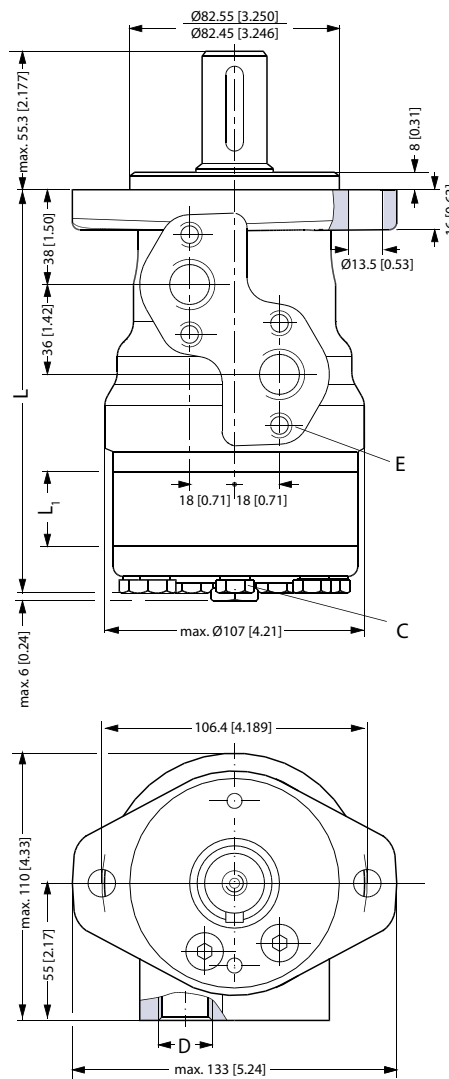
 E: M8; 13 mm [0.51 in] deep  
(4 pcs.)

Type	Max. L		L1	
	mm	[in]	mm	[in]
OMR 50	136.5	[5.37]	9.0	[0.35]
OMR 80	141.5	[5.57]	14.0	[0.55]
OMR 100	145.0	[5.71]	17.4	[0.69]
OMR 125	149.5	[5.89]	21.8	[0.86]
OMR 160	155.5	[6.12]	27.8	[1.09]
OMR 200	162.5	[6.40]	34.8	[1.37]

**Dimensions-European version**

Type	Max. L		L1	
	mm	[in]	mm	[in]
OMR 250	171.5	[6.75]	43.5	[1.71]
OMR 315	182.5	[7.19]	54.8	[2.16]
OMR 375	192.7	[7.59]	65.0	[2.56]

Side port version with 2-hole oval mounting flange (A2 flange). With check valves and drain connection. With high pressure shaft seal.



151-1845.11

C: Drain connection

G ¼; 15 mm [0.47 in] deep

E: M8; 13 mm [0.51 in] deep

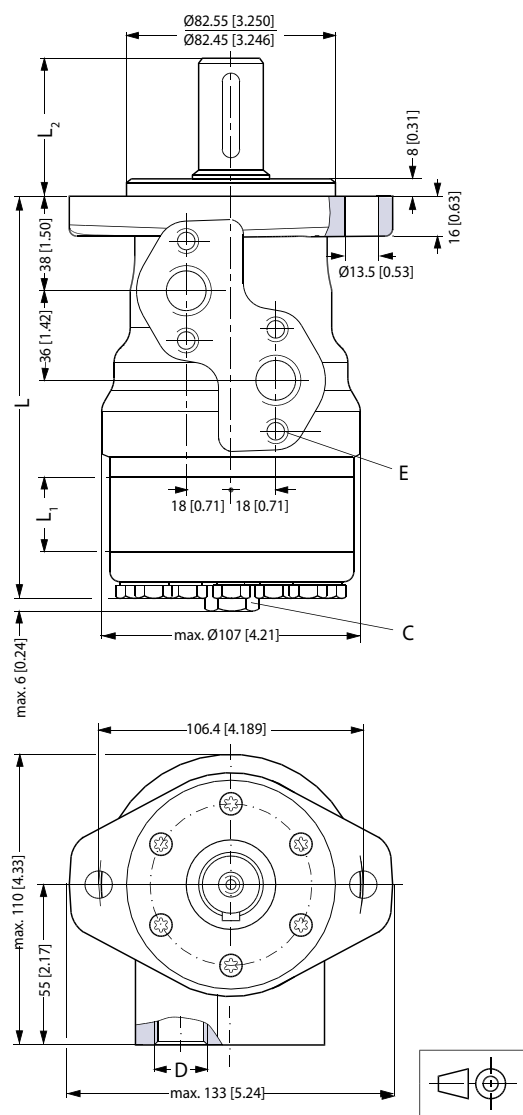
(4 pcs.)

D: G ½; 15 mm [0.59 in] deep

**Dimensions-European version**

Type	Max. L		L1	
	mm	[in]	mm	[in]
OMR 50	136.5	[5.37]	9.0	[0.35]
OMR 80	141.5	[5.57]	14.0	[0.55]
OMR 100	145.0	[5.71]	17.4	[0.69]
OMR 125	149.5	[5.89]	21.8	[0.86]
OMR 160	155.5	[6.12]	27.8	[1.09]
OMR 200	162.5	[6.40]	34.8	[1.37]
OMR 250	171.5	[6.75]	43.5	[1.71]
OMR 315	182.5	[7.19]	54.8	[2.16]
OMR 375	192.7	[7.59]	65.0	[2.56]

*OMR, OMR C and OMR N Side port version with 2-hole oval mounting flange (A2 flange)*



151-1849.13

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**Technical Information    Orbital Motors Type OMP, OMR and OMH**


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**Dimensions-European version**

C: Drain connection  
G ¼; 12 mm [0.47 in] deep

D: G ½; 15 mm [0.59 in] deep

E: M8; 13 mm [0.51 in] deep  
(4 pcs.)

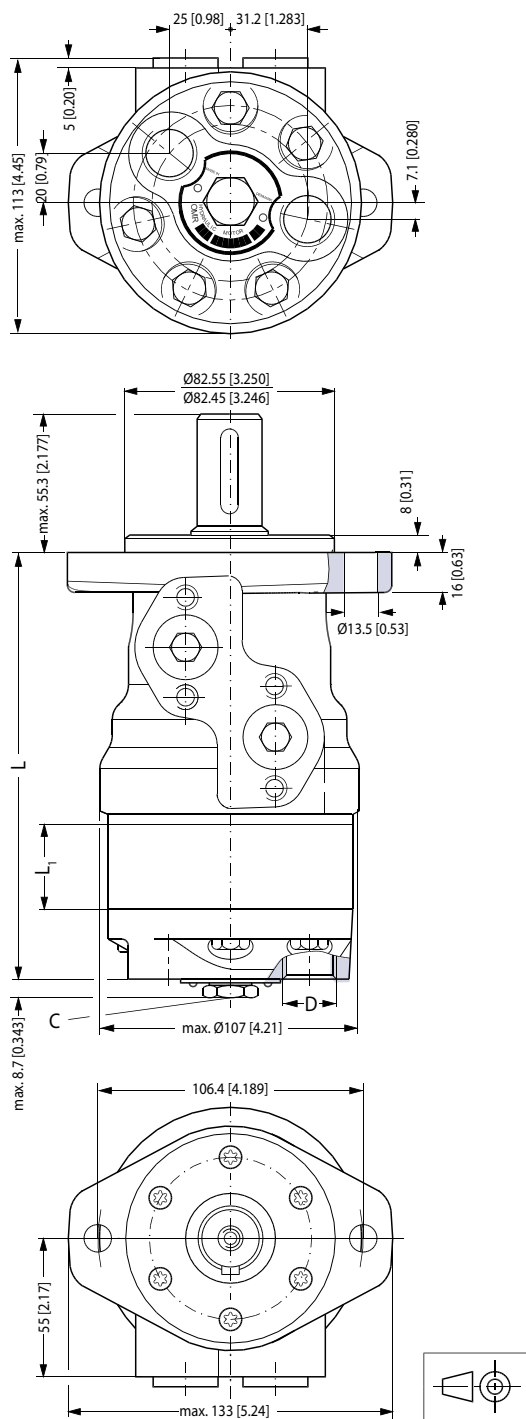
Output shaft.max.	L2	
	mm	[in]
Cylindrical shaft 32 mm [1.26 in]	68.3	[2.69]
Cylindrical shaft 25 mm [0.98 in]	55.3	[2.18]
Tapered shaft 28.56 mm [1.12 in]	56.3	[2.19]

Type	Max. L		L1	
	mm	[in]	mm	[in]
OMR 50	136.5	[5.37]	9.0	[0.35]
OMR 80	141.5	[5.57]	14.0	[0.55]
OMR 100	145.0	[5.71]	17.4	[0.69]
OMR 125	149.5	[5.89]	21.8	[0.86]
OMR 160	155.5	[6.12]	27.8	[1.09]
OMR 200	162.5	[6.40]	34.8	[1.37]
OMR 250	171.5	[6.75]	43.5	[1.71]
OMR 315	182.5	[7.19]	54.8	[2.16]
OMR 375	192.7	[7.59]	65.0	[2.56]



**Dimensions-European version**

*End port version with 2-hole oval mounting flange (A2-flange)*

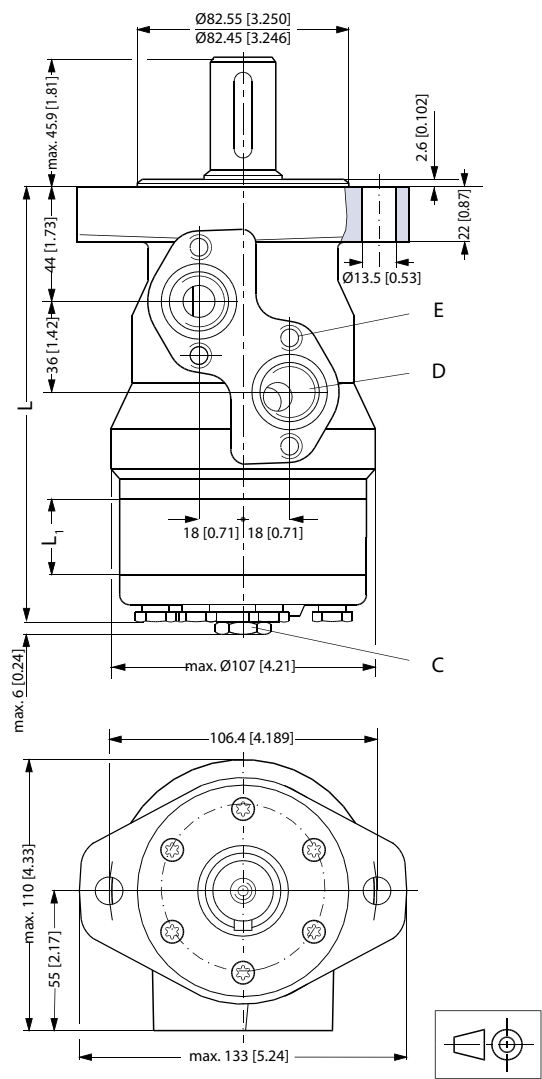


C: G ¼; 12 mm [0.47 in] deep

D: G ½; 15 mm [0.59 in] deep

**Dimensions-European version**

Type	Max. L		L1	
	mm	[in]	mm	[in]
OMR 50	151.6	[5.96]	9.0	[0.35]
OMR 80	156.6	[6.17]	14.0	[0.55]
OMR 100	160.0	[6.30]	17.4	[0.69]
OMR 125	164.4	[6.47]	21.8	[0.86]
OMR 160	170.4	[6.71]	27.8	[1.09]
OMR 200	177.4	[6.98]	34.8	[1.37]
OMR 250	186.1	[7.33]	43.5	[1.71]
OMR 315	197.4	[7.77]	54.8	[2.16]
OMR 375	207.6	[8.17]	65.0	[2.56]

**Dimension-US Version**
**Dimensions**
*Side port version with 2-hole oval mounting flange (A2-flange)*


151-1223.11

C: Drain connection  
 7/16 - 20 mm UNF;  
 12 mm [0.47 in] deep

D: 7/8 - 14 UNF;  
 16.76 mm [0.66 in] deep

E: M8; 13 mm [0.51 in] deep (4-off)

Type	Max. L mm [in]	L1 mm [in]
OMR 50	142.5 [5.61]	9.0 [0.35]
OMR 80	147.5 [5.81]	14.0 [0.55]
OMR 100	151.0 [5.95]	17.4 [0.69]
OMR 125	155.4 [6.12]	21.8 [0.86]

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**Technical Information    Orbital Motors Type OMP, OMR and OMH**

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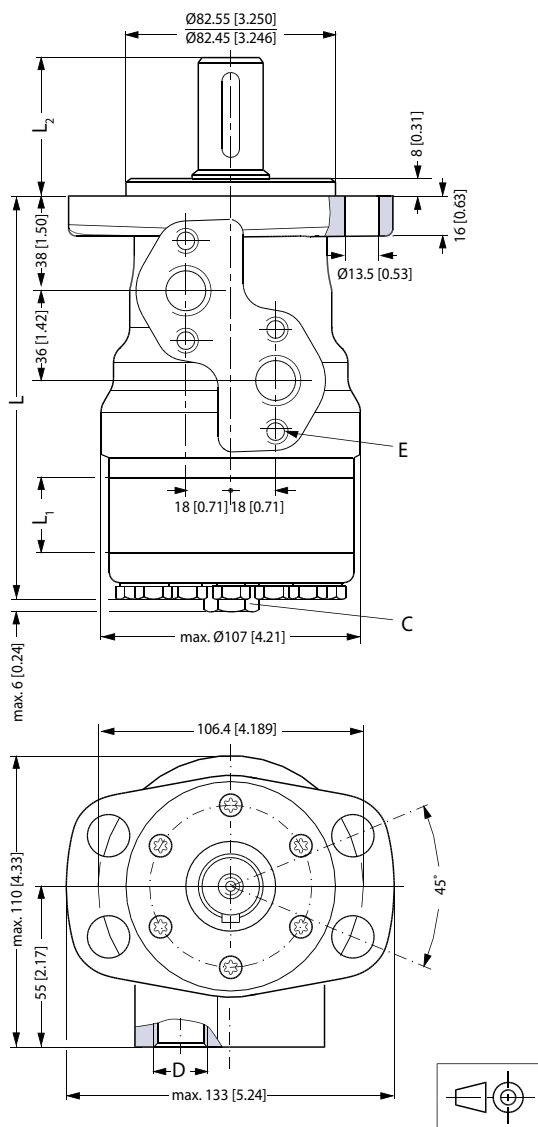
**Dimension-US Version**

<b>Type</b>	<b>Max. L mm [in]</b>	<b>L1 mm [in]</b>
OMR 160	161.5 [6.36]	27.8 [1.09]
OMR 200	168.5 [6.63]	34.8 [1.37]
OMR 250	177.5 [6.99]	43.5 [1.71]
OMR 315	188.5 [7.42]	54.8 [2.16]
OMR 375	198.5 [7.82]	64.8 [2.56]

Dimensions-European Version

Dimensions

Side port version with 4-hole oval mounting flange (A4 flange)



151-1751.11

C: Drain connection

G ¼; 15 mm [0.47 in] deep

E: M8; 13 mm [0.51 in] deep

(4 pcs.)

D: G ½; 15 mm [0.59 in] deep

Output shaft.max.	L2 mm [in]
Cylindrical shaft 32 mm [1.26 in]	68.3 [2.69]
Cylindrical shaft 25 mm [0.98 in]	55.3 [2.18]
Tapered shaft 28.56 mm [1.12 in]	56.3 [2.19]

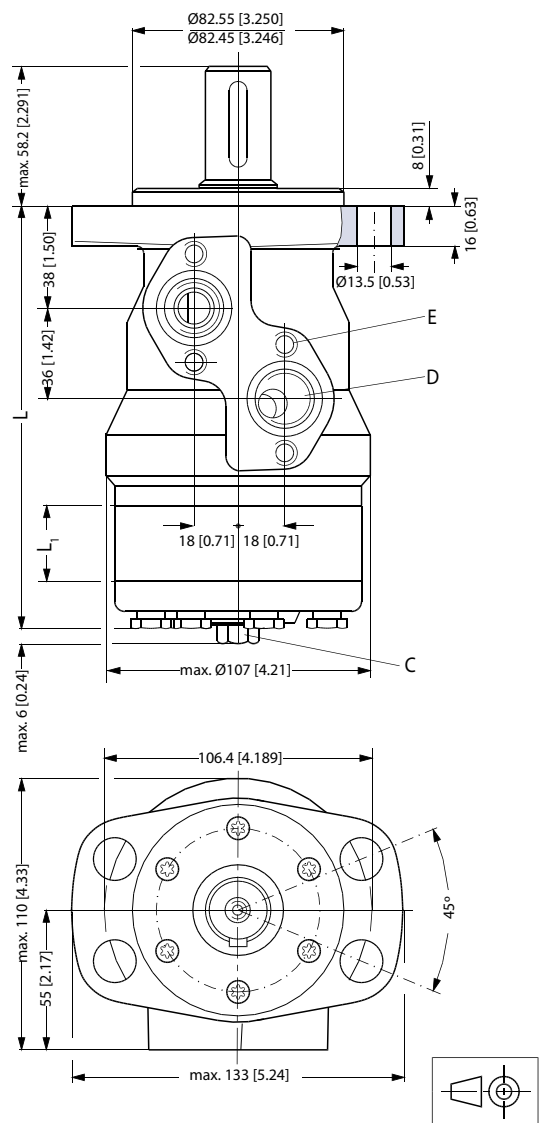
**Dimensions-European Version**

<b>Type</b>	<b>Max. L mm [in]</b>	<b>L1 mm [in]</b>
OMR 50	136.5 [5.37]	9.0 [0.35]
OMR 80	141.5 [5.57]	14.0 [0.55]
OMR 100	145.0 [5.71]	17.4 [0.69]
OMR 125	149.5 [5.89]	21.8 [0.86]
OMR 160	155.5[6.12]	27.8 [1.09]
OMR 200	162.5 [6.40]	34.8 [1.37]
OMR 250	171.5 [6.75]	43.5 [1.71]
OMR 315	182.5[7.19]	54.8 [2.16]
OMR 375	192.7 [7.59]	65.0 [2.56]

**Dimensions-US Version**

**Dimensions**

*Side port version with 4-hole oval mounting flange (A4-flange)*



151-1221.11

C: Drain connection  
7/16 - 20 UNF;  
12 mm [0.47 in] deep

D: 7/8 - 14 UNF;  
17 mm [0.66 in] deep

E: M8; 13 mm [0.51 in] deep (4-off)

Type	Max. L mm [in]	L1 mm [in]
OMR 50	136.5 [5.37]	9.0 [0.35]
OMR 80	141.5 [5.57]	14.0 [0.55]
OMR 100	145.0 [5.71]	17.4 [0.69]

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**Technical Information    Orbital Motors Type OMP, OMR and OMH**

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**Dimensions-US Version**

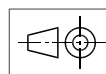
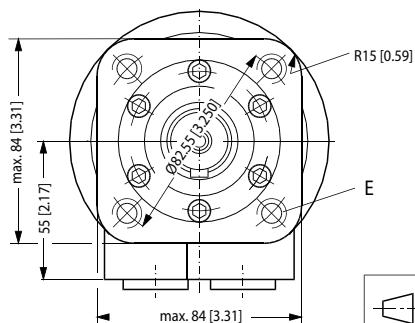
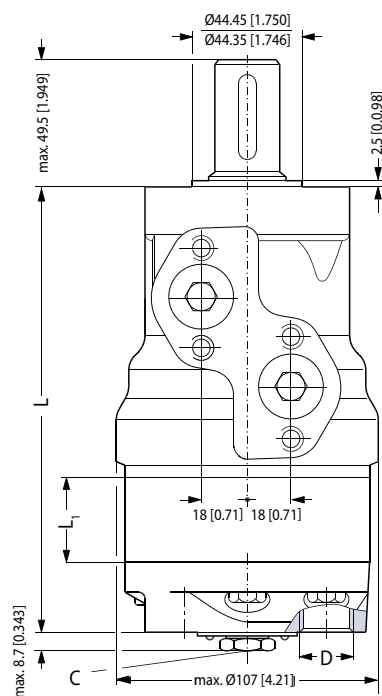
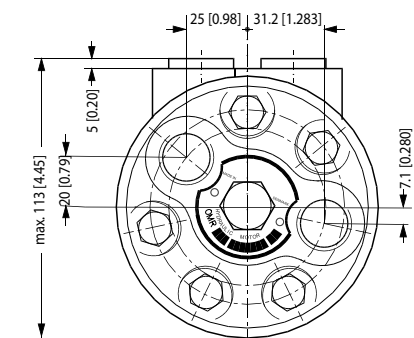
<b>Type</b>	<b>Max. L mm [in]</b>	<b>L1 mm [in]</b>
OMR 125	149.5 [5.89]	21.8 [0.86]
OMR 160	155.5 [6.12]	27.8 [1.09]
OMR 200	162.5 [6.40]	34.8 [1.37]
OMR 250	171.5 [6.75]	43.5 [1.71]
OMR 315	182.5 [7.19]	54.8 [2.16]
OMR 375	192.7 [7.59]	65.0 [2.56]



Dimensions-European Version

Dimensions

*End port version with square mounting flange (C-flange)*



151-1753.11

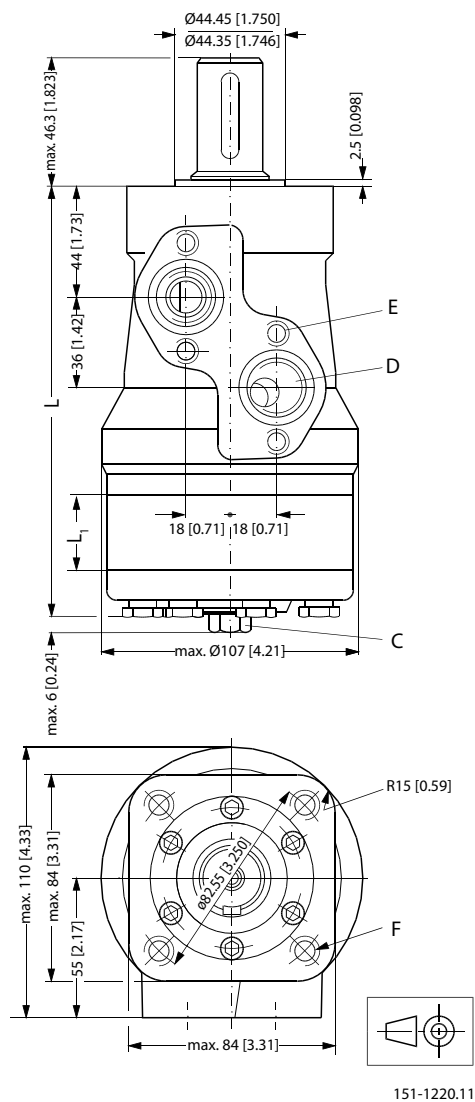
C: Drain connection  
G ¼; 12 mm [0.47 in] deep

D: G ½; 15 mm [0.59 in] deep

E: M10; 15 mm [0.59 in] deep  
(4 pcs.)

**Dimensions-European Version**

<b>Type</b>	<b>Max. L mm [in]</b>	<b>L1 mm [in]</b>
OMR 50	157.6 [6.21]	9.0 [0.35]
OMR 80	162.6 [6.40]	14.0 [0.55]
OMR 100	166.0 [6.54]	17.4 [0.69]
OMR 125	170.4 [6.71]	21.8 [0.86]
OMR 160	176.4 [6.95]	27.8 [1.09]
OMR 200	183.4 [7.22]	34.8 [1.37]
OMR 250	192.1 [7.56]	43.5 [1.71]
OMR 315	203.4 [8.02]	54.8 [2.16]
OMR 375	213.5 [8.41]	65.0 [2.56]

**Dimensions-US Version**
**Dimensions**
*Side port version with square mounting flange (C-flange)*


151-1220.11

C: Drain connection  
 7/16 - 20 mm UNF;  
 12 mm [0.47 in] deep

E: M8; 13 mm [0.51 in] deep (4-off)

D: 7/8 - 14 UNF;  
 17 mm [0.66 in] deep

F: 3/8 - 16 UNC;  
 15 mm [0.59 in] deep (4-off)

Type	Max. L mm [in]	L1 mm [in]
OMR 50	142.5 [5.61]	9.0 [0.35]
OMR 80	147.5 [5.81]	14.0 [0.55]
OMR 100	151.0 [5.95]	17.4 [0.69]
OMR 125	155.4 [6.12]	21.8 [0.86]

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**Technical Information    Orbital Motors Type OMP, OMR and OMH**

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**Dimensions-US Version**

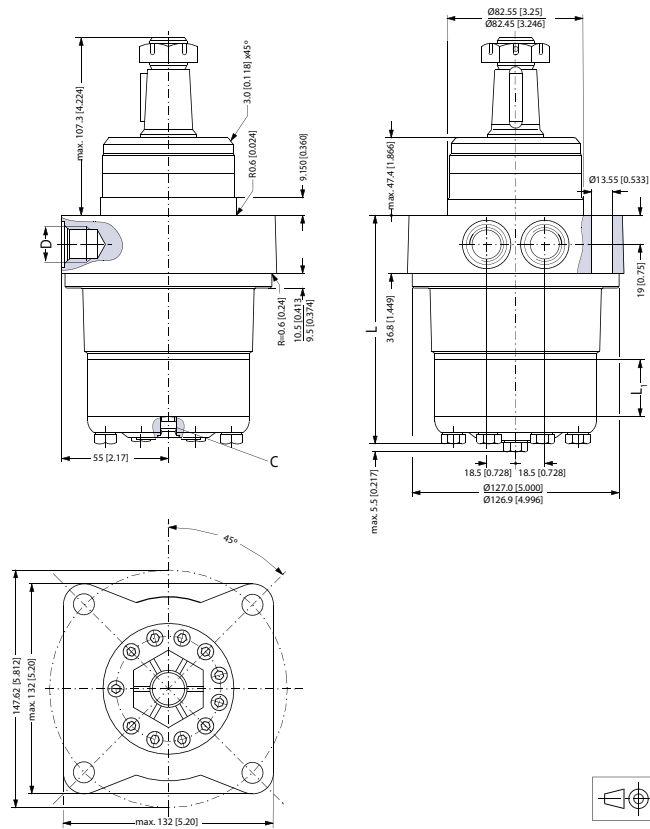
<b>Type</b>	<b>Max. L mm [in]</b>	<b>L1 mm [in]</b>
OMR 160	161.5 [6.36]	27.8 [1.09]
OMR 200	168.5 [6.63]	34.8 [1.37]
OMR 250	177.5 [6.99]	43.5 [1.71]
OMR 315	188.5 [7.42]	54.8 [2.16]
OMR 375	198.7 [7.82]	65.0 [2.56]



Dimensions-US Version

Dimensions

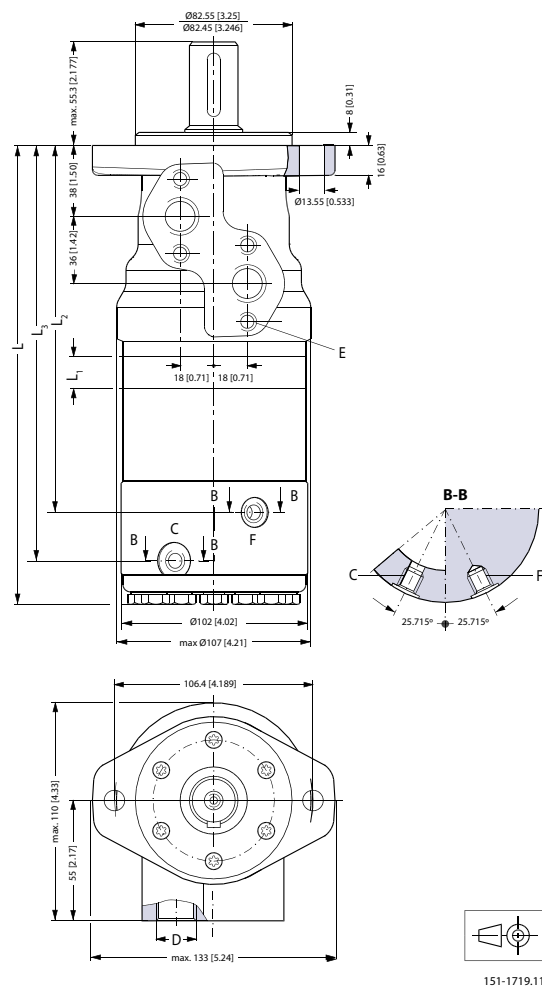
OMRW N wheel motor



C: Drain connection  
7/16 - 20 UNF;  
12 mm [0.47 in] deep

D: 7/8 - 14 UNF;  
17 mm [0.66 in] deep

Type	Max. L mm [in]	L1 mm [in]
OMRW 50 N	107.0 [4.21]	9.0 [0.35]
OMRW 80 N	112.0 [4.41]	14.0 [0.55]
OMRW 100 N	115.4 [4.54]	17.4 [0.69]
OMRW 125 N	119.8 [4.72]	21.8 [0.86]
OMRW 160 N	125.8 [4.95]	27.8 [1.09]
OMRW 200 N	132.8 [5.23]	34.8 [1.37]
OMRW 250 N	141.5 [5.57]	43.5 [1.71]
OMRW 315 N	153.0 [6.02]	54.8 [2.16]
OMRW 375 N	163.0 [6.42]	65.0 [2.56]

**Dimensions-European Version**
**Dimensions**
*OMR F motor*


C: Drain connection  
G ¼; 12 mm [0.47 in] deep

E: M8; 13 mm [0.51 in] deep

D: G ½; 15 mm [0.59 in] deep

F: Brake release connection G ¼

Type	Max. L mm [in]	L1 mm [in]	L2 mm [in]	L3 mm [in]
OMR 80 F	241.3 [9.50]	14.0 [0.55]	187.3 [7.37]	210.8 [8.30]
OMR 100 F	244.7[9.63]	17.4 [0.69]	190.7 [7.51]	214.2 [8.43]
OMR 125 F	249.1 [9.81]	21.8 [0.86]	195.1 [7.68]	218.6 [8.61]
OMR 160 F	255.1 [10.04]	27.8 [1.09]	201.1 [7.92]	224.6 [8.84]
OMR 200 F	262.1 [10.32]	34.8 [1.37]	208.1 [8.19]	231.6 [9.12]
OMR 250 F	270.8 [10.66]	43.5 [1.71]	216.8 [8.54]	240.3 [9.46]
OMR 315 F	282.1 [11.11]	54.8 [2.16]	228.1 [8.98]	251.6 [9.91]
OMR 375 F	292.3 [11.51]	65.0 [2.56]	238.3 [9.38]	261.8 [10.31]

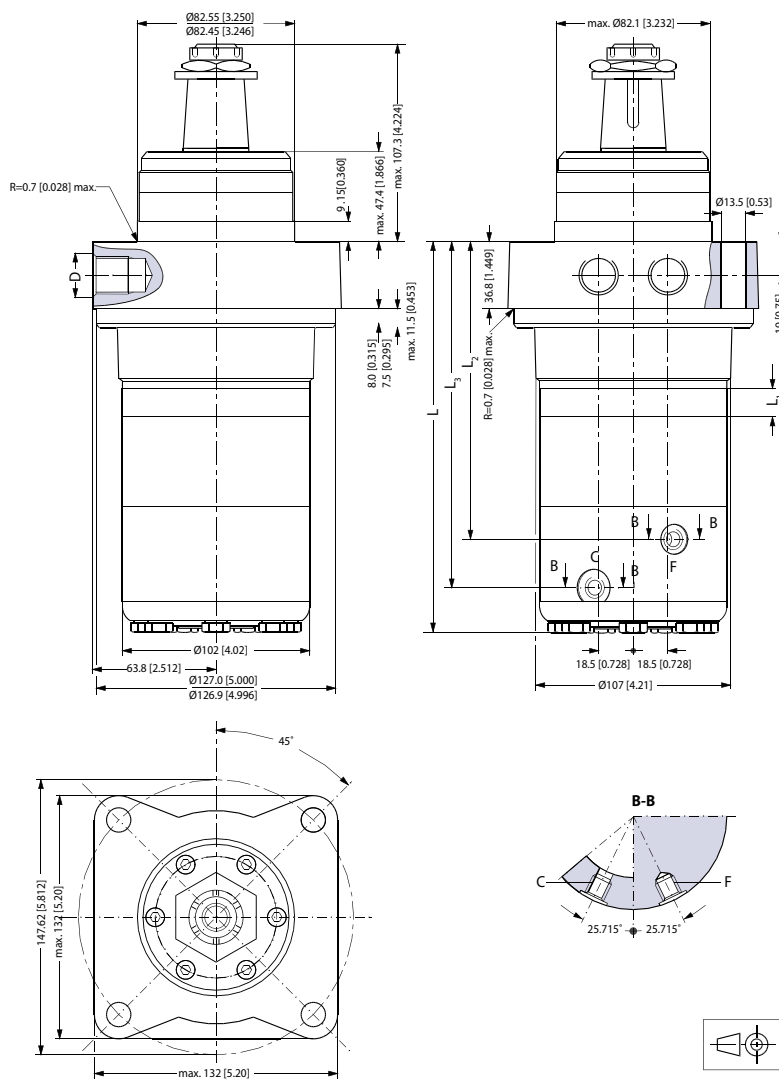




Dimensions-European Version

Dimensions

OMRW NF motor



151-1793.11

C: Drain connection  
 G ¼; 12 mm [0.47 in] deep  
 E: M8; 13 mm [0.51 in] deep

D: G ½; 15 mm [0.59 in] deep  
 F: Brake release connection G ¼

Type	Max. L mm [in]	L1 mm [in]
OMRW 80 NF	213.2[8.39]	14.0 [0.55]
OMRW 100 NF	216.6 [8.53]	17.4 [0.69]
OMRW 125 NF	221.0 [8.70]	21.8 [0.86]
OMRW 160 NF	227.0 [8.94]	27.8 [1.09]
OMRW 200 NF	234.0 [9.21]	34.8 [1.37]

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**Technical Information    Orbital Motors Type OMP, OMR and OMH**


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**Dimensions-European Version**

Type	Max. L mm [in]	L1 mm [in]
OMRW 250 NF	242.7 [9.56]	43.5 [1.71]
OMRW 315 NF	254.0 [10.0]	54.8 [2.16]
OMRW 375 NF	264.2 [10.40]	65.0 [2.56]

Type	Max. L2 mm [in]	L3 mm [in]
OMRW 80 NF	159.2 [6.27]	182.7 [7.19]
OMRW 100 NF	162.6 [6.40]	186.1 [7.50]
OMRW 125 NF	167.0 [6.57]	190.5 [7.50]
OMRW 160 NF	173.0 [6.81]	196.5 [7.74]
OMRW 200 NF	180.0 [7.09]	203.5 [8.01]
OMRW 250 NF	188.7[7.43]	212.2 [8.35]
OMRW 315 NF	200.0 [7.87]	223.5 [8.80]
OMRW 375 NF	210.2 [8.28]	233.7 [9.20]

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**Technical Information    Orbital Motors Type OMP, OMR and OMH**


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**Weight of motors**
**Weight of Motors**

Code no	Weight	
	kg	[lb]
151-0208	7.2	[15.9]
151-0242	6.9	[15.2]
151-0243	7.0	[15.4]
151-0244	7.5	[16.5]
151-0245	8.0	[17.6]
151-0246	9.0	[19.8]
151-0247	8.5	[18.7]
151-0248	6.7	[14.8]
151-0265	6.7	[14.8]
151-0266	6.9	[15.2]
151-0267	7.0	[15.4]
151-0268	7.5	[16.5]
151-0269	8.0	[17.6]
151-0270	9.0	[19.8]
151-0271	8.5	[18.7]
151-0300	5.6	[12.3]
151-0301	5.7	[12.6]
151-0302	5.9	[13.0]
151-0303	6.0	[13.2]
151-0304	6.2	[13.7]
151-0305	6.4	[14.1]
151-0306	6.6	[14.6]
151-0307	6.9	[15.2]
151-0308	7.4	[16.3]
151-0310	5.6	[12.3]
151-0311	5.7	[12.6]
151-0312	5.9	[13.0]
151-0313	6.0	[13.2]
151-0314	6.2	[13.7]
151-0315	6.4	[14.1]
151-0316	6.6	[14.6]
151-0317	6.9	[15.2]
151-0318	7.4	[16.3]
151-0319	5.6	[12.3]
151-0330	5.6	[12.3]
151-0331	5.7	[12.6]
151-0332	5.9	[13.0]
151-0333	6.0	[13.2]
151-0334	6.2	[13.7]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151-0335	6.4	[14.1]
151-0336	6.6	[14.6]
151-0337	6.9	[15.2]
151-0338	7.4	[16.3]
151-0340	5.5	[12.1]
151-0341	5.5	[12.1]
151-0342	5.6	[12.3]
151-0400	6.7	[14.8]
151-0401	6.9	[15.2]
151-0402	7.0	[15.4]
151-0403	7.2	[15.9]
151-0404	7.5	[16.5]
151-0405	8.0	[17.6]
151-0406	8.5	[18.7]
151-0407	9.0	[19.8]
151-0408	9.5	[20.9]
151-0410	6.7	[14.8]
151-0411	6.9	[15.2]
151-0412	7.0	[15.4]
151-0413	7.2	[15.9]
151-0414	7.5	[16.5]
151-0415	8.0	[17.6]
151-0416	8.5	[18.7]
151-0417	9.0	[19.8]
151-0418	9.5	[20.9]
151-0420	6.7	[14.8]
151-0421	6.9	[15.2]
151-0422	7.0	[15.4]
151-0423	7.2	[15.9]
151-0424	7.5	[16.5]
151-0425	8.0	[17.6]
151-0426	8.5	[18.7]
151-0427	9.0	[19.8]
151-0428	9.5	[20.9]
151-0600	5.6	[12.3]
151-0601	5.7	[12.6]
151-0602	5.9	[13.0]
151-0603	6.0	[13.2]
151-0604	6.2	[13.7]
151-0605	6.4	[14.1]
151-0606	6.6	[14.6]
151-0607	6.9	[15.2]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151-0608	7.4	[16.3]
151-0610	5.6	[12.3]
151-0611	5.7	[12.6]
151-0612	5.9	[13.0]
151-0613	6.0	[13.2]
151-0614	6.2	[13.7]
151-0615	6.4	[14.1]
151-0616	6.6	[14.6]
151-0617	6.9	[15.2]
151-0618	7.4	[16.3]
151-0622	5.9	[13.0]
151-0624	6.2	[13.7]
151-0625	6.4	[14.1]
151-0627	6.9	[15.2]
151-0630	5.6	[12.3]
151-0631	5.7	[12.6]
151-0632	5.9	[13.0]
151-0633	6.0	[13.2]
151-0634	6.2	[13.7]
151-0635	6.4	[14.1]
151-0636	6.6	[14.6]
151-0637	6.9	[15.2]
151-0638	7.4	[16.3]
151-0640	5.5	[12.1]
151-0641	5.5	[12.1]
151-0642	5.6	[12.3]
151-0646	5.9	[13.0]
151-0700	6.7	[14.8]
151-0701	6.9	[15.2]
151-0702	7.0	[15.4]
151-0703	7.2	[15.9]
151-0704	7.5	[16.5]
151-0705	8.0	[17.6]
151-0706	8.5	[18.7]
151-0707	9.0	[19.8]
151-0708	9.5	[20.9]
151-0710	6.7	[14.8]
151-0711	6.9	[15.2]
151-0712	7.0	[15.4]
151-0713	7.2	[15.9]
151-0714	7.5	[16.5]
151-0715	8.0	[17.6]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151-0716	8.5	[18.7]
151-0717	9.0	[19.8]
151-0718	9.5	[20.9]
151-0720	6.7	[14.8]
151-0721	6.9	[15.2]
151-0722	7.0	[15.4]
151-0723	7.2	[15.9]
151-0724	7.5	[16.5]
151-0725	8.0	[17.6]
151-0726	8.5	[18.7]
151-0727	9.0	[19.8]
151-0728	9.5	[20.9]
151-1208	5.6	[12.3]
151-1209	5.7	[12.6]
151-1210	5.9	[13.0]
151-1211	6.2	[13.7]
151-1212	6.4	[14.1]
151-1213	6.6	[14.6]
151-1214	6.9	[15.2]
151-1215	7.4	[16.3]
151-1217	6.0	[13.2]
151-1231	6.7	[14.8]
151-1232	6.9	[15.2]
151-1233	7.0	[15.4]
151-1234	7.5	[16.5]
151-1235	8.0	[17.6]
151-1236	8.5	[18.7]
151-1237	9.0	[19.8]
151-1238	7.2	[15.9]
151-1243	9.5	[20.9]
151-5001	5.6	[12.3]
151-5002	5.7	[12.6]
151-5003	5.9	[13.0]
151-5004	6.0	[13.2]
151-5005	6.2	[13.7]
151-5006	6.4	[14.1]
151-5007	6.6	[14.6]
151-5008	6.9	[15.2]
151-5009	7.4	[16.3]
151-5010	5.4	[11.9]
151-5174	5.4	[11.9]
151-5191	6.1	[13.4]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151-5192	6.2	[13.7]
151-5193	6.4	[14.1]
151-5194	6.5	[14.3]
151-5195	6.7	[14.8]
151-5196	6.9	[15.2]
151-5197	7.1	[15.7]
151-5198	7.4	[16.3]
151-5199	7.9	[17.4]
151-5211	5.5	[12.1]
151-5212	5.6	[12.3]
151-5213	5.8	[12.8]
151-5214	5.9	[13.0]
151-5215	6.1	[13.4]
151-5216	6.3	[13.9]
151-5217	6.5	[14.3]
151-5218	6.8	[15.0]
151-5219	7.3	[16.1]
151-5301	5.5	[12.1]
151-5302	5.6	[12.3]
151-5303	5.8	[12.8]
151-5304	5.9	[13.0]
151-5305	6.1	[13.4]
151-5306	6.3	[13.9]
151-5307	6.5	[14.3]
151-5308	6.8	[15.0]
151-5309	7.3	[16.1]
151-5311	5.6	[12.3]
151-5312	5.7	[12.6]
151-5313	5.9	[13.0]
151-5315	6.2	[13.7]
151-5316	6.4	[14.1]
151-5318	6.9	[15.2]
151-6000	6.7	[14.8]
151-6001	6.9	[15.2]
151-6002	7.0	[15.4]
151-6003	7.2	[15.9]
151-6004	7.5	[16.5]
151-6005	8.0	[17.6]
151-6006	8.5	[18.7]
151-6007	9.0	[19.8]
151-6008	9.5	[20.9]
151-6010	6.7	[14.8]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151-6011	6.9	[15.2]
151-6012	7.0	[15.4]
151-6013	7.2	[15.9]
151-6014	7.5	[16.5]
151-6015	8.0	[17.6]
151-6016	8.5	[18.7]
151-6017	9.0	[19.8]
151-6018	9.5	[20.9]
151-6110	6.7	[14.8]
151-6111	6.9	[15.2]
151-6112	7.0	[15.4]
151-6113	7.2	[15.9]
151-6114	7.5	[16.5]
151-6115	8.0	[17.6]
151-6116	8.5	[18.7]
151-6117	9.0	[19.8]
151-6118	9.5	[20.9]
151-6190	7.3	[16.1]
151-6191	7.5	[16.5]
151-6192	7.6	[16.8]
151-6193	7.8	[17.2]
151-6194	8.1	[17.9]
151-6195	8.6	[19.0]
151-6196	9.1	[20.1]
151-6197	9.6	[21.2]
151-6198	10.1	[22.3]
151-6210	6.7	[14.8]
151-6211	6.9	[15.2]
151-6212	7.0	[15.4]
151-6213	7.2	[15.9]
151-6214	7.5	[16.5]
151-6215	8.0	[17.6]
151-6216	8.5	[18.7]
151-6217	9.0	[19.8]
151-6218	9.5	[20.9]
151-6294	9.5	[20.9]
151-6295	7.2	[15.9]
151-6296	9.5	[20.9]
151-6300	9.0	[19.8]
151-6301	9.4	[20.7]
151-6302	9.5	[20.9]
151-6303	9.7	[21.4]



**Weight of motors**

Code no	Weight	
	kg	[lb]
151-6304	10.0	[22.1]
151-6305	10.5	[23.1]
151-6306	11.0	[24.3]
151-6307	11.5	[25.4]
151-6308	12.0	[26.5]
151-6380	6.7	[14.8]
151-6381	6.9	[15.2]
151-6383	7.2	[15.9]
151-6384	7.5	[16.5]
151-6385	8.0	[17.6]
151-6386	8.5	[18.7]
151-6387	9.0	[19.8]
151-6388	9.5	[20.9]
151-6430	9.0	[19.8]
151-6431	9.4	[20.7]
151-6432	9.5	[20.9]
151-6433	9.7	[21.4]
151-6434	10.0	[22.1]
151-6435	10.5	[23.1]
151-6436	11.0	[24.3]
151-6437	11.5	[25.4]
151-6438	12.0	[26.5]
151-6442	14.5	[32.0]
151-6443	14.7	[32.4]
151-6444	15.0	[33.1]
151-6445	15.5	[34.2]
151-6461	11.5	[25.4]
151-6462	12.0	[26.5]
151-6463	12.0	[26.5]
151-6464	12.5	[27.6]
151-6465	12.5	[27.6]
151-6466	13.0	[28.7]
151-6467	13.5	[29.8]
151-6468	14.0	[30.9]
151-6471	11.5	[25.4]
151-6472	12.0	[26.5]
151-6473	12.0	[26.5]
151-6474	12.5	[27.6]
151-6475	12.5	[27.6]
151-6476	13.0	[28.7]
151-6477	13.5	[29.8]
151-6478	14.0	[30.9]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151-7021	5.0	[11.0]
151-7022	5.1	[11.2]
151-7023	5.3	[11.7]
151-7024	5.4	[11.9]
151-7025	5.6	[12.3]
151-7026	5.8	[12.8]
151-7027	6.0	[13.2]
151-7028	6.3	[13.9]
151-7029	6.8	[15.0]
151-7041	5.6	[12.3]
151-7042	5.7	[12.6]
151-7043	5.9	[13.0]
151-7044	5.4	[11.9]
151-7045	6.2	[13.7]
151-7046	6.4	[14.1]
151-7047	6.6	[14.6]
151-7048	6.9	[15.2]
151-7049	7.4	[16.3]
151-7061	5.0	[11.0]
151-7062	5.1	[11.2]
151-7063	5.3	[11.7]
151-7065	5.6	[12.3]
151-7066	5.8	[12.8]
151-7067	6.0	[13.2]
151-7068	6.3	[13.9]
151-7069	6.8	[15.0]
151-7080	5.4	[12.0]
151-7081	5.4	[12.0]
151-7082	5.6	[12.3]
151-7101	5.5	[12.1]
151-7102	5.6	[12.3]
151-7103	5.8	[12.8]
151-7104	5.9	[13.0]
151-7105	6.1	[13.4]
151-7106	6.3	[13.9]
151-7107	6.5	[14.3]
151-7108	6.8	[15.0]
151-7109	7.3	[16.1]
151-7240	6.7	[14.8]
151-7241	6.9	[15.2]
151-7242	7.0	[15.4]
151-7243	7.2	[15.9]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151-7244	7.5	[16.5]
151-7245	8.0	[17.6]
151-7246	8.5	[18.7]
151-7247	9.0	[19.8]
151-7248	9.5	[20.9]
151-7250	6.7	[14.8]
151-7251	6.9	[15.2]
151-7252	7.0	[15.4]
151-7253	7.2	[15.9]
151-7254	7.5	[16.5]
151-7255	8.0	[17.6]
151-7256	8.5	[18.7]
151-7257	9.0	[19.8]
151-7258	9.5	[20.9]
151-7260	6.1	[13.4]
151-7261	6.3	[13.9]
151-7262	6.4	[14.1]
151-7263	6.6	[14.6]
151-7264	6.9	[15.2]
151-7265	7.4	[16.3]
151-7266	7.9	[17.4]
151-7267	8.4	[18.5]
151-7269	8.9	[19.6]
151H1002	10.5	[23.1]
151H1003	11.0	[24.3]
151H1004	11.5	[25.4]
151H1005	12.3	[27.1]
151H1006	13.0	[28.7]
151H1012	10.5	[23.1]
151H1013	11.0	[24.3]
151H1014	11.5	[25.4]
151H1015	12.3	[27.1]
151H1016	13.0	[28.7]
151H1022	10.5	[23.1]
151H1023	11.0	[24.3]
151H1024	11.5	[25.4]
151H1025	12.3	[27.1]
151H1026	13.0	[28.7]
151H1034	11.5	[25.4]
151H1035	12.3	[27.1]
151H1036	13.0	[28.7]
151H1042	10.5	[23.1]

**Weight of motors**

Code no	Weight	
	kg	[lb]
151H1043	11.0	[24.3]
151H1044	11.5	[25.4]
151H1045	12.3	[27.1]
151H1046	13.0	[28.7]
151H1052	10.5	[23.1]
151H1053	11.0	[24.3]
151H1054	11.5	[25.4]
151H1055	12.3	[27.1]
151H1056	13.0	[28.7]
151H1080	10.5	[23.1]
151H1081	13.0	[28.7]
151H1082	11.0	[24.3]
151H1083	11.5	[25.4]
151H1084	12.3	[27.1]





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