



# Model 280A Vacuum Oven

Installation and Operating Instructions

Catalog No.  
13-262-280A  
13-262-281A

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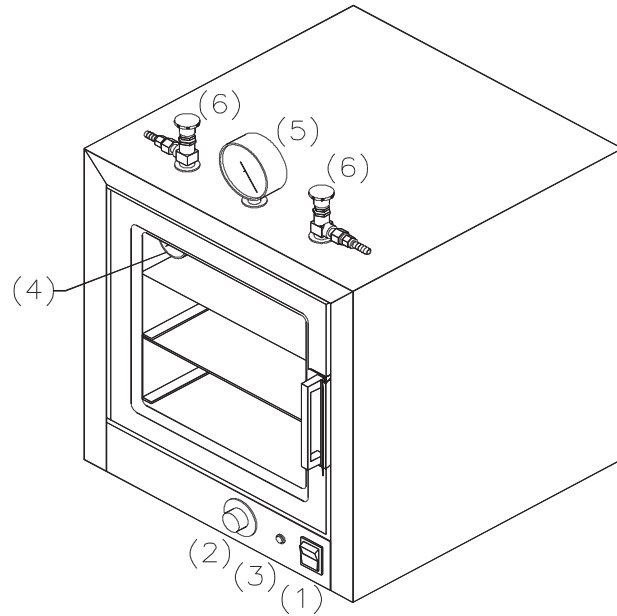
# Performance and Physical Data

<b>Model No.</b>	280A
<b>Catalog No.</b>	13-262-280A (120V), 13-262-281A (240V)
<b>Vacuum Range</b>	Atmosphere to 30" Hg.* with adequate pump
<b>Vacuum Leak Rate</b>	< .2" Hg per 24 hours
<b>Temperature Range</b>	Ambient to 200°C
<b>Shelf Capacity</b>	2.0 ft <sup>2</sup>
<b>Inside Dimensions</b>	11.125"D x 9.75"W x 9.75"H
<b>Outside Dimensions</b>	16"D x 15"W x 20"H
<b>Standard Electrical Service</b>	1000 Watts, 120 VAC 50/60 Hz. 8.4 Amps Optional: 1000 Watts, 240 VAC, 50/60 Hz , 4.2 Amps
<b>Net Weight (Pounds)</b>	65 lb.

*\*Within 10 Microns*

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# Controls and Indicators



1. Power Switch: Applies power to the oven temperature control.
2. Temperature Control: Regulates the oven operating temperature.
3. Heating Indicator: Indicates when the oven is being heated.
4. Thermometer: 0° - 200°C dial thermometer with 2° divisions.
5. Vacuum Gauge: Indicates chamber vacuum in *inches of mercury*.
6. Control Valves: Used for evacuating chamber, controlling vacuum, or for bleeding air and other gasses into chamber.

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# Operation

1. Refer to the packing checklist for the list of accessories sent with this unit. Make certain you have all accessories before destroying the shipping container and packing material. Also verify that all packing material and tape has been removed from inside the oven before operating.

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## Packing Checklist

Qty	Description
1	Model 280A Vacuum Oven
1	Instruction Manual (PN 102265)
1	Vacuum Grease Tube
2	Shelf Trays
1	Warranty Card

2. Place the oven on a bench or stand at a convenient working height. Maintain a minimum of 12 inches of clearance between the oven and any combustible surfaces.
3. Turn temperature control to low position and turn power switch off.
4. Check voltage and watts stamped on the data plate for compatibility before connecting oven to power source. The data plate can be found near the power cord.
5. Connect a vacuum pumping system, including a suitable trap, to the serrated fitting on the valve designated as vacuum. Use 1/4" ID heavy walled tubing and secure the connection with a hose clamp.
6. If desired, connect a purge gas supply to the remaining serrated fitting. Use a two-stage gas flow regulator if gas is to be supplied by a pressurized cylinder.

**Note**

Recommended vacuum tubing and vacuum pumps are listed under the Accessory Items section of this manual.



**Note**

When the oven is new and is first heated, the insulation will become scorched and some smoke and burning odor will occur. It is normal for this condition to last 2 to 3 hours at high heat.

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## Temperature Adjustment

1. Turn the power switch on to supply power to the oven.
2. Turn the Temp. Control knob fully clockwise. The "Heating" indicator will glow when the unit is heating. When the temperature reaches the desired operating level (as indicated on the thermometer) turn the Temp. Control knob counter-clockwise until the "Heating" indicator turns off. Allow the temperature to cycle on and off several times (3 to 4 hours) to make sure the oven has stabilized. Adjust the Temp. Control knob up or down as necessary.
3. When temperature is at the desired setting proceed to operate in any one of the following vacuum environments

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## Operation in a Static Environment

Static environment refers to operation at atmospheric pressure and with air, as it is present. In this case the operator would simply place the sample in the oven chamber and set the desired temperature.

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## Operation in a Controlled Environment

Controlled environment refers to operation with the samples in an inert gas. To accomplish this, perform the following:

1. Place samples in the oven chamber then close the oven door.
2. Close the purge control valve.
3. Open the vacuum control valve then turn on the vacuum pumping system to remove any air remaining in the oven.

4. Close the vacuum control valve and open the purge control valve to bleed in an inert gas.
5. Close the purge control valve.

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## Operation in a Vacuum Environment

To operate in a vacuum environment, perform the following:

1. Place samples in the oven then close the oven door.
2. Close both the purge control and vacuum control valves
3. Turn on the vacuum pumping system then open the vacuum control valve (fully counterclockwise)
4. The vacuum, in inches of mercury, can be obtained from the vacuum gauge on the top of the oven.

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## Vacuum Sealing Agents

- High temperature vacuum grease is often necessary to provide a proper seal at tubing connections, valve connections, door seals, etc. This is especially important at high vacuums. Using silicone vacuum grease will damage the door seal and has restrictions for some types of materials placed in the oven.

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## Out Gassing

- The operation of the oven at high temperature while evacuating the chamber will help drive off absorbed gasses on the walls and three surfaces and facilitate attainment of high vacuums.

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## Safety Precautions

- Before operation, always observe the following Safety precautions. This unit is not explosion proof. Do not use in the presence of flammable or combustible materials; fire or explosion may result. Unit contains components that may ignite such materials. Do not place volatile items in the chamber. Fumes and spillage from acidic solutions cause corrosion of the stainless steel chamber. Care should be taken to maintain neutral pH at all times.
- Do not operate oven at temperatures above 200° C.
- Do not permit materials of any kind to rest on top of unit when operating at elevated temperatures.
- Do not touch the oven door particularly the glass portion, with unprotected hands when operating at elevated temperatures.
- To prevent overheating unit is equipped with a safety thermostat that will open at approximately 230°C.
- The oven is equipped with silicone door gaskets. Do not use silicone door gaskets or vacuum grease when evaporating solvents in the oven or when using high aniline point oils. BUNA-N gaskets should be used in applications when evaporating solvents or when using high aniline point oils. The interior finish or silicone gaskets may be damaged by the following:
  - *BUNA-N gaskets should not be used above 125°C.*

Diesel oil	JP-4 oil
MIL-0-5606	Hydraulic Fluids
Butyl Acetate	Carbon Tetrachloride
Ethylene Chloride	Gasoline
Kerosene	Zylene
Methyl Chloride	Stoddard Solvent
Toluene	Aromatic Chlorinated Solvent



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# Maintenance and Servicing

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## Cleaning Suggestions

- Use the mildest cleaning procedure that will do the job effectively.
- Rinse thoroughly with water after every cleaning operation.
- Wipe dry to avoid watermarks.
- A stainless steel wool pad, sponge or fibrous brush is recommended. Avoid use of ordinary steel wool or steel brushes for scouring stainless steel.

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## Periodic Maintenance

- Secured access panels, covers, etc., should never be removed from this equipment by anyone other than experienced service personnel,
- If the oven fails to maintain set temperature, it may indicate a problem with the Temp. Control, or possibly a heating element failure. Contact your local Fisher Scientific service representative (1-800-395-5442).
- Gaskets should be checked periodically for hardening, shrinking, deterioration or other signs of wear. It is advisable to keep several gaskets available for use as replacements.

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## Seal Replacement

To replace the oven seal, remove the old seal and perform the following:

1. Clean edge of chamber with Xylene, (Cat. No. LLX5-500).
2. Apply a thin bead of Dow Corning RTV-736 red silicone rubber adhesive to edge of the chamber. Place gasket on chamber and close the door.
3. Keep door closed for a minimum of 16 hours with 1 to 2 inches of vacuum before using.

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# Accessories and Replacement Parts

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## Accessory Items

Detailed information on accessory items is located in the Fisher Scientific catalog.

<b>Item No.</b>	<b>Description</b>
01-257-2C	Vacuum Pump
01-257-4A	Vacuum Pump Oil
01-257-12	Clear Vacuum Tubing
14-635-5D	Vacuum Grease

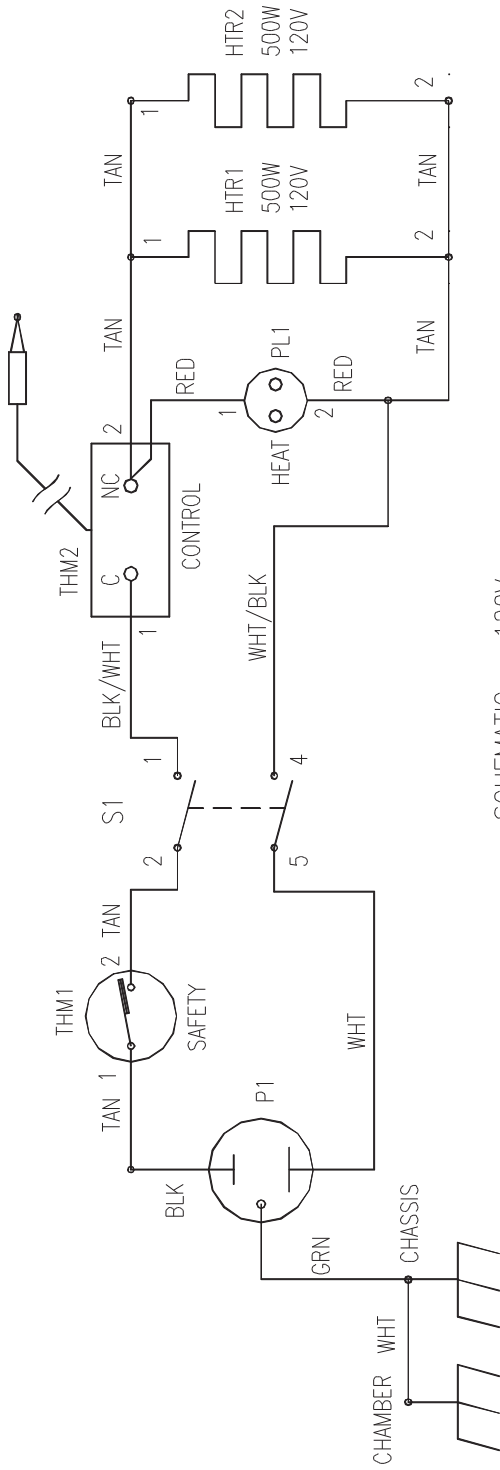
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## Replacement Parts

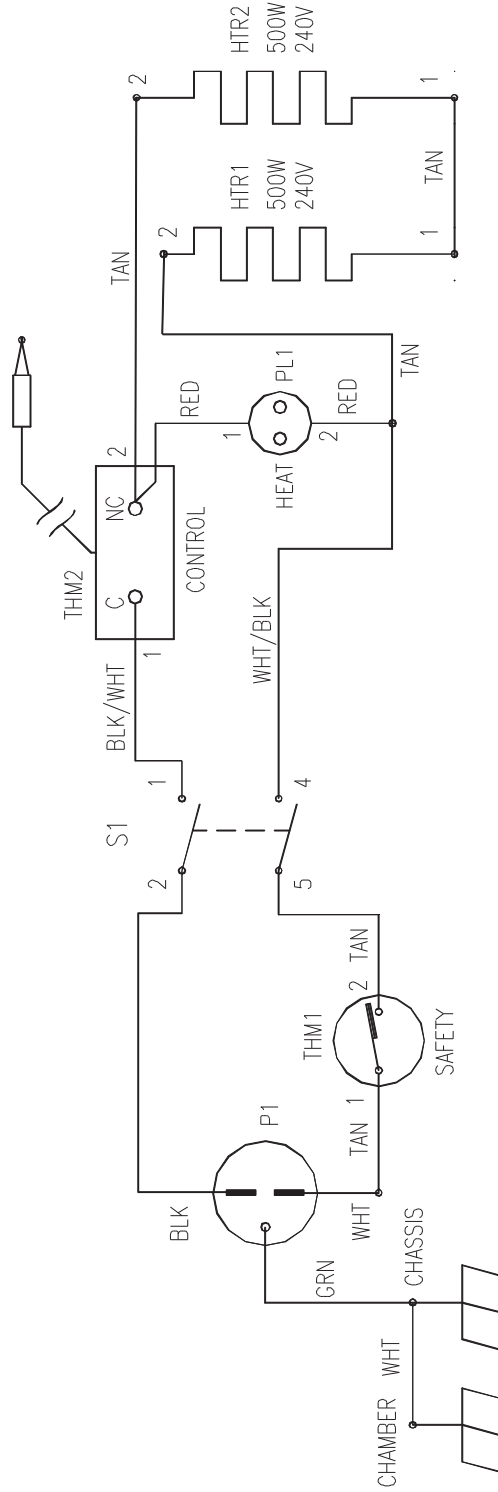
<b>Part No.</b>	<b>Description</b>
SPN83373	Power Switch
SPN102219	Temp. Control (Thermostat)
SPN20845	Temp. Control Knob
SPN102222	Thermal Cut-Out
SPN98991	Pilot Light
SPN102256	Thermometer
SPN98998	Rubber Feet
SPN102161	Control Valve
SPN102220	Vacuum Gauge
SPN30790	Heating Element (120V)
SPN50430	Door Gasket - Silicone
SPN50430B	Door Gasket - BUNA-N
SPN50430V	Door Gasket - Viton
SPN02336	Window

When ordering replacement parts, please specify the model number and serial number of your unit, and date the unit was purchased. The model and serial numbers can be found on the nameplate, which is located near the service cord.

# Schematics



SCHEMATIC - 120V



SCHEMATIC - 240V

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# Warranty

Laboratory instruments and equipment manufactured by Fisher Scientific Company L.L.C. – Laboratory Equipment Division (hereinafter called “the Company”) are warranted only as stated below.

Subject to the exceptions and upon the conditions specified below, the Company agrees, at its election, to correct by repair, by replacement, or by credit to the purchaser, any defect of materials or workmanship which develops within one year (13 months for refrigerator and freezer products) from the date of purchase by the original purchaser by the Company or by an authorized dealer of the Company provided that investigation or factory inspection by the Company discloses that such defect developed under normal and proper use

**The exceptions and conditions mentioned above are the following:**

- a. The Company makes no warranty concerning components or accessories not manufactured by it, such as tubes, batteries, etc. However, in the event of the failure of any component or accessory not manufactured by the Company, the Company will give reasonable assistance to the purchaser in obtaining from the respective manufacturer whatever adjustment is reasonable in the light of the manufacturer’s own warranty.
- b. The Company shall be released from all obligations under its warranty in the event repairs or modifications are made by persons other than its own service personnel or authorized dealer personnel unless such repairs by others are made with the written consent of the Company.
- c. **THE COMPANY MAKES NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, EITHER IN FACT OF BY OPERATION OF LAW,...STATUTORY OR OTHERWISE.**
- d. The above warranty and the above obligations to repair, replace, or credit are complete and exclusive and the Company expressly disclaims liability for lost profits or for special, indirect, incidental, consequential, or exemplary damages of any nature whether attributable to contract, warranty, negligence, strict liability, or otherwise even if the Company has been advised of the possibility of such damages.
- e. Representations and warranties made by any person, including dealers and representatives of the Company, which are inconsistent or in conflict with the foregoing warranty shall not be binding upon the Company unless reduced to writing and signed by an officer of the Company.



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