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# High-Temperature Roller Oven With Circulating Fan

**Part No.: 176-00-C**

## Instruction Manual

Updated 10/8/2021

Ver. 5

**OFI Testing Equipment, Inc.**

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## ***Introduction***

The OFITE Roller Oven (U.S. Patent No. 4,677,843) is an effective aid in determining the effects of temperature on drilling fluid as it circulates through the well bore. Aging the drilling fluid in pressurized containers effectively demonstrates the thermal effects on viscosity and how various additives behave at elevated temperatures. Aging is done under conditions that vary from static to dynamic and from ambient to highly elevated temperatures.

This oven can hold twelve 260-mL Aging Cells or eight 500-mL Aging Cells. It is ideal for laboratory use. OFITE rollers are variable-speed controlled and constructed of stainless steel for longer life and a cleaner environment inside the oven. Glass-impregnated Teflon® roller bearings extend the life of the rollers and allow for longer maintenance-free service.

All models feature a digital temperature controller that can be read directly from outside the oven. The temperature is controlled by an electronic solid-state thermostat and operates between 100°F and 600°F (38°C - 315.6°C). A seven-day programmable timer is included as standard equipment. The timer may be preset to automatically start and stop the heaters, allowing unattended operation.

A circulating fan is included on all models. This fan greatly improves air circulation within the oven and provides more stable, consistent, and reliable heating.

## ***Description***

The OFITE Roller Ovens are designed to provide heating and rolling functionality simultaneously or independently. Therefore, they can be put to many practical uses, for instance:

1. Heating Mode Only:
  - Drying Oven
  - Aging Oven
  - Baking Oven
  
2. Rolling Mode Only:
  - Ball Mill Roller
  - To make homogenous mixtures of liquids
  - To make homogenous mixtures of powders
  - To agitate chemicals into solutions
  - To de-aerate liquids

# Components

#130-78-002	Cover for Cooling Fan, with Filter
#165-14-8	Type "J" Thermocouple; 1/8" x 6"
#172-01	Fuse for Instruments, 1/2 Amp
#172-02-1	Chain
#172-03-2	Sprocket
#172-04-1	Connecting Link for Chain
#172-05	Fuse for Motor, 2 Amp
#172-08-1	Bearing, Carbon
#172-11-1	Temperature Controller
#172-14	On/Off Toggle Switch
#172-15-1	Omron Programmable Timer
#172-23-1	Heater, 750 Watt
#172-24-1	Solid State Relay, 240V-25A
#172-25-2	Motor for Circulating Fan
#174-13	Motor
#174-14	Motor Controller
#176-00-002	Safety Controller, 650°F (343.3°C)

## Optional:

#175-46	O-ring for Outside of Aging Cell, Teflon
#175-54	O-ring for Outside of Aging Cell, Buna N

## #176-00-SP Spare Parts Kit:

#120-76-002	Fuse for Heaters, 15 Amp, Qty: 5
#165-450	Neon Lamp, Red
#165-451	Neon Lamp, Clear
#172-01	Fuse for Instruments, 1/2 Amp, Qty: 5
#172-03-2	Sprocket, Qty: 7
#172-04-1	Connecting Link for Chain, Qty: 8
#172-05	Fuse for Motor, 2 Amp, Qty: 5
#172-08-1	Carbon Bearing, Qty: 10
#172-13	Fuse Light Holder
#172-23-1	Heater, 750 Watt, Qty: 2

# Specifications

- Temperature Range: 100 - 600°F (38 - 315.6°C)
- Digital Temperature Controller
- 25-RPM Motor
- Programmable Timer
- Material:
  - Cabinet: 300 Series Stainless Steel
  - Rollers: 304 Stainless Steel
- Heaters: 2 × 750-Watts
- Capacity:
  - 260 mL Aging Cells: 12
  - 500 mL Aging Cells: 8
- Crated Size: 40" × 32" × 36" (102 × 81 × 91 cm)
- Crated Weight: 320 lb (145.2 kg)
- Power Requirements: 230 VAC, 50/60 Hz, 18 Amp

The following aging cells are available from OFITE and are recommended for use with the Roller Ovens:

- #175-25 Aging Cell; Stainless Steel Grade 303, 260 mL, Pressurized
- #175-30 Aging Cell; Stainless Steel Grade 303, 500 mL, Pressurized
- #175-50 Aging Cell; Stainless Steel Grade 316, 500 mL, Pressurized
- #175-40 Corrosion Test Cell; Stainless Steel Grade 303, 500 mL

# Safety

**Aging Cells can be very dangerous if handled improperly. Elevated temperature and pressure within the cell can cause the contents to be released with explosive force.**

**Always allow the cell to cool to ambient temperature before opening.**

**Always point the cell away from people and equipment when opening the valve stems.**

**Never fill the cell to more than 75% of capacity.**

**Do not touch the metal surfaces on the outside of the oven while it is in operation. These surfaces may be hot.**

**For tests above 200°F (93.3°C), refer to the chart labeled “Mud Volume and Pressure for High-Temperature Aging” in the instruction manual for the OFITE Aging Cells.**

## ***Setup***

1. Flip both switches on the control panel (“Motor” and “Heat”) to the “Off” position (down).
2. Connect the power cord to the proper voltage source. If an adapter or another power plug is required, note that the green wire is the ground and the white and black wires are the power leads.
3. When the power cord is connected, the timer will be activated. It is recommended that the power be left connected even when tests are not being conducted so the timer will continue to keep time.

# Operation



Note



Important



Note

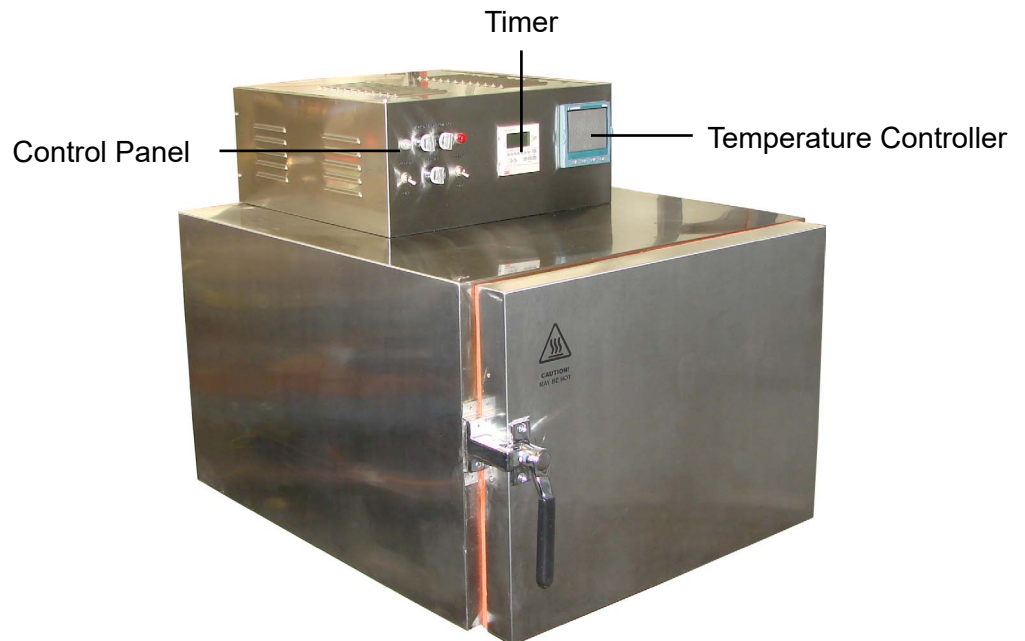
1. Make sure the oven is connected to a power supply. Refer to page 8 for instructions on operating the timer. To run a test without a timer program, set the “OUT1” switch to ON.
2. To turn on the rollers, flip the “Roller” power switch to the “On” position. The white indicator light will come on and the rollers will start turning.
3. To turn on the heaters, flip the “Heat” power switch to the “On” position. The heaters and the red indicator light will come on.

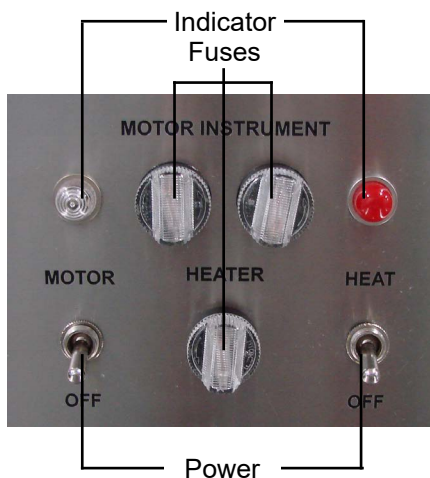
The indicator light will pulsate on and off as the temperature controller maintains the desired heat.

**The circulating fan will automatically turn on when the “Heat” switch is on. The fan blades can be dangerous when the fan is on. To prevent injury, always turn the “Heat” switch off when loading and unloading cells.**

4. The upper register on the temperature controller will display the current temperature, while the lower register will show the current setpoint. Use the up and down arrow to adjust the temperature setpoint.

For units with the optional redundant heat control there is a second temperature controller mounted on the side of the unit. The second temperature controller will cut off power to the heaters when the temperature inside the oven exceeds the setpoint. This is a safety feature. Set the redundant controller according to your safety procedures.





- The oven can be preheated while the samples are being tested and prepared. It is recommended that the samples be placed in the OFITE Aging Cells for the oven tests. However, the cells for the High-Temperature, High-Pressure (HTHP) Filter Press may also be used.

**Do not fill the test cells to more than 75% of capacity. This will allow for thermal expansion and prevent excessive internal pressure.**

**If the aging cells are going to be rolled during a test, install o-rings on the outer perimeter on the top and bottom of the cells. Failure to do so can damage the rollers in the oven. Teflon (#175-46) and Buna N (#175-54) o-rings are available. For tests above 300°F (148.9°C), use Teflon only.**

If for some reason the temperature controller fails, the safety thermostat will cut power to the heater at 650°F (343.3°C).

- The use of a pressurized adapter with a hose to direct any residual pressure to a sink is recommended.

**Be careful in handling hot aging cells. Do not open cells while hot or under pressure. Properly bleed off pressure and be sure the valve stem is always pointed away from people or equipment. Always wear personal safety equipment.**

- Allow the power switch to remain on until the oven and sample have cooled down to handling temperature. The temperature controller will indicate the oven temperature as long as the heat switch is in the "On" position. For faster cooling, open the oven door.
- After the test is complete, turn the "Heat" and "Motor" switches off.





# Timer

The timer can be programmed to turn the heaters on and off throughout the week. Each set of on/off operations requires setting an ON time and an OFF time separately. During programming, the following symbol will appear on the display.



When programming the ON time, the up arrow will blink. When programming the OFF time, the down arrow will blink.

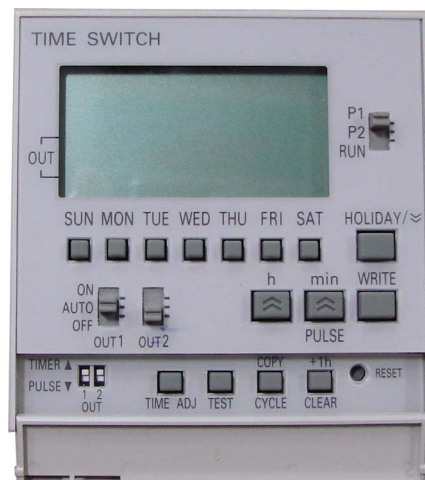
## Setting the Time:

1. Press the “h” and “min” buttons to set the correct time.
2. Press “WRITE” when finished.

## Programming:

1. Set the “OUT1” switch to AUTO. Leave the “OUT2” switch off.
2. Set the switch to the right of the display to P1 to activate programming mode for Output 1.
3. Select the day of the week for each on/off operation, marked by a dash appearing above the buttons.
4. Press “WRITE” when the finished.
5. Repeat steps 3 and 4 for each on/off operation.
6. Set the switch to the right of the display to RUN.

To clear all programmed settings, press and hold the “+1h / CLEAR” button for 3 seconds.



# Maintenance



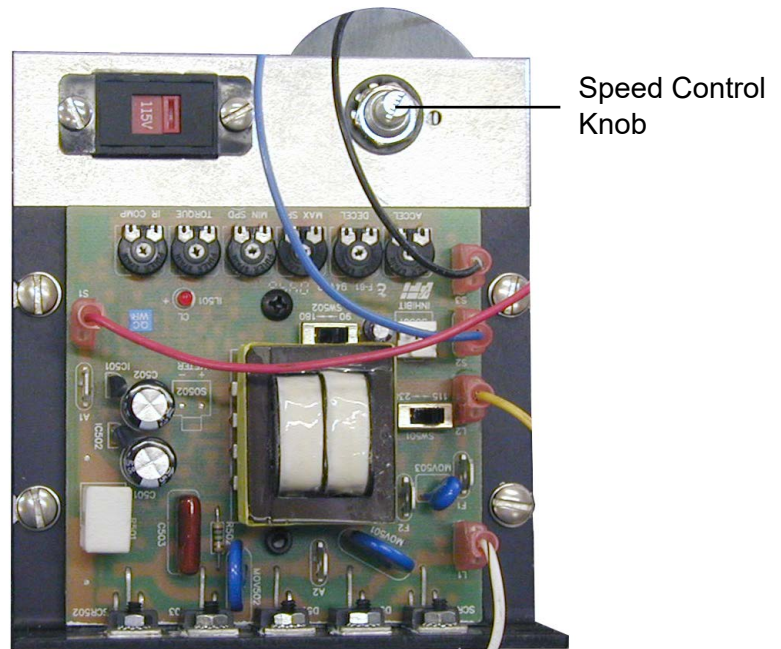
1. Every 90 days, put a small amount of grease on the chain and sprockets.
2. Do not lubricate the Teflon<sup>®</sup> roller bearings.
3. To change roller speed:

**Disconnect the unit from the power source before opening the unit casing.**

- a. Remove the top panel.
- b. Locate the Speed Control Knob. Turn it clockwise to increase and counter-clockwise to decrease the speed.
- c. Re-install the top panel.

The oven is preset at the factory to run at 25 RPM. To change the motor speed, you will need a hand-held tachometer. Mark a roller, point the tachometer at the roller, and turn the knob on the control board until the desired speed is reached.

4. OFITE Roller Ovens are fused to protect the driving motor, heaters, and the controller. The light in the fuse holder will glow when the fuse burns out. The fuse holders are located above the roll and heat switches. The one on the left is for the motor, the one on the right is for the controller, and the one below is for the heater. Refer to the photo on page 7.



Speed Control Knob

# 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](mailto:techservice@ofite.com).