C-22 Casing Hanger Installation

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UNIVERSAL WELLHEAD SERVICES HOLDINGS, LLC.

Installation Procedure for C-22 Casing Hanger

LICENSED UNDER API 6A

Required Forms:

1. DELIVERY TICKET
2. FIELD SERVICE ORDER
3. JSA

C-22 Casing Hanger

Product Description

The C-22 Casing hanger is a slip type, wrap around casing hanger with an automatically energized seal. The hanger is capable of supporting up to 50% of the pipe yield at temperatures which fall into the API-S classification.

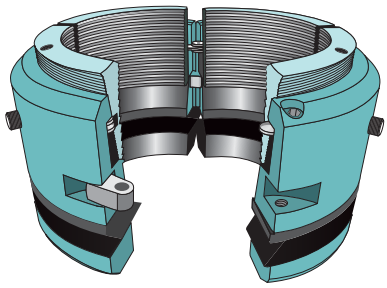
The C-22 hanger is designed as a single, preassembled unit with a hinge and latch mechanism that holds it around the casing. The hanger can be installed from the rig floor and lowered through a full opening stack via 2 eyebolts and rope. The hanger is rated for 10,000 psi and requires as little as 48,000# of casing weight (depending on casing size) to activate the seal.

PURPOSE

UWS can provide maximum casing hanger load capacity on a well by well basis. For this we will need the weight and grade of the casing, and the required test pressure that will be applied to the top of the casing hanger.

SCOPE

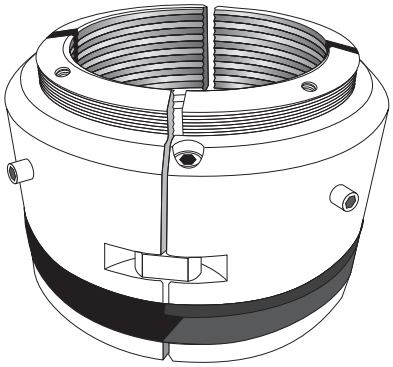
See minimum weight chart on page 15 of this procedure.



Required Equipment:

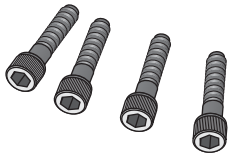
CASING HANGER SPECIFICS

1)	Hanger Type:	
2)	Manufacturer:	
3)	Inventory Number:	
4)	O.D. Size:	
5)	I.D. Size:	
6)	Seal Element Material:	



REQUIRED SPARE PARTS

* Always bring a backup Casing Hanger on every job.



TOOLS

1)	5/16” Allen Wrench
2)	Two Eye Bolts, 3/8” - 16 thd.
3)	Sash Cord 50 ft.
4)	Metal plate to set hanger on around the casing -OR- Two boards, 36” long, 1” x 6” minimum, in good condition.
5)	50 ft. Tape Measure
6)	High-Powered Flash Light

A. Pre-Installation Procedure:

1 ☐ Run the casing to desired depth and cement as required.

2 ☐ Determine the weight to be put on the hanger and verify that you have the correct casing hanger.

Note: Please see weight chart on Page 15.

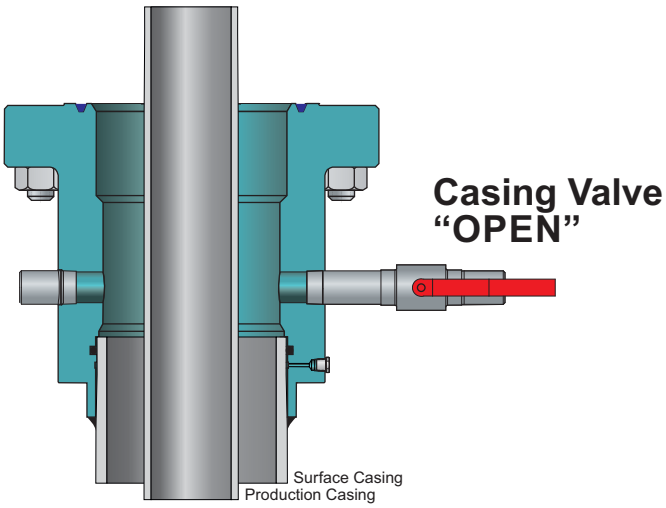
3 ☐ Drain the Casing Head and the BOP Stack through the side outlets of the casing head and leave the casing valve open.

4 ☐ Clean the stack I.D. and the Casing O.D. with a high-pressure water hose.

5 ☐ Verify that the wear bushing is removed, all lock-down pins are fully retracted, and that there are no obstructions in the stack (casing collars, Hydril rubbers, BOP rams, etc.)

6 ☐ Using a High-Powered flashlight, visually inspect the stack I.D.

Verify that there are no obstructions.



There are 2 methods used to install the Casing Hanger:

Option 1 From the rig floor through a “full-opening” stack.

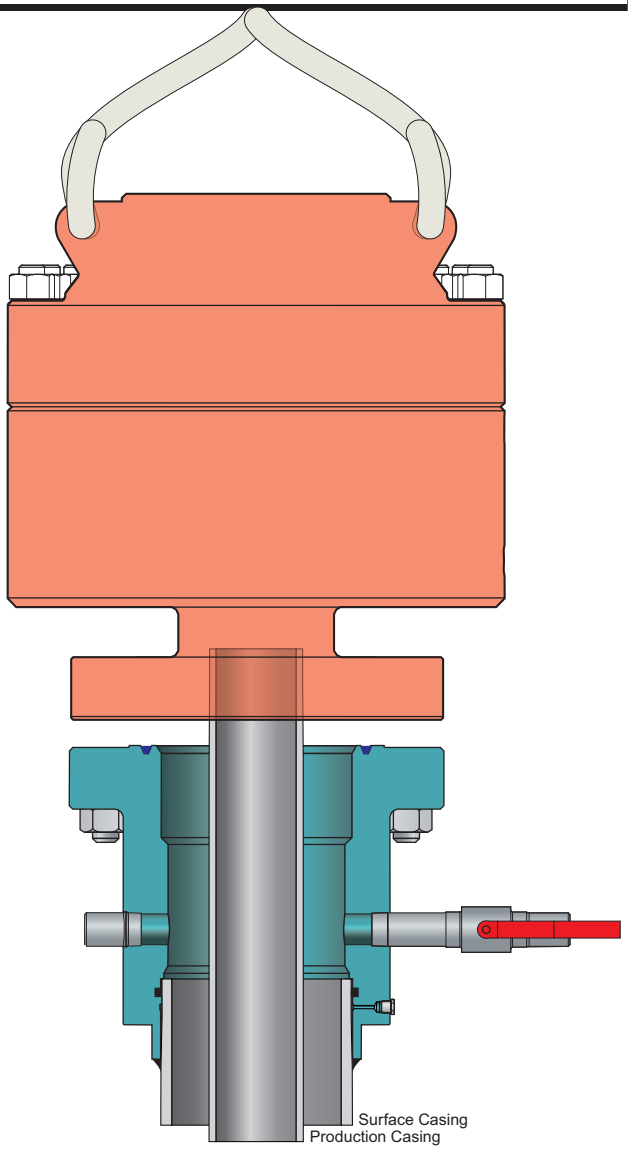
This method enables you to:

- ***keep the BOP stack on until the casing is secured and packed-off.***

Option 2 Underneath the BOP stack, providing the well is under control and the stack is properly and safely secured.

This method enables you to:

- ***inspect the casing head bowl for damage,***
- ***better clean the bowl and casing, and***
- ***ensure the casing hanger is properly seated in the casing head bowl.***

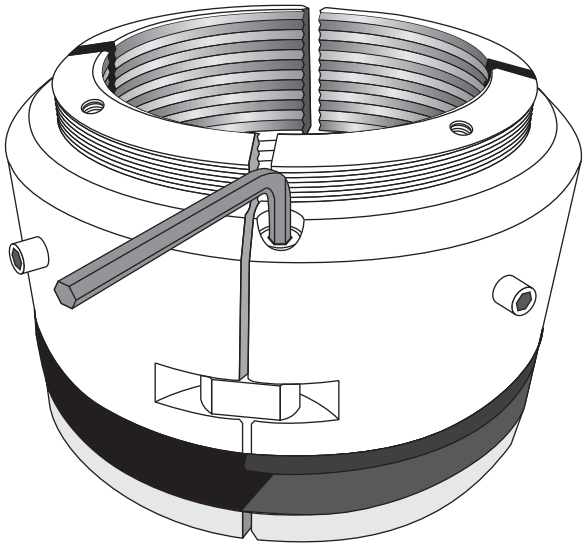


CAUTION:
DO NOT work under a BOP stack that is not properly secured with approved cables.

B. Installation

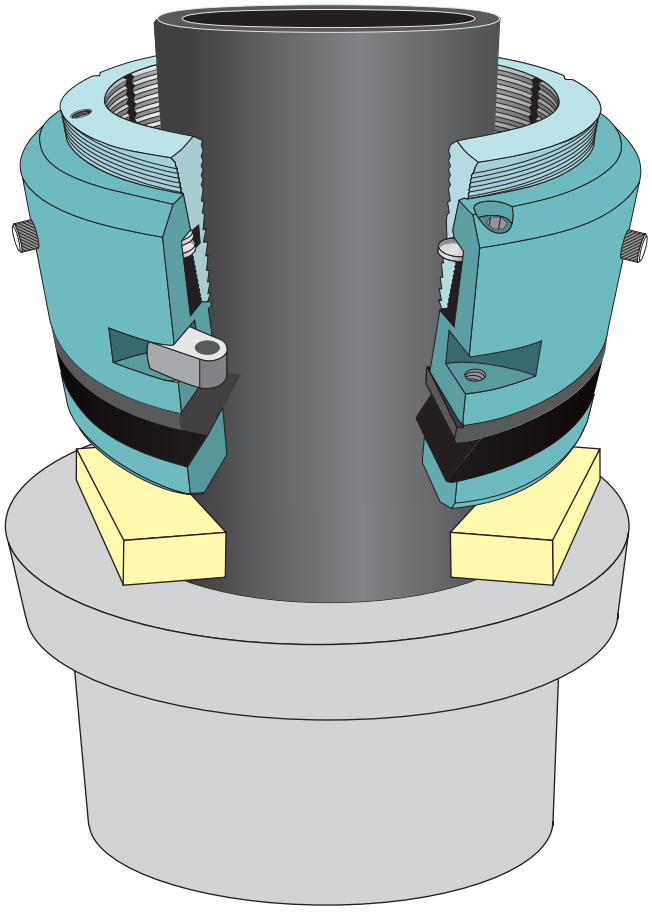
Option 1	Option 2

Option 1: From the rig floor through a "full-opening" stack.



7 ☐ Examine the Casing Hanger and verify the following:

- The seal element is clean and undamaged.
- All bolts are in place and tight.
- Slip segments are in place and snug tight.
- The bottom plates are snug. Operate the bottom bolts and ensure they are not overly tight as to compress the seal.



8 ☐ Remove the Kelly Bushings and place a plate or two boards over the hole against the casing.

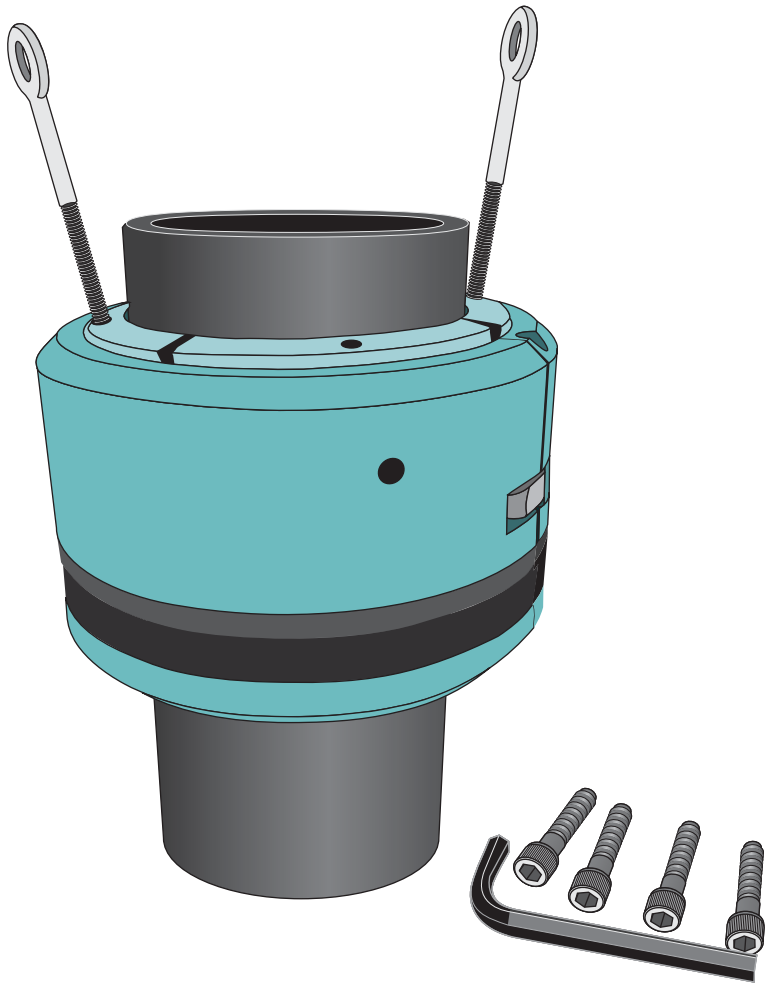
9 ☐ Remove the latch bolt and open the Casing Hanger. Wrap the hanger around the casing, resting it on the boards. Re-install the latch bolt and tighten securely.

C. Install the Hanger

10 ☐ Verify that the Casing Hanger moves freely up and down the casing.

11 ☐ Install eye bolts in two opposing slip segments and secure predetermined length of rope to each eye bolt.

12 ☐ Remove all four segment retainer bolts.



C. Installing *(Continued)*

a ☐ The rope should be long enough to lower the hanger all the way through the stack into the casing head bowl.

b ☐ Lower one end of the rope to the top of the casing head flange and tie a knot close to the rig floor. This will give you an approximation of where the hanger is during installation.

c ☐ Securely tie one end of the Rope to each eyebolt.

13 ☐ Lubricate the OD of the Casing Hanger with light grease or oil, making sure to lubricate the seal element.

14 ☐ Run a tape measure down the outside of the stack to the top of the casing head flange.

Record the measurement from the top of the casing head flange to the rig floor.

15 ☐ **Use a High-Powered Flashlight to Inspect the I.D. of the stack.**

Verify that there are No Obstructions.

D. Lowering the Hanger

16 ☐ Ensure the casing is centered in the hole. Use the cat line or air hoist if necessary to center the casing.

17 ☐ Pull tension on the ropes and remove the boards.

18 ☐ Pour oil on the OD of the casing down the BOP stack.

19 ☐ Slowly lower the Casing Hanger down the stack.

Keep the casing centered and shake the casing with the air hoist or cat line if necessary to allow the Casing Hanger to drop through the BOP stack.

* **Hold on to the Ropes and monitor the Casing Hanger's progress through the stack.**

UWS does not recommend hitting the top of the casing hanger to push it down into the stack. Slip segments can be damaged by doing so.

Use a High-Powered Flashlight to Inspect the I.D. of the stack

Perform a Visual Inspection Before, During, and After Installation

20 ☐ When the Casing Hanger is properly installed in the casing head, run the tape measure down the inside of the stack until it touches the top of the Casing Hanger.

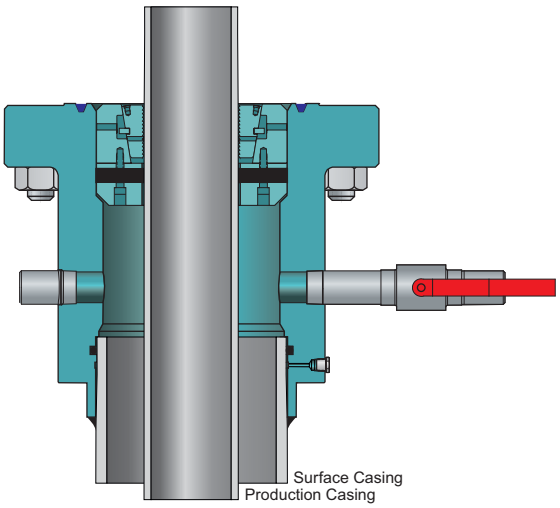
The dimension should be within 2 inches of the earlier measurement you took.

If the dimension is not close, the casing hanger is not all the way down.

Do not release the casing – continue to shake the casing while monitoring the casing hanger with the loosely held ropes.

If the casing can be moved, pick up and slack off in small increments.

Notice if the hanger is lowering into the stack by holding the ropes and monitoring their movement.



21 ☐ Once the dimensions match you can slack off the casing. ***A sharp decrease*** on the weight indicator signifies the Casing Hanger has taken weight, and at what point.

Always record the amount of casing weight placed on the Casing hanger.

Be sure to subtract the block weight from the weight indicator reading so you record actual casing weight on the casing hanger. **Note this on your FSO.**

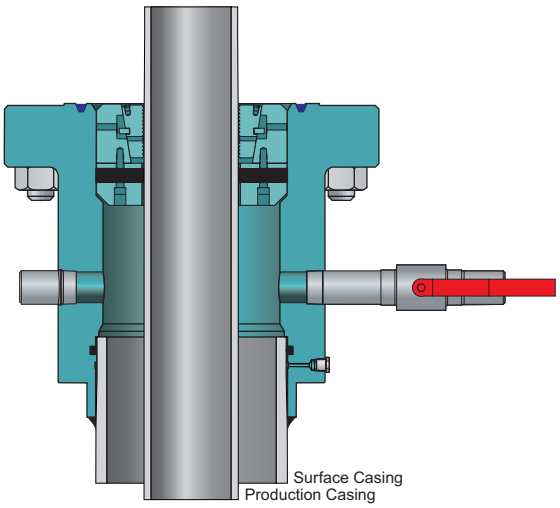
Verify the weight is sufficient for the Casing Hanger being used before releasing the casing.

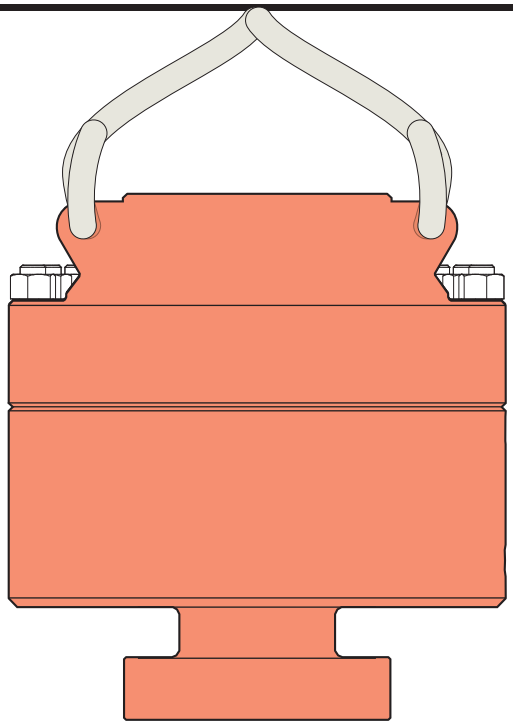
Note: Please see weight chart on Page 15.

22 ☐ Once the Casing Hanger is properly seated in the casing head and has taken all the weight:

- unlatch the elevators, and

- drop the ropes down the stack.

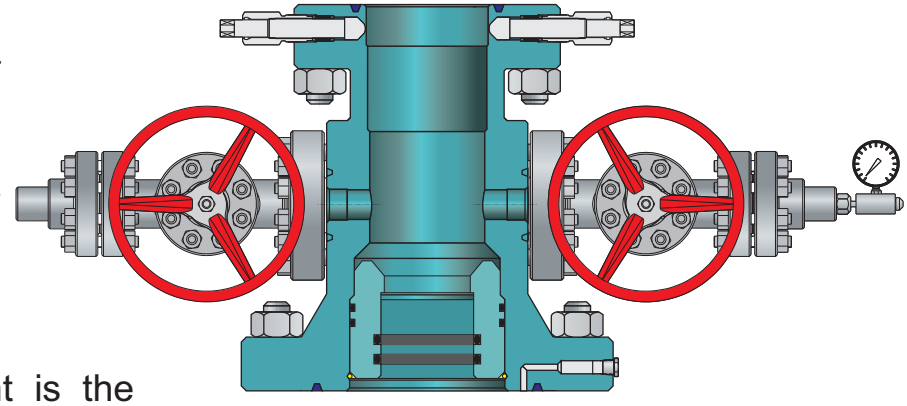




23 ☐ After the stack is unbolted and raised, clean the top of the Casing Hanger and visually verify that it is properly seated in the Casing Head bowl. Verify that the slip segments are equal in height and are even with the top of the hanger body.

CAUTION:
Verify that there is NO GAS present in the well bore before proceeding.

Cutting the Casing

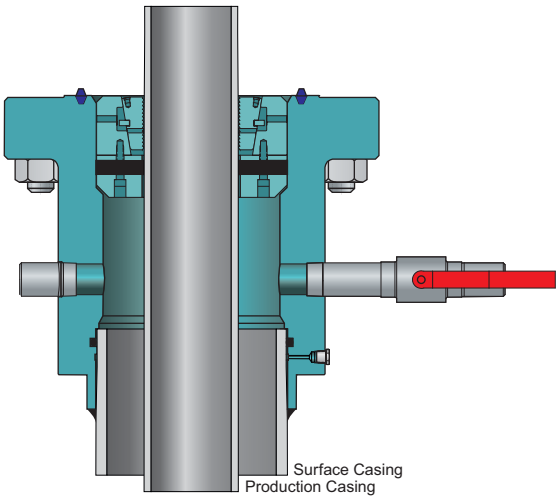


24 ☐ Determine a cut-off height that will allow proper sealing inside the tubing head or casing spool and add several more inches to the first cut.

Proper cut-off height is the measured distance from the bottom flange (of the next wellhead to be installed) to the stop shoulder in the secondary seal prep.

Add in the appropriate ring gasket gap.

Subtract 1/4” to 1/2” from this dimension to obtain proper cut-off height.



E. Rough Cut the Casing

CAUTION:
Verify that there is NO GAS present in the well bore before proceeding.

25 ☐ Rough cut the casing REMOVE the cut-off piece of casing THEN remove the BOP stack.

CARE
Must be taken not to drop anything down the casing.

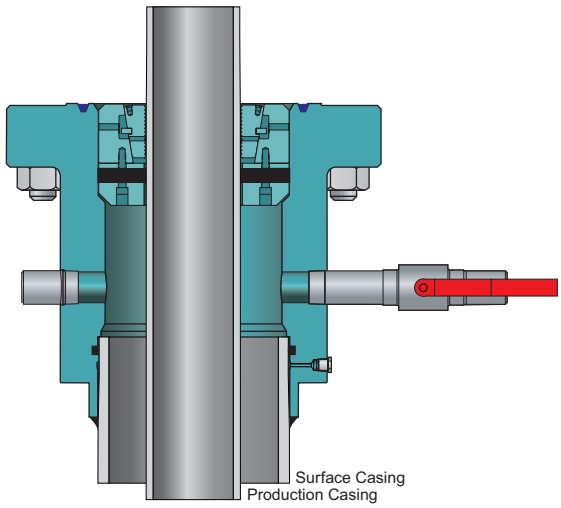
26 ☐ Clean the top of the Casing Head and Casing Hanger with a high pressure water hose.

27 ☐ Remove ***as much fluid as possible*** from the inside of the casing and **all fluid** from around the casing hanger.

UWS recommends removing fluid a minimum of 12 inches below your cut.

28 ☐ Measure your final cut-off dimension from the casing head flange (not the casing hanger) and mark the casing using a wrap-around and soap stone marker. Allow for the appropriate ring gasket gap.

29 ☐ Double check your dimension and make the final cut.



F. Bevel Procedure:

30 ☐ Using a grinder, bevel the top OD of the casing with a 3/8" x 3/16" bevel. Remove all burrs – check by passing a rag or cloth over the bevel and ensure it does not snag or hang up.

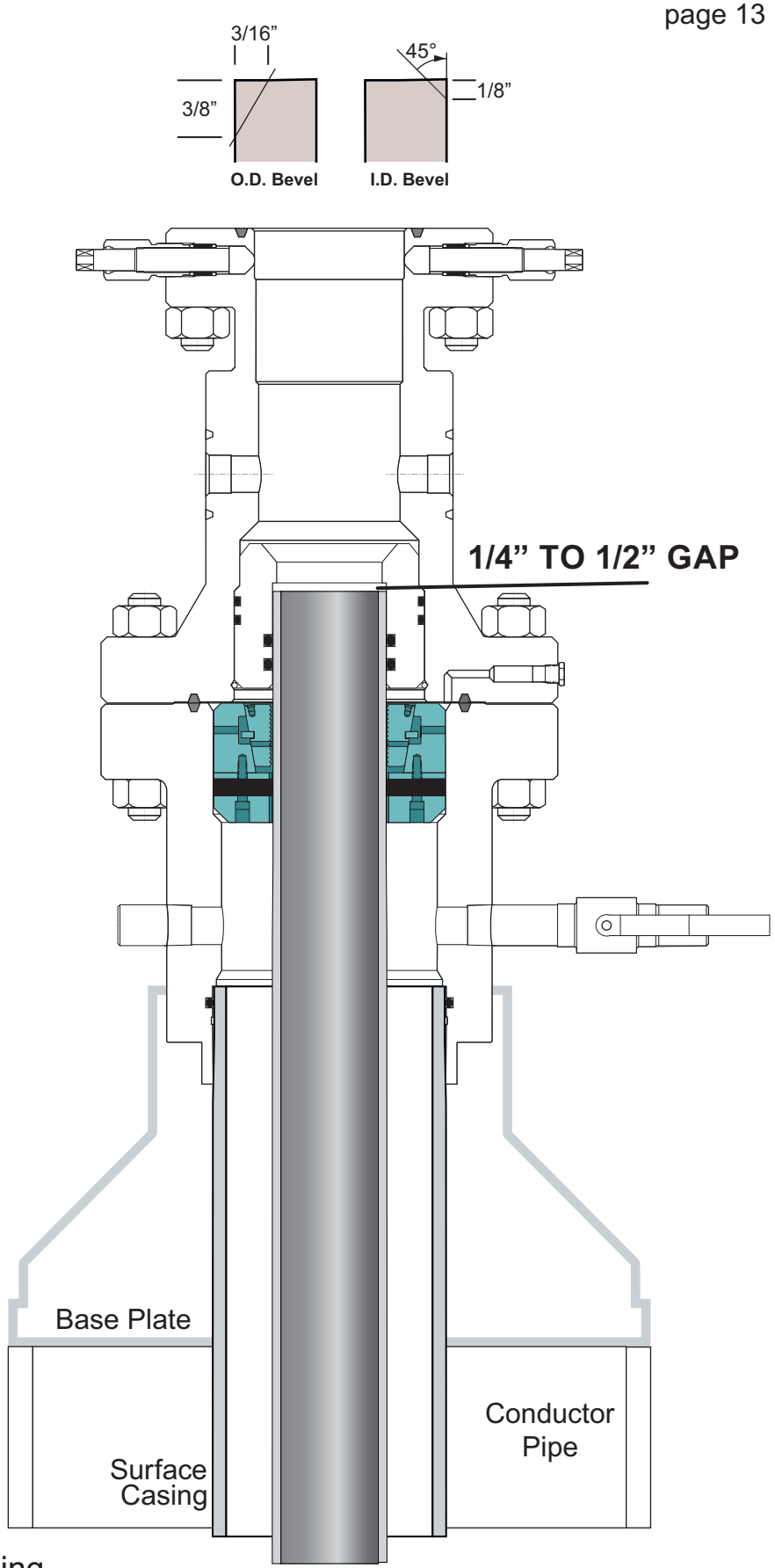
31 ☐ Bevel the top ID of the casing slightly so there are no obstructions in the casing ID.

32 ☐ Using a flapper wheel, clean the OD of the casing stub. Remove all pipe varnish and clean to bare metal.

33 ☐ Inspect the casing stub and verify that there are no seams or defects. If there is a seam or defect it must be removed before proceeding.

a ☐ Deep narrow seams or defects can be repaired by widening the groove so the seal will fill the gap. **Take care not to make the groove deeper.**

34 ☐ The Tubing Head or Casing Spool is ready to be installed.



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G. Minimum Weight Chart

* Minimum Recommended Casing Load for C-22 Casing Hangers. These numbers reflect varying field conditions such as; minor bowl damage, rust or scale, drilling fluids, shale deposits, etc.

Nominal OD of Hanger	Casing Size	Recommended minimum Load in pounds	Minimum Load in ideal or perfect Conditions
11"	4-1/2"	78,000	19,250
	5"	74,000	18,315
	5-1/2"	70,000	17,285
	6-5/8"	59,000	14,605
	7"	55,000	13,600
	7-5/8"	48,000	11,805
13-5/8"	5-1/2"	120,000	29,680
	7"	106,000	25,830
	7-5/8"	99,000	24,040
	8-5/8"	86,000	20,845
	9-5/8"	72,000	17,265
	10-3/4"	54,000	12,765
16-3/4"	9-5/8"	146,000	35,300
	10-3/4"	128,000	31,275
	11-3/4"	110,000	26,855
	11-7/8"	109,000	26,275
	13-3/8"	79,000	18,840

*UWS can provide maximum casing hanger load capacity on a well by well basis. For this we will need the weight and grade of the casing, and the required test pressure that will be applied to the top of the casing hanger.

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UNIVERSAL WELLHEAD
SERVICES HOLDINGS, LLC.

Revision Log

Revision	Date	Details
0	March 16, 2015	Field Procedure Draft
1	March 30, 2015	Initial Release

ENGINEERING

Approval Log

Approved By: _____ *SIGNATURE*

_____ *PRINT NAME*

Revision	*REVIEWER* NAME	*REVIEWER* TITLE	DATE
0	Bob Allen	VP Operations	March 16, 2015
1	Bob Allen	VP Operations	March 30, 2015

FIELD

Date of Printing ***10:31 am, 03/30/2015*** *Please ensure the latest revision is in use.*

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