Dependable Products From People You Trust

HTHP Corrosion Tester

#120-700

Instruction Manual

Updated 6/10/2026
Ver. 8

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

©Copyright OFITE 2015

Table of Contents

Components **2**
Specifications **2**
Setup **3**
Testing **4**
Beginning a Test *4*
Ending a Test *6*
Appendix **7**
Temperature Controller *7*
Timer *11*
Maintenance *12*
Rupture Disk *12*
Warranty and Return Policy **13**

Components

#120-700-1 **Spare Parts for One Year** (Individual components can be ordered separately.)

#120-001	Mineral Oil, 1 gal, Qty: 4
#120-700-011	Pressure Release Valve, Qty: 1
#120-700-012	Air to Cylinder Valve, Qty: 1
#120-700-016	Thermocouple Assembly, Qty: 1
#120-700-018-1	O-ring, Viton, Qty: 6
#120-700-020	Sample Jar, Qty: 12
#120-700-021	Sample Jar Lid, Qty: 12
#120-700-023-1	Heater, Qty: 2
#120-90-008	Breaker, 15 Amp, 2 Pole, Qty: 1
#122-052	Rupture Disk, 5,500 psi (37.9 MPa), Qty: 4

Specifications

Maximum Temperature:	400°F (204°C) For temperatures above 350°F (176°C), new Viton o-rings will be required after every test.
Maximum Pressure:	5,000 psi (34.5 MPa)
Sample Capacity:	4 Jars
Mineral Oil Used Per Test:	Approximately 1 to 1.5 quarts

Setup

1. Carefully remove the instrument from the crate and place in a suitable location away from high traffic areas.

   Make sure all valves are either closed or in the “Off” position.

2. Connect an air or nitrogen source (100 - 120 psi) to the “Air Supply” port on the back of the instrument. Also connect the “Water Supply” and “Water Drain” ports.

   All supply ports are ¼" female NPT connectors.

3. The “WASTE” port should firmly attached to a waste container which is suitable for handling corrosive fluids.

   Important

   Fluids that enter the waste container should never be reused. They will contain acids that may damage the pump and other important components.

4. Remove the cap from the oil reservoir. Fill the reservoir with white mineral oil. Use the sight glass located on the right side of cabinet to monitor the reservoir level. It should be filled to approximately ½" from the top of the sight glass.

5. Connect the control unit using the large cable supplied with the unit. The connector ports are located on the back of each cabinet. The connectors on both ends should be screwed together until they are firmly in place.

6. Attach the thermocouple cable to both units. The thermocouple connectors are located on the back of both units.

7. Ensure that all electrical switches are off and plug the unit into a grounded electrical outlet. The electrical socket is located on the back of the unit. A 220-VAC, 20-amp power source is recommended.

Testing

Beginning a Test

1. Before starting a test turn all electrical switches off and close all valves. Make sure the regulator on the front panel is turned fully counterclockwise.

2. Prepare the acid solution and pour it into the sample bottles. The bottle should be approximately 75% full.

3. Add the corrosion inhibitor to the acid and mix.

4. Prepare the corrosion coupons and record the initial weight.

5. Turn the “Main” power switch on. The green light on the front of the unit will turn on to indicate the power is on.

6. Remove the cap from the test cell and pour mineral oil into the cell to a depth of 3.5" to 4".

7. Use the up and down arrow keys on the temperature controller to adjust the set point temperature to 150°F.

8. Turn the “Heat” switch on to pre-heat the mineral oil to 150°F. The “Heat On” light will come on to indicate that the heaters are engaged.

9. Once the mineral oil is heated to 150°F, add the coupons to the sample bottles and record the time.

10. Cap the sample bottles with the plastic screw caps. The caps have holes to allow pressure equilibrium.

11. Place the bottles into the sample rack and place the rack into the test cell using the lift bail. Remove the lift bail and record the time.

Sample Rack with Bottles

12. Lubricate the cell cap o-ring with petroleum jelly or white lithium grease and apply anti-seize compound (165-44-2) to the cell cap threads. Screw the cell cap into the test cell.

13. Open the cell cap plug ¼ turn. This will allow air to escape while the cell fills with mineral oil. Hold a ⅝" wrench on the nut and be prepared to tighten it as soon as you see oil leaking form the vent hole in the cell.

14. Turn the center valve to “Fill Cell”. Air will force mineral oil from the reservoir into the test cell.

15. Turn the “Motor” switch on to activate the agitation system.

16. Turn the “Drive Coolant” valve on. The drive coolant keeps the magnetic drive system cool while the heaters are on.

17. Turn the “Pump” switch on. Apply pressure to the test cell by turning the regulator clockwise until you reach the desired pressure. Corrosion testing is commonly performed at 2,500 ± 500 psi.

18. Use the up and down arrow keys on the temperature controller to set the test temperature.

Important

While heating the system, the pressure inside the test cell will increase due to thermal expansion. Maintain the proper test pressure by slowly opening the “Pressure Release” valve. Once the cell reaches the final test temperature, the pressure should stop increasing.

19. Start the test exactly five minutes after the mineral oil reaches the test temperature. Record the test time, temperature, and pressure at the start of the test.

Testing

Ending a Test

1. When the test is complete, turn the “Heat” switch off and set the temperature control to 32°F.
2. Turn the “Cool” switch on. Do not release the pressure or turn off the pump until the test cell cools down to 180°F.
3. Once the cell is cool, turn the “Pump” switch off and turn the regulator completely counterclockwise.
4. Slowly turn the center valve to “Vent” to expel the air.
5. When you no longer hear the air venting, slowly open the “Pressure Release” valve. The pressure gauge will return to zero.
6. Turn the “Motor” switch off.
7. Turn the “Drive Coolant” valve off.
8. Open the “Air to Cylinder” valve. Air pressure will force mineral oil from the test cell and out the “Waste” port. When you hear air discharging from the “Waste” port, close the “Air to Cylinder” valve.
9. Loosen the cell cap plug with a ⅝" wrench.
10. Unscrew the cell cap from the test cell and remove the sample rack.
11. Remove the corrosion coupons from the sample bottles and neutralize them in sodium bicarbonate solution. Record the time the coupons are neutralized.
12. Wash the test cell with ammoniated water.
13. Remove excess fluid from the test cell with paper towels. Dry thoroughly.
14. Pour mineral oil into the cell until it comes to the top of the internal drive spindle located in the middle of the cell. Replace the cell cap to prevent foreign objects from entering the cell.
15. Clean and weigh the corrosion coupons. Inspect them for pitting and record the weight loss and metal condition.
16. Report the inhibitor performance as weight loss (mg) per time exposed.
17. Close all valves and turn all switches off.

Appendix

Temperature Controller

Important

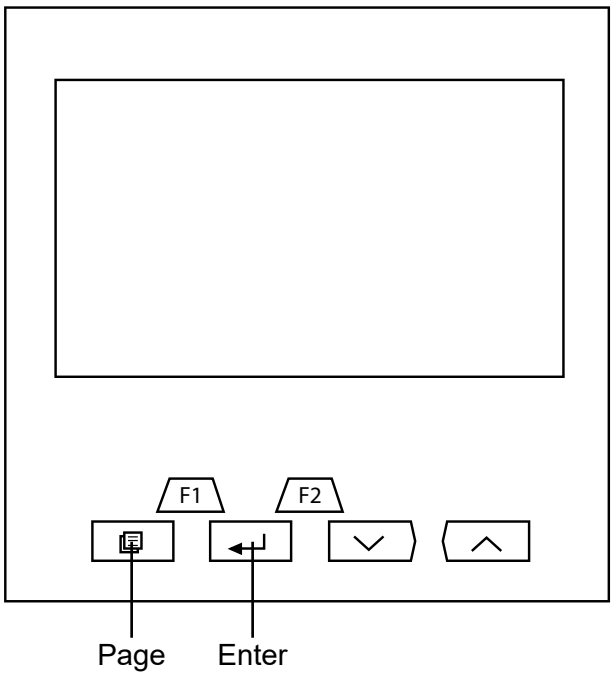
The Eurotherm Model EPC3004 Temperature Controller is the most important component of the temperature control system and it is strongly recommended that operators carefully study the Model EPC3004 instruction manual included with the Curing Chamber.

If a test requires a custom program, it is important to build and save the program prior to creating the slurry and loading the molds.

Below is an example that illustrates how to program the controller. In this example, the target temperature is 150°C, which is obtained at a rate of 2.5 degrees per minute. The target temperature of 150°C is maintained for the duration of 180 minutes (3 hours), after which you want to stop the heat.

Before you can create a program, you must be in Operator Level 2.

1. Press and hold the Page button until LEv1 shows.
2. Press the Up Arrow button until LEv2 shows.
3. Press the Enter button.
4. Press the Enter button three more times to scroll to the last digit of the password.
5. Press the Up and Down Arrow buttons to set the password to “2”.
6. Press the Enter button (the display will show LEv2 PASS) to return to the home screen.



For the test described on the previous page, use the following settings Use the Enter button to decide which setting to change. Use the Arrow buttons to change the values for that setting.

1. Press the Page button until P.SEt is displayed. If you don't see P.SEt, you will need to enter the password again.
2. Press the Enter button.
3. Press the Up and Down Arrow buttons to select a program number (1-10).
4. Press the Enter button twice. HB.STY will be displayed.
5. Use the Up and Down Arrow buttons to select PROG.
6. Press the Enter button. HB.TYP will be displayed
7. Use the Up and Down Arrow buttons to select LOw.
8. Press the Enter button. HB.VAL will be displayed.
9. Use the Up and Down Arrow buttons to select 10.0.
10. Press the Enter button. RAMP.U will be displayed.
11. Use the Up and Down Arrow buttons to select P.MIN.
12. Press the Enter button. DWEL.U will be displayed.
13. Use the Up and Down Arrow buttons to select M.INS. This will set the Dwell units to Minutes. You can also choose Hours and Seconds.
14. Press the Enter button. P.CYC will be displayed.
15. Use the Up and Down Arrow buttons to select 1.
16. Press the Enter button. P.END will be displayed.
17. Use the Up and Down Arrows to select dwEL.
18. Press the Enter button. S.NUM will be displayed.
19. Use the Up and Down Arrow buttons to select 1.
20. Press the Enter button twice. S.TYPE will be displayed.
21. Use the Up and Down Arrow buttons to select RAtE.

22. Press the Enter button. TSP will be displayed.

23. Use the Up and Down Arrow buttons to select 150.

24. Press the Enter button. R.RATE will be displayed.

25. Use the Up and Down Arrow buttons to select 2.5.

26. Press the Enter button twice. S.NUM will be displayed.

27. Use the Up and Down Arrow buttons to select 2.

28. Press the Enter button twice. S.TYPE will be displayed.

29. Use the Up and Down Arrows to select dWELL.

30. Press the Enter button. DUR will be displayed.

31. Use the Up and Down Arrows to select the time (HH:MM).

32. Press the Enter button twice. S.NUM will be displayed.

33. Use the Up and Down Arrow buttons to select 3.

34. Press the Enter button twice. S.TYPE will be displayed.

35. Use the Up and Down Arrow buttons to select ENd.

36. Press the Page button until the display returns to the main screen.

Once the program is entered, do the following to run it:

1. Press the Page button until PROG is displayed.
2. Press the Enter button to select the program number.
3. Press the Enter button until you see P.MODE.
4. Press the Up and Down Arrow buttons to select RuN.

To stop a program, you must be in Operator Level 2. See page 7. Then do the following:

1. Press the Page button until PROG is displayed.
2. Press the Enter button to select the program number.
3. Press the Enter button until you see P.MODE.
4. Press the Up and Down Arrow buttons to select rSET.
5. Press the Page button until the display returns to the main menu.

The status of the program is shown by the program status indicator.

State	Ramp/Step Up	Dwell	Ramp/Step Down
Reset	Blank	Blank	Blank
Run	/	—	\
Hold/Holdback	/ Flashing (1 second period 66% duty cycle)	— Flashing (1 second period 66% duty cycle)	\ Flashing (1 second period 66% duty cycle)
Complete (Dwell End)	N/A	— Flashing (2 seconds 66% duty cycle)	N/A

The temperature controller utilizes a high alarm setpoint which will bring the unit to an alarm condition if the temperature ever exceeds the set value. This value is defaulted to 200°C or 400°F, but can be programmed to different values.

An alarm condition will also occur if the slurry thermocouple is unplugged.

When a alarm condition occurs, the Curing Chamber will start to beep if the “SONALERT” switch is turned on and the “ALARM” switch will light up red. The heat and pump will be turned off. After the alarm condition is over, everything will be turned back on.

Appendix

Timer

The HTHP Corrosion Tester incorporates a timer for auto-cooling.

As an example, suppose the temperature is ramping up to 350°F in one hour and maintaining for four hours. After the test, allow it to cool for two hours.

1. Press the key to select setpoint 1. The setpoint number is in the bottom left-hand corner of the display.

2. Press the up and down arrows to set the setpoint. Remember to set the timer for the number of minutes. In this example, set it to 300 (equivalent to 5 hours).

3. Press the key to select setpoint 2.

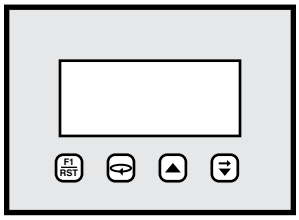
4. Press the up and down arrows to set the setpoint. Remember to set the timer for the **total** number of minutes for the test. In this example, set it to 420 (5 hours of heating plus 2 hours of cooling).

5. Press the key again to return to the home screen.

6. Press the F1/RST button to start the timer. Make sure the “AUTO COOL” switch is in the “ON” position. After 5 hours the water solenoid will engage and begin cooling the unit. The unit will cool for 2 hours and then the solenoid would de-activate.

Note

While running, the timer counts in minutes. It may not immediately appear to be working. But after one minute, the readout will advance to 2.



Timer Front Panel Layout

Appendix

Maintenance

1. The most important maintenance procedure is cleaning. Be sure to thoroughly clean the test cell immediately after every test. High-pressure valves wear quickly when exposed to contaminated fluids containing particulate matter.

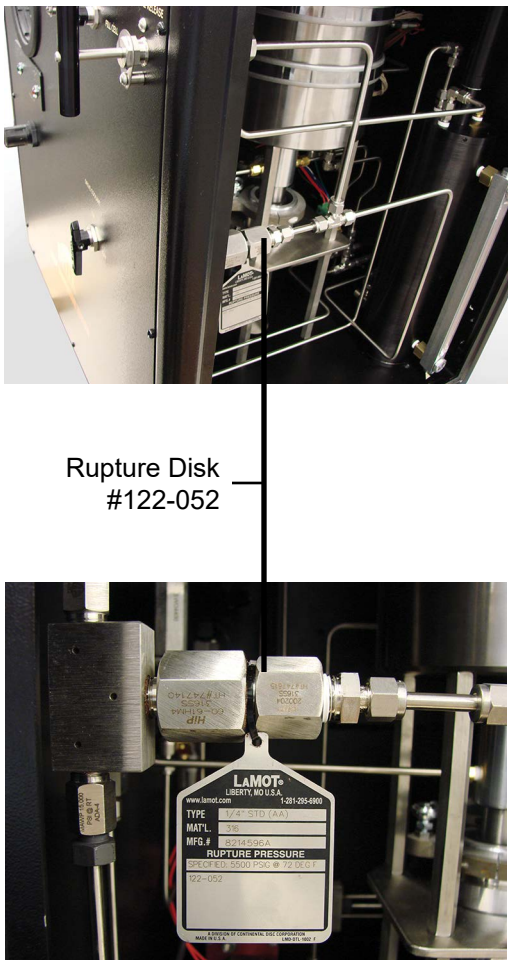
2. The test cell cap threads have been lubricated with anti-seize compound (165-44-2) prior to shipment and periodically should be re-lubricated.

Appendix

Rupture Disk

The Corrosion Tester has a rupture disk to prevent damage due to over pressurization. If the pressure inside the cell, at ambient temperature, exceeds 5,500 psi (37.9 MPa), the disk will rupture and release the pressure. If this happens, the cell cannot be pressurized until the rupture disk has been replaced.

The rupture disk is located in the pressure release line. To gain access to the rupture disk, remove the right panel and trace the line from the pressure release valve down to a tee. The rupture disc is located in the second block from the tee.



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.