

# Danfoss Char-Lynn 2000 Series orbital motor 104-1023-006

Manufacturer: Danfoss

Manufacturer part number / published order designation: 104-1023-006

Published model: M02062AC02AA0100010000000AAAAF

## About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

## Execution notes and conditions

Manufacturer card proves the complete factory PN and full type code. Ordering diagrams only decode that existing execution.

Typical performance envelopes are conditioned on 25 cSt and joint pressure/flow/duty limits; family maxima are not promoted to unconstrained full-execution ratings.

Applicable source components are AC flange, shaft 02, AA staggered ports and standard single-speed 2000 motor; no sensor/brake/two-speed/relief extras assigned.

## Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

## Source A: Danfoss Char Lynn Orbital Motors Technical Information

| Original pages | Compiled pages | Relevant content                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 110-112        | 2-4            | 2000 Series construction and operating principle for standard single-speed Geroler disc-valve motors.; Exact size-family specification row with distinct continuous/intermittent/peak limits and shaft/case limitations; not a new full SKU-specific test rating.; Duty definitions, break-in, fluid/viscosity/temperature/filtration, thermal shock and minimum differential requirements. |
| 115            | 5              | Actual motor size 100 typical torque/speed/pressure/flow envelope at 25 cSt; retain duty-region legend.                                                                                                                                                                                                                                                                                     |
| 122            | 6              | Standard-mount general body-length size row and rotation definition. Illustrated AF/AD port arrangements are not assigned; actual AA staggered ports are documented separately on physical page 134.                                                                                                                                                                                        |
| 129-130        | 7-8            | Actual AC SAE A two-bolt flange tolerances and mounting pattern; neighbouring flange choices not assigned.; Actual output shaft code 02 dimensional view, end-thread/key/spline and torque-capacity limits.                                                                                                                                                                                 |
| 132-134        | 9-11           | Tapered-bearing shaft side-load/life curves and load-position conditions.; Standard shaft-seal case-pressure speed limits and required/optional drain conditions.; Actual AA7/8-14 UNF-2B staggered main ports and 7/16-20 UNF-2B case-drain geometry.                                                                                                                                      |
| 137-139        | 12-14          | Published base article-number table where listed; fullPN design suffix006 identity comes from exactcurrent factorycard, not manufactured from this table.; Decode already published M02 displacement/AC flange/shaft02 execution; no option-code generation.; Decode already published AA ports/defaultseal/check-valve/noaccessory configuration; optional features not included.          |

### Description:

The popular 2000 Series provides torque up to 850 Nm. [7,500 lb-in]. This proven design is reliable and durable. Danfoss has added options that make the motor more flexible to use in a wide variety of applications. The expanded displacement range using patented "Drive in Drive" technology is the latest innovation in the 2000 series of motors.



### 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 valve option

### Benefits:

- Easy to design in a system
- Proven reliability and performance in tough applications
- Compact design that maximizes power density

### Applications:

- Skid steer attachments
- Swing motor
- Brush cutters & mowers
- Harvesting equipment
- Directional Boring any place pressure relief protection is optimal for system or motor performance and life
- Turf equipment

C-1

#### 2000 Series

|                    |                                                |
|--------------------|------------------------------------------------|
| Geroler element    | 13 Displacements                               |
| Flow l/min [GPM]   | 75 [20] Continuous**<br>115 [30] Intermittent* |
| Speed RPM          | 1215 Cont.**<br>1215 Inter.*                   |
| Pressure bar [PSI] | 205 [3000] Cont.**<br>310 [4500] Inter.*       |
| Torque Nm [lb-in]  | 845 [7470] Cont.**<br>930 [8225] Inter.*       |

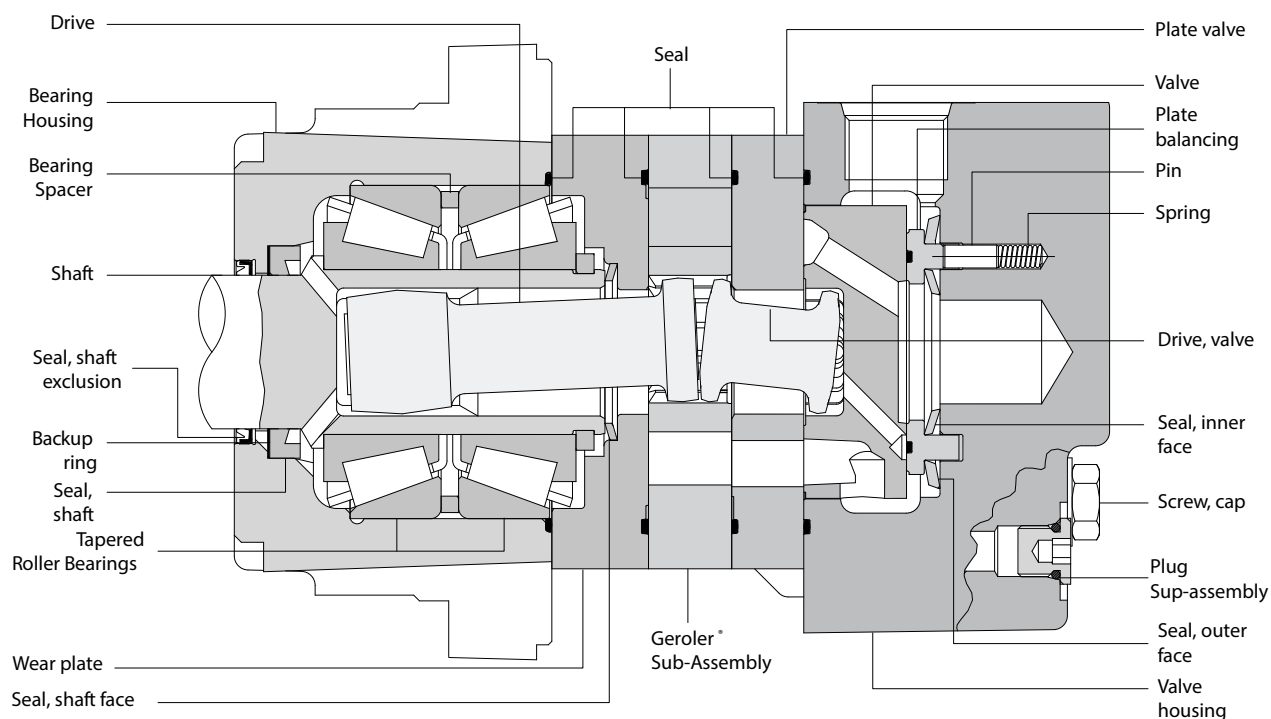
\*\* Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings.

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

# 2000 Series

## Specifications

C-1



Specification data — 2000 series motors

| Displ. cm <sup>3</sup> /r [in <sup>3</sup> /r] | 34                      | 41     | 66     | 80     | 90     | 100    | 130    | 160    | 195    | 245    | 305    | 395    | 490    |
|------------------------------------------------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                                                | [2.1]                   | [2.5]  | [4.0]  | [4.9]  | [5.5]  | [6.2]  | [8.0]  | [9.6]  | [11.9] | [14.9] | [18.7] | [24.0] | [29.8] |
| Max. Speed (RPM) @ Flow                        | Continuous              | 1215   | 1104   | 1075   | 908    | 836    | 742    | 576    | 477    | 385    | 308    | 246    | 153    |
|                                                | Intermittent            | 1215   | 1216   | 1214   | 908    | 1042   | 924    | 720    | 713    | 577    | 462    | 365    | 230    |
| Flow l/min [GPM]                               | Continuous              | 42     | 45     | 72     | 75     | 75     | 75     | 75     | 75     | 75     | 75     | 75     | 75     |
|                                                |                         | [11]   | [12]   | [19]   | [20]   | [20]   | [20]   | [20]   | [20]   | [20]   | [20]   | [20]   | [20]   |
|                                                | Intermittent            | 42     | 53     | 87     | 75     | 95     | 95     | 95     | 115    | 115    | 115    | 115    | 115    |
|                                                |                         | [11]   | [14]   | [23]   | [20]   | [25]   | [25]   | [25]   | [30]   | [30]   | [30]   | [30]   | [30]   |
| Torque* Nm [lb - in]                           | Continuous              | 98     | 112    | 186    | 235    | 265    | 295    | 385    | 455    | 540    | 660    | 765    | 845    |
|                                                |                         | [864]  | [988]  | [1643] | [2065] | [2326] | [2630] | [3420] | [4040] | [4780] | [5850] | [6750] | [7470] |
|                                                | Intermittent            | 142    | 169    | 276    | 345    | 390    | 445    | 560    | 570    | 665    | 820    | 885    | 930    |
|                                                |                         | [1261] | [1497] | [2446] | [3035] | [3458] | [3950] | [4970] | [5040] | [5890] | [7250] | [7820] | [8225] |
| Pressure Δ bar [Δ PSI]                         | Continuous              | 205    | 205    | 205    | 205    | 205    | 205    | 205    | 205    | 205    | 205    | 155    | 120    |
|                                                |                         | [3000] | [3000] | [3000] | [3000] | [3000] | [3000] | [3000] | [3000] | [3000] | [3000] | [2250] | [1750] |
|                                                | Intermittent            | 310    | 310    | 310    | 310    | 310    | 310    | 310    | 260    | 260    | 260    | 240    | 190    |
|                                                |                         | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [3750] | [3750] | [3750] | [3500] | [2750] |
|                                                | Peak                    | 310    | 310    | 310    | 310    | 310    | 310    | 310    | 310    | 310    | 310    | 310    | 225    |
|                                                |                         | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [4500] | [3250] |
| Weight kg [lb]                                 | Standard or Wheel mount | 8.8    | 8.8    | 8.8    | 9.3    | 9.3    | 9.5    | 9.8    | 10.0   | 10.4   | 11.3   | 11.3   | 12.2   |
|                                                |                         | [19.4] | [19.4] | [19.4] | [20.5] | [20.5] | [21.0] | [21.5] | [22.0] | [23.0] | [25.0] | [25.0] | [27.0] |
|                                                | Bearingless             | 6.8    | 6.8    | 6.8    | 7.3    | 7.3    | 7.5    | 7.7    | 7.9    | 8.4    | 9.3    | 9.3    | 10.2   |
|                                                |                         | [15.0] | [15.0] | [15.0] | [16.0] | [16.0] | [16.5] | [17.0] | [17.5] | [18.5] | [20.5] | [20.5] | [22.5] |

Maximum case pressure: See case pressure seal limitation graph. \*See shaft torque ratings for limitations.

**Note:** To assure best motor life, run motor in low speed high torque mode at approximately 30% of continuous pressure and 50% of continuous flow for 30 minutes in each direction before application of full load. Ensure that motor is filled with fluid prior to operation.

**Maximum inlet pressure:**

310 bar [4500 PSI]

Do not exceed  $\Delta$  pressure rating (see chart above).

**Maximum return pressure:**

310 bar [4500 PSI] with case drain line installed.

Do not exceed  $\Delta$  pressure rating (see chart above).

**$\Delta$  bar [ $\Delta$  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 13 cSt [70 SUS] at operating temperature.

**Recommended system operating temp:**

-34°C to 82°C [-30°F to 180°F]

**Recommended filtration:**

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

**Thermal shock warning:**

Do not operate the motor with fluid that is 70F or more above the motor temperature.

**Minimum delta pressure warning:**

Motors must not run with equal inlet and outlet pressure 50 PSID minimum delta pressure between motor ports is required at all times (except when switching direction of rotation)

# 2000 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 25 cSt [120 SUS]. Actual data may vary slightly from unit to unit in production.



**Δ Pressure bar [PSI]**  
**100 cm<sup>3</sup>/r [6.2 in<sup>3</sup>/r]**

| [250] | [500] | [1000] | [1500] | [2000] | [2500] | [3000] | [3500] | [4000] | [4500] |
|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 17    | 34    | 69     | 103    | 138    | 172    | 207    | 241    | 276    | 310    |

**Δ Pressure bar [PSI]**  
**130 cm<sup>3</sup>/r [8.0 in<sup>3</sup>/r]**

| [250] | [500] | [1000] | [1500] | [2000] | [2500] | [3000] | [3500] | [4000] | [4500] |
|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 17    | 34    | 69     | 103    | 138    | 172    | 207    | 241    | 276    | 310    |

C-1

| Flow LPM [GPM] | [0.25]             | [0.5]              | [1]                | [2]                  | [4]                  | [6]                  | [8]                  | [10]                 | [12]                 | [14]                 | [16] | [18] | [20] | [22] | [24] | [25] |
|----------------|--------------------|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|------|------|------|------|------|
| 0.95           | [140]<br>15<br>4   | [260]<br>30<br>2   |                    |                      |                      |                      |                      |                      |                      |                      |      |      |      |      |      |      |
| 1.9            | [150]<br>15<br>13  | [300]<br>35<br>9   | [620]<br>70<br>5   | [940]<br>105<br>2    |                      |                      |                      |                      |                      |                      |      |      |      |      |      |      |
| 4              | [170]<br>20<br>35  | [390]<br>45<br>34  | [830]<br>95<br>31  | [1210]<br>135<br>28  | [1570]<br>175<br>23  | [1870]<br>210<br>15  | [2130]<br>240<br>6   |                      |                      |                      |      |      |      |      |      |      |
| 8              | [170]<br>20<br>73  | [390]<br>45<br>71  | [830]<br>95<br>68  | [1220]<br>140<br>63  | [1590]<br>180<br>59  | [1920]<br>215<br>51  | [2220]<br>250<br>38  | [2520]<br>285<br>24  | [2810]<br>315<br>14  | [3120]<br>355<br>4   |      |      |      |      |      |      |
| 15             | [170]<br>20<br>148 | [380]<br>45<br>145 | [820]<br>90<br>141 | [1240]<br>140<br>136 | [1640]<br>185<br>131 | [2010]<br>225<br>121 | [2380]<br>270<br>104 | [2750]<br>310<br>94  | [3120]<br>355<br>80  | [3490]<br>395<br>69  |      |      |      |      |      |      |
| 23             | [160]<br>20<br>222 | [380]<br>45<br>219 | [820]<br>90<br>215 | [1260]<br>140<br>209 | [1670]<br>190<br>202 | [2080]<br>235<br>192 | [2480]<br>280<br>172 | [2880]<br>325<br>163 | [3280]<br>370<br>149 | [3680]<br>415<br>134 |      |      |      |      |      |      |
| 30             | [150]<br>15<br>297 | [370]<br>40<br>294 | [810]<br>90<br>288 | [1260]<br>140<br>281 | [1700]<br>190<br>273 | [2130]<br>240<br>261 | [2560]<br>290<br>243 | [2990]<br>340<br>231 | [3420]<br>385<br>216 | [3840]<br>435<br>200 |      |      |      |      |      |      |
| 38             | [140]<br>15<br>371 | [368]<br>40<br>367 | [810]<br>90<br>362 | [1270]<br>145<br>354 | [1720]<br>195<br>344 | [2160]<br>245<br>330 | [2610]<br>295<br>316 | [3020]<br>340<br>300 | [3440]<br>390<br>283 | [3850]<br>435<br>266 |      |      |      |      |      |      |
| 45             | [120]<br>15<br>445 | [350]<br>40<br>442 | [800]<br>90<br>436 | [1270]<br>145<br>427 | [1730]<br>195<br>415 | [2180]<br>245<br>399 | [2630]<br>295<br>389 | [3070]<br>345<br>369 | [3510]<br>395<br>350 | [3950]<br>445<br>332 |      |      |      |      |      |      |
| 53             | [110]<br>10<br>519 | [330]<br>35<br>516 | [800]<br>90<br>509 | [1260]<br>140<br>500 | [1740]<br>195<br>486 | [2180]<br>245<br>469 | [2630]<br>295<br>463 | [3070]<br>345<br>437 | [3500]<br>395<br>417 | [3940]<br>445<br>378 |      |      |      |      |      |      |
| 61             | [90]<br>10<br>594  | [320]<br>35<br>591 | [780]<br>90<br>583 | [1260]<br>140<br>573 | [1720]<br>195<br>558 | [2160]<br>245<br>540 | [2610]<br>295<br>537 | [3060]<br>345<br>506 | [3500]<br>395<br>485 | [3940]<br>445<br>463 |      |      |      |      |      |      |
| 68             | [70]<br>10<br>668  | [300]<br>35<br>665 | [770]<br>85<br>657 | [1240]<br>140<br>646 | [1700]<br>190<br>630 | [2140]<br>240<br>611 | [2580]<br>290<br>609 | [3020]<br>340<br>574 | [3460]<br>390<br>552 | [3900]<br>440<br>529 |      |      |      |      |      |      |
| 76             | [60]<br>5<br>742   | [280]<br>30<br>739 | [730]<br>80<br>731 | [1180]<br>135<br>715 | [1630]<br>185<br>703 | [2090]<br>235<br>684 | [2550]<br>290<br>662 | [2980]<br>335<br>643 | [3440]<br>390<br>619 | [3830]<br>435<br>595 |      |      |      |      |      |      |
| 83             | [40]<br>5<br>816   | [260]<br>30<br>813 | [720]<br>80<br>805 | [1180]<br>135<br>794 | [1620]<br>185<br>777 | [2070]<br>235<br>758 | [2500]<br>280<br>749 | [2930]<br>330<br>712 | [3360]<br>380<br>687 |                      |      |      |      |      |      |      |
| 91             | [20]<br>1<br>890   | [230]<br>23<br>887 | [690]<br>80<br>879 | [1140]<br>130<br>868 | [1540]<br>175<br>852 | [2020]<br>230<br>834 | [2460]<br>280<br>814 | [2900]<br>330<br>782 | [3340]<br>375<br>754 |                      |      |      |      |      |      |      |
| 95             |                    | [220]<br>25<br>924 | [670]<br>75<br>916 | [1120]<br>125<br>905 | [1560]<br>175<br>890 | [1990]<br>225<br>873 | [2450]<br>275<br>846 | [2890]<br>325<br>817 |                      |                      |      |      |      |      |      |      |

| Flow LPM [GPM] | [0.25]             | [0.5]              | [1]                  | [2]                  | [4]                  | [6]                  | [8]                  | [10]                 | [12]                 | [14]                 | [16] | [18] | [20] | [22] | [24] | [25] |
|----------------|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|------|------|------|------|------|
| 0.95           | [170]<br>20<br>3   |                    |                      |                      |                      |                      |                      |                      |                      |                      |      |      |      |      |      |      |
| 1.9            | [190]<br>20<br>12  | [410]<br>45<br>8   | [870]<br>100<br>2    |                      |                      |                      |                      |                      |                      |                      |      |      |      |      |      |      |
| 4              | [230]<br>25<br>28  | [510]<br>60<br>27  | [1070]<br>120<br>23  | [1580]<br>180<br>19  | [2050]<br>230<br>16  | [2520]<br>285<br>13  | [2920]<br>309<br>9   | [3310]<br>375<br>3   |                      |                      |      |      |      |      |      |      |
| 8              | [230]<br>25<br>56  | [510]<br>60<br>56  | [1080]<br>120<br>53  | [1600]<br>180<br>47  | [2090]<br>235<br>42  | [2580]<br>290<br>39  | [2930]<br>330<br>36  | [3320]<br>375<br>28  | [3640]<br>410<br>21  | [3990]<br>450<br>13  |      |      |      |      |      |      |
| 15             | [220]<br>25<br>114 | [500]<br>55<br>113 | [1080]<br>120<br>111 | [1620]<br>185<br>104 | [2150]<br>245<br>97  | [2660]<br>300<br>95  | [3100]<br>350<br>92  | [3540]<br>400<br>85  | [3980]<br>450<br>77  | [4420]<br>500<br>70  |      |      |      |      |      |      |
| 23             | [220]<br>25<br>172 | [490]<br>55<br>171 | [1080]<br>120<br>169 | [1640]<br>185<br>161 | [2190]<br>245<br>153 | [2740]<br>310<br>149 | [3260]<br>370<br>146 | [3770]<br>425<br>132 | [4280]<br>485<br>118 | [4800]<br>540<br>104 |      |      |      |      |      |      |
| 30             | [200]<br>25<br>230 | [480]<br>55<br>224 | [1080]<br>120<br>222 | [1650]<br>185<br>219 | [2220]<br>250<br>210 | [2780]<br>315<br>204 | [3310]<br>375<br>201 | [3840]<br>435<br>192 | [4360]<br>495<br>184 | [4890]<br>550<br>175 |      |      |      |      |      |      |
| 38             | [180]<br>20<br>287 | [470]<br>55<br>286 | [1070]<br>120<br>282 | [1650]<br>185<br>276 | [2230]<br>250<br>269 | [2800]<br>315<br>261 | [3420]<br>385<br>255 | [3940]<br>445<br>243 | [4450]<br>505<br>231 | [4970]<br>560<br>219 |      |      |      |      |      |      |
| 45             | [160]<br>20<br>345 | [460]<br>50<br>344 | [1060]<br>120<br>338 | [1640]<br>185<br>333 | [2230]<br>250<br>327 | [2800]<br>315<br>317 | [3350]<br>380<br>307 | [3910]<br>440<br>295 | [4440]<br>500<br>284 | [4960]<br>560<br>272 |      |      |      |      |      |      |
| 53             | [150]<br>15<br>403 | [440]<br>50<br>402 | [1030]<br>115<br>395 | [1620]<br>185<br>391 | [2220]<br>250<br>385 | [3000]<br>340<br>373 | [3350]<br>380<br>360 | [3910]<br>440<br>348 | [4440]<br>500<br>336 |                      |      |      |      |      |      |      |
| 61             | [130]<br>15<br>461 | [420]<br>45<br>460 | [1010]<br>115<br>452 | [1600]<br>180<br>447 | [2200]<br>250<br>443 | [2780]<br>315<br>430 | [3330]<br>375<br>411 | [3890]<br>440<br>397 | [4440]<br>500<br>384 |                      |      |      |      |      |      |      |
| 68             | [110]<br>10<br>518 | [400]<br>45<br>517 | [990]<br>110<br>509  | [1580]<br>180<br>504 | [2160]<br>245<br>500 | [2750]<br>310<br>484 | [3300]<br>375<br>471 | [3860]<br>435<br>456 | [4410]<br>500<br>440 |                      |      |      |      |      |      |      |
| 76             | [90]<br>10<br>576  | [380]<br>45<br>575 | [960]<br>110<br>568  | [1550]<br>175<br>560 | [2130]<br>240<br>551 | [2710]<br>305<br>539 | [3280]<br>370<br>524 | [3840]<br>435<br>508 |                      |                      |      |      |      |      |      |      |
| 83             | [60]<br>5<br>634   | [350]<br>40<br>633 | [940]<br>105<br>624  | [1520]<br>170<br>619 | [2100]<br>235<br>604 | [2680]<br>305<br>597 | [3250]<br>365<br>579 | [3820]<br>430<br>560 |                      |                      |      |      |      |      |      |      |
| 91             | [40]<br>5<br>692   | [325]<br>35<br>691 | [920]<br>105<br>682  | [1490]<br>170<br>676 | [2070]<br>235<br>665 | [2650]<br>300<br>651 | [3220]<br>360<br>633 | [3780]<br>425<br>616 |                      |                      |      |      |      |      |      |      |
| 95             | [20]<br>1<br>720   | [310]<br>35<br>719 | [900]<br>100<br>712  | [1480]<br>165<br>705 | [2050]<br>230<br>692 | [2630]<br>295<br>679 | [3200]<br>360<br>682 | [3700]<br>420<br>656 |                      |                      |      |      |      |      |      |      |

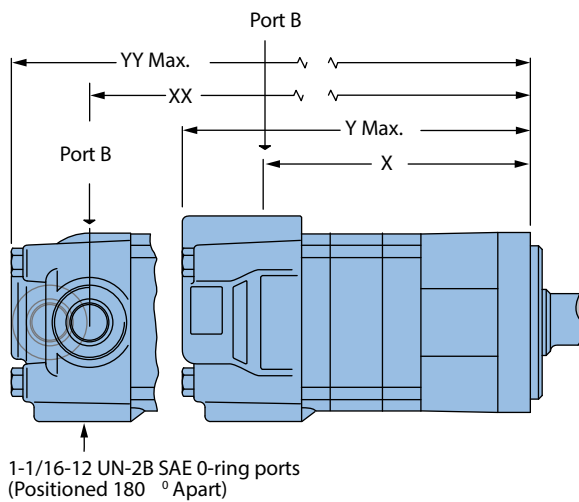
[1560]  
175  
890 } Torque [lb-in]  
Nm  
Speed RPM

## Standard mount

### Ports

7/8 -14 UNF-2B SAE O-ring staggered ports (2)  
 7/16 -20 UNF-2B SAE O-ring case drain port (1)  
 1 1/16 -12 UN-2B SAE O-ring ports (positioned 180° apart) (2)  
 7/16 -20 UNF-2B SAE O-ring case drain port (1)  
 7/8 -14 UNF-2B SAE O-ring end ports (2)  
 7/16 -20 UNF-2B SAE O-ring case drain port (1) or  
 G 1/2 (BSP) staggered ports (2)  
 G 1/4 (BSP) case drain port (1)

### Standard mount

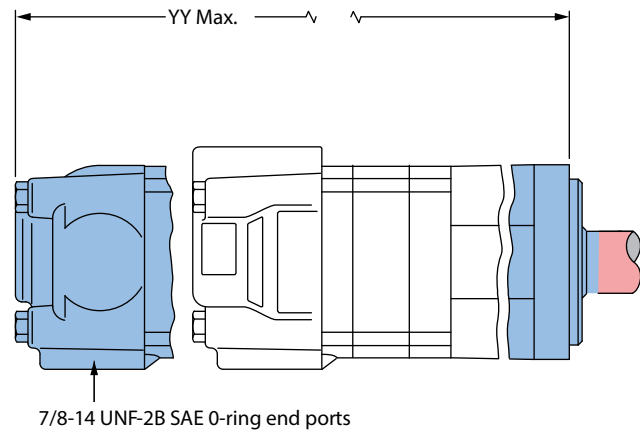


### Manifold mount

7/16 -20 UNF-2B SAE O-ring case drain port (1)

### Standard rotation viewed from shaft end

Port A Pressurized — CW  
 Port B Pressurized — CCW



Standard mount motor dimensions

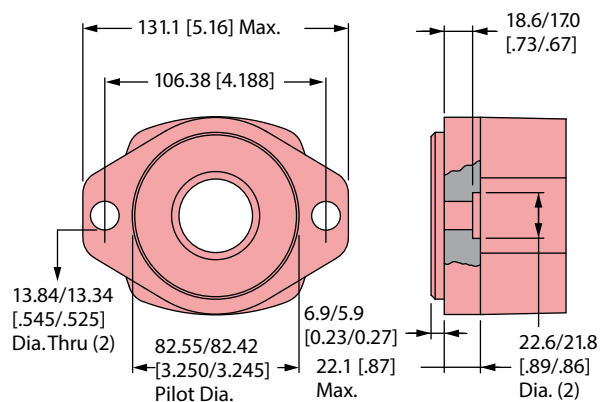
| Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r] | X mm [inch]  | Y mm [inch]   | XX mm [inch] | YY mm [inch]  |
|------------------------------------------------------|--------------|---------------|--------------|---------------|
| 34 [2.1]                                             | 126.7 [4.99] | 1740 [6.85]   | 1290 [5.08]  | 175.3 [6.90]  |
| 41 [2.5]                                             | 128.0 [5.04] | 175.3 [6.90]  | 130.5 [5.14] | 176.8 [6.96]  |
| 66 [4.0]                                             | 133.9 [5.27] | 181.1 [7.13]  | 136.1 [5.36] | 182.4 [7.18]  |
| 80 [4.9]                                             | 136.9 [5.39] | 184.2 [7.25]  | 139.2 [5.48] | 185.4 [7.30]  |
| 100 [6.2]                                            | 141.5 [5.57] | 189.0 [7.44]  | 143.8 [5.66] | 190.3 [7.49]  |
| 130 [8.0]                                            | 147.9 [5.83] | 195.4 [7.69]  | 150.2 [5.92] | 196.6 [7.74]  |
| 160 [9.6]                                            | 147.9 [5.83] | 195.4 [7.69]  | 150.2 [5.92] | 196.6 [7.74]  |
| 195 [11.9]                                           | 154.7 [6.09] | 202.2 [7.96]  | 157.0 [6.18] | 203.2 [8.00]  |
| 245 [14.9]                                           | 163.7 [6.45] | 211.1 [8.31]  | 166.0 [6.54] | 212.4 [8.36]  |
| 305 [18.7]                                           | 175.1 [6.90] | 222.3 [8.75]  | 177.4 [6.99] | 223.5 [8.80]  |
| 395 [24.0]                                           | 191.0 [7.52] | 238.6 [9.39]  | 193.3 [7.61] | 239.8 [9.44]  |
| 490 [29.8]                                           | 208.4 [8.21] | 255.8 [10.07] | 210.7 [8.30] | 257.0 [10.12] |

# 2000 Series

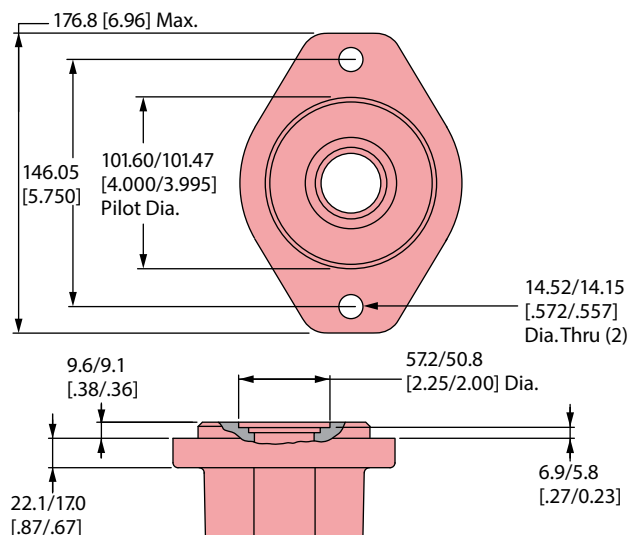
## Dimensions

### Mounting options

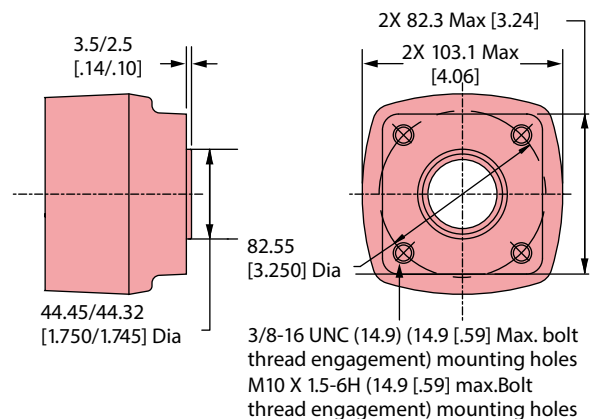
**Code:AC** SAE A - Two bolt (Standard motor)



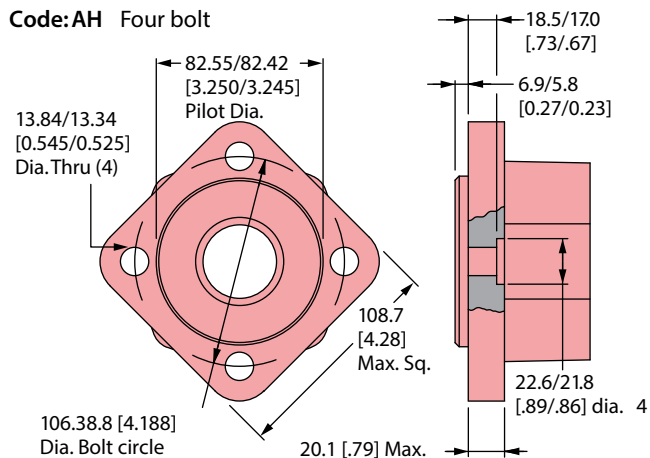
**Code:AF** SAE B - Two bolt



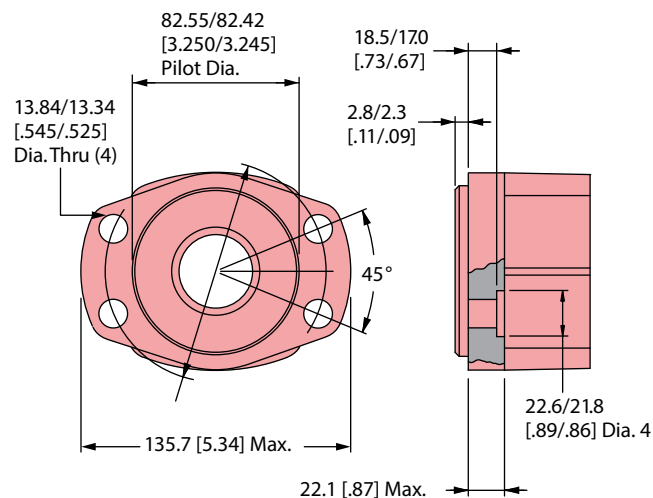
**Code:BY** Four bolt (Standard motor)



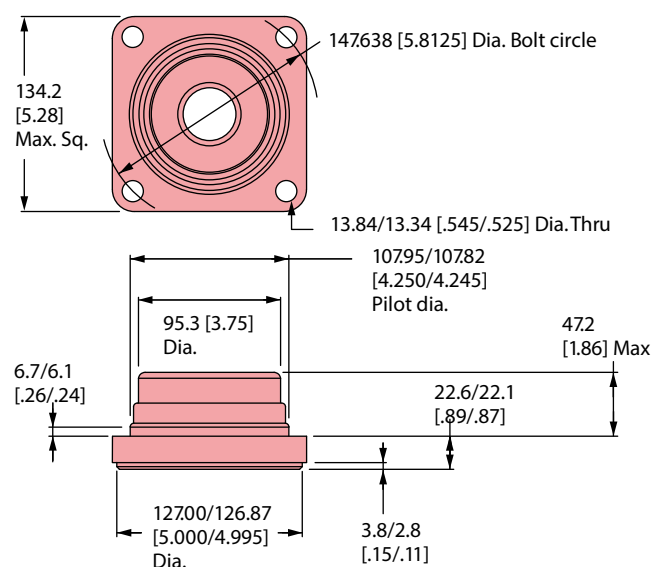
**Code:AH** Four bolt



**Code:AJ** Four bolt magneto



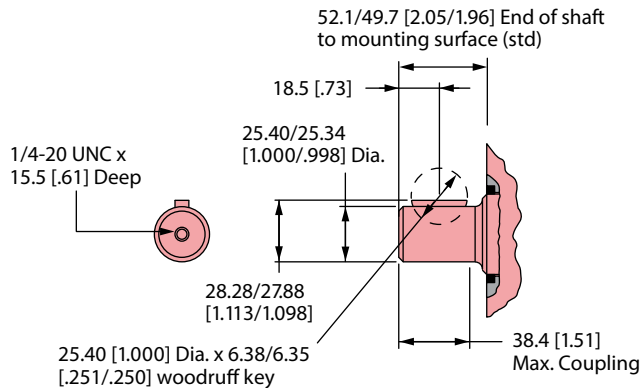
**Code:AB** Four bolt (Wheel motor)



### Shafts

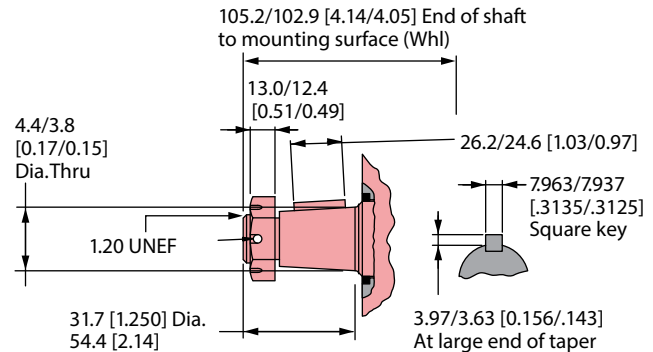
#### Code: 01 1 Inch straight

395 [3500] Max.Torque Nm [lb-in]

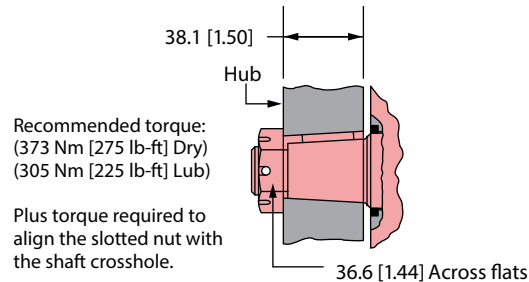


#### Code: 03 1 1/4 Inch tapered

768 [6800] Max.Torque Nm [lb-in]

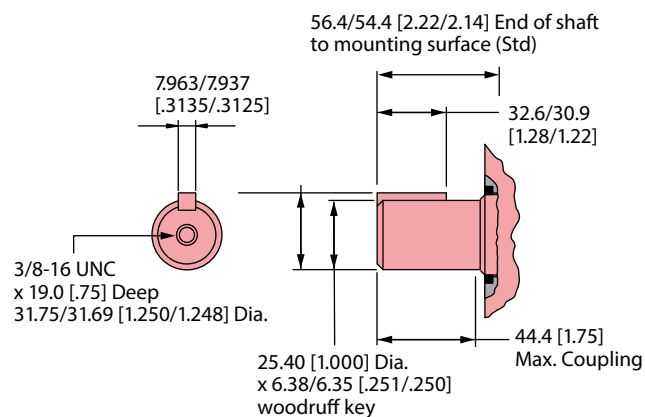


SAE J501 Standard tapered shaft 125.00±0.17Taper per meter [1.500±.002Taper per foot]



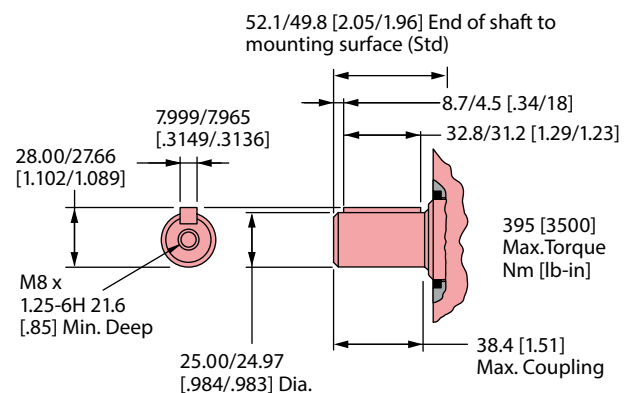
#### Code: 02 1 1/4 Inch straight

768 [6800] Max.Torque Nm [lb-in]



#### Code: 19 25 mm straight

395 [3500] Max.Torque Nm [lb-in]

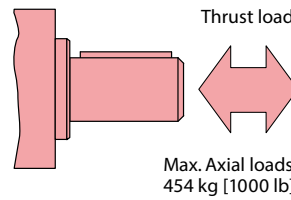


These curves indicate the radial load capacity on the motor shaft at various locations with an allowable external thrust load of 454 kg [1000 lb].

**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 61 kg/7 Bar [135 lb/100 PSI].

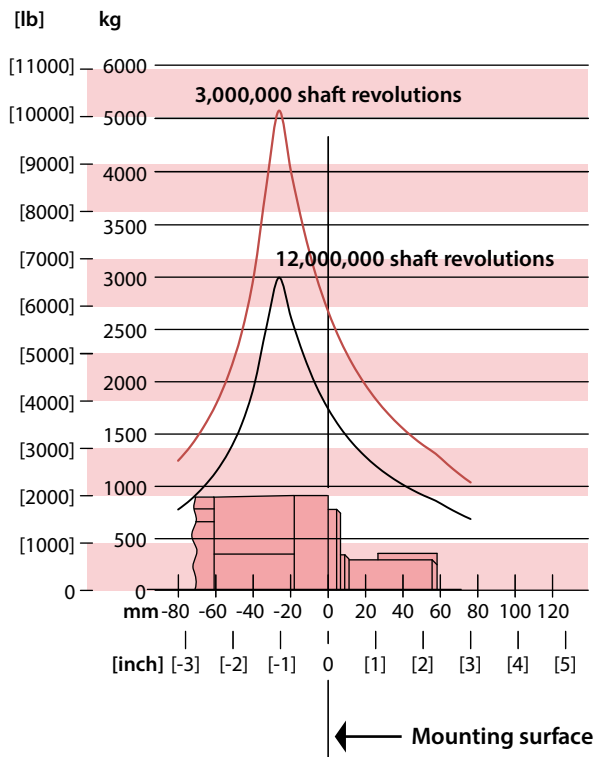
**Each curve is based on B 10 bearing life (2000 Hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.**

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.

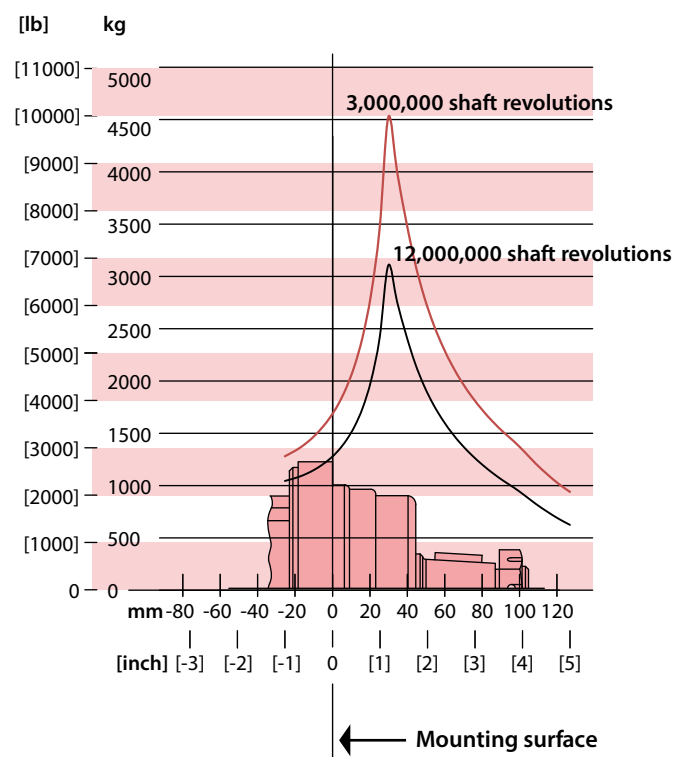


| RPM | Multiplication factor |
|-----|-----------------------|
| 50  | 1.23                  |
| 100 | 1.00                  |
| 200 | 0.81                  |
| 300 | 0.72                  |
| 400 | 0.66                  |
| 500 | 0.62                  |
| 600 | 0.58                  |
| 700 | 0.56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

### Standard motor straight and splined shafts



### Wheel motor Tapered shaft



## 2000 Series

### Case pressure and case porting

Char-Lynn 2000 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 advantages:

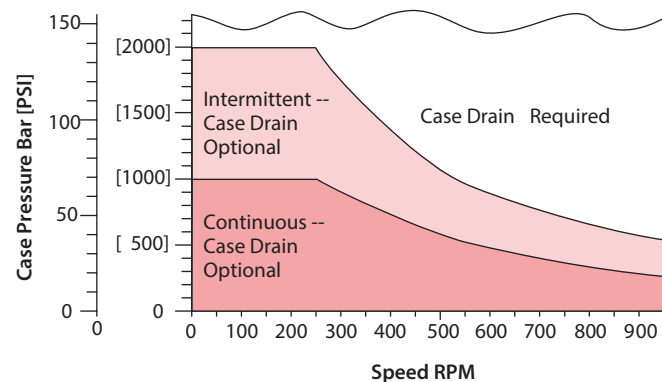
**Contamination control** — flushing the motor case.

**Cooler motor** — exiting oil draws motor heat away.

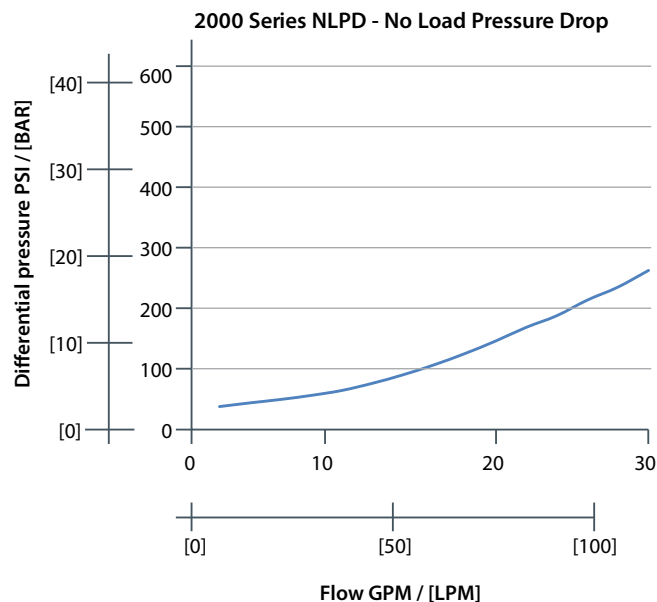
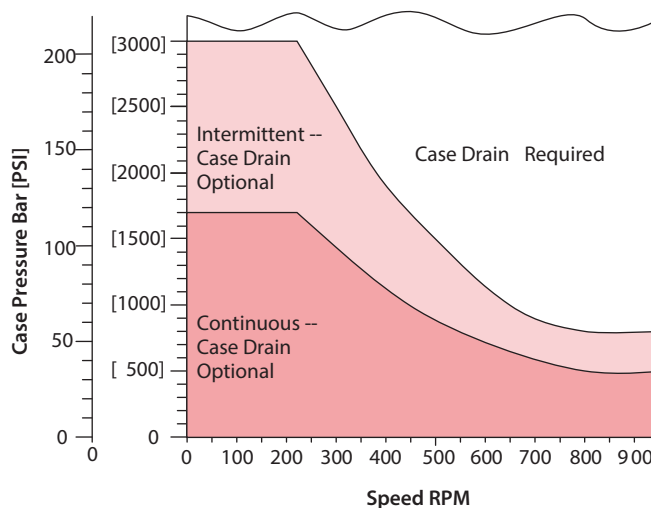
**Extend motor seal life** — maintain low case pressure with a preset restriction in the case drain line.

### Case pressure seal limitation

#### Standard shaft seal



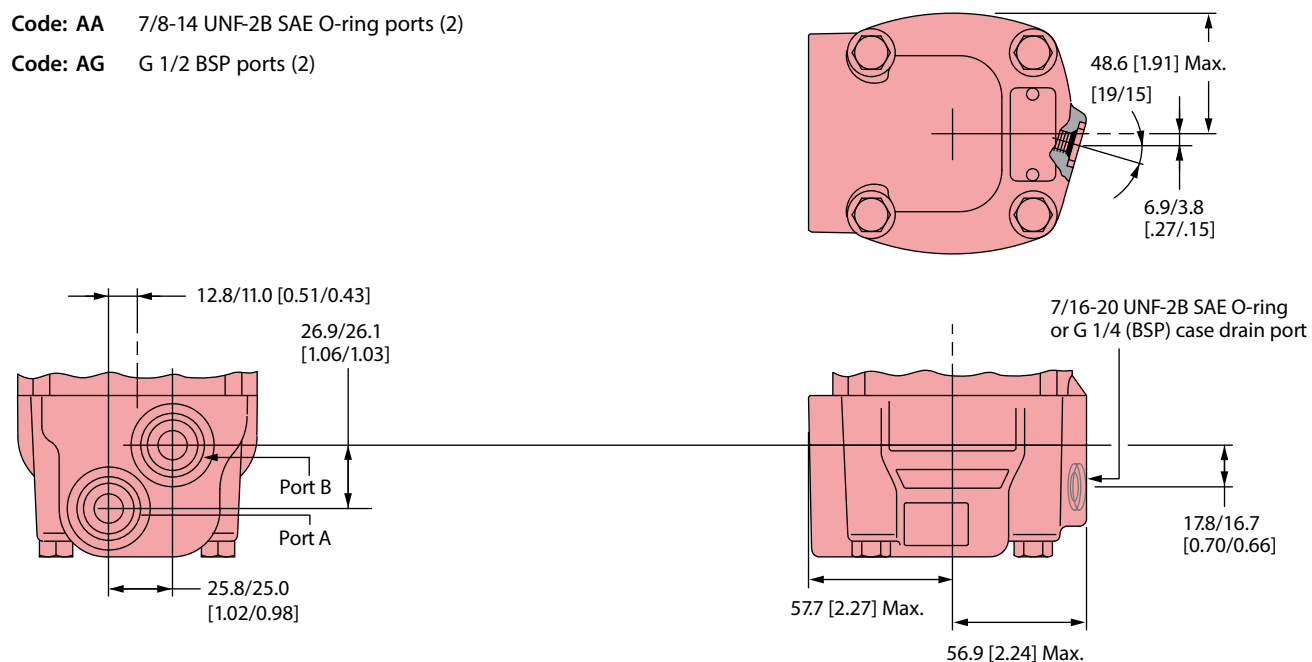
#### High pressure shaft seal



### Ports

**Code: AA** 7/8-14 UNF-2B SAE O-ring ports (2)

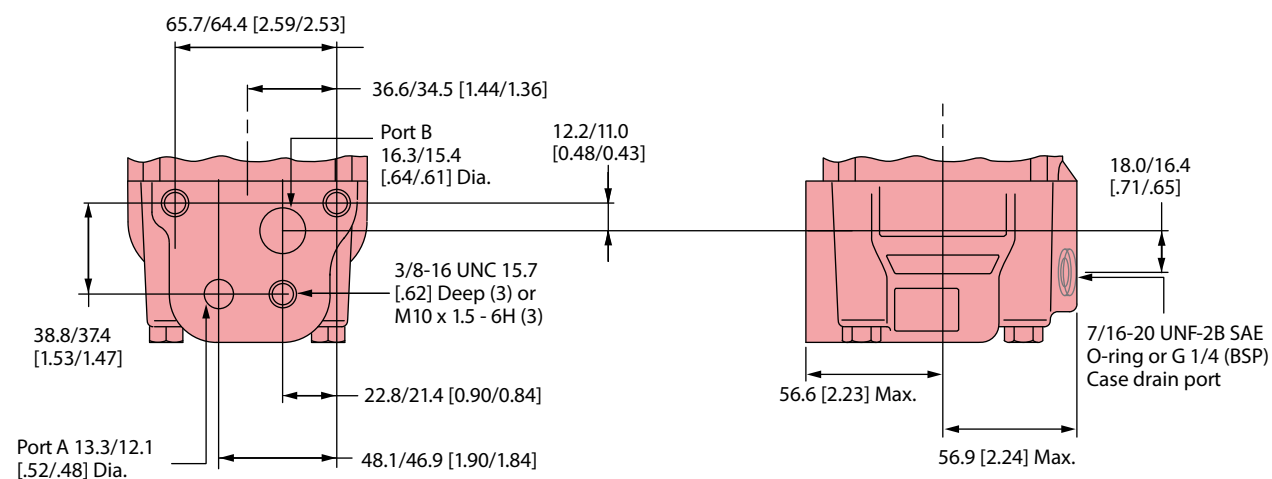
**Code: AG** G 1/2 BSP ports (2)



C-1

**Code: AB** 3/8-16 UNC threaded holes

**Code: AE** M10x1.5 -6H threaded holes



# 2000 Series

## Product numbers

**Note:** For 2000 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 — 104-, 105-, or 106- plus four digit number from charts for complete product number— Example 106-1043.

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

C-1

| Mounting                     | Shaft                           | Port size                    | Displ. cm <sup>3</sup> / r [in <sup>3</sup> /r] / product number |       |       |       |       |       |        |        |        |        |        |  |
|------------------------------|---------------------------------|------------------------------|------------------------------------------------------------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--|
|                              |                                 |                              | 41                                                               | 80    | 90    | 100   | 130   | 160   | 195    | 245    | 305    | 395    | 490    |  |
|                              |                                 |                              | [2.5]                                                            | [4.9] | [5.5] | [6.2] | [8.0] | [9.6] | [11.9] | [14.9] | [18.7] | [24.0] | [29.8] |  |
| 2 Bolt sae A flange          | 1 Inch straight                 | 7/8 -14 O-ring staggered     | 104-4708                                                         | -1001 | —     | -1002 | -1003 | -1004 | -1005  | -1006  | -1007  | -1143  | —      |  |
|                              |                                 | 1 1/16 -12 O-ring 180° apart | 104-----                                                         | -1037 | —     | -1038 | -1039 | -1040 | -1041  | -1042  | -1043  | -1044  | —      |  |
|                              | 1 ¼ Inch straight               | 7/8 -14 O-ring staggered     | 104-4774                                                         | -1022 | —     | -1023 | -1024 | -1025 | -1026  | -1027  | -1028  | -1228  | -1420  |  |
|                              |                                 | 1 1/16 -12 O-ring 180° apart | 104-----                                                         | -1061 | —     | -1062 | -1063 | -1064 | -1065  | -1066  | -1067  | -1068  | -1421  |  |
|                              | 1 ¼ Inch - 14 T splined         | 7/8 -14 O-ring staggered     | 104-4764                                                         | -1029 | —     | -1030 | -1031 | -1032 | -1033  | -1034  | -1035  | -1229  | -1422  |  |
|                              |                                 | 1 1/16 -12 O-ring 180° apart | 104-----                                                         | -1087 | —     | -1088 | -1089 | -1090 | -1091  | -1092  | -1093  | -1094  | -1423  |  |
| 2 Bolt SAE B flange          | 1 ¼ Inch straight               | 7/8-14 O-ring staggered      | 104-----                                                         | -1200 | —     | 1201  | -1202 | -1203 | -1204  | -1205  | -1206  | -1207  | —      |  |
|                              | 1 ¼ Inch involute SAE C splined | 7/8 -14 O-ring staggered     | 104-----                                                         | -1208 | —     | -1209 | -1210 | -1211 | -1212  | -1213  | -1214  | -1215  | —      |  |
|                              | 1 Inch SAE 6B splined           | 7/8 -14 O-ring staggered     | 104-----                                                         | -1193 | —     | -1194 | -1195 | -1196 | -1197  | -1198  | -1199  | —      | —      |  |
|                              | 7/8 Inch SAE B splined          | 7/8 -14 O-ring staggered     | 104-----                                                         | -1216 | —     | -1217 | -1218 | -1219 | -1220  | —      | —      | —      | —      |  |
| Standard with 4 bolt flange  | 32 mm Straight                  | G 1/2 (BSP))                 | 104-4672                                                         | -1384 | —     | -1385 | -1386 | -1387 | -1388  | -1389  | -1390  | -1391  | —      |  |
|                              | 1 ¼ Inch 14 T splined           | G 1/2 (BSP)                  | 104-----                                                         | -1376 | —     | -1377 | -1378 | -1379 | -1380  | -1381  | -1382  | -1383  | —      |  |
| Wheel motor                  | 1 ¼ Inch straight               | 7/8 -14 O-ring staggered     | 105-----                                                         | —     | —     | —     | —     | —     | —      | —      | —      | —      | -1148  |  |
|                              |                                 | 1 1/16 -12 O-ring 180° Apart | 105-----                                                         | —     | —     | —     | —     | —     | —      | —      | —      | —      | -1149  |  |
|                              | 32 mm straight                  | G 1/2 (BSP)                  | 105-----                                                         | -1134 | —     | -1135 | -1136 | -1137 | -1138  | -1139  | -1140  | -1141  | —      |  |
|                              | 1 ¼ Inch tapered                | 7/8 -14 O-ring staggered     | 105-----                                                         | -1001 | —     | -1002 | -1003 | -1004 | -1005  | -1006  | -1007  | -1060  | -1152  |  |
|                              |                                 | 1 1/16 -12 O-ring 180° apart | 105-----                                                         | -1071 | —     | -1072 | -1073 | -1074 | -1075  | -1076  | -1077  | -1078  | —      |  |
|                              | 1 ¼ Inch 14 T splined           | 7/8 -14 O-ring staggered     | 105-----                                                         | -1029 | —     | -1030 | -1031 | -1032 | -1033  | -1034  | -1035  | -1096  | —      |  |
| 1 1/16 -12 O-ring 180° apart |                                 | 105-----                     | -1079                                                            | —     | —     | —     | -1082 | -1083 | -1084  | -1085  | -1086  | —      |        |  |
| Bearingless                  | 7/8 -14 O-ring staggered        |                              | 106-----                                                         | -1008 | —     | -1009 | -1010 | -1011 | -1012  | -1013  | -1014  | -1015  | -1047  |  |
|                              | G 1/2 (BSP)                     |                              | 106-----                                                         | -1038 | —     | -1039 | -1040 | -1041 | -1042  | -1043  | -1044  | -1045  | —      |  |

↑  
106-1044

| Mounting                  | Shaft               | Port size                | Displ. cm <sup>3</sup> / r [in <sup>3</sup> /r] / product number |       |       |       |       |       |        |        |        |        |        |
|---------------------------|---------------------|--------------------------|------------------------------------------------------------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
|                           |                     |                          | 41                                                               | 80    | 90    | 100   | 130   | 160   | 195    | 245    | 305    | 395    | 490    |
|                           |                     |                          | [2.5]                                                            | [4.9] | [5.5] | [6.2] | [8.0] | [9.6] | [11.9] | [14.9] | [18.7] | [24.0] | [29.8] |
| 2 Bolt<br>SAE A<br>flange | 1 Inch straight     | 7/8 -14 O-ring Staggered | 04----                                                           | -1528 | —     | -1529 | -1530 | -1531 | -1532  | -1533  | -1534  | -1519  | -1535  |
|                           | 1 1/4 Inch straight | 7/8 -14 O-ring           | 104----                                                          | -3615 | —     | -1536 | -1537 | -1568 | -1539  | -1452  | -1479  | -1509  | -1489  |

The following 30-digit coding system has been developed to identify all of the configuration options for the 2000 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.

|   |    |   |     |   |   |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|----|---|-----|---|---|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| M | 02 |   | *** |   |   | ** |   | ** |    | ** |    | ** |    | *  | ** |    | *  | *  | ** |    | 00 |    | ** |    | ** |    | AA |    | F  |
| 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        |                                                                                                                                                                                               | 910 |  | Output shaft |                                                                                                                                                                  |
|     |  | M              | 2000 Series motor                                                                                                                                                                             |     |  |              |                                                                                                                                                                  |
| 23  |  | Product series |                                                                                                                                                                                               |     |  |              |                                                                                                                                                                  |
|     |  | 02             | 2000 Series Motor                                                                                                                                                                             |     |  |              |                                                                                                                                                                  |
| 456 |  | Displacement   |                                                                                                                                                                                               |     |  |              |                                                                                                                                                                  |
|     |  | 021            | 34.0 cm <sup>3</sup> /r [in <sup>3</sup> /r]                                                                                                                                                  |     |  | 00           | None (Bearingless)                                                                                                                                               |
|     |  | 025            | 40.8 cm <sup>3</sup> /r [in <sup>3</sup> /r]                                                                                                                                                  |     |  | 01           | 25.40 [1.000] Dia. Straight shaft with 1/4-20UNC-2B Thread in End, 6.35 [.250] wide x 25.40 [1.000] Dia. Woodruff key                                            |
|     |  | 040            | 66.5 cm <sup>3</sup> /r [in <sup>3</sup> /r]                                                                                                                                                  |     |  | 02           | 31.75 [1.250] Dia. Straight shaft with .375-16UNC-2B Thread in end, 7.938 [.3125] Sq x 31.75 [1.250] straight key                                                |
|     |  | 049            | 80.6 cm <sup>3</sup> /r [4.92 in <sup>3</sup> /r]                                                                                                                                             |     |  | 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 [.3125] Sq x 25.40 [1.0] straight key  |
|     |  | 055            | 90.6 cm <sup>3</sup> /r [5.53 in <sup>3</sup> /r]                                                                                                                                             |     |  | 04           | 31.75 [1.250] Dia. Flat root side fit, 14 tooth, 12/24 DP 30° involute spline w/ .375-16UNC-2B Thread in end, 33.0 [1.30] Min. Full spline length                |
|     |  | 062            | 101.6 cm <sup>3</sup> /r [6.20 in <sup>3</sup> /r]                                                                                                                                            |     |  | 05           | 25.40 [1.000] Dia. 6B spline per SAE J499 with .250-20UNC-2B thread in end, 22.76 [.896] Min. Full spline length                                                 |
|     |  | 080            | 130.6 cm <sup>3</sup> /r [7.97 in <sup>3</sup> /r]                                                                                                                                            |     |  | 07           | 22.22 [.875] Dia. Flat root side fit, 13 tooth, 16/32 DP 30° SAE B Involute Spline, 15.2 [.60] Min. Full Spline Length                                           |
|     |  | 096            | 158.1 cm <sup>3</sup> /r [9.65 in <sup>3</sup> /r]                                                                                                                                            |     |  | 16           | 32.00 [1.260] Dia. Straight Shaft with M8 x 1.25-6H Thread in End, 9.982 [.3930] W x 7.995 [.3132] H x 45.00 [1.772] L Key                                       |
|     |  | 119            | 194.8 cm <sup>3</sup> /r [11.89 in <sup>3</sup> /r]                                                                                                                                           |     |  | 17           | 31.75 [1.250] Dia. Straight shaft with 3/8 -16 UNC-2B Thread in end, 7.938 [.3125] Sq x 31.75 [1.250] straight key, corrosion resistant (seal area to shaft end) |
|     |  | 149            | 244.3 cm <sup>3</sup> /r [14.91 in <sup>3</sup> /r]                                                                                                                                           |     |  | 19           | 25.00 [.984] Dia. Straight shaft with M8 x 1.25-6h thread in end, 7.982 [.3142] W x 6.954 [.2738] H x 31.82 [1.254] L key                                        |
|     |  | 187            | 306.6 cm <sup>3</sup> /r [18.71 in <sup>3</sup> /r]                                                                                                                                           |     |  | 41           | 35.00 [1.378] Dia. 10:1 Tapered shaft per ISO R775 with M20 x 1.5-6g threaded shaft end and slotted hex nut, 6.00 [.236] Sq. X 20.00 [.787] Key                  |
|     |  | 240            | 393.8 cm <sup>3</sup> /r [24.03 in <sup>3</sup> /r]                                                                                                                                           |     |  | 42           | 35.00 [1.378] Dia. Straight shaft with M8 x 1.25-6h thread in end, 9.982 [.3930] W x 7.995 [.3132] H x 45.00 [1.772] L key                                       |
|     |  | 298            | 489.0 cm <sup>3</sup> /r [29.84 in <sup>3</sup> /r]                                                                                                                                           |     |  |              |                                                                                                                                                                  |
| 78  |  | Mounting type  |                                                                                                                                                                                               |     |  |              |                                                                                                                                                                  |
|     |  | AB             | Wheel, 4 Bolt: 108.0 [4.25] Pilot Dia. 13.59 [.535] Dia. Holes on 147.6 [5.81] Dia. Bolt circle. 127.0 [5.00] Dia. Rear mount pilot                                                           |     |  |              |                                                                                                                                                                  |
|     |  | AC             | Standard, 2 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt circle. SAE A                                                                                      |     |  |              |                                                                                                                                                                  |
|     |  | AD             | Bearingless (w/ leakage slots), 4 Bolt: 101.6 [4.00] Pilot Dia. 13.59 [.535] Dia. Holes on 127.0 [5.00] Dia. Bolt circle                                                                      |     |  |              |                                                                                                                                                                  |
|     |  | AF             | Standard, 2 Bolt: 101.6 [4.00] Pilot dia. 14.35 [.565] Dia. Holes on 146.0 [5.75] Dia. Bolt circle. SAE B                                                                                     |     |  |              |                                                                                                                                                                  |
|     |  | AH             | Standard, 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt circle                                                                                             |     |  |              |                                                                                                                                                                  |
|     |  | AJ             | Standard (Magneto), 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. 2.79 [.110] Pilot Length                                                         |     |  |              |                                                                                                                                                                  |
|     |  | AL             | Wheel (European), 4 Bolt: 125 [4.92] Pilot Dia. 13.79 [.543] Dia. Holes on 159.99 [6.299] Dia. Bolt Circle                                                                                    |     |  |              |                                                                                                                                                                  |
|     |  | AP             | Wheel, 4 Bolt: 108.0 [4.25] Pilot Dia. 13.59 [.535] Dia. Holes on 147.6 [5.81] Dia. Bolt Circle. 127.0 [5.00] Dia. Rear mount pilot. Spigot reduced to 88.9 [3.50] Dia. by 25.4 [1.00] Depth. |     |  |              |                                                                                                                                                                  |
|     |  | AZ             | Bearingless (w/ leakage slots), 4 Bolt: 100.0 [3.94] Pilot Dia. 11.0 [.43] Dia. Holes on 125.0 [4.92] Dia bolt circle (european)                                                              |     |  |              |                                                                                                                                                                  |

# 2000 Series

## Model code

|   |    |   |     |   |   |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|----|---|-----|---|---|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| M | 02 |   | *** |   |   | ** |   | ** |    | ** |    | ** |    | *  | ** |    | *  | *  | ** |    | 00 |    | ** |    | ** |    | AA |    | F  |
| 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 |

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### Ports

- AA** .875-14 UNF-2B SAE O-ring Ports - Staggered Ports
- AB** 12.70 [.500] and 15.88 [.625] Dia. Manifold ports with 3 x .375-16 UNC-2B port block mounting holes
- AC** .875-14 UNF-2B SAE O-ring ports - ports oriented 180° to each other
- AE** 12.70 [.500] and 15.88 [.625] Dia. Manifold ports with 3 x M10 x 1.5-6H Port block mounting holes
- AF** 1.0625-12 UN-2B SAE O-ring ports - ports oriented 180° to each other
- AG** G-1/2 BSP straight THD ports - staggered ports
- AN** G-1/2 BSP Straight THD Ports - end ported
- AS** G-1/2 Bsp Straight THD ports - staggered port with 2 x M10 x 1.5-6H port block mounting holes - european

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### Case flow options

(Shuttles available with port code AA only)

- 01** .4375-20 UNF-2B SAE O-Ring Port
- 02** G 1/4 BSP Straight THD Port
- 13** Reverse flow shuttle valve w/ .4375-20 UNF-2B SAE O-Ring port, .062 Dia. Shuttle flow orifice

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>]
- C** Set at 20.7 bar [300 lbf/in<sup>2</sup>]
- E** Set at 11.03 bar [160 lbf/in<sup>2</sup>]

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### Pressure/flow option

- 0** None
- Integral cross-over relief valve:
- 30** Set at 103.4 bar [1500 lbf/in<sup>2</sup>]
- 31** Set at 120.6 bar [1750 lbf/in<sup>2</sup>]
- 32** Set at 137.9 bar [2000 lbf/in<sup>2</sup>]
- 33** Set at 155.1 bar [2250 lbf/in<sup>2</sup>]
- 34** Set at 172.4 bar [2500 lbf/in<sup>2</sup>]
- 35** Set at 189.6 bar [2750 lbf/in<sup>2</sup>]
- 36** Set at 206.8 bar [3000 lbf/in<sup>2</sup>]
- 37** Set at 234.4 bar [3400 lbf/in<sup>2</sup>]

18

### Geroler option

- 1** Standard
- 2** Free running
- 6** Reduced side clearance, no warranty for galling

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### Seal option

- 0** Standard
- 1** Viton
- 2** Viton shaft seal
- 3** High pressure shaft seal
- 4** Seal guard
- 5** Extreme duty seal guard
- 6** High pressure shaft seal, seal guard

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### Accessories

- 00** None
- AA** Digital speed pickup (30 pulse), 127 [5.0] lead wire with weather pack shroud connector (A=Power, B=Signal, C=Common)
- AD** Digital speed pickup (30 pulse), M12 connector (A=Power, B=Common, C=Signal)
- AG** M12 connector (60 pulse per rev speed signal and one directional signal, (Pin 1=Power, Pin 2= Direction, Pin 3=Common, Pin 4=Speed)

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### Special features (hardware)

- 00** None

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### Special features (assembly)

- 00** None
- AA** Flange rotated 90 degrees
- AB** Reverse rotation
- AE** Flange rotated 45 degrees

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### Paint/packageing

- AA** No paint, indiv. Box
- AB** Low gloss black primer, indiv. Box
- AT** Epoxy coated black, individual box
- BJ** Nickel plated motor (excluding shaft), individual box

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### Customer ID

- AA** None

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### Design code

- F** Sixth

C-1