

Technical Information
OMS Orbital Motor

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Chapter

1

Orbital motors

Topics:

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

Orbital Motors Features

- Smooth running over the entire speed range
- Constant operating torque over a wide speed range
- High starting torque
- High return pressure without the use of drain line (high pressure shaft seal)
- High efficiency
- 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

Orbital Motors Application Areas

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

Technical Features

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)
 - needle bearing (OMPW X N, OMR X N)
 - low leakage version or super low leakage version (OMR, OMR X)
 - integrated negative holding brake
 - speed sensor
 - black finish paint
- Short motors without bearings or Ultra short motors
- Wheel motors with recessed mounting flange

Speed, torque, and output

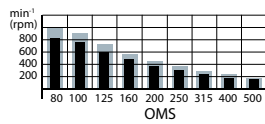


Figure 1: Maximum speed

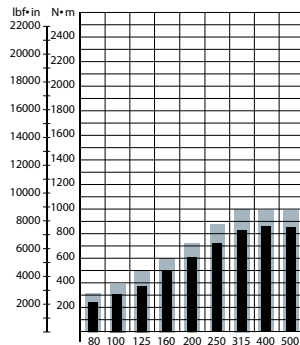
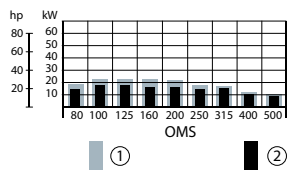


Figure 2: Maximum torque



1. Intermittend values
2. Continuous values

Figure 3: Maximum output

The bar diagrams above are useful for a quick selection of relevant motor size for the application. The final motor size can be determined by using the function diagram for each motor size: see [OMS function diagrams](#) on page 23

The function diagrams are based on actual tests on a representative number of motors from our production. The diagrams apply to a return pressure between 5 and 10 bar [75 and 150 psi] when using mineral based hydraulic oil with a viscosity of 35 mm²/s [165 SUS] and a temperature of 50°C [120°F].

Chapter

2

OMS versions and code numbers

Topics:

- *OMS versions and code numbers*

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

- Section *OMS technical data* on page 15, specify the technical data for OMS for each shaft type.
- In section *OMS function diagrams* on page 23, the diagram for each motor size is shown.
- See *OMS dimensions* on page 33 for outer main dimensions for the different OMS motor types.

OMS versions and code numbers

OMS standard motors

Table 1: Mounting flange: Standard 4 hole flange

Spigot diameter	Ø82.5mm [3.25 in]						
Bolt circle diameter	Ø106.4 mm [4.20 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
Cyl. Ø32 mm	G 1/2	G 1/4	Yes	Yes	-	OMS	<i>A1</i>
Cyl. 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>A2</i>
Splined 1.25 in	G 1/2	G 1/4	Yes	Yes	-	OMS	<i>A3</i>
Splined 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>A4</i>
Tapered 35 mm	G 1/2	G 1/4	Yes	Yes	-	OMS	<i>A5</i>
Tapered 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>A6</i>
P.t.o.	G 1/2	G 1/4	Yes	Yes	-	OMS	<i>A7</i>

Table 2: Code numbers OMS Standard 4 hole flange

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>A1</i>	151F050 0	151F050 1	151F050 2	151F050 3	151F050 4	151F050 5	151F050 6	151F060 5	151F065 5
<i>A2</i>	151F220 0	151F220 1	151F220 2	151F220 3	151F220 4	151F220 5	151F220 6	151F226 1	151F226 8
<i>A3</i>	151F050 7	151F050 8	151F050 9	151F051 0	151F051 1	151F051 2	151F051 3	151F056 7	-
<i>A4</i>	151F220 7	151F220 8	151F220 9	151F221 0	151F221 1	151F221 2	151F221 3	151F226 2	151F226 9
<i>A5</i>	151F051 4	151F051 5	151F051 6	151F051 7	151F051 8	151F051 9	151F052 0	-	-
<i>A6</i>	151F221 4	151F221 5	151F221 6	151F221 7	151F221 8	151F221 9	151F222 0	151F226 4	151F227 0
<i>A7</i>	151F056 0	151F056 1	151F056 2	151F056 3	151F056 4	151F056 5	151F056 6	-	-

Table 3: Mounting flange: Special 4 hole flange

Spigot diameter	Ø82.5mm [3.25 in]						
Bolt circle diameter	Ø106.4 mm [4.20 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
Splined 1.25 in	G 1/2	G 1/4	Yes	Yes	-	OMS	<i>B1</i>

Table 4: Code numbers OMS Special 4 hole flange

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>B1</i>	151F0542	151F0543	151F0544	151F0545	151F0546	151F0547	151F0548	-	-

Table 5: Mounting flange: A2 flange

Spigot diameter	Ø82.5mm [3.25 in]						
Bolt circle diameter	Ø106.4 mm [4.20 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
Cyl. 1 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>C1</i>
Cyl. 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>C2</i>
Splined 1 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>C3</i>
Splined 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>C4</i>
Tapered 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>C5</i>

Table 6: Code numbers OMS A2 flange

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>C1</i>	151F2300	151F2301	151F2302	151F2303	151F2304	151F2305	151F2306	151F2307	151F2345
<i>C2</i>	151F2316	151F2317	151F2318	151F2319	151F2320	151F2321	151F2322	151F2323	151F2347
<i>C3</i>	151F2308	151F2309	151F2310	151F2311	151F2312	151F2313	151F2314	151F2315	151F2346
<i>C4</i>	151F2324	151F2325	151F2326	151F2327	151F2328	151F2329	151F2330	151F2331	151F2348
<i>C5</i>	151F2332	151F2333	151F2334	151F2335	151F2336	151F2337	151F2338	151F2339	151F2349

Table 7: Mounting flange: Magneto flange

Spigot diameter	Ø82.5 mm [3.25 in]						
Bolt circle diameter	Ø106.4 mm [4.20 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
Cyl. 1 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>D1</i>
Cyl. 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>D2</i>
Splined 1 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>D3</i>
Splined 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>D4</i>

Table 8: Code numbers OMS Magneto flange

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>D1</i>	151F2377	151F2378	151F2379	151F2380	151F2381	151F2382	151F2383	151F2384	151F2385
<i>D2</i>	151F2368	151F2369	151F2370	151F2371	151F2372	151F2373	151F2374	151F2375	151F2376
<i>D3</i>	151F2359	151F2360	151F2361	151F2362	151F2363	151F2364	151F2365	151F2366	151F2367
<i>D4</i>	151F2350	151F2351	151F2352	151F2353	151F2354	151F2355	151F2356	151F2357	151F2358

Table 9: Mounting flange: SAE B flange

Spigot diameter	Ø101.6 mm [4.00 in]						
Bolt circle diameter	Ø146 mm [5.75 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
Splined 0.875 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>E1</i>
Splined 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMS	<i>E2</i>

Table 10: Code numbers OMS SAE B flange

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>E1</i>	151F2413	151F2414	151F2415	151F2416	151F2417	11126590	-	-	-
<i>E2</i>	151F2395	151F2396	151F2397	151F2398	151F2399	151F2400	151F2401	151F2402	151F2403

Table 11: Mounting flange: Wheel

Spigot diameter	Ø125 mm [4.92 in]						
Bolt circle diameter	Ø160 mm [6.35 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
Cyl. Ø32 mm	G 1/2	G 1/4	Yes	Yes	-	OMSW	<i>F1</i>
Tapered 35 mm	G 1/2	G 1/4	Yes	Yes	-	OMSW	<i>F2</i>

Table 12: Code numbers OMS Wheel

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>F1</i>	151F0521	151F0522	151F0523	151F0524	151F0525	151F0526	151F0527	151F0610	-
<i>F2</i>	151F0528	151F0529	151F0530	151F0531	151F0532	151F0533	151F0534	151F0609	-

Table 13: Mounting flange: Wheel

Spigot diameter	Ø127 mm [5.00 in]						
Bolt circle diameter	Ø161.9 mm [6.375 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
Cyl. 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMSW	<i>G1</i>
Tapered 1.25 in	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMSW	<i>G2</i>

Table 14: Code numbers: OMS Wheel

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>G1</i>	151F2235	151F2236	151F2237	151F2238	151F2239	151F2240	151F2241	151F2265	151F2266
<i>G2</i>	151F2242	151F2243	151F2244	151F2245	151F2246	151F2247	151F2248	151F2263	151F2267

Table 15: Mounting flange: Short

Spigot diameter	Ø100 mm [3.94 in]						
Bolt circle diameter	Ø125 mm [4.92 in]						
Shaft	Main Port size	Drain Port size	Check valve	European version	US version	Main type designation	Conf. code
No output shaft	G 1/2	G 1/4	Yes	Yes	-	OMSS	<i>H1</i>
No output shaft	7/8-14 UNF	7/16-20 UNF	Yes	-	Yes	OMSS	<i>H2</i>

Table 16: Code numbers OMS short

Conf. code	Displacement								
	80	100	125	160	200	250	315	400	500
<i>H1</i>	151F0535	151F0536	151F0537	151F0538	151F0539	151F0540	151F0541	151F0608	-
<i>H2</i>	151F2249	151F2250	151F2251	151F2252	151F2253	151F2254	151F2255	151F2256	151F2257

Features

Features available (options):

- Speed sensor
- Motor with tacho connection
- High pressure shaft seal
- Viton shaft seal
- Painted
- Ultra short

Chapter

3

OMS technical data

Topics:

- *OMS, OMSW, OMSS technical data*
- *Maximum permissible shaft seal pressure*
- *Pressure drop in motor*
- *Oil flow in drain line*
- *Direction of shaft rotation for OMS motors*
- *Permissible shaft loads*

OMS, OMSW, OMSS technical data

Type			OMS	OMS	OMS	OMS	OMS	OMS	OMS	OMS	
			OMS	OMS	OMS	OMS	OMS	OMS	OMS	OMS	
			W	W	W	W	W	W	W	W	
			OMSS	OMSS	OMSS	OMSS	OMSS	OMSS	OMSS	OMSS	
Motor size			80	100	125	160	200	250	315	400	500
Geometric displacement	cm ³		80.5	100.0	125.7	159.7	200.0	250.0	314.9	393.0	488.0
	[in ³]		[4.91]	[6.10]	[7.67]	[9.75]	[12.20]	[15.26]	[19.22]	[23.98]	[29.78]
Maximum speed	min ⁻¹	cont.	810	750	600	470	375	300	240	190	155
	[rpm]	int. ¹⁾	1000	900	720	560	450	360	285	230	185
Maximum torque	N•m	cont.	240	305	375	490	610	720	825	865	850
		[lbf•in]	[2120]	[2700]	[3320]	[4340]	[5400]	[6370]	[7300]	[7660]	[7520]
		int.	310	390	490	600	720	870	1000	990	990
			[2740]	[3450]	[4340]	[5310]	[6370]	[7700]	[8850]	[8760]	[8760]
Maximum output	kW	cont.	15.5	18.0	18.0	16.5	16.5	14.5	15.0	11.0	9.0
		[hp]	[20.8]	[24.1]	[24.1]	[22.1]	[22.1]	[19.4]	[20.1]	[14.8]	[12.1]
		int. ¹⁾	19.5	22.5	22.5	23.0	22.0	18.0	17.0	12.5	10.5
			[26.2]	[30.2]	[30.2]	[30.8]	[29.5]	[24.1]	[22.8]	[16.8]	[14.1]
Maximum pressure drop. See Table 17: Maximum torque for OMS shaft type on page 17	bar	cont.	210	210	210	210	210	200	200	160	120
		[psi]	[3050]	[3050]	[3050]	[3050]	[3050]	[2900]	[2900]	[2320]	[1740]
		int. ¹⁾	275	275	275	260	250	250	240	190	140
		peak	295	295	295	280	270	270	260	210	160
		[4280]	[4280]	[4280]	[4060]	[3920]	[3920]	[3770]	[3050]	[2320]	
Maximum oil flow	l/min	cont.	65	75	75	75	75	75	75	75	75
		[US gal/min]	[17.2]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
		int. ¹⁾	80	90	90	90	90	90	90	90	90
		[21.1]	[23.8]	[23.8]	[23.8]	[23.8]	[23.8]	[23.8]	[23.8]	[23.8]	

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

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

Type		OMS	OMS	OMS	OMS	OMS	OMS	OMS	OMS	OMS
		W	W	W	W	W	W	W	W	W
		OMSS	OMSS	OMSS	OMSS	OMSS	OMSS	OMSS	OMSS	OMSS
Motor size		80	100	125	160	200	250	315	400	500
Maximum starting pressure with unloaded shaft	bar	12	10	10	8	8	8	8	8	8
	[psi]	[175]	[145]	[145]	[115]	[115]	[115]	[115]	[115]	[115]
Minimum starting torque	at max. press. drop cont. N•m [lbf•in]	180	230	290	370	470	560	710	710	660
		[1590]	[2040]	[2570]	[3270]	[4160]	[4960]	[6280]	[6280]	[5840]
	at max. press. drop int. ¹⁾ N•m [lbf•in]	235	300	380	460	560	700	850	840	770
		[2080]	[2660]	[3360]	[4070]	[4960]	[6200]	[7520]	[7430]	[6820]
Type					Maximum inlet pressure	Maximum return pressure with drain line				
OMS	bar [psi]	cont.			230 [3340]	140 [2030]				
OMSW	bar [psi]	int.			295 [4280]	175 [2540]				
OMSS	bar [psi]	peak			300 [4350]	210 [3050]				

Table 17: Maximum torque for OMS shaft type

			Splined 1 in	Cyl. 1 in	Splined 0.875 in
Max torque for shaft type	N•m	cont.	360 [3190]	300 [2660]	200 [1770]
	[lbf•in]	int.	450 [3980]	410 [3630]	200 [1770]

Note: For max. permissible combination of flow and pressure, see function diagram for actual motor.

Maximum permissible shaft seal pressure

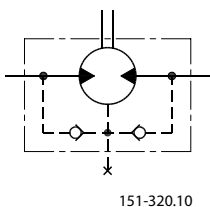
Motor with check valves and without use of drain connection

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

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

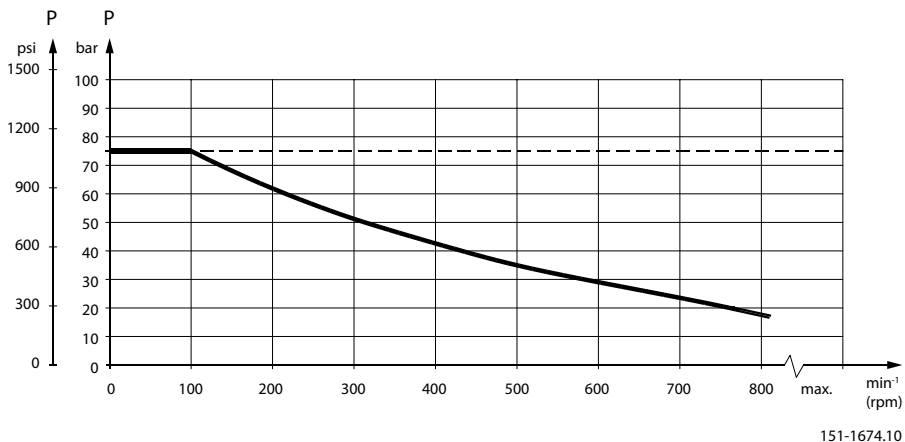
²⁾ Peak load: the permissible values may occur for max. 1% of every minute.

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



Motor with check valves and with drain connection

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



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

— Continuous operation

Figure 4: Maximum return pressure without drain line or maximum pressure in the drain line

Pressure drop in motor

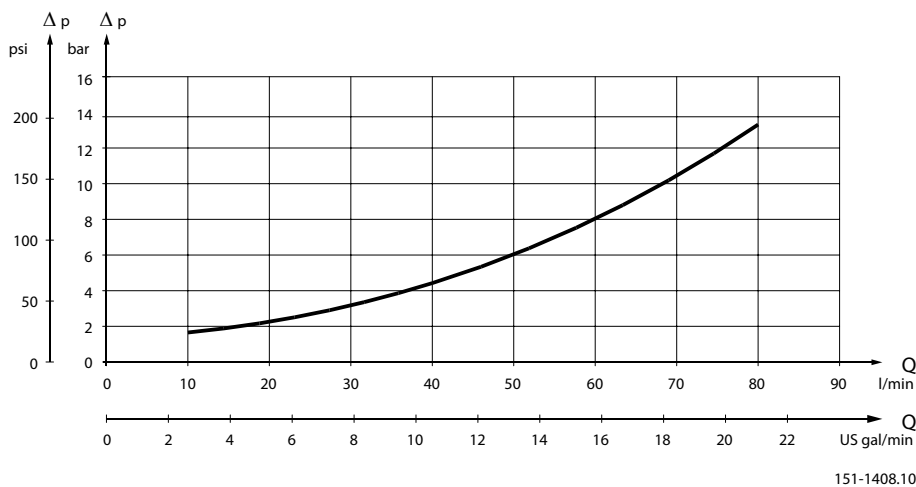


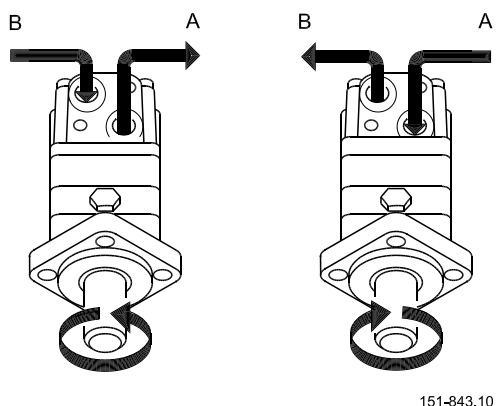
Figure 5: The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm²/s [165 SUS]

Oil flow in drain line

Table 18: Maximum oil flow in the drain line at a return pressure less than 5-10 bar [75-150 psi]

Pressure drop		Viscosity		Oil flow in drain line	
bar	[psi]	mm ² /s	[SUS]	l/min	[US gal/min]
140	[2030]	20	[100]	1.5	[0.40]
		35	[165]	1.0	[0.26]
210	[3050]	20	[100]	3.0	[0.79]
		35	[165]	2.0	[0.53]

Direction of shaft rotation for OMS motors



Permissible shaft loads

Shaft load and bearing life time

The output shaft runs in tapered roller bearings that permit high axial and radial forces.

The permissible radial load on the shaft is shown for an axial load of 0 N as a function of the distance from the mounting flange to the point of load application.

The curve is based on B10 bearing life (2000 hours or 12,000,000 shaft revolutions at 100 min⁻¹) at rated output torque, when mineral-based hydraulic oil with a sufficient content of anti-wear additives, is used.

For 3,000,000 shaft revolutions or 500 hours – increase these shaft loads with 52%.

The dash curve shows maximum radial shaft load. Any shaft load exceeding the values shown in the curve will involve a risk of breakage.

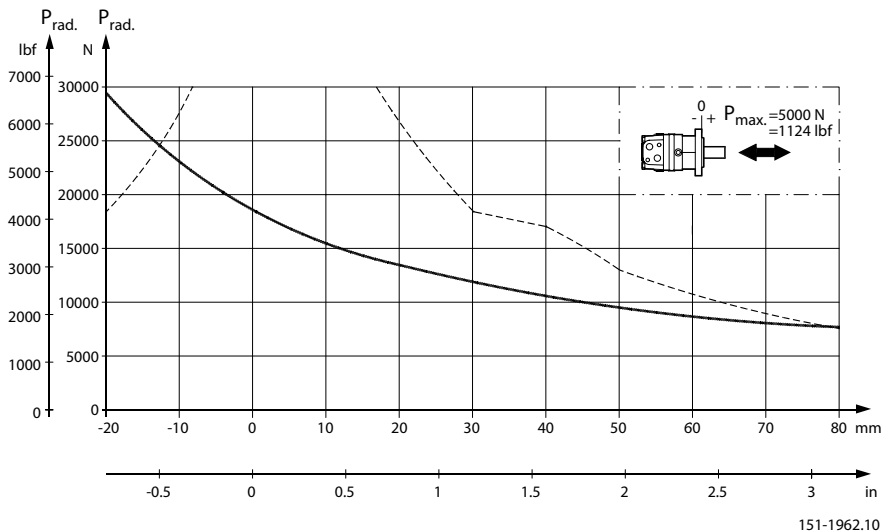
Bearing life calculations can be made using the explanation and formula provided in the chapter *Bearing dimensioning* in the technical information *General Orbital Motors*, **BC152886483554**.

OMS mounting flange: Standard – A2 – Magneto – SAE B

Shaft:

Cyl. 32 mm – Cyl. 1.25 in – Splined 1.25 in.

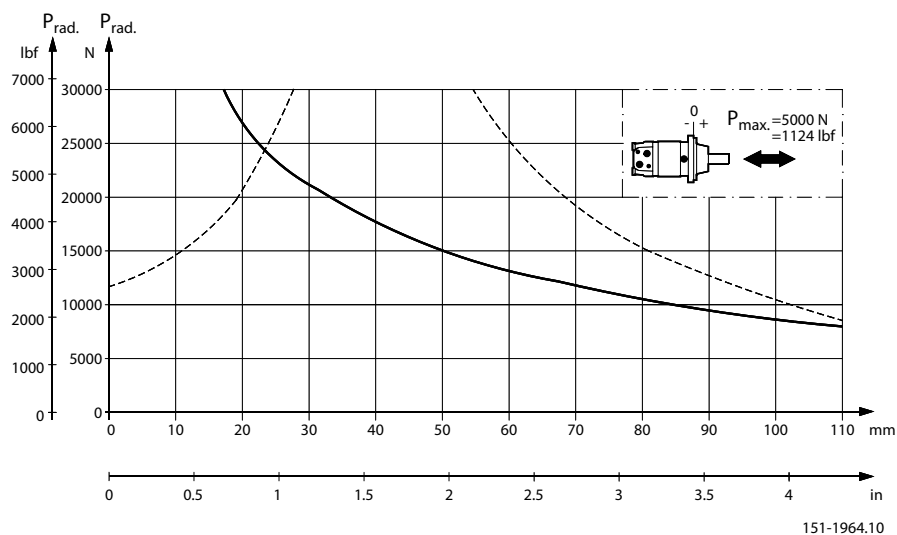
Tapered 35 mm – Tapered 1.25 in – P.t.o.



OMS mounting flange: Wheel

Shaft:

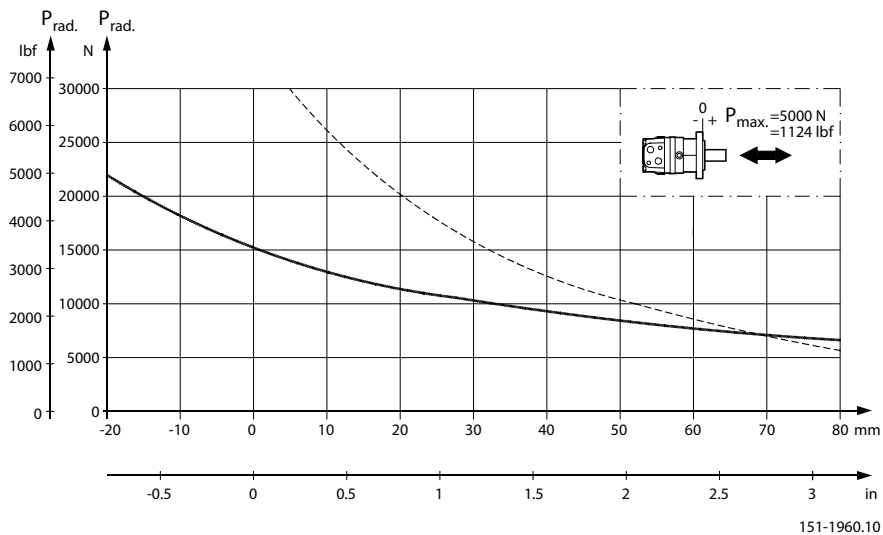
All shaft types



OMS mounting flange: Special

Shaft:

Splined 1.25 in

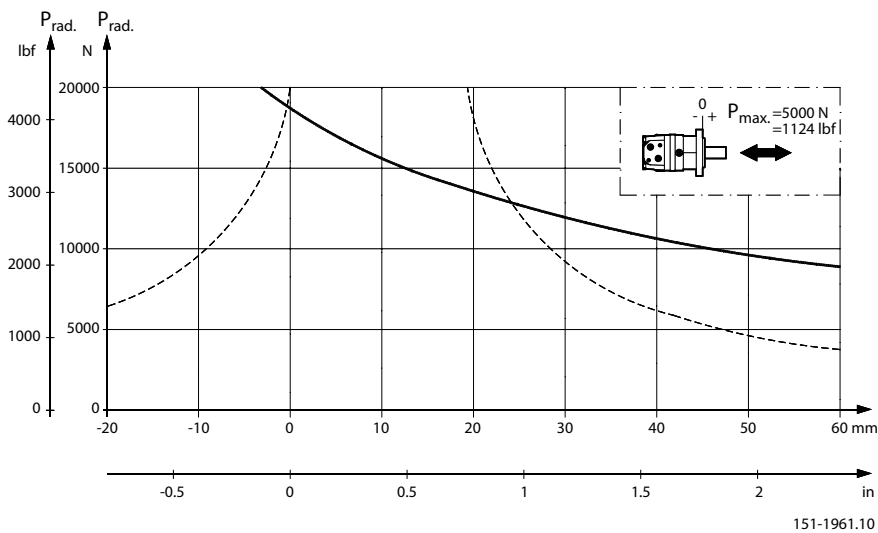


OMS mounting flange: A2 – Magneto

Shaft:

A2 – Magneto

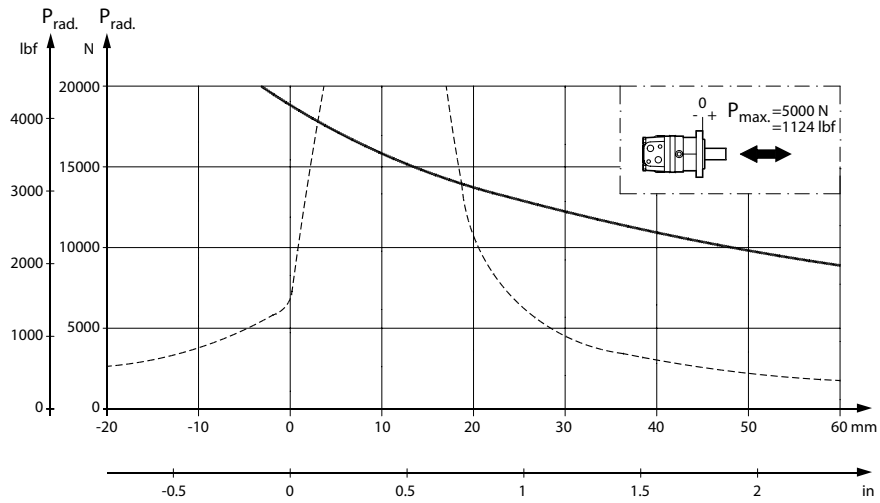
Cyl. 1 in – Splined 1 in



OMS mounting flange: SAE B

Shaft:

Splined 0.875 in



151-1963.10

Chapter

4

OMS function diagrams

Topics:

- [OMS 80 function diagram](#)
- [OMS 100 function diagram](#)
- [OMS 125 function diagram](#)
- [OMS 160 function diagram](#)
- [OMS 200 function diagram](#)
- [OMS 250 function diagram](#)
- [OMS 315 function diagram](#)
- [OMS 400 function diagram](#)
- [OMS 500 function diagram](#)

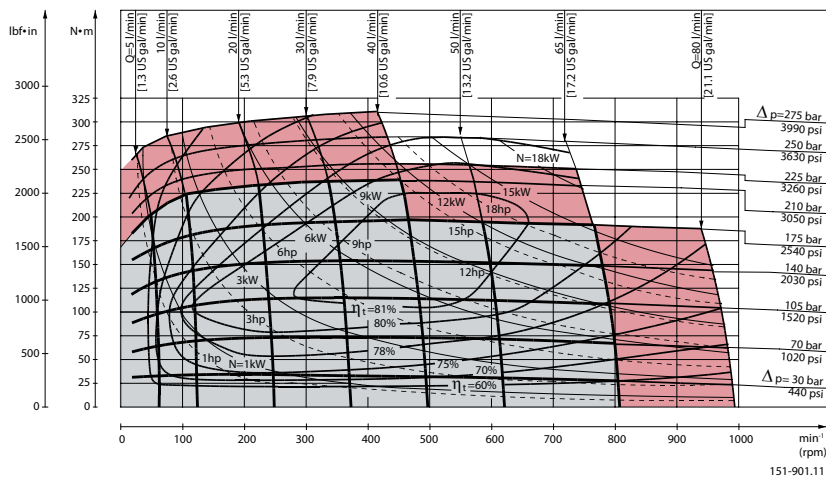
Explanation of function diagram use, basis and conditions can be found in [Speed, torque, and output](#) on page 7.

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

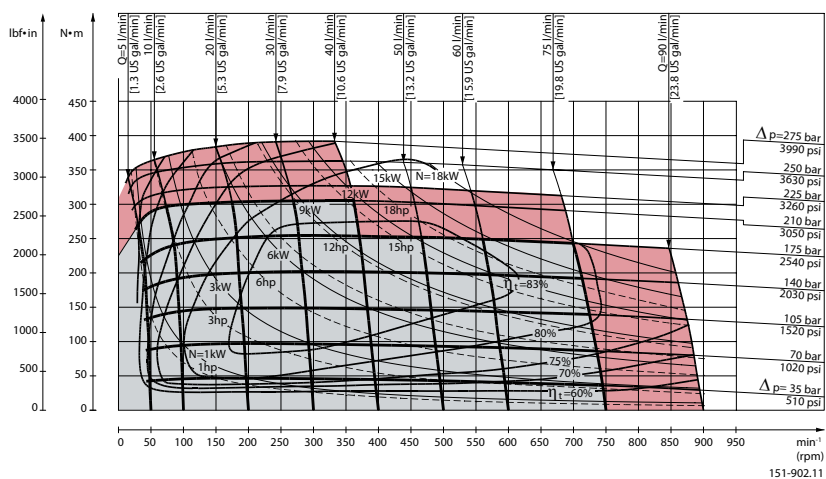
Maximum permissible continuous/intermittent pressure drop for the actual shaft version can be found in [Table 17: Maximum torque for OMS shaft type](#) on page 17.

Note: Intermittent pressure drop and oil flow must not occur simultaneously.

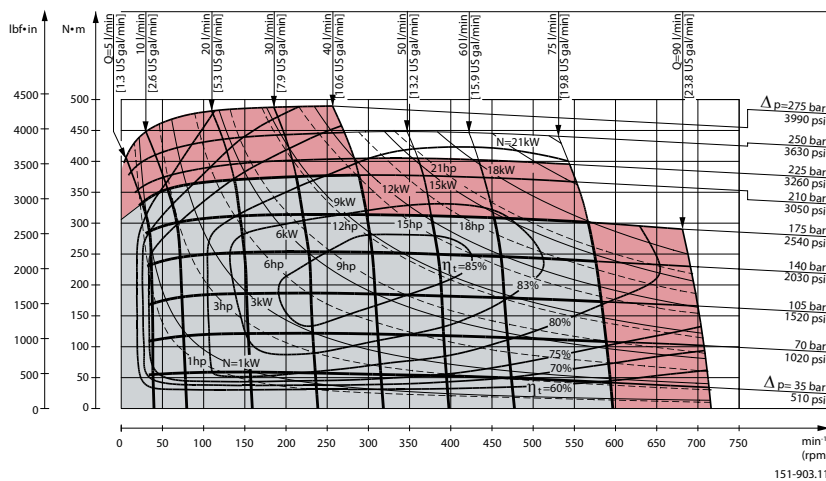
OMS 80 function diagram



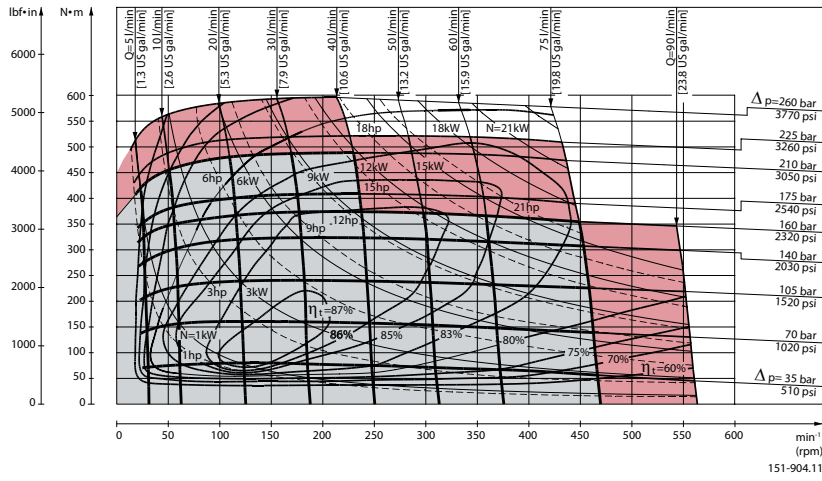
OMS 100 function diagram



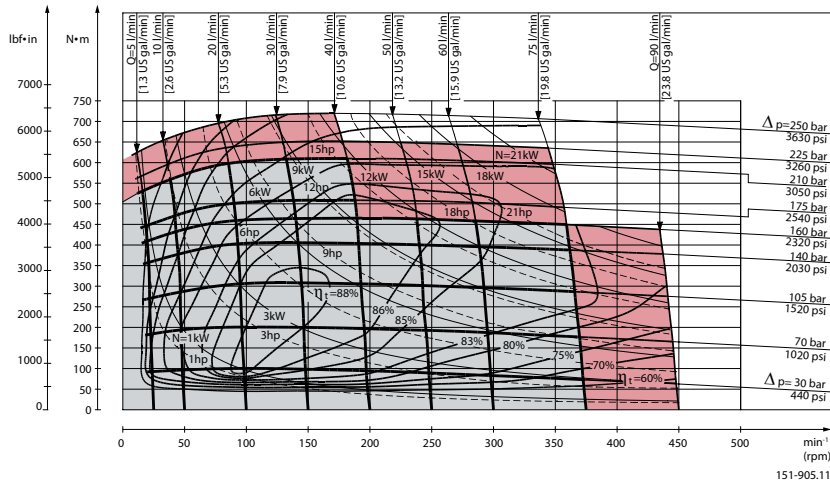
OMS 125 function diagram



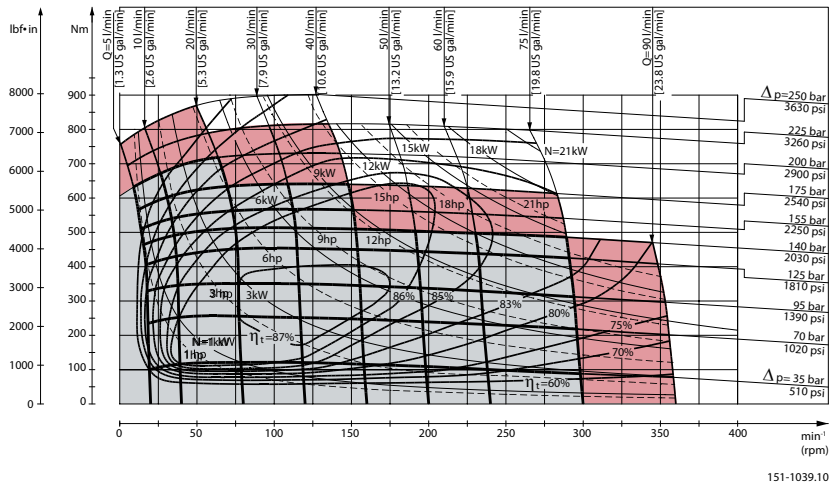
OMS 160 function diagram



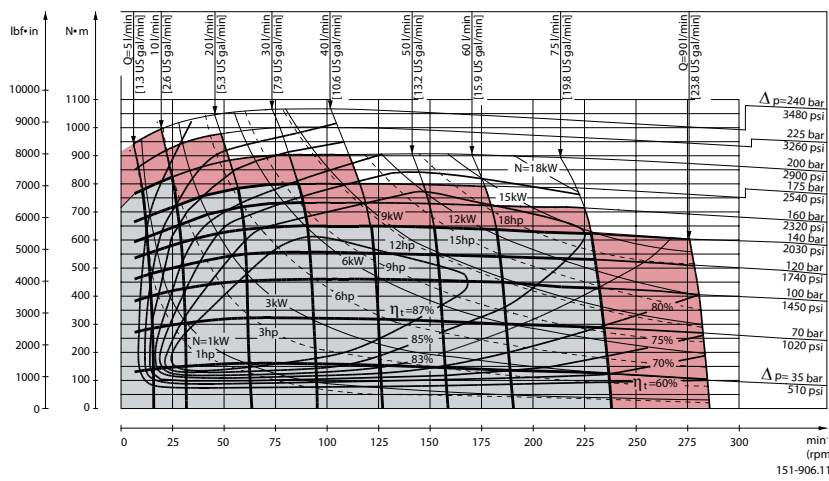
OMS 200 function diagram



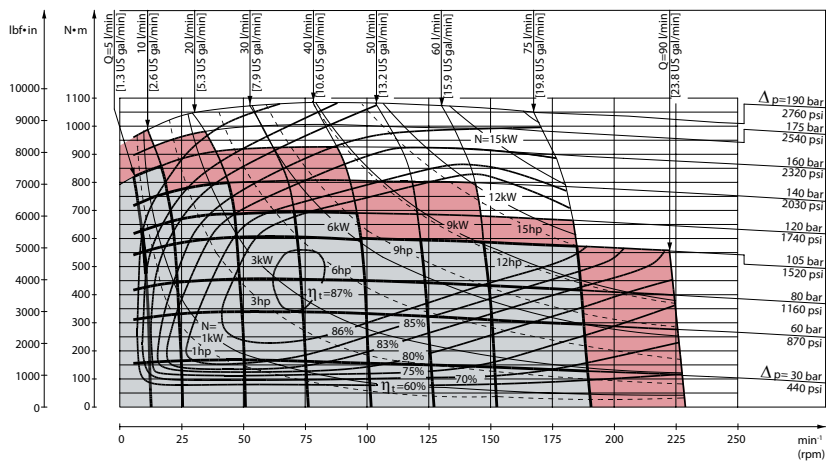
OMS 250 function diagram



OMS 315 function diagram

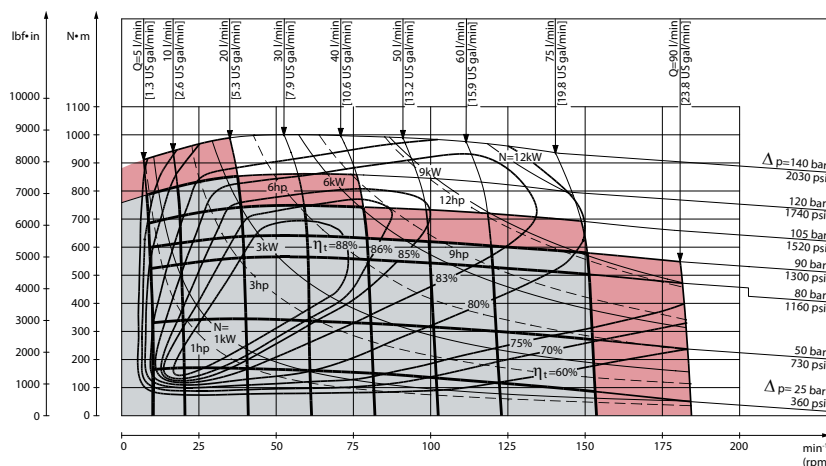


OMS 400 function diagram



151-1491.11

OMS 500 function diagram



151-1984.11

Chapter

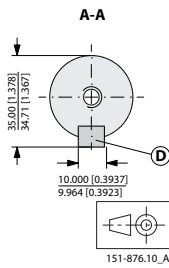
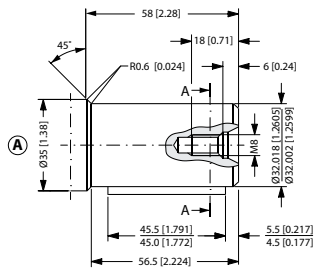
5

Shaft version

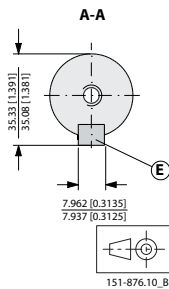
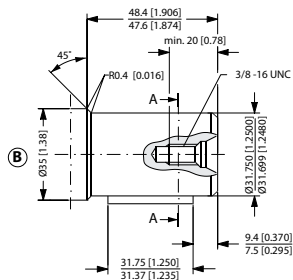
Topics:

- *OMS shaft version*
 - *OMS port thread versions*
-

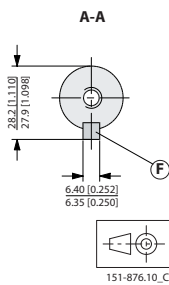
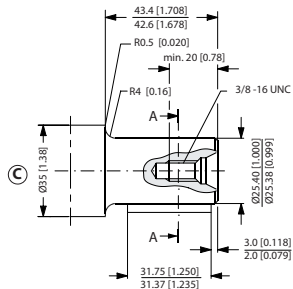
OMS shaft version



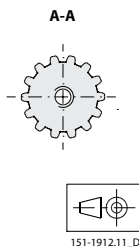
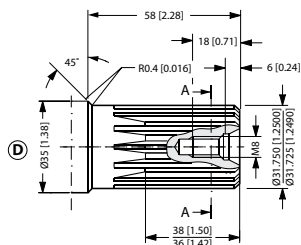
- A:** Cylindrical 32 mm shaft
D: Parallel key
 $A10 \times 8 \times 45$
 DIN 6885
 Keyway deviates from standard



- B:** Cylindrical 1.25 in shaft
E: Parallel key
 $5/16 \times 5/16 \times 1 \frac{1}{4}$ in
 SAE J744
 Keyway deviates from standard



- C:** Cylindrical 1 in shaft
F: Parallel key
 $1/4 \times 1/4 \times 1 \frac{1}{4}$ in
 B.S. 46
 Keyway deviates from standard



- D:** Involute splined shaft
 ANS B92.1 - 1996 standard
 Flat root side fit
 Pitch 12/24
 Teeth 14
 Major diameter 1.25 in
 Pressure angle 30°

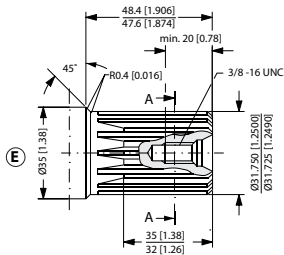
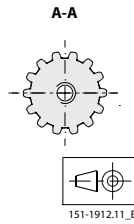
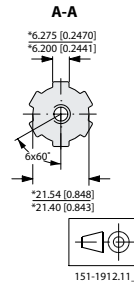
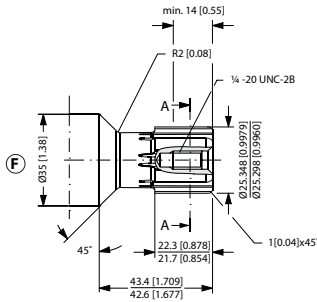


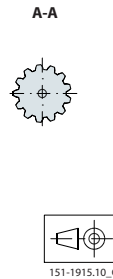
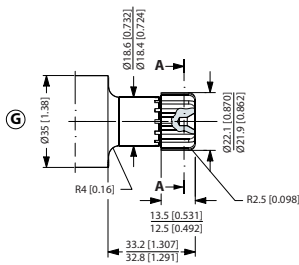
Figure 6: US version



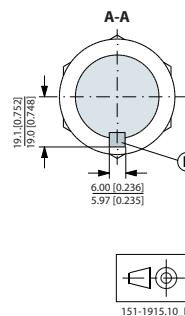
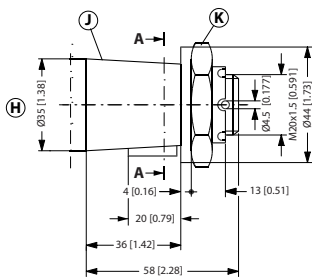
- E:** Involute splined shaft
ANS B92.1 - 1996 standard
Flat root side fit
Pitch 12/24
Teeth 14
Major diameter 1.25 in
Pressure angle 30°



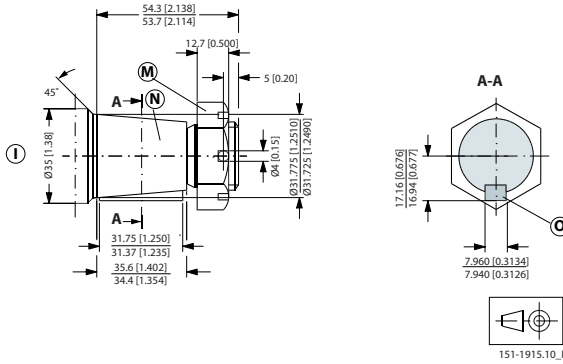
- F:** Splined shaft
SAE 6 B (B.S. 2059)
Straight-sided, bottom fitting, deep
Fit 2
Nominal size 1 in
*Deviates from SAE 6 B (B.S. 2059)



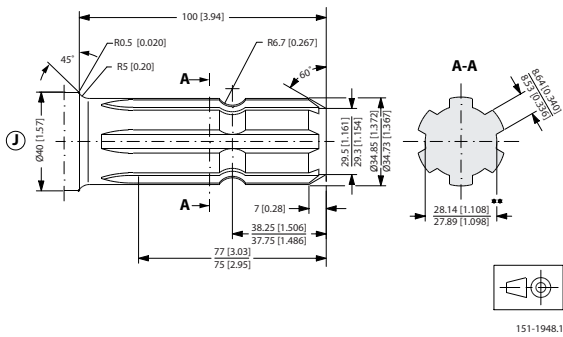
- G:** Involute splined shaft
ANS B92.1 - 1996 standard
Flat root side fit
Pitch 16/32
Teeth 13
Major dia. 0.875 in
Pressure angle 30°



- H:** Tapered 35 mm shaft
(ISO/R775)
K: DIN 937
Across flats: 41 mm
Tightening torque: 200 ± 10 N•m [1770 ± 85 lbf•in]
J: Taper 1:10
L: Parallel key
B6 × 6 × 20
DIN 6885
Keyway deviates from standard

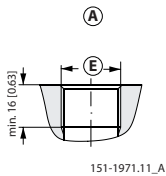


- I:** Tapered 1 1/4 in shaft
- M:** 1 - 20 UNEF
Across flats 1 7/16 in
Tightening torque: 200 ± 10 N•m
(1770 ± 85 lbf•in)
- N:** Cone 1:8
SAE J501
- O:** Parallel key
5/16 × 5/16 × 1 1/4
SAE J501
Keyway deviates from standard

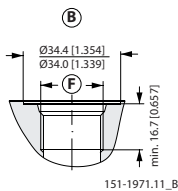


- J:** P.t.o. shaft
DIN 9611 Form 1
(ISO/R500 without pin hole)
** Deviates from DIN 9611

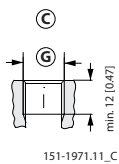
OMS port thread versions



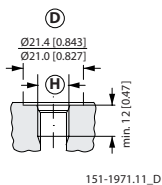
- A:** G main ports
- E:** ISO 228/1 - G1/2



- B:** UNF main ports
- F:** 7/8 - 14 UNF O-ring boss port



- C:** G drain port
- G:** ISO 228/1 - G1/4



- D:** UNF drain port
- H:** 7/16 - 20 UNF O-ring boss port

Chapter

6

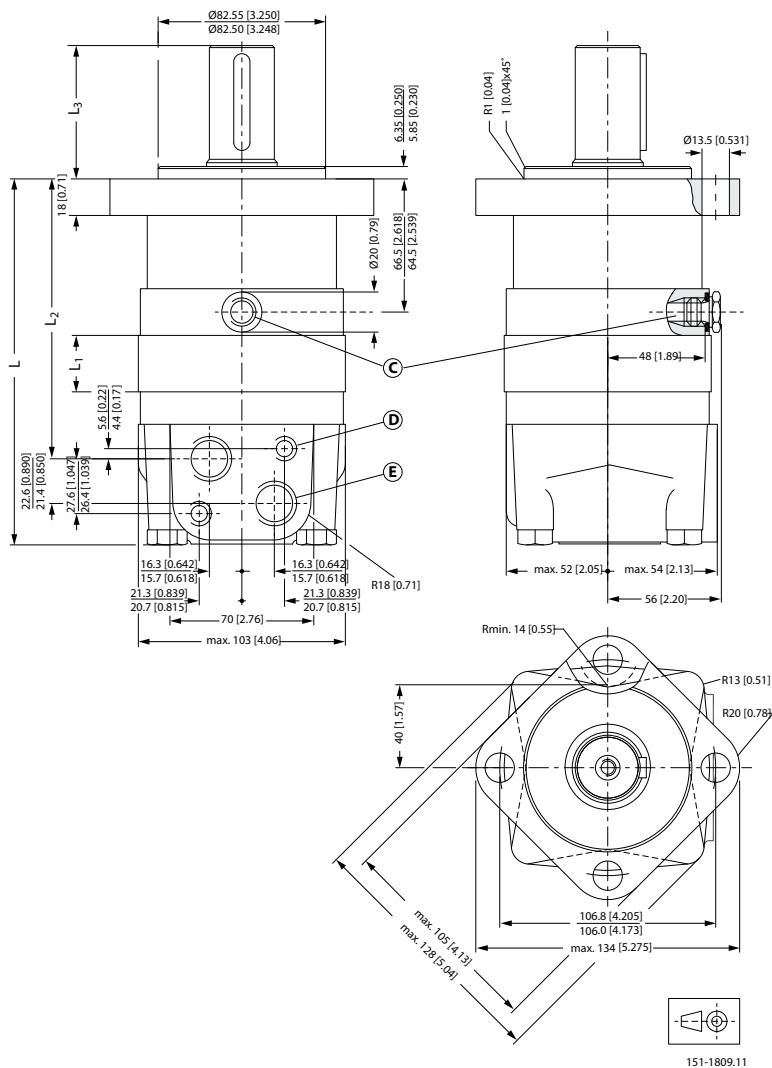
OMS dimensions

Topics:

- *OMS dimensions - European version*
- *OMS dimensions - US version*

OMS dimensions - European version

OMS standard flange - European version



C: Drain connection, G 1/4; 12 mm [0.47 in] deep

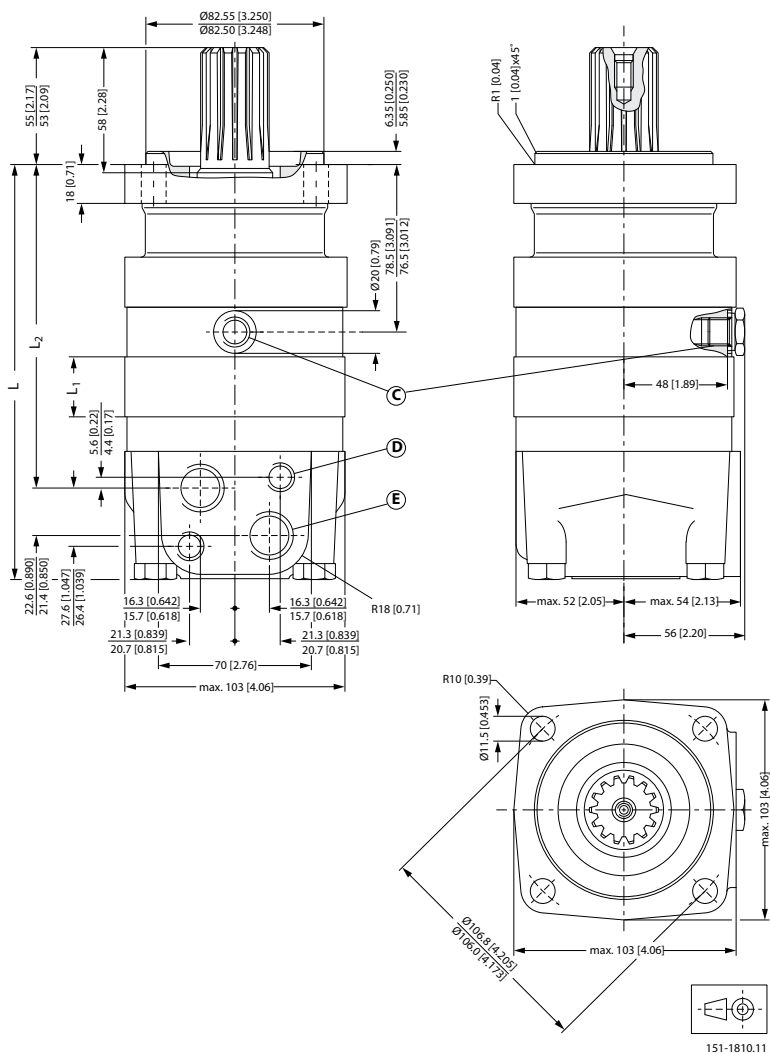
D: M10; 13 mm [0.51 in] deep

E: G 1/2; 15 mm [0.59 in] deep

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400	OMS 500
$L_{Max.}$	mm [in]	168 [6.61]	172 [6.77]	176 [6.93]	182 [7.17]	189 [7.44]	198 [7.80]	209 [8.23]	223 [8.80]	223 [8.80]
L_1	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L_2	mm [in]	124 [4.88]	127 [5.00]	132 [5.20]	138 [5.43]	145 [5.71]	153 [6.02]	165 [6.50]	178 [7.01]	178 [7.01]

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400	OMS 500
Weight	kg [lb]	9.8 [21.6]	10.0 [22.1]	10.3 [22.7]	10.7 [23.6]	11.1 [24.5]	11.6 [25.6]	12.3 [27.1]	13.1 [28.9]	13.1 [28.9]
Output shaft		All shafts except P.t.o. shaft				P.t.o. shaft				
		Maximum		Minimum		Maximum		Minimum		
L ₃	mm [in]	67 [2.64]		65 [2.56]		109 [4.29]		107 [4.21]		

OMS special flange - European version

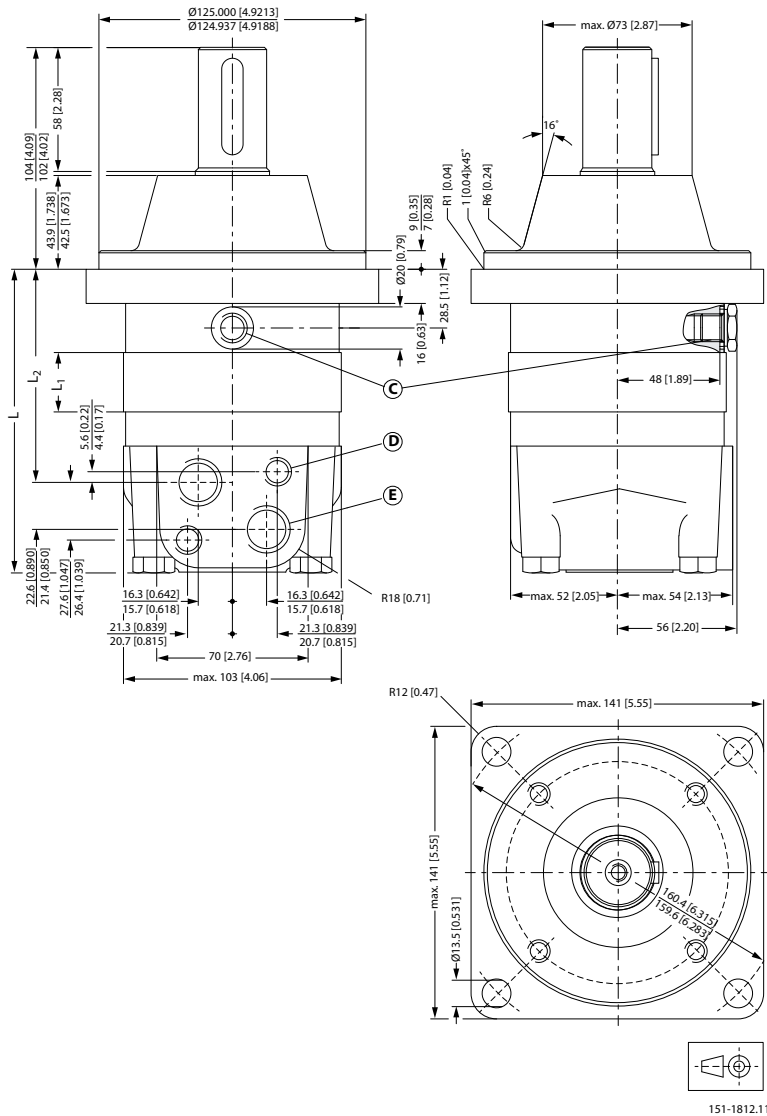


- C:** Drain connection, G 1/4; 12 mm [0.47 in] deep
D: M10; 13 mm [0.51 in] deep
E: G 1/2; 15 mm [0.59 in] deep

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400
L _{Max.}	mm [in]	180 [7.09]	183 [7.20]	188 [7.70]	194 [7.64]	201 [7.91]	210 [8.27]	221 [8.70]	232 [9.13]

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]
L ₂	mm [in]	136 [5.35]	140 [5.51]	144 [5.67]	150 [5.91]	157 [6.18]	166 [6.54]	177 [6.97]	190 [7.48]
Weight	kg [lb]	10.2 [22.5]	10.4 [22.9]	10.7 [23.6]	11.1 [24.5]	11.5 [25.4]	12.0 [26.5]	12.7 [28.0]	13.5 [29.8]

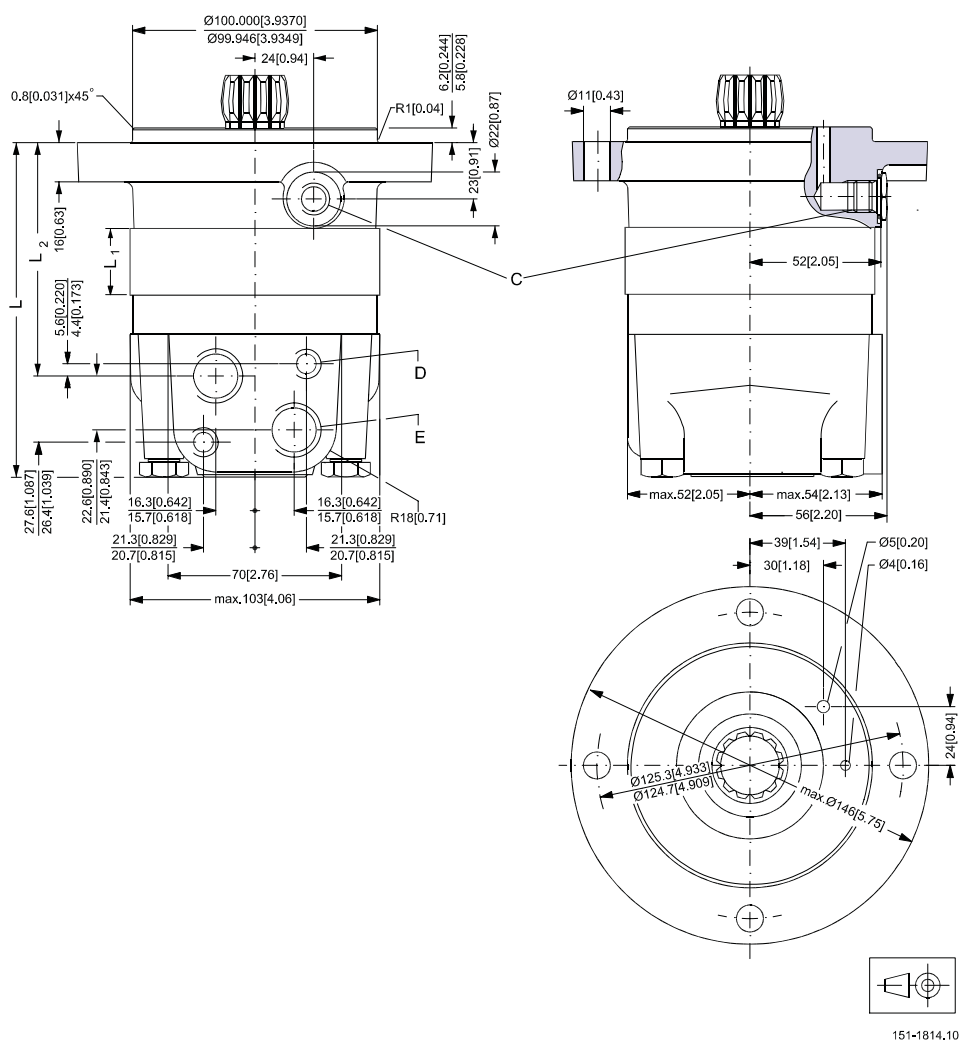
OMS wheel - European version



- C:** Drain connection, G 1/4; 12 mm [0.47 in] deep
- D:** M10; 13 mm [0.51 in] deep
- E:** G 1/2; 15 mm [0.59 in] deep

Type		OMSW 80	OMSW 100	OMSW 125	OMSW 160	OMSW 200	OMSW 250	OMSW 315	OMSW 400	OMSW 500
L _{Max.}	mm [in]	131 [5.16]	135 [5.31]	139 [5.47]	145 [5.70]	152 [5.98]	161 [6.34]	172 [6.77]	186 [7.32]	186 [7.32]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L ₂	mm [in]	87 [3.43]	90 [3.54]	95 [3.74]	101 [3.98]	108 [4.25]	116 [4.57]	128 [5.04]	142 [5.59]	142 [5.59]
Weight	kg [lb]	10.3 [22.7]	10.5 [23.1]	10.8 [23.8]	11.2 [24.7]	11.6 [25.6]	12.1 [26.7]	12.8 [28.2]	13.6 [30.0]	13.6 [30.0]

OMS short - European version

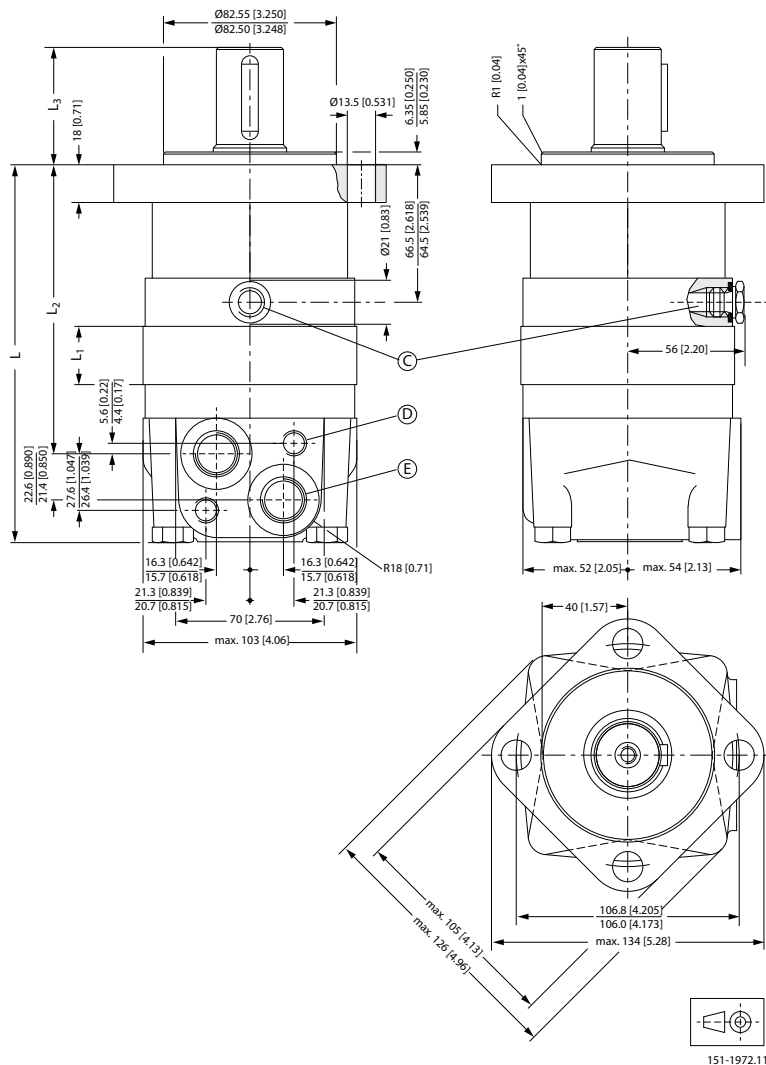


- C: Drain connection, G 1/4; 12 mm [0.47 in] deep
- D: M10; 13 mm [0.51 in] deep
- E: G 1/2; 15 mm [0.59 in] deep

Type		OMSS 80	OMSS 100	OMSS 125	OMSS 160	OMSS 200	OMSS 250	OMSS 315	OMSS 400	OMSS 500
L _{Max.}	mm [in]	126 [4.96]	129 [5.09]	134 [5.28]	140 [5.51]	147 [5.79]	156 [6.14]	167 [6.57]	180 [7.09]	180 [7.09]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L ₂	mm [in]	83 [3.27]	86 [3.39]	90 [3.54]	96 [3.78]	103 [4.06]	112 [4.41]	123 [4.84]	137 [5.39]	137 [5.39]
Weight	kg [lb]	7.8 [17.2]	8.0 [17.6]	8.3 [18.3]	8.7 [19.2]	9.1 [20.1]	9.6 [21.2]	10.3 [22.7]	11.1 [24.3]	11.1 [24.3]

OMS dimensions - US version

OMS standard flange - US version



C: Drain connection, 7/16 - 20 UNF; 12 mm [0.47 in] deep, O-ring boss port

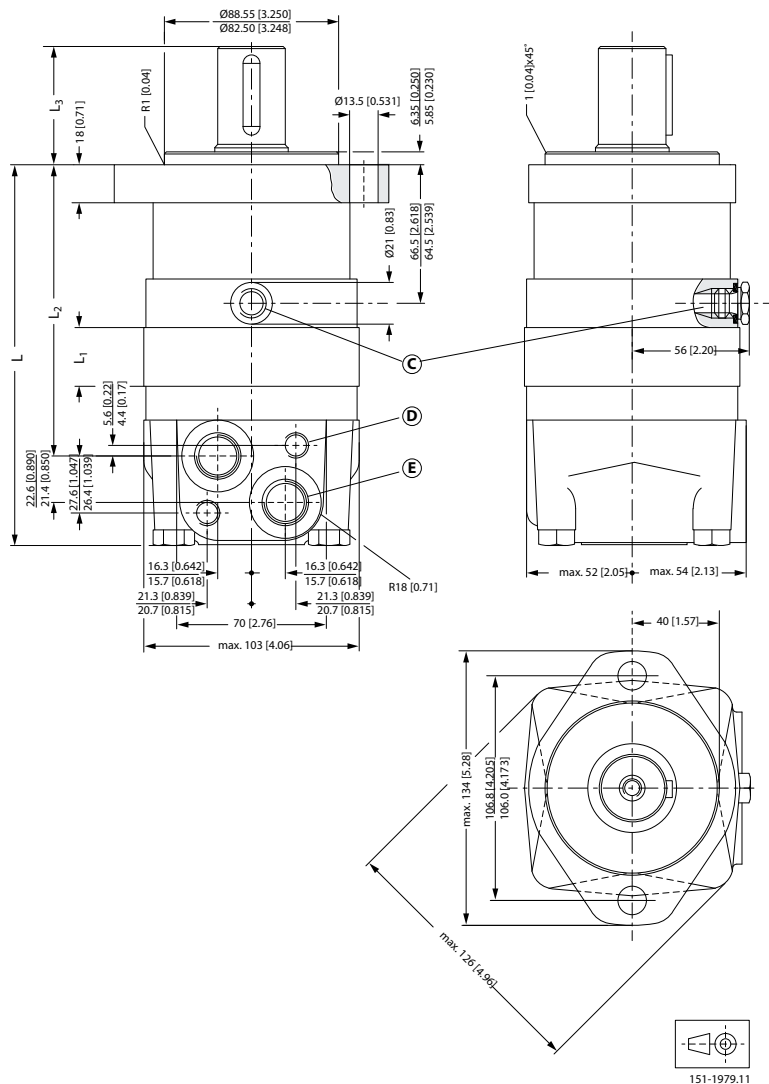
D: M10; 13 mm [0.51 in] deep

E: 7/8 - 14 UNF; 16.7 mm [0.657 in] deep, O-ring boss port

Figure 7: Standard flange

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400	OMS 500
L _{Max.}	mm [in]	168 [6.61]	172 [6.77]	176 [6.93]	182 [7.17]	189 [7.44]	198 [7.80]	209 [8.23]	223 [8.80]	223 [8.80]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L ₂	mm [in]	124 [4.88]	127 [5.00]	132 [5.20]	138 [5.43]	145 [5.71]	153 [6.02]	165 [6.50]	178 [7.01]	178 [7.01]
Weight	kg [lb]	9.8 [21.6]	10.0 [22.1]	10.3 [22.7]	10.7 [23.6]	11.1 [24.5]	11.6 [25.6]	12.3 [27.1]	13.1 [28.9]	13.1 [28.9]
Output shaft		Cyl.1.25 in, Splined 1.25 in				Tapered 1.25 in				
		Maximum		Minimum		Maximum		Minimum		
L ₃	mm [in]	57 [2.24]		55 [2.17]		67 [2.64]		65 [2.56]		

OMS A-2 flange - US version



C: Drain connection, 7/16 - 20 UNF; 12 mm [0.47 in] deep, O-ring boss port

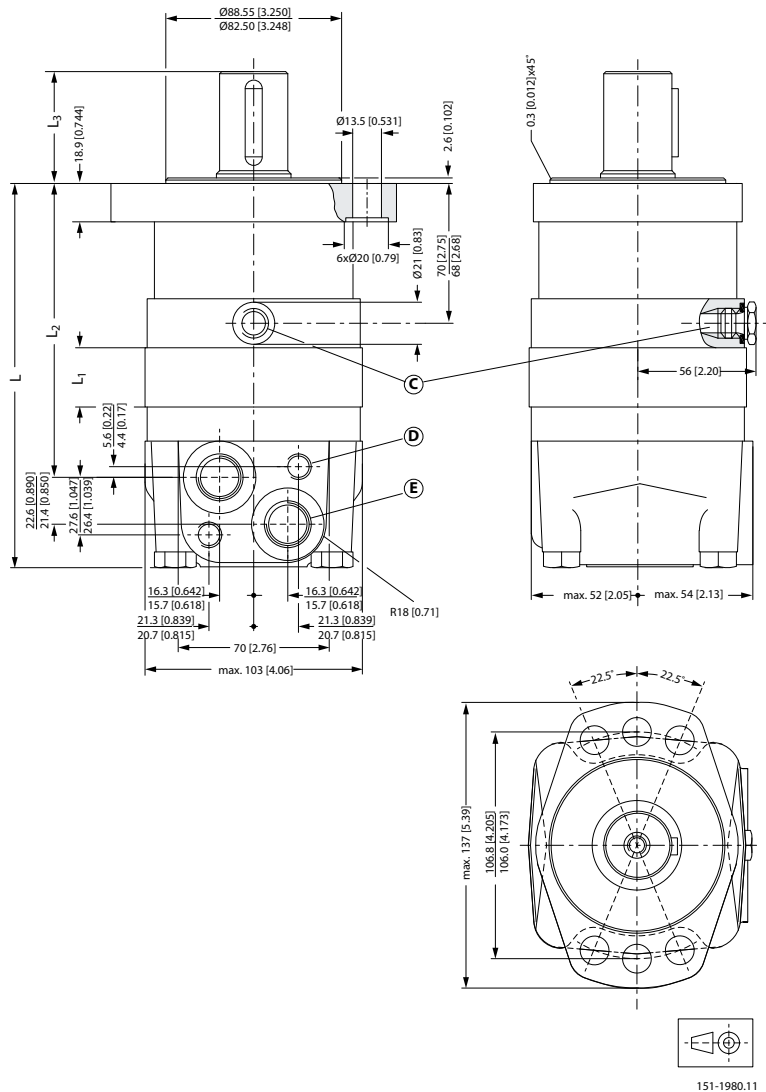
D: M10; 13 mm [0.51 in] deep

E: 7/8 - 14 UNF; 16.7 mm [0.657 in] deep, O-ring boss port

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400	OMS 500
L _{Max.}	mm [in]	168 [6.61]	172 [6.77]	176 [6.93]	182 [7.17]	189 [7.44]	198 [7.80]	209 [8.23]	223 [8.80]	223 [8.80]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L ₂	mm [in]	124 [4.88]	127 [5.00]	132 [5.20]	138 [5.43]	145 [5.71]	153 [6.02]	165 [6.50]	178 [7.01]	178 [7.01]
Weight	kg [lb]	9.8 [21.6]	10.0 [22.1]	10.3 [22.7]	10.7 [23.6]	11.1 [24.5]	11.6 [25.6]	12.3 [27.1]	13.1 [28.9]	13.1 [28.9]

Output shaft		Cyl.1 in, Splined 1 in		Cyl.1.25 in, Splined 1.25 in		Tapered 1.25 in	
		Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
L ₃	mm [in]	52 [2.05]	50 [1.97]	57 [2.24]	55 [2.17]	67 [2.64]	65 [2.56]

OMS magneto flange - US version



C: Drain connection, 7/16 - 20 UNF; 12 mm [0.47 in] deep, O-ring boss port

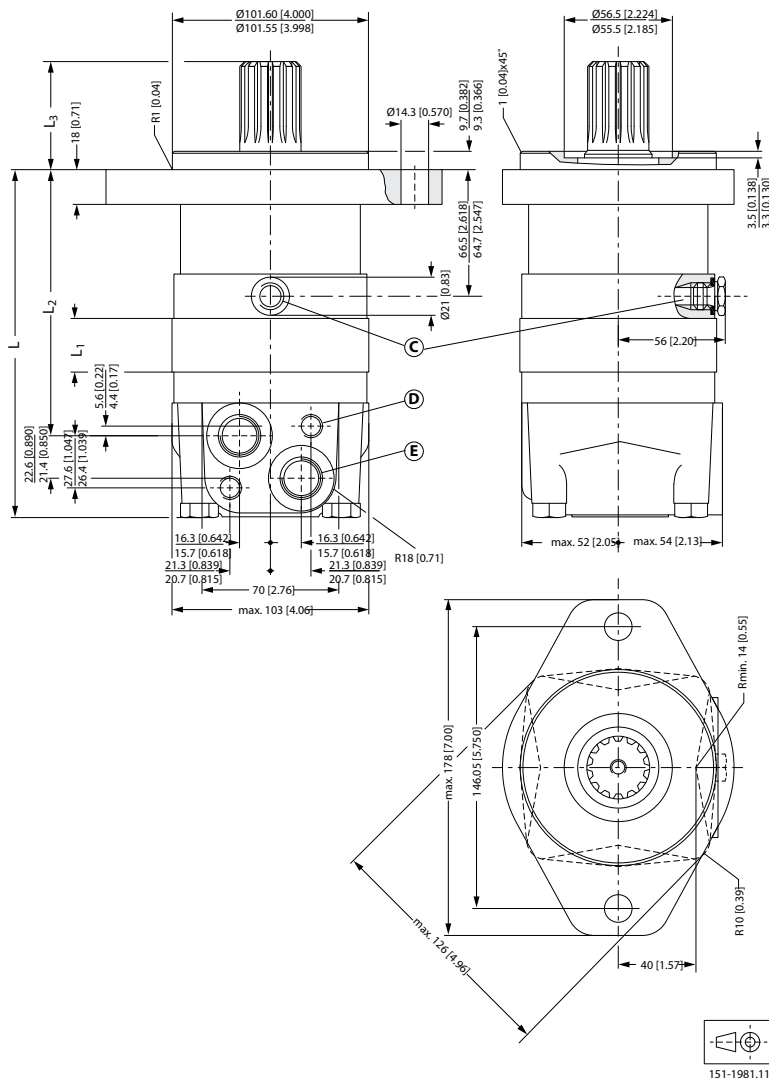
D: M10; 13 mm [0.51 in] deep

E: 7/8 - 14 UNF; 16.7 mm [0.657 in] deep, O-ring boss port

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400	OMS 500
L _{Max.}	mm [in]	172 [6.77]	175 [6.89]	180 [7.08]	186 [7.32]	193 [7.60]	201 [7.91]	213 [8.39]	226 [8.90]	226 [8.90]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400	OMS 500
L ₂	mm [in]	128 [5.04]	131 [5.16]	136 [5.35]	142 [5.59]	149 [5.87]	157 [6.18]	169 [6.65]	182 [7.17]	182 [7.17]
Weight	kg [lb]	9.8 [21.6]	10.0 [22.1]	10.3 [22.7]	10.7 [23.6]	11.1 [24.5]	11.6 [25.6]	12.3 [27.1]	13.1 [28.9]	13.1 [28.9]
Output shaft		Cyl.1 in, Splined 1 in				Cyl.1.25 in, Splined 1.25 in				
		Maximum		Minimum		Maximum		Minimum		
L ₃	mm [in]	49 [1.93]		47 [1.85]		54 [2.13]		52 [2.05]		

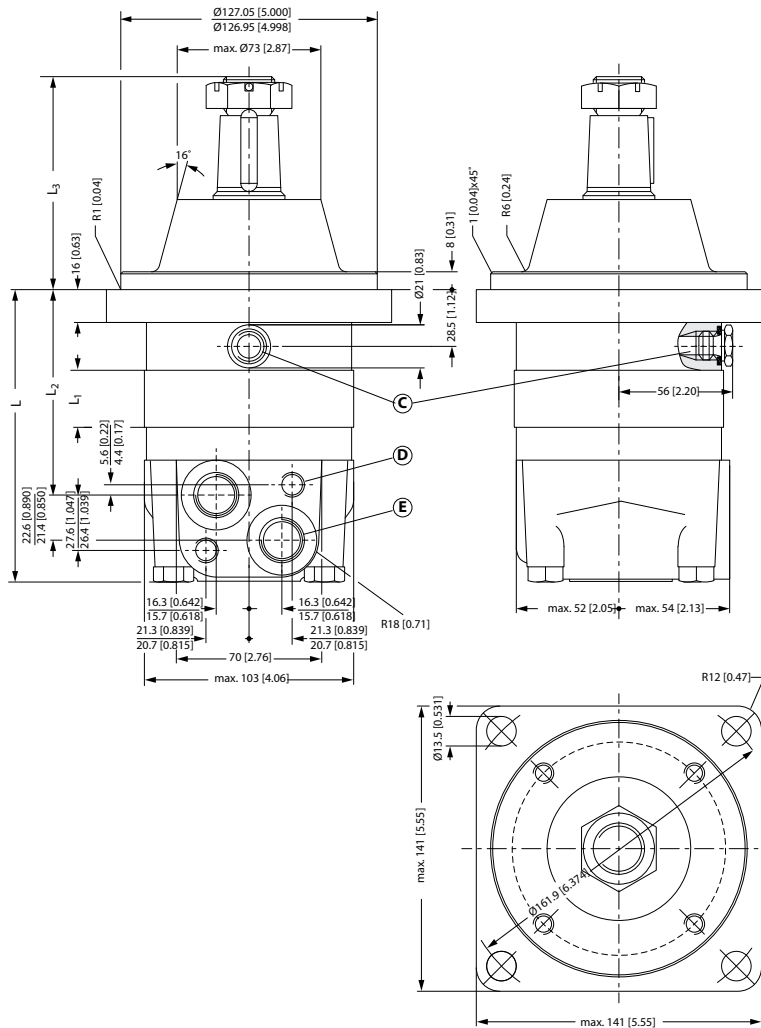
OMS SAE-B flange - US version



- C:** Drain connection, 7/16 - 20 UNF; 12 mm [0.47 in] deep, O-ring boss port
- D:** M10; 13 mm [0.51 in] deep
- E:** 7/8 - 14 UNF; 16.7 mm [0.657 in] deep, O-ring boss port

Type		OMS 80	OMS 100	OMS 125	OMS 160	OMS 200	OMS 250	OMS 315	OMS 400	OMS 500
L _{Max.}	mm [in]	168 [6.61]	172 [6.77]	176 [6.93]	182 [7.17]	189 [7.44]	198 [7.80]	209 [8.23]	223 [8.80]	223 [8.80]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L ₂	mm [in]	124 [4.88]	127 [5.00]	132 [5.20]	138 [5.43]	145 [5.71]	153 [6.02]	165 [6.50]	178 [7.01]	178 [7.01]
Weight	kg [lb]	9.8 [21.6]	10.0 [22.1]	10.3 [22.7]	10.7 [23.6]	11.1 [24.5]	11.6 [25.6]	12.3 [27.1]	13.1 [28.9]	13.1 [28.9]
Output shaft		Splined 1.25 in				Splined 0.875 in				
		Maximum		Minimum		Maximum		Minimum		
L ₃	mm [in]	57 [2.24]		55 [2.17]		42 [1.65]		40 [1.57]		

OMS Wheel - US version

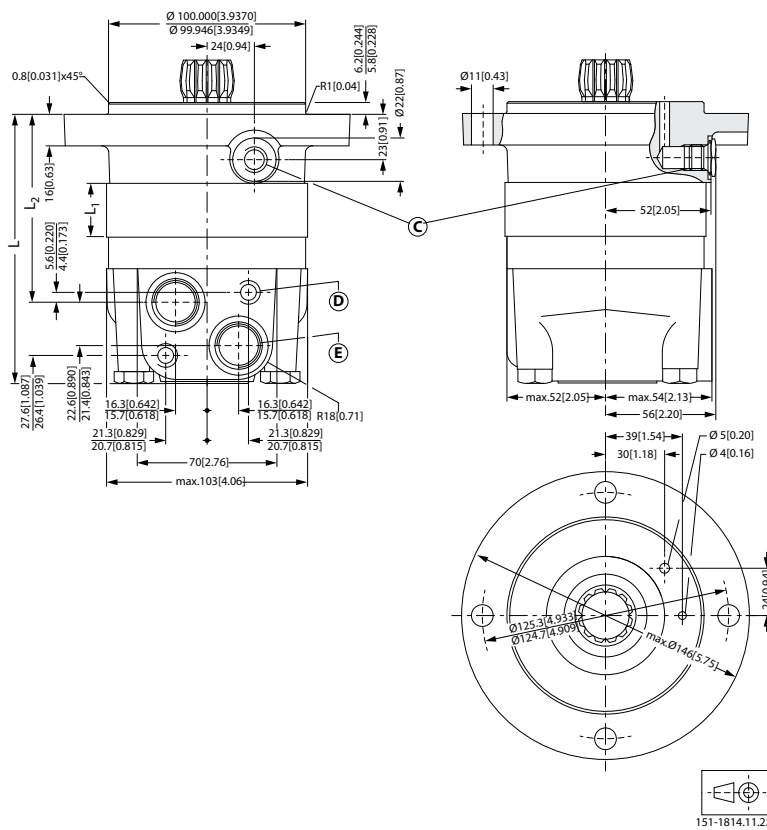


151-1982.11

- C:** Drain connection, 7/16 - 20 UNF; 12 mm [0.47 in] deep, O-ring boss port
- D:** M10; 13 mm [0.51 in] deep
- E:** 7/8 - 14 UNF; 16.7 mm [0.657 in] deep, O-ring boss port

Type		OMSW 80	OMSW 100	OMSW 125	OMSW 160	OMSW 200	OMSW 250	OMSW 315	OMSW 400	OMSW 500
L _{Max.}	mm [in]	130 [5.12]	133 [5.24]	139 [5.47]	145 [5.71]	152 [5.98]	161 [6.34]	172 [6.77]	186 [7.32]	186 [7.32]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L ₂	mm [in]	88 [3.46]	91 [3.58]	96 [3.78]	102 [4.02]	109 [4.29]	117 [4.61]	129 [5.08]	142 [5.59]	142 [5.59]
Weight	kg [lb]	10.3 [22.7]	10.5 [23.1]	10.8 [23.8]	11.2 [24.7]	11.6 [25.6]	12.1 [26.7]	12.8 [28.2]	13.6 [30.0]	13.6 [30.0]
Output shaft		Cyl.1.25 in				Tapered 1.25 in				
		Maximum		Minimum		Maximum		Minimum		
L ₃	mm [in]	94 [3.70]		92 [3.62]		104 [4.09]		102 [4.02]		

OMS short - US version



- C:** Drain connection, 7/16 - 20 UNF; 12 mm [0.47 in] deep, O-ring boss port
- D:** M10; 13 mm [0.51 in] deep
- E:** 7/8 - 14 UNF; 16.7 mm [0.657 in] deep, O-ring boss port

Type		OMSS 80	OMSS 100	OMSS 125	OMSS 160	OMSS 200	OMSS 250	OMSS 315	OMSS 400	OMSS 500
L _{Max.}	mm [in]	126 [4.96]	129 [5.09]	134 [5.28]	140 [5.51]	147 [5.79]	156 [6.14]	167 [6.57]	180 [7.09]	180 [7.09]
L ₁	mm [in]	14.0 [0.551]	17.4 [0.685]	21.8 [0.858]	27.8 [1.094]	34.8 [1.370]	43.5 [1.713]	54.8 [2.157]	68.4 [2.693]	68.4 [2.693]
L ₂	mm [in]	83 [3.27]	86 [3.39]	90 [3.54]	96 [3.78]	103 [4.06]	112 [4.41]	123 [4.84]	137 [5.39]	137 [5.39]
Weight	kg [lb]	7.8 [17.2]	8.0 [17.6]	8.3 [18.3]	8.7 [19.2]	9.1 [20.1]	9.6 [21.2]	10.3 [22.7]	11.1 [24.3]	11.1 [24.3]

Chapter

7

OMSS

Topics:

- *Installing the OMSS*
- *Attached component dimensions*
- *Internal spline data for the component to be attached*
- *Motor or attached component drain connection*

Installing the OMSS

The cardan shaft of the OMSS motor acts as an “output shaft”. Because of the movement of the shaft, no seal can be fitted at the shaft output.

Internal oil leakage from the motor will therefore flow into the attached component.

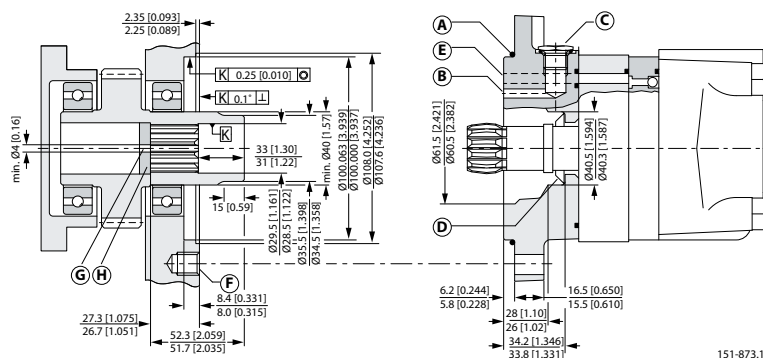
During start and operation it is important that the spline connection and the bearings in the attached component receive oil and are adequately lubricated. To ensure that the spline connection receives sufficient oil, a conical sealing ring between the shaft of the attached component and the motor intermediate plate is recommended. This method is used in the OMS.

The conical sealing ring (code. no. 633B9023) is supplied with the motor.

To ensure that oil runs to the bearings and other parts of the attached component, the stop plate must have a hole in it (see [Figure 8: OMSS dimensions of the attached component](#) on page 48).

We recommend an O-ring between motor and attached component. The O-ring (code no. 151F1033) is supplied with the motor. If motor and attached component have been separated, remember to refill before starting up. Fill the oil through the drain connection.

Attached component dimensions



- A: O-ring: 100 × 3 mm
- B: External drain channel
- C: Drain connection G 1/4; 12 mm [0.47 in] deep
- D: Conical seal ring
- E: Internal drain channel
- F: M10; min. 15 mm [0.59 in] deep
- G: Oil circulation hole
- H: Hardened stop plate

Figure 8: OMSS dimensions of the attached component

Internal spline data for the component to be attached

The attached component must have internal splines corresponding to the external splines on the motor cardan shaft (see [#unique_51/unique_51_Connect_42_InternalSplinesDrawing](#) on page 49).

Material

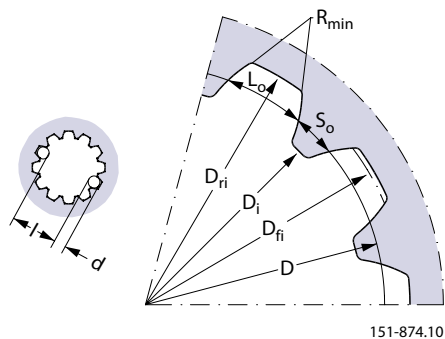
Case hardening steel with a tensile strength corresponding at least to 20 MoCr4 (900 N/mm²) or SAE 8620.

Hardening specification

- On the surface: HV = 750 ± 50
- 0.7 ± 0.2 mm under the surface: HV = 560

Table 19: Internal involute spline data; Standard ANS B92.1-1996, class 5 (corrected m · X = 0.8; m = 2.1166)

Flat root side fit		mm	[in]
Number of teeth	z	12	
Pitch	DP	12/24	
Pressure angle		30°	
Pitch diameter	D	25.4	[1.0]
Major diameter	D _{ri}	28.0 ⁰ _{-0.1}	[1.10 ⁰ _{-0.004}]
Form diameter (min.)	D _{fi}	27.6	[1.09]
Minor diameter	D _i	23.0 ⁰ _{+0.033}	[0.9055 ⁰ _{+0.0013}]
Space width (circular)	L _o	4.308 ± 0.020	[0.1696 ± 0.0008]
Tooth thickness (circular)	S _o	2.341	[0.09217]
Fillet radius	R _{min.}	0.2	[0.008]
Maximum measurement between pins	l	17.62 ⁰ _{+0.15}	[0.700 ⁰ _{-0.006}]
Pin diameter	d	4.835 ± 0.001	[0.1903 ± 0.00004]



Motor or attached component drain connection

Use the drain line when pressure in the return line exceeds the permissible pressure on the shaft seal of the attached component.

Connect the drain line either at the:

- Motor drain connection
- Drain connection of the attached component

* Finished dimensions (when hardened).

If a drain line is fitted to the attached component, it must be possible for oil to flow freely between motor and attached component.

The drain line must be led to the tank in such a way that there is no risk of the motor and attached component being drained of oil when at rest.

The maximum pressure in the drain line is limited by the attached component and its shaft seal.

Notice

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- [About Danfoss Power Solutions](#)

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