Danfoss OMP 25 151-0640 orbital hydraulic motor

Manufacturer: Danfoss

Manufacturer part number / published order designation: 151-0640

Published model: 151-0640

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

Execution notes and conditions

This is a discontinued Danfoss factory article documented for identification and maintenance of installed equipment. The retained 2018 catalogue is an archive reference; successor motors and their specifications are separate products.

The continuous torque and pressure-drop table is selected for the actual cylindrical shaft group. Independent maxima are not simultaneous guarantees; use the performance diagram and shaft/seal limits.

Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Danfoss OMP, OMR and OMH - 520L0262 / BC00000084en-US0402 - January 2018

Original pages	Compiled pages	Relevant content
8	2	Applicable OMP technical data, performance or execution drawing
10	3	Ordering identity and configuration
14-15	4-5	Applicable OMP technical data, performance or execution drawing
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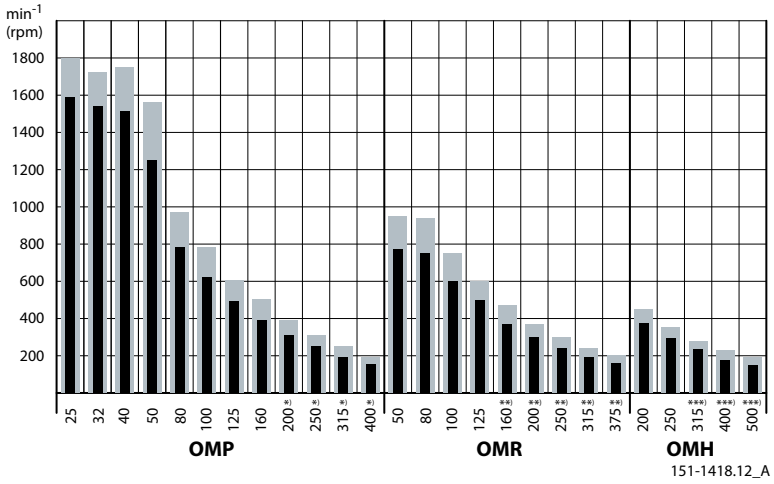
A wide range of Orbital Motors

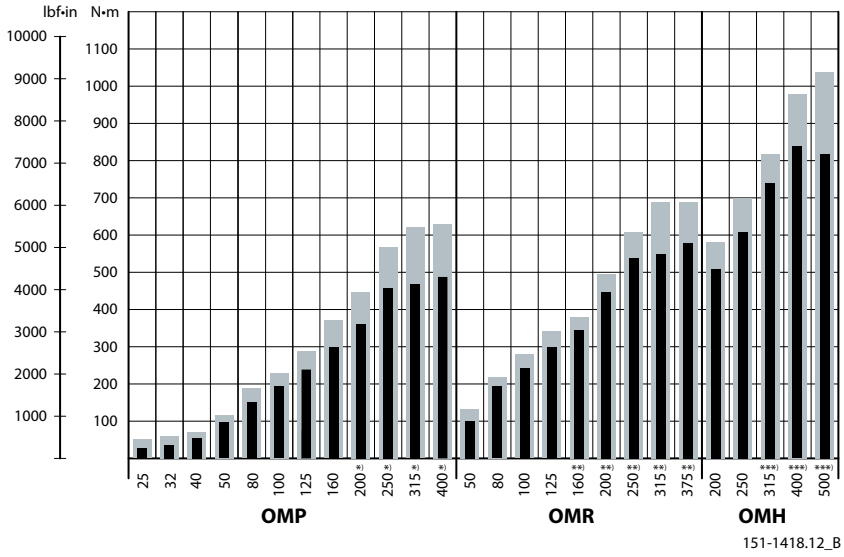
Literature title	Literature type	Reference number
TMK, TMKW, TMK FL Orbital Motors	Technical Information	BC00000098
TMT, TMTU, TMTW, TMT FL Orbital Motors	Technical Information	BC00000102
TMTHW Orbital Motors	Technical Information	BC00000230

Speed, torque and output

Maximum speed



Maximum torque



OMP versions and code numbers

This section shows the different versions/configuration codes and the ordering numbers.

- Section *OMP technical data* on page 14, specify the technical data for OMP X for each shaft type.
- In section *OMP function diagrams* on page 24, the diagram for each motor size is shown.
- See *OMP dimensions* on page 34 for outer main dimensions for the different OMP X motor types.

OMP versions and code numbers

OMP standard motors

Mounting flange: 2 holde oval flange (A2)

Spigot diamer	**Ø82.5 mm [3.25 in]**							
Bolt circle diameter	**Ø106.4 mm [4.20 in]**							
Shaft	**Main port size**	**Port style**	**Drain port size**	**Standard shaft seal**	**High pressure shaft seal**	**Check valve**	**Main type designation**	**Conf. code**
Cyl. Ø25 mm	G 1/2	Side port	-	-	Yes	-	OMP	***A1***
Cyl. Ø25 mm	G 1/2	Side port	G 1/4	-	Yes	-	OMP	***A2***
Cyl. Ø25 mm	G 1/2	End port	G 1/4	Yes	-	Yes	OMP	***A3***
Cyl. 1 in	G 1/2	Side port	-	-	Yes	-	OMP	***A4***
Cyl. 1 in	G 1/2	Side port	G 1/4	-	Yes	-	OMP	***A5***
Cyl. 1 in	7/8-14 UNF	Side port	7/16-20 UNF	Yes	-	Yes	OMP	***A6***
Splined 1 in	G 1/2	Side port	-	-	Yes	-	OMP	***A7***
Splined 1 in	G 1/2	Side port	G 1/4	-	Yes	-	OMP	***A8***

Code numbers

Conf. code	**Displacement**											
	25	**32**	**40**	**50**	**80**	**100**	**125**	**160**	**200**	**250**	**315**	**400**
A1	151-0340	151-0341	151-0342	151-0310	151-0311	151-0312	151-0313	151-0314	151-0315	151-0316	151-0317	151-0318
A2	151-0640	151-0641	151-0652	151-0610	151-0611	151-0612	151-0613	151-0614	151-0615	151-0616	151-0617	151-0618
A3	-	-	-	151-5191	151-5192	151-5193	151-5194	151-5195	151-5196	151-5197	151-5198	151-5199
A4	-	-	11090903	151-0300	151-0301	151-0302	151-0303	151-0304	151-0305	151-0306	151-0307	151-0308
A5	-	-	-	151-0600	151-0601	151-0602	151-0603	151-0604	151-0605	151-0606	151-0607	151-0608
A6	151-7080	151-7081	151-7082	151-7041	151-7042	151-7043	151-7044*	151-7045	151-7046	-	151-7048	151-7049
A7	-	-	-	151-0330	151-0331	151-0332	151-0333	151-0334	151-0335	151-0336	151-0337	151-0338
A8	-	-	-	151-0630	151-0631	151-0632	151-0633	151-0634	151-0635	151-0636	151-0637	151-0638

* Motor painted black

Mounting flange : 4 hole oval flange (A4)

Spigot diamer	**Ø82.5 mm [3.25 in]**							
Bolt circle diameter	**Ø106.4 mm [4.20 in]**							
Shaft	**Main port size**	**Port style**	**Drain port size**	**Standard shaft seal**	**High pressure shaft seal**	**Check valve**	**Main type designation**	**Conf. code**
Cyl. Ø32 mm	G 1/2	Side port	G 1/4	Yes	-	Yes	OMP	***B1***

OMP technical data

OMP with 25 mm and 1 in cylindrical shaft

OMP 25 cm³ - 100 cm³

Type			OMP	OMP	OMP	OMP	OMP	OMP
Motor size			**25**	**32**	**40**	**50**	**80**	**100**
Geometric displacement	cm^3 [inch]		25.0 [1.53]	32.0 [1.96]	40.0 [2.45]	48.6 [2.97]	77.8 [4.76]	97.3 [5.95]
Max. speed	min^{-1}	cont.	1600	1560	1500	1230	770	615
	[rpm]	int.[1]	1800	1720	1750	1540	960	770
Max. torque	N•m [lbf•in]	cont.	33 [290]	43 [380]	52 [460]	93 [820]	150 [1330]	190 [1680]
		int.[1]	47 [420]	61 [540]	74 [660]	120 [1060]	190 [1680]	230 [2040]
Max. output	kW [hp]	cont.	4.5 [6.0	5.8 [7.8]	7.0 [9.4]	10.0 [13.4]	10.0 [13.4]	11.0 [14.8]
		int.[1]	6.1 [8.2]	7.8 [10.5]	10.6 [14.2]	12.0 [16.1]	12.0 [16.1]	13.0 [17.4]
Max. pressure drop	bar [psi]	cont.	100 [1450]	100 [1450]	100 [1450]	140 [2030]	140 [2030]	140 [2030]
		int.[1]	140 [2030]	140 [2030]	140 [2030]	175 [2540]	175 [2540]	175 [2540]
		peak[2]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. oil flow	l/min [US gal/min]	cont.	40 [10.6]	50 [13.2]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
		int.[1]	45 [11.9]	55 [14.5]	70 [18.5]	75 [19.8]	75 [19.8]	75 [19.8]
Max. starting pressure with unloaded shaft	bar [psi]	standard	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]
		free running gerotor	-	-	-	-	-	2 [29]
Min starting torque	at max. press drop cont. N•m [lbf•in]		30 [270]	40 [350]	45 [400]	80 [710]	135 [1200]	170 [1510]
	at max. press.drop int.[1] N•m [lbf•in]		40 [350]	55 [490]	63 [560]	100 [890]	170 [1510]	210 [1860]

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

[2] Peak load: the permissible values may occur for max. 1% of every minute.

Technical data is based on splined 6B shaft.

OMP 125 cm³ - 400 cm³

Type			OMP	OMP	OMP	OMP	OMP	OMP
Motor size			**125**	**160**	**200**	**250**	**315**	**400**
Geometric displacement	cm^3 [inch]		125.0 [7.65]	155.7 [9.53]	194.6 [11.91]	242.3 [14.83]	306.1 [18.73]	389.2 [23.82]
Max. speed	min^{-1} [rpm]	cont.	480	385	310	250	195	155
		int[1]	600	480	385	310	245	190

OMP technical data

OMP 125 cm³ - 400 cm³ (continued)

Type			OMP	OMP	OMP	OMP	OMP	OMP
Motor size			**125**	**160**	**200**	**250**	**315**	**400**
Max. torque	N•m [lbf•in]	cont.	240 [2120]	300 [2660]	300 [2660]	300 [2660]	300 [2660]	300 [2660]
		int.	290 [2570]	370 [3280]	380 [3360]	410 [3630]	390 [3450]	420 [3720]
Max. output	kW [hp]	cont.	10 [13.4]	10 [13.4]	8.0 [10.7]	6.0 [8.1]	5.0 [6.7]	4.0 [5.4]
		int.	12.0 [16.1]	12.0 [16.1]	11.0 [14.8]	9.0 [12.1]	7.0 [9.4]	6.0 [8.1]
Max. pressure drop	bar [psi]	cont.	140 [2030]	140 [2030]	115 [1670]	90 [1310]	75 [1090]	60 [870]
		int	175 [2540]	175 [2540]	150 [2180]	125 [1810]	100 [1450]	80 [1160]
		peak[2)]	225 [3260]	225 [3260]	225 [3260]	180 [2610]	160 [2320]	130 [1890]
Max. oil flow	l/min [US gal/min]	cont.	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
		int.	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]	standard	9 [130]	7 [100]	5 [75]	5 [75]	5 [75]	5 [75]
		free running gerotor	2 [29]	2 [29]	2 [29]	-	-	-
Min starting torque	at max. press drop cont. N•m [lbf•in]		210 [1860]	280 [2480]	270 [2390]	280 [2480]	280 [2480]	280 [2480]
	at max. press.drop int. N•m [lbf•in]		270 [2390]	350 [3100]	360 [3190]	390 [3450]	370 [3280]	400 [3540]

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

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

Technical data is based on splined 6B shaft.

Type	Max. inlet pressure	Max. return pressure with drain line		
OMP 25 - 400	bar [psi]	cont.	200 [2900]	200 [2900]
	bar [psi]	int.[1)]	225 [3263]	225 [3263]

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

OMP with 1 in splined and 28.5 mm tapered shaft

Type			OMP	OMP	OMP	OMP	OMP	OMP	OMP	OMP	OMP
Motor size			**50**	**80**	**100**	**125**	**160**	**200**	**250**	**315**	**400**
Geometric displacement	cm³ [inch]		48.6 [2.97]	77.8 [4.76]	97.3 [5.95]	125.0 [7.65]	155.7 [9.53]	194.6 [11.91]	242.3 [14.83]	306.1 [18.73]	389.2 [23.82]
Maximum speed	min⁻¹ [rpm]	cont.	1230	770	615	480	385	310	250	195	155
		int.[1)]	1540	960	770	600	480	385	310	245	190

OMP technical data

Type			OMP	OMP	OMP	OMP	OMP	OMP	OMP	OMP	OMP
Motor size			**50**	**80**	**100**	**125**	**160**	**200**	**250**	**315**	**400**
Maximum oil flow	l/min [US gal/min]	cont.	60 [15.9]	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.[1]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Maximum 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]
Minimum starting torque	at max. press drop cont. N•m [lbf•in]		80 [710]	135 [1200]	170 [1510]	210 [1860]	280 [2480]	340 [3010]	420 [3720]	460 [4070]	460 [4070]
	at max. press.drop int.[1] N•m [lbf•in]		100 [890]	170 [1510]	210 [1860]	270 [2390]	350 [3100]	420 [3720]	530 [4690]	600 [5310]	600 [5310]

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

[2] Peak load: the permissible values may occur for max. 1% of every minute.

Type			Max. inlet pressure	Max. return pressure with drain line
OMP 25 - 400	bar [psi]	cont.	175 [2540]	175 [2540]
	bar [psi]	int.[1]	200 [2900]	200 [2900]
	bar [psi]	peak[2]	225 [3260]	225 [3260]

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

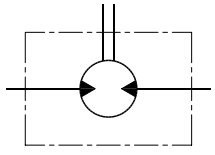
[2] Peak load: the permissible values may occur for max. 1% of every minute.

Maximum permissible shaft seal pressure

OMP with High Pressure Shaft Seal (HPS)

OMP with HPS and without drain connection:

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

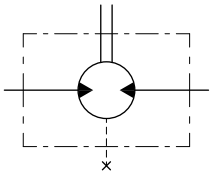


151-1743.10

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

OMP with HPS and drain connection:

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



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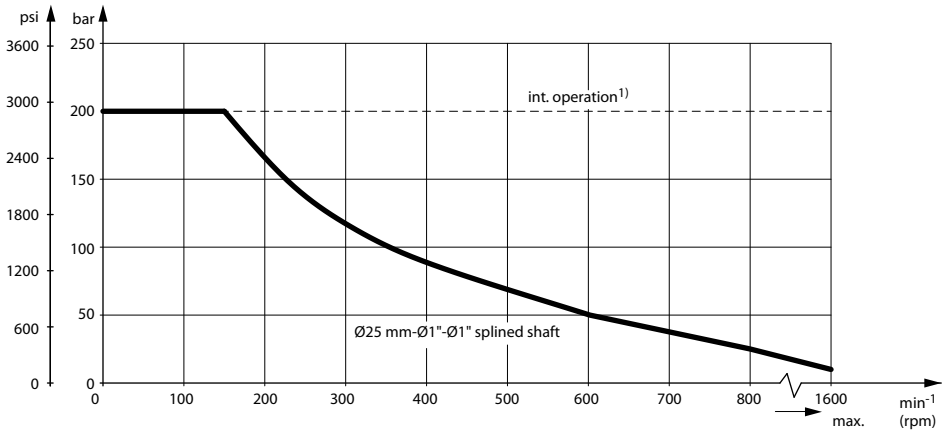
OMP technical data

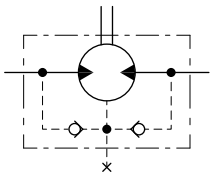
Maximum permissible shaft seal pressure



151-1745.10

OMP 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

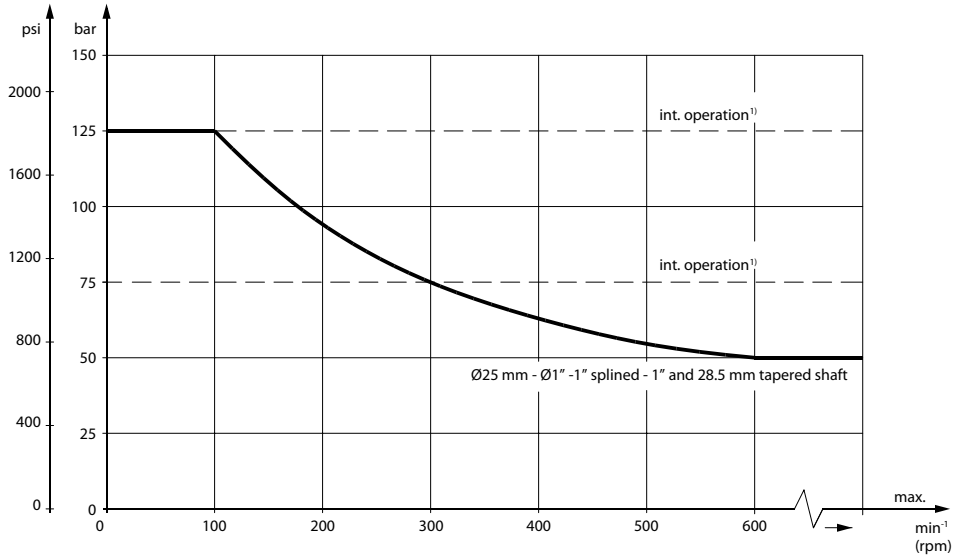


151-320.10

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

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

Maximum return pressure without drain line or max. pressure in the drain line



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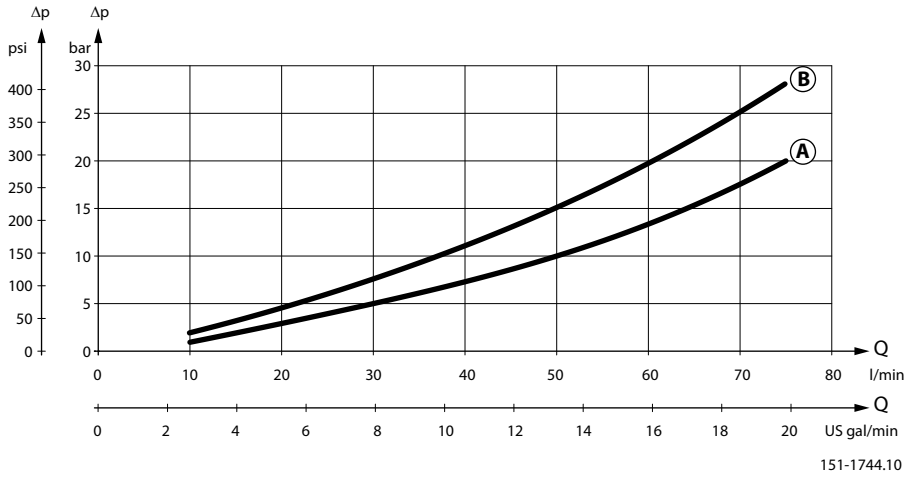
OMP technical data

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

Pressure drop in OMP motor

The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm²/s [165 SUS]



A: OMP 50 - 400

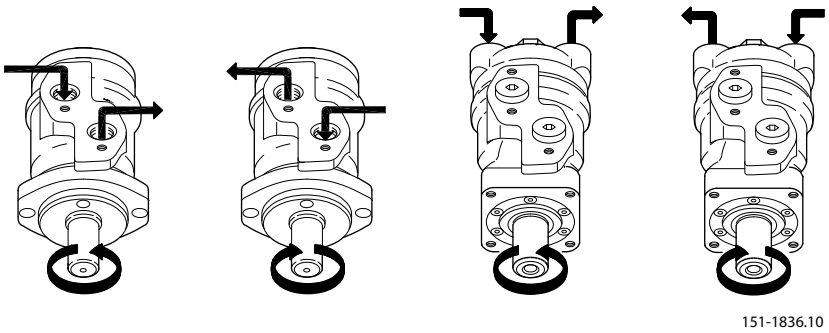
B: OMP 25 - 40 / OMPW

Oil flow in drain line

Max. oil flow in the drain line at return pressure less 5-10 bar

Pressure drop	**100 bar [1450 psi]**		**140 bar [2030 psi]**	
Viscosity	**20 mm²/s [100 SUS]**	**35 mm²/s [165 SUS]**	**20 mm²/s [100 SUS]**	**35 mm²/s [165 SUS]**
Max. oil flow	2.5 l/min [0.66 US gal/min]	1.8 l/min [0.78 US gal/min]	3.5 l/min [0.93 US gal/min]	2.8 l/min [0.74 US gal/min]

Direction of shaft rotation: clockwise



Permissible shaft loads

OMP technical data

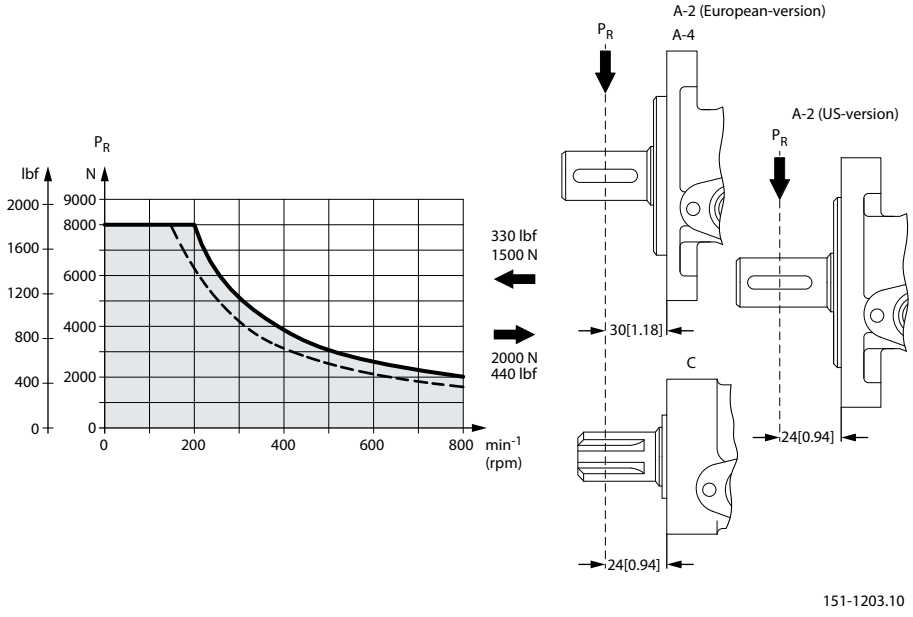
OMP and OMR shaft loads

The permissible radial shaft load (P_R) depends on: a distance from the point of load to the mounting flange (L), speed (n), mounting flange and 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)**
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 (P_R) - l in mm	$\frac{800}{n} \cdot \frac{250000\ N^*}{95 + L}$	$\frac{800}{n} \cdot \frac{187500\ N^*}{95 + L}$	$\frac{800}{n} \cdot \frac{250000\ N^*}{101 + L}$
Permissible shaft load (P_R) - l in inch	$\frac{800}{n} \cdot \frac{2215\ lbf^*}{3.74 + L}$	$\frac{800}{n} \cdot \frac{1660\ lbf^*}{3.74 + L}$	$\frac{800}{n} \cdot \frac{2215\ lbf^*}{3.98 + L}$

[**] For both European and US-version

* n≥ 200 min^{-1} [rpm]; ≤ 55 mm [2.2 in]. n< 200 min^{-1} [rpm]; = > P_{Rmax} = 8000 N [1800 lbf]



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

_____ other shaft versions

The curve shows the relation between P_R and n:

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

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

OMP function diagrams

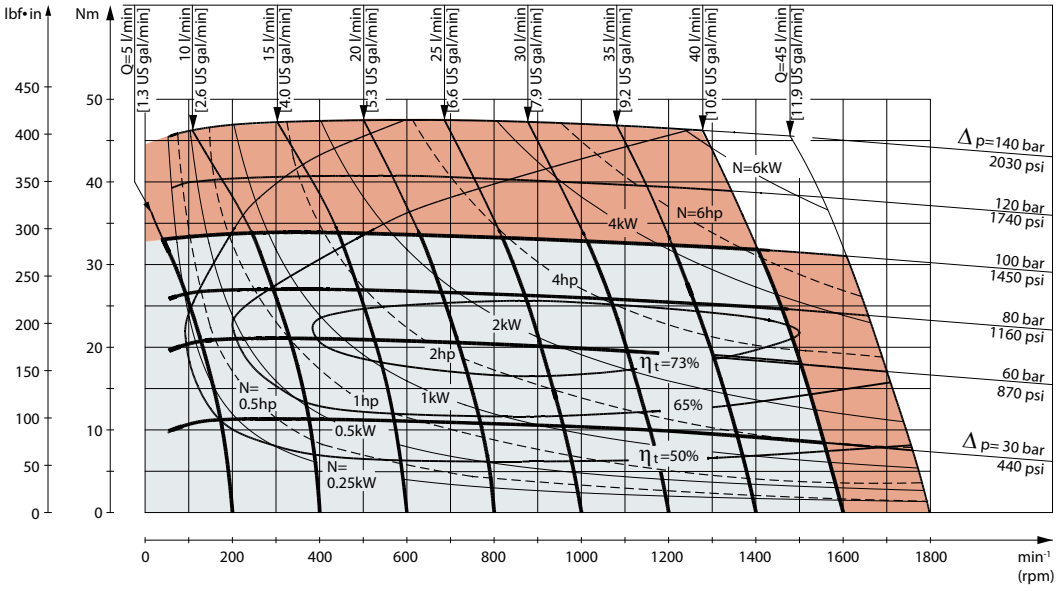
Explanation of function diagram use, basis and conditions can be found in *Speed, Torque and Output*.

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

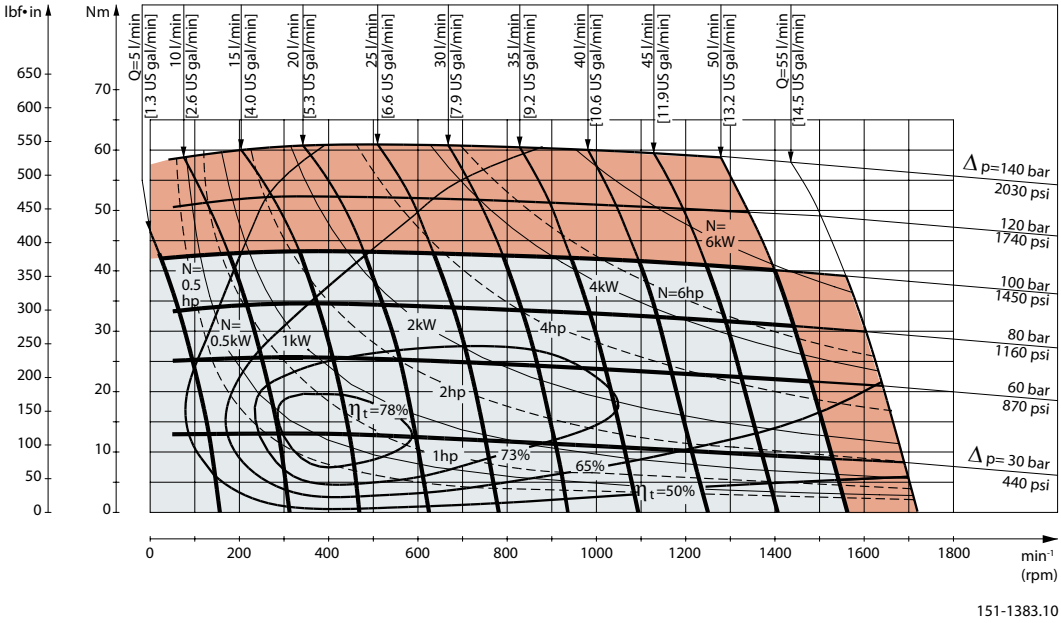
Max. permissible continuous/intermittent pressure drop for the actual shaft version can be found in *OMP technical data* on page 14.

Intermittent pressure drop and oil flow must not occur simultaneously.

OMP 25 function diagram



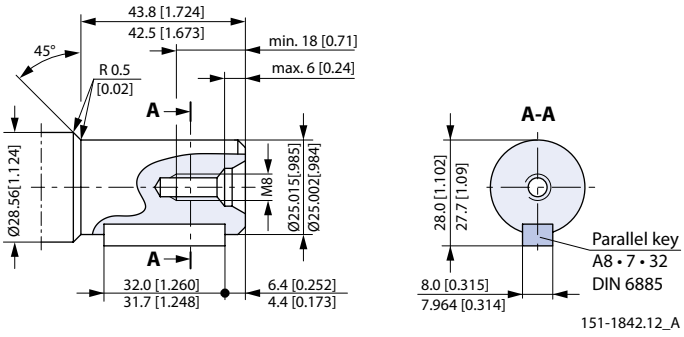
OMP 32 function diagram



OMP shaft version

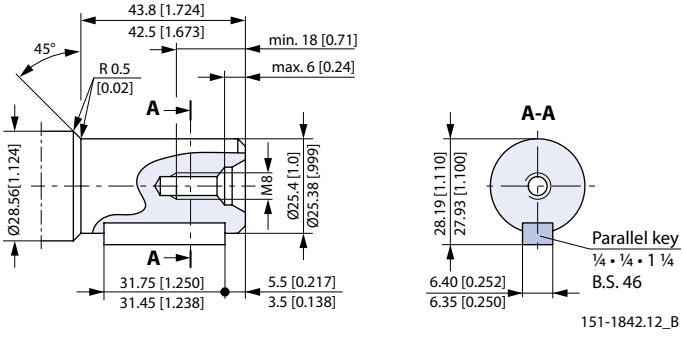
OMP shaft version

Cylindrical shaft 25 mm; Parallel key DIN 6885



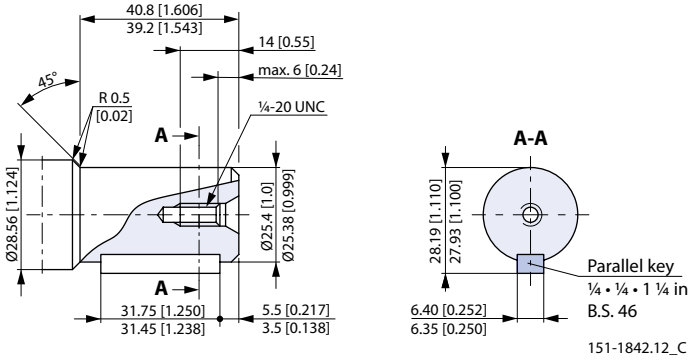
Max. torque: 360 N•m [3185 lb•in]

Cylindrical shaft 1 in; Parallel key B.S. 46



Max. torque: 360 N•m [3185 lb•in]

Cylindrical shaft 1 in; Parallel key B.S. 46 (US version)

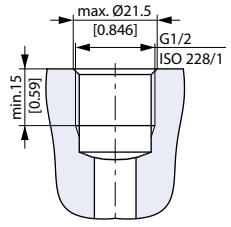
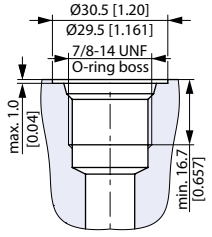
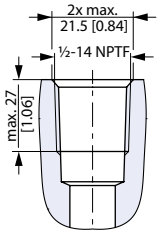
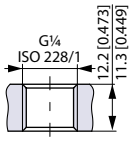
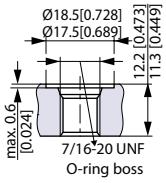


Max. torque: 360 N•m [3185 lb•in]

OMP port thread versions

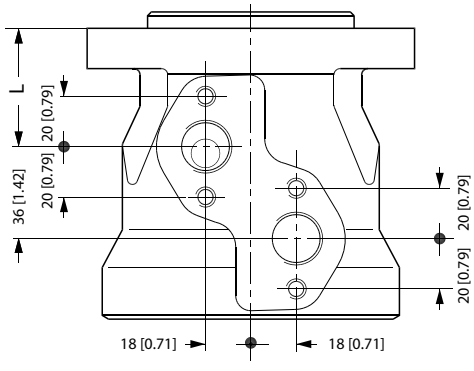
Main port thread versions

Main ports overview

G ISO 228/1 – G1/2	UNF 7/8–14 UNF O-ring boss	NPTF 1/2–14 NPTF	G drain ISO 228/1 – G1/4	UNF drain 7/16–20 UNF O-ring boss
				

OMP manifold mount

European version



151-2135.10

L: see dimensional drawing for given OMP motor:

- *OMP dimensions - European version* on page 34
- *OMP dimensions - US version* on page 42

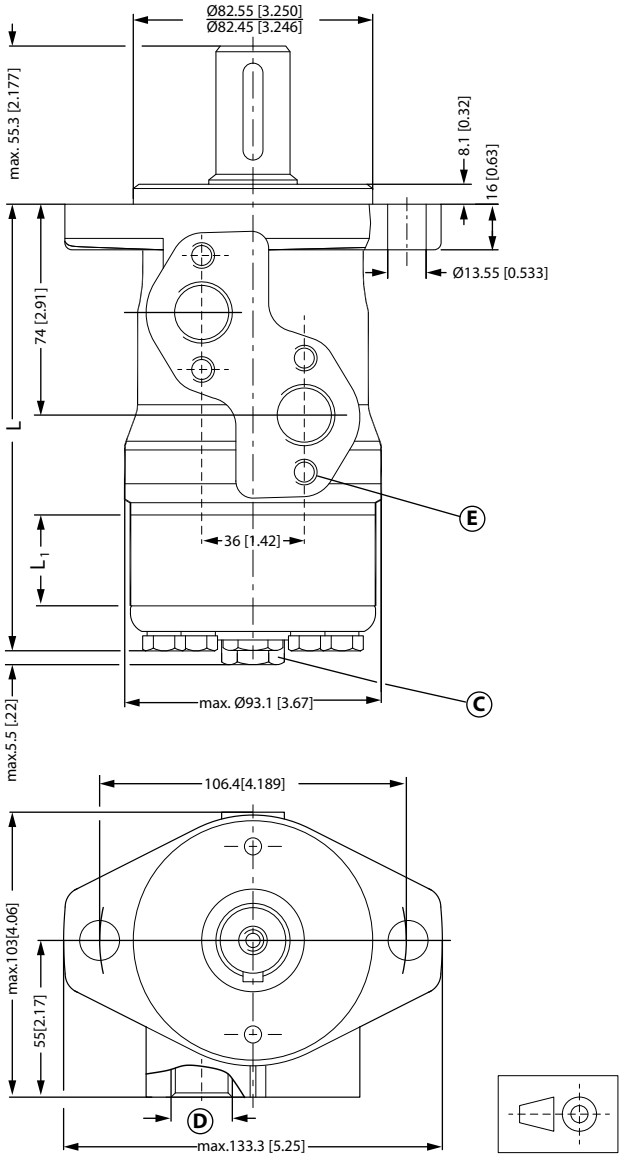
L: see dimensional drawing for given OMR motor:

- *OMR dimensions - European version* on page 69
- *OMR dimensions - US version* on page 79

OMP dimensions

EU version side port offset with 2-hole oval mounting flange (A2-flange) with drain connection

Side port - European version



151-1850.11

Tolerance for basic dimensions = ±1 mm [0.04 in]

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.)

Port connections:

A, B Main ports: G 1/2; min 15 mm [0.59 in] deep

C Drain port: G 1/4; 11.5 mm [0.45 in]

D Thread: M8; 13 mm [0.51 in] deep