

API Filter Press

Instruction Manual



Filtration

The API filter press is used to analyze filtration behavior and wall cake building characteristics of drilling fluids and cement slurries.



CE

EU Declaration of conformity

The manufacturer

MUDTEST Sp. z o.o. Chełmońskiego 77, 32-500 Chrzanów / Polen

hereby declares that the following product:

Name of product	API Filter Press	
Drawing number	7100.11.00000	

complies with the provisions of the guidelines identified below, including those at the time of the declaration applicable changes.

Pressure Equipment Directive 2014/68/EU

The filter press is classified as pressure equipment according to Article 4 Paragraph 3 of the Pressure Equipment Directive and has been designed and manufactured in accordance with good engineering practice.

The following harmonized standards were applied:

■ ISO 10414-1:2008

Petroleum and natural gas industries — Field testing of drilling fluids — Part 1: Water-based fluids

The following national standards were applied:

API RP 13B-1

Petroleum and natural gas industries - Field testing of drilling fluids - Part 1: Water-based fluids

DIN 4127

Earthworks and foundation engineering – Test methods for supporting fluids used in the construction of diaphragm walls and their constituent products



Place and date

Management representative for decentricity of conformity





Description

The API filter press is used to analyze filtration behavior and wall cake building characteristics of drilling fluids and cement slurries. Their stability is based on fluid loss and may be determined by measuring and describing the filter cake.

The components of the filter press are: A cell body to hold the mud sample, a base cap c/w drain tube to discharge filtrate into a graduated cylinder, a stand, a cell support including a pressure regulator with gauge, a CO_2 cartridge holder or an air hose. The base cap holds an exchangeable mesh on which a $3\frac{1}{2}$ " (90 mm) sheet of filter paper can be placed. This corresponds with a filtration area of 7.1 ± 0.1 in² (4,580 ± 60 mm²) recommended by the American Petroleum Institute (API).

Before the test a sheet of filter paper is placed on the mesh in the base cap. The cell body of the filter press is filled with mud or cement and the cell is closed with the base cap. A pressure of 100 psi is applied to the cell by piercing the CO_2 cartridge or by compressed air from a bottle or compressor. Filtrate is driven through filter paper and the outlet in the base cap and collected by means of a graduated measuring cylinder. After a time period of 30 minutes the amount of discharged fluid may be recorded and the filter cake that has formed on the filter paper is measured and described.

As an alternative to CO_2 cartridges or compressed air, the filtration pressure may be generated in a U-shape hydraulic assembly. On one side of the U there is a vertically aligned cylinder with a piston acting on a water column. A dead weight is resting on the piston, pushing the water into the other side of the U and compressing the air above the water column, thus creating the filtration pressure in the filter press cell. This filter press model does not need a pressure regulator nor an external pressure source.

The MUDTEST filter press complies with the requirements of API RP 13B-1 or the corresponding international standard ISO 10414 for field testing of drilling fluids. The requirements of the German standard DIN 4127 for the test procedure for supporting fluids in diaphragm wall construction are also met. The filter press falls within the scope of the European Pressure Equipment Directive 2014/68 / EU. Therefore, the corresponding conformity assessment procedure was carried out and the CE marking was attached.





Technical Specifications

:	10 bar 145 psi
:	20°C ± 2°C 68°F ± 2°F
:	200 x 500 x 230 mm 7.87 x 19.68 x 9.0 in
:	ca. 5.5 kg 12.13 lbs
:	stainless steel
:	316 ml
:	Ø 76.2 mm 3 inch
:	>64 mm 2.5 inch
:	45.8 cm ² 7.1 inch ²
:	90 mm 3.54 inch
	:





Order Information

Filter Press / 7100.11.00000







Drilling-fluid cell assembly / 7100.11.02000

	External circlip 7100.11.02005
0	O-Ring 7100.11.02004
	T-Coupling 7100.11.02003
Reserves	Cell 7100.11.02300
	Gasket 7100.11.02206
	Filter paper 7100.11.02205
	Countersunk screw 7100.11.02208
	Screen 7100.11.02204
	Lid c/w drain tube 7100.11.02200
	O-Ring 7100.11.02207
	Clamp 7100.11.02101
Ĵ.	Knurled screw 7100.11.02103
*	Hexagon nut self-locking 1000.52.00002

CO₂ Cartridge holder assembly / 7100.11.06000



MADE IN EUROPE

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Operating procedure

- 1. Unscrew and remove the barrel for CO_2 cartridge.
- 2. Make sure that the pressure regulator is closed.
- 3. Insert a CO₂ cartridge in the barrel and tighten it carefully with approximately three turns.
 - **i** NOTICE: The CO₂ cartridges must not be opened yet, CO₂ should not exhaust!
- 4. Remove the drilling-fluid cell assembly from the T-groove.
- 5. Turn the knurled screw counter clockwise to drive the lid out of the cell until the o-ring becomes visible.
- 6. Pull out the lid from the cell by twisting the assembly and put it aside. Assure that all components are clean and dry and that the o-ring is not twisted or damaged.
- 7. Remove the gasket.
- 8. Turn the drilling-fluid cell assembly upside down and close the hole in the T-coupling with a finger tip. Pour the freshly stirred sample fluid into the cell, leaving 13 mm of empty space at the top.
- 9. Clean the area where the gasket will rest and return the gasket.
- 10. Place a filter paper on top of the gasket.
- 11. Return the lid and lock the clamp by twisting and tighten the knurled screw.
- 12. Turn around the test cell assembly, close the drain tube with a finger tip, and push the cell back into the T-groove.
- 13. Place a dry graduated cylinder below the drip tube to collect the filtrate.
- 14. Tighten the barrel fully to release CO₂.
- 15. Adjust the regulator so that a pressure of 100 psi ± 5 psi is applied within 30 s or less. The test period begins at the time of pressure application.





- 16. At the end of 30 min, measure the volume of filtrate collected. Shut off the flow through the pressure regulator and open the relief valve carefully. The time interval, if other than 30 min, shall be reported.
 - **i** NOTICE: The duration and test pressure vary depending on which standard is being followed. While API requires a test pressure of 100 PSI for a duration of 30 minutes, DIN 4127 requires a test pressure of 7 bar for only 7.5 minutes.
- 17. Report the volume of filtrate in millilitres (to the nearest 0,1 ml) and the initial drilling fluid temperature in degrees Celsius (degrees Fahrenheit). Save the filtrate for chemical analysis.
- 18. Remove the cell from the frame, first making certain that all pressure has been relieved
- 19. Dissasamble the cell and dispose the drilling fluid.
- 20. Carefully remove the filter paper with a minimum of disturbance to the cake, disassemble the cell and discard the drilling fluid.
- 21. Wash the filter cake on the paper with a gentle stream of water.
- 22. Measure and report the thickness of the filter cake to the nearest millimetre (1/32 in).
- 23. Although cake descriptions are subjective, such notations as hard, soft, tough, rubbery, firm, etc., can convey important information of cake quality.
- 24. Thoroughly clean all components as residue from hardened drilling fluid inside the filter press may cause malfunction and will affect the accuracy of future tests.

