MW2 Series Installation Manual



Overhead Medium Wave Electric Infrared Heater

1, 2, and 3 Lamp Units





All persons involved with the installation, operation, and maintenance of the heater system must read and understand all the information in this manual.

Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury, or death. Read and understand the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment.

INSTALLER: Present this manual to the end user. Keep these instructions in a clean and dry place for future reference.

Serial #:

Model#:

(located on rating label)

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WARNING

California Proposition 65

This product can expose you to chemicals including lead and carbon monoxide, which are known to the State of California to cause birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.





Improper installation, adjustment, alteration, service, or maintenance can cause property damage, serious injury, or death. Read and understand the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment. Only trained, qualified personnel with proper electrical experience may install or service this equipment.

Safety Symbols

Safety is the most important consideration during installation, operation, and maintenance of the infrared heater. You will see the following symbols and signal words when there is a hazard related to safety or property damage.

NOTICE

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

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

Notice indicates a potentially hazardous situation which, if not avoided, could result in property damage.

Applications

This is not an explosion proof heater. No MW2 series heater may be used in a Class 1 or Class 2 Explosive Environment. Consult your local fire marshal, insurance carrier, and other authorities for approval if the proposed installation is in question.

Commercial / Industrial (Indoors & Outdoors)

Infrared heaters are designed and certified for use in industrial and commercial buildings such as warehouses, manufacturing plants, aircraft hangars, and vehicle maintenance shops. For maximum safety, the building must be evaluated for potential hazards before installing the heater system. A critical safety factor to consider before installation is the clearances to combustibles.

Outdoor Residential Only

This heater is **NOT** approved for use in an indoor residential application. This includes, but is not limited to, attached garages, living quarters, solariums, etc. Consult the local fire marshal and/or insurance provider if unsure of your application.





Not For Residential Use.

Installation of this infrared heater system in residential indoor spaces, RVs, mobile homes, etc. may result in property damage, fire, serious injury, or death.

Chart 1.1 • Model Number Designation Chart

Series	Material Type	Lamp Qty.	Voltage Code	Lamp Wattage Code
	D. Dis els Devuder Os et	1	A= 120 VAC B= 208 VAC	07=750
MW2-24 MW2-33 MW2-46	B= Black Powder Coat or S= Stainless Steel	2	C= 240 VAC D= 277 VAC	12=1250 20=2000
101002-40	5- Stainless Steel	3	G= 480 VAC H= 575 VAC	30=3000

Model Configuration Examples: MW2-24B1-C07 or MW2-46S2-G20

Chart 1.2 • Available Models and Operational Specifications

Series	Lamp Qty.	Voltage; Phase	Amperes	Total Wattage	BTU/h
		120; 1ph	6.25		
		208; 1ph	3.6	750	2,559
	1	240; 1ph	3.1	- 750	
		277; 1ph	2.7		
		120; 1ph	12.5		
		208; 1ph 7.2	4.500	5 4 4 9	
MW2-24	2	240; 1 ph	6.2	1,500	5,118
		277; 1 ph	5.4		
		120; 1 ph	18.7		
		208; 1 or 3 ph	10.8	0.050	
	3	240; 1 or 3 ph	9.3	2,250	7,677
		277; 1 or 3 ph	8.1		
		120; 1ph	10.4		
	1	208; 1ph	6.0	1.050	4.005
	1	240; 1ph	5.2	- 1,250	4,265
		277; 1 ph	4.5		
		120; 1ph	20.8		
MW2-33		208; 1ph	12.0	2,500	8,530
	2	240; 1 ph	10.4		
		277; 1 ph	9.0		
		208; 1 or 3 ph	18.0		
	3	240; 1 or 3 ph	15.6	3,750	12,796
		277; 1 or 3 ph	13.5		
		120; 1ph	16.6		
		208; 1ph	9.6		
	1	240; 1ph	8.3	2,000	6,824
	1	277; 1 ph	7.2		
		480; 1ph	4.2		
		575; 1ph	5.2	3,000	10,236
		208; 1ph	19.2		
		240; 1ph	16.6	4.000	
MW2-46	2	277; 1 ph	14.5	4,000	13,649
		480; 1ph	8.3		
		575; 1ph	10.4	6,000	20,473
		208; 1 or 3 ph	28.8		
	3	240; 1 or 3 ph	25.0	6.000	20 472
		277; 1 or 3 ph	21.7	6,000	20,473
		480; 1 or 3 ph	12.5		
		575; 1 or 3 ph	15.6	9,000	30,709

Clearances to Combustibles



Placement of explosive objects, flammable objects, liquids, and vapors close to the heater may result in explosion, fire, property damage, serious injury, or death. Do not store or use explosive objects, liquids, or vapors in the vicinity of the heater.

Failure to comply with the published clearances to combustibles could result in personal injury, death, and/or property damage.

The outside surfaces of the heater are hot during operation and after operation. If contact is made, permanent skin damage may occur. Do not move, handle, or service the unit during operation or while hot.

A CAUTION



Signs shall be posted specifying the maximum permissible stacking height in order to maintain clearances to combustibles.

Hazards Include:

For maximum safety the building must be evaluated for hazards before installing the heater system. Examples include, but are not limited to:

- Gas and electrical lines
- Combustible and explosive materials
- Chemical storage areas
- Areas of high chemical fume concentrations
- Provisions for accessibility to the heater
- Adequate clearances around air openings
- Vehicle parking areas

- Vehicles with lifts or cranes
- Storage areas with stacked materials
- Lights
- Sprinkler heads
- Overhead doors and tracks
- Dirty, contaminated environment

A critical safety factor to consider before installation is the clearances to combustibles. **Clearance to combustibles** is defined as *the minimum distance you must have between the indicated surface and the combustible item*. Considerations must also be made for moving objects around the infrared heater. The following is a partial list of items to maintain clearances from:

Combustible Items Include:

- Wood
- Paper
- Fabric
- Chemicals
- Wall or roof insulation
- Plastics

Moving Objects Include:

- Overhead doors
- Vehicles on lifts
- Cranes
- Hoists
- Car wash equipment

When installing the infrared heater system, the minimum clearances to combustibles must be maintained. These distances are shown in Chart 1.3 and on the heater. If you are unsure of the potential hazards, consult your local fire marshal, fire insurance carrier, or other qualified authorities on the installation of infrared heaters for approval of the proposed installation.

Chart 1.3 • Clearances to Combustibles in Inches (Millimeters) - see Figure 1.1

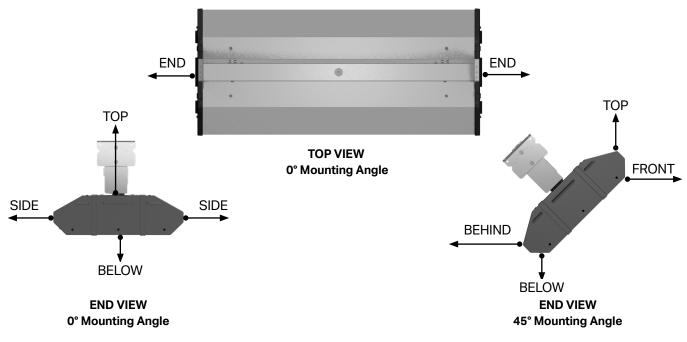
	Mounting	⊢ Sie	de ——–			
Length	Angle	Front	Behind	End	Тор	Below
Single Eleme	nt					
24" 33"	0°	9 (229)	9 (229)	6 (153)	6 (153)	42 (1067)
46"	45°	29 (737)	4 (102)	6 (153)	10 (254)	29 (737)
Double Eleme	ent					
24" 33"	0°	22 (559)	22 (559)	22 (559)	6 (153)	81 (2058)
46"	45°	81 (2058)	4 (102)	22 (559)	10 (254)	81 (2058)
Triple Elemen	Triple Element					
24'' 33''	0°	28 (712)	28 (712)	30 (762)	9 (229)	98 (2490)
46"	45°	98 (2490)	4 (102)	30 (762)	10 (254)	98 (2490)

* Heaters mounted on an angle between 0° and 45° must maintain clearances posted for 0° or 45°, whichever is greater.

** Clearances to combustibles must be maintained when using recessed mount kits (P/N: ELx-FRxx). For additional information, refer to form # LSH123a - Recessed Mounting Frame Installation Instructions or contact the factory.

NOTE: Ensure that building materials with a low heat tolerance (i.e, awnings, fabrics, plastics, sprinklers, insulation, etc.) are protected against degradation. This may require the heater to be mounted at a distance in excess of the published clearances to combustibles. Contact the material manufacturer for specific details.

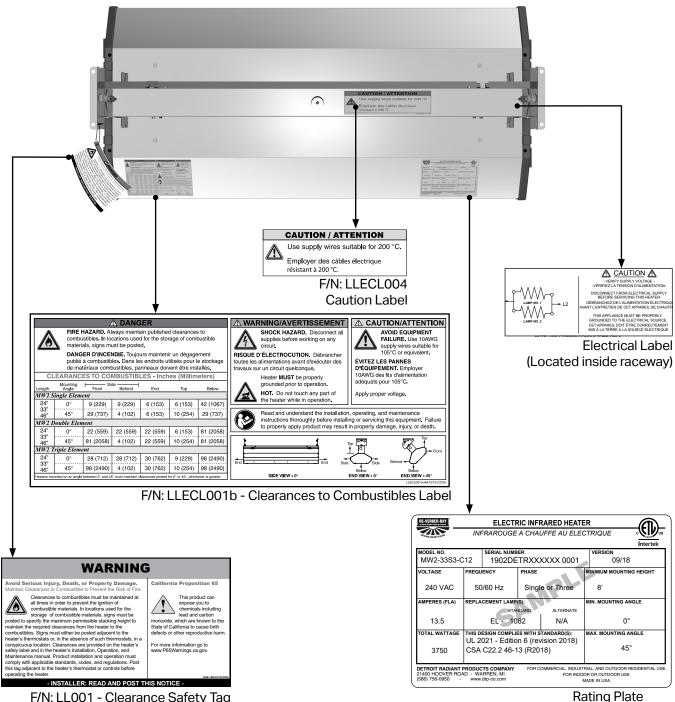
Figure 1.1 • Clearances to Combustibles



Safety Labels and Their Locations

It is important to provide warnings to alert individuals to potential hazards and safety actions. Signs should state the hazards for the particular application and be legible to the building occupants. Consult the factory or a factory representative for additional information on signage compliance.

Safety warning labels must be maintained on the infrared heater. Illustrations of the safety labels and their locations are pictured below. When no longer legible, they must be replaced. Contact either your local distributor or the product manufacturer for obtaining replacement signs or labels.



Top View

Rating i la

Standards, Certifications, and Government Regulations

Installation of this infrared heater must comply with all applicable local, state, and national specifications, regulations, and building codes. Contact the local building inspector and/or fire marshal for guidance.

The heater must be electrically grounded in accordance with the following codes:

United States: Refer to National Electrical Code[®], ANSI/NFPA 70 (latest edition). Wiring must conform to the latest edition of National Electrical Code[®], local ordinances, and any special diagrams from the manufacturer.

Canada: Refer to Canadian Electrical Code CSA C22.1 Part 1 (latest edition).

Detroit Radiant Products Company units comply with or are certified by one or more of the following organizations or standards:

- CSA 22.2 #46 M1988
- UL 2021





Read and understand the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment.

Design

To ensure a safe, properly designed heating system, a layout should be developed for the correct placement of the infrared heater(s).

Aside from safety factors such as clearances to combustibles (see Chart 1.3 on page 6), consideration should also be given to factors such as the environment (e.g., cold/drafty, average, protected), heat coverage (sq. ft.) needed, heater centers, the distance behind a person or work station(s), etc. Also, the effective infrared surface temperature of a person or object may be diminished with wind above 5 mph. Wind barrier(s) may be required. Most importantly, clearances to combustibles **must** always be maintained! Refer to hazards on page 5.

When positioning the heaters, keep in mind the location of combustible materials, lights, sprinkler heads, overhead doors, storage areas with stacked materials, gas and electrical lines, parked vehicles, cranes, etc. Refer to page 6 for minimum clearances to verify that a safe installation exists.

This installation manual, along with national, state, provincial, and local codes, addresses these issues. It is critical that you read, understand, and follow all guidelines and instructions. Always inspect and evaluate the mounting conditions, application, and wiring.

When heated, materials high in hydrocarbons (solvents, paint thinner, mineral spirits, formaldehydes, etc.) can evaporate and/or degrade. This may result in odors or fumes being emitted into the environment. To correct this problem, clean the area and/or introduce additional ventilation. Heaters installed and serviced in accordance with the installation manual do not emit foul odors into the environment.

IMPORTANT: Fire sprinkler heads must be located at an appropriate distance from the heater to avoid an inadvertent discharge. This distance may exceed the published clearances to combustibles. Certain applications may require the use of high temperature sprinkler heads or relocation of the heaters.

A CAUTION

Fire sprinkler systems containing propylene glycol, antifreeze, or other potentially flammable substances shall not be used in conjunction with this heater without careful consideration for, and avoidance of, inadvertent discharge hazards. For further information consult applicable NFPA codes. Always observe applicable provincial, state, and local codes.

Chart 2.1 • Basic Heating Application Chart

Series	Lamp Qty.	Recommended Mounting Height (Ft.)* [Dim. A]	Recommended Distance Between Heaters (Ft.) [Dim. B]	Approximate Square Foot Coverage	Approximate Watts per Square Foot
	1	7 to 9	2 to 7	200	4
MW2-24	2	7 to 9	3 to 9	200	8
	3	8 to 10	4 to 11	300	8
	1	7 to 9	3 to 9	200	6
MW2-33	2	8 to 10	4 to 11	300	8
	3	8 to 10	5 to 13	300	11
	1	8 to 10	4 to 11	300	7 to 10
MW2-46	2	10 to 14	5 to 13	500	8 to 12
	3	10 to 15	6 to 15	500	12 to 18

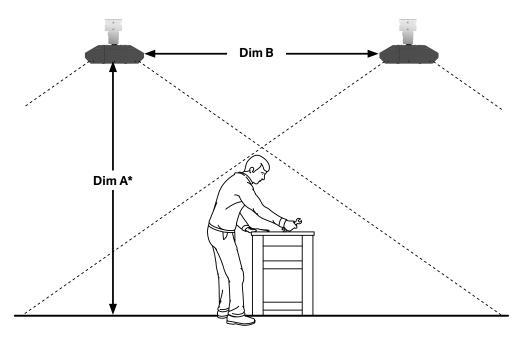
* Clearances to combustibles published in this manual and on safety labels must be maintained at all times. Factory recommended mounting heights are listed as a guideline. If infrared heaters are mounted too low or too high, they may result in discomfort or lack of heat.

Chart 2.2 • Estimating Required Load

Type of Building	Watts Req. per Square Foot at Floor Level
Insulated	10
Uninsulated	16
Outdoor Sheltered	25 to 30
Outdoor Unsheltered	30 to 45

When comfort heating people, two heaters should be used to heat both sides of the individual. Heater installation shall comply with all IOPM, NEC, ANSI/NFPA-70, CEC, and local restrictions.

Figure 2.1 • Heating Application



Heater Mounting



Improper suspension of the infrared heater may result in collapse and being crushed. Always suspend from a permanent part of the building structure that can support the total force and weight of the heater.



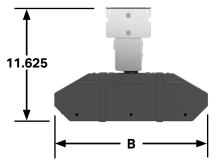
Failure to maintain minimum clearances to combustibles may result in fire and/or explosion, property damage, serious injury, or death. Always maintain minimum clearances and post signs or provided tags (F/N: LL001) adjacent to heater's controller. Signs should state the hazards for the particular application and be legible to the building occupants. Consult the factory or a factory representative for additional information on signage compliance.

The heater can be suspended with chains or rigid threaded rod. Local codes, or conditions that would cause the unit to move (e.g., wind drafts, blowers, crane rails, etc.), may require rigid threaded rod. Consult all applicable codes before installation.

Clearances to combustibles must be maintained when using recessed mount kits (P/N: ELx-FRxx). For additional information, refer to form # LSH123a - Recessed Mounting Frame Installation Instructions or contact the factory.

The heater must be level from side to side and may be 0° to 45° on horizontal. Refer to Figures 2.2 and 2.3.





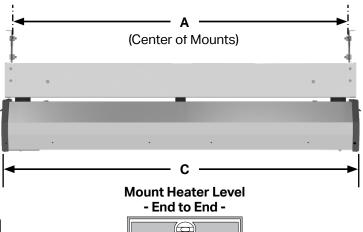
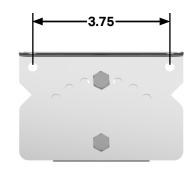


Chart 2.3 • Pl	nysical Dir	nensions	(inches)

Model No.	Α	В	С
MW2-24X1	23.50	9.625	24.50
MW2-24X2	23.50	15.25	24.50
MW2-24X3	23.50	21.00	24.50
MW2-33X1	32.50	9.625	33.50
MW2-33X2	32.50	15.25	33.50
MW2-33X3	32.50	21.00	33.50
MW2-46X1	45.50	9.625	46.50
MW2-46X2	45.50	15.25	46.50
MW2-46X3	45.50	21.00	46.50

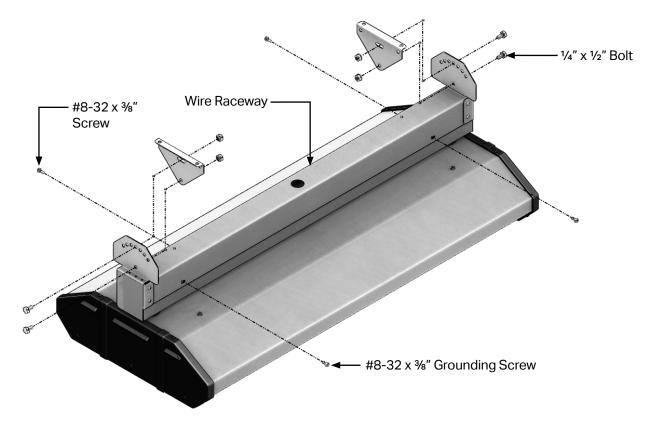
Figure 2.3 • Mounting Centers



Top Channel Assembly

- Attach the mounting brackets to the top wire raceway. On each end, place (1) ¼" x ½" bolt through the bottom hole of the mounting bracket and through the bottom hole of the top wire raceway. Place (1) ¼" lock nut on each bolt. Do not tighten completely. Refer to Figure 2.4.
- **NOTE**: The mounting brackets are **NOT** required for chain suspension.
- 2 Adjust wire raceway to desired mounting angle.
- On each side, place (1) ¼" x ½" bolt through slot in the mounting bracket and the hole in the top wire raceway. Place (1) ¼" lock nut on each bolt and tighten.
- Tighten lock nuts from Step 1.
- 6 Hook heater body into mounted wire raceway. Unit will hang freely by the "T" hinge, leaving both hands free to wire unit. Refer to Figure 2.4.
- **6** Run supplied high temperature wires out to field supplied junction box. **DO NOT** make connections inside the wire raceway.
- Close wire raceway using the (4) #8-32 x ³/₄" grounding screws provided in hardware pack.

Figure 2.4 • Top Channel Assembly



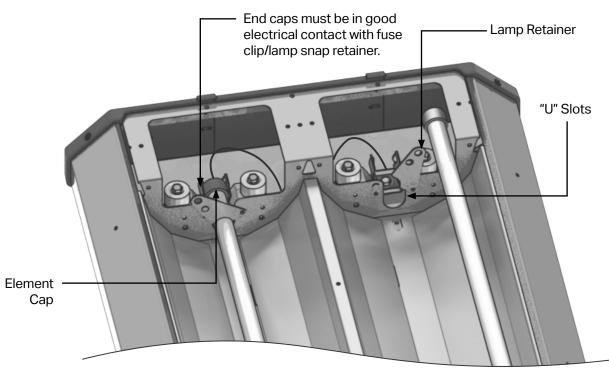
Lamp Installation

A CAUTION

Disconnect power prior to installing or replacing supplied quartz lamp(s). The elements can and should be installed prior to mounting the heater.

- Ensure appliance is OFF and is cool to the touch.
- 2 Remove both service access panels using a ¼" nut driver.
- Open lamp retainers by firmly rotating the retainers on both sides of the unit (see Figure 2.5).
- Position heating elements in "U" slots and firmly press the connector end into the clip(s), one end at a time. Avoid handling the quartz glass as much as possible.
- **6** Rotate the lamp retainer into closed position.
- 6 Repeat steps 3 through 5 until all heating elements have been installed.
- After heating elements have been installed, the quartz glass should be wiped down with alcohol using a clean cloth.
- 8 Reinstall the service access panels.

Figure 2.5 • Lamp Installation

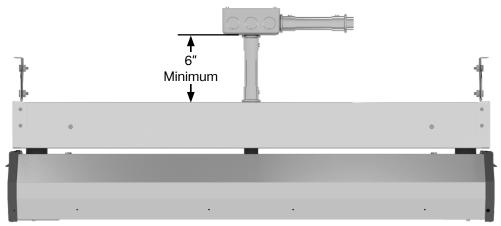


NOTE: MW2 series heaters are designed for use with quartz lamp infrared heating elements only. **They** are **NOT** intended to be used with straight metal rod heating elements. Replace lamps with parts from Detroit Radiant Products Company only!

Totally Exposed Outdoor Applications

For totally exposed outdoor applications (not ceiling protected) ensure connections are made as illustrated in Figure 2.6.

Figure 2.6 • Exposed Outdoor Application



NOTE: All conduit, conduit fittings, and junction boxes are field supplied. Must be NEMA Type 4X or equivalent. Heater must be suspended from mounting brackets.

Electrical

A WARNINGImage: Second colspan="2">**Electric Shock**Field wiring to the heater must be connected and grounded in accordance with national, state, provincial, and local codes, and to the guidelines in the this manual. In the United States, refer to the most current revisions to the ANSI/NFPA 70 Standard and in Canada, refer to the most current revisions the CSA C22.1 Part I Standard.Disconnect power to heater before servicing.Failure to follow these instructions can result in death or electrical shock.

This fixture is equipped with high temperature silicone lead wires to make connections to branch circuit. Remove the wire-ties prior to making electrical connections.

Wiring connections should always be through one of the knockouts in the top wire raceway. Wire connections must also be made outside of the top of the wire raceway. Consult the factory or a qualified electrician for details on staging.

Supply wires must be a copper conductor type with a minimum size of 10 AWG.

The heater must be connected to the earthing conductor (green wire) installed by the factory.

Reference top of page 14 for use in totally exposed outdoor applications.

Wiring Diagrams

Figure 2.7 • Wiring Diagram for Units with 1 Lamp

Figure 2.8 • Wiring Diagram for Units with 2 Lamps

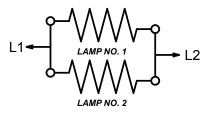
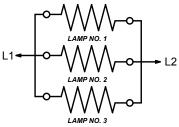


Figure 2.9 • Wiring Diagram for Units with 3 Lamps



Field Wiring

Figure 2.10 • Single Phase Service

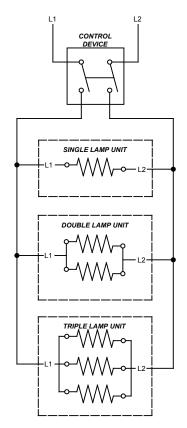
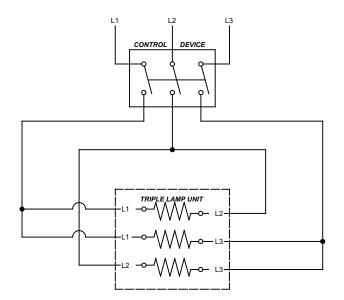


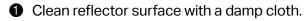
Figure 2.11 • Three Phase Service

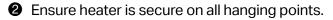


3.0 Maintenance

It is recommended that the following become a standard yearly procedure to obtain maximum operating efficiency and trouble-free operation.

During long periods of non-usage, remove or cover heater with a polyethylene bag and disconnect from power supply. If further service to the heater is desired, contact your representative or the factory.





- 3 Maintain clearances to combustibles at all times. Immediately remove objects in violation of any of the published clearances to combustibles.
- **4** Check electrical wires and connections for wear or any kind of damage.

Maintenance Log

Date	Maintenance Performed	Replacement Parts Required

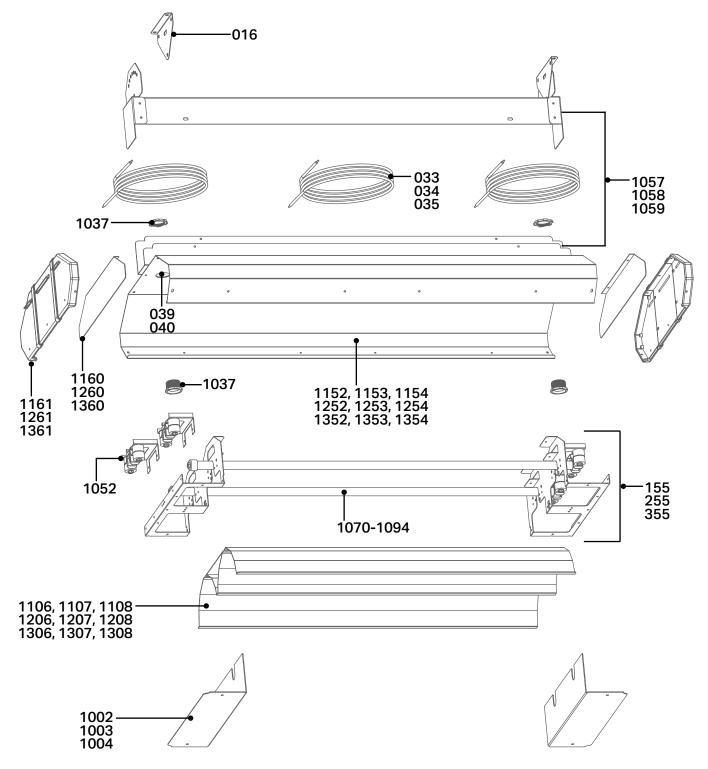
Troubleshooting Guide Key Start Process Corrective Action Question Question Turn Heater on from power source. Does the heating Are the heating lamps No Yes Replace heating lamp(s). physically damaged? lamp(s) turn on? 0 Are the heating lamps Rewire lamps as indicated wired as indicated in No in this manual. the manual? Yes 29 Find the source of the electrical problem between panel and heater. Is there a sufficient No Is the supply voltage correct for the amount of heat? No Supply correct voltage. model type on the rating label? Heater size and/or quantity of íes Is the heater mounted within the heaters, may be incorrect for application. **íes** recommended height? es Is there too much heat? Mount heater within the No recommended mounting heights.

Troubleshooting ends.

Heater Assembly Components

For complete information on MW2 series replacement parts, visit the online replacement parts library at ww.reverberray.com/shop. For discontinued models, consult the factory.

Figure 3.1 • Components



Parts List

Chart 3.1 • General Parts List

Part No.	Description	Part No.	Description
EL-0161	Mounting Brackets	EL-1107	Single Lamp Reflector, 33" Model
EL-033	12 Gauge Wire Length for 33" (specify color)	EL-1108	Single Lamp Reflector, 46" Model
EL-034	12 Gauge Wire Length for 24" (specify color)	EL-11531	Single Lamp Shell Assembly, 33" Model
EL-035	12 Gauge Wire Length for 46" (specify color)	EL-11541	Single Lamp Shell Assembly, 46" Model
EL-039	Rubber Spacer, LG, End (2 per heater) (not shown)	EL-1160	Single Lamp Shield
EL-040	Rubber Spacer, SM, Center (not shown)	EL-1161	Single Lamp Nylon End Panel
EL-1037	Wire Bushing		Double Lamp Model Parts List
EL-1052	Busbar Assembly	EL-255	Double Lamp Chassis Assembly
EL-10571	Wire Raceway Assembly, 24" Model	EL-1003	Double Lamp Service Access Panel
EL-10581	Wire Raceway Assembly, 33" Model	EL-1206	Double Lamp Reflector, 24" Model
EL-10591	Wire Raceway Assembly, 46" Model	EL-1207	Double Lamp Reflector, 33" Model
EL-1070	Lamp; 750 W, 120 V, 24"	EL-1208	Double Lamp Reflector, 46" Model
EL-1072	Lamp; 750 W, 208 V, 24"	EL-12521	Double Lamp Shell Assembly, 24" Model
EL-1074	Lamp; 750 W, 240 V, 24"	EL-12531	Double Lamp Shell Assembly, 33" Model
EL-1075	Lamp; 750 W, 277 V, 24"	EL-12541	Double Lamp Shell Assembly, 46" Model
EL-1078	Lamp; 1250 W, 120 V, 33"	EL-1260	Double Lamp Shield
EL-1080	Lamp; 1250 W, 208 V, 33"	EL-1261	Double Lamp Nylon End Panel
EL-1082	Lamp; 1250 W, 240 V, 33"		Triple Lamp Model Parts List
EL-1083	Lamp; 1250 W, 277 V, 33"	EL-355	Triple Lamp Chassis Assembly
EL-1086	Lamp; 2000 W, 120 V, 46"	EL-1004	Triple Lamp Service Access Panel
EL-1088	Lamp; 2000 W, 208 V, 46"	EL-1306	Triple Lamp Reflector, 24" Model
EL-1090	Lamp; 2000 W, 240 V, 46"	EL-1307	Triple Lamp Reflector, 33" Model
EL-1091	Lamp; 2000 W, 277 V, 46"	EL-1308	Triple Lamp Reflector, 46" Model
EL-1092	Lamp; 2000 W, 480 V, 46"	EL-13521	Triple Lamp Shell Assembly, 24" Model
EL-1094	Lamp; 3000 W, 575 V, 46"	EL-13531	Triple Lamp Shell Assembly, 33" Model
	Single Lamp Model Parts List	EL-13541	Triple Lamp Shell Assembly, 46" Model
EL-155	Single Lamp Chassis Assembly	EL-1360	Triple Lamp Shield
EL-1002	Single Lamp Service Access Panel	EL-1361	Triple Lamp Nylon End Panel
EL-1106	Single Lamp Reflector, 24" Model		

¹ Order part number as is for black finish or add -SS for stainless steel finish. Ex: EL-016 for black mounting brackets and EL-016-SS for stainless steel mounting brackets.

Visit our online parts reference library at <u>www.reverberray.com/shop</u> for further technical data related to parts.

4.0 Limited Warranty

One-Year Limited Warranty. Detroit Radiant Products Company (hereinafter referred to as the Company) warrants to the original purchaser or original user that all Detroit Radiant Products Company sold by it and all parts thereof are free from defects in material or workmanship under normal use and service. The Company's sole obligation under this warranty shall be limited to furnishing replacement parts, F.O.B. Warren, Michigan, for 12 months from the date of initial installation of the heater, but not to exceed 18 months from the date of shipment by the Company of the heaters, for any parts which the Company's examination shall disclose to its satisfaction to be defective. Defective parts are to be returned to the Company, transportation charges prepaid.

General Conditions. The warranties set out in this certificate are the exclusive remedy of the original owner or user in lieu of all other warranties written, oral or implied (including any warranty of merchantability or fitness for the purpose) and all other obligations or liabilities on the part of the Company, and the Company neither assumes nor authorizes any person to assume for it any other obligation or liabilities on the part of the Company, and the Company neither assumes nor authorizes any person to assume for it any other obligation or liabilities on the part of the Internet of the Company, and the Company neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale, installation or use of the heater or any parts thereof.

The Company will not be responsible for labor charges for the analysis of a defective condition in the heater or for the installation of replacement parts. The warranties provided herein will not apply if the input of the heater exceeds the rated input at time of manufacturing or if the heater in the judgment of the Company has been subjected to misuse, excessive dust, improper conversion, negligence, accident, corrosive atmospheres, excessive thermal shock, excessive vibration, physical damage to the heater, alterations by unauthorized service personnel, operation contrary to the Company's instructions or if the serial number has been altered, defaced, or removed. The Company shall not be liable for any default or delay in the performance of these warranties caused by contingency beyond its control, including war, government restriction or restraints, strikes, fire, flood, short or reduced supply of raw materials, or parts.

The warranties herein shall be null and void if the heater is not installed by a competent heating contractor and/ or if the heater is not installed according to Company instructions, normal industry practices and/or if the heater is not maintained and repaired according to Company's instructions. Normal product degradation and wear (rust, oxidation, etc.) does not constitute a material defect and applicable warranty claim.

Written permission is required for the return of any parts or equipment and any such return must be made on the basis of transportation charges prepaid. Shipment may be refused unless prior written permission is obtained and goods returned prepaid.



© 2019 Detroit Radiant Products Co. 21400 Hoover Road • Warren, MI 48089 Phone: (586) 756-0950 • Fax: (586) 756-2626 www.detroitradiant.com • sales@drp-co.com

