



**Composite Frac Plug
Field Manual - Short Form**

RPL-FSM-10002-11

Version 11



REVISION TRACKING

| Version | Date | Requester | Description | Editor | Approver |
|---------|------------|--------------|--|--------------|--------------|
| 01 | 11/21/2017 | | Document Release | Joseph LeRoy | Grant Martin |
| 02 | 11/29/2017 | | Document Release | Joseph LeRoy | Grant Martin |
| 03 | 04/23/2018 | Clint Mickey | Change Mill/Bit OD to match updated specs | Joseph LeRoy | Grant Martin |
| 04 | 10/05/2018 | Clint Mickey | Remove Mill/Bit table. Revise Section 1 and 2 | Joseph LeRoy | Clint Mickey |
| 05 | 01/07/2019 | Clint Mickey | Update with SI Units of Measure | Joseph LeRoy | Clint Mickey |
| 06 | 11/04/2019 | Clint Mickey | Update colors and logos | Joseph LeRoy | Clint Mickey |
| 07 | 11/06/2019 | Alex Miller | Update run in speed and pump down rates to include 5.5" casing pump rates of 14-26 bpm | Joseph LeRoy | Clint Mickey |
| 08 | 12/04/2019 | Clint Mickey | Modify Section 1 | Alex Miller | Clint Mickey |
| 09 | 9/22/2020 | Alex Miller | Update Sections 1 & 2 to include 5" | Alex Miller | Clint Mickey |
| 10 | 3/15/2021 | Alex Miller | Remove 6" from sections 1-2 | Alex Miller | Clint Mickey |
| 11 | 9/13/2022 | Alex Miller | Add RIH SOP Guidelines | Alex Miller | Alex Miller |

1 Adapter Kit Rig Up (Not applicable if running PurpleSeal Express)

1. Confirm that the correct amount of shear screws are being installed, see table 1. Ensure that the contents of the wireline adapter kit (WLAK) are in good working condition with no signs of damage to components, threads, or set screws. Drill taps are provided for each hole size in the WLAK and should be used prior to each run.

| Casing Size (in.) | Casing Size (mm) | Plug OD (in.) | Plug OD (mm) | Total Shear Screws | Tension Mandrel Shear Screws | Setting Sleeve (Anti Pre-Set Screw is mandatory every run) |
|-------------------|------------------|---------------|--------------|--------------------|------------------------------|--|
| 4.50 | 114.30 | 3.60 | 91.44 | 5 | 4 | 1 |
| 5.00 | 127.00 | 3.85 | 97.79 | 5 | 4 | 1 |
| 5.50 | 139.70 | 4.38 | 111.25 | 6 | 5 | 1 |

Table 1: Wireline Adapter Kit (WLAK) Screw Assembly

2. Install all shear screws through the shear cap and into the plug. Once all the shear screws contact the plug, apply approximately 0.25 to 0.50 turn to tighten each shear screw.
3. Ensure that the anti-preset shear screw hole lines up with the shear screw groove on the shear cap.
4. Check all set screws and adapter kit parts after each plug run.

2 Run in Speeds and Pump Down Rates

Vertical Section

1. It is recommended to pump at least 2 bbl/min [0.3 m³/min] while running in hole in the vertical section of the wellbore.
2. If free falling, limit the running speed to a maximum of 400 ft/min [121.9 m/min].
3. Pick up the tool string approximately 100 ft [30.48 m] above the correlation depth and start pumps. This will give enough space to catch rate prior to the 30° mark.

Horizontal Section

Follow the RP Suggested Pump down speeds through the curve and ensure the BHA is always moving at ~65% of fluid speed prior to reaching the 30° mark in the curve.

1. A rate of at least 9 bbl/min [1.4 m³/min] should be reached prior to entering the 30° section of the wellbore.
2. Do not exceed 400 ft/min [121.9 m/min] while traveling the curve section of the wellbore.
3. As the BHA makes its way through the curve, increase rate to a minimum of 12 bbl/min [1.9 m³/min] before reaching the 60° section and establish maximum rate before exiting into the horizontal section.

4. Vary the run-in speed and/or pump rates to maintain the wireline tension recorded at the kick-off point. This is done to ensure the wireline does not pull out of the rope socket (high WL tension) or spool in the casing (low WL tension).
5. Although the PurpleSeal plug does not have a limit to run speed, Repeat Precision recommends a running speed of no more than 450 ft/min [137.2 m/min] in the horizontal to assist in maintaining appropriate pump down parameters and to minimize the risk of compromising the plug in the event the tool string strikes an obstruction or debris.

3 Retrieval Speed with Plug

Repeat Precision recommends 100 ft/min [30.48 m/min] to 200 ft/min [60.96 m/min] or the Wireline Company/Operators SOP acceptable rate. These rates can vary depending on deviation severity, pump down fin presence, line size, and casing ID to plug OD relationship.

4 Ball Seat Rate

Seat the ball at a maximum pump rate of 15 bbl/min [2.4 m³/min] Slow the pump rate to 10 bbl/min [0.16 m³/min] to 15 bbl/min [2.4 m³/min] when the ball is 80 bbl [12.7 m³] from the ball seat.