



MOTORS

Technical Information

Orbital Motors Type OMP X and OMR X

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

Topics:

- Orbital Motors Features
- Orbital Motors Application Areas
- Operating Parameters Diagrams

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

Operating Parameters Diagrams

The bar diagrams 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.

Note:

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].

Speed

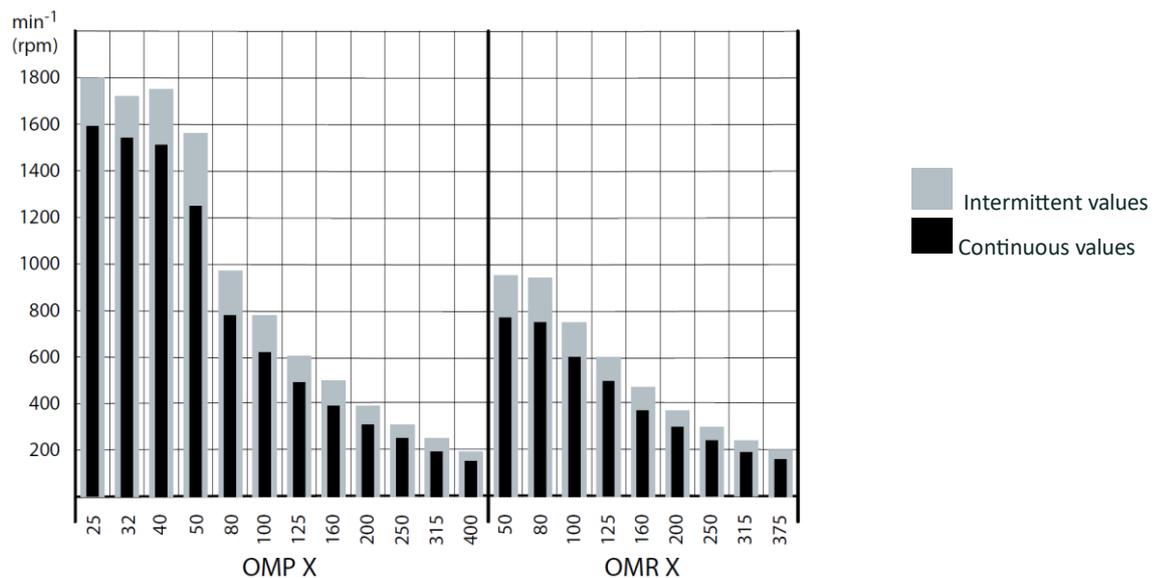


Figure 1 Maximum speed

Torque

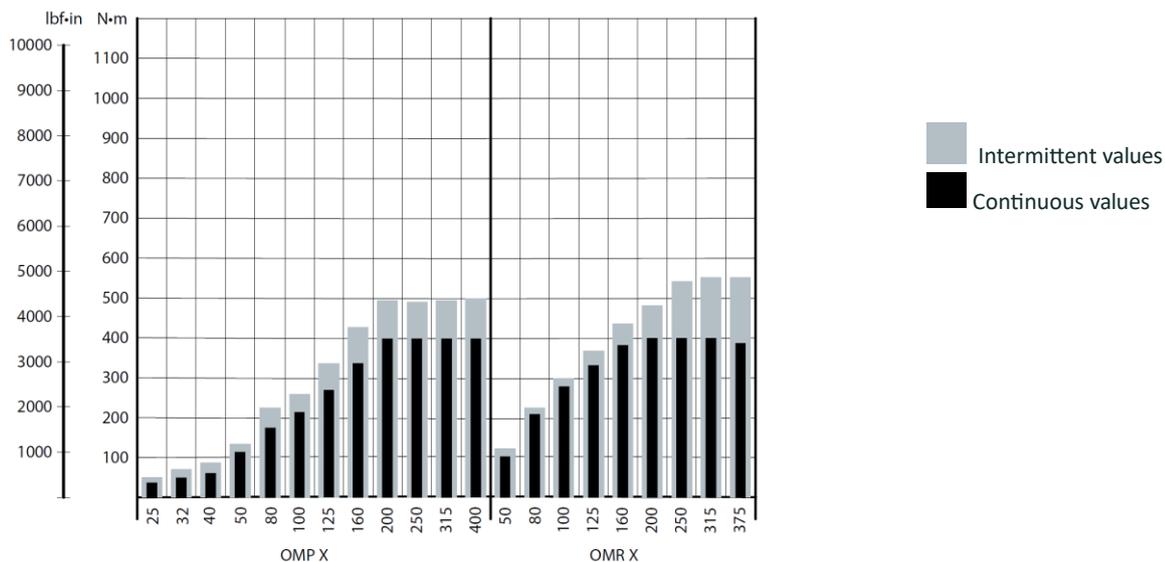


Figure 2 Maximum torque

Output

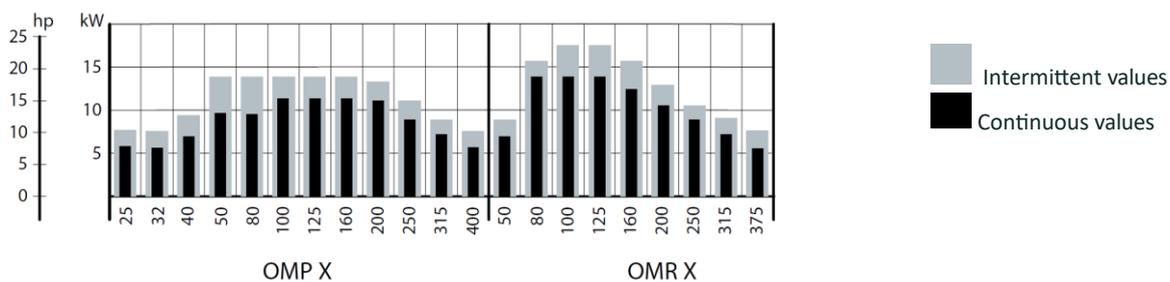


Figure 3 Maximum output

For more information about OMP X and OMPW X, please see [OMP X function diagrams](#).

For more information about OMR X, please see [OMR X function diagrams](#).

Chapter 2

OMP X Technical Data

Topics:

- OMP X motor specification
- High Pressure Shaft Seal in OMP X and OMR X motors
- Permissible shaft seal pressure
- Pressure drop in OMP X motor
- Oil flow in drain line
- Direction of shaft rotation: clockwise
- *Shaft loads*
- OMP X Model Code

OMP X motor specification

Type			OMP X											
Motor size			25	32	40	50	80	100	125	160	200	250	315	400
Geometric displacement	cm ³		25.0	32.0	40.0	48.6	77.8	97.3	125	155.7	194.6	242.3	306.1	389.2
	[in ³]		[1.53]	[1.96]	[2.45]	[2.97]	[4.76]	[5.95]	[7.65]	[9.53]	[11.91]	[14.83]	[18.73]	[23.82]
Maximum speed	min ⁻¹	cont.	1600	1560	1500	1230	770	615	480	385	310	250	195	155
	[rpm]	int. ¹⁾	1800	1720	1750	1550	960	770	600	480	385	310	245	190
Maximum torque	N•m	cont.	40	50	52	110	170	210	270	335	400	400	400	400
			[355]	[445]	[460]	[975]	[1505]	[1860]	[2390]	[2965]	[3540]	[3540]	[3540]	[3540]
	[lbf•in]	int. ¹⁾	50	70	90	125	220	260	335	425	495	490	495	500
			[445]	[620]	[795]	[1105]	[1950]	[2300]	[2965]	[3760]	[4380]	[4335]	[4380]	[4425]
Maximum output	kW	cont.	5.4	6.7	7.0	9.8	9.8	11.2	11.2	11.2	10.9	8.4	7.0	5.3
			[7.2]	[9.0]	[9.4]	[13.1]	[13.1]	[15.0]	[15.0]	[15.0]	[14.5]	[11.3]	[9.4]	[7.0]
	[hp]	int. ¹⁾	7.5	9.3	11.2	14.0	14.0	14.0	14.0	14.0	13.7	10.9	8.8	6.7
			[10.0]	[12.5]	[15.0]	[18.8]	[18.8]	[18.8]	[18.8]	[18.8]	[18.3]	[14.5]	[11.7]	[8.9]
Maximum pressure drop.	bar	cont.	115	115	115	160	160	160	160	160	155	120	100	75
			[1670]	[1670]	[1670]	[2320]	[2320]	[2320]	[2320]	[2320]	[2250]	[1740]	[1450]	[1090]
	[psi]	int. ¹⁾	160	160	160	200	200	200	200	200	195	155	125	95
			[2320]	[2320]	[2320]	[2900]	[2900]	[2900]	[2900]	[2900]	[2830]	[2250]	[1810]	[1380]
Maximum oil flow	l/min	cont.	40	50	60	60	60	60	60	60	60	60	60	60
			[10.6]	[13.2]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]
	[US gal/ min]	int. ¹⁾	45	55	70	75	75	75	75	75	75	75	75	75
			[11.9]	[14.5]	[18.5]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]
Maximum starting pressure with unloaded shaft	bar		10	10	10	10	10	10	9	7	5	5	5	5
		[psi]	[145]	[145]	[145]	[145]	[145]	[145]	[130]	[100]	[75]	[75]	[75]	[75]
Minimum starting torque	N•m	cont.	35	45	55	155	135	190	240	320	375	375	380	370
			[310]	[400]	[485]	[1370]	[1200]	[1680]	[2125]	[2830]	[3320]	[3320]	[3365]	[3275]
	[lbf•in]	int. ¹⁾	50	65	75	190	170	240	300	400	470	480	475	470
			[440]	[575]	[660]	[1680]	[1510]	[2125]	[2655]	[3540]	[4160]	[4250]	[4205]	[4160]

Table 1 OMP X motor specification

- 1) Maximum torque values for the different output shafts can be found in *OMP X and OMR X shaft versions*.
- 2) Intermittent operation, permissible values may occur for max. 10% of every minute.

Maximum pressure

Type			Maximum inlet pressure	Maximum return pressure with drain line
OMP X	bar [psi]	cont.	200 [2900]	200 [2900]
		int.	225 [3260]	225 [3260]

Table 2 Pressure limits

High Pressure Shaft Seal in OMP X and OMR X motors

OMP X and OMR X motors feature options with High Pressure Shaft Seal (HPS), with check valves and with or without drain connection.

OMP X/ OMR X with drain connection

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

OMP X/OMR X without drain connection

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

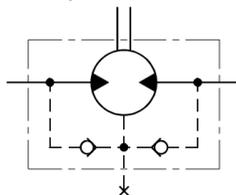


Figure 4 OMP X/ OMR X without drain connection

Permissible shaft seal pressure

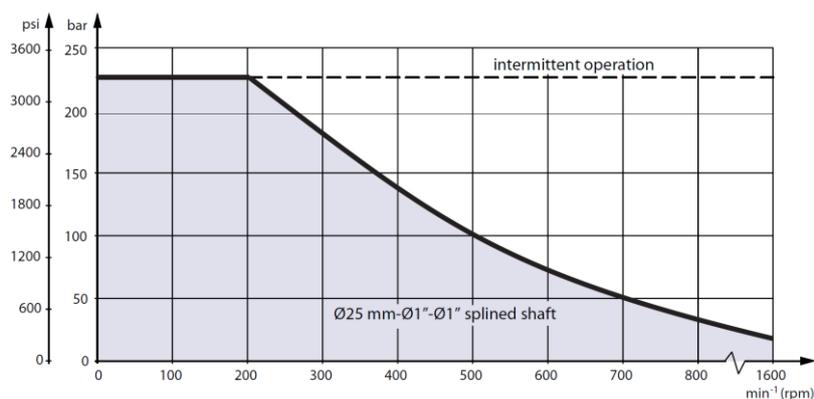
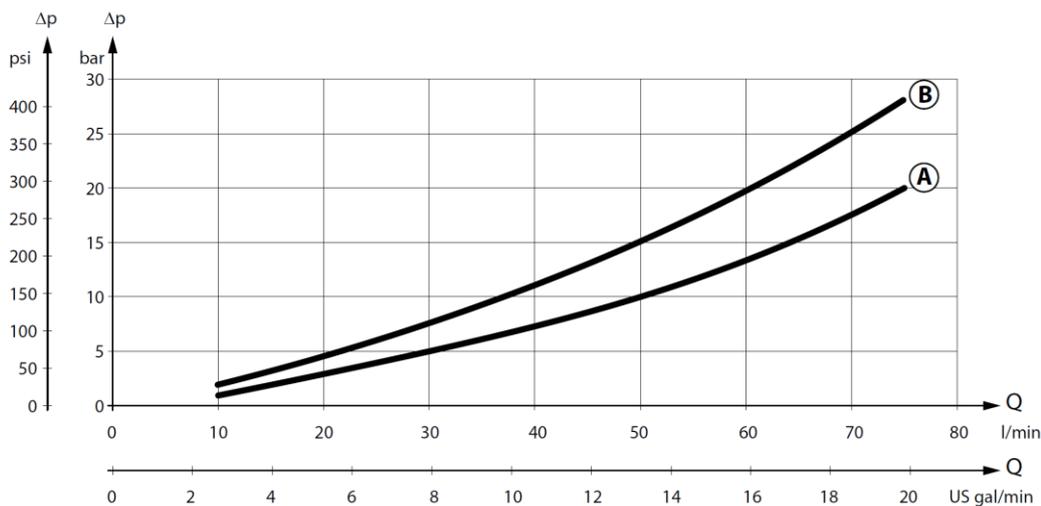


Figure 5 OMP X Maximum permissible shaft seal pressure

Pressure drop in OMP X motor

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



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

Figure 6 OMP X Motors Pressure drop

Oil flow in drain line

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

Table 3 Max. oil flow in the drain line at return pressure less 5-10 bar

Direction of shaft rotation: clockwise

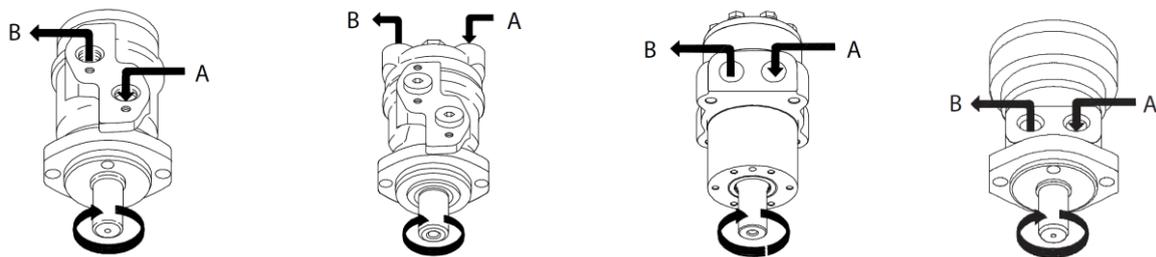


Figure 7 OMP X Direction of shaft rotation: clockwise

Shaft loads

OMP X and OMR X

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	Shaft version	Metric formula	Imperial formula
2-hole oval flange (European version)	25 mm cylindrical 28.5 mm tapered 1 in cylindrical 1 in splined	$\frac{800}{n} \cdot \frac{250000 N^*}{95 + L}$	$\frac{800}{n} \cdot \frac{2215 lbf^*}{3.74 + L}$
Square flange ** 2-hole oval flange (US)	25 mm cylindrical 1 in splined	$\frac{800}{n} \cdot \frac{250000 N^*}{101 + L}$	$\frac{800}{n} \cdot \frac{2215 lbf^*}{3.98 + L}$

Table 4 OMP X and OMR X Permissible shaft load (P_R) in N [lbf]

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

** For both European and US-version

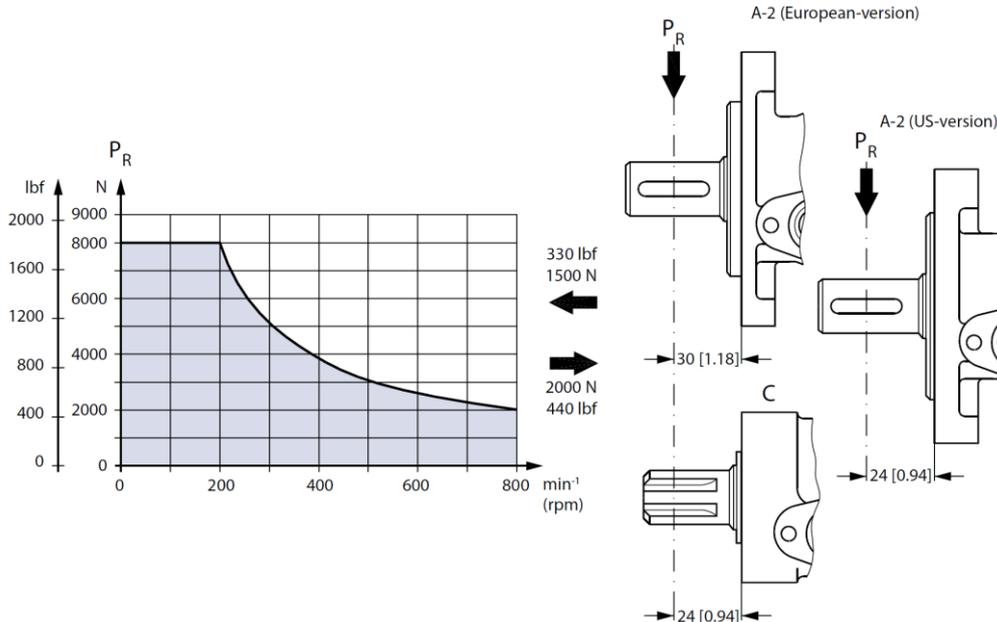


Figure 8 OMP X and OMR X shaft loads

The curve shows the relation between P_R and n :

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

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

OMP X N and OMR X N

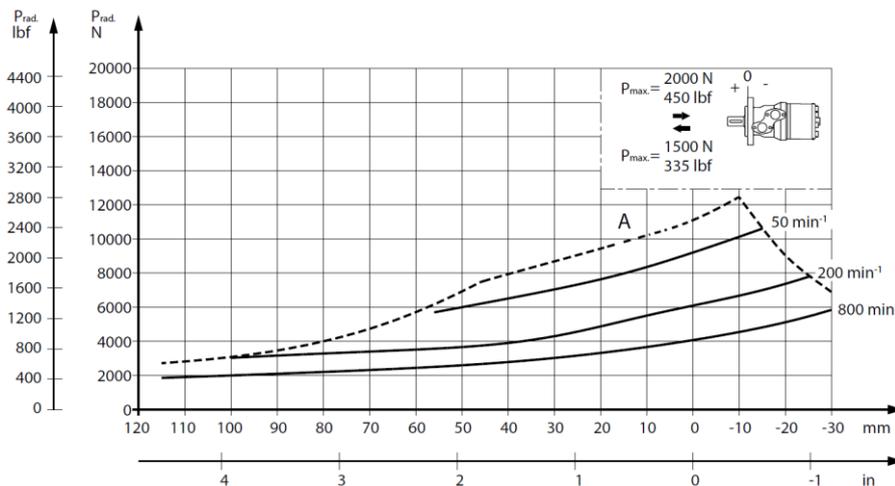


Figure 9 OMP X N shaft loads

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

OMPW X with slide bearings

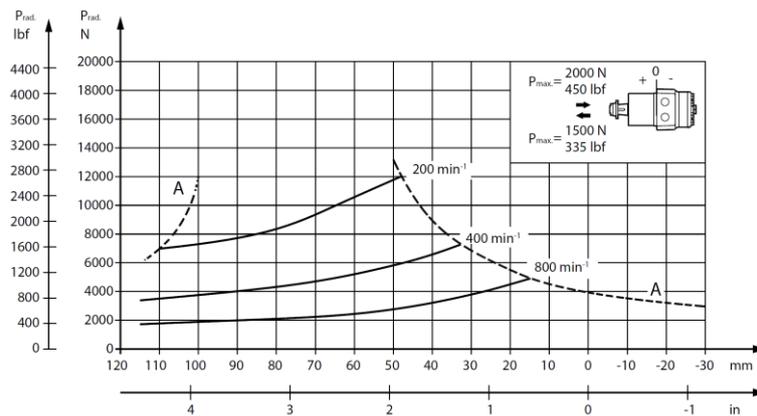


Figure 10 OMPW X with slide bearings shaft loads

The output shaft on OMPW X can be offered in slide bearings similar to the other OMP X 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 B10 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.

OMPW X N with needle bearings

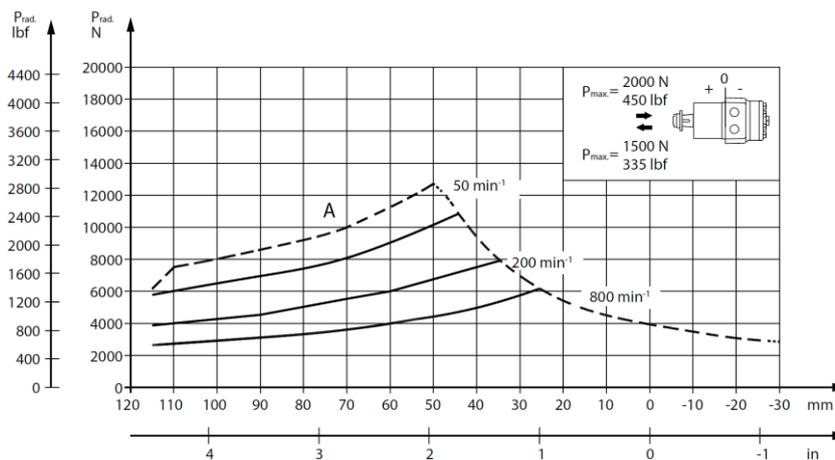


Figure 11 OMPW X with needle bearings shaft loads

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

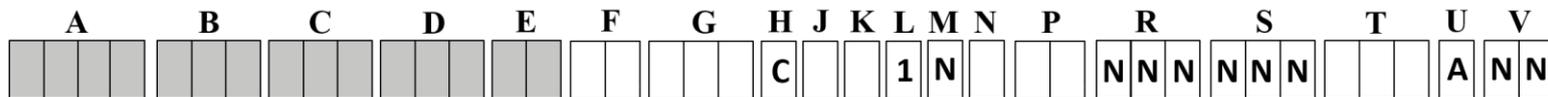
Curve A indicates the max. radial shaft load. Any shaft load exceeding the values quoted in curve A will involve risk of breakage.

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.

OMP X Model Code

The coding system has been developed to identify the configuration options for the OMP X motors. The model code begins with the motor family and the remaining fields are filled in to configure the motor with the desired features, all fields must be filled in.

Example: OMPX-200-NNN-B11-SO-A3-A11-C-E-B-1-N-N-NN-NNN-NNN-A-NN.



A – Main motor family

OMPX OMP X motor series

B – Motor displacement

Code	Displacement, cm ³ /rev [in ³ /rev]	Code	Displacement, cm ³ /rev [in ³ /rev]
025	25.0 [1.53]	100	97.3 [5.94]
032	32.0 [1.95]	125	125.0 [7.63]
036	36.0 [2.20]	160	155.7 [9.50]
040	40.0 [2.44]	200	194.6 [11.88]
050	48.6 [2.97]	250	242.3 [14.79]
060	59.1 [3.61]	315	306.1 [18.68]
080	77.8 [4.75]	400	389.1 [23.74]

C – Motor type (Align with options: D, E and F)

NNN	Standard motor
A10	Wheel motor
B13	Standard motor with needle bearing
L11	Wheel motor with needle bearing

D – Mounting type (Align with options: E and F)

B11	A2 flange; 82.5 Dia x 8 Pilot; 106.4 Dia. B.C.
B12	A2 flange; 82.5 Dia x 2.6 Pilot; 106.4 Dia. B.C.
C10	C flange; 44 Dia x 2.6 Pilot; 83 Dia. B.C.; 3/8-16 mounting
C11	C flange int.; PD44-BC83-met
C20	W flange; PD80-BC103

E – Port type (Align with options: D, F and G)

SO	Side port – Offset
SA	Side port – Aligned
EA	End port

F – Main ports thread type

A3	G 1/2
A8	7/8-14 UNF
A9	1/2-14 NPTF
B7	M22 x 1,5 according to ISO 6149
C1	Manifold

G – Shaft type (Align with options: C, F and K)

A11	<i>Cylindrical 25 mm with 8 mm key; M8 hole in shaft end</i>
B11	<i>Cylindrical 1 inch with 1/4 in key; M8 hole in shaft end</i>
B12	<i>Cylindrical 1 inch with 1/4 in key; 1/4-20UNC hole in shaft end</i>
B13	<i>Cylindrical 1 inch with Woodruff key; 1/4-20UNC hole in shaft end</i>
B14	<i>Cylindrical 1 inch with cross hole 10.3; 1/4-20UNC hole in shaft end</i>
B15	<i>Cylindrical 1 inch with cross hole 8.0</i>
C11	<i>Spline 7/8" – 13T</i>
C13	<i>1 inch 6B Spline; M8 hole in shaft end</i>
C14	<i>1 inch 6B Spline; 1/4-20UNC hole in shaft end</i>
E10	<i>Tapered 28.5 mm – 1:10</i>
F10	<i>Tapered 1" – 1:8, WK3/16x3/4</i>

H – Shaft seal

C	<i>High pressure shaft seal - NBR</i>
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J- Dust seal

B	<i>Dust seal integrated in shaft seal plus seal guard</i>
E	<i>Dust seal integrated in shaft seal</i>

K – Drain port (Align with options: F and G)

B	<i>G1/4</i>
D	<i>7/16 – 20 UNF</i>
K	<i>M12 x 1,5 according to ISO 6149</i>
M	<i>No drain port due to EMD</i>

L – Check valve

1	<i>Yes</i>
----------	------------

M – Brake release port

N	<i>None</i>
----------	-------------

N- Speed sensor

N	<i>None</i>
A	<i>Prepared for EMD speed sensor</i>

P - Painting

NN	<i>No paint</i>
AA	<i>Black, 9005; Corr. class C3; Standard covering</i>
AB	<i>Black, 9005; Corr. class C3; Surface covering</i>

R - Valve option

NNN	<i>None</i>
------------	-------------

S – Specific visible features

NNN	<i>None</i>
------------	-------------

T – Specific non-visible features

NNN	<i>None</i>
G10	<i>Gear set – Free running</i>

U – Packaging

A	<i>Single pack</i>
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V – Name tags: Motor and box

NN	<i>Name tag</i>
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Chapter 3

OMP X function diagrams

Topics:

- OMP X 25
- OMP X 32
- OMP X 40
- OMP X 50
- OMP X 80
- OMP X 100
- OMP X 125
- OMP X 160
- OMP X 200
- OMP X 250
- OMP X 315
- OMP X 400

OMP X 25

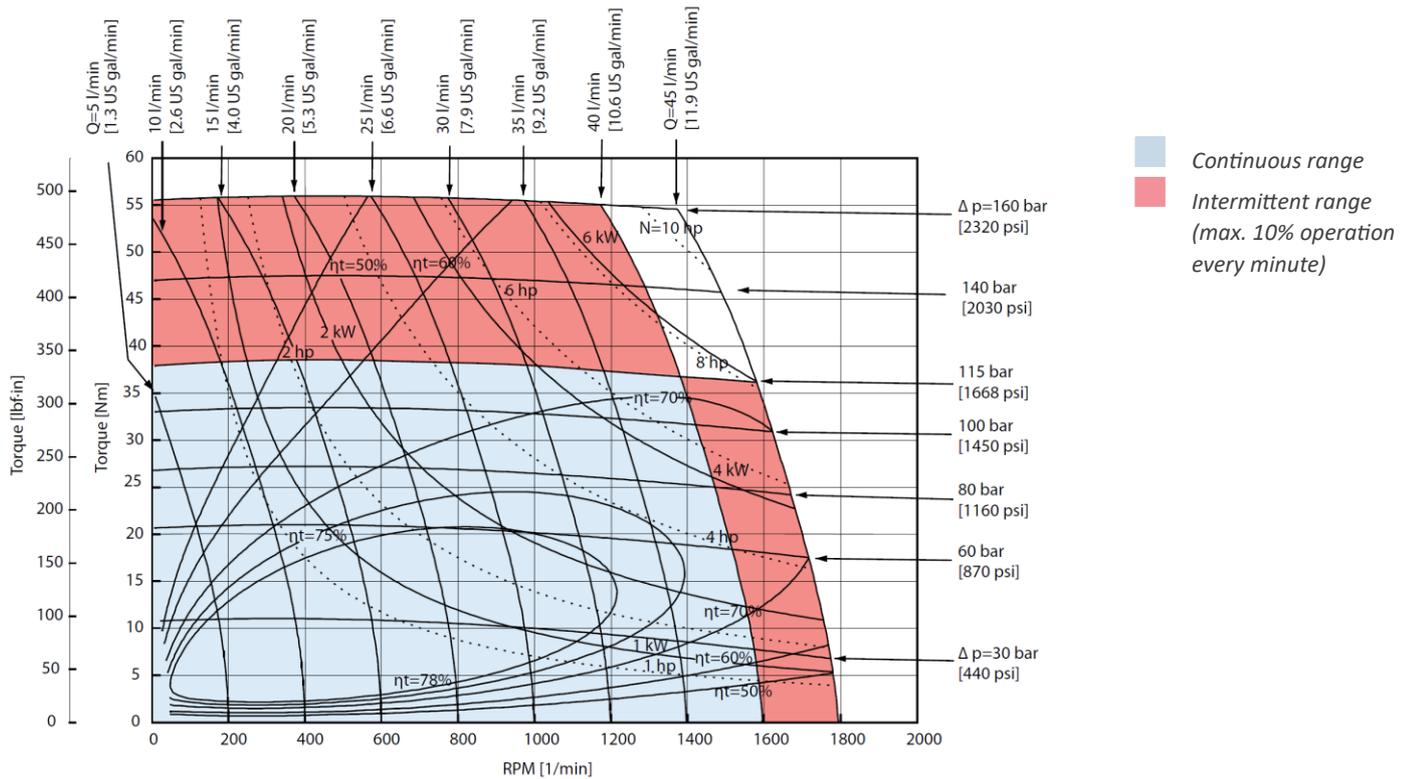


Figure 12 OMP X 25 function diagram

OMP X 32

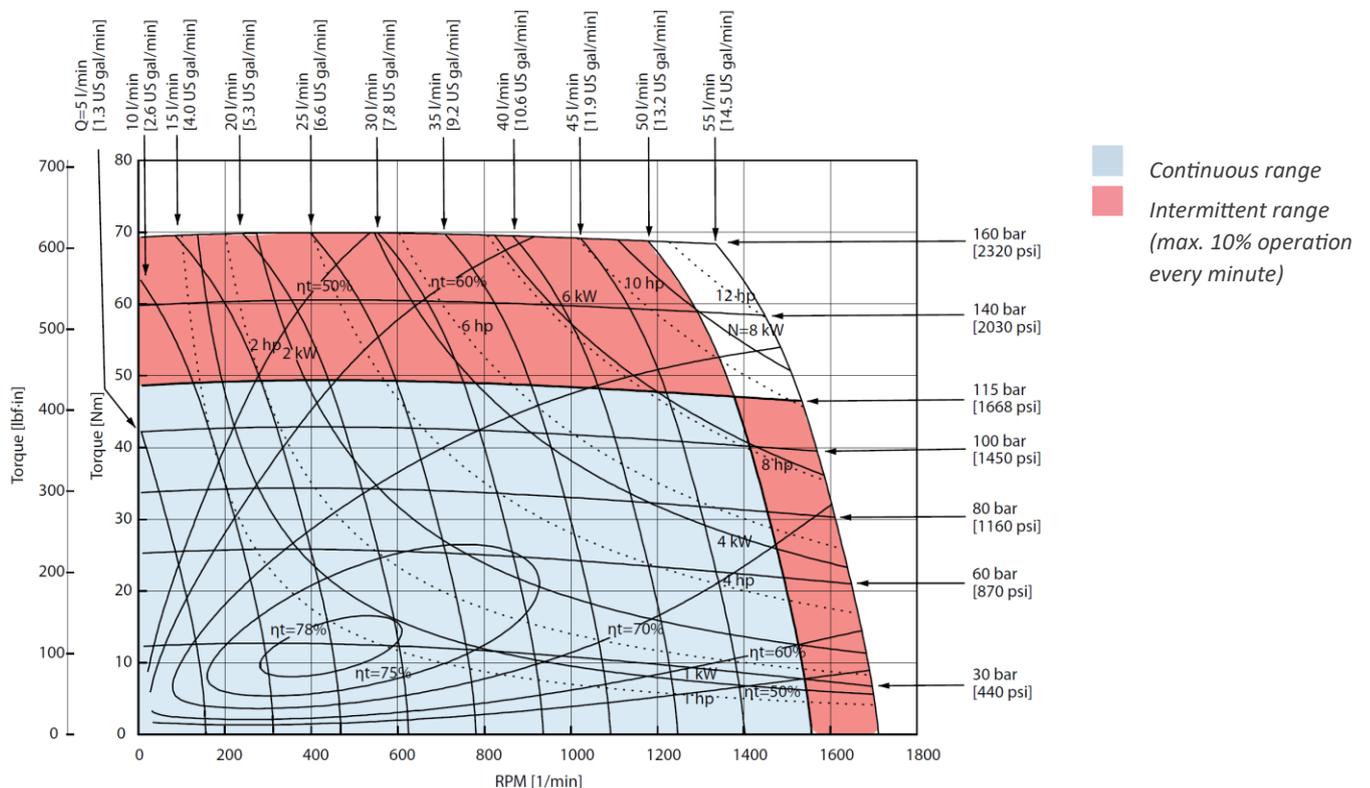


Figure 13 OMP X 32 function diagram

OMP X 40

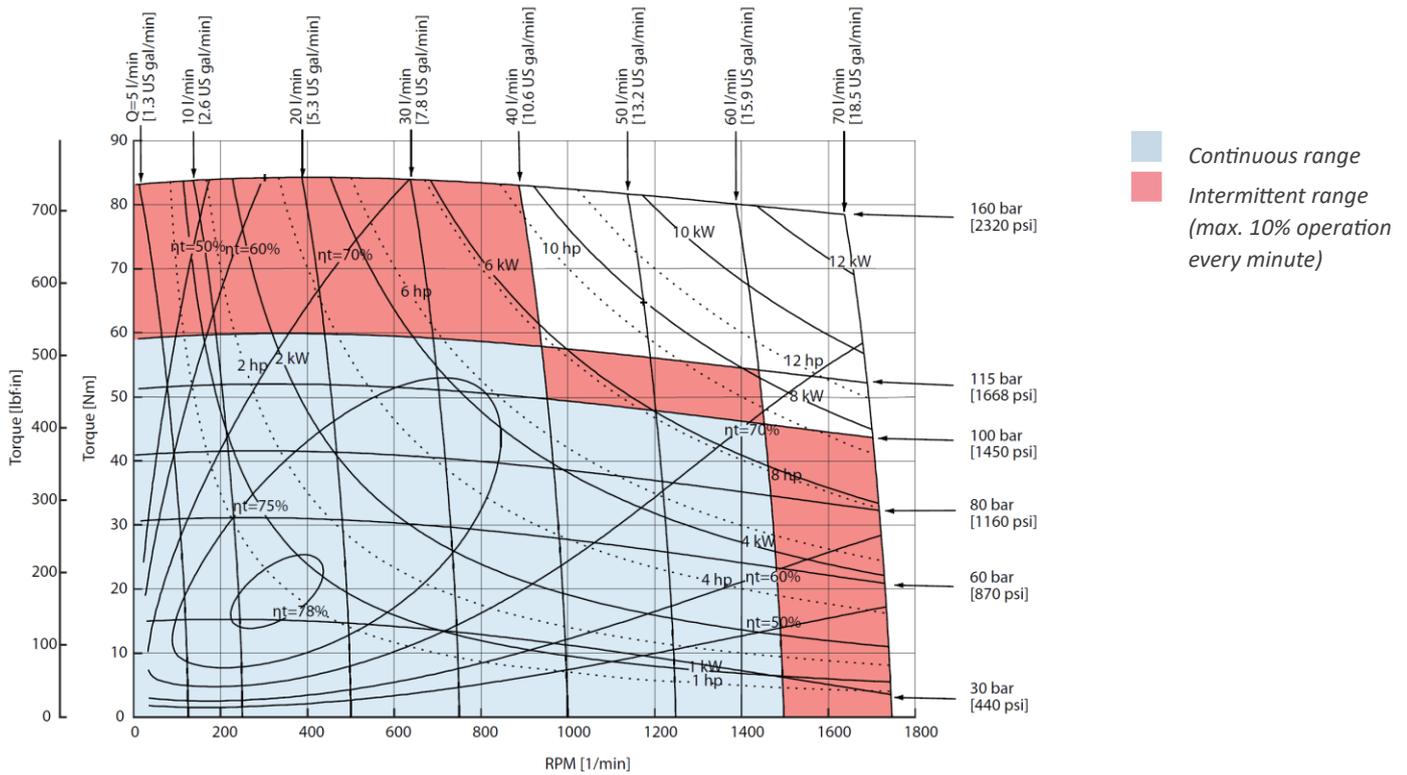


Figure 14 OMP X 40 function diagram

OMP X 50

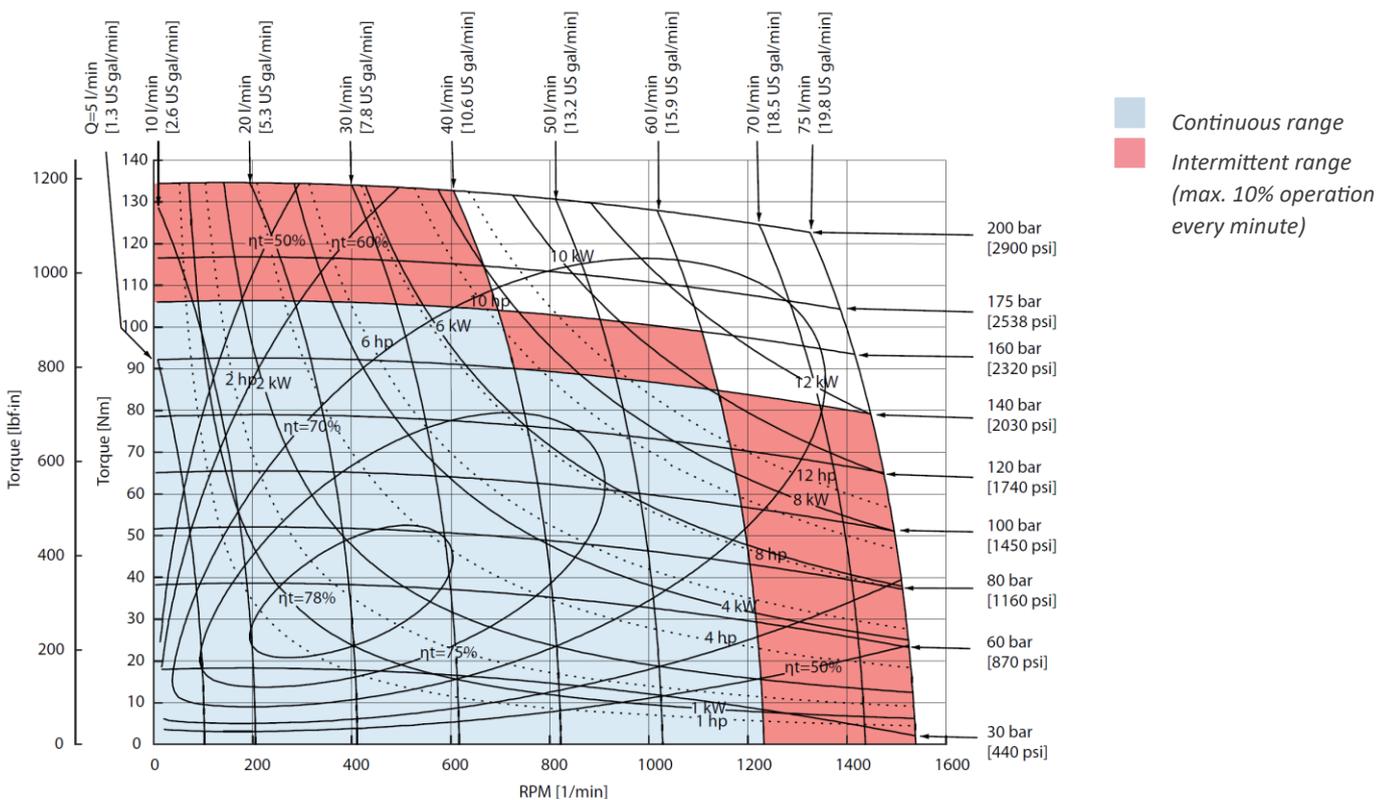
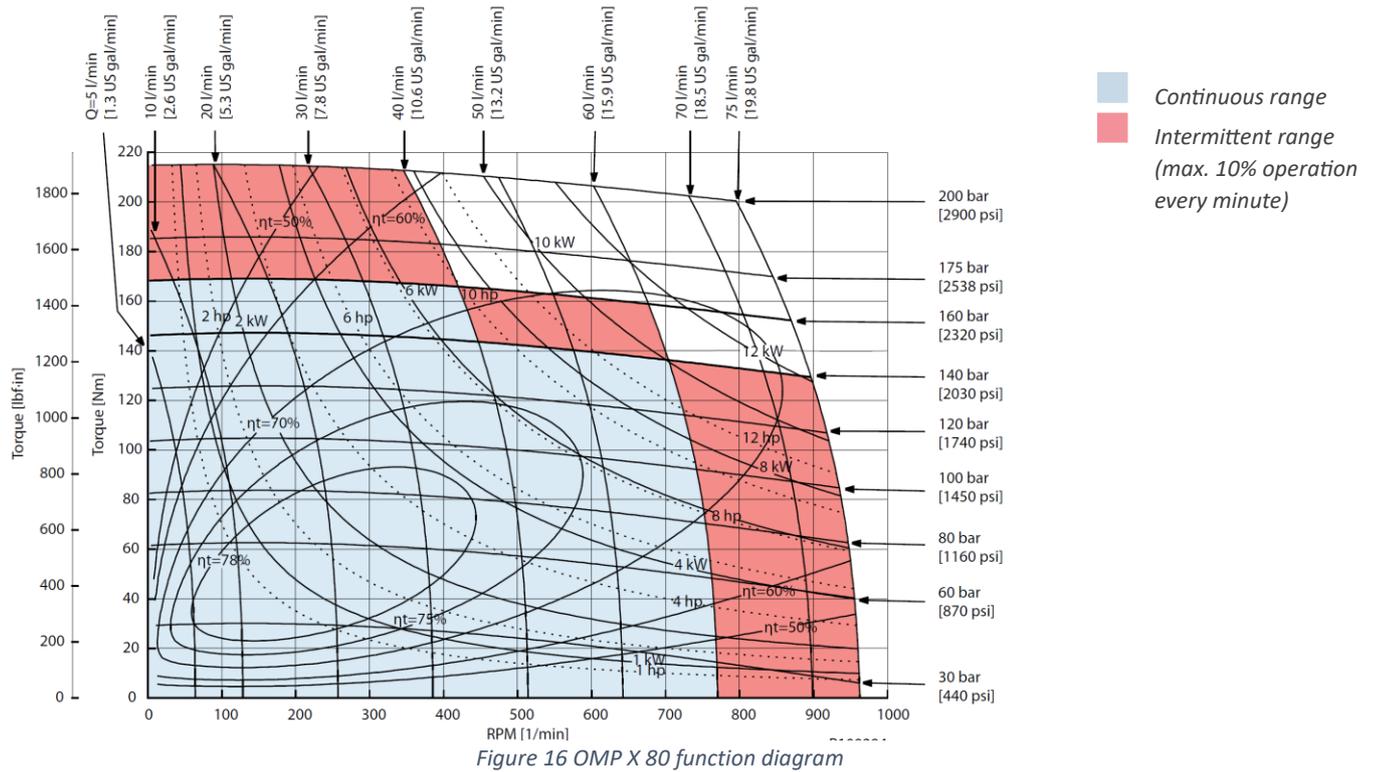
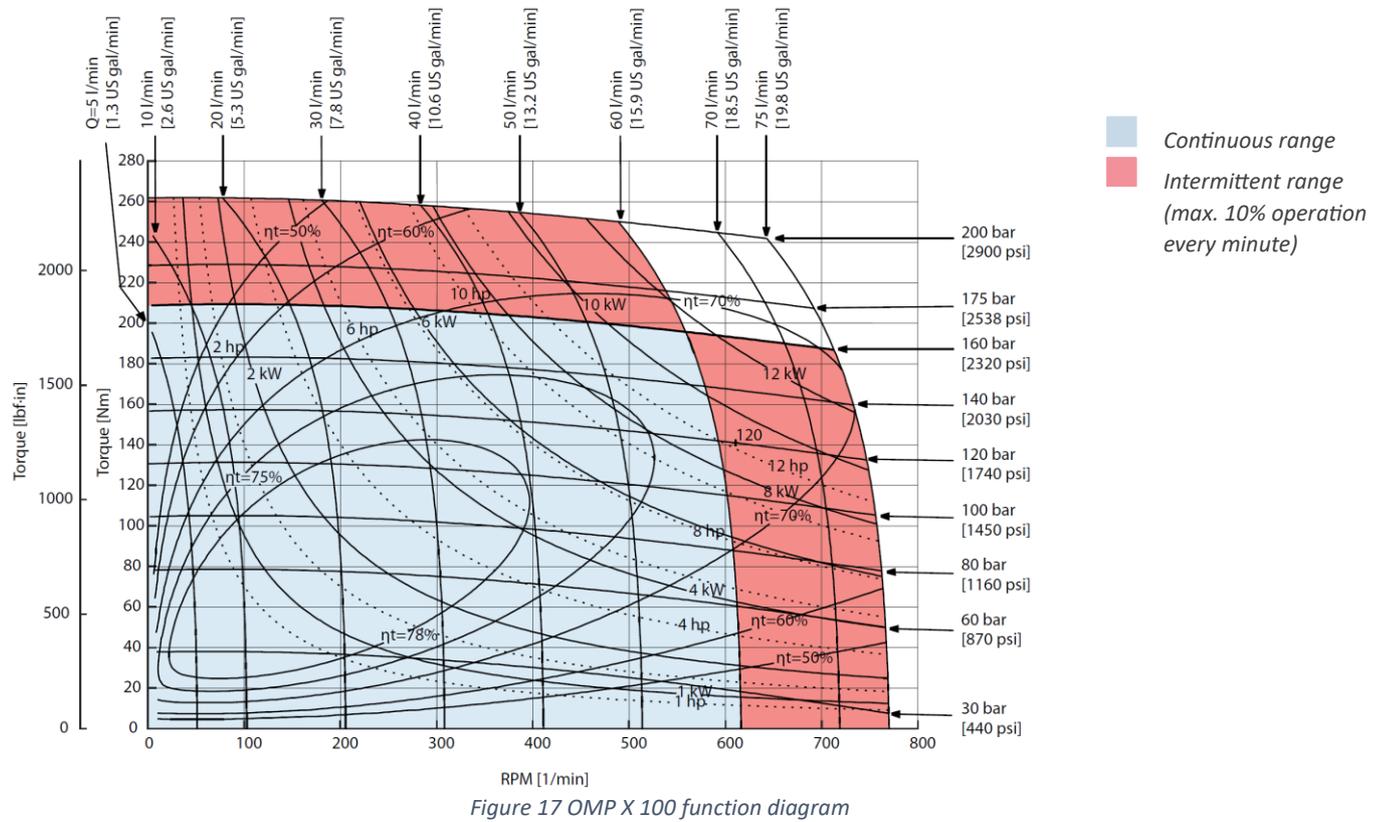


Figure 15 OMP X 50 function diagram

OMP X 80



OMP X 100



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OMP X 125

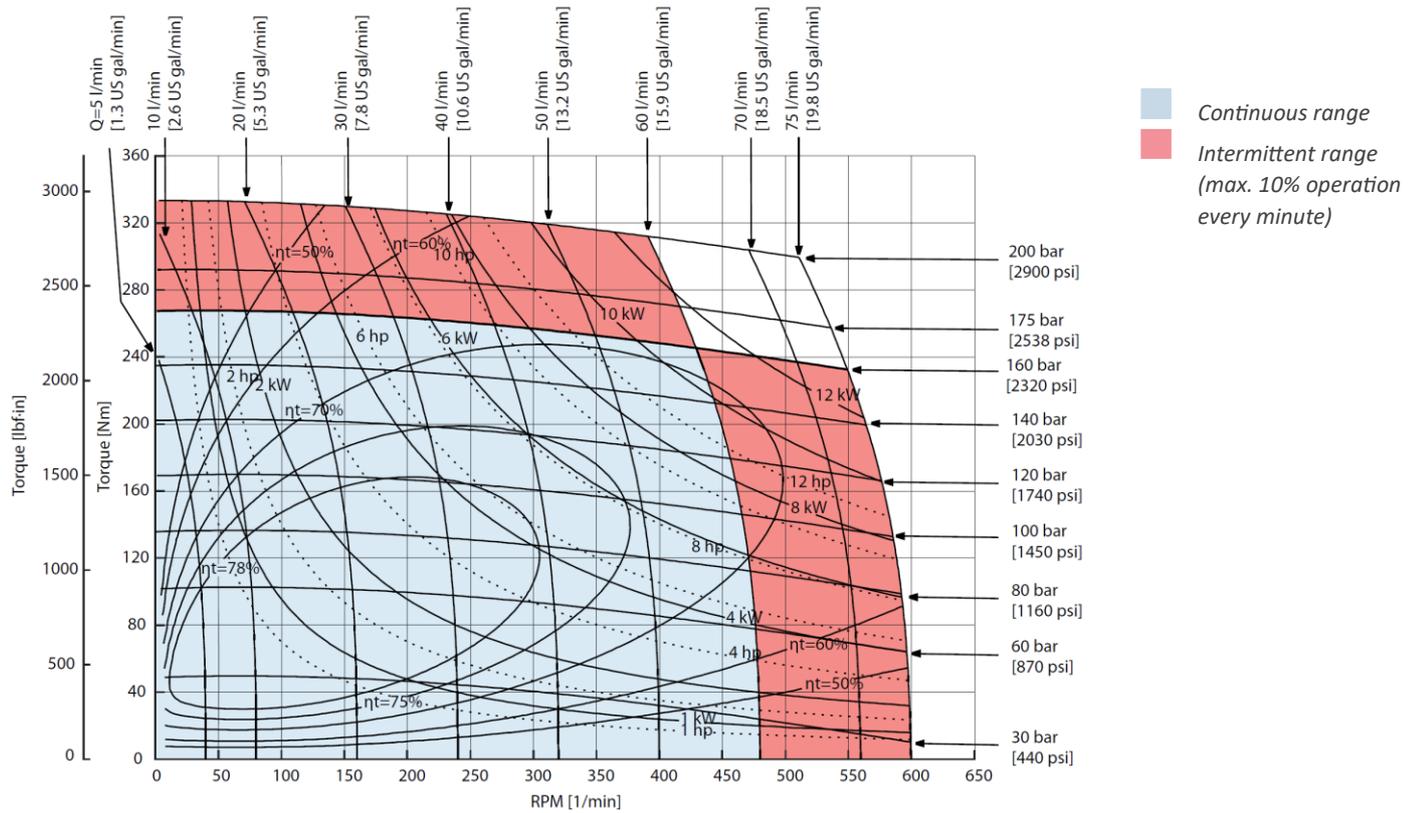


Figure 18 OMP X 125 function diagram

OMP X 160

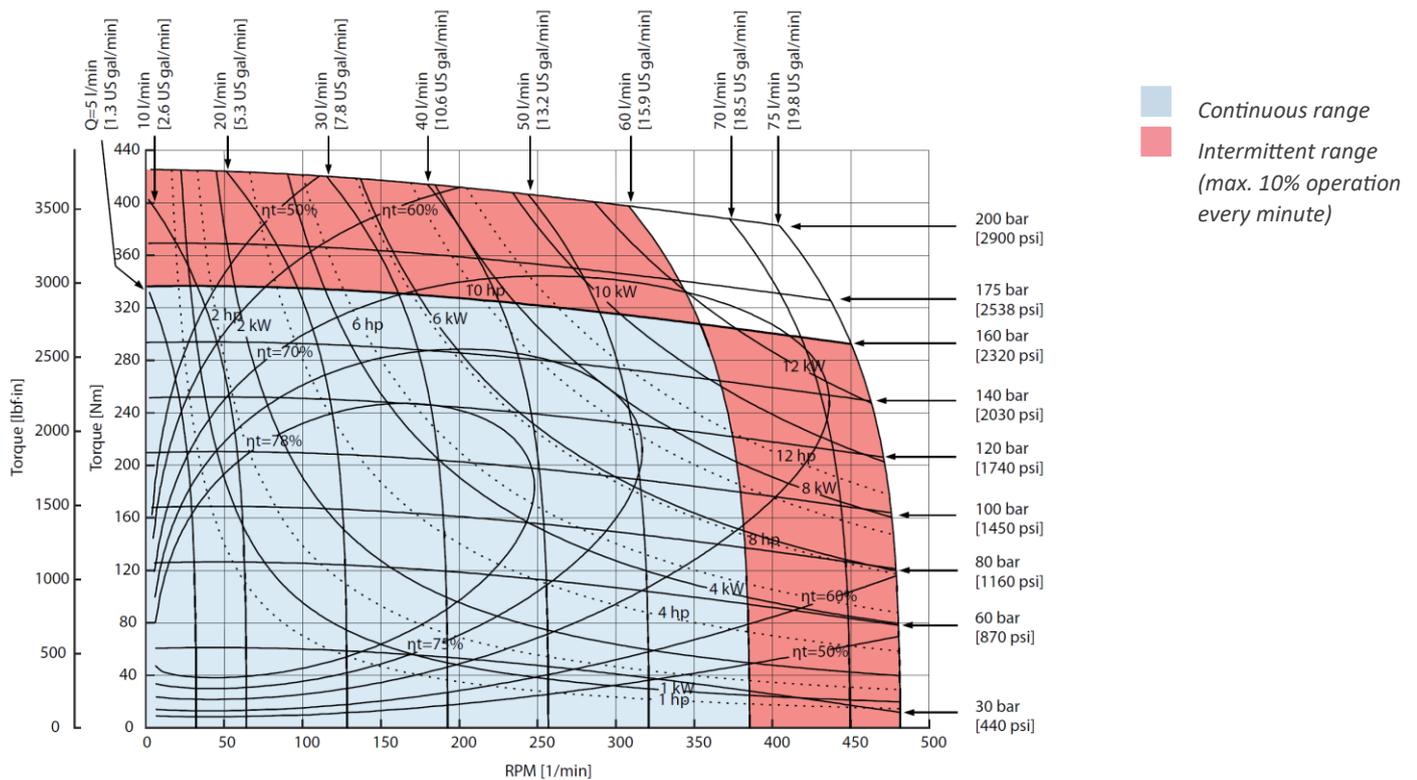
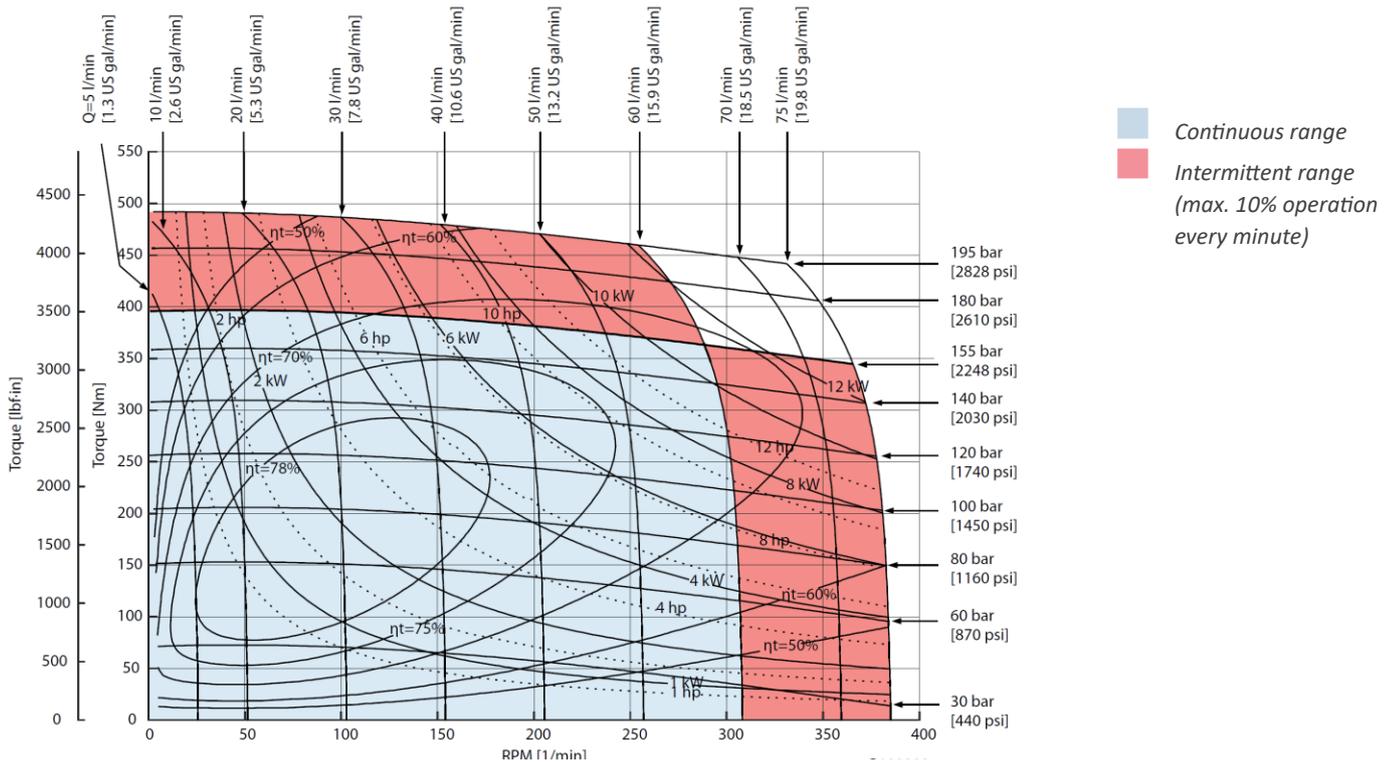
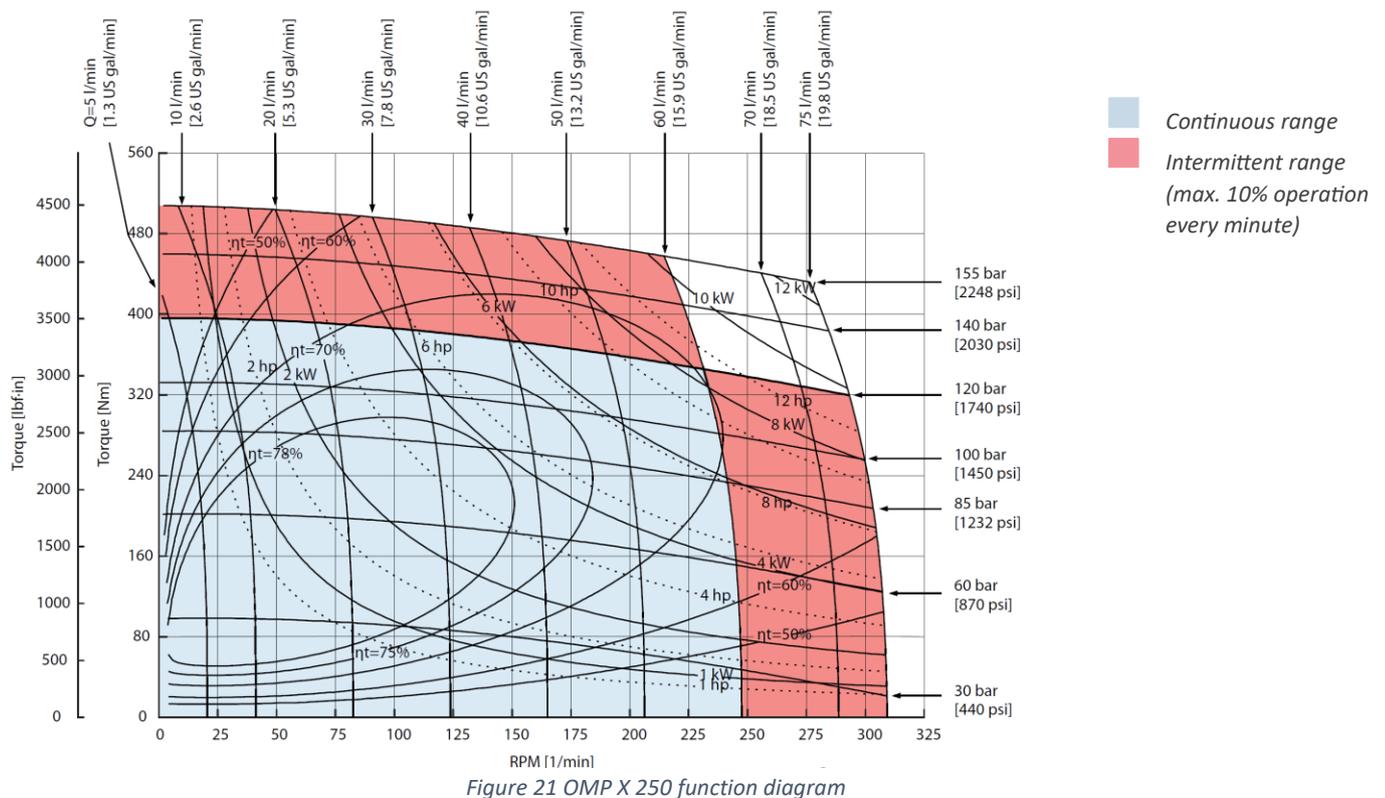


Figure 19 OMP X 160 function diagram

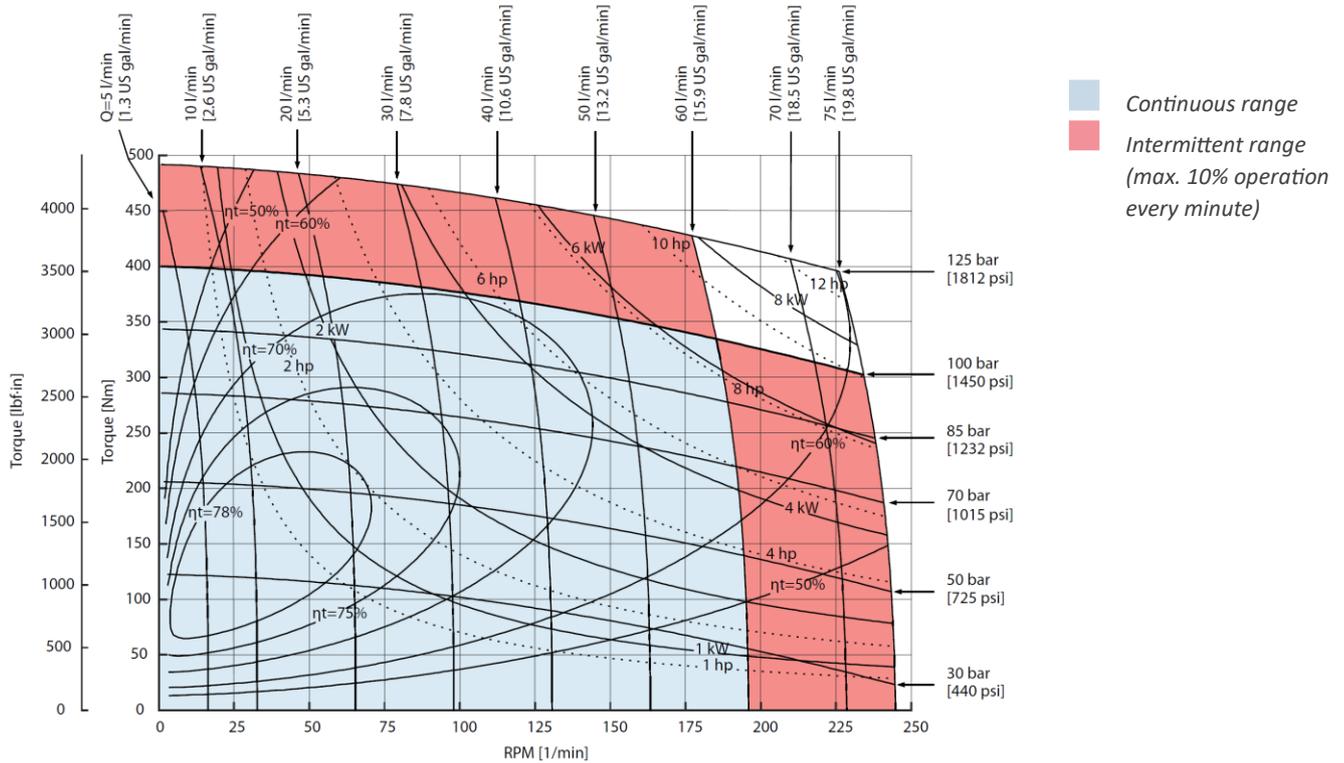
OMP X 200



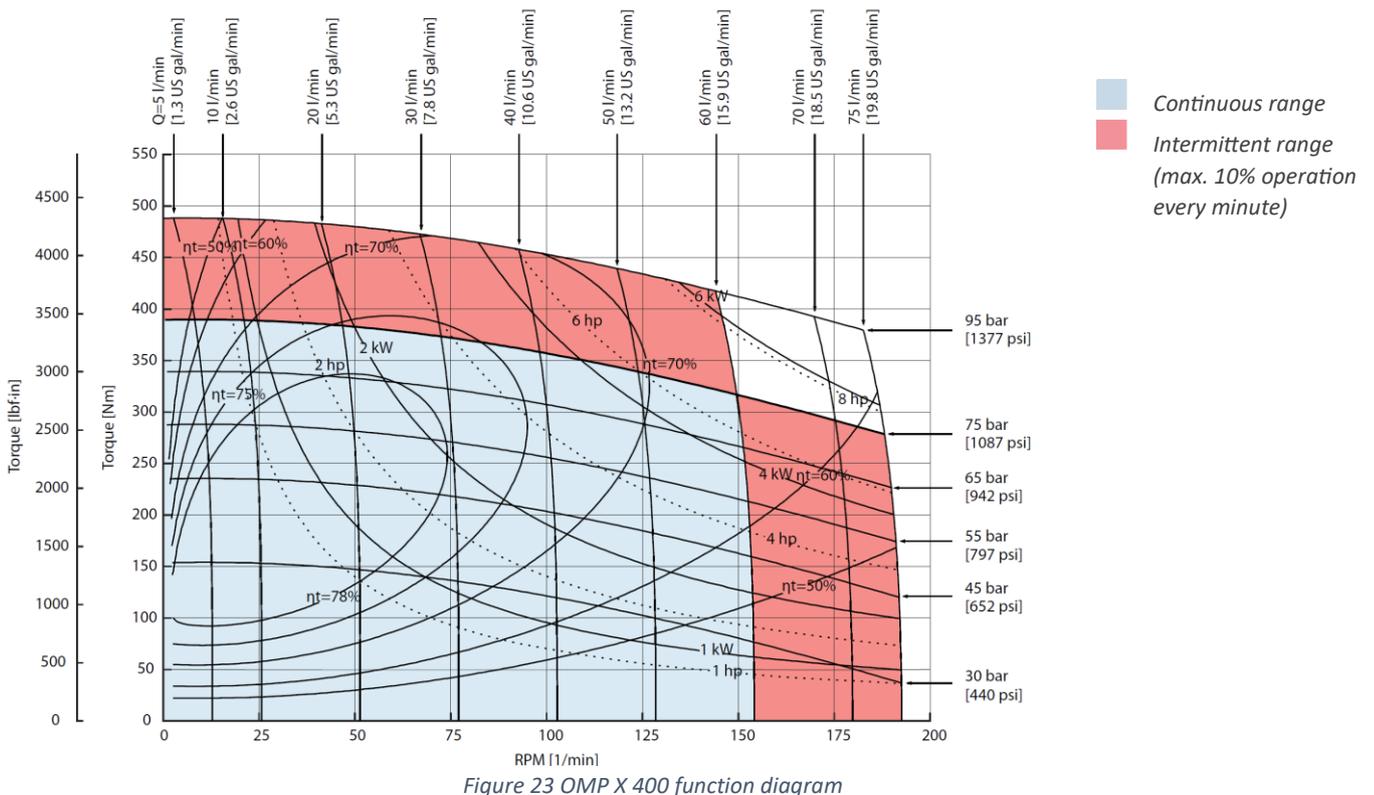
OMP X 250



OMP X 315



OMP X 400



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Chapter 4

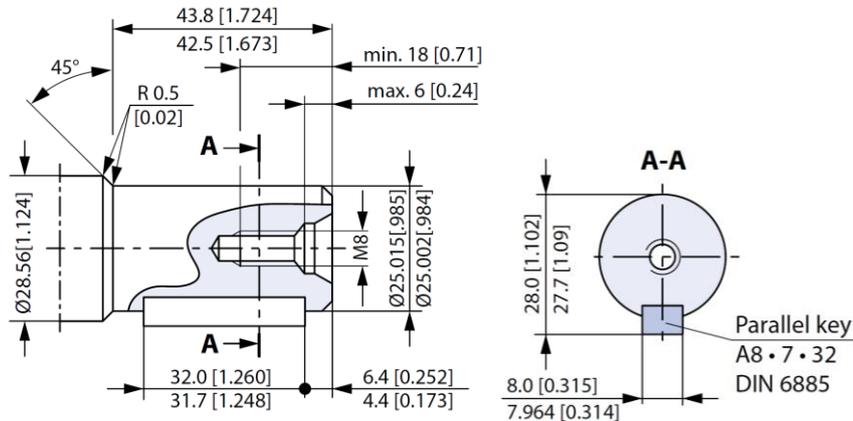
OMP X shaft and port thread version

Topics:

- OMP X and OMR X shaft versions
- OMP X port thread versions
- OMP X manifold mount

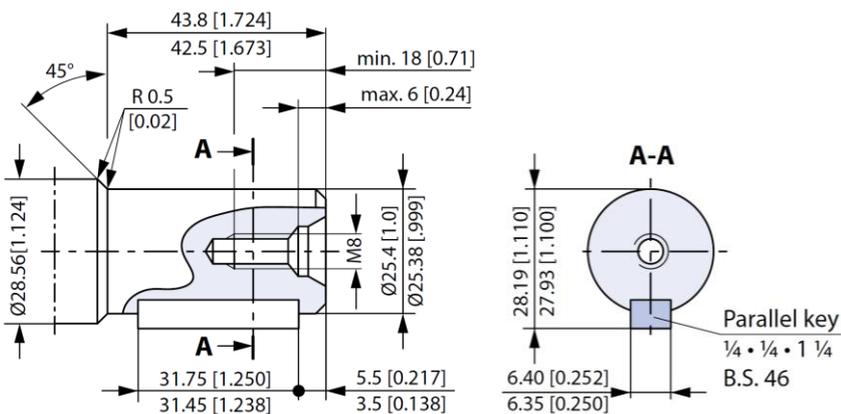
OMP X and OMR X shaft versions

Cylindrical shaft 25 mm; Parallel key DIN 6885



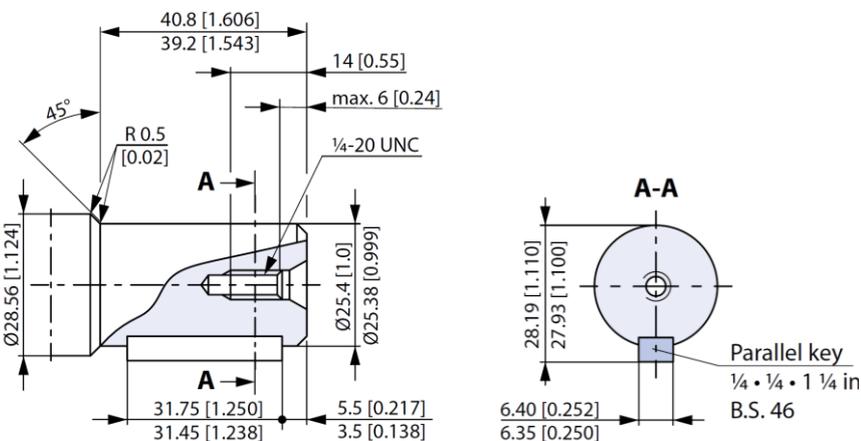
Max. cont. torque: 340 N•m
[3010 lb•in];
Max. int. torque 450 N•m
[3980 lb•in]

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



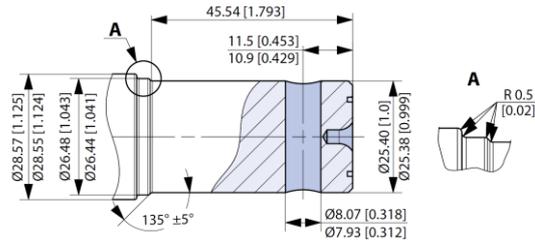
Max. cont. torque: 340 N•m
[3010 lb•in];
Max. int. torque 450 N•m
[3980 lb•in]

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



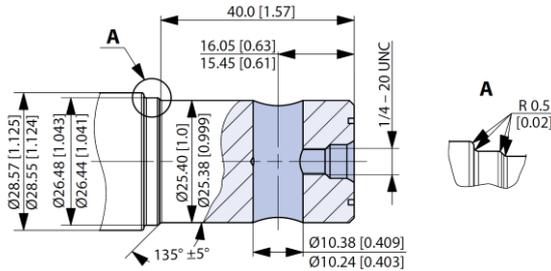
Max. cont. torque: 340 N•m
[3010 lb•in];
Max. int. torque 450 N•m
[3980 lb•in]

Cylindrical shaft 1 in; Cross hole 8 mm



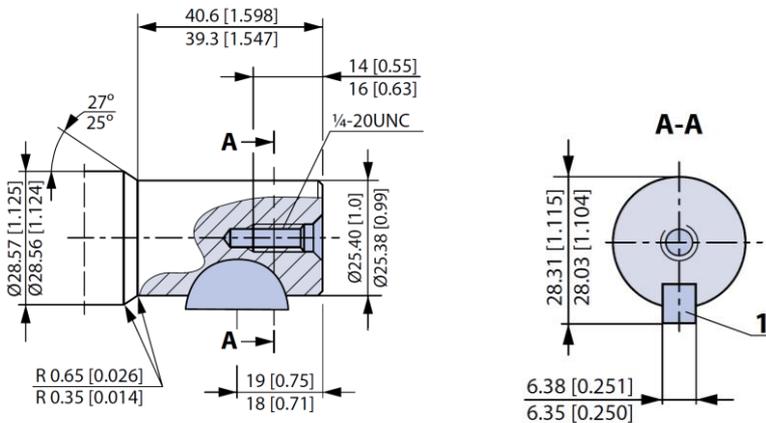
Max. torque: 200 N•m
[1770 lb•in]

Cylindrical shaft 1 in; Cross hole 10.3 mm



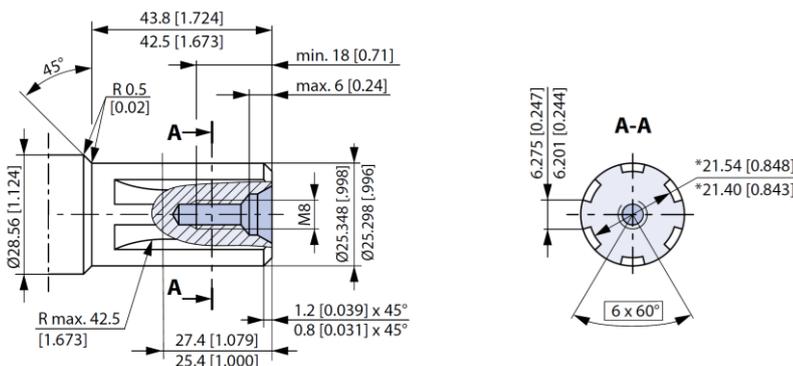
Max. torque: 200 N•m
[1770 lb•in]

Cylindrical shaft 1 in (US version); SAE J502



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

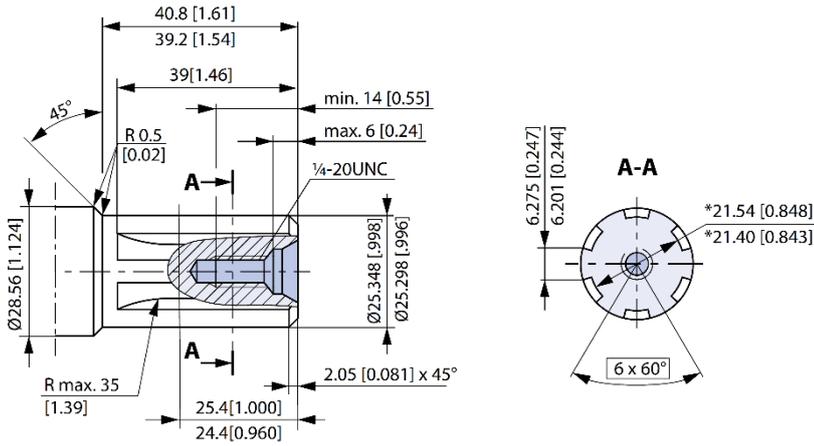
Splined shaft B.S. 2059 (SAE 6B)



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

Max. cont. torque: 400 N•m
[3540 lb•in]

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

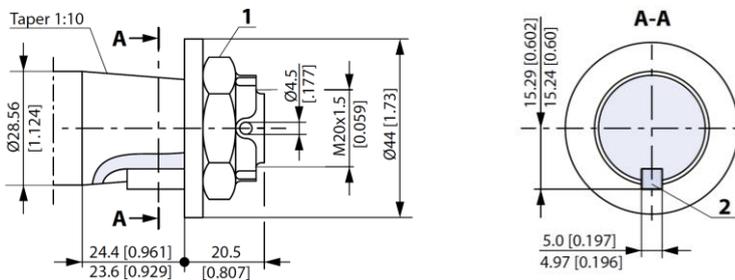


Straight-sided, bottom fitting,
dep. Fit 2, Nom. size 1 in;

* Deviates from B.S. 2059
(SAE 6B)

Max. cont. torque: 400 N•m
[3540 lb•in]

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



1. DIN 937 NV 30;
Tightening torque:
100 ± 10 N•m
[885 ± 88.5 lb•in]

2. Parallel key B5 • 5 • 14;
DIN 6885

Max. cont. torque: 400 N•m
[3540 lb•in]

Table 5 OMP X and OMR X shaft versions

OMP X port thread versions

G ISO 228/1 – G1/2	UNF 7/8–14 UNF O-ring boss	NPTF 1/2–14 NPTF	G drain ISO 228/1 – G1/4	UNF drain 7/16–20 UNF O-ring boss
<p>max. $\varnothing 21.5$ [0.846] G1/2 ISO 228/1 min. 1.5 [0.59]</p>	<p>$\varnothing 30.5$ [1.20] $\varnothing 29.5$ [1.161] 7/8-14 UNF O-ring boss max. 1.0 [0.04] min. 1.67 [0.657]</p>	<p>2x max. 21.5 [0.84] 1/2-14 NPTF max. 2.7 [1.06]</p>	<p>G1/4 ISO 228/1 12.2 [0.473] 11.3 [0.449]</p>	<p>$\varnothing 18.5$ [0.728] $\varnothing 17.5$ [0.689] 12.2 [0.473] 11.3 [0.449] max. 0.6 [0.024] 7/16-20 UNF O-ring boss</p>
Figure 24 OMP port thread version: ISO 228/1 – G1/2	Figure 25 OMP port thread version: 7/8-14 UNF O-ring boss	Figure 26 OMP port thread version: 1/2–14 NPTF	Figure 27 OMP port thread version: ISO 228/1 – G1/4	Figure 28 OMP port thread version: 7/16-20 UNF O-ring boss

Table 6 OMP main ports overview

OMP X manifold mount

For OMP X manifold mounting versions please see the dimension drawings for given OMP X motors listed below.

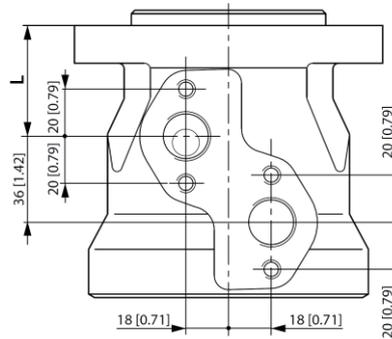


Figure 29 OMP X manifold mount

For **L** dimension please see the tables in:

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

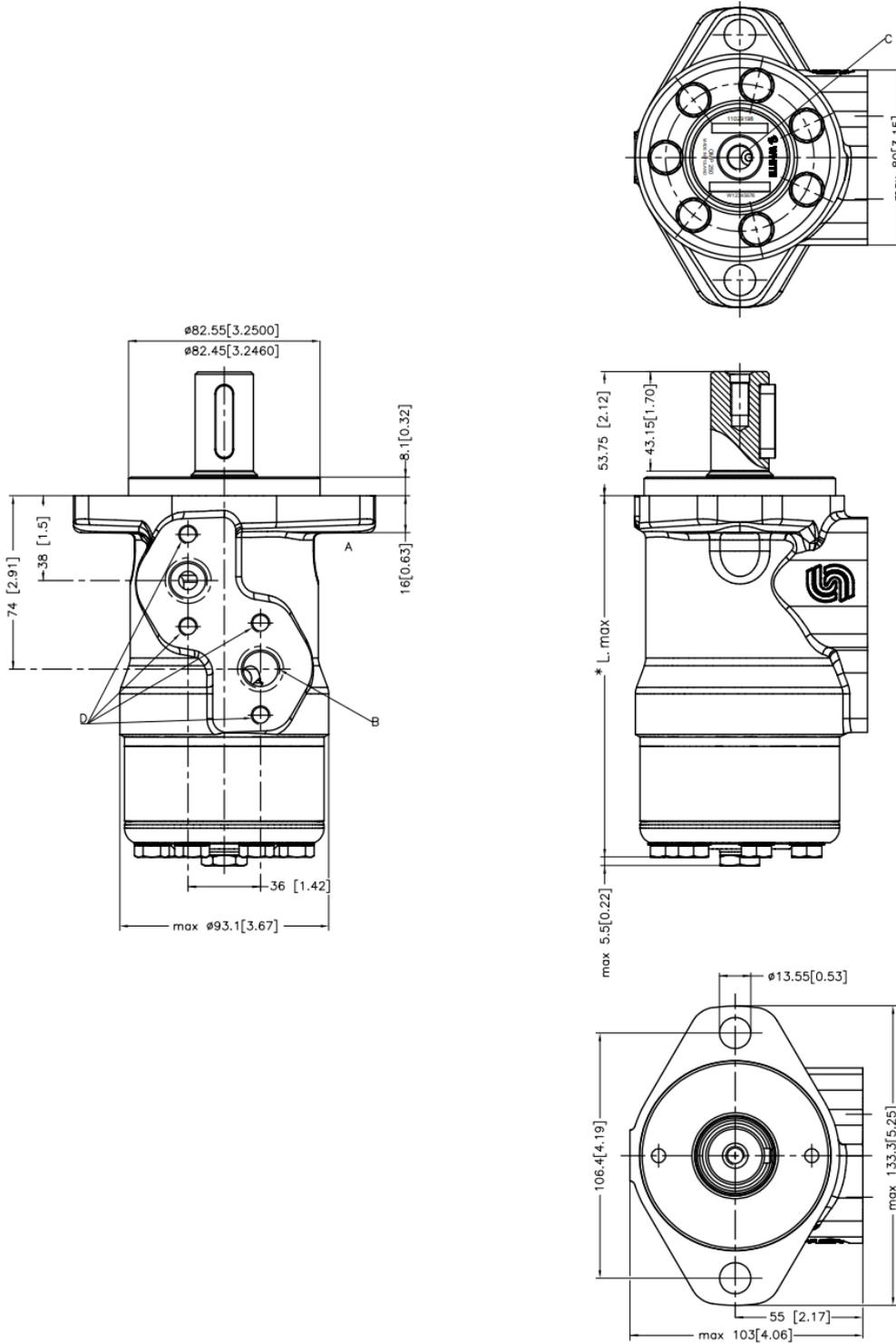
Chapter 5

OMP X dimensions

Topics:

- EU version side port offset with 2-hole oval mounting flange (A2)
- EU version end port with 2-hole oval mounting flange (A2)
- EU version OMPW X and OMPW X N motors wheel type
- US version side port offset with 2-hole oval mounting flange (A2)
- US version side port aligned with 2-hole oval mounting flange (A2)
- US version side port aligned with square mounting flange (C-flange)

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



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 30 OMP X side port offset A2-flange EU version

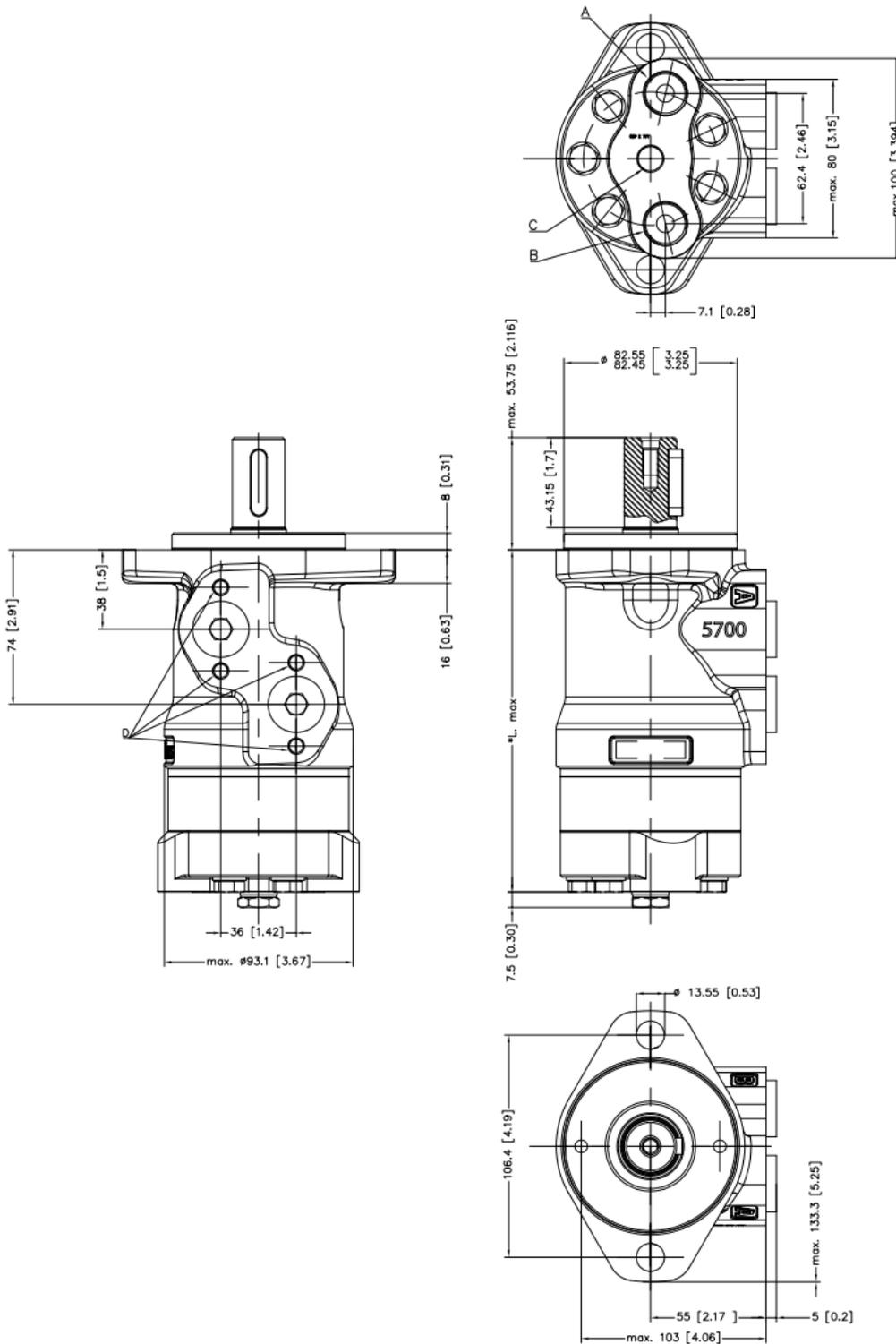
Dimension mm [in]	OMP X												
	25	32	40	50	60	80	100	125	160	200	250	315	400
L_{max.}	130.8 [5.15]	131.9 [5.22]	133.2 [5.25]	133.2 [5.25]	134.6 [5.30]	137.1 [5.40]	139.7 [5.50]	143.4 [5.65]	147.5 [5.81]	152.7 [6.02]	159.2 [6.27]	167.6 [6.6]	178.7 [7.04]

Table 7 OMP X side port offset A2-flange EU version dimensions

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EU version end port with 2-hole oval mounting flange (A2)



Port connections:

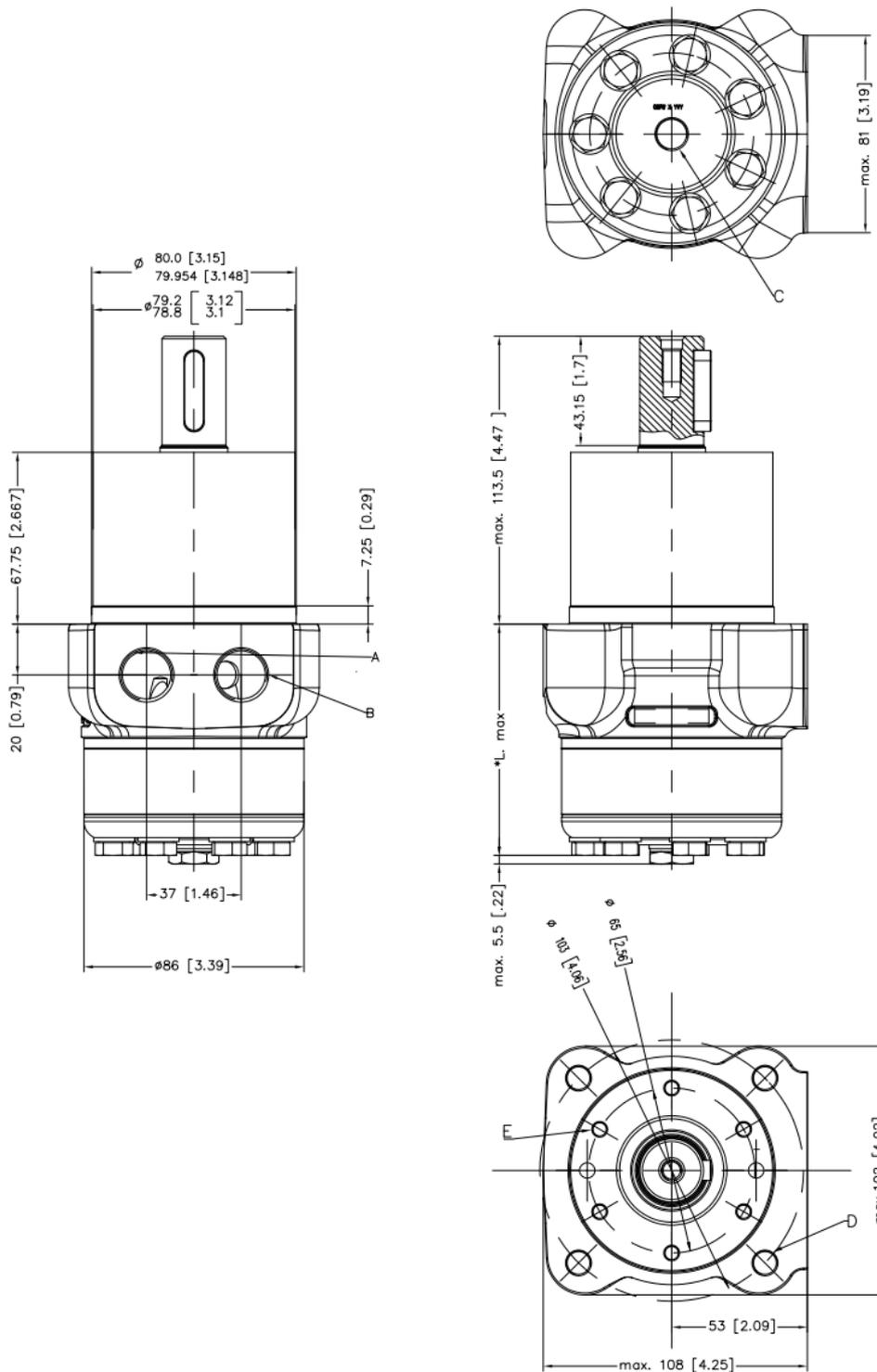
- A, B** Main ports: G 1/2; min 15 mm [0.59 in] deep
- C** Drain port: G 1/4; 11.5 mm [0.45 in]
- D** Thread: M8; 13 mm [0.51 in] deep

Figure 31 OMP X end port A2-flange EU version

Dimension mm [in]	OMP X								
	40	50	80	100	160	200	250	315	400
L_{max.}	146.8 [5.78]	146.8 [5.78]	150.7 [5.94]	153.3 [6.04]	161.1 [6.35]	166.3 [6.55]	172.8 [6.81]	181.2 [7.14]	192.2 [7.58]

Table 8 OMP X end port A2-flange EU version dimensions

EU version OMPW X and OMPW X N motors wheel type



Port connections:

- A, B** Main ports: G 1/2; min 15 mm [0.59 in] deep
- C** Drain port: G 1/4; 12 mm [0.45 in]
- D** Thread: M10; 20 mm [0.78 in] deep
- E** Thread: M6; 9mm [0.35 in] deep

Figure 32 OMPW X and OMPW X N EU version

Dimension mm [in]	OMPW X OMPW X N								
	50	80	100	125	160	200	250	315	400
L_{max}	73.4 [2.89]	77.3 [3.05]	79.9 [3.15]	83.7 [3.30]	87.7 [3.46]	92.9 [3.66]	99.4 [3.92]	107.8 [4.25]	118.9 [4.69]

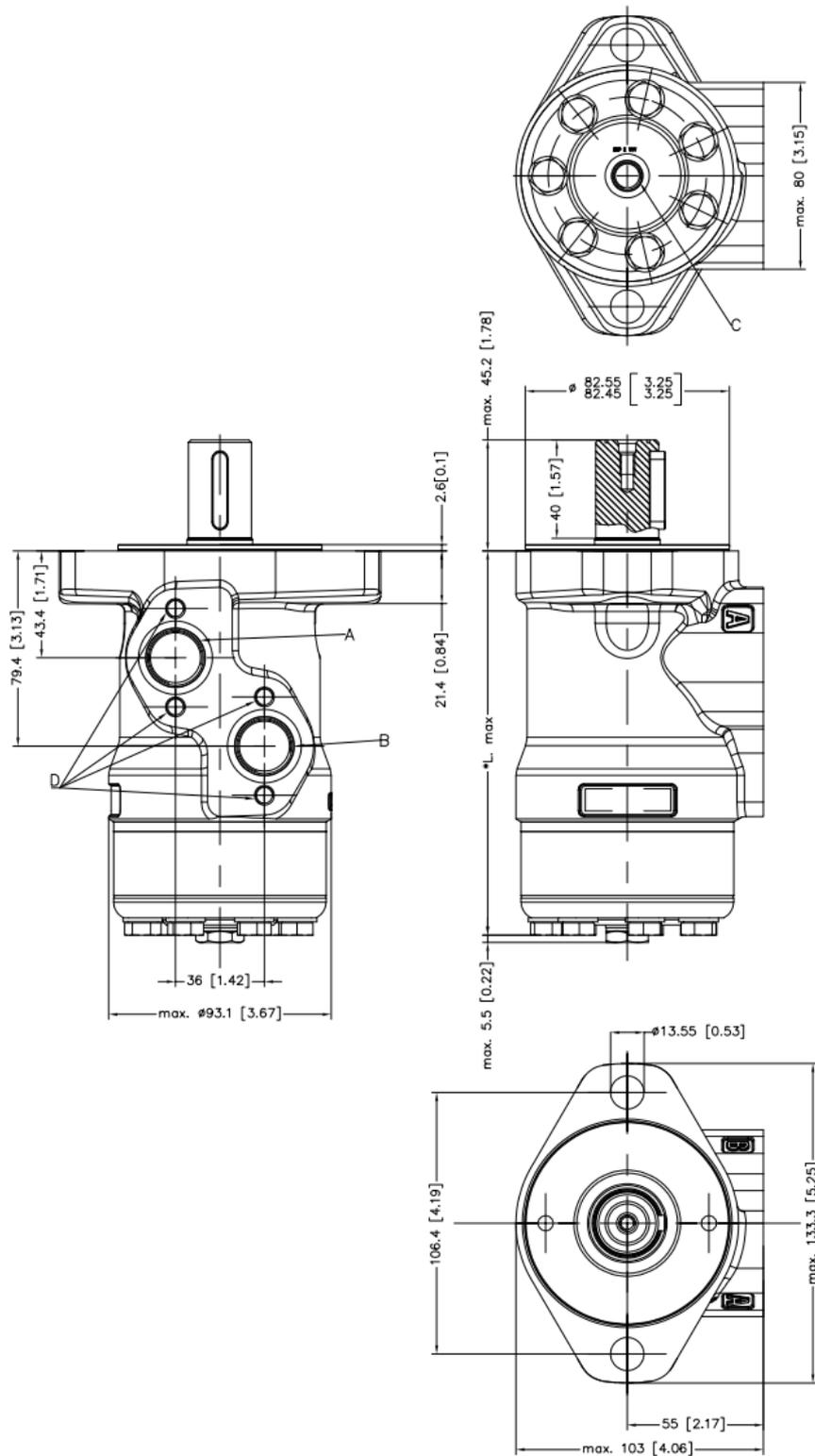
Table 9 OMPW X and OMPW X N EU version dimensions

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US version side port offset with 2-hole oval mounting flange (A2)



Port connections:

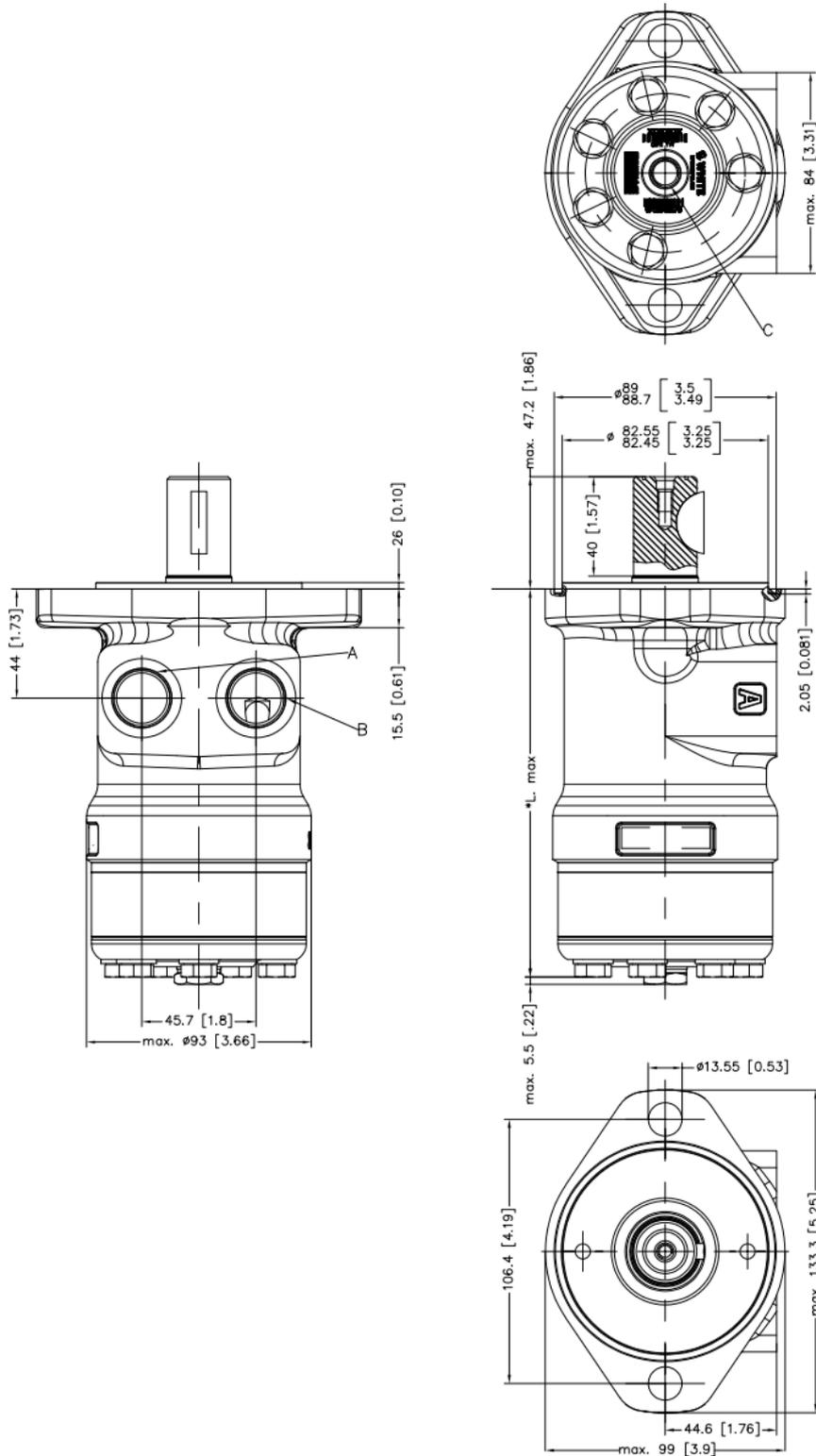
- A, B** Main ports: 7/8 - 14 UNF;
min. 16.7 mm [0.66 in] deep
- C** Drain port: 7/16 - 20 UNF;
11.5 mm [0.45 in] deep
- D** Thread: M8; 13 mm [0.51 in] deep

Figure 33 OMP X side port offset A2- flange (US version)

Dimension mm [in]	OMP X									
	25	32	40	50	80	100	160	200	315	400
L_{max.}	136.2 [5.37]	137.3 [5.41]	138.6 [5.46]	138.6 [5.46]	142.5 [5.62]	145.1 [5.72]	152.9 [6.02]	158.1 [6.82]	173 [6.82]	184.1 [7.25]

Table 10 OMP X side port offset A2- flange (US version) dimensions

US version side port aligned with 2-hole oval mounting flange (A2)



Port connections:

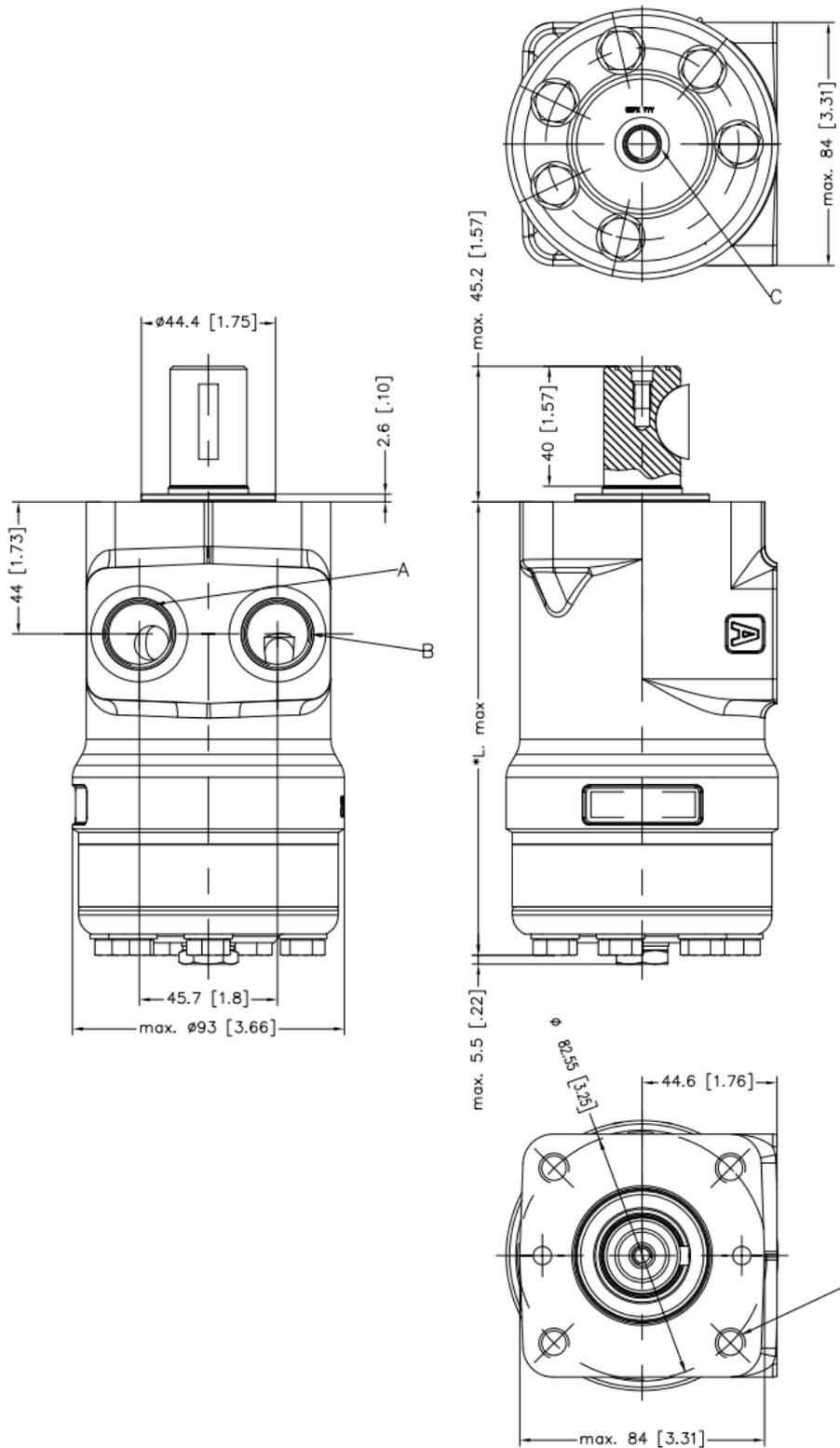
- A, B** Main ports: 7/8 - 14 UNF;
min. 16.7 mm [0.66 in] deep
- C** Drain port: 7/16 - 20 UNF;
11.5 mm [0.45 in] deep

Figure 34 OMP X side port aligned A2- flange (US version)

Dimension mm [in]	OMP X								
	32	50	80	100	125	160	200	315	400
L_{max.}	137.9 [5.43]	138.6 [5.46]	142.5 [5.62]	145.1 [5.72]	148.8 [5.86]	152.9 [6.02]	158.1 [6.82]	173 [6.82]	184.1 [7.25]

Table 11 OMP X side port aligned A2- flange (US version) dimensions

US version side port aligned with square mounting flange (C-flange)



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 35 OMP X side port aligned C-flange US version

Dimension mm [in]	OMP X								
	36	50	80	100	125	160	200	315	400
L_{max.}	137.9 [5.43]	138.6 [5.46]	142.5 [5.62]	145.1 [5.72]	148.8 [5.86]	152.9 [6.02]	158.1 [6.82]	173 [6.82]	184.1 [7.25]

Table 12 OMP X side port aligned A2- flange (US version) dimensions

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Chapter 6

OMR X Technical Data

Topics:

- OMR X motor specifications
- High Pressure Shaft Seal in OMP X and OMR X motors
- Pressure drop
- Oil flow in drain line
- Direction of shaft rotation: clockwise
- OMP X and OMR X shaft loads
- OMR X Model Code

OMR X motor specifications

Type			OMR X									
Motor size			50	80	100	125	160	200	250	315	375	400
Geometric displacement	cm ³		51.6	80.3	99.8	124.1	155.4	198.2	248.1	310.1	363.5	390.7
	[in ³]		[3.16]	[4.91]	[6.11]	[7.57]	[9.48]	[12.09]	[15.14]	[18.92]	[22.18]	[23.84]
Maximum speed	min ⁻¹	cont.	775	750	600	475	385	305	240	195	165	155
	[rpm]	int. ¹⁾	970	940	750	600	480	380	300	245	205	195
Maximum torque	N•m [lbf•in]	cont.	100	215	275	330	380	400	400	400	400	400
			[890]	[1900]	[2435]	[2920]	[3365]	[3540]	[3540]	[3540]	[3540]	[3540]
		int. ¹⁾	120	235	300	360	435	480	540	550	550	480
			[1060]	[2080]	[2655]	[3185]	[3580]	[4250]	[4780]	[4870]	[4870]	[4250]
Maximum output	kW [hp]	cont.	7.0	14.0	14.0	14.0	12.6	10.5	8.8	7.0	5.6	4.9
			[9.4]	[18.8]	[18.8]	[18.8]	[16.9]	[14]	[11.7]	[9.4]	[7.5]	[6.6]
		int. ¹⁾	8.8	15.8	17.5	17.5	15.8	13.1	10.5	8.9	7.8	6.1
			[11.7]	[21.1]	[23.5]	[23.5]	[21.1]	[17.5]	[14.1]	[11.9]	[10.5]	[8.2]
Maximum pressure drop.	bar [psi]	cont.	150	200	200	200	180	150	125	100	80	70
			[2175]	[2900]	[2900]	[2900]	[2610]	[2175]	[1815]	[1450]	[1160]	[1015]
		int. ¹⁾	175	225	225	225	215	195	170	140	115	90
			[2540]	[3260]	[3260]	[3260]	[3120]	[2830]	[2465]	[2030]	[1670]	[1305]
Maximum oil flow	l/min [US gal/ min]	cont.	40	60	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]	[15.9]
		int. ¹⁾	50	75	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]	[19.8]
Maximum starting pressure with unloaded shaft	bar [psi]		10	10	10	10	10	10	7	7	7	5
			[145]	[145]	[145]	[145]	[145]	[145]	[145]	[100]	[100]	[100]
Minimum starting torque	N•m [lbf•in]	cont.	85	190	230	295	335	350	370	370	335	325
			[750]	[1680]	[2035]	[2610]	[2965]	[3100]	[3275]	[3275]	[2965]	[2875]
		int. ¹⁾	100	215	255	335	400	460	500	515	480	420
			[890]	[1900]	[2255]	[2965]	[3540]	[4070]	[4425]	[4560]	[4250]	[3715]

Table 13 OMR X motor specification

- 1) Maximum torque values for the different output shafts can be found in [OMP X and OMR X shaft versions](#).
- 2) Intermittent operation, permissible values may occur for max. 10% of every minute.

Maximum pressure

Type			Maximum inlet pressure	Maximum return pressure with drain line
OMR X	bar [psi]	cont.	200 [2900]	200 [2900]
		int.	225 [3260]	225 [3260]

Table 14 OMR X Pressure limits

High Pressure Shaft Seal in OMP X and OMR X motors

For information, see [OMP X shaft and port thread version](#).

Pressure drop

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

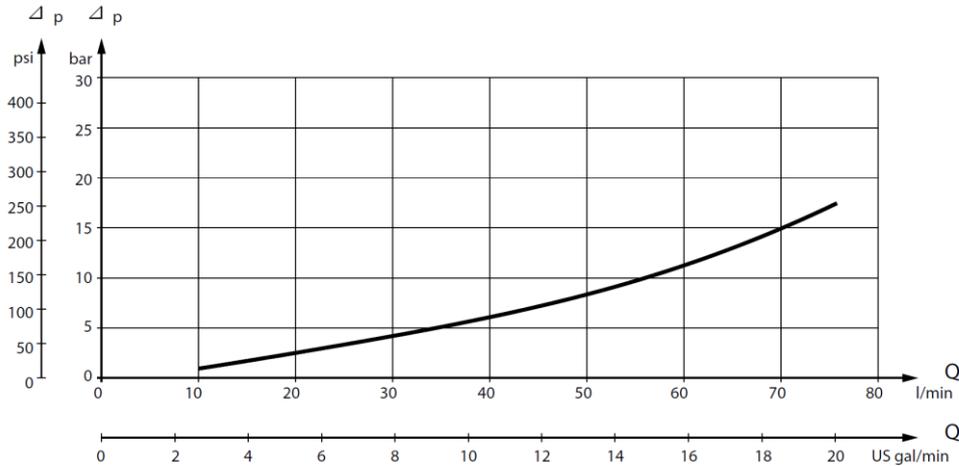


Figure 36 OMR X pressure drop

Oil flow in drain line

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

Table 15 OMR X Max. oil flow in the drain line at return pressure less 5-10 bar

Direction of shaft rotation: clockwise

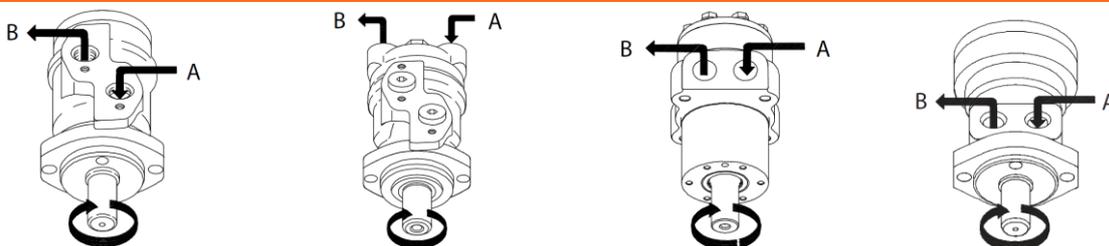


Figure 37 OMR X Direction of shaft rotation: clockwise

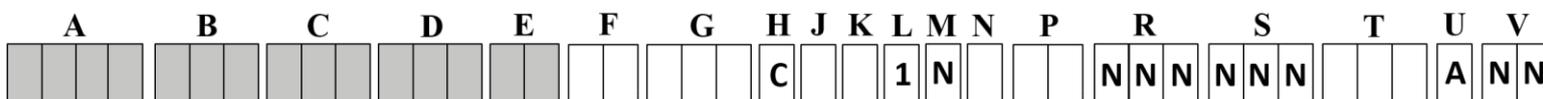
OMP X and OMR X shaft loads

For information see [Shaft loads](#)

OMR X Model Code

The coding system has been developed to identify the configuration options for the OMR X motors. The model code begins with the motor family and the remaining fields are filled in to configure the motor with the desired features, all fields must be filled in.

Example: OMPX-200-NNN-B11-SO-A3-A11-C-E-B-1-N-N-NN-NNN-NNN-NNN-A-NN.



A – Main motor family

OMRX OMR X motor series

B – Motor displacement

Code	Displacement, cm ³ /rev [in ³ /rev]	Code	Displacement, cm ³ /rev [in ³ /rev]
036	36.9 [2.25]	200	198.2 [12.09]
050	51.6 [3.15]	250	248.1 [15.14]
080	80.3 [4.90]	315	310.1 [18.92]
100	99.8 [6.09]	375	363.5 [22.18]
125	124.1 [7.57]	400	390.7 [23.84]
160	155.4 [9.48]		

C – Motor type (Align with options: D, E and F)

NNN Standard motor
B13 Standard motor with needle bearing

D – Mounting type (Align with options: E and F)

B11 A2 flange; 82.5 Dia x 8 Pilot; 106.4 Dia. B.C.
B12 A2 flange; 82.5 Dia x 2.6 Pilot; 106.4 Dia. B.C.
C10 C flange; 44 Dia x 2.6 Pilot; 83 Dia. B.C.; 3/8-16 mounting

E – Port type (Align with options: D, F and G)

SO Side port – Offset
SA Side port – Aligned
EA End port

F – Main ports thread type

A3 G 1/2
A8 7/8-14 UNF
A9 1/2-14 NPTF
B7 M22 x 1,5 according to ISO 6149
C1 Manifold

G – Shaft type (Align with options: C, F and K)

A11 Cylindrical 25 mm with 8 mm key; M8 hole in shaft end
B11 Cylindrical 1 inch with 1/4 in key; M8 hole in shaft end
B12 Cylindrical 1 inch with 1/4 in key; 1/4-20UNC hole in shaft end
B13 Cylindrical 1 inch with Woodruff key; 1/4-20UNC hole in shaft end
B14 Cylindrical 1 inch with cross hole 10.3; 1/4-20UNC hole in shaft end
B15 Cylindrical 1 inch with cross hole 8.0
C11 Spline 7/8" – 13T
C13 1 inch 6B Spline; M8 hole in shaft end
C14 1 inch 6B Spline; 1/4-20UNC hole in shaft end
E10 Tapered 28.5 mm – 1:10
F10 Tapered 1" – 1:8, WK3/16x3/4

H – Shaft seal

C *High pressure shaft seal - NBR*

J- Dust seal

B *Dust seal integrated in shaft seal plus seal guard*

E *Dust seal integrated in shaft seal*

K – Drain port (Align with options: F and G)

B *G1/4*

D *7/16 – 20 UNF*

K *M12 x 1,5 according to ISO 6149*

M *No drain port due to EMD*

L – Check valve

1 *Yes*

M – Brake release port

N *None*

N- Speed sensor

N *None*

A *Prepared for EMD speed sensor*

P - Painting

NN *No paint*

AA *Black, 9005; Corr. class C3; Standard covering*

AB *Black, 9005; Corr. class C3; Surface covering*

R - Valve option

NNN *None*

S – Specific visible features

NNN *None*

T – Specific non-visible features

NNN *None*

U – Packaging

A *Single pack*

V – Name tags: Motor and box

NN *Name tag*

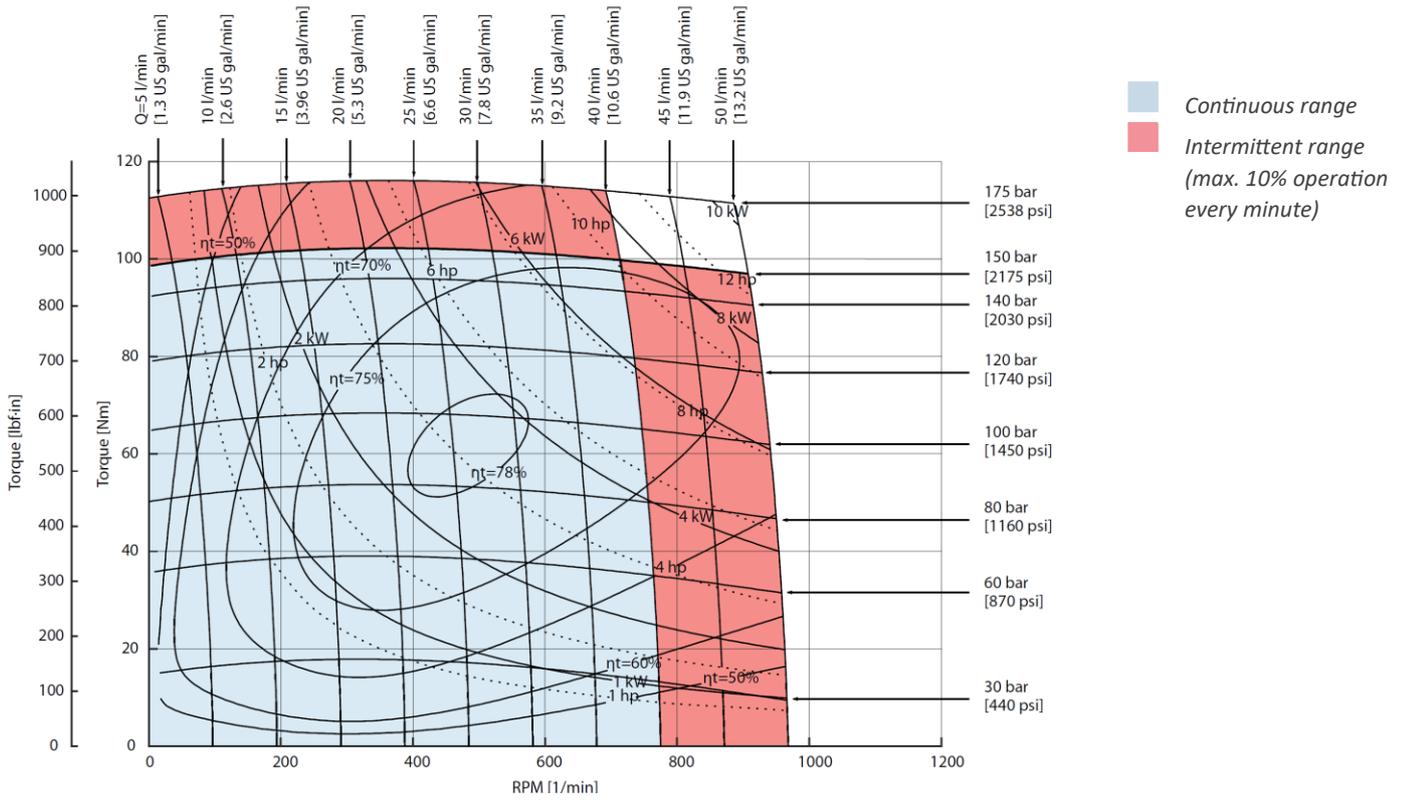
Chapter 7

OMR X function diagrams

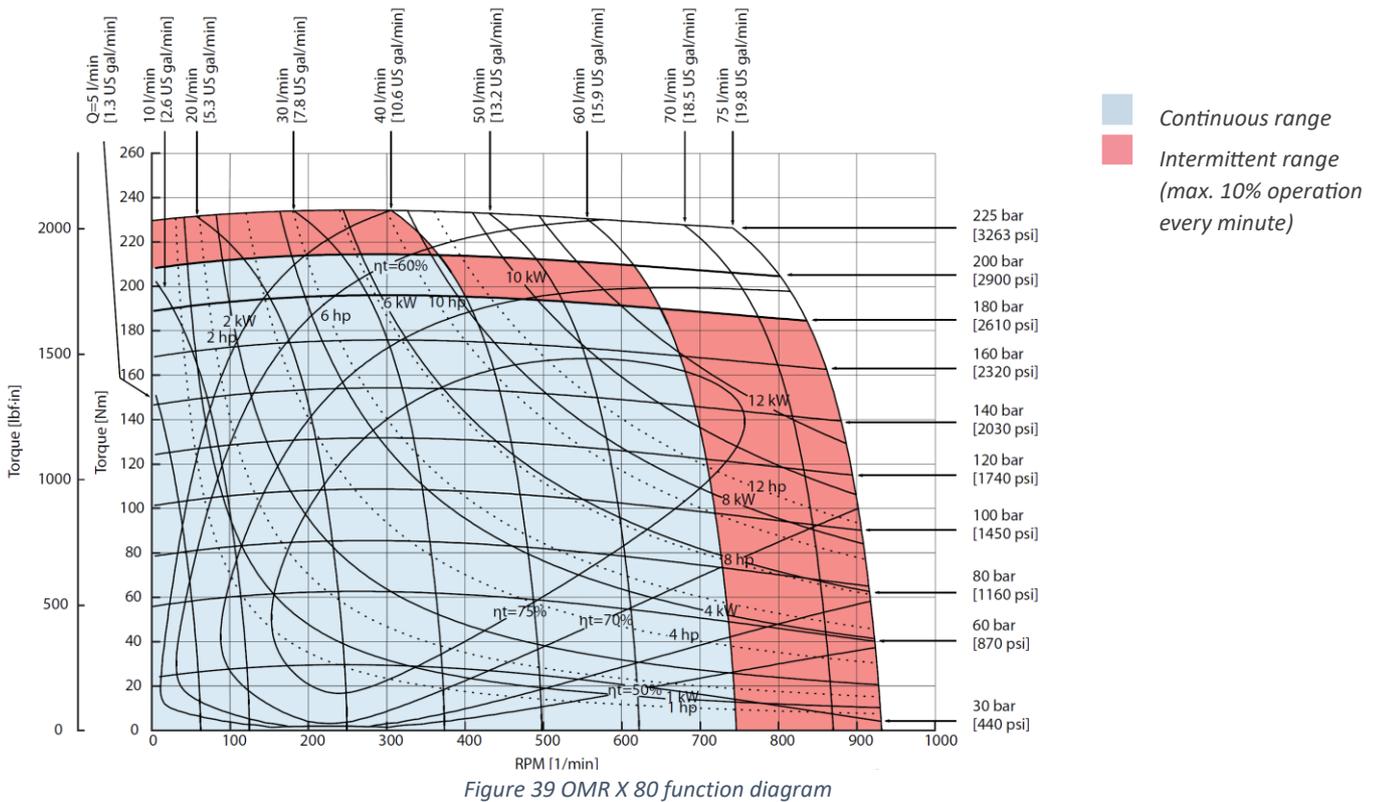
Topics:

- OMR X 50
- OMR X 80
- OMR X 100
- OMR X 125
- OMR X 160
- OMR X 200
- OMR X 250
- OMR X 315
- OMR X 375
- OMR X 400

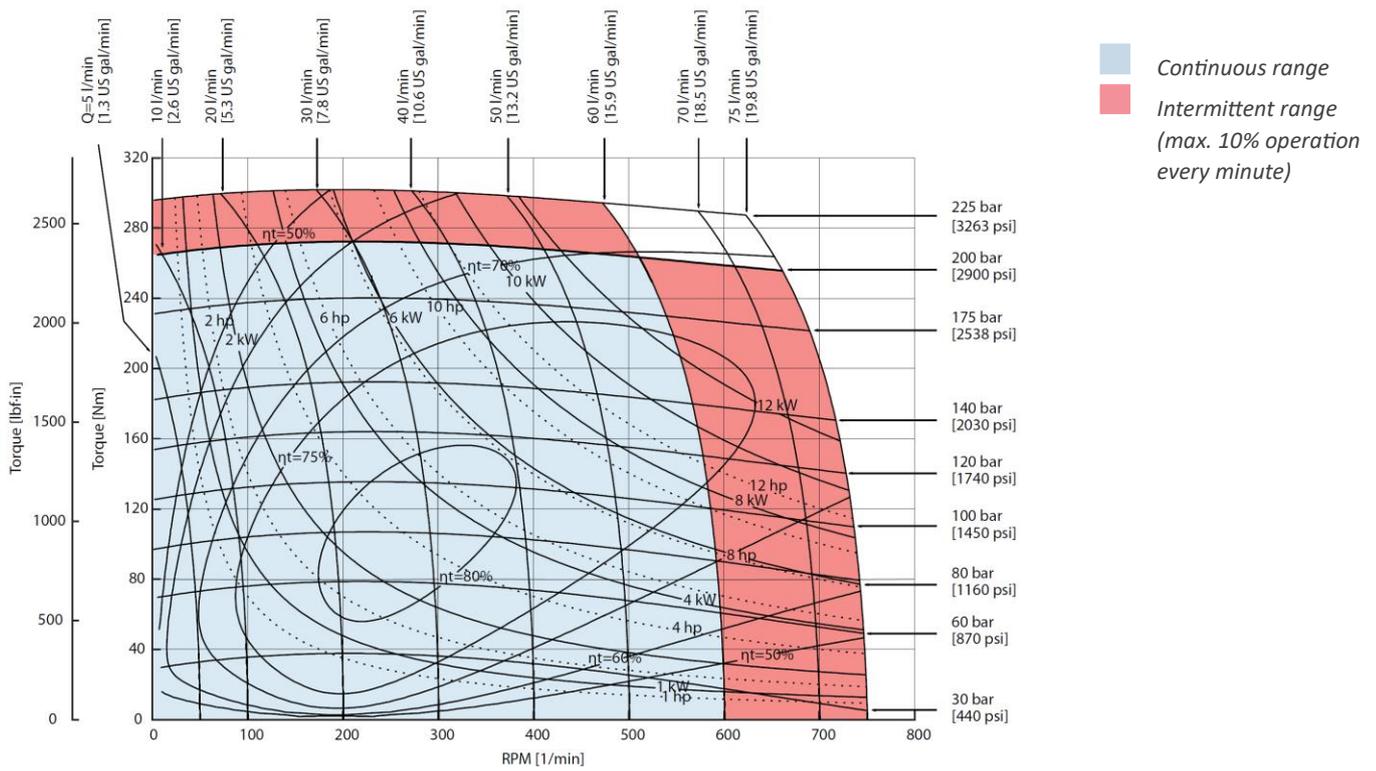
OMR X 50



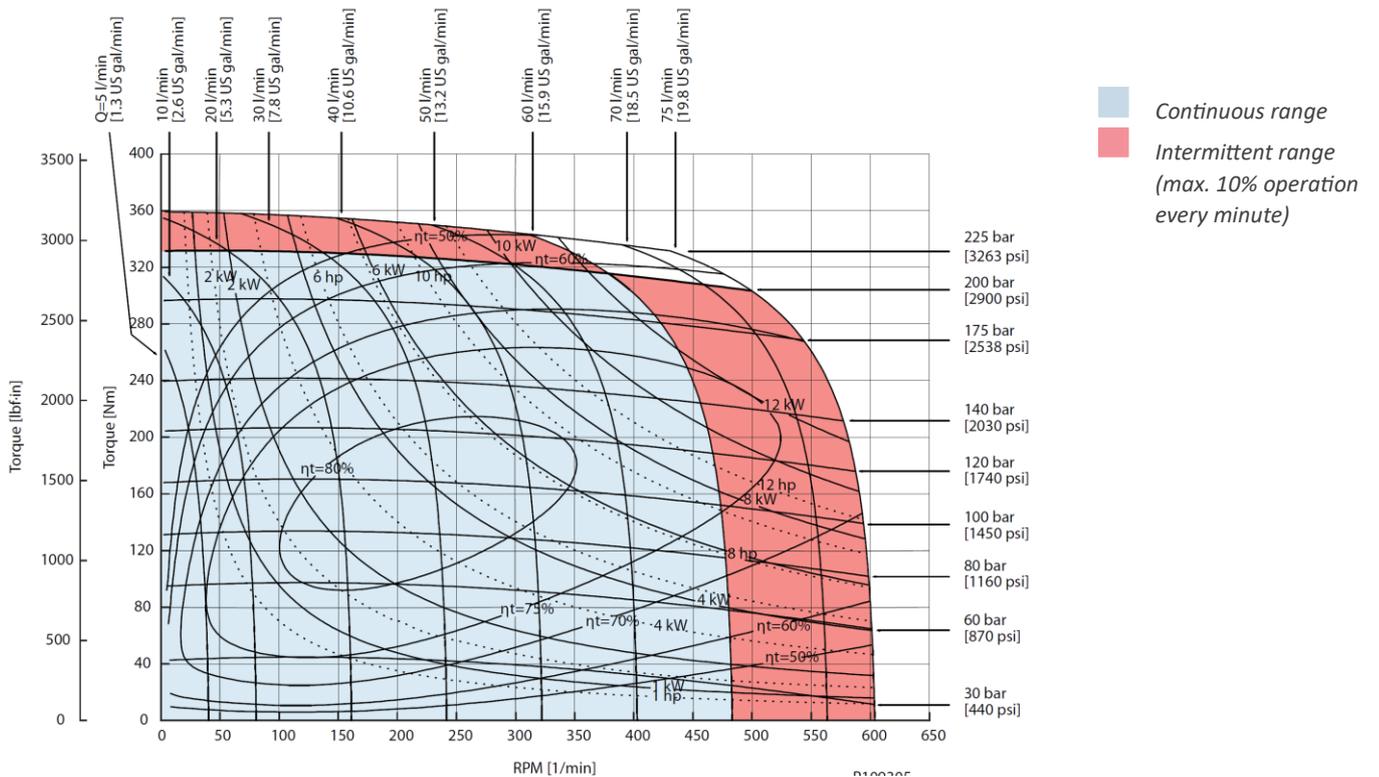
OMR X 80



OMR X 100



OMR X 125



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OMR X 160

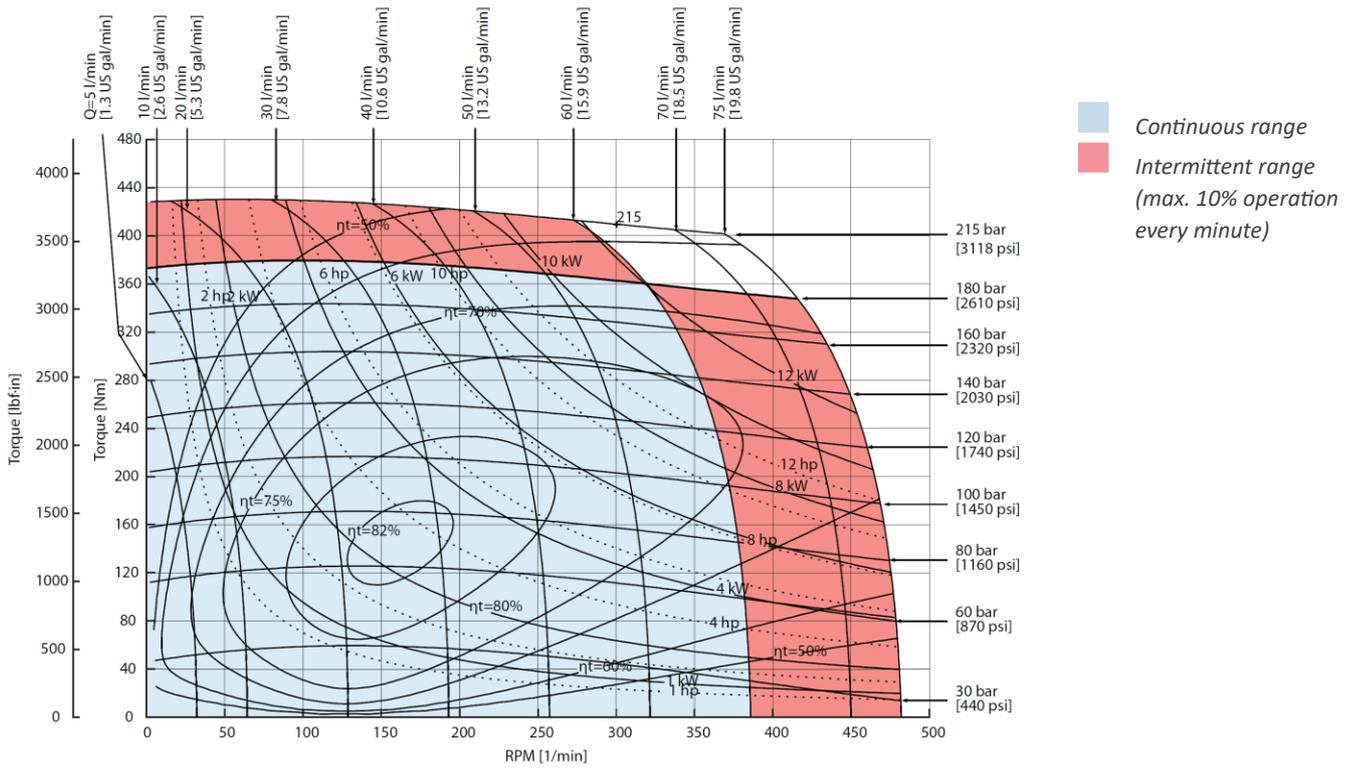


Figure 42 OMR X 160 function diagram

OMR X 200

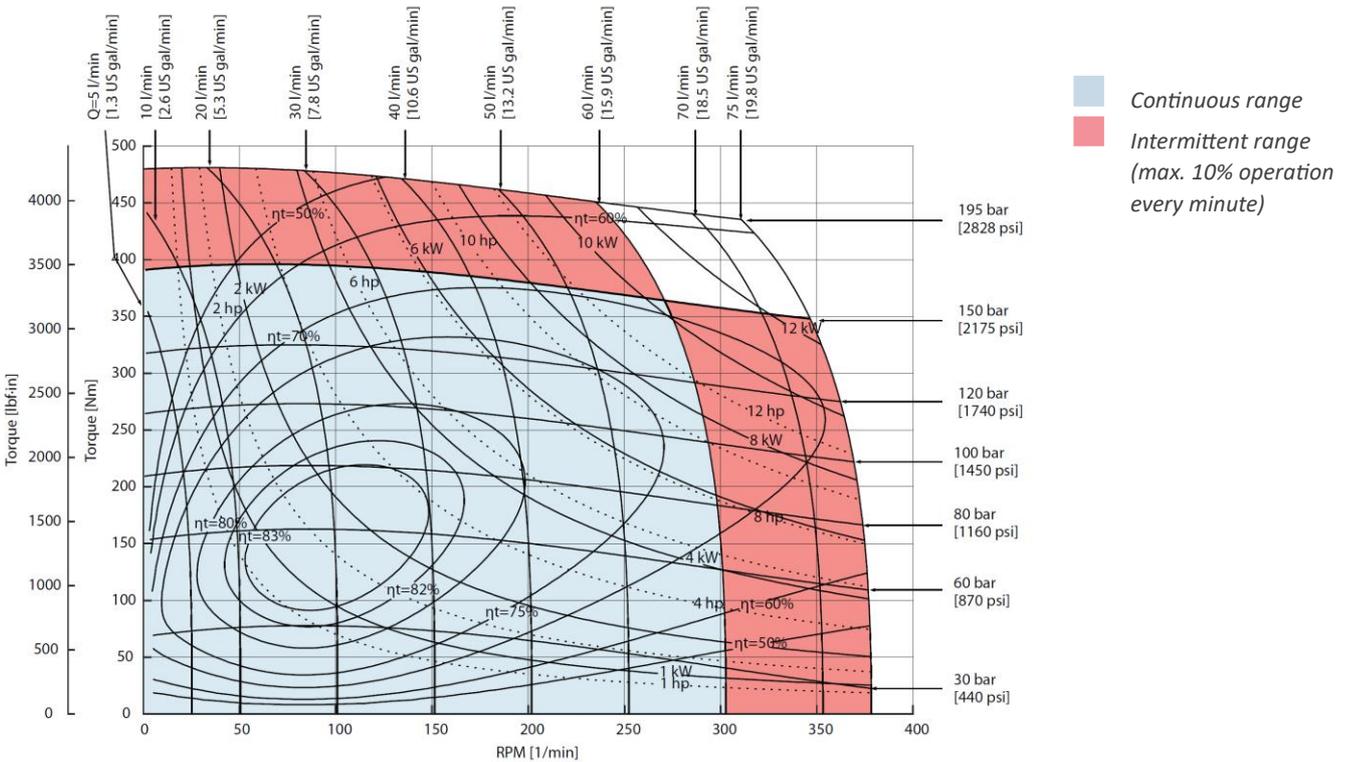


Figure 43 OMR X 200 function diagram

OMR X 250

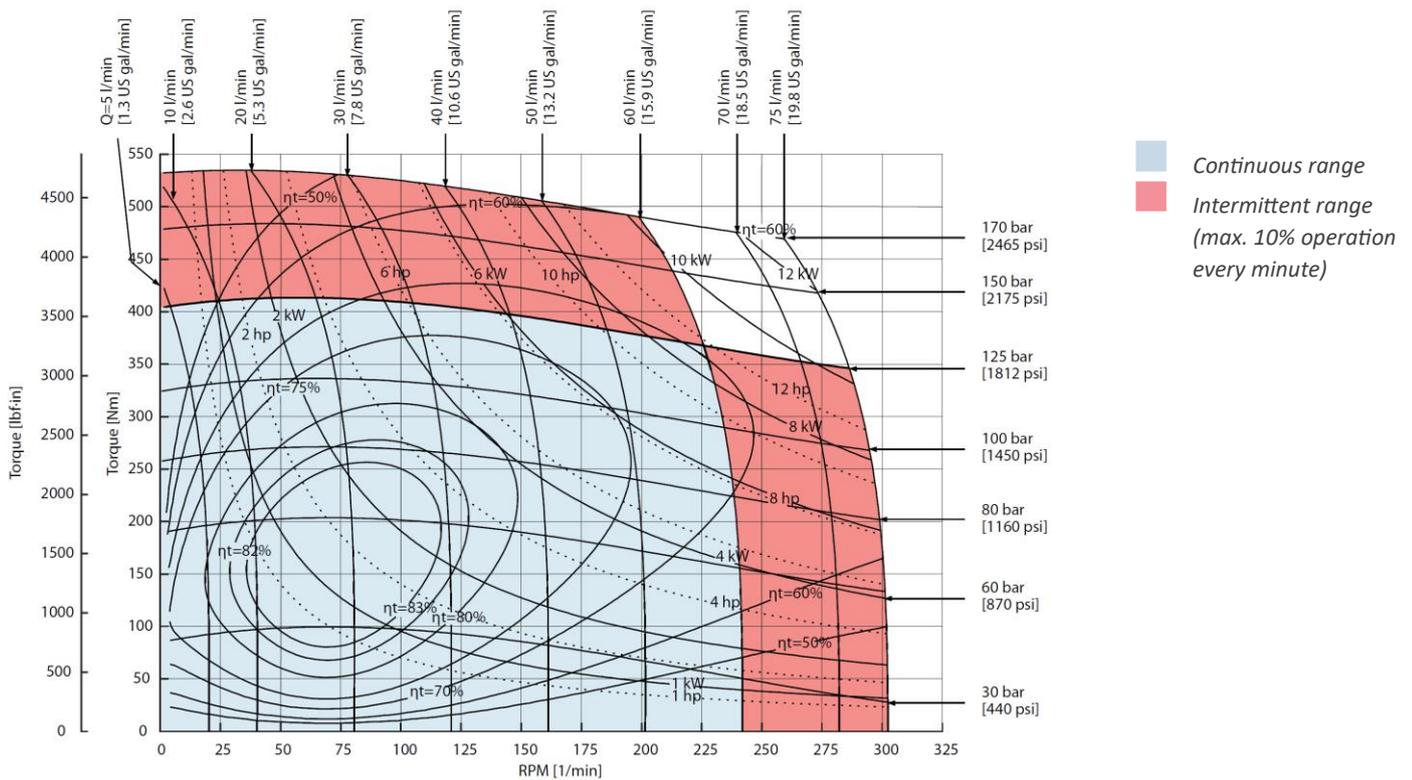


Figure 44 OMR X 250 function diagram

OMR X 315

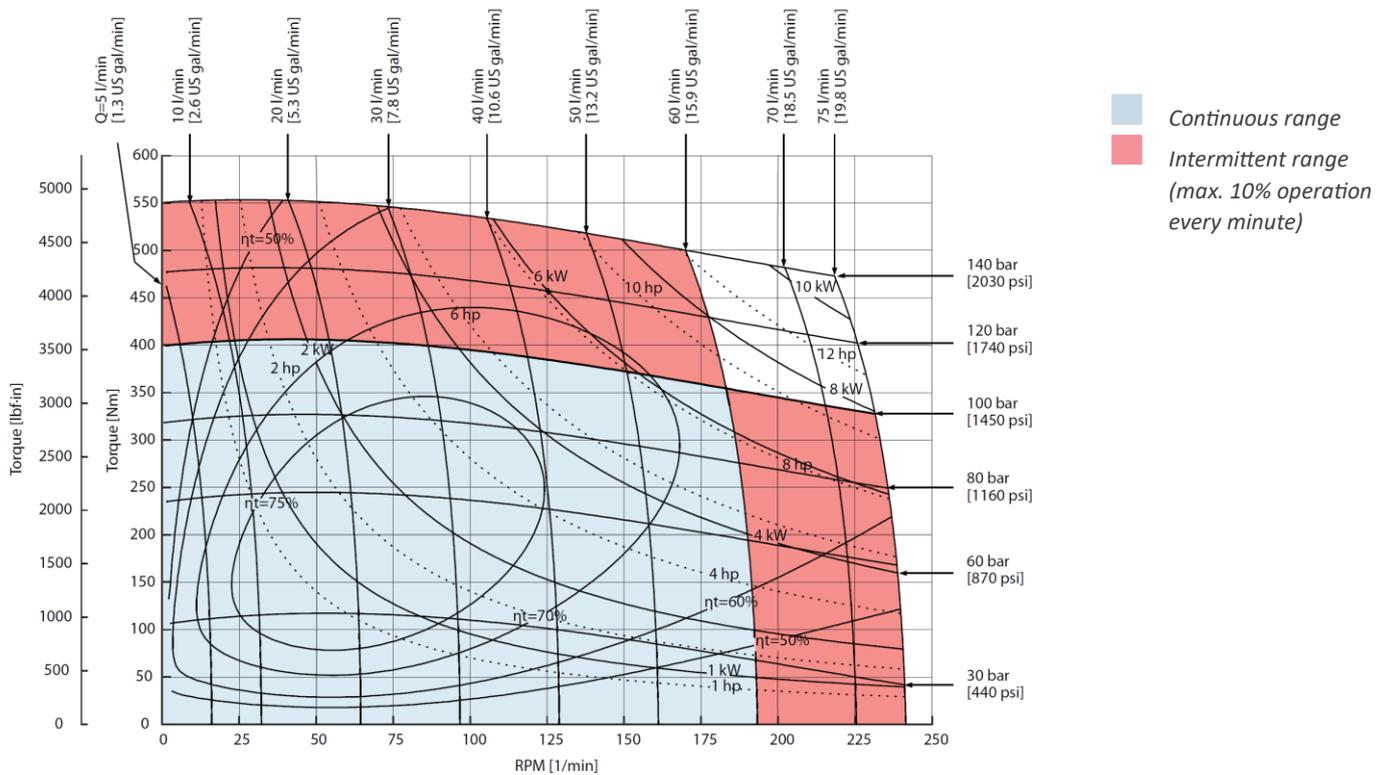
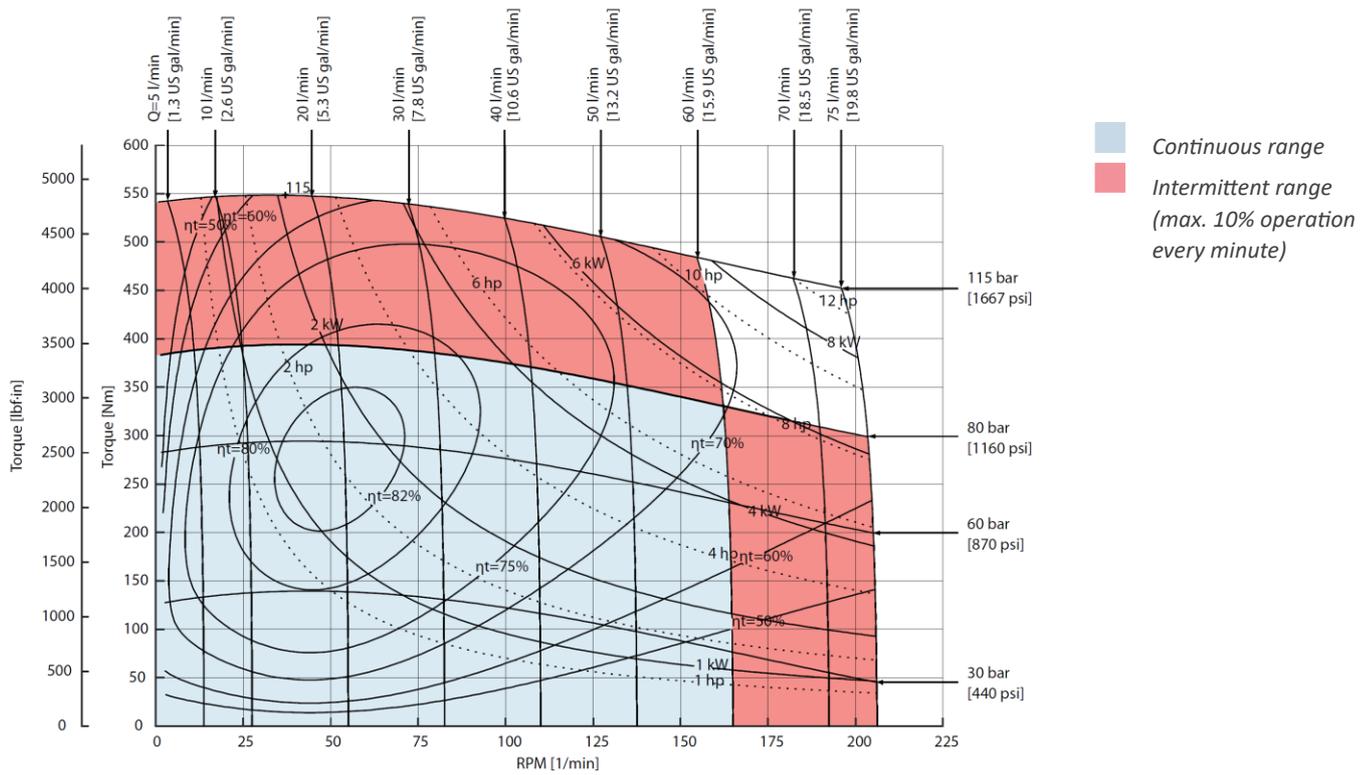
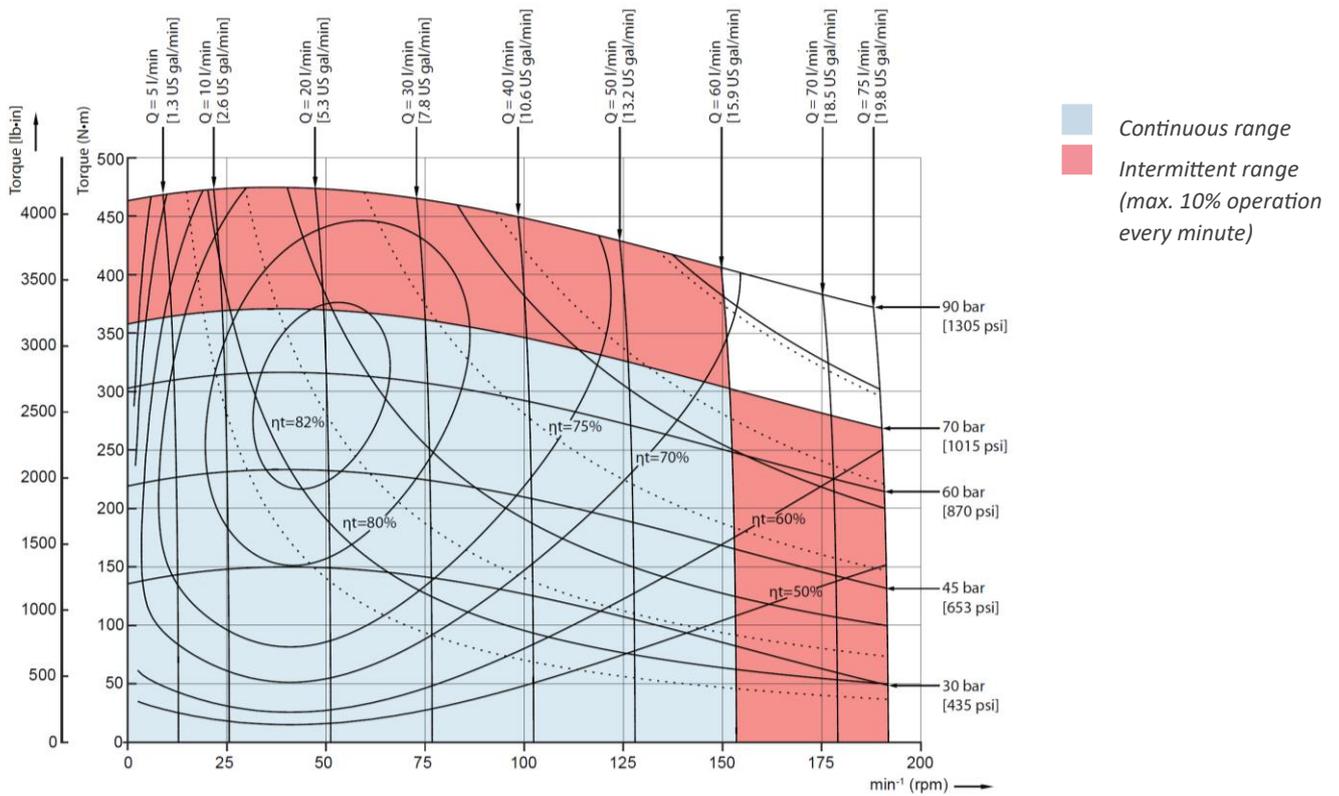


Figure 45 OMR X 315 function diagram

OMR X 375



OMR X 400



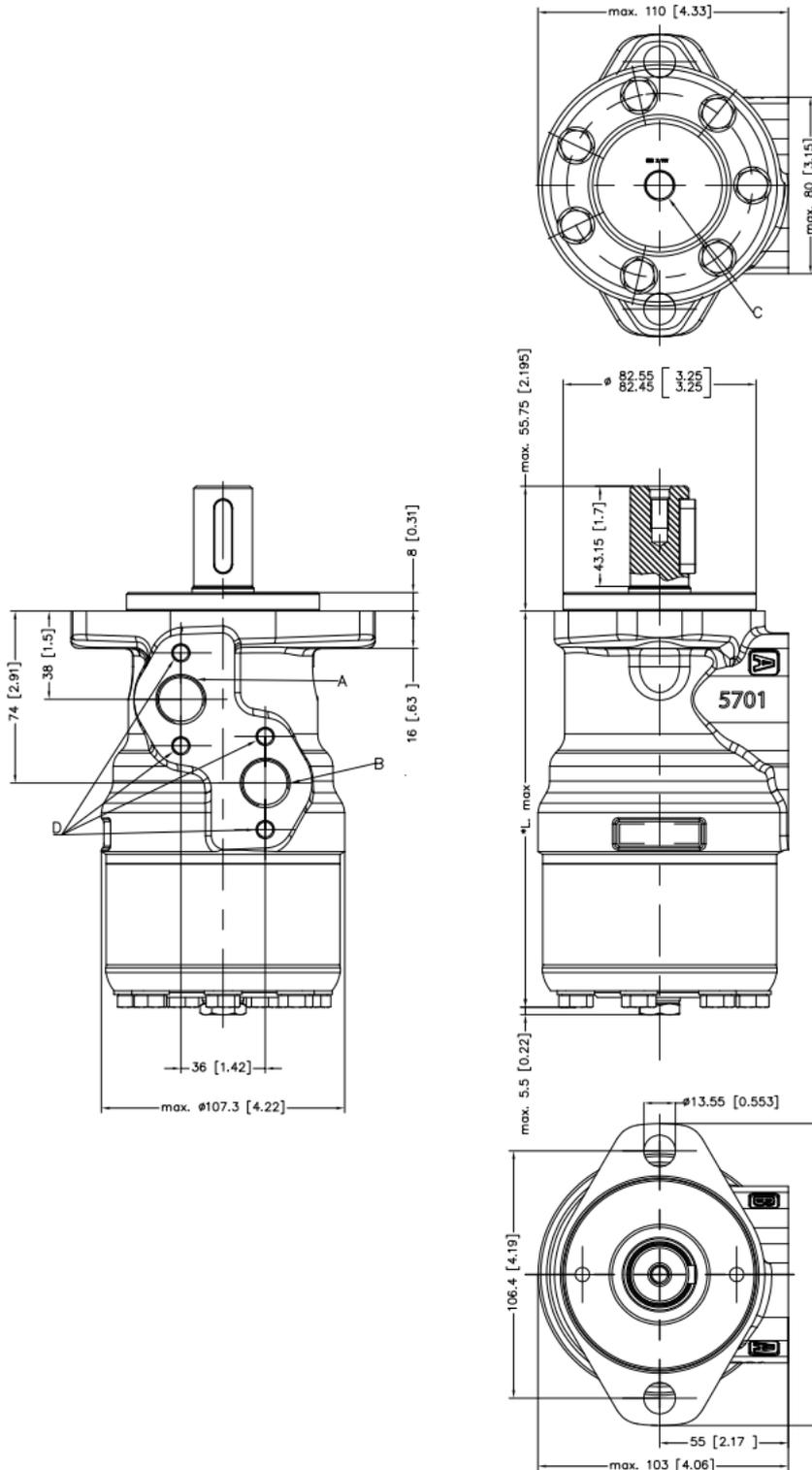
Chapter 8

OMR X dimensions

Topics:

- EU version side port offset with 2-hole oval mounting flange (A2)
- EU version end port version with 2-hole oval mounting flange (A2)
- US version side port offset with 2-hole oval mounting flange (A2)
- US version side port aligned with 2 hole oval mounting flange (A2)
- US version side port aligned with square mounting flange (C-flange)

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



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]

Figure 48 OMR X side port (A2- flange) EU version

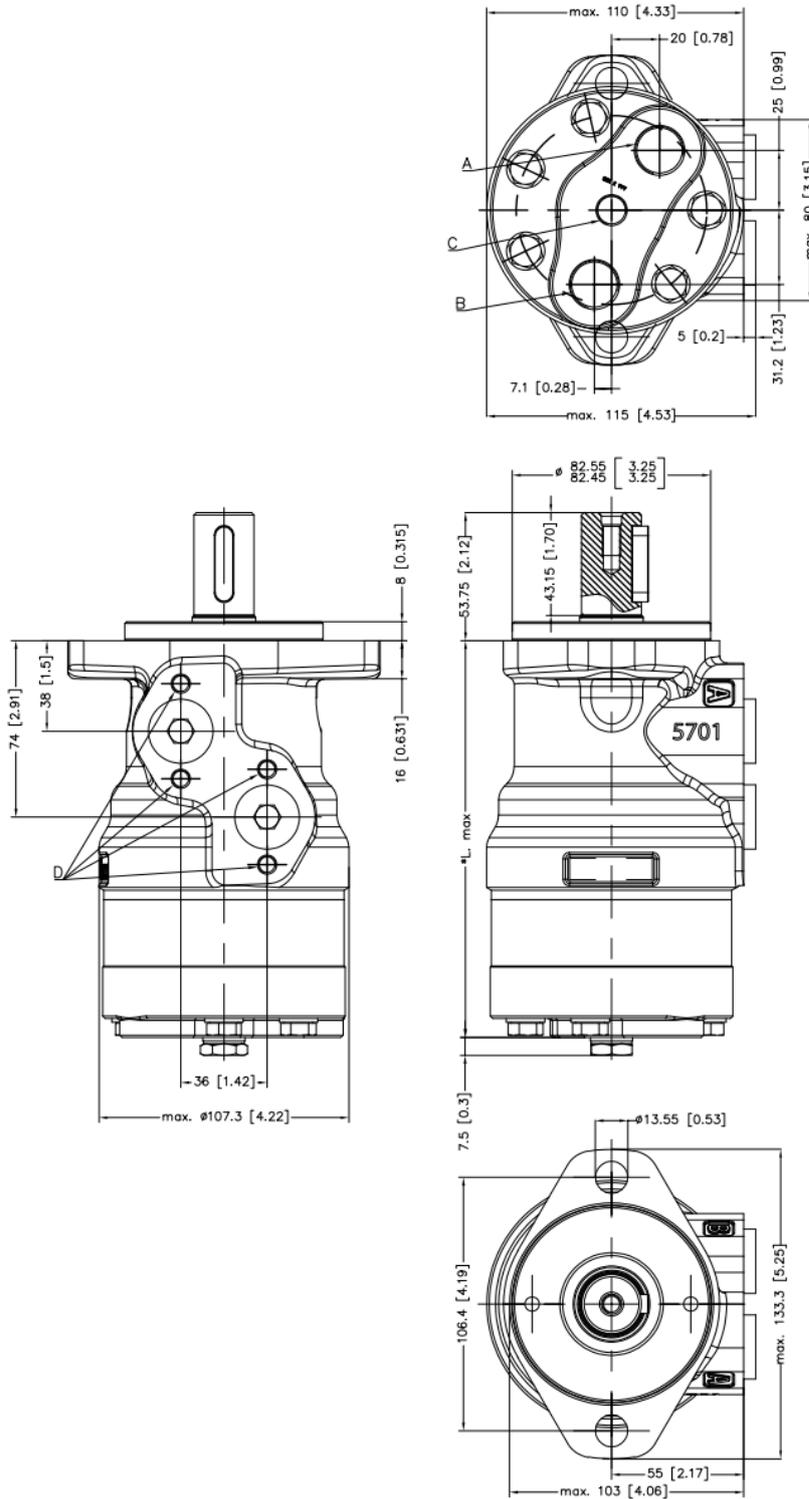
Dimension mm [in]	OMR X									
	50	80	100	125	160	200	250	315	375	400
L_{max.}	137.8 [5.43]	142.8 [5.63]	142.8 [5.63]	146.2 [5.76]	150.6 [5.93]	156.6 [6.17]	163.6 [6.45]	172.3 [6.79]	179.8 [7.08]	183.6 [7.23]

Table 16 OMR X side port (A2- flange) EU version dimensions

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EU version end port version with 2-hole oval mounting flange (A2)



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 49 OMR X end port version (A2- flange) EU version

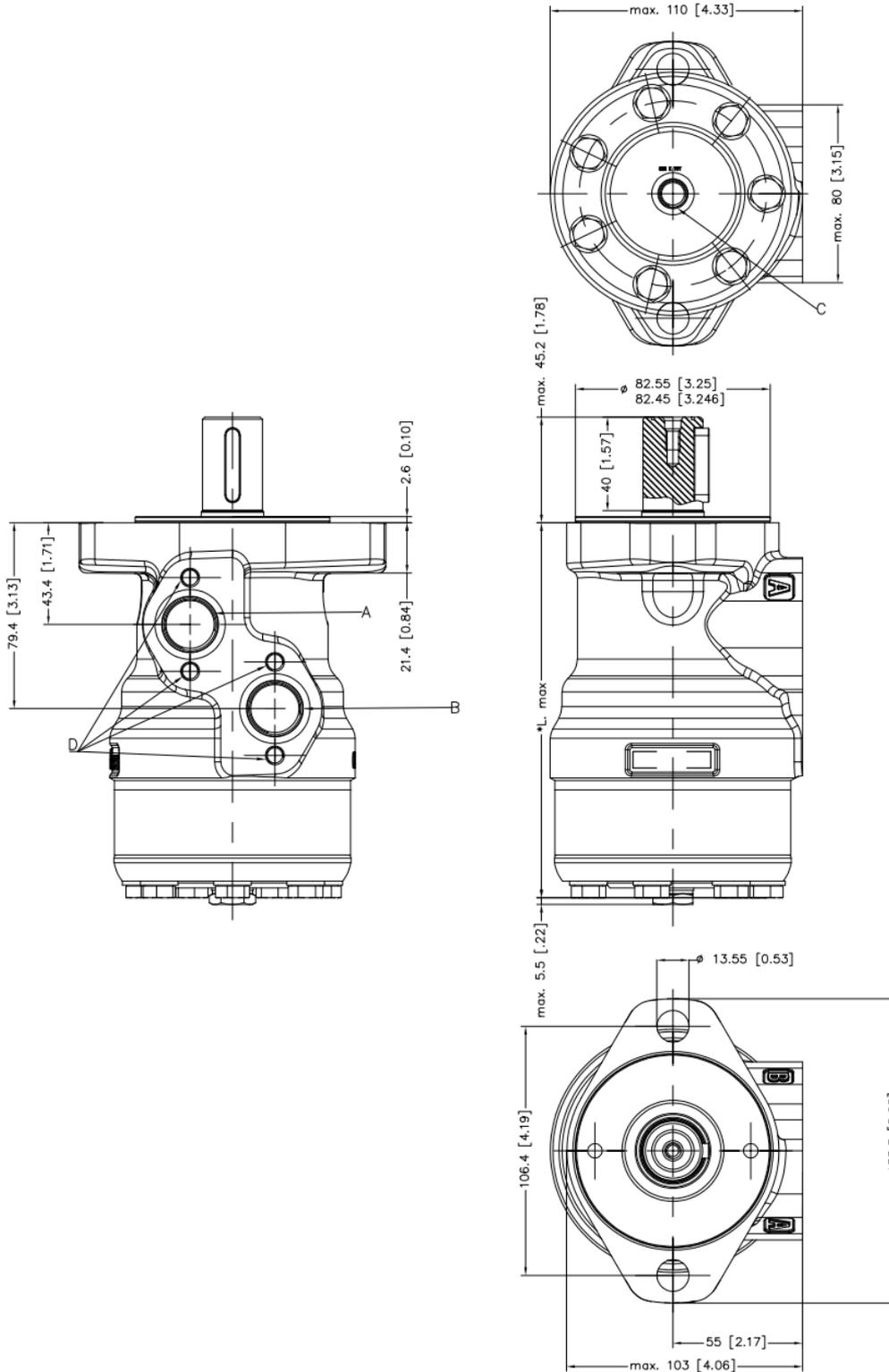
Dimension mm [in]	OMR X								
	50	80	100	125	160	200	250	315	375
L_{max.}	150.3 [5.82]	155.3 [6.12]	155.3 [6.12]	155.3 [6.12]	163.1 [6.43]	169.1 [6.66]	176.1 [6.94]	184.6 [7.28]	192.3 [7.58]

Table 17 OMR X end port version (A2- flange) EU version dimensions

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US version side port offset with 2-hole oval mounting flange (A2)



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 50 OMR X side port offset (A2- flange) US version

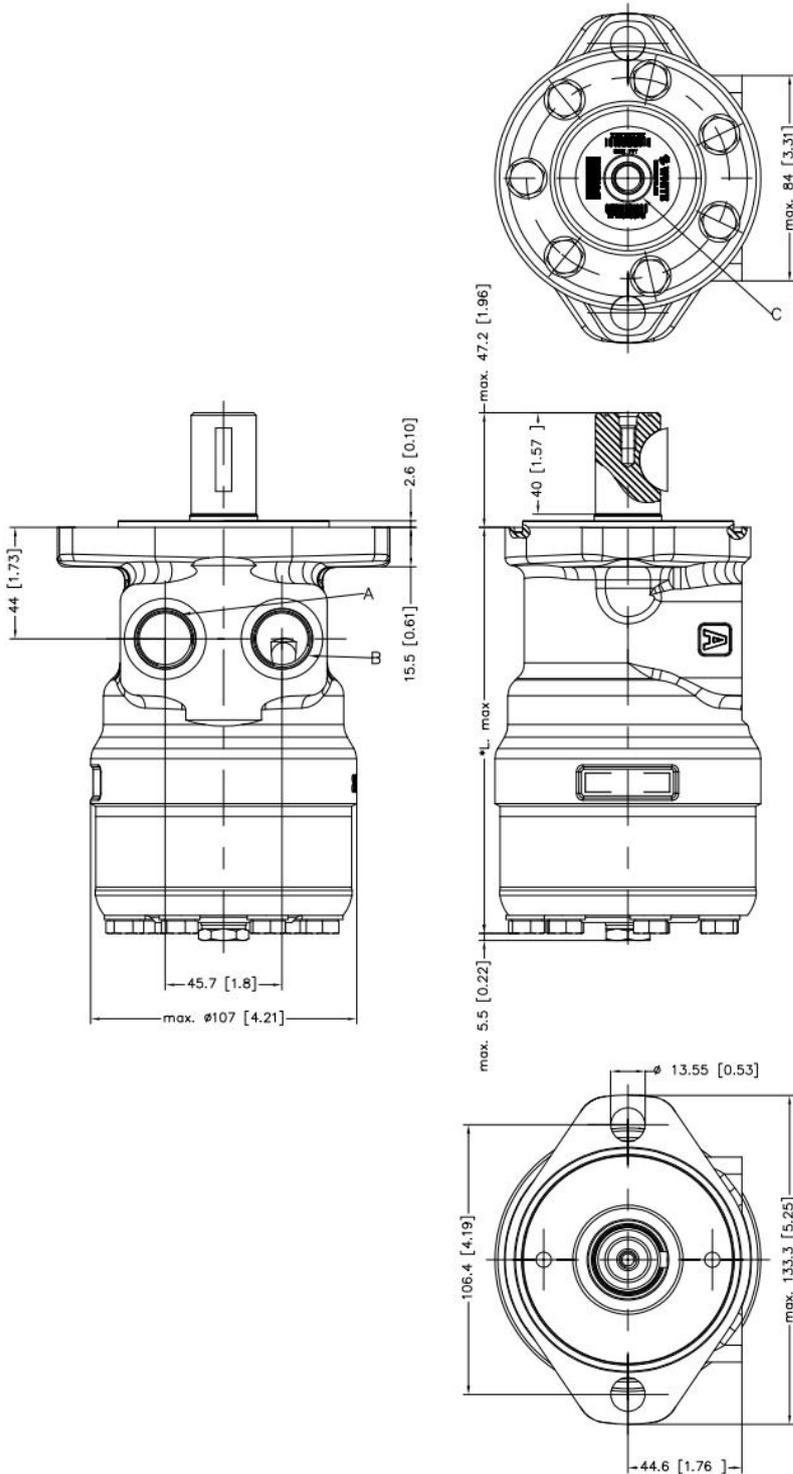
Dimension mm [in]	OMR X								
	50	80	100	125	160	200	250	315	375
L_{max.}	143.2 [5.64]	148.2 [5.84]	148.2 [5.84]	151.6 [5.97]	156 [6.15]	162 [6.38]	169 [6.66]	177.7 [7.00]	185.2 [7.30]

Table 18 OMR X side port offset (A2- flange) US version dimensions

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US version side port aligned with 2 hole oval mounting flange (A2)



Port connections:

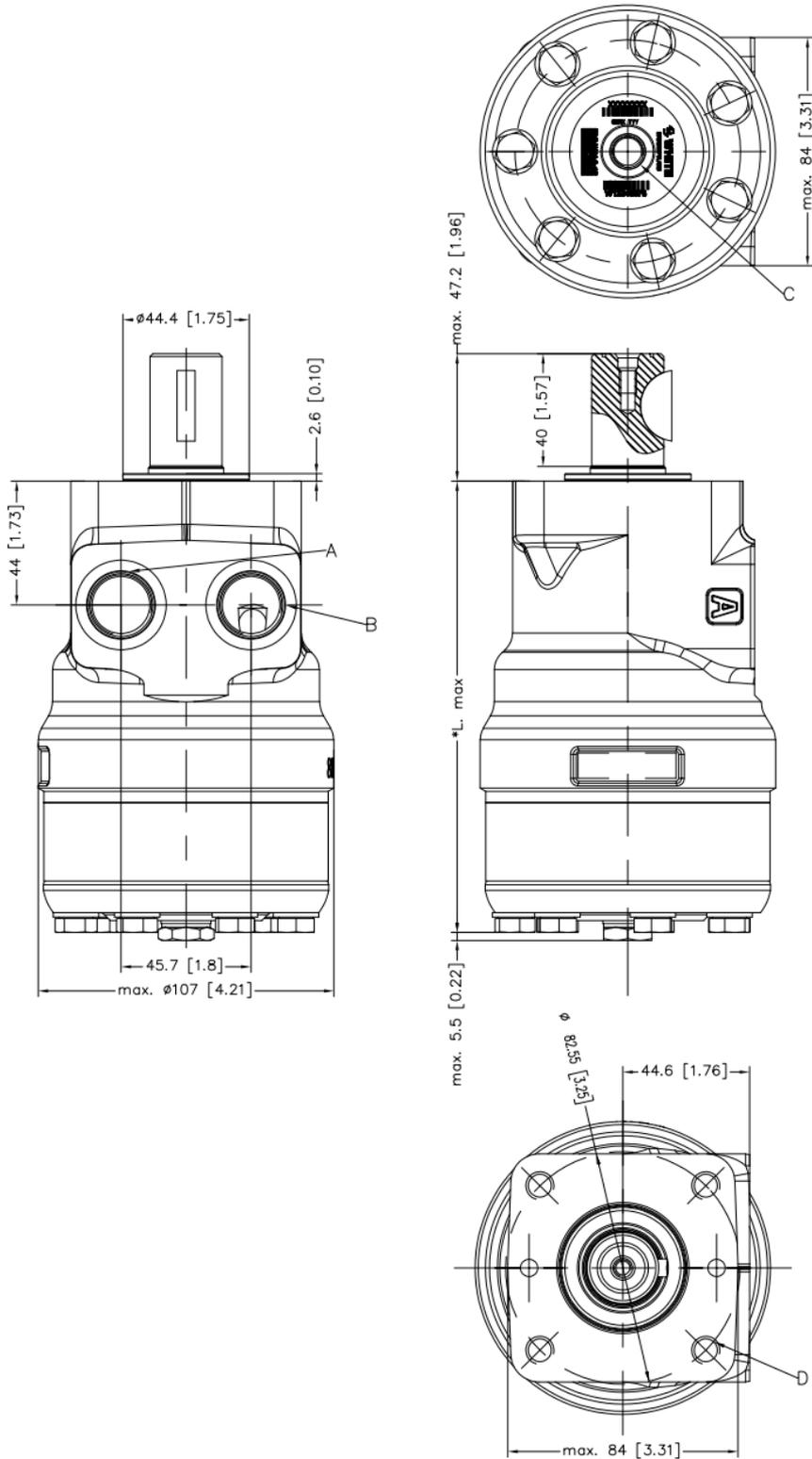
- A, B** Main ports: 7/8 - 14 UNF;
min. 16.7 mm [0.66 in] deep
- C** Drain port: 7/16 - 20 UNF;
12 mm [0.47 in] deep
- D** Thread: M8; 13 mm
[0.51 in] deep

Figure 51 OMR X side port (A2-flange) US version

Dimension mm [in]	OMR X									
	50	80	100	125	160	200	250	315	375	400
L_{max.}	137.8 [5.43]	142.8 [5.63]	142.8 [5.63]	146.2 [5.76]	150.6 [5.93]	156.6 [6.17]	163.6 [6.45]	172.3 [6.79]	179.8 [7.08]	183.6 [7.23]

Table 19 OMR X side port (A2-flange) US version dimensions

US version side port aligned with square mounting flange (C-flange)



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 inn] deep

Figure 52 OMR X side port (C-flange) US version

Dimension mm [in]	OMR X							
	80	100	125	160	200	250	315	375
L_{max.}	148.2 [5.84]	148.2 [5.84]	151.6 [5.97]	156 [6.15]	162 [6.38]	169 [6.66]	177.7 [7.0]	189 [7.45]

Table 20 OMR X side port (A2-flange) US version 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