

XL2 Series

Highlights



Description

Eaton's Xcel™ Series Low Speed High Torque Disc Valve motors offer the most popular features and options from the parallel Char-Lynn™ range and are optimized to bring the highest value in medium duty applications.

- Augers
- Sweepers
- Snow blowers
- Conveyors

Features

- Three zone design for longer life and true bi-directionality
- Bearings that meet the highest standards of the industry
- Options to optimize performance in every application
- Integrated cross-over relief and counterbalance valve options

Benefits

- Easy to design in a system
- Reliability in multiple applications
- Integrated valve options to minimize installed size and weight

Applications

- Skid steer attachments
- Swing motor
- Brush Cutters & Mowers

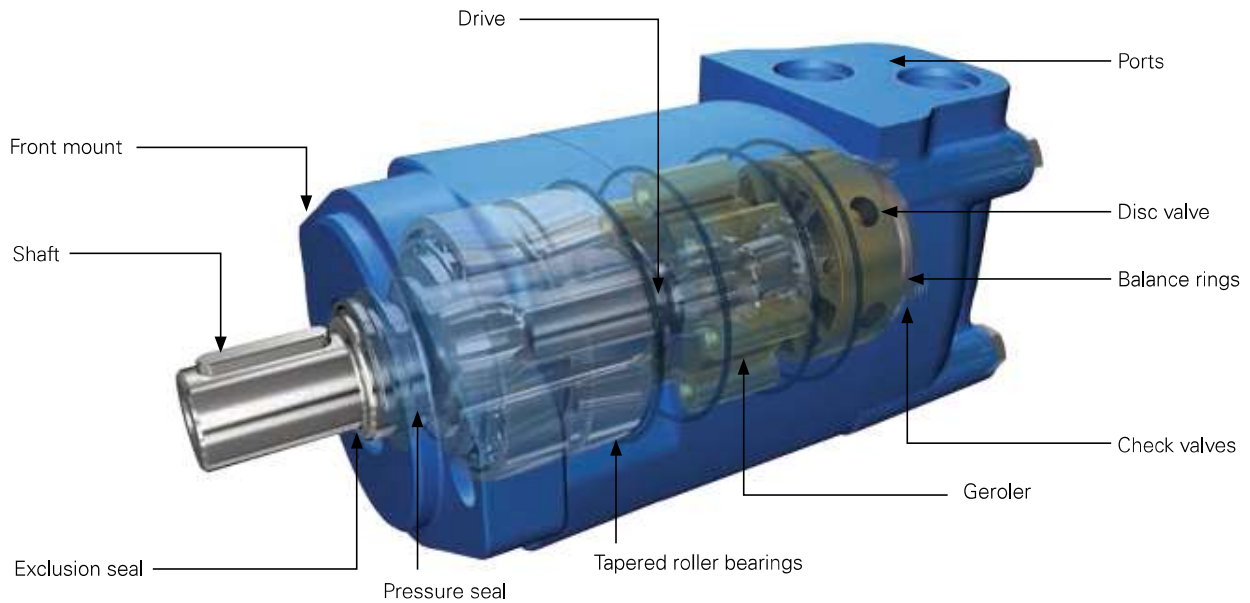
XL2 Series Motors

Geroler® element	9 displacements
Flow LPM[GPM]	75 [20] Continuous*
	115 [30] Intermittent **
Speed RPM	908 Cont.*
	924 Inter **
Pressure Bar [psi]	205[3000] Cont.*
	310 [4500] Inter **
Torque Nm [lb-in]	845 [7470] Cont.*
	930 [8225] Inter **

* Continuous-(Cont.) Continuous rating, motor may be run continuously at these ratings

** Intermittent-(Inter.) Intermittent operation, 10% of every minute





Specification Data

Displacement cm^3/r [in^3/r]		80 [4.9]	100 [6.1]	130 [7.9]	160 [9.8]	195 [11.9]	245 [15]	305 [18.6]	395 [24.1]	490 [29.9]
Flow LPM [GPM]	Continuous	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Intermittent	75 [20]	95 [25]	95 [25]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]
Speed RPM	Continuous	908	739	575	477	385	308	246	191	153
	Intermittent	908	924	719	713	577	462	365	287	230
Pressure ΔBar [Δpsi]	Continuous	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	155 [2248]	120 [1740]
	Intermittent	310 [4500]	310 [4500]	310 [4500]	260 [3771]	260 [3771]	260 [3771]	240 [3481]	170 [2466]	140 [2031]
Torque* Nm [lb-in]	Continuous	235 [2080]	295 [2611]	385 [3407]	455 [4027]	540 [4779]	660 [5841]	765 [6770]	775 [6859]	845 [7478]
	Intermittent	345 [3053]	445 [3938]	560 [4956]	570 [5045]	665 [5885]	820 [7257]	885 [7832]	925 [8186]	930 [8231]
Weight Kg [lbs]	Standard or wheel mont	9.3 [20.5]	9.5 [20.9]	9.8 [21.6]	10.0 [22]	10.4 [22.9]	10.9 [24]	11.3 [24.9]	11.8 [26]	12.2 [26.9]
		Bearingless	7.3 [16.1]	7.5 [16.5]	7.7 [17]	7.9 [17.4]	8.4 [18.5]	8.8 [19.4]	9.3 [20.5]	9.8 [21.6]

Maximum Case Pressure: See case pressure seal limitation graph

*See shaft torque ratings for limitations.

Note: To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

Max. inlet pressure:

310 bar [4500 psi]

Do not exceed Δ pressure rating (see chart above)

Max. return pressure:

310 bar [4500 psi] with case drain line installed

Do not exceed Δ pressure rating (see chart above)

$\Delta\text{Bar}[\Delta\text{psi}]$:

The true pressure difference between inlet port and outlet port

Continuous rating:

Motor may be run continuously at these ratings

Intermittent operation:

10% of every minute

Recommended fluids:

Premium quality anti-wear type hydraulic oil with a viscosity of not less than 13 cSt (70 SUS) at operating temperature.

Recommended system operating temp.:

-34°C to 82°C [-30°F to 180°F]

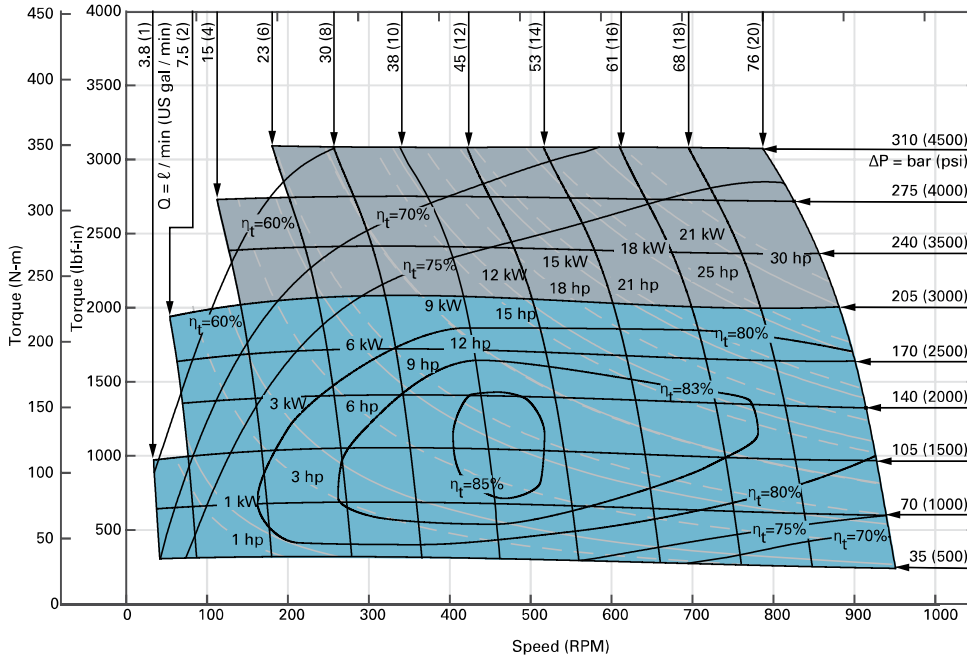
Recommended filtration

Per ISO Cleanliness code, 4406:20/18/13

XL2 Series

Performance Data

Function Diagram: XL2 motor 80 cc



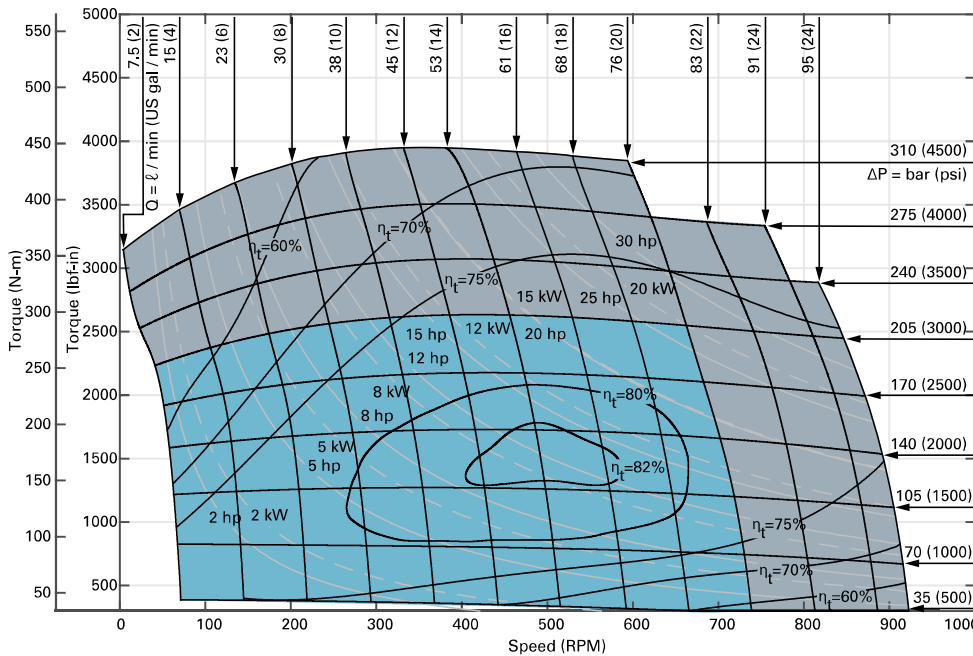
Performance data is typical at 25 cSt (120 SUS). Actual data may vary slightly from unit to unit in production.

η_t = overall efficiency

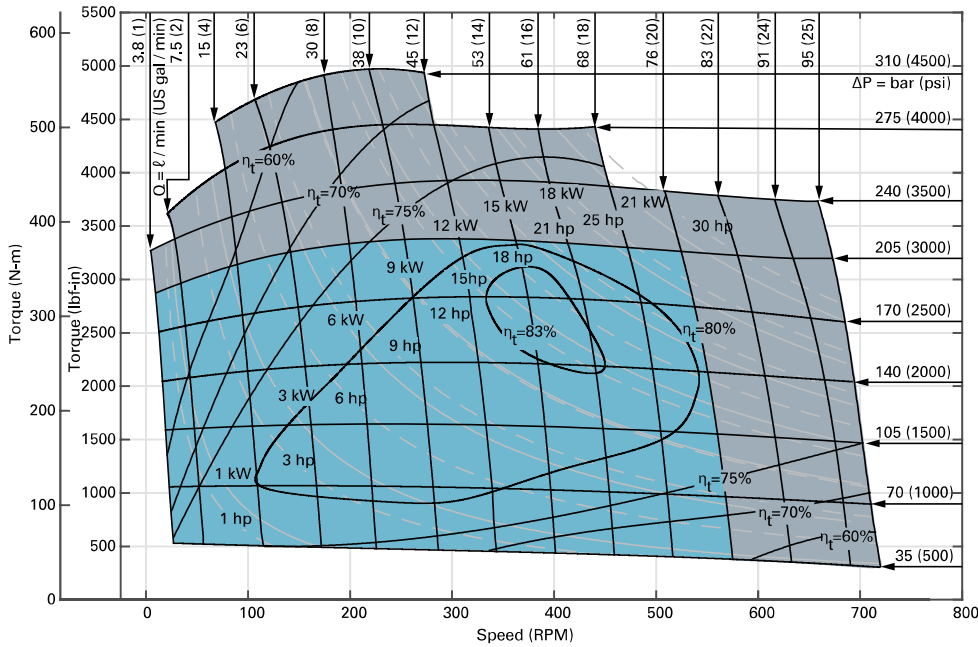
Continuous

Intermittent

Function Diagram: XL2 motor 100 cc



Function Diagram: XL2 motor 130 cc



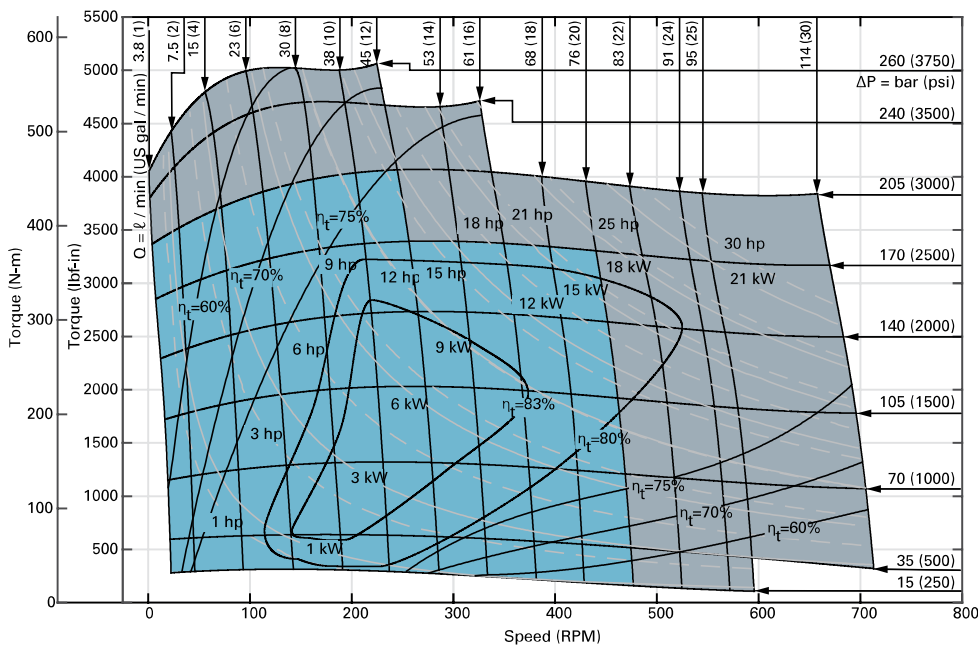
Performance data is typical at 25 cSt (120 SUS). Actual data may vary slightly from unit to unit in production.

η_t = overall efficiency

Continuous

Intermittent

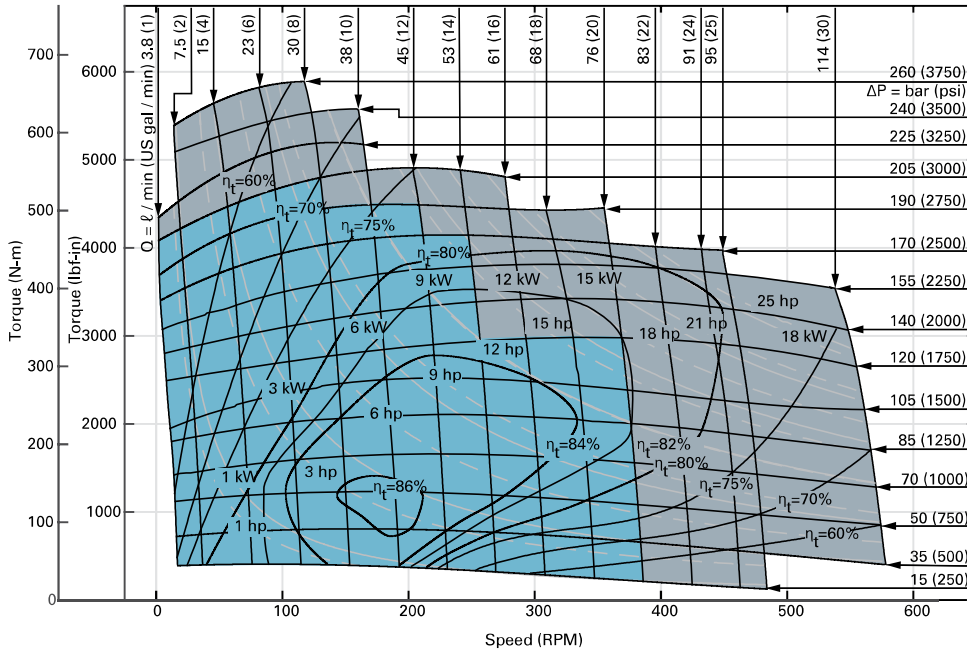
Function Diagram: XL2 motor 160 cc



XL2 Series

Performance Data

Function Diagram: XL2 motor 195 cc



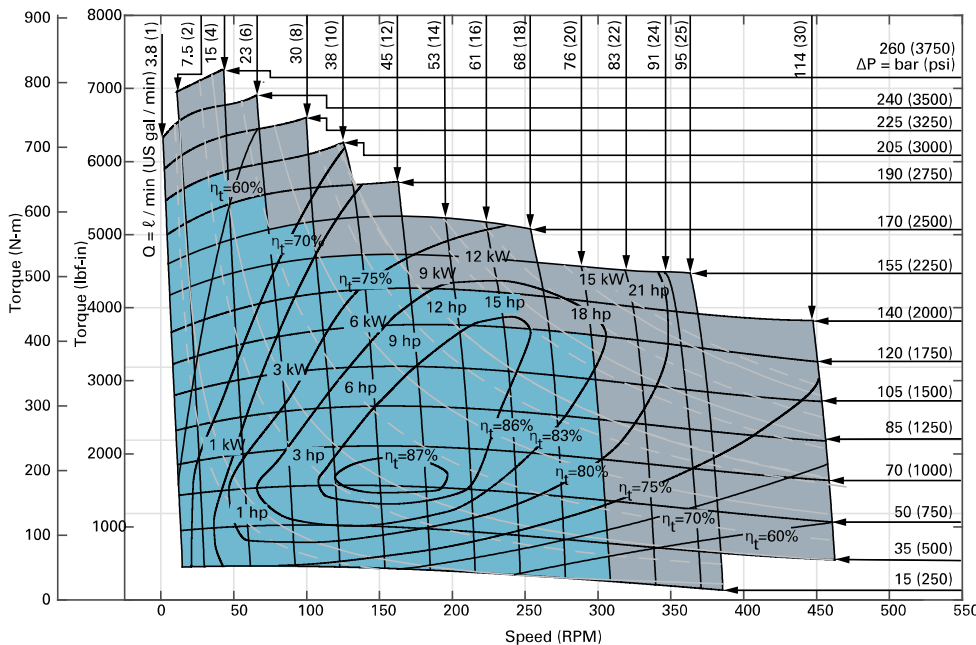
Performance data is typical at 25 cSt (120 SUS). Actual data may vary slightly from unit to unit in production.

η_t = overall efficiency

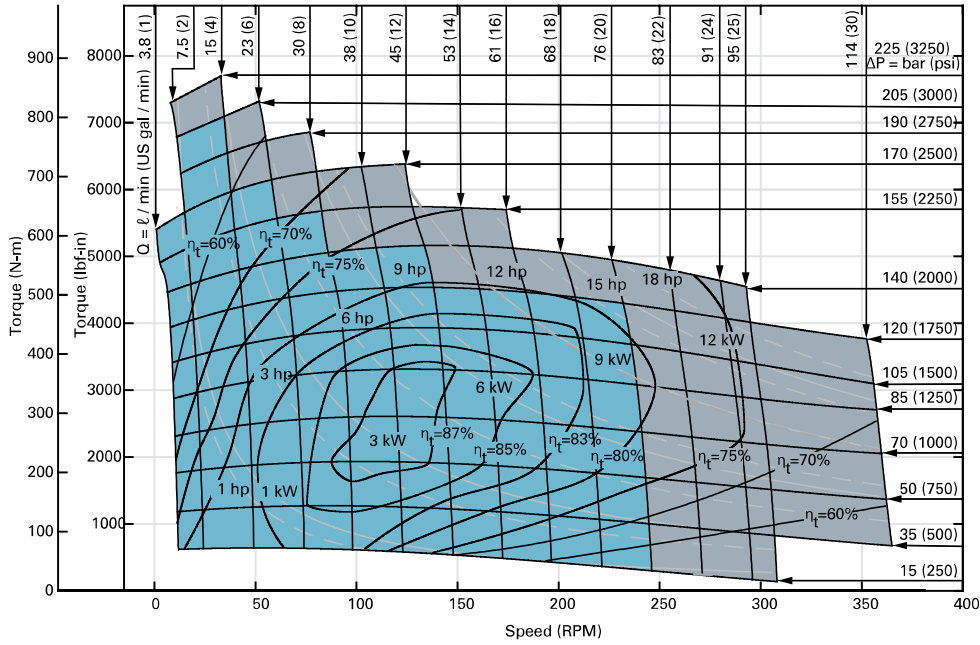
Continuous

Intermittent

Function Diagram: XL2 motor 245 cc



Function Diagram: XL2 motor 305 cc



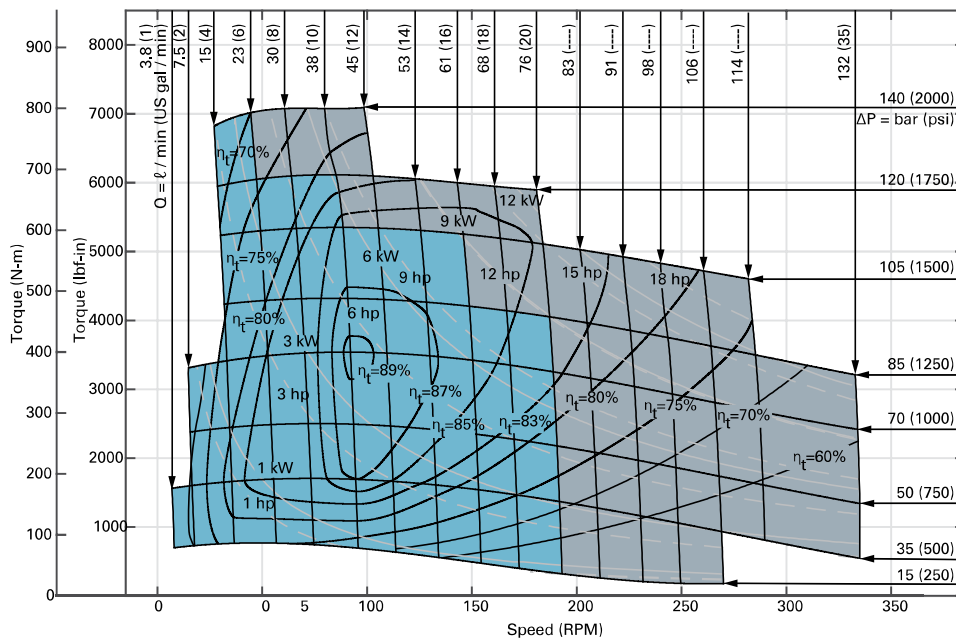
Performance data is typical at 25 cSt (120 SUS). Actual data may vary slightly from unit to unit in production.

η_t = overall efficiency

Continuous

Intermittent

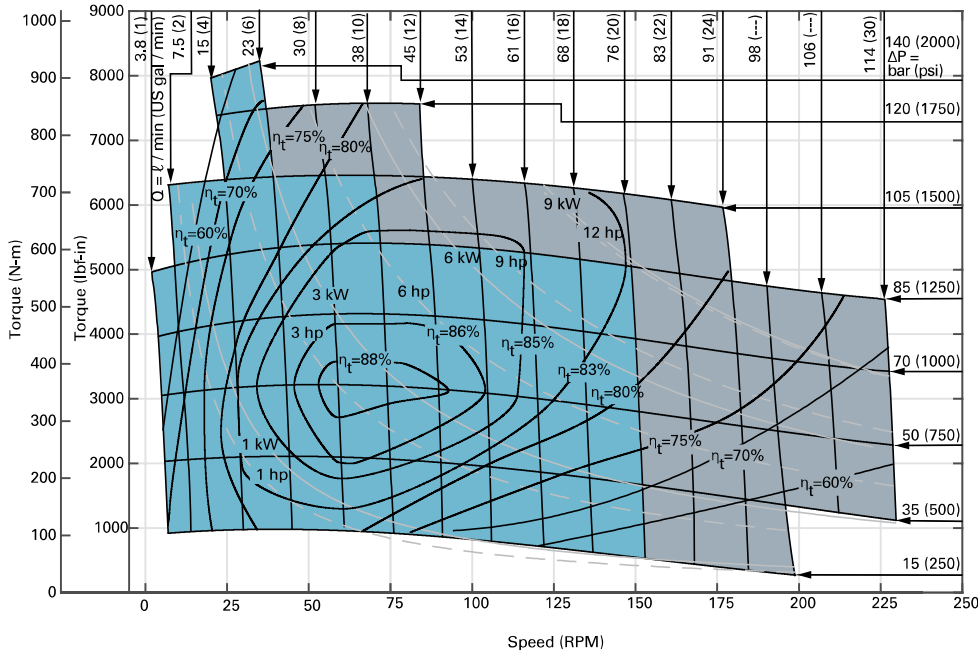
Function Diagram: XL2 motor 395 cc



XL2 Series

Performance Data

Function Diagram: XL2 motor 490 cc



Performance data is typical at 25 cSt (120 SUS). Actual data may vary slightly from unit to unit in production.

η_t = overall efficiency

Continuous

Intermittent

Standard Rotation Viewed from Shaft End

Port A pressurized – CW

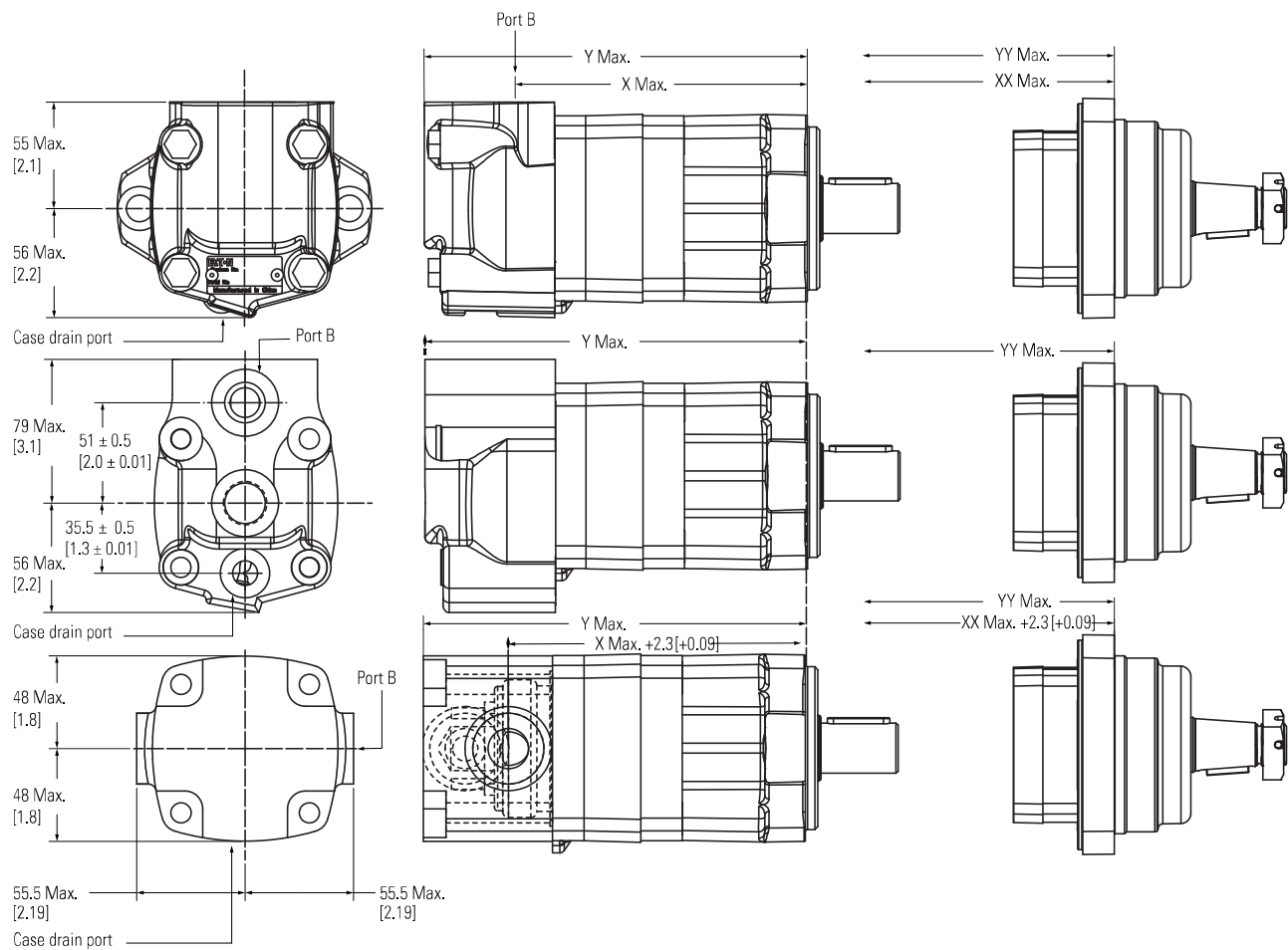
Port B pressurized – CCW

XL2 Standard and Wheel mount Shaft Seal and Section Seal Kit Number: **Z331-02**

XL2 Standard and Wheel mount High Pressure Shaft Seal and Section Seal Kit Number: **Z331-51**

XL2 Standard and Wheel mount High Pressure Shaft Seal, Seal Guard, and Section Seals Kit Number: **Z331-45**

Standard Mount & Wheel Mount



Standard/wheel mount motor dimensions

Displacement	X	Y	XX	YY
cm ³ /r [in ³ /r]	mm [inch]	mm [inch]	mm [inch]	mm [inch]
80 [4.9]	136.9 [5.39]	184.2 [7.25]	96.9 [3.81]	144.3 [5.68]
100 [6.1]	141.5 [5.57]	189 [7.44]	101.4 [3.99]	148.9 [5.86]
130 [7.9]	147.9 [5.82]	195.4 [7.69]	107.8 [4.24]	155.2 [6.11]
160 [9.8]	147.9 [5.82]	195.4 [7.69]	107.8 [4.24]	155.2 [6.11]
195 [11.9]	154.7 [6.09]	202.2 [7.96]	114.6 [4.51]	162.1 [6.38]
245 [15]	163.7 [6.44]	211.1 [8.31]	123.5 [4.86]	171 [6.73]
305 [18.6]	175.1 [6.89]	222.3 [8.75]	135 [5.31]	182.4 [7.18]
395 [24.1]	191 [7.52]	238.6 [9.39]	151.5 [5.96]	198.4 [7.81]
490 [29.9]	208.4 [8.2]	255.8 [10.07]	168.2 [6.62]	215.7 [8.49]

XL2 Series

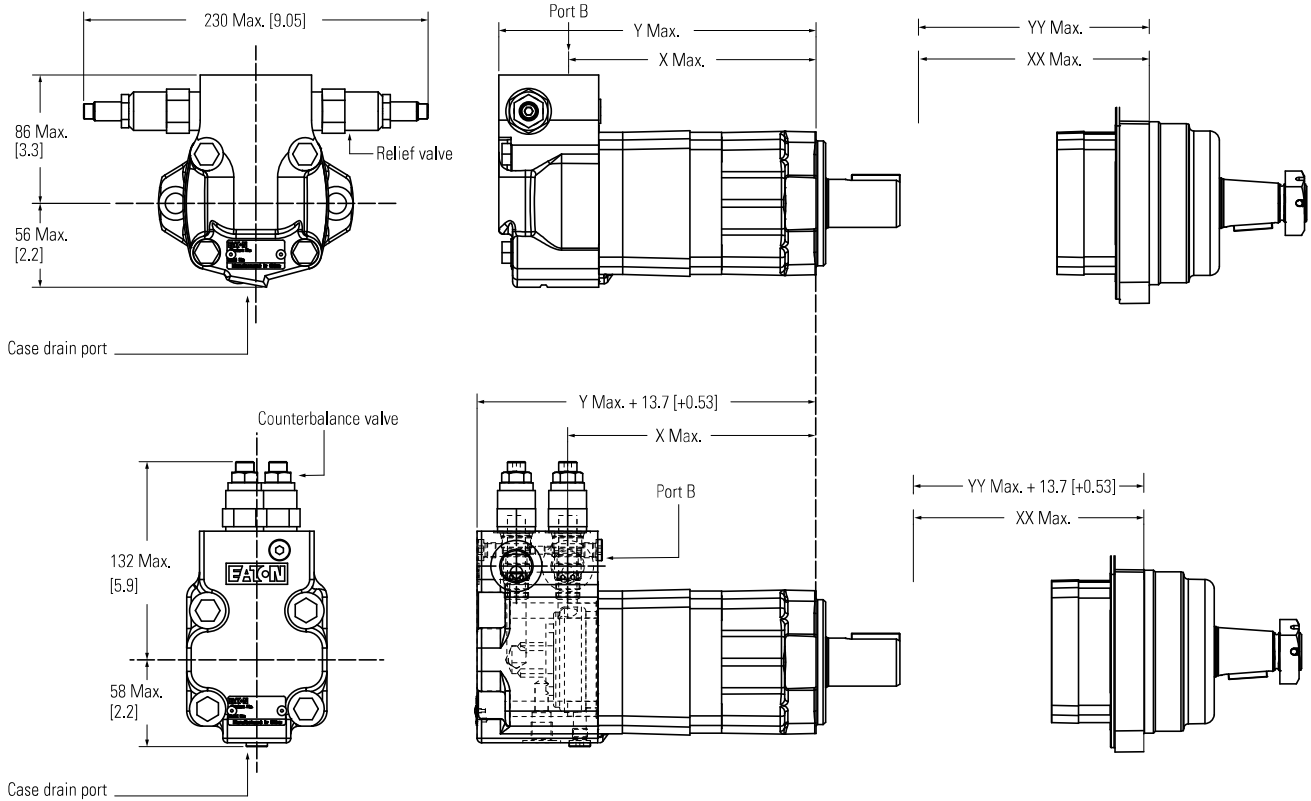
Dimensions Standard/Wheel Mount with Integral Valve

Standard Rotation Viewed from Shaft End

Port A pressurized – CW

Port B pressurized – CCW

Standard Mount with Integral Valve & Wheel Mount with Integral Valve

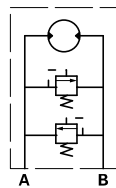


Functional symbol

Relief valve

RV3A-10-S-O-36 or

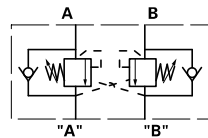
CRV2-10-C-0-0-30



Counterbalance valve

1CE30

(Rated Flow 30LPM)



Note: Please contact Eaton for more detailed information about relief valve and counterbalance valve

Standard/wheel mount motor dimensions

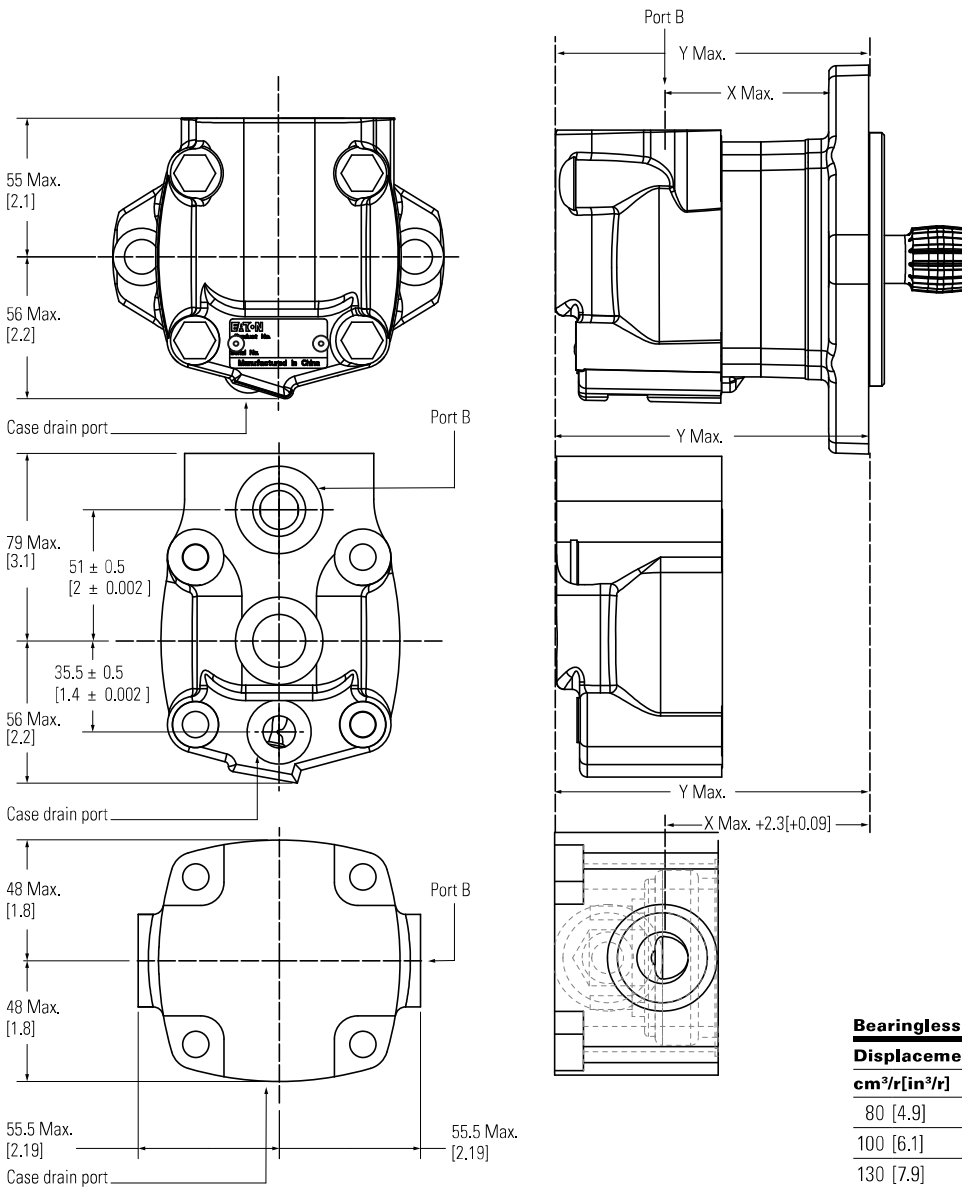
Displacement	X	Y	XX	YY
cm ³ /r [in ³ /r]	mm [inch]	mm [inch]	mm [inch]	mm [inch]
80 [4.9]	136.9 [5.39]	184.2 [7.25]	96.9 [3.81]	144.3 [5.68]
100 [6.1]	141.5 [5.57]	189 [7.44]	101.4 [3.99]	148.9 [5.86]
130 [7.9]	147.9 [5.82]	195.4 [7.69]	107.8[4.24]	155.2 [6.11]
160 [9.8]	147.9 [5.82]	195.4 [7.69]	107.8[4.24]	155.2 [6.11]
195 [11.9]	154.7 [6.09]	202.2 [7.96]	114.6[4.51]	162.1 [6.38]
245 [15]	163.7 [6.44]	211.1 [8.31]	123.5[4.86]	171 [6.73]
305 [18.6]	175.1 [6.89]	222.3 [8.75]	135[5.31]	182.4 [7.18]
395 [24.1]	191 [7.52]	238.6 [9.39]	151.5[5.96]	198.4 [7.81]
490 [29.9]	208.4 [8.2]	255.8 [10.07]	168.2[6.62]	215.7 [8.49]

Standard rotation viewed from shaft end

Port A pressurized – CW

Port B pressurized – CCW

Bearingless



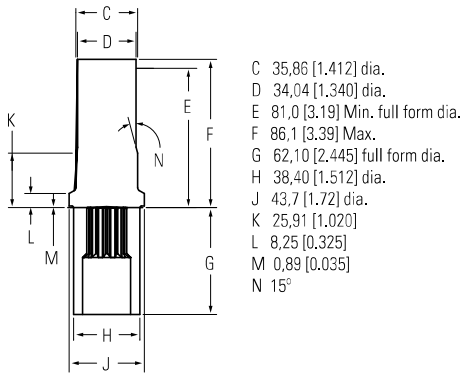
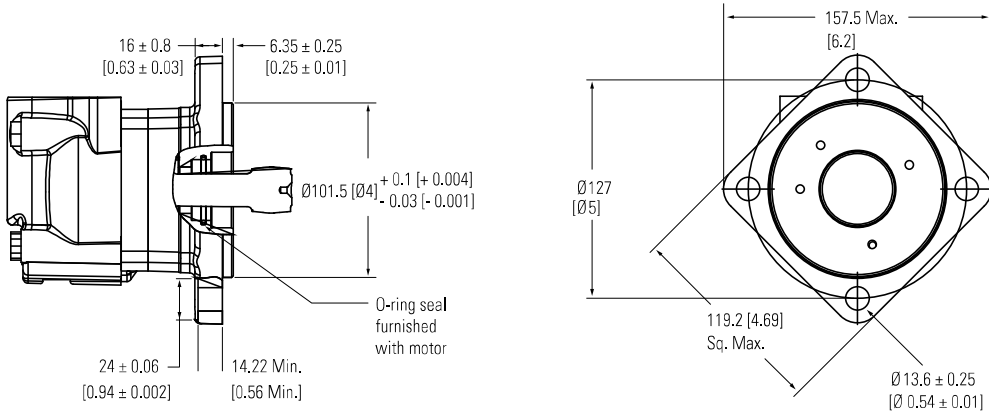
Bearingless mount motor dimensions

Displacement cm ³ /r [in ³ /r]	X		Y	
	mm	[inch]	mm	[inch]
80 [4.9]	79	[3.11]	126.5	[4.98]
100 [6.1]	83.5	[3.29]	131.4	[5.17]
130 [7.9]	89.9	[3.54]	137.7	[5.42]
160 [9.8]	89.9	[3.54]	137.7	[5.42]
195 [11.9]	96.8	[3.81]	144.3	[5.68]
245 [15]	105.6	[4.16]	153.5	[6.04]
305 [18.6]	117.1	[4.61]	164.6	[6.48]
395 [24.1]	133.1	[5.24]	180.9	[7.12]
490 [29.9]	150.3	[5.92]	198.2	[7.8]

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Dimensions Bearingless

Bearingless Mount (AD)



Mating coupling blank
Eaton part no. 6034897-803

For Xcel XL2 Series Bearingless Motor application information contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

Note:

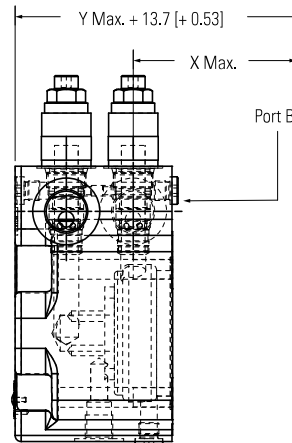
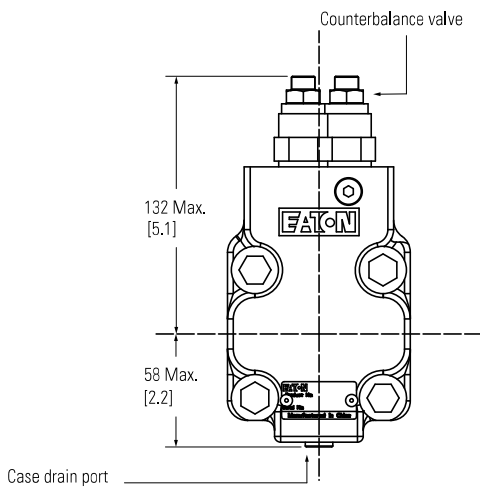
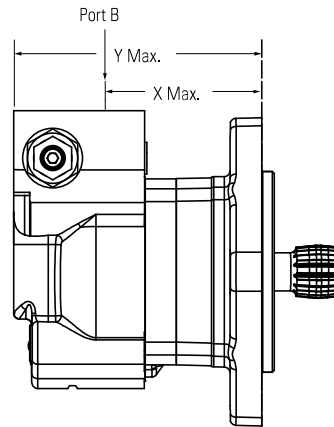
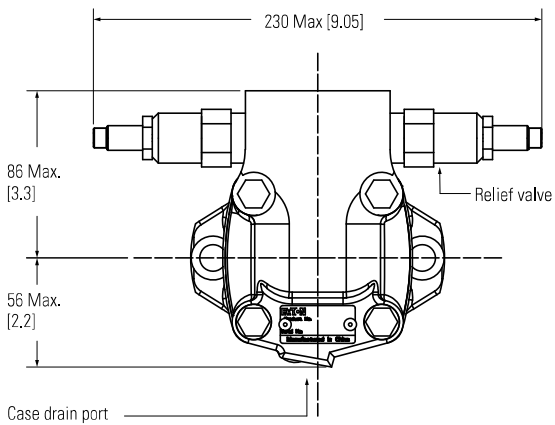
After machining blank, part must be hardened per Eaton specification

Standard rotation viewed from shaft end

Port A pressurized – CW

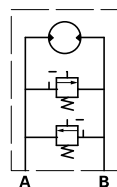
Port B pressurized – CCW

Bearingless with Integral Valve



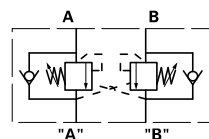
Relief valve

RV3A-10-S-O-36 or
CRV2-10-C-O-0-30



Counterbalance valve

1CE30



Bearingless mount motor dimensions

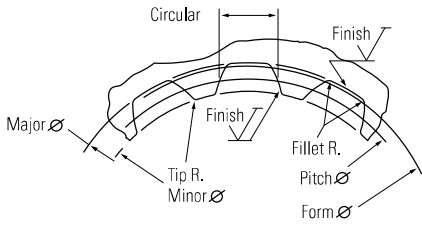
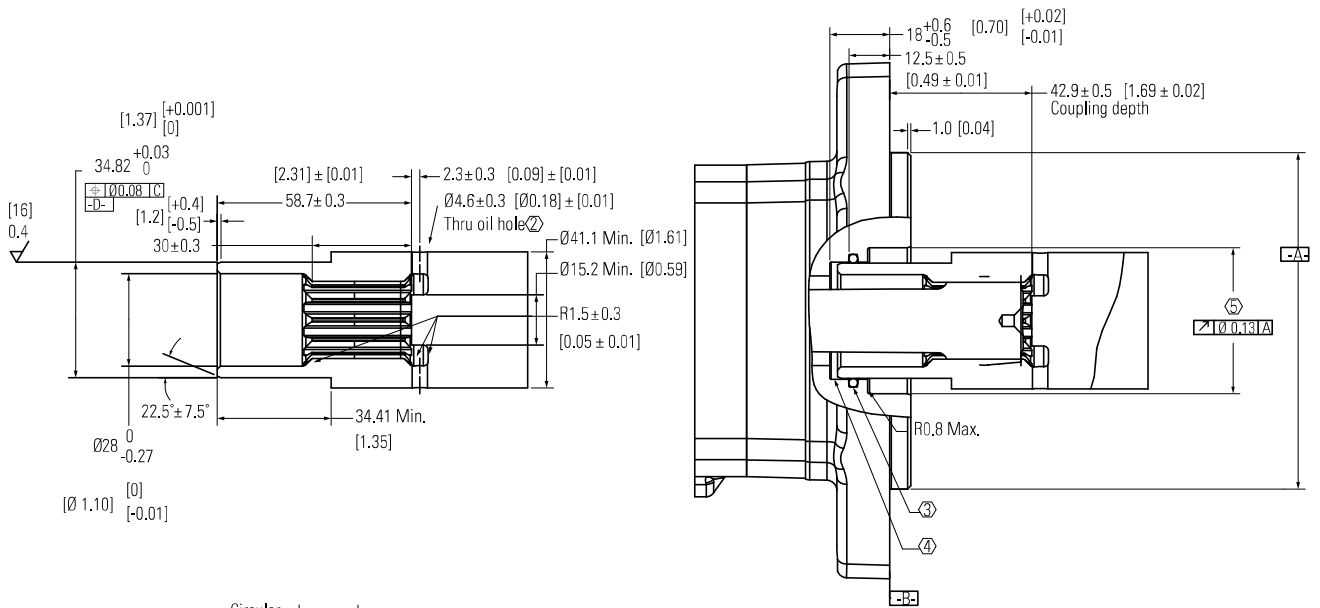
Displacement	X	Y
cm ³ /r [in ³ /r]	mm [inch]	mm [inch]
80 [4.9]	79 [3.11]	126.5 [4.98]
100 [6.1]	83.5 [3.29]	131.4 [5.17]
130 [7.9]	89.9 [3.54]	137.7 [5.42]
160 [9.8]	89.9 [3.54]	137.7 [5.42]
195 [11.9]	96.8 [3.81]	144.3 [5.68]
245 [15]	105.6 [4.16]	153.5 [6.04]
305 [18.6]	117.1 [4.61]	164.6 [6.48]
395 [24.1]	133.1 [5.24]	180.9 [7.12]
490 [29.9]	150.3 [5.92]	198.2 [7.8]

XL2 Series

Installation Information Bearingless

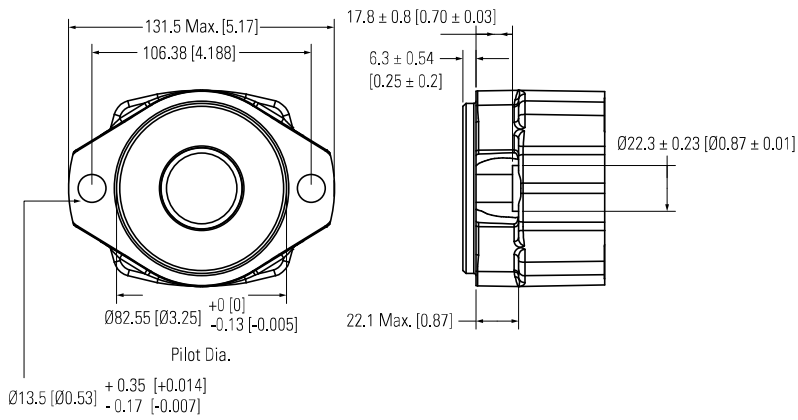
- ① Internal spline in mating part to be per spline data. Specification material to be ASTM A304, 8620H vacuum degassed alloy steel carbonize to a hardness of 59-62 HRc with case depth (to 50HRc) of 0,076 -1,02 [.030 -.040]. Dimensions apply after heat treat.
- ② Mating part to have critical dimensions as shown. Oil holes must be provided and open for proper oil circulation.
- ③ Seal to be furnished with motor for proper oil circulation thru splines.
- ④ Some means of maintaining clearance between shaft and mounting flange must be provided.
- ⑤ Counterbore designed to adapt a standard sleeve bearing 35,010 -35,040 [1.3784 -1.3795] I.D. by 44,040 -44,070 [1.7339 -1.7350] O.D. (Oilite Bronze Sleeve Bearing AAM3544-22).

Bearingless

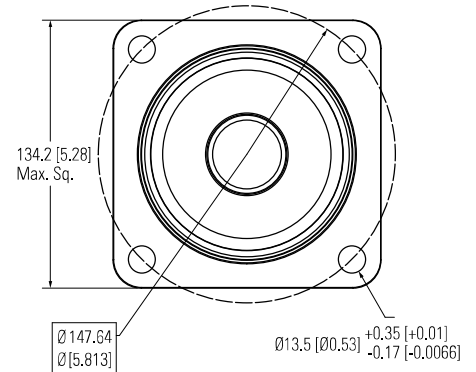


Spline pitch	12/24
Pressure angle	30°
Number of teeth	12
Class of fit	Ref 5
Type of fit	Side
Pitch diameter	Ref. 25,400000 [1.0000000]
Base diameter	Ref. 21,997045 [8660254] $\text{◎}0,21 [0,008] [D]$
Major diameter	(27,74 [1.092] Max. 27,59 [1.086] Min.)
Minor diameter	23,097 - 23,224 [.9093 - .9143]
Form diameter, min	29,93 [1.060]
Fillet radius	0,64 - 0,76 [.025 - .030]
Tip radius	0,25 - 0,38 [.010 - .015]
Finish	1,6 (63)
Involute profile variation	+0,000 -0,025 [+0,0000 -0,0010]
Total index variation	0,038 [.0015]
Lead variation	0,013 [.0005]
Circular space width:	
Maximum actual	4,318 [1,700]
Minimum effective	4,216 [1,660]
Maximum effective	Ref. 4,270 [1,681]
Minimum actual	Ref. 4,247 [1,672]
Dimension between two pins	Ref. 19,020 - 19,190 [.7488 - .7555]
Pin diameter	4,496 [1,770] Pins to Have 3,38 [1,33] Wide flat for root clearance

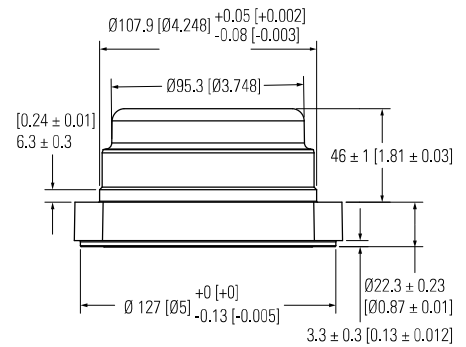
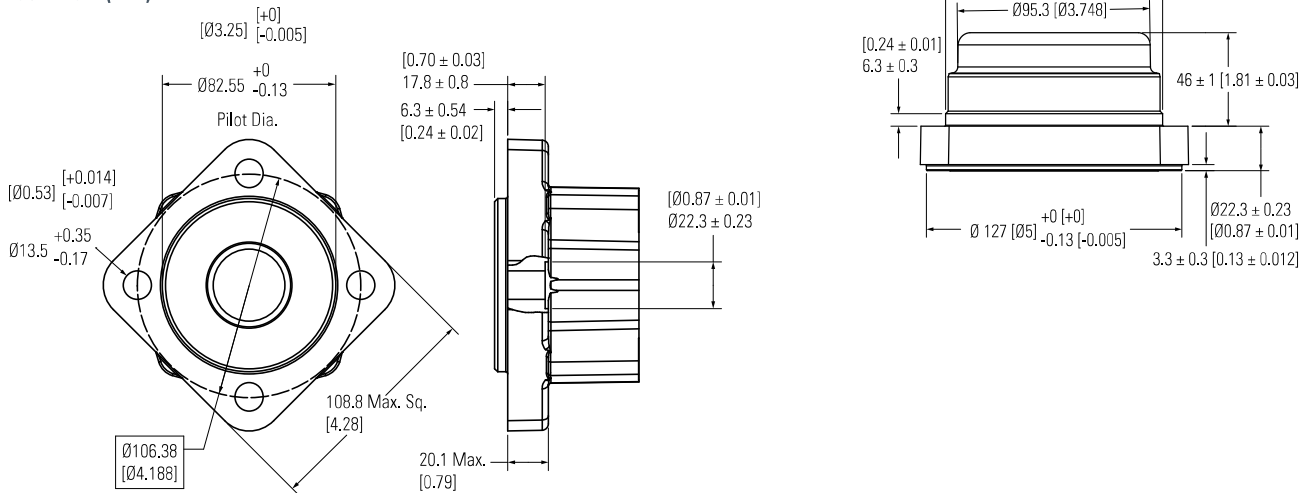
SAE A - Two Bolt (AC)



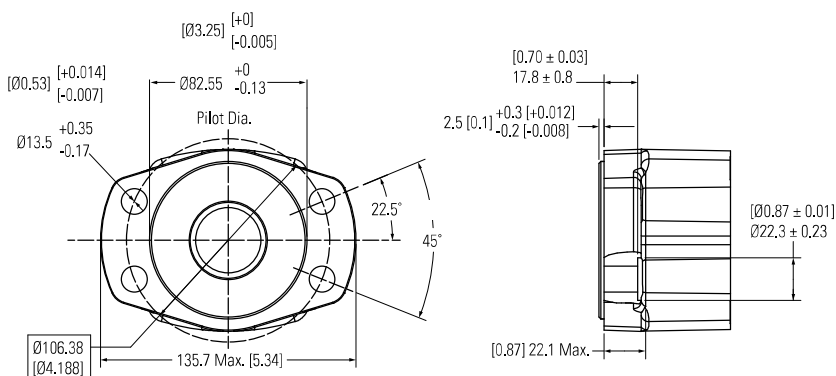
Four Bolt Wheel (AB)



Four Bolt (AH)



Four Bolt Magneto (AJ)

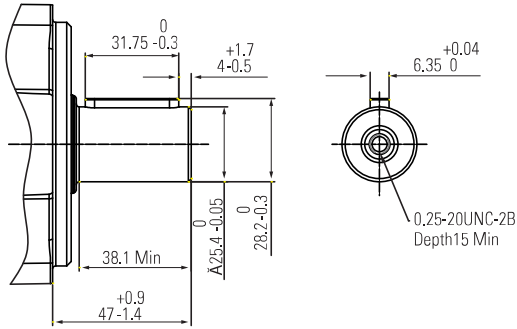


XL2 Series

Dimensions Shafts

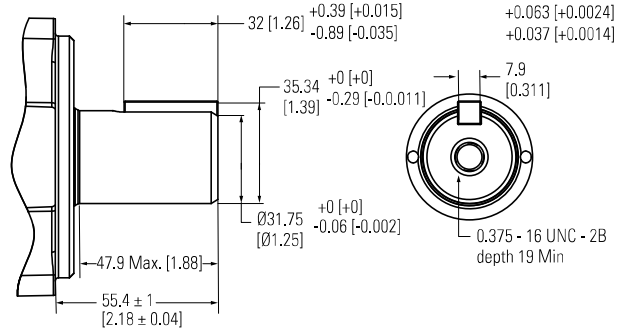
25.4mm Straight (01)

395Nm [3500 in-lb] Max. torque



31.75 [1.25] Straight (02)

768Nm [6800 in-lb] Max. torque



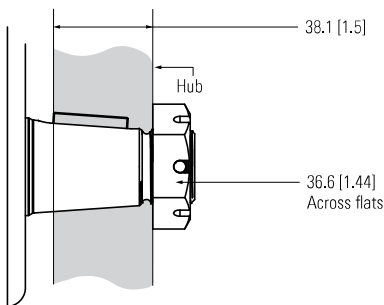
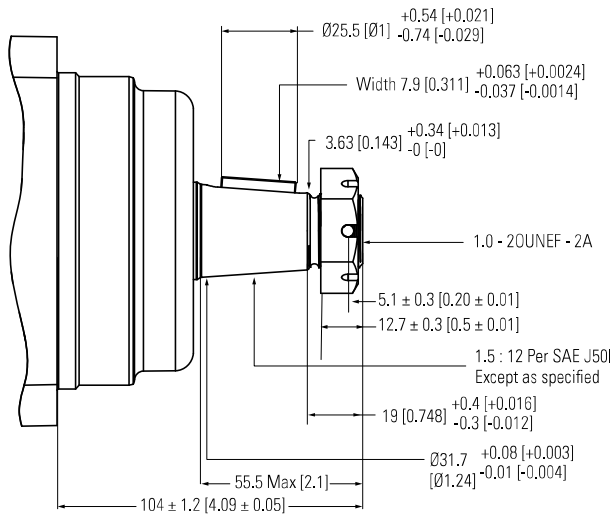
31.75 [1.25] Tapered (03)

768Nm [6800 in-lb] Max. torque

Recommended torque on nut to align the slotted nut with the shaft cross hole:

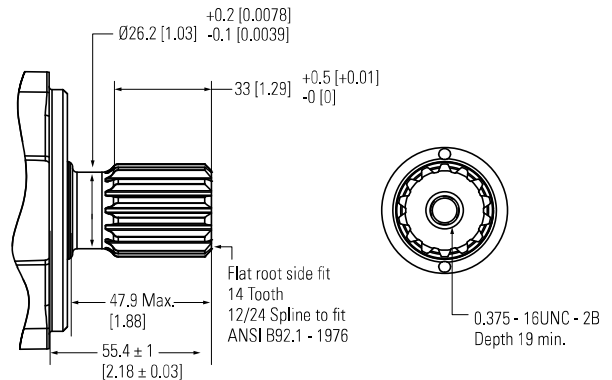
(373Nm [275 lb-ft] Dry)

(305Nm [225 lb-ft] Lub)



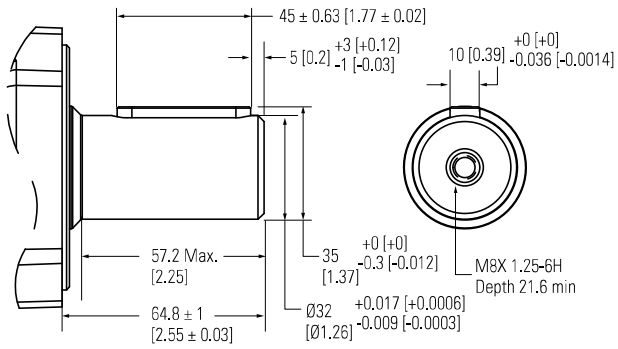
31.75 [1.25] 14 Tooth Splined (04)

768Nm [6800 in-lb] Max. torque



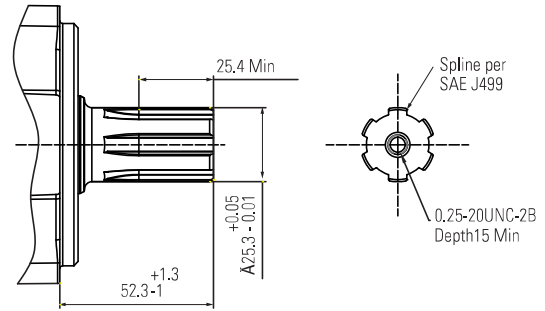
32mm Straight (16)

768Nm [6800 in-lb] Max. torque



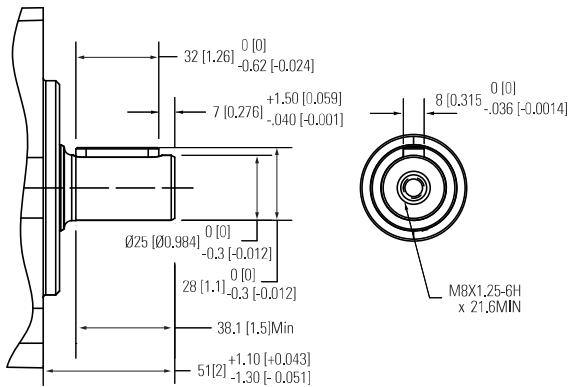
SAE 6B Splined (35)

395Nm [3500 in-lb] Max. torque



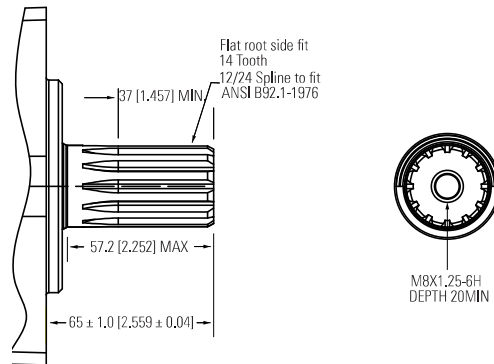
25mm Straight (98)

395Nm [3500 in-lb] Max. torque



31.75 [1.25] 14 Tooth Spline extra length (99)

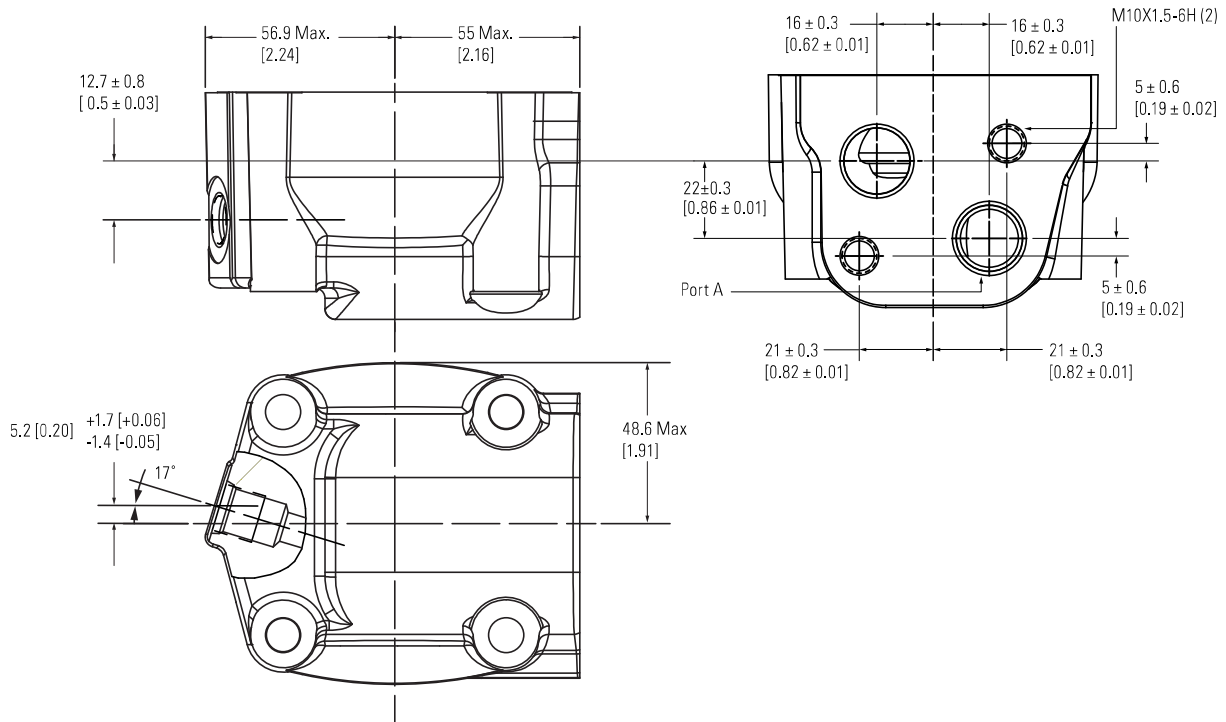
768Nm [6800 in-lb] Max. torque



Manifold Ports

G1/2 Staggered port(2) - **AS**

G1/4 Case drain port(1) - **02**

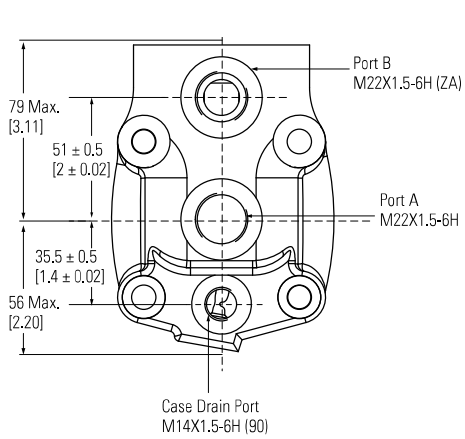


XL2 Series

Dimensions Ports

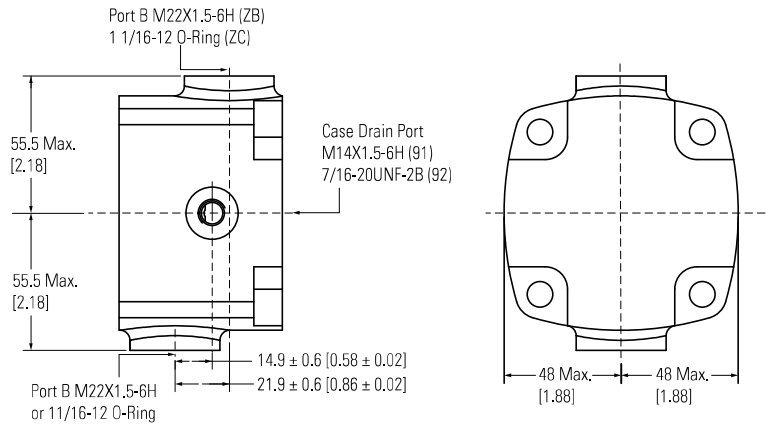
End Ports

Main Ports (2): M22X1.5-6H End Ports - **ZA**
 Case Drain Port (1): M14X1.5-6H O-ring Port - **90**

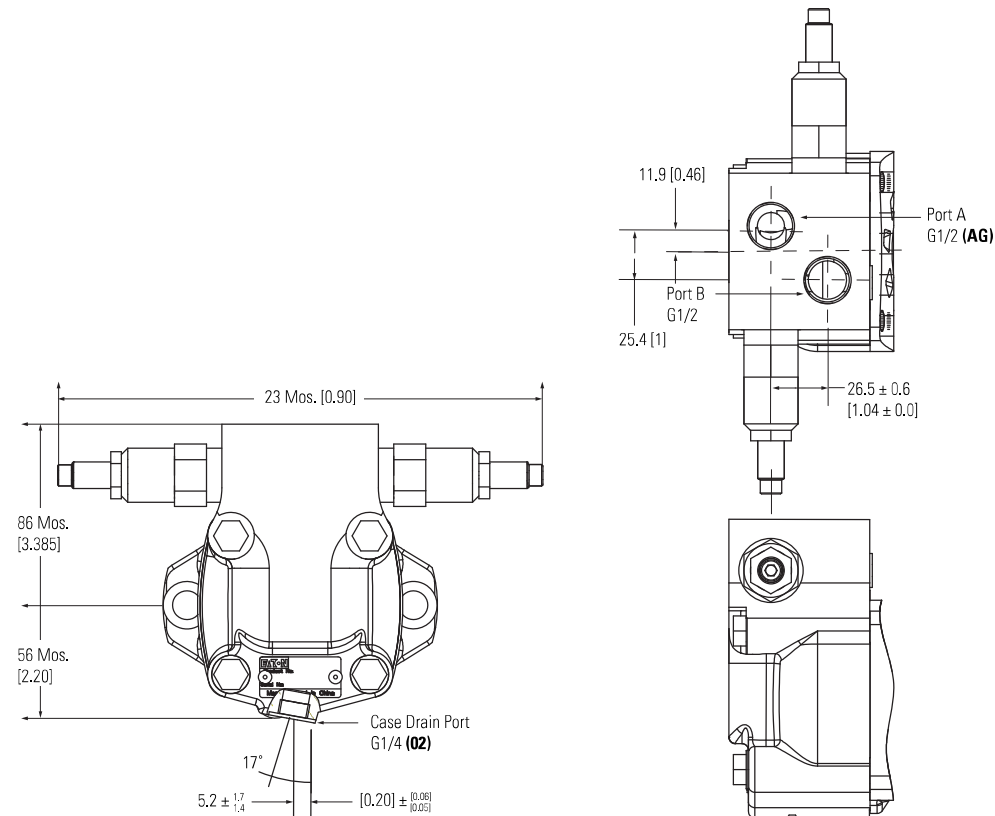


Side Ports

Main Ports (2): M22X1.5-6H Ports (Positioned 180° Apart) - **ZB**
 M14X1.5-6H O-ring Port - **91**



Ports with Relief Valves



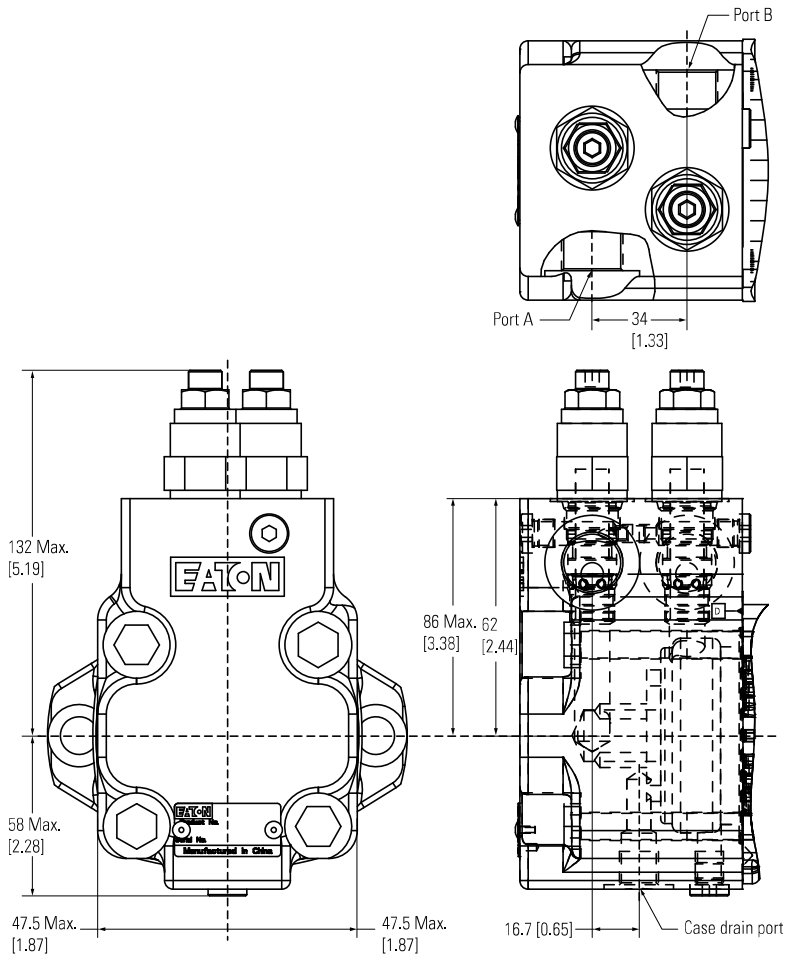
Ports with Counterbalance Valve

7/8-14UNF-2B SAE O-ring Staggered Ports(2) - **AA**

G1/2 Staggered Ports(2) - **AG**

7/16-20UNF-2B SAE O-ring Case Drain Port(1) - **01**

G1/4 Case Drain Port(1) - **02**

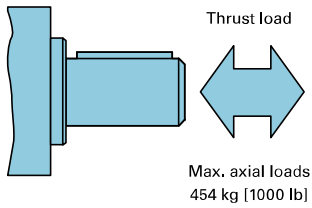


XL2 Series

Shaft Side Load Capacity

These curves indicate the radial load capacity on the motor shaft(s) at various locations with an allowable external thrust load of 454 kg, [1000 lb].

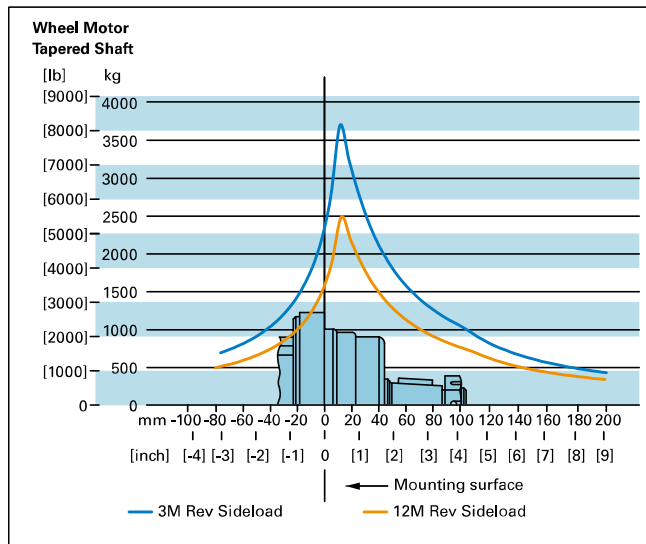
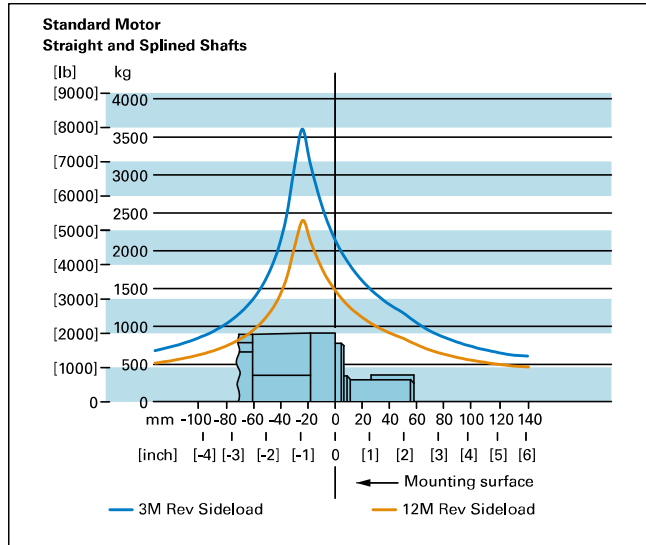
Note: Case pressure will increase the allowable inward thrust load and decrease the allowable outward thrust load. Case pressure will push outward on the shaft at 94 kg/7 Bar [208 lb/100 psi].



Each curve is based on a B10 bearing life of 2000 hours. The 12,000,000 revolution curve represents 100 RPM. The 3,000,000 revolution curve represents 25 RPM.

To determine radial load at speeds other than 25 RPM and 100 RPM, multiply the load values on the 12M revolution curve by the factors in the chart below.

RPM	Multiplication factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54



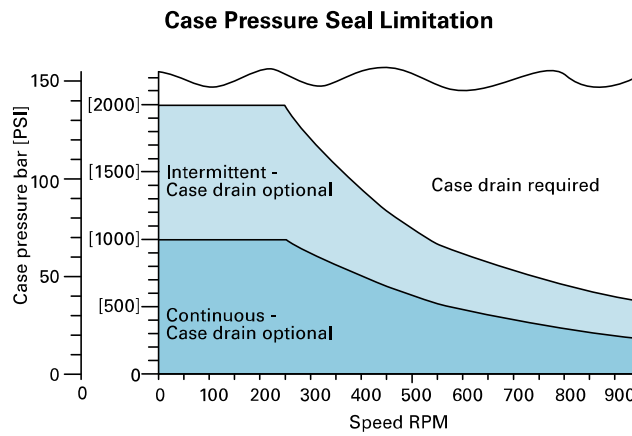
Xcel XL2 Series Case Pressure Seal Limitation motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required from the case pressure seal limitation chart.

Case porting advantage

Contamination Control - flushing the motor case.

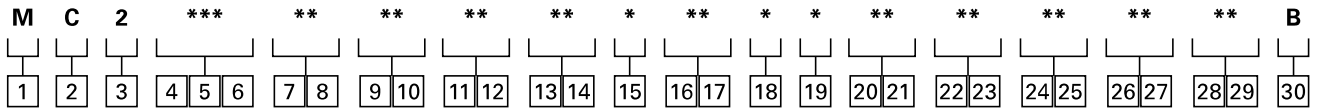
Cooler motor - exiting oil draws motor heat away.

Extend motor seal life - maintain low case pressure with a preset restriction in the case drain line.



XL2 Series

Model Code



1	Product
M	Motor

2	3	Series
C 2		Xcel XL2 Series

4	5	6	Displacement cm³/r [in³/r]
080			80.6 [4.92]
100			101.6 [6.20]
130			130.6 [7.97]
160			158.1 [9.65]
195			194.8 [11.89]
245			244.3 [14.91]
305			306.6 [18.71]
395			393.8 [24.03]
490			489.0 [29.8]

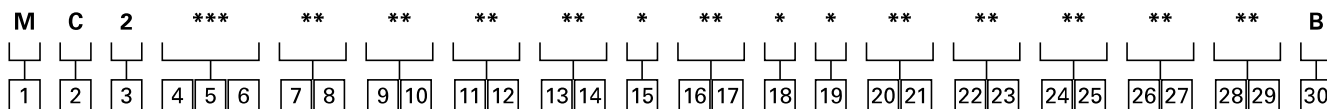
7	8	Mounting description
AB		Wheel, 4 bolt: 108.0 [4.25] Pilot dia. 13.59 [.535] dia. Holes on 147.6 [5.81] dia. Bolt circle. 127.0 [5.00] dia. Rear mount pilot
AC		Standard, 2 bolt: 82.6 [3.25] Pilot dia. 13.59 [.535] dia. Holes on 106.4 [4.19] dia. Bolt circle. SAE A
AD		Bearingless (w/ leakage slots), 4 bolt: 101.6 [4.00] Pilot dia. 13.59 [.535] dia. Holes on 127.0 [5.00] dia. bolt circle
AH		Standard, 4 bolt: 82.6 [3.25] Pilot dia. 13.59 [.535] dia. Holes on 106.4 [4.19] dia. Bolt circle
AJ		Standard (magneto), 4 bolt: 82.6 [3.25] Pilot dia. 13.59 [.535] dia. Holes on 106.4 [4.19] dia. Bolt circle. 2.79 [.110] Pilot length

9	10	Output shaft description
01		25.4 [1.000] dia. straight shaft with .250-20 UNC-2B hole in shaft end, woodruff key
02		31.75 [1.250] dia. straight shaft with .375 -16 UNC-2b thread in end, 7.938 [.3125] Sq. X 31.75 [1.250] straight key
03		31.75 [1.250] dia. .125:1 tapered shaft per SAE j501 with 1.000-20 UNEF-2A threaded shaft end and slotted hex nut, 7.938 [.3125] sq. X 25.40 [1.000] straight key
04		31.75 [1.250] Dia. flat root side fit, 14 tooth, 12/24 dp 30 deg. involute spline with .375-16UNC-2B thread in end, 33.0 [1.30] minimum full spline length

16	32.00 [1.260] dia. straight shaft with M8 X 1.25-6H thread in end, 9.982 [.3930] W X 7.995 [.3132]H x 45.00 [1.772]L key
35	25.40 [1.000] dia. 6B spline per SAE J499 with .250-20 UNC-2B thread in end, 25.40 [1.000] minimum full spline length
98	25.00 [.984] dia. straight shaft with M8 X 1.25-6H thread in end, 7.982 [.3142]W X 6.954 [.2738]H X 32[1.260]L key
99	31.75 [1.250] dia. Flat root side fit, 14 tooth, 12/24 DP 30 deg. Involute spline with M8X1.25-6H thread in end, 37.0 [1.46] minimum full spline length, 139[5.471] oal shaft length

11	12	Port description
AA		7/8-14UNF-2B SAE O-ring ports - staggered ports
AE		13.0 [.512] dia. manifold ports with 3X M10 X 1.5-6H port block mounting holes
AG		G 1/2 BSP straight THD ports – staggered ports
AS		G 1/2 BSP straight THD ports – staggered port with 2X M10 X 1.5-6H port block mounting holes - European
BA		M22X 1.5-6H ports per ISO9974-1- staggered ports
ZA		M22X 1.5-6H ports per ISO9974-1- end ports
ZB		M22X 1.5-6H ports per ISO9974-1- side ports (Position 180° apart)
ZC		1 1/16-12 O-ring ports -side ports (Position 180° apart)

13	14	Case flow options
00		None
01		7/16-20UNF-2B SAE O-ring port
02		G 1/4 BSP straight THD port
10		G 1/4 BSP straight THD port with optional G 1/4 BSP straight THD port in mounting flange
90		M14X 1.5-6H ports per ISO9974-1- end ports
91		M14X 1.5-6H ports per ISO9974-1- side ports (Position 180° apart)
92		7/16-20 O-ring ports -side ports (Position 180° apart)



15 **Low pressure relief**
0 None

16 **17** **Pressure/flow option**
00 None
17 Relief valve set @ 170.0 bar [2465 lbf/in²]

18 **Geroler option**
1 Standard

19 **Seal option**
0 Standard
3 High pressure shaft seal
4 Seal guard
6 High pressure shaft seal, seal guard

20 **21** **Accessories**
00 None
AE M12 threaded connector, long body digital speed and direction pickup (two 30 pulse signals in quadrature per revolution pin 1=power supply, pin 2=output signal 1, pin 3=common, pin 4=output signal 2) Supply voltage: 8 to 28 V DC Output voltage low: 0.5 V DC Max at 10 mA

22 **23** **Special features (hardware)**
00 None (Standard)

24 **25** **Special features (assembly)**
00 None (Standard)
AA Flange rotated 90° degrees
AB Reverse rotation
AC Flange rotated 90° degrees, reverse rotation

26 **27** **Paint/packaging**
AA Blue
AB Black

28 **29** **Customer identification or name plate**
AA Standard

30 **Design code**
B Second

* For more special features contact your Eaton representative.