



# CONVENTIONAL PCP SPECIFICATIONS

## EXPERIENCE PERFORMANCE.

Artificial lift products and services that consistently outperform the market and reduce OPEX.

# PROGRESSING CAVITY PUMP MODELS

| Series Name  | Model Name                                                                          |       | Nominal Capacity<br>(units/day/100rpm) |       | Lifts<br><br>m (ft)                                                         | Rotor Length<br>Code<br>Availability | Elastomer<br>Availability | Stator<br>Tube<br><br>OD<br>in (mm) | Standard<br>Stator Connection                             |                                           | Optional<br>Stator Connection                             |                                           | Rotor Drift<br>Diameter<br><br>in (mm) | Rotor<br>Connection<br><br>in (mm) | Min. Tubing Size for Rotor |                         | Min. Tubing Size<br>for 3/4 (19.1) Coil<br><br>in (mm) | Cavity<br>Inflow CSA<br><br>in <sup>2</sup> (mm <sup>2</sup> ) |
|--------------|-------------------------------------------------------------------------------------|-------|----------------------------------------|-------|-----------------------------------------------------------------------------|--------------------------------------|---------------------------|-------------------------------------|-----------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------|-------------------------------------------|----------------------------------------|------------------------------------|----------------------------|-------------------------|--------------------------------------------------------|----------------------------------------------------------------|
|              |                                                                                     |       | m <sup>3</sup>                         | bbls  |                                                                             |                                      |                           |                                     | Size<br>in (mm)                                           | OD<br>in (mm)                             | Size<br>in (mm)                                           | OD<br>in (mm)                             |                                        |                                    | Drift<br>in (mm)           | Orbit<br>in (mm)        |                                                        |                                                                |
| 2-3/8 Series |    | 2 XS  | 2                                      | 13 B  | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L,P                                  | MN, HN                    | 2.38<br>(60.3)                      | 2-3/8 NUE Pin<br>(60.3 NUE Pin)                           | 2.88<br>(73.0)                            | n/a                                                       | n/a                                       | 1.50<br>(38.1)                         | 3/4 API Pin<br>(19.1 API Pin)      | 2-3/8 EUE<br>(60.3 EUE)    | 2-3/8 EUE<br>(60.3 EUE) | 2-7/8 EUE<br>(73.0 EUE)                                | 0.42<br>(271)                                                  |
|              |    | 4 XS  | 4                                      | 25 B  | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L,P                                  | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 1.50<br>(38.1)                         |                                    |                            |                         |                                                        | 0.42<br>(271)                                                  |
|              |    | 7 XS  | 7                                      | 44 B  | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L,P                                  | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 1.50<br>(38.1)                         |                                    |                            |                         |                                                        | 0.46<br>(297)                                                  |
| 3-1/8 Series |    | 4     | 4                                      | 25 B  | 1200, 1500, 1800, 2400, 3000, 3600<br>(4000, 5000, 6000, 7900, 9800, 11800) | L,P                                  | MN, HN                    | 3.13<br>(79.4)                      | 2-7/8 EUE Pin <sup>3</sup><br>(73.0 EUE Pin) <sup>3</sup> | 3.46 <sup>1</sup><br>(87.9) <sup>1</sup>  | 2-3/8 EUE WEX <sup>2</sup><br>(60.3 EUE WEX) <sup>2</sup> | 3.13 <sup>3</sup><br>(79.4) <sup>3</sup>  | 1.63<br>(41.3)                         | 7/8 API Pin<br>(22.2 API Pin)      | 2-3/8 EUE<br>(60.3 EUE)    | 2-7/8 EUE<br>(73.0 EUE) | 2-7/8 EUE<br>(73.0 EUE)                                | 0.76<br>(490)                                                  |
|              |    | 5 CH  | 5                                      | 31 B  | 1200, 1500, 1800, 2400, 3000, 3600<br>(4000, 5000, 6000, 7900, 9800, 11800) | P                                    | SN                        |                                     |                                                           |                                           |                                                           |                                           | 1.65<br>(41.9)                         |                                    |                            |                         |                                                        | 0.96<br>(619)                                                  |
|              |    | 7     | 7                                      | 44 B  | 1200, 1500, 1800, 2400, 2700, 3000<br>(4000, 5000, 6000, 7900, 8900, 9800)  | L,P                                  | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 1.63<br>(41.3)                         |                                    |                            |                         |                                                        | 0.84<br>(542)                                                  |
| 3-1/2 Series |    | 10    | 10                                     | 63 B  | 1200, 1500, 1800, 2400, 2700, 3000<br>(4000, 5000, 6000, 7900, 8900, 9800)  | L,P                                  | SN, MN, HN                | 3.50<br>(88.9)                      | 2-7/8 EUE Box<br>(73.0 EUE Box)                           | 3.50<br>(88.9)                            | 3-1/2 NUE Pin<br>(88.9 NUE Pin)                           | 4.18 <sup>1</sup><br>(106.2) <sup>1</sup> | 1.88<br>(47.7)                         | 7/8 API Pin<br>(22.2 API Pin)      | 2-3/8 EUE<br>(60.3 EUE)    | 2-7/8 EUE<br>(73.0 EUE) | 3-1/2 EUE<br>(88.9 EUE)                                | 1.11<br>(716)                                                  |
|              |    | 15    | 15                                     | 94 B  | 1200, 1400, 1800, 2400, 2700, 3000<br>(4000, 4600, 6000, 7900, 8900, 9800)  | L,P                                  | SN, MN, HN                |                                     |                                                           |                                           |                                                           |                                           | 1.89<br>(47.9)                         |                                    |                            |                         |                                                        | 1.32<br>(852)                                                  |
|              |    | 20    | 20                                     | 126 B | 1200, 1500, 1800, 2400, 2700, 3000<br>(4000, 5000, 6000, 7900, 8900, 9800)  | L,P                                  | SN, MN, HN                |                                     |                                                           |                                           |                                                           |                                           | 1.89<br>(47.9)                         |                                    |                            |                         |                                                        | 1.32<br>(852)                                                  |
|              |    | 30    | 30                                     | 189 B | 1200, 1500, 1800, 2400, 2700, 3000<br>(4000, 5000, 6000, 7900, 8900, 9800)  | L,P                                  | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 1.89<br>(47.9)                         |                                    |                            |                         |                                                        | 1.32<br>(852)                                                  |
|              |    | 41    | 41                                     | 258 B | 800, 1200, 1500, 1800, 2400<br>(2600, 4000, 5000, 6000, 7900)               | L                                    | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 1.89<br>(47.9)                         |                                    |                            |                         |                                                        | 1.32<br>(852)                                                  |
|              |    | 55    | 55                                     | 346 B | 800, 1000, 1200, 1600<br>(2600, 3300, 3900, 5200)                           | L                                    | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 1.89<br>(47.9)                         |                                    |                            |                         |                                                        | 1.32<br>(852)                                                  |
|              |    | 70    | 70                                     | 440 B | 600, 900, 1200<br>(2000, 3000, 3900)                                        | L                                    | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 1.89<br>(47.9)                         |                                    |                            |                         |                                                        | 1.32<br>(852)                                                  |
| 3-3/4 Series |    | 8 CH  | 8                                      | 50 B  | 1200, 1500, 1800, 2400, 3000, 3600<br>(4000, 5000, 6000, 7900, 9800, 11800) | P                                    | SN                        | 3.75<br>(95.3)                      | 3-1/2 EUE Pin<br>(88.9 EUE Pin)                           | 4.18 <sup>1</sup><br>(106.2) <sup>1</sup> | 2-7/8 EUE WEX <sup>2</sup><br>(73.0 EUE WEX) <sup>2</sup> | 3.75 <sup>3</sup><br>(95.3) <sup>3</sup>  | 2.09<br>(53.0)                         | 1 API Pin<br>(25.4 API Pin)        | 2-7/8 EUE<br>(73.0 EUE)    | 3-1/2 EUE<br>(88.9 EUE) | 3-1/2 EUE<br>(88.9 EUE)                                | 1.42<br>(916)                                                  |
|              |  | 13 CH | 13                                     | 82 B  | 1200, 1500, 1800, 2400, 3000<br>(4000, 5000, 6000, 7900, 9800)              | P                                    | SN                        |                                     |                                                           |                                           |                                                           |                                           | 2.11<br>(53.6)                         |                                    |                            |                         |                                                        | 1.62<br>(1045)                                                 |
|              |  | 18 CH | 18                                     | 113 B | 1200, 1500, 1800, 2400<br>(4000, 5000, 6000, 7900)                          | P                                    | SN                        |                                     |                                                           |                                           |                                                           |                                           | 2.09<br>(53.2)                         |                                    |                            |                         |                                                        | 1.69<br>(1090)                                                 |
|              |  | 28    | 28                                     | 176 B | 1200, 1500, 1800, 2400, 2700, 3000<br>(4000, 5000, 6000, 7900, 8900, 9800)  | L,P                                  | SN, MN, HN                |                                     |                                                           |                                           |                                                           |                                           | 2.10<br>(53.3)                         |                                    |                            |                         |                                                        | 1.71<br>(1103)                                                 |
|              |  | 36    | 36                                     | 226 B | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L                                    | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 2.11<br>(53.5)                         |                                    |                            |                         |                                                        | 1.49<br>(961)                                                  |
|              |  | 43    | 43                                     | 270 B | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L,P                                  | SN, MN, HN                |                                     |                                                           |                                           |                                                           |                                           | 2.10<br>(53.3)                         |                                    |                            |                         |                                                        | 1.61<br>(1039)                                                 |
|              |  | 54    | 54                                     | 340 B | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L,P                                  | SN, MN, HN                |                                     |                                                           |                                           |                                                           |                                           | 2.10<br>(53.3)                         |                                    |                            |                         |                                                        | 1.71<br>(1103)                                                 |
|              |  | 68    | 68                                     | 428 B | 900, 1200, 1500, 1800<br>(3000, 4000, 5000, 6000)                           | L,P                                  | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 2.10<br>(53.3)                         |                                    |                            |                         |                                                        | 1.68<br>(1084)                                                 |
|              |  | 85    | 85                                     | 535 B | 750, 1000, 1250, 1500<br>(2500, 3300, 4100, 5000)                           | L,P                                  | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 2.09<br>(53.1)                         |                                    |                            |                         |                                                        | 1.73<br>(1116)                                                 |
|              |  | 102   | 102                                    | 642 B | 600, 900, 1200<br>(2000, 3000, 4000)                                        | L                                    | MN, HN                    |                                     |                                                           |                                           |                                                           |                                           | 2.10<br>(53.3)                         |                                    |                            |                         |                                                        | 1.71<br>(1103)                                                 |
|              |  | 120   | 120                                    | 755 B | 600, 900, 1200<br>(2000, 3000, 4000)                                        | L                                    | SN, MN, HN                |                                     |                                                           |                                           |                                                           |                                           | 2.10<br>(53.3)                         |                                    |                            |                         |                                                        | 1.71<br>(1103)                                                 |

|              |                                                                                     |       |     |        |                                                                             |     |            |                 |                                  |                 |                                                           |                                           |                |                         |                         |                                                   |                                        |                |
|--------------|-------------------------------------------------------------------------------------|-------|-----|--------|-----------------------------------------------------------------------------|-----|------------|-----------------|----------------------------------|-----------------|-----------------------------------------------------------|-------------------------------------------|----------------|-------------------------|-------------------------|---------------------------------------------------|----------------------------------------|----------------|
| 4-1/8 Series |     | 23 CH | 23  | 145 B  | 1200, 1500, 1800, 2400<br>(4000, 5000, 6000, 7900)                          | P   | SN         | 4.13<br>(104.8) | 3-1/2 EUE Box<br>(88.9 EUE Box)  | 4.13<br>(104.8) | 4 NUE Pin<br>(101.6 NUE Pin)                              | 4.75<br>(120.7)                           | 2.27<br>(57.5) | 1 (25.4) API Pin        | 2-7/8 EUE<br>(73.0 EUE) | 3-1/2 EUE <sup>4</sup><br>(88.9 EUE) <sup>4</sup> | 3-1/2 (88.9) EUE<br>Special Coil Joint | 2.08<br>(1342) |
|              |    | 31    | 31  | 195 B  | 1200, 1500, 1800, 2400, 2700, 3000<br>(4000, 5000, 6000, 7900, 8900, 9800)  | L,P | SN, MN, HN |                 |                                  |                 |                                                           |                                           | 2.21<br>(56.0) |                         |                         |                                                   |                                        | 2.10<br>(1355) |
|              |    | 42    | 42  | 264 B  | 1200, 1600, 2000, 2400, 2800, 3200<br>(4000, 5200, 6600, 7900, 9200, 10500) | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.26<br>(57.4) |                         |                         |                                                   |                                        | 2.09<br>(1348) |
|              |    | 50    | 50  | 315 B  | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.26<br>(57.4) |                         |                         |                                                   |                                        | 2.09<br>(1348) |
|              |    | 61    | 61  | 384 B  | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.26<br>(57.4) |                         |                         |                                                   |                                        | 2.09<br>(1348) |
|              |    | 72    | 72  | 453 B  | 900, 1200, 1500, 1800<br>(3000, 4000, 5000, 6000)                           | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.26<br>(57.4) |                         |                         |                                                   |                                        | 2.09<br>(1348) |
|              |    | 87    | 87  | 547 B  | 900, 1200, 1500, 1800<br>(3000, 4000, 5000, 6000)                           | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.26<br>(57.4) |                         |                         |                                                   |                                        | 2.09<br>(1348) |
|              |    | 105   | 105 | 660 B  | 800, 1000, 1200, 1600<br>(2600, 3300, 4000, 5200)                           | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.28<br>(58.0) |                         |                         |                                                   |                                        | 2.08<br>(1342) |
|              |    | 123   | 123 | 774 B  | 600, 900, 1200<br>(2000, 3000, 4000)                                        | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.32<br>(59.0) |                         |                         |                                                   | 4-1/2 EUE<br>(114.3 EUE)               | 2.07<br>(1335) |
|              |    | 145   | 145 | 912 B  | 600, 900, 1200<br>(2000, 3000, 4000)                                        | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.31<br>(59.0) |                         |                         |                                                   |                                        | 2.07<br>(1335) |
|              |    | 167   | 167 | 1050 B | 450, 600, 750, 900<br>(1500, 2000, 2500, 3000)                              | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.32<br>(58.9) | 1-1/8 (28.6)<br>API Pin |                         |                                                   |                                        | 2.07<br>(1335) |
|              |    | 190   | 190 | 1195 B | 400, 600, 800<br>(1300, 2000, 2600)                                         | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.33<br>(59.1) |                         |                         |                                                   |                                        | 2.24<br>(1445) |
| 4-3/4 Series |    | 35 CH | 35  | 220 B  | 1200, 1500, 1800, 2400<br>(4000, 5000, 6000, 7900)                          | P   | SN         | 4.75<br>(120.7) | 4-1/2 EUE Pin<br>(114.3 EUE Pin) | 5.56<br>(141.2) | 3-1/2 EUE WEX <sup>2</sup><br>(88.9 EUE WEX) <sup>2</sup> | 4.75 <sup>3</sup><br>(120.7) <sup>3</sup> | 2.71<br>(68.8) | 1 (25.4) API Pin        | 3-1/2 EUE<br>(88.9 EUE) | 4-1/2 EUE<br>(114.3 EUE)                          | 4-1/2 EUE<br>(114.3 EUE)               | 2.81<br>(1813) |
|              |    | 47 CH | 47  | 296 B  | 1200, 1500, 1800, 2400, 2700, 3000<br>(4000, 5000, 6000, 7900, 8900, 9800)  | L,P | SN, MN, HN |                 |                                  |                 |                                                           |                                           | 2.78<br>(70.6) |                         |                         |                                                   |                                        | 3.12<br>(2013) |
|              |    | 88    | 88  | 554 B  | 900, 1200, 1500, 1800, 2400<br>(3000, 4000, 5000, 6000, 7900)               | L,P | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.82<br>(71.5) | 1-1/8 (28.6)<br>API Pin |                         |                                                   |                                        | 3.27<br>(2110) |
|              |    | 165   | 165 | 1038 B | 750, 1000, 1250, 1500<br>(2500, 3300, 4100, 5000)                           | L,P | SN, MN, HN |                 |                                  |                 |                                                           |                                           | 2.82<br>(71.5) |                         |                         |                                                   |                                        | 3.27<br>(2110) |
|              |    | 280   | 280 | 1761 B | 400, 600, 800<br>(1300, 2000, 2600)                                         | L   | MN, HN     |                 |                                  |                 |                                                           |                                           | 2.82<br>(71.5) |                         |                         |                                                   |                                        | 3.27<br>(2110) |
| 5 Series     |    | 56    | 56  | 352 B  | 800, 1200, 1600, 2000, 2400<br>(2600, 3900, 5200, 6600, 7900)               | L,P | MN, HN     | 5.00<br>(127.0) | 5 STC/LTC Pin<br>(127.0 STC Pin) | 5.56<br>(141.2) | 3-1/2 EUE WEX <sup>2</sup><br>(88.9 EUE WEX) <sup>2</sup> | 5.00 <sup>3</sup><br>(127.0) <sup>3</sup> | 2.85<br>(72.5) | 1-1/8 (28.6)<br>API Pin | 3-1/2 EUE<br>(88.9 EUE) | 4-1/2 EUE<br>(114.3 EUE)                          | 4-1/2 EUE<br>(114.3 EUE)               | 3.34<br>(2155) |
|              |   | 64    | 64  | 403 B  | 900, 1200, 1500, 1800, 2400<br>(3000, 3900, 4900, 6000, 7900)               | L,P | MN, HN     |                 |                                  |                 |                                                           |                                           |                |                         |                         |                                                   |                                        | 3.47<br>(2239) |
|              |  | 101   | 101 | 635 B  | 900, 1200, 1500, 1800<br>(3000, 3900, 4900, 6000)                           | L   | MN, HN     |                 |                                  |                 |                                                           |                                           |                |                         |                         |                                                   |                                        | 3.47<br>(2239) |
|              |  | 118   | 118 | 742 B  | 800, 1000, 1200, 1600<br>(2600, 3300, 3900, 5200)                           | L   | MN, HN     |                 |                                  |                 |                                                           |                                           |                |                         |                         |                                                   |                                        | 3.47<br>(2239) |
|              |  | 130   | 130 | 818 B  | 900, 1200, 1500, 1800<br>(3000, 3900, 4900, 6000)                           | L   | MN, HN     |                 |                                  |                 |                                                           |                                           |                |                         |                         |                                                   |                                        | 3.47<br>(2239) |
|              |  | 150   | 150 | 944 B  | 800, 1000, 1200, 1600<br>(2600, 3300, 3900, 5200)                           | L   | MN, HN     |                 |                                  |                 |                                                           |                                           |                |                         |                         |                                                   |                                        | 3.47<br>(2239) |
|              |  | 215   | 215 | 1352 B | 500, 750, 1000<br>(1600, 2500, 3300)                                        | L   | MN, HN     |                 |                                  |                 |                                                           |                                           |                |                         |                         |                                                   |                                        | 3.47<br>(2239) |

 Denotes PCP Models with extended lead times. Typically used in Global Applications with build to order lead times. Models have limited inventory availability in Canadian Markets.

 Denotes PCP Models with standard lead times. Typically used in Canadian Applications with inventory availability. Models are available Globally.

<sup>1</sup> API special clearance coupling OD

<sup>2</sup> WEX = Welded Extension; WHC = Welded Half Collar

<sup>3</sup> Shaved weld (add 0.25 in. if unshaved)

<sup>4</sup> A 3-1/2 EUE Custom Handling Pup (CHP) is required for rotor orbit with all 4-1/8 Series pump models.

# ELASTOMERS

## SOFT MEDIUM NITRILE (SN1) - THE ABRASIVE RESISTANT WORKHORSE

- Low-hardness, medium-nitrile elastomer with excellent mechanical properties including tear and elongation.
- Resilient elastomer capable of handling high amounts of abrasives including large solids while minimizing damage.
- Requires a higher compression rotor fit that delays decline in volumetric efficiency associated with abrasive wear.
- Ideal for CHOPS (Cold Heavy Oil Production with Sand) applications in with low API gravity, viscous oil.

## MEDIUM NITRILE (MN1) - THE GENERAL PURPOSE ELASTOMER

- General-purpose, oil, water and abrasive resistant medium nitrile elastomer with excellent mechanical properties.
- Wear resistant elastomer capable of handling moderate amounts of abrasives with good overall flexibility.
- Offers excellent oil resistance in applications with heavy-medium crude oil.
- Recommended elastomer for CSG/CBM applications with an excellent balance of properties, including water/brine resistance and wear resistance to fine solids.

## HIGH NITRILE (HN2) - FOR HIGH AROMATIC CONTENT, LIGHT OIL APPLICATIONS

- Augmented high-nitrile elastomer with significant enhancements to mechanical properties, oil and chemical resistance.
- Offers superior oil and aromatics resistance for applications with light oil and chemical treatment.
- Superior stator-tube bonding, with high retention of bond strength even after exposure to high temperature and aggressive fluids.

## ELASTOMER QUALIFICATION AND TESTING

- Lifting Solutions elastomers are fully compliant and tested to the specifications of ISO 15136-1:2009E, Annex A.
- A detailed Progressing Cavity Pump Elastomer Datasheet is available on request with enhanced detail on our elastomers.
- Technical bulletins targeted at specific application types and various downhole scenarios (ex. high gas, water TDS, high swell fluids, low water cuts) are available in our Library.
- Our advanced materials laboratory enables testing of field fluids with specific elastomers utilizing ASTM procedures to offer consistent elastomer and pump sizing recommendations.
- A digital tracking database containing hundreds of field fluid test results and thousands of installation/inspection records offers enhanced predictive capabilities for new applications.
- For additional information on our elastomers please contact a Lifting Solutions representative.

| Elastomer Code | Typical Applications                                                                | Nitrile Level (% ACN) | Hardness (Shore A) | Maximum Downhole Temperature <sup>1</sup> | Resistance Guide                          |           |           |                  |                  |                                     |
|----------------|-------------------------------------------------------------------------------------|-----------------------|--------------------|-------------------------------------------|-------------------------------------------|-----------|-----------|------------------|------------------|-------------------------------------|
|                |                                                                                     |                       |                    |                                           | Oil                                       | Water     | Abrasive  | Gas <sup>3</sup> | H <sub>2</sub> S | CO <sub>2</sub>                     |
| SN1            | Heavy oil (CHOPS), high abrasives                                                   | 32 to 36              | 55 to 60           | 60°C (140°F)                              | Up to 15 API                              | Very Good | Excellent | Fair             | Fair             | Fair                                |
| MN1            | Heavy to moderate oil, moderate abrasives, dewatering (CSG/CBM)                     | 32 to 36              | 65 to 70           | 80°C (176°F)<br>100°C (212°F) for CSG/CBM | Up to 20 API<br>(Max 25 API) <sup>2</sup> | Very Good | Very Good | Good             | Good             | Good                                |
| HN2            | Medium to light oil, high CO <sub>2</sub> , chemical treatment, deeper/hotter wells | 45 to 50              | 70 to 75           | 100°C (212°F)                             | Up to 35 API<br>(Max 45 API) <sup>2</sup> | Very Good | Good      | Very Good        | Good             | Very Good<br>Excellent <sup>4</sup> |

<sup>1</sup> LS can provide technical documentation on the temperature rating methodology upon request.

<sup>2</sup> Suitability of upper API gravity depends on specific application conditions including oil chemistry, water cut, and temperature.

<sup>3</sup> Gas & explosive-decompression resistance is a concern primarily with CO<sub>2</sub> since methane (CH<sub>4</sub>) permeability is significantly lower in elastomers.

<sup>4</sup> HN-ED Explosive Decompression elastomer formulation is available for high CO<sub>2</sub> applications. This elastomer is custom order.