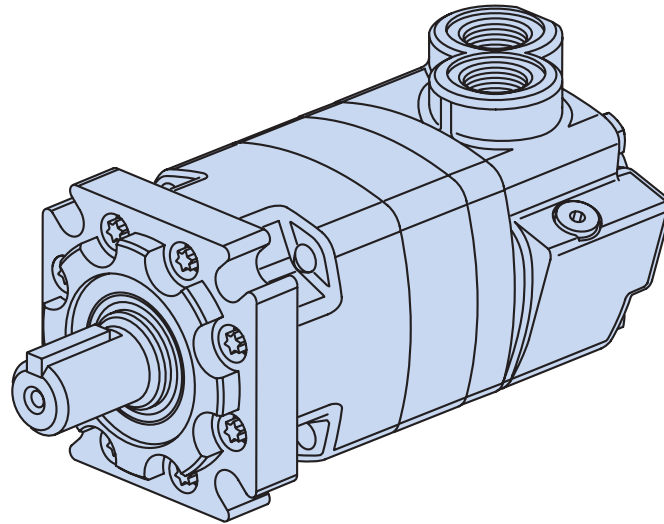


# 4000 Series

## Highlights



### Features

- 10 displacements, a variety of mounting flanges and output shafts
- Reliable, proven design
- High efficiency
- Environmental protection options

### Benefits

- Flexibility in designing this motor into a system
- Options that fit well into tough applications

### Applications

- Mowing
- Snow Removal
- Sprayer
- Trencher
- Wood Products

### Description

The 4000 Series offers up to 8600 in-lb of torque and 25 gpm (continuous ratings). This is the corner stone of the Char-Lynn line.

### 4000 Series Motors

|                    |                        |
|--------------------|------------------------|
| Geroler Element    | 10 Displacements       |
| Flow l/min [GPM]   | 95 [25] Continuous**   |
|                    | 150 [40] Intermittent* |
| Speed RPM          | 722 Cont.**            |
|                    | 868 Inter.*            |
| Pressure bar [PSI] | 200 [3000] Cont.**     |
|                    | 300 [4500] Inter.*     |
| Torque Nm [lb-in]  | 970 [8600] Cont.**     |
|                    | 1180 [10450] Inter.*   |

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

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

C-4



Mowing



Snow Removal



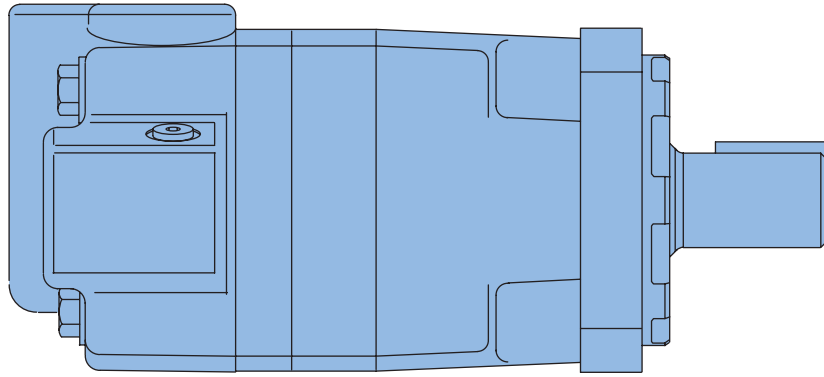
Sprayer



Trencher

# 4000 Series

## Specifications



### 4000 SERIES MOTORS

| Displ. cm <sup>3</sup> /r [in <sup>3</sup> /r] |                         | 110 [ 6.7]  | 130 [ 7.9]  | 160 [ 9.9]  | 205 [12.5]  | 245 [15.0]  | 280 [17.1]  | 310 [19.0]  | 395 [24.0]   | 495 [30.0]   | 625 [38.0]   |
|--|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|
| Max. Speed (RPM)                               | Continuous              | 697         | 722         | 582         | 459         | 383         | 336         | 303         | 239          | 191          | 151          |
|  | Intermittent @ Flow     | 868         | 862         | 693         | 546         | 532         | 488         | 422         | 376          | 305          | 241          |
| Flow l/min [GPM]                               | Continuous              | 75 [20]     | 95 [25]     | 95 [25]     | 95 [25]     | 95 [25]     | 95 [25]     | 95 [25]     | 95 [25]      | 95 [25]      | 95 [25]      |
|  | Intermittent            | 95 [25]     | 115 [30]    | 115 [30]    | 115 [30]    | 130 [35]    | 130 [35]    | 130 [35]    | 150 [40]     | 150 [40]     | 150 [40]     |
| Torque* Nm [lb-in]                             | Continuous              | 320 [2850]  | 375 [3330]  | 485 [4290]  | 600 [5300]  | 705 [6240]  | 753 [6666]  | 850 [7530]  | 930 [8240]   | 945 [8375]   | 970 [8605]   |
|  | Intermittent            | 470 [4160]  | 560 [4940]  | 705 [6240]  | 800 [7100]  | 845 [7470]  | 957 [8471]  | 1065 [9420] | 1185 [10470] | 1170 [10350] | 1180 [10450] |
| Pressure Δ bar [Δ PSI]                         | Continuous              | 205 [3000]  | 205 [3000]  | 205 [3000]  | 205 [3000]  | 205 [3000]  | 205 [3000]  | 205 [3000]  | 190 [2750]   | 140 [2000]   | 115 [1700]   |
|  | Intermittent            | 310 [4500]  | 310 [4500]  | 310 [4500]  | 260 [3750]  | 310 [4500]  | 260 [3750]  | 260 [3750]  | 240 [3500]   | 170 [2500]   | 140 [2000]   |
|  | Peak                    | 310 [4500]  | 310 [4500]  | 310 [4500]  | 310 [4500]  | 310 [4500]  | 310 [4500]  | 310 [4500]  | 295 [4250]   | 230 [3300]   | 180 [2600]   |
| Weight kg [lb]                                 | Standard or Wheel Mount | 17.9 [39.5] | 18.1 [40.0] | 18.1 [40.0] | 18.4 [40.5] | 18.6 [41.0] | 19.1 [42.0] | 19.5 [43.0] | 20.4 [45.0]  | 21.8 [48.0]  | 23.1 [51.0]  |
|  | Bearingless             |             | 14.1 [31.0] | 14.3 [31.5] | 14.1 [31.0] | 14.5 [32.0] | 14.7 [32.5] | 15.2 [33.5] | 15.6 [34.5]  | 16.6 [36.5]  | 17.9 [39.5]  |
|  |                         |             |             |             |             |             |             |             |              |              |              |

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.

#### Maximum Inlet Pressure:

310 bar [4500 PSI]  
Do not exceed Δ pressure rating (see chart above).

#### Maximum Return Pressure:

310 bar [4500 PSI] with case drain line installed.  
Do not exceed Δ pressure rating (see chart above).

#### Δ bar [Δ 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

#### Peak Operation:

1% of every minute

#### Recommended Fluids:

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

#### Recommended System Operating Temp.:

-34°C to 82°C [-30°F to 180°F]

#### Recommended Filtration:

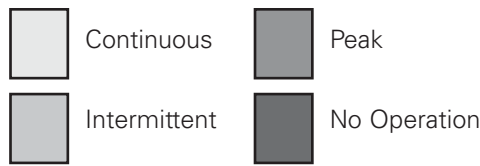
per ISO Cleanliness Code, 4406: 20/18/13

# 4000 Series

## Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

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



**130 c3m/r [7.3/9r ]in  
ΔPressure Bar [PSI]**

|             | [250]<br>155       | [500]<br>35        | [1000]<br>70         | [1500]<br>105         | [2000]<br>140         | [2500]<br>170        | [3000]<br>205         | [3500]<br>240        | [4000]<br>275        | [4500]<br>310        |
|-------------|--------------------|--------------------|----------------------|-----------------------|-----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|
| [.5]<br>1.9 | [310]<br>35<br>12  | [510]<br>60<br>9   | [1060]<br>120<br>5   | [1590]<br>180<br>2    |                       |                      |                       |                      |                      |                      |
| [1]<br>3.8  | [290]<br>35<br>30  | [530]<br>60<br>28  | [1080]<br>120<br>25  | [1600]<br>180<br>19   | [2110]<br>240<br>14   | [2640]<br>300<br>13  | [3060]<br>34 5<br>12  | [3450]<br>390<br>4   |                      |                      |
| [2]<br>7.5  | [280]<br>30<br>57  | [530]<br>60<br>56  | [1100]<br>125<br>53  | [1620]<br>185<br>47   | [2140]<br>240<br>42   | [2660]<br>300<br>40  | [3180]<br>360<br>38   | [3600]<br>405<br>29  | [4020]<br>455<br>20  | [4080]<br>460<br>12  |
| [4]<br>15   | [260]<br>30<br>116 | [520]<br>60<br>114 | [1100]<br>125<br>111 | [1650]<br>185<br>105  | [2200]<br>250<br>100  | [2700]<br>305<br>95  | [3210]<br>365<br>90   | [3660]<br>415<br>70  | [4100]<br>465<br>50  | [4560]<br>515<br>37  |
| [6]<br>23   | [240]<br>25<br>173 | [510]<br>60<br>170 | [1100]<br>125<br>167 | [1650]<br>185<br>161  | [2200]<br>250<br>156  | [2720]<br>305<br>149 | [3240]<br>36 5<br>142 | [3710]<br>420<br>123 | [4180]<br>470<br>104 | [4660]<br>525<br>91  |
| [8]<br>30   | [230]<br>25<br>228 | [510]<br>60<br>225 | [1080]<br>120<br>222 | [1640]<br>185<br>216  | [2210]<br>250<br>210  | [2740]<br>310<br>202 | [3270]<br>370<br>194  | [3770]<br>425<br>176 | [4270]<br>480<br>158 | [4750]<br>535<br>145 |
| [10]<br>38  | [210]<br>25<br>283 | [510]<br>60<br>225 | [1080]<br>120<br>278 | [1640]<br>185<br>272  | [2210]<br>250<br>266  | [2750]<br>310<br>256 | [3300]<br>375<br>246  | [3820]<br>430<br>229 | [4350]<br>490<br>212 | [4840]<br>545<br>189 |
| [12]<br>45  | [200]<br>25<br>341 | [500]<br>55<br>338 | [1070]<br>120<br>335 | [1640]<br>185<br>329  | [2220]<br>250<br>323  | [2750]<br>310<br>312 | [3300]<br>375<br>300  | [3840]<br>435<br>282 | [4370]<br>495<br>263 | [4870]<br>550<br>237 |
| [14]<br>53  | [180]<br>20<br>400 | [490]<br>55<br>396 | [1060]<br>120<br>392 | [1640]<br>185<br>386  | [2220]<br>250<br>380  | [2750]<br>310<br>368 | [3310]<br>375<br>355  | [3860]<br>435<br>335 | [4390]<br>495<br>366 | [4890]<br>550<br>286 |
| [16]<br>61  | [160]<br>20<br>457 | [490]<br>55<br>453 | [1050]<br>120<br>449 | [1630]<br>185<br>443  | [2220]<br>250<br>437  | [2760]<br>310<br>424 | [3310]<br>375<br>410  | [3860]<br>435<br>388 | [4400]<br>495<br>366 | [4920]<br>555<br>335 |
| [18]<br>68  | [130]<br>15<br>516 | [480]<br>55<br>511 | [1050]<br>120<br>506 | [1630]<br>185<br>500  | [2220]<br>250<br>494  | [2760]<br>310<br>480 | [3320]<br>375<br>465  | [3870]<br>435<br>442 | [4420]<br>500<br>418 | [4940]<br>560<br>384 |
| [20]<br>76  | [110]<br>10<br>574 | [470]<br>55<br>569 | [1040]<br>120<br>564 | [1620]<br>185<br>559  | [2210]<br>250<br>551  | [2760]<br>310<br>536 | [3330]<br>375<br>520  | [3890]<br>440<br>495 | [4440]<br>500<br>470 |                      |
| [22]<br>83  | [70]<br>10<br>633  | [450]<br>50<br>628 | [1020]<br>115<br>624 | [1610]<br>18 0<br>615 | [2190]<br>24 5<br>606 | [2750]<br>310<br>590 | [3320]<br>375<br>573  | [3880]<br>440<br>547 | [4440]<br>500<br>520 |                      |
| [25]<br>95  | [50]<br>5<br>722   | [430]<br>50<br>718 | [1000]<br>115<br>714 | [1580]<br>180<br>702  | [2160]<br>245<br>690  | [2720]<br>305<br>672 | [3300]<br>375<br>653  | [3860]<br>435<br>625 | [4430]<br>500<br>595 |                      |
| [30]<br>114 |                    | [400]<br>45<br>862 | [940]<br>105<br>855  | [1500]<br>170<br>842  | [2080]<br>235<br>827  | [2670]<br>300<br>806 | [3200]<br>360<br>783  | [3740]<br>425<br>749 |                      |                      |

**110 c3m/r [6.3/7r ]in  
ΔPressure Bar [PSI]**

|             | [250]<br>155       | [500]<br>35        | [1000]<br>70        | [1500]<br>105        | [2000]<br>140        | [2500]<br>170        | [3000]<br>205        | [3500]<br>240        | [4000]<br>275        | [4500]<br>310        |
|-------------|--------------------|--------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| [.5]<br>1.9 | [150]<br>15<br>14  | [390]<br>45<br>10  | [850]<br>95<br>5    | [1290]<br>145<br>2   |                      |                      |                      |                      |                      |                      |
| [1]<br>3.8  | [170]<br>20<br>34  | [440]<br>50<br>33  | [900]<br>100<br>31  | [1380]<br>155<br>28  | [1860]<br>210<br>25  | [2270]<br>255<br>22  | [2680]<br>305<br>18  | [3110]<br>350<br>11  |                      |                      |
| [2]<br>7.5  | [180]<br>20<br>68  | [450]<br>50<br>67  | [910]<br>105<br>62  | [1390]<br>155<br>56  | [1860]<br>210<br>50  | [2280]<br>260<br>44  | [2700]<br>305<br>36  | [3120]<br>355<br>28  | [3450]<br>390<br>18  |                      |
| [4]<br>15   | [190]<br>20<br>138 | [460]<br>50<br>136 | [940]<br>105<br>123 | [1400]<br>160<br>110 | [1870]<br>210<br>97  | [2310]<br>260<br>84  | [2730]<br>310<br>70  | [3140]<br>355<br>56  | [3560]<br>400<br>42  | [3880]<br>440<br>28  |
| [6]<br>23   | [200]<br>25<br>207 | [470]<br>55<br>204 | [960]<br>110<br>200 | [1420]<br>160<br>193 | [1880]<br>210<br>184 | [2320]<br>260<br>174 | [2760]<br>310<br>163 | [3200]<br>360<br>150 | [3640]<br>410<br>136 | [3950]<br>455<br>121 |
| [8]<br>30   | [190]<br>20<br>277 | [460]<br>50<br>274 | [950]<br>105<br>270 | [1420]<br>160<br>262 | [1880]<br>210<br>253 | [2340]<br>265<br>241 | [2790]<br>315<br>228 | [3230]<br>365<br>213 | [3670]<br>415<br>196 | [4010]<br>455<br>179 |
| [10]<br>38  | [180]<br>20<br>347 | [460]<br>50<br>344 | [950]<br>105<br>340 | [1420]<br>160<br>331 | [1890]<br>215<br>322 | [2350]<br>265<br>308 | [2820]<br>320<br>292 | [3260]<br>370<br>274 | [3710]<br>420<br>255 | [4070]<br>460<br>236 |
| [12]<br>45  | [160]<br>20<br>417 | [450]<br>50<br>414 | [940]<br>105<br>410 | [1420]<br>160<br>400 | [1880]<br>210<br>390 | [2350]<br>265<br>374 | [2820]<br>320<br>355 | [3260]<br>370<br>335 | [3710]<br>420<br>313 | [4080]<br>460<br>292 |
| [14]<br>53  | [140]<br>15<br>487 | [440]<br>50<br>484 | [930]<br>105<br>480 | [1420]<br>160<br>469 | [1880]<br>210<br>458 | [2350]<br>265<br>440 | [2830]<br>320<br>419 | [3280]<br>370<br>446 | [3730]<br>420<br>471 | [4110]<br>465<br>348 |
| [16]<br>61  | [130]<br>15<br>556 | [440]<br>50<br>553 | [920]<br>105<br>549 | [1410]<br>160<br>537 | [1870]<br>210<br>525 | [2350]<br>265<br>505 | [2840]<br>320<br>482 | [3300]<br>375<br>455 | [3750]<br>425<br>428 | [4120]<br>465<br>404 |
| [18]<br>68  | [100]<br>10<br>626 | [440]<br>50<br>622 | [910]<br>105<br>618 | [1400]<br>160<br>606 | [1870]<br>210<br>593 | [2350]<br>265<br>570 | [2840]<br>320<br>545 | [3300]<br>375<br>516 | [3770]<br>425<br>485 | [4140]<br>465<br>460 |
| [20]<br>76  | [80]<br>10<br>697  | [430]<br>50<br>694 | [900]<br>100<br>690 | [1370]<br>155<br>677 | [1860]<br>210<br>664 | [2350]<br>265<br>638 | [2850]<br>320<br>611 | [3320]<br>375<br>579 | [3790]<br>430<br>545 | [4160]<br>470<br>518 |
| [25]<br>95  |                    |                    |                     |                      |                      |                      |                      |                      |                      |                      |

Flow LPM [GPM]

[3780]  
425  
690 } Torque [lb-in]  
Nm  
Speed RPM

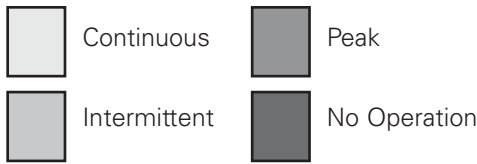
# 4000 Series

**160 cm³/r [9.9 in³/r]**  
 $\Delta$  Pressure Bar [PSI]

## Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

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

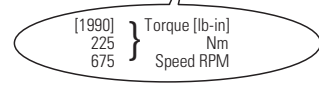


**205 cm³/r [12.5 in³/r]**  
 $\Delta$  Pressure Bar [PSI]

|      | [250]<br>15        | [500]<br>35         | [1000]<br>70         | [1500]<br>105        | [2000]<br>140        | [2500]<br>170        | [3000]<br>205        | [3500]<br>240        | [4000]<br>275        | [4500]<br>310       |
|------|--------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| [.5] | [400]<br>45<br>8   | [810]<br>90<br>5    | [1500]<br>170<br>1   |                      |                      |                      |                      |                      |                      |                     |
| [1]  | [410]<br>45<br>17  | [830]<br>95<br>17   | [1590]<br>180<br>16  | [2220]<br>250<br>15  | [2860]<br>325<br>14  | [3860]<br>435<br>12  | [4560]<br>515<br>11  | [5390]<br>610<br>9   | [5510]<br>625<br>3   |                     |
| [2]  | [420]<br>45<br>36  | [850]<br>95<br>35   | [1680]<br>190<br>34  | [2410]<br>270<br>32  | [3140]<br>355<br>29  | [4060]<br>460<br>27  | [4800]<br>540<br>25  | [5420]<br>610<br>22  | [6000]<br>680<br>16  | [6210]<br>700<br>8  |
| [4]  | [430]<br>50<br>73  | [870]<br>100<br>73  | [1770]<br>200<br>71  | [2590]<br>295<br>70  | [3140]<br>385<br>68  | [4260]<br>480<br>61  | [5040]<br>570<br>57  | [5730]<br>645<br>45  | [6340]<br>715<br>35  | [6740]<br>760<br>23 |
| [6]  | [430]<br>50<br>107 | [880]<br>100<br>106 | [1800]<br>205<br>105 | [2620]<br>295<br>103 | [3530]<br>400<br>101 | [4370]<br>495<br>98  | [5170]<br>585<br>90  | [5900]<br>665<br>81  | [6590]<br>745<br>74  | [7100]<br>800<br>65 |
| [8]  | [410]<br>45<br>144 | [870]<br>100<br>143 | [1820]<br>205<br>142 | [2660]<br>300<br>138 | [3560]<br>400<br>136 | [4410]<br>500<br>132 | [5240]<br>590<br>125 | [6020]<br>680<br>116 | [6770]<br>765<br>109 |                     |
| [10] | [390]<br>45<br>182 | [860]<br>95<br>180  | [1820]<br>205<br>179 | [2700]<br>305<br>174 | [3580]<br>405<br>170 | [4460]<br>505<br>166 | [5300]<br>600<br>160 | [6110]<br>690<br>152 | [6890]<br>780<br>143 |                     |
| [12] | [350]<br>40<br>217 | [850]<br>95<br>216  | [1810]<br>205<br>215 | [2690]<br>305<br>211 | [3570]<br>405<br>202 | [4440]<br>500<br>200 | [5300]<br>600<br>194 | [6120]<br>690<br>185 |                      |                     |
| [14] | [330]<br>35<br>256 | [840]<br>95<br>254  | [1790]<br>200<br>252 | [2670]<br>300<br>248 | [3560]<br>400<br>243 | [4430]<br>500<br>237 | [5290]<br>600<br>229 | [6120]<br>690<br>219 |                      |                     |
| [16] | [290]<br>35<br>291 | [820]<br>95<br>290  | [1770]<br>200<br>289 | [2650]<br>300<br>284 | [3540]<br>400<br>280 | [4410]<br>500<br>272 | [5280]<br>600<br>264 | [6120]<br>690<br>253 |                      |                     |
| [18] | [270]<br>30<br>329 | [810]<br>90<br>327  | [1750]<br>200<br>325 | [2640]<br>300<br>321 | [3520]<br>400<br>316 | [4400]<br>500<br>308 | [5270]<br>600<br>298 | [6120]<br>690<br>287 |                      |                     |
| [20] | [230]<br>25<br>366 | [800]<br>90<br>364  | [1730]<br>195<br>362 | [2620]<br>295<br>358 | [3510]<br>395<br>353 | [4380]<br>495<br>345 | [5270]<br>595<br>334 | [6120]<br>690<br>321 |                      |                     |
| [22] | [190]<br>20<br>402 | [780]<br>90<br>400  | [1690]<br>190<br>398 | [2600]<br>295<br>394 | [3500]<br>395<br>389 | [4370]<br>495<br>380 | [5260]<br>595<br>368 |                      |                      |                     |
| [25] | [150]<br>15<br>459 | [750]<br>85<br>456  | [1640]<br>185<br>453 | [2560]<br>290<br>448 | [3480]<br>395<br>442 | [4360]<br>495<br>434 | [5240]<br>590<br>421 |                      |                      |                     |
| [30] |                    | [710]<br>80<br>546  | [1540]<br>175<br>542 | [2510]<br>285<br>537 | [3350]<br>380<br>529 | [4190]<br>475<br>520 | [5030]<br>570<br>504 |                      |                      |                     |
| [30] |                    |                     |                      |                      |                      |                      |                      |                      |                      |                     |

Flow LPM [GPM]

|      | [250]<br>15        | [500]<br>35        | [1000]<br>70         | [1500]<br>105        | [2000]<br>140        | [2500]<br>170        | [3000]<br>205        | [3500]<br>240        | [4000]<br>275        | [4500]<br>310        |
|------|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| [.5] | [300]<br>35<br>8   | [680]<br>75<br>7   | [1320]<br>150<br>5   | [2050]<br>230<br>3   | [2750]<br>310<br>1   |                      |                      |                      |                      |                      |
| [1]  | [320]<br>35<br>23  | [700]<br>80<br>22  | [1350]<br>155<br>20  | [2070]<br>235<br>19  | [2780]<br>315<br>18  | [3300]<br>375<br>16  | [3940]<br>445<br>15  | [4410]<br>500<br>8   | [4950]<br>560<br>2   |                      |
| [2]  | [330]<br>35<br>46  | [700]<br>80<br>45  | [1360]<br>155<br>41  | [2080]<br>235<br>40  | [2790]<br>315<br>37  | [3340]<br>375<br>32  | [3970]<br>450<br>29  | [4530]<br>510<br>27  | [5090]<br>575<br>25  | [5590]<br>630<br>13  |
| [4]  | [320]<br>35<br>93  | [710]<br>80<br>92  | [1400]<br>160<br>90  | [2100]<br>240<br>88  | [2820]<br>320<br>84  | [3420]<br>385<br>76  | [4020]<br>455<br>73  | [4620]<br>520<br>62  | [5220]<br>590<br>51  | [5730]<br>645<br>35  |
| [6]  | [300]<br>35<br>137 | [710]<br>80<br>135 | [1420]<br>160<br>134 | [2140]<br>240<br>131 | [2850]<br>320<br>126 | [3510]<br>395<br>120 | [4180]<br>470<br>114 | [4760]<br>540<br>90  | [5340]<br>605<br>75  | [5870]<br>665<br>57  |
| [8]  | [280]<br>30<br>184 | [720]<br>80<br>182 | [1450]<br>165<br>180 | [2180]<br>245<br>176 | [2900]<br>330<br>171 | [3560]<br>400<br>163 | [4230]<br>480<br>154 | [4850]<br>550<br>138 | [5470]<br>620<br>122 | [6010]<br>680<br>100 |
| [10] | [260]<br>30<br>232 | [720]<br>80<br>229 | [1480]<br>165<br>226 | [2220]<br>250<br>221 | [2950]<br>335<br>216 | [3610]<br>410<br>206 | [4290]<br>485<br>194 | [4920]<br>555<br>182 | [5560]<br>630<br>169 | [6160]<br>695<br>142 |
| [12] | [240]<br>25<br>277 | [700]<br>80<br>274 | [1450]<br>165<br>272 | [2190]<br>245<br>266 | [2920]<br>330<br>260 | [3590]<br>405<br>250 | [4280]<br>485<br>238 | [4920]<br>555<br>224 | [5570]<br>630<br>209 | [6180]<br>700<br>182 |
| [14] | [220]<br>25<br>321 | [680]<br>75<br>319 | [1420]<br>160<br>318 | [2160]<br>245<br>311 | [2890]<br>325<br>304 | [3570]<br>405<br>294 | [4270]<br>480<br>282 | [4920]<br>555<br>266 | [5580]<br>630<br>249 | [6200]<br>700<br>222 |
| [16] | [200]<br>25<br>366 | [670]<br>75<br>364 | [1400]<br>160<br>362 | [2130]<br>240<br>356 | [2860]<br>325<br>348 | [3550]<br>400<br>338 | [4260]<br>480<br>326 | [4920]<br>555<br>308 | [5590]<br>630<br>289 | [6220]<br>705<br>262 |
| [18] | [180]<br>20<br>410 | [650]<br>75<br>409 | [1360]<br>155<br>407 | [2100]<br>235<br>401 | [2830]<br>320<br>392 | [3530]<br>400<br>382 | [4250]<br>480<br>370 | [4910]<br>555<br>350 | [5600]<br>635<br>329 | [6240]<br>705<br>302 |
| [20] | [150]<br>15<br>460 | [630]<br>70<br>458 | [1340]<br>150<br>456 | [2070]<br>235<br>448 | [2800]<br>315<br>440 | [3510]<br>395<br>429 | [4240]<br>480<br>417 | [4910]<br>555<br>396 | [5610]<br>635<br>373 |                      |
| [22] | [120]<br>15<br>509 | [620]<br>70<br>506 | [1330]<br>150<br>502 | [2060]<br>235<br>494 | [2790]<br>315<br>484 | [3500]<br>395<br>473 | [4220]<br>475<br>461 | [4910]<br>555<br>438 | [5600]<br>635<br>413 |                      |
| [25] | [70]<br>10<br>582  | [600]<br>70<br>578 | [1320]<br>150<br>573 | [2050]<br>230<br>563 | [2780]<br>315<br>552 | [3480]<br>395<br>540 | [4210]<br>475<br>526 | [4900]<br>555<br>501 | [5590]<br>630<br>474 |                      |
| [30] |                    | [560]<br>65<br>693 | [1280]<br>145<br>687 | [1990]<br>225<br>675 | [2700]<br>305<br>661 | [3430]<br>390<br>647 | [3970]<br>450<br>630 | [4640]<br>525<br>600 |                      |                      |

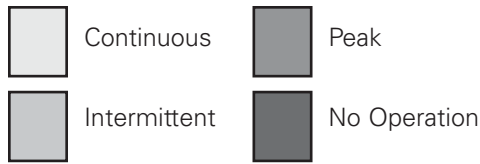


# 4000 Series

## Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

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

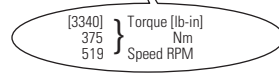


**245 cm<sup>3</sup>/r [15.0 in<sup>3</sup>/r]**  
 $\Delta$  Pressure Bar [PSI]

|             | [250]<br>15        | [500]<br>35          | [750]<br>50          | [1000]<br>70         | [1250]<br>85         | [1500]<br>105        | [1750]<br>120        | [2000]<br>140        | [2250]<br>15         | [2500]<br>170        | [2750]<br>190        | [3000]<br>205        | [3250]<br>225        | [3500]<br>240        | [3750]<br>260       |
|-------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| [5]<br>1.9  | [460]<br>50<br>5   | [980]<br>110<br>2    |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                     |
| [1]<br>3.8  | [480]<br>55<br>14  | [990]<br>110<br>14   | [1490]<br>170<br>14  | [1990]<br>225<br>13  | [2480]<br>280<br>13  | [2970]<br>335<br>12  | [3400]<br>385<br>12  | [3830]<br>435<br>11  | [4250]<br>480<br>11  | [4680]<br>530<br>10  | [5020]<br>565<br>4   |                      |                      |                      |                     |
| [2]<br>7.5  | [500]<br>55<br>30  | [1000]<br>115<br>30  | [1520]<br>170<br>29  | [2040]<br>230<br>29  | [2540]<br>285<br>28  | [3050]<br>345<br>27  | [3420]<br>385<br>26  | [3930]<br>445<br>24  | [4440]<br>500<br>23  | [4900]<br>555<br>22  | [5320]<br>600<br>20  | [5740]<br>650<br>18  | [6160]<br>695<br>16  | [6640]<br>750<br>14  | [7150]<br>810<br>11 |
| [4]<br>15   | [510]<br>60<br>61  | [1030]<br>115<br>61  | [1560]<br>175<br>60  | [2080]<br>235<br>60  | [2600]<br>295<br>59  | [3130]<br>355<br>59  | [3630]<br>410<br>58  | [4130]<br>465<br>56  | [4630]<br>525<br>49  | [5120]<br>580<br>47  | [5570]<br>630<br>47  | [6030]<br>680<br>44  | [6480]<br>730<br>42  | [6870]<br>775<br>39  | [7340]<br>830<br>36 |
| [6]<br>23   | [510]<br>60<br>91  | [1040]<br>120<br>90  | [1570]<br>175<br>90  | [2100]<br>235<br>89  | [2620]<br>295<br>88  | [3160]<br>355<br>88  | [3660]<br>415<br>86  | [4200]<br>475<br>83  | [4710]<br>530<br>80  | [5220]<br>590<br>75  | [5690]<br>645<br>72  | [6140]<br>695<br>70  | [6620]<br>750<br>67  | [7050]<br>795<br>63  | [7430]<br>840<br>59 |
| [8]<br>30   | [500]<br>55<br>121 | [1020]<br>115<br>121 | [1560]<br>175<br>120 | [2110]<br>240<br>119 | [2630]<br>295<br>118 | [3150]<br>355<br>117 | [3680]<br>415<br>115 | [4210]<br>475<br>113 | [4740]<br>535<br>111 | [5250]<br>595<br>106 | [5720]<br>645<br>104 | [6200]<br>700<br>99  | [6670]<br>755<br>95  | [7090]<br>800<br>91  | [7470]<br>845<br>87 |
| [10]<br>38  | [470]<br>55<br>152 | [1000]<br>115<br>151 | [1540]<br>175<br>150 | [2100]<br>235<br>148 | [2620]<br>295<br>148 | [3150]<br>355<br>147 | [3690]<br>415<br>145 | [4230]<br>480<br>143 | [4770]<br>540<br>141 | [5290]<br>600<br>137 | [5670]<br>650<br>133 | [6240]<br>705<br>129 | [6710]<br>760<br>125 | [7140]<br>805<br>120 |                     |
| [12]<br>45  | [450]<br>50<br>183 | [980]<br>110<br>182  | [1530]<br>175<br>180 | [2080]<br>235<br>179 | [2610]<br>295<br>178 | [3140]<br>355<br>178 | [3680]<br>415<br>176 | [4220]<br>475<br>173 | [4760]<br>540<br>170 | [5280]<br>595<br>166 | [5690]<br>645<br>161 | [6230]<br>705<br>157 | [6700]<br>755<br>152 |                      |                     |
| [14]<br>53  | [420]<br>45<br>213 | [960]<br>110<br>212  | [1520]<br>170<br>211 | [2060]<br>235<br>210 | [2600]<br>295<br>209 | [3130]<br>355<br>208 | [3670]<br>415<br>206 | [4200]<br>475<br>203 | [4740]<br>535<br>200 | [5260]<br>595<br>195 | [5740]<br>650<br>190 | [6220]<br>705<br>185 |                      |                      |                     |
| [16]<br>61  | [400]<br>45<br>244 | [950]<br>105<br>243  | [1500]<br>170<br>242 | [2040]<br>230<br>241 | [2580]<br>290<br>240 | [3120]<br>355<br>239 | [3660]<br>415<br>236 | [4190]<br>475<br>232 | [4730]<br>535<br>229 | [5250]<br>595<br>225 | [5730]<br>650<br>219 | [6210]<br>700<br>213 |                      |                      |                     |
| [18]<br>68  | [380]<br>45<br>275 | [930]<br>105<br>274  | [1480]<br>165<br>273 | [2020]<br>230<br>272 | [2560]<br>290<br>270 | [3110]<br>350<br>269 | [3650]<br>415<br>266 | [4180]<br>470<br>262 | [4710]<br>530<br>259 | [5230]<br>590<br>254 | [5720]<br>645<br>248 | [6200]<br>700<br>241 |                      |                      |                     |
| [20]<br>76  | [350]<br>40<br>305 | [910]<br>105<br>305  | [1460]<br>165<br>304 | [2000]<br>225<br>303 | [2550]<br>290<br>302 | [3100]<br>350<br>300 | [3640]<br>410<br>296 | [4170]<br>470<br>292 | [4700]<br>530<br>288 | [5220]<br>590<br>283 | [5710]<br>645<br>276 | [6200]<br>700<br>265 |                      |                      |                     |
| [22]<br>83  | [310]<br>35<br>337 | [870]<br>100<br>336  | [1420]<br>160<br>335 | [1970]<br>225<br>334 | [2500]<br>280<br>332 | [3050]<br>345<br>330 | [3590]<br>405<br>326 | [4140]<br>465<br>323 | [4680]<br>525<br>319 | [5200]<br>580<br>313 | [5680]<br>640<br>306 |                      |                      |                      |                     |
| [25]<br>95  | [260]<br>30<br>383 | [820]<br>95<br>382   | [1380]<br>155<br>381 | [1920]<br>220<br>380 | [2460]<br>280<br>378 | [2980]<br>335<br>376 | [3540]<br>400<br>372 | [4090]<br>460<br>369 | [4640]<br>525<br>365 | [5180]<br>585<br>357 |                      |                      |                      |                      |                     |
| [30]<br>114 |                    | [680]<br>75<br>457   | [1250]<br>140<br>456 | [1860]<br>210<br>455 | [2390]<br>270<br>453 | [2900]<br>330<br>450 | [3430]<br>390<br>445 | [3960]<br>445<br>442 | [4460]<br>505<br>437 | [4950]<br>560<br>427 |                      |                      |                      |                      |                     |
| [35]<br>132 |                    |                      | [1110]<br>125<br>532 | [1740]<br>195<br>531 | [2270]<br>255<br>528 | [2790]<br>315<br>525 | [3340]<br>375<br>519 | [3910]<br>440<br>515 | [4400]<br>495<br>509 |                      |                      |                      |                      |                      |                     |

**280 cm<sup>3</sup>/r [17.1 in<sup>3</sup>/r]**  
 $\Delta$  Pressure Bar [PSI]

|             | [250]<br>15        | [500]<br>35          | [750]<br>50          | [1000]<br>70         | [1250]<br>85         | [1500]<br>105        | [1750]<br>120        | [2000]<br>140        | [2250]<br>155        | [2500]<br>170        | [2750]<br>190        | [3000]<br>205        | [3250]<br>225        | [3500]<br>240       | [3750]<br>260       |
|-------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|
| [5]<br>1.9  | [533]<br>60<br>4   | [1074]<br>121<br>2   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                     |                     |
| [1]<br>3.8  | [553]<br>62<br>12  | [1136]<br>128<br>12  | [1714]<br>194<br>12  | [2287]<br>258<br>11  | [2841]<br>321<br>11  | [3394]<br>384<br>11  | [3868]<br>437<br>10  | [4389]<br>496<br>10  | [4895]<br>553<br>10  | [6080]<br>685<br>8   | [5870]<br>663<br>6   | [6811]<br>770<br>6   | [7239]<br>818<br>5   | [7654]<br>865<br>4  |                     |
| [2]<br>7.5  | [568]<br>64<br>26  | [1146]<br>130<br>26  | [1740]<br>197<br>25  | [2328]<br>263<br>25  | [2902]<br>328<br>24  | [3461]<br>391<br>24  | [3955]<br>447<br>23  | [4524]<br>511<br>22  | [5222]<br>586<br>21  | [6300]<br>713<br>20  | [6146]<br>694<br>19  | [6666]<br>753<br>17  | [7191]<br>813<br>17  | [7749]<br>876<br>15 | [8323]<br>940<br>13 |
| [4]<br>15   | [579]<br>64<br>53  | [1167]<br>132<br>53  | [1771]<br>200<br>52  | [2374]<br>268<br>52  | [2962]<br>335<br>51  | [3557]<br>402<br>50  | [4139]<br>468<br>50  | [4712]<br>532<br>49  | [5285]<br>597<br>47  | [6395]<br>722<br>45  | [6355]<br>722<br>44  | [6946]<br>785<br>42  | [7502]<br>848<br>41  | [8020]<br>906<br>40 | [8471]<br>957<br>38 |
| [6]<br>23   | [583]<br>66<br>79  | [1177]<br>133<br>79  | [1781]<br>201<br>78  | [2395]<br>271<br>78  | [2987]<br>338<br>77  | [3601]<br>407<br>77  | [4193]<br>474<br>76  | [4793]<br>542<br>74  | [5376]<br>607<br>72  | [6521]<br>737<br>67  | [7082]<br>800<br>66  | [7607]<br>859<br>65  | [8097]<br>915<br>64  |                     |                     |
| [8]<br>30   | [573]<br>65<br>106 | [1167]<br>132<br>106 | [1780]<br>201<br>105 | [2404]<br>272<br>105 | [3007]<br>340<br>104 | [3610]<br>408<br>104 | [4218]<br>477<br>102 | [4812]<br>544<br>101 | [5411]<br>611<br>99  | [6594]<br>741<br>96  | [7022]<br>793<br>92  | [7518]<br>849<br>90  |                      |                     |                     |
| [10]<br>38  | [547]<br>62<br>134 | [1146]<br>130<br>133 | [1765]<br>199<br>133 | [2395]<br>271<br>131 | [2997]<br>339<br>131 | [3629]<br>410<br>130 | [4238]<br>479<br>129 | [4837]<br>547<br>127 | [5442]<br>615<br>126 | [6635]<br>746<br>119 | [6601]<br>746<br>119 | [7022]<br>793<br>115 | [7518]<br>849<br>111 |                     |                     |
| [12]<br>45  | [527]<br>60<br>161 | [1126]<br>127<br>160 | [1745]<br>197<br>186 | [2369]<br>268<br>158 | [2991]<br>338<br>157 | [3609]<br>408<br>157 | [4228]<br>478<br>154 | [4832]<br>546<br>152 | [5441]<br>615<br>152 | [6634]<br>744<br>148 | [6586]<br>744<br>144 | [6940]<br>784<br>141 |                      |                     |                     |
| [14]<br>53  | [497]<br>56<br>187 | [1106]<br>125<br>187 | [1730]<br>195<br>186 | [2344]<br>265<br>186 | [2972]<br>336<br>185 | [3585]<br>405<br>184 | [4213]<br>476<br>182 | [4816]<br>544<br>180 | [5430]<br>614<br>178 | [6628]<br>736<br>174 | [6511]<br>736<br>170 | [6940]<br>784<br>166 |                      |                     |                     |
| [16]<br>61  | [472]<br>53<br>214 | [1096]<br>124<br>214 | [1715]<br>194<br>213 | [2324]<br>263<br>212 | [2947]<br>333<br>211 | [3565]<br>403<br>210 | [4203]<br>475<br>208 | [4811]<br>544<br>206 | [5420]<br>612<br>203 | [6619]<br>727<br>199 | [6436]<br>727<br>195 |                      |                      |                     |                     |
| [18]<br>68  | [437]<br>39<br>241 | [1075]<br>121<br>241 | [1690]<br>191<br>240 | [2299]<br>260<br>239 | [2917]<br>330<br>237 | [3541]<br>400<br>236 | [4188]<br>473<br>234 | [4801]<br>542<br>231 | [5400]<br>610<br>229 | [6619]<br>719<br>224 | [6362]<br>719<br>219 |                      |                      |                     |                     |
| [20]<br>76  | [402]<br>45<br>268 | [1055]<br>119<br>268 | [1669]<br>189<br>268 | [2274]<br>257<br>267 | [2898]<br>327<br>266 | [3521]<br>398<br>264 | [4178]<br>472<br>261 | [4791]<br>541<br>258 | [5394]<br>609<br>255 | [6551]<br>661<br>249 |                      |                      |                      |                     |                     |
| [22]<br>83  | [366]<br>41<br>296 | [1005]<br>114<br>295 | [1629]<br>184<br>295 | [2257]<br>255<br>294 | [2856]<br>323<br>292 | [3480]<br>393<br>290 | [4136]<br>467<br>288 | [4756]<br>537<br>285 | [5205]<br>588<br>279 |                      |                      |                      |                      |                     |                     |
| [25]<br>95  | [301]<br>34<br>336 | [940]<br>106<br>336  | [1588]<br>179<br>335 | [2231]<br>252<br>334 | [2825]<br>319<br>333 | [3419]<br>386<br>331 | [4086]<br>462<br>328 | [4710]<br>532<br>325 | [5205]<br>588<br>314 |                      |                      |                      |                      |                     |                     |
| [30]<br>114 |                    | [845]<br>96<br>402   | [1480]<br>167<br>401 | [2151]<br>243<br>400 | [2759]<br>312<br>398 | [3328]<br>376<br>396 | [3984]<br>450<br>392 | [4573]<br>517<br>389 | [5021]<br>567<br>377 |                      |                      |                      |                      |                     |                     |
| [35]<br>132 |                    |                      | [1348]<br>152<br>468 | [2057]<br>232<br>466 | [2623]<br>296<br>464 | [3183]<br>360<br>463 | [3883]<br>439<br>457 | [4354]<br>492<br>449 |                      |                      |                      |                      |                      |                     |                     |







# 4000 Series

**310 cm³/r [19.0 in³/r]**  
 $\Delta$  Pressure Bar [PSI]

## Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

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

|  |              |   |              |
|--|--------------|---|--------------|
|  | Continuous   |  | Peak         |
|  | Intermittent |  | No Operation |

|             | [250]<br>15        | [500]<br>35          | [750]<br>50          | [1000]<br>70         | [1250]<br>85         | [1500]<br>105        | [1750]<br>120        | [2000]<br>140        | [2250]<br>155        | [2500]<br>170        | [2750]<br>190        | [3000]<br>205       | [3250]<br>225       | [3500]<br>240        | [3750]<br>260        |
|-------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|----------------------|----------------------|
| [.5]<br>1.9 | [600]<br>70<br>4   | [1150]<br>130<br>2   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                     |                     |                      |                      |
| [1]<br>3.8  | [620]<br>70<br>11  | [1270]<br>145<br>11  | [1920]<br>215<br>11  | [2560]<br>290<br>10  | [3170]<br>360<br>10  | [3780]<br>425<br>10  | [4290]<br>485<br>9   | [4900]<br>555<br>9   | [5490]<br>620<br>9   | [6080]<br>685<br>8   | [6670]<br>755<br>8   | [7270]<br>820<br>7  | [7880]<br>890<br>7  | [8490]<br>960<br>6   | [9080]<br>1025<br>5  |
| [2]<br>7.5  | [630]<br>70<br>23  | [1280]<br>145<br>23  | [1940]<br>220<br>22  | [2590]<br>295<br>22  | [3230]<br>365<br>21  | [3830]<br>435<br>21  | [4450]<br>505<br>20  | [5070]<br>575<br>20  | [5680]<br>640<br>19  | [6300]<br>710<br>18  | [6910]<br>780<br>18  | [7530]<br>850<br>17 | [8160]<br>920<br>17 | [8790]<br>995<br>16  | [9420]<br>1065<br>15 |
| [4]<br>15   | [640]<br>70<br>47  | [1290]<br>145<br>47  | [1960]<br>220<br>46  | [2640]<br>300<br>46  | [3290]<br>370<br>45  | [3940]<br>445<br>45  | [4600]<br>520<br>44  | [5240]<br>590<br>44  | [5880]<br>665<br>43  | [6510]<br>735<br>42  | [7150]<br>810<br>42  | [7790]<br>880<br>41 | [8450]<br>955<br>41 | [9100]<br>1030<br>40 |                      |
| [6]<br>23   | [650]<br>75<br>71  | [1300]<br>145<br>71  | [1970]<br>225<br>70  | [2660]<br>300<br>70  | [3320]<br>375<br>69  | [4000]<br>450<br>69  | [4680]<br>530<br>68  | [5330]<br>600<br>67  | [5980]<br>675<br>66  | [6630]<br>750<br>64  | [7280]<br>825<br>63  | [7940]<br>895<br>63 |                     |                      |                      |
| [8]<br>30   | [640]<br>70<br>96  | [1300]<br>145<br>96  | [1980]<br>225<br>95  | [2670]<br>300<br>95  | [3350]<br>380<br>94  | [4030]<br>455<br>94  | [4710]<br>530<br>93  | [5360]<br>605<br>92  | [6020]<br>680<br>91  | [6670]<br>755<br>89  | [7320]<br>825<br>88  |                     |                     |                      |                      |
| [10]<br>38  | [620]<br>70<br>121 | [1280]<br>145<br>120 | [1970]<br>225<br>119 | [2660]<br>300<br>119 | [3340]<br>375<br>118 | [4070]<br>460<br>118 | [4740]<br>535<br>117 | [5390]<br>610<br>116 | [6050]<br>685<br>115 | [6710]<br>760<br>112 | [7370]<br>835<br>109 |                     |                     |                      |                      |
| [12]<br>45  | [600]<br>70<br>145 | [1260]<br>140<br>144 | [1940]<br>220<br>143 | [2630]<br>295<br>143 | [3340]<br>375<br>142 | [4040]<br>455<br>142 | [4730]<br>535<br>141 | [5390]<br>610<br>140 | [6060]<br>685<br>139 | [6720]<br>760<br>135 |                      |                     |                     |                      |                      |
| [14]<br>53  | [570]<br>65<br>169 | [1240]<br>140<br>169 | [1920]<br>215<br>168 | [2600]<br>295<br>168 | [3310]<br>375<br>167 | [4000]<br>450<br>167 | [4710]<br>530<br>165 | [5380]<br>610<br>164 | [6060]<br>685<br>163 | [6730]<br>760<br>159 |                      |                     |                     |                      |                      |
| [16]<br>61  | [540]<br>60<br>193 | [1230]<br>140<br>193 | [1900]<br>215<br>192 | [2580]<br>290<br>192 | [3280]<br>370<br>190 | [3970]<br>450<br>189 | [4700]<br>530<br>188 | [5380]<br>610<br>187 | [6050]<br>685<br>185 |                      |                      |                     |                     |                      |                      |
| [18]<br>68  | [490]<br>55<br>217 | [1210]<br>135<br>217 | [1880]<br>210<br>216 | [2550]<br>290<br>216 | [3240]<br>365<br>214 | [3930]<br>445<br>213 | [4680]<br>530<br>211 | [5370]<br>605<br>209 | [6040]<br>680<br>207 |                      |                      |                     |                     |                      |                      |
| [20]<br>76  | [450]<br>50<br>242 | [1190]<br>135<br>242 | [1860]<br>210<br>242 | [2520]<br>285<br>241 | [3210]<br>365<br>240 | [3900]<br>440<br>238 | [4670]<br>530<br>236 | [5360]<br>605<br>234 | [6030]<br>680<br>232 |                      |                      |                     |                     |                      |                      |
| [22]<br>83  | [420]<br>45<br>267 | [1130]<br>130<br>266 | [1820]<br>205<br>266 | [2520]<br>285<br>265 | [3180]<br>360<br>264 | [3870]<br>440<br>262 | [4640]<br>525<br>260 | [5320]<br>600<br>258 |                      |                      |                      |                     |                     |                      |                      |
| [25]<br>95  | [340]<br>40<br>303 | [1050]<br>120<br>303 | [1780]<br>200<br>302 | [2510]<br>285<br>301 | [3160]<br>355<br>300 | [3820]<br>430<br>299 | [4590]<br>520<br>296 | [5280]<br>595<br>293 |                      |                      |                      |                     |                     |                      |                      |
| [30]<br>114 |                    | [1010]<br>115<br>363 | [1700]<br>190<br>362 | [2420]<br>275<br>360 | [3100]<br>350<br>359 | [3720]<br>420<br>358 | [4500]<br>510<br>354 |                      |                      |                      |                      |                     |                     |                      |                      |
| [35]<br>132 |                    |                      | [1580]<br>180<br>422 | [2360]<br>265<br>420 | [2950]<br>335<br>419 | [3540]<br>400<br>418 | [4390]<br>495<br>413 |                      |                      |                      |                      |                     |                     |                      |                      |

**395 cm³/r [24.0 in³/r]**  
 $\Delta$  Pressure Bar [PSI]

|             | [250]<br>15        | [500]<br>35          | [750]<br>50          | [1000]<br>70         | [1250]<br>85         | [1500]<br>105        | [1750]<br>120        | [2000]<br>140        | [2250]<br>155       | [2500]<br>170       | [2750]<br>190       | [3000]<br>205        | [3250]<br>225        | [3500]<br>240        |
|-------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|
| [.5]<br>1.9 | [700]<br>80<br>4   | [1340]<br>150<br>2   |                      |                      |                      |                      |                      |                      |                     |                     |                     |                      |                      |                      |
| [1]<br>3.8  | [750]<br>85<br>9   | [1430]<br>160<br>9   | [2110]<br>240<br>8   | [2770]<br>315<br>8   | [3460]<br>390<br>8   | [4170]<br>470<br>7   | [4890]<br>550<br>7   | [5610]<br>635<br>7   | [6310]<br>715<br>5  | [7010]<br>790<br>4  | [7700]<br>870<br>2  |                      |                      |                      |
| [2]<br>7.5  | [800]<br>90<br>18  | [1500]<br>170<br>18  | [2290]<br>260<br>17  | [3030]<br>340<br>16  | [3850]<br>435<br>16  | [4620]<br>520<br>15  | [5310]<br>600<br>15  | [6000]<br>680<br>14  | [6750]<br>765<br>13 | [7490]<br>845<br>13 | [8240]<br>930<br>12 | [8990]<br>1015<br>11 | [9730]<br>1100<br>10 | [10470]<br>1185<br>8 |
| [4]<br>15   | [860]<br>95<br>38  | [1630]<br>185<br>38  | [2470]<br>280<br>37  | [3310]<br>375<br>36  | [4120]<br>465<br>36  | [4900]<br>555<br>35  | [5640]<br>635<br>34  | [6390]<br>720<br>34  | [7190]<br>810<br>33 | [7990]<br>890<br>32 | [8780]<br>990<br>32 |                      |                      |                      |
| [6]<br>23   | [860]<br>95<br>57  | [1690]<br>190<br>57  | [2540]<br>285<br>56  | [3410]<br>385<br>55  | [4180]<br>470<br>54  | [4980]<br>565<br>53  | [5780]<br>655<br>52  | [6580]<br>745<br>50  | [7400]<br>835<br>49 | [8220]<br>930<br>47 |                     |                      |                      |                      |
| [8]<br>30   | [840]<br>95<br>76  | [1680]<br>190<br>76  | [2550]<br>290<br>75  | [3400]<br>385<br>74  | [4260]<br>480<br>73  | [5090]<br>575<br>72  | [5870]<br>665<br>70  | [6650]<br>750<br>68  | [7480]<br>845<br>66 |                     |                     |                      |                      |                      |
| [10]<br>38  | [800]<br>90<br>95  | [1680]<br>190<br>95  | [2550]<br>290<br>94  | [3400]<br>385<br>93  | [4260]<br>480<br>92  | [5100]<br>575<br>91  | [5920]<br>670<br>89  | [6730]<br>760<br>86  | [7560]<br>855<br>84 |                     |                     |                      |                      |                      |
| [12]<br>45  | [760]<br>85<br>114 | [1660]<br>190<br>114 | [2520]<br>285<br>113 | [3380]<br>380<br>112 | [4270]<br>480<br>111 | [5110]<br>575<br>110 | [5900]<br>665<br>108 | [6690]<br>755<br>105 |                     |                     |                     |                      |                      |                      |
| [14]<br>53  | [740]<br>85<br>133 | [1640]<br>185<br>133 | [2490]<br>280<br>132 | [3370]<br>380<br>131 | [4260]<br>480<br>130 | [5100]<br>575<br>129 | [5880]<br>665<br>127 | [6650]<br>750<br>124 |                     |                     |                     |                      |                      |                      |
| [16]<br>61  | [710]<br>80<br>153 | [1620]<br>185<br>153 | [2460]<br>280<br>152 | [3350]<br>380<br>151 | [4240]<br>480<br>149 | [5080]<br>575<br>147 | [5840]<br>660<br>145 |                      |                     |                     |                     |                      |                      |                      |
| [18]<br>68  | [680]<br>75<br>172 | [1600]<br>180<br>172 | [2430]<br>275<br>171 | [3340]<br>375<br>170 | [4220]<br>475<br>168 | [5060]<br>570<br>166 | [5810]<br>655<br>164 |                      |                     |                     |                     |                      |                      |                      |
| [20]<br>76  | [610]<br>70<br>192 | [1580]<br>180<br>191 | [2400]<br>270<br>190 | [3320]<br>375<br>189 | [4210]<br>475<br>187 | [5040]<br>570<br>185 | [5780]<br>655<br>183 |                      |                     |                     |                     |                      |                      |                      |
| [22]<br>83  | [570]<br>65<br>211 | [1490]<br>170<br>210 | [2340]<br>265<br>209 | [3220]<br>365<br>208 | [4160]<br>470<br>206 | [5010]<br>565<br>204 | [5740]<br>650<br>201 |                      |                     |                     |                     |                      |                      |                      |
| [25]<br>95  | [490]<br>55<br>239 | [1350]<br>155<br>238 | [2250]<br>255<br>237 | [3080]<br>350<br>236 | [4070]<br>460<br>235 | [4960]<br>560<br>233 | [5700]<br>645<br>230 |                      |                     |                     |                     |                      |                      |                      |
| [30]<br>114 |                    | [1080]<br>120<br>285 | [1650]<br>185<br>284 | [2270]<br>255<br>282 | [3020]<br>340<br>281 | [3850]<br>435<br>279 |                      |                      |                     |                     |                     |                      |                      |                      |
| [35]<br>132 |                    |                      | [1520]<br>170<br>331 | [2120]<br>240<br>330 | [2870]<br>325<br>328 | [3760]<br>425<br>325 |                      |                      |                     |                     |                     |                      |                      |                      |
| [40]<br>151 |                    |                      |                      | [2050]<br>230<br>376 | [2790]<br>315<br>374 | [3620]<br>410<br>371 |                      |                      |                     |                     |                     |                      |                      |                      |

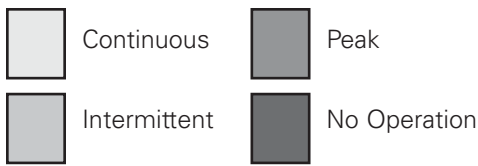
[4390]  
495  
413 } Torque [lb-in]  
Nm  
Speed RPM

# 4000 Series

## Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

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



**625 cm<sup>3</sup>/r [38.0 in<sup>3</sup>/r]**  
Δ Pressure Bar [PSI]

|             | [250]<br>15         | [500]<br>35          | [750]<br>50          | [1000]<br>70         | [1250]<br>85         | [1500]<br>105        | [1600]<br>100       | [1700]<br>115        | [1800]<br>125        | [2000]<br>140         |
|-------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|-----------------------|
| [.5]<br>1.9 | [1000]<br>115<br>2  |                      |                      |                      |                      |                      |                     |                      |                      |                       |
| [1]<br>3.8  | [1080]<br>120<br>5  | [2340]<br>265<br>5   | [3600]<br>405<br>5   | [4850]<br>550<br>4   | [6100]<br>690<br>4   | [7350]<br>830<br>3   | [7820]<br>885<br>3  | [8290]<br>935<br>2   | [8760]<br>990<br>2   |                       |
| [2]<br>7.5  | [1085]<br>125<br>14 | [2380]<br>270<br>14  | [3675]<br>415<br>14  | [5010]<br>565<br>13  | [6350]<br>715<br>12  | [7625]<br>860<br>11  | [8115]<br>915<br>10 | [8605]<br>970<br>9   | [9095]<br>1030<br>8  | [10075]<br>1140<br>7  |
| [4]<br>15   | [1090]<br>125<br>23 | [2420]<br>275<br>23  | [3750]<br>425<br>23  | [5175]<br>585<br>22  | [6600]<br>745<br>21  | [7900]<br>895<br>19  | [8410]<br>950<br>18 | [9000]<br>1015<br>17 | [9590]<br>1085<br>16 | [10450]<br>1180<br>14 |
| [6]<br>23   | [1095]<br>125<br>35 | [2460]<br>280<br>35  | [3825]<br>430<br>35  | [5270]<br>590<br>34  | [6620]<br>750<br>33  | [7950]<br>900<br>31  | [8430]<br>950<br>30 | [8910]<br>1005<br>29 | [9490]<br>1070<br>28 |                       |
| [8]<br>30   | [1100]<br>125<br>48 | [2500]<br>280<br>48  | [3900]<br>440<br>47  | [5270]<br>595<br>46  | [6640]<br>750<br>45  | [7990]<br>905<br>43  | [8460]<br>955<br>43 | [8925]<br>1010<br>42 |                      |                       |
| [10]<br>38  | [1130]<br>130<br>60 | [2550]<br>290<br>60  | [3975]<br>450<br>59  | [5320]<br>600<br>58  | [6670]<br>755<br>57  | [8045]<br>910<br>54  | [8595]<br>970<br>53 | [9150]<br>1035<br>52 |                      |                       |
| [12]<br>45  | [1160]<br>130<br>72 | [2600]<br>295<br>72  | [4050]<br>460<br>71  | [5375]<br>605<br>70  | [6700]<br>755<br>69  | [8100]<br>915<br>65  | [8660]<br>980<br>64 |                      |                      |                       |
| [14]<br>53  | [1105]<br>125<br>84 | [2535]<br>285<br>84  | [3965]<br>450<br>83  | [5325]<br>600<br>82  | [6685]<br>755<br>81  | [8065]<br>910<br>77  | [8620]<br>975<br>76 |                      |                      |                       |
| [16]<br>61  | [1050]<br>120<br>96 | [2465]<br>280<br>95  | [3880]<br>440<br>95  | [5275]<br>595<br>94  | [6670]<br>755<br>93  | [8035]<br>910<br>89  | [8580]<br>970<br>88 |                      |                      |                       |
| [18]<br>68  | [990]<br>110<br>108 | [2405]<br>270<br>107 | [3825]<br>430<br>107 | [5240]<br>590<br>105 | [6655]<br>750<br>104 | [7345]<br>830<br>100 |                     |                      |                      |                       |
| [20]<br>76  | [930]<br>105<br>121 | [2350]<br>265<br>120 | [3770]<br>425<br>120 | [5205]<br>590<br>118 | [6640]<br>750<br>116 |                      |                     |                      |                      |                       |
| [25]<br>95  | [750]<br>85<br>151  | [2175]<br>245<br>150 | [3600]<br>405<br>149 | [5000]<br>565<br>147 | [6400]<br>725<br>146 |                      |                     |                      |                      |                       |
| [30]<br>114 | [550]<br>60<br>181  | [1975]<br>225<br>180 | [3400]<br>385<br>179 | [4800]<br>530<br>177 | [6200]<br>700<br>176 |                      |                     |                      |                      |                       |
| [35]<br>132 |                     |                      | [3125]<br>355<br>210 | [4545]<br>515<br>208 |                      |                      |                     |                      |                      |                       |
| [40]<br>151 |                     |                      | [2850]<br>320<br>241 | [4295]<br>485<br>239 |                      |                      |                     |                      |                      |                       |

**495 cm<sup>3</sup>/r [30.0 in<sup>3</sup>/r]**  
Δ Pressure Bar [PSI]

|             | [250]<br>15        | [500]<br>35          | [750]<br>50          | [1000]<br>70         | [1250]<br>85         | [1500]<br>105        | [1750]<br>120        | [2000]<br>140       | [2250]<br>155        | [2500]<br>170         |
|-------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|-----------------------|
| [.5]<br>1.9 | [800]<br>90<br>3   | [1750]<br>200<br>1   |                      |                      |                      |                      |                      |                     |                      |                       |
| [1]<br>3.8  | [880]<br>100<br>7  | [1875]<br>210<br>6   | [2875]<br>325<br>6   | [3825]<br>430<br>5   | [4775]<br>540<br>4   | [5720]<br>645<br>3   | [6670]<br>755<br>2   | [7600]<br>860<br>1  |                      |                       |
| [2]<br>7.5  | [905]<br>100<br>18 | [1940]<br>220<br>17  | [2975]<br>335<br>17  | [3990]<br>450<br>16  | [5010]<br>565<br>15  | [6010]<br>680<br>12  | [7010]<br>790<br>11  | [8000]<br>905<br>10 | [8980]<br>1015<br>8  |                       |
| [4]<br>15   | [935]<br>105<br>30 | [2005]<br>225<br>29  | [3075]<br>345<br>28  | [4160]<br>470<br>27  | [5245]<br>595<br>26  | [6300]<br>710<br>23  | [7355]<br>830<br>21  | [8375]<br>945<br>19 | [9400]<br>1060<br>17 | [10350]<br>1170<br>14 |
| [6]<br>23   | [920]<br>105<br>45 | [2010]<br>225<br>44  | [3100]<br>350<br>43  | [4185]<br>475<br>42  | [5265]<br>595<br>40  | [6345]<br>715<br>37  | [7420]<br>840<br>35  | [8445]<br>955<br>32 | [9465]<br>1070<br>30 |                       |
| [8]<br>30   | [905]<br>100<br>61 | [2015]<br>230<br>60  | [3125]<br>355<br>59  | [4205]<br>475<br>57  | [5290]<br>600<br>55  | [6385]<br>720<br>52  | [7485]<br>845<br>49  | [8510]<br>960<br>46 |                      |                       |
| [10]<br>38  | [880]<br>100<br>76 | [1995]<br>225<br>75  | [3095]<br>350<br>74  | [4205]<br>475<br>72  | [5295]<br>600<br>70  | [6390]<br>720<br>66  | [7480]<br>845<br>63  | [8525]<br>960<br>59 |                      |                       |
| [12]<br>45  | [860]<br>95<br>91  | [1975]<br>225<br>90  | [3095]<br>350<br>89  | [4200]<br>475<br>87  | [5305]<br>600<br>85  | [6390]<br>720<br>81  | [7475]<br>845<br>77  |                     |                      |                       |
| [14]<br>53  | [830]<br>95<br>106 | [1945]<br>220<br>105 | [3055]<br>345<br>104 | [4165]<br>470<br>102 | [5275]<br>595<br>100 | [6360]<br>720<br>96  | [7445]<br>840<br>92  |                     |                      |                       |
| [16]<br>61  | [805]<br>90<br>122 | [1910]<br>215<br>120 | [3020]<br>340<br>119 | [4130]<br>465<br>117 | [5245]<br>595<br>115 | [6330]<br>715<br>111 | [7420]<br>840<br>107 |                     |                      |                       |
| [18]<br>68  | [740]<br>85<br>137 | [1860]<br>210<br>136 | [2980]<br>335<br>134 | [4105]<br>465<br>132 | [5235]<br>590<br>130 | [6305]<br>715<br>125 | [7380]<br>835<br>121 |                     |                      |                       |
| [20]<br>76  | [680]<br>75<br>153 | [1810]<br>205<br>152 | [2940]<br>330<br>150 | [4085]<br>460<br>147 | [5225]<br>590<br>145 | [6285]<br>710<br>140 |                      |                     |                      |                       |
| [25]<br>95  | [570]<br>65<br>191 | [1665]<br>190<br>189 | [2800]<br>315<br>187 | [4005]<br>455<br>184 | [5210]<br>590<br>182 | [6135]<br>695<br>177 |                      |                     |                      |                       |
| [30]<br>114 |                    | [1520]<br>170<br>228 | [2645]<br>300<br>226 | [3765]<br>425<br>223 | [4885]<br>550<br>220 | [5985]<br>675<br>215 |                      |                     |                      |                       |
| [35]<br>132 |                    |                      | [2400]<br>270<br>265 | [3510]<br>395<br>263 |                      |                      |                      |                     |                      |                       |
| [40]<br>151 |                    |                      | [2155]<br>245<br>305 | [3260]<br>370<br>303 |                      |                      |                      |                     |                      |                       |



# 4000 Series

## Dimensions

### Standard Mount

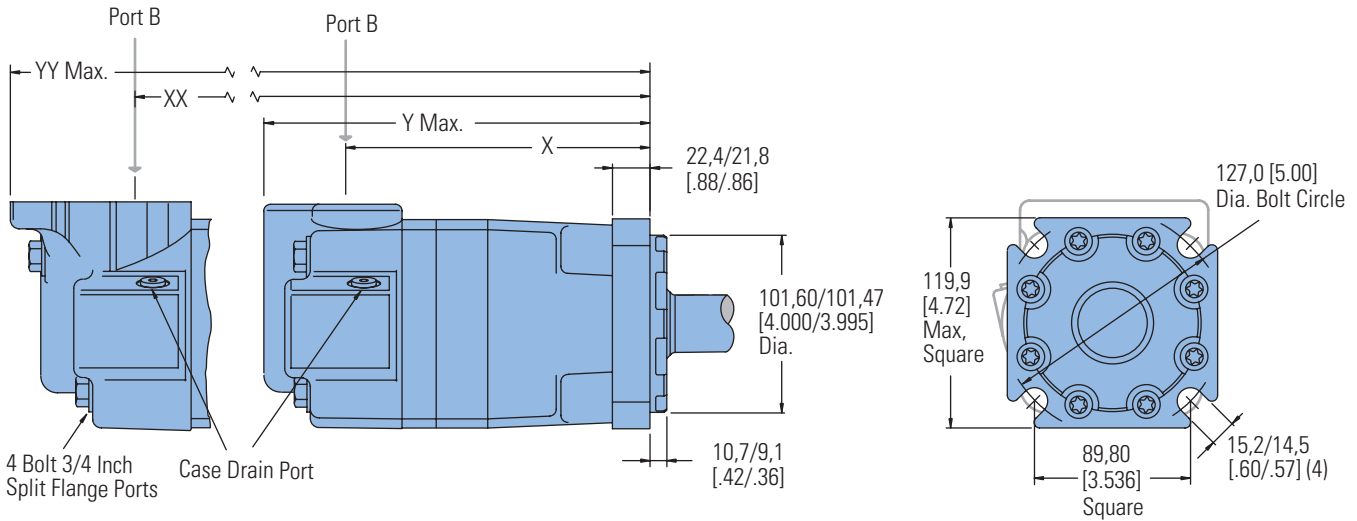
## Ports

- 1 1/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 3/4 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

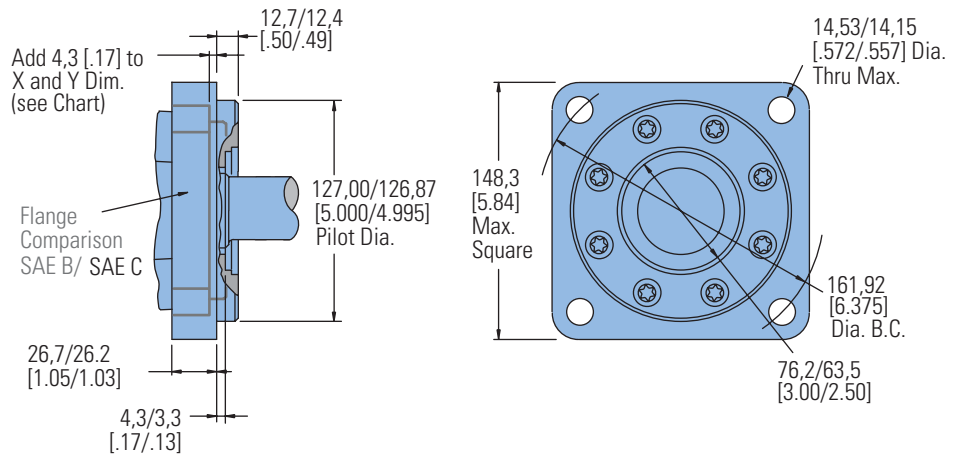
## Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

## Standard Mount



## SAE C Flange



## STANDARD MOUNT MOTOR DIMENSIONS

| Displacement<br>cm <sup>3</sup> /r [in <sup>3</sup> /r] | X<br>mm [inch] | Y<br>mm [inch] | XX<br>mm [inch] | YY<br>mm [inch] |
|---|----------------|----------------|-----------------|-----------------|
| 110 [6.7]   | 158,3 [6.23]   | 214,4 [8.44]   | 167,3 [6.59]    | 246,3 [9.70]    |
| 130 [7.9]   | 162,3 [6.39]   | 218,4 [8.60]   | 171,3 [6.75]    | 250,4 [9.86]    |
| 160 [9.9]   | 168,7 [6.64]   | 224,7 [8.85]   | 177,7 [7.00]    | 256,7 [10.11]   |
| 205 [12.5]  | 177,2 [6.98]   | 233,2 [9.18]   | 186,2 [7.33]    | 265,2 [10.44]   |
| 245 [15.0]  | 168,7 [6.64]   | 224,7 [8.85]   | 177,7 [7.00]    | 256,7 [10.11]   |
| 310 [19.0]  | 177,2 [6.98]   | 233,2 [9.18]   | 186,2 [7.33]    | 265,2 [10.44]   |
| 395 [24.0]  | 187,9 [7.40]   | 243,9 [9.60]   | 196,9 [7.75]    | 275,9 [10.86]   |
| 495 [30.0]  | 200,7 [7.90]   | 256,8 [10.11]  | 209,7 [8.26]    | 288,8 [11.37]   |
| 625 [38.0]  | 217,8 [8.58]   | 273,9 [10.78]  | 226,7 [8.93]    | 305,9 [12.04]   |



# 4000 Series

Dimensions

Wheel Mount

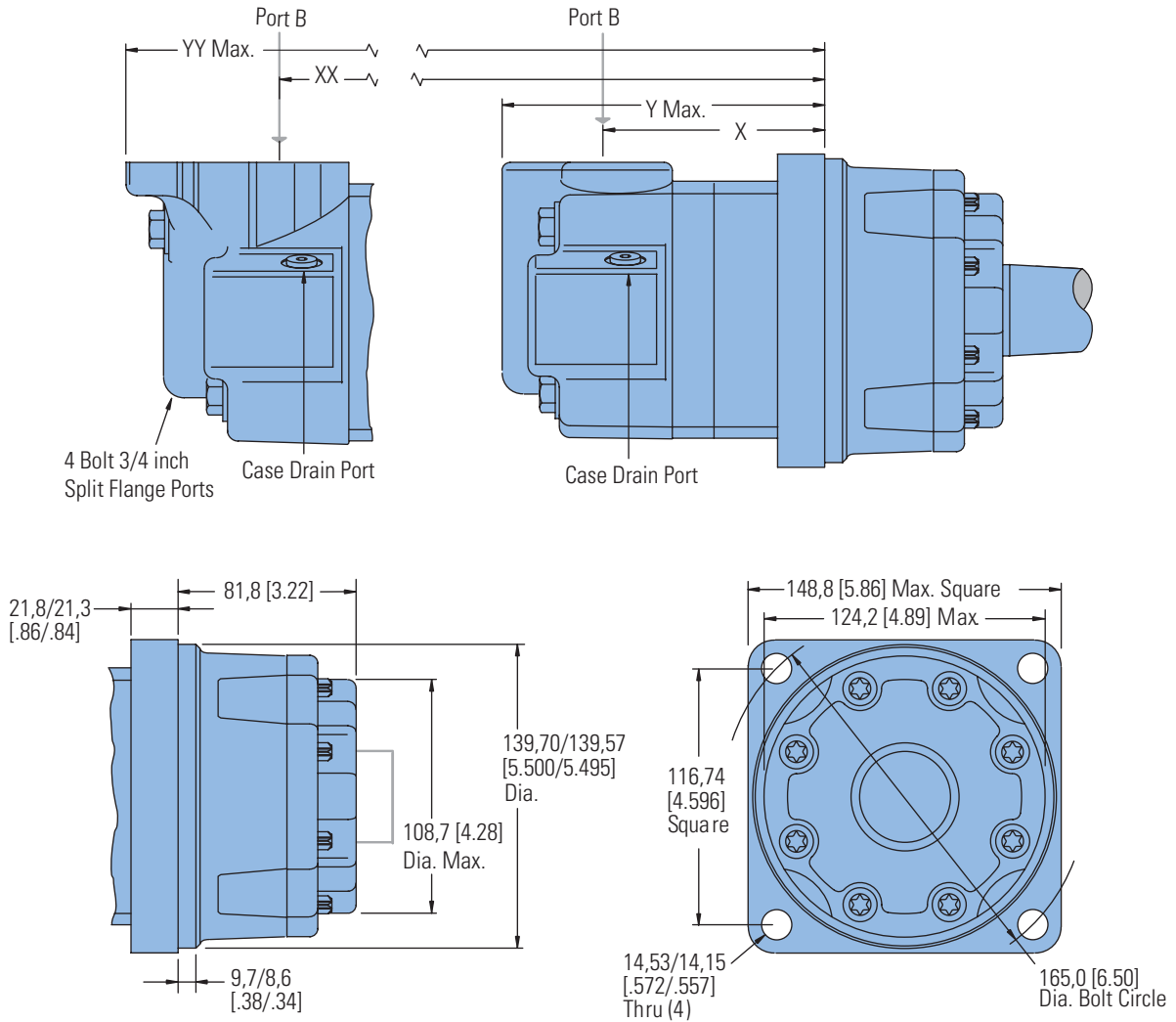
## Wheel Mount

### Ports

- 1 1/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 3/4 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

### Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW



### WHEEL MOUNT MOTOR DIMENSIONS

| Displacement<br>cm <sup>3</sup> /r [in <sup>3</sup> /r] | X<br>mm [inch] | Y<br>mm [inch] | XX<br>mm [inch] | YY<br>mm [inch] |
|---|----------------|----------------|-----------------|-----------------|
| 110 [ 6.7]  | 87,5 [3.45]    | 143,3 [5.64]   | 96,4 [3.80]     | 175,3 [6.90]    |
| 130 [ 7.9]  | 91,6 [3.61]    | 147,3 [5.80]   | 100,5 [3.96]    | 179,3 [7.06]    |
| 160 [ 9.9]  | 97,8 [3.85]    | 153,7 [6.05]   | 106,8 [4.21]    | 185,7 [7.31]    |
| 205 [12.5]  | 106,4 [4.19]   | 162,3 [6.39]   | 115,4 [4.55]    | 194,3 [7.65]    |
| 245 [15.0]  | 97,8 [3.85]    | 153,7 [6.05]   | 106,8 [4.21]    | 185,7 [7.31]    |
| 310 [19.0]  | 106,4 [4.19]   | 162,3 [6.39]   | 115,4 [4.55]    | 194,3 [7.65]    |
| 395 [24.0]  | 117,1 [4.61]   | 173,0 [6.81]   | 126,1 [4.97]    | 205,0 [8.07]    |
| 495 [30.0]  | 129,9 [5.12]   | 185,7 [7.31]   | 138,8 [5.47]    | 217,7 [8.57]    |
| 625 [38.0]  | 146,9 [5.79]   | 202,9 [7.99]   | 156,0 [6.14]    | 235,0 [9.25]    |

# 4000 Series

Dimensions

Bearingless

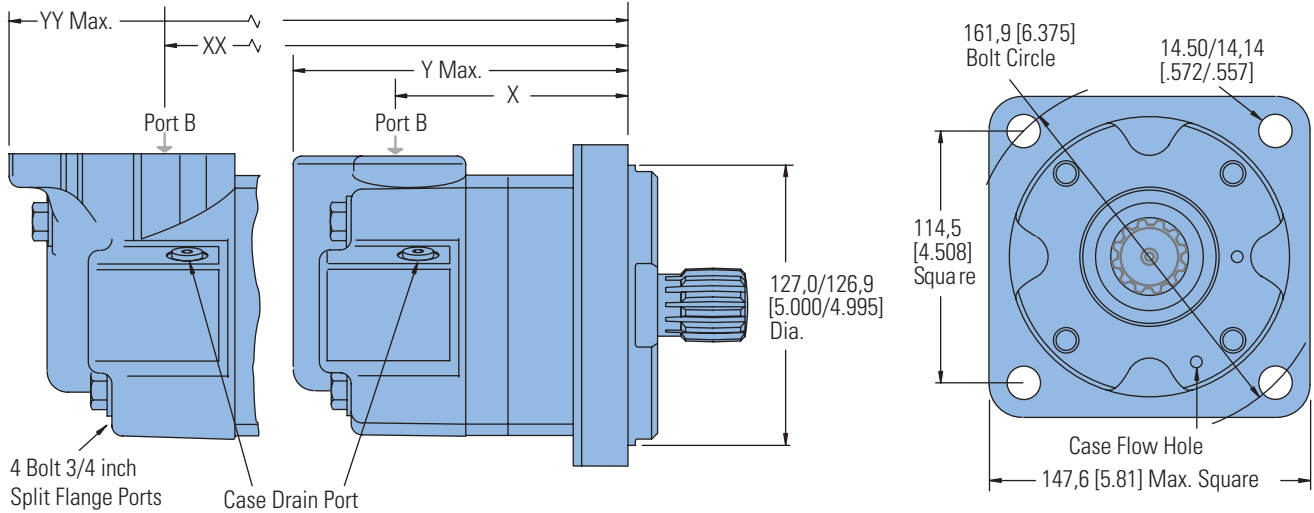
## Ports

- 1 1/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 3/4 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

## Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

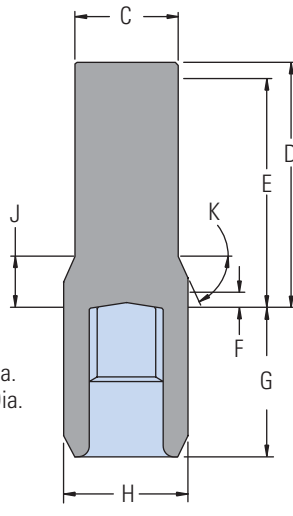
## Bearingless



For 4000 Series Bearingless Motor application information contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

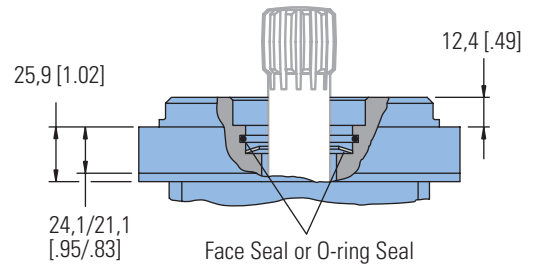
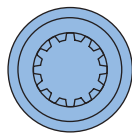
### Note:

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



- C 47,2 [1.86] Dia.
- D 112,5 [4.43] Max.
- E 107,4 [4.23] Full Form Dia.
- F 7,4 [.29] Min. Full Form Dia.
- G 68,8 [2.71] Max.
- H 56,9 [2.24] Dia.
- J 18,29 [.720]
- K 38°

Mating Coupling Blank  
Eaton Part No. 12745-003



## BEARINGLESS MOTOR DIMENSIONS

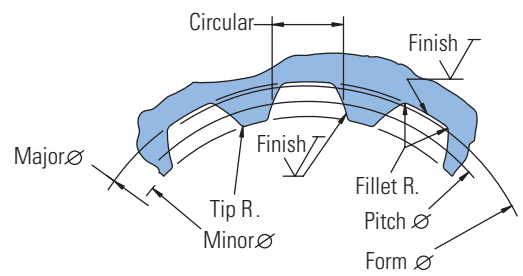
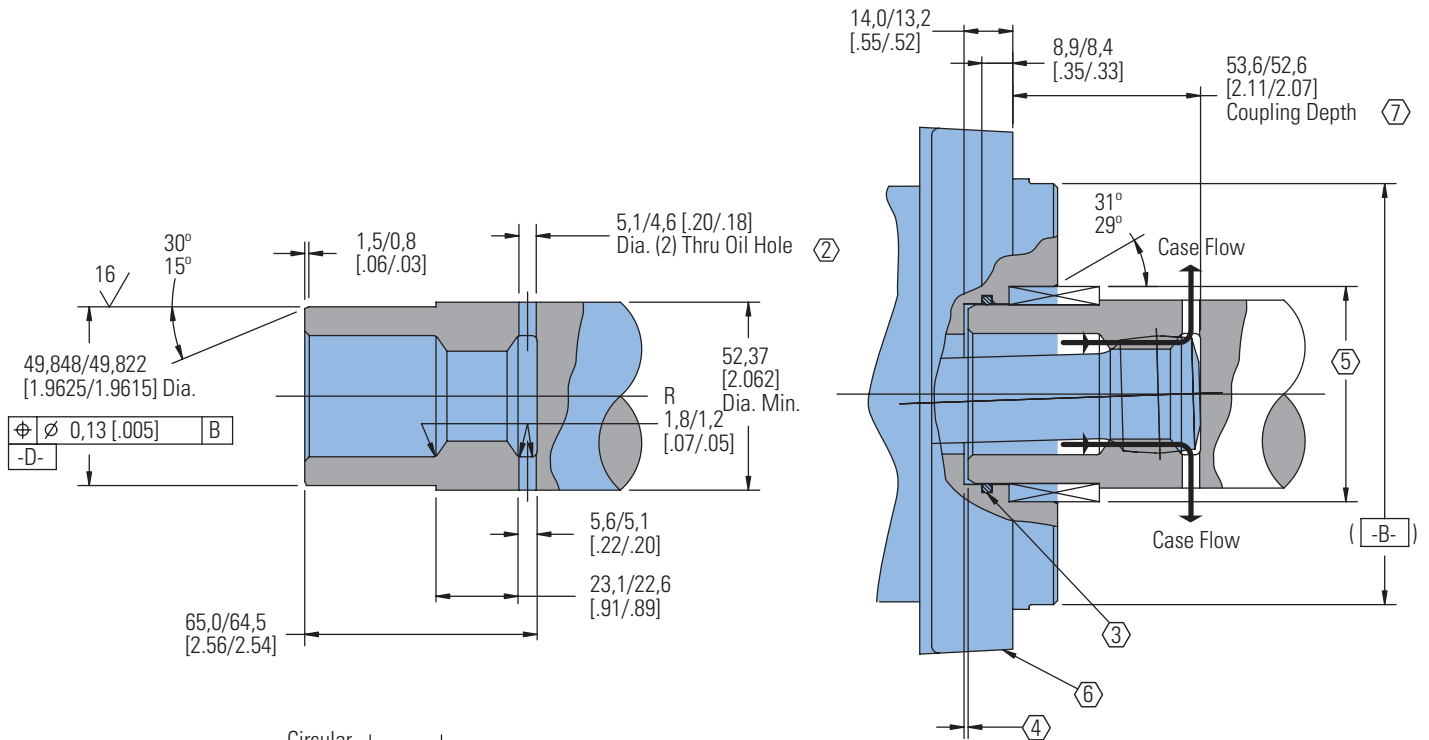
| Displacement<br>cm <sup>3</sup> /r [in <sup>3</sup> /r] | X<br>mm [inch] | Y<br>mm [inch] | XX<br>mm [inch] | YY<br>mm [inch] |
|---|----------------|----------------|-----------------|-----------------|
| 110 [6.7]   | 91,0 [3.58]    | 146,8 [5.78]   | 100,1 [3.94]    | 178,8 [7.04]    |
| 130 [7.9]   | 95,0 [3.74]    | 150,8 [5.94]   | 104,1 [4.10]    | 182,9 [7.20]    |
| 160 [9.9]   | 101,4 [4.00]   | 157,1 [6.19]   | 110,5 [4.35]    | 189,2 [7.45]    |
| 205 [12.5]  | 109,9 [4.33]   | 165,7 [6.52]   | 118,9 [4.68]    | 197,6 [7.78]    |
| 245 [15.0]  | 101,4 [4.00]   | 157,1 [6.19]   | 110,5 [4.35]    | 189,2 [7.45]    |
| 310 [19.0]  | 109,9 [4.33]   | 165,7 [6.52]   | 118,9 [4.68]    | 197,6 [7.78]    |
| 395 [24.0]  | 120,6 [4.75]   | 176,3 [6.94]   | 129,5 [5.10]    | 208,3 [8.20]    |
| 495 [30.0]  | 133,5 [5.26]   | 189,2 [7.45]   | 142,5 [5.61]    | 221,2 [8.71]    |
| 625 [38.0]  | 150,5 [5.93]   | 206,3 [8.12]   | 159,5 [6.28]    | 238,3 [9.38]    |

# 4000 Series

## Installation Information

### Bearingless

- 1 Internal spline in mating part to be as follows: Material to be ASTM A304, 8620H. Carbonize to a hardness of 60-64 HRc with case depth (to 50HRc) of 0,076 - 1,27 [.030 - .050] (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 to a standard sleeve bearing 50,010 - 50,040 [1.9689 - 1.9700] ID by 60,050 - 60,080 [2.3642 - 2.3653] (Oilite bronze sleeve bearing).
- 6 Similar to SAE "C" Four Bolt Flange.
- 7 52,8 [2.08] Max. dimension to be maintained when assembling shipping and installing unit to insure valve drive engagement with valve (this is required on displacement code number 24 only).



|                                 |   |
|---------------------------------|---|
| Spline Pitch.....               | 10/20   |
| Pressure Angle.....             | 30°   |
| Number of teeth.....            | 12  |
| Class of Fit.....               | Ref. 5  |
| Type of Fit.....                | Side  |
| Pitch Diameter.....             | Ref. 30,480000 [1.2000000] $\begin{matrix} \nearrow \\ \searrow \end{matrix}$ 0,20 [.008]   D |
| Base Diameter.....              | Ref. 26,396455 [1.0392305]  |
| Major Diameter.....             | 33,43 [1.316] Max. 33,23 [1.308] Min.   |
| Min. Minor Diameter.....        | 28,40 - 28,58 [1.118 - 1.125]   |
| Form Diameter, Min.....         | 32,59 [1.283]   |
| Fillet Radius.....              | 0,63 - 0,76 [.025 - .030]   |
| Tip Radius.....                 | 0,26 - 0,51 [.010 - .020]   |
| Finish.....                     | 1,6 (63)  |
| Involute Profile Variation..... | +0,000 -0,025 [+ .0000 - .0010]   |
| Total Index Variation.....      | 0,038 [.0015]   |
| Lead Variation.....             | 0,013 [.0005]   |
| Circular Space Width:           |   |
| Maximum Actual.....             | 5,045 [1.986]   |
| Minimum Effective.....          | 4,995 [1.951]   |
| Maximum Effective.....          | Ref. 5,009 [1.972]  |
| Minimum Actual.....             | Ref. 4,986 [1.963]  |
| Dimension Between Two Pins..... | Ref. 22,783 - 22,929 [.8970 - .9027]  |
| Pin Diameter.....               | 5,334 [.2100] Pins to Have 3,73 [.147]  |
|                                 | Wide Flat for Root Clearance  |

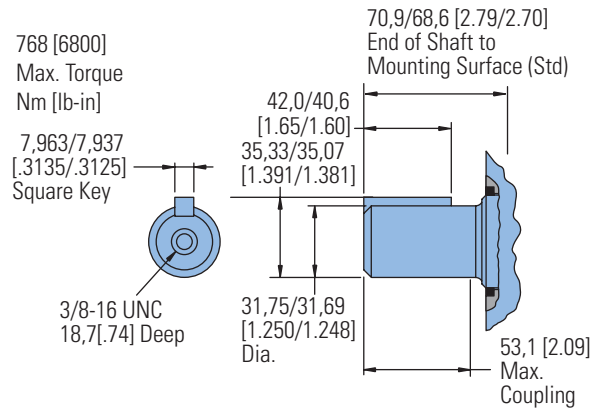
C-4

# 4000 Series

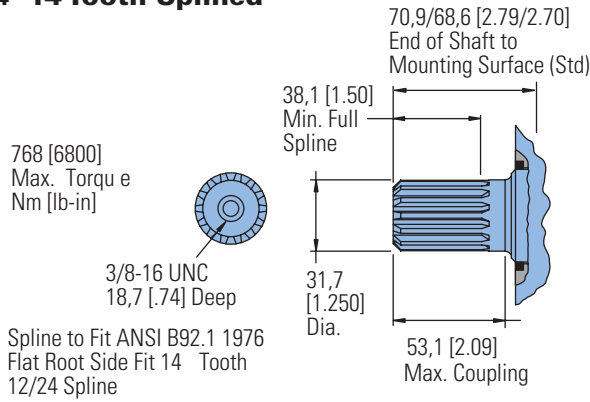
## Dimensions

### Shafts

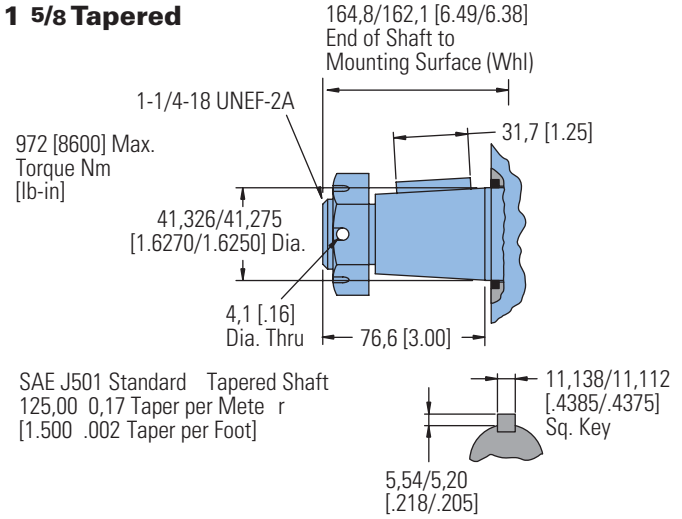
## 1 1/4 Inch Straight



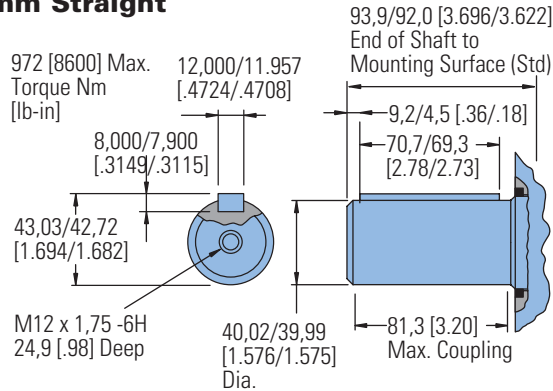
## 1 1/4 -14 Tooth Splined



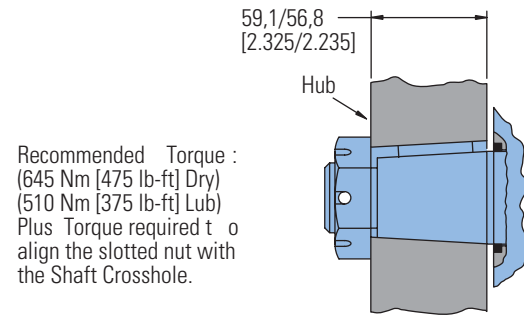
## 1 5/8 Tapered



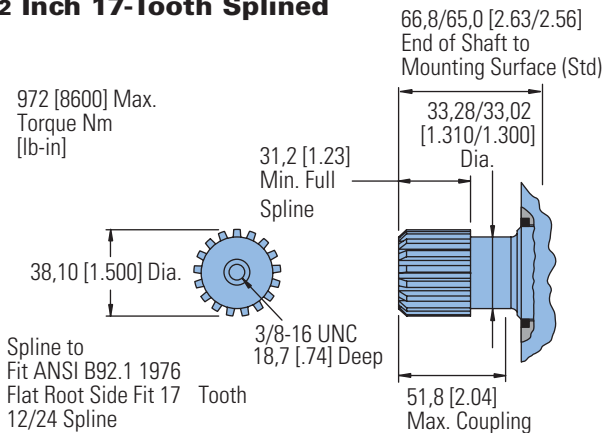
## 40 mm Straight



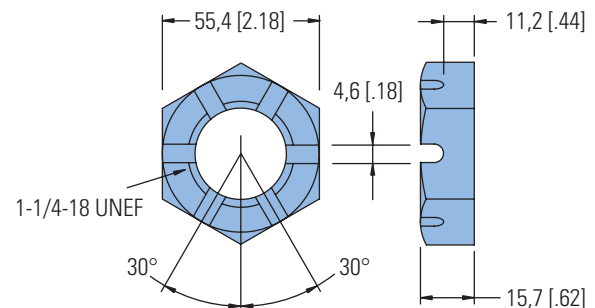
## Tapered Shaft Hub Data



## 1 1/2 Inch 17-Tooth Splined



## Slotted Hexagon Nut



# 4000 Series

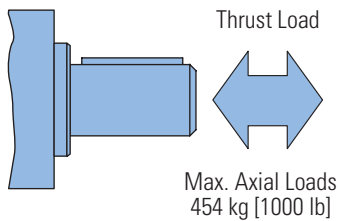
## Shaft Side Load Capacity

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**



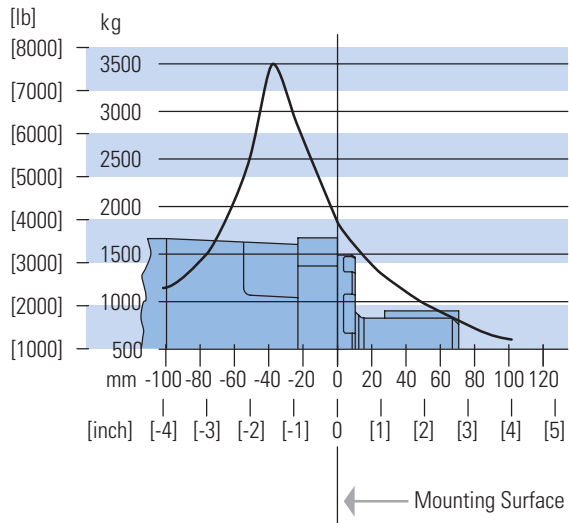
**B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.**

To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

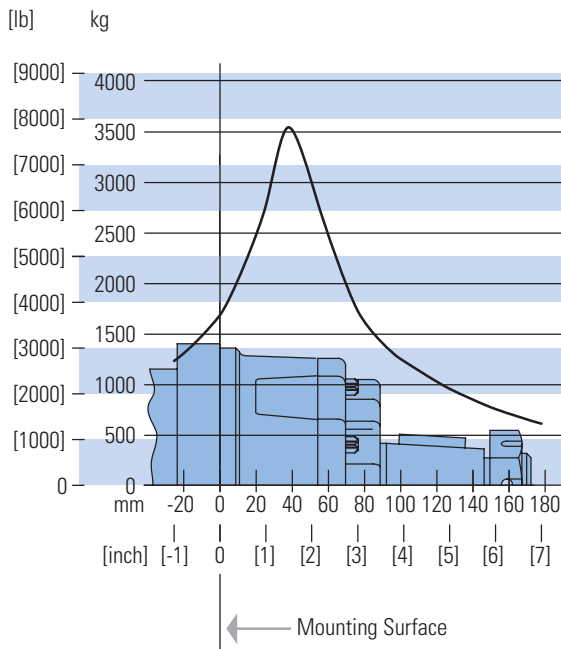
| RPM | Multiplication Factor |
|-----|-----------------------|
| 50  | 1.23                  |
| 100 | 1.00                  |
| 200 | 0.81                  |
| 300 | 0.72                  |
| 400 | 0.66                  |
| 500 | 0.62                  |
| 600 | 0.58                  |
| 700 | 0.56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

For 3,000,000 shaft revolutions or 500 hours—Increase these shaft loads 52%.

Standard Motor  
Straight and Splined Shafts



Wheel Motor Tapered Shaft



# 4000 Series

## Case Pressure and Case Port

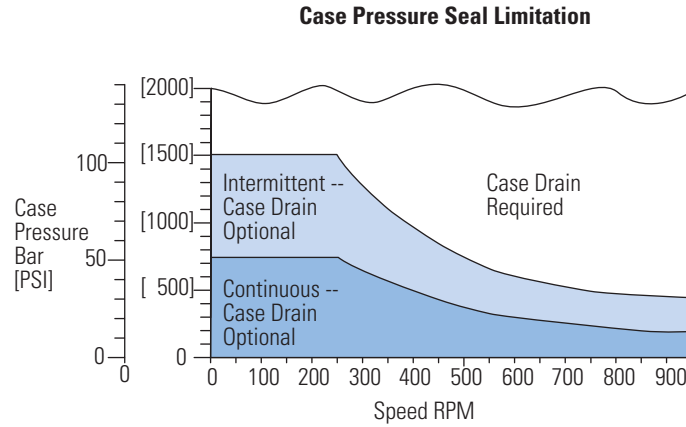
Char-Lynn 4000 Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine 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.

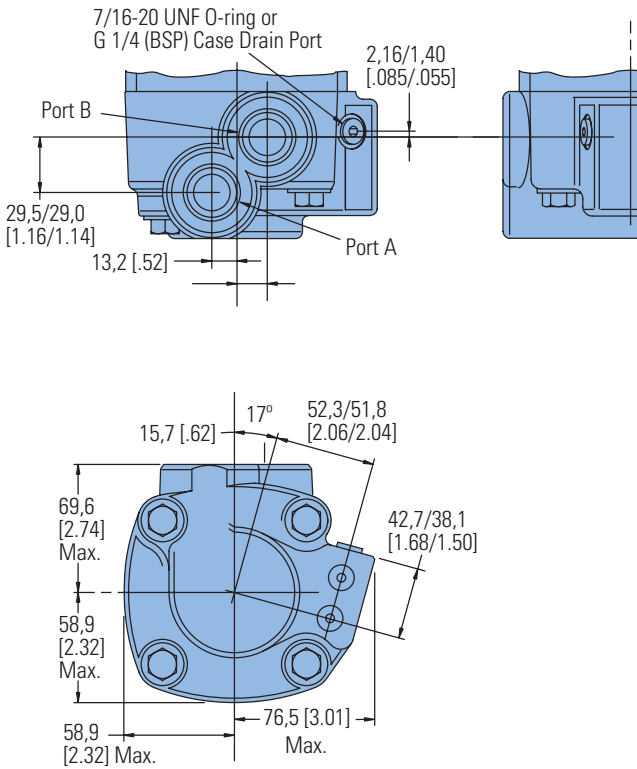


# 4000 Series

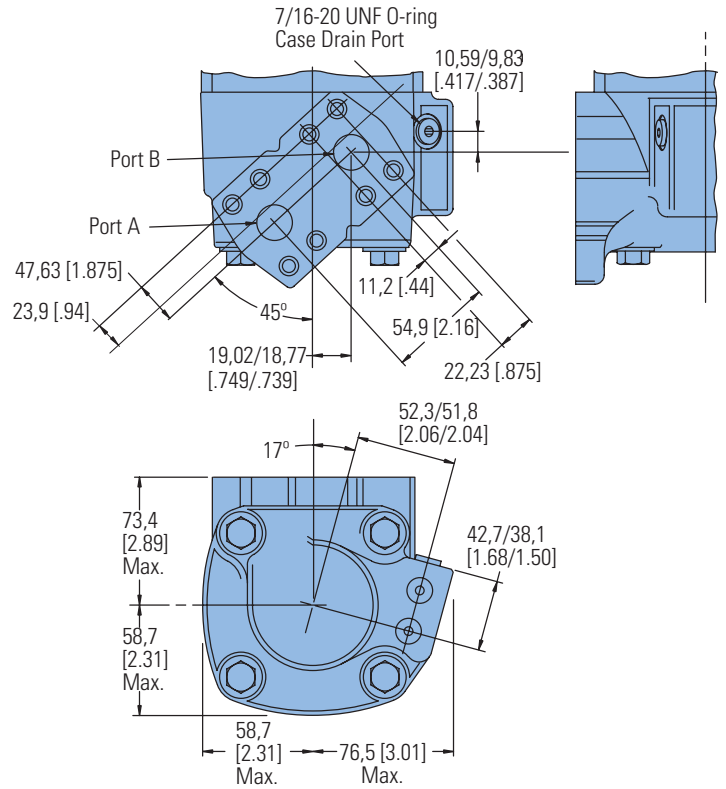
## Dimensions

### Ports

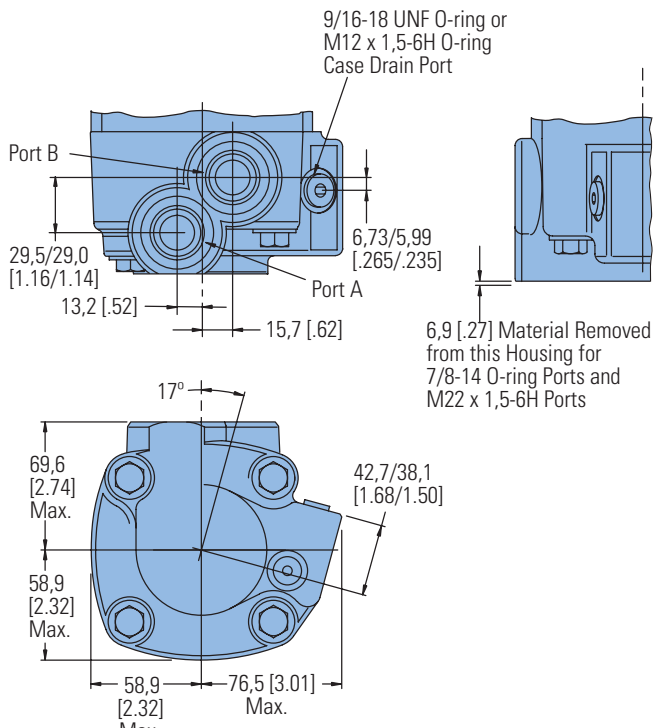
#### 1-1/16-12 O-ring Ports (2) or G 3/4 (BSP) Ports (2)



#### 4 Bolt 3/4 Inch Split Flange Ports to Fit SAE J518 c (2)



#### 7/8-14 O-ring Ports (2) or M22 x 1,5-6H Ports (2)



C-4

# 4000 Series

## Product Numbers

### Note:

For 4000 Series Motors with a configuration **Not Shown** in the charts below: Use model code number system on the next page to specify product in detail.

Use digit prefix —109-, 110-, or 111- plus four digit number from charts for complete product number— Example 111-1057.

**Orders will not be accepted without three digit prefix.**

| MOUNTING                   |                         | SHAFT                 | PORT SIZEDISPL. cm <sup>3</sup> /r [in <sup>3</sup> /r] / PRODUCT NUMBER |               |               |               |               |                |               |               |               |               |
|----------------------------|-------------------------|-----------------------|--|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|
|                            |                         |                       | 110<br>[ 6.7]  | 130<br>[ 7.9] | 160<br>[ 9.9] | 205<br>[12.5] | 245<br>[15.0] | 280*<br>[17.1] | 310<br>[19.0] | 395<br>[24.0] | 495<br>[30.0] | 625<br>[38.0] |
| Standard<br>SAE<br>B-Mount | 1 1/4 Inch Straight     | 1 1/16 O-ring         | 109-1100   | -1101         | -1102         | -1103         | -1104         | -1094          | -1105         | -1106         | -1212         | -1215         |
|                            |                         | 3/4 inch Split Flange | 109-1001   | -1054         | -1002         | -1003         | -1055         | —              | -1056         | -1057         | —             | —             |
|                            | 1 5/8 Inch Tapered      | 1 1/16 O-ring         | 109-1107   | -1108         | -1109         | -1110         | -1111         | —              | -1112         | -1113         | -1479         | -1455         |
|                            |                         | 3/4 inch Split Flange | 109-1006   | -1058         | -1007         | -1008         | -1059         | —              | -1402         | -1061         | —             | —             |
|                            | 1 1/4 Inch 14 T Splined | 1 1/16 O-ring         | 109-1114   | -1115         | -1116         | -1117         | -1118         | —              | -1119         | -1120         | —             | —             |
|                            |                         | 3/4 inch Split Flange | 109-1011   | -1062         | -1012         | -1013         | -1063         | —              | -1064         | -1065         | —             | —             |
| Standard<br>SAE<br>C-Mount | 40 mm Straight          | G 3/4 (BSP)           | 109-1184   | -1185         | -1227         | -1224         | -1225         | —              | -1189         | -1190         | —             | —             |
|                            | 1 1/4 Inch 17 T Splined | G 3/4 (BSP)           | 109-1191   | -1192         | -1193         | -1194         | -1195         | —              | -1196         | -1197         | —             | —             |
| Wheel<br>Motor             | 1 1/4 Inch Straight     | 1 1/16 O-ring         | 110-1074   | -1075         | -1076         | -1077         | -1078         | —              | -1079         | -1080         | —             | -1122         |
|                            |                         | 3/4 inch Split Flange | 110-1001   | -1040         | -1002         | -1003         | -1041         | —              | -1042         | -1043         | —             | —             |
|                            | 40 mm Straight          | G 3/4 (BSP)           | 110-1108   | -1109         | -1110         | -1111         | -1112         | —              | -1113         | -1125         | —             | —             |
|                            | 1 5/8 Inch Tapered      | 1 1/16 O-ring         | 110-1081   | -1082         | -1083         | -1084         | -1085         | —              | -1086         | -1087         | 1116          | -1117         |
|                            |                         | 3/4 inch Split Flange | 110-1006   | -1044         | -1007         | -1008         | -1045         | —              | -1046         | -1047         | —             | —             |
|                            | 1 1/4 Inch 14 T Splined | 1 1/16 O-ring         | 110-1088   | -1089         | -1090         | -1091         | -1092         | —              | -1093         | -1094         | —             | —             |
| 3/4 inch Split Flange      |                         | 110-1011              | -1048  | -1012         | -1013         | -1049         | —             | -1050          | -1051         | —             | —             |               |
| Bearingless                | 1 1/4 Inch Straight     | 1 1/16 O-ring         | 111-1033   | -1034         | -1035         | -1036         | -1037         | —              | -1038         | -1039         | -1062         | -1063         |
|                            |                         | 3/4 inch Split Flange | 111-1044   | -1015         | -1045         | -1046         | -1016         | —              | -1017         | -1018         | —             | —             |
|                            |                         | G 3/4 (BSP)           | 111-1052   | -1053         | -1054         | -1055         | -1056         | —              | -1057         | -1058         | —             | —             |

\* New Release

111-1057



# 4000 Series

## Model Code

The following 30-digit coding system has been developed to identify all of the configuration options for the 4000 Series motor. Use this model code to specify a motor with the desired features. All 30 digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| M | 0 | 4 | * | * | * | * | * | * | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |    |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

**1** Product  
M - Motor

**2**, **3** Series  
04 - 4000 Series

**4**, **5**, **6** Displacement  
cm<sup>3</sup>/r [in<sup>3</sup>/r]  
067 - 109.8 cm<sup>3</sup>/r [6.70 in<sup>3</sup>/r]  
**080** - 130.3 cm<sup>3</sup>/r [7.95 in<sup>3</sup>/r]  
**099** - 162.2 cm<sup>3</sup>/r [9.90 in<sup>3</sup>/r]  
**125** - 205.5 cm<sup>3</sup>/r [12.54 in<sup>3</sup>/r]  
**150** - 246.3 cm<sup>3</sup>/r [15.03 in<sup>3</sup>/r]  
171 - 280.1 cm<sup>3</sup>/r [17.09 in<sup>3</sup>/r]  
**190** - 311.8 cm<sup>3</sup>/r [19.03 in<sup>3</sup>/r]  
225 - 369.0 cm<sup>3</sup>/r [22.52 in<sup>3</sup>/r]  
**240** - 393.9 cm<sup>3</sup>/r [24.04 in<sup>3</sup>/r]  
**301** - 492.6 cm<sup>3</sup>/r [30.06 in<sup>3</sup>/r]  
342 - 560.2 cm<sup>3</sup>/r [34.18 in<sup>3</sup>/r]  
381 - 623.9 cm<sup>3</sup>/r [38.07 in<sup>3</sup>/r]

**7**, **8** Mounting Type  
**AA** - Bearingless, 4 Bolt: **127.00** [5.000] Pilot Dia. **14.27** [.562] Dia. Holes on **161.92** [6.375] Dia. Bolt Circle  
**AB** - Standard, 4 Bolt: **101.60** [4.000] Pilot Dia. **14.7** [.58] Slots on **127.00** [5.000] Dia. Bolt Circle. (SAE B)  
**AC** - Wheel, 4 Bolt: **139.70** [5.500] Pilot Dia. **14.27** [.562] Dia. Holes on **165.10** [6.500] Dia. Bolt Circle.  
AD - Wheel, 4 Bolt: 127.00 [5.000] Pilot Dia. .500-13 UNC-2B Threaded Holes on 147.62 [5.812] Dia. Bolt circle.  
**AF** - Standard, 4 Bolt: **127.00** [5.000] Pilot Dia. **14.27** [.562] Dia. Holes on **161.92** [6.375] Dia. Bolt Circle. (SAE C)  
**AH** - Standard: ISO Flange 125 B4hw (ISO 3019/2) **124.97** [4.920] Pilot Dia. **14.27** [.562] Dia. Holes on **160.00** [6.299] Dia. Bolt Circle

AP - Wheel, 4 Bolt: 160.0 [6.30] Pilot Dia. with 5.8 [.23] Pilot Length and 18.00 [.709] Dia Holes on 200.00 [7.874] Bolt Circle (ISO Compatible)

**9**, **10** Output Shaft  
**00** - None (Bearingless)  
**01** - **31.75** [1.250] Dia. Straight With **.375-16UNC-2B Thread, 53.1** [2.09] Max Coupling Length, **7.938** [.3125] Sq x **41.27** [1.625] Straight Key  
**02** - **41.28** [1.625] Dia. Tapered with **11.112** [.4375] Sq x **31.75** [1.250] Straight Key, **1.250-18UNEF-2A Thread with Slotted Hex Nut**  
**03** - **31.75** [1.250] Dia. Flat Root Side Fit, **14 Tooth, 12/24 DP 30° Involute Spline, 38.1** [1.50] Minimum Full Spline Length with **.375-16UNC-2B Thread**

10 - 38.10 [1.500] Dia. Flat Root Side Fit, 17 Tooth, 12/24 DP 30°. Involute Spline, 31.2 [1.23] Minimum Full Spline Length, with .375-16 UNC-2B Thread in End

**11** - **40.00** [1.575] Dia. Straight with **M12 x 1.75-6H Thread, 7.955** [.3132] x **11.979** [.4716] Wide X **69.98** [2.755] Straight Key  
21 - 40.00 [1.575] Dia. 10:1 Tapered Shaft per ISO R775 with .750-16 UNF-2B Threaded in End, 12W x 8H 70L [.472W x .313H x 2.76L] Key  
22 - None (Bearingless) European Spline  
25 - 42.00 [1.654] Dia. 10:1 Tapered Shaft per ISO R775 with .750-16 UNF-2B Thread in End, 12W x 8H X 63L [.472W X .313H X 2.48L] Key

**11**, **12** Ports  
**AA** - **.875-14 UNF-2B SAE O-Ring Ports - Staggered Ports**  
**AB** - **1.0625-12 UN-2B SAE O-Ring Ports - Staggered Ports**  
**AC** - **G 3/4 Ports - Staggered Ports**  
AD - 19.05 [.750] 4 Bolt Split Flange Staggered Ports Standard Pressure Series (Code 61)  
AE - M22 X 1.5-6H O-Ring Port - Staggered Ports  
AG - 12.70 [.500] Dia. Manifold Ports  
AJ - Dash 12 Stc Type II+ (Snap to Connect) Ports - Staggered Ports

**13**, **14** Case Flow Options  
**00** - None  
**01** - **.5625-18 UNF-2B SAE O-Ring Port with Shuttle**  
**02** - **.4375-20 UNF-2B SAE O-ring Port with Check Valve**  
**03** - **G 1/4 BSP Straight Thread with Check Valve**  
06 - .4375-20 UNF-2B SAE O-ring Port with Reverse Flow Shuttle  
10 - Dash 6 Stc Type II + (Snap to Connect) Port

**15** Low Pressure Relief  
**0** - None  
A - Set at 4.5 Bar [65 lbf/in<sup>2</sup>]  
B - Set at 15.2 Bar [220 lbf/in<sup>2</sup>]

**16**, **17** Pressure/Flow Option  
**00** - None

**18** Geroler Option  
**0** - Standard

**19** Seal Option  
**00** - Standard Seals  
02 - Seal Guard  
03 - Viton Seals  
**04** - Viton Shaft Seal  
11 - High pressure shaft seal, slinger seal  
**19** - Extreme duty seal guard

**20**, **21** Accessories  
**00** - None  
AC - M 12 Threaded Connector, Long Body Digital Speed and Direction Pickup (Two 36 Pulse Signals in Quadrature per Revolution Pin 1=Power Supply, Pin 2=Output Signal 1, Pin 3=Common, Pin 4=Output Signal 2)  
AD - M 12 Threaded Connector, Digital Speed And Direction Pickup (One 72 Pulse per Rev Speed Signal and One Directional Signal (Pin 1=Power, Pin 2=Direction, Pin 2=Common, Pin 4=Speed)

**22**, **23** Special Features (Hardware)  
**00** - None  
17 - Low Noise Valve Plate

**24**, **25** Special Features (Assembly)  
**00** - None

**26**, **27** Paint/Packaging  
**00** - No Paint, Individual Box  
**AA** - Low Gloss Black Primer, Individual Box  
AB - Epoxy Coated (Frost Gray), Individual Box

**28**, **29** Customer Identification  
**00** - None

**30** Design Code  
**F** - Sixth

Feature in **bold** are preferred and allow for shorter lead time.