



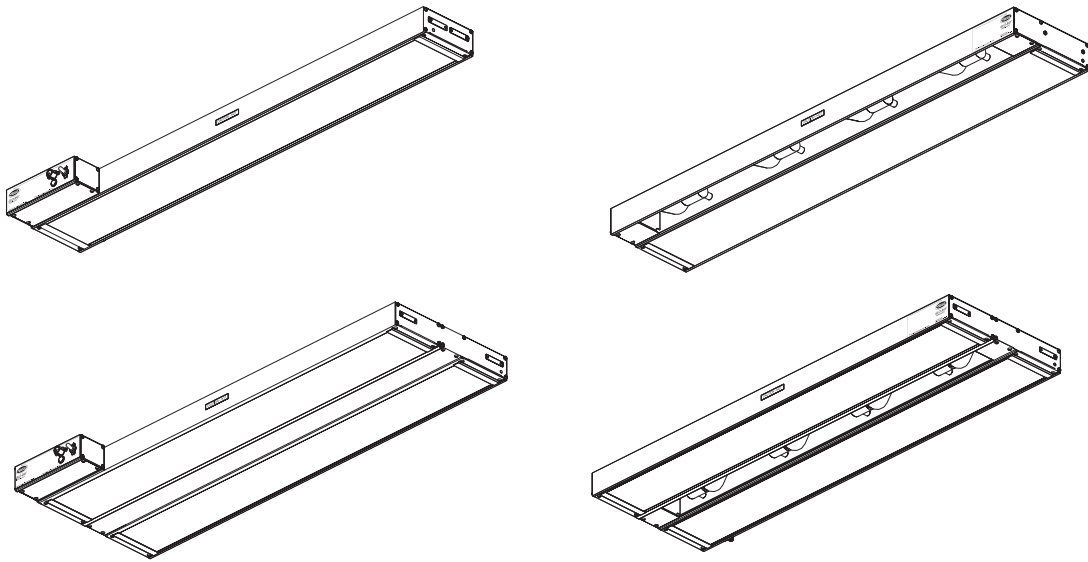
GLO-RAY®

Infra-Black® Strip Heaters

GRAIH and GRAIHL Series

Installation and Operating Manual

I&W #07.05.263.00



Register your unit online!

See IMPORTANT OWNER INFORMATION section for details.



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



No opere este equipo al menos que haya leído y comprendido el contenido de este manual! Cualquier falla en el seguimiento de las instrucciones contenidas en este manual puede resultar en un serio lesión o muerte. Este manual contiene importante información sobre seguridad concerniente al mantenimiento, uso y operación de este producto. Si usted no puede entender el contenido de este manual por favor pregunte a su supervisor. Almacenar este manual en una localización segura para la referencia futura.

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IMPORTANT OWNER INFORMATION

Record the model number, serial number, voltage, and purchase date of the unit in the spaces below (specification label located on the side of the unit). Please have this information available when calling Hatco for service assistance.

Model No. _____

Serial No. _____

Voltage _____

Date of Purchase _____

Register your unit!

Completing online warranty registration will prevent delay in obtaining warranty coverage. Access the Hatco website at **www.hatcocorp.com**, select the *Parts & Service* pull-down menu, and click on "Warranty Registration".

Business Hours: 8:00 AM to 5:00 PM
Central Standard Time (C.S.T.)

(Summer Hours: June to September –
8:00 AM to 5:00 PM C.S.T.
Monday through Thursday
8:00 AM to 2:30 PM C.S.T. Friday)

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

E-mail: partsandservice@hatcocorp.com

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



24 Hour 7 Day Parts and 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

Glo-Ray® Infra-Black® Strip Heaters ensure maximum food holding time 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. Glo-Ray Infra-Black emitters provide a solid panel of uniform heat distribution that is ideal for limited space operations.

The metal sheathed heating elements housed in the Infra-Black emitters are guaranteed against burnout for two years.

Glo-Ray Infra-Black 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 inspected and tested thoroughly prior to shipment.

This manual provides the installation, safety, and operating instructions for Glo-Ray Infra-Black Strip Heaters. Hatco recommends all installation, operating, and safety instructions appearing in this manual be read prior to installation or operation of a unit.

Safety information that appears in this manual is identified by the following signal word panels:

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

IMPORTANT SAFETY INFORMATION



Read the following important safety information before using this equipment to avoid serious injury or death and to avoid damage to equipment or property.

WARNING

ELECTRIC SHOCK HAZARD:

- Units supplied without an electrical cord and plug require a hardwired connection to the on-site electrical system. Connection must be properly grounded and of the correct voltage, size, and configuration for the electrical specifications of the unit. Contact a qualified electrician to determine and install the proper electrical connection.
- Turn power OFF at fused disconnect switch/circuit breaker and allow unit to cool before performing any maintenance, adjustments, or cleaning.
- For hardwired units, 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.
- DO NOT submerge or saturate with water. Unit is not waterproof. Do not operate if unit has been submerged or saturated with water.
- Unit is not weatherproof. Locate unit indoors where the ambient air temperature is a minimum of 70°F (21°C).
- Do not steam clean or use excessive water on the unit.
- This unit is not “jet-proof” construction. Do not use jet-clean spray to clean this unit.
- Do not clean unit when it is energized or hot.
- This unit must be serviced by qualified personnel only. Service by unqualified personnel may lead to electric shock or burn.
- Use only Genuine Hatco Replacement Parts when service is required. Failure to use Genuine Hatco Replacement Parts will void all warranties and may subject operators of the equipment to hazardous electrical voltage, resulting in electrical shock or burn. 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.

FIRE HAZARD:

- Do not install unit above or around combustible surfaces. Discoloration or combustion could occur. Unit must be installed in non-combustible surroundings only.
- Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

This unit has no “user-serviceable” parts. If service is required on this unit, contact an Authorized Hatco Service Agent or contact the Hatco Service Department at 414-671-6350; fax 414-671-3976.

WARNING

Use only light bulbs that meet or exceed National Sanitation Foundation (NSF) standards and are specifically designed for food holding areas. Breakage of light bulbs not specially coated could result in personal injury and/or food contamination.

This unit is not intended for use by children or persons with reduced physical, sensory, or mental capabilities. Ensure proper supervision of children and keep them away from the unit.

Make sure all operators have been instructed on the safe and proper use of the unit.

For installation with chains, make sure the chains have sufficient strength and are securely fastened to both the strip heater and the mounting location. Poorly installed chains may cause the heater to loosen and fall. Do not place anything on top of heaters installed with chains.

CAUTION

BURN HAZARD: Some exterior surfaces on unit will get hot. Avoid unnecessary contact with unit.

Standard and approved manufacturing oils may smoke up to 30 minutes during initial startup. This is a temporary condition. Operate unit without food product until smoke dissipates.

Light-equipped strip heaters that require a circuit breaker 20 amps or larger must be installed with a remote control enclosure containing a fuse rated at 20 amps or less for the light circuit.

Ensure safe and proper operation. Refer to the “Minimum Clearance Requirements” listed in the Installation section of this manual.

NOTICE

Damage to countertop material such as Corian® and similar products caused by heat generated from Hatco equipment is not covered under the Hatco warranty. Contact the manufacturer of the countertop material for application information.

Remote mounted control boxes must be installed outside strip heater heat zone to prevent premature failure of components due to excessive heat.

Installation of two or more separate units with less than 3” (76 mm) between housings may result in premature failure of component parts. Failure to provide proper spacing may result in heat damage to electrical components and are not covered by warranty.

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

All Models

Glo-Ray Infra-Black Strip Heaters are constructed with aluminum housings in lengths of 18" (457 mm) to 72" (1829 mm).

Dual models allow for side-by-side mounting of two heating elements to provide a wider holding area. Dual models are constructed with a standard 3" (76 mm) or optional 6" (152 mm) spacer between heating elements.

Glo-Ray Infra-Black Strip Heaters have several mounting options and switch locations. A thermostatic control box with indicator lights (TCBI) can be mounted on the unit with a thermostatic control, ON/OFF (I/O) toggle switch, and an indicator light. Remote control enclosure(s) (RMBs) can be configured with infinite control(s), ON/OFF (I/O) toggle switch(es), and/or indicator light(s). Units are available in several optional *Designer* colors and gloss finishes.

GRAIH-XX: Aluminum housing, single element

GRAIHL-XX: Aluminum housing, incandescent lights, single element

GRAIH-XXD: Aluminum housing, dual element

GRAIHL-XXD: Aluminum housing, incandescent lights, dual elements

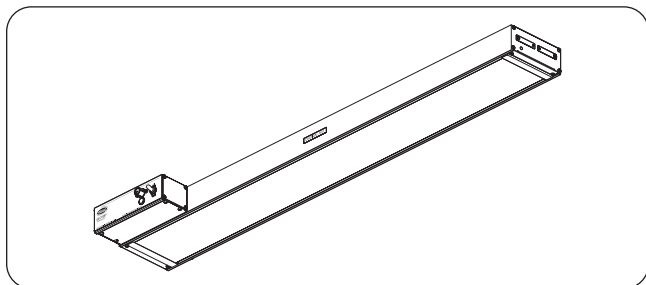


Figure 2. GRAIHL-XX Model

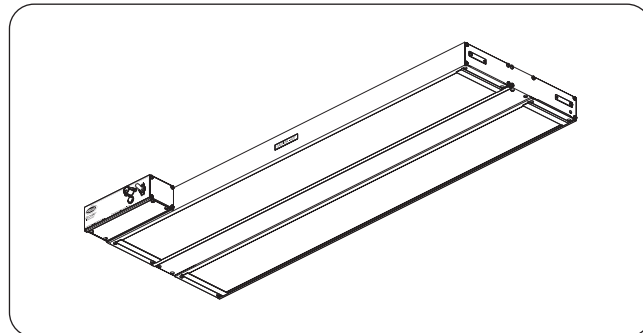


Figure 3. GRAIH-XXD Model with TCBI

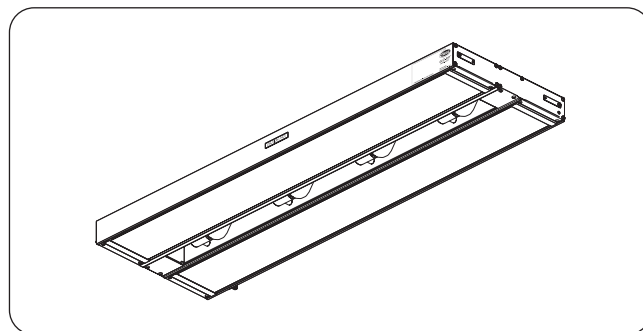


Figure 4. GRAIHL-XXD Model

G R A I H L - X X D

Glo-Ray ————
Aluminum ————
Infra-Black Emitter ————
High Wattage ————

————— Dual Elements
————— Width (in inches)
————— Incandescent Light

Figure 5. Model Designation

Electrical Rating Chart — GRAIH-XX Models

Model	Voltage	Watts	Amps	Shipping Weight
GRAIH-18	120	350	2.9	6 lbs. (3 kg)
	208	350	1.7	6 lbs. (3 kg)
	240	350	1.5	6 lbs. (3 kg)
	220	350	1.6	6 lbs. (3 kg)
	240	350	1.5	6 lbs. (3 kg)
	220–230 (CE)	350–383	1.6–1.7	6 lbs. (3 kg)
	230–240 (CE)	321–350	1.4–1.5	6 lbs. (3 kg)
GRAIH-24	120	500	4.2	11 lbs. (5 kg)
	208	500	2.4	11 lbs. (5 kg)
	240	500	2.1	11 lbs. (5 kg)
	220	500	2.3	11 lbs. (5 kg)
	240	500	2.1	11 lbs. (5 kg)
	220–230 (CE)	500–546	2.3–2.4	11 lbs. (5 kg)
	230–240 (CE)	459–500	2.0–2.1	11 lbs. (5 kg)
GRAIH-30	120	660	5.5	13 lbs. (6 kg)
	208	660	3.2	13 lbs. (6 kg)
	240	660	2.8	13 lbs. (6 kg)
	220	660	3.0	13 lbs. (6 kg)
	240	660	2.8	13 lbs. (6 kg)
	220–230 (CE)	660–721	3.0–3.1	13 lbs. (6 kg)
	230–240 (CE)	606–660	2.6–2.8	13 lbs. (6 kg)
GRAIH-36	120	800	6.7	15 lbs. (7 kg)
	208	800	3.8	15 lbs. (7 kg)
	240	800	3.3	15 lbs. (7 kg)
	220	800	3.6	15 lbs. (7 kg)
	240	800	3.3	15 lbs. (7 kg)
	220–230 (CE)	800–874	3.6–3.8	15 lbs. (7 kg)
	230–240 (CE)	734–800	3.2–3.3	15 lbs. (7 kg)
GRAIH-42	120	950	7.9	17 lbs. (8 kg)
	208	950	4.6	17 lbs. (8 kg)
	240	950	4.0	17 lbs. (8 kg)
	220	950	4.3	17 lbs. (8 kg)
	240	950	4.0	17 lbs. (8 kg)
	220–230 (CE)	950–1038	4.3–4.5	17 lbs. (8 kg)
	230–240 (CE)	872–950	3.8–4.0	17 lbs. (8 kg)

Model	Voltage	Watts	Amps	Shipping Weight
GRAIH-48	120	1100	9.2	21 lbs. (10 kg)
	208	1100	5.3	21 lbs. (10 kg)
	240	1100	4.6	21 lbs. (10 kg)
	220	1100	5.0	21 lbs. (10 kg)
	240	1100	4.6	21 lbs. (10 kg)
	220–230 (CE)	1100–1202	5.0–5.2	21 lbs. (10 kg)
	230–240 (CE)	1010–1100	4.4–4.6	21 lbs. (10 kg)
GRAIH-54	120	1250	10.4	24 lbs. (11 kg)
	208	1250	6.0	24 lbs. (11 kg)
	240	1250	5.2	24 lbs. (11 kg)
	220	1250	5.7	24 lbs. (11 kg)
	240	1250	5.2	24 lbs. (11 kg)
	220–230 (CE)	1250–1366	5.7–5.9	24 lbs. (11 kg)
	230–240 (CE)	1148–1250	5.0–5.2	24 lbs. (11 kg)
GRAIH-60	120	1400	11.7	27 lbs. (12 kg)
	208	1400	6.7	27 lbs. (12 kg)
	240	1400	5.8	27 lbs. (12 kg)
	220	1400	6.4	27 lbs. (12 kg)
	240	1400	5.8	27 lbs. (12 kg)
	220–230 (CE)	1400–1530	6.4–6.7	27 lbs. (12 kg)
	230–240 (CE)	1286–1400	5.6–5.8	27 lbs. (12 kg)
GRAIH-66	120†	1560	13.0	30 lbs. (14 kg)
	208	1560	7.5	30 lbs. (14 kg)
	240	1560	6.5	30 lbs. (14 kg)
	220	1560	7.1	30 lbs. (14 kg)
	240	1560	6.5	30 lbs. (14 kg)
	220–230 (CE)	1560–1705	7.1–7.4	30 lbs. (14 kg)
	230–240 (CE)	1433–1560	6.2–6.5	30 lbs. (14 kg)
GRAIH-72	120†	1725	14.4	33 lbs. (15 kg)
	208	1725	8.3	33 lbs. (15 kg)
	240	1725	7.2	33 lbs. (15 kg)
	220	1725	7.8	33 lbs. (15 kg)
	240	1725	7.2	33 lbs. (15 kg)
	220–230 (CE)	1725–1885	7.8–8.2	33 lbs. (15 kg)
	230–240 (CE)	1584–1725	6.9–7.2	33 lbs. (15 kg)

The shaded areas contain electrical information for **International models only**.

† Infinite control not available.

NOTE: Shipping weight does not include remote control enclosure. Add 2–8 lbs. (1–3 kg) to shipping weight depending on size of remote control enclosure.

SPECIFICATIONS

Electrical Rating Chart — GRAIHL-XX Models

Model	Voltage	Watts	Amps	Shipping Weight
GRAIHL-18	120	470	3.9	12 lbs. (5 kg)
	120/208	470	2.7	12 lbs. (5 kg)
	120/240	470	2.5	12 lbs. (5 kg)
	220	450	2.0	12 lbs. (5 kg)
	240	470	2.0	12 lbs. (5 kg)
	220–230 (CE)	450–492	2.0–2.1	12 lbs. (5 kg)
	230–240 (CE)	432–470	1.9–2.0	12 lbs. (5 kg)
GRAIHL-24	120	620	5.2	15 lbs. (7 kg)
	120/208	620	3.4	15 lbs. (7 kg)
	120/240	620	3.1	15 lbs. (7 kg)
	220	600	2.7	15 lbs. (7 kg)
	240	620	2.6	15 lbs. (7 kg)
	220–230 (CE)	600–656	2.7–2.9	15 lbs. (7 kg)
	230–240 (CE)	569–620	2.5–2.6	15 lbs. (7 kg)
GRAIHL-30	120	780	6.5	17 lbs. (8 kg)
	120/208	780	4.2	17 lbs. (8 kg)
	120/240	780	3.8	17 lbs. (8 kg)
	220	760	3.5	17 lbs. (8 kg)
	240	780	3.3	17 lbs. (8 kg)
	220–230 (CE)	760–831	3.5–3.6	17 lbs. (8 kg)
	230–240 (CE)	716–780	3.1–3.3	17 lbs. (8 kg)
GRAIHL-36	120	980	8.2	20 lbs. (9 kg)
	120/208	980	5.3	20 lbs. (9 kg)
	120/240	980	4.8	20 lbs. (9 kg)
	220	950	4.3	20 lbs. (9 kg)
	240	980	4.1	20 lbs. (9 kg)
	220–230 (CE)	950–1038	4.3–4.5	20 lbs. (9 kg)
	230–240 (CE)	900–980	3.9–4.1	20 lbs. (9 kg)
GRAIHL-42	120	1130	9.4	23 lbs. (10 kg)
	120/208	1130	6.1	23 lbs. (10 kg)
	120/240	1130	5.5	23 lbs. (10 kg)
	220	1100	5.0	23 lbs. (10 kg)
	240	1130	4.7	23 lbs. (10 kg)
	220–230 (CE)	1100–1202	5.0–5.2	23 lbs. (10 kg)
	230–240 (CE)	1038–1130	4.5–4.7	23 lbs. (10 kg)

Model	Voltage	Watts	Amps	Shipping Weight
GRAIHL-48	120	1340	11.2	26 lbs. (12 kg)
	120/208	1340	7.3	26 lbs. (12 kg)
	120/240	1340	6.6	26 lbs. (12 kg)
	220	1300	5.9	26 lbs. (12 kg)
	240	1340	5.6	26 lbs. (12 kg)
	220–230 (CE)	1300–1421	5.9–6.2	26 lbs. (12 kg)
	230–240 (CE)	1231–1340	5.4–5.6	26 lbs. (12 kg)
GRAIHL-54	120	1490	12.4	29 lbs. (13 kg)
	120/208	1490	8.0	29 lbs. (13 kg)
	120/240	1490	7.2	29 lbs. (13 kg)
	220	1450	6.6	29 lbs. (13 kg)
	240	1490	6.2	29 lbs. (13 kg)
	220–230 (CE)	1450–1585	6.6–6.9	29 lbs. (13 kg)
	230–240 (CE)	1368–1490	5.9–6.2	29 lbs. (13 kg)
GRAIHL-60	120	1700	14.2	33 lbs. (15 kg)
	120/208	1700	9.2	33 lbs. (15 kg)
	120/240	1700	8.3	33 lbs. (15 kg)
	220	1650	7.5	33 lbs. (15 kg)
	240	1700	7.1	33 lbs. (15 kg)
	220–230 (CE)	1650–1803	7.5–7.8	33 lbs. (15 kg)
	230–240 (CE)	1561–1700	6.8–7.1	33 lbs. (15 kg)
GRAIHL-66	120†	1860	15.5	34 lbs. (15 kg)
	120/208	1860	10.0	34 lbs. (15 kg)
	120/240	1860	9.0	34 lbs. (15 kg)
	220	1810	8.2	34 lbs. (15 kg)
	240	1860	7.8	34 lbs. (15 kg)
	220–230 (CE)	1810–1978	8.2–8.6	34 lbs. (15 kg)
	230–240 (CE)	1708–1860	7.1–7.8	34 lbs. (15 kg)
GRAIHL-72	120*	2085	17.4	36 lbs. (16 kg)
	120/208	2085	11.3	36 lbs. (16 kg)
	120/240	2085	10.2	36 lbs. (16 kg)
	220	2025	9.2	36 lbs. (16 kg)
	240	2085	8.7	36 lbs. (16 kg)
	220–230 (CE)	2025–2213	9.2–9.6	36 lbs. (16 kg)
	230–240 (CE)	1915–2085	8.3–8.7	36 lbs. (16 kg)

The shaded areas contain electrical information for **International models only**.

NOTE: GRAIHL-XX models that have multiple voltages listed, such as 120/208 or 120/240, have multiple internal circuits. For example a 120/208 volt unit utilizes 120 volts for light circuit and 208 volts for the heat circuit(s). Consult the Electrical Diagram supplied with the unit for specific information.

NOTE: Shipping weight does not include remote control enclosure. Add 2–8 lbs. (1–3 kg) to shipping weight depending on size of remote control enclosure.

CAUTION

Light-equipped strip heaters that require a circuit breaker 20 amps or larger must be installed with a remote control enclosure containing a fuse rated at 20 amps or less for the light circuit.

† Infinite control not available.

* Only available with remote control enclosure options.

Electrical Rating Chart — GRAIH-XXD Models

Model	Voltage	Watts	Amps	Shipping Weight
GRAIH-18D	120	700	5.8	13 lbs. (6 kg)
	208	700	3.4	13 lbs. (6 kg)
	240	700	2.9	13 lbs. (6 kg)
	220	700	3.2	13 lbs. (6 kg)
	240	700	2.9	13 lbs. (6 kg)
	220–230 (CE)	700–765	3.2–3.3	13 lbs. (6 kg)
	230–240 (CE)	643–700	2.8–2.9	13 lbs. (6 kg)
GRAIH-24D	120	1000	8.3	19 lbs. (9 kg)
	208	1000	4.8	19 lbs. (9 kg)
	240	1000	4.2	19 lbs. (9 kg)
	220	1000	4.5	19 lbs. (9 kg)
	240	1000	4.2	19 lbs. (9 kg)
	220–230 (CE)	1000–1093	4.5–4.7	19 lbs. (9 kg)
	230–240 (CE)	918–1000	4.0–4.2	19 lbs. (9 kg)
GRAIH-30D	120	1320	11.0	21 lbs. (10 kg)
	208	1320	6.3	21 lbs. (10 kg)
	240	1320	5.5	21 lbs. (10 kg)
	220	1320	6.0	21 lbs. (10 kg)
	240	1320	5.5	21 lbs. (10 kg)
	220–230 (CE)	1320–1443	6.0–6.3	21 lbs. (10 kg)
	230–240 (CE)	1212–1320	5.3–5.5	21 lbs. (10 kg)
GRAIH-36D	120	1600	13.3	24 lbs. (11 kg)
	208	1600	7.7	24 lbs. (11 kg)
	240	1600	6.7	24 lbs. (11 kg)
	220	1600	7.3	24 lbs. (11 kg)
	240	1600	6.7	24 lbs. (11 kg)
	220–230 (CE)	1600–1749	7.3–7.6	24 lbs. (11 kg)
	230–240 (CE)	1469–1600	6.4–6.7	24 lbs. (11 kg)
GRAIH-42D	120	1900	15.8	27 lbs. (12 kg)
	208	1900	9.1	27 lbs. (12 kg)
	240	1900	7.9	27 lbs. (12 kg)
	220	1900	8.6	27 lbs. (12 kg)
	240	1900	7.9	27 lbs. (12 kg)
	220–230 (CE)	1900–2077	8.6–9.0	27 lbs. (12 kg)
	230–240 (CE)	1745–1900	7.6–7.9	27 lbs. (12 kg)

Model	Voltage	Watts	Amps	Shipping Weight
GRAIH-48D	120*	2200	18.3	32 lbs. (15 kg)
	208	2200	10.6	32 lbs. (15 kg)
	240	2200	9.2	32 lbs. (15 kg)
	220	2200	10.0	32 lbs. (15 kg)
	240	2200	9.2	32 lbs. (15 kg)
	220–230 (CE)	2200–2405	10.0–10.5	32 lbs. (15 kg)
	230–240 (CE)	2020–2200	8.8–9.2	32 lbs. (15 kg)
GRAIH-54D	120*	2500	20.8	35 lbs. (16 kg)
	208	2500	12.0	35 lbs. (16 kg)
	240	2500	10.4	35 lbs. (16 kg)
	220	2500	11.4	35 lbs. (16 kg)
	240	2500	10.4	35 lbs. (16 kg)
	220–230 (CE)	2500–2733	11.4–11.9	35 lbs. (16 kg)
	230–240 (CE)	2296–2500	10.0–10.4	35 lbs. (16 kg)
GRAIH-60D	120*	2800	23.3	39 lbs. (18 kg)
	208	2800	13.5	39 lbs. (18 kg)
	240	2800	11.7	39 lbs. (18 kg)
	220	2800	12.7	39 lbs. (18 kg)
	240	2800	11.7	39 lbs. (18 kg)
	220–230 (CE)	2800–3060	12.7–13.3	39 lbs. (18 kg)
	230–240 (CE)	2571–2800	11.2–11.7	39 lbs. (18 kg)
GRAIH-66D	120*	3120	26.0	42 lbs. (19 kg)
	208	3120	15.0	42 lbs. (19 kg)
	240	3120	13.0	42 lbs. (19 kg)
	220	3120	14.2	42 lbs. (19 kg)
	240	3120	13.0	42 lbs. (19 kg)
	220–230 (CE)	3120–3410	14.2–14.8	42 lbs. (19 kg)
	230–240 (CE)	2865–3120	12.5–13.0	42 lbs. (19 kg)
GRAIH-72D	120*	3450	28.8	46 lbs. (21 kg)
	240	3450	14.4	46 lbs. (21 kg)
	220	3450	15.7	46 lbs. (21 kg)
	240	3450	14.4	46 lbs. (21 kg)
	220–230 (CE)	3450–3771	15.7–16.4	46 lbs. (21 kg)
	230–240 (CE)	3168–3450	13.8–14.4	46 lbs. (21 kg)

* Only available with remote control enclosure options.

The shaded areas contain electrical information for **International models only**.

NOTE: Shipping weight does not include remote control enclosure. Add 2–8 lbs. (1–3 kg) to shipping weight depending on size of remote control enclosure.

SPECIFICATIONS

Electrical Rating Chart — GRAIHL-XXD Models

Model	Voltage	Watts	Amps	Shipping Weight
GRAIHL-18D	120	820	6.8	18 lbs. (8 kg)
	120/208	820	4.4	18 lbs. (8 kg)
	120/240	820	3.9	18 lbs. (8 kg)
	220	800	3.6	18 lbs. (8 kg)
	240	820	3.4	18 lbs. (8 kg)
	220–230 (CE)	801–875	3.6–3.8	18 lbs. (8 kg)
	230–240 (CE)	753–820	3.3–3.4	18 lbs. (8 kg)
GRAIHL-24D	120	1120	9.3	21 lbs. (10 kg)
	120/208	1120	5.8	21 lbs. (10 kg)
	120/240	1120	5.2	21 lbs. (10 kg)
	220	1100	5.0	21 lbs. (10 kg)
	240	1120	4.7	21 lbs. (10 kg)
	220–230 (CE)	1101–1203	5.0–5.2	21 lbs. (10 kg)
	230–240 (CE)	1029–1120	4.5–4.7	21 lbs. (10 kg)
GRAIHL-30D	120	1440	12.0	23 lbs. (10 kg)
	120/208	1440	7.3	23 lbs. (10 kg)
	120/240	1440	6.5	23 lbs. (10 kg)
	220	1420	6.5	23 lbs. (10 kg)
	240	1440	6.0	23 lbs. (10 kg)
	220–230 (CE)	1421–1553	6.5–6.8	23 lbs. (10 kg)
	230–240 (CE)	1323–1440	5.8–6.0	23 lbs. (10 kg)
GRAIHL-36D	120	1780	14.8	27 lbs. (12 kg)
	120/208	1780	9.2	27 lbs. (12 kg)
	120/240	1780	8.2	27 lbs. (12 kg)
	220	1750	8.0	27 lbs. (12 kg)
	240	1780	7.4	27 lbs. (12 kg)
	220–230 (CE)	1751–1914	8.0–8.3	27 lbs. (12 kg)
	230–240 (CE)	1635–1780	7.1–7.4	27 lbs. (12 kg)
GRAIHL-42D	120	2080	17.3	30 lbs. (14 kg)
	120/208	2080	10.6	30 lbs. (14 kg)
	120/240	2080	9.4	30 lbs. (14 kg)
	220	2050	9.3	30 lbs. (14 kg)
	240	2080	8.7	30 lbs. (14 kg)
	220–230 (CE)	2051–2242	9.3–9.7	30 lbs. (14 kg)
	230–240 (CE)	1910–2080	8.3–8.7	30 lbs. (14 kg)

Model	Voltage	Watts	Amps	Shipping Weight
GRAIHL-48D	120*	2440	20.3	35 lbs. (16 kg)
	120/208	2440	12.6	35 lbs. (16 kg)
	120/240	2440	11.2	35 lbs. (16 kg)
	220	2400	10.9	35 lbs. (16 kg)
	240	2440	10.2	35 lbs. (16 kg)
	220–230 (CE)	2402–2625	10.9–11.4	35 lbs. (16 kg)
	230–240 (CE)	2241–2440	9.7–10.2	35 lbs. (16 kg)
GRAIHL-54D	120*	2740	22.8	38 lbs. (17 kg)
	120/208	2740	14.0	38 lbs. (17 kg)
	120/240	2740	12.2	38 lbs. (17 kg)
	220	2700	12.3	38 lbs. (17 kg)
	240	2740	11.4	38 lbs. (17 kg)
	220–230 (CE)	2702–2953	12.3–12.8	38 lbs. (17 kg)
	230–240 (CE)	2516–2740	10.9–11.4	38 lbs. (17 kg)
GRAIHL-60D	120*	3100	25.8	42 lbs. (19 kg)
	120/208	3100	16.0	42 lbs. (19 kg)
	120/240	3100	14.2	42 lbs. (19 kg)
	220	3050	13.9	42 lbs. (19 kg)
	240	3100	12.9	42 lbs. (19 kg)
	220–230 (CE)	3052–3336	13.9–14.5	42 lbs. (19 kg)
	230–240 (CE)	2847–3100	12.4–12.9	42 lbs. (19 kg)
GRAIHL-66D	120*	3420	28.5	44 lbs. (20 kg)
	120/240	3420	15.5	44 lbs. (20 kg)
	220	3350	15.3	44 lbs. (20 kg)
	240	3420	14.3	44 lbs. (20 kg)
	220–230 (CE)	3372–3686	15.3–16.0	44 lbs. (20 kg)
	230–240 (CE)	3141–3420	13.7–14.3	44 lbs. (20 kg)

* Only available with remote control enclosure options.

The shaded areas contain electrical information for **International models only**.

NOTE: GRAIHL-XXD models that have multiple voltages listed, such as 120/208 or 120/240, have multiple internal circuits. For example a 120/208 volt unit utilizes 120 volts for light circuit and 208 volts for the heat circuit(s). Consult the Electrical Diagram supplied with the unit for specific information.

NOTE: Shipping weight does not include remote control enclosure. Add 2–8 lbs. (1–3 kg) to shipping weight depending on size of remote control enclosure.

⚠ CAUTION

Light-equipped strip heaters that require a circuit breaker 20 amps or larger must be installed with a remote control enclosure containing a fuse rated at 20 amps or less for the light circuit.

Dimensions

Model	Width (A)	Depth (B)	Depth (C)	Height (D)
GRAIH-XX	18"-72" (457-1829 mm)	6" (152 mm)	9" (229 mm)	2-5/8" (66 mm)
GRAIHL-XX	18"-72" (457-1829 mm)	9" (229 mm)	12" (305 mm)	2-5/8" (66 mm)
GRAIH-XXD*	18"-72" (457-1829 mm)	15" (381 mm)	18" (457 mm)	2-5/8" (66 mm)
GRAIHL-XXD*	18"-66" (457-1674 mm)	15" (381 mm)	18" (457 mm)	2-5/8" (66 mm)

* Add 3" (76 mm) to Depth (B) and Depth (C) if unit is configured with an optional 6" (152 mm) spacer.

NOTE: Depth (C) dimension includes TCBI box.

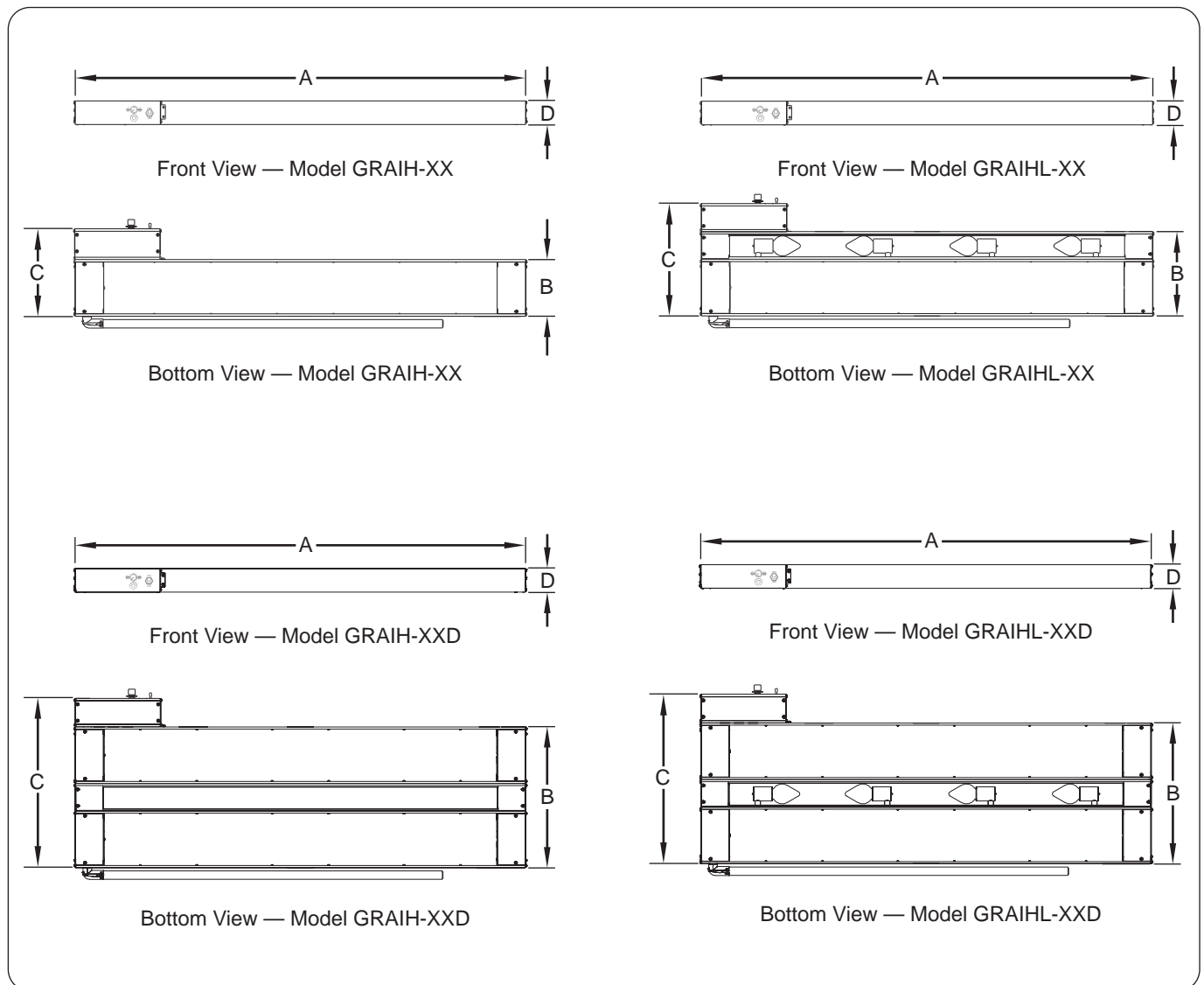


Figure 6. Dimensions

INSTALLATION

General

Use the information in this section to prepare for and install an Infra-Black® Strip Heater. Make sure to locate the specific information for the type of installation. Infra-Black Strip Heaters are shipped with most components pre-assembled. Dual units are supplied with a required 3" (76 mm) or 6" (152 mm) spacer pre-assembled at the factory.

WARNING

ELECTRIC SHOCK HAZARD: Unit is not weatherproof. Locate the unit indoors where the ambient air temperature is a minimum of 70°F (21°C).

FIRE HAZARD: Do not install unit above or around combustible surfaces. Discoloration or combustion could occur. Unit must be installed in non-combustible surroundings only.

CAUTION

Ensure safe and proper operation. Refer to the "Minimum Clearance Requirements" listed in the Installation section of this manual.

NOTICE

Damage to countertop material such as Corian® and similar products caused by heat generated from Hatco equipment is not covered under the Hatco warranty. Contact the manufacturer of the countertop material for application information.

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

1. Remove the unit from the shipping carton and remove all packing materials.
2. Remove the information packet.

NOTE: To prevent delay in obtaining warranty coverage, complete online warranty registration. See the IMPORTANT OWNER INFORMATION section for details.

3. Remove tape and protective packaging from all surfaces of the unit.

NOTE: If the unit is configured with optional equipment, see the OPTIONS AND ACCESSORIES section in this manual.

4. Refer to the appropriate mounting procedure in this section for the desired mounting style.

Dual Mounting

When mounting units side-by-side, a space not less than 3" (76 mm) must be maintained between units. Dual units ordered from the factory are shipped with a pre-assembled 3" (76 mm) or 6" (152 mm) spacer.

NOTICE

Installation of two or more separate units with less than 3" (76 mm) between housings may result in premature failure of component parts. Failure to provide proper spacing may result in heat damage to electrical components and are not covered by warranty.

Under Shelf Mounting

When mounting a 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 and prevent premature failure.

Pass-Through

If pass-through area is under 9 1/2" (241 mm) deep, a single unit can be used. For a 10" to 19" (254 to 483 mm) deep pass-through area, a dual unit is recommended. Installation of multiple units must have a minimum spacing of 3" (76 mm) between strip heaters.

Over Steam Table

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

Minimum Clearance Requirements

Models	A	B	C
GRAIH and GRAIHL with TCBI	4" (102 mm)	‡	1" (25 mm)
GRAIH and GRAIHL with RMB	4" (102 mm)	3" (76 mm)	0" (0 mm)
GRAIH-XXD and GRAIHL-XXD with TCBI	8" (203 mm)	‡	1" (25 mm)
GRAIH-XXD and GRAIHL-XXD with RMB	8" (203 mm)	3" (76 mm)	0" (0 mm)

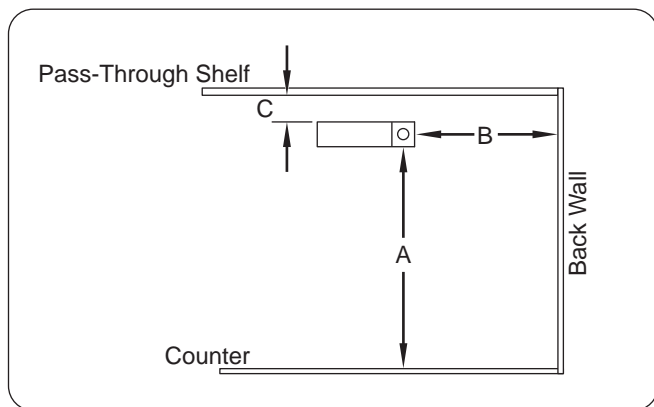


Figure 7. Minimum Clearance Requirements

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

Maximum Overshelf Clearance Requirements

Units should be mounted at a maximum distance of 10" (254 mm) from the front of an overshelf.

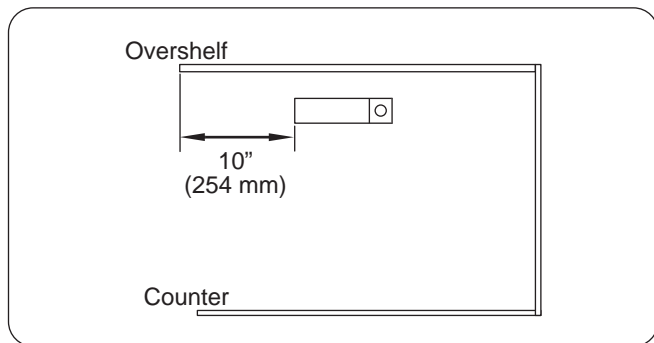


Figure 8. Maximum Overshelf Clearance Requirements

Recommended Mounting Heights

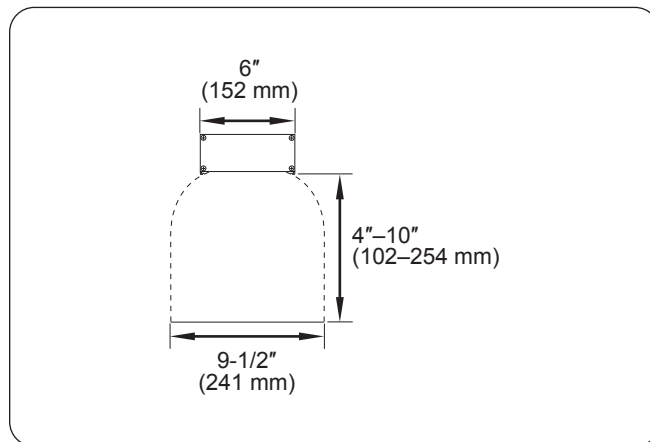


Figure 9. Recommended Element Height for GRAIH-XX and GRAIHL-XX models

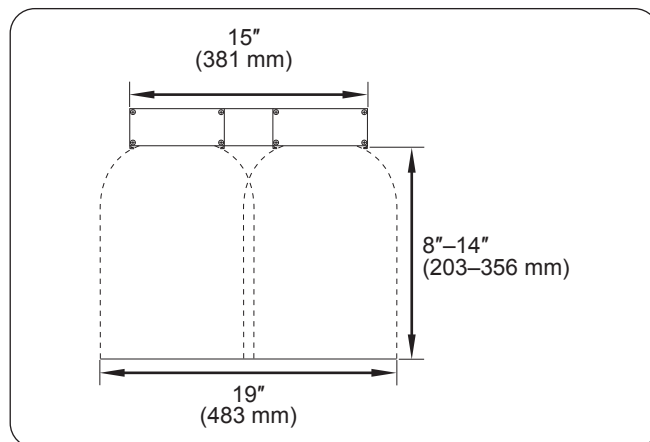


Figure 10. Recommended Element Height for GRAIH-XXD and GRAIHL-XXD models with a 3" (76 mm) spacer

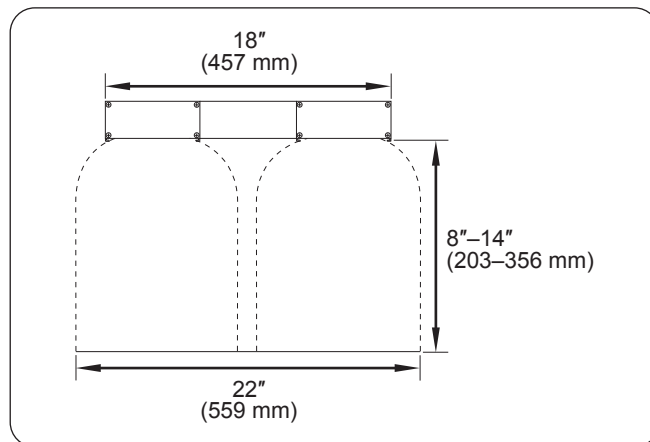


Figure 11. Recommended Element Height for GRAIH-XXD and GRAIHL-XXD models with a 6" (152 mm) spacer

INSTALLATION

Tubular Stand Mounting

Mounting a unit with non-adjustable tubular stands permanently attaches the unit to a countertop or serving table.

⚠ CAUTION

Ensure safe and proper operation. Refer to the “Minimum Clearance Requirements” listed in the Installation section of this manual.

Tubular stands are available in aluminum, *Designer* colors, or gloss finishes in heights of 4" to 14" (102 to 356 mm) in 2" (51 mm) increments.

NOTE: Tubular stands cannot be retrofitted in the field.

1. Position the unit upside-down on a flat surface.

NOTE: Units for this application are supplied with the conduit attached to one side of the unit. Conduit should not be removed.

2. Remove the two hanger tab screws and hanger tabs from each end of the unit.
3. Secure the top of the tubular stand to the bottom of the angled end bracket using the screws supplied.
4. Secure the angled end bracket to the end plate of the unit with the previously removed hanger tab screws.
5. Repeat steps 3 and 4 on the opposite end of the unit.
6. Secure the stands to the mounting surface using appropriate fasteners.

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

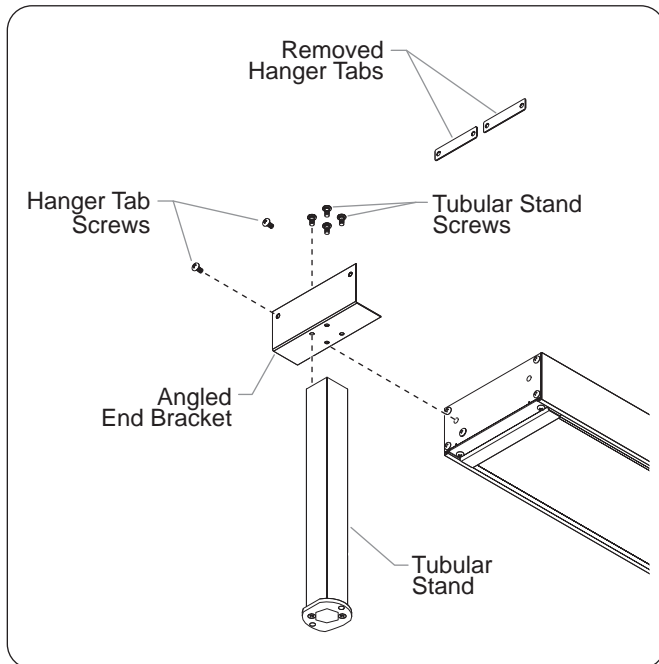


Figure 12. Tubular Stand Mounting

Angle Bracket Mounting

Mounting a unit with an angle bracket permanently attaches the unit to the underside of a shelf. It can be mounted to a flat shelf or a shelf with rolled/flanged edges. The adjustable angle brackets will provide the necessary gap between the unit and a combustible shelf.

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 of the shelf (a minimum gap of 1" [25 mm] is required between the unit and the underside of a rolled or flanged shelf to prevent heat damage to the electrical system of the unit).

⚠ CAUTION

Ensure safe and proper operation. Refer to the “Minimum Clearance Requirements” listed in the Installation section of this manual.

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

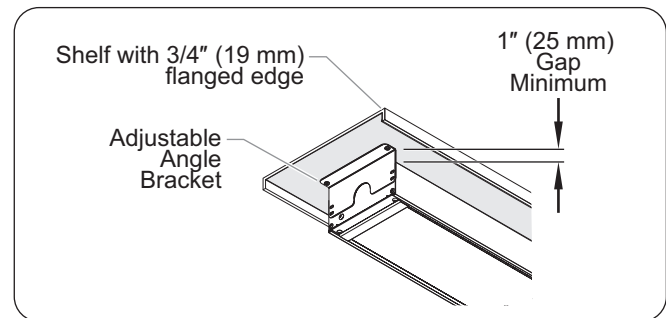


Figure 13. Flanged Edge Shelf Installation

1. Position the unit on a flat surface with the heating element facing down.
2. Remove the two hanger tab screws and hanger tabs from each end of the unit.
3. Remove the two upper end plate screws.
4. Align the adjustable angle bracket to the end plate mounting holes of the unit. Secure angle bracket with previously removed end plate screws.

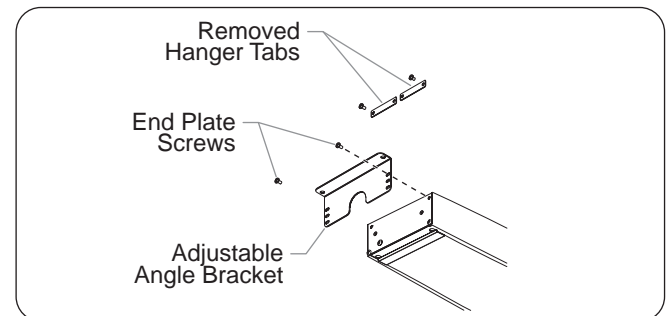


Figure 14. Adjustable Angle Bracket Installation

5. Fasten the angle bracket to the underside of the shelf using appropriate fasteners (not supplied by Hatco).

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

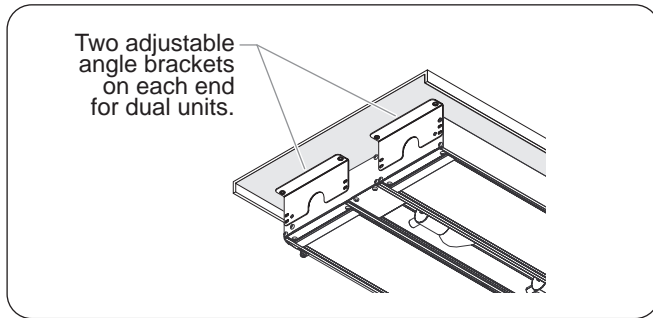


Figure 15. Dual Unit Mounting

Chain Suspension Mounting

Mounting a unit with chain suspension attaches the unit to an overhead surface with the use of “S” hooks.

NOTE: Units ordered with the “S” hook option come with two “S” hooks and two 6” (152 mm) lengths of chain. Additional chain (P/N 05.03.020.00) can be ordered from Hatco for the overhead mounting system or another option can be determined by a qualified installer.



For installation with chains, make sure the chains have sufficient strength and are securely fastened to both the unit and the mounting location. Poorly installed chains may cause the unit to loosen and fall. Do not place anything on top of units installed with chains.

Ensure safe and proper operation. Refer to the “Minimum Clearance Requirements” listed in the Installation section of this manual.

NOTE: The strength of the chain supplied by Hatco is sufficient to hold the weight of the unit securely only when mounted properly.

1. Prepare the overhead mounting system for the “S” hooks. Make sure the system is secure and is set up so the unit will be suspended at a level, safe, and proper distance from walls, counter, and food.
2. Loosen, but do not remove the screws securing the hanger tabs on each end of the unit. Rotate the tabs up, then tighten the screws securely.
3. Securely attach one of the 6” (152 mm) connecting chains between each pair of hanger tabs.

4. Attach an “S” hook to the center of each connecting chain.
5. Carefully lift the unit and attach the “S” hooks on each end of the unit to the overhead mounting system. Make sure the unit is level.

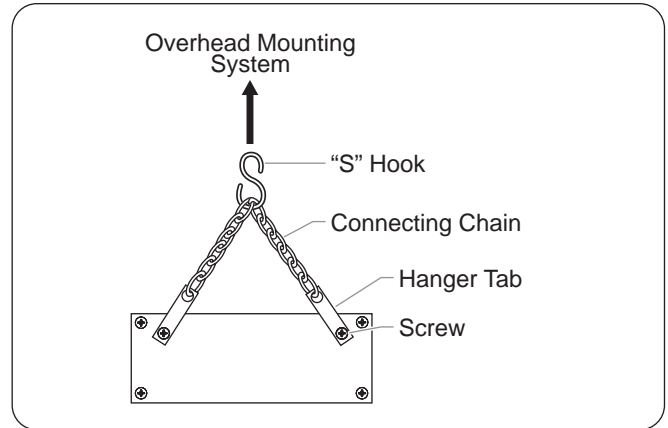


Figure 16. “S” Hook Mounting

INSTALLATION

Electrical Wiring Information

Refer to the ELECTRICAL RATING CHARTS for unit specific information.

⚠ WARNING

ELECTRIC SHOCK HAZARD: For hardwired units, 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 equipped with incandescent lights that require a circuit breaker larger than 20 amps for the heat element must have a separate circuit breaker for the incandescent lights that is 20 amps or less.

NOTE: If the unit being installed is not shown or listed in this manual, refer to the wiring diagram supplied with the unit and the installation information on the unit for further instructions.

Power Supply

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

- 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.
- Use a minimum of No. 8 AWG copper wire for individual circuits 25 to 30 amps.

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

Conduit Connection

Units supplied with a right angle fitting and flexible conduit attached have had all internal connections completed at the factory. Attach the proper power supply leads to the high temperature lead wires in the conduit.

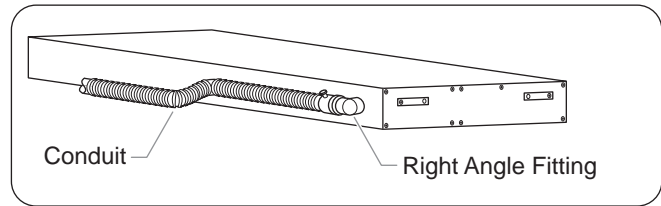


Figure 17. Conduit Connections

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

Remote Control Enclosures

Hatco remote control enclosures include switches, wire leads, and/or indicator lights and are ready for installation.

The RMB Series require one remote control enclosure per strip heater. The RMB2 Series allows multiple strip heaters to be connected to one remote control enclosure.

NOTE: See the OPTIONS AND ACCESSORIES section in this manual for more information.

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.

NOTICE

To prevent premature failure of components due to excessive heat, Remote Control Enclosures must be installed outside the strip heater heat zone.

General

Glo-Ray® Infra-Black® Strip Heaters are designed for ease of operation. Use the following information and procedures to operate the unit.



WARNING

Read all safety messages in the **IMPORTANT SAFETY INFORMATION** section before operating this equipment.



CAUTION

BURN HAZARD: Some exterior surfaces on the unit will get hot. Avoid unnecessary contact with unit.

Controls

Infra-Black Strip Heaters are equipped with either a Thermostatic Control Box with Indicator Lights (TCBI) mounted on the unit or an optional remote control enclosure (RMB) mounted remotely. The following is a list of the available controls for either control configuration.

Thermostatic Control—Controls the temperature of the heating element(s). The thermostatic control is available only on a TCBI-equipped unit.

Infinite Control—Turns on the power and controls the temperature of the heating elements. The infinite control is available only on a remote control enclosure.

ON/OFF (I/O) Toggle Switch—Turns power on and off to the heating elements and/or the lights.

Indicator Light—Illuminates when power is on, shuts off when power is off.

Startup

1. Move the ON/OFF (I/O) toggle switch to the ON (I) position and/or turn the infinite control(s) to the desired setting.
 - The indicator light (if equipped) will illuminate and the heating elements will energize.
2. For units with a thermostatic control, turn the control to the desired setting.

NOTE: Allow 15-20 minutes to reach operating temperature.

3. For units with display lights, move the lights ON/OFF (I/O) toggle switch to the ON (I) position to turn on the lights.

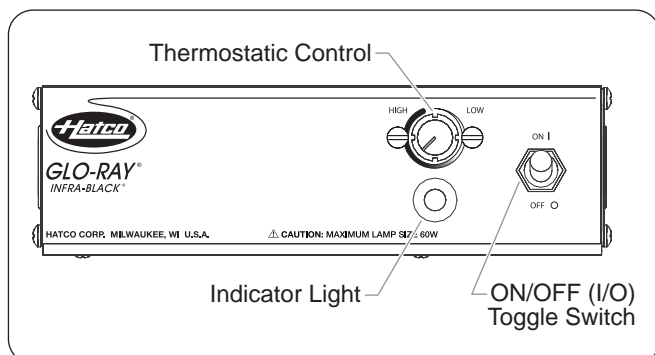


Figure 18. Thermostatic Control Box with Indicator Lights (TCBI)

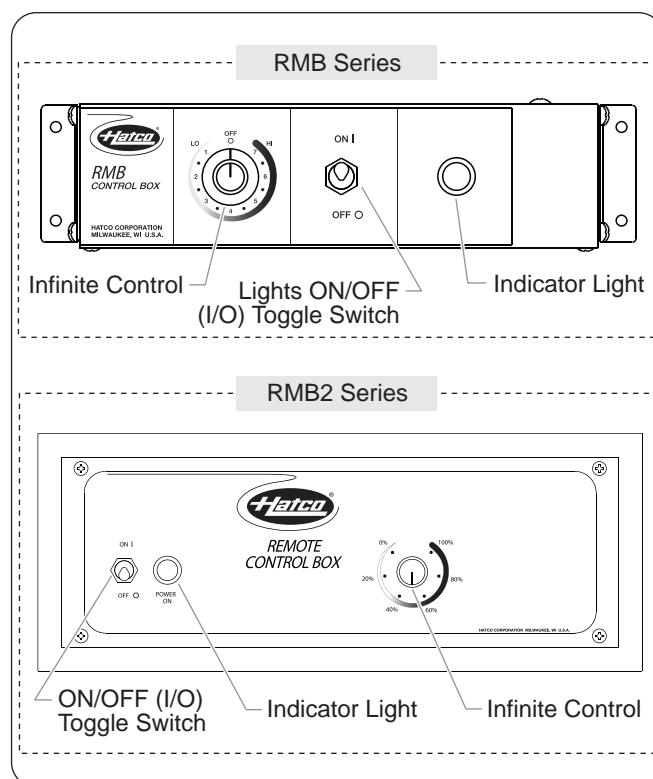


Figure 19. Remote Control Enclosures

NOTE: Refer to the **OPTIONS AND ACCESSORIES** section for remote control enclosure information.

Shutdown

1. Move the ON/OFF (I/O) toggle switch to the OFF (O) position and/or turn the infinite control(s) to the OFF(O) position.
 - The indicator light (if equipped) will shut off and the heating elements will shut down.
2. For units with display lights, move the lights ON/OFF (I/O) toggle switch to the OFF (O) position.

MAINTENANCE

General

Glo-Ray® Infra-Black® Strip Heaters are designed for maximum durability and performance with minimum maintenance.

WARNING

ELECTRIC SHOCK HAZARD:

- Turn power OFF at fused disconnect switch/circuit breaker and allow unit to cool before performing any maintenance, adjustments, or cleaning.
- **DO NOT submerge or saturate with water. Unit is not waterproof. Do not operate if unit has been submerged or saturated with water.**
- Do not steam clean or use excessive water on unit.
- This unit is not “jet-proof” construction. Do not use jet-clean spray to clean this unit.

This unit has no “user-serviceable” parts. If service is required on this unit, contact an Authorized Hatco Service Agent or contact the Hatco Service Department at 414-671-6350; fax 414-671-3976.

Use only Genuine Hatco Replacement Parts when service is required. Failure to use Genuine Hatco Replacement Parts will void all warranties and may subject operators of the equipment to hazardous electrical voltage, resulting in electrical shock or burn. 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.

Cleaning

To preserve the finish of the Glo-Ray Infra-Black Strip Heater, it is recommended that all surfaces be cleaned daily.

NOTICE

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

1. Turn off the unit and allow the unit to cool.
2. Wipe down all metal surfaces with a clean, damp cloth. Stubborn stains may be removed with a good stainless steel or non-abrasive cleaner. Clean hard to reach areas using a small brush and mild soap.

Replacing Display Light Bulbs

WARNING

Use only light bulbs that meet or exceed National Sanitation Foundation (NSF) standards and are specifically designed for food holding areas. Breakage of light bulbs not specially coated could result in personal injury and/or food contamination.

The display light is an incandescent bulb that 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 light bulb:

1. Disconnect the power supply and wait until the unit has cooled.
2. Unscrew the light bulb from the unit and replace it with a new, specially-coated incandescent light bulb.

NOTE: Hatco shatter-resistant light bulbs meet NSF standards for food holding and display areas. For 120, 120/208, and 120/240 Volt applications, use Hatco P/N 02.30.043.00. For 220–240 Volt applications, use Hatco P/N 02.30.058.00.

NOTE: Halogen bulbs are available as an option. For 120, 120/208, and 120/240 Volt applications, use Hatco P/N 02.30.081.00. For 220–240 Volt applications, use Hatco P/N 02.30.082.00.

TROUBLESHOOTING GUIDE

WARNING

This unit must be serviced by qualified personnel only. Service by unqualified personnel may lead to electric shock or burn.

WARNING

ELECTRIC SHOCK HAZARD: Turn power OFF at fused disconnect switch/circuit breaker and allow unit to cool before performing any maintenance, adjustments, or cleaning.

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.
	Switch is defective.	Contact Authorized Service Agent or Hatco for assistance.
	Wiring is open.	Contact Authorized Service Agent or Hatco for assistance.
	Heating element defective.	Contact Authorized Service Agent or Hatco for assistance.
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 (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.
	Temperature control set too low.	Move temperature control to higher setting.
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.
	Temperature control set too high.	Move temperature control to lower setting.
Control switches burn out rapidly.	Switches are mounted in the heat zone.	Check switch location per Hatco guidelines in this manual. Relocate switches to a cooler zone if installation is incorrect.
	Switches used are not Hatco supplied.	Genuine Hatco Parts are specified to operate safely and properly in the environment in which they are used. Contact Authorized Service Agent or Hatco to replace switches with Genuine Hatco Replacement Parts.

OPTIONS AND ACCESSORIES

Element Wire Guard

Element Wire Guards are available as a factory-installed option. Element Wire Guards protect users from incidental contact with the heated surface. GRAIH-XXD and GRAIHL-XXD require two sets of wire guards.

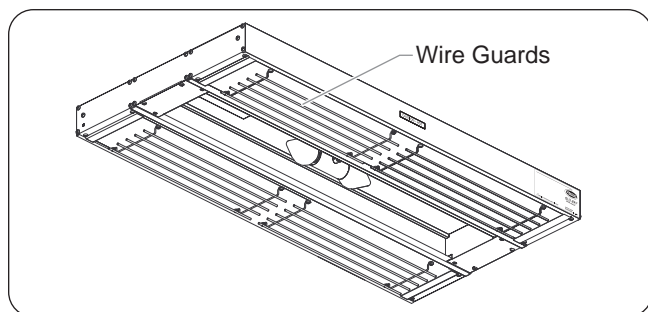


Figure 20. GRAIHL-XXD with Element Wire Guards

Remote Control Enclosure — RMB Series

RMB Series remote control enclosures are available in various sizes and configurations for use with strip heaters. Remote control enclosures locate controls away from the constant heat of the unit, increasing the life span of the controls. All models are built in accordance with UL standards with switches, indicator lights, and wiring. Consult the factory for type and location of RMB Series controls for enclosure.

NOTE: RMB Series remote control enclosures require one remote control enclosure per strip heater.

Models	Width (A)	Depth (B)	Height (C)	Screw Width (D)	Screw Height (E)
RMB-3 Series	5-15/16" (150 mm)	3" (76 mm)	2-5/8" (67 mm)	6-5/16" (161 mm)	1-5/8" (41 mm)
RMB-7 Series	9-3/8" (239 mm)	3" (76 mm)	2-5/8" (67 mm)	9-13/16" (249 mm)	1-5/8" (41 mm)
RMB-14 Series	14-3/8" (366 mm)	3" (76 mm)	2-5/8" (67 mm)	14-13/16" (376 mm)	1-5/8" (41 mm)
RMB-16 Series	16-3/8" (417 mm)	3" (76 mm)	2-5/8" (67 mm)	16-13/16" (427 mm)	1-5/8" (41 mm)
RMB-20 Series	20-3/8" (518 mm)	3" (76 mm)	2-5/8" (67 mm)	20-13/16" (529 mm)	1-5/8" (41 mm)

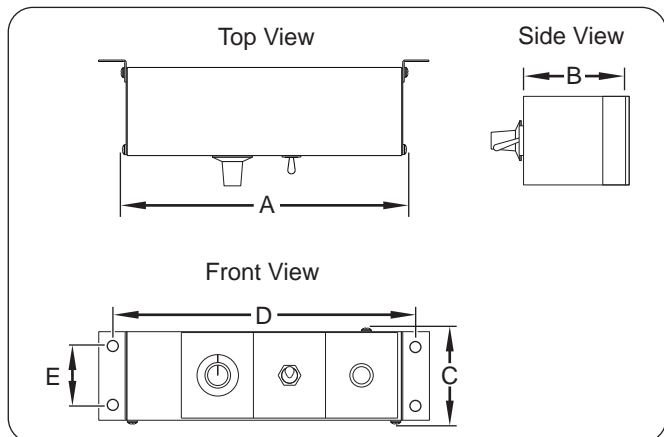


Figure 21. Dimensions — RMB Series

Remote Control Enclosure — RMB2 Series

RMB2 Series remote control enclosures allow multiple strip heaters to be wired to and controlled by a single enclosure. The total amp draw of all connected strip heaters cannot exceed the rating of the remote control enclosure. Consult the factory for information regarding the proper RMB2 Series remote control enclosure for a specific application.

RMB2 Series Dimensions

Models	Width (A)	Width (B)	Height (C)	Depth (D)	Height (E)
RMB2-1R	10-1/8" (257 mm)	11" (279 mm)	5-1/2" (140 mm)	4-1/4" (109 mm)	4-5/8" (116 mm)
RMB2-2R	13-1/8" (333 mm)	14" (356 mm)	5-1/2" (140 mm)	4-1/4" (109 mm)	4-5/8" (116 mm)

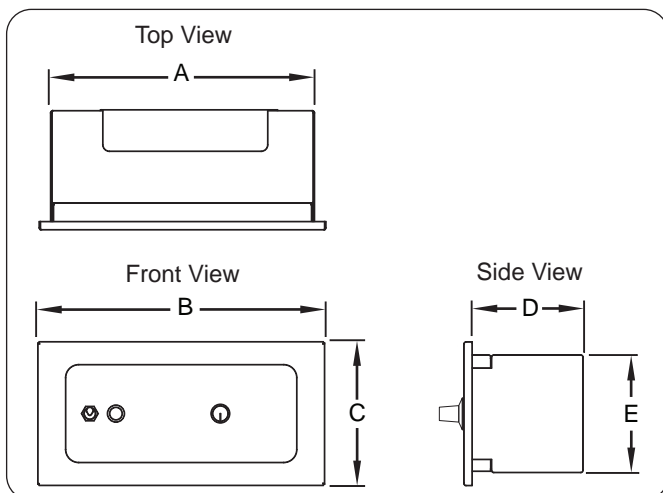


Figure 22. Dimensions — RMB2 Series

RMB2 Series Cutout Dimensions

Models	Opening Cutout Dimensions		Screw Hole Dimensions		
	(A)	(B)	(C)	(D)	(E)
RMB2-1R	4-3/4" (121 mm)	10-1/8" (257 mm)	1-1/8" (29 mm)	2-1/2" (64 mm)	10-7/16" (265 mm)
RMB2-2R	4-3/4" (121 mm)	13-1/8" (333 mm)	1-1/8" (29 mm)	2-1/2" (64 mm)	13-7/16" (341 mm)

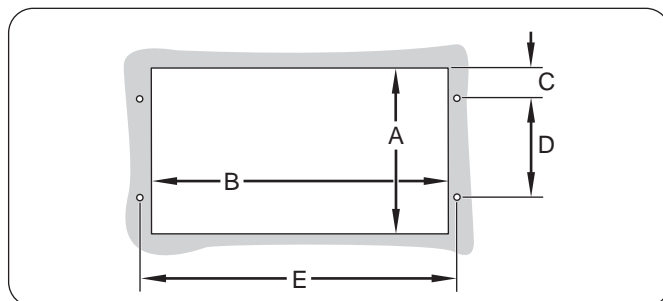


Figure 23. Cutout Dimensions — RMB2 Series

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:**
Conveyor Toaster Elements (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)
Built-In Heated Well Elements — HWB and HWBI Series (metal sheathed)
- 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
- d) **Ninety (90) Day Parts-Only Warranty:**
Replacement Parts

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, heat lamp bulbs, coated halogen light bulbs, halogen heat lamp bulbs, glass components, and fuses; Product failure in booster tank, fin tube heat exchanger, or other water heating equipment caused by liming, sediment buildup, chemical attack, or freezing; or 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 using new or refurbished parts or Product by Hatco or 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. In the context of this Limited Warranty, "refurbished" means a part or Product that has been returned to its original specifications by Hatco or a Hatco-authorized service agency. 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.

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