



PREVIEW DRAFT

SW-RP5069

**Vedanta Limited - Cairn Oil and Gas
Capex Design 8 - India**

**11 NOM Type 'ADAPT IND' 2 STAGE
Wellhead, 10000 PSI WP
13-3/8 OD Conductor x 9-5/8 OD x 7 OD
Casing x 4-1/2 OD Tubing**

Reference: LO
Version: 01
Release Date: 16-Dec-2024
TIME UID: 0004091249
Produced: 6-Dec-2024 13:43:09
Owner: Surface Production Systems
Author: Running Procedures Workgroup

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Revision History

Version	Date	Description	Prepared by
01	16-Dec-2024	Initial release per EWR 650662854.	Author: Babu Samivel

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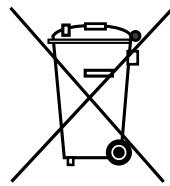
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Regulatory Compliance

Waste Management



IMPORTANT INFORMATION FOR CORRECT DISPOSAL OF THE EQUIPMENT

This symbol means that the equipment cannot be discarded in a rubbish-bin. At its end of life, the equipment and/or its components must be treated, following SLB Environmental procedures, in compliance with SLB QHSE Policy and applicable laws and regulations on waste management.

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Safety Hazard Indicators

The Safety Hazard Indicators listed below will be used throughout this procedure to indicate potentially hazardous and/ or personnel risks that may be encountered during the performance of the tasks outlined in the procedure.

Caution indicates the potential for damage to equipment or the environment.



Caution



Warning



Danger



Note is not intended to be used for any hazard that poses any threat or injury. They can provide additional information for reliable and efficient handling, installation, and operation of equipment.



Note

This document alone does not qualify an individual to install/ run the equipment. This document is created and provided as a reference for Qualified Cameron Service Personnel and does not cover all scenarios that may occur

Running Procedure General Warning

READ AND UNDERSTAND ALL INSTRUCTIONS. Failure to follow may result in serious personal injury and damage not only to the equipment but also the environment.

1. Safety is a combination of staying alert, common sense, and experience with the oil field equipment and environment. Read this Running Procedure prior to operating and installing the equipment. Be familiar with the operation terminologies of oil field equipment.
2. This document includes basic installation guidance. **The field service personnel shall be fully trained in all aspects of handling pressure control equipment as well as of the job that they are going to perform.** If any of the procedures and policies listed in this procedure cannot be followed, contact a Cameron Representative for the best course of action.
3. Proper **Personal Protective Equipment (PPE)** shall be utilized according to Company policies. Always use proper tools when servicing the equipment.
4. A **Job Hazard Analysis (JHA)** must be performed prior to beginning any service on a well location. A JHA review meeting will be held with all affected rig personnel PRIOR to the commencement of work to review the results of the JHA, evacuation routes, emergency contacts, etc. All meeting attendees and a Company Representative will sign-off on the JHA to acknowledge this meeting has taken place.
5. **Be aware of unexpected circumstances** that may arise when operating or servicing the equipment. Utilize the **Step Back 5X5 Process** in order to assess the hazards posed before, during, and after the servicing of equipment under pressure or with the potential of hazardous chemicals present. Be familiar with the company's and facility's Lockout/Tagout program in order to ensure all sources of energy (i.e. electrical, pneumatic, pressure) are isolated and/or de-energized prior to beginning work.
6. All **governmental or Company safety requirements** shall be met before working on the equipment. **Requirements of fully tested pressure barriers prior to servicing the equipment shall be observed. Cameron recommends that two mechanical pressure barriers is the preferred practice.** Additional precautions should be taken to ensure that the mechanical pressure barriers are functioning correctly prior to any work being carried out on this particular equipment.
7. Always check for any **trapped pressure** before servicing the equipment. All valves downstream of the pressure barriers must be cycled several times to release any trapped pressure.
8. Ensure the chemical and physical properties of the fluid flow product inside the equipment are known. Obtain applicable **Safety Data Sheets (SDS)** for commonly encountered chemicals such as hydrogen sulfide, cements, etc. in order to identify appropriate PPE to use, emergencies, procedures, and methods or exposure control.
9. Always use **correct lifting devices** and follow safety rules in handling heavy products. The actual weight can vary for the system configurations. Never attempt to lift the equipment by hand.
10. Cameron manufactures a variety of oil field equipment with different features and operating requirements. Be certain of the equipment model and refer to the appropriate procedure, before attempting any operation or service on the equipment. **This procedure is to assist field personnel in the operation and installation of the equipment that is listed in this document. Different procedures are available for other oil field products.**

SD-045055-01 Rev 02

HSE Hand Safety Rules and Tenets of Operation

HSE Hand Safety Rules	
	1. No Hands on Loads Select the appropriate device to control the load.
	2. Hands on Handles Only Use manufacturer's handles or safe alternatives.
	3. Permission to Touch Use lifting assistance/ technology for loads > 20kg or 44 lbs.
	4. Hands Off...Energy On Remove hands from load BEFORE setting in motion.
	5. Safe Cargo Handling Use pallets & crates designed to prevent tip over or loss of load.
	6. Use the Correct PPE Use the right glove for the job (chemical, hot work, impact, etc.).
HSE Tenets of Operation	
	Stop Work Stop work immediately until unsafe behaviors and conditions are addressed.
	Report ALL Incidents Immediately report incidents, including injuries, illnesses, property damage, near misses, and environmental releases.
	Leadership & Accountability Hold each other accountable for working safely and complying with applicable regulations.
	Equipment Operations Always operate equipment and vehicles with safety devices enabled, and never beyond their capabilities, environmental limits, or designed purposes.
	Follow Procedures Maintain all training and follow established HSE policies and practices.
	HSE Observations Recognize safe behaviors and conditions, and address those at-risk.
	PPE Always wear the correct Personal Protective Equipment for the task.
	Ask Ask questions when in doubt, and for assistance when dealing with new or unusual situations.
HSE VISION: NO ONE GETS HURT; NOTHING GETS HARMED	
HEALTH, SAFETY & ENVIRONMENT	



LIFE-SAVING RULES

Bypassing Safety Controls

Obtain authorisation before overriding or disabling safety controls



- I understand and use safety-critical equipment and procedures which apply to my task
- I obtain authorisation before:
 - disabling or overriding safety equipment
 - deviating from procedures
 - crossing a barrier

Confined Space

Obtain authorisation before entering a confined space



- I confirm energy sources are isolated
- I confirm the atmosphere has been tested and is monitored
- I check and use my breathing apparatus when required
- I confirm there is an attendant standing by
- I confirm a rescue plan is in place
- I obtain authorisation to enter

Driving

Follow safe driving rules



- I always wear a seatbelt
- I do not exceed the speed limit, and reduce my speed for road conditions
- I do not use phones or operate devices while driving
- I am fit, rested and fully alert while driving
- I follow journey management requirements

Energy Isolation

Verify isolation and zero energy before work begins



- I have identified all energy sources
- I confirm that hazardous energy sources have been isolated, locked, and tagged
- I have checked there is zero energy and tested for residual or stored energy

Hot Work

Control flammables and ignition sources



- I identify and control ignition sources
- Before starting any hot work:
 - I confirm flammable material has been removed or isolated
 - I obtain authorisation
- Before starting hot work in a hazardous area I confirm:
 - a gas test has been completed
 - gas will be monitored continually

Line of Fire

Keep yourself and others out of the line of fire



- I position myself to avoid:
 - moving objects
 - vehicles
 - pressure releases
 - dropped objects
- I establish and obey barriers and exclusion zones
- I take action to secure loose objects and report potential dropped objects

Safe Mechanical Lifting

Plan lifting operations and control the area



- I confirm that the equipment and load have been inspected and are fit for purpose
- I only operate equipment that I am qualified to use
- I establish and obey barriers and exclusion zones
- I never walk under a suspended load

Work Authorisation

Work with a valid permit when required



- I have confirmed if a permit is required
- I am authorised to perform the work
- I understand the permit
- I have confirmed that hazards are controlled and it is safe to start
- I stop and reassess if conditions change

Working at Height

Protect yourself against a fall when working at height



- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area

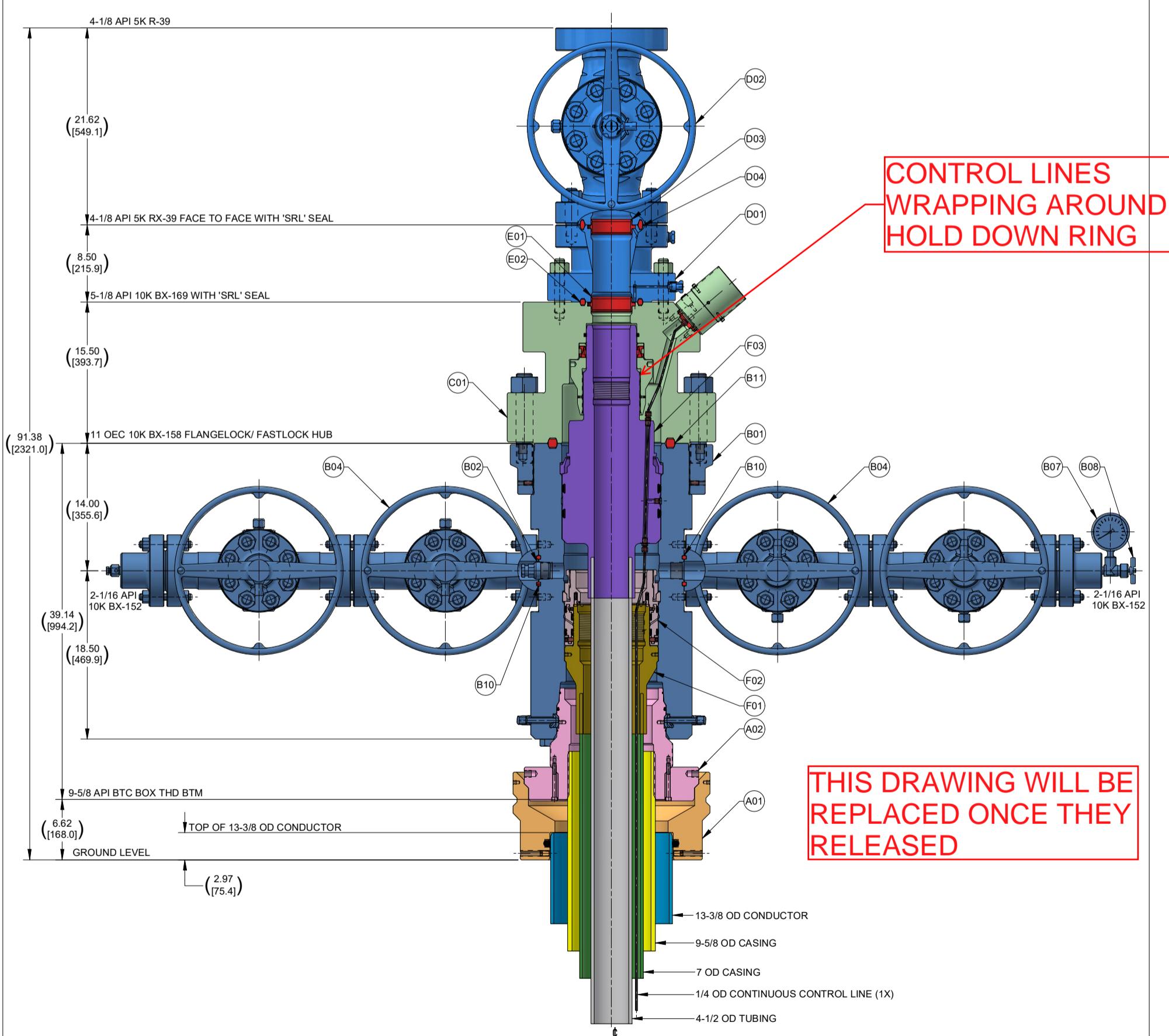
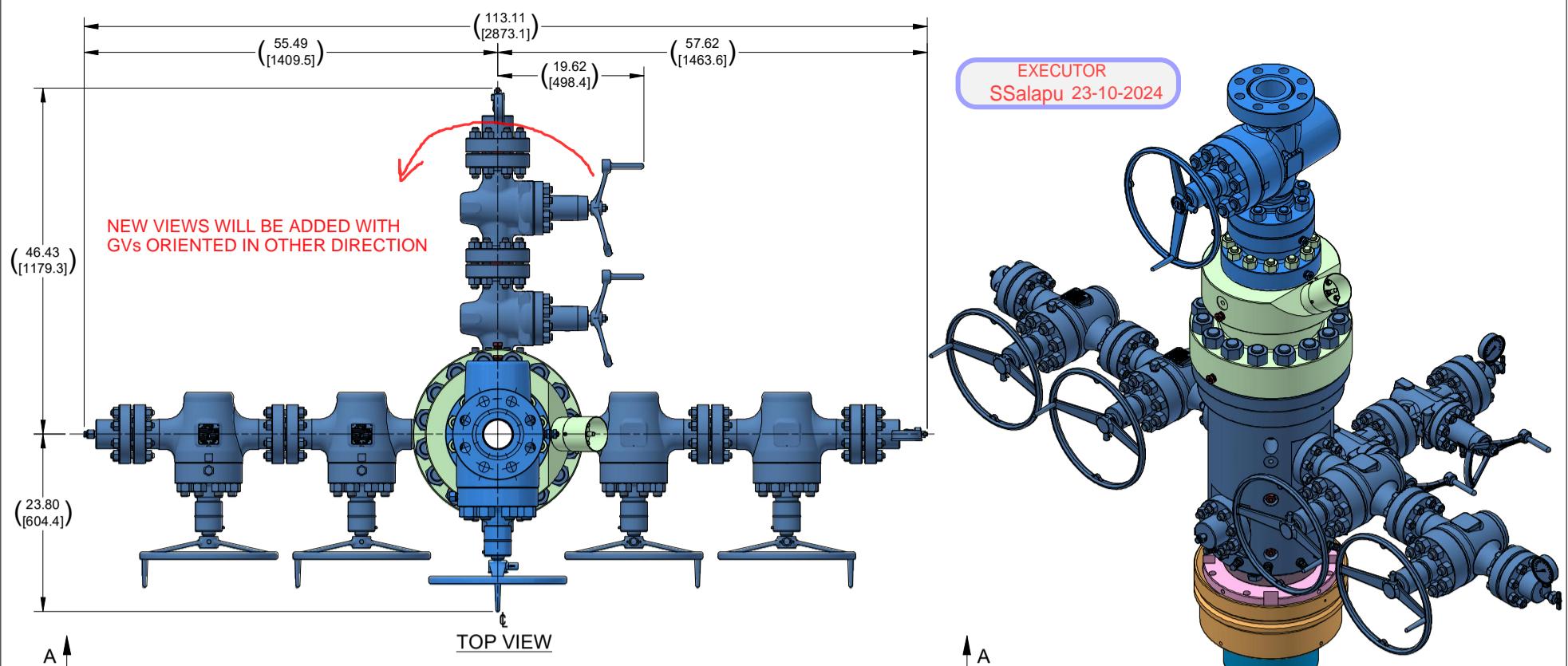
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1 **Introduction**

1.1 **System Drawings**

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vedanta

VEDANTA LIMITED - CAIRN OIL & GAS INDIA

DESIGN 8: 2CP 10K

STACK-UP FOR 11 NOM, TYPE 'ADAPT-IND' WELLHEAD ~ 10,000 PSI W.P.

CASING PROGRAMME : 13-3/8 OD CONDUCTOR X 9-5/8 OD CASING

X 7 OD CASING X 4-1/2 OD TUBING

X 1/4 OD CONTINUOUS CONTROL LINE (1X)

SALES ORDER NUMBER: 4070734

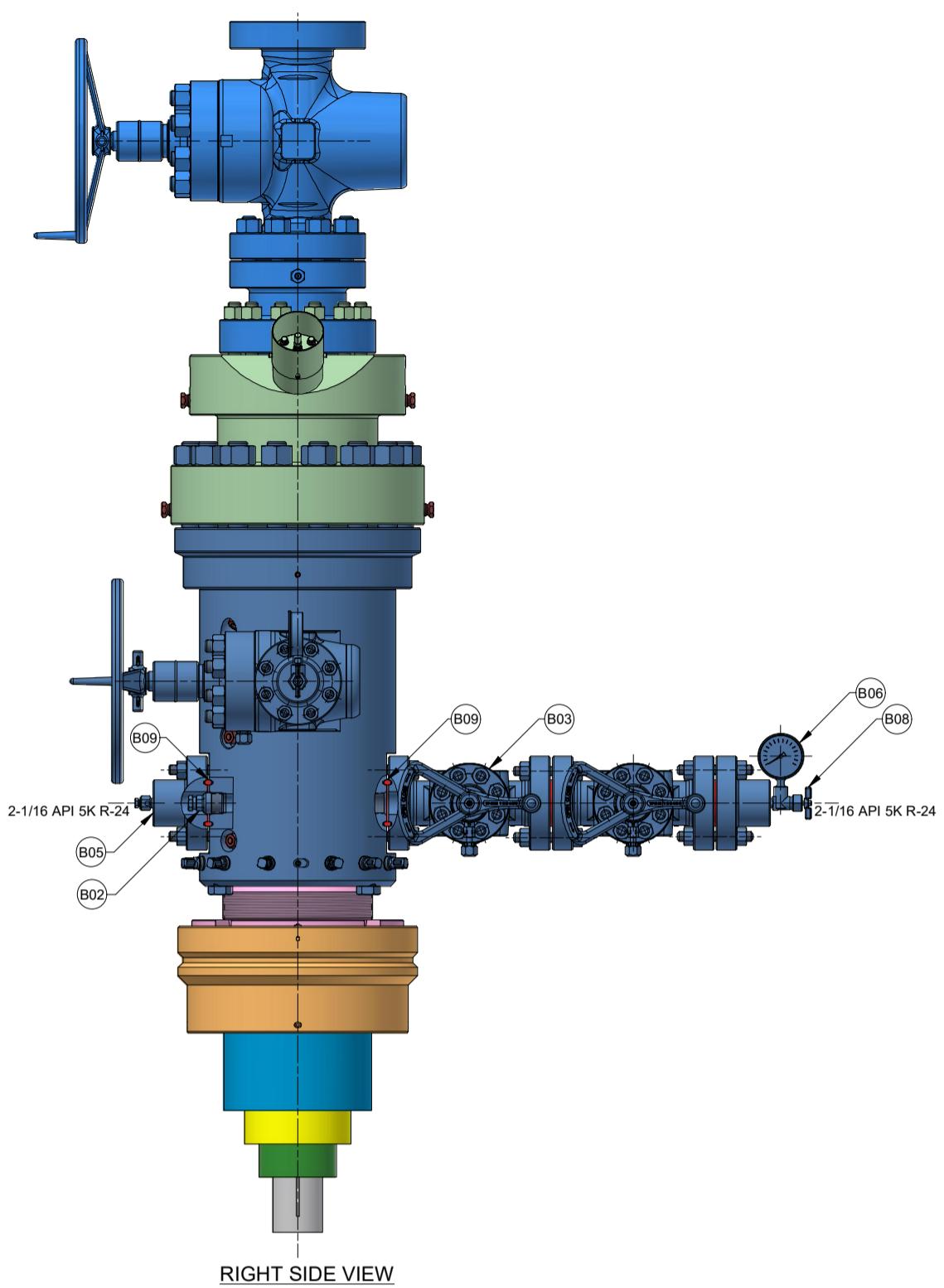
DRP EWR NUMBER: 650647188

STANDARD COMPLETION

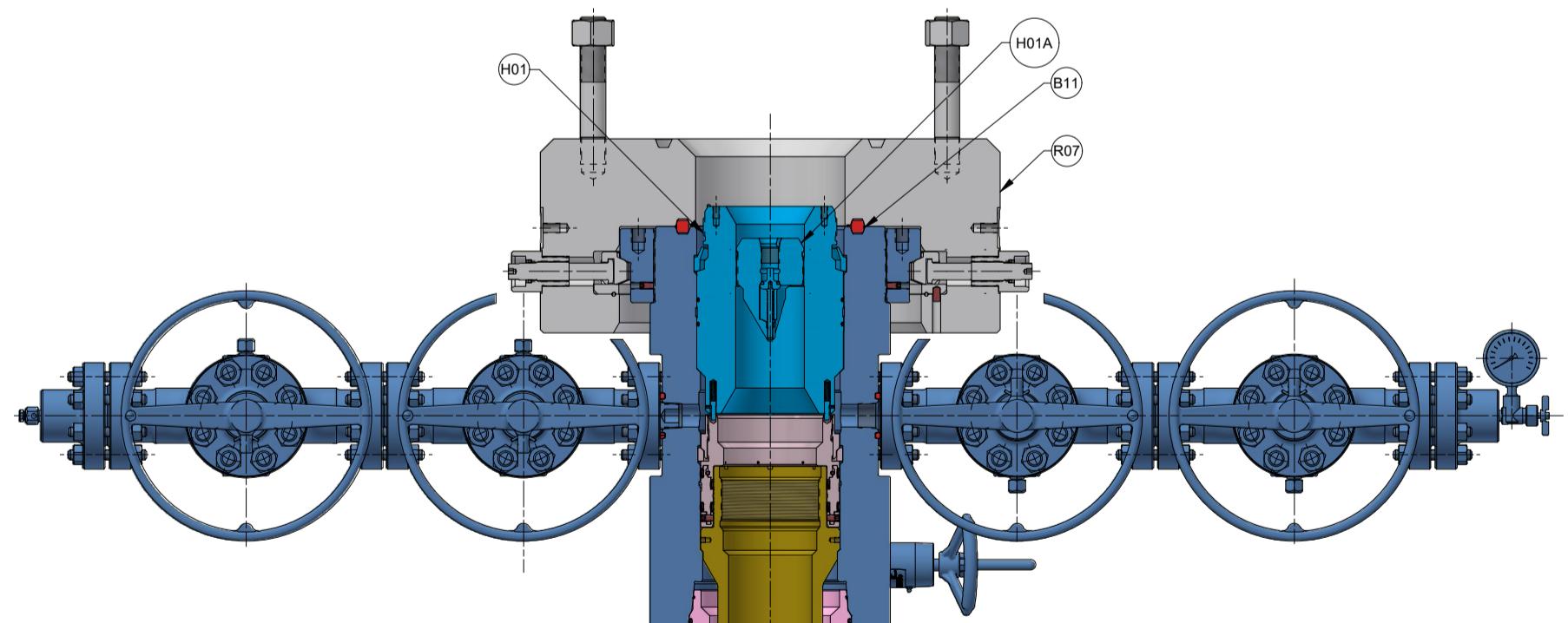
CONFIDENTIAL			
DESIGNED IN INCHES DIMENSIONAL UNITS INCHES [MILLIMETERS]	SURFACE TREATMENT ~	DO NOT SCALE	sb SURFACE SYSTEMS
DRAWN BY SANDHYA S	DATE 10 Oct 24		
MATERIAL & HEAT TREAT	CHECKED BY SUNU SUNDAR	DATE 16 Oct 24	
APPROVED BY VIGNESH J	DATE 23 Oct 24	SEE LEFT HAND CORNER	
ESTIMATED WEIGHT: 6466.6 LBS INITIAL USE BM: 2933.2 KG 220/2000-20-22	SHEET 1 OF 8	SK-231687-01	REV. 01

UNRELEASED - NOT for Manufacturing or Fabrication

INVENTOR - D



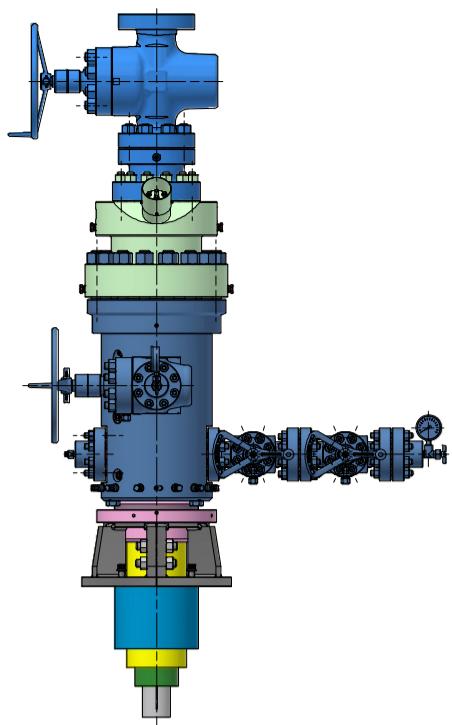
RIGHT SIDE VIEW



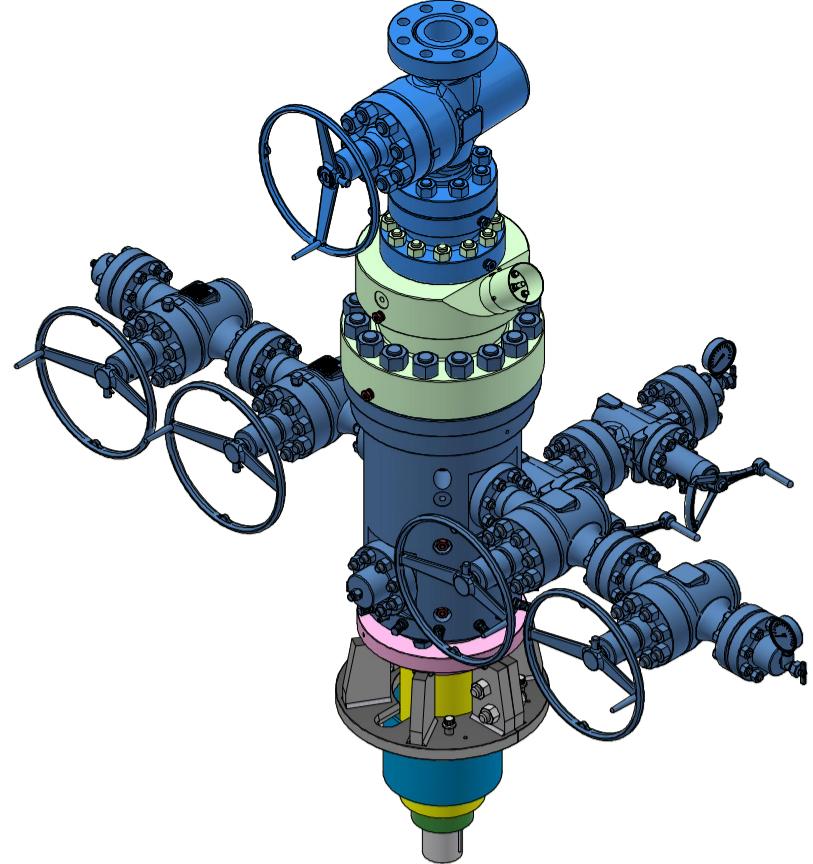
PARTIAL SECTION VIEW SHOWING
DUMMY HANGER WITH 5 NOM
BPV FOR ABANDONMENT

**STANDARD
COMPLETION**

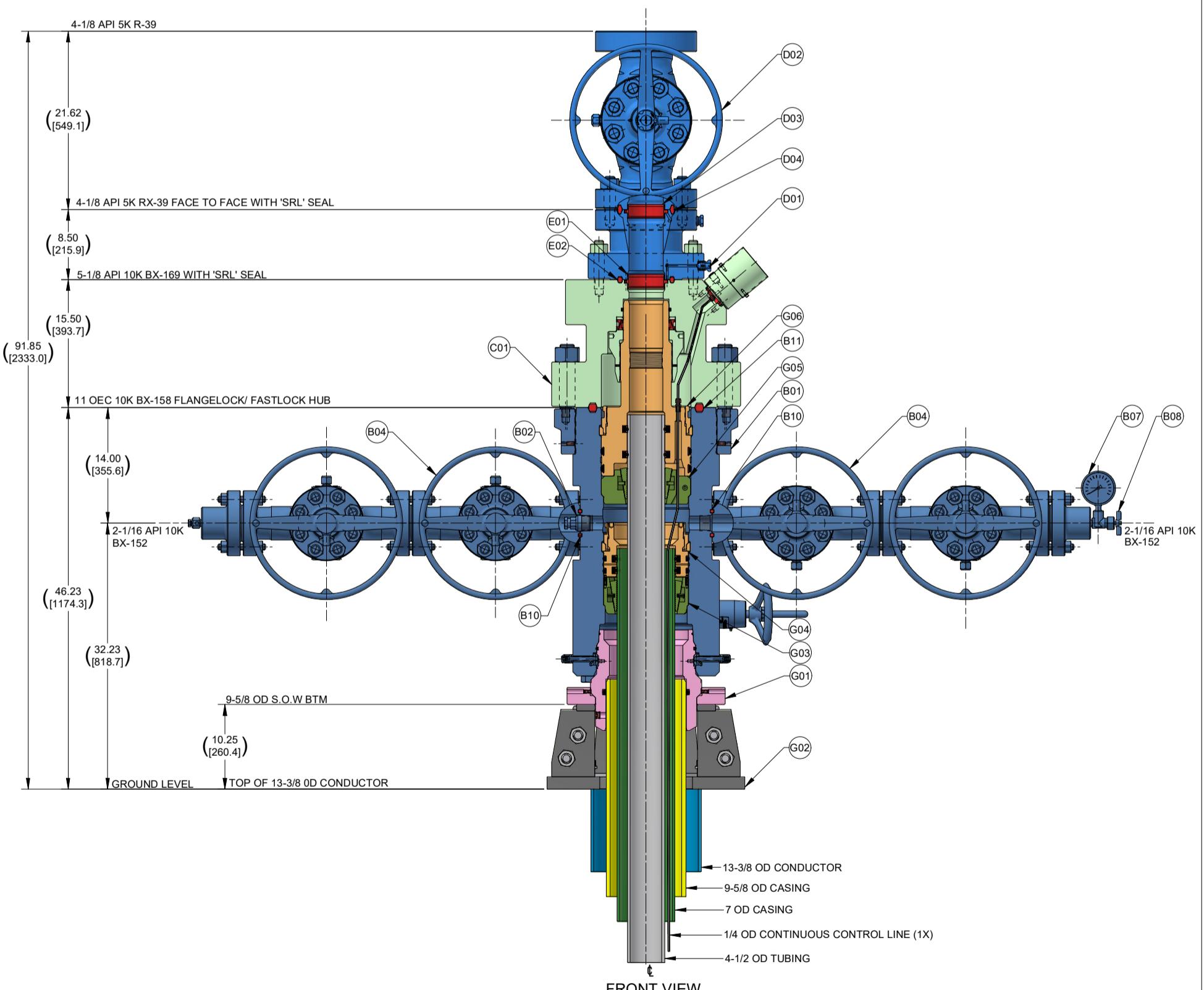
CONFIDENTIAL	
	SURFACE SYSTEMS
SEE LEFT HAND CORNER	
SHEET 2 OF 8	REV. 01
SK-231687-01	INVENTOR - D



RIGHT SIDE VIEW



ISOMETRIC VIEW



EMERGENCY COMPLETION

CONFIDENTIAL	
	SURFACE SYSTEMS
SEE LEFT HAND CORNER	
SHEET 3 OF 8	REV. 01
SK-231687-01	INVENTOR - D

SECTION A - LOAD RING AND 9-5/8 API BTC LANDING MANDREL

ITEM	PART NUMBER	QTY.	DESCRIPTION
A01	2329762-14-01	1	ASSY, LOAD RING, FOR TYPE 'ADAPT IND' LOAD RING ADAPTER, 20 OD X 12.415 ID BTM PREP WITH ONE O-RING C/W SOCKET HD SET SCREWS TO LOCK ON 13-3/8 CONDUCTOR, AND TOP PREP TO ACCEPT LOW PRESSURE ADAPTER, MIN BORE: 12.400
A02	2605993-02-01	1	ASSY; LANDING MANDREL W/ LOAD RING ADAPTER, TYPE 'ADAPT IND', 13-5/8 NOM, W/ T-103 NECK TOP X 9-5/8 API BTC BOX THD BTM, W/ 13.500-4TPI LH EXTERNAL STUB (OR) WITH SPLIT TYPE LANDING BASE 2221412-34-01, W/ FOUR "TOP JOB" FLUTES AND EIGHT ANGLED FLOW-BY HOLES ON LOAD RING ADAPTER,MIN BORE: 8.88

SECTION B - CASING HEAD HOUSING - 11 OEC FLANGELOCK/FASTLOCK #15 HUB BX-158 10K TOP X T-103 5K SEAL PREP BTM - PN: 2201888-3100095

ITEM	PART NUMBER	QTY.	DESCRIPTION
B01	2503501-19-01	1	ASSEMBLY, CASING HEAD HOUSING, TYPE 'ADAPT IND', 11 IN NOM OEC FLANGELOCK/FASTLOCK #15 HUB BX-158 10K WP TOP, WITH PREP FOR INTERNAL SNAP RING X T-103 5K SEAL PREP FOR T-103 HANGER NECK WITH C-RING PREP BOTTOM, WITH INDEPENDENT LOAD SHOULDERS, WITH TWO LOWER 2-1/16 API 5K R-24 STUDDED SIDE OUTLETS WITH 2-1/16 API VR THREADS & WITH TWO UPPER 2-1/16 API 10K BX-152 STUDDED SIDE OUTLETS WITH 2-1/16 API VR THREADS, MIN BORE: 9.945
B02	2222164-02-01	2	VALVE REMOVAL PLUG 1-1/2 IN 11-1/2 TPI - 3/4 TPF 'VEE' TUBING THD, 2-1/16 2,000 -10,000, (1.25 HEX)
B03	5C-2001015-25	1	ASSEMBLY, ANNULUS SIDE OUTLET VALVES, 2-1/16 API 5,000 PSI R-24
B04	5C-2001032-21	2	ASSEMBLY, ANNULUS SIDE OUTLET VALVES, 2-1/16 API 10,000 PSI BX-152
B05	5C-8000064-25	1	ASSEMBLY, BLIND FLANGE, 2-1/16 INCH API 6A 5K PSI R-24, RECESSED FOR CONTROL PLUG AND WITH 1/2 INCH NPT PORT, WITH ONE 1/2 NPT BLEEDER PLUG
B06	5C-9900479	1	PRESSURE GAUGE, 5000 PSI RANGE, 4.50 INCH DIAL SIZE, 1/2 INCH NPT BOTTOM, SST, LIQUID FILLED
B07	5C-9900491	1	PRESSURE GAUGE, 10000 PSI RANGE, 4.50 INCH DIAL SIZE, 1/2 INCH NPT BOTTOM, SST, LIQUID FILLED
B08	5C-9900480	2	NEEDLE VALVE, 1/2 INCH NPT, 90 DEG ANGLE INLET 1/2 INCH MNPT X OUTLET 1/2 INCH FNPT, SST
B09	5C-9900481	2	RING GASKET, API TYPE RX-24, LOW CARBON STEEL, ZN PLATED
B10	5C-9900494	2	RING GASKET, API TYPE BX-152, LOW CARBON STEEL, ZN PLATED
B11	5C-9900484	1	RING GASKET, API TYPE BX-158, LOW CARBON STEEL, ZN PLATED

SECTION C - TUBING HEAD ADAPTER

ITEM	PART NUMBER	QTY.	DESCRIPTION
C01	2114788-40-02	1	ASSEMBLY, TUBING HEAD ADAPTER, WITH 11 IN NOM OEC FLANGELOCK FLANGE BX-158 10K BOTTOM X 5-1/8 API 10K BX-169 STUDDED TOP WITH 'SRL' SEAL PREP, WITH ONE CONTROL LINE EXIT BLOCK WITH GRAYLOC #14 STUDDED OUTLET, COMES WITH 4-1/8 'SRL' SEAL, COMES WITH 5-1/2 'CANH' METAL SEALS AND 'NS' SEAL, MIN BORE:4.120

SECTION D - CROSSOVER ADAPTER - 4-1/8 API 5K R-39 TOP X 5-1/8 API 10K BX-169 BOTTOM - PN: 2201888-3100086

ITEM	PART NUMBER	QTY.	DESCRIPTION
D01	2095814-04-02	1	ASSY, CROSSOVER ADAPTER, 5-1/8 API 10K BX-169 FLG BTM X 4-1/16 API 5K RX-39 FACE TO FACE STD'D TOP, W/ 4-1/8 SRL SEAL PREP TOP X BTM, MIN BORE: 4.12
D02	141554-31-08-02	1	GATE VALVE ASSEMBLY, MANUAL, MODEL 'FLS', 4-1/8 BORE, 5,000 PSI, 4-1/16 API 5K R-39 FLG X 4-1/16 API 5K RX-39 FACE TO FACE FLG W/ 4-1/8 'SRL' SEAL PREP
D03	2120000-21-19	1	4-1/8 SRL METAL LIP SEAL RING 4.220 THRU BR, 4.501 SEAL BR, 5.253 HUB BR; 15M MAX WP (MAT'L 410 SST)(SILVER PLATING)
D04	5C-9900529	1	RING GASKET, API TYPE RX-39, LOW CARBON STEEL, ZN PLATED
ITEM	PART NUMBER	QTY.	DESCRIPTION
E01	2120000-21-19	1	4-1/8 SRL METAL LIP SEAL RING 4.220 THRU BR, 4.501 SEAL BR, 5.253 HUB BR; 15M MAX WP (MAT'L 410 SST)(SILVER PLATING)
E02	5C-9900506	1	RING GASKET, API TYPE BX-169, LOW CARBON STEEL, ZN PLATED

SECTION F - HANGERS AND SEAL ASSEMBLY

ITEM	PART NUMBER	QTY.	DESCRIPTION
F01	2502633-19-01	1	CASING HANGER, MANDREL, TYPE 'ADAPT-IND' F/ 10.318 BOWL X 7 IN 29 LB/FT L-80 HUNTING SEAL-LOCK XD BOX THD BTM X 7.250-4 TPI LH INTERNAL STUB ACME RUNNING THD TOP, W/ 8-3/8 NOM SLICK NECK TOP W/ SIX ANTI-ROTATION SLOTS,W/ SIX FLOW-BY SLOTS, MIN BORE: 6.155
F02	2502122-05-01	1	ASSEMBLY, IB SEAL PACKOFF, TYPE 'ADAPT-IND', F/ 10.318 IN NOM BOWL, W/ 9.250-4 TPI LH EXTERNAL STUB ACME RUNNING THD AND LUGS F/ RH J-SLOT TOOL W/ ENERGIZING RING AND IB LOCK RING, W/ TWO OUTER AND TWO INNER 'MEC' SEALS, W/ SIX ANTI-ROTATION PINS AT BTM, MIN BORE: 6.82 IN
F03	2301235-26-01	1	ASSEMBLY, TUBING HANGER, TYPE 'ADAPT FAMILY', 11 IN NOM, WITH 6.375-4 TPI LEFT HAND EXTERNAL STUB ACME RUNNING THREAD TOP X 4-1/2 IN 15.1 LB/FT HUNTING SEAL-LOCK XD BOX THREAD BOTTOM, WITH 4 IN NOM TYPE 'H' BPV PREP, WITH DOUBLE DOVETAIL SEALS, WITH SLICK NECK TOP FOR 5-1/2 'CANH' SEAL & 'NS' SEAL, WITH ONE 1/4 OD CONTINUOUS CONTROL LINE PREP, MIN. BORE: 3.752

SECTION G - EMERGENCY EQUIPMENT

ITEM	PART NUMBER	QTY.	DESCRIPTION
G01	2605993-16-01	1	ASSY, LANDING MANDREL W/ LOAD RING ADAPTER , TYPE 'ADAPT IND', 13-5/8 NOM W/ T-103 NECK TOP X 9-5/8 SOW BTM PREP W/ 13.500-4 TPI LH EXTERNAL STUB ACME RUNNING THDS, EIGHT ANTI-ROTATION SLOTS F/ RUNNING TOOL & PREP F/ TIEDOWN SCREWS, LANDS ON SPLIT TYPE LANDING BASE 2221412-34-01, MIN BORE: 8.88
G02	2221412-34-01	1	ASSY DETAIL; SPLIT TYPE LANDING BASE F/ 11 NOM 'TS-S' / 'SSD-11' CASING HEAD F/ 16 IN AND 20 IN CONDUCTOR (106.50 LB/FT MAX) W/ 8 GUSSETS
G03	2502526-02-01	1	ASSY, SLIP HANGER,TYPE 'IC-1-ADAPT-IND', F/ 10.318 BOWL X 7 CASING,W/ ANTI-ROTATION PINS
G04	2502619-04-01	1	ASSEMBLY, EMERGENCY IB SEAL PACKOFF, TYPE 'ADAPT IND', FOR 10.318 IN NOM BOWL, WITH 9.250-4 TPI LH EXTERNAL STUB ACME RUNNING THREAD, WITH ENERGIZING RING WITH LUGS FOR RH J-SLOT TOOL, WITH IB LOCK RING, WITH (2) 10-1/4 NOM EXTERNAL 'LS' SEALS AND 7 IN NOM DOUBLE 'T' SEALS WITH OVERSIZED 'T' SEAL BORE, WITH (6) ANTI-ROTATION HOLES AT BOTTOM, MIN BORE: 6.34
G05	2463944-09	1	ASSY, SLIP HANGER, SPECIAL BOWL, W/ IC-2 SLIPS, 11 X 4-1/2, GROUP 1, IC-2 SLIPS AND NON-STANDARD BOWL SSD-II/TS-S BOWL, W/ EIGHT ANTI-ROTATION HOLES, W/ ONE 1/4 CONTINUOUS CONTROL LINE PREP W/ RETAINER SCREW
G06	2404416-12-01	1	ASSEMBLY, EMERGENCY SEAL PACKOFF, 'ADAPT IND', 11 NOM WITH 9.625-4 TPI LH EXTERNAL STUB ACME THREAD FOR ENERGIZING RING AND IB LOCK RING, WITH 6.375-4 TPI LH EXTERNAL STUB ACME THREAD FOR 'CANH' SEAL HOLDDOWN RING, WITH 4 IN NOM TYPE 'H' BPV PREP, WITH 5-1/2 SLICK NECK FOR 'CANH' METAL SEAL, WITH DOUBLE DOVETAIL SEAL, WITH DOUBLE 'T' SEAL FOR 4-1/2 OD CASING, WITH ONE 1/4 OD CONTINUOUS CONTROL LINE PREP, MIN BORE: 3.900 (4140 LAS 85 KSI YS)

*NOT SHOWN IN DRAWING

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SECTION H - SUSPENSION PACKAGE - PN: 2371567-17

ITEM	PART NUMBER	QTY.	DESCRIPTION
H01	2345508-02-01	1	ASSY, DUMMY HANGER, MANDREL, TYPE 'ADAPT-IND', 11 NOM X 9.875-4 TPI LH EXTERNAL STUB ACME RUNNING THD TOP, W/ 5 IN NOM TYPE 'H' BPV THD, W/ TWO 11 NOM EXTERNAL DOVETAIL O-RINGS, W/ FOUR ANTI-ROTATION PINS AT BOTTOM, MIN BORE: 4.930
H01A	030246-39	1	ASSY, BPV, TYPE 'H', 5 IN NOMINAL, MAX OD: 5.010 IN, MAX PRESSURE: 10 KSI
H02	041612-49	1	ASSY, TWO WAY CHECK VALVE, TYPE 'H', 5 IN NOMINAL, MAX OD: 5.010 IN
ITEM	PART NUMBER	QTY.	DESCRIPTION
J01*	5C-200073-25	1	GATE VALVE ASSEMBLY, CAST TYPE EXPANSION BODY, MANUAL, 2-1/16 INCH BORE, API 6A 5K PSI, 2-1/16 INCH API 6A 5K PSI FLANGE X FLANGE

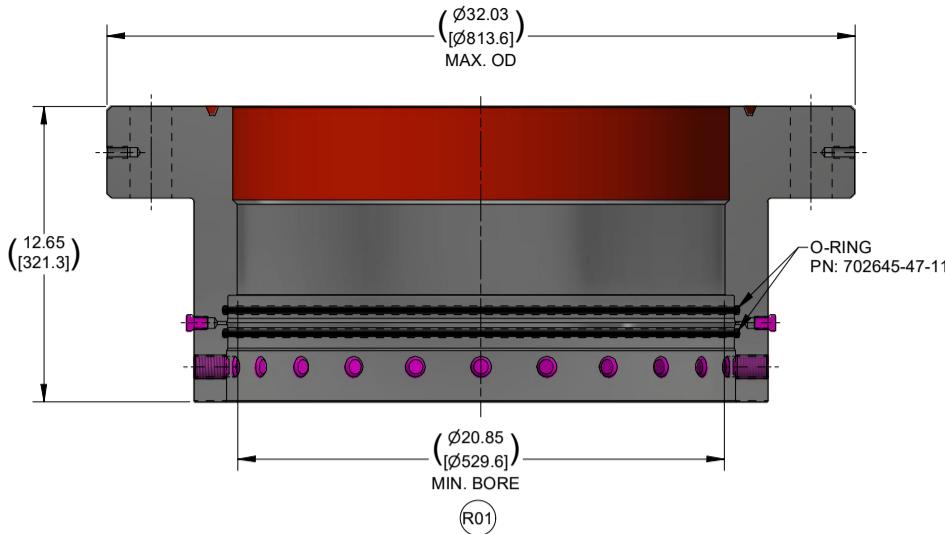
RUNNING TOOLS AND ACCESSORIES

ITEM	PART NUMBER	QTY.	DESCRIPTION
R01	2222008-14-01	1	ASSEMBLY, LOW PRESSURE ADAPTER, 21-1/4 API 2K R-73 FLANGE TOP, WITH TWO O-RING SEAL BOTTOM FOR LOAD RING, MIN BORE: 20.85
R02*	5C-9900487	1	RING GASKET, API TYPE RX-73, LOW CARBON STEEL, ZN PLATED
R03	2135095-23	1	ASSEMBLY, HANDLING TOOL FOR HOUSING, TYPE 'ADAPT FAMILY' F/ NST, IND & SGL, & INSTALLATION / RETRIEVAL TOOL F/ 11 NOM ISOLATION SLEEVE, 23.00 IN OD X 2.50 IN THICK W/ TWO 1-1/4-7 UNC SWIVEL HOIST RINGS F/ LIFTING
R04	2502657-02-01	1	ASSY, 11 NOM JETTING TOOL F/ TYPE 'ADAPT -FAMILY' AND 'ADAPT-IND' HANGERS W/ 4-1/2 API IF (NC50) BOX THD TOP
R05	2502517-01-01	1	ASSY; WEAR BUSHING, TYPE 'ADAPT-IND', 11 X 10.318 NOM W/ DOUBLE LEAD RUNNING THD TOP, W/ THREE O-RINGS MIN BORE: 9.920, OAL: 25.00
R06	2463031-01-01	1	ASSY, WELDESS SHORT WEAR BUSHING F/ 11 NOM 5K "TYPE 'ADAPT FAMILY' F/ NST, IND & SGL", W/ DOUBLE LEAD RUNNING THREAD W/ TWO EXT O-RINGS, MIN BORE: 9.92 IN, 11.00 IN OAL
R07	2398712-03-01	1	ASSEMBLY, 13-5/8 10K API DRILLING ADAPTER, 13-5/8 10K FASTLOCK BTM X STD'D TOP, W/O TIEDOWN SCREWS, W/ TESTABLE RING GASKET, MIN. BORE: 11.000 IN
R08*	5C-9900517	1	RING GASKET, API TYPE BX-159, LOW CARBON STEEL, ZN PLATED
R09	2463033-06-01	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM
R10	2463021-03-01	1	ASSY, LANDING MANDREL RUNNING TOOL, TYPE 'ADAPT IND', 9-5/8 API BTC BOX THD TOP X 13.500-4 TPI LH INTERNAL STUB ACME RUNNING THD BTM, W/ 8X TORQUE SCREWS, MIN BORE: 8.88
R11	2463026-53-01	1	ASSY, CASING HANGER RUNNING TOOL, TYPE 'ADAPT-IND', 10.318 NOM X 7 IN 29 LB/FT L-80 HUNTING SEAL-LOCK XD BOX THD TOP X 7.250-4 TPI LH EXTERNAL STUB ACME RUNNING THREAD BTM, W/ SIX FLOW-BY SLOTS, W/ ONE EXTERNAL DOVETAIL O-RING, MIN BORE: 6.155
R12*	5C-9700014-01	1	BPV REMOVING TOOL FOR TYPE H BPV F/5 NOM, 4 NOM, 3 NOM & 2-1/2 NOM
R13*	5C-9700015-01	1	BPV INSERTING TOOL FOR TYPE H BPV F/5 NOM, 4 NOM, 3 NOM & 2-1/2 NOM
R14*	5C-9700018-01	1	LUBRICATOR FOR VALVE REMOVAL PLUG AS PER API 6A VR PLUG HEX HEAD, 45-1/8 STROKE, F/2 VALVES (2-1/16 10K GV)
R15	030246-33	1	ASSY, 4" BPV TYPE 'H'; MAX O.D.: 3.980"; MAT'L: A-286; MAX PRESSURE: 20KSI
R16	041612-57	1	ASSY; 4 TWO-WAY CHECK TYPE 'H'; MAX O.D.: 3.980"; MAT'L: A-286; MAX PRESSURE: 15KSI
R17	2046001-43	1	ASSEMBLY, RUNNING TOOL, FOR 11 NOM TYPE 'ADAPT FAMILY' TUBING HANGER, WITH 4-1/2 15.1 LB/FT HUNTING SEAL-LOCK XD BOX THREAD TOP X 6.375-4 TPI LH STUB ACME INTERNAL THREAD BOTTOM, WITH TWO O-RINGS WITH 1/8 NPT TEST PORT IN BETWEEN, WITH FOUR WINDOWS AND FOUR SLOTS FOR CONTROL LINES, WITH FOUR TORQUE PINS, MIN BORE: 3.752
R18	2230299-46	1	SETTING PIECE FOR HOLD DOWN RING, FOR 11 NOM TYPE 'ADAPT FAMILY' TUBING HANGER, WITH 9.190 SETTING HEIGHT
R19*	2273869-11	1	ASSY; UNIVERSAL COLLAPSING & EXPANSION TOOL FOR LOCKDOWN RING. W/ ADAPTER FOR COLLAPSING & EXPANSION TOOL TO BE USE WITH 11-IN NOM SSMC, MC-2, 'SNAPPING' LOCKDOWN RING
R20*	5C-9700012-02	1	ASSEMBLY, LUBRICATOR FOR 4 NOM TYPE "H" BPV 15000 PSI, COMPATIBLE WITH 4-1/16 API 6A 5000 PSI , W/ 138 INCH STROKE
R21	2391013-12	1	ASSEMBLY, INSTALLATION AND RETRIEVAL TOOL FOR 11 NOM X 4-1/2 ' ADAPT IND ' EMERGENCY SEAL PACKOFF
R22	2017712-32-01	1	RUNNING TOOL, 11 NOM DUMMY HANGER & FRAC SLEEVE, WITH 2-7/8 API IF NC31 BOX THREAD TOP X BOTTOM, WITH 9.875-4 TPI LH STUB ACME INTERNAL THREAD, MIN BORE: 1.97
R23	2119760-82-01	1	ASSEMBLY, INSTALLATION AND RETRIEVAL TOOL FOR 4-1/8 'SRL' SEAL, FOR USE WITH 4-1/16 API 5K AND 5-1/8 API 10K CONNECTIONS
R24	163882-01-03-02	1	ASSEMBLY, ADAPTER, DOUBLE STUDDED, 2-1/16 API 5K R-24 X 2-1/16 API 10K BX-152, MIN. BORE: 2.06

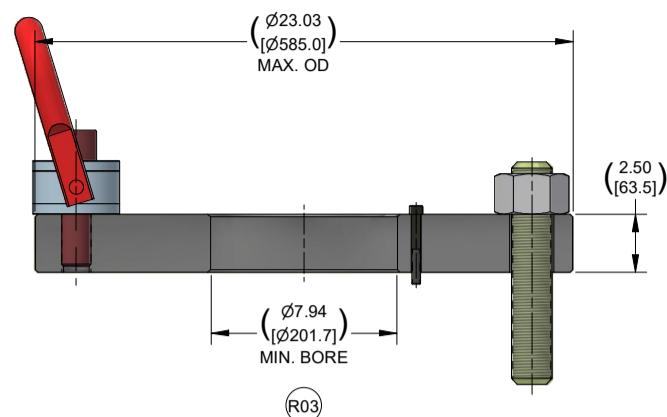
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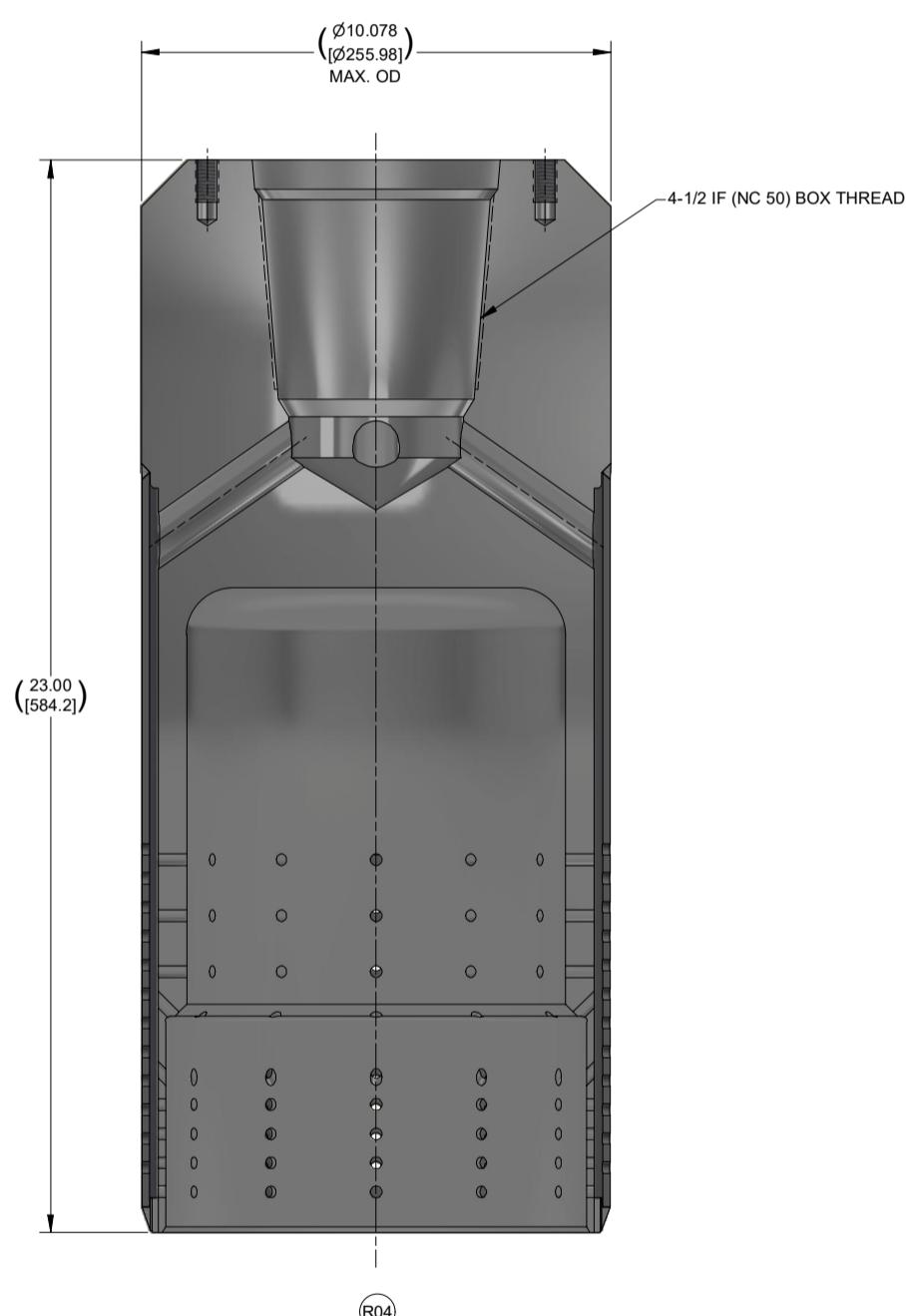
RUNNING TOOLS AND ACCESSORIES



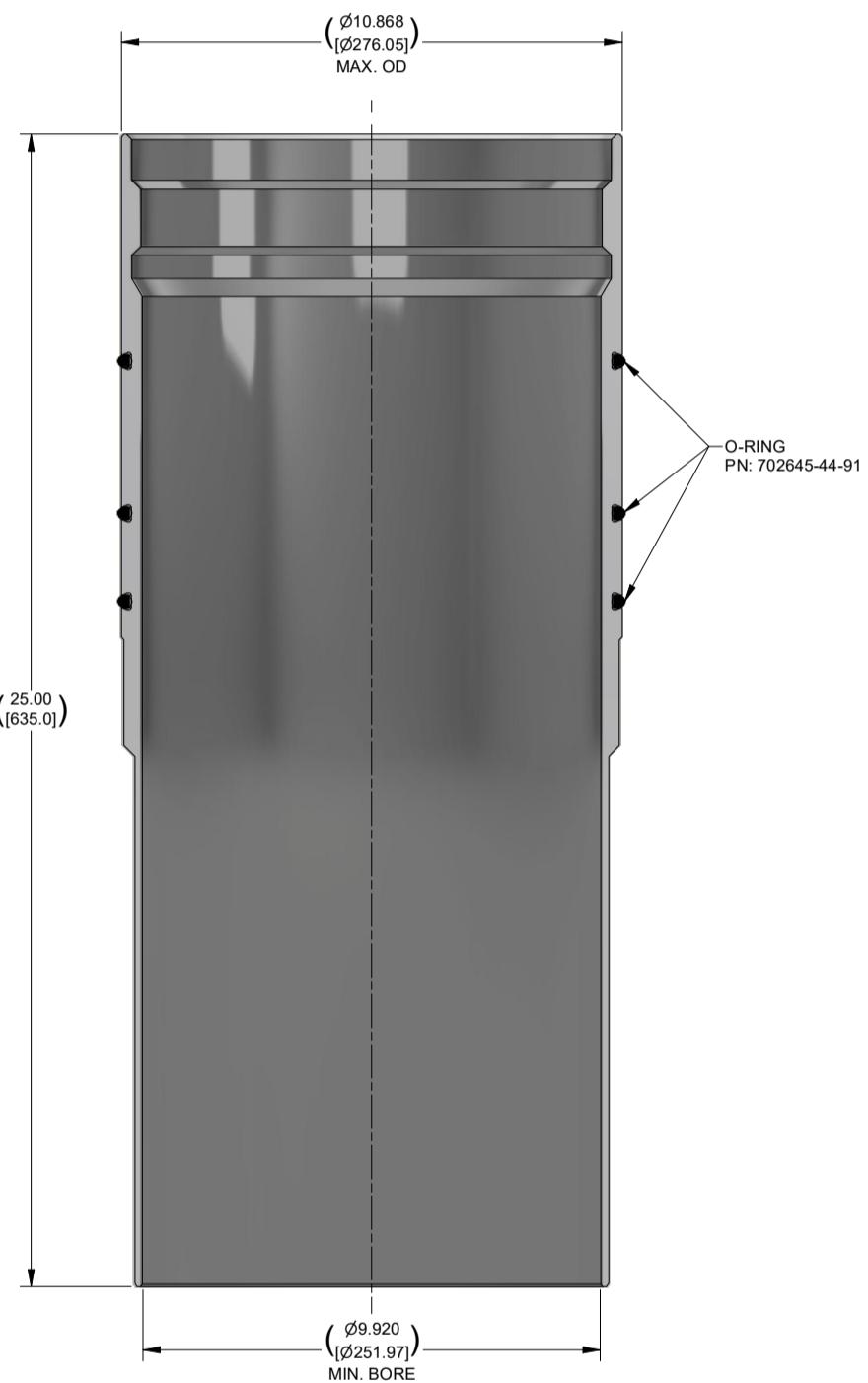
PN: 2222008-14-01
ASSY, LOW PRESSURE ADAPTER
21-1/4 API 2K R-73 FLANGE TOP



PN: 2135095-23
ASSY, HANDLING TOOL FOR HOUSING,
TYPE 'ADAPT FAMILY' FOR NST, IND & SGL,
& INSTALLATION / RETRIEVAL TOOL
FOR 11 NOM ISOLATION SLEEVE

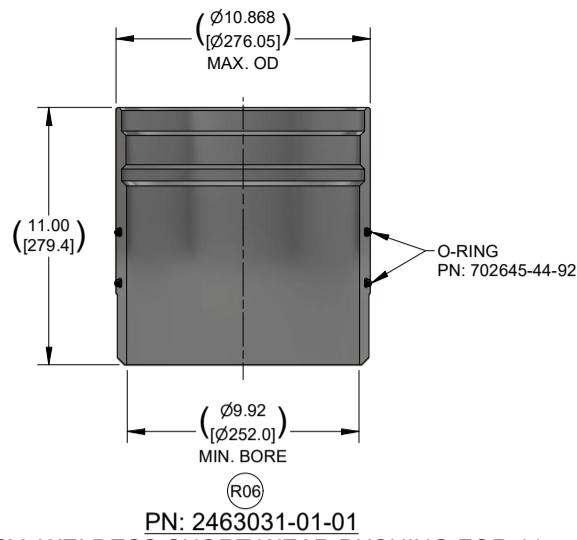


PN: 2502657-02-01
ASSY, 11 NOM JETTING TOOL FOR TYPE
'ADAPT-FAMILY' AND 'ADAPT-IND' HANGERS

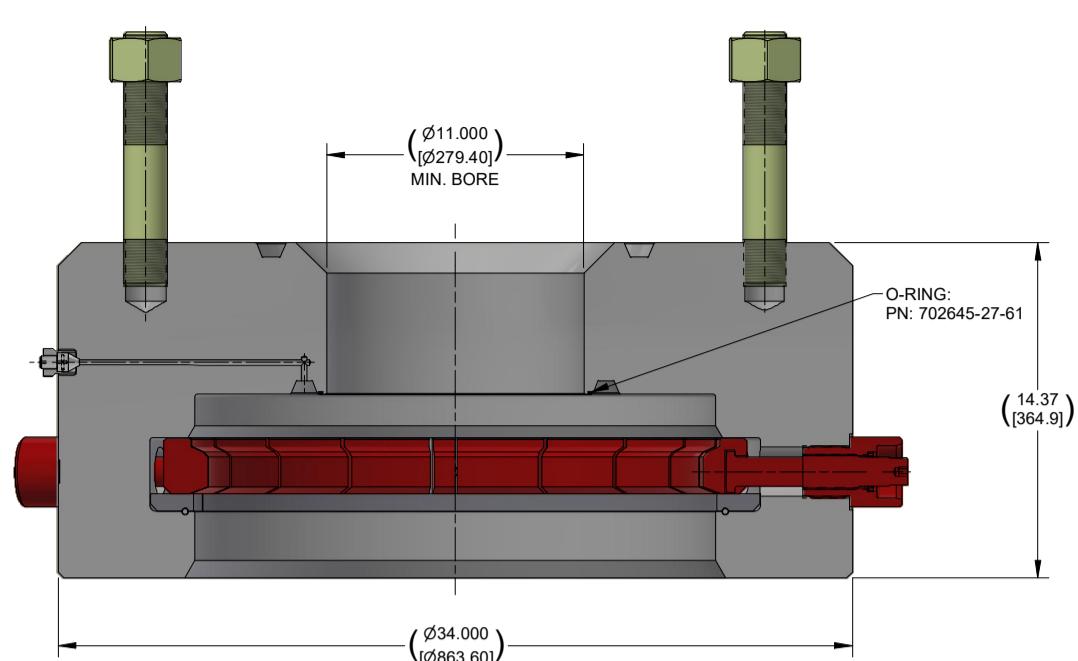


PN: 2502517-01-01
ASSY, WEAR BUSHING, TYPE 'ADAPT-IND',
11 X 10.318 NOM WITH DOUBLE LEAD RUNNING
THD TOP, WITH THREE O-RINGS

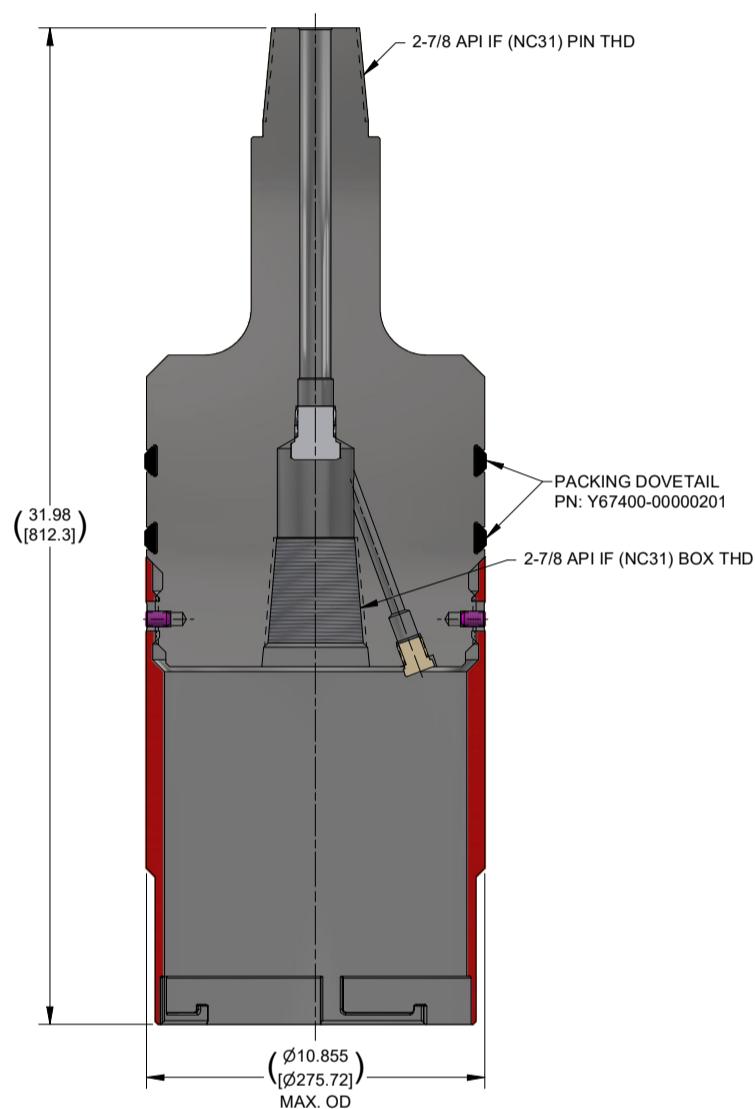
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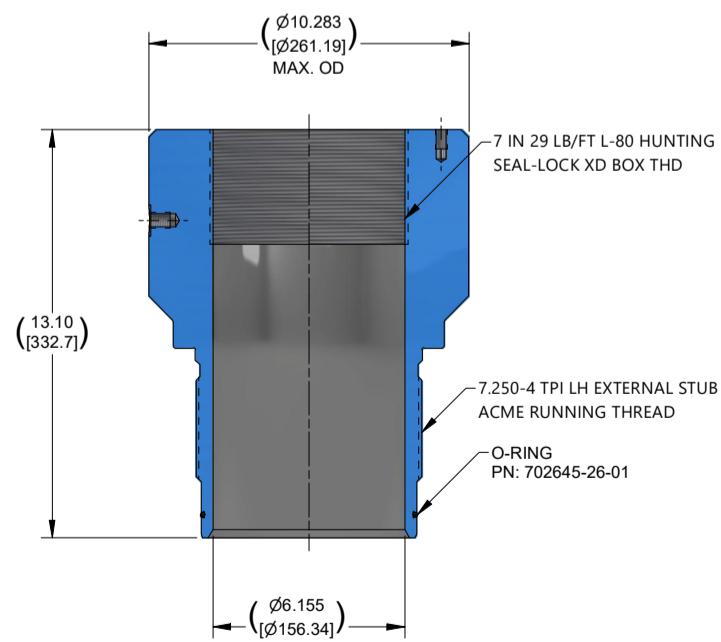
PN: 2463031-01-01
ASSY, WELDESS SHORT WEAR BUSHING FOR 11
NOM 5K "TYPE 'ADAPT FAMILY' F/NST, IND & SGL",
WITH DOUBLE LEAD RUNNING THREAD
WITH TWO EXT O-RINGS



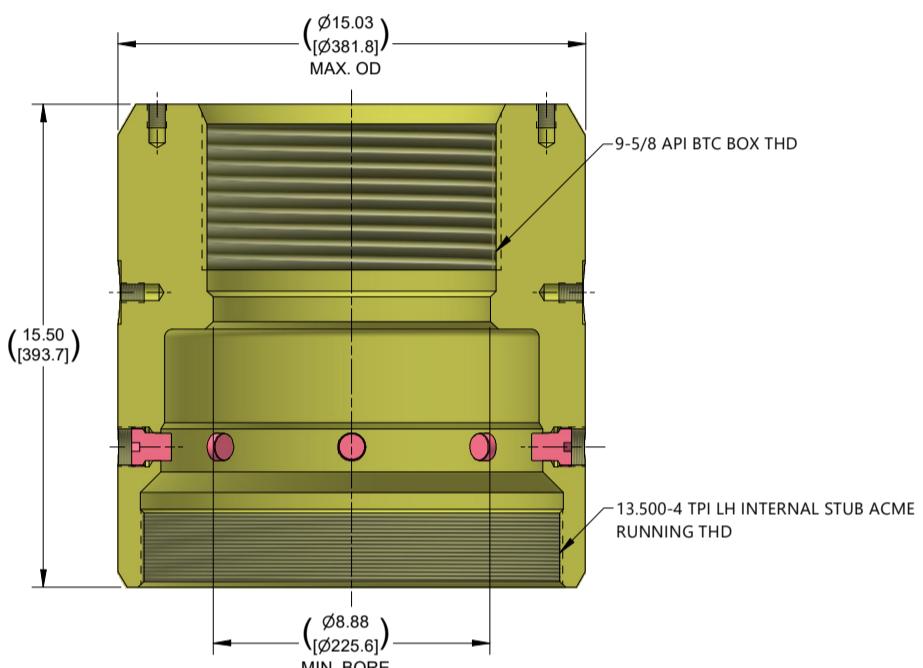
PN: 2398712-03-01
ASSY, 13-5/8 10K API DRILLING ADAPTER,
13-5/8 10K FASTLOCK BTM X STD'D TOP



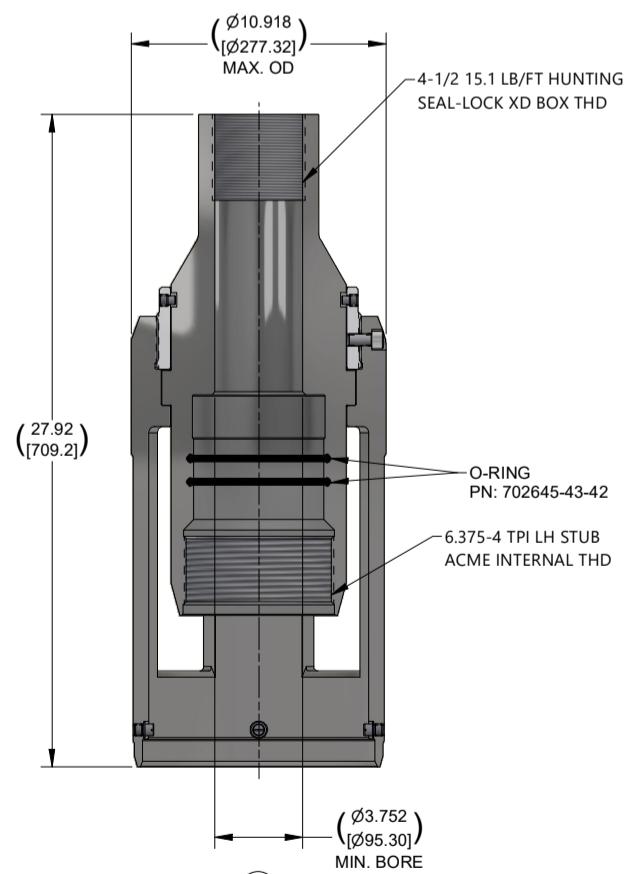
PN: 2463033-06-01
ASSY, COMBINATION TOOL: BOP TEST PLUG,
PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL,
TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM



PN: 2463026-53-01
ASSY, CASING HANGER RUNNING TOOL,
TYPE 'ADAPT-IND', 10.318 NOM

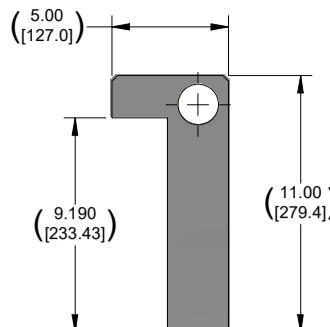


PN: 2463021-03-01
ASSY, LANDING MANDREL RUNNING TOOL,
TYPE 'ADAPT IND'

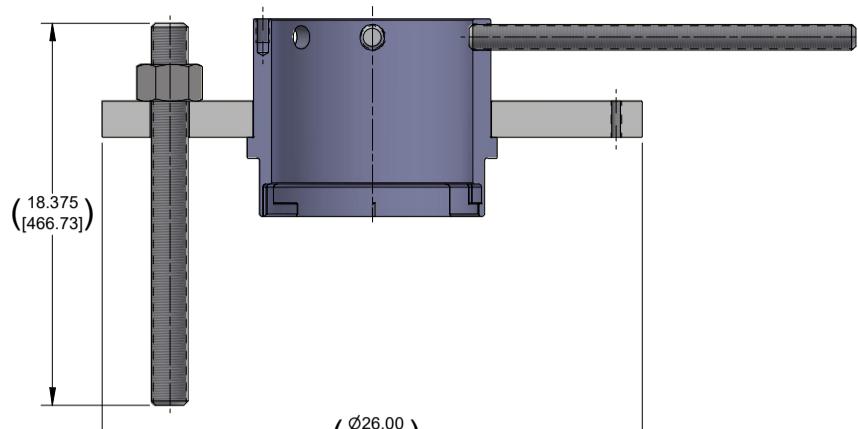


PN: 2046001-43
ASSY, RUNNING TOOL, FOR 11 NOM TYPE
'ADAPT FAMILY' TUBING HANGER

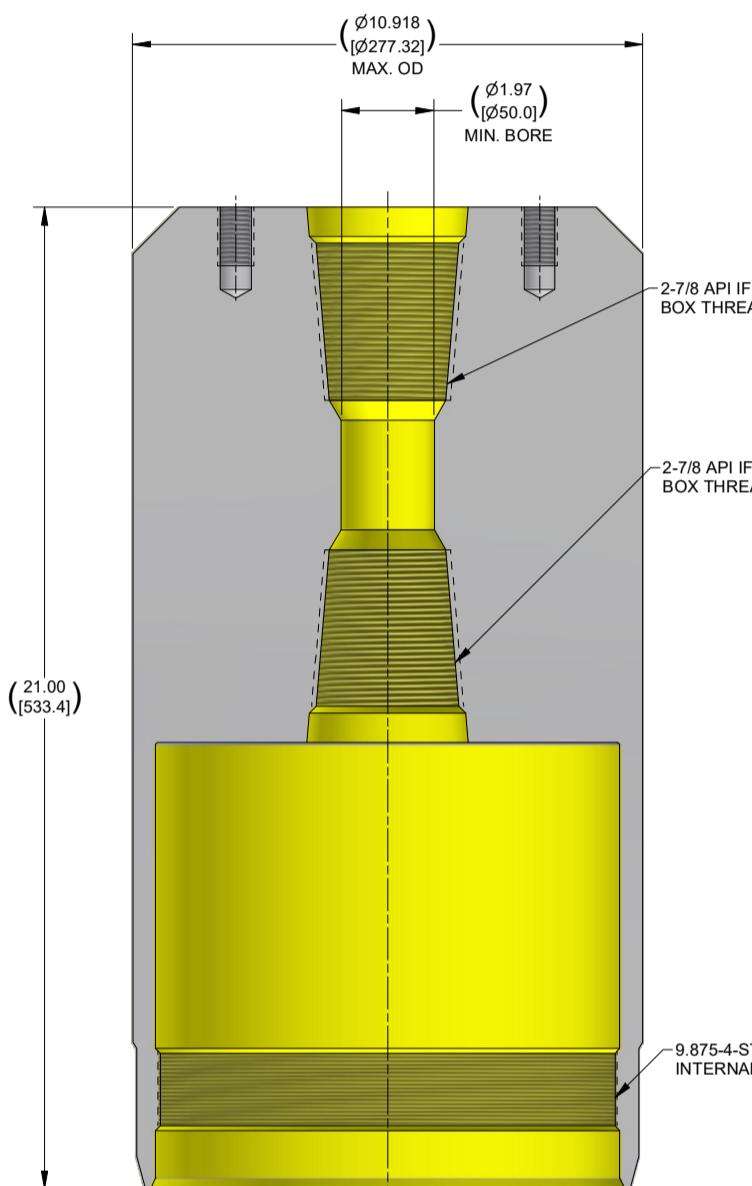
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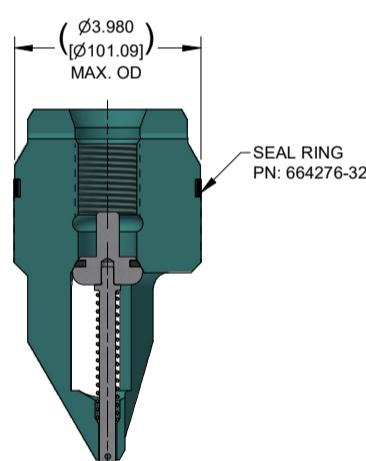
(R18)
PN: 2230299-46
SETTING PIECE FOR HOLD DOWN RING,
FOR 11 NOM TYPE 'ADAPT FAMILY'
TUBING HANGER



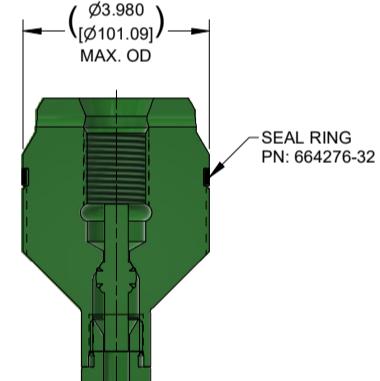
(R21)
PN: 2391013-12
ASSEMBLY, INSTALLATION AND RETRIEVAL
TOOL FOR 11 NOM X 4-1/2 ' ADAPT IND '
EMERGENCY SEAL PACKOFF



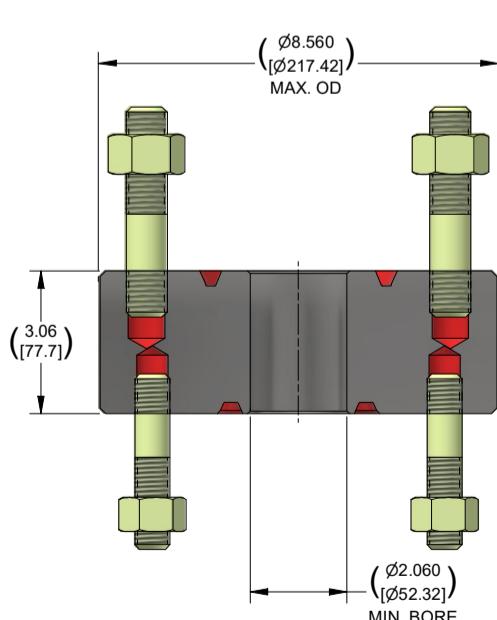
(R22)
PN: 2017712-32-01
RUNNING TOOL, 11 NOM DUMMY HANGER
& FRAC SLEEVE



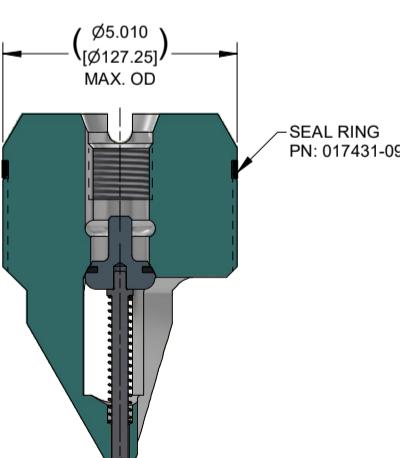
(R15)
P/N: 030246-33
ASSY, 4 BPV,
TYPE 'H', MAT'L: A-286



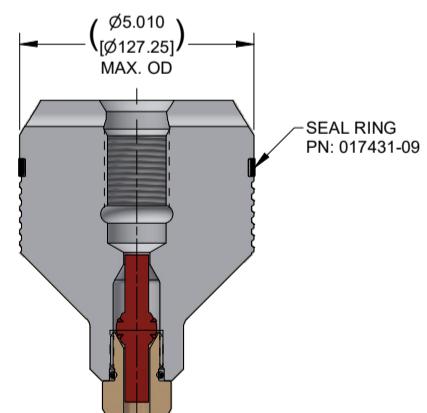
(R16)
P/N: 041612-57
ASSY, 4 TWO-WAY CHECK VALVE,
TYPE 'H', MAT'L: A-286



(R24)
PN: 163882-01-03-02
ASSEMBLY, ADAPTER, DOUBLE
STUDDED, 2-1/16 API 5K R-24 X
2-1/16 API 10K BX-152



(H01A)
PN: 030246-39
ASSY, 5 BPV,
TYPE 'H', MAT'L: A-286



(H02)
PN: 041612-49
ASSY, 5 TWO WAY CHECK VALVE,
TYPE 'H', MAT'L: A-286

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Running Procedure

**Note**

Make sure that a pre-job talk is conducted prior to any installations.

**Note**

Always wear proper PPE (Personal Protective Equipment) such as safety shoes, safety glasses, hard hat, gloves, etc. to handle and install equipment.

**Caution**

Threaded Devices should NEVER be routinely tightened under pressure. This includes: Flange Bolting, Pipe Plugs, Bull Plugs, Union Nuts, Tiedown/ Lockscrew Glands.

**Caution**

Use of Teflon tape is prohibited. Use appropriate thread compound/sealant only. TS-73; PN: 687950-38-31-26, TF-15; PN: 687950-39-31-26, Liquid O-Ring 104G or any other thread sealant approved by Cameron Engineering.

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2.1 13-3/8 OD Conductor

2.1.1 Load Ring

Table 1: Equipment

Item	Qty	Description
A01	1	ASSY, LOAD RING, F/ TYPE 'ADAPT IND' LOAD RING ADAPTER, 20 OD X 12.415 ID BTM PREP W/ ONE O-RING C/W SOCKET HD SET SCREWS TO LOCK ON 13-3/8 CONDUCTOR, AND TOP PREP TO ACCEPT LOW PRESSURE ADAPTER, MIN BORE: 12.400
		PART# 2329762-14-01
R01	1	ASSEMBLY, LOW PRESSURE ADAPTER, 21-1/4 API 2K R-73 FLANGE TOP, WITH TWO O-RING SEAL BOTTOM FOR LOAD RING, MIN BORE: 20.85
		PART# 2222008-14-01

Table 2: System Tables

Measurement / Description	Dimension / Value
Cut the Conductor above cellar floor	3.00 in (76.2 mm)
Riser Adapter Stand-off	5.08 in (129.0 mm)
Load Ring Min Bore	12.400 in (341.96 mm)
'A': Distance from top of conductor to top edge of paint mark	3.00 in (76.2 mm)
Test between the seals pressure	2,000 psi (13,800 kPa)

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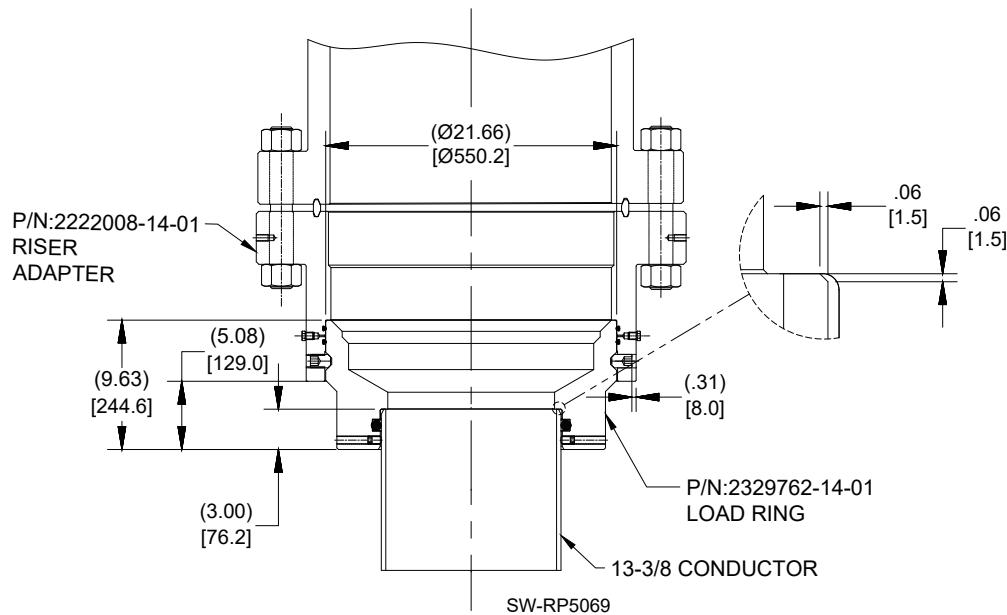
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Figure 1: Installation of Load Ring with Low Pressure Adapter

2.1.1.1 Install the Load Ring


Note

Confirm the casing weight and grade, verify by measuring the OD. Remove loose scale and clean casing OD.


Note

Check for any corrosion and ensure that the conductor is in good condition.

-
1. Run the conductor and space out as necessary.
 2. Calculate and record the elevation for the top of the Load Ring.
 3. Use the cellar depth dimensions to cut the conductor to the applicable height $\pm 1/8$ in.
-

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4.

**Caution**

Equipment that is installed incorrectly can cause damage or an NPT event. Make sure it is at level in all dimensions, is at the correct height, and has the correct orientation. Refer to [SW-RP4554: Cameron Rig Alignment Verification](#).

Make sure the conductor is level and smooth. Remove all burrs and sharp edges and bevel the OD edge. Remove the longitudinal weld seam and remove paint coating from the top of the Casing.

**Note**

The square cut on the conductor can have a small bevel on the OD edge, no larger than 1/16-in x 45 deg, to let it through the seals of the Load RIng.

**Note**

There must not be any rough edges on the casing / tubing or the seals of the next component to be installed will be damaged.

5. Examine the **Load Ring**. Make sure:

- the bore is clean and there is no debris
- the seals are correctly installed, clean, and not damaged
- all threads are clean and not damaged
- the set screws are correctly installed and not damaged or protruding into the Load Ring ID
- OD is free from burrs or other protrusions, grind sharp edges as required

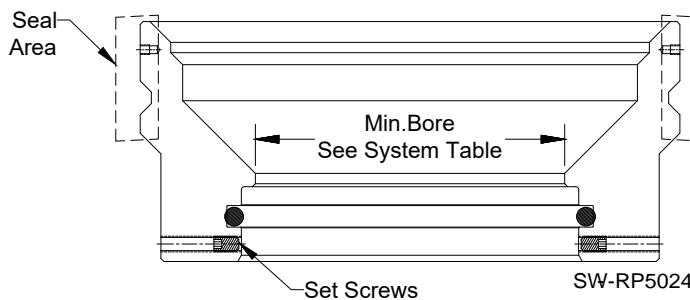


Figure 2: Load Ring

6. Orient the Load Ring with the set screws down.

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7.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the seals of the Load Ring and the OD of the conductor with a light coat of oil or grease.

8.

**Warning**

A seal/ seal surface that is damaged can cause a failure of the pressure test or an NPT event. Make sure that all seals, internal seal bores and the gasket seal surface are free from damage.

Lower the Load Ring until it lands on the conductor.

9. For proper landing verification, place a 1/2 in wide paint mark on the conductor OD, at a distance of 'A' from top of the conductor.

**Note**

Refer to stage drawing or system table for technical information.

10. Use a 180° alternating pattern to tighten all of the set screws into the conductor.

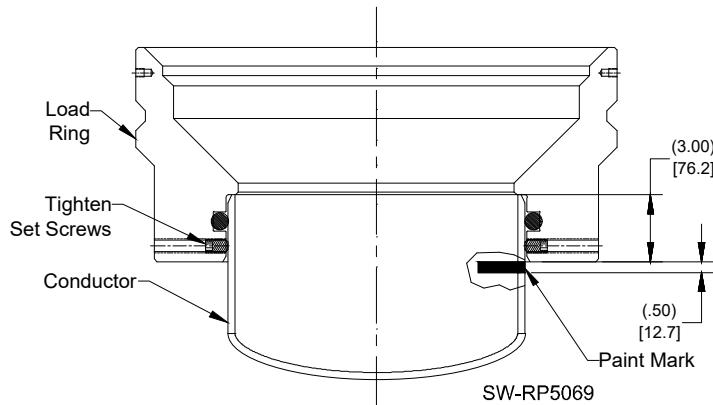


Figure 3: Load Ring Made-up to the Conductor

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PREVIEW DRAFT**2.1.1.2****Install the Riser Adapter**

-
1. Examine the **Riser Adapter**. Make sure:
 - the bore is clean and there is no debris
 - the seals are correctly installed, clean, and not damaged
 - the set screws are correctly installed and not damaged

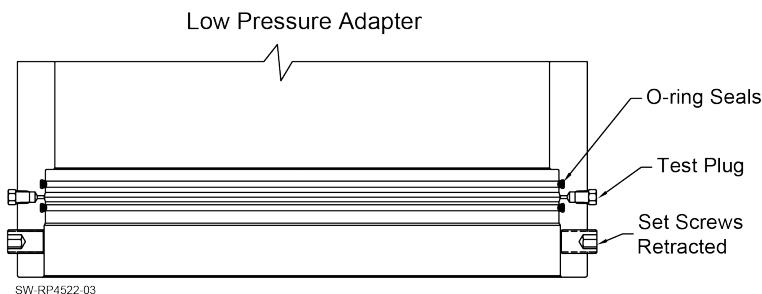


Figure 4: Riser Adapter

-
2. Orient the Riser Adapter with the set screws down.

- 3.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the seals of the Riser Adapter with a light coat of oil or grease.

- 4.

**Warning**

A seal/ seal surface that is damaged can cause a failure of the pressure test or an NPT event. Make sure that all seals, internal seal bores and the gasket seal surface are free from damage.

Lower the Riser Adapter until it lands on the Load Ring.

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5. Tighten all of the set screws into the Load Ring.

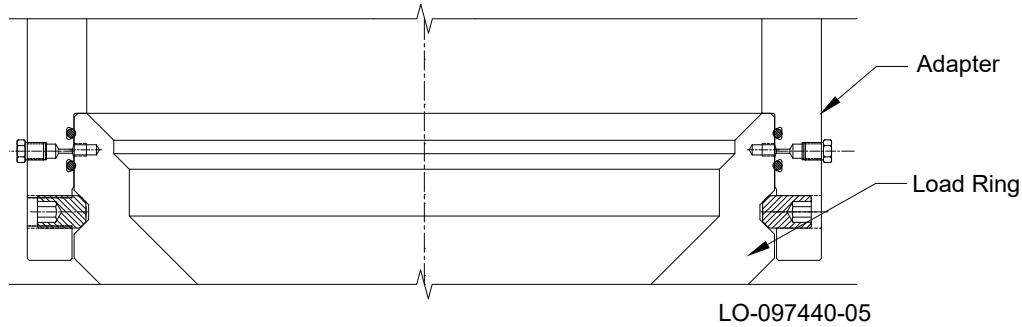


Figure 5: Riser Adapter Made-up to the Load Ring

2.1.1.3 **Test Between the Seals**

1. Locate the test ports on the OD of the Riser Adapter and remove both of the fittings.
2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.

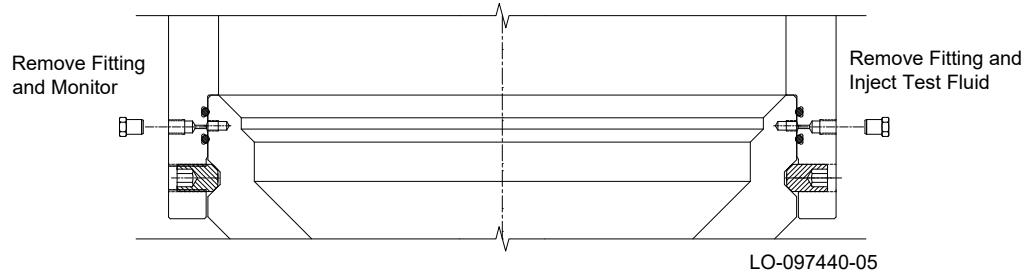


Figure 6: Test for Continuity

3. When a continuous stream is seen from the open port, re-install the fitting.

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4.**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to supply test fluid to the **maximum rated working pressure of the Riser Adapter**.

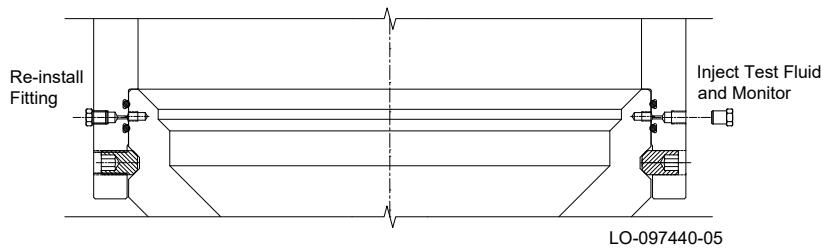


Figure 7: Test Between the Seals

**Note**

See stage drawings or system tables for technical parameters.

-
5. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or as instructed by the Drilling Supervisor.
 6. When the test is complete, carefully bleed off all test pressure and remove the hydraulic test pump.
 7. Re-install the fitting.
-

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2.2 9-5/8 OD Casing

2.2.1 Landing Mandrel

Table 3: Equipment

Item	Qty	Description
A02	1	ASSY; LANDING MANDREL W/ LOAD RING ADAPTER, TYPE 'ADAPT IND', 13-5/8 NOM, W/ T-103 NECK TOP X 9-5/8 API BTC BOX THD BTM, W/ 13.500-4TPI LH EXTERNAL STUB ACME RUNNING THDS, EIGHT ANTI-ROTATION SLOTS F/ RUNNING TOOL & PREP F/ TIEDOWN SCREWS, LANDS IN CONDUCTOR LOAD RING 2605992-01-() OR 2329761-07-() (OR) WITH SPLIT TYPE LANDING BASE 2221412-34-01, W/ FOUR "TOP JOB" FLUTES AND EIGHT ANGLED FLOW-BY HOLES ON LOAD RING ADAPTER, MIN BORE: 8.88 ***ASSEMBLY MAX OD: 19.177 SHALL BE COMPARED WITH RISER DRIFT BEFORE USE***** MAX HANGING CAPACITY: 500,000 LBS (OR LESSER OF 80% PIPE BODY YIELD AND PIPE CONNECTION STRENGTH) ***
		PART# 2605993-02-01
r10	1	ASSY, LANDING MANDREL RUNNING TOOL, TYPE 'ADAPT IND', 9-5/8 API BTC BOX THD TOP X 13.500-4 TPI LH INTERNAL STUB ACME RUNNING THD BTM, W/ 8X TORQUE SCREWS MIN BORE: 8.88 ***** LIFTING CAPACITY: 450,000 LBF
		PART# 2463021-03-01

Table 4: System Tables

Measurement / Description	Dimension / Value
Landing Mandrel Running Tool Stand-off from top of Load Ring	16.46 in (418.0 mm)
Landing Mandrel Stand-off from top of Load Ring	9.24 in (234.6 mm)
Landing Mandrel & Running Tool Min.bore	8.88 in (225.6 mm)
Landing Mandrel Land-off from top of Load Ring	1.27 in (32.4 mm)
Turn to make up Running Tool to Landing Mandrel	8 counterclockwise turns

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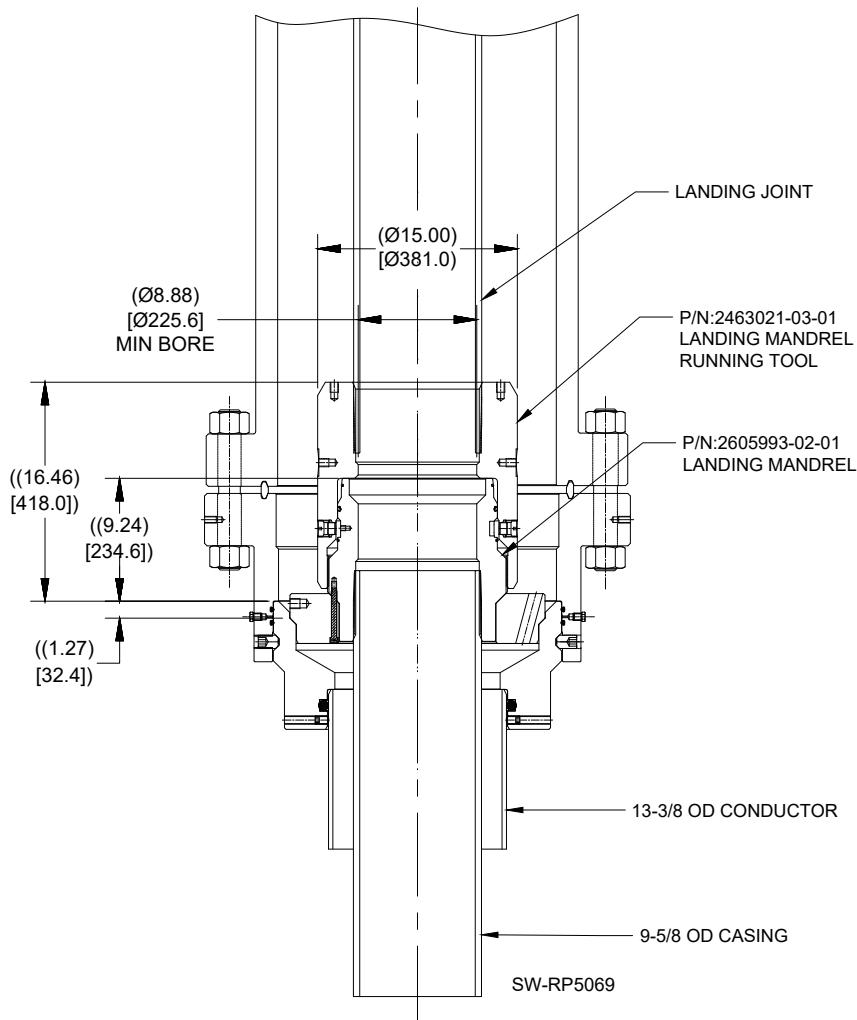
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Figure 8: Installation of Load Ring and Landing Mandrel

2.2.1.1 Hang off the Casing


Note

Steps 3- may be conducted offline and the made-up assembly shipped to the field.

-
1. Run the casing and space out appropriately.
 2. Hang the last joint of casing in the floor slips at a height to easily move and make up the Landing Mandrel and landing joint assembly.
-

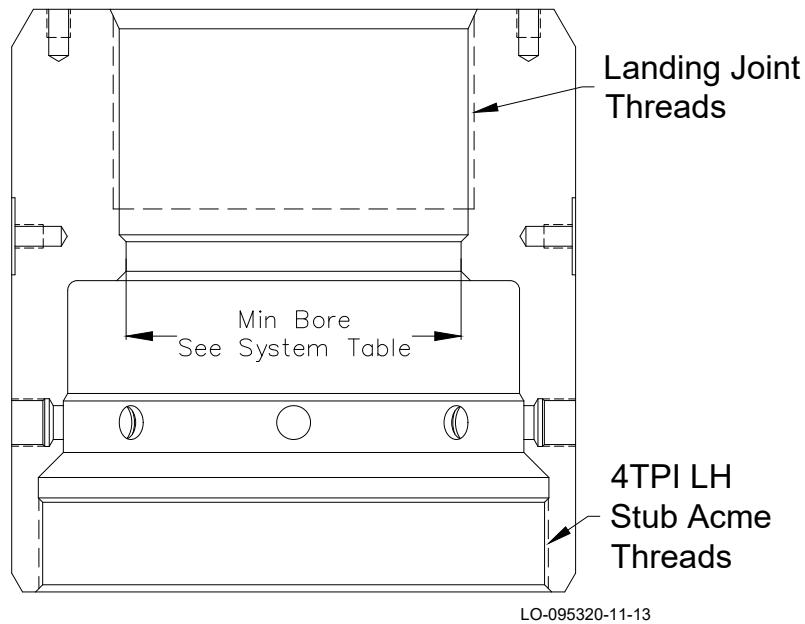
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PREVIEW DRAFT**3. Examine the Landing Mandrel Running Tool.** Make sure:

- the bore is clean and there is no debris
- all threads are clean and not damaged
- the ACME threads have the appropriate thread start profile (grind back)
- the torque pins are removed

**Figure 9: Landing Mandrel Running Tool****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**Note**

All ACME and stub ACME threads should be verified prior to acceptance or installation to make sure the blunt start feature is present and complies with bill of material requirements.



Figure 10: Male and Female ACME Thread Blunt Start

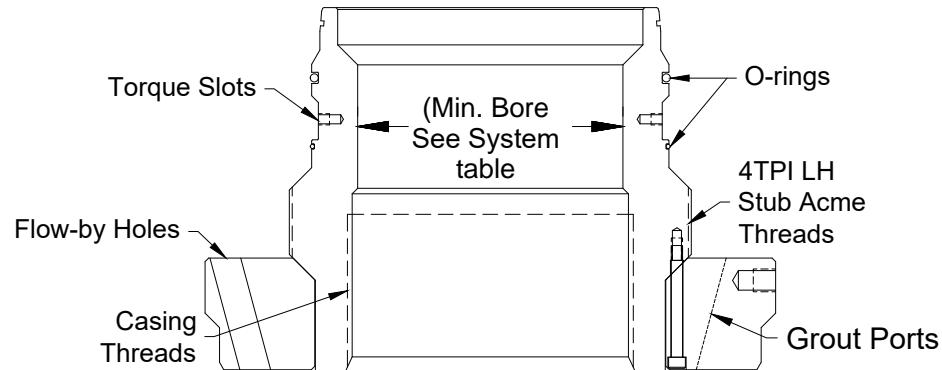
-
4. Orient the Landing Mandrel Running Tool with the ACME threads down.
 5. Make up a joint of casing to the top of the Landing Mandrel Running Tool.
-

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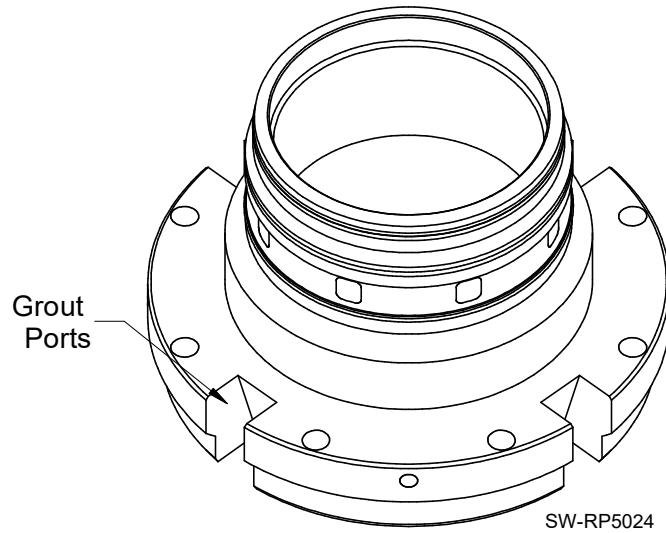
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PREVIEW DRAFT6. Examine the **Landing Mandrel**. Make sure:

- the bore is clean and there is no debris
- the middle and lower o-rings are correctly installed, clean and not damaged; the top o-ring on taper is removed
- the neck seal area is clean and not damaged
- all threads are clean and not damaged
- the ACME threads have the appropriate thread start profile (grind back)
- the load ring adapter is correctly installed
- the flow-by slot holes and grout ports are clean and there is no debris



SW-RP5069



SW-RP5024

Figure 11: Landing Mandrel**PREVIEW DRAFT****Private**

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PREVIEW DRAFT

Figure 12: Male and Female ACME Thread Blunt Start

-
- 7. Orient the Landing Mandrel with the o-rings up.
-

- 8.
-

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the running threads of the Landing Mandrel and Landing Mandrel Running Tool and the o-ring of the Landing Mandrel with a light coat of oil or grease.

- 9. Lift and suspend the Landing Mandrel Running Tool over the Landing Mandrel.
 - 10. Lower the Landing Mandrel Running Tool onto the Landing Mandrel until the mating threads touch.
-

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11.**Warning**

Do not torque the connection between the Landing Mandrel Running Tool and Landing Mandrel.

**Caution**

Do not use Top Drive to engage or disengage the Running Tool. Using Top Drive can permanently damage the running threads of the equipment and will require damaged parts to be replaced.

While the weight is balanced, turn the Landing Mandrel Running Tool clockwise until the thread 'jump' is felt then turn counterclockwise to a positive stop.

**Note**

Refer to stage drawing or system table for technical information.

12.

Turn the Landing Mandrel Running Tool approximately 1/4 clockwise turn to prevent the Landing Mandrel and Landing Mandrel Running Tool from locking up.

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-
13. Make a vertical paint mark on the OD of the Landing Mandrel Running Tool/ Landing Mandrel assembly to monitor movement.

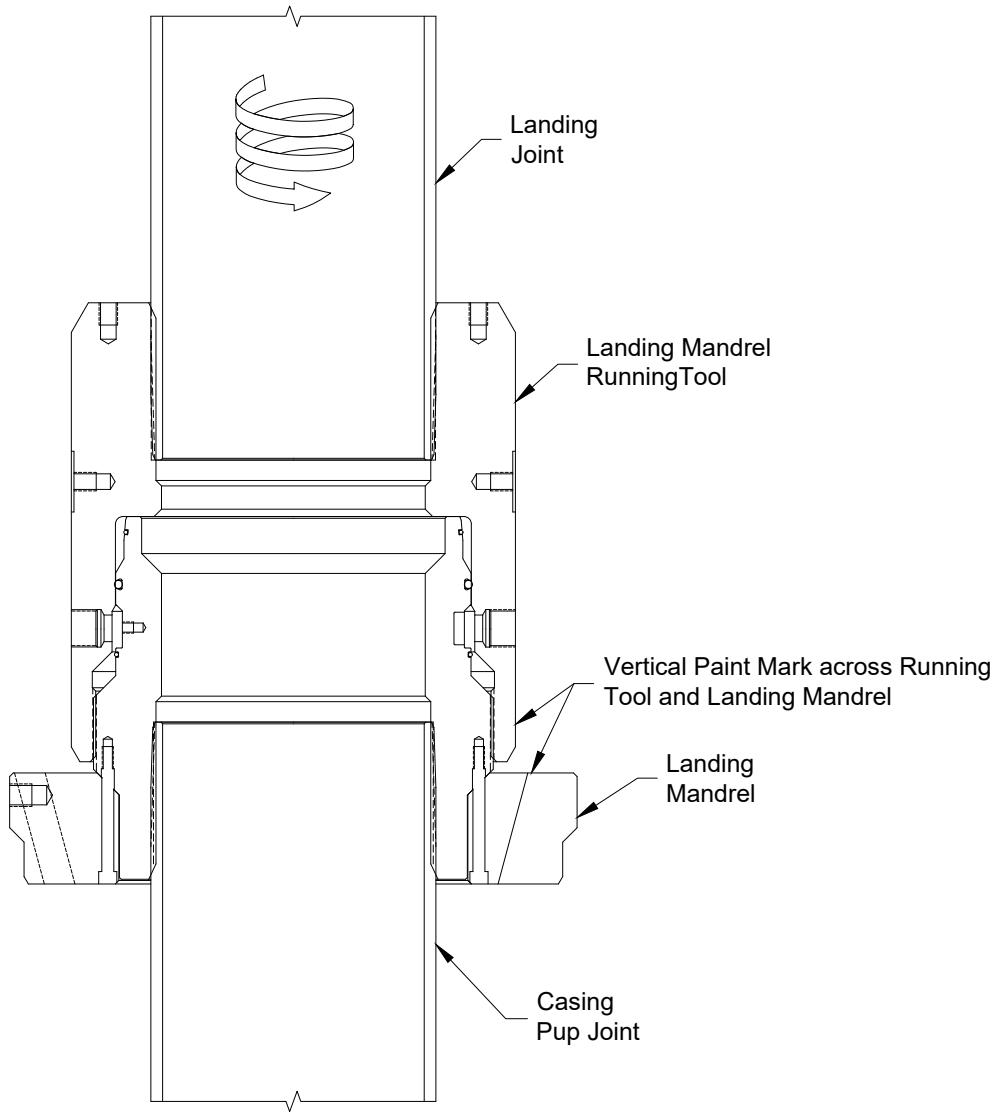


Figure 13: Landing Mandrel Running Tool Made-up to the Landing Mandrel

-
14. Measure the distance from the rig floor to the landing point and identify it on the landing joint with a horizontal paint mark. Put incremental paint marks the length of the landing point.
 15. Lift the Landing Mandrel Running Tool/ Landing Mandrel assembly above the casing hung in the floor slips.
 16. Lower the Landing Mandrel Running Tool/ Landing Mandrel assembly until the mating threads touch.
-

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17.

**Warning**

Turn the Landing Mandrel and Landing Mandrel Running Tool clockwise as a unit. Monitor the paint mark and do not allow the Landing Mandrel Running Tool to back out of the Landing Mandrel.

While the weight is balanced, turn the Landing Mandrel Running Tool/ Landing Mandrel assembly with tongs on the pup joint until the thread 'jump' is felt then in the opposite direction to the thread manufacturer's recommended optimum torque to make up the casing string.

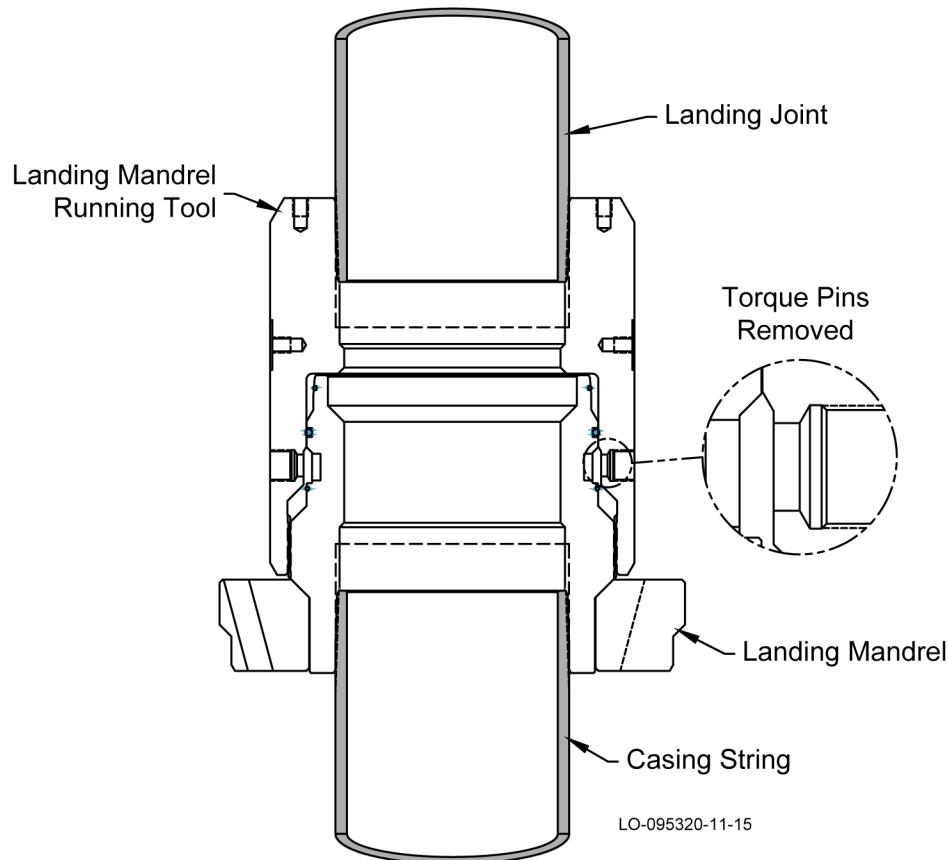


Figure 14: Landing Mandrel Running Tool/ Landing Mandrel Assembly Made-up to the Casing String

-
18. Release the casing from the floor slips and lower the Landing Mandrel Running Tool/ Landing Mandrel assembly. Measure and record the depth while the Landing Mandrel Running Tool/ Landing Mandrel assembly is lowered.

 19. Land the Landing Mandrel Running Tool/ Landing Mandrel assembly at the landing point.
-

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-
20. Make sure the Landing Mandrel is aligned in the center of the well and slack off all weight.

**Note**

If the casing is to be cemented offline, proceed to step : and cement offline per : .

-
21. Cement the casing as necessary.
-
22. If applicable, make sure the paint mark from step 14 is aligned.
-
23. Turn the landing joint clockwise turns until the thread 'jump' can be felt.

**Note**

See stage drawings or system tables for technical parameters.

-
24. Retrieve the Landing Mandrel Running Tool to the rig floor.
-
25. Clean, lubricate, and put the Landing Mandrel Running Tool in storage as necessary.

2.2.2 11 Nom Casing Head Housing

Table 5: Equipment

Item	Qty	Description
B01	1	SECTIONAL ASSEMBLY, CASING HEAD HOUSING, TYPE 'ADAPT IND', 11 IN NOM OEC FLANGELOCK/ FASTLOCK #15 HUB BX-158 10K WP TOP, WITH PREP FOR INTERNAL SNAP RING X T-103 5K SEAL PREP FOR T-103 HANGER NECK WITH C-RING PREP BOTTOM, WITH INDEPENDENT LOAD SHOULDERS, WITH TWO LOWER 2-1/16 API 5K R-24 STUDDED SIDE OUTLETS & TWO UPPER 2-1/16 API 10K BX-152 STUDDED SIDE OUTLETS WITH 2-1/16 API VR THREADS, COMES WITH TWO 2-1/16 API 5K MANUAL GATE VALVE, ONE RECESSED BLIND FLANGE AND ACCESSORIES ON LOWER BACK SIDE OUTLET, COMES WITH ONE 2-1/16 API 5K RECESSED BLIND FLANGE AND BLEEDER FITTING ON LOWER FRONT SIDE OUTLET, TWO 2-1/16 API 10K MANUAL GATE VALVE AND ONE RECESSED BLIND FLANGE ON BOTH UPPER OUTLETS AND ACCESSORIES ONLY ON UPPER RIGHT SIDE OUTLET, COMES WITH TWO VR PLUGS, MIN. BORE: 9.945; API 6A; M/C: DD; T/C: U; PSL 2 ***** - WITH B7 STUDS AND 2H NUTS - WITH PURCHASED ANNULUS EQUIPMENT
		PART# 2201888-3100095

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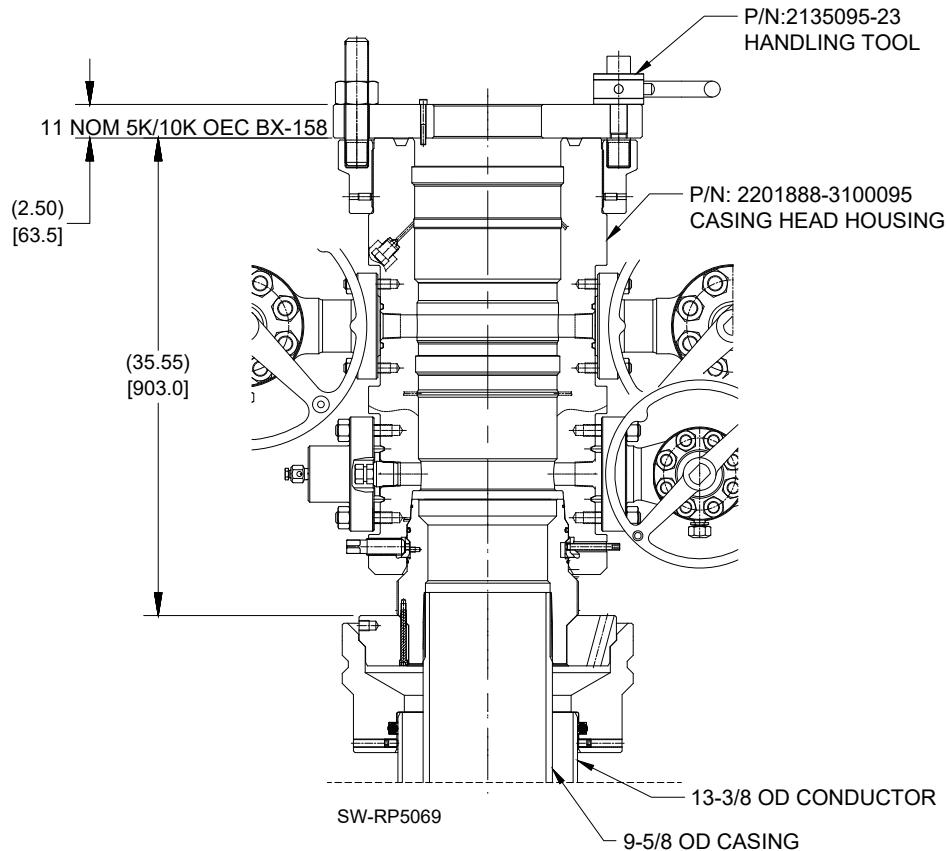
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Item	Qty	Description
R03	1	ASSEMBLY, HANDLING TOOL FOR HOUSING, TYPE 'ADAPT FAMILY' F/ NST, IND & SGL, & INSTALLATION / RETRIEVAL TOOL F/ 11 NOM ISOLATION SLEEVE, 23.00 IN OD X 2.50 IN THICK W/ TWO 1-1/4-7 UNC SWIVEL HOIST RINGS F/ LIFTING ***MAX LIFTING CAPACITY: 30,000 LBS**
		PART# 2135095-23

Table 6: System Tables

Measurement / Description	Dimension / Value
Casing Head Housing Stand-off from top of Load Ring	35.55 in (903.0 mm)
Test between the seals pressure	maximum 5,000 psi (34,500 kPa)
Casing Head Housing Min Bore	9.945 in (262.6 mm)

**Figure 15: Install Casing Head Housing****PREVIEW DRAFT****Private**

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2.2.2.1

Install the Casing Head Housing

1.**Warning**

A pressure that is trapped behind a fitting can cause injuries or damage to the equipment. It is mandatory for personnel to remove the fitting(s) before equipment installation.

Examine the **Casing Head Housing**. Make sure:

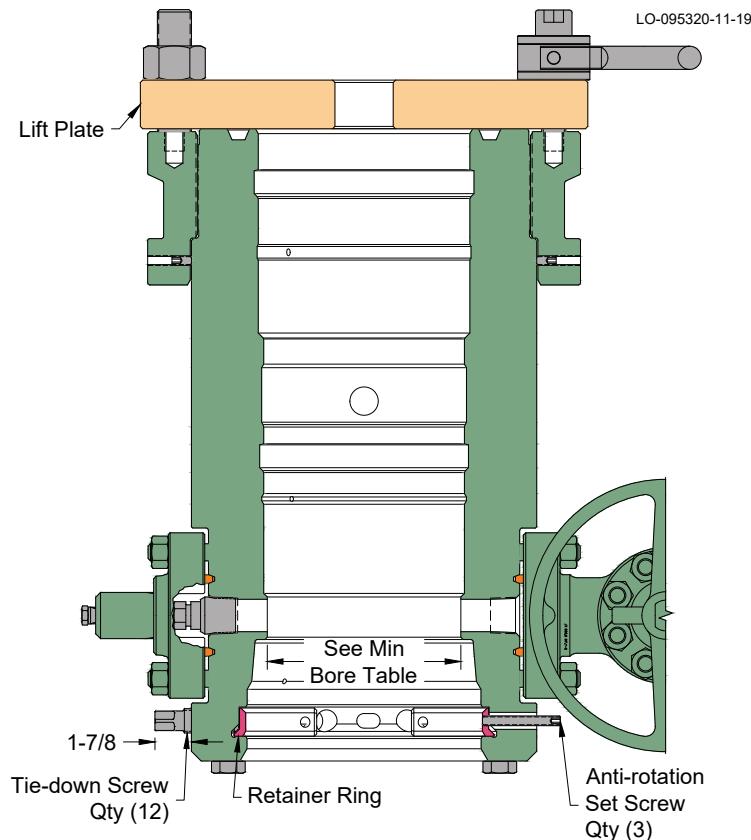
- the bore is clean and there is no debris
- the ring groove and seal areas are clean and not damaged
- all peripheral equipment, including the **Lift Plate** is correctly installed
- the split retainer ring is correctly installed; the anti-rotation set screws do not extend into the ID of the split retainer ring
- tie-down screws #1-8 are retracted from the bore as indicated in [Figure 16](#); tie-down screws #9-12 are removed from the body and set aside as indicated in [Figure 17](#)
- the test fittings above the tie-down screws are removed

**Note**

Make sure the set screws are flush with the ID of the split retainer ring.

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PREVIEW DRAFT**Figure 16: Casing Head Housing**

2. Orient the Casing Head Housing with the tie-down screws down.
3. Thoroughly clean the neck of the Landing Mandrel and the bottom prep of the Casing Head Housing.
4. Install the o-ring on the taper of the Landing Mandrel neck.
5. Examine the middle o-ring of the Landing Mandrel for damage and replace, if applicable.
- 6.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the ID of the Casing Head Housing bottom prep with a light coat of oil or grease.

7. Lift and hold the Casing Head Housing over the Landing Mandrel.
8. Orient the outlet as necessary; refer to customer requirements.

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9.

**Caution**

Do not move the equipment after it lands on the ring gasket or seal. Movement of the equipment can cause an abrasion and prevent a positive seal. If it is necessary to move the equipment, lift it to clear the gasket or seal first.

Carefully lower the Casing Head Housing over the neck of the Landing Mandrel.

-
10. Tighten the tie-down screws, #1-8, in sequential order to 100 ft-lbs [136 Nm].

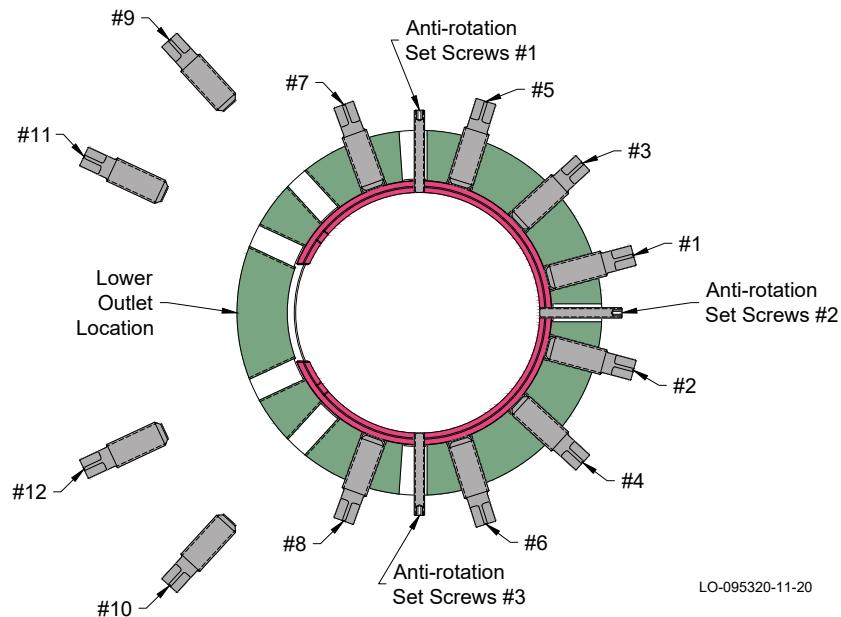


Figure 17: Casing Head Housing Tie-down Screw Pattern

**Note**

It is recommended to monitor the movement of the retainer ring through the empty holes of the tie-down screws or the view port for anti-rotation set screws #1 and #3. The retainer ring should come into view through the empty holes and anti-rotation set screws should be in the center of the view ports.

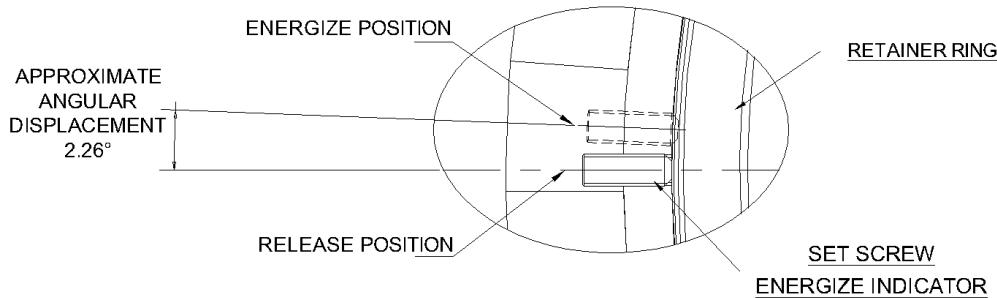
-
11. Install tie-down screws #9-12.
 12. Tighten the tie-down screws, #1-12, in sequential order to 200 ft-lbs [271 Nm].
 13. Check all of the tie-down screws again to make sure they hold a torque of 200 ft-lbs [271 Nm].
-

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-
14. Verify the proper ring engagement by visual checking the **angular displacement** of the two set screw energize indicators. These should now moved from initial 'RELEASED' position and travelled along the slots into 'ENERGIZED' position.



LO-095747-02

Figure 18: Position of Energize Indicator

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15.

**Caution**

A tie-down screw that engages incorrectly can cause damage or an NPT event. All tie-down screws must fully engage the retainer ring as shown. If the engagement is not correct, speak with Surface Engineering for aid.

Make sure all tie-down screws extend 1-5/8 in (1.625 in [41.28 mm]) out of the OD of the Casing Head Housing.

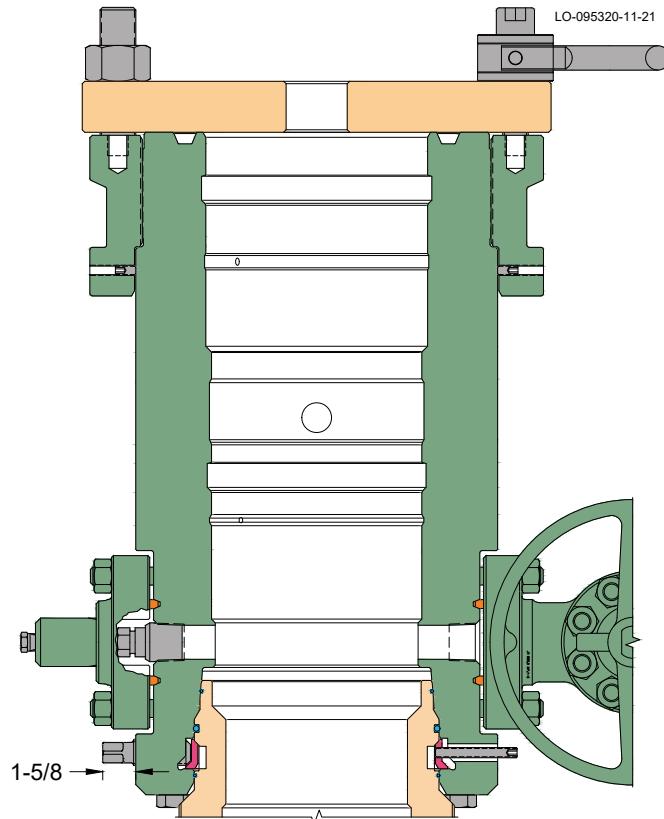


Figure 19: Casing Head Housing Secured to Landing Mandrel

2.2.2.2**Test Between the Seals**

1. Locate the test ports on the bottom of the Casing Head Housing.

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-
2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.

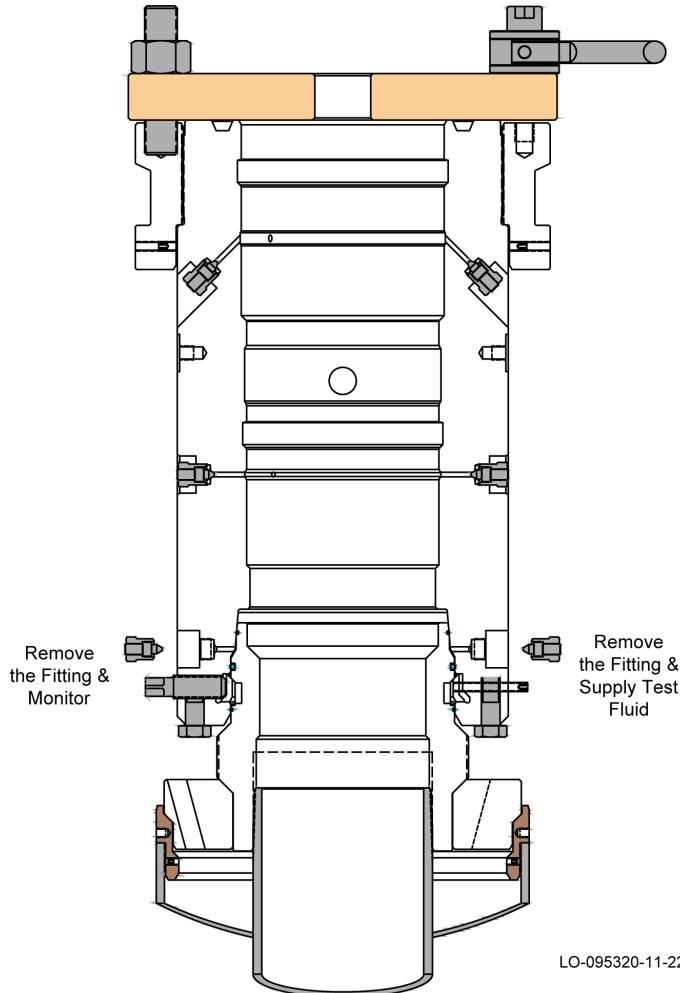


Figure 20: Continuity Test

-
3. When a continuous stream is seen from the open port, re-install the fitting.
-

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4.

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to supply test fluid to the **maximum rated working pressure of the Landing Mandrel**.

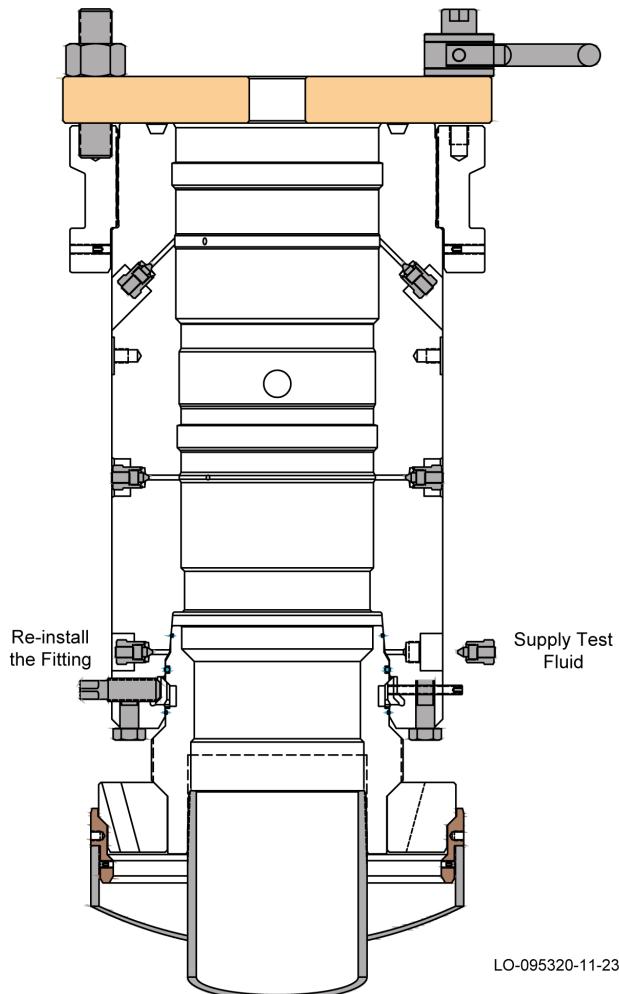


Figure 21: Testing Between the Landing Mandrel Seals

**Note**

See stage drawings or system tables for technical parameters.

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-
5. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or refer to customer requirements.
 6. When the test is complete, carefully bleed off all test pressure and remove the hydraulic test pump.
 7. Re-install the fitting.
-

2.2.3

11 Nom Drilling Adapter**Table 7: Equipment**

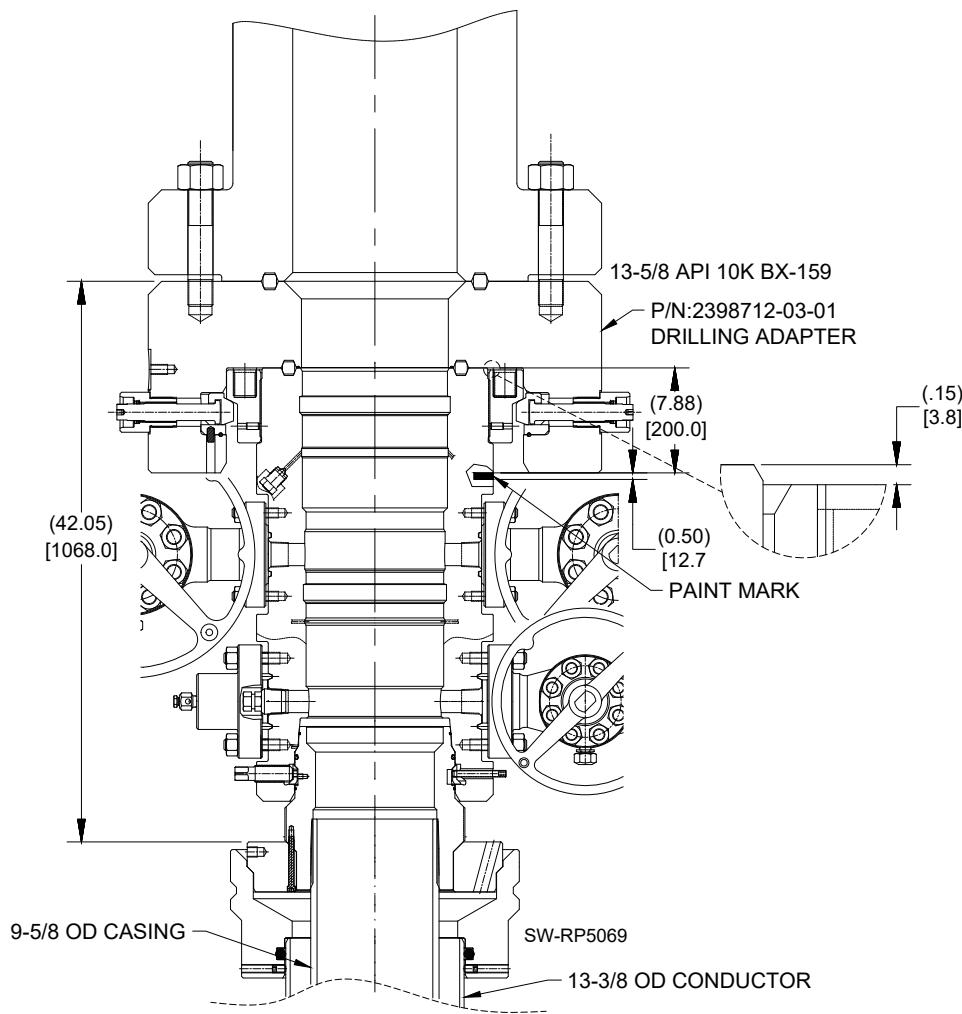
Item	Qty	Description
R07	1	ASSEMBLY, 13-5/8 10K API DRILLING ADAPTER, 13-5/8 10K FASTLOCK BTM X STD'D TOP, W/O TIEDOWN SCREWS, W/ TESTABLE RING GASKET, MIN. BORE: 11.000 IN, M/C: DD-NL, T/C: P +U, PSL-2, PR-2
		PART# 2398712-03-01

Table 8: System Tables

Measurement / Description	Dimension / Value
Stand-off from top of Load Ring	42.05 in (1068.0 mm)
Test the connection pressure	10,000 psi (64,948 kPa)
'A': Distance from top of Casing Head Housing to top edge of paint mark	7.88 in (200.0 mm)
Drilling Adapter Min Bore	11.000 (279.40 mm)
Torque Value for fastlock drive screws	1,000 ft-lbf (1,360 Nm)

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PREVIEW DRAFT**Figure 22: Install Drilling Adapter****2.2.3.1 Install the Drilling Adapter****Caution**

A non-integral drilling hub may be installed for some systems and when installed incorrectly can cause damage or an NPT event. Make sure that it is at level in all directions, is at 0.15 in below the top face of the casing head housing, and has the correct orientation. This makes sure that the Fastlock equipment lands and the drive screws can correctly engage.

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-
1. Examine the **Drilling Adapter**. Make sure:
 - the bore is clean and there is no debris
 - the ring groove and seal areas are clean and not damaged
 - the o-ring is correctly installed for the testable gasket
 - all of the peripheral equipment is correctly installed
 - all of the drive screws are fully retracted

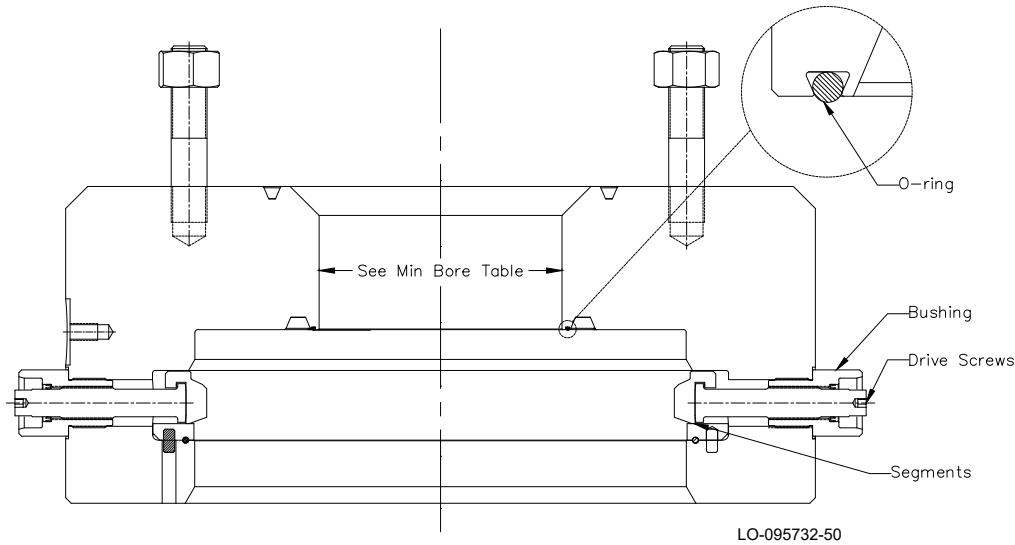


Figure 23: Drilling Adapter

-
2. Orient the Drilling Adapter with the drive screws down.
-

- 3.



Warning

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Clean the mating ring grooves of the Casing Head Housing and Drilling Adapter. Lubricate each groove with a light coat of oil or grease.

-
4. Lubricate the OD and tapered surface of the Casing Head Housing hub with a light coat of oil or grease.
 5. Install a new **Ring Gasket** into the ring groove of the Casing Head Housing.
-

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-
6. For proper landing verification, place a 1/2 in wide paint mark on the Casing Head Housing OD, at a distance of 'A' from top of the Casing Head Housing.

**Note**

Refer to stage drawing or system table for technical information.

7. Use an applicable lifting device to lift and hold the Drilling Adapter over the Casing Head Housing. Make sure it is level.

8.

**Caution**

Do not move the equipment after it lands on the ring gasket or seal. Movement of the equipment can cause an abrasion and prevent a positive seal. If it is necessary to move the equipment, lift it to clear the gasket or seal first.

Carefully lower the Drilling Adapter and land it on the Casing Head Housing face.

9. Make sure the Drilling Adapter is correctly landed.

**Note**

Make sure the Fastlock equipment has correctly landed by checking the bottom of the Fastlock equipment is level with the shoulder of the Casing Head Housing or the paint mark on the OD of the Casing Head Housing hub.

10. Run in all of the drive screws by hand or with a small wrench until the segments all contact the hub to make sure that the body is initially centered on the hub prior to make-up.
 11. Use a 180° alternating pattern to tighten the drive screws to approximately 100-200 ft-lbf [136-271 Nm].
-

**Note**

Refer to X-079110-01 attached at the back of this document for make up and break out procedure of Fastlock connector with proprietary hubs.

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-
12. Use the same 180° alternating pattern to tighten the drive screws to the appropriate torque.

**Note**

Refer to stage drawing or system table for technical information.

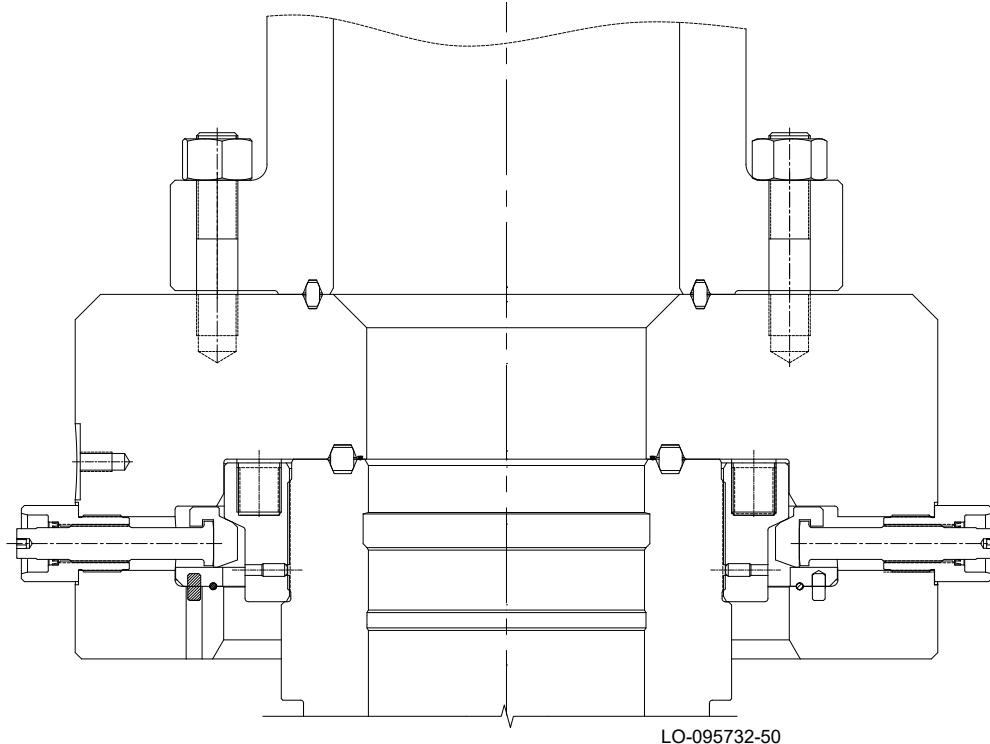


Figure 24: Drilling Adapter Installed on the Casing Head Housing

-
13. Check each drive screw to make sure it has the correct amount of torque.

**Note**

Refer to stage drawing or system table for technical information.

**Note**

As a secondary verification that the Fastlock equipment is correctly made-up, the end of the drive screws will be flush with the end of the bushing.

-
14. Use the grease fitting on the OD of the body to fill the area around the segments with a general purpose grease. A vent fitting is located opposite the grease fitting to release any trapped air. Fill the connector with grease until all of the air is displaced and grease begins coming out the vent fitting.

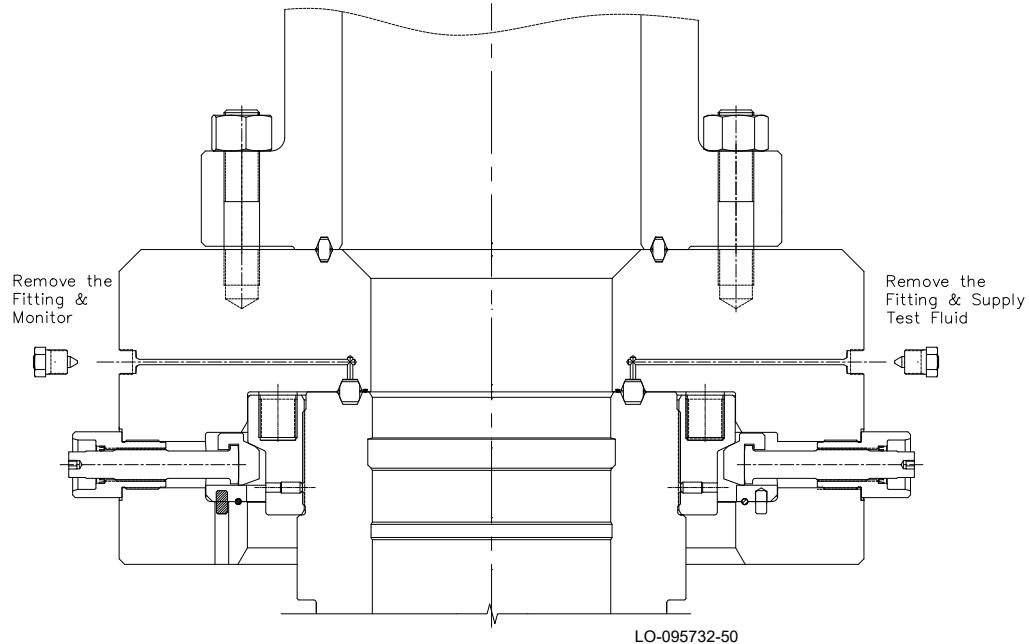
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PREVIEW DRAFT**2.2.3.2****Test the Connection of the Drilling Adapter**

-
1. Locate the ports for testing the connection of the Drilling Adapter on the lower OD of the Drilling Adapter and remove both of the fittings.
 2. Attach a hydraulic test pump to one of the open test ports and inject test fluid until a continuous stream is seen from the open port.
-

**Figure 25: Testing for Continuity**

-
3. Once a continuous stream is seen from the open port, re-install the fitting.
-

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4.

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to inject test fluid to the **maximum rated working pressure of the Housing Connection**.

**Note**

See stage drawings or system tables for technical parameters.

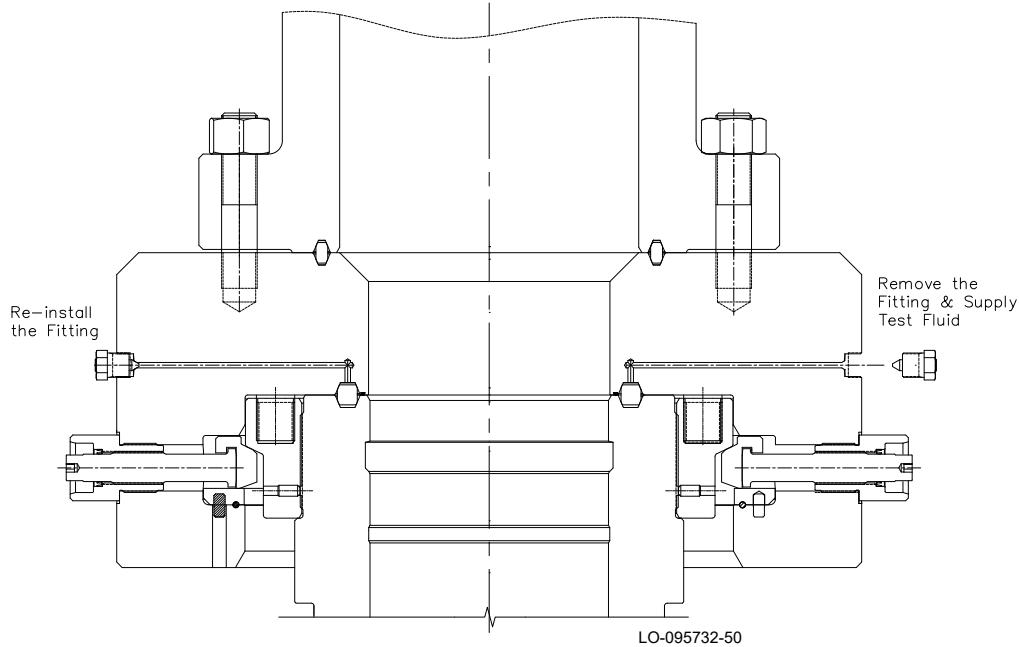


Figure 26: Test the Connection

5. Hold and monitor, chart record if required, the test pressure for 15 minutes or as required by the Drilling Supervisor.
6. Once a satisfactory test is achieved, carefully bleed off all test pressure and remove the test pump.
7. Re-install the fitting.

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PREVIEW DRAFT

2.3 7 OD Casing

2.3.1 11 Nom Combination Tool

Table 9: Equipment

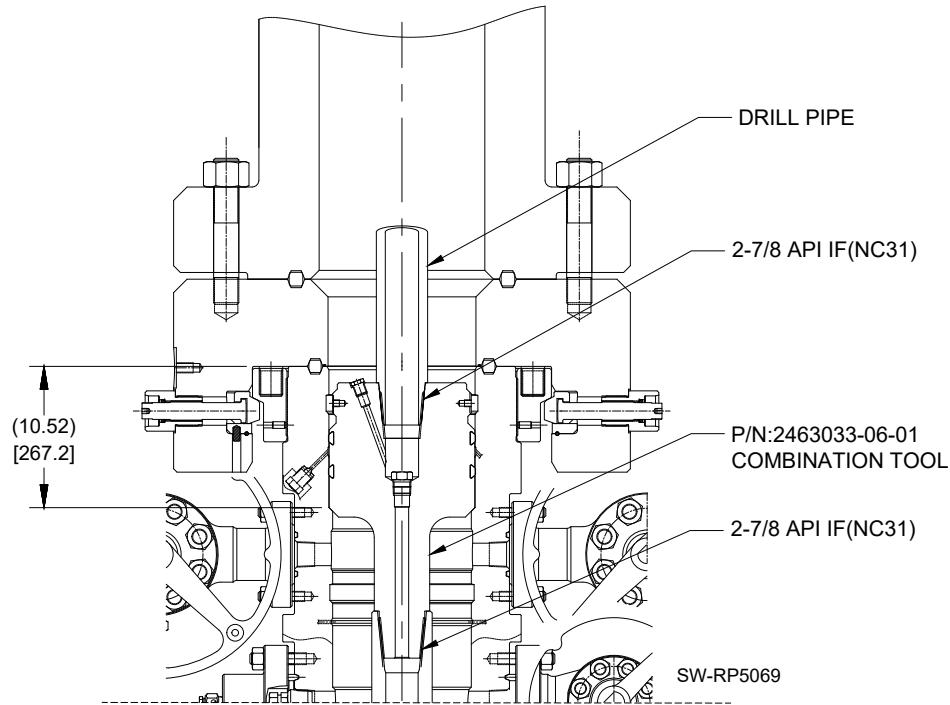
Item	Qty	Description
R09	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM *****MAX HANGING LOAD WITH RUNNING TOOL SLEEVE P/N 2463035-02-01: 70,000 LBF MAX TORQUE: 6,000 LBF-FT***
		PART# 2463033-06-01

System Tables**Table 10: Test the BOP Stack**

Measurement / Description	Dimension / Value
Land-off from top face of Casing Head Housing	10.52 in (267.2 mm)
BOP Test Pressure	10,000 psi (64,948 kPa)

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PREVIEW DRAFT**Figure 27: Installation of 11 Nom Combination Tool****2.3.1.1 Test the BOP Stack*****i* Note**

Previously used Test Plugs must be inspected for damage due to wear. Where warranted such as highly deviated wells the Test Plugs must be checked periodically to ensure integrity.

***i* Note**

Immediately after make-up of the BOP stack and periodically during the drilling of the hole for the next casing string, the BOP stack (connections and rams) must be tested.

***i* Note**

During the drilling operations, the Ring Gasket can be tested through the Drilling Adapter instead of the Test Plug. See [2.2.3.2: Test the Connection of the Drilling Adapter](#) for the test procedure.

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-
1. Examine the **Combination Tool**. Make sure:
 - the elastomer seal is in place and not damaged
 - all threads are clean and not damaged
 - the pipe plug is
 - correctly installed for testing via chokes / kill lines
 - removed for testing via drill pipe
 - the VR plug is correctly installed
 - the running tool sleeve and set screws are removed and set aside

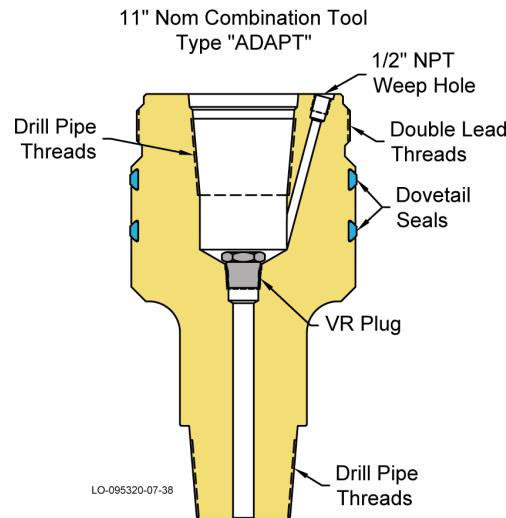


Figure 28: Combination Tool (Test Plug Configuration)

i Note

The pressure test can be performed by applying pressure down the centre of the drill pipe handling joint. This requires the removal of the upper-side pipe plug from the BOP Test Plug and keep installed VR plug inside the BOP Test Plug.

i Note

If the pressure test is performed by applying pressure thru exit outlets of BOP stack / Riser Adapter and the upper side outlet valves on the Housing cannot be open to monitor any fluid passing, remove the VR Plug inside the BOP Test Plug and keep installed the upper-side pipe plug. Any leak pass the O-ring will come up thru the pipe during testing.

i Note

Install VR plug inside the BOP Test Tool if the Blind Rams are tested.

-
2. Orient the Combination Tool with the double lead threads up.
-

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3.

**Warning**

A minimum of one joint of drill pipe is required on the bottom of the Test Plug to make sure the Test Plug remains centralized.

Make up a joint of drill pipe to the top of the Combination Tool.

4.

Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.

5.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the elastomer seals of the Combination Tool with a light coat of oil or grease.

6.

Open the uppermost annulus valve to drain fluid and leave it open.

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-
7. Slowly lower the Combination Tool through the BOP Stack and land it at the landing point. Measure and record the depth while the Combination Tool is lowered.

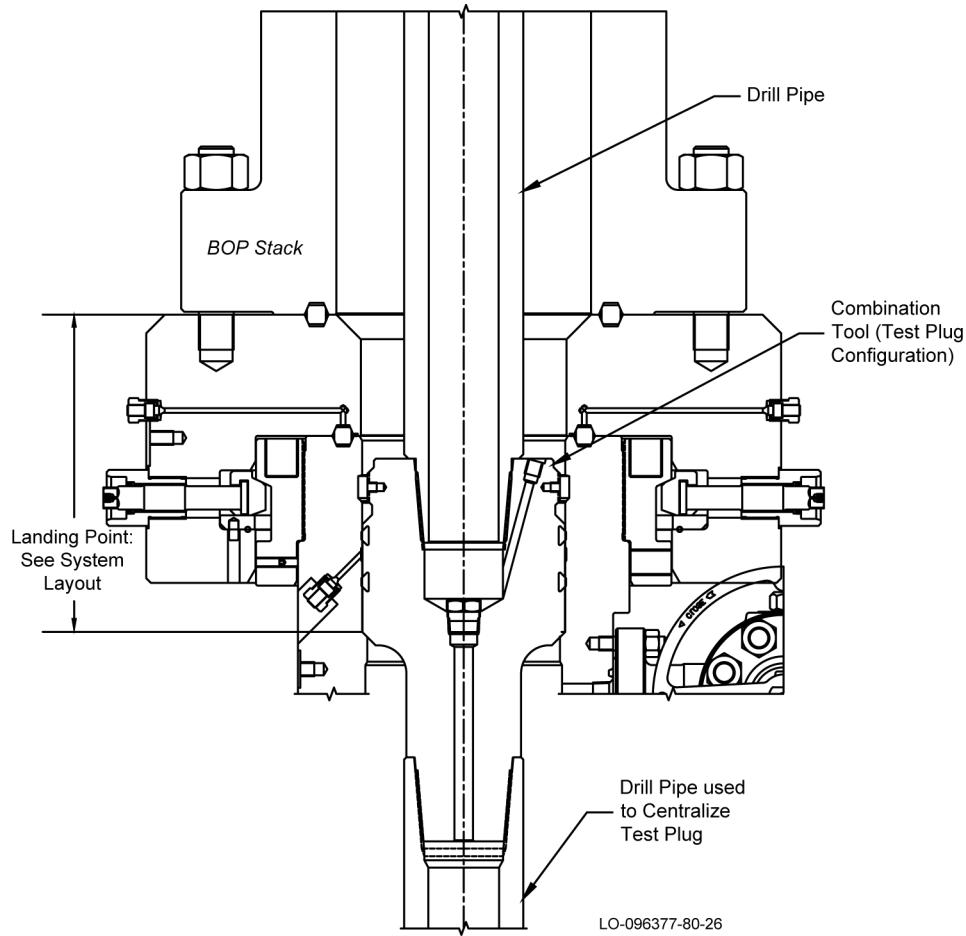


Figure 29: Combination Tool Landed

-
8. Close the BOP rams on the drill pipe and test to **the maximum rated working pressure of the Casing Head Housing top connection**.



Note

Refer to stage drawing or system table for technical information.

-
9. Monitor the open annulus valve for signs of leakage.
-

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-
10. When a satisfactory test is complete, release the test pressure and open the BOP rams.
 11. Remove as much fluid from the BOP Stack as possible; refer to the rig procedure.
 12. Retrieve the Combination Tool slowly to prevent damage to the elastomer seals.
 13. Close the annulus valve.
-

**Note**

It may be necessary to open the annulus valve when starting to retrieve the Test Plug to relieve any vacuum that may occur.

14. Clean and lubricate the Combination Tool.
 15. Put a protective cover on the threads of the Combination Tool and put it in storage as necessary.
 16. Repeat as necessary during drilling operations.
-

2.3.2

11 X 10.318 Nom Wear Bushing**Table 11: Equipment**

Item	Qty	Description
R05	1	ASSY; WEAR BUSHING, TYPE 'ADAPT-IND', 11 X 10.318 NOM W/ DOUBLE LEAD RUNNING THD TOP, W/ THREE O-RINGS MIN BORE: 9.920, OAL: 25.00 PART# 2502517-01-01
R09	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM *****MAX HANGING LOAD WITH RUNNING TOOL SLEEVE P/N 2463035-02-01: 70,000 LBF MAX TORQUE: 6,000 LBF-FT*** PART# 2463033-06-01

System Tables**Table 12: Run the Wear Bushing Before Drilling**

Measurement / Description	Dimension / Value
Wear Bushing Land-off	10.57 in (268.4 mm)

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Wear Bushing Min Bore	9.920 in (251.97 mm)
Combination Tool Stand-off	9.27 in (235.4 mm)

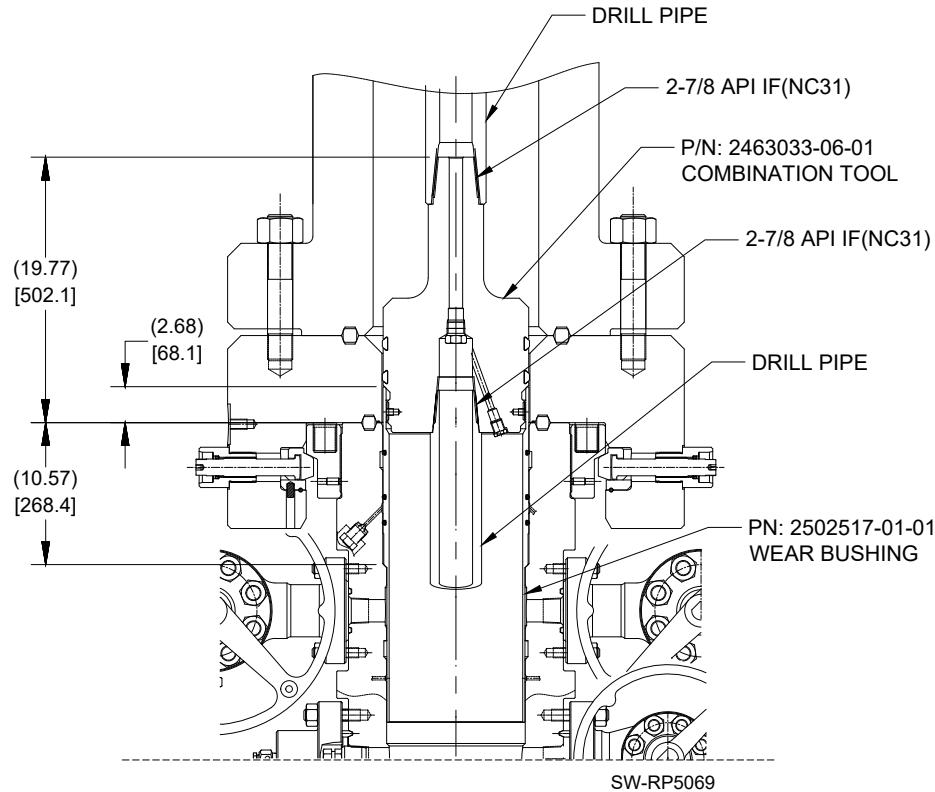


Figure 30: Installation of 11 Nom Combination Tool with Wear Bushing

2.3.2.1

Run the Wear Bushing Before Drilling



Warning

Previously used Wear Bushings must be inspected for damage and significant reduction in wall thickness due to wear. Where warranted such as highly deviated wells the Wear Bushing must be checked periodically to ensure integrity.

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PREVIEW DRAFT**Caution**

Always use a Wear Bushing while drilling to protect the sealing areas and load shoulder from damage by the drill bit or rotating drill pipe. The Wear Bushing must be retrieved prior to running the casing/tubing.

1. Examine the **Combination Tool**. Make sure:
 - all threads are clean and not damaged
 - the running tool sleeve and set screws are removed and set aside

11" Nom Combination Tool
Type "ADAPT"
(Wear Bushing Running Tool Configuration)

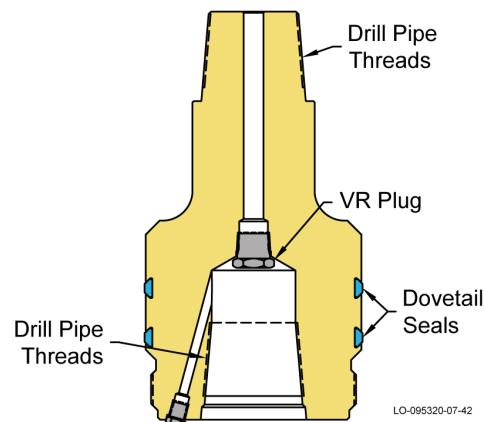


Figure 31: Combination Tool (Wear Bushing Running Tool Configuration)

2. Orient the Combination Tool with the double lead thread down.
3. Make up a joint of drill pipe to the top of the Combination Tool.
4. Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.

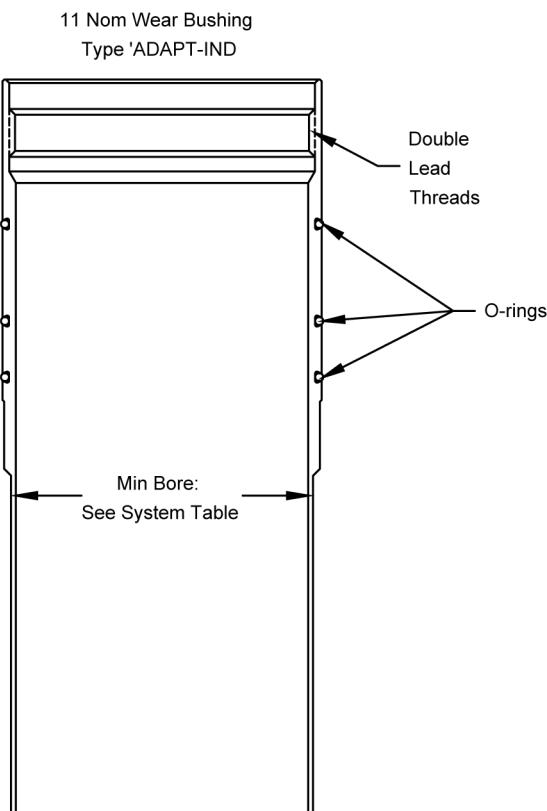
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-
5. Examine the **Wear Bushing**. Make sure:

- the bore is clean and there is no debris
- the o-rings are in place, clean, and not damaged
- all threads are clean and not damaged



LO-096377-80-09

Figure 32: Wear Bushing

-
6. Orient the Wear Bushing with the double lead threads up.
-

- 7.



Warning

Too much grease applied on grooves can cause O-ring rolling out of the Wear Bushing.

Lubricate the o-rings of the Wear Bushing with a light coat of oil or grease.

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8.**Warning**

Do not torque the connection between the Wear Bushing Running Tool and Wear Bushing.

Lower the Combination Tool into the Wear Bushing and turn the drill pipe counterclockwise until thread 'jump' can be felt, then approximately 1 clockwise turn to a positive stop to thread the Combination Tool into the Wear Bushing.

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-
9. Slowly lower the Combination Tool/ Wear Bushing assembly through the BOP Stack and land it at the landing point. Measure and record the depth while the Combination Tool/ Wear Bushing assembly is lowered.

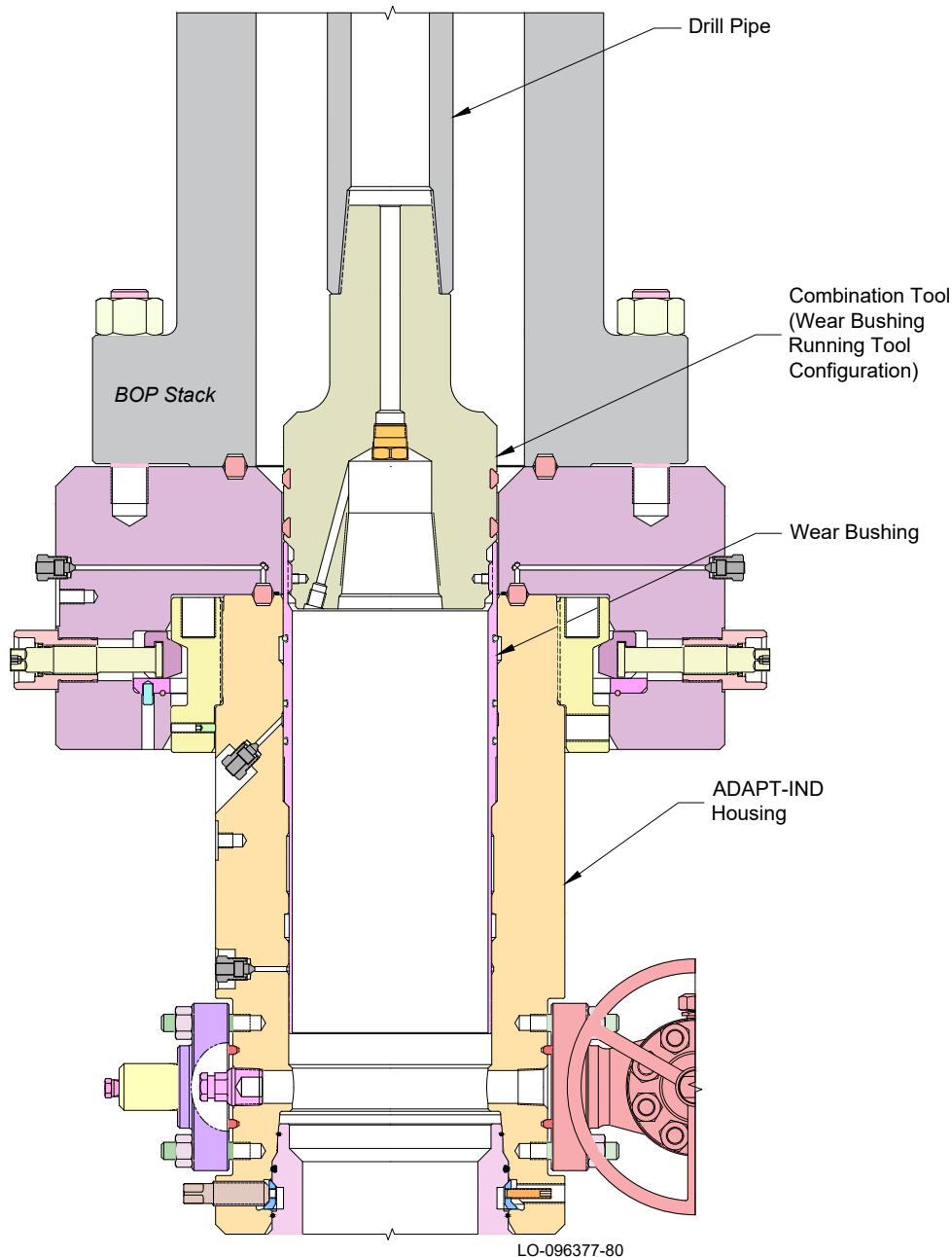


Figure 33: Wear Bushing Landed

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PREVIEW DRAFT**Note**

See stage drawings or system tables for technical parameters.

10.

**Caution**

This Wear Bushing does not have a mechanical retention device. Care must be exercised when tripping out the hole to avoid dislodging the Wear Bushing which could compromise safety if it is lodged in the BOP stack.

Disengage the Combination Tool from the Wear Bushing by turning the drill pipe approximately 1 counterclockwise turn until thread 'jump' is felt and lift straight up.

11. Remove the Combination Tool from the drill string.

12. Clean and lubricate the Combination Tool.

13. Put a protective cover on the threads of the Combination Tool and put it in storage as necessary.

14. Drill as necessary.

2.3.2.2 Retrieve the Wear Bushing After Drilling

1. Orient the **Combination Tool** with double lead threads down.
2. Make up a joint of drill pipe to the top of the **Combination Tool**.
3. Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.
4. Drain the BOP Stack (Refer to the rig procedure).
5. Slowly lower the Combination Tool through the BOP Stack until the threads touch the threads of the Wear Bushing. Measure and record the depth while the Combination Tool is lowered.
6. Turn the drill pipe counterclockwise until thread 'jump' can be felt.

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-
7. Slack off all weight to make sure the Combination Tool is down and then turn the drill pipe approximately 1 clockwise turn to a positive stop.

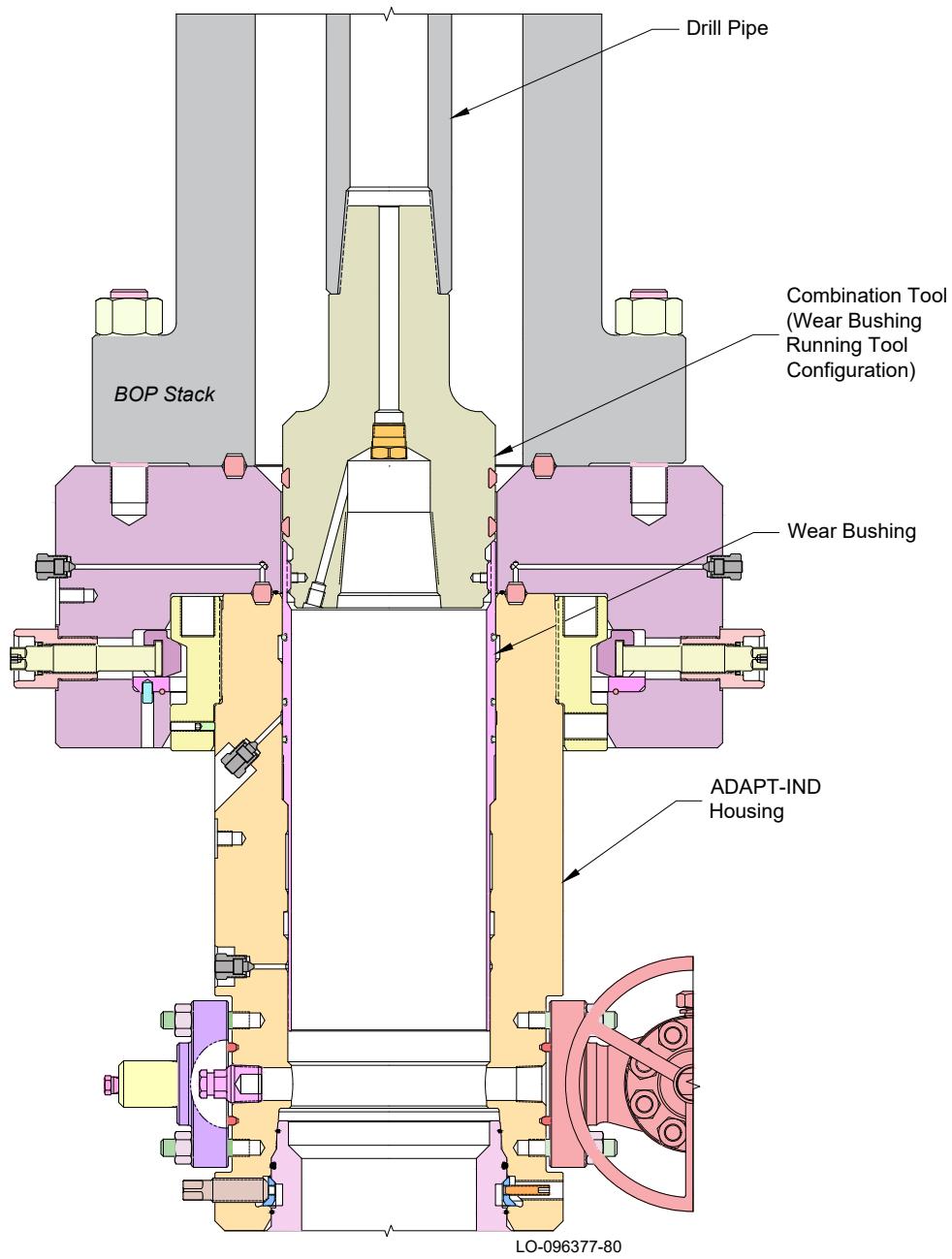


Figure 34: Retrieving the Wear Bushing

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8.

**Caution**

If the Wear Bushing cannot be removed from the wellhead with 30,000 pounds of pull, stop the job and speak with Engineering for support.

Slowly retrieve the Wear Bushing to the rig floor and remove it and the Combination Tool from the drill string.

9. Clean and lubricate the Wear Bushing and Combination Tool.

10. Put a protective cover on the threads of the Combination Tool.

11. Put the Wear Bushing and Combination Tool in storage as necessary.

2.3.3 **10.318 Nom Casing Hanger**

Table 13: Equipment

Item	Qty	Description
F01	1	CASING HANGER, MANDREL, TYPE 'ADAPT-IND' F/ 10.318 BOWL X 7 IN 29 LB/FT L-80 HUNTING SEAL-LOCK XD BOX THD BTM X 7.250-4 TPI LH INTERNAL STUB ACME RUNNING THD TOP, W/ 8-3/8 NOM SLICK NECK TOP W/ SIX ANTI-ROTATION SLOTS, W/ SIX FLOW-BY SLOTS, MIN BORE: 6.155, API 6A, T/C: U; M/C: DD; PSL 2; PR2 ***MAX WORKING PRESSURE 8160 PSI *** ***ALLOWABLE HANGING LOAD IN 'ADAPT-NST' 3 STAGE PSB: 330,000 LBF*** ***ALLOWABLE HANGING LOAD IN 'ADAPT-IND' HOUSING: 290,000 LBF*** ***MAX MAKE-UP TORQUE: 12,430 FT-LBF TO CONNECT W/ 7 IN 26 LB/FT L-80 CSG*** (MAT'L 4140 LAS 85 KSI YS)
		PART# 2502633-19-01
R11	1	ASSY, CASING HANGER RUNNING TOOL, TYPE 'ADAPT-IND', 10.318 NOM X 7 IN 29 LB/FT L-80 HUNTING SEAL-LOCK XD BOX THD TOP X 7.250-4 TPI LH EXTERNAL STUB ACME RUNNING THREAD BTM, W/ SIX FLOW-BY SLOTS, W/ ONE EXTERNAL DOVETAIL O-RING, MIN BORE: 6.155 ***MAJOR LOAD BEARING TOOL*** ***MAX HANGING CAPACITY: 540,800 LBF WHICH IS 80% PIPE BODY YIELD OF 29 LB/FT L-80 CSG***
		PART# 2463026-53-01

Table 14: System Tables

Measurement / Description	Dimension / Value
Casing Hanger Land-off	23.89 in (606.9 mm)

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Casing Hanger Stand-off	17.70 in (449.5 mm) below top face
'A': Distance from top of Running Tool to top edge of paint mark	3.00 in (76.2 mm)
'B': Paint mark thickness	.50 in (12.7 mm)
Turns to make up Running Tool to Casing Hanger	.820 Turns clockwise
Casing Hanger Min.Bore	6.155 in (156.34 mm)
Casing Hanger Running Tool Stand-off	10.68 in (271.2 mm) below top face
Casing Hanger Running Tool Min Bore	6.155 in (156.34 mm)

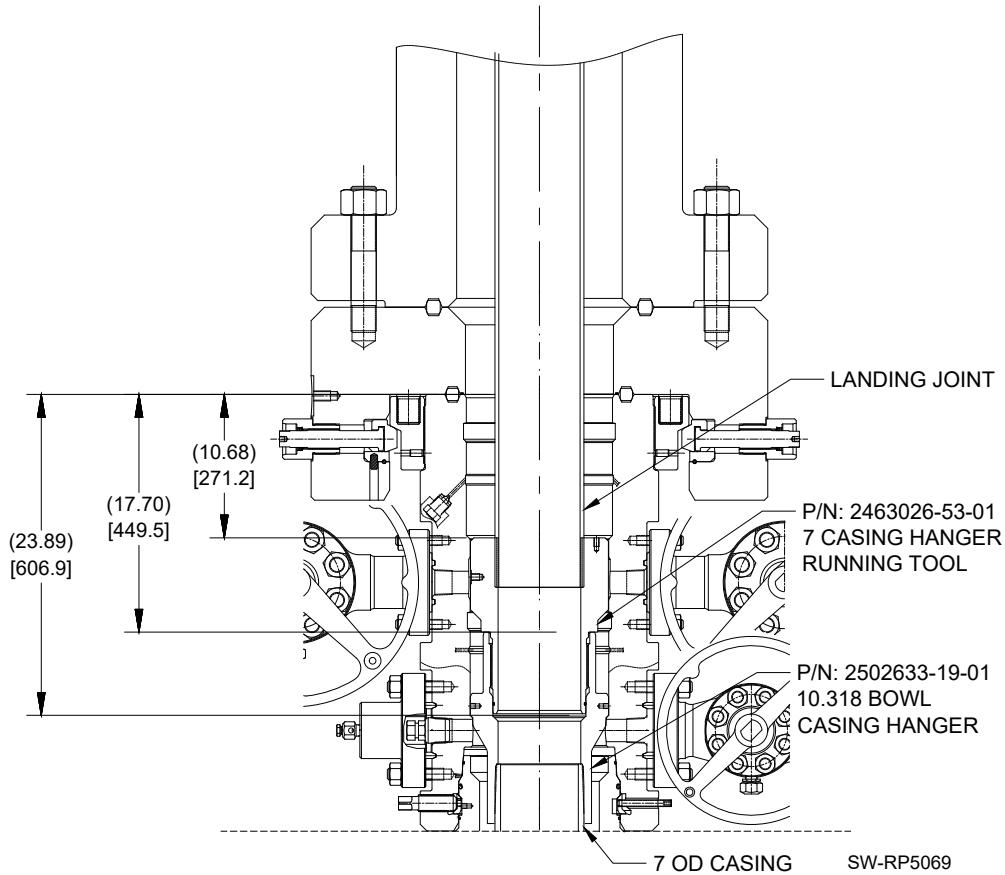


Figure 35: Installation of 10.318 Bowl Casing Hanger with Casing Hanger Running Tool

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PREVIEW DRAFT**2.3.3.1****Hang off the Casing****Note**

Cameron service personnel must verify that the Mandrel Hanger is correctly landed on the load shoulder. This can be accomplished by one of three methods.

- Visually observe the scribe line mark around Casing Hanger Running Tool and/or Hanger through the open annulus valve.
- Conduct a dry run and mark the dedicated landing joint prior to running the casing or tubing.
- Calculate the distance from the rig floor to the load shoulder and confirm that the Mandrel Hanger has traveled the necessary distance.

**Note**

Steps 3-13 may be conducted offline and the made-up assembly shipped to the field.

-
1. Run the casing and space out appropriately.
 2. Hang the last joint of casing in the floor slips at a height to easily move and make up the Casing Hanger and landing joint.
-

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-
3. Examine the **Casing Hanger Running Tool**. Make sure:

- the bore is clean and there is no debris
- the flow-by slots are clean and there is no debris
- the o-ring is correctly installed, clean and not damaged
- all threads are clean and not damaged
- the Stub ACME threads have the appropriate thread start profile (grind back)
- the horizontal paint mark on the tool OD is 'A' from the top with thickness 'B'.

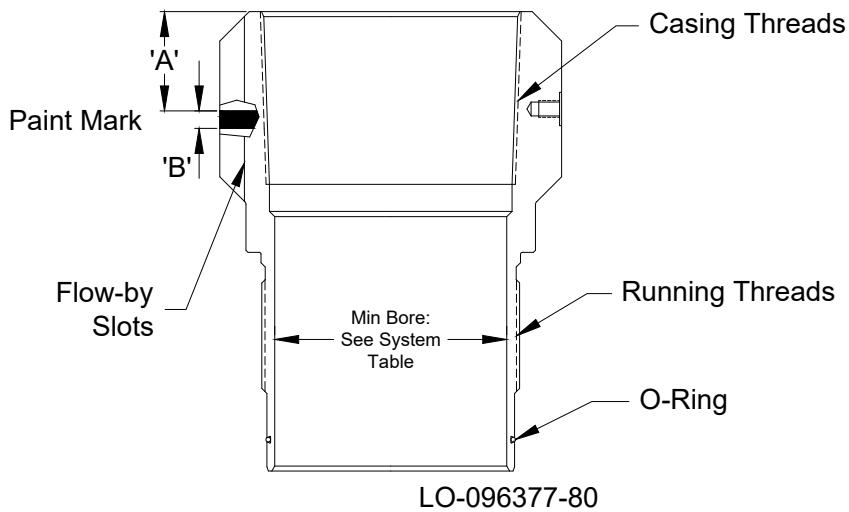


Figure 36: Casing Hanger Running Tool

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PREVIEW DRAFT**Note**

All ACME and stub ACME threads should be verified prior to acceptance or installation to make sure the blunt start feature is present and complies with bill of material requirements.



Figure 37: Male and Female ACME Thread Blunt Start

**Note**

Refer to stage drawing or system table for technical information.

4. Orient the Casing Hanger Running Tool with the flow-by slots up.
5. Make up a joint of casing to the top of the Casing Hanger Running Tool.

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6. Examine the **Casing Hanger**. Make sure:

- the bore is clean and there is no debris
- the neck seal area is clean and not damaged
- the anti-rotation slots on the neck are clean and there is no debris
- the flow-by flutes are clean and there is no debris
- all threads are clean and not damaged
- the Stub ACME threads have the appropriate thread start profile (grind back)
- the pup joint is correctly installed, clean, not damaged, and compatible with casing run by the rig

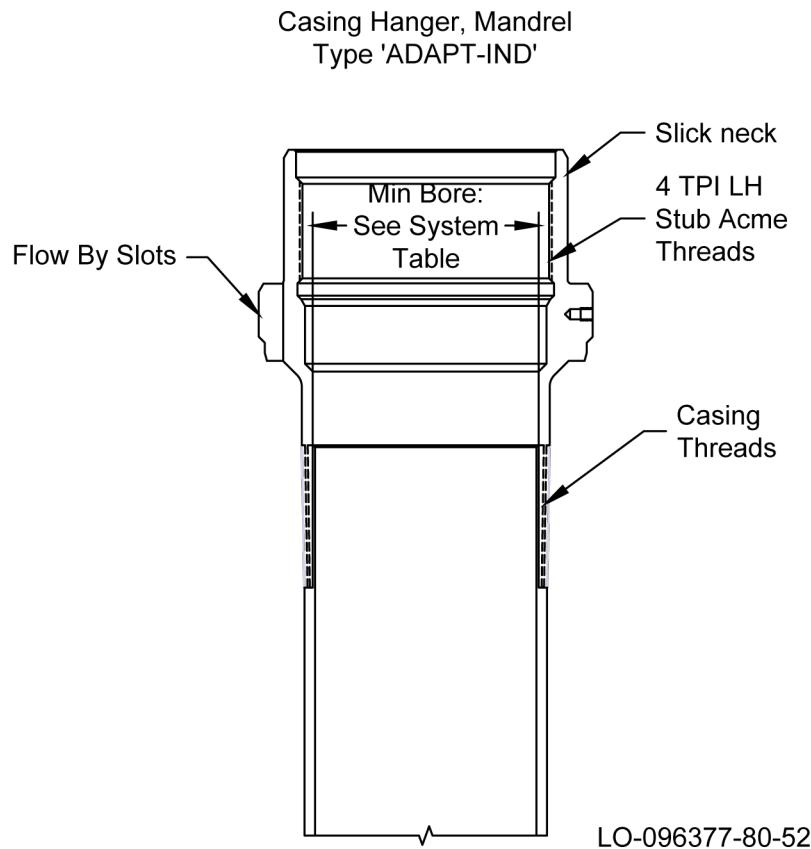


Figure 38: Casing Hanger

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PREVIEW DRAFT**Note**

All ACME and stub ACME threads should be verified prior to acceptance or installation to make sure the blunt start feature is present and complies with bill of material requirements.



Figure 39: Male and Female ACME Thread Blunt Start

-
7. Orient the Casing Hanger with the running threads up.
-

- 8.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the running threads of the Casing Hanger and Casing Hanger Running Tool and the o-ring of the Casing Hanger Running Tool with a light coat of oil or grease.

-
9. Lift and suspend the Casing Hanger Running Tool over the Casing Hanger.
 10. Lower the Casing Hanger Running Tool onto the Casing Hanger until the mating threads touch.
-

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11.**Warning**

Do not torque the connection between the Casing Hanger Running Tool and Casing Hanger.

**Caution**

Do not use Top Drive to engage or disengage the Running Tool. Using Top Drive can permanently damage the running threads of the equipment and will require damaged parts to be replaced.

While the weight is balanced, turn the Casing Hanger Running Tool clockwise until the thread 'jump' is felt then counterclockwise turns to a positive stop.

12. Turn the Casing Hanger Running Tool approximately 1/4 clockwise turn to prevent the Casing Hanger and Casing Hanger Running Tool from locking up.
-

**Note**

Refer to stage drawing or system table for technical information.

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-
13. Put a vertical paint mark on the OD of the Casing Hanger Running Tool/ Casing Hanger assembly to monitor movement.

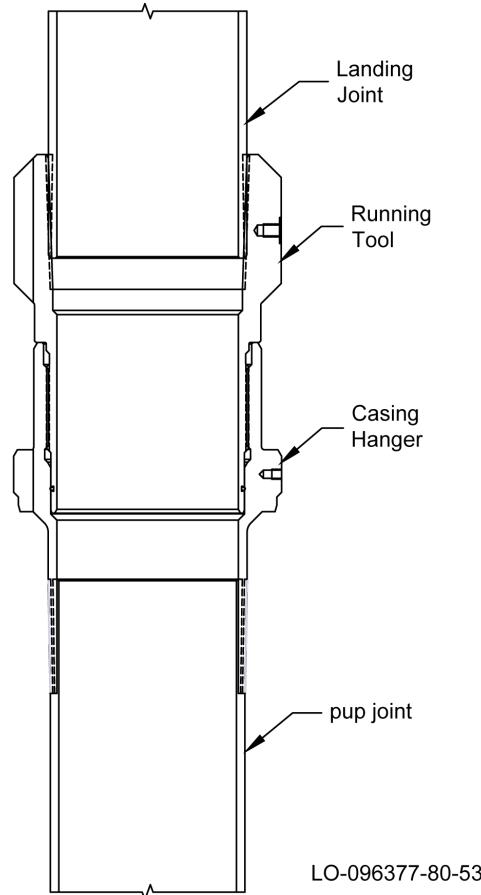


Figure 40: Casing Hanger Running Tool/ Casing Hanger Assembly

-
14. Measure the distance from the rig floor to the landing point and identify it on the landing joint with a horizontal paint mark. Put incremental paint marks the length of the landing point.
 15. Lift the Casing Hanger Running Tool/ Casing Hanger assembly above the casing hung in the floor slips.
 16. Lower the Casing Hanger Running Tool/ Casing Hanger assembly until the mating threads touch.
-

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17.**Warning**

Turn the Casing Hanger and Casing Hanger Running Tool as a unit. Do not allow the Casing Hanger Running Tool to back out of the Casing Hanger.

While the weight is balanced, turn the Casing Hanger Running Tool/ Casing Hanger assembly with tongs on the pup joint until the thread 'jump' is felt then in the opposite direction to the thread manufacturer's recommended optimum torque to make up the casing string.

18. Open the middle and lowermost annulus valve.

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-
19. Release the casing from the floor slips and lower the Casing Hanger Running Tool/ Casing Hanger assembly through the BOP Stack. Land the Casing Hanger Running Tool/ Casing Hanger assembly at the landing point. Measure and record the depth while the Casing Hanger Running Tool/ Casing Hanger assembly is lowered.

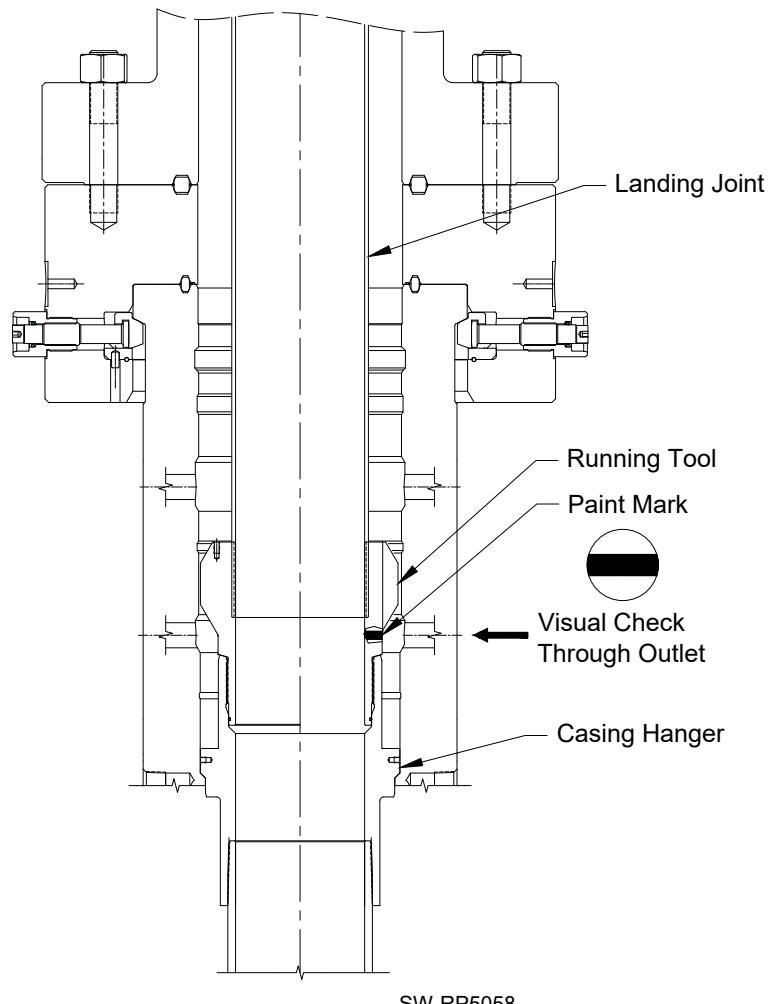


Figure 41: Casing Hanger Landed



Note

Refer to stage drawing or system table for technical information.

-
20. Make sure the Casing Hanger is aligned in the center of the well and slack off all weight.
21. Make sure the horizontal paint mark on the landing joint is level with the rig floor to verify the Casing Hanger Running Tool / Casing Hanger assembly is correctly landed.
-

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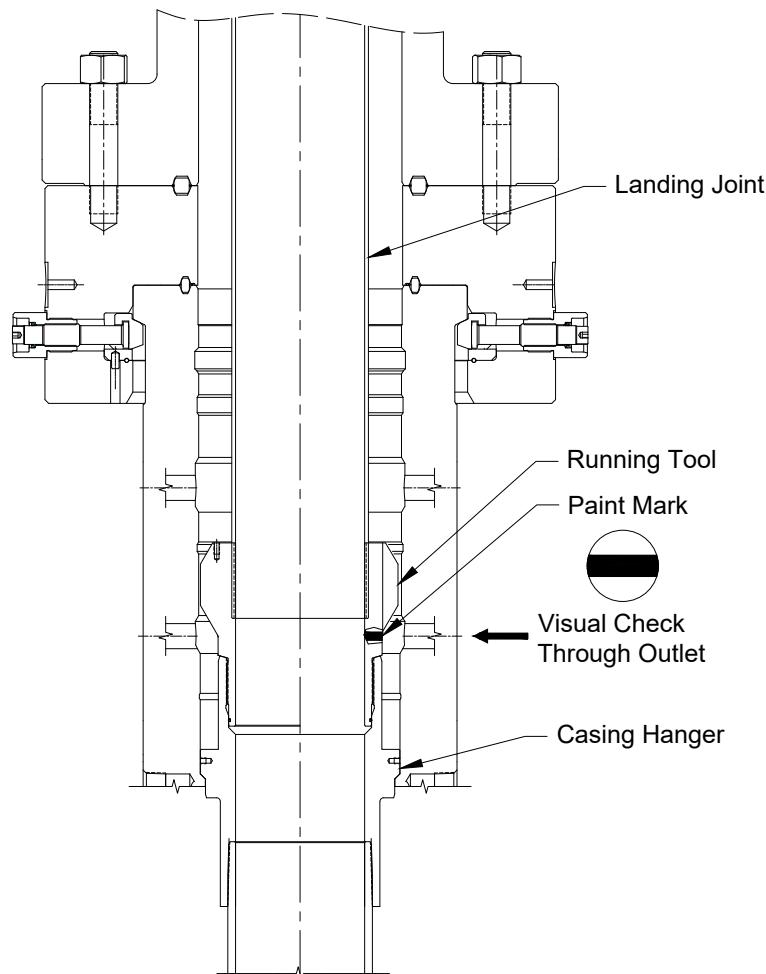
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-
22. Check the open middle annulus valve for the paint mark to make sure the Casing Hanger is correctly landed.

**Note**

The paint mark should be in the center of the open annulus valve.



SW-RP5058

Figure 42: Casing Hanger Landing Verification

-
23. Close the middle annulus valve.
-
24. Put a horizontal paint mark on the OD of the landing joint that is level with the rig floor to monitor rise in the Casing Hanger Running Tool/ Casing Hanger assembly during cementing and a vertical mark to monitor possible rotation of the Casing Hanger Running Tool during cementing.
-

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25.

**Caution**

A cement rate that is too high can lift the Mandrel Hanger from the landing point. Make sure the Mandrel Hanger stays at the landing point. If it is necessary to adjust the Mandrel Hanger position, do it before the cement is set.

Cement the casing as necessary.

**Note**

Cement returns may be taken through the flow-by slots of the Hanger and out of the BOP or out of the appropriate side outlets.

26. Turn the landing joint clockwise turns until thread 'jump' can be felt.

**Note**

Refer to stage drawing or system table for technical information.

27. Close the lowermost annulus valve.

28. Retrieve the Casing Hanger Running Tool to the rig floor.

29. Clean and lubricate the Casing Hanger Running Tool as required.

30. Put a protective cover on the external threads and put the Casing Hanger Running Tool in storage as necessary.

2.3.4

11 Nom Jetting Tool**Table 15: Equipment**

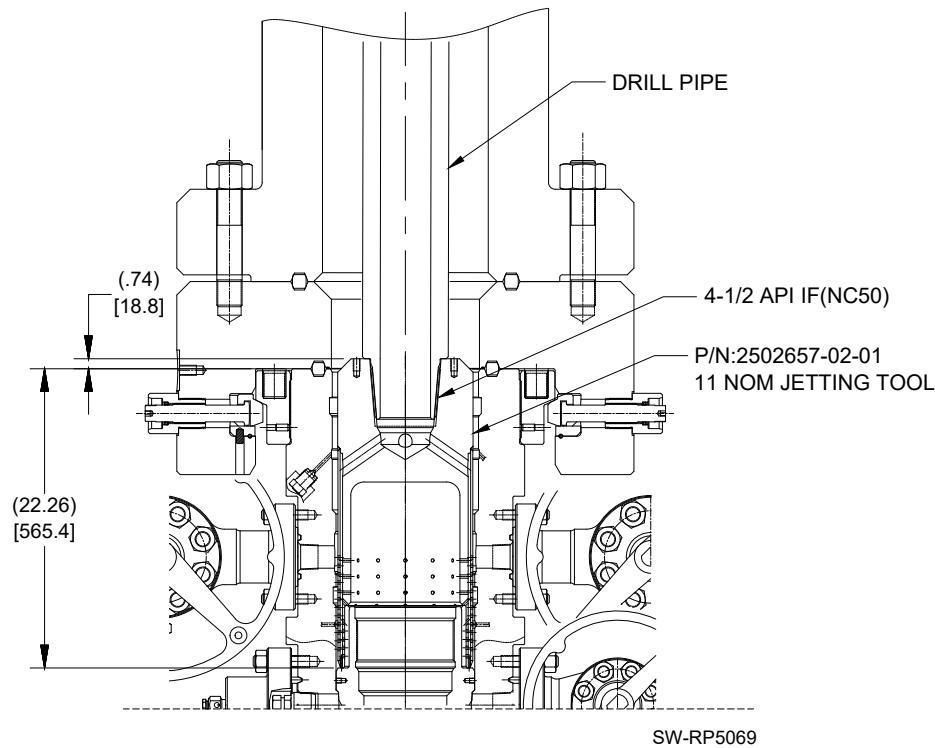
Item	Qty	Description
R04	1	ASSY, 11 IN NOM JETTING TOOL F/ TYPE' ADAPT-FAMILY' AND 'ADAPT-IND' HANGERS W/ 4-1/2 API IF (NC50) BOX THD TOP
		PART# 2502657-02-01

Table 16: System Tables

Measurement / Description	Dimension / Value
Jetting Tool Land-off	22.26 in (565.4 mm)

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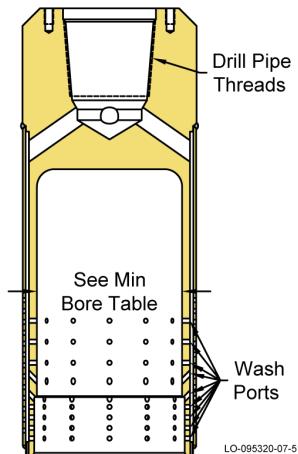
PREVIEW DRAFT**Figure 43: Installation of 11 Nom Jetting Tool****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**2.3.4.1****Washout Before Landing the Seal Assembly**

1. Examine the **Wash Tool**. Make sure:
 - the bore is clean and there is no debris
 - all threads are clean and not damaged
 - all wash ports and drilled flow ports are clean and clogged
 - the rig is lined up to pump clean water through the Wash Tool

11" Nom Jetting Tool

**Figure 44: Wash Tool**

2. Orient the Wash Tool with the wash ports down.
3. Make up a joint of drill pipe to the top of the Wash Tool.
4. Measure the distance from the rig floor to the landing point and identify it on the landing joint with a horizontal paint mark. Put incremental paint marks the length of the landing point.
5. Open the lowermost annulus valve.
6. Lower the Wash Tool to 3 ft [1 m] below the rotary table.
7. Do a visual flow check while pumping at the minimum pump rate to make sure the Wash Tool correctly operates.
8. Increase the pump rate to a minimum of 200 GPM or as directed by the Drilling Supervisor.
9. Slowly lower the Wash Tool through the BOP Stack until it touches the Casing Hanger. Measure and record the depth while the Wash Tool is lowered.
10. Lift the Wash Tool approximately 2.00 in [50.8 mm] from the Casing Hanger.

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-
11. Put a horizontal paint mark on the OD of the drill pipe level with the rig floor.

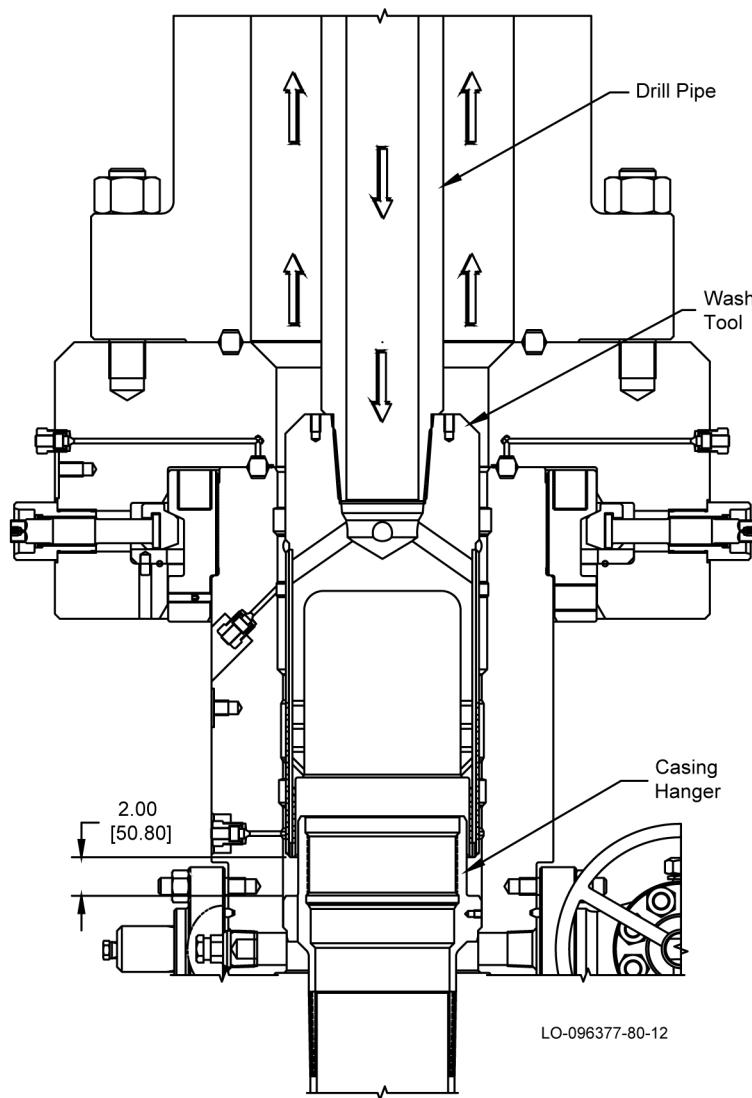


Figure 45: Find the Wash Tool Travel

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12.

**Caution**

A Wash Tool operation that has too much movement causes damage to the equipment. Make sure the Wash Tool is not reciprocated below the maximum "wash depth" mark on the drill pipe.

Turn the Wash Tool at approximately 10 RPM.

13. Pump fresh fluid through the Wash Tool and take returns through the lowermost annulus valve until clear returns are seen.
14. When the returns are clean and there is no debris, shut down the pumps and allow the BOP Stack to drain.
15. Retrieve the Wash Tool to the rig floor.
16. Close the lowermost annulus valve.
17. Clean, lubricate, and put the Wash Tool in storage as necessary.

2.3.5

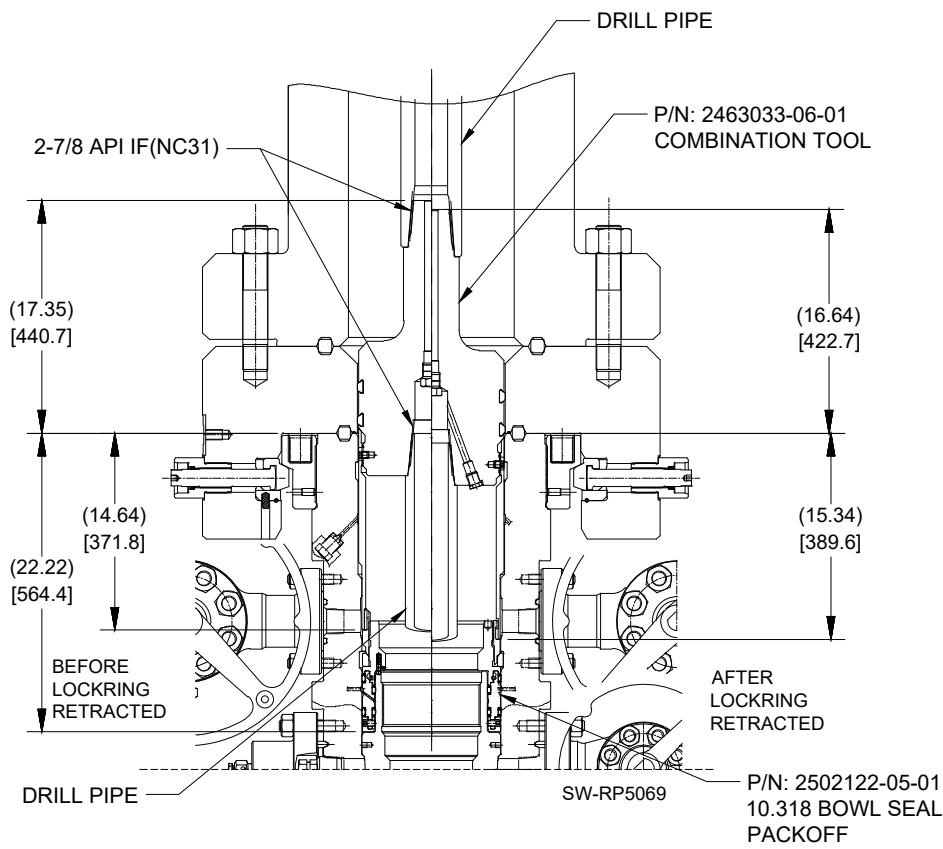
10.318 Bowl Seal Packoff**Table 17: Equipment**

Item	Qty	Description
F02	1	ASSEMBLY, IB SEAL PACKOFF, TYPE 'ADAPT- IND', F/ 10.318 IN NOM BOWL, W/ 9.250-4 TPI LH EXTERNAL STUB ACME RUNNING THD AND LUGS F/ RH J-SLOT TOOL W/ ENERGIZING RING AND IB LOCK RING, W/ TWO OUTER AND TWO INNER 'MEC' SEALS, W/ SIX ANTI-ROTATION PINS AT BTM, MIN BORE: 6.82 IN (4140 LAS 85 KSI MIN YS) TEMP RATING: 0 DEG F TO 250 DEG F MATERIAL SERVICE: SOUR SERVICE - SPECIAL W/ 10.318 OUTER AND 8.373 INNER 'MEC' SEALS. - WITH FOUR ANTI-ROTATION HOLES AT TOP. - WITH 7-3/4 NOM 'S' SEAL POCKET. PART# 2502122-05-01
R09	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM *****MAX HANGING LOAD WITH RUNNING TOOL SLEEVE P/N 2463035-02-01: 70,000 LBF MAX TORQUE: 6,000 LBF-FT*** PART# 2463033-06-01

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PREVIEW DRAFT**Table 18: System Tables**

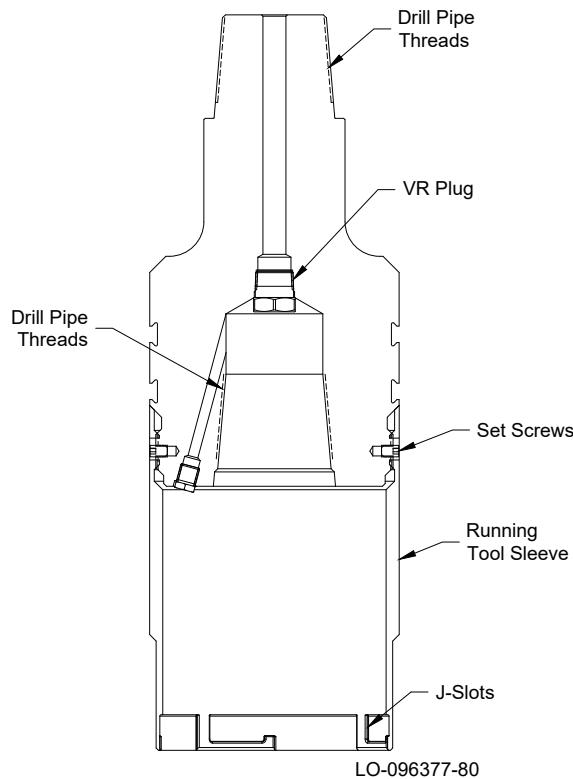
Measurement / Description	Dimension / Value
Seal Packoff Land-off	22.22 in (564.4 mm)
Seal Packoff Min. bore	6.82 in (173.2 mm)
Running Tool Sleeve Land-off before Lockring is energized	14.64 in (371.8 mm)
Combination Tool Stand-off before Lockring is energized	17.35 in (440.7 mm)
Running Tool Sleeve Land-off after Lockring is energized	15.34 in (389.6 mm)
Combination Tool Stand-off after Lockring is energized	16.64 in (422.7 mm)
'A' Distance from bottom of Seal Packoff to edge of paint mark	7.97 in (202.4 mm)
'B' Paint mark thickness	0.50 in (12.7 mm)
Test between the seals pressure	maximum 5,000 psi (34,500 kPa)

**Figure 46: Installation of 10.318 Bowl Seal Packoff Support Bushing with 11 Combination Tool****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**2.3.5.1****Install the Seal assembly**

1. Examine the **Combination Tool**. Make sure:
 - all threads are clean and not damaged
 - the elastomer seals and pipe plug are removed and set aside
 - the VR plug is correctly installed, if necessary
 - the running tool sleeve is correctly secured with the set screws
 - the j-slots are clean and there is no debris

**Figure 47: Combination Tool (Seal assembly Running Tool Configuration)**

2. Orient the Combination Tool with the running tool sleeve down.
3. Make up a joint of drill pipe to the top of the Combination Tool.
4. Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.

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-
5. Examine the **Seal assembly**. Make sure:

- the bore is clean and there is no debris
- all the elastomer seals are in place and not damaged
- all threads are clean and not damaged
- the scribe line is correctly identified with paint as necessary
- the lockring is correctly installed and sits below the OD of the body
- the energizing ring is correctly installed and touches the lockring; threads are clean, not damaged, and there is no debris
- the spring plunger pins are correctly installed and spring loaded pins correctly retract

**Seal Packoff
Type 'ADAPT-IND'**

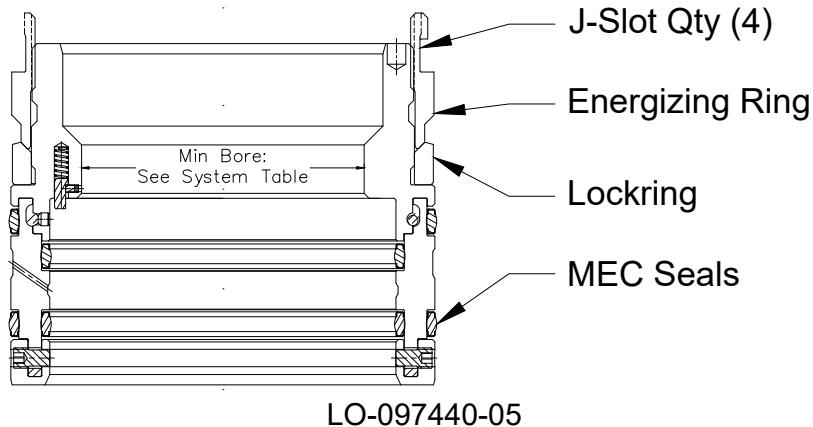


Figure 48: Seal assembly

-
6. Orient the Seal assembly with the energizing ring up.

-
- 7.



Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the ID and the OD seals with a light coat of oil or grease.

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8. Run drill pipe or heavy weight collars through the rotary table and hang off in the floor slips. This will be used for weight to set the Seal assembly into position.

**Note**

If necessary, weight can be used to help land the Seal assembly. The recommended weight to set the Seal Assembly is 3,000–6,000 lbs. Speak to Engineering for aid if more weight is necessary.

-
9. Carefully lower the Combination Tool onto the Seal assembly and turn the drill pipe 1/4 clockwise turn to fully engage the j-slots of the energizing ring.

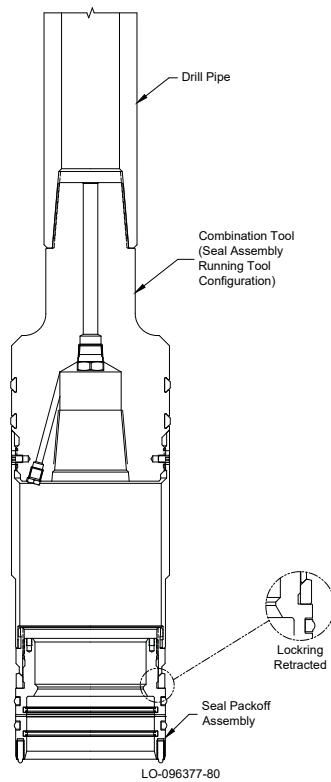


Figure 49: Seal assembly/ Combination Tool assembly

-
10. Do a scribe line check on the running tool sleeve and energizing ring for correct make up.
 11. Lift and suspend the Combination Tool/ Seal assembly over the drill pipe hung in the floor slips.
-

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12.

**Warning**

A failure to prevent damage to the seal surfaces of the internal seals can cause an NPT event. Make sure that all the seal surfaces are not damaged during makeup.

Lower the Combination Tool/ Seal assembly until the mating threads touch and make up the connection.

13.

**Caution**

A side outlet closure during the installation of the Seal Assembly can cause damage or a dangerous pressure condition. Make sure that the annulus valve below the load shoulder is open during the installation of the Seal Assembly.

Open the uppermost and lowermost annulus valves.

14. Put a horizontal paint mark on the tool OD at dim 'A' from the bottom of Seal assembly.

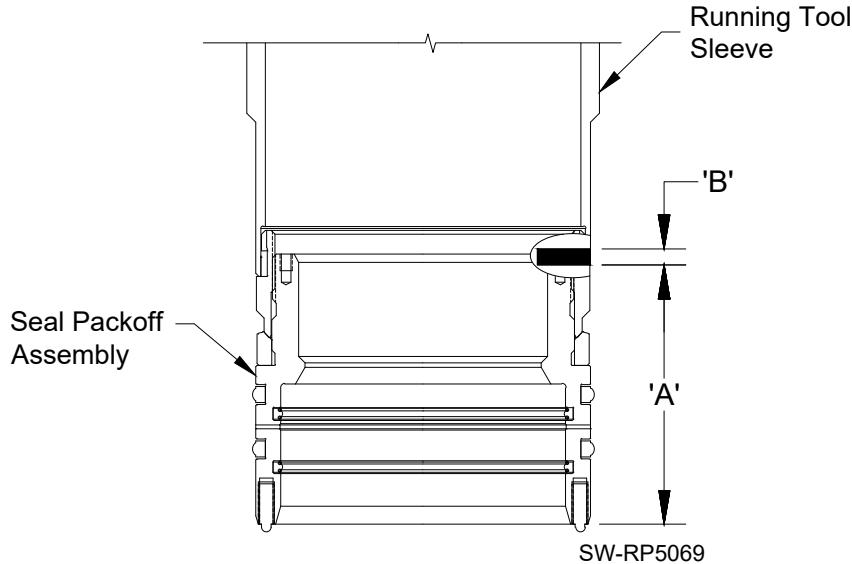


Figure 50: Horizontal Paint Mark

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-
15. Release the drill pipe from the floor slips and lower the Combination Tool/ Seal assembly through the BOP Stack. Land the Combination Tool/ Seal assembly at the landing point. Measure and record the depth while the Seal assembly is lowered.

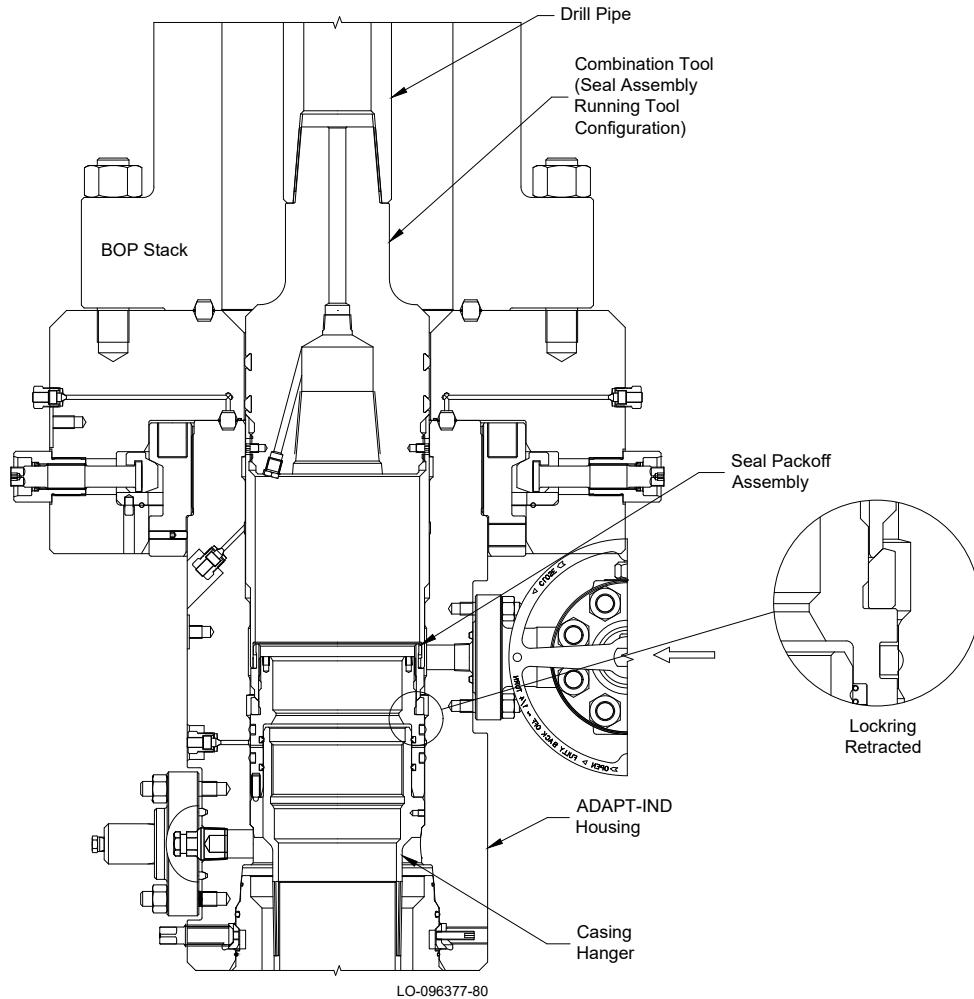


Figure 51: Seal assembly Landed

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-
16. Do a paint mark check in the uppermost annulus valve. This shows the Seal assembly is correctly landed.

**Note**

The paint mark should be in the center of the open annulus valve.

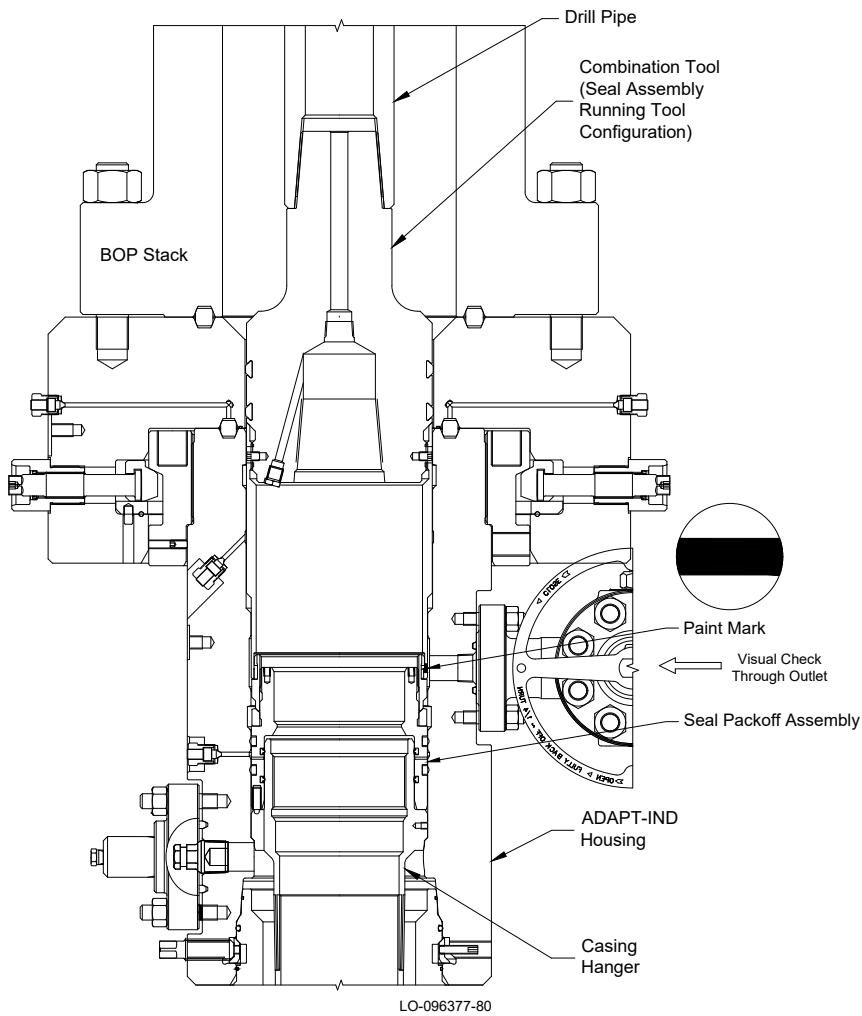


Figure 52: Seal assembly Landing Verification

-
17. Make sure the horizontal paint mark on the drill pipe is level with the rig floor to verify the Seal assembly/Combination Tool assembly is correctly landed.
 18. Close the uppermost and lowermost annulus valves.
-

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PREVIEW DRAFT**2.3.5.2****Set the Seal Assembly Lockring**

-
1. Put a horizontal paint mark on the OD of the drill pipe that is 0.75 in [19.1 mm] above the rig floor to monitor travel of the Combination Tool and a vertical paint mark to monitor the number of turns.
 2. —
-

**Caution**

Do not use Top Drive to engage or disengage the Running Tool. Using Top Drive can permanently damage the running threads of the equipment and will require damaged parts to be replaced.

Use chain tongs to turn the Combination Tool 1/4 counterclockwise turn to disengage the J-slots of the energizing ring.

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-
3. Continue to turn the Combination Tool 2-3/4 counterclockwise turns to expand the lockring into the mating groove.

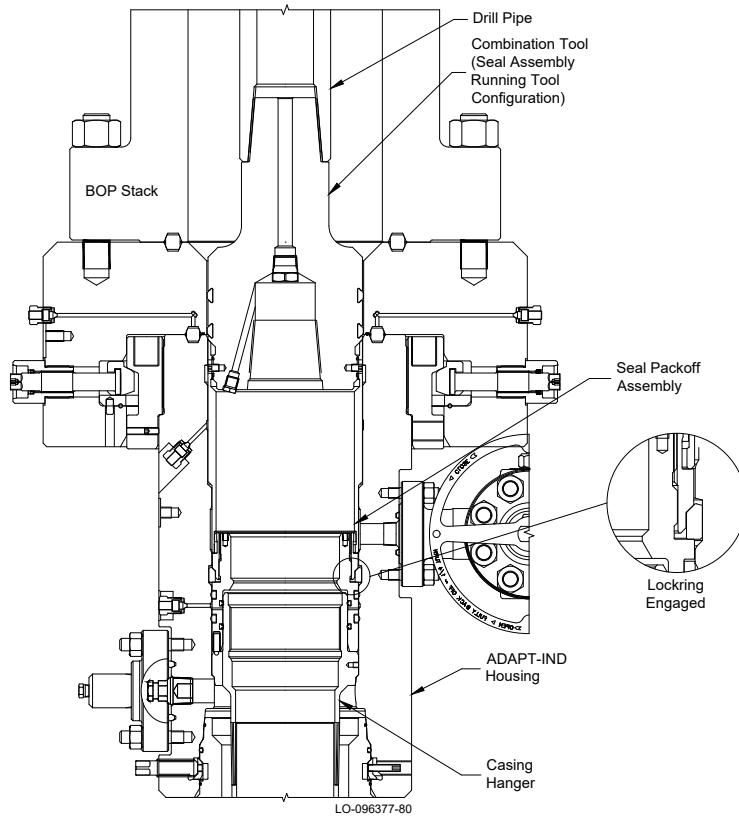


Figure 53: Seal Assembly Lockring Set

i Note

Load may be required to overcome friction. Torque must not exceed 500 ft-lbs.

i Note

The horizontal paint mark on the drill pipe/ landing joint should lower no more than 0.75-in [19.1-mm].

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4.**Caution****Maximum Pulling Load of the Running Tool is 30,000 lbs.**

Overpull Test (If Required):

- a. Using chain tongs, slowly rotate the Seal Assembly Running Tool 1/4 turn clockwise to a positive stop to engage the J-slots of the Energizing Ring.
 - b. Perform an overpull no more than 10,000 lbs (above the drill pipe weight hung off below the Running Tool, if any) to confirm the Lockring has properly engaged to its groove.
-

2.3.5.3**Test Between the Seals of the Seal Assembly**

-
1. Find the ports for the seal test and remove the two fittings.
-

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-
2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.

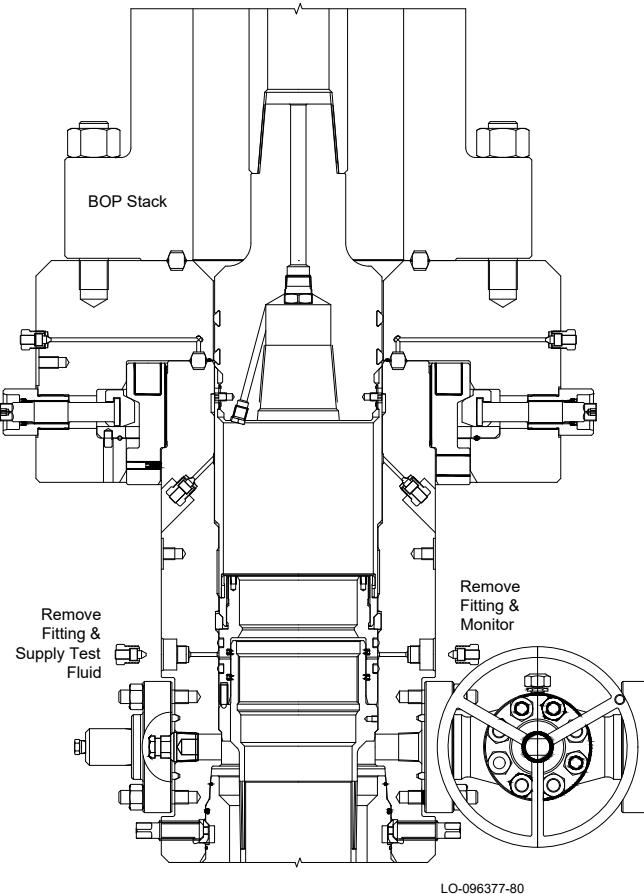


Figure 54: Continuity Test

-
3. When a continuous stream is seen from the open port, re-install the fitting.
-

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4.

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to supply test fluid to the maximum rated working pressure of Casing Hanger neck or Casing Head Housing — whichever is less.

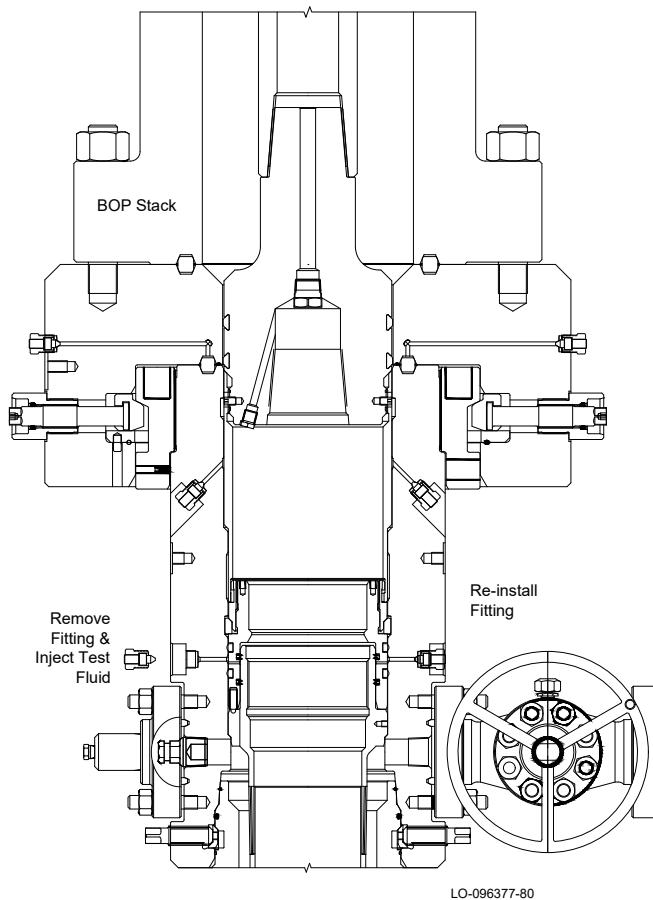


Figure 55: Test Between the Seals of the Seal Assembly

**Note**

See stage drawings or system tables for technical parameters.

5. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or refer to customer requirements.

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-
6. When the test is complete, carefully bleed off all test pressure and remove the hydraulic test pump.
 7. Re-install the fitting.
 8. Lift straight up to retrieve the Combination Tool to the rig floor and then remove it from the drill pipe.
 9. Clean, lubricate, and put the Combination Tool in storage as necessary.
-

2.3.5.4 **Retrieval of the Seal Assembly**

**Caution**

This section should be followed ONLY in the event retrieval of the Seal Assembly is necessary. If the Seal Assembly was properly landed, skip this section.

-
1. Open the uppermost annulus valve.
-

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-
2. Make up a joint of drill pipe to the top of the **Combination Tool**.

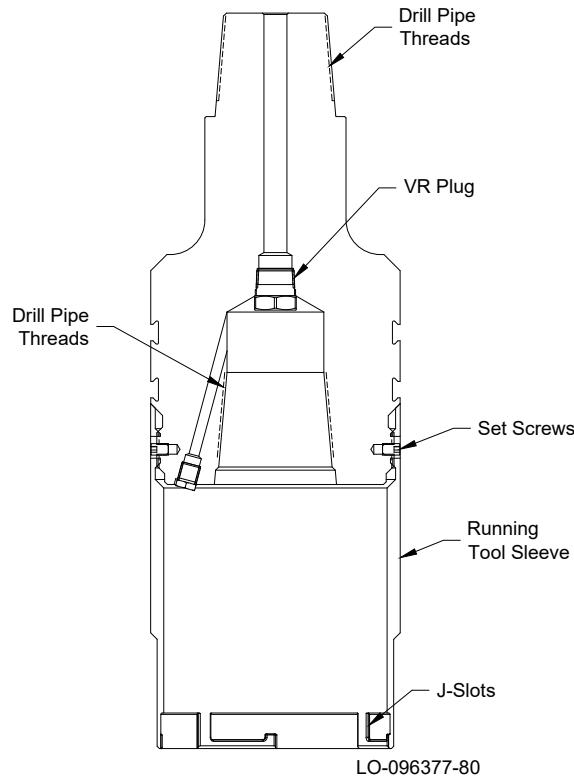


Figure 56: Combination Tool (Seal Assembly Running Tool Configuration)

-
3. Lower the Combination Tool through BOP Stack and land it on top of the Seal Assembly.
 4. Turn the Combination Tool until it drops approximately 1-1/2 in and aligns with the j-slots of the energizing ring.
 5. Turn the Combination Tool 1/4 clockwise turn to fully engage the j-slots of the energizing ring.
-

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6.

**Warning**

Do not exceed 4 turns.

**Caution**

Do not use Top Drive to engage or disengage the Running Tool. Using Top Drive can permanently damage the running threads of the equipment and will require damaged parts to be replaced.

Use chain tongs to turn the Combination Tool 3 clockwise turns to release the lockring from the mating groove.

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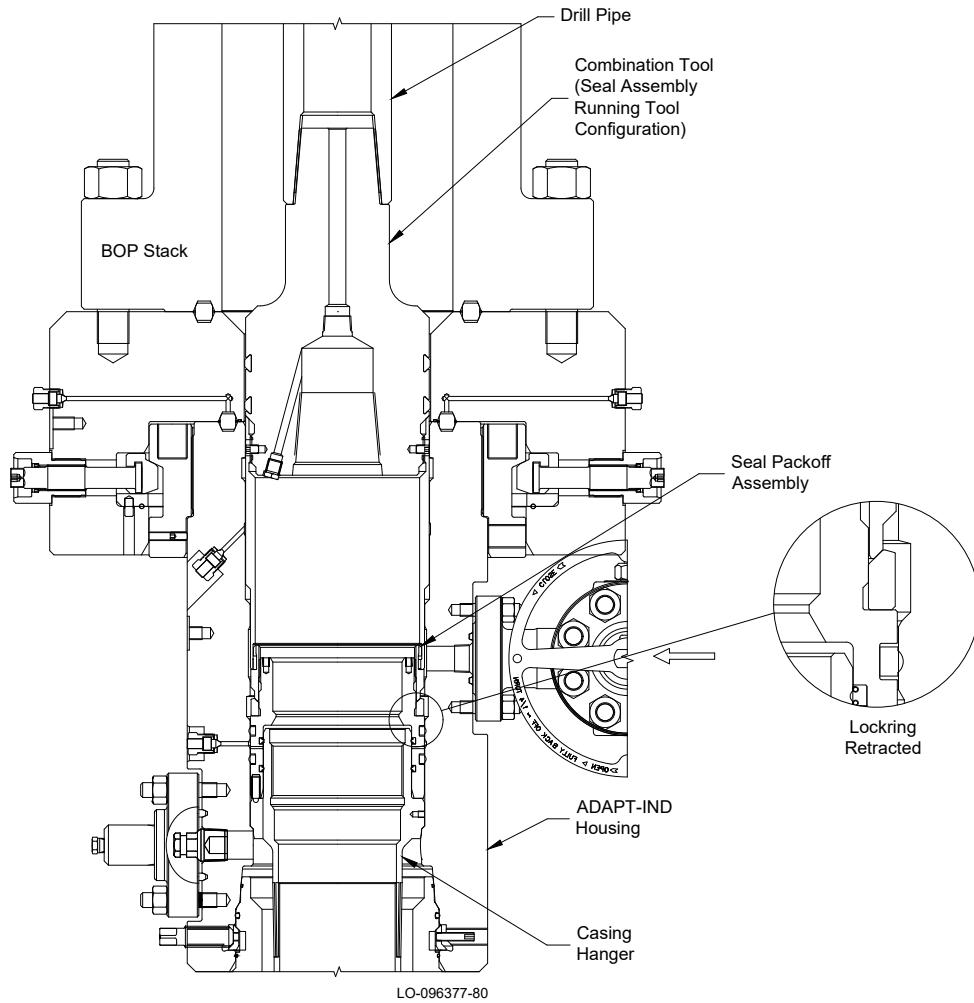
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Figure 57: Seal Assembly Lockring Disengaged

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-
7. Do a paint mark check in the uppermost annulus valve.
-

**Note**

The paint mark should be in the center of the open annulus valve.

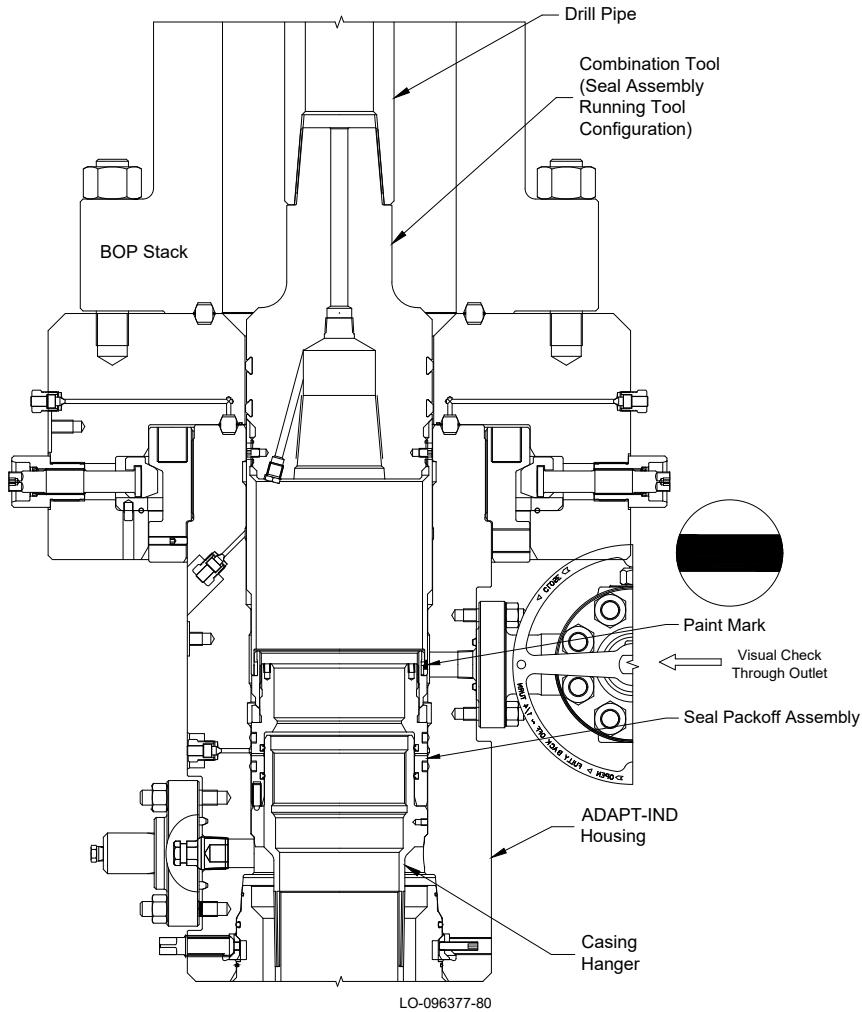


Figure 58: Visual Check Through Outlet

-
8. Do a vertical pull (maximum 4,000 lbs) to retrieve the Seal Assembly.
 9. Close the uppermost annulus valve.
 10. Turn the drill pipe 1/4 counterclockwise turn to remove the Seal Assembly from the Combination Tool.
 11. After the Seal Assembly is retrieved to the rig floor, replace the elastomer seals as necessary.
-

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PREVIEW DRAFT**2.3.6****Temporary Abandonment****2.3.6.1****11 Nom Dummy Hanger****Table 19: Equipment**

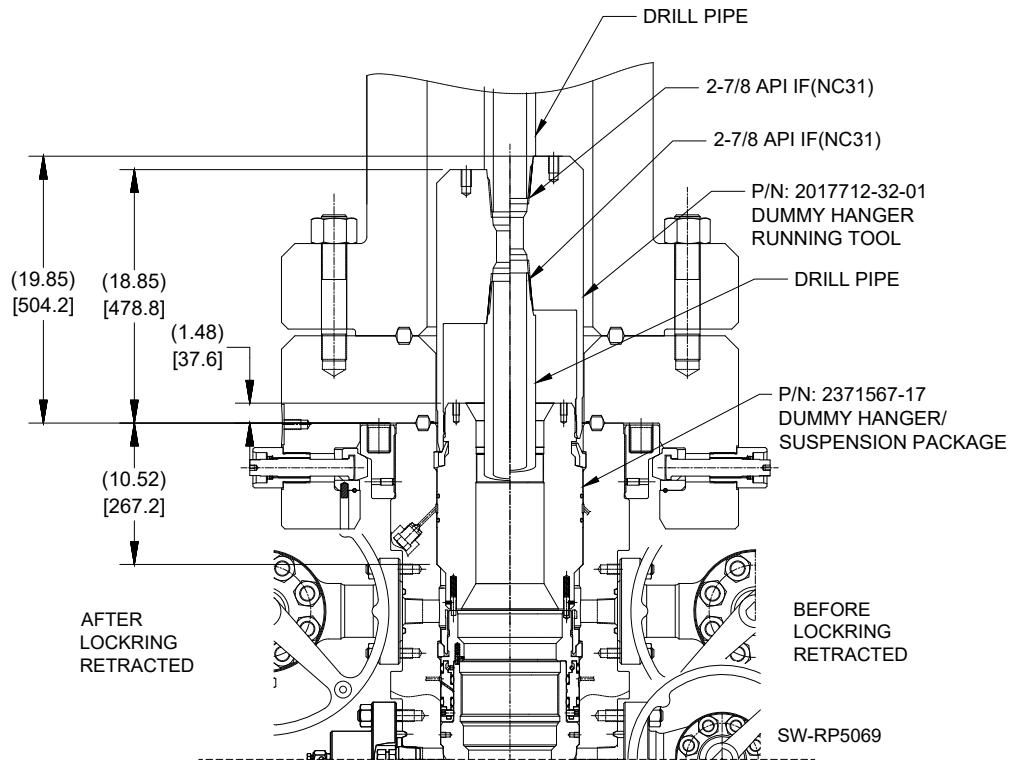
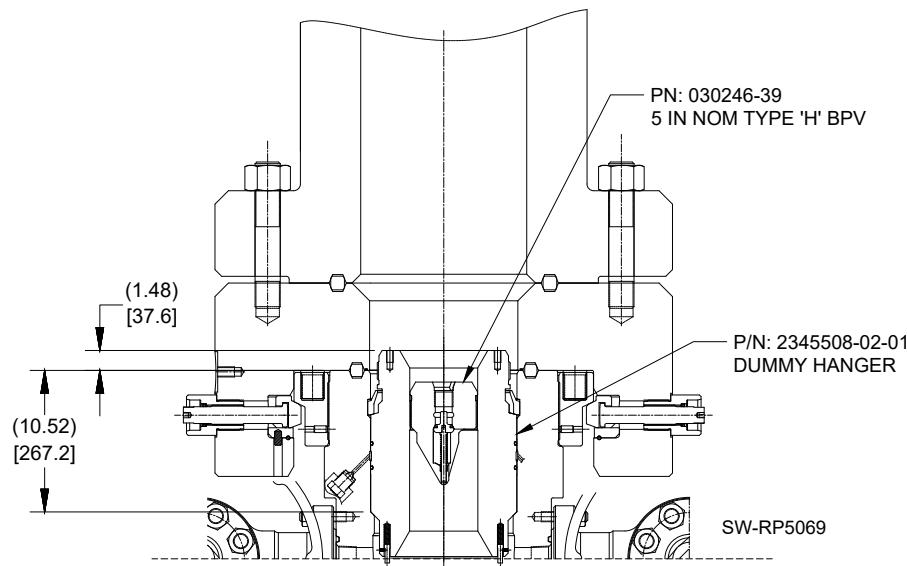
Item	Qty	Description
H00	1	SUSPENSION PACKAGE WITH TWCV, DUMMY HANGER AND REDRESS KITS FOR MATERIAL CLASS: DD
		PART# 2371567-17
R22	1	RUNNING TOOL, 11 NOM DUMMY HANGER & FRAC SLEEVE, WITH 2-7/8 API IF NC31 BOX THREAD TOP X B0TTOM, WITH 9.875-4 TPI LH STUB ACME INTERNALTHREAD, MIN BORE: 1.97
		PART# 2017712-32-01

Table 20: System Tables

Measurement / Description	Dimension / Value
Dummy Hanger Land-off	10.52 in (267.2 mm)
Dummy Hanger Stand-off	1.48 in (37.6 mm)
Dummy Hanger min.Bore	4.930 in (125.22 mm)
Dummy Hanger Running Tool Stand-off when lockring is retracted	18.85 in (478.7 mm)
Dummy Hanger Running Tool Stand-off when lockring is expanded	19.85 in (504.2 mm)
Test between the seals pressure	Maximum 5,000 psi (34,500 kPa)

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PREVIEW DRAFT**Figure 59: Installation of 11 Nom Dummy Hanger****Figure 60: Install BPV****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**2.3.6.1.1****Install the Dummy Hanger****Note**

It is recommended to hang off at least 2 stands of drill pipe underneath the Dummy Hanger Running Tool to help pull the Dummy Hanger into the Casing Head Housing while running with minimal tilt. Always check the tool joint outer diameter will drift inside the casing it is being run inside

1. Examine the Dummy Hanger Assembly. Make sure:

- bore is clean and free of debris
 - all threads are clean and not damaged
 - seal(s) are in place, clean and not damaged
 - snap ring is in place and not damaged
 - Stub ACME threads have the appropriate thread start profile (grind back)
-

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-
2. Orient the Dummy Hanger with the running threads up.

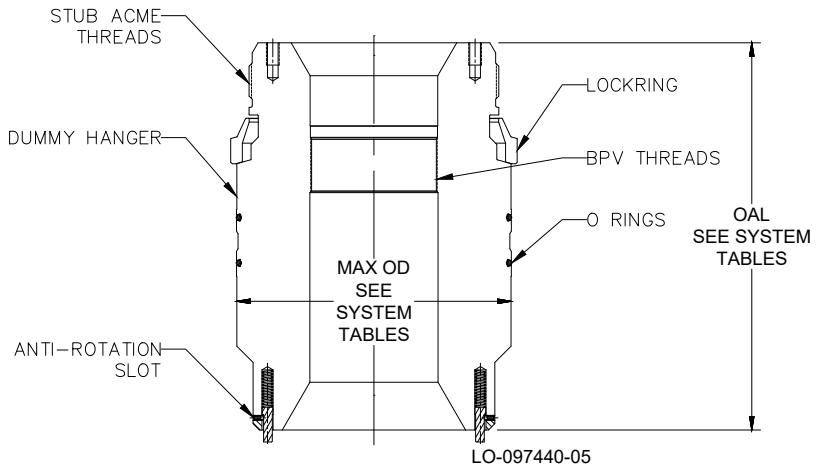


Figure 61: Dummy Hanger



Note

All ACME and stub ACME threads should be verified prior to acceptance or installation to make sure the blunt start feature is present and complies with bill of material requirements.

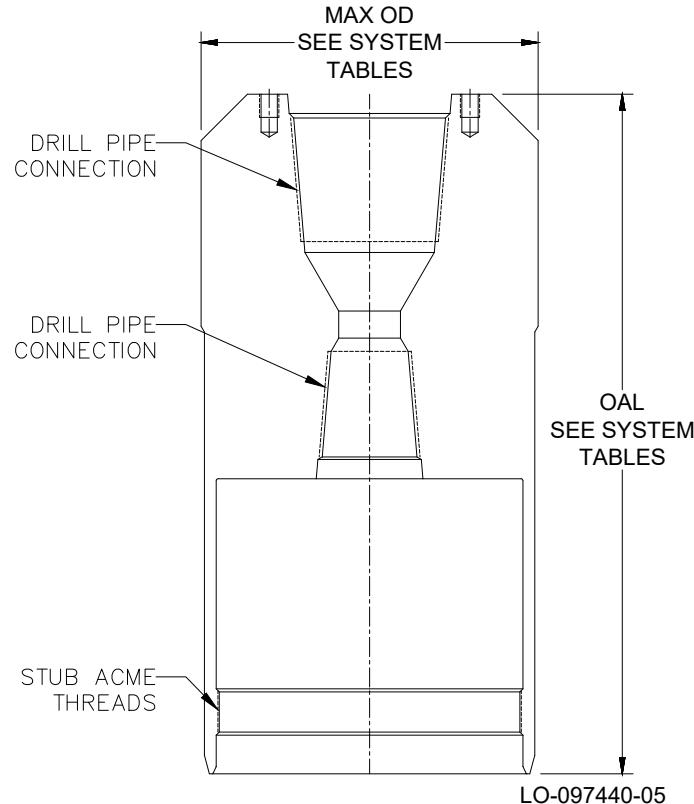


Figure 62: Male and Female ACME Thread Blunt Start

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PREVIEW DRAFT3. Examine the **Running Tool**. Make sure:

- bore is clean and free of debris
- all threads are clean and not damaged
- Stub ACME threads have the appropriate thread start profile (grind back)

**Figure 63: Dummy Hanger Running Tool****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**Note**

All ACME and stub ACME threads should be verified prior to acceptance or installation to make sure the blunt start feature is present and complies with bill of material requirements.



Figure 64: Male and Female ACME Thread Blunt Start

-
4. Verify the Land of Point (LOP) on the Dummy Hanger.

**Note**

See stage drawings or system tables for technical parameters.

-
5. Verify the dimension from the top of the Housing to the rig floor.
 6. Calculate and record the Dummy Hanger landing dimension. This is used to verify that the Dummy Hanger is landed correctly.
 7. Make up the correct length of drill pipe to the top of the Running Tool to land the Dummy Hanger.
 8.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the internal mating threads of the Running Tool and the external running threads of the Dummy Hanger with a light oil or grease.

-
9. Install the Lockring Installation Tool onto the Snapring of the Dummy Hanger. Compress the Snapring fully with the Installation Tool.
 10. Carefully lower the Running Tool onto the Dummy Hanger until the threads make contact.
-

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-
11. Make up the connection by first turning the Tool clockwise to align the threads then counterclockwise until the Tool fully engages the Snapring. Record the number of turns to make up the SART to the Dummy Hanger.
-

**Note**

Approximately 4–1/2 turns are necessary for full make up of the Dummy Hanger Running Tool (DHRT) to the Dummy Hanger.

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12.

**Caution**

**Do not apply torque to the connection of the Dummy Hanger to the DHRT during make up.
It will thread lock the assemblies together.**

With Running Tool fully engaged on Snapring, remove the Lockring Installation Tool from the Dummy Hanger Snapring.

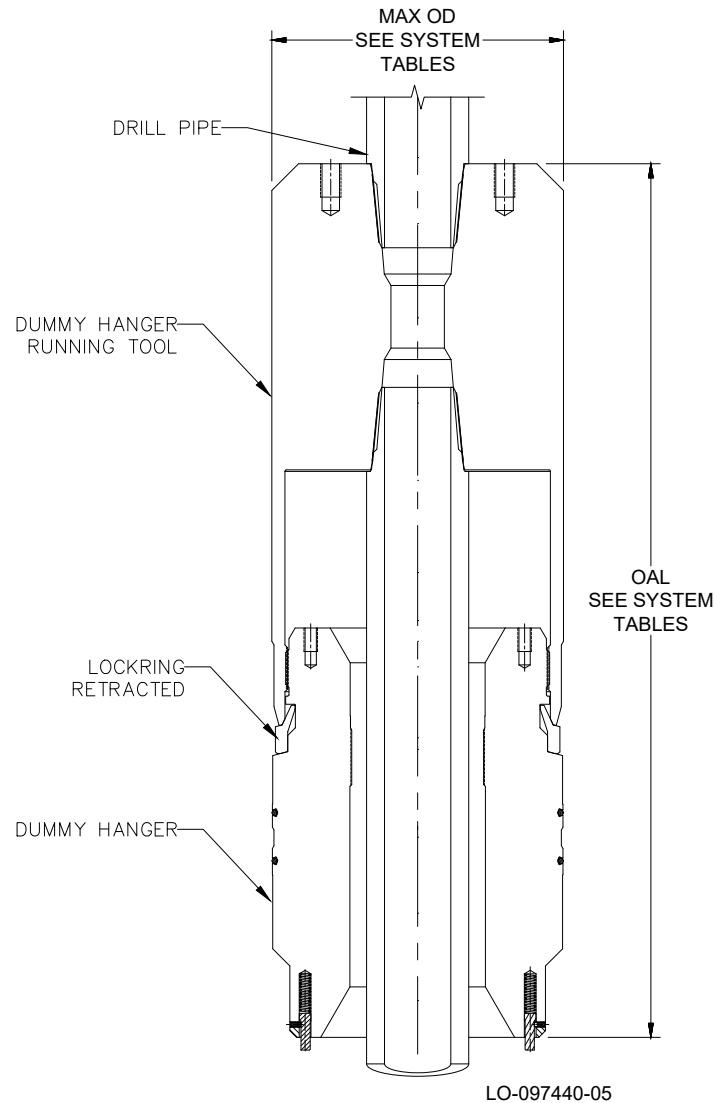


Figure 65: Dummy Hanger/ Dummy Hanger Running Tool Assembly

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13.

**Caution**

Make sure split Snapring is still flush or below the O.D. of the Dummy Hanger body. If not, re-install Installation Tool and repeat.

**Note**

The Lockring Installation Tool will assist in minimizing the length of time that the lockring is compressed

Run a short string of drill pipe through the rotary table and hang off in the floor slips. Record the drill pipe string weight.

**Note**

The minimum string weight necessary to set the Dummy Hanger into the housing is 10,000 lbs. It is recommended to use 20,000 lbs.

14. Lift and make up the Dummy Hanger landing assembly to the drill pipe string that is hung off in the rig floor.

**Note**

Make sure that the connection of the drill pipe to the Running Tool and the other drill pipe connections in the landing assembly are torqued correctly. These connections must not loosen in the BOP when the Dummy Hanger is released.

15. Make sure with the drilling supervisor that the well is static.

16. Open the side outlet valve on the Housing and drain the (BOP) stack.

17. Install the Valve Removal (VR) plug with the anti-rotation pin through the correct side outlet valve and make it up into the side outlet threads of the wellhead.

18.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lightly lubricate the OD seals with oil or a light grease.

19. If the Drilling Adapter is provided with lockscrews make sure that they are fully retracted from the bore.

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-
20. Carefully lower Dummy Hanger/Running Tool Assembly through BOP stack until it lands in the correct position in the Compact Housing. If the Dummy Hanger lands on top of anti-rotation pin, pick up the Dummy Hanger and rotate assembly up to 90 degrees to the right to engage pin into slot on bottom of Dummy Hanger.

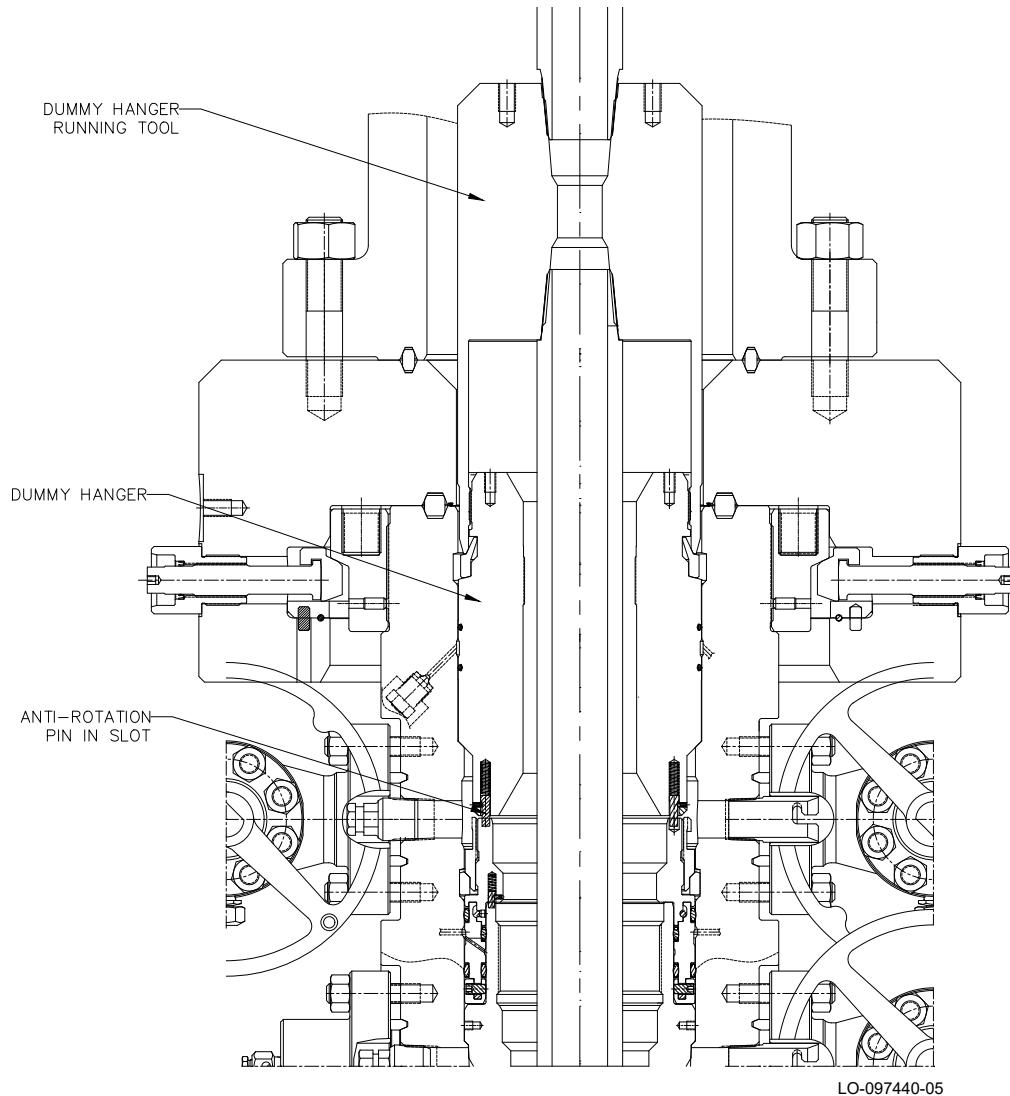


Figure 66: Dummy Hanger Landed

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PREVIEW DRAFT**2.3.6.1.2****Set the Dummy Hanger Snapping**

1.**Warning**

Prior to opening the outlet for visual inspection, ensure the well is safe and under control.

Using a paint marker, put a horizontal mark on the OD of the drill pipe that is level with the rig floor to monitor travel of the Dummy Hanger Running Tool and a vertical mark to monitor the number of turns.

**Note**

Confirm the Dummy Hanger has properly landed by looking through the upper side outlet of the Housing.

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-
2. Using chain tongs, back out the Running Tool approximately 2–1/2 turns clockwise to allow split Snapring to expand into its groove in the Housing.
-

**Note**

The expected torque would be below 5,000 ft-lbs.

**Note**

Horizontal mark should raise no more than 0.75" [19.1 mm].

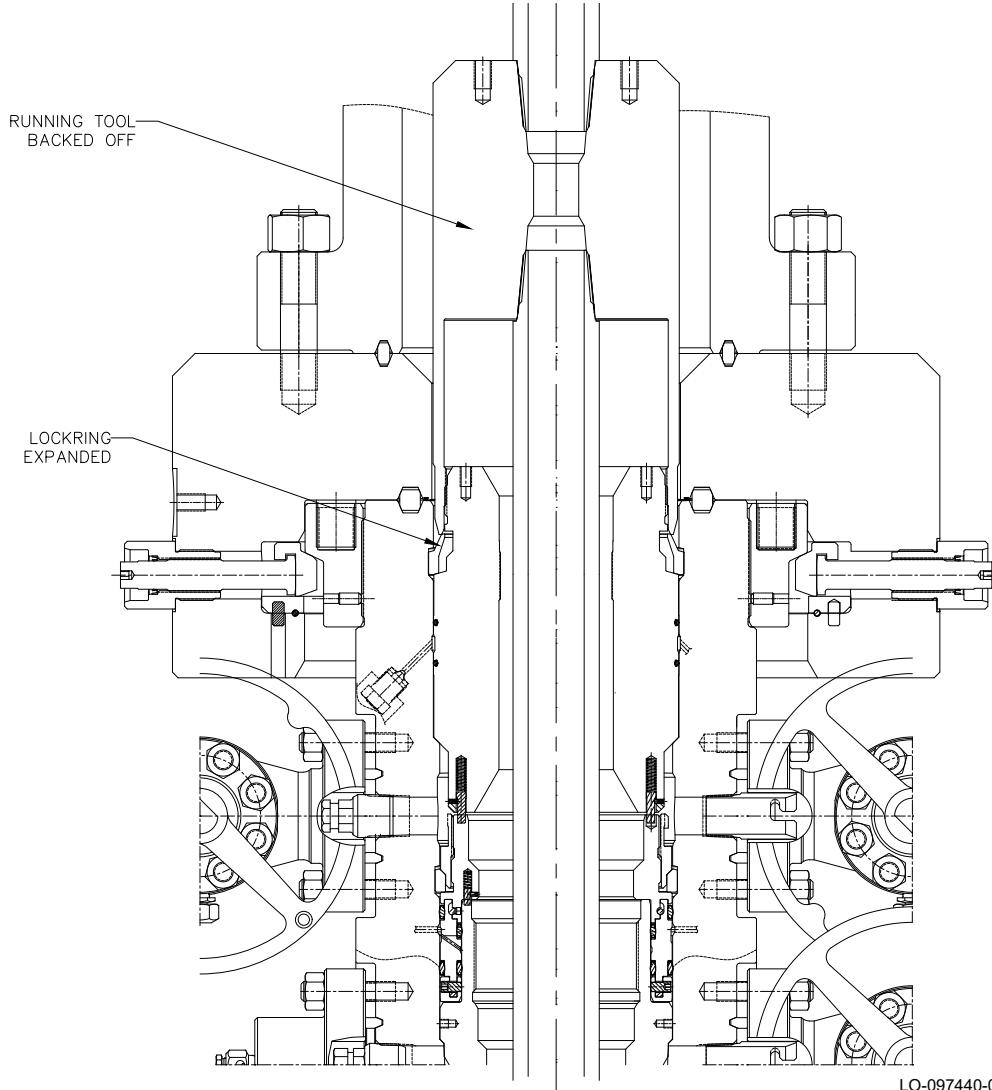


Figure 67: Set the Snapring

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-
3. Perform an overpull of **50,000 lbs** above neutral weight, to make sure that the Snapring is correctly engaged into the Housing. Monitor for vertical movement in the drill pipe.
-

4.

**Caution**

The split Snapring must be expanded into the lockdown groove before pressure testing commences. Failure to do this can result in damage to the Dummy Hanger.

Close lower outlet on Housing; do not retrieve Running Tool at this stage.

2.3.6.1.3 **Test Between the Seals of the Dummy Hanger**

-
1. Locate the ports for testing between the seals of the Dummy Hanger and remove both of the fittings.
-
2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.
-
3. Once a continuous stream is seen from the open port, re-install the fitting.
-
- 4.
-

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to supply fluid to the **maximum rated working pressure of the Dummy Hanger neck**.

**Note**

See stage drawings or system tables for technical parameters.

5. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or as told by the Drilling Supervisor.
-
6. After a satisfactory test is completed, carefully bleed off all test pressure and remove the test pump.
-
7. Re-install the fitting.
-
8. Turn the drill pipe approximately 3 clockwise turns or until the Dummy Hanger Running Tool comes free from the Dummy Hanger.
-

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-
9. Retrieve the Dummy Hanger Running Tool to the rig floor by lifting straight up and then remove it from the drill pipe.
-

**Note**

Installation and/or removal of a Cameron BPV/ TWC to be performed only by a qualified Cameron Service Technician.

10. Install a BPV into the Dummy Hanger prep.
 11. With the Wellhead is safe and under control, nipple down the BOP Stack.
 12. Install the Threaded Flange to the Housing.
-

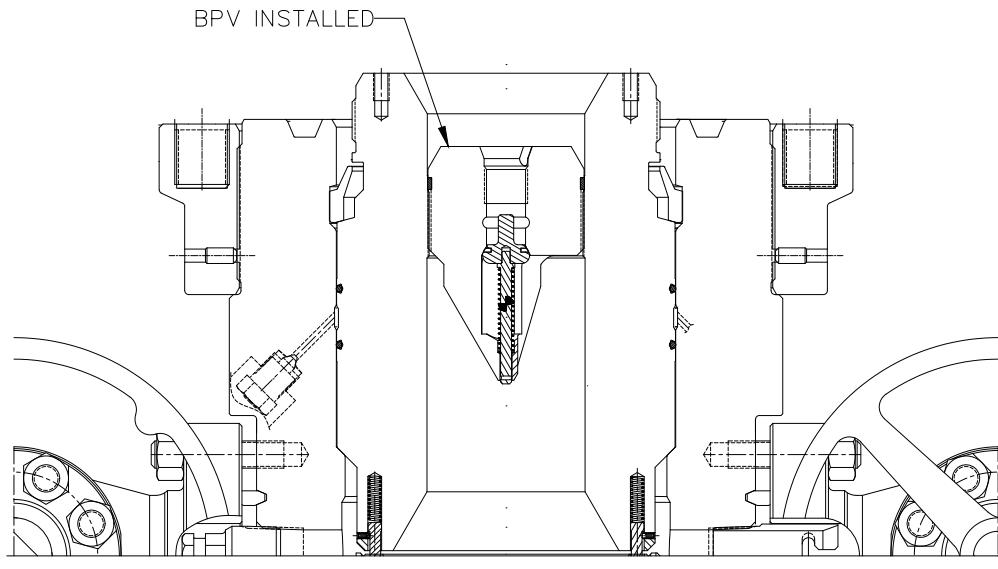


Figure 68: BPV installed

-
13. Clean, lubricate, and put the Dummy Hanger Running Tool in storage as necessary.
-

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PREVIEW DRAFT**2.3.6.1.4****Install the Blind Flange**

-
1. Examine the **Blind Flange**. Make sure:
 - the fittings are correctly installed and not damaged
 - the ring groove and seal areas are clean and not damaged
 2. Orient the Blind Flange with the ring groove down.
 - 3.
-

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Clean the mating ring grooves of the wellhead and Blind Flange. Lubricate each groove with a light coat of oil or grease.

4. Install a new **Ring Gasket** into the ring groove of the wellhead.
 5. Lift and suspend the Blind Flange over the wellhead, making sure it is level.
 6. Align the bolts of the wellhead as required (two holed). Carefully lower the Blind Flange and land it on the wellhead.
 7. Make up the connection using the appropriate **studs and nuts** in an alternating cross fashion to the recommended torque referenced in the chart in the back of this procedure.
-

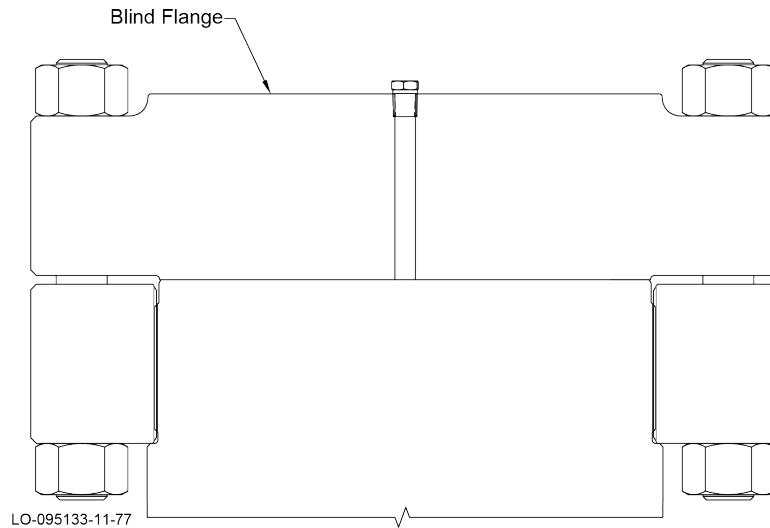


Figure 69: Blind Flange Installed

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PREVIEW DRAFT**2.3.6.1.5****Remove the Blind Flange**

-
1. Make sure the well is safe and under control.
 2. Locate the vent port on the Blind Flange and carefully bleed off any residual pressure that may be trapped in the void below the Flange.
 3. Once the pressure has been bled off, nipple down the Blind Flange.
 4. Clean, grease and store the Blind Flange as required.
 5. With the Blind Flange safely out of the way, inspect the wellhead and report any damages.
-

2.3.6.1.6**Retrieval of Dummy Hanger**

-
1. Make up a joint of drill pipe to the top of the Dummy Hanger Running Tool.
 2. Lower the Running Tool until the threads of the Running Tool and Dummy Hanger make contact.
 3. Turn the Tool counterclockwise approximately 5 turns until the tool fully engages the Snapping and a firm stop is encountered. Back off from this point a maximum 1/8 of a turn.
 4. Retrieve the Dummy Hanger by pulling vertically (approximately 3,000 lbs).
 5. To remove Dummy Hanger from the Running Tool, install Lockring Installation Tool and fully compress the Snapping.
 6. Remove the Extended VR Plug from the Housing Outlet.
-

**Note**

Elastomer seals must be replaced prior to reinstalling/ running equipment.

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2.4

4-1/2 OD Tubing

2.4.1

11 Nom Combination Tool

Table 21: Equipment

Item	Qty	Description
R09	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM *****MAX HANGING LOAD WITH RUNNING TOOL SLEEVE P/N 2463035-02-01: 70,000 LBF MAX TORQUE: 6,000 LBF-FT***
		PART# 2463033-06-01

Table 22: System Tables

Measurement / Description	Dimension / Value
Land-off	10.52 in (267.2 mm)
BOP Test Pressure	5,000 psi (34,500 kPa)

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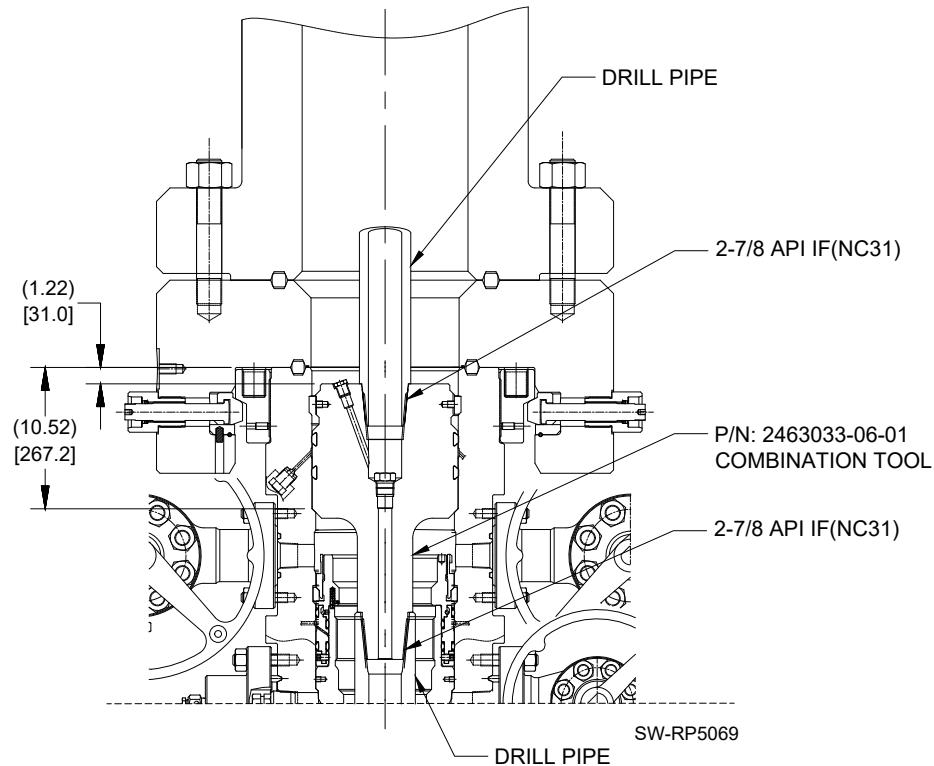
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Figure 70: Installation of 11 Nom Combination Tool

2.4.1.1 Test the BOP Stack

i Note

Previously used Test Plugs must be inspected for damage due to wear. Where warranted such as highly deviated wells the Test Plugs must be checked periodically to ensure integrity.

i Note

Immediately after make-up of the BOP stack and periodically during the drilling of the hole for the next casing string, the BOP stack (connections and rams) must be tested.

i Note

During the drilling operations, the Ring Gasket can be tested through the Drilling Adapter instead of the Test Plug. See [2.2.3.2: Test the Connection of the Drilling Adapter](#) for the test procedure.

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-
1. Examine the **Combination Tool**. Make sure:
 - the elastomer seal is in place and not damaged
 - all threads are clean and not damaged
 - the pipe plug is
 - correctly installed for testing via chokes / kill lines
 - removed for testing via drill pipe
 - the VR plug is correctly installed
 - the running tool sleeve and set screws are removed and set aside

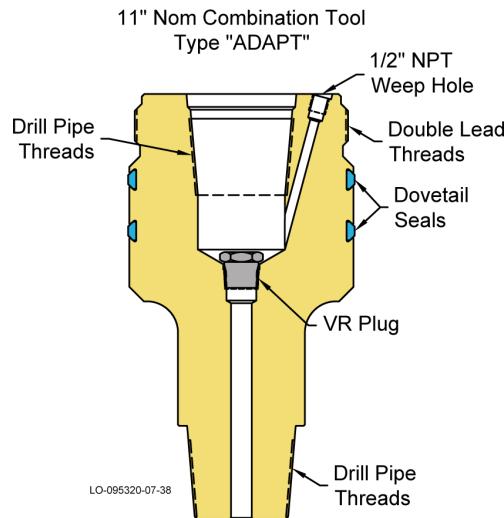


Figure 71: Combination Tool (Test Plug Configuration)

i Note

The pressure test can be performed by applying pressure down the centre of the drill pipe handling joint. This requires the removal of the upper-side pipe plug from the BOP Test Plug and keep installed VR plug inside the BOP Test Plug.

i Note

If the pressure test is performed by applying pressure thru exit outlets of BOP stack / Riser Adapter and the upper side outlet valves on the Housing cannot be open to monitor any fluid passing, remove the VR Plug inside the BOP Test Plug and keep installed the upper-side pipe plug. Any leak pass the O-ring will come up thru the pipe during testing.

i Note

Install VR plug inside the BOP Test Tool if the Blind Rams are tested.

-
2. Orient the Combination Tool with the double lead threads up.
-

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3.

**Warning**

A minimum of one joint of drill pipe is required on the bottom of the Test Plug to make sure the Test Plug remains centralized.

Make up a joint of drill pipe to the top of the Combination Tool.

4.

Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.

5.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the elastomer seals of the Combination Tool with a light coat of oil or grease.

6.

Open the uppermost annulus valve to drain fluid and leave it open.

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-
7. Slowly lower the Combination Tool through the BOP Stack and land it at the landing point. Measure and record the depth while the Combination Tool is lowered.

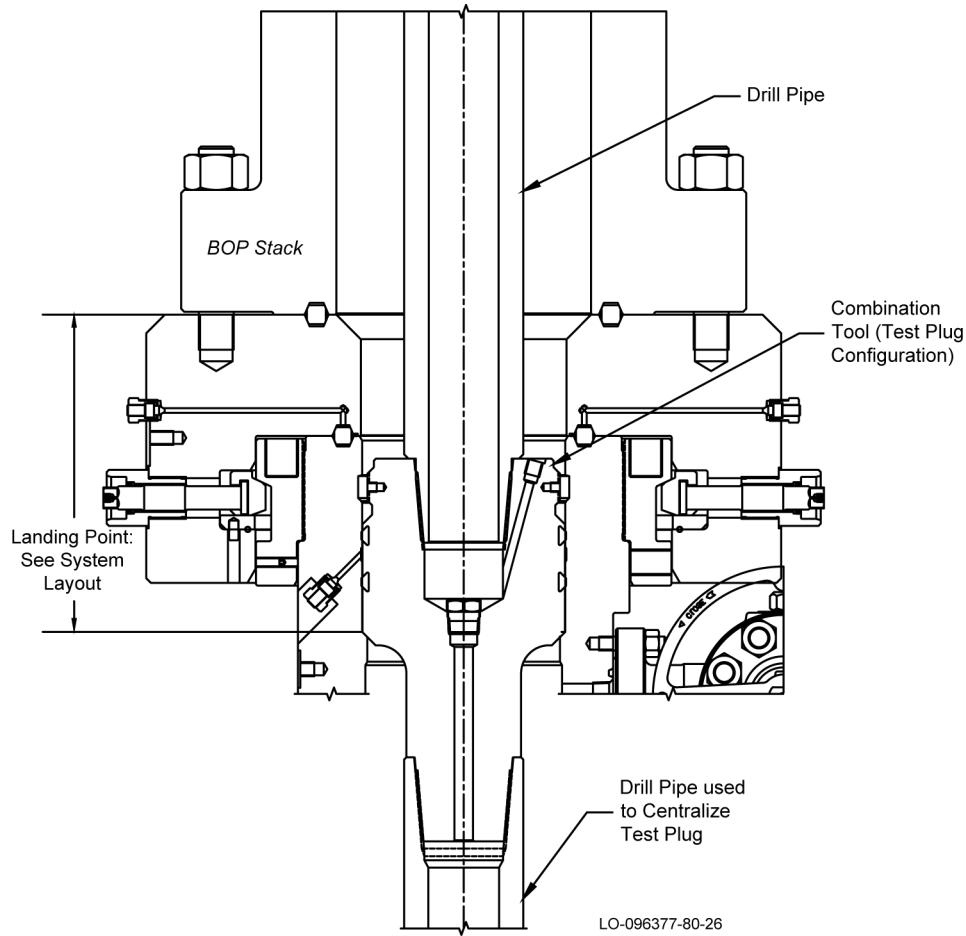


Figure 72: Combination Tool Landed

-
8. Close the BOP rams on the drill pipe and test to **the maximum rated working pressure of the Casing Head Housing top connection**.



Note

Refer to stage drawing or system table for technical information.

-
9. Monitor the open annulus valve for signs of leakage.
-

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-
10. When a satisfactory test is complete, release the test pressure and open the BOP rams.
 11. Remove as much fluid from the BOP Stack as possible; refer to the rig procedure.
 12. Retrieve the Combination Tool slowly to prevent damage to the elastomer seals.
 13. Close the annulus valve.
-

**Note**

It may be necessary to open the annulus valve when starting to retrieve the Test Plug to relieve any vacuum that may occur.

14. Clean and lubricate the Combination Tool.
 15. Put a protective cover on the threads of the Combination Tool and put it in storage as necessary.
 16. Repeat as necessary during drilling operations.
-

2.4.2 Short Wear Bushing

Table 23: Equipment

Item	Qty	Description
R06	1	ASSY, WELDESS SHORT WEAR BUSHING F/ 11 NOM 5K "TYPE 'ADAPT FAMILY' F/ NST, IND & SGL", W/ DOUBLE LEAD RUNNING THREAD W/ TWO EXT O-RINGS, MIN BORE: 9.92 IN, 11.00 IN OAL (STANDARD / NACE SERVICE) (4140 LAS, HARDNESS = 248-321 HBW)
		PART# 2463031-01-01
R09	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM *****MAX HANGING LOAD WITH RUNNING TOOL SLEEVE P/N 2463035-02-01: 70,000 LBF MAX TORQUE: 6,000 LBF-FT***
		PART# 2463033-06-01

Table 24: System Tables

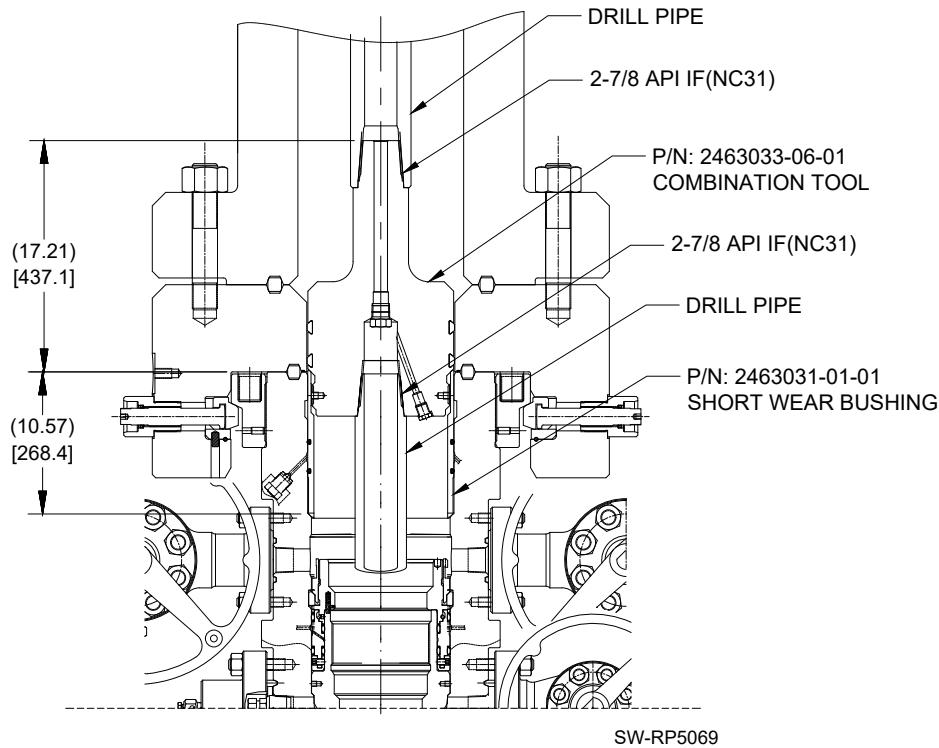
Measurement / Description	Dimension / Value
Wear Bushing Min.bore	9.92 in (252.0 mm)
Wear Bushing Land-off	10.57 in (268.4 mm)

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Combination Tool Stand-off	17.21 in (437.1 mm)
----------------------------	---------------------



SW-RP5069

Figure 73: Installation of 11 Nom Combination Tool with Short Wear Bushing**2.4.2.1****Run the Wear Bushing Before Drilling****Warning**

Previously used Wear Bushings must be inspected for damage and significant reduction in wall thickness due to wear. Where warranted such as highly deviated wells the Wear Bushing must be checked periodically to ensure integrity.

**Caution**

Always use a Wear Bushing while drilling to protect the sealing areas and load shoulder from damage by the drill bit or rotating drill pipe. The Wear Bushing must be retrieved prior to running the casing/tubing.

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-
1. Examine the **Combination Tool**. Make sure:
 - all threads are clean and not damaged
 - the running tool sleeve and set screws are removed and set aside

11" Nom Combination Tool
Type "ADAPT"
(Wear Bushing Running Tool Configuration)

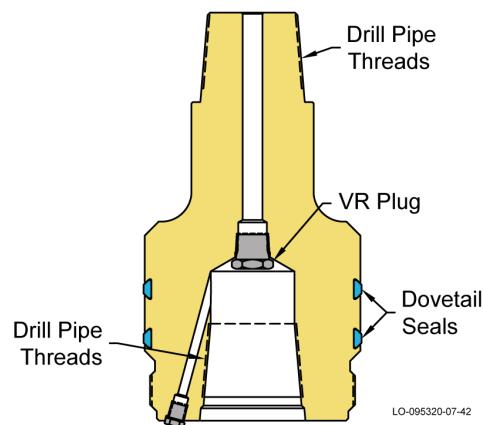


Figure 74: Combination Tool (Wear Bushing Running Tool Configuration)

-
2. Orient the Combination Tool with the double lead threads down.
 3. Make up a joint of drill pipe to the top of the Combination Tool.
 4. Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.
-

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-
5. Examine the **Wear Bushing**. Make sure:

- the bore is clean and there is no debris
- the o-rings are correctly installed, clean, and not damaged
- all threads are clean and not damaged

**11" Nom Short Wear Bushing
Type "ADAPT"**

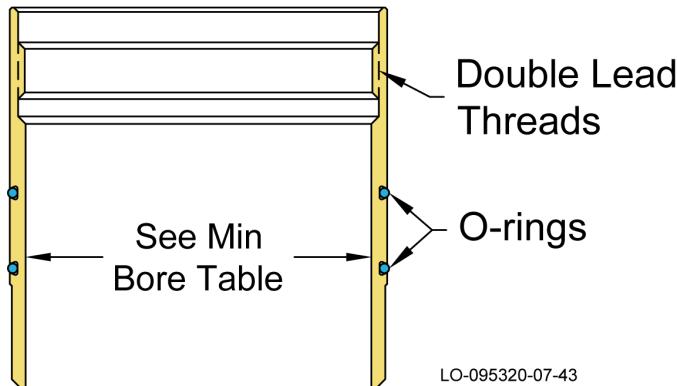


Figure 75: Wear Bushing

-
6. Orient the Wear Bushing with the double lead threads up.

7.



Warning

Too much grease applied on grooves can cause O-ring rolling out of the Wear Bushing.

Lubricate the o-rings of the Wear Bushing with a light coat of oil or grease.

8.



Warning

Do not torque the connection between the Wear Bushing Running Tool and Wear Bushing.

Lower the Combination Tool into the Wear Bushing and turn the drill pipe counterclockwise until thread 'jump' can be felt, then approximately 1 clockwise turn to a positive stop to thread the Combination Tool into the Wear Bushing.

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-
9. Slowly lower the Combination Tool/ Wear Bushing assembly through the BOP Stack and land it at the landing point. Measure and record the depth while the Combination Tool/ Wear Bushing assembly is lowered.

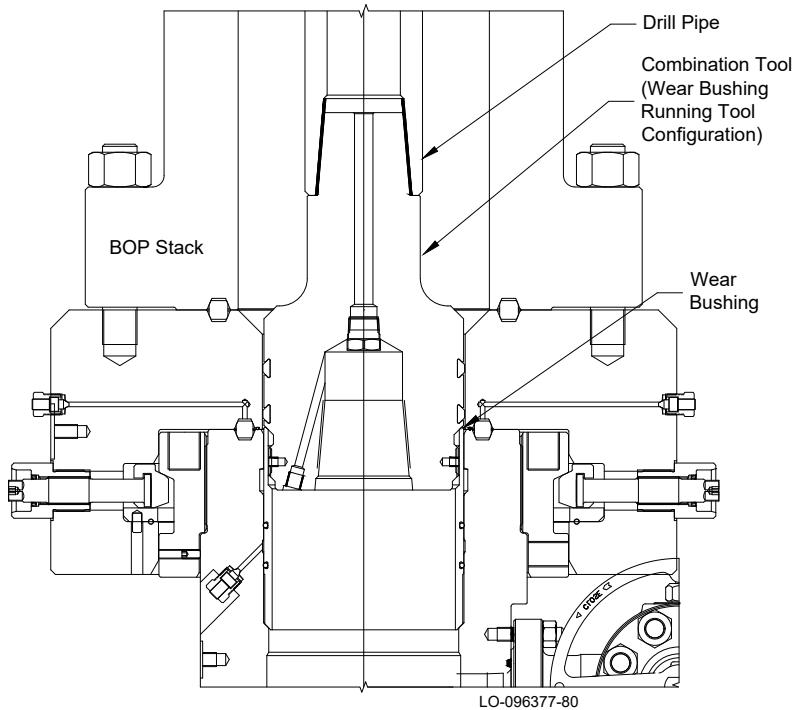


Figure 76: Wear Bushing Landed



Note

See stage drawings or system tables for technical parameters.

-
- 10.



Caution

This Wear Bushing does not have a mechanical retention device. Care must be exercised when tripping out the hole to avoid dislodging the Wear Bushing which could compromise safety if it is lodged in the BOP stack.

Disengage the Combination Tool from the Wear Bushing by turning the drill pipe approximately 1 counterclockwise turn until thread 'jump' is felt and lift straight up.

-
11. Remove the Combination Tool from the drill string.

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-
12. Clean and lubricate the Combination Tool.
 13. Put a protective cover on the threads of the Combination Tool and put it in storage as necessary.
 14. Drill as necessary.
-

2.4.2.2 **Retrieve the Wear Bushing After Drilling**

-
1. Orient the **Combination Tool** with double lead threads down.
 2. Make up a joint of drill pipe to the top of the **Combination Tool**.
 3. Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.
 4. Drain the BOP Stack (Refer to the rig procedure).
 5. Slowly lower the Combination Tool through the BOP Stack until the threads touch the threads of the Wear Bushing. Measure and record the depth while the Combination Tool is lowered.
 6. Turn the drill pipe counterclockwise until thread 'jump' can be felt.
-

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-
7. Slack off all weight to make sure the Combination Tool is down and then turn the drill pipe approximately 1 clockwise turn to a positive stop.

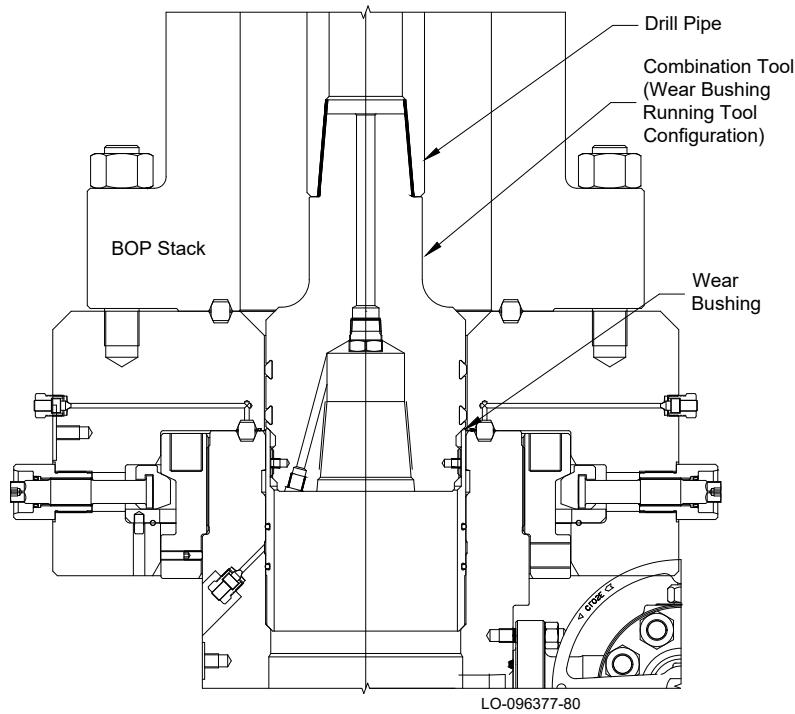


Figure 77: Retrieving the Wear Bushing

-
8. Slowly retrieve the Wear Bushing to the rig floor and remove it and the Combination Tool from the drill string.
 9. Clean and lubricate the Wear Bushing and Combination Tool.
 10. Put a protective cover on the threads of the Combination Tool.
 11. Put the Wear Bushing and Combination Tool in storage as necessary.
-

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2.4.3

11 Nom Tubing Hanger

Table 25: Equipment

Item	Qty	Description
F03	1	ASSEMBLY, TUBING HANGER, TYPE 'ADAPT FAMILY', 11 IN NOM, WITH 6.375-4 TPI LEFT HAND EXTERNAL STUB ACME RUNNING THREAD TOP X 4-1/2 IN 15.1 LB/FT HUNTING SEAL-LOCK XD BOX THREAD BOTTOM, WITH 4 IN NOM TYPE 'H' BPV PREP, WITH DOUBLE DOVETAIL SEALS, WITH SLICK NECK TOP FOR 5-1/2 'CANH' SEAL & 'NS' SEAL, WITH ONE 1/4 OD CONTINUOUS CONTROL LINE PREP, MIN. BORE: 3.752, API 6A, M/C: BB; T/C: U; PSL 3, PR2 ***** - WITH INCONEL 825 FITTINGS
		PART# 2301235-26-01
R17	1	ASSEMBLY, RUNNING TOOL, FOR 11 NOM TYPE 'ADAPT FAMILY' TUBING HANGER, WITH 4-1/2 15.1 LB/FT HUNTING SEAL-LOCK XD BOX THREAD TOP X 6.375-4 TPI LH STUB ACME INTERNAL THREAD BOTTOM, WITH TWO O-RINGS WITH 1/8 NPT TEST PORT IN BETWEEN, WITH FOUR WINDOWS AND FOUR SLOTS FOR CONTROL LINES, WITH FOUR TORQUE PINS,
		PART# 2046001-43

Table 26: System Tables

Measurement / Description	Dimension / Value
Test pressure of Control Line Fittings	5,000 psi [34,500 kPa] or maximum rated working pressure of the Swagelok Fittings — whichever is less
Tubing Hanger Land-off	10.52 in (267.2 mm)
Tubing Hanger Stand-off	12.98 in (329.7 mm)
Tubing Hanger Min.bore	3.752 in (95.30 mm)
Tubing Hanger Running Tool Stand-off when Lockring is retracted	25.68 in (652.3 mm)
Tubing Hanger Running Tool Stand-off when Lockring is expanded	26.68 in (677.7 mm)
Test Between the Seals pressure	5,000 psi (34,500 kPa)

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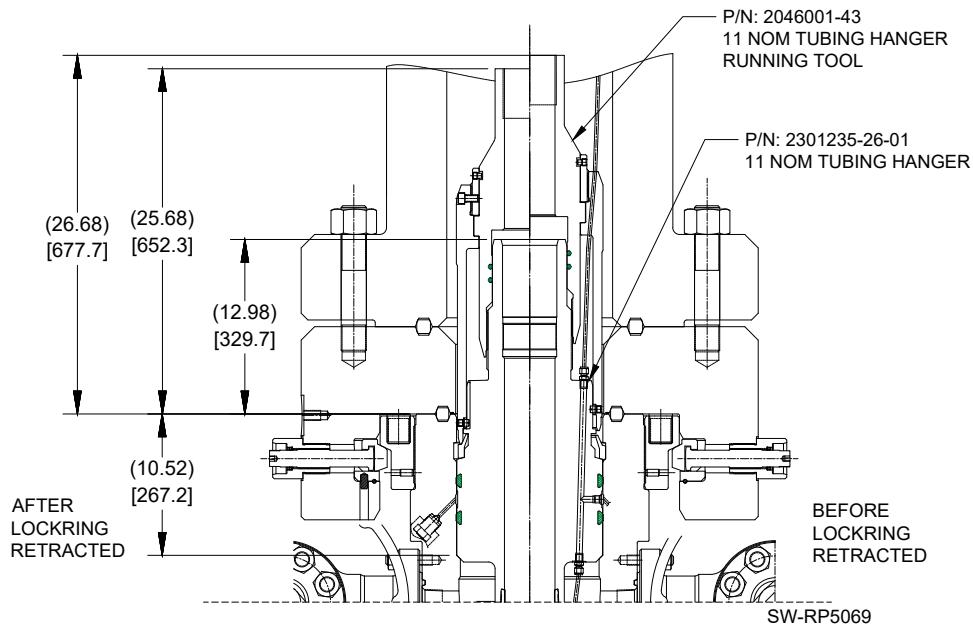
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Figure 78: Installation of 11 Nom Tubing Hanger with 11 Nom Tubing Hanger Running Tool

2.4.3.1 **Install the Tubing Hanger**

-
1. Run the Tubing and Control line as required and space out appropriately.
-

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PREVIEW DRAFT2. Examine the **Tubing Hanger**. Make sure:

- the bore is clean and there is no debris
- the neck seal area is clean and not damaged
- all threads are clean and not damaged
- the ACME threads have the appropriate thread start profile (grind back)
- the pipe plug is correctly installed; flush with the OD
- the dovetail seals are correctly installed, clean, and not damaged
- the pup joint is correctly installed, clean, not damaged, and compatible with the tubing run by the rig

**Note**

All ACME and stub ACME threads should be verified prior to acceptance or installation to make sure the blunt start feature is present and complies with bill of material requirements.



Figure 79: Male and Female ACME Thread Blunt Start

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3. Orient the Tubing Hanger with the running threads up

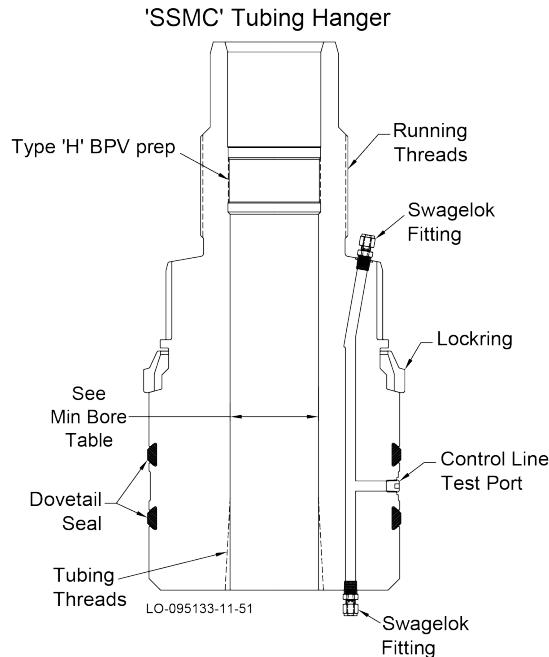


Figure 80: Tubing Hanger

-
- 4.



Warning

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the seals of the Tubing Hanger with a light coat of oil or grease.

-
5. Set tubing in slips so that the Hanger will be 3-4 feet above rig floor.
 6. Pick up the Hanger and make it up to the Box connection of the last joint of tubing to be run. Torque the connection to tubing manufacturer's recommended optimum torque.
 7. Identify which Ports within the tubing hanger body will be used to perform the continuous Control Line scope and remove the NPT plugs from both the top and bottom of the Tubing Hanger.
 8. Bleed off the pressure of the hydraulic control line and cut control line to the desired length above the rig floor.
 9. Wrap sufficient number of turns of control line below the tubing hanger pup joint's collar.
 10. Wrap a piece of tape around the control line below the Hanger to prevent the bottom Swagelok fitting from sliding downhole.
 11. Slide the bottom Swagelok fitting down the control line in such a manner as to allow it to be made up to the bottom of the Hanger.
-

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-
12. Feed the control line through the Hanger body and slide the top Swagelok fitting over the control line above the Hanger.
-

- 13.

**Warning**

Control line(s) that is(are) caught between equipment can cause damage to equipment or a NPT event. Make sure the control line(s) do not get pinched.

**Note**

If customer needs to wrap the control line below Tubing Hanger, perform the wrapping below the last coupling below the hanger. Immediate wrapping below will create difficulty in feeding the lines and engaging Swagelok fitting to hanger.

Pull all excess control line through the Hanger

-
14. Swagelok nuts and ferrules should be checked at this point to ensure they are loose.
 15. Pull all of the slack from control line and tighten Swagelok nuts on bottom and top of the Hanger.
-

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-
16. Paint 0.5 in [12.7 mm] thick yellow band on the Tubing Hanger bottom neck, 2.40 in [61.0 mm] from the bottom of Tubing Hanger landing shoulder for landing verification.

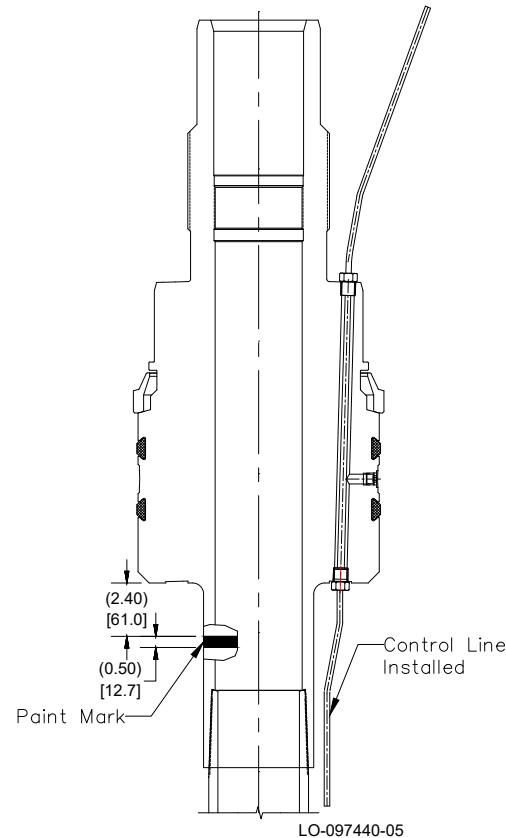


Figure 81: Tubing Hanger Installation

-
17. Install a **Lockring Installation Tool** onto the lockring of the Tubing Hanger Assembly.

**Note**

Make sure the Lockring is flush or below the OD of the Hanger

**Note**

The Lockring Installation Tool will assist in minimizing the length of time that the lockring is compressed.

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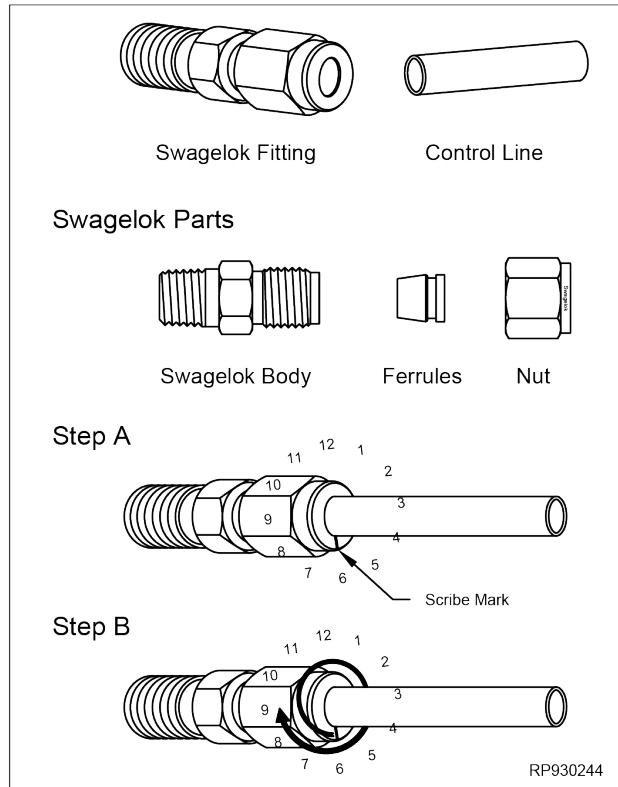
PREVIEW DRAFT**2.4.3.2****Install Control Line Fittings (Swagelok)**

1. The top and bottom Swagelok fittings consist of a nut, two nested ferrules and a threaded body. Follow the manufacturer's instructions to make up the Swagelok fittings
 - a. Loosen the nut on bottom Swagelok fitting. Put the control line through the bottom Swagelok fitting. Make sure the control line is fully fed through the Tubing Hanger and the top Swagelok fitting.
 - b. Put a paint mark on the nut at the 6 o'clock position before the tightening the bottom Swagelok fitting.

Tighten the 1-1/4 turns, while holding the body of the bottom Swagelok fitting tightly in the Tubing Hanger with a backup wrench. Monitor the paint mark, while a full turn is made and then continue to the 9 o'clock position.

If a paint mark is put on the nut at the 6 o'clock position as it appears to you, there will be no doubt of the starting position. When the nut is tightened 1-1/4 turns to the 9 o'clock position, you can easily see that the Swagelok fitting has been correctly installed.

Use the Gap Inspection Gauge(1-1/4 turns from finger tight) to make sure there is sufficient pull-up. Do this sequence again on the top Swagelok fitting.

**Figure 82: Swagelok Fittings**

2. Remove the fitting from the OD of the Tubing Hanger and attach a hydraulic test pump to the open test port. Inject test fluid to the **maximum rated working pressure of the Swagelok fittings**, or as instructed by the Drilling Supervisor. Once a satisfactory test is achieved, carefully bleed off all test pressure and remove the hydraulic test pump.

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-
3. Re-install the fitting and make sure it is flush or below the OD of the Tubing Hanger.
 4. Carefully clean the Tubing Hanger and lubricate the seal(s) to prevent bending of the control line (s).
-

2.4.3.3**Installation of Tubing Hanger Running Tool/ Land the Tubing Hanger**

-
1. Examine the **Tubing Hanger Running Tool**. Make sure:
 - the bore is clean and there is no debris
 - all threads are clean and not damaged
 - the ACME threads have the appropriate thread start profile (grind back)
 - the o-ring(s) is correctly installed, clean and not damaged
 - the torque sleeve and pins are correctly installed and not damaged
-

**Note**

All ACME and stub ACME threads should be verified prior to acceptance or installation to make sure the blunt start feature is present and complies with bill of material requirements.



Figure 83: Male and Female ACME Thread Blunt Start

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2. Lubricate all threads of both the Running Tool and Tubing Hanger.

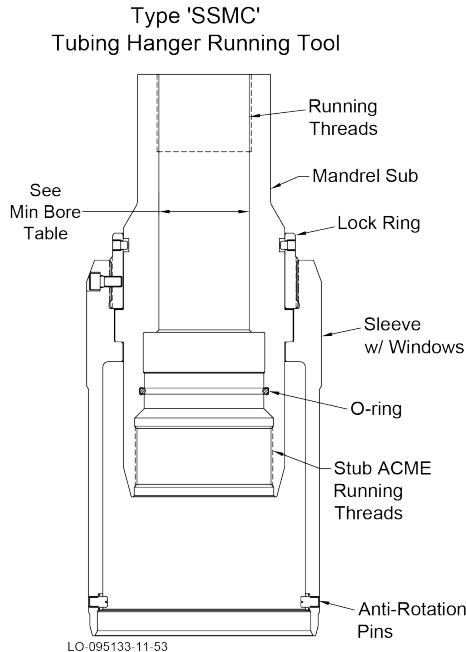


Figure 84: Tubing Hanger Running Tool

3. Make up a landing joint to the top of the Running Tool. Secure threads per thread manufacturer's specifications.
4. Carefully lower the Running Tool over the control line, guiding the line through the slot in the Running Tool sleeve. At the same time align the anti-rotation pins in the sleeve with their mating slots in the Tubing Hanger.

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5.

**Caution**

Do not use Top Drive to engage or disengage the Running Tool. Using Top Drive can permanently damage the running threads of the equipment and will require damaged parts to be replaced.

Set the Tool down and balancing the weight of the tool such that it is unloaded, turn the main body of the Tool clockwise until the thread 'jump' can be felt then counterclockwise to a positive stop. Ensure the sleeve has properly captured the lockring. Approximately 10-1/2 turns.

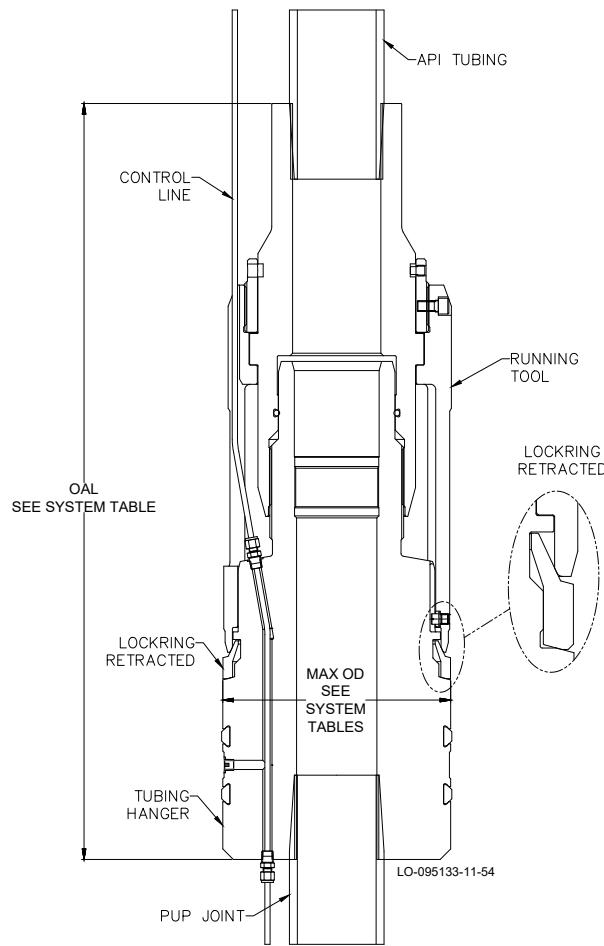


Figure 85: Tubing Hanger and Running Tool Assembly

6. Remove the Lockring Installation Tool.

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-
7. Use applicable Swagelok tubing unions to connect the control line to control line spools. Apply pressure as instructed by the Drilling Supervisor.
 8. Slowly lower the Tubing Hanger through the BOP and position the Tubing hanger within the Stack.
 9. Make sure the well is safe and under control, open the uppermost outlet valve on the Housing, drain the stack taking returns through the outlet.
-

**Note**

The uppermost side outlet valve is to remain open while landing the Tubing Hanger.

10. While measuring Tubing Hanger distance, slowly lower the Tubing Hanger in to the ID of the wellhead until the bottom of the Tubing Hanger lands off on the upper load shoulder in the Housing. Measure and record.
-

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11. Confirm the Tubing Hanger has landed properly. This can be done by observing through the **uppermost** side outlet and verifying yellow paint mark on the pup joint.

**Note**

Once the correct land off depth is achieved, you will notice the weight of the tubing string dropping off.

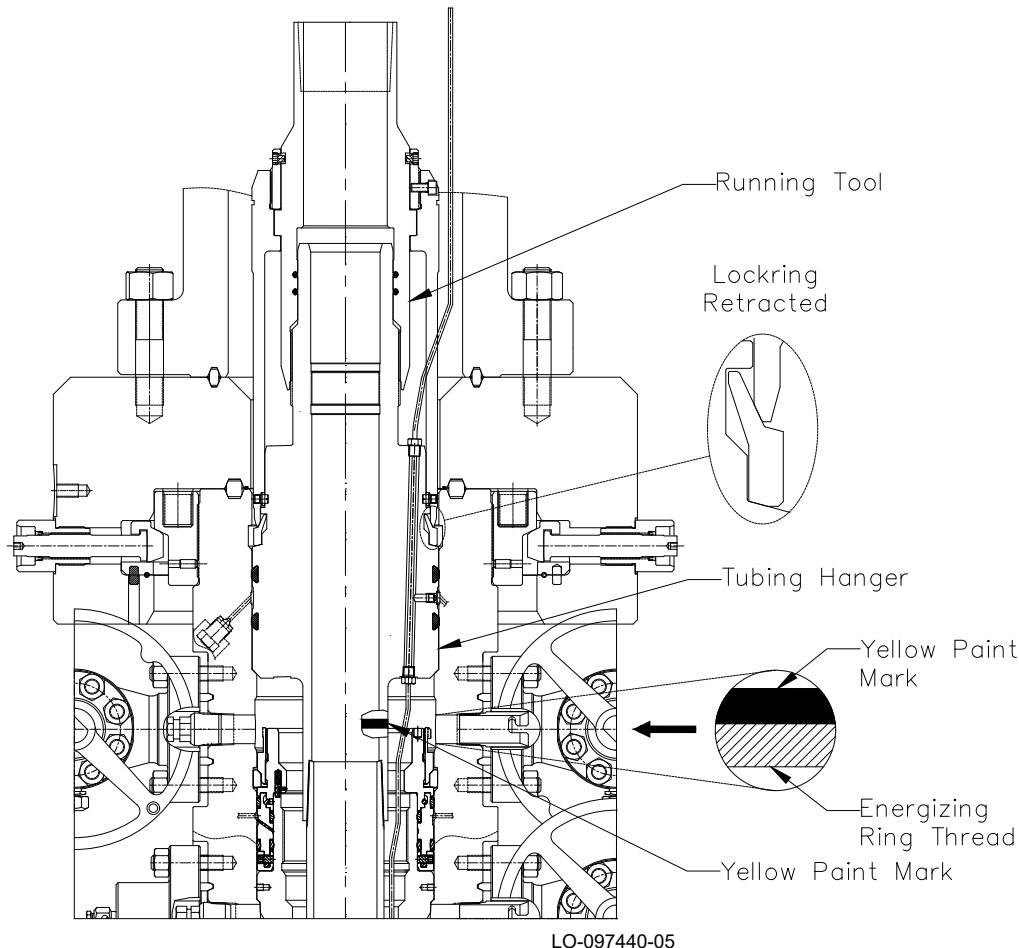


Figure 86: Land the Tubing Hanger

SLB Signature	Customer Representative Signature	Date [dd/mm/yyyy]

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PREVIEW DRAFT**2.4.3.4****Set the Tubing Hanger Lockring**

-
1. Using a paint marker, put a horizontal mark on the OD of the landing joint that is level with the rig floor to monitor travel of the Running Tool and a vertical mark to monitor the number of turns.
 2. Back out the Running Tool 4 turns clockwise to allow the lockring to expand into its mating groove in the Casing Head Housing.
-

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3.

**Caution**

Clear out personnel from rig floor during overpull test. Precautions must be taken for personnel monitoring the overpull.

Do an overpull in 5,000-lb increments up to 50,000-lbs over the string weight to confirm the lockring is correctly engaged

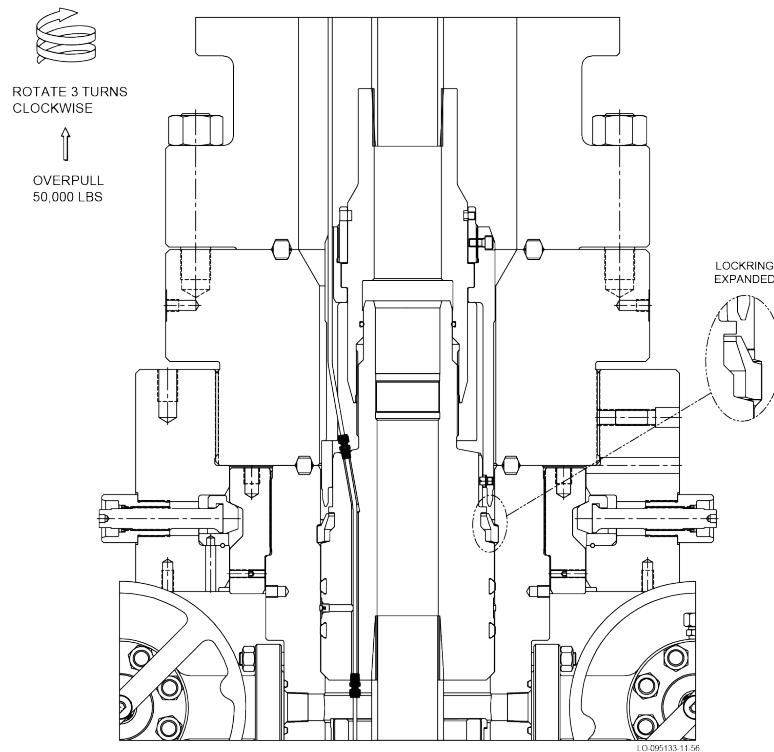


Figure 87: Set the Lockring

**Note**

If initial overpull test is unsuccessful, do not immediately collapse the Lockring for a second installation attempt. Conduct the following steps prior to retrieving the equipment:

- Make sure the Running Tool is backed off 3 turns.
- Re-attempt 50,000 lbs overpull test.

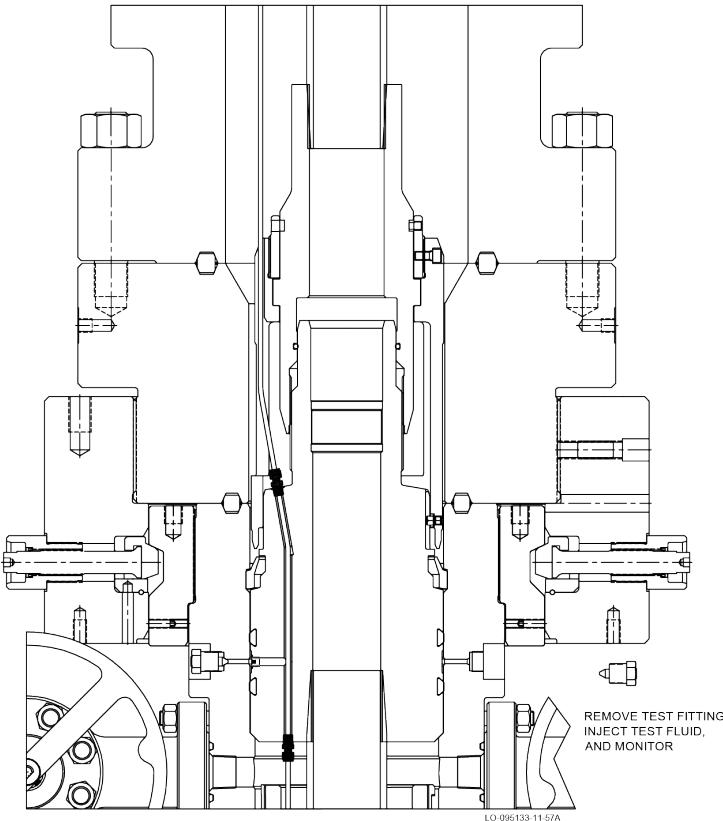
4. After a satisfactory overpull is completed, slack off the overpull weight.

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PREVIEW DRAFT**2.4.3.5****Test Between the Seals**

-
1. Locate the test ports on the OD of the Housing / Head / Spool for testing between the Hanger seals and remove both fittings.
 2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.
 3. Once a continuous stream is seen from the open port, re-install the fitting.
-

**Figure 88: Test Between Tubing Hanger Seals****PREVIEW DRAFT****Private**

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4.**Warning****Do NOT over pressurize.**

Continue to supply fluid to either **the rated working pressure of the wellhead equipment or 80% of casing collapse—whichever is less.**

**Note****See stage drawings or system tables for technical parameters.****Note****Contact the Drilling Supervisor to determine the collapse pressure of the specific grade and weight of the casing used.**

-
5. Hold and monitor the test pressure for fifteen minutes or as required by the Drilling Supervisor.
 6. After a satisfactory test is completed, carefully bleed off the test pressure and remove the test pump.
 7. Re-install the fittings.
 8. Release the Tool from the Hanger by turning the landing joint (with chain tongs) to the right until it comes free from the Hanger.
 9. Cut the Control Line, retrieve the Tool to the rig floor and remove it from the landing joint.
-

**Note****Installation and/or removal of a Cameron BPV/ TWC to be performed only by a qualified Cameron Service Technician.****PREVIEW DRAFT****Private**

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-
10. Install a type 'H' Back Pressure Valve into the prep of the Tubing Hanger.

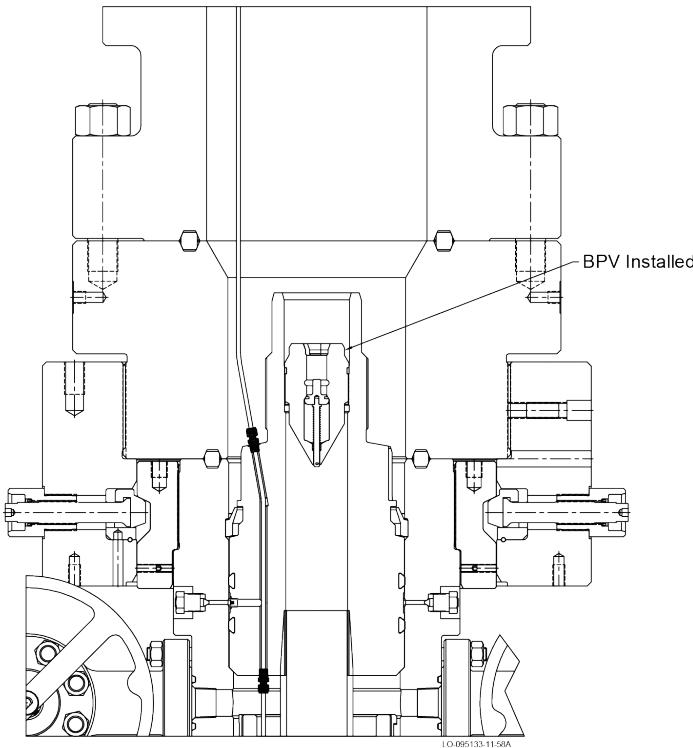


Figure 89: Install BPV to Tubing Hanger

-
11. Clean, grease, and store the Tool as required.

2.4.4 11 Nom Tubing Head Adapter

Table 27: Equipment

Item	Qty	Description
C01	1	ASSEMBLY, TUBING HEAD ADAPTER, WITH 11 IN NOM OEC FLANGELOCK FLANGE BX-158 10K BOTTOM X 5-1/8 API 10K BX-169 STUDDED TOP WITH 'SRL' SEAL PREP, WITH ONE CONTROL LINE EXIT BLOCK WITH GRAYLOC #14 STUDDED OUTLET, COMES WITH 4-1/8 'SRL' SEAL, COMES WITH 5-1/2 'CANH' METAL SEALS AND 'NS' SEAL, MIN BORE: 4.120; API 6A; M/C: DD; T/C: U; PSL 3, PR2
		PART# 2114788-40-02

Table 28: System Tables

Measurement / Description	Dimension / Value
---------------------------	-------------------

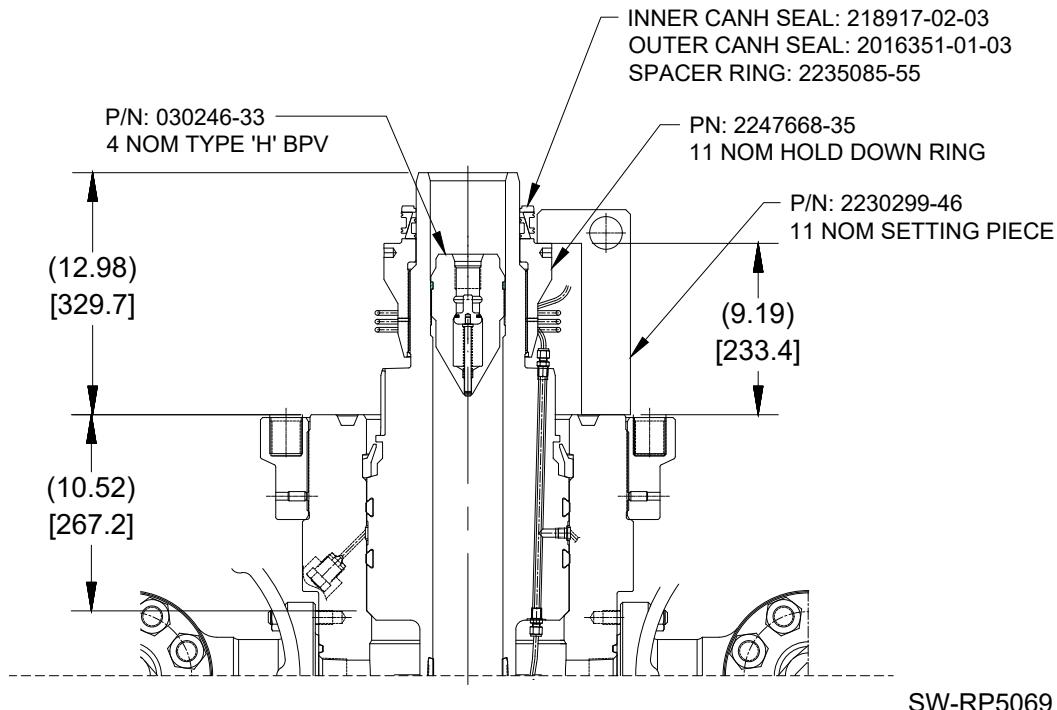
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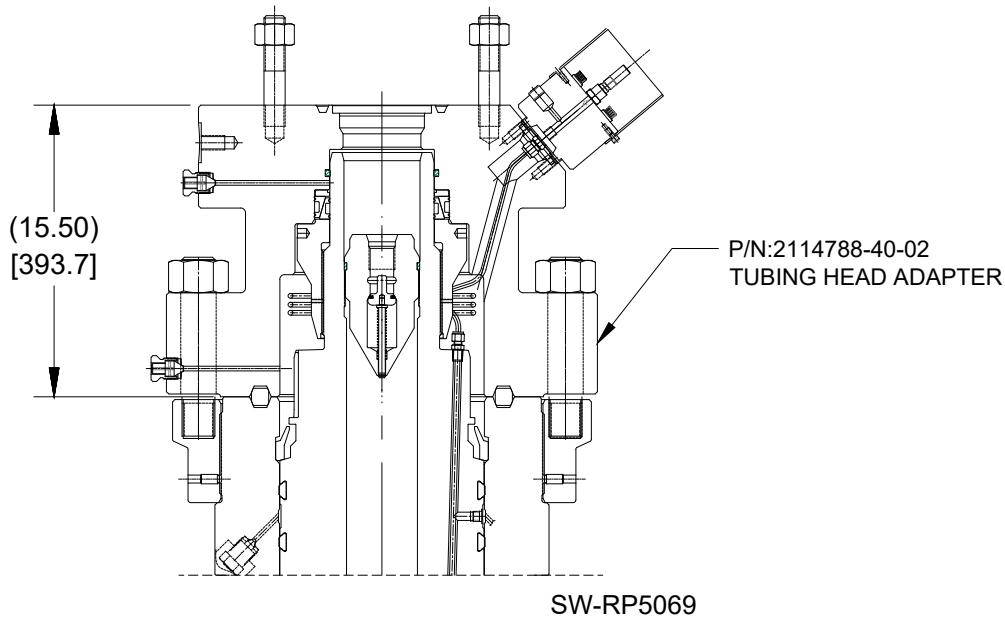
Tubing Head Adapter Min.bore	4.120 in (104.64 mm)
Test the Connection Pressure	5,000 psi (34,500 kPa) or 80% of the collapse pressure of the Control Lines — whichever is less
Test between seals pressure	5,000 psi (34,500 kPa) or 80% of the collapse pressure of the Control Lines — whichever is less



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Figure 90: Installation of CANH Seal**PREVIEW DRAFT****Private**

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PREVIEW DRAFT**Figure 91: Installation of 11 Nom Tubing Head Adapter****2.4.4.1 Remove the Drilling Adapter**

1.

**Warning**

An uncontrolled release of trapped pressure can cause injuries or damage to equipment. It is mandatory to bleed off trapped pressure in the system.

Find the vent port on the Drilling Adapter and carefully bleed off any remaining trapped pressure.

2. After any trapped pressure has been bled off, remove all of the fittings on the Drilling Adapter.

3.

**Caution**

Too much torque on the drive screws can cause damage to the equipment. If the torque value is 15% more than the make-up torque, contact a Cameron Surface engineer for guidance.

After the well is safe and secure, use 180° alternating pattern to loosen the drive screws until all drive screws are retracted.

4. Use the appropriate lifting device to carefully lift and remove the Drilling Adapter.

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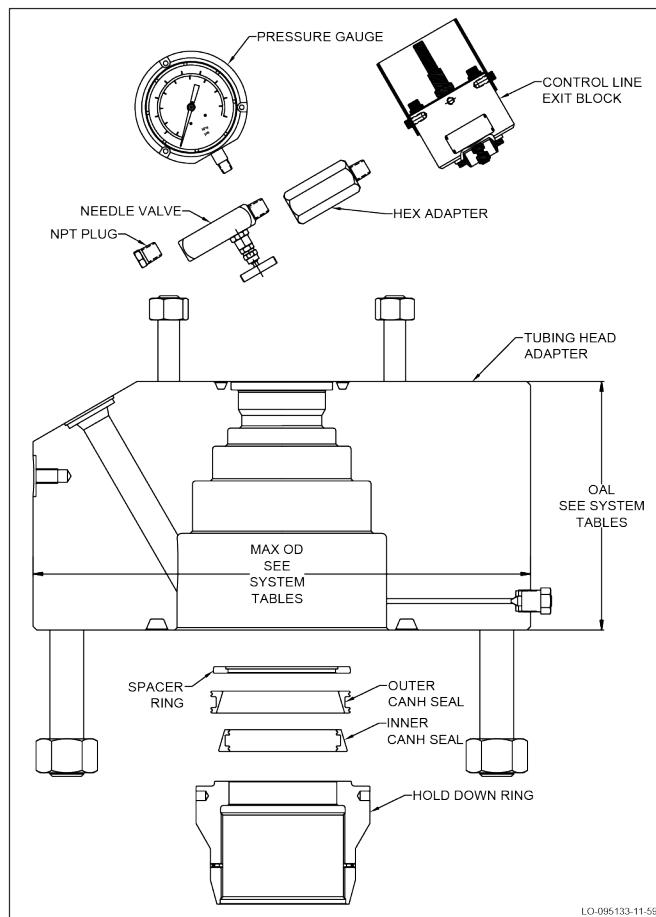
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-
5. Clean, lubricate, and put the Drilling Adapter in storage as necessary.
 6. Examine the sealing surfaces and immediately report any damages.
-

2.4.4.2 **Install Tubing Head Adapter**

-
1. Examine the **Tubing Head Adapter**. Make sure:
 - seal pocket and ring grooves are clean and in good condition
 - all fittings, studs and nuts are intact and in good condition
 - the DHCV Needle Valve Assembly is intact and in good condition



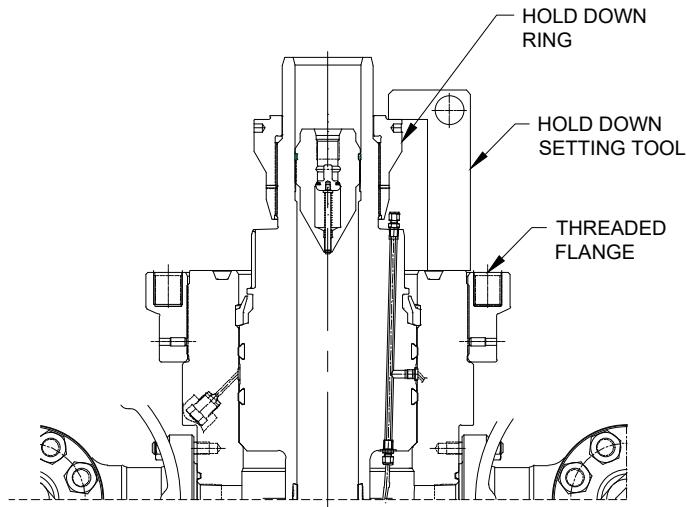
-
2. Using a high pressure water hose, thoroughly clean top of tubing hanger and tubing head and blow dry with compressed air.
-

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-
3. Clean the mating ring grooves of the Spool/Housing and Tubing Head Adapter. Lubricate lightly with oil or grease.
 4. Examine the **ring gasket** and the **CANH seals**. Make sure:
 - seals are clean and not damaged
 5. Install the Hold Down Ring with counterclockwise rotation. Use the **Hold Down Ring Setting Tool** to ensure that the Hold Down Ring has been installed correctly, check 3 or 4 different points. Tighten all set screws on the Hold Down Ring.
-



SW-RP5069

Figure 92: Install Hold Down Ring**Note**

Refer to stage drawing or system table for technical information.

-
6. Install a **new Ring Gasket** in the ring groove of the Housing/Spool.
 7. Remove **DHCV Exit Valve** by removing four (4) cap screws on DHCV Exit Valve. Remove **U-14 Seal Ring** from the Tubing Head Adapter.
 8. Wrap the control line around the neck of the Hanger a minimum of three (3) times.
 9. Fill void area above Tubing Hanger with hydraulic oil to the top of the Tubing Spool.
 10. Slide the Inner CANH Seal over the Tubing Hanger neck with larger OD down. Make sure that the Seal sits flat and does not rock on top of the Hold Down Ring.
 11. Slide the Outer CANH Seal over the Tubing Hanger neck with larger ID down until it lands flush onto the Inner CANH.
 12. Install the Spacer Ring on top of the Outer CANH Seal ensuring it sits flat and does not rock.
 13. Orient the Tubing Head Adapter as required with the orientation of the Exit Block to be under flow wing valve.
-

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-
14. Lift and level the Tubing Head Adapter over the Spool/Housing and carefully lower it over the Tubing Hanger neck, guiding the control line(s) through the exit port(s) in the Adapter and land it on the Ring Gasket.

**Note**

Tubing Head Adapter is to remain as level as possible during the installation.

15. Make up the connection using **studs and nuts** in an alternating cross fashion to the torque referenced in the **chart** in the back of this manual.

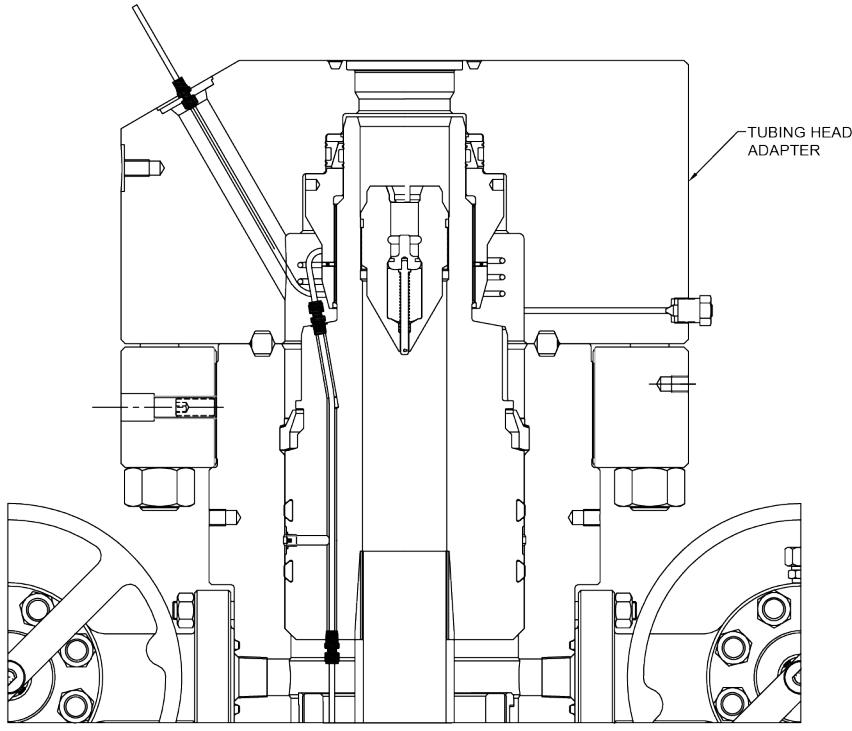


Figure 93: Install the Tubing Head Adapter

2.4.4.3 **Test the Connection**

-
1. Locate the ports for testing the connection of the Tubing Head Adapter and remove both fittings.
 2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.
 3. Once a continuous stream is seen from the open port, re-install the fitting.
-

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4.

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to supply fluid to the **maximum rated working pressure of the Connection or 80% of the collapse pressure of the Control Lines — whichever is less**.

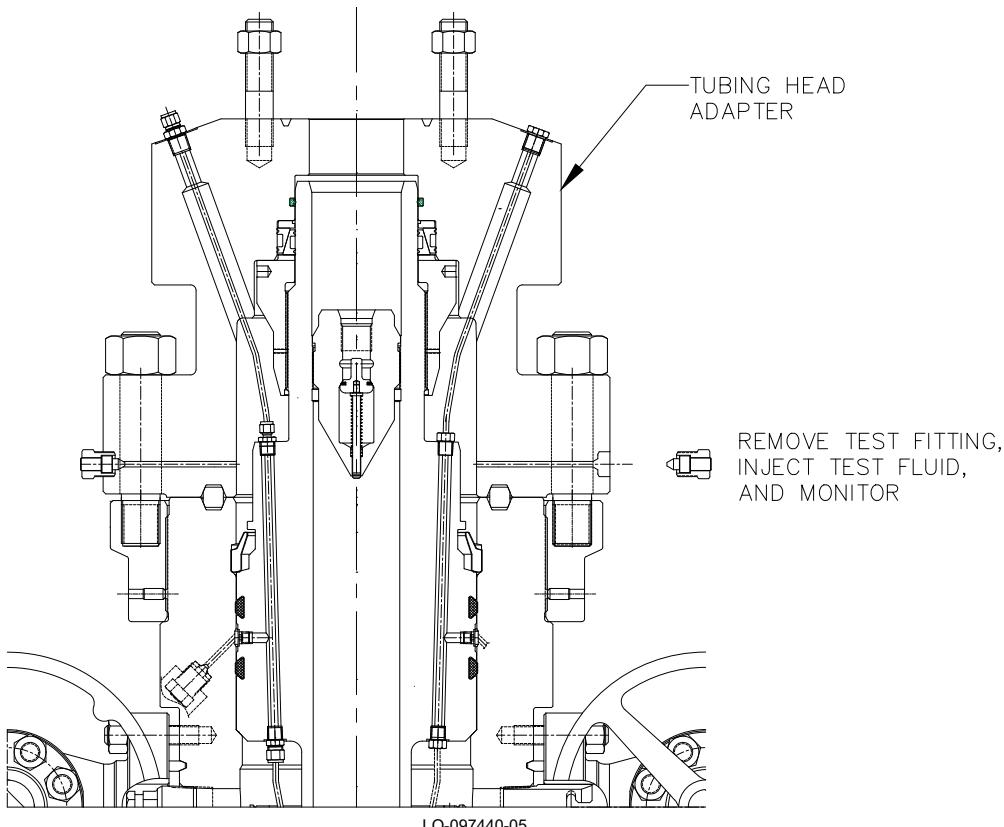


Figure 94: Test the Connection

**Note**

See stage drawings or system tables for technical parameters.

5. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or as told by the Drilling Supervisor.
6. After a satisfactory test is completed, carefully bleed off all test pressure and remove the test pump.

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-
7. Re-install the fitting.
-

2.4.4.4 **Test between Seals**

-
1. Locate the ports for testing between the seals and remove both fittings.
 2. Attach the test pump to one open port for testing between the seals and inject fluid. When test fluid flows out the opposite test port, plug it and inject test fluid to the **the maximum rated working pressure of the Tubing Hanger**.
-

**Note**

Contact the Drilling Supervisor to determine the collapse pressure of the specific grade and weight of the casing used.

**Note**

Refer to stage drawing or system table for technical information.

-
3. Hold and monitor, chart record if required, the test pressure for 15 minutes or as required by the Drilling Supervisor.
 4. Once a satisfactory test is achieved, carefully bleed off all test pressure and remove the test pump.
 5. Reinstall the fitting.
-

2.4.5 **Install Crossover Adapter Assembly**

Table 29: Equipment

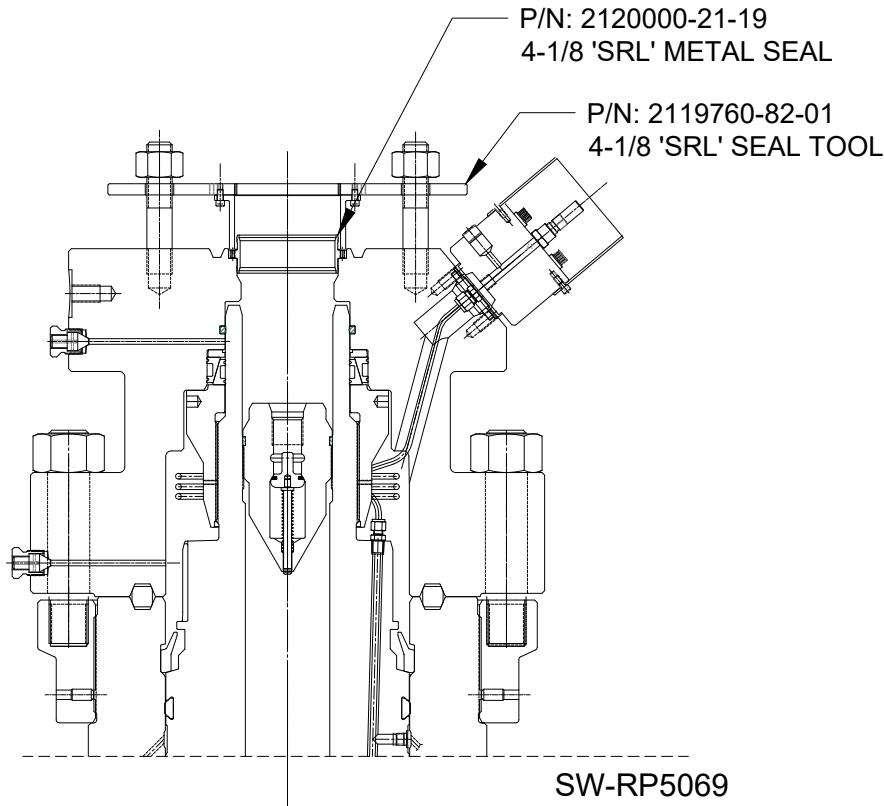
Item	Qty	Description
D00	1	SECTIONAL ASSEMBLY, CROSSOVER ADAPTER 5-1/8 API 10K BX-169 FLANGE BOTTOM X 4-1/16 API 5K RX-39 FACE TO FACE STD'D TOP, COMES WITH ONE 4-1/8 API 5K MODEL 'FLS' MANUAL GATE VALVE WITH 'SRL' SEAL PREP, COMES WITH ONE 4-1/8 'SRL' METAL SEAL, MIN BORE: 4.120; API 6A; M/C: DD; T/C: U; PSL 2
		PART# 2201888-3100086
R23	1	ASSEMBLY, INSTALLATION AND RETRIEVAL TOOL FOR 4-1/8 'SRL' SEAL, FOR USE WITH 4-1/16 API 5K AND 5-1/8 API 10K CONNECTIONS
		PART# 2119760-82-01

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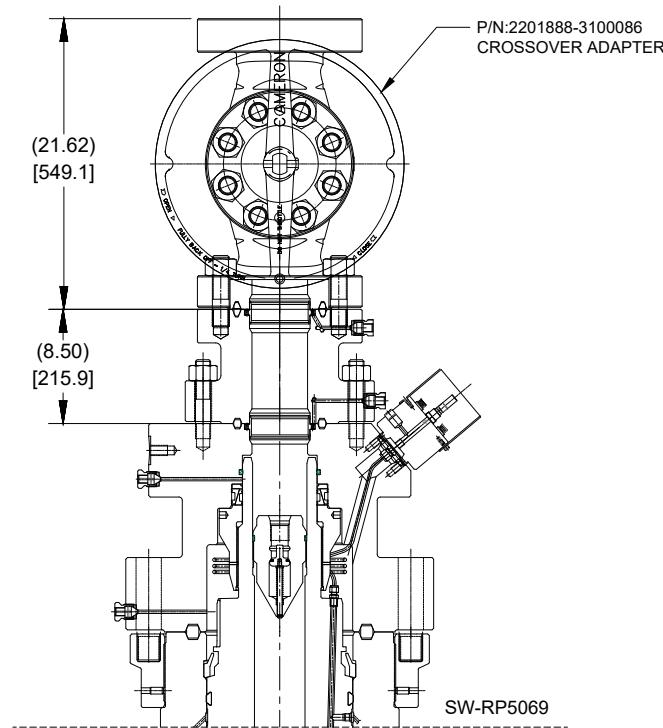
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PREVIEW DRAFT**Table 30: System Tables**

Measurement / Description	Dimension / Value
Test the Connection Pressure	10,000 psi (64948 kPa)

**Figure 95: Install SRL seal****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**Figure 96: Install Crossover Adapter****2.4.5.1 Install the SRL Seal**

-
1. Examine the **SRL Seal Installation Tool Assembly**. Make sure:
 - all components are in good condition
 - Support Ring is firmly attached to the Push Plate

**Note**

Studs, Nuts, and Washers in the Installation Tool Assembly will not be used at this stage.

2. Examine the **SRL Seal**. Make sure:
 - bore is clean and free of debris
 - SRL seal profile is clean and not damaged
 3. Clean and inspect the SRL seal prep in the top connection.
-

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4.**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the SRL Seal with a light coat of oil or grease.

5. Remove all nuts from the studs of the top connection, if applicable.
 6. Set the SRL Seal level on the SRL seal prep of the top connection.
 7. Orient the Push Plate with the Support Ring down.
 8. Slowly place the Push Plate / Support Ring assembly on top of the SRL Seal.
 9. Re-install the nuts at 90° apart and thread down the nuts evenly in an alternating cross pattern until the SRL seal bottoms out on the top connection prep.
 10. Remove the SRL Seal Installation Tool.
-

**Note**

The SRL Seal is to remain as level as possible during installation.

2.4.5.2 **Install Crossover Adapter Assembly**

-
1. Examine the **Crossover Adapter Assembly**. Make sure:
 - all fittings, nuts and hand wheels are intact and not damaged
 - all ring grooves and seal areas are clean and not damaged
 - all valves in the run of the Crossover adapter are opened
 2. Examine the connection below. Make sure:
 - bore is clean and free of debris
 - ring groove is clean and not damaged
 - **SRL Seal** is clean and not damaged
-

**Note**

Install Tree Orientation as required by Drilling Supervisor.

3. Remove fittings from the SRL vent ports on the Crossover Adapter assembly, if applicable
-

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4.**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Install a new Ring Gasket in the groove of the bottom connection. Lubricate the with a light coat of oil or grease.

5. Orient the Christmas Tree assembly as required and carefully lower it over the bottom connection until it lands on the ring gasket.

**Note**

Make sure that the assembly is properly aligned with the SRL Seal and remains as level as possible during installation.

6. Make up the connection using **studs and nuts** in an alternating cross fashion to the torque referenced in the back of this procedure.

2.4.5.3 **Test the SRL Seal**

1. Replace the **Back Pressure Valve** with a **Two Way Check Valve**.

**Note**

Installation and/or removal of a Cameron BPV/ TWC to be performed only by a qualified Cameron Service Technician.

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2.

**Caution**

An external test pressure can cause damage to the SRL Seal. Make sure a test pressure is not applied through the port used to monitor the SRL Seal.

Locate the port for monitoring the SRL Seal and remove the fitting(s).

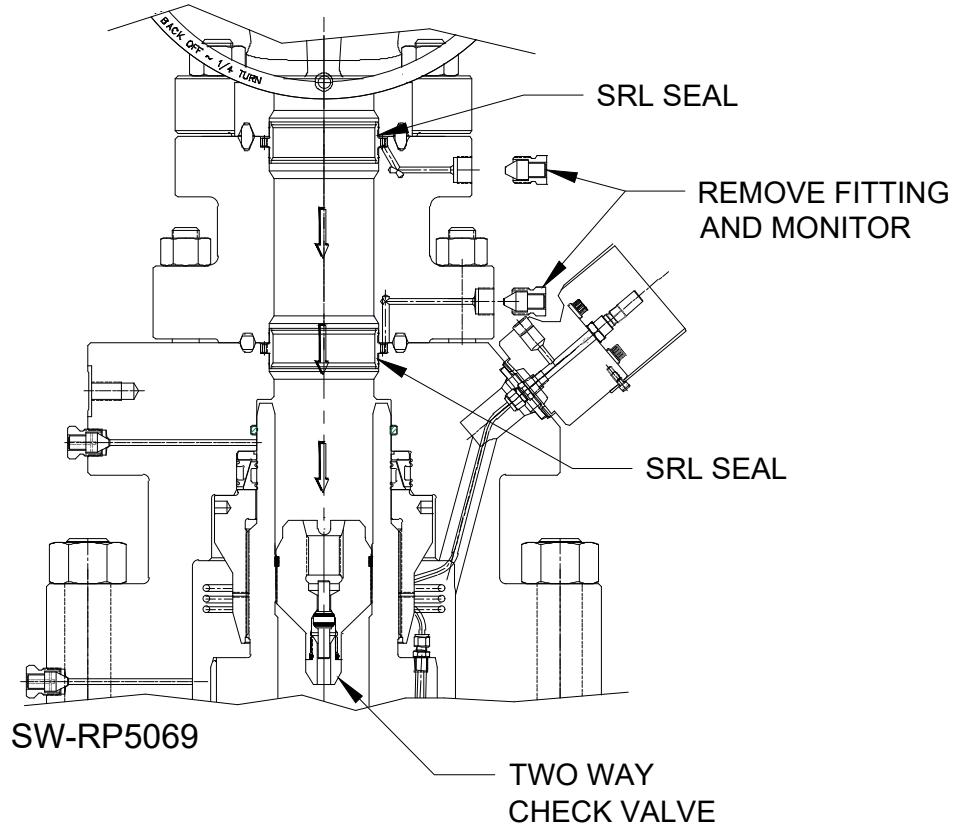


Figure 97: Test the SRL Seal

-
3. Make sure all of the valves in the run are fully open and any wing valves are fully closed.
-

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4.

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Supply pressure through the run to the **lowest rated maximum working pressure of the top connection**.

**Note**

Refer to stage drawing or system table for technical information.

5. Monitor the open port for signs of leakage past the SRL Seal
6. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or as instructed by Drilling Supervisor.
7. After a satisfactory test, carefully bleed off all test pressure.
8. Re-install the fitting(s).

2.5

Emergency

2.5.1

Split Landing Base

Table 31: Equipment

Item	Qty	Description
G02	1	ASSY DETAIL; SPLIT TYPE LANDING BASE F/ 11 NOM 'TS-S' / 'SSD-11' CASING HEAD F/ 16 IN AND 20 IN CONDUCTOR (106.50 LB/FT MAX) W/ 8 GUSSETS. *** MAX LOAD CAPACITY: 600,000 LBF***
		PART# 2221412-34-01

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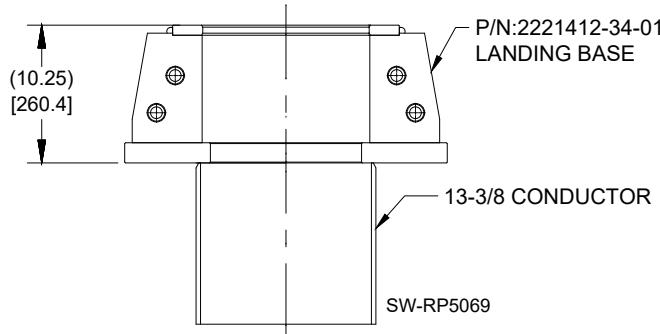
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Item	Qty	Description
G01	1	ASSY, LANDING MANDREL W/ LOAD RING ADAPTER , TYPE 'ADAPT IND', 13-5/8 NOM W/ T-103 NECK TOP X 9-5/8 SOW BTM PREP W/ 13.500-4 TPI LH EXTERNAL STUB ACME RUNNING THDS, EIGHT ANTI-ROTATION SLOTS F/ RUNNING TOOL & PREP F/ TIEDOWN SCREWS, LANDS ON SPLIT TYPE LANDING BASE 2221412-34-01, MIN BORE: 8.88; ***HANGER MAX OD: 19.177 SHALL BE COMPARED WITH RISER DRIFT BEFORE USE***** MAX HANGING CAPACITY: 600,000 LBS (OR LESSER OF 80% PIPE BODY YIELD AND PIPE CONNECTION STRENGTH) ***
		PART# 2605993-16-01

Table 32: System Tables

Measurement / Description	Dimension / Value
Cut the 13-3/8 OD Conductor	flush with cellar floor or as required by drilling supervisor
Final cut the 9-5/8 OD Casing	13.34 in (338.8 mm) above conductor
'A': Distance from top of 9-5/8 OD Casing to top edge of paint mark	6.25 in (158.8 mm)
Landing Mandrel Stand-off from top of Landing Base	9.09 in (230.9 mm)
Test pressure of the weld	maximum 80% of casing collapse

**Figure 98: Installation of Split Type Landing Base****PREVIEW DRAFT****Private**

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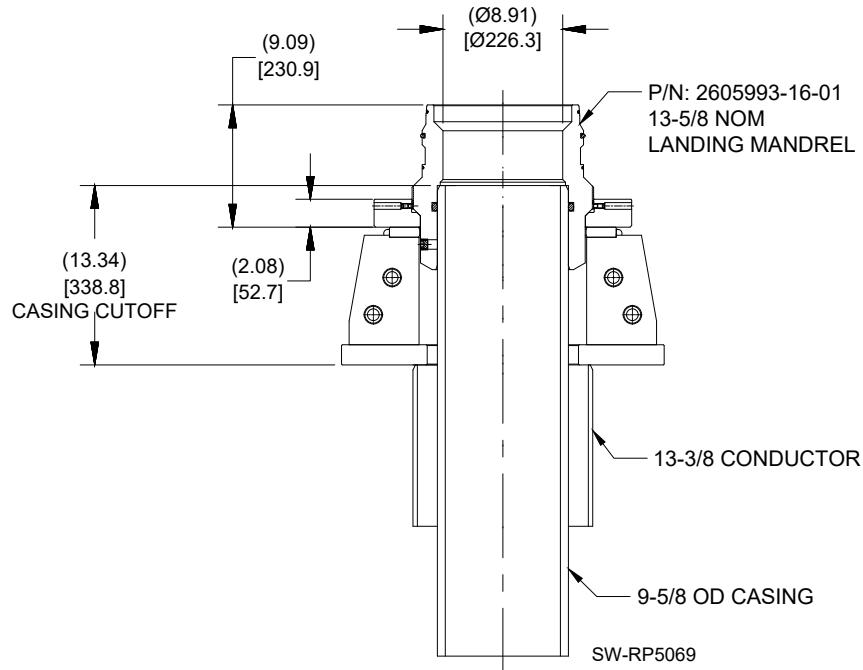
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Figure 99: Installation of Split Type Landing Base

2.5.1.1 Cut the Conductor

i Note

Confirm the casing weight and grade, verify by measuring the OD. Remove loose scale and clean Casing OD.

i Note

Check for any corrosion and ensure that the conductor is in good condition.

1. Run the conductor and space out as necessary.
 2. Calculate and record the elevation for the top of the wellhead.
 3. Use the cellar depth dimensions to cut the conductor to the applicable height $\pm 1/8$ in.
-

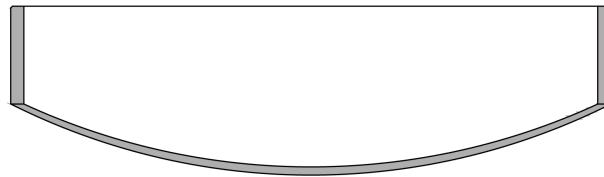
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-
4. Calculate the height of the top of the wellhead and cut the casing at the recommended height \pm 1/8-in.



LO-095320-11-04

Figure 100: Cut the Conductor

**Note**

Make sure the conductor cut is level and smooth as this will determine the position and elevation of the entire Wellhead and Tree. Alternatively, conductor cut could be flush or below cellar to allow the landing base landed on the cellar ground.

-
- 5.

**Caution**

Equipment that is installed incorrectly can cause damage or an NPT event. Make sure it is at level in all dimensions, is at the correct height, and has the correct orientation. Refer to [SW-RP4554: Cameron Rig Alignment Verification](#).

Make sure the conductor is level and smooth. Remove all burrs and sharp edges and bevel the OD edge. Remove the longitudinal weld seam and remove paint coating from the top of the Casing.

2.5.1.2 **Hang Off the Casing**

-
1. Run the casing and space out as necessary.
-

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-
2. Calculate the casing cut-off and cut the casing at the measured pocket depth minus 0.125 in [3.18 mm] above the top face of the equipment.

**Note**

Always physically measure the exact cut-off height by measuring the bottom prep height of the next component to be installed and subtracting 1/4" from this dimension, prior to making the final cut-off.

-
- 3.

**Caution**

Equipment that has damage to the bottom seals can cause a test failure or an NPT event. Make sure that the primary (final) cut of the casing is clean and correctly polished.

Place a 3/8 in x 3/16 in bevel on the OD of the casing stub and remove all burrs and sharp edges. Remove the longitudinal weld seam and remove paint coating from the top of the Surface Casing.

**Note**

It is advisable to grind the ID of the casing to allow drill pipe and casing collars to be run smoothly.

**Note**

There must not be any rough edges on the casing / tubing or the seals of the next component to be installed will be damaged.

**Note**

Confirm the casing weight and grade, verify by measuring the OD. Remove loose scale and clean Casing OD.

**Note**

Check for any corrosion and ensure that the conductor is in good condition.

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PREVIEW DRAFT4. Examine the **Landing Mandrel**. Make sure:

- the bore is clean and there is no debris
- the o-rings are correctly installed, clean, and not damaged
- the neck seal area is clean and not damaged
- the load ring is correctly installed

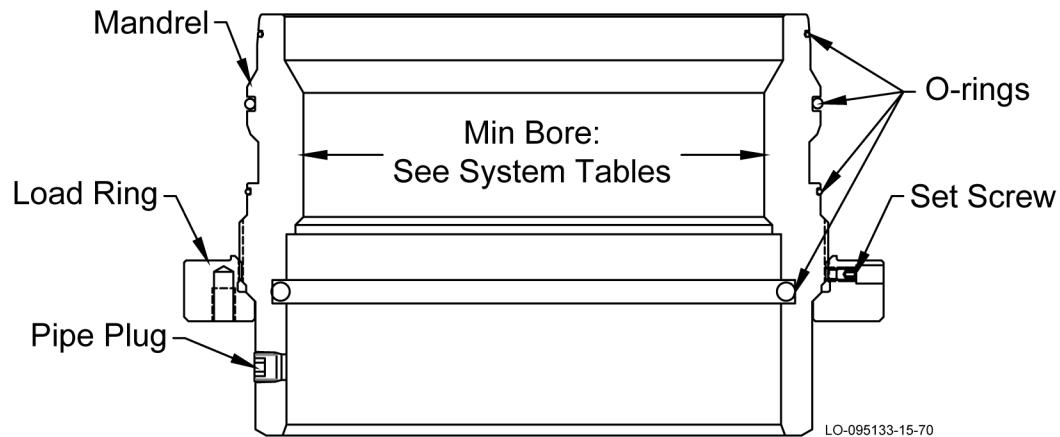


Figure 101: Landing Mandrel

**Note**

Refer to stage drawing or system table for technical information.

5. Point the Landing Mandrel with the SOW pocket down.

6. Find the test port on the bottom of the Landing Mandrel and remove the pipe plug.

7. 

Warning

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

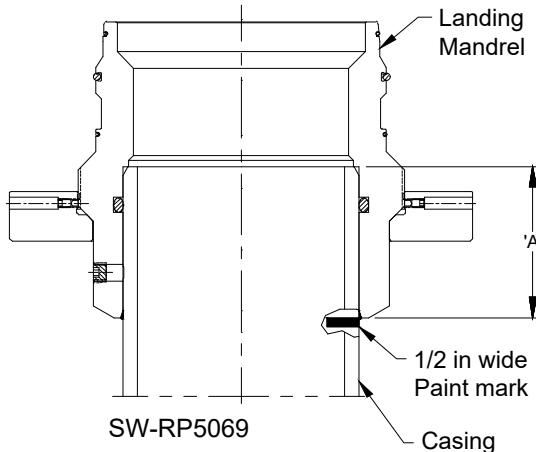
Lubricate the o-ring and SOW pocket of the Landing Mandrel with a light coat of oil or grease.

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-
8. For proper landing verification, place a 1/2 in wide paint mark on the casing OD, at a distance of 'A' from top of the casing.

**Note**

Refer to stage drawing or system table for technical information.

9. Lift the Landing Mandrel above the casing stub.
-

10.

**Warning**

A seal/ seal surface that is damaged can cause a failure of the pressure test or an NPT event. Make sure that all seals, internal seal bores and the gasket seal surface are free from damage.

Slowly lower the Landing Mandrel and land it on the casing stub.

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11.

**Caution**

The area where the o-ring is located must NEVER exceed 300 degrees F.

Make sure the Landing Mandrel is level and then weld it to the casing.

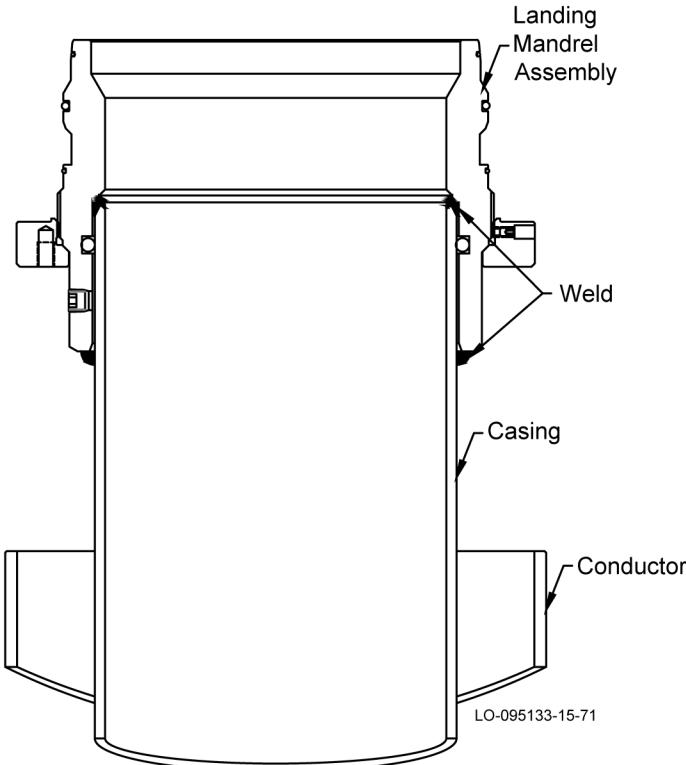


Figure 102: Landing Mandrel Welded to Casing

**Note**

Refer to Field Welding Procedure for the details of the welding procedure

**Note**

The weld should be a fillet type weld with legs no less than the wall of the casing. Legs of 1/2" to 5/8" are adequate for most jobs.

**Note**

Do NOT use HOT HEADS, or similar methods of preheating, as it may damage seals and packing.

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PREVIEW DRAFT**Note**

It is recommended that all pre-heat and post-heat temperatures are monitored with an infrared thermometer.

-
12. Do a test of the weld; refer to customer requirements.
-

**Note**

After allowing the weld to cool below 200 degrees F, the weld must be pressure tested per customer specifications, not to exceed 80% of casing collapse.

13. After a satisfactory test is completed, install the pipe plug in the test port.
-

2.5.1.3 **Install the Split Landing Base**

-
1. Examine the **Split Landing Base**. Make sure the assembly halves are clean and not damaged.
-

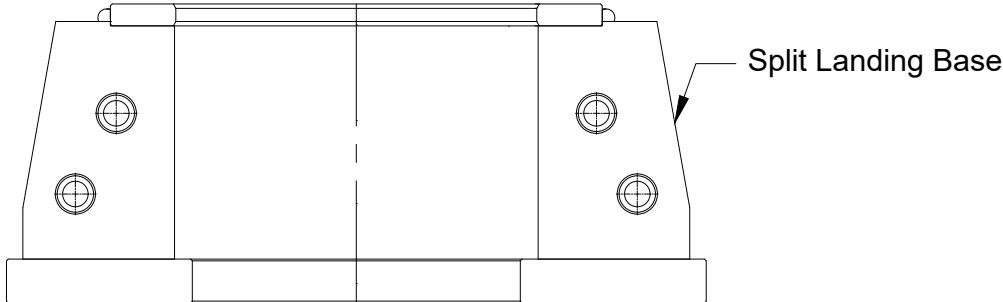


Figure 103: Split Landing Base

-
2. Make sure there is sufficient clearance for installation of the Split Landing Base.
 3. When the weld test is satisfactory, put the assembly halves around the casing.
 4. Install the four 1 1/4-in studs and eight nuts to connect the two assembly halves. Tighten the nuts to 686 lbf.ft.
 5. Install the four 5/8-in cap screws to attach the Split Landing Base to the bottom of the wellhead equipment. Tighten the cap screws to 115 lbf.ft.
-

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2.5.2

11 Nom Casing Head Housing

Table 33: Equipment

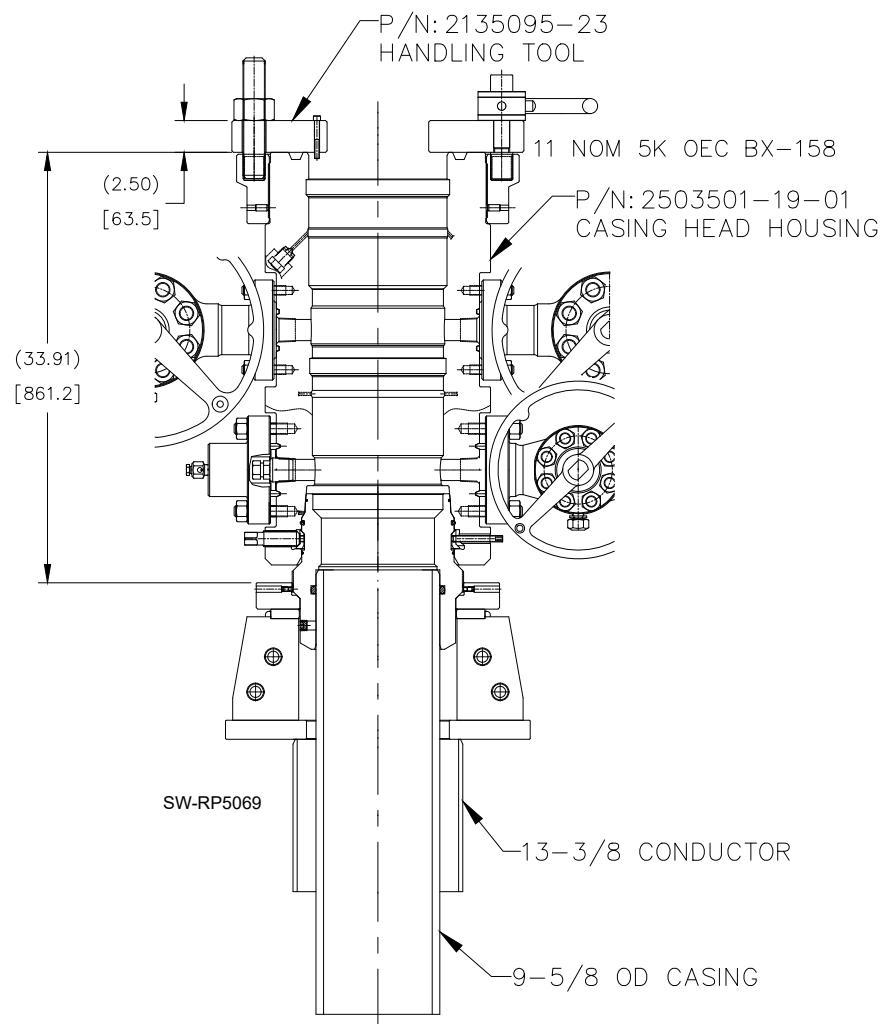
Item	Qty	Description
B01	1	ASSEMBLY, CASING HEAD HOUSING, TYPE 'ADAPT IND', 11 IN NOM OEC FLANGELOCK/ FASTLOCK #15 HUB BX-158 10K WP TOP, WITH PREP FOR INTERNAL SNAP RING X T-103 5K SEAL PREP FOR T-103 HANGER NECK WITH C-RING PREP BOTTOM, WITH INDEPENDENT LOAD SHOULDERS, WITH TWO LOWER 2-1/16 API 5K R-24 STUDDED SIDE OUTLETS WITH 2-1/16 API VR THREADS & WITH TWO UPPER 2-1/16 API 10K BX-152 STUDDED SIDE OUTLETS WITH 2-1/16 API VR THREADS, MIN BORE: 9.945; API 6A; T/C: U; M/C: DD; PSL 2; PR2 ***** - WITH B7 STUDS AND 2H NUTS
		PART# 2503501-19-01
R03	1	ASSEMBLY, HANDLING TOOL FOR HOUSING, TYPE 'ADAPT FAMILY' F/ NST, IND & SGL, & INSTALLATION / RETRIEVAL TOOL F/ 11 NOM ISOLATION SLEEVE, 23.00 IN OD X 2.50 IN THICK W/ TWO 1-1/4-7 UNC SWIVEL HOIST RINGS F/ LIFTING ***MAX LIFTING CAPACITY: 30,000 LBS**
		PART# 2135095-23

Table 34: System Tables

Measurement / Description	Dimension / Value
Casing Head Housing Stand-off from top of Load Ring	33.91 in (861.2 mm)
Test between the seals pressure	maximum 5,000 psi (34,500 kPa)
Casing Head Housing Min Bore	9.945 in (262.6 mm)

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PREVIEW DRAFT**Figure 104: Install Casing Head Housing****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**2.5.2.1****Install the Casing Head Housing**

1.**Warning**

A pressure that is trapped behind a fitting can cause injuries or damage to the equipment. It is mandatory for personnel to remove the fitting(s) before equipment installation.

Examine the **Casing Head Housing**. Make sure:

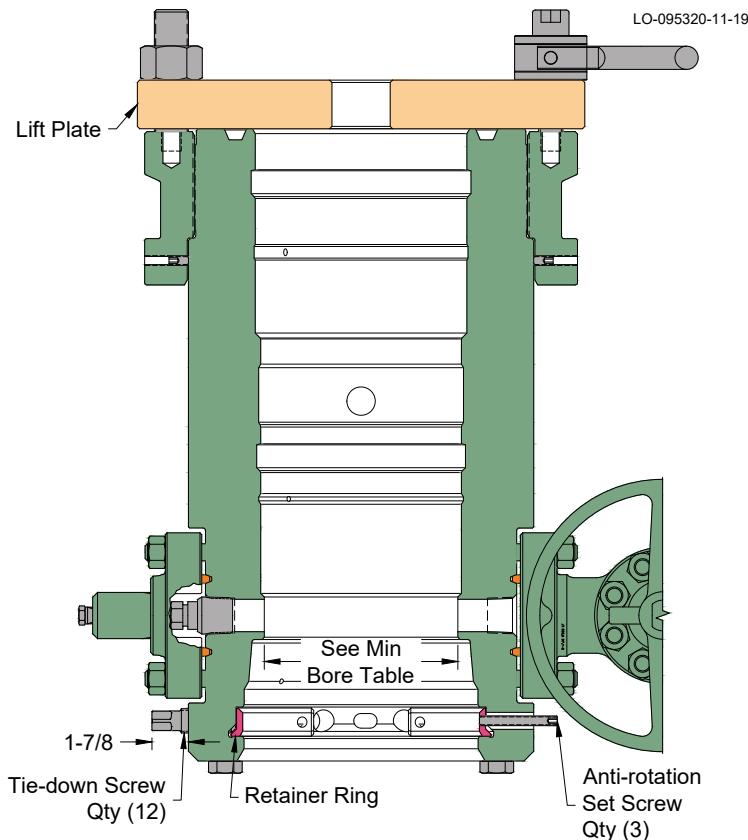
- the bore is clean and there is no debris
 - the ring groove and seal areas are clean and not damaged
 - all peripheral equipment, including the **Lift Plate** is correctly installed
 - the split retainer ring is correctly installed; the anti-rotation set screws do not extend into the ID of the split retainer ring
 - tie-down screws #1-8 are retracted from the bore as indicated in [Figure 105](#); tie-down screws #9-12 are removed from the body and set aside as indicated in [Figure 106](#)
 - the test fittings above the tie-down screws are removed
-

**Note**

Make sure the set screws are flush with the ID of the split retainer ring.

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PREVIEW DRAFT**Figure 105: Casing Head Housing**

2. Orient the Casing Head Housing with the tie-down screws down.
3. Thoroughly clean the neck of the Landing Mandrel and the bottom prep of the Casing Head Housing.
4. Install the o-ring on the taper of the Landing Mandrel neck.
5. Examine the middle o-ring of the Landing Mandrel for damage and replace, if applicable.
- 6.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the ID of the Casing Head Housing bottom prep with a light coat of oil or grease.

7. Lift and hold the Casing Head Housing over the Landing Mandrel.
8. Orient the outlet as necessary; refer to customer requirements.

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9.

**Caution**

Do not move the equipment after it lands on the ring gasket or seal. Movement of the equipment can cause an abrasion and prevent a positive seal. If it is necessary to move the equipment, lift it to clear the gasket or seal first.

Carefully lower the Casing Head Housing over the neck of the Landing Mandrel.

-
10. Tighten the tie-down screws, #1-8, in sequential order to 100 ft-lbs [136 Nm].

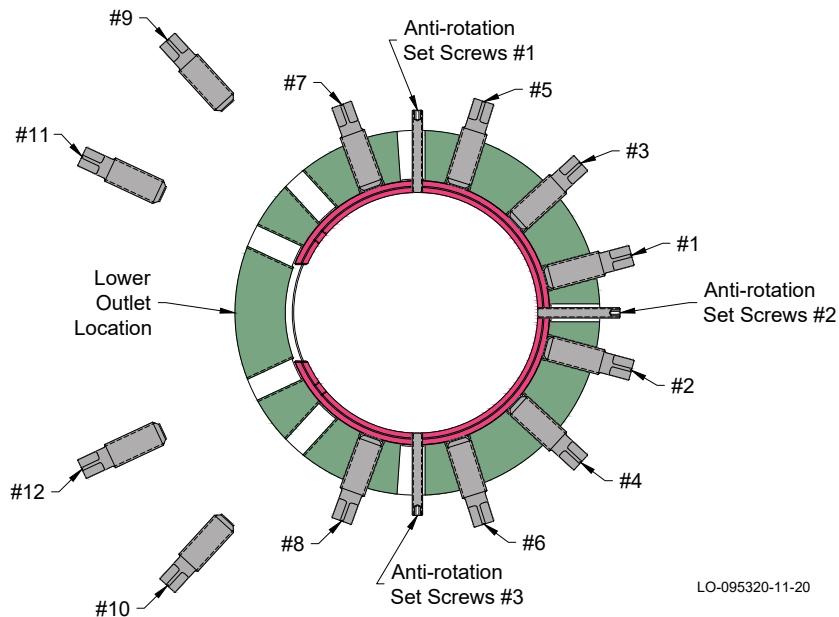


Figure 106: Casing Head Housing Tie-down Screw Pattern

**Note**

It is recommended to monitor the movement of the retainer ring through the empty holes of the tie-down screws or the view port for anti-rotation set screws #1 and #3. The retainer ring should come into view through the empty holes and anti-rotation set screws should be in the center of the view ports.

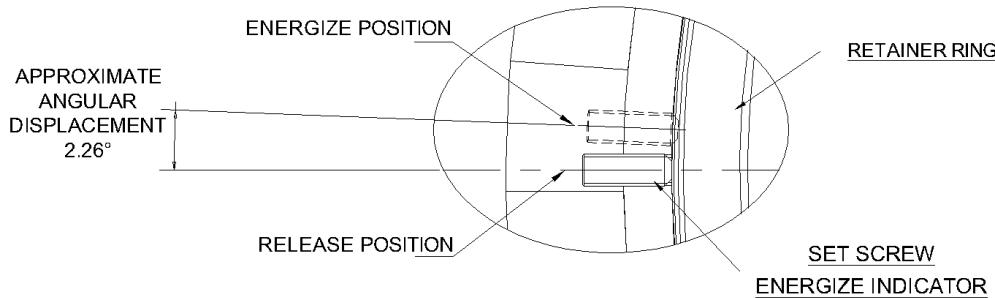
-
11. Install tie-down screws #9-12.
 12. Tighten the tie-down screws, #1-12, in sequential order to 200 ft-lbs [271 Nm].
 13. Check all of the tie-down screws again to make sure they hold a torque of 200 ft-lbs [271 Nm].
-

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-
14. Verify the proper ring engagement by visual checking the **angular displacement** of the two set screw energize indicators. These should now moved from initial 'RELEASED' position and travelled along the slots into 'ENERGIZED' position.



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Figure 107: Position of Energize Indicator

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15.

**Caution**

A tie-down screw that engages incorrectly can cause damage or an NPT event. All tie-down screws must fully engage the retainer ring as shown. If the engagement is not correct, speak with Surface Engineering for aid.

Make sure all tie-down screws extend 1-5/8 in (1.625 in [41.28 mm]) out of the OD of the Casing Head Housing.

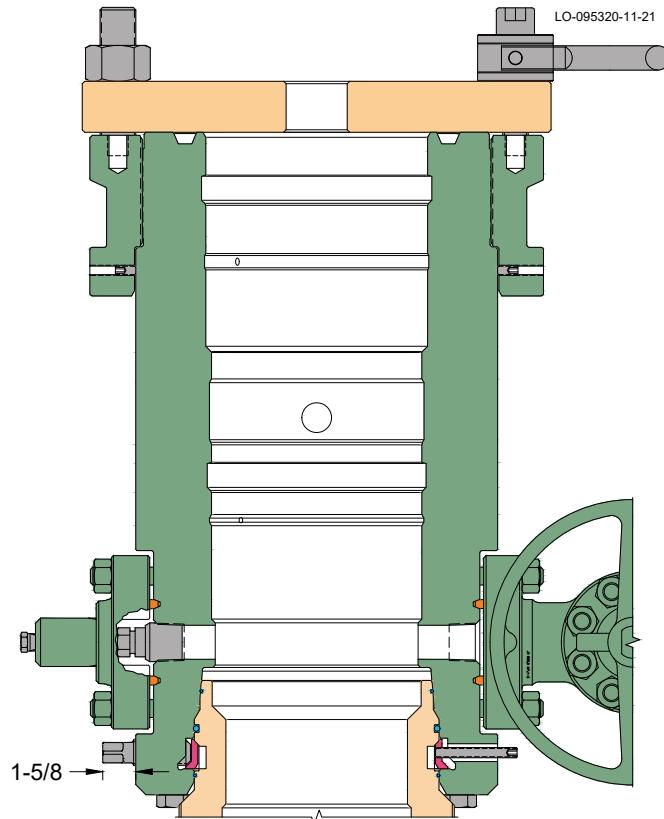


Figure 108: Casing Head Housing Secured to Landing Mandrel

2.5.2.2**Test Between the Seals**

-
1. Locate the test ports on the bottom of the Casing Head Housing.
-

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-
2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.

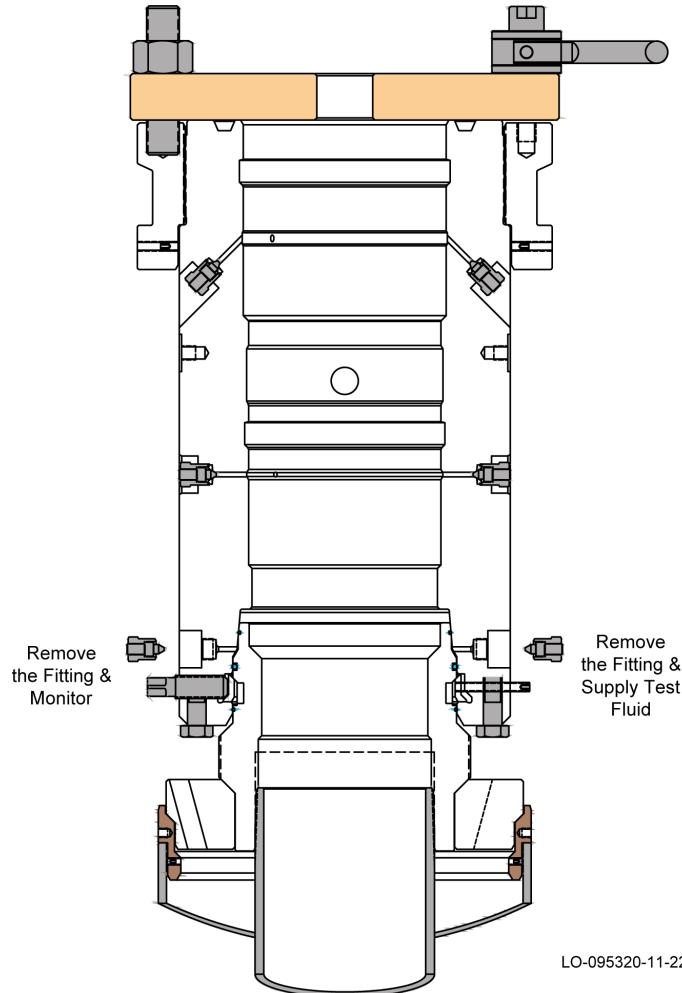


Figure 109: Continuity Test

-
3. When a continuous stream is seen from the open port, re-install the fitting.
-

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4.

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to supply test fluid to the **maximum rated working pressure of the Landing Mandrel**.

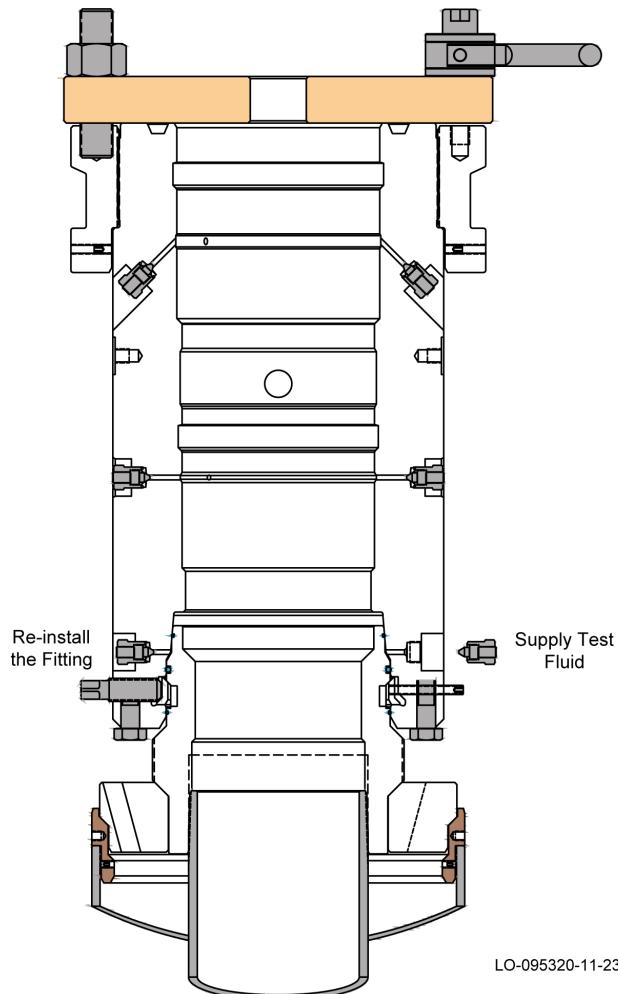


Figure 110: Testing Between the Landing Mandrel Seals

**Note**

See stage drawings or system tables for technical parameters.

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-
5. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or refer to customer requirements.

 6. When the test is complete, carefully bleed off all test pressure and remove the hydraulic test pump.

 7. Re-install the fitting.
-

2.5.3

10.318 Bowl Slip Hanger

Table 35: Equipment

Item	Qty	Description
G03	1	ASSY, SLIP HANGER, TYPE 'IC-1-ADAPT-IND', F/ 10.318 BOWL X 7 CASING, W/ ANTI-ROTATION PINS, API 6A, T/C: L+U, M/C: DD, PSL-3, PR 2, GROUP 1 ***SPECIAL WITH "SB" STYLE LATCH***
		PART# 2502526-02-01

Table 36: System Tables

Measurement / Description	Dimension / Value
Final cut casing below top face of Casing Head Housing	17.00 in (431.8 mm)
Slip Hanger Land-off	23.91 in (607.2 mm)

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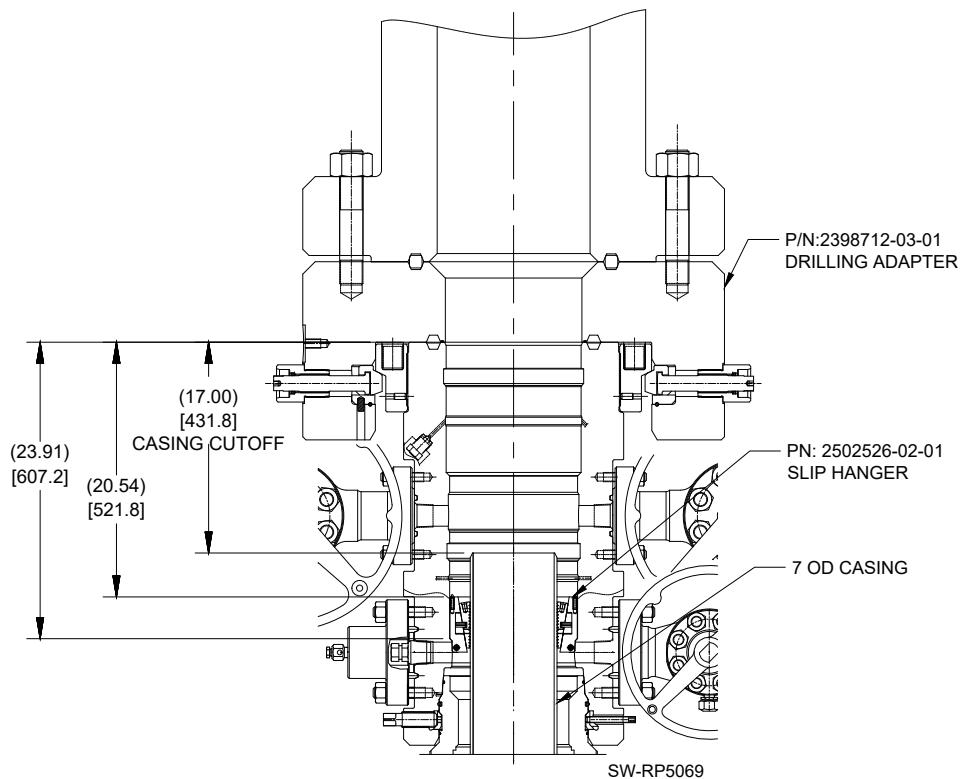
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Figure 111: Installation of 10.318 Bowl Slip Hanger with 7 OD Casing

2.5.3.1 Hang Off the Casing



Note

Always wear proper PPE (Personal Protective Equipment) such as safety shoes, safety glasses, hard hat, gloves, etc. to handle and install equipment.



Note

1. Re-confirm the casing OD and grade. Remove and clean loose scale from casing OD.
2. Verify the slip bowl taper is smooth, clean with no corrosion and damage free.
3. Disassembly of the Slip Hanger to re-orient the split is not required.

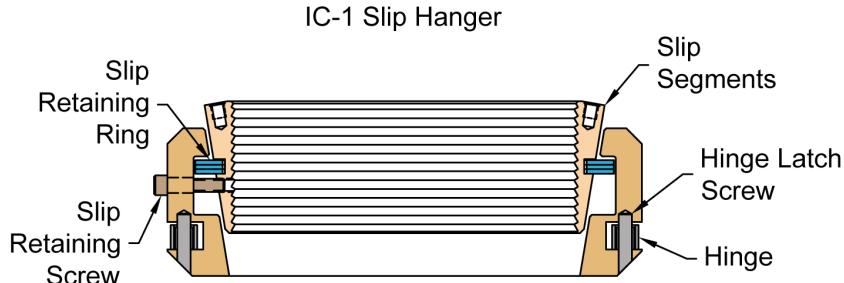
-
1. Make sure the casing has been run to total depth.
-

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-
2. There are two methods used to install the Slip Hanger:
- from the rig floor through a full opening BOP Stack, provided no casing collars are between the rig floor and the load shoulder bowl.
 - underneath the BOP Stack, provided the well is safe and under control. This option allows the Slip Hanger bowl to be inspected and thoroughly washed prior to the Slip Hanger installation.
-
3. Drain the load shoulder bowl through the side outlets.
-
4. Measure the landing distance from the load shoulder to the top of rotary table or top face of the Slip Hanger bowl depending on landing method.
-
5. Examine the **Slip Hanger**. Make sure:
- the dimensions and PART# match
 - all the screws are in place and intact
 - the slip segments are intact, clean, and not damaged
 - if spring plunger pins are present they should be correctly installed and the spring loaded pins correctly retract



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Figure 112: Slip Hanger**Note**

It is recommended that the rig adds 1.50 in [38.1 mm] to the vertical travel necessary to get the string weight (tension). This makes sure that the Slip Hanger has a sufficient movement to engage the casing and hang off the correct weight.

-
6. Washout the load shoulder bowl to ensure area is clean and free of debris.
-
7. Place two boards against the casing to support the Slip Hanger.
-
8. Remove the latch screw to open the Slip Hanger.
-
9. Wrap the Slip Hanger around the casing and replace the latch screws.
-
10. Remove the four slip retainer screws on the OD of the Slip Hanger body. These screws hold the slip segments in the retracted position. The slip segments will NOT set unless these screws are removed before Slip Hanger is placed in the bowl.
-

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-
11. Grease the Slip Hanger body.
 12. Center casing in load shoulder bowl using winch lines or other mechanical means.

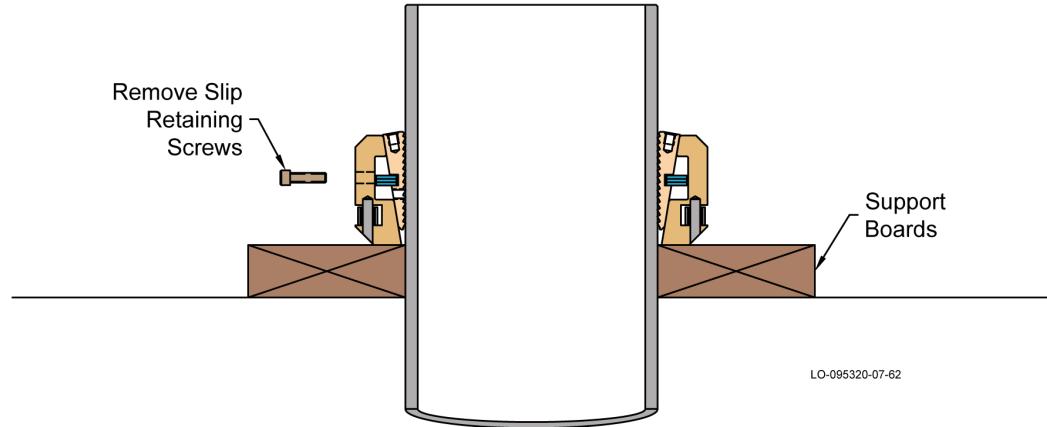


Figure 113: Slip Hanger Wrapped Around Casing

-
- 13.



Caution

If the Slip Hanger gets hung up on the casing while running, before correctly landing out in the load shoulder bowl, follow the recommendations below:

- Do not attempt to pull or reciprocate the pipe or Slip Hanger as the slip bowl will separate and release the slip segments down hole. Without manipulating the casing up or down, tie on to the casing string with a winch line and rock it back and forth to attempt to free the slips.
- Using a joint of wash pipe, push or tap on top of the Slip Hanger in a circular pattern to move slip bowl down.
- If this is unsuccessful, verify that there is no pressure and nipple down the BOP Stack. Raise the BOP Stack enough to install a cover over the hole to protect against dropping the slips out of the slip bowl. Keep clear of the raised BOP Stack in the event that the slips come loose and fall. With the BOP Stack raised it may be desirable to install a new set of slips in the bowl, if available. Remove the stuck slips after the casing is cut.

Remove the boards and carefully lower the Slip Hanger into the load shoulder bowl, using a cat-line to center the casing, if necessary.

-
14. Once the Slip Hanger is landed, measure from top of Housing/ Head/ Spool to verify that Slip Hanger is on the load shoulder prior to putting weight on the slip segments.
-

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-
15. Slack off the casing string weight.

**Note**

The maximum rated capacity of the IC-1 Slip Hanger is 50% of the casings minimum pipe body yield. Ensure customer requested or actual casing string load on the Slip Hanger does not exceed this amount. Serious damage to the casing can result from overloading the IC-1 Slip Hanger.

**Note**

A sharp drop of the weight on the weight indicator shows that the Slip Hanger fully lands. It also shows that the weight of the casing string hangs off on the load shoulder.

16. Secure the casing above rig floor with a winch to hold the weight when the pipe is cut off.

**Note**

It is recommended to pull enough tension to take slack out of the cable so the pipe cannot fall when cut. Do NOT pull tight or pipe will jump when cut free of casing string.

17. Rough cut the casing at a height above the flange of the load shoulder bowl in which the Slip Hanger has been installed, appropriate with the final cut dimension, leaving ample stub above the final cut location.
18. Move the BOP Stack and excess casing out of the way.

**Note**

Always physically measure the bottom prep height of the next component to be installed and ensure there will be clearance above Casing Stub or Hanger Neck.

19. Final cut the casing at the measured pocket depth (minus 1/4") $\pm 1/8"$ below the top of the Housing/ Head/ Spool flange. Place a 3/8" x 3/16" bevel on the casing stub and remove all burrs and sharp edges.

**Note**

There must not be any rough edges on the casing / tubing or the seals of the next component to be installed will be damaged.

**Note**

It is advisable to grind the ID of the casing to allow drill pipe and casing collars to be run smoothly.

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2.5.4

10.318 Emergency Seal Packoff

Table 37: Equipment

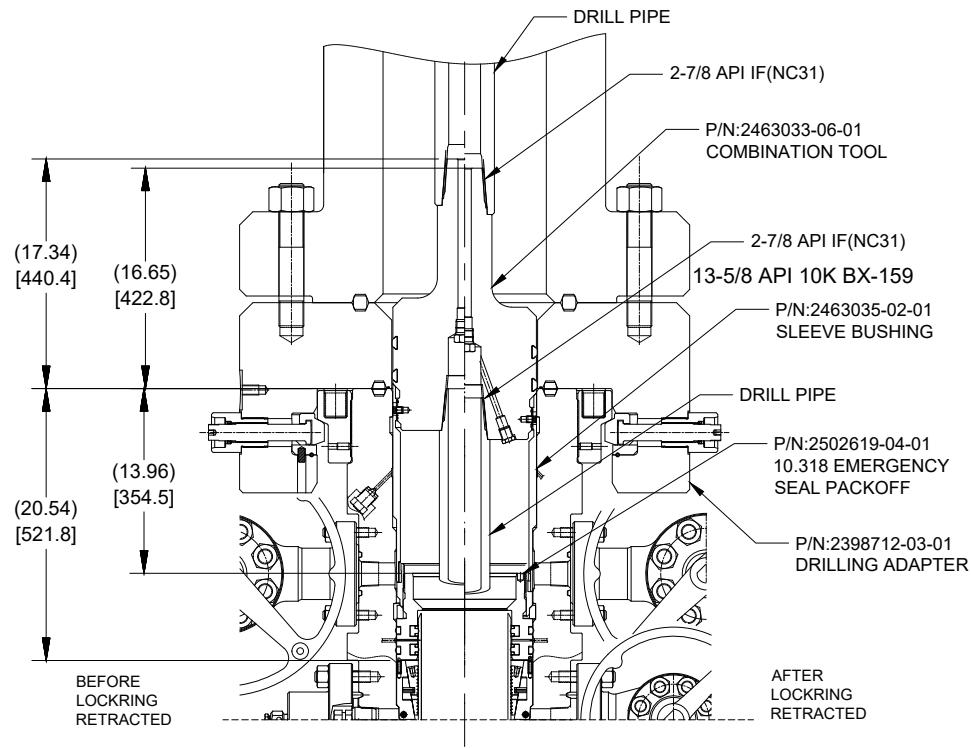
Item	Qty	Description
G04	1	ASSEMBLY, EMERGENCY IB SEAL PACKOFF, TYPE 'ADAPT IND', FOR 10.318 IN NOM BOWL, WITH 9.250-4 TPI LH EXTERNAL STUB ACME RUNNING THREAD, WITH ENERGIZING RING WITH LUGS FOR RH J-SLOT TOOL, WITH IB LOCK RING, WITH (2) 10-1/4 NOM EXTERNAL 'LS' SEALS AND 7 IN NOM DOUBLE 'T' SEALS WITH OVERSIZED 'T' SEAL BORE, WITH (6) ANTI-ROTATION HOLES AT BOTTOM, MIN BORE: 6.34 (4140 LAS 85 KSI MIN YS) TEMP RATING: -20 DEG F TO 180 DEG F MATERIAL SERVICE: SOUR SERVICE ***** - SPECIAL WITH (4) ANTI-ROTATION HOLES AT TOP - WITH 7-3/4 NOM 'S' SEAL POCKET
		PART# 2502619-04-01
R09	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM *****MAX HANGING LOAD WITH RUNNING TOOL SLEEVE P/N 2463035-02-01: 70,000 LBF MAX TORQUE: 6,000 LBF-FT***
		PART# 2463033-06-01

Table 38: System Tables

Measurement / Description	Dimension / Value
Emergency Seal Packoff Land-off	20.54 in (521.8 mm)
Emergency Seal Packoff Min.bore	6.34 in (161.0 mm)
Combination Tool Stand-off before Lockring is energized	17.34 in (440.4 mm)
Combination Tool Stand-off after Lockring is energized	16.65 in (422.8 mm)
Test between the seals pressure	maximum 80% of the casing collapse

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SW-RP5069

Figure 114: Install Emergency Seal Packoff**PREVIEW DRAFT****Private**

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PREVIEW DRAFT**2.5.4.1****Install the Seal Assembly**

1. Examine the **Combination Tool**. Make sure:
 - all the threads are clean and not damaged
 - the elastomer seals and pipe plug are removed and set aside
 - the VR plug is correctly installed, if necessary
 - the running tool sleeve is correctly secured with the set screws
 - the scribe line is correctly identified with paint as necessary
 - the j-slots are clean and there is no debris

11" Nom Combination Tool
Type "ADAPT"

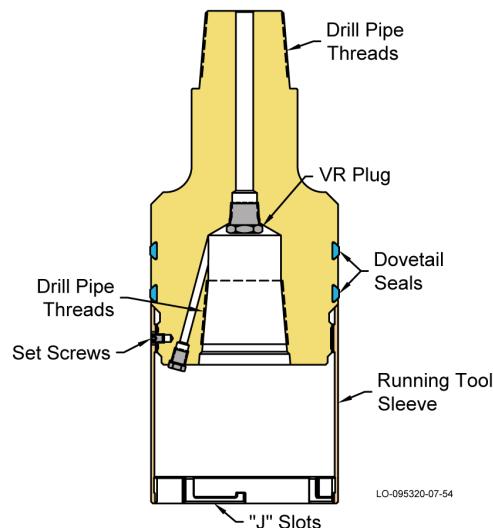


Figure 115: Combination Tool (Running Tool Configuration)

2. Orient the Combination Tool with the running tool sleeve down.
3. Make up a joint of drill pipe to the top of the Combination Tool.
4. Measure the distance from the rig floor to the landing point and identify it on the drill pipe with a horizontal paint mark. Put incremental paint marks the length of the landing point.

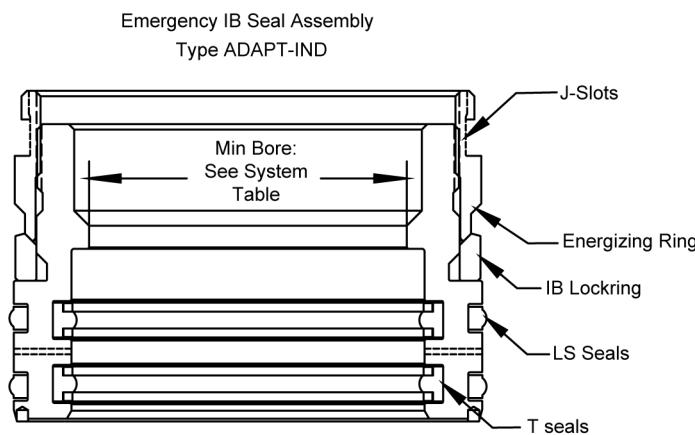
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-
5. Examine the **Seal Assembly**. Make sure:

- the bore is clean and there is no debris
- all elastomer seals are in place, clean, and not damaged
- all threads are clean and not damaged
- the scribe line is correctly identified with paint as necessary
- the lockring is correctly installed and sits below the OD of the body
- the energizing ring is correctly installed and makes contact with the lockring; the threads are clean, not damaged, and there is no debris



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Figure 116: Seal Assembly

-
6. Orient the Seal Assembly with the energizing ring up.

-
- 7.



Warning

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the ID and the OD seals with a light coat of oil or grease.

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-
8. Run drill pipe or heavy weight collars through the rotary table and hang off in the floor slips. This will be used for weight to set the Seal Assembly into position.

**Note**

If necessary, weight can be used to help land the Seal Assembly. The recommended weight to set the Seal Assembly is 3,000 lbs. Speak to Engineering for aid if more weight is necessary.

-
9. Carefully lower the Combination Tool onto the Seal Assembly and turn the drill pipe 1/4 clockwise turn to fully engage the j-slots of the energizing ring.

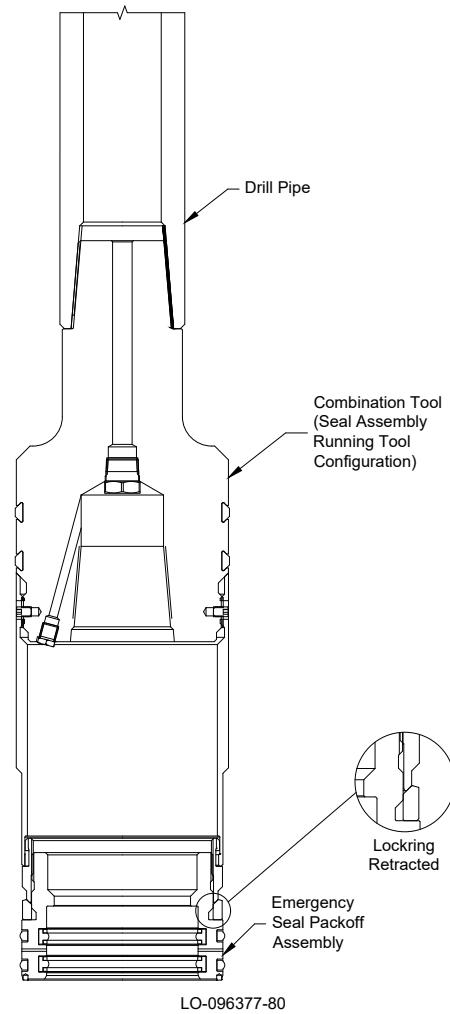


Figure 117: Seal Assembly/ Combination Tool Assembly

-
10. Do a scribe line check on the running tool sleeve and energizing ring for correct make up.

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-
11. Lift and suspend the Combination Tool/ Seal Assembly assembly over the drill pipe hung in the floor slips.
-

12.

**Warning**

A failure to prevent damage to the seal surfaces of the internal seals can cause an NPT event. Make sure that all the seal surfaces are not damaged during makeup.

Lower the Combination Tool/ Seal Assembly until the mating threads touch and make up the connection.

13.

**Caution**

A side outlet closure during the installation of the Seal Assembly can cause damage or a dangerous pressure condition. Make sure that the annulus valve below the load shoulder is open during the installation of the Seal Assembly.

Open the uppermost and lowermost annulus valves.

14. Put a horizontal paint mark on the tool OD at dim 'A' from the bottom of Seal assembly.

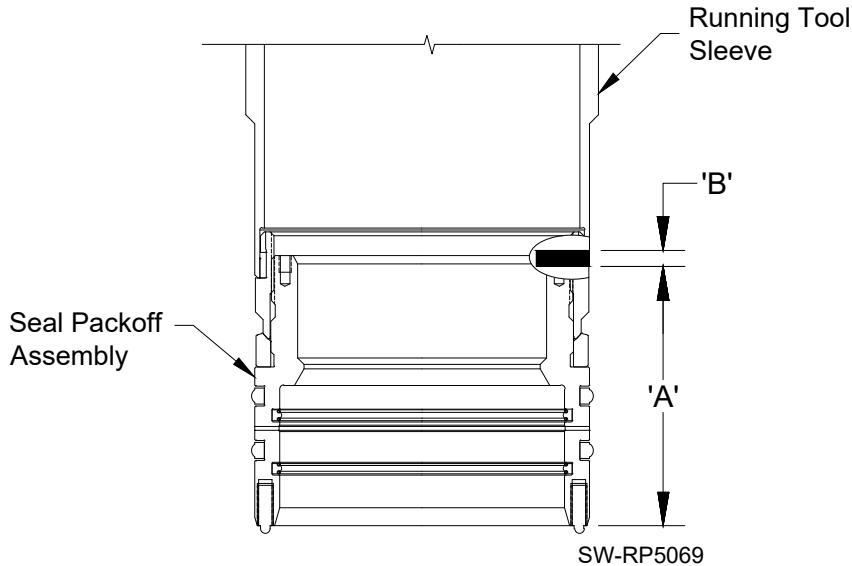


Figure 118: Horizontal Paint Mark

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-
15. Release the drill pipe from the floor slips and lower the Combination Tool/ Seal Assembly assembly and land it at the landing point. Measure and record the depth while the Seal Assembly is lowered.

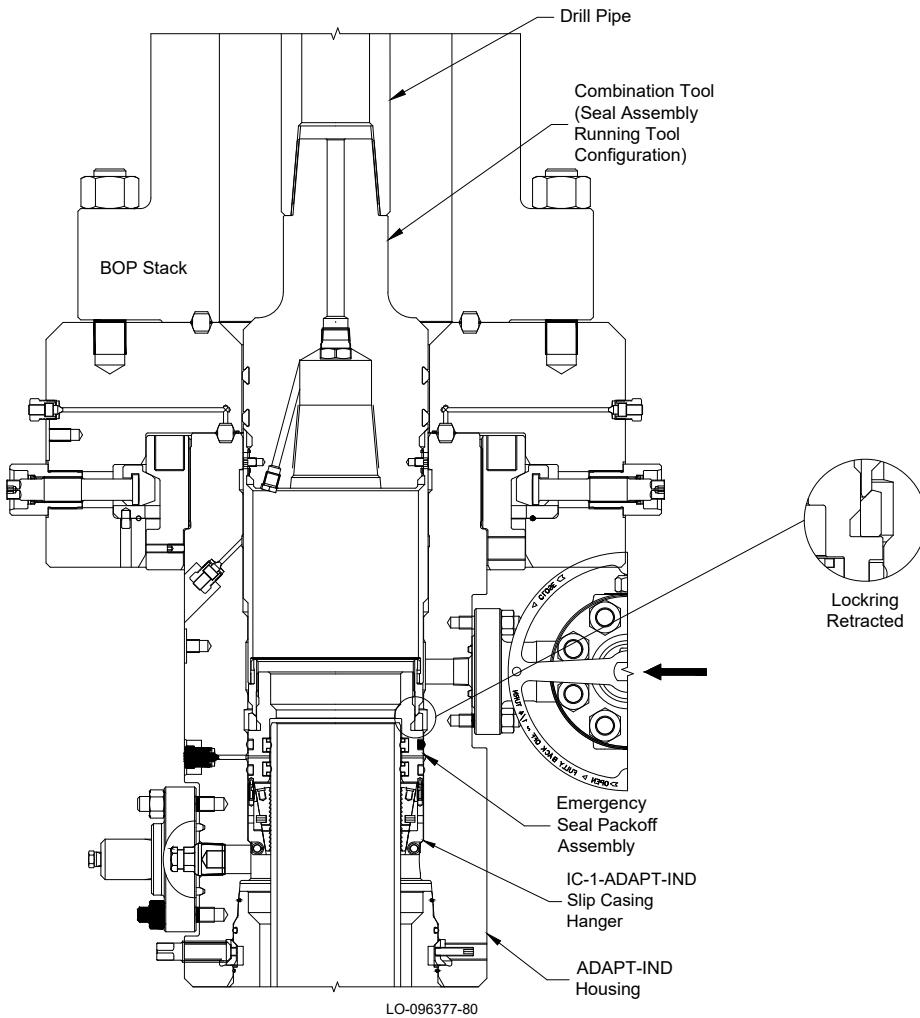


Figure 119: Seal Assembly Landed

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-
16. Do a paint mark check in the uppermost annulus valve. This shows the Seal Assembly is correctly landed.
-

**Note**

The paint mark should be in the center of the open annulus valve.

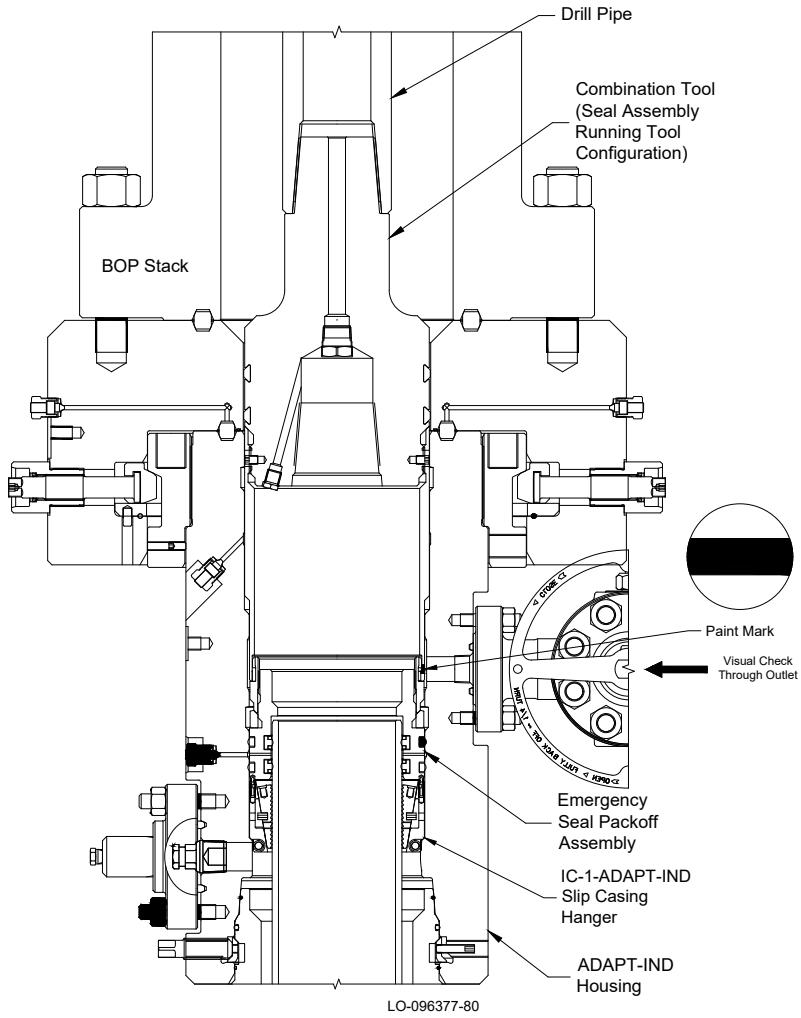


Figure 120: Emergency Seal Assembly Landing Verification

-
17. Make sure the horizontal paint mark on the drill pipe is level with the rig floor to verify the Seal assembly/Combination Tool assembly is correctly landed.
 18. Close the uppermost and lowermost annulus valves.
-

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PREVIEW DRAFT**2.5.4.2****Set the Seal Assembly Lockring**

-
1. Put a horizontal paint mark on the OD of the drill pipe that is 0.75 in [19.1 mm] above the rig floor to monitor travel of the Combination Tool and a vertical paint mark to monitor the number of turns.
 2. —
-

**Caution**

Do not use Top Drive to engage or disengage the Running Tool. Using Top Drive can permanently damage the running threads of the equipment and will require damaged parts to be replaced.

Use chain tongs to turn the Combination Tool 1/4 counterclockwise turn to disengage the j-slots of the energizing ring.

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-
3. Continue to turn the Combination Tool 3 counterclockwise turns to expand the lockring into the mating groove in the Intermediate Seal Assembly.

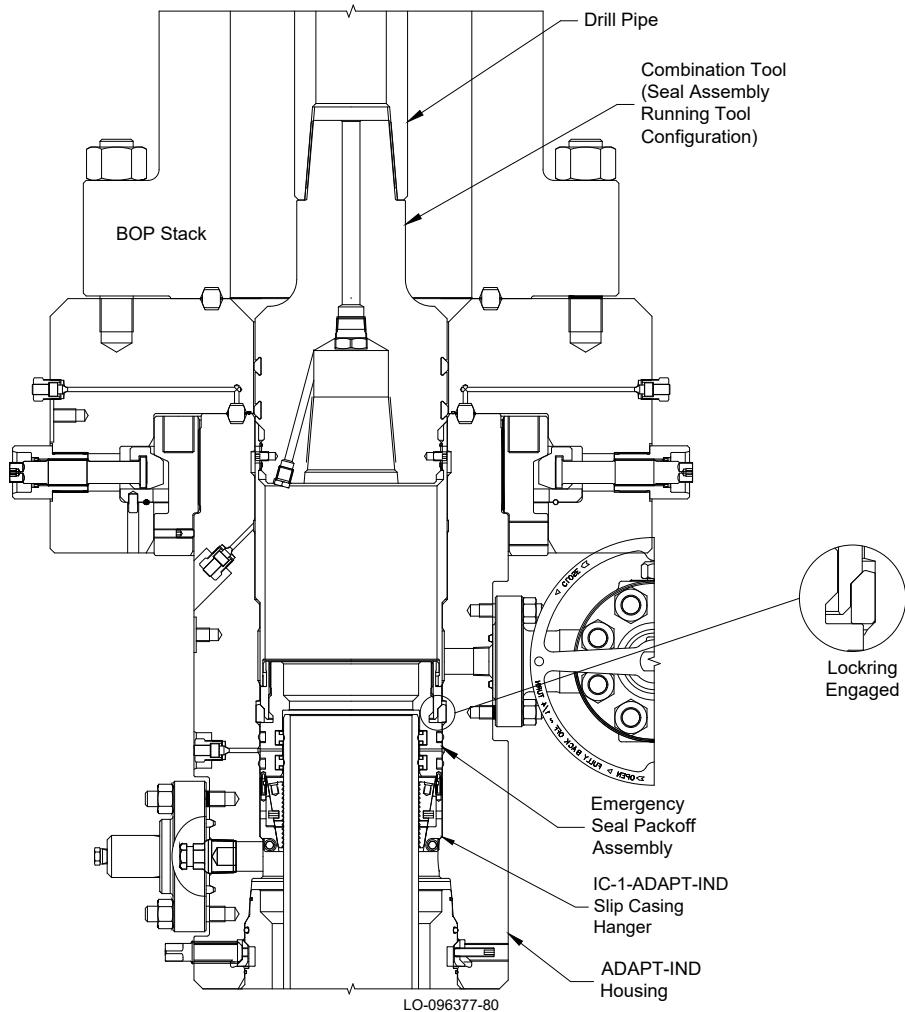


Figure 121: Seal Assembly Lockring Set

i Note

Load may be required to overcome friction. Torque must not exceed 3,000 ft-lbs.

i Note

The horizontal paint mark on the drill pipe/ landing joint should lower no more than 0.75-in [19.1-mm].

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4.**Caution****Maximum Pulling Load of the Running Tool is 30,000 lbs.**

Overpull Test (If Required):

- a. Using chain tongs, slowly rotate the Seal Assembly Running Tool 1/4 turn clockwise to a positive stop to engage the J-slots of the Energizing Ring.
 - b. Perform an overpull no more than 10,000 lbs (above the drill pipe weight hung off below the Running Tool, if any) to confirm the Lockring has properly engaged to its groove.
-

2.5.4.3**Test Between the Seals of the Seal Assembly**

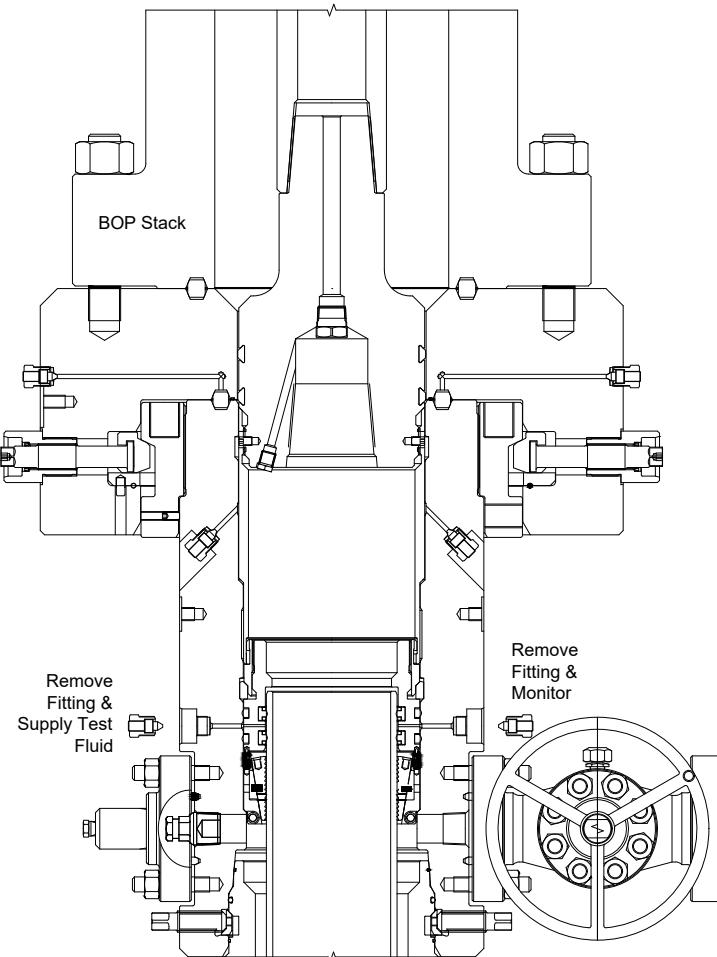
-
1. Find the ports for the seal test and remove the two fittings.
-

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-
2. Attach a hydraulic test pump to one of the open test ports and supply test fluid until a continuous stream is seen from the open port.



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Figure 122: Continuity Test

-
3. When a continuous stream is seen from the open port, re-install the fitting.
-

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4.

**Warning**

A test pressure that is too high can cause damage to the equipment or a dangerous condition. Do not use a test pressure that is higher than the rated working pressure of the wellhead equipment.

Continue to supply test fluid to the **80% of the casing collapse**.

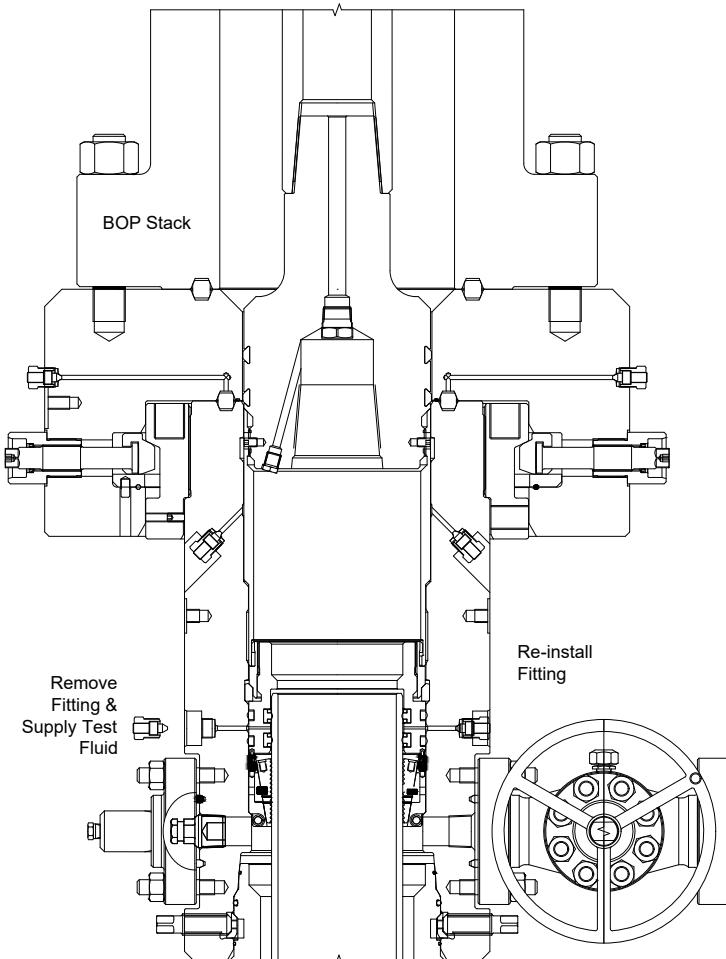


Figure 123: Test Between the Seals

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PREVIEW DRAFT**Note**

Contact the Drilling Supervisor to determine the collapse pressure of the specific grade and weight of the casing used.

**Note**

See stage drawings or system tables for technical parameters.

5. Hold and monitor, chart record if necessary, the test pressure for 15 minutes or refer to customer requirements.
6. When the test is complete, carefully bleed off all test pressure and remove the hydraulic test pump.
7. Re-install the fitting.
8. Lift straight up and retrieve the Combination Tool to the rig floor and then remove it from the drill pipe.
9. Clean, lubricate, and put the Combination Tool in storage as necessary.

2.5.4.4**Retrieval of the Seal Assembly****Caution**

This section should be followed ONLY in the event retrieval of the Seal Assembly is necessary. If the Seal Assembly was properly landed, skip this section.

1. Open the uppermost annulus valve.

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-
2. Make up a joint of drill pipe to the top of the **Combination Tool**.

11" Nom Combination Tool
Type "ADAPT"

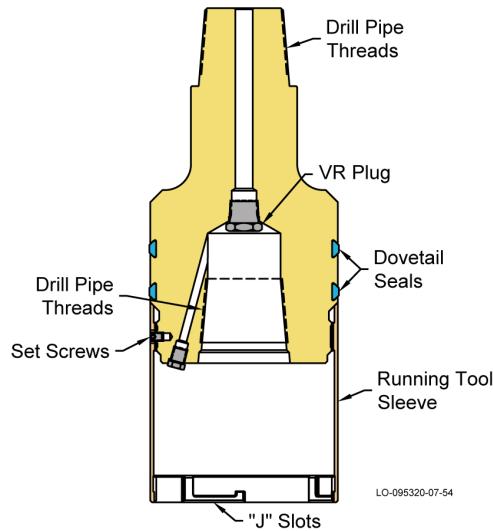


Figure 124: Combination Tool (Seal Assembly Running Tool Configuration)

-
3. Lower the Combination Tool and land it on top of the Seal Assembly.
 4. Turn the Combination Tool until it drops approximately 1-1/2 in and aligns with the j-slots of the energizing ring.
 5. Turn the Combination Tool 1/4 clockwise turn to fully engage the j-slots of the energizing ring.
-

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6.

**Warning**

Do NOT exceed 4 turns.

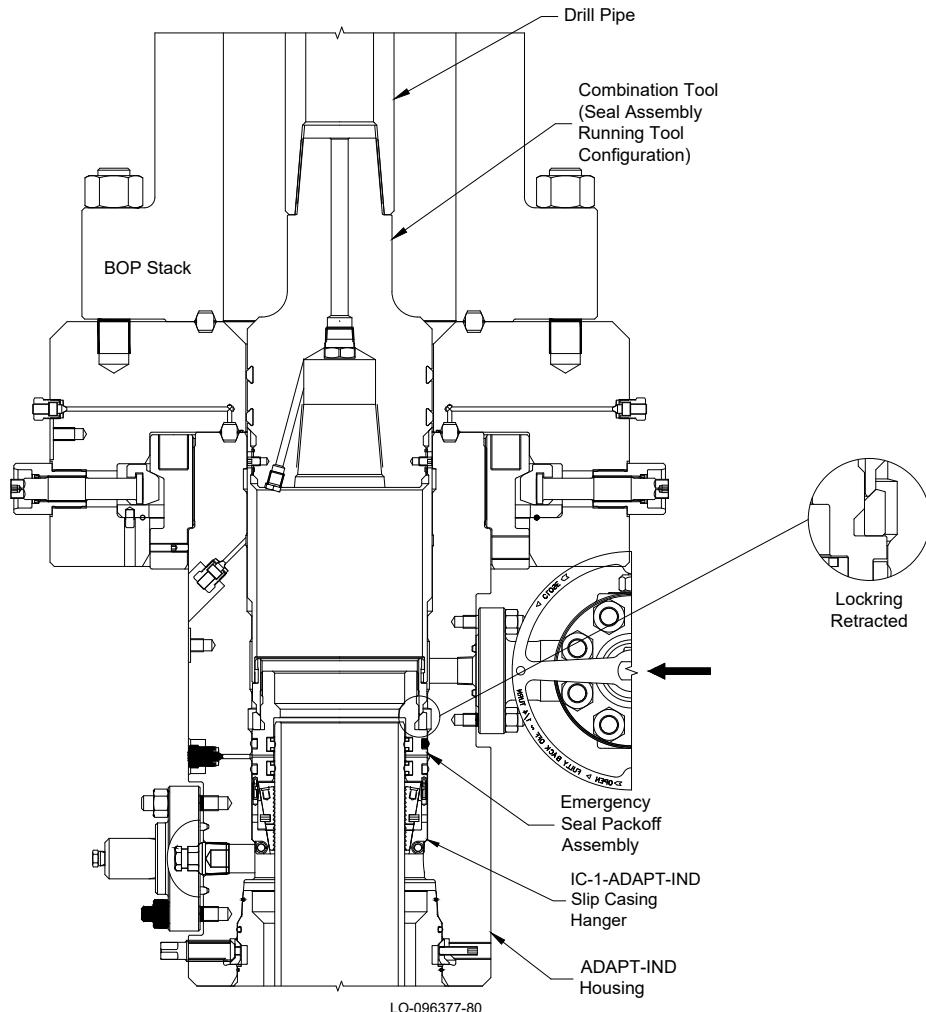
**Caution**

Do not use Top Drive to engage or disengage the Running Tool. Using Top Drive can permanently damage the running threads of the equipment and will require damaged parts to be replaced.

Use chain tongs to turn the Combination Tool 3 clockwise turns to release the lockring from the mating groove.

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PREVIEW DRAFT**Figure 125: Seal Assembly Lockring Disengaged****PREVIEW DRAFT****Private**

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-
7. Do a paint mark check in the uppermost annulus valve.
-

**Note**

The paint mark should be in the center of the open annulus valve.

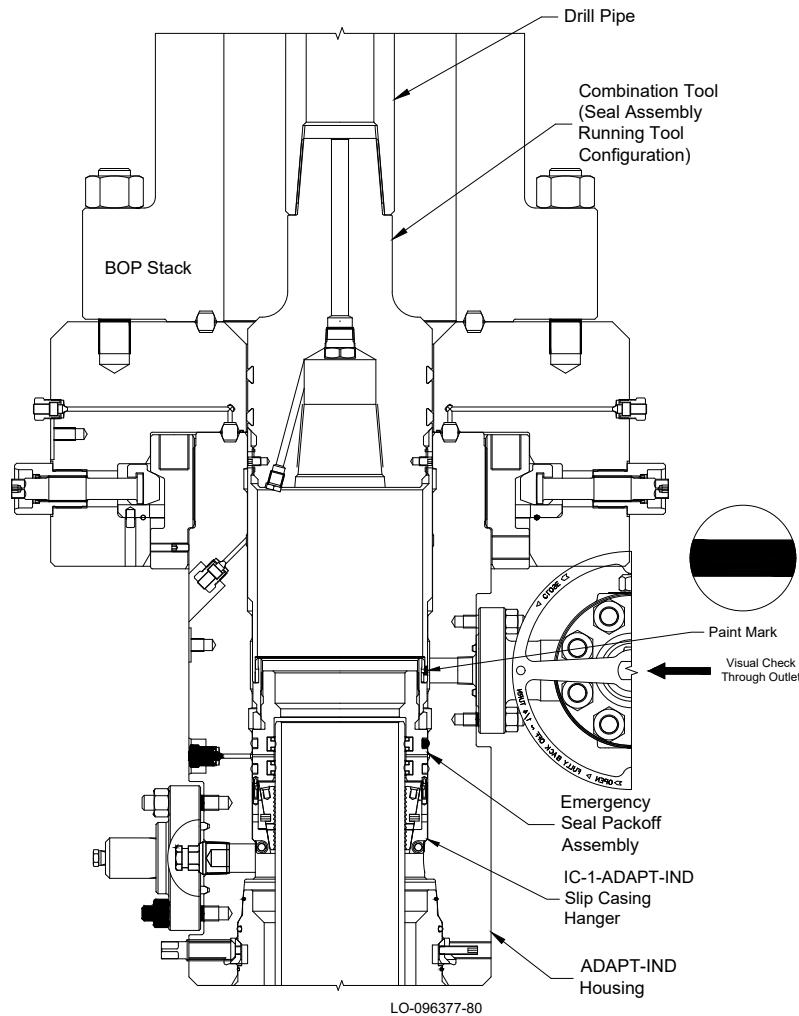


Figure 126: Visual Check Through Outlet

8. Do a vertical pull (maximum 3,000 lbs) to retrieve the Seal Assembly.
 9. Close the uppermost annulus valve.
 10. Turn the drill pipe 1/4 counterclockwise turn to remove the Seal Assembly from the Combination Tool.
 11. After the Seal Assembly is retrieved to the rig floor, replace the elastomer seals as necessary.
-

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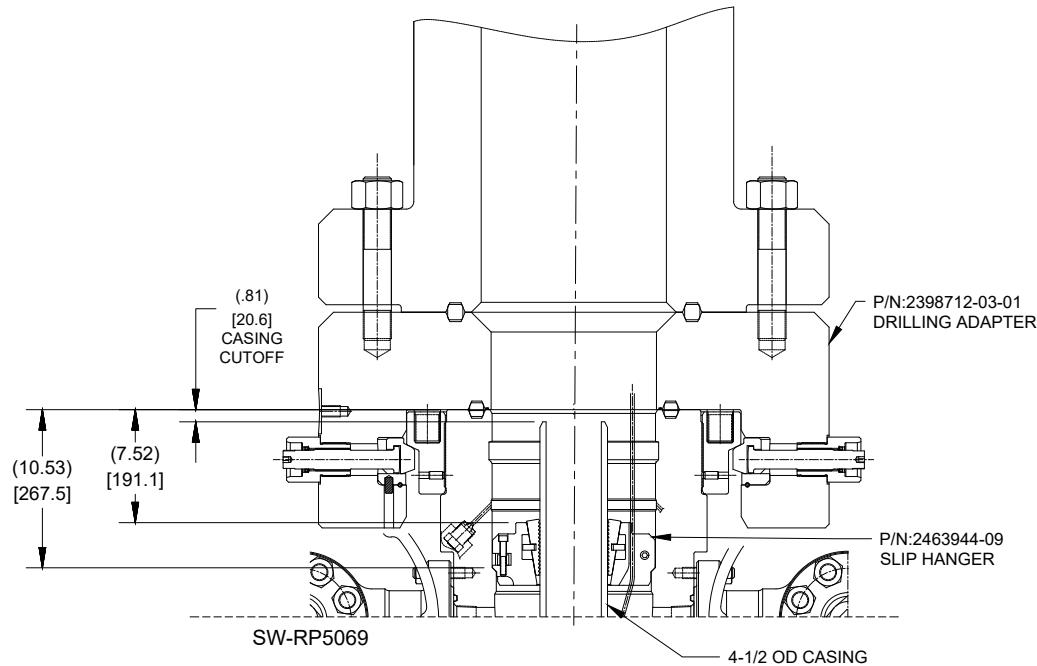
2.5.5

4-1/2 Emergency Slip Hanger**Table 39: Equipment**

Item	Qty	Description
G05	1	ASSY, SLIP HANGER, SPECIAL BOWL, W/ IC-2 SLIPS, 11 X 4-1/2, API 6A; PSL-3; PR-2, GROUP 1, T/C: U; M/C: DD-NL,EE-NL; IC-2 SLIPS AND NON-STANDARD BOWL SSD-II/TS-S BOWL, W/ EIGHT ANTI-ROTATION HOLES, W/ ONE 1/4 CONTINUOUS CONTROL LINE PREP W/ RETAINER SCREW TO BE USED W/ PACKOFF P/N: 2404416-09-01
		PART# 2463944-09

Table 40: System Tables

Measurement / Description	Dimension / Value
Final cut casing below top face of Casing Head Housing	.81 in (20.6 mm)
Slip Hanger Land-off	10.53 in (267.5 mm)

**Figure 127: Install Emergency Slip Hanger****PREVIEW DRAFT****Private**

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PREVIEW DRAFT**2.5.5.1****Hang off the Casing****Warning**

The maximum rated capacity of this Hanger is 35% of the tubing minimum pipe body yield. Make sure Customer-requested or actual casing / tubing string load on the Hanger does NOT exceed this amount. Serious damage to casing can result from overloading the Hanger.

**Note**

Make sure that a pre-job talk is conducted prior to any installations.

1. Make sure that no casing / tubing collars or centralizers are present within the Housing / Head / Spool.

**Note**

1. Re-confirm the Casing / Tubing OD and grade. Remove and clean loose scale from Casing / Tubing OD.
2. Make sure the Slip Bowl taper is smooth, clean with no corrosion and damage free.
3. Disassembly of the Hanger to re-orient the split is not required.
4. If applicable, handles are not removed when setting slips.

- 2.

**Warning**

Make sure that the casing / tubing is centralized. Hanger clearances are small, and centering must be accurate.

Centralize tubing within Housing / Head / Spool and cement casing / tubing, taking returns back up the stack. Monitor returns.

**Note**

Pressure to close the safety valve depending on the procedure set by Cairn India Limited. Take extra care to not damage the control line and chemical line (if applicable). After displacing the cement, drain and flush the stack with water.

3. After displacing cement, drain and flush the BOP stack.

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PREVIEW DRAFT

-
4. Allow the cement to cure and leave the valve open until Hanger is set.

**Note**

The Slip Hanger is to be installed underneath the BOP stack, provided the well is safe and under control. This option allows the Hanger bowl to be inspected and thoroughly washed prior to Hanger installation.

-
- 5.

**Warning**

Make sure that the casing / tubing is centralized. Hanger clearances are small, and centering must be accurate.

**Warning**

Control line(s) that is(are) caught between equipment can cause damage to equipment or a NPT event. Make sure the control line(s) do not get pinched.

**Warning**

Exercise caution while working under suspended load.

Make sure that the well is under control and sufficiently lift the Drilling Adapter (if applicable) and the BOP stack from the top of the Housing / Head / Spool to gain access to the casing / tubing.

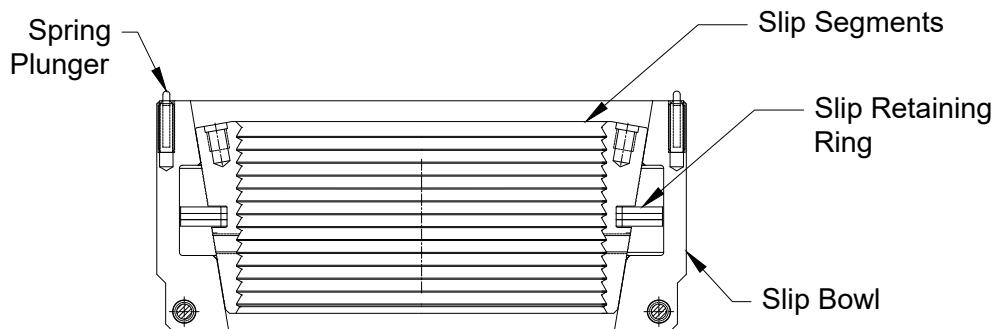
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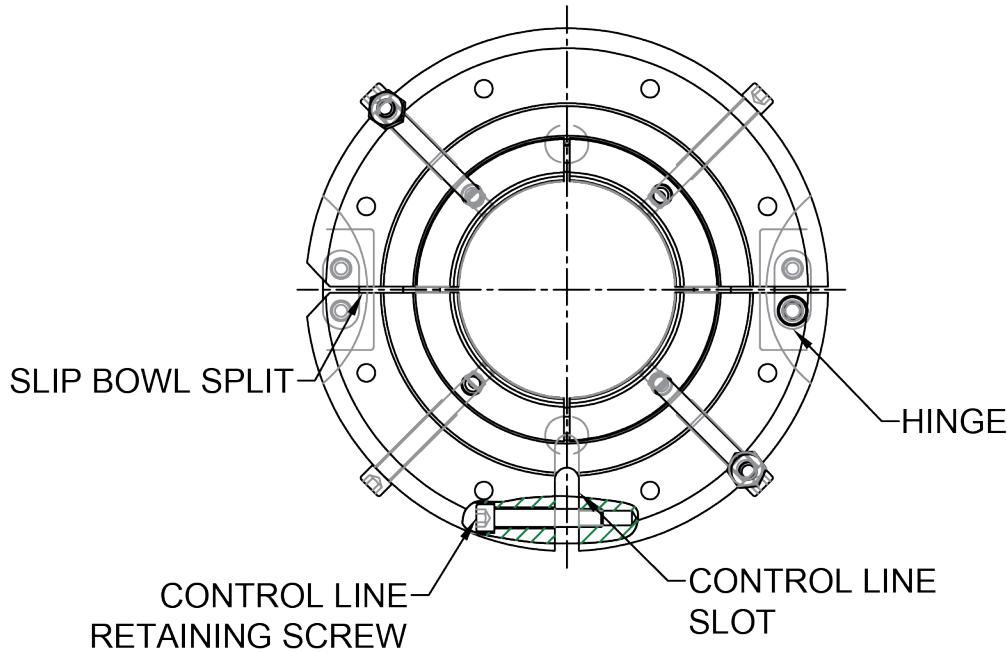
6. Examine the **Slip Hanger**. Make sure:

- all screws are in place and intact
- bore and threads are clean and in good condition
- slip segments are intact, clean, not damaged



SW-RP5069

Figure 128: Slip Hanger Assembly



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Figure 129: Slip Hanger Top View

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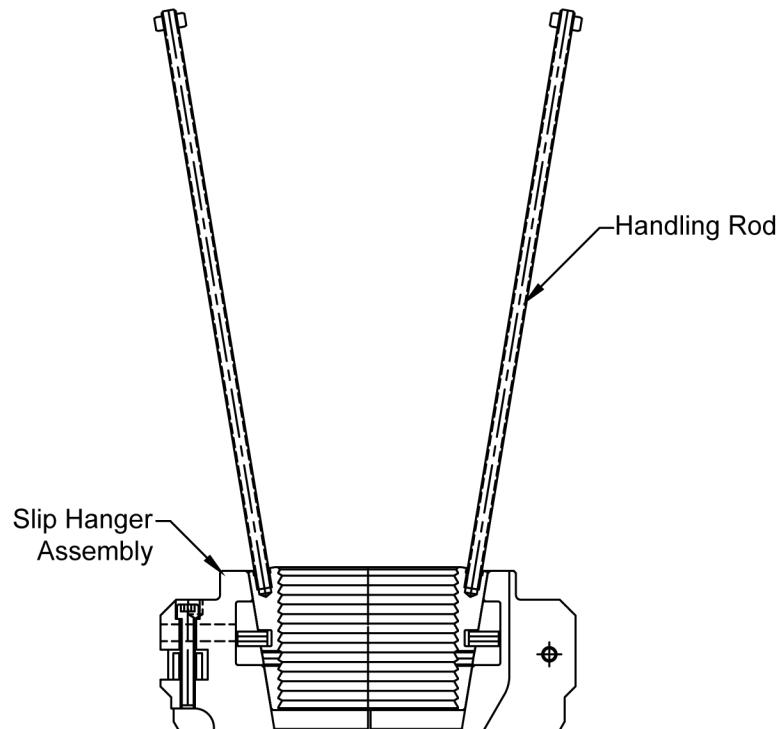
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PREVIEW DRAFT**Note**

Tension may be applied on casing / tubing prior to making up the Hanger if required.

7. Washout the Housing / Head / Spool to make sure the landing area is clean and free of debris.
8. Make up handling rods to Hanger slip segments using the long studs and nuts provided.



LO-095133-11-81

Figure 130: Slip Hanger with Handling Rods

9. Spool off enough control line to pass through the Hanger, plus additional length for termination through the exit port of the equipment above.
10. Place two boards against the casing / tubing to support the Hanger.
11. Remove the control line retainer screw from the control line slot on the Hanger.
12. Remove the latch screw to open the Hanger.
13. Wrap the Hanger around the casing / tubing and maneuver the control line so that it sits inside the slot on the Hanger. Set the Hanger on the support boards over the Housing / Head / Spool and replace the latch screw and control line retainer screw.
14. Remove slip retaining screws from the Hanger body.
15. Grease the Hanger body.

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-
16. Centralize casing / tubing in the Housing / Head / Spool using winch lines or other mechanical means.

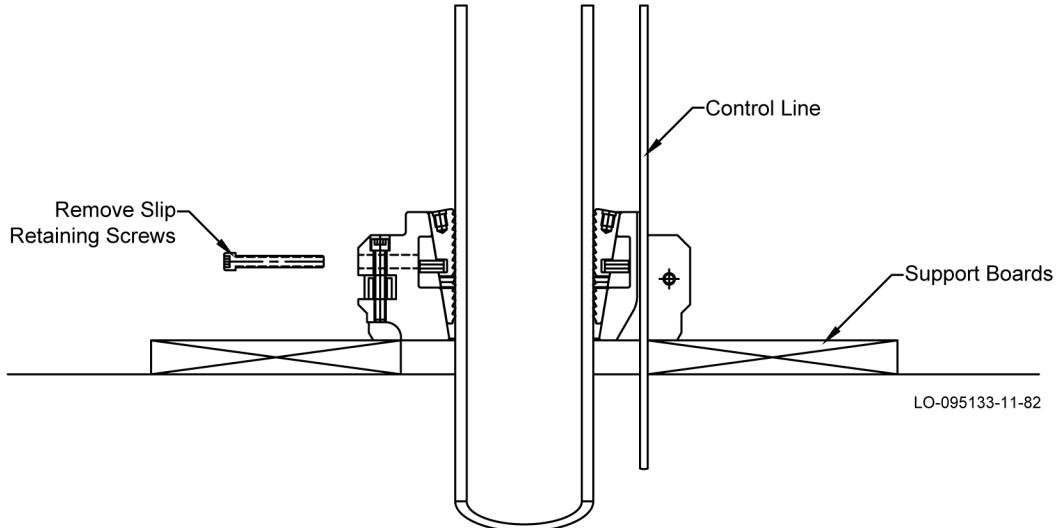


Figure 131: Slip Hanger on Support Boards

-
- 17.



Warning

Do NOT drop the Hanger. Carefully land the Hanger and take care not to damage the control line.

Remove the support boards and carefully lower the Hanger into the Housing / Head / Spool bowl, centralize the casing / tubing if necessary. Lower the Hanger using the handling rods.

-
18. Once the Slip Hanger is landed, measure from the wellhead datum to the top of the Slip Hanger bowl to make sure the Hanger is properly landed prior to putting weight on the slips.
-
19. Cut the control line to the desired length and place it out of the way.



Note

Refer to stage drawing or system table for technical information.

-
20. Pull tension on the casing / tubing to the desired hanging weight.
-
21. Slack off on the casing / tubing. A sharp decrease on the weight indicator will signify that the Hanger has taken weight and is supporting the casing / tubing.

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-
22. Secure casing / tubing above the rig floor to hold weight when the pipe is cut off.

**Note**

Make sure the casing / tubing is held by elevators through the operation under tension.

**Note**

Cover the wellhead prior to cutting operation.

-
23. Rough cut the tubing above the top of the Housing / Head / Spool, leaving ample stub above the final cut location.

**Note**

Refer to stage drawing or system table for technical information.

-
24. Move the BOP and excess casing / tubing out of the way.

-
- 25.

**Warning**

Make sure not to damage the control line during the casing / tubing final cut.

Final cut the casing / tubing below the top of the Housing / Head / Spool using the internal casing cutter.

**Note**

Cover the sealing area and Slip Hanger top with fire blanket prior to internal cutting.

**Note**

Refer to stage drawing or system table for technical information.

-
26. Place a bevel on the casing / tubing stub and remove all burns and sharp edges.

**Note**

There must not be any rough edges on the casing / tubing or the seals of the next component to be installed will be damaged.

-
27. Clean all dirt and loose scale from OD of casing / tubing in areas of seals. Clean all debris from top of the Hanger.

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-
28. There are (8) anti-rotation holes (45 deg apart) on top of the slip bowl. Project and make three line markings on the top of the Housing / Head / Spool. One for the control line and two for the anti-rotation holes.
-

2.5.6

4-1/2 Emergency Seal Packoff**Table 41: Equipment**

Item	Qty	Description
A5	1	ASSEMBLY, EMERGENCY SEAL PACKOFF, 'ADAPT IND', 11 NOM WITH 9.625-4 TPI LH EXTERNAL STUB ACME THREAD FOR ENERGIZING RING AND IB LOCK RING, WITH 6.375-4 TPI LH EXTERNAL STUB ACME THREAD FOR 'CANH' SEAL HOLDDOWN RING, WITH 4 IN NOM TYPE 'H' BPV PREP, WITH 5-1/2 SLICK NECK FOR 'CANH' METAL SEAL, WITH DOUBLE DOVETAIL SEAL, WITH DOUBLE 'T' SEAL FOR 4-1/2 OD CASING, WITH ONE 1/4 OD CONTINUOUS CONTROL LINE PREP, MIN BORE: 3.900 (4140 LAS 85 KSI YS), TEMP RATING: 0 DEG F TO 250 DEG F MATERIAL SERVICE: SOUR SERVICE ***** - WITH INCONEL 825 FITTING
		PART# 2404416-12-01
ST12	1	ASSEMBLY, INSTALLATION AND RETRIEVAL TOOL FOR 11 NOM X 4-1/2 ' ADAPT IND ' EMERGENCY SEAL PACKOFF ***** -MAX ALLOWABLE LOAD ON PUSH PLATE: 100,000 LBF -MAX ALLOWABLE TORQUE ON TORQUE SLEEVE: FOR QTY 4 STUDS THAT ARE 18.5" AND LESS: 1000 FT-LBF FOR QTY 2 STUDS THAT ARE 18.5" AND LESS: 500 FT-LBF
		PART# 2391013-12

Table 42: System Tables

Measurement / Description	Dimension / Value
Emergency Seal Packoff Land-off	8.27 in (210.1 mm)
Emergency Seal Packoff Min.bore	3.900 in (99.06 mm)
Seal Pack off tool Stand-off before Lockring is energized	9.00 in (228.7 mm)
Seal Pack off tool Stand-off after Lockring is energized	8.25 in (209.6 mm)
Test between the seals pressure	maximum 80% of the casing collapse

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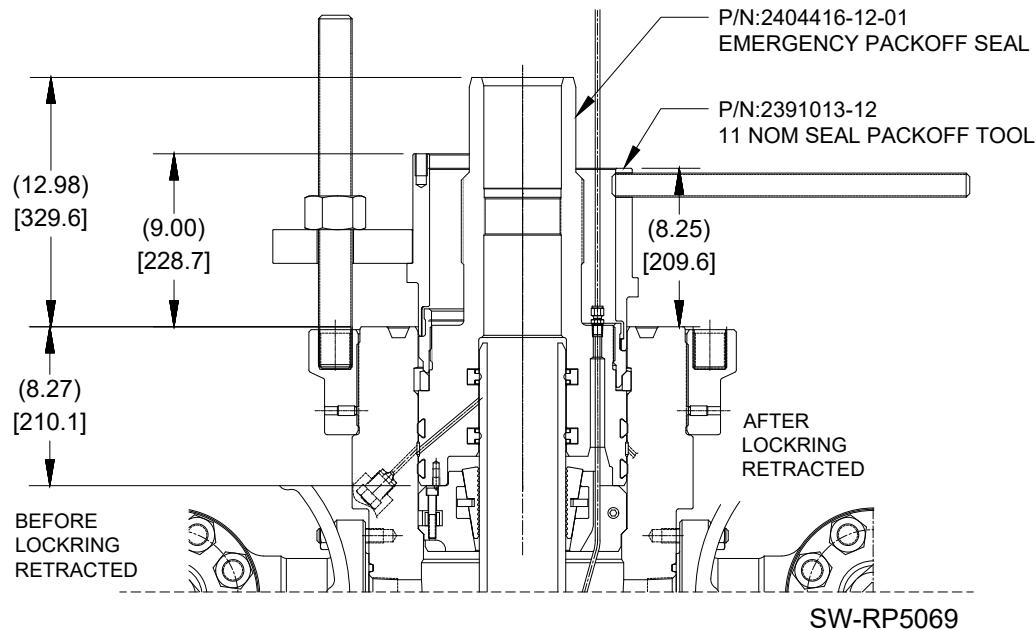
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Figure 132: Install Emergency Pack off Seal Assembly

2.5.6.1

Install the Seal Assembly



Note

Make sure that a pre-job talk is conducted prior to any installations.



Note

Make sure that the Threaded Flange is installed prior to installation of the Seal Assembly.

1. Examine the **Seal Assembly**. Make sure:
 - bore is clean and free of debris
 - all elastomer seals are in place, clean and not damaged
 - all threads are clean and not damaged
 - lockring is properly installed
 - all spring plunger pins are properly installed and able to retract properly
 - J-slots are clean and free debris
 - energizing ring is included and threads are clean and not damaged
 - control line fitting is removed

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-
2. Orient the Seal Assembly with the J-slots up.

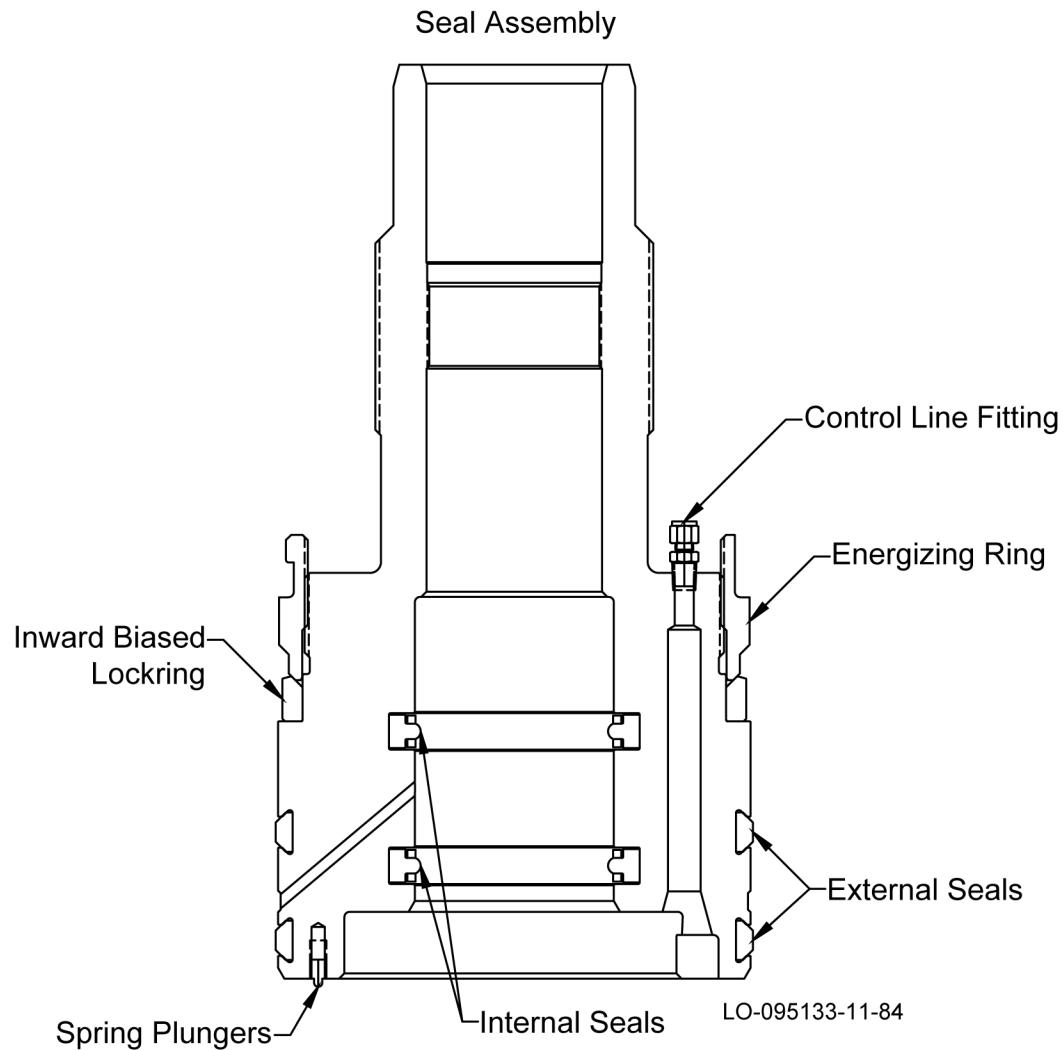


Figure 133: Seal Assembly

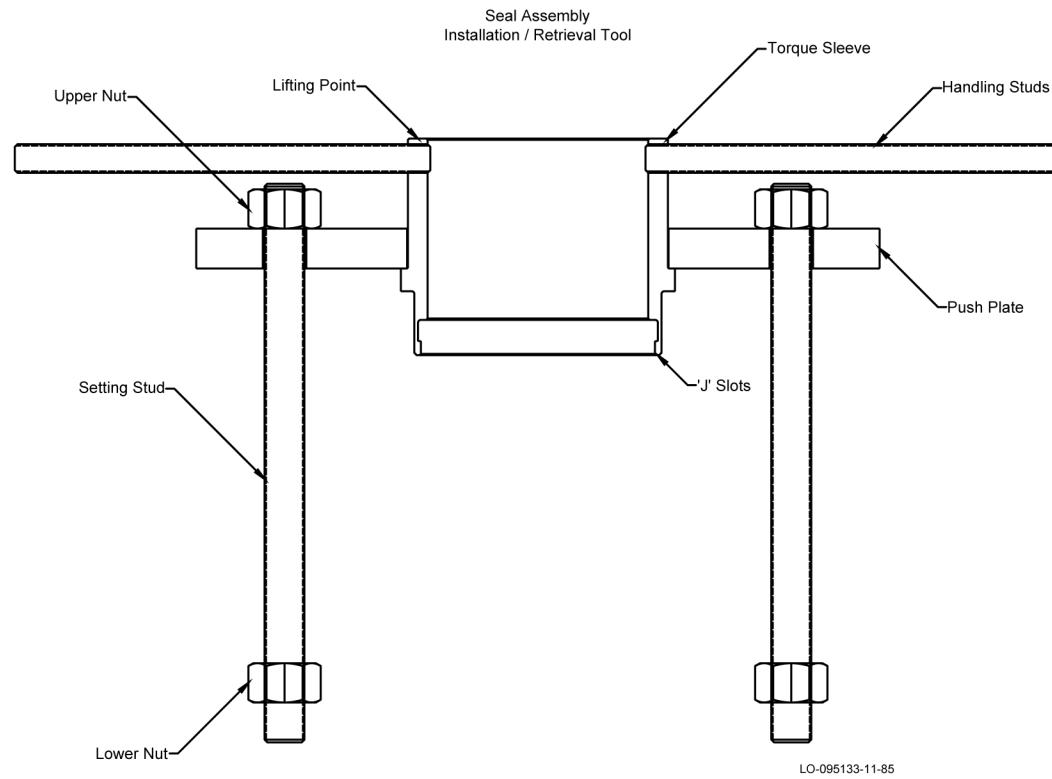
-
3. Examine the **Seal Assembly Installation Tool Kit**. Make sure:
- bore is clean and free of debris
 - all threads are clean and not damaged
 - J-slots on the Torque Sleeve are clean and free of debris
 - Push Plate is clean and not damaged
-

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-
4. Orient the Torque Sleeve with the J-slots down.



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-
- 5.

**Warning**

Too much oil or grease can prevent a positive seal. This can cause a leak, an incorrect test or an NPT event.

Lubricate the ID seals and the OD seals with a light coat of oil or grease.

-
6. Mark three vertical straight lines on the OD of the Seal Assembly. One for the control line and two for the anti-rotation pins. This is to align the rotation screws and control line port on the Seal Assembly to the slot on top of the slip bowl.

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-
7. Using the appropriate lifting device, carefully lower the Torque Sleeve onto the Seal Assembly and turn the Torque Sleeve $\frac{1}{4}$ turn to the right until it stops in the J-slots of the Energizing Ring.

**Note**

For safety purposes the assembly must be suspended at all times during installation.

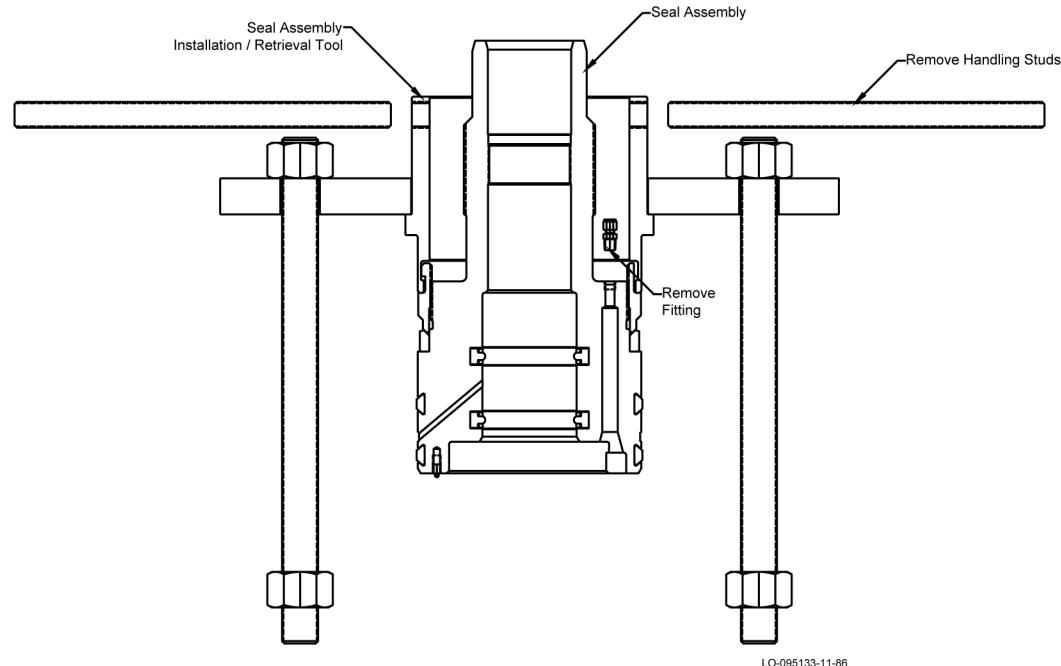


Figure 134: Seal Assembly with Installation Tool

-
8. Locate the test ports "TEST #1" and "TEST #2" on the OD of the Housing / Head / Spool and remove both fittings.

**Note**

A test fitting that is installed during the installation of the Seal Assembly can cause damage or a dangerous pressure condition. Make sure that the test ports are open during the installation of the Seal Assembly.

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9.**Caution**

Control Line is fixed with tubing cemented. Make sure that the last tubing clamp is at least 30 feet below the Slip Assembly to allow the top portion of the control line to twirl below the slip assembly as the Seal Assembly is lowered down.

Slowly lower the Torque Sleeve / Seal Assembly over the tubing stub while feeding the control line through Seal Assembly and Seal Assembly Installation Tool.

**Note**

For ease of installation without the risk of bending the control line (if applicable), do not install top control line fitting at this stage.

**Note**

Due to the seal drag, the Push Plate is needed to properly jack down the Seal Assembly into the Housing / Head / Spool.

10. Make sure the Torque Sleeve / Seal Assembly is straight and concentric to the ID bore of the Housing / Head / Spool.
-

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-
11. Using the appropriate lifting device, carefully lower the Push Plate onto the shoulder of the Torque Sleeve and secure it with studs and nuts to the Threaded Flange.

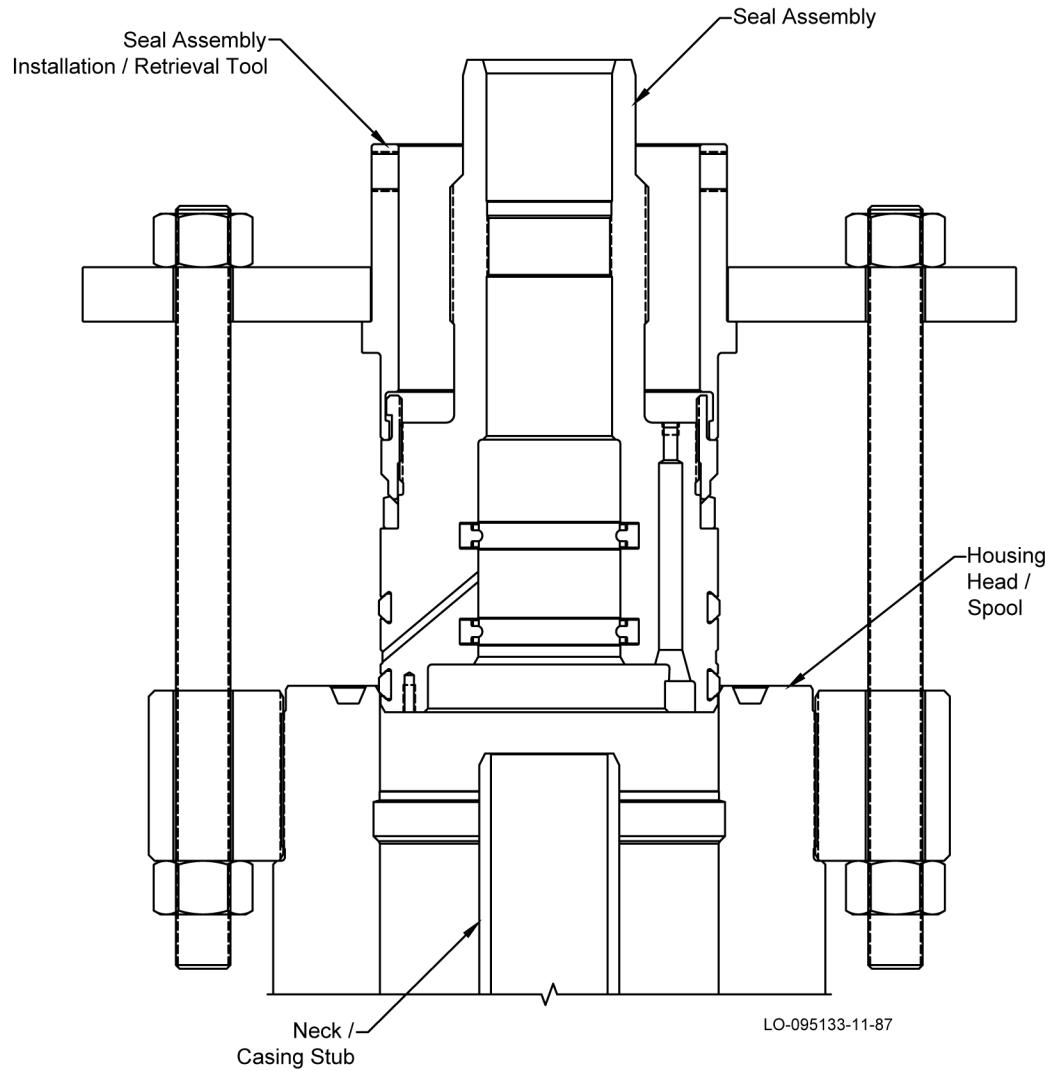


Figure 135: Install the Seal Assembly



Note

Select the bolt holes on the Push Plate that will not interfere with the four stud holes on the OD of the Torque Sleeve and the peripheral equipment below.

-
12. Anti-rotate the upper nut and thread the bottom nut evenly in an alternating cross pattern until the Seal Assembly bottoms out at the top face of the Hanger.
-

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13.

**Warning**

Do NOT rotate the Torque Sleeve until it is confirmed that the Seal Assembly has properly landed on the Hanger.

**Warning**

It is recommended to apply slight tension on control line while lowering down Seal Assembly as a precautionary measure to prevent the control line getting kinked at the bottom of the Seal Assembly.

Make sure the Seal Assembly has landed properly by measuring the distance between the Threaded Flange and the bottom of the Push Plate.

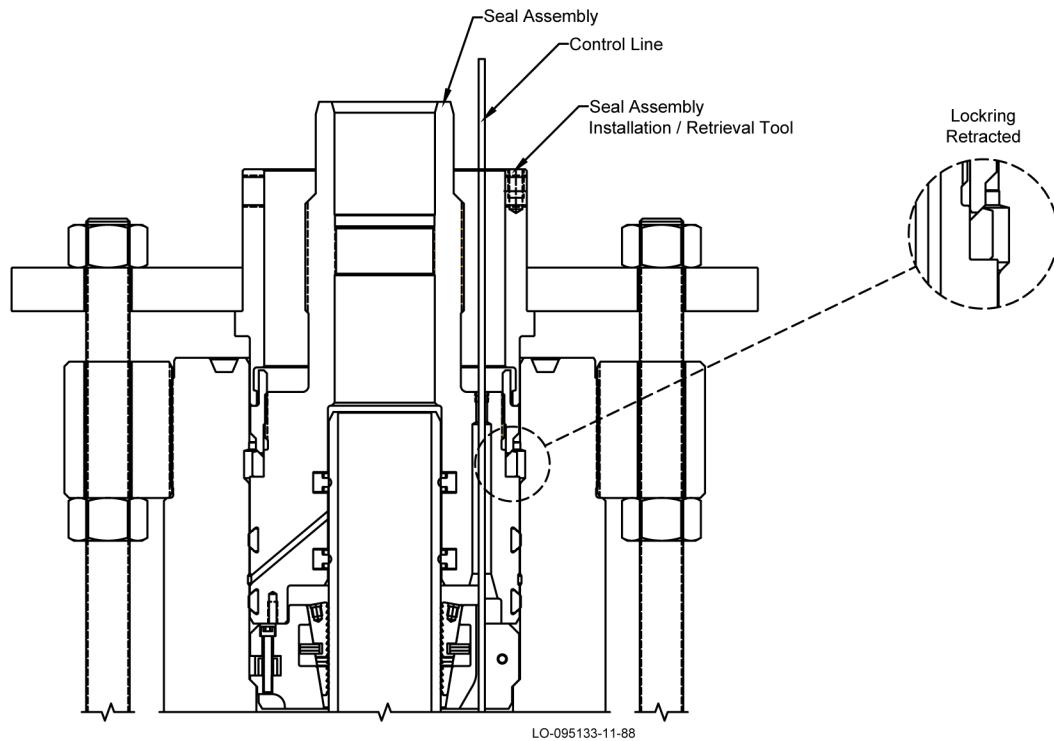


Figure 136: Seal Assembly Landed

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PREVIEW DRAFT**Note**

Refer to stage drawing or system table for technical information.

2.5.6.2 Set the Seal Assembly Lockring

**Note**

Confirm the Seal Assembly is correctly landed at the landing point.

1. Make a vertical mark on the Torque Sleeve and Push Plate to help with counting the number of turns.
2. Thread in (4) studs on the OD of the Torque Sleeve, until they are flush with the ID.

**Note**

- Maximum torque capacity with two studs (18.5" long or less) is 500 ft-lb.
- Maximum torque capacity with four studs (18.5" long or less) is 1000 ft-lb.

3. Using the (4) studs on the OD, turn the Torque Sleeve approximately 3 turns to the left to expand the Lockring into its mating groove in the Housing. Record the number of turns

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-
4. Make sure the Lockring is fully engaged by measuring the distance between the Threaded Flange and the bottom of the Push Plate.

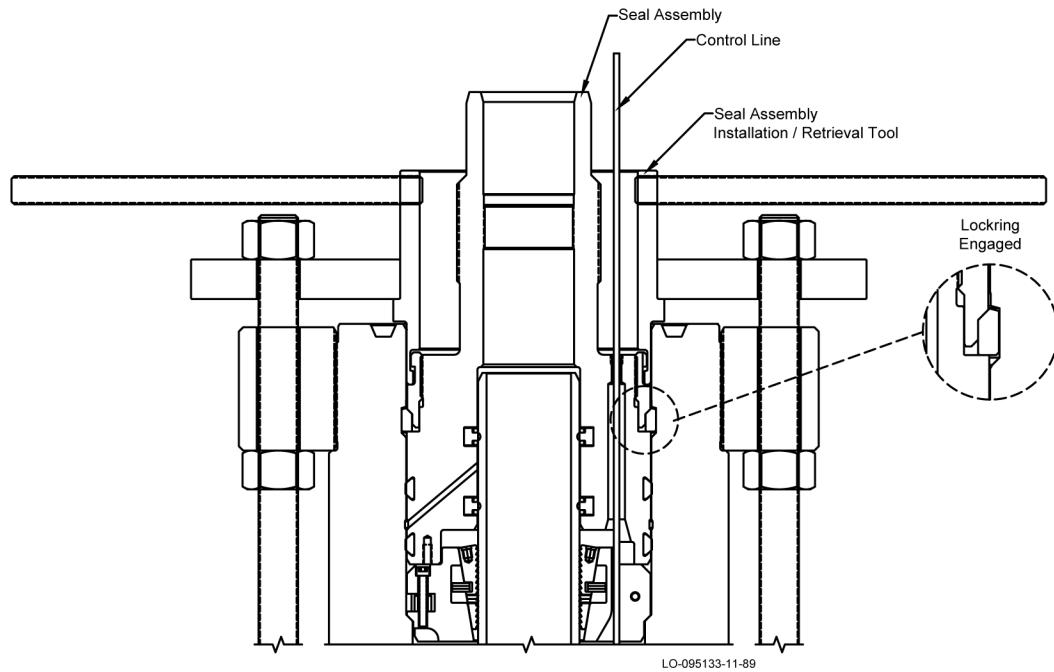


Figure 137: Set the Lockring



Note

Refer to stage drawing or system table for technical information.

2.5.6.3 **Test Between the Seals**

-
1. Locate the test ports on the OD of the Housing / Head / Spool.
 2. Remove both fittings from the Housing.
-

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3.**Warning****Do NOT over pressurize.**

Install a test pump to the open test port and inject fluid. When test fluid flows out from the opposite test port, make up the fitting and test as per rig procedure.

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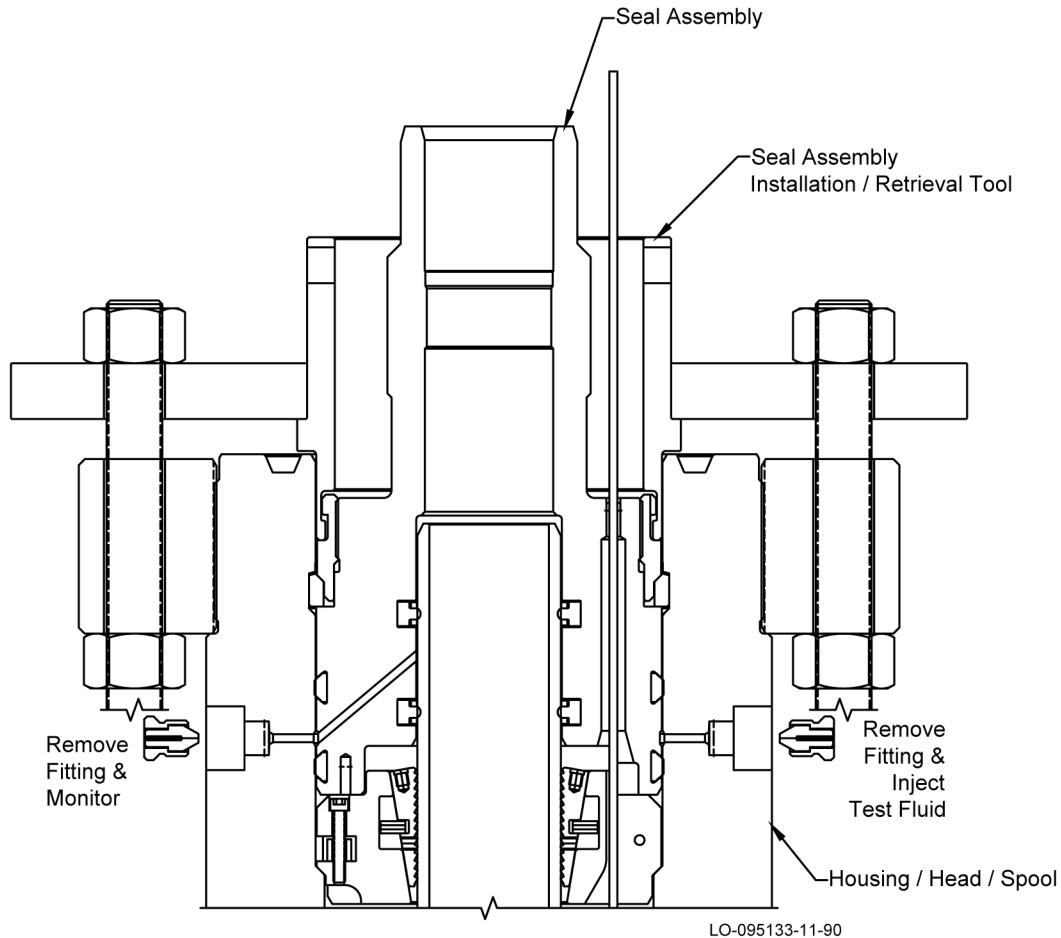
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4.

**Warning****Do NOT exceed 80% of casing collapse.**

Hold and monitor test pressure for 15 minutes or as per rig procedure.

**Figure 138: Test Between the Seals****Note**

Refer to stage drawing or system table for technical information.

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PREVIEW DRAFT**Note**

Contact the Drilling Supervisor to determine the collapse pressure of the specific grade and weight of the casing used.

**Note**

Field service technician shall indicate test pressure and record in field service report.

**Note**

Field service technician shall indicate test pressure and record in field service report.

5. Once a satisfactory test is achieved, carefully bleed off all test pressure and remove the test pump.
6. Re-install all fittings.
7. Remove the studs from OD of the Torque Sleeve.
8. Using the appropriate lifting device, remove the Push Plate and the studs from the Housing / Head / Spool.
9. Using the appropriate lifting device, remove the Torque Sleeve from the Seal Assembly by lifting straight up.
10. Clean, grease, and store the Tool as required.
11. Measure and record the Seal Assembly neck stand-off.

**Note**

Refer to stage drawing or system table for technical information.

12. Slide the control line fitting and install it on the Seal Assembly.

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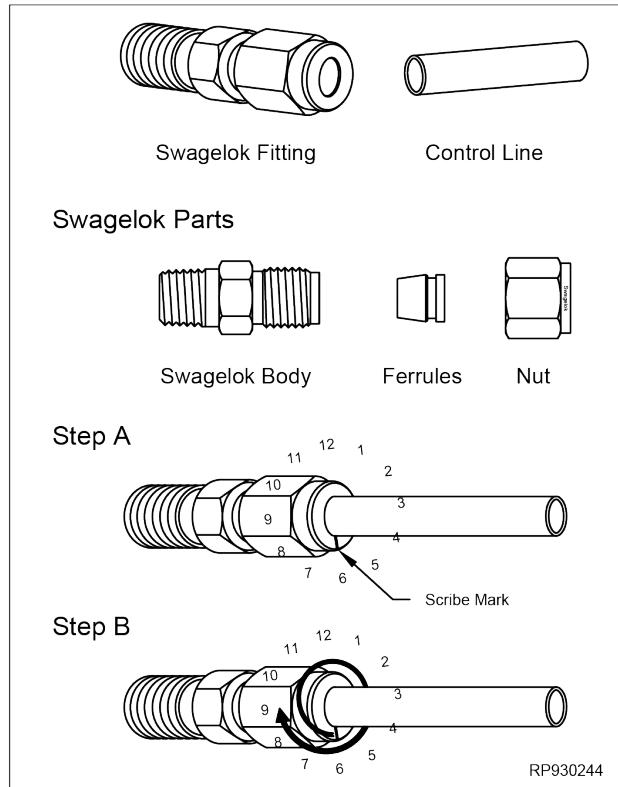
PREVIEW DRAFT**2.5.6.4****Install Control Line Fittings (Swagelok)**

1. The top and bottom Swagelok fittings consist of a nut, two nested ferrules and a threaded body. Follow the manufacturer's instructions to make up the Swagelok fittings
 - a. Loosen the nut on bottom Swagelok fitting. Put the control line through the bottom Swagelok fitting. Make sure the control line is fully fed through the Tubing Hanger and the top Swagelok fitting.
 - b. Put a paint mark on the nut at the 6 o'clock position before the tightening the bottom Swagelok fitting.

Tighten the 1-1/4 turns, while holding the body of the bottom Swagelok fitting tightly in the Tubing Hanger with a backup wrench. Monitor the paint mark, while a full turn is made and then continue to the 9 o'clock position.

If a paint mark is put on the nut at the 6 o'clock position as it appears to you, there will be no doubt of the starting position. When the nut is tightened 1-1/4 turns to the 9 o'clock position, you can easily see that the Swagelok fitting has been correctly installed.

Use the Gap Inspection Gauge(1-1/4 turns from finger tight) to make sure there is sufficient pull-up. Do this sequence again on the top Swagelok fitting.

**Figure 139: Swagelok Fittings**

2. Remove the fitting from the OD of the Tubing Hanger and attach a hydraulic test pump to the open test port. Inject test fluid to the **maximum rated working pressure of the Swagelok fittings**, or as instructed by the Drilling Supervisor. Once a satisfactory test is achieved, carefully bleed off all test pressure and remove the hydraulic test pump.

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-
3. Re-install the fitting and make sure it is flush or below the OD of the Tubing Hanger.
 4. Carefully clean the Tubing Hanger and lubricate the seal(s) to prevent bending of the control line (s).
-

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Bill of Material

Table 43: SECTION A - LOAD RING AND 9-5/8 API BTC LANDING MANDREL

Item	Qty	Description
A01	1	ASSY, LOAD RING, F/ TYPE 'ADAPT IND' LOAD RING ADAPTER, 20 OD X 12.415 ID BTM PREP W/ ONE O-RING C/W SOCKET HD SET SCREWS TO LOCK ON 13-3/8 CONDUCTOR, AND TOP PREP TO ACCEPT LOW PRESSURE ADAPTER, MIN BORE: 12.400
		PART# 2329762-14-01
A02	1	ASSY; LANDING MANDREL W/ LOAD RING ADAPTER, TYPE 'ADAPT IND', 13-5/8 NOM, W/ T-103 NECK TOP X 9-5/8 API BTC BOX THD BTM, W/ 13.500-4TPI LH EXTERNAL STUB ACME RUNNING THDS, EIGHT ANTI-ROTATION SLOTS F/ RUNNING TOOL & PREP F/ TIEDOWN SCREWS, LANDS IN CONDUCTOR LOAD RING 2605992-01-() OR 2329761-07-() (OR WITH SPLIT TYPE LANDING BASE 2221412-34-01, W/ FOUR "TOP JOB" FLUTES AND EIGHT ANGLED FLOW-BY HOLES ON LOAD RING ADAPTER, MIN BORE: 8.88 ***ASSEMBLY MAX OD: 19.177 SHALL BE COMPARED WITH RISER DRIFT BEFORE USE***** MAX HANGING CAPACITY: 500,000 LBS (OR LESSER OF 80% PIPE BODY YIELD AND PIPE CONNECTION STRENGTH) ***
		PART# 2605993-02-01

Table 44: SECTION B - CASING HEAD HOUSING

Item	Qty	Description
B00	1	SECTIONAL ASSEMBLY, CASING HEAD HOUSING, TYPE 'ADAPT IND', 11 IN NOM OEC FLANGELOCK/ FASTLOCK #15 HUB BX-158 10K WP TOP, WITH PREP FOR INTERNAL SNAP RING X T-103 5K SEAL PREP FOR T-103 HANGER NECK WITH C-RING PREP BOTTOM, WITH INDEPENDENT LOAD SHOULDERS, WITH TWO LOWER 2-1/16 API 5K R-24 STUDDED SIDE OUTLETS & TWO UPPER 2-1/16 API 10K BX-152 STUDDED SIDE OUTLETS WITH 2-1/16 API VR THREADS, COMES WITH TWO 2-1/16 API 5K MANUAL GATE VALVE, ONE RECESSED BLIND FLANGE AND ACCESSORIES ON LOWER BACK SIDE OUTLET, COMES WITH ONE 2-1/16 API 5K RECESSED BLIND FLANGE AND BLEEDER FITTING ON LOWER FRONT SIDE OUTLET, TWO 2-1/16 API 10K MANUAL GATE VALVE AND ONE RECESSED BLIND FLANGE ON BOTH UPPER OUTLETS AND ACCESSORIES ONLY ON UPPER RIGHT SIDE OUTLET, COMES WITH TWO VR PLUGS, MIN. BORE: 9.945; API 6A; M/C: DD; T/C: U; PSL 2 ***** - WITH B7 STUDS AND 2H NUTS - WITH PURCHASED ANNULUS EQUIPMENT
		PART# 2201888-3100095
B01	1	ASSEMBLY, CASING HEAD HOUSING, TYPE 'ADAPT IND', 11 IN NOM OEC FLANGELOCK/ FASTLOCK #15 HUB BX-158 10K WP TOP, WITH PREP FOR INTERNAL SNAP RING X T-103 5K SEAL PREP FOR T-103 HANGER NECK WITH C-RING PREP BOTTOM, WITH INDEPENDENT LOAD SHOULDERS, WITH TWO LOWER 2-1/16 API 5K R-24 STUDDED

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Item	Qty	Description
		SIDE OUTLETS WITH 2-1/16 API VR THREADS & WITH TWO UPPER 2-1/16 API 10K BX-152 STUDDED SIDE OUTLETS WITH 2-1/16 API VR THREADS, MIN BORE: 9.945; API 6A; T/C: U; M/C: DD; PSL 2; PR2 ***** - WITH B7 STUDS AND 2H NUTS
		PART# 2503501-19-01
B03	1	ASSEMBLY, ANNULUS SIDE OUTLET VALVE, 2-1/16 INCH API 6A 5K PSI R-24
		PART# 5C-2001015-25
B04	2	ASSEMBLY, ANNULUS SIDE OUTLET VALVES, 2-1/16 API 10,000 PSI BX-152,
		PART# 5C-2001032-21

Table 45: SECTION C - TUBING HEAD ADAPTER

Item	Qty	Description
C01	1	ASSEMBLY, TUBING HEAD ADAPTER, WITH 11 IN NOM OEC FLANGELOCK FLANGE BX-158 10K BOTTOM X 5-1/8 API 10K BX-169 STUDDED TOP WITH 'SRL' SEAL PREP, WITH ONE CONTROL LINE EXIT BLOCK WITH GRAYLOC #14 STUDDED OUTLET, COMES WITH 4-1/8 'SRL' SEAL, COMES WITH 5-1/2 'CANH' METAL SEALS AND 'NS' SEAL, MIN BORE: 4.120; API 6A; M/C: DD; T/C: U; PSL 3, PR2
		PART# 2114788-40-02

Table 46: SECTION D - CROSSOVER ADAPTER

Item	Qty	Description
D00	1	SECTIONAL ASSEMBLY, CROSSOVER ADAPTER 5-1/8 API 10K BX-169 FLANGE BOTTOM X 4-1/16 API 5K RX-39 FACE TO FACE STD'D TOP, COMES WITH ONE 4-1/8 API 5K MODEL 'FLS' MANUAL GATE VALVE WITH 'SRL' SEAL PREP, COMES WITH ONE 4-1/8 'SRL' METAL SEAL, MIN BORE: 4.120; API 6A; M/C: DD; T/C: U; PSL 2
		PART# 2201888-3100086
D01	1	ASSY, CROSSOVER ADAPTER, 5-1/8 API 10K BX-169 FLG BTM X 4-1/16 API 5K RX-39 FACE TO FACE STD'D TOP, W/ 4-1/8 SRL SEAL PREP TOP X BTM, MIN BORE 4.12. API 6A, M/C: DD-NL,EE-NL; T/C: U; PSL-2; PR 2.
		PART# 2095814-04-02
D02	1	GATE VALVE ASSEMBLY, MANUAL, MODEL 'FLS', 4-1/8 BORE, 5,000 PSI, 4-1/16 API 5K R-39 FLG X 4-1/16 API 5K RX-39 FACE TO FACE FLG W/ 4-1/8 'SRL' SEAL PREP; API 6A; T/C: P+U; M/C: DD-NL; PSL-2; PR-2
		PART# 141554-31-08-02

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PREVIEW DRAFT**Table 47: SECTION F - HANGERS AND ASSEMBLY**

Item	Qty	Description
F01	1	CASING HANGER, MANDREL, TYPE 'ADAPT-IND' F/ 10.318 BOWL X 7 IN 29 LB/FT L-80 HUNTING SEAL-LOCK XD BOX THD BTM X 7.250-4 TPI LH INTERNAL STUB ACME RUNNING THD TOP, W/ 8-3/8 NOM SLICK NECK TOP W/ SIX ANTI-ROTATION SLOTS, W/ SIX FLOW-BY SLOTS, MIN BORE: 6.155, API 6A, T/C: U; M/C: DD; PSL 2; PR2 ***MAX WORKING PRESSURE 8160 PSI *** ALLOWABLE HANGING LOAD IN 'ADAPT-NST' 3 STAGE PSB: 330,000 LBF*** ALLOWABLE HANGING LOAD IN 'ADAPT-IND' HOUSING: 290,000 LBF*** MAX MAKE-UP TORQUE: 12,430 FT-LBF TO CONNECT W/ 7 IN 26 LB/FT L-80 CSG*** (MAT'L 4140 LAS 85 KSI YS)
		PART# 2502633-19-01
F02	1	ASSEMBLY, IB SEAL PACKOFF, TYPE 'ADAPT- IND', F/ 10.318 IN NOM BOWL, W/ 9.250-4 TPI LH EXTERNAL STUB ACME RUNNING THD AND LUGS F/ RH J-SLOT TOOL W/ ENERGIZING RING AND IB LOCK RING, W/ TWO OUTER AND TWO INNER 'MEC' SEALS, W/ SIX ANTI-ROTATION PINS AT BTM, MIN BORE: 6.82 IN (4140 LAS 85 KSI MIN YS) TEMP RATING: 0 DEG F TO 250 DEG F MATERIAL SERVICE: SOUR SERVICE - SPECIAL W/ 10.318 OUTER AND 8.373 INNER 'MEC' SEALS. - WITH FOUR ANTI-ROTATION HOLES AT TOP. - WITH 7-3/4 NOM 'S' SEAL POCKET.
		PART# 2502122-05-01
F03	1	ASSEMBLY, TUBING HANGER, TYPE 'ADAPT FAMILY', 11 IN NOM, WITH 6.375-4 TPI LEFT HAND EXTERNAL STUB ACME RUNNING THREAD TOP X 4-1/2 IN 15.1 LB/FT HUNTING SEAL-LOCK XD BOX THREAD BOTTOM, WITH 4 IN NOM TYPE 'H' BPV PREP, WITH DOUBLE DOVETAIL SEALS, WITH SLICK NECK TOP FOR 5-1/2 'CANH' SEAL & 'NS' SEAL, WITH ONE 1/4 OD CONTINUOUS CONTROL LINE PREP, MIN. BORE: 3.752, API 6A, M/C: BB; T/C: U; PSL 3, PR2 ***** - WITH INCONEL 825 FITTINGS
		PART# 2301235-26-01

Table 48: SECTION G - EMERGENCY EQUIPMENT

Item	Qty	Description
G01	1	ASSY, LANDING MANDREL W/ LOAD RING ADAPTER , TYPE 'ADAPT IND', 13-5/8 NOM W/ T-103 NECK TOP X 9-5/8 SOW BTM PREP W/ 13.500-4 TPI LH EXTERNAL STUB ACME RUNNING THDS, EIGHT ANTI-ROTATION SLOTS F/ RUNNING TOOL & PREP F/ TIEDOWN SCREWS, LANDS ON SPLIT TYPE LANDING BASE 2221412-34-01, MIN BORE: 8.88; ***HANGER MAX OD: 19.177 SHALL BE COMPARED WITH RISER DRIFT BEFORE USE***** MAX HANGING CAPACITY: 600,000 LBS (OR LESSER OF 80% PIPE BODY YIELD AND PIPE CONNECTION STRENGTH) ***
		PART# 2605993-16-01
G02	1	ASSY DETAIL; SPLIT TYPE LANDING BASE F/ 11 NOM 'TS-S' / 'SSD-11' CASING HEAD F/ 16 IN AND 20 IN CONDUCTOR (106.50 LB/FT MAX) W/ 8 GUSSETS. *** MAX LOAD CAPACITY: 600,000 LBE***

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		PART# 2221412-34-01
G03	1	ASSY, SLIP HANGER, TYPE 'IC-1-ADAPT-IND', F/ 10.318 BOWL X 7 CASING, W/ ANTI-ROTATION PINS, PR 2, GROUP 1 ***SPECIAL WITH "SB" STYLE LATCH***
		PART# 2502526-02-01
G04	1	ASSEMBLY, EMERGENCY IB SEAL PACKOFF, TYPE 'ADAPT IND', FOR 10.318 IN NOM BOWL, WITH 9.250-4 TPI LH EXTERNAL STUB ACME RUNNING THREAD, WITH ENERGIZING RING WITH LUGS FOR RH J-SLOT TOOL, WITH IB LOCK RING, WITH (2) 10-1/4 NOM EXTERNAL 'LS' SEALS AND 7 IN NOM DOUBLE 'T' SEALS WITH OVERSIZED 'T' SEAL BORE, WITH (6) ANTI-ROTATION HOLES AT BOTTOM, MIN BORE: 6.34 (4140 LAS 85 KSI MIN YS) TEMP RATING: -20 DEG F TO 180 DEG F MATERIAL SERVICE: SOUR SERVICE - SPECIAL WITH (4) ANTI-ROTATION HOLES AT TOP - WITH 7-3/4 NOM 'S' SEAL POCKET
		PART# 2502619-04-01
G05	1	ASSY, SLIP HANGER, SPECIAL BOWL, W/ IC-2 SLIPS, 11 X 4-1/2, API 6A; PSL-3; PR-2, GROUP 1, T/C: U; M/C: DD-NL,EE-NL; IC-2 SLIPS AND NON-STANDARD BOWL SSD-II/TS-S BOWL, W/ EIGHT ANTI-ROTATION HOLES, W/ ONE 1/4 CONTINUOUS CONTROL LINE PREP W/ RETAINER SCREW TO BE USED W/ PACKOFF P/N: 2404416-09-01
		PART# 2463944-09
G06	1	ASSEMBLY, EMERGENCY SEAL PACKOFF, 'ADAPT IND', 11 NOM WITH 9.625-4 TPI LH EXTERNAL STUB ACME THREAD FOR ENERGIZING RING AND IB LOCK RING, WITH 6.375-4 TPI LH EXTERNAL STUB ACME THREAD FOR 'CANH' SEAL HOLDDOWN RING, WITH 4 IN NOM TYPE 'H' BPV PREP, WITH 5-1/2 SLICK NECK FOR 'CANH' METAL SEAL, WITH DOUBLE DOVETAIL SEAL, WITH DOUBLE 'T' SEAL FOR 4-1/2 OD CASING, WITH ONE 1/4 OD CONTINUOUS CONTROL LINE PREP, MIN BORE: 3.900 (4140 LAS 85 KSI YS), TEMP RATING: 0 DEG F TO 250 DEG F MATERIAL SERVICE: SOUR SERVICE ***** - WITH INCONEL 825 FITTING
		PART# 204416-12-01

Table 49: SECTION H - SUSPENSION PACKAGE

Item	Qty	Description
H01	1	ASSY, DUMMY HANGER, MANDREL, TYPE 'ADAPT-IND', 11 NOM X 9.875-4 TPI LH EXTERNAL STUB ACME RUNNING THD TOP, W/ 5 IN NOM TYPE 'H' BPV THD, W/ TWO 11 NOM EXTERNAL DOVETAIL O-RINGS, W/ FOUR ANTI-ROTATION PINS AT BOTTOM, MIN BORE: 4.930, API 6A, T/C: U; M/C: DD; PSL 2; PR2 ***C/W 5 IN NOM TYPE 'H' BPV***
		PART# 2345508-02-01
H01A	1	ASSY, BPV, TYPE 'H', 5 IN NOMINAL, MAX OD: 5.010 IN, SUPER TRIM WITH A-286 BODY; M/C: FF-15; MAX PRESSURE: 10 KSI;
		PART# 030246-39
H02	1	ASSY, TWO WAY CHECK VALVE, TYPE 'H', 5 IN NOMINAL, MAX OD: 5.010 IN; SUPER TRIM WITH A-286 BODY; M/C: FF-15,

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Item	Qty	Description
		PART# 041612-49
J01	1	GATE VALVE ASSEMBLY, CAST TYPE EXPANSION BODY, MANUAL, 2-1/16 INCH BORE, API 6A 5K PSI, 2-1/16 INCH API 6A 5K PSI FLANGE X FLANGE, API 6A, T/C: U, M/C: DD, PSL 2, PR2.
		PART# 5C-200073-25

Table 50: SECTION R - RUNNING TOOLS

Item	Qty	Description
RO1	1	ASSEMBLY, LOW PRESSURE ADAPTER, 21-1/4 API 2K R-73 FLANGE TOP, WITH TWO O-RING SEAL BOTTOM FOR LOAD RING, MIN BORE: 20.85
		PART# 2222008-14-01
RO3	1	ASSEMBLY, HANDLING TOOL FOR HOUSING, TYPE 'ADAPT FAMILY' F/ NST, IND & SGL, & INSTALLATION / RETRIEVAL TOOL F/ 11 NOM ISOLATION SLEEVE, 23.00 IN OD X 2.50 IN THICK W/ TWO 1-1/4-7 UNC SWIVEL HOIST RINGS F/ LIFTING ***MAX LIFTING CAPACITY: 30,000 LBS**
		PART# 2135095-23
RO4	1	ASSY, 11 IN NOM JETTING TOOL F/ TYPE' ADAPT-FAMILY' AND 'ADAPT-IND' HANGERS W/ 4-1/2 API IF (NC50) BOX THD TOP
		PART# 2502657-02-01
RO5	1	ASSY; WEAR BUSHING, TYPE 'ADAPT-IND', 11 X 10.318 NOM W/ DOUBLE LEAD RUNNING THD TOP, W/ THREE O-RINGS MIN BORE: 9.920, OAL: 25.00
		PART# 2502517-01-01
RO6	1	ASSY, WELDESS SHORT WEAR BUSHING F/ 11 NOM 5K "TYPE 'ADAPT FAMILY' F/ NST, IND & SGL", W/ DOUBLE LEAD RUNNING THREAD W/ TWO EXT O-RINGS, MIN BORE: 9.92 IN, 11.00 IN OAL (STANDARD / NACE SERVICE) (4140 LAS, HARDNESS = 248-321 HBW)
		PART# 2463031-01-01
R07		ASSEMBLY, 13-5/8 10K API DRILLING ADAPTER, 13-5/8 10K FASTLOCK BTM X STD'D TOP, W/O TIEDOWN SCREWS, W/ TESTABLE RING GASKET, MIN. BORE: 11.000 IN, M/C: DD-NL, T/C: P +U, PSL-2, PR-2
		PART# 2398712-03-01
RO9	1	ASSEMBLY, COMBINATION TOOL: BOP TEST PLUG, PACKOFF, WEAR BUSHING RUNNING & RETRIEVING TOOL, TYPE 'ADAPT FAMILY' FOR NST, IND & SGL, 11 NOM, WITH 2-7/8 API IF (NC31) PIN THREAD BOTTOM X 2-7/8 API IF (NC31) BOX THREAD TOP, WITH ONE 1/2 NPT PLUG TO WEEP, WITH 1 IN NPT PLUG, WITH TWO DOVETAIL SEALS, WITH DOUBLE LEAD THREAD FOR 11 NOM WEAR BUSHING AND PACKOFF RUNNING SLEEVE WITH FOUR 'J' SLOT BOTTOM

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Item	Qty	Description
		*****MAX HANGING LOAD WITH RUNNING TOOL SLEEVE P/N 2463035-02-01: 70,000 LBF MAX TORQUE: 6,000 LBF-FT***
		PART# 2463033-06-01
R10	1	ASSY, LANDING MANDREL RUNNING TOOL, TYPE 'ADAPT IND', 9-5/8 API BTC BOX THD TOP X 13.500-4 TPI LH INTERNAL STUB ACME RUNNING THD BTM, W/ 8X TORQUE SCREWS MIN BORE: 8.88 ***** LIFTING CAPACITY: 450,000 LBF
		PART# 2463021-03-01
R11	1	ASSY, CASING HANGER RUNNING TOOL, TYPE 'ADAPT-IND', 10.318 NOM X 7 IN 29 LB/FT L-80 HUNTING SEAL-LOCK XD BOX THD TOP X 7.250-4 TPI LH EXTERNAL STUB ACME RUNNING THREAD BTM, W/ SIX FLOW-BY SLOTS, W/ ONE EXTERNAL DOVETAIL O-RING, MIN BORE: 6.155 ***MAJOR LOAD BEARING TOOL*** ***MAX HANGING CAPACITY: 540,800 LBF WHICH IS 80% PIPE BODY YIELD OF 29 LB/FT L-80 CSG***
		PART# 2463026-53-01
R12	1	BPV REMOVING TOOL FOR TYPE H BPV F/5 NOM,4 NOM, 3 NOM & 2- 1/2 NOM.
		PART# 5C-9700014-01
R13	1	BPV INSERTING TOOL FOR TYPE H BPV F/5 NOM,4 NOM, 3 NOM & 2- 1/2 NOM.
		PART# 5C-9700015-01
R14		LUBRICATOR FOR VALVE REMOVAL PLUG AS PER API 6A VR PLUG HEX HEAD, 45-1/8 STROKE, F/2 VALVES (2-1/16 10K GV)
		PART# 5C-9700018-01
R15	1	ASSY, 4" BPV TYPE 'H'; MAX O.D.:3.980
		PART# 030246-33
R16	1	ASSY; 4 TWO-WAY CHECK VALVE TYPE, 'H' MAX O.D.: 3.980
		PART# 041612-57
R17		ASSEMBLY, RUNNING TOOL, FOR 11 NOM TYPE 'ADAPT FAMILY' TUBING HANGER, WITH 4-1/2 15.1 LB/FT HUNTING SEAL-LOCK XD BOX THREAD TOP X 6.375-4 TPI LH STUB ACME INTERNAL THREAD BOTTOM, WITH TWO O-RINGS WITH 1/8 NPT TEST PORT IN BETWEEN, WITH FOUR WINDOWS AND FOUR SLOTS FOR CONTROL LINES, WITH FOUR TORQUE PINS, MIN BORE: 3.752
		PART# 2046001-43
R18	1	SETTING PIECE FOR HOLD DOWN RING, FOR 11 NOM TYPE 'ADAPT FAMILY' TUBING HANGER, WITH 9.190 SETTING HEIGHT
		PART# 2230299-46

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Item	Qty	Description
R19	1	ASSY; UNIVERSAL COLLAPSING & EXPANSION TOOL FOR LOCKDOWN RING. W/ ADAPTER FOR COLLAPSING & EXPANSION TOOL TO BE USE WITH 11-IN NOM SSMC, MC-2, 'SNAPPING' LOCKDOWN RING (AS PER RP-001601)
		PART# 2273869-11
R20	1	ASSEMBLY, LUBRICATOR FOR 4 NOM TYPE "H" BPV 15000 PSI, COMPATIBLE WITH 4-1/16 API 6A 5000 PSI , W/ 138 INCH STROKE.
		PART# 5C-9700012-02
R21	1	ASSEMBLY, INSTALLATION AND RETRIEVAL TOOL FOR 11 NOM X 4-1/2 'ADAPT IND' EMERGENCY SEAL PACKOFF ***** -MAX ALLOWABLE LOAD ON PUSH PLATE: 100,000 LBF -MAX ALLOWABLE TORQUE ON TORQUE SLEEVE: FOR QTY 4 STUDS THAT ARE 18.5" AND LESS: 1000 FT-LBF FOR QTY 2 STUDS THAT ARE 18.5" AND LESS: 500 FT-LBF
		PART# 2391013-12
R22	1	RUNNING TOOL, 11 NOM DUMMY HANGER & FRAC SLEEVE, WITH 2-7/8 API IF NC31 BOX THREAD TOP X B0TTOM, WITH 9.875-4 TPI LH STUB ACME INTERNAL THREAD, MIN BORE: 1.97
		PART# 2017712-32-01
R23	1	ASSEMBLY, INSTALLATION AND RETRIEVAL TOOL FOR 4-1/8 'SRL' SEAL, FOR USE WITH 4-1/16 API 5K AND 5-1/8 API 10K CONNECTIONS
		PART# 2119760-82-01
R24	1	ASSEMBLY, ADAPTER, DOUBLE STUDDED, 2-1/16 API 5K R-24 X 2-1/16 API 10K BX-152, MIN. BORE: 2.06; API 6A; M/C: DD; T/C: U; PSL 2, PR2
		PART# 163882-01-03-02

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Technical Information

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4.1

Capacity Chart

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Sealing Technology

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A Verification Checklist

13-3/8 OD Conductor

1. Load Ring

Install the Load Ring

Table A-1: Confirm the load ring position is level.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	If no, refer to SW-RP4554: Cameron Rig Alignment Verification .

Table A-2: Confirm the set screws are engaged.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	If no, engage the set screws.

Install the Riser Adapter

Table A-3: Confirm the set screws are engaged.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	If no, engage the set screws.

Test Between the Seals

Table A-4: Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	2000 psi [13,800 kPa]	Speak with Engineering for aid.

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PREVIEW DRAFT**9-5/8 OD Casing****1. Landing Mandrel****Hang off the Casing****Table A-5:** Confirm the landing mandrel running tool to landing mandrel make up.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
counterclockwise turns	8 counterclockwise turns	Go to installation steps.

Table A-6: Confirm the torque pins position.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Retract the torque pins.

Table A-7: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	1.27 in [32.4 mm]	Go to the installation steps.

Table A-8: Confirm the paint mark at rig floor.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Table A-9: Confirm the torque pins position are retracted.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Retract the torque pins.

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PREVIEW DRAFT**2. 11 Nom Casing Head Housing****Install the Casing Head Housing****Table A-10:** Confirm the stand off from top face of load ring adapter

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	35.55 in [903.0 mm]	Go to the installation steps.

Table A-11: Confirm the casing head housing position is level.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	If no, refer to SW-RP4554: Cameron Rig Alignment Verification.

Test Between the Seals**Table A-12:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

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PREVIEW DRAFT**3. 11 Nom Drilling Adapter****Install the Drilling Adapter****Table A-13:** Confirm the stand off from top face of load ring adapter.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	42.05 in [1,068 mm]	Go to the installation steps.

Table A-14: Confirm the Drilling Adapter bottom edge aligns with paint mark.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Table A-15: Confirm the drive screws are engaged.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Test the Connection of the Drilling Adapter**Table A-16:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

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PREVIEW DRAFT**7 OD Casing****1. 11 Nom Combination Tool****Test the BOP Stack****Table A-17: Confirm the land off.**

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	10.52 in [267.2 mm]	Go to the installation steps.

Table A-18: Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

2. 11 X 10.318 Nom Wear Bushing**Run the Wear Bushing Before Drilling****Table A-19: Confirm the wear bushing running tool to wear bushing make up.**

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
clockwise turn	1 clockwise turn	Go to installation steps.

Table A-20: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	10.57 in [268.4 mm]	Go to the installation steps.

Retrieve the Wear Bushing After Drilling**Table A-21: Confirm the wear bushing running tool to wear bushing make up.**

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
clockwise turns	1 clockwise turn	Go to installation steps.

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PREVIEW DRAFT**3. 10.318 Bowl Casing Hanger****Hang off the Casing****Table A-22:** Confirm the casing hanger running tool to casing hanger make up.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
counterclockwise turns	11-1/2 counterclockwise turns	Go to installation steps.

Table A-23: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	23.89 in [606.9 mm]	Go to the installation steps.

Table A-24: Confirm the paint mark in annulus valve position.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Table A-25: Confirm the paint mark at rig floor.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

4. 11 Nom Jetting Tool**Washout Before Landing the Seal Assembly****Table A-26:** Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	22.26 in [565.4 mm]	Go to the installation steps.

Table A-27: Confirm that the fluid returns condition is clear.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Continue the wash operations.

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PREVIEW DRAFT**5. 10.318 Bowl Seal Packoff****Install the Seal Assembly****Table A-28:** Confirm the scribe lines position is aligned.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Table A-29: Confirm the weight to set seal assembly.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	3,000 lbs [1,360 kg] to 6,000 lbs [2,720 kg]	Speak with Engineering for aid.

Table A-30: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	14.64 in [371.8 mm]	Go to the installation steps.

Table A-31: Confirm the Combination Tool initial stand off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	6.85 in [174.0 mm]	Go to the installation steps.

Table A-32: Confirm the paint mark in annulus valve position.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Set the Seal Assembly Lockring**Table A-33:** Confirm the turn count to engage the lockring.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
counterclockwise turns	2-3/4 counterclockwise turns	Go to installation steps.

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PREVIEW DRAFT**Table A-34:** Confirm the paint mark at rig floor.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Table A-35: Confirm the overpull test.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	10,000 lbs [4,540 kg]	Go to the installation steps.

Test Between the Seals of the Seal Assembly**Table A-36:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

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PREVIEW DRAFT**Temporary Abandonment****1. 11 Nom Dummy Hanger****Install the Dummy Hanger****Table A-37:** Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	10.52 in [267.2 mm]	Go to the installation steps.

Set the Dummy Hanger Snapring**Table A-38:** Confirm the turn count to expand the snapring.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
clockwise turns	2-1/2 clockwise turns	Go to installation steps.

Table A-39: Confirm the overpull test.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	50,000 lbs [22,700 kg]	Go to the installation steps.

Test Between the Seals of the Dummy Hanger**Table A-40:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

Table A-41: Confirm that the BPV is installed.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

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PREVIEW DRAFT**4-1/2 OD Tubing****1. 11 Nom Combination Tool****Test the BOP Stack****Table A-42: Confirm the land off.**

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	10.52 in [267.2 mm]	Go to the installation steps.

Table A-43: Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

2. Short Wear Bushing**Run the Wear Bushing Before Drilling****Table A-44: Confirm the wear bushing running tool to wear bushing make up.**

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
clockwise turn	1 clockwise turn	Go to installation steps.

Table A-45: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	10.57 in [268.4 mm]	Go to the installation steps.

Retrieve the Wear Bushing After Drilling**Table A-46: Confirm the wear bushing running tool to wear bushing make up.**

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
clockwise turn	1 clockwise turn	Go to installation steps.

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PREVIEW DRAFT**3. 11 Nom Tubing Hanger****Installation of Tubing Hanger Running Tool/ Land the Tubing Hanger****Table A-47:** Confirm the tubing hanger running tool to tubing hanger make up.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
clockwise turn	10–1/2 clockwise turn	Go to installation steps.

Table A-48: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	10.52 in [267.2 mm]	Go to the installation steps.

Table A-49: Confirm the paint mark at rig floor.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Set the Tubing Hanger Lockring**Table A-50:** Confirm the turn count to expand the lockring.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
clockwise turns	4 clockwise turns	Go to installation steps.

Table A-51: Confirm the overpull test.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	50,000 lbs [22,700 kg]	Go to the installation steps.

Test Between the Seals**Table A-52:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

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PREVIEW DRAFT**4. 11 Nom Tubing Head Adapter****Install the Tubing Head Adapter****Table A-53:** Confirm the stand off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	15.50 in [393.7 mm]	Go to the installation steps.

Test between the Seals**Table A-54:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

Test the Connection**Table A-55:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

Test the SRL Seal**Table A-56:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa]	Speak with Engineering for aid.

Emergency**1. Split Landing Base****Cut the Conductor****Table A-57:** Confirm the conductor position is level.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	If no, refer to SW-RP4554: Cameron Rig Alignment Verification .

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PREVIEW DRAFT**2. 10.318 Bowl Slip Hanger****Hang Off the Casing****Table A-58:** Confirm that the slip retainer screws are removed.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Remove the slip retainer screws.

Table A-59: Confirm the casing load on the slip hanger.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	1,000 lbs [454 kg] to 300,000 lbs [136,000 kg]	Speak with Engineering for aid.

Table A-60: Confirm the land off

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	23.91 in [607.2 mm]	Go to the installation steps.

Table A-61: Confirm the casing cut-off below top face of Casing Head Housing.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	17.00 in [431.8 mm]	Speak with Engineering for aid.

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PREVIEW DRAFT**3. 10.318 Emergency Seal Packoff****Install the Seal Assembly****Table A-62:** Confirm the scribe lines position is aligned.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Table A-63: Confirm the weight to set seal assembly.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	3,000 lbs [1,360 kg]	Speak with Engineering for aid.

Table A-64: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	20.54 in [521.8 mm]	Go to the installation steps.

Table A-65: Confirm the paint mark in annulus valve position.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Set the Seal Assembly Lockring**Table A-66:** Confirm the turn count to engage the lockring.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
counterclockwise turns	3 counterclockwise turns	Go to installation steps.

Table A-67: Confirm the paint mark at rig floor.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

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PREVIEW DRAFT**Table A-68:** Confirm the overpull test.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	10,000 lbs [4,540 kg]	Go to the installation steps.

Test Between the Seals of the Seal Assembly**Table A-69:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa] or 80% of the casing collapse	Speak with Engineering for aid.

4. 11 X 4-1/2 Slip Hanger**Hang Off the Casing****Table A-70:** Confirm that the slip retainer screws are removed.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Remove the slip retainer screws.

Table A-71: Confirm the casing load on the slip hanger.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	1,000 lbs [454 kg] to 300,000 lbs [136,000 kg]	Speak with Engineering for aid.

Table A-72: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	10.53 in [267.5 mm]	Go to the installation steps.

Table A-73: Confirm the casing cut-off below top face of Casing Head Housing.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	.81 in [20.6 mm]	Speak with Engineering for aid.

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PREVIEW DRAFT**5. 11 Nom Emergency Seal Packoff****Install the Seal Assembly****Table A-74:** Confirm the scribe lines position is aligned.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Table A-75: Confirm the weight to set seal assembly.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	3,000 lbs [1,360 kg]	Speak with Engineering for aid.

Table A-76: Confirm the land off.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
in [mm]	8.12 in [206.3 mm]	Go to the installation steps.

Table A-77: Confirm the paint mark in annulus valve position.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

Set the Seal Assembly Lockring**Table A-78:** Confirm the turn count to engage the lockring.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
counterclockwise turns	3 counterclockwise turns	Go to installation steps.

Table A-79: Confirm the paint mark at rig floor.

Result/ Actual Value	Select From These Values	If NON - Conformant ONLY: (Action Stop, Go To)
	<ul style="list-style-type: none"> • Yes • No 	Go to the installation steps.

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PREVIEW DRAFT**Table A-80:** Confirm the overpull test.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
	10,000 lbs [4,540 kg]	Go to the installation steps.

Test Between the Seals of the Seal Assembly**Table A-81:** Confirm the pressure after the customer identified hold time.

Result/ Actual Value	Expected Value	If NON - Conformant ONLY: (Action Stop, Go To)
psi [kPa]	5,000 psi [34,500 kPa] or 80% of the casing collapse	Speak with Engineering for aid.

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