



# MOTORS

## Technical Information

*Orbital Motors Type OMP, OMR and OMH*

White is a leading global provider of motor and steering solutions that power the evolution of mobile and industrial applications around the world.



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# Chapter 1

## General Information

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### Topics:

- *Orbital Motors Features*
- *Technical Features*
- *Orbital Motors Application Areas*
- *Speed, torque and output*

## Orbital Motors Features

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- 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
- High radial and axial bearing capacity
- Long life under extreme operating conditions
- Robust and compact design
- For applications in both open and closed loop hydraulic systems
- Suitable for a wide variety of hydraulics fluids

## Technical Features

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The program is characterized by technical features appealing to a large number of applications and by motors that can be adapted to a given application.

Adaptions comprise the following variants:

- Motors with:
  - corrosion resistant parts
  - needle bearing (OMP, OMR)
  - integrated negative holding brake
  - speed sensor
  - tachometer connection
  - black finish paint
- Short motors without bearings or Ultra short motors
- Wheel motors with recessed mounting flange

## Orbital Motors Application Areas

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The orbital motors are used in the following application areas:

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

# Speed, torque and output

## Speed

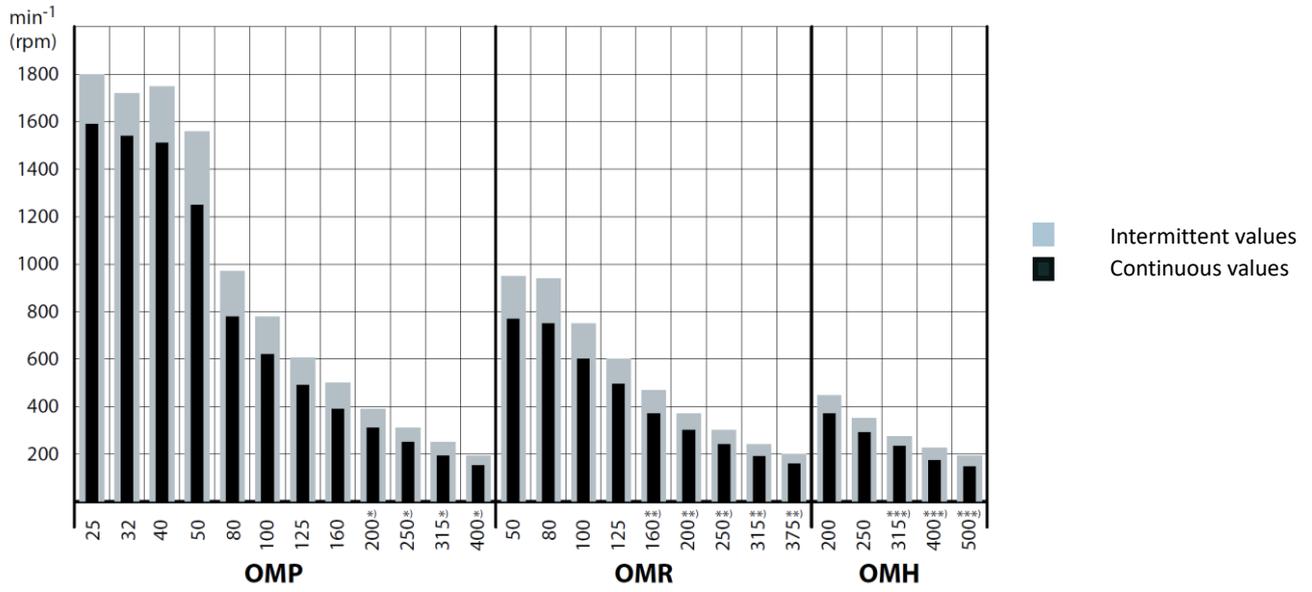


Figure 1 Maximum speed

## Torque

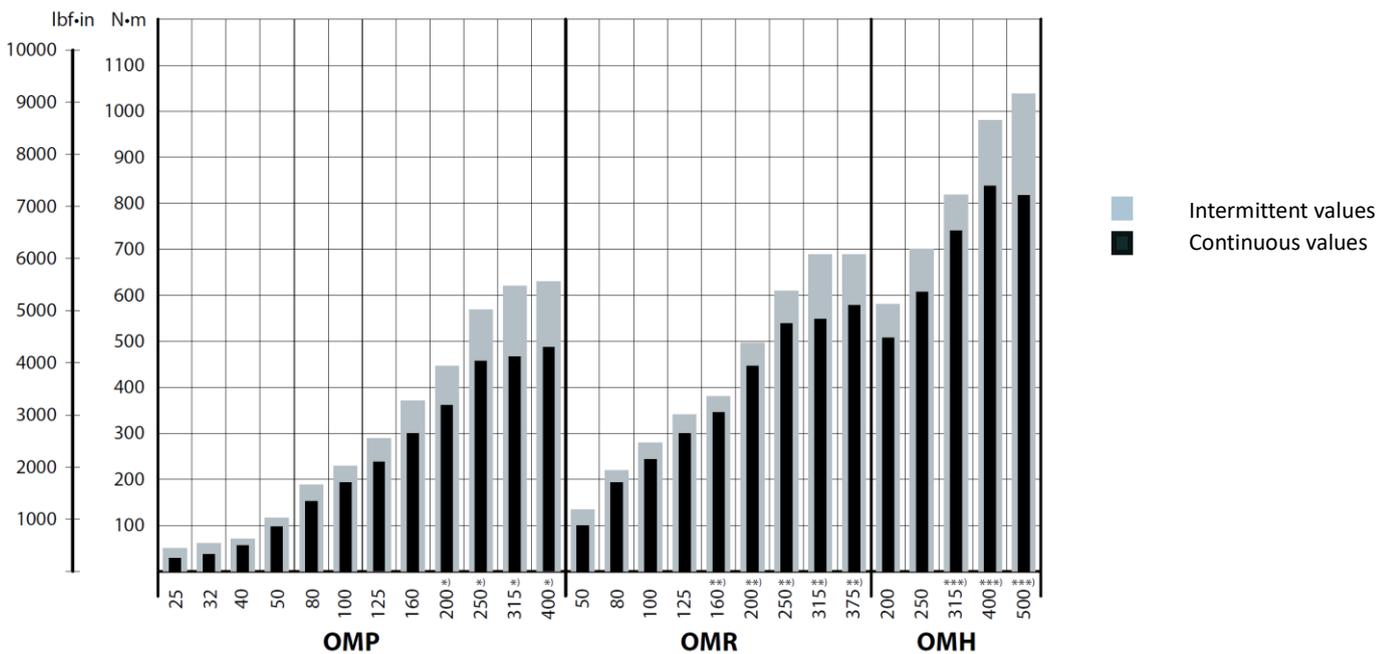


Figure 2 Maximum torque

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## Chapter 2

# OMP technical data

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### Topics:

- *OMP with 25 mm and 1 in cylindrical shaft*
- *OMP with 1 in splined and 28.5 mm tapered shaft*
- *OMP with 32 mm cylindrical shaft*
- *Maximum permissible shaft seal pressure*
- *Pressure drop in OMP motor*
- *Oil flow in drain line*
- *Direction of shaft rotation: clockwise*
- *Permissible shaft loads*

## OMP with 25 mm and 1 in cylindrical shaft

### OMP 25 cm<sup>3</sup> – 100 cm<sup>3</sup>

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

Table 1 OMP 25 cm<sup>3</sup> - 100 cm<sup>3</sup>

- 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.

Note:  
 Technical data is based on splined 6B shaft

Type			OMP					
Motor size			125	160	200	250	315	400
Geometric displacement	cm <sup>3</sup>		125.0	155.7	194.6	242.3	306.1	389.2
	[in <sup>3</sup> ]		[7.65]	[9.53]	[11.91]	[14.83]	[18.73]	[23.82]
Maximum speed	min <sup>-1</sup>	cont.	480	385	310	250	195	155
	[rpm]	int. <sup>1)</sup>	600	480	385	310	245	190
Maximum torque	N•m [lbf•in]	cont.	240	300	300	300	300	300
			[2120]	[2660]	[2660]	[2660]	[2660]	[2660]
		int. <sup>1)</sup>	290	370	380	410	390	420
			[2570]	[3280]	[3360]	[3630]	[3450]	[3720]
Maximum output	kW [hp]	cont.	10	10	8.0	6.0	5.0	4.0
			[13.4]	[13.4]	[10.7]	[8.1]	[6.7]	[5.4]
		int. <sup>1)</sup>	12.0	12.0	11.0	9.0	7.0	6.0
			[16.1]	[16.1]	[14.8]	[12.1]	[9.4]	[8.1]
Maximum pressure drop.	bar [psi]	cont.	140	140	115	90	75	60
			[2030]	[2030]	[1670]	[1310]	[1090]	[870]
		int. <sup>1)</sup>	175	175	150	125	100	80
			[2540]	[2540]	[2180]	[1810]	[1450]	[1160]
peak <sup>2)</sup>	225	225	225	180	160	130		
	[3260]	[3260]	[3260]	[2610]	[2320]	[1890]		
Maximum oil flow	l/min [US gal/ min]	cont.	60	60	60	60	60	60
			[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]
		int. <sup>1)</sup>	75	75	75	75	75	75
			[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
Maximum starting pressure with unloaded shaft	Bar [psi]	standard	9	7	5	5	5	5
			[130]	[100]	[75]	[75]	[75]	[75]
		Free running gerotor	2	2	2	-	-	-
			[29]	[29]	[29]			
Min starting torque	at max. press drop cont. N•m [lbf•in]		210	280	270	280	280	280
			[1860]	[2480]	[2390]	[2480]	[2480]	[2480]
		at max. press.drop int. <sup>1)</sup> N•m [lbf•in]	270	350	360	390	370	400
			[2390]	[3100]	[3190]	[3450]	[3280]	[3540]

Table 2 OMP 125 cm<sup>3</sup> - 400 cm<sup>3</sup>

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.

**Note:**

Technical data is based on splined 6B shaft

**Maximum pressure**

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

Table 3 OMP Maximum pressures

## OMP with 1 in splined and 28.5 mm tapered shaft

Type			OMP								
Motor size			50	80	100	125	160	200	250	315	400
Geometric displacement	$cm^3$		48.6	77.8	97.3	125.0	155.7	194.6	242.3	306.1	389.2
	$[in^3]$		[2.97]	[4.76]	[5.95]	[7.65]	[9.53]	[11.91]	[14.83]	[18.73]	[23.82]
Maximum speed	$min^{-1}$	cont.	1230	770	615	480	385	310	250	195	155
	$[rpm]$	int. <sup>1)</sup>	1540	960	770	600	480	385	310	245	190
Maximum torque	$N\bullet m$ $[lbf\bullet in]$	cont.	93	150	190	240	300	360	360	360	360
			[820]	[1330]	[1680]	[2120]	[2660]	[3190]	[3190]	[3190]	[3190]
		int. <sup>1)</sup>	120	190	230	290	370	450	460	470	460
			[1060]	[1680]	[2040]	[2570]	[3280]	[3980]	[4070]	[4160]	[4070]
Maximum output	$kW$ $[hp]$	cont.	10.0	10.0	11.0	10.0	10.0	10.0	8.0	6.0	5.0
			[13.4]	[13.4]	[14.8]	[13.4]	[13.4]	[13.4]	[10.7]	[8.0]	[6.7]
		int. <sup>1)</sup>	12.0	12.0	13	12.0	12.0	12.0	10.5	7.5	6.0
			[16.1]	[16.1]	[17.4]	[16.1]	[16.1]	[16.1]	[14.1]	[10.1]	[8.0]
Maximum pressure drop.	$bar$ $[psi]$	cont.	140	140	140	140	140	140	105	90	70
			[2030]	[2030]	[2030]	[2030]	[2030]	[2030]	[1520]	[1310]	[1020]
		int. <sup>1)</sup>	175	175	175	175	175	175	140	120	90
			[2540]	[2540]	[2540]	[2540]	[2540]	[2540]	[2030]	[1740]	[1310]
peak <sup>2)</sup>	225	225	225	225	225	225	180	160	130		
	[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[2610]	[2320]	[1890]		
Maximum oil flow	$l/min$ $[US\ gal/min]$	cont.	60	60	60	60	60	60	60	60	60
			[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]
		int. <sup>1)</sup>	75	75	75	75	75	75	75	75	75
			[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	
Maximum starting pressure with unloaded shaft	$Bar$ $[psi]$		10	10	10	9	7	5	5	5	5
			[145]	[145]	[145]	[130]	[100]	[75]	[75]	[75]	[75]
Min starting torque	at max. press drop cont. $N\bullet m [lbf\bullet in]$		80	135	170	210	280	340	330	340	345
			[710]	[1200]	[1510]	[1860]	[2480]	[3010]	[2920]	[3010]	[3050]
		at max. press.drop int. <sup>1)</sup> $N\bullet m [lbf\bullet in]$	100	170	210	270	350	420	440	450	425
			[890]	[1510]	[1860]	[2390]	[3100]	[3720]	[3890]	[3980]	[3760]

Table 4 OMP with 1 in splined and 28.5 mm tapered shaft

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.

Note:

Technical data is based on splined 6B shaft.

## OMP with 32 mm cylindrical shaft

Type			OMP									
Motor size			50	80	100	125	160	200	250	315	400	
Geometric displacement	$cm^3$		48.6	77.8	97.3	125.0	155.7	194.6	242.3	306.1	389.2	
	$[in^3]$		[2.97]	[4.76]	[5.95]	[7.65]	[9.53]	[11.91]	[14.83]	[18.73]	[23.82]	
Maximum speed	$min^{-1}$	cont.	1230	770	615	480	385	310	250	195	155	
	$[rpm]$	int. <sup>1)</sup>	[1540]	[960]	[770]	[600]	[480]	[385]	[310]	[245]	[190]	
Maximum torque	$N\cdot m$ $[lbf\cdot in]$	cont.	93	150	190	240	300	360	460	470	490	
			[820]	[1330]	[1680]	[2120]	[2660]	[3190]	[4070]	[4160]	[4340]	
		int. <sup>1)</sup>	120	190	230	290	370	450	570	620	630	
			[1060]	[1680]	[2040]	[2570]	[3280]	[3980]	[5050]	[5490]	[580]	
Maximum output	$kW$ $[hp]$	cont.	10.0	10.0	11.0	10.0	10.0	10.0	9.5	7.5	6.5	
			[13.4]	[13.4]	[14.8]	[13.4]	[13.4]	[13.4]	[12.7]	[10.1]	[8.7]	
		int. <sup>1)</sup>	12.0	12.0	13.0	12.0	12.0	12.0	12.0	9.0	7.5	
			[16.1]	[16.1]	[17.4]	[16.1]	[16.1]	[16.1]	[16.1]	[12.1]	[10.1]	
Maximum pressure drop.	$bar$ $[psi]$	cont.	140	140	140	140	140	140	140	120	95	
			[2030]	[2030]	[2030]	[2030]	[2030]	[2030]	[2030]	[2030]	[1740]	[1380]
		int. <sup>1)</sup>	175	175	175	175	175	175	175	175	160	125
			[2540]	[2540]	[2540]	[2540]	[2540]	[2540]	[2540]	[2540]	[2320]	[1810]
peak <sup>2)</sup>	225	225	225	225	225	225	225	225	225	180		
	[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[2610]		
Maximum oil flow	$l/min$ $[US\ gal/min]$	cont.	60	60	60	60	60	60	60	60	60	
			[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	
		int. <sup>1)</sup>	75	75	75	75	75	75	75	75	75	
			[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]		
Maximum starting pressure with unloaded shaft	$Bar$ $[psi]$		10	10	10	9	7	5	5	5	5	
			[145]	[145]	[145]	[130]	[100]	[75]	[75]	[75]	[75]	
Min starting torque	at max. press.drop $N\cdot m [lbf\cdot in]$	cont.	80	135	170	210	280	340	420	460	460	
			[710]	[1200]	[1510]	[1860]	[2480]	[3010]	[3720]	[4070]	[4070]	
		int. <sup>1)</sup>	100	170	210	270	350	420	530	600	600	
			[890]	[1510]	[1860]	[2390]	[3100]	[3720]	[4690]	[5310]	[5310]	

Table 5 OMP with 32 mm cylindrical shaft

- 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 pressure

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

Table 6 OMP 25-400 Maximum pressures

## 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.

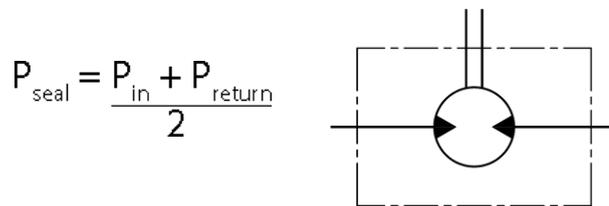


Figure 4 OMP with HPS

#### OMP with HPS and drain connection:

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

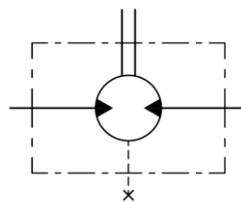


Figure 5 OMP with HPS and drain connection

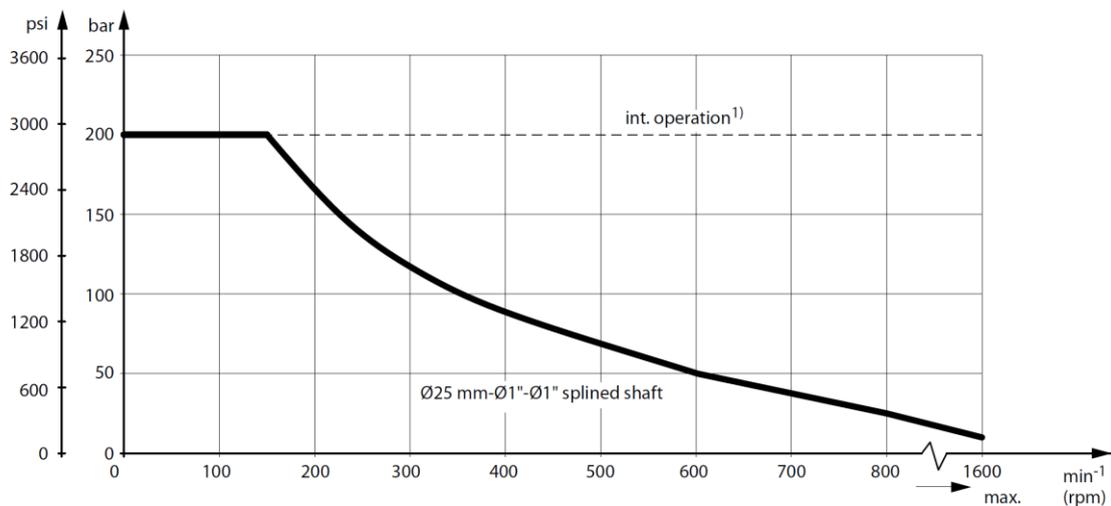


Figure 6 OMP with HPS and drain connection max. permissible shaft seal pressure

### 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.

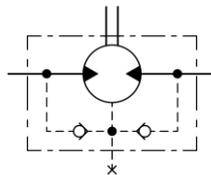


Figure 7 OMP with standard shaft seal, check valves and without use of drain connection

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

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

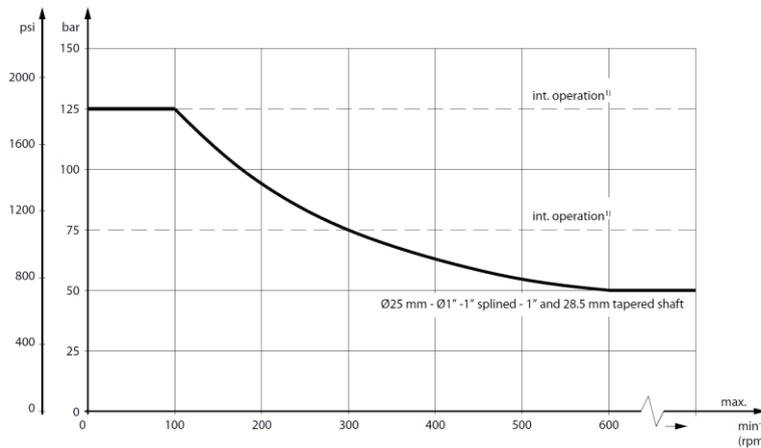


Figure 8 OMP with standard shaft seal, check valves and with drain connection max. return pressure without drain line or max. pressure in the drain line

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

**OMP with Standard Shaft Seal**

**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

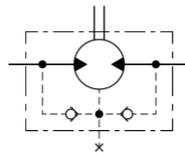


Figure 9 OMP with standard shaft seal, check valves and without use of drain connection

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

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

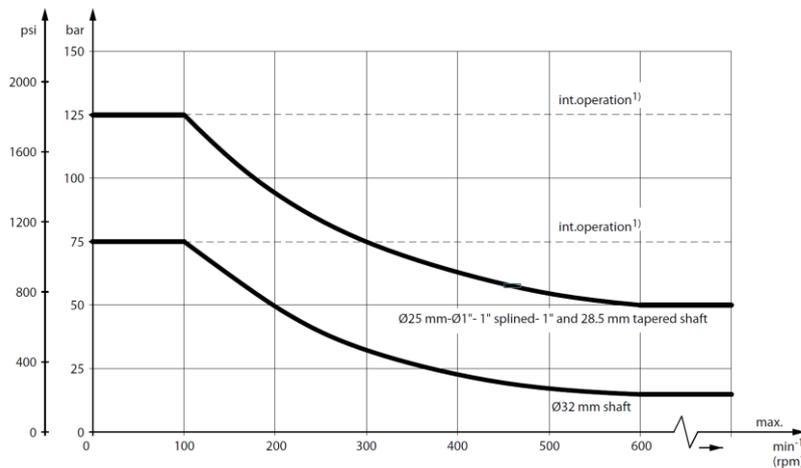
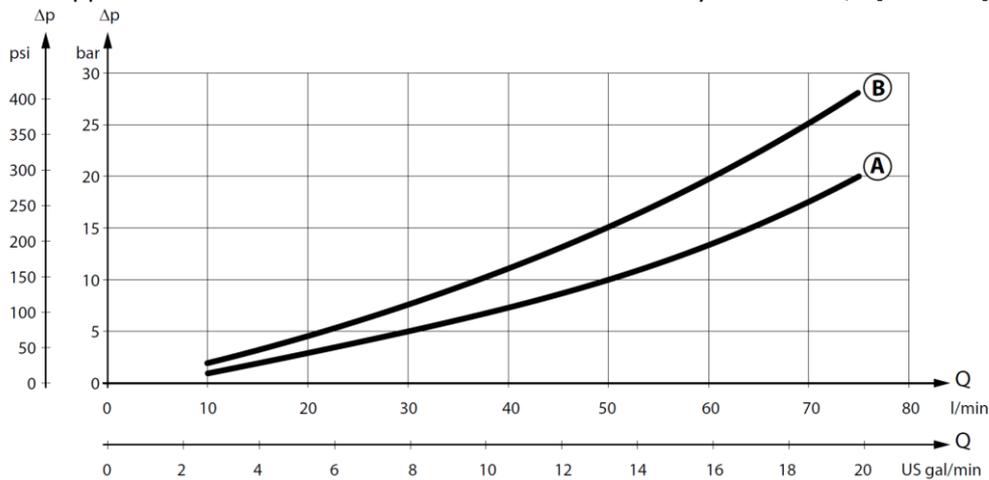


Figure 10 OMP with standard shaft seal, check valves and with drain connection max. return pressure without drain line or max. pressure in the drain line

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

## Pressure drop in OMP motor

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



A: OMP 50 – 400  
B: OMP 25 - 40 / OMPW

Figure 11 Pressure drop in OMP motor

## 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]	
	20 mm <sup>2</sup> /s [100 SUS]	35 mm <sup>2</sup> /s [165 SUS]	20 mm <sup>2</sup> /s [100 SUS]	35 mm <sup>2</sup> /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]

Table 7 OMP – Oil flow in drain line

## Direction of shaft rotation: clockwise

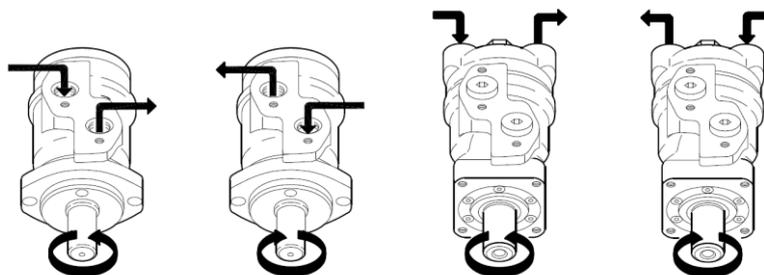


Figure 12 OMP - Direction of shaft rotation

## Permissible shaft loads

### OMP and OMR shaft loads

The permissible radial shaft load ( $P_R$ ) depends on the distance from the point of load to the mounting flange ( $L$ ), speed ( $n$ ), mounting flange and shaft version.

Mounting flange		4-oval flange	4-hole oval flange	Square flange**
		2-hole oval flange (European version)		2-hole oval flange (US-version)
Shaft version		25 mm cylindrical shaft	32 mm cylindrical shaft	25 mm cylindrical shaft
		1 in cylindrical shaft 1 in splined shaft		
Permissible shaft load ( $P_R$ )	mm	$\frac{800}{n} * \frac{250\,000N^*}{95 + L}$	$\frac{800}{n} * \frac{187\,500N^*}{95 + L}$	$\frac{800}{n} * \frac{250\,000N^*}{101 + L}$
	in	$\frac{800}{n} * \frac{2215\text{ lbf}^*}{3.74 + L}$	$\frac{800}{n} * \frac{1660\text{ lbf}^*}{3.74 + L}$	$\frac{800}{n} * \frac{2215\text{ lbf}^*}{3.98 + L}$

Table 8 Permissible shaft loads (OMP/ OMR)

\*  $n \geq 200 \text{ min}^{-1}$  [rpm];  $\leq 55 \text{ mm}$  [2.2 in].  $n < 200 \text{ min}^{-1}$  [rpm];  $\Rightarrow P_{Rmax} = 8000 \text{ N}$  [1800 lbf]

\*\* for both European and US-version

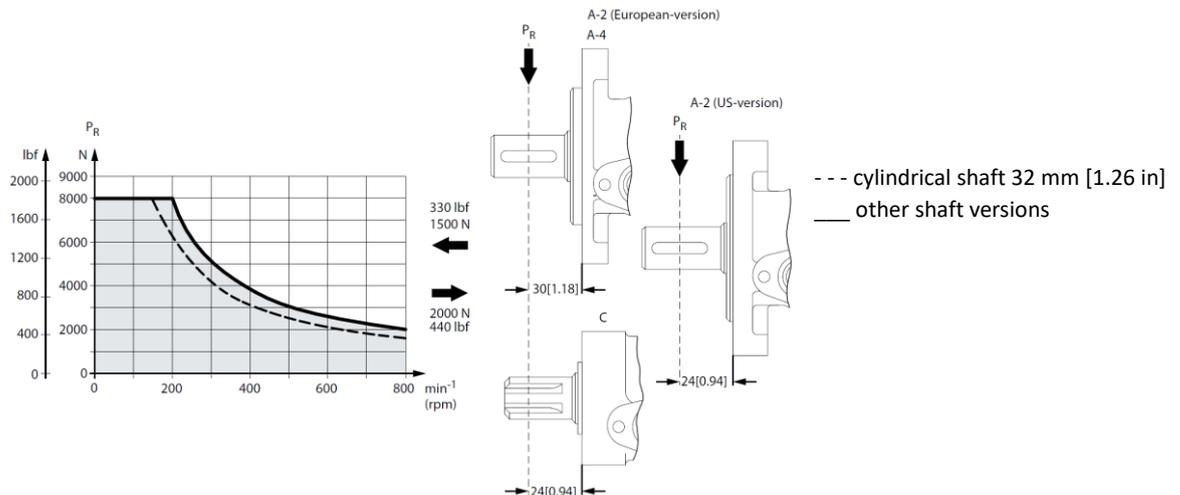


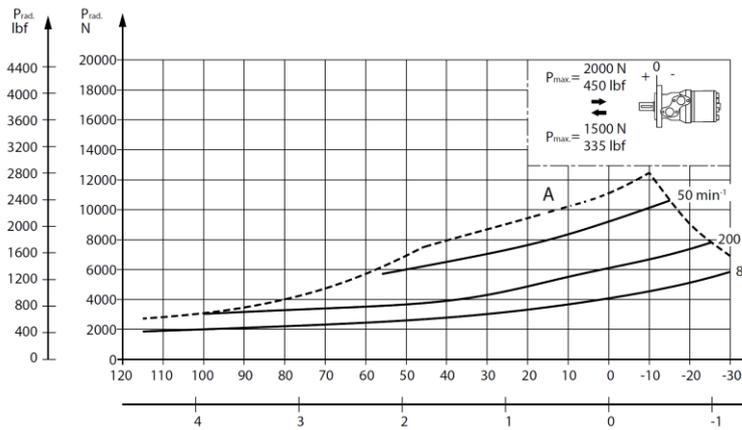
Figure 13 Permissible shaft loads (OMP/OMR)

The curve shows the relation between  $P_R$  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)

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

### OMP N shaft loads

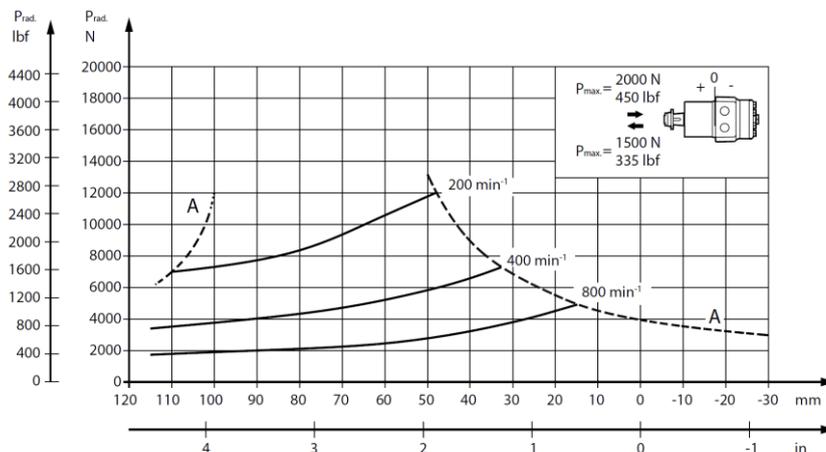


--- Max. Radial shaft load  
 — based on B<sub>10</sub> bearing life at rated output torque

Figure 14 Permissible shaft loads (OMP N)

The output shaft on OMP N can be offered in needle bearings. These bearings and the recessed mounting flange allow a higher permissible radial load in comparison to OMP motors. 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 indicates the max. radial shaft load. Any shaft load exceeding the values quoted in curve A will involve risk of breakage. The other curves apply to a B<sub>10</sub> 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.

### OMPW with slide bearings shaft loads



--- Max. Radial shaft load  
 — based on B<sub>10</sub> bearing life at rated output torque

Figure 15 Permissible shaft loads (OMPW with slide bearings)

The output shaft on OMPW can be offered in slide bearings similar to the other OMP motors. The permissible higher radial load is therefore due to the recessed mounting flange moving the point of load closer to the motor 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. The curves are not based on calculations of B<sub>10</sub> bearing life. They represent absolute limits that must not be exceeded. Curve A indicates the max. radial shaft load. Any shaft load exceeding the values quoted in curve A will involve risk of breakage.

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## OMPW N with needle bearing shaft loads

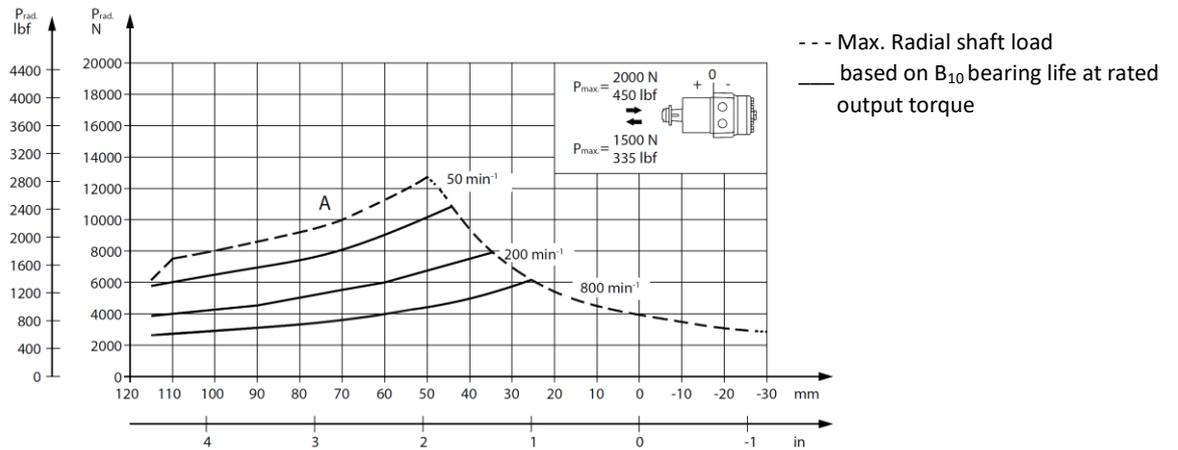


Figure 16 Permissible shaft loads (OMPW N with needle bearings)

The output shaft on OMPW N can be offered in needle bearings. These bearings and the recessed mounting flange allow a higher permissible radial load in comparison to OMP motors.

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 indicates the max. radial shaft load. Any shaft load exceeding the values quoted in curve A will involve 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.

# Chapter 3

## OMP function diagrams

---

### Topics:

- *OMP 25 function diagram*
- *OMP 32 function diagram*
- *OMP 40 function diagram*
- *OMP 50 function diagram*
- *OMP 80 function diagram*
- *OMP 100 function diagram*
- *OMP 125 function diagram*
- *OMP 160 function diagram*
- *OMP 200 function diagram*
- *OMP 250 function diagram*
- *OMP 315 function diagram*
- *OMP 400 function diagram*

## OMP 25 function diagram

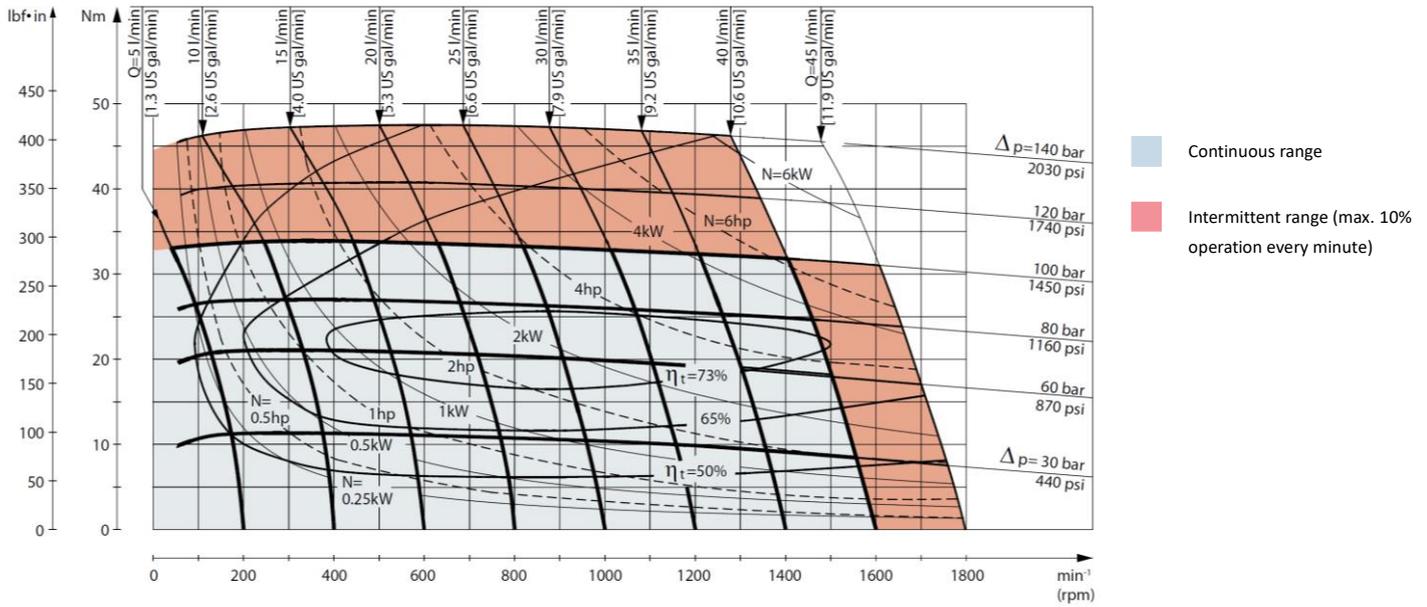


Figure 17 OMP 25 function diagram

## OMP 32 function diagram

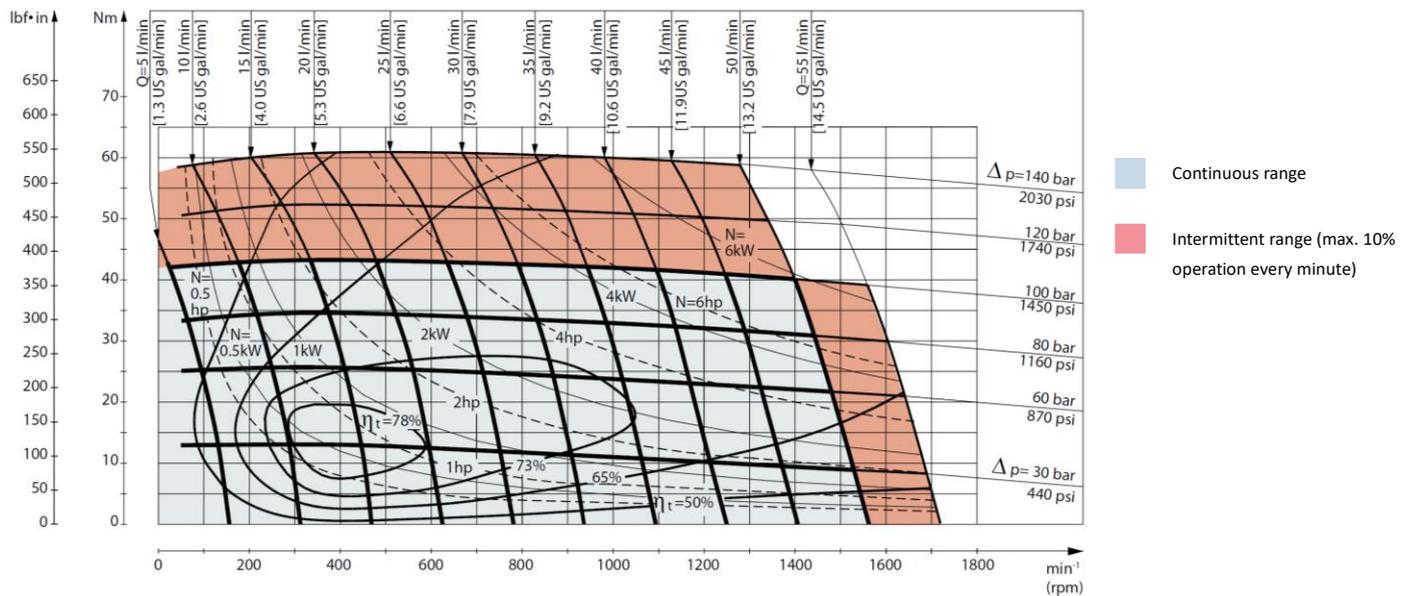


Figure 18 OMP 32 function diagram

## OMP 40 function diagram

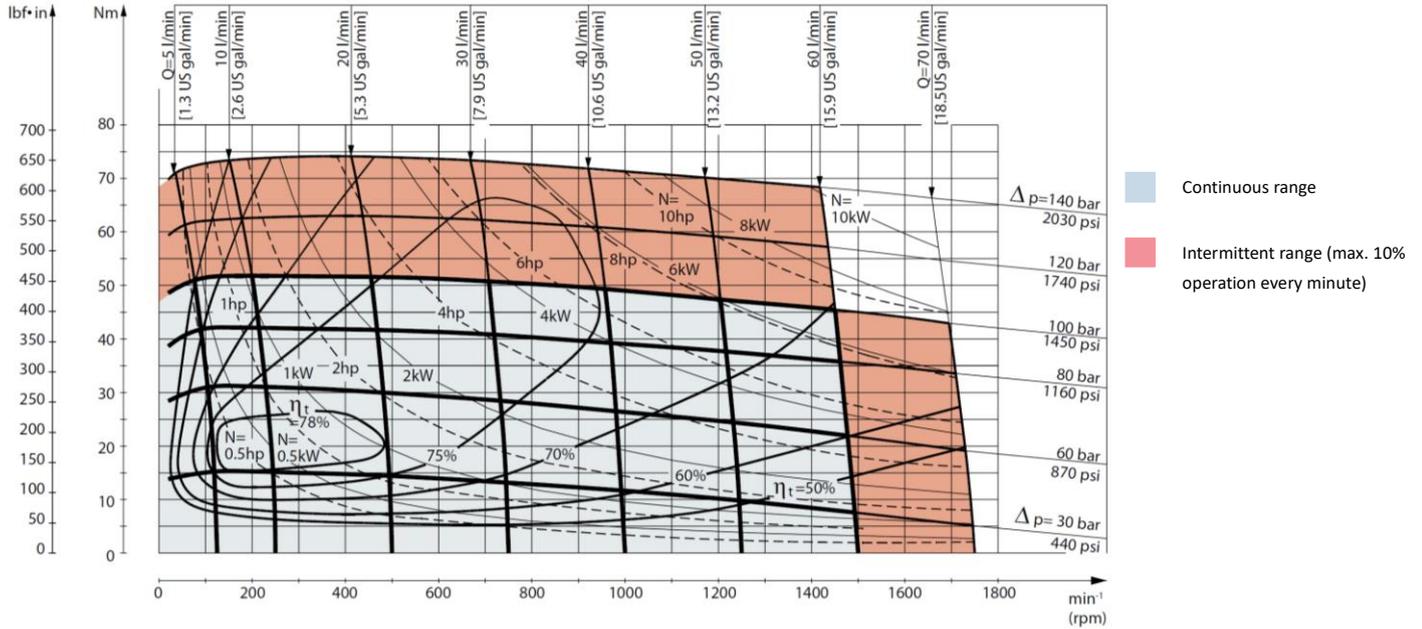


Figure 19 OMP 40 function diagram

## OMP 50 function diagram

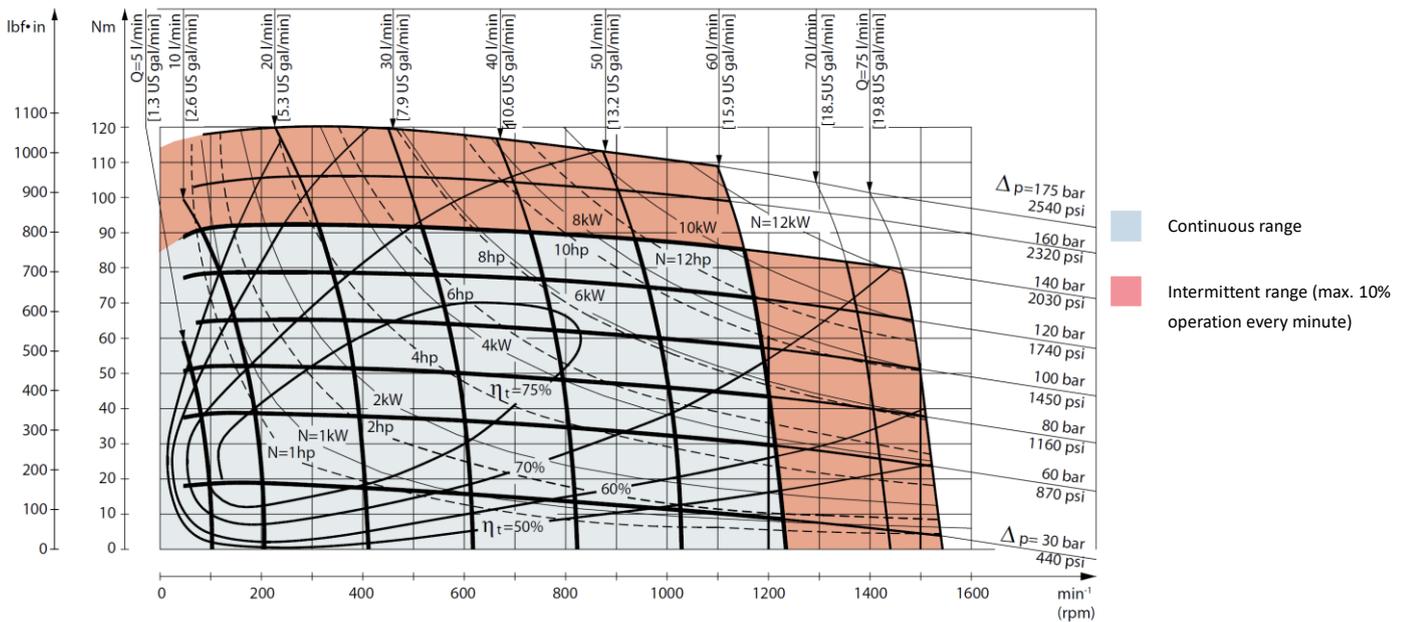


Figure 20 OMP 50 function diagram

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## OMP 80 function diagram

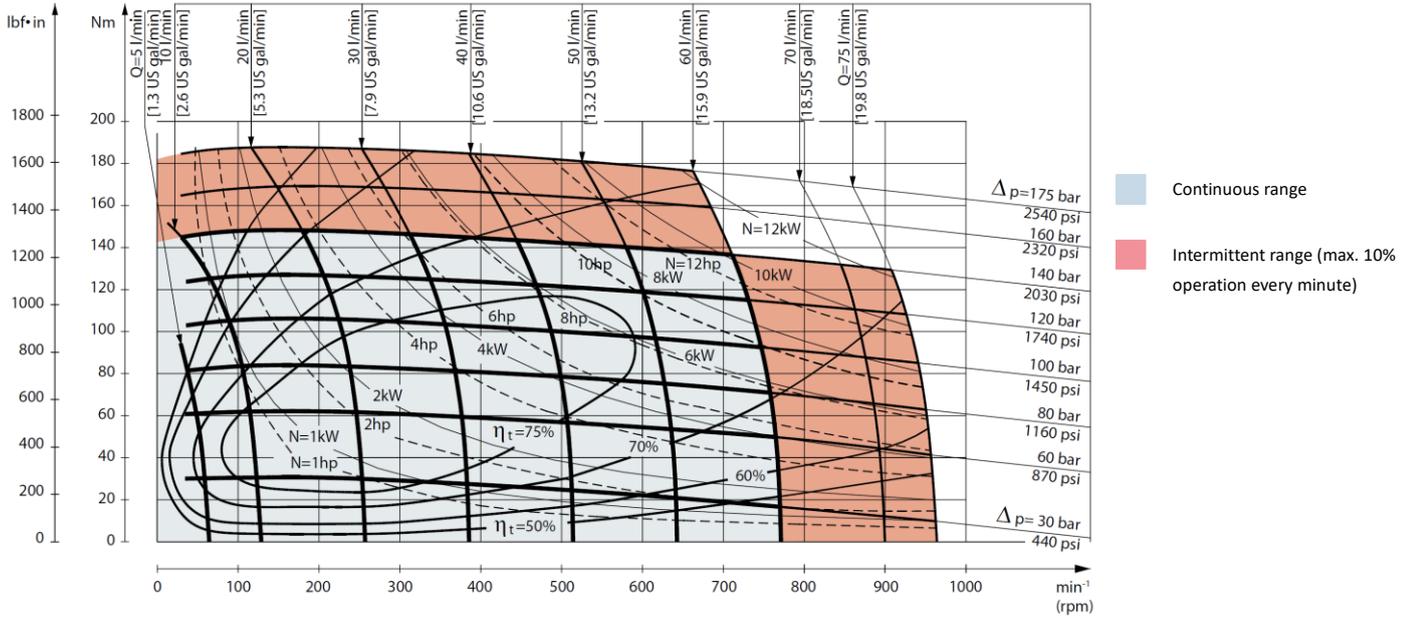


Figure 21 OMP 80 function diagram

## OMP 100 function diagram

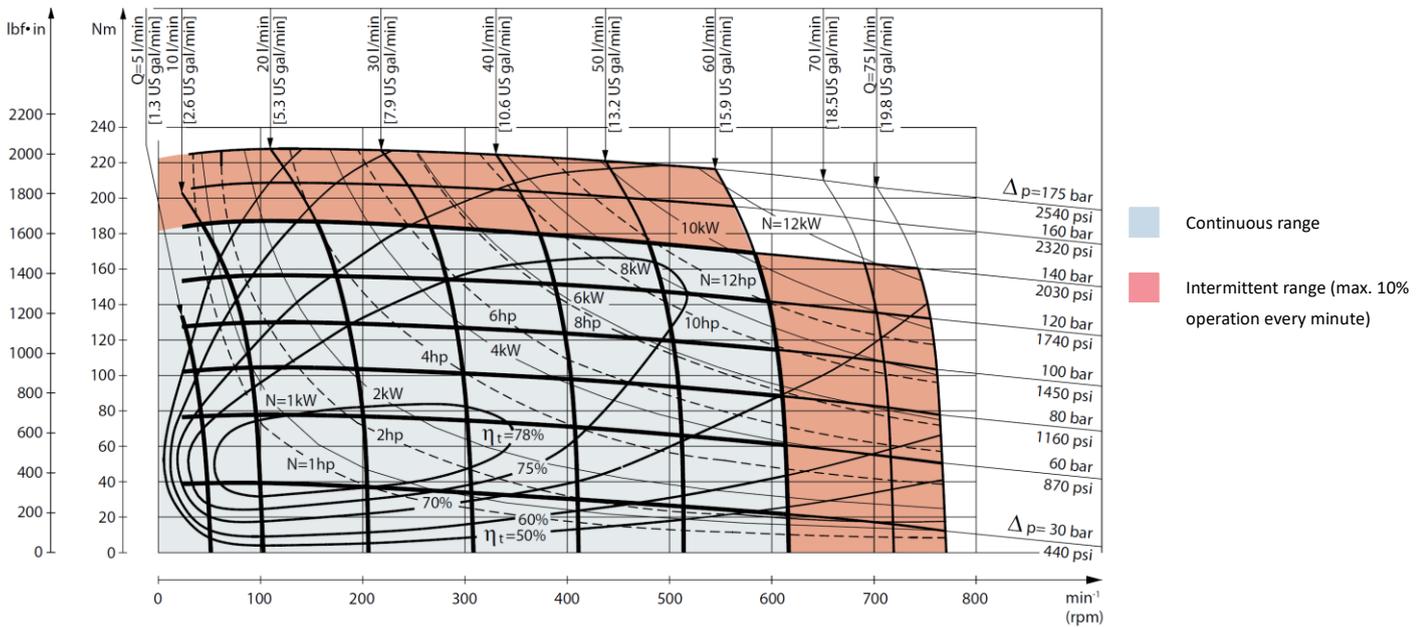


Figure 22 OMP 100 function diagram

## OMP 125 function diagram

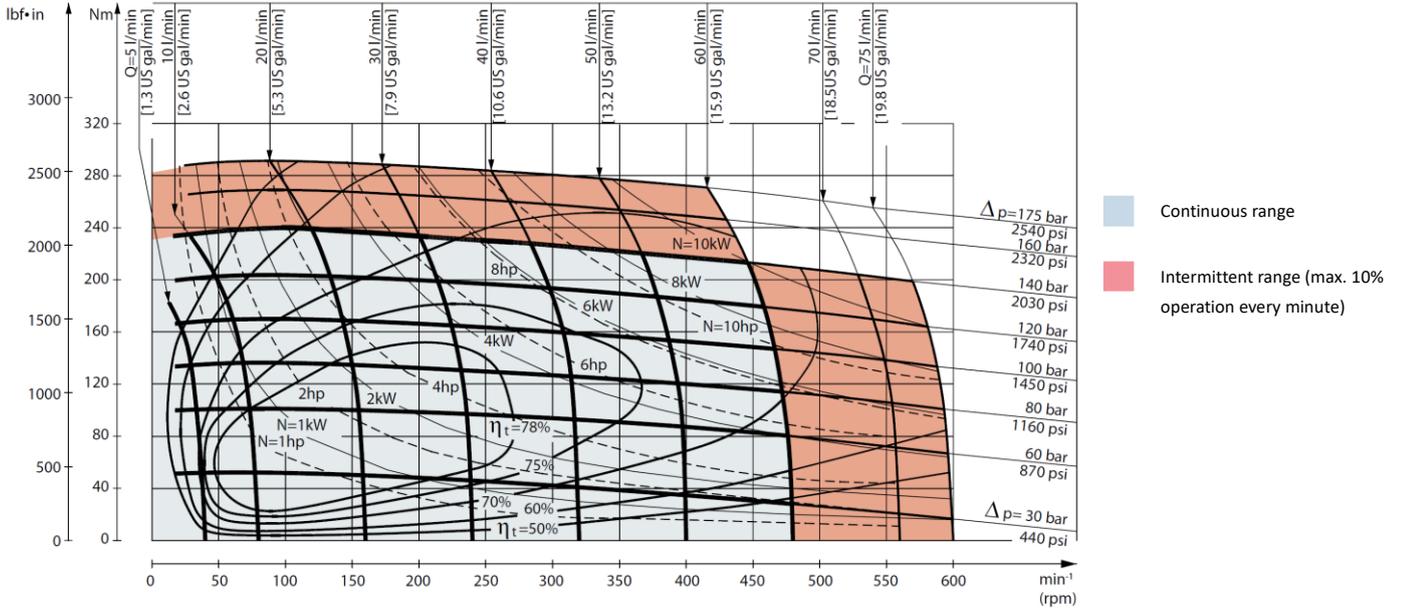


Figure 23 OMP 125 function diagram

## OMP 160 function diagram

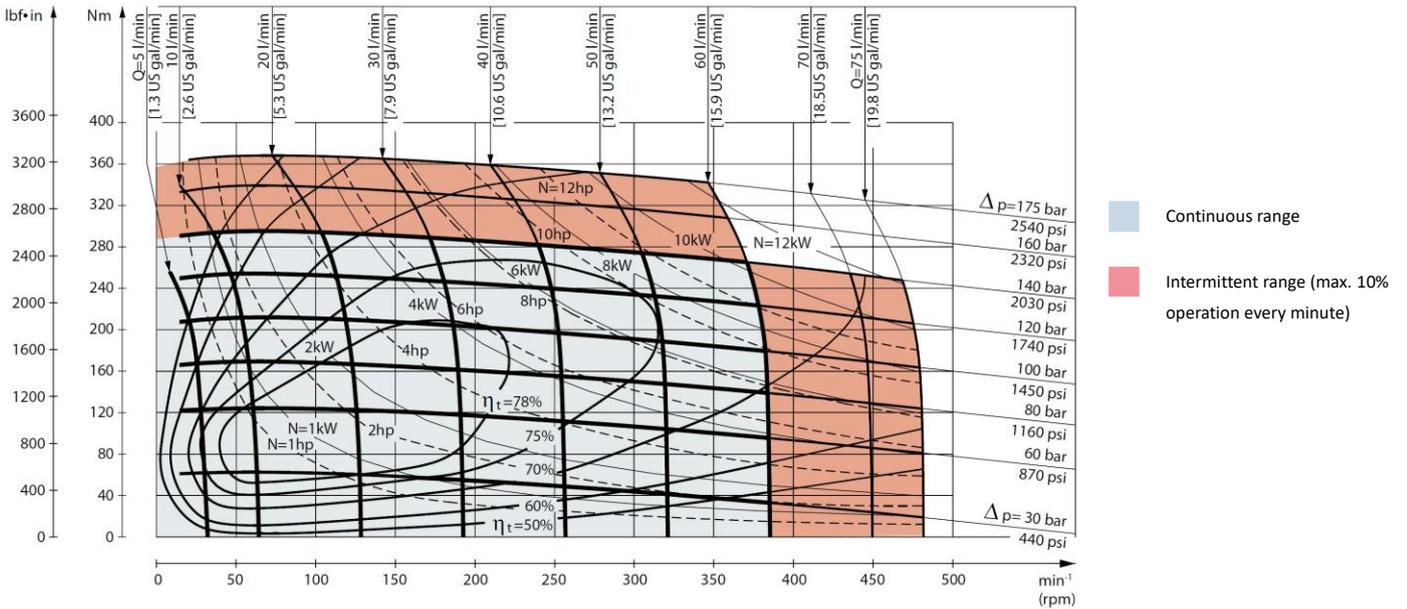


Figure 24 OMP 160 function diagram

## OMP 200 function diagram

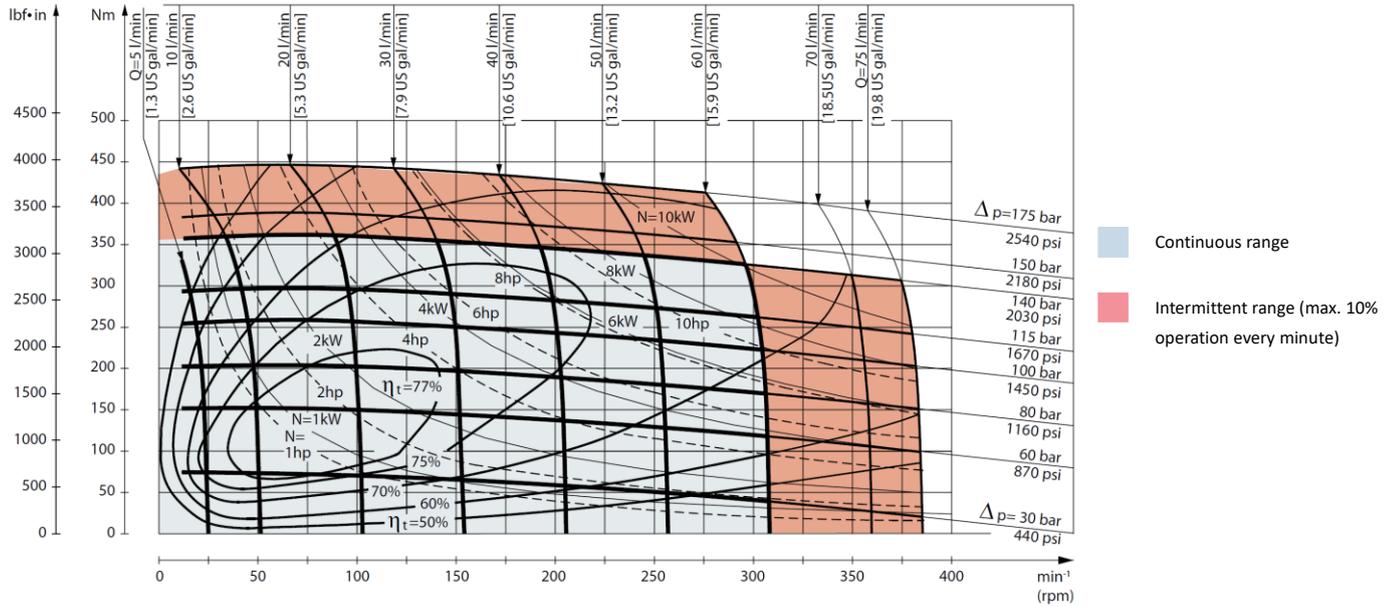


Figure 25 OMP 200 function diagram

## OMP 250 function diagram

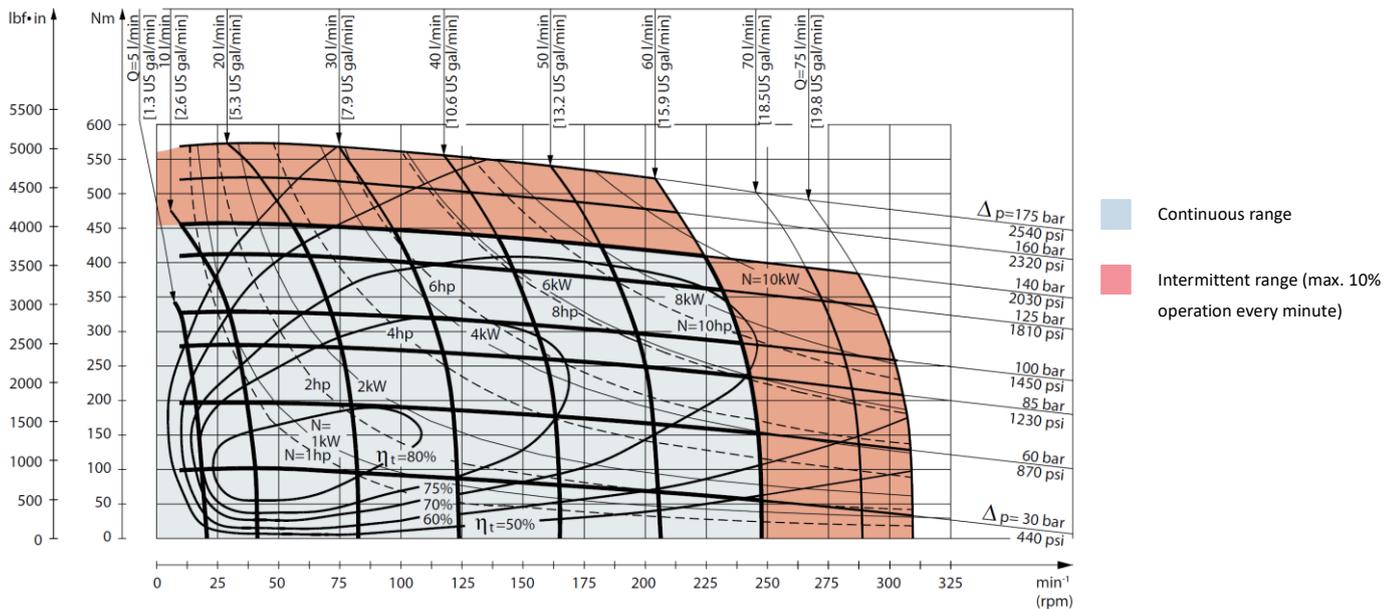


Figure 26 OMP 250 function diagram

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## OMP 315 function diagram

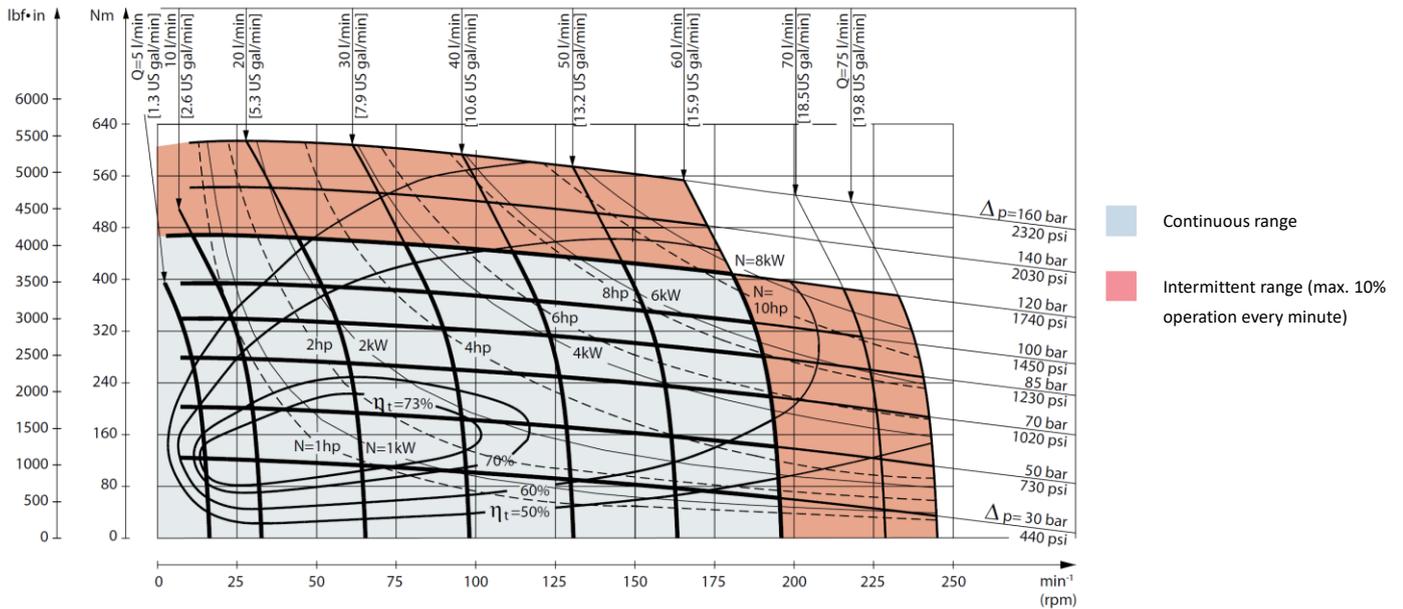


Figure 27 OMP 315 function diagram

## OMP 400 function diagram

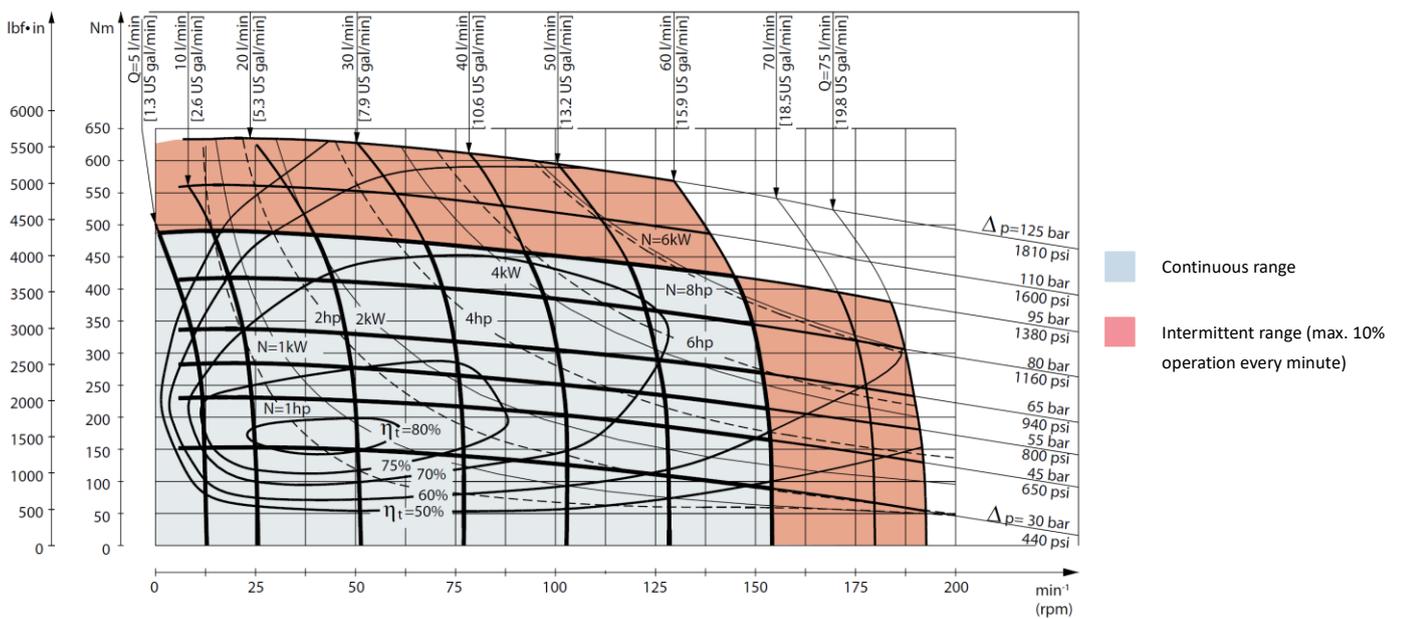


Figure 28 OMP 400 function diagram

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## Chapter 4

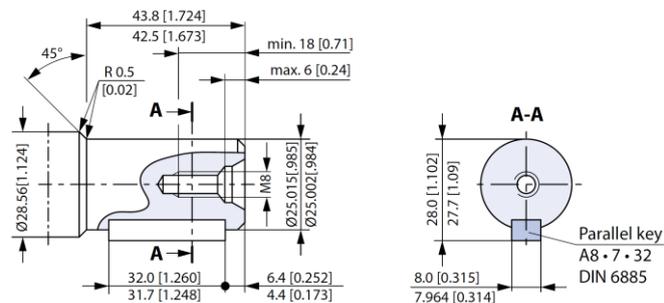
### OMP shaft version

---

#### Topics:

- *Cylindrical shaft 25 mm; Parallel key DIN 6885*
- *Cylindrical shaft 1 in; Parallel key B.S. 46*
- *Cylindrical shaft 1 in; Parallel key B.S. 46 (US version)*
- *Cylindrical shaft 1 in (US version); SAE J502*
- *Cylindrical shaft 32 mm; DIN 6885*
- *Splined shaft B.S. 2059 (SAE 6B)*
- *Splined shaft B.S. 2059 (SAE 6B); US version*
- *Tapered shaft (taper 1:10); Parallel key DIN 6885*

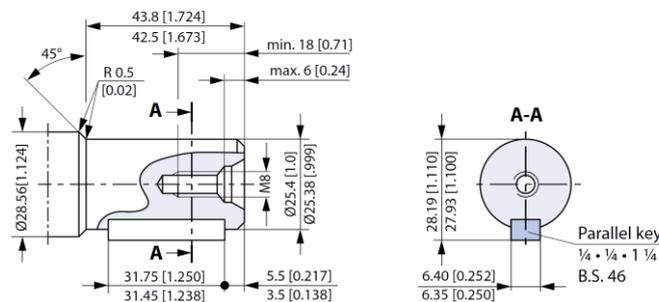
## Cylindrical shaft 25 mm; Parallel key DIN 6885



Max. torque: 360 N•m [3185 lb•in]

Figure 29 OMP shaft version: Cylindrical shaft 25 mm; Parallel key DIN 6885

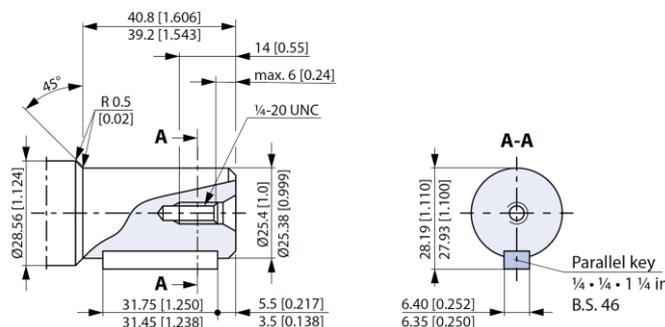
## Cylindrical shaft 1 in; Parallel key B.S. 46



Max. torque: 360 N•m [3185 lb•in]

Figure 30 OMP shaft version: Cylindrical shaft 1 in; Parallel key B.S. 46

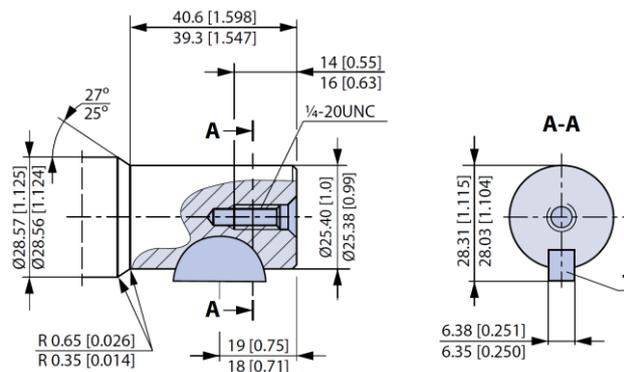
## Cylindrical shaft 1 in; Parallel key B.S. 46 (US version)



Max. torque: 360 N•m [3185 lb•in]

Figure 31 OMP shaft version: Cylindrical shaft 1 in; Parallel key B.S. 46 (US version)

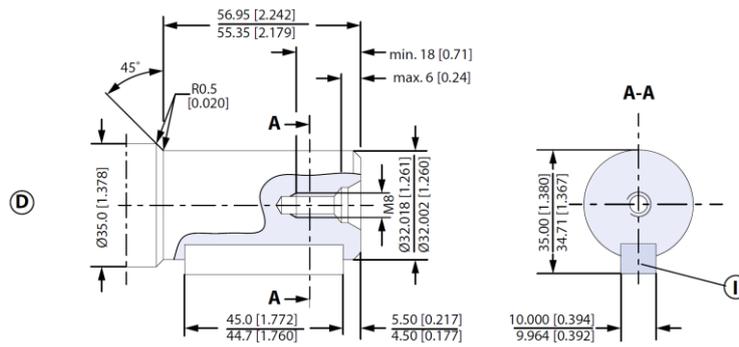
## Cylindrical shaft 1 in (US version); SAE J502



1 - Woodruff key 1/4 x 1 in SAE J502

Figure 32 OMP shaft version: Cylindrical shaft 1 in (US version); SAE J502

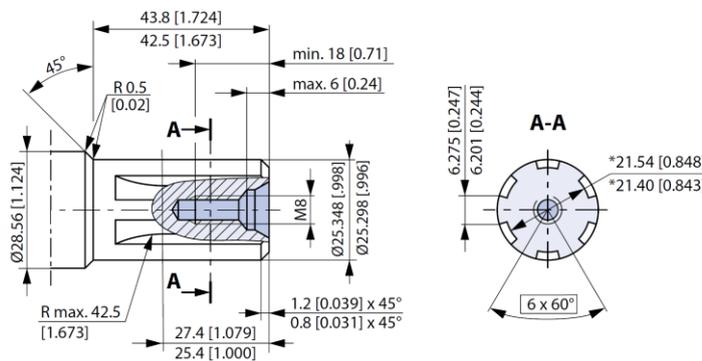
## Cylindrical shaft 32 mm; DIN 6885



I: Parallel key A10 • 8 • 45; DIN 6885

Figure 33 OMP shaft version: Cylindrical shaft 32 mm; DIN 6885

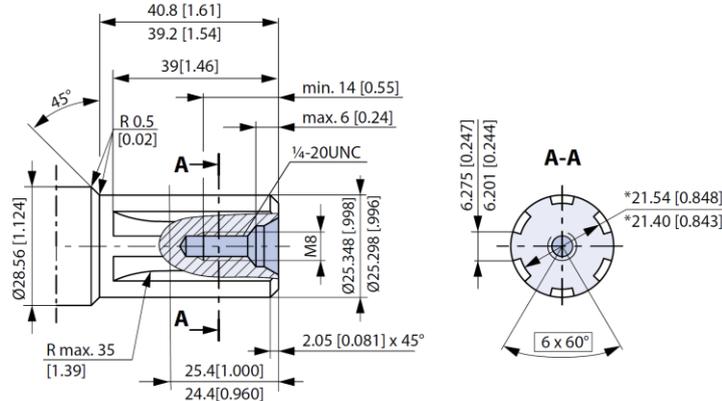
## Splined shaft B.S. 2059 (SAE 6B)



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

Figure 34 OMP shaft version: Splined shaft B.S. 2059 (SAE 6B)

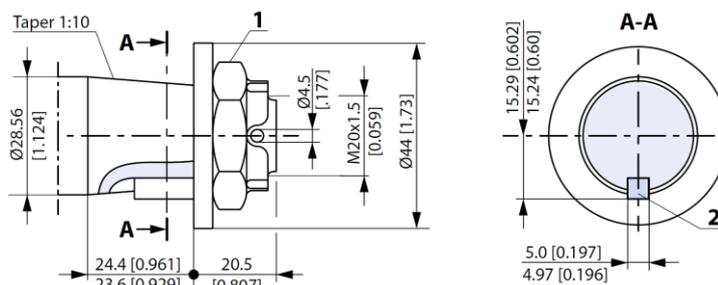
## Splined shaft B.S. 2059 (SAE 6B); US version



Straight-sided, bottom fitting, deep.  
Fit 2; Nom. size 1 in,  
\* Deviates from B.S. 2059 (SAE 6B)  
Max. cont. torque 400 N•m [3540 lb•in]

Figure 35 OMP shaft version: Splined shaft B.S. 2059 (SAE 6B); US version

## Tapered shaft (taper 1:10); Parallel key DIN 6885



DIN 937 NV 30;  
Tightening torque: 100 ± 10 N•m  
[885 ± 88.5 lb•in]  
1 - Parallel key B5 • 5 • 14; DIN 6885

Figure 36 OMP shaft version: Tapered shaft (taper 1:10); Parallel key DIN 6885

# Chapter 5

## OMP port thread versions

---

### Topics:

- *Main port thread versions*
- *OMP manifold mount*

## Main port thread versions

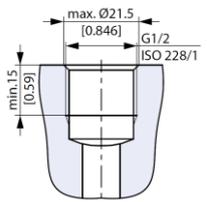
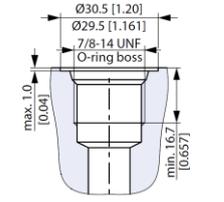
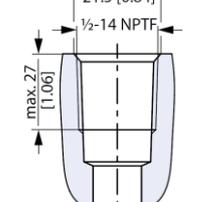
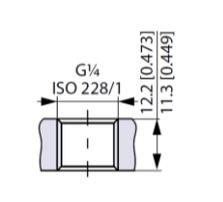
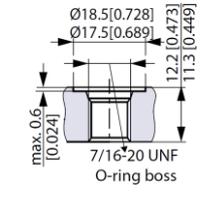
<b>G</b> <b>ISO 228/1 – G1/2</b>	<b>UNF</b> <b>7/8–14 UNF O-ring boss</b>	<b>NPTF</b> <b>1/2–14 NPTF</b>	<b>G drain</b> <b>ISO 228/1 – G1/4</b>	<b>UNF drain</b> <b>7/16–20 UNF O-ring boss</b>
 <p>Figure 37 OMP port thread version: ISO 228/1 – G1/2</p>	 <p>Figure 38 OMP port thread version: 7/8-14 UNF O-ring boss</p>	 <p>Figure 39 OMP port thread version: 1/2–14 NPTF</p>	 <p>Figure 40 OMP port thread version: ISO 228/1 – G1/4</p>	 <p>Figure 41 OMP port thread version: 7/16-20 UNF O-ring boss</p>

Table 9 OMP main ports overview

## OMP manifold mount

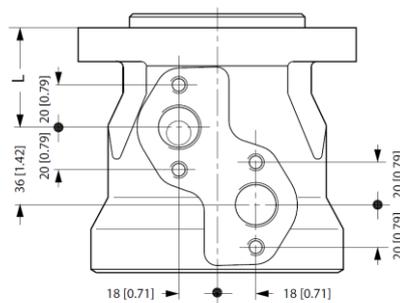


Figure 42 OMP manifold mount (EU version)

L: see dimensional drawing for given OMP/OMR motor:

- [OMP dimensions](#)
- [OMR dimensions](#)

# Chapter 6

## OMP dimensions

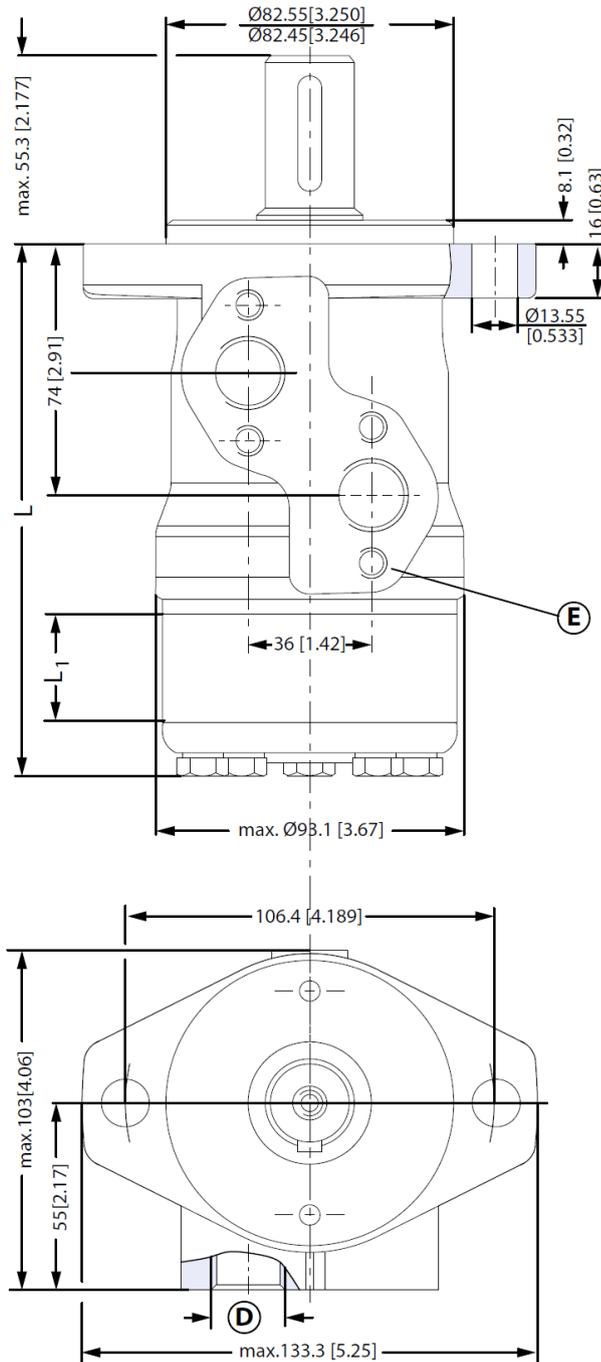
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### Topics:

- *OMP dimensions - European version*
- *OMP dimensions - US version*

## OMP dimensions - European version

### OMP Side port version with 2 hole oval mounting flange (A2-flange)



Tolerance for basic dimensions =  $\pm 1$  mm  
[0.04 in]

D: G1/2; 15 mm [0.59 in] deep

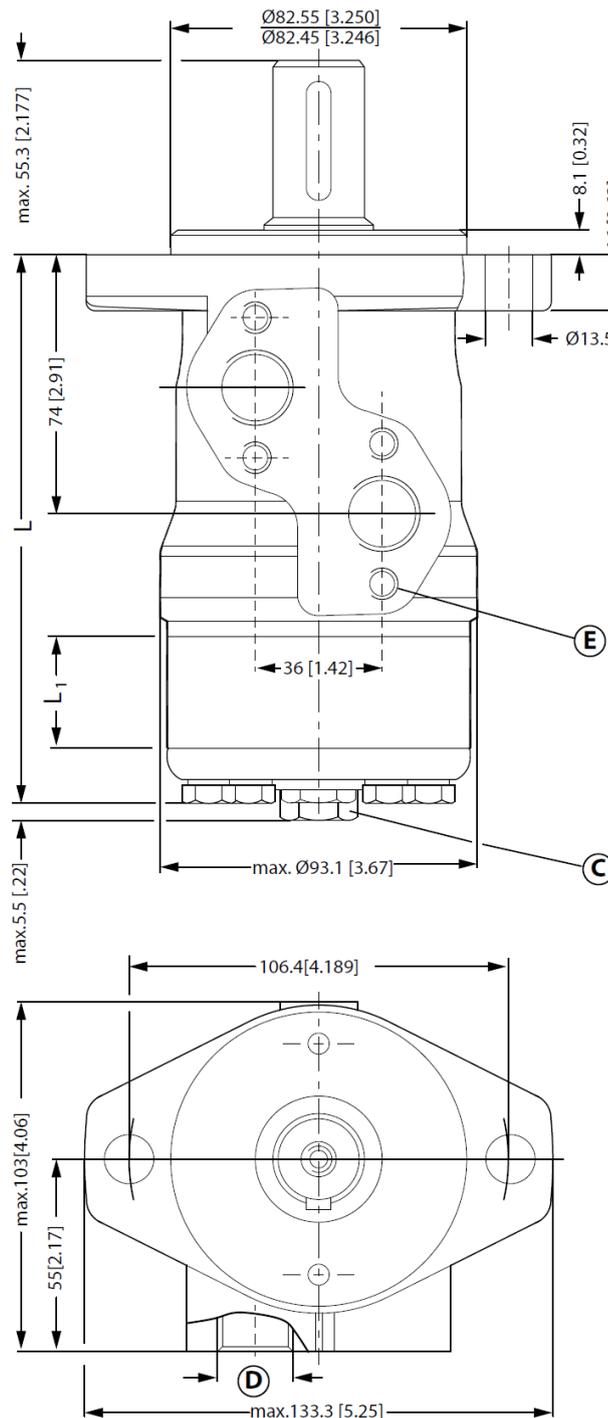
E: M8; 13 mm [0.51 in] deep

Figure 43 OMP Side port version with A2-flange (EU version)

Type		OMP											
		25	32	40	50	80	100	125	160	200	250	315	400
Length	L <sub>max</sub> mm [in]	130.8 [5.15]	131.9 [5.19]	133.2 [5.24]	133.2 [5.24]	137.2 [5.40]	139.7 [5.50]	143.5 [5.65]	147.5 [5.81]	152.7 [6.01]	159.2 [6.27]	167.6 [6.60]	178.7 [7.04]
	L <sub>1</sub> mm [in]	4.1 [0.16]	5.2 [0.20]	6.5 [0.26]	6.5 [0.26]	10.4 [0.41]	13 [0.51]	16.7 [0.66]	20.8 [0.82]	26 [1.02]	32.5 [1.28]	40.9 [1.61]	52 [2.05]

Table 10 OMP side port with A2-flange dimensions (EU version)

### OMP Side port offset with 2-hole oval mounting flange (A2-flange) with drain connection



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

Figure 44 OMP Side port offset with A2-flange with drain connection (EU version)

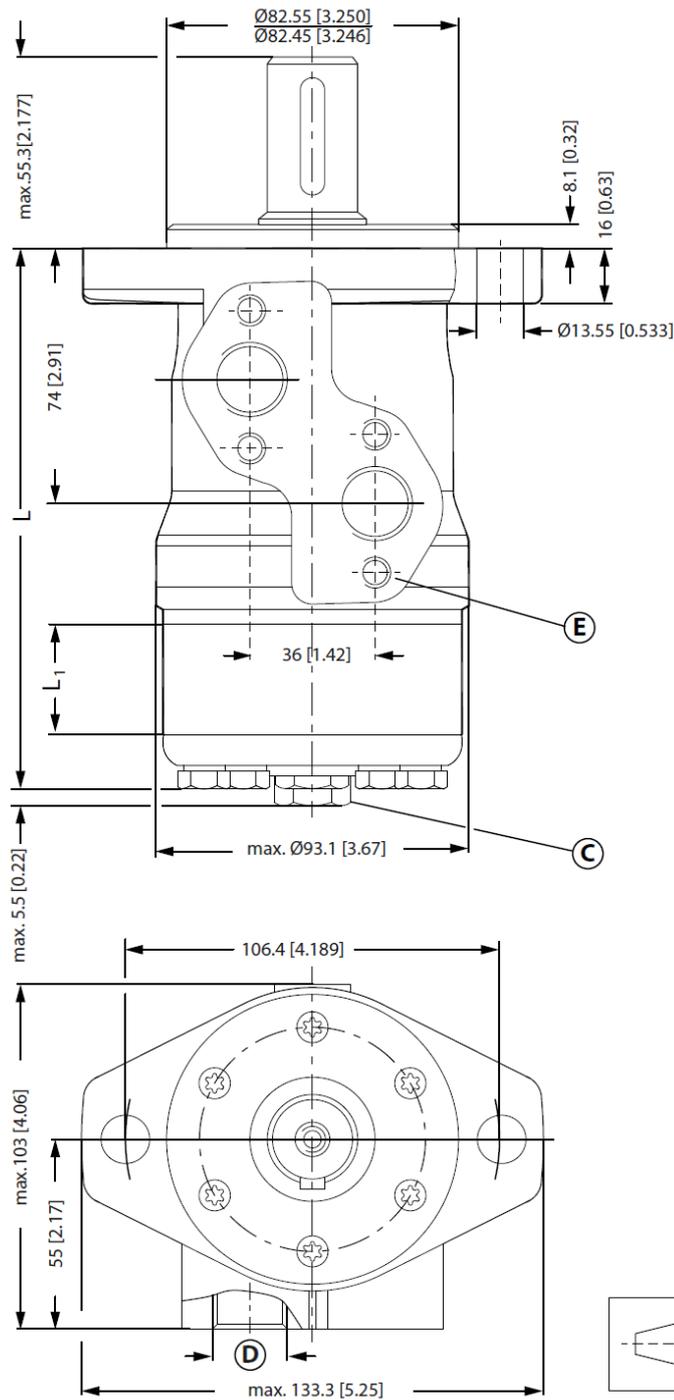
Type		OMP											
		25	32	40	50	80	100	125	160	200	250	315	400
Length	L <sub>max</sub> mm [in]	130.8 [5.15]	131.9 [5.19]	133.2 [5.24]	133.2 [5.24]	137.2 [5.40]	139.7 [5.50]	143.5 [5.65]	147.5 [5.81]	152.7 [6.01]	159.2 [6.27]	167.6 [6.60]	178.7 [7.04]
	L <sub>1</sub> mm [in]	4.1 [0.16]	5.2 [0.20]	6.5 [0.26]	6.5 [0.26]	10.4 [0.41]	13 [0.51]	16.7 [0.66]	20.8 [0.82]	26 [1.02]	32.5 [1.28]	40.9 [1.61]	52 [2.05]

Table 11 OMP side port offset with A2-flange dimensions (EU version)

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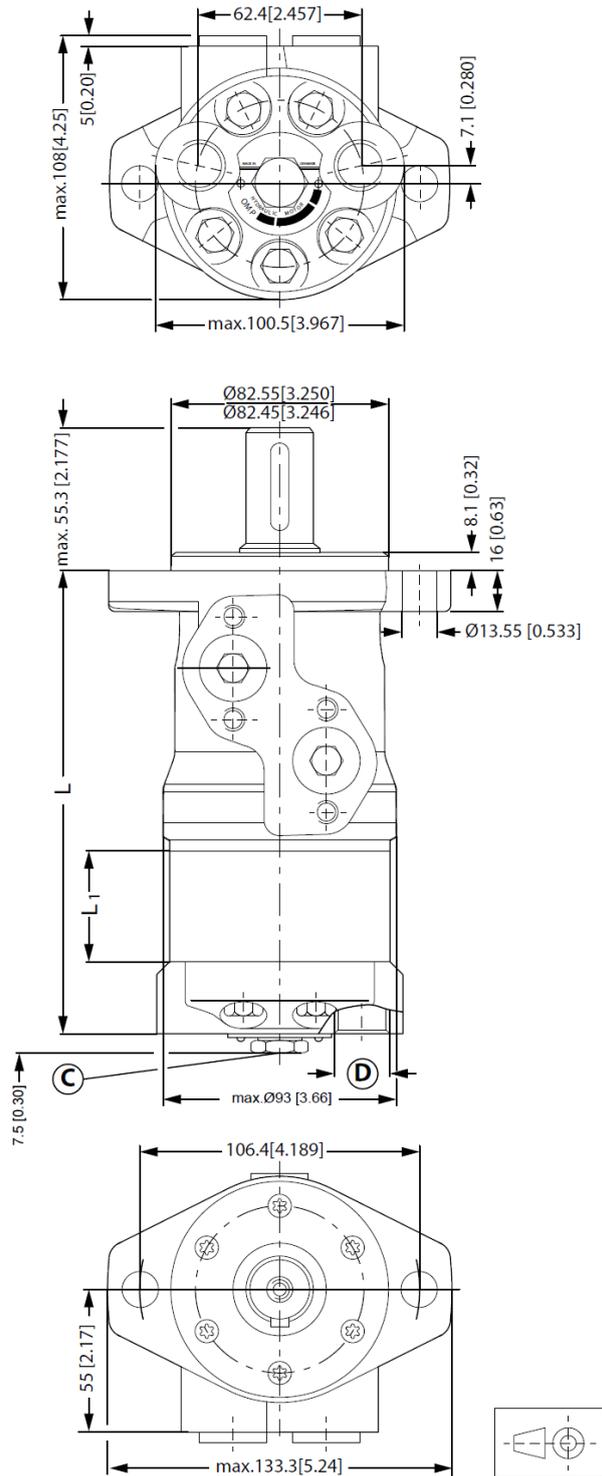
**OMP C and OMP N-side port version with 2-hole oval mounting flange (A2-flange)**



Tolerance for basic dimensions =  $\pm 1$  mm [0.04 in]  
**C:** Drain connection G  $\frac{1}{4}$ ; 12 mm [0.47 in] deep  
**D:** G  $\frac{1}{2}$ ; 15 mm [0.59 in] deep  
**E:** M8; 13 mm [0.51 in] deep (4 pcs.)

Figure 45 OMP C and OMP N-side port version with A2-flange (EU version)

### OMP End port with 2-hole oval mounting flange (A2-flange)



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

**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

Figure 46 OMP End port with A2-flange (EU version)

Type		OMP								
		50	80	100	125	160	200	250	315	400
Length	L <sub>max</sub> mm [in]	146.7 5.78	150.6 5.93	153.2 6.03	157 6.18	161 6.34	166.2 6.54	172.7 6.80	181.1 7.13	192.2 6.57
	L <sub>1</sub> mm [in]	6.5 [0.26]	10.4 [0.41]	13 [0.51]	16.7 [0.66]	20.8 [0.82]	26 [1.02]	32.5 [1.28]	40.9 [1.61]	52 [2.05]

Table 12 OMP End port with A2-flange (EU version)

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

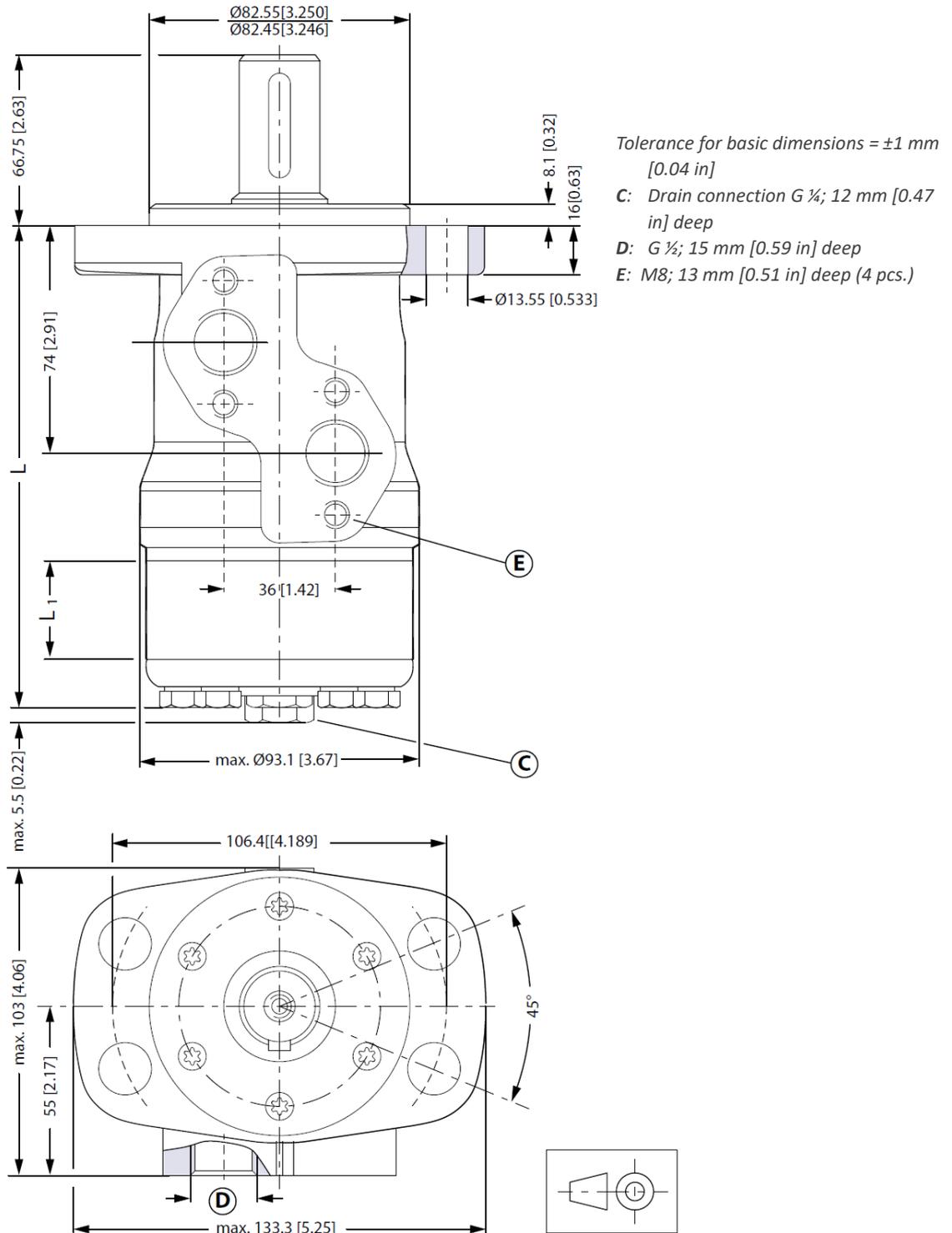
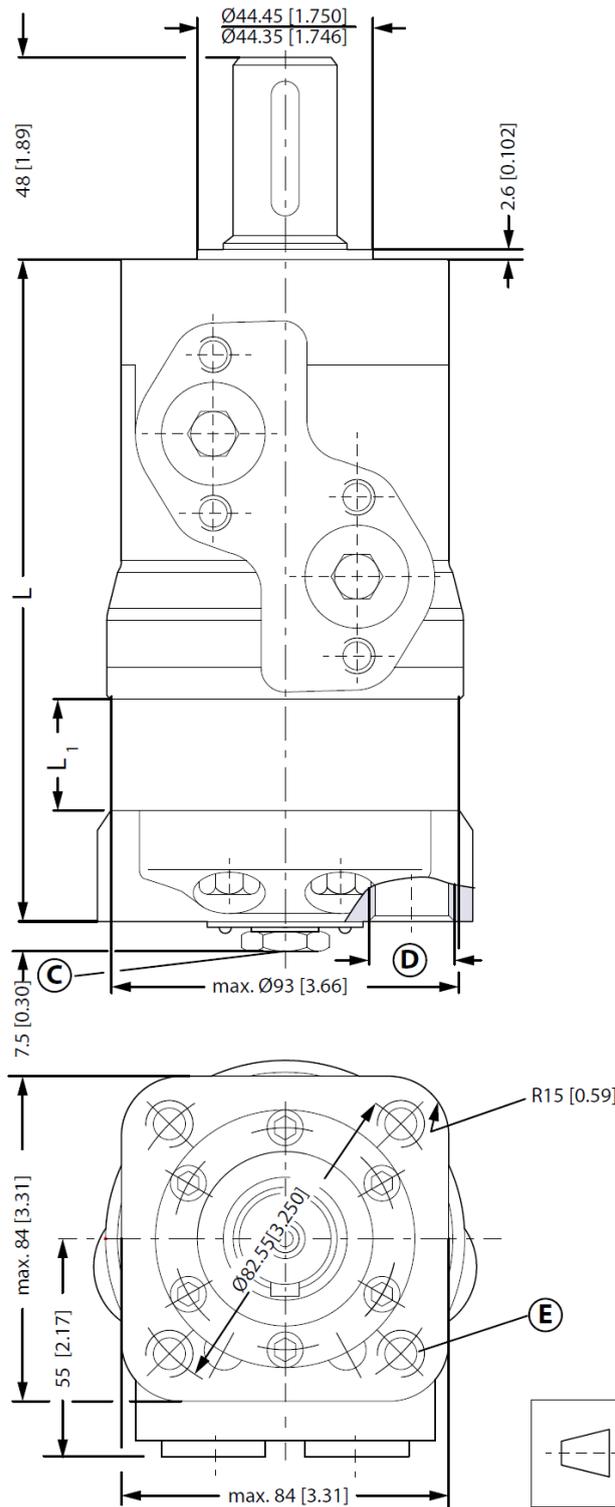


Figure 47 OMP Side port version with A4-flange (EU version)

Type		OMP								
		50	80	100	125	160	200	250	315	400
Length	L <sub>max</sub> mm [in]	133.2 [5.24]	137.2 [5.40]	139.7 [5.50]	143.5 [5.65]	147.5 [5.81]	152.7 [6.01]	159.2 [6.27]	167.6 [6.60]	178.7 [7.04]
	L <sub>1</sub> mm [in]	6.5 [0.26]	10.4 [0.41]	13.0 [0.51]	16.7 [0.66]	20.8 [0.82]	26.0 [1.02]	32.5 [1.28]	40.9 [1.61]	52.0 [2.05]

Table 13 OMP Side port version with A4-flange dimensions (EU version)

### OMP End port version with square mounting flange (C-flange)



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: M10; 15 mm [0.59 in] deep

Figure 48 OMP End port version with C-flange (EU version)

Type		OMP								
		50	80	100	125	160	200	250	315	400
Length	L <sub>max</sub> mm [in]	152.7 [60.1]	156.6 [6.17]	159.2 [6.27]	162.9 [6.41]	167.0 [6.57]	172.2 [6.78]	178.7 [7.04]	187.1 [7.37]	198.2 [7.80]
	L <sub>1</sub> mm [in]	6.5 [0.26]	10.4 [0.41]	13.0 [0.51]	16.7 [0.66]	20.8 [0.82]	26.0 [1.02]	32.5 [1.28]	40.9 [1.61]	52.0 [2.05]

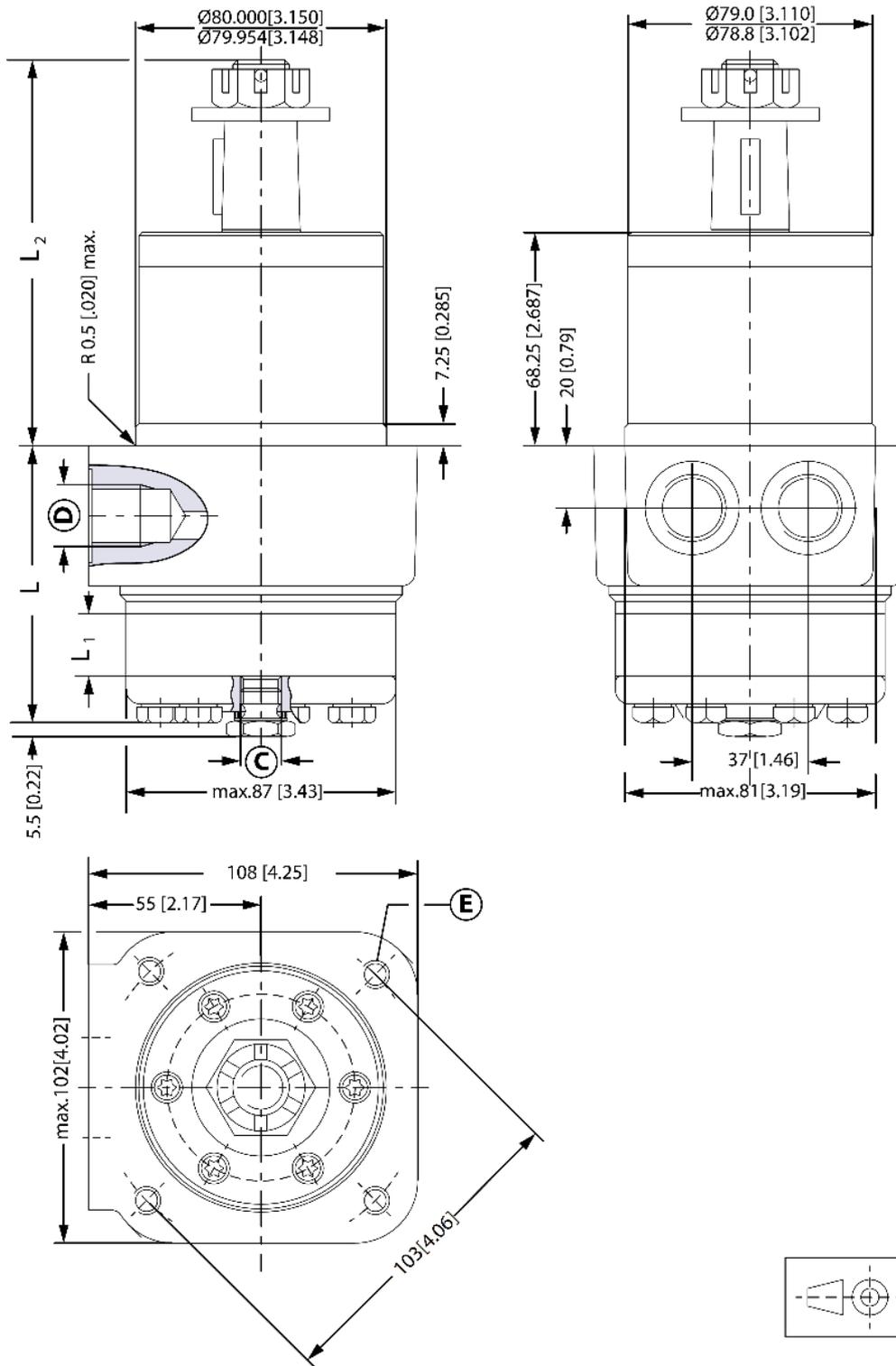
Table 14 OMP Side port version with C-flange dimensions (EU version)

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## OMPW and OMPW N motors wheel type



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:** M10; 20 mm [0.79 in] deep (4pcs.)

### Port connections:

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

**C** Drain port: G 1/4; 12 mm [0.47 in]

**D** Thread: M10; 20 mm [0.78 in] deep

Figure 49 OMPW and OMPW N motors wheel type (EU version)

Type		OMP								
		50	80	100	125	160	200	250	315	400
Length	L <sub>max</sub> mm [in]	152.7 [60.1]	156.6 [6.17]	159.2 [6.27]	162.9 [6.41]	167.0 [6.57]	172.2 [6.78]	178.7 [7.04]	187.1 [7.37]	198.2 [7.80]
	L <sub>1</sub> mm [in]	6.5 [0.26]	10.4 [0.41]	13.0 [0.51]	16.7 [0.66]	20.8 [0.82]	26.0 [1.02]	32.5 [1.28]	40.9 [1.61]	52.0 [2.05]

Table 15 OMPW and OMPW N dimensions (EU version)

## OMP dimensions - US version

### OMP Side port offset with 2-hole oval mounting flange (A2-flange)

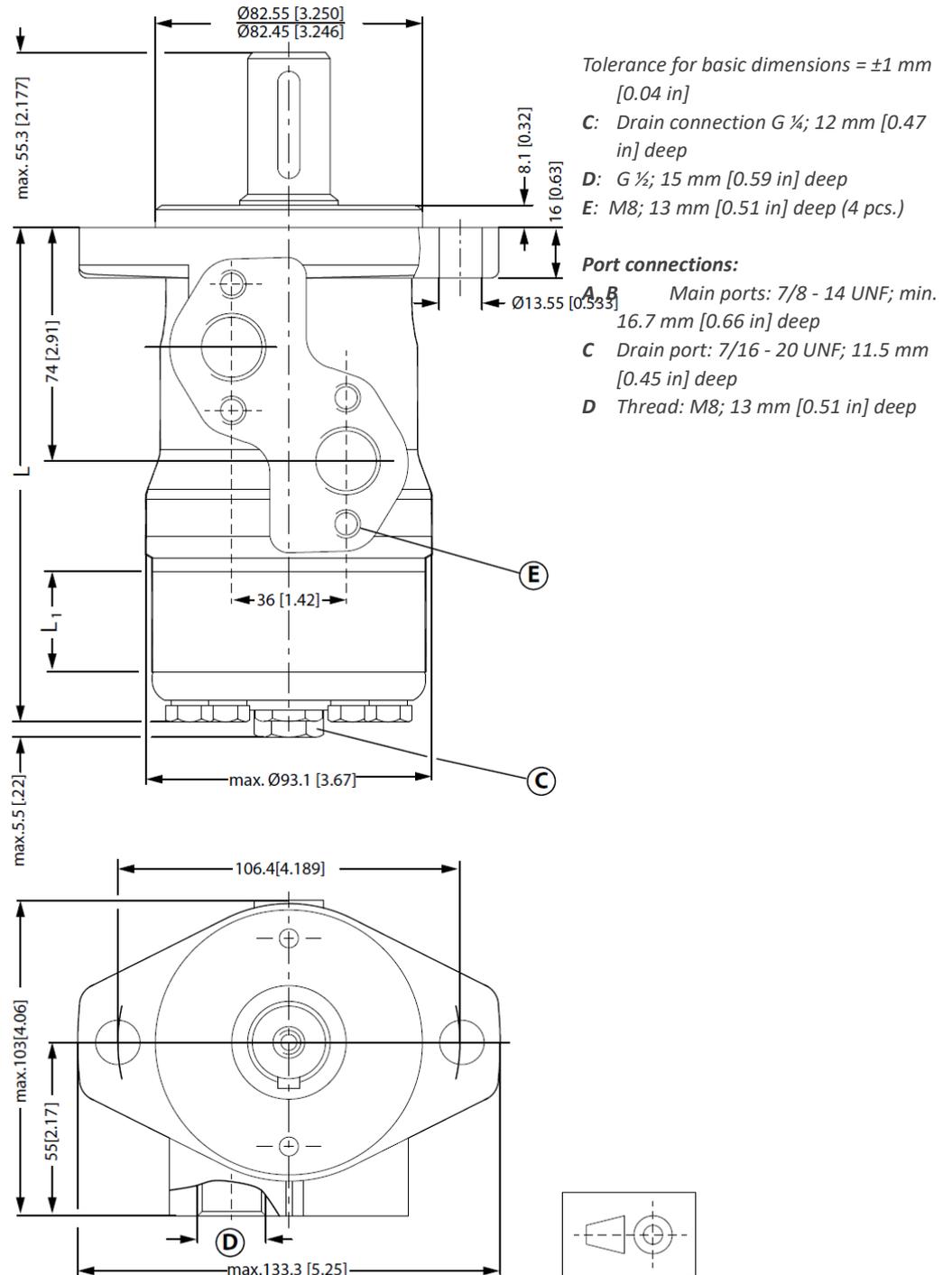
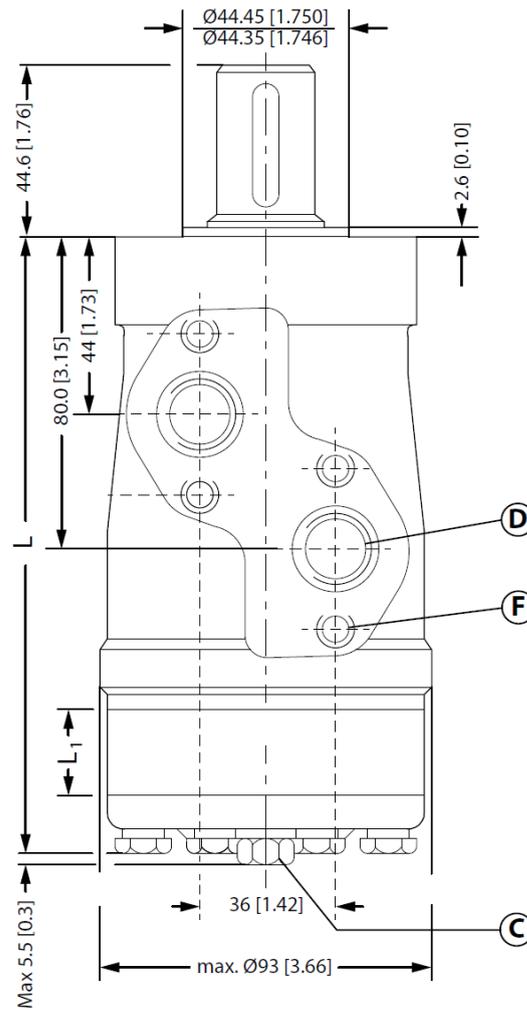


Figure 50 OMP Side port offset with A2-flange (US version)

Type		OMP											
		25	32	40	50	80	100	125	160	200	250	315	400
Length	L <sub>max</sub> mm [in]	137.2 [5.40]	138.3 [5.44]	139.6 [5.50]	139.6 [5.50]	143.6 [5.65]	146.1 [5.75]	149.9 [5.90]	153.9 [6.06]	159.1 [6.26]	165.6 [6.52]	174.0 [6.85]	185.1 [7.29]
	L <sub>1</sub> mm [in]	4.1 [0.16]	5.2 [0.20]	6.5 [0.26]	6.5 [0.26]	10.4 [0.41]	13.0 [0.51]	16.7 [0.66]	20.8 [0.82]	26.0 [1.02]	32.5 [1.28]	40.9 [1.61]	52.0 [2.05]

Table 16 OMP side port offset with A2-flange dimensions (US version)

### OMP Side port with square mounting flange (C-flange)



Tolerance for basic dimensions =  $\pm 1$  mm [0.04 in]  
**C:** Drain connection 7/16 - 20 UNF; 12 mm [0.47 in] deep  
**D:** 7/8 - 14 UNF; 16.76 mm [0.66 in] deep or 1/2 - 14 NPTF  
**E:** 3/8 - 16 UNC; 15 mm [0.59 in] deep (4off)  
**F:** M8; 13 mm [0.51 in] deep (4 pcs.)

**Port connections:**  
**A, B** Main ports: 7/8 - 14 UNF; min. 11.5 mm [0.45 in] deep  
**C** Drain port: 7/16 - 20 UNF; 11.5 mm [0.45 in] deep  
**D** Thread: 3/8 - 16 UNC; 15 mm [0.59 in] deep

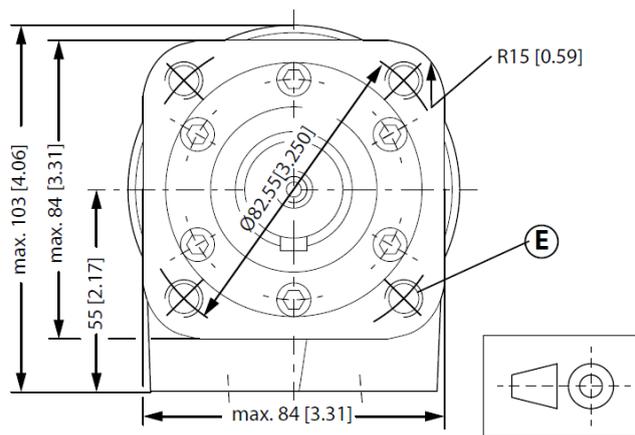


Figure 51 OMP Side port with C-flange (US version)

Type		OMP									
		40	50	80	100	125	160	200	250	315	400
Length	$L_{max}$ mm [in]	139.6 [5.50]	139.6 [5.50]	143.6 [5.65]	146.1 [5.75]	149.9 [5.90]	153.9 [6.06]	159.1 [6.26]	165.6 [6.52]	174.0 [6.85]	185.1 [7.29]
	$L_1$ mm [in]	6.5 [0.26]	6.5 [0.26]	10.4 [0.41]	13.0 [0.51]	16.7 [0.66]	20.8 [0.82]	26.0 [1.02]	32.5 [1.28]	40.9 [1.61]	52.0 [2.05]

Table 17 OMP side port offset with C-flange dimensions (US version)

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# Chapter 7

## OMR technical data

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### Topics:

- *Technical data for OMR with 25 mm and 1 in cylindrical shaft*
- *Technical data for OMR with 1 in splined and 28.5 mm tapered shaft*
- *Technical data for OMR with 32 mm , 1 ¼ in cylindrical shaft and 35 mm, 1 ¼ in tapered shaft*
- *Technical data for parking brake motor OMR F, OMR NF and OMRW NF*
- *Maximum permissible shaft seal pressure*
- *Pressure drop in motor*
- *Oil flow in drain line*
- *Direction of shaft rotation: clockwise*
- *Permissible shaft loads*

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

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

Table 18 Technical data for OMR with 25 mm and 1 in cylindrical shaft

- 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 for OMR with 1 in splined and 28.5 mm tapered shaft

Type			OMR								
Motor size			50	80	100	125	160	200	250	315	375
Geometric displacement	$cm^3$		51.6	80.3	99.8	125.7	159.6	199.8	249.3	315.7	372.6
	$[in^3]$		[3.16]	[4.91]	[6.11]	[7.69]	[9.77]	[12.23]	[15.26]	[19.32]	[22.80]
Maximum speed	$min^{-1}$	cont.	775	750	600	475	375	300	240	190	160
	[rpm]	int. <sup>1)</sup>	[970]	[940]	[750]	[600]	[470]	[375]	[300]	[240]	[200]
Maximum torque	$N\bullet m$	cont.	100	195	240	300	360	360	360	360	360
	$[lbf\bullet in]$		[890]	[1730]	[2120]	[2660]	[3190]	[3190]	[3190]	[3190]	[3190]
		int. <sup>1)</sup>	130	220	280	340	430	440	470	470	460
			[1150]	[1950]	[2480]	[3010]	[3810]	[3890]	[4160]	[4160]	[4070]
Maximum output	kW	cont.	7.0	12.5	13.0	12.5	12.5	10.0	7.0	5.0	5.0
	[hp]		[9.4]	[16.8]	[17.4]	[16.8]	[16.8]	[13.4]	[9.4]	[6.7]	[6.7]
		int. <sup>1)</sup>	8.5	15.0	15.0	14.5	14.0	13.0	9.5	8.0	7.0
			[11.4]	[20.1]	[20.1]	[19.4]	[18.8]	[17.4]	[12.7]	[10.7]	[9.4]
Maximum pressure drop.	bar [psi]	cont.	140	175	175	175	165	130	100	85	70
			[2030]	[2540]	[2540]	[2540]	[2390]	[1890]	[1450]	[1230]	[1020]
		int. <sup>1)</sup>	175	200	200	200	200	175	140	115	90
			[2540]	[2900]	[2900]	[2900]	[2900]	[2540]	[2030]	[1670]	[1310]
		peak <sup>2)</sup>	225	225	225	225	225	225	200	150	130
			[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[2900]	[2180]	[1890]
Maximum oil flow	l/min [US gal/ min]	cont.	40	60	60	60	60	60	60	60	60
			[10.6]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]
		int. <sup>1)</sup>	50	75	75	75	75	75	75	75	75
			[13.2]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
Maximum starting pressure with unloaded shaft	Bar [psi]		10	10	10	9	7	5	5	5	5
			[145]	[145]	[145]	[130]	[100]	[75]	[75]	[75]	[75]
Min starting torque	at max. press drop cont. $N\bullet m [lbf\bullet in]$		80	150	200	250	300	300	290	315	300
			[710]	[1330]	[1770]	[2210]	[2660]	[2660]	[2570]	[2790]	[2660]
	at max. press.drop int. <sup>1)</sup> $N\bullet m [lbf\bullet in]$		100	170	230	280	350	400	400	400	380
			[890]	[1510]	[2040]	[2480]	[3100]	[3540]	[3540]	[3540]	[3360]

Table 19 Technical data for OMR with 1 in splined and 28.5 mm tapered shaft

- 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 for OMR with 32 mm , 1 ¼ in cylindrical shaft and 35 mm, 1 ¼ in tapered shaft

Type			OMR								
Motor size			50	80	100	125	160	200	250	315	375
Geometric displacement	$cm^3$		51.6	80.3	99.8	125.7	159.6	199.8	249.3	315.7	372.6
	$[in^3]$		[3.16]	[4.91]	[6.11]	[7.69]	[9.77]	[12.23]	[15.26]	[19.32]	[22.80]
Maximum speed	$min^{-1}$	cont.	775	750	600	475	375	300	240	190	160
	$[rpm]$	int. <sup>1)</sup>	[970]	[940]	[750]	[600]	[470]	[375]	[300]	[240]	[200]
Maximum torque	$N\cdot m$ $[lbf\cdot in]$	cont.	100	195	240	300	380	450	540	550	580
			[890]	[1730]	[2120]	[2660]	[3360]	[3980]	[4780]	[4870]	[5130]
		int. <sup>1)</sup>	130	220	280	340	430	500	610	690	690
			[1150]	[1957]	[2480]	[3010]	[3810]	[4430]	[5400]	[6110]	[6110]
Maximum output	$kW$ $[hp]$	cont.	7.0	12.5	13.0	12.5	12.5	11.0	10.0	9.0	7.5
			[9.4]	[16.8]	[17.4]	[16.8]	[16.8]	[14.8]	[13.4]	[12.1]	[10.1]
		int. <sup>1)</sup>	8.5	15.0	15.0	14.5	14.0	13.0	12.0	10.0	9.0
			[11.4]	[20.1]	[20.1]	[19.4]	[18.8]	[17.4]	[16.1]	[13.4]	[12.1]
Maximum pressure drop.	$bar$ $[psi]$	cont.	140	175	175	175	175	175	175	135	115
			[2030]	[2540]	[2540]	[2540]	[2540]	[2540]	[2540]	[1960]	[1670]
		int. <sup>1)</sup>	175	200	200	200	200	200	200	175	150
			[2540]	[2900]	[2900]	[2900]	[2900]	[2900]	[2900]	[2540]	[2180]
peak <sup>2)</sup>	225	225	225	225	225	225	225	210	175		
	[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[3260]	[3050]	[2540]		
Maximum oil flow	$l/min$ $[US\ gal/min]$	cont.	40	60	60	60	60	60	60	60	60
			[10.6]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]
		int. <sup>1)</sup>	50	75	75	75	75	75	75	75	75
			[13.2]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
Maximum starting pressure with unloaded shaft	$Bar$ $[psi]$		10	10	10	9	7	5	5	5	5
			[145]	[145]	[145]	[130]	[100]	[75]	[75]	[75]	[75]
Min starting torque	at max. press drop cont. $N\cdot m [lbf\cdot in]$		80	150	200	250	320	410	500	500	470
			[710]	[1330]	[1770]	[2210]	[2830]	[3630]	[4430]	[4430]	[4170]
		at max. press.drop int. <sup>1)</sup> $N\cdot m [lbf\cdot in]$	100	170	230	280	370	460	550	660	570
			[890]	[1510]	[2040]	[2480]	[3280]	[4070]	[4870]	[5840]	[5050]

Table 20 Technical data for OMR with 32 mm , 1 ¼ in cylindrical shaft and 35 mm, 1 ¼ in tapered shaft

- 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 pressure

Type			Maximum inlet pressure	Maximum return pressure with drain line
OMR 50-375	$bar$ $[psi]$	cont.	175 [2540]	175 [2540]
		int.	200 [2900]	200 [2900]
		peak	225 [3260]	225 [3260]

Table 21 OMR 50-375 Maximum pressures

## Technical data for parking brake motor OMR F, OMR NF and OMRW NF

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

Table 22 Technical data for brake motor OMR F, OMR NF, OMRW NF

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.

### OMR F function

In normal conditions, 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 [300 psi] min. is applied to the brake release port (1).

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 [300 psi], the springs force the piston and pressure pad (9) against the brake discs and the cardan shaft/output shaft begin to lock up.

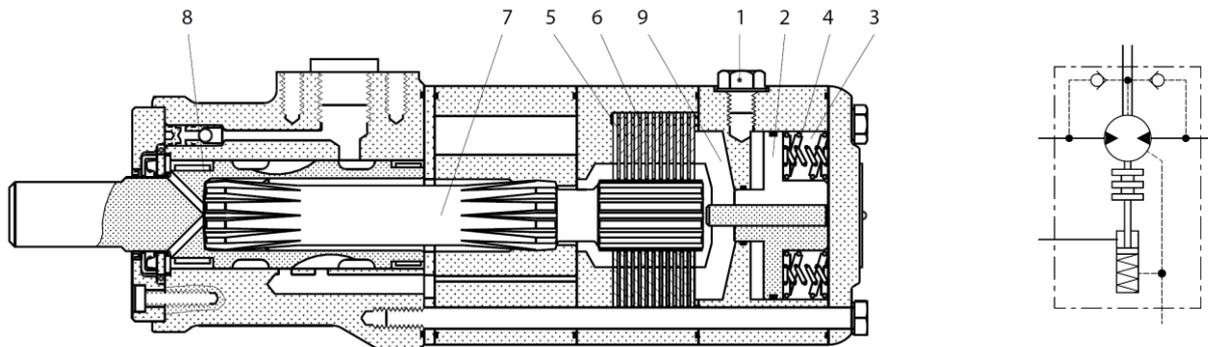


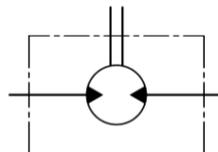
Figure 52 OMR F

## Maximum permissible shaft seal pressure

### High Pressure Shaft Seal (HPS) in motor

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

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



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

Figure 53 OMR with HPS, without check valves and without drain connection

**OMR with HPS, check valves and:**

- with drain connection – **The shaft seal pressure equals the pressure in the drain line.**

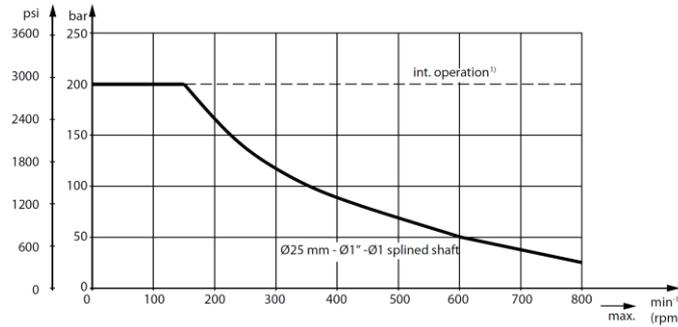


Figure 54 OMR with HPS, check valves and drain connection max. permissible shaft seal pressure

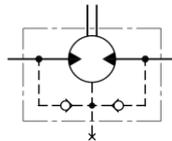


Figure 55 OMR with HPS, check valves and drain connection

- without drain connection – **The shaft seal pressure never exceeds the pressure in the return line.**

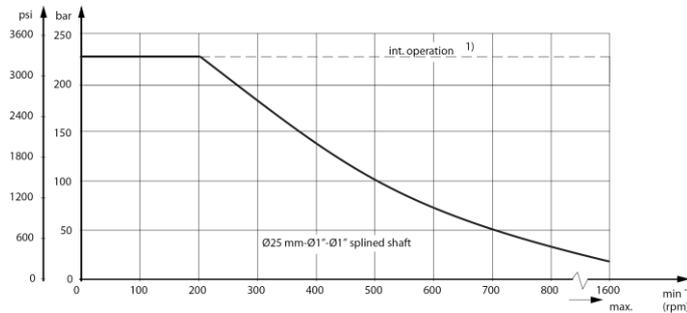


Figure 56 OMR with HPS, check valves and without drain connection max. permissible shaft seal pressure

**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

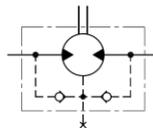
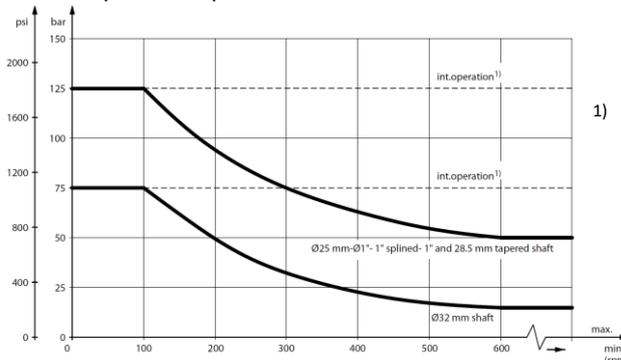


Figure 57 OMR with standard shaft seal, check valves and without use of drain connection

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

The shaft seal pressure equals the pressure on the drain line



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

Figure 58 OMR with standard shaft seal, check valves and with drain connection max. return pressure without drain line or max. pressure on drain line

## Pressure drop in motor

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

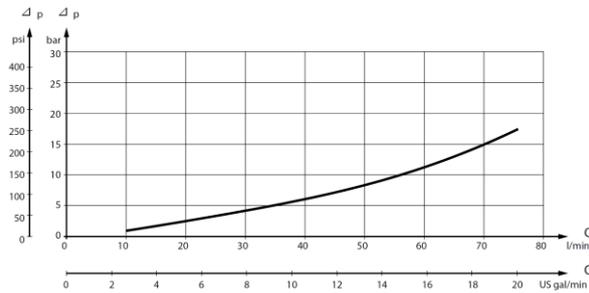


Figure 59 Pressure drop in OMR motor

## 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]	
	20 mm <sup>2</sup> /s [100 SUS]	35 mm <sup>2</sup> /s [165 SUS]	20 mm <sup>2</sup> /s [100 SUS]	35 mm <sup>2</sup> /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]

Table 60 OMR oil flow in drain line

## Direction of shaft rotation: clockwise

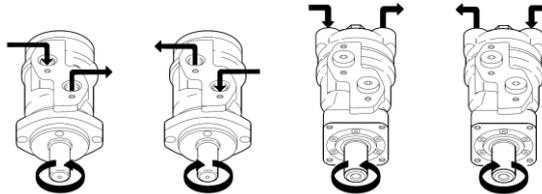


Figure 61 OMR Direction of shaft rotation

## Permissible shaft loads

### 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	4-hole oval flange	square flange*
	2-hole oval flange (European version)		2-hole oval flange (US-version)
Shaft version	25 mm cylindrical shaft	32 mm cylindrical shaft	25 mm cylindrical shaft
	1 in cylindrical shaft		
	1 in splined shaft		
Permissible shaft load ( $P_R$ ) - l in mm	$\frac{800}{n} \times \frac{250\,000N^\dagger}{95 + L}$	$\frac{800}{n} \times \frac{187\,500N^\dagger}{95 + L}$	$\frac{800}{n} \times \frac{250\,000N^\dagger}{101 + L}$
Permissible shaft load ( $P_R$ ) - l in inch	$\frac{800}{n} \times \frac{2515\,lbf^\dagger}{3.74 + L}$	$\frac{800}{n} \times \frac{1660\,lbf^\dagger}{3.74 + L}$	$\frac{800}{n} \times \frac{2215\,lbf^\dagger}{3.98 + L}$

Table 23 OMP and OMR shaft loads

\* For both European and US-version

†  $n \geq 200\, \text{min}^{-1}$  [rpm];  $\leq 55\, \text{mm}$  [2.2 in].  $n < 200\, \text{min}^{-1}$  [rpm];  $= > P_{R,max} = 8000\, \text{N}$  [1800 lbf]

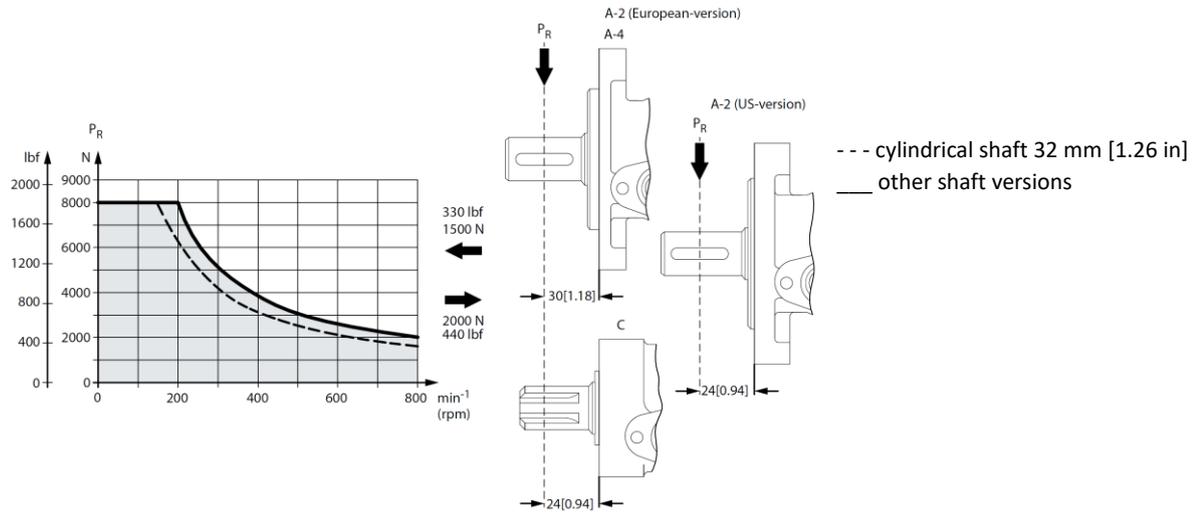


Figure 62 OMP and OMR Permissible shaft loads

The curve shows the relation between  $P_R$  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)

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

### OMR N and OMR NF with needle bearings shaft loads

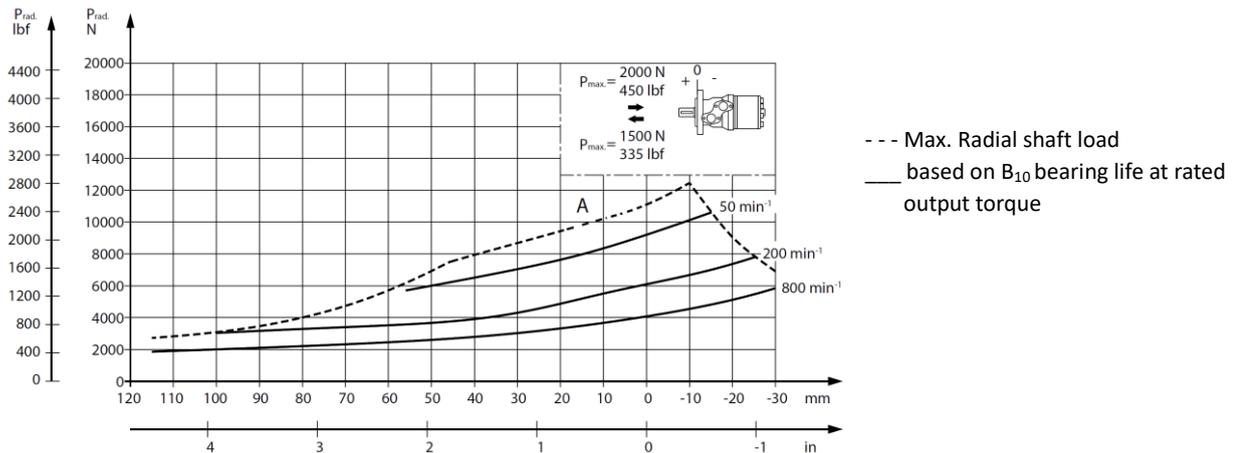


Figure 63 Permissible shaft loads (OMR N and OMR NF)

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

The other curves apply to a  $B_{10}$  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.

## OMRW N and OMRW NF with Needle Bearings

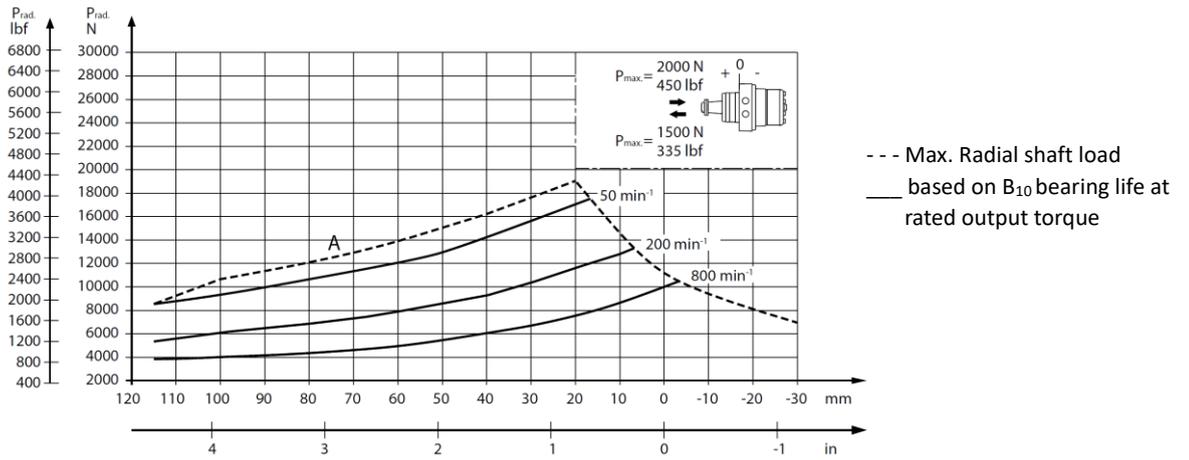


Figure 64 Permissible shaft loads (OMRW N and OMRW NF)

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 B<sub>10</sub> 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.

# Chapter 8

## OMR function diagrams

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### Topics:

- *OMR 50 function diagram*
- *OMR 80 function diagram*
- *OMR 100 function diagram*
- *OMR 125 function diagram*
- *OMR 160 function diagram*
- *OMR 200 function diagram*
- *OMR 250 function diagram*
- *OMR 315 function diagram*
- *OMR 375 function diagram*

## OMR 50 function diagram

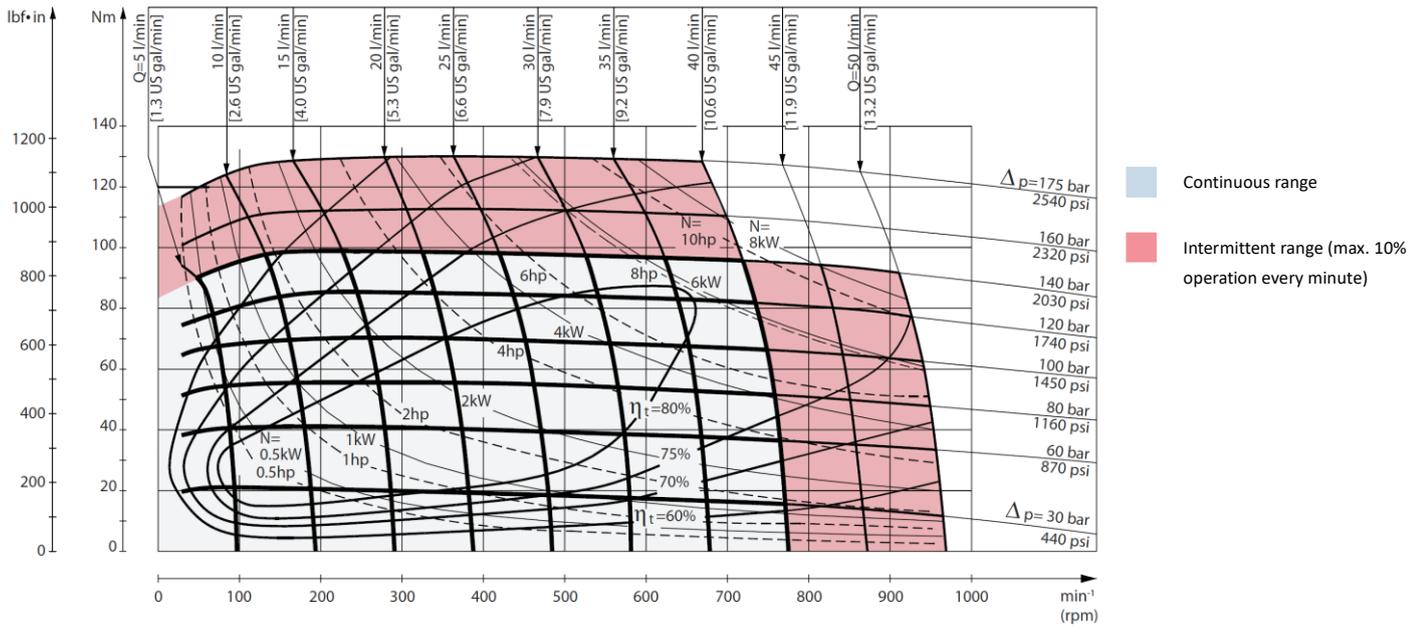


Figure 65 OMR 50 function diagram

## OMR 80 function diagram

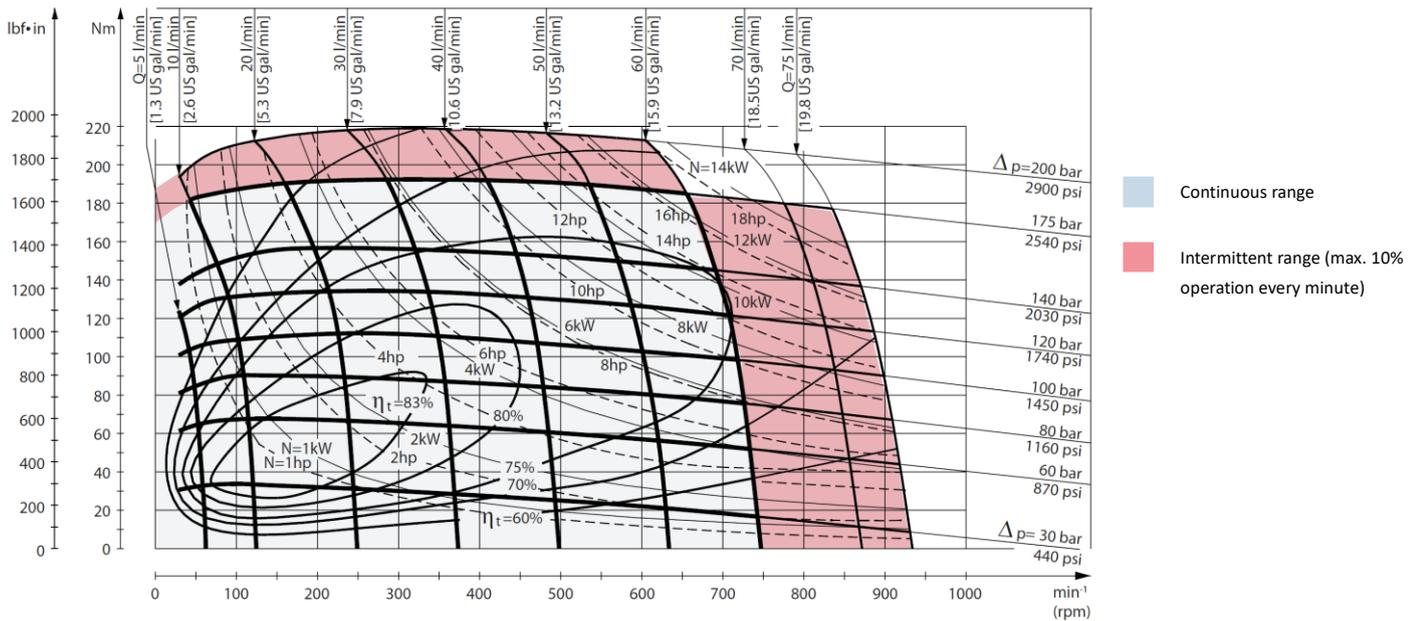


Figure 66 OMR 80 function diagram

## OMR 100 function diagram

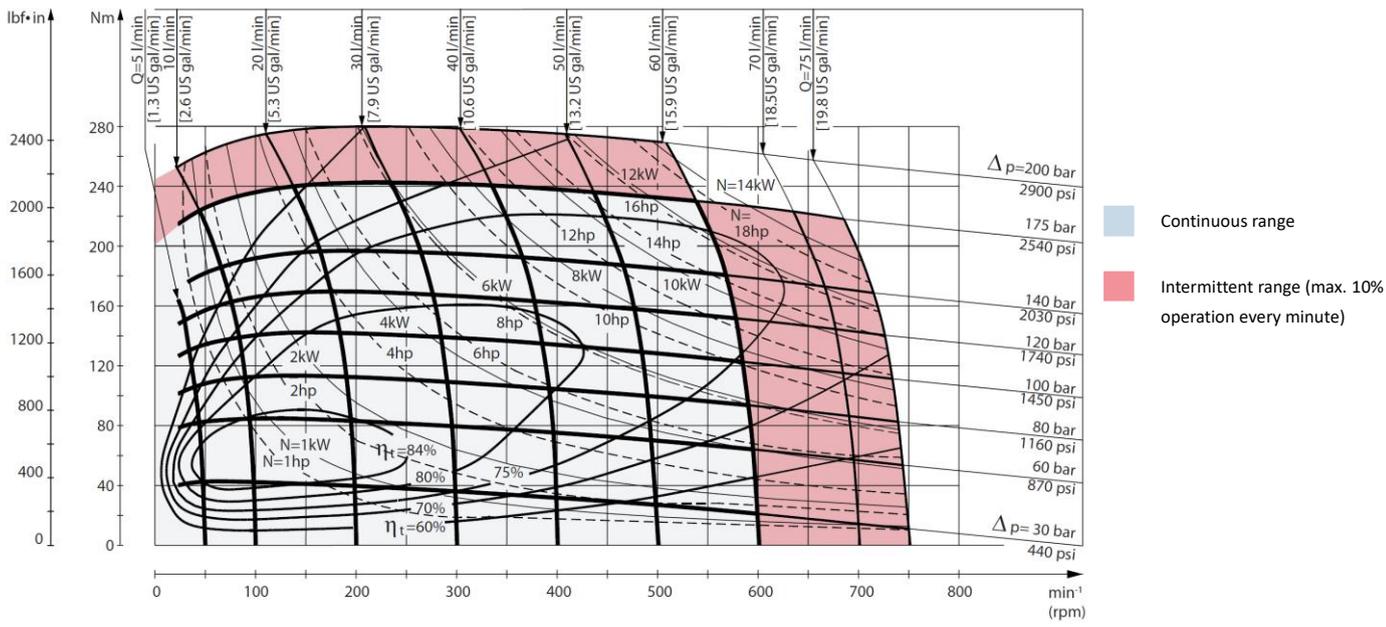


Figure 67 OMR 100 function diagram

## OMR 125 function diagram

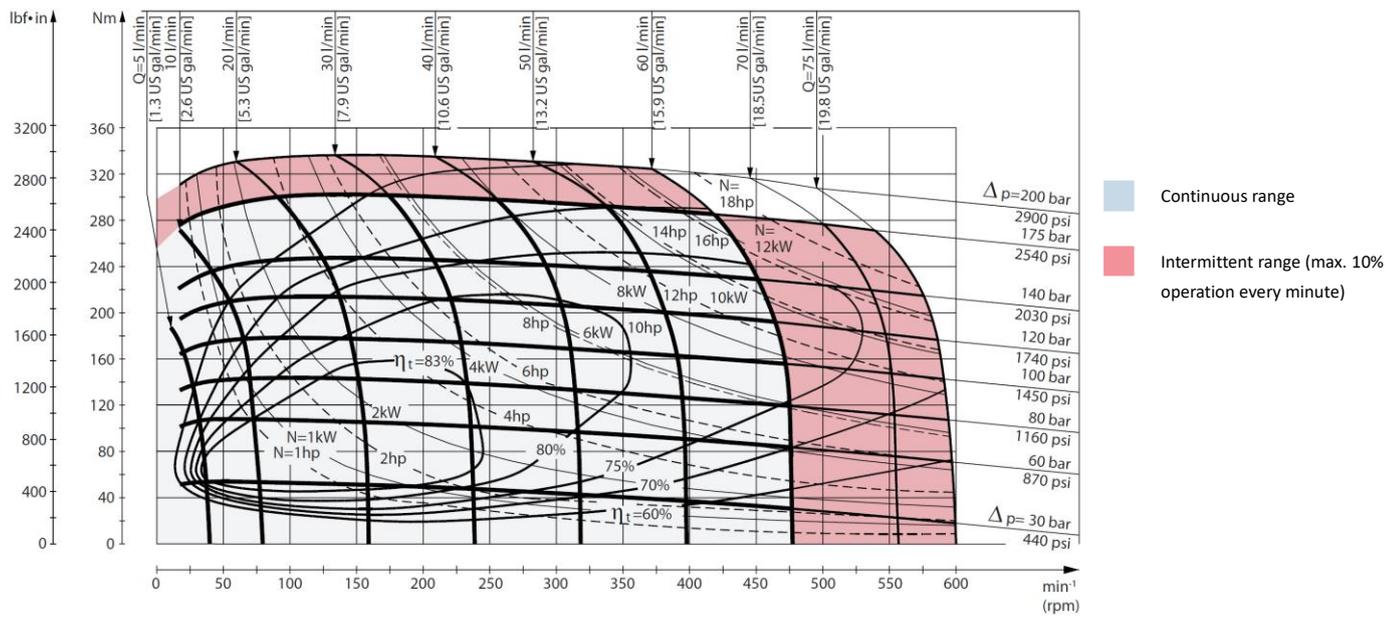


Figure 68 OMR 125 function diagram

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## OMR 160 function diagram

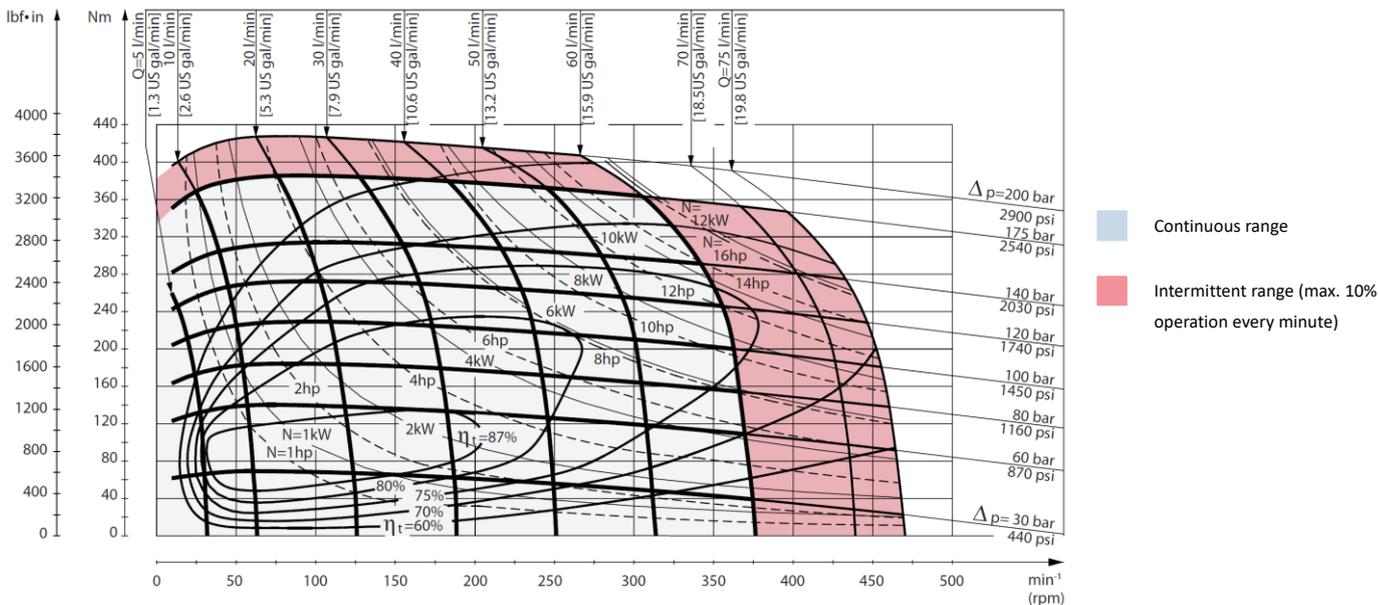


Figure 69 OMR 160 function diagram

## OMR 200 function diagram

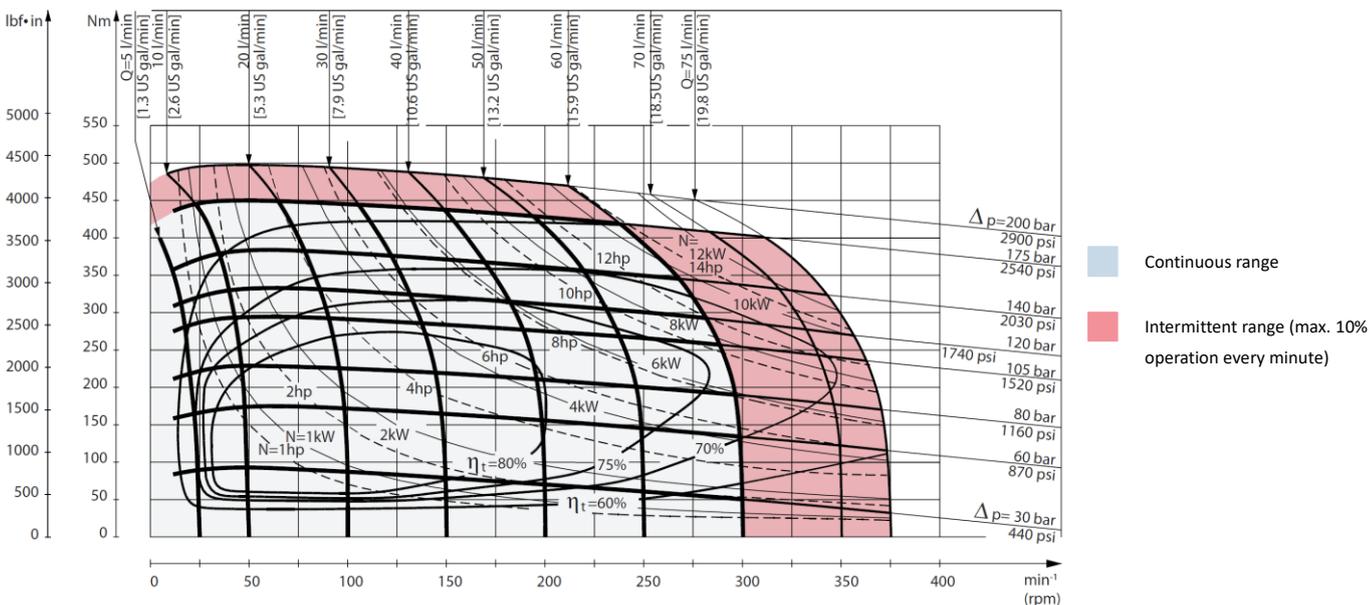


Figure 70 OMR 200 function diagram

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## OMR 250 function diagram

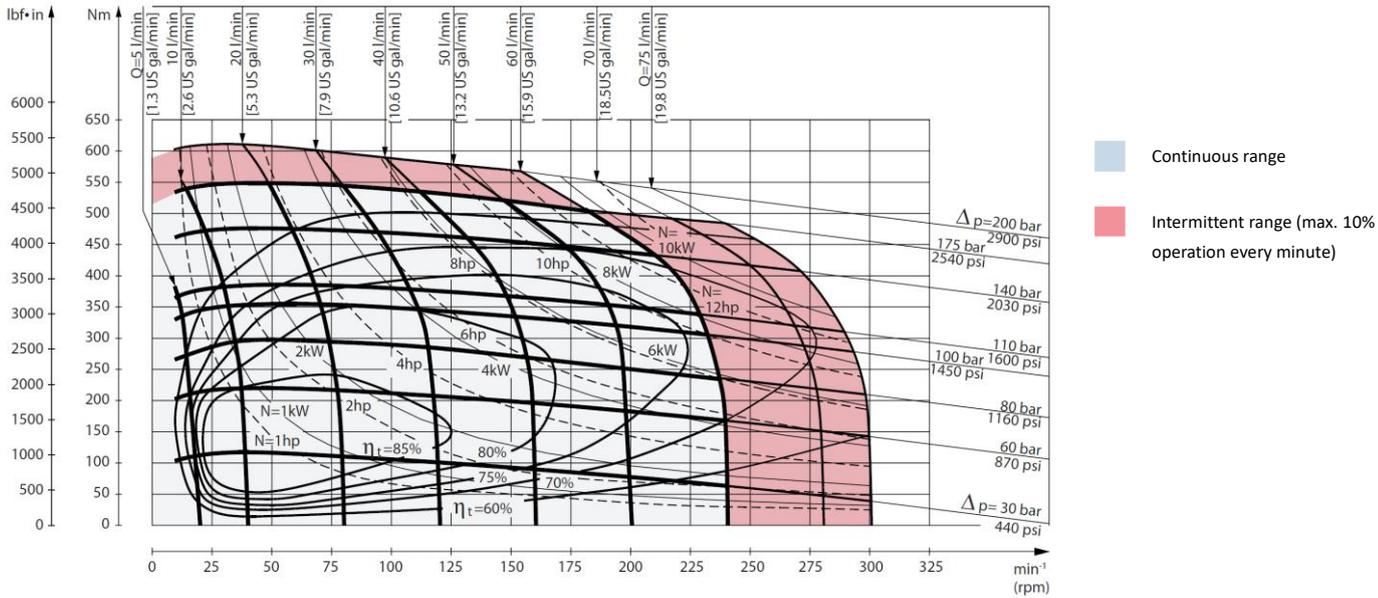


Figure 71 OMR 250 function diagram

## OMR 315 function diagram

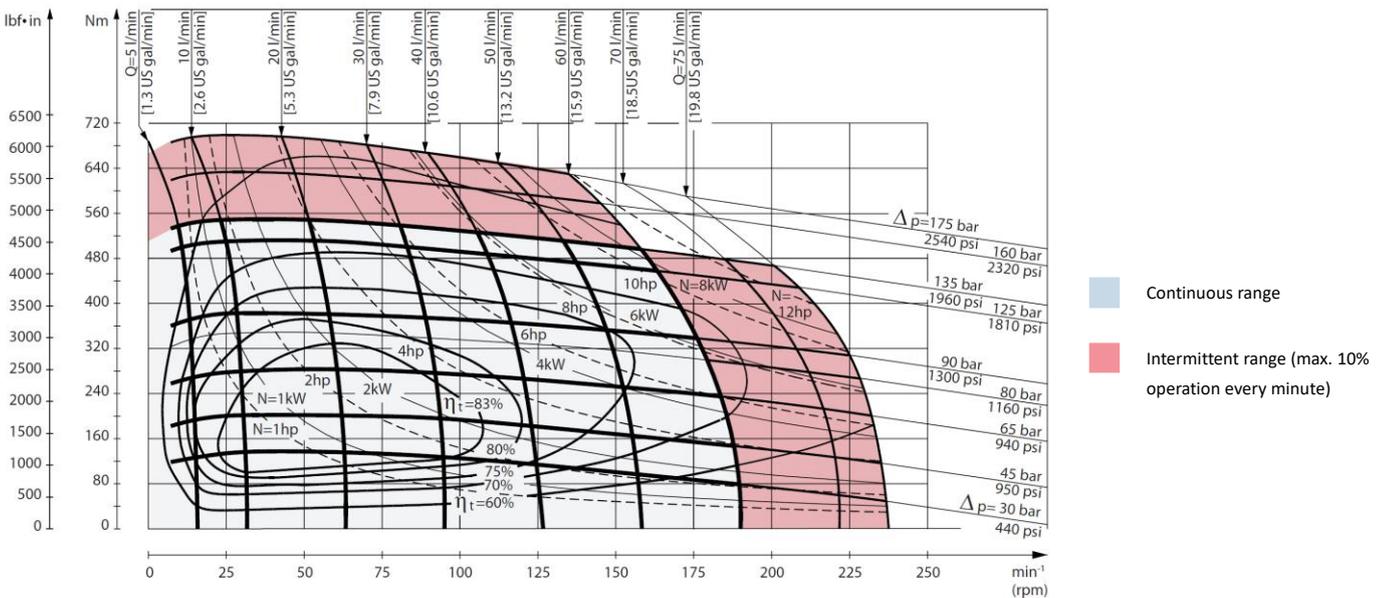


Figure 72 OMR 315 function diagram

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# OMR 375 function diagram

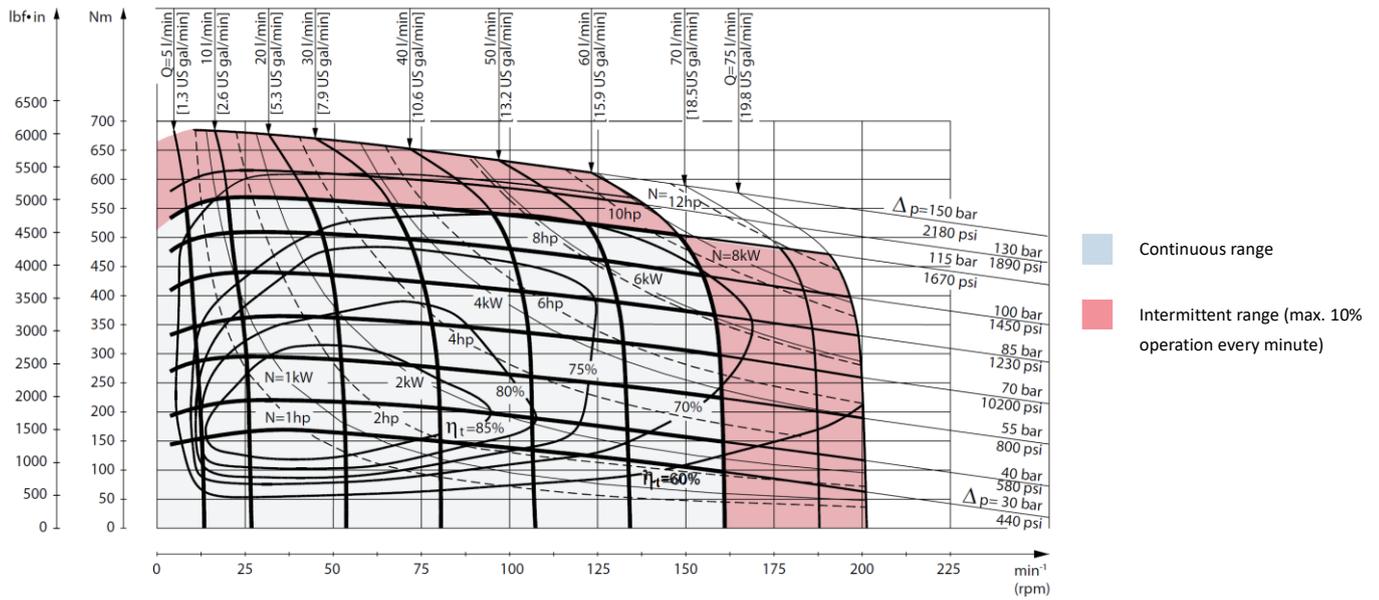


Figure 73 OMR 375 function diagram

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## Chapter 9

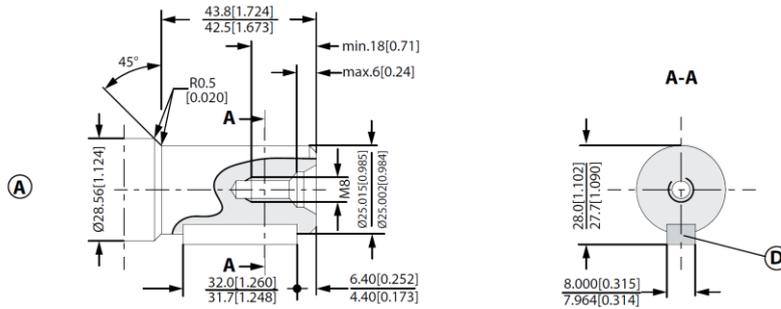
### OMR Shaft version

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#### Topics:

- *A - Cylindrical shaft 25 mm*
- *B - Cylindrical shaft 1 in*
- *C - Cylindrical shaft 1 in (US version)*
- *D – Cylindrical shaft 32 mm*
- *E – Cylindrical shaft 1 ¼ in (US version)*
- *F – Involute splined shaft B.S. 2059 (SAE 6B)*
- *Splined shaft B.S. 2059 (SAE 6B - US version)*
- *H – Tapered shaft 28.5 mm; ISO/R775 (taper 1:10)*
- *I – Tapered shaft 35 mm (taper 1:10)*
- *J – Tapered shaft 1 ¼ in (taper 1:8); SAE J501*

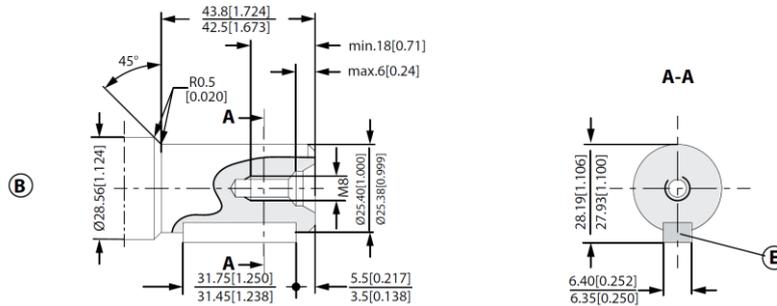
## A - Cylindrical shaft 25 mm



D: Parallel key A8 • 7 • 32 DIN 6885  
Max. torque 360 N•m [3185 lb•in]

Figure 74 OMR shaft version: Cylindrical shaft 25 mm

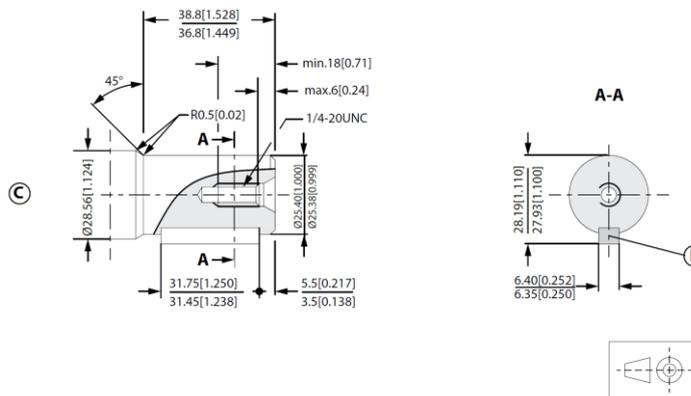
## B - Cylindrical shaft 1 in



E: Parallel key ¼ • ¼ • 1 ¼ in B.S. 46  
Max. torque 360 N•m [3185 lb•in]

Figure 75 OMR shaft version: Cylindrical shaft 1 in

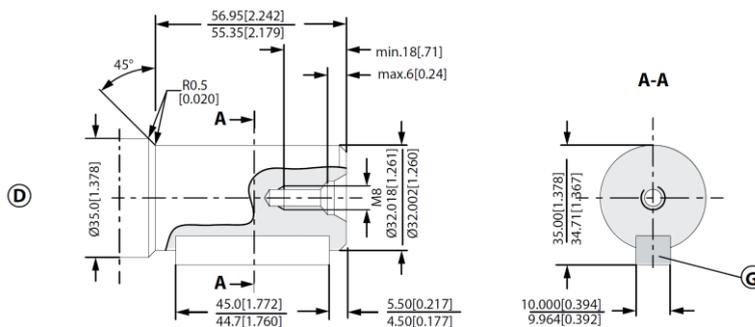
## C - Cylindrical shaft 1 in (US version)



F: Parallel key ¼ • ¼ • 1 ¼ in B.S. 46  
Max torque 360 N•m [3185 lb•in]

Figure 76 OMR shaft version: Cylindrical shaft 1 in (US version)

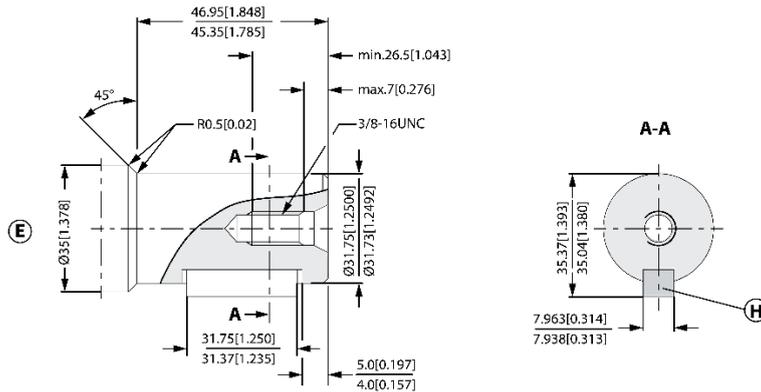
## D – Cylindrical shaft 32 mm



G: Parallel key A10 • 8 • 45 DIN 6885

Figure 77 OMR shaft version: Cylindrical shaft 32mm

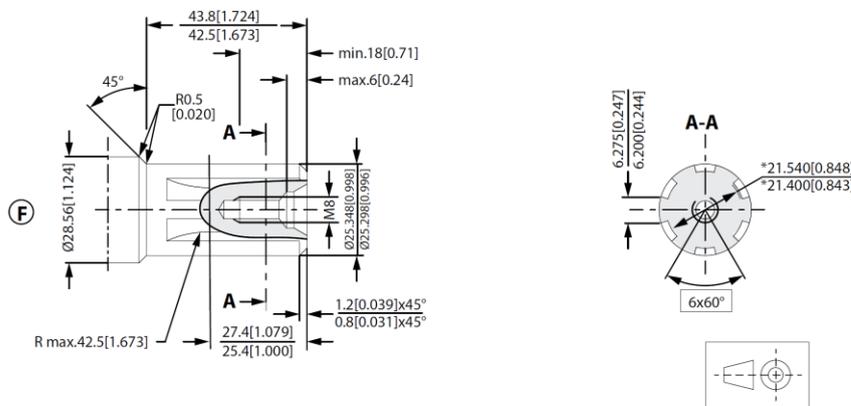
## E – Cylindrical shaft 1 ¼ in (US version)



H: Parallel key 5/16 • 5/16 • 1 ¼ in B.S. 46

Figure 78 OMR shaft version: Cylindrical shaft 1 ¼ in (US version)

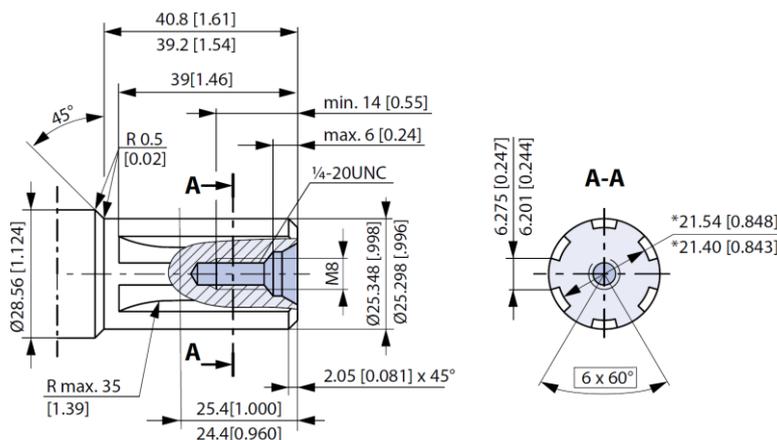
## F – Involute splined shaft B.S. 2059 (SAE 6B)



F: Straight-sided, bottom fitting, deep.  
Fit 2;  
Nom. size 1 in  
\*Deviates from B.S. 2059 (SAE 6B)  
Max. torque 360 N•m [3185 lb•in]  
Max. cont. torque 400 N•m [3540 lb•in]

Figure 79 OMR shaft version: Involute splined shaft B.S. 2059 (SAE 6B)

## Splined shaft B.S. 2059 (SAE 6B - US version)



Straight-sided, bottom fitting, deep. Fit 2;  
Nom. size 1 in,  
\*Deviates from B.S. 2059 (SAE 6B)  
Max. cont. torque 400 N•m [3540 lb•in]

Figure 80 OMR shaft version: Splined shaft B.S. 2059 (SAE 6B - US version)

## H – Tapered shaft 28.5 mm; ISO/R775 (taper 1:10)

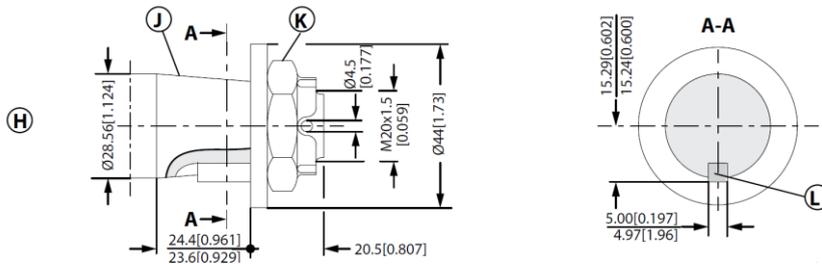


Figure 81 OMR shaft version: Tapered shaft 28.5 mm; ISO/R775 (taper 1:10)

- K: DIN 937 NV 30  
Tightening torque:  $100 \pm 10 \text{ N}\cdot\text{m}$   
[885 ± 85 lb•in]
- L: Parallel key B5 • 5 • 14 DIN 6885

## I – Tapered shaft 35 mm (taper 1:10)

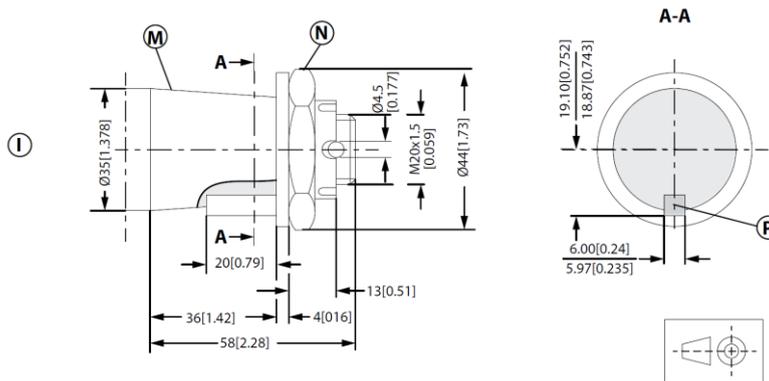


Figure 82 OMR shaft version: Tapered shaft 35 mm (taper 1:10)

- N: DIN 937 NV 41  
Tightening torque:  $200 \pm 10 \text{ N}\cdot\text{m}$   
[1770 ± 85 lb•in]
- P: Parallel key B6 • 6 • 20 DIN 6885

## J – Tapered shaft 1 ¼ in (taper 1:8); SAE J501

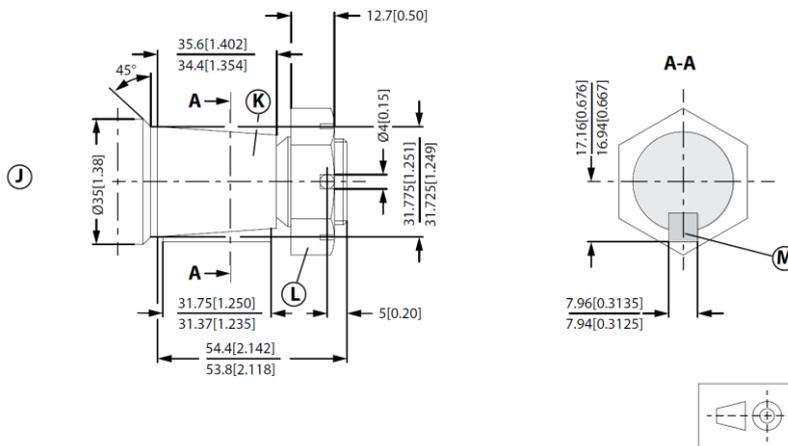


Figure 83 OMR shaft version: Tapered shaft 1 ¼ in (taper 1:8); SAE J501

- L: 1 - 20 UNF across flats 1 7/16;  
Tightening torque:  $200 \pm 10 \text{ N}\cdot\text{m}$   
[1770 ± 85 lb•in]
- M: Parallel key 5/16 • 5/16 • 1 ¼ SAE J501; Max. cont. torque  $400 \text{ N}\cdot\text{m}$   
[3540 lb•in]

# Chapter 10

## OMR port thread versions

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### Topics:

- *Main port thread versions*
- *OMR manifold mount*

## Main port thread versions

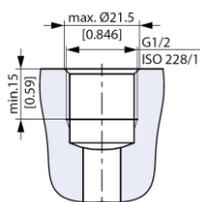
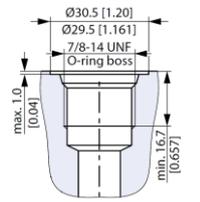
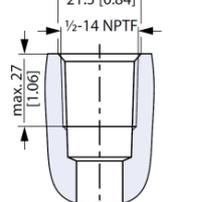
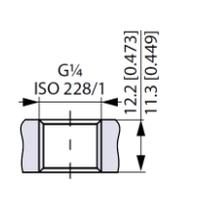
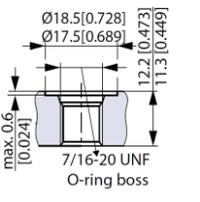
<b>G</b> <b>ISO 228/1 – G1/2</b>	<b>UNF</b> <b>7/8–14 UNF O-ring boss</b>	<b>NPTF</b> <b>1/2–14 NPTF</b>	<b>G drain</b> <b>ISO 228/1 – G1/4</b>	<b>UNF drain</b> <b>7/16–20 UNF O-ring boss</b>
 <p>Figure 84 OMR port thread version: ISO 228/1 - G1/2</p>	 <p>Figure 85 OMR port thread version: 7/8 - 14 UNF O-ring boss</p>	 <p>Figure 86 OMR port thread version: 1/2 - 14 NPTF</p>	 <p>Figure 87 OMR port thread version: ISO 228/1 - G1/4</p>	 <p>Figure 88 OMR port thread version: 7/16 - 20 UNF O-ring boss</p>

Table 24 OMR Main ports overview

## OMR manifold mount

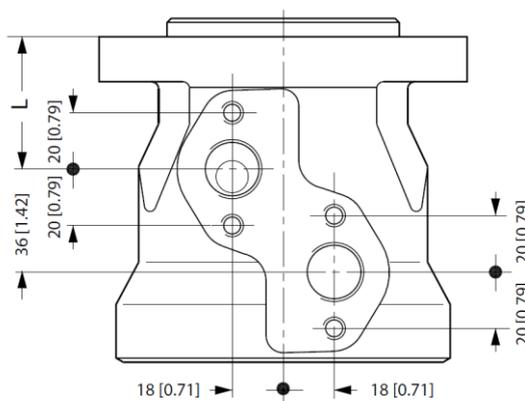


Figure 89 OMR manifold mount

L: see dimensional drawing for given OMP/OMR motor:

- [OMP dimensions](#)
- [OMR dimensions](#)

# Chapter 11

## OMR dimensions

---

### Topics:

- *OMR dimensions - European version*
- *OMR dimensions - US version*

## OMR dimensions - European version

### OMR Side port version with 2-hole oval mounting flange (A2 flange) with high pressure shaft seal

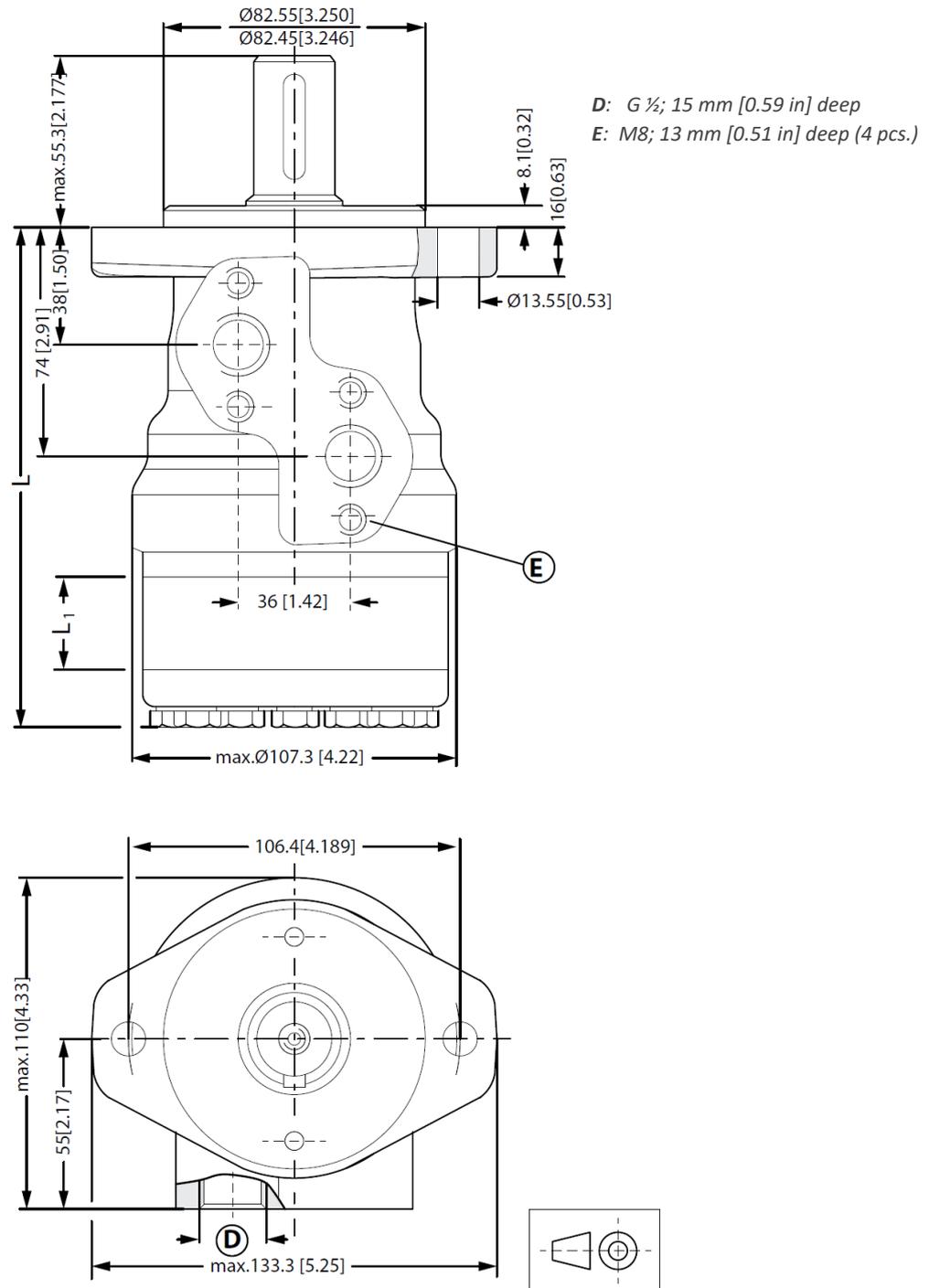
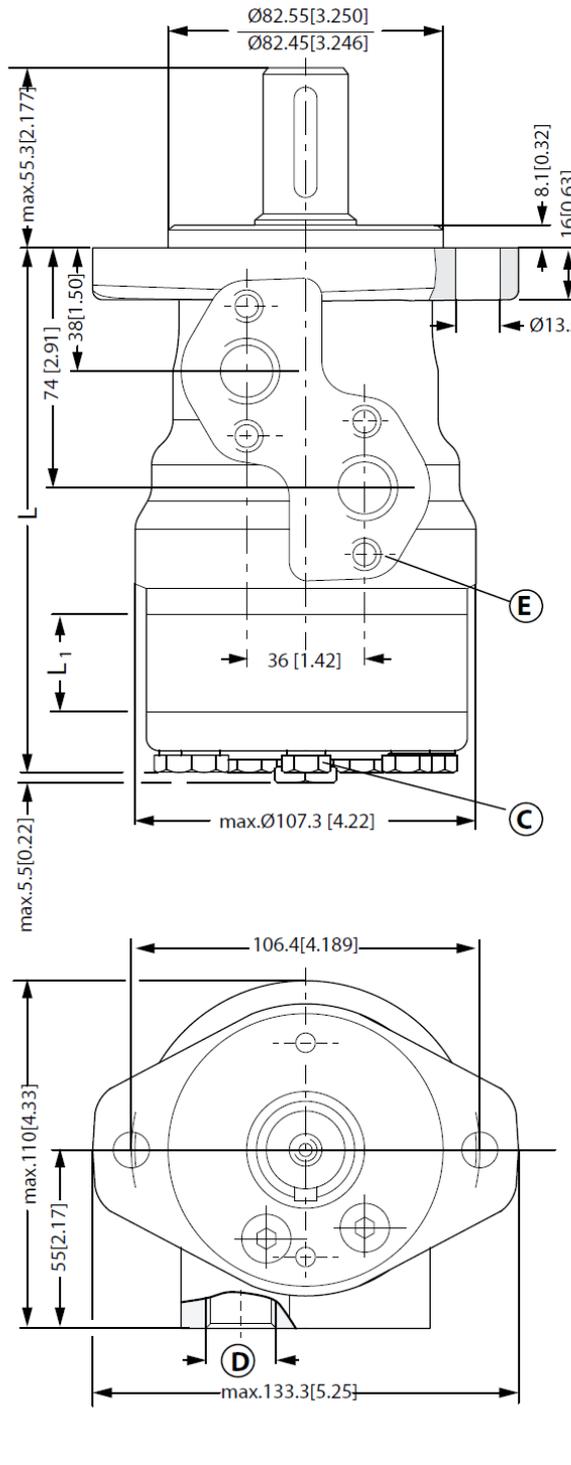


Figure 90 OMR Side port with A2-flange (EU version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub>	137.9	142.8	146.2	150.6	156.6	163.6	172.3	183.6	193.8
	mm [in]	[5.43]	[5.62]	[5.76]	[5.93]	[6.17]	[6.44]	[6.78]	[7.23]	[7.63]
L <sub>1</sub>	9.0	14.0	17.4	21.8	27.8	34.8	43.5	54.8	65.0	
	mm [in]	[0.35]	[0.55]	[0.69]	[0.86]	[1.09]	[1.37]	[1.71]	[2.16]	[2.56]

Table 25 OMR Side port version with A2-flange dimensions (EU version)

## Side port with 2-hole oval mounting flange (A2-flange)



Tolerance for basic dimensions =  $\pm 1$  mm

[0.04 in]

**C:** Drain connection G  $\frac{1}{4}$ ; 15 mm [0.47 in] deep

**D:** G  $\frac{1}{2}$ ; 15 mm [0.59 in] deep

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

### Port connections:

**A, B** Main ports: G  $\frac{1}{2}$ ; min 15 mm [0.59 in] deep

**C** Drain port: G  $\frac{1}{4}$ ; 11.5 mm [0.47 in] deep

Figure 91 OMR Side port with A2-flange (EU version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	$L_{max}$ mm [in]	137.9 [5.43]	142.8 [5.62]	146.2 [5.76]	150.6 [5.93]	156.6 [6.17]	163.6 [6.44]	172.3 [6.78]	183.6 [7.23]	193.8 [7.63]
	$L_1$ mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 26 OMR Side port with A2-flange dimensions (EU version)

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

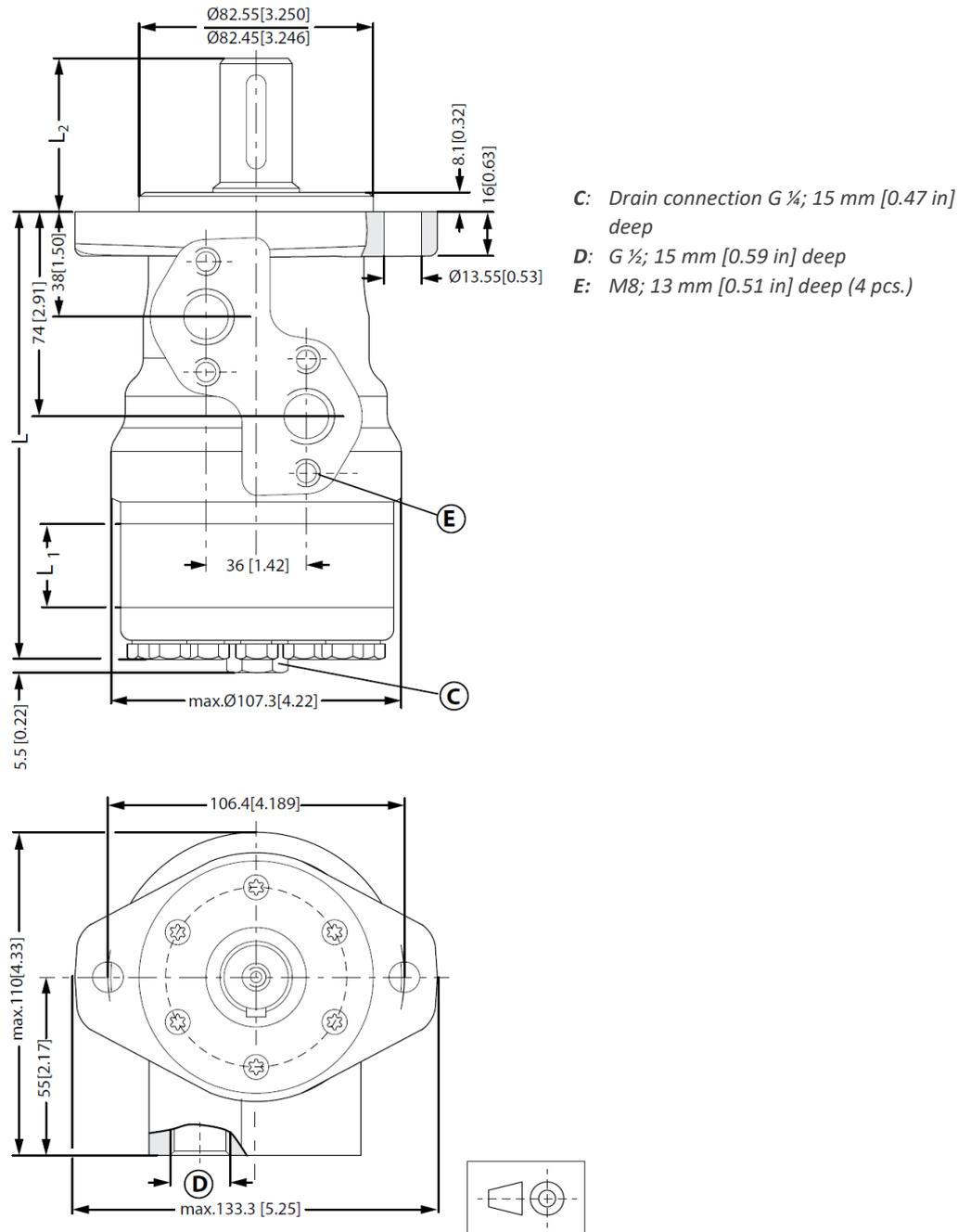


Figure 92 OMR, OMR C and OMR N Side port version with A2 flange (EU version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub> mm [in]	137.9 [5.43]	142.8 [5.62]	146.2 [5.76]	150.6 [5.93]	156.6 [6.17]	163.6 [6.44]	172.3 [6.78]	183.6 [7.23]	193.8 [7.63]
	L <sub>1</sub> mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 27 OMR, OMR C and OMR N Side port version with A2 flange dimensions (EU versions)

Output shaft. max.		Cylindrical shaft 32 mm [1.26 in]	Cylindrical shaft 25 mm [0.98 in]	Tapered shaft 28.56 mm [1.12 in]
L <sub>2</sub> max	mm	68.3	55.3	56.65
	[in]	[2.69]	[2.18]	[2.23]

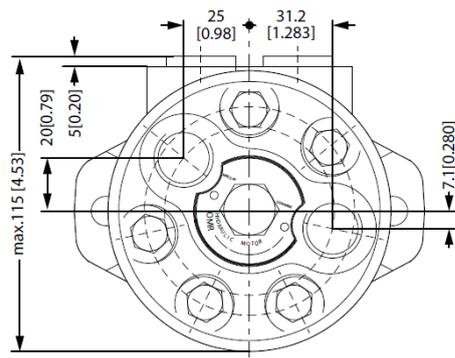
Table 28 OMR, OMR C, OMR N Output shaft. max.

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### OMR, OMR C and OMR N 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

**Port connections:**

- A, B Main ports: G ½; min 15 mm [0.59 in] deep
- C Drain port: G ¼; 12 mm [0.47 in] deep
- D Thread: M8; 13 mm [0.51 in] deep

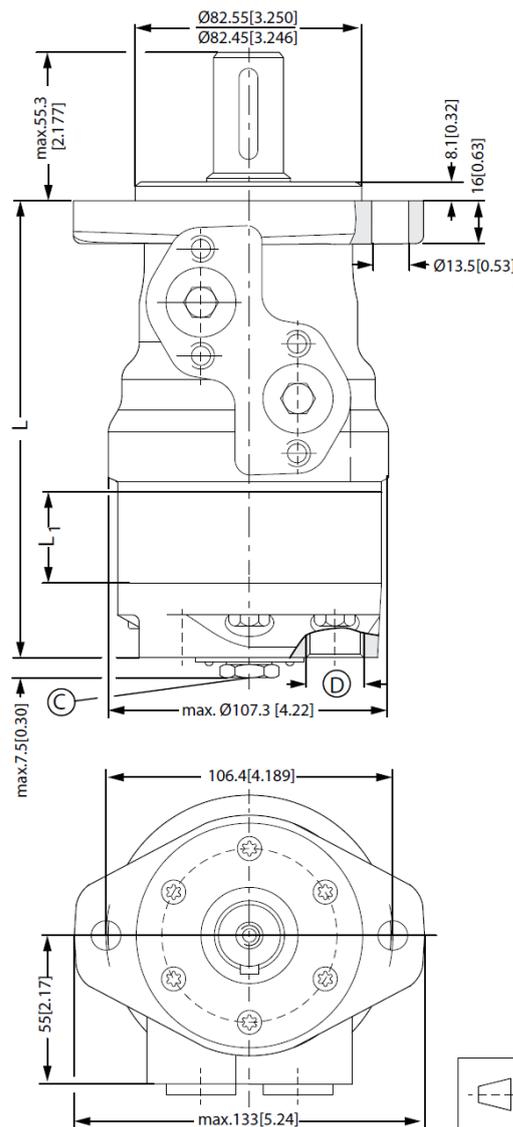


Figure 93 OMR, OMR C and OMR N End port version with A2-flange (EU version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub> mm [in]	152.2 [5.99]	157.2 [6.19]	160.6 [6.32]	165.0 [6.50]	171.0 [6.73]	178.0 [7.01]	186.7 [7.35]	198.0 [7.80]	208.2 [8.20]
	L <sub>1</sub> mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 29 OMR, OMR C and OMR N End port version with A2 flange dimensions (EU version)

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

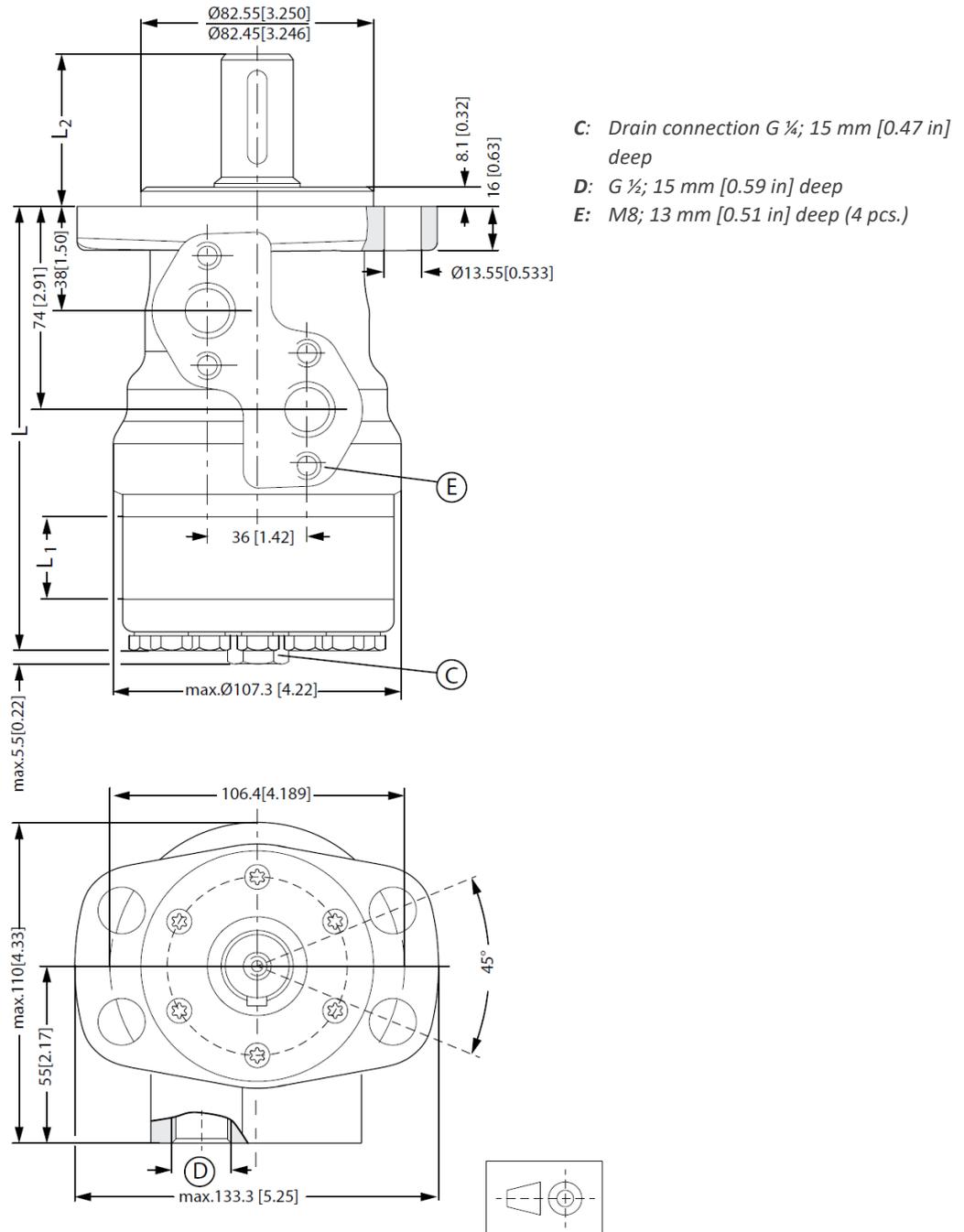


Figure 94 OMR Side port version with A4-flange (EU version)

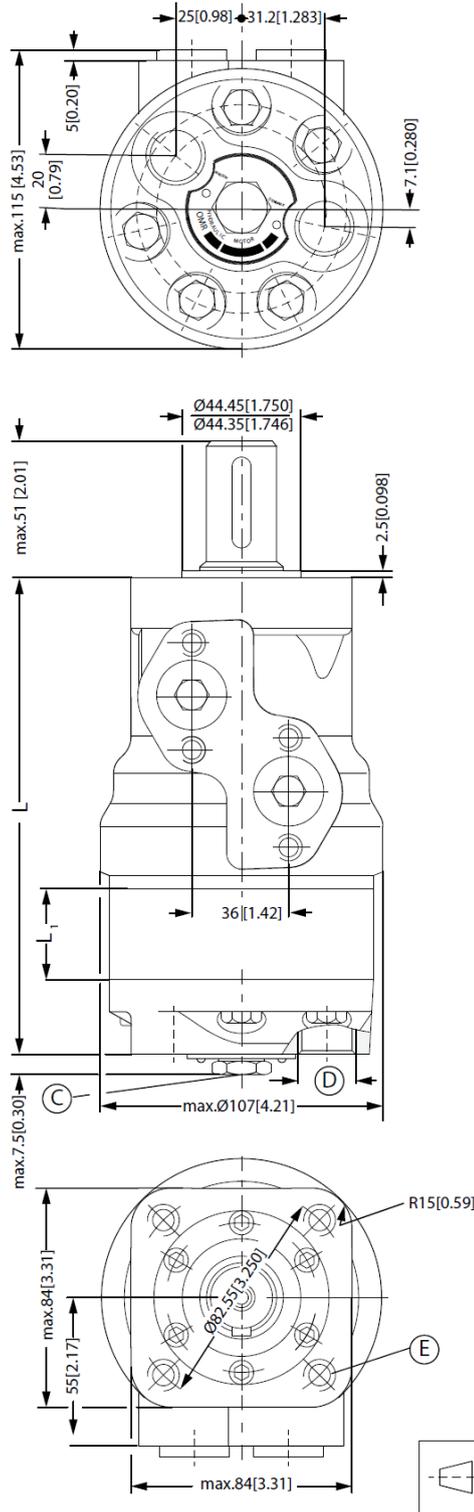
Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub> mm [in]	137.9 [5.43]	142.8 [5.62]	146.2 [5.76]	150.6 [5.93]	156.6 [6.17]	163.6 [6.44]	172.3 [6.78]	183.6 [7.23]	193.8 [7.63]
	L <sub>1</sub> mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 30 OMR Side port version with A4-flange

Output shaft. max.		Cylindrical shaft 32 mm [1.26 in]	Cylindrical shaft 25 mm [0.98 in]	Tapered shaft 28.56 mm [1.12 in]
L <sub>2 max</sub>	mm	68.3	55.3	56.65
	[in]	[2.69]	[2.18]	[2.23]

Table 31 OMR Output shaft. max.

### OMR End port version with square mounting flange (C-flange)



- C: Drain connection G ¼; 12 mm [0.47 in] deep
- D: G ½; 15 mm [0.59 in] deep
- E: M10; 15 mm [0.51 in] deep (4 pcs.)

Figure 95 OMR End port version with C-flange (EU version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub> mm [in]	158.6 [6.24]	163.3 [6.44]	167.0 [6.57]	171.0 [6.73]	177.0 [6.97]	184.0 [7.24]	192.7 [7.59]	204.0 [8.03]	214.2 [8.43]
	L <sub>1</sub> mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 32 OMR End port version with C-flange dimensions (EU version)

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### OMRW N wheel motor

C: Drain connection G ¼; 12 mm [0.47 in] deep  
 D: G ½; 15 mm [0.59 in] deep

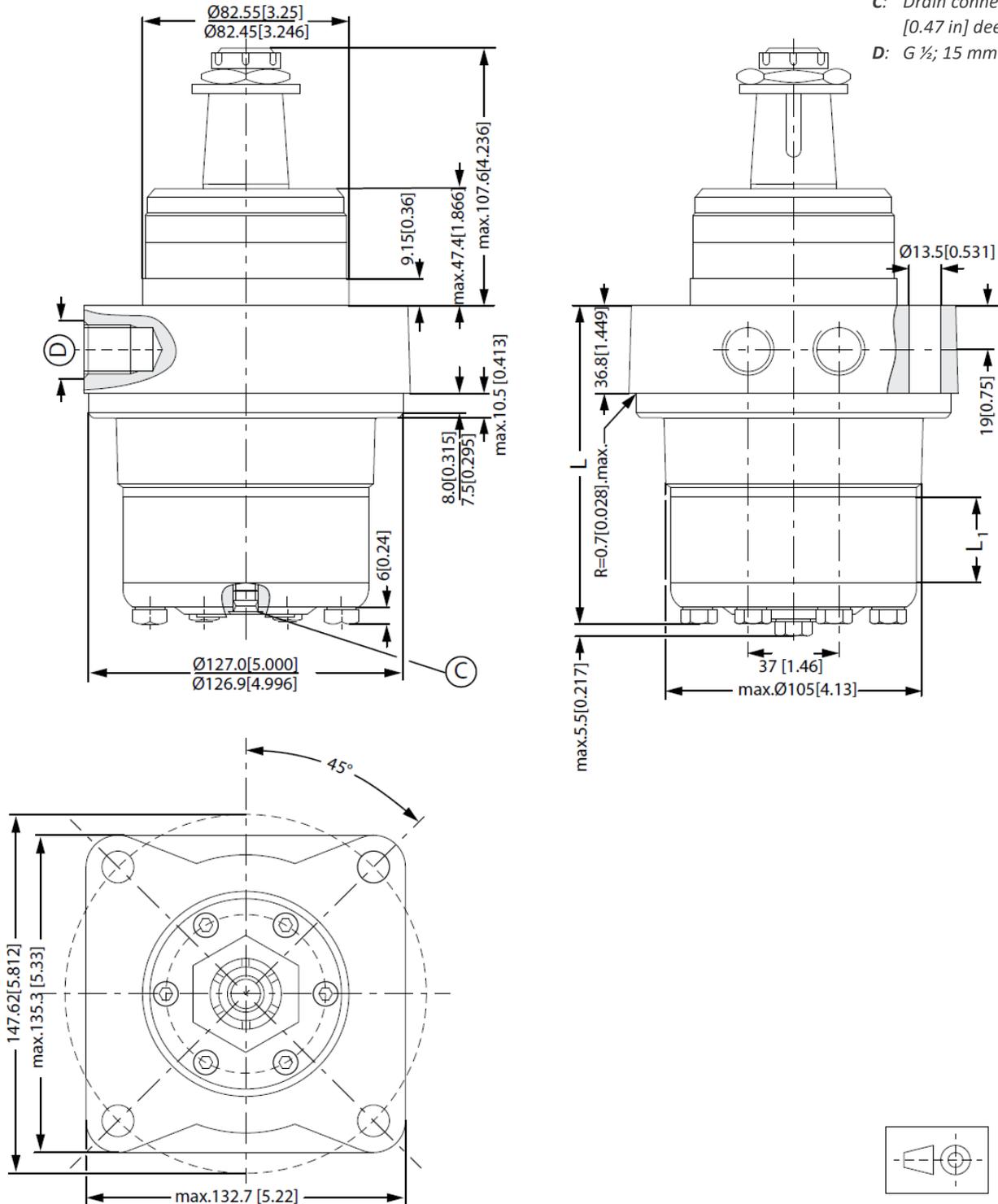


Figure 96 OMRW N (EU version)

Type		OMRW N								
		50	80	100	125	160	200	250	315	375
Length	$L_{max}$ mm [in]	113.7 [4.48]	114.7 [4.52]	118.1 [4.65]	122.5 [4.82]	128.5 [5.06]	135.1 [5.33]	144.2 [5.68]	155.5 [6.12]	165.7 [6.52]
	$L_1$ mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 33 OMRW N dimensions (EU version)

# OMR F motor

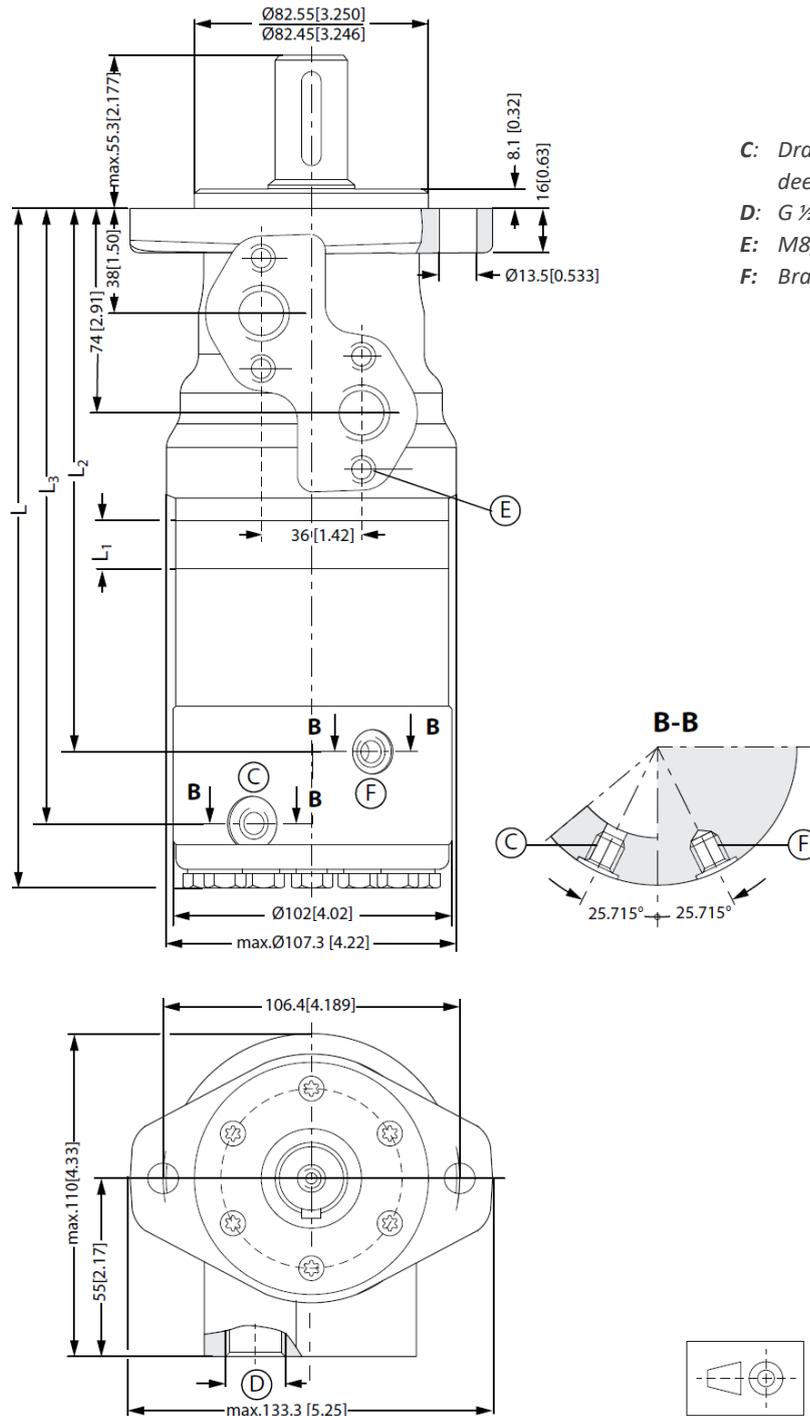


Figure 97 OMR F (EU version)

Type		OMR F							
		80	100	125	160	200	250	315	375
Length	L <sub>max</sub>	242.7	246.1	250.5	256.5	263.5	272.2	283.5	293.7
	mm [in]	[9.56]	[9.69]	[9.86]	[10.10]	[10.37]	[10.72]	[11.16]	[11.56]
	L <sub>1</sub>	14.0	17.4	21.8	27.8	34.8	43.5	54.8	65.0
	mm [in]	[0.55]	[0.69]	[0.86]	[1.09]	[1.37]	[1.71]	[2.16]	[2.56]
L <sub>2</sub>	186.8	190.2	194.6	200.6	207.6	216.3	227.6	237.7	
mm [in]	[7.35]	[7.49]	[7.66]	[7.90]	[8.17]	[8.51]	[8.96]	[9.36]	
L <sub>3</sub>	210.3	213.7	218.1	224.1	231.1	239.8	251.1	261.2	
mm [in]	[8.28]	[8.41]	[8.58]	[8.82]	[9.10]	[9.45]	[9.88]	[10.28]	

Table 34 OMR F dimensions (EU version)

## OMRW NF motor

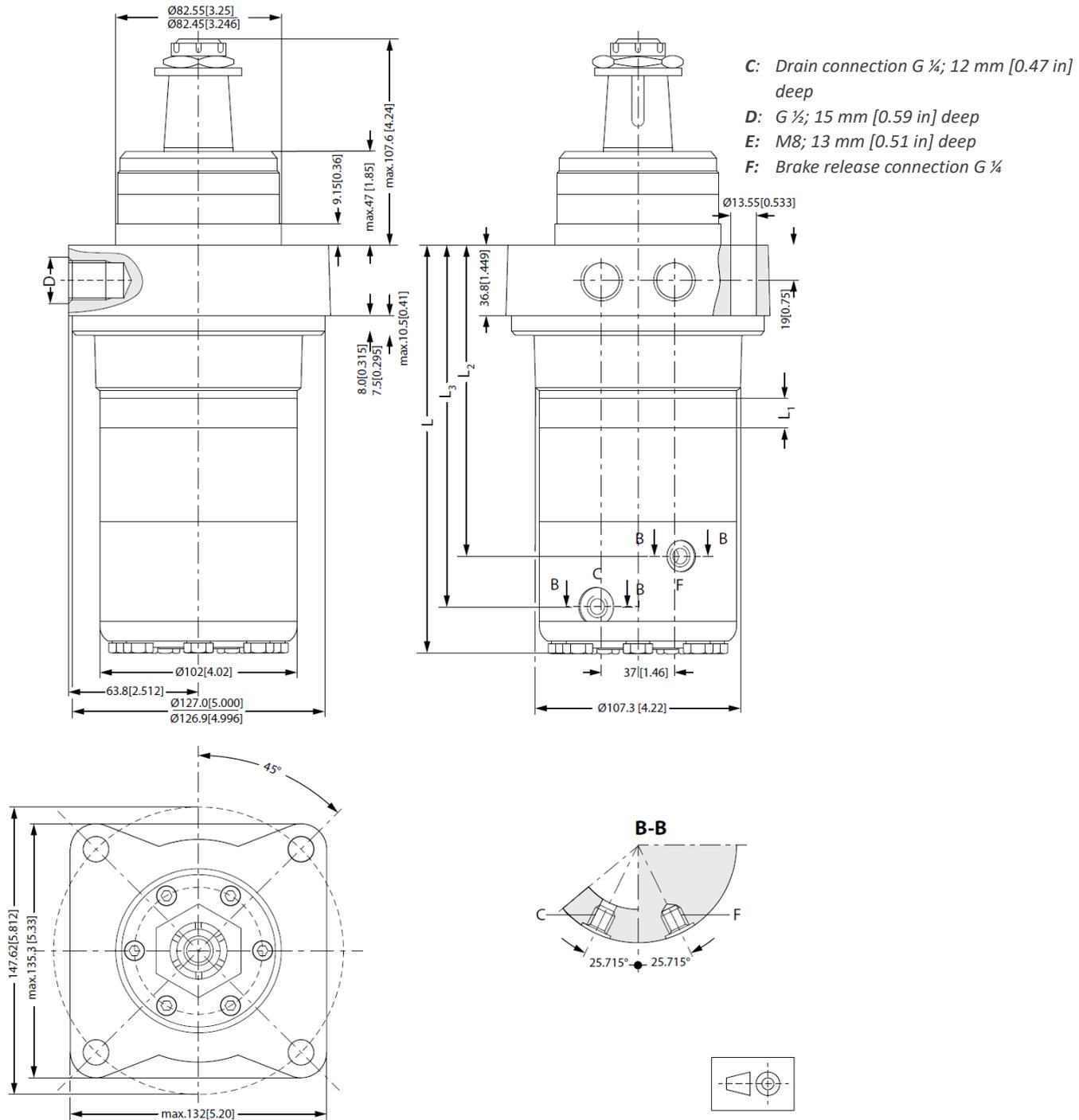


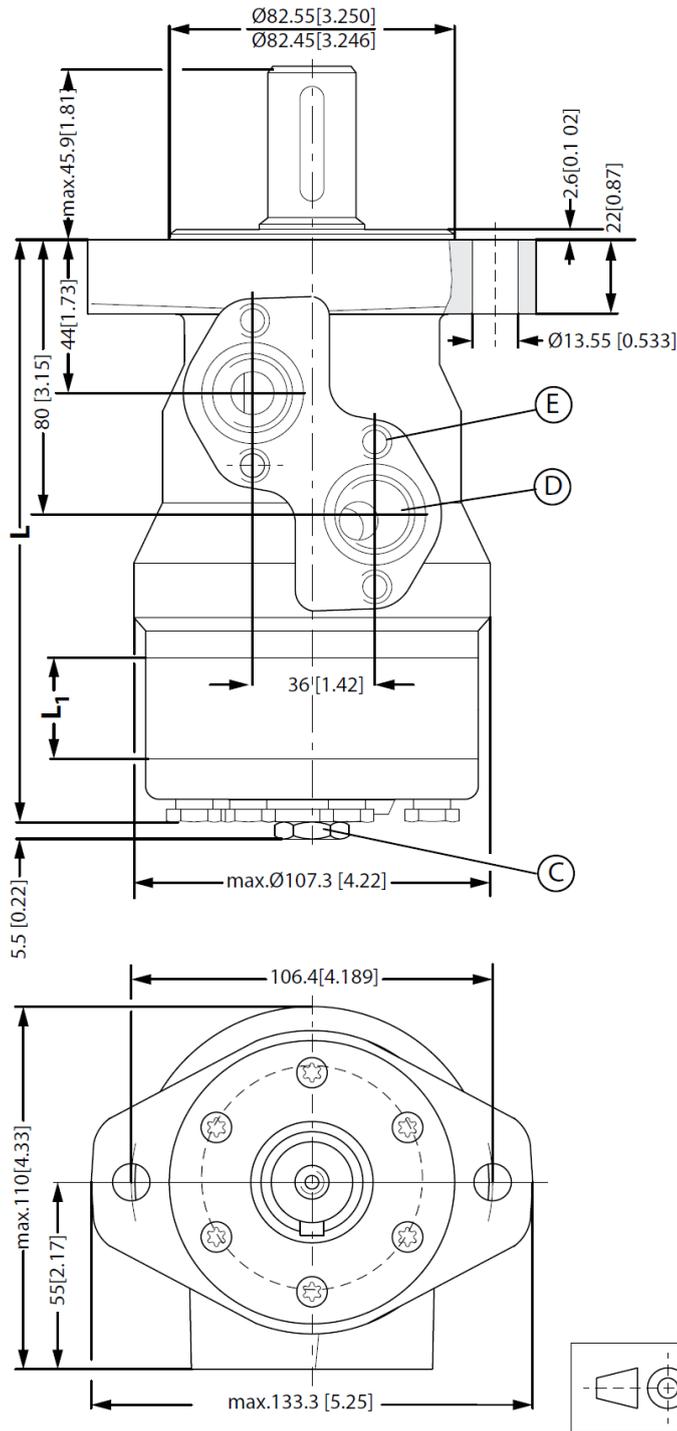
Figure 98 OMRW NF (EU version)

Type		OMRW NF							
		80	100	125	160	200	250	315	375
Length	L <sub>max</sub> mm [in]	213.2 [8.39]	218.0 [8.58]	222.4 [8.76]	228.4 [8.99]	235.4 [9.27]	242.7 [9.56]	254.0 [10.00]	264.2 [10.40]
	L <sub>1</sub> mm [in]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]
	L <sub>2</sub> mm [in]	159.2 [6.27]	161.9 [6.37]	166.3 [6.55]	172.3 [6.78]	179.3 [7.06]	188.7 [7.43]	200.0 [7.87]	210.2 [8.28]
	L <sub>3</sub> mm [in]	182.7 [7.19]	185.4 [7.30]	189.8 [7.47]	195.8 [7.71]	202.8 [7.98]	212.2 [8.35]	223.5 [8.80]	233.7 [9.20]

Table 35 OMR NF dimensions (EU version)

## OMR dimensions - US version

### OMR Side port with 2-hole oval mounting flange (A2-flange)



- 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)

**Port connections:**

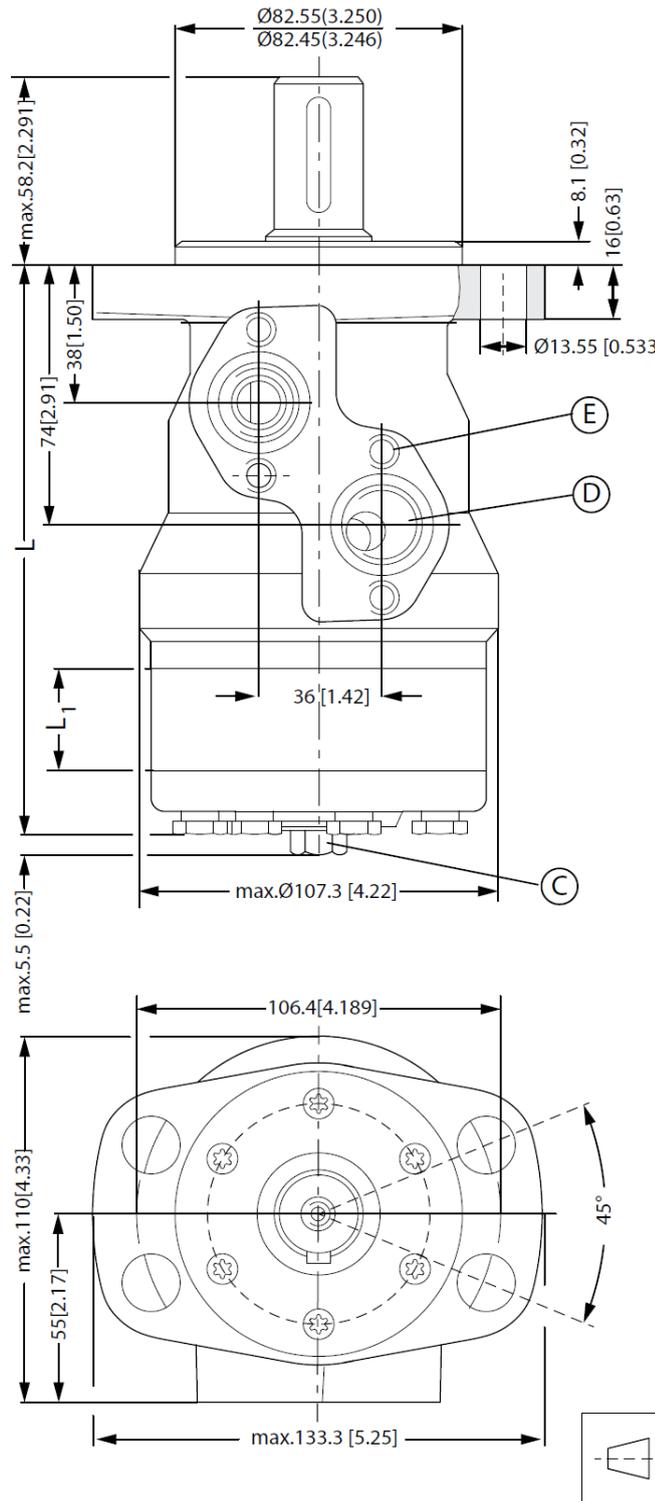
- A, B Main ports: 7/8 - 14 UNF; min. 16.7 mm [0.66 in] deep
- C Drain port: 7/16 - 20 UNF; 12 mm [0.47 in] deep
- D Thread: M8; 13 mm [0.51 in] deep

Figure 99 OMR Side port with A2-flange (US version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub>	143.7	148.7	152.1	156.5	162.5	169.5	178.2	189.5	199.7
	mm [in]	[5.66]	[5.85]	[5.99]	[6.16]	[6.40]	[6.67]	[7.02]	[7.46]	[7.86]
	L <sub>1</sub>	9.0	14.0	17.4	21.8	27.8	34.8	43.5	54.8	65.0
	mm [in]	[0.35]	[0.55]	[0.69]	[0.86]	[1.09]	[1.37]	[1.71]	[2.16]	[2.56]

Table 36 OMR Side port with A2-flange dimensions (US version)

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



- 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)
- Port connections:**
- A, B Main ports: 7/8 - 14 UNF; min. 16.7 mm [0.66 in] deep
  - C Drain port: 7/16 - 20 UNF; 12 mm [0.47 in] deep
  - D Thread: M8; 13 mm [0.51 in] deep

Figure 100 OMR Side port version with A4-flange (US version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub> mm [in]	137.9 [5.43]	142.8 [5.62]	146.2 [5.76]	150.6 [5.93]	156.6 [6.17]	163.6 [6.44]	172.3 [6.78]	183.6 [7.23]	193.8 [7.63]
	L <sub>1</sub> mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

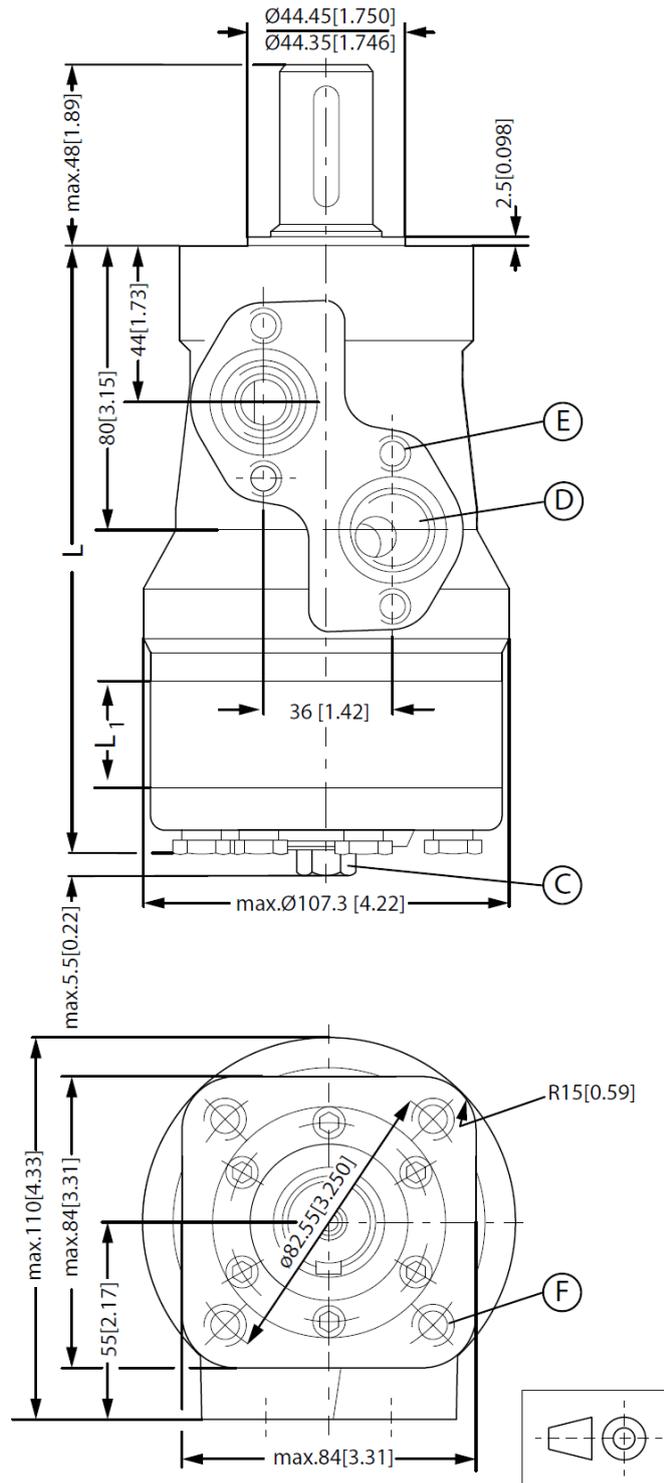
Table 37 OMR Side port version with A4-flange dimensions (US version)

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**OMR Side port with square mounting flange (C-flange)**



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

**Port connections:**

- A, B** Main ports: 7/8 - 14 UNF; min. 16.7 mm [0.66 in] deep
- C** Drain port: 7/16 - 20 UNF; 12 mm [0.47 in] deep
- D** Thread: 3/8-16 UNC; 15 mm [0.59 in] deep

Figure 101 OMR side port with C-flange (US version)

Type		OMR								
		50	80	100	125	160	200	250	315	375
Length	<b>L<sub>max</sub></b> mm [in]	143.7 [5.66]	148.8 [5.86]	152.2 [5.99]	156.6 [6.17]	162.6 [6.40]	169.6 [6.68]	178.3 [7.02]	189.6 [7.46]	199.8 [7.87]
	<b>L<sub>1</sub></b> mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 38 OMR side port with C-flange dimensions (US version)

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**OMRW N wheel motor**

**C:** Drain connection 7/16 - 20 mm UNF; 12 mm [0.47 in] deep  
**D:** 7/8 - 14 UNF; 17 mm [0.66 in] deep

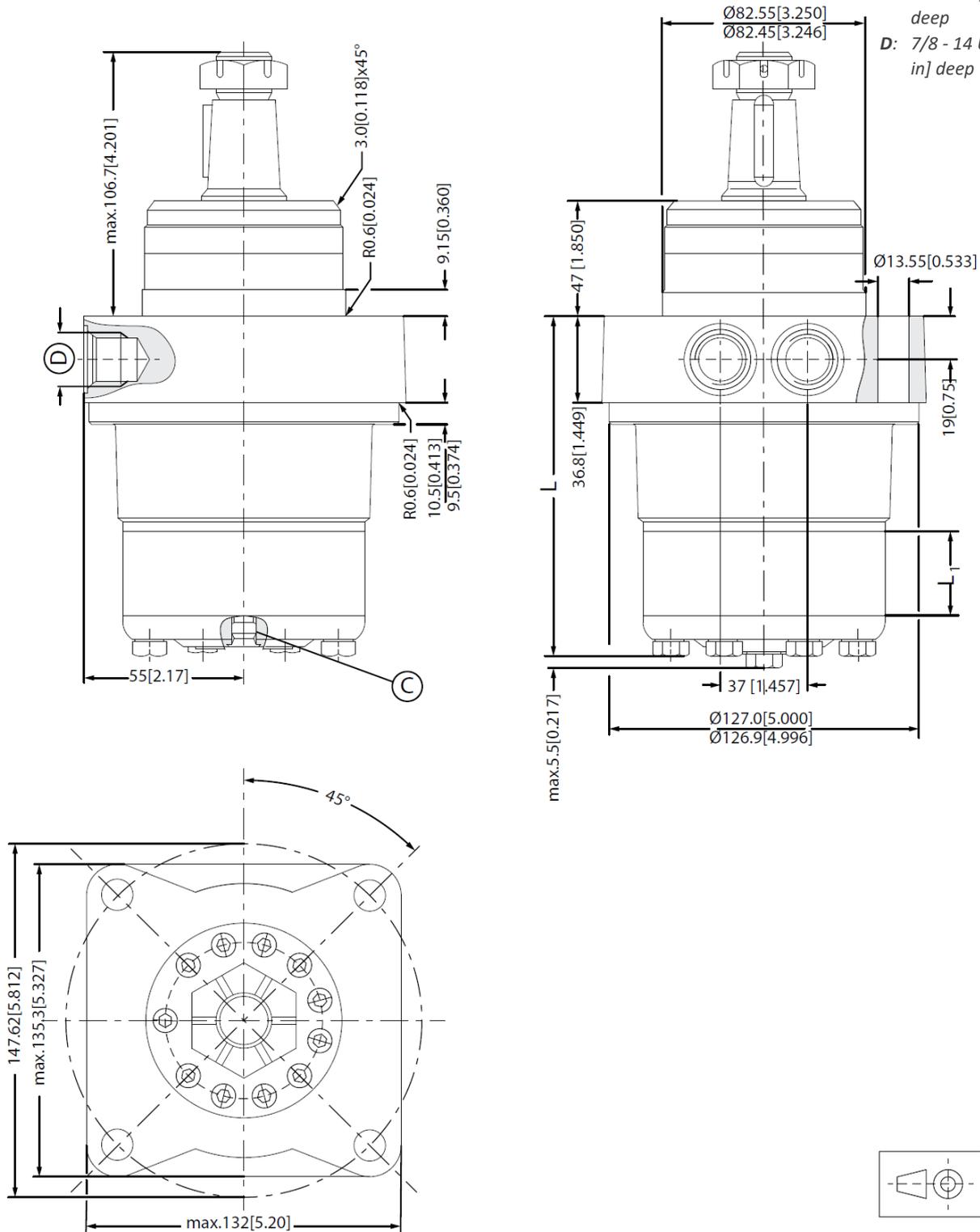


Figure 102 OMRW N (US version)

Type		OMRW N								
		50	80	100	125	160	200	250	315	375
Length	L <sub>max</sub> mm [in]	113.7 [4.48]	114.7 [4.52]	118.1 [4.65]	122.5 [4.82]	128.5 [5.06]	135.1 [5.33]	144.2 [5.68]	155.5 [6.12]	165.7 [6.52]
	L <sub>1</sub> mm [in]	9.0 [0.35]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 39 OMRW N dimensions (US version)

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# OMR NF motor

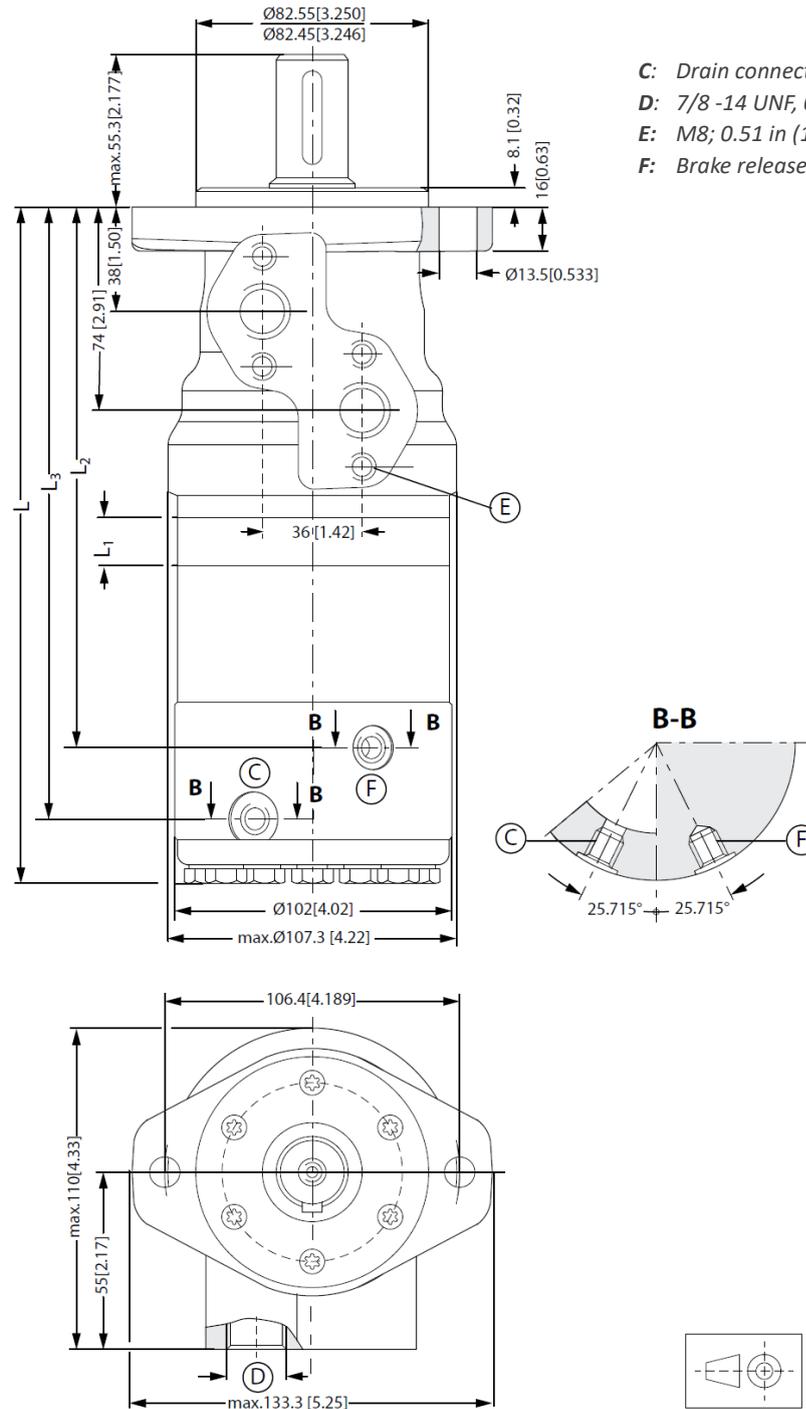


Figure 103 OMR NF (US version)

Type		OMR NF							
		80	100	125	160	200	250	315	375
Length	<b>L<sub>max</sub></b> mm [in]	248.7 [9.79]	252.1 [9.93]	256.5 [10.10]	262.5 [10.33]	269.5 [10.61]	278.2 [10.95]	289.5 [11.40]	299.7 [11.80]
	<b>L<sub>1</sub></b> mm [in]	14.0 [0.55]	17.4 [0.69]	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]
	<b>L<sub>2</sub></b> mm [in]	186.8 [7.35]	196.2 [7.72]	200.6 [7.90]	206.6 [8.13]	213.6 [8.41]	222.3 [8.75]	233.6 [9.19]	243.7 [9.59]
	<b>L<sub>3</sub></b> mm [in]	216.3 [8.51]	213.7 [8.41]	224.1 [8.82]	230.1 [9.06]	237.1 [9.33]	245.8 [9.68]	257.1 [10.12]	267.2 [10.52]

Table 40 OMR NF dimensions (US version)

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## Chapter 12

# OMH technical data

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### Topics:

- *Technical data for OMH with 1 in SAE 6 B splined shaft*
- *Technical data for OMH with 32 mm and 1 ¼ in cylindrical shaft*
- *Technical data for OMH with 35 mm cylindrical, 1 ¼ in splined and 35 mm tapered shaft*
- *Maximum permissible shaft seal pressure*
- *Pressure drop in OMH motor*
- *Oil flow in drain line*
- *Direction of shaft rotation*
- *Permissible shaft loads*

## Technical data for OMH with 1 in SAE 6 B splined shaft

		Type					
Motor size		200	250	315	400	500	
Geometric displacement	$cm^3$	201.3	252.0	314.9	396.8	470.6	
	$[in^3]$	[12.32]	[15.42]	[19.27]	[24.28]	[28.80]	
Maximum speed	$min^{-1}$	cont. 370	295	235	185	155	
	$[rpm]$	int. <sup>1)</sup> 445	350	285	225	190	
Maximum torque	$N\cdot m$	cont.	340	340	340	340	340
			[3000]	[3000]	[3000]	[3000]	[3000]
	$[lb\cdot in]$	int. <sup>1)</sup>	510	510	540	540	520
			[4500]	[4500]	[4800]	[4800]	[4600]
Maximum output	$kW$	cont.	11.2	7.5	5.2	4.8	3.7
			[15.0]	[10.0]	[7.0]	[6.5]	[5.0]
	$[hp]$	int. <sup>1)</sup>	17.2	11.9	9.7	8.2	6.0
			[23.0]	[16.0]	[13.0]	[11.0]	[8.0]
Maximum pressure drop.	$bar$	cont.	115	90	75	60	50
			[1650]	[1300]	[1100]	[900]	[725]
	$[psi]$	int. <sup>1)</sup>	170	145	120	95	75
			[2500]	[2100]	[1750]	[1400]	[1100]
		peak <sup>2)</sup>	215	175	145	110	90
			[3120]	[2540]	[2100]	[1600]	[1300]
Maximum oil flow	$l/min$	cont.	75	75	75	75	75
			[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
	$[US\ gal/min]$	int. <sup>1)</sup>	90	90	90	90	90
			[23.8]	[23.8]	[23.8]	[23.8]	[23.8]
Maximum starting pressure with unloaded shaft	$Bar$	standard	7	7	7	7	7
			[100]	[100]	[100]	[100]	[100]
Min starting torque	at max. press drop cont.	$N\cdot m [lb\cdot in]$	255	270	280	290	300
			[2250]	[2400]	[2500]	[2550]	[2650]
	at max. press.drop int. <sup>1)</sup>	$N\cdot m [lb\cdot in]$	390	435	450	450	450
			[3450]	[3850]	[4000]	[4000]	[4000]

Table 41 OMH with 1 in SAE 6 B splined shaft

<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 OMH with 32 mm and 1 ¼ in cylindrical shaft

		Type					
Motor size		200	250	315	400	500	
Geometric displacement	$cm^3$	201.3	252.0	314.9	396.8	470.6	
	$[in^3]$	[12.32]	[15.42]	[19.27]	[24.28]	[28.80]	
Maximum speed	$min^{-1}$	cont. 370	295	235	185	155	
	$[rpm]$	int. <sup>1)</sup> 445	350	285	225	190	
Maximum torque	$N\cdot m$ $[lb\cdot in]$	cont.	510	610	590	590	580
			[4500]	[5400]	[5220]	[5220]	[5130]
		int. <sup>1)</sup>	580	700	670	700	680
			[5130]	[6200]	[5930]	[6200]	[6020]
Maximum output	$kW$ $[hp]$	cont.	16.0	16.0	12.5	10.0	8.5
			[21.5]	[21.5]	[16.8]	[13.4]	[11.4]
		int. <sup>1)</sup>	18.5	18.5	14.0	12.0	10.0
			[24.8]	[24.8]	[18.8]	[16.1]	[13.4]
Maximum pressure drop.	$bar$ $[psi]$	cont.	175	175	135	105	85
			[2540]	[2540]	[1960]	[1520]	[1230]
		int. <sup>1)</sup>	200	200	155	125	100
			[2900]	[2900]	[2250]	[1810]	[1450]
peak <sup>2)</sup>	225	225	190	155	130		
	[3260]	[3260]	[2760]	[2250]	[1890]		
Maximum oil flow	$l/min$ $[US\ gal/min]$	cont.	75	75	75	75	75
			[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
		int. <sup>1)</sup>	90	90	90	90	90
			[23.8]	[23.8]	[23.8]	[23.8]	[23.8]
Maximum starting pressure with unloaded shaft	$Bar$ $[psi]$	standard	7	7	7	7	7
			[100]	[100]	[100]	[100]	[100]
Min starting torque	at max. press drop cont. $N\cdot m [lb\cdot in]$	390	520	510	490	490	
		[3450]	[4600]	[4510]	[4340]	[4340]	
	at max. press.drop int. <sup>1)</sup> $N\cdot m [lb\cdot in]$	450	590	590	600	600	
			[3980]	[5220]	[5220]	[5310]	[5310]

Table 42 OMH with 32 mm and 1 ¼ in cylindrical shaft

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 for OMH with 35 mm cylindrical, 1 ¼ in splined and 35 mm tapered shaft

		Type					
Motor size		200	250	315	400	500	
Geometric displacement	$cm^3$	201.3	252.0	314.9	396.8	470.6	
	$[in^3]$	[12.32]	[15.42]	[19.27]	[24.28]	[28.80]	
Maximum speed	$min^{-1}$	cont.	370	295	235	185	155
	$[rpm]$	int. <sup>1)</sup>	445	350	285	225	190
Maximum torque	$N\cdot m$ $[lb\cdot in]$	cont.	510	610	740	840	820
			[4500]	[5400]	[6550]	[7440]	[7260]
		int. <sup>1)</sup>	580	700	820	980	1040
			[5130]	[6200]	[7260]	[8670]	[9210]
Maximum output	$kW$ $[hp]$	cont.	16.0	16.0	14.0	12.5	11.0
			[21.5]	[21.5]	[18.8]	[16.8]	[14.8]
		int. <sup>1)</sup>	18.5	18.5	15.5	15.0	14.0
			[24.8]	[24.8]	[20.8]	[20.1]	[18.8]
Maximum pressure drop.	$bar$ $[psi]$	cont.	175	175	175	155	125
			[2540]	[2540]	[2540]	[2250]	[1810]
		int. <sup>1)</sup>	200	200	200	190	160
			[2900]	[2900]	[2900]	[2760]	[2320]
peak <sup>2)</sup>	225	225	225	210	180		
	[3260]	[3260]	[3260]	[3050]	[2610]		
Maximum oil flow	$l/min$ $[US\ gal/min]$	cont.	75	75	75	75	75
			[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
		int. <sup>1)</sup>	90	90	90	90	90
			[23.8]	[23.8]	[23.8]	[23.8]	[23.8]
Maximum starting pressure with unloaded shaft	$Bar$ $[psi]$	standard	7	7	7	7	7
			[100]	[100]	[100]	[100]	[100]
Min starting torque	at max. press drop cont. $N\cdot m [lb\cdot in]$	cont.	390	520	660	720	720
			[3450]	[4600]	[5840]	[6370]	[6370]
		int. <sup>1)</sup>	450	590	730	880	880
			[3980]	[5220]	[6460]	[7790]	[7790]

Table 43 OMH with 35 mm cylindrical, 1 ¼ in splined and 35 mm tapered shaft

### Maximum pressure

Type			Maximum inlet pressure	Maximum return pressure with drain line
OMH 200-500	$bar$ $[psi]$	cont.	200 [2900]	175 [2540]
		int.	225 [3263]	200 [2900]
		peak	250 [3630]	225 [3260]

Table 44 OMH 200-500 Maximum pressures

## Maximum permissible shaft seal pressure

### OMH with Standard Shaft Seal

OMH 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.

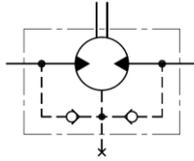


Figure 104 OMH with Standard Shaft Seal

OMH with standard shaft seal, check valves and with drain connection: The shaft seal pressure equals the pressure on the drain line.

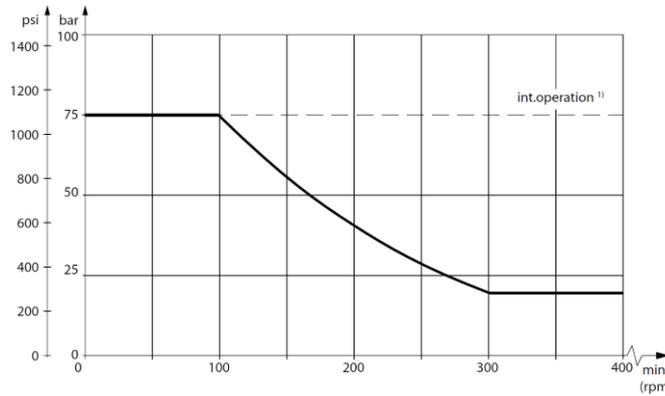


Figure 105 OMH with standard shaft seal max. return pressure without drain line or max. pressure in the drain line

## Pressure drop in OMH motor

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

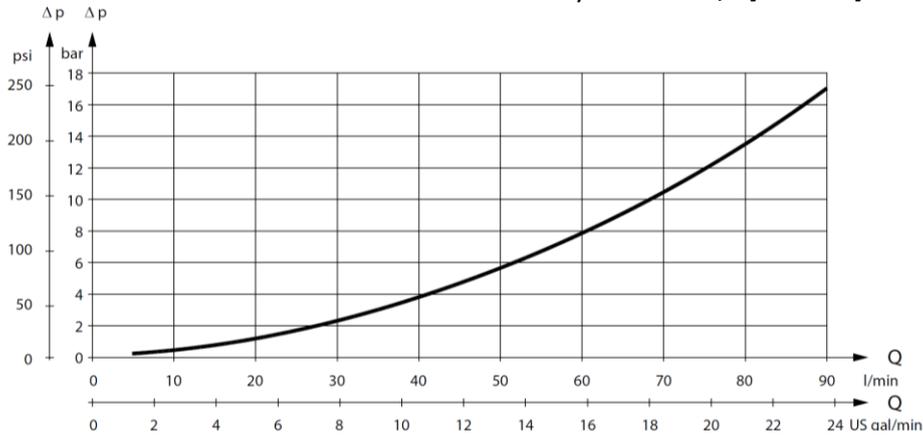


Figure 106 Pressure drop in OMH motor

## 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]	
	20 mm <sup>2</sup> /s [100 SUS]	35 mm <sup>2</sup> /s [165 SUS]	20 mm <sup>2</sup> /s [100 SUS]	35 mm <sup>2</sup> /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]

Table 45 OMH oil flow in drain line

## Direction of shaft rotation

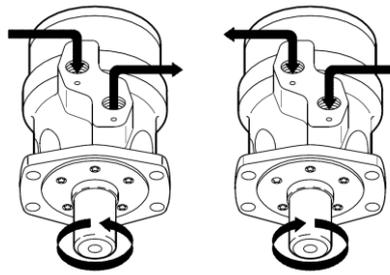


Figure 107 OMH direction of shaft rotation

## Permissible shaft loads

### OMH permissible shaft loads

The permissible shaft load ( $P_{rad}$ ) is calculated from the speed ( $n$ ) and the distance ( $l$ ) between the point of load application and the mounting flange.

$$P_{rad} = \frac{1100}{n} \cdot \frac{25000}{103.5 + l} \quad N^*; l \text{ in mm}$$

$$P_{rad} = \frac{1100}{n} \cdot \frac{2215}{4.07 + l} \quad lbf^*; l \text{ in inch}$$

\* $n > 200 \text{ min}^{-1}$  (rpm);  $l < 60 \text{ mm}$  [2.36 in]

$n < 200 \text{ min}^{-1}$  (rpm);  $\Rightarrow PR_{max} = 11000 \text{ N}$  [2475 lbf]

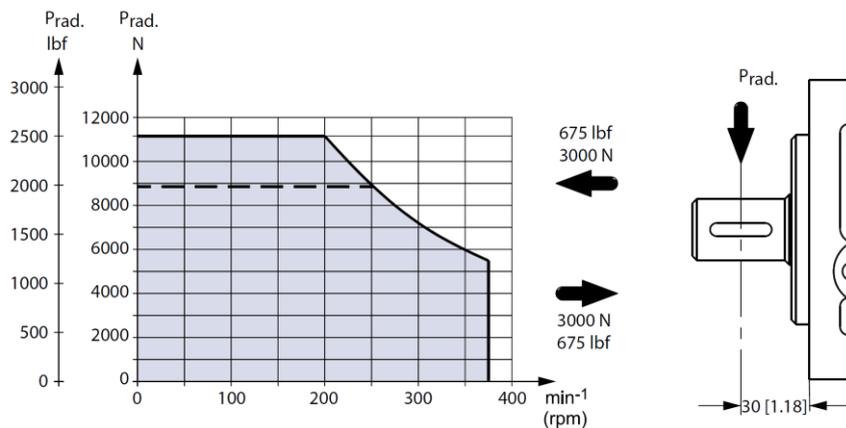


Figure 108 OMH permissible shaft loads

-----1 in SAE 6B splined shaft

The drawing shows the permissible radial load when  $l = 30 \text{ mm}$  [1.18 in].

# Chapter 13

## OMH function diagrams

---

### Topics:

- *OMH 200 function diagram*
- *OMH 250 function diagram*
- *OMH 315 function diagram*
- *OMH 400 function diagram*
- *OMH 500 function diagram*

# OMH 200 function diagram

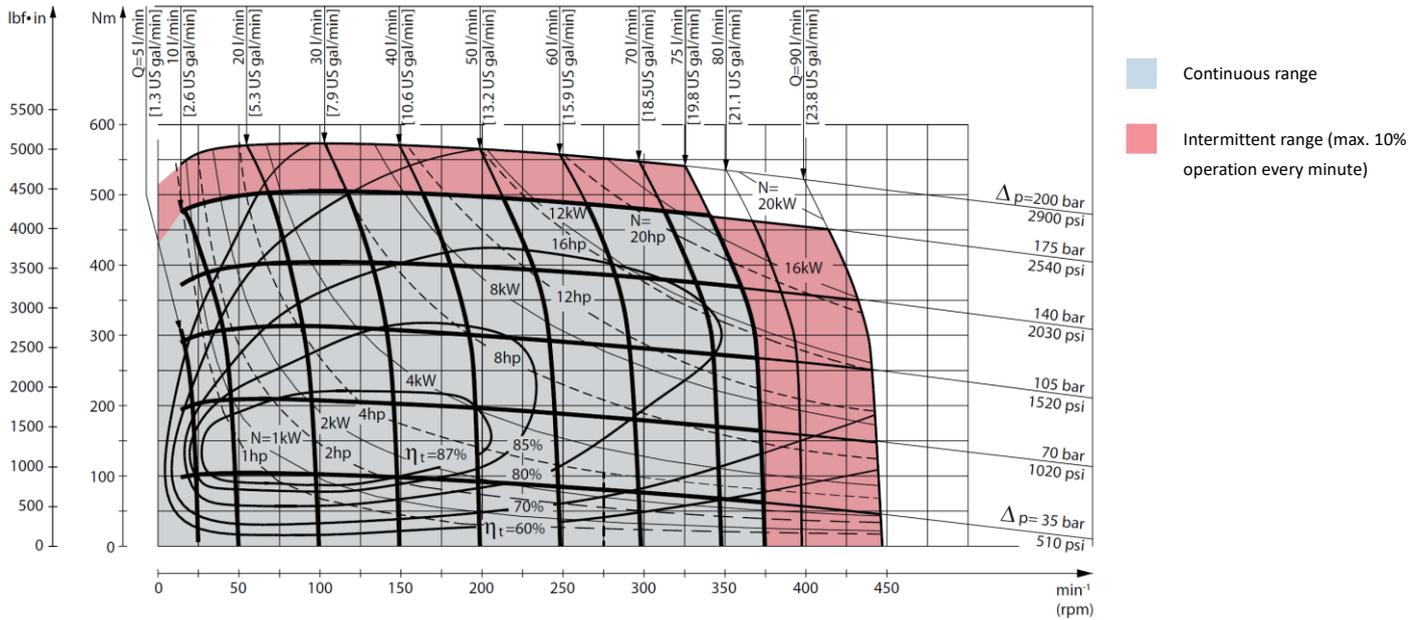


Figure 109 OMH 200 function diagram

# OMH 250 function diagram

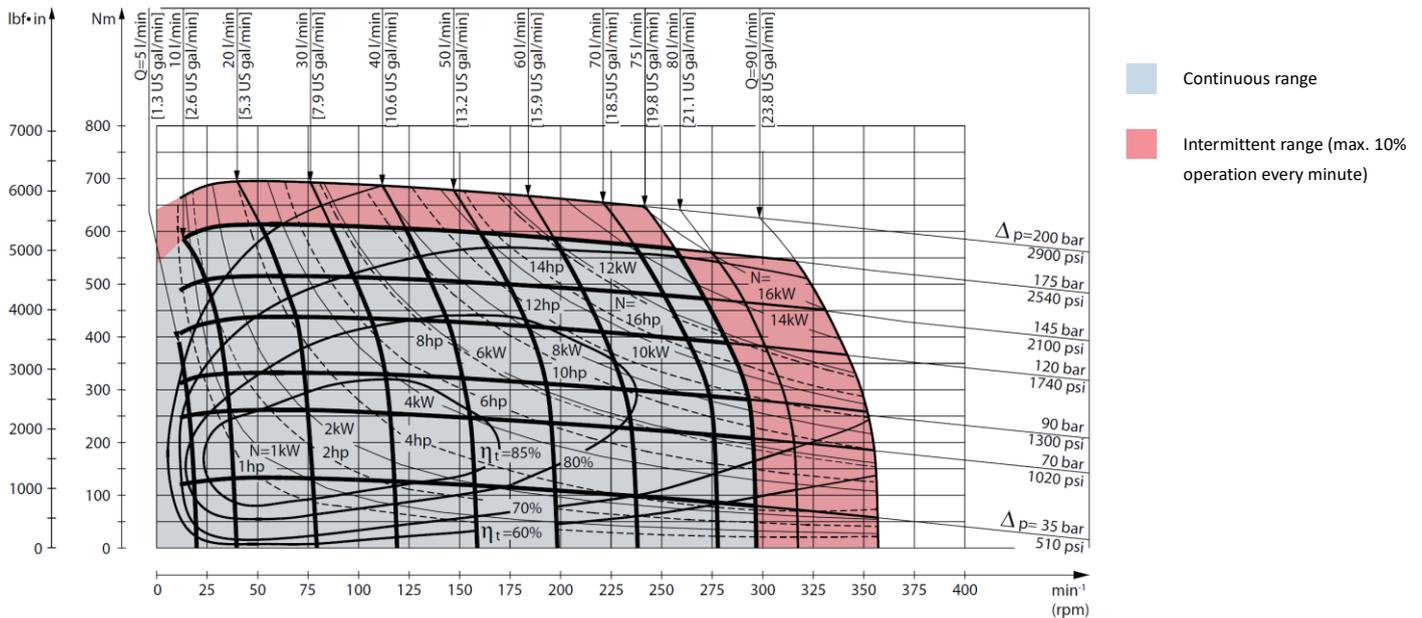


Figure 110 OMH 250 function diagram

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## OMH 315 function diagram

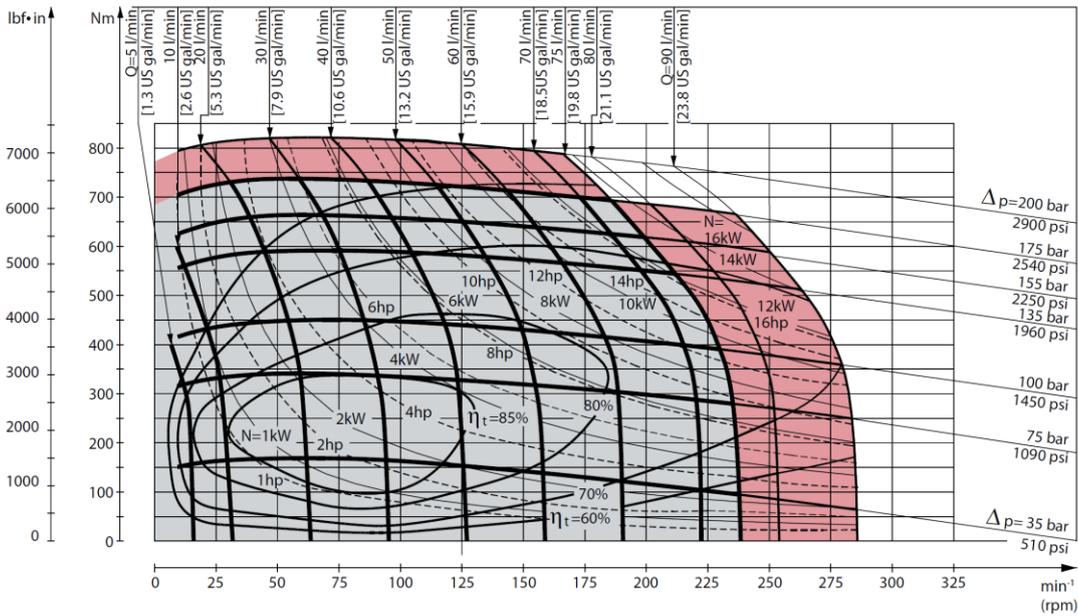


Figure 111 OMH 315 function diagram

## OMH 400 function diagram

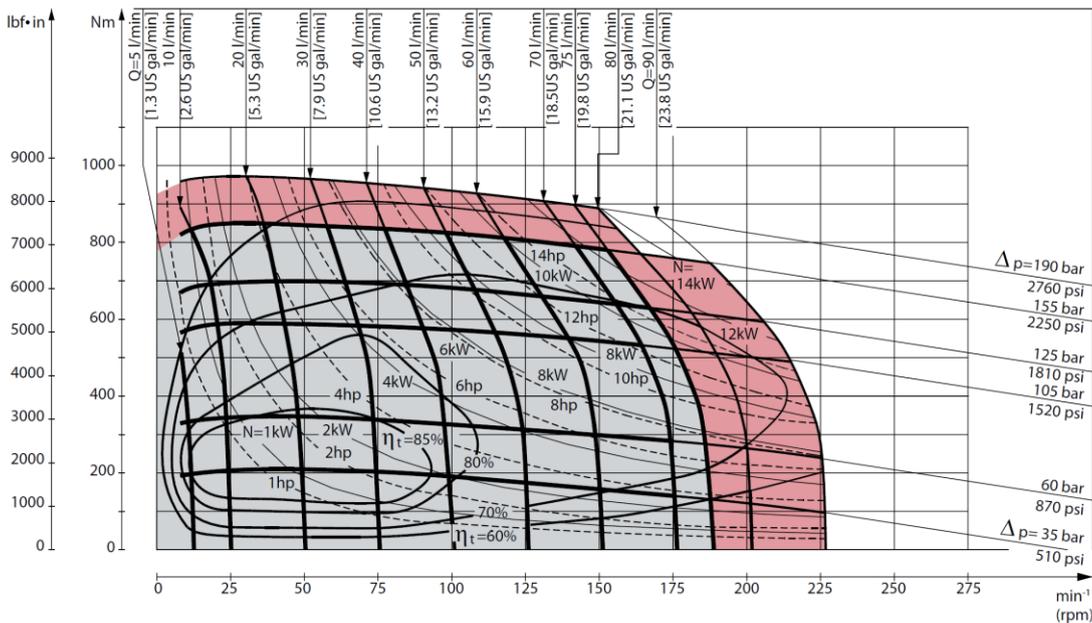


Figure 112 OMH 400 function diagram

# OMH 500 function diagram

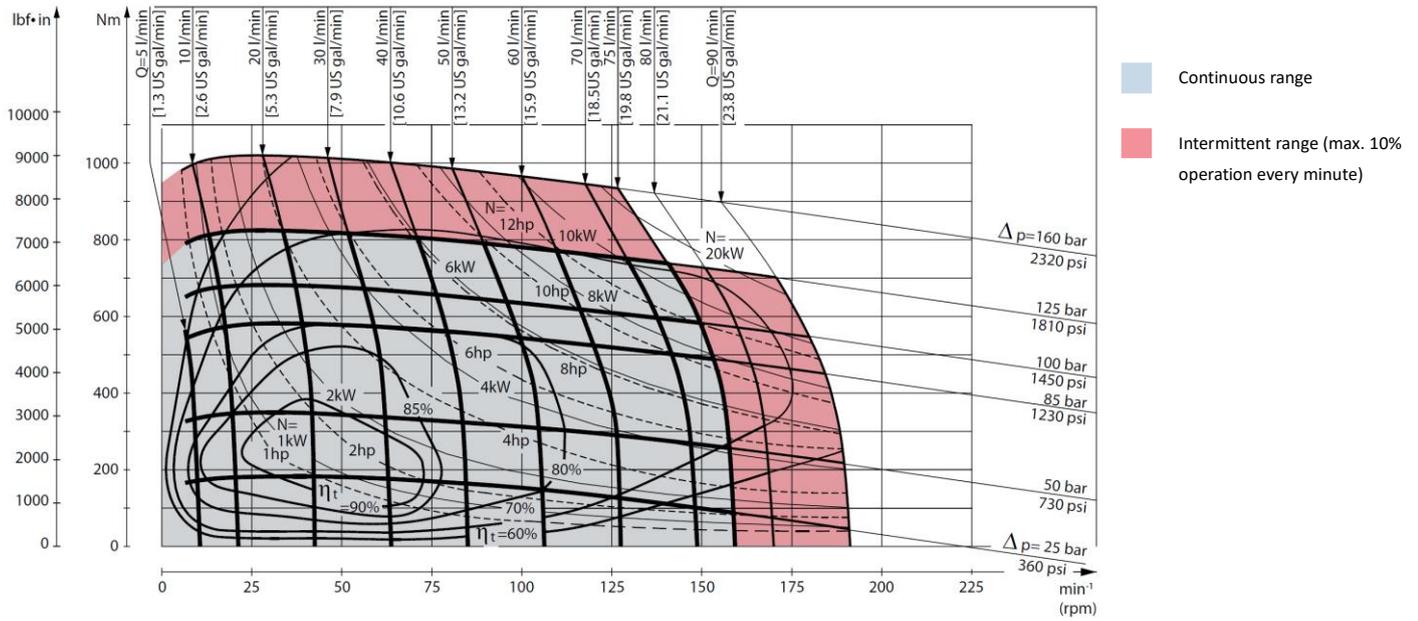


Figure 113 OMH 500 function diagram

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## Chapter 14

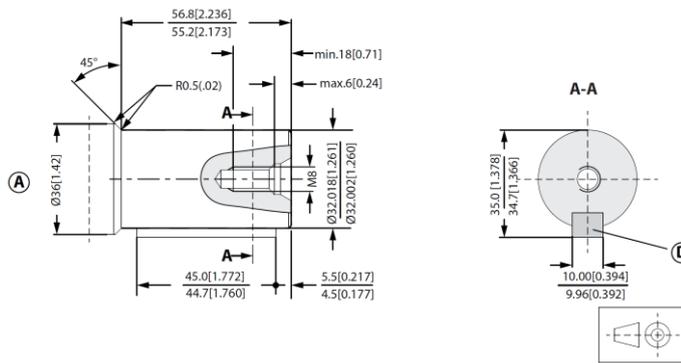
# OMH shaft version

---

### Topics:

- *Cylindrical shaft 32 mm; Parallel key A10 × 8 × 45, DIN 6885*
- *Cylindrical shaft 35 mm; Parallel key, A10 × 8 × 45, DIN 6885*
- *Cylindrical shaft 1 ¼ in; Parallel key, 5/16 × 5/16 × 11/4 in, SAE J 744*
- *Splined shaft, SAE 6 B (B.S. 2059)*
- *Involute splined shaft, ANSI B92.1 -1996*
- *Tapered shaft 35 mm DIN 937*

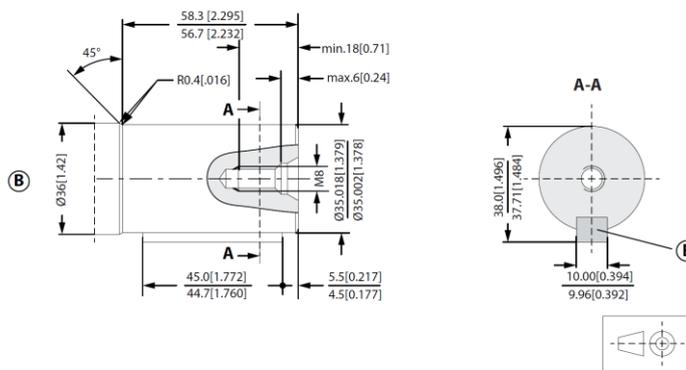
## Cylindrical shaft 32 mm; Parallel key A10 × 8 × 45, DIN 6885



A: Cylindrical shaft 32 mm  
D: Parallel key A10 × 8 × 45, DIN 6885

Figure 114 OMH shaft version: Cylindrical shaft 32 mm; Parallel key A10 × 8 × 45, DIN 6885

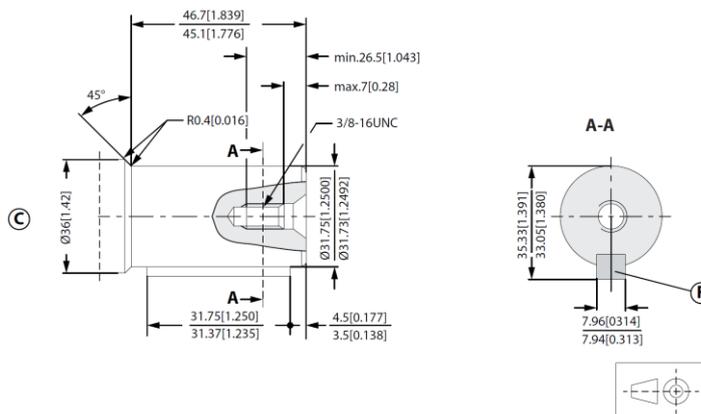
## Cylindrical shaft 35 mm; Parallel key, A10 × 8 × 45, DIN 6885



B: Cylindrical shaft 35 mm  
E: Parallel key, A10 × 8 × 45, DIN 6885

Figure 115 OMH shaft version: Cylindrical shaft 35 mm; Parallel key, A10 × 8 × 45, DIN 6885

## Cylindrical shaft 1 ¼ in; Parallel key, 5/16 × 5/16 × 11/4 in, SAE J 744



C: Cylindrical shaft 1 ¼ in  
F: Parallel key, 5/16 × 5/16 × 11/4 in, SAE J 744

Figure 116 OMH shaft version: Cylindrical shaft 1 ¼ in; Parallel key, 5/16 × 5/16 × 11/4 in, SAE J 744



# Chapter 15

## OMH port thread versions

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### Topics:

- *Main port thread versions*
- *OMH manifold mount*

## Main port thread versions

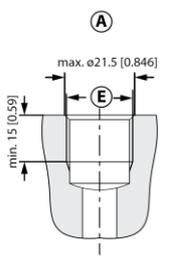
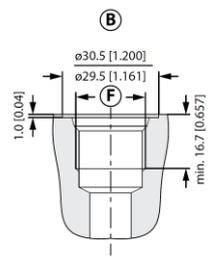
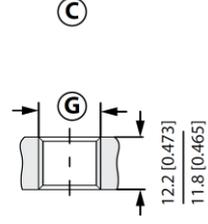
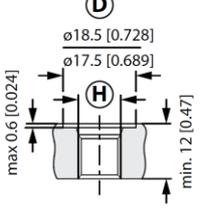
<b>G</b> ISO 228/1 – G1/2	<b>UNF</b> 7/8–14 UNF O-ring boss	<b>G drain</b> ISO 228/1 – G1/4	<b>UNF drain</b> 7/16–20 UNF O-ring boss
 <p>Figure 121 OMH port thread version: ISO 228/1 – G1/2</p>	 <p>Figure 122 port thread version: 7/8-14 UNF O-ring boss</p>	 <p>Figure 123 port thread version: ISO 228/1 – G1/4</p>	 <p>Figure 124 port thread version: 7/16-20 UNF O-ring boss</p>

Table 46 OMH main ports overview

## OMH manifold mount

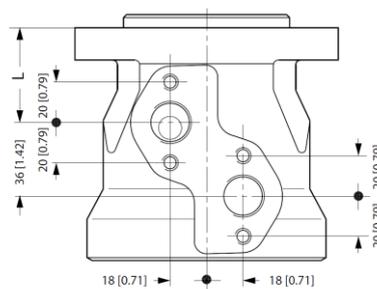


Figure 125 OMH manifold mount

L: see dimensional drawing for given OMH motor:

- [OMH dimensions](#)

# Chapter 16

## OMH dimensions

---

### Topics:

- *OMH dimensions - European version*
- *OMH dimensions – US version*

## OMH dimensions - European version

### OMH side port version with 4 hole oval mounting flange (A4-flange)

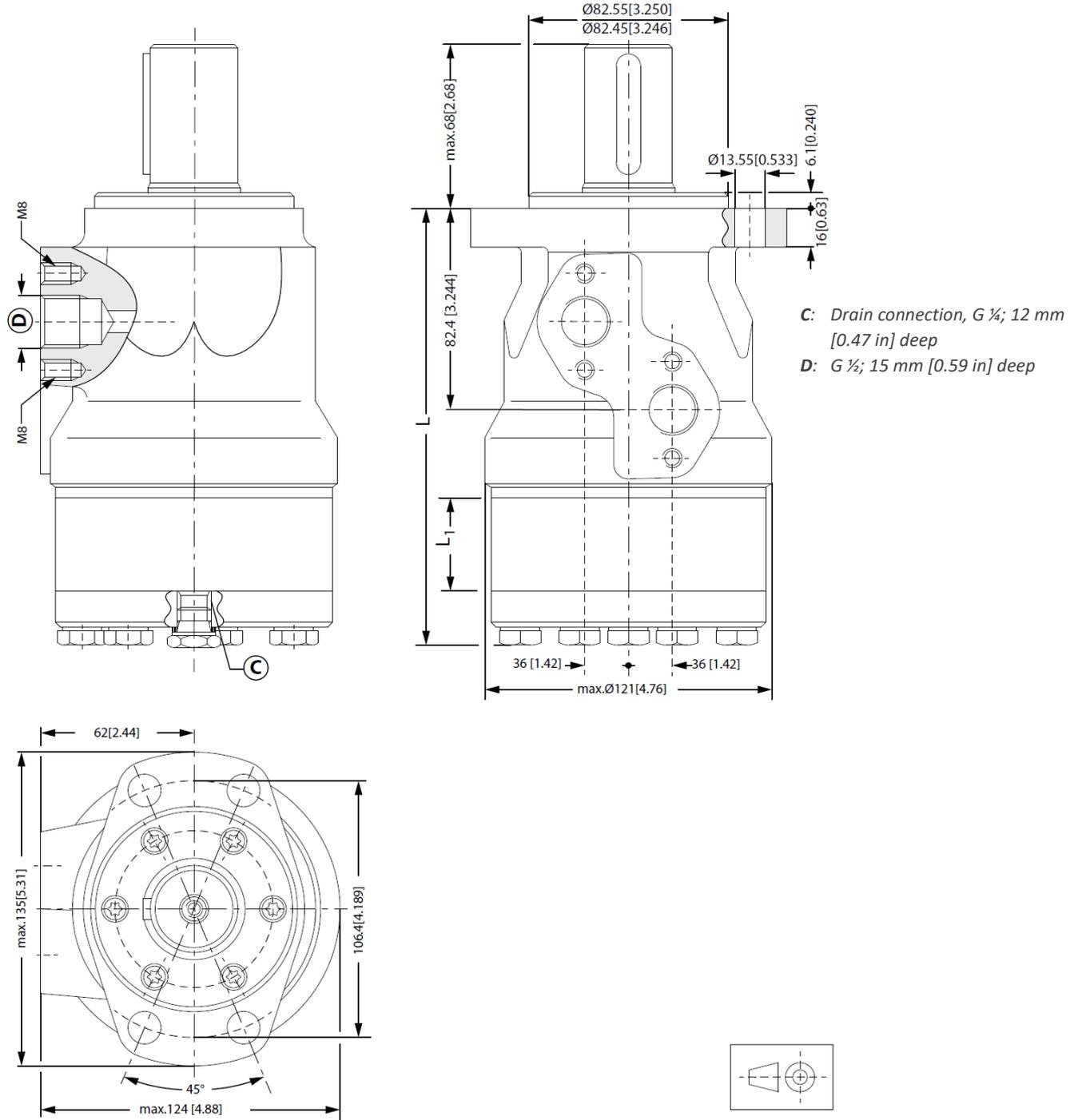


Figure 126 OMH side port version with A4-flange (EU version)

Type		OMH				
		200	250	315	400	500
Length	L <sub>max</sub> mm [in]	171.8 [6.77]	179.5 [7.07]	187.5 [7.39]	198.8 [7.83]	209.0 [8.23]
	L <sub>1</sub> mm [in]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 47 OMH side port version with A4-flange dimensions (EU version)

## OMH dimensions – US version

### OMH side port version with 4-hole oval mounting flange (A4 flange)

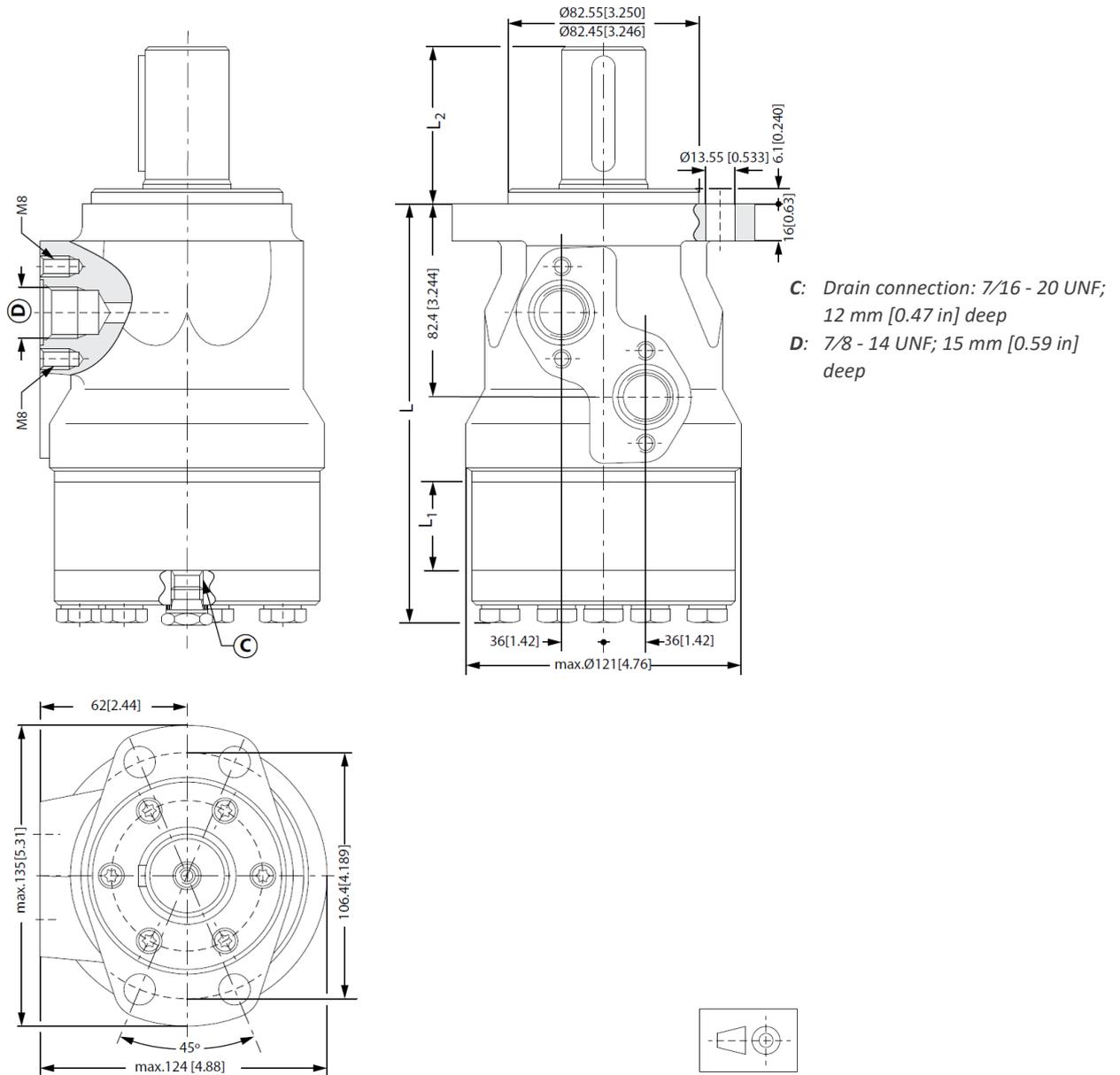


Figure 127 OMH side port version with A4 flange (US version)

Type		OMH				
		200	250	315	400	500
Length	$L_{max}$ mm [in]	171.8 [6.77]	179.5 [7.07]	187.5 [7.39]	198.8 [7.83]	209.0 [8.23]
	$L_1$ mm [in]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	65.0 [2.56]

Table 48 OMH side port version with A4 flange dimensions (US version)

Output shaft. max.		Splined shaft 1 in	Other shaft versions
$L_2$ max	mm	50.5	58.0
	[in]	[1.99]	[2.28]

Table 49 OMH Output shaft. max.

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White Drive Motors & Steering, LLC  
110 Bill Bryan Blvd, Hopkinsville, Kentucky, 42240

White Drive Motors and Steering sp. z o.o.  
ul. Logistyczna 1, Bielany Wrocławskie, 55-040 Kobierzyce

[whitedriveproducts.com](http://whitedriveproducts.com)