



NeoHybridPositiveDisplacementBailer Systems
General Preparation & Run-in Procedures
(NeoHybridPDB Systems)

Document # DRI-0118-0175

NeoHybridPDB Systems are non-explosive **Positive Displacement Bailer Systems** used to place **NeoSuperSlurry** atop platforms in wellbores.


NeoHybridPDBs are available in **1 3/4", 2", 2 1/8", 2 1/2", 3", 3 1/2", 4" & 5"** run-in diameters.

Recommended Operations to Maintain Static Wellbore Conditions


The operations below were strictly followed for many decades of high success rate **Thru-tubing Plug-back Operations**. Many WL operators are unaware of or have chosen to not perform these critical operations. Maintaining static wellbore conditions during **Thru-Tubing Plug-back Operations** is critical.

These are recommended procedures that will maintain a relatively static shut-in tubing pressure (SITP) and overall wellbore pressure when making multiple wireline (WL) & Slickline (SL) runs in and out of the well

1. Perform the lubricator pressure test using the appropriate water solution e.g., fresh water, brackish water, or weighted brine.
 - a. Use a 25% glycol/water solution if there is gas below the Master Valve (MV).
 - b. The pressure test should be at least 250 psi above the SITP.
2. Once the lubricator pressure test is finished, reduce the lubricator pressure to be 50-100 psig above the SITP.
3. Slowly crack open the MV and allow pressure equalization. Record the lubricator/wellhead SITP.
4. Descend into the well.
5. Monitor, record and adjust the wellhead pressure throughout descent and ascent operations. This must be done during every RIH until the plug is pressure tested.
 - a. Record the SITP before and after opening the MV on every RIH. Call this the recent SITP.
 - b. Maintain a constant wellhead pressure equal to the recent SITP ± 50 psig for that RIH.
 - i. Wellhead pressure can increase due to descending line displacement while RIH, bleed off wellhead pressure at the surface to maintain recent SITP ± 50 psig,


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- ii. Wellhead pressure can decrease due to ascending line displacement while coming out of the hole (COOH). Pump 25% glycol water solution into the wellhead to maintain the recent SITP \pm 50 psig,
6. Perform a pressure test when and as instructed.

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PURGE ALL GAS FROM THE INTERIOR OF THE NeoHybridDBA


1. Secure the NeoHybridDBA in a vise. Orient the DBA so that it is vertically upright. Remove the #2 Parker Plug (Item 22).
2. Verify that the resistance of the NeoHybridDBA is between 270 – 320 ohms. Contact NeoProducts if the NeoHybridDBA has resistance is out of this range or does not fire properly.
3. Make-up the Pump-in Fixture with the Fill Port on the Dual Valve Tandem Sub. Never wrap Teflon tape onto the threads of the Pump-In Fixture (Item 42) or the Pipe Plug (Item 26). Bits of Teflon tape can fowl the Check Valve and/or Solenoid Valve in the DBA.
4. Attach the Hydraulic Hand Pump to the Pump-In Fixture.
5. Upright the DBA. Slowly pump hydraulic fluid into the DBA until hydraulic fluid is expelled from the #2 Parker Plug Port in the Electrical Contact Sub. Compressible air/gas has now been purged from the DBA.
6. Install the #2 Parker Plug (Item 22). Continue to slowly pump hydraulic fluid until a steady stream of hydraulic fluid is expelled from the Weep Holes.
7. Make-up a “GO” Double Pin Electrical Sub to the DBA.
 - a. Check the resistance of the DBA. The resistance should be 270 – 320 ohms,
 - b. Connect a V_{dc} Power Supply to the DBA. Attach the positive lead to the “GO” Double Pin Electrical Contact Sub and the negative lead to the DBA body,
 - c. Wrap a shop towel around the Dual Valve Tandem Sub (Item 6) where hydraulic fluid is discharged from the DBA. Approximately 2 fluid ounces of hydraulic fluid will be expelled upon DBA firing,
 - d. Slowly increase the current over 3 – 4 seconds to 450-500 milliamps,
 - e. Proper DBA firing is demonstrated by expelling hydraulic fluid into the shop towel,
 - f. Record the threshold current and voltage needed to fire the DBA.
8. With the DBA vertically upright. Remove the #2 Parker Plug in the Electrical Contact Sub (Item 1). Very slowly pump hydraulic fluid into the Pump-in Fixture until a steady flow of hydraulic fluid exits the DBA. The DBA is now thoroughly purged of all air.
9. Re-install the #2 Parker Plug.
10. Slowly pump hydraulic fluid into the NeoHybridDBA until a steady stream of hydraulic fluid is expelled from the Weep Holes.
11. Make-up the NeoHybridDBA to the NeoCockingTool. Attach a water supply to the inlet manifold of the NeoCockingTool (P/N 0118-175-011). Do not allow the pressure in the NeoCockingTool to exceed 100 psig.
12. Once the water supply is attached, open all valves on the NeoCockingTool. Purge all air out of the system. Close all valves.

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13. Slowly open the inlet valve and allow the water supply to stroke the **NeoCockingTool**. The **NeoCockingTool** will move the Swab Piston upward while simultaneously compressing the Springs (Item 34). You will see (thru the vent holes in the Spring Housing) and hear the springs rubbing against the Spring Housing as they compress.
14. When the **NeoCockingTool** approaches the top of its stroke a very small discharge of hydraulic fluid will be expelled from the Weep Holes. You will hear a distinctive “CLICK” come from the top section of the Spring Housing. The CLICK is the Collet Rod snapping into its service position. You will also see the top of the Swab Piston in the long oval holes at the bottom of the Swab Piston Housing.
15. Close the inlet valve. Open the discharge valve. If the Swab Piston stays in place the DBA is “Locked & Loaded” and ready to be run in the hole.
16. Close the discharge valve if the Swab Piston moves downward several inches. Repeat Steps #13 thru #16.
17. Remove the Pump-in Fixture. Install the Pipe Plug.

MAKE-UP BAILER SYSTEM BHA

18. Make-up the “GO” Double Pin Electrical Sub with the CCL.
19. Place the **NeoHybridDBA** out of harm’s way.
20. Obtain the **NeoShearPistonAssembly (NeoSPA)**.
 - a. Disassemble the **NeoSPA**,
 - b. Examine the O-Ring for service worthiness, replace as needed,
 - c. Apply downhole grease to the Shear Piston & O-Ring,
 - d. Firmly install the Shear Piston into the Bottom Fill Shear Sub,
 - e. Install a **NeoShearScrew** to secure the Shear Piston in place,
 - f. Flip the Bottom Fill Shear Sub over and firmly tap the top of the Shear Piston hard enough to verify that the Shear Screw is in the shear groove,
 - g. Make-up the Bottom Fill Shear Sub with the Piston Cage and
 - h. Install the Bailer Cage Plug in the Piston Cage.
21. Obtain the Diameter O-Ring Sealed Bailer Joints to be used on the job. Inspect the bailers inside and out for service worthiness. Replace O-Rings as needed. Apply grease to the pins, boxes, and O-Rings.
22. Determine the amount of **NeoSuperSlurry** needed to fill the bailer. For example 40 ft of 2 ½” Diameter Bailleurs will require 4 x 2.18 gallons per 10 ft joint = 8.72 gallons. Mix/prepare two (2) 5 gallon batches of **NeoSuperSlurry**.
23. If there is no mouse hole available go to Step #24. If the bailer can be lowered into a mouse hole or riser go to Step # 25.
24. Make-up the bailer string with the lubricator vertical or on the ground, for example;
 - a. Make-up the bailer joints,

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For the bailer joints, thread the pin end of one bailer joint into the box end of another by hand. Once the bailer joints are almost completely threaded, you may use a pipe wrench on each of the knurled sections to finish threading the two bailer joints into each other. Do not overtighten. If using a Bailer Clamp, attach the clamp to a knurled section of the bailer joints. Overtightening will result in damage to the bailer joints and possibly misruns.


- b. Make-up the **NeoSPA** with the bottom bailer joint,
- c. Make-up the **NeoHybridDBA** with the top bailer joint,
- d. Pull the BHA into the lubricator,
- e. Upright the lubricator,
- f. Lower the **NeoSPA** out the bottom of the lubricator,
- g. Make-up the **NeoBottomFill** System to the Bottom Fill Shear Sub,
- h. Place a gallon of fresh water in the **NeoBottomFill** Pail,
- i. Pump the water into the bailer. Do not allow the system to suck air into the bailer. Close the valve at the Bottom Fill Shear Sub before running out of water in the pail,
- j. Place 5 gallons of **NeoSuperSlurry** in the **NeoBottomFill** Pail,
- k. Open the valve and pump the slurry into the bailer,
- l. Regulate the pump rate so that the pump does not suck air,
- m. Keep adding slurry to the pail to keep the slurry height as high while bottom filling,
- n. Stop pumping slurry once water begins has gushed out the bottom of the **NeoHybridDBA** for a few seconds (You must make sure the system is completely filled with slurry and that there is no air in the system. Having any trapped air in the bailer can result in a misrun),
- o. Detach the bottom fill system,
- p. The bailer system is now ready to be pulled up into the lubricator and run into the well,
- q. Go to Step # 26.

25. Perform the following if a mouse hole or riser is available:

- a. Make-up the **NeoSPA** with a bailer joint,
- b. Make-up the remainder of the bailer joints one joint at a time while lowering the **NeoSPA** one joint length at a time into the mouse hole,

For the bailer joints, thread the pin end of one bailer joint into the box end of another by hand. Once the bailer joints are almost completely threaded, you may use a pipe wrench on each of the knurled sections to finish threading the two bailer joints into each other. Do not overtighten. If using a Bailer Clamp, attach the clamp to a knurled section of the bailer joints. Overtightening will result in damage to the bailer joints and possibly misruns.

- c. Attach a **NeoBailerClamp** below the top of the top bailer, hang off the bailer,
- d. Pour slurry into the bailer and verify that the top of slurry is 2 ft below the top of bailer joint,


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- e. Remove the Swab Piston Housing from the bottom of the NeoHybridDBA,
- f. Make-up the Swab Piston Housing with the top bailer joint,
- g. Pour fresh water into the Swab Piston housing until water flows out of the oval holes in the housing, this will result in a 30" long water pad atop the 38' long slurry column,
- h. Make-up the NeoHybridDBA with the Swab Piston Housing (remember to re-install the locking Cap Screw (Item 18) at the top of the Housing),
- i. The bailer system is now ready to be pulled up into the lubricator and run into the well.


26. Perform all required safety and operational tasks and descend into the well.
- a. Locate the bottom of the bailer no greater than 1 – 3 ft above the platform upon which the slurry will be placed,
 - b. Apply V_{dc} to the tool string, bring the current up to 450-500 mA and hold for 3 – 5 seconds,
 - c. Remove the V_{dc} ,
 - d. Repeat b & c, above, two more times (wait 60 seconds in between each repeat),
 - e. Pull out of the hole.

Note: Increased wireline length will affect line resistance. Additional voltage may need to be applied at surface to reach desired voltage at the tool head.

27. Once at the surface, lower the NeoSPA out the end of the lubricator, verify that the Shear Piston is located at the bottom of the Piston Cage.
28. Remove the NeoSPA from the bottom bailer joint.
- a. Disassemble the NeoSPA,
 - b. Examine the O-Ring for service worthiness, replace as needed,
 - c. Clean the O-Ring & Shear Piston. Apply grease to the Shear Piston & O-Ring,
 - d. Firmly install the Shear Piston into the Bottom Fill Shear Sub,
 - e. Install a NeoShearScrew to secure the Shear Piston in place,
 - f. Flip the Bottom Fill Shear Sub over and firmly tap the top of the Shear Piston hard enough to verify that the Shear Screw is in the shear groove,
 - g. Make-up the Bottom Fill Shear Sub with the Piston Cage and
 - h. Make-up the NeoSPA with the bottom bailer joint.
29. If the bailer is run in brine that is heavier than 10.5 ppg or in crude oil or condensate, flush the bailer out with fresh water between every run in the hole using the NeoBottomFill System. Add an oil film breaking surfactant to the fresh water if the bailer is run thru oil or condensate.
30. If performing a job with the use of a mouse hole or riser, go to Step #31. If performing a job without the use of a mouse hole or riser perform the following:

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- a. Lay the bailer down and break the connection between the NeoHybridDBA and the top bailer joint,
- b. With the DBA vertically upright. Remove the Pipe Plug (Item 26). Remove the #2 Parker Plug (Item 22). Install the Pump-in Fixture. Very slowly pump hydraulic fluid into the DBA until a steady flow of hydraulic fluid exits the DBA. The DBA is now thoroughly purged of gas,
- c. Re-install the #2 Parker Plug,
- d. Slowly pump hydraulic fluid into the DBA until a stream of hydraulic fluid is expelled from the both Weep Holes,
- e. Wrap a shop towel around the Dual Valve Tandem Sub where the hydraulic fluid exits the DBA,
- f. Fire the DBA by slowly increasing the current to 450-500 milliamps,
- g. Upon “firing,” the DBA will expel hydraulic fluid into the shop towel,
- h. Record the threshold current and voltage needed to fire the DBA,
- i. Continue on if the NeoHybridDBA fired properly,
- j. Slowly pump hydraulic fluid into the NeoHybridDBA until a stream of hydraulic fluid is expelled from both Weep Holes.
- k. Make-up the NeoHybridDBA to the NeoCockingTool. Attach a water supply to the inlet manifold of the NeoCockingTool. Do not allow the pressure in the NeoCockingTool to exceed 100 psig.
- l. Once attached open all valves on the NeoCockingTool. Purge all air out of the system. Close all valves,
- m. Slowly open the inlet valve and allow the water supply to stroke the NeoCockingTool. The NeoCockingTool will move the Swab Piston upward while simultaneously compressing the Springs (Item 34). You will see (thru the vent holes in the Spring Housing) and hear the springs compressing,
- n. When the NeoCockingTool reaches the top of its stroke you will see a very small discharge of hydraulic fluid expelled from the Weep Holes. You will also hear a “CLICK” come from the top section of the Spring Housing. The CLICK is the Collet Rod snapping into its service position. You will also see the top of the Swab Piston in the long oval holes at the bottom of the Swab Piston Housing,
- o. Close the valve on the input of the NeoCockingTool and open the discharge valve. The DBA is “Locked and Loaded” if the Swab Piston stays in place,
- p. Close the discharge valve if the Swab Piston moves downward several inches and repeat Steps m thru o. The NeoHybridDBA is now “Locked & Loaded”,
- q. Make-up the bailer string with the lubricator vertical or on the ground, for example;
- r. Make-up the NeoHybridDBA with the top bailer joint,
- s. Pull the BHA into the lubricator,
- t. Upright the lubricator,
- u. Lower the NeoSPA out the end of the lubricator,
- v. Make-up the NeoBottomFill System to the Bottom Fill Shear Sub,
- w. Place ¾ of a gallon of fresh water in the NeoBottomFill Pail,
- x. Pump all the water into the bailer and close the ball valve at the Bottom Fill Shear Sub,

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- y. Place 5 gallons of **NeoSuperSlurry** in the **NeoBottomFill Pail**,
 - z. Open the ball valve and pump the slurry into the bailer,
 - aa. Regulate the pump rate so that the pump does not suck air,
 - bb. Keep adding slurry to the pail to keep the slurry height as high as possible while bottom filling,
 - cc. Stop pumping slurry once water begins to gush out the bottom of the **NeoHybridDBA**,
 - dd. The bailer system is now ready to be pulled up into the lubricator and run into the well.
31. Perform the following if a mouse hole or riser is available, otherwise go to Step #32:
- a. Attach a **NeoBailerClamp 6"** below the top of the top bailer, separate the **NeoHybridDBA** from the top bailer joint, hang off the bailer,
 - b. With the DBA vertically upright. Remove the Pipe Plug (Item 26). Remove the #2 Parker Plug. Install the Pump-in Fixture. Very slowly pump hydraulic fluid into the Pump-in Fixture until a steady flow of hydraulic fluid exits the DBA. The DBA is now thoroughly purged of gas,
 - c. Re-install the #2 Parker Plug,
 - d. Slowly pump hydraulic fluid into the **NeoHybridDBA** until a steady stream of hydraulic fluid is expelled from the Weep Holes,
 - e. Wrap a shop towel around the Dual Valve Tandem Sub where the hydraulic fluid exits the DBA,
 - f. Fire the DBA by slowly increasing the current to 450-500 milliamps
 - g. Upon "firing," the DBA will expel hydraulic fluid into the shop towel,
 - h. Record the threshold current and voltage needed to fire the DBA,
 - i. Continue on if the DBA fired properly,
 - j. Slowly pump hydraulic fluid into the DBA until a stream of hydraulic fluid is expelled from both Weep Holes.
 - k. Remove the Pump-in Fixture and install the Pipe Plug.
 - l. Attach a water supply to the inlet manifold of the **NeoCockingTool** (P/N 0118-175-011). Do not allow the pressure in the **NeoCockingTool** to exceed 100 psig,
 - m. Once attached open all valves on the **NeoCockingTool**. Purge all air out of the system. Close all valves,
 - n. Slowly open the inlet valve and allow the water supply to stroke the **NeoCockingTool**. The **NeoCockingTool** will move the Swab Piston upward while simultaneously compressing the Springs (Item 34),
 - o. When the **NeoCockingTool** reaches the top of its stroke a very small discharge of hydraulic fluid will be expelled from both Weep Holes. You will hear a "CLICK" come from the top section of the Spring Housing. The CLICK is the Collet Rod snapping into its service position,
 - p. Close the inlet valve, and open the discharge valve. The DBA is "Locked and Loaded" if the Swab Piston stays in place,
 - q. Close the discharge valve if the Swab Piston moves downward several inches and repeat Steps n thru p,

- r. Pour slurry into the bailer and verify that the top of slurry is 2 ft below the top of the bailer joint,
 - s. Remove the Swab Piston Housing from the bottom of the NeoHybridDBA,
 - t. Make-up the Swab Piston Housing with the top bailer joint,
 - u. Pour fresh water into the Swab Piston housing until the water flows out of the oval holes in the housing, this will result in a 30"-long water pad atop of the 38'-long slurry column,
 - v. Make-up the NeoHybridDBA with the Swab Piston Housing (remember to re-install the locking cap screw at the top of the housing, and
 - w. The bailer system is now ready to be pulled up into the lubricator and run into the well.
32. Perform all required safety and operational tasks and descend into the well.
- a. Locate the bottom of the bailer no greater than 1 – 3 ft above the platform upon which the slurry will be placed,
 - b. Apply V_{dc} to the tool string, bring the current up to 450-500 mA and hold for 3 – 5 seconds,
 - c. Remove the V_{dc} ,
 - d. Repeat b & c, above, two more times, (wait 60 seconds between each repeat) and
 - e. Pull out of the hole.
- Note:** Increased wireline length will affect line resistance. Additional voltage may need to be applied at surface to reach desired voltage at the tool head.
33. Repeat Steps #27 thru #32 until the desired cement plug length is achieved.
34. Break down the BHA once bailing operations are complete. Examine the NeoHybridPDB components for general service worthiness. Contact NeoProducts if there appears to be any problems with the equipment or any need for product support.
35. Wipe down NeoProducts tools, fixtures, etc. Stow the equipment for;
- a. Transportation to the shop for,
 - b. Disassembly, examination & redressing and/or rebuilding, and
 - c. Future service.