



INMOTION ENERGY (OPC) PRIVATE LIMITED

HTHP Filter Press (175 mL Cell)

High-Temperature, High-Pressure Filtration Tester for Drilling Fluids and Cement Slurries — Complete with Mud Sample Cup, Heating Jacket and Pipe-Manifold Assembly

Model No: IM-FP-HTHP175

Compliant with API RP 13B-1, Sec. 7.2 & ISO 10414-1

INSTRUCTION MANUAL

Updated 07 Jan 2026

Ver. 1.0

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Introduction

Static fluid-loss control is one of the clearest early warnings a mud engineer has. Under ambient conditions a drilling fluid can look perfectly stable, yet the same fluid exposed to downhole temperature and a real pressure differential can lose its filtration control entirely — API RP 13B-1, Section 7.2 exists precisely because a room-temperature reading cannot be trusted to predict what happens thousands of feet down.

The Inmotion HTHP Filter Press reproduces that downhole environment on the bench: a sealed, pressurized, heated test cell that holds a fluid or cement slurry at a controlled temperature and a fixed differential pressure while filtrate is collected and measured. The result is a static fluid-loss value and a filter cake that reflect what the formation will actually see — not a room-temperature approximation of it.



The complete IM-FP-HTHP175 kit — press, pipe-manifold, sample cups and every tool needed to run a test, ready out of the box

Description

The IM-FP-HTHP175 is a 175 mL high-temperature, high-pressure filtration cell built around an insulated heating jacket and a nitrogen/CO₂-pressurized pipe-manifold. A regulated gas supply pressurizes the cell to 4.2 MPa (600 PSI) while a second regulator holds the receiver at 0.7 MPa (100 PSI) back-pressure — the 3.5 MPa (500 PSI) difference between the two is what actually drives filtration across the sample. The jacket holds the cell at test temperature throughout; filtrate passes through a filter paper and screen assembly into the back-pressure receiver, which keeps the filtrate itself under enough pressure to stop it flashing to vapor as it leaves a hot, pressurized cell.

Two interchangeable cup configurations are supplied. The standard cup, without a through-hole, is used for conventional drilling-fluid filtration. The through-hole cup, fitted with a cover carrying double filter screens, is used for cement-slurry testing, where a bottom outlet is needed to release trapped air and give a cleaner filter cake.

Everything the standard test needs, in one cell:

- **Insulated heating jacket** — holds the cell at test temperature with high heat-transfer efficiency and a low outer-surface temperature.
- **Through-hole and standard mud sample cups** — the same press tests both drilling fluids and cement slurries.
- **Regulated pipe-manifold** — dual-gauge nitrogen/CO₂ supply sets cell pressure and back-pressure independently.
- **Back-pressure filtrate receiver** — collects filtrate without letting it flash off at temperature.



The IM-FP-HTHP175 heating jacket, cell and pipe-manifold assembly, mounted on its base

Components

Part Number	Description
IM-FP-HTHP175-01	Principal Machine — insulated heating jacket, stand and temperature controller
IM-FP-HTHP175-02	Pipe-Manifold Package — dual-regulator, dual-gauge nitrogen/CO ₂ supply assembly
IM-FP-HTHP175-03	Mud Sample Cup, standard — 175 mL, without through-hole, for drilling fluids
IM-FP-HTHP175-04	Mud Sample Cup, through-hole — 175 mL, with double-screen cover, for cement slurries
IM-FP-HTHP175-05	Tee Coupling — links the pipe-manifold to the cell's upper linking valve rod
IM-FP-HTHP175-06	Filtrate (Back-Pressure) Receiver — collects filtrate under regulated back-pressure
IM-FP-HTHP175-07	Temperature Controlling System — heating-jacket controller and dial thermometer ports

*Back-pressure receiver and sample-cup hardware**Pipe-manifold assembly — dual-gauge nitrogen/CO₂ regulation*



Linking valve rods with replacement “O” rings and set screws

Features

- **Full HTHP Test Range** — cell pressure up to 4.2 MPa (600 PSI) with 0.7 MPa (100 PSI) back-pressure — a 3.5 MPa (500 PSI) differential across the filter media, the standard API RP 13B-1, Sec. 7.2 test condition.
- **Dual-Cell Compatibility** — the through-hole cup and double-screen cover let the same press test both drilling fluids and cement slurries — no second instrument needed.
- **Insulated Heating Jacket** — high heat-transfer efficiency brings the cell to test temperature quickly and holds it there with a low outer-surface temperature.
- **Back-Pressure Filtrate Receiver** — keeps collected filtrate under regulated pressure so it doesn't flash to vapor on the way out of a hot, pressurized cell.
- **Regulated Dual-Gauge Manifold** — cell pressure and back-pressure are set independently, each read on its own gauge. Runs on AC220V 50Hz (standard) or AC120V 60Hz (USA), $\pm 10\%$.



Heating jacket and digital temperature-controller panel

Specifications

Model Number	IM-FP-HTHP175
Sample Cup Capacity	175 mL
Cell (Working) Pressure	4.2 MPa (600 PSI)
Back-Pressure (Receiver)	0.7 MPa (100 PSI)
Differential Test Pressure	3.5 MPa (500 PSI) — cell pressure less back-pressure, the API RP 13B-1 reference differential
Limiting Pressure (sample cup)	6 MPa (870 PSI)
Effective Filtration Area	22.6 cm ² (half the standard 45 cm ² low-pressure API area)
Working Temperature	Ambient to 232°C (450°F) max design temperature; 150°C (300°F) typical API RP 13B-1 reference test temperature
Standard Test Duration	30 minutes, static, per API RP 13B-1, Sec. 7.2
Gas Source	Nitrogen recommended; CO ₂ acceptable for non-chemistry-sensitive tests (oil- and water-free supply)
Power Supply	AC220V 50Hz (standard) or AC120V 60Hz (USA), ±10%
Rated Power	400 W
Overall Dimensions (approx.)	530 (W) × 465 (D) × 334 (H) mm
Gross Weight (approx.)	36 kg
Cell/Cup Material	Stainless steel
Applicable Standard	API RP 13B-1, Section 7.2 — equivalent to ISO 10414-1

Values shown reflect standard factory specification for this instrument class per API RP 13B-1, Sec. 7.2. Please confirm exact figures against the calibration certificate shipped with each unit serial number.

NOTE

Because the 175 mL cell's 22.6 cm² filtration area is half the standard low-pressure API area (45 cm²), multiply the 30-minute filtrate volume by 2 to report an equivalent standard-area API HTHP fluid-loss value.

✓TIP

Nitrogen is the preferred pressurizing gas. CO₂ is acceptable for a routine static fluid-loss check, but it dissolves into water-based filtrate and can shift pH — avoid it if the filtrate will also be used for chemical or rheological analysis.

Operation

1. Mount the pipe-manifold package on the gas cylinder and secure it with the G5/8 screw cap. With the pressure-regulating handle in its free (unloaded) state, open the gas source and confirm the mid-line pressure gauge reads above 6 MPa.

*G5/8 gas-cylinder connector**Regional power cord*

2. Take out the principal machine and check that the cell, fittings and power supply are in good condition.
3. Connect the power supply and switch on the temperature controller. Pre-heat the jacket to roughly 6–8°C above the target test temperature, then insert the thermometer and hold the jacket at the desired test temperature.
4. Loosen the holding screw on the cup cover, back the linking valve rod out of the cover, and lift the cover clear. Fit the double-screen cover in place of the standard cover when testing cement slurry.
5. Screw a linking valve rod into the cup bottom (and, for the through-hole cup, into the bottom cap as well), then seat the cup on the cup seat.
6. Stir the prepared fluid or slurry for 10 minutes and pour it into the sample cup, staying below the marked fill line — the sample will expand under heat, and overfilling risks a dangerous pressure spike.
7. Fit filter paper in the cup, seat the cover squarely on the cup body, and screw down the cover screw and linking valve rod.
8. Invert the filled sample cup into the heating jacket and seat it on the locating pin. Insert the second thermometer, then fit the back-pressure receiver and tee coupling and secure both with their fixed pins.



Tee coupling, back-pressure valve and gas-manifold regulator — the fittings this step secures with fixed pins

9. Connect the airline hoses from the pipe-manifold to the back-pressure joint and the tee fitting, and tighten both connections.
10. Open the gas source master valve and bring the pipe-manifold pressure-regulating handle up to 0.7 MPa.
11. Back the upper linking valve rod out by about 90° to admit gas without risking boil-over, then screw it back down once gas has entered the cell.
12. Once the cell reaches test temperature, bring the regulating handle up to 4.2 MPa, back the upper linking valve rod out by about 90° again, then open the lower linking valve rod and begin timing the filtration.
13. Hold the temperature within $\pm 3^{\circ}\text{C}$ ($\pm 5^{\circ}\text{F}$) of the setting and collect filtrate for the standard 30-minute static test period (or the duration specified by your test program).

⚠IMPORTANT

If the back-pressure gauge reads above 3.5 MPa during the test, bleed off a small amount of filtrate carefully at the receiver's tee valve to bring the pressure back down.

14. At the end of the test, close both linking valve rods, record the collected filtrate volume, switch off the power, return the temperature controller to zero, and shut the gas-source master valve.

NOTE

Report the filtrate volume as an equivalent standard-area API HTHP fluid loss by doubling the volume collected — the 22.6 cm² cell area is half the standard low-pressure API filtration area.

15. Bleed the residual gas from the pipe-manifold, hose and receiver, release the pressure-regulating handle to its free state, and remove the tee coupling and receiver.
16. Let the sample cup cool to room temperature before opening it. Release any residual gas first, then remove the cover, rinse it, and recover the filter cake for measurement.

⚠IMPORTANT

Oxygen is strictly forbidden as a pressurizing gas. Residual gas in the sample cup must always be bled off before the cup is opened.

✓TIP

Bring pressure up to 4.2 MPa gradually rather than in one step — a fast ramp can rupture the filter paper and send fluid straight through to the receiver.

Maintenance

1. Handle the unit gently when moving, servicing or storing it — rough handling can deform components and affect accuracy.
2. Inspect the “O” sealing rings on a regular schedule and replace them as soon as they show wear.
3. Bring pressure up gradually and never strike or knock the pressure gauges.
4. Dry and lightly oil or grease the sample cup, cover, tightening screw and linking valve rod after each test session, ready for next use.
5. Watch the filtrate-receiver pressure gauge throughout the test and bleed filtrate carefully at the tee valve if the reading climbs above 3.5 MPa.
6. Have the pressure gauges and thermometers checked against a certified reference on a regular schedule (annually, or per your lab's QA program) — a drifted gauge or thermometer invalidates the test even when the rest of the instrument is working perfectly.

NOTE

Store the instrument in a well-ventilated room, free of any airborne impurity that could corrode the unit, in line with JB/T 9329-1999.



Adjustable wrench, 14mm spanner and hex key



Fixed pins for the receiver and tee coupling

Troubleshooting

Symptom	Likely Cause	Recommended Action
Drilling fluid leaks from the lower linking valve rod during the test	Wrong or damaged filter paper; filter screen not fully clean; ice in the filter screen; pressure raised too fast	Fit the correct filter paper (988 grade) and replace as needed; clean the filter screen thoroughly; restore the screen face; raise pressure to 4.2 MPa gradually
Air bubble visible in the sample cup during the test	Cup cover not seated correctly; linking-valve-rod “O” ring ($\Phi 8 \times 1.9$) or sample-cup “O” ring ($\Phi 65 \times 3.1$) aged or damaged	Reseat the cover and re-tighten the screw; replace the affected “O” ring
Heating jacket won’t reach the set test temperature	Temperature-controller maximum set incorrectly	Adjust the controller per the temperature-controller setup procedure, then re-test
Linking valve rod feels inconsistent or won’t seal	Worn or damaged rod tip (fluted or dinged rather than a clean seating face)	Inspect the rod tip against the good/bad reference in this manual and replace if worn

Still stuck after trying the above? Set the instrument aside and get in touch with Inmotion Energy (see Company & Contact Information, page 13).



988-grade HTHP filter paper — the first thing to check against symptom 1 above

**Warranty and
Return Policy****Warranty**

Inmotion Energy (OPC) Private Limited stands behind the materials and workmanship of every instrument it ships. For eighteen (18) months from the invoice date, if a product turns out not to meet its stated specifications through no fault of the buyer, and we're notified in writing once the issue is found, we'll repair or replace it at our discretion, subject to the exclusions below.

This coverage assumes normal use, in line with the operating conditions described in this manual. It does not stretch to cover use outside those conditions, nor to flaws that were plainly visible on arrival but went unreported.

Beyond what's stated here, Inmotion Energy doesn't offer any other express or implied warranty — including, to the extent the law allows, implied warranties of merchantability or fitness for a particular purpose.

Coverage does not extend to damage or loss caused by:

- Installation, operation, or upkeep that doesn't follow this manual
- Misuse, carelessness, or accidental damage
- Adjustment, disassembly or repair of the heating jacket or pressure cell carried out by anyone other than Inmotion Energy or an authorized service provider
- Storage conditions or exposure beyond what normal field use implies
- Parts or components sourced from outside Inmotion Energy
- **Ordinary wear items** — the sample cup, “O” rings and filter screens, for example

Returns and Repairs

Pack anything you're sending back carefully — Inmotion Energy can't take responsibility for damage caused by inadequate packaging in transit.

If you're returning a unit that isn't defective, do so within thirty (30) days of your invoice; a restocking charge may apply, and the item needs to arrive in its original condition to qualify for a refund.

Before shipping anything back, reach out to us with your invoice number, a description of the issue, and your contact details so we can set expectations. Send equipment to:

Inmotion Energy (OPC) Private Limited

Attn: Service & Repair

186, 1st Main Road, Vijaya Bank Layout, Bilekahalli
Bangalore, Karnataka – 560076, India

Questions before then? Reach our support team at info@inmotionenergy.in.

**Company &
Contact
Information**

Inmotion Energy has spent years supplying precision testing instruments and drilling tools to operators working with drilling fluids, cements, and completion fluids. Working out of our Bangalore facility, we serve customers across India and the Middle East. Being an independent manufacturer means our customers come first, not a parent company's agenda.

Industries We Serve

- Onshore & offshore drilling contractors
- National & independent oil companies
- Mud engineering & testing laboratories
- Well completion & workover operations

Why Choose Us

- Every unit goes through rigorous checks before it ships
- Spares and replacements move fast, so downtime doesn't stack up
- Designs proven in the field, built to keep working

Contact Details

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Precision testing equipment, built to work as hard as you do.