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Production Screen Tester

Part No. 800-00

Instruction Manual

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Ver. 1.2

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Intro

New generation reservoir drill-in fluids are allowing wells to be drilled and completed in one stage, thus potentially reducing the cost and time to first oil. Since these minimum-solid fluids are designed to drill the reservoir section, they must remain in the hole while the completion assembly is being positioned. Therefore, it is critical that the fluid system properties, in particular the particle size distribution and concentration, be perfectly compatible with the planned method of completion.

In Natural Sand Pack completions, an assortment of production screens has been developed for sand control. At the initiation of production, it is imperative that the drilling fluid flow back unrestricted through the screen when breakers are not used. Otherwise, there exists the real possibility of screen plugging, which not only minimizes production, but increases the risk of screen erosion, which may result in exorbitant remediation costs and reduce the productive life of the well.

The Production Screen tester makes is a unique rig-site apparatus that now makes it possible to determine, in real time, if the drilling fluid remaining in the annulus will flow back freely through the production screen.

Components

#141-02 Top Cap
#141-03 Filtrate Tube
#141-05 Neoprene Gasket, Qty: 2
#141-06 Cell Pin, Qty: 2
#141-19 Air Hose Adapter for Top Cap
#141-22 Felt Filter

#800-00-006 Threaded Insert for T-screw
#800-00-025 Cell Body
#800-00-027 Base Cap
#800-00-028 Cap Lock Ring
#800-00-029 O-ring, Qty: 4

Safety

Carbon Dioxide gas is normally supplied in small bulbs or cartridges, which contain approximately 900 PSI (6,206 kPa) pressure when new. Because they are highly portable, they are usually used in field operations. These bulbs should not be exposed to high heat (50°C/120°F) as they can explode if over heated.

Never transport CO_2 bulbs or cartridges by airplane without proper packaging. Cabin depressurization could cause them to explode.

Nitrous Oxide cartridges should never be used as a pressure source for any Filter Press.

Operation

1. Before beginning a test, make sure each part of the cell is clean and dry, particularly the screen. Examine the gaskets for distortion and wear. Make sure the screen is free of sharp edges, burrs, or tears.

2. Measure the initial temperature of the mud sample and record it for later analysis.

3. Assemble the test cell:

   a. Place a rubber gasket in the outside groove in the base cap.

   b. Place an o-ring in the inside groove in the base cap.

   c. Place the screen on top of the o-ring and secure it in place with the lock ring.

   d. Place the cell body into the base cap and turn it to lock it in place.

4. Pour the freshly stirred sample fluid into the cell, leaving 0.5" (13 mm) of empty space at the top.

5. Place a rubber gasket inside the top cap. Make sure it is seated all the way around the cap. Then place the top cap onto the top of the cell body.

6. Place the entire cell into the frame and secure the cell with the T-screw.

7. Place a clean, dry graduated cylinder under the filtrate tube.

8. Screw the CO_2 Pressuring Assembly onto the inlet valve on the top cap. With the T-screw regulator completely closed and the relief valve pushed in, place a CO_2 bulb into the sleeve and screw it onto the assembly. This will puncture the bulb and release the pressure.

9. Adjust the regulator to apply 100 ± 5 PSI (690 ± 34.7 kPa) in 30 seconds or less. The test period begins at the time of initial pressurization.

10. After 30 minutes, measure the volume of filtrate collected. Slowly close the regulator T-screw. Pull the relief valve out to release the pressure inside the cell.

11. Record the volume of filtrate collected in cubic centimeters to the nearest .1 cm^3. Label this value “API Filtrate”. Record the time interval and the initial mud temperature. Save the filtrate for chemical analysis.

12. Make sure all pressure has been released from the cell. Remove the CO_2 pressuring assembly from the cell cap. Pull out the relief valve and slowly open the T-screw to allow any remaining pressure to escape. Discard the empty CO_2 cartridge.

13. Remove the cell from the frame and disassemble it. Discard any remaining mud.

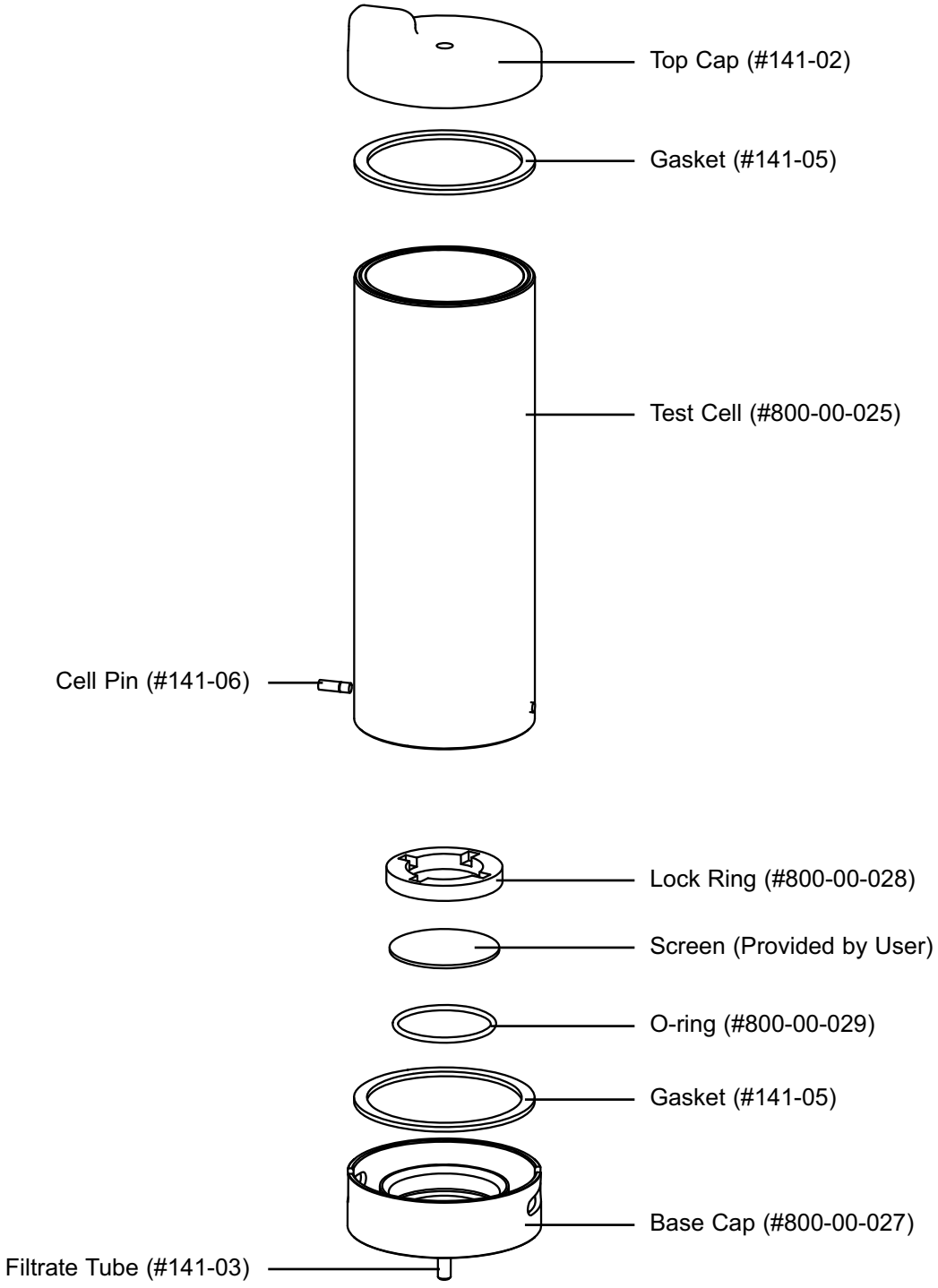
14. Carefully save the filter paper and deposited cake. Wash the excess filter cake on the paper with a gentle stream of water.

    If you are testing oil mud, use diesel oil to clean the filter cake instead of water.

15. Measure and record the thickness of the filter cake to the nearest 1/32" (0.8 mm). A cake thickness less than 2/32" is usually considered acceptable. Observe and record the quality of the cake: hardness, softness, toughness, slickness, rubberiness, firmness, flexibility, sponginess, etc.

16. After each test, disassemble the test cell and thoroughly clean all surfaces with soap and water. Make sure all parts are clean and dry before storing the unit.

Diagram


Top Cap (#141-02)
Gasket (#141-05)
Test Cell (#800-00-025)
Cell Pin (#141-06)
Lock Ring (#800-00-028)
Screen (Provided by User)
O-ring (#800-00-029)
Gasket (#141-05)
Base Cap (#800-00-027)
Filtrate Tube (#141-03)