



Torqlink™ Series

**Small and Large Frame
Low Speed High Torque
Hydraulic Motors**

*Catalog No. 1510-20-002/USA
November, 1997*



 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled "Offer of Sale".

Torqlink™ Series Small and Large Frame

| | | |
|---|-------------------------|-----------|
| Introduction | | 2 |
| Small Frame | | |
| Quick Reference Data Chart | | 3 |
| TA Series | | 4 – 15 |
| TB Series | | 16 – 27 |
| TD Series | | 28 – 40 |
| Large Frame | | |
| Quick Reference Data Chart | | 41 |
| TF Series | | 42 – 61 |
| TG Series | | 62 – 82 |
| TH Series | | 83 – 97 |
| Accessories | Cross-Over Relief Valve | 98 – 99 |
| | Cross Port Relief | 100 |
| | Hot Oil Shuttle | 100 |
| | Speed Sensor | 101 |
| Installation/Operation Information | | 102 |
| Engineering Data | | 103 – 106 |
| Offer of Sale | | 108 |

Warning

This Catalog is not a Controlled Document. All Dimensions listed herein are for reference only. Consult a Sales engineer for detailed information.

Excellence of Design

The producers of Parker Hannifin's **Torqlink™** Series motors have a history of manufacturing reliable, precision parts that stretches back over ninety years. Milestones include the first patent on roller vane rotor sets for low speed, high torque hydraulic motors. That was thirty years ago. Today the technological advances continue.

In the Development Laboratory, engineers continuously measure and analyze motor data to move existing products to even higher levels of performance and to develop new products to serve the ever changing needs of our customers. Design integrity is assured by exhaustive testing on endurance stands. To be sure that this translates into superior performance, advanced manufacturing techniques are employed as well.



Excellence of Manufacturing

Central to manufacturing excellence is the understanding that quality parts make quality motors. The instrumentation in our Quality Assurance laboratory includes devices such as coordinate measuring machines, to accurately measure the parts that we manufacture as well as those that we purchase. Quality cannot be inspected in, however. It must be manufactured. Each machine operator is responsible for the quality of the part that comes off that machine. Efficiency is enhanced by our cellular manufacturing techniques. Accuracy is assured by statistical process control methods. Micrometers and specialized gages are at the disposal of the operator. As a final check, every motor is tested before shipment to our customer. Parker understands that our customers cannot produce quality products unless we do.

Quick Reference Data Chart

| Quick Reference Data Chart | | | |
|---|--------------------------|--------------------------|--------------------------|
| Series | TA | TB | TD |
| Displacement cc/rev (cu in/rev) | 45 - 392 (2.7 - 24.0) | 45 - 392 (2.7 - 24.0) | 45 - 392 (2.7 - 24.0) |
| Max Continuous Pressure bar (psi) | 86.2 (1250) | 124.1 (1800) | 137.9 (2000) |
| Max Intermittent Pressure bar (psi) | 120.7 (1750) | 165.5 (2400) | 172.4 (2500) |
| Max Continuous Torque nm (lb in) | 215.2 (1905) | 428.4 (3792) | 444.6 (3935) |
| Max Intermittent Torque nm (lb in) | 306.1 (2709) | 524.5 (4642) | 538.7 (4768) |
| Max Continuous Flow LPM (GPM) | 45 (12) | 45 (12) | 57 (15) |
| Max Intermittent Flow LPM (GPM) | 57 (15) | 57 (15) | 76 (20) |
| Max Speed RPM | 810 | 785 | 835 |
| Max Radial Load daN (lb) | 625 (1405) | 704 (1582) | 1100 (2473) |

**S
M
A
L
L

F
R
A
M
E

T
O
R
Q
L
I
N
K

T
M**

Compact Power In An Economical Package

Use of a shaft speed disc valve allows Parker's TA Series motors to pack 2700 lb ins of torque into less than six inches of length. These low cost motors contain many features not normally found in motors of this type. When used within their ratings, they assure long trouble free life.



Options

- All Common 1 inch Shafts
- SAE A 2 Bolt or 4 Bolt Mounting
- SAE O-Ring, NPTF or Manifold Porting
- External Crossover Relief Valve Package
- Free Running Rotor Set

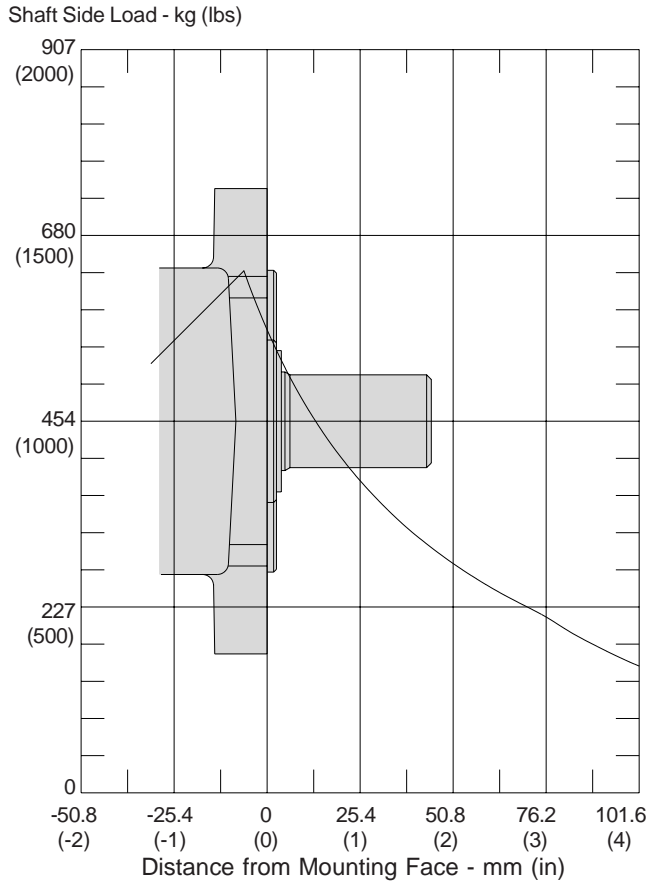
Features

- **Roller Vane Power Element** — For High Volumetric Efficiency and Long Life
- **High Pressure Shaft Seal** — For High Back Pressure Operation Without External Drains
- **High Flow Shaft Seal Cooling** — For Long Seal Life
- **60:40 Spline Geometry** — For Superior Power-train Strength, Long Life

TA Specifications

| Code | 0045 | 0050 | 0065 | 0080 | 0100 | 0130 | 0165 | 0195 | 0230 | 0260 | 0295 | 0330 | 0365 | 0390 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Displacement cc/rev (cu in/rev) | 43 (2.7) | 49 (3.0) | 66 (4.0) | 82 (5.0) | 98 (6.0) | 131 (8.0) | 164 (10.0) | 197 (12.0) | 229 (14.0) | 262 (16.0) | 295 (18.0) | 328 (20.0) | 370 (22.6) | 393 (24.0) |
| Maximum Speed (rpm) @ Maximum Continuous Flow | 810 | 688 | 517 | 413 | 460 | 346 | 278 | 231 | 198 | 174 | 154 | 138 | 121 | 115 |
| Pressure Differential Maximum Continuous bar (psid) | 86.2 (1250) | 86.2 (1250) | 86.2 (1250) | 86.2 (1250) | 86.2 (1250) | 86.2 (1250) | 86.2 (1250) | 86.2 (1250) | 75.9 (1100) | 65.5 (950) | 58.6 (850) | 51.7 (750) | 44.8 (650) | 44.8 (650) |
| Maximum Intermittent bar (psid) | 120.7 (1750) | 120.7 (1750) | 120.7 (1750) | 120.7 (1750) | 120.7 (1750) | 120.7 (1750) | 120.7 (1750) | 120.7 (1750) | 106.9 (1550) | 96.6 (1400) | 86.2 (1250) | 75.9 (1100) | 65.5 (950) | 65.5 (950) |
| Max. Torque @ Max. Continuous Pressure nm (lb-in) | 39.8 (352) | 47.8 (423) | 65.8 (582) | 85.1 (753) | 100.3 (888) | 137.6 (1218) | 172.7 (1529) | 205.1 (1815) | 215.2 (1905) | 211.3 (1870) | 208.2 (1843) | 205.5 (1819) | 198.5 (1757) | 207.0 (1832) |
| Max. Torque @ Max. Intermittent Pressure nm (lb-in) | 56.0 (496) | 66.5 (589) | 91.5 (810) | 118.6 (1050) | 140.1 (1240) | 191.7 (1697) | 238.4 (2110) | 286.1 (2532) | 297.9 (2637) | 306.1 (2709) | 300.2 (2657) | 296.1 (2621) | 290.4 (2570) | 296.2 (2622) |

Maximum Side Load Capacity



Performance Data

Continuous / Intermittent* Operation

- = Continuous
- = Intermittent*

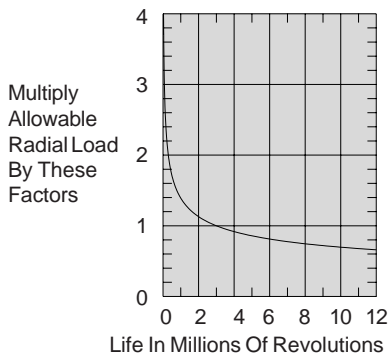
**Intermittent operation is defined as less than 10% of each minute.*

Performance data based on testing using 15W40 oil with a viscosity of 200 SUS at 54° C (130° F.)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Application of the above uni-directional radial loads will result in a B-10 life of 2.5 million revolutions. For B-10 life at other radial loads, apply the factors from the curve below.

B-10 Life Factors



Code 0045

45 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 1.9 | 6.3 36 | 14.2 23 | 21.8 14 | 29.1 7 | | | |
| 3.8 | 6.7 81 | 14.8 68 | 22.7 58 | 30.3 52 | 37.5 38 | 44.4 26 | 51.1 8 |
| 7.6 | 6.6 171 | 14.9 158 | 23.2 149 | 31.2 142 | 39.1 128 | 46.8 113 | 54.0 94 |
| 11.4 | 6.3 263 | 14.7 249 | 23.2 239 | 31.3 231 | 39.3 218 | 47.0 202 | 54.5 182 |
| 15.1 | 5.9 354 | 14.3 340 | 22.9 330 | 31.5 321 | 39.8 307 | 47.9 292 | 55.6 272 |
| 18.9 | 5.3 445 | 13.9 431 | 22.5 421 | 31.3 411 | 39.7 397 | 48.0 381 | 56.0 360 |
| 26.5 | 3.6 628 | 12.2 612 | 20.9 602 | 29.8 591 | 38.5 577 | 47.0 559 | 55.2 537 |
| 34.1 | 1.6 810 | 10.4 794 | 19.1 783 | 28.1 771 | 36.7 756 | 45.1 737 | 53.2 714 |

Flow (LPM)

TORQUE (nm) 45.1
 SPEED (RPM) 737

Code 0050

50 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 1.9 | 7.1 29 | 15.6 15 | 23.6 5 | | | | |
| 3.8 | 7.7 68 | 16.5 54 | 25.0 43 | 33.2 32 | 41.0 18 | | |
| 7.6 | 7.9 145 | 17.7 131 | 27.0 120 | 35.9 108 | 44.5 93 | 52.4 74 | 59.9 50 |
| 11.4 | 7.6 222 | 17.5 209 | 27.2 197 | 36.4 186 | 45.3 170 | 53.7 151 | 61.9 125 |
| 15.1 | 6.9 300 | 17.4 286 | 27.9 275 | 37.8 263 | 47.2 247 | 56.0 228 | 64.2 202 |
| 18.9 | 6.3 378 | 17.1 364 | 27.7 352 | 38.0 340 | 47.8 324 | 57.2 305 | 65.8 278 |
| 26.5 | 4.6 533 | 15.5 518 | 26.3 507 | 37.1 494 | 47.5 478 | 57.3 458 | 66.5 432 |
| 34.1 | 2.7 688 | 13.8 673 | 24.6 661 | 35.4 648 | 45.8 632 | 55.6 612 | 65.2 585 |

Flow (LPM)

2.7 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|-----------|------------|------------|------------|------------|------------|------------|
| .5 | 56 36 | 126 23 | 193 14 | 258 7 | | | |
| 1 | 59 81 | 131 68 | 201 58 | 268 52 | 332 38 | 393 26 | 452 8 |
| 2 | 58 171 | 132 158 | 205 149 | 276 142 | 346 128 | 414 113 | 478 94 |
| 3 | 56 263 | 130 249 | 205 239 | 277 231 | 348 218 | 416 202 | 482 182 |
| 4 | 52 354 | 127 340 | 203 330 | 279 321 | 352 307 | 424 292 | 492 272 |
| 5 | 47 445 | 123 431 | 199 421 | 277 411 | 351 397 | 425 381 | 496 360 |
| 7 | 32 628 | 108 612 | 185 602 | 264 591 | 341 577 | 416 559 | 489 537 |
| 9 | 14 810 | 92 794 | 169 783 | 249 771 | 325 756 | 399 737 | 471 714 |

Flow (GPM)

TORQUE (LB IN) 399
 SPEED (RPM) 737

3.0 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|-----------|------------|------------|------------|------------|------------|------------|
| .5 | 63 29 | 138 15 | 209 5 | | | | |
| 1 | 68 68 | 146 54 | 221 43 | 294 32 | 363 18 | | |
| 2 | 70 145 | 157 131 | 239 120 | 318 108 | 394 93 | 464 74 | 530 50 |
| 3 | 67 222 | 155 209 | 241 197 | 322 186 | 401 170 | 475 151 | 548 125 |
| 4 | 61 300 | 154 286 | 247 275 | 335 263 | 418 247 | 496 228 | 568 202 |
| 5 | 56 378 | 151 364 | 245 352 | 336 340 | 423 324 | 506 305 | 582 278 |
| 7 | 41 533 | 137 518 | 233 507 | 328 494 | 420 478 | 507 458 | 589 432 |
| 9 | 24 688 | 122 673 | 218 661 | 313 648 | 405 632 | 492 612 | 577 585 |

Flow (GPM)

Performance data is typical.
 Actual data may vary slightly from
 one production motor to another.

Code 0065

65 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 1.9 | 11.3 22 | 23.7 15 | 36.4 10 | 48.8 3 | | | |
| 3.8 | 11.7 51 | 24.5 44 | 37.4 38 | 50.2 31 | 62.7 21 | 75.2 12 | |
| 7.6 | 12.2 109 | 25.5 102 | 38.9 95 | 52.0 88 | 64.9 78 | 77.6 67 | 89.8 53 |
| 11.4 | 11.5 167 | 25.1 159 | 38.8 153 | 52.1 145 | 65.1 136 | 77.8 124 | 90.4 110 |
| 15.1 | 10.5 226 | 24.6 217 | 38.6 210 | 52.4 202 | 65.8 193 | 78.7 181 | 91.3 166 |
| 18.9 | 9.7 284 | 24.0 274 | 38.1 268 | 52.1 260 | 65.6 250 | 78.7 238 | 91.5 223 |
| 26.5 | 7.6 400 | 21.9 390 | 36.2 383 | 50.4 374 | 64.3 365 | 77.7 352 | 90.7 336 |
| 34.1 | 5.4 517 | 20.2 505 | 34.7 497 | 49.0 489 | 62.8 479 | 76.4 466 | 89.5 449 |

Flow (LPM)

TORQUE (nm) 76.4
 SPEED (RPM) 466

Code 0080

80 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| 1.9 | 14.9 19 | 31.0 15 | 47.1 11 | 63.0 8 | 78.7 3 | | |
| 3.8 | 15.6 43 | 32.3 38 | 48.9 34 | 65.4 30 | 81.5 25 | 97.0 18 | 112.3 12 |
| 7.6 | 15.8 89 | 33.2 84 | 50.6 80 | 67.8 75 | 84.6 70 | 101.1 62 | 116.9 54 |
| 11.4 | 15.1 135 | 32.8 130 | 50.3 126 | 67.7 121 | 84.6 115 | 101.2 108 | 117.3 99 |
| 15.1 | 13.9 182 | 32.1 176 | 50.1 172 | 67.8 167 | 85.1 161 | 102.1 153 | 118.6 144 |
| 18.9 | 12.8 228 | 31.1 223 | 49.3 218 | 67.0 213 | 84.5 207 | 101.8 199 | 118.5 189 |
| 26.5 | 9.9 321 | 28.2 315 | 46.4 310 | 64.3 304 | 82.0 298 | 99.3 290 | 116.4 279 |
| 34.1 | 7.5 413 | 25.9 407 | 44.1 402 | 62.0 396 | 79.5 389 | 96.9 381 | 113.8 369 |

Flow (LPM)

4.0 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| .5 | 100 22 | 210 15 | 322 10 | 432 3 | | | |
| 1 | 104 51 | 217 44 | 331 38 | 444 31 | 555 21 | 666 12 | |
| 2 | 108 109 | 226 102 | 344 95 | 460 88 | 574 78 | 687 67 | 795 53 |
| 3 | 102 167 | 222 159 | 343 153 | 461 145 | 576 136 | 689 124 | 800 110 |
| 4 | 93 226 | 218 217 | 342 210 | 464 202 | 582 193 | 697 181 | 808 166 |
| 5 | 86 284 | 212 274 | 337 268 | 461 260 | 581 250 | 697 238 | 810 223 |
| 7 | 67 400 | 194 390 | 320 383 | 446 374 | 569 365 | 688 352 | 803 336 |
| 9 | 48 517 | 179 505 | 307 497 | 434 489 | 556 479 | 676 466 | 792 449 |

Flow (GPM)

TORQUE (LB IN) 676
 SPEED (RPM) 466

5.0 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|------------|------------|------------|------------|------------|------------|-------------|
| .5 | 132 19 | 274 15 | 417 11 | 558 8 | 697 3 | | |
| 1 | 138 43 | 286 38 | 433 34 | 579 30 | 721 25 | 859 18 | 994 12 |
| 2 | 140 89 | 294 84 | 448 80 | 600 75 | 749 70 | 895 62 | 1035 54 |
| 3 | 134 135 | 290 130 | 445 126 | 599 121 | 749 115 | 896 108 | 1038 99 |
| 4 | 123 182 | 284 176 | 443 172 | 600 167 | 753 161 | 904 153 | 1050 144 |
| 5 | 113 228 | 275 223 | 436 218 | 593 213 | 748 207 | 901 199 | 1049 189 |
| 7 | 88 321 | 250 315 | 411 310 | 569 304 | 726 298 | 879 290 | 1030 279 |
| 9 | 66 413 | 229 407 | 390 402 | 549 396 | 704 389 | 858 381 | 1007 369 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0100

100 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|
| 1.9 | 17.2 14 | 36.0 8 | 54.8 3 | | | | |
| 3.8 | 18.1 34 | 37.6 27 | 57.1 22 | 76.3 17 | 95.2 12 | 113.5 7 | |
| 7.6 | 19.0 72 | 39.4 65 | 60.0 60 | 80.0 56 | 99.8 50 | 119.2 43 | 137.6 33 |
| 11.4 | 18.1 111 | 38.8 104 | 59.3 99 | 79.7 94 | 99.6 89 | 119.2 81 | 138.4 71 |
| 15.1 | 16.5 150 | 37.8 143 | 59.1 138 | 79.9 133 | 100.3 128 | 120.4 120 | 140.1 109 |
| 18.9 | 15.4 189 | 36.8 182 | 58.1 176 | 79.2 172 | 99.8 166 | 120.1 159 | 140.0 148 |
| 26.5 | 12.5 266 | 33.9 259 | 55.0 254 | 76.3 249 | 97.2 244 | 117.7 236 | 138.1 225 |
| 34.1 | 8.1 344 | 29.3 337 | 50.5 331 | 72.0 327 | 93.1 322 | 113.9 313 | 134.4 301 |
| 45.4 | 1.6 460 | 22.8 453 | 43.8 448 | 65.3 443 | 86.2 438 | 106.7 430 | 126.9 417 |

Flow (LPM)

TORQUE (nm) 106.7
 SPEED (RPM) 430

Code 0130

130 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 24.2 12 | 51.3 9 | 78.4 7 | 105.6 5 | 132.4 2 | | |
| 3.8 | 25.2 27 | 52.9 24 | 80.4 22 | 107.7 19 | 134.8 16 | 162.0 13 | 188.9 8 |
| 7.6 | 26.1 56 | 54.1 53 | 82.4 51 | 110.2 48 | 137.6 44 | 164.8 41 | 191.7 35 |
| 11.4 | 25.2 85 | 53.3 82 | 81.6 80 | 109.4 77 | 136.8 74 | 164.2 69 | 190.9 64 |
| 15.1 | 23.3 114 | 52.0 111 | 80.4 109 | 108.6 106 | 136.1 102 | 163.6 98 | 190.5 93 |
| 18.9 | 21.4 143 | 50.2 140 | 78.7 138 | 107.1 135 | 134.9 131 | 162.4 127 | 189.2 122 |
| 26.5 | 17.7 201 | 46.2 198 | 74.3 195 | 102.9 193 | 130.9 189 | 158.5 185 | 185.7 179 |
| 34.1 | 11.4 259 | 39.9 255 | 68.1 253 | 96.6 250 | 124.7 247 | 152.5 243 | 179.9 237 |
| 45.4 | 2.6 346 | 29.6 342 | 56.9 340 | 85.1 337 | 112.8 334 | 140.5 329 | 168.1 323 |
| 56.8 | | 20.9 429 | 48.6 426 | 76.3 423 | 103.6 420 | 130.5 416 | 156.9 410 |

Flow (LPM)

6.0 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|------------|------------|------------|------------|------------|-------------|-------------|
| .5 | 152 14 | 319 8 | 485 3 | | | | |
| 1 | 160 34 | 333 27 | 505 22 | 675 17 | 843 12 | 1005 7 | |
| 2 | 168 72 | 349 65 | 531 60 | 708 56 | 883 50 | 1055 43 | 1218 33 |
| 3 | 160 111 | 343 104 | 525 99 | 705 94 | 882 89 | 1055 81 | 1225 71 |
| 4 | 146 150 | 335 143 | 523 138 | 707 133 | 888 128 | 1066 120 | 1240 109 |
| 5 | 136 189 | 326 182 | 514 176 | 701 172 | 883 166 | 1063 159 | 1239 148 |
| 7 | 111 266 | 300 259 | 487 254 | 675 249 | 860 244 | 1042 236 | 1222 225 |
| 9 | 72 344 | 259 337 | 447 331 | 637 327 | 824 322 | 1008 313 | 1190 301 |
| 12 | 14 460 | 202 453 | 388 448 | 578 443 | 763 438 | 944 430 | 1123 417 |

Flow (GPM)

TORQUE (LB IN) 944
 SPEED (RPM) 430

8.0 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|------------|------------|------------|------------|-------------|-------------|-------------|
| .5 | 214 12 | 454 9 | 694 7 | 935 5 | 1172 2 | | |
| 1 | 223 27 | 468 24 | 712 22 | 953 19 | 1193 16 | 1434 13 | 1672 8 |
| 2 | 231 56 | 479 53 | 729 51 | 975 48 | 1218 44 | 1459 41 | 1697 35 |
| 3 | 223 85 | 472 82 | 722 80 | 968 77 | 1211 74 | 1453 69 | 1690 64 |
| 4 | 206 114 | 460 111 | 712 109 | 961 106 | 1205 102 | 1448 98 | 1686 93 |
| 5 | 189 143 | 444 140 | 697 138 | 948 135 | 1194 131 | 1437 127 | 1675 122 |
| 7 | 157 201 | 409 198 | 658 195 | 911 193 | 1159 189 | 1403 185 | 1644 179 |
| 9 | 101 259 | 353 255 | 603 253 | 855 250 | 1104 247 | 1350 243 | 1592 237 |
| 12 | 23 346 | 262 342 | 504 340 | 753 337 | 998 334 | 1244 329 | 1488 323 |
| 15 | | 185 429 | 430 426 | 675 423 | 917 420 | 1155 416 | 1389 410 |

Flow (GPM)

Performance data is typical.
 Actual data may vary slightly from
 one production motor to another.

Code 0165

165 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 30.4 10 | 63.5 8 | 96.3 6 | 129.6 4 | 162.4 2 | | |
| 3.8 | 32.3 21 | 66.4 19 | 100.3 18 | 133.8 16 | 166.8 14 | 199.3 11 | 231.6 8 |
| 7.6 | 33.6 45 | 68.8 43 | 104.1 41 | 138.6 39 | 172.7 37 | 206.1 34 | 238.4 30 |
| 11.4 | 32.4 68 | 67.7 66 | 102.8 65 | 137.7 63 | 171.8 61 | 205.3 58 | 237.8 54 |
| 15.1 | 29.6 91 | 65.9 89 | 101.7 88 | 136.9 86 | 171.6 84 | 205.4 81 | 238.3 77 |
| 18.9 | 27.2 115 | 63.4 113 | 99.1 111 | 134.6 110 | 169.4 108 | 203.3 105 | 236.4 100 |
| 26.5 | 22.1 161 | 57.3 159 | 92.6 158 | 128.2 156 | 163.3 154 | 197.2 151 | 230.3 147 |
| 34.1 | 14.6 208 | 49.4 206 | 84.5 204 | 119.9 203 | 154.6 201 | 188.6 198 | 221.3 194 |
| 45.4 | 1.8 278 | 35.5 276 | 69.6 274 | 104.3 273 | 138.5 271 | 172.3 269 | 205.1 264 |
| 56.8 | | 24.4 346 | 58.7 343 | 93.0 342 | 126.9 341 | 159.9 338 | 191.8 334 |

Flow (LPM)

TORQUE (nm) 159.9
 SPEED (RPM) 338

Code 0195

195 cc / rev

PRESSURE (BAR)

| | 17.2 | 34.5 | 51.7 | 69.0 | 86.2 | 103.4 | 120.7 |
|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 36.5 8 | 77.8 6 | 119.0 5 | 160.8 3 | | | |
| 3.8 | 37.7 18 | 79.2 16 | 120.5 14 | 162.1 13 | 203.5 11 | 244.5 8 | 286.1 6 |
| 7.6 | 38.4 37 | 80.4 35 | 122.1 34 | 163.9 32 | 205.1 30 | 245.1 27 | 285.2 24 |
| 11.4 | 37.3 57 | 79.2 55 | 121.0 54 | 162.7 52 | 203.8 50 | 243.9 47 | 283.6 43 |
| 15.1 | 34.5 76 | 77.1 74 | 119.2 73 | 160.9 72 | 201.7 70 | 241.8 67 | 281.4 62 |
| 18.9 | 31.9 95 | 74.3 94 | 116.5 93 | 157.9 91 | 198.7 89 | 239.0 86 | 277.9 82 |
| 26.5 | 26.3 134 | 68.0 132 | 109.5 132 | 151.2 130 | 191.8 128 | 231.7 125 | 270.5 121 |
| 34.1 | 17.4 173 | 58.9 171 | 100.1 170 | 141.7 169 | 182.0 167 | 221.9 164 | 260.9 159 |
| 45.4 | 4.0 231 | 43.4 229 | 83.3 228 | 124.1 228 | 164.4 226 | 203.9 223 | 242.5 218 |
| 56.8 | | 30.7 287 | 70.2 286 | 109.9 286 | 149.2 284 | 187.3 281 | 224.8 276 |

Flow (LPM)

10.0 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|------------|------------|------------|-------------|-------------|-------------|-------------|
| .5 | 269 10 | 562 8 | 852 6 | 1147 4 | 1437 2 | | |
| 1 | 286 21 | 588 19 | 888 18 | 1184 16 | 1476 14 | 1764 11 | 2050 8 |
| 2 | 297 45 | 609 43 | 921 41 | 1227 39 | 1529 37 | 1824 34 | 2110 30 |
| 3 | 287 68 | 599 66 | 910 65 | 1219 63 | 1521 61 | 1817 58 | 2105 54 |
| 4 | 262 91 | 583 89 | 900 88 | 1212 86 | 1519 84 | 1818 81 | 2109 77 |
| 5 | 241 115 | 561 113 | 877 111 | 1191 110 | 1499 108 | 1799 105 | 2092 100 |
| 7 | 196 161 | 507 159 | 820 158 | 1135 156 | 1445 154 | 1745 151 | 2038 147 |
| 9 | 129 208 | 437 206 | 748 204 | 1061 203 | 1368 201 | 1669 198 | 1959 194 |
| 12 | 16 278 | 314 276 | 616 274 | 923 273 | 1226 271 | 1525 269 | 1815 264 |
| 15 | | 216 346 | 520 343 | 823 342 | 1123 341 | 1415 338 | 1698 334 |

Flow (GPM)

TORQUE (LB IN) 1415
 SPEED (RPM) 338

12.0 cu in / rev

PRESSURE (PSI)

| | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|------------|------------|------------|-------------|-------------|-------------|-------------|
| .5 | 323 8 | 689 6 | 1053 5 | 1423 3 | | | |
| 1 | 334 18 | 701 16 | 1067 14 | 1435 13 | 1801 11 | 2164 8 | 2532 6 |
| 2 | 340 37 | 712 35 | 1081 34 | 1451 32 | 1815 30 | 2169 27 | 2524 24 |
| 3 | 330 57 | 701 55 | 1071 54 | 1440 52 | 1804 50 | 2159 47 | 2510 43 |
| 4 | 305 76 | 682 74 | 1055 73 | 1424 72 | 1785 70 | 2140 67 | 2491 62 |
| 5 | 282 95 | 658 94 | 1031 93 | 1398 91 | 1759 89 | 2115 86 | 2460 82 |
| 7 | 233 134 | 602 132 | 969 132 | 1338 130 | 1698 128 | 2051 125 | 2394 121 |
| 9 | 154 173 | 521 171 | 886 170 | 1254 169 | 1611 167 | 1964 164 | 2309 159 |
| 12 | 35 231 | 384 229 | 737 228 | 1098 228 | 1455 226 | 1805 223 | 2146 218 |
| 15 | | 272 287 | 621 286 | 973 286 | 1321 284 | 1658 281 | 1990 276 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0230

230 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|--------------|
| | 17.2 | 34.5 | 51.7 | 75.9 | 89.7 | 106.9 |
| 1.9 | 45.4 6 | 94.3 4 | 143.4 3 | | | |
| 3.8 | 47.0 14 | 96.4 13 | 145.6 11 | 213.4 9 | 251.3 7 | 297.7 5 |
| 7.6 | 47.5 31 | 97.5 29 | 147.4 28 | 215.2 26 | 252.5 23 | 297.9 20 |
| 11.4 | 46.1 48 | 95.7 46 | 145.1 45 | 212.6 43 | 249.8 40 | 295.2 37 |
| 15.1 | 42.8 64 | 92.6 63 | 142.2 62 | 209.4 59 | 246.4 57 | 291.4 54 |
| 18.9 | 39.7 81 | 89.5 79 | 138.9 78 | 205.8 76 | 242.6 74 | 286.6 71 |
| 26.5 | 32.7 114 | 82.2 113 | 130.9 112 | 197.6 110 | 234.3 108 | 277.8 104 |
| 34.1 | 23.2 148 | 70.8 146 | 118.3 145 | 184.8 143 | 221.7 141 | 266.1 137 |
| 45.4 | 6.2 198 | 51.5 196 | 97.2 195 | 162.4 193 | 199.0 192 | 243.4 187 |
| 56.8 | | 37.6 246 | 83.5 244 | 146.8 243 | 181.6 242 | 223.6 237 |

Flow (LPM)

TORQUE (nm) 37.6
 SPEED (RPM) 246

Code 0260

260 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|--------------|
| | 17.2 | 34.5 | 51.7 | 65.5 | 82.8 | 96.6 |
| 1.9 | 52.3 6 | 108.0 5 | 163.4 4 | 207.2 3 | 261.5 2 | |
| 3.8 | 54.2 13 | 110.3 12 | 165.9 11 | 209.6 10 | 263.4 9 | 305.2 8 |
| 7.6 | 54.7 28 | 111.2 27 | 167.4 26 | 211.3 25 | 264.8 24 | 306.1 22 |
| 11.4 | 53.2 42 | 109.5 42 | 165.5 41 | 209.2 40 | 262.7 39 | 303.9 37 |
| 15.1 | 49.5 57 | 106.2 56 | 162.5 56 | 206.2 55 | 259.3 54 | 300.4 52 |
| 18.9 | 45.5 72 | 102.0 71 | 158.2 70 | 201.8 70 | 254.8 68 | 295.7 67 |
| 26.5 | 37.4 101 | 92.5 100 | 147.0 100 | 190.4 99 | 242.8 98 | 283.4 97 |
| 34.1 | 24.4 130 | 78.6 129 | 132.5 129 | 175.5 129 | 227.2 128 | 267.4 126 |
| 45.4 | 6.7 174 | 57.7 173 | 108.5 173 | 150.2 173 | 200.7 172 | 240.2 171 |
| 56.8 | | 40.0 217 | 92.9 217 | 134.1 217 | 184.3 216 | 221.9 215 |

Flow (LPM)

14.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|------------|-------------|-------------|-------------|-------------|
| | 250 | 500 | 750 | 1100 | 1300 | 1550 |
| .5 | 402 6 | 835 4 | 1269 3 | | | |
| 1 | 416 14 | 853 13 | 1289 11 | 1889 9 | 2224 7 | 2635 5 |
| 2 | 420 31 | 863 29 | 1305 28 | 1905 26 | 2235 23 | 2637 20 |
| 3 | 408 48 | 847 46 | 1284 45 | 1882 43 | 2211 40 | 2613 37 |
| 4 | 379 64 | 820 63 | 1259 62 | 1853 59 | 2181 57 | 2579 54 |
| 5 | 351 81 | 792 79 | 1229 78 | 1822 76 | 2147 74 | 2537 71 |
| 7 | 289 114 | 728 113 | 1159 112 | 1749 110 | 2074 108 | 2459 104 |
| 9 | 205 148 | 627 146 | 1047 145 | 1636 143 | 1962 141 | 2355 137 |
| 12 | 55 198 | 456 196 | 860 195 | 1437 193 | 1761 192 | 2154 187 |
| 15 | | 333 246 | 739 244 | 1299 243 | 1607 242 | 1979 237 |

Flow (GPM)

TORQUE (LB IN) 333
 SPEED (RPM) 246

16.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|------------|-------------|-------------|-------------|-------------|
| | 250 | 500 | 750 | 950 | 1200 | 1400 |
| .5 | 463 6 | 956 5 | 1446 4 | 1834 3 | 2315 2 | |
| 1 | 480 13 | 976 12 | 1468 11 | 1855 10 | 2331 9 | 2701 8 |
| 2 | 484 28 | 984 27 | 1482 26 | 1870 25 | 2344 24 | 2709 22 |
| 3 | 471 42 | 969 42 | 1465 41 | 1852 40 | 2325 39 | 2690 37 |
| 4 | 438 57 | 940 56 | 1438 56 | 1825 55 | 2295 54 | 2659 52 |
| 5 | 403 72 | 903 71 | 1400 70 | 1786 70 | 2255 68 | 2617 67 |
| 7 | 331 101 | 819 100 | 1301 100 | 1685 99 | 2149 98 | 2508 97 |
| 9 | 216 130 | 696 129 | 1173 129 | 1553 129 | 2011 128 | 2367 126 |
| 12 | 59 174 | 511 173 | 960 173 | 1329 173 | 1776 172 | 2126 171 |
| 15 | | 354 217 | 822 217 | 1187 217 | 1631 216 | 1964 215 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0295

295 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|
| | 17.2 | 34.5 | 58.6 | 69.0 | 86.2 |
| 1.9 | 57.2 5 | 119.0 4 | 204.6 2 | | |
| 3.8 | 59.2 11 | 121.1 10 | 206.6 9 | 242.1 8 | 300.1 6 |
| 7.6 | 60.2 24 | 122.6 23 | 208.2 22 | 243.2 21 | 300.2 20 |
| 11.4 | 58.0 37 | 120.2 36 | 205.6 35 | 240.8 34 | 297.7 33 |
| 15.1 | 53.3 50 | 116.1 49 | 201.7 48 | 236.6 47 | 293.4 46 |
| 18.9 | 49.3 63 | 112.2 62 | 197.6 62 | 232.4 61 | 288.8 60 |
| 26.5 | 40.0 89 | 101.2 89 | 185.3 88 | 220.4 87 | 276.5 86 |
| 34.1 | 26.8 115 | 87.2 115 | 170.1 114 | 205.2 114 | 260.8 113 |
| 45.4 | 7.7 154 | 63.5 154 | 142.4 153 | 176.5 153 | 231.4 152 |
| 56.8 | | 43.7 193 | 123.1 192 | 155.8 192 | 208.7 192 |

Flow (LPM)

TORQUE (nm) 43.7
 SPEED (RPM) 193

Code 0330

330 cc / rev

| | PRESSURE (BAR) | | | |
|-------------|----------------|-------------|--------------|--------------|
| | 17.2 | 34.5 | 51.7 | 75.9 |
| 1.9 | 65.1 4 | 133.7 3 | 201.1 2 | |
| 3.8 | 67.4 10 | 135.7 9 | 203.0 8 | 294.2 6 |
| 7.6 | 68.9 22 | 137.9 21 | 205.5 20 | 296.1 18 |
| 11.4 | 66.4 33 | 135.0 32 | 202.3 31 | 293.0 30 |
| 15.1 | 61.9 45 | 130.8 44 | 198.4 43 | 288.4 42 |
| 18.9 | 56.9 57 | 125.7 56 | 193.3 55 | 283.2 54 |
| 26.5 | 47.0 80 | 114.3 79 | 180.4 78 | 269.5 78 |
| 34.1 | 31.1 103 | 96.4 102 | 161.3 102 | 249.9 102 |
| 45.4 | 8.8 138 | 69.5 137 | 130.0 137 | 216.2 137 |
| 56.8 | | 47.6 172 | 108.2 172 | 191.6 172 |

Flow (LPM)

18.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|------------|-------------|-------------|-------------|
| | 250 | 500 | 850 | 1000 | 1250 |
| .5 | 506 5 | 1053 4 | 1811 2 | | |
| 1 | 524 11 | 1072 10 | 1829 9 | 2143 8 | 2656 6 |
| 2 | 533 24 | 1085 23 | 1843 22 | 2153 21 | 2657 20 |
| 3 | 513 37 | 1064 36 | 1820 35 | 2131 34 | 2635 33 |
| 4 | 472 50 | 1028 49 | 1785 48 | 2094 47 | 2597 46 |
| 5 | 436 63 | 993 62 | 1749 62 | 2057 61 | 2556 60 |
| 7 | 354 89 | 896 89 | 1640 88 | 1951 87 | 2447 86 |
| 9 | 237 115 | 772 115 | 1506 114 | 1816 114 | 2308 113 |
| 12 | 68 154 | 562 154 | 1260 153 | 1562 153 | 2048 152 |
| 15 | | 387 193 | 1090 192 | 1379 192 | 1847 192 |

Flow (GPM)

TORQUE (LB IN) 387
 SPEED (RPM) 193

Performance data is typical. Actual data may vary slightly from one production motor to another.

20.0 cu in / rev

| | PRESSURE (PSI) | | | |
|-----------|----------------|------------|-------------|-------------|
| | 250 | 500 | 750 | 1100 |
| .5 | 576 4 | 1183 3 | 1780 2 | |
| 1 | 597 10 | 1201 9 | 1797 8 | 2604 6 |
| 2 | 610 22 | 1221 21 | 1819 20 | 2621 18 |
| 3 | 588 33 | 1195 32 | 1791 31 | 2593 30 |
| 4 | 548 45 | 1158 44 | 1756 43 | 2553 42 |
| 5 | 504 57 | 1113 56 | 1711 55 | 2507 54 |
| 7 | 416 80 | 1012 79 | 1597 78 | 2385 78 |
| 9 | 275 103 | 853 102 | 1428 102 | 2212 102 |
| 12 | 78 138 | 615 137 | 1151 137 | 1914 137 |
| 15 | | 421 172 | 958 172 | 1696 172 |

Flow (GPM)

Code 0365

370 cc / rev

| | PRESSURE (BAR) | | | |
|-------------|----------------|-------------|---------------|---------------|
| | 17.2 | 34.5 | 44.8 | 65.5 |
| 1.9 | 66.9 4 | 144.5 3 | 191.6 2 | 283.6 1 |
| 3.8 | 69.9 9 | 148.0 8 | 194.6 7 | 285.4 6 |
| 7.6 | 72.5 19 | 151.2 18 | 198.5 18 | 290.4 17 |
| 11.4 | 69.7 30 | 148.8 29 | 195.9 28 | 286.4 27 |
| 15.1 | 64.1 40 | 143.3 39 | 190.5 39 | 280.6 38 |
| 18.9 | 60.3 50 | 138.7 49 | 185.9 49 | 274.7 49 |
| 26.5 | 48.8 71 | 125.7 70 | 172.3 70 | 260.8 69 |
| 34.1 | 35.5 91 | 110.5 90 | 156.7 90 | 243.9 90 |
| 45.4 | 9.0 122 | 82.8 121 | 130.2 121 | 216.8 121 |
| 56.8 | 152 | 68.6 607 | 119.6 1059 | 207.8 1839 |

Flow (LPM)

TORQUE (nm) 119.6
 SPEED (RPM) 1059

Code 0390

390 cc / rev

| | PRESSURE (BAR) | | | |
|-------------|----------------|-------------|--------------|--------------|
| | 17.2 | 34.5 | 44.8 | 65.5 |
| 1.9 | 75.1 3 | 155.6 2 | | |
| 3.8 | 77.8 8 | 157.9 7 | 205.3 6 | 296.2 5 |
| 7.6 | 80.0 18 | 159.9 17 | 207.0 16 | 295.9 15 |
| 11.4 | 77.2 27 | 156.9 26 | 203.8 26 | 293.0 25 |
| 15.1 | 71.9 37 | 151.4 36 | 198.3 36 | 286.9 35 |
| 18.9 | 66.2 47 | 145.3 46 | 191.8 46 | 279.7 45 |
| 26.5 | 54.8 66 | 132.2 66 | 177.3 65 | 264.5 65 |
| 34.1 | 38.8 86 | 115.0 85 | 159.5 85 | 246.4 85 |
| 45.4 | 11.6 115 | 84.3 114 | 127.0 114 | 211.6 115 |
| 56.8 | | 60.6 144 | 103.0 143 | 184.5 144 |

Flow (LPM)

22.6 cu in / rev

| | PRESSURE (PSI) | | | |
|-----------|----------------|------------|-------------|-------------|
| | 250 | 500 | 650 | 950 |
| .5 | 592 4 | 1279 3 | 1696 2 | 2510 1 |
| 1 | 619 9 | 1310 8 | 1722 7 | 2526 6 |
| 2 | 642 19 | 1338 18 | 1757 18 | 2570 17 |
| 3 | 617 30 | 1317 29 | 1734 28 | 2535 27 |
| 4 | 567 40 | 1268 39 | 1686 39 | 2484 38 |
| 5 | 534 50 | 1228 49 | 1645 49 | 2431 49 |
| 7 | 432 71 | 1113 70 | 1525 70 | 2308 69 |
| 9 | 314 91 | 978 90 | 1387 90 | 2159 90 |
| 12 | 80 122 | 733 121 | 1152 121 | 1919 121 |
| 15 | 152 | 607 152 | 1059 152 | 1839 152 |

Flow (GPM)

TORQUE (LB IN) 1059
 SPEED (RPM) 152

24.0 cu in / rev

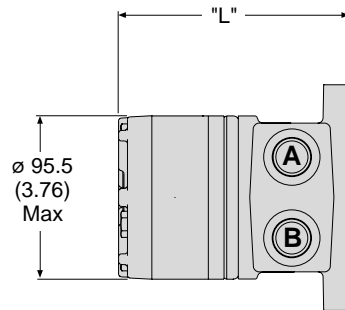
| | PRESSURE (PSI) | | | |
|-----------|----------------|------------|-------------|-------------|
| | 250 | 500 | 650 | 950 |
| .5 | 665 3 | 1377 2 | | |
| 1 | 689 8 | 1398 7 | 1817 6 | 2622 5 |
| 2 | 708 18 | 1415 17 | 1832 16 | 2619 15 |
| 3 | 683 27 | 1389 26 | 1804 26 | 2593 25 |
| 4 | 636 37 | 1340 36 | 1755 36 | 2539 35 |
| 5 | 586 47 | 1286 46 | 1698 46 | 2476 45 |
| 7 | 485 66 | 1170 66 | 1569 65 | 2341 65 |
| 9 | 343 86 | 1018 85 | 1412 85 | 2181 85 |
| 12 | 103 115 | 746 114 | 1124 114 | 1873 115 |
| 15 | | 536 144 | 912 143 | 1633 144 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Dimensions

Inch equivalents for metric dimensions are shown in (**)



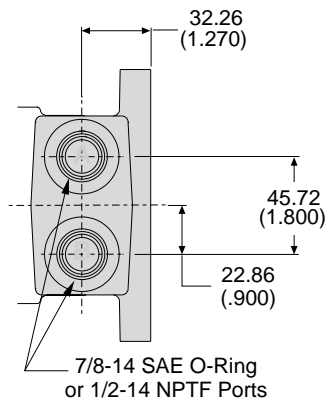
Standard Rotation:
 (As viewed from shaft end)
 Front Ports - Pressurize "A"
 to turn **Clockwise**, "B" to
 turn **Counterclockwise**.

Length "L" and Weight

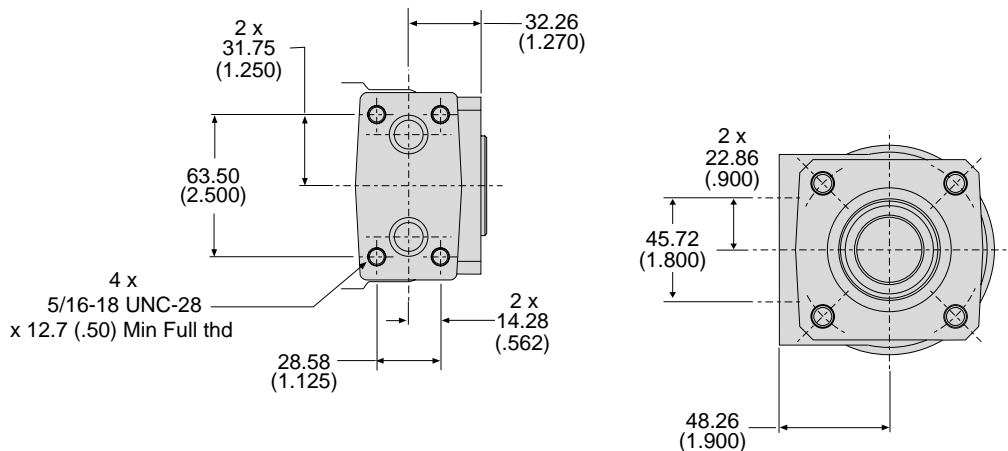
| Displacement Code | 0045 | 0050 | 0065 | 0080 | 0100 | 0130 | 0160 | 0195 | 0230 | 0260 | 0295 | 0330 | 0365 | 0390 | |
|----------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| SAE "A" Mount | | | | | | | | | | | | | | | |
| Length "L" | mm | 106 | 108 | 111 | 114 | 117 | 124 | 130 | 136 | 143 | 149 | 155 | 162 | 170 | 174 |
| | (inches) | (4.18) | (4.24) | (4.36) | (4.49) | (4.61) | (4.86) | (5.11) | (5.36) | (5.61) | (5.86) | (6.11) | (6.36) | (6.70) | (6.86) |
| Weight | kg | 4.89 | 4.98 | 5.12 | 5.26 | 5.31 | 5.67 | 5.92 | 6.19 | 6.41 | 6.69 | 6.93 | 7.22 | 7.58 | 7.69 |
| | (lb) | (10.8) | (11.0) | (11.3) | (11.6) | (11.7) | (12.5) | (13.1) | (13.6) | (14.1) | (14.7) | (15.3) | (15.9) | (16.7) | (17.0) |
| 4 Bolt | | | | | | | | | | | | | | | |
| Length "L" | mm | 106 | 108 | 111 | 114 | 117 | 124 | 130 | 136 | 143 | 149 | 155 | 162 | 170 | 174 |
| | (inches) | (4.18) | (4.24) | (4.36) | (4.49) | (4.61) | (4.86) | (5.11) | (5.36) | (5.61) | (5.86) | (6.11) | (6.36) | (6.70) | (6.86) |
| Weight | kg | 4.59 | 4.68 | 4.82 | 4.96 | 5.01 | 5.37 | 5.63 | 5.89 | 6.11 | 6.39 | 6.63 | 6.92 | 7.26 | 7.39 |
| | (lb) | (10.1) | (10.3) | (10.6) | (10.9) | (11.1) | (11.8) | (12.4) | (13.0) | (13.5) | (14.1) | (14.6) | (15.3) | (16.0) | (16.3) |

Porting

SAE O-Ring & NPTF



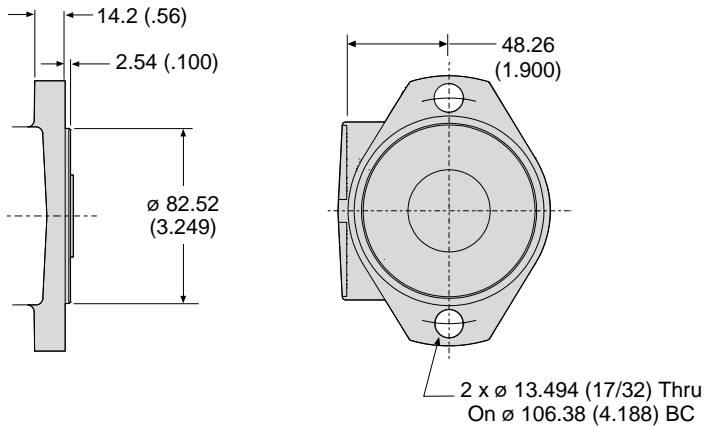
Manifold



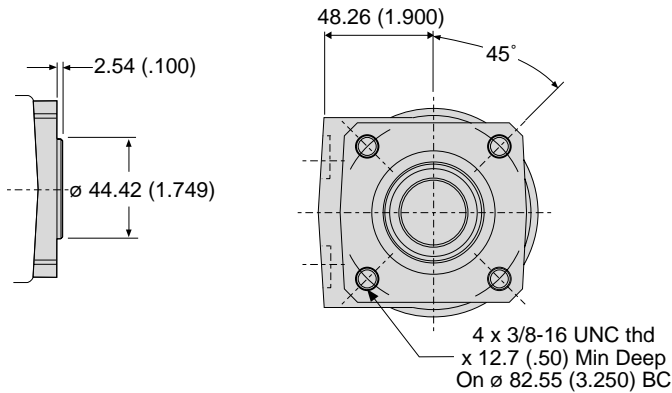
Consult Factory for
 ISO6149 Porting

Mounting

Inch equivalents for metric dimensions are shown in (**)

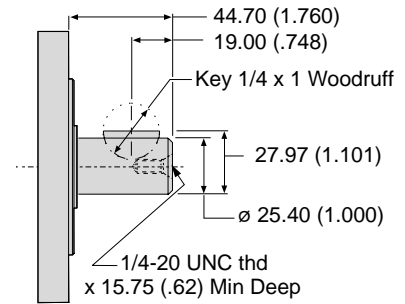


SAE A 2 Bolt

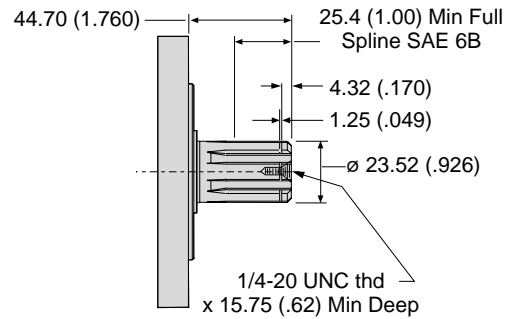


4 Bolt

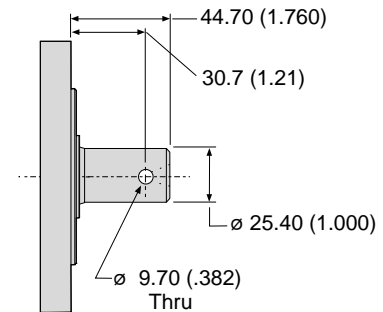
Shaft



1" Key



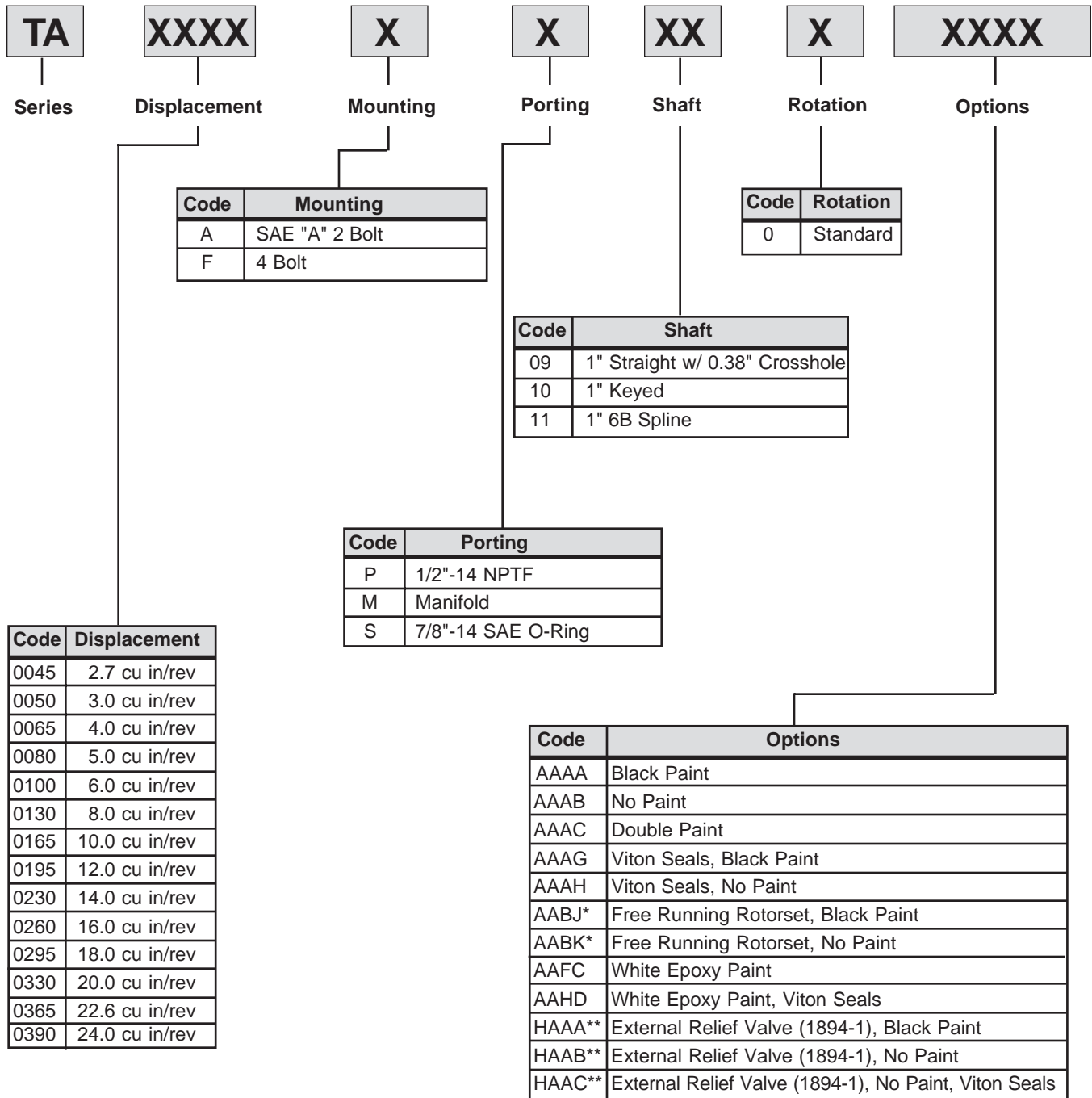
1" 6B Spline



1" Straight Shaft w/ .38 Cross Hole

Ordering Information

**T
A
S
E
R
I
E
S**



* Not applicable to TA0365 or TA0390 displacements
 ** Available only with porting code "M"

A General Purpose Motor With Advanced Technology

Features are built into this multi-purposed motor that assure long, trouble free life. The power element contains roller vanes. Splines and seals are cooled. The drivetrain utilizes patented spline geometry. This all adds up to a TB Series motor that provides real value.



Options

- All Common 1 inch, 25mm or 7/8 inch 13 Tooth Shafts
- SAE A 2 Bolt, 4 Bolt Magneto or 4 Bolt Mounting
- SAE O-Ring, NPTF, Manifold or BSPF Porting
- Front or Rear Porting
- External Cross - Over Relief Valve Package
- Free Running Rotor Set
- Reverse Timed Manifold
- Corrosion Resistance

Features

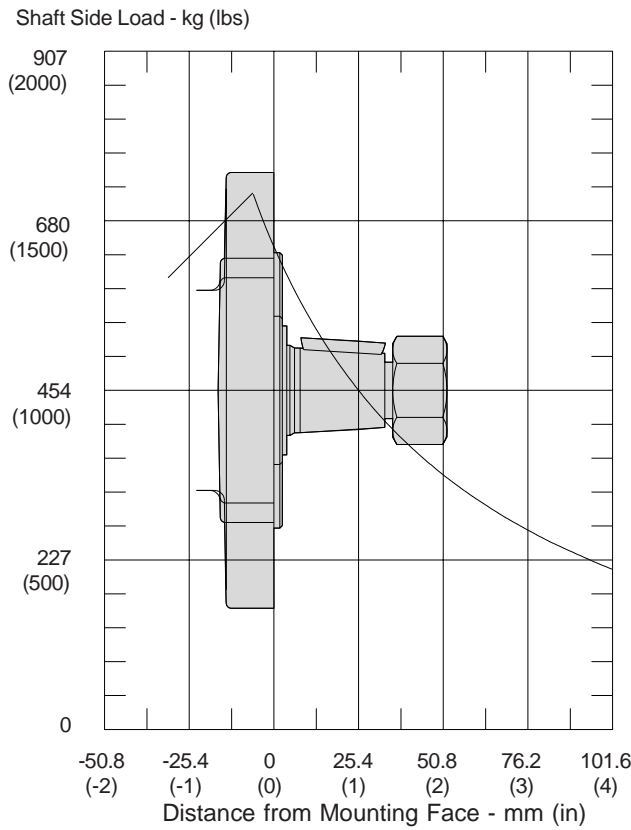
- **Roller Vane Power Element** — For High Volumetric Efficiency and Long Life
- **Orbiting Commutator** — For Accurate Timing, Smooth Low Speed Operation
- **Full Flow Spline Lubrication** — For Extended Spline Life
- **High Pressure Shaft Seal** — For High Back Pressure Operation Without External Drain Lines
- **High Flow Shaft seal Cooling** — For Long Seal Life
- **60:40 Spline Geometry** — For Superior Powertrain Strength, Long Life

TB Specifications

| Code | 0045 | 0050 | 0065 | 0080 | 0100 | 0130 | 0165 | 0195 | 0230 | 0260 | 0295 | 0330 | 0365 | 0390 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Displacement cc/rev (cu in/rev) | 45 (2.7) | 49 (3.0) | 65 (4.0) | 82 (5.0) | 99 (6.0) | 130 (8.0) | 163 (9.9) | 195 (11.9) | 228 (13.9) | 260 (15.9) | 293 (17.9) | 328 (20.0) | 370 (22.6) | 392 (24.0) |
| Maximum Speed (rpm) @ Maximum Continuous Flow | 785 | 678 | 511 | 409 | 454 | 343 | 274 | 230 | 197 | 172 | 153 | 137 | 117 | 114 |
| Pressure Differential Maximum Continuous | 124.1 (1800) | 124.1 (1800) | 124.1 (1800) | 124.1 (1800) | 124.1 (1800) | 124.1 (1800) | 124.1 (1800) | 124.1 (1800) | 103.4 (1500) | 100.0 (1450) | 96.6 (1400) | 93.1 (1350) | 86.2 (1250) | 82.8 (1200) |
| Maximum Intermittent | 165.5 (2400) | 165.5 (2400) | 165.5 (2400) | 165.5 (2400) | 165.5 (2400) | 165.5 (2400) | 155.2 (2250) | 144.8 (2100) | 137.9 (2000) | 131.0 (1900) | 124.1 (1800) | 113.8 (1650) | 105.2 (1525) | 100.0 (1450) |
| Max. Torque @ Max. Continuous Pressure | 64.3 (569) | 78.3 (693) | 106.9 (946) | 134.8 (1193) | 159.4 (1411) | 220.4 (1951) | 273.2 (2418) | 340.2 (3011) | 316.0 (2797) | 349.8 (3096) | 383.1 (3391) | 413.2 (3657) | 440.3 (3897) | 428.4 (3792) |
| Max. Torque @ Max. Intermittent Pressure | 88.0 (779) | 106.9 (946) | 145.1 (1284) | 183.5 (1624) | 216.6 (1917) | 297.4 (2632) | 345.9 (3062) | 399.6 (3537) | 427.3 (3782) | 465.1 (4117) | 498.8 (4415) | 509.0 (4505) | 540.4 (4783) | 524.5 (4642) |

**T
B
S
E
R
I
E
S**

Maximum Side Load Capacity



Performance Data

Continuous / Intermittent* Operation

- = Continuous
- = Intermittent*

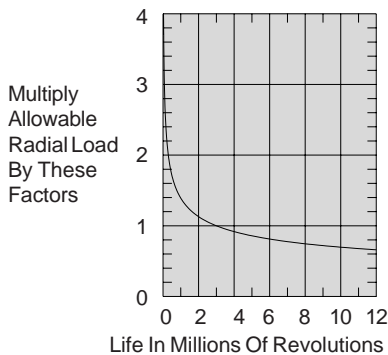
**Intermittent operation is defined as less than 10% of each minute.*

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F.)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Application of the above uni-directional radial loads will result in a B-10 life of 2.5 million revolutions. For B-10 life at other radial loads, apply the factors from the curve below.

B-10 Life Factors



**T
B
S
E
R
I
E
S**

Code 0045

45 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 34.5 | 69.0 | 103.4 | 124.1 | 137.9 | 165.5 |
| 1.9 | 13.1 31 | 29.7 17 | | | | |
| 3.8 | 14.0 76 | 31.2 61 | 48.2 43 | 58.5 36 | 65.4 29 | 79.8 18 |
| 7.6 | 15.1 167 | 33.2 149 | 51.2 131 | 61.8 121 | 68.8 113 | 82.6 97 |
| 11.4 | 14.9 256 | 33.1 239 | 51.4 220 | 62.5 210 | 69.7 200 | 84.3 183 |
| 15.1 | 14.9 344 | 33.4 326 | 52.5 307 | 64.1 295 | 71.7 285 | 86.9 268 |
| 18.9 | 14.5 433 | 33.2 414 | 52.5 393 | 64.3 380 | 72.2 370 | 88.0 352 |
| 26.5 | 13.2 609 | 32.1 589 | 51.7 566 | 63.7 551 | 71.7 540 | 88.0 520 |
| 34.1 | 12.1 785 | 31.1 764 | 50.7 739 | 62.7 722 | 70.8 710 | 87.0 689 |

Flow (LPM)

TORQUE (nm) 62.7
 SPEED (RPM) 722

Code 0050

50 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|-------------|-------------|-------------|-------------|--------------|
| | 34.5 | 69.0 | 103.4 | 124.1 | 137.9 | 165.5 |
| 1.9 | 16.3 26 | 36.0 13 | | | | |
| 3.8 | 17.4 65 | 38.2 50 | 58.5 35 | 70.6 28 | 78.7 21 | 94.9 9 |
| 7.6 | 18.4 141 | 40.7 127 | 62.7 110 | 75.8 102 | 84.3 94 | 101.2 80 |
| 11.4 | 18.2 218 | 40.4 203 | 62.9 186 | 76.3 177 | 85.1 169 | 102.5 153 |
| 15.1 | 18.1 295 | 40.8 279 | 64.1 261 | 78.1 251 | 87.4 243 | 105.9 227 |
| 18.9 | 17.5 371 | 40.4 355 | 63.9 337 | 78.3 326 | 87.8 317 | 106.9 301 |
| 26.5 | 16.2 525 | 39.1 507 | 63.0 487 | 77.5 474 | 87.2 466 | 106.9 448 |
| 34.1 | 15.0 678 | 38.0 658 | 61.7 638 | 76.3 623 | 86.0 614 | 105.7 595 |

Flow (LPM)

2.7 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|------------|------------|------------|------------|------------|
| | 500 | 1000 | 1500 | 1800 | 2000 | 2400 |
| .5 | 116 31 | 263 17 | | | | |
| 1 | 124 76 | 276 61 | 427 43 | 518 36 | 579 29 | 706 18 |
| 2 | 134 167 | 294 149 | 453 131 | 547 121 | 609 113 | 731 97 |
| 3 | 132 256 | 293 239 | 455 220 | 553 210 | 617 200 | 746 183 |
| 4 | 132 344 | 296 326 | 465 307 | 567 295 | 635 285 | 769 268 |
| 5 | 128 433 | 294 414 | 465 393 | 569 380 | 639 370 | 779 352 |
| 7 | 117 609 | 284 589 | 458 566 | 564 551 | 635 540 | 779 520 |
| 9 | 107 785 | 275 764 | 449 739 | 555 722 | 627 710 | 770 689 |

Flow (GPM)

TORQUE (LB IN) 555
 SPEED (RPM) 722

3.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|------------|------------|------------|------------|------------|
| | 500 | 1000 | 1500 | 1800 | 2000 | 2400 |
| .5 | 144 26 | 319 13 | | | | |
| 1 | 154 65 | 338 50 | 518 35 | 625 28 | 697 21 | 840 9 |
| 2 | 163 141 | 360 127 | 555 110 | 671 102 | 746 94 | 896 80 |
| 3 | 161 218 | 358 203 | 557 186 | 675 177 | 753 169 | 907 153 |
| 4 | 160 295 | 361 279 | 567 261 | 691 251 | 774 243 | 937 227 |
| 5 | 155 371 | 358 355 | 566 337 | 693 326 | 777 317 | 946 301 |
| 7 | 143 525 | 346 507 | 558 487 | 686 474 | 772 466 | 946 448 |
| 9 | 133 678 | 336 658 | 546 638 | 675 623 | 761 614 | 936 595 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0065

65 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|-------------|-------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 124.1 | 137.9 | 165.5 |
| 1.9 | 24.1 22 | 51.9 14 | 80.1 6 | | | |
| 3.8 | 25.3 51 | 54.1 42 | 82.9 34 | 100.2 29 | 111.7 25 | 134.8 17 |
| 7.6 | 26.3 108 | 56.5 99 | 86.7 90 | 104.6 85 | 116.7 81 | 140.5 71 |
| 11.4 | 26.1 166 | 56.3 156 | 86.9 147 | 105.3 141 | 117.4 136 | 141.5 126 |
| 15.1 | 25.9 224 | 56.6 214 | 87.9 203 | 106.8 197 | 119.3 192 | 144.4 181 |
| 18.9 | 25.2 281 | 56.2 271 | 87.8 260 | 106.9 252 | 119.5 247 | 145.1 237 |
| 26.5 | 23.3 396 | 54.3 385 | 86.3 372 | 105.7 364 | 118.6 359 | 144.6 347 |
| 34.1 | 21.7 511 | 52.8 499 | 84.6 485 | 103.9 476 | 116.9 470 | 143.1 457 |

Flow (LPM)

TORQUE (nm) 116.9
 SPEED (RPM) 470

Code 0080

80 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 124.1 | 137.9 | 165.5 |
| 1.9 | 28.9 17 | 63.5 10 | 99.1 4 | | | |
| 3.8 | 30.4 40 | 66.1 33 | 102.2 26 | 123.9 21 | 138.5 18 | 168.0 10 |
| 7.6 | 32.2 86 | 69.6 78 | 107.3 70 | 129.9 66 | 145.0 62 | 175.1 53 |
| 11.4 | 32.2 132 | 69.9 124 | 108.3 116 | 131.4 110 | 146.6 106 | 176.9 97 |
| 15.1 | 32.3 178 | 71.0 170 | 110.3 161 | 134.1 155 | 149.9 151 | 181.7 141 |
| 18.9 | 31.9 225 | 70.8 216 | 110.6 206 | 134.8 200 | 150.8 196 | 183.1 185 |
| 26.5 | 30.2 317 | 69.5 307 | 109.8 296 | 134.3 290 | 150.6 285 | 183.5 274 |
| 34.1 | 28.5 409 | 67.8 398 | 108.0 387 | 132.5 379 | 148.9 374 | 181.8 362 |

Flow (LPM)

4.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|------------|------------|------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1800 | 2000 | 2400 |
| .5 | 213 22 | 459 14 | 709 6 | | | |
| 1 | 224 51 | 479 42 | 734 34 | 887 29 | 989 25 | 1193 17 |
| 2 | 233 108 | 500 99 | 767 90 | 926 85 | 1033 81 | 1244 71 |
| 3 | 231 166 | 498 156 | 769 147 | 932 141 | 1039 136 | 1252 126 |
| 4 | 229 224 | 501 214 | 778 203 | 945 197 | 1056 192 | 1278 181 |
| 5 | 223 281 | 497 271 | 777 260 | 946 252 | 1058 247 | 1284 237 |
| 7 | 206 396 | 481 385 | 764 372 | 936 364 | 1050 359 | 1280 347 |
| 9 | 192 511 | 467 499 | 749 485 | 920 476 | 1035 470 | 1267 457 |

Flow (GPM)

TORQUE (LB IN) 1035
 SPEED (RPM) 470

5.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|------------|------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1800 | 2000 | 2400 |
| .5 | 256 17 | 562 10 | 877 4 | | | |
| 1 | 269 40 | 585 33 | 905 26 | 1097 21 | 1226 18 | 1487 10 |
| 2 | 285 86 | 616 78 | 950 70 | 1150 66 | 1283 62 | 1550 53 |
| 3 | 285 132 | 619 124 | 959 116 | 1163 110 | 1298 106 | 1566 97 |
| 4 | 286 178 | 628 170 | 976 161 | 1187 155 | 1327 151 | 1608 141 |
| 5 | 282 225 | 627 216 | 979 206 | 1193 200 | 1335 196 | 1621 185 |
| 7 | 267 317 | 615 307 | 972 296 | 1189 290 | 1333 285 | 1624 274 |
| 9 | 252 409 | 600 398 | 956 387 | 1173 379 | 1318 374 | 1609 362 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

**T
B
S
E
R
I
E
S**

Code 0100

100 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 124.1 | 137.9 | 165.5 |
| 1.9 | 35.0 16 | 75.6 13 | 116.9 9 | 142.1 7 | 159.1 5 | |
| 3.8 | 37.3 35 | 78.7 32 | 121.2 27 | 146.6 25 | 163.6 23 | 196.2 18 |
| 7.6 | 39.1 73 | 82.7 69 | 126.7 64 | 152.9 61 | 170.5 59 | 205.8 53 |
| 11.4 | 39.0 111 | 83.0 107 | 128.1 102 | 154.9 98 | 172.9 95 | 208.3 89 |
| 15.1 | 39.2 149 | 84.4 144 | 130.8 139 | 158.5 135 | 177.3 132 | 213.8 126 |
| 18.9 | 38.8 187 | 84.7 182 | 131.5 176 | 159.4 172 | 178.3 169 | 215.7 162 |
| 26.5 | 36.9 264 | 83.4 257 | 130.9 250 | 159.4 246 | 178.5 242 | 216.6 235 |
| 34.1 | 34.0 340 | 80.8 333 | 128.7 325 | 157.6 319 | 176.9 316 | 215.7 307 |
| 45.4 | 29.0 454 | 75.6 446 | 123.3 437 | 152.2 430 | 171.5 426 | 210.5 417 |

Flow (LPM)

TORQUE (nm) 171.5
 SPEED (RPM) 426

Code 0130

130 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 124.1 | 137.9 | 165.5 |
| 1.9 | 50.4 12 | 107.9 10 | 167.1 7 | 203.0 5 | 227.2 3 | |
| 3.8 | 52.5 27 | 111.7 24 | 171.2 21 | 206.9 19 | 230.8 17 | 278.9 13 |
| 7.6 | 54.3 55 | 115.6 52 | 177.5 49 | 214.8 46 | 239.5 44 | 289.0 40 |
| 11.4 | 54.5 84 | 116.3 81 | 178.6 77 | 216.0 74 | 241.0 72 | 290.4 67 |
| 15.1 | 54.6 113 | 117.7 109 | 181.3 105 | 219.2 102 | 244.5 100 | 294.7 95 |
| 18.9 | 54.0 142 | 117.6 138 | 181.9 133 | 220.4 130 | 246.2 128 | 297.4 122 |
| 26.5 | 50.8 199 | 115.1 195 | 180.4 190 | 219.5 186 | 245.6 184 | 297.4 177 |
| 34.1 | 46.8 257 | 111.2 252 | 176.6 246 | 215.9 242 | 242.3 239 | 295.1 233 |
| 45.4 | 37.8 343 | 102.5 338 | 168.2 331 | 208.1 327 | 234.5 323 | 288.1 316 |
| 56.8 | 28.6 430 | 92.4 424 | 157.4 416 | 196.6 411 | 223.0 407 | 276.0 399 |

Flow (LPM)

6.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1800 | 2000 | 2400 |
| .5 | 310 16 | 669 13 | 1035 9 | 1258 7 | 1408 5 | |
| 1 | 330 35 | 697 32 | 1073 27 | 1298 25 | 1448 23 | 1737 18 |
| 2 | 346 73 | 732 69 | 1121 64 | 1353 61 | 1509 59 | 1822 53 |
| 3 | 345 111 | 735 107 | 1134 102 | 1371 98 | 1530 95 | 1844 89 |
| 4 | 347 149 | 747 144 | 1158 139 | 1403 135 | 1569 132 | 1892 126 |
| 5 | 343 187 | 750 182 | 1164 176 | 1411 172 | 1578 169 | 1909 162 |
| 7 | 327 264 | 738 257 | 1159 250 | 1411 246 | 1580 242 | 1917 235 |
| 9 | 301 340 | 715 333 | 1139 325 | 1395 319 | 1566 316 | 1909 307 |
| 12 | 257 454 | 669 446 | 1091 437 | 1347 430 | 1518 426 | 1863 417 |

Flow (GPM)

TORQUE (LB IN) 1518
 SPEED (RPM) 426

8.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1800 | 2000 | 2400 |
| .5 | 446 12 | 955 10 | 1479 7 | 1797 5 | 2011 3 | |
| 1 | 465 27 | 989 24 | 1515 21 | 1831 19 | 2043 17 | 2469 13 |
| 2 | 481 55 | 1023 52 | 1571 49 | 1901 46 | 2120 44 | 2558 40 |
| 3 | 482 84 | 1029 81 | 1581 77 | 1912 74 | 2133 72 | 2570 67 |
| 4 | 483 113 | 1042 109 | 1605 105 | 1940 102 | 2164 100 | 2608 95 |
| 5 | 478 142 | 1041 138 | 1610 133 | 1951 130 | 2179 128 | 2632 122 |
| 7 | 450 199 | 1019 195 | 1597 190 | 1943 186 | 2174 184 | 2632 177 |
| 9 | 414 257 | 984 252 | 1563 246 | 1911 242 | 2145 239 | 2612 233 |
| 12 | 335 343 | 907 338 | 1489 331 | 1842 327 | 2076 323 | 2550 316 |
| 15 | 253 430 | 818 424 | 1393 416 | 1740 411 | 1974 407 | 2443 399 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0165

165 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 124.1 | 155.2 |
|-------------|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 59.8 9 | 128.5 7 | 199.9 4 | 242.8 3 | |
| 3.8 | 62.8 21 | 133.4 18 | 205.5 15 | 248.7 13 | 313.6 9 |
| 7.6 | 65.5 44 | 139.9 40 | 215.7 37 | 261.4 34 | 329.0 29 |
| 11.4 | 66.0 67 | 141.0 63 | 217.6 59 | 263.5 56 | 331.5 51 |
| 15.1 | 66.9 90 | 144.2 86 | 222.3 82 | 269.1 78 | 338.9 73 |
| 18.9 | 66.4 113 | 145.0 109 | 224.6 104 | 272.5 101 | 344.1 95 |
| 26.5 | 63.3 159 | 143.3 154 | 224.5 149 | 273.2 145 | 345.9 139 |
| 34.1 | 58.4 205 | 139.0 200 | 221.1 194 | 270.4 190 | 344.3 183 |
| 45.4 | 48.0 274 | 128.9 268 | 211.7 262 | 261.8 257 | 336.7 250 |
| 56.8 | 36.3 343 | 116.7 337 | 198.7 330 | 248.2 325 | 323.0 317 |

Flow (LPM)

TORQUE (nm) 248.2
 SPEED (RPM) 325

Code 0195

195 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 124.1 | 144.8 |
|-------------|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 77.7 9 | 168.3 8 | 263.1 7 | 321.0 6 | 378.8 5 |
| 3.8 | 81.1 18 | 173.7 17 | 268.9 16 | 326.5 15 | 384.4 14 |
| 7.6 | 84.3 38 | 178.5 36 | 276.0 35 | 334.6 33 | 393.2 32 |
| 11.4 | 84.2 57 | 179.9 55 | 277.0 53 | 335.9 52 | 394.8 50 |
| 15.1 | 84.3 76 | 181.6 74 | 280.4 72 | 339.8 71 | 398.6 69 |
| 18.9 | 83.3 95 | 180.9 93 | 280.2 91 | 340.2 89 | 399.6 87 |
| 26.5 | 78.7 134 | 177.6 131 | 277.4 129 | 337.4 127 | 397.0 125 |
| 34.1 | 72.4 172 | 170.6 169 | 270.9 167 | 331.5 164 | 392.3 162 |
| 45.4 | 59.9 230 | 157.2 227 | 257.9 223 | 318.7 221 | 379.6 217 |
| 56.8 | 45.1 287 | 141.5 284 | 240.6 280 | 300.8 277 | 361.5 273 |

Flow (LPM)

9.9 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 1800 | 2250 |
|-----------|------------|-------------|-------------|-------------|-------------|
| .5 | 529 9 | 1137 7 | 1769 4 | 2149 3 | |
| 1 | 556 21 | 1181 18 | 1819 15 | 2201 13 | 2776 9 |
| 2 | 580 44 | 1238 40 | 1909 37 | 2314 34 | 2912 29 |
| 3 | 584 67 | 1248 63 | 1926 59 | 2332 56 | 2934 51 |
| 4 | 592 90 | 1276 86 | 1968 82 | 2382 78 | 3000 73 |
| 5 | 588 113 | 1283 109 | 1988 104 | 2412 101 | 3046 95 |
| 7 | 560 159 | 1268 154 | 1987 149 | 2418 145 | 3062 139 |
| 9 | 517 205 | 1230 200 | 1957 194 | 2393 190 | 3047 183 |
| 12 | 425 274 | 1141 268 | 1874 262 | 2317 257 | 2980 250 |
| 15 | 321 343 | 1033 337 | 1759 330 | 2197 325 | 2859 317 |

Flow (GPM)

TORQUE (LB IN) 1759
 SPEED (RPM) 330

11.9 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 1800 | 2100 |
|-----------|------------|-------------|-------------|-------------|-------------|
| .5 | 688 9 | 1490 8 | 2329 7 | 2841 6 | 3353 5 |
| 1 | 718 18 | 1537 17 | 2380 16 | 2890 15 | 3402 14 |
| 2 | 746 38 | 1580 36 | 2443 35 | 2962 33 | 3480 32 |
| 3 | 745 57 | 1592 55 | 2452 53 | 2973 52 | 3494 50 |
| 4 | 746 76 | 1607 74 | 2482 72 | 3008 71 | 3528 69 |
| 5 | 737 95 | 1601 93 | 2480 91 | 3011 89 | 3537 87 |
| 7 | 697 134 | 1572 131 | 2455 129 | 2986 127 | 3514 125 |
| 9 | 641 172 | 1510 169 | 2398 167 | 2934 164 | 3472 162 |
| 12 | 530 230 | 1391 227 | 2283 223 | 2821 221 | 3360 217 |
| 15 | 399 287 | 1252 284 | 2130 280 | 2662 277 | 3200 273 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

**T
B
S
E
R
I
E
S**

Code 0230

230 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 |
|-------------|-------------|--------------|--------------|--------------|
| 1.9 | 89.9 8 | 192.5 7 | 298.3 6 | 406.4 5 |
| 3.8 | 92.4 16 | 195.8 15 | 302.9 14 | 412.3 13 |
| 7.6 | 94.9 32 | 200.5 31 | 308.7 30 | 418.0 28 |
| 11.4 | 95.5 49 | 202.1 47 | 310.7 46 | 420.9 43 |
| 15.1 | 95.8 65 | 205.1 64 | 315.1 62 | 425.0 59 |
| 18.9 | 94.9 82 | 204.8 80 | 316.0 78 | 427.3 74 |
| 26.5 | 90.3 114 | 202.2 112 | 314.6 110 | 426.6 106 |
| 34.1 | 83.7 147 | 196.4 145 | 309.3 142 | 422.7 138 |
| 45.4 | 69.3 197 | 182.5 194 | 296.7 190 | 411.8 185 |
| 56.8 | 53.4 246 | 185.6 243 | 277.6 239 | 391.7 233 |

Flow (LPM)

TORQUE (nm) 277.6
 SPEED (RPM) 239

Code 0260

260 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 100.0 | 131.0 |
|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 102.4 7 | 220.0 6 | 328.8 5 | 440.2 4 |
| 3.8 | 105.3 14 | 224.2 13 | 334.9 12 | 447.1 11 |
| 7.6 | 108.2 28 | 229.6 27 | 341.8 26 | 455.5 24 |
| 11.4 | 108.6 43 | 231.3 41 | 344.0 40 | 457.8 38 |
| 15.1 | 108.8 57 | 234.3 56 | 348.7 54 | 463.0 52 |
| 18.9 | 107.8 71 | 234.3 70 | 349.8 68 | 465.1 65 |
| 26.5 | 102.7 100 | 231.5 99 | 348.4 96 | 464.6 93 |
| 34.1 | 95.4 129 | 224.9 127 | 342.6 125 | 459.8 121 |
| 45.4 | 78.6 172 | 209.1 170 | 328.0 167 | 446.6 162 |
| 56.8 | 61.0 216 | 190.1 213 | 306.3 209 | 424.0 204 |

Flow (LPM)

Code 0295

295 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 96.6 | 124.1 |
|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 117.4 6 | 251.8 5 | 362.4 4 | 474.5 3 |
| 3.8 | 120.8 12 | 257.7 11 | 368.9 10 | 479.9 9 |
| 7.6 | 124.1 25 | 263.5 24 | 377.0 22 | 490.7 20 |
| 11.4 | 124.3 38 | 264.8 36 | 378.8 35 | 492.1 32 |
| 15.1 | 124.1 50 | 267.3 49 | 382.6 47 | 496.9 44 |
| 18.9 | 122.7 63 | 266.7 61 | 383.1 60 | 498.8 57 |
| 26.5 | 116.8 89 | 262.7 87 | 379.7 85 | 496.4 81 |
| 34.1 | 107.9 114 | 254.2 112 | 372.3 109 | 490.0 106 |
| 45.4 | 89.5 153 | 235.6 150 | 354.9 147 | 473.8 142 |
| 56.8 | 68.5 191 | 212.3 188 | 328.5 185 | 446.8 180 |

Flow (LPM)

13.9 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 |
|-----------|------------|-------------|-------------|-------------|
| .5 | 796 8 | 1704 7 | 2640 6 | 3597 5 |
| 1 | 818 16 | 1733 15 | 2681 14 | 3649 13 |
| 2 | 840 32 | 1775 31 | 2732 30 | 3700 28 |
| 3 | 845 49 | 1789 47 | 2750 46 | 3725 43 |
| 4 | 848 65 | 1815 64 | 2789 62 | 3762 59 |
| 5 | 840 82 | 1813 80 | 2797 78 | 3782 74 |
| 7 | 799 114 | 1790 112 | 2785 110 | 3776 106 |
| 9 | 741 147 | 1738 145 | 2738 142 | 3741 138 |
| 12 | 613 197 | 1615 194 | 2626 190 | 3645 185 |
| 15 | 473 246 | 1643 243 | 2457 239 | 3467 233 |

Flow (GPM)

TORQUE (LB IN) 2457
 SPEED (RPM) 239

15.9 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1450 | 1900 |
|-----------|------------|-------------|-------------|-------------|
| .5 | 906 7 | 1947 6 | 2910 5 | 3896 4 |
| 1 | 932 14 | 1984 13 | 2964 12 | 3957 11 |
| 2 | 958 28 | 2032 27 | 3025 26 | 4032 24 |
| 3 | 961 43 | 2047 41 | 3045 40 | 4052 38 |
| 4 | 963 57 | 2074 56 | 3086 54 | 4098 52 |
| 5 | 954 71 | 2074 70 | 3096 68 | 4117 65 |
| 7 | 909 100 | 2049 99 | 3084 96 | 4112 93 |
| 9 | 844 129 | 1991 127 | 3032 125 | 4070 121 |
| 12 | 696 172 | 1851 170 | 2903 167 | 3953 162 |
| 15 | 540 216 | 1683 213 | 2711 209 | 3753 204 |

Flow (GPM)

17.9 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1400 | 1800 |
|-----------|------------|-------------|-------------|-------------|
| .5 | 1039 6 | 2229 5 | 3208 4 | 4200 3 |
| 1 | 1069 12 | 2281 11 | 3265 10 | 4248 9 |
| 2 | 1098 25 | 2332 24 | 3337 22 | 4343 20 |
| 3 | 1100 38 | 2344 36 | 3353 35 | 4356 32 |
| 4 | 1098 50 | 2366 49 | 3386 47 | 4398 44 |
| 5 | 1086 63 | 2361 61 | 3391 60 | 4415 57 |
| 7 | 1034 89 | 2325 87 | 3361 85 | 4394 81 |
| 9 | 955 114 | 2250 112 | 3295 109 | 4337 106 |
| 12 | 792 153 | 2085 150 | 3141 147 | 4194 142 |
| 15 | 606 191 | 1879 188 | 2908 185 | 3955 180 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0330

330 cc / rev

| | PRESSURE (BAR) | | | |
|-------------|----------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 93.1 | 113.8 |
| 1.9 | 134.7 5 | 282.2 4 | 387.0 4 | 477.6 3 |
| 3.8 | 138.3 11 | 288.7 10 | 394.9 9 | 485.7 8 |
| 7.6 | 141.8 22 | 296.0 21 | 404.6 20 | 497.8 18 |
| 11.4 | 142.2 34 | 297.5 32 | 406.4 31 | 499.8 29 |
| 15.1 | 142.1 45 | 301.2 43 | 411.8 42 | 506.2 40 |
| 18.9 | 140.4 56 | 301.1 55 | 413.2 53 | 509.0 51 |
| 26.5 | 134.0 79 | 296.8 77 | 410.6 75 | 507.5 73 |
| 34.1 | 123.4 102 | 287.4 100 | 402.5 97 | 500.6 94 |
| 45.4 | 102.2 137 | 267.0 134 | 383.1 131 | 482.3 127 |
| 56.8 | 78.2 171 | 240.5 168 | 354.3 165 | 452.0 161 |

Flow (LPM)

TORQUE (nm) 354.3
 SPEED (RPM) 165

Code 0365

370 cc / rev

| | PRESSURE (BAR) | | | |
|-------------|----------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 86.2 | 105.2 |
| 1.9 | 157.4 5 | 332.4 4 | 421.9 4 | 521.6 3 |
| 3.8 | 163.1 10 | 339.5 9 | 428.9 9 | 527.8 8 |
| 7.6 | 168.8 20 | 349.1 19 | 439.5 18 | 538.8 17 |
| 11.4 | 167.8 30 | 348.2 29 | 438.7 28 | 538.3 27 |
| 15.1 | 166.9 40 | 349.0 39 | 440.3 38 | 540.4 36 |
| 18.9 | 164.0 50 | 347.4 49 | 439.2 48 | 539.5 46 |
| 26.5 | 154.9 70 | 340.0 69 | 432.3 67 | 533.2 65 |
| 34.1 | 142.4 90 | 327.5 89 | 420.4 87 | 522.1 85 |
| 45.4 | 113.2 121 | 300.3 119 | 394.1 117 | 496.3 115 |
| 56.8 | 79.1 151 | 266.1 149 | 360.4 147 | 462.7 144 |

Flow (LPM)

Code 0390

390 cc / rev

| | PRESSURE (BAR) | | | |
|-------------|----------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 82.8 | 100.0 |
| 1.9 | 147.9 4 | 325.9 3 | 399.3 2 | 492.5 2 |
| 3.8 | 154.6 9 | 333.1 8 | 405.5 7 | 496.4 6 |
| 7.6 | 160.1 18 | 342.1 17 | 416.1 16 | 510.2 15 |
| 11.4 | 161.2 28 | 345.5 26 | 419.6 26 | 512.9 24 |
| 15.1 | 163.0 37 | 350.5 36 | 425.3 35 | 519.1 34 |
| 18.9 | 162.6 47 | 352.5 45 | 428.2 45 | 523.1 43 |
| 26.5 | 157.3 66 | 351.4 65 | 428.4 64 | 524.5 62 |
| 34.1 | 146.5 85 | 343.5 84 | 421.6 83 | 519.4 81 |
| 45.4 | 122.8 114 | 320.3 112 | 400.1 111 | 499.1 110 |
| 56.8 | 93.9 143 | 290.5 141 | 369.7 140 | 468.3 138 |

Flow (LPM)

20.0 cu in / rev

| | PRESSURE (PSI) | | | |
|-----------|----------------|-------------|-------------|-------------|
| | 500 | 1000 | 1350 | 1650 |
| .5 | 1192 5 | 2498 4 | 3425 4 | 4227 3 |
| 1 | 1224 11 | 2555 10 | 3495 9 | 4299 8 |
| 2 | 1255 22 | 2620 21 | 3581 20 | 4406 18 |
| 3 | 1259 34 | 2633 32 | 3597 31 | 4424 29 |
| 4 | 1258 45 | 2666 43 | 3645 42 | 4480 40 |
| 5 | 1243 56 | 2665 55 | 3657 53 | 4505 51 |
| 7 | 1186 79 | 2627 77 | 3634 75 | 4492 73 |
| 9 | 1092 102 | 2544 100 | 3563 97 | 4431 94 |
| 12 | 905 137 | 2363 134 | 3391 131 | 4269 127 |
| 15 | 692 171 | 2129 168 | 3136 165 | 4001 161 |

Flow (GPM)

TORQUE (LB IN) 3136
 SPEED (RPM) 165

22.6 cu in / rev

| | PRESSURE (PSI) | | | |
|-----------|----------------|-------------|-------------|-------------|
| | 500 | 1000 | 1250 | 1525 |
| .5 | 1393 5 | 2942 4 | 3734 4 | 4617 3 |
| 1 | 1444 10 | 3005 9 | 3796 9 | 4672 8 |
| 2 | 1494 20 | 3090 19 | 3890 18 | 4769 17 |
| 3 | 1485 30 | 3082 29 | 3883 28 | 4765 27 |
| 4 | 1477 40 | 3089 39 | 3897 38 | 4783 36 |
| 5 | 1452 50 | 3075 49 | 3887 48 | 4775 46 |
| 7 | 1371 70 | 3009 69 | 3826 67 | 4719 65 |
| 9 | 1260 90 | 2899 89 | 3721 87 | 4621 85 |
| 12 | 1002 121 | 2658 119 | 3488 117 | 4393 115 |
| 15 | 700 151 | 2355 149 | 3190 147 | 4095 144 |

Flow (GPM)

24.0 cu in / rev

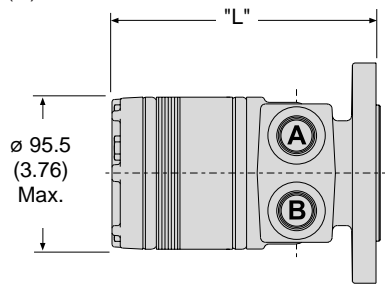
| | PRESSURE (PSI) | | | |
|-----------|----------------|-------------|-------------|-------------|
| | 500 | 1000 | 1200 | 1450 |
| .5 | 1309 4 | 2885 3 | 3534 2 | 4359 2 |
| 1 | 1368 9 | 2948 8 | 3589 7 | 4394 6 |
| 2 | 1417 18 | 3028 17 | 3683 16 | 4516 15 |
| 3 | 1427 28 | 3058 26 | 3714 26 | 4540 24 |
| 4 | 1443 37 | 3102 36 | 3764 35 | 4595 34 |
| 5 | 1439 47 | 3120 45 | 3790 45 | 4630 43 |
| 7 | 1392 66 | 3110 65 | 3792 64 | 4642 62 |
| 9 | 1297 85 | 3040 84 | 3732 83 | 4597 81 |
| 12 | 1087 114 | 2835 112 | 3541 111 | 4418 110 |
| 15 | 831 143 | 2571 141 | 3272 140 | 4145 138 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Dimensions

Inch equivalents for metric dimensions are shown in (**)



Standard Rotation:

(As viewed from shaft end)
 Front Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.

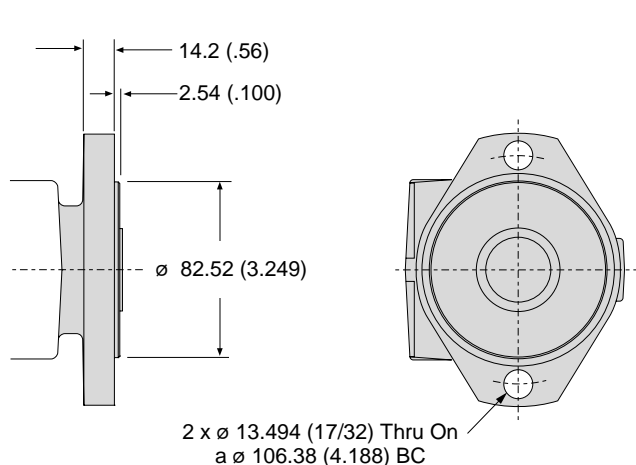
Rear Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Length "L" and Weight

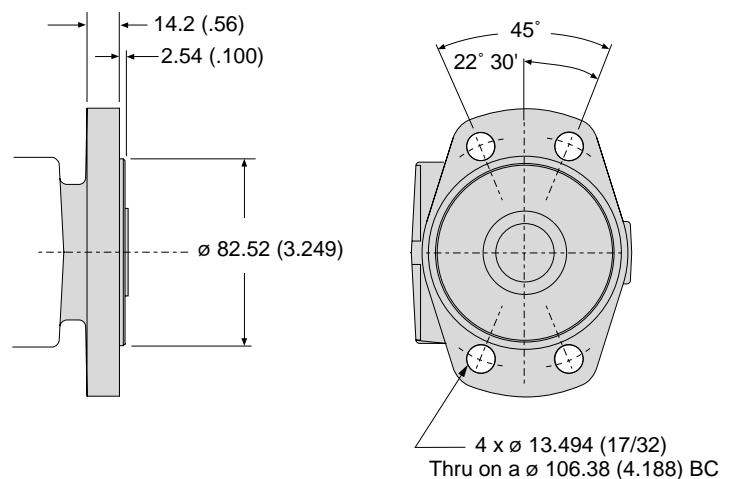
| Displacement Code | 0045 | 0050 | 0065 | 0080 | 0100 | 0130 | 0165 | 0195 | 0230 | 0260 | 0295 | 0330 | 0365 | 0390 | |
|----------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| SAE "A" Mount | | | | | | | | | | | | | | | |
| Length "L" | mm | 136 | 138 | 141 | 144 | 147 | 154 | 160 | 166 | 173 | 179 | 185 | 192 | 200 | 205 |
| | (inches) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |
| Weight | kg | 6.03 | 6.12 | 6.26 | 6.35 | 6.49 | 6.76 | 7.03 | 7.35 | 7.58 | 7.80 | 8.07 | 8.35 | 8.66 | 8.80 |
| | (lb) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| 4 Bolt | | | | | | | | | | | | | | | |
| Length "L" | mm | 136 | 138 | 141 | 144 | 147 | 154 | 160 | 166 | 173 | 179 | 185 | 192 | 200 | 205 |
| | (inches) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.05) |
| Weight | kg | 5.62 | 5.67 | 5.80 | 5.94 | 6.08 | 6.31 | 6.62 | 7.03 | 7.17 | 7.39 | 7.62 | 7.94 | 8.26 | 8.39 |
| | (lb) | (12.4) | (12.5) | (12.8) | (13.1) | (13.4) | (13.9) | (14.6) | (15.5) | (15.8) | (16.3) | (16.8) | (17.5) | (18.2) | (18.5) |
| Magneto Mount | | | | | | | | | | | | | | | |
| Length "L" | mm | 136 | 138 | 141 | 144 | 147 | 154 | 160 | 166 | 173 | 179 | 185 | 192 | 200 | 205 |
| | (inches) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.05) |
| Weight | kg | 6.30 | 6.40 | 6.53 | 6.62 | 6.76 | 7.03 | 7.30 | 7.62 | 7.85 | 8.12 | 8.35 | 8.62 | 8.94 | 9.07 |
| | (lb) | (13.9) | (14.1) | (14.4) | (14.6) | (14.9) | (15.5) | (16.1) | (16.8) | (17.3) | (17.9) | (18.4) | (19.0) | (19.7) | (20.0) |

Mounting

SAE A 2 Bolt



Magneto

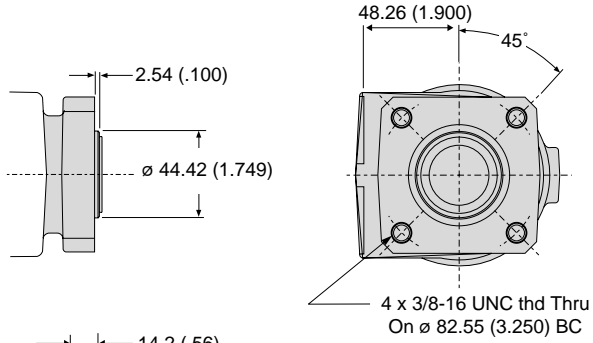


TB SERIES

Mounting

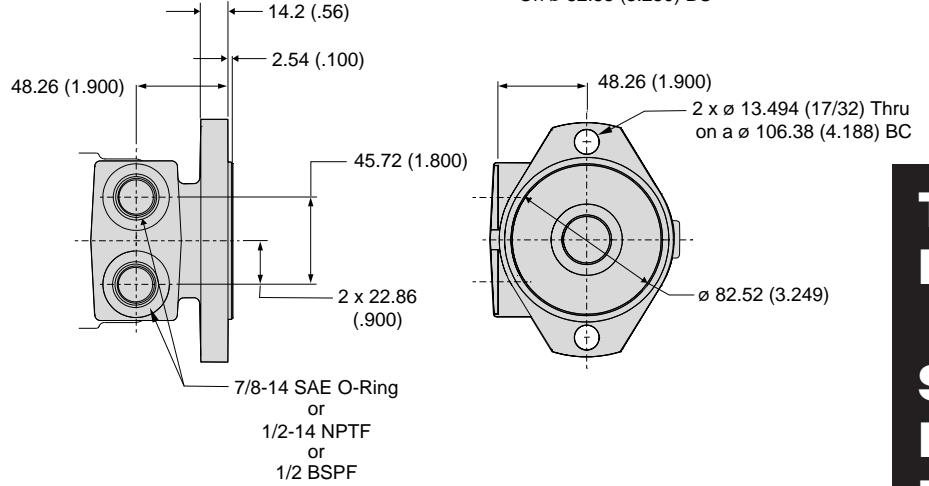
Inch equivalents for metric dimensions are shown in (**)

4 Bolt

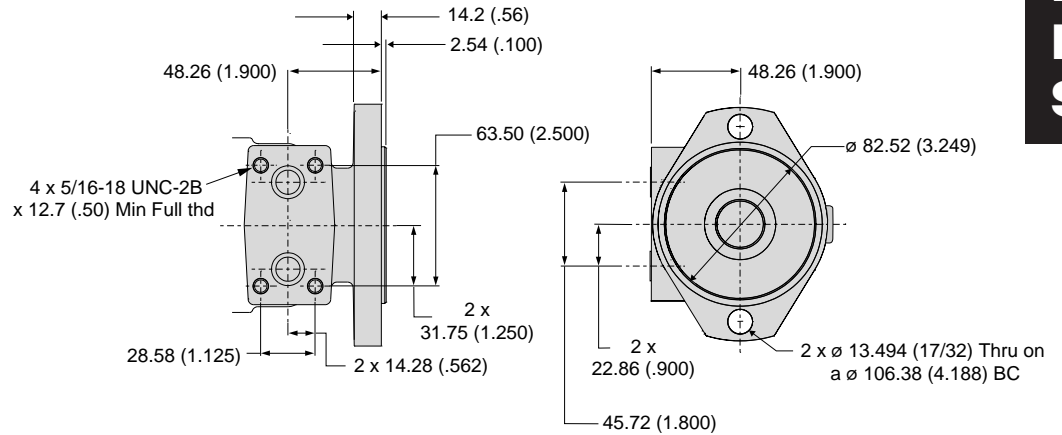


Porting

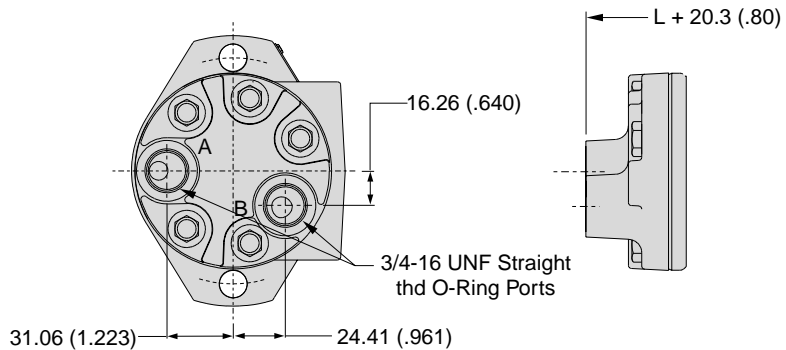
SAE O-Ring, NPTF, BSPF



Manifold



Rear, SAE O-Ring

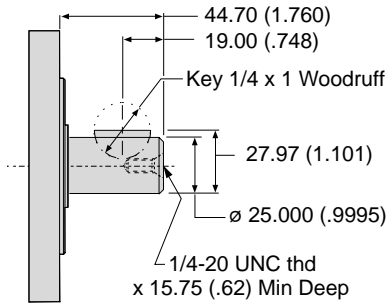


Consult Factory for
 ISO6149 Porting

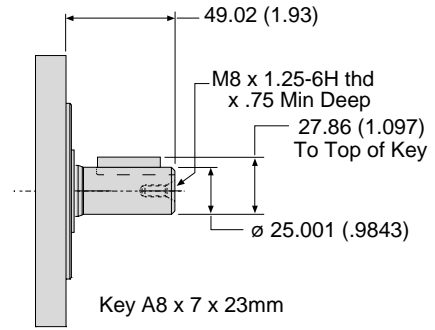
**T
B
S
E
R
I
E
S**

Shaft

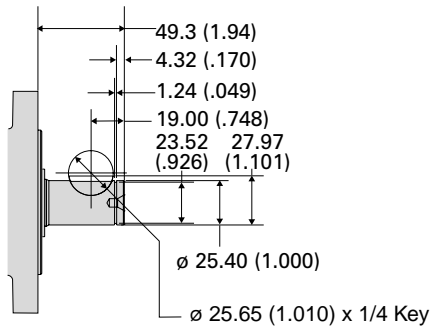
Inch equivalents for metric dimensions are shown in (**)



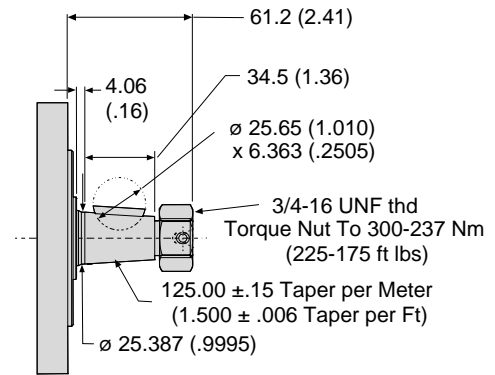
1" Key



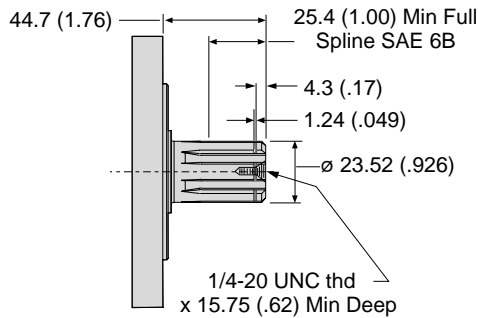
25mm Keyed



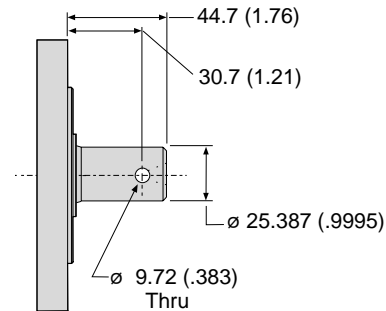
Long 1" Key



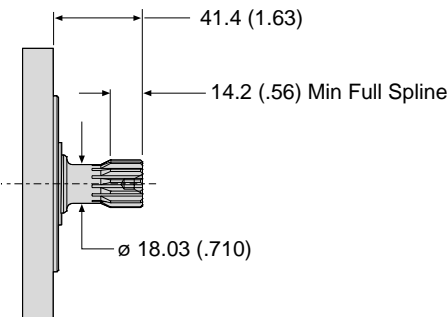
1" Tapered



1" 6B Spline



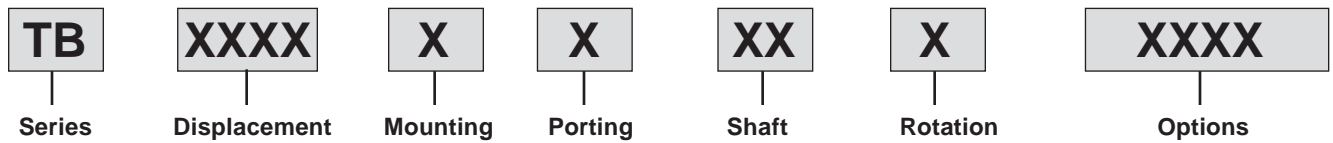
1" Straight Shaft w/ .38 Cross Hole



7/8" 13 Tooth Spline

**T
B
S
E
R
I
E
S**

Ordering Information



| Code | Displacement |
|------|----------------|
| 0045 | 2.7 cu in/rev |
| 0050 | 3.0 cu in/rev |
| 0065 | 4.0 cu in/rev |
| 0080 | 5.0 cu in/rev |
| 0100 | 6.0 cu in/rev |
| 0130 | 8.0 cu in/rev |
| 0165 | 9.9 cu in/rev |
| 0195 | 11.9 cu in/rev |
| 0230 | 13.9 cu in/rev |
| 0260 | 15.9 cu in/rev |
| 0295 | 17.9 cu in/rev |
| 0330 | 20.0 cu in/rev |
| 0365 | 22.6 cu in/rev |
| 0390 | 24.0 cu in/rev |

| Code | Mounting |
|------|----------------|
| A | SAE "A" 2 Bolt |
| F | 4 Bolt |
| M | Magneto |

| Code | Shaft |
|------|-------------------------------|
| 09 | 1" Straight w/0.38" Crosshole |
| 10 | 1" Keyed |
| 11 | 1" 6B Spline |
| 13 | Long 1" Keyed |
| 21 | 1" Keyed; Corrosion Resistant |
| 25 | 1" Tapered |
| 26 | 25mm Keyed w/ 8mm Key |
| 28 | 7/8" 13 Tooth Spline |

| Code | Rotation |
|------|------------------------|
| 0 | Standard |
| 1 | Reverse Timed Manifold |

| Code | Porting |
|------|-------------------------|
| M | Manifold |
| P* | 1/2"-14 NPTF |
| R | Rear; 3/4-16 SAE O-Ring |
| S | 7/8"-14 SAE O-Ring |
| T** | 1/2" BSPF |

* Available on A & F mounting only
 ** Available on A & M mounting only

| Code | Options |
|--------|--|
| AAAA | Black Paint |
| AAAB | No Paint |
| AAAC | Double Paint |
| AAAF | Castle Nut, Black Paint |
| AABP | Castle Nut, No Paint |
| AAAG | Viton Seals, Black Paint |
| AAAH | Viton Seals, No Paint |
| AAAJ | Vespel Commutator Seal, Black Paint |
| AAFG | Vespel Commutator Seal, No Paint |
| AABJ* | Free Running Rotorset, Black Paint |
| AABK* | Free Running Rotorset, No Paint |
| AABL* | Free Running Rotorset, No Commutator Seal, Black Paint |
| AABM* | Free Running Rotorset, No Commutator Seal, No Paint |
| AAFC | White Epoxy Paint |
| AAHD | White Epoxy Paint, Viton Seals |
| AAJV | Bidirectional Shuttle (3:30), Black Paint |
| HAAA** | External Relief Valve (1894-1), Black Paint |
| HAAB** | External Relief Valve (1894-1), No Paint |
| HAAC** | External Relief Valve (1894-1), No Paint, Viton Seals |

* Not applicable to TB0365 or TB0390 displacements
 ** Available only with porting code "M"

**T
B
S
E
R
I
E
S**

The Ultimate In Performance From A Small Frame Motor

Parker's TD Series motor provides all that could be expected of a general purpose motor and more. Patented 60:40 spline geometry provides drivetrain strength for severe applications. Roller vanes and sealed orbit commutation assure high volumetric efficiency and smooth low speed operation. Cooling fluid flow across splines and seals mean long, trouble free life.



Options

- All Common 1 inch, 25mm or 7/8 inch 13 Tooth Shafts
- SAE A 2 Bolt, 4 Bolt Magneto or 4 Bolt Mounting
- Wheel Mount
- SAE O-Ring, NPTF, Manifold or BSPF Porting
- Front or Rear Porting
- Speed Sensor
- External Cross - Over Relief Valve Package
- Free Running Rotor Set
- Reverse Timed Manifold
- Corrosion Resistance

Features

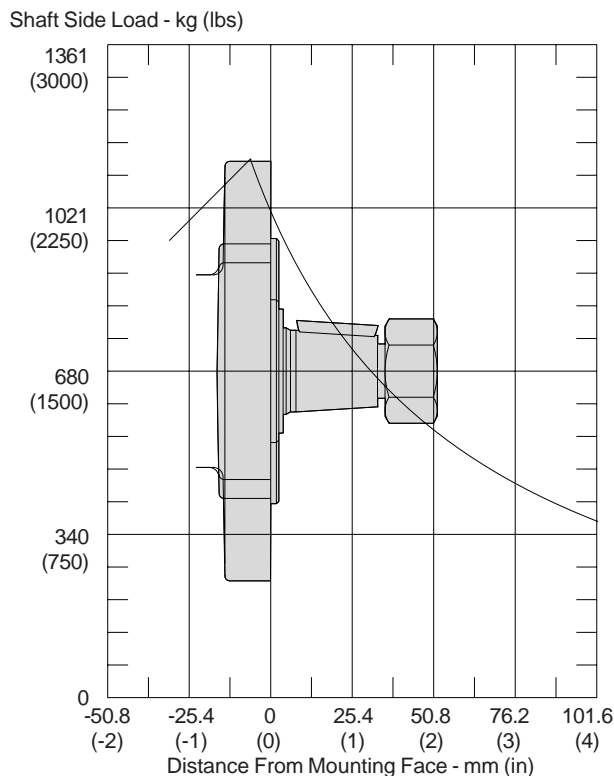
- **Roller Vane Power Element** — For High Volumetric Efficiency and Long Life
- **Orbiting Commutator** — For Accurate Timing, Smooth Low Speed Operation
- **Full Flow Spline Lubrication** — For Extended Spline Life
- **High Pressure Shaft Seal** — For High Back Pressure Operation Without External Drain Lines
- **High Flow Shaft Seal Cooling** — For Long Seal Life
- **60:40 Spline Geometry** — For Superior Powertrain Strength, Long Life

TD Specifications

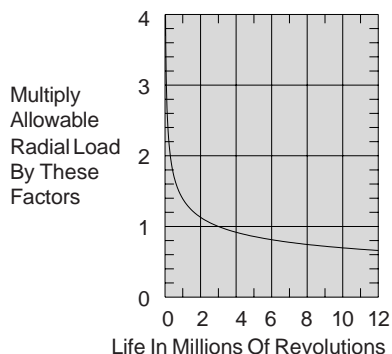
| Code | 0045 | 0050 | 0065 | 0080 | 0100 | 0130 | 0165 | 0195 | 0230 | 0260 | 0295 | 0330 | 0365 | 0390 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Displacement cc/rev (cu in/rev) | 45 (2.7) | 50 (3.0) | 66 (4.0) | 82 (5.0) | 98 (6.0) | 130 (8.0) | 163 (10.0) | 196 (11.9) | 228 (13.9) | 261 (15.9) | 293 (17.9) | 326 (20.0) | 370 (22.6) | 392 (24.0) |
| Maximum Speed (rpm) @ Maximum Continuous Flow | 805 | 640 | 654 | 546 | 456 | 344 | 274 | 230 | 247 | 215 | 192 | 171 | 146 | 143 |
| Pressure Differential Maximum Continuous | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 120.7 (1750) | 113.8 (1650) | 106.9 (1550) | 100.0 (1450) | 91.4 (1325) | 86.2 (1250) |
| Maximum Intermittent | 172.4 (2500) | 172.4 (2500) | 172.4 (2500) | 172.4 (2500) | 172.4 (2500) | 172.4 (2500) | 172.4 (2500) | 172.4 (2500) | 148.3 (2150) | 137.9 (2000) | 127.6 (1850) | 117.2 (1700) | 108.6 (1575) | 103.4 (1500) |
| Max. Torque @ Max. Continuous Pressure | 70.5 (624) | 88.7 (785) | 122.0 (1080) | 153.5 (1359) | 183.5 (1624) | 248.7 (2201) | 308.7 (2732) | 379.6 (3360) | 370.2 (3277) | 402.3 (3561) | 427.5 (3784) | 443.6 (3926) | 467.6 (4139) | 444.6 (3935) |
| Max. Torque @ Max. Intermittent Pressure | 90.0 (797) | 112.8 (998) | 154.2 (1365) | 194.1 (1718) | 231.9 (2053) | 313.6 (2776) | 389.4 (3447) | 476.9 (4221) | 461.0 (4080) | 492.9 (4363) | 515.6 (4564) | 523.2 (4631) | 558.6 (4944) | 538.7 (4768) |

PSLGC,PM6, dg, ki

**Maximum Side Load Capacity
 Flange Mount**



B-10 Life Factors



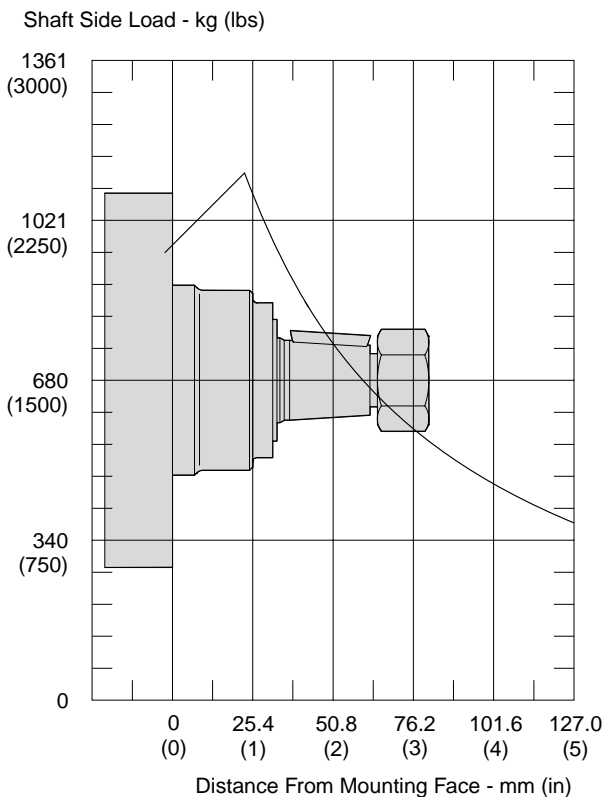
Performance Data

Continuous / Intermittent* Operation

- = Continuous
- = Intermittent*

**Intermittent operation is defined as less than 10% of each minute.*

Wheel Mount



Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F.)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Application of the above uni-directional radial loads will result in a B-10 life of 3 million revolutions. For B-10 life at other radial loads, apply the factors from the curve at top of next column.

PSLGC.PM6, dg, ki

Code 0045

45 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|-------------|-------------|-------------|-------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 13.7 41 | 30.7 35 | 48.0 28 | 65.4 22 | 83.0 14 |
| 3.8 | 14.2 86 | 31.9 79 | 49.7 72 | 67.7 65 | 85.5 56 |
| 7.6 | 14.5 176 | 32.5 168 | 51.1 161 | 69.9 152 | 89.0 141 |
| 11.4 | 14.2 266 | 32.4 257 | 51.2 249 | 70.0 239 | 89.1 227 |
| 15.1 | 13.9 356 | 32.2 346 | 51.3 337 | 70.5 326 | 89.9 313 |
| 18.9 | 13.4 446 | 31.7 435 | 51.0 425 | 70.5 413 | 90.0 398 |
| 26.5 | 11.9 625 | 30.5 613 | 49.7 601 | 69.5 587 | 89.6 570 |
| 34.1 | 10.6 805 | 29.3 791 | 48.6 777 | 68.4 761 | 88.6 742 |

Flow (LPM)

TORQUE (nm) 68.4
 SPEED (RPM) 761

Code 0050

50 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|-------------|-------------|-------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 16.5 32 | 36.9 23 | 58.3 13 | 79.7 6 | |
| 3.8 | 18.0 69 | 39.0 60 | 60.7 50 | 82.1 41 | 103.3 25 |
| 7.6 | 19.2 146 | 41.1 136 | 63.6 124 | 86.3 113 | 108.6 94 |
| 11.4 | 18.9 225 | 41.0 214 | 63.8 203 | 86.8 191 | 109.5 172 |
| 15.1 | 19.1 294 | 41.5 282 | 64.9 271 | 88.6 260 | 112.2 241 |
| 18.9 | 18.6 363 | 41.2 349 | 64.9 339 | 88.7 327 | 112.8 307 |
| 26.5 | 17.6 501 | 40.3 485 | 64.2 474 | 88.4 460 | 112.6 440 |
| 34.1 | 15.9 640 | 38.6 621 | 62.7 609 | 87.1 594 | 111.6 572 |
| 45.4 | 12.9 835 | 35.8 813 | 60.0 802 | 84.5 786 | 109.1 766 |

Flow (LPM)

Code 0065

65 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|-------------|-------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 24.9 24 | 54.3 17 | 83.9 11 | 113.4 3 | |
| 3.8 | 26.2 52 | 56.3 45 | 86.2 38 | 115.8 31 | 145.0 23 |
| 7.6 | 27.0 109 | 57.8 102 | 89.1 94 | 120.4 85 | 150.9 75 |
| 11.4 | 26.9 167 | 57.8 159 | 89.3 151 | 120.7 141 | 151.4 130 |
| 15.1 | 26.8 224 | 58.1 215 | 89.8 207 | 121.8 197 | 153.3 185 |
| 18.9 | 26.3 279 | 57.7 271 | 89.7 262 | 122.0 252 | 154.2 240 |
| 26.5 | 24.4 386 | 56.2 376 | 88.5 366 | 121.1 356 | 153.8 343 |
| 34.1 | 22.0 494 | 53.9 483 | 86.3 472 | 119.1 460 | 152.2 446 |
| 45.4 | 17.2 654 | 49.1 641 | 81.8 629 | 114.9 617 | 148.5 601 |
| 56.8 | 11.5 802 | 43.8 789 | 87.7 676 | 109.5 763 | 142.9 748 |

Flow (LPM)

2.7 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|------------|------------|------------|------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 121 41 | 272 35 | 425 28 | 579 22 | 735 14 |
| 1 | 126 86 | 282 79 | 440 72 | 599 65 | 757 56 |
| 2 | 128 176 | 288 168 | 452 161 | 619 152 | 788 141 |
| 3 | 126 266 | 287 257 | 453 249 | 620 239 | 789 227 |
| 4 | 123 356 | 285 346 | 454 337 | 624 326 | 796 313 |
| 5 | 119 446 | 281 435 | 451 425 | 624 413 | 797 398 |
| 7 | 105 625 | 270 613 | 440 601 | 615 587 | 793 570 |
| 9 | 94 805 | 259 791 | 430 777 | 605 761 | 784 742 |

Flow (GPM)

TORQUE (LB IN) 605
 SPEED (RPM) 761

3.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|------------|------------|------------|------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 146 32 | 327 23 | 516 13 | 705 6 | |
| 1 | 159 69 | 345 60 | 537 50 | 727 41 | 914 25 |
| 2 | 170 146 | 364 136 | 563 124 | 764 113 | 961 94 |
| 3 | 167 225 | 363 214 | 565 203 | 768 191 | 969 172 |
| 4 | 169 294 | 367 282 | 574 271 | 784 260 | 993 241 |
| 5 | 165 363 | 365 349 | 574 339 | 785 327 | 998 307 |
| 7 | 156 501 | 357 485 | 568 474 | 782 460 | 997 440 |
| 9 | 141 640 | 342 621 | 555 609 | 771 594 | 988 572 |
| 12 | 114 835 | 317 813 | 531 802 | 748 786 | 966 766 |

Flow (GPM)

4.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|------------|------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 220 24 | 481 17 | 743 11 | 1004 3 | |
| 1 | 232 52 | 498 45 | 763 38 | 1025 31 | 1283 23 |
| 2 | 239 109 | 512 102 | 789 94 | 1066 85 | 1336 75 |
| 3 | 238 167 | 512 159 | 790 151 | 1068 141 | 1340 130 |
| 4 | 237 224 | 514 215 | 795 207 | 1078 197 | 1357 185 |
| 5 | 233 279 | 511 271 | 794 262 | 1080 252 | 1365 240 |
| 7 | 216 386 | 497 376 | 783 366 | 1072 356 | 1361 343 |
| 9 | 195 494 | 477 483 | 764 472 | 1054 460 | 1347 446 |
| 12 | 152 654 | 435 641 | 724 629 | 1017 617 | 1314 601 |
| 15 | 102 802 | 388 789 | 776 676 | 969 763 | 1265 748 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0080

80 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 29.5 17 | 65.0 8 | | | |
| 3.8 | 31.2 39 | 67.3 30 | 103.7 23 | 140.7 13 | 178.8 2 |
| 7.6 | 32.8 85 | 71.3 76 | 110.0 68 | 148.0 56 | 183.3 42 |
| 11.4 | 32.9 131 | 71.5 122 | 110.5 113 | 149.0 101 | 186.9 86 |
| 15.1 | 33.1 177 | 72.5 167 | 112.4 158 | 152.2 146 | 190.5 130 |
| 18.9 | 32.8 223 | 72.4 213 | 112.9 203 | 153.5 191 | 193.5 174 |
| 26.5 | 30.8 316 | 71.0 304 | 111.7 293 | 152.9 280 | 194.1 262 |
| 34.1 | 28.1 408 | 68.1 396 | 109.1 384 | 150.7 370 | 192.4 350 |
| 45.4 | 22.3 546 | 62.3 533 | 103.5 519 | 145.4 504 | 187.7 483 |
| 56.8 | 15.4 686 | 55.8 670 | 96.8 655 | 138.5 638 | 181.0 615 |

Flow (LPM)

TORQUE (nm) 138.5
 SPEED (RPM) 638

Code 0100

100 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 35.6 14 | 77.6 7 | | | |
| 3.8 | 37.5 33 | 80.2 26 | 122.4 18 | 165.0 9 | |
| 7.6 | 39.3 71 | 84.8 64 | 130.2 55 | 174.1 45 | 214.5 33 |
| 11.4 | 39.5 109 | 85.4 102 | 131.1 92 | 175.8 83 | 219.6 69 |
| 15.1 | 39.9 147 | 86.8 140 | 133.9 130 | 180.3 120 | 224.8 106 |
| 18.9 | 39.4 186 | 87.1 178 | 135.2 168 | 183.3 158 | 229.6 143 |
| 26.5 | 37.3 263 | 85.8 254 | 134.6 244 | 183.5 232 | 231.9 217 |
| 34.1 | 34.1 340 | 82.6 330 | 131.8 319 | 181.4 307 | 230.7 292 |
| 45.4 | 27.5 456 | 75.8 444 | 125.5 433 | 175.7 420 | 225.7 403 |
| 56.8 | 19.9 572 | 68.5 558 | 117.7 546 | 167.7 533 | 217.8 514 |

Flow (LPM)

5.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|------------|------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 261 17 | 575 8 | | | |
| 1 | 276 39 | 596 30 | 918 23 | 1245 13 | 1583 2 |
| 2 | 290 85 | 631 76 | 974 68 | 1310 56 | 1622 42 |
| 3 | 291 131 | 633 122 | 978 113 | 1319 101 | 1654 86 |
| 4 | 293 177 | 642 167 | 995 158 | 1347 146 | 1686 130 |
| 5 | 290 223 | 641 213 | 999 203 | 1359 191 | 1713 174 |
| 7 | 273 316 | 628 304 | 989 293 | 1353 280 | 1718 262 |
| 9 | 249 408 | 603 396 | 966 384 | 1334 370 | 1703 350 |
| 12 | 197 546 | 551 533 | 916 519 | 1287 504 | 1661 483 |
| 15 | 136 686 | 494 670 | 857 655 | 1226 638 | 1602 615 |

Flow (GPM)

TORQUE (LB IN) 1226
 SPEED (RPM) 638

Performance data is typical. Actual data may vary slightly from one production motor to another.

6.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 315 14 | 687 7 | | | |
| 1 | 332 33 | 710 26 | 1083 18 | 1460 9 | |
| 2 | 348 71 | 751 64 | 1152 55 | 1541 45 | 1899 33 |
| 3 | 350 109 | 756 102 | 1160 92 | 1556 83 | 1944 69 |
| 4 | 353 147 | 768 140 | 1185 130 | 1596 120 | 1990 106 |
| 5 | 349 186 | 771 178 | 1197 168 | 1622 158 | 2032 143 |
| 7 | 330 263 | 759 254 | 1191 244 | 1624 232 | 2053 217 |
| 9 | 302 340 | 731 330 | 1167 319 | 1606 307 | 2042 292 |
| 12 | 243 456 | 671 444 | 1111 433 | 1555 420 | 1998 403 |
| 15 | 176 572 | 606 558 | 1042 546 | 1484 533 | 1928 514 |

Flow (GPM)

TD SERIES

Code 0130

130 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 50.3 12 | 108.7 10 | 168.1 7 | 228.0 3 | |
| 3.8 | 52.4 27 | 112.5 24 | 172.3 21 | 231.7 17 | 291.1 10 |
| 7.6 | 54.5 55 | 116.6 53 | 179.0 49 | 241.3 44 | 302.0 36 |
| 11.4 | 54.6 84 | 117.2 81 | 180.1 77 | 242.9 72 | 304.1 64 |
| 15.1 | 54.6 113 | 118.7 110 | 182.9 105 | 246.7 100 | 309.7 91 |
| 18.9 | 54.0 142 | 118.6 138 | 183.6 133 | 248.7 128 | 313.3 119 |
| 26.5 | 50.8 200 | 116.3 195 | 182.2 190 | 248.0 183 | 313.6 174 |
| 34.1 | 46.8 257 | 112.2 252 | 178.4 247 | 244.7 239 | 311.3 229 |
| 45.4 | 38.2 344 | 103.4 338 | 169.8 331 | 236.8 323 | 304.1 312 |
| 56.8 | 28.5 431 | 93.4 424 | 159.1 416 | 225.5 407 | 292.8 395 |

Flow (LPM)

TORQUE (nm) 225.5
 SPEED (RPM) 407

Code 0165

165 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 62.4 9 | 132.8 7 | 204.8 4 | 277.6 3 | |
| 3.8 | 64.9 21 | 137.0 18 | 209.7 16 | 282.3 12 | 355.9 8 |
| 7.6 | 67.4 44 | 142.7 41 | 219.0 38 | 295.3 33 | 370.1 28 |
| 11.4 | 67.8 67 | 143.8 64 | 220.9 60 | 297.6 55 | 372.7 49 |
| 15.1 | 68.1 90 | 146.8 87 | 225.6 83 | 304.0 78 | 380.5 71 |
| 18.9 | 67.4 113 | 147.1 109 | 227.7 105 | 308.1 100 | 387.1 93 |
| 26.5 | 64.3 159 | 145.3 155 | 227.0 150 | 308.7 144 | 389.4 137 |
| 34.1 | 59.1 205 | 140.5 201 | 223.2 195 | 305.8 189 | 387.5 181 |
| 45.4 | 48.5 274 | 130.2 269 | 213.5 263 | 297.1 256 | 380.2 247 |
| 56.8 | 35.7 344 | 117.4 338 | 199.9 331 | 282.5 323 | 366.5 313 |

Flow (LPM)

8.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 445 12 | 962 10 | 1488 7 | 2018 3 | |
| 1 | 464 27 | 996 24 | 1525 21 | 2051 17 | 2577 10 |
| 2 | 482 55 | 1032 53 | 1584 49 | 2136 44 | 2673 36 |
| 3 | 483 84 | 1037 81 | 1594 77 | 2150 72 | 2692 64 |
| 4 | 483 113 | 1051 110 | 1619 105 | 2184 100 | 2741 91 |
| 5 | 478 142 | 1050 138 | 1625 133 | 2201 128 | 2773 119 |
| 7 | 450 200 | 1029 195 | 1613 190 | 2195 183 | 2776 174 |
| 9 | 414 257 | 993 252 | 1579 247 | 2166 239 | 2755 229 |
| 12 | 338 344 | 915 338 | 1503 331 | 2096 323 | 2692 312 |
| 15 | 252 431 | 827 424 | 1408 416 | 1996 407 | 2592 395 |

Flow (GPM)

TORQUE (LB IN) 1996
 SPEED (RPM) 407

10.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 552 9 | 1175 7 | 1813 4 | 2457 3 | |
| 1 | 574 21 | 1213 18 | 1856 16 | 2499 12 | 3150 8 |
| 2 | 597 44 | 1263 41 | 1938 38 | 2614 33 | 3276 28 |
| 3 | 600 67 | 1273 64 | 1955 60 | 2634 55 | 3299 49 |
| 4 | 603 90 | 1299 87 | 1997 83 | 2691 78 | 3368 71 |
| 5 | 597 113 | 1302 109 | 2015 105 | 2727 100 | 3426 93 |
| 7 | 569 159 | 1286 155 | 2009 150 | 2732 144 | 3447 137 |
| 9 | 523 205 | 1244 201 | 1976 195 | 2707 189 | 3430 181 |
| 12 | 429 274 | 1152 269 | 1890 263 | 2630 256 | 3365 247 |
| 15 | 316 344 | 1039 338 | 1769 331 | 2500 323 | 3244 313 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0195

195 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 80.2 8 | 171.6 7 | 264.8 5 | 359.5 3 | |
| 3.8 | 83.2 18 | 176.0 16 | 269.7 14 | 363.9 12 | 457.8 8 |
| 7.6 | 85.6 37 | 180.3 35 | 276.2 33 | 373.1 30 | 468.2 25 |
| 11.4 | 85.6 56 | 181.2 54 | 277.8 51 | 374.5 48 | 470.0 42 |
| 15.1 | 85.5 75 | 182.8 73 | 280.4 70 | 378.0 67 | 474.4 60 |
| 18.9 | 84.4 95 | 182.5 92 | 281.1 89 | 379.6 85 | 476.9 78 |
| 26.5 | 79.7 133 | 179.2 130 | 278.7 127 | 377.7 122 | 475.6 115 |
| 34.1 | 73.0 172 | 172.6 169 | 272.8 165 | 372.8 160 | 471.5 151 |
| 45.4 | 59.9 230 | 159.1 226 | 260.2 221 | 361.2 215 | 461.6 206 |
| 56.8 | 44.5 288 | 143.8 283 | 242.6 278 | 342.0 272 | 442.4 261 |

Flow (LPM)

TORQUE (nm) 342.0
 SPEED (RPM) 272

Code 0230

230 cc / rev

| | PRESSURE (BAR) | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--|
| | 34.5 | 69.0 | 103.4 | 120.7 | 137.9 | 148.3 | |
| 1.9 | 86.0 7 | 189.0 6 | 295.3 5 | 349.6 4 | 404.9 3 | 438.2 3 | |
| 3.8 | 89.4 15 | 193.4 14 | 299.4 13 | 353.4 12 | 408.4 11 | 441.9 10 | |
| 7.6 | 92.5 32 | 199.3 30 | 308.0 29 | 362.4 28 | 417.1 26 | 450.2 25 | |
| 11.4 | 92.5 48 | 200.1 47 | 309.2 45 | 364.5 44 | 420.1 42 | 453.7 41 | |
| 15.1 | 92.8 65 | 201.9 63 | 312.4 61 | 367.9 60 | 423.7 58 | 457.5 57 | |
| 18.9 | 91.3 81 | 201.8 79 | 313.7 77 | 370.2 76 | 426.8 74 | 461.0 73 | |
| 26.5 | 87.0 114 | 198.4 112 | 311.3 109 | 367.7 108 | 424.8 106 | 459.0 105 | |
| 34.1 | 79.7 147 | 192.0 145 | 306.2 142 | 363.3 140 | 420.7 138 | 455.1 137 | |
| 45.4 | 65.6 197 | 178.7 194 | 293.2 191 | 350.6 189 | 408.6 186 | 443.6 185 | |
| 56.8 | 45.2 247 | 159.2 243 | 275.3 239 | 333.2 237 | 391.6 235 | 426.7 233 | |
| 75.7 | 7.2 329 | 118.9 325 | 233.5 321 | 291.5 319 | 350.2 316 | 386.1 314 | |

Flow (LPM)

11.9 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 710 8 | 1519 7 | 2344 5 | 3182 3 | |
| 1 | 736 18 | 1558 16 | 2387 14 | 3221 12 | 4052 8 |
| 2 | 758 37 | 1596 35 | 2445 33 | 3302 30 | 4144 25 |
| 3 | 758 56 | 1604 54 | 2459 51 | 3315 48 | 4160 42 |
| 4 | 757 75 | 1618 73 | 2482 70 | 3346 67 | 4199 60 |
| 5 | 747 95 | 1615 92 | 2488 89 | 3360 85 | 4221 78 |
| 7 | 705 133 | 1586 130 | 2467 127 | 3343 122 | 4210 115 |
| 9 | 646 172 | 1528 169 | 2415 165 | 3300 160 | 4173 151 |
| 12 | 530 230 | 1408 226 | 2303 221 | 3197 215 | 4086 206 |
| 15 | 394 288 | 1273 283 | 2147 278 | 3027 272 | 3916 261 |

Flow (GPM)

TORQUE (LB IN) 3027
 SPEED (RPM) 272

Performance data is typical. Actual data may vary slightly from one production motor to another.

13.9 cu in / rev

| | PRESSURE (PSI) | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|--|
| | 500 | 1000 | 1500 | 1750 | 2000 | 2150 | |
| .5 | 761 7 | 1673 6 | 2614 5 | 3094 4 | 3584 3 | 3879 3 | |
| 1 | 791 15 | 1712 14 | 2650 13 | 3128 12 | 3615 11 | 3911 10 | |
| 2 | 819 32 | 1764 30 | 2726 29 | 3208 28 | 3692 26 | 3985 25 | |
| 3 | 819 48 | 1771 47 | 2737 45 | 3226 44 | 3718 42 | 4016 41 | |
| 4 | 821 65 | 1787 63 | 2765 61 | 3256 60 | 3750 58 | 4049 57 | |
| 5 | 808 81 | 1786 79 | 2777 77 | 3277 76 | 3778 74 | 4080 73 | |
| 7 | 770 114 | 1756 112 | 2755 109 | 3255 108 | 3760 106 | 4063 105 | |
| 9 | 705 147 | 1699 145 | 2710 142 | 3216 140 | 3724 138 | 4028 137 | |
| 12 | 581 197 | 1582 194 | 2595 191 | 3103 189 | 3617 186 | 3926 185 | |
| 15 | 400 247 | 1409 243 | 2437 239 | 2949 237 | 3466 235 | 3777 233 | |
| 20 | 64 329 | 1052 325 | 2067 321 | 2580 319 | 3100 316 | 3417 314 | |

Flow (GPM)

TD SERIES

Code 0260

260 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 113.8 | 137.9 |
| 1.9 | 102.6 7 | 221.6 6 | 344.4 6 | 381.9 6 | 468.8 5 |
| 3.8 | 106.0 14 | 226.6 13 | 350.1 13 | 387.9 12 | 474.9 12 |
| 7.6 | 109.7 28 | 232.6 27 | 357.6 26 | 395.5 26 | 483.7 24 |
| 11.4 | 109.4 43 | 233.3 42 | 358.9 40 | 397.0 39 | 485.6 38 |
| 15.1 | 109.6 57 | 235.1 56 | 361.9 54 | 400.1 53 | 489.5 51 |
| 18.9 | 108.1 71 | 235.5 70 | 363.7 68 | 402.3 67 | 492.9 65 |
| 26.5 | 102.5 100 | 231.5 98 | 361.3 96 | 400.2 95 | 491.5 92 |
| 34.1 | 94.6 129 | 224.3 127 | 355.1 124 | 394.2 123 | 485.7 119 |
| 45.4 | 78.2 172 | 208.3 169 | 340.7 166 | 380.4 164 | 473.4 160 |
| 56.8 | 55.2 215 | 186.1 212 | 319.7 208 | 360.2 206 | 454.9 202 |
| 75.7 | 14.6 287 | 141.8 283 | 273.2 279 | 313.3 277 | 408.0 272 |

Flow (LPM)

TORQUE (nm) 313.3
 SPEED (RPM) 277

15.9 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1650 | 2000 |
| .5 | 908 7 | 1961 6 | 3048 6 | 3380 6 | 4149 5 |
| 1 | 938 14 | 2006 13 | 3099 13 | 3433 12 | 4203 12 |
| 2 | 971 28 | 2059 27 | 3165 26 | 3501 26 | 4281 24 |
| 3 | 968 43 | 2065 42 | 3177 40 | 3514 39 | 4298 38 |
| 4 | 970 57 | 2081 56 | 3203 54 | 3541 53 | 4333 51 |
| 5 | 957 71 | 2084 70 | 3219 68 | 3561 67 | 4363 65 |
| 7 | 907 100 | 2049 98 | 3198 96 | 3542 95 | 4350 92 |
| 9 | 837 129 | 1985 127 | 3143 124 | 3489 123 | 4299 119 |
| 12 | 692 172 | 1844 169 | 3016 166 | 3367 164 | 4190 160 |
| 15 | 489 215 | 1647 212 | 2830 208 | 3188 206 | 4026 202 |
| 20 | 129 287 | 1255 283 | 2418 279 | 2773 277 | 3611 272 |

Flow (GPM)

TORQUE (LB IN) 2773
 SPEED (RPM) 277

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0295

295 cc / rev

| | PRESSURE (BAR) | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 106.9 | 127.6 |
| 1.9 | 114.6 6 | 250.4 5 | 390.1 4 | 404.0 4 | 487.8 3 |
| 3.8 | 118.7 12 | 256.5 11 | 396.4 10 | 410.5 10 | 493.9 9 |
| 7.6 | 122.9 25 | 263.7 24 | 406.7 22 | 421.1 22 | 506.8 21 |
| 11.4 | 122.6 38 | 264.1 36 | 408.0 35 | 422.4 34 | 508.5 33 |
| 15.1 | 122.6 50 | 265.8 49 | 411.1 47 | 425.8 47 | 512.8 45 |
| 18.9 | 121.1 63 | 265.7 62 | 412.8 60 | 427.5 59 | 515.6 58 |
| 26.5 | 115.1 89 | 261.1 87 | 409.4 85 | 424.2 84 | 513.5 82 |
| 34.1 | 106.1 115 | 252.7 113 | 402.3 110 | 417.2 110 | 507.4 107 |
| 45.4 | 87.7 153 | 234.3 151 | 384.5 148 | 399.6 147 | 490.8 145 |
| 56.8 | 61.6 192 | 209.4 189 | 359.7 186 | 375.0 185 | 466.7 182 |
| 75.7 | 14.2 256 | 159.1 253 | 304.7 249 | 319.3 249 | 408.0 246 |

Flow (LPM)

17.9 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1550 | 1850 |
| .5 | 1014 6 | 2216 5 | 3453 4 | 3576 4 | 4318 3 |
| 1 | 1051 12 | 2270 11 | 3509 10 | 3633 10 | 4372 9 |
| 2 | 1088 25 | 2334 24 | 3600 22 | 3727 22 | 4486 21 |
| 3 | 1085 38 | 2338 36 | 3611 35 | 3739 34 | 4501 33 |
| 4 | 1085 50 | 2353 49 | 3639 47 | 3769 47 | 4539 45 |
| 5 | 1072 63 | 2352 62 | 3654 60 | 3784 59 | 4564 58 |
| 7 | 1019 89 | 2311 87 | 3624 85 | 3755 84 | 4545 82 |
| 9 | 939 115 | 2237 113 | 3561 110 | 3693 110 | 4491 107 |
| 12 | 776 153 | 2074 151 | 3403 148 | 3537 147 | 4344 145 |
| 15 | 545 192 | 1853 189 | 3184 186 | 3319 185 | 4131 182 |
| 20 | 126 256 | 1408 253 | 2697 249 | 2826 249 | 3611 246 |

Flow (GPM)

TD SERIES

Code 0330

330 cc / rev
 PRESSURE (BAR)

| | 34.5 | 69.0 | 100.0 | 117.2 |
|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 133.8 5 | 283.2 5 | 420.5 4 | 496.4 4 |
| 3.8 | 137.6 11 | 289.0 10 | 426.2 9 | 501.6 9 |
| 7.6 | 142.1 22 | 297.4 21 | 436.9 20 | 514.6 19 |
| 11.4 | 141.3 34 | 297.5 32 | 438.2 31 | 516.3 30 |
| 15.1 | 141.1 45 | 299.3 44 | 441.6 42 | 520.7 41 |
| 18.9 | 138.9 57 | 299.2 55 | 443.6 53 | 523.2 51 |
| 26.5 | 131.3 80 | 293.7 78 | 440.4 75 | 521.3 73 |
| 34.1 | 120.2 103 | 284.5 100 | 432.6 98 | 514.1 95 |
| 45.4 | 98.9 137 | 263.6 135 | 413.2 131 | 495.1 129 |
| 56.8 | 70.2 171 | 235.1 169 | 386.4 165 | 469.9 162 |
| 75.7 | 18.4 229 | 178.1 226 | 324.8 222 | 406.7 218 |

Flow (LPM)

TORQUE (nm) 324.8
 SPEED (RPM) 222

Code 0365

370 cc / rev
 PRESSURE (BAR)

| | 34.5 | 69.0 | 91.4 | 108.6 |
|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 157.4 5 | 332.4 4 | 449.0 4 | 540.2 3 |
| 3.8 | 163.1 10 | 339.5 9 | 456.0 8 | 545.9 8 |
| 7.6 | 168.8 20 | 349.1 19 | 466.7 18 | 557.1 17 |
| 11.4 | 167.8 30 | 348.2 29 | 466.0 28 | 556.7 27 |
| 15.1 | 166.9 40 | 349.0 39 | 467.6 37 | 558.6 36 |
| 18.9 | 164.0 50 | 347.4 49 | 466.6 47 | 557.7 46 |
| 26.5 | 154.9 70 | 340.0 69 | 459.9 67 | 551.3 65 |
| 34.1 | 142.4 90 | 327.5 89 | 414.5 87 | 540.5 85 |
| 45.4 | 113.2 121 | 300.3 119 | 422.2 117 | 515.2 114 |
| 56.8 | 79.1 151 | 266.1 149 | 387.7 146 | 481.4 144 |
| 75.7 | 17.2 201 | 200.7 199 | 320.6 196 | 412.3 193 |

Flow (LPM)

Code 0390

390 cc / rev
 PRESSURE (BAR)

| | 34.5 | 69.0 | 86.2 | 103.4 |
|-------------|--------------|--------------|--------------|--------------|
| 1.9 | 149.8 4 | 326.4 3 | 416.0 2 | 507.8 2 |
| 3.8 | 155.9 9 | 331.5 7 | 420.7 7 | 511.7 6 |
| 7.6 | 163.0 18 | 342.8 17 | 433.8 15 | 525.6 14 |
| 11.4 | 162.9 28 | 344.5 26 | 436.2 25 | 528.6 23 |
| 15.1 | 164.3 37 | 348.4 36 | 441.2 34 | 534.4 33 |
| 30.3 | 163.5 47 | 350.7 45 | 444.6 44 | 538.7 42 |
| 26.5 | 157.4 66 | 348.0 64 | 443.2 62 | 538.3 61 |
| 34.1 | 146.5 85 | 340.4 83 | 437.0 81 | 533.3 80 |
| 45.4 | 122.9 114 | 318.4 112 | 416.4 110 | 514.1 108 |
| 56.8 | 90.0 143 | 286.9 140 | 385.7 138 | 484.5 136 |
| 75.7 | 29.8 191 | 226.6 188 | 325.4 186 | 423.6 184 |

Flow (LPM)

19.9 cu in / rev

| | 500 | 1000 | 1450 | 1700 |
|-----------|-------------|-------------|-------------|-------------|
| .5 | 1184 5 | 2507 5 | 3722 4 | 4394 4 |
| 1 | 1218 11 | 2558 10 | 3772 9 | 4440 9 |
| 2 | 1258 22 | 2632 21 | 3867 20 | 4555 19 |
| 3 | 1251 34 | 2633 32 | 3879 31 | 4570 30 |
| 4 | 1249 45 | 2649 44 | 3909 42 | 4609 41 |
| 5 | 1229 57 | 2648 55 | 3926 53 | 4631 51 |
| 7 | 1162 80 | 2600 78 | 3898 75 | 4614 73 |
| 9 | 1064 103 | 2518 100 | 3829 98 | 4550 95 |
| 12 | 875 137 | 2333 135 | 3657 131 | 4382 129 |
| 15 | 621 171 | 2081 169 | 3420 165 | 4159 162 |
| 20 | 163 229 | 1576 226 | 2875 222 | 3600 218 |

Flow (GPM)

TORQUE (LB IN) 2875
 SPEED (RPM) 222

22.6 cu in / rev

| | 500 | 1000 | 1325 | 1575 |
|-----------|-------------|-------------|-------------|-------------|
| .5 | 1393 5 | 2942 4 | 3974 4 | 4781 3 |
| 1 | 1444 10 | 3005 9 | 4036 8 | 4832 8 |
| 2 | 1494 20 | 3090 19 | 4131 18 | 4931 17 |
| 3 | 1485 30 | 3082 29 | 4125 28 | 4927 27 |
| 4 | 1477 40 | 3089 39 | 4139 37 | 4944 36 |
| 5 | 1452 50 | 3075 49 | 4130 47 | 4936 46 |
| 7 | 1371 70 | 3009 69 | 4071 67 | 4880 65 |
| 9 | 1260 90 | 2899 89 | 3669 87 | 4784 85 |
| 12 | 1002 121 | 2658 119 | 3737 117 | 4560 114 |
| 15 | 700 151 | 2355 149 | 3432 146 | 4261 144 |
| 20 | 152 201 | 1776 199 | 2838 196 | 3649 193 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

24.0 cu in / rev

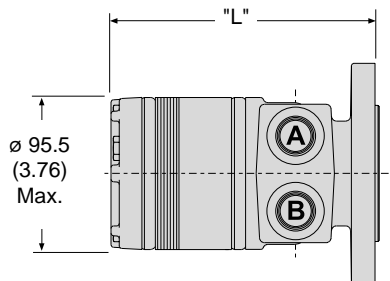
| | 500 | 1000 | 1250 | 1500 |
|-----------|-------------|-------------|-------------|-------------|
| .5 | 1326 4 | 2889 3 | 3682 2 | 4495 2 |
| 1 | 1380 9 | 2934 7 | 3724 7 | 4529 6 |
| 2 | 1443 18 | 3034 17 | 3840 15 | 4652 14 |
| 3 | 1442 28 | 3049 26 | 3861 25 | 4679 23 |
| 4 | 1454 37 | 3084 36 | 3905 34 | 4730 33 |
| 5 | 1447 47 | 3104 45 | 3935 44 | 4768 42 |
| 7 | 1393 66 | 3080 64 | 3923 62 | 4765 61 |
| 9 | 1297 85 | 3013 83 | 3868 81 | 4720 80 |
| 12 | 1088 114 | 2818 112 | 3686 110 | 4550 108 |
| 15 | 797 143 | 2539 140 | 3414 138 | 4288 136 |
| 20 | 264 191 | 2006 188 | 2880 186 | 3749 184 |

Flow (GPM)

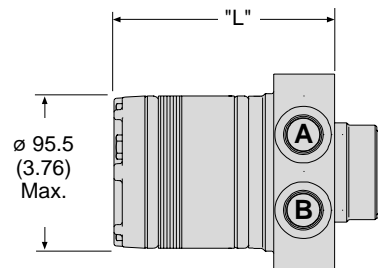
**T
D
S
E
R
I
E
S**

Dimensions

Inch equivalents for metric dimensions are shown in (**)



Flange Mount



Wheel Mount

Standard Rotation:

(As viewed from shaft end)

Front Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.

Rear Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Length "L" and Weight

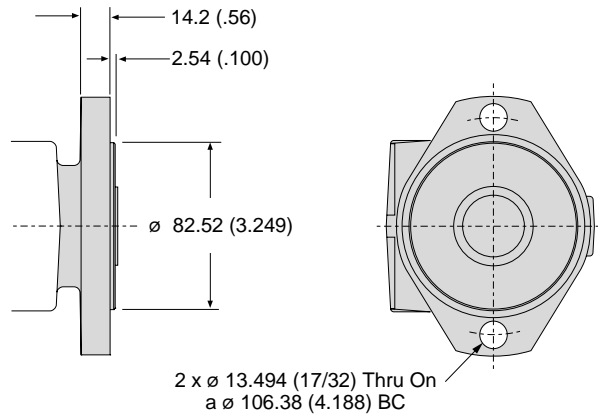
| Displacement, Code | 0045 | 0050 | 0065 | 0080 | 0100 | 0130 | 0165 | 0195 | 0230 | 0260 | 0295 | 0330 | 0365 | 0390 | |
|----------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| SAE "A" Mount | | | | | | | | | | | | | | | |
| Length "L" | mm | 136 | 138 | 141 | 144 | 147 | 154 | 160 | 166 | 173 | 179 | 185 | 195 | 200 | 205 |
| | (inches) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |
| Weight | kg | 6.09 | 6.17 | 6.30 | 6.44 | 6.51 | 6.82 | 7.08 | 7.37 | 7.56 | 7.86 | 8.02 | 8.34 | 8.71 | 8.84 |
| | (lb) | (13.4) | (13.6) | (13.9) | (14.2) | (14.4) | (15.0) | (15.6) | (16.2) | (16.7) | (17.3) | (17.7) | (18.4) | (19.2) | (19.5) |
| 4 Bolt | | | | | | | | | | | | | | | |
| Length "L" | mm | 136 | 138 | 141 | 144 | 147 | 154 | 160 | 166 | 173 | 179 | 185 | 195 | 200 | 205 |
| | (inches) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.05) |
| Weight | kg | 5.66 | 5.74 | 5.88 | 6.01 | 6.08 | 6.40 | 6.65 | 6.94 | 7.14 | 7.43 | 7.60 | 7.92 | 8.30 | 8.42 |
| | (lb) | (12.5) | (12.7) | (13.0) | (13.3) | (13.4) | (14.1) | (14.7) | (15.3) | (15.7) | (16.4) | (16.7) | (17.5) | (18.3) | (18.6) |
| Magneto Mount | | | | | | | | | | | | | | | |
| Length "L" | mm | 136 | 138 | 141 | 144 | 147 | 154 | 160 | 166 | 173 | 179 | 185 | 195 | 200 | 205 |
| | (inches) | (5.36) | (5.42) | (5.55) | (5.67) | (5.80) | (6.05) | (6.30) | (6.55) | (6.80) | (7.05) | (7.30) | (7.55) | (7.88) | (8.05) |
| Weight | kg | 6.35 | 6.44 | 6.58 | 6.71 | 6.80 | 7.08 | 7.35 | 7.62 | 7.85 | 8.12 | 8.30 | 8.62 | 8.98 | 9.12 |
| | (lb) | (14.0) | (14.2) | (14.5) | (14.8) | (15.0) | (15.6) | (16.2) | (16.8) | (17.3) | (17.9) | (18.3) | (19.0) | (19.8) | (20.1) |
| Wheel Mount | | | | | | | | | | | | | | | |
| Length "L" | mm | 107 | 109 | 112 | 115 | 118 | 124 | 131 | 137 | 143 | 150 | 156 | 162 | 171 | 175 |
| | (inches) | (4.21) | (4.27) | (4.39) | (4.52) | (4.64) | (4.89) | (5.14) | (5.39) | (5.64) | (5.89) | (6.14) | (6.39) | (6.73) | (6.89) |
| Weight | kg | 6.80 | 6.87 | 7.01 | 7.14 | 7.22 | 7.53 | 7.79 | 8.07 | 8.27 | 8.57 | 8.73 | 9.05 | 9.43 | 9.55 |
| | (lb) | (15.0) | (15.2) | (15.5) | (15.8) | (15.9) | (16.6) | (17.2) | (17.8) | (18.2) | (18.9) | (19.2) | (20.0) | (20.8) | (21.1) |

TD SERIES

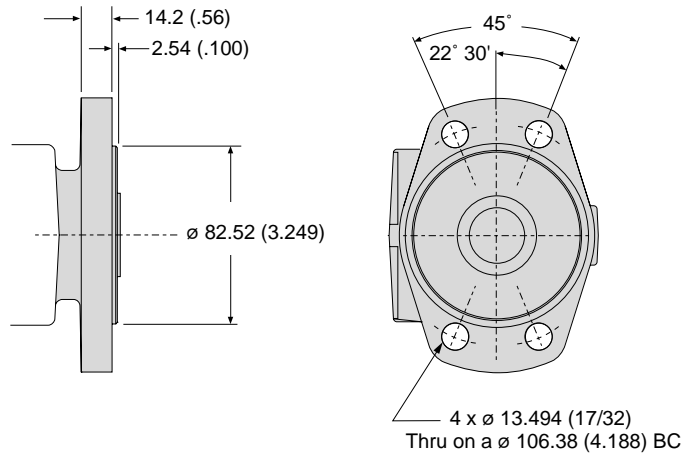
Mounting

Inch equivalents for metric dimensions are shown in (**)

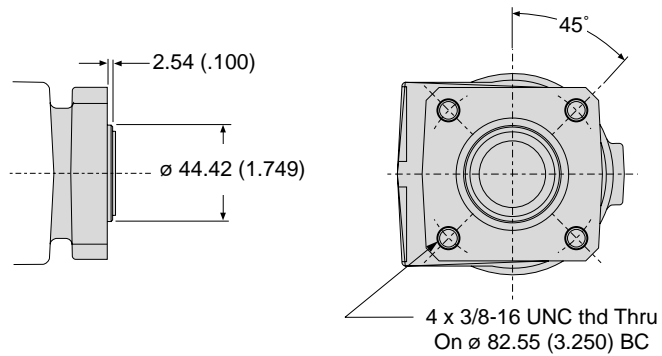
SAE A 2 Bolt



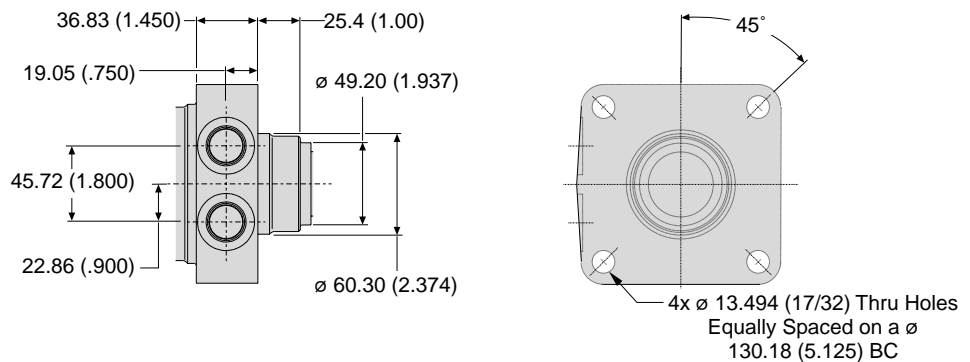
Magneto



4 Bolt



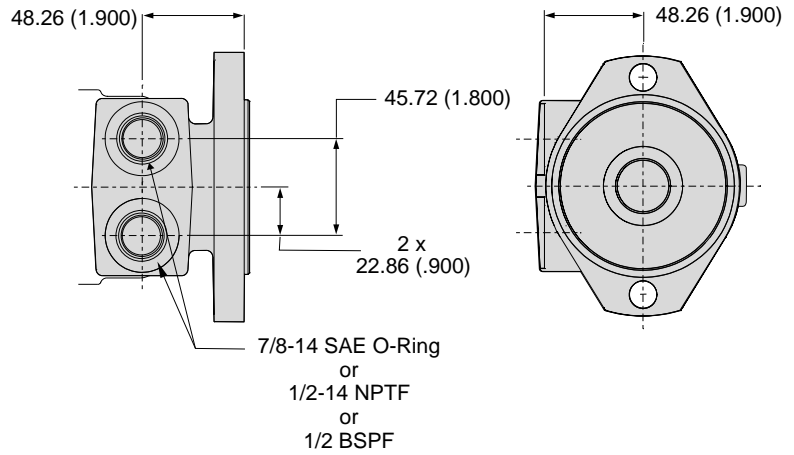
Wheel Mount



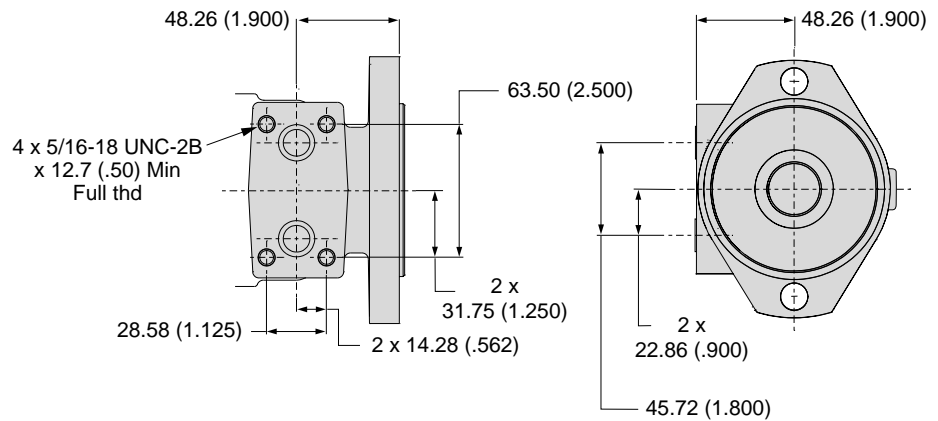
Porting

Inch equivalents for metric dimensions are shown in (**)

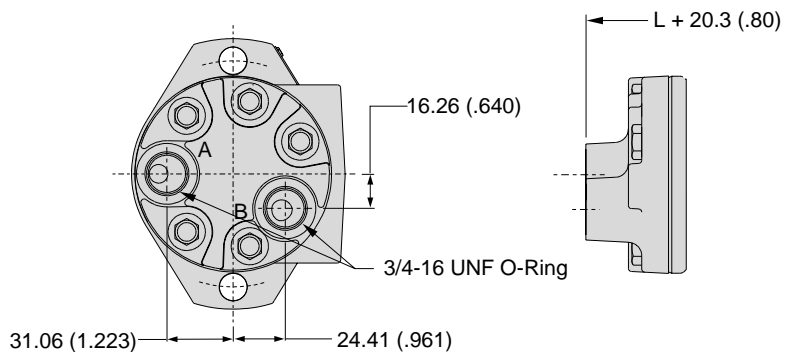
SAE O-Ring, NPTF, BSPF



Manifold



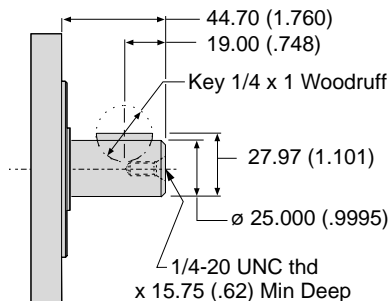
Rear, SAE O-Ring



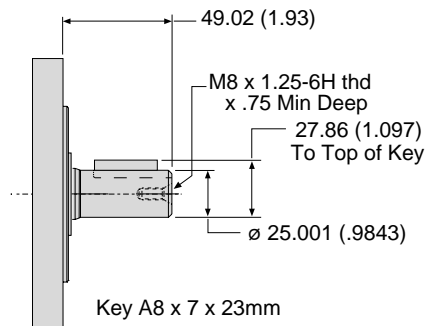
**T
D
S
E
R
I
E
S**

Shaft

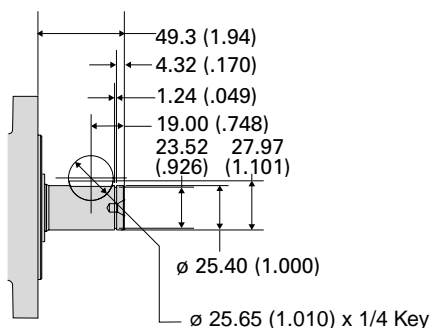
Inch equivalents for metric dimensions are shown in (**)



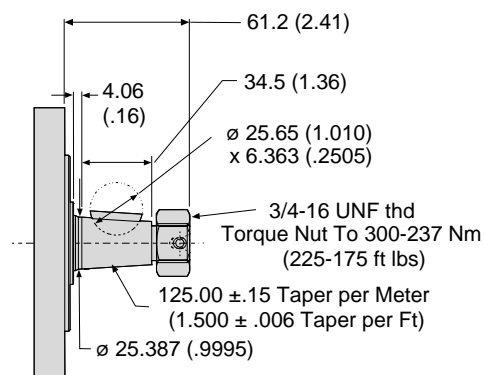
1" Key



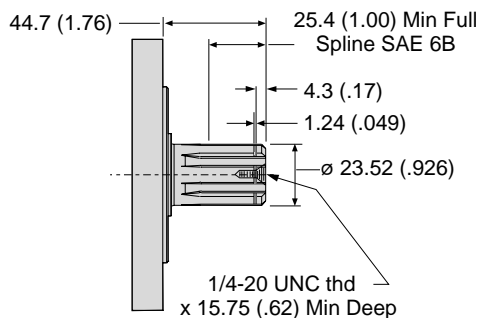
25mm Keyed



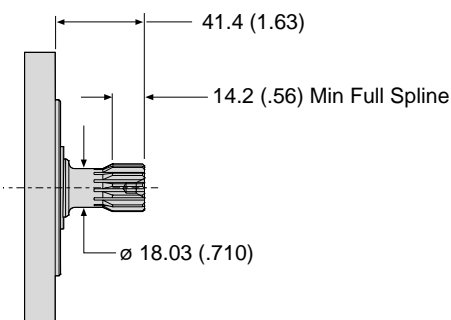
Long 1" Key



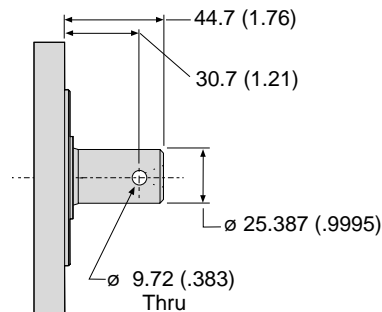
1" Tapered



1" 6B Spline



7/8" 13 Tooth Spline

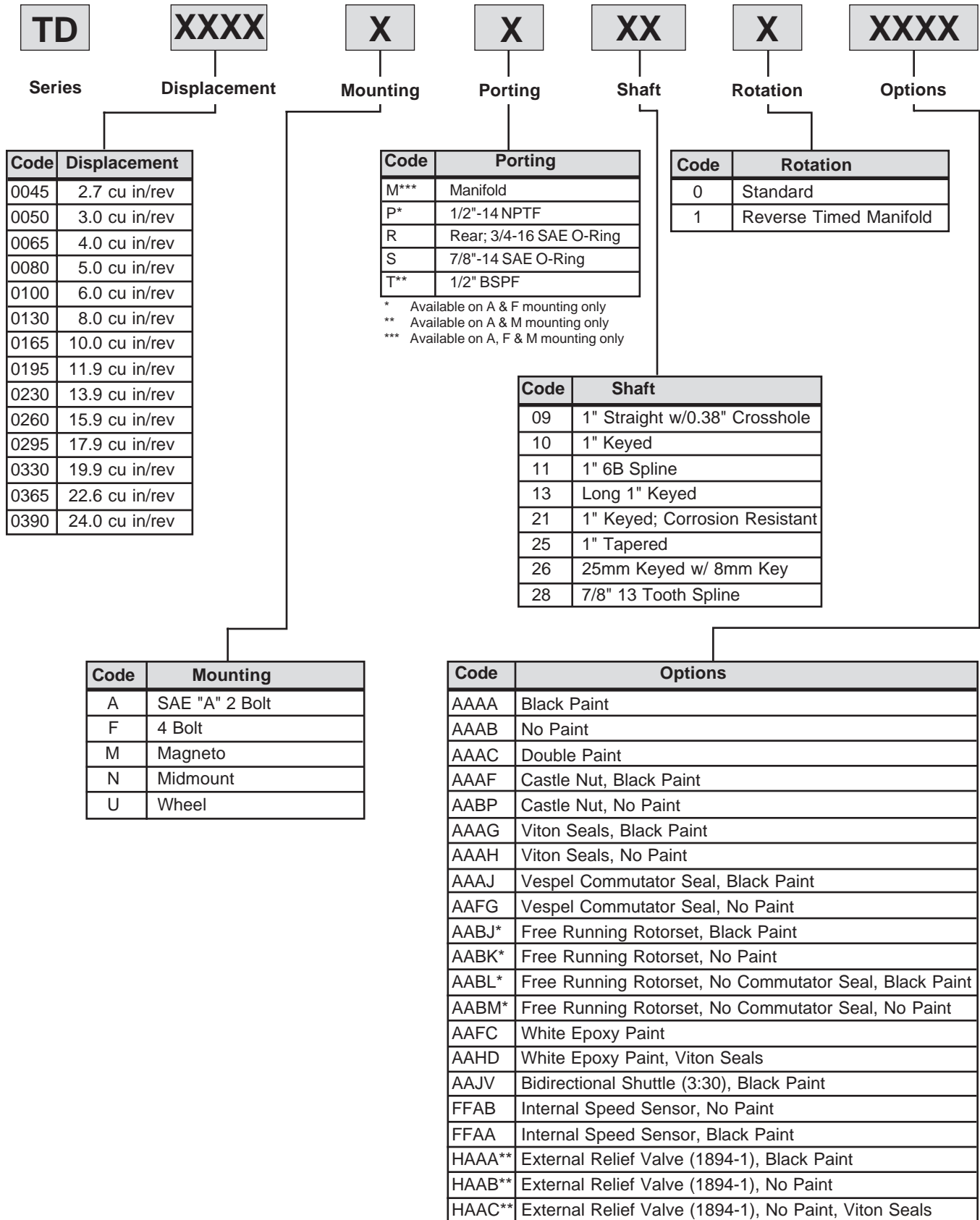


1" Straight Shaft w/ .38 Cross Hole

Add 1.05" to Shaft Length for Wheel Mount Option

**T
D
S
E
R
I
E
S**

Ordering Information



TD SERIES

| Quick Reference Data Chart | | | |
|---|----------------------|-----------------------|-----------------------|
| Series | TF | TG | TH |
| Displacement cc/rev (cu in/rev) | 81-477 (4.9-29.1) | 140-958 (8.6-58.5) | 140-958 (8.6-58.5) |
| Max Continuous Pressure bar (psi) | 206.8 (3000) | 206.8 (3000) | 206.8 (3000) |
| Max Intermittent Pressure bar (psi) | 275.8 (4000) | 275.8 (4000) | 275.8 (4000) |
| Max Continuous Torque nm (lb in) | 680.9 (6027) | 1142.1 (9239) | 1142.1 (9239) |
| Max Intermittent Torque nm (lb in) | 917.5 (8121) | 1489.7 (12636) | 1489.7 (12636) |
| Max Continuous Flow LPM (GPM) | 76 (20) | 76 (20) | 76 (20) |
| Max Intermittent Flow LPM (GPM) | 95 (25) | 114 (30) | 114 (30) |
| Max Speed RPM | 749 | 660 | 660 |
| Max Radial Load daN (lb) | 3008 (6762) | 3008 (6762) | 3093 (6953) |

**L
A
R
G
E

F
R
A
M
E

T
O
R
Q
L
I
N
K

T
M**

A Tough Motor for Tough Applications

Sturdy construction throughout makes Parker's TF Series motors suitable for the most severe applications. The powertrain uses patented 60:40 spline geometry for strength. All splines are constantly flushed with cool fluid for durability. Roller vanes and sealed commutation assure high volumetric efficiency, smooth low speed operation and extended life. Shaft seals can withstand full system pressure and are washed in cool fluid for long life.

Options

- 1 inch Keyed or Splined, 1 1/4 inch Keyed, Splined or Tapered, 25mm Shafts
- SAE A 2 Bolt, SAE B 2 Bolt or 4 Bolt Magneto Mounting
- Wheel Mount
- SAE O-Ring, Manifold or BSPF Porting
- Front or Rear Porting
- Brake Motor
- Clutch Motor
- Speed Sensor
- Internal Cross - Over Relief Valves
- Hot Oil Shuttle
- Free Running Rotor Set
- Reverse Timed Manifold
- Corrosion Resistance



Features

- **Roller Bearings** — For Heavy Radial Loads
- **Roller Vane Power Element** — For High Volumetric Efficiency and Long Life
- **Orbiting Commutator** — For Accurate Timing, Smooth Low Speed Operation
- **Full Flow Spline Lubrication** — For Extended Spline Life
- **High Pressure Shaft Seal** — For High Back Pressure Operation Without External Drain Lines
- **High Flow Shaft Seal Cooling** — For Long Seal Life
- **60:40 Spline Geometry** — For Superior Powertrain Strength, Long Life
- **Robust Construction** — For Quiet operation

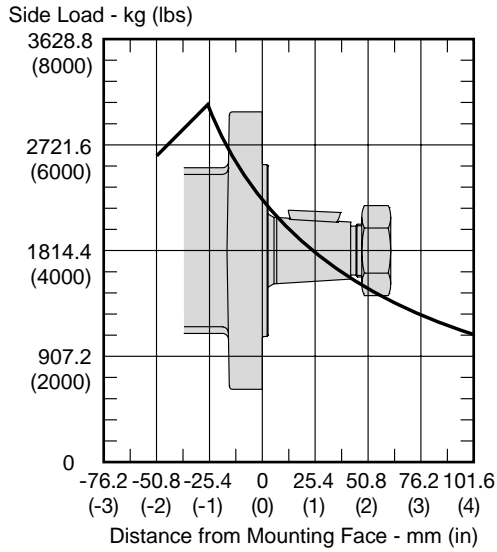
TF Specifications

| Code | 0080 | 0100 | 0130 | 0140 | 0170 | 0195 | 0240 | 0280 | 0360 | 0405 | 0475 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|
| Displacement cc/rev (cu in/rev) | 81 (4.9) | 100 (6.1) | 128 (7.8) | 141 (8.6) | 169 (10.3) | 197 (12.0) | 238 (14.5) | 280 (17.1) | 364 (22.2) | 405 (24.7) | 477 (29.1) |
| Maximum Speed (rpm) @ Maximum Continuous Flow | 553 | 562 | 436 | 397 | 332 | 285 | 315 | 267 | 204 | 185 | 156 |
| Pressure Differential Maximum Continuous bar (psid) | 206.9 (3000) | 155.2 (2250) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 137.9 (2000) | 127.6 (1400) | 127.6 (1850) | 113.4 (1645) |
| Maximum Intermittent (bar) psid | 275.9 (4000) | 241.4 (3500) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 189.7 (2200) | 172.4 (2500) | 137.9 (2000) |
| Max. Torque @ Max. Continuous Pressure nm (lb-in) | 221.4 (1957) | 202.0 (1788) | 236.6 (2094) | 261.4 (2314) | 328.9 (2911) | 376.1 (3329) | 456.0 (4036) | 545.4 (4827) | 658.8 (5831) | 722.3 (6393) | 767.1 (6790) |
| Max. Torque @ Max. Intermittent Pressure nm (lb-in) | 296.9 (2628) | 319.2 (2825) | 359.7 (3184) | 396.6 (3510) | 495.4 (4385) | 568.7 (5034) | 689.3 (6101) | 820.9 (7266) | 976.3 (8641) | 1072.5 (9638) | 933.0 (8258) |

PSLGC.PM6, dg, ki


Maximum Side Load Capacity

Flange Mount



Performance Data

Continuous / Intermittent* Operation

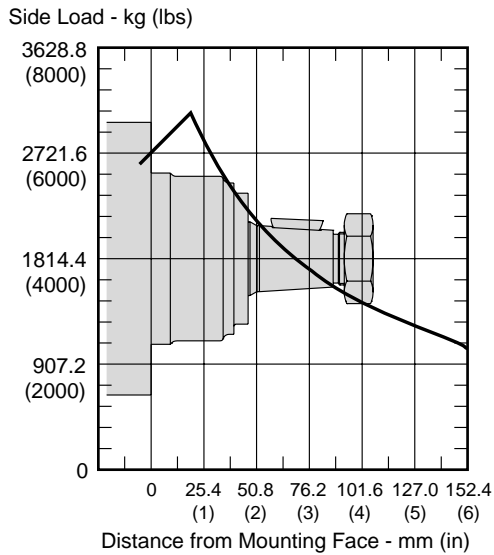
 = Continuous

 = Intermittent*

* Intermittent operation is defined as less than 10% per minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F.)

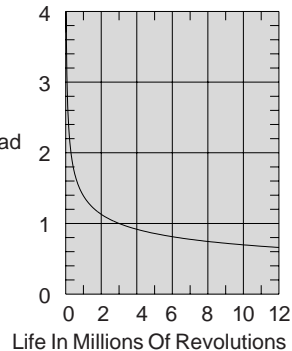
Wheel Mount



B-10 Life Factors

Application of the above uni-directional radial loads will result in a B-10 life of 3 million revolutions. For B-10 life at other radial loads, apply the factors from the curve to the right.

Multiply Allowable Radial Load By These Factors



Code 0080

80 cc / rev

| | PRESSURE (BAR) | | | | | | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 | | |
| 1.9 | 28.9 19 | 61.7 14 | 94.3 8 | 126.3 1 | | | | | | |
| 3.8 | 30.5 42 | 65.0 37 | 98.0 31 | 130.0 24 | 162.0 17 | 193.5 13 | 226.2 12 | 258.6 13 | | |
| 7.6 | 31.7 89 | 67.6 83 | 103.6 76 | 139.3 68 | 173.7 60 | 205.7 53 | 236.1 46 | 265.7 40 | | |
| 11.4 | 31.9 135 | 67.9 128 | 104.2 121 | 139.9 113 | 174.8 104 | 208.4 96 | 241.6 86 | 274.3 78 | | |
| 15.1 | 32.1 182 | 68.9 174 | 106.0 166 | 142.8 158 | 179.2 149 | 214.5 139 | 248.8 129 | 281.4 120 | | |
| 18.9 | 31.9 228 | 69.1 219 | 106.7 211 | 144.4 202 | 181.6 193 | 218.3 183 | 254.2 172 | 289.2 163 | | |
| 26.5 | 31.0 321 | 68.6 311 | 106.8 301 | 145.2 291 | 183.3 281 | 221.1 270 | 258.5 258 | 295.1 247 | | |
| 34.1 | 29.6 414 | 67.4 402 | 105.9 391 | 144.5 380 | 183.3 369 | 221.4 357 | 259.3 344 | 296.9 331 | | |
| 45.4 | 27.0 553 | 64.9 540 | 103.5 526 | 142.4 514 | 181.3 501 | 220.1 488 | 258.4 472 | 296.1 456 | | |
| 56.8 | 24.3 693 | 61.7 677 | 100.1 661 | 139.1 646 | 178.4 633 | 217.7 619 | 256.4 601 | 294.3 582 | | |

Flow (LPM)

TORQUE (nm) 178.4
SPEED (RPM) 633

Code 0100

100 cc / rev

| | PRESSURE (BAR) | | | | | | | | | |
|-------------|----------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 155.2 | 172.4 | 206.9 | 241.4 | | |
| 1.9 | 35.9 14 | 76.7 9 | 117.6 4 | | | | | | | |
| 3.8 | 37.8 33 | 79.4 28 | 120.4 22 | 161.6 17 | 182.0 14 | 202.3 12 | 244.3 9 | 287.3 6 | | |
| 7.6 | 39.7 71 | 83.9 65 | 127.9 58 | 171.1 52 | 192.1 48 | 212.6 45 | 253.2 39 | 294.0 34 | | |
| 11.4 | 39.5 109 | 84.3 102 | 128.6 95 | 172.3 88 | 194.0 84 | 215.5 80 | 258.5 72 | 301.8 64 | | |
| 15.1 | 39.9 147 | 85.2 139 | 130.6 132 | 175.6 124 | 197.9 120 | 220.1 116 | 263.7 107 | 306.9 98 | | |
| 18.9 | 39.8 184 | 85.8 177 | 131.8 169 | 177.6 161 | 200.4 156 | 223.0 152 | 267.8 143 | 312.1 133 | | |
| 26.5 | 38.8 260 | 85.1 252 | 131.7 243 | 178.6 233 | 202.0 229 | 225.3 224 | 271.3 213 | 317.5 202 | | |
| 34.1 | 37.2 336 | 83.7 327 | 130.9 316 | 178.4 306 | 202.0 301 | 225.6 296 | 272.4 284 | 319.1 272 | | |
| 45.4 | 33.8 449 | 80.8 438 | 128.5 426 | 176.4 415 | 200.3 409 | 224.3 403 | 271.8 391 | 319.2 377 | | |
| 56.8 | 29.3 562 | 76.7 549 | 125.0 536 | 173.1 523 | 197.3 517 | 221.3 510 | 269.7 496 | 317.8 480 | | |
| 75.7 | 21.0 749 | 68.6 734 | 116.8 718 | 165.3 703 | 189.7 696 | 214.2 689 | 263.4 671 | 312.2 653 | | |

Flow (LPM)

4.9 cu in / rev

| | PRESSURE (PSI) | | | | | | | |
|-----------|----------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
| .5 | 256 19 | 546 14 | 835 8 | 1118 1 | | | | |
| 1 | 270 42 | 575 37 | 867 31 | 1151 24 | 1434 17 | 1713 13 | 2002 12 | 2289 13 |
| 2 | 281 89 | 598 83 | 917 76 | 1233 68 | 1537 60 | 1821 53 | 2090 46 | 2352 40 |
| 3 | 282 135 | 601 128 | 922 121 | 1238 113 | 1547 104 | 1845 96 | 2138 86 | 2428 78 |
| 4 | 284 182 | 610 174 | 938 166 | 1264 158 | 1586 149 | 1899 139 | 2202 129 | 2491 120 |
| 5 | 282 228 | 612 219 | 944 211 | 1278 202 | 1607 193 | 1932 183 | 2250 172 | 2560 163 |
| 7 | 274 321 | 607 311 | 945 301 | 1285 291 | 1622 281 | 1957 270 | 2288 258 | 2612 247 |
| 9 | 262 414 | 597 402 | 937 391 | 1279 380 | 1622 369 | 1960 357 | 2295 344 | 2628 331 |
| 12 | 239 553 | 574 540 | 916 526 | 1260 514 | 1605 501 | 1948 488 | 2287 472 | 2621 456 |
| 15 | 215 693 | 546 677 | 886 661 | 1231 646 | 1579 633 | 1927 619 | 2269 601 | 2605 582 |

Flow (GPM)

TORQUE (LB IN) 1231
SPEED (RPM) 646

6.1 cu in / rev

| | PRESSURE (PSI) | | | | | | | |
|-----------|----------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2250 | 2500 | 3000 | 3500 |
| .5 | 318 14 | 679 9 | 1041 4 | | | | | |
| 1 | 335 33 | 703 28 | 1066 22 | 1430 17 | 1611 14 | 1791 12 | 2162 9 | 2543 6 |
| 2 | 351 71 | 743 65 | 1132 58 | 1514 52 | 1700 48 | 1882 45 | 2241 39 | 2602 34 |
| 3 | 350 109 | 746 102 | 1138 95 | 1525 88 | 1717 84 | 1907 80 | 2288 72 | 2671 64 |
| 4 | 353 147 | 754 139 | 1156 132 | 1554 124 | 1752 120 | 1948 116 | 2334 107 | 2716 98 |
| 5 | 352 184 | 759 177 | 1167 169 | 1572 161 | 1774 156 | 1974 152 | 2370 143 | 2762 133 |
| 7 | 343 260 | 753 252 | 1166 243 | 1581 233 | 1788 229 | 1994 224 | 2401 213 | 2810 202 |
| 9 | 329 336 | 741 327 | 1159 316 | 1579 306 | 1788 301 | 1997 296 | 2411 284 | 2824 272 |
| 12 | 299 449 | 715 438 | 1137 426 | 1561 415 | 1773 409 | 1985 403 | 2406 391 | 2825 377 |
| 15 | 259 562 | 679 549 | 1106 536 | 1532 523 | 1746 517 | 1959 510 | 2387 496 | 2813 480 |
| 20 | 186 749 | 607 734 | 1034 718 | 1463 703 | 1679 696 | 1896 689 | 2331 671 | 2763 653 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0130

130 cc / rev

| | PRESSURE (BAR) | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | |
| 1.9 | 49.8 10 | 104.7 7 | 159.6 3 | | | | |
| 3.8 | 51.5 24 | 107.1 21 | 162.7 17 | 218.6 13 | 273.6 9 | 328.7 5 | |
| 7.6 | 54.0 52 | 112.0 47 | 168.9 42 | 226.4 36 | 283.4 32 | 340.0 29 | |
| 11.4 | 53.7 82 | 112.2 76 | 170.6 70 | 228.6 63 | 286.2 57 | 343.7 52 | |
| 15.1 | 54.1 112 | 113.7 105 | 172.7 98 | 231.4 91 | 290.1 85 | 348.4 79 | |
| 18.9 | 54.0 141 | 114.6 134 | 174.9 127 | 234.5 119 | 293.7 113 | 351.9 106 | |
| 26.5 | 52.8 200 | 114.1 192 | 175.5 184 | 236.6 176 | 297.4 169 | 357.7 161 | |
| 34.1 | 50.5 259 | 112.5 251 | 174.7 242 | 236.6 233 | 298.3 225 | 359.7 216 | |
| 45.4 | 46.3 348 | 108.6 338 | 171.5 328 | 234.2 318 | 296.7 309 | 358.9 299 | |
| 56.8 | 41.2 436 | 103.3 426 | 166.5 415 | 229.5 404 | 292.5 394 | 355.7 382 | |
| 75.7 | 29.7 583 | 91.7 572 | 154.9 559 | 218.4 547 | 282.2 535 | 345.6 522 | |

Flow (LPM)

TORQUE (nm) 345.6
 SPEED (RPM) 522

7.8 cu in / rev

| | PRESSURE (PSI) | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|--|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | |
| .5 | 441 10 | 927 7 | 1413 3 | | | | |
| 1 | 456 24 | 948 21 | 1440 17 | 1935 13 | 2422 9 | 2909 5 | |
| 2 | 478 52 | 991 47 | 1495 42 | 2004 36 | 2508 32 | 3009 29 | |
| 3 | 475 82 | 993 76 | 1510 70 | 2023 63 | 2533 57 | 3042 52 | |
| 4 | 479 112 | 1006 105 | 1529 98 | 2048 91 | 2568 85 | 3084 79 | |
| 5 | 478 141 | 1014 134 | 1548 127 | 2076 119 | 2600 113 | 3115 106 | |
| 7 | 467 200 | 1010 192 | 1553 184 | 2094 176 | 2632 169 | 3166 161 | |
| 9 | 447 259 | 996 251 | 1546 242 | 2094 233 | 2640 225 | 3184 216 | |
| 12 | 410 348 | 961 338 | 1518 328 | 2073 318 | 2626 309 | 3177 299 | |
| 15 | 365 436 | 914 426 | 1474 415 | 2031 404 | 2589 394 | 3148 382 | |
| 20 | 263 583 | 812 572 | 1371 559 | 1933 547 | 2498 535 | 3059 522 | |

Flow (GPM)

TORQUE (LB IN) 1933
 SPEED (RPM) 547

Performance data is typical. Actual data may vary slightly from one production motor to another.

PSLGC,PM6, dg, ki

Code 0140

140 cc / rev

| | PRESSURE (BAR) | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | |
| 1.9 | 54.8 11 | 115.8 8 | 176.2 4 | | | | |
| 3.8 | 57.3 24 | 119.3 20 | 180.1 16 | 241.4 12 | 303.0 8 | 364.2 5 | |
| 7.6 | 59.4 50 | 124.4 46 | 188.7 42 | 252.7 37 | 315.9 33 | 376.9 28 | |
| 11.4 | 59.3 77 | 124.6 72 | 189.4 68 | 253.8 63 | 317.9 57 | 380.7 52 | |
| 15.1 | 59.7 103 | 125.9 98 | 191.6 93 | 257.3 88 | 322.8 82 | 386.7 77 | |
| 18.9 | 59.7 130 | 126.5 125 | 193.4 119 | 260.0 113 | 325.9 107 | 390.5 101 | |
| 26.5 | 58.3 184 | 126.0 177 | 193.9 170 | 261.4 164 | 328.5 158 | 395.1 151 | |
| 34.1 | 56.0 237 | 124.3 230 | 192.9 222 | 261.1 215 | 329.0 208 | 396.6 200 | |
| 45.4 | 51.3 317 | 120.1 309 | 189.5 300 | 258.7 292 | 327.8 284 | 396.1 275 | |
| 56.8 | 45.5 397 | 114.2 388 | 184.0 378 | 254.0 368 | 323.8 359 | 392.8 349 | |
| 75.7 | 33.7 530 | 102.6 520 | 172.3 508 | 242.8 497 | 313.5 485 | 384.2 473 | |

Flow (LPM)

8.6 cu in / rev

| | PRESSURE (PSI) | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|--|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | |
| .5 | 485 11 | 1025 8 | 1560 4 | | | | |
| 1 | 507 24 | 1056 20 | 1594 16 | 2137 12 | 2682 8 | 3224 5 | |
| 2 | 526 50 | 1101 46 | 1670 42 | 2237 37 | 2796 33 | 3336 28 | |
| 3 | 525 77 | 1103 72 | 1676 68 | 2246 63 | 2814 57 | 3370 52 | |
| 4 | 528 103 | 1114 98 | 1696 93 | 2277 88 | 2857 82 | 3423 77 | |
| 5 | 528 130 | 1120 125 | 1712 119 | 2301 113 | 2885 107 | 3456 101 | |
| 7 | 516 184 | 1115 177 | 1716 170 | 2314 164 | 2908 158 | 3497 151 | |
| 9 | 496 237 | 1100 230 | 1707 222 | 2311 215 | 2912 208 | 3510 200 | |
| 12 | 454 317 | 1063 309 | 1677 300 | 2290 292 | 2901 284 | 3506 275 | |
| 15 | 403 397 | 1011 388 | 1629 378 | 2248 368 | 2866 359 | 3477 349 | |
| 20 | 298 530 | 908 520 | 1525 508 | 2149 497 | 2775 485 | 3401 473 | |

Flow (GPM)

Code 0170

170 cc / rev

| | PRESSURE (BAR) | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | |
| 1.9 | 70.8 8 | 147.3 6 | 223.7 2 | | | | |
| 3.8 | 74.2 19 | 151.5 16 | 228.3 12 | 306.6 9 | 384.6 4 | 463.3 1 | |
| 7.6 | 77.6 42 | 159.2 38 | 239.9 34 | 319.6 29 | 397.7 25 | 474.2 21 | |
| 11.4 | 76.9 64 | 159.0 60 | 240.3 56 | 321.0 51 | 401.3 45 | 481.6 40 | |
| 15.1 | 76.9 86 | 160.3 82 | 243.2 77 | 325.3 72 | 407.2 67 | 488.2 61 | |
| 18.9 | 76.3 109 | 160.8 104 | 244.6 99 | 327.3 94 | 409.9 88 | 492.0 82 | |
| 26.5 | 73.9 153 | 158.8 148 | 244.1 143 | 328.9 137 | 412.6 130 | 495.4 123 | |
| 34.1 | 70.5 198 | 155.9 193 | 242.1 186 | 327.6 180 | 411.8 173 | 495.3 165 | |
| 45.4 | 64.6 265 | 150.4 259 | 237.4 252 | 323.5 244 | 408.8 236 | 493.0 228 | |
| 56.8 | 58.1 332 | 143.1 325 | 230.5 317 | 317.2 309 | 403.3 300 | 488.5 291 | |
| 75.7 | 43.7 444 | 128.6 436 | 215.0 427 | 301.3 417 | 388.1 407 | 474.6 396 | |

Flow (LPM)

TORQUE (nm) 301.3
 SPEED (RPM) 417

Code 0195

195 cc / rev

| | PRESSURE (BAR) | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | |
| 1.9 | 80.2 8 | 168.8 7 | 258.3 5 | 348.5 3 | | | |
| 3.8 | 83.3 18 | 173.7 16 | 263.7 14 | 354.0 12 | 445.8 9 | 538.6 7 | |
| 7.6 | 85.5 37 | 179.3 35 | 273.1 32 | 366.3 29 | 459.5 26 | 552.1 23 | |
| 11.4 | 85.6 56 | 179.8 53 | 273.9 51 | 367.6 47 | 461.6 44 | 555.2 40 | |
| 15.1 | 85.8 75 | 181.2 72 | 276.8 69 | 371.9 66 | 466.7 62 | 560.9 58 | |
| 30.3 | 85.3 94 | 181.9 91 | 278.9 88 | 375.2 84 | 470.3 80 | 564.9 75 | |
| 26.5 | 83.3 132 | 180.7 129 | 278.7 125 | 376.1 120 | 472.8 116 | 568.7 110 | |
| 34.1 | 80.1 170 | 178.2 166 | 276.9 162 | 375.0 157 | 472.4 152 | 568.7 146 | |
| 45.4 | 73.7 228 | 172.1 223 | 271.7 218 | 370.9 212 | 469.3 206 | 566.9 199 | |
| 56.8 | 66.2 285 | 163.9 280 | 264.1 273 | 364.0 267 | 463.2 260 | 561.6 252 | |
| 75.7 | 43.0 445 | 42.4 1303 | 41.5 2174 | 40.6 3056 | 39.5 3939 | 38.5 4822 | |

Flow (LPM)

10.3 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| .5 | 627 8 | 1304 6 | 1980 2 | | | |
| 1 | 657 19 | 1341 16 | 2021 12 | 2714 9 | 3404 4 | 4101 1 |
| 2 | 687 42 | 1409 38 | 2123 34 | 2829 29 | 3520 25 | 4197 21 |
| 3 | 681 64 | 1407 60 | 2127 56 | 2841 51 | 3552 45 | 4263 40 |
| 4 | 681 86 | 1419 82 | 2153 77 | 2879 72 | 3604 67 | 4321 61 |
| 5 | 675 109 | 1423 104 | 2165 99 | 2897 94 | 3628 88 | 4355 82 |
| 7 | 654 153 | 1406 148 | 2161 143 | 2911 137 | 3652 130 | 4385 123 |
| 9 | 624 198 | 1380 193 | 2143 186 | 2900 180 | 3645 173 | 4384 165 |
| 12 | 572 265 | 1331 259 | 2101 252 | 2863 244 | 3618 236 | 4364 228 |
| 15 | 514 332 | 1267 325 | 2040 317 | 2808 309 | 3570 300 | 4324 291 |
| 20 | 387 444 | 1138 436 | 1903 427 | 2667 417 | 3435 407 | 4201 396 |

Flow (GPM)

TORQUE (LB IN) 4201
 SPEED (RPM) 396

12.0 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| .5 | 710 8 | 1494 7 | 2286 5 | 3085 3 | | |
| 1 | 737 18 | 1537 16 | 2334 14 | 3133 12 | 3946 9 | 4767 7 |
| 2 | 757 37 | 1587 35 | 2417 32 | 3242 29 | 4067 26 | 4887 23 |
| 3 | 758 56 | 1591 53 | 2424 51 | 3254 47 | 4086 44 | 4914 40 |
| 4 | 759 75 | 1604 72 | 2450 69 | 3292 66 | 4131 62 | 4965 58 |
| 5 | 755 94 | 1610 91 | 2469 88 | 3321 84 | 4163 80 | 5000 75 |
| 7 | 737 132 | 1599 129 | 2467 125 | 3329 120 | 4185 116 | 5034 110 |
| 9 | 709 170 | 1577 166 | 2451 162 | 3319 157 | 4181 152 | 5034 146 |
| 12 | 652 228 | 1523 223 | 2405 218 | 3283 212 | 4154 206 | 5018 199 |
| 15 | 586 285 | 1451 280 | 2338 273 | 3222 267 | 4100 260 | 4971 252 |
| 20 | 381 445 | 375 1303 | 367 2174 | 359 3056 | 350 3939 | 341 4822 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0240

240 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 |
| 1.9 | 96.7 7 | 202.9 5 | 311.6 3 | 422.4 1 | | |
| 3.8 | 99.8 15 | 207.7 13 | 316.5 11 | 427.1 8 | 537.3 5 | 648.6 3 |
| 7.6 | 103.9 30 | 216.0 28 | 328.8 26 | 440.1 23 | 551.3 20 | 662.5 17 |
| 11.4 | 103.8 46 | 216.9 44 | 330.7 41 | 444.1 38 | 556.3 35 | 668.7 31 |
| 15.1 | 104.4 62 | 219.3 60 | 334.2 57 | 448.2 54 | 562.4 50 | 676.2 45 |
| 18.9 | 103.8 78 | 220.1 75 | 336.1 72 | 451.7 69 | 566.8 64 | 680.7 60 |
| 26.5 | 102.1 109 | 220.0 106 | 338.4 103 | 456.0 99 | 572.4 94 | 688.0 89 |
| 34.1 | 98.1 141 | 217.1 137 | 336.9 134 | 455.6 130 | 573.0 124 | 689.3 119 |
| 45.4 | 92.1 188 | 210.8 184 | 331.0 180 | 451.7 175 | 570.9 169 | 688.0 162 |
| 56.8 | 82.0 235 | 202.3 231 | 323.7 227 | 444.5 221 | 565.1 214 | 684.0 206 |
| 75.7 | 60.9 315 | 182.6 310 | 304.9 304 | 427.3 297 | 549.4 289 | 669.7 280 |
| 94.6 | 37.8 394 | 158.6 389 | 278.4 382 | 400.2 374 | 523.5 365 | 646.0 354 |

TORQUE (nm) 646.0
 SPEED (RPM) 354

Flow (LPM)

14.5 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| .5 | 856 7 | 1796 5 | 2758 3 | 3739 1 | | |
| 1 | 883 15 | 1838 13 | 2801 11 | 3780 8 | 4756 5 | 5741 3 |
| 2 | 920 30 | 1912 28 | 2910 26 | 3895 23 | 4880 20 | 5864 17 |
| 3 | 919 46 | 1920 44 | 2927 41 | 3931 38 | 4924 35 | 5919 31 |
| 4 | 924 62 | 1941 60 | 2958 57 | 3967 54 | 4978 50 | 5985 45 |
| 5 | 919 78 | 1948 75 | 2975 72 | 3998 69 | 5017 64 | 6025 60 |
| 7 | 904 109 | 1947 106 | 2995 103 | 4036 99 | 5066 94 | 6090 89 |
| 9 | 868 141 | 1922 137 | 2982 134 | 4033 130 | 5072 124 | 6101 119 |
| 12 | 815 188 | 1866 184 | 2930 180 | 3998 175 | 5053 169 | 6090 162 |
| 15 | 726 235 | 1791 231 | 2865 227 | 3934 221 | 5002 214 | 6054 206 |
| 20 | 539 315 | 1616 310 | 2699 304 | 3782 297 | 4863 289 | 5928 280 |
| 25 | 335 394 | 1404 389 | 2464 382 | 3542 374 | 4634 365 | 5718 354 |

TORQUE (LB IN) 5718
 SPEED (RPM) 354

Flow (GPM)
PSLGC, PM6, dg, ki

Code 0280

280 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 |
| 1.9 | 118.4 6 | 246.3 5 | 376.6 4 | 509.3 3 | 644.4 2 | |
| 3.8 | 122.0 13 | 252.7 12 | 384.0 11 | 517.1 9 | 651.0 7 | 782.4 5 |
| 7.6 | 126.5 26 | 261.7 25 | 397.2 23 | 533.9 22 | 668.3 19 | 801.3 17 |
| 11.4 | 126.2 39 | 262.1 38 | 398.6 36 | 535.8 34 | 672.1 32 | 806.0 29 |
| 15.1 | 126.5 53 | 264.0 51 | 402.1 49 | 539.8 47 | 676.5 44 | 812.0 41 |
| 18.9 | 125.3 66 | 264.6 64 | 403.9 62 | 542.5 60 | 680.1 56 | 815.5 53 |
| 26.5 | 122.7 93 | 263.4 91 | 404.7 88 | 545.4 85 | 684.4 81 | 820.9 77 |
| 34.1 | 117.5 120 | 259.7 117 | 402.4 114 | 543.5 111 | 683.3 106 | 820.7 102 |
| 45.4 | 110.5 160 | 251.5 157 | 394.8 154 | 537.6 149 | 678.0 144 | 815.4 138 |
| 56.8 | 100.3 200 | 242.5 197 | 386.3 193 | 529.7 188 | 671.7 182 | 810.7 175 |
| 75.7 | 76.6 267 | 219.7 263 | 364.1 258 | 508.6 252 | 652.7 245 | 794.1 236 |
| 94.6 | 49.9 334 | 190.5 330 | 331.9 324 | 475.2 316 | 619.9 308 | 763.1 297 |

Flow (LPM)

17.1 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| .5 | 1048 6 | 2180 5 | 3333 4 | 4508 3 | 5704 2 | |
| 1 | 1080 13 | 2237 12 | 3399 11 | 4577 9 | 5762 7 | 6925 5 |
| 2 | 1120 26 | 2316 25 | 3516 23 | 4726 22 | 5915 19 | 7092 17 |
| 3 | 1117 39 | 2320 38 | 3528 36 | 4742 34 | 5949 32 | 7134 29 |
| 4 | 1120 53 | 2337 51 | 3559 49 | 4778 47 | 5988 44 | 7187 41 |
| 5 | 1109 66 | 2342 64 | 3575 62 | 4802 60 | 6020 56 | 7218 53 |
| 7 | 1086 93 | 2331 91 | 3582 88 | 4827 85 | 6058 81 | 7266 77 |
| 9 | 1040 120 | 2299 117 | 3562 114 | 4811 111 | 6048 106 | 7264 102 |
| 12 | 978 160 | 2226 157 | 3494 154 | 4758 149 | 6001 144 | 7217 138 |
| 15 | 888 200 | 2146 197 | 3419 193 | 4688 188 | 5945 182 | 7176 175 |
| 20 | 678 267 | 1945 263 | 3223 258 | 4502 252 | 5777 245 | 7029 236 |
| 25 | 442 334 | 1686 330 | 2938 324 | 4206 316 | 5487 308 | 6754 297 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0360

365 cc / rev

| | PRESSURE (BAR) | | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--|
| | 34.5 | 69.0 | 103.4 | 127.6 | 137.9 | 172.4 | 189.7 | |
| 1.9 | 162.2 5 | 333.9 4 | 508.1 4 | 630.7 4 | 683.2 3 | 859.6 3 | 948.2 3 | |
| 3.8 | 168.6 10 | 343.7 9 | 518.7 9 | 640.8 8 | 693.2 8 | 866.9 8 | 954.1 7 | |
| 7.6 | 173.1 20 | 351.8 19 | 530.0 19 | 653.5 18 | 706.0 18 | 881.1 17 | 968.8 16 | |
| 11.4 | 172.5 30 | 351.8 29 | 530.9 29 | 654.8 28 | 707.6 27 | 882.8 26 | 970.5 25 | |
| 15.1 | 172.4 40 | 353.1 40 | 533.0 38 | 657.7 37 | 710.6 37 | 886.6 35 | 974.3 34 | |
| 18.9 | 169.9 51 | 351.8 50 | 533.2 48 | 658.8 47 | 712.2 46 | 888.7 44 | 976.3 43 | |
| 26.5 | 166.0 71 | 349.1 70 | 530.7 68 | 656.3 66 | 709.7 66 | 886.9 63 | 975.0 61 | |
| 34.1 | 157.3 92 | 340.9 90 | 524.2 88 | 651.4 86 | 705.3 85 | 883.2 81 | 971.1 79 | |
| 45.4 | 144.5 122 | 327.9 120 | 511.3 117 | 638.7 115 | 692.9 113 | 871.3 109 | 959.5 106 | |
| 56.8 | 125.0 153 | 309.5 151 | 495.4 147 | 623.4 144 | 677.8 142 | 856.2 139 | 943.9 134 | |
| 75.7 | 94.9 204 | 278.5 202 | 464.9 197 | 593.8 193 | 647.9 191 | 828.0 184 | 917.5 180 | |
| 94.6 | 58.3 255 | 241.6 253 | 424.4 248 | 550.9 243 | 605.1 240 | 788.1 232 | 879.5 226 | |

TORQUE (nm) 879.5
 SPEED (RPM) 226

Flow (LPM)

22.2 cu in / rev

| | PRESSURE (PSI) | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1850 | 2000 | 2500 | 2750 |
| .5 | 1436 5 | 2955 4 | 4497 4 | 5582 4 | 6047 3 | 7608 3 | 8393 3 |
| 1 | 1492 10 | 3042 9 | 4591 9 | 5672 8 | 6136 8 | 7673 8 | 8445 7 |
| 2 | 1532 20 | 3114 19 | 4691 19 | 5784 18 | 6249 18 | 7799 17 | 8575 16 |
| 3 | 1527 30 | 3114 29 | 4699 29 | 5796 28 | 6263 27 | 7814 26 | 8590 25 |
| 4 | 1526 40 | 3125 40 | 4718 38 | 5821 37 | 6290 37 | 7847 35 | 8624 34 |
| 5 | 1504 51 | 3114 50 | 4719 48 | 5831 47 | 6304 46 | 7866 44 | 8641 43 |
| 7 | 1469 71 | 3090 70 | 4697 68 | 5809 66 | 6282 66 | 7850 63 | 8630 61 |
| 9 | 1392 92 | 3017 90 | 4640 88 | 5766 86 | 6243 85 | 7817 81 | 8595 79 |
| 12 | 1279 122 | 2902 120 | 4526 117 | 5653 115 | 6133 113 | 7712 109 | 8493 106 |
| 15 | 1106 153 | 2739 151 | 4385 147 | 5518 144 | 5999 142 | 7578 139 | 8355 134 |
| 20 | 840 204 | 2465 202 | 4115 197 | 5256 193 | 5735 191 | 7329 184 | 8121 180 |
| 25 | 516 255 | 2138 253 | 3756 248 | 4876 243 | 5356 240 | 6976 232 | 7785 226 |

TORQUE (LB IN) 7785
 SPEED (RPM) 226

Performance data is typical. Actual data may vary slightly from one production motor to another.

Flow (GPM)
PSLGC, PM6, dg, kl

Code 0405

405 cc / rev

| | PRESSURE (BAR) | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--|
| | 34.5 | 69.0 | 103.4 | 127.6 | 137.9 | 172.4 | |
| 1.9 | 177.0 4 | 362.9 4 | 551.7 3 | 686.4 2 | 744.2 2 | 940.6 2 | |
| 3.8 | 183.4 9 | 372.6 8 | 561.7 7 | 694.9 6 | 752.4 6 | 945.8 5 | |
| 7.6 | 187.8 18 | 381.5 17 | 576.5 16 | 712.5 14 | 770.0 14 | 961.1 12 | |
| 11.4 | 188.1 27 | 383.2 26 | 578.2 24 | 714.6 23 | 772.7 22 | 966.4 20 | |
| 15.1 | 188.3 37 | 385.7 35 | 582.4 33 | 719.3 32 | 777.3 31 | 970.6 28 | |
| 18.9 | 186.6 46 | 386.1 44 | 584.2 42 | 722.3 40 | 780.6 39 | 974.5 36 | |
| 26.5 | 183.4 64 | 384.0 62 | 583.3 60 | 722.2 58 | 780.9 56 | 975.9 53 | |
| 34.1 | 175.0 83 | 377.0 81 | 579.0 78 | 718.7 75 | 777.6 73 | 972.2 69 | |
| 45.4 | 161.8 111 | 363.3 108 | 565.6 104 | 706.4 101 | 765.9 99 | 962.9 94 | |
| 56.8 | 142.2 138 | 345.6 136 | 549.8 131 | 690.6 128 | 750.6 126 | 948.4 120 | |
| 75.7 | 105.7 185 | 309.0 182 | 513.2 177 | 655.3 172 | 715.7 170 | 915.8 162 | |
| 94.6 | 74.2 231 | 275.1 229 | 473.0 222 | 612.1 217 | 671.7 214 | 871.0 205 | |

Flow (LPM)

24.7 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1850 | 2000 | 2500 |
| .5 | 1567 4 | 3212 4 | 4883 3 | 6075 2 | 6587 2 | 8325 2 |
| 1 | 1623 9 | 3298 8 | 4972 7 | 6151 6 | 6660 6 | 8371 5 |
| 2 | 1662 18 | 3377 17 | 5103 16 | 6306 14 | 6815 14 | 8507 12 |
| 3 | 1665 27 | 3392 26 | 5118 24 | 6325 23 | 6839 22 | 8554 20 |
| 4 | 1667 37 | 3414 35 | 5155 33 | 6367 32 | 6880 31 | 8591 28 |
| 5 | 1652 46 | 3417 44 | 5171 42 | 6393 40 | 6909 39 | 8625 36 |
| 7 | 1623 64 | 3399 62 | 5163 60 | 6392 58 | 6912 56 | 8638 53 |
| 9 | 1549 83 | 3337 81 | 5125 78 | 6361 75 | 6883 73 | 8605 69 |
| 12 | 1432 111 | 3216 108 | 5006 104 | 6252 101 | 6779 99 | 8523 94 |
| 15 | 1259 138 | 3059 136 | 4866 131 | 6113 128 | 6644 126 | 8394 120 |
| 20 | 936 185 | 2735 182 | 4542 177 | 5800 172 | 6335 170 | 8106 162 |
| 25 | 657 231 | 2435 229 | 4187 222 | 5418 217 | 5945 214 | 7709 205 |

Flow (GPM)

Code 0475

475 cc / rev

| | PRESSURE (BAR) | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|
| | 34.5 | 69.0 | 103.4 | 113.4 | 127.6 | 137.9 |
| 1.9 | 211.3 4 | 435.8 3 | 663.8 3 | 729.9 3 | 823.9 2 | 892.8 2 |
| 3.8 | 219.3 8 | 448.2 7 | 677.0 7 | 743.6 6 | 837.2 6 | 905.6 6 |
| 7.6 | 226.3 15 | 459.9 15 | 691.9 14 | 758.9 14 | 853.5 13 | 922.6 13 |
| 11.4 | 225.3 23 | 460.1 23 | 694.3 22 | 761.3 21 | 856.2 20 | 925.5 20 |
| 15.1 | 225.2 31 | 462.2 30 | 697.9 29 | 765.6 28 | 860.9 27 | 930.4 27 |
| 18.9 | 221.9 39 | 461.1 38 | 698.9 37 | 767.1 36 | 863.1 35 | 933.0 34 |
| 26.5 | 216.7 55 | 457.3 54 | 695.8 52 | 764.3 51 | 860.9 50 | 931.2 48 |
| 34.1 | 206.6 70 | 448.0 59 | 689.0 67 | 758.0 66 | 854.7 64 | 925.2 63 |
| 45.4 | 191.4 94 | 431.8 92 | 672.7 89 | 742.8 89 | 840.6 87 | 911.0 85 |
| 56.8 | 165.2 117 | 408.6 116 | 651.4 112 | 721.4 111 | 819.6 109 | 889.7 107 |
| 75.7 | 120.9 156 | 365.0 154 | 609.4 151 | 680.9 149 | 779.6 147 | 850.7 145 |
| 94.6 | 80.3 195 | 318.6 194 | 556.7 190 | 624.9 188 | 722.1 185 | 794.0 183 |

TORQUE (nm) 794.0
 SPEED (RPM) 183

Flow (LPM)

29.1 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 1645 | 1850 | 2000 |
| .5 | 1870 4 | 3857 3 | 5875 3 | 6460 3 | 7292 2 | 7902 2 |
| 1 | 1941 8 | 3967 7 | 5992 7 | 6582 6 | 7410 6 | 8016 6 |
| 2 | 2003 15 | 4071 15 | 6124 14 | 6717 14 | 7554 13 | 8166 13 |
| 3 | 1994 23 | 4072 23 | 6145 22 | 6738 21 | 7578 20 | 8192 20 |
| 4 | 1993 31 | 4091 30 | 6177 29 | 6776 28 | 7620 27 | 8235 27 |
| 5 | 1964 39 | 4081 38 | 6186 37 | 6790 36 | 7639 35 | 8258 34 |
| 7 | 1918 55 | 4048 54 | 6159 52 | 6765 51 | 7620 50 | 8242 48 |
| 9 | 1829 70 | 3965 59 | 6098 67 | 6709 66 | 7565 64 | 8189 63 |
| 12 | 1694 94 | 3822 92 | 5954 89 | 6575 89 | 7440 87 | 8063 85 |
| 15 | 1462 117 | 3617 116 | 5766 112 | 6385 111 | 7254 109 | 7875 107 |
| 20 | 1070 156 | 3231 154 | 5394 151 | 6027 149 | 6900 147 | 7530 145 |
| 25 | 711 195 | 2820 194 | 4927 190 | 5531 188 | 6391 185 | 7028 183 |

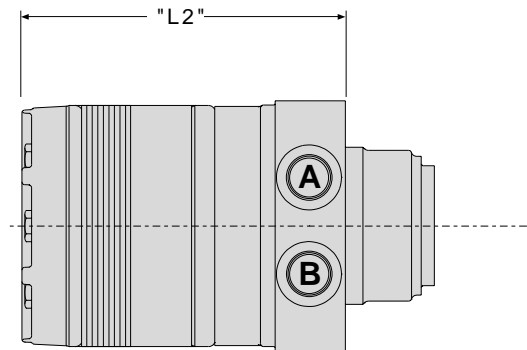
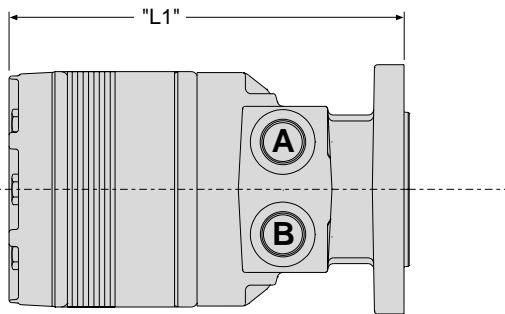
TORQUE (LB IN) 7028
 SPEED (RPM) 183

Performance data is typical. Actual data may vary slightly from one production motor to another.

Flow (GPM)
PSLGC, PM6, dg, ki

Lengths & Weights

Inch equivalents for metric dimensions are shown in (**)



Magneto, SAE "A", SAE "B" Mounts

Wheel, Front Brake Nose Wheel, Optional Wheel Mounts

Standard Rotation:

(As viewed from shaft end)

Front Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Rear Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.

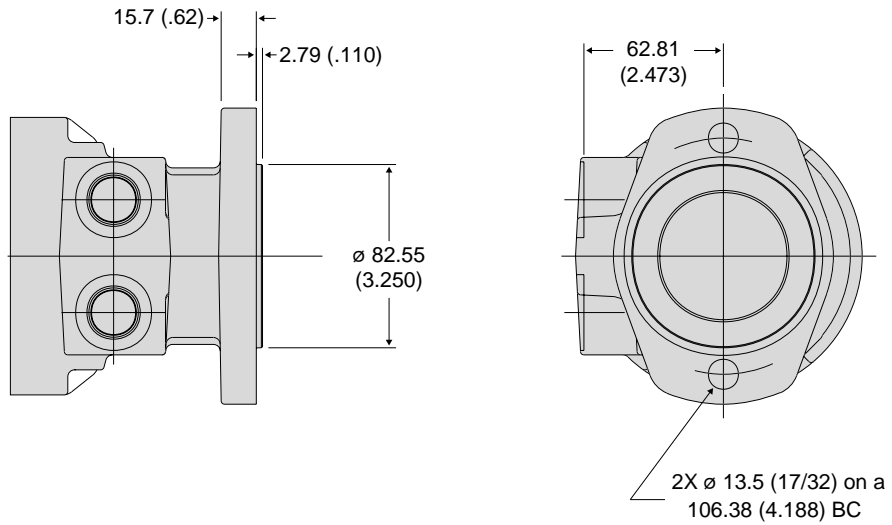
Length "L" and Weight

| Displacement, Code | 0080 | 0100 | 0130 | 0140 | 0170 | 0195 | 0240 | 0280 | 0360 | 0405 | 0475 |
|--------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Magneto & SAE "A" | | | | | | | | | | | |
| Length "L1" | mm (inches) | 191 (7.51) | 191 (7.51) | 194 (7.63) | 196 (7.70) | 199 (7.82) | 202 (7.95) | 207 (8.13) | 211 (8.32) | 221 (8.70) | 234 (9.20) |
| Weight | kg (lb) | 13.6 (29.9) | 13.6 (30.0) | 13.8 (30.5) | 13.9 (30.7) | 14.2 (31.3) | 14.5 (31.9) | 14.9 (32.9) | 15.2 (33.5) | 16.0 (35.2) | 17.2 (37.9) |
| SAE "B" | | | | | | | | | | | |
| Length "L1" | mm (inches) | 184 (7.25) | 184 (7.25) | 187 (7.37) | 189 (7.44) | 192 (7.56) | 195 (7.69) | 200 (7.87) | 205 (8.06) | 214 (8.44) | 227 (8.94) |
| Weight | kg (lb) | 14.2 (31.3) | 14.2 (31.4) | 14.5 (31.9) | 14.6 (32.1) | 14.8 (32.7) | 15.1 (33.3) | 15.5 (34.3) | 15.8 (34.9) | 16.6 (36.6) | 17.8 (39.3) |
| Displacement, Code | 0080 | 0100 | 0130 | 0140 | 0170 | 0195 | 0240 | 0280 | 0360 | 0405 | 0475 |
| Wheel & Brake Mount | | | | | | | | | | | |
| Length "L2" | mm (inches) | 146 (5.73) | 146 (5.73) | 149 (5.85) | 150 (5.92) | 153 (6.04) | 157 (6.17) | 161 (6.35) | 166 (6.54) | 176 (6.92) | 188 (7.42) |
| Weight | kg (lb) | 13.9 (30.6) | 13.9 (30.7) | 14.2 (31.2) | 14.3 (31.5) | 14.5 (32.0) | 14.8 (32.7) | 15.2 (33.6) | 15.5 (34.2) | 16.3 (35.9) | 17.5 (38.6) |
| Optional Wheel Mount | | | | | | | | | | | |
| Length "L2" | mm (inches) | 173 (6.80) | 173 (6.80) | 176 (6.93) | 178 (6.99) | 180 (7.11) | 184 (7.24) | 189 (7.43) | 194 (7.61) | 207 (8.15) | 216 (8.49) |
| Weight | kg (lb) | 16.9 (37.2) | 16.9 (37.3) | 17.2 (37.8) | 17.3 (38.0) | 17.5 (38.6) | 17.8 (39.2) | 18.2 (40.2) | 18.5 (40.8) | 19.3 (42.5) | 20.5 (45.2) |

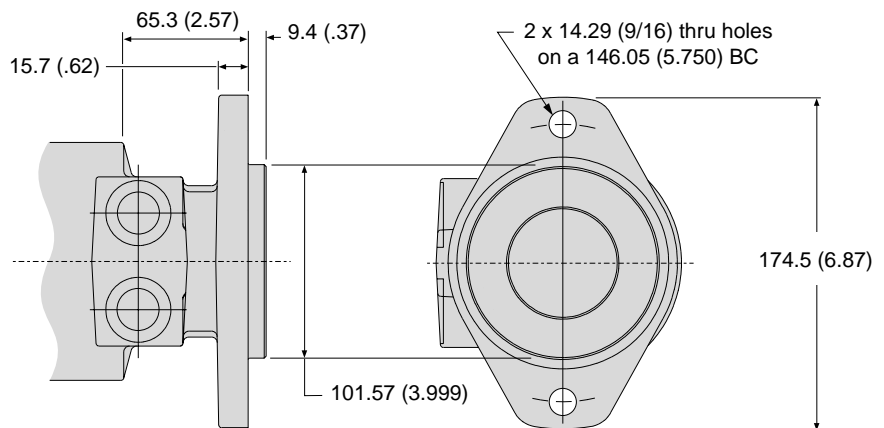
Mounting

Inch equivalents for metric dimensions are shown in (**)

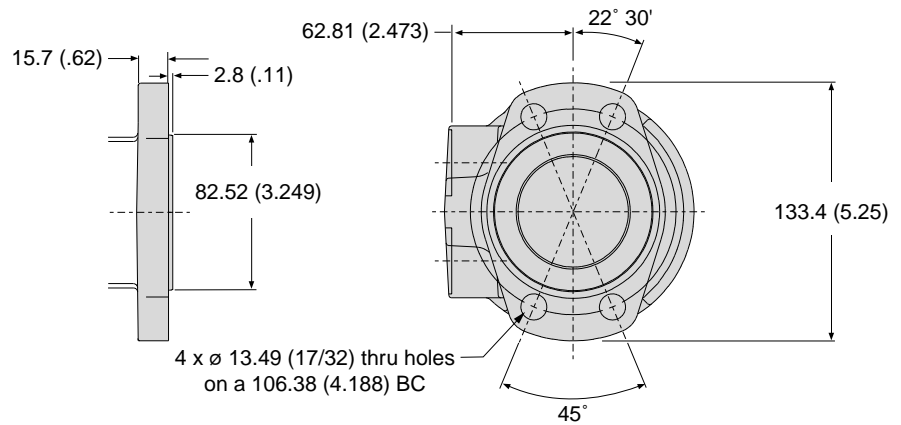
SAE "A" 2 Bolt Flange



SAE "B" 2 Bolt Flange



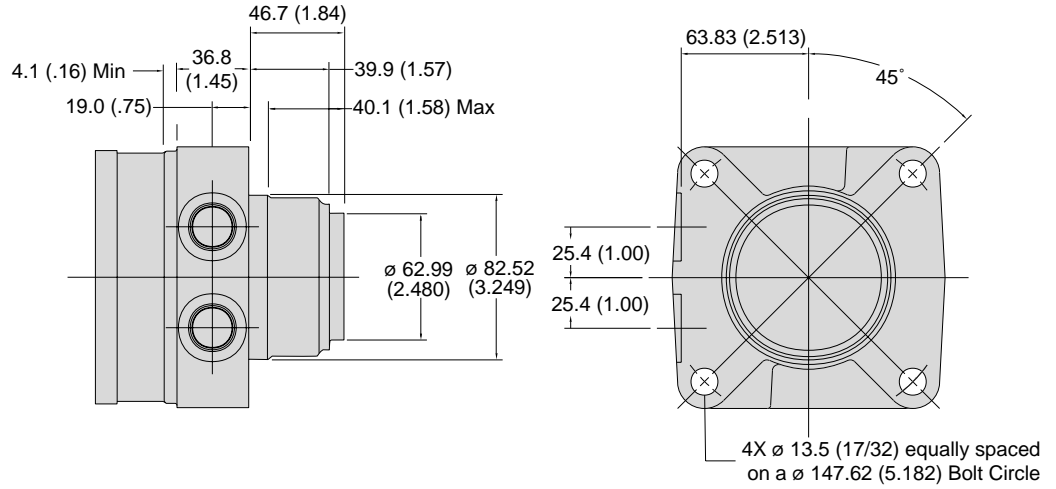
4 Bolt Magneto



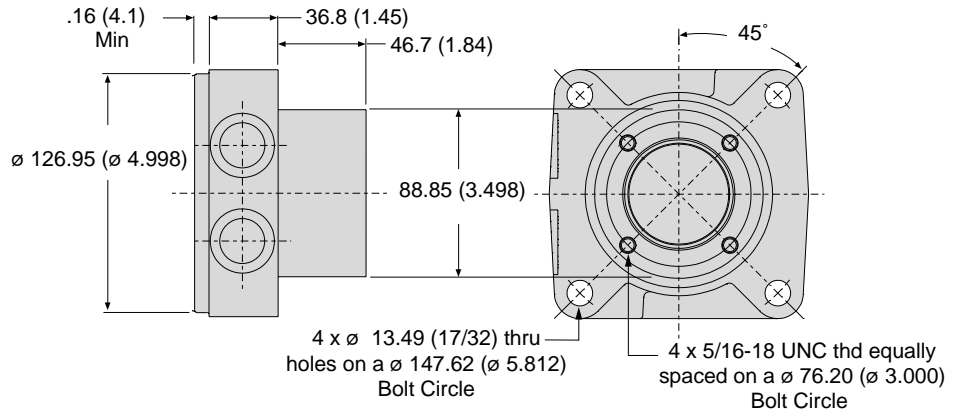
Mounting, Wheel

Inch equivalents for metric dimensions are shown in (**)

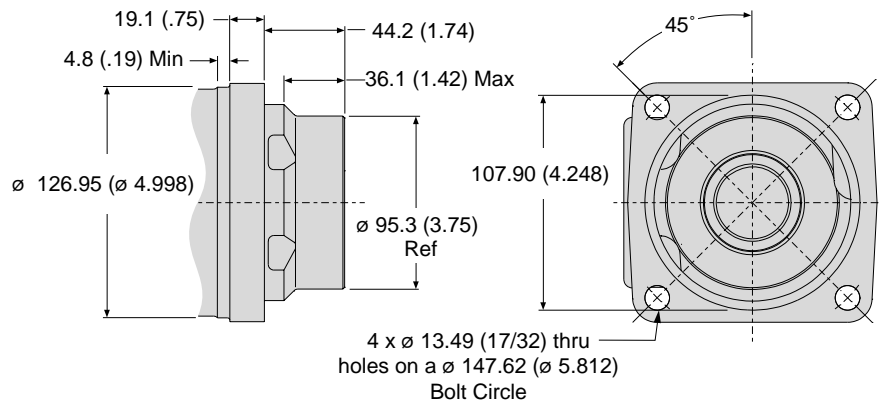
Wheel



Wheel, Front Brake Nose

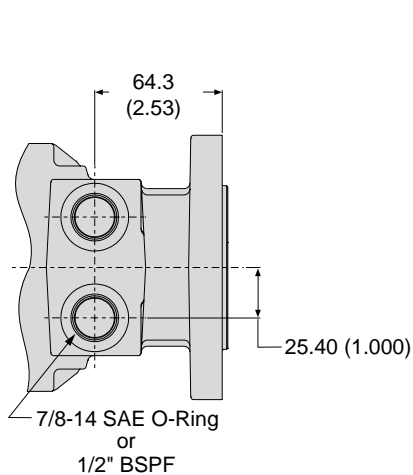


Wheel, Optional

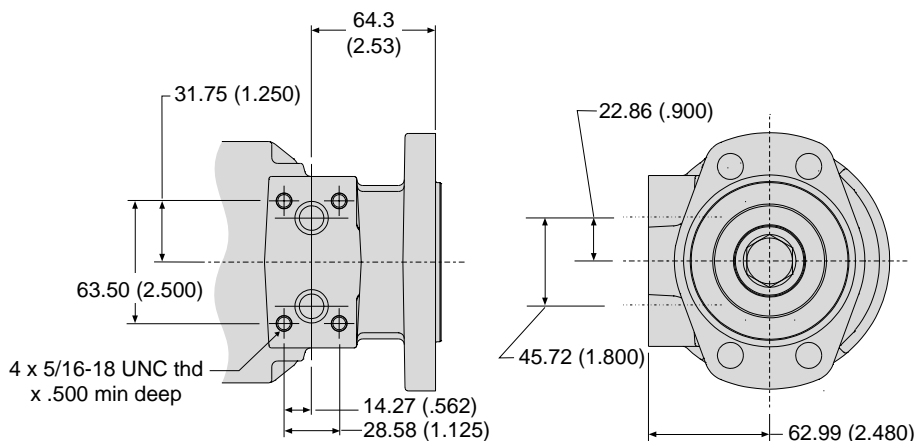


Porting

SAE O-Ring & BSPF

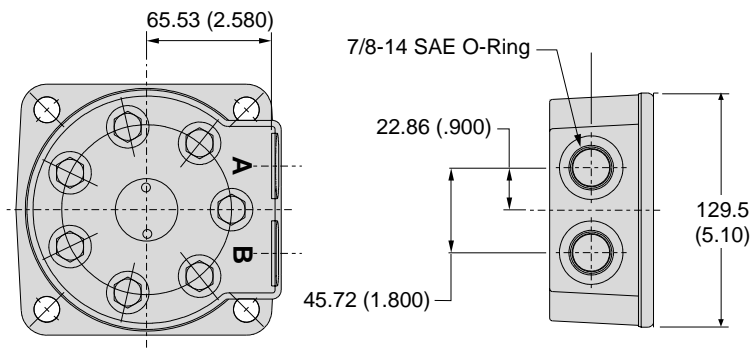


Manifold

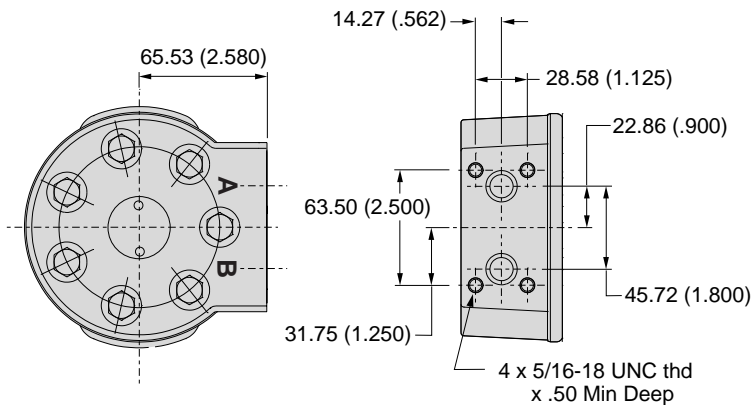


Rear Ports

7/8-14 SAE O-Ring



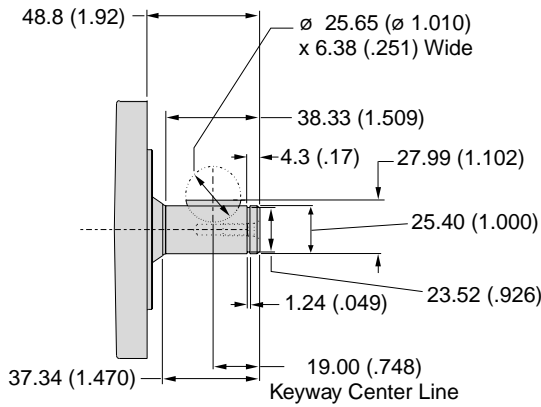
Manifold



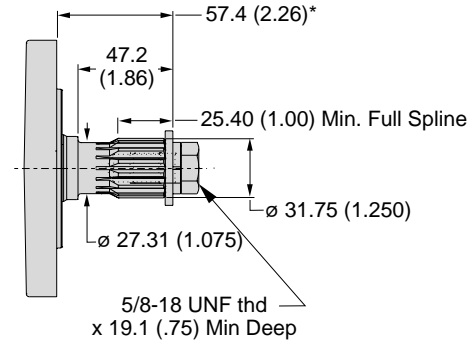
Consult Factory for
 ISO 6149 Porting

Shafts

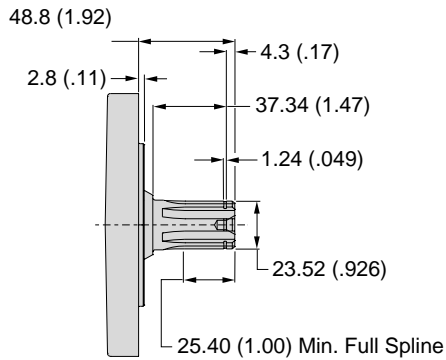
Inch equivalents for metric dimensions are shown in (**)



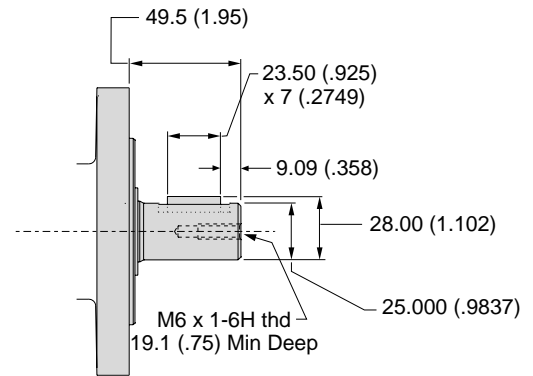
1" Keyed



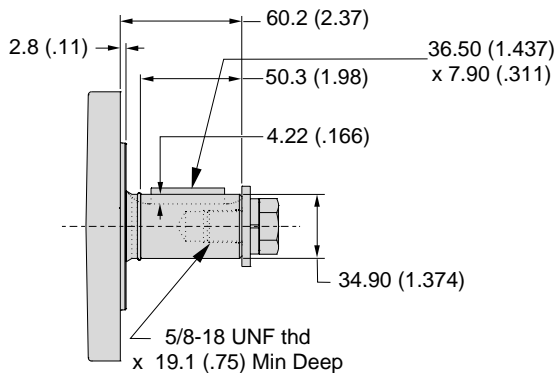
1 1/4" 14 Tooth Spline



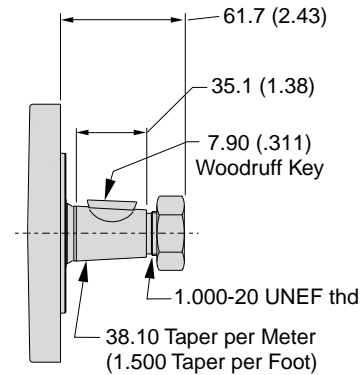
1" 6B Spline



25 mm Keyed



1 1/4" Keyed



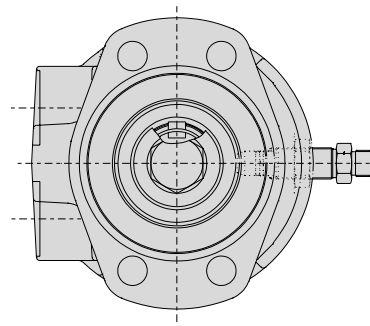
1 1/4" Taper

* Add .26" for SAE B Mount
 Add 1.78" for Wheel Mount
 Add 1.68" for Optional Wheel Mount

An Economical Sensor for Speed Readout

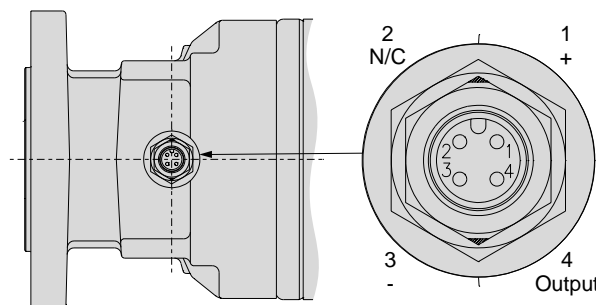
This rugged, weather resistant speed sensor is a Hall effect device. When externally powered, 30 square wave digital pulses per output shaft revolution are produced. By signal multiplication, 60 pulses per revolution can be obtained.

The installation of this economical sensor does not affect the torque or side load capability of the **Torqlink™** motor into which it is installed.



Features

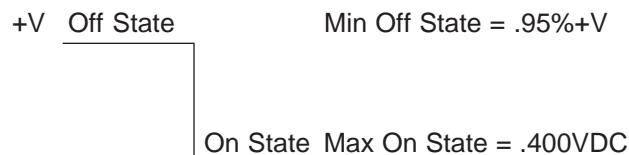
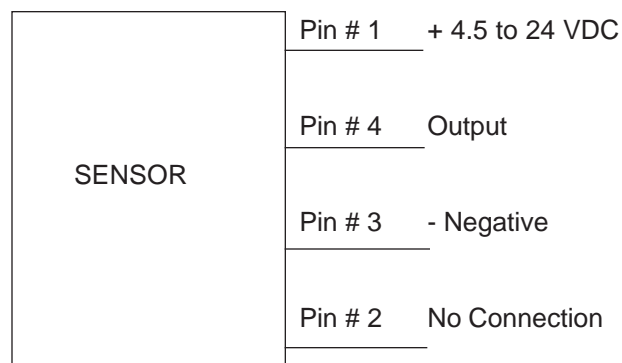
- Operating Voltage Range 4.5 to 24 VDC
- Operating Temperature -40° C to 93° C (-40° F to 200° F)
- Operating Frequency Range 0 to 100 KHZ
- Maximum Sink Current 20 mA
- Connection DC Din Standard 4 Pin Micro-Mini
- Pin Diameter 12mm
- Sensor Output 30 Pulses per Revolution which can be doubled electronically.



Pull-up Resistor Value Formula (for 1/4 Watt, 5% Tolerance)

$$\frac{V \text{ Supply (4.5-24 VDC)}}{\text{Desired Sink Current (0-20 mA } \pm 20\%)} = \text{Resistor Value (K - Ohms)}$$

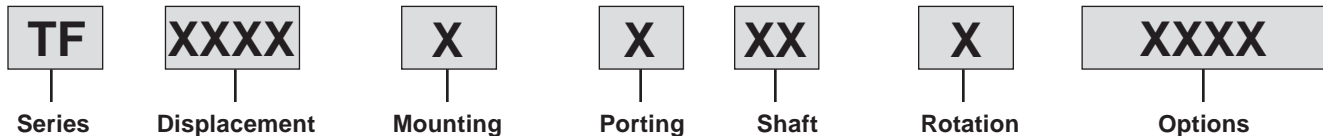
On State Current: 5 mA
 Higher wattage resistor will be needed for higher sink current.



Cable not included

Ordering Information

TF
S
E
R
I
E
S



| Code | Displacement |
|------|----------------|
| 0080 | 04.9 cu in/rev |
| 0100 | 06.1 cu in/rev |
| 0130 | 07.8 cu in/rev |
| 0140 | 08.6 cu in/rev |
| 0170 | 10.3 cu in/rev |
| 0195 | 12.0 cu in/rev |
| 0240 | 14.5 cu in/rev |
| 0280 | 17.1 cu in/rev |
| 0360 | 22.2 cu in/rev |
| 0405 | 24.7 cu in/rev |
| 0475 | 29.1 cu in/rev |

| Code | Porting |
|------|---------------------------------|
| A | 7/8"-14 SAE O-Ring; Rear Axial |
| B | 7/8"-14 SAE O-Ring; Rear Radial |
| E | Manifold; Rear Radial |
| J | ISO 6149 M22x1.5 |
| M* | Manifold |
| S | 7/8"-14 SAE O-Ring |
| T** | 1/2" BSPF |

* Not available on L, U or W mounting

** Available on A & M mounting only

| Code | Rotation |
|------|------------------------|
| 0 | Standard |
| 1 | Reverse Timed Manifold |

| Code | Mounting |
|------|-------------------------|
| A | SAE "A" 2-Bolt |
| B | SAE "B" 2-Bolt |
| M | Magneto |
| U | Wheel; Standard |
| L | Wheel; Front Brake Nose |
| W* | Wheel, Optional |

* Requires rear porting

| Code | Shaft |
|------|------------------------|
| 01 | 1"6B Spline |
| 02 | 1" Keyed |
| 03 | 1 1/4" Keyed |
| 04 | 10B Spline |
| 05 | 1 1/4" 14 Tooth Spline |
| 06 | 19 Tooth Spline |
| 07 | 15 Tooth Spline |
| 08 | 1 1/4" Tapered |
| 22 | 25mm Keyed |
| 28 | 13 Tooth Spline |

| Code | Options |
|---------|---|
| AAAA | Black Paint |
| AAAB | No Paint |
| AAAC | Double Paint |
| AAFC | White Epoxy Paint |
| AAAF*** | Castle Nut, Black Paint |
| AABP*** | Castle Nut, No Paint |
| AAAG | Viton Seals, Black Paint |
| AAAH | Viton Seals, No Paint |
| AAHD | Viton Seals, White Epoxy Paint |
| AAAJ | Vespel Commutator Seal, Black Paint |
| AAFG | Vespel Commutator Seal, No Paint |
| AAAT* | Bidirectional Shuttle (11:00**), Black Paint |
| AAFX* | Bidirectional Shuttle (11:00**), No Paint |
| AAAU* | Bidirectional Shuttle (11:00**), Castle Nut, Black Paint |
| AAGF* | Bidirectional Shuttle (11:00**), Castle Nut, No Paint |
| AABJ | Free Running Rotorset, Black Paint |
| AABK | Free Running Rotorset, No Paint |
| AABL | Free Running Rotorset, No Commutator Seal, Black Paint |
| AABM | Free Running Rotorset, No Commutator Seal, No Paint |
| BBBA* | 1000 PSI Internal Bidirectional Relief, Black Paint |
| BBBM* | 1000 PSI Internal Bidirectional Relief, No Paint |
| BBBG* | 1500 PSI Internal Bidirectional Relief, Black Paint |
| BBBJ* | 1500 PSI Internal Bidirectional Relief, No Paint |
| BBBB* | 2000 PSI Internal Bidirectional Relief, Black Paint |
| BBBN* | 2000 PSI Internal Bidirectional Relief, No Paint |
| BBBK* | 2000 PSI Internal Bidirectional Relief, Castle Nut, Black Paint |
| BBBC* | 3000 PSI Internal Bidirectional Relief, Black Paint |
| BBBF* | 3000 PSI Internal Bidirectional Relief, No Paint |
| BBBD* | 4000 PSI Internal Bidirectional Relief, Black Paint |
| BBBW* | 4000 PSI Internal Bidirectional Relief, No Paint |
| FFAA | Internal Speed Sensor, Black Paint |
| FFAB | Internal Speed Sensor, No Paint |
| FFAH | Internal Speed Sensor, Castle Nut, No Paint |
| FFAJ | Internal Speed Sensor, Castle Nut, Black Paint |

* Not available with A, B or E porting

** Shuttle port position as viewed from shaft end of motor

*** Available only with shaft code 08

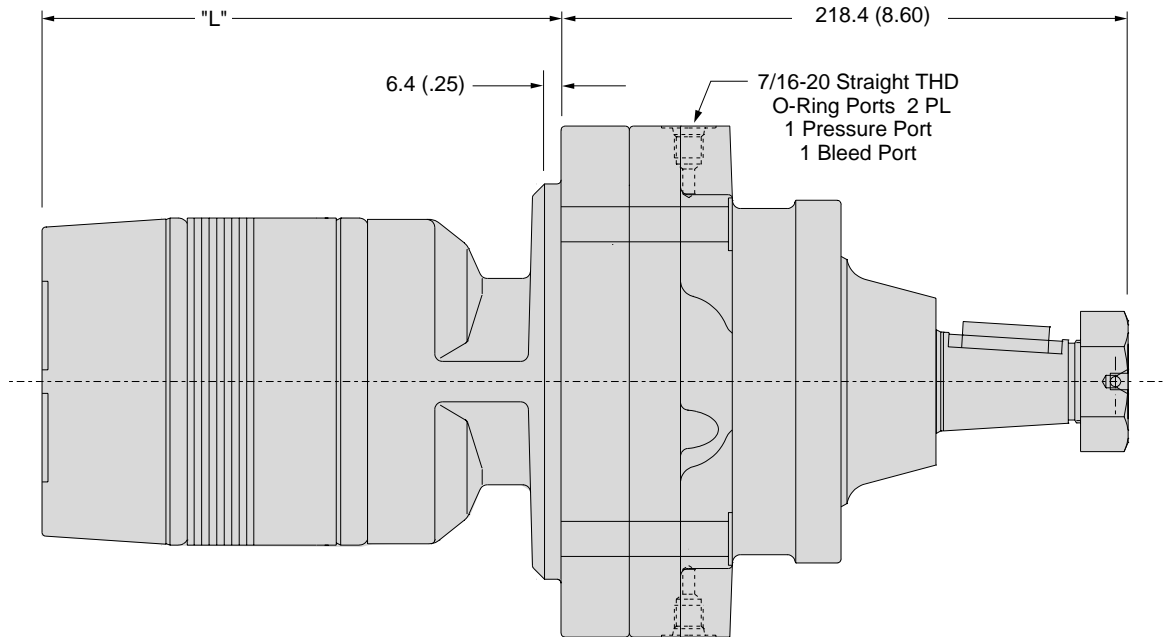
Brake Motor

This motor/brake combination consists of a TF Series motor built into a front mounted brake. The brake is a wet disc, spring set, hydraulically released unit. When hydraulic pressure is absent at the pilot port of the brake, internal springs will hold against 6900 lb in of torque. The brake will start to release when 190 PSI is present in the brake pilot port and will be fully disengaged when that pressure reaches 260 PSI. The pilot port is capable of withstanding the maximum operating pressure of the TF Series motor.

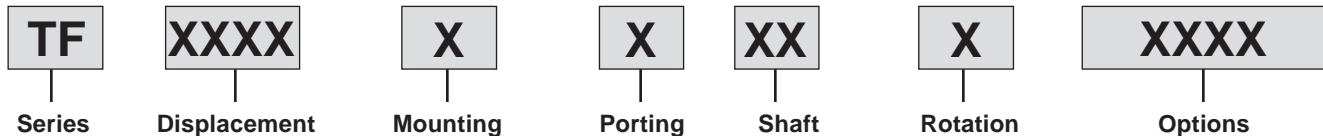


Dimensions

Inch equivalents for metric dimensions are shown in (**)



Ordering Information



| Code | Displacement |
|------|----------------|
| 0080 | 04.9 cu in/rev |
| 0100 | 06.1 cu in/rev |
| 0130 | 07.8 cu in/rev |
| 0140 | 08.6 cu in/rev |
| 0170 | 10.3 cu in/rev |
| 0195 | 12.0 cu in/rev |
| 0240 | 14.5 cu in/rev |
| 0280 | 17.1 cu in/rev |
| 0360 | 22.2 cu in/rev |
| 0405 | 24.7 cu in/rev |
| 0475 | 29.1 cu in/rev |

| Code | Porting |
|------|----------------------------------|
| A | 7/8"-14 SAE O-Ring; Rear Axial |
| B | 7/8"-14 SAE O-Ring; Rear Radial |
| S | 7/8"-14 SAE O-Ring; Front Radial |

| Code | Rotation |
|------|------------------------|
| 0 | Standard |
| 1 | Reverse Timed Manifold |

| Code | Mounting |
|------|-------------|
| 8 | Wheel Brake |

| Code | Shaft |
|------|------------------------|
| 03 | 1 1/4" Keyed |
| 05 | 1 1/4" 14 Tooth Spline |
| 08 | 1 1/4" Tapered |
| 31 | 1 1/2" Tapered |
| 32 | 1 1/2" Keyed |
| 36 | 1 1/2" 17 Tooth Spline |

| Code | Options |
|---------|---|
| AAAA | Black Paint |
| AAAB | No Paint |
| AAAC | Double Paint |
| AAFC | White Epoxy Paint |
| AAAF*** | Castle Nut, Black Paint |
| AABP*** | Castle Nut, No Paint |
| AAAG | Viton Seals, Black Paint |
| AAAH | Viton Seals, No Paint |
| AAHD | Viton Seals, White Epoxy Paint |
| AAAJ | Vespel Commutator Seal, Black Paint |
| AAFG | Vespel Commutator Seal, No Paint |
| AAAT* | Bidirectional Shuttle (11:00**), Black Paint |
| AAFX* | Bidirectional Shuttle (11:00**), No Paint |
| AAAU* | Bidirectional Shuttle (11:00**), Castle Nut, Black Paint |
| AAGF* | Bidirectional Shuttle (11:00**), Castle Nut, No Paint |
| AABJ | Free Running Rotorset, Black Paint |
| AABK | Free Running Rotorset, No Paint |
| AABL | Free Running Rotorset, No Commutator Seal, Black Paint |
| AABM | Free Running Rotorset, No Commutator Seal, No Paint |
| BBBA* | 1000 PSI Internal Bidirectional Relief, Black Paint |
| BBBM | 1000 PSI Internal Bidirectional Relief, No Paint |
| BBBG* | 1500 PSI Internal Bidirectional Relief, Black Paint |
| BBBJ* | 1500 PSI Internal Bidirectional Relief, No Paint |
| BBBB* | 2000 PSI Internal Bidirectional Relief, Black Paint |
| BBCC | 2000 PSI Internal Bidirectional Relief, No Paint |
| BBBK* | 2000 PSI Internal Bidirectional Relief, Castle Nut, Black Paint |
| BBBC* | 3000 PSI Internal Bidirectional Relief, Black Paint |
| BBBF* | 3000 PSI Internal Bidirectional Relief, No Paint |
| BBBD* | 4000 PSI Internal Bidirectional Relief, Black Paint |
| BBBW* | 4000 PSI Internal Bidirectional Relief, No Paint |

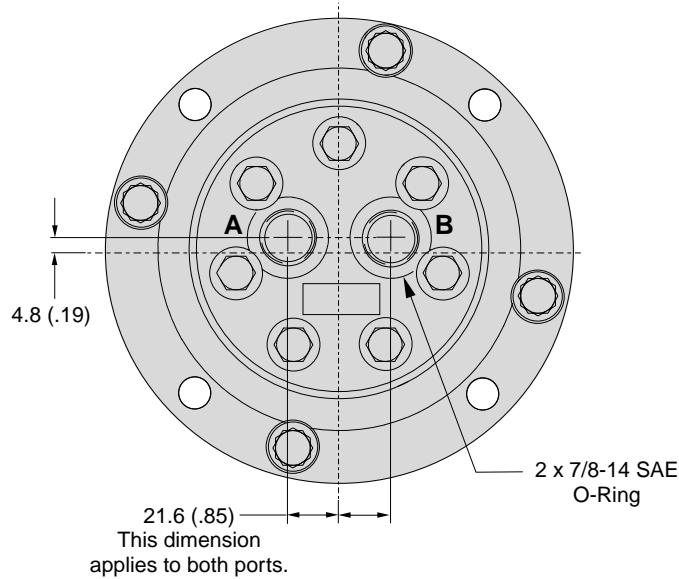
* Not available with A or B porting

** Shuttle port position as viewed from shaft end of motor

*** Available only with shaft code 08 or 31

Dimensions

Inch equivalents for metric dimensions are shown in (**)



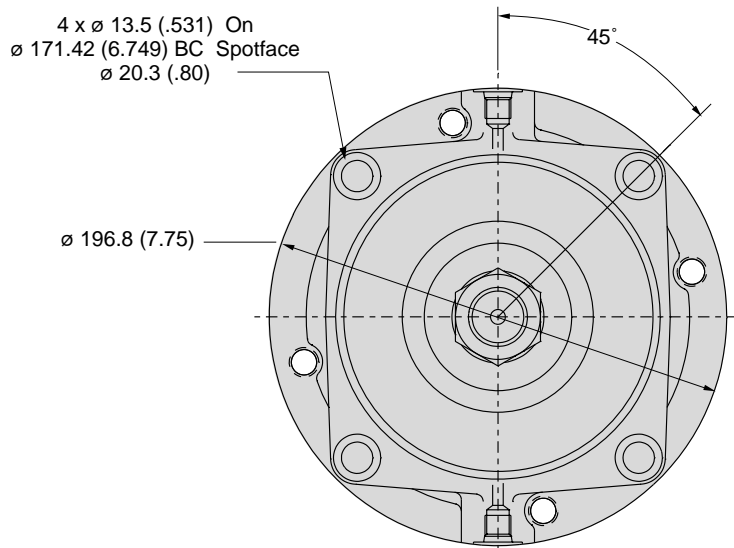
Rear View

Standard Rotation:

(As viewed from shaft end)

Front Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Rear Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.



Front View

Clutch Motor

The Clutch Motor consists of a TF Series motor separated from the output shaft by a face spline coupling. The coupling is held apart by springs, disconnecting the motor from the output shaft, allowing the output shaft to freewheel. When hydraulic pressure is applied to either motor port, the springs separating the coupling are overcome and the motor is coupled to the output shaft.

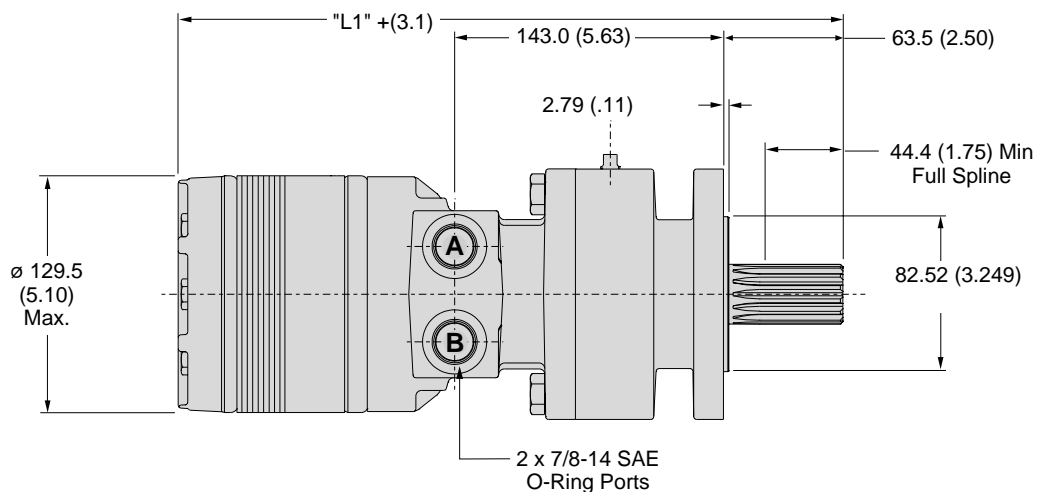
Notes:

- 1) Consult factory if clutch is to be engaged while output shaft is rotating.
- 2) Clutch may not disengage if there is residual torque on output shaft when pressure is lost at motor ports.
- 3) Minimum pressure to engage clutch - 125 PSI.
- 4) To assure clutch disengagement, pressure at motor ports must be below 70 PSI.
- 5) Shaft will freewheel when pressure is lost at motor ports whether by design or inadvertently. The possibility of unplanned freewheeling should be considered in the design of the system.



Dimensions

Inch equivalents for metric dimensions are shown in (**)



Standard Rotation:

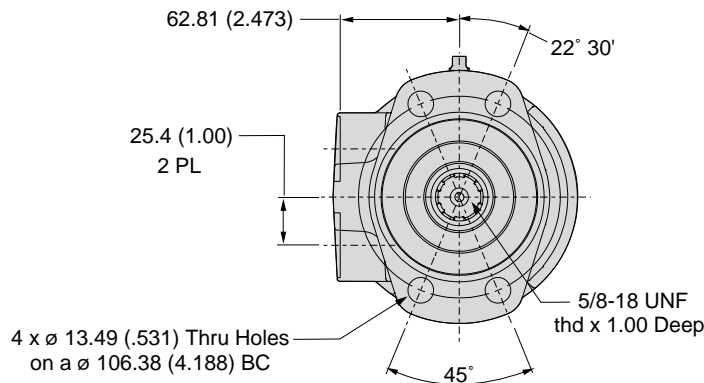
(As viewed from shaft end)

Front Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Rear Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.

Dimensions

Inch equivalents for metric dimensions are shown in (**)



Clutch Motor Ordering Information



| Code | Displacement |
|------|----------------|
| 0080 | 04.9 cu in/rev |
| 0100 | 06.1 cu in/rev |
| 0130 | 07.8 cu in/rev |
| 0140 | 08.6 cu in/rev |
| 0170 | 10.3 cu in/rev |
| 0195 | 12.0 cu in/rev |
| 0240 | 14.5 cu in/rev |
| 0280 | 17.1 cu in/rev |
| 0365 | 22.2 cu in/rev |

| Code | Mounting |
|------|-----------------|
| G | Magneto, Clutch |

| Code | Shaft |
|------|------------------------|
| 03 | 1 1/4" Keyed |
| 05 | 1 1/4" 14-Tooth Spline |

| Code | Porting |
|------|--------------------|
| S | 7/8"-14 SAE O-Ring |

| Code | Rotation |
|------|------------------------|
| 0 | Standard |
| 1 | Reverse Timed Manifold |

| Code | Options |
|------|--|
| AAAA | Black Paint |
| AAAB | No Paint |
| AAAC | Double Paint |
| AAFC | White Epoxy Paint |
| AAAG | Viton Seals, Black Paint |
| AAAH | Viton Seals, No Paint |
| AAHD | Viton Seals, White Epoxy Paint |
| AAAJ | Vespel Commutator Seal, Black Paint |
| AAFG | Vespel Commutator Seal, No Paint |
| AAAT | Bidirectional Shuttle (11:00**), Black Paint |
| AAFX | Bidirectional Shuttle (11:00**), No Paint |
| AABJ | Free Running Rotorset, Black Paint |
| AABK | Free Running Rotorset, No Paint |
| AABL | Free Running Rotorset, No Commutator Seal, Black Paint |
| AABM | Free Running Rotorset, No Commutator Seal, No Paint |
| BBBA | 1000 PSI Internal Bidirectional Relief, Black Paint |
| BBBM | 1000 PSI Internal Bidirectional Relief, No Paint |
| BBBG | 1500 PSI Internal Bidirectional Relief, Black Paint |
| BBBJ | 1500 PSI Internal Bidirectional Relief, No Paint |
| BBBB | 2000 PSI Internal Bidirectional Relief, Black Paint |
| BBCC | 2000 PSI Internal Bidirectional Relief, No Paint |
| BBBC | 3000 PSI Internal Bidirectional Relief, Black Paint |
| BBBF | 3000 PSI Internal Bidirectional Relief, No Paint |
| BBBD | 4000 PSI Internal Bidirectional Relief, Black Paint |
| BBBW | 4000 PSI Internal Bidirectional Relief, No Paint |

** Shuttle port position as viewed from shaft end of motor

Exceptional Strength and Durability in a High Performance Motor

The heart of Parker's TG Series powertrain, the torque link, is an extra heavy duty part that includes patented 60:40 spline geometry. Rugged construction throughout allows the transmission of over 13,000 lb in of torque. The entire powertrain is continually washed in cool, high flow fluid to assure long life. Roller vanes and sealed commutator maintain high efficiency and provide smooth low speed performance.



Options

- 1 inch Keyed or Splined, 1 1/4 inch Keyed Splined or Tapered, 1 3/8 inch Keyed or Tapered Shafts
- SAE A 2 Bolt, SAE B 2 Bolt or 4 Bolt Magneto Mounting
- Wheel Mount
- SAE O-Ring, Manifold or BSPF Porting
- Front or Rear Porting
- Brake Motor
- Speed Sensor
- Internal Cross - Over Relief Valves
- Hot Oil Shuttle
- Free Running Rotor Set
- Reverse Timed Manifold
- Corrosion Resistance

Features

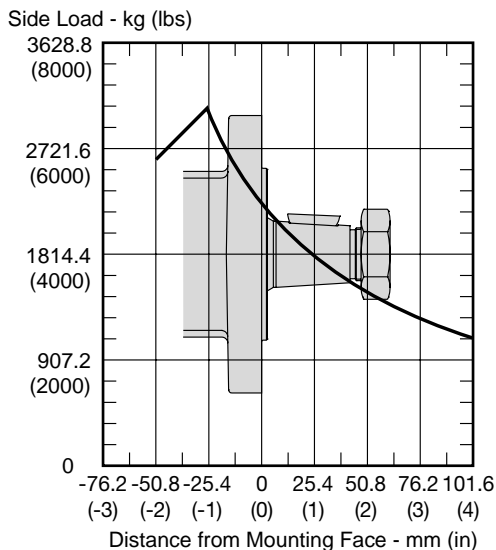
- **Roller Bearings** — For Heavy Radial Loads
- **Roller Vane Power Element** — For High Volumetric Efficiency and Long Life
- **Orbiting Commutator** — For Accurate Timing, Smooth Low Speed Operation
- **Full Flow Spline Lubrication** — For Extended Spline Life
- **High Pressure Shaft Seal** — For High Back Pressure Operation Without External Drain Lines
- **High Flow Shaft Seal Cooling** — For Long Seal Life
- **60:40 Spline Geometry** — For Superior Powertrain Strength, Long Life
- **Robust Construction** — For Quiet operation

TG Specifications

| Code | 0140 | 0170 | 0195 | 0240 | 0280 | 0335 | 0405 | 0475 | 0530 | 0625 | 0785 | 0960 |
|---|-----------------|-----------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Displacement cc/rev (cu in/rev) | 140 (8.6) | 169 (10.3) | 195 (11.9) | 237 (14.5) | 280 (17.1) | 337 (20.6) | 405 (24.7) | 476 (29.1) | 529 (32.3) | 624 (38.0) | 786 (48.0) | 958 (58.5) |
| Maximum Speed (rpm) @ Maximum Continuous Flow | 528 | 442 | 381 | 314 | 266 | 221 | 185 | 157 | 141 | 120 | 95 | 78 |
| Pressure Differential Maximum Continuous bar (psid) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 172.4 (2500) | 137.9 (2000) | 137.9 (2000) | 120.7 (1750) | 103.4 (1500) | 69.0 (1000) |
| Maximum Intermittent bar (psid) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 241.4 (3500) | 206.9 (3000) | 172.4 (2500) | 155.2 (2250) | 137.9 (2000) | 103.4 (1500) |
| Max. Torque @ Max. Continuous Pressure nm (lb-in) | 406.8 (3601) | 494.9 (4380) | 576.0 (5098) | 704.9 (6239) | 824.9 (7301) | 1006.4 (8908) | 991.1 (8772) | 954.1 (8445) | 1057.7 (9362) | 1054.9 (9337) | 1142.0 (10108) | 923.4 (8173) |
| Max. Torque @ Max. Intermittent Pressure nm (lb-in) | 541.6 (4794) | 659.6 (5838) | 765.6 (6776) | 937.5 (8298) | 1096.7 (9707) | 1337.0 (11834) | 1386.4 (12271) | 1424.5 (12608) | 1317.2 (11659) | 1348.4 (11935) | 1489.6 (13185) | 1385.4 (12262) |

PSLGC,PM6, dg, ki


Maximum Side Load Capacity Flange Mount



Performance Data

Continuous / Intermittent* Operation

 = Continuous

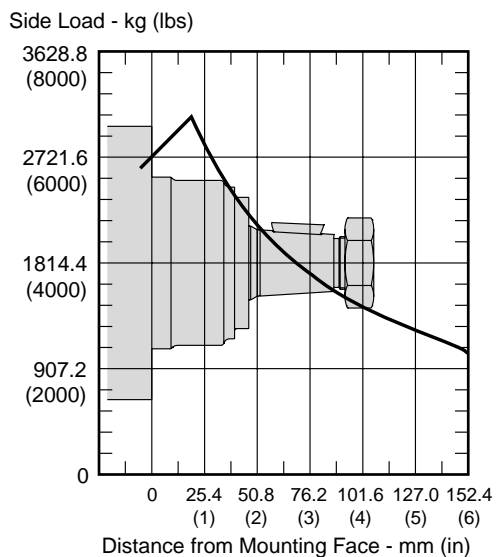
 = Intermittent*

**Intermittent operation is defined as less than 10% per minute.*

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F.)

Performance data is typical. Actual data may vary slightly from one production motor to another.

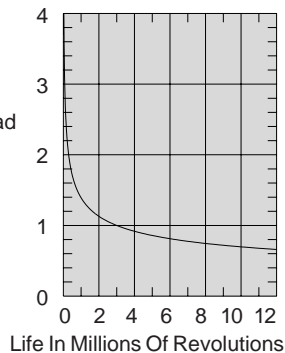
Wheel Mount



B-10 Life Factors

Application of the above uni-directional radial loads will result in a B-10 life of 3 million revolutions. For B-10 life at other radial loads, apply the factors from the curve to the right.

Multiply Allowable Radial Load By These Factors



Code 0140

140 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 58.6 9 | 119.8 4 | | | | | | |
| 3.8 | 61.0 22 | 123.1 17 | 184.7 11 | 246.3 6 | | | | |
| 7.6 | 64.3 49 | 130.6 43 | 195.5 36 | 258.3 30 | 319.4 23 | 380.5 19 | 440.5 12 | 502.4 12 |
| 11.4 | 63.8 75 | 130.9 69 | 197.0 62 | 262.2 55 | 327.5 47 | 392.8 40 | 457.3 33 | 520.6 29 |
| 15.1 | 63.7 102 | 132.2 94 | 199.7 87 | 266.4 80 | 332.5 72 | 397.4 64 | 461.2 57 | 524.7 52 |
| 18.9 | 62.8 128 | 132.2 120 | 200.7 112 | 268.3 105 | 335.3 97 | 401.8 89 | 467.2 81 | 531.1 76 |
| 26.5 | 61.0 182 | 131.1 172 | 201.0 164 | 270.0 155 | 338.3 146 | 405.8 138 | 472.4 130 | 538.1 123 |
| 34.1 | 58.2 235 | 129.1 225 | 199.7 215 | 269.5 206 | 338.5 196 | 406.8 187 | 474.4 179 | 541.6 171 |
| 45.4 | 53.2 315 | 123.8 303 | 195.3 292 | 266.2 281 | 336.0 271 | 405.3 261 | 473.7 252 | 541.6 243 |
| 56.8 | 47.2 395 | 117.7 381 | 189.0 368 | 260.6 357 | 331.4 346 | 401.0 336 | 470.3 325 | 539.0 314 |
| 75.7 | 33.8 528 | 105.2 512 | 176.8 497 | 248.3 484 | 319.2 472 | 390.3 459 | 460.7 447 | 530.1 435 |
| 94.6 | 19.5 660 | 89.7 643 | 161.1 626 | 232.6 612 | 304.5 598 | 376.4 583 | 447.5 569 | 517.3 555 |

Flow (LPM)

TORQUE (nm) 304.5
 SPEED (RPM) 598

8.6 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 519 9 | 1060 4 | | | | | | |
| 1 | 540 22 | 1090 17 | 1635 11 | 2180 6 | | | | |
| 2 | 569 49 | 1156 43 | 1730 36 | 2286 30 | 2827 23 | 3368 19 | 3899 12 | 4447 12 |
| 3 | 565 75 | 1159 69 | 1744 62 | 2321 55 | 2899 47 | 3477 40 | 4048 33 | 4608 29 |
| 4 | 564 102 | 1170 94 | 1768 87 | 2358 80 | 2943 72 | 3517 64 | 4082 57 | 4644 52 |
| 5 | 556 128 | 1170 120 | 1776 112 | 2375 105 | 2968 97 | 3556 89 | 4135 81 | 4701 76 |
| 7 | 540 182 | 1160 172 | 1779 164 | 2390 155 | 2994 146 | 3592 138 | 4181 130 | 4763 123 |
| 9 | 515 235 | 1143 225 | 1768 215 | 2385 206 | 2996 196 | 3601 187 | 4199 179 | 4794 171 |
| 12 | 471 315 | 1096 303 | 1729 292 | 2356 281 | 2974 271 | 3587 261 | 4193 252 | 4794 243 |
| 15 | 418 395 | 1042 381 | 1673 368 | 2307 357 | 2933 346 | 3549 336 | 4163 325 | 4771 314 |
| 20 | 299 528 | 931 512 | 1565 497 | 2198 484 | 2825 472 | 3455 459 | 4078 447 | 4692 435 |
| 25 | 173 660 | 794 643 | 1426 626 | 2059 612 | 2695 598 | 3332 583 | 3961 569 | 4579 555 |

Flow (GPM)

PSLGC, PM6, dg, ki

Code 0170

170 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 70.0 9 | 145.1 7 | 219.7 5 | 295.2 4 | 372.0 3 | 450.0 2 | | |
| 3.8 | 73.7 20 | 151.1 18 | 226.6 16 | 303.1 14 | 381.3 12 | 459.0 11 | 536.0 8 | 610.3 8 |
| 7.6 | 76.6 42 | 157.0 40 | 237.8 37 | 318.8 35 | 399.4 32 | 477.5 30 | 554.6 27 | 631.2 25 |
| 11.4 | 76.6 64 | 157.8 61 | 239.2 58 | 320.4 56 | 401.5 53 | 481.6 50 | 560.7 46 | 638.6 44 |
| 15.1 | 76.7 86 | 159.2 83 | 242.0 80 | 324.5 77 | 406.3 74 | 486.9 71 | 567.3 67 | 645.8 64 |
| 18.9 | 76.3 108 | 159.6 104 | 242.9 101 | 325.9 98 | 408.5 94 | 490.2 91 | 571.3 87 | 650.9 83 |
| 26.5 | 74.7 153 | 158.7 148 | 243.1 143 | 327.6 140 | 411.5 136 | 494.2 132 | 576.3 127 | 657.3 123 |
| 34.1 | 71.4 197 | 156.5 191 | 241.8 186 | 326.6 181 | 411.0 177 | 494.9 173 | 577.8 168 | 659.6 163 |
| 45.4 | 65.9 263 | 150.7 256 | 236.8 250 | 323.1 244 | 408.6 239 | 492.8 234 | 576.3 228 | 657.9 223 |
| 56.8 | 59.2 330 | 144.0 322 | 229.9 314 | 316.8 308 | 403.6 302 | 488.9 296 | 572.8 289 | 655.4 283 |
| 75.7 | 43.2 442 | 129.1 432 | 215.6 422 | 303.1 413 | 390.3 406 | 476.3 399 | 561.7 391 | 645.6 383 |
| 94.6 | 27.0 554 | 111.1 543 | 197.4 531 | 285.0 520 | 372.7 511 | 459.9 501 | 546.7 492 | 631.7 483 |

Flow (LPM)

10.3 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 620 9 | 1284 7 | 1945 5 | 2613 4 | 3293 3 | 3983 2 | | |
| 1 | 652 20 | 1337 18 | 2006 16 | 2683 14 | 3375 12 | 4063 11 | 4744 8 | 5402 8 |
| 2 | 678 42 | 1390 40 | 2105 37 | 2822 35 | 3535 32 | 4226 30 | 4909 27 | 5587 25 |
| 3 | 678 64 | 1397 61 | 2117 58 | 2836 56 | 3554 53 | 4263 50 | 4963 46 | 5652 44 |
| 4 | 679 86 | 1409 83 | 2142 80 | 2872 77 | 3596 74 | 4310 71 | 5021 67 | 5716 64 |
| 5 | 675 108 | 1413 104 | 2150 101 | 2885 98 | 3616 94 | 4339 91 | 5057 87 | 5761 83 |
| 7 | 661 153 | 1405 148 | 2152 143 | 2900 140 | 3642 136 | 4374 132 | 5101 127 | 5818 123 |
| 9 | 632 197 | 1385 191 | 2140 186 | 2891 181 | 3638 177 | 4380 173 | 5114 168 | 5838 163 |
| 12 | 583 263 | 1334 256 | 2096 250 | 2860 244 | 3617 239 | 4362 234 | 5101 228 | 5823 223 |
| 15 | 524 330 | 1275 322 | 2035 314 | 2804 308 | 3572 302 | 4327 296 | 5070 289 | 5801 283 |
| 20 | 382 442 | 1143 432 | 1908 422 | 2683 413 | 3455 406 | 4216 399 | 4972 391 | 5714 383 |
| 25 | 239 554 | 983 543 | 1747 531 | 2523 520 | 3299 511 | 4071 501 | 4839 492 | 5591 483 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

TG SERIES

Code 0195

195 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 82.8 7 | 169.8 3 | | | | | | |
| 3.8 | 86.0 16 | 174.7 13 | 262.8 8 | 350.7 3 | | | | |
| 7.6 | 90.3 35 | 185.1 32 | 278.5 27 | 369.4 21 | 457.1 16 | 543.8 11 | 631.4 7 | 720.2 6 |
| 11.4 | 89.7 55 | 185.2 50 | 279.7 45 | 373.2 39 | 466.8 34 | 561.5 28 | 654.4 23 | 745.1 19 |
| 15.1 | 89.7 74 | 186.9 69 | 283.5 64 | 379.2 58 | 474.1 52 | 567.5 46 | 658.7 40 | 749.6 35 |
| 18.9 | 88.5 93 | 186.8 88 | 284.4 83 | 381.3 76 | 477.2 70 | 572.2 64 | 666.0 58 | 758.1 52 |
| 26.5 | 86.1 131 | 184.9 126 | 284.0 120 | 382.3 113 | 479.6 106 | 576.0 99 | 671.1 92 | 765.1 86 |
| 34.1 | 82.6 170 | 182.6 164 | 282.3 157 | 381.1 150 | 478.9 142 | 575.4 135 | 670.6 127 | 765.3 120 |
| 45.4 | 76.5 228 | 176.5 221 | 277.4 213 | 377.7 205 | 476.4 196 | 574.1 188 | 670.4 179 | 765.6 172 |
| 56.8 | 69.3 285 | 169.2 278 | 269.9 269 | 370.9 260 | 471.0 251 | 569.4 242 | 667.4 232 | 764.3 233 |
| 75.7 | 50.6 381 | 152.5 373 | 253.6 363 | 354.9 353 | 455.4 342 | 555.7 331 | 655.1 321 | 752.8 310 |
| 94.6 | 37.7 477 | 130.8 468 | 230.9 457 | 332.3 445 | 433.5 433 | 534.3 421 | 634.0 409 | 734.4 397 |

Flow (LPM)

11.9 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 733 7 | 1503 3 | | | | | | |
| 1 | 761 16 | 1546 13 | 2326 8 | 3104 3 | | | | |
| 2 | 799 35 | 1638 32 | 2465 27 | 3270 21 | 4046 16 | 4813 11 | 5589 7 | 6375 6 |
| 3 | 794 55 | 1639 50 | 2476 45 | 3303 39 | 4132 34 | 4970 28 | 5792 23 | 6595 19 |
| 4 | 794 74 | 1654 69 | 2509 64 | 3356 58 | 4196 52 | 5023 46 | 5830 40 | 6635 35 |
| 5 | 783 93 | 1653 88 | 2517 83 | 3375 76 | 4224 70 | 5065 64 | 5895 58 | 6710 52 |
| 7 | 762 131 | 1637 126 | 2514 120 | 3384 113 | 4245 106 | 5098 99 | 5940 92 | 6772 86 |
| 9 | 731 170 | 1616 164 | 2499 157 | 3373 150 | 4239 142 | 5093 135 | 5936 127 | 6774 120 |
| 12 | 677 228 | 1562 221 | 2455 213 | 3343 205 | 4217 196 | 5081 188 | 5934 179 | 6776 172 |
| 15 | 613 285 | 1498 278 | 2389 269 | 3283 260 | 4169 251 | 5040 242 | 5907 232 | 6765 233 |
| 20 | 448 381 | 1350 373 | 2245 363 | 3141 353 | 4031 342 | 4919 331 | 5798 321 | 6663 310 |
| 25 | 334 477 | 1158 468 | 2044 457 | 2941 445 | 3837 433 | 4729 421 | 5612 409 | 6500 397 |

TORQUE (nm) 534.3
 SPEED (RPM) 421

TORQUE (LB IN) 4813
 SPEED (RPM) 11

Flow (GPM)

PSLGC, PM6, dg, ki

Code 0240

240 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 105.3 6 | 215.5 4 | 327.0 2 | | | | | |
| 3.8 | 108.5 14 | 220.8 12 | 333.3 9 | 445.5 6 | 558.0 3 | 670.0 2 | | |
| 7.6 | 111.6 30 | 229.5 27 | 346.3 24 | 462.1 20 | 577.0 17 | 689.2 14 | 798.5 11 | 908.0 9 |
| 11.4 | 111.1 45 | 229.2 42 | 347.0 39 | 463.3 35 | 579.4 31 | 696.1 27 | 811.4 23 | 924.6 20 |
| 15.1 | 110.5 61 | 230.1 58 | 349.1 54 | 467.3 49 | 584.8 45 | 701.3 42 | 816.8 37 | 930.3 33 |
| 18.9 | 108.7 77 | 229.3 73 | 349.3 69 | 468.2 64 | 586.4 60 | 704.0 56 | 820.1 51 | 934.5 47 |
| 26.5 | 105.4 108 | 226.5 104 | 347.8 99 | 467.9 94 | 586.8 89 | 704.9 84 | 821.9 78 | 937.5 73 |
| 34.1 | 100.6 140 | 222.8 135 | 344.4 129 | 464.6 123 | 584.0 117 | 701.9 112 | 818.5 106 | 934.5 100 |
| 45.4 | 94.0 187 | 216.0 181 | 338.5 175 | 459.9 167 | 579.0 161 | 696.3 154 | 812.9 147 | 929.1 140 |
| 56.8 | 85.1 235 | 207.0 228 | 330.0 220 | 452.9 212 | 574.1 204 | 693.4 196 | 811.4 188 | 927.8 180 |
| 75.7 | 63.2 314 | 186.9 306 | 310.0 297 | 433.2 287 | 555.5 278 | 676.9 268 | 795.9 258 | 913.0 248 |
| 94.6 | 59.2 393 | 161.2 384 | 283.2 373 | 406.2 363 | 529.9 352 | 653.0 340 | 774.3 328 | 894.0 317 |

Flow (LPM)

14.5 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 932 6 | 1907 4 | 2894 2 | | | | | |
| 1 | 960 14 | 1954 12 | 2950 9 | 3943 6 | 4939 3 | 5930 2 | | |
| 2 | 988 30 | 2031 27 | 3065 24 | 4090 20 | 5107 17 | 6100 14 | 7068 11 | 8037 9 |
| 3 | 983 45 | 2029 42 | 3071 39 | 4101 35 | 5128 31 | 6161 27 | 7182 23 | 8184 20 |
| 4 | 978 61 | 2037 58 | 3090 54 | 4136 49 | 5176 45 | 6207 42 | 7230 37 | 8234 33 |
| 5 | 962 77 | 2030 73 | 3092 69 | 4144 64 | 5190 60 | 6231 56 | 7259 51 | 8271 47 |
| 7 | 933 108 | 2005 104 | 3078 99 | 4141 94 | 5194 89 | 6239 84 | 7275 78 | 8298 73 |
| 9 | 890 140 | 1972 135 | 3048 129 | 4112 123 | 5169 117 | 6213 112 | 7245 106 | 8271 100 |
| 12 | 832 187 | 1912 181 | 2996 175 | 4071 167 | 5125 161 | 6163 154 | 7195 147 | 8224 140 |
| 15 | 753 235 | 1832 228 | 2921 220 | 4009 212 | 5081 204 | 6137 196 | 7182 188 | 8212 180 |
| 20 | 559 314 | 1654 306 | 2744 297 | 3834 287 | 4917 278 | 5991 268 | 7045 258 | 8081 248 |
| 25 | 524 393 | 1427 384 | 2507 373 | 3595 363 | 4690 352 | 5780 340 | 6853 328 | 7913 317 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

TG SERIES

Code 0280

280 cc / rev

| | PRESSURE (BAR) | | | | | | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|--|--|--|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 | | | | |
| 1.9 | 119.3 5 | 246.0 4 | 375.4 2 | 509.8 1 | | | | | | | | |
| 3.8 | 122.8 12 | 251.2 10 | 381.6 8 | 514.3 6 | 647.8 5 | 783.0 3 | 919.1 3 | 1056.4 2 | | | | |
| 7.6 | 127.0 25 | 261.3 23 | 396.9 21 | 531.0 18 | 664.3 16 | 797.6 14 | 930.8 12 | 1062.0 11 | | | | |
| 11.4 | 127.0 39 | 262.5 36 | 399.0 34 | 535.5 31 | 671.1 28 | 807.0 25 | 942.9 22 | 1077.4 19 | | | | |
| 15.1 | 127.2 52 | 265.1 49 | 403.1 47 | 540.7 43 | 678.3 40 | 815.0 37 | 950.7 33 | 1084.2 30 | | | | |
| 18.9 | 126.0 65 | 265.5 62 | 404.7 59 | 544.1 56 | 682.9 52 | 819.8 49 | 955.5 45 | 1089.2 41 | | | | |
| 26.5 | 123.3 92 | 264.1 88 | 405.1 85 | 545.9 80 | 686.0 76 | 824.9 72 | 962.0 67 | 1096.6 63 | | | | |
| 34.1 | 118.2 118 | 260.9 114 | 402.7 110 | 543.5 105 | 683.6 101 | 822.5 96 | 960.2 90 | 1096.7 85 | | | | |
| 45.4 | 110.8 159 | 253.3 154 | 396.1 148 | 537.4 143 | 677.0 137 | 815.8 132 | 954.0 125 | 1090.5 118 | | | | |
| 56.8 | 101.5 199 | 244.5 193 | 388.3 186 | 531.2 180 | 672.3 174 | 812.0 168 | 950.8 160 | 1087.4 152 | | | | |
| 75.7 | 78.1 266 | 223.2 258 | 367.7 250 | 511.7 243 | 654.7 235 | 795.8 227 | 934.9 218 | 1073.2 209 | | | | |
| 94.6 | 79.4 334 | 195.0 324 | 337.5 314 | 481.3 305 | 625.9 296 | 770.0 286 | 911.9 276 | 1052.0 267 | | | | |

Flow (LPM)

17.1 cu in / rev

| | PRESSURE (PSI) | | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
| .5 | 1056 5 | 2177 4 | 3323 2 | 4512 1 | | | | |
| 1 | 1087 12 | 2223 10 | 3378 8 | 4552 6 | 5734 5 | 6930 3 | 8135 3 | 9350 2 |
| 2 | 1124 25 | 2313 23 | 3513 21 | 4700 18 | 5880 16 | 7060 14 | 8239 12 | 9400 11 |
| 3 | 1124 39 | 2323 36 | 3532 34 | 4740 31 | 5940 28 | 7143 25 | 8346 22 | 9536 19 |
| 4 | 1126 52 | 2346 49 | 3568 47 | 4786 43 | 6004 40 | 7214 37 | 8415 33 | 9596 30 |
| 5 | 1115 65 | 2350 62 | 3582 59 | 4816 56 | 6044 52 | 7256 49 | 8457 45 | 9641 41 |
| 7 | 1091 92 | 2338 88 | 3586 85 | 4832 80 | 6072 76 | 7301 72 | 8515 67 | 9706 63 |
| 9 | 1046 118 | 2309 114 | 3564 110 | 4811 105 | 6051 101 | 7280 96 | 8499 90 | 9707 85 |
| 12 | 981 159 | 2242 154 | 3506 148 | 4757 143 | 5992 137 | 7221 132 | 8444 125 | 9652 118 |
| 15 | 898 199 | 2164 193 | 3437 186 | 4702 180 | 5951 174 | 7187 168 | 8416 160 | 9625 152 |
| 20 | 691 266 | 1976 258 | 3255 250 | 4529 243 | 5795 235 | 7044 227 | 8275 218 | 9499 209 |
| 25 | 703 334 | 1726 324 | 2987 314 | 4260 305 | 5540 296 | 6815 286 | 8071 276 | 9311 267 |

Flow (GPM)

PSLGC,PM6, dg, ki

Code 0335

335 cc / rev

| | PRESSURE (BAR) | | | | | | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|--|--|--|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 | | | | |
| 1.9 | 146.5 4 | 304.9 3 | 466.4 1 | 630.9 1 | | | | | | | | |
| 3.8 | 150.2 10 | 309.7 8 | 471.8 7 | 636.1 5 | 800.4 4 | 966.1 2 | 1133.9 2 | 1298.8 1 | | | | |
| 7.6 | 154.7 21 | 320.0 19 | 486.7 17 | 653.8 15 | 820.8 13 | 985.0 11 | 1145.2 9 | 1303.1 8 | | | | |
| 11.4 | 154.3 32 | 320.6 30 | 488.8 27 | 657.2 25 | 824.9 22 | 992.1 20 | 1157.8 17 | 1320.2 14 | | | | |
| 15.1 | 154.6 43 | 322.9 40 | 492.4 38 | 662.2 35 | 831.3 32 | 999.9 29 | 1165.6 25 | 1327.3 22 | | | | |
| 18.9 | 153.1 54 | 322.9 51 | 493.5 48 | 664.3 45 | 834.5 42 | 1003.3 38 | 1169.6 34 | 1332.1 30 | | | | |
| 26.5 | 149.5 76 | 320.9 73 | 492.9 69 | 665.2 65 | 836.8 61 | 1006.4 57 | 1173.2 53 | 1336.4 47 | | | | |
| 34.1 | 143.0 98 | 315.3 94 | 488.8 90 | 661.6 85 | 833.3 81 | 1003.7 76 | 1171.8 71 | 1337.0 64 | | | | |
| 45.4 | 133.0 131 | 304.8 127 | 477.9 121 | 650.7 116 | 821.7 110 | 991.2 105 | 1159.3 98 | 1324.8 90 | | | | |
| 56.8 | 121.5 165 | 293.1 159 | 466.3 153 | 638.8 146 | 810.1 140 | 979.5 134 | 1147.1 126 | 1312.0 116 | | | | |
| 75.7 | 94.1 221 | 268.0 214 | 442.3 205 | 617.2 197 | 791.8 189 | 964.1 182 | 1132.7 173 | 1296.9 161 | | | | |
| 94.6 | 76.6 277 | 242.0 269 | 413.8 259 | 586.3 248 | 759.9 239 | 932.9 230 | 1102.3 219 | 1267.5 209 | | | | |

Flow (LPM)

20.6 cu in / rev

| | PRESSURE (PSI) | | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
| .5 | 1297 4 | 2699 3 | 4128 1 | 5584 1 | | | | |
| 1 | 1329 10 | 2741 8 | 4176 7 | 5630 5 | 7084 4 | 8551 2 | 10036 2 | 11496 1 |
| 2 | 1369 21 | 2832 19 | 4308 17 | 5787 15 | 7265 13 | 8718 11 | 10136 9 | 11534 8 |
| 3 | 1366 32 | 2838 30 | 4326 27 | 5817 25 | 7301 22 | 8781 20 | 10248 17 | 11685 14 |
| 4 | 1368 43 | 2858 40 | 4358 38 | 5861 35 | 7358 32 | 8850 29 | 10317 25 | 11748 22 |
| 5 | 1355 54 | 2858 51 | 4368 48 | 5880 45 | 7386 42 | 8880 38 | 10352 34 | 11791 30 |
| 7 | 1323 76 | 2840 73 | 4363 69 | 5888 65 | 7407 61 | 8908 57 | 10384 53 | 11829 47 |
| 9 | 1266 98 | 2791 94 | 4326 90 | 5856 85 | 7376 81 | 8884 76 | 10372 71 | 11834 64 |
| 12 | 1177 131 | 2698 127 | 4230 121 | 5759 116 | 7273 110 | 8773 105 | 10261 98 | 11726 90 |
| 15 | 1075 165 | 2594 159 | 4127 153 | 5654 146 | 7170 140 | 8670 134 | 10153 126 | 11613 116 |
| 20 | 833 221 | 2372 214 | 3915 205 | 5463 197 | 7008 189 | 8533 182 | 10026 173 | 11479 161 |
| 25 | 678 277 | 2142 269 | 3663 259 | 5189 248 | 6726 239 | 8257 230 | 9757 219 | 11219 209 |

Flow (GPM)

TORQUE (nm) 770.0
 SPEED (RPM) 286

TORQUE (LB IN) 9350
 SPEED (RPM) 2

Performance data is typical. Actual data may vary slightly from one production motor to another.

TG SERIES

Code 0405

405 cc / rev

| | PRESSURE (BAR) | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|---------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 |
| 1.9 | 174.4 4 | 359.1 3 | 546.8 2 | 736.1 1 | 924.7 1 | | |
| 3.8 | 180.0 8 | 367.9 7 | 556.8 6 | 746.5 6 | 938.1 5 | 1128.3 4 | 1316.4 3 |
| 7.6 | 184.8 17 | 378.6 16 | 574.4 15 | 770.2 14 | 966.0 13 | 1160.5 12 | 1353.3 11 |
| 11.4 | 184.9 27 | 380.2 25 | 576.9 23 | 773.6 22 | 970.3 21 | 1165.3 19 | 1359.3 18 |
| 15.1 | 185.9 36 | 383.5 34 | 582.9 32 | 781.8 30 | 979.3 29 | 1175.2 27 | 1370.4 26 |
| 18.9 | 185.3 45 | 385.0 43 | 587.6 41 | 788.9 39 | 986.7 37 | 1182.4 35 | 1377.7 33 |
| 26.5 | 181.4 64 | 383.7 61 | 588.7 59 | 791.2 56 | 991.1 54 | 1189.3 51 | 1386.4 49 |
| 34.1 | 175.2 82 | 378.5 80 | 584.8 77 | 788.7 73 | 990.0 70 | 1188.4 67 | 1386.2 64 |
| 45.4 | 161.3 110 | 365.8 107 | 573.4 103 | 778.2 99 | 979.5 95 | 1177.7 91 | 1375.2 88 |
| 56.8 | 148.0 138 | 351.6 135 | 559.0 130 | 763.6 125 | 965.4 120 | 1164.4 115 | 1362.5 111 |
| 75.7 | 128.3 185 | 323.3 181 | 530.1 175 | 736.4 168 | 941.8 162 | 1143.6 156 | 1341.9 151 |
| 94.6 | | | 507.5 219 | 712.1 212 | 913.3 204 | 1112.6 197 | 1308.9 190 |

Flow (LPM)

TORQUE (nm) 712.1
 SPEED (RPM) 212

24.7 cu in / rev

| | PRESSURE (PSI) | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|--------------|--------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 |
| .5 | 1544 4 | 3178 3 | 4840 2 | 6515 1 | 8185 1 | | |
| 1 | 1593 8 | 3256 7 | 4928 6 | 6607 6 | 8303 5 | 9987 4 | 11652 3 |
| 2 | 1636 17 | 3351 16 | 5084 15 | 6817 14 | 8550 13 | 10272 12 | 11978 11 |
| 3 | 1637 27 | 3365 25 | 5106 23 | 6847 22 | 8588 21 | 10314 19 | 12031 18 |
| 4 | 1645 36 | 3394 34 | 5159 32 | 6920 30 | 8668 29 | 10402 27 | 12130 26 |
| 5 | 1640 45 | 3408 43 | 5201 41 | 6983 39 | 8733 37 | 10466 35 | 12194 33 |
| 7 | 1606 64 | 3396 61 | 5211 59 | 7003 56 | 8772 54 | 10527 51 | 12271 49 |
| 9 | 1551 82 | 3350 80 | 5176 77 | 6981 73 | 8763 70 | 10519 67 | 12269 64 |
| 12 | 1428 110 | 3238 107 | 5075 103 | 6888 99 | 8670 95 | 10424 91 | 12172 88 |
| 15 | 1310 138 | 3112 135 | 4948 130 | 6759 125 | 8545 120 | 10306 115 | 12060 111 |
| 20 | 1136 185 | 2862 181 | 4692 175 | 6518 168 | 8336 162 | 10122 156 | 11877 151 |
| 25 | | | 4492 219 | 6303 212 | 8084 204 | 9848 197 | 11585 190 |

Flow (GPM)

TORQUE (LB IN) 9848
 SPEED (RPM) 197

**T
G
S
E
R
I
E
S**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0475

475 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 |
|--------------|--------------|--------------|--------------|--------------|---------------|---------------|
| 1.9 | 199.7 3 | 421.6 3 | 647.7 2 | 874.9 1 | 1102.9 1 | |
| 3.8 | 211.0 7 | 438.1 7 | 664.2 6 | 887.0 5 | 1111.5 4 | 1336.6 3 |
| 7.6 | 221.9 15 | 458.1 14 | 698.2 14 | 930.6 12 | 1157.0 10 | 1371.1 8 |
| 11.4 | 222.8 23 | 460.3 22 | 701.4 21 | 940.1 19 | 1172.6 17 | 1395.9 13 |
| 15.1 | 226.5 31 | 467.2 30 | 710.3 29 | 947.0 27 | 1182.1 24 | 1411.8 20 |
| 18.9 | 226.4 39 | 466.5 38 | 712.2 37 | 952.2 34 | 1187.9 31 | 1417.2 26 |
| 26.5 | 224.8 55 | 466.9 54 | 712.7 52 | 954.1 50 | 1192.5 45 | 1423.8 40 |
| 34.1 | 217.4 70 | 463.7 69 | 710.1 68 | 952.4 65 | 1189.5 60 | 1424.5 54 |
| 45.4 | 200.5 94 | 449.0 93 | 695.6 91 | 940.9 87 | 1180.2 82 | 1415.4 75 |
| 56.8 | 182.9 118 | 427.5 116 | 676.8 114 | 925.1 110 | 1164.9 104 | 1397.8 96 |
| 75.7 | 148.5 157 | 381.1 156 | 636.0 153 | 887.2 149 | 1134.1 141 | 1372.1 132 |
| 94.6 | 128.9 197 | 342.2 196 | 589.8 193 | 839.1 189 | 1087.9 182 | 1328.3 174 |
| 113.6 | 68.5 237 | 283.0 236 | 525.2 233 | 764.4 230 | 1003.0 224 | 1241.5 219 |

Flow (LPM)

TORQUE (nm) 283.0
 SPEED (RPM) 236

29.1 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
|-----------|-------------|-------------|-------------|-------------|--------------|--------------|
| .5 | 1768 3 | 3732 3 | 5733 2 | 7744 1 | 9762 1 | |
| 1 | 1868 7 | 3878 7 | 5879 6 | 7851 5 | 9838 4 | 11830 3 |
| 2 | 1964 15 | 4055 14 | 6180 14 | 8237 12 | 10241 10 | 12136 8 |
| 3 | 1972 23 | 4074 22 | 6208 21 | 8321 19 | 10379 17 | 12355 13 |
| 4 | 2005 31 | 4135 30 | 6287 29 | 8382 27 | 10463 24 | 12496 20 |
| 5 | 2004 39 | 4129 38 | 6304 37 | 8428 34 | 10514 31 | 12544 26 |
| 7 | 1990 55 | 4133 54 | 6308 52 | 8445 50 | 10555 45 | 12602 40 |
| 9 | 1924 70 | 4104 69 | 6285 68 | 8430 65 | 10528 60 | 12608 54 |
| 12 | 1775 94 | 3974 93 | 6157 91 | 8328 87 | 10446 82 | 12528 75 |
| 15 | 1619 118 | 3784 116 | 5990 114 | 8188 110 | 10311 104 | 12372 96 |
| 20 | 1314 157 | 3373 156 | 5629 153 | 7853 149 | 10038 141 | 12145 132 |
| 25 | 1141 197 | 3029 196 | 5220 193 | 7427 189 | 9629 182 | 11757 174 |
| 30 | 606 237 | 2505 236 | 4649 233 | 6766 230 | 8878 224 | 10989 219 |

Flow (GPM)

TORQUE (LB IN) 6766
 SPEED (RPM) 230

**T
G
S
E
R
I
E
S**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0530

530 cc / rev

| | PRESSURE (BAR) | | | | |
|--------------|----------------|--------------|--------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 235.0 3 | 480.8 3 | 732.0 2 | 985.9 2 | 1244.1 1 |
| 3.8 | 243.8 7 | 493.9 6 | 744.8 6 | 991.9 5 | 1242.1 4 |
| 7.6 | 253.8 14 | 516.0 13 | 776.1 12 | 1031.1 11 | 1285.3 9 |
| 11.4 | 253.3 21 | 517.2 20 | 781.4 19 | 1043.6 17 | 1299.3 14 |
| 15.1 | 254.5 28 | 522.5 27 | 788.3 25 | 1050.3 23 | 1309.0 20 |
| 18.9 | 252.5 35 | 523.0 34 | 791.1 32 | 1054.4 29 | 1313.5 26 |
| 26.5 | 246.5 49 | 519.6 48 | 791.5 46 | 1057.7 42 | 1317.2 38 |
| 34.1 | 236.7 63 | 512.4 62 | 786.3 59 | 1054.1 55 | 1316.2 50 |
| 45.4 | 219.5 85 | 496.0 83 | 771.1 80 | 1041.3 75 | 1304.8 69 |
| 56.8 | 198.1 106 | 474.4 104 | 750.0 100 | 1022.7 95 | 1288.9 87 |
| 75.7 | 149.9 141 | 427.4 139 | 707.5 135 | 983.0 129 | 1252.5 120 |
| 94.6 | 114.2 177 | 372.8 175 | 649.7 171 | 927.6 165 | 1202.0 158 |
| 113.6 | 30.4 213 | 304.8 211 | 574.3 208 | 837.7 203 | 1108.8 197 |

Flow (LPM)

TORQUE (nm) 304.8
 SPEED (RPM) 211

32.2 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|--------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 2080 3 | 4256 3 | 6479 2 | 8726 2 | 11012 1 |
| 1 | 2158 7 | 4372 6 | 6592 6 | 8779 5 | 10994 4 |
| 2 | 2246 14 | 4567 13 | 6869 12 | 9126 11 | 11376 9 |
| 3 | 2242 21 | 4578 20 | 6916 19 | 9237 17 | 11500 14 |
| 4 | 2253 28 | 4625 27 | 6977 25 | 9296 23 | 11586 20 |
| 5 | 2235 35 | 4629 34 | 7002 32 | 9333 29 | 11626 26 |
| 7 | 2182 49 | 4599 48 | 7006 46 | 9362 42 | 11659 38 |
| 9 | 2095 63 | 4535 62 | 6960 59 | 9330 55 | 11650 50 |
| 12 | 1943 85 | 4390 83 | 6825 80 | 9217 75 | 11549 69 |
| 15 | 1753 106 | 4199 104 | 6638 100 | 9052 95 | 11408 87 |
| 20 | 1327 141 | 3783 139 | 6262 135 | 8701 129 | 11086 120 |
| 25 | 1011 177 | 3300 175 | 5751 171 | 8210 165 | 10639 158 |
| 30 | 269 213 | 2698 211 | 5083 208 | 7415 203 | 9814 197 |

Flow (GPM)

TORQUE (LB IN) 9814
 SPEED (RPM) 197

**T
G
S
E
R
I
E
S**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0625

625 cc / rev

| | PRESSURE (BAR) | | | | |
|--------------|----------------|--------------|--------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 | 120.7 | 155.2 |
| 1.9 | 219.1 2 | 518.9 1 | | | |
| 3.8 | 235.8 5 | 527.1 3 | 822.8 2 | 980.7 2 | 1308.2 1 |
| 7.6 | 264.1 11 | 563.9 9 | 857.5 8 | 1000.2 7 | 1294.5 5 |
| 11.4 | 269.6 17 | 576.3 15 | 875.9 13 | 1023.0 12 | 1320.6 9 |
| 15.1 | 277.6 23 | 587.7 21 | 889.4 19 | 1036.5 17 | 1329.7 14 |
| 18.9 | 280.1 29 | 592.7 27 | 897.4 25 | 1044.2 23 | 1335.5 18 |
| 26.5 | 278.4 41 | 595.7 39 | 903.3 36 | 1051.4 34 | 1339.8 28 |
| 34.1 | 271.3 53 | 590.1 51 | 903.0 48 | 1054.9 45 | 1348.4 39 |
| 45.4 | 254.7 71 | 575.3 69 | 891.0 65 | 1043.8 62 | 1344.5 54 |
| 56.8 | 231.8 89 | 553.7 87 | 872.3 83 | 1026.5 80 | 1329.0 70 |
| 75.7 | 180.8 120 | 507.3 117 | 828.6 112 | 985.8 109 | 1290.7 98 |
| 94.6 | 120.1 151 | 444.4 148 | 770.3 144 | 930.4 140 | 1245.2 131 |
| 113.6 | 40.6 182 | 367.2 180 | 686.2 176 | 840.9 172 | 1150.0 165 |

Flow (LPM)

TORQUE (nm) 367.2
 SPEED (RPM) 180

38.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|--------------|
| | 500 | 1000 | 1500 | 1750 | 2250 |
| .5 | 1939 2 | 4593 1 | | | |
| 1 | 2087 5 | 4665 3 | 7283 2 | 8680 2 | 11579 1 |
| 2 | 2338 11 | 4991 9 | 7590 8 | 8853 7 | 11458 5 |
| 3 | 2386 17 | 5101 15 | 7753 13 | 9055 12 | 11689 9 |
| 4 | 2457 23 | 5202 21 | 7872 19 | 9174 17 | 11769 14 |
| 5 | 2479 29 | 5246 27 | 7943 25 | 9242 23 | 11821 18 |
| 7 | 2464 41 | 5273 39 | 7995 36 | 9306 34 | 11859 28 |
| 9 | 2401 53 | 5223 51 | 7993 48 | 9337 45 | 11935 39 |
| 12 | 2254 71 | 5092 69 | 7886 65 | 9239 62 | 11900 54 |
| 15 | 2052 89 | 4901 87 | 7721 83 | 9086 80 | 11763 70 |
| 20 | 1600 120 | 4490 117 | 7334 112 | 8725 109 | 11424 98 |
| 25 | 1063 151 | 3933 148 | 6818 144 | 8235 140 | 11021 131 |
| 30 | 359 182 | 3250 180 | 6074 176 | 7443 172 | 10179 165 |

Flow (GPM)

TORQUE (LB IN) 7443
 SPEED (RPM) 172

**T
G
S
E
R
I
E
S**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0785

785 cc / rev

| | PRESSURE (BAR) | | | |
|--------------|----------------|--------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 |
| 1.9 | 328.8 2 | 695.2 2 | 1085.4 1 | 1463.1 1 |
| 3.8 | 340.2 4 | 711.3 4 | 1092.5 3 | 1459.6 3 |
| 7.6 | 363.5 9 | 738.4 8 | 1122.5 7 | 1475.5 6 |
| 11.4 | 363.8 14 | 747.1 13 | 1127.2 11 | 1477.7 9 |
| 15.1 | 368.9 19 | 754.6 17 | 1132.2 15 | 1477.6 13 |
| 18.9 | 368.7 23 | 757.3 22 | 1135.1 19 | 1480.4 16 |
| 26.5 | 363.6 33 | 759.5 31 | 1137.5 28 | 1475.7 24 |
| 34.1 | 351.0 43 | 752.9 41 | 1142.0 36 | 1489.6 31 |
| 45.4 | 326.7 57 | 733.1 55 | 1125.2 49 | 1478.0 42 |
| 56.8 | 298.6 71 | 704.8 69 | 1099.6 62 | 1461.7 54 |
| 75.7 | 230.9 95 | 640.9 92 | 1043.8 85 | 1427.6 75 |
| 94.6 | 261.3 119 | 562.2 117 | 968.4 110 | 1364.0 101 |
| 113.6 | 56.0 143 | 463.7 141 | 856.6 137 | 1245.5 130 |

Flow (LPM)

TORQUE (nm) 856.6
 SPEED (RPM) 137

48.0 cu in / rev

| | PRESSURE (PSI) | | | |
|-----------|----------------|-------------|-------------|--------------|
| | 500 | 1000 | 1500 | 2000 |
| .5 | 2910 2 | 6153 2 | 9607 1 | 12950 1 |
| 1 | 3011 4 | 6296 4 | 9670 3 | 12919 3 |
| 2 | 3217 9 | 6536 8 | 9935 7 | 13060 6 |
| 3 | 3220 14 | 6613 13 | 9977 11 | 13079 9 |
| 4 | 3265 19 | 6679 17 | 10021 15 | 13078 13 |
| 5 | 3263 23 | 6703 22 | 10047 19 | 13103 16 |
| 7 | 3218 33 | 6722 31 | 10068 28 | 13062 24 |
| 9 | 3107 43 | 6664 41 | 10108 36 | 13185 31 |
| 12 | 2892 57 | 6489 55 | 9959 49 | 13082 42 |
| 15 | 2643 71 | 6238 69 | 9733 62 | 12938 54 |
| 20 | 2044 95 | 5673 92 | 9239 85 | 12636 75 |
| 25 | 2313 119 | 4976 117 | 8571 110 | 12073 101 |
| 30 | 496 143 | 4104 141 | 7582 137 | 11024 130 |

Flow (GPM)

TORQUE (LB IN) 11024
 SPEED (RPM) 130

**T
G
S
E
R
I
E
S**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Performance Data

Code 0960

960 cc / rev

| | PRESSURE (BAR) | | |
|--------------|----------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 |
| 1.9 | 417.1 2 | 871.3 1 | 1327.5 1 |
| 3.8 | 428.0 3 | 887.8 3 | 1343.9 3 |
| 7.6 | 440.6 7 | 908.9 7 | 1362.3 6 |
| 11.4 | 441.2 11 | 912.7 11 | 1371.0 10 |
| 15.1 | 445.0 15 | 921.4 14 | 1379.5 13 |
| 18.9 | 443.2 19 | 923.4 18 | 1382.6 17 |
| 26.5 | 436.1 27 | 921.9 26 | 1385.4 24 |
| 34.1 | 421.8 35 | 912.2 34 | 1381.1 31 |
| 45.4 | 392.6 47 | 886.7 45 | 1362.8 42 |
| 56.8 | 355.8 58 | 852.4 57 | 1335.8 53 |
| 75.7 | 275.3 78 | 773.1 76 | 1268.4 72 |
| 94.6 | 335.4 98 | 676.8 96 | 1170.5 92 |
| 113.6 | 68.1 118 | 555.7 117 | 1036.0 113 |

Flow (LPM)

TORQUE (nm) 555.7
SPEED (RPM) 117

58.5 cu in / rev

| | PRESSURE (PSI) | | |
|-----------|----------------|-------------|-------------|
| | 500 | 1000 | 1500 |
| .5 | 3692 2 | 7712 1 | 11750 1 |
| 1 | 3788 3 | 7858 3 | 11895 3 |
| 2 | 3900 7 | 8045 7 | 12058 6 |
| 3 | 3905 11 | 8078 11 | 12135 10 |
| 4 | 3939 15 | 8155 14 | 12210 13 |
| 5 | 3923 19 | 8173 18 | 12238 17 |
| 7 | 3860 27 | 8160 26 | 12262 24 |
| 9 | 3733 35 | 8074 34 | 12224 31 |
| 12 | 3475 47 | 7848 45 | 12062 42 |
| 15 | 3149 58 | 7545 57 | 11823 53 |
| 20 | 2437 78 | 6843 76 | 11227 72 |
| 25 | 2969 98 | 5990 96 | 10360 92 |
| 30 | 603 118 | 4919 117 | 9170 113 |

Flow (GPM)

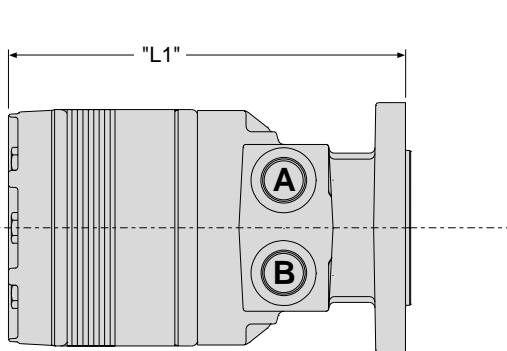
TORQUE (LB IN) 9170
SPEED (RPM) 113

T
G
S
E
R
I
E
S

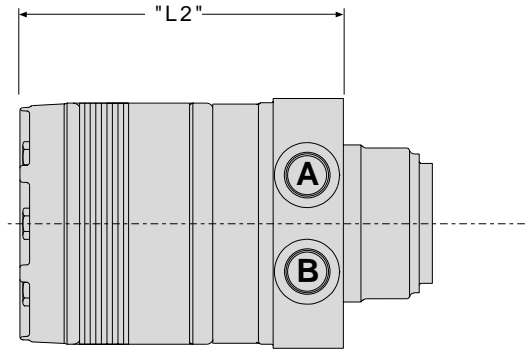
Performance data is typical. Actual data may vary slightly from one production motor to another.

Lengths & Weights

Inch equivalents for metric dimensions are shown in (**)



Magneto, SAE "A", SAE "B" Mounts



**Wheel, Front Brake Nose Wheel,
 Optional Wheel Mounts**

Standard Rotation:

(As viewed from shaft end)

Front Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Rear Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.

Length "L" and Weight

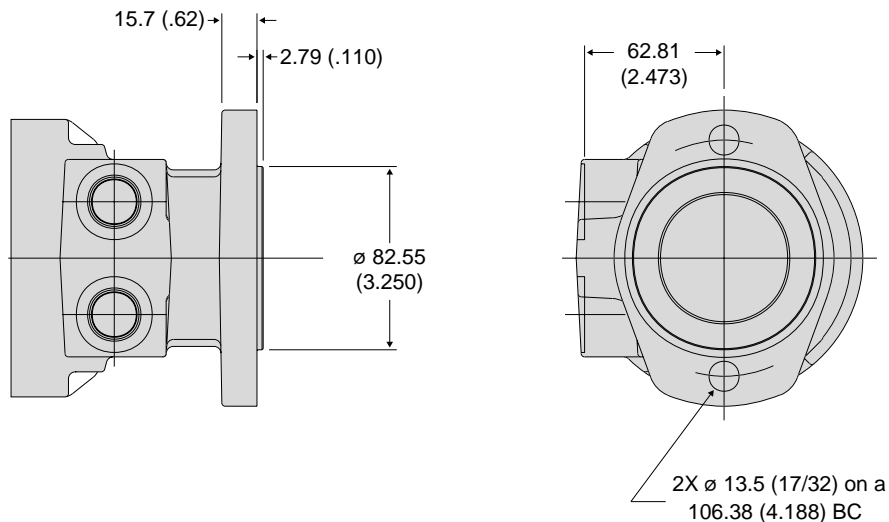
| Displacement, Code | 0140 | 0170 | 0195 | 0240 | 0280 | 0335 | 0405 | 0415 | 0530 | 0625 | 0785 | 0960 |
|--------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|
| Magneto & SAE "A" | | | | | | | | | | | | |
| Length "L1" | mm 196 | mm 199 | mm 202 | mm 207 | mm 211 | mm 218 | mm 225 | mm 234 | mm 240 | mm 250 | mm 269 | mm 288 |
| | (inches) (7.70) | (inches) (7.82) | (inches) (7.95) | (inches) (8.13) | (inches) (8.32) | (inches) (8.57) | (inches) (8.86) | (inches) (9.20) | (inches) (9.45) | (inches) (9.82) | (inches) (10.57) | (inches) (11.32) |
| Weight | kg 14.2 | kg 14.5 | kg 14.7 | kg 15.1 | kg 15.5 | kg 15.9 | kg 16.5 | kg 17.2 | kg 17.9 | kg 18.6 | kg 20.2 | kg 21.9 |
| | (lb) (31.4) | (lb) (32.0) | (lb) (32.5) | (lb) (33.3) | (lb) (34.2) | (lb) (35.1) | (lb) (36.4) | (lb) (37.9) | (lb) (39.5) | (lb) (41.1) | (lb) (44.5) | (lb) (48.3) |
| SAE "B" | | | | | | | | | | | | |
| Length "L1" | mm 189 | mm 192 | mm 195 | mm 200 | mm 205 | mm 211 | mm 219 | mm 227 | mm 233 | mm 243 | mm 262 | mm 281 |
| | (inches) (7.44) | (inches) (7.56) | (inches) (7.69) | (inches) (7.87) | (inches) (8.06) | (inches) (8.31) | (inches) (8.60) | (inches) (8.94) | (inches) (9.19) | (inches) (9.56) | (inches) (10.31) | (inches) (11.06) |
| Weight | kg 14.9 | kg 15.2 | kg 15.3 | kg 15.7 | kg 16.1 | kg 16.6 | kg 17.1 | kg 17.8 | kg 18.6 | kg 19.3 | kg 20.8 | kg 22.5 |
| | (lb) (32.8) | (lb) (33.4) | (lb) (33.9) | (lb) (34.7) | (lb) (35.6) | (lb) (36.5) | (lb) (37.8) | (lb) (39.3) | (lb) (40.9) | (lb) (42.5) | (lb) (45.9) | (lb) (49.7) |
| Displacement, Code | 0140 | 0170 | 0195 | 0240 | 0280 | 0335 | 0405 | 0415 | 0530 | 0625 | 0785 | 0960 |
| Wheel & Brake Mount | | | | | | | | | | | | |
| Length "L2" | mm 150 | mm 154 | mm 157 | mm 161 | mm 166 | mm 173 | mm 180 | mm 188 | mm 195 | mm 204 | mm 223 | mm 242 |
| | (inches) (5.92) | (inches) (6.04) | (inches) (6.17) | (inches) (6.35) | (inches) (6.54) | (inches) (6.79) | (inches) (7.08) | (inches) (7.42) | (inches) (7.67) | (inches) (8.04) | (inches) (8.79) | (inches) (9.54) |
| Weight | kg 14.6 | kg 14.8 | kg 15.1 | kg 15.5 | kg 15.9 | kg 16.3 | kg 16.9 | kg 17.5 | kg 18.3 | kg 19.0 | kg 20.5 | kg 22.2 |
| | (lb) (32.2) | (lb) (32.7) | (lb) (33.3) | (lb) (34.1) | (lb) (35.0) | (lb) (35.8) | (lb) (37.2) | (lb) (38.6) | (lb) (40.3) | (lb) (41.8) | (lb) (45.3) | (lb) (49.0) |
| Optional Wheel Mount | | | | | | | | | | | | |
| Length "L2" | mm 178 | mm 181 | mm 184 | mm 189 | mm 193 | mm 200 | mm 207 | mm 216 | mm 222 | mm 232 | mm 251 | mm 270 |
| | (inches) (6.99) | (inches) (7.11) | (inches) (7.24) | (inches) (7.43) | (inches) (7.61) | (inches) (7.86) | (inches) (8.15) | (inches) (8.49) | (inches) (8.74) | (inches) (9.12) | (inches) (9.87) | (inches) (10.62) |
| Weight | kg 17.6 | kg 17.8 | kg 18.1 | kg 18.4 | kg 18.8 | kg 19.3 | kg 19.8 | kg 20.5 | kg 21.3 | kg 22.0 | kg 23.5 | kg 25.2 |
| | (lb) (38.7) | (lb) (39.3) | (lb) (39.8) | (lb) (40.6) | (lb) (41.5) | (lb) (42.4) | (lb) (43.7) | (lb) (45.2) | (lb) (46.8) | (lb) (48.4) | (lb) (51.8) | (lb) (55.6) |

**T
G
S
E
R
I
E
S**

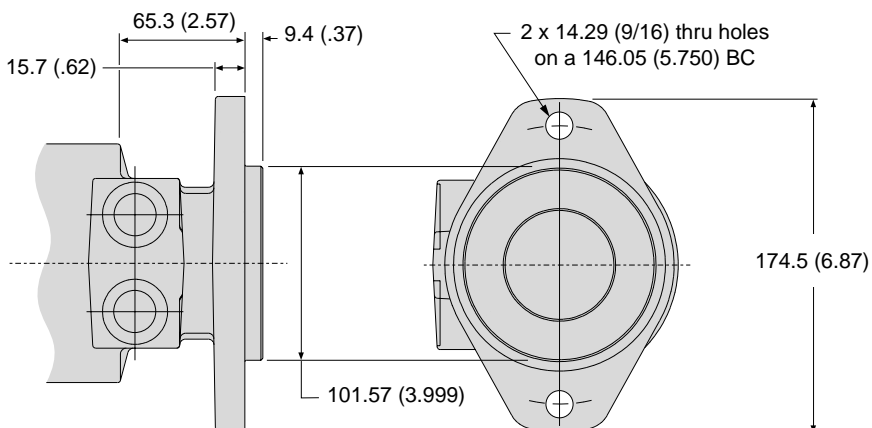
Mounting

Inch equivalents for metric dimensions are shown in (**)

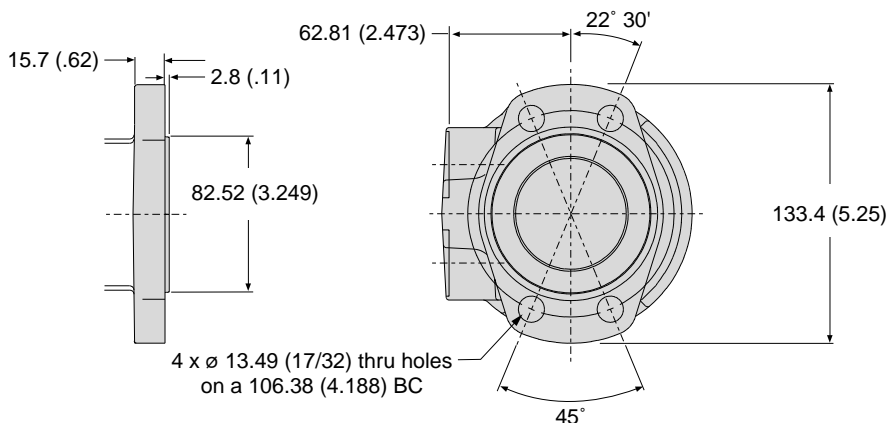
SAE "A" 2 Bolt Flange



SAE "B" 2 Bolt Flange



4 Bolt Magneto

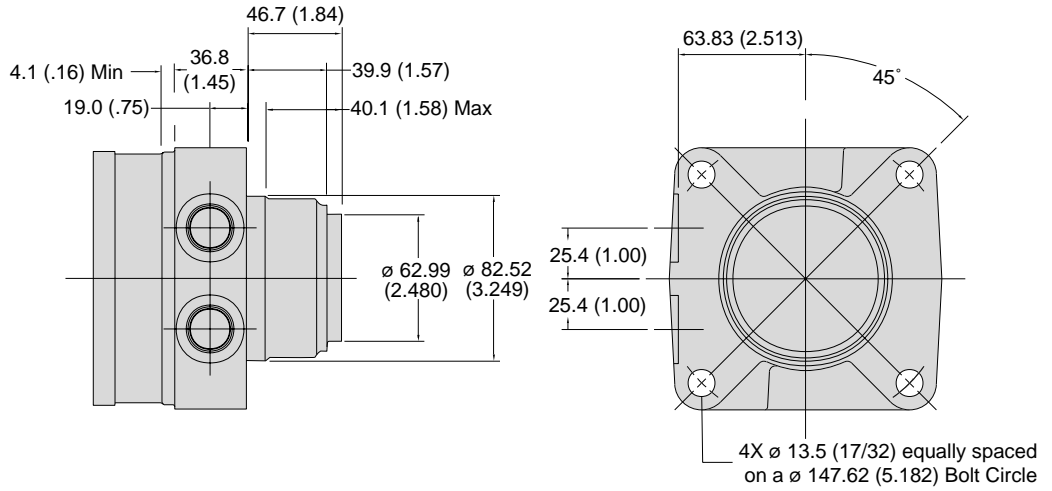


**T
G
S
E
R
I
E
S**

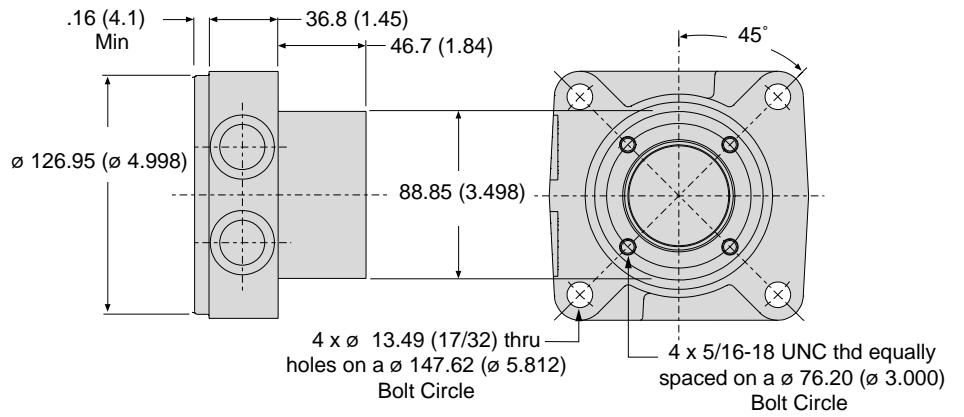
Mounting, Wheel

Inch equivalents for metric dimensions are shown in (**)

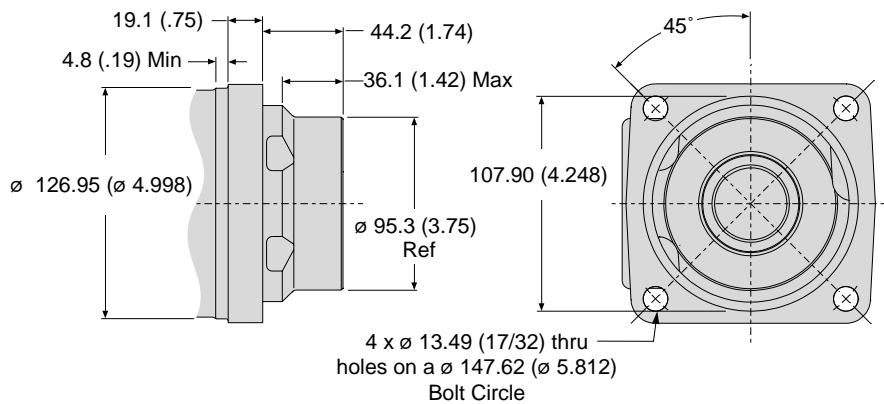
Wheel



Wheel, Front Brake Nose



Wheel, Optional

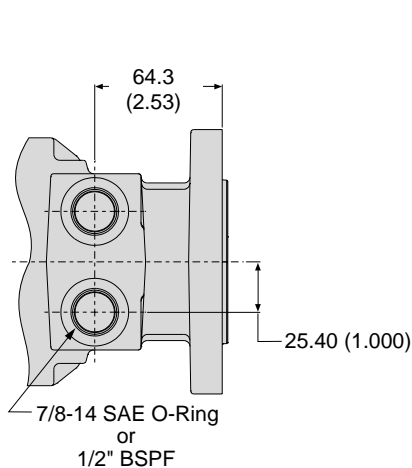


**T
G
S
E
R
I
E
S**

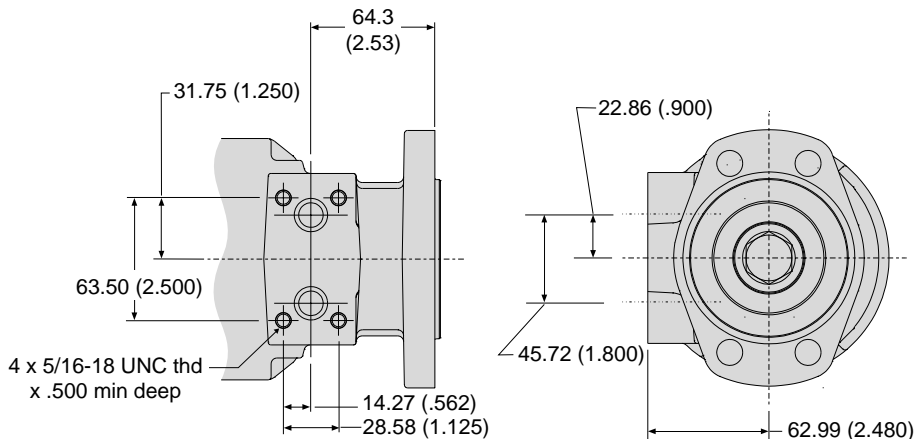
Porting

Inch equivalents for metric dimensions are shown in (**)

SAE O-Ring & BSPF

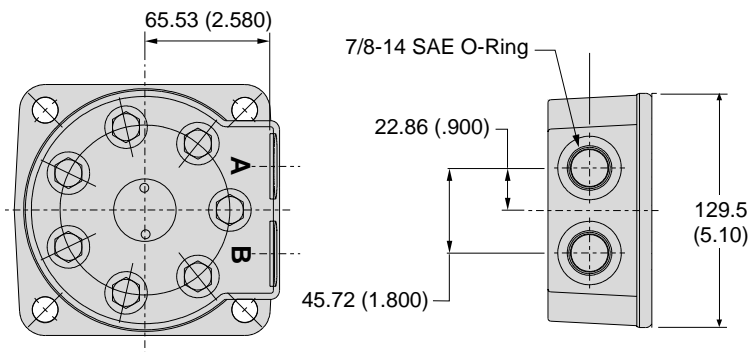


Manifold

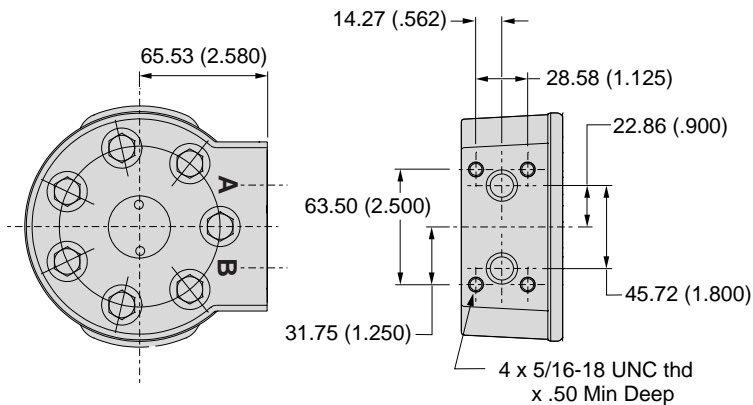


Rear Ports

7/8-14 SAE O-Ring



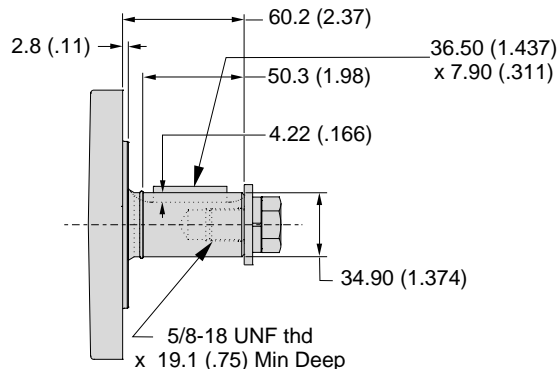
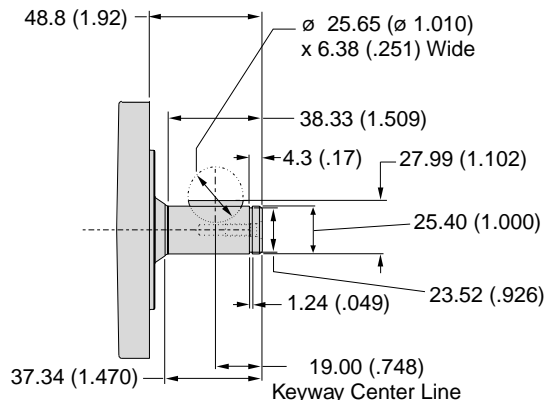
Manifold



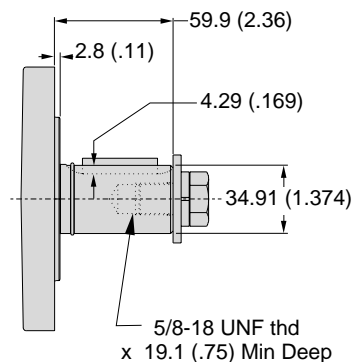
Consult Factory for
 ISO 6149 Porting

Shafts

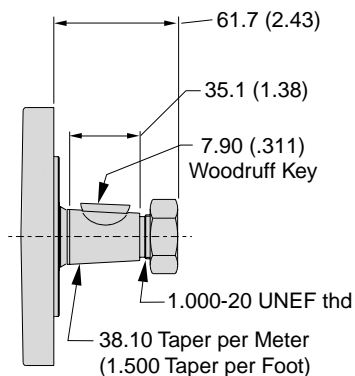
Inch equivalents for metric dimensions are shown in (**)



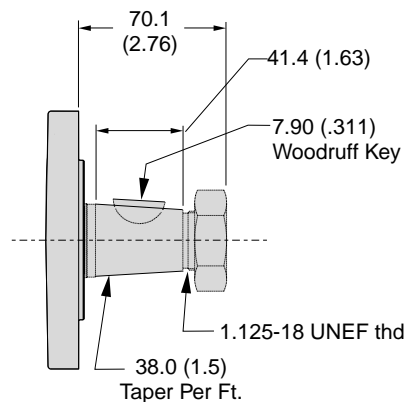
1 1/4" Keyed



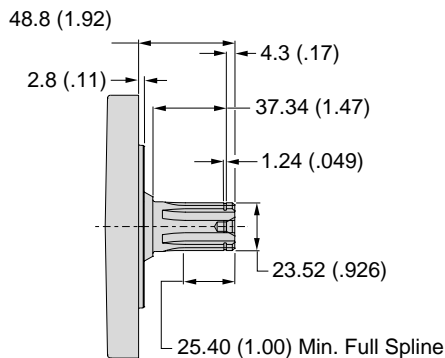
Key Width .311
1 3/8" Keyed



1 1/4" Taper

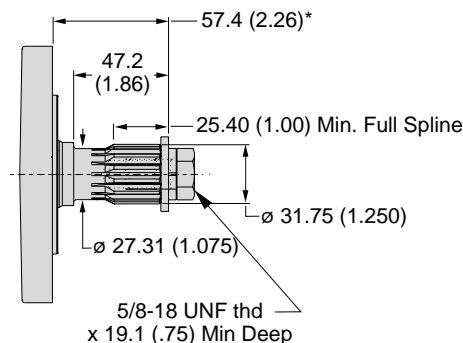


1 3/8" Taper



1" 6B Spline

* Add .26" for SAE B Mount
 Add 1.78" for Wheel Mount
 Add 1.68" for Optional Wheel Mount



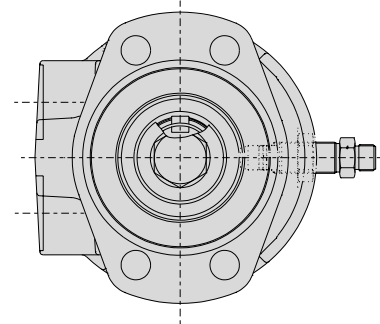
1 1/4" 14 Tooth Spline

**T
G
S
E
R
I
E
S**

An Economical Sensor for Speed Readout

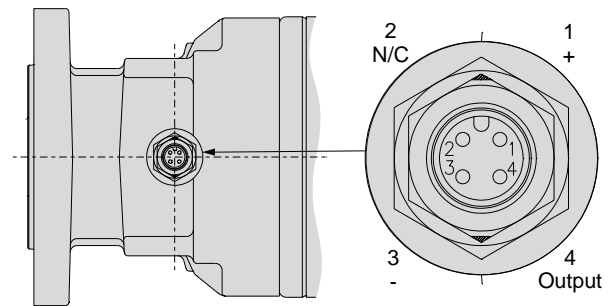
This rugged, weather resistant speed sensor is a Hall effect device. When externally powered, 30 square wave digital pulses per output shaft revolution are produced. By signal multiplication, 60 pulses per revolution can be obtained.

The installation of this economical sensor does not affect the torque or side load capability of the **Torqlink™** motor into which it is installed.



Features

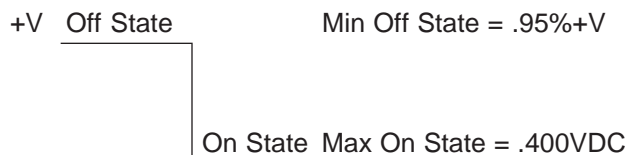
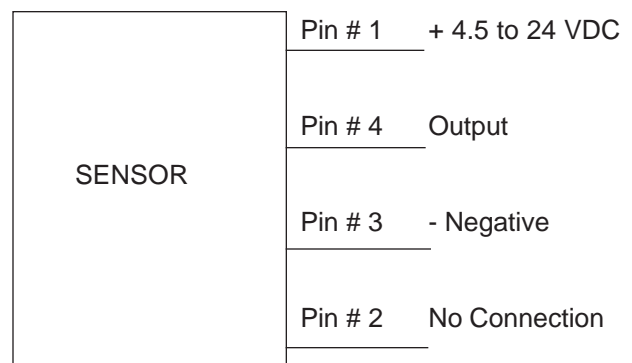
- Operating Voltage Range 4.5 to 24 VDC
- Operating Temperature -40° C to 93° C
 (-40° F to 200° F)
- Operating Frequency Range 0 to 100 KHZ
- Maximum Sink Current 20 mA
- Connection DC Din Standard
 4 Pin Micro-Mini
- Pin Diameter 12mm
- Sensor Output 30 Pulses per Revolution which can be doubled electronically.



Pull-up Resistor Value Formula (for 1/4 Watt, 5% Tolerance)

$$\frac{V \text{ Supply (4.5-24 VDC)}}{\text{Desired Sink Current (0-20 mA } \pm 20\%)} = \text{Resistor Value (K - Ohms)}$$

On State Current: 5 mA
 Higher wattage resistor will be needed for higher sink current.



0V

PSLGC,PM6, dg, ki

Cable not included

**T
G
S
E
R
I
E
S**

Ordering Information



| Code | Displacement |
|------|----------------|
| 0140 | 08.6 cu in/rev |
| 0170 | 10.3 cu in/rev |
| 0195 | 11.9 cu in/rev |
| 0240 | 14.5 cu in/rev |
| 0280 | 17.1 cu in/rev |
| 0335 | 20.6 cu in/rev |
| 0405 | 24.7 cu in/rev |
| 0475 | 29.1 cu in/rev |
| 0530 | 32.3 cu in/rev |
| 0625 | 38.0 cu in/rev |
| 0785 | 48.0 cu in/rev |
| 0960 | 58.5 cu in/rev |

| Code | Porting |
|------|---------------------------------|
| A | 7/8"-14 SAE O-Ring; Rear Axial |
| B | 7/8"-14 SAE O-Ring; Rear Radial |
| E | Manifold; Rear Radial |
| J | ISO 6149 M22x1.5 |
| M* | Manifold |
| S | 7/8"-14 SAE O-Ring |
| T** | 1/2" BSPF |

* Not available on L, U or W mounting

** Available on A & M mounting only

| Code | Rotation |
|------|------------------------|
| 0 | Standard |
| 1 | Reverse Timed Manifold |

| Code | Mounting |
|------|-------------------------|
| A | SAE "A" 2-Bolt |
| B | SAE "B" 2-Bolt |
| M | Magneto |
| U | Wheel; Standard |
| L | Wheel; Front Brake Nose |
| W* | Wheel, Optional |

* Requires rear porting

| Code | Shaft |
|------|------------------------|
| 01 | 1"6B Spline |
| 02 | 1" Keyed |
| 03 | 1 1/4" Keyed |
| 04 | 10B Spline |
| 05 | 1 1/4" 14 Tooth Spline |
| 06 | 19 Tooth Spline |
| 07 | 15 Tooth Spline |
| 08 | 1 1/4" Tapered |
| 19 | 1 3/8" Tapered |
| 20 | 1 3/8" Keyed |

| Code | Options |
|----------|---|
| AAAA | Black Paint |
| AAAB | No Paint |
| AAAC | Double Paint |
| AAFC | White Epoxy Paint |
| AAAF*** | Castle Nut, Black Paint |
| AABP*** | Castle Nut, No Paint |
| AAAG | Viton Seals, Black Paint |
| AAAH | Viton Seals, No Paint |
| AAHD | Viton Seals, White Epoxy Paint |
| AAAJ | Vespel Commutator Seal, Black Paint |
| AAFG | Vespel Commutator Seal, No Paint |
| AAAT* | Bidirectional Shuttle (11:00**), Black Paint |
| AAFX* | Bidirectional Shuttle (11:00**), No Paint |
| AAAU* | Bidirectional Shuttle (11:00**), Castle Nut, Black Paint |
| AAGF* | Bidirectional Shuttle (11:00**), Castle Nut, No Paint |
| AABJ**** | Free Running Rotorset, Black Paint |
| AABK**** | Free Running Rotorset, No Paint |
| AABL**** | Free Running Rotorset, No Commutator Seal, Black Paint |
| AABM**** | Free Running Rotorset, No Commutator Seal, No Paint |
| BBBA* | 1000 PSI Internal Bidirectional Relief, Black Paint |
| BBBM* | 1000 PSI Internal Bidirectional Relief, No Paint |
| BBBG* | 1500 PSI Internal Bidirectional Relief, Black Paint |
| BBBJ* | 1500 PSI Internal Bidirectional Relief, No Paint |
| BBBB* | 2000 PSI Internal Bidirectional Relief, Black Paint |
| BBBN* | 2000 PSI Internal Bidirectional Relief, No Paint |
| BBBK* | 2000 PSI Internal Bidirectional Relief, Castle Nut, Black Paint |
| BBBC* | 3000 PSI Internal Bidirectional Relief, Black Paint |
| BBBF* | 3000 PSI Internal Bidirectional Relief, No Paint |
| BBBD* | 4000 PSI Internal Bidirectional Relief, Black Paint |
| BBBW* | 4000 PSI Internal Bidirectional Relief, No Paint |
| FFAA | Internal Speed Sensor, Black Paint |
| FFAB | Internal Speed Sensor, No Paint |
| FFAH | Internal Speed Sensor, Castle Nut, No Paint |
| FFAJ | Internal Speed Sensor, Castle Nut, Black Paint |

* Not available with A, B or E porting

** Shuttle port position as viewed from shaft end of motor

*** Available only with shaft code 08 & 19

**** Not available on 0625, 0785 or 0960 displacement codes

TG SERIES

Technical Information

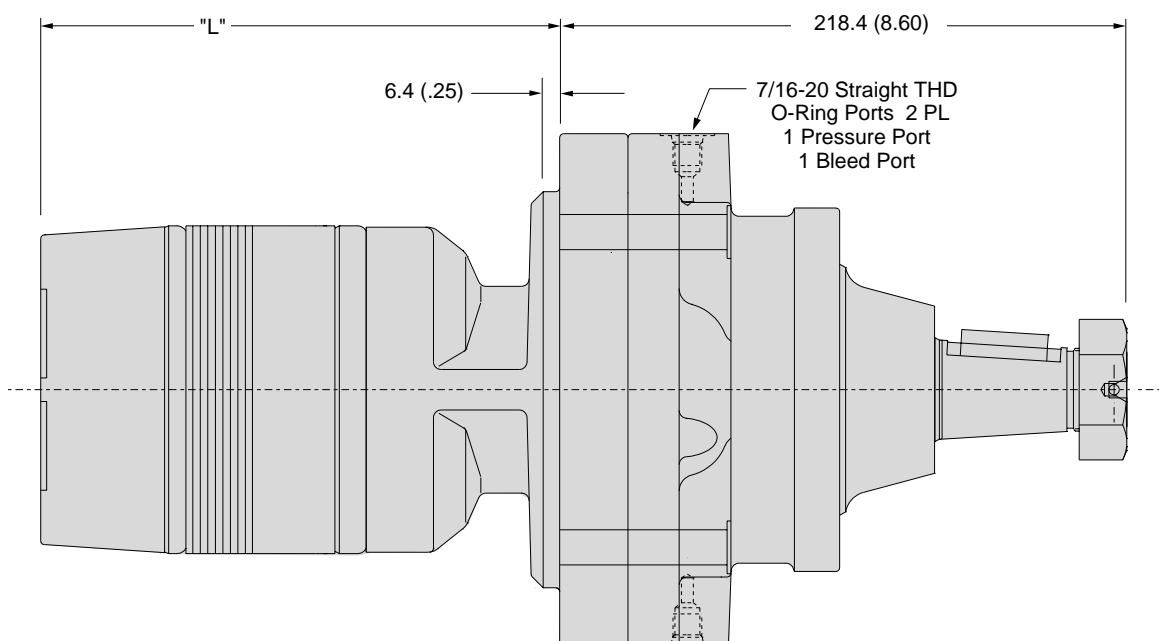
Brake Motor

This motor/brake combination consists of a TG Series motor built into a front mounted brake. The brake is a wet disc, spring set, hydraulically released unit. When hydraulic pressure is absent at the pilot port of the brake, internal springs will hold against 10,200 lb in of torque. The brake will start to release when 360 PSI is present in the brake pilot port and will be fully disengaged when that pressure reaches 460 PSI. The pilot port is capable of withstanding the maximum operating pressure of the TG Series motor.



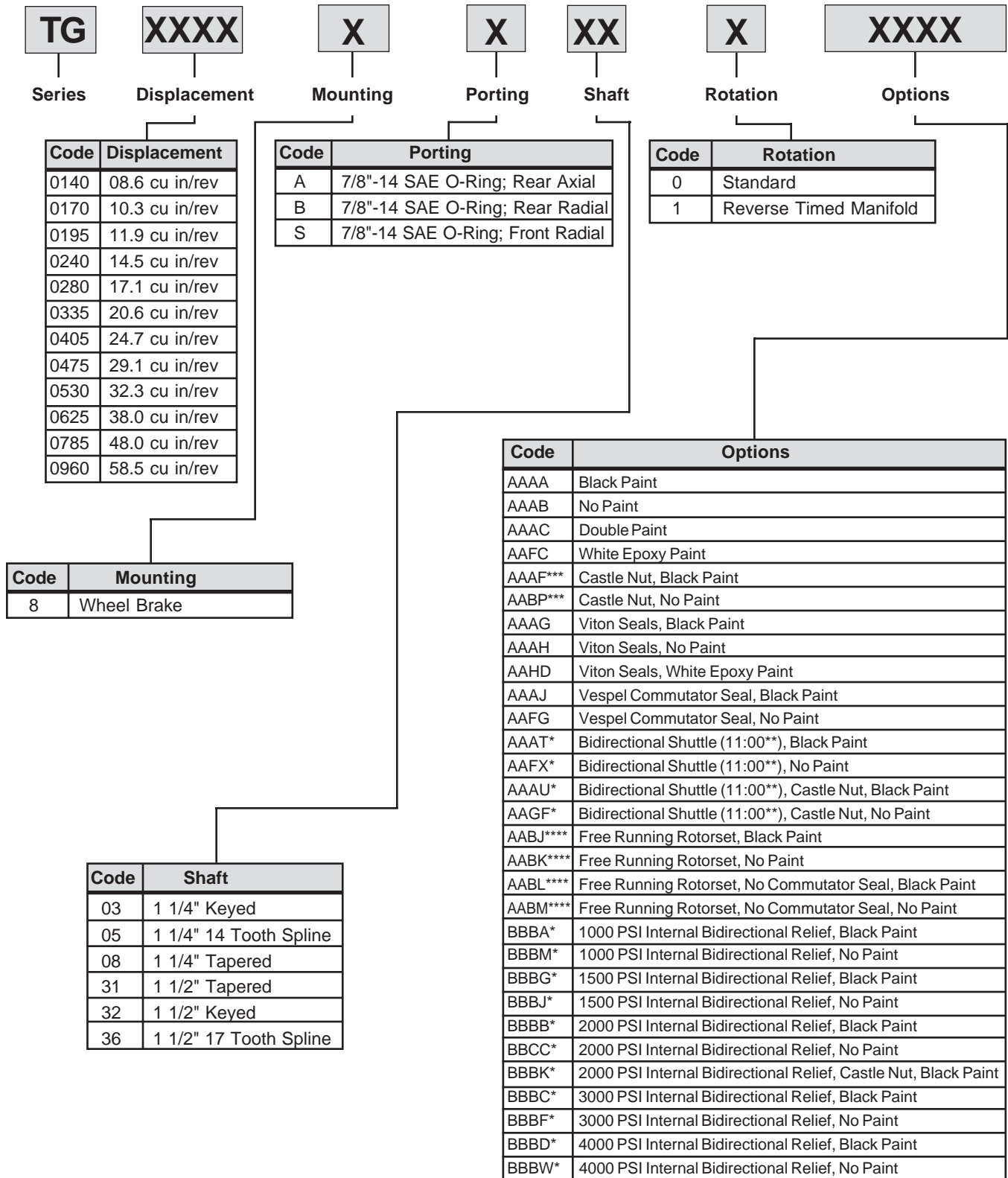
Dimensions

Inch equivalents for metric dimensions are shown in (**)



**T
G
S
E
R
I
E
S**

Ordering Information



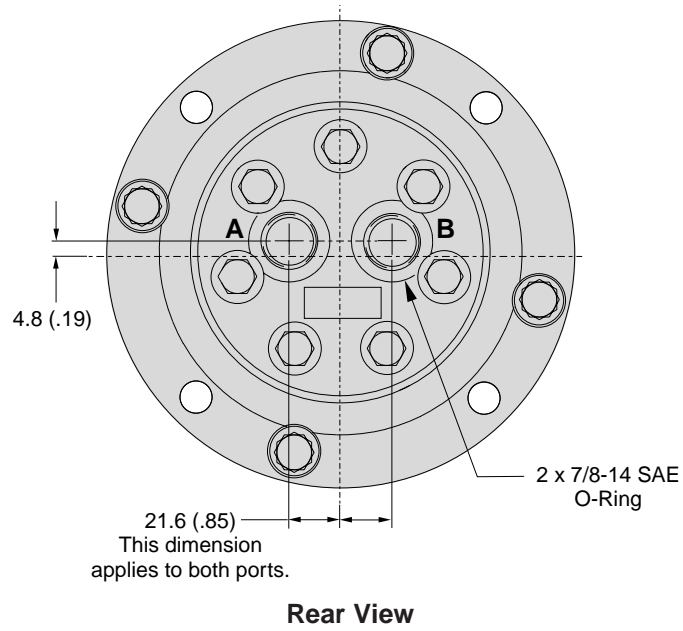
TG SERIES

* Not available with A or B porting
 ** Shuttle port position as viewed from shaft end of motor
 *** Available only with shaft code 08 or 31
 **** Not available on 0625, 0785, or 0960 displacement codes

Technical Information

Dimensions

Inch equivalents for metric dimensions are shown in (**)

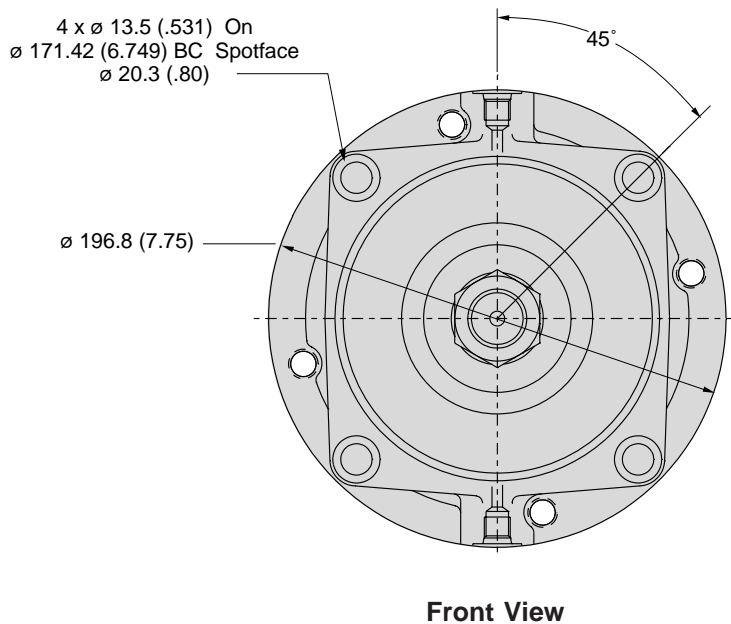


Standard Rotation:

(As viewed from shaft end)

Front Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Rear Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.



**T
G
S
E
R
I
E
S**

A Rugged Motor for Heavy Duty, High Side Load Applications

This motor was designed for tough applications. A stout drive link with patented 60:40 spline geometry will transmit over 13000 lb in of torque. The 1 1/2" output shaft can support 7000 lb of axial load. Efficiency is assured by use of roller vanes and sealed commutator. Durability is maintained by continually washing the powertrain splines and shaft seal in cooling fluid.



Options

- 1 1/2 inch Keyed, Splined or Tapered Shafts
- Wheel or 4 Bolt Magneto Mounting
- SAE O-Ring or Manifold Porting
- Front or Rear Porting
- Internal Cross - Over Relief Valves
- Hot Oil Shuttle
- Free Running Rotor Set
- Reverse Timed Manifold
- Corrosion Resistance

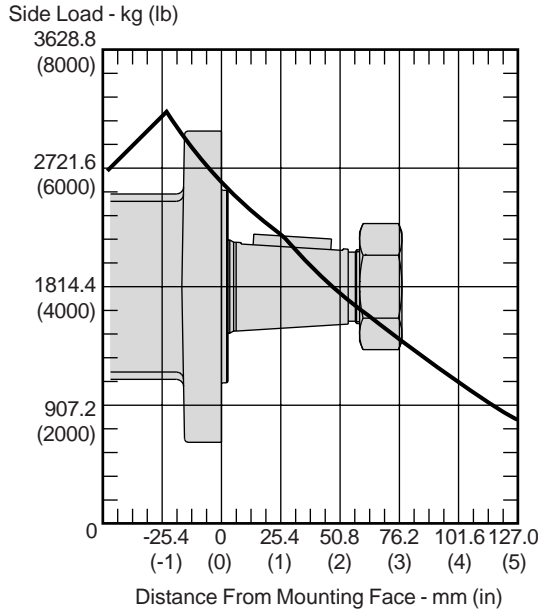
Features

- **Roller Bearings** - For Heavy Radial Loads
- **Roller Vane Power Element** - For High Volumetric Efficiency and Long Life
- **Orbiting Commutator** - For Accurate Timing, Smooth Low Speed Operation
- **Full Flow Spline Lubrication** - For Extended Spline Life
- **High Pressure Shaft Seal** - For High Back Pressure Operation Without External Drain Lines
- **High Flow Shaft Seal Cooling** - For Long Seal Life
- **60:40 Spline Geometry** - For Superior Powertrain Strength, Long Life
- **Robust Construction** - For Quiet operation

TH Specifications

| Code | 0140 | 0170 | 0195 | 0240 | 0280 | 0335 | 0405 | 0475 | 0530 | 0625 | 0785 | 0960 |
|--|-----------------|-----------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Displacement cc/rev (cu in/rev) | 140 (8.6) | 169 (10.3) | 195 (11.9) | 237 (14.5) | 280 (17.1) | 337 (20.6) | 405 (24.7) | 476 (29.1) | 529 (32.3) | 624 (38.0) | 786 (48.0) | 958 (58.5) |
| Maximum Speed (rpm) @ Maximum Continuous Flow | 528 | 442 | 381 | 314 | 266 | 221 | 185 | 157 | 141 | 120 | 95 | 78 |
| Pressure Differential Maximum Continuous bar (psid) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 206.9 (3000) | 172.4 (2500) | 137.9 (2000) | 137.9 (2000) | 120.7 (1750) | 103.4 (1500) | 69.0 (1000) |
| Maximum Intermittent bar (psid) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 275.9 (4000) | 241.4 (3500) | 206.9 (3000) | 172.4 (2500) | 155.2 (2250) | 137.9 (2000) | 103.4 (1500) |
| Max. Torque @ Max. Continuous Pressure nm (lb-in) | 406.8 (3601) | 494.9 (4380) | 576.0 (5098) | 704.9 (6239) | 824.9 (7301) | 1006.4 (8908) | 991.1 (8772) | 954.1 (8445) | 1057.7 (9362) | 1054.9 (9337) | 1142.0 (10108) | 923.4 (8173) |
| Max. Torque @ Max. Intermittent Pressure nm (lb-in) | 541.6 (4794) | 659.6 (5838) | 765.6 (6776) | 937.5 (8298) | 1096.7 (9707) | 1337.0 (11834) | 1386.4 (12271) | 1424.5 (12608) | 1317.2 (11659) | 1348.4 (11935) | 1489.6 (13185) | 1385.4 (12262) |

**Maximum Side Load Capacity
 Flange Mount**



Performance Data

Continuous / Intermittent* Operation

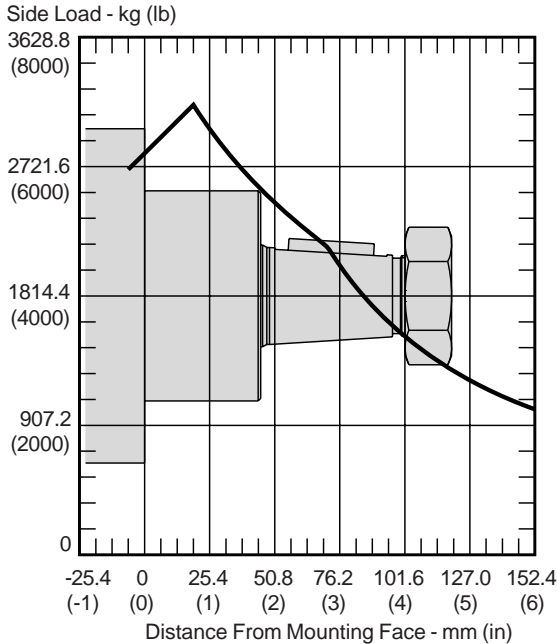
- = Continuous
- = Intermittent*

**Intermittent operation is defined as less than 10% per minute.*

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F.)

Performance data is typical. Actual data may vary slightly from one production motor to another.

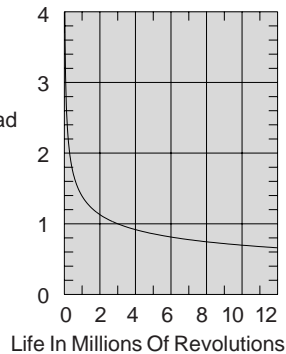
Wheel Mount



B-10 Life Factors

Application of the above uni-directional radial loads will result in a B-10 life of 3 million revolutions. For B-10 life at other radial loads, apply the factors from the curve to the right.

Multiply Allowable Radial Load By These Factors



TH SERIES

Code 0140

140 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 58.6 9 | 119.8 4 | | | | | | |
| 3.8 | 61.0 22 | 123.1 17 | 184.7 11 | 246.3 6 | | | | |
| 7.6 | 64.3 49 | 130.6 43 | 195.5 36 | 258.3 30 | 319.4 23 | 380.5 19 | 440.5 12 | 502.4 12 |
| 11.4 | 63.8 75 | 130.9 69 | 197.0 62 | 262.2 55 | 327.5 47 | 392.8 40 | 457.3 33 | 520.6 29 |
| 15.1 | 63.7 102 | 132.2 94 | 199.7 87 | 266.4 80 | 332.5 72 | 397.4 64 | 461.2 57 | 524.7 52 |
| 18.9 | 62.8 128 | 132.2 120 | 200.7 112 | 268.3 105 | 335.3 97 | 401.8 89 | 467.2 81 | 531.1 76 |
| 26.5 | 61.0 182 | 131.1 172 | 201.0 164 | 270.0 155 | 338.3 146 | 405.8 138 | 472.4 130 | 538.1 123 |
| 34.1 | 58.2 235 | 129.1 225 | 199.7 215 | 269.5 206 | 338.5 196 | 406.8 187 | 474.4 179 | 541.6 171 |
| 45.4 | 53.2 315 | 123.8 303 | 195.3 292 | 266.2 281 | 336.0 271 | 405.3 261 | 473.7 252 | 541.6 243 |
| 56.8 | 47.2 395 | 117.7 381 | 189.0 368 | 260.6 357 | 331.4 346 | 401.0 336 | 470.3 325 | 539.0 314 |
| 75.7 | 33.8 528 | 105.2 512 | 176.8 497 | 248.3 484 | 319.2 472 | 390.3 459 | 460.7 447 | 530.1 435 |
| 94.6 | 19.5 660 | 89.7 643 | 161.1 626 | 232.6 612 | 304.5 598 | 376.4 583 | 447.5 569 | 517.3 555 |

Flow (LPM)

TORQUE (nm) 304.5
 SPEED (RPM) 598

8.6 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 519 9 | 1060 4 | | | | | | |
| 1 | 540 22 | 1090 17 | 1635 11 | 2180 6 | | | | |
| 2 | 569 49 | 1156 43 | 1730 36 | 2286 30 | 2827 23 | 3368 19 | 3899 12 | 4447 12 |
| 3 | 565 75 | 1159 69 | 1744 62 | 2321 55 | 2899 47 | 3477 40 | 4048 33 | 4608 29 |
| 4 | 564 102 | 1170 94 | 1768 87 | 2358 80 | 2943 72 | 3517 64 | 4082 57 | 4644 52 |
| 5 | 556 128 | 1170 120 | 1776 112 | 2375 105 | 2968 97 | 3556 89 | 4135 81 | 4701 76 |
| 7 | 540 182 | 1160 172 | 1779 164 | 2390 155 | 2994 146 | 3592 138 | 4181 130 | 4763 123 |
| 9 | 515 235 | 1143 225 | 1768 215 | 2385 206 | 2996 196 | 3601 187 | 4199 179 | 4794 171 |
| 12 | 471 315 | 1096 303 | 1729 292 | 2356 281 | 2974 271 | 3587 261 | 4193 252 | 4794 243 |
| 15 | 418 395 | 1042 381 | 1673 368 | 2307 357 | 2933 346 | 3549 336 | 4163 325 | 4771 314 |
| 20 | 299 528 | 931 512 | 1565 497 | 2198 484 | 2825 472 | 3455 459 | 4078 447 | 4692 435 |
| 25 | 173 660 | 794 643 | 1426 626 | 2059 612 | 2695 598 | 3332 583 | 3961 569 | 4579 555 |

Flow (GPM)

PSLGC, PM6, dg, ki

Code 0170

170 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 70.0 9 | 145.1 7 | 219.7 5 | 295.2 4 | 372.0 3 | 450.0 2 | | |
| 3.8 | 73.7 20 | 151.1 18 | 226.6 16 | 303.1 14 | 381.3 12 | 459.0 11 | 536.0 8 | 610.3 8 |
| 7.6 | 76.6 42 | 157.0 40 | 237.8 37 | 318.8 35 | 399.4 32 | 477.5 30 | 554.6 27 | 631.2 25 |
| 11.4 | 76.6 64 | 157.8 61 | 239.2 58 | 320.4 56 | 401.5 53 | 481.6 50 | 560.7 46 | 638.6 44 |
| 15.1 | 76.7 86 | 159.2 83 | 242.0 80 | 324.5 77 | 406.3 74 | 486.9 71 | 567.3 67 | 645.8 64 |
| 18.9 | 76.3 108 | 159.6 104 | 242.9 101 | 325.9 98 | 408.5 94 | 490.2 91 | 571.3 87 | 650.9 83 |
| 26.5 | 74.7 153 | 158.7 148 | 243.1 143 | 327.6 140 | 411.5 136 | 494.2 132 | 576.3 127 | 657.3 123 |
| 34.1 | 71.4 197 | 156.5 191 | 241.8 186 | 326.6 181 | 411.0 177 | 494.9 173 | 577.8 168 | 659.6 163 |
| 45.4 | 65.9 263 | 150.7 256 | 236.8 250 | 323.1 244 | 408.6 239 | 492.8 234 | 576.3 228 | 657.9 223 |
| 56.8 | 59.2 330 | 144.0 322 | 229.9 314 | 316.8 308 | 403.6 302 | 488.9 296 | 572.8 289 | 655.4 283 |
| 75.7 | 43.2 442 | 129.1 432 | 215.6 422 | 303.1 413 | 390.3 406 | 476.3 399 | 561.7 391 | 645.6 383 |
| 94.6 | 27.0 554 | 111.1 543 | 197.4 531 | 285.0 520 | 372.7 511 | 459.9 501 | 546.7 492 | 631.7 483 |

Flow (LPM)

10.3 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 620 9 | 1284 7 | 1945 5 | 2613 4 | 3293 3 | 3983 2 | | |
| 1 | 652 20 | 1337 18 | 2006 16 | 2683 14 | 3375 12 | 4063 11 | 4744 8 | 5402 8 |
| 2 | 678 42 | 1390 40 | 2105 37 | 2822 35 | 3535 32 | 4226 30 | 4909 27 | 5587 25 |
| 3 | 678 64 | 1397 61 | 2117 58 | 2836 56 | 3554 53 | 4263 50 | 4963 46 | 5652 44 |
| 4 | 679 86 | 1409 83 | 2142 80 | 2872 77 | 3596 74 | 4310 71 | 5021 67 | 5716 64 |
| 5 | 675 108 | 1413 104 | 2150 101 | 2885 98 | 3616 94 | 4339 91 | 5057 87 | 5761 83 |
| 7 | 661 153 | 1405 148 | 2152 143 | 2900 140 | 3642 136 | 4374 132 | 5101 127 | 5818 123 |
| 9 | 632 197 | 1385 191 | 2140 186 | 2891 181 | 3638 177 | 4380 173 | 5114 168 | 5838 163 |
| 12 | 583 263 | 1334 256 | 2096 250 | 2860 244 | 3617 239 | 4362 234 | 5101 228 | 5823 223 |
| 15 | 524 330 | 1275 322 | 2035 314 | 2804 308 | 3572 302 | 4327 296 | 5070 289 | 5801 283 |
| 20 | 382 442 | 1143 432 | 1908 422 | 2683 413 | 3455 406 | 4216 399 | 4972 391 | 5714 383 |
| 25 | 239 554 | 983 543 | 1747 531 | 2523 520 | 3299 511 | 4071 501 | 4839 492 | 5591 483 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

**TH
SERIES**

Code 0195

195 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 82.8 7 | 169.8 3 | | | | | | |
| 3.8 | 86.0 16 | 174.7 13 | 262.8 8 | 350.7 3 | | | | |
| 7.6 | 90.3 35 | 185.1 32 | 278.5 27 | 369.4 21 | 457.1 16 | 543.8 11 | 631.4 7 | 720.2 6 |
| 11.4 | 89.7 55 | 185.2 50 | 279.7 45 | 373.2 39 | 466.8 34 | 561.5 28 | 654.4 23 | 745.1 19 |
| 15.1 | 89.7 74 | 186.9 69 | 283.5 64 | 379.2 58 | 474.1 52 | 567.5 46 | 658.7 40 | 749.6 35 |
| 18.9 | 88.5 93 | 186.8 88 | 284.4 83 | 381.3 76 | 477.2 70 | 572.2 64 | 666.0 58 | 758.1 52 |
| 26.5 | 86.1 131 | 184.9 126 | 284.0 120 | 382.3 113 | 479.6 106 | 576.0 99 | 671.1 92 | 765.1 86 |
| 34.1 | 82.6 170 | 182.6 164 | 282.3 157 | 381.1 150 | 478.9 142 | 575.4 135 | 670.6 127 | 765.3 120 |
| 45.4 | 76.5 228 | 176.5 221 | 277.4 213 | 377.7 205 | 476.4 196 | 574.1 188 | 670.4 179 | 765.6 172 |
| 56.8 | 69.3 285 | 169.2 278 | 269.9 269 | 370.9 260 | 471.0 251 | 569.4 242 | 667.4 232 | 764.3 233 |
| 75.7 | 50.6 381 | 152.5 373 | 253.6 363 | 354.9 353 | 455.4 342 | 555.7 331 | 655.1 321 | 752.8 310 |
| 94.6 | 37.7 477 | 130.8 468 | 230.9 457 | 332.3 445 | 433.5 433 | 534.3 421 | 634.0 409 | 734.4 397 |

Flow (LPM)

TORQUE (nm) 534.3
 SPEED (RPM) 421

11.9 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 733 7 | 1503 3 | | | | | | |
| 1 | 761 16 | 1546 13 | 2326 8 | 3104 3 | | | | |
| 2 | 799 35 | 1638 32 | 2465 27 | 3270 21 | 4046 16 | 4813 11 | 5589 7 | 6375 6 |
| 3 | 794 55 | 1639 50 | 2476 45 | 3303 39 | 4132 34 | 4970 28 | 5792 23 | 6595 19 |
| 4 | 794 74 | 1654 69 | 2509 64 | 3356 58 | 4196 52 | 5023 46 | 5830 40 | 6635 35 |
| 5 | 783 93 | 1653 88 | 2517 83 | 3375 76 | 4224 70 | 5065 64 | 5895 58 | 6710 52 |
| 7 | 762 131 | 1637 126 | 2514 120 | 3384 113 | 4245 106 | 5098 99 | 5940 92 | 6772 86 |
| 9 | 731 170 | 1616 164 | 2499 157 | 3373 150 | 4239 142 | 5093 135 | 5936 127 | 6774 120 |
| 12 | 677 228 | 1562 221 | 2455 213 | 3343 205 | 4217 196 | 5081 188 | 5934 179 | 6776 172 |
| 15 | 613 285 | 1498 278 | 2389 269 | 3283 260 | 4169 251 | 5040 242 | 5907 232 | 6765 233 |
| 20 | 448 381 | 1350 373 | 2245 363 | 3141 353 | 4031 342 | 4919 331 | 5798 321 | 6663 310 |
| 25 | 334 477 | 1158 468 | 2044 457 | 2941 445 | 3837 433 | 4729 421 | 5612 409 | 6500 397 |

TORQUE (LB IN) 4813
 SPEED (RPM) 11

Flow (GPM)

PSLGC,PM6, dg, ki

Code 0240

240 cc / rev

PRESSURE (BAR)

| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.9 | 105.3 6 | 215.5 4 | 327.0 2 | | | | | |
| 3.8 | 108.5 14 | 220.8 12 | 333.3 9 | 445.5 6 | 558.0 3 | 670.0 2 | | |
| 7.6 | 111.6 30 | 229.5 27 | 346.3 24 | 462.1 20 | 577.0 17 | 689.2 14 | 798.5 11 | 908.0 9 |
| 11.4 | 111.1 45 | 229.2 42 | 347.0 39 | 463.3 35 | 579.4 31 | 696.1 27 | 811.4 23 | 924.6 20 |
| 15.1 | 110.5 61 | 230.1 58 | 349.1 54 | 467.3 49 | 584.8 45 | 701.3 42 | 816.8 37 | 930.3 33 |
| 18.9 | 108.7 77 | 229.3 73 | 349.3 69 | 468.2 64 | 586.4 60 | 704.0 56 | 820.1 51 | 934.5 47 |
| 26.5 | 105.4 108 | 226.5 104 | 347.8 99 | 467.9 94 | 586.8 89 | 704.9 84 | 821.9 78 | 937.5 73 |
| 34.1 | 100.6 140 | 222.8 135 | 344.4 129 | 464.6 123 | 584.0 117 | 701.9 112 | 818.5 106 | 934.5 100 |
| 45.4 | 94.0 187 | 216.0 181 | 338.5 175 | 459.9 167 | 579.0 161 | 696.3 154 | 812.9 147 | 929.1 140 |
| 56.8 | 85.1 235 | 207.0 228 | 330.0 220 | 452.9 212 | 574.1 204 | 693.4 196 | 811.4 188 | 927.8 180 |
| 75.7 | 63.2 314 | 186.9 306 | 310.0 297 | 433.2 287 | 555.5 278 | 676.9 268 | 795.9 258 | 913.0 248 |
| 94.6 | 59.2 393 | 161.2 384 | 283.2 373 | 406.2 363 | 529.9 352 | 653.0 340 | 774.3 328 | 894.0 317 |

Flow (LPM)

14.5 cu in / rev

PRESSURE (PSI)

| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| .5 | 932 6 | 1907 4 | 2894 2 | | | | | |
| 1 | 960 14 | 1954 12 | 2950 9 | 3943 6 | 4939 3 | 5930 2 | | |
| 2 | 988 30 | 2031 27 | 3065 24 | 4090 20 | 5107 17 | 6100 14 | 7068 11 | 8037 9 |
| 3 | 983 45 | 2029 42 | 3071 39 | 4101 35 | 5128 31 | 6161 27 | 7182 23 | 8184 20 |
| 4 | 978 61 | 2037 58 | 3090 54 | 4136 49 | 5176 45 | 6207 42 | 7230 37 | 8234 33 |
| 5 | 962 77 | 2030 73 | 3092 69 | 4144 64 | 5190 60 | 6231 56 | 7259 51 | 8271 47 |
| 7 | 933 108 | 2005 104 | 3078 99 | 4141 94 | 5194 89 | 6239 84 | 7275 78 | 8298 73 |
| 9 | 890 140 | 1972 135 | 3048 129 | 4112 123 | 5169 117 | 6213 112 | 7245 106 | 8271 100 |
| 12 | 832 187 | 1912 181 | 2996 175 | 4071 167 | 5125 161 | 6163 154 | 7195 147 | 8224 140 |
| 15 | 753 235 | 1832 228 | 2921 220 | 4009 212 | 5081 204 | 6137 196 | 7182 188 | 8212 180 |
| 20 | 559 314 | 1654 306 | 2744 297 | 3834 287 | 4917 278 | 5991 268 | 7045 258 | 8081 248 |
| 25 | 524 393 | 1427 384 | 2507 373 | 3595 363 | 4690 352 | 5780 340 | 6853 328 | 7913 317 |

Flow (GPM)

Performance data is typical. Actual data may vary slightly from one production motor to another.

TH SERIES

Code 0280

280 cc / rev

| | PRESSURE (BAR) | | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
| 1.9 | 119.3 5 | 246.0 4 | 375.4 2 | 509.8 1 | | | | |
| 3.8 | 122.8 12 | 251.2 10 | 381.6 8 | 514.3 6 | 647.8 5 | 783.0 3 | 919.1 3 | 1056.4 2 |
| 7.6 | 127.0 25 | 261.3 23 | 396.9 21 | 531.0 18 | 664.3 16 | 797.6 14 | 930.8 12 | 1062.0 11 |
| 11.4 | 127.0 39 | 262.5 36 | 399.0 34 | 535.5 31 | 671.1 28 | 807.0 25 | 942.9 22 | 1077.4 19 |
| 15.1 | 127.2 52 | 265.1 49 | 403.1 47 | 540.7 43 | 678.3 40 | 815.0 37 | 950.7 33 | 1084.2 30 |
| 18.9 | 126.0 65 | 265.5 62 | 404.7 59 | 544.1 56 | 682.9 52 | 819.8 49 | 955.5 45 | 1089.2 41 |
| 26.5 | 123.3 92 | 264.1 88 | 405.1 85 | 545.9 80 | 686.0 76 | 824.9 72 | 962.0 67 | 1096.6 63 |
| 34.1 | 118.2 118 | 260.9 114 | 402.7 110 | 543.5 105 | 683.6 101 | 822.5 96 | 960.2 90 | 1096.7 85 |
| 45.4 | 110.8 159 | 253.3 154 | 396.1 148 | 537.4 143 | 677.0 137 | 815.8 132 | 954.0 125 | 1090.5 118 |
| 56.8 | 101.5 199 | 244.5 193 | 388.3 186 | 531.2 180 | 672.3 174 | 812.0 168 | 950.8 160 | 1087.4 152 |
| 75.7 | 78.1 266 | 223.2 258 | 367.7 250 | 511.7 243 | 654.7 235 | 795.8 227 | 934.9 218 | 1073.2 209 |
| 94.6 | 79.4 334 | 195.0 324 | 337.5 314 | 481.3 305 | 625.9 296 | 770.0 286 | 911.9 276 | 1052.0 267 |

Flow (LPM)

17.1 cu in / rev

| | PRESSURE (PSI) | | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
| .5 | 1056 5 | 2177 4 | 3323 2 | 4512 1 | | | | |
| 1 | 1087 12 | 2223 10 | 3378 8 | 4552 6 | 5734 5 | 6930 3 | 8135 3 | 9350 2 |
| 2 | 1124 25 | 2313 23 | 3513 21 | 4700 18 | 5880 16 | 7060 14 | 8239 12 | 9400 11 |
| 3 | 1124 39 | 2323 36 | 3532 34 | 4740 31 | 5940 28 | 7143 25 | 8346 22 | 9536 19 |
| 4 | 1126 52 | 2346 49 | 3568 47 | 4786 43 | 6004 40 | 7214 37 | 8415 33 | 9596 30 |
| 5 | 1115 65 | 2350 62 | 3582 59 | 4816 56 | 6044 52 | 7256 49 | 8457 45 | 9641 41 |
| 7 | 1091 92 | 2338 88 | 3586 85 | 4832 80 | 6072 76 | 7301 72 | 8515 67 | 9706 63 |
| 9 | 1046 118 | 2309 114 | 3564 110 | 4811 105 | 6051 101 | 7280 96 | 8499 90 | 9707 85 |
| 12 | 981 159 | 2242 154 | 3506 148 | 4757 143 | 5992 137 | 7221 132 | 8444 125 | 9652 118 |
| 15 | 898 199 | 2164 193 | 3437 186 | 4702 180 | 5951 174 | 7187 168 | 8416 160 | 9625 152 |
| 20 | 691 266 | 1976 258 | 3255 250 | 4529 243 | 5795 235 | 7044 227 | 8275 218 | 9499 209 |
| 25 | 703 334 | 1726 324 | 2987 314 | 4260 305 | 5540 296 | 6815 286 | 8071 276 | 9311 267 |

Flow (GPM)

PSLGC,PM6, dg, ki



Code 0335

335 cc / rev

| | PRESSURE (BAR) | | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | 275.9 |
| 1.9 | 146.5 4 | 304.9 3 | 466.4 1 | 630.9 1 | | | | |
| 3.8 | 150.2 10 | 309.7 8 | 471.8 7 | 636.1 5 | 800.4 4 | 966.1 2 | 1133.9 2 | 1298.8 1 |
| 7.6 | 154.7 21 | 320.0 19 | 486.7 17 | 653.8 15 | 820.8 13 | 985.0 11 | 1145.2 9 | 1303.1 8 |
| 11.4 | 154.3 32 | 320.6 30 | 488.8 27 | 657.2 25 | 824.9 22 | 992.1 20 | 1157.8 17 | 1320.2 14 |
| 15.1 | 154.6 43 | 322.9 40 | 492.4 38 | 662.2 35 | 831.3 32 | 999.9 29 | 1165.6 25 | 1327.3 22 |
| 18.9 | 153.1 54 | 322.9 51 | 493.5 48 | 664.3 45 | 834.5 42 | 1003.3 38 | 1169.6 34 | 1332.1 30 |
| 26.5 | 149.5 76 | 320.9 73 | 492.9 69 | 665.2 65 | 836.8 61 | 1006.4 57 | 1173.2 53 | 1336.4 47 |
| 34.1 | 143.0 98 | 315.3 94 | 488.8 90 | 661.6 85 | 833.3 81 | 1003.7 76 | 1171.8 71 | 1337.0 64 |
| 45.4 | 133.0 131 | 304.8 127 | 477.9 121 | 650.7 116 | 821.7 110 | 991.2 105 | 1159.3 98 | 1324.8 90 |
| 56.8 | 121.5 165 | 293.1 159 | 466.3 153 | 638.8 146 | 810.1 140 | 979.5 134 | 1147.1 126 | 1312.0 116 |
| 75.7 | 94.1 221 | 268.0 214 | 442.3 205 | 617.2 197 | 791.8 189 | 964.1 182 | 1132.7 173 | 1296.9 161 |
| 94.6 | 76.6 277 | 242.0 269 | 413.8 259 | 586.3 248 | 759.9 239 | 932.9 230 | 1102.3 219 | 1267.5 209 |

Flow (LPM)

20.6 cu in / rev

| | PRESSURE (PSI) | | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
| .5 | 1297 4 | 2699 3 | 4128 1 | 5584 1 | | | | |
| 1 | 1329 10 | 2741 8 | 4176 7 | 5630 5 | 7084 4 | 8551 2 | 10036 2 | 11496 1 |
| 2 | 1369 21 | 2832 19 | 4308 17 | 5787 15 | 7265 13 | 8718 11 | 10136 9 | 11534 8 |
| 3 | 1366 32 | 2838 30 | 4326 27 | 5817 25 | 7301 22 | 8781 20 | 10248 17 | 11685 14 |
| 4 | 1368 43 | 2858 40 | 4358 38 | 5861 35 | 7358 32 | 8850 29 | 10317 25 | 11748 22 |
| 5 | 1355 54 | 2858 51 | 4368 48 | 5880 45 | 7386 42 | 8880 38 | 10352 34 | 11791 30 |
| 7 | 1323 76 | 2840 73 | 4363 69 | 5888 65 | 7407 61 | 8908 57 | 10384 53 | 11829 47 |
| 9 | 1266 98 | 2791 94 | 4326 90 | 5856 85 | 7376 81 | 8884 76 | 10372 71 | 11834 64 |
| 12 | 1177 131 | 2698 127 | 4230 121 | 5759 116 | 7273 110 | 8773 105 | 10261 98 | 11726 90 |
| 15 | 1075 165 | 2594 159 | 4127 153 | 5654 146 | 7170 140 | 8670 134 | 10153 126 | 11613 116 |
| 20 | 833 221 | 2372 214 | 3915 205 | 5463 197 | 7008 189 | 8533 182 | 10026 173 | 11479 161 |
| 25 | 678 277 | 2142 269 | 3663 259 | 5189 248 | 6726 239 | 8257 230 | 9757 219 | 11219 209 |

Flow (GPM)

TORQUE (nm) 770.0
 SPEED (RPM) 286

TORQUE (LB IN) 9350
 SPEED (RPM) 2

Performance data is typical. Actual data may vary slightly from one production motor to another.

**TH
 S
 E
 R
 I
 E
 S**

Code 0405

405 cc / rev

| | PRESSURE (BAR) | | | | | | | |
|-------------|----------------|--------------|--------------|--------------|--------------|---------------|---------------|--|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 | 241.4 | |
| 1.9 | 174.4 4 | 359.1 3 | 546.8 2 | 736.1 1 | 924.7 1 | | | |
| 3.8 | 180.0 8 | 367.9 7 | 556.8 6 | 746.5 6 | 938.1 5 | 1128.3 4 | 1316.4 3 | |
| 7.6 | 184.8 17 | 378.6 16 | 574.4 15 | 770.2 14 | 966.0 13 | 1160.5 12 | 1353.3 11 | |
| 11.4 | 184.9 27 | 380.2 25 | 576.9 23 | 773.6 22 | 970.3 21 | 1165.3 19 | 1359.3 18 | |
| 15.1 | 185.9 36 | 383.5 34 | 582.9 32 | 781.8 30 | 979.3 29 | 1175.2 27 | 1370.4 26 | |
| 18.9 | 185.3 45 | 385.0 43 | 587.6 41 | 788.9 39 | 986.7 37 | 1182.4 35 | 1377.7 33 | |
| 26.5 | 181.4 64 | 383.7 61 | 588.7 59 | 791.2 56 | 991.1 54 | 1189.3 51 | 1386.4 49 | |
| 34.1 | 175.2 82 | 378.5 80 | 584.8 77 | 788.7 73 | 990.0 70 | 1188.4 67 | 1386.2 64 | |
| 45.4 | 161.3 110 | 365.8 107 | 573.4 103 | 778.2 99 | 979.5 95 | 1177.7 91 | 1375.2 88 | |
| 56.8 | 148.0 138 | 351.6 135 | 559.0 130 | 763.6 125 | 965.4 120 | 1164.4 115 | 1362.5 111 | |
| 75.7 | 128.3 185 | 323.3 181 | 530.1 175 | 736.4 168 | 941.8 162 | 1143.6 156 | 1341.9 151 | |
| 94.6 | | | 507.5 219 | 712.1 212 | 913.3 204 | 1112.6 197 | 1308.9 190 | |

Flow (LPM)

TORQUE (nm) 712.1
 SPEED (RPM) 212

24.7 cu in / rev

| | PRESSURE (PSI) | | | | | | | |
|-----------|----------------|-------------|-------------|-------------|-------------|--------------|--------------|--|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | |
| .5 | 1544 4 | 3178 3 | 4840 2 | 6515 1 | 8185 1 | | | |
| 1 | 1593 8 | 3256 7 | 4928 6 | 6607 6 | 8303 5 | 9987 4 | 11652 3 | |
| 2 | 1636 17 | 3351 16 | 5084 15 | 6817 14 | 8550 13 | 10272 12 | 11978 11 | |
| 3 | 1637 27 | 3365 25 | 5106 23 | 6847 22 | 8588 21 | 10314 19 | 12031 18 | |
| 4 | 1645 36 | 3394 34 | 5159 32 | 6920 30 | 8668 29 | 10402 27 | 12130 26 | |
| 5 | 1640 45 | 3408 43 | 5201 41 | 6983 39 | 8733 37 | 10466 35 | 12194 33 | |
| 7 | 1606 64 | 3396 61 | 5211 59 | 7003 56 | 8772 54 | 10527 51 | 12271 49 | |
| 9 | 1551 82 | 3350 80 | 5176 77 | 6981 73 | 8763 70 | 10519 67 | 12269 64 | |
| 12 | 1428 110 | 3238 107 | 5075 103 | 6888 99 | 8670 95 | 10424 91 | 12172 88 | |
| 15 | 1310 138 | 3112 135 | 4948 130 | 6759 125 | 8545 120 | 10306 115 | 12060 111 | |
| 20 | 1136 185 | 2862 181 | 4692 175 | 6518 168 | 8336 162 | 10122 156 | 11877 151 | |
| 25 | | | 4492 219 | 6303 212 | 8084 204 | 9848 197 | 11585 190 | |

Flow (GPM)

TORQUE (LB IN) 9848
 SPEED (RPM) 197

**TH
 S
 E
 R
 I
 E
 S**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0475

475 cc / rev

| | PRESSURE (BAR) | | | | | |
|--------------|----------------|--------------|--------------|--------------|---------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 | 206.9 |
| 1.9 | 199.7 3 | 421.6 3 | 647.7 2 | 874.9 1 | 1102.9 1 | |
| 3.8 | 211.0 7 | 438.1 7 | 664.2 6 | 887.0 5 | 1111.5 4 | 1336.6 3 |
| 7.6 | 221.9 15 | 458.1 14 | 698.2 14 | 930.6 12 | 1157.0 10 | 1371.1 8 |
| 11.4 | 222.8 23 | 460.3 22 | 701.4 21 | 940.1 19 | 1172.6 17 | 1395.9 13 |
| 15.1 | 226.5 31 | 467.2 30 | 710.3 29 | 947.0 27 | 1182.1 24 | 1411.8 20 |
| 18.9 | 226.4 39 | 466.5 38 | 712.2 37 | 952.2 34 | 1187.9 31 | 1417.2 26 |
| 26.5 | 224.8 55 | 466.9 54 | 712.7 52 | 954.1 50 | 1192.5 45 | 1423.8 40 |
| 34.1 | 217.4 70 | 463.7 69 | 710.1 68 | 952.4 65 | 1189.5 60 | 1424.5 54 |
| 45.4 | 200.5 94 | 449.0 93 | 695.6 91 | 940.9 87 | 1180.2 82 | 1415.4 75 |
| 56.8 | 182.9 118 | 427.5 116 | 676.8 114 | 925.1 110 | 1164.9 104 | 1397.8 96 |
| 75.7 | 148.5 157 | 381.1 156 | 636.0 153 | 887.2 149 | 1134.1 141 | 1372.1 132 |
| 94.6 | 128.9 197 | 342.2 196 | 589.8 193 | 839.1 189 | 1087.9 182 | 1328.3 174 |
| 113.6 | 68.5 237 | 283.0 236 | 525.2 233 | 764.4 230 | 1003.0 224 | 1241.5 219 |

Flow (LPM)

TORQUE (nm) 283.0
 SPEED (RPM) 236

29.1 cu in / rev

| | PRESSURE (PSI) | | | | | |
|-----------|----------------|-------------|-------------|-------------|--------------|--------------|
| | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| .5 | 1768 3 | 3732 3 | 5733 2 | 7744 1 | 9762 1 | |
| 1 | 1868 7 | 3878 7 | 5879 6 | 7851 5 | 9838 4 | 11830 3 |
| 2 | 1964 15 | 4055 14 | 6180 14 | 8237 12 | 10241 10 | 12136 8 |
| 3 | 1972 23 | 4074 22 | 6208 21 | 8321 19 | 10379 17 | 12355 13 |
| 4 | 2005 31 | 4135 30 | 6287 29 | 8382 27 | 10463 24 | 12496 20 |
| 5 | 2004 39 | 4129 38 | 6304 37 | 8428 34 | 10514 31 | 12544 26 |
| 7 | 1990 55 | 4133 54 | 6308 52 | 8445 50 | 10555 45 | 12602 40 |
| 9 | 1924 70 | 4104 69 | 6285 68 | 8430 65 | 10528 60 | 12608 54 |
| 12 | 1775 94 | 3974 93 | 6157 91 | 8328 87 | 10446 82 | 12528 75 |
| 15 | 1619 118 | 3784 116 | 5990 114 | 8188 110 | 10311 104 | 12372 96 |
| 20 | 1314 157 | 3373 156 | 5629 153 | 7853 149 | 10038 141 | 12145 132 |
| 25 | 1141 197 | 3029 196 | 5220 193 | 7427 189 | 9629 182 | 11757 174 |
| 30 | 606 237 | 2505 236 | 4649 233 | 6766 230 | 8878 224 | 10989 219 |

Flow (GPM)

TORQUE (LB IN) 6766
 SPEED (RPM) 230

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0530

530 cc / rev

| | PRESSURE (BAR) | | | | |
|--------------|----------------|--------------|--------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 | 172.4 |
| 1.9 | 235.0 3 | 480.8 3 | 732.0 2 | 985.9 2 | 1244.1 1 |
| 3.8 | 243.8 7 | 493.9 6 | 744.8 6 | 991.9 5 | 1242.1 4 |
| 7.6 | 253.8 14 | 516.0 13 | 776.1 12 | 1031.1 11 | 1285.3 9 |
| 11.4 | 253.3 21 | 517.2 20 | 781.4 19 | 1043.6 17 | 1299.3 14 |
| 15.1 | 254.5 28 | 522.5 27 | 788.3 25 | 1050.3 23 | 1309.0 20 |
| 18.9 | 252.5 35 | 523.0 34 | 791.1 32 | 1054.4 29 | 1313.5 26 |
| 26.5 | 246.5 49 | 519.6 48 | 791.5 46 | 1057.7 42 | 1317.2 38 |
| 34.1 | 236.7 63 | 512.4 62 | 786.3 59 | 1054.1 55 | 1316.2 50 |
| 45.4 | 219.5 85 | 496.0 83 | 771.1 80 | 1041.3 75 | 1304.8 69 |
| 56.8 | 198.1 106 | 474.4 104 | 750.0 100 | 1022.7 95 | 1288.9 87 |
| 75.7 | 149.9 141 | 427.4 139 | 707.5 135 | 983.0 129 | 1252.5 120 |
| 94.6 | 114.2 177 | 372.8 175 | 649.7 171 | 927.6 165 | 1202.0 158 |
| 113.6 | 30.4 213 | 304.8 211 | 574.3 208 | 837.7 203 | 1108.8 197 |

Flow (LPM)

TORQUE (nm) 304.8
 SPEED (RPM) 211

32.2 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|--------------|
| | 500 | 1000 | 1500 | 2000 | 2500 |
| .5 | 2080 3 | 4256 3 | 6479 2 | 8726 2 | 11012 1 |
| 1 | 2158 7 | 4372 6 | 6592 6 | 8779 5 | 10994 4 |
| 2 | 2246 14 | 4567 13 | 6869 12 | 9126 11 | 11376 9 |
| 3 | 2242 21 | 4578 20 | 6916 19 | 9237 17 | 11500 14 |
| 4 | 2253 28 | 4625 27 | 6977 25 | 9296 23 | 11586 20 |
| 5 | 2235 35 | 4629 34 | 7002 32 | 9333 29 | 11626 26 |
| 7 | 2182 49 | 4599 48 | 7006 46 | 9362 42 | 11659 38 |
| 9 | 2095 63 | 4535 62 | 6960 59 | 9330 55 | 11650 50 |
| 12 | 1943 85 | 4390 83 | 6825 80 | 9217 75 | 11549 69 |
| 15 | 1753 106 | 4199 104 | 6638 100 | 9052 95 | 11408 87 |
| 20 | 1327 141 | 3783 139 | 6262 135 | 8701 129 | 11086 120 |
| 25 | 1011 177 | 3300 175 | 5751 171 | 8210 165 | 10639 158 |
| 30 | 269 213 | 2698 211 | 5083 208 | 7415 203 | 9814 197 |

Flow (GPM)

TORQUE (LB IN) 9814
 SPEED (RPM) 197

**TH
 SERIES**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0625

625 cc / rev

| | PRESSURE (BAR) | | | | |
|--------------|----------------|--------------|--------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 | 120.7 | 155.2 |
| 1.9 | 219.1 2 | 518.9 1 | | | |
| 3.8 | 235.8 5 | 527.1 3 | 822.8 2 | 980.7 2 | 1308.2 1 |
| 7.6 | 264.1 11 | 563.9 9 | 857.5 8 | 1000.2 7 | 1294.5 5 |
| 11.4 | 269.6 17 | 576.3 15 | 875.9 13 | 1023.0 12 | 1320.6 9 |
| 15.1 | 277.6 23 | 587.7 21 | 889.4 19 | 1036.5 17 | 1329.7 14 |
| 18.9 | 280.1 29 | 592.7 27 | 897.4 25 | 1044.2 23 | 1335.5 18 |
| 26.5 | 278.4 41 | 595.7 39 | 903.3 36 | 1051.4 34 | 1339.8 28 |
| 34.1 | 271.3 53 | 590.1 51 | 903.0 48 | 1054.9 45 | 1348.4 39 |
| 45.4 | 254.7 71 | 575.3 69 | 891.0 65 | 1043.8 62 | 1344.5 54 |
| 56.8 | 231.8 89 | 553.7 87 | 872.3 83 | 1026.5 80 | 1329.0 70 |
| 75.7 | 180.8 120 | 507.3 117 | 828.6 112 | 985.8 109 | 1290.7 98 |
| 94.6 | 120.1 151 | 444.4 148 | 770.3 144 | 930.4 140 | 1245.2 131 |
| 113.6 | 40.6 182 | 367.2 180 | 686.2 176 | 840.9 172 | 1150.0 165 |

Flow (LPM)

TORQUE (nm) 367.2
 SPEED (RPM) 180

38.0 cu in / rev

| | PRESSURE (PSI) | | | | |
|-----------|----------------|-------------|-------------|-------------|--------------|
| | 500 | 1000 | 1500 | 1750 | 2250 |
| .5 | 1939 2 | 4593 1 | | | |
| 1 | 2087 5 | 4665 3 | 7283 2 | 8680 2 | 11579 1 |
| 2 | 2338 11 | 4991 9 | 7590 8 | 8853 7 | 11458 5 |
| 3 | 2386 17 | 5101 15 | 7753 13 | 9055 12 | 11689 9 |
| 4 | 2457 23 | 5202 21 | 7872 19 | 9174 17 | 11769 14 |
| 5 | 2479 29 | 5246 27 | 7943 25 | 9242 23 | 11821 18 |
| 7 | 2464 41 | 5273 39 | 7995 36 | 9306 34 | 11859 28 |
| 9 | 2401 53 | 5223 51 | 7993 48 | 9337 45 | 11935 39 |
| 12 | 2254 71 | 5092 69 | 7886 65 | 9239 62 | 11900 54 |
| 15 | 2052 89 | 4901 87 | 7721 83 | 9086 80 | 11763 70 |
| 20 | 1600 120 | 4490 117 | 7334 112 | 8725 109 | 11424 98 |
| 25 | 1063 151 | 3933 148 | 6818 144 | 8235 140 | 11021 131 |
| 30 | 359 182 | 3250 180 | 6074 176 | 7443 172 | 10179 165 |

Flow (GPM)

TORQUE (LB IN) 7443
 SPEED (RPM) 172

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0785

785 cc / rev

| | PRESSURE (BAR) | | | |
|--------------|----------------|--------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 | 137.9 |
| 1.9 | 328.8 2 | 695.2 2 | 1085.4 1 | 1463.1 1 |
| 3.8 | 340.2 4 | 711.3 4 | 1092.5 3 | 1459.6 3 |
| 7.6 | 363.5 9 | 738.4 8 | 1122.5 7 | 1475.5 6 |
| 11.4 | 363.8 14 | 747.1 13 | 1127.2 11 | 1477.7 9 |
| 15.1 | 368.9 19 | 754.6 17 | 1132.2 15 | 1477.6 13 |
| 18.9 | 368.7 23 | 757.3 22 | 1135.1 19 | 1480.4 16 |
| 26.5 | 363.6 33 | 759.5 31 | 1137.5 28 | 1475.7 24 |
| 34.1 | 351.0 43 | 752.9 41 | 1142.0 36 | 1489.6 31 |
| 45.4 | 326.7 57 | 733.1 55 | 1125.2 49 | 1478.0 42 |
| 56.8 | 298.6 71 | 704.8 69 | 1099.6 62 | 1461.7 54 |
| 75.7 | 230.9 95 | 640.9 92 | 1043.8 85 | 1427.6 75 |
| 94.6 | 261.3 119 | 562.2 117 | 968.4 110 | 1364.0 101 |
| 113.6 | 56.0 143 | 463.7 141 | 856.6 137 | 1245.5 130 |

Flow (LPM)

TORQUE (nm) 856.6
 SPEED (RPM) 137

48.0 cu in / rev

| | PRESSURE (PSI) | | | |
|-----------|----------------|-------------|-------------|--------------|
| | 500 | 1000 | 1500 | 2000 |
| .5 | 2910 2 | 6153 2 | 9607 1 | 12950 1 |
| 1 | 3011 4 | 6296 4 | 9670 3 | 12919 3 |
| 2 | 3217 9 | 6536 8 | 9935 7 | 13060 6 |
| 3 | 3220 14 | 6613 13 | 9977 11 | 13079 9 |
| 4 | 3265 19 | 6679 17 | 10021 15 | 13078 13 |
| 5 | 3263 23 | 6703 22 | 10047 19 | 13103 16 |
| 7 | 3218 33 | 6722 31 | 10068 28 | 13062 24 |
| 9 | 3107 43 | 6664 41 | 10108 36 | 13185 31 |
| 12 | 2892 57 | 6489 55 | 9959 49 | 13082 42 |
| 15 | 2643 71 | 6238 69 | 9733 62 | 12938 54 |
| 20 | 2044 95 | 5673 92 | 9239 85 | 12636 75 |
| 25 | 2313 119 | 4976 117 | 8571 110 | 12073 101 |
| 30 | 496 143 | 4104 141 | 7582 137 | 11024 130 |

Flow (GPM)

TORQUE (LB IN) 11024
 SPEED (RPM) 130

**TH
 SERIES**

Performance data is typical. Actual data may vary slightly from one production motor to another.

Code 0960

960 cc / rev

| | PRESSURE (BAR) | | |
|--------------|----------------|--------------|---------------|
| | 34.5 | 69.0 | 103.4 |
| 1.9 | 417.1 2 | 871.3 1 | 1327.5 1 |
| 3.8 | 428.0 3 | 887.8 3 | 1343.9 3 |
| 7.6 | 440.6 7 | 908.9 7 | 1362.3 6 |
| 11.4 | 441.2 11 | 912.7 11 | 1371.0 10 |
| 15.1 | 445.0 15 | 921.4 14 | 1379.5 13 |
| 18.9 | 443.2 19 | 923.4 18 | 1382.6 17 |
| 26.5 | 436.1 27 | 921.9 26 | 1385.4 24 |
| 34.1 | 421.8 35 | 912.2 34 | 1381.1 31 |
| 45.4 | 392.6 47 | 886.7 45 | 1362.8 42 |
| 56.8 | 355.8 58 | 852.4 57 | 1335.8 53 |
| 75.7 | 275.3 78 | 773.1 76 | 1268.4 72 |
| 94.6 | 335.4 98 | 676.8 96 | 1170.5 92 |
| 113.6 | 68.1 118 | 555.7 117 | 1036.0 113 |

Flow (LPM)

TORQUE (nm) 555.7
 SPEED (RPM) 117

58.5 cu in / rev

| | PRESSURE (PSI) | | |
|-----------|----------------|-------------|-------------|
| | 500 | 1000 | 1500 |
| .5 | 3692 2 | 7712 1 | 11750 1 |
| 1 | 3788 3 | 7858 3 | 11895 3 |
| 2 | 3900 7 | 8045 7 | 12058 6 |
| 3 | 3905 11 | 8078 11 | 12135 10 |
| 4 | 3939 15 | 8155 14 | 12210 13 |
| 5 | 3923 19 | 8173 18 | 12238 17 |
| 7 | 3860 27 | 8160 26 | 12262 24 |
| 9 | 3733 35 | 8074 34 | 12224 31 |
| 12 | 3475 47 | 7848 45 | 12062 42 |
| 15 | 3149 58 | 7545 57 | 11823 53 |
| 20 | 2437 78 | 6843 76 | 11227 72 |
| 25 | 2969 98 | 5990 96 | 10360 92 |
| 30 | 603 118 | 4919 117 | 9170 113 |

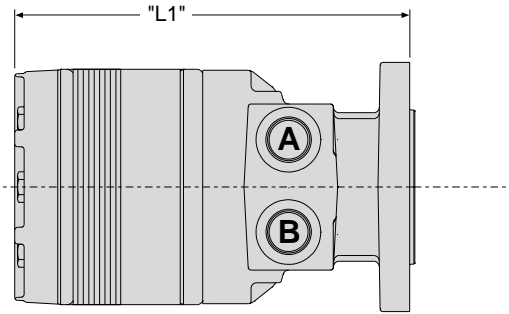
Flow (GPM)

TORQUE (LB IN) 9170
 SPEED (RPM) 113

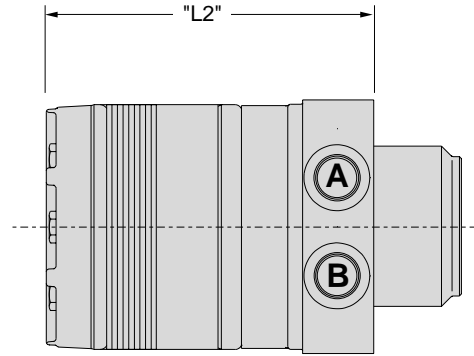
Performance data is typical. Actual data may vary slightly from one production motor to another.

Lengths & Weights

Inch equivalents for metric dimensions are shown in (**)



Magneto Mount



Wheel Mount

Standard Rotation:

(As viewed from shaft end)

Front Ports - Pressurize "A" to turn **Counterclockwise**, "B" to turn **Clockwise**.

Rear Ports - Pressurize "A" to turn **Clockwise**, "B" to turn **Counterclockwise**.

Length "L" and Weight

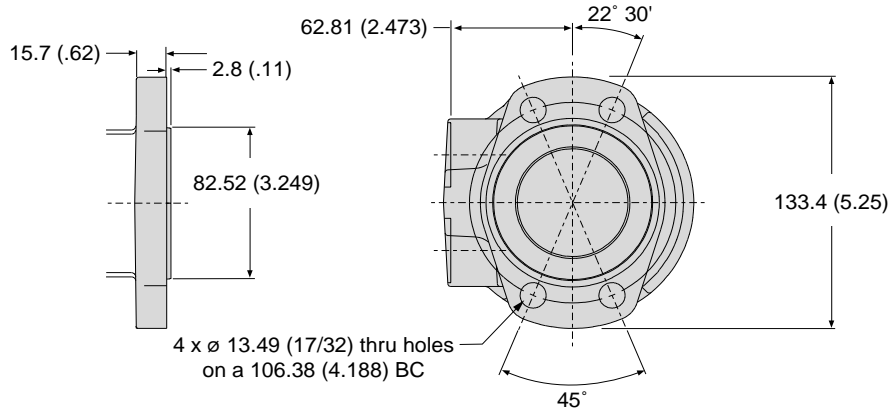
| Displacement, Code | 0140 | 0170 | 0195 | 0240 | 0280 | 0335 | 0405 | 0475 | 0530 | 0625 | 0785 | 0960 | |
|----------------------|----------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| Magneto Mount | | | | | | | | | | | | | |
| Length "L1" | mm | 216 | 219 | 222 | 227 | 232 | 238 | 245 | 254 | 260 | 270 | 289 | 308 |
| | (inches) | (8.50) | (8.62) | (8.75) | (8.94) | (9.12) | (9.37) | (9.66) | (10.00) | (10.25) | (10.62) | (11.37) | (12.12) |
| Weight | kg | 14.7 | 14.9 | 15.2 | 15.5 | 15.9 | 16.3 | 16.9 | 17.6 | 18.3 | 19.0 | 20.6 | 22.3 |
| | (lb) | (32.3) | (32.8) | (33.4) | (34.2) | (35.1) | (35.9) | (37.3) | (38.7) | (40.4) | (41.9) | (45.4) | (49.1) |
| Wheel Mount | | | | | | | | | | | | | |
| Length "L1" | mm | 173 | 177 | 180 | 184 | 189 | 196 | 203 | 212 | 218 | 227 | 246 | 265 |
| | (inches) | (6.82) | (6.95) | (7.07) | (7.26) | (7.45) | (7.70) | (7.99) | (8.32) | (8.57) | (8.95) | (9.70) | (10.45) |
| Weight | kg | 16.9 | 17.2 | 17.4 | 17.8 | 18.2 | 18.6 | 19.2 | 19.8 | 20.6 | 21.3 | 22.9 | 24.5 |
| | (lb) | (37.3) | (37.8) | (38.4) | (39.2) | (40.1) | (40.9) | (42.3) | (43.7) | (45.4) | (46.9) | (50.4) | (54.1) |

TH SERIES

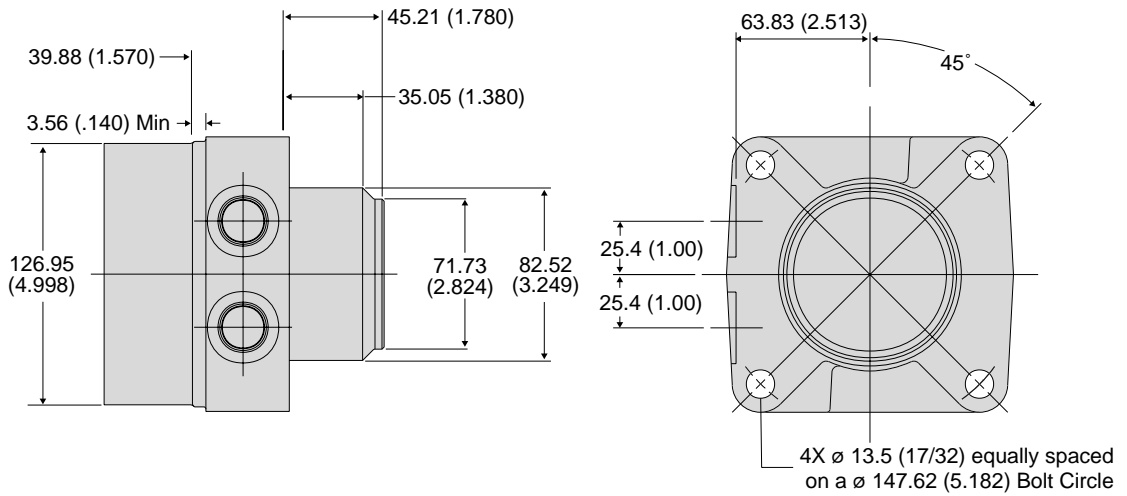
Mounting

Inch equivalents for metric dimensions are shown in (**)

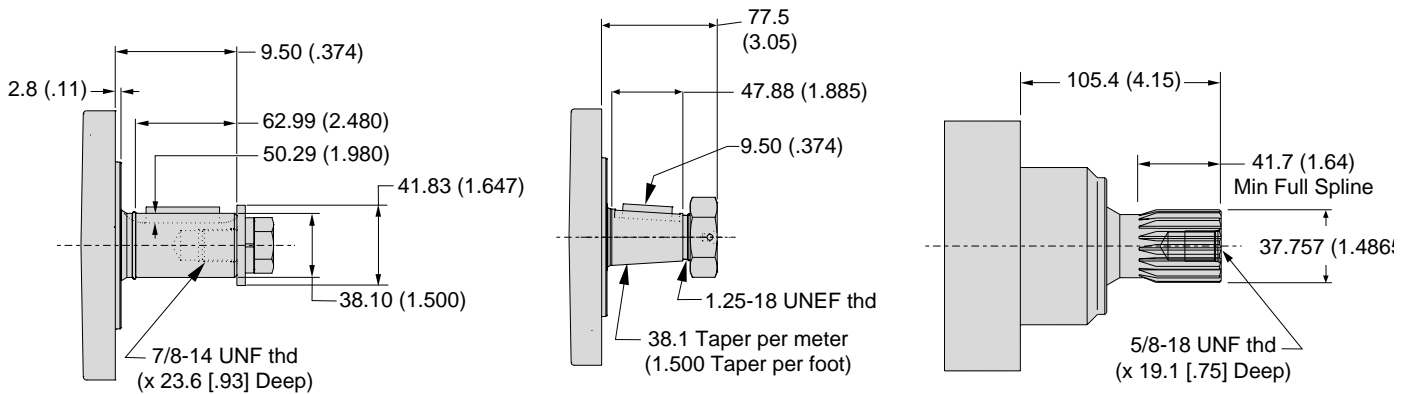
4 Bolt Magneto



Wheel



Shafts



1 1/2" Keyed

1 1/2" Taper

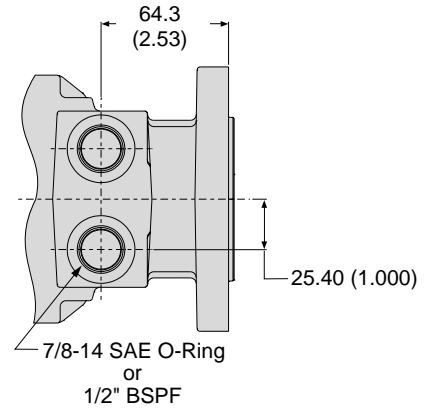
17T-12/24 Spline

**TH
SERIES**

Porting

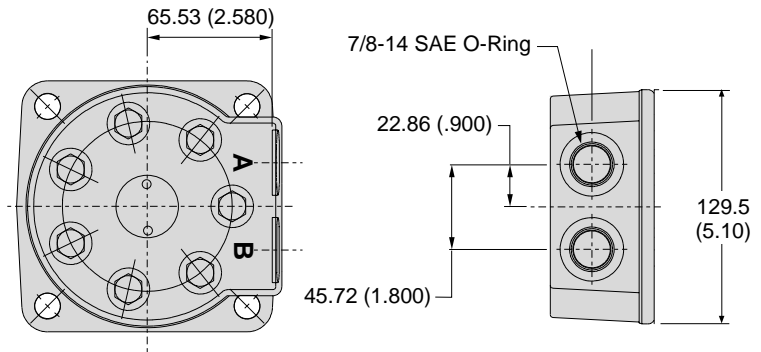
Inch equivalents for metric dimensions are shown in (**)

SAE O-Ring

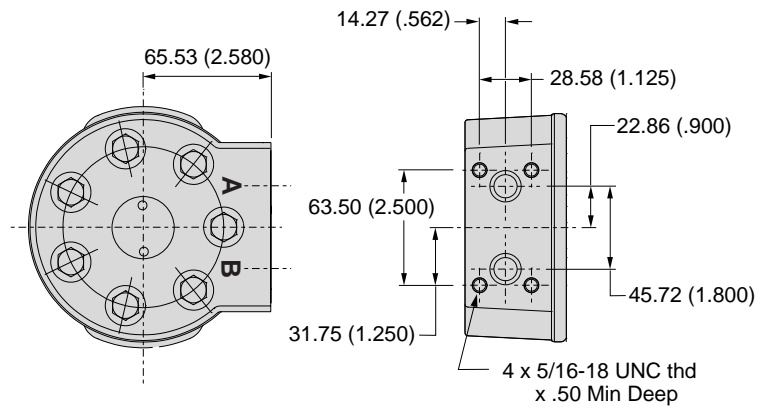


Rear Ports

7/8-14 SAE O-Ring



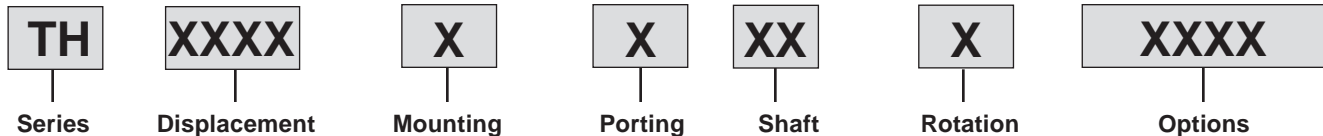
Manifold



Consult Factory for
 ISO 6149 Porting

**TH
 S
 E
 R
 I
 E
 S**

Ordering Information



| Code | Displacement |
|------|----------------|
| 0140 | 08.6 cu in/rev |
| 0170 | 10.3 cu in/rev |
| 0195 | 11.9 cu in/rev |
| 0240 | 14.5 cu in/rev |
| 0280 | 17.1 cu in/rev |
| 0335 | 20.6 cu in/rev |
| 0405 | 24.7 cu in/rev |
| 0475 | 29.1 cu in/rev |
| 0530 | 32.3 cu in/rev |
| 0625 | 38.0 cu in/rev |
| 0785 | 48.0 cu in/rev |
| 0960 | 58.5 cu in/rev |

| Code | Porting |
|------|---------------------------------|
| A | 7/8"-14 SAE O-Ring; Rear Axial |
| B | 7/8"-14 SAE O-Ring; Rear Radial |
| E | Manifold; Rear Radial |
| J | ISO 6149 M22x1.5 |
| M* | Manifold |
| S | 7/8"-14 SAE O-Ring |
| T** | 1/2" BSPF |

* Not available on U mounting

** Available on M mounting only

| Code | Rotation |
|------|------------------------|
| 0 | Standard |
| 1 | Reverse Timed Manifold |

| Code | Mounting |
|------|-----------------|
| M | Magneto |
| U | Wheel; Standard |

| Code | Shaft |
|------|-----------------|
| 31 | 1 1/2" Tapered |
| 32 | 1 1/2" Keyed |
| 36 | 17 Tooth Spline |

| Code | Options |
|----------|---|
| AAAA | Black Paint |
| AAAB | No Paint |
| AAAC | Double Paint |
| AAFC | White Epoxy Paint |
| AAAF*** | Castle Nut, Black Paint |
| AABP*** | Castle Nut, No Paint |
| AAAG | Viton Seals, Black Paint |
| AAAH | Viton Seals, No Paint |
| AAHD | Viton Seals, White Epoxy Paint |
| AAAJ | Vespel Commutator Seal, Black Paint |
| AAFG | Vespel Commutator Seal, No Paint |
| AAAT* | Bidirectional Shuttle (11:00**), Black Paint |
| AAFX* | Bidirectional Shuttle (11:00**), No Paint |
| AAAU* | Bidirectional Shuttle (11:00**), Castle Nut, Black Paint |
| AAGF* | Bidirectional Shuttle (11:00**), Castle Nut, No Paint |
| AABJ**** | Free Running Rotorset, Black Paint |
| AABK**** | Free Running Rotorset, No Paint |
| AABL**** | Free Running Rotorset, No Commutator Seal, Black Paint |
| AABM**** | Free Running Rotorset, No Commutator Seal, No Paint |
| BBBA* | 1000 PSI Internal Bidirectional Relief, Black Paint |
| BBBM* | 1000 PSI Internal Bidirectional Relief, No Paint |
| BBBG* | 1500 PSI Internal Bidirectional Relief, Black Paint |
| BBBJ* | 1500 PSI Internal Bidirectional Relief, No Paint |
| BBBB* | 2000 PSI Internal Bidirectional Relief, Black Paint |
| BBBN* | 2000 PSI Internal Bidirectional Relief, No Paint |
| BBBK* | 2000 PSI Internal Bidirectional Relief, Castle Nut, Black Paint |
| BBBC* | 3000 PSI Internal Bidirectional Relief, Black Paint |
| BBBF* | 3000 PSI Internal Bidirectional Relief, No Paint |
| BBBD* | 4000 PSI Internal Bidirectional Relief, Black Paint |
| BBBW* | 4000 PSI Internal Bidirectional Relief, No Paint |
| FFAA | Internal Speed Sensor, Black Paint |
| FFAB | Internal Speed Sensor, No Paint |
| FFAH | Internal Speed Sensor, Castle Nut, No Paint |
| FFAJ | Internal Speed Sensor, Castle Nut, Black Paint |

* Not available with A, B or E porting

** Shuttle port position as viewed from shaft end of motor

*** Available only with shaft code 08 & 19

**** Not available on 0625, 0785 or 0960 displacement codes

TH SERIES

The Cross-Over Relief Valve is designed to provide overload and shock protection for our LSHT motors built with the manifold port option. Close coupling the valve to the motor provides ideal protection and eliminates plumbing.

Specifications

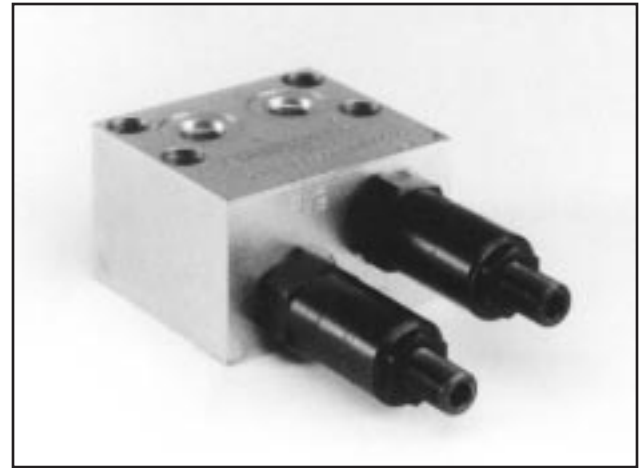
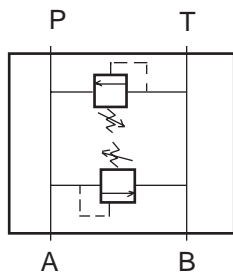
- **Rated flow** — 75.7 lpm (20 gpm)
- **Max. Operating Pressure** — 241.4 bar (3500 psi)
- **Reseat Pressure** — 90% of set pressure
- **Operating Temperature Range:** -40°C to 121°C (-40°F to 250°F)
- **Cartridge Material** — All parts steel. All operating parts hardened steel.
- **Body Material** — Steel
- **Filtration** — Maintain SAE Class 4
- **Mounting** — TA, TB & TD Series only. See dimensions for mounting pattern.
- **Mounting Bolts Torque** — 33.9 ± 2.7 nm (25 ± 2 ft lb)

Features

- Fast acting differential area reliefs
- Low leakage
- Serviceable cartridge design
- Hardened operating parts for long life

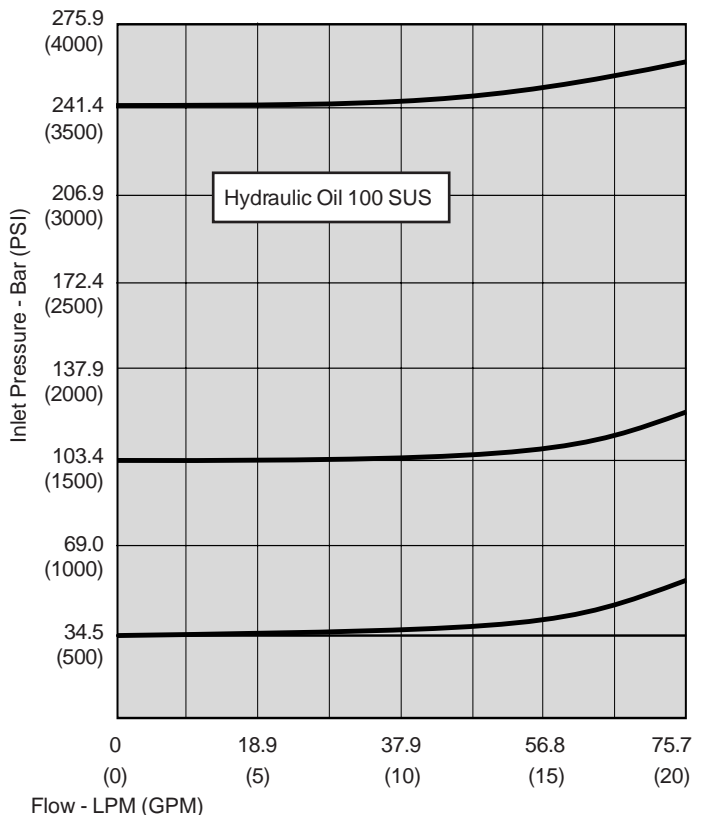
Operation

The valve relieves oil from one side of the motor to the other reducing shock and preventing overload. It also reduces the possibility of cavitation.



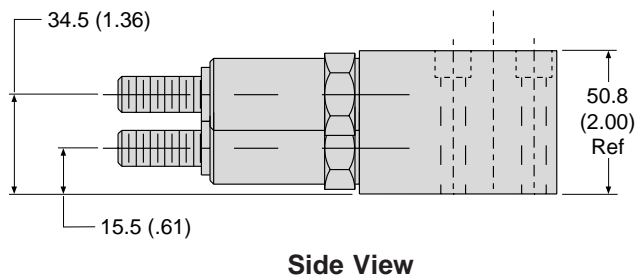
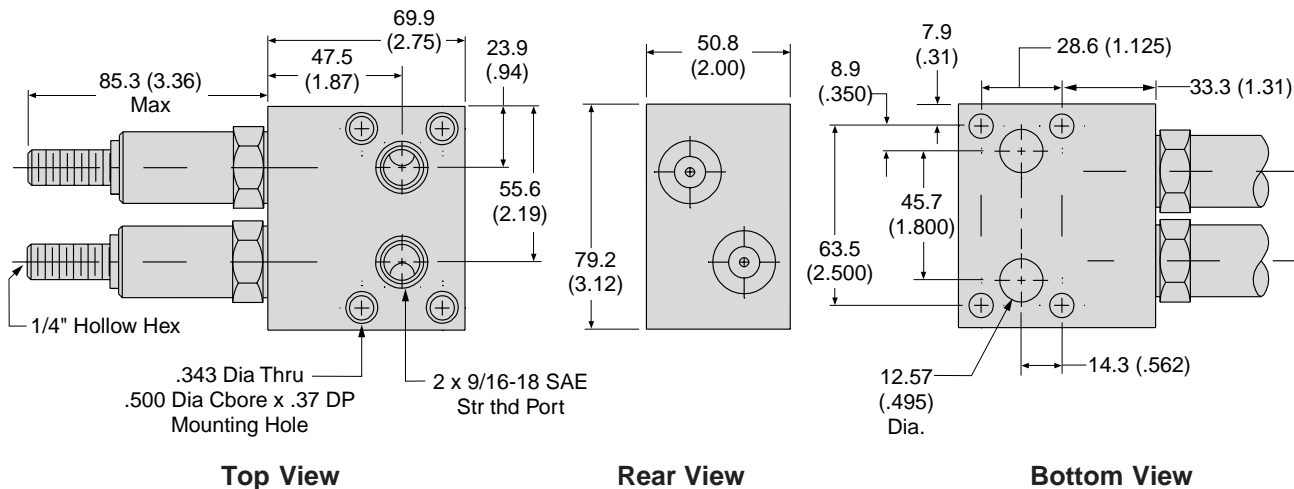
Performance Curve

Flow vs. Pressure

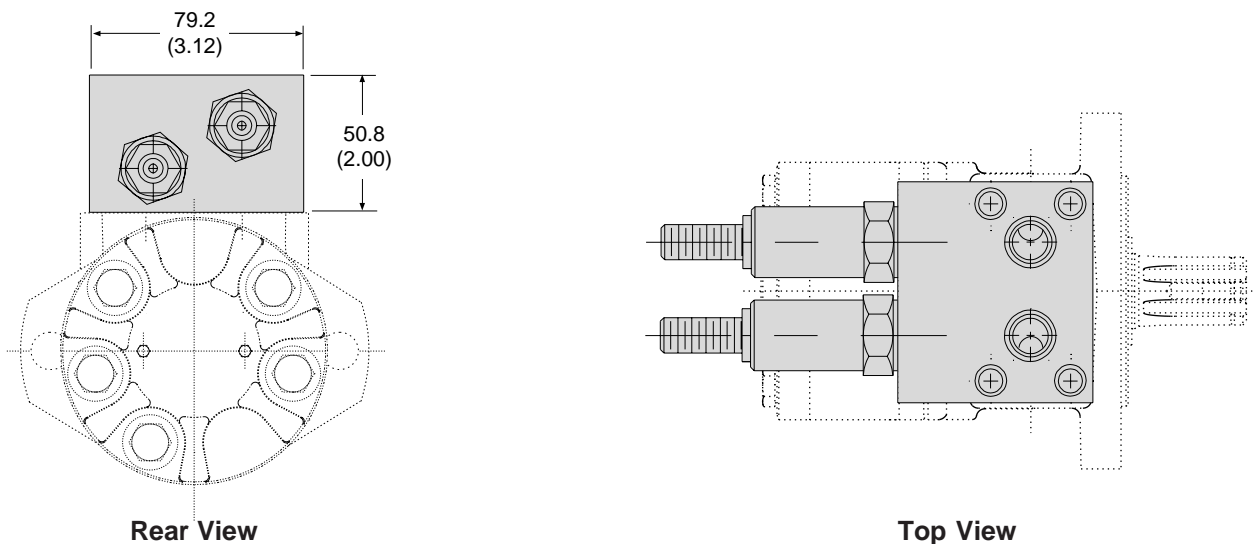


Dimensions

Inch equivalents for metric dimensions are shown in (**)



Valve Mounted on Motor



Ordering Information

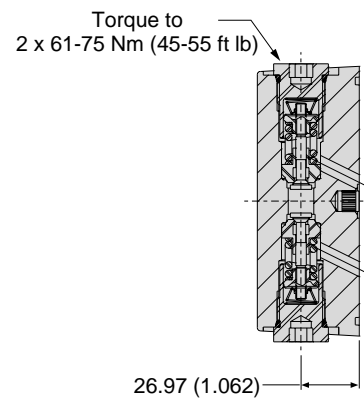
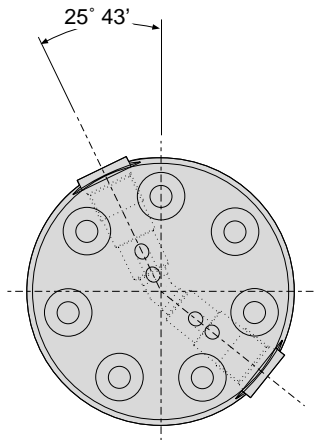
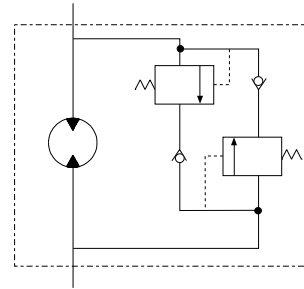
To order a cross-over relief valve mounted on a specific motor see the ordering information for that motor.

To order a cross-over relief valve as a field conversion or as a spare part use P/N 1894-1 (manifold mount required on motor).

Mounting bolts are available as P/N 021450 (4 required).

Cross Port Relief

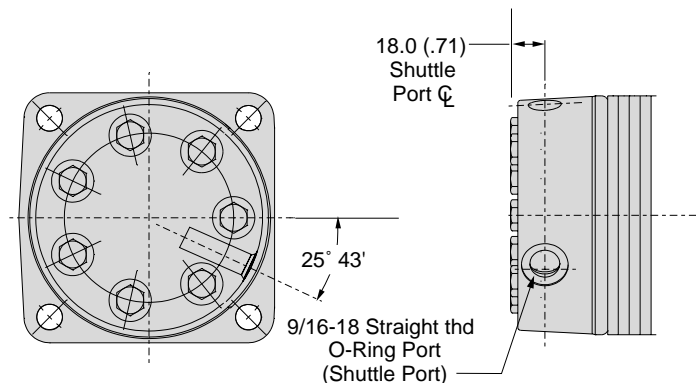
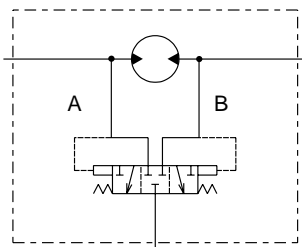
Fixed setting crossover relief valves may be ordered to protect the motor from hydraulic overpressurization. These valves are built into the endcover and relieve pressure from the high pressure to the low pressure port. This accessory adds 27.7 mm (1.09 in.) to the "L" dimension.



Hot Oil Shuttle

A Hot Oil Shuttle is used to continuously remove a portion of the fluid in a closed loop transmission or other closed loop system. At 125 PSI pressure differential between the motor return port and the shuttle outlet, 1.5 GPM* will exit the circuit to cool, filter and return to the reservoir. The constant loop replenishment helps to keep heat and contamination from building up in the circuit.

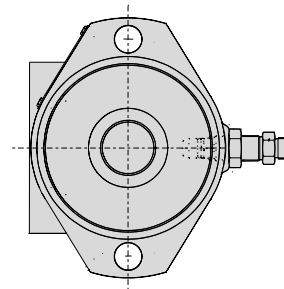
*with 200 SSU fluid



An Economical Sensor for Speed Readout

This rugged, weather resistant speed sensor is a Hall effect device. When externally powered, 30 square wave digital pulses per output shaft revolution are produced. By signal multiplication, 60 pulses per revolution can be obtained.

The installation of this economical sensor does not affect the torque or side load capability of the **Torqlink™** motor into which it is installed.



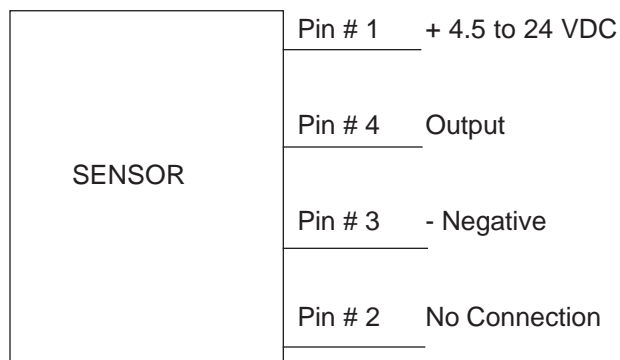
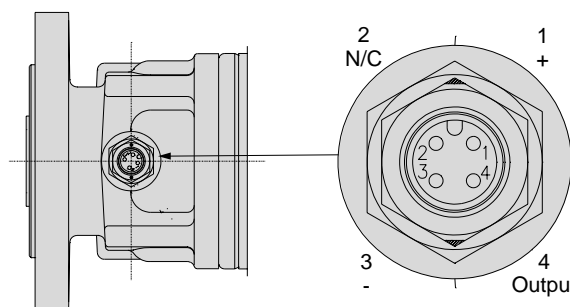
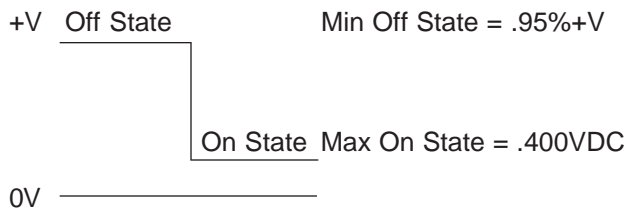
Features

- Operating Voltage Range 4.5 to 24 VDC
- Operating Temperature -40° C to 93° C
 (-40° F to 200° F)
- Operating Frequency Range 0 to 100 KHZ
- Maximum Sink Current 20 mA
- Connection DC Din Standard
 4 Pin Micro-Mini
- Pin Diameter 12mm
- Sensor Output 30 Pulses per
 revolution which can be
 doubled electronically.

Pull-up Resistor Value Formula (for 1/4 Watt, 5% Tolerance)

$$\frac{V \text{ Supply (4.5-24 VDC)}}{\text{Desired Sink Current (0-20 mA } \pm 20\%)} = \text{Resistor Value (K - Ohms)}$$

On State Current: 5 mA
 Higher wattage resistor will be needed for higher sink current.



Cable not included

Installation/Operation Information

Fluid

To insure maximum motor performance and life, use premium grade hydraulic oils. Fluids with a minimum of .125% zinc anti-wear additives should be used. API 10W40 SF or CD motor oils are recommended. Seals in **Torqlink™** Series motors are Buna-N, compatible with most mineral based and engine oils. If using synthetic fluids consult the factory for alternative seal materials.

- Minimum fluid viscosity is 50 SSU
- Fluid operating temperature is -28° C to 93° C (-20°F to 200° F)
- Filtration level is 20-50 micron nominal

Pressure

Operating the motor in its intermittent pressure range will shorten the life of the motor and should generally be restricted to 10% or less per minute. The reduced life resulting from continuous operation in the intermittent range may be acceptable in some applications. Consult the factory for details.

Shaft Loading

Use of one inch and 25mm shafts are not recommended when torque loads exceed 3500 lb. in. For the Corrosion Resistant Shaft "N" option limit torque to 1300 lb. in. For 7/8 inch splined shafts limit torque to 1250 lb. in. Maximum thrust load on the shaft should not exceed 1000 pounds inward of outward.

Performance Data

Performance data shown in this catalog is the result of testing performed using 10W40 oil at 54° C (130° F), 200 SUS. Actual performance will vary with fluid conditions. Lower viscosity will produce lower performance.

Inlet Conditions

Positive pressure *must* be available at the motor inlet while it is rotating. If an overrunning load causes the motor to rotate faster than the pump can fill it, cavitation will occur. Consult the factory for inlet pressure requirements and speed limitations.

Other Operating Conditions

Consult factory before operating at conditions exceeding any ratings or recommendations in this catalog.

Installation Recommendations

- To avoid contamination do not remove plastic port plugs until fittings are to be installed.
- Use SAE Grade 8 bolts and nuts. Torque on non-plated, lightly oiled mounting hardware should be 105 lb ft.
- Motor mounting flange must make full contact with equipment mount; do not use the mounting bolts to force the motor pilot into the pilot hole to align the motor.
- Pulleys, sprockets, wheels, or couplings should be properly aligned on the shaft to avoid excessive radial or thrust loads.
- To avoid damaging the thrust system, do not hammer on the motor or shaft to install or remove couplings, pulleys, sprockets, etc.

Castle Nut

All motors ordered with Tapered shafts are equipped with patch locking nuts. If desired, a castle nut may be specified.

Paint

Unless specified otherwise, motors are shipped unpainted and coated with a rust inhibitor. Paint options are:

- Single coat of black paint
- Double coat of black paint for increased corrosion resistance
- Multi-layered coating of white FDA approved epoxy for superior corrosion resistance

Vespel™ Commutator Seal

Under conditions of high temperature or low lubricity, it is possible for the standard commutator seal to extrude. A Vespel seal should be specified.

Reverse Timed Manifold

All **Torqlink™** Series motors are bi-directional. The port that must be pressurized to obtain a desired direction of rotation is shown on the catalog page for that motor. To change that port specify a Reverse Timed Manifold.

Engineering Data

Hydraulic Formulas

$$HP_{in} = \frac{QP}{1714}$$

$$HP_{out} = \frac{NT}{63025}$$

$$T = \frac{D \Delta P e_m}{2 \pi}$$

$$Q = \frac{DN}{231 e_v}$$

Where

- HP = Horsepower
- Q = Flow, GPM
- P = Pressure, PSI
- ΔP = Pressure differential across the motor
- T = Torque, lb in
- D = Motor displacement, cubic inches per revolution
- N = Shaft Speed, RPM
- e_m = Mechanical efficiency
- e_v = Volumetric efficiency

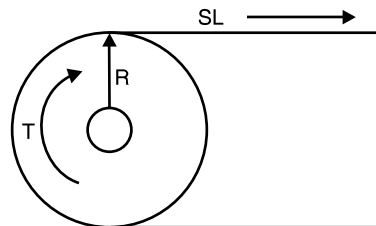
| To Convert | Into | Multiply By |
|---------------|---------------|-----------------------------|
| Into | To Convert | Divide By |
| bars | pounds/sq.in. | 14.5 |
| BTU/min | horsepower | .02356 |
| BTU/min | kilowatts | .01757 |
| centigrade | fahrenheit | $(C^\circ \times 9/5) + 32$ |
| centimeters | inches | .3937 |
| cu. cms. | cu. inches | .06102 |
| cu. cms. | liters | .001 |
| cu. inches | cu.cms. | 16.39 |
| cu. inches | liters | .01639 |
| feet | meters | .3048 |
| gallons | cu. inches | 231 |
| gallons | liters | 3.785 |
| horsepower | kilowatts | .7457 |
| inches | millimeters | 25.4 |
| kilograms | pounds | 2.205 |
| pounds | newtons | 4.448 |
| pound-inches | newton-meters | .113 |
| pound-inches | daNM | .0113 |
| radians | degrees | 57.3 |
| square inches | sq. cms. | 6.452 |

Side Load

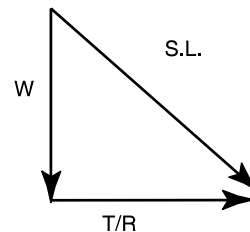
Side loads are imposed upon the shaft of a motor by:

- Driving the load through a pulley or gear
- Supporting the weight of a vehicle or other load on the shaft

Or both



If the load above requires torque T pound-inches and is driven with a pulley on the motor shaft with a radius of R inches, the side load imposed on the motor shaft is T/R pounds. If the motor shaft is connected to a sprocket for a chain drive, R is one half the pitch diameter of the sprocket. If an external load with a weight of W pounds is also being supported by the motor shaft above, the total side load on the shaft is:



$$(SL)^2 = W^2 + (T/R)^2$$

$$\text{Side Load(lb)} = \sqrt{W^2 + (T/R)^2}$$

Warning

This Catalog is not a Controlled Document. All Dimensions listed herein are for reference only. Consult a Sales engineer for detailed information.

Vehicle Propulsion Systems

Hydraulic motors are often used to drive off-highway vehicles, either directly or through gear reducers. The power required to propel the vehicle, called "Tractive Effort," is supplied by the hydraulic motor(s). It is normally expressed in pounds and is the sum of the forces below:

$$TE = (RR+GR+F+DP) \times 1.1$$

Where:

- RR** = Rolling Resistance
- GR** = Grade Resistance
- F** = Acceleration Force
- DP** = Drawbar Pull

Definitions

• Tractive Effort (TE)

Tractive effort is the total linear force that a vehicle can exert on the ground. Sometimes called "rim pull," it is the axle torque divided by the distance from the axle to the surface it is traversing.

• Rolling Resistance (RR)

Rolling resistance is the force in pounds required to propel a vehicle at constant speed over level terrain. It varies with the weight of the vehicle and the type of surface it is traversing. Soft sand, for example, offers more resistance to movement than concrete

$$RR = GVW \times R \quad \text{where:}$$

- RR** = Rolling Resistance (lbs.)
- GVW** = Gross Vehicle Weight (lbs.)
- R** = Rolling Resistance Factor dependent upon type and condition of surface. Typical "R" values are shown in the accompanying table.

| Surface Type | Surface Condition | R Value |
|--------------|-------------------|--------------------|
| Concrete | Excellent | 0.010 lb. |
| Concrete | Good | 0.015 lb. |
| Concrete | Poor | 0.020 lb. |
| Asphalt | Good | 0.012 lb. |
| Asphalt | Fair | 0.017 lb. |
| Asphalt | Poor | 0.022 lb. |
| Macadam | Good | 0.015 lb. |
| Macadam | Fair | 0.022 lb. |
| Macadam | Poor | 0.037 lb. |
| Cobbles | Ordinary | 0.055 lb. |
| Cobbles | Poor | 0.085 lb. |
| Snow | 2 In. | 0.025 lb. |
| Snow | 4 In. | 0.037 lb. |
| Dirt | Smooth | 0.025 lb. |
| Dirt | Sandy | 0.037 lb. |
| Mud | | 0.037 to 0.150 lb. |
| Sand | Level/Soft | 0.060 to 0.150 lb. |
| Sand | Dune | 0.150 to 0.300 lb. |

Engineering Data

• **Grade Resistance (GR)**

Grade resistance is the additional force required to move a vehicle up an incline. The grade of a slope is normally expressed as a percentage, and represents the number of feet of rise in 100 feet of length. A slope that rises 10 feet in 100 feet has a grade of 10%. The gradeability of a vehicle is defined as the maximum grade the vehicle can climb.

$GR = 0.01 \times GVW \times G$ where:

- GR = Grade Resistance (lbs.)
- GVW = Gross Vehicle Weight (lbs.)
- G = Grade (%)

The following table gives the approximate relationship between grade in percent and slope in degrees.

| Grade (Percent) | Slope (Degrees) |
|-----------------|-----------------|
| 1% | 0° 35' |
| 2% | 1° 9' |
| 5% | 2° 51' |
| 6% | 3° 26' |
| 8% | 4° 35' |
| 10% | 5° 43' |
| 12% | 6° 54' |
| 15% | 8° 31' |
| 20% | 11° 19' |
| 25% | 14° 3' |
| 32% | 18° |
| 60% | 31° |

• **Acceleration Force (F)**

The force required to accelerate a vehicle from an initial speed V_1 (in feet/second) to speed V_2 in T seconds is the accelerating force in pounds. If the acceleration is from rest, V_1 is zero.

$F = \frac{V \times GVW}{T \times 32.16}$ where

- V = Change in Velocity (ft. per Second) (Final Velocity - Initial Velocity)
- GVW = Gross Vehicle Weight (lbs.)
- T = Time for Velocity Change (Seconds)
- Note - To obtain velocity in feet per second when MPH is known, Multiply MPH by 1.467.

• **Drawbar Pull (DP)**

Drawbar Pull is the force a vehicle can exert on a load in addition to the force required to propel itself.

Actual force to tow or push a load can be calculated based upon Rolling Resistance, Accelerating Force and Grade Resistance of towed or pushed load.

• **Motor Torque**

The total Tractive effort required to propel a vehicle is the sum of the forces due to Rolling Resistance, Grade Resistance, Acceleration and Drawbar Pull plus 10% for friction and other variables:

$TE = (RR + GR + F + DP) \times 1.1$

When Tractive Effort has been calculated, hydraulic motor torque can be estimated by:

$T = \frac{TE \times r}{G \times N}$ where:

- T = Hydraulic Motor Torque (lbs. in.)
- TE = Tractive Effort
- r = Rolling Radius of Driven Tires (inches)
- G = Gear Reduction Ratio Between Hydraulic Motors and Driven Wheels (if none, use a value of 1)
- N = Number of Driving Motors

• **Slip Torque**

Slip torque is the torque at the motor shaft that will cause the wheels or tracks to break traction and skid. It is affected by the weight of the vehicle and the coefficient of friction between the wheels or tracks and the surface.

$$ST = \frac{VW \times u \times r}{G \times N} \text{ where:}$$

- ST = Hydraulic Motor Slip Torque (lb in)
- VW = Maximum Weight on Driven Wheel (lb) Including: Allowable Vehicle Overload Dynamic Weight Shift.
- u = Coefficient of Friction Between Tire and Ground. (A value of 0.6 is used for "normal" tires and an average road surface)
- r = Rolling Radius of Driven Tires (inches)
- G = Gear Reduction Ratio Between Hydraulic Motors and Driven Wheel.
- N = Number of Driving Motors

• **Rolling Radius**

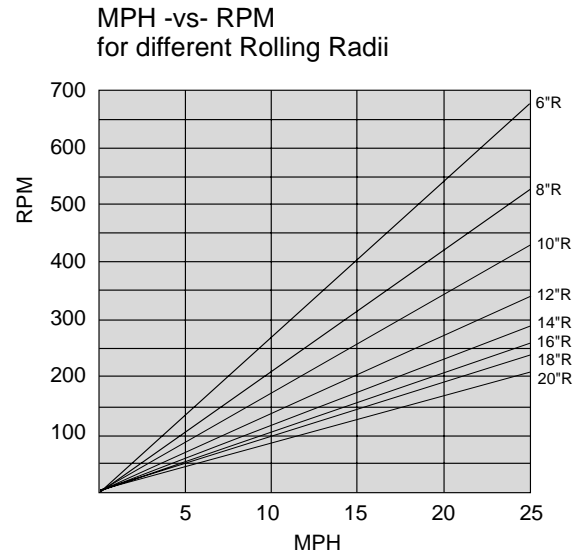
The rolling radius should be based on actual application factors such as Plyrating, Rated Load and inflation pressure can result in different values.

• **Hydraulic Motor Speed**

$$S = \frac{168 \times V \times G}{r} \text{ where:}$$

- S = Required Hydraulic Motor Speed (RPM)
- V = Desired Vehicle Velocity (MPH)
- G = Gear Reduction Ratio Between Hydraulic Motors and Driven Wheels (if none, use a value of 1)
- r = Rolling Radius of driven Tires (inches)

The chart below will estimate the wheel RPM -vs- vehicle velocity for various rolling radii.



Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such item, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 5 years from date of shipment from Parker Hannifin Corporation. **THIS WARRANTY COMPROMISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW. TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.**

5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER. INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specification for items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between buyer and Seller unless accepted by Seller in written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer, in no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed,

Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings. Confidential information or equipment furnished by buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount hereof shall be in addition to amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and buyer's sole and exclusive remedy for infringement of Intellectual Property Rights. If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, buyer shall defend and indemnify Seller for all costs, expenses of or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of god, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carries or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representation or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.



Parker Hannifin Corporation
 6035 Parkland Blvd.
 Cleveland, Ohio 44124-4141
 Telephone: (216) 896-3000
 Fax: (216) 896-4000
 Web site: www.parker.com

Parker Hannifin Corporation

About Parker Hannifin Corporation

Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service. A Fortune 500 corporation listed on the New York Stock Exchange (PH), our components and systems comprise over 1,400 product lines that control motion in some 1,000 industrial and aerospace markets. Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, and electromechanical motion-control solutions. Our Company has the largest distribution network in its field, with over 7,500 distributors serving more than 350,000 customers worldwide.

Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods. More specifically, we will design, market and manufacture products controlling motion, flow and pressure. We will achieve profitable growth through premier customer service.

Product Information

North American customers seeking product information, the location of a nearby distributor, or repair services will receive prompt attention by calling the Parker Product Information Center at our toll-free number: 1-800-C-PARKER (1-800-272-7537). In the UK, a similar service is available by calling 0500-103-203.

The Aerospace Group

is a leader in the development, design, manufacture and servicing of control systems and components for aerospace and related high-technology markets, while achieving growth through premier customer service.



The Climate & Industrial Controls Group

designs, manufactures and markets system-control and fluid-handling components and systems to refrigeration, air-conditioning and industrial customers worldwide.



The Fluid Connectors Group

designs, manufactures and markets rigid and flexible connectors, and associated products used in pneumatic and fluid systems.



The Seal Group

designs, manufactures and distributes industrial and commercial sealing devices and related products by providing superior quality and total customer satisfaction.



The Hydraulics Group

designs, produces and markets a full spectrum of hydraulic components and systems to builders and users of industrial and mobile machinery and equipment.



The Filtration Group

designs, manufactures and markets quality filtration and clarification products, providing customers with the best value, quality, technical support, and global availability.



The Automation Group

is a leading supplier of pneumatic and electro-mechanical components and systems to automation customers worldwide.



The Instrumentation Group

is a global leader in the design, manufacture and distribution of high-quality critical flow components for worldwide process instrumentation, ultra-high-purity, medical and analytical applications.





Parker Hannifin Corporation
Hydraulics
2745 Snapps Ferry Road
Greeneville, TN 37745 USA
Tel: (423) 639-8151
Fax: (423) 787-2418
Web site: <http://www.parker.com>

HPMD 5000 DG# 69050 11/97