



**PRECISION
SCIENTIFIC CO.**



**TECHNICAL SERVICE DEPARTMENT
OPERATING INSTRUCTION**

ISSUE: Y-1

TS-31479-8

3737 West Cortland Street, Chicago, Illinois 60647
Telephone Area Code 312 227-2660

TITLE: PRECISION-THELCO® MODEL 18, 26 AND 28 MECHANICAL CONVECTION OVENS

INTRODUCTION: The Precision-Thelco Model 18, 26 and 28 Ovens are constant temperature cabinets designed to provide dependable and economical operation while offering superior temperature uniformity in a range up to 200°C.

The dependability and long life built into your Thelco Oven can be assured by observing the recommended procedures set forth in the following instructions. It is also suggested that the instructions be kept on hand for future reference and to assist other operators.

UNPACKING: Exercise care when removing the oven from its shipping container to prevent any damage. If damage has occurred in shipment, file claim with the carrier immediately, and save all packing material. If it is necessary to contact your laboratory supply dealer or the Precision Scientific Company be sure to include all the information found on the nameplate located on the back of the oven.

INSTALLATION: Best operation will be obtained by choosing a location as free as possible from drafts or severe temperature changes which can affect the performance of the oven. The oven should also be level and wedges or pads should be used if a level surface is not available.

ELECTRICAL CONNECTIONS: The Model 18, 26 and 28 come equipped with a line cord and plug and may be connected to any electrical outlet of the same characteristics as those stamped on the nameplate.

If your electrical system will not accept the 3 prong polarized plug provided, use a 2 prong adapter and connect the "pigtail" ground wire to a well-grounded conduit system (i.e., outlet cover plate retaining screw) or a water pipe. It may be necessary to replace the 240 volt line plug supplied with one obtained locally. Make certain the plug you obtain matches the configuration of your electrical outlet.

EXPLANATION OF CONTROLS: The control panel contains a line switch which energizes the heater bank and motor blower, a temperature control dial which is used in the selection of the desired operating temperature and a pilot lamp which indicates heater bank operation. (Light on-Heater on).

When the line switch is in the on position, the blower motor operates at all times, while the heater bank operates as the thermostat requires. The thermostat is operated through the temperature control dial which is calibrated in reference numbers.

OPERATION: Open the exhaust vent located on the top of the oven at least $\frac{1}{4}$ " and insert the thermometer provided. The vent must remain open at all times to assure satisfactory operation.

Turn the line switch to the on position and turn the temperature control dial clockwise to any desired setting and allow the oven to heat up until steady readings are obtained from the thermometer. Uniform cycling of the pilot light is also an indication that the oven temperature has stabilized.

It must be remembered that the temperature control dial is calibrated in reference numbers which do not represent actual oven temperatures. For this reason, the temperature obtained at any particular setting should be recorded for future reference. Allow the oven temperature to stabilize after each movement of the control dial before recording the temperature.

When moving from a higher temperature setting to a lower setting, move the control dial all the way back to zero position and approach the new setting in a clockwise manner.

LOADING: The mechanical convection type of oven depends upon heated air entering from the side walls to maintain proper temperature within the working chamber. Do not block the airflow across the working chamber and do not place objects on the floor of the working chamber as this will result in unsatisfactory operation. At no time should solid shelves be substituted for the shelves provided.

MOTOR LUBRICATION: A ball bearing, permanently lubricated motor is used in the turbo-blower assembly. Depending on the amount of use, the motor should be removed, cleaned and lubricated at one or two year intervals. If facilities for this service are not immediately available, a good motor repair organization should be contacted.

HEAT LOSS: Improper door closure due to the position of the door strike can cause heat loss. The door strike, which is attached to the oven body, can be adjusted by loosening a screw and moving it on its serrated track. Moving the strike toward the oven results in tighter door closure, while moving it away from the oven loosens the door closure.

The silicone door gasket should last indefinitely. There are certain solvents, few in number, which may attack and reduce its resilience. Replacement is accomplished by removing the inside door panel and placing the retaining edge of the replacement beneath the sheet metal edge. Older models employed an asbestos rope type gasket and it may be replaced in the same manner. An adapter plate will allow conversion to new style gasket.

TEMPERATURE VARIES:

Make sure vent is not closed - open to maximum.

Test oven empty - if results satisfactory, oven was improperly loaded.

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Allow proper time to stabilize - it could take 1 to 2 hours to reach equilibrium, depending upon how high the operating temperature selected.

Be sure all power connections are secure and unit is connected to proper power supply.

An intermittent problem with the line switch or thermostat. Isolate and repair or replace.

NO HEAT: If oven does not heat, first check the line voltage, the electrical connections and the line switch. Then check the heater bank for continuity. If the heater bank has a broken element or is burned out, it should be replaced as field repair of heaters is not practical. If the heater bank is satisfactory, the thermostat should be replaced.

LOSS OF HEAT CONTROL: If the oven temperature continues to rise above the normal temperature for a control dial setting, it is an indication that the thermostat contacts are sticking. In this case, the thermostat should be replaced. A safety kit, Catalog #31114, is available for field installation.

THERMOSTAT REPLACEMENT:

1. Remove the heater bank as described below.
2. Remove the screws which hold the sensing bulb in place on the bottom of the working chamber.
3. Carefully erect the sensing bulb to a position perpendicular to the diffuser panel. Pull off the temperature reference dial.
4. Lay the cabinet on its side.
5. Remove the screws securing the thermostat to the rear of the control panel and remove the electrical connections to the thermostat.
6. Withdraw thermostat capillary out through bottom of the working chamber.
7. Install the replacement thermostat in the reverse order of the above steps. CAUTION - DO NOT CRIMP OR SHARPLY BEND CAPILLARY TUBING.

MOTOR REPLACEMENT:

1. Disconnect all power to the oven and lift out the diffuser panel at the bottom of the working chamber.
2. Reach between the heater coils and loosen the set screws securing the blower to the motor shaft extension.
3. Lay the cabinet on its back and remove the motor mounting screws and pull out the motor, after removing the electrical connections.
4. Remove the motor shaft extension and place on the replacement motor.
5. Install the replacement motor in the reverse order of the above steps.

HEATER BANK REPLACEMENT:

1. Disconnect all power to the oven and lift out the diffuser panel on the bottom of the working chamber.
2. Remove the nuts securing the electrical connections to the three buss bars attached to the heater terminals. One buss bar is at the center rear and the other two are at the front sides.

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3. Remove the screws which secure the heater assembly to the bottom of the working chamber.
4. Lift out the old assembly and install the replacement in the reverse order of the above steps.

PILOT LAMP & SWITCH:

1. Disconnect power, remove shelves and thermometer.
2. Lay cabinet on its right side.
3. Compress spring clips at each side of unit and push out.
4. Change wires from malfunctioning item to the replacement and snap it into the opening.

PARTS LIST

<u>ITEM</u>	<u>PART NO.</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
1	31497C	1	Thermometer (0 to 200°C)
2	525839	2	Shelf - Model 18
	525837	2	Shelf - Model 26
	525834	2	Shelf - Model 28
3	518528	12	Clip, Shelf
4			Door Latch Assembly
	271010	1	Strike
	270003	1	Catch
5	247167	1	Heater 120/240V., Model 18
	247212	1	Heater 120/240V., Model 26
	247208	1	Heater 120/240V., Model 28
6			Gasket, Door
	167319	*	Silicone rubber
	520802	*	Asbestos rope (old style)
7	223386	1	Motor, 120V., 3½" shaft
	223253	1	Motor, 120V., 1-3/4" shaft (old style) (Used on #31479 ser. 15, 31540 ser. 14, 31543 ser. 16)
	223387	1	Motor, 240V., 3½" shaft
	223254	1	Motor, 240V., 1-3/4" shaft (old style) (Used on 31481 ser. 17, 31541 ser. 14, 31544 ser. 16)
8	520813	1	Extension, motor shaft, for 1-3/4" shaft only
9	521807	3	Buss Bar, Heater
10	250087	3	Insulator
11	262032	2	Hinge, Door
12	234026	1	Pilot Light
13	239091	1	Thermostat
14	240150	1	Switch, Line, S.P.S.T.
15	240117	1	Switch, Line, D.P.S.T. (240V., only)
16	220047	1	Dial, Temperature Reference
	31024	1	Thermometer, Dial Type, straight form, 0-200°C with 2° subdivisions (accessory)



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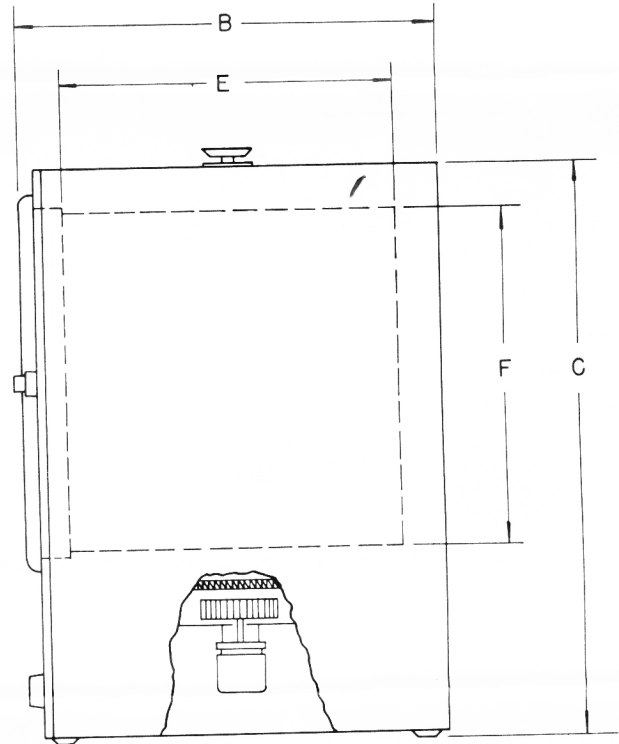
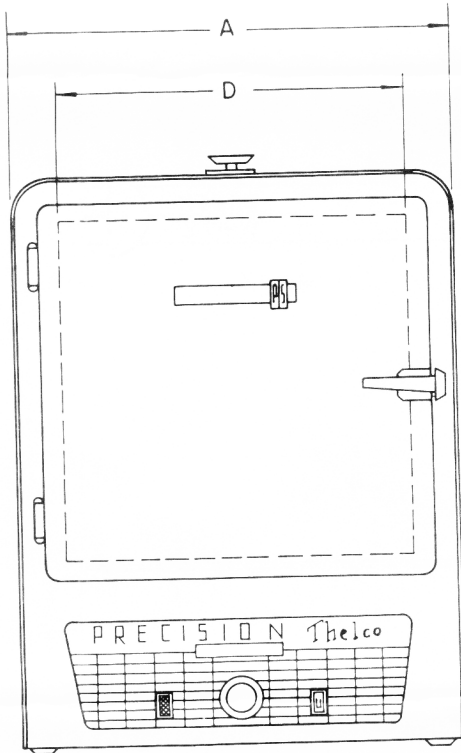
**TECHNICAL SERVICE DEPARTMENT
OPERATING INSTRUCTION**

ISSUE: W-7

TS-31479-D2

3737 West Cortland Street, Chicago, Illinois 60647
Telephone Area Code 312 227-2660

**TITLE: DIMENSIONAL DRAWING PRECISION-THELCO MODELS 18, 26 & 28
 MECHANICAL CONVECTION OVENS**

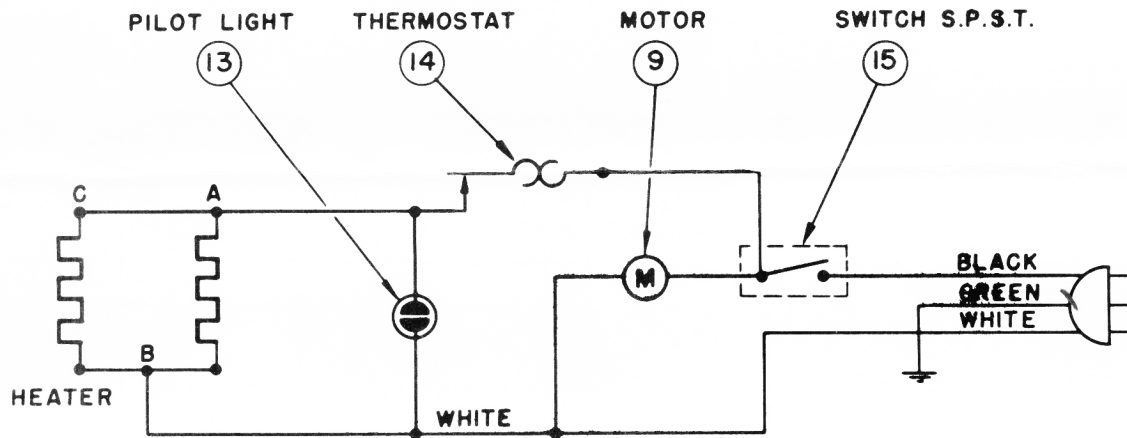


MODEL NO.	CAT. NO.	50/60 CYCLE VOLTAGE	AMPS.	WATTS	OVERALL DIMS.			WORK CHAMBER		
					A	B	C	D	E	F
18	31479	120	10	1160	24	18	32	18	14	19
	31481	240	5							
26	31540	120	8	950	18	18	26	13	14	13
	31541	240	4							
28	31543	120	12	1400	30	23	32	23	19	19
	31544	240	6							

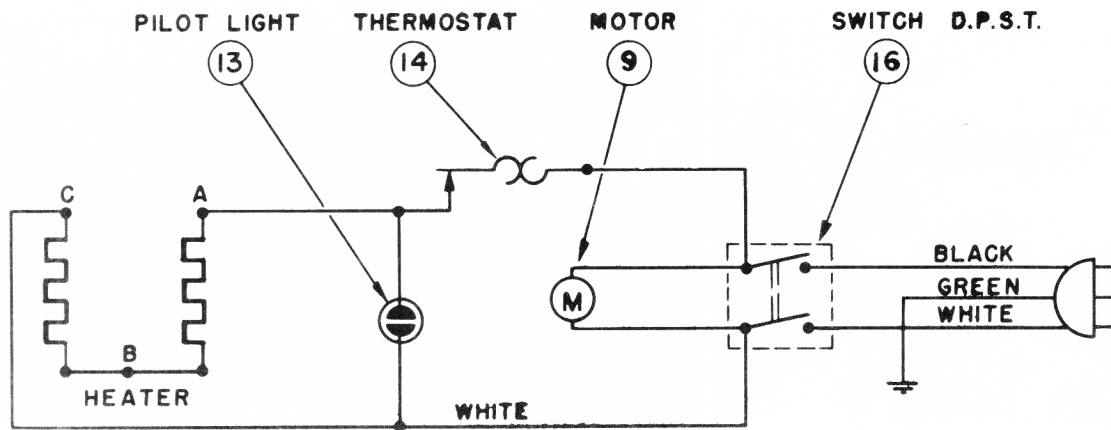
TEK MODEL NO.: MADF-C50
0.5A
0.1A
CE
Conforms to ANSI/UL STD. 1950
Certified to CAN/CSA STD. C22.2 No. 950
9900870
ONLY USED IN A SCANNER WHICH IS SUPPLIED FROM LIMITED POWER SOURCE
OTEK INTERNATIONAL INC. MADE IN CHINA

3737 West Cortland Street, Chicago, Illinois 60647
Telephone Area Code 312 227-2660

**TITLE: WIRING DIAGRAM PRECISION-THELCO MODELS 18, 26 & 28
MECHANICAL CONVECTION OVENS**



120 VOLTS 50/60 CYCLE



240 VOLTS 50/60 CYCLE