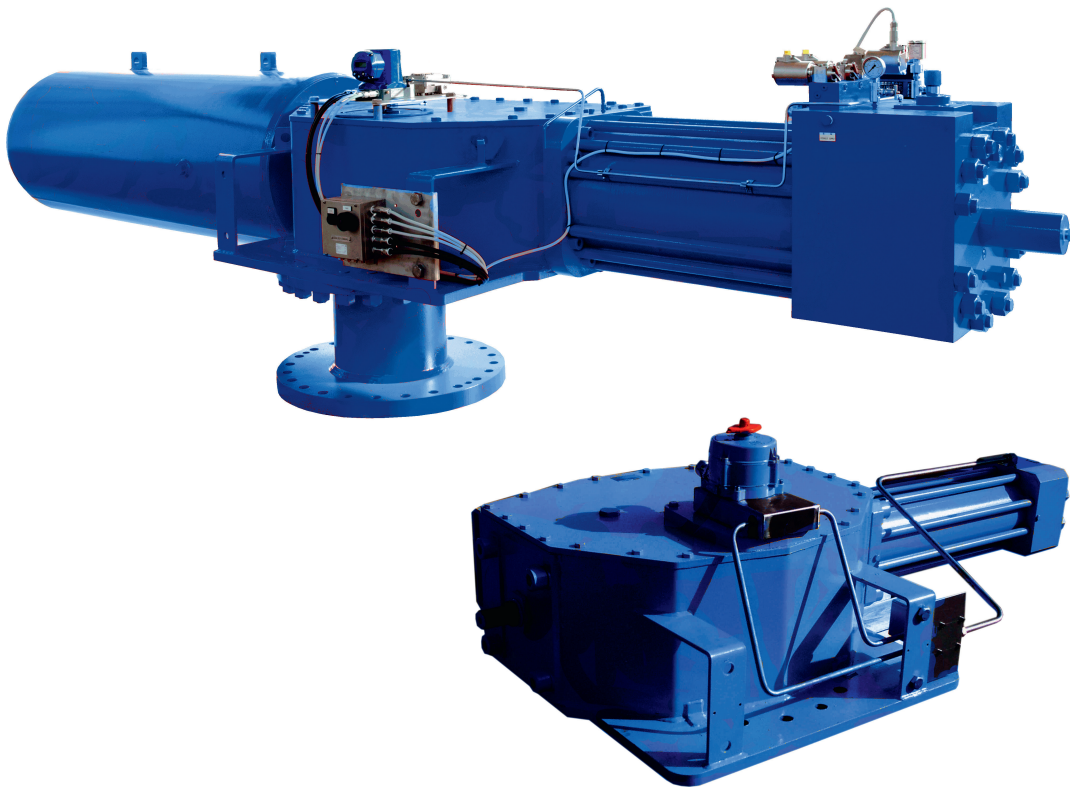


# Biffi OLGA/OLGAS

## Hydraulic Actuators Scotch Yoke Design

Double-acting and spring-return hydraulic quarter-turn actuators for on/off and modulating control of valves in heavy-duty service. Models available for output torques to 750,000 N•m.



*This page is intentionally left blank.*

## Table of Contents

### Section 1: General Application

General Application ..... 5

### Section 2: Technical Data

Technical Data ..... 5

### Section 3: Features

Features ..... 5

### Section 4: Approvals

Approvals ..... 5

### Section 5: OLGA Double-Acting Hydraulic Actuator Output Torques (N•m)

Canted Yoke Design ..... 7  
Symmetric Yoke Design ..... 13

### Section 6: OLGAS Spring-Return Hydraulic Actuator Output Torque (N•m)

Canted Yoke Design, Spring to Close ..... 19  
Canted Yoke Design, Spring to Open ..... 28  
Symmetric Yoke Design, Spring to Close ..... 37  
Symmetric Yoke Design, Spring to Open ..... 46

### Section 7: OLGA Double-Acting Hydraulic Actuator Overall Dimensions

MHP Hydraulic Manual Override ..... 56

### Section 8: OLGAS Spring-Return Hydraulic Actuator

Spring to Close ..... 58  
Spring to Open ..... 60

### Section 9: OLGA/OLGAS Hydraulic Actuator

Mounting Dimensions ..... 62  
Accessories Mounting Dimensions ..... 67  
Model Decoding ..... 69

*This page is intentionally left blank.*

## General Application

OLGA and OLGAS series hydraulic actuators are designed for the control of quarter-turn ball, butterfly, plug or damper style valves.

## Technical Data

### Design pressure (MAWP)

|                |   |
|----------------|---|
| OLGA/OLGAS:    | Up to 105 barg (contact factory for PED limit)            |
| OLGAS-QA:      | Contact factory   |
| Supply medium: | Hydraulic oil, special versions for fire-resistant fluids |

### Output torque

|           |  |
|-----------|--|
| OLGA:     | Double-acting torque up to 750,000 N•m   |
| OLGAS/QA: | Spring starting torque up to 335,000 N•m<br>Spring ending torque up to 235,000 N•m |

### Ambient temperature

|                 |                                 |
|-----------------|---------------------------------|
| Standard range: | -20 to +100 °C / -4 to +210 °F  |
| Extended range: | -60 to +135 °C / -70 to +275 °F |

MAWP: Maximum Allowable Working Pressure is the pressure defined for the design of the actuator pressure containing parts.

MOP: Maximum Operating Pressure is pressure that generates the torque used to engineer the mechanical loaded parts of the actuator and it is the one required to produce the design torque of the actuator.

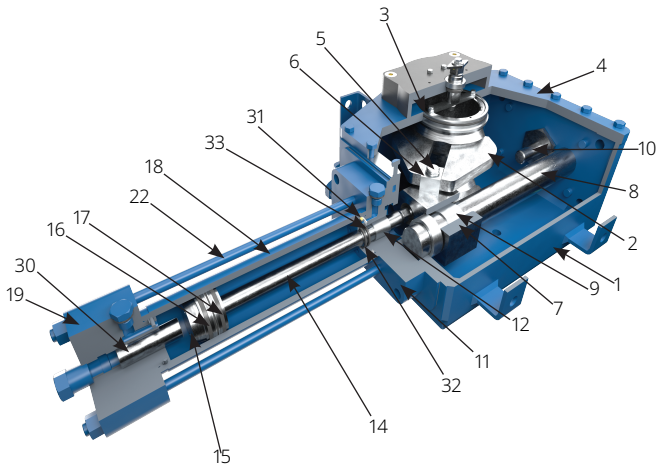
## Features

- Totally enclosed, weatherproof housing in fabricated carbon steel for maximum strength.
- Guide bar resists transverse loads and supports the piston rod.
- Hard chromium plated alloy steel material guarantees corrosion protection and minimal friction.
- Polytetrafluoroethylene (PTFE)-impregnated bronze or sintered bronze bushings provide minimal friction and extended service life.
- Scotch yoke design with canted or symmetric torque arm allows close working to distinctive valve torque profiles.
- External travel stops for precise angular stroke adjustment 90° ±4° at each end of travel.
- Electroless nickel plated and polished cylinder provides maximum corrosion resistance and reduces friction.
- Triple-element piston seals provide low friction, high sensitivity, ensure long life and prevent sticking problems.
- OLGAS fully encapsulated spring-return pack ensures personnel safety and simplifies assembly.
- OLGAS modular design enables spring action to be changed in the field easily.
- OLGAS-QA achieves 'safe' position in 0.2 seconds.

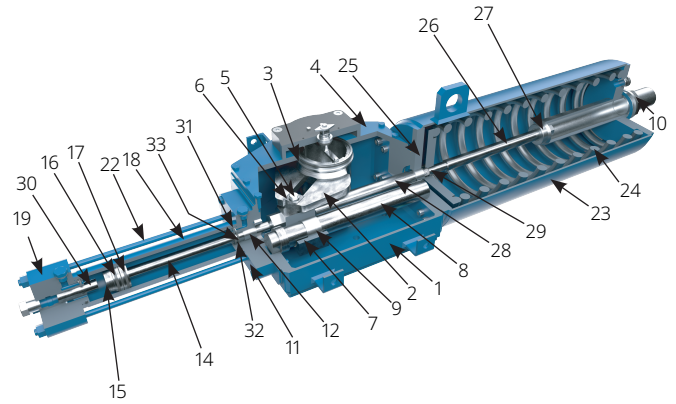
## Approvals

|                               |   |
|-------------------------------|---|
| Safety integrity level:       | (IEC 61508-1÷7:2010)<br>- Suitable for use in SIL3 applications |
| Area classification:          | (ATEX) - Ex II 2GD  |
| Enclosure standards:          | (IEC 60529) - IP67M<br>(ANSI/NEMA 250)<br>- NEMA 4, 4X, 6       |
| Pressure equipment directive: | PED 2014/68/EU  |
| Machinery directive:          | 2006/42/EC  |

**Figure 1. OLGA Double-Acting**



**Figure 2. OLGAS Spring-Return**



**Table 1. Materials**

| Part                         | Material                         |
|------------------------------|----------------------------------|
| 1 Housing                    | Carbon steel                     |
| 2 Yoke                       | Carbon steel                     |
| 3 Yoke bushing               | Bronze                           |
| 4 Cover                      | Carbon steel                     |
| 5 Guide block pin            | Alloy steel                      |
| 6 Sliding block              | Bronze                           |
| 7 Guide block                | Carbon steel                     |
| 8 Guide bar                  | Alloy steel (hard chrome plated) |
| 9 Guide block bushing        | Steel + Bronze + PTFE            |
| 10 Travel stop screw         | Carbon steel                     |
| 11 Cylinder head flange      | Carbon steel                     |
| 12 Piston rod bushing        | Steel + Bronze + PTFE            |
| 13 Piston rod seal           | Nitrile butadiene rubber (NBR)   |
| 14 Piston rod                | Alloy steel (hard chrome plated) |
| 15 Piston                    | Carbon steel                     |
| 16 Piston guide sliding ring | PTFE + Graphite                  |
| 17 Piston seal O-ring        | PTFE + NBR                       |

| Part                     | Material                         |
|--------------------------|----------------------------------|
| 18 Cylinder tube         | Carbon steel (ENP)               |
| 19 Cylinder end flange   | Carbon steel                     |
| 20 Cylinder seal O-ring  | NBR                              |
| 21 Sealing washer        | PVC                              |
| 22 Tie rod               | Alloy steel                      |
| 23 Spring container      | Carbon steel                     |
| 24 Spring                | Carbon steel                     |
| 25 Spring thrust flange  | Carbon steel                     |
| 26 Guide rod             | Alloy steel (hard chrome plated) |
| 27 Guide rod bushing     | Steel + Bronze + PTFE            |
| 28 Container rod         | Alloy steel (hard chrome plated) |
| 29 Container rod bushing | Steel + Bronze + PTFE            |
| 30 Stop setting screw    | Carbon steel                     |
| 31 Back-up ring          | NBR                              |
| 32 Piston rod seal ring  | PTFE + Graphite + NBR            |
| 33 O-ring                | NBR                              |

# OLGA Double-Acting Hydraulic Actuator

## Output Torques (N•m)

### Canted Yoke Design

Table 2. Models 0.3C-45 to 14C-350 at 15 to 40 barg

| Model    | MOP* (barg) | Position | Operating Supply Pressure (barg) |       |       |       |        |        |       |        |        |        |        |        |
|----------|-------------|----------|----------------------------------|-------|-------|-------|--------|--------|-------|--------|--------|--------|--------|--------|
|          |             |          | 15                               |       | 20    |       | 25     |        | 30    |        | 35     |        | 40     |        |
|          |             |          | OP                               | CL    | OP    | CL    | OP     | CL     | OP    | CL     | OP     | CL     | OP     | CL     |
| 0.3C-45  | 100         | 0°       | 339                              | 298   | 458   | 404   | 576    | 510    | 695   | 615    | 814    | 721    | 933    | 827    |
|          |             | 45°      | 132                              | 105   | 179   | 142   | 225    | 179    | 271   | 217    | 318    | 254    | 364    | 291    |
|          |             | 90°      | 191                              | 145   | 258   | 197   | 325    | 249    | 392   | 300    | 459    | 352    | 525    | 403    |
| 0.3C-75  | 46          | 0°       | 959                              | 943   | 1289  | 1268  | 1619   | 1593   | 1948  | 1918   | 2278   | 2244   | 2608   | 2569   |
|          |             | 45°      | 375                              | 332   | 504   | 447   | 632    | 561    | 761   | 676    | 890    | 791    | 1019   | 905    |
|          |             | 90°      | 540                              | 460   | 726   | 619   | 912    | 778    | 1098  | 936    | 1284   | 1095   | 1470   | 1254   |
| 0.3C-100 | 25          | 0°       | 1717                             | 1730  | 2304  | 2322  | 2890   | 2914   | -     | -      | -      | -      | -      | -      |
|          |             | 45°      | 671                              | 610   | 900   | 818   | 1129   | 1027   | -     | -      | -      | -      | -      | -      |
|          |             | 90°      | 968                              | 844   | 1298  | 1134  | 1629   | 1423   | -     | -      | -      | -      | -      | -      |
| 0.9C-100 | 66          | 0°       | 1986                             | 2001  | 2664  | 2685  | 3342   | 3370   | 4019  | 4055   | 4697   | 4739   | 5375   | 5424   |
|          |             | 45°      | 776                              | 705   | 1041  | 946   | 1306   | 1187   | 1571  | 1429   | 1836   | 1670   | 2101   | 1911   |
|          |             | 90°      | 1119                             | 977   | 1501  | 1311  | 1883   | 1645   | 2265  | 1979   | 2647   | 2314   | 3029   | 2648   |
| 0.9C-135 | 36          | 0°       | 3644                             | 3683  | 4880  | 4934  | 6115   | 6185   | 7351  | 7435   | 8586   | 8686   | -      | -      |
|          |             | 45°      | 1424                             | 1298  | 1907  | 1739  | 2390   | 2180   | 2873  | 2620   | 3356   | 3061   | -      | -      |
|          |             | 90°      | 2054                             | 1798  | 2750  | 2409  | 3446   | 3019   | 4143  | 3630   | 4839   | 4241   | -      | -      |
| 1.5C-135 | 47          | 0°       | 4608                             | 4658  | 6171  | 6239  | 7733   | 7821   | 9295  | 9402   | 10857  | 10984  | 12420  | 12566  |
|          |             | 45°      | 1801                             | 1641  | 2412  | 2199  | 3022   | 2756   | 3633  | 3314   | 4244   | 3871   | 4854   | 4429   |
|          |             | 90°      | 2597                             | 2274  | 3478  | 3046  | 4358   | 3818   | 5239  | 4590   | 6119   | 5363   | 7000   | 6135   |
| 1.5C-175 | 28          | 0°       | 7770                             | 7910  | 10396 | 10586 | 13021  | 13261  | -     | -      | -      | -      | -      | -      |
|          |             | 45°      | 3037                             | 2788  | 4063  | 3731  | 5089   | 4674   | -     | -      | -      | -      | -      | -      |
|          |             | 90°      | 4379                             | 3862  | 5859  | 5168  | 7339   | 6474   | -     | -      | -      | -      | -      | -      |
| 3C-135   | 57          | 0°       | 7628                             | 7710  | 10214 | 10327 | 12800  | 12945  | 15385 | 15563  | 17971  | 18181  | 20557  | 20799  |
|          |             | 45°      | 2981                             | 2717  | 3992  | 3640  | 5003   | 4562   | 6014  | 5485   | 7025   | 6408   | 8035   | 7331   |
|          |             | 90°      | 4299                             | 3764  | 5757  | 5042  | 7214   | 6320   | 8672  | 7598   | 10129  | 8876   | 11587  | 10155  |
| 3C-175   | 34          | 0°       | 12861                            | 13093 | 17207 | 17521 | 21552  | 21950  | 25897 | 26379  | -      | -      | -      | -      |
|          |             | 45°      | 5027                             | 4614  | 6726  | 6175  | 8424   | 7736   | 10123 | 9297   | -      | -      | -      | -      |
|          |             | 90°      | 7249                             | 6392  | 9698  | 8554  | 12147  | 10717  | 14596 | 12879  | -      | -      | -      | -      |
| 6C-175   | 58          | 0°       | 15036                            | 15307 | 20116 | 20484 | 25196  | 25662  | 30277 | 30839  | 35357  | 36017  | 40437  | 41194  |
|          |             | 45°      | 5877                             | 5395  | 7863  | 7220  | 9849   | 9045   | 11834 | 10870  | 13820  | 12694  | 15806  | 14519  |
|          |             | 90°      | 8475                             | 7473  | 11338 | 10001 | 14201  | 12529  | 17065 | 15057  | 19928  | 17585  | 22791  | 20113  |
| 6C-200   | 44          | 0°       | 19693                            | 19867 | 26328 | 26568 | 32963  | 33268  | 39598 | 39969  | 46233  | 46670  | 52868  | 53371  |
|          |             | 45°      | 7697                             | 7002  | 10291 | 9364  | 12885  | 11726  | 15478 | 14088  | 18072  | 16449  | 20665  | 18811  |
|          |             | 90°      | 11099                            | 9699  | 14839 | 12971 | 18579  | 16243  | 22319 | 19514  | 26059  | 22786  | 29798  | 26058  |
| 14C-200  | 82          | 0°       | 21523                            | 21713 | 28775 | 29037 | 36027  | 36361  | 43279 | 43685  | 50531  | 51009  | 57783  | 58333  |
|          |             | 45°      | 8413                             | 7653  | 11248 | 10234 | 14082  | 12816  | 16917 | 15397  | 19752  | 17979  | 22587  | 20560  |
|          |             | 90°      | 12131                            | 10601 | 16219 | 14177 | 20306  | 17753  | 24394 | 21329  | 28481  | 24904  | 32568  | 28480  |
| 14C-235  | 57          | 0°       | 29776                            | 30872 | 39788 | 41259 | 49800  | 51646  | 59813 | 62034  | 69825  | 72421  | 79837  | 82808  |
|          |             | 45°      | 11639                            | 10881 | 15552 | 14542 | 19466  | 18203  | 23380 | 21865  | 27294  | 25526  | 31207  | 29187  |
|          |             | 90°      | 16783                            | 15073 | 22426 | 20144 | 28069  | 25216  | 33712 | 30287  | 39356  | 35359  | 44999  | 40430  |
| 14C-280  | 40          | 0°       | 42271                            | 43955 | 56485 | 58743 | 70699  | 73532  | 84913 | 88320  | 99127  | 103109 | 113341 | 117897 |
|          |             | 45°      | 16523                            | 15492 | 22079 | 20705 | 27635  | 25917  | 33191 | 31130  | 38747  | 36342  | 44303  | 41555  |
|          |             | 90°      | 23826                            | 21460 | 31837 | 28681 | 39848  | 35901  | 47860 | 43121  | 55871  | 50342  | 63883  | 57562  |
| 14C-300  | 35          | 0°       | 48526                            | 50896 | 64843 | 68019 | 81160  | 85141  | 97477 | 102264 | 113794 | 119386 | -      | -      |
|          |             | 45°      | 18968                            | 17939 | 25346 | 23974 | 31724  | 30009  | 38102 | 36044  | 44481  | 42079  | -      | -      |
|          |             | 90°      | 27351                            | 24849 | 36548 | 33209 | 45744  | 41569  | 54941 | 49929  | 64138  | 58289  | -      | -      |
| 14C-350  | 25          | 0°       | 66049                            | 70344 | 88259 | 94005 | 110468 | 117667 | -     | -      | -      | -      | -      | -      |
|          |             | 45°      | 25818                            | 24794 | 34499 | 33134 | 43180  | 41473  | -     | -      | -      | -      | -      | -      |
|          |             | 90°      | 37228                            | 34344 | 49746 | 45897 | 62263  | 57450  | -     | -      | -      | -      | -      | -      |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

**Table 3. Models 0.3C-45 to 14C-350 at 45 to 70 barg**

| Model    | MOP* (barg) | Position | Operating Supply Pressure (barg) |       |       |        |        |        |       |       |       |       |        |        |
|----------|-------------|----------|----------------------------------|-------|-------|--------|--------|--------|-------|-------|-------|-------|--------|--------|
|          |             |          | 45                               |       | 50    |        | 55     |        | 60    |       | 65    |       | 70     |        |
|          |             |          | OP                               | CL    | OP    | CL     | OP     | CL     | OP    | CL    | OP    | CL    | OP     | CL     |
| 0.3C-45  | 100         | 0°       | 1051                             | 933   | 1170  | 1038   | 1289   | 1144   | 1408  | 1250  | 1526  | 1356  | 1645   | 1461   |
|          |             | 45°      | 411                              | 328   | 457   | 366    | 503    | 403    | 550   | 440   | 596   | 477   | 643    | 515    |
|          |             | 90°      | 592                              | 455   | 659   | 507    | 726    | 558    | 793   | 610   | 860   | 662   | 927    | 713    |
| 0.3C-75  | 46          | 0°       | 2938                             | 2894  | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | 1148                             | 1020  | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | 1656                             | 1413  | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 0.3C-100 | 25          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 0.9C-100 | 66          | 0°       | 6053                             | 6108  | 6731  | 6793   | 7409   | 7478   | 8087  | 8162  | 8765  | 8847  | -      | -      |
|          |             | 45°      | 2366                             | 2153  | 2631  | 2394   | 2896   | 2635   | 3161  | 2877  | 3426  | 3118  | -      | -      |
|          |             | 90°      | 3412                             | 2982  | 3794  | 3316   | 4176   | 3651   | 4558  | 3985  | 4940  | 4319  | -      | -      |
| 0.9C-135 | 36          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 1.5C-135 | 47          | 0°       | 13982                            | 14147 | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | 5465                             | 4986  | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | 7881                             | 6907  | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 1.5C-175 | 28          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 3C-135   | 57          | 0°       | 23143                            | 23417 | 25729 | 26034  | 28315  | 28652  | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | 9046                             | 8253  | 10057 | 9176   | 11068  | 10099  | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | 13044                            | 11433 | 14502 | 12711  | 15959  | 13989  | -     | -     | -     | -     | -      | -      |
| 3C-175   | 34          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 6C-175   | 58          | 0°       | 45517                            | 46372 | 50597 | 51550  | 55677  | 56727  | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | 17792                            | 16344 | 19777 | 18169  | 21763  | 19994  | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | 25655                            | 22640 | 28518 | 25168  | 31381  | 27696  | -     | -     | -     | -     | -      | -      |
| 6C-200   | 44          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 14C-200  | 82          | 0°       | 65035                            | 65656 | 72287 | 72980  | 79539  | 80304  | 86791 | 87628 | 94043 | 94952 | 101295 | 102276 |
|          |             | 45°      | 25421                            | 23141 | 28256 | 25723  | 31091  | 28304  | 33925 | 30886 | 36760 | 33467 | 39595  | 36049  |
|          |             | 90°      | 36656                            | 32056 | 40743 | 35632  | 44831  | 39208  | 48918 | 42783 | 53006 | 46359 | 57093  | 49935  |
| 14C-235  | 57          | 0°       | 89849                            | 93195 | 99862 | 103582 | 109874 | 113969 | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | 35121                            | 32848 | 39035 | 36509  | 42948  | 40170  | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | 50642                            | 45501 | 56285 | 50573  | 61929  | 55644  | -     | -     | -     | -     | -      | -      |
| 14C-280  | 40          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 14C-300  | 35          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
| 14C-350  | 25          | 0°       | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 45°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |
|          |             | 90°      | -                                | -     | -     | -      | -      | -      | -     | -     | -     | -     | -      | -      |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

**Table 4. Models 0.3C-45 to 14C-350 at 75 to 100 barg**

| Model    | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |      |      |      |      |      |      |      |      |
|----------|-------------|----------|----------------------------------|--------|--------|--------|------|------|------|------|------|------|------|------|
|          |             |          | 75                               |        | 80     |        | 85   |      | 90   |      | 95   |      | 100  |      |
|          |             |          | OP                               | CL     | OP     | CL     | OP   | CL   | OP   | CL   | OP   | CL   | OP   | CL   |
| 0.3C-45  | 100         | 0°       | 1764                             | 1567   | 1882   | 1673   | 2001 | 1778 | 2120 | 1884 | 2239 | 1990 | 2357 | 2096 |
|          |             | 45°      | 689                              | 552    | 736    | 589    | 782  | 627  | 828  | 664  | 875  | 701  | 921  | 738  |
|          |             | 90°      | 994                              | 765    | 1061   | 816    | 1128 | 868  | 1195 | 920  | 1262 | 971  | 1328 | 1023 |
| 0.3C-75  | 46          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 0.3C-100 | 25          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 0.9C-100 | 66          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 0.9C-135 | 36          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 1.5C-135 | 47          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 1.5C-175 | 28          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 3C-135   | 57          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 3C-175   | 34          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 6C-175   | 58          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 6C-200   | 44          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 14C-200  | 82          | 0°       | 108547                           | 109599 | 115799 | 116923 | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | 42430                            | 38630  | 45264  | 41211  | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | 61181                            | 53511  | 65268  | 57087  | -    | -    | -    | -    | -    | -    | -    | -    |
| 14C-235  | 57          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 14C-280  | 40          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 14C-300  | 35          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
| 14C-350  | 25          | 0°       | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 45°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |
|          |             | 90°      | -                                | -      | -      | -      | -    | -    | -    | -    | -    | -    | -    | -    |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

**Table 5. Models 18C-235 to 80C-350 at 15 to 40 barg**

| Model   | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |        |        |        |
|---------|-------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|         |             |          | 15                               |        | 20     |        | 25     |        | 30     |        | 35     |        | 40     |        |
|         |             |          | OP                               | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     |
| 18C-235 | 75          | 0°       | 34242                            | 35503  | 45756  | 47448  | 57271  | 59393  | 68785  | 71339  | 80299  | 83284  | 91813  | 95229  |
|         |             | 45°      | 13385                            | 12513  | 17885  | 16724  | 22386  | 20934  | 26887  | 25144  | 31388  | 29355  | 35888  | 33565  |
|         |             | 90°      | 19300                            | 17334  | 25790  | 23166  | 32280  | 28998  | 38769  | 34830  | 45259  | 40662  | 51749  | 46495  |
| 18C-280 | 53          | 0°       | 48612                            | 50548  | 64958  | 67555  | 81304  | 84562  | 97650  | 101569 | 113996 | 118575 | 130342 | 135582 |
|         |             | 45°      | 19002                            | 17816  | 25391  | 23811  | 31781  | 29805  | 38170  | 35799  | 44560  | 41794  | 50949  | 47788  |
|         |             | 90°      | 27399                            | 24679  | 36613  | 32983  | 45826  | 41286  | 55039  | 49590  | 64252  | 57893  | 73465  | 66197  |
| 18C-300 | 45          | 0°       | 55805                            | 58531  | 74569  | 78221  | 93334  | 97912  | 112098 | 117603 | 130863 | 137294 | 149627 | 156985 |
|         |             | 45°      | 21813                            | 20630  | 29148  | 27570  | 36483  | 34511  | 43818  | 41451  | 51153  | 48391  | 58488  | 55332  |
|         |             | 90°      | 31454                            | 28577  | 42030  | 38191  | 52606  | 47805  | 63183  | 57418  | 73759  | 67032  | 84335  | 76646  |
| 18C-350 | 33          | 0°       | 75957                            | 80895  | 101497 | 108106 | 127038 | 135317 | 152578 | 162528 | -      | -      | -      | -      |
|         |             | 45°      | 29691                            | 28513  | 39674  | 38104  | 49658  | 47695  | 59641  | 57286  | -      | -      | -      | -      |
|         |             | 90°      | 42812                            | 39496  | 57207  | 52782  | 71603  | 66067  | 85999  | 79353  | -      | -      | -      | -      |
| 32C-235 | 100         | 0°       | 40198                            | 41678  | 53714  | 55700  | 67231  | 69723  | 80747  | 83746  | 94264  | 97768  | 107780 | 111791 |
|         |             | 45°      | 15713                            | 14690  | 20996  | 19632  | 26280  | 24575  | 31563  | 29517  | 36846  | 34460  | 42130  | 39402  |
|         |             | 90°      | 22657                            | 20348  | 30275  | 27195  | 37893  | 34041  | 45512  | 40888  | 53130  | 47734  | 60749  | 54581  |
| 32C-280 | 75          | 0°       | 57067                            | 59339  | 76255  | 79304  | 95444  | 99268  | 114633 | 119233 | 133821 | 139197 | 153010 | 159162 |
|         |             | 45°      | 22307                            | 20915  | 29807  | 27952  | 37308  | 34989  | 44809  | 42025  | 52309  | 49062  | 59810  | 56099  |
|         |             | 90°      | 32165                            | 28972  | 42980  | 38719  | 53796  | 48467  | 64611  | 58214  | 75426  | 67962  | 86242  | 77709  |
| 32C-300 | 65          | 0°       | 65510                            | 68710  | 87538  | 91825  | 109566 | 114941 | 131594 | 138056 | 153622 | 161171 | 175649 | 184287 |
|         |             | 45°      | 25607                            | 24218  | 34218  | 32365  | 42828  | 40513  | 51438  | 48660  | 60049  | 56807  | 68659  | 64955  |
|         |             | 90°      | 36924                            | 33547  | 49339  | 44833  | 61755  | 56119  | 74171  | 67404  | 86587  | 78690  | 99002  | 89976  |
| 32C-350 | 50          | 0°       | 89167                            | 94964  | 119149 | 126907 | 149132 | 158850 | 179114 | 190794 | 209096 | 222737 | 239079 | 254680 |
|         |             | 45°      | 34854                            | 33471  | 46574  | 44730  | 58294  | 55989  | 70014  | 67248  | 81733  | 78507  | 93453  | 89766  |
|         |             | 90°      | 50258                            | 46365  | 67157  | 61961  | 84056  | 77557  | 100955 | 93153  | 117854 | 108749 | 134753 | 124345 |
| 50C-235 | 100         | 0°       | 44664                            | 46308  | 59682  | 61889  | 74701  | 77470  | 89719  | 93051  | 104738 | 108631 | 119756 | 124212 |
|         |             | 45°      | 17458                            | 16322  | 23329  | 21814  | 29200  | 27305  | 35070  | 32797  | 40941  | 38289  | 46811  | 43781  |
|         |             | 90°      | 25174                            | 22609  | 33639  | 30217  | 42104  | 37824  | 50569  | 45431  | 59034  | 53038  | 67499  | 60645  |
| 50C-280 | 100         | 0°       | 63407                            | 65933  | 84728  | 88115  | 106049 | 110298 | 127370 | 132481 | 148691 | 154664 | 170011 | 176846 |
|         |             | 45°      | 24785                            | 23239  | 33119  | 31058  | 41453  | 38876  | 49787  | 46695  | 58121  | 54514  | 66455  | 62332  |
|         |             | 90°      | 35739                            | 32191  | 47756  | 43021  | 59773  | 53852  | 71790  | 64682  | 83807  | 75513  | 95824  | 86344  |
| 50C-300 | 84          | 0°       | 72789                            | 76344  | 97265  | 102028 | 121740 | 127712 | 146215 | 153396 | 170691 | 179079 | 195166 | 204763 |
|         |             | 45°      | 28452                            | 26909  | 38020  | 35961  | 47587  | 45014  | 57154  | 54067  | 66721  | 63119  | 76288  | 72172  |
|         |             | 90°      | 41026                            | 37274  | 54822  | 49814  | 68617  | 62354  | 82412  | 74894  | 96207  | 87434  | 110003 | 99974  |
| 50C-350 | 63          | 0°       | 99074                            | 105516 | 132388 | 141008 | 165702 | 176500 | 199016 | 211993 | 232329 | 247485 | 265643 | 282978 |
|         |             | 45°      | 38727                            | 37191  | 51749  | 49701  | 64771  | 62210  | 77793  | 74720  | 90815  | 87230  | 103837 | 99740  |
|         |             | 90°      | 55842                            | 51517  | 74619  | 68846  | 93395  | 86175  | 112172 | 103503 | 130949 | 120832 | 149726 | 138161 |
| 80C-300 | 100         | 0°       | 84921                            | 87484  | 113475 | 116920 | 142030 | 146356 | 170585 | 175793 | 199139 | 205229 | 227694 | 234665 |
|         |             | 45°      | 33194                            | 30835  | 44356  | 41210  | 55518  | 51586  | 66680  | 61961  | 77841  | 72336  | 89003  | 82712  |
|         |             | 90°      | 47864                            | 42713  | 63959  | 57085  | 80053  | 71457  | 96148  | 85829  | 112242 | 100201 | 128336 | 114573 |
| 80C-350 | 91          | 0°       | 115587                           | 121517 | 154453 | 162397 | 193319 | 203276 | 232185 | 244156 | 271051 | 285036 | 309917 | 325915 |
|         |             | 45°      | 45182                            | 42831  | 60374  | 57239  | 75566  | 71648  | 90759  | 86057  | 105951 | 100466 | 121143 | 114875 |
|         |             | 90°      | 65149                            | 59329  | 87055  | 79289  | 108961 | 99248  | 130868 | 119207 | 152774 | 139166 | 174680 | 159125 |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

**Table 6. Models 18C-235 to 80C-350 at 45 to 70 barg**

| Model   | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |        |        |        |
|---------|-------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|         |             |          | 45                               |        | 50     |        | 55     |        | 60     |        | 65     |        | 70     |        |
|         |             |          | OP                               | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     |
| 18C-235 | 75          | 0°       | 103327                           | 107174 | 114841 | 119120 | 126355 | 131065 | 137869 | 143010 | 149383 | 154955 | 160897 | 166901 |
|         |             | 45°      | 40389                            | 37775  | 44890  | 41986  | 49391  | 46196  | 53891  | 50406  | 58392  | 54617  | 62893  | 58827  |
|         |             | 90°      | 58239                            | 52327  | 64728  | 58159  | 71218  | 63991  | 77708  | 69823  | 84198  | 75655  | 90687  | 81488  |
| 18C-280 | 53          | 0°       | 146688                           | 152589 | 163034 | 169596 | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 57339                            | 53782  | 63728  | 59777  | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 82678                            | 74500  | 91892  | 82803  | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-300 | 45          | 0°       | 168392                           | 176676 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 65822                            | 62272  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 94912                            | 86260  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-350 | 33          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
| 32C-235 | 100         | 0°       | 121297                           | 125814 | 134813 | 139836 | 148330 | 153859 | 161846 | 167882 | 175363 | 181904 | 188879 | 195927 |
|         |             | 45°      | 47413                            | 44345  | 52697  | 49288  | 57980  | 54230  | 63264  | 59173  | 68547  | 64115  | 73831  | 69058  |
|         |             | 90°      | 68367                            | 61427  | 75986  | 68274  | 83604  | 75120  | 91222  | 81967  | 98841  | 88813  | 106459 | 95659  |
| 32C-280 | 75          | 0°       | 172199                           | 179126 | 191387 | 199091 | 210576 | 219055 | 229765 | 239020 | 248954 | 258984 | 268142 | 278949 |
|         |             | 45°      | 67311                            | 63136  | 74811  | 70173  | 82312  | 77210  | 89813  | 84247  | 97313  | 91283  | 104814 | 98320  |
|         |             | 90°      | 97057                            | 87457  | 107873 | 97204  | 118688 | 106952 | 129504 | 116699 | 140319 | 126447 | 151135 | 136194 |
| 32C-300 | 65          | 0°       | 197677                           | 207402 | 219705 | 230517 | 241733 | 253633 | 263761 | 276748 | 285789 | 299863 | -      | -      |
|         |             | 45°      | 77270                            | 73102  | 85880  | 81250  | 94491  | 89397  | 103101 | 97545  | 111712 | 105692 | -      | -      |
|         |             | 90°      | 111418                           | 101262 | 123834 | 112548 | 136249 | 123834 | 148665 | 135120 | 161081 | 146406 | -      | -      |
| 32C-350 | 50          | 0°       | 269061                           | 286623 | 299043 | 318566 | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 105173                           | 101025 | 116893 | 112284 | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 151652                           | 139941 | 168552 | 155537 | -      | -      | -      | -      | -      | -      | -      | -      |
| 50C-235 | 100         | 0°       | 134774                           | 139793 | 149793 | 155374 | 164811 | 170954 | 179829 | 186535 | 194848 | 202116 | 209866 | 217697 |
|         |             | 45°      | 52682                            | 49272  | 58552  | 54764  | 64423  | 60256  | 70293  | 65747  | 76164  | 71239  | 82034  | 76731  |
|         |             | 90°      | 75964                            | 68252  | 84428  | 75860  | 92893  | 83467  | 101358 | 91074  | 109823 | 98681  | 118288 | 106288 |
| 50C-280 | 100         | 0°       | 191332                           | 199029 | 212653 | 221212 | 233974 | 243395 | 255294 | 265578 | 276615 | 287760 | 297936 | 309943 |
|         |             | 45°      | 74790                            | 70151  | 83124  | 77970  | 91458  | 85789  | 99792  | 93607  | 108126 | 101426 | 116460 | 109245 |
|         |             | 90°      | 107842                           | 97174  | 119859 | 108005 | 131876 | 118835 | 143893 | 129666 | 155910 | 140496 | 167927 | 151327 |
| 50C-300 | 84          | 0°       | 219641                           | 230447 | 244117 | 256131 | 268592 | 281814 | 293068 | 307498 | 317543 | 333182 | 342018 | 358865 |
|         |             | 45°      | 85855                            | 81225  | 95423  | 90278  | 104990 | 99330  | 114557 | 108383 | 124124 | 117436 | 133691 | 126488 |
|         |             | 90°      | 123798                           | 112513 | 137593 | 125053 | 151388 | 137593 | 165184 | 150133 | 178979 | 162673 | 192774 | 175213 |
| 50C-350 | 63          | 0°       | 298957                           | 318470 | 332270 | 353963 | 365584 | 389455 | 398898 | 424947 | -      | -      | -      | -      |
|         |             | 45°      | 116859                           | 112250 | 129881 | 124760 | 142903 | 137270 | 155925 | 149780 | -      | -      | -      | -      |
|         |             | 90°      | 168503                           | 155490 | 187280 | 172819 | 206056 | 190148 | 224833 | 207477 | -      | -      | -      | -      |
| 80C-300 | 100         | 0°       | 256248                           | 264101 | 284803 | 293537 | 313358 | 322974 | 341912 | 352410 | 370467 | 381846 | 399021 | 411282 |
|         |             | 45°      | 100165                           | 93087  | 111326 | 103462 | 122488 | 113838 | 133650 | 124213 | 144812 | 134588 | 155973 | 144964 |
|         |             | 90°      | 144431                           | 128945 | 160525 | 143317 | 176620 | 157689 | 192714 | 172061 | 208809 | 186433 | 224903 | 200805 |
| 80C-350 | 91          | 0°       | 348783                           | 366795 | 387649 | 407675 | 426515 | 448554 | 465381 | 489434 | 504247 | 530314 | 543113 | 571193 |
|         |             | 45°      | 136336                           | 129283 | 151528 | 143692 | 166720 | 158101 | 181913 | 172510 | 197105 | 186918 | 212297 | 201327 |
|         |             | 90°      | 196587                           | 179084 | 218493 | 199043 | 240399 | 219003 | 262306 | 238962 | 284212 | 258921 | 306118 | 278880 |

**NOTE:**  
\* MOP = Maximum Operating Pressure (barg)

**Table 7. Models 18C-235 to 80C-350 at 75 to 100 barg**

| Model   | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |        |        |        |
|---------|-------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|         |             |          | 75                               |        | 80     |        | 85     |        | 90     |        | 95     |        | 100    |        |
|         |             |          | OP                               | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     |
| 18C-235 | 75          | 0°       | 172411                           | 178846 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 67394                            | 63037  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 97177                            | 87320  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-280 | 53          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-300 | 45          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-350 | 33          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-235 | 100         | 0°       | 202396                           | 209950 | 215912 | 223972 | 229429 | 237995 | 242945 | 252018 | 256462 | 266040 | 269979 | 280063 |
|         |             | 45°      | 79114                            | 74000  | 84398  | 78943  | 89681  | 83885  | 94965  | 88828  | 100248 | 93770  | 105532 | 98713  |
|         |             | 90°      | 114078                           | 102506 | 121696 | 109352 | 129314 | 116199 | 136933 | 123045 | 144551 | 129892 | 152170 | 136738 |
| 32C-280 | 75          | 0°       | 287331                           | 298913 | 306520 | 318878 | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 112315                           | 105357 | 119815 | 112394 | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 161950                           | 145942 | 172766 | 155689 | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-300 | 65          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-350 | 50          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 50C-235 | 100         | 0°       | 224884                           | 233277 | 239903 | 248858 | 254921 | 264439 | 269939 | 280020 | 284958 | 295600 | 299976 | 311181 |
|         |             | 45°      | 87905                            | 82223  | 93775  | 87714  | 99646  | 93206  | 105516 | 98698  | 111387 | 104189 | 117258 | 109681 |
|         |             | 90°      | 126753                           | 113895 | 135218 | 121503 | 143683 | 129110 | 152148 | 136717 | 160613 | 144324 | 169077 | 151931 |
| 50C-280 | 100         | 0°       | 319257                           | 332126 | 340577 | 354309 | 361898 | 376491 | 383219 | 398674 | 404540 | 420857 | 425860 | 443040 |
|         |             | 45°      | 124794                           | 117063 | 133128 | 124882 | 141462 | 132701 | 149796 | 140520 | 158130 | 148338 | 166465 | 156157 |
|         |             | 90°      | 179945                           | 162157 | 191962 | 172988 | 203979 | 183818 | 215996 | 194649 | 228013 | 205480 | 240031 | 216310 |
| 50C-300 | 84          | 0°       | 366494                           | 384549 | 390969 | 410233 | 415444 | 435917 | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 143259                           | 135541 | 152826 | 144594 | 162393 | 153646 | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 206569                           | 187753 | 220364 | 200292 | 234160 | 212832 | -      | -      | -      | -      | -      | -      |
| 50C-350 | 63          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 80C-300 | 100         | 0°       | 427576                           | 440718 | 456131 | 470155 | 484685 | 499591 | 513240 | 529027 | 541794 | 558463 | 570349 | 587899 |
|         |             | 45°      | 167135                           | 155339 | 178297 | 165714 | 189459 | 176090 | 200620 | 186465 | 211782 | 196840 | 222944 | 207215 |
|         |             | 90°      | 240997                           | 215177 | 257092 | 229549 | 273186 | 243921 | 289281 | 258293 | 305375 | 272665 | 321470 | 287036 |
| 80C-350 | 91          | 0°       | 581979                           | 612073 | 620845 | 652953 | 659711 | 693833 | 698577 | 734712 | -      | -      | -      | -      |
|         |             | 45°      | 227490                           | 215736 | 242682 | 230145 | 257874 | 244554 | 273067 | 258962 | -      | -      | -      | -      |
|         |             | 90°      | 328024                           | 298839 | 349931 | 318798 | 371837 | 338758 | 393743 | 358717 | -      | -      | -      | -      |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

## Symmetric Yoke Design

**Table 8. Models 0.3S-45 to 14S-350 at 15 to 40 barg**

| Model    | MOP* (barg) | Position | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |        |        |       |       |
|----------|-------------|----------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|
|          |             |          | 15                               |       | 20    |       | 25    |       | 30    |       | 35     |        | 40    |       |
|          |             |          | OP                               | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP     | CL     | OP    | CL    |
| 0.3S-45  | 100         | 0°       | 213                              | 189   | 287   | 256   | 362   | 323   | 436   | 390   | 511    | 457    | 585   | 524   |
|          |             | 45°      | 135                              | 107   | 182   | 145   | 229   | 183   | 276   | 221   | 324    | 259    | 371   | 297   |
|          |             | 90°      | 243                              | 175   | 328   | 237   | 414   | 300   | 499   | 362   | 584    | 424    | 669   | 486   |
| 0.3S-75  | 73          | 0°       | 602                              | 597   | 809   | 803   | 1016  | 1010  | 1223  | 1216  | 1430   | 1422   | 1637  | 1628  |
|          |             | 45°      | 381                              | 338   | 513   | 455   | 644   | 572   | 775   | 689   | 906    | 805    | 1038  | 922   |
|          |             | 90°      | 688                              | 554   | 925   | 746   | 1162  | 937   | 1399  | 1128  | 1635   | 1320   | 1872  | 1511  |
| 0.3S-100 | 40          | 0°       | 1078                             | 1097  | 1446  | 1472  | 1814  | 1847  | 2182  | 2222  | 2550   | 2598   | -     | -     |
|          |             | 45°      | 683                              | 621   | 917   | 834   | 1150  | 1046  | 1383  | 1259  | 1617   | 1472   | -     | -     |
|          |             | 90°      | 1233                             | 1018  | 1653  | 1366  | 2074  | 1714  | 2495  | 2062  | 2916   | 2411   | -     | -     |
| 0.9S-100 | 100         | 0°       | 1246                             | 1268  | 1672  | 1702  | 2097  | 2136  | 2523  | 2570  | 2948   | 3004   | 3374  | 3438  |
|          |             | 45°      | 790                              | 718   | 1060  | 964   | 1330  | 1210  | 1599  | 1456  | 1869   | 1702   | 2139  | 1948  |
|          |             | 90°      | 1425                             | 1177  | 1912  | 1579  | 2399  | 1982  | 2885  | 2385  | 3372   | 2788   | 3858  | 3190  |
| 0.9S-135 | 57          | 0°       | 2287                             | 2335  | 3063  | 3127  | 3838  | 3920  | 4613  | 4713  | 5389   | 5506   | 6164  | 6299  |
|          |             | 45°      | 1450                             | 1322  | 1942  | 1772  | 2434  | 2221  | 2925  | 2670  | 3417   | 3119   | 3909  | 3568  |
|          |             | 90°      | 2616                             | 2166  | 3503  | 2902  | 4390  | 3638  | 5276  | 4374  | 6163   | 5109   | 7050  | 5845  |
| 1.5S-135 | 69          | 0°       | 3138                             | 3203  | 4201  | 4290  | 5265  | 5378  | 6329  | 6466  | 7393   | 7553   | 8457  | 8641  |
|          |             | 45°      | 1835                             | 1667  | 2458  | 2234  | 3080  | 2800  | 3702  | 3366  | 4325   | 3932   | 4947  | 4499  |
|          |             | 90°      | 3027                             | 2507  | 4054  | 3359  | 5080  | 4210  | 6106  | 5061  | 7133   | 5913   | 8159  | 6764  |
| 1.5S-175 | 40          | 0°       | 5291                             | 5439  | 7078  | 7279  | 8866  | 9119  | 10653 | 10959 | 12441  | 12799  | 14229 | 14639 |
|          |             | 45°      | 3095                             | 2832  | 4141  | 3790  | 5186  | 4748  | 6232  | 5706  | 7278   | 6664   | 8324  | 7622  |
|          |             | 90°      | 5104                             | 4258  | 6829  | 5698  | 8554  | 7139  | 10278 | 8579  | 12003  | 10019  | 13728 | 11460 |
| 3S-135   | 84          | 0°       | 5126                             | 5232  | 6864  | 7009  | 8602  | 8786  | 10339 | 10562 | 12077  | 12339  | 13815 | 14116 |
|          |             | 45°      | 3039                             | 2763  | 4070  | 3702  | 5100  | 4640  | 6131  | 5578  | 7161   | 6517   | 8192  | 7455  |
|          |             | 90°      | 5088                             | 4214  | 6813  | 5645  | 8538  | 7076  | 10263 | 8507  | 11988  | 9938   | 13713 | 11369 |
| 3S-175   | 50          | 0°       | 8643                             | 8886  | 11563 | 11892 | 14483 | 14897 | 17404 | 17903 | 20324  | 20909  | 23244 | 23915 |
|          |             | 45°      | 5125                             | 4693  | 6857  | 6280  | 8588  | 7868  | 10320 | 9455  | 12052  | 11043  | 13783 | 12630 |
|          |             | 90°      | 8580                             | 7157  | 11478 | 9578  | 14377 | 11999 | 17276 | 14420 | 20174  | 16841  | 23073 | 19262 |
| 6S-175   | 85          | 0°       | 10087                            | 10370 | 13495 | 13878 | 16902 | 17385 | 20310 | 20893 | 23718  | 24401  | 27126 | 27909 |
|          |             | 45°      | 5992                             | 5487  | 8017  | 7343  | 10041 | 9200  | 12066 | 11056 | 14090  | 12912  | 16115 | 14768 |
|          |             | 90°      | 10051                            | 8384  | 13447 | 11220 | 16843 | 14057 | 20239 | 16893 | 23634  | 19729  | 27030 | 22565 |
| 6S-200   | 66          | 0°       | 13210                            | 13459 | 17661 | 17999 | 22112 | 22539 | 26563 | 27079 | 31015  | 31618  | 35466 | 36158 |
|          |             | 45°      | 7848                             | 7122  | 10492 | 9524  | 13136 | 11927 | 15781 | 14329 | 18425  | 16731  | 21069 | 19133 |
|          |             | 90°      | 13164                            | 10882 | 17599 | 14553 | 22034 | 18223 | 26470 | 21894 | 30905  | 25564  | 35340 | 29235 |
| 14S-200  | 100         | 0°       | 14655                            | 14931 | 19593 | 19968 | 24531 | 25004 | 29469 | 30040 | 34407  | 35077  | 39345 | 40113 |
|          |             | 45°      | 8573                             | 7774  | 11462 | 10396 | 14351 | 13018 | 17239 | 15641 | 20128  | 18263  | 23017 | 20885 |
|          |             | 90°      | 14139                            | 11689 | 18903 | 15631 | 23668 | 19574 | 28432 | 23517 | 33196  | 27459  | 37960 | 31402 |
| 14S-235  | 84          | 0°       | 20274                            | 21229 | 27092 | 28372 | 33909 | 35515 | 40727 | 42658 | 47544  | 49801  | 54362 | 56944 |
|          |             | 45°      | 11860                            | 11053 | 15849 | 14772 | 19837 | 18491 | 23825 | 22210 | 27813  | 25929  | 31802 | 29648 |
|          |             | 90°      | 19561                            | 16619 | 26138 | 22211 | 32716 | 27803 | 39293 | 33394 | 45871  | 38986  | 52448 | 44578 |
| 14S-280  | 59          | 0°       | 28783                            | 30226 | 38461 | 40396 | 48139 | 50565 | 57818 | 60735 | 67496  | 70904  | 77174 | 81074 |
|          |             | 45°      | 16838                            | 15737 | 22500 | 21032 | 28162 | 26327 | 33823 | 31622 | 39485  | 36916  | 45147 | 42211 |
|          |             | 90°      | 27770                            | 23662 | 37107 | 31623 | 46445 | 39584 | 55783 | 47545 | 65120  | 55506  | 74458 | 63468 |
| 14S-300  | 51          | 0°       | 33042                            | 34999 | 44152 | 46774 | 55262 | 58548 | 66373 | 70323 | 77483  | 82097  | 88593 | 93872 |
|          |             | 45°      | 19329                            | 18222 | 25829 | 24353 | 32328 | 30483 | 38828 | 36614 | 45328  | 42744  | 51827 | 48875 |
|          |             | 90°      | 31878                            | 27399 | 42598 | 36616 | 53317 | 45834 | 64036 | 55051 | 74755  | 64269  | 85475 | 73486 |
| 14S-350  | 37          | 0°       | 44973                            | 48373 | 60096 | 64644 | 75218 | 80915 | 90341 | 97186 | 105463 | 113457 | -     | -     |
|          |             | 45°      | 26309                            | 25185 | 35156 | 33657 | 44003 | 42129 | 52849 | 50600 | 61696  | 59072  | -     | -     |
|          |             | 90°      | 43390                            | 37868 | 57980 | 50606 | 72570 | 63343 | 87160 | 76081 | 101751 | 88819  | -     | -     |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

**Table 9. Models 0.3S-45 to 14S-350 45 to 70 barg**

| Model    | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |        |        |       |       |       |       |       |       |
|----------|-------------|----------|----------------------------------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
|          |             |          | 45                               |        | 50     |        | 55     |        | 60    |       | 65    |       | 70    |       |
|          |             |          | OP                               | CL     | OP     | CL     | OP     | CL     | OP    | CL    | OP    | CL    | OP    | CL    |
| 0.3S-45  | 100         | 0°       | 660                              | 591    | 734    | 658    | 809    | 725    | 883   | 792   | 958   | 859   | 1032  | 926   |
|          |             | 45°      | 418                              | 335    | 465    | 373    | 513    | 411    | 560   | 449   | 607   | 486   | 654   | 524   |
|          |             | 90°      | 755                              | 548    | 840    | 611    | 925    | 673    | 1010  | 735   | 1095  | 797   | 1181  | 859   |
| 0.3S-75  | 73          | 0°       | 1844                             | 1835   | 2051   | 2041   | 2258   | 2247   | 2465  | 2453  | -     | -     | -     | -     |
|          |             | 45°      | 1169                             | 1039   | 1300   | 1156   | 1431   | 1273   | 1563  | 1390  | -     | -     | -     | -     |
|          |             | 90°      | 2109                             | 1702   | 2345   | 1894   | 2582   | 2085   | 2819  | 2277  | -     | -     | -     | -     |
| 0.3S-100 | 40          | 0°       | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 45°      | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 90°      | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
| 0.9S-100 | 100         | 0°       | 3799                             | 3872   | 4225   | 4306   | 4650   | 4740   | 5076  | 5174  | 5501  | 5608  | 5926  | 6042  |
|          |             | 45°      | 2409                             | 2193   | 2679   | 2439   | 2949   | 2685   | 3218  | 2931  | 3488  | 3177  | 3758  | 3423  |
|          |             | 90°      | 4345                             | 3593   | 4832   | 3996   | 5318   | 4398   | 5805  | 4801  | 6292  | 5204  | 6778  | 5607  |
| 0.9S-135 | 57          | 0°       | 6940                             | 7091   | 7715   | 7884   | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 45°      | 4400                             | 4017   | 4892   | 4467   | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 90°      | 7937                             | 6581   | 8824   | 7317   | -      | -      | -     | -     | -     | -     | -     | -     |
| 1.5S-135 | 69          | 0°       | 9520                             | 9728   | 10584  | 10816  | 11648  | 11904  | 12712 | 12991 | 13775 | 14079 | -     | -     |
|          |             | 45°      | 5569                             | 5065   | 6192   | 5631   | 6814   | 6197   | 7436  | 6764  | 8059  | 7330  | -     | -     |
|          |             | 90°      | 9185                             | 7616   | 10212  | 8467   | 11238  | 9319   | 12264 | 10170 | 13291 | 11021 | -     | -     |
| 1.5S-175 | 40          | 0°       | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 45°      | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 90°      | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
| 3S-135   | 84          | 0°       | 15553                            | 15893  | 17291  | 17669  | 19028  | 19446  | 20766 | 21223 | 22504 | 23000 | 24242 | 24776 |
|          |             | 45°      | 9222                             | 8393   | 10253  | 9332   | 11283  | 10270  | 12314 | 11209 | 13344 | 12147 | 14375 | 13085 |
|          |             | 90°      | 15438                            | 12800  | 17163  | 14231  | 18888  | 15663  | 20613 | 17094 | 22338 | 18525 | 24063 | 19956 |
| 3S-175   | 50          | 0°       | 26164                            | 26920  | 29084  | 29926  | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 45°      | 15515                            | 14218  | 17247  | 15805  | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 90°      | 25972                            | 21682  | 28870  | 24103  | -      | -      | -     | -     | -     | -     | -     | -     |
| 6S-175   | 85          | 0°       | 30534                            | 31416  | 33942  | 34924  | 37350  | 38432  | 40757 | 41940 | 44165 | 45447 | 47573 | 48955 |
|          |             | 45°      | 18139                            | 16624  | 20164  | 18480  | 22189  | 20337  | 24213 | 22193 | 26238 | 24049 | 28262 | 25905 |
|          |             | 90°      | 30426                            | 25401  | 33822  | 28237  | 37218  | 31073  | 40613 | 33910 | 44009 | 36746 | 47405 | 39582 |
| 6S-200   | 66          | 0°       | 39917                            | 40698  | 44368  | 45238  | 48819  | 49778  | 53270 | 54317 | 57721 | 58857 | -     | -     |
|          |             | 45°      | 23714                            | 21536  | 26358  | 23938  | 29002  | 26340  | 31647 | 28743 | 34291 | 31145 | -     | -     |
|          |             | 90°      | 39776                            | 32906  | 44211  | 36576  | 48646  | 40247  | 53082 | 43917 | 57517 | 47588 | -     | -     |
| 14S-200  | 100         | 0°       | 44283                            | 45149  | 49221  | 50186  | 54159  | 55222  | 59096 | 60258 | 64034 | 65295 | 68972 | 70331 |
|          |             | 45°      | 25905                            | 23507  | 28794  | 26129  | 31683  | 28752  | 34571 | 31374 | 37460 | 33996 | 40349 | 36618 |
|          |             | 90°      | 42724                            | 35345  | 47488  | 39287  | 52252  | 43230  | 57016 | 47173 | 61780 | 51115 | 66544 | 55058 |
| 14S-235  | 84          | 0°       | 61179                            | 64087  | 67996  | 71230  | 74814  | 78373  | 81631 | 85515 | 88449 | 92658 | 95266 | 99801 |
|          |             | 45°      | 35790                            | 33367  | 39778  | 37086  | 43766  | 40805  | 47754 | 44524 | 51743 | 48243 | 55731 | 51962 |
|          |             | 90°      | 59025                            | 50170  | 65603  | 55761  | 72180  | 61353  | 78758 | 66945 | 85335 | 72536 | 91913 | 78128 |
| 14S-280  | 59          | 0°       | 86853                            | 91243  | 96531  | 101413 | 106209 | 111582 | -     | -     | -     | -     | -     | -     |
|          |             | 45°      | 50809                            | 47506  | 56471  | 52801  | 62133  | 58096  | -     | -     | -     | -     | -     | -     |
|          |             | 90°      | 83795                            | 71429  | 93133  | 79390  | 102471 | 87351  | -     | -     | -     | -     | -     | -     |
| 14S-300  | 51          | 0°       | 99703                            | 105646 | 110814 | 117421 | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 45°      | 58327                            | 55005  | 64826  | 61136  | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 90°      | 96194                            | 82704  | 106913 | 91922  | -      | -      | -     | -     | -     | -     | -     | -     |
| 14S-350  | 37          | 0°       | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 45°      | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |
|          |             | 90°      | -                                | -      | -      | -      | -      | -      | -     | -     | -     | -     | -     | -     |

**NOTE:**  
\* MOP = Maximum Operating Pressure (barg)

**Table 10. Models 0.3S-45 to 14S-350 at 75 to 100 barg**

| Model    | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |       |       |       |       |       |       |       |        |
|----------|-------------|----------|----------------------------------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|--------|
|          |             |          | 75                               |        | 80     |        | 85    |       | 90    |       | 95    |       | 100   |        |
|          |             |          | OP                               | CL     | OP     | CL     | OP    | CL    | OP    | CL    | OP    | CL    | OP    | CL     |
| 0.3S-45  | 100         | 0°       | 1107                             | 993    | 1181   | 1060   | 1256  | 1127  | 1330  | 1194  | 1405  | 1261  | 1479  | 1328   |
|          |             | 45°      | 702                              | 562    | 749    | 600    | 796   | 638   | 843   | 676   | 891   | 714   | 938   | 752    |
|          |             | 90°      | 1266                             | 922    | 1351   | 984    | 1436  | 1046  | 1522  | 1108  | 1607  | 1170  | 1692  | 1233   |
| 0.3S-75  | 73          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 0.3S-100 | 40          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 0.9S-100 | 100         | 0°       | 6352                             | 6476   | 6777   | 6910   | 7203  | 7344  | 7628  | 7777  | -     | -     | -     | -      |
|          |             | 45°      | 4028                             | 3669   | 4298   | 3914   | 4567  | 4160  | 4837  | 4406  | -     | -     | -     | -      |
|          |             | 90°      | 7265                             | 6009   | 7752   | 6412   | 8238  | 6815  | 8725  | 7218  | -     | -     | -     | -      |
| 0.9S-135 | 57          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 1.5S-135 | 69          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 1.5S-175 | 40          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 3S-135   | 84          | 0°       | 25979                            | 26553  | 27717  | 28330  | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | 15405                            | 14024  | 16436  | 14962  | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | 25788                            | 21387  | 27513  | 22818  | -     | -     | -     | -     | -     | -     | -     | -      |
| 3S-175   | 50          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 6S-175   | 85          | 0°       | 50981                            | 52463  | 54389  | 55970  | 57797 | 59478 | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | 30287                            | 27761  | 32311  | 29617  | 34336 | 31474 | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | 50801                            | 42418  | 54197  | 45254  | 57593 | 48090 | -     | -     | -     | -     | -     | -      |
| 6S-200   | 66          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 14S-200  | 100         | 0°       | 73910                            | 75367  | 78848  | 80404  | 83786 | 85440 | 88724 | 90476 | 93662 | 95513 | 98600 | 100549 |
|          |             | 45°      | 43238                            | 39240  | 46126  | 41863  | 49015 | 44485 | 51904 | 47107 | 54792 | 49729 | 57681 | 52351  |
|          |             | 90°      | 71309                            | 59000  | 76073  | 62943  | 80837 | 66886 | 85601 | 70828 | 90365 | 74771 | 95129 | 78714  |
| 14S-235  | 84          | 0°       | 102083                           | 106944 | 108901 | 114087 | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | 59719                            | 55681  | 63707  | 59400  | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | 98490                            | 83720  | 105067 | 89312  | -     | -     | -     | -     | -     | -     | -     | -      |
| 14S-280  | 59          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 14S-300  | 51          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
| 14S-350  | 37          | 0°       | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 45°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |
|          |             | 90°      | -                                | -      | -      | -      | -     | -     | -     | -     | -     | -     | -     | -      |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

**Table 11. Models 18S-235 to 80S-350 at 15 to 40 barg**

| Model   | MOP* (barg) | Position | Operating Supply Pressure (barg) |       |        |        |        |        |        |        |        |        |        |        |
|---------|-------------|----------|----------------------------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|         |             |          | 15                               |       | 20     |        | 25     |        | 30     |        | 35     |        | 40     |        |
|         |             |          | OP                               | CL    | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     |
| 18S-235 | 100         | 0°       | 23309                            | 24407 | 31147  | 32619  | 38985  | 40831  | 46823  | 49043  | 54660  | 57255  | 62498  | 65467  |
|         |             | 45°      | 13640                            | 12711 | 18226  | 16988  | 22813  | 21265  | 27399  | 25542  | 31986  | 29819  | 36572  | 34096  |
|         |             | 90°      | 22503                            | 19119 | 30069  | 25551  | 37636  | 31984  | 45202  | 38416  | 52769  | 44849  | 60335  | 51282  |
| 18S-280 | 77          | 0°       | 33091                            | 34750 | 44218  | 46442  | 55345  | 58133  | 66472  | 69825  | 77599  | 81517  | 88725  | 93208  |
|         |             | 45°      | 19364                            | 18098 | 25875  | 24188  | 32386  | 30277  | 38898  | 36366  | 45409  | 42455  | 51920  | 48545  |
|         |             | 90°      | 31946                            | 27221 | 42688  | 36379  | 53430  | 45537  | 64172  | 54696  | 74913  | 63854  | 85655  | 73012  |
| 18S-300 | 66          | 0°       | 37987                            | 40238 | 50760  | 53775  | 63534  | 67312  | 76307  | 80848  | 89080  | 94385  | 101853 | 107922 |
|         |             | 45°      | 22229                            | 20956 | 29704  | 28007  | 37178  | 35057  | 44653  | 42107  | 52128  | 49157  | 59602  | 56208  |
|         |             | 90°      | 36673                            | 31519 | 49004  | 42123  | 61335  | 52727  | 73666  | 63330  | 85998  | 73934  | 98329  | 84538  |
| 18S-350 | 48          | 0°       | 51705                            | 55613 | 69091  | 74319  | 86476  | 93026  | 103862 | 111733 | 121248 | 130439 | 138634 | 149146 |
|         |             | 45°      | 30256                            | 28964 | 40430  | 38707  | 50604  | 48450  | 60778  | 58192  | 70952  | 67935  | 81125  | 77678  |
|         |             | 90°      | 49916                            | 43563 | 66700  | 58216  | 83484  | 72869  | 100268 | 87523  | 117052 | 102176 | 133837 | 116829 |
| 32S-235 | 100         | 0°       | 27014                            | 28286 | 36097  | 37804  | 45181  | 47321  | 54265  | 56838  | 63348  | 66355  | 72432  | 75872  |
|         |             | 45°      | 16019                            | 14939 | 21405  | 19966  | 26792  | 24992  | 32178  | 30018  | 37565  | 35045  | 42951  | 40071  |
|         |             | 90°      | 26815                            | 22783 | 35832  | 30448  | 44849  | 38114  | 53866  | 45779  | 62882  | 53445  | 71899  | 61110  |
| 32S-280 | 100         | 0°       | 38350                            | 40273 | 51246  | 53823  | 64141  | 67373  | 77037  | 80923  | 89932  | 94473  | 102827 | 108023 |
|         |             | 45°      | 22741                            | 21270 | 30388  | 28426  | 38035  | 35583  | 45682  | 42739  | 53329  | 49895  | 60976  | 57052  |
|         |             | 90°      | 38069                            | 32438 | 50869  | 43351  | 63670  | 54265  | 76470  | 65178  | 89271  | 76092  | 102072 | 87005  |
| 32S-300 | 100         | 0°       | 44025                            | 46633 | 58828  | 62322  | 73632  | 78010  | 88435  | 93698  | 103238 | 109387 | 118042 | 125075 |
|         |             | 45°      | 26106                            | 24629 | 34885  | 32915  | 43663  | 41200  | 52441  | 49486  | 61220  | 57772  | 69998  | 66058  |
|         |             | 90°      | 43701                            | 37560 | 58396  | 50196  | 73090  | 62832  | 87785  | 75468  | 102479 | 88104  | 117174 | 100740 |
| 32S-350 | 73          | 0°       | 59923                            | 64452 | 80072  | 86132  | 100221 | 107811 | 120370 | 129491 | 140519 | 151171 | 160668 | 172851 |
|         |             | 45°      | 35534                            | 34040 | 47482  | 45490  | 59430  | 56940  | 71379  | 68390  | 83327  | 79840  | 95275  | 91290  |
|         |             | 90°      | 59482                            | 51912 | 79483  | 69373  | 99484  | 86835  | 119485 | 104297 | 139486 | 121759 | 159487 | 139220 |
| 50S-235 | 100         | 0°       | 30016                            | 31429 | 40108  | 42004  | 50201  | 52579  | 60294  | 63153  | 70387  | 73728  | 80480  | 84303  |
|         |             | 45°      | 17799                            | 16599 | 23784  | 22184  | 29769  | 27769  | 35754  | 33354  | 41739  | 38939  | 47724  | 44524  |
|         |             | 90°      | 29795                            | 25314 | 39813  | 33831  | 49832  | 42349  | 59851  | 50866  | 69869  | 59383  | 79888  | 67900  |
| 50S-280 | 100         | 0°       | 42612                            | 44748 | 56940  | 59804  | 71268  | 74859  | 85596  | 89915  | 99925  | 104970 | 114253 | 120025 |
|         |             | 45°      | 25268                            | 23633 | 33765  | 31585  | 42261  | 39536  | 50758  | 47488  | 59255  | 55439  | 67751  | 63391  |
|         |             | 90°      | 42298                            | 36042 | 56521  | 48168  | 70744  | 60294  | 84967  | 72420  | 99190  | 84547  | 113413 | 96673  |
| 50S-300 | 100         | 0°       | 48917                            | 51815 | 65365  | 69246  | 81813  | 86678  | 98261  | 104109 | 114709 | 121541 | 131158 | 138972 |
|         |             | 45°      | 29007                            | 27366 | 38761  | 36572  | 48514  | 45778  | 58268  | 54985  | 68022  | 64191  | 77776  | 73398  |
|         |             | 90°      | 48557                            | 41733 | 64884  | 55773  | 81212  | 69813  | 97539  | 83853  | 113866 | 97893  | 130193 | 111933 |
| 50S-350 | 93          | 0°       | 66581                            | 71613 | 88969  | 95702  | 111357 | 119791 | 133745 | 143879 | 156132 | 167968 | 178520 | 192057 |
|         |             | 45°      | 39482                            | 37822 | 52758  | 50544  | 66034  | 63267  | 79310  | 75989  | 92586  | 88711  | 105861 | 101434 |
|         |             | 90°      | 66092                            | 57680 | 88315  | 77082  | 110538 | 96484  | 132761 | 115886 | 154985 | 135287 | 177208 | 154689 |
| 80S-300 | 100         | 0°       | 57069                            | 59375 | 76259  | 79354  | 95449  | 99332  | 114638 | 119310 | 133828 | 139289 | 153017 | 159267 |
|         |             | 45°      | 33842                            | 31359 | 45221  | 41910  | 56600  | 52462  | 67980  | 63013  | 79359  | 73564  | 90738  | 84116  |
|         |             | 90°      | 56650                            | 47823 | 75698  | 63914  | 94747  | 80005  | 113795 | 96097  | 132844 | 112188 | 151892 | 128279 |
| 80S-350 | 100         | 0°       | 77678                            | 82473 | 103797 | 110218 | 129916 | 137963 | 156035 | 165708 | 182155 | 193453 | 208274 | 221198 |
|         |             | 45°      | 46062                            | 43558 | 61551  | 58211  | 77039  | 72865  | 92528  | 87518  | 108017 | 102171 | 123505 | 116825 |
|         |             | 90°      | 77107                            | 66427 | 103034 | 88774  | 128961 | 111121 | 154888 | 133468 | 180816 | 155814 | 206743 | 178161 |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

**Table 12. Models 18S-235 to 80S-350 at 45 to 70 barg**

| Model   | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |        |        |        |
|---------|-------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|         |             |          | 45                               |        | 50     |        | 55     |        | 60     |        | 65     |        | 70     |        |
|         |             |          | OP                               | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     |
| 18S-235 | 100         | 0°       | 70336                            | 73679  | 78174  | 81891  | 86012  | 90103  | 93849  | 98315  | 101687 | 106527 | 109525 | 114739 |
|         |             | 45°      | 41159                            | 38373  | 45745  | 42650  | 50332  | 46927  | 54918  | 51204  | 59505  | 55481  | 64091  | 59758  |
|         |             | 90°      | 67902                            | 57714  | 75469  | 64147  | 83035  | 70580  | 90602  | 77012  | 98168  | 83445  | 105735 | 89878  |
| 18S-280 | 77          | 0°       | 99852                            | 104900 | 110979 | 116592 | 122106 | 128283 | 133233 | 139975 | 144360 | 151667 | 155487 | 163358 |
|         |             | 45°      | 58431                            | 54634  | 64943  | 60723  | 71454  | 66812  | 77965  | 72902  | 84476  | 78991  | 90987  | 85080  |
|         |             | 90°      | 96397                            | 82171  | 107139 | 91329  | 117881 | 100487 | 128623 | 109646 | 139365 | 118804 | 150107 | 127962 |
| 18S-300 | 66          | 0°       | 114627                           | 121459 | 127400 | 134996 | 140173 | 148533 | 152946 | 162069 | 165720 | 175606 | -      | -      |
|         |             | 45°      | 67077                            | 63258  | 74551  | 70308  | 82026  | 77359  | 89501  | 84409  | 96975  | 91459  | -      | -      |
|         |             | 90°      | 110660                           | 95142  | 122991 | 105745 | 135323 | 116349 | 147654 | 126953 | 159985 | 137557 | -      | -      |
| 18S-350 | 48          | 0°       | 156020                           | 167852 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 91299                            | 87421  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 150621                           | 131483 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 32S-235 | 100         | 0°       | 81515                            | 85389  | 90599  | 94907  | 99682  | 104424 | 108766 | 113941 | 117849 | 123458 | 126933 | 132975 |
|         |             | 45°      | 48338                            | 45098  | 53724  | 50124  | 59111  | 55151  | 64497  | 60177  | 69884  | 65204  | 75270  | 70230  |
|         |             | 90°      | 80916                            | 68776  | 89933  | 76441  | 98949  | 84107  | 107966 | 91772  | 116983 | 99438  | 126000 | 107103 |
| 32S-280 | 100         | 0°       | 115723                           | 121573 | 128618 | 135123 | 141514 | 148672 | 154409 | 162222 | 167304 | 175772 | 180200 | 189322 |
|         |             | 45°      | 68623                            | 64208  | 76270  | 71364  | 83917  | 78521  | 91564  | 85677  | 99211  | 92833  | 106857 | 99990  |
|         |             | 90°      | 114872                           | 97919  | 127673 | 108833 | 140473 | 119746 | 153274 | 130660 | 166075 | 141573 | 178875 | 152487 |
| 32S-300 | 100         | 0°       | 132845                           | 140763 | 147649 | 156452 | 162452 | 172140 | 177255 | 187829 | 192059 | 203517 | 206862 | 219205 |
|         |             | 45°      | 78776                            | 74343  | 87555  | 82629  | 96333  | 90915  | 105111 | 99201  | 113890 | 107486 | 122668 | 115772 |
|         |             | 90°      | 131869                           | 113376 | 146563 | 126012 | 161258 | 138648 | 175952 | 151284 | 190647 | 163920 | 205342 | 176556 |
| 32S-350 | 73          | 0°       | 180817                           | 194531 | 200966 | 216211 | 221115 | 237890 | 241264 | 259570 | 261414 | 281250 | 281563 | 302930 |
|         |             | 45°      | 107224                           | 102740 | 119172 | 114191 | 131120 | 125641 | 143068 | 137091 | 155017 | 148541 | 166965 | 159991 |
|         |             | 90°      | 179488                           | 156682 | 199489 | 174144 | 219490 | 191606 | 239491 | 209067 | 259492 | 226529 | 279493 | 243991 |
| 50S-235 | 100         | 0°       | 90572                            | 94877  | 100665 | 105452 | 110758 | 116026 | 120851 | 126601 | 130944 | 137176 | 141036 | 147750 |
|         |             | 45°      | 53709                            | 50109  | 59694  | 55694  | 65679  | 61279  | 71664  | 66864  | 77649  | 72449  | 83634  | 78034  |
|         |             | 90°      | 89907                            | 76418  | 99925  | 84935  | 109944 | 93452  | 119962 | 101969 | 129981 | 110486 | 140000 | 119004 |
| 50S-280 | 100         | 0°       | 128581                           | 135081 | 142909 | 150136 | 157237 | 165192 | 171566 | 180247 | 185894 | 195303 | 200222 | 210358 |
|         |             | 45°      | 76248                            | 71342  | 84744  | 79294  | 93241  | 87245  | 101737 | 95197  | 110234 | 103148 | 118731 | 111100 |
|         |             | 90°      | 127636                           | 108799 | 141859 | 120925 | 156082 | 133051 | 170304 | 145178 | 184527 | 157304 | 198750 | 169430 |
| 50S-300 | 100         | 0°       | 147606                           | 156404 | 164054 | 173835 | 180502 | 191267 | 196950 | 208698 | 213399 | 226130 | 229847 | 243562 |
|         |             | 45°      | 87529                            | 82604  | 97283  | 91810  | 107037 | 101017 | 116790 | 110223 | 126544 | 119429 | 136298 | 128636 |
|         |             | 90°      | 146521                           | 125973 | 162848 | 140013 | 179175 | 154053 | 195503 | 168093 | 211830 | 182133 | 228157 | 196173 |
| 50S-350 | 93          | 0°       | 200908                           | 216145 | 223296 | 240234 | 245684 | 264323 | 268072 | 288411 | 290460 | 312500 | 312847 | 336589 |
|         |             | 45°      | 119137                           | 114156 | 132413 | 126878 | 145689 | 139601 | 158965 | 152323 | 172241 | 165046 | 185517 | 177768 |
|         |             | 90°      | 199431                           | 174091 | 221654 | 193493 | 243878 | 212895 | 266101 | 232297 | 288324 | 251699 | 310548 | 271101 |
| 80S-300 | 100         | 0°       | 172207                           | 179245 | 191396 | 199223 | 210586 | 219202 | 229776 | 239180 | 248965 | 259158 | 268155 | 279137 |
|         |             | 45°      | 102118                           | 94667  | 113497 | 105219 | 124876 | 115770 | 136256 | 126322 | 147635 | 136873 | 159014 | 147425 |
|         |             | 90°      | 170941                           | 144371 | 189989 | 160462 | 209038 | 176553 | 228087 | 192644 | 247135 | 208736 | 266184 | 224827 |
| 80S-350 | 100         | 0°       | 234393                           | 248943 | 260512 | 276688 | 286631 | 304433 | 312750 | 332178 | 338870 | 359923 | 364989 | 387668 |
|         |             | 45°      | 138994                           | 131478 | 154482 | 146132 | 169971 | 160785 | 185459 | 175439 | 200948 | 190092 | 216436 | 204745 |
|         |             | 90°      | 232670                           | 200508 | 258597 | 222855 | 284524 | 245202 | 310451 | 267549 | 336378 | 289896 | 362306 | 312242 |

**NOTE:**  
\* MOP = Maximum Operating Pressure (barg)

**Table 13. Models 18S-235 to 80S-350 at 75 to 100 barg**

| Model   | MOP* (barg) | Position | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |        |        |        |
|---------|-------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|         |             |          | 75                               |        | 80     |        | 85     |        | 90     |        | 95     |        | 100    |        |
|         |             |          | OP                               | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     |
| 18S-235 | 100         | 0°       | 117363                           | 122951 | 125201 | 131163 | 133038 | 139375 | 140876 | 147587 | 148714 | 155799 | 156552 | 164011 |
|         |             | 45°      | 68678                            | 64035  | 73265  | 68312  | 77851  | 72589  | 82438  | 76866  | 87024  | 81143  | 91611  | 85420  |
|         |             | 90°      | 113302                           | 96310  | 120868 | 102743 | 128435 | 109176 | 136001 | 115608 | 143568 | 122041 | 151135 | 128474 |
| 18S-280 | 77          | 0°       | 166614                           | 175050 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 45°      | 97499                            | 91169  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|         |             | 90°      | 160849                           | 137121 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-300 | 66          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
| 18S-350 | 48          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
| 32S-235 | 100         | 0°       | 136016                           | 142493 | 145100 | 152010 | 154183 | 161527 | 163267 | 171044 | 172350 | 180561 | 181434 | 190078 |
|         |             | 45°      | 80657                            | 75257  | 86043  | 80283  | 91430  | 85310  | 96816  | 90336  | 102203 | 95363  | 107589 | 100389 |
|         |             | 90°      | 135016                           | 114769 | 144033 | 122434 | 153050 | 130100 | 162067 | 137765 | 171083 | 145431 | 180100 | 153096 |
| 32S-280 | 100         | 0°       | 193095                           | 202872 | 205991 | 216422 | 218886 | 229972 | 231781 | 243522 | 244677 | 257072 | 257572 | 270621 |
|         |             | 45°      | 114504                           | 107146 | 122151 | 114302 | 129798 | 121459 | 137445 | 128615 | 145092 | 135771 | 152739 | 142927 |
|         |             | 90°      | 191676                           | 163400 | 204476 | 174314 | 217277 | 185228 | 230078 | 196141 | 242878 | 207055 | 255679 | 217968 |
| 32S-300 | 100         | 0°       | 221666                           | 234894 | 236469 | 250582 | 251272 | 266270 | 266076 | 281959 | 280879 | 297647 | 295683 | 313336 |
|         |             | 45°      | 131446                           | 124058 | 140225 | 132344 | 149003 | 140630 | 157781 | 148915 | 166560 | 157201 | 175338 | 165487 |
|         |             | 90°      | 220036                           | 189192 | 234731 | 201828 | 249425 | 214464 | 264120 | 227100 | 278814 | 239736 | 293509 | 252372 |
| 32S-350 | 73          | 0°       | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 45°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
|         |             | 90°      | -                                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |        |
| 50S-235 | 100         | 0°       | 151129                           | 158325 | 161222 | 168900 | 171315 | 179474 | 181408 | 190049 | 191500 | 200624 | 201593 | 211198 |
|         |             | 45°      | 89619                            | 83619  | 95604  | 89204  | 101589 | 94789  | 107574 | 100373 | 113559 | 105958 | 119544 | 111543 |
|         |             | 90°      | 150018                           | 127521 | 160037 | 136038 | 170055 | 144555 | 180074 | 153072 | 190093 | 161590 | 200111 | 170107 |
| 50S-280 | 100         | 0°       | 214550                           | 225413 | 228879 | 240469 | 243207 | 255524 | 257535 | 270580 | 271863 | 285635 | 286192 | 300691 |
|         |             | 45°      | 127227                           | 119051 | 135724 | 127002 | 144220 | 134954 | 152717 | 142905 | 161213 | 150857 | 169710 | 158808 |
|         |             | 90°      | 212973                           | 181556 | 227196 | 193682 | 241419 | 205809 | 255642 | 217935 | 269865 | 230061 | 284088 | 242187 |
| 50S-300 | 100         | 0°       | 246295                           | 260993 | 262743 | 278425 | 279192 | 295856 | 295640 | 313288 | 312088 | 330719 | 328536 | 348151 |
|         |             | 45°      | 146052                           | 137842 | 155805 | 147049 | 165559 | 156255 | 175313 | 165461 | 185066 | 174668 | 194820 | 183874 |
|         |             | 90°      | 244485                           | 210213 | 260812 | 224253 | 277139 | 238293 | 293467 | 252333 | 309794 | 266373 | 326121 | 280413 |
| 50S-350 | 93          | 0°       | 335235                           | 360677 | 357623 | 384766 | 380011 | 408855 | 402399 | 432943 | -      | -      | -      | -      |
|         |             | 45°      | 198793                           | 190490 | 212069 | 203213 | 225344 | 215935 | 238620 | 228657 | -      | -      | -      | -      |
|         |             | 90°      | 332771                           | 290503 | 354994 | 309905 | 377217 | 329307 | 399441 | 348709 | -      | -      | -      | -      |
| 80S-300 | 100         | 0°       | 287344                           | 299115 | 306534 | 319093 | 325724 | 339072 | 344913 | 359050 | 364103 | 379028 | 383292 | 399007 |
|         |             | 45°      | 170394                           | 157976 | 181773 | 168528 | 193152 | 179079 | 204532 | 189631 | 215911 | 200182 | 227290 | 210734 |
|         |             | 90°      | 285232                           | 240918 | 304281 | 257009 | 323329 | 273101 | 342378 | 289192 | 361426 | 305283 | 380475 | 321375 |
| 80S-350 | 100         | 0°       | 391108                           | 415413 | 417227 | 443158 | 443346 | 470903 | 469465 | 498648 | 495585 | 526393 | 521704 | 554138 |
|         |             | 45°      | 231925                           | 219399 | 247413 | 234052 | 262902 | 248706 | 278390 | 263359 | 293879 | 278013 | 309368 | 292666 |
|         |             | 90°      | 388233                           | 334589 | 414160 | 356936 | 440087 | 379283 | 466014 | 401630 | 491941 | 423977 | 517869 | 446323 |

**NOTE:**

\* MOP = Maximum Operating Pressure (barg)

# OLGAS Spring-Return Hydraulic Actuator Output Torque (N•m)

## Canted Yoke Design, Spring to Close

**Table 14. Models 0.3C-008A-45-CL to 6C-3800-200-CL at 15 to 35 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |     |     |      |      |      |       |      |      |       |      |      |       |      |       |
|------------------|------------|-------|-------|-------|----------------------------------|-----|-----|------|------|------|-------|------|------|-------|------|------|-------|------|-------|
|                  |            |       |       |       | 15                               |     |     | 20   |      |      | 25    |      |      | 30    |      |      | 35    |      |       |
|                  |            |       |       |       | BTO                              | RTO | ETO | BTO  | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO   |
| 0.3C-008A-45-CL  | 100        | 203   | 115   | 193   | -                                | -   | -   | 246  | 25   | 25   | 365   | 87   | 92   | 484   | 136  | 159  | 602   | 183  | 226   |
| 0.3C-008A-75-CL  | 49         | 196   | 110   | 179   | 748                              | 240 | 308 | 1077 | 370  | 494  | 1407  | 499  | 680  | 1737  | 628  | 865  | 2067  | 757  | 1051  |
| 0.3C-008B-45-CL  | 100        | 309   | 157   | 192   | -                                | -   | -   | -    | -    | -    | -     | -    | -    | 485   | 49   | 49   | 604   | 116  | 116   |
| 0.3C-008B-75-CL  | 49         | 302   | 151   | 177   | 749                              | 184 | 198 | 1079 | 318  | 384  | 1409  | 448  | 570  | 1738  | 578  | 756  | 2068  | 707  | 941   |
| 0.3C-008C-45-CL  | 100        | 372   | 192   | 245   | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | 551   | 48   | 48    |
| 0.3C-008C-75-CL  | 49         | 365   | 186   | 231   | 696                              | 130 | 130 | 1026 | 277  | 316  | 1355  | 409  | 501  | 1685  | 539  | 687  | 2015  | 669  | 873   |
| 0.3C-0100-45-CL  | 100        | 598   | 328   | 502   | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.3C-0100-75-CL  | 53         | 590   | 322   | 487   | -                                | -   | -   | 770  | 67   | 67   | 1100  | 248  | 253  | 1430  | 385  | 439  | 1760  | 517  | 625   |
| 0.3C-0100-100-CL | 30         | 584   | 318   | 475   | 1199                             | 290 | 308 | 1785 | 527  | 639  | 2371  | 759  | 969  | 2957  | 990  | 1300 | -     | -    | -     |
| 0.3C-0150-45-CL  | 100        | 752   | 443   | 818   | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.3C-0150-75-CL  | 58         | 745   | 438   | 804   | -                                | -   | -   | -    | -    | -    | 785   | 75   | 75   | 1115  | 254  | 261  | 1444  | 391  | 447   |
| 0.3C-0150-100-CL | 33         | 739   | 434   | 791   | 883                              | 131 | 131 | 1470 | 401  | 461  | 2056  | 635  | 792  | 2642  | 866  | 1122 | -     | -    | -     |
| 0.9C-0200-100-CL | 74         | 987   | 576   | 1039  | 898                              | 7   | 7   | 1576 | 372  | 389  | 2254  | 648  | 771  | 2932  | 917  | 1153 | 3610  | 1184 | 1535  |
| 0.9C-0200-135-CL | 41         | 979   | 571   | 1023  | 2557                             | 768 | 941 | 3792 | 1256 | 1638 | 5028  | 1740 | 2334 | 6263  | 2224 | 3030 | 7499  | 2708 | 3727  |
| 0.9C-0250-100-CL | 77         | 1181  | 720   | 1435  | -                                | -   | -   | 1181 | 166  | 166  | 1859  | 489  | 548  | 2537  | 761  | 930  | 3215  | 1029 | 1312  |
| 0.9C-0250-135-CL | 42         | 1173  | 714   | 1420  | 2162                             | 611 | 719 | 3397 | 1100 | 1415 | 4633  | 1585 | 2111 | 5868  | 2070 | 2808 | 7104  | 2553 | 3504  |
| 0.9C-0350-100-CL | 81         | 1875  | 1103  | 2023  | -                                | -   | -   | -    | -    | -    | -     | -    | -    | 1952  | 177  | 177  | 2630  | 559  | 559   |
| 0.9C-0350-135-CL | 45         | 1867  | 1097  | 2007  | -                                | -   | -   | 2812 | 644  | 662  | 4047  | 1151 | 1358 | 5283  | 1642 | 2055 | 6518  | 2129 | 2751  |
| 0.9C-0400-100-CL | 87         | 2210  | 1352  | 2711  | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | 1944  | 173  | 173   |
| 0.9C-0400-135-CL | 47         | 2203  | 1346  | 2695  | -                                | -   | -   | 2127 | 276  | 276  | 3362  | 874  | 972  | 4598  | 1370 | 1668 | 5833  | 1859 | 2365  |
| 0.9C-0700-100-CL | 93         | 3124  | 1874  | 3599  | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.9C-0700-135-CL | 51         | 3116  | 1869  | 3583  | -                                | -   | -   | -    | -    | -    | -     | -    | -    | 3713  | 670  | 670  | 4949  | 1252 | 1367  |
| 1.5C-1100-135-CL | 65         | 5773  | 3245  | 5306  | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5C-1100-175-CL | 39         | 5758  | 3234  | 5276  | -                                | -   | -   | -    | -    | -    | 7649  | 1001 | 1001 | 10275 | 2392 | 2480 | 12900 | 3478 | 3960  |
| 1.5C-1200-135-CL | 71         | 6685  | 3937  | 7235  | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5C-1200-175-CL | 42         | 6670  | 3926  | 7205  | -                                | -   | -   | -    | -    | -    | -     | -    | -    | 8354  | 1429 | 1429 | 10979 | 2708 | 2908  |
| 3C-2000-135-CL   | 80         | 9844  | 5938  | 11537 | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 3C-2000-175-CL   | 48         | 9819  | 5920  | 11488 | -                                | -   | -   | -    | -    | -    | 9918  | 1210 | 1210 | 14263 | 3449 | 3659 | 18609 | 5222 | 6108  |
| 6C-2500-175-CL   | 76         | 14038 | 8583  | 17194 | -                                | -   | -   | -    | -    | -    | -     | -    | -    | 12928 | 1416 | 1416 | 18008 | 4150 | 4279  |
| 6C-2500-200-CL   | 58         | 14033 | 8579  | 17183 | -                                | -   | -   | -    | -    | -    | 15614 | 2930 | 2930 | 22249 | 5914 | 6670 | 28885 | 8574 | 10410 |
| 6C-3800-175-CL   | 84         | 18963 | 11945 | 25641 | -                                | -   | -   | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 6C-3800-200-CL   | 64         | 18958 | 11941 | 25631 | -                                | -   | -   | -    | -    | -    | -     | -    | -    | 13836 | 1095 | 1095 | 20471 | 4699 | 4834  |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 15. Models 0.3C-008A-45-CL to 6C-3800-200-CL at 40 to 60 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 40                               |       |       | 45    |       |       | 50    |       |       | 55    |       |       | 60    |       |       |
|                  |            |       |       |       | BTO                              | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   |
| 0.3C-008A-45-CL  | 100        | 203   | 115   | 193   | 721                              | 230   | 293   | 840   | 277   | 360   | 958   | 323   | 427   | 1077  | 370   | 494   | 1196  | 416   | 561   |
| 0.3C-008A-75-CL  | 49         | 196   | 110   | 179   | 2396                             | 886   | 1237  | 2726  | 1015  | 1423  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-008B-45-CL  | 100        | 309   | 157   | 192   | 723                              | 173   | 183   | 841   | 222   | 250   | 960   | 270   | 317   | 1079  | 318   | 384   | 1198  | 365   | 451   |
| 0.3C-008B-75-CL  | 49         | 302   | 151   | 177   | 2398                             | 836   | 1127  | 2728  | 966   | 1313  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-008C-45-CL  | 100        | 372   | 192   | 245   | 669                              | 115   | 115   | 788   | 178   | 182   | 907   | 228   | 249   | 1026  | 277   | 316   | 1144  | 324   | 382   |
| 0.3C-008C-75-CL  | 49         | 365   | 186   | 231   | 2345                             | 798   | 1059  | 2675  | 927   | 1245  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0100-45-CL  | 100        | 598   | 328   | 502   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 770   | 67    | 67    | 889   | 134   | 134   |
| 0.3C-0100-75-CL  | 53         | 590   | 322   | 487   | 2089                             | 648   | 810   | 2419  | 778   | 996   | 2749  | 908   | 1182  | -     | -     | -     | -     | -     | -     |
| 0.3C-0100-100-CL | 30         | 584   | 318   | 475   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-45-CL  | 100        | 752   | 443   | 818   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-75-CL  | 58         | 745   | 438   | 804   | 1774                             | 523   | 633   | 2104  | 654   | 819   | 2434  | 784   | 1005  | 2764  | 914   | 1190  | -     | -     | -     |
| 0.3C-0150-100-CL | 33         | 739   | 434   | 791   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0200-100-CL | 74         | 987   | 576   | 1039  | 4288                             | 1450  | 1917  | 4966  | 1716  | 2299  | 5644  | 1982  | 2681  | 6322  | 2247  | 3063  | 6999  | 2513  | 3445  |
| 0.9C-0200-135-CL | 41         | 979   | 571   | 1023  | 8734                             | 3191  | 4423  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0250-100-CL | 77         | 1181  | 720   | 1435  | 3893                             | 1295  | 1694  | 4571  | 1561  | 2076  | 5249  | 1827  | 2458  | 5926  | 2092  | 2841  | 6604  | 2358  | 3223  |
| 0.9C-0250-135-CL | 42         | 1173  | 714   | 1420  | 8339                             | 3037  | 4200  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0350-100-CL | 81         | 1875  | 1103  | 2023  | 3307                             | 852   | 941   | 3985  | 1126  | 1323  | 4663  | 1396  | 1705  | 5341  | 1665  | 2088  | 6019  | 1932  | 2470  |
| 0.9C-0350-135-CL | 45         | 1867  | 1097  | 2007  | 7754                             | 2614  | 3447  | 8989  | 3098  | 4144  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0400-100-CL | 87         | 2210  | 1352  | 2711  | 2622                             | 555   | 555   | 3300  | 849   | 937   | 3978  | 1123  | 1319  | 4656  | 1393  | 1701  | 5334  | 1662  | 2083  |
| 0.9C-0400-135-CL | 47         | 2203  | 1346  | 2695  | 7069                             | 2345  | 3061  | 8304  | 2830  | 3758  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0700-100-CL | 93         | 3124  | 1874  | 3599  | -                                | -     | -     | -     | -     | -     | 3094  | 321   | 321   | 3772  | 703   | 703   | 4450  | 1043  | 1085  |
| 0.9C-0700-135-CL | 51         | 3116  | 1869  | 3583  | 6184                             | 1752  | 2063  | 7420  | 2244  | 2760  | 8655  | 2733  | 3456  | -     | -     | -     | -     | -     | -     |
| 1.5C-1100-135-CL | 65         | 5773  | 3245  | 5306  | 7048                             | 662   | 662   | 8611  | 1543  | 1543  | 10173 | 2348  | 2423  | 11735 | 3003  | 3304  | 13298 | 3639  | 4184  |
| 1.5C-1100-175-CL | 39         | 5758  | 3234  | 5276  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5C-1200-135-CL | 71         | 6685  | 3937  | 7235  | -                                | -     | -     | 6690  | 491   | 491   | 8252  | 1371  | 1371  | 9814  | 2211  | 2252  | 11377 | 2873  | 3133  |
| 1.5C-1200-175-CL | 42         | 6670  | 3926  | 7205  | 13604                            | 3778  | 4388  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3C-2000-135-CL   | 80         | 9844  | 5938  | 11537 | 8923                             | 649   | 649   | 11509 | 2107  | 2107  | 14095 | 3378  | 3564  | 16681 | 4445  | 5022  | 19267 | 5486  | 6479  |
| 3C-2000-175-CL   | 48         | 9819  | 5920  | 11488 | 22954                            | 6953  | 8557  | 27299 | 8671  | 11006 | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6C-2500-175-CL   | 76         | 14038 | 8583  | 17194 | 23088                            | 6254  | 7143  | 28168 | 8288  | 10006 | 33248 | 10302 | 12869 | 38328 | 12306 | 15733 | 43408 | 14305 | 18596 |
| 6C-2500-200-CL   | 58         | 14033 | 8579  | 17183 | 35520                            | 11200 | 14150 | 42155 | 13813 | 17890 | 48790 | 16419 | 21629 | 55425 | 19022 | 25369 | -     | -     | -     |
| 6C-3800-175-CL   | 84         | 18963 | 11945 | 25641 | 14674                            | 1567  | 1567  | 19754 | 4382  | 4431  | 24835 | 6520  | 7294  | 29915 | 8567  | 10157 | 34995 | 10588 | 13020 |
| 6C-3800-200-CL   | 64         | 18958 | 11941 | 25631 | 27106                            | 7441  | 8574  | 33741 | 10091 | 12314 | 40377 | 12716 | 16054 | 47012 | 15330 | 19794 | 53647 | 17937 | 23534 |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 16. Models 0.3C-008A-45-CL to 6C-3800-200-CL at 65 to 80 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 65                               |       |       | 70    |       |       | 75    |       |       | 80    |       |       |
|                  |            |       |       |       | BTO                              | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   |
| 0.3C-008A-45-CL  | 100        | 203   | 115   | 193   | 1315                             | 463   | 627   | 1433  | 509   | 694   | 1552  | 556   | 761   | 1671  | 602   | 828   |
| 0.3C-008A-75-CL  | 49         | 196   | 110   | 179   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-008B-45-CL  | 100        | 309   | 157   | 192   | 1316                             | 412   | 518   | 1435  | 458   | 584   | 1554  | 505   | 651   | 1672  | 552   | 718   |
| 0.3C-008B-75-CL  | 49         | 302   | 151   | 177   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-008C-45-CL  | 100        | 372   | 192   | 245   | 1263                             | 372   | 449   | 1382  | 419   | 516   | 1500  | 466   | 583   | 1619  | 513   | 650   |
| 0.3C-008C-75-CL  | 49         | 365   | 186   | 231   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0100-45-CL  | 100        | 598   | 328   | 502   | 1007                             | 201   | 201   | 1126  | 259   | 268   | 1245  | 310   | 335   | 1364  | 358   | 401   |
| 0.3C-0100-75-CL  | 53         | 590   | 322   | 487   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0100-100-CL | 30         | 584   | 318   | 475   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-45-CL  | 100        | 752   | 443   | 818   | 692                              | 23    | 23    | 811   | 90    | 90    | 930   | 157   | 157   | 1049  | 224   | 224   |
| 0.3C-0150-75-CL  | 58         | 745   | 438   | 804   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-100-CL | 33         | 739   | 434   | 791   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0200-100-CL | 74         | 987   | 576   | 1039  | 7677                             | 2778  | 3827  | 8355  | 3043  | 4210  | -     | -     | -     | -     | -     | -     |
| 0.9C-0200-135-CL | 41         | 979   | 571   | 1023  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0250-100-CL | 77         | 1181  | 720   | 1435  | 7282                             | 2623  | 3605  | 7960  | 2889  | 3987  | 8638  | 3154  | 4369  | -     | -     | -     |
| 0.9C-0250-135-CL | 42         | 1173  | 714   | 1420  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0350-100-CL | 81         | 1875  | 1103  | 2023  | 6697                             | 2199  | 2852  | 7375  | 2465  | 3234  | 8053  | 2731  | 3616  | 8731  | 2997  | 3998  |
| 0.9C-0350-135-CL | 45         | 1867  | 1097  | 2007  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0400-100-CL | 87         | 2210  | 1352  | 2711  | 6012                             | 1929  | 2466  | 6690  | 2196  | 2848  | 7368  | 2462  | 3230  | 8045  | 2728  | 3612  |
| 0.9C-0400-135-CL | 47         | 2203  | 1346  | 2695  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0700-100-CL | 93         | 3124  | 1874  | 3599  | 5127                             | 1325  | 1468  | 5805  | 1600  | 1850  | 6483  | 1872  | 2232  | 7161  | 2142  | 2614  |
| 0.9C-0700-135-CL | 51         | 3116  | 1869  | 3583  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5C-1100-135-CL | 65         | 5773  | 3245  | 5306  | 14860                            | 4265  | 5065  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5C-1100-175-CL | 39         | 5758  | 3234  | 5276  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5C-1200-135-CL | 71         | 6685  | 3937  | 7235  | 12939                            | 3510  | 4013  | 14501 | 4138  | 4894  | -     | -     | -     | -     | -     | -     |
| 1.5C-1200-175-CL | 42         | 6670  | 3926  | 7205  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3C-2000-135-CL   | 80         | 9844  | 5938  | 11537 | 21853                            | 6517  | 7937  | 24439 | 7541  | 9394  | 27024 | 8562  | 10852 | 29610 | 9581  | 12309 |
| 3C-2000-175-CL   | 48         | 9819  | 5920  | 11488 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6C-2500-175-CL   | 76         | 14038 | 8583  | 17194 | 48488                            | 16301 | 21459 | 53568 | 18294 | 24322 | 58648 | 20285 | 27186 | -     | -     | -     |
| 6C-2500-200-CL   | 58         | 14033 | 8579  | 17183 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6C-3800-175-CL   | 84         | 18963 | 11945 | 25641 | 40075                            | 12597 | 15884 | 45155 | 14599 | 18747 | 50235 | 16597 | 21610 | 55315 | 18593 | 24474 |
| 6C-3800-200-CL   | 64         | 18958 | 11941 | 25631 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 17. Models 0.3C-008A-45-CL to 6C-3800-200-CL at 85 to 100 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |      |      |      |      |      |      |     |      |      |     |      |
|------------------|------------|-------|-------|-------|----------------------------------|------|------|------|------|------|------|-----|------|------|-----|------|
|                  |            |       |       |       | 85                               |      |      | 90   |      |      | 95   |     |      | 100  |     |      |
|                  |            |       |       |       | BTO                              | RTO  | ETO  | BTO  | RTO  | ETO  | BTO  | RTO | ETO  | BTO  | RTO | ETO  |
| 0.3C-008A-45-CL  | 100        | 203   | 115   | 193   | 1790                             | 649  | 895  | 1908 | 695  | 962  | 2027 | 742 | 1029 | 2146 | 788 | 1096 |
| 0.3C-008A-75-CL  | 49         | 196   | 110   | 179   | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.3C-008B-45-CL  | 100        | 309   | 157   | 192   | 1791                             | 598  | 785  | 1910 | 645  | 852  | 2029 | 692 | 919  | 2147 | 738 | 986  |
| 0.3C-008B-75-CL  | 49         | 302   | 151   | 177   | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.3C-008C-45-CL  | 100        | 372   | 192   | 245   | 1738                             | 560  | 717  | 1857 | 606  | 784  | 1975 | 653 | 851  | 2094 | 700 | 918  |
| 0.3C-008C-75-CL  | 49         | 365   | 186   | 231   | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.3C-0100-45-CL  | 100        | 598   | 328   | 502   | 1482                             | 406  | 468  | 1601 | 454  | 535  | 1720 | 502 | 602  | 1839 | 549 | 669  |
| 0.3C-0100-75-CL  | 53         | 590   | 322   | 487   | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.3C-0100-100-CL | 30         | 584   | 318   | 475   | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.3C-0150-45-CL  | 100        | 752   | 443   | 818   | 1167                             | 277  | 291  | 1286 | 327  | 358  | 1405 | 375 | 425  | 1523 | 423 | 491  |
| 0.3C-0150-75-CL  | 58         | 745   | 438   | 804   | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.3C-0150-100-CL | 33         | 739   | 434   | 791   | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0200-100-CL | 74         | 987   | 576   | 1039  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0200-135-CL | 41         | 979   | 571   | 1023  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0250-100-CL | 77         | 1181  | 720   | 1435  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0250-135-CL | 42         | 1173  | 714   | 1420  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0350-100-CL | 81         | 1875  | 1103  | 2023  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0350-135-CL | 45         | 1867  | 1097  | 2007  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0400-100-CL | 87         | 2210  | 1352  | 2711  | 8723                             | 2994 | 3994 | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0400-135-CL | 47         | 2203  | 1346  | 2695  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 0.9C-0700-100-CL | 93         | 3124  | 1874  | 3599  | 7839                             | 2410 | 2996 | 8517 | 2678 | 3378 | -    | -   | -    | -    | -   | -    |
| 0.9C-0700-135-CL | 51         | 3116  | 1869  | 3583  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 1.5C-1100-135-CL | 65         | 5773  | 3245  | 5306  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 1.5C-1100-175-CL | 39         | 5758  | 3234  | 5276  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 1.5C-1200-135-CL | 71         | 6685  | 3937  | 7235  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 1.5C-1200-175-CL | 42         | 6670  | 3926  | 7205  | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 3C-2000-135-CL   | 80         | 9844  | 5938  | 11537 | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 3C-2000-175-CL   | 48         | 9819  | 5920  | 11488 | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 6C-2500-175-CL   | 76         | 14038 | 8583  | 17194 | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 6C-2500-200-CL   | 58         | 14033 | 8579  | 17183 | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 6C-3800-175-CL   | 84         | 18963 | 11945 | 25641 | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |
| 6C-3800-200-CL   | 64         | 18958 | 11941 | 25631 | -                                | -    | -    | -    | -    | -    | -    | -   | -    | -    | -   | -    |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 18. Models 14C-5100-200-CL to 50C-15600-350-CL at 15 to 30 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC    | Operating Supply Pressure (barg) |      |       |       |       |       |       |       |       |        |       |       |
|------------------|------------|--------|-------|--------|----------------------------------|------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
|                  |            |        |       |        | 15                               |      |       | 20    |       |       | 25    |       |       | 30     |       |       |
|                  |            |        |       |        | BTO                              | RTO  | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO    | RTO   | ETO   |
| 14C-5100-200-CL  | 100        | 22753  | 14367 | 31007  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 14C-5100-235-CL  | 75         | 22738  | 14356 | 30976  | -                                | -    | -     | -     | -     | -     | 18662 | 2598  | 2598  | 28675  | 7431  | 8241  |
| 14C-5100-280-CL  | 53         | 22679  | 14312 | 30855  | -                                | -    | -     | 25347 | 6049  | 6366  | 39561 | 11802 | 14377 | 53775  | 17416 | 22388 |
| 14C-5100-300-CL  | 46         | 22649  | 14291 | 30794  | 17388                            | 1879 | 1879  | 33705 | 9466  | 11076 | 50022 | 15938 | 20273 | 66339  | 22354 | 29470 |
| 14C-5100-350-CL  | 34         | 22566  | 14230 | 30624  | 34911                            | 9949 | 11756 | 57121 | 18732 | 24274 | 79330 | 27448 | 36792 | 101539 | 36146 | 49310 |
| 14C-5400-200-CL  | 100        | 29467  | 18157 | 37046  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 14C-5400-235-CL  | 78         | 29452  | 18146 | 37015  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | 22660  | 934   | 934   |
| 14C-5400-280-CL  | 55         | 29393  | 18103 | 36894  | -                                | -    | -     | -     | -     | -     | 33547 | 7070  | 7070  | 47760  | 13097 | 15082 |
| 14C-5400-300-CL  | 48         | 29363  | 18081 | 36833  | -                                | -    | -     | 27690 | 3769  | 3769  | 44007 | 11577 | 12966 | 60324  | 18114 | 22163 |
| 14C-5400-350-CL  | 35         | 29280  | 18020 | 36663  | 28897                            | 4449 | 4449  | 51106 | 14441 | 16967 | 73315 | 23251 | 29485 | 95524  | 31986 | 42003 |
| 14C-8300-200-CL  | 100        | 37876  | 23442 | 48323  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 14C-8300-235-CL  | 84         | 37860  | 23431 | 48292  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 14C-8300-280-CL  | 59         | 37801  | 23387 | 48170  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | 36530  | 5732  | 5732  |
| 14C-8300-300-CL  | 51         | 37772  | 23366 | 48110  | -                                | -    | -     | -     | -     | -     | 32777 | 3617  | 3617  | 49093  | 11999 | 12814 |
| 14C-8300-350-CL  | 38         | 37689  | 23305 | 47940  | -                                | -    | -     | 39875 | 7618  | 7618  | 62084 | 17299 | 20136 | 84294  | 26132 | 32654 |
| 18C-9600-235-CL  | 100        | 61231  | 35851 | 64951  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-9600-280-CL  | 75         | 61163  | 35800 | 64811  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-9600-300-CL  | 65         | 61129  | 35775 | 64742  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-9600-350-CL  | 48         | 61033  | 35704 | 64546  | -                                | -    | -     | -     | -     | -     | 62020 | 4250  | 4250  | 87560  | 18645 | 18645 |
| 18C-9800-235-CL  | 100        | 77544  | 45086 | 80301  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-9800-280-CL  | 79         | 77476  | 45036 | 80162  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-9800-300-CL  | 69         | 77442  | 45010 | 80092  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-9800-350-CL  | 51         | 77346  | 44939 | 79897  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | 72272  | 855   | 855   |
| 18C-10500-280-CL | 81         | 86785  | 49985 | 86961  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-10500-300-CL | 71         | 86751  | 49959 | 86891  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-10500-350-CL | 52         | 86655  | 49888 | 86695  | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-11000-280-CL | 88         | 97091  | 57663 | 108069 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-11000-300-CL | 76         | 97057  | 57637 | 107999 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 18C-11000-350-CL | 56         | 96961  | 57567 | 107804 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 32C-12000-300-CL | 92         | 111946 | 63520 | 106395 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 32C-12000-350-CL | 67         | 111834 | 63436 | 106166 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 32C-15000-300-CL | 98         | 129982 | 75362 | 133282 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 32C-15000-350-CL | 72         | 129870 | 75278 | 133052 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 50C-15400-300-CL | 100        | 141211 | 78586 | 125096 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 50C-15400-350-CL | 78         | 141087 | 78492 | 124841 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 50C-15600-300-CL | 100        | 147506 | 83332 | 137990 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 50C-15600-350-CL | 80         | 147382 | 83239 | 137735 | -                                | -    | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 19. Models 14C-5100-200-CL to 50C-15600-350-CL at 35 to 50 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC    | Operating Supply Pressure (barg) |       |       |        |       |       |        |       |       |        |       |       |
|------------------|------------|--------|-------|--------|----------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
|                  |            |        |       |        | 35                               |       |       | 40     |       |       | 45     |       |       | 50     |       |       |
|                  |            |        |       |        | BTO                              | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   |
| 14C-5100-200-CL  | 100        | 22753  | 14367 | 31007  | 19393                            | 3010  | 3010  | 26645  | 6594  | 7097  | 33897  | 9543  | 11185 | 41149  | 12431 | 15272 |
| 14C-5100-235-CL  | 75         | 22738  | 14356 | 30976  | 38687                            | 11454 | 13884 | 48699  | 15417 | 19528 | 58711  | 19357 | 25171 | 68724  | 23290 | 30814 |
| 14C-5100-280-CL  | 53         | 22679  | 14312 | 30855  | 67989                            | 23001 | 30400 | 82203  | 28574 | 38411 | 96416  | 34141 | 46423 | 110630 | 39706 | 54434 |
| 14C-5100-300-CL  | 46         | 22649  | 14291 | 30794  | 82656                            | 28752 | 38667 | 98972  | 35142 | 47863 | 115289 | 41530 | 57060 | -      | -     | -     |
| 14C-5100-350-CL  | 34         | 22566  | 14230 | 30624  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 14C-5400-200-CL  | 100        | 29467  | 18157 | 37046  | -                                | -     | -     | -      | -     | -     | 27883  | 3878  | 3878  | 35135  | 7851  | 7965  |
| 14C-5400-235-CL  | 78         | 29452  | 18146 | 37015  | 32672                            | 6577  | 6577  | 42685  | 11036 | 12221 | 52697  | 15077 | 17864 | 62709  | 19059 | 23507 |
| 14C-5400-280-CL  | 55         | 29393  | 18103 | 36894  | 61974                            | 18768 | 23093 | 76188  | 24382 | 31104 | 90402  | 29974 | 39116 | 104616 | 35555 | 47127 |
| 14C-5400-300-CL  | 48         | 29363  | 18081 | 36833  | 76641                            | 24561 | 31360 | 92958  | 30978 | 40557 | 109275 | 37381 | 49753 | -      | -     | -     |
| 14C-5400-350-CL  | 35         | 29280  | 18020 | 36663  | 117733                           | 40698 | 54521 | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 14C-8300-200-CL  | 100        | 37876  | 23442 | 48323  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 14C-8300-235-CL  | 84         | 37860  | 23431 | 48292  | -                                | -     | -     | 31454  | 2871  | 2871  | 41466  | 8515  | 8515  | 51478  | 12991 | 14158 |
| 14C-8300-280-CL  | 59         | 37801  | 23387 | 48170  | 50744                            | 12686 | 13744 | 64957  | 18451 | 21755 | 79171  | 24106 | 29767 | 93385  | 29721 | 37778 |
| 14C-8300-300-CL  | 51         | 37772  | 23366 | 48110  | 65410                            | 18632 | 22010 | 81727  | 25119 | 31207 | 98044  | 31556 | 40404 | 114361 | 37973 | 49601 |
| 14C-8300-350-CL  | 38         | 37689  | 23305 | 47940  | 106503                           | 34886 | 45172 | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9600-235-CL  | 100        | 61231  | 35851 | 64951  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9600-280-CL  | 75         | 61163  | 35800 | 64811  | -                                | -     | -     | 65324  | 6112  | 6112  | 81669  | 15325 | 15325 | 98015  | 23347 | 24538 |
| 18C-9600-300-CL  | 65         | 61129  | 35775 | 64742  | 65844                            | 6406  | 6406  | 84609  | 16982 | 16982 | 103373 | 25596 | 27558 | 122138 | 33266 | 38135 |
| 18C-9600-350-CL  | 48         | 61033  | 35704 | 64546  | 113101                           | 29600 | 33041 | 138641 | 39889 | 47437 | 164182 | 50041 | 61832 | -      | -     | -     |
| 18C-9800-235-CL  | 100        | 77544  | 45086 | 80301  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9800-280-CL  | 79         | 77476  | 45036 | 80162  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | 82727  | 6748  | 6748  |
| 18C-9800-300-CL  | 69         | 77442  | 45010 | 80092  | -                                | -     | -     | -      | -     | -     | 88085  | 9768  | 9768  | 106850 | 20345 | 20345 |
| 18C-9800-350-CL  | 51         | 77346  | 44939 | 79897  | 97812                            | 15251 | 15251 | 123353 | 28636 | 29646 | 148893 | 39260 | 44042 | 174434 | 49557 | 58438 |
| 18C-10500-280-CL | 81         | 86785  | 49985 | 86961  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-10500-300-CL | 71         | 86751  | 49959 | 86891  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | 100079 | 10298 | 10298 |
| 18C-10500-350-CL | 52         | 86655  | 49888 | 86695  | 91041                            | 5204  | 5204  | 116582 | 19599 | 19599 | 142122 | 32892 | 33995 | 167663 | 43560 | 48391 |
| 18C-11000-280-CL | 88         | 97091  | 57663 | 108069 | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-11000-300-CL | 76         | 97057  | 57637 | 107999 | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-11000-350-CL | 56         | 96961  | 57567 | 107804 | -                                | -     | -     | 95560  | 7751  | 7751  | 121100 | 22146 | 22146 | 146641 | 34827 | 36542 |
| 32C-12000-300-CL | 92         | 111946 | 63520 | 106395 | -                                | -     | -     | -      | -     | -     | -      | -     | -     | 113108 | 1339  | 1339  |
| 32C-12000-350-CL | 67         | 111834 | 63436 | 106166 | -                                | -     | -     | 132482 | 12259 | 12259 | 162464 | 29158 | 29158 | 192446 | 44555 | 46057 |
| 32C-15000-300-CL | 98         | 129982 | 75362 | 133282 | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 32C-15000-350-CL | 72         | 129870 | 75278 | 133052 | -                                | -     | -     | -      | -     | -     | 135687 | 8959  | 8959  | 165669 | 25858 | 25858 |
| 50C-15400-300-CL | 100        | 141211 | 78586 | 125096 | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 50C-15400-350-CL | 78         | 141087 | 78492 | 124841 | -                                | -     | -     | -      | -     | -     | 173664 | 14526 | 14526 | 206978 | 33303 | 33303 |
| 50C-15600-300-CL | 100        | 147506 | 83332 | 137990 | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 50C-15600-350-CL | 80         | 147382 | 83239 | 137735 | -                                | -     | -     | -      | -     | -     | 160823 | 7289  | 7289  | 194136 | 26066 | 26066 |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 20. Models 14C-5100-200-CL to 50C-15600-350-CL at 55 to 70 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC    | Operating Supply Pressure (barg) |       |       |        |       |       |        |       |       |        |       |        |
|------------------|------------|--------|-------|--------|----------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|--------|
|                  |            |        |       |        | 55                               |       |       | 60     |       |       | 65     |       |       | 70     |       |        |
|                  |            |        |       |        | BTO                              | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO    |
| 14C-5100-200-CL  | 100        | 22753  | 14367 | 31007  | 48401                            | 15299 | 19359 | 55653  | 18155 | 23447 | 62905  | 21005 | 27534 | 70157  | 23852 | 31622  |
| 14C-5100-235-CL  | 75         | 22738  | 14356 | 30976  | 78736                            | 27215 | 36457 | 88748  | 31139 | 42101 | 98760  | 35059 | 47744 | 108772 | 38978 | 53387  |
| 14C-5100-280-CL  | 53         | 22679  | 14312 | 30855  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-5100-300-CL  | 46         | 22649  | 14291 | 30794  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-5100-350-CL  | 34         | 22566  | 14230 | 30624  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-5400-200-CL  | 100        | 29467  | 18157 | 37046  | 42386                            | 10914 | 12053 | 49638  | 13852 | 16140 | 56890  | 16749 | 20228 | 64142  | 19627 | 24315  |
| 14C-5400-235-CL  | 78         | 29452  | 18146 | 37015  | 72721                            | 23017 | 29150 | 82734  | 26960 | 34794 | 92746  | 30895 | 40437 | 102758 | 34826 | 46080  |
| 14C-5400-280-CL  | 55         | 29393  | 18103 | 36894  | 118830                           | 41128 | 55139 | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-5400-300-CL  | 48         | 29363  | 18081 | 36833  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-5400-350-CL  | 35         | 29280  | 18020 | 36663  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-8300-200-CL  | 100        | 37876  | 23442 | 48323  | 31156                            | 2703  | 2703  | 38408  | 6791  | 6791  | 45660  | 10540 | 10878 | 52912  | 13581 | 14966  |
| 14C-8300-235-CL  | 84         | 37860  | 23431 | 48292  | 61490                            | 17060 | 19801 | 71503  | 21062 | 25444 | 81515  | 25035 | 31088 | 91527  | 28989 | 36731  |
| 14C-8300-280-CL  | 59         | 37801  | 23387 | 48170  | 107599                           | 35317 | 45789 | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-8300-300-CL  | 51         | 37772  | 23366 | 48110  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 14C-8300-350-CL  | 38         | 37689  | 23305 | 47940  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 18C-9600-235-CL  | 100        | 61231  | 35851 | 64951  | 61337                            | 3865  | 3865  | 72851  | 10355 | 10355 | 84365  | 16844 | 16844 | 95879  | 22435 | 23334  |
| 18C-9600-280-CL  | 75         | 61163  | 35800 | 64811  | 114361                           | 30114 | 33752 | 130707 | 36714 | 42965 | 147053 | 43242 | 52178 | 163399 | 49730 | 61391  |
| 18C-9600-300-CL  | 65         | 61129  | 35775 | 64742  | 140902                           | 40793 | 48711 | 159667 | 48251 | 59287 | 178431 | 55675 | 69864 | -      | -     | -      |
| 18C-9600-350-CL  | 48         | 61033  | 35704 | 64546  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 18C-9800-235-CL  | 100        | 77544  | 45086 | 80301  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | 80591  | 5544  | 5544   |
| 18C-9800-280-CL  | 79         | 77476  | 45036 | 80162  | 99073                            | 15961 | 15961 | 115419 | 25110 | 25175 | 131765 | 32203 | 34388 | 148111 | 38942 | 43601  |
| 18C-9800-300-CL  | 69         | 77442  | 45010 | 80092  | 125614                           | 29606 | 30921 | 144378 | 37417 | 41497 | 163143 | 45027 | 52074 | -      | -     | -      |
| 18C-9800-350-CL  | 51         | 77346  | 44939 | 79897  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 18C-10500-280-CL | 81         | 86785  | 49985 | 86961  | 92302                            | 5914  | 5914  | 108648 | 15128 | 15128 | 124994 | 24341 | 24341 | 141340 | 32553 | 33554  |
| 18C-10500-300-CL | 71         | 86751  | 49959 | 86891  | 118843                           | 20874 | 20874 | 137607 | 30917 | 31450 | 156372 | 38910 | 42027 | 175136 | 46605 | 52603  |
| 18C-10500-350-CL | 52         | 86655  | 49888 | 86695  | -                                | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 18C-11000-280-CL | 88         | 97091  | 57663 | 108069 | -                                | -     | -     | 87626  | 3279  | 3279  | 103972 | 12492 | 12492 | 120318 | 21705 | 21705  |
| 18C-11000-300-CL | 76         | 97057  | 57637 | 107999 | 97821                            | 9025  | 9025  | 116585 | 19601 | 19601 | 135350 | 29905 | 30178 | 154114 | 37971 | 40754  |
| 18C-11000-350-CL | 56         | 96961  | 57567 | 107804 | 172181                           | 45405 | 50937 | -      | -     | -     | -      | -     | -     | -      | -     | -      |
| 32C-12000-300-CL | 92         | 111946 | 63520 | 106395 | 135136                           | 13755 | 13755 | 157164 | 26170 | 26170 | 179192 | 38586 | 38586 | 201220 | 48299 | 51002  |
| 32C-12000-350-CL | 67         | 111834 | 63436 | 106166 | 222429                           | 57114 | 62956 | 252411 | 69295 | 79855 | 282393 | 81316 | 96754 | 312376 | 93255 | 113654 |
| 32C-15000-300-CL | 98         | 129982 | 75362 | 133282 | -                                | -     | -     | 130387 | 5972  | 5972  | 152415 | 18387 | 18387 | 174442 | 30803 | 30803  |
| 32C-15000-350-CL | 72         | 129870 | 75278 | 133052 | 195652                           | 42624 | 42757 | 225634 | 55587 | 59657 | 255616 | 67905 | 76556 | 285599 | 80004 | 93455  |
| 50C-15400-300-CL | 100        | 141211 | 78586 | 125096 | -                                | -     | -     | 167775 | 11207 | 11207 | 192250 | 25002 | 25002 | 216725 | 38798 | 38798  |
| 50C-15400-350-CL | 78         | 141087 | 78492 | 124841 | 240291                           | 52035 | 52080 | 273605 | 66555 | 70857 | 306919 | 80310 | 89634 | 340232 | 93806 | 108411 |
| 50C-15600-300-CL | 100        | 147506 | 83332 | 137990 | -                                | -     | -     | 154934 | 3969  | 3969  | 179409 | 17765 | 17765 | 203884 | 31560 | 31560  |
| 50C-15600-350-CL | 80         | 147382 | 83239 | 137735 | 227450                           | 44842 | 44842 | 260764 | 61114 | 63619 | 294077 | 75049 | 82396 | 327391 | 88622 | 101173 |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 21. Models 14C-5100-200-CL to 50C-15600-350-CL at 75 to 85 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC    | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |
|------------------|------------|--------|-------|--------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |            |        |       |        | 75                               |        |        | 80     |        |        | 85     |        |        |
|                  |            |        |       |        | BTO                              | RTO    | ETO    | BTO    | RTO    | ETO    | BTO    | RTO    | ETO    |
| 14C-5100-200-CL  | 100        | 22753  | 14367 | 31007  | 77409                            | 26695  | 35709  | 84661  | 29538  | 39797  | 91913  | 32378  | 43884  |
| 14C-5100-235-CL  | 75         | 22738  | 14356 | 30976  | 118785                           | 42898  | 59030  | -      | -      | -      | -      | -      | -      |
| 14C-5100-280-CL  | 53         | 22679  | 14312 | 30855  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5100-300-CL  | 46         | 22649  | 14291 | 30794  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5100-350-CL  | 34         | 22566  | 14230 | 30624  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-200-CL  | 100        | 29467  | 18157 | 37046  | 71394                            | 22493  | 28403  | 78646  | 25351  | 32490  | 85898  | 28205  | 36577  |
| 14C-5400-235-CL  | 78         | 29452  | 18146 | 37015  | 112770                           | 38752  | 51723  | -      | -      | -      | -      | -      | -      |
| 14C-5400-280-CL  | 55         | 29393  | 18103 | 36894  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-300-CL  | 48         | 29363  | 18081 | 36833  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-350-CL  | 35         | 29280  | 18020 | 36663  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-200-CL  | 100        | 37876  | 23442 | 48323  | 60164                            | 16527  | 19053  | 67415  | 19434  | 23141  | 74667  | 22321  | 27228  |
| 14C-8300-235-CL  | 84         | 37860  | 23431 | 48292  | 101539                           | 32933  | 42374  | 111552 | 36869  | 48017  | -      | -      | -      |
| 14C-8300-280-CL  | 59         | 37801  | 23387 | 48170  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-300-CL  | 51         | 37772  | 23366 | 48110  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-350-CL  | 38         | 37689  | 23305 | 47940  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9600-235-CL  | 100        | 61231  | 35851 | 64951  | 107393                           | 27260  | 29824  | 118907 | 31961  | 36314  | 130421 | 36599  | 42803  |
| 18C-9600-280-CL  | 75         | 61163  | 35800 | 64811  | 179745                           | 56194  | 70604  | -      | -      | -      | -      | -      | -      |
| 18C-9600-300-CL  | 65         | 61129  | 35775 | 64742  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9600-350-CL  | 48         | 61033  | 35704 | 64546  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9800-235-CL  | 100        | 77544  | 45086 | 80301  | 92105                            | 12034  | 12034  | 103619 | 18524  | 18524  | 115133 | 24975  | 25013  |
| 18C-9800-280-CL  | 79         | 77476  | 45036 | 80162  | 164457                           | 45555  | 52814  | -      | -      | -      | -      | -      | -      |
| 18C-9800-300-CL  | 69         | 77442  | 45010 | 80092  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9800-350-CL  | 51         | 77346  | 44939 | 79897  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-10500-280-CL | 81         | 86785  | 49985 | 86961  | 157686                           | 39455  | 42767  | 174032 | 46156  | 51980  | -      | -      | -      |
| 18C-10500-300-CL | 71         | 86751  | 49959 | 86891  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-10500-350-CL | 52         | 86655  | 49888 | 86695  | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-11000-280-CL | 88         | 97091  | 57663 | 108069 | 136663                           | 30496  | 30918  | 153009 | 37510  | 40131  | 169355 | 44252  | 49345  |
| 18C-11000-300-CL | 76         | 97057  | 57637 | 107999 | 172879                           | 45688  | 51330  | -      | -      | -      | -      | -      | -      |
| 18C-11000-350-CL | 56         | 96961  | 57567 | 107804 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-12000-300-CL | 92         | 111946 | 63520 | 106395 | 223248                           | 57451  | 63418  | 245275 | 66413  | 75833  | 267303 | 75280  | 88249  |
| 32C-12000-350-CL | 67         | 111834 | 63436 | 106166 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-15000-300-CL | 98         | 129982 | 75362 | 133282 | 196470                           | 43004  | 43219  | 218498 | 52594  | 55635  | 240526 | 61746  | 68050  |
| 32C-15000-350-CL | 72         | 129870 | 75278 | 133052 | 315581                           | 91991  | 110354 | -      | -      | -      | -      | -      | -      |
| 50C-15400-300-CL | 100        | 141211 | 78586 | 125096 | 241201                           | 52463  | 52593  | 265676 | 63208  | 66388  | 290152 | 73433  | 80183  |
| 50C-15400-350-CL | 78         | 141087 | 78492 | 124841 | 373546                           | 107160 | 127187 | 406860 | 120436 | 145964 | 440173 | 133655 | 164741 |
| 50C-15600-300-CL | 100        | 147506 | 83332 | 137990 | 228360                           | 45355  | 45355  | 252835 | 57684  | 59150  | 277310 | 68103  | 72946  |
| 50C-15600-350-CL | 80         | 147382 | 83239 | 137735 | 360705                           | 102027 | 119950 | 394018 | 115326 | 138727 | 427332 | 128565 | 157503 |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 22. Models 14C-5100-200-CL to 50C-15600-350-CL at 90 to 100 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC    | Operating Supply Pressure (barg) |       |        |        |       |        |        |        |        |
|------------------|------------|--------|-------|--------|----------------------------------|-------|--------|--------|-------|--------|--------|--------|--------|
|                  |            |        |       |        | 90                               |       |        | 95     |       |        | 100    |        |        |
|                  |            |        |       |        | BTO                              | RTO   | ETO    | BTO    | RTO   | ETO    | BTO    | RTO    | ETO    |
| 14C-5100-200-CL  | 100        | 22753  | 14367 | 31007  | 99165                            | 35217 | 47972  | 106417 | 38056 | 52059  | 113669 | 40895  | 56147  |
| 14C-5100-235-CL  | 75         | 22738  | 14356 | 30976  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5100-280-CL  | 53         | 22679  | 14312 | 30855  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5100-300-CL  | 46         | 22649  | 14291 | 30794  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5100-350-CL  | 34         | 22566  | 14230 | 30624  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5400-200-CL  | 100        | 29467  | 18157 | 37046  | 93150                            | 31054 | 40665  | 100402 | 33903 | 44752  | 107654 | 36746  | 48840  |
| 14C-5400-235-CL  | 78         | 29452  | 18146 | 37015  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5400-280-CL  | 55         | 29393  | 18103 | 36894  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5400-300-CL  | 48         | 29363  | 18081 | 36833  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5400-350-CL  | 35         | 29280  | 18020 | 36663  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-8300-200-CL  | 100        | 37876  | 23442 | 48323  | 81919                            | 25194 | 31316  | 89171  | 28059 | 35403  | 96423  | 30918  | 39491  |
| 14C-8300-235-CL  | 84         | 37860  | 23431 | 48292  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-8300-280-CL  | 59         | 37801  | 23387 | 48170  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-8300-300-CL  | 51         | 37772  | 23366 | 48110  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-8300-350-CL  | 38         | 37689  | 23305 | 47940  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9600-235-CL  | 100        | 61231  | 35851 | 64951  | 141935                           | 41205 | 49293  | 153449 | 45786 | 55783  | 164963 | 50350  | 62273  |
| 18C-9600-280-CL  | 75         | 61163  | 35800 | 64811  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9600-300-CL  | 65         | 61129  | 35775 | 64742  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9600-350-CL  | 48         | 61033  | 35704 | 64546  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9800-235-CL  | 100        | 77544  | 45086 | 80301  | 126647                           | 30045 | 31503  | 138161 | 34863 | 37993  | 149675 | 39578  | 44483  |
| 18C-9800-280-CL  | 79         | 77476  | 45036 | 80162  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9800-300-CL  | 69         | 77442  | 45010 | 80092  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9800-350-CL  | 51         | 77346  | 44939 | 79897  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-10500-280-CL | 81         | 86785  | 49985 | 86961  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-10500-300-CL | 71         | 86751  | 49959 | 86891  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-10500-350-CL | 52         | 86655  | 49888 | 86695  | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-11000-280-CL | 88         | 97091  | 57663 | 108069 | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-11000-300-CL | 76         | 97057  | 57637 | 107999 | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-11000-350-CL | 56         | 96961  | 57567 | 107804 | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 32C-12000-300-CL | 92         | 111946 | 63520 | 106395 | 289331                           | 84086 | 100665 | 311359 | 92852 | 113080 | -      | -      | -      |
| 32C-12000-350-CL | 67         | 111834 | 63436 | 106166 | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 32C-15000-300-CL | 98         | 129982 | 75362 | 133282 | 262554                           | 70721 | 80466  | 284582 | 79596 | 92882  | 306609 | 88413  | 105297 |
| 32C-15000-350-CL | 72         | 129870 | 75278 | 133052 | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 50C-15400-300-CL | 100        | 141211 | 78586 | 125096 | 314627                           | 83447 | 93979  | 339102 | 93352 | 107774 | 363578 | 103175 | 121569 |
| 50C-15400-350-CL | 78         | 141087 | 78492 | 124841 | -                                | -     | -      | -      | -     | -      | -      | -      | -      |
| 50C-15600-300-CL | 100        | 147506 | 83332 | 137990 | 301786                           | 78211 | 86741  | 326261 | 88166 | 100536 | 350736 | 98026  | 114331 |
| 50C-15600-350-CL | 80         | 147382 | 83239 | 137735 | -                                | -     | -      | -      | -     | -      | -      | -      | -      |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

## Canted Yoke Design, Spring to Open

**Table 23. Models 0.3C-008A-45-OP to 6C-3800-200-OP at 15 to 35 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |     |      |      |      |      |      |      |      |       |      |       |       |      |       |
|------------------|------------|-------|-------|-------|----------------------------------|-----|------|------|------|------|------|------|------|-------|------|-------|-------|------|-------|
|                  |            |       |       |       | 15                               |     |      | 20   |      |      | 25   |      |      | 30    |      |       | 35    |      |       |
|                  |            |       |       |       | BTC                              | RTC | ETC  | BTC  | RTC  | ETC  | BTC  | RTC  | ETC  | BTC   | RTC  | ETC   | BTC   | RTC  | ETC   |
| 0.3C-008A-45-OP  | 100        | 377   | 92    | 99    | -                                | -   | -    | 121  | 24   | 24   | 185  | 101  | 156  | 249   | 149  | 288   | 314   | 197  | 420   |
| 0.3C-008A-75-OP  | 48         | 364   | 87    | 92    | 392                              | 254 | 581  | 571  | 383  | 947  | 750  | 513  | 1313 | 928   | 642  | 1679  | 1107  | 771  | 2045  |
| 0.3C-008B-45-OP  | 100        | 574   | 99    | 99    | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 238   | 46   | 46    | 302   | 152  | 178   |
| 0.3C-008B-75-OP  | 48         | 561   | 92    | 92    | 381                              | 212 | 339  | 559  | 345  | 705  | 738  | 475  | 1071 | 917   | 605  | 1437  | 1095  | 734  | 1803  |
| 0.3C-008C-45-OP  | 100        | 691   | 127   | 127   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | 269   | 35   | 35    |
| 0.3C-008C-75-OP  | 48         | 678   | 119   | 119   | 348                              | 173 | 196  | 526  | 309  | 562  | 705  | 440  | 928  | 884   | 570  | 1294  | 1062  | 700  | 1660  |
| 0.3C-0100-45-OP  | 100        | 1111  | 253   | 259   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | -     | -    | -     |
| 0.3C-0100-75-OP  | 60         | 1097  | 247   | 251   | -                                | -   | -    | 376  | 47   | 47   | 554  | 295  | 413  | 733   | 429  | 779   | 912   | 561  | 1145  |
| 0.3C-0100-100-OP | 34         | 1086  | 242   | 245   | 608                              | 335 | 523  | 925  | 571  | 1173 | 1243 | 803  | 1824 | 1561  | 1033 | 2475  | -     | -    | -     |
| 0.3C-0150-45-OP  | 100        | 1396  | 371   | 419   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | -     | -    | -     |
| 0.3C-0150-75-OP  | 65         | 1383  | 366   | 412   | -                                | -   | -    | -    | -    | -    | 384  | 64   | 64   | 562   | 301  | 430   | 741   | 435  | 796   |
| 0.3C-0150-100-OP | 36         | 1371  | 361   | 406   | 437                              | 173 | 173  | 755  | 445  | 824  | 1072 | 679  | 1474 | 1390  | 910  | 2125  | 1708  | 1140 | 2776  |
| 0.9C-0200-100-OP | 74         | 1764  | 450   | 495   | -                                | -   | -    | 838  | 465  | 733  | 1205 | 738  | 1485 | 1573  | 1006 | 2238  | 1940  | 1273 | 2990  |
| 0.9C-0200-135-OP | 41         | 1750  | 444   | 487   | 1369                             | 858 | 1821 | 2039 | 1345 | 3192 | 2708 | 1829 | 4564 | 3378  | 2314 | 5935  | 4047  | 2798 | 7306  |
| 0.9C-0250-100-OP | 77         | 2122  | 595   | 696   | -                                | -   | -    | 624  | 295  | 295  | 991  | 579  | 1047 | 1359  | 850  | 1799  | 1726  | 1118 | 2552  |
| 0.9C-0250-135-OP | 42         | 2108  | 589   | 688   | 1155                             | 701 | 1383 | 1825 | 1189 | 2754 | 2494 | 1674 | 4125 | 3163  | 2159 | 5496  | 3833  | 2643 | 6867  |
| 0.9C-0350-100-OP | 87         | 3354  | 871   | 967   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 1028  | 288  | 288   | 1395  | 742  | 1041  |
| 0.9C-0350-135-OP | 48         | 3339  | 865   | 959   | -                                | -   | -    | 1494 | 817  | 1243 | 2163 | 1317 | 2614 | 2833  | 1806 | 3985  | 3502  | 2292 | 5356  |
| 0.9C-0400-100-OP | 92         | 3974  | 1121  | 1317  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | 1024  | 280  | 280   |
| 0.9C-0400-135-OP | 51         | 3959  | 1116  | 1309  | -                                | -   | -    | 1122 | 483  | 483  | 1792 | 1041 | 1854 | 2461  | 1535 | 3225  | 3131  | 2023 | 4596  |
| 0.9C-0700-100-OP | 100        | 5602  | 1518  | 1735  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | -     | -    | -     |
| 0.9C-0700-135-OP | 58         | 5588  | 1513  | 1727  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 1966  | 1001 | 1227  | 2636  | 1511 | 2598  |
| 1.5C-1100-135-OP | 79         | 10196 | 2358  | 2436  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | -     | -    | -     |
| 1.5C-1100-175-OP | 47         | 10169 | 2346  | 2421  | -                                | -   | -    | -    | -    | -    | 4084 | 1848 | 1848 | 5507  | 3045 | 4761  | 6929  | 4109 | 7675  |
| 1.5C-1200-135-OP | 79         | 11884 | 3081  | 3418  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | -     | -    | -     |
| 1.5C-1200-175-OP | 51         | 11857 | 3070  | 3403  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 4466  | 2256 | 2691  | 5889  | 3342 | 5604  |
| 3C-2000-135-OP   | 90         | 17508 | 4779  | 5488  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | -     | -    | -     |
| 3C-2000-175-OP   | 53         | 17463 | 4761  | 5463  | -                                | -   | -    | -    | -    | -    | 5326 | 2284 | 2284 | 7680  | 4325 | 7107  | 10035 | 6079 | 11929 |
| 6C-2500-175-OP   | 80         | 24935 | 6997  | 8184  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 6993  | 2766 | 2766  | 9746  | 5384 | 8403  |
| 6C-2500-200-OP   | 61         | 24926 | 6994  | 8179  | -                                | -   | -    | -    | -    | -    | 8449 | 4393 | 5747 | 12044 | 7106 | 13111 | 15639 | 9755 | 20474 |
| 6C-3800-175-OP   | 90         | 33892 | 10151 | 12399 | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -     | -     | -    | -     |
| 6C-3800-200-OP   | 69         | 33883 | 10147 | 12394 | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 7481  | 2124 | 2124  | 11076 | 6109 | 9487  |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 24. Models 0.3C-008A-45-OP to 6C-3800-200-OP at 40 to 60 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 40                               |       |       | 45    |       |       | 50    |       |       | 55    |       |       | 60    |       |       |
|                  |            |       |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 0.3C-008A-45-OP  | 100        | 377   | 92    | 99    | 378                              | 244   | 551   | 442   | 290   | 683   | 507   | 337   | 815   | 571   | 383   | 947   | 635   | 430   | 1078  |
| 0.3C-008A-75-OP  | 48         | 364   | 87    | 92    | 1286                             | 900   | 2411  | 1464  | 1029  | 2777  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-008B-45-OP  | 100        | 574   | 99    | 99    | 366                              | 201   | 310   | 431   | 249   | 441   | 495   | 297   | 573   | 559   | 345   | 705   | 624   | 392   | 837   |
| 0.3C-008B-75-OP  | 48         | 561   | 92    | 92    | 1274                             | 864   | 2169  | 1453  | 993   | 2535  | 1632  | 1122  | 2901  | -     | -     | -     | -     | -     | -     |
| 0.3C-008C-45-OP  | 100        | 691   | 127   | 127   | 333                              | 161   | 167   | 398   | 212   | 299   | 462   | 260   | 430   | 526   | 309   | 562   | 591   | 356   | 694   |
| 0.3C-008C-75-OP  | 48         | 678   | 119   | 119   | 1241                             | 830   | 2026  | 1420  | 959   | 2392  | 1599  | 1088  | 2758  | -     | -     | -     | -     | -     | -     |
| 0.3C-0100-45-OP  | 100        | 1111  | 253   | 259   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 376   | 47    | 47    | 440   | 179   | 179   |
| 0.3C-0100-75-OP  | 60         | 1097  | 247   | 251   | 1090                             | 692   | 1511  | 1269  | 822   | 1877  | 1448  | 952   | 2243  | 1626  | 1081  | 2609  | 1805  | 1210  | 2975  |
| 0.3C-0100-100-OP | 34         | 1086  | 242   | 245   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-45-OP  | 100        | 1396  | 371   | 419   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-75-OP  | 65         | 1383  | 366   | 412   | 920                              | 567   | 1162  | 1098  | 698   | 1528  | 1277  | 828   | 1894  | 1456  | 957   | 2260  | 1634  | 1087  | 2625  |
| 0.3C-0150-100-OP | 36         | 1371  | 361   | 406   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0200-100-OP | 74         | 1764  | 450   | 495   | 2307                             | 1539  | 3742  | 2675  | 1805  | 4495  | 3042  | 2071  | 5247  | 3409  | 2336  | 5999  | 3777  | 2602  | 6752  |
| 0.9C-0200-135-OP | 41         | 1750  | 444   | 487   | 4716                             | 3281  | 8677  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0250-100-OP | 77         | 2122  | 595   | 696   | 2093                             | 1384  | 3304  | 2460  | 1650  | 4056  | 2828  | 1916  | 4809  | 3195  | 2182  | 5561  | 3562  | 2447  | 6313  |
| 0.9C-0250-135-OP | 42         | 2108  | 589   | 688   | 4502                             | 3126  | 8238  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0350-100-OP | 87         | 3354  | 871   | 967   | 1762                             | 1019  | 1793  | 2130  | 1292  | 2545  | 2497  | 1561  | 3298  | 2864  | 1829  | 4050  | 3231  | 2096  | 4802  |
| 0.9C-0350-135-OP | 48         | 3339  | 865   | 959   | 4171                             | 2778  | 6728  | 4841  | 3263  | 8099  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0400-100-OP | 92         | 3974  | 1121  | 1317  | 1391                             | 739   | 1033  | 1758  | 1016  | 1785  | 2126  | 1289  | 2537  | 2493  | 1558  | 3290  | 2860  | 1826  | 4042  |
| 0.9C-0400-135-OP | 51         | 3959  | 1116  | 1309  | 3800                             | 2509  | 5967  | 4470  | 2994  | 7338  | 5139  | 3478  | 8709  | -     | -     | -     | -     | -     | -     |
| 0.9C-0700-100-OP | 100        | 5602  | 1518  | 1735  | -                                | -     | -     | -     | -     | -     | 1631  | 540   | 540   | 1998  | 1026  | 1292  | 2365  | 1307  | 2044  |
| 0.9C-0700-135-OP | 58         | 5588  | 1513  | 1727  | 3305                             | 2008  | 3969  | 3975  | 2499  | 5341  | 4644  | 2986  | 6712  | 5313  | 3472  | 8083  | -     | -     | -     |
| 1.5C-1100-135-OP | 79         | 10196 | 2358  | 2436  | 3759                             | 1181  | 1181  | 4605  | 2353  | 2914  | 5452  | 3003  | 4648  | 6298  | 3639  | 6382  | 7145  | 4269  | 8116  |
| 1.5C-1100-175-OP | 47         | 10169 | 2346  | 2421  | 8352                             | 5159  | 10588 | 9774  | 6198  | 13502 | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5C-1200-135-OP | 79         | 11884 | 3081  | 3418  | -                                | -     | -     | 3565  | 844   | 844   | 4411  | 2213  | 2578  | 5258  | 2866  | 4312  | 6104  | 3504  | 6045  |
| 1.5C-1200-175-OP | 51         | 11857 | 3070  | 3403  | 7311                             | 4402  | 8518  | 8734  | 5447  | 11431 | 10156 | 6484  | 14345 | -     | -     | -     | -     | -     | -     |
| 3C-2000-135-OP   | 90         | 17508 | 4779  | 5488  | 4787                             | 1180  | 1180  | 6188  | 3188  | 4050  | 7589  | 4257  | 6920  | 8990  | 5305  | 9790  | 10391 | 6343  | 12659 |
| 3C-2000-175-OP   | 53         | 17463 | 4761  | 5463  | 12389                            | 7804  | 16751 | 14744 | 9518  | 21574 | 17098 | 11227 | 26396 | -     | -     | -     | -     | -     | -     |
| 6C-2500-175-OP   | 80         | 24935 | 6997  | 8184  | 12499                            | 7443  | 14041 | 15251 | 9471  | 19679 | 18004 | 11478 | 25317 | 20756 | 13480 | 30955 | 23509 | 15477 | 36592 |
| 6C-2500-200-OP   | 61         | 24926 | 6994  | 8179  | 19235                            | 12374 | 27838 | 22830 | 14984 | 35201 | 26425 | 17591 | 42565 | 30020 | 20194 | 49929 | 33616 | 22796 | 57292 |
| 6C-3800-175-OP   | 90         | 33892 | 10151 | 12399 | 7935                             | 3054  | 3054  | 10688 | 5814  | 8692  | 13441 | 7881  | 14330 | 16193 | 9921  | 19968 | 18946 | 11932 | 25606 |
| 6C-3800-200-OP   | 69         | 33883 | 10147 | 12394 | 14672                            | 8795  | 16851 | 18267 | 11437 | 24215 | 21862 | 14055 | 31578 | 25457 | 16666 | 38942 | 29053 | 19274 | 46306 |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 25. Models 0.3C-008A-45-OP to 6C-3800-200-OP at 65 to 80 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 65                               |       |       | 70    |       |       | 75    |       |       | 80    |       |       |
|                  |            |       |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 0.3C-008A-45-OP  | 100        | 377   | 92    | 99    | 700                              | 477   | 1210  | 764   | 523   | 1342  | 828   | 570   | 1474  | 892   | 616   | 1605  |
| 0.3C-008A-75-OP  | 48         | 364   | 87    | 92    | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-008B-45-OP  | 100        | 574   | 99    | 99    | 688                              | 439   | 968   | 752   | 485   | 1100  | 817   | 532   | 1232  | 881   | 579   | 1364  |
| 0.3C-008B-75-OP  | 48         | 561   | 92    | 92    | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-008C-45-OP  | 100        | 691   | 127   | 127   | 655                              | 404   | 826   | 719   | 451   | 957   | 784   | 498   | 1089  | 848   | 544   | 1221  |
| 0.3C-008C-75-OP  | 48         | 678   | 119   | 119   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0100-45-OP  | 100        | 1111  | 253   | 259   | 504                              | 256   | 311   | 569   | 306   | 442   | 633   | 354   | 574   | 697   | 403   | 706   |
| 0.3C-0100-75-OP  | 60         | 1097  | 247   | 251   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0100-100-OP | 34         | 1086  | 242   | 245   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-45-OP  | 100        | 1396  | 371   | 419   | -                                | -     | -     | 398   | 93    | 93    | 462   | 222   | 225   | 526   | 273   | 356   |
| 0.3C-0150-75-OP  | 65         | 1383  | 366   | 412   | 1813                             | 1216  | 2991  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3C-0150-100-OP | 36         | 1371  | 361   | 406   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0200-100-OP | 74         | 1764  | 450   | 495   | 4144                             | 2868  | 7504  | 4511  | 3133  | 8256  | -     | -     | -     | -     | -     | -     |
| 0.9C-0200-135-OP | 41         | 1750  | 444   | 487   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0250-100-OP | 77         | 2122  | 595   | 696   | 3930                             | 2713  | 7066  | 4297  | 2978  | 7818  | 4664  | 3243  | 8570  | -     | -     | -     |
| 0.9C-0250-135-OP | 42         | 2108  | 589   | 688   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0350-100-OP | 87         | 3354  | 871   | 967   | 3599                             | 2363  | 5555  | 3966  | 2629  | 6307  | 4333  | 2895  | 7059  | 4701  | 3161  | 7812  |
| 0.9C-0350-135-OP | 48         | 3339  | 865   | 959   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0400-100-OP | 92         | 3974  | 1121  | 1317  | 3228                             | 2093  | 4794  | 3595  | 2360  | 5547  | 3962  | 2626  | 6299  | 4330  | 2892  | 7051  |
| 0.9C-0400-135-OP | 51         | 3959  | 1116  | 1309  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9C-0700-100-OP | 100        | 5602  | 1518  | 1735  | 2732                             | 1583  | 2797  | 3100  | 1856  | 3549  | 3467  | 2128  | 4301  | 3834  | 2396  | 5054  |
| 0.9C-0700-135-OP | 58         | 5588  | 1513  | 1727  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5C-1100-135-OP | 79         | 10196 | 2358  | 2436  | 7991                             | 4895  | 9850  | 8838  | 5514  | 11584 | 9684  | 6132  | 13317 | -     | -     | -     |
| 1.5C-1100-175-OP | 47         | 10169 | 2346  | 2421  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5C-1200-135-OP | 79         | 11884 | 3081  | 3418  | 6951                             | 4135  | 7779  | 7797  | 4761  | 9513  | 8644  | 5381  | 11247 | 9490  | 5999  | 12981 |
| 1.5C-1200-175-OP | 51         | 11857 | 3070  | 3403  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3C-2000-135-OP   | 90         | 17508 | 4779  | 5488  | 11792                            | 7368  | 15529 | 13194 | 8390  | 18399 | 14595 | 9409  | 21269 | 15996 | 10427 | 24138 |
| 3C-2000-175-OP   | 53         | 17463 | 4761  | 5463  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6C-2500-175-OP   | 80         | 24935 | 6997  | 8184  | 26262                            | 17472 | 42230 | 29014 | 19466 | 47868 | 31767 | 21459 | 53506 | 34519 | 23450 | 59143 |
| 6C-2500-200-OP   | 61         | 24926 | 6994  | 8179  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6C-3800-175-OP   | 90         | 33892 | 10151 | 12399 | 21698                            | 13936 | 31243 | 24451 | 15936 | 36881 | 27204 | 17934 | 42519 | 29956 | 19929 | 48157 |
| 6C-3800-200-OP   | 69         | 33883 | 10147 | 12394 | 32648                            | 21878 | 53669 | -     | -     | -     | -     | -     | -     | -     | -     | -     |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 26. Models 0.3C-008A-45-OP to 6C-3800-200-OP at 85 to 100 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |      |      |      |      |      |      |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
|                  |            |       |       |       | 85                               |       |       | 90    |       |       | 95   |      |      | 100  |      |      |
|                  |            |       |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC  | RTC  | ETC  | BTC  | RTC  | ETC  |
| 0.3C-008A-45-OP  | 100        | 377   | 92    | 99    | 957                              | 663   | 1737  | 1021  | 709   | 1869  | 1085 | 755  | 2001 | 1150 | 802  | 2132 |
| 0.3C-008A-75-OP  | 48         | 364   | 87    | 92    | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.3C-008B-45-OP  | 100        | 574   | 99    | 99    | 945                              | 625   | 1495  | 1010  | 672   | 1627  | 1074 | 719  | 1759 | 1138 | 765  | 1891 |
| 0.3C-008B-75-OP  | 48         | 561   | 92    | 92    | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.3C-008C-45-OP  | 100        | 691   | 127   | 127   | 912                              | 591   | 1353  | 977   | 638   | 1484  | 1041 | 685  | 1616 | 1105 | 731  | 1748 |
| 0.3C-008C-75-OP  | 48         | 678   | 119   | 119   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.3C-0100-45-OP  | 100        | 1111  | 253   | 259   | 762                              | 450   | 838   | 826   | 498   | 969   | 890  | 546  | 1101 | 954  | 593  | 1233 |
| 0.3C-0100-75-OP  | 60         | 1097  | 247   | 251   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.3C-0100-100-OP | 34         | 1086  | 242   | 245   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.3C-0150-45-OP  | 100        | 1396  | 371   | 419   | 591                              | 322   | 488   | 655   | 371   | 620   | 719  | 419  | 752  | 784  | 467  | 883  |
| 0.3C-0150-75-OP  | 65         | 1383  | 366   | 412   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.3C-0150-100-OP | 36         | 1371  | 361   | 406   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0200-100-OP | 74         | 1764  | 450   | 495   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0200-135-OP | 41         | 1750  | 444   | 487   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0250-100-OP | 77         | 2122  | 595   | 696   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0250-135-OP | 42         | 2108  | 589   | 688   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0350-100-OP | 87         | 3354  | 871   | 967   | 5068                             | 3427  | 8564  | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0350-135-OP | 48         | 3339  | 865   | 959   | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0400-100-OP | 92         | 3974  | 1121  | 1317  | 4697                             | 3158  | 7804  | 5064  | 3424  | 8556  | -    | -    | -    | -    | -    | -    |
| 0.9C-0400-135-OP | 51         | 3959  | 1116  | 1309  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 0.9C-0700-100-OP | 100        | 5602  | 1518  | 1735  | 4202                             | 2664  | 5806  | 4569  | 2932  | 6558  | 4936 | 3199 | 7311 | 5304 | 3465 | 8063 |
| 0.9C-0700-135-OP | 58         | 5588  | 1513  | 1727  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 1.5C-1100-135-OP | 79         | 10196 | 2358  | 2436  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 1.5C-1100-175-OP | 47         | 10169 | 2346  | 2421  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 1.5C-1200-135-OP | 79         | 11884 | 3081  | 3418  | 10337                            | 6615  | 14714 | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 1.5C-1200-175-OP | 51         | 11857 | 3070  | 3403  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 3C-2000-135-OP   | 90         | 17508 | 4779  | 5488  | 17397                            | 11444 | 27008 | 18798 | 12460 | 29878 | -    | -    | -    | -    | -    | -    |
| 3C-2000-175-OP   | 53         | 17463 | 4761  | 5463  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 6C-2500-175-OP   | 80         | 24935 | 6997  | 8184  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 6C-2500-200-OP   | 61         | 24926 | 6994  | 8179  | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |
| 6C-3800-175-OP   | 90         | 33892 | 10151 | 12399 | 32709                            | 21922 | 53794 | 35461 | 23915 | 59432 | -    | -    | -    | -    | -    | -    |
| 6C-3800-200-OP   | 69         | 33883 | 10147 | 12394 | -                                | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | -    |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 27. Models 14C-5100-200-OP to 50C-15600-350-OP at 15 to 30 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|--------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |        |       |       | 15                               |       |       | 20    |       |       | 25    |       |       | 30    |       |       |
|                  |            |        |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 14C-5100-200-OP  | 100        | 40669  | 12241 | 15001 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14C-5100-235-OP  | 76         | 40641  | 12230 | 14985 | -                                | -     | -     | -     | -     | -     | 10104 | 4906  | 5098  | 15529 | 9050  | 16210 |
| 14C-5100-280-OP  | 54         | 40531  | 12187 | 14924 | -                                | -     | -     | 13726 | 7699  | 12517 | 21428 | 13399 | 28292 | 29129 | 19003 | 44066 |
| 14C-5100-300-OP  | 47         | 40477  | 12165 | 14893 | 9413                             | 3684  | 3684  | 18254 | 11073 | 21792 | 27096 | 17527 | 39901 | 35937 | 23939 | 58009 |
| 14C-5100-350-OP  | 34         | 40323  | 12104 | 14807 | 18908                            | 11556 | 23131 | 30942 | 20318 | 47779 | 42976 | 29036 | 72427 | 55010 | 37738 | 97074 |
| 14C-5400-200-OP  | 100        | 52473  | 14988 | 17738 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14C-5400-235-OP  | 83         | 52444  | 14976 | 17722 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 12225 | 1731  | 1731  |
| 14C-5400-280-OP  | 58         | 52335  | 14933 | 17660 | -                                | -     | -     | -     | -     | -     | 18124 | 9694  | 13813 | 25826 | 15471 | 29588 |
| 14C-5400-300-OP  | 51         | 52280  | 14911 | 17629 | -                                | -     | -     | 14951 | 7212  | 7314  | 23792 | 13960 | 25422 | 32633 | 20470 | 43531 |
| 14C-5400-350-OP  | 37         | 52127  | 14850 | 17543 | 15605                            | 7736  | 8653  | 27638 | 16813 | 33300 | 39672 | 25596 | 57948 | 51706 | 34328 | 82595 |
| 14C-8300-200-OP  | 100        | 67333  | 19401 | 23094 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14C-8300-235-OP  | 91         | 67305  | 19390 | 23078 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14C-8300-280-OP  | 64         | 67196  | 19346 | 23017 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 19829 | 9903  | 11360 |
| 14C-8300-300-OP  | 56         | 67141  | 19324 | 22986 | -                                | -     | -     | -     | -     | -     | 17795 | 7194  | 7194  | 26636 | 15111 | 25303 |
| 14C-8300-350-OP  | 41         | 66988  | 19263 | 22900 | -                                | -     | -     | 21641 | 11318 | 15072 | 33675 | 20353 | 39720 | 45709 | 29155 | 64367 |
| 18C-9600-235-OP  | 100        | 106927 | 27068 | 29561 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-9600-280-OP  | 86         | 106801 | 27016 | 29490 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-9600-300-OP  | 74         | 106738 | 26990 | 29455 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-9600-350-OP  | 55         | 106562 | 26918 | 29356 | -                                | -     | -     | -     | -     | -     | 34139 | 9462  | 9462  | 47978 | 25885 | 37806 |
| 18C-9800-235-OP  | 100        | 135427 | 33729 | 36452 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-9800-280-OP  | 95         | 135302 | 33677 | 36381 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-9800-300-OP  | 83         | 135239 | 33651 | 36346 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-9800-350-OP  | 61         | 135063 | 33578 | 36246 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 39728 | 2847  | 2847  |
| 18C-10500-280-OP | 100        | 157915 | 39550 | 42897 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-10500-300-OP | 89         | 157852 | 39524 | 42861 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-10500-350-OP | 66         | 157676 | 39451 | 42762 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-11000-280-OP | 100        | 176935 | 47336 | 53617 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-11000-300-OP | 95         | 176872 | 47310 | 53582 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18C-11000-350-OP | 70         | 176696 | 47239 | 53482 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32C-12000-300-OP | 100        | 201070 | 48236 | 50917 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32C-12000-350-OP | 82         | 200863 | 48149 | 50801 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32C-15000-300-OP | 100        | 233909 | 59022 | 64321 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32C-15000-350-OP | 88         | 233702 | 58937 | 64204 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50C-15400-300-OP | 100        | 253231 | 57858 | 59373 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50C-15400-350-OP | 96         | 253001 | 57757 | 59244 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50C-15600-300-OP | 100        | 264849 | 62857 | 65922 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50C-15600-350-OP | 98         | 264619 | 62759 | 65792 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 28. Models 14C-5100-200-OP to 50C-15600-350-OP at 35 to 50 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |       |        |       |       |        |       |       |        |        |       |        |
|------------------|------------|--------|-------|-------|----------------------------------|-------|--------|-------|-------|--------|-------|-------|--------|--------|-------|--------|
|                  |            |        |       |       | 35                               |       |        | 40    |       |        | 45    |       |        | 50     |       |        |
|                  |            |        |       |       | BTC                              | RTC   | ETC    | BTC   | RTC   | ETC    | BTC   | RTC   | ETC    | BTC    | RTC   | ETC    |
| 14C-5100-200-OP  | 100        | 40669  | 12241 | 15001 | 10500                            | 5223  | 5909   | 14429 | 8227  | 13958  | 18358 | 11150 | 22006  | 22288  | 14027 | 30054  |
| 14C-5100-235-OP  | 76         | 40641  | 12230 | 14985 | 20954                            | 13054 | 27321  | 26379 | 17006 | 38433  | 31804 | 20944 | 49544  | 37229  | 24875 | 60656  |
| 14C-5100-280-OP  | 54         | 40531  | 12187 | 14924 | 36831                            | 24587 | 59841  | 44533 | 30163 | 75615  | 52234 | 35731 | 91389  | 59936  | 41299 | 107164 |
| 14C-5100-300-OP  | 47         | 40477  | 12165 | 14893 | 44778                            | 30340 | 76118  | 53619 | 36732 | 94226  | 62461 | 43125 | 112334 | -      | -     | -      |
| 14C-5100-350-OP  | 34         | 40323  | 12104 | 14807 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 14C-5400-200-OP  | 100        | 52473  | 14988 | 17738 | -                                | -     | -      | -     | -     | -      | 15055 | 7297  | 7527   | 18984  | 10350 | 15575  |
| 14C-5400-235-OP  | 83         | 52444  | 14976 | 17722 | 17650                            | 9332  | 12843  | 23075 | 13426 | 23954  | 28500 | 17449 | 35066  | 33926  | 21413 | 46177  |
| 14C-5400-280-OP  | 58         | 52335  | 14933 | 17660 | 33527                            | 21123 | 45362  | 41229 | 26728 | 61136  | 48931 | 32316 | 76911  | 56633  | 37895 | 92685  |
| 14C-5400-300-OP  | 51         | 52280  | 14911 | 17629 | 41475                            | 26906 | 61639  | 50316 | 33321 | 79747  | 59157 | 39723 | 97856  | 67998  | 46122 | 115964 |
| 14C-5400-350-OP  | 37         | 52127  | 14850 | 17543 | 63740                            | 43042 | 107243 | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 14C-8300-200-OP  | 100        | 67333  | 19401 | 23094 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 14C-8300-235-OP  | 91         | 67305  | 19390 | 23078 | -                                | -     | -      | 17078 | 5726  | 5726   | 22503 | 11981 | 16838  | 27928  | 16080 | 27949  |
| 14C-8300-280-OP  | 64         | 67196  | 19346 | 23017 | 27530                            | 15781 | 27134  | 35232 | 21503 | 42908  | 42934 | 27134 | 58683  | 50635  | 32739 | 74457  |
| 14C-8300-300-OP  | 56         | 67141  | 19324 | 22986 | 35477                            | 21684 | 43411  | 44319 | 28144 | 61519  | 53160 | 34572 | 79628  | 62001  | 40987 | 97736  |
| 14C-8300-350-OP  | 41         | 66988  | 19263 | 22900 | 57743                            | 37898 | 89015  | 69777 | 46619 | 113663 | -     | -     | -      | -      | -     | -      |
| 18C-9600-235-OP  | 100        | 106927 | 27068 | 29561 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 18C-9600-280-OP  | 86         | 106801 | 27016 | 29490 | -                                | -     | -      | 35929 | 13128 | 13128  | 44786 | 23436 | 31269  | 53643  | 30174 | 49409  |
| 18C-9600-300-OP  | 74         | 106738 | 26990 | 29455 | 36211                            | 13706 | 13706  | 46379 | 24662 | 34531  | 56546 | 32352 | 55356  | 66713  | 39925 | 76180  |
| 18C-9600-350-OP  | 55         | 106562 | 26918 | 29356 | 61817                            | 36287 | 66151  | 75656 | 46527 | 94496  | 89495 | 56635 | 122840 | 103334 | 66705 | 151185 |
| 18C-9800-235-OP  | 100        | 135427 | 33729 | 36452 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 18C-9800-280-OP  | 95         | 135302 | 33677 | 36381 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | 45393  | 14451 | 14451  |
| 18C-9800-300-OP  | 83         | 135239 | 33651 | 36346 | -                                | -     | -      | -     | -     | -      | 48296 | 20397 | 20397  | 58464  | 30668 | 41221  |
| 18C-9800-350-OP  | 61         | 135063 | 33578 | 36246 | 53567                            | 26853 | 31192  | 67406 | 37482 | 59537  | 81245 | 47844 | 87881  | 95084  | 58099 | 116226 |
| 18C-10500-280-OP | 100        | 157915 | 39550 | 42897 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 18C-10500-300-OP | 89         | 157852 | 39524 | 42861 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | 50911  | 13484 | 13484  |
| 18C-10500-350-OP | 66         | 157676 | 39451 | 42762 | 46014                            | 3454  | 3454   | 59853 | 29394 | 31799  | 73692 | 40123 | 60144  | 87531  | 50544 | 88488  |
| 18C-11000-280-OP | 100        | 176935 | 47336 | 53617 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 18C-11000-300-OP | 95         | 176872 | 47310 | 53582 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 18C-11000-350-OP | 70         | 176696 | 47239 | 53482 | -                                | -     | -      | 48462 | 8469  | 8469   | 62301 | 31336 | 36813  | 76140  | 41981 | 65158  |
| 32C-12000-300-OP | 100        | 201070 | 48236 | 50917 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 32C-12000-350-OP | 82         | 200863 | 48149 | 50801 | -                                | -     | -      | 68784 | 17993 | 17993  | 85030 | 42966 | 51267  | 101276 | 55470 | 84541  |
| 32C-15000-300-OP | 100        | 233909 | 59022 | 64321 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 32C-15000-350-OP | 88         | 233702 | 58937 | 64204 | -                                | -     | -      | -     | -     | -      | 70272 | 10986 | 10986  | 86518  | 42139 | 44260  |
| 50C-15400-300-OP | 100        | 253231 | 57858 | 59373 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 50C-15400-350-OP | 96         | 253001 | 57757 | 59244 | -                                | -     | -      | -     | -     | -      | 90087 | 20386 | 20386  | 108138 | 53088 | 57357  |
| 50C-15600-300-OP | 100        | 264849 | 62857 | 65922 | -                                | -     | -      | -     | -     | -      | -     | -     | -      | -      | -     | -      |
| 50C-15600-350-OP | 98         | 264619 | 62759 | 65792 | -                                | -     | -      | -     | -     | -      | 83129 | 6135  | 6135   | 101180 | 43106 | 43106  |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 29. Models 14C-5100-200-OP to 50C-15600-350-OP at 55 to 70 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |       |        |        |       |        |        |       |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|--------|--------|
|                  |            |        |       |       | 55                               |       |        | 60     |       |        | 65     |       |        | 70     |        |        |
|                  |            |        |       |       | BTC                              | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC    | ETC    |
| 14C-5100-200-OP  | 100        | 40669  | 12241 | 15001 | 26217                            | 16888 | 38102  | 30147  | 19741 | 46150  | 34076  | 22592 | 54198  | 38006  | 25437  | 62247  |
| 14C-5100-235-OP  | 76         | 40641  | 12230 | 14985 | 42654                            | 28803 | 71767  | 48079  | 32727 | 82879  | 53504  | 36649 | 93990  | 58929  | 40572  | 105102 |
| 14C-5100-280-OP  | 54         | 40531  | 12187 | 14924 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5100-300-OP  | 47         | 40477  | 12165 | 14893 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5100-350-OP  | 34         | 40323  | 12104 | 14807 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5400-200-OP  | 100        | 52473  | 14988 | 17738 | 22914                            | 13306 | 23623  | 26843  | 16225 | 31672  | 30773  | 19113 | 39720  | 34702  | 21980  | 47768  |
| 14C-5400-235-OP  | 83         | 52444  | 14976 | 17722 | 39351                            | 25362 | 57289  | 44776  | 29301 | 68400  | 50201  | 33238 | 79512  | 55626  | 37166  | 90623  |
| 14C-5400-280-OP  | 58         | 52335  | 14933 | 17660 | 64334                            | 43472 | 108460 | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5400-300-OP  | 51         | 52280  | 14911 | 17629 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-5400-350-OP  | 37         | 52127  | 14850 | 17543 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-8300-200-OP  | 100        | 67333  | 19401 | 23094 | 16917                            | 5396  | 5396   | 20846  | 10701 | 13444  | 24776  | 13710 | 21492  | 28705  | 16660  | 29540  |
| 14C-8300-235-OP  | 91         | 67305  | 19390 | 23078 | 33354                            | 20114 | 39061  | 38779  | 24102 | 50172  | 44204  | 28060 | 61284  | 49629  | 32006  | 72395  |
| 14C-8300-280-OP  | 64         | 67196  | 19346 | 23017 | 58337                            | 38329 | 90232  | 66039  | 43912 | 106006 | -      | -     | -      | -      | -      | -      |
| 14C-8300-300-OP  | 56         | 67141  | 19324 | 22986 | 70843                            | 47391 | 115845 | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14C-8300-350-OP  | 41         | 66988  | 19263 | 22900 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9600-235-OP  | 100        | 106927 | 27068 | 29561 | 33769                            | 8704  | 8704   | 40007  | 19694 | 21482  | 46246  | 24561 | 34260  | 52485  | 29301  | 47038  |
| 18C-9600-280-OP  | 86         | 106801 | 27016 | 29490 | 62500                            | 36796 | 67550  | 71357  | 43365 | 85691  | 80214  | 49863 | 103831 | 89071  | 56326  | 121972 |
| 18C-9600-300-OP  | 74         | 106738 | 26990 | 29455 | 76881                            | 47424 | 97005  | 87048  | 54850 | 117830 | 97216  | 62254 | 138654 | 107383 | 69648  | 159479 |
| 18C-9600-350-OP  | 55         | 106562 | 26918 | 29356 | 117173                           | 76752 | 179529 | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 18C-9800-235-OP  | 100        | 135427 | 33729 | 36452 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | 44235  | 12079  | 12079  |
| 18C-9800-280-OP  | 95         | 135302 | 33677 | 36381 | 54250                            | 27390 | 32591  | 63107  | 34225 | 50732  | 71964  | 40912 | 68872  | 80821  | 47528  | 87013  |
| 18C-9800-300-OP  | 83         | 135239 | 33651 | 36346 | 68631                            | 38406 | 62046  | 78798  | 46021 | 82871  | 88966  | 53574 | 103695 | 99133  | 61068  | 124520 |
| 18C-9800-350-OP  | 61         | 135063 | 33578 | 36246 | 108923                           | 68222 | 144571 | 122762 | 78309 | 172915 | -      | -     | -      | -      | -      | -      |
| 18C-10500-280-OP | 100        | 157915 | 39550 | 42897 | 46697                            | 4853  | 4853   | 55554  | 22994 | 22994  | 64411  | 32989 | 41135  | 73268  | 39801  | 59275  |
| 18C-10500-300-OP | 89         | 157852 | 39524 | 42861 | 61078                            | 30369 | 34308  | 71245  | 38259 | 55133  | 81413  | 45959 | 75958  | 91580  | 53562  | 96782  |
| 18C-10500-350-OP | 66         | 157676 | 39451 | 42762 | 101370                           | 60835 | 116833 | 115209 | 71039 | 145178 | 129048 | 81148 | 173522 | -      | -      | -      |
| 18C-11000-280-OP | 100        | 176935 | 47336 | 53617 | -                                | -     | -      | -      | -     | -      | 53020  | 17804 | 17804  | 61877  | 31003  | 35945  |
| 18C-11000-300-OP | 95         | 176872 | 47310 | 53582 | 49687                            | 10978 | 10978  | 59855  | 29396 | 31803  | 70022  | 37323 | 52627  | 80189  | 45037  | 73452  |
| 18C-11000-350-OP | 70         | 176696 | 47239 | 53482 | 89979                            | 52369 | 93503  | 103818 | 62651 | 121847 | 117657 | 72832 | 150192 | 131496 | 82935  | 178536 |
| 32C-12000-300-OP | 100        | 201070 | 48236 | 50917 | 70223                            | 20938 | 20938  | 82158  | 40698 | 45385  | 94094  | 49995 | 69831  | 106030 | 59066  | 94277  |
| 32C-12000-350-OP | 82         | 200863 | 48149 | 50801 | 117522                           | 67698 | 117815 | 133768 | 79792 | 151089 | 150013 | 91814 | 184363 | 166259 | 103699 | 217638 |
| 32C-15000-300-OP | 100        | 233909 | 59022 | 64321 | -                                | -     | -      | 67400  | 5104  | 5104   | 79336  | 29550 | 29550  | 91272  | 45920  | 53996  |
| 32C-15000-350-OP | 88         | 233702 | 58937 | 64204 | 102764                           | 54828 | 77534  | 119009 | 67144 | 110808 | 135255 | 79291 | 144082 | 151501 | 91354  | 177356 |
| 50C-15400-300-OP | 100        | 253231 | 57858 | 59373 | -                                | -     | -      | 86896  | 13850 | 13850  | 100158 | 41013 | 41013  | 113420 | 57272  | 68175  |
| 50C-15400-350-OP | 96         | 253001 | 57757 | 59244 | 126189                           | 67169 | 94328  | 144240 | 80870 | 131300 | 162291 | 94395 | 168271 | 180342 | 107817 | 205242 |
| 50C-15600-300-OP | 100        | 264849 | 62857 | 65922 | -                                | -     | -      | -      | -     | -      | 93200  | 26762 | 26762  | 106462 | 51743  | 53924  |
| 50C-15600-350-OP | 98         | 264619 | 62759 | 65792 | 119231                           | 61808 | 80077  | 137282 | 75618 | 117049 | 155333 | 89196 | 154020 | 173384 | 102658 | 190991 |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 30. Models 14C-5100-200-OP to 50C-15600-350-OP at 75 to 85 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |            |        |       |       | 75                               |        |        | 80     |        |        | 85     |        |        |
|                  |            |        |       |       | BTC                              | RTC    | ETC    | BTC    | RTC    | ETC    | BTC    | RTC    | ETC    |
| 14C-5100-200-OP  | 100        | 40669  | 12241 | 15001 | 41935                            | 28283  | 70295  | 45865  | 31126  | 78343  | 49794  | 33967  | 86391  |
| 14C-5100-235-OP  | 76         | 40641  | 12230 | 14985 | 64355                            | 44494  | 116213 | -      | -      | -      | -      | -      | -      |
| 14C-5100-280-OP  | 54         | 40531  | 12187 | 14924 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5100-300-OP  | 47         | 40477  | 12165 | 14893 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5100-350-OP  | 34         | 40323  | 12104 | 14807 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-200-OP  | 100        | 52473  | 14988 | 17738 | 38632                            | 24839  | 55816  | 42561  | 27694  | 63864  | 46491  | 30546  | 71913  |
| 14C-5400-235-OP  | 83         | 52444  | 14976 | 17722 | 61051                            | 41094  | 101735 | 66476  | 45022  | 112846 | -      | -      | -      |
| 14C-5400-280-OP  | 58         | 52335  | 14933 | 17660 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-300-OP  | 51         | 52280  | 14911 | 17629 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-350-OP  | 37         | 52127  | 14850 | 17543 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-200-OP  | 100        | 67333  | 19401 | 23094 | 32635                            | 19581  | 37588  | 36564  | 22481  | 45636  | 40493  | 25353  | 53685  |
| 14C-8300-235-OP  | 91         | 67305  | 19390 | 23078 | 55054                            | 35946  | 83507  | 60479  | 39883  | 94618  | 65904  | 43815  | 105730 |
| 14C-8300-280-OP  | 64         | 67196  | 19346 | 23017 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-300-OP  | 56         | 67141  | 19324 | 22986 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-350-OP  | 41         | 66988  | 19263 | 22900 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9600-235-OP  | 100        | 106927 | 27068 | 29561 | 58724                            | 33983  | 59816  | 64963  | 38627  | 72595  | 71202  | 43250  | 85373  |
| 18C-9600-280-OP  | 86         | 106801 | 27016 | 29490 | 97928                            | 62772  | 140112 | 106785 | 69214  | 158253 | 115642 | 75641  | 176393 |
| 18C-9600-300-OP  | 74         | 106738 | 26990 | 29455 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9600-350-OP  | 55         | 106562 | 26918 | 29356 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9800-235-OP  | 100        | 135427 | 33729 | 36452 | 50474                            | 24384  | 24858  | 56713  | 29314  | 37636  | 62952  | 34107  | 50414  |
| 18C-9800-280-OP  | 95         | 135302 | 33677 | 36381 | 89678                            | 54102  | 105153 | 98535  | 60630  | 123294 | 107392 | 67105  | 141435 |
| 18C-9800-300-OP  | 83         | 135239 | 33651 | 36346 | 109301                           | 68498  | 145345 | 119468 | 75913  | 166169 | -      | -      | -      |
| 18C-9800-350-OP  | 61         | 135063 | 33578 | 36246 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-10500-280-OP | 100        | 157915 | 39550 | 42897 | 82125                            | 46493  | 77416  | 90982  | 53116  | 95556  | 99839  | 59700  | 113697 |
| 18C-10500-300-OP | 89         | 157852 | 39524 | 42861 | 101748                           | 61116  | 117607 | 111915 | 68627  | 138431 | 122083 | 76066  | 159256 |
| 18C-10500-350-OP | 66         | 157676 | 39451 | 42762 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-11000-280-OP | 100        | 176935 | 47336 | 53617 | 70734                            | 37867  | 54085  | 79591  | 44585  | 72226  | 88448  | 51228  | 90366  |
| 18C-11000-300-OP | 95         | 176872 | 47310 | 53582 | 90357                            | 52651  | 94277  | 100524 | 60208  | 115101 | 110692 | 67731  | 135926 |
| 18C-11000-350-OP | 70         | 176696 | 47239 | 53482 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-12000-300-OP | 100        | 201070 | 48236 | 50917 | 117965                           | 68030  | 118724 | 129901 | 76925  | 143170 | 141837 | 85775  | 167616 |
| 32C-12000-350-OP | 82         | 200863 | 48149 | 50801 | 182505                           | 115554 | 250912 | 198751 | 127375 | 284186 | 214997 | 139193 | 317460 |
| 32C-15000-300-OP | 100        | 233909 | 59022 | 64321 | 103207                           | 55167  | 78443  | 115143 | 64229  | 102889 | 127079 | 73193  | 127335 |
| 32C-15000-350-OP | 88         | 233702 | 58937 | 64204 | 167747                           | 103325 | 210631 | 183993 | 115197 | 243905 | 200239 | 127049 | 277179 |
| 50C-15400-300-OP | 100        | 253231 | 57858 | 59373 | 126682                           | 67546  | 95338  | 139944 | 77631  | 122500 | 153205 | 87603  | 149663 |
| 50C-15400-350-OP | 96         | 253001 | 57757 | 59244 | 198392                           | 121178 | 242213 | 216443 | 134405 | 279185 | 234494 | 147577 | 316156 |
| 50C-15600-300-OP | 100        | 264849 | 62857 | 65922 | 119724                           | 62191  | 81087  | 132986 | 72356  | 108249 | 146247 | 82383  | 135412 |
| 50C-15600-350-OP | 98         | 264619 | 62759 | 65792 | 191434                           | 116041 | 227962 | 209485 | 129312 | 264934 | 227536 | 142500 | 301905 |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 31. Models 14C-5100-200-OP to 50C-15600-350-OP at 90 to 100 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |            |        |       |       | 90                               |        |        | 95     |        |        | 100    |        |        |
|                  |            |        |       |       | BTC                              | RTC    | ETC    | BTC    | RTC    | ETC    | BTC    | RTC    | ETC    |
| 14C-5100-200-OP  | 100        | 40669  | 12241 | 15001 | 53724                            | 36808  | 94439  | 57653  | 39649  | 102487 | 61582  | 42490  | 110536 |
| 14C-5100-235-OP  | 76         | 40641  | 12230 | 14985 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5100-280-OP  | 54         | 40531  | 12187 | 14924 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5100-300-OP  | 47         | 40477  | 12165 | 14893 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5100-350-OP  | 34         | 40323  | 12104 | 14807 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-200-OP  | 100        | 52473  | 14988 | 17738 | 50420                            | 33396  | 79961  | 54349  | 36242  | 88009  | 58279  | 39087  | 96057  |
| 14C-5400-235-OP  | 83         | 52444  | 14976 | 17722 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-280-OP  | 58         | 52335  | 14933 | 17660 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-300-OP  | 51         | 52280  | 14911 | 17629 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-5400-350-OP  | 37         | 52127  | 14850 | 17543 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-200-OP  | 100        | 67333  | 19401 | 23094 | 44423                            | 28219  | 61733  | 48352  | 31078  | 69781  | 52282  | 33935  | 77829  |
| 14C-8300-235-OP  | 91         | 67305  | 19390 | 23078 | 71329                            | 47743  | 116841 | -      | -      | -      | -      | -      | -      |
| 14C-8300-280-OP  | 64         | 67196  | 19346 | 23017 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-300-OP  | 56         | 67141  | 19324 | 22986 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14C-8300-350-OP  | 41         | 66988  | 19263 | 22900 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9600-235-OP  | 100        | 106927 | 27068 | 29561 | 77441                            | 47834  | 98151  | 83679  | 52392  | 110929 | 89918  | 56944  | 123708 |
| 18C-9600-280-OP  | 86         | 106801 | 27016 | 29490 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9600-300-OP  | 74         | 106738 | 26990 | 29455 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9600-350-OP  | 55         | 106562 | 26918 | 29356 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9800-235-OP  | 100        | 135427 | 33729 | 36452 | 69191                            | 38828  | 63192  | 75430  | 43509  | 75971  | 81668  | 48160  | 88749  |
| 18C-9800-280-OP  | 95         | 135302 | 33677 | 36381 | 116249                           | 73568  | 159575 | 125106 | 80014  | 177716 | -      | -      | -      |
| 18C-9800-300-OP  | 83         | 135239 | 33651 | 36346 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-9800-350-OP  | 61         | 135063 | 33578 | 36246 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-10500-280-OP | 100        | 157915 | 39550 | 42897 | 108696                           | 66258  | 131837 | 117553 | 72756  | 149978 | 126410 | 79223  | 168119 |
| 18C-10500-300-OP | 89         | 157852 | 39524 | 42861 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-10500-350-OP | 66         | 157676 | 39451 | 42762 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18C-11000-280-OP | 100        | 176935 | 47336 | 53617 | 97305                            | 57821  | 108507 | 106162 | 64387  | 126648 | 115019 | 70900  | 144788 |
| 18C-11000-300-OP | 95         | 176872 | 47310 | 53582 | 120859                           | 75173  | 156750 | 131027 | 82592  | 177575 | -      | -      | -      |
| 18C-11000-350-OP | 70         | 176696 | 47239 | 53482 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-12000-300-OP | 100        | 201070 | 48236 | 50917 | 153773                           | 94567  | 192063 | 165708 | 103297 | 216509 | 177644 | 112006 | 240955 |
| 32C-12000-350-OP | 82         | 200863 | 48149 | 50801 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32C-15000-300-OP | 100        | 233909 | 59022 | 64321 | 139014                           | 82092  | 151781 | 150950 | 90946  | 176228 | 162886 | 99765  | 200674 |
| 32C-15000-350-OP | 88         | 233702 | 58937 | 64204 | 216484                           | 138867 | 310453 | -      | -      | -      | -      | -      | -      |
| 50C-15400-300-OP | 100        | 253231 | 57858 | 59373 | 166467                           | 97507  | 176826 | 179729 | 107363 | 203988 | 192991 | 117191 | 231151 |
| 50C-15400-350-OP | 96         | 253001 | 57757 | 59244 | 252545                           | 160734 | 353127 | 270596 | 173865 | 390099 | 288647 | 186996 | 427070 |
| 50C-15600-300-OP | 100        | 264849 | 62857 | 65922 | 159509                           | 92322  | 162575 | 172771 | 102204 | 189737 | 186033 | 112038 | 216900 |
| 50C-15600-350-OP | 98         | 264619 | 62759 | 65792 | 245587                           | 155672 | 338876 | 263638 | 168803 | 375847 | 281689 | 181934 | 412819 |

**NOTES:**

Model 80C available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

## Symmetric Yoke Design, Spring to Close

**Table 32. Models 0.3S-008A-45-CL to 6S-3800-200-CL at 15 to 35 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |     |      |      |      |      |       |      |      |       |      |      |       |      |       |
|------------------|------------|-------|-------|-------|----------------------------------|-----|------|------|------|------|-------|------|------|-------|------|------|-------|------|-------|
|                  |            |       |       |       | 15                               |     |      | 20   |      |      | 25    |      |      | 30    |      |      | 35    |      |       |
|                  |            |       |       |       | BTO                              | RTO | ETO  | BTO  | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO   |
| 0.3S-008A-45-CL  | 100        | 252   | 112   | 136   | -                                | -   | -    | 141  | 23   | 23   | 215   | 94   | 108  | 290   | 144  | 193  | 364   | 192  | 278   |
| 0.3S-008A-75-CL  | 70         | 244   | 106   | 127   | 455                              | 250 | 383  | 662  | 382  | 619  | 869   | 513  | 856  | 1076  | 645  | 1093 | 1283  | 776  | 1330  |
| 0.3S-008B-45-CL  | 100        | 387   | 148   | 149   | -                                | -   | -    | -    | -    | -    | -     | -    | -    | 277   | 44   | 44   | 351   | 129  | 129   |
| 0.3S-008B-75-CL  | 73         | 378   | 140   | 140   | 442                              | 198 | 233  | 649  | 334  | 470  | 856   | 467  | 706  | 1063  | 599  | 943  | 1270  | 731  | 1180  |
| 0.3S-008S-45-CL  | 100        | 464   | 181   | 187   | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | 314   | 39   | 39    |
| 0.3S-008S-75-CL  | 75         | 456   | 175   | 178   | 405                              | 144 | 144  | 612  | 295  | 380  | 819   | 429  | 617  | 1026  | 561  | 854  | 1233  | 693  | 1091  |
| 0.3S-0100-45-CL  | 100        | 745   | 316   | 365   | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.3S-0100-75-CL  | 81         | 737   | 311   | 356   | -                                | -   | -    | 437  | 53   | 53   | 644   | 270  | 289  | 851   | 409  | 526  | 1058  | 543  | 763   |
| 0.3S-0100-100-CL | 46         | 729   | 306   | 348   | 706                              | 312 | 360  | 1074 | 553  | 781  | 1442  | 789  | 1202 | 1810  | 1024 | 1623 | 2178  | 1258 | 2044  |
| 0.3S-0150-45-CL  | 100        | 931   | 435   | 565   | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.3S-0150-75-CL  | 86         | 923   | 429   | 556   | -                                | -   | -    | -    | -    | -    | 446   | 63   | 63   | 653   | 276  | 300  | 860   | 415  | 537   |
| 0.3S-0150-100-CL | 48         | 915   | 425   | 548   | 508                              | 134 | 134  | 876  | 425  | 555  | 1244  | 663  | 976  | 1612  | 898  | 1397 | 1980  | 1133 | 1817  |
| 0.9S-0200-100-CL | 100        | 1220  | 562   | 718   | -                                | -   | -    | 930  | 404  | 455  | 1355  | 685  | 942  | 1781  | 958  | 1428 | 2206  | 1230 | 1915  |
| 0.9S-0200-135-CL | 59         | 1211  | 556   | 708   | 1545                             | 807 | 1159 | 2321 | 1303 | 2046 | 3096  | 1797 | 2933 | 3872  | 2289 | 3819 | 4647  | 2782 | 4706  |
| 0.9S-0250-100-CL | 100        | 1454  | 708   | 970   | -                                | -   | -    | 682  | 171  | 171  | 1107  | 523  | 658  | 1533  | 799  | 1145 | 1958  | 1072 | 1631  |
| 0.9S-0250-135-CL | 60         | 1444  | 702   | 960   | 1297                             | 647 | 875  | 2073 | 1145 | 1762 | 2848  | 1639 | 2649 | 3624  | 2132 | 3536 | 4399  | 2624 | 4423  |
| 0.9S-0350-100-CL | 100        | 2316  | 1077  | 1394  | -                                | -   | -    | -    | -    | -    | -     | -    | -    | 1114  | 150  | 150  | 1540  | 623  | 637   |
| 0.9S-0350-135-CL | 66         | 2307  | 1071  | 1384  | -                                | -   | -    | 1654 | 703  | 768  | 2430  | 1217 | 1655 | 3205  | 1716 | 2541 | 3980  | 2212 | 3428  |
| 0.9S-0400-100-CL | 100        | 2721  | 1330  | 1830  | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | 1110  | 145  | 145   |
| 0.9S-0400-135-CL | 69         | 2712  | 1324  | 1820  | -                                | -   | -    | 1224 | 276  | 276  | 1999  | 936  | 1163 | 2775  | 1440 | 2050 | 3550  | 1938 | 2936  |
| 0.9S-0700-100-CL | 100        | 3854  | 1838  | 2455  | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.9S-0700-135-CL | 74         | 3844  | 1832  | 2444  | -                                | -   | -    | -    | -    | -    | -     | -    | -    | 2159  | 737  | 737  | 2935  | 1345 | 1624  |
| 1.5S-1100-135-CL | 88         | 6284  | 3076  | 3739  | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5S-1100-175-CL | 52         | 6267  | 3065  | 3718  | -                                | -   | -    | -    | -    | -    | 5120  | 1248 | 1248 | 6907  | 2671 | 2973 | 8695  | 3767 | 4697  |
| 1.5S-1200-135-CL | 94         | 7291  | 3781  | 5065  | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5S-1200-175-CL | 56         | 7274  | 3770  | 5044  | -                                | -   | -    | -    | -    | -    | 3812  | 21   | 21   | 5599  | 1745 | 1745 | 7387  | 2985 | 3470  |
| 3S-2000-135-CL   | 100        | 10967 | 5751  | 8016  | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 3S-2000-175-CL   | 65         | 10940 | 5733  | 7983  | -                                | -   | -    | -    | -    | -    | 6482  | 1475 | 1475 | 9402  | 3811 | 4373 | 12322 | 5609 | 7272  |
| 6S-2500-175-CL   | 100        | 15694 | 8347  | 11920 | -                                | -   | -    | -    | -    | -    | -     | -    | -    | 8404  | 1715 | 1715 | 11812 | 4627 | 5110  |
| 6S-2500-200-CL   | 80         | 15689 | 8344  | 11913 | -                                | -   | -    | -    | -    | -    | 10207 | 3510 | 3510 | 14658 | 6406 | 7946 | 19109 | 9113 | 12381 |
| 6S-3800-175-CL   | 100        | 21216 | 11714 | 17685 | -                                | -   | -    | -    | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -     |
| 6S-3800-200-CL   | 87         | 21210 | 11711 | 17679 | -                                | -   | -    | -    | -    | -    | -     | -    | -    | 8972  | 1335 | 1335 | 13423 | 5241 | 5770  |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 33. Models 0.3S-008A-45-CL to 6S-3800-200-CL at 40 to 60 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 40                               |       |       | 45    |       |       | 50    |       |       | 55    |       |       | 60    |       |       |
|                  |            |       |       |       | BTO                              | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   |
| 0.3S-008A-45-CL  | 100        | 252   | 112   | 136   | 439                              | 239   | 364   | 513   | 287   | 449   | 588   | 335   | 534   | 662   | 382   | 619   | 737   | 429   | 705   |
| 0.3S-008A-75-CL  | 70         | 244   | 106   | 127   | 1490                             | 908   | 1566  | 1697  | 1039  | 1803  | 1904  | 1170  | 2040  | 2111  | 1301  | 2277  | 2318  | 1433  | 2513  |
| 0.3S-008B-45-CL  | 100        | 387   | 148   | 149   | 426                              | 187   | 214   | 500   | 237   | 299   | 575   | 286   | 384   | 649   | 334   | 470   | 724   | 382   | 555   |
| 0.3S-008B-75-CL  | 73         | 378   | 140   | 140   | 1477                             | 862   | 1417  | 1684  | 994   | 1653  | 1891  | 1125  | 1890  | 2098  | 1256  | 2127  | 2305  | 1388  | 2364  |
| 0.3S-008S-45-CL  | 100        | 464   | 181   | 187   | 388                              | 125   | 125   | 463   | 195   | 210   | 537   | 245   | 295   | 612   | 295   | 380   | 686   | 343   | 466   |
| 0.3S-008S-75-CL  | 75         | 456   | 175   | 178   | 1440                             | 825   | 1327  | 1647  | 957   | 1564  | 1854  | 1088  | 1801  | 2061  | 1220  | 2038  | 2268  | 1351  | 2274  |
| 0.3S-0100-45-CL  | 100        | 745   | 316   | 365   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 437   | 53    | 53    | 511   | 138   | 138   |
| 0.3S-0100-75-CL  | 81         | 737   | 311   | 356   | 1265                             | 676   | 1000  | 1472  | 809   | 1236  | 1679  | 941   | 1473  | 1886  | 1073  | 1710  | 2093  | 1204  | 1946  |
| 0.3S-0100-100-CL | 46         | 729   | 306   | 348   | 2546                             | 1492  | 2464  | 2914  | 1726  | 2885  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-45-CL  | 100        | 931   | 435   | 565   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-75-CL  | 86         | 923   | 429   | 556   | 1067                             | 549   | 773   | 1274  | 682   | 1010  | 1481  | 815   | 1247  | 1688  | 947   | 1484  | 1895  | 1079  | 1720  |
| 0.3S-0150-100-CL | 48         | 915   | 425   | 548   | 2348                             | 1367  | 2238  | 2716  | 1600  | 2659  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0200-100-CL | 100        | 1220  | 562   | 718   | 2632                             | 1502  | 2401  | 3057  | 1772  | 2888  | 3483  | 2042  | 3375  | 3908  | 2313  | 3861  | 4334  | 2583  | 4348  |
| 0.9S-0200-135-CL | 59         | 1211  | 556   | 708   | 5423                             | 3274  | 5593  | 6198  | 3766  | 6480  | 6973  | 4258  | 7367  | 7749  | 4750  | 8254  | -     | -     | -     |
| 0.9S-0250-100-CL | 100        | 1454  | 708   | 970   | 2384                             | 1344  | 2118  | 2809  | 1614  | 2604  | 3235  | 1885  | 3091  | 3660  | 2155  | 3578  | 4086  | 2425  | 4064  |
| 0.9S-0250-135-CL | 60         | 1444  | 702   | 960   | 5175                             | 3117  | 5310  | 5950  | 3609  | 6196  | 6725  | 4101  | 7083  | 7501  | 4592  | 7970  | 8276  | 5084  | 8857  |
| 0.9S-0350-100-CL | 100        | 2316  | 1077  | 1394  | 1965                             | 913   | 1123  | 2391  | 1192  | 1610  | 2816  | 1467  | 2097  | 3242  | 1740  | 2583  | 3667  | 2012  | 3070  |
| 0.9S-0350-135-CL | 66         | 2307  | 1071  | 1384  | 4756                             | 2707  | 4315  | 5531  | 3200  | 5202  | 6307  | 3692  | 6089  | 7082  | 4185  | 6976  | 7858  | 4677  | 7863  |
| 0.9S-0400-100-CL | 100        | 2721  | 1330  | 1830  | 1535                             | 620   | 632   | 1961  | 910   | 1118  | 2386  | 1189  | 1605  | 2812  | 1464  | 2092  | 3237  | 1737  | 2578  |
| 0.9S-0400-135-CL | 69         | 2712  | 1324  | 1820  | 4326                             | 2433  | 3823  | 5101  | 2926  | 4710  | 5877  | 3419  | 5597  | 6652  | 3912  | 6484  | 7428  | 4404  | 7371  |
| 0.9S-0700-100-CL | 100        | 3854  | 1838  | 2455  | -                                | -     | -     | -     | -     | -     | 1771  | 292   | 292   | 2196  | 779   | 779   | 2622  | 1134  | 1266  |
| 0.9S-0700-135-CL | 74         | 3844  | 1832  | 2444  | 3710                             | 1854  | 2511  | 4486  | 2354  | 3398  | 5261  | 2852  | 4285  | 6037  | 3347  | 5171  | 6812  | 3842  | 6058  |
| 1.5S-1100-135-CL | 88         | 6284  | 3076  | 3739  | 4710                             | 853   | 853   | 5774  | 1880  | 1880  | 6838  | 2628  | 2906  | 7902  | 3286  | 3932  | 8965  | 3930  | 4959  |
| 1.5S-1100-175-CL | 52         | 6267  | 3065  | 3718  | 10482                            | 4838  | 6422  | 12270 | 5899  | 8147  | 14057 | 6956  | 9871  | -     | -     | -     | -     | -     | -     |
| 1.5S-1200-135-CL | 94         | 7291  | 3781  | 5065  | -                                | -     | -     | 4466  | 652   | 652   | 5530  | 1679  | 1679  | 6594  | 2489  | 2705  | 7658  | 3151  | 3731  |
| 1.5S-1200-175-CL | 56         | 7274  | 3770  | 5044  | 9174                             | 4069  | 5195  | 10962 | 5136  | 6919  | 12750 | 6196  | 8644  | 14537 | 7251  | 10369 | -     | -     | -     |
| 3S-2000-135-CL   | 100        | 10967 | 5751  | 8016  | 5813                             | 811   | 811   | 7551  | 2536  | 2536  | 9289  | 3739  | 4261  | 11026 | 4818  | 5986  | 12764 | 5877  | 7711  |
| 3S-2000-175-CL   | 65         | 10940 | 5733  | 7983  | 15242                            | 7372  | 10171 | 18162 | 9123  | 13069 | 21082 | 10868 | 15968 | 24002 | 12609 | 18867 | 26923 | 14347 | 21765 |
| 6S-2500-175-CL   | 100        | 15694 | 8347  | 11920 | 15220                            | 6751  | 8506  | 18628 | 8823  | 11902 | 22036 | 10876 | 15298 | 25444 | 12920 | 18694 | 28852 | 14958 | 22089 |
| 6S-2500-200-CL   | 80         | 15689 | 8344  | 11913 | 23560                            | 11791 | 16816 | 28011 | 14456 | 21252 | 32462 | 17114 | 25687 | 36913 | 19769 | 30122 | 41364 | 22421 | 34558 |
| 6S-3800-175-CL   | 100        | 21216 | 11714 | 17685 | 9534                             | 1895  | 1895  | 12942 | 4930  | 5291  | 16350 | 7076  | 8687  | 19758 | 9159  | 12083 | 23166 | 11218 | 15478 |
| 6S-3800-200-CL   | 87         | 21210 | 11711 | 17679 | 17874                            | 8011  | 10205 | 22325 | 10711 | 14641 | 26776 | 13388 | 19076 | 31227 | 16054 | 23511 | 35678 | 18714 | 27947 |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 34. Models 0.3S-008A-45-CL to 6S-3800-200-CL 65 to 80 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 65                               |       |       | 70    |       |       | 75    |       |       | 80    |       |       |
|                  |            |       |       |       | BTO                              | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   |
| 0.3S-008A-45-CL  | 100        | 252   | 112   | 136   | 811                              | 477   | 790   | 886   | 524   | 875   | 960   | 571   | 960   | 1035  | 619   | 1045  |
| 0.3S-008A-75-CL  | 70         | 244   | 106   | 127   | 2525                             | 1564  | 2750  | 2732  | 1695  | 2987  | -     | -     | -     | -     | -     | -     |
| 0.3S-008B-45-CL  | 100        | 387   | 148   | 149   | 798                              | 430   | 640   | 873   | 477   | 725   | 947   | 525   | 811   | 1022  | 572   | 896   |
| 0.3S-008B-75-CL  | 73         | 378   | 140   | 140   | 2512                             | 1519  | 2600  | 2719  | 1650  | 2837  | -     | -     | -     | -     | -     | -     |
| 0.3S-008S-45-CL  | 100        | 464   | 181   | 187   | 761                              | 391   | 551   | 835   | 439   | 636   | 910   | 487   | 721   | 985   | 535   | 806   |
| 0.3S-008S-75-CL  | 75         | 456   | 175   | 178   | 2475                             | 1483  | 2511  | 2682  | 1614  | 2748  | 2889  | 1745  | 2984  | -     | -     | -     |
| 0.3S-0100-45-CL  | 100        | 745   | 316   | 365   | 586                              | 223   | 223   | 660   | 281   | 308   | 735   | 332   | 393   | 809   | 381   | 479   |
| 0.3S-0100-75-CL  | 81         | 737   | 311   | 356   | 2300                             | 1336  | 2183  | 2507  | 1467  | 2420  | 2714  | 1599  | 2657  | 2921  | 1730  | 2893  |
| 0.3S-0100-100-CL | 46         | 729   | 306   | 348   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-45-CL  | 100        | 931   | 435   | 565   | -                                | -     | -     | 463   | 82    | 82    | 537   | 167   | 167   | 612   | 247   | 252   |
| 0.3S-0150-75-CL  | 86         | 923   | 429   | 556   | 2102                             | 1210  | 1957  | 2309  | 1342  | 2194  | 2516  | 1473  | 2430  | 2723  | 1605  | 2667  |
| 0.3S-0150-100-CL | 48         | 915   | 425   | 548   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0200-100-CL | 100        | 1220  | 562   | 718   | 4759                             | 2853  | 4835  | 5185  | 3123  | 5321  | 5610  | 3393  | 5808  | 6036  | 3663  | 6294  |
| 0.9S-0200-135-CL | 59         | 1211  | 556   | 708   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0250-100-CL | 100        | 1454  | 708   | 970   | 4511                             | 2695  | 4551  | 4937  | 2966  | 5038  | 5362  | 3236  | 5524  | 5788  | 3506  | 6011  |
| 0.9S-0250-135-CL | 60         | 1444  | 702   | 960   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0350-100-CL | 100        | 2316  | 1077  | 1394  | 4093                             | 2284  | 3557  | 4518  | 2555  | 4043  | 4944  | 2826  | 4530  | 5369  | 3097  | 5017  |
| 0.9S-0350-135-CL | 66         | 2307  | 1071  | 1384  | 8633                             | 5170  | 8750  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0400-100-CL | 100        | 2721  | 1330  | 1830  | 3663                             | 2009  | 3065  | 4088  | 2281  | 3551  | 4514  | 2552  | 4038  | 4939  | 2823  | 4525  |
| 0.9S-0400-135-CL | 69         | 2712  | 1324  | 1820  | 8203                             | 4897  | 8258  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0700-100-CL | 100        | 3854  | 1838  | 2455  | 3047                             | 1419  | 1752  | 3473  | 1699  | 2239  | 3898  | 1975  | 2725  | 4324  | 2250  | 3212  |
| 0.9S-0700-135-CL | 74         | 3844  | 1832  | 2444  | 7588                             | 4336  | 6945  | 8363  | 4829  | 7832  | -     | -     | -     | -     | -     | -     |
| 1.5S-1100-135-CL | 88         | 6284  | 3076  | 3739  | 10029                            | 4568  | 5985  | 11093 | 5201  | 7011  | 12157 | 5832  | 8038  | 13221 | 6462  | 9064  |
| 1.5S-1100-175-CL | 52         | 6267  | 3065  | 3718  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5S-1200-135-CL | 94         | 7291  | 3781  | 5065  | 8721                             | 3797  | 4758  | 9785  | 4435  | 5784  | 10849 | 5069  | 6810  | 11913 | 5700  | 7837  |
| 1.5S-1200-175-CL | 56         | 7274  | 3770  | 5044  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3S-2000-135-CL   | 100        | 10967 | 5751  | 8016  | 14502                            | 6927  | 9436  | 16240 | 7971  | 11161 | 17978 | 9013  | 12886 | 19715 | 10052 | 14611 |
| 3S-2000-175-CL   | 65         | 10940 | 5733  | 7983  | 29843                            | 16085 | 24664 | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6S-2500-175-CL   | 100        | 15694 | 8347  | 11920 | 32259                            | 16993 | 25485 | 35667 | 19026 | 28881 | 39075 | 21058 | 32277 | 42483 | 23087 | 35673 |
| 6S-2500-200-CL   | 80         | 15689 | 8344  | 11913 | 45815                            | 25071 | 38993 | 50266 | 27722 | 43428 | 54717 | 30369 | 47864 | 59168 | 33017 | 52299 |
| 6S-3800-175-CL   | 100        | 21216 | 11714 | 17685 | 26574                            | 13267 | 18874 | 29982 | 15309 | 22270 | 33389 | 17346 | 25666 | 36797 | 19381 | 29062 |
| 6S-3800-200-CL   | 87         | 21210 | 11711 | 17679 | 40129                            | 21368 | 32382 | 44581 | 24022 | 36817 | 49032 | 26673 | 41253 | 53483 | 29323 | 45688 |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 35. Models 0.3S-008A-45-CL to 6S-3800-200-CL at 85 to 100 barg**

| Model            | MOP (barg) | BTC   | RTC   | ETC   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 85                               |       |       | 90    |       |       | 95    |       |       | 100   |       |       |
|                  |            |       |       |       | BTO                              | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   |
| 0.3S-008A-45-CL  | 100        | 252   | 112   | 136   | 1109                             | 666   | 1131  | 1184  | 713   | 1216  | 1258  | 760   | 1301  | 1333  | 808   | 1386  |
| 0.3S-008A-75-CL  | 70         | 244   | 106   | 127   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-008B-45-CL  | 100        | 387   | 148   | 149   | 1096                             | 620   | 981   | 1171  | 667   | 1066  | 1245  | 715   | 1151  | 1320  | 762   | 1237  |
| 0.3S-008B-75-CL  | 73         | 378   | 140   | 140   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-008S-45-CL  | 100        | 464   | 181   | 187   | 1059                             | 582   | 892   | 1134  | 630   | 977   | 1208  | 678   | 1062  | 1283  | 725   | 1147  |
| 0.3S-008S-75-CL  | 75         | 456   | 175   | 178   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0100-45-CL  | 100        | 745   | 316   | 365   | 884                              | 430   | 564   | 958   | 479   | 649   | 1033  | 527   | 734   | 1107  | 575   | 820   |
| 0.3S-0100-75-CL  | 81         | 737   | 311   | 356   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0100-100-CL | 46         | 729   | 306   | 348   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-45-CL  | 100        | 931   | 435   | 565   | 686                              | 299   | 338   | 761   | 349   | 423   | 835   | 398   | 508   | 910   | 447   | 593   |
| 0.3S-0150-75-CL  | 86         | 923   | 429   | 556   | 2930                             | 1736  | 2904  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-100-CL | 48         | 915   | 425   | 548   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0200-100-CL | 100        | 1220  | 562   | 718   | 6461                             | 3933  | 6781  | 6887  | 4203  | 7268  | 7312  | 4473  | 7754  | 7738  | 4743  | 8241  |
| 0.9S-0200-135-CL | 59         | 1211  | 556   | 708   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0250-100-CL | 100        | 1454  | 708   | 970   | 6213                             | 3776  | 6497  | 6639  | 4046  | 6984  | 7064  | 4315  | 7471  | 7490  | 4585  | 7957  |
| 0.9S-0250-135-CL | 60         | 1444  | 702   | 960   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0350-100-CL | 100        | 2316  | 1077  | 1394  | 5795                             | 3367  | 5503  | 6220  | 3637  | 5990  | 6645  | 3908  | 6476  | 7071  | 4178  | 6963  |
| 0.9S-0350-135-CL | 66         | 2307  | 1071  | 1384  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0400-100-CL | 100        | 2721  | 1330  | 1830  | 5364                             | 3094  | 5011  | 5790  | 3364  | 5498  | 6215  | 3634  | 5985  | 6641  | 3905  | 6471  |
| 0.9S-0400-135-CL | 69         | 2712  | 1324  | 1820  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0700-100-CL | 100        | 3854  | 1838  | 2455  | 4749                             | 2523  | 3699  | 5174  | 2796  | 4185  | 5600  | 3068  | 4672  | 6025  | 3340  | 5159  |
| 0.9S-0700-135-CL | 74         | 3844  | 1832  | 2444  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5S-1100-135-CL | 88         | 6284  | 3076  | 3739  | 14284                            | 7090  | 10090 | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5S-1100-175-CL | 52         | 6267  | 3065  | 3718  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5S-1200-135-CL | 94         | 7291  | 3781  | 5065  | 12977                            | 6330  | 8863  | 14040 | 6958  | 9889  | -     | -     | -     | -     | -     | -     |
| 1.5S-1200-175-CL | 56         | 7274  | 3770  | 5044  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3S-2000-135-CL   | 100        | 10967 | 5751  | 8016  | 21453                            | 11089 | 16336 | 23191 | 12125 | 18061 | 24929 | 13160 | 19786 | 26667 | 14195 | 21511 |
| 3S-2000-175-CL   | 65         | 10940 | 5733  | 7983  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6S-2500-175-CL   | 100        | 15694 | 8347  | 11920 | 45891                            | 25116 | 39068 | 49299 | 27145 | 42464 | 52706 | 29174 | 45860 | 56114 | 31200 | 49256 |
| 6S-2500-200-CL   | 80         | 15689 | 8344  | 11913 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6S-3800-175-CL   | 100        | 21216 | 11714 | 17685 | 40205                            | 21414 | 32457 | 43613 | 23446 | 35853 | 47021 | 25476 | 39249 | 50429 | 27505 | 42645 |
| 6S-3800-200-CL   | 87         | 21210 | 11711 | 17679 | 57934                            | 31974 | 50123 | -     | -     | -     | -     | -     | -     | -     | -     | -     |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 36. Models 14S-5100-200-CL to 50S-15600-350-CL at 15 to 30 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|--------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |        |       |       | 15                               |       |       | 20    |       |       | 25    |       |       | 30    |       |       |
|                  |            |        |       |       | BTO                              | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   |
| 14S-5100-200-CL  | 100        | 24894  | 14052 | 21540 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-5100-235-CL  | 100        | 24877  | 14040 | 21518 | -                                | -     | -     | -     | -     | -     | 12493 | 3221  | 3221  | 19310 | 8108  | 9799  |
| 14S-5100-280-CL  | 73         | 24812  | 13997 | 21435 | -                                | -     | -     | 17045 | 6715  | 7613  | 26723 | 12553 | 16951 | 36401 | 18275 | 26288 |
| 14S-5100-300-CL  | 63         | 24779  | 13975 | 21393 | 11625                            | 2384  | 2384  | 22736 | 10175 | 13103 | 33846 | 16768 | 23823 | 44956 | 23307 | 34542 |
| 14S-5100-350-CL  | 46         | 24687  | 13913 | 21276 | 23557                            | 10667 | 13896 | 38680 | 19616 | 28486 | 53802 | 28500 | 43076 | 68924 | 37368 | 57666 |
| 14S-5400-200-CL  | 100        | 32200  | 17637 | 25799 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-5400-235-CL  | 100        | 32183  | 17626 | 25778 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 15110 | 1379  | 1379  |
| 14S-5400-280-CL  | 75         | 32118  | 17582 | 25694 | -                                | -     | -     | -     | -     | -     | 22522 | 8160  | 8530  | 32201 | 14139 | 17868 |
| 14S-5400-300-CL  | 65         | 32085  | 17560 | 25653 | -                                | -     | -     | 18535 | 4683  | 4683  | 29645 | 12595 | 15402 | 40756 | 19246 | 26122 |
| 14S-5400-350-CL  | 48         | 31994  | 17498 | 25536 | 19356                            | 5476  | 5476  | 34479 | 15506 | 20066 | 49601 | 24480 | 34656 | 64724 | 33385 | 49246 |
| 14S-8300-200-CL  | 100        | 41398  | 22799 | 33637 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-8300-235-CL  | 100        | 41381  | 22788 | 33616 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-8300-280-CL  | 79         | 41316  | 22744 | 33532 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 24471 | 7044  | 7044  |
| 14S-8300-300-CL  | 69         | 41283  | 22722 | 33491 | -                                | -     | -     | -     | -     | -     | 21916 | 4578  | 4578  | 33026 | 13251 | 15298 |
| 14S-8300-350-CL  | 50         | 41191  | 22660 | 33374 | -                                | -     | -     | 26749 | 9222  | 9242  | 41872 | 18621 | 23832 | 56994 | 27618 | 38422 |
| 18S-9600-235-CL  | 100        | 66994  | 34519 | 45762 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9600-280-CL  | 100        | 66919  | 34467 | 45666 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9600-300-CL  | 88         | 66881  | 34442 | 45618 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9600-350-CL  | 64         | 66776  | 34370 | 45484 | -                                | -     | -     | -     | -     | -     | 41122 | 5450  | 5450  | 58508 | 21240 | 22234 |
| 18S-9800-235-CL  | 100        | 84610  | 43189 | 56372 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9800-280-CL  | 100        | 84535  | 43137 | 56276 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9800-300-CL  | 92         | 84497  | 43112 | 56228 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9800-350-CL  | 67         | 84392  | 43039 | 56094 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 48045 | 1901  | 1901  |
| 18S-10500-280-CL | 100        | 93530  | 46981 | 59691 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-10500-300-CL | 93         | 93492  | 46955 | 59643 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-10500-350-CL | 68         | 93387  | 46883 | 59509 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-11000-280-CL | 100        | 104897 | 54769 | 74203 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-11000-300-CL | 99         | 104859 | 54743 | 74155 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-11000-350-CL | 73         | 104754 | 54671 | 74020 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-12000-300-CL | 100        | 124445 | 60472 | 74716 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-12000-350-CL | 92         | 124319 | 60386 | 74560 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-15000-300-CL | 100        | 144619 | 72222 | 93236 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-15000-350-CL | 97         | 144494 | 72136 | 93080 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15400-300-CL | 100        | 157192 | 74572 | 88599 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15400-350-CL | 100        | 157053 | 74476 | 88426 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15600-300-CL | 100        | 164240 | 79422 | 97350 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15600-350-CL | 100        | 164101 | 79327 | 97177 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 37. Models 14S-5100-200-CL to 50S-15600-350-CL at 35 to 50 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC   | Operating Supply Pressure (barg) |       |       |       |       |       |        |       |        |        |       |       |
|------------------|------------|--------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|--------|-------|--------|--------|-------|-------|
|                  |            |        |       |       | 35                               |       |       | 40    |       |       | 45     |       |        | 50     |       |       |
|                  |            |        |       |       | BTO                              | RTO   | ETO   | BTO   | RTO   | ETO   | BTO    | RTO   | ETO    | BTO    | RTO   | ETO   |
| 14S-5100-200-CL  | 100        | 24894  | 14052 | 21540 | 12991                            | 3701  | 3701  | 17929 | 7263  | 8466  | 22866  | 10253 | 13230  | 27804  | 13195 | 17994 |
| 14S-5100-235-CL  | 100        | 24877  | 14040 | 21518 | 26128                            | 12199 | 16376 | 32945 | 16236 | 22954 | 39763  | 20253 | 29531  | 46580  | 24261 | 36109 |
| 14S-5100-280-CL  | 73         | 24812  | 13997 | 21435 | 46080                            | 23967 | 35626 | 55758 | 29648 | 44964 | 65436  | 35323 | 54301  | 75115  | 40993 | 63639 |
| 14S-5100-300-CL  | 63         | 24779  | 13975 | 21393 | 56067                            | 29828 | 45261 | 67177 | 36344 | 55980 | 78287  | 42851 | 66700  | 89397  | 49359 | 77419 |
| 14S-5100-350-CL  | 46         | 24687  | 13913 | 21276 | 84047                            | 46225 | 72256 | 99169 | 55082 | 86846 | 114291 | 63933 | 101436 | -      | -     | -     |
| 14S-5400-200-CL  | 100        | 32200  | 17637 | 25799 | -                                | -     | -     | 13728 | 45    | 45    | 18666  | 4809  | 4809   | 23604  | 8859  | 9574  |
| 14S-5400-235-CL  | 100        | 32183  | 17626 | 25778 | 21927                            | 7766  | 7956  | 28745 | 12048 | 14533 | 35562  | 16154 | 21111  | 42379  | 20209 | 27688 |
| 14S-5400-280-CL  | 75         | 32118  | 17582 | 25694 | 41879                            | 19913 | 27206 | 51557 | 25635 | 36543 | 61236  | 31335 | 45881  | 70914  | 37021 | 55219 |
| 14S-5400-300-CL  | 65         | 32085  | 17560 | 25653 | 51866                            | 25817 | 36841 | 62976 | 32358 | 47560 | 74086  | 38885 | 58279  | 85197  | 45403 | 68999 |
| 14S-5400-350-CL  | 48         | 31994  | 17498 | 25536 | 79846                            | 42265 | 63836 | 94968 | 51133 | 78426 | 110091 | 59995 | 93016  | -      | -     | -     |
| 14S-8300-200-CL  | 100        | 41398  | 22799 | 33637 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 14S-8300-235-CL  | 100        | 41381  | 22788 | 33616 | -                                | -     | -     | 21015 | 3709  | 3709  | 27832  | 9956  | 10287  | 34650  | 14250 | 16864 |
| 14S-8300-280-CL  | 79         | 41316  | 22744 | 33532 | 34150                            | 13943 | 16382 | 43828 | 19794 | 25719 | 53506  | 25552 | 35057  | 63185  | 31274 | 44395 |
| 14S-8300-300-CL  | 69         | 41283  | 22722 | 33491 | 44136                            | 19978 | 26017 | 55247 | 26583 | 36736 | 66357  | 33147 | 47455  | 77467  | 39688 | 58175 |
| 14S-8300-350-CL  | 50         | 41191  | 22660 | 33374 | 72116                            | 36538 | 53012 | 87239 | 45429 | 67602 | 102361 | 54306 | 82192  | 117484 | 63174 | 96782 |
| 18S-9600-235-CL  | 100        | 66994  | 34519 | 45762 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 18S-9600-280-CL  | 100        | 66919  | 34467 | 45666 | -                                | -     | -     | 43371 | 7621  | 7621  | 54498  | 18363 | 18363  | 65625  | 25769 | 29105 |
| 18S-9600-300-CL  | 88         | 66881  | 34442 | 45618 | 43726                            | 7963  | 7963  | 56499 | 19907 | 20295 | 69273  | 28031 | 32626  | 82046  | 35804 | 44957 |
| 18S-9600-350-CL  | 64         | 66776  | 34370 | 45484 | 75894                            | 32082 | 39018 | 93280 | 42541 | 55802 | 110666 | 52882 | 72587  | 128051 | 63166 | 89371 |
| 18S-9800-235-CL  | 100        | 84610  | 43189 | 56372 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 18S-9800-280-CL  | 100        | 84535  | 43137 | 56276 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | 55162  | 8772  | 8772  |
| 18S-9800-300-CL  | 92         | 84497  | 43112 | 56228 | -                                | -     | -     | -     | -     | -     | 58809  | 12293 | 12293  | 71582  | 24624 | 24624 |
| 18S-9800-350-CL  | 67         | 84392  | 43039 | 56094 | 65431                            | 18685 | 18685 | 82816 | 31955 | 35469 | 100202 | 42658 | 52254  | 117588 | 53126 | 69038 |
| 18S-10500-280-CL | 100        | 93530  | 46981 | 59691 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 18S-10500-300-CL | 93         | 93492  | 46955 | 59643 | -                                | -     | -     | -     | -     | -     | 55441  | 2092  | 2092   | 68214  | 14423 | 14423 |
| 18S-10500-350-CL | 68         | 93387  | 46883 | 59509 | 62063                            | 8484  | 8484  | 79449 | 25269 | 25269 | 96834  | 37626 | 42053  | 114220 | 48330 | 58837 |
| 18S-11000-280-CL | 100        | 104897 | 54769 | 74203 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 18S-11000-300-CL | 99         | 104859 | 54743 | 74155 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | 53904  | 608   | 608   |
| 18S-11000-350-CL | 73         | 104754 | 54671 | 74020 | -                                | -     | -     | 65138 | 11454 | 11454 | 82524  | 28238 | 28238  | 99910  | 39546 | 45022 |
| 32S-12000-300-CL | 100        | 124445 | 60472 | 74716 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | 73541  | 2334  | 2334  |
| 32S-12000-350-CL | 92         | 124319 | 60386 | 74560 | -                                | -     | -     | 86560 | 15258 | 15258 | 106710 | 35259 | 35259  | 126859 | 49798 | 55259 |
| 32S-15000-300-CL | 100        | 144619 | 72222 | 93236 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 32S-15000-350-CL | 97         | 144494 | 72136 | 93080 | -                                | -     | -     | -     | -     | -     | 88446  | 11348 | 11348  | 108595 | 31349 | 31349 |
| 50S-15400-300-CL | 100        | 157192 | 74572 | 88599 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 50S-15400-350-CL | 100        | 157053 | 74476 | 88426 | -                                | -     | -     | -     | -     | -     | 113062 | 17851 | 17851  | 135450 | 40074 | 40074 |
| 50S-15600-300-CL | 100        | 164240 | 79422 | 97350 | -                                | -     | -     | -     | -     | -     | -      | -     | -      | -      | -     | -     |
| 50S-15600-350-CL | 100        | 164101 | 79327 | 97177 | -                                | -     | -     | -     | -     | -     | 104433 | 9285  | 9285   | 126821 | 31508 | 31508 |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 38. Models 14S-5100-200-CL to 50S-15600-350-CL at 55 to 70 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC   | Operating Supply Pressure (barg) |       |        |        |       |        |        |       |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|--------|--------|
|                  |            |        |       |       | 55                               |       |        | 60     |       |        | 65     |       |        | 70     |        |        |
|                  |            |        |       |       | BTO                              | RTO   | ETO    | BTO    | RTO   | ETO    | BTO    | RTO   | ETO    | BTO    | RTO    | ETO    |
| 14S-5100-200-CL  | 100        | 24894  | 14052 | 21540 | 32742                            | 16116 | 22758  | 37680  | 19027 | 27522  | 42618  | 21933 | 32286  | 47556  | 24834  | 37050  |
| 14S-5100-235-CL  | 100        | 24877  | 14040 | 21518 | 53398                            | 28263 | 42686  | 60215  | 32261 | 49263  | 67032  | 36259 | 55841  | 73850  | 40252  | 62418  |
| 14S-5100-280-CL  | 73         | 24812  | 13997 | 21435 | 84793                            | 46662 | 72976  | 94471  | 52330 | 82314  | 104150 | 57998 | 91652  | 113828 | 63662  | 100989 |
| 14S-5100-300-CL  | 63         | 24779  | 13975 | 21393 | 100508                           | 55866 | 88138  | 111618 | 62369 | 98857  | -      | -     | -      | -      | -      | -      |
| 14S-5100-350-CL  | 46         | 24687  | 13913 | 21276 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14S-5400-200-CL  | 100        | 32200  | 17637 | 25799 | 28542                            | 11924 | 14338  | 33480  | 14907 | 19102  | 38417  | 17857 | 23866  | 43355  | 20787  | 28630  |
| 14S-5400-235-CL  | 100        | 32183  | 17626 | 25778 | 49197                            | 24241 | 34266  | 56014  | 28261 | 40843  | 62832  | 32273 | 47421  | 69649  | 36278  | 53998  |
| 14S-5400-280-CL  | 75         | 32118  | 17582 | 25694 | 80592                            | 42703 | 64556  | 90271  | 48378 | 73894  | 99949  | 54054 | 83231  | 109627 | 59723  | 92569  |
| 14S-5400-300-CL  | 65         | 32085  | 17560 | 25653 | 96307                            | 51918 | 79718  | 107417 | 58429 | 90437  | 118528 | 64936 | 101156 | -      | -      | -      |
| 14S-5400-350-CL  | 48         | 31994  | 17498 | 25536 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14S-8300-200-CL  | 100        | 41398  | 22799 | 33637 | 20812                            | 3514  | 3514   | 25750  | 8278  | 8278   | 30688  | 11793 | 13042  | 35626  | 14846  | 17806  |
| 14S-8300-235-CL  | 100        | 41381  | 22788 | 33616 | 41467                            | 18379 | 23442  | 48285  | 22452 | 30019  | 55102  | 26497 | 36597  | 61920  | 30527  | 43174  |
| 14S-8300-280-CL  | 79         | 41316  | 22744 | 33532 | 72863                            | 36977 | 53732  | 82541  | 42669 | 63070  | 92220  | 48355 | 72407  | 101898 | 54034  | 81745  |
| 14S-8300-300-CL  | 69         | 41283  | 22722 | 33491 | 88578                            | 46215 | 68894  | 99688  | 52738 | 79613  | 110798 | 59254 | 90332  | -      | -      | -      |
| 14S-8300-350-CL  | 50         | 41191  | 22660 | 33374 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 18S-9600-235-CL  | 100        | 66994  | 34519 | 45762 | 40658                            | 5001  | 5001   | 48495  | 12568 | 12568  | 56333  | 19795 | 20134  | 64171  | 24859  | 27701  |
| 18S-9600-280-CL  | 100        | 66919  | 34467 | 45666 | 76752                            | 32602 | 39847  | 87879  | 39310 | 50589  | 99006  | 45957 | 61330  | 110133 | 52567  | 72072  |
| 18S-9600-300-CL  | 88         | 66881  | 34442 | 45618 | 94819                            | 43460 | 57288  | 107592 | 51062 | 69620  | 120366 | 58627 | 81951  | 133139 | 66171  | 94282  |
| 18S-9600-350-CL  | 64         | 66776  | 34370 | 45484 | 145437                           | 73419 | 106155 | 162823 | 83655 | 122939 | -      | -     | -      | -      | -      | -      |
| 18S-9800-235-CL  | 100        | 84610  | 43189 | 56372 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | 53708  | 7368   | 7368   |
| 18S-9800-280-CL  | 100        | 84535  | 43137 | 56276 | 66289                            | 19514 | 19514  | 77416  | 28515 | 30256  | 88543  | 35525 | 40998  | 99670  | 42335  | 51739  |
| 18S-9800-300-CL  | 92         | 84497  | 43112 | 56228 | 84356                            | 32922 | 36955  | 97129  | 40791 | 49287  | 109902 | 48516 | 61618  | 122675 | 56163  | 73949  |
| 18S-9800-350-CL  | 67         | 84392  | 43039 | 56094 | 134974                           | 63487 | 85822  | 152360 | 73796 | 102606 | 169745 | 84068 | 119390 | -      | -      | -      |
| 18S-10500-280-CL | 100        | 93530  | 46981 | 59691 | 62921                            | 9313  | 9313   | 74048  | 20055 | 20055  | 85175  | 30119 | 30797  | 96302  | 37291  | 41539  |
| 18S-10500-300-CL | 93         | 93492  | 46955 | 59643 | 80988                            | 26755 | 26755  | 93761  | 35689 | 39086  | 106534 | 43636 | 51417  | 119307 | 51414  | 63748  |
| 18S-10500-350-CL | 68         | 93387  | 46883 | 59509 | 131606                           | 58815 | 75621  | 148992 | 69202 | 92405  | 166378 | 79528 | 109190 | -      | -      | -      |
| 18S-11000-280-CL | 100        | 104897 | 54769 | 74203 | -                                | -     | -      | 59738  | 6240  | 6240   | 70865  | 16982 | 16982  | 81991  | 27724  | 27724  |
| 18S-11000-300-CL | 99         | 104859 | 54743 | 74155 | 66678                            | 12940 | 12940  | 79451  | 25271 | 25271  | 92224  | 34712 | 37602  | 104997 | 42693  | 49933  |
| 18S-11000-350-CL | 73         | 104754 | 54671 | 74020 | 117296                           | 50195 | 61806  | 134682 | 60660 | 78590  | 152067 | 71031 | 95375  | 169453 | 81350  | 112159 |
| 32S-12000-300-CL | 100        | 124445 | 60472 | 74716 | 88344                            | 17028 | 17028  | 103148 | 31723 | 31723  | 117951 | 44028 | 46417  | 132754 | 53537  | 61112  |
| 32S-12000-350-CL | 92         | 124319 | 60386 | 74560 | 147008                           | 62431 | 75260  | 167157 | 74797 | 95261  | 187306 | 87036 | 115262 | 207455 | 99196  | 135263 |
| 32S-15000-300-CL | 100        | 144619 | 72222 | 93236 | -                                | -     | -      | 84884  | 7812  | 7812   | 99688  | 22507 | 22507  | 114491 | 37202  | 37202  |
| 32S-15000-350-CL | 97         | 144494 | 72136 | 93080 | 128744                           | 48383 | 51350  | 148893 | 61231 | 71351  | 169042 | 73703 | 91352  | 189192 | 86007  | 111353 |
| 50S-15400-300-CL | 100        | 157192 | 74572 | 88599 | -                                | -     | -      | 109105 | 13923 | 13923  | 125553 | 30250 | 30250  | 142001 | 46577  | 46577  |
| 50S-15400-350-CL | 100        | 157053 | 74476 | 88426 | 157838                           | 59004 | 62298  | 180226 | 73344 | 84521  | 202614 | 87254 | 106744 | 225002 | 100965 | 128968 |
| 50S-15600-300-CL | 100        | 164240 | 79422 | 97350 | -                                | -     | -      | 100475 | 5356  | 5356   | 116923 | 21684 | 21684  | 133372 | 38011  | 38011  |
| 50S-15600-350-CL | 100        | 164101 | 79327 | 97177 | 149208                           | 53199 | 53731  | 171596 | 67889 | 75955  | 193984 | 81923 | 98178  | 216372 | 95700  | 120401 |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 39. Models 14S-5100-200-CL to 50S-15600-350-CL at 75 to 85 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC   | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |            |        |       |       | 75                               |        |        | 80     |        |        | 85     |        |        |
|                  |            |        |       |       | BTO                              | RTO    | ETO    | BTO    | RTO    | ETO    | BTO    | RTO    | ETO    |
| 14S-5100-200-CL  | 100        | 24894  | 14052 | 21540 | 52494                            | 27733  | 41814  | 57432  | 30629  | 46578  | 62370  | 33525  | 51342  |
| 14S-5100-235-CL  | 100        | 24877  | 14040 | 21518 | 80667                            | 44245  | 68996  | 87485  | 48238  | 75573  | 94302  | 52231  | 82151  |
| 14S-5100-280-CL  | 73         | 24812  | 13997 | 21435 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-300-CL  | 63         | 24779  | 13975 | 21393 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-350-CL  | 46         | 24687  | 13913 | 21276 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-200-CL  | 100        | 32200  | 17637 | 25799 | 48293                            | 23708  | 33394  | 53231  | 26622  | 38158  | 58169  | 29529  | 42922  |
| 14S-5400-235-CL  | 100        | 32183  | 17626 | 25778 | 76466                            | 40283  | 60575  | 83284  | 44281  | 67153  | 90101  | 48279  | 73730  |
| 14S-5400-280-CL  | 75         | 32118  | 17582 | 25694 | 119306                           | 65392  | 101907 | -      | -      | -      | -      | -      | -      |
| 14S-5400-300-CL  | 65         | 32085  | 17560 | 25653 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-350-CL  | 48         | 31994  | 17498 | 25536 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-200-CL  | 100        | 41398  | 22799 | 33637 | 40564                            | 17836  | 22570  | 45502  | 20793  | 27334  | 50440  | 23733  | 32098  |
| 14S-8300-235-CL  | 100        | 41381  | 22788 | 33616 | 68737                            | 34548  | 49752  | 75554  | 38562  | 56329  | 82372  | 42570  | 62906  |
| 14S-8300-280-CL  | 79         | 41316  | 22744 | 33532 | 111576                           | 59710  | 91083  | -      | -      | -      | -      | -      | -      |
| 14S-8300-300-CL  | 69         | 41283  | 22722 | 33491 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-350-CL  | 50         | 41191  | 22660 | 33374 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-235-CL  | 100        | 66994  | 34519 | 45762 | 72009                            | 29712  | 35267  | 79847  | 34478  | 42834  | 87684  | 39193  | 50400  |
| 18S-9600-280-CL  | 100        | 66919  | 34467 | 45666 | 121260                           | 59155  | 82814  | 132387 | 65726  | 93556  | 143514 | 72286  | 104298 |
| 18S-9600-300-CL  | 88         | 66881  | 34442 | 45618 | 145912                           | 73698  | 106613 | 158685 | 81221  | 118945 | 171458 | 88730  | 131276 |
| 18S-9600-350-CL  | 64         | 66776  | 34370 | 45484 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9800-235-CL  | 100        | 84610  | 43189 | 56372 | 61545                            | 14934  | 14934  | 69383  | 22501  | 22501  | 77221  | 28389  | 30068  |
| 18S-9800-280-CL  | 100        | 84535  | 43137 | 56276 | 110797                           | 49053  | 62481  | 121923 | 55714  | 73223  | 133050 | 62343  | 83965  |
| 18S-9800-300-CL  | 92         | 84497  | 43112 | 56228 | 135449                           | 63769  | 86280  | 148222 | 71344  | 98612  | 160995 | 78901  | 110943 |
| 18S-9800-350-CL  | 67         | 84392  | 43039 | 56094 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-10500-280-CL | 100        | 93530  | 46981 | 59691 | 107429                           | 44185  | 52280  | 118555 | 50959  | 63022  | 129682 | 57662  | 73764  |
| 18S-10500-300-CL | 93         | 93492  | 46955 | 59643 | 132081                           | 59100  | 76080  | 144854 | 66737  | 88411  | 157627 | 74336  | 100742 |
| 18S-10500-350-CL | 68         | 93387  | 46883 | 59509 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-11000-280-CL | 100        | 104897 | 54769 | 74203 | 93118                            | 35281  | 38465  | 104245 | 42231  | 49207  | 115372 | 49029  | 59949  |
| 18S-11000-300-CL | 99         | 104859 | 54743 | 74155 | 117771                           | 50483  | 62265  | 130544 | 58178  | 74596  | 143317 | 65819  | 86927  |
| 18S-11000-350-CL | 73         | 104754 | 54671 | 74020 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32S-12000-300-CL | 100        | 124445 | 60472 | 74716 | 147558                           | 62771  | 75807  | 162361 | 71871  | 90501  | 177165 | 80887  | 105196 |
| 32S-12000-350-CL | 92         | 124319 | 60386 | 74560 | 227604                           | 111310 | 155264 | 247753 | 123395 | 175265 | 267902 | 135444 | 195266 |
| 32S-15000-300-CL | 100        | 144619 | 72222 | 93236 | 129295                           | 48743  | 51896  | 144098 | 58221  | 66591  | 158901 | 67457  | 81285  |
| 32S-15000-350-CL | 97         | 144494 | 72136 | 93080 | 209341                           | 98212  | 131354 | 229490 | 110359 | 151355 | 249639 | 122464 | 171356 |
| 50S-15400-300-CL | 100        | 157192 | 74572 | 88599 | 158449                           | 59407  | 62905  | 174898 | 69986  | 79232  | 191346 | 80284  | 95559  |
| 50S-15400-350-CL | 100        | 157053 | 74476 | 88426 | 247390                           | 114568 | 151191 | 269777 | 128093 | 173414 | 292165 | 141570 | 195637 |
| 50S-15600-300-CL | 100        | 164240 | 79422 | 97350 | 149820                           | 53621  | 54338  | 166268 | 64484  | 70666  | 182716 | 74904  | 86993  |
| 50S-15600-350-CL | 100        | 164101 | 79327 | 97177 | 238760                           | 109332 | 142625 | 261148 | 122883 | 164848 | 283536 | 136375 | 187071 |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 40. Models 14S-5100-200-CL to 50S-15600-350-CL at 90 to 100 barg**

| Model            | MOP (barg) | BTC    | RTC   | ETC   | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |            |        |       |       | 90                               |        |        | 95     |        |        | 100    |        |        |
|                  |            |        |       |       | BTO                              | RTO    | ETO    | BTO    | RTO    | ETO    | BTO    | RTO    | ETO    |
| 14S-5100-200-CL  | 100        | 24894  | 14052 | 21540 | 67308                            | 36421  | 56107  | 72246  | 39313  | 60871  | 77184  | 42205  | 65635  |
| 14S-5100-235-CL  | 100        | 24877  | 14040 | 21518 | 101119                           | 56224  | 88728  | 107937 | 60214  | 95305  | 114754 | 64204  | 101883 |
| 14S-5100-280-CL  | 73         | 24812  | 13997 | 21435 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-300-CL  | 63         | 24779  | 13975 | 21393 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-350-CL  | 46         | 24687  | 13913 | 21276 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-200-CL  | 100        | 32200  | 17637 | 25799 | 63107                            | 32435  | 47686  | 68045  | 35336  | 52450  | 72983  | 38237  | 57215  |
| 14S-5400-235-CL  | 100        | 32183  | 17626 | 25778 | 96919                            | 52277  | 80308  | 103736 | 56273  | 86885  | 110553 | 60266  | 93463  |
| 14S-5400-280-CL  | 75         | 32118  | 17582 | 25694 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-300-CL  | 65         | 32085  | 17560 | 25653 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-350-CL  | 48         | 31994  | 17498 | 25536 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-200-CL  | 100        | 41398  | 22799 | 33637 | 55378                            | 26660  | 36862  | 60315  | 29580  | 41626  | 65253  | 32495  | 46391  |
| 14S-8300-235-CL  | 100        | 41381  | 22788 | 33616 | 89189                            | 46575  | 69484  | 96007  | 50579  | 76061  | 102824 | 54577  | 82639  |
| 14S-8300-280-CL  | 79         | 41316  | 22744 | 33532 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-300-CL  | 69         | 41283  | 22722 | 33491 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-350-CL  | 50         | 41191  | 22660 | 33374 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-235-CL  | 100        | 66994  | 34519 | 45762 | 95522                            | 43880  | 57967  | 103360 | 48546  | 65534  | 111198 | 53198  | 73100  |
| 18S-9600-280-CL  | 100        | 66919  | 34467 | 45666 | 154641                           | 78839  | 115040 | 165768 | 85385  | 125782 | 176894 | 91924  | 136524 |
| 18S-9600-300-CL  | 88         | 66881  | 34442 | 45618 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-350-CL  | 64         | 66776  | 34370 | 45484 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9800-235-CL  | 100        | 84610  | 43189 | 56372 | 85059                            | 33361  | 37634  | 92897  | 38205  | 45201  | 100734 | 42981  | 52767  |
| 18S-9800-280-CL  | 100        | 84535  | 43137 | 56276 | 144177                           | 68948  | 94707  | 155304 | 75540  | 105449 | 166431 | 82111  | 116191 |
| 18S-9800-300-CL  | 92         | 84497  | 43112 | 56228 | 173768                           | 86444  | 123274 | -      | -      | -      | -      | -      | -      |
| 18S-9800-350-CL  | 67         | 84392  | 43039 | 56094 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-10500-280-CL | 100        | 93530  | 46981 | 59691 | 140809                           | 64322  | 84506  | 151936 | 70953  | 95248  | 163063 | 77564  | 105990 |
| 18S-10500-300-CL | 93         | 93492  | 46955 | 59643 | 170400                           | 81911  | 113073 | -      | -      | -      | -      | -      | -      |
| 18S-10500-350-CL | 68         | 93387  | 46883 | 59509 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-11000-280-CL | 100        | 104897 | 54769 | 74203 | 126499                           | 55751  | 70691  | 137626 | 62421  | 81433  | 148753 | 69060  | 92175  |
| 18S-11000-300-CL | 99         | 104859 | 54743 | 74155 | 156090                           | 73423  | 99258  | 168863 | 81000  | 111590 | -      | -      | -      |
| 18S-11000-350-CL | 73         | 104754 | 54671 | 74020 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32S-12000-300-CL | 100        | 124445 | 60472 | 74716 | 191968                           | 89854  | 119890 | 206771 | 98785  | 134585 | 221575 | 107693 | 149279 |
| 32S-12000-350-CL | 92         | 124319 | 60386 | 74560 | 288051                           | 147487 | 215267 | 308200 | 159506 | 235268 | -      | -      | -      |
| 32S-15000-300-CL | 100        | 144619 | 72222 | 93236 | 173705                           | 76563  | 95980  | 188508 | 85592  | 110674 | 203311 | 94569  | 125369 |
| 32S-15000-350-CL | 97         | 144494 | 72136 | 93080 | 269788                           | 134546 | 191357 | 289937 | 146595 | 211358 | 310086 | 158640 | 231359 |
| 50S-15400-300-CL | 100        | 157192 | 74572 | 88599 | 207794                           | 90439  | 111886 | 224242 | 100502 | 128214 | 240691 | 110504 | 144541 |
| 50S-15400-350-CL | 100        | 157053 | 74476 | 88426 | 314553                           | 155004 | 217861 | 336941 | 168420 | 240084 | 359329 | 181808 | 262307 |
| 50S-15600-300-CL | 100        | 164240 | 79422 | 97350 | 199164                           | 85125  | 103320 | 215613 | 95235  | 119647 | 232061 | 105265 | 135975 |
| 50S-15600-350-CL | 100        | 164101 | 79327 | 97177 | 305923                           | 149827 | 209294 | 328311 | 163256 | 231518 | 350699 | 176648 | 253741 |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

## Symmetric Yoke Design, Spring to Open

**Table 41. Models 0.3S-008A-45-OP to 6S-3800-200-OP at 15 to 35 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |     |      |      |      |      |      |      |      |       |      |      |       |      |       |
|------------------|------------|-------|-------|-------|----------------------------------|-----|------|------|------|------|------|------|------|-------|------|------|-------|------|-------|
|                  |            |       |       |       | 15                               |     |      | 20   |      |      | 25   |      |      | 30    |      |      | 35    |      |       |
|                  |            |       |       |       | BTC                              | RTC | ETC  | BTC  | RTC  | ETC  | BTC  | RTC  | ETC  | BTC   | RTC  | ETC  | BTC   | RTC  | ETC   |
| 0.3S-008A-45-OP  | 100        | 222   | 99    | 116   | -                                | -   | -    | 156  | 33   | 33   | 234  | 100  | 116  | 311   | 149  | 200  | 389   | 197  | 283   |
| 0.3S-008A-75-OP  | 71         | 214   | 94    | 107   | 483                              | 255 | 386  | 699  | 387  | 618  | 914  | 519  | 850  | 1129  | 651  | 1082 | 1345  | 782  | 1314  |
| 0.3S-008B-45-OP  | 100        | 334   | 109   | 109   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 306   | 62   | 62   | 383   | 145  | 146   |
| 0.3S-008B-75-OP  | 73         | 325   | 99    | 99    | 478                              | 208 | 248  | 694  | 343  | 480  | 909  | 476  | 712  | 1124  | 608  | 944  | 1339  | 740  | 1176  |
| 0.3S-008S-45-OP  | 100        | 402   | 140   | 140   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | 347   | 61   | 61    |
| 0.3S-008S-75-OP  | 74         | 394   | 131   | 131   | 442                              | 163 | 163  | 657  | 305  | 395  | 872  | 439  | 627  | 1088  | 572  | 859  | 1303  | 704  | 1091  |
| 0.3S-0100-45-OP  | 100        | 655   | 278   | 302   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.3S-0100-75-OP  | 78         | 647   | 272   | 293   | -                                | -   | -    | 482  | 82   | 82   | 698  | 285  | 314  | 913   | 423  | 546  | 1128  | 558  | 778   |
| 0.3S-0100-100-OP | 44         | 640   | 267   | 284   | 762                              | 327 | 383  | 1145 | 568  | 795  | 1528 | 804  | 1208 | 1910  | 1039 | 1620 | 2293  | 1274 | 2033  |
| 0.3S-0150-45-OP  | 100        | 834   | 398   | 507   | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.3S-0150-75-OP  | 83         | 826   | 392   | 497   | -                                | -   | -    | -    | -    | -    | 492  | 92   | 92   | 707   | 292  | 324  | 923   | 429  | 556   |
| 0.3S-0150-100-OP | 46         | 819   | 387   | 489   | 556                              | 161 | 161  | 939  | 440  | 574  | 1322 | 677  | 986  | 1705  | 913  | 1399 | 2087  | 1148 | 1811  |
| 0.9S-0200-100-OP | 100        | 1054  | 487   | 596   | 604                              | 54  | 54   | 1046 | 451  | 531  | 1489 | 730  | 1008 | 1931  | 1003 | 1485 | 2374  | 1275 | 1962  |
| 0.9S-0200-135-OP | 59         | 1045  | 481   | 586   | 1686                             | 852 | 1221 | 2493 | 1349 | 2090 | 3299 | 1843 | 2959 | 4106  | 2336 | 3828 | 4913  | 2829 | 4697  |
| 0.9S-0250-100-OP | 100        | 1278  | 635   | 853   | -                                | -   | -    | 788  | 253  | 253  | 1231 | 569  | 730  | 1673  | 844  | 1207 | 2116  | 1117 | 1684  |
| 0.9S-0250-135-OP | 61         | 1269  | 629   | 843   | 1428                             | 692 | 943  | 2235 | 1190 | 1812 | 3042 | 1685 | 2681 | 3848  | 2178 | 3550 | 4655  | 2671 | 4419  |
| 0.9S-0350-100-OP | 100        | 2005  | 939   | 1169  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 1307  | 307  | 307  | 1749  | 714  | 783   |
| 0.9S-0350-135-OP | 64         | 1996  | 933   | 1158  | 1062                             | 43  | 43   | 1868 | 792  | 912  | 2675 | 1301 | 1781 | 3481  | 1801 | 2650 | 4288  | 2297 | 3519  |
| 0.9S-0400-100-OP | 100        | 2394  | 1194  | 1614  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | 1302  | 301  | 301   |
| 0.9S-0400-135-OP | 66         | 2385  | 1188  | 1603  | -                                | -   | -    | 1421 | 430  | 430  | 2228 | 1021 | 1299 | 3034  | 1524 | 2168 | 3841  | 2022 | 3037  |
| 0.9S-0700-100-OP | 100        | 3361  | 1626  | 2112  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 0.9S-0700-135-OP | 70         | 3352  | 1620  | 2101  | -                                | -   | -    | -    | -    | -    | 1669 | 100  | 100  | 2475  | 951  | 969  | 3282  | 1479 | 1838  |
| 1.5S-1100-135-OP | 98         | 6862  | 2643  | 2929  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5S-1100-175-OP | 58         | 6844  | 2631  | 2912  | -                                | -   | -    | -    | -    | -    | 4429 | 1370 | 1370 | 5998  | 2876 | 3373 | 7566  | 3958 | 5377  |
| 1.5S-1200-135-OP | 100        | 8011  | 3367  | 4073  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5S-1200-175-OP | 62         | 7993  | 3356  | 4055  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 4852  | 1950 | 1950 | 6420  | 3183 | 3953  |
| 3S-2000-135-OP   | 100        | 11599 | 5169  | 6555  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 3S-2000-175-OP   | 68         | 11570 | 5151  | 6525  | -                                | -   | -    | -    | -    | -    | 5924 | 1756 | 1756 | 8560  | 4125 | 5029 | 11197 | 5904 | 8302  |
| 6S-2500-175-OP   | 100        | 16485 | 7523  | 9766  | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 7814  | 2174 | 2174 | 10903 | 5115 | 5993  |
| 6S-2500-200-OP   | 80         | 16479 | 7520  | 9760  | -                                | -   | -    | -    | -    | -    | 9447 | 4085 | 4193 | 13481 | 6869 | 9182 | 17515 | 9555 | 14171 |
| 6S-3800-175-OP   | 100        | 22456 | 10790 | 14771 | -                                | -   | -    | -    | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 6S-3800-200-OP   | 88         | 22450 | 10786 | 14765 | -                                | -   | -    | -    | -    | -    | -    | -    | -    | 8360  | 1786 | 1786 | 12394 | 5802 | 6774  |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 42. Models 0.3S-008A-45-OP to 6S-3800-200-OP at 40 to 60 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 40                               |       |       | 45    |       |       | 50    |       |       | 55    |       |       | 60    |       |       |
|                  |            |       |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 0.3S-008A-45-OP  | 100        | 222   | 99    | 116   | 466                              | 245   | 367   | 544   | 292   | 451   | 621   | 340   | 534   | 699   | 387   | 618   | 776   | 435   | 701   |
| 0.3S-008A-75-OP  | 71         | 214   | 94    | 107   | 1560                             | 914   | 1546  | 1775  | 1045  | 1778  | 1990  | 1177  | 2010  | 2206  | 1308  | 2242  | 2421  | 1440  | 2474  |
| 0.3S-008B-45-OP  | 100        | 334   | 109   | 109   | 461                              | 197   | 229   | 538   | 246   | 313   | 616   | 295   | 396   | 693   | 343   | 480   | 771   | 391   | 563   |
| 0.3S-008B-75-OP  | 73         | 325   | 99    | 99    | 1555                             | 872   | 1408  | 1770  | 1004  | 1640  | 1985  | 1135  | 1872  | 2201  | 1267  | 2104  | 2416  | 1399  | 2336  |
| 0.3S-008S-45-OP  | 100        | 402   | 140   | 140   | 424                              | 144   | 144   | 502   | 206   | 228   | 579   | 256   | 311   | 657   | 305   | 395   | 734   | 354   | 478   |
| 0.3S-008S-75-OP  | 74         | 394   | 131   | 131   | 1518                             | 836   | 1323  | 1733  | 968   | 1555  | 1949  | 1100  | 1787  | 2164  | 1231  | 2019  | 2379  | 1363  | 2251  |
| 0.3S-0100-45-OP  | 100        | 655   | 278   | 302   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 482   | 82    | 82    | 560   | 165   | 165   |
| 0.3S-0100-75-OP  | 78         | 647   | 272   | 293   | 1344                             | 691   | 1010  | 1559  | 823   | 1242  | 1774  | 956   | 1474  | 1989  | 1088  | 1706  | 2205  | 1219  | 1938  |
| 0.3S-0100-100-OP | 44         | 640   | 267   | 284   | 2676                             | 1508  | 2445  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-45-OP  | 100        | 834   | 398   | 507   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-75-OP  | 83         | 826   | 392   | 497   | 1138                             | 564   | 788   | 1353  | 697   | 1020  | 1568  | 829   | 1252  | 1784  | 961   | 1484  | 1999  | 1093  | 1716  |
| 0.3S-0150-100-OP | 46         | 819   | 387   | 489   | 2470                             | 1382  | 2224  | 2853  | 1616  | 2636  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0200-100-OP | 100        | 1054  | 487   | 596   | 2816                             | 1547  | 2439  | 3259  | 1818  | 2915  | 3702  | 2089  | 3392  | 4144  | 2359  | 3869  | 4587  | 2630  | 4346  |
| 0.9S-0200-135-OP | 59         | 1045  | 481   | 586   | 5719                             | 3322  | 5566  | 6526  | 3814  | 6435  | 7332  | 4307  | 7305  | 8139  | 4800  | 8174  | -     | -     | -     |
| 0.9S-0250-100-OP | 100        | 1278  | 635   | 853   | 2559                             | 1389  | 2161  | 3001  | 1660  | 2637  | 3444  | 1931  | 3114  | 3886  | 2202  | 3591  | 4329  | 2472  | 4068  |
| 0.9S-0250-135-OP | 61         | 1269  | 629   | 843   | 5461                             | 3164  | 5288  | 6268  | 3657  | 6157  | 7074  | 4150  | 7027  | 7881  | 4642  | 7896  | 8687  | 5135  | 8765  |
| 0.9S-0350-100-OP | 100        | 2005  | 939   | 1169  | 2192                             | 999   | 1260  | 2634  | 1276  | 1737  | 3077  | 1551  | 2214  | 3520  | 1824  | 2691  | 3962  | 2097  | 3168  |
| 0.9S-0350-135-OP | 64         | 1996  | 933   | 1158  | 5095                             | 2791  | 4388  | 5901  | 3286  | 5257  | 6708  | 3779  | 6126  | 7514  | 4272  | 6996  | 8321  | 4765  | 7865  |
| 0.9S-0400-100-OP | 100        | 2394  | 1194  | 1614  | 1745                             | 711   | 778   | 2187  | 996   | 1255  | 2630  | 1273  | 1732  | 3072  | 1548  | 2209  | 3515  | 1821  | 2686  |
| 0.9S-0400-135-OP | 66         | 2385  | 1188  | 1603  | 4647                             | 2517  | 3906  | 5454  | 3012  | 4775  | 6260  | 3505  | 5644  | 7067  | 3999  | 6514  | 7874  | 4492  | 7383  |
| 0.9S-0700-100-OP | 100        | 3361  | 1626  | 2112  | -                                | -     | -     | 1628  | 57    | 57    | 2071  | 534   | 534   | 2514  | 978   | 1010  | 2956  | 1270  | 1487  |
| 0.9S-0700-135-OP | 70         | 3352  | 1620  | 2101  | 4089                             | 1985  | 2708  | 4895  | 2485  | 3577  | 5702  | 2982  | 4446  | 6508  | 3478  | 5315  | 7315  | 3973  | 6184  |
| 1.5S-1100-135-OP | 98         | 6862  | 2643  | 2929  | 4070                             | 911   | 911   | 5003  | 2103  | 2103  | 5937  | 2833  | 3296  | 6870  | 3482  | 4488  | 7804  | 4119  | 5680  |
| 1.5S-1100-175-OP | 58         | 6844  | 2631  | 2912  | 9134                             | 5019  | 7380  | 10703 | 6073  | 9384  | 12271 | 7122  | 11387 | 13840 | 8168  | 13391 | -     | -     | -     |
| 1.5S-1200-135-OP | 100        | 8011  | 3367  | 4073  | -                                | -     | -     | 3858  | 680   | 680   | 4791  | 1872  | 1872  | 5724  | 2695  | 3064  | 6658  | 3347  | 4257  |
| 1.5S-1200-175-OP | 62         | 7993  | 3356  | 4055  | 7988                             | 4256  | 5957  | 9557  | 5314  | 7960  | 11125 | 6366  | 9964  | 12694 | 7414  | 11967 | 14262 | 8460  | 13971 |
| 3S-2000-135-OP   | 100        | 11599 | 5169  | 6555  | 5321                             | 1007  | 1007  | 6890  | 2945  | 2954  | 8458  | 4055  | 4902  | 10027 | 5121  | 6850  | 11596 | 6171  | 8797  |
| 3S-2000-175-OP   | 68         | 11570 | 5151  | 6525  | 13833                            | 7656  | 11575 | 16469 | 9396  | 14848 | 19105 | 11131 | 18120 | 21741 | 12863 | 21393 | 24377 | 14595 | 24666 |
| 6S-2500-175-OP   | 100        | 16485 | 7523  | 9766  | 13991                            | 7210  | 9813  | 17079 | 9266  | 13632 | 20167 | 11306 | 17452 | 23255 | 13338 | 21271 | 26344 | 15366 | 25091 |
| 6S-2500-200-OP   | 80         | 16479 | 7520  | 9760  | 21548                            | 12216 | 19160 | 25582 | 14866 | 24149 | 29615 | 17511 | 29137 | 33649 | 20155 | 34126 | 37683 | 22800 | 39115 |
| 6S-3800-175-OP   | 100        | 22456 | 10790 | 14771 | 8870                             | 2416  | 2416  | 11958 | 5499  | 6236  | 15047 | 7609  | 10055 | 18135 | 9673  | 13875 | 21223 | 11719 | 17694 |
| 6S-3800-200-OP   | 88         | 22450 | 10786 | 14765 | 16428                            | 8536  | 11763 | 20461 | 11215 | 16752 | 24495 | 13876 | 21741 | 28528 | 16527 | 26729 | 32562 | 19172 | 31718 |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 43. Models 0.3S-008A-45-OP to 6S-3800-200-OP at 65 to 80 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 65                               |       |       | 70    |       |       | 75    |       |       | 80    |       |       |
|                  |            |       |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 0.3S-008A-45-OP  | 100        | 222   | 99    | 116   | 854                              | 482   | 785   | 931   | 530   | 868   | 1009  | 577   | 952   | 1086  | 624   | 1035  |
| 0.3S-008A-75-OP  | 71         | 214   | 94    | 107   | 2636                             | 1571  | 2706  | 2852  | 1702  | 2938  | -     | -     | -     | -     | -     | -     |
| 0.3S-008B-45-OP  | 100        | 334   | 109   | 109   | 848                              | 439   | 647   | 926   | 487   | 730   | 1003  | 534   | 814   | 1081  | 582   | 897   |
| 0.3S-008B-75-OP  | 73         | 325   | 99    | 99    | 2631                             | 1530  | 2568  | 2846  | 1662  | 2800  | -     | -     | -     | -     | -     | -     |
| 0.3S-008S-45-OP  | 100        | 402   | 140   | 140   | 812                              | 402   | 562   | 889   | 450   | 645   | 967   | 498   | 729   | 1044  | 545   | 812   |
| 0.3S-008S-75-OP  | 74         | 394   | 131   | 131   | 2595                             | 1495  | 2483  | 2810  | 1626  | 2715  | -     | -     | -     | -     | -     | -     |
| 0.3S-0100-45-OP  | 100        | 655   | 278   | 302   | 637                              | 244   | 249   | 715   | 297   | 332   | 792   | 347   | 416   | 870   | 396   | 499   |
| 0.3S-0100-75-OP  | 78         | 647   | 272   | 293   | 2420                             | 1351  | 2170  | 2635  | 1483  | 2402  | 2851  | 1615  | 2634  | -     | -     | -     |
| 0.3S-0100-100-OP | 44         | 640   | 267   | 284   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-45-OP  | 100        | 834   | 398   | 507   | 432                              | 27    | 27    | 509   | 111   | 111   | 587   | 194   | 194   | 664   | 263   | 278   |
| 0.3S-0150-75-OP  | 83         | 826   | 392   | 497   | 2214                             | 1225  | 1948  | 2430  | 1357  | 2180  | 2645  | 1489  | 2412  | 2860  | 1621  | 2644  |
| 0.3S-0150-100-OP | 46         | 819   | 387   | 489   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0200-100-OP | 100        | 1054  | 487   | 596   | 5029                             | 2900  | 4823  | 5472  | 3171  | 5300  | 5914  | 3441  | 5777  | 6357  | 3711  | 6254  |
| 0.9S-0200-135-OP | 59         | 1045  | 481   | 586   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0250-100-OP | 100        | 1278  | 635   | 853   | 4771                             | 2743  | 4545  | 5214  | 3013  | 5022  | 5656  | 3283  | 5499  | 6099  | 3554  | 5976  |
| 0.9S-0250-135-OP | 61         | 1269  | 629   | 843   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0350-100-OP | 100        | 2005  | 939   | 1169  | 4405                             | 2368  | 3645  | 4847  | 2640  | 4122  | 5290  | 2911  | 4599  | 5732  | 3182  | 5075  |
| 0.9S-0350-135-OP | 64         | 1996  | 933   | 1158  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0400-100-OP | 100        | 2394  | 1194  | 1614  | 3957                             | 2094  | 3163  | 4400  | 2365  | 3640  | 4843  | 2637  | 4117  | 5285  | 2908  | 4593  |
| 0.9S-0400-135-OP | 66         | 2385  | 1188  | 1603  | 8680                             | 4985  | 8252  | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0700-100-OP | 100        | 3361  | 1626  | 2112  | 3399                             | 1552  | 1964  | 3841  | 1830  | 2441  | 4284  | 2106  | 2918  | 4726  | 2381  | 3395  |
| 0.9S-0700-135-OP | 70         | 3352  | 1620  | 2101  | 8121                             | 4467  | 7053  | 8928  | 4961  | 7922  | -     | -     | -     | -     | -     | -     |
| 1.5S-1100-135-OP | 98         | 6862  | 2643  | 2929  | 8737                             | 4752  | 6873  | 9670  | 5380  | 8065  | 10604 | 6007  | 9257  | 11537 | 6631  | 10450 |
| 1.5S-1100-175-OP | 58         | 6844  | 2631  | 2912  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5S-1200-135-OP | 100        | 8011  | 3367  | 4073  | 7591                             | 3986  | 5449  | 8524  | 4619  | 6641  | 9458  | 5248  | 7833  | 10391 | 5874  | 9026  |
| 1.5S-1200-175-OP | 62         | 7993  | 3356  | 4055  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3S-2000-135-OP   | 100        | 11599 | 5169  | 6555  | 13165                            | 7213  | 10745 | 14733 | 8251  | 12693 | 16302 | 9286  | 14641 | 17871 | 10319 | 16588 |
| 3S-2000-175-OP   | 68         | 11570 | 5151  | 6525  | 27013                            | 16326 | 27939 | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6S-2500-175-OP   | 100        | 16485 | 7523  | 9766  | 29432                            | 17390 | 28910 | 32520 | 19415 | 32730 | 35608 | 21440 | 36549 | 38697 | 23464 | 40369 |
| 6S-2500-200-OP   | 80         | 16479 | 7520  | 9760  | 41716                            | 25444 | 44104 | 45750 | 28089 | 49092 | 49784 | 30733 | 54081 | 53817 | 33378 | 59070 |
| 6S-3800-175-OP   | 100        | 22456 | 10790 | 14771 | 24311                            | 13755 | 21514 | 27400 | 15785 | 25333 | 30488 | 17812 | 29153 | 33576 | 19837 | 32972 |
| 6S-3800-200-OP   | 88         | 22450 | 10786 | 14765 | 36596                            | 21816 | 36707 | 40629 | 24461 | 41696 | 44663 | 27105 | 46685 | 48696 | 29750 | 51673 |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 44. Models 0.3S-008A-45-OP to 6S-3800-200-OP at 85 to 100 barg**

| Model            | MOP (barg) | BTO   | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|-------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |       |       |       | 85                               |       |       | 90    |       |       | 95    |       |       | 100   |       |       |
|                  |            |       |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 0.3S-008A-45-OP  | 100        | 222   | 99    | 116   | 1164                             | 672   | 1119  | 1241  | 719   | 1202  | 1319  | 766   | 1286  | 1396  | 814   | 1369  |
| 0.3S-008A-75-OP  | 71         | 214   | 94    | 107   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-008B-45-OP  | 100        | 334   | 109   | 109   | 1158                             | 630   | 981   | 1236  | 677   | 1064  | 1314  | 724   | 1148  | 1391  | 772   | 1231  |
| 0.3S-008B-75-OP  | 73         | 325   | 99    | 99    | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-008S-45-OP  | 100        | 402   | 140   | 140   | 1122                             | 593   | 896   | 1200  | 641   | 979   | 1277  | 688   | 1063  | 1355  | 736   | 1146  |
| 0.3S-008S-75-OP  | 74         | 394   | 131   | 131   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0100-45-OP  | 100        | 655   | 278   | 302   | 947                              | 445   | 583   | 1025  | 493   | 666   | 1102  | 541   | 750   | 1180  | 590   | 833   |
| 0.3S-0100-75-OP  | 78         | 647   | 272   | 293   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0100-100-OP | 44         | 640   | 267   | 284   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-45-OP  | 100        | 834   | 398   | 507   | 742                              | 314   | 361   | 819   | 364   | 445   | 897   | 413   | 528   | 974   | 462   | 612   |
| 0.3S-0150-75-OP  | 83         | 826   | 392   | 497   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.3S-0150-100-OP | 46         | 819   | 387   | 489   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0200-100-OP | 100        | 1054  | 487   | 596   | 6799                             | 3982  | 6730  | 7242  | 4252  | 7207  | 7685  | 4522  | 7684  | 8127  | 4793  | 8161  |
| 0.9S-0200-135-OP | 59         | 1045  | 481   | 586   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0250-100-OP | 100        | 1278  | 635   | 853   | 6542                             | 3824  | 6453  | 6984  | 4095  | 6929  | 7427  | 4365  | 7406  | 7869  | 4635  | 7883  |
| 0.9S-0250-135-OP | 61         | 1269  | 629   | 843   | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0350-100-OP | 100        | 2005  | 939   | 1169  | 6175                             | 3453  | 5552  | 6617  | 3724  | 6029  | 7060  | 3994  | 6506  | 7503  | 4265  | 6983  |
| 0.9S-0350-135-OP | 64         | 1996  | 933   | 1158  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0400-100-OP | 100        | 2394  | 1194  | 1614  | 5728                             | 3179  | 5070  | 6170  | 3450  | 5547  | 6613  | 3721  | 6024  | 7055  | 3992  | 6501  |
| 0.9S-0400-135-OP | 66         | 2385  | 1188  | 1603  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 0.9S-0700-100-OP | 100        | 3361  | 1626  | 2112  | 5169                             | 2654  | 3872  | 5611  | 2927  | 4349  | 6054  | 3199  | 4825  | 6497  | 3471  | 5302  |
| 0.9S-0700-135-OP | 70         | 3352  | 1620  | 2101  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5S-1100-135-OP | 98         | 6862  | 2643  | 2929  | 12470                            | 7255  | 11642 | 13404 | 7878  | 12834 | 14337 | 8500  | 14026 | -     | -     | -     |
| 1.5S-1100-175-OP | 58         | 6844  | 2631  | 2912  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1.5S-1200-135-OP | 100        | 8011  | 3367  | 4073  | 11325                            | 6499  | 10218 | 12258 | 7123  | 11410 | 13191 | 7746  | 12603 | 14125 | 8368  | 13795 |
| 1.5S-1200-175-OP | 62         | 7993  | 3356  | 4055  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3S-2000-135-OP   | 100        | 11599 | 5169  | 6555  | 19440                            | 11351 | 18536 | 21008 | 12381 | 20484 | 22577 | 13412 | 22431 | 24146 | 14443 | 24379 |
| 3S-2000-175-OP   | 68         | 11570 | 5151  | 6525  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6S-2500-175-OP   | 100        | 16485 | 7523  | 9766  | 41785                            | 25489 | 44188 | 44873 | 27514 | 48008 | 47961 | 29538 | 51828 | 51050 | 31563 | 55647 |
| 6S-2500-200-OP   | 80         | 16479 | 7520  | 9760  | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 6S-3800-175-OP   | 100        | 22456 | 10790 | 14771 | 36664                            | 21861 | 36792 | 39752 | 23886 | 40611 | 42841 | 25911 | 44431 | 45929 | 27935 | 48250 |
| 6S-3800-200-OP   | 88         | 22450 | 10786 | 14765 | 52730                            | 32394 | 56662 | -     | -     | -     | -     | -     | -     | -     | -     | -     |

**NOTES:**

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 45. Models 14S-5100-200-OP to 50S-15600-350-OP at 15 to 30 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |       |       |       |       |       |       |       |
|------------------|------------|--------|-------|-------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |            |        |       |       | 15                               |       |       | 20    |       |       | 25    |       |       | 30    |       |       |
|                  |            |        |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 14S-5100-200-OP  | 100        | 27498  | 13013 | 17698 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-5100-235-OP  | 100        | 27479  | 13002 | 17679 | -                                | -     | -     | -     | -     | -     | 10964 | 3746  | 3746  | 16946 | 8680  | 11387 |
| 14S-5100-280-OP  | 71         | 27404  | 12958 | 17608 | -                                | -     | -     | 14958 | 7306  | 8847  | 23450 | 13083 | 19695 | 31942 | 18763 | 30542 |
| 14S-5100-300-OP  | 62         | 27367  | 12936 | 17572 | 10203                            | 2773  | 2773  | 19951 | 10724 | 15226 | 29699 | 17267 | 27678 | 39448 | 23770 | 40131 |
| 14S-5100-350-OP  | 46         | 27263  | 12874 | 17471 | 20672                            | 11212 | 16147 | 33940 | 20096 | 33096 | 47209 | 28948 | 50045 | 60477 | 37793 | 66994 |
| 14S-5400-200-OP  | 100        | 35440  | 16081 | 20993 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-5400-235-OP  | 100        | 35421  | 16070 | 20974 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 13216 | 1549  | 1549  |
| 14S-5400-280-OP  | 75         | 35346  | 16025 | 20903 | -                                | -     | -     | -     | -     | -     | 19720 | 9056  | 9857  | 28212 | 14940 | 20704 |
| 14S-5400-300-OP  | 66         | 35309  | 16003 | 20867 | -                                | -     | -     | 16221 | 5387  | 5387  | 25969 | 13412 | 17840 | 35718 | 20003 | 30292 |
| 14S-5400-350-OP  | 48         | 35205  | 15941 | 20766 | 16942                            | 6308  | 6308  | 30210 | 16294 | 23257 | 43479 | 25200 | 40207 | 56747 | 34052 | 57156 |
| 14S-8300-200-OP  | 100        | 45484  | 20783 | 27317 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-8300-235-OP  | 100        | 45465  | 20771 | 27298 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 14S-8300-280-OP  | 81         | 45390  | 20727 | 27227 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 21533 | 8262  | 8262  |
| 14S-8300-300-OP  | 71         | 45353  | 20705 | 27191 | -                                | -     | -     | -     | -     | -     | 19291 | 5398  | 5398  | 29039 | 14388 | 17850 |
| 14S-8300-350-OP  | 52         | 45249  | 20642 | 27090 | -                                | -     | -     | 23532 | 10476 | 10815 | 36800 | 19695 | 27764 | 50069 | 28618 | 44713 |
| 18S-9600-235-OP  | 100        | 71792  | 29579 | 35058 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9600-280-OP  | 100        | 71707  | 29527 | 34976 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9600-300-OP  | 94         | 71664  | 29500 | 34935 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9600-350-OP  | 69         | 71544  | 29427 | 34819 | -                                | -     | -     | -     | -     | -     | 37207 | 7736  | 7736  | 52471 | 24420 | 27222 |
| 18S-9800-235-OP  | 100        | 91146  | 37130 | 43510 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9800-280-OP  | 100        | 91060  | 37078 | 43428 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9800-300-OP  | 100        | 91017  | 37051 | 43387 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-9800-350-OP  | 74         | 90897  | 36978 | 43271 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | 42996 | 3248  | 3248  |
| 18S-10500-280-OP | 100        | 106286 | 43484 | 51177 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-10500-300-OP | 100        | 106243 | 43457 | 51136 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-10500-350-OP | 77         | 106123 | 43384 | 51020 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-11000-280-OP | 100        | 119233 | 51369 | 63676 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-11000-300-OP | 100        | 119190 | 51343 | 63635 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 18S-11000-350-OP | 81         | 119070 | 51271 | 63519 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-12000-300-OP | 100        | 156381 | 68205 | 84565 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-12000-350-OP | 100        | 156242 | 68119 | 84427 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-15000-300-OP | 100        | 134323 | 52005 | 56887 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 32S-15000-350-OP | 100        | 134184 | 51916 | 56749 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15400-300-OP | 100        | 169415 | 66500 | 73789 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15400-350-OP | 100        | 169260 | 66401 | 73636 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15600-300-OP | 100        | 177222 | 71451 | 81539 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 50S-15600-350-OP | 100        | 177068 | 71354 | 81386 | -                                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 46. Models 14S-5100-200-OP to 50S-15600-350-OP at 35 to 50 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |       |       |       |       |        |        |       |        |        |       |        |
|------------------|------------|--------|-------|-------|----------------------------------|-------|-------|-------|-------|--------|--------|-------|--------|--------|-------|--------|
|                  |            |        |       |       | 35                               |       |       | 40    |       |        | 45     |       |        | 50     |       |        |
|                  |            |        |       |       | BTC                              | RTC   | ETC   | BTC   | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC   | ETC    |
| 14S-5100-200-OP  | 100        | 27498  | 13013 | 17698 | 11401                            | 4304  | 4304  | 15733 | 7845  | 9838   | 20066  | 10802 | 15372  | 24398  | 13719 | 20907  |
| 14S-5100-235-OP  | 100        | 27479  | 13002 | 17679 | 22927                            | 12732 | 19028 | 28909 | 16739 | 26669  | 34891  | 20730 | 34310  | 40872  | 24721 | 41951  |
| 14S-5100-280-OP  | 71         | 27404  | 12958 | 17608 | 40433                            | 24428 | 41390 | 48925 | 30093 | 52237  | 57417  | 35754 | 63085  | 65909  | 41411 | 73932  |
| 14S-5100-300-OP  | 62         | 27367  | 12936 | 17572 | 49196                            | 30273 | 52583 | 58944 | 36771 | 65036  | 68693  | 43265 | 77488  | 78441  | 49757 | 89941  |
| 14S-5100-350-OP  | 46         | 27263  | 12874 | 17471 | 73746                            | 46632 | 83943 | 87014 | 55463 | 100893 | 100283 | 64294 | 117842 | -      | -     | -      |
| 14S-5400-200-OP  | 100        | 35440  | 16081 | 20993 | -                                | -     | -     | -     | -     | -      | 16336  | 5534  | 5534   | 20669  | 9734  | 11069  |
| 14S-5400-235-OP  | 100        | 35421  | 16070 | 20974 | 19198                            | 8677  | 9190  | 25179 | 12871 | 16830  | 31161  | 16937 | 24471  | 37142  | 20959 | 32112  |
| 14S-5400-280-OP  | 75         | 35346  | 16025 | 20903 | 36704                            | 20665 | 31552 | 45195 | 26345 | 42399  | 53687  | 32010 | 53247  | 62179  | 37676 | 64094  |
| 14S-5400-300-OP  | 66         | 35309  | 16003 | 20867 | 45466                            | 26526 | 42745 | 55214 | 33029 | 55197  | 64963  | 39532 | 67650  | 74711  | 46036 | 80102  |
| 14S-5400-350-OP  | 48         | 35205  | 15941 | 20766 | 70016                            | 42904 | 74105 | 83284 | 51752 | 91054  | 96553  | 60591 | 108003 | -      | -     | -      |
| 14S-8300-200-OP  | 100        | 45484  | 20783 | 27317 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 14S-8300-235-OP  | 100        | 45465  | 20771 | 27298 | -                                | -     | -     | 18500 | 4388  | 4388   | 24482  | 11172 | 12029  | 30464  | 15372 | 19670  |
| 14S-8300-280-OP  | 81         | 45390  | 20727 | 27227 | 30025                            | 15070 | 19109 | 38517 | 20856 | 29957  | 47008  | 26568 | 40804  | 55500  | 32250 | 51652  |
| 14S-8300-300-OP  | 71         | 45353  | 20705 | 27191 | 38787                            | 21039 | 30303 | 48535 | 27592 | 42755  | 58284  | 34106 | 55207  | 68032  | 40610 | 67660  |
| 14S-8300-350-OP  | 52         | 45249  | 20642 | 27090 | 63337                            | 37478 | 61663 | 76606 | 46329 | 78612  | 89874  | 55181 | 95561  | 103143 | 64030 | 112510 |
| 18S-9600-235-OP  | 100        | 71792  | 29579 | 35058 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-9600-280-OP  | 100        | 71707  | 29527 | 34976 | -                                | -     | -     | 39182 | 10257 | 10257  | 48951  | 21869 | 22728  | 58719  | 28817 | 35199  |
| 18S-9600-300-OP  | 94         | 71664  | 29500 | 34935 | 39493                            | 10654 | 10654 | 50707 | 23151 | 24970  | 61922  | 31035 | 39287  | 73136  | 38703 | 53603  |
| 18S-9600-350-OP  | 69         | 71544  | 29427 | 34819 | 67735                            | 35025 | 46708 | 82999 | 45373 | 66194  | 98263  | 55629 | 85680  | 113527 | 65838 | 105166 |
| 18S-9800-235-OP  | 100        | 91146  | 37130 | 43510 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-9800-280-OP  | 100        | 91060  | 37078 | 43428 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | 49245  | 11225 | 11225  |
| 18S-9800-300-OP  | 100        | 91017  | 37051 | 43387 | -                                | -     | -     | 41233 | 996   | 996    | 52447  | 15313 | 15313  | 63661  | 28467 | 29629  |
| 18S-9800-350-OP  | 74         | 90897  | 36978 | 43271 | 58260                            | 22734 | 22734 | 73524 | 35516 | 42220  | 88788  | 46047 | 61706  | 104052 | 56405 | 81192  |
| 18S-10500-280-OP | 100        | 106286 | 43484 | 51177 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-10500-300-OP | 100        | 106243 | 43457 | 51136 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | 55207  | 10768 | 10768  |
| 18S-10500-350-OP | 77         | 106123 | 43384 | 51020 | 49806                            | 3873  | 3873  | 65070 | 23359 | 23359  | 80334  | 37767 | 42845  | 95598  | 48404 | 62331  |
| 18S-11000-280-OP | 100        | 119233 | 51369 | 63676 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-11000-300-OP | 100        | 119190 | 51343 | 63635 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-11000-350-OP | 81         | 119070 | 51271 | 63519 | -                                | -     | -     | 52506 | 7320  | 7320   | 67770  | 26806 | 26806  | 83034  | 39677 | 46293  |
| 32S-12000-300-OP | 100        | 156381 | 68205 | 84565 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 32S-12000-350-OP | 100        | 156242 | 68119 | 84427 | -                                | -     | -     | -     | -     | -      | 71082  | 8462  | 8462   | 89271  | 31046 | 31046  |
| 32S-15000-300-OP | 100        | 134323 | 52005 | 56887 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 32S-15000-350-OP | 100        | 134184 | 51916 | 56749 | -                                | -     | -     | 80159 | 13205 | 13205  | 98349  | 35789 | 35789  | 116538 | 52870 | 58372  |
| 50S-15400-300-OP | 100        | 169415 | 66500 | 73789 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 50S-15400-350-OP | 100        | 169260 | 66401 | 73636 | -                                | -     | -     | -     | -     | -      | 97738  | 14783 | 14783  | 117948 | 39875 | 39875  |
| 50S-15600-300-OP | 100        | 177222 | 71451 | 81539 | -                                | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 50S-15600-350-OP | 100        | 177068 | 71354 | 81386 | -                                | -     | -     | -     | -     | -      | 89947  | 5110  | 5110   | 110158 | 30203 | 30203  |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 47. Models 14S-5100-200-OP to 50S-15600-350-OP at 55 to 70 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |       |        |        |       |        |        |       |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|--------|--------|
|                  |            |        |       |       | 55                               |       |        | 60     |       |        | 65     |       |        | 70     |        |        |
|                  |            |        |       |       | BTC                              | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC    | ETC    |
| 14S-5100-200-OP  | 100        | 27498  | 13013 | 17698 | 28731                            | 16620 | 26441  | 33064  | 19511 | 31976  | 37396  | 22401 | 37510  | 41729  | 25292  | 43045  |
| 14S-5100-235-OP  | 100        | 27479  | 13002 | 17679 | 46854                            | 28711 | 49592  | 52836  | 32701 | 57233  | 58817  | 36687 | 64874  | 64799  | 40672  | 72515  |
| 14S-5100-280-OP  | 71         | 27404  | 12958 | 17608 | 74401                            | 47068 | 84780  | 82893  | 52720 | 95627  | 91385  | 58372 | 106475 | 99876  | 64023  | 117322 |
| 14S-5100-300-OP  | 62         | 27367  | 12936 | 17572 | 88189                            | 56245 | 102393 | 97937  | 62733 | 114846 | -      | -     | -      | -      | -      | -      |
| 14S-5100-350-OP  | 46         | 27263  | 12874 | 17471 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14S-5400-200-OP  | 100        | 35440  | 16081 | 20993 | 25001                            | 12749 | 16603  | 29334  | 15701 | 22137  | 33666  | 18625 | 27672  | 37999  | 21534  | 33206  |
| 14S-5400-235-OP  | 100        | 35421  | 16070 | 20974 | 43124                            | 24963 | 39753  | 49106  | 28954 | 47394  | 55087  | 32945 | 55035  | 61069  | 36935  | 62676  |
| 14S-5400-280-OP  | 75         | 35346  | 16025 | 20903 | 70671                            | 43341 | 74942  | 79163  | 49006 | 85789  | 87655  | 54663 | 96637  | 96146  | 60320  | 107484 |
| 14S-5400-300-OP  | 66         | 35309  | 16003 | 20867 | 84459                            | 52535 | 92555  | 94207  | 59029 | 105007 | 103956 | 65523 | 117460 | -      | -      | -      |
| 14S-5400-350-OP  | 48         | 35205  | 15941 | 20766 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 14S-8300-200-OP  | 100        | 45484  | 20783 | 27317 | 18322                            | 4161  | 4161   | 22655  | 9695  | 9695   | 26987  | 12956 | 15229  | 31320  | 15961  | 20764  |
| 14S-8300-235-OP  | 100        | 45465  | 20771 | 27298 | 36445                            | 19455 | 27311  | 42427  | 23492 | 34952  | 48409  | 27507 | 42593  | 54390  | 31509  | 50234  |
| 14S-8300-280-OP  | 81         | 45390  | 20727 | 27227 | 63992                            | 37915 | 62499  | 72484  | 43580 | 73347  | 80976  | 49245 | 84194  | 89468  | 54910  | 95042  |
| 14S-8300-300-OP  | 71         | 45353  | 20705 | 27191 | 77780                            | 47113 | 80112  | 87529  | 53616 | 92565  | 97277  | 60119 | 105017 | 107025 | 66616  | 117470 |
| 14S-8300-350-OP  | 52         | 45249  | 20642 | 27090 | -                                | -     | -      | -      | -     | -      | -      | -     | -      | -      | -      | -      |
| 18S-9600-235-OP  | 100        | 71792  | 29579 | 35058 | 36799                            | 7215  | 7215   | 43680  | 16000 | 16000  | 50561  | 23046 | 24784  | 57443  | 27928  | 33569  |
| 18S-9600-280-OP  | 100        | 71707  | 29527 | 34976 | 68488                            | 35540 | 47670  | 78257  | 42172 | 60141  | 88026  | 48759 | 72612  | 97795  | 55315  | 85083  |
| 18S-9600-300-OP  | 94         | 71664  | 29500 | 34935 | 84350                            | 46283 | 67919  | 95564  | 53819 | 82236  | 106779 | 61326 | 96552  | 117993 | 68817  | 110868 |
| 18S-9600-350-OP  | 69         | 71544  | 29427 | 34819 | 128791                           | 76018 | 124652 | 144054 | 86197 | 144138 | 159318 | 96376 | 163624 | -      | -      | -      |
| 18S-9800-235-OP  | 100        | 91146  | 37130 | 43510 | -                                | -     | -      | -      | -     | -      | 41087  | 810   | 810    | 47968  | 9595   | 9595   |
| 18S-9800-280-OP  | 100        | 91060  | 37078 | 43428 | 59014                            | 23696 | 23696  | 68783  | 32168 | 36167  | 78551  | 39016 | 48638  | 88320  | 45728  | 61109  |
| 18S-9800-300-OP  | 100        | 91017  | 37051 | 43387 | 74875                            | 36462 | 43945  | 86090  | 44204 | 58261  | 97304  | 51841 | 72578  | 108518 | 59416  | 86894  |
| 18S-9800-350-OP  | 74         | 90897  | 36978 | 43271 | 119316                           | 66678 | 100678 | 134580 | 76906 | 120164 | 149844 | 87109 | 139650 | 165108 | 97288  | 159136 |
| 18S-10500-280-OP | 100        | 106286 | 43484 | 51177 | 50560                            | 4835  | 4835   | 60328  | 17306 | 17306  | 70097  | 29777 | 29777  | 79866  | 37434  | 42248  |
| 18S-10500-300-OP | 100        | 106243 | 43457 | 51136 | 66421                            | 25084 | 25084  | 77636  | 35840 | 39401  | 88850  | 43742 | 53717  | 100064 | 51469  | 68033  |
| 18S-10500-350-OP | 77         | 106123 | 43384 | 51020 | 110862                           | 58823 | 81817  | 126126 | 69139 | 101304 | 141390 | 79398 | 120790 | 156653 | 89622  | 140276 |
| 18S-11000-280-OP | 100        | 119233 | 51369 | 63676 | -                                | -     | -      | 47765  | 1267  | 1267   | 57534  | 13738 | 13738  | 67303  | 26209  | 26209  |
| 18S-11000-300-OP | 100        | 119190 | 51343 | 63635 | 53858                            | 9046  | 9046   | 65072  | 23362 | 23362  | 76286  | 34868 | 37678  | 87501  | 42803  | 51994  |
| 18S-11000-350-OP | 81         | 119070 | 51271 | 63519 | 98298                            | 50259 | 65779  | 113562 | 60655 | 85265  | 128826 | 70957 | 104751 | 144090 | 81210  | 124237 |
| 32S-12000-300-OP | 100        | 156381 | 68205 | 84565 | -                                | -     | -      | 67866  | 4470  | 4470   | 81230  | 21062 | 21062  | 94593  | 37654  | 37654  |
| 32S-12000-350-OP | 100        | 156242 | 68119 | 84427 | 107460                           | 48684 | 53629  | 125649 | 61295 | 76212  | 143839 | 73615 | 98795  | 162028 | 85797  | 121378 |
| 32S-15000-300-OP | 100        | 134323 | 52005 | 56887 | 81770                            | 15205 | 15205  | 95133  | 31796 | 31796  | 108497 | 47089 | 48388  | 121860 | 56608  | 64980  |
| 32S-15000-350-OP | 100        | 134184 | 51916 | 56749 | 134727                           | 65488 | 80955  | 152917 | 77827 | 103538 | 171106 | 90024 | 126121 | 189295 | 102144 | 148704 |
| 50S-15400-300-OP | 100        | 169415 | 66500 | 73789 | -                                | -     | -      | 94165  | 10347 | 10347  | 109013 | 28782 | 28782  | 123862 | 47217  | 47217  |
| 50S-15400-350-OP | 100        | 169260 | 66401 | 73636 | 138158                           | 61194 | 64967  | 158369 | 75385 | 90060  | 178579 | 89187 | 115152 | 198789 | 102806 | 140245 |
| 50S-15600-300-OP | 100        | 177222 | 71451 | 81539 | -                                | -     | -      | 86375  | 675   | 675    | 101223 | 19110 | 19110  | 116072 | 37545  | 37545  |
| 50S-15600-350-OP | 100        | 177068 | 71354 | 81386 | 130368                           | 55295 | 55295  | 150578 | 69979 | 80388  | 170789 | 83896 | 105480 | 190999 | 97575  | 130572 |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 48. Models 14S-5100-200-OP to 50S-15600-350-OP at 75 to 85 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |            |        |       |       | 75                               |        |        | 80     |        |        | 85     |        |        |
|                  |            |        |       |       | BTC                              | RTC    | ETC    | BTC    | RTC    | ETC    | BTC    | RTC    | ETC    |
| 14S-5100-200-OP  | 100        | 27498  | 13013 | 17698 | 46061                            | 28182  | 48579  | 50394  | 31072  | 54113  | 54726  | 33962  | 59648  |
| 14S-5100-235-OP  | 100        | 27479  | 13002 | 17679 | 70781                            | 44656  | 80156  | 76762  | 48640  | 87797  | 82744  | 52621  | 95438  |
| 14S-5100-280-OP  | 71         | 27404  | 12958 | 17608 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-300-OP  | 62         | 27367  | 12936 | 17572 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-350-OP  | 46         | 27263  | 12874 | 17471 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-200-OP  | 100        | 35440  | 16081 | 20993 | 42331                            | 24433  | 38741  | 46664  | 27325  | 44275  | 50997  | 30215  | 49810  |
| 14S-5400-235-OP  | 100        | 35421  | 16070 | 20974 | 67051                            | 40926  | 70317  | 73032  | 44916  | 77958  | 79014  | 48906  | 85599  |
| 14S-5400-280-OP  | 75         | 35346  | 16025 | 20903 | 104638                           | 65977  | 118332 | -      | -      | -      | -      | -      | -      |
| 14S-5400-300-OP  | 66         | 35309  | 16003 | 20867 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-350-OP  | 48         | 35205  | 15941 | 20766 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-200-OP  | 100        | 45484  | 20783 | 27317 | 35653                            | 18917  | 26298  | 39985  | 21847  | 31833  | 44318  | 24763  | 37367  |
| 14S-8300-235-OP  | 100        | 45465  | 20771 | 27298 | 60372                            | 35500  | 57875  | 66354  | 39490  | 65516  | 72335  | 43480  | 73157  |
| 14S-8300-280-OP  | 81         | 45390  | 20727 | 27227 | 97960                            | 60575  | 105889 | 106451 | 66234  | 116737 | -      | -      | -      |
| 14S-8300-300-OP  | 71         | 45353  | 20705 | 27191 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-350-OP  | 52         | 45249  | 20642 | 27090 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-235-OP  | 100        | 71792  | 29579 | 35058 | 64324                            | 32689  | 42353  | 71205  | 37391  | 51138  | 78086  | 42056  | 59923  |
| 18S-9600-280-OP  | 100        | 71707  | 29527 | 34976 | 107564                           | 61851  | 97554  | 117333 | 68376  | 110025 | 127102 | 74891  | 122496 |
| 18S-9600-300-OP  | 94         | 71664  | 29500 | 34935 | 129207                           | 76295  | 125184 | 140422 | 83774  | 139501 | 151636 | 91253  | 153817 |
| 18S-9600-350-OP  | 69         | 71544  | 29427 | 34819 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9800-235-OP  | 100        | 91146  | 37130 | 43510 | 54849                            | 18379  | 18379  | 61730  | 27030  | 27164  | 68612  | 32047  | 35949  |
| 18S-9800-280-OP  | 100        | 91060  | 37078 | 43428 | 98089                            | 52372  | 73580  | 107858 | 58972  | 86051  | 117627 | 65545  | 98522  |
| 18S-9800-300-OP  | 100        | 91017  | 37051 | 43387 | 119733                           | 66958  | 101210 | 130947 | 74477  | 115527 | 142161 | 81976  | 129843 |
| 18S-9800-350-OP  | 74         | 90897  | 36978 | 43271 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-10500-280-OP | 100        | 106286 | 43484 | 51177 | 89635                            | 44288  | 54719  | 99404  | 51018  | 67190  | 109173 | 57676  | 79662  |
| 18S-10500-300-OP | 100        | 106243 | 43457 | 51136 | 111279                           | 59106  | 82350  | 122493 | 66692  | 96666  | 133707 | 74244  | 110982 |
| 18S-10500-350-OP | 77         | 106123 | 43384 | 51020 | 171917                           | 99826  | 159762 | -      | -      | -      | -      | -      | -      |
| 18S-11000-280-OP | 100        | 119233 | 51369 | 63676 | 77071                            | 35435  | 38680  | 86840  | 42344  | 51152  | 96609  | 49099  | 63623  |
| 18S-11000-300-OP | 100        | 119190 | 51343 | 63635 | 98715                            | 50545  | 66311  | 109929 | 58189  | 80627  | 121144 | 65782  | 94943  |
| 18S-11000-350-OP | 81         | 119070 | 51271 | 63519 | 159354                           | 91428  | 143723 | 174618 | 101627 | 163209 | -      | -      | -      |
| 32S-12000-300-OP | 100        | 156381 | 68205 | 84565 | 107957                           | 49037  | 54245  | 121320 | 58330  | 70837  | 134684 | 67440  | 87429  |
| 32S-12000-350-OP | 100        | 156242 | 68119 | 84427 | 180217                           | 97901  | 143961 | 198407 | 109956 | 166544 | 216596 | 121970 | 189128 |
| 32S-15000-300-OP | 100        | 134323 | 52005 | 56887 | 135224                           | 65828  | 81571  | 148588 | 74905  | 98163  | 161951 | 83898  | 114755 |
| 32S-15000-350-OP | 100        | 134184 | 51916 | 56749 | 207484                           | 114210 | 171287 | 225674 | 126241 | 193871 | 243863 | 138254 | 216454 |
| 50S-15400-300-OP | 100        | 169415 | 66500 | 73789 | 138710                           | 61590  | 65653  | 153559 | 72055  | 84088  | 168407 | 82269  | 102523 |
| 50S-15400-350-OP | 100        | 169260 | 66401 | 73636 | 219000                           | 116325 | 165337 | 239210 | 129771 | 190429 | 259420 | 143165 | 215522 |
| 50S-15600-300-OP | 100        | 177222 | 71451 | 81539 | 130920                           | 55894  | 55980  | 145768 | 66607  | 74416  | 160617 | 76931  | 92851  |
| 50S-15600-350-OP | 100        | 177068 | 71354 | 81386 | 211209                           | 111119 | 155665 | 231420 | 124588 | 180757 | 251630 | 138003 | 205850 |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

**Table 49. Models 14S-5100-200-OP to 50S-15600-350-OP at 90 to 100 barg**

| Model            | MOP (barg) | BTO    | RTO   | ETO   | Operating Supply Pressure (barg) |        |        |        |        |        |        |        |        |
|------------------|------------|--------|-------|-------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |            |        |       |       | 90                               |        |        | 95     |        |        | 100    |        |        |
|                  |            |        |       |       | BTC                              | RTC    | ETC    | BTC    | RTC    | ETC    | BTC    | RTC    | ETC    |
| 14S-5100-200-OP  | 100        | 27498  | 13013 | 17698 | 59059                            | 36848  | 65182  | 63392  | 39734  | 70717  | 67724  | 42620  | 76251  |
| 14S-5100-235-OP  | 100        | 27479  | 13002 | 17679 | 88726                            | 56602  | 103079 | 94707  | 60583  | 110719 | 100689 | 64564  | 118360 |
| 14S-5100-280-OP  | 71         | 27404  | 12958 | 17608 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-300-OP  | 62         | 27367  | 12936 | 17572 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5100-350-OP  | 46         | 27263  | 12874 | 17471 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-200-OP  | 100        | 35440  | 16081 | 20993 | 55329                            | 33106  | 55344  | 59662  | 35996  | 60878  | 63994  | 38886  | 66413  |
| 14S-5400-235-OP  | 100        | 35421  | 16070 | 20974 | 84996                            | 52892  | 93240  | 90977  | 56877  | 100881 | 96959  | 60862  | 108522 |
| 14S-5400-280-OP  | 75         | 35346  | 16025 | 20903 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-300-OP  | 66         | 35309  | 16003 | 20867 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-5400-350-OP  | 48         | 35205  | 15941 | 20766 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-200-OP  | 100        | 45484  | 20783 | 27317 | 48650                            | 27669  | 42902  | 52983  | 30567  | 48436  | 57315  | 33460  | 53971  |
| 14S-8300-235-OP  | 100        | 45465  | 20771 | 27298 | 78317                            | 47471  | 80798  | 84299  | 51461  | 88439  | 90280  | 55452  | 96080  |
| 14S-8300-280-OP  | 81         | 45390  | 20727 | 27227 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-300-OP  | 71         | 45353  | 20705 | 27191 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 14S-8300-350-OP  | 52         | 45249  | 20642 | 27090 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-235-OP  | 100        | 71792  | 29579 | 35058 | 84967                            | 46699  | 68707  | 91849  | 51326  | 77492  | 98730  | 55943  | 86277  |
| 18S-9600-280-OP  | 100        | 71707  | 29527 | 34976 | 136871                           | 81406  | 134967 | 146640 | 87921  | 147439 | 156408 | 94436  | 159910 |
| 18S-9600-300-OP  | 94         | 71664  | 29500 | 34935 | 162850                           | 98732  | 168133 | -      | -      | -      | -      | -      | -      |
| 18S-9600-350-OP  | 69         | 71544  | 29427 | 34819 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9800-235-OP  | 100        | 91146  | 37130 | 43510 | 75493                            | 36891  | 44733  | 82374  | 41653  | 53518  | 89255  | 46366  | 62302  |
| 18S-9800-280-OP  | 100        | 91060  | 37078 | 43428 | 127396                           | 72099  | 110993 | 137165 | 78635  | 123464 | 146934 | 85168  | 135936 |
| 18S-9800-300-OP  | 100        | 91017  | 37051 | 43387 | 153376                           | 89464  | 144159 | 164590 | 96943  | 158475 | 175804 | 104421 | 172792 |
| 18S-9800-350-OP  | 74         | 90897  | 36978 | 43271 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-10500-280-OP | 100        | 106286 | 43484 | 51177 | 118942                           | 64293  | 92133  | 128711 | 70880  | 104604 | 138480 | 77446  | 117075 |
| 18S-10500-300-OP | 100        | 106243 | 43457 | 51136 | 144921                           | 81768  | 125298 | 156136 | 89276  | 139615 | 167350 | 96776  | 153931 |
| 18S-10500-350-OP | 77         | 106123 | 43384 | 51020 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-11000-280-OP | 100        | 119233 | 51369 | 63676 | 106378                           | 55777  | 76094  | 116147 | 62403  | 88565  | 125916 | 68998  | 101036 |
| 18S-11000-300-OP | 100        | 119190 | 51343 | 63635 | 132358                           | 73336  | 109260 | 143572 | 80863  | 123576 | 154786 | 88374  | 137892 |
| 18S-11000-350-OP | 81         | 119070 | 51271 | 63519 | -                                | -      | -      | -      | -      | -      | -      | -      | -      |
| 32S-12000-300-OP | 100        | 156381 | 68205 | 84565 | 148047                           | 76441  | 104020 | 161411 | 85384  | 120612 | 174775 | 94283  | 137204 |
| 32S-12000-350-OP | 100        | 156242 | 68119 | 84427 | 234785                           | 133966 | 211711 | 252974 | 145944 | 234294 | 271164 | 157909 | 256877 |
| 32S-15000-300-OP | 100        | 134323 | 52005 | 56887 | 175315                           | 92836  | 131347 | 188678 | 101734 | 147938 | 202042 | 110603 | 164530 |
| 32S-15000-350-OP | 100        | 134184 | 51916 | 56749 | 262052                           | 150233 | 239037 | 280242 | 162212 | 261620 | 298431 | 174167 | 284203 |
| 50S-15400-300-OP | 100        | 169415 | 66500 | 73789 | 183255                           | 92350  | 120958 | 198104 | 102345 | 139394 | 212952 | 112284 | 157829 |
| 50S-15400-350-OP | 100        | 169260 | 66401 | 73636 | 279631                           | 156528 | 240614 | 299841 | 169876 | 265707 | 320051 | 183187 | 290799 |
| 50S-15600-300-OP | 100        | 177222 | 71451 | 81539 | 175465                           | 87073  | 111286 | 190314 | 97114  | 129721 | 205162 | 107078 | 148157 |
| 50S-15600-350-OP | 100        | 177068 | 71354 | 81386 | 271840                           | 151382 | 230942 | 292051 | 164731 | 256034 | 312261 | 178057 | 281127 |

**NOTES:**

Model 80S available on request.

- MOP: Maximum Operating Pressure
- BTC: Break to Close
- RTC: Run to Close
- ETC: End to Close
- BTO: Break to Open
- RTO: Run to Open
- ETO: End to Open

# OLGA Double-Acting Hydraulic Actuator Overall Dimensions

Figure 3. Double-Acting Hydraulic Assembly Drawing

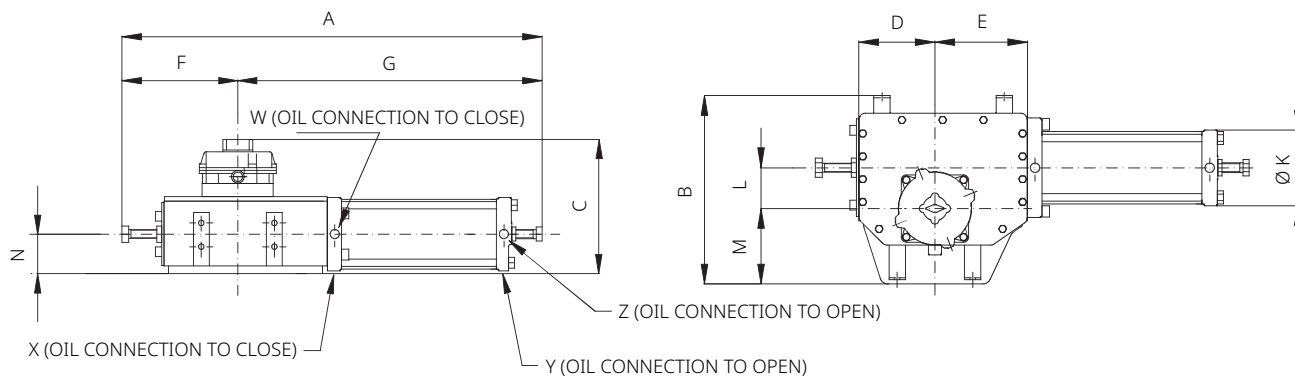


Table 50. Double-Acting Hydraulic Actuator Dimensions (mm)

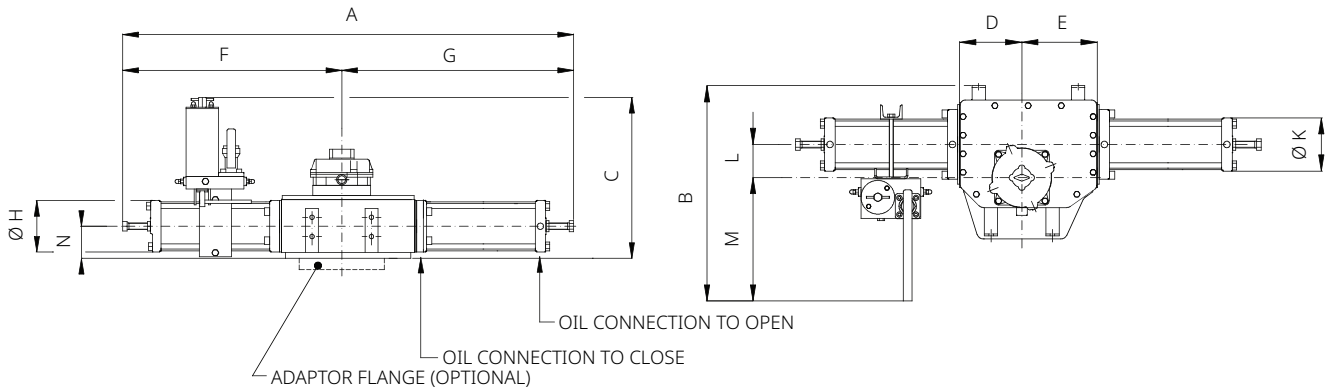
| Model   | A    | B    | C   | D   | E   | F   | G    | ØK  | L   | M   | N   | Connection to Close (in.)* [X-Y] | Connection to Open (in.)* [W-Z] | Weight (kg) | Oil Consumption (liters) |
|---------|------|------|-----|-----|-----|-----|------|-----|-----|-----|-----|----------------------------------|---------------------------------|-------------|--------------------------|
| 0.3-45  | 723  | 319  | 132 | 135 | 150 | 136 | 587  | 75  | 70  | 119 | 70  | 1/2                              | 1/2                             | 38          | 0.4                      |
| 0.3-75  | 756  | 319  | 279 | 136 | 151 | 222 | 534  | 116 | 70  | 119 | 70  | 1/2                              | 1/2                             | 44          | 0.8                      |
| 0.3-100 | 803  | 319  | 279 | 136 | 151 | 222 | 625  | 125 | 70  | 119 | 70  | 1/2                              | 1/2                             | 48          | 1.4                      |
| 0.9-100 | 870  | 413  | 303 | 160 | 190 | 245 | 625  | 160 | 80  | 170 | 83  | 1/2                              | 1/2                             | 60          | 1.6                      |
| 0.9-135 | 921  | 413  | 303 | 160 | 190 | 245 | 676  | 160 | 80  | 170 | 83  | 1/2                              | 1/2                             | 79          | 2.8                      |
| 1.5-135 | 1011 | 469  | 343 | 187 | 227 | 293 | 718  | 160 | 100 | 185 | 100 | 1/2                              | 1/2                             | 116         | 3.5                      |
| 1.5-175 | 1056 | 469  | 343 | 187 | 227 | 293 | 763  | 196 | 100 | 185 | 100 | 1/2                              | 1/2                             | 135         | 5.6                      |
| 3-135   | 1451 | 586  | 351 | 285 | 330 | 391 | 1060 | 160 | 160 | 215 | 106 | 1/2                              | 1/2                             | 190         | 9.5                      |
| 3-175   | 1532 | 586  | 351 | 285 | 330 | 391 | 1141 | 196 | 160 | 215 | 106 | 1/2                              | 1/2                             | 220         | 11.0                     |
| 6-175   | 1625 | 740  | 414 | 327 | 379 | 430 | 1195 | 196 | 185 | 260 | 140 | 1/2                              | 1/2                             | 360         | 9.5                      |
| 6-200   | 1705 | 740  | 414 | 327 | 379 | 430 | 1275 | 230 | 185 | 260 | 140 | 3/4                              | 3/4                             | 398         | 14.0                     |
| 14-200  | 1826 | 873  | 527 | 376 | 435 | 496 | 1330 | 230 | 200 | 330 | 193 | 3/4                              | 3/4                             | 600         | 15.0                     |
| 14-235  | 1806 | 873  | 527 | 376 | 435 | 496 | 1310 | 340 | 200 | 330 | 193 | 3/4                              | 3/4                             | 650         | 21.0                     |
| 14-280  | 1842 | 873  | 527 | 376 | 435 | 496 | 1346 | 350 | 200 | 330 | 193 | 3/4                              | 3/4                             | 700         | 30.0                     |
| 14-300  | 1800 | 873  | 384 | 376 | 435 | 376 | 1424 | 392 | 200 | 330 | 193 | 3/4                              | 3/4                             | 750         | 35.0                     |
| 14-350  | 1870 | 873  | 460 | 376 | 435 | 376 | 1495 | 480 | 200 | 330 | 193 | 3/4                              | 3/4                             | 780         | 48.0                     |
| 18-235  | 1972 | 880  | 511 | 424 | 492 | 548 | 1424 | 340 | 230 | 330 | 196 | 3/4                              | 3/4                             | 800         | 25.0                     |
| 18-280  | 1953 | 880  | 511 | 424 | 492 | 548 | 1405 | 350 | 230 | 330 | 196 | 3/4                              | 3/4                             | 850         | 35.0                     |
| 18-300  | 1906 | 955  | 387 | 421 | 492 | 425 | 1481 | 392 | 230 | 355 | 193 | 3/4                              | 3/4                             | 845         | 40.0                     |
| 18-350  | 1979 | 955  | 460 | 421 | 492 | 425 | 1553 | 480 | 230 | 355 | 193 | 3/4                              | 3/4                             | 875         | 55.0                     |
| 32-235  | 2263 | 1055 | 584 | 505 | 585 | 643 | 1620 | 340 | 270 | 395 | 232 | 3/4                              | 3/4                             | 1350        | 29.0                     |
| 32-280  | 2263 | 1055 | 584 | 505 | 585 | 643 | 1620 | 350 | 270 | 395 | 232 | 3/4                              | 3/4                             | 1380        | 41.0                     |
| 32-300  | 2186 | 1055 | 457 | 505 | 585 | 505 | 1681 | 392 | 270 | 395 | 232 | 3/4                              | 3/4                             | 1187        | 65.0                     |
| 32-350  | 2241 | 1055 | 462 | 505 | 585 | 505 | 1736 | 480 | 270 | 395 | 232 | 3/4                              | 3/4                             | 1545        | 65.0                     |
| 50-235  | 2460 | 1092 | 584 | 548 | 633 | 700 | 1760 | 340 | 300 | 387 | 232 | 3/4                              | 3/4                             | 1500        | 32.0                     |
| 50-280  | 2460 | 1092 | 584 | 548 | 633 | 700 | 1760 | 350 | 300 | 387 | 232 | 3/4                              | 3/4                             | 1540        | 45.0                     |
| 50-300  | 2500 | 1092 | 584 | 548 | 633 | 700 | 1800 | 392 | 300 | 387 | 232 | 3/4                              | 3/4                             | 1580        | 52.0                     |
| 50-350  | 2481 | 1092 | 463 | 548 | 633 | 548 | 1933 | 480 | 300 | 387 | 232 | 3/4                              | 3/4                             | 1610        | 72.0                     |
| 80-300  | 2790 | 1350 | 591 | 663 | 761 | 663 | 2127 | 392 | 350 | 450 | 302 | 3/4                              | 3/4                             | 2890        | 61.0                     |
| 80-350  | 2854 | 1350 | 591 | 663 | 761 | 663 | 2191 | 480 | 350 | 450 | 302 | 3/4                              | 3/4                             | 2910        | 83.0                     |

**NOTE:**

\* Oil connection NPT (in.)

## MHP Hydraulic Manual Override

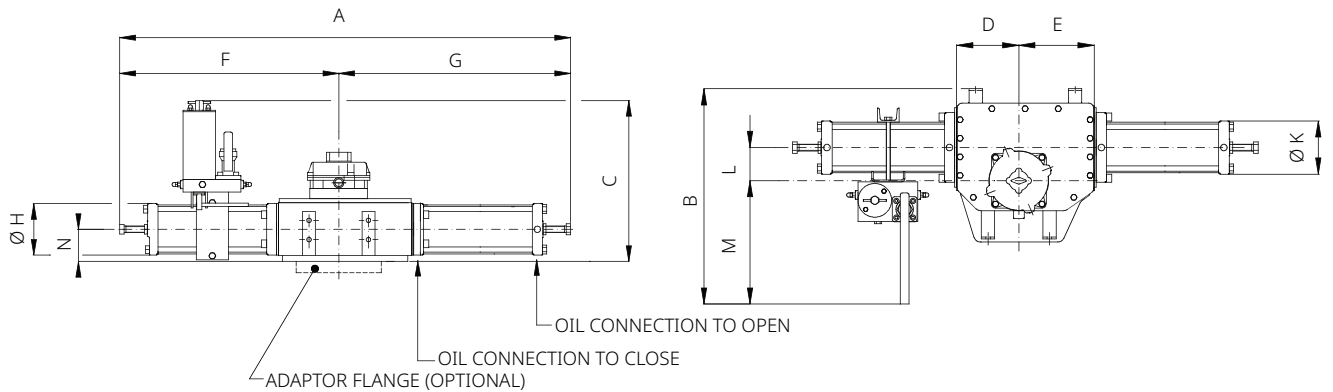
**Figure 4. Overall Dimensions**



**Table 51. Models 0.3-45-MHP45 to 14-350-MHP350 Dimensions (mm)**

| Model          | A    | B    | C    | D   | E   | F    | G    | ØH  | ØK  | L   | M   | N   | Oil Connections<br>NPT (in.) | Weight<br>(kg) | Oil Consumption<br>(liters) | Hand Pump<br>Operation<br>Per Stroke | Oil<br>Displacement<br>(liters) |
|----------------|------|------|------|-----|-----|------|------|-----|-----|-----|-----|-----|------------------------------|----------------|-----------------------------|--------------------------------------|---------------------------------|
| 0.3-45-MHP45   | 1159 | 630  | 534  | 135 | 150 | 572  | 587  | 75  | 64  | 62  | 438 | 70  | 1/4                          | 100            | 0.3                         | 9                                    | 0.2                             |
| 0.3-75-MHP75   | 1127 | 630  | 639  | 135 | 150 | 556  | 571  | 100 | 100 | 70  | 438 | 70  | 1/2                          | 66             | 0.8                         | 25                                   | 0.6                             |
| 0.3-100-MHP75  | 1195 | 653  | 621  | 135 | 150 | 590  | 605  | 125 | 125 | 85  | 438 | 76  | 1/2                          | 74             | 1.4                         | 25                                   | 0.6                             |
| 0.3-100-MHP100 | 1195 | 653  | 633  | 135 | 150 | 590  | 605  | 125 | 125 | 70  | 453 | 70  | 1/2                          | 86             | 1.4                         | 45                                   | 1.1                             |
| 0.9-100-MHP100 | 1220 | 617  | 484  | 160 | 190 | 595  | 625  | 125 | 125 | 80  | 374 | 82  | 1/2                          | 87             | 1.6                         | 51                                   | 1.3                             |
| 0.9-135-MHP100 | 1318 | 686  | 634  | 160 | 190 | 614  | 704  | 125 | 125 | 85  | 438 | 82  | 1/2                          | 106            | 2.9                         | 51                                   | 1.3                             |
| 0.9-135-MHP135 | 1377 | 704  | 634  | 160 | 190 | 674  | 704  | 160 | 160 | 103 | 438 | 82  | 1/2                          | 125            | 2.9                         | 93                                   | 2.4                             |
| 1.5-135-MHP135 | 1441 | 725  | 651  | 187 | 227 | 701  | 741  | 160 | 160 | 103 | 438 | 100 | 1/2                          | 166            | 3.6                         | 117                                  | 3.0                             |
| 1.5-175-MHP135 | 1527 | 725  | 651  | 187 | 227 | 701  | 827  | 160 | 160 | 103 | 438 | 100 | 1/2                          | 185            | 6.1                         | 117                                  | 3.0                             |
| 1.5-175-MHP175 | 1613 | 749  | 674  | 187 | 227 | 787  | 827  | 196 | 196 | 127 | 438 | 100 | 1/2                          | 204            | 6.1                         | 196                                  | 5.0                             |
| 3-135-MHP135   | 2056 | 541  | 669  | 330 | 285 | 1006 | 1051 | 160 | 160 | 80  | 438 | 106 | 1/2                          | 249            | 5.8                         | 187                                  | 4.8                             |
| 3-175-MHP135   | 2087 | 683  | 507  | 285 | 330 | 987  | 1100 | 160 | 196 | 160 | 312 | 106 | 1/2                          | 278            | 9.7                         | 187                                  | 4.8                             |
| 3-175-MHP175   | 2284 | 811  | 843  | 285 | 330 | 1120 | 1165 | 196 | 196 | 128 | 478 | 106 | 1/2                          | 307            | 9.7                         | 314                                  | 8.0                             |
| 6-175-MHP175   | 2375 | 900  | 877  | 327 | 379 | 1162 | 1214 | 96  | 196 | 128 | 478 | 140 | 1/2                          | 462            | 11.2                        | 363                                  | 9.3                             |
| 6-200-MHP175   | 2467 | 900  | 877  | 327 | 415 | 1162 | 1306 | 196 | 230 | 128 | 478 | 140 | 3/4                          | 500            | 14.6                        | 363                                  | 9.3                             |
| 6-200-MHP200   | 2559 | 913  | 890  | 327 | 379 | 1254 | 1306 | 230 | 230 | 140 | 478 | 140 | 3/4                          | 540            | 14.6                        | 474                                  | 12.1                            |
| 14-200-MHP200  | 2664 | 961  | 943  | 376 | 435 | 1303 | 1362 | 230 | 230 | 140 | 478 | 193 | 3/4                          | 750            | 15.8                        | 513                                  | 13.1                            |
| 14-235-MHP200  | 2663 | 961  | 943  | 376 | 435 | 1303 | 1361 | 230 | 338 | 140 | 478 | 193 | 3/4                          | 765            | 21.9                        | 513                                  | 13.1                            |
| 14-235-MHP235  | 2662 | 998  | 980  | 376 | 435 | 1302 | 1361 | 339 | 339 | 177 | 478 | 193 | 3/4                          | 785            | 21.9                        | 708                                  | 18.1                            |
| 14-280-MHP200  | 2715 | 961  | 943  | 376 | 435 | 1303 | 1412 | 230 | 360 | 140 | 478 | 193 | 3/4                          | 790            | 31.0                        | 513                                  | 13.1                            |
| 14-280-MHP235  | 2714 | 998  | 980  | 376 | 435 | 1302 | 1412 | 340 | 360 | 177 | 478 | 193 | 3/4                          | 805            | 31.0                        | 708                                  | 18.1                            |
| 14-280-MHP280  | 2765 | 1024 | 1010 | 376 | 435 | 1353 | 1412 | 360 | 360 | 203 | 478 | 193 | 3/4                          | 820            | 31.0                        | 1005                                 | 25.7                            |
| 14-300-MHP200  | 2719 | 960  | 879  | 376 | 435 | 1296 | 1423 | 230 | 392 | 200 | 417 | 193 | 3/4                          | 1039           | 35.6                        | 513                                  | 13.1                            |
| 14-300-MHP235  | 2722 | 993  | 982  | 376 | 435 | 1299 | 1423 | 230 | 392 | 200 | 450 | 193 | 3/4                          | 987            | 35.6                        | 708                                  | 18.1                            |
| 14-300-MHP280  | 2776 | 1013 | 1010 | 376 | 435 | 1353 | 1423 | 360 | 392 | 200 | 470 | 193 | 3/4                          | 1242           | 35.6                        | 1005                                 | 25.7                            |
| 14-300-MHP300  | 2791 | 1028 | 1016 | 376 | 435 | 1366 | 1425 | 392 | 392 | 207 | 478 | 193 | 3/4                          | 1037           | 35.6                        | 1154                                 | 29.5                            |
| 14-350-MHP235  | 2657 | 993  | 982  | 376 | 435 | 1299 | 1358 | 340 | 340 | 200 | 450 | 193 | 3/4                          | 1282           | 48.5                        | 708                                  | 18.1                            |
| 14-350-MHP280  | 2814 | 1024 | 1010 | 376 | 435 | 1353 | 1461 | 360 | 480 | 203 | 478 | 193 | 3/4                          | 1115           | 48.5                        | 1005                                 | 25.7                            |
| 14-350-MHP300  | 2960 | 1084 | 1016 | 374 | 435 | 1364 | 1595 | 392 | 480 | 203 | 540 | 193 | 3/4                          | 1332           | 48.5                        | 1154                                 | 29.5                            |
| 14-350-MHP350  | 2863 | 1070 | 1010 | 376 | 435 | 1402 | 1461 | 480 | 480 | 250 | 478 | 193 | 3/4                          | 1410           | 48.5                        | 1571                                 | 40.2                            |

**Figure 5. Overall Dimensions**



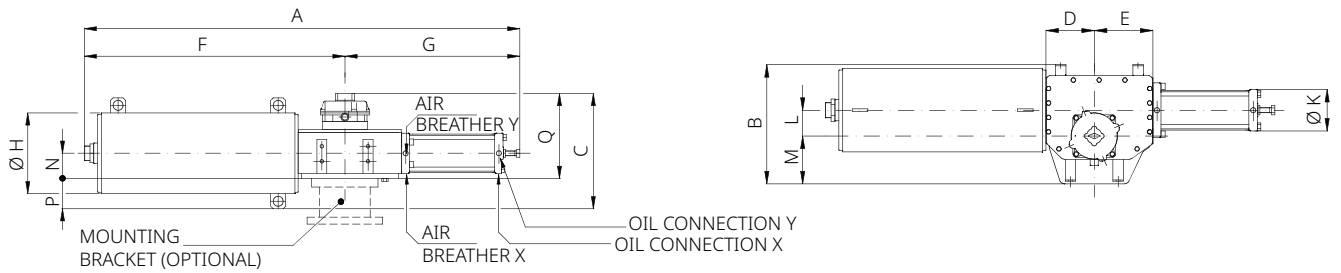
**Table 52. Models 18-235-MHP235 to 80-350-MHP350 Dimensions (mm)**

| Model         | A    | B    | C    | D   | E   | F    | G    | Ø H | Ø K | L   | M   | N   | Oil Connections NPT (in.) | Weight (kg) | Oil Consumption (liters) | Hand Pump Operation Per Stroke | Oil Displacement (liters) |
|---------------|------|------|------|-----|-----|------|------|-----|-----|-----|-----|-----|---------------------------|-------------|--------------------------|--------------------------------|---------------------------|
| 18-235-MHP235 | 2898 | 1025 | 980  | 425 | 493 | 1415 | 1483 | 339 | 339 | 177 | 478 | 193 | 3/4                       | 880         | 25.1                     | 814                            | 20.8                      |
| 18-280-MHP235 | 2885 | 1025 | 980  | 425 | 493 | 1415 | 1470 | 339 | 339 | 177 | 478 | 193 | 3/4                       | 895         | 35.7                     | 814                            | 20.8                      |
| 18-280-MHP280 | 2872 | 1051 | 1010 | 425 | 493 | 1402 | 1470 | 360 | 360 | 203 | 478 | 193 | 3/4                       | 910         | 35.7                     | 1156                           | 29.6                      |
| 18-300-MHP235 | 2890 | 1020 | 982  | 425 | 493 | 1409 | 1481 | 340 | 392 | 230 | 420 | 193 | 3/4                       | 1253        | 41.0                     | 814                            | 20.8                      |
| 18-300-MHP280 | 2883 | 1059 | 1010 | 425 | 493 | 1402 | 1481 | 360 | 392 | 210 | 460 | 193 | 3/4                       | 1395        | 41.0                     | 1156                           | 29.6                      |
| 18-300-MHP300 | 2894 | 1055 | 1017 | 425 | 493 | 1413 | 1481 | 392 | 392 | 203 | 478 | 193 | 3/4                       | 1500        | 41.0                     | 1327                           | 34.0                      |
| 18-350-MHP235 | 2901 | 993  | 982  | 425 | 493 | 1348 | 1553 | 340 | 480 | 230 | 420 | 193 | 3/4                       | 1548        | 55.8                     | 814                            | 20.8                      |
| 18-350-MHP280 | 2921 | 1051 | 1010 | 425 | 493 | 1402 | 1519 | 360 | 480 | 425 | 493 | 193 | 3/4                       | 1585        | 55.8                     | 1156                           | 29.6                      |
| 18-350-MHP300 | 3066 | 1110 | 1016 | 425 | 493 | 1413 | 1656 | 392 | 480 | 230 | 511 | 193 | 3/4                       | 1690        | 55.8                     | 1327                           | 34.0                      |
| 18-350-MHP350 | 2970 | 1097 | 1010 | 425 | 493 | 1451 | 1519 | 480 | 480 | 250 | 478 | 193 | 3/4                       | 1880        | 55.8                     | 1807                           | 46.2                      |
| 32-235-MHP235 | 3222 | 1045 | 1019 | 505 | 585 | 1571 | 1651 | 340 | 340 | 177 | 478 | 232 | 3/4                       | 1540        | 29.5                     | 956                            | 24.5                      |
| 32-280-MHP235 | 3226 | 1045 | 1019 | 505 | 585 | 1571 | 1655 | 340 | 360 | 507 | 587 | 232 | 3/4                       | 1570        | 41.9                     | 956                            | 24.5                      |
| 32-280-MHP280 | 3230 | 1071 | 1049 | 505 | 585 | 1575 | 1655 | 360 | 360 | 204 | 478 | 232 | 3/4                       | 1620        | 41.9                     | 1357                           | 34.7                      |
| 32-300-MHP235 | 3170 | 1040 | 1022 | 505 | 585 | 1489 | 1681 | 340 | 392 | 270 | 380 | 232 | 3/4                       | 1675        | 48.1                     | 956                            | 24.5                      |
| 32-300-MHP280 | 3263 | 1056 | 1049 | 505 | 585 | 1582 | 1681 | 360 | 392 | 270 | 340 | 232 | 3/4                       | 1785        | 48.1                     | 1357                           | 34.7                      |
| 32-300-MHP300 | 3282 | 1130 | 1056 | 505 | 585 | 1601 | 1681 | 392 | 392 | 270 | 470 | 232 | 3/4                       | 1785        | 48.1                     | 1558                           | 39.9                      |
| 32-350-MHP235 | 3307 | 1090 | 1029 | 505 | 585 | 1571 | 1736 | 340 | 480 | 270 | 380 | 239 | 3/4                       | 1957        | 65.5                     | 956                            | 24.5                      |
| 32-350-MHP280 | 3318 | 1066 | 977  | 505 | 585 | 1582 | 1736 | 360 | 480 | 270 | 356 | 239 | 3/4                       | 2005        | 65.5                     | 1357                           | 34.7                      |
| 32-350-MHP300 | 3337 | 1140 | 1063 | 505 | 585 | 1601 | 1736 | 392 | 480 | 270 | 430 | 239 | 3/4                       | 2095        | 65.5                     | 1558                           | 39.9                      |
| 32-350-MHP350 | 3393 | 1153 | 1095 | 505 | 585 | 1657 | 1737 | 480 | 480 | 235 | 478 | 236 | 3/4                       | 2315        | 65.5                     | 2121                           | 54.3                      |
| 50-235-MHP235 | 3435 | 1040 | 851  | 548 | 633 | 1675 | 1760 | 340 | 340 | 300 | 335 | 233 | 3/4                       | 1700        | 32.8                     | 1062                           | 27.2                      |
| 50-280-MHP235 | 3435 | 1040 | 851  | 548 | 633 | 1675 | 1760 | 340 | 350 | 300 | 335 | 233 | 3/4                       | 1740        | 46.6                     | 1062                           | 27.2                      |
| 50-280-MHP280 | 3500 | 1082 | 1295 | 551 | 636 | 1708 | 1793 | 360 | 360 | 300 | 378 | 233 | 3/4                       | 1780        | 46.6                     | 1508                           | 38.6                      |
| 50-300-MHP235 | 3475 | 1040 | 851  | 548 | 633 | 1675 | 1800 | 340 | 392 | 300 | 355 | 233 | 1                         | 1780        | 53.4                     | 1062                           | 27.2                      |
| 50-300-MHP280 | 3475 | 1062 | 876  | 548 | 633 | 1675 | 1800 | 350 | 392 | 300 | 357 | 233 | 1                         | 1820        | 53.4                     | 1508                           | 38.6                      |
| 50-300-MHP300 | 3509 | 1090 | 1054 | 551 | 636 | 1712 | 1797 | 392 | 392 | 207 | 478 | 233 | 3/4                       | 1890        | 53.4                     | 1731                           | 44.3                      |
| 50-350-MHP235 | 3655 | 1055 | 1011 | 551 | 636 | 1722 | 1933 | 340 | 480 | 300 | 350 | 233 | 3/4                       | 2110        | 72.7                     | 1062                           | 27.2                      |
| 50-350-MHP280 | 3641 | 1031 | 1022 | 551 | 636 | 1708 | 1933 | 360 | 480 | 300 | 326 | 233 | 3/4                       | 2170        | 72.7                     | 1508                           | 38.6                      |
| 50-350-MHP300 | 3643 | 1105 | 1056 | 551 | 636 | 1710 | 1933 | 392 | 480 | 300 | 400 | 233 | 3/4                       | 2260        | 72.7                     | 1731                           | 44.3                      |
| 50-350-MHP350 | 3782 | 1181 | 1338 | 551 | 636 | 1848 | 1933 | 480 | 480 | 300 | 478 | 233 | 3/4                       | 2480        | 72.7                     | 2356                           | 60.3                      |
| 80-300-MHP300 | 4156 | 1294 | 1407 | 663 | 761 | 2029 | 2127 | 392 | 392 | 350 | 394 | 302 | 3/4                       | 3180        | 62.3                     | 2020                           | 51.7                      |
| 80-350-MHP300 | 4220 | 1250 | 1127 | 663 | 761 | 2029 | 2191 | 392 | 480 | 350 | 350 | 302 | 3/4                       | 3460        | 84.9                     | 2020                           | 51.7                      |
| 80-350-MHP350 | 4294 | 1263 | 1401 | 663 | 761 | 2098 | 2196 | 480 | 480 | 236 | 478 | 302 | 3/4                       | 3740        | 84.9                     | 2749                           | 70.4                      |

# OLGAS Spring-Return Hydraulic Actuator

## Spring to Close

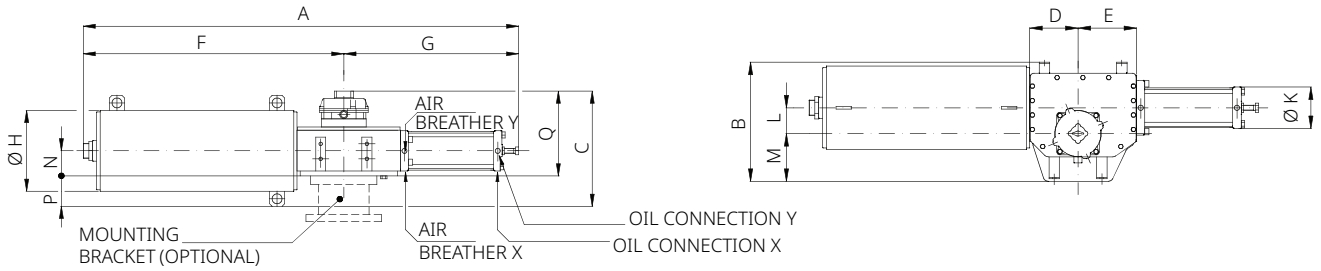
**Figure 6. Overall Dimensions**



**Table 53. Models 0.3-008A-45-CL to 6-3800-200-CL Dimensions (mm)**

| Model           | A    | B   | C   | D   | E   | F    | G    | Ø H | Ø K | L   | M   | N   | P   | Q   | Oil Connections<br>NPT (in.) |     | Weight<br>(kg) | Oil<br>Consumption<br>(liters) |
|-----------------|------|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|------------------------------|-----|----------------|--------------------------------|
|                 |      |     |     |     |     |      |      |     |     |     |     |     |     |     | X                            | Y   |                |                                |
| 0.3-008A-45-CL  | 1301 | 262 | 192 | 136 | 151 | 714  | 587  | 147 | 75  | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.35                           |
| 0.3-008A-75-CL  | 1286 | 319 | 200 | 136 | 151 | 714  | 571  | 147 | 116 | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.80                           |
| 0.3-008B-45-CL  | 1301 | 262 | 192 | 136 | 151 | 714  | 587  | 147 | 75  | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.35                           |
| 0.3-008B-75-CL  | 1286 | 319 | 200 | 136 | 151 | 714  | 571  | 147 | 116 | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.80                           |
| 0.3-008C-45-CL  | 1301 | 262 | 192 | 136 | 151 | 714  | 587  | 147 | 75  | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.35                           |
| 0.3-008C-75-CL  | 1286 | 319 | 200 | 136 | 151 | 714  | 571  | 147 | 116 | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.80                           |
| 0.3-0100-45-CL  | 1402 | 300 | 293 | 136 | 151 | 815  | 587  | 223 | 75  | 70  | 119 | 70  | 42  | 251 | 1/2                          | -   | 75             | 0.35                           |
| 0.3-0100-75-CL  | 1386 | 319 | 293 | 136 | 151 | 815  | 571  | 223 | 116 | 70  | 119 | 70  | 42  | 251 | 1/2                          | -   | 80             | 0.80                           |
| 0.3-0100-100-CL | 1419 | 319 | 293 | 136 | 151 | 815  | 605  | 233 | 125 | 70  | 119 | 70  | 42  | 251 | 1/2                          | -   | 84             | 1.40                           |
| 0.3-0150-45-CL  | 1350 | 300 | 283 | 136 | 151 | 763  | 587  | 223 | 75  | 70  | 119 | 70  | 42  | 241 | 1/2                          | -   | 75             | 0.35                           |
| 0.3-0150-75-CL  | 1334 | 319 | 283 | 136 | 151 | 763  | 571  | 223 | 100 | 70  | 119 | 70  | 42  | 151 | 1/2                          | -   | 80             | 0.80                           |
| 0.3-0150-100-CL | 1368 | 319 | 283 | 136 | 151 | 763  | 605  | 223 | 125 | 70  | 119 | 70  | 42  | 151 | 1/2                          | -   | 84             | 1.40                           |
| 0.9-0200-100-CL | 1501 | 413 | 300 | 160 | 190 | 857  | 644  | 240 | 125 | 80  | 170 | 82  | 37  | 175 | 1/2                          | -   | 147            | 1.60                           |
| 0.9-0200-135-CL | 1561 | 413 | 300 | 160 | 190 | 857  | 704  | 240 | 160 | 80  | 170 | 82  | 37  | 175 | 1/2                          | -   | 166            | 2.80                           |
| 0.9-0250-100-CL | 1430 | 413 | 300 | 160 | 190 | 786  | 644  | 240 | 125 | 80  | 170 | 82  | 37  | 262 | 1/2                          | -   | 147            | 1.60                           |
| 0.9-0250-135-CL | 1489 | 413 | 300 | 160 | 190 | 786  | 703  | 240 | 160 | 80  | 170 | 82  | 37  | 262 | 1/2                          | -   | 166            | 2.80                           |
| 0.9-0350-100-CL | 1554 | 413 | 370 | 160 | 190 | 910  | 644  | 310 | 125 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 181            | 1.60                           |
| 0.9-0350-135-CL | 1614 | 413 | 370 | 160 | 190 | 910  | 704  | 310 | 160 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 200            | 2.80                           |
| 0.9-0400-100-CL | 1488 | 413 | 370 | 160 | 190 | 844  | 644  | 310 | 125 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 176            | 1.60                           |
| 0.9-0400-135-CL | 1548 | 413 | 370 | 160 | 190 | 844  | 704  | 310 | 160 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 195            | 2.80                           |
| 0.9-0700-100-CL | 1515 | 413 | 370 | 160 | 190 | 871  | 644  | 310 | 125 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 198            | 1.60                           |
| 0.9-0700-135-CL | 1575 | 413 | 370 | 160 | 190 | 871  | 704  | 310 | 160 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 217            | 2.80                           |
| 1.5-1100-135-CL | 1749 | 470 | 458 | 187 | 227 | 1008 | 741  | 370 | 160 | 100 | 185 | 100 | 85  | 215 | 1/2                          | -   | 349            | 3.50                           |
| 1.5-1100-175-CL | 1835 | 470 | 440 | 187 | 227 | 1008 | 827  | 370 | 196 | 100 | 185 | 100 | 85  | 215 | 1/2                          | -   | 368            | 5.60                           |
| 1.5-1200-135-CL | 1818 | 469 | 384 | 187 | 227 | 1077 | 741  | 324 | 160 | 100 | 185 | 100 | 62  | 215 | 1/2                          | -   | 322            | 3.50                           |
| 1.5-1200-175-CL | 1904 | 469 | 384 | 187 | 227 | 1077 | 827  | 324 | 196 | 100 | 185 | 100 | 62  | 215 | 1/2                          | -   | 341            | 5.60                           |
| 3-2000-135-CL   | 2444 | 586 | 466 | 285 | 330 | 1393 | 1051 | 406 | 160 | 160 | 215 | 106 | 98  | 222 | 1/2                          | -   | 617            | 3.60                           |
| 3-2000-175-CL   | 2558 | 586 | 466 | 285 | 330 | 1393 | 1165 | 406 | 196 | 160 | 215 | 106 | 98  | 222 | 1/2                          | -   | 646            | 9.50                           |
| 6-2500-175-CL   | 3120 | 740 | 443 | 327 | 379 | 1906 | 1214 | 383 | 196 | 185 | 260 | 140 | 52  | 285 | 1/2                          | -   | 831            | 11                             |
| 6-2500-200-CL   | 3212 | 740 | 443 | 327 | 379 | 1906 | 1306 | 383 | 230 | 185 | 260 | 140 | 52  | 285 | 3/4                          | -   | 884            | 14                             |
| 6-3800-175-CL   | 3350 | 740 | 600 | 327 | 379 | 2136 | 1214 | 530 | 196 | 185 | 260 | 140 | 125 | 285 | 1/2                          | -   | 1344           | 11                             |
| 6-3800-200-CL   | 3442 | 740 | 600 | 327 | 379 | 2136 | 1306 | 530 | 230 | 185 | 260 | 140 | 125 | 285 | -                            | 3/4 | 1397           | 14                             |

**Figure 7. Overall Dimensions**

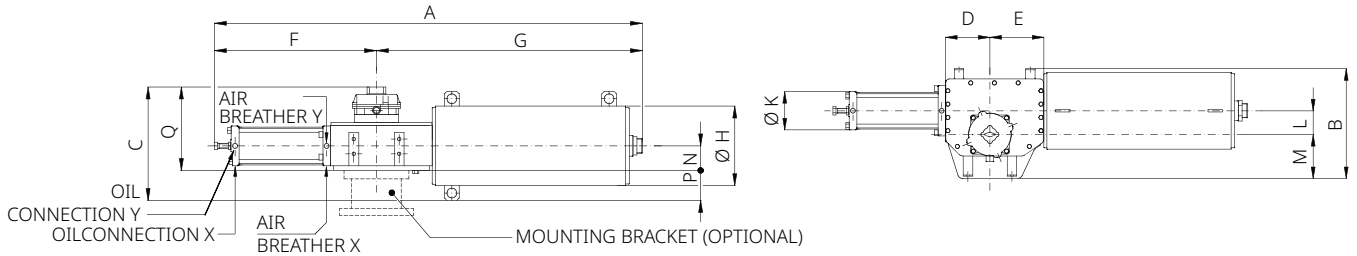


**Table 54. Models 14-5100-200-CL to 50-15600-350-CL Dimensions (mm)**

| Model           | A    | B    | C   | D   | E   | F    | G    | ØH  | ØK  | L   | M   | N   | P   | Q   | Oil Connections<br>NPT (in.) |     | Weight<br>(kg) | Oil<br>Consumption<br>(liters) |
|-----------------|------|------|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|------------------------------|-----|----------------|--------------------------------|
|                 |      |      |     |     |     |      |      |     |     |     |     |     |     |     | X                            | Y   |                |                                |
| 14-5100-200-CL  | 3453 | 838  | 600 | 376 | 435 | 2092 | 1361 | 530 | 230 | 200 | 295 | 193 | 72  | 528 | -                            | 3/4 | 1952           | 15                             |
| 14-5100-235-CL  | 3452 | 838  | 600 | 376 | 435 | 2092 | 1360 | 530 | 339 | 200 | 295 | 193 | 72  | 528 | -                            | 3/4 | 2012           | 21                             |
| 14-5100-280-CL  | 3504 | 838  | 600 | 376 | 435 | 2092 | 1412 | 530 | 360 | 200 | 295 | 193 | 72  | 528 | -                            | 3/4 | 2062           | 30                             |
| 14-5100-300-CL  | 3515 | 795  | 600 | 376 | 435 | 2092 | 1423 | 530 | 392 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2100           | 35                             |
| 14-5100-350-CL  | 3739 | 795  | 600 | 376 | 435 | 2144 | 1595 | 530 | 480 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2062           | 48                             |
| 14-5400-200-CL  | 3402 | 838  | 600 | 376 | 435 | 2040 | 1362 | 530 | 230 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2000           | 15                             |
| 14-5400-235-CL  | 3401 | 838  | 600 | 376 | 435 | 2040 | 1361 | 530 | 340 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2060           | 21                             |
| 14-5400-280-CL  | 3452 | 838  | 600 | 376 | 435 | 2040 | 1412 | 530 | 360 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2110           | 30                             |
| 14-5400-300-CL  | 3463 | 795  | 600 | 376 | 435 | 2040 | 1423 | 530 | 392 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2158           | 35                             |
| 14-5400-350-CL  | 3635 | 795  | 600 | 376 | 435 | 2040 | 1595 | 530 | 480 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2405           | 48                             |
| 14-8300-200-CL  | 3465 | 838  | 600 | 376 | 435 | 2103 | 1362 | 530 | 230 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2050           | 15                             |
| 14-8300-235-CL  | 3464 | 838  | 600 | 376 | 435 | 2103 | 1361 | 530 | 340 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2110           | 21                             |
| 14-8300-280-CL  | 3515 | 838  | 600 | 376 | 435 | 2103 | 1412 | 530 | 360 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2160           | 30                             |
| 14-8300-300-CL  | 3526 | 795  | 600 | 376 | 435 | 2103 | 1423 | 530 | 392 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2112           | 35                             |
| 14-8300-350-CL  | 3698 | 795  | 600 | 376 | 435 | 2013 | 1595 | 530 | 480 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2455           | 48                             |
| 18-9600-235-CL  | 4178 | 940  | 739 | 425 | 493 | 2695 | 1483 | 559 | 340 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 2610           | 25                             |
| 18-9600-280-CL  | 4165 | 940  | 739 | 425 | 493 | 2695 | 1470 | 559 | 360 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 2650           | 35                             |
| 18-9600-300-CL  | 4176 | 1878 | 648 | 425 | 493 | 2695 | 1481 | 559 | 392 | 230 | 340 | 193 | 86  | 562 | -                            | 3/4 | 2690           | 40                             |
| 18-9600-350-CL  | 4338 | 864  | 648 | 425 | 493 | 2685 | 1653 | 559 | 480 | 230 | 340 | 193 | 86  | 562 | -                            | 3/4 | 2945           | 55                             |
| 18-9800-235-CL  | 4168 | 940  | 738 | 425 | 493 | 2685 | 1483 | 559 | 340 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 2960           | 25                             |
| 18-9800-280-CL  | 4155 | 940  | 738 | 425 | 493 | 2685 | 1470 | 559 | 360 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 3000           | 35                             |
| 18-9800-300-CL  | 4166 | 864  | 648 | 425 | 493 | 2685 | 1481 | 559 | 392 | 230 | 355 | 193 | 86  | 562 | -                            | 3/4 | 3040           | 40                             |
| 18-9800-350-CL  | 4338 | 864  | 648 | 425 | 493 | 2685 | 1653 | 558 | 480 | 230 | 355 | 193 | 86  | 562 | -                            | 3/4 | 3295           | 55                             |
| 18-10500-280-CL | 4239 | 940  | 760 | 425 | 493 | 2769 | 1470 | 670 | 360 | 230 | 340 | 193 | 142 | 618 | -                            | 3/4 | 3281           | 35                             |
| 18-10500-300-CL | 4250 | 940  | 760 | 425 | 493 | 2769 | 1481 | 670 | 392 | 230 | 340 | 193 | 142 | 618 | -                            | 3/4 | 3321           | 40                             |
| 18-10500-350-CL | 4422 | 940  | 760 | 425 | 493 | 2769 | 1653 | 670 | 480 | 230 | 340 | 193 | 142 | 618 | -                            | 3/4 | 3351           | 55                             |
| 18-11000-280-CL | 4123 | 920  | 760 | 425 | 493 | 2653 | 1470 | 670 | 360 | 230 | 340 | 193 | 142 | 404 | -                            | 3/4 | 3251           | 35                             |
| 18-11000-300-CL | 4134 | 920  | 760 | 425 | 493 | 2653 | 1481 | 670 | 392 | 230 | 355 | 193 | 142 | 618 | -                            | 3/4 | 3281           | 40                             |
| 18-11000-350-CL | 4306 | 920  | 760 | 425 | 493 | 2653 | 1653 | 670 | 480 | 230 | 355 | 193 | 142 | 618 | -                            | 3/4 | 3321           | 55                             |
| 32-12000-300-CL | 4590 | 1130 | 890 | 505 | 585 | 2909 | 1681 | 800 | 392 | 270 | 420 | 236 | 164 | 726 | 3/4                          | 3/4 | 4700           | 48                             |
| 32-12000-350-CL | 4795 | 1130 | 890 | 505 | 585 | 2909 | 1886 | 800 | 480 | 270 | 420 | 236 | 164 | 726 | 3/4                          | 3/4 | 4900           | 65                             |
| 32-15000-300-CL | 4590 | 1130 | 890 | 505 | 585 | 2909 | 1681 | 800 | 392 | 270 | 420 | 236 | 164 | 890 | 3/4                          | 3/4 | 4840           | 48                             |
| 32-15000-350-CL | 4795 | 1130 | 890 | 505 | 585 | 2909 | 1886 | 800 | 480 | 270 | 420 | 236 | 164 | 726 | 3/4                          | 3/4 | 5140           | 65                             |
| 50-15400-300-CL | 4828 | 1092 | 890 | 551 | 633 | 3027 | 1802 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 5420           | 52                             |
| 50-15400-350-CL | 4960 | 1092 | 890 | 551 | 633 | 3027 | 1933 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 6210           | 72                             |
| 50-15600-300-CL | 4828 | 1130 | 890 | 551 | 633 | 3027 | 1802 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 5358           | 52                             |
| 50-15600-350-CL | 4960 | 1092 | 890 | 551 | 633 | 3027 | 1933 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 6148           | 72                             |

## Spring to Open

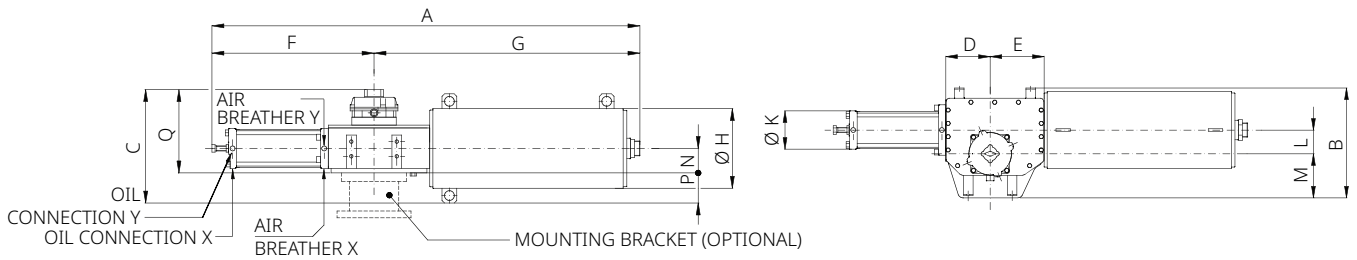
**Figure 8. Overall Dimensions**



**Table 55. Models 0.3-008A-45-OP to 6-3800-200-OP**

| Model           | A    | B   | C   | D   | E   | F    | G    | ØH  | ØK  | L   | M   | N   | P   | Q   | Oil Connections<br>NPT (in.) |     | Weight<br>(kg) | Oil<br>Consumption<br>(liters) |
|-----------------|------|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|------------------------------|-----|----------------|--------------------------------|
|                 |      |     |     |     |     |      |      |     |     |     |     |     |     |     | X                            | Y   |                |                                |
| 0.3-008A-45-OP  | 1301 | 262 | 192 | 136 | 151 | 572  | 729  | 147 | 75  | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.35                           |
| 0.3-008A-75-OP  | 1286 | 319 | 200 | 136 | 151 | 555  | 729  | 147 | 116 | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.80                           |
| 0.3-008B-45-OP  | 1301 | 262 | 192 | 136 | 151 | 572  | 729  | 147 | 75  | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.35                           |
| 0.3-008B-75-OP  | 1286 | 319 | 200 | 136 | 151 | 555  | 729  | 147 | 116 | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.80                           |
| 0.3-008C-45-OP  | 1301 | 262 | 192 | 136 | 151 | 572  | 729  | 147 | 75  | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.35                           |
| 0.3-008C-75-OP  | 1286 | 319 | 200 | 136 | 151 | 555  | 729  | 147 | 116 | 70  | 119 | 70  | 4   | 188 | 1/2                          | -   | 62             | 0.80                           |
| 0.3-0100-45-OP  | 1402 | 300 | 293 | 136 | 151 | 572  | 830  | 223 | 75  | 70  | 119 | 70  | 42  | 251 | 1/2                          | -   | 75             | 0.35                           |
| 0.3-0100-75-OP  | 1386 | 319 | 293 | 136 | 151 | 555  | 830  | 223 | 116 | 70  | 119 | 70  | 42  | 251 | 1/2                          | -   | 80             | 0.80                           |
| 0.3-0100-100-OP | 1419 | 319 | 293 | 136 | 151 | 589  | 830  | 233 | 125 | 70  | 119 | 70  | 42  | 251 | 1/2                          | -   | 84             | 1.40                           |
| 0.3-0150-45-OP  | 1350 | 300 | 283 | 136 | 151 | 572  | 778  | 223 | 75  | 70  | 119 | 70  | 42  | 241 | 1/2                          | -   | 75             | 0.35                           |
| 0.3-0150-75-OP  | 1334 | 319 | 283 | 136 | 151 | 556  | 778  | 223 | 100 | 70  | 119 | 70  | 42  | 151 | 1/2                          | -   | 80             | 0.80                           |
| 0.3-0150-100-OP | 1368 | 319 | 283 | 136 | 151 | 590  | 778  | 223 | 125 | 70  | 119 | 70  | 42  | 151 | 1/2                          | -   | 84             | 1.40                           |
| 0.9-0200-100-OP | 1501 | 413 | 300 | 160 | 190 | 614  | 887  | 240 | 125 | 80  | 170 | 82  | 37  | 175 | 1/2                          | -   | 147            | 1.60                           |
| 0.9-0200-135-OP | 1561 | 413 | 300 | 160 | 190 | 674  | 887  | 240 | 160 | 80  | 170 | 82  | 37  | 175 | 1/2                          | -   | 166            | 2.80                           |
| 0.9-0250-100-OP | 1430 | 413 | 300 | 160 | 190 | 614  | 816  | 240 | 125 | 80  | 170 | 82  | 37  | 262 | 1/2                          | -   | 147            | 1.60                           |
| 0.9-0250-135-OP | 1489 | 413 | 300 | 160 | 190 | 673  | 816  | 240 | 160 | 80  | 170 | 82  | 37  | 262 | 1/2                          | -   | 166            | 2.80                           |
| 0.9-0350-100-OP | 1554 | 413 | 370 | 160 | 190 | 614  | 940  | 310 | 125 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 181            | 1.60                           |
| 0.9-0350-135-OP | 1614 | 413 | 370 | 160 | 190 | 674  | 940  | 310 | 160 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 200            | 2.80                           |
| 0.9-0400-100-OP | 1488 | 413 | 370 | 160 | 190 | 614  | 874  | 310 | 125 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 176            | 1.60                           |
| 0.9-0400-135-OP | 1548 | 413 | 370 | 160 | 190 | 674  | 874  | 310 | 160 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 195            | 2.80                           |
| 0.9-0700-100-OP | 1515 | 413 | 370 | 160 | 190 | 614  | 901  | 310 | 125 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 198            | 1.60                           |
| 0.9-0700-135-OP | 1575 | 413 | 370 | 160 | 190 | 674  | 901  | 310 | 160 | 80  | 170 | 82  | 73  | 175 | 1/2                          | -   | 217            | 2.80                           |
| 1.5-1100-135-OP | 1749 | 470 | 458 | 187 | 227 | 701  | 1048 | 370 | 160 | 100 | 185 | 100 | 85  | 215 | 1/2                          | -   | 349            | 3.50                           |
| 1.5-1100-175-OP | 1835 | 470 | 440 | 187 | 227 | 787  | 1048 | 370 | 196 | 100 | 185 | 100 | 85  | 215 | 1/2                          | -   | 368            | 5.60                           |
| 1.5-1200-135-OP | 1818 | 469 | 384 | 187 | 227 | 701  | 1117 | 324 | 160 | 100 | 185 | 100 | 62  | 215 | 1/2                          | -   | 322            | 3.50                           |
| 1.5-1200-175-OP | 1904 | 469 | 384 | 187 | 227 | 787  | 1117 | 324 | 196 | 100 | 185 | 100 | 62  | 215 | 1/2                          | -   | 341            | 5.60                           |
| 3-2000-135-OP   | 2444 | 586 | 466 | 285 | 330 | 1006 | 1438 | 406 | 160 | 160 | 215 | 106 | 98  | 222 | 1/2                          | -   | 617            | 3.60                           |
| 3-2000-175-OP   | 2558 | 586 | 466 | 285 | 330 | 1120 | 1438 | 406 | 196 | 160 | 215 | 106 | 98  | 222 | 1/2                          | -   | 646            | 9.50                           |
| 6-2500-175-OP   | 3120 | 740 | 443 | 327 | 379 | 1162 | 1958 | 383 | 196 | 185 | 260 | 140 | 52  | 285 | 1/2                          | -   | 831            | 11.00                          |
| 6-2500-200-OP   | 3212 | 740 | 443 | 327 | 379 | 1254 | 1958 | 383 | 230 | 185 | 260 | 140 | 52  | 285 | 3/4                          | -   | 884            | 14.00                          |
| 6-3800-175-OP   | 3350 | 740 | 600 | 327 | 379 | 1162 | 2188 | 530 | 196 | 185 | 260 | 140 | 125 | 285 | 1/2                          | -   | 1344           | 11.00                          |
| 6-3800-200-OP   | 3442 | 740 | 600 | 327 | 379 | 1254 | 2188 | 530 | 230 | 185 | 260 | 140 | 125 | 285 | -                            | 3/4 | 1397           | 14.00                          |

**Figure 9. Overall Dimensions**



**Table 56. Models 14-5100-200-OP to 50-15600-350-OP**

| Model           | A    | B    | C   | D   | E   | F    | G    | ØH  | ØK  | L   | M   | N   | P   | Q   | Oil Connections<br>NPT (in.) |     | Weight<br>(kg) | Oil<br>Consumption<br>(liters) |
|-----------------|------|------|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|------------------------------|-----|----------------|--------------------------------|
|                 |      |      |     |     |     |      |      |     |     |     |     |     |     |     | X                            | Y   |                |                                |
| 14-5100-200-OP  | 3453 | 838  | 600 | 376 | 435 | 1301 | 2151 | 530 | 230 | 200 | 295 | 193 | 72  | 528 | -                            | 3/4 | 1952           | 15                             |
| 14-5100-235-OP  | 3452 | 838  | 600 | 376 | 435 | 1301 | 2151 | 530 | 339 | 200 | 295 | 193 | 72  | 528 | -                            | 3/4 | 2012           | 21                             |
| 14-5100-280-OP  | 3504 | 838  | 600 | 376 | 435 | 1353 | 2151 | 530 | 360 | 200 | 295 | 193 | 72  | 528 | -                            | 3/4 | 2062           | 30                             |
| 14-5100-300-OP  | 3515 | 795  | 600 | 376 | 435 | 1364 | 2151 | 530 | 392 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2100           | 35                             |
| 14-5100-350-OP  | 3687 | 795  | 600 | 376 | 435 | 1536 | 2151 | 530 | 480 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2062           | 48                             |
| 14-5400-200-OP  | 3402 | 838  | 600 | 376 | 435 | 1303 | 2099 | 530 | 230 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2000           | 15                             |
| 14-5400-235-OP  | 3401 | 838  | 600 | 376 | 435 | 1302 | 2099 | 530 | 340 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2060           | 21                             |
| 14-5400-280-OP  | 3452 | 838  | 600 | 376 | 435 | 1353 | 2099 | 530 | 360 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2110           | 30                             |
| 14-5400-300-OP  | 3463 | 795  | 600 | 376 | 435 | 1364 | 2099 | 530 | 392 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2158           | 35                             |
| 14-5400-350-OP  | 3635 | 795  | 600 | 376 | 435 | 1536 | 2099 | 530 | 480 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2405           | 48                             |
| 14-8300-200-OP  | 3465 | 838  | 600 | 376 | 435 | 1303 | 2162 | 530 | 230 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2050           | 15                             |
| 14-8300-235-OP  | 3464 | 838  | 600 | 376 | 435 | 1302 | 2162 | 530 | 340 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2110           | 21                             |
| 14-8300-280-OP  | 3515 | 838  | 600 | 376 | 435 | 1353 | 2162 | 530 | 360 | 200 | 295 | 193 | 72  | 398 | -                            | 3/4 | 2160           | 30                             |
| 14-8300-300-OP  | 3526 | 795  | 600 | 376 | 435 | 1364 | 2162 | 530 | 392 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2112           | 35                             |
| 14-8300-350-OP  | 3698 | 795  | 600 | 376 | 435 | 1536 | 2162 | 530 | 480 | 200 | 330 | 193 | 72  | 528 | -                            | 3/4 | 2455           | 48                             |
| 18-9600-235-OP  | 4178 | 940  | 739 | 425 | 493 | 1415 | 2763 | 559 | 340 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 2610           | 25                             |
| 18-9600-280-OP  | 4165 | 940  | 739 | 425 | 493 | 1402 | 2763 | 559 | 360 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 2650           | 35                             |
| 18-9600-300-OP  | 4176 | 1878 | 648 | 425 | 493 | 1413 | 2763 | 559 | 392 | 230 | 340 | 193 | 86  | 562 | -                            | 3/4 | 2690           | 40                             |
| 18-9600-350-OP  | 4338 | 864  | 648 | 425 | 493 | 1585 | 2763 | 559 | 480 | 230 | 340 | 193 | 86  | 562 | -                            | 3/4 | 2945           | 55                             |
| 18-9800-235-OP  | 4168 | 940  | 738 | 425 | 493 | 1415 | 2753 | 559 | 340 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 2960           | 25                             |
| 18-9800-280-OP  | 4155 | 940  | 738 | 425 | 493 | 1402 | 2753 | 559 | 360 | 230 | 340 | 193 | 176 | 404 | -                            | 3/4 | 3000           | 35                             |
| 18-9800-300-OP  | 4166 | 864  | 648 | 425 | 493 | 1413 | 2753 | 559 | 392 | 230 | 355 | 193 | 86  | 562 | -                            | 3/4 | 3040           | 40                             |
| 18-9800-350-OP  | 4338 | 864  | 648 | 425 | 493 | 1585 | 2753 | 558 | 480 | 230 | 355 | 193 | 86  | 562 | -                            | 3/4 | 3295           | 55                             |
| 18-10500-280-OP | 4239 | 940  | 760 | 425 | 493 | 1402 | 2873 | 670 | 360 | 230 | 340 | 193 | 142 | 618 | -                            | 3/4 | 3281           | 35                             |
| 18-10500-300-OP | 4250 | 940  | 760 | 425 | 493 | 1413 | 2873 | 670 | 392 | 230 | 340 | 193 | 142 | 618 | -                            | 3/4 | 3321           | 40                             |
| 18-10500-350-OP | 4422 | 940  | 760 | 425 | 493 | 1585 | 2873 | 670 | 480 | 230 | 340 | 193 | 142 | 618 | -                            | 3/4 | 3351           | 55                             |
| 18-11000-280-OP | 4123 | 920  | 760 | 425 | 493 | 1402 | 2721 | 670 | 360 | 230 | 340 | 193 | 142 | 404 | -                            | 3/4 | 3251           | 35                             |
| 18-11000-300-OP | 4134 | 920  | 760 | 425 | 493 | 1413 | 2721 | 670 | 392 | 230 | 355 | 193 | 142 | 618 | -                            | 3/4 | 3281           | 40                             |
| 18-11000-350-OP | 4306 | 920  | 760 | 425 | 493 | 1585 | 2721 | 670 | 480 | 230 | 355 | 193 | 142 | 618 | -                            | 3/4 | 3321           | 55                             |
| 32-12000-300-OP | 4590 | 1130 | 890 | 505 | 585 | 1601 | 2989 | 800 | 392 | 270 | 420 | 236 | 164 | 726 | 3/4                          | 3/4 | 4700           | 48                             |
| 32-12000-350-OP | 4795 | 1130 | 890 | 505 | 585 | 1805 | 2989 | 800 | 480 | 270 | 420 | 236 | 164 | 726 | 3/4                          | 3/4 | 4900           | 65                             |
| 32-15000-300-OP | 4590 | 1130 | 890 | 505 | 585 | 1601 | 2989 | 800 | 392 | 270 | 420 | 236 | 164 | 890 | 3/4                          | 3/4 | 4840           | 48                             |
| 32-15000-350-OP | 4795 | 1130 | 890 | 505 | 585 | 1805 | 2989 | 800 | 480 | 270 | 420 | 236 | 164 | 726 | 3/4                          | 3/4 | 5140           | 65                             |
| 50-15400-300-OP | 4828 | 1092 | 890 | 551 | 633 | 1822 | 3112 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 5420           | 52                             |
| 50-15400-350-OP | 4960 | 1092 | 890 | 551 | 633 | 1848 | 3112 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 6210           | 72                             |
| 50-15600-300-OP | 4828 | 1130 | 890 | 551 | 633 | 1822 | 3112 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 5358           | 52                             |
| 50-15600-350-OP | 4960 | 1092 | 890 | 551 | 633 | 1848 | 3112 | 800 | 460 | 300 | 387 | 233 | 167 | 723 | 3/4                          | 3/4 | 6148           | 72                             |

# OLGA/OLGAS Hydraulic Actuator

## Mounting Dimensions

Figure 10. Actuator Models 0.3 to 6 (SCN6200E - Rev. 15/10/19)

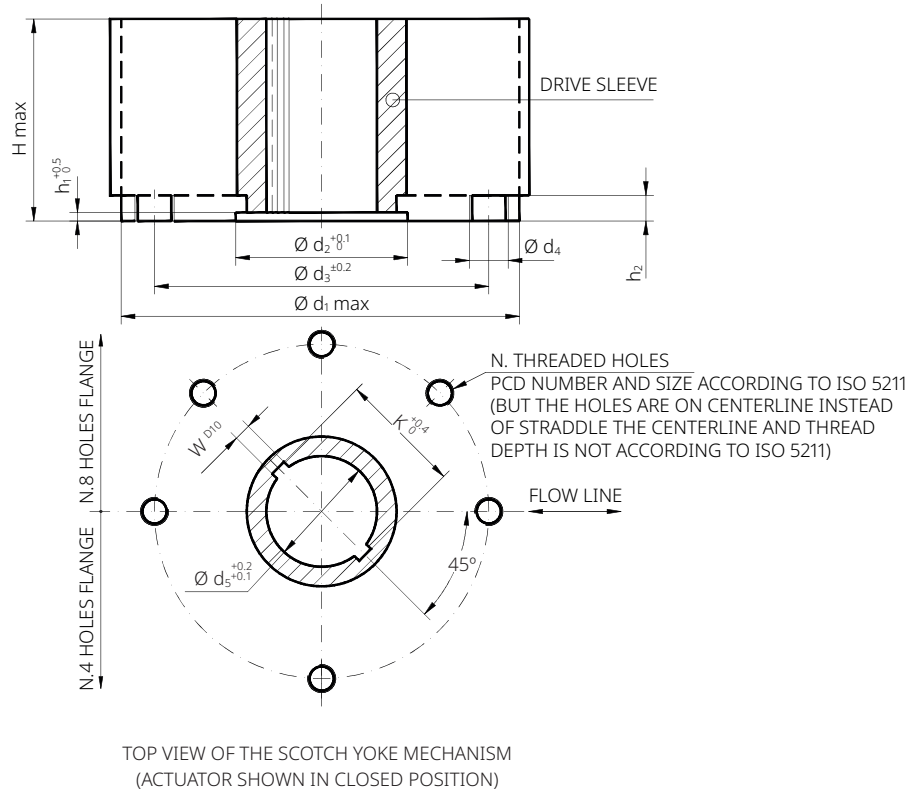


Table 57. Models 0.3 to 6 Coupling Dimensions (mm)

| Actuator Model | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_4$ | N | $h_1$ | $h_2$ | H max | $\varnothing d_5$ | W  | K     |
|----------------|-------------------|-------------------|-------------------|-------------------|---|-------|-------|-------|-------------------|----|-------|
| 0.3            | 240               | 93                | 165               | M20               | 4 | 5     | 17    | 127   | 70                | 12 | 75.6  |
| 0.9            | 310               | 112               | 254               | M16               | 8 | 5     | 19    | 150   | 86                | 14 | 93.6  |
| 1.5            | 360               | 144               | 298               | M20               | 8 | 6     | 19    | 190   | 112               | 18 | 119.0 |
| 3              | 430               | 195               | 356               | M30               | 8 | 9     | 23    | 200   | 157               | 25 | 167.8 |
| 6              | 520               | 250               | 406               | M36               | 8 | 14    | 29    | 260   | 200               | 28 | 212.8 |

**NOTE:**

$\varnothing d_1$  is maximum adapter flange diameter

Figure 11. Actuator Model 14  
(SCN6201E - Rev. 16/06/20)

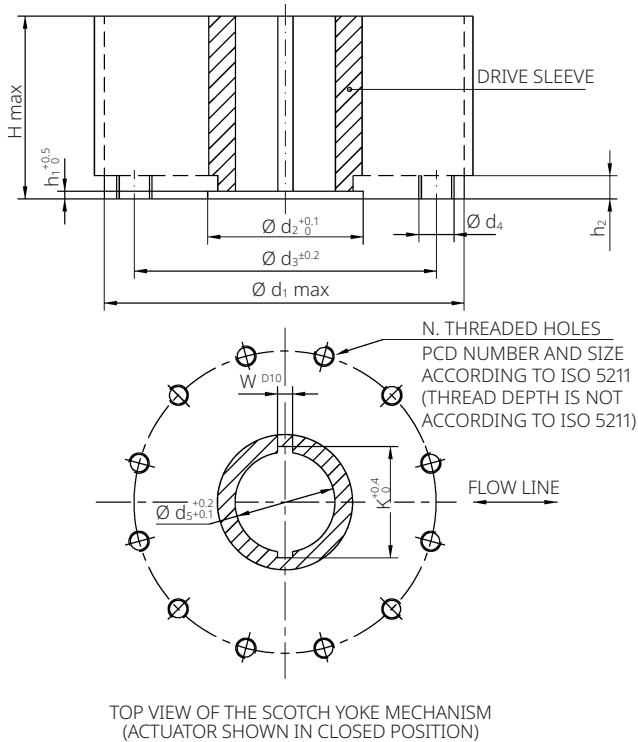


Figure 12. Actuator Models 18 and 32  
(SCN6201E - Rev. 16/06/20)

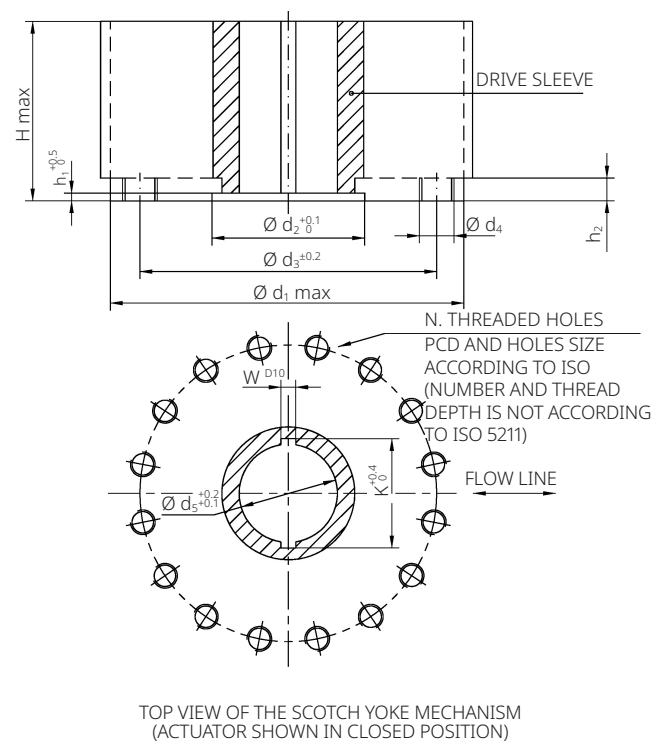


Table 58. Model 14 Coupling Dimensions (mm)

| Actuator Model | Ø d <sub>1</sub> | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>4</sub> | N  | h <sub>1</sub> | h <sub>2</sub> | H max | Ø d <sub>5</sub> | W  | K     |
|----------------|------------------|------------------|------------------|------------------|----|----------------|----------------|-------|------------------|----|-------|
| 14             | 580              | 250              | 483              | M36              | 12 | 10             | 29             | 340   | 175              | 45 | 195.8 |

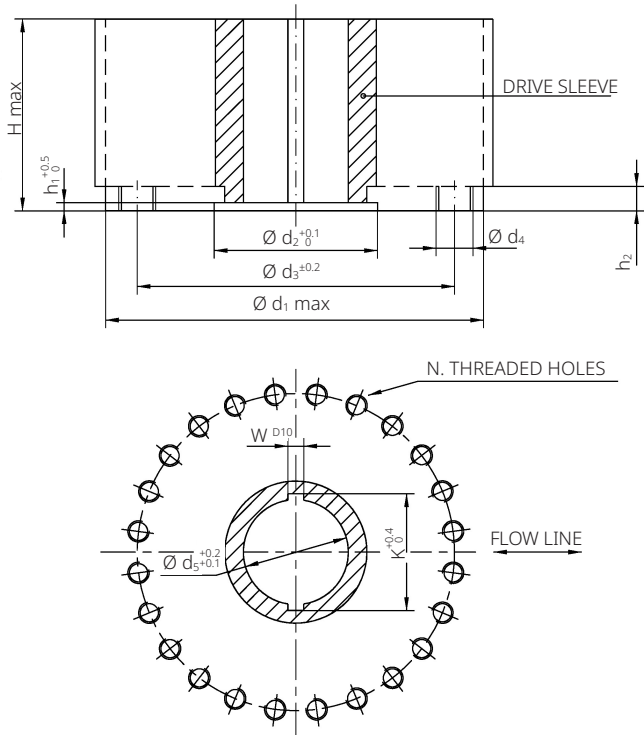
Table 59. Models 18 and 32 Coupling Dimensions (mm)

| Actuator Model | Ø d <sub>1</sub> | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>4</sub> | N  | h <sub>1</sub> | h <sub>2</sub> | H max | Ø d <sub>5</sub> | W  | K     |
|----------------|------------------|------------------|------------------|------------------|----|----------------|----------------|-------|------------------|----|-------|
| 18             | 680              | 290              | 603              | M36              | 16 | 12             | 32             | 350   | 200              | 45 | 220.8 |
| 32             | 780              | 310              | 603              | M36              | 16 | 12             | 32             | 400   | 220              | 50 | 242.8 |

**NOTE:**

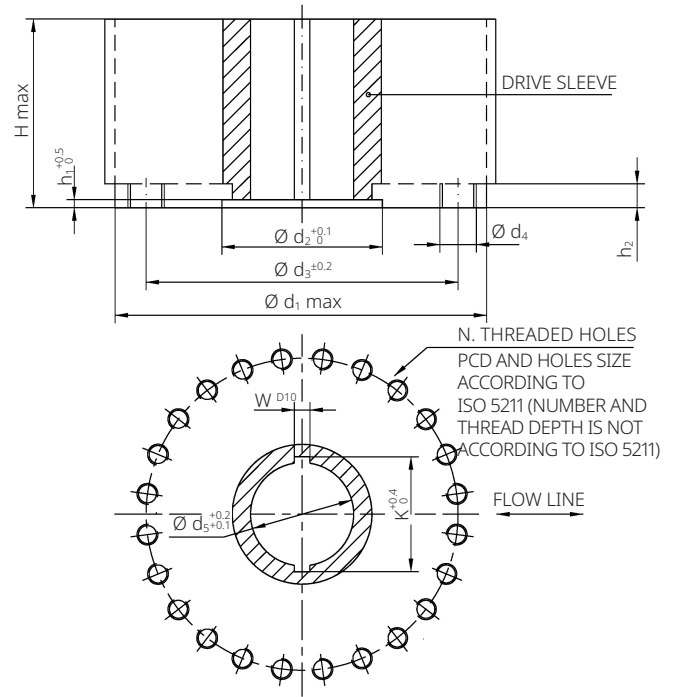
Ø d<sub>1</sub> is maximum adapter flange diameter.

**Figure 13. Actuator Model 50 (SCN62011 - Rev. 15/10/19)**



TOP VIEW OF THE SCOTCH YOKE MECHANISM (ACTUATOR SHOWN IN CLOSED POSITION)

**Figure 14. Actuator Models 65 and 80 (SCN62013 - Rev. 19/06/20)**



TOP VIEW OF THE SCOTCH YOKE MECHANISM (ACTUATOR SHOWN IN CLOSED POSITION)

**Table 60. Model 50 Coupling Dimensions (mm)**

| Actuator Model | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_4$ | N  | $h_1$ | $h_2$ | H max | $\varnothing d_5$ | W  | K     |
|----------------|-------------------|-------------------|-------------------|-------------------|----|-------|-------|-------|-------------------|----|-------|
| 50             | 800               | 315               | 698               | M36               | 24 | 10    | 32    | 430   | 240               | 56 | 264.8 |

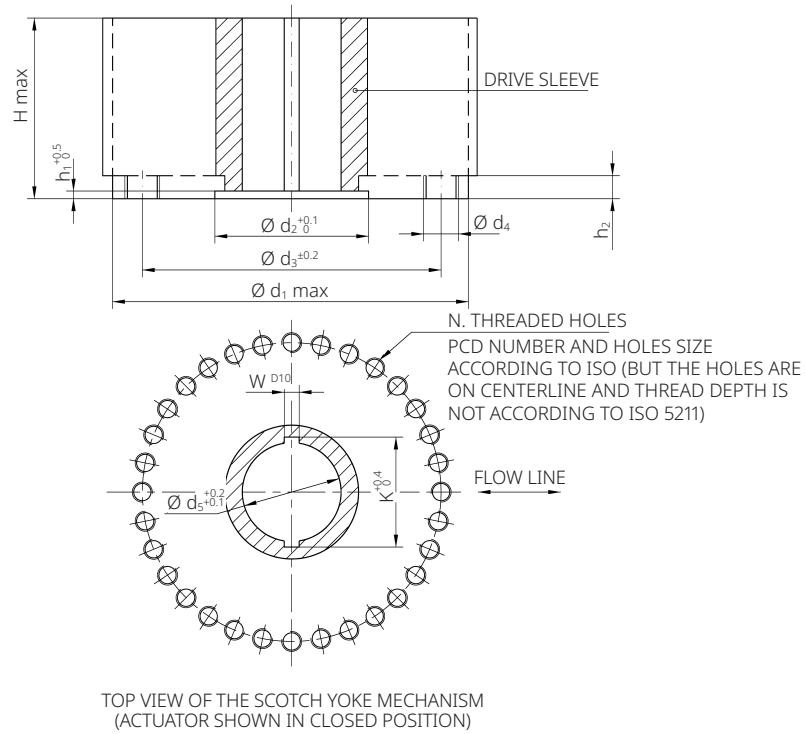
**Table 61. Models 65 and 80 Coupling Dimensions (mm)**

| Actuator Model | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_4$ | N  | $h_1$ | $h_2$ | H max | $\varnothing d_5$ | W  | K     |
|----------------|-------------------|-------------------|-------------------|-------------------|----|-------|-------|-------|-------------------|----|-------|
| 65             | 910               | 370               | 813               | M42               | 24 | 12    | 37    | 540   | 280               | 46 | 327.4 |
| 80             | 900               | 970               | 813               | M42               | 24 | 12    | 37    | 540   | 280               | 46 | 327.4 |

**NOTE:**

$\varnothing d_1$  is maximum adapter flange diameter.

**Figure 15. Actuator Model 100 (SCN62015 - Rev. 22/07/22)**



TOP VIEW OF THE SCOTCH YOKE MECHANISM  
(ACTUATOR SHOWN IN CLOSED POSITION)

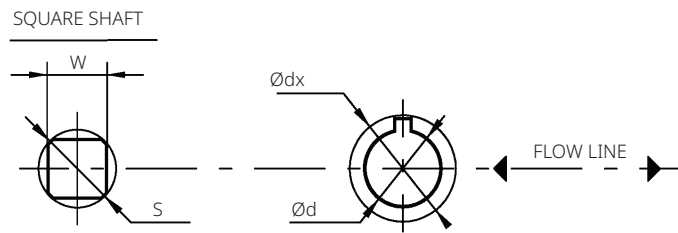
**Table 62. Model 100 Coupling Dimensions (mm)**

| Actuator Model | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_4$ | N  | $h_1$ | $h_2$ | H max | $\varnothing d_5$ | W  | K     |
|----------------|-------------------|-------------------|-------------------|-------------------|----|-------|-------|-------|-------------------|----|-------|
| 100            | 1200              | 450               | 1042              | M42               | 32 | 8     | 57    | 600   | 300               | 70 | 328.8 |

**NOTE:**

$\varnothing d_1$  is maximum adapter flange diameter.

**Figure 16. Stem Acceptance**



**Table 63. Stem Acceptance Dimensions for Insert Bushes (mm)**

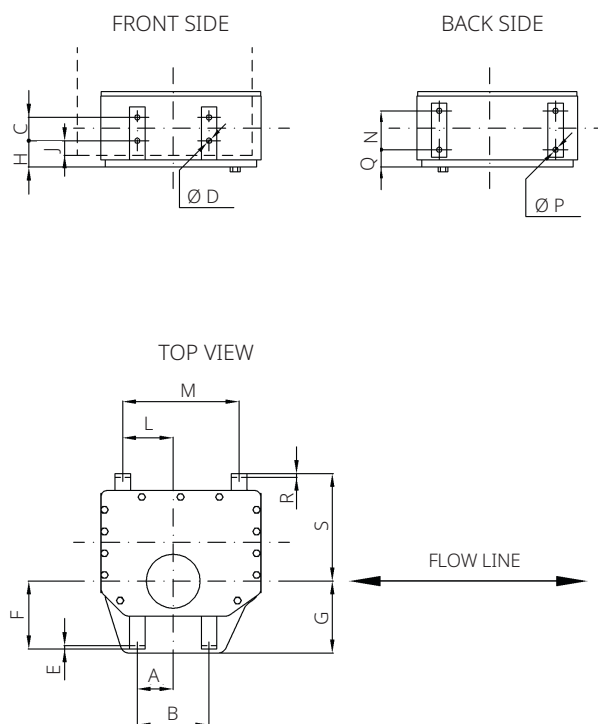
| Housing Size | Maximum Stem Diameter with Rectangular Key | Maximum Accepted Diameter Described by the Key | Maximum Accepted Square Stem (mm) |     | Maximum Accepted Square Stem Height (mm)** |
|--------------|--|--|-----------------------------------|-----|--|
|              | d (bxh) <sup>[2]</sup> (mm)                | dx <sup>[3]</sup> (mm)                         | W                                 | S*  |  |
| 0.3          | 53 (16x10)                                 | 64   | 46                                | 64  | 120  |
| 0.9          | 62 (18x11)                                 | 73   | 55                                | 73  | 140  |
| 1.5          | 85 (22x14)                                 | 99   | 73                                | 99  | 180  |
| 3            | 126 (32x18)                                | 145  | 104                               | 145 | 190  |
| 6            | 161 (40x22)                                | 185  | 133                               | 185 | 250  |
| 14           | 105 (28x16)                                | 121  | -                                 | -   | 340  |
| 18           | 122 (32x18)                                | 140  | -                                 | -   | 350  |
| 32           | 160 (40x22)                                | 183  | -                                 | -   | 400  |
| 50           | 160 (40x22)                                | 183  | -                                 | -   | 430  |
| 65           | -  | -  | -                                 | -   | 540  |
| 80           | -  | -  | -                                 | -   | 540  |
| 100          | -  | -  | -                                 | -   | 600  |

**NOTES:**

1. The listed maximum acceptance values are applicable for stems with keyways parallel or perpendicular to the flow line and for square stems with diagonal parallel with the flow line.
  2. Key according to UNI6604 or DIN 6885 sh.1 or ISO 773 or equivalent.
  3. For stem with key not correspondent to any specification, check the dimension dx.
- \* S max: maximum external diameter in case of rounded edge.  
 \*\* Without adapter flange.

## Accessories Mounting Dimensions

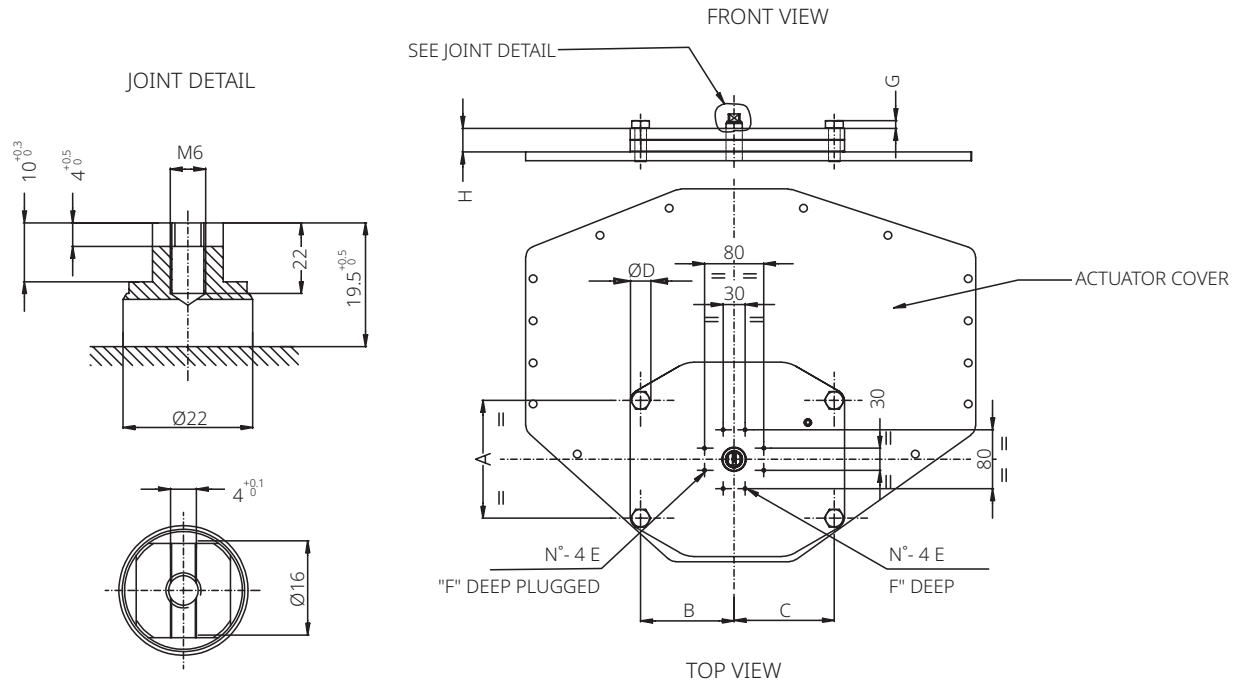
**Figure 17. Actuator Models 0.3 to 100**



**Table 64. Accessories Mounting Dimensions (mm)**

| Actuator Model | A     | B    | C   | Ø D | E  | F     | G   | H   | J  | L   | M    | N   | Ø P | Q   | R  | S    |
|----------------|-------|------|-----|-----|----|-------|-----|-----|----|-----|------|-----|-----|-----|----|------|
| 0.3            | 77.5  | 155  | 60  | 14  | 5  | 113   | 119 | 37  | 12 | 92  | 200  | 60  | 14  | 36  | 5  | 200  |
| 0.9            | 92.5  | 185  | 60  | 14  | 5  | 155   | 170 | 61  | 35 | 85  | 200  | 60  | 14  | 48  | 5  | 243  |
| 1.5            | 92.5  | 185  | 60  | 14  | 5  | 175   | 185 | 62  | 35 | 130 | 300  | 100 | 14  | 45  | 5  | 284  |
| 3              | 117.5 | 235  | 85  | 23  | 8  | 203   | 215 | 57  | 25 | 230 | 500  | 100 | 14  | 54  | 5  | 371  |
| 6              | 137   | 455  | 115 | 23  | 8  | 248   | 260 | 59  | 22 | 224 | 500  | 100 | 14  | 87  | 8  | 480  |
| 14             | 315   | 630  | 200 | 27  | 10 | 227   | 330 | 97  | 55 | 220 | 500  | 170 | 27  | 99  | 8  | 543  |
| 18             | 315   | 630  | 200 | 27  | 10 | 235   | 340 | 72  | 32 | 306 | 680  | 215 | 27  | 80  | 10 | 600  |
| 32             | 315   | 630  | 200 | 27  | 10 | 385   | 395 | 72  | 32 | 414 | 890  | 215 | 27  | 149 | 10 | 660  |
| 50             | 387.5 | 860  | 250 | 30  | 12 | 372   | 387 | 77  | 35 | 473 | 1030 | 215 | 27  | 163 | 10 | 1072 |
| 65             | 391   | 860  | 250 | 30  | 15 | 380   | 455 | 107 | 50 | 474 | 1030 | 215 | 27  | 270 | 15 | 830  |
| 80             | 500   | 1000 | 250 | 30  | 15 | 437.5 | 450 | 107 | 50 | 500 | 1100 | 215 | 27  | 270 | 15 | 900  |
| 100            | 500   | 1100 | 250 | 30  | 20 | 564   | 600 | 127 | 50 | 500 | 1100 | 215 | 27  | 333 | 15 | 1275 |

**Figure 18. Accessories Mounting Holes on Actuator Top (Cover and Yoke)**

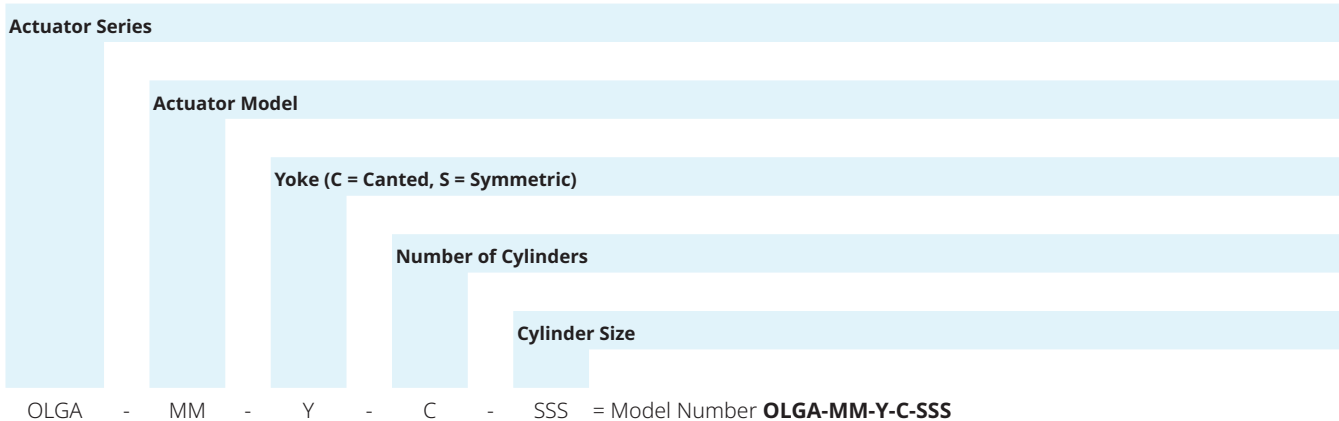


**Table 65. Dimensions (mm)**

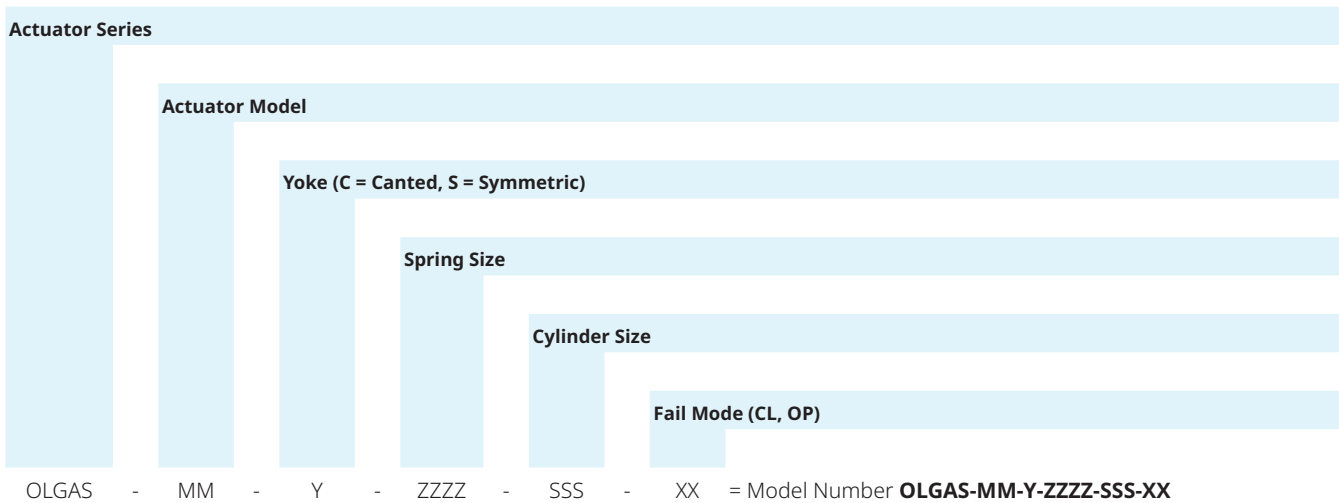
| Actuator Model | A     | B     | C     | D   | E  | F | G   | H  |
|----------------|-------|-------|-------|-----|----|---|-----|----|
| 0.3            | N/A   | N/A   | N/A   | N/A | M5 | 9 | N/A | 32 |
| 0.9            | N/A   | N/A   | N/A   | N/A | M5 | 9 | N/A | 32 |
| 1.5            | N/A   | N/A   | N/A   | N/A | M5 | 9 | N/A | 32 |
| 3              | 160   | 127   | 136   | 30  | M5 | 9 | 11  | 32 |
| 6              | 160   | 127   | 136   | 30  | M5 | 9 | 11  | 32 |
| 14             | 160   | 127   | 136   | 30  | M5 | 9 | 11  | 32 |
| 18             | 314   | 109   | 109   | 30  | M5 | 9 | 11  | 29 |
| 32             | 314   | 109   | 109   | 30  | M5 | 9 | 11  | 29 |
| 50             | 280.6 | 138.5 | 138.5 | 37  | M5 | 9 | 13  | 32 |
| 65             | 410   | 180   | 180   | 44  | M5 | 9 | 16  | 32 |
| 80             | 410   | 180   | 180   | 44  | M5 | 9 | 16  | 32 |
| 100            | 460   | 205   | 205   | 44  | M5 | 9 | 16  | 32 |

## Model Decoding

**Table 66. Double-Acting Hydraulic Actuators**



**Table 67. Single Acting Hydraulic Actuators**



Biffi Italia s.r.l.  
Strada Biffi 165  
29017 Fiorenzuola d'Arda (PC)  
Italy  
T +39 0523 944 411

For complete list of sales and manufacturing sites, please visit  
[www.biffi.it](http://www.biffi.it) or contact us at [biffi\\_italia@biffi.it](mailto:biffi_italia@biffi.it)

VCTDS-02815-EN © 2025 Biffi. All rights reserved.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.

