



Model 285A Vacuum Oven

Catalog No. 13-262-285A and 13-262-286A

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Introduction

Alert Signals



Warning

Warnings alert you to a possibility of personal injury.



Caution

Cautions alert you to a possibility of damage to the equipment.



Note

Notes alert you to pertinent facts and conditions.



Hot Surface

Hot surfaces alert you to a possibility of personal injury if you come in contact with a surface during use or for a period of time after use.



Warning

Before operation, read this manual carefully and become familiar with the operation of the oven before use. Always observe the safety precautions throughout this manual.

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.

Performance and Physical Data

Model No.	285A
Catalog No.	13-262-285A (120V), 13-262-286A (240V)
Vacuum Range	Atmosphere to 30" Hg.* with adequate pump
Vacuum Leak Rate.	< .2" Hg per 24 hours
Temperature Range	Ambient +10°C to 200°C
Shelf Capacity	4.1 ft ²
Inside Dimensions	19"D x 12"W x 12"H
Outside Dimensions	25"D x 22.5"W x 23.5"H
Standard Electrical Service	1700 Watts, 120 VAC, 50/60 Hz, 14.2 Amps
Optional:	1700 Watts, 240 VAC, 50/60 HZ, 7.1 Amps
Net Weight (Pounds)	130 lb.

* *within 10 Microns*

Unpacking

Refer to the unpacking 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.

Unpacking Checklist

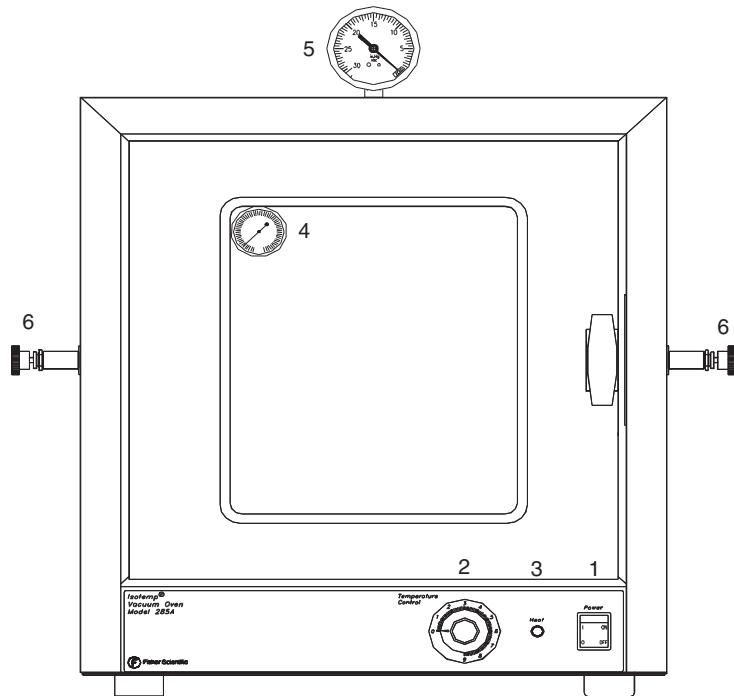
<u>Qty</u>	<u>Description</u>
1	Model 285A Vacuum Oven
1	Instruction Manual (PN 102505)
1	Vacuum Grease Tube
2	Shelf Trays
1	Warranty Card

If any of these items are missing from the carton, contact Fisher Scientific.

Before operating the vacuum oven, the user should ensure that all packing material has been removed from the interior of the chamber.

Control and Indicator Description

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°C - 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.
7. **Port:** One inch port located on the back of oven, for attachment to a high capacity vacuum system for quick evacuation of oven.



Operation



Note

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

Preparing the Oven

1. 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.
2. Turn temperature control to low position and turn power switch off.
3. 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.
4. 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.
5. 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

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.

Temperature Adjustment

1. Turn the power switch on, to supply power to the oven.
2. Turn the Temperature 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 Temperature Control knob counterclockwise 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.

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.

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.

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.

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..

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.

Precautions

- 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.

OPERATION

- 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

Maintenance

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 water marks.
- A stainless steel wool pad, sponge or fibrous brush is recommended. Avoid use of ordinary steel wool or steel brushes for scouring stainless steel.

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 Temperature Control, or possibly a heating element failure. If this occurs contact your local Fisher Scientific service representative at (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.

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.

Accessories and Replacement Parts

Accessory Items

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

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

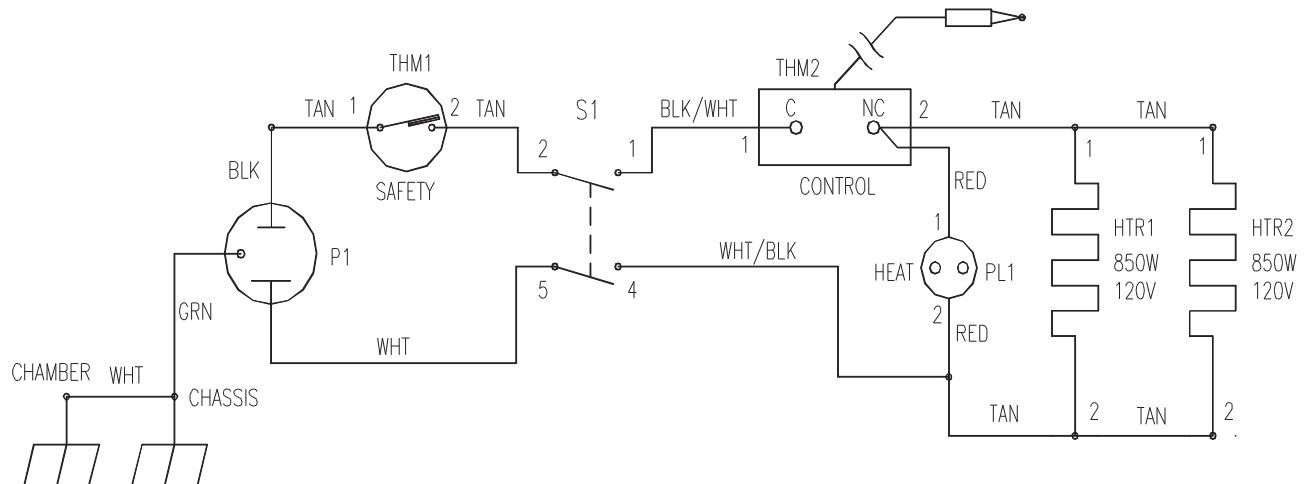
Replacement Parts

Part No.	Description
SPN83373	Power Switch
SPN102219	Temp. Control (Thermostat)
SPN20845	Temp. Control Knob
SPN102222	Thermal Cut-Out
SPN98991	Pilot Light
SPN102256	Thermometer
SPN38821	Rubber Feet
SPN102161	Control Valve
SPN102220	Vacuum Gauge
SPN50098	Heating Element
SPN70435	Door Gasket - Silicone
SPN70435B	Door Gasket - BUNA-N
SPN70435V	Door Gasket - Viton
SPN102284	Window
SPN102282	Handle Latch
SPN102524	Pawl
SPN102239	Strike Plate

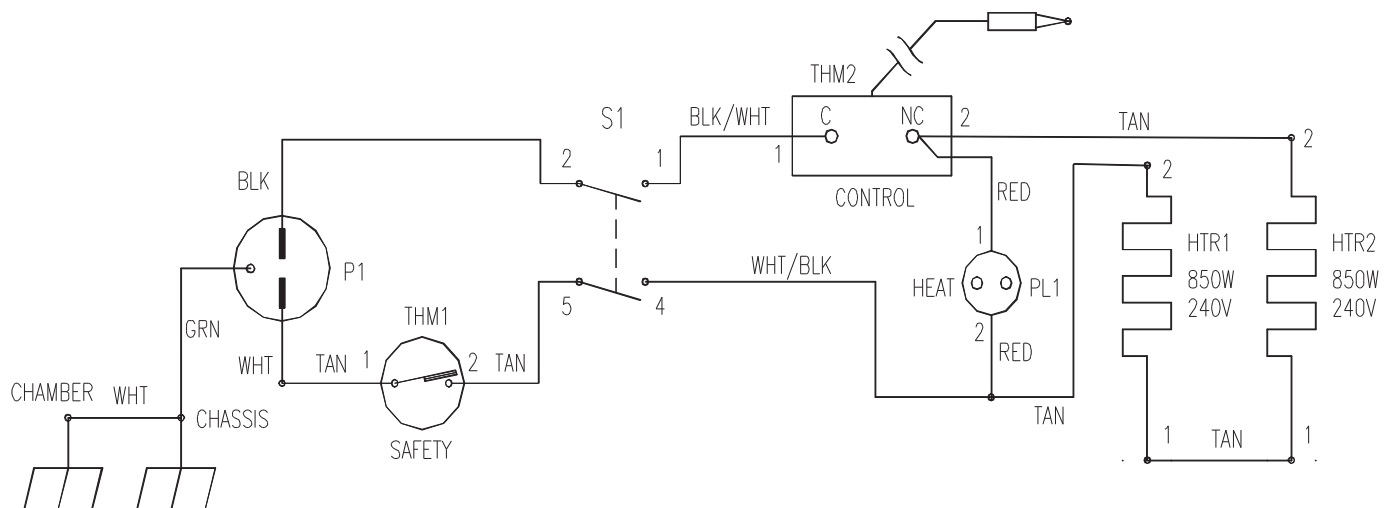
When ordering replacement parts, please specify the model number and serial number of your unit, and date the unit was purchased. The model and serial numbers can be found on the nameplate which is located near the service cord.

Schematics

120V Schematic



240V Schematic



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 OR 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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