



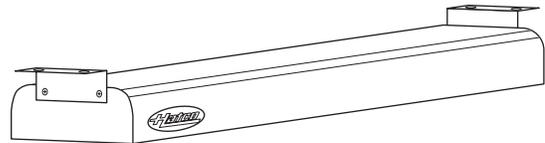
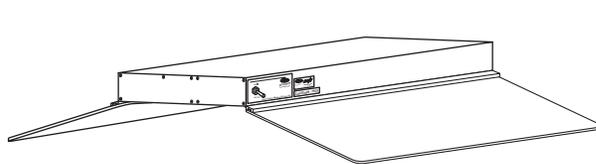
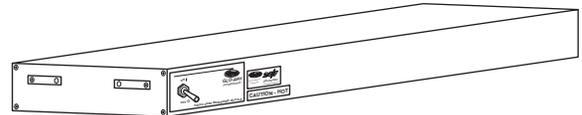
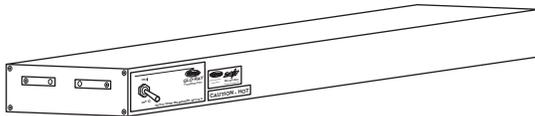
GLO-RAY®

Infrared Strip Heaters

GR, GRH, GRA, GRAH, GRAL,
GRAHL, GRN & GRNH Series

Installation &
Operating Manual

I&W #07.05.183.00



This manual contains important safety information concerning the maintenance, use and operation of this product. Failure to follow the instructions contained in this manual may result in serious injury. If you're unable to understand the contents of this manual, please bring it to the attention of your supervisor. Do not operate this equipment unless you have read and understood the contents of this manual.

Este manual contiene importante información sobre seguridad concerniente al mantenimiento, uso y operación de este producto. Cualquier falla en el seguimiento de las instrucciones contenidas en este manual puede resultar en un serio daño. Si usted no puede entender el contenido de este manual por favor pregunte a su supervisor. No opere este equipo al menos que haya leído y comprendido el contenido de este manual.

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IMPORTANT OWNER INFORMATION

Record the model number, serial number (identification decal located on the underside of the unit), voltage and purchase date of your Infrared Strip Heater in the spaces below. Please have this information available when calling Hatco for service assistance.

Model No. _____

Serial No. _____

Voltage _____

Date of Purchase _____

Business Hours: 8:00 a.m. to 5:00 p.m.
Central Standard Time

(Summer Hours: June to September -
8:00 a.m. to 5:00 p.m. C.D.T.
Monday through Thursday
8:00 a.m. to 2:30 p.m. C.D.T. Friday)

Telephone: (800) 558-0607; (414) 671-6350

Fax: (800) 690-2966 (Parts & Service)
(414) 671-3976 (International)



24-Hour 7-Day Parts & Service Assistance available in the United States and Canada by calling (800) 558-0607.

Additional information can be found by visiting our web site at www.hatcocorp.com

INTRODUCTION

Hatco Glo-Ray® Strip Heaters ensure maximum food holding and minimize the risk of food-borne illness. Optimum safety and quality is the result of food held at the proper serving temperatures, using Glo-Ray's pre-focused heat patterns. The pre-focused heat pattern prevents foods from being over-cooked in the middle and cooling off around the edges by concentrating higher temperatures to the outer edges of holding surfaces where heat loss is the greatest. Utilizing specially designed reflectors to direct the heat from the element, Glo-Ray Strip Heaters safely maintain peak serving temperatures longer, without cooking the food beyond the point of excellence.

The Glo-Ray Strip Heaters are available with or without shatter-resistant incandescent lights to illuminate the warming area. These bulbs have a special coating that guards against injury and food contamination in the event of breakage.

This manual provides the installation, safety and operating instructions for the Strip Heaters. We recommend all installation, operating and safety instructions appearing in this manual be read prior to installation or operation of your Hatco Strip Heaters. Safety instructions that appear in this manual after a warning symbol and the words **WARNING** or **CAUTION** printed in bold face are very important. **WARNING** means there is the possibility of serious personal injury or death to yourself or others. **CAUTION** means there is the possibility of minor or moderate injury. **NOTICE** *without the symbol* signifies the possibility of equipment or property damage only.

Hatco Strip Heaters are a product of extensive research and field testing. The materials used were selected for maximum durability, attractive appearance and optimum performance. Every unit is thoroughly inspected and tested prior to shipment.

IMPORTANT SAFETY INFORMATION

IMPORTANT! Read the following important safety information to avoid personal injury or death, and to avoid damage to the equipment or property.

⚠ WARNINGS

- ⚠ Only light bulbs which meet or exceed NSF standards, specifically designed for food holding areas may be used. Breakage of light bulbs not specially coated could result in personal injury and/or food contamination.
- ⚠ Units equipped with a cord and plug supplied by Hatco must be plugged into a properly grounded electrical outlet of the correct voltage, size and plug configuration. If the plug and receptacle do not match, contact a qualified electrician to determine the proper voltage and size and install the proper electrical outlet.
- ⚠ For safe and proper operation, the unit must be located the correct distance from combustible walls and materials. If safe distances are not maintained, discoloration or combustion could occur. Refer to specific installation and mounting information in this manual for proper clearances.
- ⚠ To prevent any injury or damage to the unit do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.
- ⚠ The unit is not waterproof. DO NOT submerge in water. Do not operate if it has been submerged in water.
- ⚠ To prevent combustion or damage to materials do not install standard wattage strip heater (GR, GRA, GRN, GRAL Series) less than 10" (254 mm) above a non-metallic surface. Do not install high wattage strip heater (GRH, GRAH, GRNH, GRAHL Series) less than 13-1/2" (343 mm) above a non-metallic surface. Do not install dual strip heaters (GRA-XXD, GRAH-XXD, GRAL-XXD & GRAHL-XXD Series) above non-metallic surface. Install all non-dual strip heaters so there is a minimum distance of 3" (76 mm) from a non-metallic wall or adjacent surface.
- ⚠ To avoid any injury or damage to the unit when using chains for installation, the chains must have sufficient strength and be securely fastened, or the unit could become loose or fall.
- ⚠ To avoid any injury or damage the strip heater must only be serviced by qualified personnel.
- ⚠ All electrical connections must be in accordance with local electrical codes and any other applicable codes. Connections should be made by a qualified, licensed electrician.
- ⚠ To avoid any injury or damage to the strip heater turn the power OFF at the disconnect switch/circuit breaker and allow to cool before performing any maintenance.
- ⚠ If service is required on this unit, contact your Authorized Hatco Service Agent, or contact the Hatco Service Department at 800-558-0607 or 414-671-6350; fax 800-690-2966 or International fax 414-671-3976.
- ⚠ This product has no "user" serviceable parts. To avoid damage to the unit or injury to personnel, use only Authorized Hatco Service Agents and Genuine Hatco Replacement Parts when service is required.
- ⚠ Genuine Hatco Replacement Parts are specified to operate safely in the environments in which they are used. Some aftermarket or generic replacement parts do not have the characteristics that will allow them to operate safely in Hatco equipment. It is essential to use Hatco Replacement Parts when repairing Hatco equipment. Failure to use Hatco Replacement Parts may subject operators of the equipment to hazardous electrical voltage, resulting in electrical shock or burn.

IMPORTANT SAFETY INFORMATION

⚠ CAUTIONS

- ⚠ Standard and approved manufacturing oils will smoke up to 30 minutes during initial start-up. This is a temporary condition. To assure safe operation, operate unit without food product until smoke dissipates.
- ⚠ Some exterior surfaces on the unit will get hot. Use caution when touching these areas to avoid injury.
- ⚠ To prevent unit failure do not add a decorative soffit to hide a pass-through mounted Glo-Ray Strip Heater.
- ⚠ Strip Heaters with incandescent lights that require a circuit breaker larger than 20 amps must have a separate circuit breaker for the incandescent lights that is 20 amps or less.
- ⚠ To assure safe and proper operation refer to Installation Clearance Requirements listed in this manual.
- ⚠ Installation of two or more single units with less than 3" (76 mm) between housings may result in premature failure of component parts.
- ⚠ Unit is not moisture proof. Do not mount over steam table unless a remote control switch is installed. Spacing of at least 16" (406 mm) is required for all units over a steam table.

NOTICE

Use only non-abrasive cleaners. Abrasive cleaners could scratch the finish of your unit, marring its appearance and making it susceptible to dirt accumulation.

To prevent premature failure to components the Remote Control Box (RMB) must be installed outside the strip heater heat zone.

Heat damage to countertop material such as Corian® and similar products (other than stainless steel) is not covered under the Hatco warranty. Contact the manufacturer of the base material for temperature limits and application information before installing the unit.

MODEL DESIGNATION

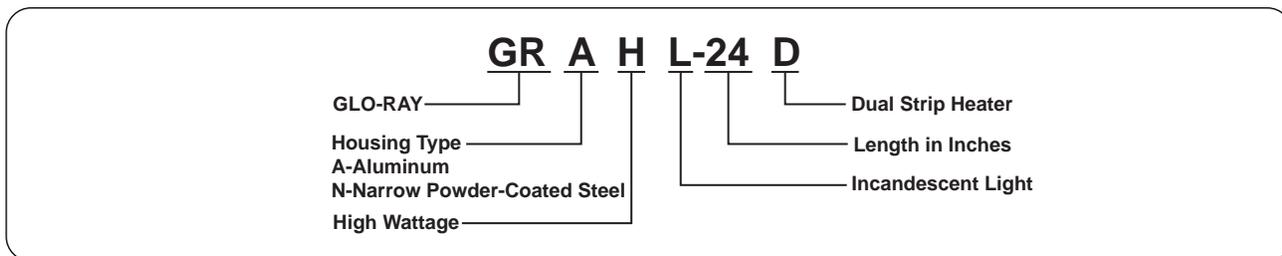


Figure 1. Model Designation

MODEL DESCRIPTIONS

Hatco Glo-Ray® Infrared Strip Heater keep hot foods at optimum serving temperatures longer. Foods do not dry out or become discolored; even the most delicate dishes hold that “just-prepared” look. The Glo-Ray pre-focused heat pattern directs heat from a tubular element to bathe the entire holding surface.

Hatco Glo-Ray® Strip Heater can be ordered in standard or high wattage configurations, aluminum housings in lengths of 18" (457 mm) to 144" (3658 mm), stainless steel housings in lengths of 24" (610 mm) to 96" (2438 mm) or narrow design housings in lengths of 18" (457 mm) to 72" (1829 mm).

All Strip Heaters have several mounting options and switch locations. Optional infinite control switches, remote control enclosures, incandescent lighting and breath protectors are available.

The advanced Glo-Ray dual models allow for side by side mounting of two or more strip heaters installed (with a required 3" (76 mm) or 6" (152 mm) spacer), to provide a wider holding area.

- GR-XX:** Stainless steel housing, standard wattage
- GRH-XX:** Stainless steel housing, high wattage
- GRN-XX:** Narrow design, powder-coated painted steel housing, standard wattage
- GRNH-XX:** Narrow design, powder-coated painted steel housing, high wattage

NOTE: Stainless steel and narrow design Strip Heaters are not available with lights, breath protectors or as dual units.

- GRA-XX:** Aluminum housing, standard wattage
- GRAH-XX:** Aluminum housing, high wattage
- GRAL-XX:** Aluminum housing, standard wattage, incandescent light
- GRAHL-XX:** Aluminum housing, high wattage, incandescent light
- GRA-XXD:** Aluminum housing, standard wattage, dual
- GRAH-XXD:** Aluminum housing, high wattage, dual
- GRAL-XXD:** Aluminum housing, standard wattage, incandescent light, dual
- GRAHL-XXD:** Aluminum housing, high wattage, incandescent light, dual

NOTE: Incandescent lights and breath protectors not available for retro-fit.

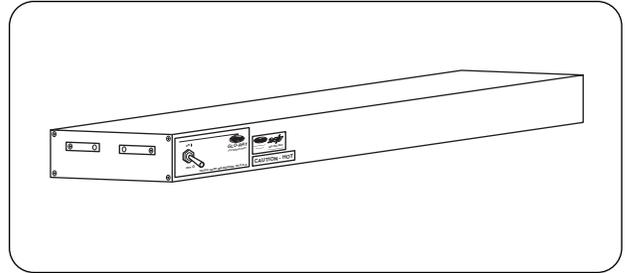


Figure 2. GRA-24 Model

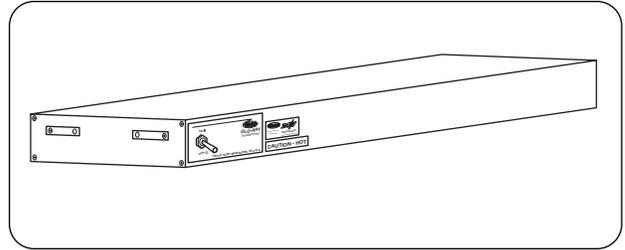


Figure 3. GRAHL-24 Model

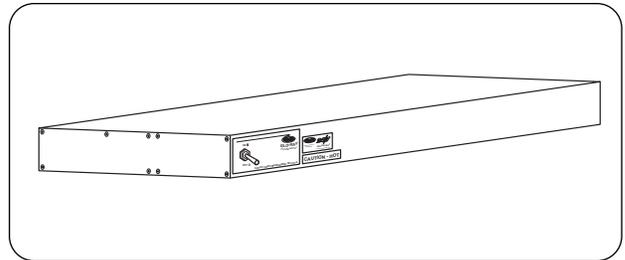


Figure 4. GRA-24D Model

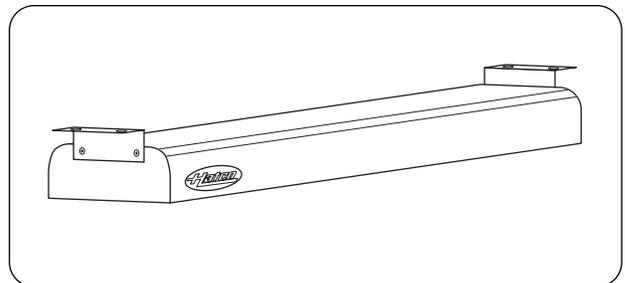


Figure 5. GRN-24 Model

SPECIFICATIONS

GR MODELS-ELECTRICAL RATING CHART

Model GR-18		Watts: 250		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.1	1.2	1.0	2.5	1.3	1.1	1.0
Model GR-24		Watts: 350		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.9	1.7	1.5	3.5	1.8	1.6	1.5
Model GR-36		Watts: 575		Shipping Weight: 10 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	4.8	2.7	2.4	5.8	2.9	2.6	2.4
Model GR-48		Watts: 800		Shipping Weight: 12 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	6.7	3.8	3.3	8.0	4.0	3.6	3.3
Model GR-60		Watts: 1050		Shipping Weight: 15 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	8.8	5.0	4.4	10.5	5.3	4.8	4.4
Model GR-72		Watts: 1275		Shipping Weight: 19 lbs. (9 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	10.6	6.1	5.3	12.8	6.4	5.8	5.3
Model GR-96		Watts: 1725		Shipping Weight: 24 lbs. (11 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	14.4	8.3	7.2	17.3	8.6	7.8	7.2

GRH MODELS-ELECTRICAL RATING CHART

Model GRH-18		Watts: 350		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.9	1.7	1.5	3.5	1.8	1.6	1.5
Model GRH-24		Watts: 500		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	4.2	2.4	2.1	5.0	2.5	2.3	2.1
Model GRH-36		Watts: 800		Shipping Weight: 10 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	6.7	3.8	3.3	8.0	4.0	3.6	3.3
Model GRH-48		Watts: 1100		Shipping Weight: 12 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	9.2	5.3	4.6	11.0	5.5	5.0	4.6
Model GRH-60		Watts: 1400		Shipping Weight: 15 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	11.7	6.7	5.8	14.0	7.0	6.4	5.8
Model GRH-72		Watts: 1725		Shipping Weight: 19 lbs. (9 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	14.4	8.3	7.2	17.3	8.6	7.8	7.2
Model GRH-96*		Watts: 2400		Shipping Weight: 24 lbs. (11 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	---	11.5	10.0	---	12.0	10.9	10.0

The electrical information in the shaded area pertains to **Export Models** only.

* Not available in 100 or 120 volts.

◆CE approved units for 220-230 volt utilize a 220 volt heating system; 230-240 CE units utilize a 240 volt heating system.

SPECIFICATIONS

GRA MODELS-ELECTRICAL RATING CHART

Model GRA-18		Watts: 250		Shipping Weight: 6 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.1	1.2	1.0	2.5	1.3	1.1	1.0
Model GRA-24		Watts: 350		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.9	1.7	1.5	3.5	1.8	1.6	1.5
Model GRA-30		Watts: 450		Shipping Weight: 8 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	3.8	2.2	1.9	4.5	2.3	2.1	1.9
Model GRA-36		Watts: 575		Shipping Weight: 9 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	4.8	2.8	2.4	5.8	2.9	2.6	2.1
Model GRA-42		Watts: 675		Shipping Weight: 10 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	5.6	3.2	2.8	6.8	3.4	3.1	2.8
Model GRA-48		Watts: 800		Shipping Weight: 11 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	6.7	3.8	3.3	8.0	4.0	3.6	3.3
Model GRA-54		Watts: 925		Shipping Weight: 13 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	7.7	4.4	3.9	9.3	4.6	4.2	3.9
Model GRA-60		Watts: 1050		Shipping Weight: 14 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	8.8	5.0	4.4	10.5	5.3	4.8	4.4
Model GRA-66		Watts: 1160		Shipping Weight: 16 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	9.7	5.6	4.8	11.6	5.8	5.3	4.8
Model GRA-72■		Watts: 1275		Shipping Weight: 17 lbs. (8 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	10.6	6.1	5.3	12.8	6.4	5.8	5.3
Model GRA-84■		Watts: 1500		Shipping Weight: 19 lbs. (9 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	12.5	7.2	6.3	15.0	7.5	6.8	6.3
Model GRA-96■		Watts: 1725		Shipping Weight: 21 lbs. (10 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	14.4	8.3	7.2	17.3	8.6	7.8	7.2
Model GRA-108†		Watts: 1850		Shipping Weight: 23 lbs. (10 kg)			
Voltage	120	208	240	100	200	220	240
Amps	15.4	8.9	7.7	18.5	9.3	8.4	7.7
Model GRA-120†*		Watts: 2100		Shipping Weight: 26 lbs. (12 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	10.1	8.8	21.0	10.5	9.5	8.8
Model GRA-132†		Watts: 2320		Shipping Weight: 30 lbs. (14 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	11.2	9.7	23.2	11.6	10.5	9.7
Model GRA-144†		Watts: 2550		Shipping Weight: 33 lbs. (15 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	12.3	10.6	25.6	12.8	11.6	10.6

GRAH MODELS-ELECTRICAL RATING CHART

Model GRAH-18		Watts: 350		Shipping Weight: 6 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.9	1.7	1.5	3.5	1.8	1.6	1.5
Model GRAH-24		Watts: 500		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	4.2	2.4	2.1	5.0	2.5	2.3	2.1
Model GRAH-30		Watts: 660		Shipping Weight: 8 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	5.5	3.2	2.8	6.6	3.3	3.0	2.8
Model GRAH-36		Watts: 800		Shipping Weight: 9 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	6.7	3.8	3.3	8.0	4.0	3.6	3.3
Model GRAH-42		Watts: 950		Shipping Weight: 10 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	7.9	4.6	4.0	9.5	4.8	4.3	4.0
Model GRAH-48		Watts: 1100		Shipping Weight: 11 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	9.2	5.3	4.6	11.0	5.5	5.0	4.6
Model GRAH-54		Watts: 1250		Shipping Weight: 13 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	10.4	6.0	5.2	12.5	6.3	5.7	5.2
Model GRAH-60		Watts: 1400		Shipping Weight: 14 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	11.7	6.7	5.8	14.0	7.0	6.4	5.8
Model GRAH-66		Watts: 1560		Shipping Weight: 16 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	13.0	7.5	6.5	15.6	7.1	7.5	6.5
Model GRAH-72		Watts: 1725		Shipping Weight: 17 lbs. (8 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	14.4	8.3	7.2	17.3	8.6	7.8	7.2
Model GRAH-84■		Watts: 2050		Shipping Weight: 19 lbs. (9 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	17.1	9.9	8.5	20.5	10.3	9.3	8.5
Model GRAH-96■		Watts: 2400		Shipping Weight: 21 lbs. (10 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	18.3	11.5	10.0	24.0	12.0	10.9	10.0
Model GRAH-108†		Watts: 2500		Shipping Weight: 23 lbs. (10 kg)			
Voltage	120	208	240	100	200	220	240
Amps	20.8	12.0	10.4	25.0	12.5	11.4	10.4
Model GRAH-120†		Watts: 2800		Shipping Weight: 26 lbs. (12 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	13.5	11.7	---	14.0	12.7	11.7
Model GRAH-132†		Watts: 3120		Shipping Weight: 30 lbs. (14 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	15.0	13.0	---	15.6	14.2	13.0
Model GRAH-144†		Watts: 3450		Shipping Weight: 33 lbs. (15 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	16.6	14.4	---	17.3	15.7	14.4

The electrical information in the shaded area pertains to **Export Models** only.

- 100 and 120 volt models with infinite switch require tandem (end-to-end) elements, consult factory for applications.
- 100 and 120 volt models may require additional switches, consult factory for applications.

†Glo-Ray models 108" through 144" and 120 volt models of GRA-84 and GRA-96 contain tandem (end-to-end) elements may be individually controlled.

* Not available in 100 or 120 volts.

◆CE approved units for 220-230 volt utilize a 220 volt heating system; 230-240 CE units utilize a 240 volt heating system.

SPECIFICATIONS

GRAL MODELS-ELECTRICAL RATING CHART

Model GRAL-18 Watts: 370 Shipping Weight: 9 lbs. (4 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	3.1	2.2	2.0	3.7	2.5	1.7	1.5
Model GRAL-24 Watts: 470 Shipping Weight: 10 lbs. (5 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	3.9	2.7	2.5	4.7	3.0	2.1	2.0
Model GRAL-30 Watts: 570 Shipping Weight: 11 lbs. (5 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	4.8	3.2	2.9	5.7	3.5	2.6	2.4
Model GRAL-36 Watts: 755 Shipping Weight: 13 lbs. (6 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	6.3	4.3	3.9	7.6	4.7	3.4	3.1
Model GRAL-42 Watts: 855 Shipping Weight: 15 lbs. (7 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	7.1	4.7	4.3	8.6	5.2	3.9	3.6
Model GRAL-48 Watts: 1040 Shipping Weight: 17 lbs. (8 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	8.7	5.8	5.3	10.4	6.4	4.7	4.3
Model GRAL-54 Watts: 1165 Shipping Weight: 19 lbs. (9 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	9.7	6.4	5.9	11.7	7.0	5.3	4.9
Model GRAL-60 Watts: 1350 Shipping Weight: 21 lbs. (10 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	11.3	7.5	6.9	13.5	8.3	6.1	5.6
Model GRAL-66 Watts: 1460 Shipping Weight: 22 lbs. (10 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	12.2	8.1	7.3	14.6	8.8	6.6	6.1
Model GRAL-72 Watts: 1635 Shipping Weight: 24 lbs. (11 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	13.6	9.1	8.3	16.4	10.0	7.4	6.8
Model GRAL-84■ Watts: 1920 Shipping Weight: 28 lbs. (13 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	16.0	10.7	9.8	19.2	11.7	8.7	8.0
Model GRAL-96■ Watts: 2205 Shipping Weight: 32 lbs. (15 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	18.4	12.3	11.2	22.1	13.4	10.0	9.2
Model GRAL-108† Watts: 2390 Shipping Weight: 36 lbs. (16 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	19.9	13.4	12.2	23.9	14.7	10.9	10.0
Model GRAL-120†* Watts: 2700 Shipping Weight: 40 lbs. (18 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	---	15.1	13.8	27.0	16.5	12.3	11.3
Model GRAL-132†* Watts: 2980 Shipping Weight: 44 lbs. (20 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	---	16.7	15.2	29.2	18.2	13.5	12.4
Model GRAL-144†* Watts: 3270 Shipping Weight: 48 lbs. (22 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	---	18.3	16.6	32.7	20.0	14.9	13.6

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- 100 and 120 volt models with infinite switch may require tandem (end-to-end) elements, consult factory for applications.
- 100 and 120 volt models may require additional switches, consult factory for applications.

†Glo-Ray models 108" through 144" and 100 and 120 volt models of GRAL-84 and GRAL-96 contain tandem (end-to-end) elements that may be individually controlled.

* Not available in 100 or 120 volts.

◆CE approved units for 220-230 volt utilize a 220 volt heating system; 230-240 CE units utilize a 240 volt heating system.

NOTE: GRAL & GRAHL Models that have multiple voltages listed, such as 120/208, 120/240 or 100/200, have multiple circuits. For example a 120/208 volt unit utilizes 120 volts for light circuit and 208 volts for the heat circuit(s). Consult Electrical Diagram supplied with the unit for specific information.

⚠ CAUTION - Strip Heaters with incandescent lights that require a circuit breaker larger than 20 amps must have a separate circuit breaker for the incandescent lights that is 20 amps or less.

GRAHL MODELS-ELECTRICAL RATING CHART

Model GRAHL-18 Watts: 470 Shipping Weight: 9 lbs. (4 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	3.9	2.7	2.5	4.7	3.0	2.1	2.0
Model GRAHL-24 Watts: 620 Shipping Weight: 10 lbs. (5 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	5.2	3.4	3.1	6.2	3.7	2.8	2.6
Model GRAHL-30 Watts: 780 Shipping Weight: 11 lbs. (5 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	6.5	4.2	3.8	7.8	4.5	3.5	3.3
Model GRAHL-36 Watts: 980 Shipping Weight: 13 lbs. (6 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	8.2	5.3	4.8	9.8	5.8	4.5	4.1
Model GRAHL-42 Watts: 1130 Shipping Weight: 15 lbs. (7 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	9.4	6.1	5.5	11.3	6.6	5.1	4.7
Model GRAHL-48 Watts: 1340 Shipping Weight: 17 lbs. (8 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	11.2	7.3	6.6	13.4	7.9	6.1	5.6
Model GRAHL-54 Watts: 1490 Shipping Weight: 19 lbs. (9 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	12.4	8.0	7.2	14.9	8.7	6.8	6.2
Model GRAHL-60 Watts: 1700 Shipping Weight: 21 lbs. (10 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	14.2	9.2	8.3	17.0	10.0	7.7	7.1
Model GRAHL-66■ Watts: 1860 Shipping Weight: 22 lbs. (10 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	15.5	10.0	9.0	18.6	10.8	8.5	7.8
Model GRAHL-72■ Watts: 2085 Shipping Weight: 24 lbs. (11 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	17.4	11.3	10.2	20.9	12.2	9.5	8.7
Model GRAHL-84■ Watts: 2470 Shipping Weight: 28 lbs. (13 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	20.6	13.4	12.0	24.7	14.5	11.2	10.3
Model GRAHL-96■ Watts: 2880 Shipping Weight: 32 lbs. (15 kg)							
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	24.0	15.5	14.0	28.8	16.8	13.1	12.0
Model GRAHL-108† Watts: 3040 Shipping Weight: 36 lbs. (16 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	24.8	16.5	14.9	30.4	17.9	13.8	12.7
Model GRAHL-120†* Watts: 3400 Shipping Weight: 40 lbs. (18 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	---	18.5	16.7	34.0	20.0	15.5	14.2
Model GRAHL-132†* Watts: 3780 Shipping Weight: 44 lbs. (20 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	---	20.5	18.5	37.2	21.6	17.2	15.8
Model GRAHL-144†* Watts: 4170 Shipping Weight: 48 lbs. (22 kg)							
Voltage	120	120/208	120/240	100	100/200	220	240
Amps	---	22.6	20.4	44.7	24.5	19.0	17.4

SPECIFICATIONS

GRA-XXD MODELS- ELECTRICAL RATING CHART

Model GRA-18D		Watts: 500		Shipping Weight: 14 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	4.2	2.4	2.1	5.0	2.5	2.3	2.1
Model GRA-24D		Watts: 700		Shipping Weight: 16 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	5.8	3.4	2.9	7.0	3.5	3.2	2.9
Model GRA-30D		Watts: 900		Shipping Weight: 18 lbs. (8 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	7.5	4.3	3.8	9.0	4.5	4.1	3.8
Model GRA-36D■		Watts: 1150		Shipping Weight: 21 lbs. (10 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	9.6	5.5	4.8	11.5	5.8	5.2	4.8
Model GRA-42D■		Watts: 1350		Shipping Weight: 24 lbs. (11 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	11.3	6.5	5.6	13.5	6.8	6.1	5.6
Model GRA-48D■		Watts: 1600		Shipping Weight: 27 lbs. (12 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	13.3	7.7	6.7	16.0	8.0	7.3	6.7
Model GRA-54D■		Watts: 1850		Shipping Weight: 30 lbs. (14 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	15.4	8.9	7.7	18.5	9.3	8.4	7.7
Model GRA-60D■		Watts: 2100		Shipping Weight: 34 lbs. (15 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	17.5	10.1	8.8	21.0	10.5	9.5	8.8
Model GRA-66D■		Watts: 2320		Shipping Weight: 37 lbs. (17 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	19.3	11.2	9.7	23.2	11.6	10.5	9.7
Model GRA-72D■		Watts: 2550		Shipping Weight: 41 lbs. (19 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	21.3	12.3	10.6	25.5	12.8	11.6	10.6
Model GRA-84D†■		Watts: 3000		Shipping Weight: 44 lbs. (20 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	25.0	14.4	12.5	30.0	15.0	13.6	12.5
Model GRA-96D†■		Watts: 3450		Shipping Weight: 52 lbs. (24 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	28.8	16.6	14.4	34.5	17.3	15.7	14.4
Model GRA-108D†■		Watts: 3700		Shipping Weight: 59 lbs. (27 kg)			
Voltage	120	208	240	100	200	220	240
Amps	30.8	17.8	15.4	37.0	18.5	16.8	15.4
Model GRA-120D†*		Watts: 4200		Shipping Weight: 66 lbs. (30 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	20.2	17.5	---	21.0	19.1	17.5
Model GRA-132D†*		Watts: 4640		Shipping Weight: 73 lbs. (33 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	22.3	19.3	---	23.2	21.1	19.3
Model GRA-144D†*		Watts: 5100		Shipping Weight: 80 lbs. (36 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	24.5	21.3	---	25.5	23.2	21.3

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- 100 and 120 volt models may require additional switches, consult factory for applications.

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GRAH-XXD MODELS- ELECTRICAL RATING CHART

Model GRAH-18D		Watts: 700		Shipping Weight: 14 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	5.8	3.4	2.9	7.0	3.5	3.2	2.9
Model GRAH-24D		Watts: 1000		Shipping Weight: 16 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	8.3	4.8	4.2	10.0	5.0	4.5	4.2
Model GRAH-30D		Watts: 1320		Shipping Weight: 18 lbs. (8 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	11.0	6.3	5.5	13.2	6.6	6.0	5.5
Model GRAH-36D■		Watts: 1600		Shipping Weight: 21 lbs. (10 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	13.3	7.7	6.7	16.0	8.0	7.3	6.7
Model GRAH-42D■		Watts: 1900		Shipping Weight: 24 lbs. (11 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	15.8	9.1	7.9	19.0	9.5	8.6	7.9
Model GRAH-48D■		Watts: 2200		Shipping Weight: 27 lbs. (12 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	18.3	10.6	9.2	22.0	11.0	10.0	9.2
Model GRAH-54D■		Watts: 2500		Shipping Weight: 30 lbs. (14 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	20.8	12.0	10.4	25.0	12.5	11.4	10.4
Model GRAH-60D■		Watts: 2800		Shipping Weight: 34 lbs. (15 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	23.3	13.5	11.7	28.0	14.0	12.7	11.7
Model GRAH-66D■		Watts: 3120		Shipping Weight: 37 lbs. (17 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	26.0	15.0	13.0	31.2	15.6	14.2	13.0
Model GRAH-72D■		Watts: 3450		Shipping Weight: 41 lbs. (19 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	28.8	16.6	14.4	34.5	17.3	15.7	14.4
Model GRAH-84D†■		Watts: 4100		Shipping Weight: 44 lbs. (20 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	34.2	19.7	17.1	41.0	20.5	18.6	17.1
Model GRAH-96D†■		Watts: 4800		Shipping Weight: 52 lbs. (24 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	40.0	23.1	20.0	48.0	24.0	21.8	20.0
Model GRAH-108D†■		Watts: 5000		Shipping Weight: 59 lbs. (27 kg)			
Voltage	120	208	240	100	200	220	240
Amps	41.7	24.0	20.8	50.0	25.0	22.7	20.8
Model GRAH-120D†*		Watts: 5600		Shipping Weight: 66 lbs. (30 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	26.9	23.3	---	28.0	25.5	23.3
Model GRAH-132D†*		Watts: 6240		Shipping Weight: 73 lbs. (33 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	30.0	26.0	---	31.2	28.4	26.0
Model GRAH-144D†*		Watts: 6900		Shipping Weight: 80 lbs. (36 kg)			
Voltage	120	208	240	100	200	220	240
Amps	---	33.2	28.8	---	34.5	31.4	28.8

SPECIFICATIONS

GRAL-XXD MODELS- ELECTRICAL RATING CHART

Model GRAL-18D		Watts: 620	Shipping Weight: 14 lbs. (6 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	5.2	3.4	3.1	6.2	3.7	2.8	2.6
Model GRAL-24D		Watts: 820	Shipping Weight: 16 lbs. (7 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	6.8	4.4	3.9	8.2	4.7	3.7	3.4
Model GRAL-30D		Watts: 1020	Shipping Weight: 19 lbs. (9 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	8.5	5.3	4.8	10.2	5.7	4.6	4.3
Model GRAL-36D		Watts: 1330	Shipping Weight: 22 lbs. (10 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	11.1	7.0	6.3	13.3	7.6	6.0	5.5
Model GRAL-42D		Watts: 1530	Shipping Weight: 25 lbs. (11 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	12.8	8.0	7.1	15.3	8.6	7.0	6.4
Model GRAL-48D■		Watts: 1840	Shipping Weight: 29 lbs. (13 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	15.3	9.7	8.7	18.4	10.4	8.4	7.7
Model GRAL-54D■		Watts: 2090	Shipping Weight: 33 lbs. (15 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	17.4	10.9	9.7	20.9	11.7	9.5	8.7
Model GRAL-60D■		Watts: 2400	Shipping Weight: 37 lbs. (17 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	20.0	12.6	11.3	24.0	12.9	10.9	10.0
Model GRAL-66D■		Watts: 2620	Shipping Weight: 40 lbs. (18 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	21.8	13.7	12.2	26.2	14.6	11.9	10.9
Model GRAL-72D■		Watts: 2910	Shipping Weight: 42 lbs. (19 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	24.3	15.3	13.6	29.1	16.4	13.2	12.1
Model GRAL-84D■		Watts: 3420	Shipping Weight: 47 lbs. (21 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	28.5	17.9	16.0	34.2	19.2	15.5	14.3
Model GRAL-96D■		Watts: 3930	Shipping Weight: 56 lbs. (25 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	32.8	20.6	18.4	39.3	22.1	15.7	14.4
Model GRAL-108D†■		Watts: 4240	Shipping Weight: 64 lbs. (29 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	35.3	22.3	19.9	42.4	23.9	17.9	16.4
Model GRAL-120D†*		Watts: 4800	Shipping Weight: 72 lbs. (33 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	--	25.2	22.5	---	27.0	21.8	20.0
Model GRAL-132D†*		Watts: 5300	Shipping Weight: 79 lbs. (36 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	---	27.8	24.8	---	29.8	24.1	22.1
Model GRAL-144D†*		Watts: 5820	Shipping Weight: 86 lbs. (39 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	---	30.5	27.3	---	32.7	26.5	24.3

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■ 100 and 120 volt models may require additional switches, consult factory for applications.

† Glo-Ray models 108" through 144" and 100 and 120 volt models of GRAL-84 and GRAL-96 contain tandem (end-to-end) elements that may be individually controlled.

* Not available in 100 or 120 volts.

◆ CE approved units for 220-230 volt utilize a 220 volt heating system; 230-240 CE units utilize a 240 volt heating system.

NOTE: GRAL & GRAHL Models that have multiple voltages listed, such as 120/208, 120/240 or 100/200, have multiple circuits. For example a 120/208 volt unit utilizes 120 volts for light circuit and 208 volts for the heat circuit(s). Consult Electrical Diagram supplied with the unit for specific information.

⚠ CAUTION - Strip Heaters with incandescent lights that require a circuit breaker larger than 20 amps must have a separate circuit breaker for the incandescent lights that is 20 amps or less.

GRAHL-XXD MODELS- ELECTRICAL RATING CHART

Model GRAHL-18D		Watts: 820	Shipping Weight: 14 lbs. (6 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	6.8	4.4	3.9	8.2	4.7	3.7	3.4
Model GRAHL-24D		Watts: 1120	Shipping Weight: 16 lbs. (7 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	9.3	5.8	5.2	11.2	6.2	5.1	4.7
Model GRAHL-30D		Watts: 1440	Shipping Weight: 19 lbs. (9 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	12.0	7.3	6.5	14.4	7.8	6.5	6.0
Model GRAHL-36D■		Watts: 1780	Shipping Weight: 22 lbs. (10 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	14.8	9.2	8.2	17.8	9.8	8.1	7.4
Model GRAHL-42D■		Watts: 2080	Shipping Weight: 25 lbs. (11 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	17.3	10.6	9.4	20.8	11.3	9.5	8.7
Model GRAHL-48D■		Watts: 2440	Shipping Weight: 29 lbs. (13 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	20.3	12.6	11.2	24.4	13.4	11.1	10.2
Model GRAHL-54D■		Watts: 2740	Shipping Weight: 33 lbs. (15 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	22.8	14.0	12.4	27.4	14.9	12.5	11.4
Model GRAHL-60D■		Watts: 3100	Shipping Weight: 37 lbs. (17 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	25.8	16.0	14.2	31.0	17.0	14.1	12.9
Model GRAHL-66D■		Watts: 3420	Shipping Weight: 39 lbs. (18 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	28.5	17.5	15.5	34.2	18.6	15.5	14.3
Model GRAHL-72D■		Watts: 3810	Shipping Weight: 42 lbs. (19 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	31.8	19.6	17.4	38.1	20.9	17.3	15.9
Model GRAHL-84D†■		Watts: 4520	Shipping Weight: 47 lbs. (21 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	37.7	23.2	20.6	45.2	24.7	20.5	18.8
Model GRAHL-96D†■		Watts: 5280	Shipping Weight: 56 lbs. (25 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	44.0	27.1	24.0	52.8	28.8	24.0	22.0
Model GRAHL-108D†■		Watts: 5540	Shipping Weight: 64 lbs. (29 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	46.2	28.5	25.3	55.4	30.4	25.2	23.1
Model GRAHL-120D†*		Watts: 6200	Shipping Weight: 72 lbs. (33 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	---	31.9	28.3	---	34.0	28.2	25.8
Model GRAHL-132D†*		Watts: 6840	Shipping Weight: 79 lbs. (36 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	---	35.5	31.5	---	37.8	31.4	28.8
Model GRAHL-144D†*		Watts: 7620	Shipping Weight: 86 lbs. (39 kg)				
Voltage	120	120/208	120/240	100	100/200	220◆	240◆
Amps	---	39.2	34.8	---	41.7	34.6	31.8

SPECIFICATIONS

GRN MODELS-ELECTRICAL RATING CHART

Model GRN-18		Watts: 250		Shipping Weight: 6 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.1	1.2	1.0	2.5	1.3	1.1	1.0
Model GRN-24		Watts: 350		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.9	1.7	1.5	3.5	1.8	1.6	1.5
Model GRN-30		Watts: 450		Shipping Weight: 8 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	3.8	2.2	1.9	4.5	2.3	2.1	1.9
Model GRN-36		Watts: 575		Shipping Weight: 9 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	4.8	2.8	2.4	5.8	2.9	2.6	2.1
Model GRN-42		Watts: 675		Shipping Weight: 10 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	5.6	3.2	2.8	6.8	3.4	3.1	2.8
Model GRN-48		Watts: 800		Shipping Weight: 11 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	6.7	3.8	3.3	8.0	4.0	3.6	3.3
Model GRN-54		Watts: 925		Shipping Weight: 13 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	7.7	4.4	3.9	9.3	4.6	4.2	3.9
Model GRN-60		Watts: 1050		Shipping Weight: 14 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	8.8	5.5	4.4	10.5	5.3	4.8	4.4
Model GRN-66		Watts: 1160		Shipping Weight: 16 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	9.7	5.6	4.8	11.6	5.8	5.3	4.8
Model GRN-72		Watts: 1275		Shipping Weight: 17 lbs. (8 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	10.6	6.1	5.3	12.8	6.4	5.8	5.3

GRNH MODELS-ELECTRICAL RATING CHART

Model GRNH-18		Watts: 350		Shipping Weight: 6 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	2.9	1.7	1.5	3.5	1.8	1.6	1.5
Model GRNH-24		Watts: 500		Shipping Weight: 7 lbs. (3 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	4.2	2.4	2.1	5.0	2.5	2.3	2.1
Model GRNH-30		Watts: 660		Shipping Weight: 8 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	5.5	3.2	2.8	6.6	3.3	3.0	2.8
Model GRNH-36		Watts: 800		Shipping Weight: 9 lbs. (4 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	6.7	3.8	3.3	8.0	4.0	3.6	3.3
Model GRNH-42		Watts: 950		Shipping Weight: 10 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	7.9	4.6	4.0	9.5	4.8	4.3	4.0
Model GRNH-48		Watts: 1100		Shipping Weight: 11 lbs. (5 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	9.2	5.3	4.6	11.0	5.5	5.0	4.6
Model GRNH-54		Watts: 1250		Shipping Weight: 13 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	10.4	6.0	5.2	12.5	6.3	5.7	5.2
Model GRNH-60		Watts: 1400		Shipping Weight: 14 lbs. (6 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	11.7	6.7	5.8	14.0	7.0	6.4	5.8
Model GRNH-66*		Watts: 1560		Shipping Weight: 16 lbs. (7 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	13.0	7.5	6.5	15.6	7.8	7.1	6.5
Model GRNH-72*		Watts: 1725		Shipping Weight: 17 lbs. (8 kg)			
Voltage	120	208	240	100	200	220◆	240◆
Amps	14.4	8.3	7.2	17.3	8.6	7.8	7.2

The electrical information in the shaded area pertains to **Export Models** only.

* 120 volt models not available for use with remote infinite switches.

◆CE approved units for 220-230 volt utilize a 220 volt heating system; 230-240 CE units utilize a 240 volt heating system.

SPECIFICATIONS

DIMENSIONS

Models	Width (A)	Depth (B)	Depth (C)	Height (D)
GR & GRH	24" - 96" (610 - 2438 mm)	6" (152 mm)	23" (584 mm)	2-1/2" (64 mm)
GRA & GRAH	18" - 144" (457 - 3658 mm)	6" (152 mm)	23" (584 mm)	2-1/2" (64 mm)

NOTE: Units shown with optional 9-3/8" (187 mm) breath protectors and mounting flanges. Not available for retro-fit or on GR and GRH models.

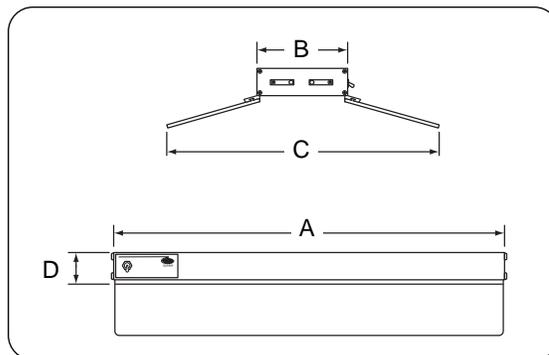


Figure 6. Dimensions—GR, GRH, GRA & GRAH Models

Models	Width (A)	Depth (B)	Depth (C)	Height (D)
GRAL & GRAHL	18" - 144" (457 - 3658 mm)	9" (229 mm)	26" (660 mm)	2-1/2" (64 mm)

NOTE: Units shown with optional 9-3/8" (187 mm) breath protectors and mounting flanges. Not available for retro-fit.

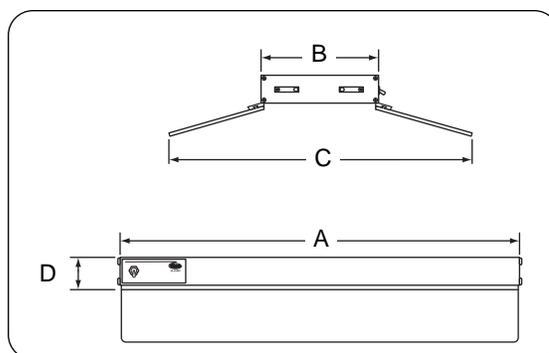


Figure 7. Dimensions—GRAL & GRAHL Models

Models	Width (A)	Depth* (B)	Depth* (C)	Height (D)
GRA-XXD & GRAH-XXD	18" - 144" (457 - 3658 mm)	15" (381 mm)	32" (813 mm)	2-1/2" (64 mm)
GRAL-XXD & GRAHL-XXD	18" - 144" (457 - 3658 mm)	15" (381 mm)	32" (813 mm)	2-1/2" (64 mm)

NOTE: Units shown with optional 9-3/8" (187 mm) breath protectors and mounting flanges. Not available for retro-fit.

* Dimension shown is standard with 3" (76 mm) spacer; when used with 6" (152 mm) spacer add 3" (76 mm).

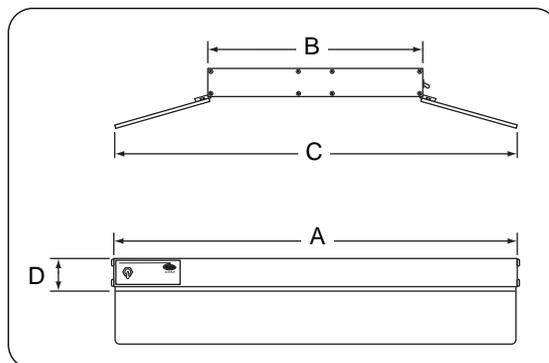


Figure 8. Dimensions—GRA-D, GRAH-D, GRAL-D & GRAHL-D Models

Models	Width (A)	Depth (B)	Height (C)
GRN & GRNH	18" - 72" (457 - 1829 mm)	4" (102 mm)	2" (51 mm)

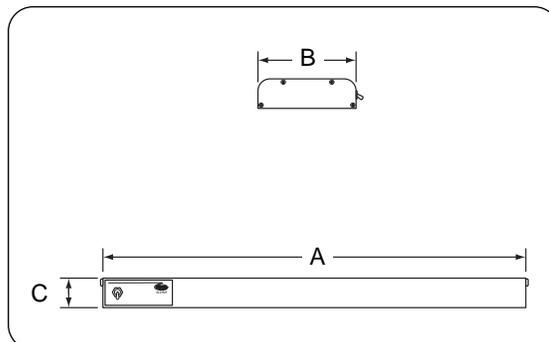


Figure 9. Dimensions—GRN & GRNH Models

INSTALLATION

UNPACKING

1. Remove the unit from the carton and remove all packing materials.
2. Remove information packet. **To prevent delay in obtaining warranty coverage, fill out and mail in warranty card.**

NOTE: If unit is equipped with optional equipment, see ACCESSORIES section at back of this manual.

LOCATION

WARNING

For safe and proper operation, the unit must be located the correct distance from combustible walls and materials. If safe distances are not maintained, discoloration or combustion could occur. Refer to specific installation and mounting information in this manual for proper clearances.

WARNING

To prevent any injury or damage to the unit do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

WARNING

To prevent combustion or damage to materials do not install standard wattage strip heater (GR, GRA, GRN, GRAL Series) less than 10" (254 mm) above a non-metallic surface. Do not install high wattage strip heater (GRH, GRAH, GRNH, GRAHL Series) less than 13-1/2" (343 mm) above a non-metallic surface. Do not install dual strip heaters (GRA-XXD, GRAH-XXD, GRAL-XXD & GRAHL-XXD Series) above non-metallic surface. Install all non-dual strip heaters so there is a minimum distance of 3" (76 mm) from a non-metallic wall or adjacent surface.

CAUTION

To prevent unit failure do not add a decorative soffit to hide a pass-through mounted Glo-Ray Strip Heater.

WARNING

All electrical connections must be in accordance with local electrical codes and any other applicable codes. Connections should be made by a qualified, licensed electrician.

NOTICE

Heat damage to countertop material such as Corian® and similar products (other than stainless steel) is not covered under the Hatco warranty. Contact the manufacturer of the base material for temperature limits and application information before installing the unit.

NOTE: Contact the countertop manufacturer of the base material for application information and surface temperature limits before installing the unit.

Dual Mounting

Dual models ordered from the factory are shipped with either a 3" (76 mm) or 6" (152 mm) spacer.

NOTE: When mounting units side-by-side, a space not less than 3" (76 mm) must be maintained between units.

NOTE: Dual models are only available with Glo-Ray aluminum housings.

CAUTION

Installation of two or more single units with less than 3" (76 mm) between housings may result in premature failure of component parts.

When proper distances are maintained, hot foods will be held at ideal serving temperatures without cooking the foods beyond the point of excellence. See Figures 10-12 for strip heater spacing requirements.

INSTALLATION

Under Shelf Mounting

When mounting unit under a shelf, use adjustable angle brackets to assure proper spacing. Remote control enclosures are recommended to keep switches out of the heat zone.

⚠ CAUTION

To assure safe and proper operation refer to Installation Clearance Requirements listed in this manual.

Pass-Through

If pass-through area is 12" to 16" (305 to 406 mm) deep, the standard wattage or high wattage single unit can be used. For a 20" to 24" (508 to 610 mm) deep pass-through area, a dual unit in either standard or high wattage is recommended. Dual units must always have a minimum spacing of 3" (76 mm) between heaters.

T-Legs or C-Legs

Do not mount units longer than 72" (1829 mm) on T-legs or C-legs.

Over Steam Table

When mounting over steam table, a remote control switch enclosure must be installed.

⚠ CAUTION

Unit is not moisture proof. Do not mount over steam table unless a remote control switch is installed. Spacing of at least 16" (406 mm) is required for all units over a steam table.

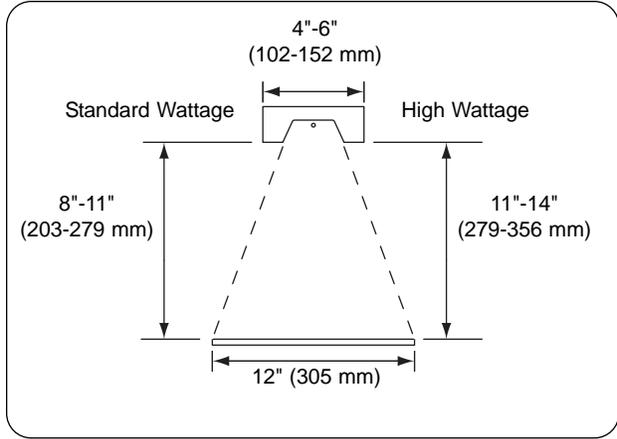


Figure 10. Recommended Element Height for the GR, GRA, GRH, GRN, GRAH, GRAL, GRNH, and GRAHL in all lengths (excluding dual models).

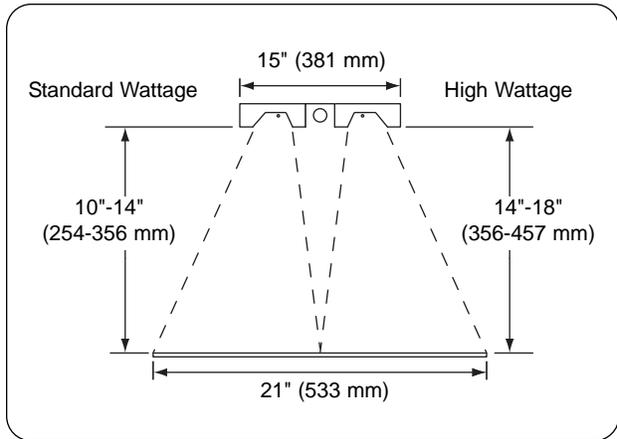


Figure 11. Recommended Element Height for the GRA-D, GRAH-D, GRAL-D & GRAHL-D Models with a 3" (76 mm) spacer in all lengths.

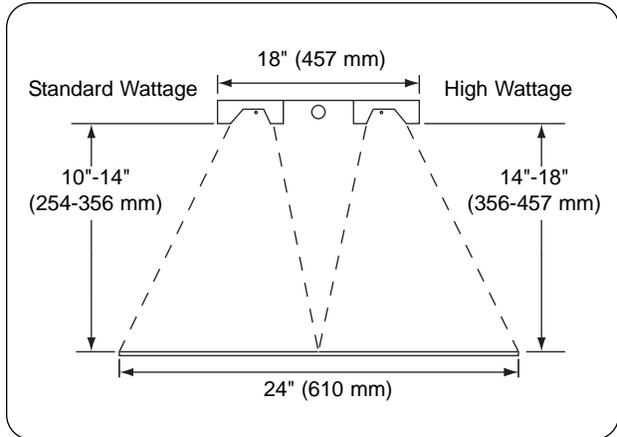


Figure 12. Recommended Element Height for the GRA-D, GRAH-D, GRAL-D & GRAHL-D Models with a 6" (152 mm) spacer in all lengths.

INSTALLATION

ASSEMBLY

Glo-Ray® Strip Heaters are shipped with most components pre-assembled. Dual units are available with a required 3" (76 mm) or 6" (152 mm) spacer pre-assembled at the factory.

Optional breath protectors, mounting equipment and remote control enclosures must be installed on location.

PORTABLE SURFACE MOUNT

T-Leg Stand

NOTE: T-Leg not to be used with dual Glo-Ray units.

NOTE: T-Leg stands available in 10" (254 mm), 13-1/2" (343 mm), 16" (406 mm), and 18" (457 mm).

1. Position the unit upside-down on a flat surface.
2. Remove the two screws and mounting tabs from each end of the unit.
3. Position the mounting bracket on the underside of the unit and remove the two screws on the unit that match up with the holes on the mounting bracket.
4. Secure the mounting bracket to the unit with the previously removed screws.
5. Align two mounting holes on side of T-Leg with two holes on end of unit and attach leg with screws supplied.
6. Align the mounting hole on the T-Leg bracket with the hole on the mounting bracket and secure with a screw. (See Figure 13.)

C-Leg Stand

NOTE: C-Legs are not to be used with dual Glo-Ray models.

NOTE: Two types of C-Legs are available for mounting. CL-Low is for standard wattage Glo-Ray models up to 6 ft. (1829 mm) in length only. CL-High is for high wattage Glo-Ray models up to 6 ft. (1829 mm) in length only.

1. Position the unit upside-down on a flat surface.
2. Remove the two screws and mounting bracket from each end of the unit.
3. Attach C-Leg to each end of unit using original screws. (See Figure 14.) Tighten screws securely.

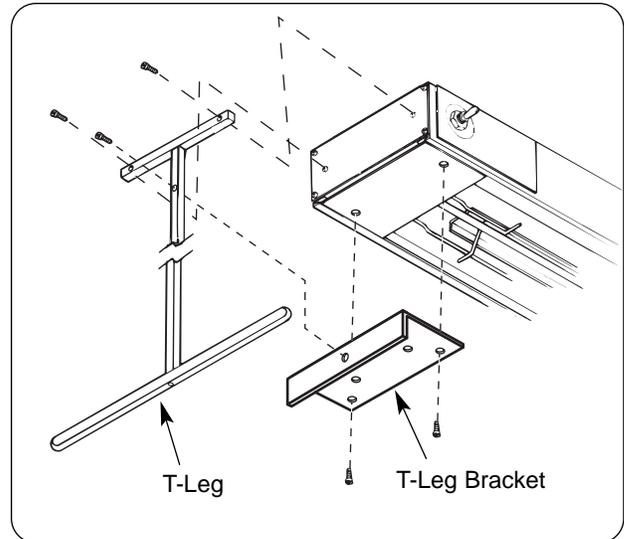


Figure 13. T-Leg Stand End Mounting

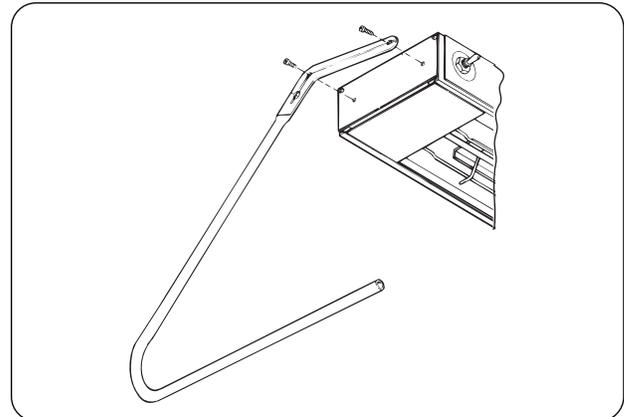


Figure 14. C-Leg Stand

INSTALLATION

PERMANENT SURFACE MOUNT

Tubular Stand Mounting

Tubular stand mounting permanently attaches the unit to a countertop or serving table. All wiring may be concealed within the tubular stand.

Tubular stands are available in non-adjustable heights from 10"-16" (254-406 mm) or in adjustable heights from 10"-14" (254-356 mm).

NOTE: If wiring is to be concealed, a 3/4" (19 mm) diameter hole must be provided in the mounting surface, centered under the leg flange nearest the electrical wiring hookup.

1. Position the unit upside-down on a flat surface.
2. Units for this application are supplied with the conduit attached. Conduit should not be removed.
3. If applicable, route flexible conduit through the leg opening. Pull the leg up to the underside of the warmer. (See Figure 15.)
4. Secure legs to warmer using screws supplied.
5. If applicable, route the flexible conduit through opening in countertop.
6. Secure the legs to the mounting surface.

NOTE: The adjustable legs can be raised or lowered by turning the locking set screw counterclockwise one turn with an allen wrench, and then raising or lowering the unit to the desired height and retightening the screw. Do not loosen the screw more than necessary.

NOTE: Two pairs of legs will be needed for mounting dual units.

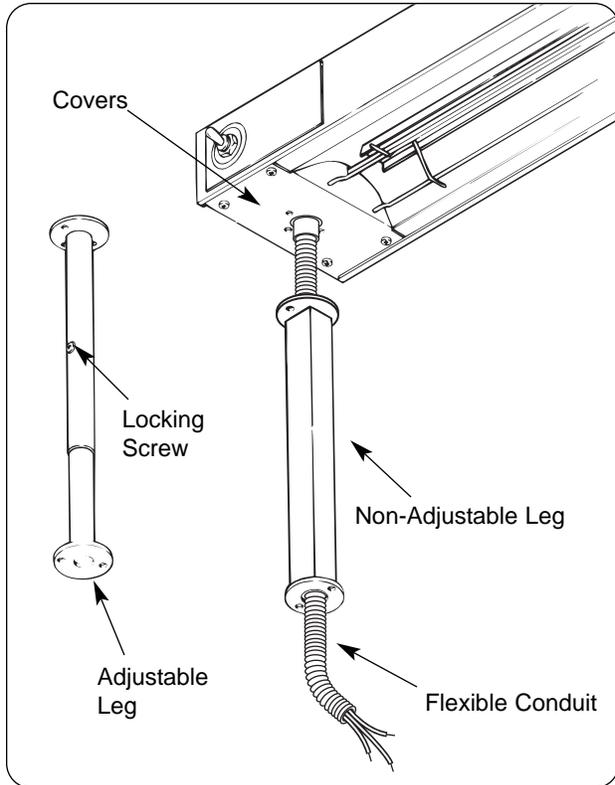


Figure 15. Tubular Stand Mounting

INSTALLATION

UNDERSHELF MOUNTING

Pass Thru

NOTE: When mounting the unit under a shelf, it is recommended to use a remote switch enclosure.

If the shelf has a rolled or flanged edge, use the optional adjustable angle brackets to mount the unit below the lowest part of the rolled or flanged edge. (See Figure 16.)

CAUTION

To assure safe and proper operation refer to Installation Clearance Requirements listed in this manual.

Adjustable Angle Bracket Mounting

NOTE: When mounting the unit under a shelf it is recommended to use a remote control enclosure.

NOTE: Multiple brackets will be needed for dual units.

1. Position the Glo-Ray unit on a flat surface with the heating element facing down.
2. Remove the two screws and mounting tabs from each end of the Glo-Ray unit.
3. Remove the two upper end plate screws.
4. Align the adjustable angle bracket to the end plate mounting holes of the Glo-Ray unit. Secure angle bracket with previously removed screws.
5. Fasten angle bracket to the underside of the shelf using appropriate fasteners. (Not supplied by Hatco.)

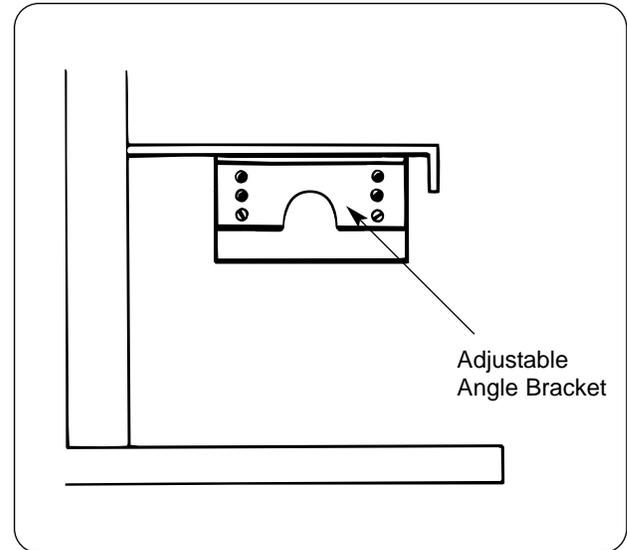


Figure 16. Adjustable Angle Bracket Mounting

INSTALLATION

Clearance Requirements for Combustible Surroundings

Models	(A)	(B)	(C)
GRA & GRAL	10" (254 mm)	3" (76 mm)	1" (25 mm)
GRAH & GRAHL	13-1/2" (343 mm)	3" (76 mm)	1" (25 mm)

NOTE: Dual Strip Heaters are not to be installed in combustible surroundings.

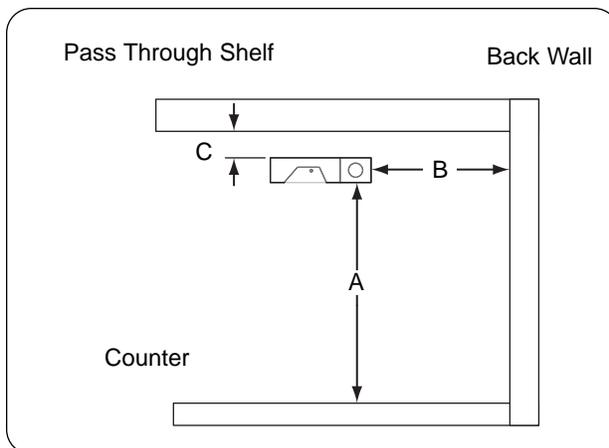


Figure 17. Combustible Spacing Requirements

Clearance Requirements for Non-Combustible Surroundings

Corded Units with Built-In Switches

Models	(A)	(B)†	(C)
GRA & GRAL	10" (254 mm)	N/A	3" (76 mm)
GRAH & GRAHL	11" (279 mm)	N/A	3" (76 mm)

Hardwired Units with Built-In Switches

Models	(A)	(B)†	(C)
GRA & GRAL	8" (203 mm)	N/A	1" (25 mm)
GRAH & GRAHL with Infinite Heat Control Switch or Indicator Light	10" (254 mm)	N/A	1" (25 mm)
GRAH & GRAHL with On/Off Toggle Switch	8" (203 mm)	N/A	1" (25 mm)

Hardwired Units with Remote Switches

Models	(A)	(B)	(C)
GRA & GRAL	8" (203 mm)	0" (0 mm)	0" (0 mm)
GRAH & GRAHL	8" (203 mm)	0" (0 mm)	0" (0 mm)

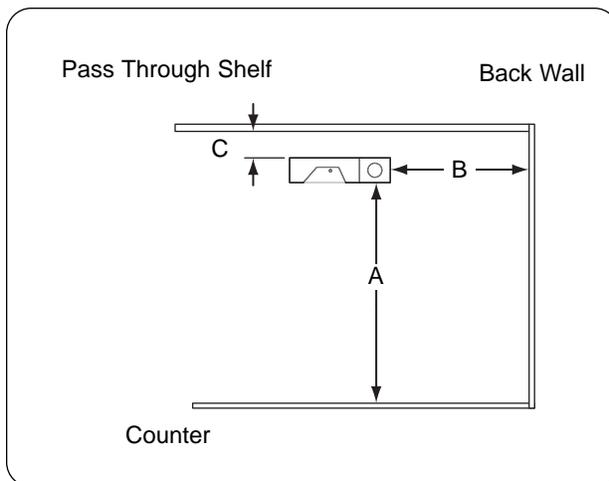


Figure 18. Non-Combustible Spacing Requirements

Dual Units with Built-In Switches

Models	(A)	(B)†	(C)
GRA-XXD GRAH-XXD GRAL-XXD GRAHL-XXD	10" (254 mm)	N/A	1" (25 mm)

Dual Units with Remote Switches

Models	(A)	(B)	(C)
GRA-XXD GRAH-XXD GRAL-XXD GRAHL-XXD	8" (203 mm)	3" (76 mm)	0" (0 mm)

† Must be a pass-through application, not allowed with back wall installation.

INSTALLATION

CEILING MOUNTING

Chain Mounting

WARNING

To avoid any injury or damage to the unit when using chains for installation, the chains must have sufficient strength and be securely fastened, or the unit could become loose or fall.

Chain supplied by Hatco is constructed of sufficient strength to securely hold the weight of the unit only when properly mounted.

1. Securely fasten the chain to the surface above the desired area. Be sure chain is located so the unit will be suspended at a safe and proper distance from walls, counter and food.
2. Loosen but do not remove the screws securing the mounting tabs on each end of the unit. Extend the tabs, then tighten the screws securely. (See Figure 19.)
3. Attach a short piece of connecting chain to each pair of mounting tabs. (See Figure 19.)
4. Attach overhead chain to the connecting chain between the two mounting tabs. Repeat for other end of unit. (See Figure 19.)

NOTE: Additional chain will be needed for dual Glo-Ray units.

Chain Mounting with “S” Hook

Units supplied from Hatco with power cord attached come with the connecting chain and “S” hook already attached to the mounting tabs.

1. Securely fasten the chain to the surface above the desired area. Be sure chain is located so the unit will be suspended at a safe and proper distance from walls, counter and food.
2. Attach both “S” hooks to the overhead chains and ensure the unit is level. (See Figure 19.)

BREATH PROTECTOR (Optional)

1. Remove protective paper from the acrylic surfaces.
2. Position the acrylic breath protector into the channel on the warmer with the mounting holes aligned. (See Figure 20.)
3. Secure the breath protector using the weld screws and acorn nuts provided. Tighten weld screws until snug. Do not overtighten.

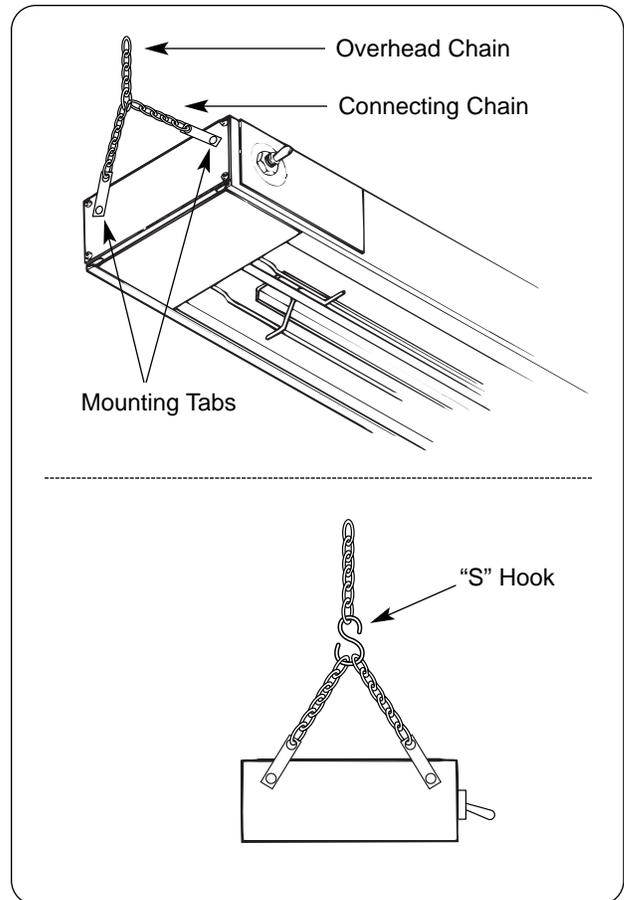


Figure 19. Mounting with Chains

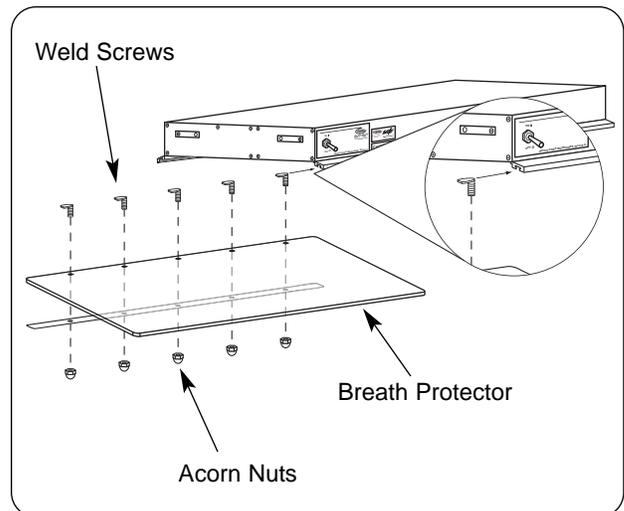


Figure 20. Installing Breath Protectors

INSTALLATION

ELECTRICAL WIRING HOOK-UP

Refer to the *ELECTRICAL RATING CHARTS* for specific information.

⚠ WARNING

All electrical connections must be in accordance with local electrical codes and any other applicable codes. Connections should be made by a qualified, licensed electrician.

⚠ CAUTION

Strip Heaters with incandescent lights that require a circuit breaker larger than 20 amps must have a separate circuit breaker for the incandescent lights that is 20 amps or less.

NOTICE

To prevent premature failure to components the Remote Control Box (RMB) must be installed outside the strip heater heat zone.

Power Supply

Install supply wire and connectors suitable for at least 90°C (194°F).

- Use a minimum of No. 14 AWG copper wire for individual circuits up to 15 amps.
- Use a minimum of No. 12 AWG copper wire for individual circuits 15 to 20 amps.
- Use a minimum of No. 10 AWG copper wire for individual circuits 20 to 25 amps.

NOTE: Refer to wiring diagram supplied with unit and specifications label attached to unit for specific electrical information.

Conduit Connection

Units supplied with flexible conduit with right angle fitting attached come equipped with all internal connections completed at the factory. Attach proper power supply leads to the high temperature lead wires supplied. (See Figure 21.)

NOTE: Refer to wiring diagram supplied with unit and specification label attached to warmer for specific electrical information.

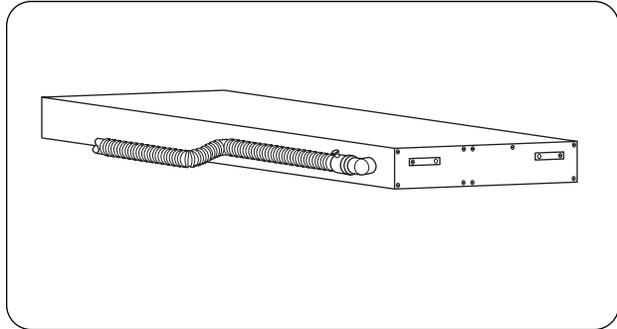


Figure 21. Conduit Connections

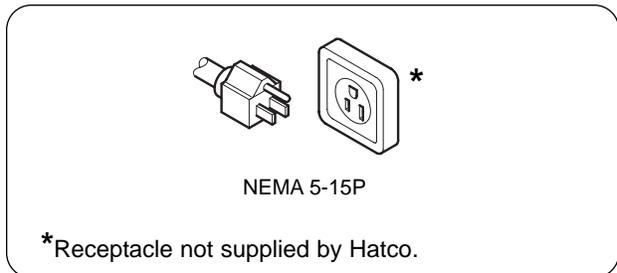


Figure 22. Plug Configuration

Power Cord and Plug Models

Units can be supplied with a power cord and plug attached if the unit meets the following guidelines:

- 120 Volt Only
- 72" (1829 mm) or less in length
- Portable mounting using C-Legs or T-Legs supplied by Hatco or Stationary mounting using "S" hooks and mounting chain supplied by Hatco.

Plugs are only supplied according to the application. (See Figure 22.)

⚠ WARNING

Units equipped with a cord and plug supplied by Hatco must be plugged into a properly grounded electrical outlet of the correct voltage, size and plug configuration. If the plug and receptacle do not match, contact a qualified electrician to determine the proper voltage and size and install the proper electrical outlet.

NOTE: Power cords and plugs cannot be supplied to units rated for 208, 220, 240, 100/200, 120/208 or 120/240 Volt.

NOTE: Units intended for fixed or permanent mounting cannot have a power cord attached and must be hard wired according to local and national electrical codes.

INSTALLATION

Remote Mounted Control Box (RMB)

Hatco Remote Mounted Control Boxes include switches, wire leads and/or indicator lights and are ready for installation.

NOTICE

To prevent premature failure to components the Remote Control Box (RMB) must be installed outside the foodwarmer heat zone.

Control Switches

When two or more units are mounted where the heat from one housing tends to raise the temperature of another, the control switches should be installed in a remote control enclosure. Units in a multiple installation should use remote control enclosures.

NOTE: Remote control enclosures are available in five sizes. All models are built in accordance with U.L. standards to accommodate switches, indicator lights and wiring, ready for installation. See ACCESSORIES at the back of this manual.

OPERATION

⚠ CAUTION

Some exterior surfaces on the unit will get hot. Use caution when touching these areas to avoid injury.

⚠ WARNING

The unit is not waterproof. DO NOT submerge in water. Do not operate if it has been submerged in water.

⚠ CAUTION

Standard and approved manufacturing oils will smoke up to 30 minutes during initial start-up. This is a temporary condition. To assure safe operation, operate unit without food product until smoke dissipates.

Heating Element(s)

Heating element(s) are controlled by an ON/OFF toggle switch(es) or an optional infinite switch(es). To turn each element on, either flip the toggle switch to the ON position or turn the adjustable switch to the desired setting.

Allow 15-20 minutes to reach operating temperature.

NOTE: Remote control enclosures are recommended for all Glo-Ray units.

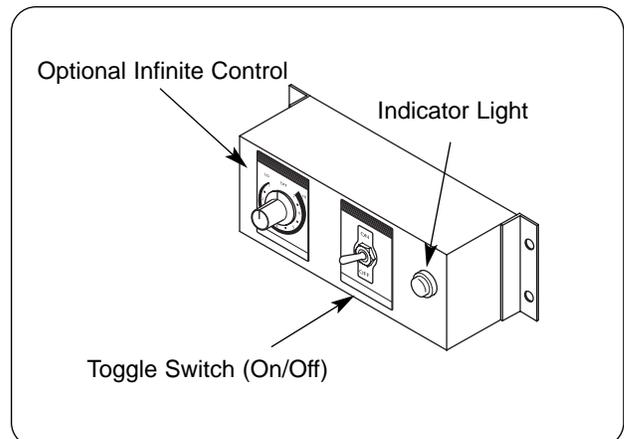


Figure 23. Remote Control Box (RMB)

Lights

On models equipped with lights, flip the toggle switch to the ON position to energize the lights.

NOTE: Dual Glo-Ray units do not use a built-in infinite switch.

MAINTENANCE

CLEANING

Hatco Glo-Ray® Strip Heater units are designed for maximum durability and performance, with minimum maintenance.

WARNING

To avoid any injury or damage to the strip heater turn the power OFF at the disconnect switch/circuit breaker and allow to cool before performing any maintenance.

To preserve the finish of the Glo-Ray Strip Heater, it is recommended that the surfaces be wiped daily with a clean, soft, damp cloth. Stubborn stains maybe be removed with a good stainless steel cleaner or a non-abrasive cleaner. Hard to reach areas should be cleaned with a small brush and mild soap.

NOTICE

Use only non-abrasive cleaners. Abrasive cleaners could scratch the finish of your unit marring its appearance and making it susceptible to soil accumulation.

DISPLAY LIGHT BULB REPLACEMENT

The display light is an incandescent bulb which illuminates the warming area. This bulb has a special coating to guard against injury and food contamination in the event of breakage.

To replace a bulb, disconnect the power supply and wait until the unit has cooled. Display lamps have a threaded base. Unscrew the bulb from the unit and replace it with a new specially coated incandescent bulb. Hatco shatter-resistant bulbs meet NSF standards for food holding and display areas.

NOTE: Hatco shatter-resistant light bulbs meet NSF standards for food holding and display areas. For 120, 120/208, 120/240 and 100/200 Volt applications, use Hatco part number 02.30.043.00. For 200, 220, 230 and 240 Volt units use Hatco part number 02.30.058.00.

WARNING

Only light bulbs which meet or exceed NSF standards, specially designed for food holding areas may be used. Breakage of light bulbs not specially coated could result in personal injury and/or food contamination.

WARNING

If service is required on this unit, contact your Authorized Hatco Service Agent, or contact the Hatco Service Department at 800-558-0607 or 414-671-6350; fax 800-690-2966 or International fax 414-671-3976.

WARNING

This product has no “user” serviceable parts. To avoid damage to the unit or injury to personnel, use only Authorized Hatco Service Agents and Genuine Hatco Replacement Parts when service is required.

WARNING

Genuine Hatco Replacement Parts are specified to operate safely in the environments in which they are used. Some aftermarket or generic replacement parts do not have the characteristics that will allow them to operate safely in Hatco equipment. It is essential to use Hatco Replacement Parts when repairing Hatco equipment. Failure to use Hatco Replacement Parts may subject operators of the equipment to hazardous electrical voltage, resulting in electrical shock or burn.

ACCESSORIES

REMOTE CONTROL ENCLOSURES

Hatco Remote Control Enclosures are available in various sizes and configurations for use with the Strip Heaters. All models are built in accordance with U.L. standards to accommodate switches, indicator lights and wiring. Consult the factory for type and location of switches for enclosure.

INCANDESCENT LIGHT

The Strip Heaters with aluminum housings may be equipped with incandescent display lights to illuminate the warming area.

Shatterproof bulbs guard against injury and food contamination in the event of breakage. The display lighting meets NSF standards for food holding and display areas.

NOTE: Display lights cannot be retrofitted to units.

INDICATOR LIGHT

An optional red indicator light is available for mounting on either side of the unit. The indicator light provides an instant visual check of the unit operation.

TROUBLESHOOTING GUIDE

⚠ WARNING

To avoid any injury or damage the strip heater must only be serviced by qualified personnel.

⚠ WARNING

To avoid any injury or damage to the strip heater turn the power OFF at the disconnect switch/circuit breaker and allow to cool before performing any maintenance.

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Unit is turned "ON" but there is no heat.	No power to unit.	Check circuit breaker and reset as necessary. If power cord connected check for damage to cord. If power cord connected check power outlet.
	Switch is defective.	Check input and output sides of the switch for power. If proper power on supply side but nothing on output side replace switch.
	Wiring is open.	Check for power at the heating element. If no power at element check wiring for break or bad connection. Repair or replace as necessary.
	Heating element defective.	<p>Check heating element for continuity. Using an ohm meter check the resistance of element.</p> <p>Resistance in ohms = $\frac{\text{voltage}^2}{\text{wattage}}$</p> <p>Example: GRAH-48, 120 Volt is rated for 1100 watts.</p> $\frac{(120)^2}{\text{Wattage}} = \frac{14,400}{1100} = 13.09 \text{ ohms}$ <p>Replace heating element if defective.</p>
Heat is inadequate.	Unit mounted too high above target area.	Lower unit, putting effective heat closer to target.
	Excessive air movement around strip heater target area.	Restrict or redirect air movement (ie. - air conditioning duct or exhaust fan) away from unit.
	Incorrect power supply (low).	Check power supply to unit, making sure it matches rating on the unit. If power supply is incorrect, change to match rating on unit.

TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Heat is excessive.	Unit mounted too close to target area.	Check to see that installation is within specifications for type/model. Increase mounting height if too close.
	Voltage supply too high.	Check power supply to unit, making sure it matches rating on unit. If power supply is incorrect, change to match rating.
Control switches burn-out rapidly.	Switches are mounted in the heat zone.	Check switch location per Hatco guidelines in the Glo-Ray Installation and Operations Manual. Relocate switches to a cooler zone if installation is incorrect.
	Switches used are not Hatco supplied.	Genuine Hatco components are specified to operate safely and properly in the environment in which they are used. Replace switches with Genuine Hatco Parts if switches are aftermarket or generic.

HATCO LIMITED WARRANTY

1. PRODUCT WARRANTY

Hatco warrants the products that it manufactures (the "Products") to be free from defects in materials and workmanship, under normal use and service, for a period of one (1) year from the date of purchase when installed and maintained in accordance with Hatco's written instructions or 18 months from the date of shipment from Hatco. Buyer must establish the product's purchase date by returning Hatco's Warranty Registration Card or by other means satisfactory to Hatco in its sole discretion.

Hatco warrants the following Product components to be free from defects in materials and workmanship from the date of purchase (subject to the foregoing conditions) for the period(s) of time and on the conditions listed below:

a) One (1) Year Parts and Labor PLUS One (1) Additional Year Parts-Only Warranty:

Toaster Elements (TQ, TRH,TK metal sheathed)
Drawer Warmer Elements (metal sheathed)
Drawer Warmer Drawer Rollers and Slides
Food Warmer Elements (metal sheathed)
Display Warmer Elements (metal sheathed air heating)
Holding Cabinet Elements (metal sheathed air heating)

b) One (1) Year Parts and Labor PLUS Four (4) Years Parts-Only Warranty on pro-rated terms that Hatco will explain at Buyer's request:

3CS and FR Tanks

c) One (1) Year Parts and Labor PLUS Nine (9) Years Parts-Only Warranty on:

Electric Booster Heater Tanks
Gas Booster Heater Tanks

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR PATENT OR OTHER INTELLECTUAL PROPERTY RIGHT INFRINGEMENT. Without limiting the generality of the foregoing, SUCH WARRANTIES DO NOT COVER: Coated incandescent light bulbs, fluorescent lights, lamp warmer heat bulbs, glass components, Product failure in booster tank, fin tube heat exchanger, or other water heating equipment, caused by liming, sediment buildup, chemical attack or freezing, Product misuse, tampering or misapplication, improper installation or application of improper voltage.

2. LIMITATION OF REMEDIES AND DAMAGES

Hatco's liability and Buyer's exclusive remedy hereunder will be limited solely, at Hatco's option, to repair or replacement by a Hatco-authorized service agency (other than where Buyer is located outside of the United States, Canada, United Kingdom or Australia in which case Hatco's liability and Buyer's exclusive remedy hereunder will be limited solely to replacement of part under warranty) with respect to any claim made within the applicable warranty period referred to above. Hatco reserves the right to accept or reject any such claim in whole or in part. Hatco will not accept the return of any Product without prior written approval from Hatco, and all such approved returns shall be made at Buyer's sole expense. HATCO WILL NOT BE LIABLE, UNDER ANY CIRCUMSTANCES, FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING BUT NOT LIMITED TO LABOR COSTS OR LOST PROFITS RESULTING FROM THE USE OF OR INABILITY TO USE THE PRODUCTS OR FROM THE PRODUCTS BEING INCORPORATED IN OR BECOMING A COMPONENT OF ANY OTHER PRODUCT OR GOODS.