

## **XL2 disc valve motor series**

### **About the XL2 series motors**

Danfoss' Xcel™ series low speed, high torque disc valve motors offer the most popular features and options from the Danfoss Char-Lynn range and are optimized to bring the highest value in medium duty applications.



### **XL2 series features, benefits, and applications**

#### **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**

- Augers
- Sweepers
- Snow blowers
- Conveyors

**XL2 disc valve motor series**

**XL2 specifications overview**

*XL2 series specifications*

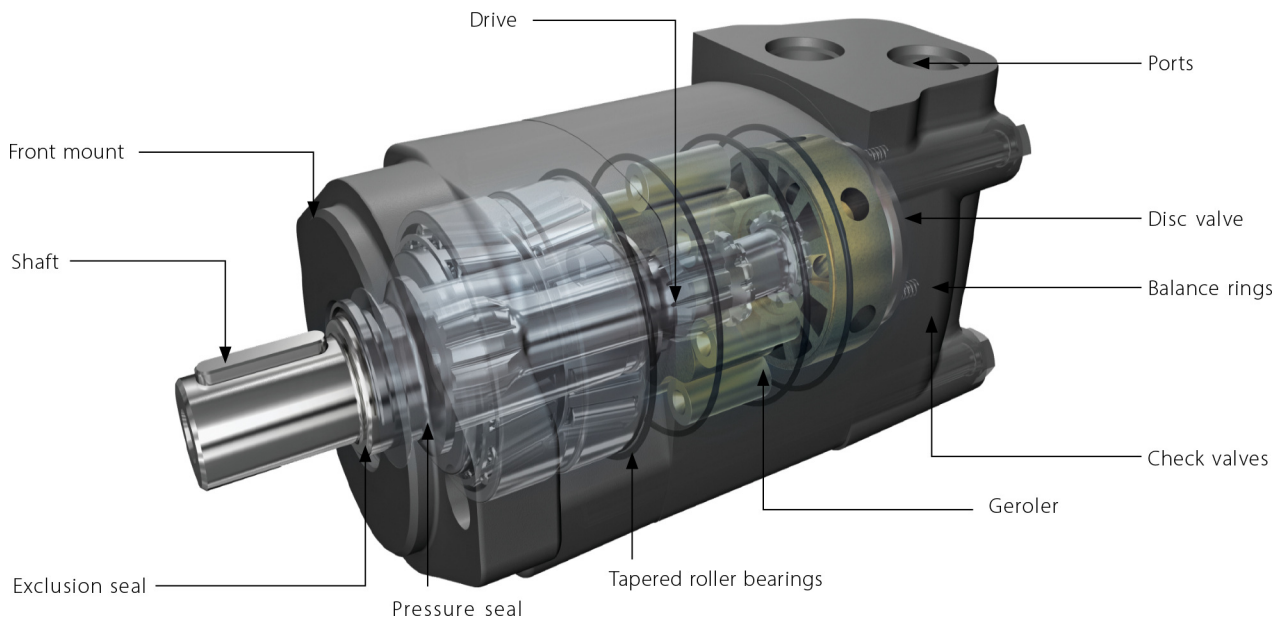
| Parameter                  | Data   |
|----------------------------|--|
| Geroler element            | 9 displacements                                  |
| Flow<br>l/min [US gal/min] | 75 [20] continuous<br>115 [30] intermittent      |
| Speed<br>rpm               | 908 continuous<br>924 intermittent               |
| Pressure<br>bar [psi]      | 205 [3000] continuous<br>310 [4500] intermittent |
| Torque<br>N·m [lb·in]      | 845 [7470] continuous<br>930 [8225] intermittent |

**Continuous**                    motor may run continuously at the listed ratings

**Intermittent**                10% of every minute

**XL2 disc valve motor series**

**XL2 part identification**



**XL2 technical data**

*XL2 80cc-195cc technical data*

| <b>Displacement cm<sup>3</sup>/r [in<sup>3</sup>/r]</b> |                         | <b>80 [4.9]</b> | <b>100 [6.1]</b> | <b>130 [7.9]</b> | <b>160 [9.8]</b> | <b>195 [11.9]</b> |
|---|-------------------------|-----------------|------------------|------------------|------------------|-------------------|
| Flow<br>l/min [US gal/min]                              | Continuous              | 75 [20]         | 75 [20]          | 75 [20]          | 75 [20]          | 75 [20]           |
|   | Intermittent            | 75 [20]         | 95 [25]          | 95 [25]          | 115 [30]         | 115 [30]          |
| Speed<br>rpm  | Continuous              | 908             | 739              | 575              | 477              | 385               |
|   | Intermittent            | 908             | 924              | 719              | 713              | 577               |
| Pressure<br>Δbar [Δpsi]                                 | Continuous              | 205 [3000]      | 205 [3000]       | 205 [3000]       | 205 [3000]       | 205 [3000]        |
|   | Intermittent            | 310 [4500]      | 310 [4500]       | 310 [4500]       | 260 [3771]       | 260 [3771]        |
| Torque<br>N·m [lb·in]                                   | Continuous              | 235 [2080]      | 295 [2611]       | 385 [3407]       | 455 [4027]       | 540 [4779]        |
|   | Intermittent            | 345 [3053]      | 445 [3938]       | 560 [4956]       | 570 [5045]       | 665 [5885]        |
| Weight<br>kg [lbs]                                      | Standard or wheel mount | 9.3 [20.5]      | 9.5 [20.9]       | 9.8 [21.6]       | 10.0 [22]        | 10.4 [22.9]       |
|   | Bearingless             | 7.3 [16.1]      | 7.5 [16.5]       | 7.7 [17]         | 7.9 [17.4]       | 8.4 [18.5]        |

*XL2 245cc-490cc technical data*


| <b>Displacement cm<sup>3</sup>/r [in<sup>3</sup>/r]</b> |                         | <b>245 [15]</b> | <b>305 [18.6]</b> | <b>395 [24.1]</b> | <b>490 [29.9]</b> |
|---|-------------------------|-----------------|-------------------|-------------------|-------------------|
| Flow<br>l/min [US gal/min]                              | Continuous              | 75 [20]         | 75 [20]           | 75 [20]           | 75 [20]           |
|   | Intermittent            | 115 [30]        | 115 [30]          | 115 [30]          | 115 [30]          |
| Speed<br>rpm  | Continuous              | 308             | 246               | 191               | 153               |
|   | Intermittent            | 462             | 365               | 287               | 230               |
| Pressure<br>Δbar [Δpsi]                                 | Continuous              | 205 [3000]      | 205 [3000]        | 155 [2248]        | 120 [1740]        |
|   | Intermittent            | 260 [3771]      | 240 [3481]        | 170 [2466]        | 140 [2031]        |
| Torque<br>N·m [lb·in]                                   | Continuous              | 660 [5841]      | 765 [6770]        | 775 [6859]        | 845 [7478]        |
|   | Intermittent            | 820 [7257]      | 885 [7832]        | 925 [8186]        | 930 [8231]        |
| Weight<br>kg [lbs]                                      | Standard or wheel mount | 10.8 [24]       | 11.3 [24.9]       | 11.8 [26]         | 12.2 [26.9]       |
|   | Bearingless             | 8.8 [19.4]      | 9.3 [20.5]        | 9.8 [21.6]        | 10.2 [22.5]       |

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|                               |  |
|-------------------------------|--|
| <b>Δ bar [psi]</b>            | The true pressure difference between inlet port and outlet port. |
| <b>Continuous rating</b>      | Motor may be run continuously at these ratings.                  |
| <b>Intermittent operation</b> | 10% of every minute.   |

To ensure best motor life, run motor for approximately 1 hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

**XL2 recommended operating parameters**

| Data                  | Recommended   |
|-----------------------|---|
| Max. inlet pressure   | 310 bar [4500 psi]<br> <b>Caution</b><br>Do not exceed Δ pressure rating |
| Fluids                | Premium quality, anti-wear type hydraulic oil with a viscosity of no less than 13 cSt [70 SUS] at operating temperature.                                  |
| Operating temperature | -34 to 82 °C [-30 to 180 °F]  |
| Filtration            | Per ISO cleanliness code 4406:20/18/13  |

## XL2 disc valve motor series

### XL2 product numbers

#### Design specification

| Flange                      | Standard 4 bolt flange (AH)  |                         |                             | Standard 2 bolt flange (AC) | Bearingless 4 bolt flange (AZ) |
|-----------------------------|------------------------------|-------------------------|-----------------------------|-----------------------------|--------------------------------|
| Specification               | Ref. A1                      | Ref. A2                 | Ref. A3                     | Ref. A4                     | Ref. A5                        |
| Flange pilot diameter       | Ø 82.5 mm [3.25 in]          |                         |                             | Ø 82.5 mm [3.25 in]         | Ø 199 mm [3.94 in]             |
| Flange bolt circle diameter | Ø 106.4 mm [4.20 in]         |                         |                             | Ø 106.4 mm [4.20 in]        | Ø 125 mm [4.92 in]             |
| Shaft                       | Cyl. Ø32 mm (16)             | Spline Ø31.75, 14T (99) | Tapered Ø35, cone 1:10 (41) | Cyl. Ø32 mm (16)            | None, European splines (39)    |
| Main port                   | G ½ (AS)                     | G ½ (AS)                | G ½ (AS)                    | G ½ (AS)                    | G ½ (AS)                       |
| Drain port                  | G ¼                          | G ¼                     | G ¼                         | G ¼                         | G ¼                            |
| Shaft seal                  | Standard pressure shaft seal |                         |                             |                             | None                           |
| Paint                       | Painted black                |                         |                             |                             |                                |

#### Product numbers

| Displacement | Ref. A1     | Ref. A2     | Ref. A3     | Ref. A4     | Ref. A5     |
|--------------|-------------|-------------|-------------|-------------|-------------|
| 80cc         | 629AG00715A | 629AG00733A | 629AG00724A | 629AG00742A | 631AG00056A |
| 100cc        | 629AG00716A | 629AG00734A | 629AG00725A | 629AG00743A | 631AG00025A |
| 130cc        | 629AG00717A | 629AG00735A | 629AG00726A | 629AG00744A | 631AG00026A |
| 160cc        | 629AG00718A | 629AG00736A | 629AG00727A | 629AG00745A | 631AG00033A |
| 195cc        | 629AG00719A | 629AG00737A | 629AG00728A | 629AG00746A | 631AG00057A |
| 245cc        | 629AG00720A | 629AG00738A | 629AG00729A | 629AG00747A | 631AG00058A |
| 305cc        | 629AG00721A | 629AG00739A | 629AG00730A | 629AG00748A | *           |
| 395cc        | 629AG00722A | 629AG00740A | 629AG00731A | 629AG00749A | 631AG00060A |
| 490cc        | 629AG00723A | 629AG00741A | 629AG00732A | 629AG00750A | N/A         |

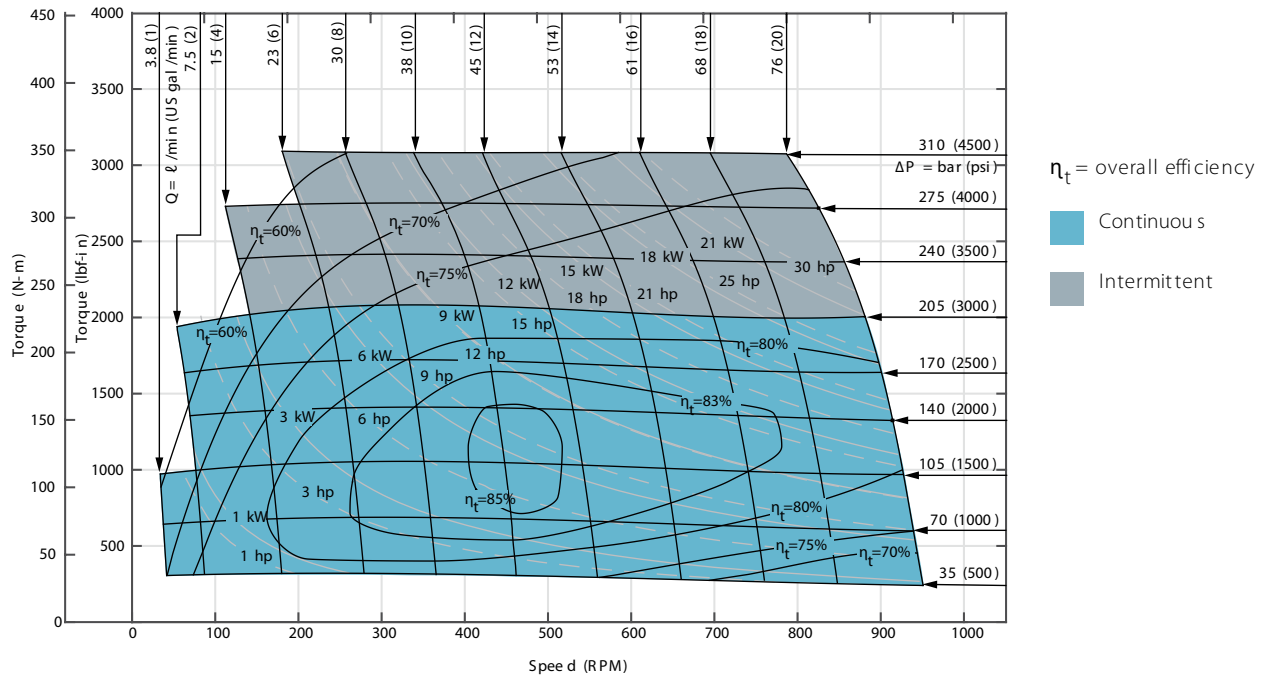
\* Contact the Danfoss sales team

**XL2 disc valve motor series**

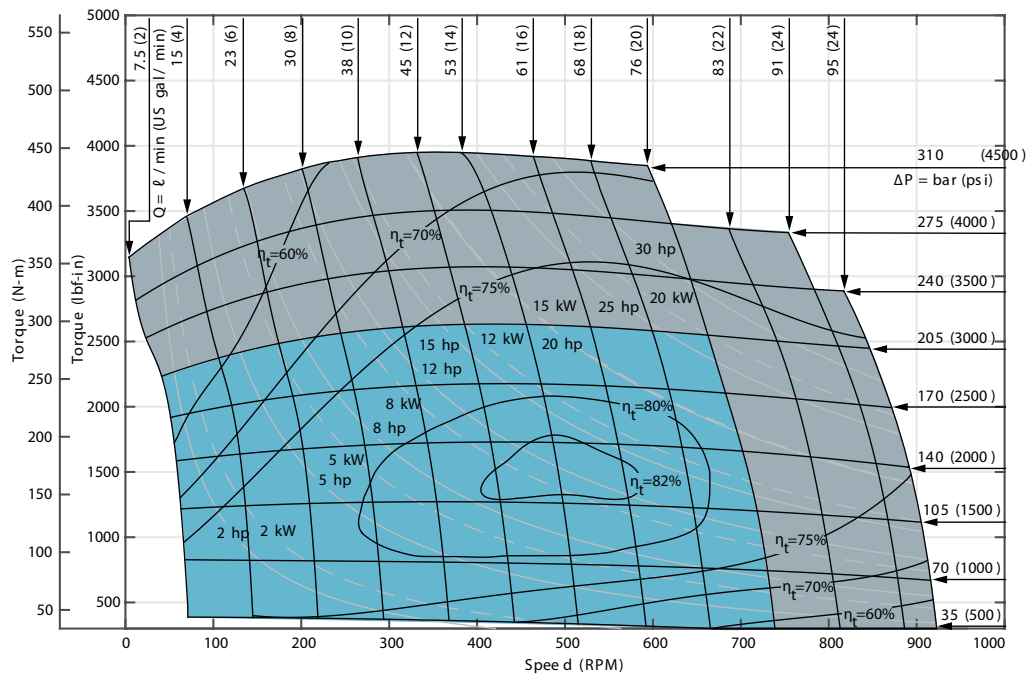
**XL2 performance data**

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

**XL2 80cc motor**

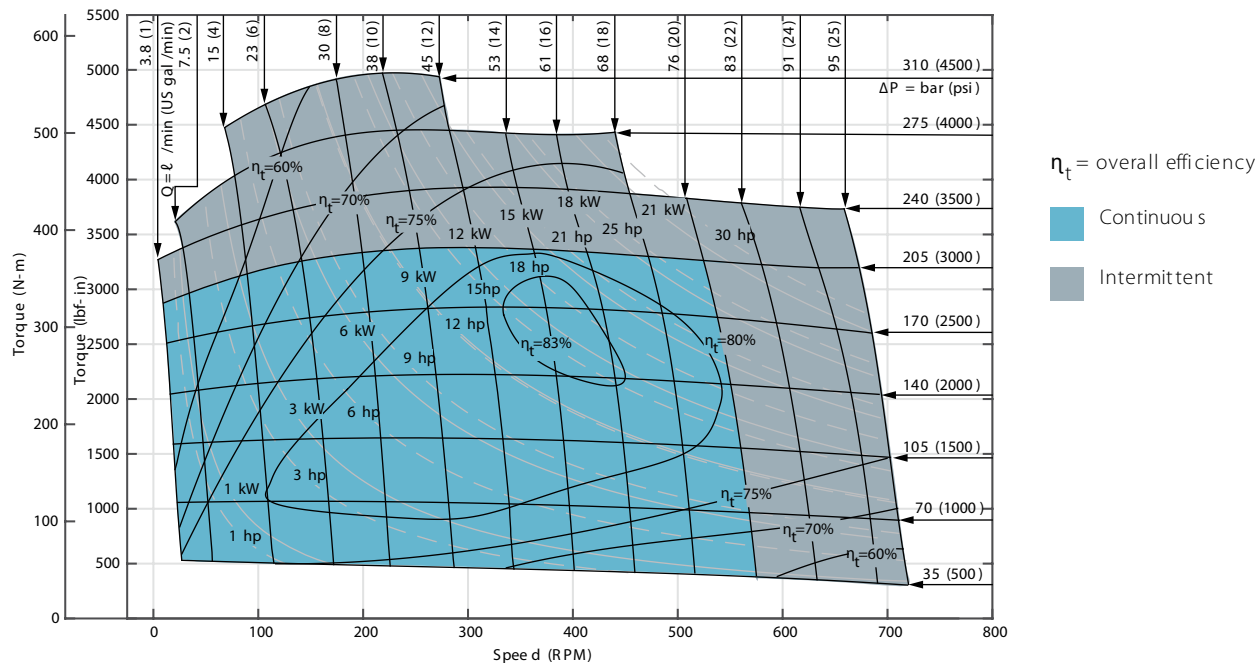


**XL2 100cc motor**

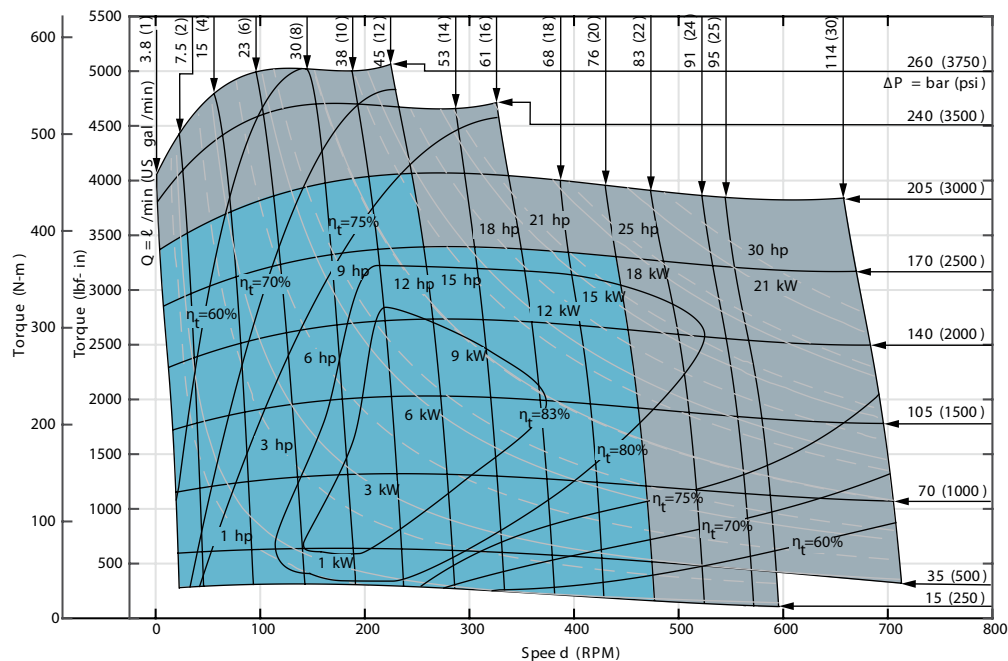


**XL2 disc valve motor series**

*XL2 130cc motor*

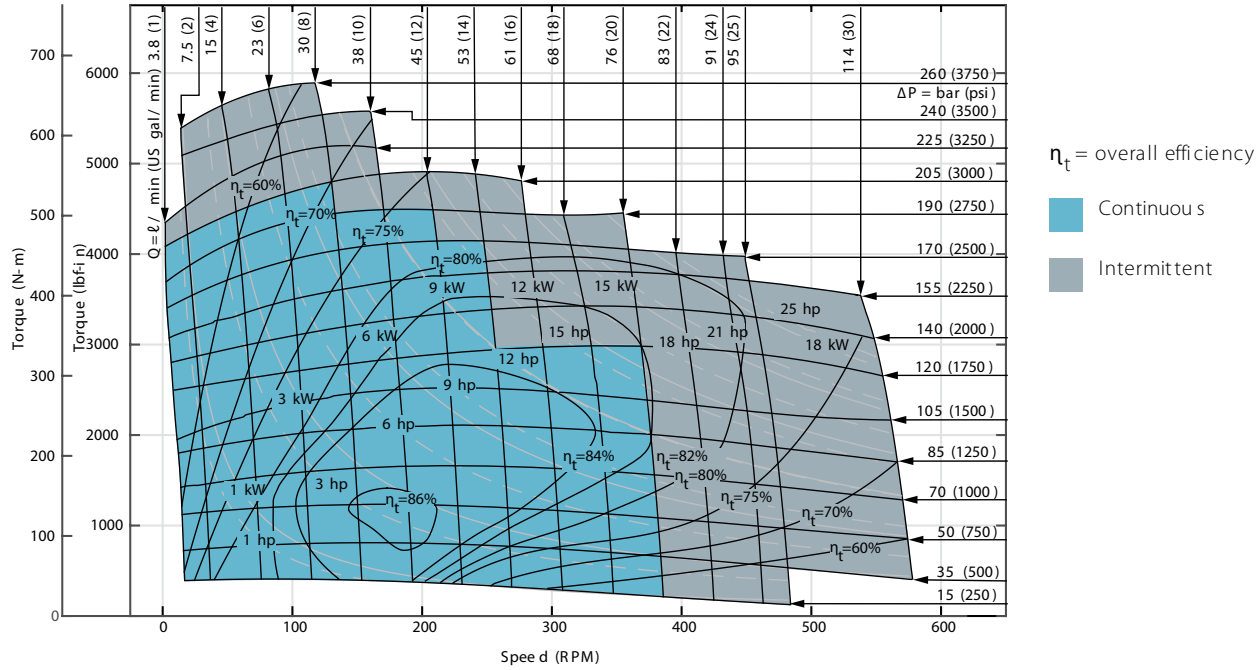


*XL2 160cc motor*

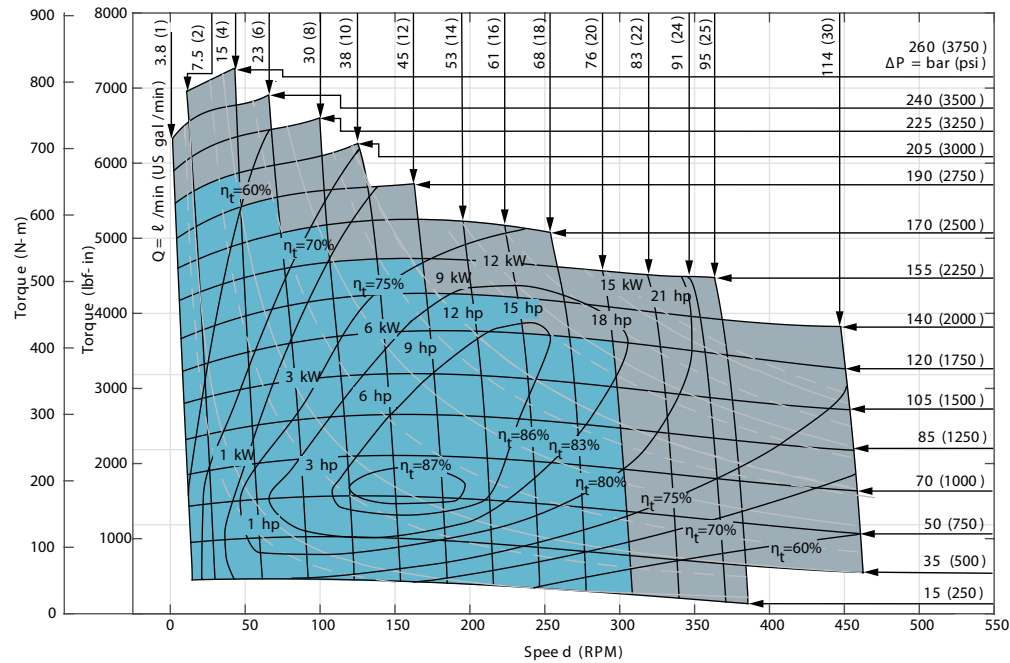


**XL2 disc valve motor series**

*XL2 195cc motor*

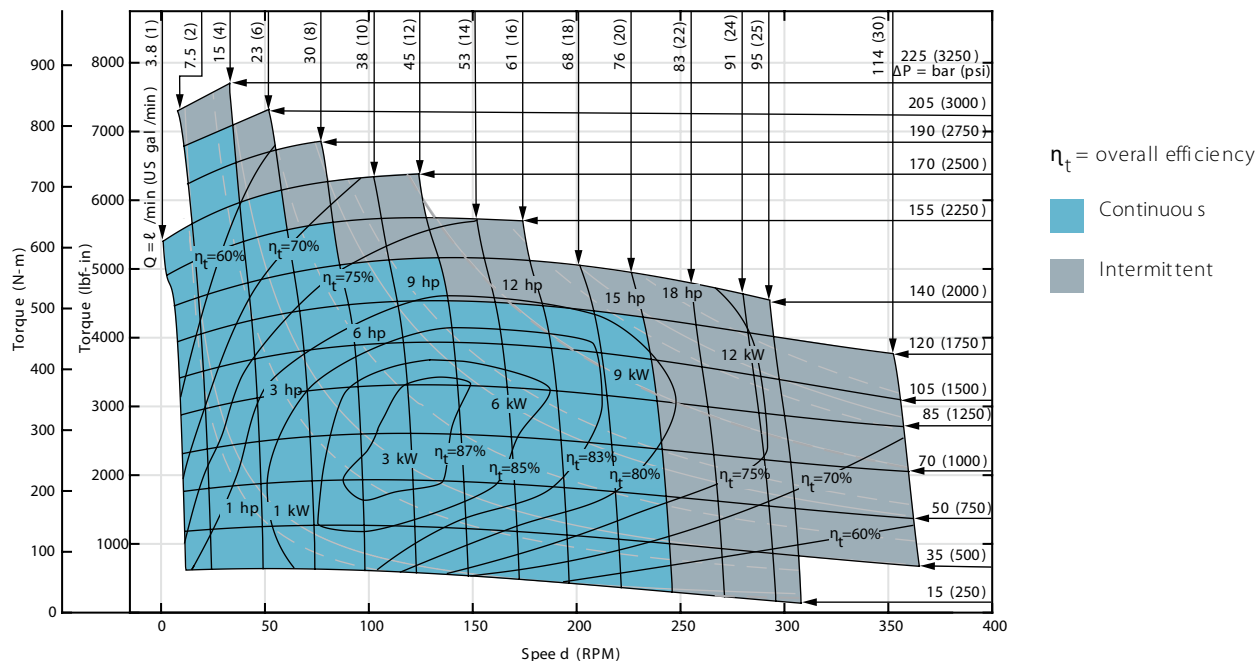


*XL2 245cc motor*

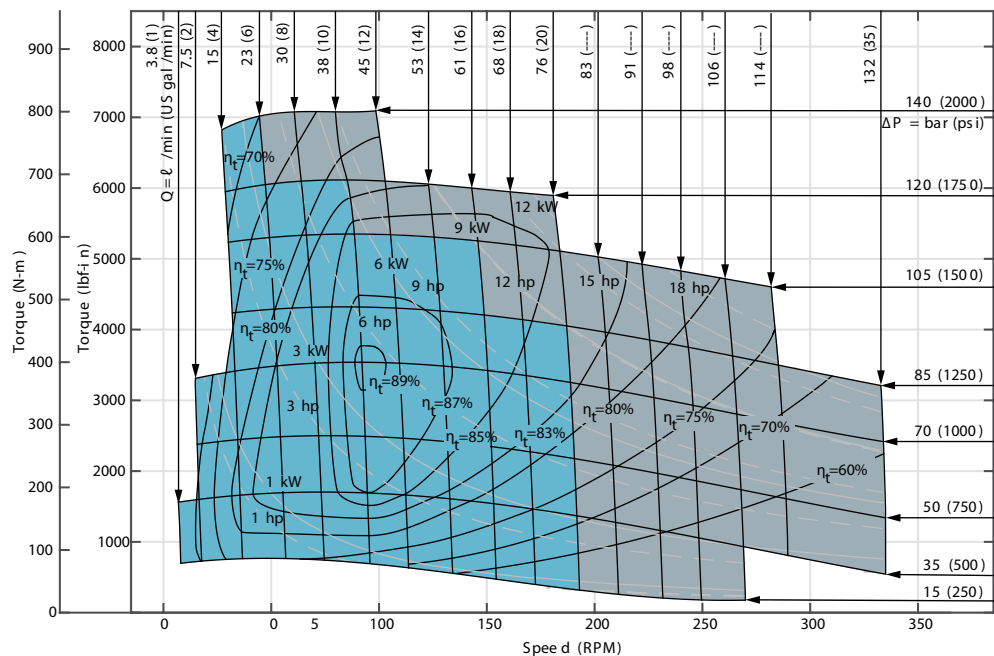


**XL2 disc valve motor series**

*XL2 305cc motor*

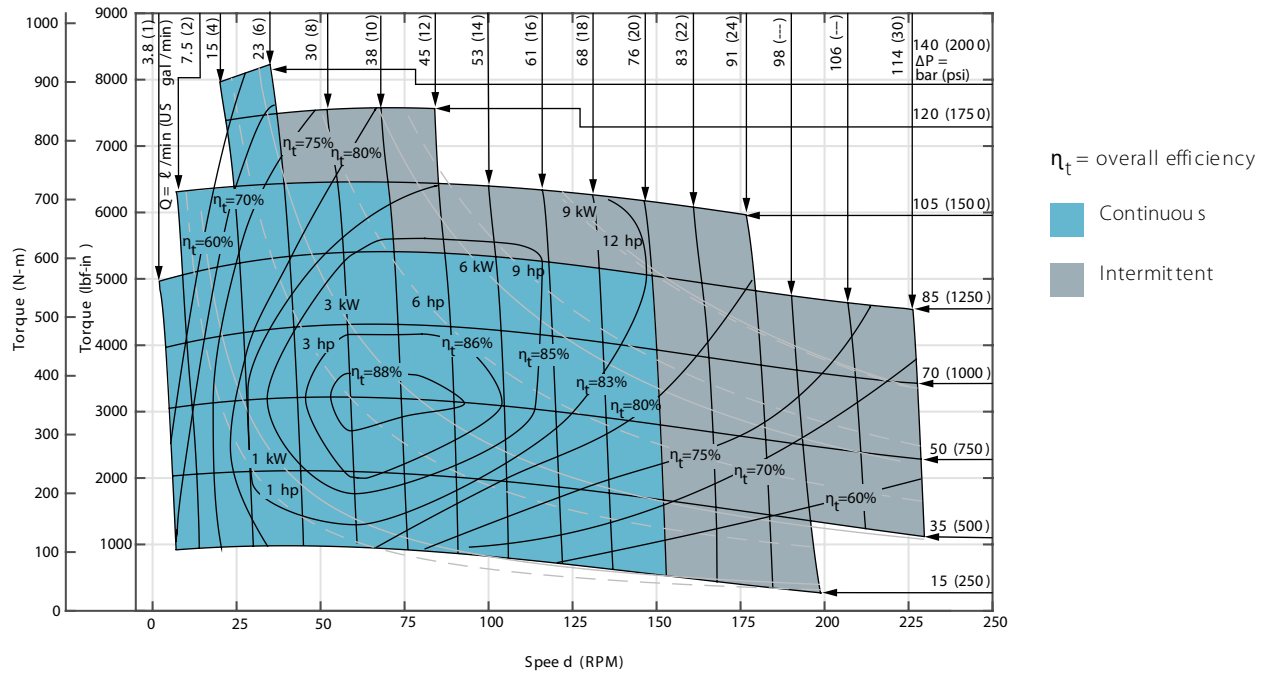


*XL2 395cc motor*



**XL2 disc valve motor series**

*XL2 490cc motor*



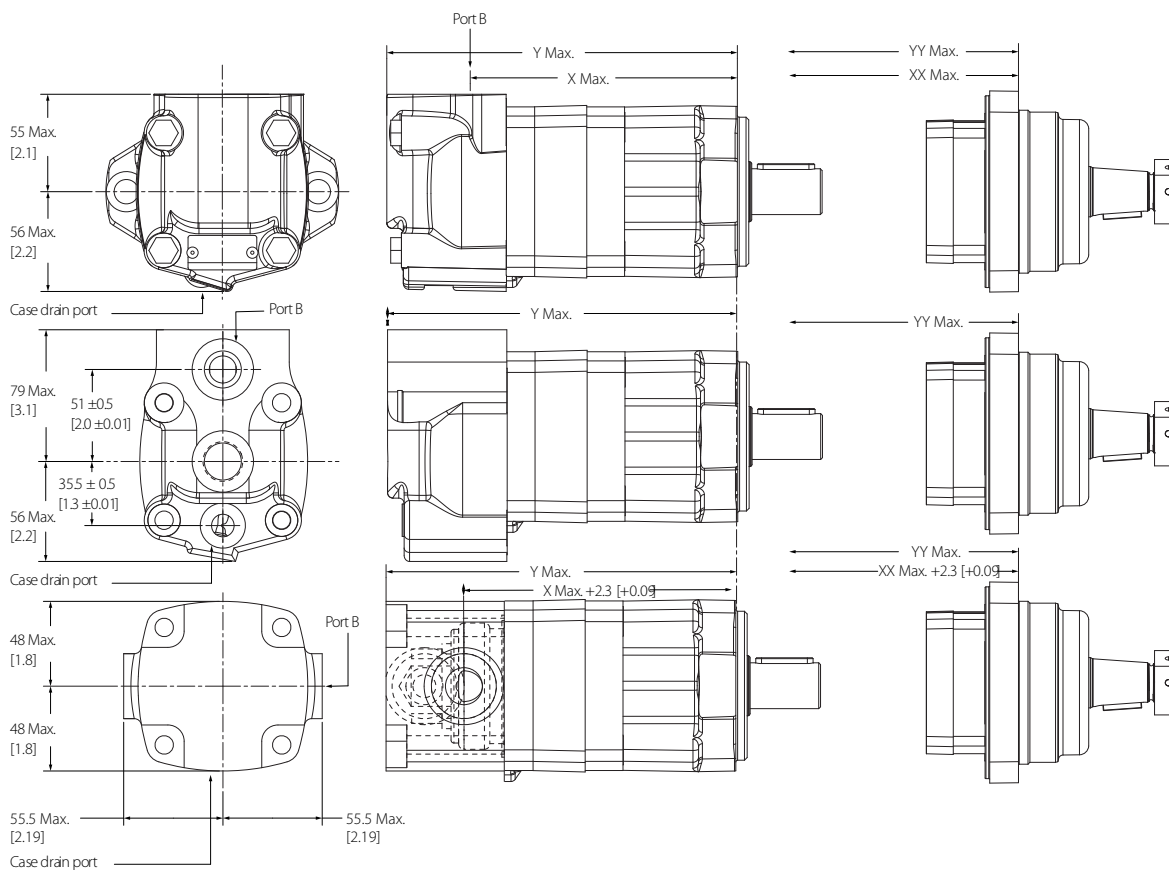
**XL2 disc valve motor series**

**Standard and wheel mount dimensions**

**XL2 standard and wheel mount dimensions**

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 wheel mount high pressure shaft seal, seal guard, and section seal kit number: Z331-45



**Dimensions**

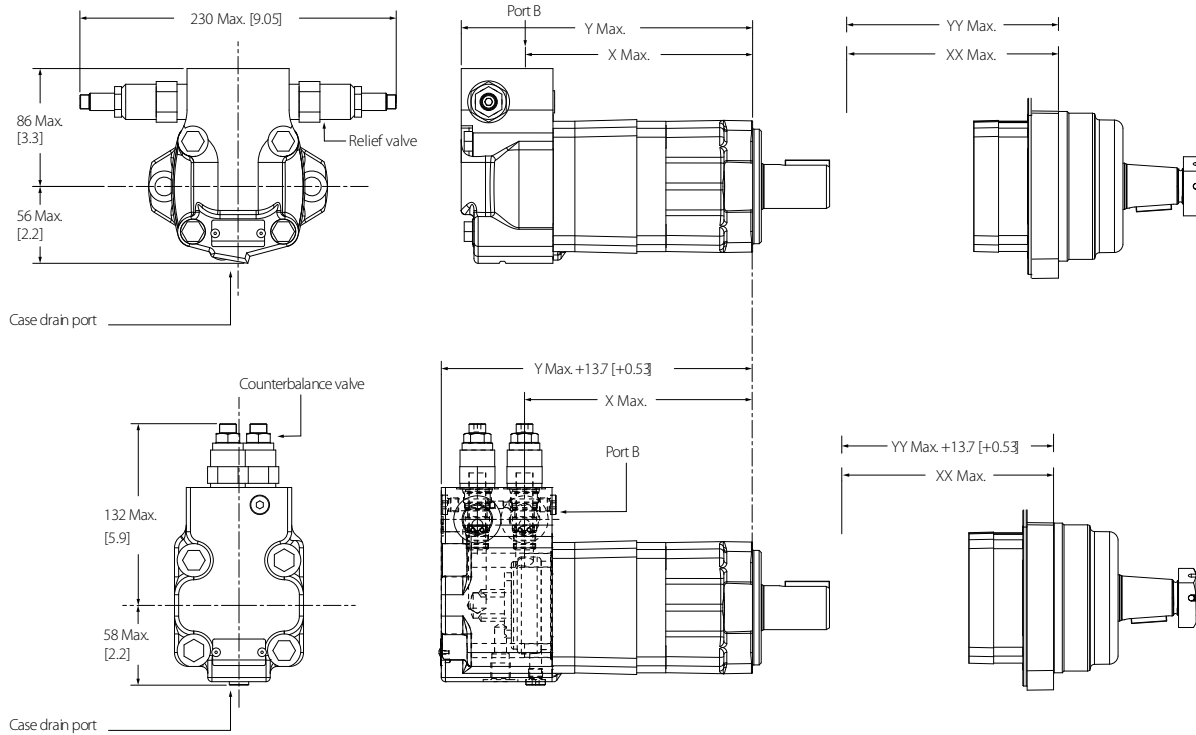
| Displacement $\text{cm}^3/\text{r}$<br>[in <sup>3</sup> /r] | Dimension mm [in] |               |              |              |
|---|-------------------|---------------|--------------|--------------|
|   | X                 | Y             | XX           | YY           |
| 80 [4.9]  | 136.9 [5.39]      | 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 disc valve motor series**

**XL2 standard and wheel mount with integral valve dimensions**

Standard rotation viewed from shaft end

- Port A pressurized - CW
- Port B pressurized - CCW



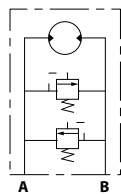
*Dimensions*

| Displacement cm <sup>3</sup> /r<br>[in <sup>3</sup> /r] | Dimensions mm [in] |               |              |              |
|---|--------------------|---------------|--------------|--------------|
|   | X                  | Y             | XX           | YY           |
| 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 disc valve motor series**

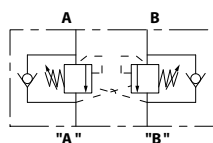
***Relief valve and counterbalance valve schematics***

*Relief valve*



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

*Counterbalance valve*



- 1CE30 (rated flow 30 l/min)

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[Contact Danfoss for more detailed information about the relief valve and counterbalance valve.](#)

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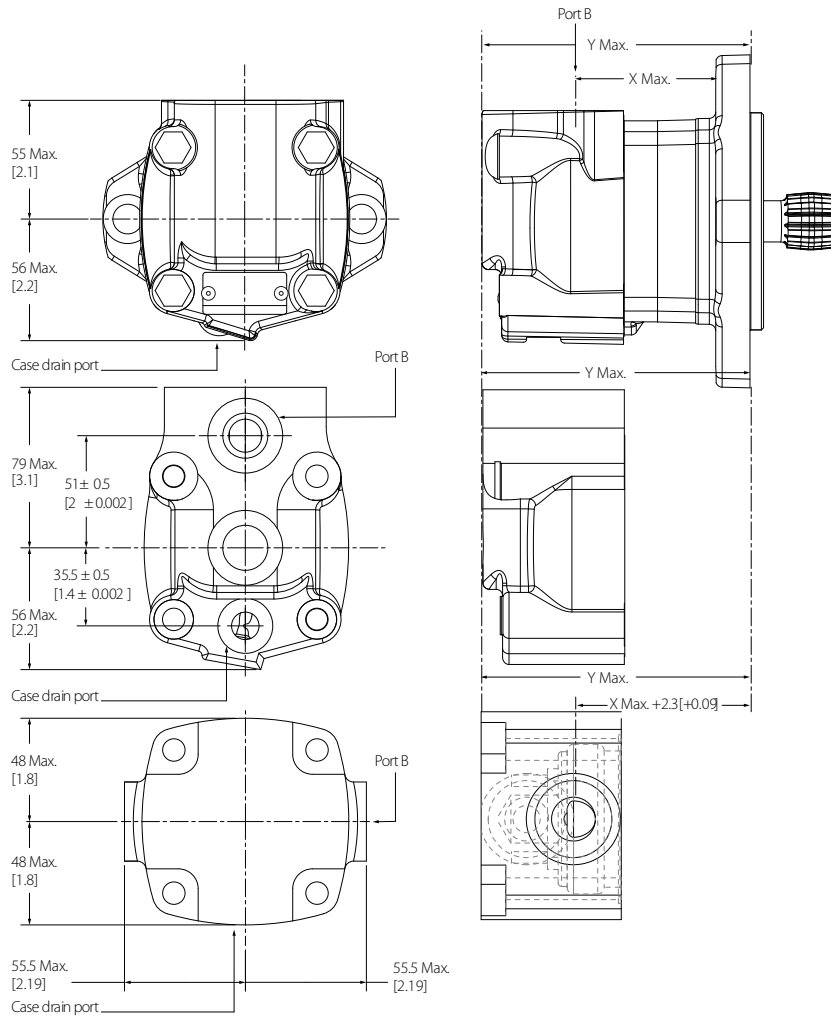
**XL2 disc valve motor series**

**Bearingless dimensions**

**XL2 bearingless motor (AD) dimensions**

Standard rotation viewed from shaft end

- Port A pressurized - CW
- Port B pressurized - CCW



**Dimensions**

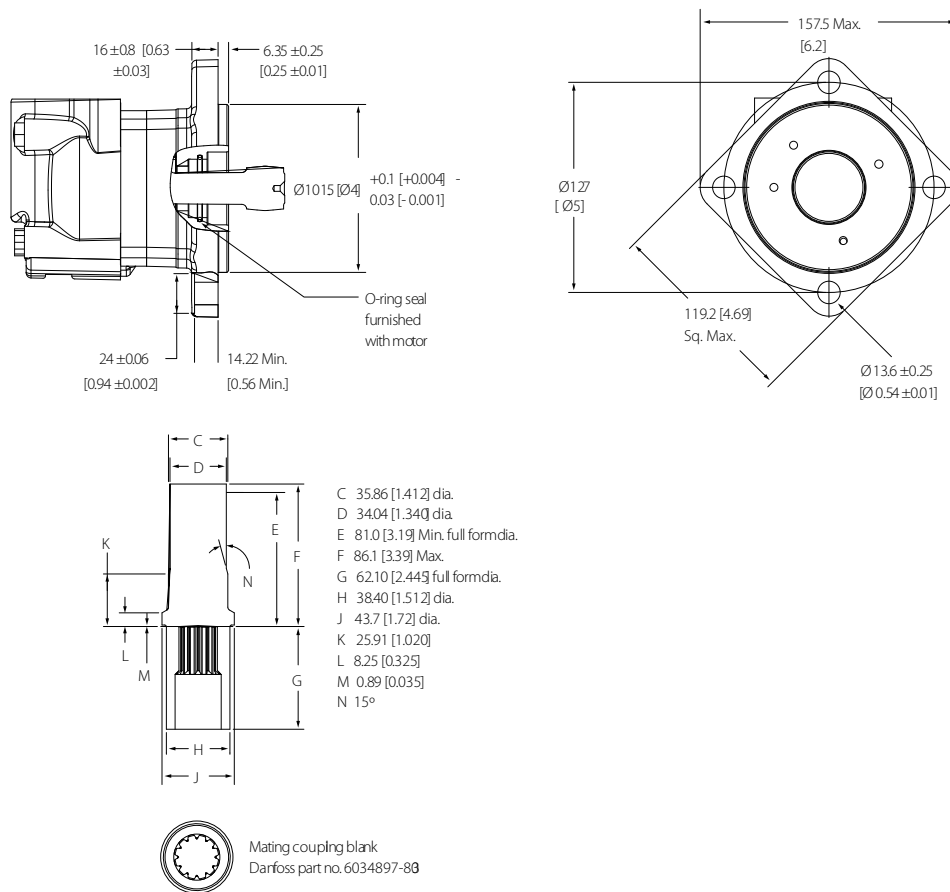
| Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r] | Dimensions mm [in] |              |
|--|--------------------|--------------|
|  | X                  | Y            |
| 80 [4.9]   | 79 [3.11]          | 126.5 [4.98] |
| 100 [6.1]  | 83.5 [3.29]        | 131.4 [5.17] |
| 130 [7.9]  | 89.9 [3.54]        | 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] |

**XL2 disc valve motor series**

*Dimensions (continued)*

| Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r] | Dimensions mm [in] |              |
|--|--------------------|--------------|
|  | X                  | Y            |
| 395 [24.1]   | 133.1 [5.24]       | 180.9 [7.12] |
| 490 [29.9]   | 150.3 [5.92]       | 198.2 [7.8]  |

**XL2 bearingless mount (AD) dimensions**



For Xcel XL2 series bearingless motor applications information, contact your Danfoss representative.

Mating coupling blanks available from Danfoss.

After machining blank, part must be hardened per Danfoss specification.

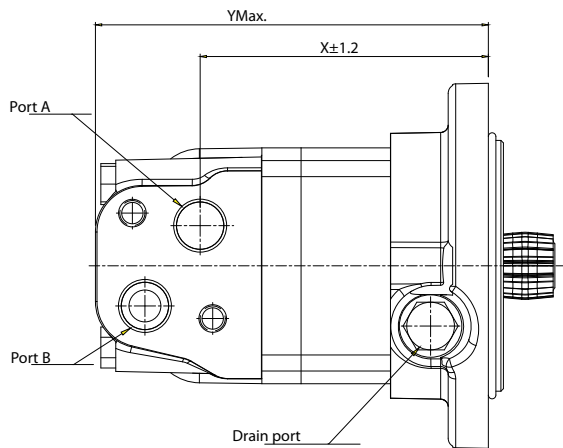
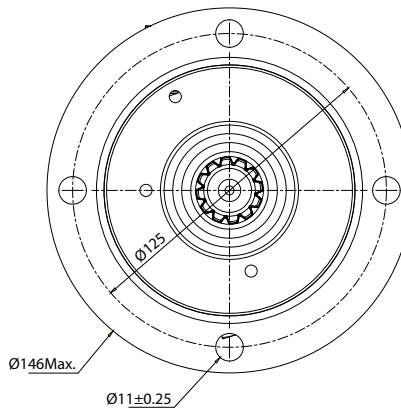
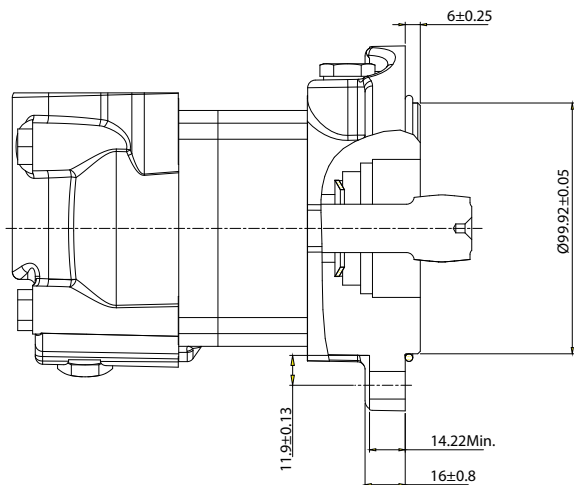
**XL2 disc valve motor series**

**XL2 bearingless motor EMEA (AZ) dimensions**

Standard rotation viewed from shaft end

- Port A pressurized - CW
- Port B pressurized - CCW

*Bearingless motor EMEA (AZ)*

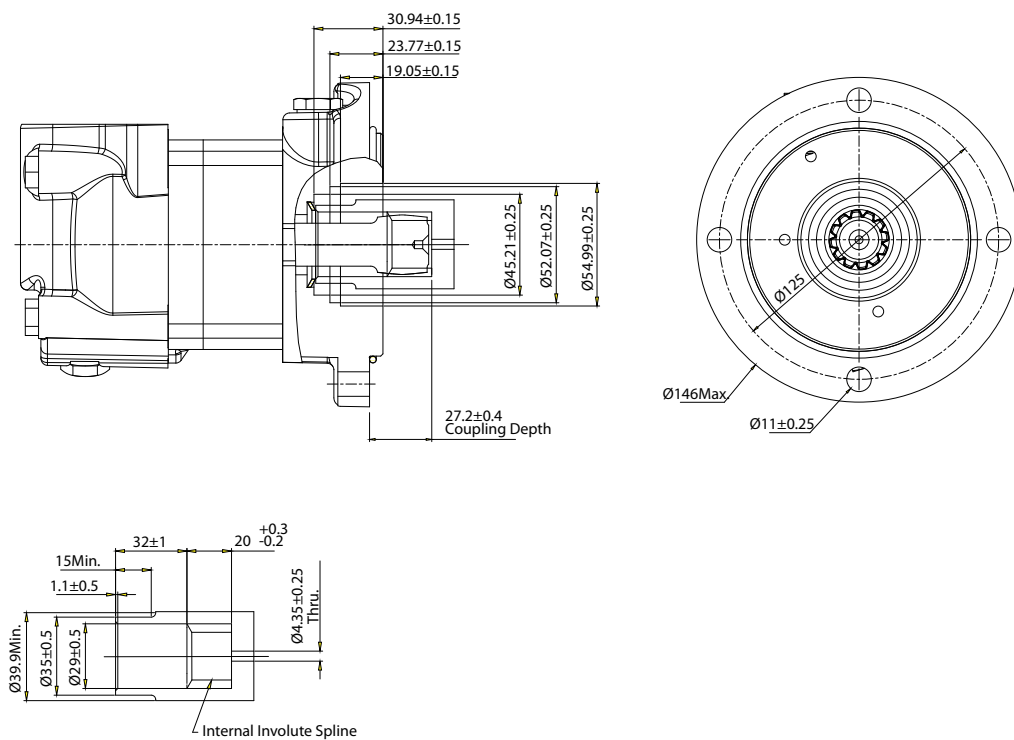


*Dimensions*

| Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r] | Dimensions mm [in] |              |
|--|--------------------|--------------|
|  | X                  | Y            |
| 80 [4.9]   | 97 [3.82]          | 140.3 [5.52] |
| 100 [6.1]  | 101.6 [4]          | 144.9 [5.7]  |
| 130 [7.9]  | 108.1 [4.26]       | 151.4 [5.96] |
| 160 [9.8]  | 108.1 [4.26]       | 151.4 [5.96] |
| 195 [11.9]   | 114.8 [4.52]       | 158.1 [6.22] |
| 245 [15]   | 123.8 [4.87]       | 167.1 [6.58] |
| 305 [18.6]   | 135.2 [5.32]       | 178.5 [7.03] |
| 395 [24.1]   | 151.1 [5.95]       | 194.4 [7.65] |

**XL2 disc valve motor series**

**XL2 bearingless mount EMEA (AZ) dimensions**

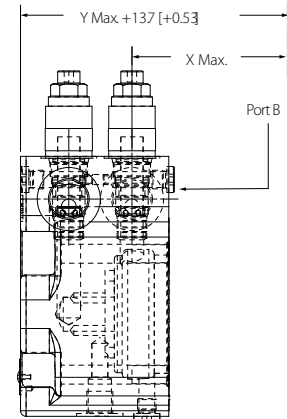
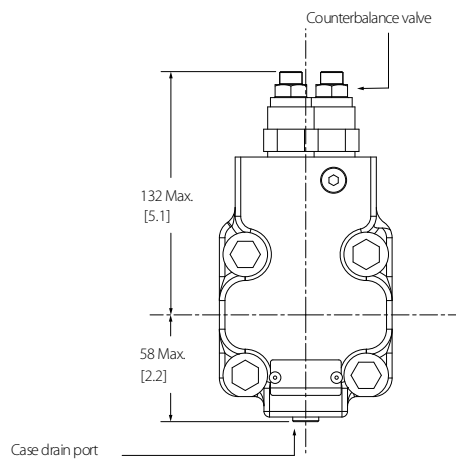
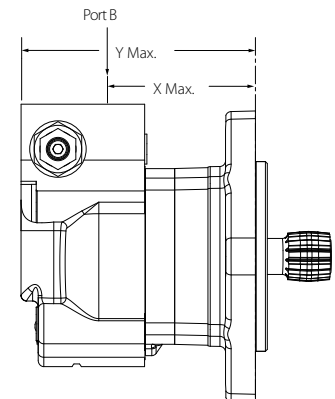
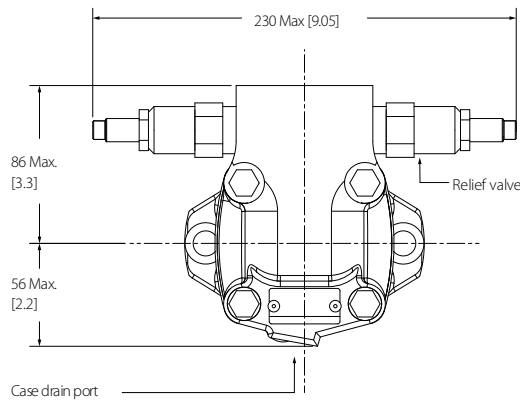


**XL2 disc valve motor series**

**XL2 bearingless with integral valve dimensions**

Standard rotation viewed from shaft end

- Port A pressurized - CW
- Port B pressurized - CCW



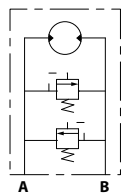
*Dimensions*

| Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r] | Dimensions mm [in] |              |
|--|--------------------|--------------|
|  | X                  | Y            |
| 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 disc valve motor series**

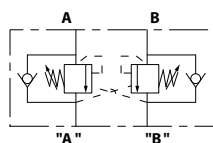
***Relief valve and counterbalance valve schematics***

*Relief valve*



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

*Counterbalance valve*



- 1CE30 (rated flow 30 l/min)

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[Contact Danfoss for more detailed information about the relief valve and counterbalance valve.](#)

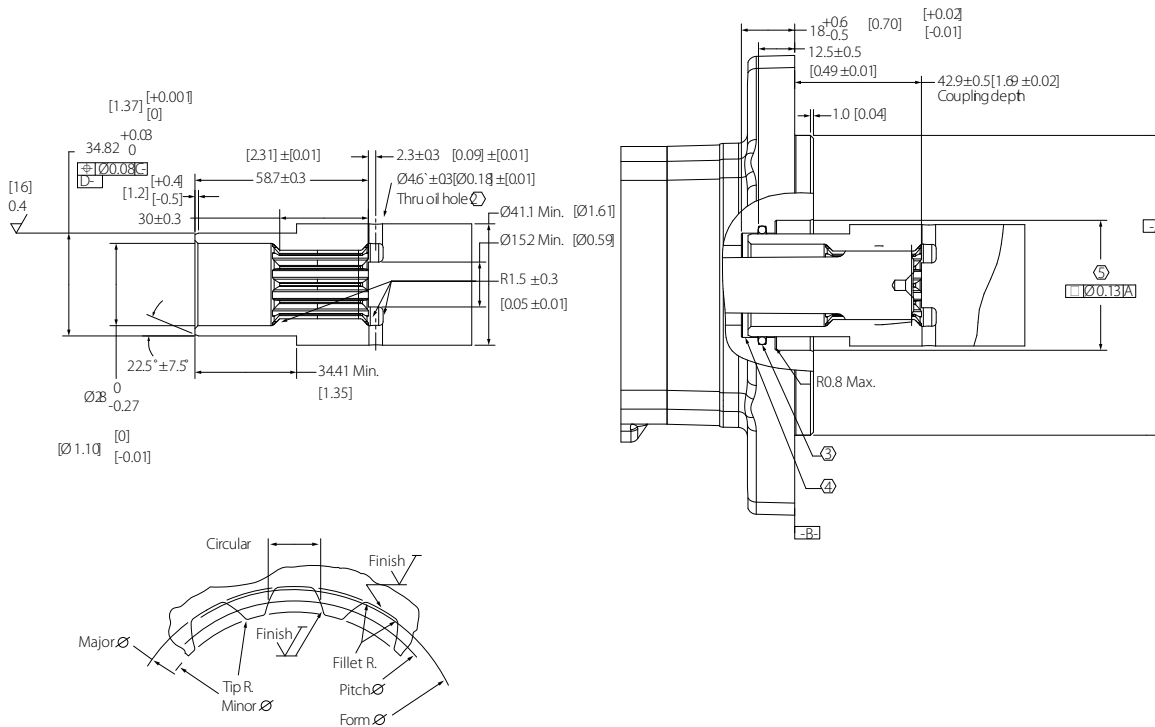
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**XL2 disc valve motor series**

**Bearingless motor installation information**

- 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 [0.030-0.040]. Dimensions apply after heat treat.
- Mating part to have critical dimensions as shown. Oil holes must be provided and open for proper oil circulation.
- Seal to be furnished with motor for proper oil circulation thru splines.
- Some means of maintaining clearance between shaft and mounting flange must be provided.
- 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 motor installation dimensions*



*Installation information*

| Parameter          | Data                                     |
|--------------------|--|
| 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 [0.8660254]               |
| Major diameter     | 27.74 [1.092] max.<br>27.59 [1.086] min. |
| Minor diameter     | 23.097-23.224 [0.9093-0.9143]            |
| Form diameter, min | 29.93 [1.060]                            |
| Fillet radius      | 0.64-0.76 [0.0250-0.030]                 |
| Tip radius         | 0.25-0.38 [0.010-0.015]                  |

**XL2 disc valve motor series**

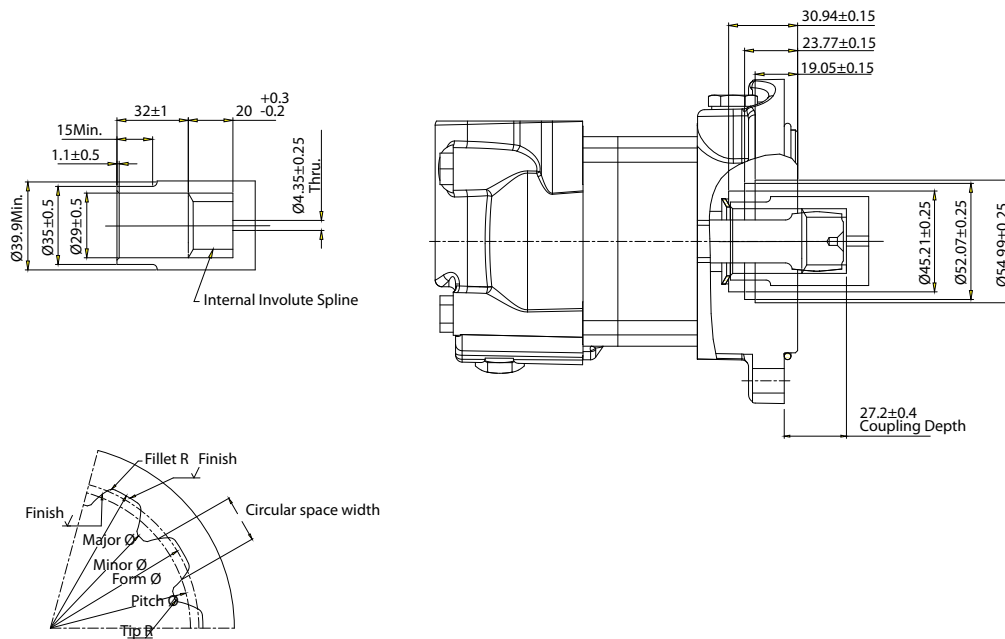
*Installation information (continued)*

| <b>Parameter</b>           | <b>Data</b>  |
|----------------------------|--|
| Finish                     | 1.6 [63]   |
| Involute profile variation | +0.000 -0.025 [+0.0000 -0.0010]  |
| Total index variation      | 0.038 [0.0015]   |
| Lead variation             | 0.013 [.0005]  |
| Circular space width       | Maximum actual: 4.318 [0.1700]   |
|                            | Minimum effective: 4.216 [0.1660]  |
|                            | Maximum effective: Ref. 4.270 [0.1681]                                   |
|                            | Minimum actual: Ref. 4.247 [0.1672]                                      |
| Dimension between two pins | Ref. 19.020-19.190 [0.7488-0.7555]                                       |
| Pin diameter               | 4.496 [0.1770] Pins to Have 3.38 [0.133]<br>Wide flat for root clearance |

**XL2 disc valve motor series**

**XL2 bearingless motor EMEA (AZ) installation information**

- 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 [0.030-0.040]. Dimensions apply after heat treat.
- Mating part to have critical dimensions as shown. Oil holes must be provided and open for proper oil circulation.
- Seal to be furnished with motor for proper oil circulation thru splines.
- Some means of maintaining clearance between shaft and mounting flange must be provided.
- 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).



*Installation information*

| Parameter          | Data                                   |
|--------------------|--|
| 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 [0.8660254]             |
| Major diameter     | 27.94 [1.1] max.<br>27.84 [1.096] min. |
| Minor diameter     | 23-23.033 [0.9055-0.9068]              |
| Form diameter, min | 27.69 [1.090]                          |
| Fillet radius      | 0.2-0.33 [0.00787-0.01299]             |
| Tip radius         | 0.2-0.33 [0.00787-0.01299]             |

### XL2 disc valve motor series

*Installation information (continued)*

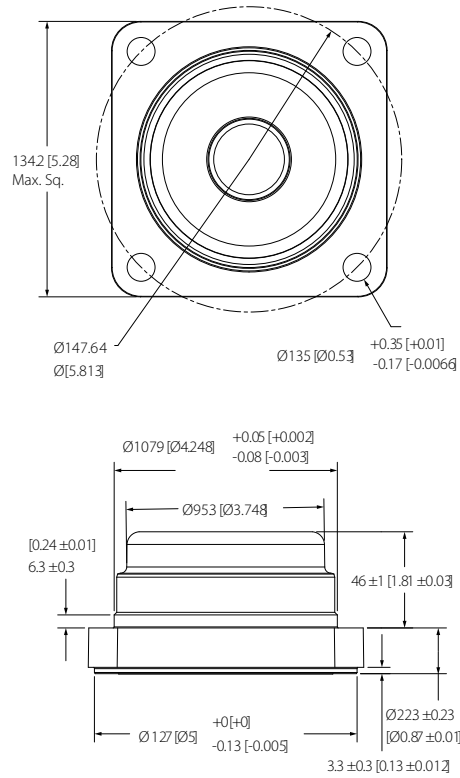
| Parameter                  | Data                                   |
|----------------------------|--|
| Circular space width       | Maximum actual: 4.328 [0.1704]         |
|                            | Minimum effective: 4.247 [0.1672]      |
|                            | Maximum effective: Ref. 4.277 [0.1684] |
|                            | Minimum actual: Ref. 4.288 [0.1688]    |
| Dimension between two pins | Ref. 17.622-17.784 [0.6938-0.7002]     |
| Pin diameter               | 4.8326-4.8346 [0.1903-0.19034]         |

**XL2 disc valve motor series**

**Mounting dimensions**

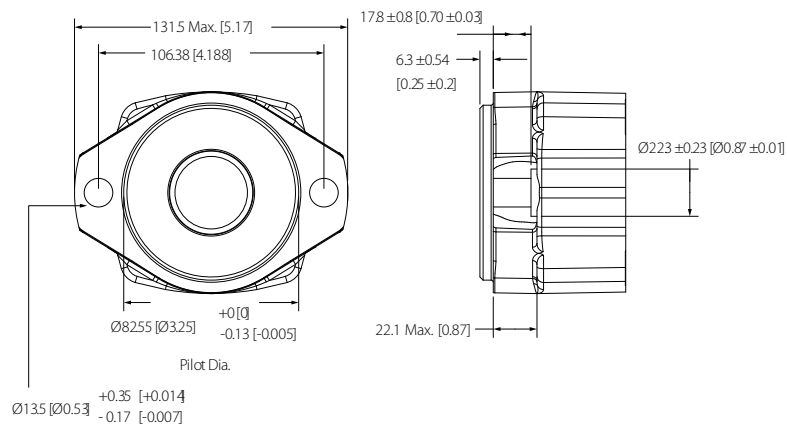
**XL2 four bolt wheel mounting dimensions**

Code AB



**XL2 SAE A two bolt mounting dimensions**

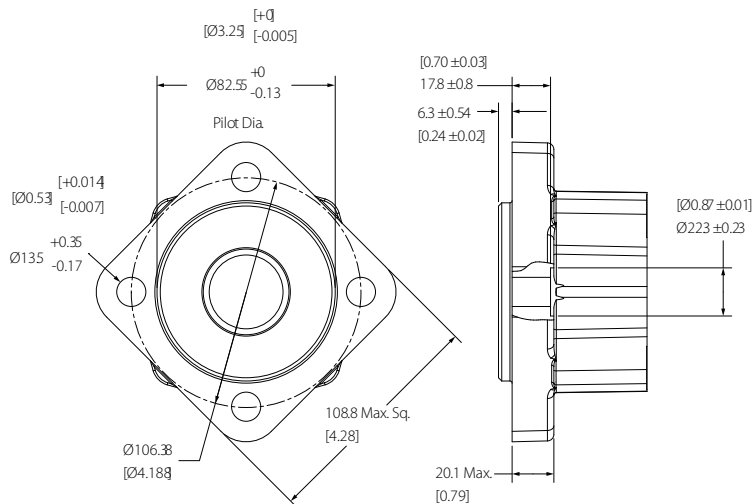
Code AC



**XL2 disc valve motor series**

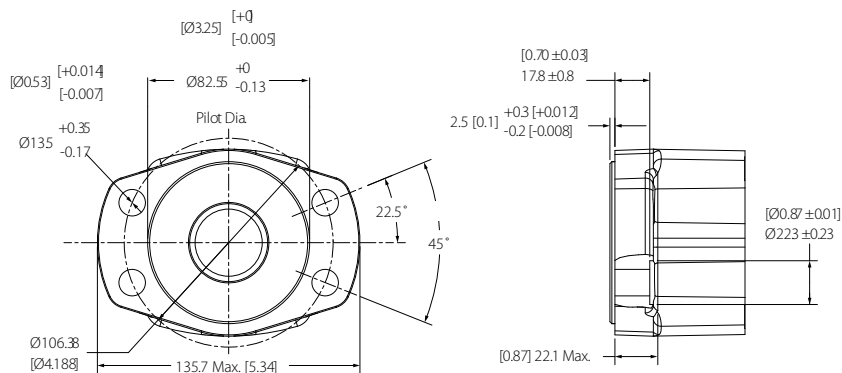
**XL2 four bolt mounting dimensions**

Code AH



**XL2 four bolt magneto mounting dimensions**

Code AJ

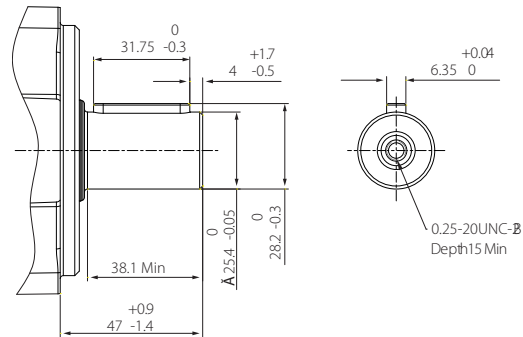


**XL2 disc valve motor series**

**Shaft dimensions**

**XL2 shaft code 01 dimensions**

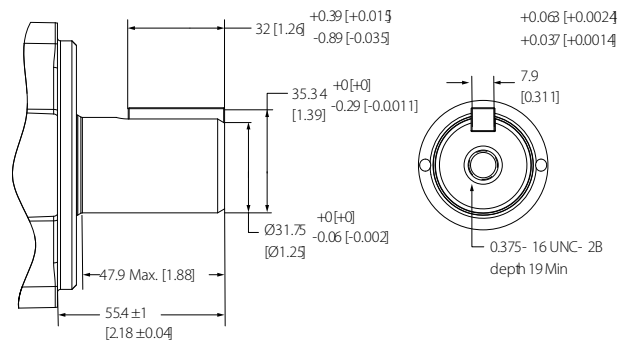
*25.4 [1] straight shaft (code 01)*



395 N·m [3500 in·lb] max. torque

**XL2 shaft code 02 dimensions**

*31.75 [1.25] straight shaft (code 02)*

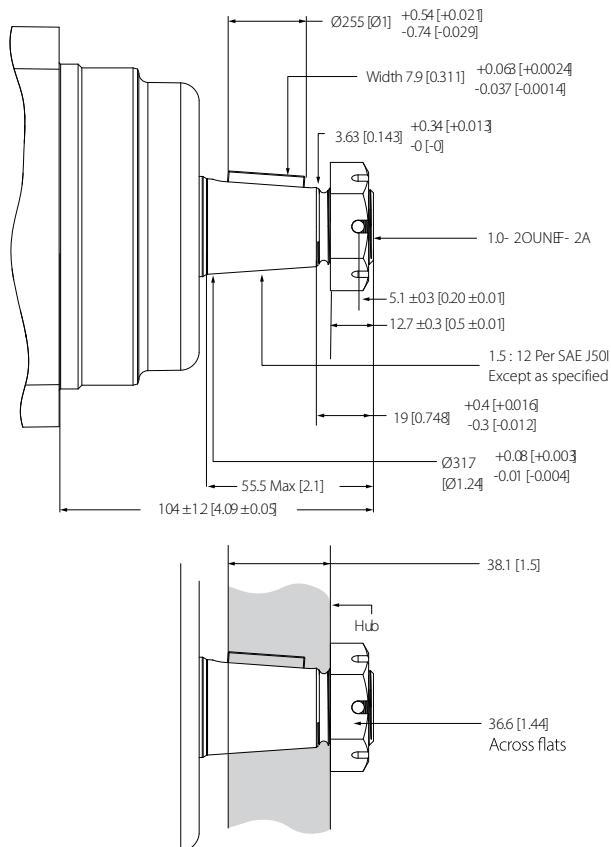


768 N·m [6800 in·lb] max. torque

**XL2 disc valve motor series**

**XL2 shaft code 03 dimensions**

31.75 [1.25] tapered shaft (code 03)



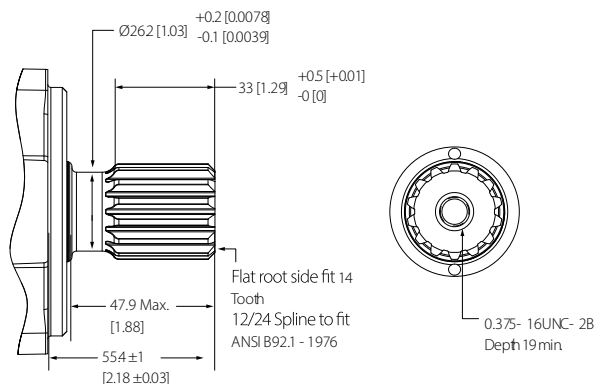
768 N-m [6800 in-lb] max. torque

Recommended torque on nut to align the slotted nut with the shaft crosshole:

- 373 N-m [275 lb-ft] dry
- 305 N-m [225 lb-ft] lub

**XL2 shaft code 04 dimensions**

31.75 [1.25] 14 tooth splined shaft (code 04)



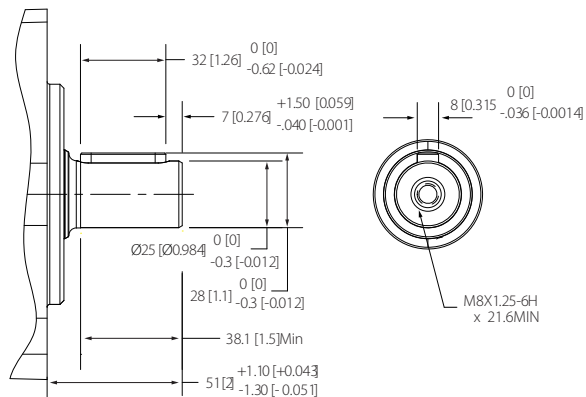
768 N-m [6800 in-lb] max. torque



**XL2 disc valve motor series**

**XL2 shaft code 98 dimensions**

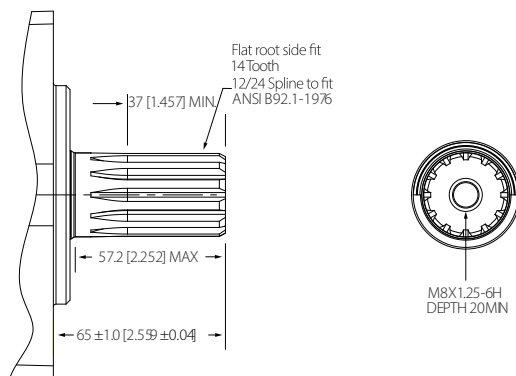
25mm straight shaft (code 98)



395 N·m [3500 in·lb] max. torque

**XL2 shaft code 99 dimensions**

31.75 [1.25] 14 tooth spline with extra length (code 99)



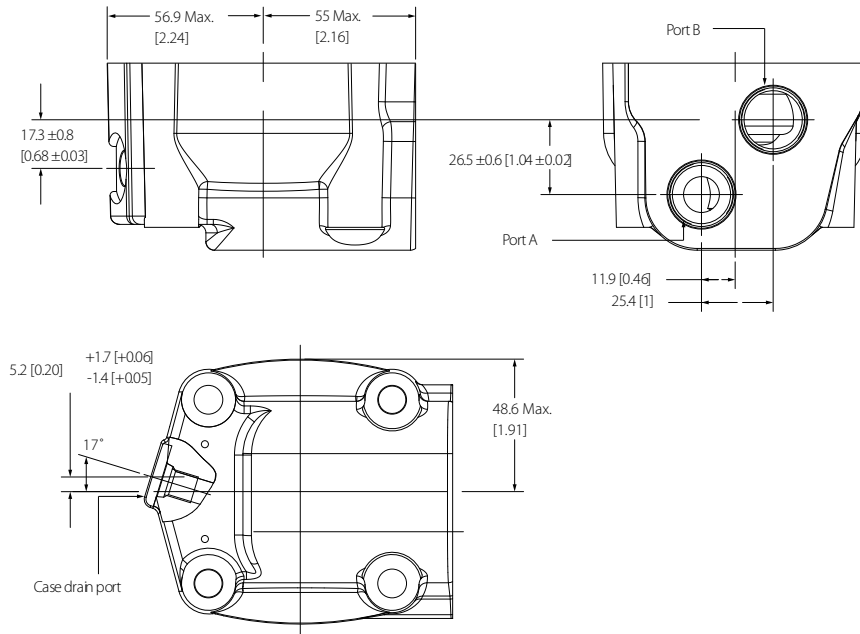
768 N·m [6800 in·lb] max. torque

**XL2 disc valve motor series**

**Port dimensions**

**XL2 staggered ports AA, AG, 01, 02 dimensions**

*Dimensions*

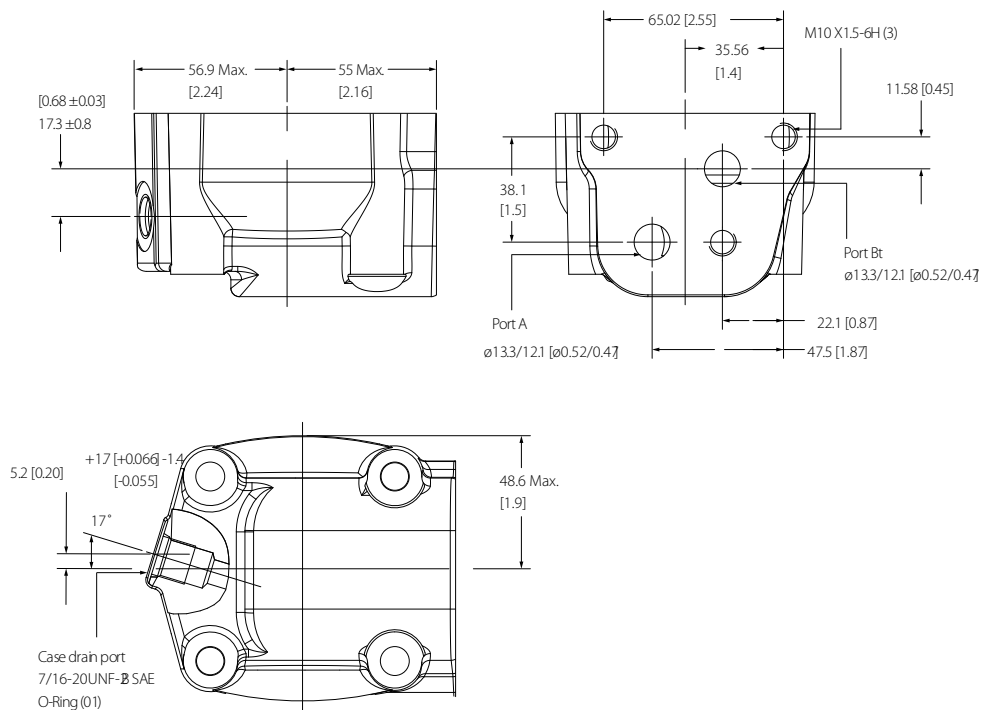


*Port code numbers*

| Port   | Code |
|--|------|
| Main ports (2)<br>7/8-14 UNF-2B SAE O-ring ports       | AA   |
| Main ports (2)<br>G1/2 O-ring ports                    | AG   |
| Case drain port (1)<br>7/16-20 UNF-2B SAE O-ring ports | 01   |
| Case drain port (1)<br>G1/4 O-ring port                | 02   |

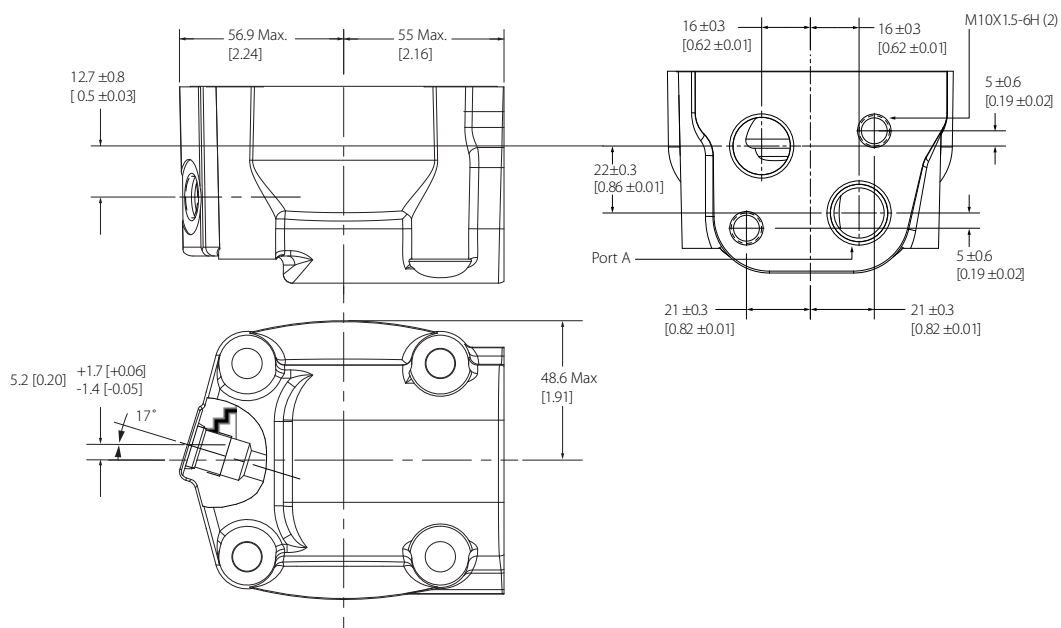
**XL2 disc valve motor series**

**XL2 manifold port AE dimensions**



**XL2 manifold ports AS, 02 dimensions**

*Dimensions*



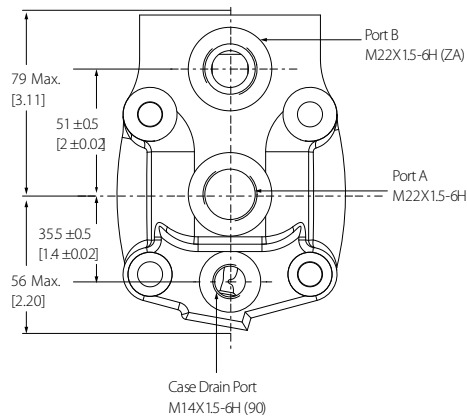
**XL2 disc valve motor series**

*Port code numbers*

| Port                     | Code |
|--------------------------|------|
| G1/2 staggered port (2)  | AS   |
| G1/4 case drain port (1) | 02   |

**XL2 end port dimensions**

*Dimensions*

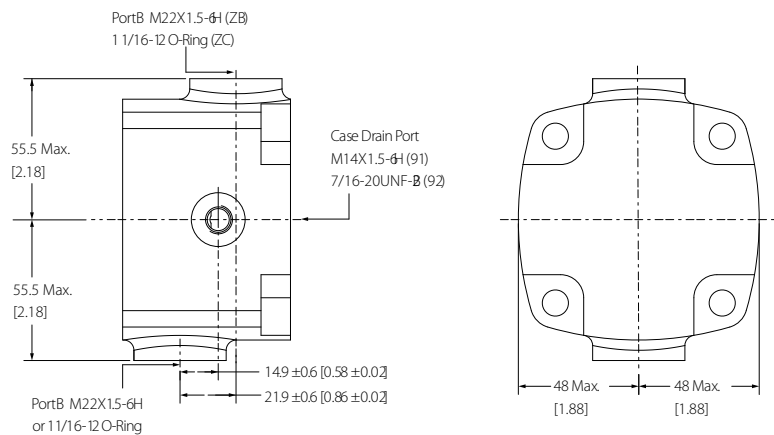


*Port code numbers*

| Port  | Code |
|---|------|
| Main ports (2)<br>22 x 1.5-6H end ports         | ZA   |
| Case drain port (1)<br>M14 x 1.6-6H O-ring port | 90   |

**XL2 side ports dimensions**

*Dimensions*



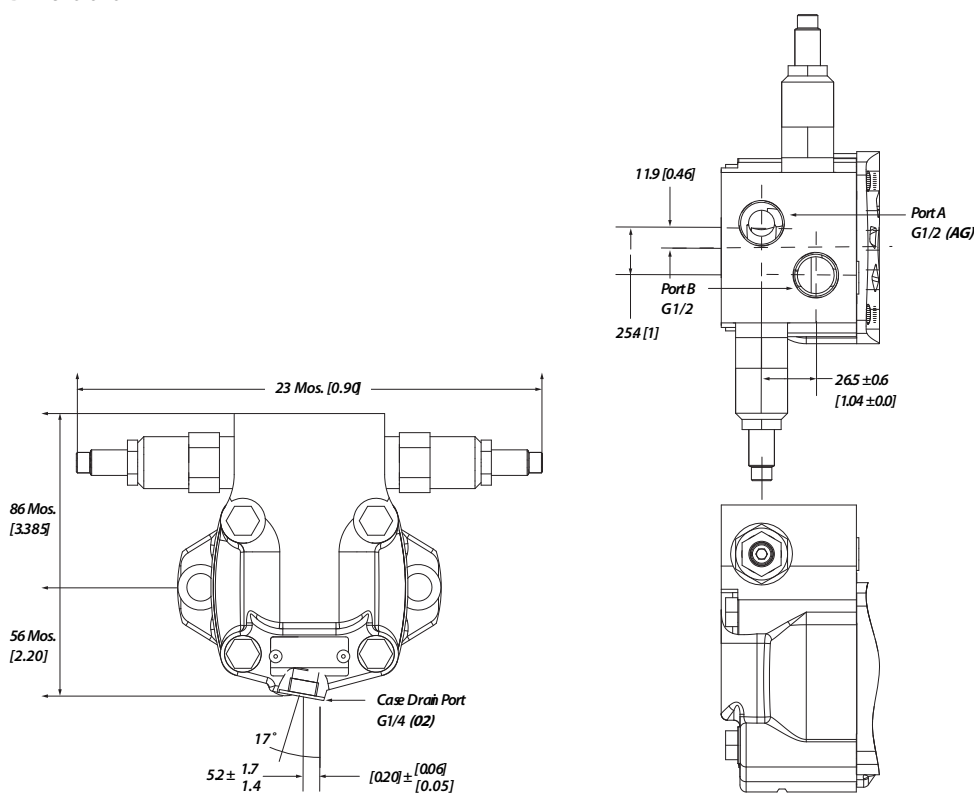
**XL2 disc valve motor series**

*Ports code numbers*

| Port   | Code |
|--|------|
| Main ports (2)<br>M22x1.5-6H ports (positioned 180° apart) | ZB   |
| M14x1.5-6H O-ring port                                     | 91   |

**XL2 ports with relief valves dimensions**

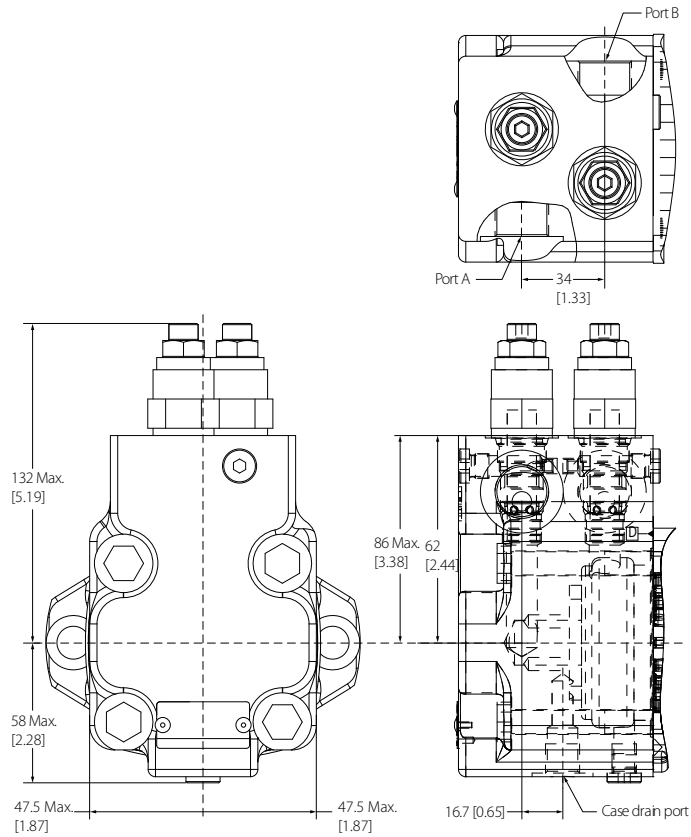
*Dimensions*



**XL2 disc valve motor series**

**XL2 ports with counterbalance valve dimensions**

*Dimensions*



*Ports code numbers*

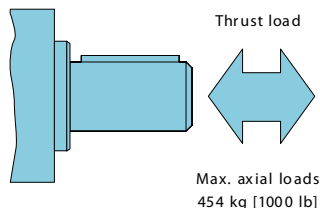
| Port   | Code |
|--|------|
| 7/8-14UNF-2B SAE O-ring staggered ports (2)  | AA   |
| G1/2 staggered ports                         | AG   |
| 7/16-20UNF-2B SAE O-ring case drain Port (1) | 01   |
| G1/4 case drain port (1)                     | 02   |

## XL2 disc valve motor series

### Shaft side load capacity

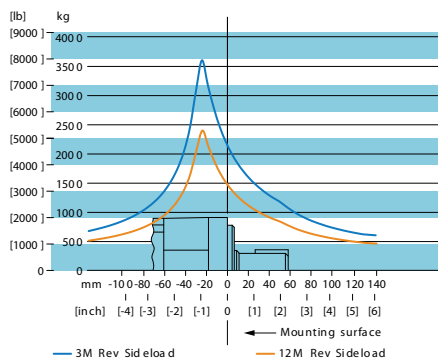
These curves indicate the radial load capacity on the motor shaft(s) at various locations with an allowable external thrust load of 454 kg [1000 lb].

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].

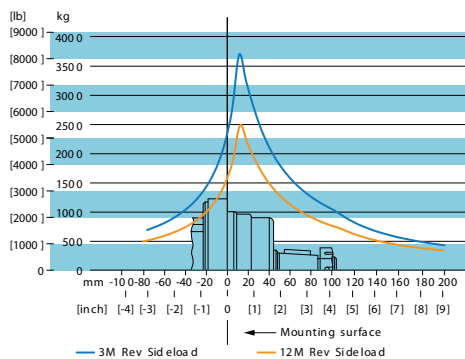


Each curve is based on a B10 bearing life of 2000 hours. The 12,000,000 revolution curve represents 100 RPM. The 3,000,000 revolution curve represents 25 RPM.

#### Standard motor straight and splined shafts



#### Wheel motor tapered shaft



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 table 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                  |

**XL2 disc valve motor series**

| RPM | Multiplication factor |
|-----|-----------------------|
| 700 | 0.56                  |
| 800 | 0.54                  |

**XL2 case pressure seal limitation**

Xcel XL2 series case pressure seal limitation motors are durable and have long life as long as the recommended case pressure is not exceeded.

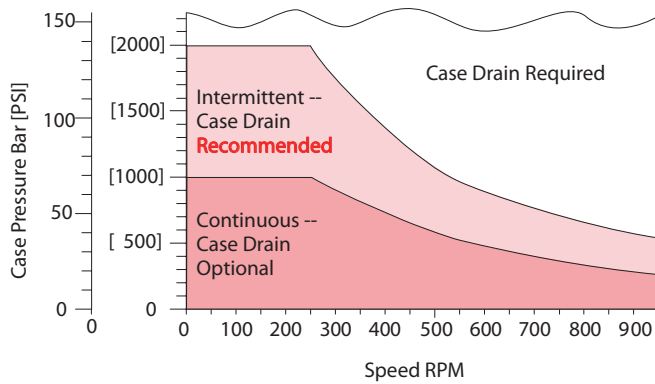
Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required from the case pressure seal limitation chart.

**Case porting advantage contamination control** Flushing motor case

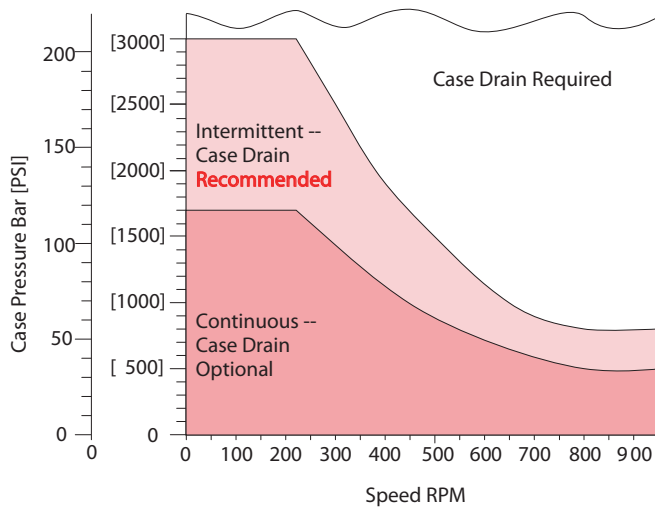
**Cooler motor** Exiting oil draws motor heat away

**Extended motor seal life** Maintain low case pressure with a preset restriction in the case drain line

*Standard shaft seal*



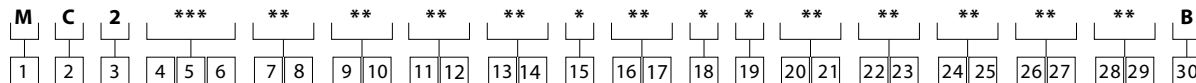
*High pressure shaft seal*



## XL2 disc valve motor series

### XL2 model code

Model code identification



### XL2 product, series, displacement options

1 - product

| Code | Description |
|------|-------------|
| M    | Motor       |

2, 3 - series

| Code | Description     |
|------|-----------------|
| C2   | Xcel XL2 series |

4, 5, 6 - displacement

| Code | Description   |
|------|---------------|
| 80   | 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]  |

### XL2 mounting flange and output shaft options

7, 8 - mounting flange

| Code | Description  |
|------|--|
| AB   | Wheel, 4 bolt: 108.0 [4.25] pilot dia. 13.59 [0.535] 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 [0.535] dia. holes on 106.4 [4.19] dia. bolt circle. SAE A.                               |
| AH   | Standard, 4 bolt: 82.6 [3.25] pilot dia. 13.59 [0.535] dia. holes on 106.4 [4.19] dia. bolt circle.                                      |
| AJ   | Standard (magneto), 4 bolt: 82.6 [3.25] pilot dia. 13.59 [0.535] dia. holes on 106.4 [4.19] dia. bolt circle. 2.79 [0.110] pilot length. |
| AZ   | Bearingless - European (w/o leakage slots), 4 bolt: 100.0 [3.94] pilot dia. 11.0 [0.43] dia. holes on 125.0 [4.92] dia. bolt circle.     |

9, 10 - output shaft

| Code | Description  |
|------|--|
| 01   | 25.4 [1.000] dia. straight shaft with 0.250-20 UNC-2B hole in shaft end, woodruff key                                  |
| 02   | 31.75 [1.250] dia. straight shaft with 0.375 -16 UNC-2b thread in end, 7.938 [0.3125] Sq. x 31.75 [1.250] straight key |

## XL2 disc valve motor series

### 9, 10 - output shaft (continued)

| Code | Description   |
|------|---|
| 03   | 31.75 [1.250] dia. 0.125:1 tapered shaft per SAE J501 with 1.000-20 UNEF-2A threaded shaft end and slotted hex nut, 7.938 [0.3125] 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 0.375-16UNC-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 [0.3132] H x 45.00 [1.772] L key   |
| 35   | 25.40 [1.000] dia. 6B spline per SAE J 499 with 0.250-20 UNC-2B thread in end, 25.40 [1.000] minimum full spline length   |
| 39   | None (bearingless) European spline  |
| 41   | 35.00 [1.378] dia. 1:10 tapered shaft per ISO R775 with M20x1.5-6g thread shaft end and slot hex nut, 6.00 [0.236] sq x 20.0 [0.787] key  |
| 98   | 25.00 [0.984] dia. straight shaft with M8 x 1.25-6H thread in end, 7.982 [0.3142] W x 6.954 [0.2738] 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 M8 x 1.25-6H thread in end, 37.0 [1.46] minimum full spline length, 139 [5.471] oal shaft length |

### XL2 ports, case flow, relief valve, geroler options

#### 11, 12 - port description

| Code | Description   |
|------|---|
| AA   | 7/8-14UNF-2B SAE O-ring ports - staggered ports   |
| AE   | 13.0 [0.512] dia. manifold ports with 3 x M10 x 1.5-6H port block mounting holes                          |
| AG   | G 1/2 B SP straight THD ports - staggered ports   |
| AS   | G 1/2 B SP straight THD ports - staggered port with 2 x M10 x 1.5-6H port block mounting holes - European |
| BA   | M22 x 1.5-6H ports per ISO9974-1 - staggered ports  |
| ZA   | M22 x 1.5-6H ports per ISO9974-1- end ports   |
| ZB   | M22 x 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

| Code | Description   |
|------|---|
| 00   | None  |
| 01   | 7/16-20UNF-2B SAE O-ring port   |
| 02   | G 1/4 B SP straight THD port  |
| 10   | G 1/4 B S P straight THD port with optional G 1/4 B SP 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

| Code | Description |
|------|-------------|
| 0    | None        |

## XL2 disc valve motor series

### 16, 17 - pressure/flow setting

| Code | Description  |
|------|--|
| 00   | None   |
| 17   | Relief valve set @ 170.0 bar [2465 lbf/in <sup>2</sup> ] |

### 18 - geroler

| Code | Description |
|------|-------------|
| 1    | Standard    |

## XL2 shaft seal, accessories, special feature options

### 19 - shaft seal

| Code | Description                          |
|------|--------------------------------------|
| 0    | Standard                             |
| 3    | High pressure shaft seal             |
| 4    | Seal guard                           |
| 6    | High pressure shaft seal, seal guard |

### 20, 21 - accessories

| Code | Description  |
|------|--|
| 00   | None   |
| AE   | M12 threaded connector, long body digital speed and direction pickup, two 30 pulse signals in quadrature per revolution: <ul style="list-style-type: none"> <li>• pin 1 = power supply</li> <li>• pin 2 = output signal 1</li> <li>• pin 3 = common</li> <li>• pin 4 = output signal 2</li> </ul> Supply voltage: 8 to 28 VDC output voltage low: 0.5 V DC max at 10 mA. |

### 22, 23 - special features (hardware)

| Code | Description                        |
|------|------------------------------------|
| 00   | None (standard)                    |
| 52   | Drain outtake through spacer plate |

### 24, 25 - special features (assembly)

| Code | Description                         |
|------|-------------------------------------|
| 00   | None (standard)                     |
| AA   | Flange rotated 90°                  |
| AB   | Reverse rotation                    |
| AC   | Flange rotated 90° reverse rotation |

## XL2 paint, identification, design code

### 26, 27 - paint/packaging

| Code | Description |
|------|-------------|
| AA   | Blue        |
| AB   | Black       |

**XL2 disc valve motor series**

*28, 29 - customer identification or nameplate*

| <b>Code</b> | <b>Description</b> |
|-------------|--------------------|
| AA          | Standard           |

*30 - design code*

| <b>Code</b> | <b>Description</b> |
|-------------|--------------------|
| B           | Second             |

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[For additional special feature options, contact your Danfoss representative.](#)

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