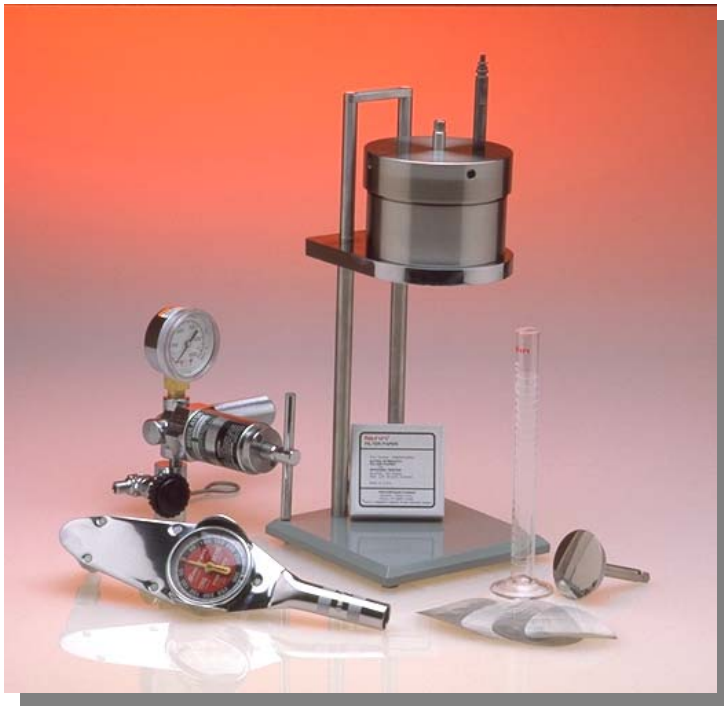


Differential Sticking

Most incidences of stuck pipe are caused by differential-pressure effects. Excessive differential pressures across lower-pressure permeable zones can cause the drillstring to push into the wellbore wall where it becomes stuck. When differential sticking occurs, spotting fluid can sometimes free the drillpipe.

Differential sticking may be identified by the following characteristics:

- ◆ *Pipe sticks after remaining motionless for a period of time*
- ◆ *Pipe cannot be rotated or moved when circulation is maintained*



The Differential Sticking Tester was designed to determine how likely a given drilling fluid will be to produce a "stuck pipe" situation and how effective a given drilling fluid treatment or application of spotting fluid in any given drilling fluid would be in reducing this tendency. This measurement is called the "Stuck Tendency Coefficient". It takes into account both the stickiness and the cake building capability of the drilling fluid. The "Stuck Tendency Coefficient" is determined by the Timed Filtrate Test.

The unit can be pressurized by the CO₂ regulator assembly or from any nitrogen source. If Nitrogen is to be used, the Differential Sticking Tester must be fitted with a suitable Nitrogen regulator, gauges, relief valve, hose and fittings. The standard test uses 477.5 psig (3292 kPa) differential pressure

applied to a stainless steel vessel of approximately 140 ml capacity. The measurement can be made using either the flat-faced torque plate or the 12-1/2" (31.75 cm) spherical radius plate which approximates pipe in casing or collars in borehole contact geometry. (Both are provided.) In the event of a "sticky" sample that tends to adhere more to the torque plate than to the filter paper, stainless steel micro-corrugation disks are provided, to help ensure success of the test.

Parts and Accessories

| PART NO. | DESCRIPTION |
|----------|--------------------------------------|
| 209471 | CO ₂ PRESSURIZED ASSEMBLY |
| 205091 | RETAINER WRENCH |
| 206922 | LEVER |
| 206915 | CELL BODY |
| 206916 | CELL CAP |
| 206917 | CELL SCREEN HOLDER |
| 206918 | FILTER RETAINER RING |
| 206913 | FLAT BOTTOMED TORQUE PLATE |
| 206908 | RUBBER RING GASKET |
| 206909 | PLASTIC RING GASKET |
| 207232 | SUPPORT SCREEN |
| 206910 | LOCKING MESH DISC |
| 206914 | SPHERICAL TORQUE PLATE |
| 209496 | VALVE STEM |
| 205649 | "O" RING 3/16 X 5-1/16 X 1/16 |
| 205662 | "O" RING 2-1/4 X 2-1/2 X 1/8 |
| 205652 | "O" RING 1/2 X 3/8 X 1/16 |
| 205665 | "O" RING 3-3/4 X 3-1/2 X 1/8 |
| 205640 | SPANNER WRENCH |
| 205639 | TORQUE WRENCH |
| 208608 | BOX OF CO ₂ CARTRIDGES |
| 209516 | LOCK PIN |
| 205868 | GRADUATED CYLINDER, 25 ml TC |
| 205636 | SOCKET, 5/16 |

Specifications

Capacity: 140 ml cell
Dimensions: 13.5" x 7.5" x 6.25"
Weight: 23 pounds
Pressure: 477 psig

Order No. 206906 Differential Sticking Tester

Fann Instrument Company offers a complete line of instruments for use in testing drilling fluids in accordance with the following American Petroleum Institute publications:

API Recommended Practice 13B-1, ANSI/API 13B-1/ISO 10414-1,
API Recommended Practice 13B-2, & API Specification 13A

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