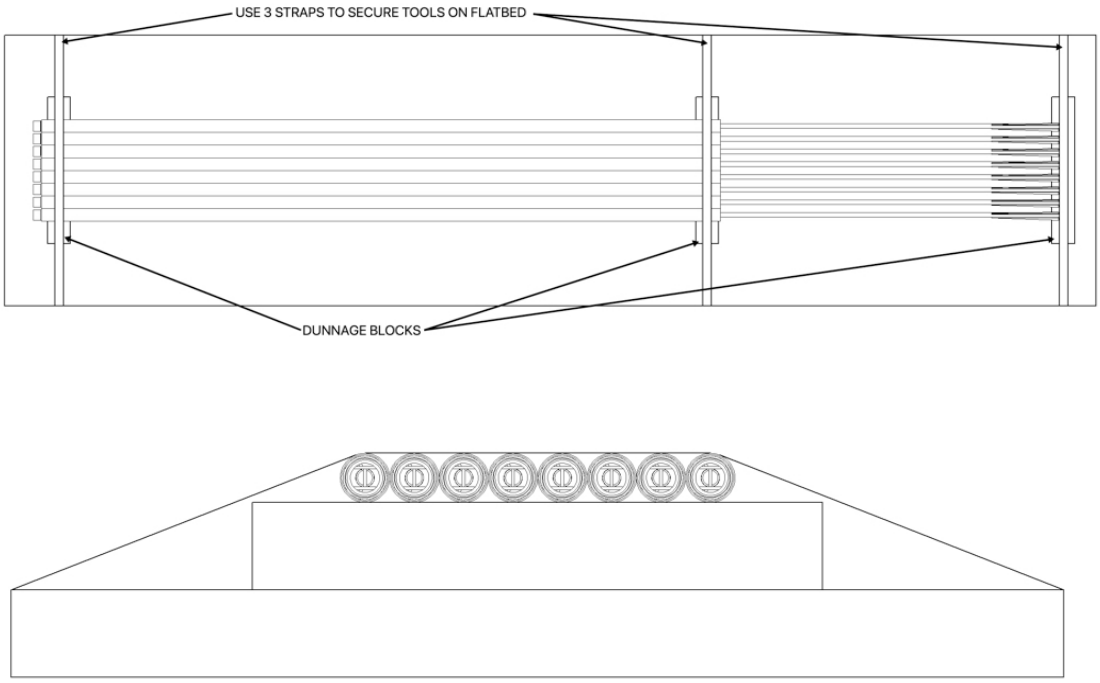
# Standard Operating Procedure (SOP)

| Doc Name | Silver Packerless Separator SOP | | |
|---|---|---|---|
| Date | September 8, 2023 | Revision | 2 |

## 1. Transportation

1.1. The following loading and transportation diagram shall be adhered to alt all times to avoid damage to the separator:




1.2. Do not lift or strap on the small diameter center tube between the top sub and separator collector with forklift or slings. See section 2.4 for correct lifting procedure.

1.3. Support separator at the top 2-3/8” or 2-7/8” EUE sub and main separator collector shroud body while shipping.

1.4. Do not stack anything on top of the separator.

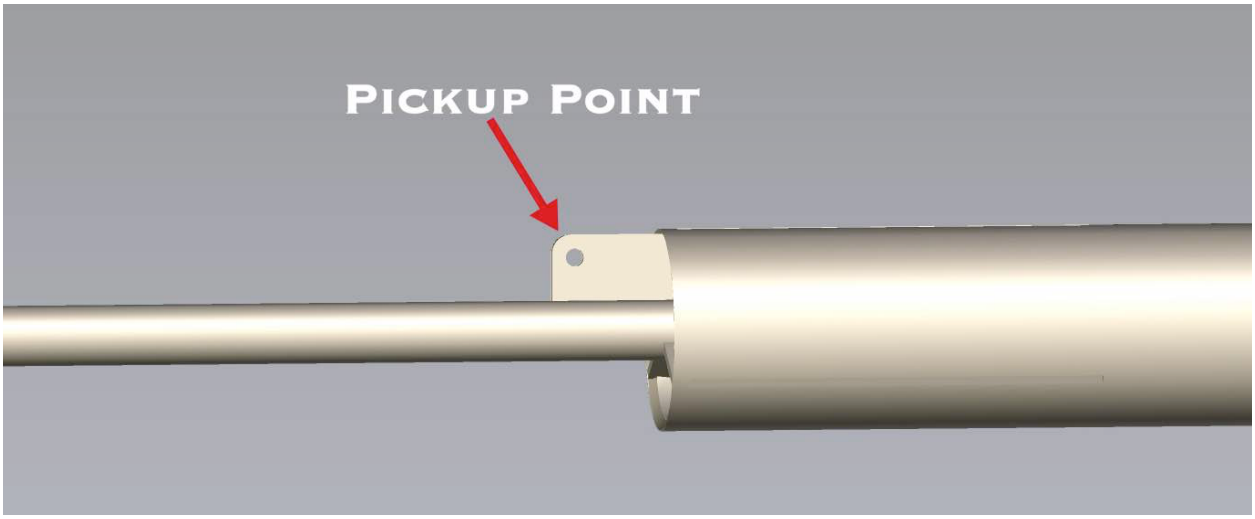
1.5. Do not strap across the separator’s small diameter center tube during transportation as this will bend it.

1.6. Always use a 2-3/8” or 2-7/8” EUE thread protection for storage, handling and transport.

1.7. All Separators are clean, coated, and then sealed with protective wrapped before shipping to prevent debris from entering. The wrapping should only be removed just before installation. Transportation company to inspect wrapping prior to transport.

## 2. Lifting the Separator

2.1. Lift the separators using a clevis pin through the pickup point provided at the top of the lower shroud as shown.




## 3. Running in the Hole

3.1. Ensure wellbore to separator landing depth is free of debris and a casing drift run with mill or string mill or casing scraper has been performed to confirm.

3.2. Inspect and caliper separator; confirm OD of separator is within specifications and for the casing ID of the well. Observe for any damage or bending to the small diameter intake tube (which could restrict flow during operation). Remove transportation wrapping and thread protectors from the separator. Observe for any debris inside separator's collector that could plug the separator intake tube or pump.

**Note:** If this is a re-run of the separator, ensure there is no bending of the dip tube and pump fluid in reverse down through separator intake tube and back out the body to flush any debris that may have fallen into the body while pulling the separator out of hole.

3.3. If running mud joints on bottom of separator:

3.3.1. RIH with mud joints as required.

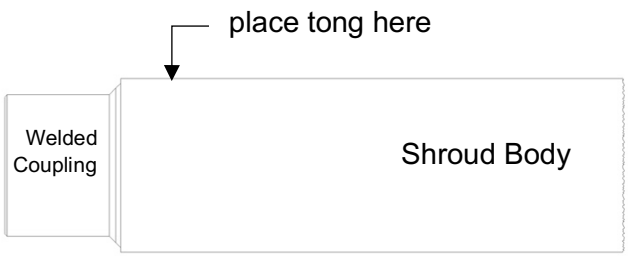
3.3.2. The maximum number of mud joints for the different models are:

| | |
|---|---|
| 10035 | 12 joints of 2-3/8 |
| 10045 | 11 joints of 2-7/8 |
| 10055 | 11 joints of 2-7/8 |

3.3.3. Lift separator with lifting point (section 2). Do not allow any side impact to separator (on rig floor while lifting). Do not bend separator while lifting.

**Note:** If required, remove thread protector at top of separator and install a 4' to 6' pup joint.

3.3.4. Bottom: Place tongs on collar or alternative location is just above the welded collar. Do not place higher than 8" above the welded collar.




3.3.5. Top: Only torque on the welded collar, do not torque on the pump intake tube.

3.3.6. Make up box down separator into pin up of mud joint and tighten by only applying a wrench to top section of crossover sub (if used) on the bottom of the separator's collector body, to minimum EUE make-up torque.

**Note:** Do not over torque the assembly.

3.4. Makeup separator by hand on the floor. Use hole cover above the BOP's so the separator can not accidentally fall downhole.

3.5. Tighten box thread on top of lifting sub by only applying a backup wrench to top section of lifting sub, to optimal make-up torque.

**Note:** if separator has a corrosion/scale coating, always use torque straps to avoid damaging the coating with a standard wrench

3.6. Lower separator in hole, **never** put weight on separator or place it in compression and avoid/minimize rotation.

3.7. Tubing Anchor must be installed above the separator and Pup Joint.

## 4. Fishing (if required)

4.1. In 4-1/2" (114.3mm) casing, fish the separator as follows:

4.1.1. Scenario 1 – top sub with tubing pin broke off inside EUE box. Run an overshot tool (Box Tap/Die Collar) with outside dimension of casing drift or close to drift with a catch range 3" to 2.875" over 3" taper, equivalent as follows:

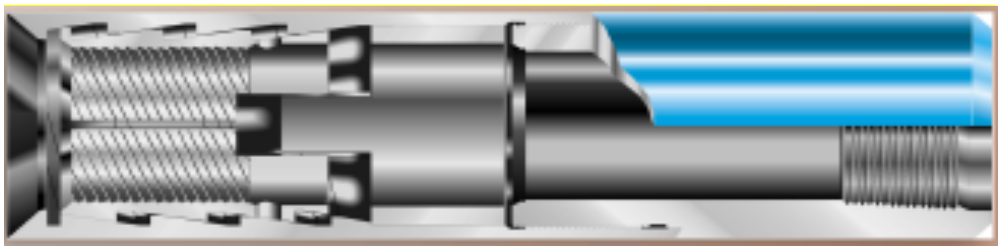
4.1.2. Scenario 2 – separator parted below top sub, pulled apart or twisted off in the separation region (i.e., small diameter intake tube has parted).

4.1.2.1. Run a overshot tool(Box Tap/Die Collar) with outside dimension of casing drift or close to drift with a catch range 2.5" to 1.25" over 2" taper, equivalent as above.

4.2. In 5-1/2” (139.7mm) or in 7” (177.8mm) casing, fish the separator as follows:

4.2.1. Scenario 1 – top sub with tubing pin broke off inside separator’s EUE box. Run a short catch overshot loaded to catch 1.92" OD fish neck.

Short Catch Overshot:



4.2.2. Scenario 2 – if separator parted below top sub, pulled apart or twisted off at the pump intake tube and cannot retrieved with smaller overshot tool:

4.2.2.1. Run a drift OD Concave mill and mill off pump intake tube and top 24“ of separator body. Then run tapered or round nose mill to clean out ID of separator body to 24” inside.

4.2.2.2. Then run spear to catch ID of separator Collector.