



MOTORS

Technical Information

OMSW with brake nose orbital motors

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Chapter 1

General Information

Topics:

- *Speed, torque and output*

Speed, torque and output

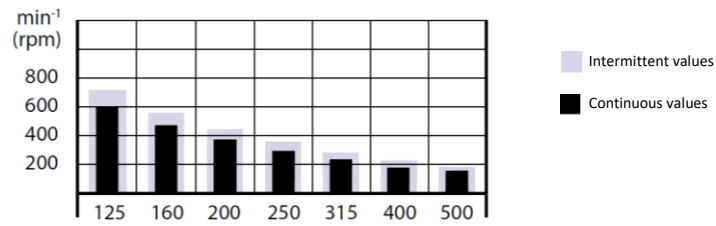


Figure 1 Max. Speed

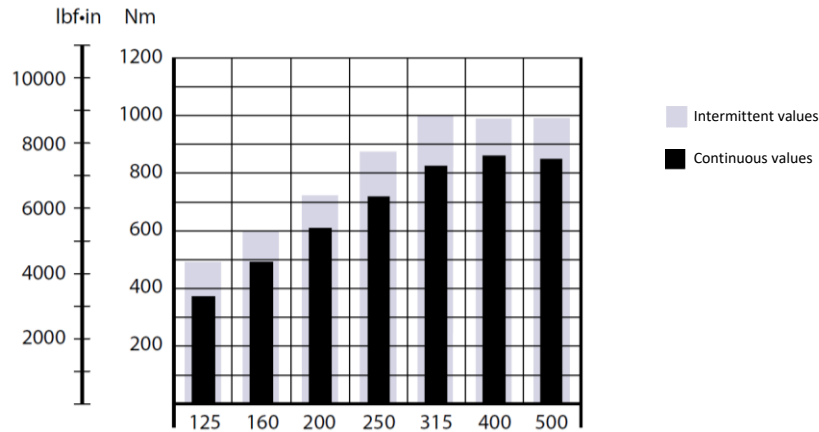


Figure 2 Max. torque

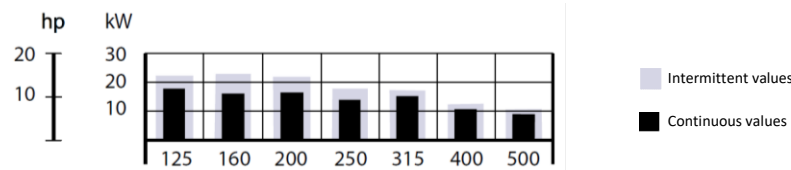


Figure 3 Max. Output

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.

Function diagrams for OMSW see [Function diagrams](#).

Chapter 2

Technical data

Topics:

- *Technical data for OMSW*
- *Max. permissible shaft seal pressure*
- *Oil flow in drain line*
- *Direction of shaft rotation*
- *Function diagrams*
- *Shaft version*
- *Port thread versions*

Technical data for OMSW

Type			OMSW						
Motor size			125	160	200	250	315	400	500
Geometric displacement	cm ³		125.7	159.7	200.0	250.0	314.9	393.0	488.0
	[in ³]		[7.67]	[9.75]	[12.20]	[15.26]	[19.22]	[23.98]	[29.78]
Maximum speed	min ⁻¹ [rpm]	cont.	600	470	375	300	240	190	155
		int.	720	560	450	360	285	230	185
Maximum torque	N•m [lbf•in]	cont.	375	490	610	720	825	865	850
			[3320]	[4340]	[5400]	[6370]	[7300]	[7660]	[7520]
		int. ¹⁾	490	600	720	870	1000	990	990
			[4340]	[5310]	[6370]	[7700]	[8850]	[8760]	[8760]
Maximum output	kW [hp]	cont.	18.0	16.5	16.5	14.5	15.0	11.0	9.0
			[24.1]	[22.1]	[22.1]	[19.4]	[20.1]	[14.8]	[12.1]
		int. ¹⁾	22.5	22.5	23.0	18.0	17.0	12.5	10.5
			[30.2]	[30.2]	[30.8]	[24.1]	[22.8]	[16.8]	[14.1]
Maximum pressure drop	bar [psi]	cont.	210	210	210	200	200	160	120
			[3050]	[3050]	[3050]	[2900]	[2900]	[2320]	[1740]
		int. ¹⁾	275	260	250	250	240	190	140
			[3990]	[3770]	[3630]	[3630]	[3480]	[2760]	[2030]
peak ²⁾	295	280	270	270	260	210	160		
	[4280]	[4060]	[3920]	[3920]	[3770]	[3050]	[2320]		
Maximum oil flow	l/min [US gal/min]	cont.	75	75	75	75	75	75	75
			[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
		int. ¹⁾	90	90	90	90	90	90	90
			[23.8]	[23.8]	[23.8]	[23.8]	[23.8]	[23.8]	[23.8]
Maximum starting pressure with unloaded shaft	bar [psi]		10	8	8	8	8	8	8
			[145]	[115]	[115]	[115]	[115]	[115]	[115]
Minimum starting torque	at maximum press drop cont. N•m [lbf•in]		290	370	470	560	710	710	660
			[2570]	[3270]	[4160]	[4960]	[6280]	[6280]	[5840]
	at maximum press drop int. ¹⁾ N•m [lbf•in]		380	460	560	700	850	840	770
			[3360]	[4070]	[4960]	[6200]	[7520]	[7430]	[6820]

Table 1 Technical data for OMSW

Max. pressure

Type			Max inlet pressure	Max return pressure with drain line
OMSW	bar [psi]	cont.	230	140
			[3340]	[2030]
		int. ¹⁾	290	175
			[4280]	[2540]
		peak ²⁾	300	210
			[4350]	[3050]

Table 2 Max pressure

- 1) Intermittent operation: the permissible values may occur for max. 10% of every minute.
- 2) Peak load: the permissible values may occur for maximum 1% of every minute.

Note:

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

Max. permissible shaft seal pressure

OMSW with check valves

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

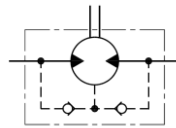


Figure 4 OMSW with check valves

OMSW with drain connection

Use of the drain connection:

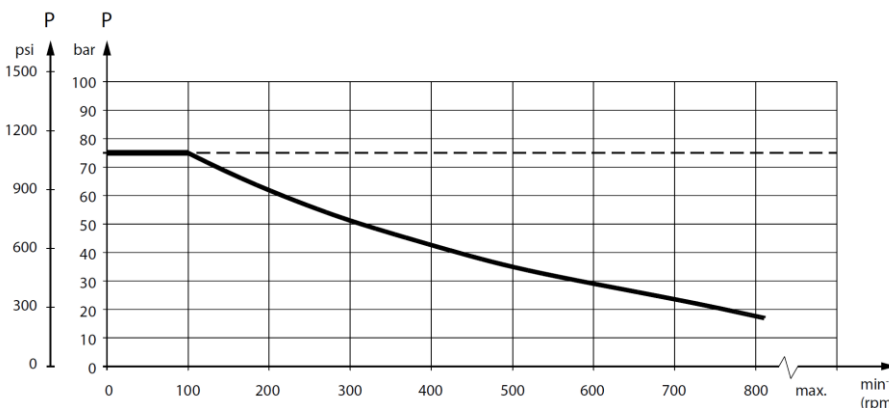
The shaft seal pressure equals the pressure in the drain line.

Without use of the drain connection:

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



Figure 5 OMSW with drain connection



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

Figure 6 Max pressure on shaft seal

Pressure drop in motor

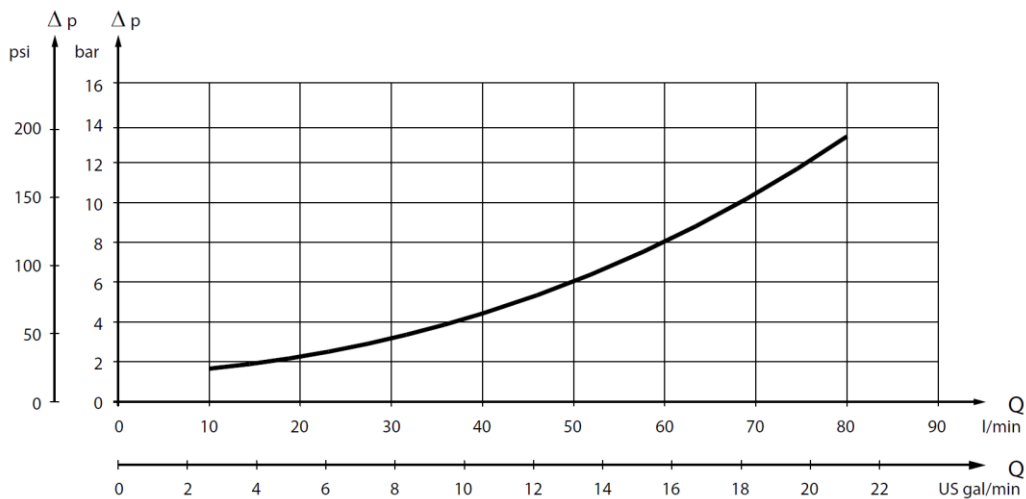


Figure 7 Pressure Drop in OMSW

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

Oil flow in drain line

The table below shows the max. oil flow in the drain line at a return pressure less than 5-10 bar [75-150 psi]. Pressure Viscosity Oil flow in drop drain line bar mm²/s l/min [psi] [SUS] [US gal/min]

Pressure drop bar [psi]	Viscosity mm ² /s [SUS]	Oil flow in drain line 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]

Table 3 Oil flow in drain line

Direction of shaft rotation

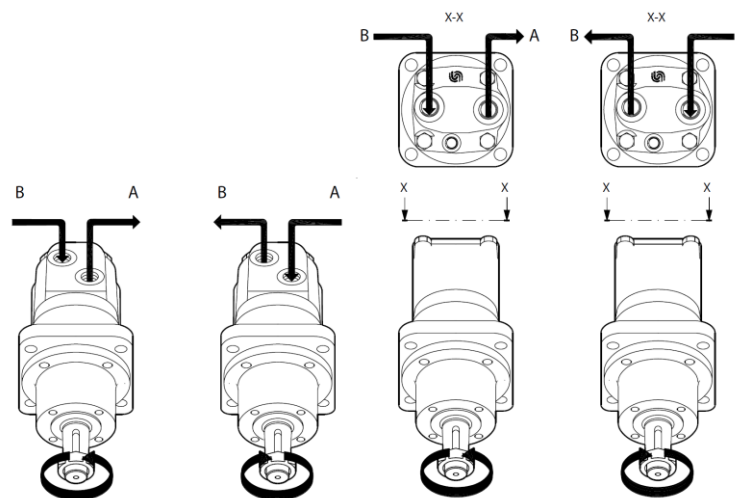


Figure 8 direction of shaft rotation

Permissible shaft load for OMSW

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.

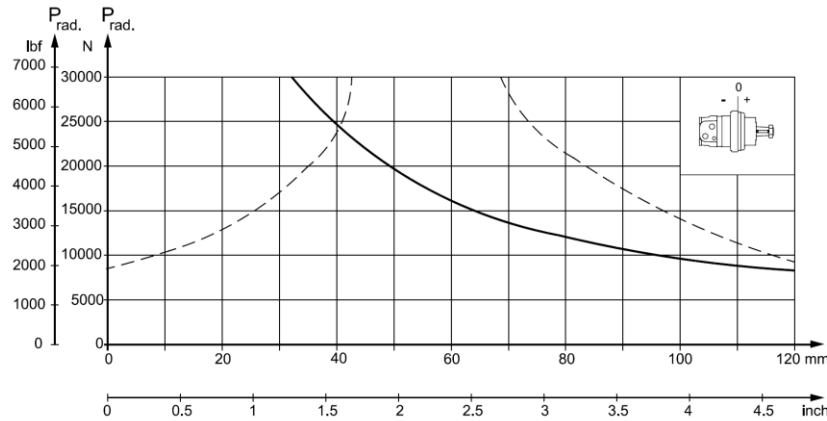


Figure 9 Mounting flange: Wheel / Shaft: All shaft types

Function diagrams

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]. For further explanation concerning how to read and use the function diagrams, please consult the paragraph "Selection of motor size" in the technical information "General"

Note:

Intermittent pressure drop and oil flow must not occur simultaneously.

OMS 125

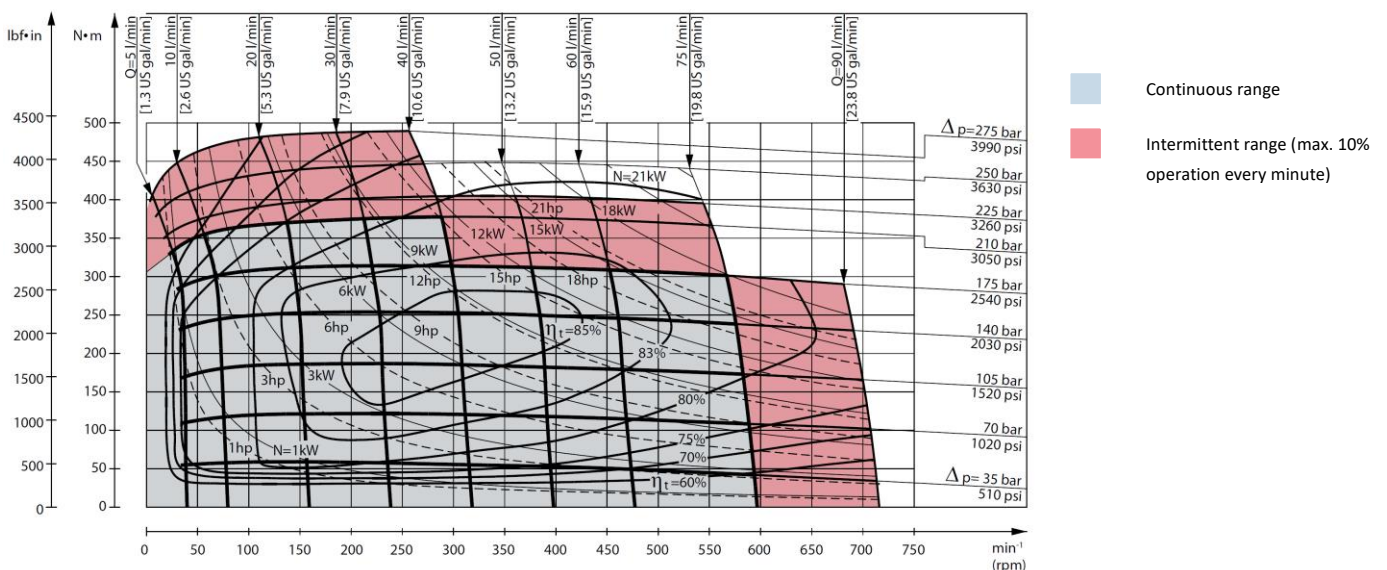


Figure 10 Function diagram OMS 125

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OMS 160

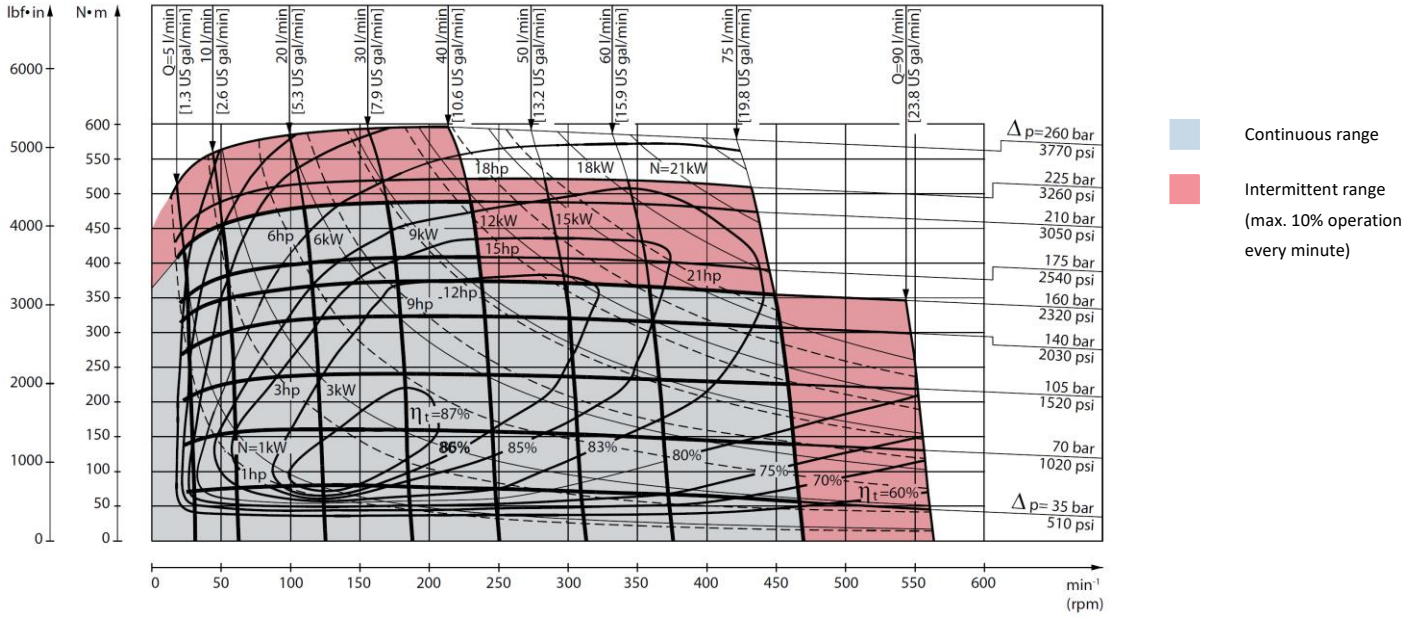


Figure 11 Function diagram OMS 160

OMS 200

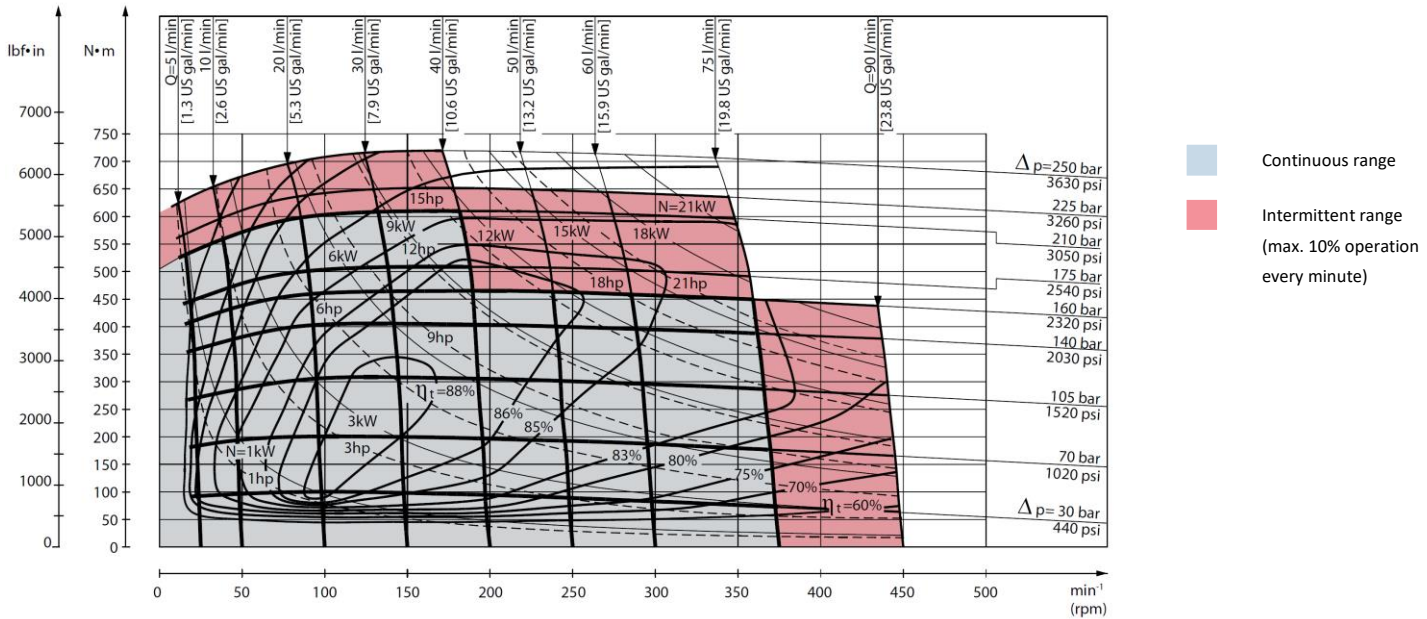


Figure 12 Function diagram OMS 200

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OMS 250

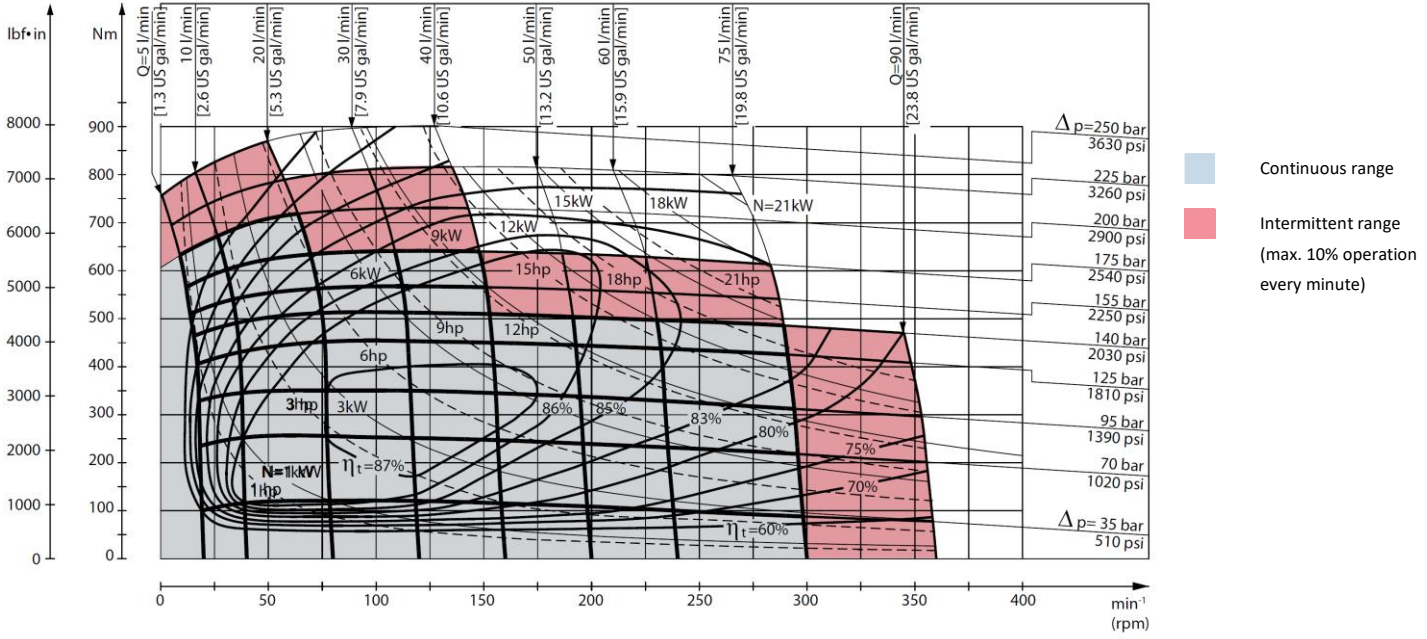


Figure 13 Function diagram OMS 250

OMS 315

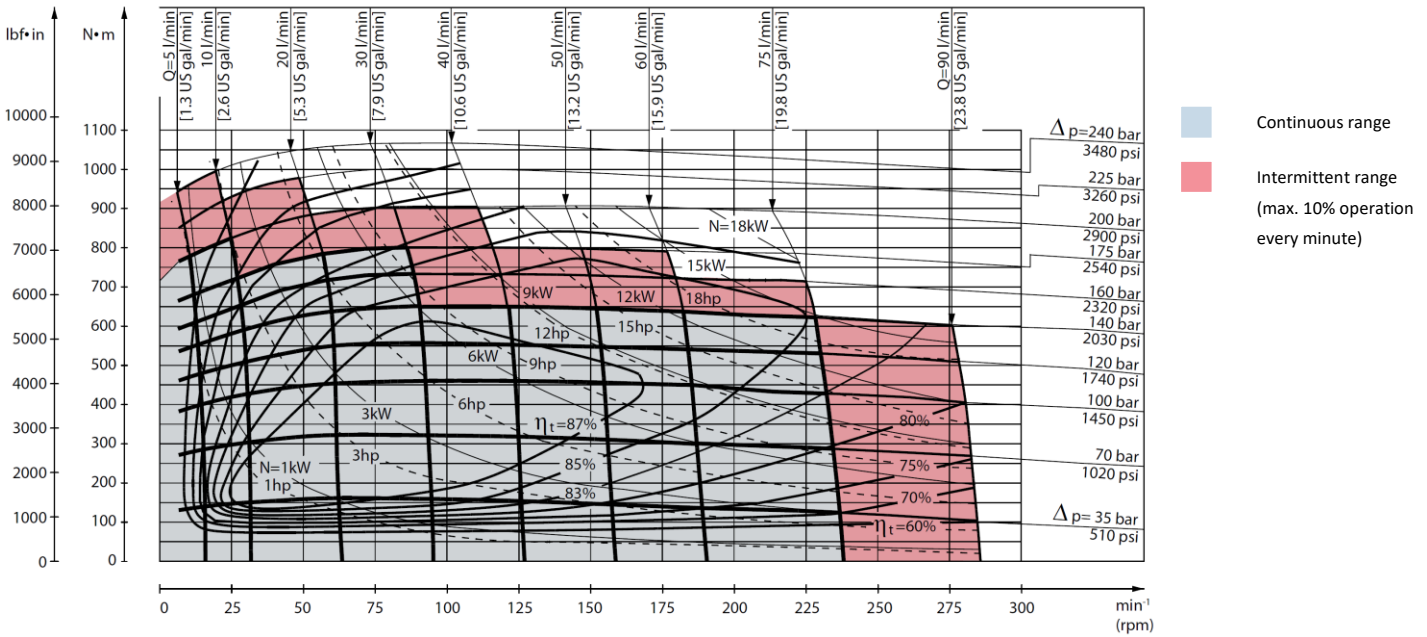


Figure 14 Function diagram OMS 315

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OMS 400

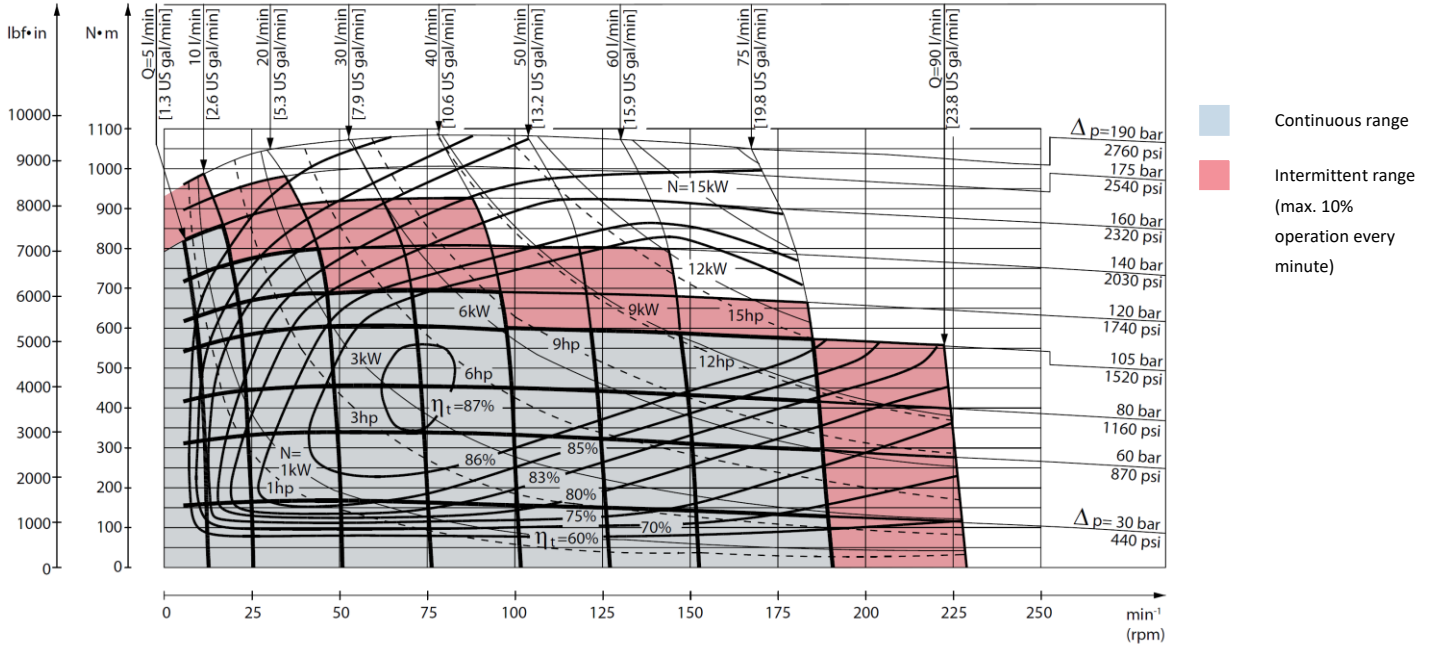


Figure 15 Function diagram OMS 400

OMS 500

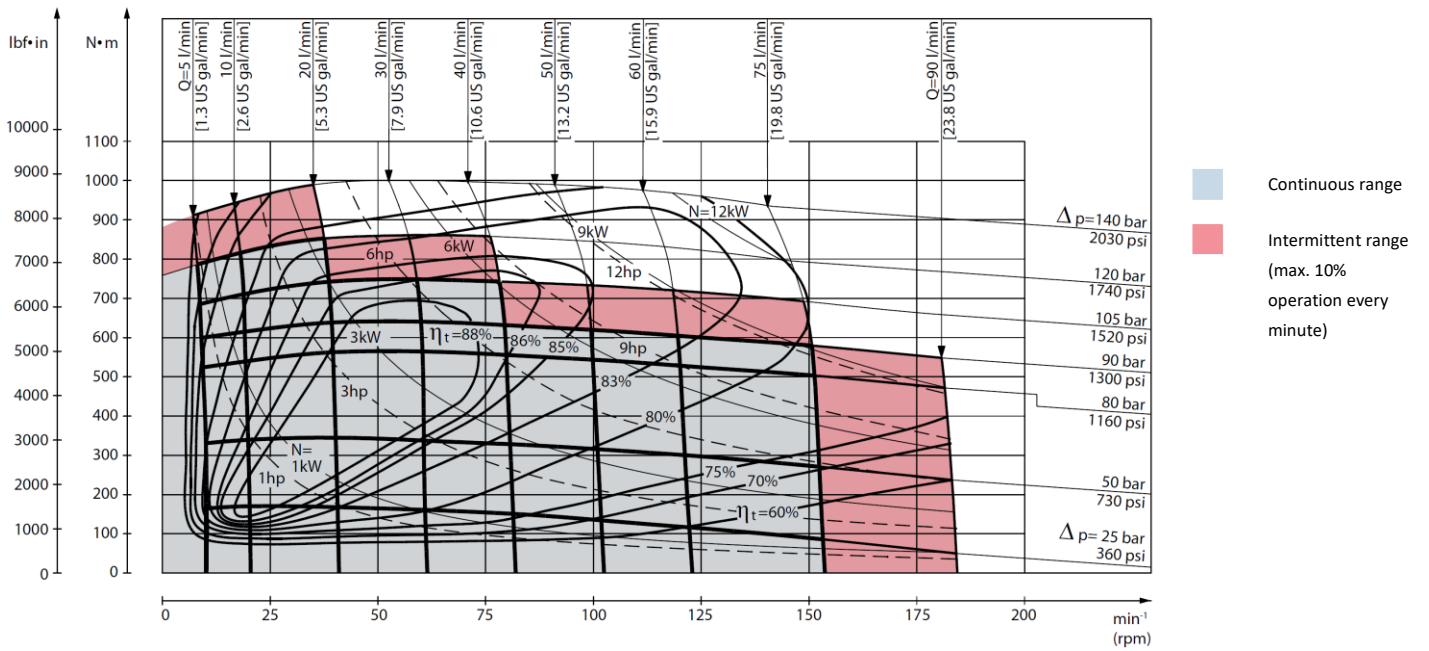


Figure 16 Function diagram OMS 500

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Shaft version

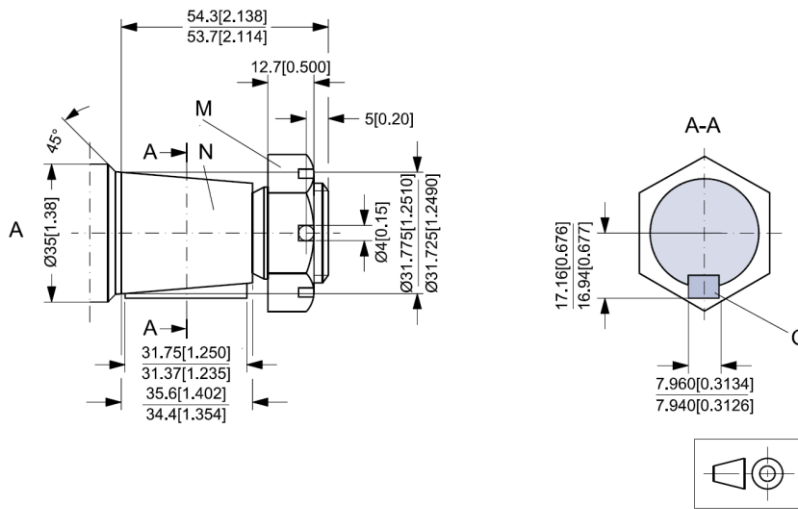


Figure 17 Shaft version

Port thread versions

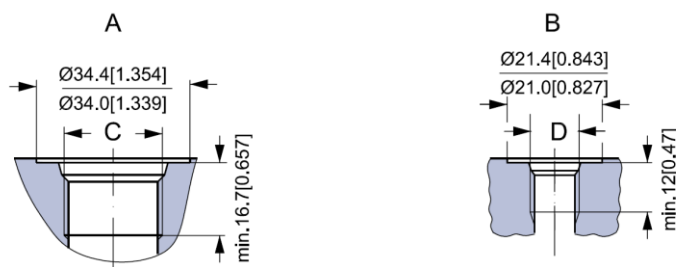


Figure 18 Port thread version

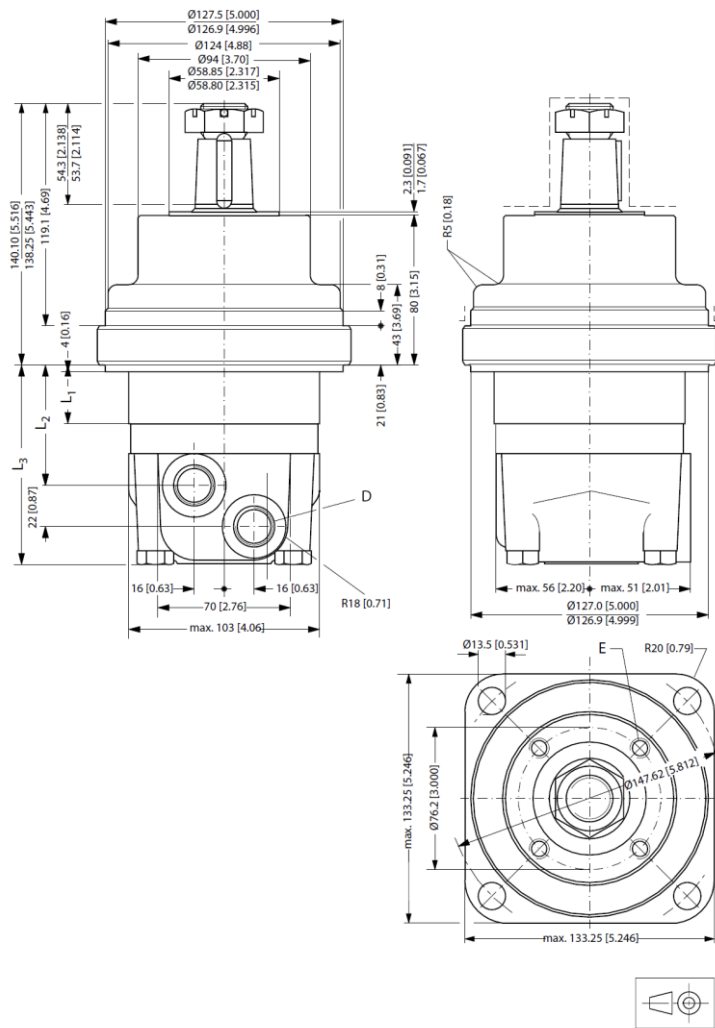
Chapter 3

Dimensions

Topics:

- *OMSW with side port and check valve*
- *OMSW with side port and drain connection*
- *OMSW with end port and check valve*
- *OMSW with end port and drain connection*

OMSW with side port and check valve



D: 7/8 - 14 UNF; 16.76 mm [0.66 in] deep
E: Thread for external brake 4 x 5/16 - 18 UNF;
 13 mm [0.51 in] deep

- - - Not painted

Please note:

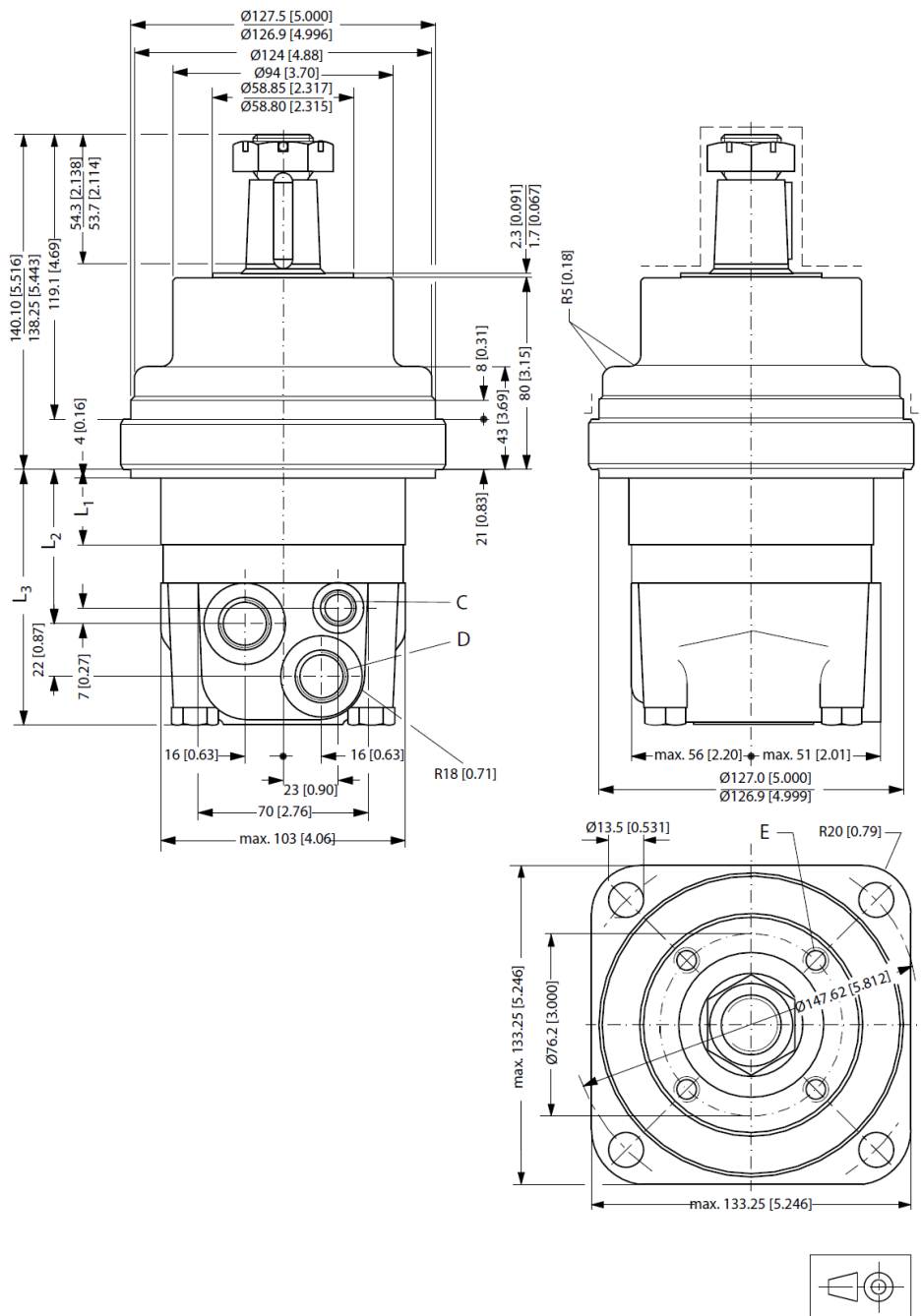
The stated dimension is without paint

Figure 19 OMSW with side port and check valve

Dimension mm [in]	Type						
	OMSW 125	OMSW 160	OMSW 200	OMSW 250	OMSW 315	OMSW 400	OMSW 500
L₁	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	68.4 [2.69]	68.4 [2.69]
L₂	58.8 [2.31]	64.8 [2.55]	71.8 [2.83]	80.5 [3.17]	91.8 [3.61]	105.4 [4.15]	105.4 [4.15]
L₃	100.2 [3.94]	106.2 [4.18]	113.2 [4.46]	121.9 [4.80]	133.2 [5.24]	146.8 [5.78]	146.8 [5.78]

Table 4 OMSW with side port and check valve dimensions

OMSW with side port and drain connection



- C:** 7/16 - 20 UNF; 11.43 mm [0.45 in] deep
- D:** 7/8 - 14 UNF; 16.76 mm [0.66 in] deep
O-ring boss port
- E:** Thread for external brake 4 x 5/16 - 18 UNF; 13 mm [0.51 in] deep

--- Not painted

Please note:
The stated dimension is without paint

Figure 20 OMSW with side port and drain connection

Dimension mm [in]	Type						
	OMSW 125	OMSW 160	OMSW 200	OMSW 250	OMSW 315	OMSW 400	OMSW 500
L₁	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	68.4 [2.69]	68.4 [2.69]
L₂	58.8 [2.31]	64.8 [2.55]	71.8 [2.83]	80.5 [3.17]	91.8 [3.61]	105.4 [4.15]	105.4 [4.15]
L₃	100.2 [3.94]	106.2 [4.18]	113.2 [4.46]	121.9 [4.80]	133.2 [5.24]	146.8 [5.78]	146.8 [5.78]

Table 5 OMSW with side port and drain connection dimensions

OMSW with end port and check valve

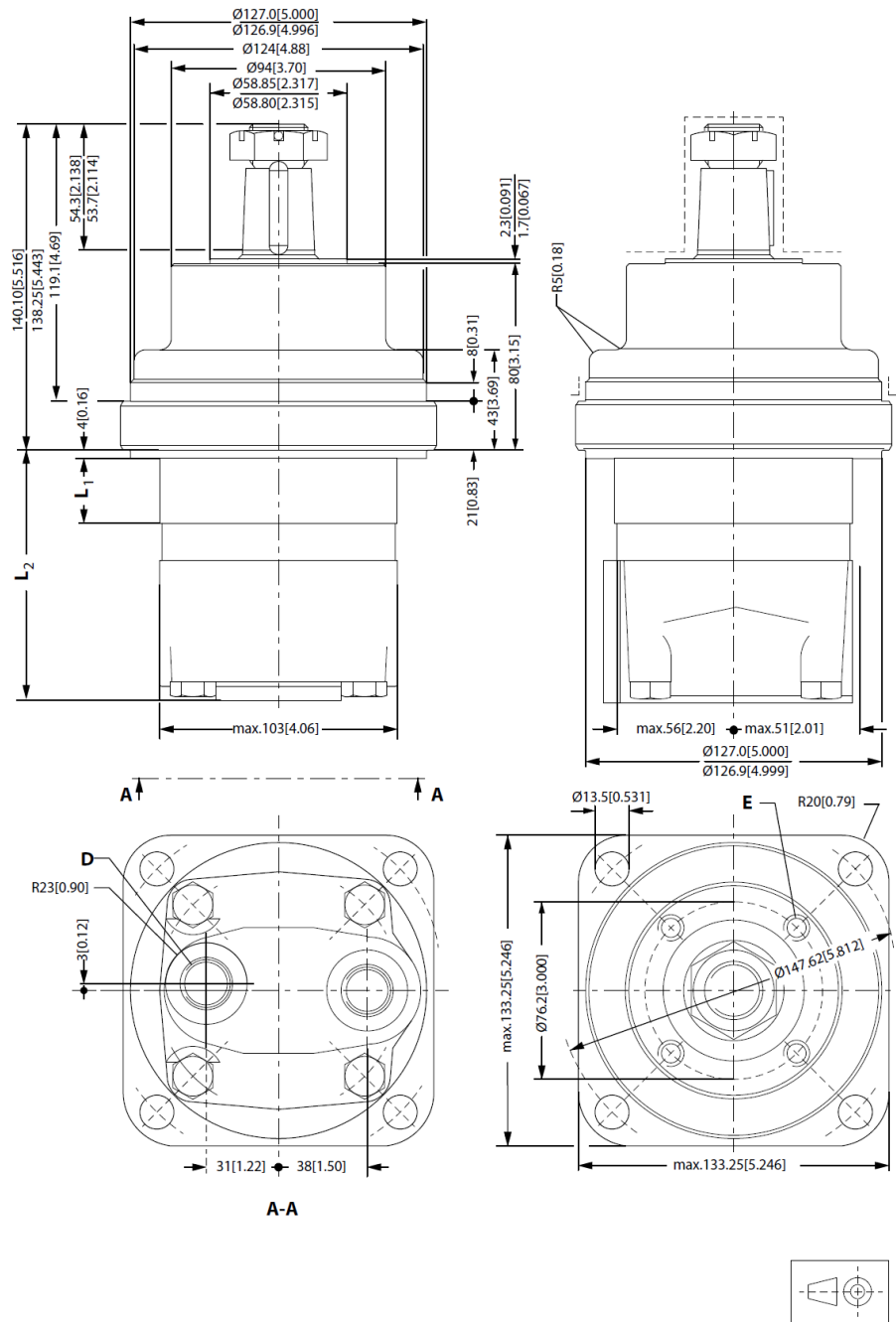


Figure 21 OMSW with end port and check valve

Dimension mm [in]	Type						
	OMSW 125	OMSW 160	OMSW 200	OMSW 250	OMSW 315	OMSW 400	OMSW 500
L ₁	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	68.4 [2.69]	68.4 [2.69]
L ₂	101.8 [4.01]	107.8 [4.24]	114.8 [4.52]	123.5 [4.86]	134.8 [5.31]	148.4 [5.84]	148.4 [5.84]

Figure 22 OMSW with end port and check valve dimensions

OMSW with end port and drain connection

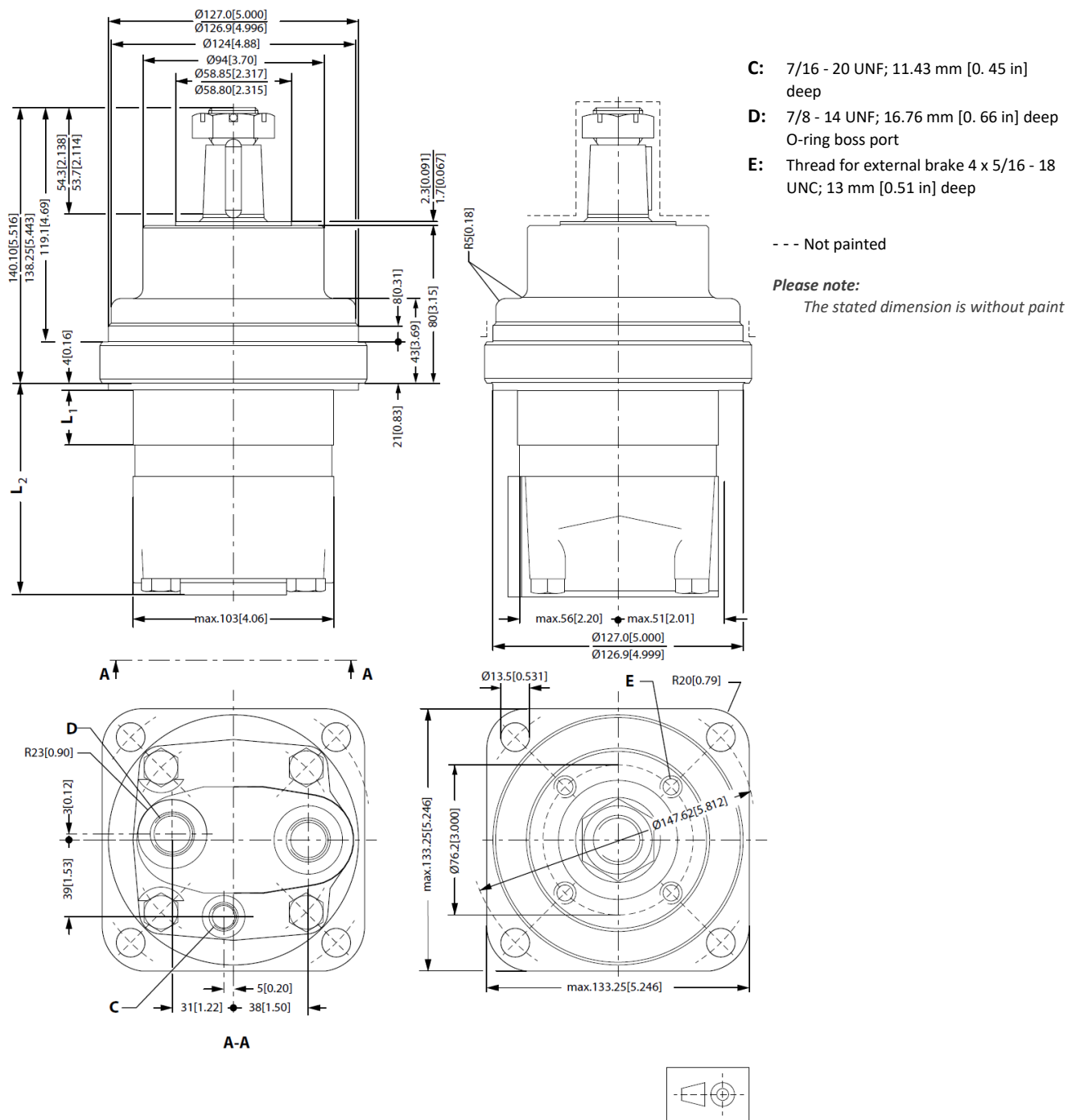


Figure 23 OMSW with end port and drain connection

Dimension mm [in]	Type						
	OMSW 125	OMSW 160	OMSW 200	OMSW 250	OMSW 315	OMSW 400	OMSW 500
L_1	21.8 [0.86]	27.8 [1.09]	34.8 [1.37]	43.5 [1.71]	54.8 [2.16]	68.4 [2.69]	68.4 [2.69]
L_2	101.8 [4.01]	107.8 [4.24]	114.8 [4.52]	123.5 [4.86]	134.8 [5.31]	148.4 [5.84]	148.4 [5.84]

Table 6 OMSW with end port and drain connection dimensions

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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