CATALOG FOR CLAMPS FOR CLAMP HUB CONNECTIONS.

API Spec. 16A Clamps, includes assembly drawings, sizes available, parts description, and part numbers, how to install, plus a Hub Identification Worksheet, a Clamp Identification Worksheet, WOODCO USA API 16A License Certificate and DNV Type Approval Certificate.

MANUFACTURER

WOODCO USA
P.O. Box 1261
Houston, Texas 77251-1261
Phone: 713-672-9491
U.S. and Canada: 1-800-496-6326
Fax: 713-672-8768
www.woodcousa.com
Email: contact@woodcousa.com

WOODCO USA presents this catalog to gain your attention and secure your business
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1.0 General

1.1 Purpose

WOODCO USA offers this catalog to provide information useful to persons working with, and seeking to purchase, clamps that fit API 16A hubs. This catalog describes WOODCO USA clamp features and provides instructions for installation and care of these clamps. Included, convenient tables with illustrations provide a reference to improve communication and facilitate selecting clamps to fit specific hubs.

1.2 Application

WOODCO USA clamps provide a reliable means to join API and other hub connections. Any of the equipment in the following list may have clamp hub connections:

Wellhead Equipment
- Casing Heads
- Casing Spools
- Tubing Heads
- Valves
- Chokes
- Crosses
- Tees
- Flowlines
Drilling Equipment
- Spools
- Blowout Preventers
- Choke and Kill Manifolds
Manifold Systems
- Mud Systems (Pump to Standpipe)
- Oil and Gas Production
- High Pressure Supply Lines

Clamps allow faster and easier make up. Where limited space requires, clamp orientation adjustment allows easy access to nuts and bolts. Clamp connections have 360° infinite adjustability.

1.3 Specification

WOODCO USA has performed stress analysis on each clamp size using formulas outlined in “Summary of Design” (AWHEM, June 1975) to demonstrate conformance with the design allowable stresses specified in API Spec 16A, First Edition.

1.4 Reference Standards

API Spec 16A

DNV M.O.U. Part 6 Ch.5 Drill N (see Appendix B, DNV Type Approval Cert.)

1.5 Material

WOODCO USA manufactures clamps from material which meets or exceeds the requirements of API Spec 16A for material qualification, processing, chemical composition and mechanical properties.

1.6 Quality

WOODCO USA defines “Product Quality” as conformance to specified requirements.

WOODCO USA selects suppliers based on their ability to provide materials, products and/or services which conform to WOODCO USA and API specifications.

WOODCO USA personnel inspect clamps during manufacturing and after final operations to assure compliance with API and WOODCO USA requirements. Completed Clamps receive 100% Magnetic Particle Examination. WOODCO USA can provide any additional supplemental inspections that customers may require.
2.0 WOODCO USA HUB CLAMP FEATURES

- Fit all hub connections specified in API Spec 16A plus many other popular hub connections.
- Made from Forged Low Alloy Steel, qualified to the same standards API Spec 16A requires for flanges.
- 100% dimensional, hardness and magnetic particle inspected.
- Self-aligning bearing washers to evenly distribute bolting stress.
- Special coatings on bolts, nuts, and washers to ease make and break of clamp hub connections.
- Swivel lifting eyes on larger sizes, to make handling easy, quick and safe.
## Table 1, Clamps and Clamp Parts

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### Working Pressure (PSI)

- 10,000
- 5,000
- 20,000

### Ring Gasket

- 80
- 90

### Outer Washer Part No.

- 3715-09
- 3715-10

### Outer Washer Part No. (2 Req’d)

- 8UN X 9
- 8UN X 9

### Inner Washer Part No.

- 3716-05
- 3716-05

### Inner Washer Part No. (2 Req’d)

- 8UN X 9
- 8UN X 9

### Bolt Size

- 1/4
- 1/4

### Bolt Part No.

- 3900-01
- 3900-01

### Nut Part No.

- 3899-02
- 3899-02

### Lifting Eye, Swivel

- (6)
- (6)

### Approx. Assembly Weight (LBS.)

- 51
- 51

*NOT API

**NOTE:** Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

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**Figure 2, Clamp and Washer Detail**

![Washer Detail Diagram]

All dimensions in inches
Table 1, Clamps and Clamp Parts (continued)

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NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.
Table 2, Clamp and Hub Dimensions

(All dimensions in inches)

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Table 2, Clamp and Hub Dimensions (continued)  

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* NOT API  

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.
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<th>BORE A</th>
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<th>RING GASKET</th>
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<th>CLAMP DIMENSIONS</th>
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<td></td>
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<tr>
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</tr>
<tr>
<td></td>
<td>3,000</td>
<td>57*</td>
<td>13 18.375 16.750 3.000 1.067 - -</td>
<td>27.62 5.88 17.250 3.188</td>
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<tr>
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<td>57*</td>
<td>13 18.375 16.750 3.000 1.067 - -</td>
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</tbody>
</table>

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

** Caution: Current WOODCO USA #10 Clamps require Hub length minimum to measure 4-1/8" for assembly.

WWW.WOODCOUSA.COM

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Table 2, Clamp and Hub Dimensions (continued)  

<table>
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<tr>
<th>BORE A (IN)</th>
<th>WORKING PRESSURE (PSI)</th>
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<th>CLAMP NO.</th>
<th>HUB DIMENSIONS</th>
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<td>65*</td>
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</table>

* NOT API  
NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.
3.0 Instructions for Installation and Care

You may install a WOODCO USA clamp in any orientation desired. Prior to installation of the clamp, clean and lubricate the tapered contact surfaces of the hubs and the clamp with API RP 5A3 / ISO 13678 thread compound or other extreme pressure grease. Coated bolts and nuts do not require lubrication. Lubricate replacement uncoated bolts and nut bearing surfaces with API RP 5A3 / ISO 13678 thread compound in order to provide proper make up force using the recommended torques.

Keep clamp halves matched and turned so that all marking appears on the same side of the clamp.

When installing, keep the spacing between the clamp halves approximately equal. Put the bolts, nuts, and washers in place and arranged as shown in Figure 4.

Perform the tightening of the nuts so as to draw the clamp together evenly on each side. Tighten the bolts to the recommended bolt torque, reference

Confirm make up on hubs with SR and BX ring grooves by observing, through the gaps, that the hub faces have come into contact. After make up, clearance between the hub neck O.D. and the clamp I.D. should appear uniform.

Excessive torque to achieve make up indicates some problem with fit or finish (rust on clamp or hub mating surfaces can result in difficulty during make up).

Protect the mating surfaces of hub connections and clamps in the same manner as ring grooves when not in use. Clamps or clamp hubs, if allowed to rust, lose their dimensional accuracy and finish and may become unusable.

Figure 4
### Table 3, Recommended Bolt Torque for WOODCO USA Hub Clamps

<table>
<thead>
<tr>
<th>BOLT SIZE</th>
<th>FLOUROPOLYMER COATED B7/L7 BOLTS* (FT-LBS)</th>
<th>UNCOATED B7/L7 BOLTS LUBRICATED WITH API 5A2 THREAD COMPOUND** (FT-LBS)</th>
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<tr>
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<td>3 - 8UN*</td>
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<td>3 1/4 - 8UN*</td>
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<tr>
<td>4 - 8UN*</td>
<td>18475</td>
<td>33461</td>
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* WOODCO USA assembles API 16A Clamps with L7 Bolts only. Torque values for Bolts over 2-1/2” apply to L7 Bolts only.

** Lubricate uncoated Bolts and Nut Faces with API BUL 5A3 / ISO 13678 Thread Compound.
Appendix A

Hub Identification Worksheet
(For Clamps Click Here)

To determine the nominal size and pressure rating of any existing Hub Connection, measure the Hub dimensions indicated on the drawing below and provide this information to WOODCO USA, or See Hub Slide Rule Program.

Using an accurate scale, measure Hub outside diameter.

Measure ring groove pitch diameter.

Measure inside diameter.

Measure Hub thickness at O.D.

THICKNESS AT O.D.

HUB 1.

HUB 2.

HUB 3.

HUB 4.

NOTE: MEASURE RING GROOVE PITCH DIAMETER BY MEASURING FROM INSIDE EDGE OF RING GROOVE ON ONE SIDE, TO OUTSIDE EDGE OF RING GROOVE ON OPPOSITE SIDE.

* To obtain more complete information about Hub Connection Equipment, see the WOODCO USA Catalog for Pressure Control Equipment.
Appendix B

Clamp Identification Worksheet
(For Hubs Click Here)
To identify a Clamp by basic dimensions, measure the Clamp dimensions indicated on the drawing below and provide this information to WOODCO USA, or See Clamp Slide Rule Program.

USING A SCALE OR MEASURING TAPE:

1. MEASURE THE CLAMP INSIDE DIAMETER (I.D.).

2. MEASURE THE INTERNAL GROOVE HEIGHT (OR WIDTH).

3. MEASURE CLAMP HEIGHT (OR WIDTH) AS MEASURED THRU THE I.D. BORE.

1
2
3

<table>
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<td>CLAMP HEIGHT MEASURED THRU I.D.</td>
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<td>CLAMP 1.</td>
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To obtain more information about WOODCO USA Clamps, click on this catalog’s Table of Contents.
To obtain more information about Clamp Hub Connection Equipment, see the WOODCO USA Catalog for Pressure Control Equipment.
WOODCO USA
Number 6 API Spec 16A Clamp
(All API designated sizes available)

WOODCO USA #6 Clamp Assembly
with Xylan coated bolts, nuts and spherical washers.
Fits 2-9/16” 20M, 3-1/16” 15M and 4-1/16” 10M Hubs.
Appendix D

WOODCO USA
Number 14 API Spec 16A Clamp
(All API designated sizes available)

WOODCO USA # 14 Clamp Assembly
with Xylan coated bolts, nuts and spherical washers.
Fits 16-3/4” 3M Hubs.
Appendix E

TYPE APPROVAL CERTIFICATE

This is to certify:
That the Pipe Fitting
with type designation(s)
Clamp Assemblies (#1 to #22 and #25 to #28)

Issued to
Woodco USA
Houston, TX, USA

is found to comply with
DNVGL-OS-E101 – Drilling facilities, Edition January 2018
DNVGL-SI-0166 - Verification for Compliance with Norwegian shelf regulations - Ch.2 Sec.7
DRILL(N), July 2015

Application :
See page 2

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Type Approval Certificate is 3 pages, and replaces D-5473 as issued on 2014-03-04.

Issued at Houston on 2018-08-15

This Certificate is valid until 2023-08-14.

DNV GL local station: Certification & Inspection Services
Approval Engineer: M. Kevin Mandeville Jr.

Meindert van Mierlo
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity data relates to the Type Approval Certificate and not to the approval of equipment/systems installed.
Appendix F

Certificate of Authority to use the Official API Monogram

License Number: 16A-0004

The American Petroleum Institute hereby grants to

WOODCO USA
773 McCarty Drive
Houston, TX

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and API-16A

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: 16A-0004

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Hub and Clamp Connectors, Adapters and Drilling Spools

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: APRIL 15, 2018
Expiration Date: APRIL 15, 2021

To verify the authenticity of this license, go to www.api.org/composite/list.

Executive Vice President
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