

MILROYAL[®] SERIES

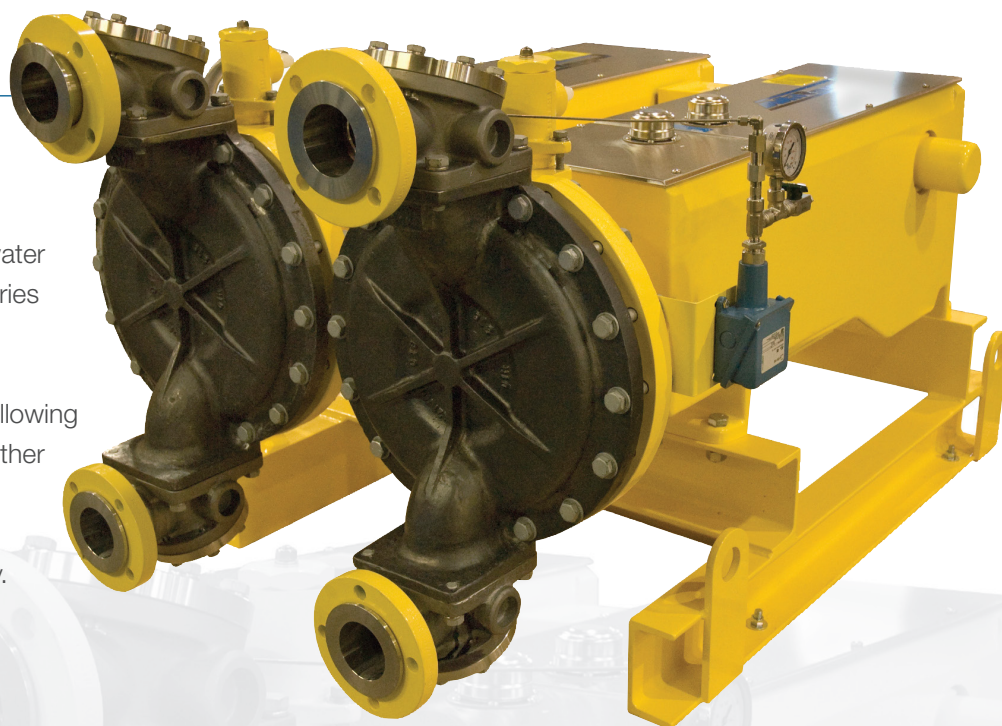
Metering Pumps

PD 3661

MILROYAL C Pumps

The MILROYAL C metering pump is a robust industrial duty metering pump for use in critical processes in oil and gas, chemical and hydrocarbon processes, water and waste treatment, and in most industries where chemical injection is required.

The MILROYAL design is modular thus allowing it to accept a variety of liquid ends and other options that perfectly tune it to process requirements. Multiplex configurations provide even greater application flexibility.



MILROYAL C DUPLEX with HPD Liquid End

General Specifications

Drive

Polar crank design - all moving parts submerged in oil. Front end scavenging - The plunger always set to top dead center on each stroke.

Liquid Ends Available

High Performance Diaphragm (HPD); Packed Plunger; Disc Diaphragm

Accuracy

±1.0% over 10:1 turndown ratio

Maximum Performance Ratings (per head)

2,080 gph (7,873 l/h) @ 50 psig (3 bar) to 4 gph (15 l/h) @ 10,000 psig (689 bar)

Capacity Control

Manual micrometer standard; Electronic, pneumatic, or variable speed optional

Multiplexing

Up to 6 pumps driven by one motor. Limited to a maximum of 25 HP. Consult applications engineering concerning capabilities for a specific application.

Approximate Shipping Weight. (Simplex)

850-1400 lbs. (386-635 kg), depending upon liquid end selected



An Ingersoll Rand Business



HIGH PERFORMANCE DIAPHRAGM (HPD) LIQUID END PERFORMANCE

Typical performance based on 1725 RPM, 3 Phase, 60 Hz motor. Derate flow rates for all other RPM speeds.

| Plunger Diameter | Gear Ratio Code | SPM @1725 RPM | Maximum Capacity* | | 1 HP (0.75 kW) | | 1 1/2 HP (1.1 kW) | | 2 HP (1.5 kW) | | 3 HP (2.2 kW) | | 5 HP (4 kW) | |
|-------------------|-----------------|---------------|-------------------|------|--|-----|-------------------|-----|---------------|-----|---------------|-----|-------------|-----|
| | | | | | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR |
| | | | GPH | L/H | Maximum Discharge Pressure* | | | | | | | | | |
| 3/4 in (19 mm) | 8K | 43 | 13 | 49 | 1600 | 110 | 1600 | 110 | — | — | — | — | — | — |
| | 8J | 71 | 21.5 | 81 | 1600 | 110 | 1600 | 110 | 1600 | 110 | — | — | — | — |
| | 8H | 85 | 25.7 | 97 | 1400 | 97 | 1600 | 110 | 1600 | 110 | 1600 | 110 | — | — |
| | 8G | 113 | 34.0 | 129 | 1000 | 7 | 1550 | 107 | 1600 | 110 | 1600 | 110 | — | 110 |
| | 8F | 140 | 42.0 | 159 | 825 | 57 | 1250 | 86 | 1600 | 110 | 1600 | 110 | 1600 | 110 |
| 7/8 in (22 mm) | 8K | 43 | 17.5 | 66 | 2000 | 138 | 2900 | 200 | 3025 | 209 | — | — | — | — |
| | 8J | 71 | 29.0 | 110 | 1200 | 83 | 1800 | 124 | 2400 | 165 | 3025 | 209 | — | — |
| | 8H | 85 | 35.0 | 132 | 1000 | 69 | 1500 | 103 | 2000 | 138 | 3025 | 209 | — | — |
| | 8G | 113 | 46.0 | 174 | 750 | 52 | 1150 | 79 | 1500 | 103 | 2300 | 159 | 3025 | 209 |
| | 8F | 140 | 57.0 | 216 | 600 | 41 | 900 | 62 | 1250 | 86 | 1850 | 128 | 3025 | 209 |
| 1 in (25 mm) | 8K | 43 | 23 | 87 | 745 | 51 | 1545 | 107 | 2235 | 154 | 3025 | 209 | — | — |
| | 8J | 71 | 38 | 143 | 465 | 32 | 1000 | 69 | 1550 | 107 | 2635 | 182 | 3025 | 209 |
| | 8H | 85 | 46 | 174 | 315 | 22 | 770 | 53 | 1240 | 85 | 2150 | 148 | 3025 | 209 |
| | 8G | 113 | 61 | 230 | 240 | 17 | 580 | 40 | 935 | 64 | 1620 | 112 | 2900 | 200 |
| | 8F | 140 | 76 | 287 | 165 | 11 | 510 | 35 | 855 | 59 | 1520 | 105 | 2800 | 193 |
| 1 1/4 in (32 mm) | 8K | 43 | 37 | 140 | 480 | 33 | 950 | 66 | 1420 | 98 | 2060 | 142 | — | — |
| | 8J | 71 | 60 | 227 | 295 | 20 | 640 | 44 | 1000 | 69 | 1680 | 116 | 1930 | 133 |
| | 8H | 85 | 72 | 272 | 200 | 14 | 490 | 34 | 790 | 54 | 1370 | 94 | 1930 | 133 |
| | 8G | 113 | 97 | 367 | 150 | 10 | 370 | 26 | 590 | 41 | 1030 | 71 | 1900 | 131 |
| | 8F | 140 | 120 | 454 | 110 | 8 | 325 | 22 | 545 | 38 | 970 | 67 | 1840 | 127 |
| 1 1/2 in (38 mm) | 8K | 43 | 53 | 200 | 335 | 23 | 660 | 46 | 990 | 68 | 1350 | 93 | — | — |
| | 8J | 71 | 88 | 333 | 205 | 14 | 445 | 31 | 695 | 48 | 1170 | 81 | 1350 | 93 |
| | 8H | 85 | 105 | 397 | 140 | 10 | 345 | 24 | 550 | 38 | 950 | 66 | 1350 | 93 |
| | 8G | 113 | 140 | 529 | 105 | 7 | 260 | 18 | 415 | 29 | 720 | 50 | 1300 | 90 |
| | 8F | 140 | 173 | 654 | 75 | 5 | 230 | 16 | 380 | 26 | 675 | 47 | 1280 | 88 |
| 2 in (51 mm) | 8K | 43 | 97 | 367 | 190 | 13 | 370 | 26 | 560 | 39 | 745 | 51 | — | — |
| | 8J | 71 | 151 | 571 | 115 | 8 | 250 | 17 | 390 | 27 | 660 | 46 | 745 | 51 |
| | 8H | 85 | 181 | 685 | 80 | 6 | 190 | 13 | 310 | 21 | 540 | 37 | 745 | 51 |
| | 8G | 113 | 240 | 908 | 60 | 4 | 145 | 10 | 235 | 16 | 400 | 28 | 745 | 51 |
| | 8F | 140 | 299 | 1131 | 40 | 3 | 130 | 9 | 215 | 15 | 380 | 26 | 740 | 51 |
| 2 1/2 in (64 mm) | 8K | 43 | 145 | 548 | 120 | 8 | 240 | 17 | 350 | 24 | 500 | 34 | — | — |
| | 8J | 71 | 240 | 908 | 70 | 5 | 160 | 11 | 250 | 17 | 420 | 29 | 470 | 32 |
| | 8H | 85 | 288 | 1090 | 50 | 3 | 120 | 8 | 200 | 14 | 340 | 23 | 470 | 32 |
| | 8G | 113 | 383 | 1449 | 40 | 3 | 90 | 6 | 150 | 10 | 260 | 18 | 380 | 26 |
| | 8F | 140 | 475 | 1797 | — | — | 75 | 5 | 122 | 8 | 211 | 15 | 350 | 24 |
| 3 in (76 mm) | 8K | 43 | 212 | 803 | 120 | 8 | 170 | 12 | 250 | 17 | 350 | 24 | — | — |
| | 8J | 71 | 352 | 1332 | 90 | 6 | 150 | 10 | 200 | 14 | 310 | 21 | 350 | 24 |
| | 8H | 85 | 423 | 1601 | 85 | 6 | 130 | 9 | 175 | 12 | 260 | 18 | 350 | 24 |
| | 8G | 113 | 562 | 2127 | 60 | 4 | 90 | 6 | 130 | 9 | 190 | 13 | 325 | 22 |
| | 8F | 140 | 678 | 2567 | — | — | 75 | 5 | 105 | 7 | 155 | 11 | 260 | 18 |
| 3 1/2 in (89 mm) | 8K | 43 | 297 | 1124 | 60 | 4 | 120 | 8 | 185 | 13 | 235 | 16 | — | — |
| | 8J | 71 | 490 | 1854 | — | — | 80 | 6 | 125 | 9 | 220 | 15 | 235 | 16 |
| | 8H | 85 | 587 | 2221 | — | — | 60 | 4 | 100 | 7 | 175 | 12 | 220 | 15 |
| | 8G | 113 | 780 | 2952 | — | — | — | — | 75 | 5 | 130 | 9 | 175 | 12 |
| | 8F | 140 | 968 | 3663 | — | — | — | — | 65 | 4 | 100 | 7 | 170 | 12 |
| 5 in (127 mm) | | | 573 | 2168 | This application range is now handled by the Primeroyal N frame | | | | | | | | | |
| | | | 947 | 3584 | | | | | | | | | | |
| | | | 1132 | 4284 | | | | | | | | | | |
| | | | 1500 | 5677 | | | | | | | | | | |
| | | | 1545 | 5847 | | | | | | | | | | |
| 5 3/4 in (146 mm) | | | 770 | 2914 | | | | | | | | | | |
| | | | 1270 | 4807 | | | | | | | | | | |
| | | | 1520 | 5753 | | | | | | | | | | |
| | | | 2025 | 7664 | | | | | | | | | | |
| | | | 2080 | 7872 | | | | | | | | | | |

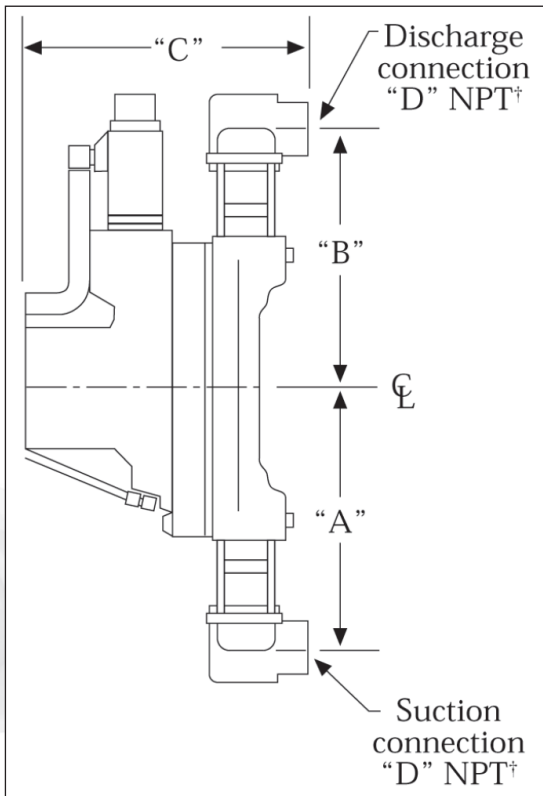
Capacities listed are for discharge pressures up to 200 PSIG (14 Bar). Capacity will decrease 0.8% for each 100 PSIG (7 Bar) over 200 PSIG (14 Bar).

NOTES:

- * Plastic liquid ends are limited to 150 psig (10 Bar) @ 68°F (20°C) and are linearly derated to 65 psi (4 Bar) @ 140°F (60°C).
- † Derate capacities 5% when applying a diaphragm rupture detection system.
- ‡ These gear ratios are limited to 1,450 RPM maximum. SPM and pump capacity noted is based on 1,450 RPM motor.



HPD LIQUID END DIMENSIONS



For exact dimensions, request a certified drawing

| Material | Plunger Diameter | | A [‡] | | B [‡] | | C* | | D |
|-------------------------------|-------------------------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|-----|--|
| | in. | mm | in. | mm | in. | mm | in. | mm | in. |
| Metal | 1 | 25 | 5 ⁷ / ₃₂ | 133 | 5 ⁷ / ₃₂ | 133 | 7 ³ / ₄ | 197 | 1/2 |
| | 1 ¹ / ₄ | 32 | 7 ¹ / ₁₆ | 179 | 7 ¹ / ₁₆ | 179 | 9 ¹³ / ₁₆ | 249 | 1 |
| | 1 ¹ / ₂ | 38 | 7 ¹⁷ / ₃₂ | 191 | 7 ¹⁷ / ₃₂ | 191 | 9 ¹³ / ₁₆ | 249 | 1 |
| | 2 | 51 | 7 ¹⁷ / ₃₂ | 191 | 7 ¹⁷ / ₃₂ | 191 | 9 ¹³ / ₁₆ | 249 | 1 |
| | 2 ¹ / ₂ | 64 | 10 ¹ / ₈ | 257 | 10 ¹ / ₈ | 257 | 12 ⁵ / ₁₆ | 313 | 1 ¹ / ₂ |
| | 3 ¹ / ₂ | 89 | 10 ¹ / ₈ | 257 | 10 ¹ / ₈ | 257 | 12 ⁵ / ₁₆ | 313 | 1 ¹ / ₂ |
| | 5 | 127 | 12 ³ / ₈ | 314 | 12 ³ / ₈ | 314 | 16 ⁷ / ₈ | 429 | - |
| 5 ³ / ₄ | 146 | 12 ³ / ₈ | 314 | 12 ³ / ₈ | 314 | 16 ⁷ / ₈ | 429 | - | |
| Plastic | 2 ¹ / ₂ | 64 | 13 | 330 | 13 | 330 | 12 | 305 | 1 ¹ / ₂ |
| | 3 ¹ / ₂ | 89 | 13 | 330 | 13 | 330 | 12 | 305 | 1 ¹ / ₂ |
| | 5 | 127 | 18 ¹ / ₂ | 470 | 14 | 356 | 13 ⁷ / ₈ | 352 | 2 ¹ / ₂ [†] |
| | 5 ³ / ₄ | 146 | 18 ¹ / ₂ | 470 | 14 | 356 | 13 ⁷ / ₈ | 352 | 2 ¹ / ₂ [†] |

Notes:

* 3 in –150 lb. ANSI raised face flange.

† Suction and discharge connections are horizontal on metal and vertical on plastic, except on plastic 5 in (127 mm) and 5³/₄ in (146 mm) plungers, where suction is horizontal and discharge is vertical.

‡ A & B dimensions are based on standard ball check configuration: metallic-single ball checks (single poppet on 5 in (127 mm) and 5³/₄ in (146 mm)); plastic-double ball checks (single on 5 in (127 mm) and 5³/₄ in (146 mm)).

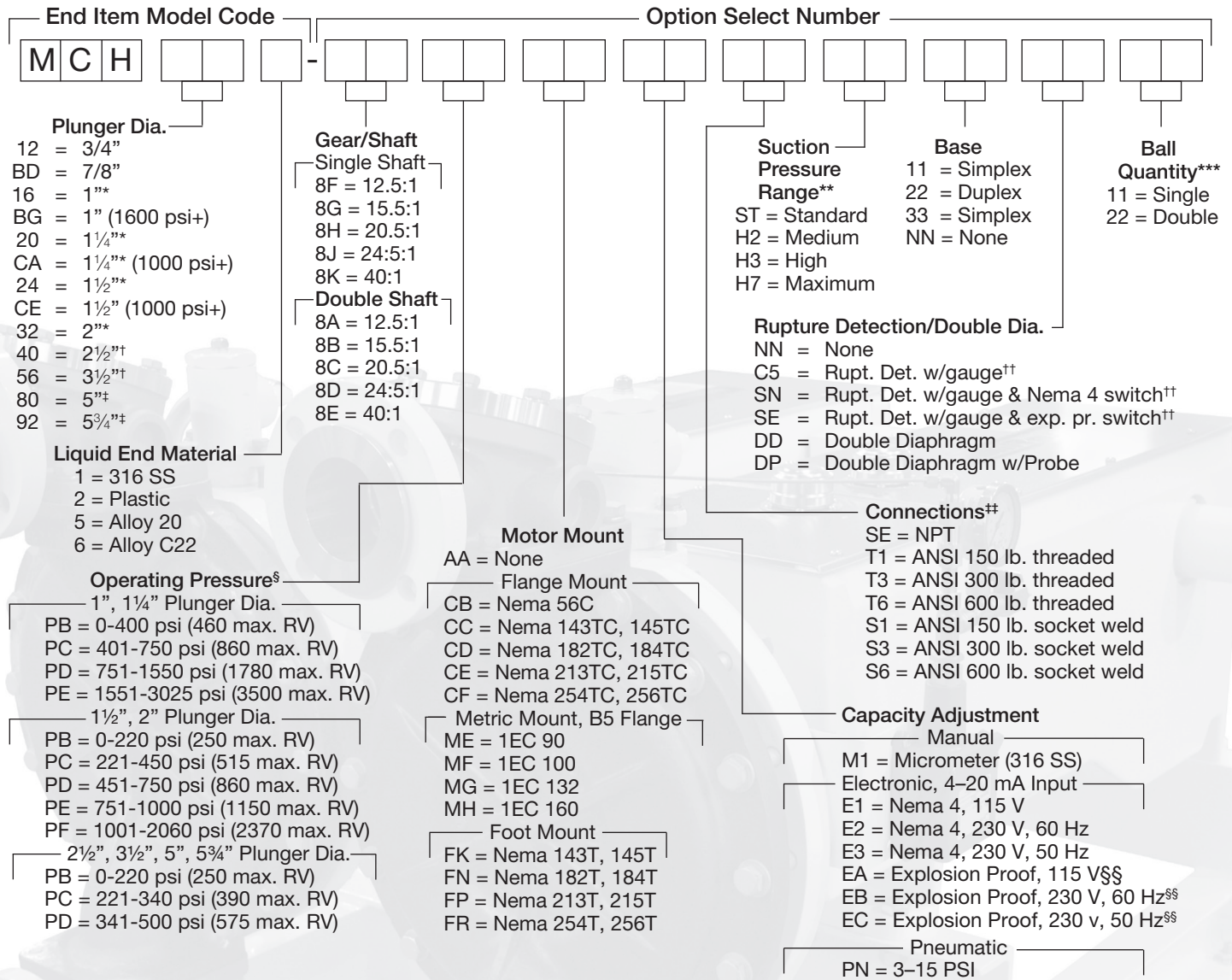
MAXIMUM ALLOWABLE SUCTION PRESSURE RANGE – HPD

| Plunger Diameter | | Standard | | Mid Range | | High Range | | Maximum Range | |
|-------------------------------|-----|----------|-----|-----------|-----|------------|-----|---------------|-----|
| in. | mm | PSIG | Bar | PSIG | Bar | PSIG | Bar | PSIG | Bar |
| 3/4 | 19 | 100 | 7 | — | — | — | — | — | — |
| 7/8 | 22 | 100 | 7 | — | — | — | — | — | — |
| 1 | 25 | 100 | 7 | — | — | — | — | — | — |
| 1 ¹ / ₄ | 32 | 100 | 7 | — | — | — | — | — | — |
| 1 ¹ / ₂ | 38 | 85 | 6 | 100 | 7 | — | — | — | — |
| 2 | 51 | 70 | 5 | 100 | 7 | — | — | — | — |
| 2 ¹ / ₂ | 64 | 50 | 3 | 70 | 5 | 100 | 7 | — | — |
| 3 ¹ / ₂ | 89 | 30 | 2 | 40 | 3 | 70 | 5 | 100 | 7 |
| 5 | 127 | 12 | 1 | 17 | 1 | 28 | 2 | 65 | 4 |
| 5 ³ / ₄ | 146 | 9 | 1 | 13 | 1 | 21 | 1 | 50 | 3 |





HIGH PERFORMANCE DIAPHRAGM (HPD) LIQUID END MODEL CODE



NOTES:

- * Plunger codes 12, BD, 16, BG, 20, CA, 24, CE, & 32 are not available with plastic liquid ends (liquid end material code 2) since this capacity range is covered by the Milroyal B Series.
- † Plunger codes 40 & 56 are only available with double ball checks (ball quantity code 22) when ordered in plastic.
- ‡ Plunger codes 80 & 92 are only available with poppet valves on metallic pumps or single ball checks on plastic pumps (ball quantity code 11), and ANSI 150 lb. socket weld connections (connection code S1). Plunger codes 80 & 92 are not available in Alloy C22 (liquid end material code 6).
- § Operating pressure is the application system pressure. The internal relief valve is normally set 15% above the operating pressure. If an internal relief valve setting greater than 15% above the operating pressure range is required, select the operating pressure range that will accommodate the relief valve setting.
- ** Refer to the suction pressure table for maximum suction pressure vs. range.
- †† Options C5, SN, and SE are only available on metallic liquid ends.
- ‡‡ Flange sizes equal the NPT connection size as noted on the liquid end drawing.
- §§ Explosion proof electronic actuators are certified by Factory Mutual for Class I, Division I, Groups B, C, & D; Class II, Division I, Groups E, F, & G.
- *** Special ball check and seat materials are available for severe slurry service. Contact factory.





DISC DIAPHRAGM LIQUID END PERFORMANCE

Typical performance based on 1725 RPM, 3 Phase, 60 Hz motor. Derate flow rates for all other RPM speeds.

| Plunger Diameter | Gear Ratio Code | SPM @1725 RPM | Maximum Capacity* | | Maximum Discharge Pressure* | | | | | | | | | |
|------------------|-----------------|---------------|-------------------|------|-----------------------------|-----|-------------------|-----|---------------|-----|---------------|-----|-------------|-----|
| | | | | | 1 HP (0.75 kW) | | 1 1/2 HP (1.1 kW) | | 2 HP (1.5 kW) | | 3 HP (2.2 kW) | | 5 HP (4 kW) | |
| | | | GPH | L/H | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR |
| 5/8 in (16 mm) | 8K | 43 | 8.2 | 31 | 2710 | 187 | 3500 | 241 | — | — | — | — | — | — |
| | 8J | 71 | 13.7 | 51 | 1920 | 132 | 3500 | 241 | 3500 | 241 | — | — | — | — |
| | 8H | 85 | 16.4 | 62 | 1210 | 83 | 2780 | 192 | 3500 | 241 | — | — | — | — |
| | 8G | 113 | 21.8 | 82 | 910 | 63 | 2090 | 144 | 2850 | 197 | 3500 | 241 | — | — |
| | 8F | 140 | 27.2 | 103 | 725 | 50 | 1840 | 127 | 2940 | 203 | 3500 | 241 | — | — |
| 7/8 in (22 mm) | 8K | 43 | 16.8 | 63 | 1320 | 91 | 2550 | 176 | 3500 | 241 | — | — | — | — |
| | 8J | 71 | 27.5 | 104 | 850 | 59 | 1750 | 121 | 2660 | 183 | 3500 | 241 | — | — |
| | 8H | 85 | 33.2 | 125 | 570 | 39 | 1350 | 93 | 2110 | 145 | 3500 | 241 | — | — |
| | 8G | 113 | 44.2 | 167 | 430 | 30 | 1010 | 70 | 1580 | 109 | 2720 | 188 | 3500 | 241 |
| | 8F | 140 | 54.5 | 206 | 330 | 23 | 890 | 61 | 1440 | 99 | 2540 | 175 | 3500 | 241 |
| 1 1/8 in (28 mm) | 8K | 43 | 28.5 | 107 | 775 | 53 | 1510 | 104 | 2260 | 156 | 2400 | 165 | — | — |
| | 8J | 71 | 47 | 177 | 490 | 34 | 1030 | 71 | 1575 | 109 | 2360 | 163 | 2400 | 165 |
| | 8H | 85 | 56 | 212 | 325 | 22 | 795 | 55 | 1250 | 86 | 2150 | 148 | 2400 | 165 |
| | 8G | 113 | 74 | 280 | 240 | 17 | 590 | 41 | 940 | 65 | 1620 | 112 | 2400 | 165 |
| | 8F | 140 | 93 | 352 | 180 | 12 | 515 | 36 | 845 | 58 | 1500 | 103 | 2400 | 165 |
| 1 1/2 in (38 mm) | 8K | 43 | 50 | 189 | 420 | 29 | 845 | 58 | 1270 | 88 | 1350 | 93 | — | — |
| | 8J | 71 | 84 | 317 | 260 | 18 | 570 | 39 | 885 | 61 | 1330 | 92 | 1350 | 93 |
| | 8H | 85 | 101 | 382 | 160 | 11 | 430 | 30 | 690 | 48 | 1210 | 83 | 1350 | 93 |
| | 8G | 113 | 135 | 511 | 120 | 8 | 325 | 22 | 520 | 36 | 910 | 63 | 1350 | 93 |
| | 8F | 140 | 165 | 624 | 85 | 6 | 275 | 19 | 465 | 32 | 840 | 58 | 1350 | 93 |
| 2 in (51 mm) | 8K | 43 | 90 | 340 | 220 | 15 | 450 | 31 | 725 | 50 | 745 | 51 | — | — |
| | 8J | 71 | 150 | 567 | 130 | 9 | 300 | 21 | 475 | 33 | 730 | 50 | 745 | 51 |
| | 8H | 85 | 179 | 677 | 80 | 6 | 225 | 16 | 370 | 26 | 660 | 46 | 745 | 51 |
| | 8G | 113 | 238 | 900 | 60 | 4 | 170 | 12 | 280 | 19 | 495 | 34 | 745 | 51 |
| | 8F | 140 | 295 | 1116 | 35 | 2 | 140 | 10 | 245 | 17 | 455 | 31 | 745 | 51 |
| 2 1/2 in (64 mm) | 8K | 43 | 140 | 529 | 130 | 9 | 280 | 19 | 300 | 21 | — | — | — | — |
| | 8J | 71 | 233 | 881 | 75 | 5 | 180 | 12 | 295 | 20 | 300 | 21 | — | — |
| | 8H | 85 | 277 | 1048 | 40 | 3 | 135 | 9 | 225 | 16 | 300 | 21 | — | — |
| | 8G | 113 | 368 | 1392 | — | — | 100 | 7 | 170 | 12 | 300 | 21 | — | — |
| 3 1/2 in (89 mm) | 8K | 43 | 280 | 1059 | — | — | 130 | 9 | 210 | 14 | — | — | — | — |
| | 8J | 71 | 471 | 1782 | — | — | 85 | 6 | 145 | 10 | 210 | 14 | — | — |
| | 8H | 85 | 558 | 2112 | — | — | 55 | 4 | 105 | 7 | 200 | 14 | 210 | 14 |
| | 8G | 113 | 742 | 2808 | — | — | 40 | 3 | 80 | 6 | 150 | 10 | 160 | 11 |

Capacities listed are for discharge pressures up to 1,000 PSIG (69 Bar).
Capacity will decrease 1.0% for each 100 PSIG (7 Bar) over 1,000 PSIG (69 Bar).

Illinois Location:
(847) 841-7867
860 Church Rd Elgin, IL 60120

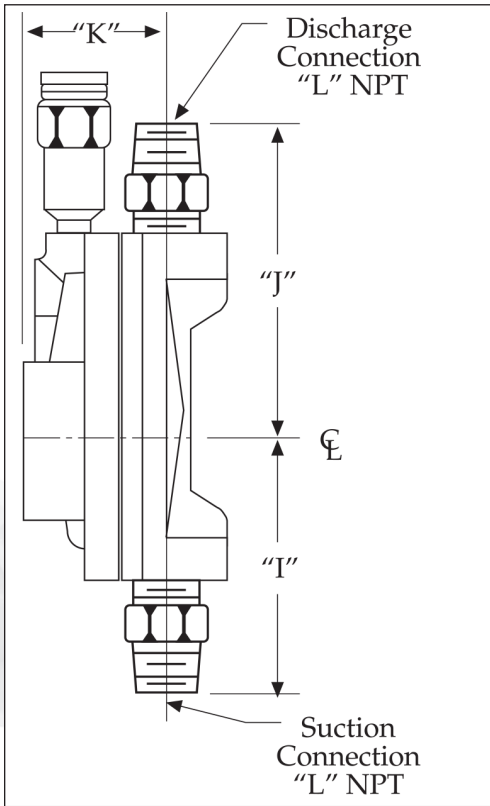
Minnesota Location:
(651) 758-7867
330 Mill Bay South Suite 100
Afton, MN 55001

PumpSupplyInc.com



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DISC DIAPHRAGM LIQUID END DIMENSIONS



| Material | Plunger Diameter | | I | | J | | K | | L |
|----------|------------------|----|---------|-----|---------|-----|--------|-----|-------|
| | in. | mm | in. | mm | in. | mm | in. | mm | in. |
| Metal | 5/8 | 16 | 7 1/8 | 181 | 7 1/8 | 181 | 5 1/2 | 140 | 1 1/4 |
| | 7/8 | 22 | 7 1/8 | 181 | 7 1/8 | 181 | 5 5/8 | 140 | 1 1/4 |
| | 1 1/4 | 28 | 7 1/8 | 181 | 7 1/8 | 181 | 5 5/8 | 143 | 1 1/4 |
| | 1 1/2 | 38 | 8 1/16 | 205 | 8 3/8 | 213 | 5 5/8 | 143 | 1 1/2 |
| | 2 | 51 | 10 5/8 | 270 | 10 5/8 | 270 | 6 3/16 | 157 | 2 1/2 |
| | 2 1/2 | 64 | 10 5/8 | 270 | 10 5/8 | 270 | 6 3/16 | 157 | 2 1/2 |
| | 3 1/2 | 89 | 11 1/16 | 281 | 13 1/16 | 332 | 6 1/2 | 165 | 3 |

Illinois Location:
(847) 841-7867
860 Church Rd Elgin, IL 60120

Minnesota Location:
(651) 758-7867
330 Mill Bay South Suite 100
Afton, MN 55001

PumpSupplyInc.com

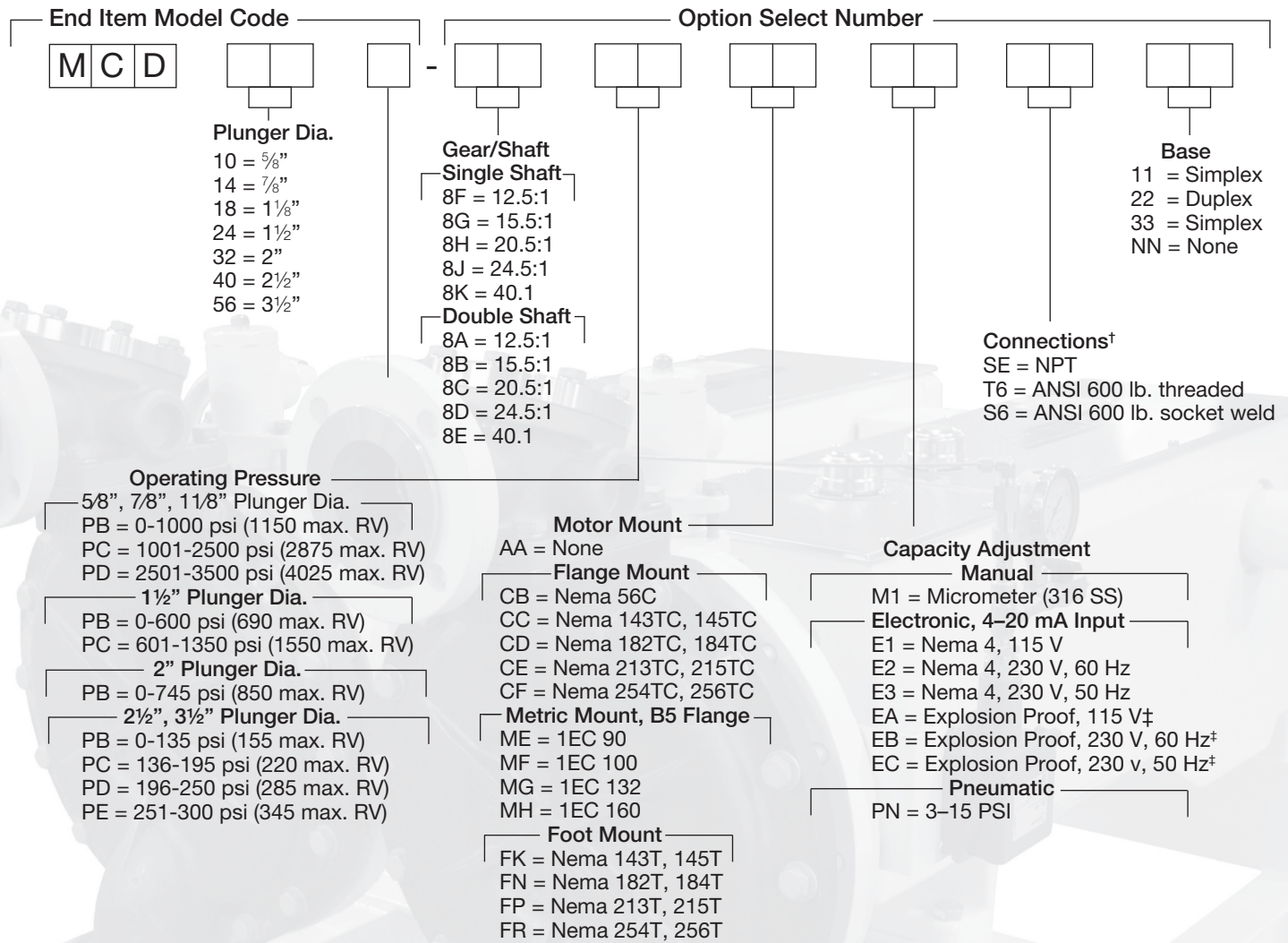
MAXIMUM ALLOWABLE SUCTION PRESSURE RANGE – Disc Diaphragm

| Plunger Diameter | | Maximum Range | |
|------------------|----|---------------|-----|
| in. | mm | PSIG | Bar |
| 5/8 | 16 | 50 | 31 |
| 7/8 | 22 | 250 | 17 |
| 1 1/8 | 28 | 170 | 12 |
| 1 1/2 | 38 | 110 | 8 |
| 2 | 51 | 70 | 5 |
| 2 1/2 | 64 | 50 | 3 |
| 3 | 89 | 30 | 2 |





MILROYAL C DISC DIAPHRAGM LIQUID END MODEL CODE



NOTES:

- * Operating pressure is the application system pressure. The internal relief valve is normally set 15% above the operating pressure. If an internal relief valve setting greater than 15% above the operating pressure range is required, select the operating pressure range that will accommodate the relief valve setting.
- † Flange sizes equal the NPT connection size as noted on the liquid end drawing.
- ‡ Explosion proof electronic actuators are certified by Factory Mutual for Class I, Division I, Groups B, C, & D; Class II, Division I, Groups E, F, & G.

Illinois Location:
 (847) 841-7867
 860 Church Rd Elgin, IL 60120

Minnesota Location:
 (651) 758-7867
 330 Mill Bay South Suite :
 Afton, MN 55001

PumpSupplyInc.com



PACKED PLUNGER LIQUID END PERFORMANCE

Typical performance based on 1725 RPM, 3 Phase, 60 Hz motor. Derate flow rates for all other RPM speeds.

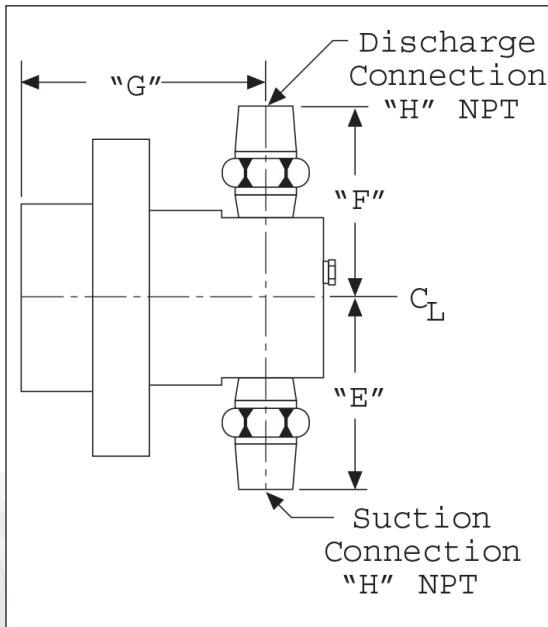
| Plunger Diameter | Gear Ratio Code | SPM @1725 RPM | Maximum Capacity* | | Maximum Discharge Pressure* | | | | | | | | | |
|--------------------|-----------------|---------------|-------------------|------|-----------------------------|-----|-------------------|-----|---------------|-----|---------------|------|-------------|-----|
| | | | | | 1 HP (0.75 kW) | | 1 1/2 HP (1.1 kW) | | 2 HP (1.5 kW) | | 3 HP (2.2 kW) | | 5 HP (4 kW) | |
| | | | GPH | L/H | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR |
| 7/16 in (11 mm) | 8K | 43 | 4.0 | 15 | 5500 | 379 | 7500 | 517 | 10000 | 689 | — | — | — | — |
| | 8J | 71 | 6.7 | 25 | 3630 | 250 | 7400 | 510 | 7500 | 517 | 10000 | 689 | — | — |
| | 8H | 85 | 7.9 | 29 | 2875 | 198 | 5680 | 392 | 7500 | 517 | 10000 | 689 | — | — |
| | 8G | 113 | 10.5 | 39 | 2150 | 148 | 4275 | 295 | 6100 | 421 | 7500 | 517 | 10000 | 689 |
| | 8F | 140 | 13.2 | 50 | 1545 | 107 | 4000 | 276 | 5920 | 408 | 7500 | 517 | 10000 | 689 |
| 5/8 in (16 mm) | 8K | 43 | 8.6 | 32 | 2700 | 186 | 5190 | 358 | 7500 | 517 | — | — | — | — |
| | 8J | 71 | 14.5 | 54 | 1920 | 132 | 3545 | 244 | 5370 | 370 | 7390 | 510 | 7500 | 517 |
| | 8H | 85 | 17.2 | 65 | 1210 | 83 | 2780 | 192 | 4300 | 296 | 7300 | 503 | 7500 | 517 |
| | 8G | 113 | 22.8 | 86 | 910 | 63 | 2090 | 144 | 3230 | 223 | 5495 | 379 | 7500 | 517 |
| | 8F | 140 | 28.7 | 108 | 725 | 50 | 1840 | 127 | 2940 | 203 | 5190 | 358 | 7500 | 517 |
| 7/8 in (22 mm) | 8K | 43 | 17.7 | 67 | 1320 | 91 | 2550 | 176 | 3800 | 262 | 4050 | 279 | — | — |
| | 8J | 71 | 29.1 | 110 | 850 | 59 | 1750 | 121 | 2660 | 183 | 3990 | 275 | 4050 | 279 |
| | 8H | 85 | 35.0 | 132 | 570 | 39 | 1350 | 93 | 2110 | 145 | 3625 | 250 | 4050 | 279 |
| | 8G | 113 | 46.5 | 176 | 430 | 30 | 1015 | 70 | 1585 | 109 | 2725 | 188 | 4050 | 279 |
| | 8F | 140 | 57.4 | 217 | 330 | 23 | 890 | 61 | 1400 | 97 | 2540 | 175 | 4050 | 279 |
| 1 1/8 in (29.1 mm) | 8K | 43 | 29.9 | 113 | 775 | 53 | 1510 | 104 | 2260 | 156 | 2415 | 167 | — | — |
| | 8J | 71 | 49.7 | 188 | 490 | 34 | 1030 | 71 | 1575 | 109 | 2380 | 164 | 2415 | 167 |
| | 8H | 85 | 59.1 | 223 | 325 | 22 | 795 | 55 | 1250 | 86 | 2150 | 148 | 2415 | 167 |
| | 8G | 113 | 78.5 | 297 | 240 | 17 | 595 | 41 | 940 | 65 | 1620 | 112 | 2415 | 167 |
| | 8F | 140 | 97.8 | 370 | 180 | 12 | 515 | 36 | 845 | 58 | 1500 | 103 | 2415 | 167 |
| 1 1/2 in (38 mm) | 8K | 43 | 53.0 | 200 | 420 | 29 | 845 | 58 | 1270 | 88 | 1360 | 94 | — | — |
| | 8J | 71 | 88.0 | 333 | 260 | 18 | 570 | 39 | 885 | 61 | 1340 | 92 | 1360 | 94 |
| | 8H | 85 | 105 | 397 | 160 | 11 | 430 | 30 | 690 | 48 | 1210 | 83 | 1360 | 94 |
| | 8G | 113 | 140 | 529 | 120 | 8 | 325 | 22 | 520 | 36 | 910 | 63 | 1360 | 94 |
| | 8F | 140 | 173 | 654 | 85 | 6 | 275 | 19 | 465 | 32 | 840 | 58 | 1360 | 94 |
| 2 in (51 mm) | 8K | 43 | 94 | 355 | 220 | 15 | 450 | 31 | 725 | 50 | 745 | 51 | — | — |
| | 8J | 71 | 156 | 590 | 130 | 9 | 300 | 21 | 475 | 33 | 660 | 46 | 745 | 51 |
| | 8H | 85 | 186 | 704 | 80 | 6 | 225 | 16 | 370 | 26 | 660 | 46 | 745 | 51 |
| | 8G | 113 | 248 | 938 | 60.4 | 170 | 12 | 280 | 29 | 495 | 34 | 745 | 51 | — |
| | 8F | 140 | 308 | 1165 | 35 | 2 | 140 | 10 | 245 | 17 | 455 | 31 | 745 | 51 |
| 2 1/2 in (64 mm) | 8K | 43 | 146 | 552 | 130 | 9 | 280 | 19 | 435 | 30 | 470 | 32 | — | — |
| | 8J | 71 | 244 | 923 | 75 | 5 | 185 | 13 | 350 | 24 | 460 | 32 | 470 | 32 |
| | 8H | 85 | 292 | 1105 | 40 | 3 | 135 | 9 | 225 | 16 | 415 | 29 | 470 | 32 |
| | 8G | 113 | 389 | 1472 | — | — | 100 | 7 | 170 | 12 | 310 | 21.3 | 85 | 27 |
| 3 1/2 in (89 mm) | 8K | 43 | 285 | 1078 | — | — | 130 | 9 | 210 | 14 | 230 | 16 | — | — |
| | 8J | 71 | 475 | 1797 | — | — | 85 | 6 | 165 | 11 | 225 | 16 | 230 | 16 |
| | 8H | 85 | 565 | 2138 | — | — | 55 | 4 | 105 | 7 | 200 | 14 | 230 | 16 |
| | 8G | 113 | 755 | 2857 | — | — | 40 | 3 | 80 | 6 | 150 | 10 | 190 | 13 |
| 4 7/16 in (113 mm) | 8K | 43 | 465 | 1760 | — | — | 80 | 6 | 120 | 8 | 140 | 10 | — | — |
| | 8J | 71 | 770 | 2914 | — | — | 45 | 3 | 80 | 6 | 135 | 9 | 140 | 10 |
| | 8H | 85 | 923 | 3493 | — | — | — | — | 55 | 4 | 115 | 8 | 140 | 10 |
| | 8G | 113 | 1225 | 4636 | — | — | — | — | — | — | 85 | 6 | 115 | 8 |

Capacities listed are for discharge pressures up to 2,000 PSIG (137 Bar). Capacities may vary at pressures greater than 2,000 PSI (137 Bar) based on packing selection.





PACKED PLUNGER LIQUID END DIMENSIONS



For exact dimensions, request a certified drawing

| Material | Plunger Diameter | | E± | | F± | | G* | | H |
|------------|------------------|-------|--------|-------|--------|-------|--------|-----|-------|
| | in. | mm | in. | mm | in. | mm | in. | mm | in. |
| Metal Only | 7/16 | 11 | 4 1/2 | 114 | 4 1/2 | 114 | 4 5/16 | 110 | 3/4 |
| | 5/8 | 16 | | | | | | | |
| | 7/8 | 22 | 5 9/16 | 141 | 5 9/16 | 141 | 4 5/16 | 110 | 1 1/4 |
| | 1 1/8 | 29 | | | | | | | |
| | 1 1/2 | 38 | 5 | 127 | 5 | 127 | 4 7/16 | 113 | 1 1/2 |
| | 2 | 51 | 5 5/8 | 143 | 5 5/8 | 143 | 5 1/8 | 130 | 1 1/2 |
| | 2 1/2 | 64 | 7 3/8 | 187 | 7 3/8 | 187 | 7 | 178 | 2 1/2 |
| | 3 1/2 | 89 | 8 3/4 | 222 | 8 3/4 | 222 | 4 3/4 | 121 | 3 |
| 4 7/16 | 113 | 8 1/8 | 206 | 8 1/8 | 206 | 4 3/4 | 122 | 3 | |

Illinois Location:
(847) 841-7867
860 Church Rd Elgin, IL 60120

Minnesota Location:
(651) 758-7867
330 Mill Bay South Suite 100
Afton, MN 55001

PumpSupplyInc.com

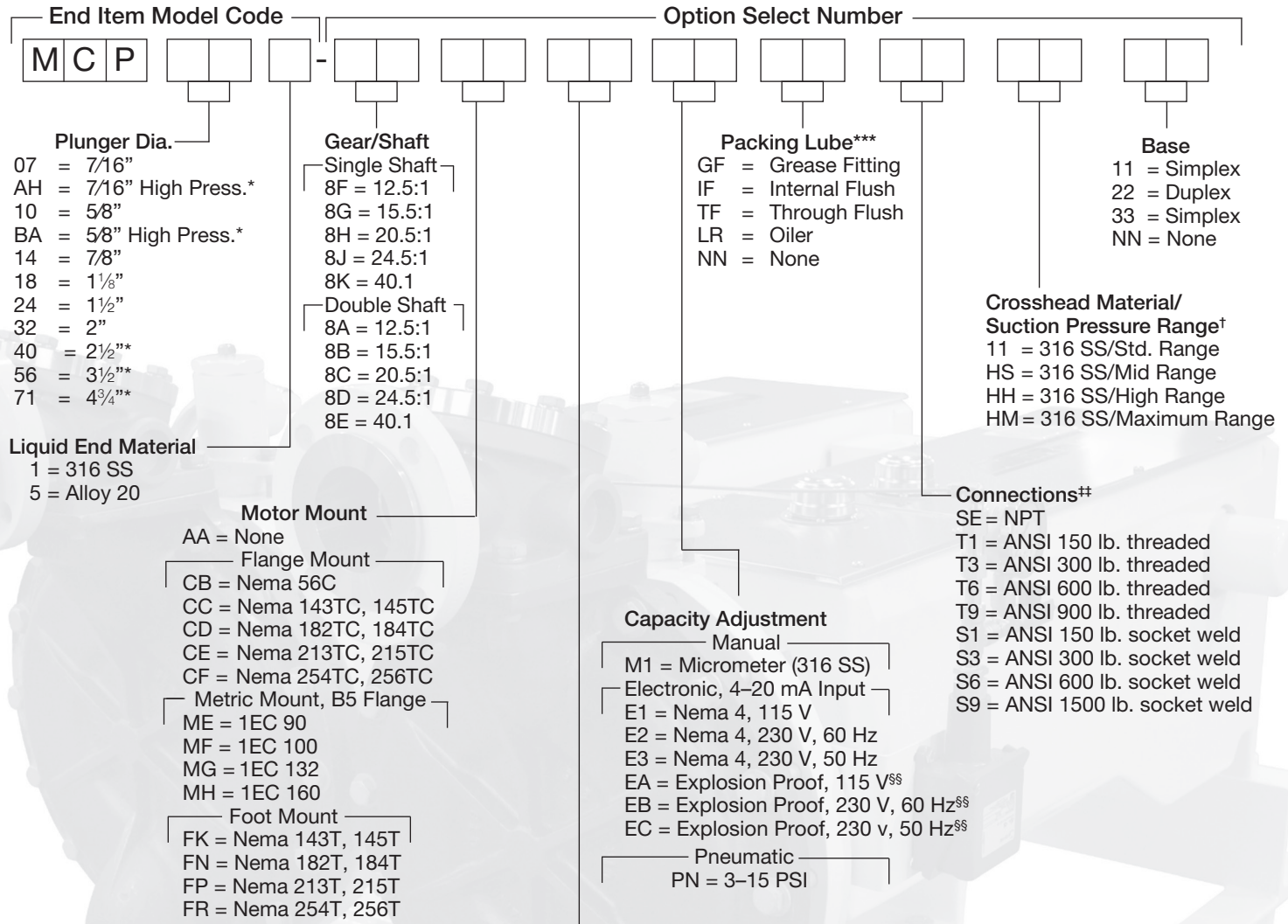
MAXIMUM ALLOWABLE SUCTION PRESSURE RANGE — Packed Plunger

| Plunger Diameter | | Standard | | Mid Range | | High Range | | Maximum Range | |
|------------------|-----|----------|-----|-----------|-----|------------|-----|---------------|-----|
| in. | mm | PSIG | Bar | PSIG | Bar | PSIG | Bar | PSIG | Bar |
| 7/16 | 11 | 850 | 59 | 1,510 | 104 | 2,950 | 203 | — | — |
| 5/8 | 16 | 450 | 31 | 780 | 54 | 1,500 | 103 | 3,800 | 262 |
| 7/8 | 22 | 250 | 17 | 420 | 29 | 780 | 54 | 2,000 | 138 |
| 1 1/8 | 29 | 170 | 12 | 250 | 17 | 490 | 34 | 1,200 | 83 |
| 1 1/2 | 38 | 110 | 8 | 165 | 11 | 290 | 20 | 690 | 48 |
| 2 | 51 | 70 | 5 | 100 | 7 | 170 | 12 | 395 | 27 |
| 2 1/2 | 64 | 50 | 3 | 70 | 5 | 115 | 8 | 260 | 18 |
| 3 1/2 | 89 | 30 | 2 | 40 | 3 | 70 | 5 | 140 | 10 |
| 4 7/16 | 113 | 25 | 2 | 30 | 2 | 40 | 3 | 85 | 6 |





PACKED PLUNGER LIQUID END MODEL CODE



| Code | Description | Type | Plunger Range | PSI Range* | Plunger Materials | Oiler Suggested? |
|------|---------------------|---|--------------------------|--------------|---------------------------------------|------------------|
| TM | PTFE 5022 AFP | Compression- User adjust required | 7/16 in to 1 1/8 in | 0 to 1500 | 316ss or A 20 (Same as Liquid end) | No |
| BC | PTFE Braid 5022 AFP | | 1 1/8 in to 4 7/16 in | | Ceramic | |
| NM | Nitrile Fabric | V-Ring | 1 1/8 in to 4 7/16 in | 0 to 10,000* | 316ss | Yes |
| NR | Nitrile Fabric | | | | Ceramic | |
| TR | PTFE | Spring load self adjust | 7/16 in to 1 1/8 in | 0 to 10,000* | Ceramic | Yes |

NOTES:

- * Plunger diameter Codes BA, AH, 24, 32, 40, 56 & 71 are available in 316 SS only. Other liquid end materials can be quoted by the Milton Roy application engineering department. High pressure plunger diameter codes are for applications requiring pressures over 5,000 psi.
- ** Packing code NM is a standard option for 316 SS liquid ends with plunger diameters of 1 1/2 in and larger.
- *** Select packing lube GF with packing codes TM & NM. Contact applications engineering for other packing lube selection.
- † Refer to suction pressure table for suction pressure versus range.
- †† Flange sizes equal the NPT connection size as noted on the liquid end drawing.
- ‡ Alloy 20 liquid ends are available standard with packing code TM. Contact applications engineering for other packings or plunger materials with Alloy 20 liquid ends.
- ‡‡ The plunger material will automatically match the liquid end material when selecting packing/plunger material code TM.
- § Packing/plunger codes AL, TL, & VL are offered on 316 SS liquid ends with 7/16 in through 1 1/8 in plunger diameters. Contact Milton Roy applications engineering to apply to other plunger diameters or liquid end materials.
- §§ Packing/plunger codes AR, TR, & VR are offered on 316 SS liquid ends with 7/16 in and 5/8 in high pressure plunger diameters. Contact Milton Roy applications engineering to apply to other plunger diameters or liquid end materials.
- §§§ Explosion proof electronic actuators are certified by Factory Mutual for Class I, Division I, Groups B, C, & D; Class II, Division I, Groups E, F, & G.



HPD MATERIALS OF CONSTRUCTION – WETTED PARTS

| Materials of Construction | Diaphragm | Diaphragm Head | Port Connection | Ball Seat | Ball Check | Ball Guide |
|---------------------------|----------------|-------------------------------|-------------------------------|-----------|----------------------|-------------------------------|
| 316 SS [‡] | PTFE/Elastomer | 316 SS CF-8M | 316 SS CF-8M | 316 SS | 316 SS | 316 SS CF-8M [§] |
| Alloy 20 [‡] | PTFE/Elastomer | 20Cb-D3 CN-7M** | 20Cb-D3 CN-7M** | 20Cb-3 | 20Cb-3 | 20Cb-D3 CN-7M* |
| Plastic [‡] | PTFE/Elastomer | PVC* | PVC | PVC | Ceramic [†] | PVC |
| Alloy C22 [‡] | PTFE/Elastomer | Alloy C22 CX2MW ^{††} | Alloy C22 CX2MW ^{††} | Alloy C22 | Alloy C22 | Alloy C22 CX2MW ^{††} |

NOTES:

- * Polyethylene diaphragm heads on 5" (127 mm) and 5¼" (146 mm) plunger size.
- † PTFE single ball checks used on 5" (127 mm) and 5¼" (146 mm) plunger size.
- ‡ Temperature range for metallic versions is 10°F (-12°C) to 225°F (107°C). PTFE/FKM diaphragm option is required above 190°F (88°C). Temperature range for plastic versions is 10°F (-12°C) to 140°F (60°C).
- § CF-8M is the cast equivalent to wrought 316 SS.
- ** CN-7M is the cast equivalent to wrought 20Cb-3 SS.
- †† CX2MW is the cast equivalent to wrought Alloy 20.

DISC DIAPHRAGM MATERIALS OF CONSTRUCTION – WETTED PARTS

| Materials of Construction | Diaphragm Head | Cartridge Body | Seats | Balls | Limit Pins | Diaphragm | Contour Plate |
|---------------------------|---------------------------|----------------------------|----------|----------|------------|-----------|----------------------------|
| 316 SS* | 316 SS CF-8M [†] | 316 SS CF-8M [†] | 316 SS | 316 SS | 316 SS | PTFE | 316 SS CF-8M [†] |
| Alloy 20* | 20Cb-D3 CN-7M* | 20Cb-D3 CN-7M [†] | Alloy 20 | Alloy 20 | Alloy 20 | PTFE | 20Cb-D3 CN-7M [‡] |

NOTES:

- * Temperature range is 20°F (-7°C) to 250°F (121°C).
- † CF-8M is the cast equivalent to wrought 316 SS.
- ‡ CN-7M is the cast equivalent to wrought 20Cb-3 SS.

PACKED PLUNGER MATERIALS OF CONSTRUCTION – WETTED PARTS

| Liquid End Material | Plunger | Check Valve | Seat | Seat Seal | Ball | Liquid End Material | Packing Spring | Gland Cap |
|---------------------|------------------------|---------------------------|------------------|-----------|---------|----------------------------|----------------|----------------------------|
| 316 SS [‡] | 316 SS (to 1500 psi) | 316 SS CF-8M* | 316 SS | PTFE | 316 SS | 316 SS CF-8M* | N/A | 316 SS CF-8M* |
| | Colmonoy (to 5000 psi) | 316 SS CF-8M* | 316 SS | PTFE | 316 SS | 316 SS CF-8M* | 316 SS | 316 SS CF-8M* |
| | Carbide (to 10,00 psi) | 316 SS CF-8M [§] | Hardened 13-4 Mo | PTFE | Carbide | 316 SS CF-8M* | 316 SS | 316 SS CF-8M* |
| Alloy 20 | 20Cb-3 CN-7M* | 20Cb-3 CN-7M* | 20Cb-3 | PTFE | N/A | 20Cb-D3 CN-7M [†] | N/A | 20Cb-D3 CN-7M [†] |

NOTES:

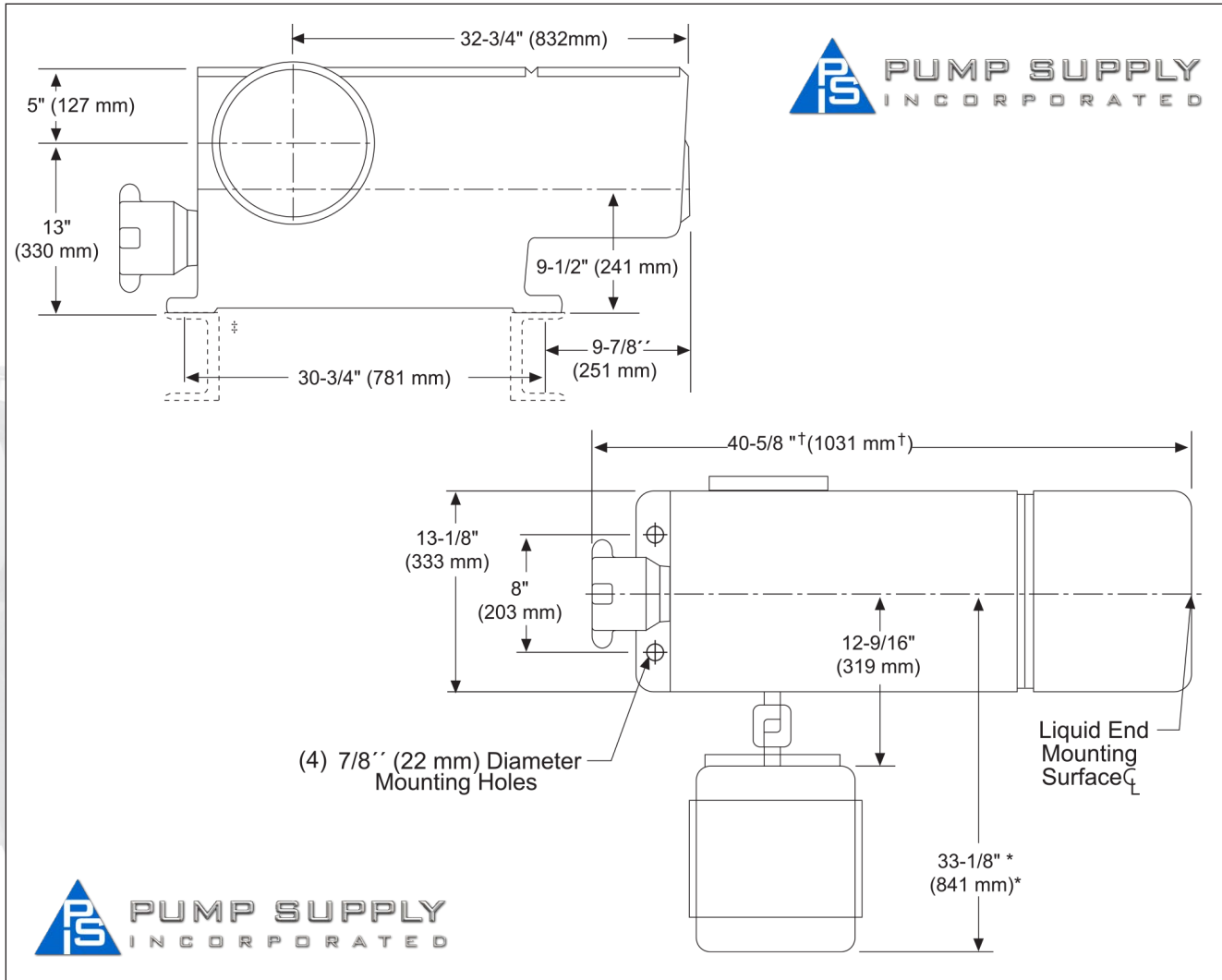
- * CF-8M is the cast equivalent to wrought 316 SS.
- † CN-7M is the cast equivalent to wrought 20Cb-3 SS.





An Ingersoll Rand Business

DRIVE DIMENSIONS



NOTES:

- * Dimension shown is for the largest available motor.
- ‡ Various bases are supplied with certain liquid ends and multiplex units. Consult factory for exact mounting dimensions.
- † 47" (1194 mm) is the dimension for manual stroke adjustment. For electronic stroke, overall length is 52" (1320 mm).

AVAILABLE OPTIONS

- Double diaphragm
- Diaphragm rupture detection system
- Flanged connections
- Electronic capacity control
- Pneumatic capacity control
- Severe duty motors
- Variable speed drives
- Customer options available to fit your application

ACCESSORIES

- Safety valves
- Back pressure valves
- Calibration columns
- Pulsation dampeners
- Tanks & standard systems
- Sludge traps

Illinois Location:

(847) 841-7867

860 Church Rd Elgin, IL 60123

Minnesota Location:

(651) 758-7867

330 Mill Bay South Suite 1511 Afton, MN 55001

