

# Chromalox®

## Installation, Operation

and

## RENEWAL PARTS IDENTIFICATION

### SERVICE REFERENCE

DIVISION 4

SECTION

SALES REFERENCE (Supersedes PG433)

PG433-1

161-304901-001

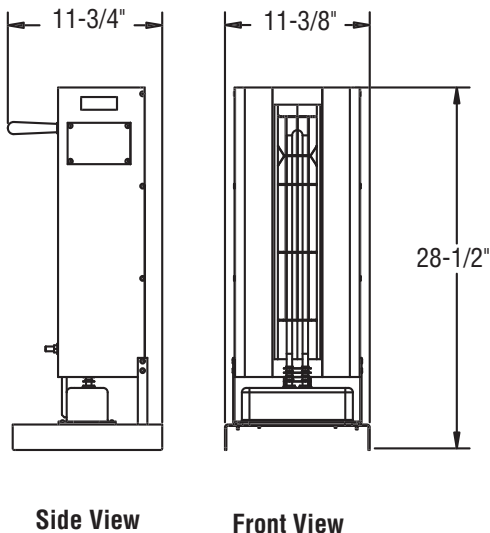
DATE MAY, 2003

# Type STAR Radiant Heater For Portable Installations

Specifications – Table 1

Model	Figure	Volts	KW	Amperage		BTU	Dimensions (In.)			Cord Ga./No. cond.	
				1 Phase	3 Phase		A Height	B Width	D Depth	1 Phase	3 Phase
STAR-02A-11-PC	1	120	1.5	12.5	NA	5118	28-1/2	11-3/8	11-3/4	Comes w/cord & plug	
STAR-02A-81-P		208	2	9.6	NA	6824				14/3	NA
STAR-02A-21-P		240	2	8.3	NA	6824				14/3	NA
STAR-02A-71-P		277	2	7.2	NA	6824				14/3	NA
STAR-02A-41-P		480	2	4.2	NA	6824				14/3	NA
STAR-02A-61-P		600	2	3.3	NA	6824				14/3	NA
STAR-05A-81-P	2	208	4.5	21.6	NA	15354	49	11-3/8	11-3/4	12/3	NA
STAR-05A-21-P		240	4.5	18.8	NA	15354				12/3	NA
STAR-05A-71-P		277	4.5	15.9	NA	15354				14/3	NA
STAR-05A-41-P		480	4.5	9.4	NA	15354				14/3	NA
STAR-05A-61-P		600	4.5	7.5	NA	15354				14/3	NA
STAR-06A-83-P	3	208	6	28.8	16.7	20472	32-1/2	23-5/8	11-1/2	10/3	12/4
STAR-06A-23-P		240	6	25.0	14.4	20472				10/3	12/4
STAR-06A-71-P		277	6	21.7	—	20472				10/3	—
STAR-06A-43-P		480	6	12.5	7.2	20472				12/3	12/4
STAR-06A-63-P		600	6	10.0	5.8	20472				12/3	12/4
STAR-14A-83-P	4	208	13.5	NR	37.5	46062	55-5/8	23-5/8	11-1/2	NR	6/4
STAR-14A-23-P		240	13.5	NR	32.5	46062				NR	6/4
STAR-14A-71-P		277	13.3	47.7	—	45038				6/3	—
STAR-14A-43-P		480	13.5	28.1	16.2	46062				10/3	12/4
STAR-14A-63-P		600	13.5	22.5	13.0	46062				10/3	12/4

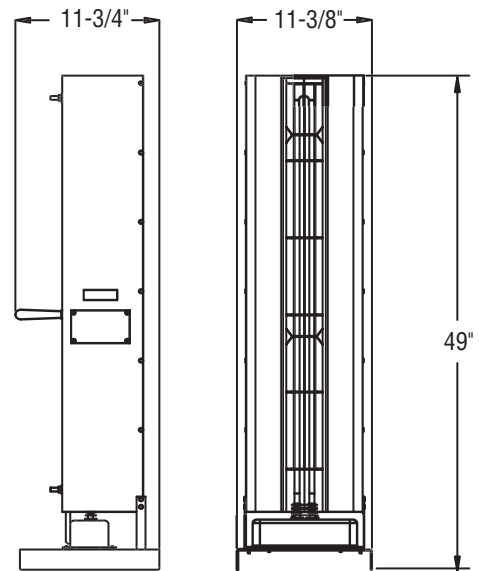
NA - Not Available  
NR - Not Recommended



Side View

Front View

Figure 1



Side View

Front View

Figure 2

## GENERAL

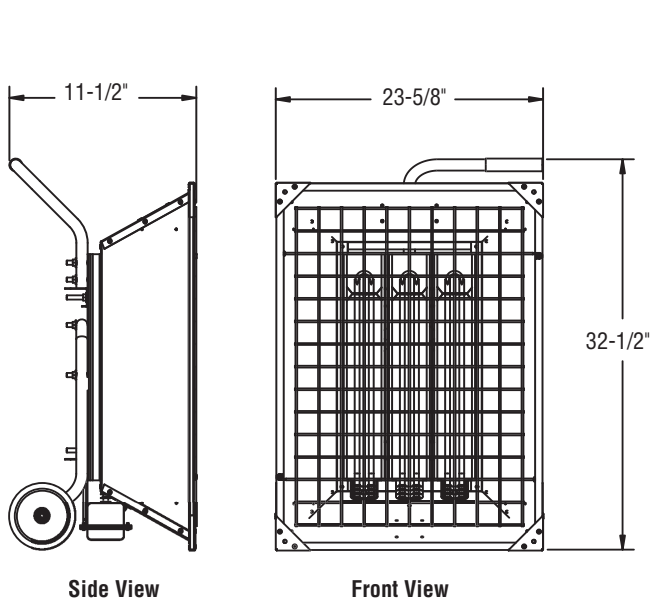


Figure 3

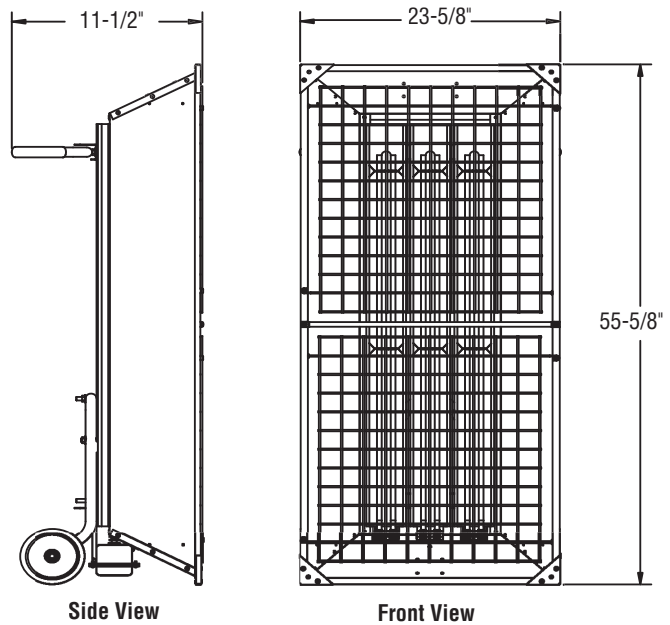


Figure 4

### IMPORTANT: SAVE THESE INSTRUCTIONS

#### **⚠ WARNING**

**FIRE HAZARD. Do not use as a residential or household heater. Keep combustible material away from heater. Do not operate heater where flammable vapors, gases or liquids are present.**

**To avoid personal injury read "IMPORTANT INSTRUCTIONS" on this page before installation or operation of heater.**

## IMPORTANT INSTRUCTIONS

When using electrical appliances, basic precautions should always be followed to reduce risk of fire, electric shock and injury to persons, including the following:

1. Read all instructions before using this heater.
2. This heater is hot when in use. To avoid burns, do not let bare skin touch hot surfaces. Keep combustible materials, such as furniture and papers at least 7 feet from the front of the heater.
3. **Do not leave heater unattended while in operation.**
4. Always disconnect heater when not in use.
5. Do not use outdoors in areas subject to wind.
6. Connect to properly grounded outlets or building ground.
7. This heater has hot surfaces. Do not use it in areas where gasoline, paint or flammable liquids are used or stored.
8. Use this heater only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock or injury to persons.
9. In order to prevent equipment damage, protect with a ground fault device such as Chromalox STAR-TG series monitor.
10. **SAVE THESE INSTRUCTIONS**

## WIRING

### **⚠ WARNING**

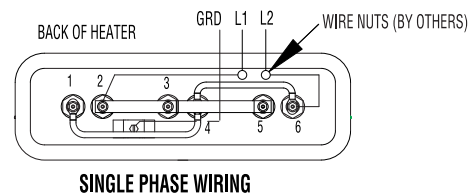
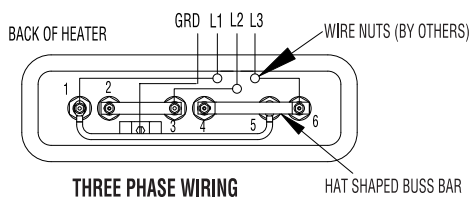
**ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing heater. Failure to do so could result in personal injury or property damage. Heater must be effectively grounded in accordance with the National Electrical Code, NFPA 70.**

### **⚠ WARNING**

**All electrical wiring must be done by a qualified person in accordance with National Electrical Code (NEC) and meet all state and local regulations.**

1. Use heater only at the voltage specified on the nameplate.

2. The heater connection points are located in the gasketed terminal enclosure. To remove cover, remove screw(s) on the cover. Remove the cover to expose wiring connection points.
3. A green ground terminal is provided in the bottom of the enclosure. The ground wire should be connected before other connections are made.
4. Use type "SO" or equal cord.  
Refer to Table 1 for proper cord gage and number of conductors.
5. All 3 element heaters are factory pre-wired for 3-phase delta operation. Some units can be converted to single phase operation by changing the wiring. Refer to Table 1 for those heaters that can be converted to single phase. The appropriate wiring diagram (Figure 4) is also located on the bottom of the enclosure.



### INSTRUCTIONS FOR FIELD CONVERSION FROM 3 PHASE TO 1 PHASE:

1. Remove nuts from all terminals.
2. Remove all pigtail leads and hat shaped buss bar.
3. Remove end of leadwire on terminal 5 and slip onto terminal 4.
4. Remove leadwire attached to instruction sheet and connect between terminals 4 and 6.
5. Install hat shaped buss bar between terminals 3 and 5.
6. Place pigtail lead marked "L1" on to terminal 2 and pigtail lead marked "L2" on to terminal 6.
7. Install nuts.
8. Connect entrance wiring to pigtail leads "L1" and "L2". Connect ground to screw provided.
9. Inspect to make sure wiring is per "Single Phase Wiring" above.

## OPTIONAL ACCESSORIES

Chromalox STAR series radiant heaters can be field modified by adding optional kits. Refer to Chart A and B to select the proper kit.

### Disconnect Kit

The disconnect kit consists of a complete assembly consisting of a disconnect switch (3 Pole), power terminal block and all hardware to complete the installation. This kit can be mounted to both the fixed, overhead heater or the portable heater; see instruction bulletin PG436 for details.

### Cord Kits

Cord kits consist of 25 feet of 90°C cable and a right angle cord fitting which can connect directly to the heater terminal box or disconnect switch (if used). See installation bulletin PF491 for details

### Plugs

Single and three phase with ground. Available in nonlocking and locking. See Chart B.

### Tip Over and Ground Fault Kits

Star Tip Series Kit attaches to portable heater and de-energizes the heater in the event it is tipped over.

Star-TG Series Kit combines the tip over and ground fault feature for portable heaters. See installation bulletin PG436.

## OPTIONAL ACCESSORIES

**Chart A - Kit Selection**

Model	Disconnect Kit	Tipover Kit	Tipover w/Ground Fault	Single Phase Cord Set	Three Phase Cord Set
STAR-02A-11-PC	NA	NA	NA	Comes w/cord & plug	
STAR-02A-81-P	NA	NA	NA	PCN 295670	NA
STAR-02A-21-P	NA	NA	NA	PCN 295670	NA
STAR-02A-71-P	NA	NA	NA	PCN 295670	NA
STAR-02A-41-P	NA	NA	NA	PCN 295670	NA
STAR-02A-61-P	NA	NA	NA	PCN 295670	NA
STAR-05A-81-P	NA	NA	NA	PCN 295662	NA
STAR-05A-21-P	NA	NA	NA	PCN 295662	NA
STAR-05A-71-P	NA	NA	NA	PCN 295670	NA
STAR-05A-41-P	NA	NA	NA	PCN 295670	NA
STAR-05A-61-P	NA	NA	NA	PCN 295670	NA
STAR-06A-83-P	PCN 340662	PCN 340670	PCN 340726	PCN 295443	PCN 295435
STAR-06A-23-P	PCN 340662	PCN 340689	PCN 340734	PCN 295443	PCN 295435
STAR-06A-71-P	PCN 340662	PCN 340697	PCN 340742	PCN 295443	NA
STAR-06A-43-P	PCN 340662	PCN 340700	PCN 340750	PCN 295662	PCN 295427
STAR-06A-63-P	PCN 340662	PCN 340718	PCN 340769	PCN 295662	PCN 295427
STAR-1A4-83-P	PCN 340662	PCN 340670	PCN 340726	NA	PCN 295494
STAR-14A-23-P	PCN 340662	PCN 340689	PCN 340734	NA	PCN 295478
STAR-14A-71-P	PCN 340662	PCN 340697	PCN 340742	PCN 295486	NA
STAR-14A-43-P	PCN 340662	PCN 340700	PCN 340750	PCN 295443	PCN 295435
STAR-14A-63-P	PCN 340662	PCN 340718	PCN 340769	PCN 295443	PCN 295427

**Chart B - Plug Selection**

Fits Cable Dia.	Plug Type	Model	Description	Volts	Amps	Configuration	NEMA #	ANSI #
.385"-.780"	Locking	PGL-15-20	3 Pole, 4 Wire	250	20		L15-20	C73.85
.385"-.780"	Locking	PGL-15-30	3 Pole, 4 Wire	250	30		L15-30	C73.86
.595"-1.150"	Locking	PGL-16-30	3 Pole, 4 Wire	480	30		L16-30	C73.88
.595"-1.150"	Locking	PGL-17-30	3 Pole, 4 Wire	600	30		L17-30	C73.89
.750"-1.125"	Locking	PGL-3763C	2 Pole, 4 Wire	600	50		—	—
.750"-1.125"	Locking	PGL-3765C	3 Pole, 4 Wire	600	50		—	—
.625"-1.187"	Non Locking	PGN-6-50	2 Pole, 3 Wire	250	50		6-50	C73.53
.390"-.775"	Non Locking	PGN-15-20	3 Pole, 4 Wire	250	20		15-20	C73.59
.750"-1.250"	Non Locking	PGN-15-50	3 Pole, 4 Wire	250	50		15-50	C73.61

The above plugs are designed to be used with specific ranges of cable diameters. If not used with Chromalox Cable Kits, check cable manufacturer's cable diameter to be sure plug fits selected cable.

## MAINTENANCE

### ⚠ WARNING

**ELECRIC SHOCK HAZARD. Disconnect all power before servicing or replacing heating elements.**

The reflectors should be kept clean to obtain the maximum radiant output.

#### Element Replacement

1. Remove Terminal Box Cover.
2. Disconnect lead wires from heater terminals.
3. Remove safety grills (if installed).
4. Remove retainer screw located on the reflector at the terminal end.
5. Loosen (2), 3/8" nuts from the terminal box bracket located on the back of the heater and slide the entire heating element assembly out of the reflector assembly.

6. Remove wires and jumper straps as required to replace the failed heating element(s).
7. Remove bulkhead fitting nuts and washers.
8. Remove failed element and replace with a new element. **Replace only with genuine Chromalox "Arctic End" elements. Use of other elements will cause excess temperatures inside terminal box.**
9. Place gasket on the bulkhead fitting and insert terminals and fittings into the element holes in the terminal box.
10. Place washers and nuts on bulkhead fittings and tighten.
11. Replace wiring and jumper straps ( see Fig. 4).
12. Reassemble by following the reverse procedures (steps 5 through 1)

## RENEWAL PARTS IDENTIFICATION

Model	Element***	Element Housing Reflector	Safety Screen	Terminal Box Gasket
STAR-02A-11-PC	PCN 106059	234-891755-004	PCN 111878	132-304879-004
STAR-02A-81-P	PCN 106067		PCN 111878	132-304879-004
STAR-06A-83-P			PCN 340638	132-304879-003
STAR-02A-21-P	PCN 106075		PCN 111878	132-304879-004
STAR-06A-23-P			PCN 340638	132-304879-003
STAR-02A-71-P	PCN 106083		PCN 111878	132-304879-004
STAR-06A-71-P			PCN 340638	132-304879-003
STAR-02A-41-P	PCN 106091		PCN 111878	132-304879-004
STAR-06A-43-P			PCN 340638	132-304879-003
STAR-02A-61-P	PCN 106104		PCN 111878	132-304879-004
STAR-06A-63-P		PCN 340638	132-304879-003	
STAR-05A-81-P	PCN 106403	234-891-755-002	PCN 111894	132-304879-004
STAR-14A-83-P			PCN 340857	132-304879-003
STAR-05A-21-P	PCN 106411		PCN 111894	132-304879-004
STAR-14A-23-P			PCN 340857	132-304879-003
STAR-05A-71-P	PCN 106796		PCN 111894	132-304879-004
STAR-14A-71-P			PCN 340857	132-304879-003
STAR-05A-41-P	PCN 106964		PCN 111894	132-304879-004
STAR-14A-43-P			PCN 340857	132-304879-003
STAR-05A-61-P	PCN 106972		PCN 111894	132-304879-004
STAR-14A-63-P			PCN 340857	132-304879-003

\*\*\* Includes element supports

#### Parts Common to All Models:

Bulkhead fitting gasket . . . . . 132-895735-008  
 Bulkhead fitting washer . . . . . 328-890675-014  
 Bulkhead fitting nut . . . . . 200-890615-031  
 Element Support . . . . . 291-304869-002  
 Vinyl Grip . . . . . 024-304894-001

#### Parts Common to STAR, 06A-P and 14A-P Models:

Wheel . . . . . 333-557518-001  
 End Cap . . . . . 039-510848-001

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**Limited Warranty:**

Please refer to the Chromalox limited warranty applicable to this product at  
<http://www.chromalox.com/customer-service/policies/termsofsale.aspx>.

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