3 1/16” 10K Coiled Tubing BOPs and Accessories
The quad BOP has a four ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore.

The BOP closure design consists of a hydraulic actuator assembly connected to each of the four ram assemblies. This allows the rams to be hydraulically compressed around the tubing from opposite sides which creates a seal thus containing well pressure below the rams. Pressure across the rams is equalized, through a flanged equalizing assembly located between each ram assembly. This takes place prior to hydraulic retraction of the rams.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

BOPs are available in nominal sizes from 3 1/16” to 5 1/8” with working pressure ratings from 5000 PSI to 15000 PSI. The BOPs are usable in both standard and sour environments.

Standard ram assembly configurations are:

1) Shear/Seal Combi rams - top set of rams that serve to shear the tubing and seal-off well pressure. Can also be used to seal off the well when no tubing is present.

2) Slip rams - second set of rams that serve to hold the tubing in place while shearing or for other applications

3 & 4) Pipe seal rams – the bottom two set of rams serve to seal around the tubing, thus isolating the wellbore pressure below the rams.

Features

- Available with a ported type connection which can be used for downhole injection
- Available with Bowen or Otis Type hand unions, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
3 1/16” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 1.75”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 3.06”

Dimensions

Overall Height: 32.93” (flange x flange)
Width: 41.72”
Thickness: 15.93”
Weight: 1425 lbs.

Hydraulic System

Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Shear/Seal Actuator:
Hydraulic Opening Volume (per Set): 108.2 in³
Hydraulic Closing Volume (per Set): 101.4 in³
Standard Actuator:
Hydraulic Opening Volume (per Set): 48.3 in³
Hydraulic Closing Volume (per Set): 39.4 in³

Connections

Common Top Connections: BX-154 10KPSI Studded Flange
                   Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Female Hand Union
Common Bottom Connections: BX-154 10KPSI Open or Studded Flange
                   Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Male Hand Union
Side Injection Port: BX-152 10K Studded Flange with a BX-152 10K x 2” 1502 Female Crossover
The quad BOP has a four ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore.

The BOP closure design consists of a hydraulic actuator assembly connected to each of the four ram assemblies. This allows the rams to be hydraulically compressed around the tubing from opposite sides which creates a seal thus containing well pressure below the rams. Pressure across the rams is equalized, through a flanged equalizing assembly located between each ram assembly. This takes place prior to hydraulic retraction of the rams.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

BOPs are available in nominal sizes from 3 1/16" to 7 1/16", with working pressure ratings from 5000 PSI to 15000 PSI. The BOPs are useable in both standard and sour environments.

Standard ram assembly configurations are:

1) Blind seal rams - top set of rams that serve to seal-off well pressure when no tubing is present
2) Shear rams - second set of rams that serve to shear the tubing
3) Slip rams - third set of rams that serve to hold the tubing in place while shearing or for other applications
4) Pipe seal rams - bottom set of rams that serve to seal around the tubing, thus isolating the wellbore pressure below the rams

Features

- Available with a ported type connection which can be used for downhole injection
- Available with a variety of hand unions, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
3 1/16” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 1.75”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 3.06”

Dimensions

Overall Height: 31.58” (flange x flange)
Width: 33.60”
Thickness: 15.93”
Weight: 1350 lbs.

Hydraulic System

Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)

Standard Actuator:
Hydraulic Closing Volume (per Set): 39.4 in³
Hydraulic Closing Volume (per Set): 48.3 in³

Shear Actuator:
Hydraulic Closing Volume (per Set): 82.1 in³
Hydraulic Closing Volume (per Set): 76.4 in³

Connections

Common Top Connections: BX-154 10KPSI Studded Flange
                          Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Female Hand Union
Common Bottom Connections: BX-154 10KPSI Studded or Open Flange
                           Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Male Hand Union
Side Injection Port: BX-152 10K Studded Flange with a BX-152 10K x 2” 1502 Female Crossover
The Dual Combi BOP has a two ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore. By utilizing combination rams, this BOP can do all the functions of a quad BOP, with half the rams, which translates to shorter stack height and less weight than a quad BOP.

The BOP closure design consists of a hydraulic actuator assembly connected to each of the two ram assemblies. This allows the rams to be hydraulically compressed around the tubing from opposite sides which creates a seal, thus containing well pressure below the rams. Pressure across the rams is equalized, through a flanged equalizing assembly located across each ram assembly. This takes place prior to hydraulic retraction of the rams.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

BOPs are available in nominal sizes from 3 1/16" to 7 1/16", with working pressure ratings from 5000 PSI to 15000 PSI. The BOPs are useable in both standard and sour environments.

### Standard Ram configurations

1) Shear/Seal rams - Upper set of rams that can shear coiled tubing, and seal-off the well pressure.

2) Slip/Seal rams - Lower set of rams that serve to hold the tubing in place while shearing or for other applications and seal around the tubing, thus isolating the wellbore pressure below the rams

### Features

- Available with a ported type connection which can be used for downhole injection
- Available with a variety of hand unions, flanged or client specified connections. Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
- Manual override available in case of hydraulic failure
3 1/16” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 1 3/4”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 3.06”

Dimensions
Overall Height: 21.30” (flange x flange)
Width: 41.72”
Thickness: 16.06”
Weight: 900 lbs.

Hydraulic System
Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Hydraulic Closing Volume (per Set): 101.4 in³
Hydraulic Closing Volume (per Set): 108.2 in³
Piston Stroke: 2.375 in.

Connections
Common Top Connections: BX-154 10KPSI Studded Flange
                       Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Female Hand Union

Common Bottom Connections: BX-154 10KPSI Studded Flange
                           BX-154 10KPSI Open Flange
                           Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Male Hand Union

Side Injection Port: BX-152 10K Studded Flange with a BX-152 10K x 1502 2” WECO Female Crossover
The Shear/Seal BOP provides positive protection against blowouts and to secure the well in emergencies. This BOP can cut the coiled tubing and seal the well off.

The BOP closure design consists of a hydraulic actuator assembly connected to each of the ram assemblies. This allows the rams to be hydraulically closed slicing the tubing. A horizontal seal is compressed against the lower side of the shear blade which creates a seal, thus containing well pressure below the rams. Pressure across the rams is equalized, through a flanged equalizing assembly located between each ram assembly. This takes place prior to hydraulic retraction of the rams.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

BOPs are available in nominal sizes from 3 1/16" to 7 1/16", with working pressure ratings from 5000 PSI to 15000 PSI. The BOPs are useable in both standard and sour environments.

**Features**

- Available with a variety of hand unions, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
3 1/16” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 1 3/4”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 3.06”

Dimensions

Overall Height: 15.6” (studded flange x open flange)
Width: 41.72”
Thickness: 16.06”
Weight: 700 lbs.

Hydraulic System

Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Hydraulic Opening Volume (per Set): 101.4 in³
Hydraulic Closing Volume (per Set): 108.2 in³

Connections

Common Top Connections: BX-154 10KPSI Open or Studded Flange
    Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Female Hand Union
Common Bottom Connections: BX-154 10KPSI Open or Studded Flange
    Integral 6 5/16 -4 ACME (4 3/8) ‘B’ Male Hand Union
The side door stripper/packer is designed to pack-off around coiled tubing being stripped in or out of the well bore. The tool allows easy access to the packer, primary seal and bushing. These can be replaced under pressure with the coiled tubing still in the well. The tool is installed above the coiled tubing BOP.

Well pressure is sealed-off by actuating the hydraulic cylinder to the extended position. This causes the packer cylinder sleeve to push against the packer. The packer is squeezed to form a seal around the tubing. Interchangeability of the bushing and packer allows one tool to be used with a wide range of coiled tubing sizes.

The side door stripper/packer is available in 3 1/16”, 4 1/16”, and 5 1/2” nominal sizes.

Features:

- Working pressures from 5000 PSI to 10000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
- Can be easily redressed for different coiled tubing sizes.
- Packing rubbers can be changed out with coiled tubing still in the well.
- Max Coil Size 2.00”
- Weight: 290 lbs
Lubricator section assemblies are available in several standard lengths and sizes. Working pressure and service ratings are consistent with all Vanoil surface pressure equipment. Lubricator sections are configured to provide an overall length, which is needed in order to accommodate a particular tool string configuration, between the stuffing box and BOP. The lubricators are equipped with client-specified quick union connectors, which facilitate quick and easy assembly.

All Vanoil lubricators incorporate a dual seal design between the lubricator tube and union connection. This dual seal design consists of a metal-to-metal primary seal between tube and union with a secondary O-Ring seal located behind the primary seal. This helps to prevent well fluids from damaging the threaded connections and escaping into the atmosphere.

A typical lubricator section consists of a lubricator tube with a quick union box connection at the top and a quick union pin and collar connection at the bottom. Lubricator sections are available with bleed-off port subs, if required. Optional bleed subs are also available for use with all sizes of lubricator sections.

Features:
- Working pressures from 5000 PSI to 15000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
- Incorporates a dual seal design
The hydraulic quick connect union is designed to provide a hydraulic activated latching mechanism which permits safe and rapid make-up of surface pressure equipment components. This union facilitates the assembly of large size BOPs and lubricators to each other or to the wellhead.

The quick connect union has a special pin adapter that seats in the union body box. Three actuators hydraulically operate lock dogs to engage and lock the pin adapter in place. The adapter has an O ring that seals in the box end, similar to conventional unions. The actuators incorporate a "fail-safe" spring that retains engagement of the lock dogs in case of hydraulic failure.

The quick connect union bottom connection is available as a union pin and collar connection, flanged or client specified connection. The tool is available in 5000 PSI to 10000 PSI working pressure for standard and sour service environments. Quick connect unions are also available in sizes and IDs to match other current surface pressure equipment.

**Features:**

- provides a safe and efficient method in handling and make-up of large size BOPs and lubricators
- fail safe feature ensures coupled union remains engaged in case of hydraulic failure
The pump in/ flow tee sub is a short joint of lubricator with customer specified connections on the top and bottom, with a flanged side port. Typically a BX 152 by 2” Fig. 1502 thread half adapter is made up to the side port.

**Features:**

- Working pressures from 3000 PSI to 15000 PSI
- Available in nominal sizes from 2 1/2” - 7”
- Also available in flow cross configuration
- Standard and sour service environments
- Available with studded or open flange, or standard hand union connections
- Available with any customer specified side port connections.
Flanged and threaded wellhead adapters provide a direct connection between surface pressure equipment and the wellhead. Two types of wellhead adapters are available - union box by API flange type or union box by pin thread type.

The flange type adapter covers all API flange sizes pressure and service environment requirements. The pin threaded adapter is made up to the wellhead lift thread or special threaded box connection and is available to meet required pressure and service environments.

The union end of the adapter can be provided in any size and style of customer specified connection.

Vanoil can provide adapters to meet any API flange or threaded pin with any commonly used union connection.
Chemical Injection Sub

The Chemical Injection Sub is designed to inject coolant or inhibitor fluids on to the coiled tubing while running into or out of the well. The internal brass sleeve has small pin holes that provide an even coating of the fluid on the tubing. Vanoil’s 4 1/16" coolant / inhibitor injection sub comes with two 2.0" fig. 1502 port connections for connection with an injection line. A check valve design is incorporated in the side ports to prevent wellbore pressure from escaping into the injection line.

Chemical injection subs are available from 5000 PSI to 15000 PSI working pressures, for standard or sour service environments.

Features:

- Comes with an insert that can be replaced if worn,
- Available with a variety of hand unions, flanged or client specified connections.
- Available with internal diameters of 3 1/16", 4 1/16", 5 1/8", or 7 1/16"
Rotating joints are used as an integral part of a coiled tubing reel. Our rotating joints are designed to handle all circulating operations required for through-tubing pumping operations. Vanoil’s rotating joints come with a flanged outlet and a 1502 hammer union style inlet for ease of installation and removal. Multi-style seals and a heavy duty bearing design in a hydraulic oil bath ensures a wide pressure sealing range and a long, reliable service life. Vanoil rotating joints are available with an internal diameter of 1 1/2”, 2”, and 2 1/2”. The maximum working pressure is 10,000 psi. These rotating joints are designed for sour service, and comply with NACE MR 01-75 latest edition.

Features:
- New roller bearing design to provide longer bearing life.
- Oil bath for bearings w/ oil level check port.
- New packing stack design to provide improved seal over wide range of pressures and temperatures.
- Includes weep port to indicate faulty packing stack.
4 1/16” 10K Coiled Tubing BOPs and Accessories
The quad BOP has a four ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore.

Our Enviro-Safe Dismantling System allows for quick and easy ram access, without any hydraulic fluid loss. By removing the actuator capscrews the actuators can be functioned back and away from BOP body. Once the actuators are retracted the rams can be removed for inspection, or servicing.

An additional attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

Standard ram configurations are:

1) Blind seal rams - top set of rams that serve to seal-off well pressure when no tubing is present

2) Shear rams - second set of rams that serve to shear the tubing

3) Slip rams - third set of rams that serve to hold the tubing in place while shearing or for other applications

4) Pipe seal rams - bottom set of rams that serve to seal around the tubing, thus isolating the wellbore pressure below the rams

Features

- Available with a ported type connection which can be used for downhole injection
- Available with a variety hand unions, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
4 1/16” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 2 3/8”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 4.06”

Dimensions

Overall Height: 43.88” (studded flanges)
Width: 51.64”
Thickness: 19.09”
Weight: 3615 lbs.

Hydraulic System

Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)

Standard Actuator:
Hydraulic Opening Volume (per Set): 118 in³
Hydraulic Closing Volume (per Set): 109 in³

Shear Actuator:
Hydraulic Opening Volume (per Set): 218 in³
Hydraulic Closing Volume (per Set): 212 in³

Connections

Common Top Connections: BX-155 10KPSI Studded Flange
Integral 8.25-4 ACME (6.00) ‘B’ Female Hand Union

Common Bottom Connections: BX-155 10KPSI Open or Studded Flange
Integral 8.25-4 ACME (6.00) ‘B’ Male Hand Union

Side Injection Port: BX-152 10K Studded Flange with a BX-152 10K x 2” 1502 Female Crossover
The Dual Combi BOP has a two ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore. By utilizing combination rams, this BOP can do all the functions of a quad BOP, with half the rams, which translates to shorter stack height and less weight than a quad BOP.

Our Enviro-Safe Dismantling System allows for quick and easy ram access, without any hydraulic fluid loss. By removing the actuator capscrews the actuators can be functioned back and away from BOP body. Once the actuators are retracted the rams can be removed for inspection, or servicing.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

BOPs are available in nominal sizes from 4 1/16” to 5 1/8”, with working pressure ratings from 5000 PSI to 10000 PSI. The BOPs are useable in both standard and sour environments.

---

**Standard Ram configurations**

1) Shear/Seal rams - Upper set of rams that can shear coiled tubing and seal-off the well pressure.

2) Slip/Seal rams - Lower set of rams that serve to hold the tubing in place while shearing or for other applications and seal around the tubing, thus isolating the wellbore pressure below the rams

---

**Features**

- Available with a ported type connection which can be used for downhole injection
- Available with a variety of hand unions, flanged or client specified connections. Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
- Manual override available in case of hydraulic failure
4 1/16” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 2 3/8”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 4.06”

Dimensions
Overall Height: 21.91” (flange x flange)
Width: 51.66”
Thickness: 19.0”
Weight: 1900 lbs.

Hydraulic System
Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Hydraulic Closing Volume (per Set): 213.60 in³
Hydraulic Closing Volume (per Set): 221.90 in³

Connections
Common Top Connections: BX-155 10KPSI Studded Flange
                      Integral 8.25-4 ACME (6.00) ‘B’ Female Hand Union
Common Bottom Connections: BX-155 10KPSI Studded or Open Flange
                        Integral 8.25-4 ACME (6.00) ‘B’ Male Hand Union
Side Injection Port: BX-152 10K Studded Flange with a BX-152 10K x 2” 1502 Female Crossover
The Shear/Seal BOP provides positive protection against blowouts and to secure the well in emergencies. This BOP can cut the coiled tubing and seal the well off.

The BOP closure design consists of two hydraulic actuator assemblies connected to each of the ram assemblies. This allows the rams to be hydraulically compressed slicing the tubing. A horizontal seals is compressed against the lower side of the shear blade which creates a seal, thus containing well pressure below the rams. Pressure across the rams is equalized, through a flanged equalizing assembly located between each ram assembly. This takes place prior to hydraulic retraction of the rams.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

BOPs are available in nominal sizes from 3 1/16" to 7 1/16", with working pressure ratings from 5000 PSI to 15000 PSI. The BOPs are useable in both standard and sour environments.

**Features**

- Available with a variety of hand unions, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
4 1/16” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 2 3/8”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 4.06”

Dimensions
Overall Height: 17.5” (studded flange x open flange)
Width: 51.66”
Thickness: 13.38”
Weight: 970 lbs.

Hydraulic System
Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Hydraulic Opening Volume (per Set): 221.9 in³
Hydraulic Closing Volume (per Set): 213.6 in³

Connections
Common Top Connections: BX-155 10KPSI Open or Studded Flange
Integral 8.25 -4 ACME (6.00) ‘B’ Female Hand Union
Common Bottom Connections: BX-155 10KPSI Open or Studded Flange
Integral 8.25 -4 ACME (6.00) ‘B’ Male Hand Union
The side door stripper/packer is designed to pack-off around coiled tubing being stripped in or out of the well bore. The tool allows easy access to the packer, primary seal and bushing. These can be replaced under pressure with the coiled tubing still in the well. The tool is installed above the coiled tubing BOP.

Well pressure is sealed-off by actuating the hydraulic cylinder to the extended position. This causes the packer cylinder sleeve to push against the packer. The packer is squeezed to form a seal around the tubing. Interchangeability of the bushing and packer allows one tool to be used with a wide range of coiled tubing sizes.

The side door stripper/packer is available in 3 1/16”, 4 1/16”, and 5 1/2” nominal sizes.

**Features:**

- Working pressures from 5000 PSI to 10000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
- Can be easily redressed for different coiled tubing sizes.
- Packing rubbers can be changed out with coiled tubing still in the well.

---

**Specification Guide**

<table>
<thead>
<tr>
<th>Part #</th>
<th>3 1/16”</th>
<th>4 1/16”</th>
<th>5 1/2”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Coiled Tubing Size</td>
<td>2”</td>
<td>2 7/8”</td>
<td>3 1/2”</td>
</tr>
<tr>
<td>Overall Height</td>
<td>33.31”</td>
<td>44.52”</td>
<td>44.42”</td>
</tr>
</tbody>
</table>

A-8064 Edgar Industrial Cres., Alberta Canada, T4P 3S2
Direct: (403) 347.8280 / Fax (403) 347.8281 / [www.vanoil.com](http://www.vanoil.com)
The tandem side door stripper/packer is designed to perform the same functions and operations as the standard side door stripper/packer. The tool is installed between the BOP and standard side door stripper/packer and is used in conjunction with the standard tool or alone during emergency operations.

Well pressure is sealed-off by actuating the hydraulic cylinder to the extended position. This causes the packer cylinder sleeve to push against the packer. The packer is squeezed to form a seal around the tubing. Interchangeability of the bushing and packer allows one tool to be used with a wide range of coiled tubing sizes.

The tandem side door stripper/packer is available in 3 1/16”, and 4 1/16” nominal sizes.

**Features:**

- Working pressures from 5000 PSI to 10000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
- Can be easily redressed for different coiled tubing sizes.
- Packing rubbers can be changed out with coiled tubing still in the well.

### Specification Guide

<table>
<thead>
<tr>
<th>Part #</th>
<th>3 1/16”</th>
<th>4 1/16”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Coiled Tubing Size</td>
<td>M306TS20-xxx</td>
<td>M406TS20-xxx</td>
</tr>
<tr>
<td>Overall Height</td>
<td>49.35”</td>
<td>47.36”</td>
</tr>
</tbody>
</table>

A-8064 Edgar Industrial Cres., Alberta Canada, T4P 3S2
Direct: (403) 347.8280 / Fax (403) 347.8281 / www.vanoil.com
Lubricator section assemblies are available in several standard lengths and sizes. Working pressure and service ratings are consistent with all Vanoil surface pressure equipment. Lubricator sections are configured to provide an overall length, which is needed in order to accommodate a particular tool string configuration, between the stuffing box and BOP. The lubricators are equipped with client-specified quick union connectors, which facilitate quick and easy assembly.

All Vanoil lubricators incorporate a dual seal design between the lubricator tube and union connection. This dual seal design consists of a metal-to-metal primary seal between tube and union with a secondary O-Ring seal located behind the primary seal. This helps to prevent well fluids from damaging the threaded connections and escaping into the atmosphere.

A typical lubricator section consists of a lubricator tube with a quick union box connection at the top and a quick union pin and collar connection at the bottom. Lubricator sections are available with bleed-off port subs, if required. Optional bleed subs are also available for use with all sizes of lubricator sections.

Features:
- Working pressures from 5000 PSI to 15000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
- Incorporates a dual seal design
Hydraulic Quick Connect

The hydraulic quick connect union is designed to provide a hydraulic activated latching mechanism which permits safe and rapid make-up of surface pressure equipment components. This union facilitates the assembly of large size BOPs and lubricators to each other or to the wellhead.

The quick connect union has a special pin adapter that seats in the union body box. Three actuators hydraulically operate lock dogs to engage and lock the pin adapter in place. The adapter has an O ring that seals in the box end, similar to conventional unions. The actuators incorporate a "fail-safe" spring that retains engagement of the lock dogs in case of hydraulic failure.

The quick connect union bottom connection is available as a union pin and collar connection, flanged or client specified connection. The tool is available in 5000 PSI to 10000 PSI working pressure for standard and sour service environments. Quick connect unions are also available in sizes and IDs to match other current surface pressure equipment.

Features:

- provides a safe and efficient method in handling and make-up of large size BOPs and lubricators
- fail safe feature ensures coupled union remains engaged in case of hydraulic failure
The Chemical Injection Sub is designed to inject coolant or inhibitor fluids on to the coiled tubing while running into or out of the well. The internal brass sleeve has small pin holes that provide an even coating of the fluid on the tubing. Vanoil’s 4 1/16” coolant / inhibitor injection sub comes with two 2.0” fig. 1502 port connections for connection with an injection line. A check valve design is incorporated in the side ports to prevent wellbore pressure from escaping into the injection line.

Chemical injection subs are available from 5000 PSI to 15000 PSI working pressures, for standard or sour service environments.

**Features:**

- Comes with an insert that can be replaced if worn,
- Available with a variety of hand unions, flanged or client specified connections.
- Available with internal diameters of 3 1/16”, 4 1/16”, 5 1/8”, or 7 1/16”
The pump in/ flow tee sub is a short joint of lubricator with customer specified connections on the top and bottom, with a flanged side port. Typically a BX 152 by 2” Fig. 1502 thread half adapter is made up to the side port.

Features:

- Working pressures from 3000 PSI to 15000 PSI
- Available in nominal sizes from 2 1/2”- 7”
- Also available in flow cross configuration
- Standard and sour service environments
- Available with studded or open flange, or standard hand union connections
- Available with any customer specified side port connections.
Flanged and threaded wellhead adapters provide a direct connection between surface pressure equipment and the wellhead. Two types of wellhead adapters are available - union box by API flange type or union box by pin thread type.

The flange type adapter covers all API flange sizes pressure and service environment requirements. The pin threaded adapter is made up to the wellhead lift thread or special threaded box connection and is available to meet required pressure and service environments.

The union end of the adapter can be provided in any size and style of customer specified connection.

Vanoil can provide adapters to meet any API flange or threaded pin with any commonly used union connection.
Rotating joints are used as an integral part of a coiled tubing reel. Our rotating joints are designed to handle all circulating operations required for through-tubing pumping operations. Vanoil’s rotating joints come with a flanged outlet and a 1502 hammer union style inlet for ease of installation and removal. Multi-style seals and a heavy duty bearing design in a hydraulic oil bath ensures a wide pressure sealing range and a long, reliable service life. Vanoil rotating joints are available with an internal diameter of 1 1/2”, 2”, and 2 1/2”. The maximum working pressure is 10,000 psi. These rotating joints are designed for sour service, and comply with NACE MR 01-75 latest edition.

Features:

- New roller bearing design to provide longer bearing life.
- Oil bath for bearings w/ oil level check port.
- New packing stack design to provide improved seal over wide range of pressures and temperatures.
- Includes weep port to indicate faulty packing stack.
4 1/16” 15K Coiled Tubing BOPs and Accessories
The quad BOP has a four ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore.

Our Enviro-Safe Dismantling System allows for quick and easy ram access, without any hydraulic fluid loss. To open the actuators away from the BOP body, remove the actuator capscrews and then apply hydraulic pressure to close the BOP rams. Once the actuators are retracted the rams can be removed for inspection, or servicing. To close the actuators, hydraulic pressure is applied to open the rams. Once closed, the capscrews are replaced.

An additional attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

Standard ram assembly configurations are:

1) Blind seal rams - top set of rams that serve to seal-off well pressure when no tubing is present

2) Shear rams - second set of rams that serve to shear the tubing

3) Slip rams - third set of rams that serve to hold the tubing in place while shearing or for other applications

4) Pipe seal rams - bottom set of rams that serve to seal around the tubing, thus isolating the wellbore pressure below the rams

Features
- Available with a ported type connection which can be used for downhole injection
- Available with any standard hand union, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
4 1/16” Technical Specifications

**Working Pressure:** 15,000 psi
**Maximum Coiled Tubing Size:** 2 3/8”
**Operating Temperature:** -28°C – 120°C (-20°F – 250°F)
**Internal Bore ID:** 4.06”

**Dimensions**

- **Overall Height:** 49.00” (flange x flange)
- **Width:** 54.66”
- **Thickness:** 22.36”
- **Weight:** 6000 lbs.

**Hydraulic System**

- **Connections:** 1/2” NPT Box
- **Hydraulic Operating Pressure:** 2800-3000 psi (max)

**Standard Actuator:**

- **Hydraulic Opening Volume (per Set):** 162 in$^3$
- **Hydraulic Closing Volume (per Set):** 145 in$^3$

**Shear Actuator:**

- **Hydraulic Opening Volume (per Set):** 236 in$^3$
- **Hydraulic Closing Volume (per Set):** 233 in$^3$

**Connections**

- **Common Top Connections:** BX-155 15KPSI Studded Flange
- **Common Bottom Connections:** BX-155 15KPSI Open or Studded Flange
- **Side Injection Port:** BX-152 15K Studded Flange with a BX-152 15K x 2” 2202 Female Crossover
The Dual Combi BOP has a two ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore. By utilizing combination rams, this BOP can do all the functions of a quad BOP, with half the rams, which translates to shorter stack height and less weight than a quad BOP.

Our Enviro-Safe Dismantling System allows for quick and easy ram access, without any hydraulic fluid loss. By removing the actuator capscrews the actuators can be functioned back and away from BOP body. Once the actuators are retracted the rams can be removed for inspection, or servicing.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

### Standard Ram configurations

1) Shear/Seal rams - Upper set of rams that can shear coiled tubing and seal-off the well pressure.

2) Slip/Seal rams - Lower set of rams that serve to hold the tubing in place while shearing or for other applications and seal around the tubing, thus isolating the wellbore pressure below the rams

### Features

- Available with a ported type connection which can be used for downhole injection
- Available with a variety of hand unions, flanged or client specified connections. Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
- Manual override available in case of hydraulic failure
4 1/16” Technical Specifications

Working Pressure: 15,000 psi
Maximum Coiled Tubing Size: 2 3/8”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 4.06”

Dimensions

Overall Height: 33.13” (studded flange x open flange)
Width: 59.56”
Thickness: 22.36”
Weight: 3300 lbs.

Hydraulic System

Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Hydraulic Opening Volume (per Set): 236 in³
Hydraulic Closing Volume (per Set): 233 in³

Connections

Common Top Connections: BX-155 10KPSI Studded Flange
Common Bottom Connections: BX-155 10KPSI Studded or Open Flange
Side Injection Port: BX-152 10K Studded Flange with a BX-152 10K x 2” 2202 Female Crossover
The Shear/Seal BOP provides positive protection against blowouts and to secure the well in emergencies. This BOP can cut the coiled tubing and seal the well off.

The BOP closure design consists of two hydraulic actuator assemblies connected to each of the ram assemblies. This allows the rams to be hydraulically compressed slicing the tubing. A horizontal seal is compressed against the lower side of the shear blade which creates a seal, thus containing well pressure below the rams. Pressure across the rams is equalized, through a flanged equalizing assembly located between each ram assembly. This takes place prior to hydraulic retraction of the rams.

Our Enviro-Safe Dismantling System allows for quick and easy ram access, without any hydraulic fluid loss. By removing the actuator capscrews the actuators can be functioned back and away from BOP body. Once the actuators are retracted the rams can be removed for inspection, or servicing.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

---

**Features**

- Available with a variety of hand unions, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
4 1/16” Technical Specifications

Working Pressure: 15,000 psi
Maximum Coiled Tubing Size: 2”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 4.06”

Dimensions
Overall Height: 19.75 (studded flange x open flange)
Width: 59.56
Thickness: 14.5”
Weight: 1640 lbs.

Hydraulic System
Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Hydraulic Opening Volume (per Set): 236 in³
Hydraulic Closing Volume (per Set): 233 in³

Connections
Common Top Connections: BX-155 15KPSI Open or Studded Flange
Common Bottom Connections: BX-155 15KPSI Open or Studded Flange
Optional Side Injection Port: BX-152 15K Studded Flange with a BX-152 15K x 2” 2202 Female Crossover
The side door stripper/packer is designed to pack-off around coiled tubing being stripped in or out of the well bore. This equipment allows for easy access to the packer, primary seal and bushing. The packer rubber can be replaced under pressure with the coiled tubing still in the well.

Well pressure is sealed-off by actuating the hydraulic cylinder to the extended position. This causes the packer cylinder sleeve to push against the packer. The packer is squeezed to form a seal around the tubing. Interchangeability of the brass bushings and packer rubbers allows one tool to be used with a wide range of coiled tubing sizes.

This model is available with a snubbing guide and non-pressurized hand union connection for easy installation and removal from the coiled tubing injector.

Features:

- Working pressure: 15000 PSI
- 2.00” Max Coil Size.
- Standard and sour service environments
- Available with any standard hand union or flanged connection
- Can be easily redressed for different coiled tubing sizes.
- Packing rubbers can be changed out with coiled tubing still in the well.
- Comes with HF9 pressure monitoring port.
Integral lubricators are available in several standard lengths and sizes. Working pressure and service ratings are consistent with all Vanoil surface pressure equipment. Lubricator sections are configured to provide an overall length, which is needed in order to accommodate a particular tool string configuration, between the stuffing box and BOP. The lubricators are equipped with client-specified quick union connectors, which facilitate quick and easy assembly.

Lubricator sections are available with bleed-off ports, if required. Optional bleed subs are also available for use with all sizes of lubricator sections.

Features:

- Working pressures from 3000 PSI to 15000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
The Chemical Injection Sub is designed to inject coolant or inhibitor fluids on to the coiled tubing while running into or out of the well. The internal brass sleeve has small pin holes that provide an even coating of the fluid on the tubing. Vanoil’s 4 1/16” coolant / inhibitor injection sub comes with two 2.0” fig. 1502 port connections for connection with an injection line. A check valve design is incorporated in the side ports to prevent wellbore pressure from escaping into the injection line.

Chemical injection subs are available from 5000 PSI to 15000 PSI working pressures, for standard or sour service environments.

Features:

- Comes with an insert that can be replaced if worn,
- Available with a variety of hand unions, flanged or client specified connections.
- Available with internal diameters of 3 1/16”, 4 1/16”, 5 1/8”, or 7 1/16”
The pump in/flow tee sub is a short joint of lubricator with customer specified connections on the top and bottom, with a flanged side port. Typically a BX 152 by 2” Fig. 1502 thread half adapter is made up to the side port.

**Features:**

- Working pressures from 3000 PSI to 15000 PSI
- Available in nominal sizes from 2 1/2” - 7”
- Also available in flow cross configuration
- Standard and sour service environments
- Available with studded or open flange, or standard hand union connections
- Available with any customer specified side port connections.
Flanged and threaded wellhead adapters provide a direct connection between surface pressure equipment and the wellhead. Two types of wellhead adapters are available - union box by API flange type or union box by pin thread type.

The flange type adapter covers all API flange sizes pressure and service environment requirements. The pin threaded adapter is made up to the wellhead lift thread or special threaded box connection and is available to meet required pressure and service environments.

The union end of the adapter can be provided in any size and style of customer specified connection.

Vanoil can provide adapters to meet any API flange or threaded pin with any commonly used union connection.
5 1/8” & 7 1/16” Coiled Tubing BOPs and Accessories
The 5 1/8” 5K Dual Combi BOP has a two ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore. By utilizing combination rams, this BOP can do all the functions of a quad BOP, with half the rams, which translates to shorter stack height and less weight than a quad BOP.

Our Enviro-Safe Dismantling System allows for quick and easy ram access, without any hydraulic fluid loss. By removing the actuator capscrews the actuators can be functioned back and away from BOP body. Once the actuators are retracted the rams can be removed for inspection, or servicing.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

### Standard Ram configurations

1) **Shear/Seal rams** - Upper set of rams that can shear coiled tubing and seal-off the well pressure.

2) **Slip/Seal rams** - Lower set of rams that serve to hold the tubing in place while shearing or for other applications and seal around the tubing, thus isolating the wellbore pressure below the rams

### Features

- Available with a ported type connection which can be used for downhole injection
- Available with a variety of hand unions, flanged or client specified connections. Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
- Manual override available in case of hydraulic failure
5 1/8” Technical Specifications

Working Pressure: 5,000 psi
Maximum Coiled Tubing Size: 2 7/8” (3 ¼” available as special order)
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 5.12”

Dimensions
Overall Height: 31” (Studded Flanges)
Overall Height: 41.3” (5 1/2” ‘B’ Hand Unions)
Width: 62.8”
Thickness: 19.5”
Weight: 2300 lbs.

Hydraulic System
Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Hydraulic Opening Volume (per Set): 220.4 in³
Hydraulic Closing Volume (per Set): 225.5 in³

Connections
Common Top Connections: R-46 5KPSI Studded Flange
R-44 5KPSI Studded Flange
8 1/2 -4 ACME-DS (6 3/4) ‘B’ Female Hand Union

Common Bottom Connections: R-46 5KPSI Studded Flange
R-46 5KPSI Open Flange
R-44 5KPSI Studded Flange
R-44 5KPSI Open Flange
8 1/2 -4 ACME-DS (6 3/4) ‘B’ Male Hand Union

Side Injection Port: R-24 5K Studded Flange with a R-24 5K x 2” 1502 Female Crossover
The 5 1/8” 10K quad BOP has an oval four ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore.

Our Enviro-Safe Dismantling System allows for quick and easy ram access, without any hydraulic fluid loss. By removing the actuator capscrews the actuators can be functioned back and away from BOP body. Once the actuators are retracted the rams can be removed for inspection, or servicing.

An additional attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

Standard ram configurations are:

1) Blind seal rams - top set of rams that serve to seal-off well pressure when no tubing is present

2) Shear rams - second set of rams that serve to shear the tubing

3) Slip rams - third set of rams that serve to hold the tubing in place while shearing or for other applications

4) Pipe seal rams - bottom set of rams that serve to seal around the tubing, thus isolating the wellbore pressure below the rams

Features

- Available with a ported type connection which can be used for downhole injection
- Available with a variety hand unions, flanged or client specified connections.
- Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
5 1/8” Technical Specifications

Working Pressure: 10,000 psi
Maximum Coiled Tubing Size: 3 1/2”
Operating Temperature: -28°C – 120°C (-20°F – 250°F)
Internal Bore ID: 5.12”

Dimensions
Overall Height: 57.00” (studded x open flanges)
Width: 59.00”
Thickness: 20.83”
Weight: 5700 lbs.

Hydraulic System
Connections: 1/2” NPT Box
Hydraulic Operating Pressure: 2800-3000 psi (max)
Standard Actuator:
Hydraulic Opening Volume (per Set): 161 in³
Hydraulic Closing Volume (per Set): 161 in³
Shear Actuator:
Hydraulic Opening Volume (per Set): 309.4 in³
Hydraulic Closing Volume (per Set): 315.6 in³

Connections
Common Top Connections: BX-169 10KPSI Studded Flange
Common Bottom Connections: BX-169 10KPSI Open or Studded Flange
Side Injection Port: BX-152 10K Studded Flange with a BX-152 10K x 2” 1502 Female Crossover
The 7 1/16” 5K Dual Combi BOP has a two ram configuration to provide positive protection against blowouts and to secure the well in emergencies. This permits work to be carried out, under pressure, on surface equipment while the tubing is still in the wellbore. By utilizing combination rams, this BOP can do all the functions of a quad BOP, with half the rams, which translates to shorter stack height and less weight than a quad BOP.

This BOP utilizes a side door access ports to the ram assemblies. This facilitates quick and easy access to the ram assemblies for inspection or servicing.

An innovative attribute is the "internal plumbing" feature. Single point open and close ports permit operation of both hydraulic actuators for each set of rams. The requirement of harness hoses becomes redundant, thereby effectively reducing the number of hoses and connections.

**Standard Ram configurations**

1) Shear/Seal rams - Upper set of rams that can shear coiled tubing and seal-off the well pressure.

2) Slip/Seal rams - Lower set of rams that serve to hold the tubing in place while shearing or for other applications and seal around the tubing, thus isolating the wellbore pressure below the rams

**Features**

- Available with a ported type connection which can be used for downhole injection
- Available with a variety of hand unions, flanged or client specified connections. Optional ram configurations
- Operated with any hydraulic source capable of providing 3000 psi. hydraulic pressure
- Manual lock holds rams mechanically locked in closed position
- Manual override available in case of hydraulic failure
7 1/16” Technical Specifications

Working Pressure: 5,000 psi  
Maximum Coiled Tubing Size: 3 1/2”  
Operating Temperature: -28°C – 120°C (-20°F – 250°F)  
Internal Bore ID: 7.06”

Dimensions

Overall Height: 24.63” (Studded Flanges)  
Width: 63.63”  
Thickness: 22.57”  
Weight: 3535 lbs.

Hydraulic System

Connections: 1/2” NPT Box  
Hydraulic Operating Pressure: 2800-3000 psi (max)  
Hydraulic Opening Volume (per Set): 327 in³  
Hydraulic Closing Volume (per Set): 327 in³

Connections

Common Top Connections: R-46 5KPSI Studded Flange  
Common Bottom Connections: R-46 5KPSI Studded Flange

Side Injection Port: R-24 5K Studded Flange with a R-24 5K x 2” Fig. 1502 Female Crossover
Side Door Stripper

The side door stripper/packer is designed to pack-off around coiled tubing being stripped in or out of the well bore. The tool allows easy access to the packer, primary seal and bushing. These can be replaced under pressure with the coiled tubing still in the well. The tool is installed above the coiled tubing BOP.

Well pressure is sealed-off by actuating the hydraulic cylinder to the extended position. This causes the packer cylinder sleeve to push against the packer. The packer is squeezed to form a seal around the tubing. Interchangeability of the bushing and packer allows one tool to be used with a wide range of coiled tubing sizes.

The side door stripper/packer is available in 3 1/16”, 4 1/16”, and 5 1/2” nominal sizes.

Features:

- Working pressures from 5000 PSI to 10000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
- Can be easily redressed for different coiled tubing sizes.
- Packing rubbers can be changed out with coiled tubing still in the well.

<table>
<thead>
<tr>
<th>Specification Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 1/16”</td>
</tr>
<tr>
<td>Part #</td>
</tr>
<tr>
<td>Max Coiled Tubing Size</td>
</tr>
<tr>
<td>Overall Height</td>
</tr>
</tbody>
</table>
Lubricator section assemblies are available in several standard lengths and sizes. Working pressure and service ratings are consistent with all Vanoil surface pressure equipment. Lubricator sections are configured to provide an overall length, which is needed in order to accommodate a particular tool string configuration, between the stuffing box and BOP. The lubricators are equipped with client-specified quick union connectors, which facilitate quick and easy assembly.

All Vanoil lubricators incorporate a dual seal design between the lubricator tube and union connection. This dual seal design consists of a metal-to-metal primary seal between tube and union with a secondary O-Ring seal located behind the primary seal. This helps to prevent well fluids from damaging the threaded connections and escaping into the atmosphere.

A typical lubricator section consists of a lubricator tube with a quick union box connection at the top and a quick union pin and collar connection at the bottom. Lubricator sections are available with bleed-off port subs, if required. Optional bleed subs are also available for use with all sizes of lubricator sections.

Features:

- Working pressures from 5000 PSI to 15000 PSI
- Standard and sour service environments
- Available with any standard hand union connection
- Incorporates a dual seal design
The pump in/ flow tee sub is a short joint of lubricator with customer specified connections on the top and bottom, with a flanged side port. Typically a BX 152 by 2” Fig. 1502 thread half adapter is made up to the side port.

Features:

- Working pressures from 3000 PSI to 15000 PSI
- Available in nominal sizes from 2 1/2”- 7”
- Also available in flow cross configuration
- Standard and sour service environments
- Available with studded or open flange, or standard hand union connections
- Available with any customer specified side port connections.
Flanged and threaded wellhead adapters provide a direct connection between surface pressure equipment and the wellhead. Two types of wellhead adapters are available - union box by API flange type or union box by pin thread type.

The flange type adapter covers all API flange sizes pressure and service environment requirements. The pin threaded adapter is made up to the wellhead lift thread or special threaded box connection and is available to meet required pressure and service environments.

The union end of the adapter can be provided in any size and style of customer specified connection.

Vanoil can provide adapters to meet any API flange or threaded pin with any commonly used union connection.