

# Together for a Bright Future

——Surging Passion Flowing Spring



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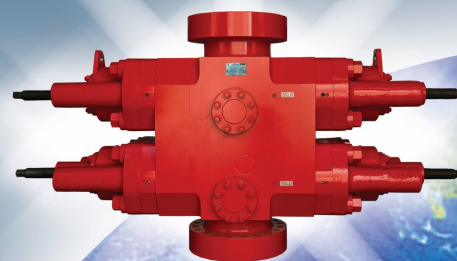
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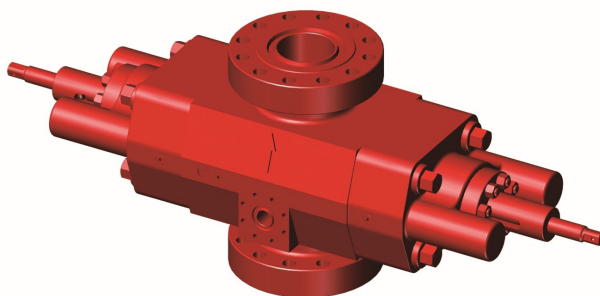


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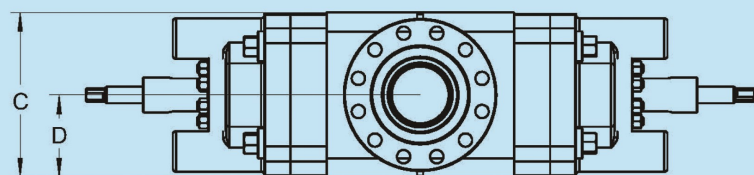
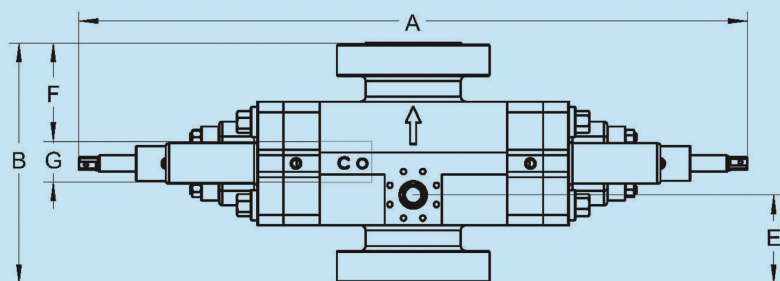


## U Type Ram BOP



### Descriptions:

The U-Style Ram BOP is available in three forged structures, the single, double and triple ram configurations. The rams are controlled hydraulically with the option of having the ram locking method manual or hydraulic depending on the model. Various rams option are available including the blind ram, various size pipe ram, shear blind ram and the variable bore ram. Structures can be ordered with studed or flanged connections.



Single Ram BOP

## U Type Ram BOP



### Single Ram U type BOP Dimensions Flange or Clamp Hub (Manual lock)

| Size (in.) | Pressure Rating (psi) | Vertical Bore (in.) | A-1 (in.) | A-2 (in.) | A-3 (in.) | A-4 (in.) | B-1 (in.) | B-2 (in.)      | C (in.) |
|------------|-----------------------|---------------------|-----------|-----------|-----------|-----------|-----------|----------------|---------|
| 7-1/16     | 3000                  | 7-1/16              | 74.000    | 109.500   | -         | -         | 24.062    | -              | 20.250  |
| 7-1/16     | 5000                  | 7-1/16              | 74.000    | 109.500   | -         | -         | 27.500    | 25.188         | 20.250  |
| 7-1/16     | 10,000                | 7-1/16              | 74.000    | 109.500   | -         | -         | 30.562    | 27.188         | 20.625  |
| 7-1/16     | 15,000                | 7-1/16              | 74.000    | 109.500   | -         | -         | 31.812    | -              | 20.625  |
| 11         | 3000                  | 11                  | 96.250    | 146.875   | -         | -         | 29.062    | -              | 25.125  |
| 11         | 5000                  | 11                  | 96.250    | 146.875   | 110.125   | 150.188   | 34.312    | 29.312         | 25.125  |
| 11         | 10,000                | 11                  | 96.250    | 146.875   | 110.125   | 150.188   | 35.688    | 32.188         | 25.750  |
| 11         | 15,000                | 11                  | 124.000   | 175.312   | 124.500   | 167.125   | 44.812    | 33.875         | 32.000  |
| 13-5/8     | 3000                  | 13-5/8              | 112.125   | 171.500   | 122.688   | 166.062   | 31.312    | -              | 29.250  |
| 13-5/8     | 5000                  | 13-5/8              | 112.125   | 171.500   | 122.688   | 166.062   | 33.812    | 31.938         | 29.250  |
| 13-5/8     | 10,000                | 13-5/8              | 114.125   | 172.750   | 124.688   | 167.312   | 41.688    | 32.812         | 30.250  |
| 13-5/8     | 15,000                | 13-5/8              | 139.000   | 214.375   | 152.250   | 205.500   | 53.688    | 42.000         | 39.500  |
| 16-3/4     | 3000                  | 16-3/4              | 127.250   | 204.562   | 147.250   | 199.375   | 40.062    | 31.750         | 35.750  |
| 16-3/4     | 5000                  | 16-3/4              | 129.250   | 202.125   | 149.250   | 202.250   | 43.062    | 34.938         | 35.750  |
| 16-3/4     | 10,000                | 16-3/4              | 139.000   | 218.375   | 155.500   | 212.000   | 49.688    | 41.938         | 39.500  |
| 18-3/4     | 10,000                | 18-3/4              | 156.375   | 242.125   | 166.500   | 226.625   | 56.000    | 43.234         | 42.500  |
| 20-3/4     | 3000                  | 20-3/4              | 143.688   | 226.812   | 163.938   | 223.875   | 40.562    | 33.312         | 39.516  |
| 21-1/4     | 2000                  | 21-1/4              | 143.688   | 226.812   | 163.938   | 223.875   | 37.188    | 33.312         | 39.516  |
| 21-1/4     | 5000                  | 21-1/4              | 164.250   | 247.250   | 180.938   | 239.250   | 50.938    | 46.125         | 42.500  |
| 21-1/4     | 10,000                | 21-1/4              | 163.375   | 250.375   | 181.125   | 239.500   | 66.000    | 53.000         | 47.250  |
| 26-3/4     | 3000                  | 26-3/4              | 169.625   | 275.375   | -         | -         | 48.312    | -              | 46.250  |
| Size (in.) | Pressure Rating (psi) | Vertical Bore (in.) | E-1 (in.) | E-2 (in.) | F-1 (in.) | F-2 (in.) | G (in.)   | Approx. Weight |         |
| 7-1/16     | 3000                  | 7-1/16              | 8.750     | -         | 7.844     | -         | 5.50      | 2600           | 1179    |
| 7-1/16     | 5000                  | 7-1/16              | 10.406    | 9.250     | 9.625     | 8.469     | 5.50      | 2800           | 1270    |
| 7-1/16     | 10,000                | 7-1/16              | 11.062    | 9.375     | 12.031    | 10.344    | 5.50      | 3550           | 1610    |
| 7-1/16     | 15,000                | 7-1/16              | 11.688    | -         | 12.656    | -         | 5.50      | 3800           | 1724    |
| 11         | 3000                  | 11                  | 9.812     | -         | 10.531    | -         | 6.75      | 5300           | 2404    |
| 11         | 5000                  | 11                  | 12.438    | 9.938     | 13.156    | 10.656    | 6.75      | 5600           | 2540    |
| 11         | 10,000                | 11                  | 13.125    | 11.375    | 13.844    | 12.094    | 6.75      | 6400           | 2903    |
| 11         | 15,000                | 11                  | 16.688    | 11.219    | 17.781    | 12.312    | 9.25      | 10,300         | 4672    |
| 13-5/8     | 3000                  | 13-5/8              | 10.312    | -         | 11.531    | -         | 7.50      | 7200           | 3266    |
| 13-5/8     | 5000                  | 13-5/8              | 11.562    | 10.625    | 12.781    | 11.844    | 7.50      | 7700           | 3493    |
| 13-5/8     | 10,000                | 13-5/8              | 15.125    | 10.688    | 17.094    | 12.656    | 7.50      | 10,300         | 4672    |
| 13-5/8     | 15,000                | 13-5/8              | 21.375    | 15.500    | 22.844    | 17.000    | 8.00      | 23,700         | 10,750  |
| 16-3/4     | 3000                  | 16-3/4              | 13.312    | 9.156     | 15.406    | 11.250    | 9.25      | 13,700         | 6214    |
| 16-3/4     | 5000                  | 16-3/4              | 14.812    | 10.750    | 16.906    | 12.844    | 9.25      | 13,750         | 6237    |
| 16-3/4     | 10,000                | 16-3/4              | 19.375    | 15.500    | 20.219    | 16.344    | 9.25      | 23,300         | 10,569  |
| 18-3/4     | 10,000                | 18-3/4              | 20.500    | 13.875    | 22.000    | 15.344    | 12.00     | 28,900         | 13,109  |
| 20-3/4     | 3000                  | 20-3/4              | 14.312    | 10.688    | 16.281    | 12.656    | 8.00      | 13,650         | 6192    |
| 21-1/4     | 2000                  | 21-1/4              | 12.625    | 10.688    | 14.594    | 12.656    | 8.00      | 13,250         | 6010    |
| 21-1/4     | 5000                  | 21-1/4              | 17.969    | 17.188    | 18.719    | 14.688    | 13.50     | 30,000         | 13,608  |
| 21-1/4     | 10,000                | 21-1/4              | 24.531    | 18.031    | 26.250    | 19.750    | 13.50     | 34,650         | 15,717  |
| 26-3/4     | 3000                  | 26-3/4              | 17.438    | -         | 19.906    | -         | 8.00      | 24,000         | 10,886  |

The capital letters in the following designations refer to the U BOP dimensional views below and dimensional charts shown on the following page.

A-1 Length - bonnets closed, locking screws locked

A-2 Length - bonnets opened, locking screws unlocked

A-3 Length - bonnets closed, with wedgelocks

A-4 Length - bonnets opened, with wedgelocks

B-1 Height - flanged

B-2 Height - clamp hubs

C Width - no side outlets

D Centerline of preventer to outlet flange or hub face. This distance is variable and must be determined per individual specifications.

E-1 Centerline of side outlet below rams to bottom flange face

E-2 Centerline of side outlet below rams to bottom hub face

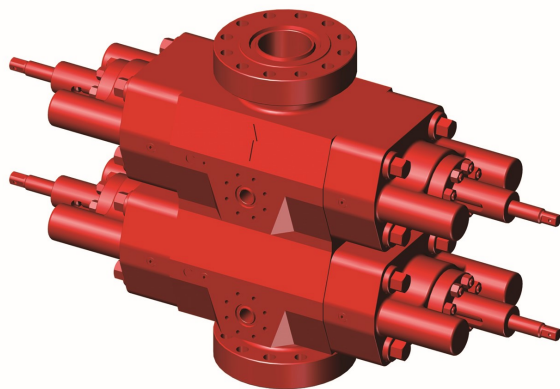
F-1 Top of upper ram to top flange face

F-2 Top of upper ram to top hub face

G Height of ram

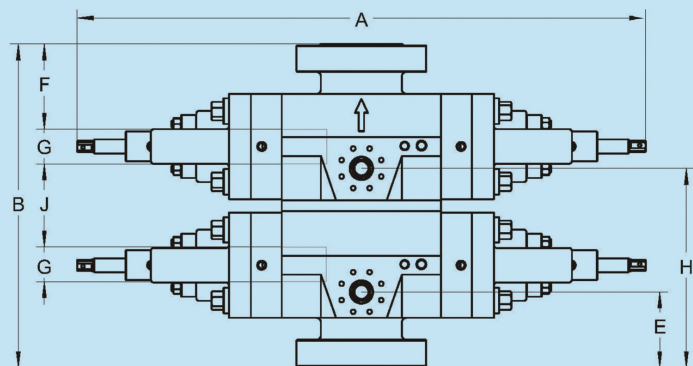


## U Type Ram BOP

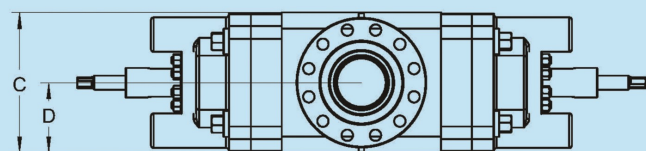


### Descriptions:

The U-Style Ram BOP is available in three forged structures, the single, double and triple ram configurations. The rams are controlled hydraulically with the option of having the ram locking method manual or hydraulic depending on the model. Various rams option are available including the blind ram, various size pipe ram, shear blind ram and the variable bore ram. Structures can be ordered with studded or flanged connections.



Double Ram BOP



## U Type Ram BOP

### Double Ram U type BOP Dimensions Flange or Clamp Hub (Manual lock)

| Size (in.) | Press. Rating (psi) | Vert. Bore (in.) | A-1 (in.) | A-2 (in.) | A-3 (in.) | A-4 (in.) | B-1 (in.) | B-2 (in.) | B *** (in.) | C (in.)        | E-1 (in.) |
|------------|---------------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|----------------|-----------|
| 7-1/16     | 3000                | 7-1/16           | 74.000    | 109.500   | -         | -         | 41.00     | -         | 18.562      | 20.250         | 8.750     |
| 7-1/16     | 5000                | 7-1/16           | 74.000    | 109.500   | -         | -         | 44.188    | 41.875    | 18.812      | 20.250         | 10.406    |
| 7-1/16     | 10,000              | 7-1/16           | 74.000    | 109.500   | -         | -         | 48.625    | 45.250    | 17.438      | 20.625         | 11.062    |
| 7-1/16     | 15,000              | 7-1/16           | 74.000    | 109.500   | -         | -         | 49.875    | -         | 17.438      | 20.625         | 11.688    |
| 11         | 3000                | 11               | 96.250    | 146.875   | -         | -         | 49.250    | -         | 16.562      | 25.125         | 9.812     |
| 11         | 5000                | 11               | 96.250    | 146.875   | 110.125   | 150.188   | 54.500    | 49.500    | 16.562      | 25.125         | 12.438    |
| 11         | 10,000              | 11               | 96.250    | 146.875   | 110.125   | 150.188   | 55.875    | 52.375    | 16.562      | 25.750         | 13.125    |
| 11         | 15,000              | 11               | 124.000   | 175.312   | 124.500   | 167.125   | 69.750    | 58.812    | 14.312      | 32.000         | 16.688    |
| 13-5/8     | 3000                | 13-5/8           | 112.125   | 171.500   | 122.688   | 166.062   | 53.375    | -         | 15.438      | 29.250         | 10.312    |
| 13-5/8     | 5000                | 13-5/8           | 112.125   | 171.500   | 122.688   | 166.062   | 55.875    | 54.000    | 15.438      | 29.250         | 11.562    |
| 13-5/8     | 10,000              | 13-5/8           | 114.125   | 172.750   | 124.688   | 167.312   | 66.625    | 57.750    | 12.562      | 30.250         | 15.125    |
| 13-5/8     | 15,000              | 13-5/8           | 139.000   | 214.375   | 152.250   | 205.500   | 81.750    | 70.125    | 9.938       | 39.500         | 21.375    |
| 16-3/4     | 3000                | 16-3/4           | 127.250   | 204.562   | 147.250   | 199.375   | 65.875    | 57.562    | 13.438      | 35.750         | 13.312    |
| 16-3/4     | 5000                | 16-3/4           | 129.250   | 202.125   | 149.250   | 202.250   | 68.875    | 60.750    | 13.438      | 35.750         | 14.812    |
| 16-3/4     | 10,000              | 16-3/4           | 139.000   | 218.375   | 155.500   | 212.000   | 77.750    | 70.000    | 11.188      | 39.500         | 19.375    |
| 18-3/4     | 10,000              | 18-3/4           | 156.375   | 242.125   | 166.500   | 226.625   | 87.125    | 74.000    | 10.875      | 42.500         | 20.500    |
| 20-3/4     | 3000                | 20-3/4           | 143.688   | 226.812   | 163.938   | 223.875   | 66.125    | 58.875    | 12.438      | 39.516         | 14.312    |
| 21-1/4     | 2000                | 21-1/4           | 143.688   | 226.812   | 163.938   | 223.875   | 62.750    | 58.875    | 12.438      | 39.516         | 12.625    |
| 21-1/4     | 5000                | 21-1/4           | 164.250   | 247.250   | 180.938   | 239.250   | 82.375    | 74.000    | 12.375      | 42.500         | 17.969    |
| 21-1/4     | 10,000              | 21-1/4           | 163.375   | 250.375   | 181.125   | 239.500   | 100.062   | 87.062    | 9.438       | 47.250         | 24.531    |
| 26-3/4     | 3000                | 26-3/4           | 169.625   | 275.375   | -         | -         | 78.875    | -         | 7.438       | 46.250         | 17.438    |
| Size (in.) | Press. Rating (psi) | Vert. Bore (in.) | E-2 (in.) | F-1 (in.) | F-2 (in.) | G (in.)   | H-1 (in.) | H-2 (in.) | J (in.)     | Approx. Weight |           |
| 7-1/16     | 3000                | 7-1/16           | -         | 7.844     | -         | 5.50      | 25.688    | -         | 11.438      | 5000           | 2268      |
| 7-1/16     | 5000                | 7-1/16           | 9.250     | 9.625     | 8.469     | 5.50      | 27.094    | 25.938    | 11.188      | 5200           | 2359      |
| 7-1/16     | 10,000              | 7-1/16           | 9.375     | 12.031    | 10.344    | 5.50      | 29.125    | 27.438    | 12.562      | 6400           | 2903      |
| 7-1/16     | 15,000              | 7-1/16           | -         | 12.656    | -         | 5.50      | 29.750    | -         | 12.562      | 6750           | 3062      |
| 11         | 3000                | 11               | -         | 10.531    | -         | 6.75      | 30.000    | -         | 13.438      | 9900           | 4491      |
| 11         | 5000                | 11               | 9.938     | 13.156    | 10.656    | 6.75      | 32.625    | 30.125    | 13.438      | 10,200         | 4627      |
| 11         | 10,000              | 11               | 11.375    | 13.844    | 12.094    | 6.75      | 33.312    | 31.562    | 13.438      | 11,300         | 5126      |
| 11         | 15,000              | 11               | 11.219    | 17.781    | 12.312    | 9.25      | 41.625    | 36.156    | 15.688      | 18,400         | 8346      |
| 13-5/8     | 3000                | 13-5/8           | -         | 11.531    | -         | 7.50      | 32.375    | -         | 14.562      | 14,300         | 6486      |
| 13-5/8     | 5000                | 13-5/8           | 10.625    | 12.781    | 11.844    | 7.50      | 33.625    | 32.688    | 14.562      | 14,800         | 6713      |
| 13-5/8     | 10,000              | 13-5/8           | 10.688    | 17.094    | 12.656    | 7.50      | 40.062    | 35.625    | 17.438      | 18,400         | 8346      |
| 13-5/8     | 15,000              | 13-5/8           | 15.500    | 22.844    | 17.000    | 8.00      | 49.438    | 43.562    | 20.062      | 43,250         | 19,618    |
| 16-3/4     | 3000                | 16-3/4           | 9.156     | 15.406    | 11.250    | 9.25      | 39.125    | 34.969    | 16.562      | 26,650         | 12,088    |
| 16-3/4     | 5000                | 16-3/4           | 10.750    | 16.906    | 12.844    | 9.25      | 40.625    | 36.562    | 16.562      | 26,940         | 12,220    |
| 16-3/4     | 10,000              | 16-3/4           | 15.500    | 20.219    | 16.344    | 9.25      | 47.438    | 43.562    | 18.812      | 43,500         | 19,731    |
| 18-3/4     | 10,000              | 18-3/4           | 13.875    | 22.000    | 15.344    | 12.00     | 51.500    | 44.875    | 19.125      | 56,950         | 25,832    |
| 20-3/4     | 3000                | 20-3/4           | 10.688    | 16.281    | 12.656    | 8.00      | 39.875    | 36.250    | 17.562      | 25,550         | 11,589    |
| 21-1/4     | 2000                | 21-1/4           | 10.688    | 14.594    | 12.656    | 8.00      | 38.188    | 36.250    | 17.562      | 25,150         | 11,408    |
| 21-1/4     | 5000                | 21-1/4           | 17.188    | 18.719    | 14.688    | 13.50     | 49.031    | 45.000    | 17.625      | 58,000         | 26,308    |
| 21-1/4     | 10,000              | 21-1/4           | 18.031    | 26.250    | 19.750    | 13.50     | 58.594    | 52.094    | 20.562      | 65,500         | 29,710    |
| 26-3/4     | 3000                | 26-3/4           | -         | 19.906    | -         | 8.00      | 48.000    | -         | 22.562      | 44,200         | 20,049    |

The capital letters in the following designations refer to the U BOP dimensional views below and dimensional charts shown on the following page.

A-1 Length - bonnets closed, locking screws locked

A-2 Length - bonnets opened, locking screws unlocked

A-3 Length - bonnets closed, with wedgelocks

A-4 Length - bonnets opened, with wedgelocks

B-1 Height - flanged B-2 Height - clamp hubs

C Width - no side outlets

D Centerline of preventer to outlet flange or hub face. This distance is variable and must be determined per individual specifications.

E-1 Centerline of side outlet below rams to bottom flange face

E-2 Centerline of side outlet below rams to bottom hub face

F-1 Top of upper ram to top flange face F-2 Top of upper ram to top hub face

H-1 Centerline of side outlet between rams to bottom flange face

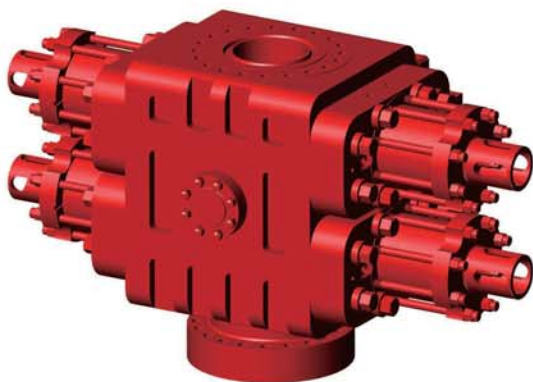
H-2 Centerline of side outlet between rams to bottom hub face

G Height of ram

J Top of lower ram to bottom of upper ram



## S Style Ram BOP



### Descriptions:

The S-Style Ram BOP is available in double cast structures, the single and double ram configurations. The rams are controlled hydraulically with the manual locking. Various rams option are available including the blind ram, various size pipe ram, shear blind ram and the variable bore ram. Structures can be ordered with studded or flanged connections.

**S Style Ram BOP Dimensions Flanged or Studded**

| Bore (in) | Working Pressure (psi) | With Shear or Not | Open Volume (L) | Close Volume (L) | Total Weight (lb) | Dimension (in) |       |       | Connections |         |
|-----------|------------------------|-------------------|-----------------|------------------|-------------------|----------------|-------|-------|-------------|---------|
|           |                        |                   |                 |                  |                   | L              | W     | H     | Top         | Bottom  |
| 7-1/16    | 3000                   | N                 | 2x1.6           | 2x2              | 1759              | 59.8           | 21.26 | 11.02 | Studded     | Studded |
|           |                        |                   | 4x1.6           | 4x2              | 3660              | 59.8           | 21.26 | 22.28 | Studded     | Studded |
|           | 5000                   | N                 | 2x1.6           | 2x2              | 1759              | 59.8           | 21.26 | 11.02 | Studded     | Flanged |
|           |                        |                   | 4x1.6           | 4x2              | 3660              | 59.8           | 21.26 | 22.28 | Studded     | Studded |
|           | 5000                   | Y                 | 2x5.8           | 2x6.2            | 2348              | 83.1           | 21.26 | 18.7  | Flanged     | Studded |
|           |                        |                   | 4x5.8           | 4x6.2            | 4718              | 83.1           | 21.26 | 30.75 | Flanged     | Studded |
| 9         | 10000                  | Y                 | 2x8.8           | 2x9.6            | 8523              | 75.9           | 30.31 | 46.06 | Flanged     | Flanged |
|           |                        |                   | 4x8.8           | 4x9.6            | 8523              | 75.9           | 30.31 | 46.06 | Flanged     | Flanged |
|           | 3000                   | N                 | 2x1.96          | 2x2.36           | 1746              | 68             | 23.43 | 11.02 | Studded     | Studded |
|           |                        |                   | 4x1.96          | 4x2.36           | 3968              | 68             | 23.43 | 27.95 | Studded     | Flanged |
|           | 5000                   | N                 | 2x4.4           | 2x5              | 3825              | 80             | 28.94 | 24.61 | Studded     | Flanged |
|           |                        |                   | 4x4.4           | 4x5              | 8774              | 80             | 34.06 | 32.68 | Studded     | Studded |
| 11        | 3000                   | N                 | 2x5.2           | 2x6              | 4057              | 81.5           | 26.57 | 27.17 | Flanged     | Flanged |
|           |                        |                   | 4x5.2           | 4x6              | 7848              | 81.5           | 34.45 | 31.5  | Studded     | Studded |
|           | 3000                   | Y                 | 2x13            | 2x12.1           | 4751              | 96.4           | 26.57 | 27.17 | Flanged     | Flanged |
|           |                        |                   | 2x5.2 (Upper)   | 2x6 (Upper)      | 8521              | 96.4           | 34.45 | 31.5  | Studded     | Studded |
|           | 3000                   | Y                 | 2x13 (Lower)    | 2x12.1 (Lower)   |                   |                |       |       |             |         |
|           |                        |                   |                 |                  |                   |                |       |       |             |         |

## S Style Ram BOP

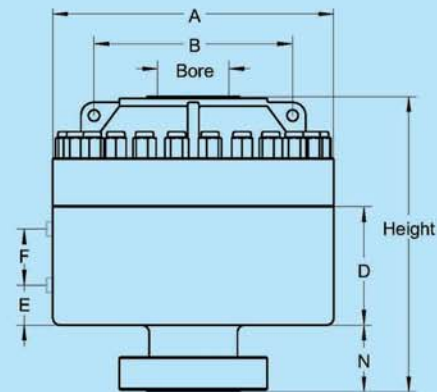


**S Style BOP Dimensions Flanged or Studded(Continued)**

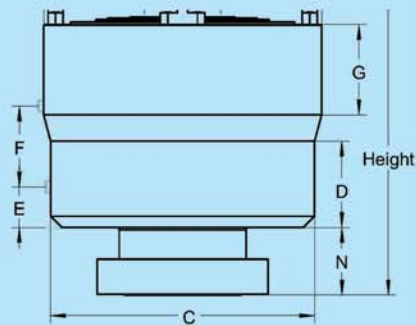
| Bore (in) | Working Pressure (psi) | With Shear or Not | Open Volume (L) | Close Volume (L) | Total Weight (lb) | Dimension (in) |       |       | Connections |         |
|-----------|------------------------|-------------------|-----------------|------------------|-------------------|----------------|-------|-------|-------------|---------|
|           |                        |                   |                 |                  |                   | L              | W     | H     | Top         | Bottom  |
| 11        | 5000                   | N                 | 2x5.15          | 2x5.9            | 4982              | 83.1           | 30.71 | 25.98 | Studded     | Flanged |
|           |                        |                   | 4x5.15          | 4x5.9            | 9381              | 83.1           | 34.06 | 32.68 | Studded     | Studded |
|           |                        | Y                 | 2x11            | 2x12             | 5864              | 98.8           | 30.71 | 25.98 | Studded     | Flanged |
|           |                        |                   | 4x11            | 4x12             | 10880             | 98.8           | 34.65 | 51.18 | Flanged     | Flanged |
|           | 10000                  | N                 | 2x6.5           | 2x7.4            | 10737             | 88.58          | 40.16 | 40.94 | Flanged     | Flanged |
|           |                        |                   | 4x6.5           | 4x7.4            | 17042             | 88.58          | 40.16 | 57.87 | Flanged     | Flanged |
| 13-5/8    | 2000                   | N                 | 2x2.28          | 2x3.55           | 2998              | 94.49          | 28.35 | 13.19 | Studded     | Flanged |
|           |                        |                   | 4x1.5           | 4x16.5           | 16535             | 96.26          | 40.16 | 48.54 | Studded     | Flanged |
|           |                        | Y                 | 2x15            | 2x16.5           | 8719              | 96.26          | 36.22 | 31.61 | Flanged     | Flanged |
|           |                        |                   | 4x15            | 4x16.5           | 16535             | 96.26          | 40.16 | 48.54 | Studded     | Flanged |
|           | 3000                   | N                 | 2x5.85          | 2x6.65           | 4453              | 92.13          | 29.53 | 21.85 | Studded     | Flanged |
|           |                        |                   | 4x5.85          | 4x6.65           | 7751              | 92.13          | 33.23 | 31.1  | Studded     | Studded |
|           |                        | Y                 | 2x17.5          | 2x20             | 6316              | 100.9          | 32.68 | 23.35 | Studded     | Flanged |
|           |                        |                   | 4x17.5          | 4x20             | 12084             | 100.9          | 32.68 | 39.13 | Studded     | Flanged |
|           | 5000                   | N                 | 2x8.25          | 2x8.95           | 7275              | 94.49          | 36.22 | 27.95 | Studded     | Flanged |
|           |                        |                   | 4x8.25          | 4x8.95           | 13558             | 94.49          | 36.22 | 53.54 | Flanged     | Flanged |
|           |                        | Y                 | 2x17.9          | 2x19.6           | 7981              | 106            | 36.22 | 27.95 | Studded     | Flanged |
|           |                        |                   | 4x17.9          | 4x19.6           | 14154             | 106            | 36.22 | 45.08 | Studded     | Flanged |
| 16-3/4    | 10000                  | Y                 | 2x14.7          | 2x16.6           | 14209             | 105.1          | 48.82 | 37.8  | Studded     | Flanged |
|           |                        |                   | 4x14.7          | 4x16.6           | 26345             | 105.1          | 48.82 | 58.46 | Studded     | Flanged |
|           |                        | Y                 | 2x18.3          | 2x20.9           | 14220             | 110            | 48.74 | 38.03 | Studded     | Flanged |
|           |                        |                   | 4x18.3          | 4x20.9           | 25706             | 110            | 48.74 | 58.7  | Studded     | Flanged |
|           | 5000                   | Y                 | 2x22            | 2x25.5           | 15124             | 122            | 46.77 | 42.32 | Flanged     | Flanged |
|           |                        |                   | 4x22            | 4x25.5           | 27549             | 122            | 46.77 | 62.4  | Flanged     | Flanged |
|           |                        | Y                 | 2x26.5          | 2x31             | 20768             | 134.6          | 52.17 | 48.9  | Flanged     | Flanged |
|           |                        |                   | 4x26.5          | 4x31             | 37523             | 134.6          | 52.17 | 70.75 | Flanged     | Flanged |
| 20-3/4    | 3000                   | N                 | 2x11.65         | 2x13.65          | 11828             | 126.2          | 46.46 | 43.31 | Flanged     | Flanged |
|           |                        |                   | 4x11.65         | 4x13.65          | 21010             | 126.2          | 46.46 | 50.39 | Studded     | Flanged |
|           |                        | Y                 | 2x24            | 2x27             | 13025             | 150.3          | 46.46 | 27.76 | Studded     | Flanged |
|           |                        |                   | 4x24            | 4x27             | 22262             | 150.3          | 46.46 | 45.47 | Studded     | Flanged |
|           | 2000                   | N                 | 2x11.65         | 2x13.65          | 10417             | 126.2          | 46.46 | 27.76 | Studded     | Flanged |
|           |                        |                   | 4x11.65         | 4x13.65          | 19798             | 126.2          | 46.46 | 45.47 | Studded     | Flanged |
|           |                        | Y                 | 2x24            | 2x27             | 11614             | 150.3          | 46.46 | 27.76 | Studded     | Flanged |
|           |                        |                   | 4x24            | 4x27             | 22302             | 150.3          | 46.46 | 45.47 | Studded     | Flanged |
| 21-1/4    | 5000                   | Y                 | 2x29.7          | 2x31.1           | 21451             | 137.6          | 54.61 | 42.17 | Studded     | Flanged |
|           |                        |                   | 4x29.7          | 4x31.1           | 38856             | 137.6          | 54.61 | 65.2  | Studded     | Flanged |
|           | 10000                  | Y                 | 2x28            | 2x29             | 39403             | 152.8          | 72.64 | 65.35 | Flanged     | Flanged |
|           |                        |                   | 4x28            | 4x29             | 61895             | 152.8          | 72.64 | 87.6  | Studded     | Flanged |
|           | 2000                   | Y                 | 2x33.5          | 2x35             | 22465             | 165.6          | 63.39 | 49.61 | Flanged     | Flanged |
|           |                        |                   | 4x33.5          | 4x35             |                   | 165.6          | 63.39 |       |             |         |
| 26-3/4    | 3000                   | Y                 | 2x33.5          | 2x35             | 22436             | 165.6          | 71.26 | 38.58 | Studded     | Flanged |
|           |                        |                   | 4x33.5          | 4x35             | 42589             | 165.6          | 71.26 | 63.46 | Studded     | Flanged |



## Spherical Annular BOP



Bolted-Cover Spherical BOP



Wedge-Cover Spherical BOP

## Spherical Annular BOP



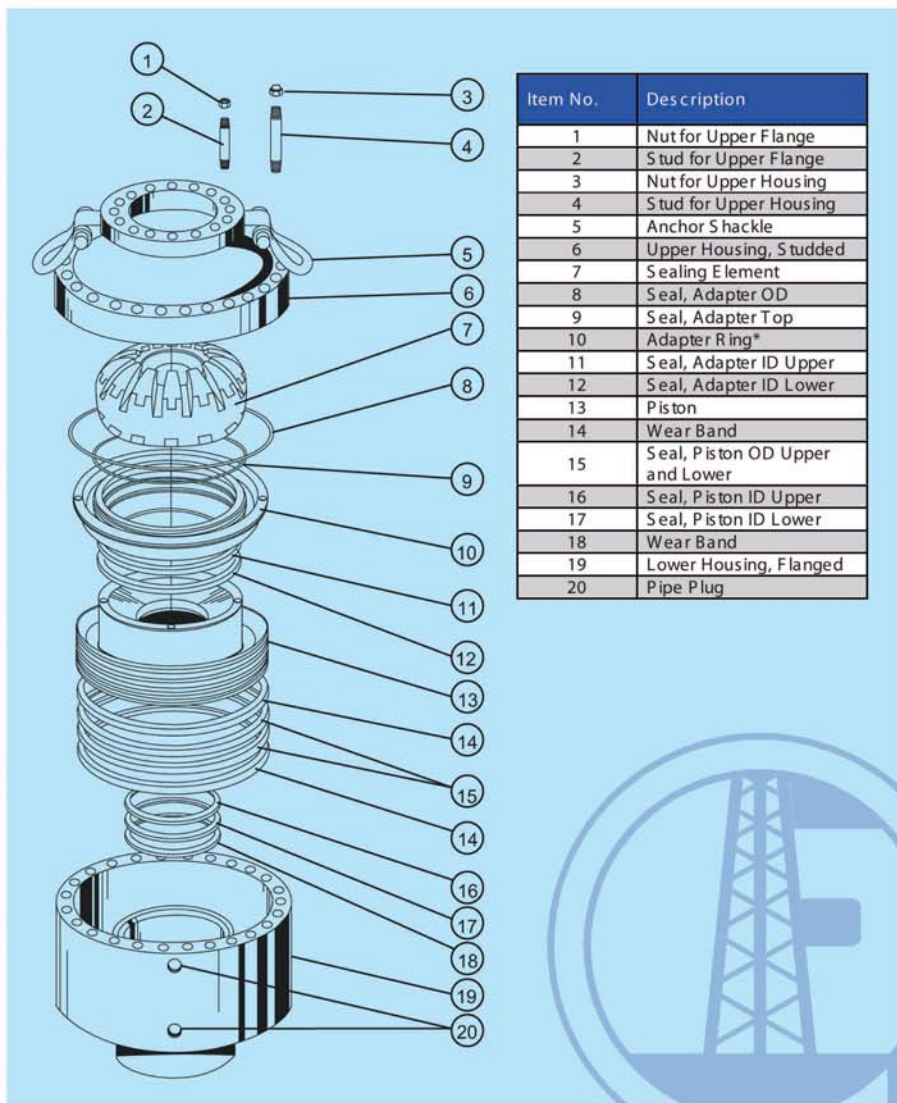
### Spherical Annular BOP Dimensions

| Working Pressure (PSI)            |                 | 10,000       |              |               |               | 5,000        |              |              |               |
|-----------------------------------|-----------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|---------------|
| Bore (Inches) Cover Configuration |                 | 18-3/4 Wedge | 13-5/8 Wedge | 11 Wedge      | 7-1/6 Bolted  | 21-1/4 Wedge | 18-3/4 Wedge | 16-3/4 Wedge | 13-5/8 Bolted |
| A (Inches)                        |                 | 76-1/4       | 64-1/2       | 57            | 43            | 71           | 66-1/4       | 60           | 50            |
| B (Inches)                        |                 | 70-7/8       | 59-5/8       | 53-1/4        | 28-7/8        | 66-5/8       | 62-1/4       | 56-1/4       | 34-1/8        |
| C (Inches)                        |                 | 72           | 59           | 53            | —             | 69-1/2       | 64-5/8       | 56-3/4       | —             |
| D (Inches)                        |                 | 38           | 22-7/8       | 21-1/8        | 17-7/8        | 32-1/4       | 28-7/8       | 23-7/16      | 18-1/2        |
| E (Inches)                        |                 | 8-1/2        | 6-5/8        | 6             | 4-1/2         | 5-1/2        | 7            | 4-3/4        | 2-3/4         |
| F (Inches)                        |                 | 18-5/8       | 14-9/16      | 12-7/8        | 11-1/8        | 22-3/16      | 18-7/8       | 16           | 12            |
| G (Inches)                        |                 | 15           | 15-1/2       | 10-1/2        | —             | 15-3/8       | 12-1/4       | 7            | —             |
| N (Inches)                        | Flanged Bottom  | 13-11/16     | 10-3/4       | 9-1/2         | 7-5/16        | 11-1/2       | 11           | 9-1/8        | 7-13/16       |
|                                   | Studded Bottom  | 1            | 1-9/16       | 2             | 13/16         | 1-1/2        | 2            | 13/16        | 1/2           |
|                                   | Hubbed Bottom   | 8            | 6-1/2        | 5-3/4         | 4-1/6         | 8            | 8            | 6-1/2        | 5-5/8         |
| Hydraulic Conn.: NPT (Qty.)       |                 | 2 (4)        | 2 (4)        | 2 (2)         | 1-1/4 (2)     | 2 (4)        | 2 (4)        | 2 (2)        | 1-1/2 (2)     |
| Hydraulic Fluid (Gallons)         | Close           | 85.0         | 40.16        | 30.58         | 17.20         | 61.37        | 48.16        | 33.26        | 23.58         |
|                                   | Open            | 66.0         | 32.64        | 24.67         | 13.95         | 47.76        | 37.61        | 25.61        | 17.41         |
| Maximum Operating (psi)           |                 | 1,500        | 1,500        | 1,500         | 1,500         | 1,500        | 1,500        | 1,500        | 1,500         |
| Flanged Bottom                    | Height (Inches) | 72-3/4       | 58-3/8       | 53            | 42-1/4        | 66           | 60           | 51-15/16     | 44-15/16      |
|                                   | Weight (Lbs.)   | 57,050       | 32,475       | 23,000        | 10,600        | 44,500       | 36,100       | 22,900       | 13,650        |
| Studded Bottom                    | Height (Inches) | 60-3/4       | 49-3/16      | 45-1/2        | 35-3/4        | 55           | 51           | 43-5/8       | 37-5/8        |
|                                   | Weight (Lbs.)   | 54,950       | 31,175       | 22,375        | 10,275        | 42,500       | 34,750       | 22,000       | 13,100        |
| Hubbed Bottom                     | Height (Inches) | 67-1/16      | 54-1/8       | 49-1/4        | 39            | 63-1/2       | 57           | 49-5/16      | 42-3/4        |
|                                   | Weight (Lbs.)   | 50,075       | 31,575       | 22,550        | 10,400        | 43,200       | 35,400       | 22,525       | 13,250        |
| Working Pressure (PSI)            |                 | 5,000        |              |               |               | 3,000        |              |              |               |
| Bore (Inches) Cover Configuration |                 | 9 Bolted     | 7-1/6 Bolted | 20-3/4 Bolted | 13-5/8 Bolted | 11 Bolted    | 9 Bolted     | 7-1/6 Bolted | 21-1/4 Bolted |
| A (Inches)                        |                 | 40           | 29           | 54 1/8        | 46 3/8        | 39 7/8       | 35 1/2       | 29           | 49            |
| B (Inches)                        |                 | 25           | 19-3/4       | 39 1/4        | 31 1/2        | 26 1/2       | 24           | 19 1/4       | 39 1/4        |
| C (Inches)                        |                 | —            | —            | —             | —             | —            | —            | —            | —             |
| D (Inches)                        |                 | 14-13/16     | 11-3/4       | 21 3/16       | 16 1/8        | 13 7/16      | 13 5/8       | 11 5/8       | 20 9/16       |
| E (Inches)                        |                 | 2-13/16      | 2-3/4        | 3 3/4         | 3 3/4         | 2 1/6        | 1 7/8        | 2 5/8        | 3 1/8         |
| F (Inches)                        |                 | 10-1/4       | 7-3/4        | 14 7/32       | 10 7/8        | 10 1/8       | 10 1/4       | 7 3/4        | 15 13/16      |
| G (Inches)                        |                 | —            | —            | —             | —             | —            | —            | —            | —             |
| N (Inches)                        | Flanged Bottom  | 7-7/16       | 9            | 9             | 6 7/16        | 5 15/16      | 5 13/16      | 5            | 7 3/8         |
|                                   | Studded Bottom  | 7/16         | —            | —             | 1/4           | 3/8          | 3/8          | 1            | 13/16         |
|                                   | Hubbed Bottom   | 3-7/8        | —            | —             | 3 1/2         | 3 3/4        | —            | —            | 5 1/2         |
| Maximum Operating (psi)           |                 | 1-1/4 (2)    | 1 (2)        | 1 1/2 (2)     | 11/2 (2)      | 1 (2)        | 1 (2)        | 1 (2)        | —             |
| Hydraulic Fluid (Gallons)         | Close           | 11.05        | 43.4         | 43.4          | 23.50         | 11.00        | 7.23         | 4.92         | 32.59         |
|                                   | Open            | 8.72         | 26.9         | 26.9          | 14.67         | 6.78         | 5.03         | 3.43         | 16.92         |
| Maximum Operating (psi)           |                 | 1,500        | 1,500        | 1,500         | 1,500         | 1,500        | 1,500        | 1,500        | 1,500         |
| Flanged Bottom                    | Height (Inches) | 36-1/2       | 2            | 48 7/16       | 40 11/16      | 32 7/8       | 32 1/2       | 29 1/8       | 46 1/8        |
|                                   | Weight (Lbs.)   | 6,800        | 100,000      | 14,600        | 9,500         | 5,825        | 4,775        | 2,900        | 10,850        |
| Studded Bottom                    | Height (Inches) | 29-1/2       | 48 7/16      | —             | 34 1/2        | 27 1/16      | 27 1/16      | 25 3/8       | —             |
|                                   | Weight (Lbs.)   | 6,500        | 14,600       | —             | 8,850         | 5,675        | 4,675        | 2,850        | 10,150        |
| Hubbed Bottom                     | Height (Inches) | 32-1 5/16    | —            | —             | 37 3/4        | 30 11/16     | —            | —            | 44 1/4        |
|                                   | Weight (Lbs.)   | 6,625        | —            | —             | 9,325         | 5,683        | —            | —            | 10,200        |



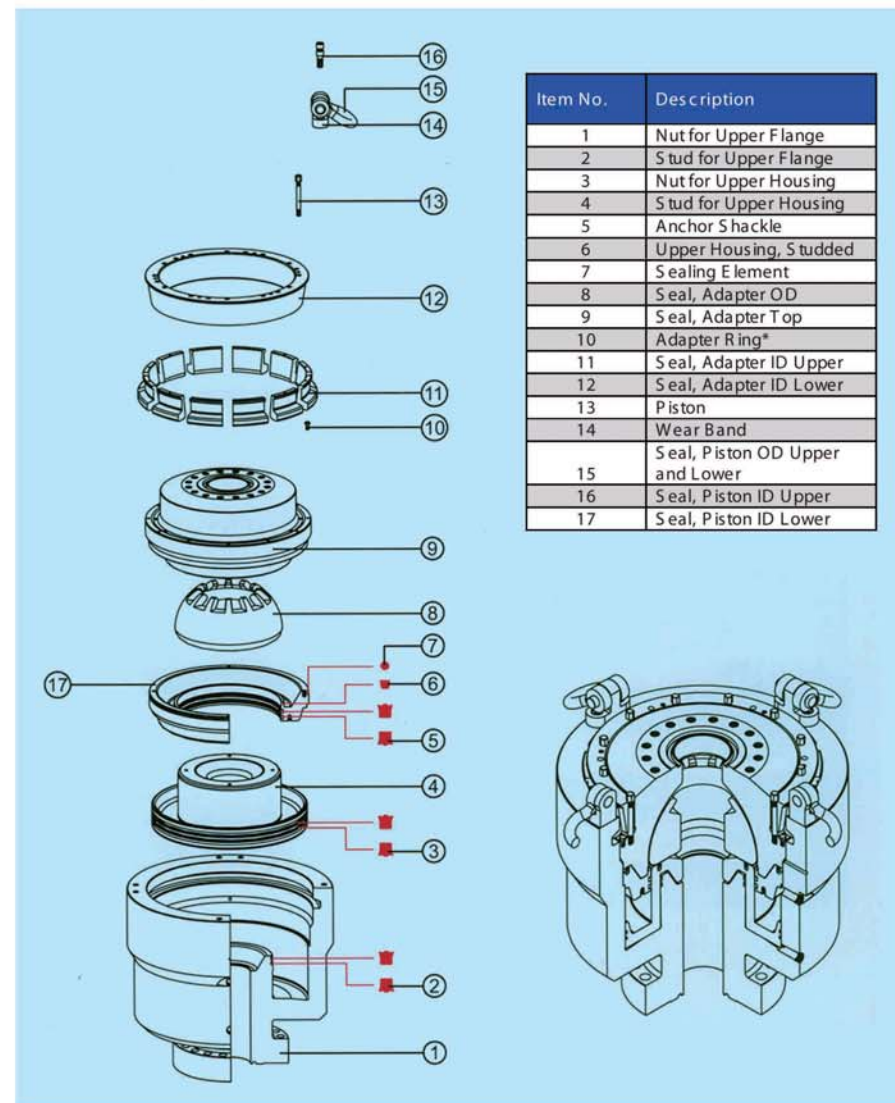
## Spherical Annular BOP

Bolted-Cover Spherical Annular BOP Structure View



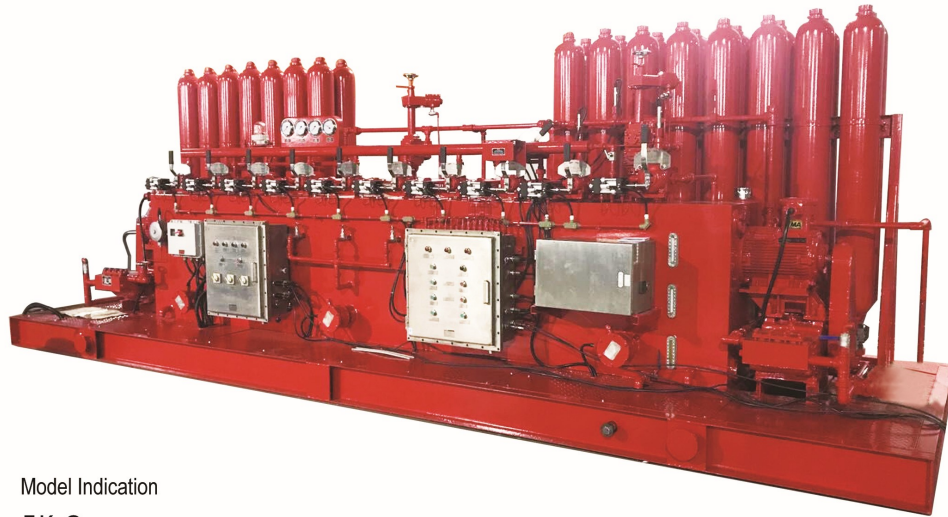
## Spherical Annular BOP

Wedge-Cover Spherical Annular BOP Structure View





## BOP Control System



### Model Indication

FK Q xxx-x x

Improvement Code

Number of Controlled Objects: e.g. 3, 5...

Total Volume of Accumulators (Units: L) 40~1800

Type of Remote Control Panel  
Q- Pneumatic Remote Control Panel  
DQ- Electric/Pneumatic Remote Control Panel  
DY- Electric/Hydraulic Remote Control Panel  
Blank-Without Remote Control Panel

Product code

### Description:

FUQUAN offers a range of control systems for surface mounted BOP stacks that can control 1 to 14 objects with accumulator volumes from 10gal ~ 480gal (40L ~ 1800L). The systems are rated at the working pressure of 3000 psi.

We offer accumulators that comply with ASME that is required to meet API SPEC 16D.

## BOP Control System



### BOP Control System Technical Data

| Model      | Number of Controlled Objects |     |       |         | Accumulators    |                     | Volume of reservoir (L) | Motor power (KW) | Flow rate of pumps |                  |               |
|------------|------------------------------|-----|-------|---------|-----------------|---------------------|-------------------------|------------------|--------------------|------------------|---------------|
|            | Annular                      | Ram | Choke | Back-up | Total volume(L) | Effective volume(L) |                         |                  | Electrical (L/min) | Pneumatic (ml/r) | Manual (ml/r) |
| FKQ1800-14 | 1                            | 5   | 6     | 2       | 60x30           | 900                 | 3000                    | 18.5x2           | 42x2               | 175x3            | NA            |
| FKQ1440-14 | 1                            | 5   | 6     | 2       | 60x24           | 720                 | 2600                    | 18.5x2           | 42x2               | 175x3            | NA            |
| FKQ800-7B  | 1                            | 3   | 2     | 1       | 40x24           | 400                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ800-7D  | 1                            | 3   | 2     | 1       | 40x20           | 400                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ800-7F  | 1                            | 3   | 2     | 1       | 40x20           | 400                 | 1280                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ800-7N  | 1                            | 3   | 2     | 1       | 40x20           | 400                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ800-7   | 1                            | 3   | 2     | 1       | 80x10           | 320                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ800-6N  | 1                            | 3   | 1     | 1       | 40x20           | 400                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ800-6F  | 1                            | 3   | 2     | -       | 80x10           | 400                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ720-6   | 1                            | 3   | 2     | -       | 60x12           | 360                 | 1290                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ640-7   | 1                            | 3   | 2     | 1       | 80x8            | 320                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ640-6G  | 1                            | 3   | 2     | -       | 40x16           | 320                 | 1290                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ640-6E  | 1                            | 3   | 2     | -       | 80x8            | 320                 | 1300                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ640-6M  | 1                            | 3   | 2     | -       | 40x16           | 320                 | 1120                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ640-6N  | 1                            | 3   | 2     | -       | 40x16           | 320                 | 1600                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ640-6   | 1                            | 3   | 1     | 1       | 40x16           | 320                 | 1120                    | 18.5             | 42                 | 175x2            | NA            |
| FKQ480-5C  | 1                            | 3   | 1     | -       | 40x12           | 200                 | 1100                    | 15               | 32                 | 90x2             | NA            |
| FKQ480-5E  | 1                            | 2   | 1     | 1       | 40x12           | 240                 | 1120                    | 15               | 32                 | 90x2             | NA            |
| FKQ400-5B  | 1                            | 3   | 1     | -       | 40x10           | 240                 | 1100                    | 15               | 32                 | 90x2             | NA            |
| FKQ400-5   | 1                            | 2   | 1     | 1       | 40x10           | 200                 | 1120                    | 15               | 32                 | 90x2             | NA            |
| FK320-4    | 1                            | 2   | 1     | -       | 40x8            | 160                 | 790                     | 11               | 24                 | NA               | 14/28         |
| FKQ320-4E  | 1                            | 2   | 1     | -       | 40x8            | 160                 | 790                     | 11               | 24                 | 90               | NA            |
| FKQ320-4G  | 1                            | 2   | 1     | -       | 40x8            | 160                 | 790                     | 11               | 24                 | 90               | NA            |
| FKQ320-3   | 1                            | 2   | -     | -       | 40x8            | 160                 | 790                     | 11               | 24                 | 90               | NA            |
| FK250-4    | 1                            | 2   | 1     | -       | 25x10           | 125                 | 630                     | 11               | 20                 | NA               | 14/28         |
| FK240-4    | 1                            | 2   | 1     | -       | 40x6            | 120                 | 630                     | 11               | 31                 | NA               | 14/28         |
| FKQ240-3D  | 1                            | 2   | -     | -       | 40x6            | 120                 | 500                     | 11               | 20                 | 90               | NA            |
| FK240-3    | 1                            | 2   | -     | -       | 40x6            | 120                 | 456                     | 11               | 20                 | NA               | 14/28         |
| FKQ160-4W  | -                            | 2   | 2     | -       | 40x4            | 120                 | 720                     | 11               | 20                 | 90               | NA            |
| FK125-3    | -                            | 1   | 1     | 1       | 25x5            | 62.5                | 440                     | 11               | 20                 | NA               | 14/28         |
| FK125-3B   | 1                            | 2   | -     | -       | 25x5            | 62.5                | 440                     | 11               | 20                 | NA               | 14/28         |
| FK125-2D   | -                            | 1   | 1     | -       | 25x5            | 62.5                | 440                     | 11               | 31                 | NA               | 14/28         |
| FK100-4    | -                            | 2   | 1     | 1       | 25x4            | 120                 | 630                     | 11               | 20                 | NA               | 14/28         |
| FK50-1     | -                            | 1   | -     | -       | 25x2            | 25                  | 98                      | 3                | 7                  | NA               | 14/28         |

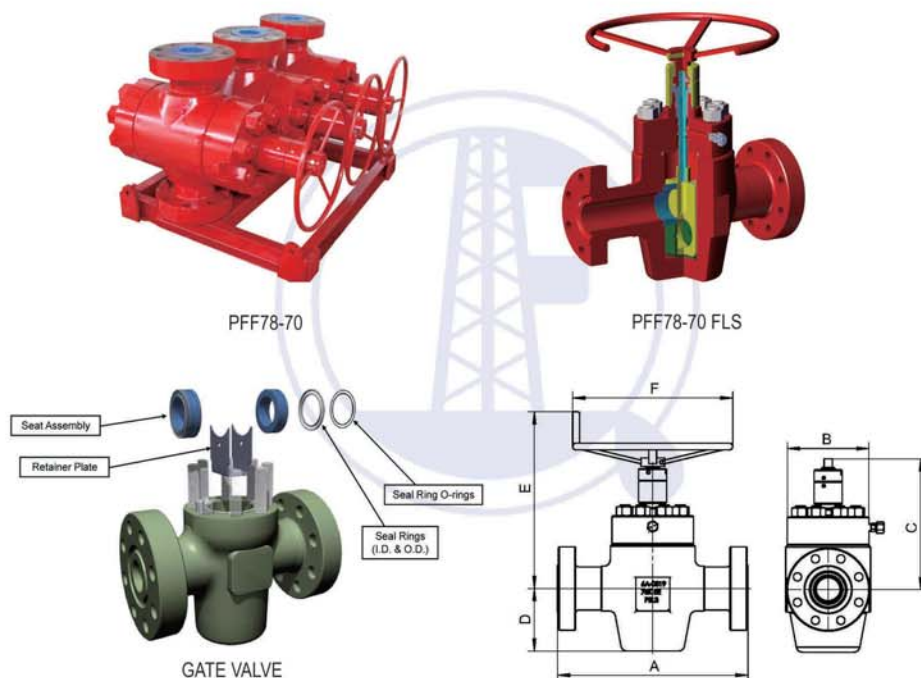
Note: 1 US gal ≈ 3.8L



## Gate Valve



### Gate Valve Dimensions



### Gate Valve Dimensions

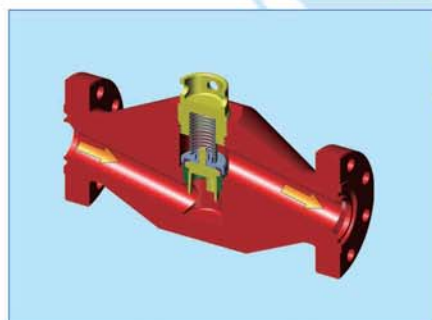
| Item | Working Pressure                       | 2000 psi |           |           |           |         |
|------|----------------------------------------|----------|-----------|-----------|-----------|---------|
|      | Description                            | 2-1/16"  | 2-9/16"   | 3-1/8"    | 4-1/8"    | 6-1/8"  |
| A    | End-to-End, Flanged (Ring Joint)       | 11-5/8"  | 13-1/8"   | 14-1/8"   | 17-1/8"   | 22-1/8" |
| B    | Extreme Width of Body                  | 6-1/8"   | 7-1/8"    | 7-3/4"    | 9-3/4"    | 12-3/8" |
| C    | Center of Port to Top of Stem Adapter  | 13"      | 33-13/16" | 16-13/16" | 18-7/16"  | 22-3/4" |
| D    | Center of Port to Bottom of Body       | 5-1/4"   | 6"        | 7-1/8"    | 9-1/8"    | 12-7/8" |
| E    | Center of Port to Top of Handwheel Rim | 15-3/8"  | 16-1/8"   | 19-1/16"  | 20-11/16" | 24"     |
| F    | Handwheel OD                           | 14"      | 14"       | 14"       | 14"       | 18-1/2" |
|      | Weight (Flanged)                       | 160 lb   | 200 lb    | 240 lb    | 350 lb    | 800 lb  |

### Gate Valve Dimensions(Continued)

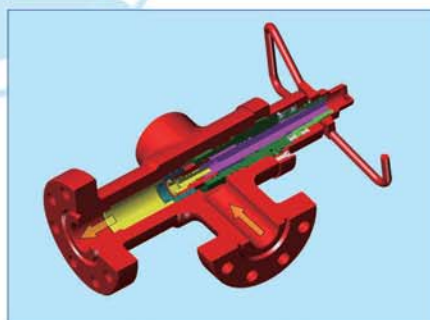
| Item | Working Pressure                       | 3000 psi  |           |           |           |           |         |
|------|----------------------------------------|-----------|-----------|-----------|-----------|-----------|---------|
|      | Description                            | 2-1/16"   | 2-9/16"   | 3-1/8"    | 4-1/8"    | 5-1/8"    | 6-1/8"  |
| A    | End-to-End, Threaded                   | 10-5/8"   | 12-3/8"   | 13-5/8"   | -         | -         | -       |
| A    | End-to-End, Flanged (Ring Joint)       | 14-5/8"   | 16-5/8"   | 17-1/8"   | 20-1/8"   | 24-1/8"   | 24-1/8" |
| B    | Extreme Width of Body                  | 6-3/4"    | 7-5/8"    | 7-1/2"    | 10-1/2"   | 21"       | 12-3/4" |
| C    | Center of Port to Top of Stem Adapter  | 13"       | 33-13/16" | 16-13/16" | 18-7/16"  | 21-5/16"  | 22-3/4" |
| D    | Center of Port to Bottom of Body       | 5-5/8"    | 6-1/2"    | 7-3/8"    | 9-1/8"    | 11-3/8"   | 12-7/8" |
| E    | Center of Port to Top of Handwheel Rim | 15-3/8"   | 16-1/8"   | 19-1/16"  | 20-11/16" | 22-9/16"  | 24"     |
| F    | Handwheel OD                           | 14"       | 14"       | 14"       | 181/2"    | 24"       | 24"     |
|      | Weight (Flanged)                       | 170 lb    | 220 lb    | 260 lb    | 450 lb    | 750 lb    | 1000 lb |
| Item | Working Pressure                       | 5000 psi  |           |           |           |           |         |
|      | Description                            | 2-1/16"   | 2-9/16"   | 3-1/8"    | 4-1/8"    | 5-1/8"    | 6-1/8"  |
| A    | End-to-End, Threaded                   | 10-5/8"   | 12-3/8"   | 13-5/8"   | -         | -         | -       |
| A    | End-to-End, Flanged (Ring Joint)       | 14-5/8"   | 16-5/8"   | 18-5/8"   | 21-5/8"   | 28-5/8"   | 29"     |
| A    | End-to-End, Butt Weld                  | -         | -         | -         | 211/2"    | -         | -       |
| B    | Extreme Width of Body                  | 7"        | 8-3/16"   | 9-1/4"    | 10-13/16" | 21-3/4"   | 14-1/8" |
| C    | Center of Port to Top of Stem Adapter  | 15-1/8"   | 15-15/16" | 16-13/16" | 18-7/16"  | 21-5/16"  | 22-3/4" |
| D    | Center of Port to Bottom of Body       | 5-5/8"    | 6-1/2"    | 7-3/8"    | 9-1/8"    | 11-3/8"   | 12-7/8" |
| E    | Center of Port to Top of Handwheel Rim | 17-3/8"   | 18-1/8"   | 19-1/16"  | 20-11/16" | 23-9/16"  | 24"     |
| F    | Handwheel OD                           | 14"       | 14"       | 18-1/2"   | 18-1/2"   | 24"       | 24"     |
|      | Weight (Flanged)                       | 175 lb    | 230 lb    | 360 lb    | 520 lb    | 800 lb    | 1160 lb |
| Item | Working Pressure                       | 10000 psi |           |           |           |           |         |
|      | Description                            | 1-13/16"  | 2-1/16"   | 2-9/16"   | 3-1/16"   | 4-1/16"   | 5-1/8"  |
| A    | End-to-End, Flanged (Ring Joint)       | 18-1/4"   | 20-1/2"   | 22-1/4"   | 24--3/8"  | 26-3/8"   | 29"     |
| B    | Extreme Width of Body                  | 9-1/16"   | 9-3/8"    | 9-13/16"  | 10-1/4"   | 12-13/16" | 23-1/2" |
| C    | Center of Port to Top of Stem Adapter  | 15-1/8"   | 15-1/8"   | 15-13/16" | 16-7/8"   | 19-11/16" | 23-7/8" |
| D    | Center of Port to Bottom of Body       | 5-3/4"    | 5-7/8"    | 6-13/16"  | 8-1/16"   | 10-1/16"  | 13-1/8" |
| E    | Center of Port to Top of Handwheel Rim | 17-3/8"   | 17-3/8"   | 18-1/8"   | 18-1/16"  | 20-15/16" | 25-1/4" |
| F    | Handwheel OD                           | 14"       | 18-1/2"   | 18-1/2"   | 24"       | 24"       | 24"     |
|      | Weight                                 | 250 lb    | 275 lb    | 370 lb    | 480 lb    | 880 lb    | 1750 lb |
| Item | Working Pressure                       | 15000 psi |           |           |           |           |         |
|      | Description                            | 1-13/16"  | 2-1/16"   | 2-9/16"   | 3-1/16"   |           |         |
| A    | End-to-End, Flanged (Ring Joint)       | 18"       | 19"       | 21"       | 23-9/16"  |           |         |
| B    | Extreme Width of Body                  | 9-7/8"    | 9-7/8"    | 11-1/2"   | 13-9/16"  |           |         |
| C    | Center of Port to Top of Stem Adapter  | 15-1/8"   | 15-1/8"   | 17-3/16"  | 20-15/16" |           |         |
| D    | Center of Port to Bottom of Body       | 5-7/8"    | 6-1/8"    | 7-5/16"   | 9-1/4"    |           |         |
| E    | Center of Port to Top of Handwheel Rim | 17-3/8"   | 17-3/8"   | 19-9/16"  | 22-3/16"  |           |         |
| F    | Handwheel OD                           | 18-1/2"   | 18-1/2"   | 18-1/2"   | 24"       |           |         |
|      | Weight                                 | 275 lb    | 300 lb    | 560 lb    | 890 lb    |           |         |



## Choke Manifold



Check Valve



Choke Valve



## Kill Manifold



### Choke and Kill Manifold Technical Data

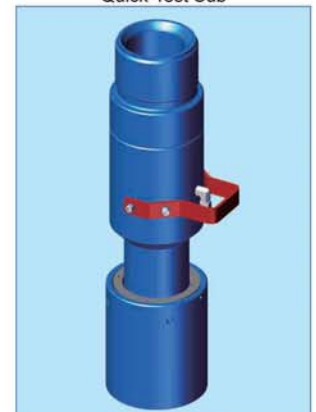
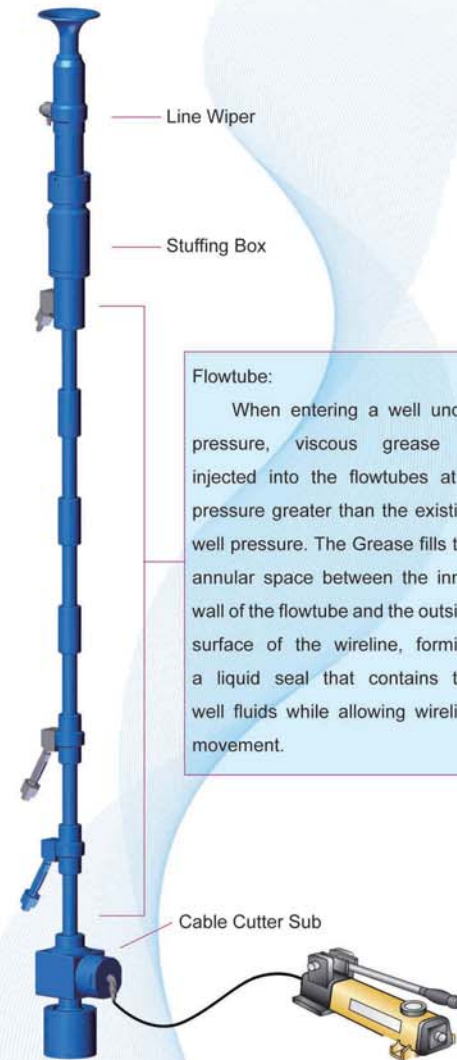
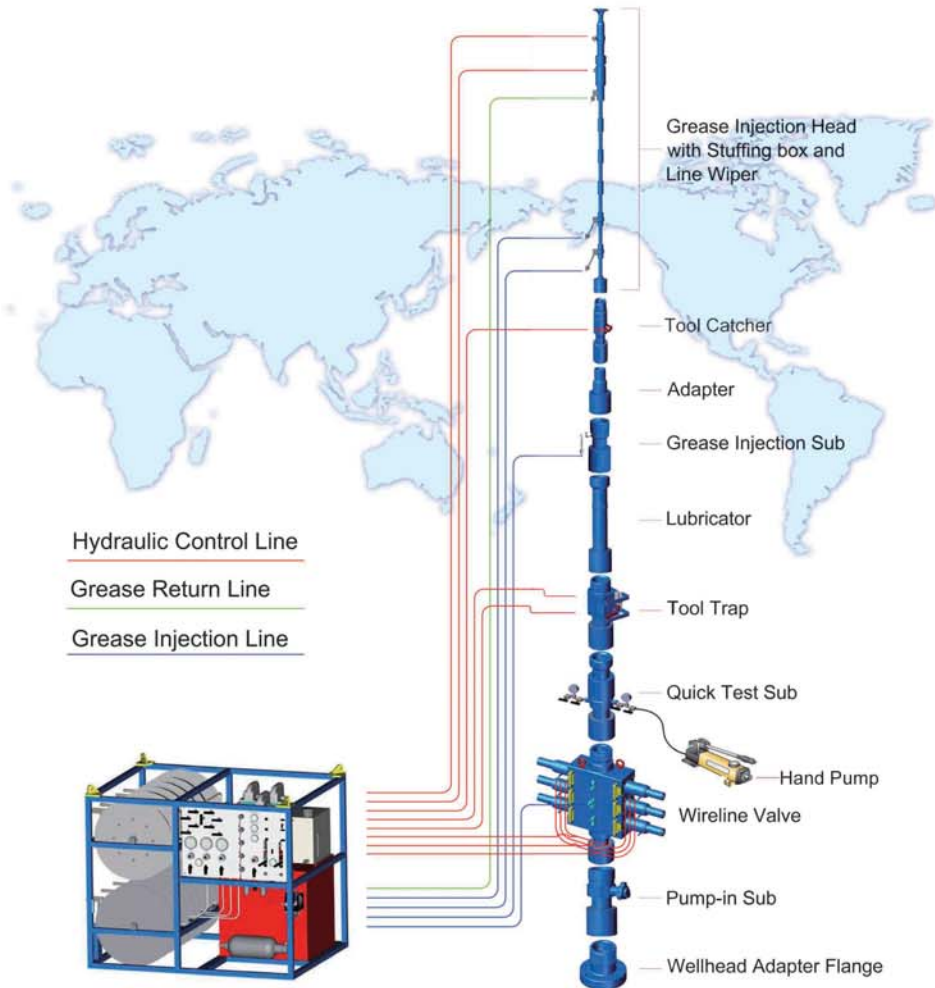
| Description    | Model | Main Bore and Bypass Bore | Working Pressure                 | Temp.                        | Material Class | PSL Level     | PR Level   |
|----------------|-------|---------------------------|----------------------------------|------------------------------|----------------|---------------|------------|
| Choke Manifold | JG    | 2-1/16(52)                | 2000psi~15000psi<br>14MPa~105MPa | -46℃~121℃<br>-50 ~250<br>L~U | EE<br>FF<br>HH | PSL3~<br>PSL4 | PR1<br>PR2 |
|                |       | 2-9/16(65)                |                                  |                              |                |               |            |
|                |       | 3-1/8(78)                 |                                  |                              |                |               |            |
|                |       | 4-1/16(103)               |                                  |                              |                |               |            |
| Kill Manifold  | YG    | 2-1/16(52)                | 2000psi~15000psi<br>14MPa~105MPa |                              |                |               |            |
|                |       | 2-9/16(65)                |                                  |                              |                |               |            |
|                |       | 3-1/8(78)                 |                                  |                              |                |               |            |
|                |       | 4-1/16(103)               |                                  |                              |                |               |            |

Note: Choke and Kill manifolds are built according to customer requirements.





### Typical Wireline Pressure Control Equipment String





## Wireline Pressure Control Equipment



Single Ram Manual wireline valve



Triple Ram Hydraulic wireline valve

| Item | Bore Size                        | Working Pressure                 | Structure | Operation            | Wire Size Detail                                                                                                                                                 |
|------|----------------------------------|----------------------------------|-----------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 2-9/16in ~7-1/16in<br>65mm~180mm | 3000psi~15000psi<br>21MPa~105MPa | Single    | Manual/<br>Hydraulic | Universal, slickline to 5/16<br>Slickline (Up to 0.125)<br>3/16 Cable, 7/32 Cable, 1/4 Cable<br>5/16 Cable, 3/8 Cable, 7/16 Cable<br>15/32 Cable, Shear and seal |
|      |                                  |                                  | Double    |                      |                                                                                                                                                                  |
|      |                                  |                                  | Tripple   |                      |                                                                                                                                                                  |
|      |                                  |                                  | Quad      |                      |                                                                                                                                                                  |



## Wireline Pressure Control Equipment



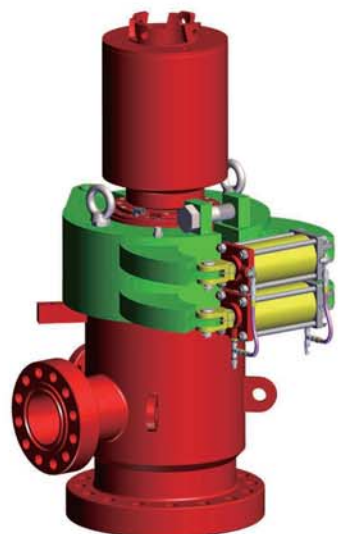
### Wellhead Wireline Pressure Control Equipment



| Item | Model     | Bore Size |     | Working Pressure |       | Temp. Class                                             | Material Class | PSL Level         | Note                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|-----------|-----------|-----|------------------|-------|---------------------------------------------------------|----------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |           | in        | mm  | MPa              | psi   |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1    | FP65-35   | 2-9/16    | 65  | 35               | 5000  | -46℃<br>~<br>121℃<br><br>-50°F<br>~<br>250°F<br><br>L~U | EE<br>FF<br>HH | PSL3<br>~<br>PSL4 | Typical wireline pressure control equipment string Including:<br>1.Wellhead Adapter Flange<br>2. Pump-in Sub<br>3.Wireline valve(BOP)<br>4.Quick Test Sub<br>5. Tool Trap<br>6. Lubricator<br>7. Tool Catcher<br>8. Grease Injection Head<br>9. Stuffing Box<br>10. Line Wiper<br>11. Grease Injection Unit<br><br>▲We can supply following customer specification.<br>▲ Meeting Spec API 6A.<br>NACE MR0175 |
| 2    | FP65-70   | 2-9/16    | 65  | 70               | 10000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3    | FP65-105  | 2-9/16    | 65  | 105              | 15000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 4    | FP76-35   | 3         | 76  | 35               | 5000  |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 5    | FP76-70   | 3         | 76  | 70               | 10000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 6    | FP76-105  | 3         | 76  | 105              | 15000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 7    | FP102-35  | 4         | 102 | 35               | 5000  |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 8    | FP102-70  | 4         | 102 | 70               | 10000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 9    | FP102-105 | 4         | 102 | 105              | 15000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 10   | FP102-140 | 4         | 102 | 140              | 20000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 11   | FP127-35  | 5         | 127 | 35               | 5000  |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 12   | FP127-70  | 5         | 127 | 70               | 10000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 13   | FP127-105 | 5         | 127 | 105              | 15000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 14   | FP140-35  | 5-1/2     | 140 | 35               | 5000  |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 15   | FP140-70  | 5-1/2     | 140 | 70               | 10000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 16   | FP140-105 | 5-1/2     | 140 | 105              | 15000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 17   | FP160-35  | 6-3/8     | 160 | 35               | 5000  |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 18   | FP160-70  | 6-3/8     | 160 | 70               | 10000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 19   | FP160-105 | 6-3/8     | 160 | 105              | 15000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 20   | FP180-35  | 7-1/16    | 180 | 35               | 5000  |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 21   | FP180-70  | 7-1/16    | 180 | 70               | 10000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |
| 22   | FP180-105 | 7-1/16    | 180 | 105              | 15000 |                                                         |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                              |



## Rotating Control Head



High pressure rotating control head



Low pressure rotating control head



Rotating control head



## Rotating Control Head

### Description

Bearing Assembly all of the bearings packed internally with a remote heat exchanger and oil pump, enabling sustained performance at published rpm.

Manual or hydraulic clamp to safely secure the bearing assembly on the bowl.

They also feature a flanged stripper rubber attachment.

### Rotating Control Head Technical Data

| Description                                  | Model<br>FX35-10.5/21<br>Rotating control Head |          | Model<br>FX28-3.5/5<br>Rotating control Head |          |
|----------------------------------------------|------------------------------------------------|----------|----------------------------------------------|----------|
|                                              |                                                |          |                                              |          |
| Rated dynamic sealing pressure               | 10.5 MPa                                       | 1500 psi | 3.5 MPa                                      | 500 psi  |
| Rated static sealing pressure                | 21MPa                                          | 3000 psi | 5MPa                                         | 750 psi  |
| Maximum speed                                | 100 rpm                                        |          | 100 rpm                                      |          |
| Bore of central pipe                         | 180 mm                                         | 7 1/16"  | 180 mm                                       | 7 1/16"  |
| OD of rotating assembly                      | 432 mm                                         | 17 "     | 380 mm                                       | 15 "     |
| Maximum working pressure of lubricating oil  | 19.25 MPa                                      | 2750 psi | 7MPa                                         | 1000 psi |
| Maximum working pressure of locking cylinder | 21 MPa                                         | 3000 psi | NA                                           | NA       |
| Lower connection                             | 13 5/8 5000psi Flanged                         |          | 11 5000psi Flanged                           |          |
| Major sideway connection                     | 7 1/16 5000psi Flanged                         |          | 4-1/16 5000psi Studded                       |          |
| Minor sideway connection                     | 2 1/16 5000psi Flanged                         |          | 2-1/16 3000psi Studded                       |          |

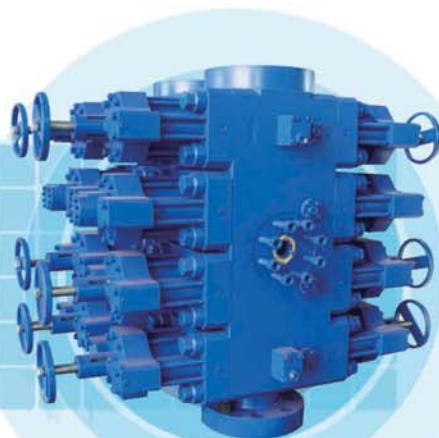




## Coiled Tubing BOP Description

### Features

|                          |                                         |
|--------------------------|-----------------------------------------|
| Main Bore                | 4-1/16in (103mm)<br>5-1/8in (130mm)     |
| Working Pressure         | 10,000psi (70MPa)<br>15,000psi (105MPa) |
| Meeting Standard         | API Spec. 6A<br>NACE MR 0175            |
| Material Class           | EE, FF, HH                              |
| Temp. Class              | -29°C ~ 121°C (P-U)                     |
| PSL Level                | PSL3                                    |
| PR Level                 | PR1                                     |
| Available Configurations | Single, Dual, Triple, Quad, Quint       |
| Ram Operation            | Single and Multifunction                |
| Connection               | Flanged Studded                         |
| Side Connection          | Studded                                 |



### Features

- ◆ Blind, shear, slip and pipe rams (Upper to lower configuration)  
FOR QUAD RAM COILED TUBING BOP
- ◆ Blind/shear and pipe/slip rams (Upper to lower configuration)  
FOR DOUBLE RAM COILED TUBING BOP
- ◆ Hydraulic actuators with manual lockes
- ◆ Hydraulic Ram Change  
Pressure Balanced Piston  
FOR QUAD RAM COILED TUBING BOP
- ◆ Integral Equalizing Valves
- ◆ Comply with API Spec. 6A and NACE MR 0175
- ◆ Easy Maintenance
- ◆ Internal Porting
- ◆ Independent Bonnet Testing
- ◆ Ram Position Indicator

## Surface Safe Valve

### Applications

- ◆ High pressure oil / gas wells production
- ◆ Testing oil and gas wells with high flow rates, high wellhead pressures, or the presence of H<sub>2</sub>S.
- ◆ Wells with hazard operational analysis showing a surface pressure barrier is needed in addition to the primary or master valve.

### Features

- ◆ Fail-safe remote activation and automatic well closure when loss of control pressure occurs.
- ◆ Double metal-to-metal seals for reliability in harsh environments.
- ◆ Compliance with API-6A (PSL-3, PR1), NACE MR0175.
- ◆ Working Pressure: 5,000psi ~ 15,000psi.
- ◆ Temperature: P ~ U.
- ◆ Bore Size: all popular.
- ◆ Hydraulic actuator: 3,000 psi working pressure and 1/2" NPT.  
Inlet and outlet connections: API 6A flange





## Sand Filter

### CSQ78-70 Sand Filter

#### Specifications

Max working pressure: 10000psi (700bar)  
 Working temperature: -20°C to 120°C  
 Max. dry gas flow: 35MMscf/d (1E6m3/d)  
 Max. liquid flow: 5000bbls/d  
 Max Delta P screen : 1500psi (100bar)  
 Volume filterpot: 46liter  
 Hub connection seal: #82 steel ring

#### Connections:

Top inlet hub connection: Techlok 12"/82  
 Inlet: 3" Fig 1502 female Weco union, bore 78mm  
 Outlet: 3" Fig 1502 female Weco union, bore 78mm  
 Drain: 2" Fig 1502 female Weco union, bore 38mm.  
 (Operational 2" adj. drain choke)  
 Internal connections: Flanged 3-1/16" x 10.000



#### Dimensions

Length: 2.80m  
 Width: 2.15m, 2.18m  
 Height: 4.06m, in use 7.40 (incl. lifting frame)  
 Weight: 8000kg(18000lb)  
 Screen Size:  
 Standard length: 2250mm(88.58in)  
 Standard OD: 162mm(6.38in)  
 Standard screen size: 200micron  
 Equivalent flow area (200micron): 11.5" ID pipe  
 Max. Delta P (burst): 100bar

## Flowhead - Surface Test Tree



#### Applications

- ◆ Support the weight of the test string
- ◆ Enable up and down movement of the testing string
- ◆ Control flow out of the well
- ◆ Provide a kill line connection
- ◆ Introduce tools into the well

#### Specifications

|                        |                             |
|------------------------|-----------------------------|
| Main Bore              | 3-1/16in (78mm)             |
| Working Pressure       | 10,000psi (70MPa)           |
| Meeting Standard       | API Spec. 6A NACE MR 0175   |
| Temp. Class            | -29°C~121°C (P-U)           |
| PSL Level              | PSL3                        |
| PR Level               | PR1                         |
| Valve Type             |                             |
| Master Valve           | 3-1/16 Manual Gate Valve    |
| Wing Valve (Kill line) | 3-1/16 Manual Gate Valve    |
| Wing Valve (Flow line) | 3-1/16 Hydraulic Gate Valve |
| Swab Valve             | 3-1/16 Manual Gate Valve    |
| End Connection         |                             |
| Flow line Connection   | 3" Fig 1502 Union Male      |
| Kill line Connection   | 3" Fig 1502 Union Female    |
| Top Connection         | 5 3/4-4Acme Box             |
| Bottom Connection      | 5 3/4-4Acme Pin             |

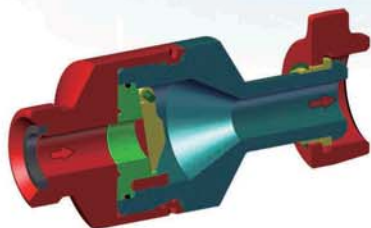


Note: Flowhead are built according to customer requirements.

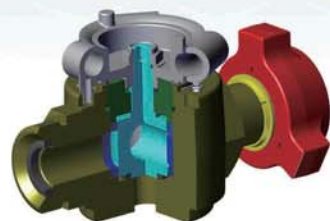




Fracturing Manifold



Check Valve



Plug Valve



Bore:3in  
Working Pressure:15,000psi



Swivel Pipeline



Christmas Tree



13-5/8 10,000psi BOP Stack



21-1/4 10,000psi Annular BOP



13-5/8 15,000psi Double Ram BOP



## Truck Mount Coiled Tubing Drilling

## Truck Mount Coiled Tubing Drilling



### Detailed Description

#### INJECTOR

National oil well RT-100, 100,000 lb hoist, 17,800 lb snub force  
Lifting structure  
New van oil 2 7/8 side loading pack off  
Pivoting and folding goose neck with hydraulic gates

#### REEL

Rated Capacity of 1200 meters with 2 7/8" coiled tubing  
Reel can accommodate 2 3/8" and 3 1/2" tubing  
1140 meters 2 7/8 tubing (sched 80) new condition  
Level line with auto spooler  
New van oil rotating joint  
Pumping iron inside reel and 2" and 3" valves

#### CONTROL CAB

Hydraulic cab lift system  
Injector function controls  
Remote fluid pump controls  
Air remote hydraulic BOP controls  
Pressure recording panel  
Rented monitoring system

#### MUDPUMP

D.P. 800 Weatherford triplex with new drive, cat powered  
New 15 hp upright air compressor for cat engine  
750 cfm, 2300 psi. hurricane 4-stage compressor (blow coil)

#### MUDTANK

Brandt Mini Cobra flow line cleaner  
40m<sup>3</sup> custom mud tank with two 50hp mission magnum pumps  
Electric chemical barrel  
Two mixing hoppers

#### HYDRAULIC SYSTEM

Cummins deck engine  
Hydraulic gear box  
Dennison and Sauer pumps  
Hydraulic oil storage tank with high/low pressure filtering system and high temp/low level alarms  
Hydraulic cooling system

#### BLOWOUT PREVENTION EQUIPMENT

DRILLING RIG TRAILER  
COMBO BUILDING  
SAFETY TRAILER

#### RIG

Rig is seven compact loads for quick and efficient move times and expense  
Tanks, B.O.P.'s, buildings and rig are plumbed in and functioning  
This coiled tubing drilling rig is best utilized with a preset surface casing rig



## Machining Equipment



## Testing Equipment



Chemical Composition Testing Equipment



Impact Testing Equipment



Ultrasonic Detector



Tensile Testing Equipment

Impact Testing Equipment



Metallurgical Microscope



Pressure Testing Central