
CATALOG FOR PRESSURE CONTROL EQUIPMENT

Supplement 1

API TOP CONNECTORS

This catalog supplement provides detailed information about API Top Connectors manufactured by WOODCOUSA. You will find the equipment listed by Flange or (Clamp) Hub size and pressure, with parts illustrated and a table of part numbers.

TRADEMARK



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1.0 General

WOODCO USA offers supplements to general catalogs in order to provide more detailed information about specific equipment.

1.1 Purpose

WOODCO USA intends this supplement to communicate the design, material, and advantages of WOODCO USA Top Connectors as specified in the "informative" Annex K, of API Spec 6A, 20th Edition.

1.2 Application

Top Connectors using the uppermost collar connection shown in API Spec 6A allow operators and service companies to use interchangeable equipment when making service equipment attachment to the top of well head Christmas Trees.

1.3 Specification

WOODCO USA Top Connectors meet all the defined requirements of API Spec 6A.

1.4 Reference Standards

API Spec 6A

API Spec 16A

Note: API Spec 6A, 20th Edition provides "Informative" information about Top Connectors with a paragraph in Annex K, K.4 warning that specified Top Connector bores will not pass a drift or Backpressure Valve. WOODCO USA Top Connectors will pass both Drifts and Backpressure Valves and satisfy all API specified design requirements. See Section 1.7 of this catalog.

1.4 Reference Standards

API Spec 6A

API Spec 16A

1.5 Material

WOODCO USA Top Connectors meet API Spec 6A material requirements including the special Annex K requirement that all Top Connector material meet 75 K strength regardless of working pressure.

Annex K specifies that Top Connectors utilize only the following material classes.

Flange/ Body, Collar & Plug.

| | |
|-------------------|-------------------------------------|
| DD-Sour Service a | Carbon or low alloy steel |
| EE-Sour Service a | b Carbon or low alloy |
| FF-Sour Service a | steel b Stainlesssteel ^b |
| HH-Sour Service a | CRA ^{b ed} |

- a As defined by NACE Standard MR0175/ISO15156.
- b In compliance with NACE Standard MR-01-75/ISO15156.
- c CRA required on retained fluid wetted surfaces only; CRA cladding of low alloy or stainless steel permitted.
- d CRA as defined in AP6A latest edition. NACE MR0175/ISO15156 definition of CRA does not apply.

1.6 Service Temperature

API Spec 6A Annex K makes no mention of service temperature yet specifies the use of "FKM" (Viton) elastomer seal material. This material has a normal temperature service range of -20°F to 400°F.

The following API 6A temperature classifications fall within -20°F to 350°F.

| Temperature Classification * | Operating Range (Degrees Fahrenheit [°F]) | | |
|------------------------------|--|----|------|
| | Min. | | Max. |
| P | -20 | to | 180 |
| R | Room Temperature | | |
| S | 0 | to | 140 |
| T | 0 | to | 180 |
| U | 0 | to | 250 |
| V | 0 | to | 250 |
| X** | 0 | to | 350 |

* PURCHASER MAY COMBINE TEMPERATURE CLASSES

CLASSES e.g. PX, -20 TO 350 °F

** MAY REQUIRE DERATING

Operators may specify lower temperature ratings K (-75°F to 180°F), L (-50°F to 180°F) and N (-50°F to 140°F) using elastomer seals other than FKM.

1.7 Design

WOODCO USA Top Connectors have lowermost connectors meeting API Spec 6A requirements for Flanges, and API Spec 16A requirements for (Clamp) Hub connections. Body diameters between lower and upper connections have maximum allowed diameters. Plugs have spiral retainer rings to keep them connected with nuts and help extract the plug when operators need to enter the well through the Christmas Tree. All WOODCO USA manufactured Top Connectors have API full bores allowing the normal installation of "Back Pressure Valves" through the Christmas Tree.

1.8 Quality

WOODCO USA defines "Product Quality" as conformance to specified requirements. We select suppliers on the basis of their ability to provide materials, products and/or services which conform to WOODCO USA and API specifications.

All individual units must pass inspections during and after production, and each unit receives a hydrostatic body test. Operators may specify API Spec 6A PSL levels.

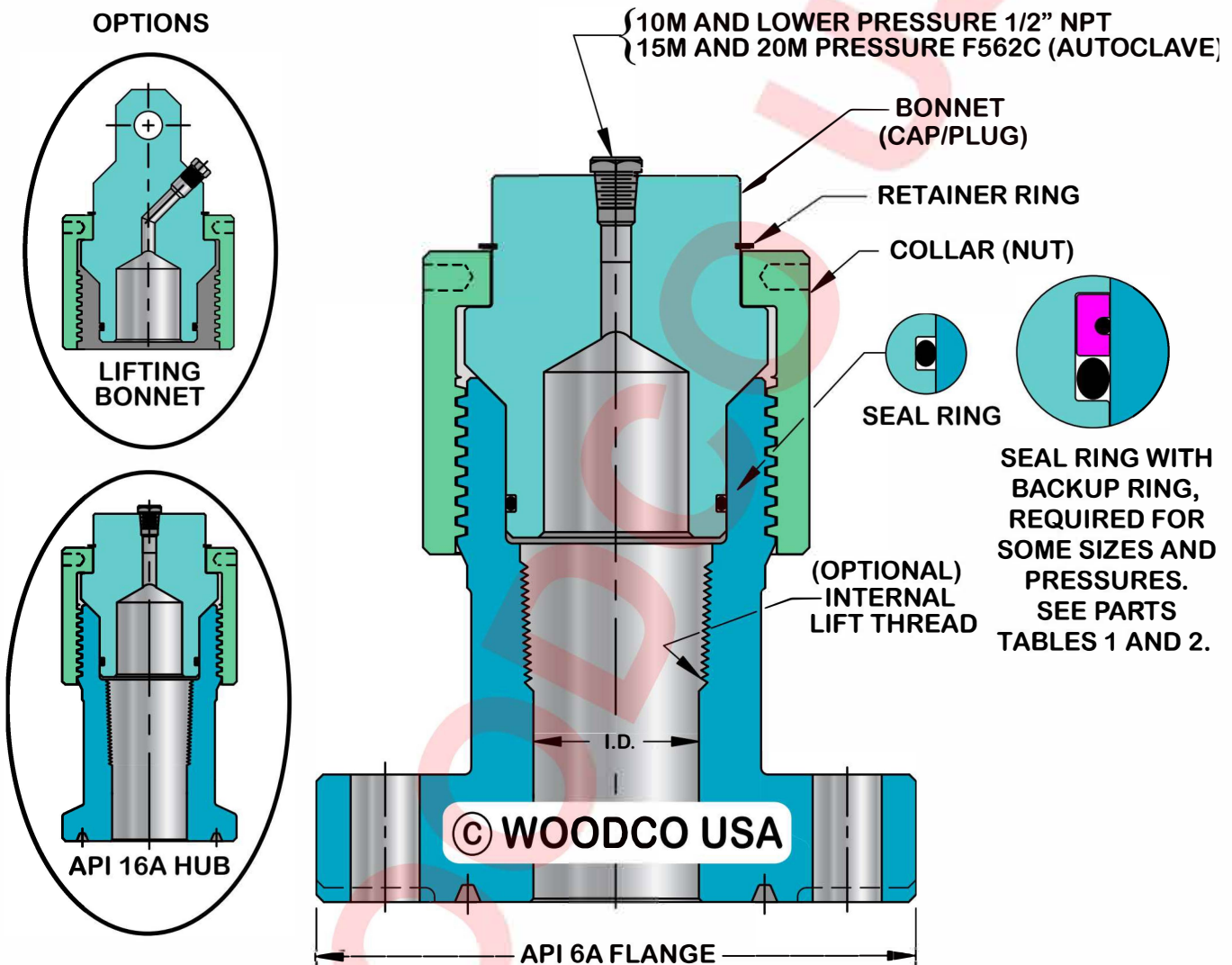
1.9 Supplemental Requirements

Buyers should clearly define, at the time of order, any requirements which exceed or differ from API Spec 6A.

2.0 Equipment

2.1 Flange and Hub Top Connector Features

Figure 1, WOODCO USA Top Connector



- Full compliance with the details and intent of API Spec 6A, Annex K, assures field interchangeability with service equipment having API designated collar connections.
- WOODCO USA full bore designs allow Back Pressure Valve installation through the Top Connector.
- WOODCO USA provides a gall resistant coating on all units regardless of material to reduce field corrosion and prevent galling on sensitive surfaces.
- The Collar (Nut) has a coarse knurled surface and "Tommy Bar" holes to facilitate installation and removal of the Collar.
- A spiral retainer ring on the Plug allows the collar to lift the plug when opening the collar connection.
- Bonnet may have configuration to provide a lug to accept a Lifting Shackle.

2.2 Flange Top Connector Parts

Reference this page to order parts for WOODCO USA Flange Top Connectors. Size and pressure along with part numbers designate equipment geometry only. Buyers must additionally specify: PSL, Material Class, Service Temperature and any special requirements.

Figure 2, Flange Top Connector Detail

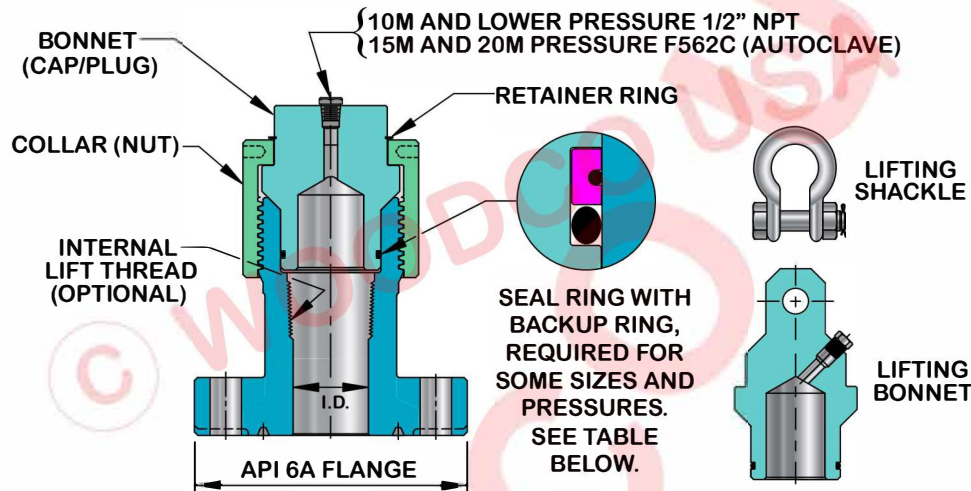


Table 1, Top Connectors and Top Connector Parts

(All dimensions in inches)

| FLANGE SIZE | RING GASKET | BONNET (CAP PLUG) | COLLAR (NUT) | RETAINER RING | TEST PORT PLUG | SEAL RING | BACKUP RING | BACKUP O-RING |
|--------------|-------------|-------------------|--------------|---------------|----------------|-----------|-------------|---------------|
| 2-1/16" 5M* | R-24 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-1/16" 10M* | BX-152 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-1/16" 15M* | BX-152 | 10889 | 10898 | 10914-1 | 10913 | 34290 | - | - |
| 2-1/16" 20M* | BX-152 | 10890 | 10899 | 10914-2 | 10913 | 34290 | 10268-02 | 15380 |
| 2-9/16" 5M | R-27 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-9/16" 10M | BX-153 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-9/16" 15M | BX-153 | 10889 | 10898 | 10914-1 | 10913 | 34290 | - | - |
| 2-9/16" 20M | BX-153 | 10890 | 10899 | 10914-2 | 10913 | 34290 | 10268-02 | 15380 |
| 3-1/8" 5M | R-35 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 3-1/16" 10M | BX-154 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 3-1/16" 15M | BX-154 | 10891 | 10900 | 10914-3 | 10913 | 35490 | 10268-03 | 15980 |
| 4-1/16" 5M | R-39 | 10892 | 10901 | 10914-4 | 10912 | 42790 | - | - |
| 4-1/16" 10M | BX-155 | 10892 | 10901 | 10914-4 | 10912 | 42790 | - | - |
| 4-1/16" 15M | BX-155 | 10893 | 10902 | 10914-6 | 10913 | 43690 | 10268-05 | 16180 |
| 5-1/8" 5M | R-44 | 10895 | 10904 | 10914-5 | 10912 | 43890 | - | - |
| 5-1/8" 10M | BX-169 | 10895 | 10904 | 10914-5 | 10912 | 43890 | - | - |
| 5-1/8" 15M | BX-169 | 10896 | 10905 | 10914-8 | 10913 | 43990 | 10268-07 | 16680 |
| 7-1/16" 10M | BX-156 | 10897 | 10906 | 10914-9 | 10912 | 44490 | 10268-09 | 16880 |

* NOT SHOWN IN API 6A

2.3 Hub Top Connector Parts

Reference this page to order parts for WOODCO USA Hub Top Connectors. Size and pressure along with part numbers designate equipment geometry only. Buyers must additionally specify: PSL, Material Class, Service Temperature and any special requirements.

Figure 3, Hub Top Connector Detail

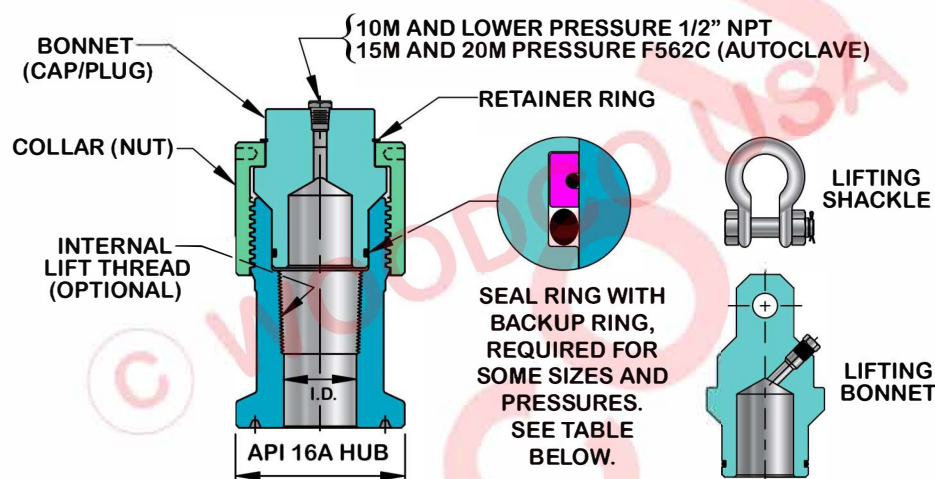


Table 2, Top Connectors and Top Connector Parts

(All dimensions in inches)

| HUB SIZE | RING GASKET | BONNET (CAP PLUG) | COLLAR (NUT) | RETAINER RING | TEST PORT PLUG | SEAL RING | BACKUP RING | BACKUP O-RING |
|--------------|-------------|-------------------|--------------|---------------|----------------|-----------|-------------|---------------|
| 2-1/16" 5M* | BX-152 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-1/16" 10M* | BX-152 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-1/16" 15M* | BX-152 | 10889 | 10898 | 10914-1 | 10913 | 34290 | - | - |
| 2-1/16" 20M* | BX-152 | 10890 | 10899 | 10914-2 | 10913 | 34290 | 10268-02 | 15380 |
| 2-9/16" 5M | BX-153 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-9/16" 10M | BX-153 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 2-9/16" 15M | BX-153 | 10889 | 10898 | 10914-1 | 10913 | 34290 | - | - |
| 2-9/16" 20M | BX-153 | 10890 | 10899 | 10914-2 | 10913 | 34290 | 10268-02 | 15380 |
| 3-1/8" 5M | BX-154 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 3-1/16" 10M | BX-154 | 10888 | 10898 | 10914-1 | 10912 | 34290 | - | - |
| 3-1/16" 15M | BX-154 | 10891 | 10900 | 10914-3 | 10913 | 35490 | 10268-03 | 15980 |
| 4-1/16" 5M | BX-155 | 10892 | 10901 | 10914-4 | 10912 | 42790 | - | - |
| 4-1/16" 10M | BX-155 | 10892 | 10901 | 10914-4 | 10912 | 42790 | - | - |
| 4-1/16" 15M | BX-155 | 10893 | 10902 | 10914-6 | 10913 | 43690 | 10268-05 | 16180 |
| 5-1/8" 10M | BX-169 | 10895 | 10904 | 10914-5 | 10912 | 43890 | - | - |
| 5-1/8" 15M | BX-169 | 10896 | 10905 | 10914-8 | 10913 | 43990 | 10268-07 | 16680 |
| 7-1/16" 10M | BX-156 | 10897 | 10906 | 10914-9 | 10912 | 44490 | 10268-09 | 16880 |

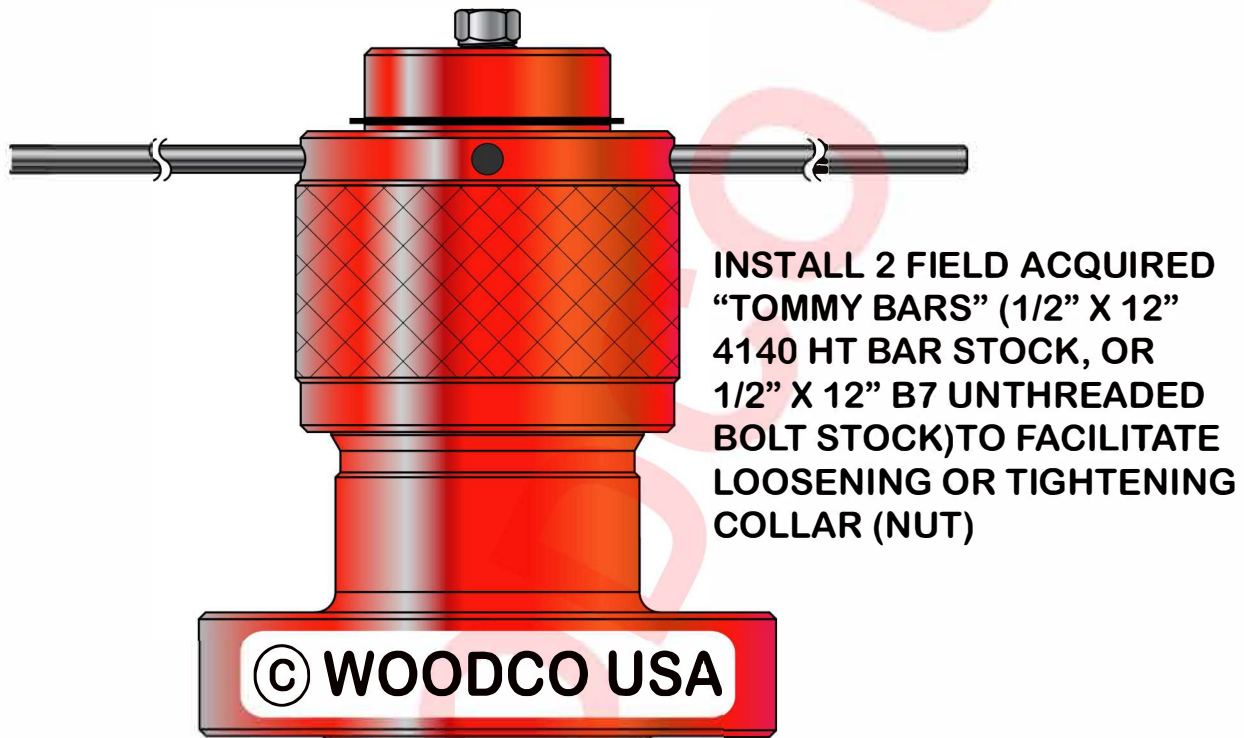
* NOT SHOWN IN API 6A

3.0 Assembly

3.1 Assembly Details and Instructions

Figure 4, WOODCO USA Top Connector W/ "Tommy Bars"

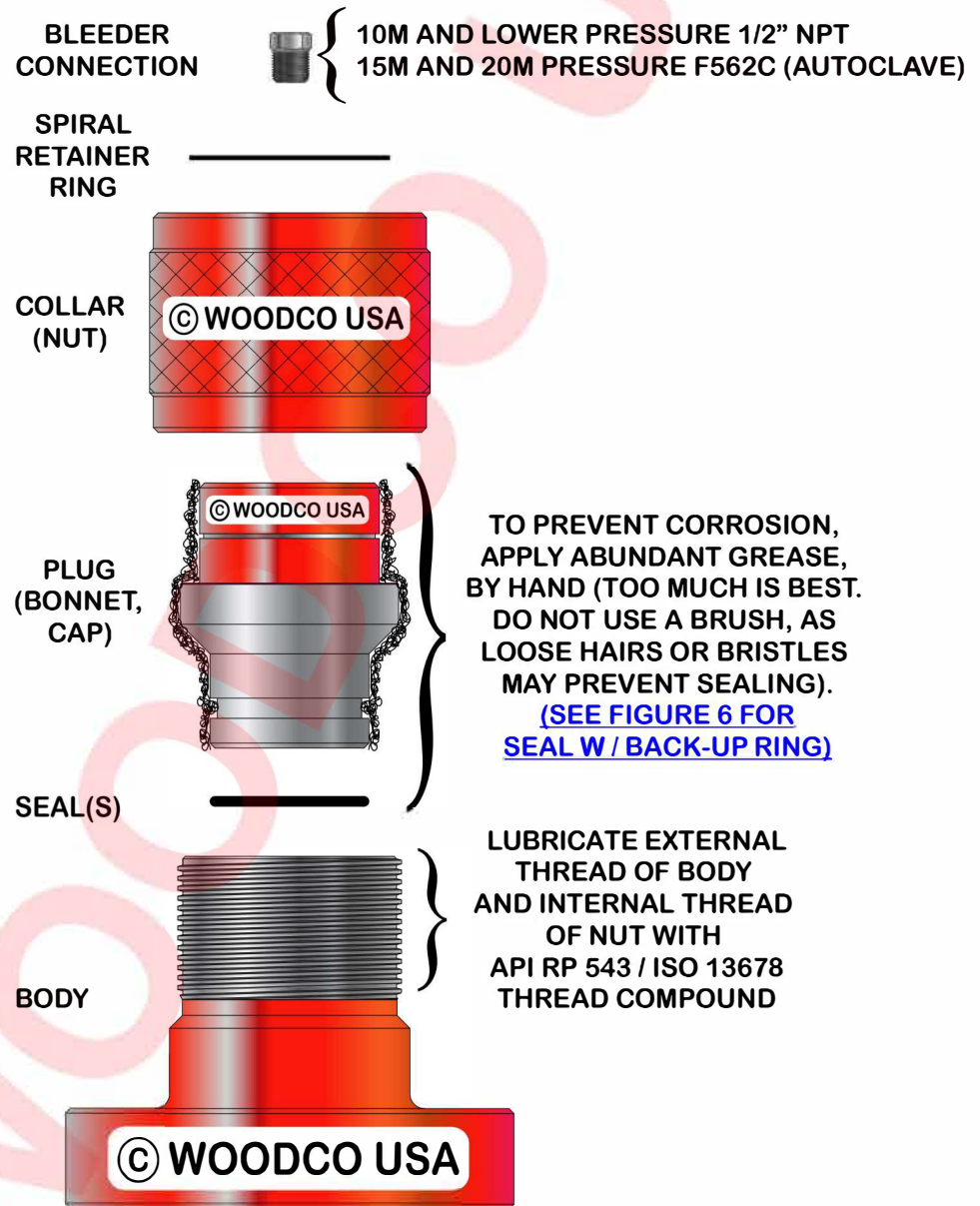
The WOODCO USA Top Connector follows the API Spec 6A Annex K specifications, dimensions, and design. WOODCO USA has added the feature of "Tommy Bar" holes in the Collar to facilitate turning of the Collar to connect or disconnect the Collar connection.



All WOODCO USA made Top Connectors, have a gall resistant coating on all surfaces. During original assembly, WOODCO USA applies water-resistant grease on the plug and collar. When operators remove the Plug and Collar, WOODCO USA recommends the replacement of this lubricant. Seal rings and backup rings prove easier to install when lightly lubricated with water-resistant grease (applied by hand, brush application of lubricant may cause problems if the brush should lose a bristle that might end up behind or across a seal).

3.1 Assembly Details and Instructions (Continued)

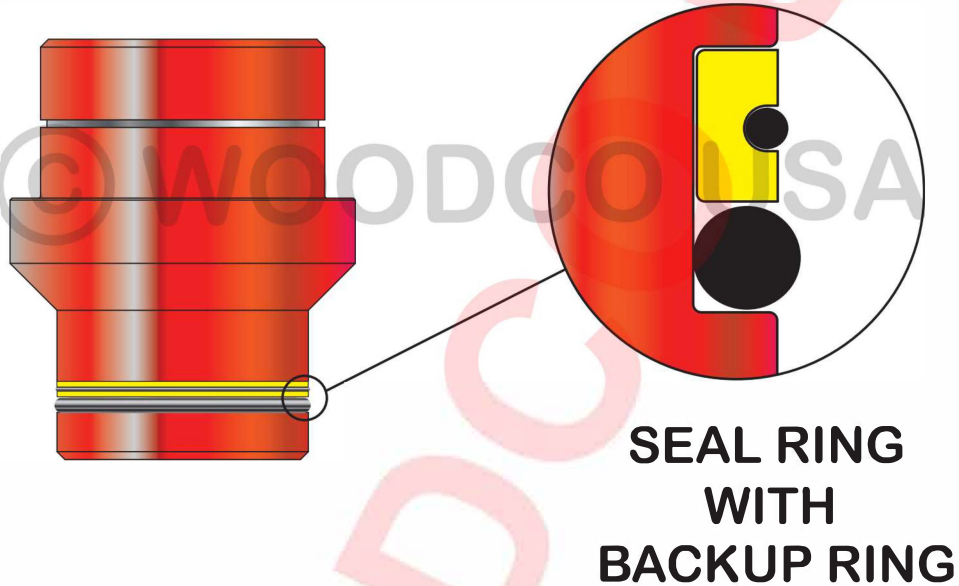
Figure 5, WOODCO USA Top Connector Disassembled



3.1 Assembly Details and Instructions (Continued)

Figure 6, WOODCO USA Top Connector Plug (Bonnet, Cap)

When replacing the seals of any Top Connector that require a Back-up Ring, always install the Back-up Ring above the Seal Ring. The smaller cross section o-ring acts to keep the Back-up Ring closed and in place in the groove.



3.1 Assembly Details and Instructions (Continued)

Figure 7, WOODCO USA Flange Top Connector Assembled

The completed assembly should appear as below. No force greater than hand tightening with 2 - 12" long "Tommy Bars" should prove necessary.

