



## Running Procedure for PBMO Lubricator:

### Type-H Back Pressure Valve/2-Way Check Valve Installation & Retrieval Procedures

## BACK PRESSURE VALVE (BPV)

### Product Description

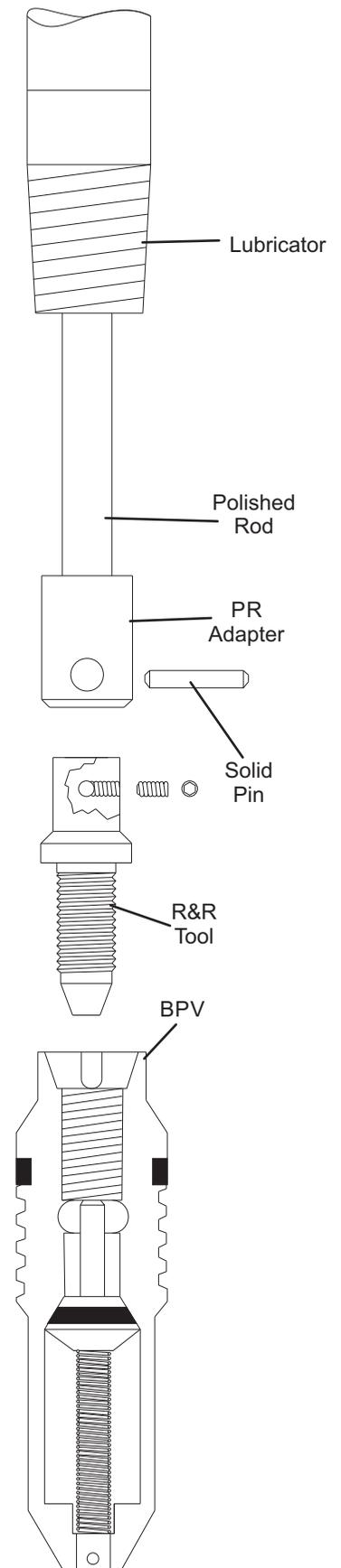
The Type-H Back Pressure Valve is a device that is installed in a tubing hanger (usually under pressure) by means of a lubricator or dry rod.

It isolates the well bore pressure from the Christmas Tree or Frac Stack to be safely removed or repaired. It is designed to hold pressure from the bottom while allowing fluid to be pumped through the top.

The Type-H Two Way Check Valve is a device that is installed with the same procedure as the BPV. It also isolates the well bore pressure from the Christmas Tree or Frac Stack. It is designed to hold pressure from the bottom and the top, allowing the tree assembly to be pressure tested from the top. It can be used in place of the BPV for tree removal, but it will not allow fluid to be pumped through it.

*This procedure will refer only to back pressure valve, or BPV.  
The same procedure applies to the 2-Way Check Valve.*

<b>PRODUCT DESCRIPTION</b> .....	<b>1</b>
<b>PURPOSE</b> .....	<b>2</b>
<b>SCOPE</b> .....	<b>2</b>
<b>OVERVIEW OF PROCEDURE</b> .....	<b>2</b>
<b>REQUIRED TOOLS</b> .....	<b>3</b>
<b>PRE-INSTALLATION CHECKLIST</b> .....	<b>3</b>
<b>TEST PROCEDURE</b> .....	<b>4</b>
<b>PARTS ARRAY / TOOL DRAWINGS</b> .....	<b>5</b>
<b>INSTALLATION PROCEDURE</b> .....	<b>6</b>
<b>BPV INSTALLATION</b> .....	<b>8</b>
<b>REMOVING THE LUBRICATOR</b> .....	<b>9</b>
<b>BPV REPAIR</b> .....	<b>12</b>
<b>LUBRICATOR REPAIR</b> .....	<b>12</b>
<b>MAINTENANCE</b> .....	<b>12</b>
<b>STORAGE</b> .....	<b>12</b>





## Installation Procedure Overview

- 1 Inventory tools, test the Lubricator
- 2 Go to the well site
- 3 Assemble Lubricator R&R tool, BPV
- 4 Stop the flow in the Tree
- 5 Attach the assembly to the top of the tree
- 6 Set the BPV
- 7 Back the Lubricator out of the tree
- 8 Make all repairs to the tree
- 9 Make up Lubricator to the tree
- 10 Retrieve the BPV
- 11 Remove the Lubricator
- 12 Re-place the tree cap
- 13 Return to the shop
- 14 Do maintenance on Lubricator & BPV
- 15 Store the Lubricator and the BPV

## PURPOSE

These procedures are in place for Field Service Technicians to safely isolate the tree from pressure in the tubing during installation and maintenance of the Christmas tree.

Following these procedures will ensure the safety of all personnel and the surrounding environment.

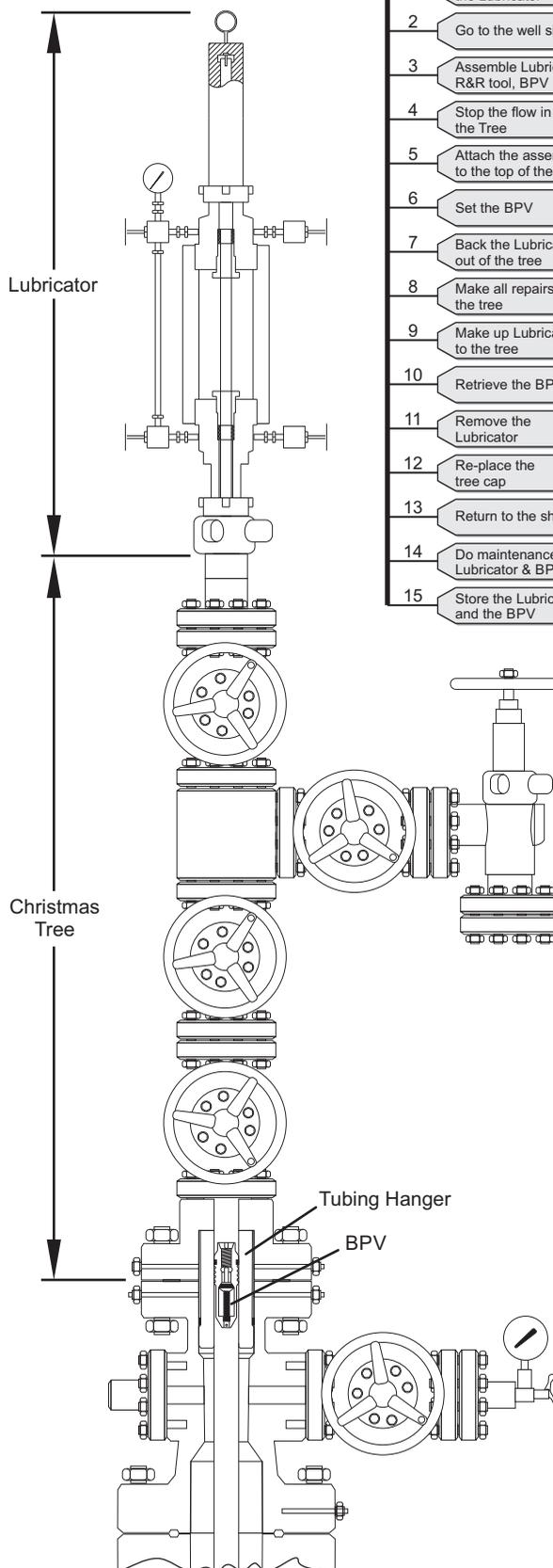
## SCOPE

In order for the BPV and the Lubricator to work together properly it is imperative that all seals and valves are in good working condition. These seals and valves should be examined and tested prior to going to the well site.

The wing valves and master valves are closed to stop flow of fluids in the tree. The Back Pressure Valve (BPV) is attached to the Lubricator and mounted on top of the tree. The master valves are opened and the lubricator equalized with the tubing pressure. The BPV is lowered down into the tree and set in the tubing hanger.

Pressure is held and repairs are made during installation of tree components, when doing repairs to the tree or during removal of the BOP.

*A lubricator with the correct stroke is needed because . . .  
The stroke of the lubricator must be greater than the height of the tree.*



## CAUTION

This is a potentially dangerous procedure. Pressure must be maintained carefully in order for the Lubricator and BPV to function properly. Follow instructions carefully as a sudden increase in pressure could cause the polished rod to skyrocket out of the Lubricator. Follow all instructions to ensure the safety of all personnel on-site.



Installation Procedure Overview

1. Verify tools, test the Lubricator
2. Go to the well site
3. Assemble Lubricator R&R tool, BPV
4. Check the flow in the line
5. Attach the assembly to the top of the line
6. Set the BPV
7. Block the lubricator out of the line
8. Make all repairs to the line
9. Make up Lubricator to the line
10. Remove the BPV
11. Remove the Lubricator
12. Re-secure the well cap
13. Return to the shop
14. Do maintenance on Lubricator & BPV
15. Check the Lubricator and the BPV

## BRING THE REQUIRED TOOLS

It is necessary to find out as much as possible about the tree components before going to the job site.

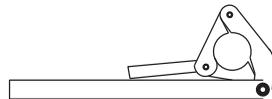
- \_\_\_\_\_ height of the tree
- \_\_\_\_\_ working pressure of the tree
- \_\_\_\_\_ correct size and pressure lubricator
- \_\_\_\_\_ correct size and pressure lubricator adapter
- \_\_\_\_\_ correct size BPV or 2-way check (bring spare)
- \_\_\_\_\_ spare seals for BPV or 2-way check
- \_\_\_\_\_ all wrenches needed to attach lubricator to the tree
  - #2 parmelee wrench or gear wrench
  - gland nut wrench
  - spanner wrench
- \_\_\_\_\_ grinding compound
- \_\_\_\_\_ correct size running tool (bring spare)
- \_\_\_\_\_ spare pins to attach running tool
- \_\_\_\_\_ spare set screws for securing the running tool pin
- \_\_\_\_\_ tape measure

## PRE-INSTALLATION CHECKLIST

1.  • check that all required tools are on hand  
do this by using the list to the left on this page
2.  • verify the height of the Christmas tree  
ask someone or look at a drawing
3.  • find out what size and style of BPV is needed
  - one-way \_\_\_\_\_
  - two-way \_\_\_\_\_
4.  • determine the correct R&R tool needed to install the BPV
5.  • test the BPV lubricator  
do this by blocking the adapter end of the lubricator and pumping water or hydraulic fluid into the lubricator
6.  • check the seals on the unions to see if there is any leakage
7.  • check the packing around the gland nuts to see if there is any leakage
8.  • replace any damaged seals or packing as necessary
9.  • tighten the gland nuts with the spanner wrench

## WRENCHES

A choice of either parmelee wrench or gear wrench are available. These wrenches are used to move the polished rod up or down in the tree, and to install the BPV into the tubing hanger.



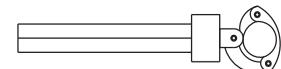
- gear wrench

Installation of the R&R Tool requires a 3/6 in. allen wrench, and is furnished with the tool.

- allen wrench

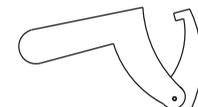
- pressure gauge \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- parmelee wrench



A spanner wrench is available to tighten the gland nuts and to tighten the BPV on the stinger type R&R Tool.

- spanner wrench





Installation  
Procedure  
Overview

1	Inventory Tools, M&P	<input checked="" type="checkbox"/>
2	Go to the well site	<input type="checkbox"/>
3	Remove the Lubricator M&P Tool, BPV	<input type="checkbox"/>
4	Strip the Hose in the Tree	<input type="checkbox"/>
5	Attach the assembly to the top of the Tree	<input type="checkbox"/>
6	Set the BPV	<input type="checkbox"/>
7	Check the Lubricator out of the Tree	<input type="checkbox"/>
8	Make all repairs to the Tree	<input type="checkbox"/>
9	Make up Lubricator to the Tree	<input type="checkbox"/>
10	Pressure the BPV	<input type="checkbox"/>
11	Remove the Lubricator	<input type="checkbox"/>
12	Replace the tree cap	<input type="checkbox"/>
13	Return to the site	<input type="checkbox"/>
14	Do maintenance on Lubricator & BPV	<input type="checkbox"/>
15	Close the Lubricator and the BPV	<input type="checkbox"/>

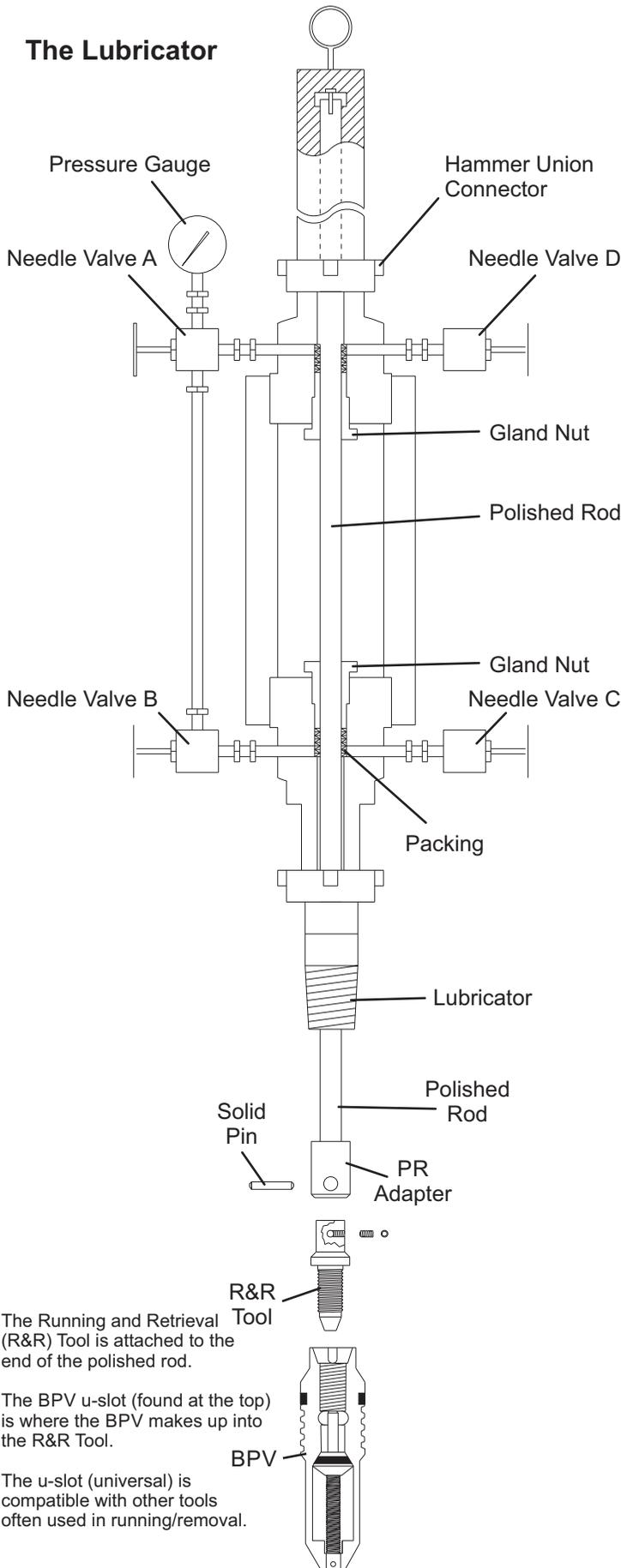
## Test Procedure

- 1)  Close the bleed valves on the lubricator manifold.
- 2)  Install test fitting on the upper manifold bleed valve and connect to test unit.
- 3)  Close inboard wing valves of the Tree or Frac Stack.
- 4)  Open the upper master valve on the Tree or Frac Stack, keep the lower master closed.
- 5)  Open the equalization manifold valves on the Lubricator.
- 6)  Pressure test the entire Lubricator Assembly against the lower master of the Tree Assembly.
  - a. Ensure there is sufficient anti-freeze in the test fluid.
  - b. Test to Tree, Frac Stack or lubricator working pressure (whichever is less).
- 7)  Hold test for min of 5 minutes or longer if well site supervisor requests.
- 8)  Open the Manifold Bleed Valves and bleed all test pressure down.



Installation Procedure Overview	
1	Inventory tools, test the Lubricator
2	Go to the well site
3	Align the Lubricator with the tool, BPV
4	Check the flow in the line
5	Attach the assembly to the top of the line
6	Open the BPV
7	Place the Lubricator out of the line
8	Make all repairs to the line
9	Make up Lubricator to the line
10	Remove the BPV
11	Remove the Lubricator
12	Re-secure the Lubricator
13	Return to the shop
14	Do maintenance on Lubricator & BPV
15	Store the Lubricator and the BPV

## The Lubricator



The Running and Retrieval (R&R) Tool is attached to the end of the polished rod.

The BPV u-slot (found at the top) is where the BPV makes up into the R&R Tool.

The u-slot (universal) is compatible with other tools often used in running/removal.

## BODY

The Lubricator Body consists of a yoke assembly with a 2-in. 1502 union male w/nut on the adapter end.

A two-inch (2-in.) 1502 female union on the extension end provides for connection of the extension and end barrels, which accommodate various sizes of polished rods.

## NEEDLE VALVES

Attached to the yoke of the Lubricator are four Needle Valves, used to equalize and bleed off pressure.

## POLISHED ROD

Running through the yoke is a Polished Rod, which can be moved up and down by means of a parmelee or gear wrench.

## PACKING

**Chevron Style (2)**

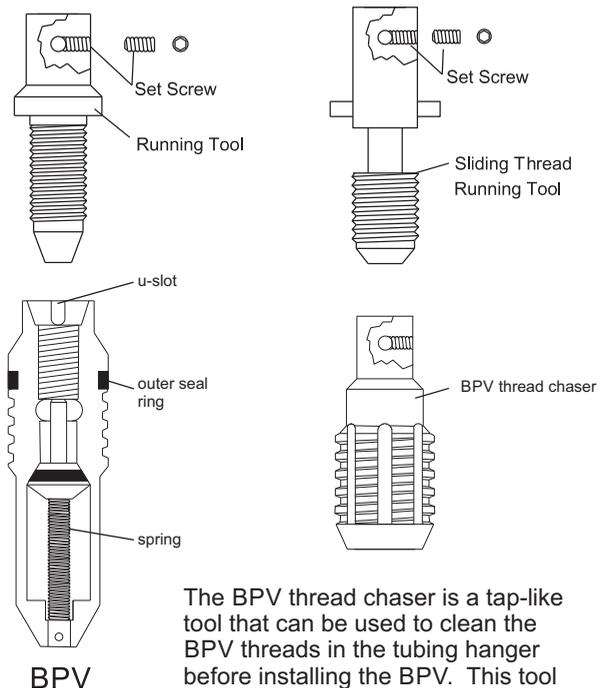
## PRESSURE GAUGE

An optional pressure gauge can be installed in the cross on the manifold.

## RUNNING and RETRIEVING TOOLS

The solid stinger type R&R tool is recommended for smaller BPV sizes (up to 2-1/2 in.) that require less torque for installation.

The sliding thread type R&R tool is recommended for larger size BPVs (3 in. to 6 in.), which require more torque. This tool can also be used for smaller size BPVs.



The BPV thread chaser is a tap-like tool that can be used to clean the BPV threads in the tubing hanger before installing the BPV. This tool installs into the Polished Rod Adapter Socket like the BPV R&R Tools (shown).

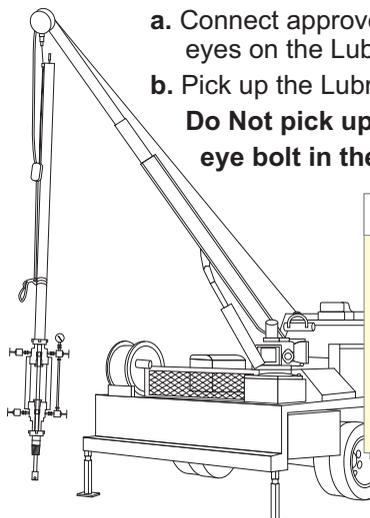
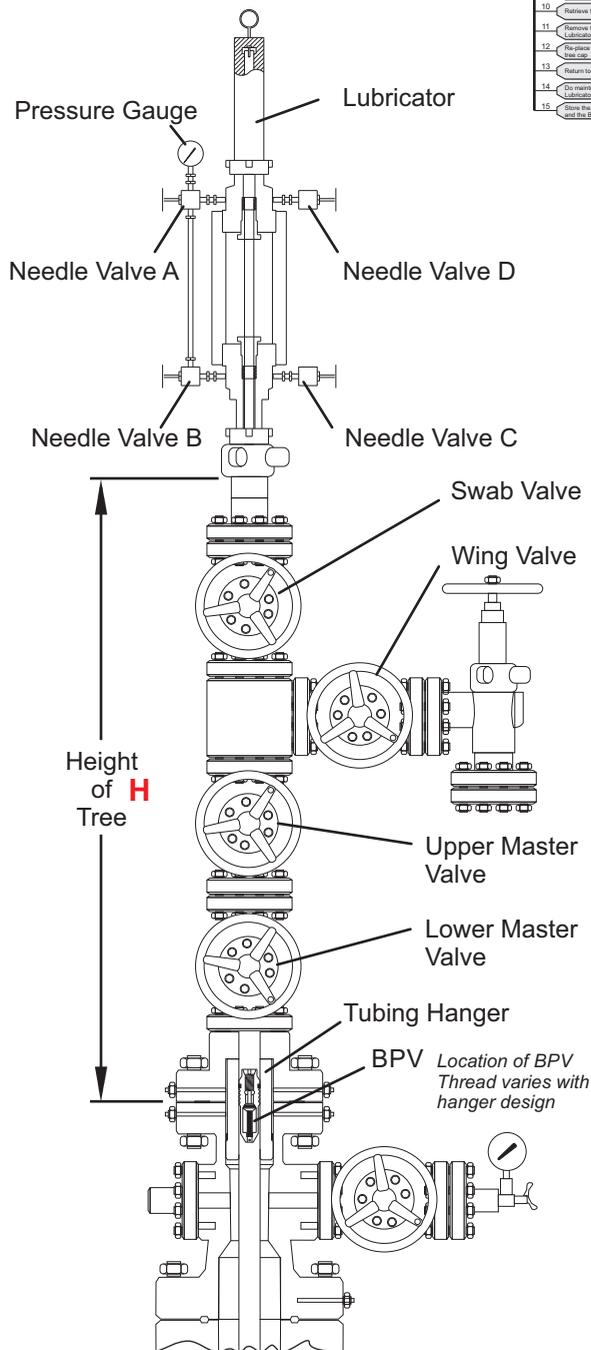
**Installation Procedure Overview**

1. Inventory tools, test the Lubricator
2. Go to the well site
3. Measure the Lubricator Height over BPV
4. Strip the Tree in the Tree
5. Attach the assembly to the top of the Tree
6. Seal the BPV
7. Back the Lubricator out of the Tree
8. Make all repairs to the Tree
9. Make up Lubricator
10. Release the BPV
11. Remove the Lubricator
12. Re-place the Tree cap
13. Return to the shop
14. Do maintenance on Lubricator & BPV
15. Close the Lubricator and the BPV

## Installation Procedure

- 1) Examine the Back Pressure Valve and verify the following:
  - ID and OD are clean and undamaged.
  - Body seal is clean, undamaged and properly installed.
  - Poppet seal is in good condition and functioning properly.
- 2) Verify the BPV profile in the Tubing Hanger and ensure you have the proper BPV.
  - Ensure the Lockdown Screws in the tubing head are fully engaged if the tubing hanger is a mandrel style.
  - Look for pin engagement specs. UWS Tubing Heads will have this stenciled on the upper flange, by one of the lockdown screws.
- 3) Measure the distance from the Tubing Head bowl to the top of the Tree Assembly or Frac Stack. Verify that you have enough Polished Rod to safely install the BPV.
- 4) Verify wellbore pressure at this time. well bore pressure \_\_\_\_\_
- 5) Close the uppermost Valve on the Tree Assembly or Frac Stack and bleed down pressure above the valve.
  - Inspect the Tree or Frac Stack Bore and verify that it is clean and that no restrictions are visible.
- 6) Install the BPV on the running tool.
  - Inspect and verify the following:
    - a. The BPV threads (inside and out) are clean, undamaged, & lubricated with anti-seize compound.
    - b. All elastomers are new, clean, and lubricated with oil.
    - c. Keep in mind the amount of torque you use to install the BPV is the same amount of torque you will use to remove it. Use a 12-in. wrench as to not over torque.
- 7) Install the proper Adapter on the Tree Assembly.
  - Inspect and verify the following:
    - All ring grooves are clean, dry, and undamaged.
- 8) Verify the following before proceeding:
  - a. The Polished Rod Stop is installed to prevent the Polished Rod from coming out of the Lubricator.
  - b. All connections on the Lubricator are tight, secure.
- 9) Position the Lubricator –
  - a. Connect approved cables or chains to the lift eyes on the Lubricator Assembly.
  - b. Pick up the Lubricator to the vertical position. **Do Not pick up the Lubricator with the eye bolt in the end of the barrel.**

*The Stroke of the Lubricator must be greater than the height of the Tree.*



**Position the Lubricator**

- Ensure that the Lubricator is level and straight.
- Raise the Lubricator Assembly to the installed height, but keep it next to the Tree or Frac Stack.
- Verify Polished Rod Length

page 7

Installation Procedure Overview	
1 Inventory tools, test the Lubricator	
2 Go to the well site	
3 Assemble Lubricator (test tool, BPV)	
4 Check the flow in the line	
5 <b>Attach the secondary Lubricator to the line</b>	
6 Open the BPV	
7 Push the Lubricator out of the line	
8 Make all repairs to the line	
9 Make up Lubricator to the line	
10 Remove the BPV	
11 Remove the Lubricator	
12 Reattach the Lubricator	
13 Return to the shop	
14 Do maintenance on Lubricator & BPV	
15 Store the Lubricator and the BPV	

## Verify Lubricator Polished Rod

- 10) Verify Polished Rod Length –
  - a. Loosen the Packing Glands on the Lubricator.
  - b. Slowly lower the BPV outside the Frac Stack until it is properly aligned with the Tubing Hanger.
  - c. Mark your Polished Rod in the center of the window to indicate proper installation depth.
  
- 11) Fully retract the Polished Rod into the Lubricator Body and tighten the Polished Rod Packing Gland Nuts, install the Polished Rod Clamp.

Install the Lubricator Assembly on the Tree or Frac Stack. Tighten and torque per customer or API requirements.

Tighten all connections, unions – and fittings on the Lubricator.

- 12) Field Test the Lubricator Assembly – *Optional*. Lubricator is fully tested in the shop prior to arriving on location.

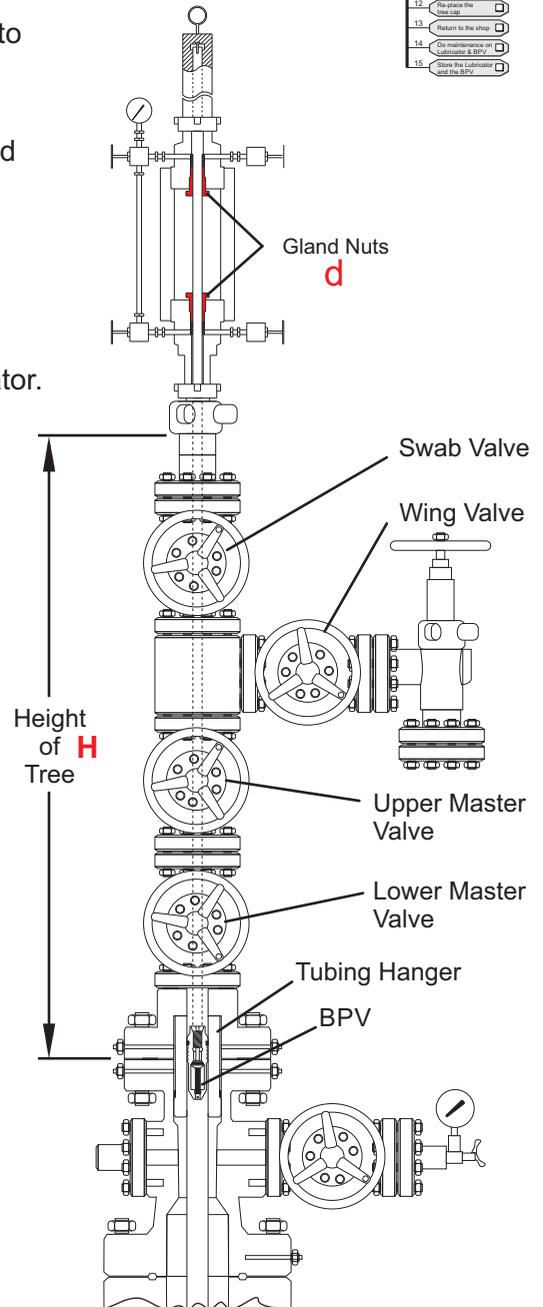
For Test Procedure, See page 4.

$$d - w = \text{mid} \div H = \text{PR moves}$$

1.  **measure the approximate distance from the:**  
tubing hanger to the top of the tree \_\_\_\_\_ **H**
2.  **also, measure the:**  
distance between the two gland nuts \_\_\_\_\_ **d**
3.  **and subtract:**  
the width of the parmelee wrench (3") -or- \_\_\_\_\_ **w**  
the width of the gear wrench (2-1/4") \_\_\_\_\_
4.  = **maximum incremental distance**  
the polished rod can be moved \_\_\_\_\_ **mid**
5.  **divide this maximum incremental distance into:** ÷  
the distance between the tubing hanger to the top of the tree \_\_\_\_\_ **H**  
same as step 1

**=**

**= number of times**  
the Polished Rod will have to be moved  
in order to reach the tubing hanger \_\_\_\_\_

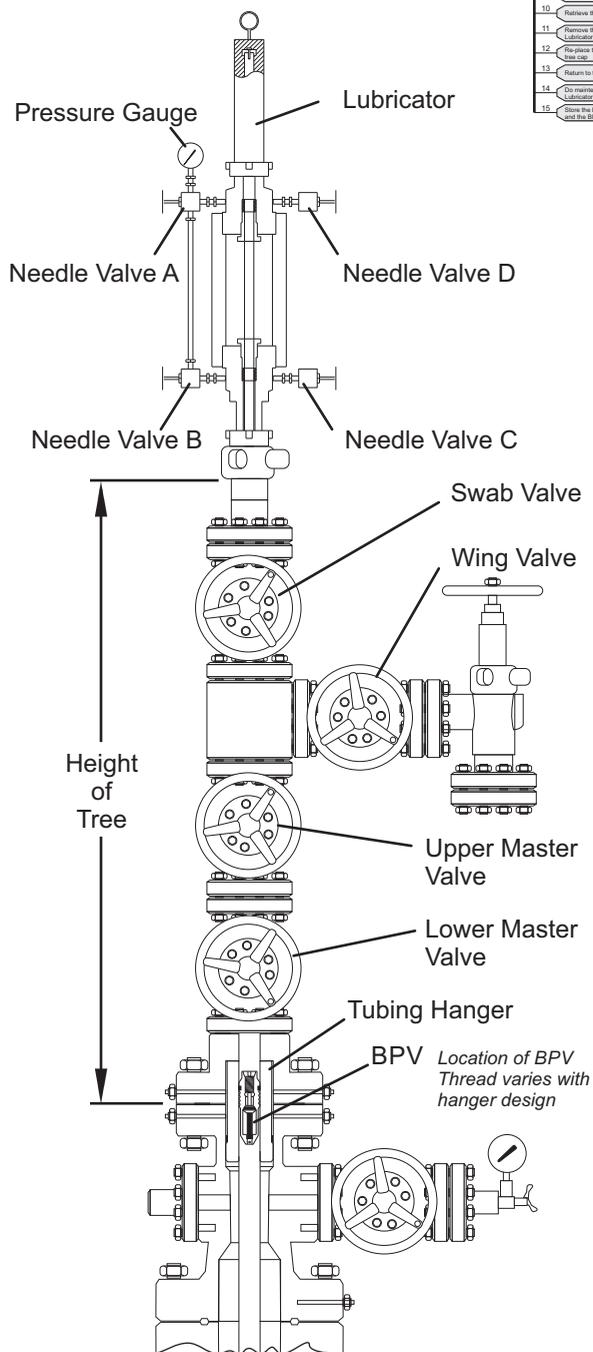


Installation Procedure Overview

1. Inventory tools, set the Lubricator
2. Go to the well site
3. Remove the Lubricator from tool, BPV
4. Stop the flow in the Tree
5. Attach the assembly to the top of the Tree
6. **Use the BPV**
7. Back the Lubricator out of the Tree
8. Make all repairs to the Tree
9. Make up Lubricator in the Tree
10. Release the BPV
11. Remove the Lubricator
12. Re-press the well site
13. Return to the shop
14. Do maintenance on Lubricator & BPV
15. Close the Lubricator and the BPV

## Installing the BPV

- 1) Verify that you have the well bore pressure recorded before proceeding.  
 well bore pressure \_\_\_\_\_
- 2) Close the lower equalization valve “B” on the Lubricator, and bleed valves “C and “D”.
- 3) Slowly open the uppermost valve on the Tree or Frac Stack allowing the Tree or Frac Stack and well bore to equalize. Verify that all valves in the tree are fully open.
- 4) Once equalized, open the Lower Manifold Valve “B” on the Lubricator, allowing the Lubricator Body to fully equalize with the well bore pressure.
  - a. Keep Upper Manifold Valve “A” open at all times.
- 5) Using your Parmelee Wrench, lower the BPV into the Tubing Hanger.
  - a. Apply a grinding compound such as “Clover Compound” to the inside seat of the Parmelee Wrench.
- 6) Tag the BPV in the Tubing Hanger.
  - a. Rotate the BPV clockwise until you notice the threads jump – indicating that you are in the proper position.
  - b. Mark your Polished Rod at the top of the window with a marker pen.
- 7) Install the BPV in the Tubing Hanger.
  - a. Rotate the BPV counter clockwise and verify that the BPV is engaging by monitoring your mark.  
 Full engagement for most BPVs will require approx. 5-1/2 to 6 full turns or 1-1/2 in. of rod movement.  
 (These will vary slightly with Tubing Hanger and BPV manufacturer).
- 8) If the BPV will not go into the Tubing Hanger, retrieve the BPV and install a BPV thread tap. Follow the same procedure and work the tap back and forth to clean the threads.



**CAUTION**

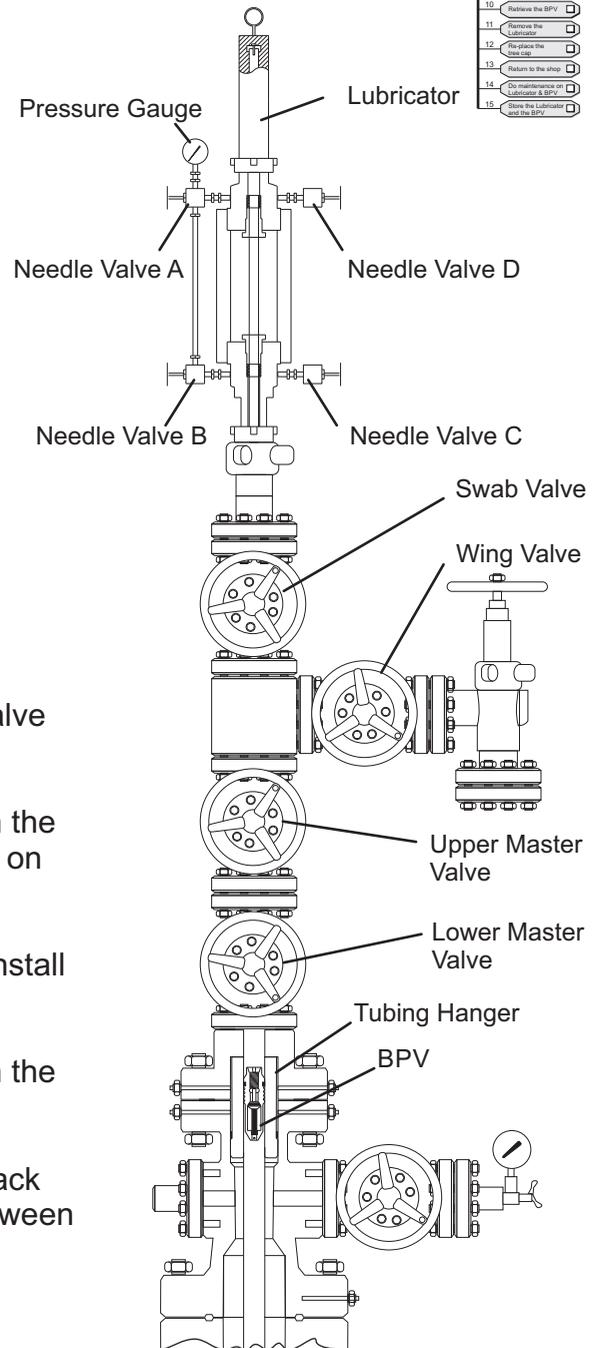
If at any time during this procedure a leak is detected in the tree assembly or the lubricator – Bleed all pressure down before attempting to tighten any connection.



Installation Procedure Overview	
1	Inventory tools, test the Lubricator
2	Go to the well site
3	Assemble Lubricator (test tool, BPV)
4	Check the flow in the line
5	Attach the assembly to the top of the line
6	Open the BPV
7	Place the lubricator out of the line
8	Make all repairs to the line
9	Make up Lubricator Subline
10	Reinstall the BPV
11	Remove the Lubricator
12	Re-place the new tool
13	Return to the shop
14	Do maintenance on Lubricator & BPV
15	Close the Lubricator and the BPV

## Retrieve the Running Tool

- 1)  Once the BPV is fully seated, continue to rotate the Polished Rod counter clockwise. You should feel increased torque as the tool breaks free from the BPV.
- 2)  Monitor the mark on the Polished Rod, verify that the running tool is lifting out of the BPV.
- 3)  Once the running tool is completely out of the BPV, ensure the lower equalization manifold valve "B" on the Lubricator is closed.
- 4)  Fully retract the Polished Rod / running tool back into the Lubricator Body. Slowly bleed pressure from the upper Lubricator Body by opening the upper bleed valve "D". Be sure you work the Polished Rod with the parmelee wrench while retracting the tool.



## Removing the Lubricator Assembly

- 1) Once fully retracted, close the lower master valve on the Tree or Frac Stack.
- 2) Slowly and completely bleed off all pressure in the Lubricator barrel via the upper bleed valve "D" on the manifold.
- 3) Fully tighten the polished rod gland nuts and install the polished rod clamp.
- 4) Slowly and completely bleed off all pressure in the Tree or Frac Stack bore.
- 5) Open the lower master on the Tree or Frac Stack and completely bleed down all pressure in-between the BPV and the lower master valve.
- 6) Verify that the BPV is holding pressure before removing the lubricator.
- 7) If the pressure will not bleed down, the BPV did not properly seat. Retrieve the BPV, examine the seals and repeat the procedure. If the seals are in good condition there is a high probability the BPV threads are damaged in the tubing hanger.

### CAUTION

When operating a Parmelee or Gear Wrench, always grip the wrench from the bottom with your fingers on top. Keep your head and other body parts away from the wrench at all times.



Installation Procedure Overview

1	Inventory tools, test the Lubricator
2	Go to the well site
3	Remove the Lubricator & BPV
4	Stop the flow in the Tree
5	Attach the assembly to the top of the tree
6	Get the BPV
7	Check the Lubricator out of the Tree
8	Make all repairs to the tree
9	Make an alignment
10	Remove the BPV
11	Remove the Lubricator
12	Replace the tree cap
13	Return to the shop
14	Do maintenance on Lubricator & BPV
15	Store the Lubricator and the BPV

## Retrieval Procedure

- 1) Examine Lubricator, verify that it is in good condition and all seals are clean and undamaged.
- 2) Measure the distance from the Tubing Hanger body to the top of the Tree Assembly or Frac Stack. Verify that there is enough Polished Rod to safely retrieve the BPV.
- 3) Close the Lower Master Valve on the Tree or Frac Stack and bleed down pressure above the valve.
  - Inspect the Tree or Frac Stack Bore and verify that it is clean and that no restrictions are visible.
- 4) Install the proper Adapter and Retrieval Tool on the Lubricator and verify the following:
  - All ring grooves are clean and undamaged
  - All elastomers are new, clean, lubricated with oil.
  - The BPV Retrieval Tool threads are clean, undamaged, lubricated with anti-seize compound.
  - The Polished Rod Stop is installed to prevent the Polished Rod from coming out of the Lubricator.
- 5) Install the Lubricator -
 

Fully retract the Polished Rod into the Lubricator Body and tighten the Polished Rod Packing Gland Nuts, install the Polished Rod Clamp.

Install the Lubricator Assembly on the Tree or Frac Stack.  
Tighten and torque per customer or API requirements.

Tighten all connections, unions and fittings on the Lubricator.
- 6) Field Test the Lubricator Assembly – *Optional*.  
For Test Procedure, See page 4.

### CAUTION

If at any time during this procedure a leak is detected in the tree assembly or the lubricator – Bleed all pressure down before attempting to tighten any connection.



Installation Procedure Overview	
1	Inventory tools, test the Lubricator
2	Go to the well site
3	Assemble Lubricator (test tool, BPV)
4	Check the flow in the line
5	Attach the assembly to the top of the line
6	Get the BPV
7	Place the Lubricator out of the line
8	Make all repairs to the line
9	Make up Lubricator and Test Line
10	Remove the BPV
11	Remove the Lubricator
12	Run the BPV
13	Return to the shop
14	Do maintenance on Lubricator & BPV
15	Close the Lubricator and the BPV

## Retrieve the BPV

- 1) Close the Lower Equalization Valve “B” on the Lubricator, and the Bleed Valves “C” and “D”.
- 2) Slowly open the Lower Master of the Tree or Frac Stack allowing any trapped pressure to equalize.
- 3) Lower the Polished Rod until the Retrieval Tool contacts the Tubing Hanger.
- 4) Rotate the Polished Rod clockwise engaging the Retrieval Tool with the BPV until well bore pressure equalizes with the Tree Assembly or Frac Stack.

**Do Not remove the BPV at this time.**

- a. Open the Equalization Valve “B” in the Lubricator Manifold and equalize the upper barrel of the Lubricator with the Tree and well bore.
- b. Mark the Polished Rod in the lowermost section of the window with a marker.
- c. Verify equalization with a pressure gauge in Needle Valve “A”.

- 5) **Remove the BPV –**

- a. Continue to rotate the Polished Rod clockwise until the BPV is out of the Tubing Hanger. You will feel an increase in torque that will be required to retrieve the BPV.

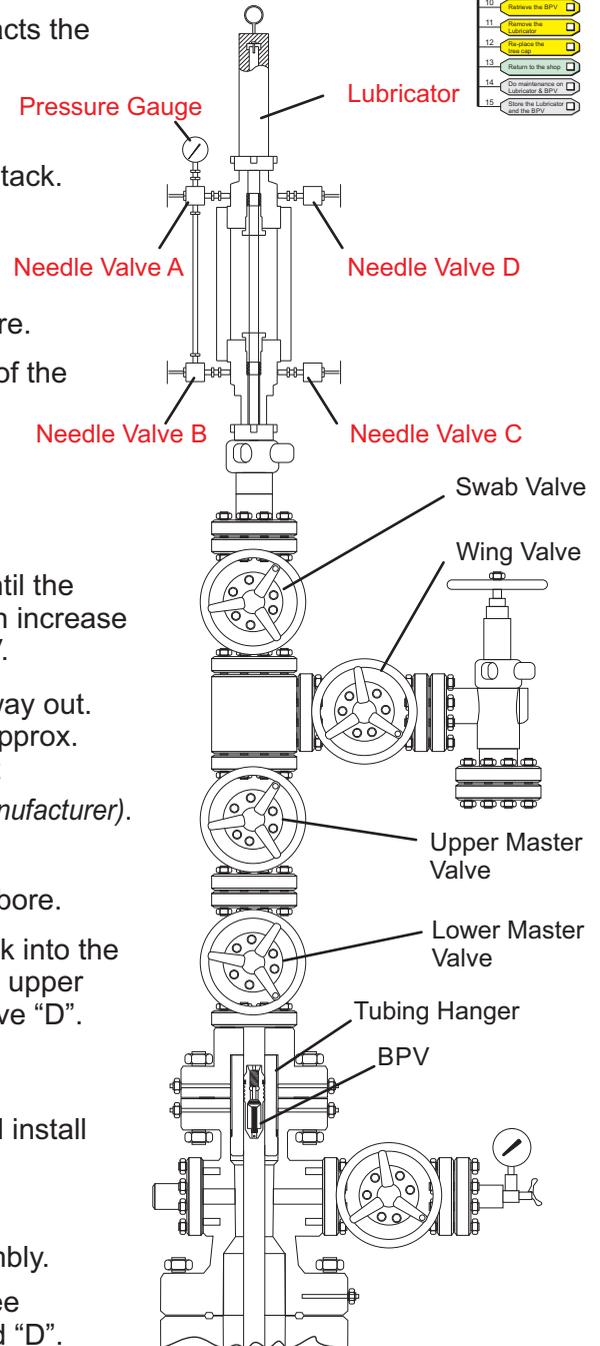
Watch your mark and verify that you are all the way out. Full disengagement for most BPVs will require approx. 5-1/2 to 6 full turns or 1-1/2 in. of Rod movement

*(These will vary slightly with Tubing Hanger and BPV manufacturer).*

- b. Close the Equalization Manifold Valve “B” on the Lubricator to isolate the Lubricator from the well bore.
- c. Fully retract the Polished Rod / Running Tool back into the Lubricator Body. Slowly bleed pressure from the upper Lubricator Body by opening the Upper Bleed Valve “D”. Be sure you work the Polished Rod with the Parmelee Wrench while retracting the tool.
- d. Tighten the Polished Rod packing gland nuts and install the Polished Rod clamp.

- 6) **Remove the Lubricator Assembly –**

- a. Close the Lower Master Valve on the Tree Assembly.
- b. Bleed off all pressure from the Lubricator and Tree Assembly through Manifold Bleed Valves “C” and “D”.
- c. Ensure all Manifold Valves are open and that the Lubricator and the Tree are completely bled down.
- d. Close the remaining valves on the Tree Assembly.
- e. Once all pressure is completely bled down, remove the Lubricator Assembly and BPV.



### CAUTION

When operating a Parmelee or Gear Wrench, always grip the wrench from the bottom with your fingers on top. Keep your head and other body parts away from the wrench at all times.

Installation Procedure Overview

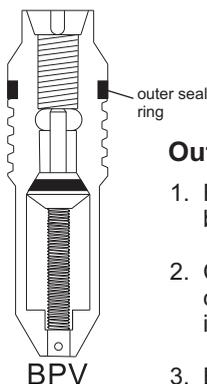
1	Inventory tools, test the Lubricator
2	Go to the well site
3	Remove the Lubricator from tool, BPV
4	Strip the flow in the line
5	Attach the assembly to the top of the line
6	Set the BPV
7	Check the Lubricator out of the line
8	Make all repairs to the line
9	Make up Lubricator to the line
10	Release the BPV
11	Remove the Lubricator
12	Replace the flow stop
13	Return to the shop
14	Do maintenance on Lubricator & BPV
15	Check the Lubricator out to the BPV

## LUBRICATOR REPAIR

*The Lubricator is repaired as follows:*

- 1) Remove the Polished Rod from the Lubricator.
- 2) Remove the gland nuts carefully with the spanner wrench.
- 3) Slide the damaged packing from the groove with a screwdriver.
- 4) Replace the packing and gland nuts, as necessary.

## MAINTENANCE



### Outer Seal Replacement

1. Remove the OUTER SEAL RING on the body carefully with a screwdriver or an awl.
2. Check the new seal for any damage, carefully slide it over the BPV body into the appropriate groove.
3. Ensure that the seal is seated properly and snug in the groove. Check the seal for any damage, if there is any, replace the seal (repeat the procedure).

## STORAGE

- 1) Store the Lubricator in a climate-controlled environment.
- 2) Remove polished rod, set aside.
- 3) Ensure the packing is clean.
- 4) Tag the Lubricator, as necessary.

