Dependable Products From People You Trust



Dynamic HTHP Filter Press

With Magnetic Drive

#170-95 - 115 Volt

#170-95-1 - 230 Volt

Instruction Manual

Updated 6/10/2026
Ver. 7

OFI Testing Equipment, Inc.
11302 Steeplecrest Dr. · Houston, Texas · 77065 · U.S.A.
Tele: 832.320.7300 · Fax: 713.880.9886 · www.ofite.com

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Intro

One of the main factors in the successful completion of a well is the filtration properties of the drilling fluid. Wall cake building properties and formation invasion studies must be predicted as much as possible in advance and adequately controlled during the drilling operation. Currently most filtration testing is conducted only under static conditions, but during the drilling phase, the fluid is circulating under dynamic conditions most of the time. Dynamic filtration properties are sometimes very different from static filtration properties. Typically static filtration results in a thicker filter cake and depending upon the cake permeability may or may not give higher filtrate amounts. When circulation starts again, much of the thick cake deposited under static conditions is washed away, resulting in a thinner cake with usually lower amounts of filtration loss to the formation. Eventually after several cycles of dynamic and static conditions, a state of equilibrium is reached between the two environments. Therefore in order to adequately predict and control downhole filtration properties, the test fluid must be subjected to both dynamic and static conditions.

The OFITE High Temperature, High Pressure (HTHP) Dynamic filter press measures filtration properties under varying dynamic down-hole conditions, and it may also be used for static filtration studies. A motor driven shaft fitted with a propeller turns at varying speeds inside a standard 500 mL HTHP cell. Speed settings up to 3,600 RPM permit comparable downhole circulating rates of varying flow rates per minute. By varying the shaft length, the shear stress may be increased or decreased over the filter media.

Description

The test procedure is exactly the same as that in the conventional HTHP filtration test. The only difference is that fluid is circulating inside the cell while filtrate is being collected. Since the filter medium is conventional disk material, the results are fully comparable with those of other laboratories or for comparing historical trends.

The Dynamic Filter Press features an internal cooling system which enables the cell to be cooled rapidly via a water or coolant connection. This is a major safety consideration and permits the cell to cool to room temperature while remaining inside the heating jacket. Additionally the cell may also be depressurized while inside the heating jacket, which then enables the technician to remove from the heating jacket a non-heated and non-pressurized cell.

The Dynamic Filter Press also features two interchangeable bottom caps to accommodate quarter inch thick ceramic disks or conventional filter paper. Both caps have a threaded hole for the valve stem, which connects to the 100 mL back pressure receiver.

Two regulators provide both main pressure and back pressure from a single Nitrogen source. A temperature controller maintains a constant temperature throughout the test and a temperature display shows the cell temperature.

Specifications

- Cell Volume: 500 mL
- Cell Material: Stainless Steel
- Maximum Allowable Working Pressure: 2,500 psi (17.2 MPa)
- Variable Speed Motor: up to 3,600 RPM
- Digital Temperature Controller: 100° - 500°F (38° - 260°C)
- Receiver Volume: 100 mL
- Heater: 1,000 Watts
- Size: 21.5" × 15" × 30" (55 × 38 × 76 cm)
- Weight: 133 lb (60.3 kg)
- Shipping Size: 27" × 24" × 37" (69 × 61 × 94 cm)
- Shipping Weight: 225 lb (102 kg)
- Requires a Nitrogen source: 2,500 psi Maximum
- Power Requirements:
  - 115 VAC, 10 Amps, 50/60 HZ
  - 220 VAC, 10 Amps, 50/60 HZ

Components

#122-077	Fuse, 10 Amp, Qty: 2
#141-28	Hose Kit, Set of 3
#152-37	AC Power Cord, 115 Volt
#152-38	AC Power Cord, 230 Volt
#153-12	Graduated Cylinder, 100 mL × 1 mL, Glass
#154-20	Thermometer, Metal Dial, 8" Stem, Dual Scale: 50°F – 500°F / 0°C – 250°C
#165-44-2	Anti Seize Compound, Silver, 7 g Pouch
#170-16	Valve Stem, 3.25"
#170-19	Filter Paper; 2½" (6.35 cm)
#170-20	Manifold Block
#170-32	Needle Valve
#170-35	Adjustable Wrench, 6"
#170-50-075	Mag Drive, ¼" HP, ¾" NPT
#170-50-078	Magnetic Pickup
#170-53	Filter Disk Ceramic, 50 Micron, 15 Darcy, 2½"
#170-67	Propeller, 1½", Stainless Steel
#170-68	Propeller, 2", Stainless Steel
#170-93	Wrench for Valve Stem
#170-95-313	Spanner Wrench, for Inlet cell cap
#170-95-314	Heating Element, 250 Watt
#170-95-317	Shaft Extension, 4"
#171-10	Back Pressure Receiver, 100 mL
#171-190-028	Cell Assembly Stand
#171-23-1	Safety Pin with Lanyard 3"
#171-25-1	Relief Valve, Set at 750 psi
#171-25-4	Relief Valve, Set at 2600 psi
#171-48-2	Thermocouple
#171-196-316	Cell Assembly, HTHP System, Mud Dynamic W/Mag
#120-910-028	O-ring, Viton 75D, for Rupture Disk
#130-81-040	Retaining Ring, Qty: 2
#170-13-3	O-ring for Cell, Viton, Qty: 4
#170-16	Valve Stem, Qty. 2
#170-17	O-ring,for Valve Stem, Qty: 4
#171-190-020-316	Cell Body, 10.5" D.E. 316
#171-190-021	Adapter, Dynamic, Valve Stem
#171-190-023	Cap Screw, Qty: 2
#171-190-027	Plug, Rupture, 5,500 psig
#171-190-029	Cap Wrench, Bar, for Outlet cell cap
#171-190-030-S	Cap, End, 60 Mesh, Outlet, 316
#171-190-034-S	Cap, End, Ceramic Disk, Outlet
#171-190-035-S	Cap, Top End, Dynamic Mag
#171-190-041	Adapter, Dynamic, ¼" NPT
#171-190-057	O-ring for Valve Stem,Viton 90D, Qty: 4
#171-190-058	O-ring for Rupture Disk, Viton 90D
#171-190-060	O-ring for Cell, Viton 90D, Qty: 4

Optional:

#155-20	Timer, 60 minutes
#170-40	Cell Carrying Tool
#170-58	Shaft Extension, ½"
#170-59	Shaft Extension, 1"
#170-60	Shaft Extension, 1½"
#170-91	Pressure Relief Tool
#171-06	Safety Shield
#171-196-H	Filter Press Cell Assembly, Threaded, 500mL, Hastelloy®

170-95-SP Spare Parts Kit		
Part Number	**Description**	**Qty.**
120-70-1-053	24" Hose	2
120-910-028	O-ring for Rupture Disk, Viton 75D	2
130-38-2	Red Lens For Lamp	1
130-38-3	Lamp	1
130-81-040	Retaining Ring	2
141-15	Air Hose, Low Pressure, 6'	2
141-23	Air Hose, ¼"	12
141-27	Hose, SS Braided Teflon, 6'	1
153-12	Graduated Cylinder, 100 mL × 1	2
154-20	Thermometer With Metal Dial, 8"	1
170-13-3	O-ring for Cell, Viton 75D	48
170-16	Valve Stem, 3.25" (8.3 cm)	4
170-17	O-ring for Valve Stem, Viton 75D	48
170-19	Filter Paper, Diameter 2½"	5
170-35	6" Adjustable Wrench	1
170-53	Ceramic Filter Disk, 50 Micron, 15 Darcy	10
170-95-314	Heating Element, 250W	4
171-11	O-ring for Back Pressure Receiver, Nitrile 70D	4
171-190-057	O-ring for Valve Stem, Viton 90D	8
171-190-058	O-ring for Rupture Disk, Viton 90D	4
171-190-060	O-ring for Cell, Viton 90D	8
171-23-1	Safety Pin With Lanyard, 3"	2
171-48-2	Thermocouple, Type J, 4"	1
171-71	Thermostat for Heating Jacket	1

Safety

Read this manual carefully before attempting to use the equipment. Improper use can result in injury or damage to the equipment.

Temperature

The heating jacket, test cell, and valve stems will be very hot during testing. Handle these components with care. Never touch hot components without wearing protective clothing. At elevated temperatures, the fluid in the test cell will expand. Never fill the test cell completely with fluid. Always leave some void space to allow for thermal expansion. Refer to page 13 for recommended fill volumes.

Normally when one experiences a loss of pressure, it is not due to a failure of the metal alloy, but rather a failure of the o-ring or elastomer, which provides the seal. These o-rings may deform or melt under elevated temperatures, usually in excess of 350°F (176°C), causing a pressurization failure of the cell. This is often sudden and catastrophic. For example, if the valve stem o-ring suddenly fails, hot steam at 400°F and under great pressure may shoot outward horizontally in one or several directions. A safety shield should always be used whenever operating any HTHP Filter Press and especially when going to higher temperatures and pressures. All o-rings must be replaced after tests above 350°F (176°C).

Pressure

OFITE clearly stamps the working pressure of the cell assembly along with the assembly serial number on each cell body and cell cap. These pressure limits should never be exceeded and the recommended fluid volumes inside the cell should be strictly adhered to.

Always pressurize with either Nitrogen or Carbon Dioxide. Do not use Nitrous Oxide (NO_2), Oxygen (O_2), or compressed air. These gasses are dangerous at elevated temperatures.

For temperatures less than 200°F (93°C) a Back Pressure Receiver is not required as the filtrate will not reach the boiling point. However when operating in excess of the boiling point of water, a suitable back pressure receiver is required, otherwise the test fluid will turn to steam and the test becomes invalidated. Even though the receiver tube has a 100 mL volume capacity, it can fill up very quickly when testing a fluid with little or no filtration properties. If this happens, the filtrate hopefully will all be ejected from the safety bleeder valve, but if there is too much fluid volume, the liquid may end up inside the regulator rendering it useless. This will require servicing by a knowledgeable technician.

Cell Corrosion

Test fluids under high tempreature and pressure can corrode the cell body and caps. Carefully inspect the cell body and calls for corrosion before and after each test.

Some materials are more susceptible to corrosion than other. Also, some fluids and additives are more corrosive than others. OFITE offers a variety of cell materials for different levels of corrosion resistance and cost.

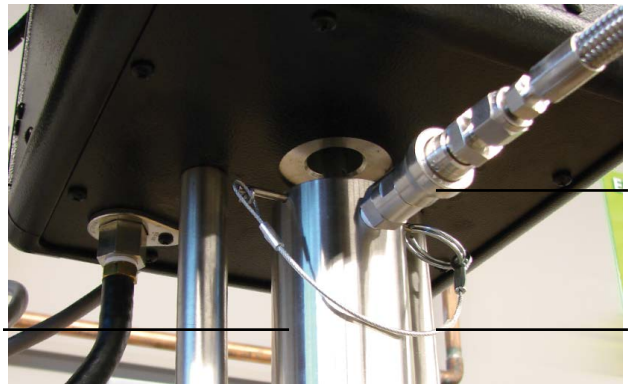
Heating Jacket

The heating jacket will get very hot during the test so be careful not to touch the outside of the jacket at any time during the heat-up period or during the test. It is especially easy to get burned when installing or removing the back pressure receiver as the technician is working in a very confined space. The power cord is supplied for either 115 volts or 230 volts and due to the various types of plug connectors around the world it may be necessary to change the plug on the end of the power cord. The power cable is 8 feet in length and the heating jacket should be placed no more than 8 feet from the appropriate electrical outlet. The heat up time will vary from one instrument to the next and the pilot light will turn on when the set temperature has been reached. The temperature of the fluid inside the cell however will not be at the set temperature so always allow one hour of heating time for the fluid to reach temperature inside the cell after the cell has been fully inserted into the heating jacket.

Equipment

Inspect all o-rings before every test. Discard any that show signs of damage or wear. Looks for nicks, cuts, or brittle o-rings. Two sets of o-rings are included with the Filter Press. The first set is made from Viton 75D. These o-rings are black and should be used for tests up to 400°F only. The second set is made from Viton 90D. These o-rings are green and should be used for tests up to 500°F.

The Safety Pin includes an attached lanyard. The lanyard secures the pin and prevents it from accidentally disengaging from the valve stem and pressure assembly. Always secure the pin with the lanyard.





Safety Retainer Pin with Lanyard
(# 171-23-1)

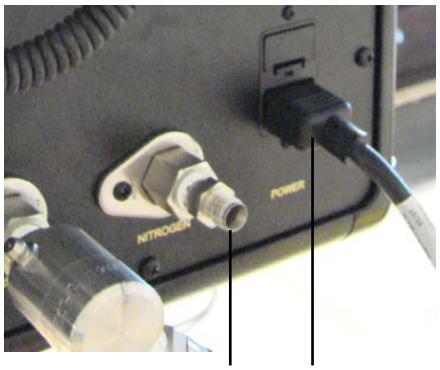
Setup

1. Carefully unpack the units and place them on a stable surface near a power outlet. Unpack and unwrap each of the component pieces.

2. Make sure all switches are off and both regulators are backed off (counterclockwise) completely.

3. Connect a Nitrogen source to the port to the back of the control box.

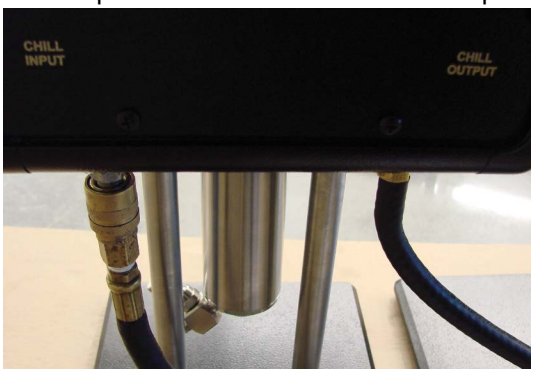
4. Plug the instrument into a suitable power source.



Nitrogen Electrical

5. Connect the input and output to a chiller/water source prior to heating the cell if the water cooling method will be used upon completion of the test.

Chill Input Chill Output



Quick Start

1. With the thermocouple in the heating jacket, preheat the heating jacket to 10°F (6°C) above the test temperature. The pilot light will turn on at the target temperature.
2. Inspect all o-rings. Replace any that show signs of damage or wear.
3. Apply grease to all o-rings and the threads of the cell caps and valve stems.
4. Place an o-ring in the groove inside the cell body on the end marked “OUT”.
5. Assemble both cell caps. Place an o-ring in the groove around each cap.
6. Place a circle of filter paper or ceramic disk on top of the o-ring on the outlet side of the cell.
7. Screw the outlet cell cap into the cell and tighten it completely.
8. Place o-rings on both ends of the inlet and outlet valve stems.
9. Screw a valve stem into the outlet cell cap and tighten it completely.
10. Invert the cell and place it in a suitable stand. Pour mud in the cell leaving the proper amount of void space. See page 13.
11. Place an o-ring in the shoulder inside the inlet end of the cell body.
12. Screw the inlet cell cap (with the mag drive attached) into the cell. Tighten it completely with the spanner wrench.
13. Screw a valve stem into the inlet cell cap and tighten it completely. The cell is now sealed because both valves are closed.
14. Place the cell in the heating jacket. Rotate the cell until it locks.
15. Move the thermocouple from the heating jacket to the cell body. Start a 60 minute timer.
16. Plug the mag drive into the port on the back of the control box.
17. Connect the manifold block to the top valve stem and secure it with the safety pin.
18. Connect the back pressure receiver to the outlet valve stem and secure it with the safety pin.
19. Connect the pressure hose to the back pressure receiver.

20. Adjust both regulators to the target back pressure for the test. See page 16 for recommended back pressure. Both the inlet and outlet valve stems should still be closed.

21. Open the inlet valve stem ½ turn to allow pressure into the cell.

22. Turn the Motor switch on and set the mixing speed using the speed control knob on the control panel.

23. After one hour of heating time, increase the top pressure to 500 psi above the back pressure.

24. Open the bottom valve stem to initiate filtration.

25. Collect filtrate after 15 seconds but do not record the amount. If the graduated cylinder fills with fluid, abort the test.

26. Collect filtrate and record the volume at 1, 7.5, and 30 minutes.

27. After 30 minutes, close both valve stems.

28. Turn both regulators counterclockwise.

29. Set the temperature controller to 0 and turn the Heat switch off.

30. Turn the Motor switch off and unplug the magnetic drive.

31. Begin cooling by opening the cooling valve on the back of the heating jacket.

32. Allow the filtrate to cool for at least five minutes. Then open the outlet valve on the back pressure receiver to remove any residual filtrate.

33. Open the safety bleeder valve on the inlet manifold block to release any remaining pressure.

34. Remove the manifold block from the inlet valve stem.

35. Disconnect the pressure line from the back pressure receiver and remove the receiver from the outlet valve stem.

36. When the cell temperature is less than 115°F (46°C), remove the cell from the heating jacket and place it in a suitable stand. Keep the outlet side pointing down.

37. Slowly open the valve stem on the inlet side to release the pressure.

38. Loosen the outlet valve stem and unscrew and remove the outlet cell cap.

39. Carefully remove the filter medium with the filter cake attached. Keep the outlet end of the cell pointed downward as much as possible.

40. Pour out the test fluid.

41. Wash the excess liquid from the filter cake and record the thickness to the nearest 1/32".

42. Clean and dry all components.

43. If the test temperature was more than 350°F (177°C), replace all o-rings.

Operation

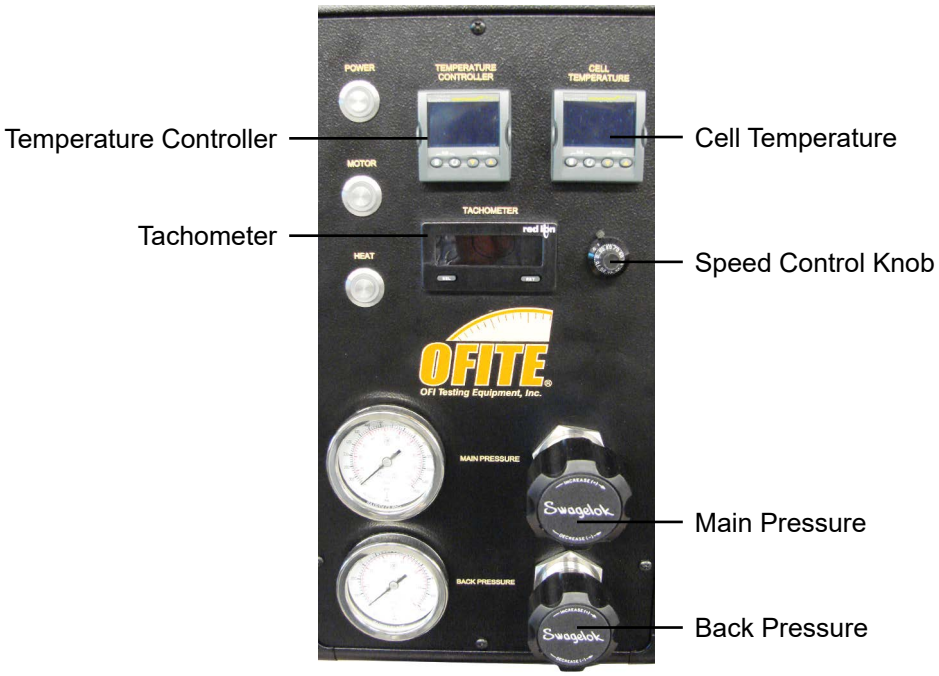
Use of this equipment in a manner not specified by the manufacturer may impair the protections provided by the equipment.

1. Turn the “Power” and “Heat” switches on.

2. Connect the temperature controller extension cable from the back of the control box to the back of the filter press.

3. Use the up and down arrows on the “Temperature Controller” to set the temperature to 10°F (6°C) above the test temperature.

4. Inspect all o-rings. Replace any that show signs of damage or wear. Looks for nicks, cuts, or brittle o-rings. Replace all o-rings after any test above 350°F (176.7°C). Place a thin film of silicone grease on all o-rings.



5. Place an o-ring (#170-13-3) on the shoulder inside the cell body on the end marked “OUT”. Place another o-ring in the groove around the outlet cell cap.

6. Place a circle of filter paper or ceramic disk on top of the cell o-ring. Gently push the paper or disk downward so it contacts the o-ring evenly without the paper binding or pinching.

7. Install the outlet cell cap and secure it with the supplied wrench (#171-190-029).

8. Place an o-ring in each of the two o-ring grooves on both valve stems.

9. Screw one valve stem into the outlet cell cap. Tighten the valve stem completely.

10. Invert the cell and place it on a suitable stand. Carefully pour the sample into the cell. Leave enough void space for thermal expansion (see chart below).

API Recommended Void Space		
Fluid / Temperature	Void Space	Fluid Volume
Water-based drilling fluid. < 300°F	0.6" (1.5 cm)	405 mL
Water-based drilling fluid. > 300°F	1.5" (4.0 cm)	353 mL
Oil-Based Drilling Fluid. Any temperature.	2" (5.1 cm)	382 mL

11. Place an o-ring on the shoulder inside the cell body. Place another o-ring on the cell cap.

    Be careful not to spill fluid on the o-ring inside the cell.

Important

12. Lower the propeller and propeller shaft down into the test cell.

13. Secure the top cap assembly in place with the spanner wrench (#170-95-313).



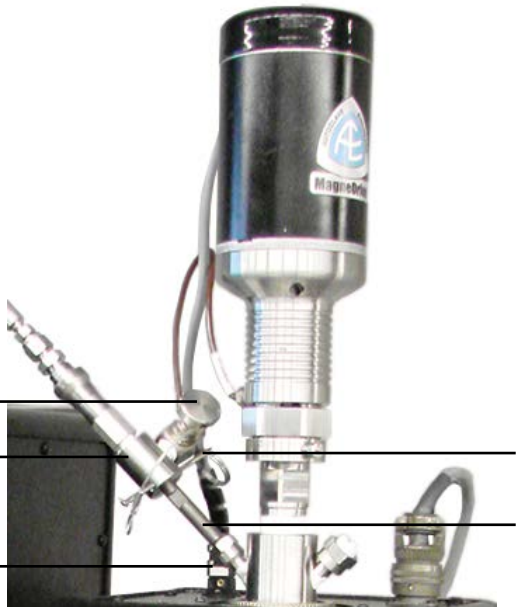
14. Screw a valve stem into the cell cap and tighten it completely.

15. Place the cell in the heating jacket. Rotate the cell so that the pin in the bottom of the heating well seats into the hole in the bottom of the cell. This will anchor the cell inside the well and prevent the cell from rotating as the valve stems are opened and closed. Once anchored, you may rotate the cap, mag drive, or stem to better orient the valve and/or thermocouple.

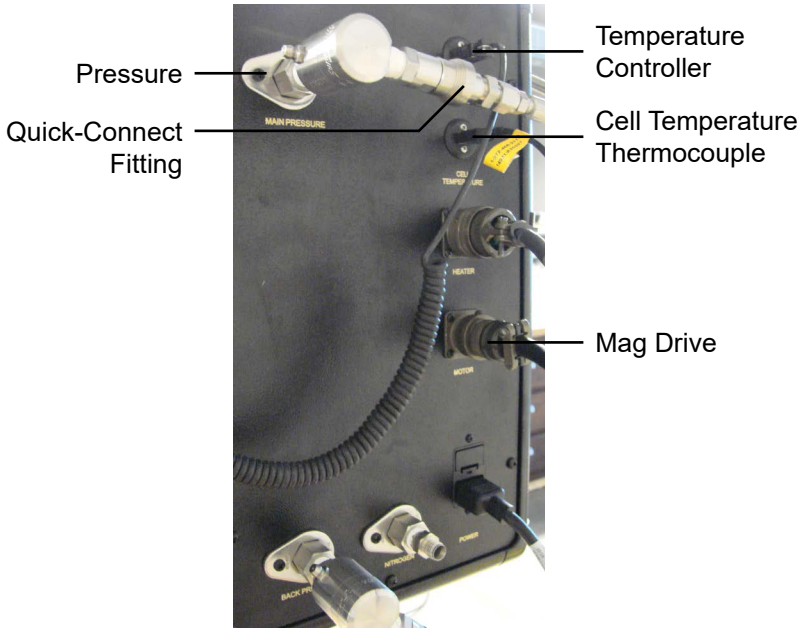
16. Place the cell thermocouple into the hole in the top of the cell body.

Note

The reading from the thermocouple will display on the “Cell Temperature” Eurotherm. Allow the cell to heat for one hour. Start a 60 minute timer now.



17. Plug the magnetic drive into the port on the back of the control box.



18. Connect the manifold block to the inlet valve stem and lock it in place with the safety pin. Make sure the bleeder valve is closed by turning it fully clockwise.

Important

The safety pin includes an attached lanyard. The lanyard secures the pin and prevents it from accidentally disengaging from the valve stem and pressure assembly. Always secure the pin with the lanyard.

19. Connect the pressure hose from the manifold block to the quick-connect fitting on the back of the Control Box.

20. Place the back pressure receiver on the outlet valve stem and lock it in place with the safety pin and lanyard. Make sure the bleeder valve on the receiver is closed.



21. Connect the pressure hose from the back of the Control Box to the quick-connect fitting on the back pressure receiver.

22. Keeping the valve stems closed, adjust the two regulators to the recommended back pressure for your test (refer to the chart on the next page).

Note

The upper and lower limits of the test pressure differential are determined by the test temperature. As this temperature exceeds 212°F (100°C), the back pressure must be increased in order to prevent vaporization of the filtrate. The table on the next page shows the back pressure receiver pressures recommended for various test temperatures.

23. Open (loosen) the inlet valve stem ½ turn to pressurize the sample. Maintain this pressure on the fluid until the temperature is stabilized.

24. Turn the “Motor” switch on.

Important

Always make sure the Speed Control Knob is set to 0 before turning on the motor switch.

Recommended Minimum Back Pressure					
Test Temperature		Vapor Pressure		Minimum Back Pressure	
°F	°C	psi	kPa	psi	kPa
200-299	95-149	12.1-67	84-462	100	700
300-374	150-189	67-184	462-1269	200	1400
375-399	190-199	184-247	1269-1704	275	1900
400-424*	200-219	247-326	1704-2245	350	2500
425-450*	220-230	326-422	2245-2912	450	3100
**For tests above 400°F, use special o-rings provided by OFITE.*					

25. Set the mixing speed using the speed control knob on the control box. The current speed of the motor will be displayed on the tachometer.

26. After the one-hour heat time, increase the “Main Pressure” to 500 psi (3,448 kPa) more than the back pressure.

27. Open (loosen) the outlet valve stem ½ turn to initiate filtration.

28. To collect filtrate, carefully open the ball valve on the bottom of the back pressure receiver while holding a graduated cylinder up to the valve port. Close the valve immediately after the pressure begins to decrease and the filtrate is collected.

    Collect filtrate at 15 seconds, 1 minute, 7.5 minutes, and 30 minutes. The initial 15 second collection is precautionary in nature, as a fluid with little filtration properties may fill up the 15 mL receiver tube almost immediately, potentially damaging the regulator. Do not record the 15 second collection as a separate notation, but do record the volume collected at the other time intervals. If the receiver tube is full after 15 seconds, abort the test.

29. At the end of the test, close (tighten) the top and bottom valve stems to seal off the cell.

30. Turn the regulators counterclockwise to close off the flow of pressurized gas.

31. Set the “Temperature Controller” to 0 and turn off the “Heat” switch.

32. Turn the “Motor” switch off and unplug the magnetic drive.

33. Begin cooling by opening the valve on the back of the heat jacket a quarter-turn.

34. Allow the filtrate to cool for at least five minutes. Open the outlet valve on the back pressure receiver to collect all of the filtrate in the graduated cylinder.

35. Open the bleeder valve (turn the knob counterclockwise) on the upper manifold block to release any remaining pressure in the line.

36. Remove the safety pin and then remove the manifold block from the inlet valve stem.

37. Disconnect the pressure line from the back pressure receiver and remove the receiver from the outlet valve stem. Drain any residual filtrate collected in the receiver into the graduated cylinder.


Important

Pressure inside the sample cell will still be approximately 600 psi (4,137 kPa). The cell must be cool for at least one hour at room temperature before loosening and removing the cell cap.

38. When the cell has cooled down to 115°F (46°C), carefully remove it from the heating jacket after once again checking that the cell valve stems are tightly closed.

39. Using extreme care to save the filter paper and deposited cake, place the cooled cell in a suitable stand with the outlet or filter side down. Open (loosen) the inlet valve stem very slowly to bleed off pressure inside the cell. It is a good idea to hold a rag over the valve stem when opening in order to catch any liquid that might be ejected under pressure.


Note

Pressure may not be relieved from the cell by opening the outlet valve stem because the filter cake may seal off the cell.

40. Loosen the outlet valve stem and unscrew and remove the outlet cell cap. Use the supplied cell cap wrench to loosen the threads. Keep the cell upright as much as possible with the outlet end pointed down.

41. Carefully remove the filter paper or ceramic disk and deposited cake. Be careful not to damage the filter cake. Carefully wash any residual fluid from the surface of the filter cake.

42. Pour out the test fluid.

43. Clean and dry the apparatus thoroughly after each use. Inspect all of the o-rings and replace any that show signs of wear or damage.


Note

If the test temperature was more than 350°F (177°C), replace all o-rings.

Data

Filtrate Volume

The HTHP filter press has a filtration area of 3.55 in^2 (22.9 cm^2). This is half the area of a standard filtration test, which is 7.1 in^2 (45.8 cm^2). To compare the results of this test to a standard filtration test, double the total filtrate volume collected.

$$V_F = 2\ (V_{30})$$

Where:

V_F = Standard Filtrate Volume (mL)

$V_{7.5}$ = Filtrate volume collected after 7.5 minutes

Spurt Loss (Optional):

Spurt Loss is the amount of filtrate collected before the filter cake has had a chance to form and is expressed in milliliters. To calculate the spurt loss, use the following equation:

$$V_1 = 2\ [V_{7.5} - (V_{30} - V_{7.5})] = 2\ (2V_{7.5} - V_{30}) = 4V_{7.5} - 2V_{30}$$

Where:

V_1 = Spurt Loss

$V_{7.5}$ = Filtrate volume collected after 7.5 minutes

V_{30} = Filtrate volume collected after 30 minutes

Filter Cake

Wash the filter cake on the paper with a gentle stream of water. Measure and report the thickness of the filter cake to the nearest 1/32 in (0.8 mm). A ruler with the “zero mark” at the very edge of the ruler is useful here. Cake descriptions may be subjective and such notations such as hard, soft, rubbery, and fine, etc. convey adequate information on cake quality.

Cell Cap Assembly

☑ Tip

1. Choose the appropriate cap for your test:

   - 171-190-030-S - Outlet, with 60 Mesh Screen for Filter Paper
   - 171-190-031-S - Inlet, with 60 Mesh Screen
   - 171-190-034-S - Outlet, Scribed for Ceramic Disks

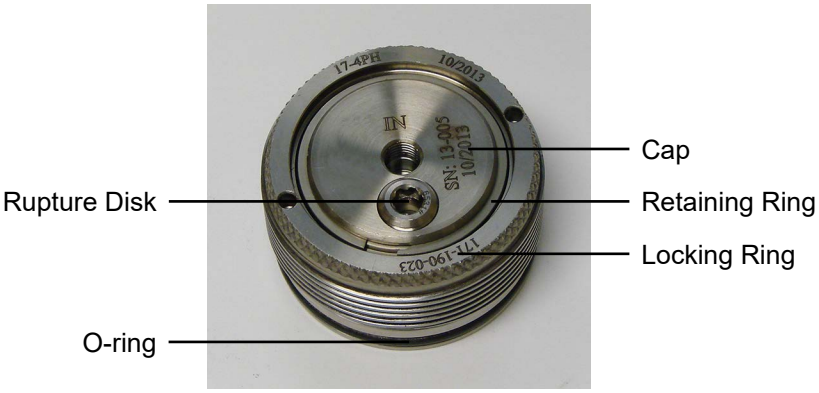
2. Place the locking ring (#171-190-023) around the cap.

3. Place the retaining ring (#130-81-040) into the groove around the outside of the cap. Make sure it engages completely around the circle.

   The cap should turn freely inside the locking ring.

4. Place an o-ring in the port in the cap. Wrap a rupture disk (#171-190-027) with nickel anti-seize tape (#171-190-040) and screw it into the port.





Top Cell Cap Assembly

1. Wrap a rupture disk (#171-190-027) with Teflon tape and screw it into the ¼" NPT Adapter (#171-190-041).
2. Wrap the threads of the NPT adapter with Teflon® tape and install the adapter and rupture disk into one side of the cap.
3. Wrap the threads of the Valve Stem Adapter (#171-190-021) and install the Adapter into the other side of the cap.

See page 25 to see an assembled photo of the top cell cap.



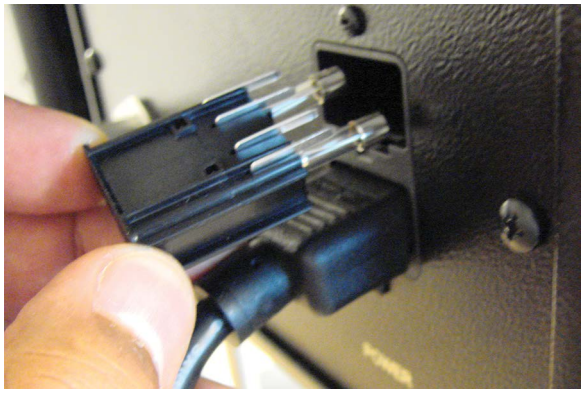
Maintenance

Fuses

1. The instrument has two fuses that protect the electronic components which are located on the power cord receptacle:

   10 Amp fuses (#122-077), Qty. 2





Maintenance

Swivel Connections

The main pressure and back pressure hoses are connected to the back of the control box by NPT swivel fittings. It is recommended to grease these swivel fittings with a hand held grease pump every 40 hours of use or so, using Lithium Moly grease.

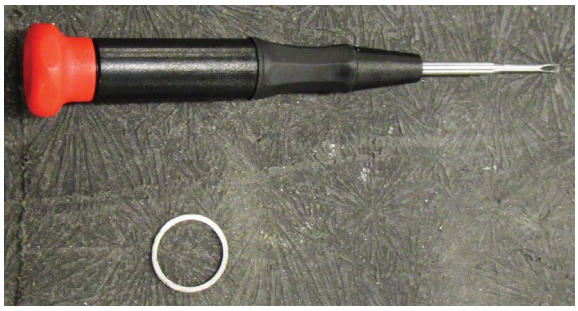
Swivel
(#170-95-311)



Maintenance

Bearing Replacement

1. Remove the retaining ring from the NPT end of the shaft assembly with a small flat head screwdriver.





2. Unscrew the upper hex on the shaft to access bearings inside cap assembly.



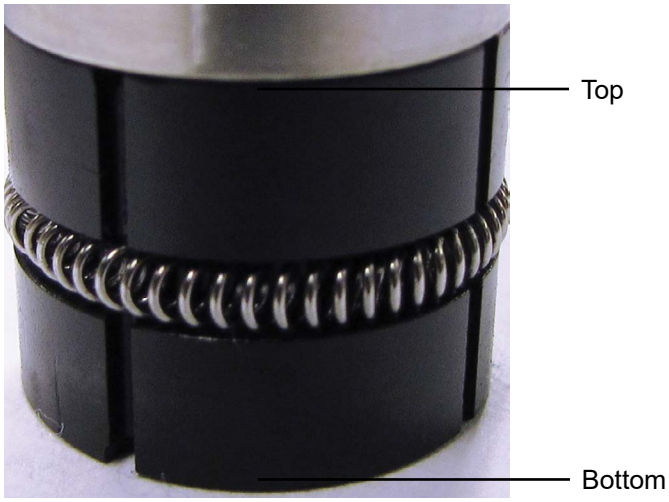
3. Carefully tap the bearings and spacer using the supplied bearing removal tool from one end of the cap to push them all out.

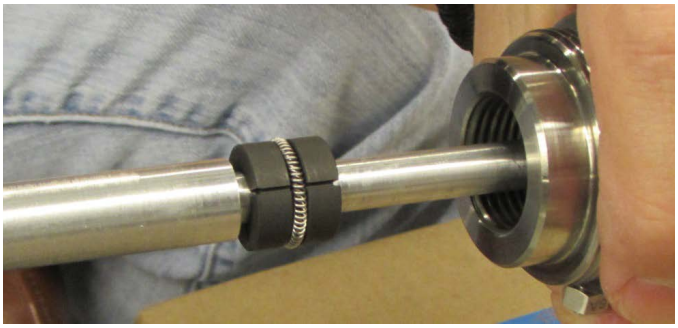
4. Inspect bearings for wear and tear.



5. If necessary, reinstall the bearings while maintaining proper orientation of the springs. The direction of rotation is clockwise when viewed from the top of the drive so they must resist the rotation and be left to right when viewed from the side.

6. Reinstall the bearings one by one with the correct spring orientation very carefully with the bearing removal tool.





7. Carefully tap the bearing removal tool to pass the bearing spring through the bore. You should feel it clear.



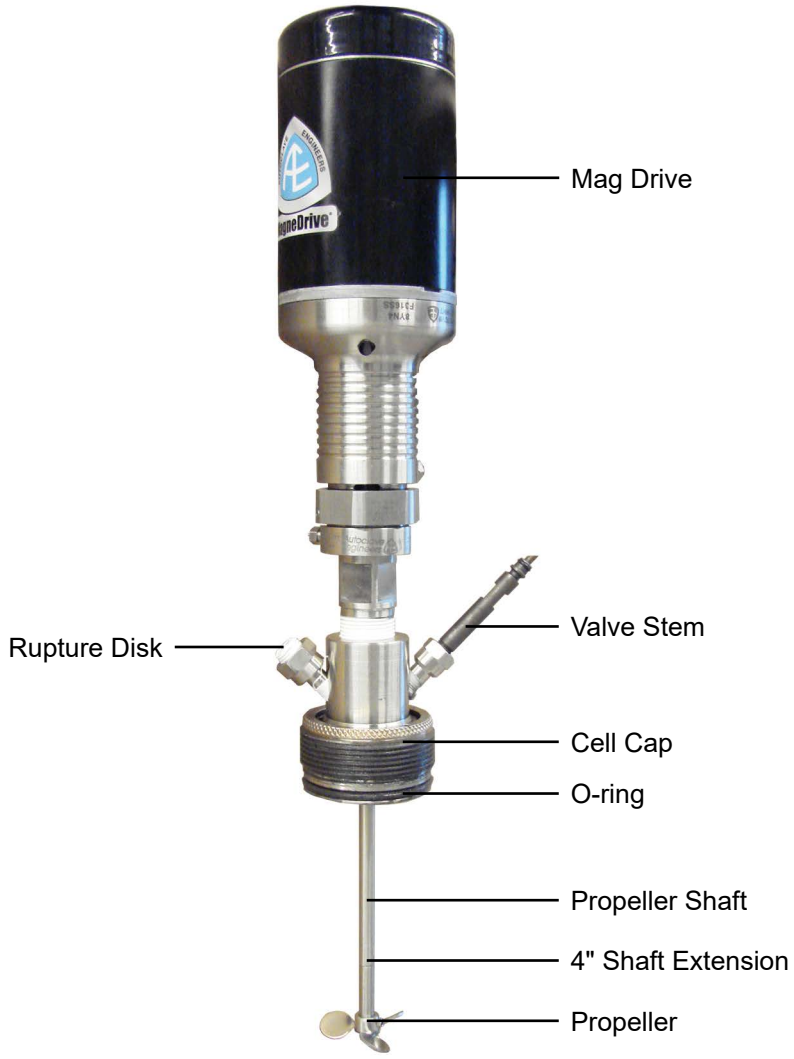
8. Insert the retaining ring. Inspect for damages to the bearing and repeat for the other bearings.

9. Reinstall the cap with anti-seize and Teflon® on the NPT port to the mag drive cap.



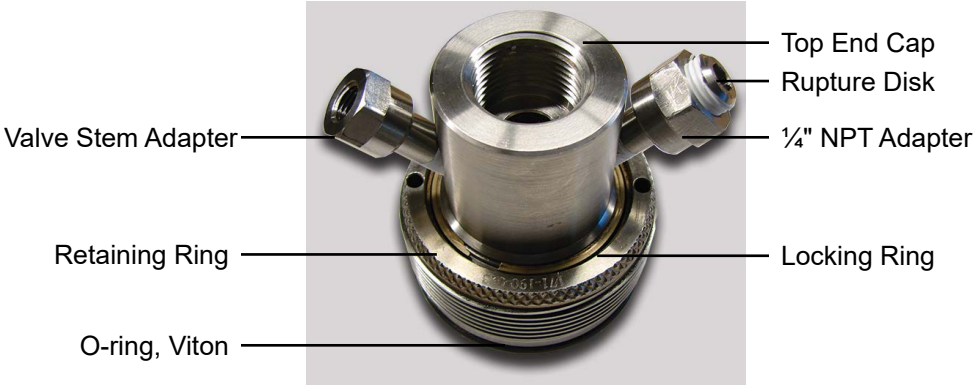
Appendix

Mag Drive



Appendix

Top Cell Cap



Warranty and Return Policy

Warranty:

OFI Testing Equipment, Inc. (OFITE) warrants that the products shall be free from liens and defects in title, and shall conform in all respects to the terms of the sales order and the specifications applicable to the products. All products shall be furnished subject to OFITE's standard manufacturing variations and practices. Unless the warranty period is otherwise extended in writing, the following warranty shall apply: if, at any time prior to twelve (12) months from the date of invoice, the products, or any part thereof, do not conform to these warranties or to the specifications applicable thereto, and OFITE is so notified in writing upon discovery, OFITE shall promptly repair or replace the defective products. Notwithstanding the foregoing, OFITE's warranty obligations shall not extend to any use by the buyer of the products in conditions more severe than OFITE's recommendations, nor to any defects which were visually observable by the buyer but which are not promptly brought to OFITE's attention.

In the event that the buyer has purchased installation and commissioning services on applicable products, the above warranty shall extend for an additional period of twelve (12) months from the date of the original warranty expiration for such products.

In the event that OFITE is requested to provide customized research and development for the buyer, OFITE shall use its best efforts but makes no guarantees to the buyer that any products will be provided.

OFITE makes no other warranties or guarantees to the buyer, either express or implied, and the warranties provided in this clause shall be exclusive of any other warranties including ANY IMPLIED OR STATUTORY WARRANTIES OF FITNESS FOR PURPOSE, MERCHANTABILITY, AND OTHER STATUTORY REMEDIES WHICH ARE WAIVED.

This limited warranty does not cover any losses or damages that occur as a result of:

- Improper installation or maintenance of the products
- Misuse
- Neglect
- Adjustment by non-authorized sources
- Improper environment
- Excessive or inadequate heating or air conditioning or electrical power failures, surges, or other irregularities
- Equipment, products, or material not manufactured by OFITE
- Firmware or hardware that have been modified or altered by a third party
- Consumable parts (bearings, accessories, etc.)

Returns and Repairs:

Items being returned must be carefully packaged to prevent damage in shipment and insured against possible damage or loss. OFITE will not be responsible for equipment damaged due to insufficient packaging.

Any non-defective items returned to OFITE within ninety (90) days of invoice are subject to a 15% restocking fee. Items returned must be received by OFITE in original condition for it to be accepted. Reagents and special order items will not be accepted for return or refund.

OFITE employs experienced personnel to service and repair equipment manufactured by us, as well as other companies. To help expedite the repair process, please include a repair form with all equipment sent to OFITE for repair. Be sure to include your name, company name, phone number, email address, detailed description of work to be done, purchase order number, and a shipping address for returning the equipment. All repairs performed as "repair as needed" are subject to the ninety (90) day limited warranty. All "Certified Repairs" are subject to the twelve (12) month limited warranty.

Returns and potential warranty repairs require a Return Material Authorization (RMA) number. An RMA form is available from your sales or service representative.

Please ship all equipment (with the RMA number for returns or warranty repairs) to the following address:

OFI Testing Equipment, Inc.
Attn: Repair Department
11302 Steeplecrest Dr.
Houston, TX 77065
USA

OFITE also offers competitive service contracts for repairing and/or maintaining your lab equipment, including equipment from other manufacturers. For more information about our technical support and repair services, please contact techservice@ofite.com.