



whitedriveproducts



**SERIES**

300 -

310 -

315 -



**MEDIUM DUTY**  
Hydraulic Motor & Brake





**OVERVIEW**

The HB Series motor is the leader in its class, offering high efficiency and durability. The three-zone orbiting valve, laminated manifold and Roller Stator® motor work harmoniously to produce high overall efficiencies over a wide range of operating conditions. The standard case drain increases shaft seal life by reducing internal pressures experienced by the seal. Case oil leakage is also directed across all driveline components, increasing motor life. An internal drain option is also available. At the heart of the motor is a heavy-duty driveline, offering 30% more torque capacity than competitive designs. These features make the HB Series motor the preferred choice for applications requiring peak efficiency for continuous operation.

**FEATURES / BENEFITS**

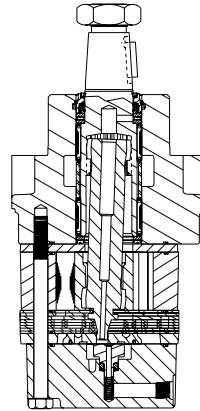
- Forced Drive Link Lubrication reduces wear and promotes longer life from motor.
- Heavy-Duty Drive Link is up to 30% stronger than competitive designs for longer life.
- Three-Zone Orbiting Valve precisely meters oil to produce exceptional volumetric efficiency.
- Rubber Energized Steel Face Seal does not extrude or melt under high pressure or high temperature.
- Standard Case Drain increases shaft seal life by reducing pressure on seal.

**TYPICAL APPLICATIONS**

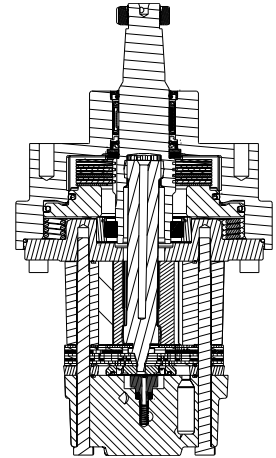
conveyors, carwashes, positioners, light-duty wheel drives, sweepers, machine tool indexers, grain augers, spreaders, feed rollers, screw drives, brush drives and more

**SERIES DESCRIPTIONS**

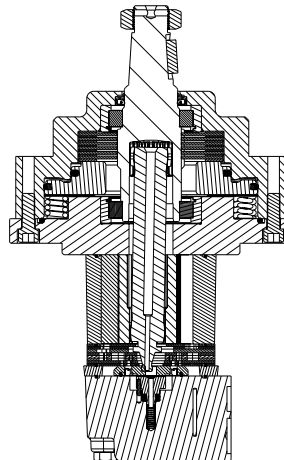
**300 -** Hydraulic Motor  
*Standard*



**310 -** Hydraulic Motor/Brake  
*Standard*



**315 -** Hydraulic Motor/Brake  
*With Greater Holding Torque*



**SPECIFICATIONS**

| CODE | Displacement<br>cm <sup>3</sup> [in <sup>3</sup> /rev] | Max. Speed<br>rpm |        | Max. Flow<br>lpm [gpm] |         | Max. Torque<br>Nm [lb-in] |             | Max. Pressure<br>bar [psi] |            |            |
|------|--|-------------------|--------|------------------------|---------|---------------------------|-------------|----------------------------|------------|------------|
|      |  | cont.             | inter. | cont.                  | inter.  | cont.                     | inter.      | cont.                      | inter.     | peak       |
| 050  | 52 [3.2]   | 680               | 830    | 38 [10]                | 45 [12] | 135 [1200]                | 158 [1400]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 080  | 76 [4.6]   | 800               | 950    | 53 [14]                | 64 [17] | 191 [1700]                | 222 [1975]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 090  | 89 [5.4]   | 680               | 840    | 61 [16]                | 76 [20] | 225 [2000]                | 270 [2400]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 110  | 111 [6.8]  | 680               | 850    | 76 [20]                | 95 [25] | 298 [2650]                | 349 [3100]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 125  | 127 [7.7]  | 580               | 740    | 76 [20]                | 95 [25] | 338 [3000]                | 394 [3500]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 160  | 164 [10.0]   | 460               | 580    | 76 [20]                | 95 [25] | 448 [3975]                | 512 [4550]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 200  | 205 [12.5]   | 370               | 460    | 76 [20]                | 95 [25] | 569 [5050]                | 653 [5800]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 250  | 254 [15.5]   | 290               | 370    | 76 [20]                | 95 [25] | 704 [6250]                | 799 [7100]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 300  | 293 [17.9]   | 250               | 320    | 76 [20]                | 95 [25] | 811 [7200]                | 929 [8250]  | 207 [3000]                 | 242 [3500] | 276 [4000] |
| 400  | 409 [24.9]   | 180               | 230    | 76 [20]                | 95 [25] | 946 [8400]                | 1019 [9050] | 173 [2500]                 | 189 [2750] | 207 [3000] |

► Performance data is typical. Performance of production units varies slightly from one motor to another. Running at intermittent ratings should not exceed 10% of every minute of operation.



DISPLACEMENT PERFORMANCE

|  |         |  |                 |                 |                 |                 |                 |   |                   |     |
|--|---------|--|-----------------|-----------------|-----------------|-----------------|-----------------|---|-------------------|-----|
| <b>050</b>   |         | Pressure - bar [psi]   |                 |                 |                 |                 |                 | Max. Cont.                              | Max. Inter.       |     |
|  |         | 17 [250]   | 35 [500]        | 69 [1000]       | 104 [1500]      | 138 [2000]      | 173 [2500]      | 207 [3000]                              | 242 [3500]        |     |
| 52 cm <sup>3</sup> [3.2 in <sup>3</sup> ] / rev                              |         |  |                 |                 |                 |                 |                 |   |                   |     |
| Flow - lpm [gpm]   |         | Torque - Nm [lb-in], Speed rpm   |                 |                 |                 |                 |                 | Intermittent Ratings - 10% of Operation |                   |     |
|  |         | 2 [0.5]  | 7 [66]<br>36    | 18 [158]<br>31  | 38 [314]<br>26  | 51 [447]<br>21  | 66 [587]<br>9   |   |                   | 37  |
| Max. Max. Inter. Cont.   | 4 [1]   | 9 [77]<br>72   | 19 [164]<br>69  | 38 [335]<br>65  | 57 [505]<br>63  | 71 [631]<br>33  | 87 [772]<br>32  | 98 [866]<br>9                           |                   | 73  |
|  | 8 [2]   | 9 [75]<br>142  | 19 [164]<br>140 | 39 [342]<br>135 | 59 [521]<br>133 | 78 [690]<br>122 | 95 [840]<br>102 | 109 [964]<br>77                         | 123 [1086]<br>57  | 145 |
|  | 15 [4]  | 8 [68]<br>288  | 19 [164]<br>286 | 38 [340]<br>285 | 57 [507]<br>284 | 78 [688]<br>265 | 99 [872]<br>245 | 112 [993]<br>211                        | 129 [1145]<br>189 | 289 |
|  | 23 [6]  |  |                 | 36 [319]<br>431 | 56 [492]<br>427 | 76 [669]<br>416 | 97 [859]<br>396 | 114 [1009]<br>347                       | 134 [1182]<br>321 | 434 |
|  | 30 [8]  |  |                 | 34 [304]<br>577 | 53 [467]<br>572 | 73 [646]<br>568 | 95 [841]<br>543 | 113 [1001]<br>488                       | 134 [1183]<br>463 | 578 |
|  | 38 [10] |  |                 |                 | 51 [451]<br>699 | 71 [628]<br>683 | 92 [810]<br>665 | 111 [978]<br>634                        | 133 [1174]<br>604 | 722 |
|  | 45 [12] |  |                 |                 | 48 [427]<br>847 | 68 [606]<br>825 | 88 [781]<br>798 | 111 [980]<br>770                        |                   | 867 |
| Rotor Width  |         | Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/> |                 |                 |                 |                 |                 |   |                   |     |
| 8.0 [3.16] mm [in]   |         | Theoretical Torque - Nm [lb-in]  |                 |                 |                 |                 |                 |   |                   |     |
|  |         | 14 [127]   | 29 [255]        | 58 [510]        | 86 [764]        | 115 [1019]      | 144 [1274]      | 173 [1529]                              | 202 [1783]        |     |
| Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS] |         |  |                 |                 |                 |                 |                 |   |                   |     |

|  |         |  |                 |                 |                   |                   |                   |   |                   |                 |
|--|---------|--|-----------------|-----------------|-------------------|-------------------|-------------------|---|-------------------|-----------------|
| <b>080</b>   |         | Pressure - bar [psi]   |                 |                 |                   |                   |                   | Max. Cont.                              | Max. Inter.       |                 |
|  |         | 17 [250]   | 35 [500]        | 69 [1000]       | 104 [1500]        | 138 [2000]        | 173 [2500]        | 207 [3000]                              | 242 [3500]        |                 |
| 76 cm <sup>3</sup> [4.6 in <sup>3</sup> ] / rev                              |         |  |                 |                 |                   |                   |                   |   |                   |                 |
| Flow - lpm [gpm]   |         | Torque - Nm [lb-in], Speed rpm   |                 |                 |                   |                   |                   | Intermittent Ratings - 10% of Operation |                   |                 |
|  |         | 2 [0.5]  | 14 [127]<br>25  | 30 [262]<br>24  | 61 [543]<br>21    | 91 [806]<br>18    | 120 [1062]<br>17  | 145 [1285]<br>11                        | 169 [1496]<br>11  | 191 [1693]<br>9 |
| Max. Max. Inter. Cont.   | 4 [1]   | 16 [140]<br>50   | 32 [286]<br>50  | 63 [559]<br>43  | 95 [839]<br>43    | 124 [1099]<br>34  | 151 [1340]<br>32  | 178 [1579]<br>32                        | 203 [1796]<br>31  | 51              |
|  | 8 [2]   | 16 [139]<br>100  | 32 [280]<br>100 | 64 [563]<br>99  | 97 [857]<br>92    | 129 [1139]<br>87  | 157 [1390]<br>79  | 187 [1652]<br>78                        | 211 [1865]<br>77  | 101             |
|  | 15 [4]  | 14 [127]<br>200  | 31 [275]<br>200 | 65 [572]<br>199 | 99 [872]<br>191   | 131 [1155]<br>181 | 160 [1420]<br>174 | 186 [1643]<br>160                       | 216 [1911]<br>154 | 201             |
|  | 23 [6]  | 13 [113]<br>301  | 30 [262]<br>300 | 63 [557]<br>297 | 96 [853]<br>295   | 130 [1149]<br>284 | 160 [1420]<br>271 | 186 [1646]<br>253                       | 218 [1930]<br>245 | 302             |
|  | 30 [8]  | 10 [91]<br>401   | 27 [243]<br>400 | 61 [536]<br>398 | 93 [826]<br>390   | 127 [1125]<br>384 | 159 [1409]<br>372 | 187 [1654]<br>346                       | 220 [1945]<br>339 | 402             |
|  | 38 [10] |  | 24 [212]<br>502 | 58 [511]<br>500 | 89 [790]<br>499   | 123 [1087]<br>498 | 156 [1379]<br>485 | 185 [1638]<br>443                       | 213 [1883]<br>433 | 503             |
|  | 45 [12] |  | 20 [177]<br>602 | 54 [482]<br>601 | 87 [767]<br>600   | 120 [1060]<br>597 | 164 [1451]<br>540 | 193 [1711]<br>526                       | 228 [2021]<br>510 | 603             |
| 53 [14]  |         | 14 [127]<br>690  | 50 [445]<br>689 | 84 [741]<br>688 | 124 [1098]<br>658 | 155 [1369]<br>644 | 185 [1640]<br>631 | 217 [1918]<br>613                       | 704               |                 |
| 61 [16]  |         |  |                 |                 |                   |                   |                   |   | 804               |                 |
| 64 [17]  |         |  |                 |                 |                   |                   |                   |   | 904               |                 |
| Rotor Width  |         | Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/> |                 |                 |                   |                   |                   |   |                   |                 |
| 11.7 [4.62] mm [in]  |         | Theoretical Torque - Nm [lb-in]  |                 |                 |                   |                   |                   |   |                   |                 |
|  |         | 21 [183]   | 41 [366]        | 83 [732]        | 124 [1099]        | 166 [1465]        | 207 [1831]        | 248 [2197]                              | 290 [2564]        |                 |
| Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS] |         |  |                 |                 |                   |                   |                   |   |                   |                 |

► Performance data is typical. Performance of production units varies slightly from one motor to another.



**DISPLACEMENT PERFORMANCE**

|   |            | Pressure - bar [psi]   |                |                |                   |                   |                   | Max. Cont.                              | Max. Inter.       |                   |     |                 |
|---|------------|--|----------------|----------------|-------------------|-------------------|-------------------|---|-------------------|-------------------|-----|-----------------|
| <b>090</b>  |            | 17 [250]   | 35 [500]       | 69 [1000]      | 104 [1500]        | 138 [2000]        | 173 [2500]        | 207 [3000]                              | 242 [3500]        |                   |     |                 |
| 89 cm <sup>3</sup> [5.4 in <sup>3</sup> ] / rev   |            |  |                |                |                   |                   |                   |   |                   |                   |     |                 |
|   |            | Torque - Nm [lb-in], Speed rpm   |                |                |                   |                   |                   | Intermittent Ratings - 10% of Operation |                   |                   |     |                 |
| Flow - lpm [gpm]  | Max. Cont. | 2 [0.5]  | 12 [106]<br>21 | 26 [231]<br>19 | 69 [609]<br>17    | 100 [889]<br>15   | 142 [1259]<br>13  | 174 [1537]<br>10                        | 206 [1826]<br>7   | 232 [2049]<br>5   | 22  | Theoretical rpm |
|   |            | 4 [1]  |                | 30 [264]<br>41 | 68 [605]<br>38    | 107 [947]<br>34   | 146 [1296]<br>30  | 180 [1596]<br>27                        | 212 [1875]<br>26  | 242 [2142]<br>23  | 43  |                 |
|   |            | 8 [2]  |                | 33 [291]<br>84 | 71 [629]<br>79    | 108 [958]<br>73   | 149 [1323]<br>67  | 183 [1620]<br>66                        | 221 [1956]<br>60  | 251 [2223]<br>59  | 86  |                 |
|   |            | 15 [4]   |                |                | 72 [636]<br>167   | 113 [1003]<br>158 | 153 [1351]<br>149 | 188 [1664]<br>143                       | 225 [1990]<br>141 | 260 [2300]<br>135 | 172 |                 |
|   |            | 23 [6]   |                |                | 72 [633]<br>252   | 112 [995]<br>243  | 151 [1340]<br>233 | 187 [1654]<br>227                       | 226 [1996]<br>222 | 260 [2304]<br>218 | 257 |                 |
|   |            | 30 [8]   |                |                | 68 [598]<br>339   | 109 [960]<br>331  | 151 [1340]<br>317 | 188 [1660]<br>309                       | 227 [2012]<br>301 | 263 [2326]<br>300 | 343 |                 |
|   |            | 38 [10]  |                |                |                   | 108 [959]<br>416  | 150 [1328]<br>403 | 188 [1667]<br>391                       | 229 [2024]<br>381 | 270 [2393]<br>370 | 428 |                 |
|   |            | 45 [12]  |                |                |                   | 109 [961]<br>505  | 153 [1356]<br>490 | 195 [1728]<br>475                       | 232 [2049]<br>462 | 271 [2398]<br>448 | 514 |                 |
|   |            | 53 [14]  |                |                |                   | 145 [1287]<br>590 | 190 [1678]<br>578 | 213 [1886]<br>558                       | 241 [2135]<br>544 | 282 [2495]<br>530 | 599 |                 |
|   |            | 61 [16]  |                |                |                   | 134 [1190]<br>677 | 187 [1654]<br>660 | 192 [1701]<br>644                       | 227 [2007]<br>629 | 269 [2384]<br>610 | 685 |                 |
| Max. Inter.   | 68 [18]    |  |                |                | 136 [1201]<br>748 | 189 [1675]<br>729 | 240 [2122]<br>719 |   |                   | 770               |     |                 |
|   | 76 [20]    |  |                |                | 136 [1205]<br>835 | 174 [1536]<br>819 | 216 [1916]<br>806 |   |                   | 856               |     |                 |
| <b>Overall Efficiency</b> - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/> |            |  |                |                |                   |                   |                   |   |                   |                   |     |                 |
| <b>Rotor Width</b>  |            |  |                |                |                   |                   |                   |   |                   |                   |     |                 |
| 13.7 [541]  |            | 24 [215]   | 49 [430]       | 97 [860]       | 146 [1290]        | 194 [1720]        | 243 [2150]        | 291 [2580]                              | 340 [3010]        |                   |     |                 |
| mm [in]   |            | Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS] |                |                |                   |                   |                   |   |                   |                   |     |                 |

|   |            | Pressure - bar [psi]   |                |                   |                   |                   |                   | Max. Cont.                              | Max. Inter.       |                   |     |                 |
|---|------------|--|----------------|-------------------|-------------------|-------------------|-------------------|---|-------------------|-------------------|-----|-----------------|
| <b>110</b>  |            | 17 [250]   | 35 [500]       | 69 [1000]         | 104 [1500]        | 138 [2000]        | 173 [2500]        | 207 [3000]                              | 242 [3500]        |                   |     |                 |
| 111 cm <sup>3</sup> [6.8 in <sup>3</sup> ] / rev  |            |  |                |                   |                   |                   |                   |   |                   |                   |     |                 |
|   |            | Torque - Nm [lb-in], Speed rpm   |                |                   |                   |                   |                   | Intermittent Ratings - 10% of Operation |                   |                   |     |                 |
| Flow - lpm [gpm]  | Max. Cont. | 2 [0.5]  | 12 [106]<br>16 | 39 [347]<br>16    | 88 [777]<br>14    | 135 [1199]<br>11  | 182 [1609]<br>9   | 223 [1977]<br>8                         | 273 [2420]<br>6   | 304 [2690]<br>5   | 17  | Theoretical rpm |
|   |            | 4 [1]  | 16 [142]<br>33 | 42 [374]<br>33    | 97 [857]<br>31    | 146 [1290]<br>27  | 199 [1763]<br>21  | 246 [2179]<br>19                        | 293 [2592]<br>18  | 329 [2916]<br>16  | 34  |                 |
|   |            | 8 [2]  |                | 42 [372]<br>67    | 98 [866]<br>64    | 148 [1313]<br>59  | 201 [1782]<br>49  | 249 [2204]<br>46                        | 297 [2629]<br>44  | 345 [3050]<br>43  | 68  |                 |
|   |            | 15 [4]   |                |                   | 94 [835]<br>134   | 149 [1320]<br>126 | 201 [1777]<br>117 | 251 [2223]<br>110                       | 302 [2674]<br>104 | 348 [3083]<br>104 | 136 |                 |
|   |            | 23 [6]   |                |                   | 93 [819]<br>202   | 148 [1312]<br>196 | 201 [1775]<br>186 | 250 [2215]<br>177                       | 302 [2671]<br>167 | 348 [3078]<br>163 | 204 |                 |
|   |            | 30 [8]   |                |                   | 89 [785]<br>269   | 145 [1287]<br>267 | 199 [1760]<br>258 | 249 [2204]<br>247                       | 299 [2648]<br>267 | 352 [3114]<br>229 | 272 |                 |
|   |            | 38 [10]  |                |                   | 83 [738]<br>339   | 139 [1232]<br>336 | 194 [1718]<br>327 | 244 [2163]<br>315                       | 296 [2617]<br>304 | 349 [3086]<br>292 | 340 |                 |
|   |            | 45 [12]  |                |                   | 82 [723]<br>407   | 145 [1281]<br>406 | 209 [1853]<br>397 | 291 [2578]<br>386                       | 315 [2786]<br>368 | 343 [3031]<br>360 | 408 |                 |
|   |            | 53 [14]  |                |                   | 74 [654]<br>475   | 129 [1143]<br>473 | 183 [1621]<br>466 | 238 [2103]<br>451                       | 287 [2539]<br>441 | 349 [3085]<br>426 | 476 |                 |
|   |            | 61 [16]  |                |                   |                   | 143 [1261]<br>542 | 199 [1763]<br>536 | 251 [2224]<br>523                       | 301 [2666]<br>510 | 363 [3213]<br>492 | 544 |                 |
| Max. Inter.   | 68 [18]    |  |                | 120 [1059]<br>609 | 179 [1586]<br>603 | 233 [2058]<br>593 | 284 [2510]<br>580 | 347 [3071]<br>561                       | 612               |                   |     |                 |
|   | 76 [20]    |  |                | 107 [944]<br>678  | 160 [1419]<br>677 | 217 [1918]<br>661 | 268 [2374]<br>645 | 327 [2896]<br>627                       | 680               |                   |     |                 |
| 83 [22]   |            |  |                | 93 [824]<br>746   | 157 [1393]<br>743 | 206 [1823]<br>735 | 257 [2271]<br>714 |   | 748               |                   |     |                 |
| 91 [24]   |            |  |                | 86 [762]<br>813   | 139 [1234]<br>810 | 197 [1744]<br>803 | 250 [2214]<br>783 |   | 816               |                   |     |                 |
| 95 [25]   |            |  |                | 77 [678]<br>847   | 132 [1171]<br>844 | 191 [1694]<br>835 | 243 [2154]<br>828 |   | 850               |                   |     |                 |
| <b>Overall Efficiency</b> - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/> |            |  |                |                   |                   |                   |                   |   |                   |                   |     |                 |
| <b>Rotor Width</b>  |            |  |                |                   |                   |                   |                   |   |                   |                   |     |                 |
| 17.3 [681]  |            | 31 [271]   | 61 [541]       | 122 [1083]        | 184 [1624]        | 245 [2166]        | 306 [2707]        | 367 [3248]                              | 428 [3790]        |                   |     |                 |
| mm [in]   |            | Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS] |                |                   |                   |                   |                   |   |                   |                   |     |                 |

► Performance data is typical. Performance of production units varies slightly from one motor to another.



DISPLACEMENT PERFORMANCE

|  |         |  |                 |                   |                   |                   |                   |                   |   |             |
|--|---------|--|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|---|-------------|
|  |         | Pressure - bar [psi]   |                 |                   |                   |                   |                   |                   | Max. Cont.                              | Max. Inter. |
| <b>125</b>                                       |         | 17 [250]   | 35 [500]        | 69 [1000]         | 104 [1500]        | 138 [2000]        | 173 [2500]        | 207 [3000]        | 242 [3500]                              |             |
| 127 cm <sup>3</sup> [7.7 in <sup>3</sup> ] / rev |         |  |                 |                   |                   |                   |                   |                   |   |             |
|  |         | Torque - Nm [lb-in], Speed rpm   |                 |                   |                   |                   |                   |                   | Intermittent Ratings - 10% of Operation |             |
| Flow - lpm [gpm]                                 | 2 [0.5] | 14 [127]<br>14   | 44 [394]<br>14  | 109 [961]<br>13   | 159 [1408]<br>13  | 217 [1922]<br>12  | 267 [2364]<br>10  | 313 [2766]<br>9   | 355 [3146]<br>7                         | 15          |
|  | 4 [1]   | 16 [138]<br>29   | 45 [401]<br>29  | 108 [952]<br>29   | 167 [1475]<br>27  | 226 [2004]<br>25  | 278 [2459]<br>23  | 332 [2936]<br>21  | 367 [3245]<br>19                        | 30          |
|  | 8 [2]   |  | 49 [432]<br>59  | 108 [953]<br>59   | 165 [1462]<br>57  | 231 [2046]<br>54  | 286 [2528]<br>48  | 332 [2941]<br>48  | 387 [3421]<br>45                        | 60          |
|  | 15 [4]  |  | 49 [430]<br>119 | 107 [949]<br>119  | 167 [1479]<br>118 | 229 [2024]<br>113 | 284 [2513]<br>108 | 342 [3023]<br>102 | 392 [3467]<br>98                        | 120         |
|  | 23 [6]  |  |                 | 102 [902]<br>179  | 166 [1473]<br>177 | 223 [1973]<br>173 | 279 [2473]<br>169 | 337 [2985]<br>163 | 393 [3477]<br>157                       | 180         |
|  | 30 [8]  |  |                 | 100 [888]<br>239  | 160 [1420]<br>239 | 222 [1968]<br>235 | 287 [2541]<br>235 | 337 [2987]<br>221 | 391 [3459]<br>214                       | 240         |
|  | 38 [10] |  |                 | 95 [841]<br>299   | 154 [1359]<br>298 | 217 [1919]<br>298 | 273 [2413]<br>292 | 332 [2940]<br>281 | 387 [3428]<br>273                       | 300         |
|  | 45 [12] |  |                 | 83 [738]<br>359   | 147 [1304]<br>358 | 207 [1831]<br>357 | 267 [2361]<br>350 | 329 [2914]<br>342 | 406 [3590]<br>308                       | 360         |
|  | 53 [14] |  |                 | 82 [727]<br>419   | 146 [1293]<br>418 | 204 [1801]<br>417 | 268 [2375]<br>413 | 332 [2935]<br>402 | 419 [3704]<br>340                       | 420         |
|  | 61 [16] |  |                 | 69 [608]<br>473   | 168 [1484]<br>463 | 198 [1756]<br>440 | 258 [2287]<br>415 | 327 [2895]<br>384 | 386 [3419]<br>341                       | 480         |
|  | 68 [18] |  |                 |                   | 193 [1704]<br>517 | 214 [1894]<br>498 | 278 [2460]<br>472 | 360 [3188]<br>438 | 386 [3412]<br>384                       | 540         |
|  | 76 [20] |  |                 |                   | 205 [1815]<br>577 | 245 [2164]<br>561 | 290 [2567]<br>537 | 344 [3040]<br>505 | 408 [3606]<br>453                       | 600         |
| 83 [22]  |         |  |                 | 151 [1336]<br>640 | 201 [1781]<br>623 | 260 [2298]<br>597 | 320 [2832]<br>563 |                   | 660                                     |             |
| 91 [24]  |         |  |                 | 85 [751]<br>705   | 151 [1334]<br>686 | 218 [1930]<br>662 | 284 [2516]<br>621 |                   | 720                                     |             |
| 95 [25]  |         |  |                 | 79 [697]<br>736   | 139 [1227]<br>723 | 209 [1853]<br>694 | 270 [2387]<br>669 |                   | 750                                     |             |
| Max. Cont.                                       |         |  |                 |                   |                   |                   |                   |                   |   |             |
| Max. Inter.                                      |         |  |                 |                   |                   |                   |                   |                   |   |             |
| Rotor Width                                      |         | Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/> |                 |                   |                   |                   |                   |                   |   |             |
| Theoretical Torque - Nm [lb-in]                  |         | Theoretical Torque - Nm [lb-in]  |                 |                   |                   |                   |                   |                   |   |             |
| 19.7 [.776]                                      |         | 35 [307] 69 [613] 139 [1226] 208 [1839] 277 [2452] 346 [3065] 416 [3678] 485 [4291]  |                 |                   |                   |                   |                   |                   |   |             |
| mm [in]  |         | Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS]   |                 |                   |                   |                   |                   |                   |   |             |

|   |         |  |                 |                   |                   |                   |                   |                   |   |             |
|---|---------|--|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|---|-------------|
|   |         | Pressure - bar [psi]   |                 |                   |                   |                   |                   |                   | Max. Cont.                              | Max. Inter. |
| <b>160</b>  |         | 17 [250]   | 35 [500]        | 69 [1000]         | 104 [1500]        | 138 [2000]        | 173 [2500]        | 207 [3000]        | 242 [3500]                              |             |
| 164 cm <sup>3</sup> [10.0 in <sup>3</sup> ] / rev |         |  |                 |                   |                   |                   |                   |                   |   |             |
|   |         | Torque - Nm [lb-in], Speed rpm   |                 |                   |                   |                   |                   |                   | Intermittent Ratings - 10% of Operation |             |
| Flow - lpm [gpm]                                  | 2 [0.5] | 24 [216]<br>11   | 61 [538]<br>11  | 143 [1267]<br>10  | 213 [1881]<br>9   | 287 [2536]<br>8   | 351 [3106]<br>7   | 411 [3640]<br>5   | 470 [4159]<br>4                         | 12          |
|   | 4 [1]   | 28 [244]<br>23   | 67 [596]<br>22  | 145 [1287]<br>21  | 215 [1899]<br>18  | 291 [2578]<br>16  | 355 [3145]<br>14  | 425 [3758]<br>13  | 493 [4366]<br>11                        | 24          |
|   | 8 [2]   |  | 66 [588]<br>46  | 148 [1306]<br>44  | 224 [1983]<br>39  | 301 [2666]<br>34  | 366 [3241]<br>32  | 441 [3904]<br>30  | 508 [4493]<br>28                        | 47          |
|   | 15 [4]  |  | 66 [584]<br>92  | 146 [1291]<br>91  | 226 [2002]<br>87  | 313 [2769]<br>80  | 375 [3318]<br>71  | 451 [3990]<br>67  | 516 [4569]<br>66                        | 93          |
|   | 23 [6]  |  | 62 [551]<br>137 | 146 [1295]<br>136 | 224 [1986]<br>134 | 307 [2718]<br>125 | 379 [3358]<br>119 | 449 [3975]<br>108 | 515 [4553]<br>106                       | 139         |
|   | 30 [8]  |  |                 | 142 [1258]<br>184 | 221 [1954]<br>182 | 299 [2644]<br>172 | 376 [3329]<br>161 | 447 [3952]<br>152 | 520 [4603]<br>146                       | 185         |
|   | 38 [10] |  |                 | 132 [1169]<br>230 | 216 [1909]<br>229 | 289 [2558]<br>222 | 371 [3282]<br>211 | 448 [3961]<br>195 | 520 [4598]<br>190                       | 231         |
|   | 45 [12] |  |                 | 129 [1144]<br>277 | 208 [1842]<br>275 | 284 [2510]<br>270 | 357 [3161]<br>261 | 436 [3862]<br>239 | 512 [4529]<br>228                       | 278         |
|   | 53 [14] |  |                 | 117 [1040]<br>323 | 202 [1788]<br>320 | 275 [2438]<br>316 | 353 [3124]<br>305 | 427 [3781]<br>291 | 509 [4508]<br>279                       | 324         |
|   | 61 [16] |  |                 | 103 [913]<br>369  | 187 [1659]<br>367 | 275 [2431]<br>364 | 338 [2994]<br>356 | 418 [3698]<br>341 | 496 [4392]<br>325                       | 370         |
|   | 68 [18] |  |                 | 91 [803]<br>415   | 175 [1553]<br>413 | 257 [2278]<br>410 | 325 [2874]<br>403 | 405 [3587]<br>389 | 480 [4246]<br>376                       | 416         |
|   | 76 [20] |  |                 |                   | 169 [1499]<br>461 | 246 [2176]<br>459 | 328 [2906]<br>447 | 397 [3514]<br>438 | 477 [4223]<br>422                       | 462         |
| 83 [22]   |         |  |                 | 147 [1297]<br>507 | 232 [2049]<br>504 | 315 [2792]<br>498 | 385 [3411]<br>487 |                   | 509                                     |             |
| 91 [24]   |         |  |                 | 131 [1157]<br>553 | 218 [1928]<br>550 | 300 [2655]<br>546 | 378 [3344]<br>531 |                   | 555                                     |             |
| 95 [25]   |         |  |                 | 121 [1073]<br>577 | 208 [1844]<br>573 | 291 [2577]<br>571 | 365 [3229]<br>557 |                   | 578                                     |             |
| Max. Cont.  |         |  |                 |                   |                   |                   |                   |                   |   |             |
| Max. Inter.                                       |         |  |                 |                   |                   |                   |                   |                   |   |             |
| Rotor Width                                       |         | Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/> |                 |                   |                   |                   |                   |                   |   |             |
| Theoretical Torque - Nm [lb-in]                   |         | Theoretical Torque - Nm [lb-in]  |                 |                   |                   |                   |                   |                   |   |             |
| 25.4 [1.000]                                      |         | 45 [398] 90 [796] 180 [1592] 270 [2389] 360 [3185] 450 [3981] 540 [4777] 630 [5573]  |                 |                   |                   |                   |                   |                   |   |             |
| mm [in]   |         | Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS]   |                 |                   |                   |                   |                   |                   |   |             |

► Performance data is typical. Performance of production units varies slightly from one motor to another.



**DISPLACEMENT PERFORMANCE**

|   |         | Pressure - bar [psi]  |                 |                   |                   |                   |                   | Max. Cont.        | Max. Inter.                             |     |
|---|---------|---|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|---|-----|
| <b>200</b>  |         | 17 [250]  | 35 [500]        | 69 [1000]         | 104 [1500]        | 138 [2000]        | 173 [2500]        | 207 [3000]        | 242 [3500]                              |     |
| 205 cm <sup>3</sup> [12.5 in <sup>3</sup> ] / rev |         |   |                 |                   |                   |                   |                   |                   | Intermittent Ratings - 10% of Operation |     |
|   |         | Torque - Nm [lb-in], Speed rpm  |                 |                   |                   |                   |                   |                   |   |     |
| Flow - lpm [gpm]                                  | 2 [0.5] | 35 [314]<br>9   | 83 [734]<br>9   | 179 [1581]<br>8   | 267 [2365]<br>7   | 353 [3121]<br>6   | 443 [3921]<br>5   | 505 [4469]<br>4   | 579 [5120]<br>3                         | 10  |
|   | 4 [1]   | 37 [325]<br>18  | 81 [721]<br>18  | 186 [1642]<br>17  | 287 [2536]<br>14  | 301 [2665]<br>13  | 452 [4004]<br>11  | 540 [4777]<br>9   | 611 [5406]<br>8                         | 19  |
|   | 8 [2]   | 39 [349]<br>36  | 89 [790]<br>36  | 199 [1759]<br>35  | 295 [2610]<br>31  | 386 [3412]<br>27  | 473 [4185]<br>24  | 554 [4904]<br>21  | 643 [5687]<br>20                        | 37  |
|   | 15 [4]  | 38 [338]<br>73  | 87 [766]<br>73  | 191 [1689]<br>72  | 292 [2586]<br>68  | 386 [3417]<br>61  | 480 [4252]<br>53  | 574 [5077]<br>49  | 661 [5849]<br>46                        | 74  |
|   | 23 [6]  |   | 84 [742]<br>110 | 185 [1635]<br>109 | 287 [2542]<br>106 | 382 [3380]<br>98  | 480 [4247]<br>89  | 570 [5046]<br>81  | 657 [5817]<br>74                        | 111 |
|   | 30 [8]  |   |                 | 176 [1556]<br>147 | 279 [2468]<br>144 | 376 [3327]<br>136 | 479 [4243]<br>123 | 571 [5051]<br>112 | 658 [5827]<br>104                       | 148 |
|   | 38 [10] |   |                 | 166 [1471]<br>184 | 268 [2374]<br>182 | 368 [3256]<br>173 | 467 [4131]<br>162 | 556 [4923]<br>151 | 651 [5761]<br>141                       | 185 |
|   | 45 [12] |   |                 | 154 [1361]<br>221 | 257 [2275]<br>219 | 360 [3185]<br>214 | 460 [4069]<br>200 | 558 [4939]<br>187 | 650 [5751]<br>176                       | 222 |
|   | 53 [14] |   |                 | 147 [1304]<br>258 | 245 [2165]<br>256 | 355 [3141]<br>250 | 441 [3906]<br>238 | 539 [4773]<br>224 | 640 [5666]<br>213                       | 259 |
|   | 61 [16] |   |                 | 123 [1089]<br>295 | 235 [2083]<br>290 | 333 [2949]<br>286 | 429 [3797]<br>277 | 523 [4628]<br>264 | 624 [5519]<br>242                       | 296 |
|   | 68 [18] |   |                 | 112 [993]<br>331  | 220 [1943]<br>327 | 302 [2669]<br>323 | 414 [3665]<br>319 | 527 [4659]<br>303 | 616 [5451]<br>289                       | 333 |
|   | 76 [20] |   |                 |                   | 197 [1745]<br>369 | 310 [2740]<br>365 | 395 [3499]<br>360 | 492 [4353]<br>343 | 596 [5273]<br>331                       | 370 |
|   | 83 [22] |   |                 |                   | 172 [1525]<br>405 | 282 [2496]<br>401 | 386 [3420]<br>395 | 480 [4252]<br>382 |   | 407 |
|   | 91 [24] |   |                 |                   | 157 [1390]<br>442 | 265 [2341]<br>441 | 369 [3269]<br>438 | 453 [4005]<br>425 |   | 444 |
| 95 [25]   |         |   |                 | 139 [1229]<br>460 | 252 [2234]<br>458 | 349 [3087]<br>456 | 447 [3955]<br>444 |                   | 462                                     |     |
|   |         | Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input checked="" type="checkbox"/> |                 |                   |                   |                   |                   |                   |   |     |
| Rotor Width                                       |         | Theoretical Torque - Nm [lb-in]   |                 |                   |                   |                   |                   |                   |   |     |
| 31.8 [1.251]                                      |         | 56 [498]  | 112 [995]       | 225 [1990]        | 337 [2986]        | 450 [3981]        | 562 [4976]        | 675 [5971]        | 787 [6967]                              |     |
| mm [in]   |         | Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS]  |                 |                   |                   |                   |                   |                   |   |     |

|   |         | Pressure - bar [psi]  |                  |                   |                   |                   |                   | Max. Cont.        | Max. Inter.                             |     |
|---|---------|---|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---|-----|
| <b>250</b>  |         | 17 [250]  | 35 [500]         | 69 [1000]         | 104 [1500]        | 138 [2000]        | 173 [2500]        | 207 [3000]        | 242 [3500]                              |     |
| 254 cm <sup>3</sup> [15.5 in <sup>3</sup> ] / rev |         |   |                  |                   |                   |                   |                   |                   | Intermittent Ratings - 10% of Operation |     |
|   |         | Torque - Nm [lb-in], Speed rpm  |                  |                   |                   |                   |                   |                   |   |     |
| Flow - lpm [gpm]                                  | 2 [0.5] | 43 [381]<br>7   | 104 [924]<br>6   | 221 [1955]<br>6   | 339 [3001]<br>5   | 449 [3974]<br>3   | 551 [4872]<br>1   |                   |   | 8   |
|   | 4 [1]   | 50 [439]<br>14  | 115 [1014]<br>14 | 240 [2128]<br>13  | 361 [3196]<br>11  | 466 [4128]<br>9   | 574 [5080]<br>7   | 668 [5907]<br>4   |   | 15  |
|   | 8 [2]   | 51 [455]<br>29  | 115 [1014]<br>29 | 245 [2167]<br>28  | 369 [3262]<br>26  | 479 [4236]<br>22  | 604 [5342]<br>17  | 712 [6303]<br>13  | 800 [7082]<br>9                         | 30  |
|   | 15 [4]  | 48 [428]<br>59  | 105 [930]<br>58  | 242 [2145]<br>57  | 371 [3286]<br>56  | 493 [4363]<br>51  | 619 [5480]<br>41  | 741 [6555]<br>33  | 847 [7496]<br>25                        | 60  |
|   | 23 [6]  | 42 [368]<br>89  | 110 [969]<br>88  | 234 [2069]<br>88  | 367 [3252]<br>87  | 487 [4313]<br>82  | 626 [5542]<br>69  | 747 [6611]<br>58  | 847 [7492]<br>48                        | 90  |
|   | 30 [8]  |   | 92 [818]<br>119  | 223 [1978]<br>118 | 357 [3159]<br>117 | 490 [4332]<br>115 | 622 [5508]<br>101 | 744 [6587]<br>87  | 846 [7490]<br>76                        | 120 |
|   | 38 [10] |   | 80 [712]<br>149  | 209 [1849]<br>148 | 342 [3025]<br>147 | 472 [4176]<br>141 | 605 [5353]<br>129 | 717 [6345]<br>114 | 844 [7472]<br>104                       | 150 |
|   | 45 [12] |   |                  | 199 [1757]<br>178 | 329 [2915]<br>176 | 455 [4022]<br>174 | 581 [5142]<br>165 | 703 [6225]<br>147 | 833 [7375]<br>127                       | 179 |
|   | 53 [14] |   |                  | 182 [1640]<br>208 | 310 [2743]<br>206 | 443 [3919]<br>205 | 567 [5017]<br>197 | 711 [6296]<br>176 | 817 [7227]<br>158                       | 209 |
|   | 61 [16] |   |                  | 164 [1456]<br>238 | 294 [2603]<br>235 | 438 [3873]<br>233 | 552 [4886]<br>227 | 674 [5960]<br>205 | 804 [7114]<br>191                       | 239 |
|   | 68 [18] |   |                  | 145 [1285]<br>268 | 270 [2393]<br>266 | 402 [3560]<br>263 | 530 [4694]<br>259 | 661 [5846]<br>245 | 784 [6939]<br>222                       | 269 |
|   | 76 [20] |   |                  | 122 [1083]<br>298 | 255 [2256]<br>295 | 380 [3359]<br>292 | 511 [4519]<br>289 | 627 [5547]<br>277 | 757 [6697]<br>252                       | 299 |
|   | 83 [22] |   |                  |                   | 221 [1955]<br>326 | 353 [3124]<br>323 | 484 [4279]<br>319 | 607 [5368]<br>307 |   | 328 |
|   | 91 [24] |   |                  |                   | 201 [1775]<br>357 | 336 [2973]<br>355 | 461 [4082]<br>353 | 599 [5297]<br>342 |   | 358 |
| 95 [25]   |         |   |                  | 184 [1627]<br>371 | 313 [2768]<br>368 | 442 [3915]<br>365 | 575 [5088]<br>360 |                   | 373                                     |     |
|   |         | Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input checked="" type="checkbox"/> |                  |                   |                   |                   |                   |                   |   |     |
| Rotor Width                                       |         | Theoretical Torque - Nm [lb-in]   |                  |                   |                   |                   |                   |                   |   |     |
| 39.4 [1.551]                                      |         | 70 [617]  | 139 [1234]       | 279 [2468]        | 418 [3702]        | 558 [4936]        | 697 [6170]        | 837 [7404]        | 976 [8639]                              |     |
| mm [in]   |         | Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS]  |                  |                   |                   |                   |                   |                   |   |     |

► Performance data is typical. Performance of production units varies slightly from one motor to another.





DISPLACEMENT PERFORMANCE

|            |                      |          |           |            |            |            |            |            |             |
|------------|----------------------|----------|-----------|------------|------------|------------|------------|------------|-------------|
| <b>300</b> | Pressure - bar [psi] |          |           |            |            |            |            | Max. Cont. | Max. Inter. |
|            | 17 [250]             | 35 [500] | 69 [1000] | 104 [1500] | 138 [2000] | 173 [2500] | 207 [3000] | 242 [3500] |             |

293 cm<sup>3</sup> [17.9 in<sup>3</sup>] / rev

Intermittent Ratings - 10% of Operation

|                  |                                |                  |                   |                   |                   |                   |                   |                   |                 |
|------------------|--------------------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------|
| Flow - lpm [gpm] | Torque - Nm [lb-in], Speed rpm |                  |                   |                   |                   |                   |                   |                   | Theoretical rpm |
|                  | 2 [0.5]                        | 61 [543]<br>6    | 118 [1044]<br>5   | 261 [2311]<br>5   | 388 [3433]<br>4   |                   |                   |                   |                 |
| 4 [1]            | 59 [521]<br>12                 | 140 [1237]<br>12 | 271 [2397]<br>11  | 414 [3666]<br>11  | 546 [4833]<br>8   | 681 [6025]<br>5   |                   |                   | 13              |
| 8 [2]            | 61 [541]<br>25                 | 128 [1134]<br>25 | 281 [2490]<br>24  | 425 [3761]<br>23  | 562 [4970]<br>19  | 693 [6128]<br>14  | 820 [7259]<br>10  | 915 [8095]<br>4   | 26              |
| 15 [4]           | 52 [461]<br>51                 | 128 [1130]<br>51 | 275 [2436]<br>50  | 427 [3782]<br>50  | 578 [5119]<br>44  | 715 [6327]<br>32  | 827 [7317]<br>25  | 956 [8457]<br>19  | 52              |
| 23 [6]           |                                | 115 [1017]<br>77 | 266 [2351]<br>76  | 406 [3592]<br>75  | 557 [4931]<br>70  | 706 [6250]<br>55  | 840 [7435]<br>43  | 945 [8361]<br>37  | 78              |
| 30 [8]           |                                | 107 [951]<br>103 | 251 [2223]<br>102 | 407 [3598]<br>101 | 538 [4759]<br>96  | 691 [6117]<br>82  | 832 [7359]<br>66  | 948 [8393]<br>52  | 104             |
| 38 [10]          |                                | 88 [779]<br>129  | 229 [2026]<br>127 | 393 [3475]<br>126 | 528 [4672]<br>122 | 672 [5950]<br>109 | 826 [7307]<br>90  | 959 [8487]<br>74  | 130             |
| 45 [12]          |                                |                  | 217 [1923]<br>154 | 368 [3256]<br>153 | 504 [4457]<br>150 | 663 [5864]<br>133 | 800 [7076]<br>112 | 931 [8239]<br>97  | 155             |
| 53 [14]          |                                |                  | 201 [1782]<br>180 | 347 [3067]<br>178 | 510 [4513]<br>173 | 646 [5713]<br>161 | 798 [7060]<br>140 | 921 [8149]<br>114 | 181             |
| 61 [16]          |                                |                  | 168 [1491]<br>206 | 324 [2865]<br>204 | 472 [4180]<br>201 | 621 [5492]<br>188 | 764 [6765]<br>171 | 917 [8112]<br>142 | 207             |
| 68 [18]          |                                |                  | 143 [1266]<br>232 | 298 [2638]<br>230 | 427 [3783]<br>227 | 591 [5234]<br>220 | 745 [6591]<br>198 | 878 [7773]<br>176 | 233             |
| 76 [20]          |                                |                  | 114 [1013]<br>258 | 283 [2501]<br>256 | 443 [3916]<br>254 | 597 [5284]<br>247 | 717 [6344]<br>227 | 849 [7512]<br>206 | 259             |
| 83 [22]          |                                |                  |                   | 246 [2179]<br>282 | 397 [3512]<br>280 | 559 [4943]<br>274 | 681 [6023]<br>257 |                   | 284             |
| 91 [24]          |                                |                  |                   | 181 [1601]<br>309 | 357 [3159]<br>306 | 502 [4442]<br>304 | 642 [5684]<br>294 |                   | 310             |
| 95 [25]          |                                |                  |                   | 166 [1466]<br>321 | 323 [2858]<br>319 | 491 [4347]<br>318 | 630 [5577]<br>300 |                   | 323             |

Rotor Width

|              |
|--------------|
| 45.5 [1.790] |
|--------------|

mm [in]

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - Nm [lb-in]

|          |            |            |            |            |            |            |             |
|----------|------------|------------|------------|------------|------------|------------|-------------|
| 81 [713] | 161 [1425] | 322 [2850] | 483 [4275] | 644 [5701] | 805 [7126] | 966 [8551] | 1127 [9976] |
|----------|------------|------------|------------|------------|------------|------------|-------------|

Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS]

|            |                      |          |           |            |            |            |            |            |      |
|------------|----------------------|----------|-----------|------------|------------|------------|------------|------------|------|
| <b>400</b> | Pressure - bar [psi] |          |           |            |            |            |            | Max. Cont. | Peak |
|            | 17 [250]             | 35 [500] | 69 [1000] | 104 [1500] | 138 [2000] | 173 [2500] | 207 [3000] |            |      |

409 cm<sup>3</sup> [24.9 in<sup>3</sup>] / rev

Intermittent Ratings - 10% of Operation

|                  |                                |                   |                   |                   |                   |                   |                    |  |                 |
|------------------|--------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--|-----------------|
| Flow - lpm [gpm] | Torque - Nm [lb-in], Speed rpm |                   |                   |                   |                   |                   |                    |  | Theoretical rpm |
|                  | 2 [0.5]                        | 85 [757]<br>4     | 193 [1710]<br>4   | 367 [3248]<br>3   | 534 [4721]<br>2   |                   |                    |  |                 |
| 4 [1]            | 88 [776]<br>9                  | 185 [1640]<br>8   | 383 [3386]<br>8   | 580 [5129]<br>6   | 745 [6590]<br>4   | 899 [7954]<br>1   |                    |  | 10              |
| 8 [2]            | 86 [762]<br>18                 | 196 [1734]<br>18  | 394 [3487]<br>17  | 586 [5184]<br>15  | 764 [6763]<br>11  | 927 [8204]<br>5   |                    |  | 19              |
| 15 [4]           | 85 [749]<br>37                 | 188 [1661]<br>36  | 404 [3571]<br>35  | 602 [5325]<br>32  | 796 [7047]<br>24  | 962 [8517]<br>18  | 1108 [9804]<br>9   |  | 38              |
| 23 [6]           | 71 [629]<br>55                 | 180 [1593]<br>55  | 387 [3428]<br>54  | 596 [5274]<br>49  | 787 [6969]<br>39  | 978 [8653]<br>28  | 1141 [10094]<br>20 |  | 56              |
| 30 [8]           |                                | 165 [1462]<br>74  | 373 [3299]<br>73  | 595 [5264]<br>69  | 792 [7010]<br>58  | 966 [8552]<br>44  | 1149 [10167]<br>31 |  | 75              |
| 38 [10]          |                                | 143 [1269]<br>92  | 356 [3150]<br>90  | 581 [5144]<br>88  | 782 [6923]<br>79  | 974 [8617]<br>62  | 1156 [10231]<br>45 |  | 93              |
| 45 [12]          |                                | 122 [1076]<br>111 | 333 [2950]<br>109 | 545 [4823]<br>107 | 749 [6624]<br>98  | 957 [8470]<br>83  | 1143 [10116]<br>61 |  | 112             |
| 53 [14]          |                                | 95 [842]<br>129   | 313 [2774]<br>128 | 521 [4607]<br>126 | 717 [6344]<br>117 | 931 [8235]<br>103 | 1131 [10007]<br>78 |  | 130             |
| 61 [16]          |                                |                   | 282 [2493]<br>147 | 496 [4385]<br>145 | 685 [6063]<br>141 | 919 [8131]<br>121 | 1100 [9733]<br>100 |  | 149             |
| 68 [18]          |                                |                   | 244 [2156]<br>166 | 453 [4009]<br>165 | 681 [6023]<br>158 | 871 [7708]<br>142 | 1071 [9478]<br>121 |  | 167             |
| 76 [20]          |                                |                   | 197 [1741]<br>185 | 420 [3713]<br>183 | 650 [5756]<br>179 | 838 [7417]<br>166 | 1051 [9302]<br>145 |  | 186             |
| 83 [22]          |                                |                   | 164 [1448]<br>203 | 378 [3344]<br>201 | 588 [5200]<br>198 | 810 [7171]<br>186 |                    |  | 205             |
| 91 [24]          |                                |                   |                   | 333 [2947]<br>222 | 559 [4945]<br>220 | 750 [6640]<br>211 |                    |  | 223             |
| 95 [25]          |                                |                   |                   | 303 [2682]<br>231 | 539 [4773]<br>228 | 764 [6760]<br>221 |                    |  | 232             |

Rotor Width

|              |
|--------------|
| 63.5 [2.500] |
|--------------|

mm [in]

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - Nm [lb-in]

|           |            |            |            |            |             |              |
|-----------|------------|------------|------------|------------|-------------|--------------|
| 112 [991] | 224 [1982] | 448 [3965] | 672 [5947] | 896 [7930] | 1120 [9912] | 1344 [11895] |
|-----------|------------|------------|------------|------------|-------------|--------------|

Displacement tested at 54°C [129°F] with an oil viscosity of 46cSt [213 SUS]

► Performance data is typical. Performance of production units varies slightly from one motor to another.

**PORTING**

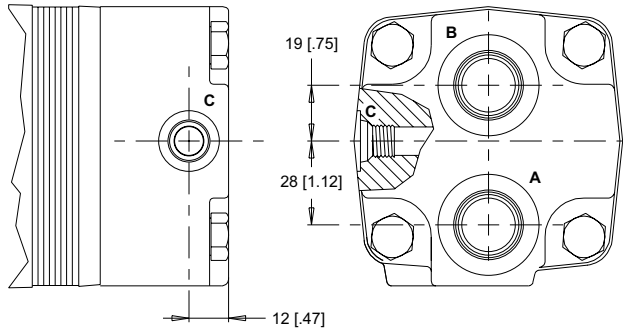
► Dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

**END PORTED - ALIGNED**

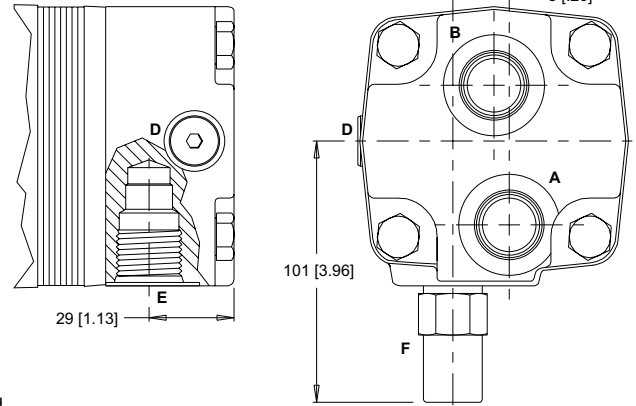
**1** Main Ports **A, B:** 7/8-14 UNF  
Drain Port **C:** 7/16-20 UNF

**2** Main Ports **A, B:** G 1/2  
Drain Port **C:** G 1/4

**STANDARD**



**OPTIONAL**



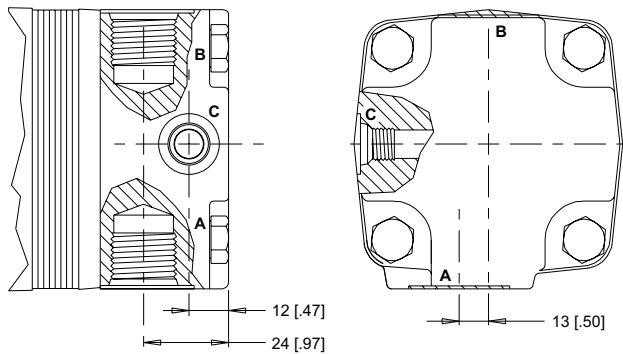
D: Internal Drain E: 10 Series/2-Way Valve Cavity 7/8-14 UNF F: Valve Cartridge Installed

**SIDE PORTED - 180° OPPOSED**

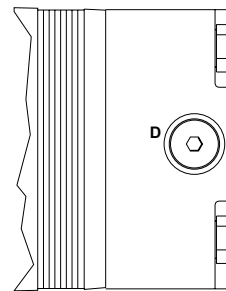
**6** Main Ports **A, B:** 1 1/16-20 UN  
Drain Port **C:** 7/16-20 UNF

**7** Main Ports **A, B:** G 1/2  
Drain Port **C:** G 1/4

**STANDARD**



**OPTIONAL**

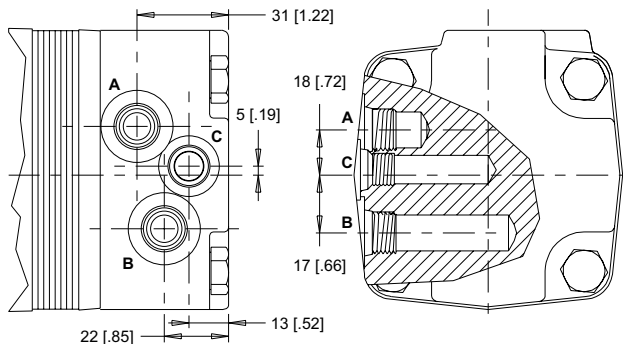


D: Internal Drain

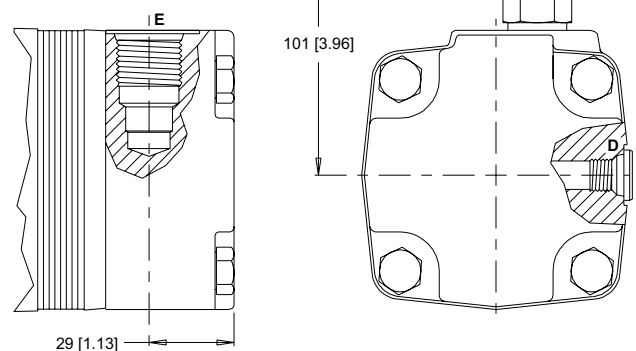
**SIDE PORTED - OFFSET**

**5** Main Ports **A, B:** 9/16-18 UNF  
Drain Port **C:** 7/16-20 UNF

**STANDARD**



**OPTIONAL**



D: Internal Drain E: 10 Series/2-Way Valve Cavity 7/8-14 UNF F: Valve Cartridge Installed



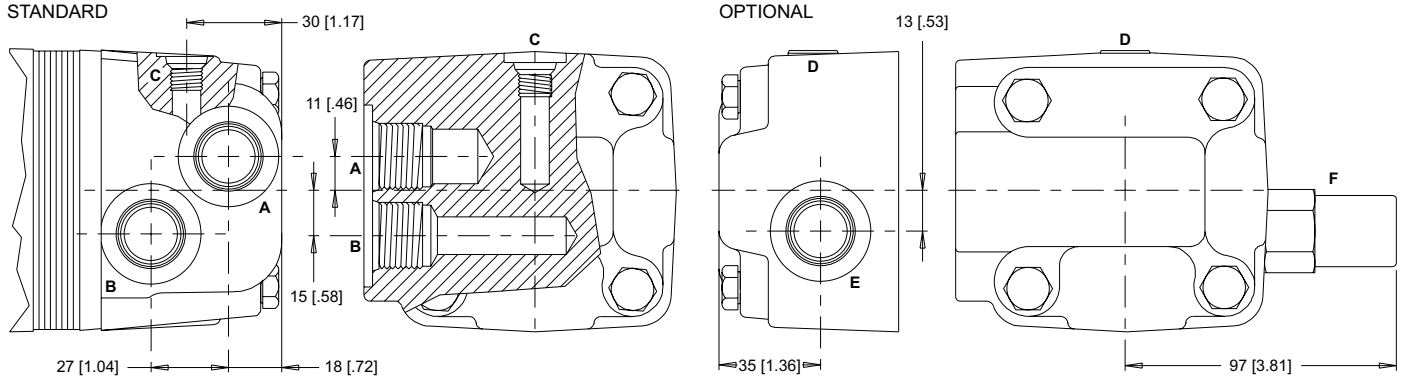
**PORTING**

► Dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

**SIDE PORTED - OFFSET**

**1** Main Ports **A, B:** 7/8-14 UNF  
Drain Port **C:** 7/16-20 UNF

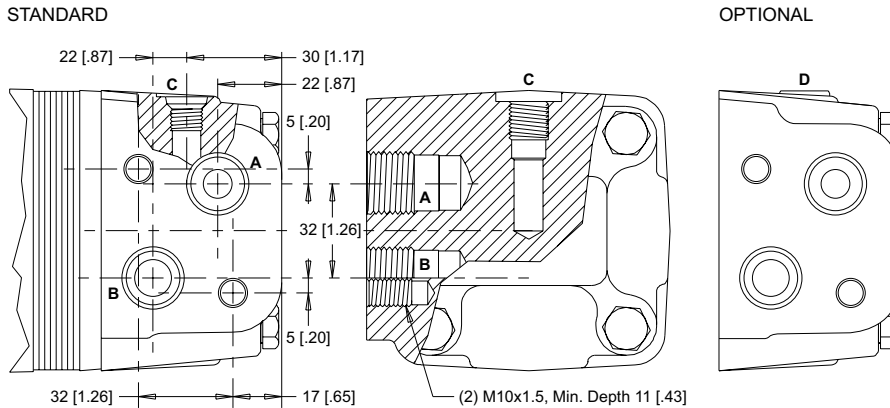
**2** Main Ports **A, B:** G 1/2  
Drain Port **C:** G 1/4



D: Internal Drain E: 10 Series/2-Way Valve Cavity 7/8-14 UNF F: Valve Cartridge Installed

**SIDE PORTED - OFFSET MANIFOLD**

**3** Main Ports **A, B:** G 1/2  
Drain Port **C:** G 1/4



D: Internal Drain

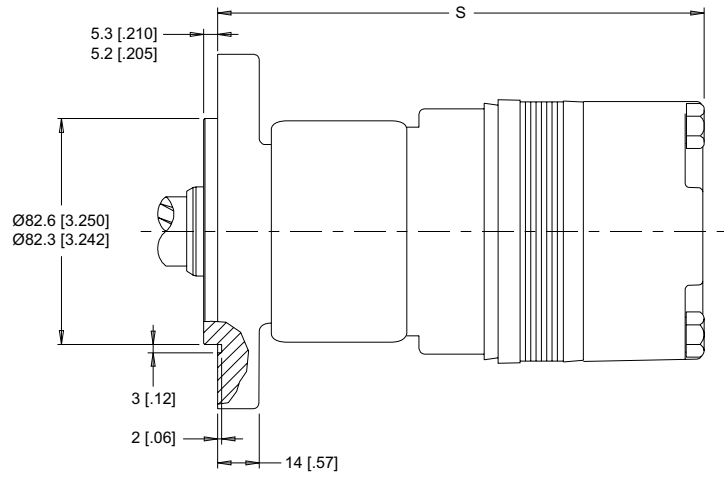
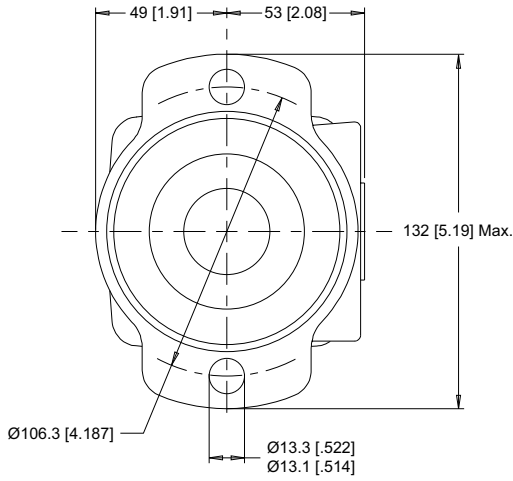


**HOUSINGS**

► Dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

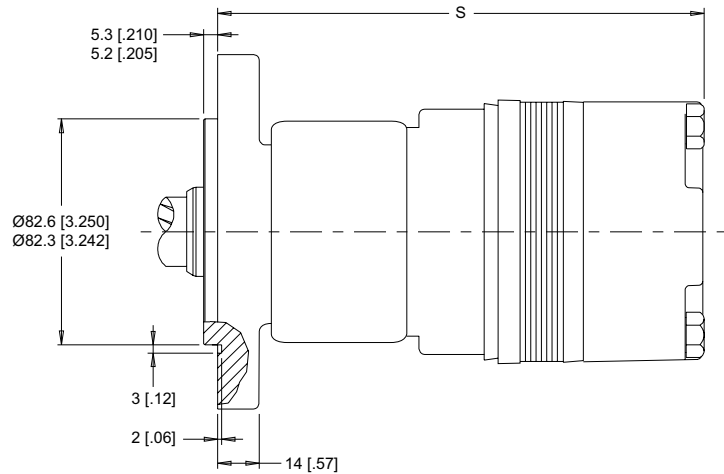
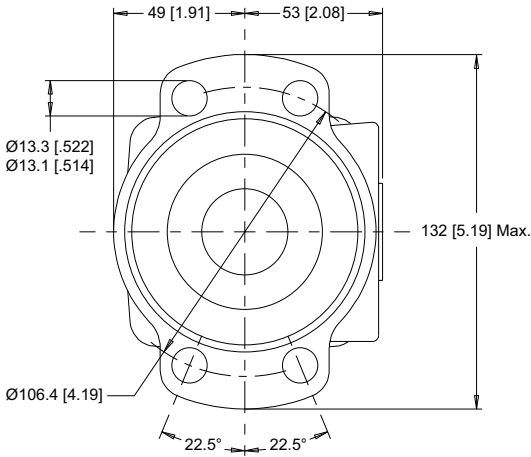
**2-HOLE, SAE A MOUNT**

**A0** End Ports    **A7** Side Ports



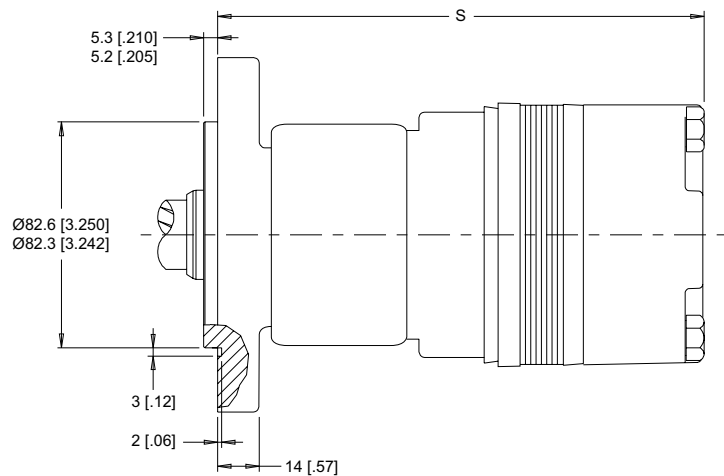
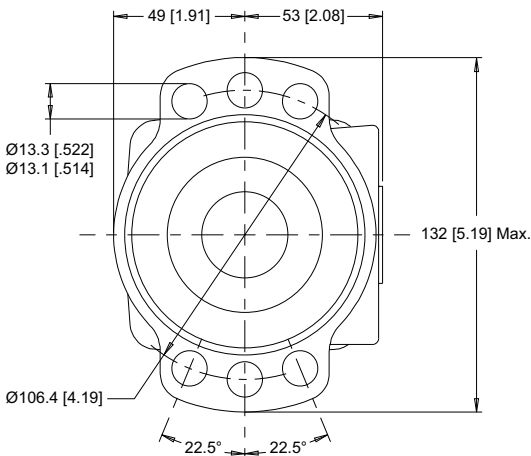
**4-HOLE, MAGNETO MOUNT**

**A2** End Ports    **A8** Side Ports



**6-HOLE, SAE A MOUNT**

**A4** End Ports    **A9** Side Ports



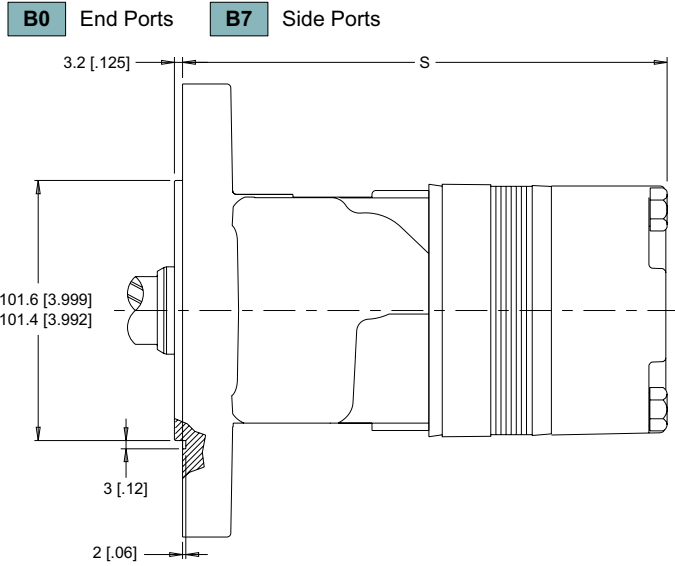
► Dimension S is charted on page 12. Porting options listed on pages 8-9.



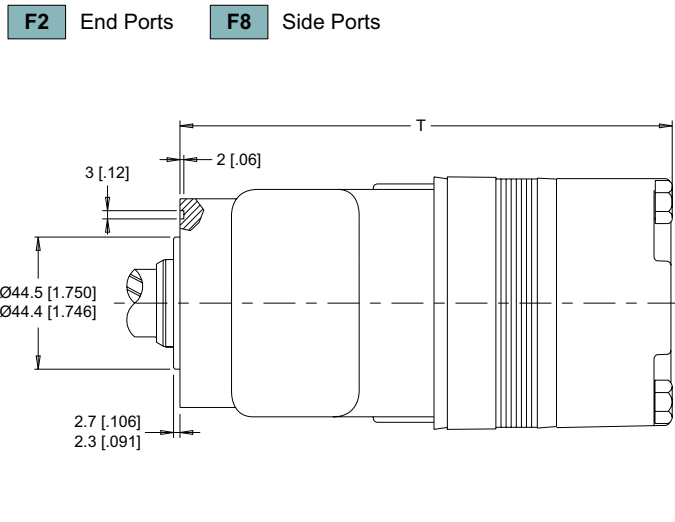
**HOUSINGS**

► Dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

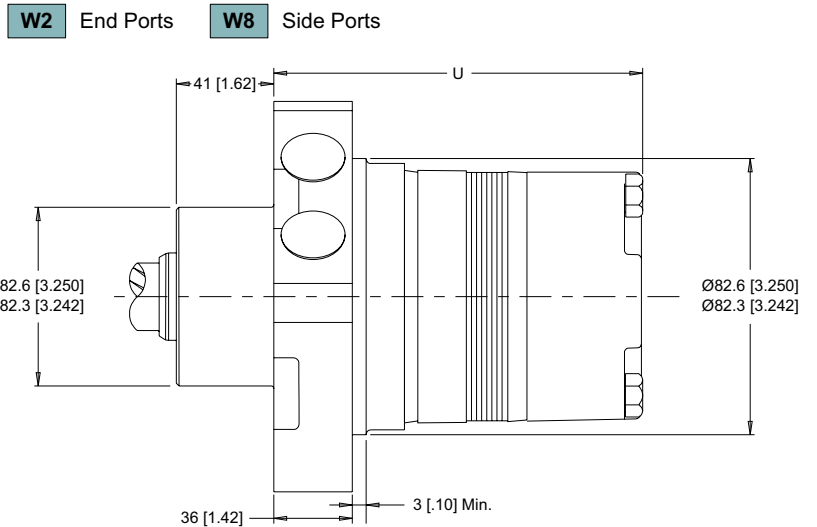
**2-HOLE, SAE B MOUNT**



**4-HOLE, SQUARE MOUNT**



**4-HOLE, WHEEL MOUNT**



► Dimensions S & T are charted on page 12. Dimension U is charted on page 13. Porting options listed on pages 8-9.

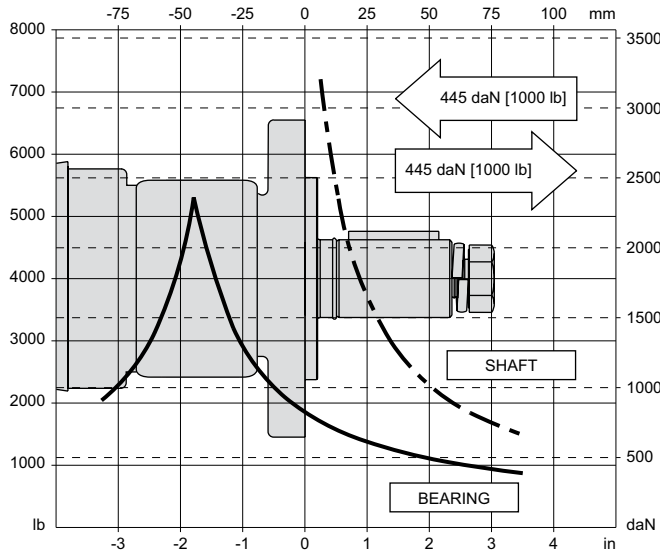


**TECHNICAL INFORMATION**

**ALLOWABLE SHAFT LOAD / BEARING CURVE**

The bearing curve represents allowable bearing loads based on ISO 281 bearing capacity for an  $L_{10}$  life of 2,000 hours at 100 rpm. Radial loads for speeds other than 100 rpm may be calculated using the multiplication factor table below.

**SAE A & B MOUNTS**



**LENGTH & WEIGHT CHART**

Dimension S is the overall motor length from the rear of the motor to the mounting flange surface and is referenced on detailed housing drawings listed on pages 10 & 11.

| S   | Endcovers on pg. 8 | Endcovers on pg. 9 | Weight      |
|-----|--------------------|--------------------|-------------|
| #   | mm [in]            | mm [in]            | kg [lb]     |
| 050 | 177 [6.97]         | 195 [7.68]         | 8.8 [19.5]  |
| 080 | 181 [7.11]         | 199 [7.82]         | 9.1 [20.0]  |
| 090 | 183 [7.19]         | 201 [7.90]         | 9.2 [20.2]  |
| 110 | 186 [7.33]         | 204 [8.04]         | 9.4 [20.7]  |
| 125 | 189 [7.43]         | 207 [8.14]         | 9.5 [21.0]  |
| 160 | 194 [7.65]         | 212 [8.36]         | 9.8 [21.7]  |
| 200 | 201 [7.90]         | 219 [8.61]         | 10.2 [22.5] |
| 250 | 208 [8.20]         | 226 [8.91]         | 10.6 [23.4] |
| 300 | 214 [8.44]         | 232 [9.15]         | 11.0 [24.3] |
| 400 | 233 [9.15]         | 251 [9.86]         | 12.0 [26.4] |

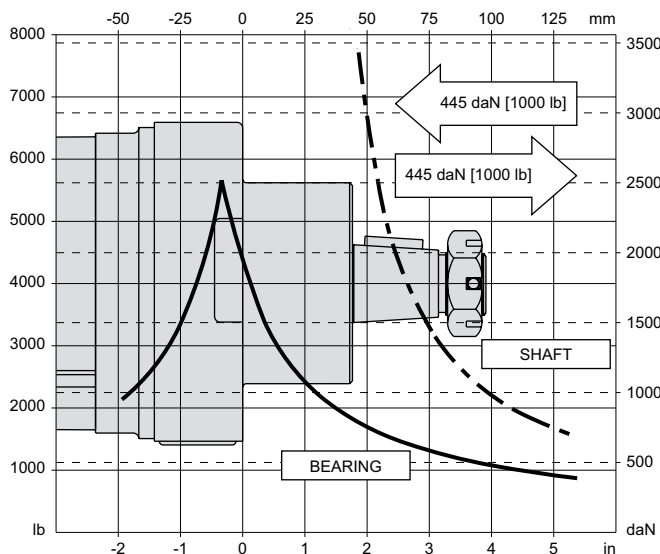
► Add 1.2 kg [2.7 lb] to the weight listed to the right for SAE B mount housings.

Dimension T is the overall motor length from the rear of the motor to the mounting flange surface and is referenced on detailed housing drawings listed on page 11.

| T   | Endcovers on pg. 8 | Endcovers on pg. 9 | Weight      |
|-----|--------------------|--------------------|-------------|
| #   | mm [in]            | mm [in]            | kg [lb]     |
| 050 | 180 [7.09]         | 198 [7.80]         | 8.3 [18.4]  |
| 080 | 184 [7.23]         | 202 [7.94]         | 8.6 [18.9]  |
| 090 | 186 [7.31]         | 204 [8.02]         | 8.7 [19.1]  |
| 110 | 189 [7.45]         | 207 [8.16]         | 8.9 [19.6]  |
| 125 | 192 [7.55]         | 210 [8.26]         | 9.0 [19.9]  |
| 160 | 197 [7.77]         | 215 [8.48]         | 9.3 [20.6]  |
| 200 | 204 [8.02]         | 222 [8.73]         | 9.7 [21.4]  |
| 250 | 211 [8.32]         | 229 [9.03]         | 10.1 [22.3] |
| 300 | 218 [8.56]         | 236 [9.27]         | 10.5 [23.2] |
| 400 | 236 [9.27]         | 254 [9.98]         | 11.5 [25.3] |

► 300 series motor weights can vary  $\pm$  1kg [2 lb] depending on model configurations such as housing, shaft, endcover, options etc.

**WHEEL MOUNTS**



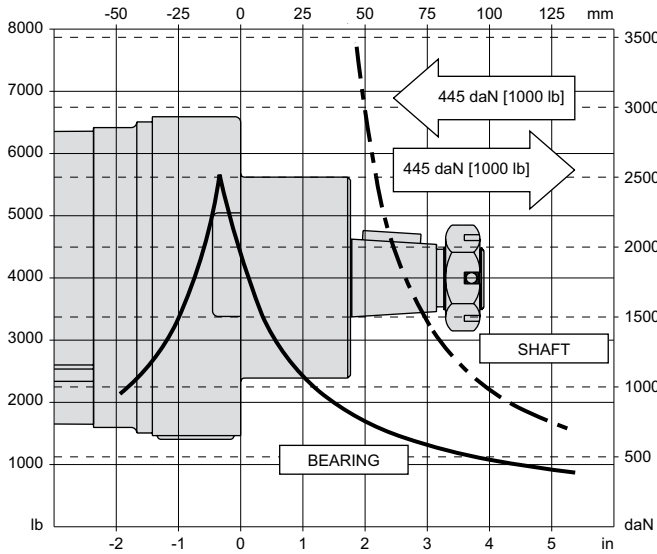
| BEARING LOAD MULTIPLICATION FACTOR TABLE |        |     |        |
|--|--------|-----|--------|
| RPM                                      | FACTOR | RPM | FACTOR |
| 50                                       | 1.23   | 500 | 0.62   |
| 100                                      | 1.00   | 600 | 0.58   |
| 200                                      | 0.81   | 700 | 0.56   |
| 300                                      | 0.72   | 800 | 0.50   |
| 400                                      | 0.66   |     |        |

**TECHNICAL INFORMATION**

**ALLOWABLE SHAFT LOAD / BEARING CURVE**

The bearing curve represents allowable bearing loads based on ISO 281 bearing capacity for an  $L_{10}$  life of 2,000 hours at 100 rpm. Radial loads for speeds other than 100 rpm may be calculated using the multiplication factor table on page 12.

**WHEEL MOUNTS**



**LENGTH & WEIGHT CHART**

Dimension U is the overall motor length from the rear of the motor to the mounting flange surface and is referenced on detailed housing drawings listed on page 11.

| U # | Endcovers on pg. 8<br>mm [in] | Endcovers on pg. 9<br>mm [in] | Weight<br>kg [lb] |
|-----|-------------------------------|-------------------------------|-------------------|
| 050 | 140 [5.51]                    | 158 [6.22]                    | 11.5 [25.3]       |
| 080 | 144 [5.65]                    | 162 [6.36]                    | 11.7 [25.7]       |
| 090 | 145 [5.70]                    | 163 [6.41]                    | 11.8 [25.9]       |
| 110 | 148 [5.84]                    | 166 [6.55]                    | 12.0 [26.5]       |
| 125 | 151 [5.93]                    | 169 [6.64]                    | 12.1 [26.7]       |
| 160 | 156 [6.16]                    | 174 [6.87]                    | 12.4 [27.4]       |
| 200 | 163 [6.41]                    | 181 [7.12]                    | 12.8 [28.3]       |
| 250 | 170 [6.71]                    | 188 [7.42]                    | 13.2 [29.7]       |
| 300 | 177 [6.95]                    | 195 [7.66]                    | 13.6 [30.0]       |
| 400 | 195 [7.61]                    | 213 [8.37]                    | 14.6 [32.1]       |

► 300 series motor weights can vary  $\pm$  1kg [2 lb] depending on model configurations such as housing, shaft, endcover, options etc.

**MOUNTING / SHAFT LENGTH CHART**

Dimension V is the overall distance from the motor mounting surface to the end of the shaft and is referenced on detailed housing drawings listed on page 14.

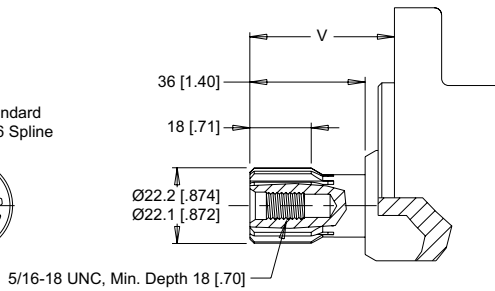
| V # | SAE A & B Mounts<br>mm [in] | Wheel Mounts<br>mm [in] | Square Mounts<br>mm [in] |
|-----|-----------------------------|-------------------------|--------------------------|
| 01  | 44 [1.75]                   | 82 [3.21]               | 41 [1.63]                |
| 02  | 49 [1.93]                   | 86 [3.39]               | 46 [1.81]                |
| 07  | 81 [3.18]                   | 118 [4.65]              | 78 [3.07]                |
| 08  | 81 [3.18]                   | 118 [4.65]              | 78 [3.07]                |
| 10  | 49 [1.93]                   | 86 [3.39]               | 46 [1.81]                |
| 12  | 55 [2.17]                   | 92 [3.63]               | 52 [2.05]                |
| 15  | 69 [2.73]                   | 106 [4.19]              | 66 [2.61]                |
| 20  | 61 [2.40]                   | 99 [3.87]               | 58 [2.29]                |
| 21  | 61 [2.40]                   | 98 [3.87]               | 58 [2.29]                |
| 22  | 66 [2.58]                   | 103 [4.04]              | 63 [2.46]                |
| 23  | 57 [2.23]                   | 94 [3.69]               | 54 [2.11]                |



**SHAFTS**

**01** 7/8" 13 Tooth Spline

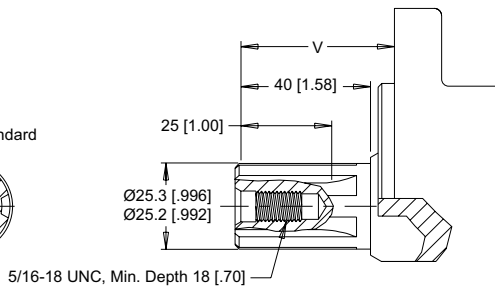
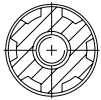
16/32 Pitch Standard  
ANSI B92.1-1996 Spline



Max. Torque: 170 Nm [1500 lb-in]

**02** 1" 6B Spline

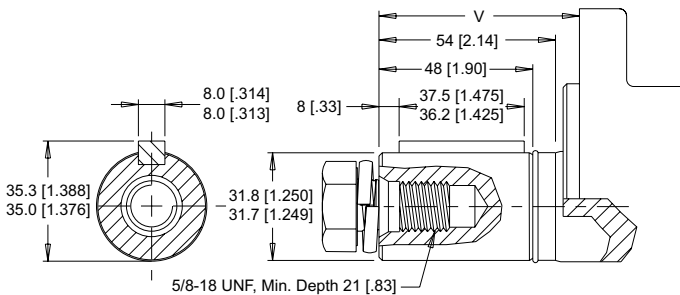
6B Spline  
SAE J499 Standard



Max. Torque: 678 Nm [6000 lb-in]

**07** 1-1/4" Straight Extended

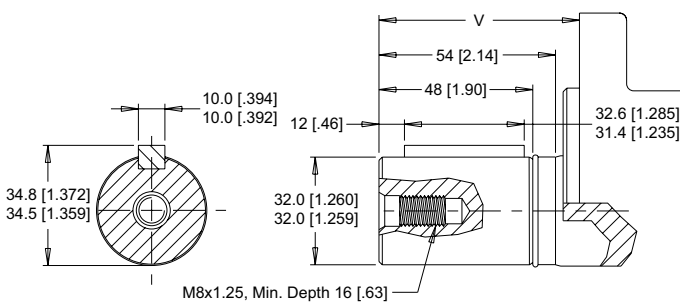
**20** 1-1/4" Straight



Max. Torque: 882 Nm [7804 lb-in]

**08** 32mm Straight Extended

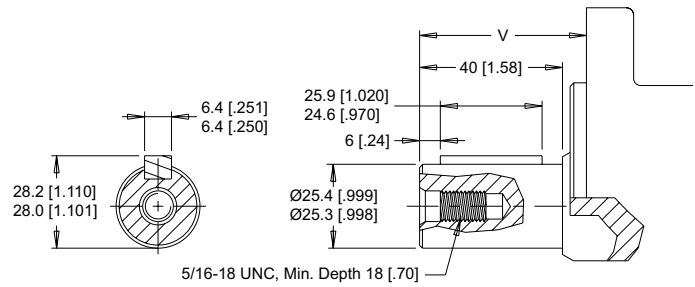
**21** 32mm Straight



Max. Torque: 882 Nm [7804 lb-in]

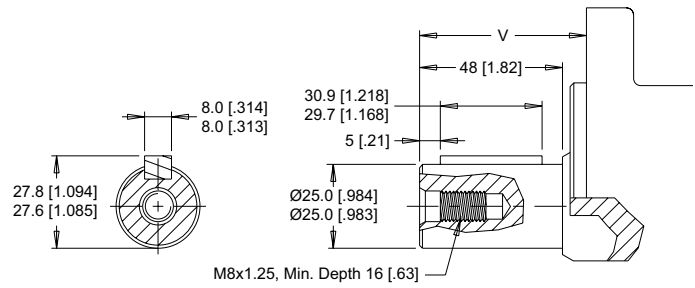
**10** 1" Straight

**15** 1" Straight Extended



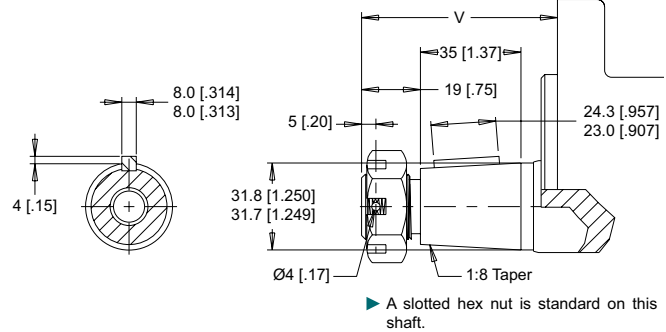
Max. Torque: 655 Nm [5800 lb-in]

**12** 25mm Straight



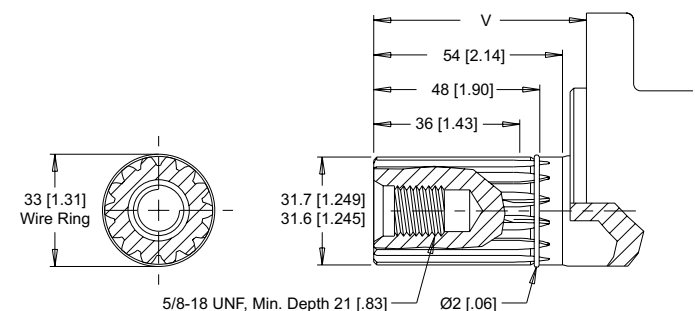
Max. Torque: 678 Nm [6000 lb-in]

**22** 1-1/4" Tapered



Max. Torque: 882 Nm [7804 lb-in]

**23** 14 Tooth Spline



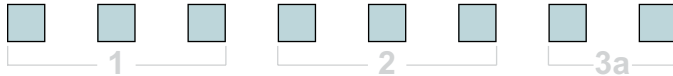
Max. Torque: 882 Nm [7804 lb-in]

► Dimension V is charted on page 13.



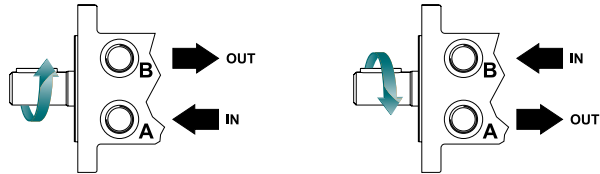


**ORDERING INFORMATION**



**1. CHOOSE SERIES DESIGNATION**

**300** Standard Motor



► The 300 series is bi-directional. Reversing the inlet hose will reverse shaft rotation.

**2. SELECT A DISPLACEMENT OPTION**

|            |   |            |  |
|------------|---|------------|--|
| <b>050</b> | 52 cm <sup>3</sup> /rev [3.2 in <sup>3</sup> /rev]  | <b>160</b> | 164 cm <sup>3</sup> /rev [10.0 in <sup>3</sup> /rev] |
| <b>080</b> | 76 cm <sup>3</sup> /rev [4.6 in <sup>3</sup> /rev]  | <b>200</b> | 205 cm <sup>3</sup> /rev [12.5 in <sup>3</sup> /rev] |
| <b>090</b> | 89 cm <sup>3</sup> /rev [5.4 in <sup>3</sup> /rev]  | <b>250</b> | 254 cm <sup>3</sup> /rev [15.5 in <sup>3</sup> /rev] |
| <b>110</b> | 111 cm <sup>3</sup> /rev [6.8 in <sup>3</sup> /rev] | <b>300</b> | 293 cm <sup>3</sup> /rev [17.9 in <sup>3</sup> /rev] |
| <b>125</b> | 127 cm <sup>3</sup> /rev [7.7 in <sup>3</sup> /rev] | <b>400</b> | 409 cm <sup>3</sup> /rev [24.9 in <sup>3</sup> /rev] |

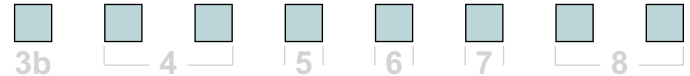
**3a. SELECT MOUNT TYPE**

|                      |                       |
|----------------------|-----------------------|
| <b>▼ END MOUNTS</b>  |                       |
| <b>A0</b>            | 2-Hole, SAE A Mount   |
| <b>A2</b>            | 4-Hole, Magneto Mount |
| <b>A4</b>            | 6-Hole, SAE A Mount   |
| <b>B0</b>            | 2-Hole, SAE B Mount   |
| <b>F2</b>            | 4-Hole, Square Mount  |
| <b>W2</b>            | 4-Hole, Wheel Mount   |
| <b>▼ SIDE MOUNTS</b> |                       |
| <b>A7</b>            | 2-Hole, SAE A Mount   |
| <b>A8</b>            | 4-Hole, Magneto Mount |
| <b>A9</b>            | 6-Hole, SAE A Mount   |
| <b>B7</b>            | 2-Hole, SAE B Mount   |
| <b>F8</b>            | 4-Hole, Square Mount  |
| <b>W8</b>            | 4-Hole, Wheel Mount   |

**3b. SELECT PORT SIZE**

|                            |                            |
|----------------------------|----------------------------|
| <b>▼ END PORT OPTIONS</b>  |                            |
| <b>1</b>                   | 7/8-14 UNF Aligned         |
| <b>2</b>                   | G 1/2 Aligned              |
| <b>▼ SIDE PORT OPTIONS</b> |                            |
| <b>1</b>                   | 7/8-14 UNF, Offset         |
| <b>2</b>                   | G 1/2, Offset              |
| <b>3</b>                   | G 1/2, Offset Manifold     |
| <b>5</b>                   | 9/16-18 UNF Offset         |
| <b>6</b>                   | 1 1/16-20 UN, 180° Opposed |
| <b>7</b>                   | G 1/2, 180° Opposed        |

► Speed sensor option is not available on wheel mounts.



**4. SELECT A SHAFT OPTION**

|           |                          |           |                      |
|-----------|--------------------------|-----------|----------------------|
| <b>01</b> | 7/8" 13 Tooth Spline     | <b>15</b> | 1" Straight Extended |
| <b>02</b> | 1" 6B Spline             | <b>20</b> | 1-1/4" Straight      |
| <b>07</b> | 1-1/4" Straight Extended | <b>21</b> | 32mm Straight        |
| <b>08</b> | 32mm Straight Extended   | <b>22</b> | 1-1/4" Tapered       |
| <b>10</b> | 1" Straight              | <b>23</b> | 14 Tooth Spline      |
| <b>12</b> | 25mm Straight            |           |                      |

► The 07, 08 & 15 extended shafts are designed for use with one of the speed sensor options listed in STEP 7.

**5. SELECT A PAINT OPTION**

|          |                                   |
|----------|-----------------------------------|
| <b>A</b> | Black                             |
| <b>B</b> | Black, Unpainted Mounting Surface |
| <b>Z</b> | No Paint                          |

**6. SELECT A VALVE CAVITY / CARTRIDGE OPTION**

|          |                           |          |                           |
|----------|---------------------------|----------|---------------------------|
| <b>A</b> | None                      | <b>F</b> | 121 bar [1750 psi] Relief |
| <b>B</b> | Valve Cavity Only         | <b>G</b> | 138 bar [2000 psi] Relief |
| <b>C</b> | 69 bar [1000 psi] Relief  | <b>J</b> | 173 bar [2500 psi] Relief |
| <b>D</b> | 86 bar [1250 psi] Relief  | <b>L</b> | 207 bar [3000 psi] Relief |
| <b>E</b> | 104 bar [1500 psi] Relief |          |                           |

► Valve cavity is only available on side ports 1, 2 & 5 and end ports 1 & 2.

**7. SELECT AN ADD-ON OPTION**

|          |  |
|----------|--|
| <b>A</b> | Standard   |
| <b>B</b> | Lock Nut   |
| <b>C</b> | Solid Hex Nut  |
| <b>W</b> | Speed Sensor, Dual, 4-Pin Male Weatherpack Connector   |
| <b>X</b> | Speed Sensor, Dual, 4-Pin M12 Male Connector           |
| <b>Y</b> | Speed Sensor, Single, 3-Pin Male Weatherpack Connector |
| <b>Z</b> | Speed Sensor, Single, 4-Pin M12 Male Connector         |

**8. SELECT A MISCELLANEOUS OPTION**

|           |                                    |
|-----------|------------------------------------|
| <b>AA</b> | None                               |
| <b>AB</b> | Internal Drain                     |
| <b>AC</b> | Freeturning Rotor                  |
| <b>AD</b> | Internal Drain & Freeturning Rotor |

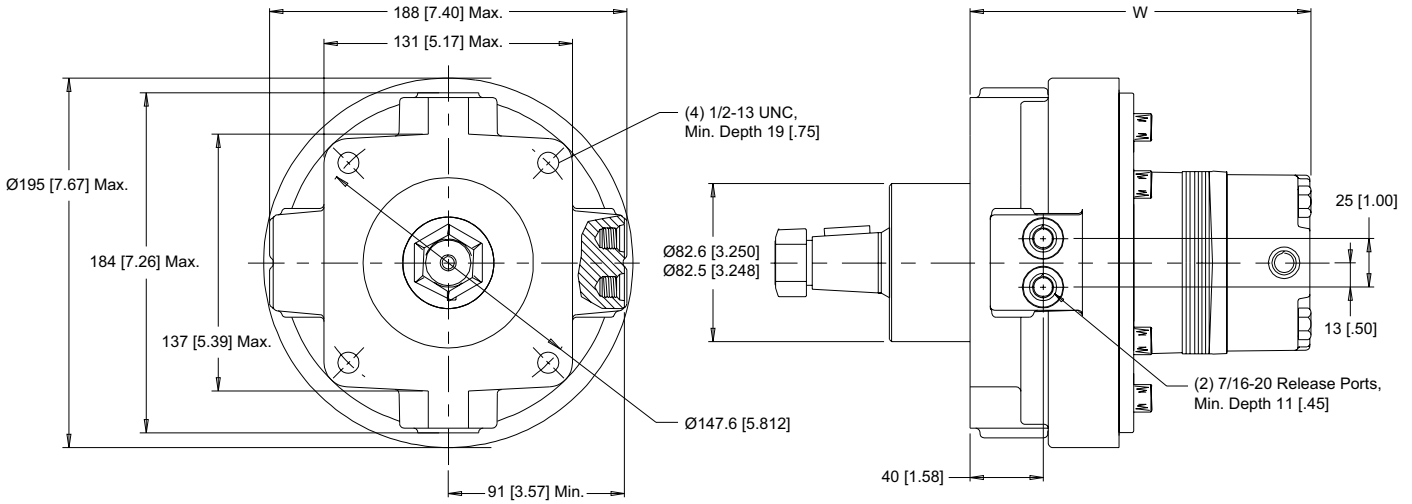
**HOUSINGS**

► Dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

**4-HOLE, MOTOR BRAKE**

**W2** End Ports

**W8** Side Ports



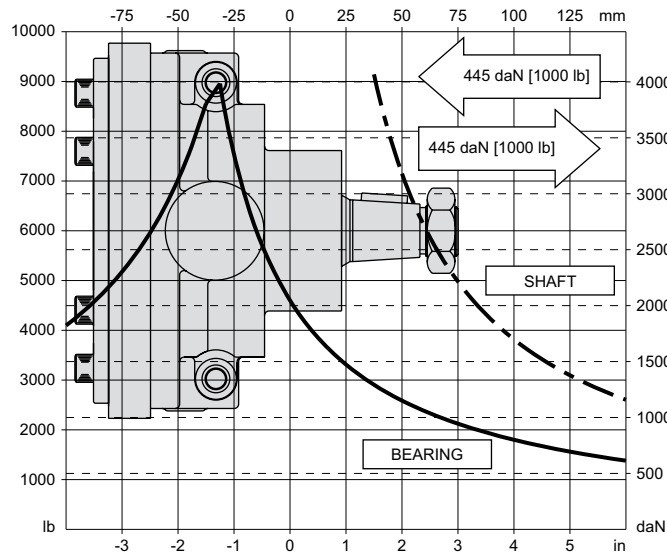
► Porting options listed on pages 8-9.

**TECHNICAL INFORMATION**

**ALLOWABLE SHAFT LOAD / BEARING CURVE**

The bearing curve represents allowable bearing loads based on ISO 281 bearing capacity for an  $L_{10}$  life of 2,000 hours at 100 rpm. Radial loads for speeds other than 100 rpm may be calculated using the multiplication factor table on page 12.

**MOTOR BRAKE**



**SPECIFICATIONS**

|                                |  |
|--------------------------------|--|
| Rated brake torque.....        | 904 Nm [8000 lb-in]                                |
| Initial release pressure ..... | 21 bar [300 psi]                                   |
| Full release pressure .....    | 31 bar [450 psi]                                   |
| Maximum release pressure ..... | 207 bar [3000 psi]                                 |
| Release volume.....            | 13-16 cm <sup>3</sup> [0.8 - 1.0 in <sup>3</sup> ] |

**LENGTH & WEIGHT CHART**

Dimension W is the overall motor length from the rear of the motor to the mounting flange surface.

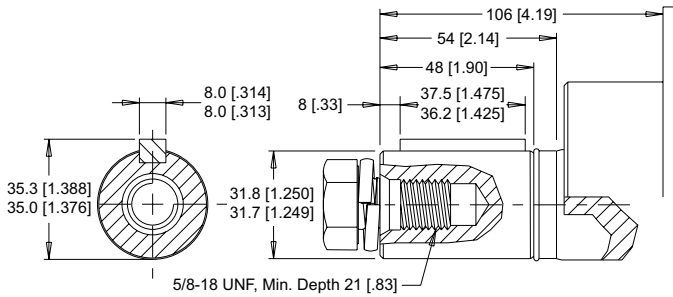
| W # | Endcovers on pg. 8 | Endcovers on pg. 9 | Weight      |
|-----|--------------------|--------------------|-------------|
|     | mm [in]            | mm [in]            | kg [lb]     |
| 050 | 163 [6.41]         | 181 [7.12]         | 19.1 [42.2] |
| 080 | 167 [6.56]         | 185 [7.27]         | 19.4 [42.7] |
| 090 | 169 [6.64]         | 187 [7.35]         | 19.5 [42.9] |
| 110 | 172 [6.78]         | 190 [7.49]         | 19.7 [43.4] |
| 125 | 175 [6.87]         | 193 [7.58]         | 19.8 [43.7] |
| 160 | 180 [7.10]         | 198 [7.81]         | 20.1 [44.4] |
| 200 | 187 [7.35]         | 205 [8.06]         | 20.5 [45.3] |
| 250 | 194 [7.32]         | 212 [8.36]         | 20.9 [46.1] |
| 300 | 200 [7.65]         | 218 [8.59]         | 21.3 [47.0] |
| 400 | 218 [8.60]         | 236 [9.31]         | 22.3 [49.1] |

► 310 series motor/brake weights can vary  $\pm 1$ kg [2 lb] depending on model configurations such as housing, shaft, endcover, options etc.



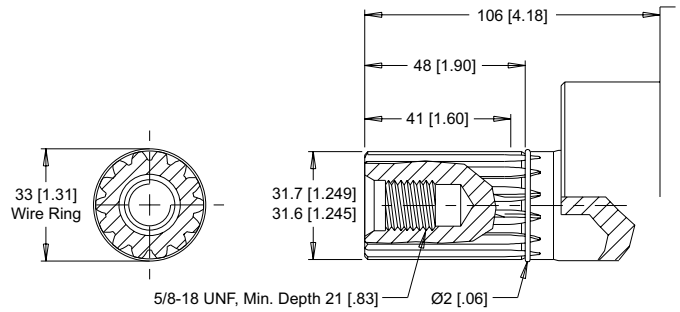
**SHAFTS**

**20** 1-1/4" Straight



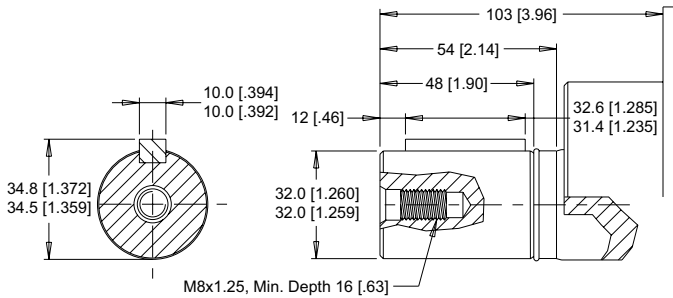
Max. Torque: 882 Nm [7804 lb-in]

**23** 14 Tooth Spline



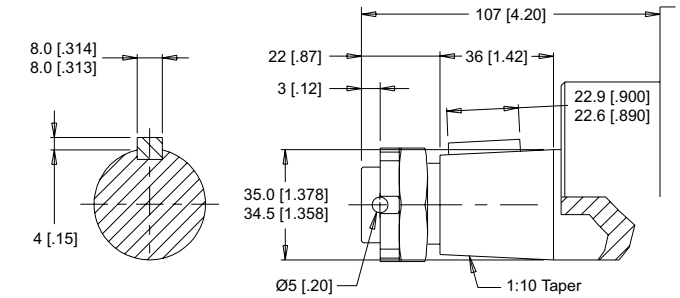
Max. Torque: 882 Nm [7804 lb-in]

**21** 32mm Straight



Max. Torque: 882 Nm [7804 lb-in]

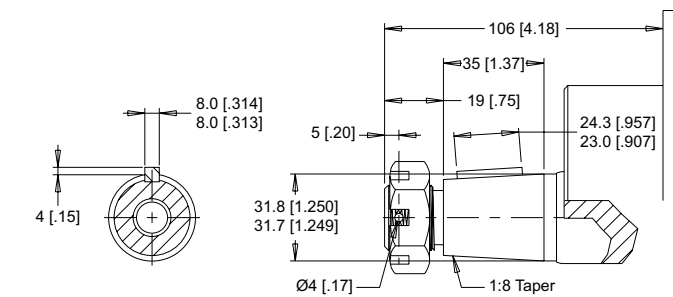
**28** 35mm Tapered



► A slotted hex nut is standard on this shaft.

Max. Torque: 882 Nm [7804 lb-in]

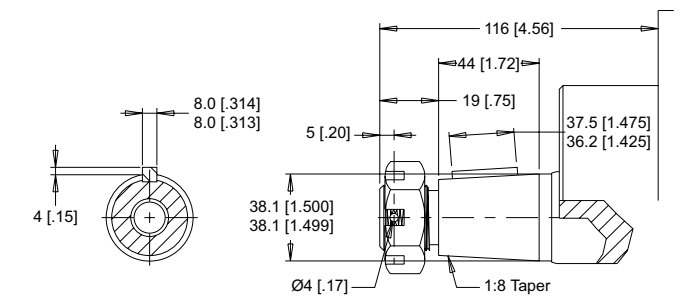
**22** 1-1/4" Tapered



► A slotted hex nut is standard on this shaft.

Max. Torque: 882 Nm [7804 lb-in]

**31** 1-1/2" Tapered

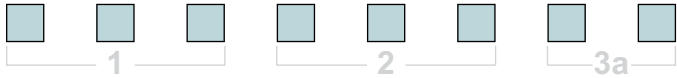


► A slotted hex nut is standard on this shaft.

Max. Torque: 882 Nm [7804 lb-in]

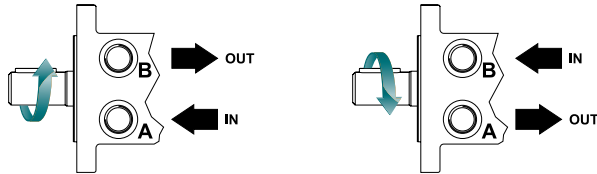


**ORDERING INFORMATION**



**1. CHOOSE SERIES DESIGNATION**

**310** HB Series Motor/Brake



▶ The 310 series is bi-directional. Reversing the inlet hose will reverse shaft rotation.

**2. SELECT A DISPLACEMENT OPTION**

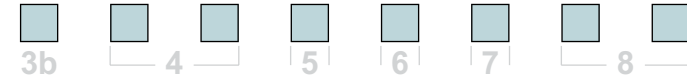
|            |   |            |  |
|------------|---|------------|--|
| <b>050</b> | 52 cm <sup>3</sup> /rev [3.2 in <sup>3</sup> /rev]  | <b>160</b> | 164 cm <sup>3</sup> /rev [10.0 in <sup>3</sup> /rev] |
| <b>080</b> | 76 cm <sup>3</sup> /rev [4.6 in <sup>3</sup> /rev]  | <b>200</b> | 205 cm <sup>3</sup> /rev [12.5 in <sup>3</sup> /rev] |
| <b>090</b> | 89 cm <sup>3</sup> /rev [5.4 in <sup>3</sup> /rev]  | <b>250</b> | 254 cm <sup>3</sup> /rev [15.5 in <sup>3</sup> /rev] |
| <b>110</b> | 111 cm <sup>3</sup> /rev [6.8 in <sup>3</sup> /rev] | <b>300</b> | 293 cm <sup>3</sup> /rev [17.9 in <sup>3</sup> /rev] |
| <b>125</b> | 127 cm <sup>3</sup> /rev [7.7 in <sup>3</sup> /rev] | <b>400</b> | 409 cm <sup>3</sup> /rev [24.9 in <sup>3</sup> /rev] |

**3a. SELECT MOUNT TYPE**

- ▼ **END MOUNT**
- W2** 4-Hole, Motor/Brake
  
- ▼ **SIDE MOUNT**
- W8** 4-Hole, Motor/Brake

**3b. SELECT PORT SIZE**

- ▼ **END PORT OPTIONS**
- 1** 7/8-14 UNF Aligned
- 2** G 1/2 Aligned
  
- ▼ **SIDE PORT OPTIONS**
- 1** 7/8-14 UNF, Aligned
- 2** G 1/2, Aligned
- 3** G 1/2, Offset Manifold
- 5** 9/16-18 UNF Offset
- 6** 1 1/16-20 UN, 180° Opposed
- 7** G 1/2, 180° Opposed



**4. SELECT A SHAFT OPTION**

|           |                 |           |                 |
|-----------|-----------------|-----------|-----------------|
| <b>20</b> | 1-1/4" Straight | <b>23</b> | 14 Tooth Spline |
| <b>21</b> | 32mm Straight   | <b>28</b> | 35mm Tapered    |
| <b>22</b> | 1-1/4" Tapered  | <b>31</b> | 1-1/2" Tapered  |

**5. SELECT A PAINT OPTION**

|          |                                   |
|----------|-----------------------------------|
| <b>A</b> | Black                             |
| <b>B</b> | Black, Unpainted Mounting Surface |
| <b>Z</b> | No Paint                          |

**6. SELECT A VALVE CAVITY / CARTRIDGE OPTION**

|          |                           |          |                           |
|----------|---------------------------|----------|---------------------------|
| <b>A</b> | None                      | <b>F</b> | 121 bar [1750 psi] Relief |
| <b>B</b> | Valve Cavity Only         | <b>G</b> | 138 bar [2000 psi] Relief |
| <b>C</b> | 69 bar [1000 psi] Relief  | <b>J</b> | 173 bar [2500 psi] Relief |
| <b>D</b> | 86 bar [1250 psi] Relief  | <b>L</b> | 207 bar [3000 psi] Relief |
| <b>E</b> | 104 bar [1500 psi] Relief |          |                           |

▶ Valve cavity is only available on side ports 1, 2 & 5 and end ports 1 & 2.

**7. SELECT AN ADD-ON OPTION**

|          |               |
|----------|---------------|
| <b>A</b> | Standard      |
| <b>B</b> | Lock Nut      |
| <b>C</b> | Solid Hex Nut |

**8. SELECT A MISCELLANEOUS OPTION**

|           |                   |
|-----------|-------------------|
| <b>AA</b> | None              |
| <b>AC</b> | Freeturning Rotor |

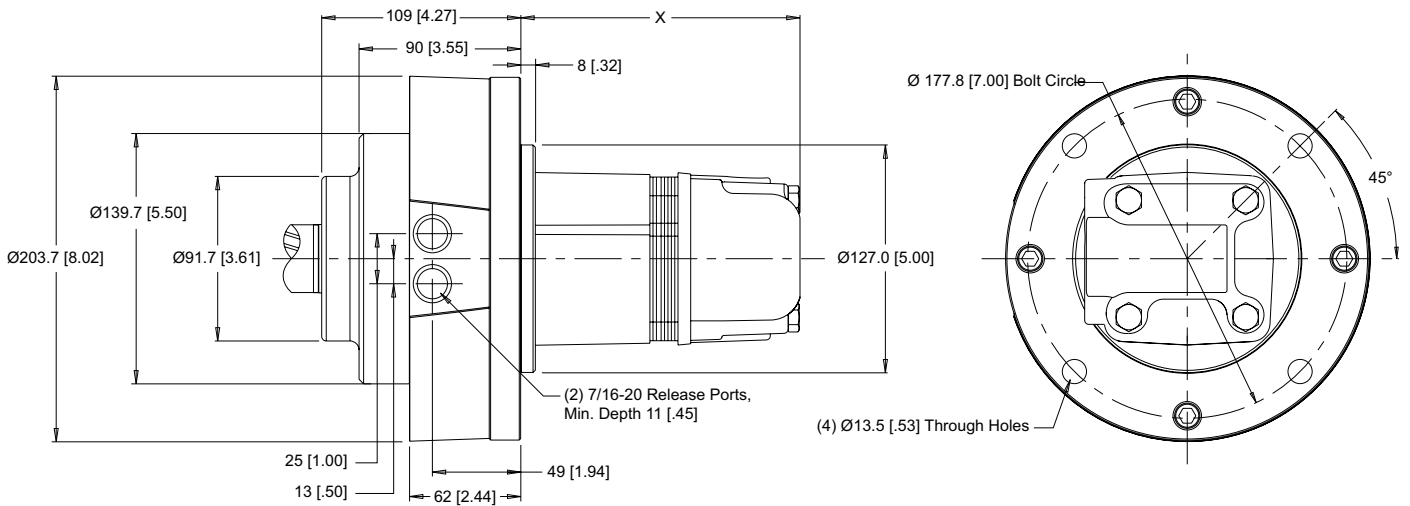


**HOUSINGS**

► Housing dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

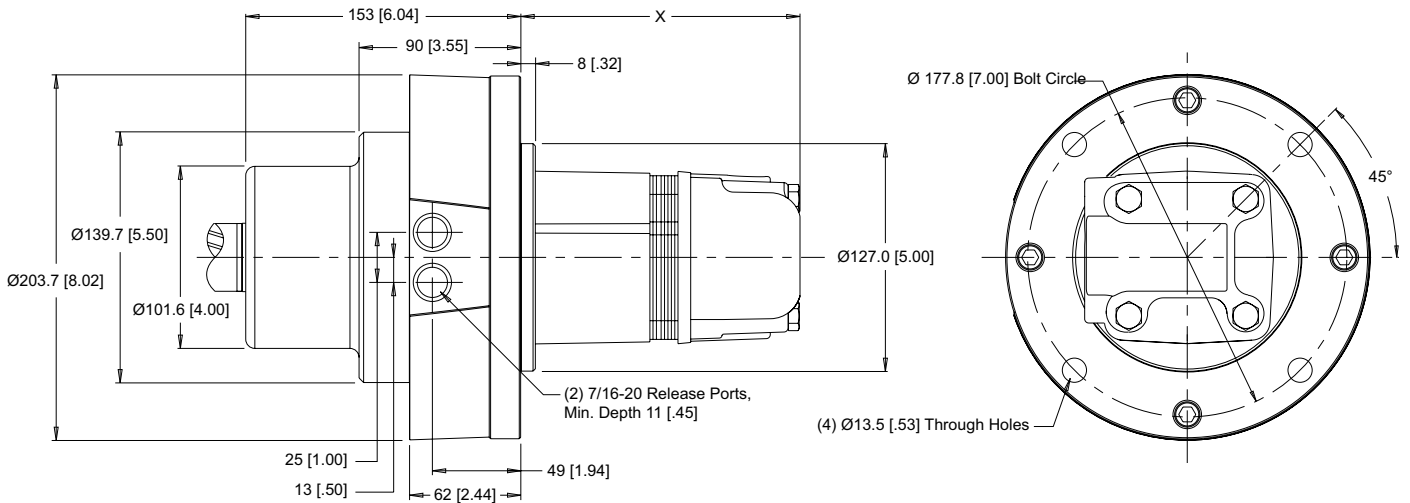
**4-HOLE, MOTOR BRAKE**

**W2** End Ports    **W8** Side Ports



**4-HOLE, MOTOR BRAKE, TALL PILOT**

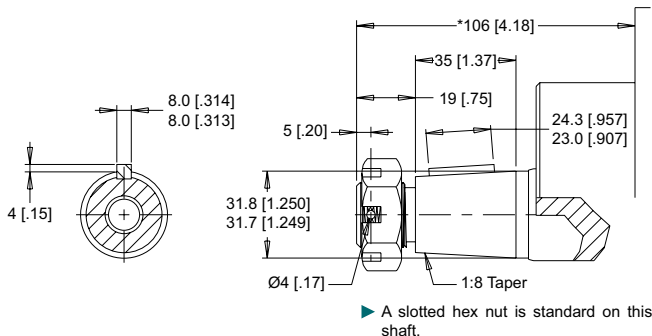
**WB** End Ports    **WC** Side Ports



► Dimension X is charted on page 20. Porting options listed on pages 8-9.

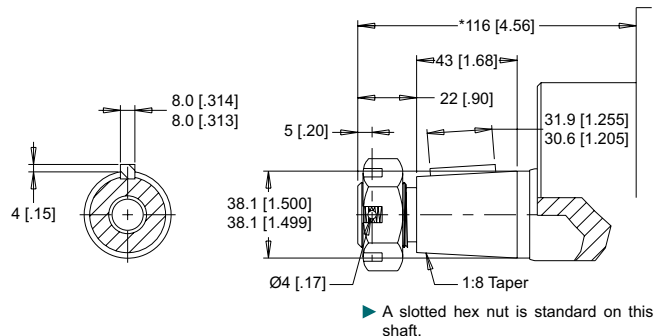
**SHAFTS**

**22** 1-1/4" Tapered



Max. Torque: 882 Nm [7804 lb-in]

**31** 1-1/2" Tapered



Max. Torque: 882 Nm [7804 lb-in]

► \* Dimension from end of shaft to mounting flange shown is for the WB and WC. When using the W2 or W8 mount subtract 45 [1.77] from this dimension.



**TECHNICAL INFORMATION**

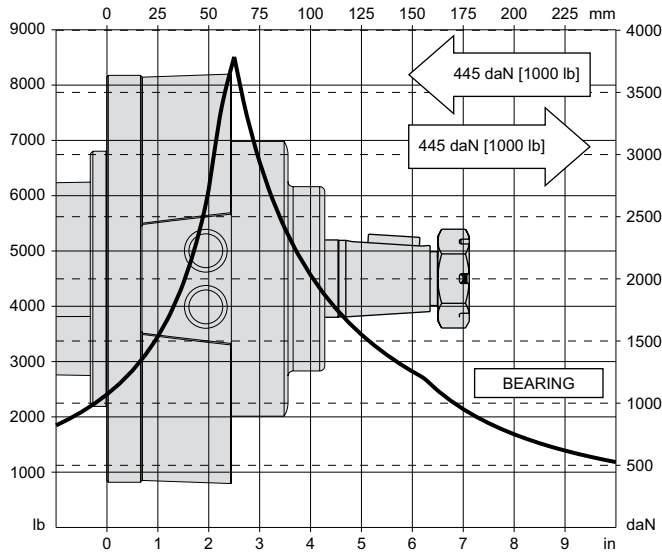
**ALLOWABLE SHAFT LOAD / BEARING CURVE**

The bearing curve represents allowable bearing loads based on ISO 281 bearing capacity for an  $L_{10}$  life of 2,000 hours at 100 rpm. Radial loads for speeds other than 100 rpm may be calculated using the multiplication factor table on page 12.

**SPECIFICATIONS**

Rated brake torque..... 1130 Nm [10000 lb-in]  
Initial release pressure .....28 bar [400 psi]  
Maximum release pressure .....207 bar [3000 psi]  
Release volume..... 1.6 -16.4 cm<sup>3</sup> [0.1 - 1.0 in<sup>3</sup>]

**MOTOR BRAKE (SHORT PILOT)**



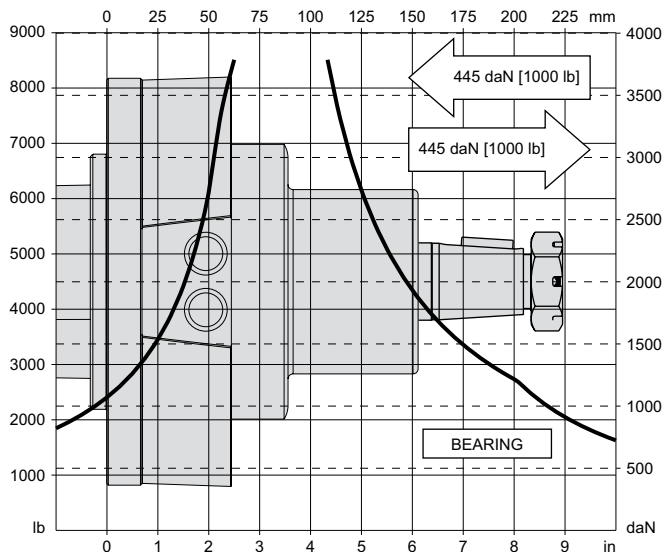
**LENGTH & WEIGHT CHART**

Dimension X is the overall motor length from the rear of the motor to the mounting flange surface.

| X   | Endcovers on pg. 8 | Endcovers on pg. 9 | Weight      |
|-----|--------------------|--------------------|-------------|
| #   | mm [in]            | mm [in]            | kg [lb]     |
| 050 | 83 [3.26]          | 101 [3.97]         | 21.9 [48.2] |
| 080 | 86 [3.40]          | 104 [4.11]         | 22.1 [48.7] |
| 090 | 88 [3.45]          | 106 [4.16]         | 22.2 [48.9] |
| 110 | 91 [3.59]          | 109 [4.30]         | 22.5 [49.4] |
| 125 | 94 [3.68]          | 112 [4.39]         | 22.6 [49.7] |
| 160 | 99 [3.91]          | 117 [4.62]         | 22.9 [50.4] |
| 200 | 106 [4.16]         | 124 [4.87]         | 23.3 [51.3] |
| 250 | 113 [4.46]         | 131 [5.17]         | 23.7 [52.1] |
| 300 | 119 [4.70]         | 137 [5.41]         | 24.1 [53.0] |
| 400 | 137 [5.41]         | 155 [6.12]         | 25.0 [55.1] |

▶ 315 series motor/brake weights can vary ± 1kg [2 lb] depending on model configurations such as housing, shaft, endcover, options etc. Add 1.4 kg [3 lb] to the weight listed for the Tall Pilot mount housings.

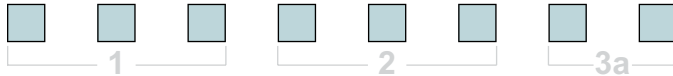
**MOTOR BRAKE (TALL PILOT)**





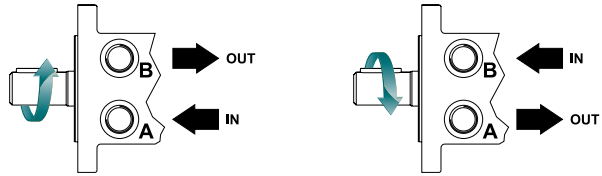


**ORDERING INFORMATION**



**1. CHOOSE SERIES DESIGNATION**

**315** HK Series Motor/Brake



► The 315 series is bi-directional. Reversing the inlet hose will reverse shaft rotation.

**2. SELECT A DISPLACEMENT OPTION**

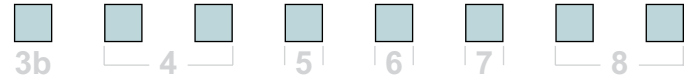
|            |   |            |  |
|------------|---|------------|--|
| <b>050</b> | 52 cm <sup>3</sup> /rev [3.2 in <sup>3</sup> /rev]  | <b>160</b> | 164 cm <sup>3</sup> /rev [10.0 in <sup>3</sup> /rev] |
| <b>080</b> | 76 cm <sup>3</sup> /rev [4.6 in <sup>3</sup> /rev]  | <b>200</b> | 205 cm <sup>3</sup> /rev [12.5 in <sup>3</sup> /rev] |
| <b>090</b> | 89 cm <sup>3</sup> /rev [5.4 in <sup>3</sup> /rev]  | <b>250</b> | 254 cm <sup>3</sup> /rev [15.5 in <sup>3</sup> /rev] |
| <b>110</b> | 111 cm <sup>3</sup> /rev [6.8 in <sup>3</sup> /rev] | <b>300</b> | 293 cm <sup>3</sup> /rev [17.9 in <sup>3</sup> /rev] |
| <b>125</b> | 127 cm <sup>3</sup> /rev [7.7 in <sup>3</sup> /rev] | <b>400</b> | 409 cm <sup>3</sup> /rev [24.9 in <sup>3</sup> /rev] |

**3a. SELECT MOUNT TYPE**

|                     |                          |
|---------------------|--------------------------|
| <b>▼ END MOUNT</b>  |                          |
| <b>W2</b>           | 4-Hole, Motor/Brake      |
| <b>WB</b>           | 4-Hole, Motor/Brake (TP) |
| <b>▼ SIDE MOUNT</b> |                          |
| <b>W8</b>           | 4-Hole, Motor/Brake      |
| <b>WC</b>           | 4-Hole, Motor/Brake (TP) |

**3b. SELECT PORT SIZE**

|                            |                            |
|----------------------------|----------------------------|
| <b>▼ END PORT OPTIONS</b>  |                            |
| <b>1</b>                   | 7/8-14 UNF Aligned         |
| <b>2</b>                   | G 1/2 Aligned              |
| <b>▼ SIDE PORT OPTIONS</b> |                            |
| <b>1</b>                   | 7/8-14 UNF, Aligned        |
| <b>2</b>                   | G 1/2, Aligned             |
| <b>3</b>                   | G 1/2, Offset Manifold     |
| <b>5</b>                   | 9/16-18 UNF Offset         |
| <b>6</b>                   | 1 1/16-20 UN, 180° Opposed |
| <b>7</b>                   | G 1/2, 180° Opposed        |



**4. SELECT A SHAFT OPTION**

**22** 1-1/4" Tapered      **31** 1-1/2" Tapered

**5. SELECT A PAINT OPTION**

|          |                                   |
|----------|-----------------------------------|
| <b>A</b> | Black                             |
| <b>B</b> | Black, Unpainted Mounting Surface |
| <b>Z</b> | No Paint                          |

**6. SELECT A VALVE CAVITY / CARTRIDGE OPTION**

|          |                           |          |                           |
|----------|---------------------------|----------|---------------------------|
| <b>A</b> | None                      | <b>F</b> | 121 bar [1750 psi] Relief |
| <b>B</b> | Valve Cavity Only         | <b>G</b> | 138 bar [2000 psi] Relief |
| <b>C</b> | 69 bar [1000 psi] Relief  | <b>J</b> | 173 bar [2500 psi] Relief |
| <b>D</b> | 86 bar [1250 psi] Relief  | <b>L</b> | 207 bar [3000 psi] Relief |
| <b>E</b> | 104 bar [1500 psi] Relief |          |                           |

► Valve cavity is only available on side ports 1, 2 & 5 and end ports 1 & 2.

**7. SELECT AN ADD-ON OPTION**

|          |               |
|----------|---------------|
| <b>A</b> | Standard      |
| <b>B</b> | Lock Nut      |
| <b>C</b> | Solid Hex Nut |

**8. SELECT A MISCELLANEOUS OPTION**

|           |                   |
|-----------|-------------------|
| <b>AA</b> | None              |
| <b>AC</b> | Freeturning Rotor |

## North America

White Drive Products, Inc.  
P.O. Box 1127  
Hopkinsville, KY, USA 42241  
Phone: +1.270.885.1110  
Fax: +1.270.886.8462  
infousa@whitedriveproducts.com

## Europe

White Drive Products GmbH  
Mannsnetterstrasse 34  
D-88145 Opfenbach, Germany  
Phone: +49.8385.924988.0  
Fax: +49.8385.924988.9  
infoeu@whitedriveproducts.com

## Asia

White (China) Drive Products Co., Ltd.  
1-8 Ning Zhen Gong Lu  
Zhenjiang, 212021, Jiangsu, China  
Phone: +86 511 5729988  
Fax: +86 511 5728921  
infochina@whitedriveproducts.com

Delivering The Power  
To Get Work Done!



whitedriveproducts