



Smart Heating Solutions

General Guide Specifications

KING ELECTRICAL MANUFACTURING FULL PRODUCT LINE OF HEATERS

King Electrical Manufacturing Company / 9131 10th Avenue South, Seattle, WA 98108
phone 206.762.0400 / fax 206.763.7738 / www.king-electric.com

SECTION 23 50 00
ELECTRIC HEATERS AND THERMOSTATS

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electric heaters and thermostats of the following types:
 - 1. Fan-forced wall and kick-space heaters.
 - 2. Ceiling heaters.
 - 3. Baseboard heaters.
 - 4. Cove heaters.
 - 5. Garage and shop heaters.
 - 6. Pumphouse heaters.
 - 7. Radiant heaters.
 - 8. Cabinet heaters.
 - 9. Draft barrier heaters.
 - 10. Unit, plenum, and explosion proof heaters.
 - 11. Industrial Portable heaters.
 - 12. Electric furnaces.
 - 13. Electric marine heaters.
 - 14. Thermostats.

1.2 RELATED SECTIONS

- A. Section 26 05 00 - Common Work Results for Electrical.

1.3 REFERENCES

- A. American Society of Sanitary Engineering (ASSE): ASSE 1060 --- Performance Requirements for Outdoor Enclosures for Fluid Conveying Components.
- B. CSA Group (CSA): CSA 22.2 No. 46 - electric Air Heaters.
- C. Edison Electric Institute (EEI).
- D. National Electrical Manufacturers Association (NEMA).
- E. Underwriters Laboratories (UL)
 - 1. UL 449 - Standard for Electric Heating Appliances
 - 2. UL 2021 - Standard for Fixed and Location-Dedicated Electric Room Heaters.
 - 3. UL 1042 - Standard for Electric Baseboard Heating Equipment.
 - 4. UL 1278 - Standard for Movable and Wall- or Ceiling-Hung Electric Room Heaters
- F. Underwriters Laboratories of Canada (ULC)
- G. Electrical testing Labs (ETL)



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1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Include system components, utility requirements and connections, relationship with adjacent construction. Include required clearances and access for servicing.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years experience manufacturing similar equipment.
- B. Installer Qualifications: Minimum 2 years experience installing similar equipment.
- C. Performance Ratings: In accordance with the Hydronics Institute's "I=B=R Testing and Rating Standard for Finned-Tube (Commercial) Radiation."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

- A. Provide manufacturer's standard one year limited warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: King Electrical Manufacturing Co., which is located at: 9131 10th Ave. S.; Seattle, WA 98108; Tel: 206-762-0400 ; Fax: 206-763-7738; Email:[request info \(info@king-electric.com\)](mailto:request_info@king-electric.com); Web:www.king-electric.com
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

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2.2 FAN-FORCED WALL AND KICK-SPACE HEATERS

- A. Basis of Design: W series fan forced wall heater as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed; ULC and UL-E41422.
 3. Ratings: 500 or 2,000 W at 120, 208 or 240 V.
 4. Motor: C-Frame, shaded pole, permanently lubricated, impedance protection and sealed bearings. Same voltage as heater. Wiring isolated from heating chamber.
 5. Fan: 4-Blade aluminum impeller fan in upper portion of unit, providing a down-flow heating pattern. 85 cu ft per min (2.41 cu m per min) air movement.
 6. Heating Elements: Coiled nickel chromium alloy, corrosion-resistant wire strung through four or more rows of mica insulator. Provided connection allows field modification to 50 percent wattage at time of installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Automatic reset if power is interrupted for 10 minutes.
 8. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire, and QuickSet stud alignment tabs. Mounts to wall studs, new or existing.
 9. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 - a. Color: White.
 - b. Color: Almond.
 10. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design, R rounded edges and corners.
 - a. Color: White.
 - b. Color: Almond.
 11. Thermostat: Factory installed, single pole.
 12. Thermostat: Factory installed, double pole.
- B. Basis of Design: WHF series fan forced wall heater, or WHF-HM - series fan forced high mount wall heater as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed; ULC and UL-E41422.
 3. Ratings: 500 or 2,000 W at 120, 208 or 240 V.
 4. Motor: C-Frame, shaded pole, permanently lubricated, impedance protection and sealed bearings. Same voltage as heater. Wiring isolated from heating chamber.
 5. Fan: Tangential blower. 75 cu ft per min (2.12 cu m per min) air movement.
 6. Heating Elements: Coiled nickel chromium alloy, corrosion-resistant wire strung through four or more rows of mica insulator. Provided connection allows field modification to 50 percent wattage at time of installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire, and QuickSet stud alignment tabs. Mounts to wall studs, new or existing.

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9. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 - a. Color: White.
 - b. Color: Almond.
 10. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design, R rounded edges and corners. .
 - a. Color: White.
 - b. Color: Almond.
 11. Thermostat: Factory installed, single pole.
 12. Thermostat: Factory installed, double pole.
- C. Basis of Design: PAW and PAW Ultra series fan forced wall heater or SL series slim line wall heater as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed; ULC and UL-E41422.
 3. Ratings: 250 or 2,250 at 120, 208, 240 or 277 V.
 4. Motor: C-Frame, shaded pole, permanently lubricated, impedance protection and sealed bearings. Same voltage as heater. Wiring isolated from heating chamber.
 5. Fan: Tangential blower. 75 cu ft per min (2.12 cu m per min) air movement.
 6. Heating Elements: Three steel sheathed heating tubes in furnace-brazed, plate-finned, block design. Each tube contains coiled Ni-Chrome wire embedded in magnesium oxide insulator. Seven possible wattage configurations available for selection during field installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire,
 9. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 - a. Color: White.
 - b. Color: Almond.
 10. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 11. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design, R rounded edges and corners.
 - a. Color: White.
 - b. Color: Almond.
 12. Grill: 20 gauge stainless steel.
 13. Grill: Custom bar grill.
 14. Thermostat: Factory installed, single pole.
 15. Thermostat: Factory installed, double pole.
- D. Basis of Design: EFW series large economy wall heater as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed by CSA; USA and Canada.
 3. Ratings 1500 to 4000 W at 120, 208 or 240/208 V.
 4. Motor: Heavy-duty cast aluminum 4 pole unit bearing, permanently lubricated with 10 cc oil reservoir, 1440 RPM. Enclosed impedance protected with intake air cooling motor for increased bearing life.

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5. Fan: 5-Blade aluminum impeller, high efficiency, dynamically balanced. 185 cu ft per min (5.24 cu m per min) air movement.
 6. Heating Elements: Coiled nickel chromium alloy, corrosion-resistant wire strung through four or more rows of mica insulator. Provided connection allows field modification to 50 percent wattage at time of installation.
 7. Auto Reset Safety Limit: Automatic shutdown if overheating occurs and automatically resets when temperature returns to normal.
 8. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 9. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 - a. Color: White.
 - b. Color: Almond.
 10. Tamper-proof cover for controls.
 11. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design.
 - a. Color: White.
 - b. Color: Almond.
 12. Thermostat: Factory installed, single pole.
 13. Thermostat: Factory installed, double pole.
- E. Basis of Design: LPW series and LPW series 2, wall heaters as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed; UL and ULC.
 3. Ratings: 1250 to 4000 W at 120, 208, 240/208 or 277 V.
 4. Motor: Heavy-duty, cast iron, unit bearing, permanently lubricated with 20cc oil reservoir, 1440 RPM. Enclosed impedance protected with intake air cooling motor for increased bearing life.
 5. Fan: 5-Blade aluminum impeller, high efficiency, dynamically balanced. 185 cu ft per min (5.24 cu m per min) air movement.
 6. Heating Elements: Three steel sheathed heating tubes in furnace-brazed, plate-finned, block design. Each tube contains coiled Ni-Chrome wire embedded in magnesium oxide insulator. Seven possible wattage configurations available for selection during field installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Fan, Heat, and Off Switch: 3-position switch providing heating and fan-only operation. Off switch to provide a "positive off" disconnecting all ungrounded conductors.
 9. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 10. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 - a. Color: White.
 - b. Color: Almond.
 11. Tamper-proof cover for controls.
 12. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design.
 - a. Oversized grill.
 - b. Color: White.
 - c. Color: Almond.
 13. Thermostat: single pole.

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- F. Basis of Design: LPWA architectural wall heaters as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed; UL and ULC.
 3. Ratings: 1500 to 4000 W at 120, 208, 240/208 or 277 V.
 4. Motor: Cast iron, unit bearing, permanently lubricated with 20 cc oil reservoir, 1300 RPM. Enclosed impedance protected with intake air cooling motor for increased bearing life.
 5. Fan: 5-Blade aluminum impeller, high efficiency, dynamically balanced. 185 cu ft per min (5.24 cu m per min) air movement.
 6. Heating Elements: Three steel sheathed heating tubes in furnace-brazed, plate-finned, block design. Each tube contains coiled Ni-Chrome wire embedded in magnesium oxide insulator. Seven possible wattage configurations available for selection during field installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Fan, Heat, and Off Switch: 3-position switch providing heating and fan-only operation. Off switch to provide a "positive off" disconnecting all ungrounded conductors.
 9. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire,
 10. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 11. Grill: 12 gauge extruded aluminum, epoxy powder-coated, louvered, one-piece design, powder coated or anodized.
 - a. Color: Anodized Silver.
 - b. Color: Dark bronze.
 - c. Color: White.
 - d. Color: Almond.
 12. Thermostat: factory installed, tamper proof.
 13. Thermostat: single pole.
 14. Transformer: 208, 240, 277 VAC to 24V.
 - a. Power contactor.
- G. Basis of Design: LPW-ECO2S large wall heaters as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed; UL and ULC.
 3. Ratings: 1250 to 4500 W at 120, 208, or 240/208 V.
 4. Motor: Cast iron, unit bearing, permanently lubricated with 20cc oil reservoir, 1440 RPM. Enclosed impedance protected with intake air cooling motor for increased bearing life.
 5. Fan: 5-Blade aluminum impeller, high efficiency, dynamically balanced. 185 cu ft per min (5.24 cu m per min) air movement.
 6. Heating Elements: Three steel sheathed heating tubes in furnace-brazed, plate-finned, block design. Each tube contains coiled Ni-Chrome wire embedded in magnesium oxide insulator. Seven possible wattage configurations available for selection during field installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.

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8. Fan, Heat, and Off Switch: 3-position switch providing heating and fan-only operation. Off switch to provide a "positive off" disconnecting all ungrounded conductors.
 9. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 10. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 - a. Color: Brushed aluminum.
 - b. Color: Bronze.
 - c. Color: White.
 11. Grill: 20 gauge steel, epoxy powder-coated, louvered, one-piece design, R rounded edges and corners.
 - a. Color: Brushed Nickel.
 - b. Color: Bronze.
 - c. Color: White.
- H. Basis of Design: LPWV vandal resistant wall heaters as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed UL and ULC.
 3. Ratings: 500 to 1500 W, at 120, 208, 240/208 or 277 Volts.
 4. Motor: Cast iron, unit bearing, permanently lubricated with 20 cc oil reservoir, 1300 RPM. Enclosed impedance protected with intake air cooling
 5. Fan: 5-Blade aluminum impeller, high efficiency, dynamically balanced. 185 cu ft per min (5.24 cu m per min) air movement.
 6. Heating Elements: Steel sheathed heating tubes in furnace-brazed, plate-finned, block design. Each tube contains coiled Ni-Chrome wire embedded in magnesium oxide insulator. Seven possible wattage configurations available for selection during field installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Fan, Heat, and Off Switch: Tamper proof 3-position switch providing heating and fan-only operation. Off switch to provide a "positive off" disconnecting all ungrounded conductors.
 9. Built-In Thermostat: Factory installed, single pole, hydraulic capillary tube with precision control, and taper proof. 40 to 90 degrees F (4.4 to 32.2 degrees C) operating range. Delete one of the following enclosure subparagraphs.
 10. Fan Delay Switch: Fan continues operating after thermostat shuts off.
 11. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire, 18 gauge reinforcements.
 12. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 13. Grill: Heavy 3/16 in (5 mm) thick plate with 5/16 in (8 mm) hole pattern grille. Attached with tamper-proof 1/4-20 screws (hex socket/pinned). Controls are accessed through grill with slotted screwdriver.
 - a. Color: Brushed aluminum.
 - b. Color: Dark bronze.
 - c. Color: White.
 14. Transformer: 208, 240, 277 VAC to 24V.
 - a. Power contactor.
 15. Circuit breaker 20 A disconnect.

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- I. Basis of Design: KT series kick space wall heater as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed; ULC and UL-E41422.
 3. Ratings: 500 or 1,500 W at 120 or 240/208 V.
 4. Motor: C-Frame, shaded pole, permanently lubricated, impedance protection and sealed bearings. Same voltage as heater. Wiring isolated from heating chamber.
 5. Fan: Tangential blower. 75 cu ft per min (2.12 cu m per min) air movement.
 6. Heating Elements: Coiled nickel chromium alloy, corrosion-resistant wire strung through four or more rows of mica insulator. Provided connection allows field modification to 50 percent wattage at time of installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 9. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design, rounded edges and corners.
 - a. Color: Almond.
 - b. Color: Black.
 - c. Color: White.
 10. Grill: 20 gauge stainless steel, louvered, one-piece design, rounded edges and corners.
 11. Thermostat: Factory installed, single pole.
 12. Thermostat: Factory installed, double pole.
- J. Basis of Design: KTW series kick space horizontal and vertical wall heater as manufactured by King Electrical Manufacturing Company:
1. Model: _____.
 2. Standards Compliance: Listed; ULC and UL-E41422.
 3. Ratings: 250 or 1,500 W at 120, or 240/208 V.
 4. Motor: C-Frame, shaded pole, permanently lubricated, impedance protection and sealed bearings. Same voltage as heater. Wiring isolated from heating chamber.
 5. Fan: Tangential blower. 70 cu ft per min (1.98 cu m per sec) air movement.
 6. Heating Elements: Coiled nickel chromium alloy, corrosion-resistant wire strung through two or more rows of muscovite insulator. Provided connection allows field modification to of wattage at time of installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Wattage Selector Switch: Low and high settings. Low wattage setting adjustable from 250 to 1250 watts. High wattage setting adjustable from 750 to 1500 watts.
 9. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 10. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design, rounded edges and corners.
 - a. Color: Almond.
 - b. Color: Black.
 - c. Color: White.
 11. Grill: 20 gauge stainless steel, louvered, one-piece design, rounded edges and corners.

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12. Thermostat: Factory installed, single pole.
13. Thermostat: Factory installed, double pole.

2.3 CEILING HEATERS

- A. Basis of Design: WHFC series fan forced ceiling mount heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed; UL and UL-E41422.
 3. Ratings: 500 to 1500 W at 120, 240/208 V.
 4. Motor: C-Frame, shaded pole, permanently lubricated, impedance protection and sealed bearings. Same voltage as heater. Wiring isolated from heating chamber.
 5. Fan: Tangential cylindrical squirrel cage blower 70 cu ft per min (1.98 cu m per sec) air movement.
 6. Heating Elements: Coiled nickel chromium alloy, corrosion-resistant wire strung through four or more rows of mica insulator. Provided connection allows field modification to 50 percent wattage at time of installation.
 7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Ceiling Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire, and QuickSet stud alignment tabs. Mounts to wall studs, new or existing.
 9. Ceiling Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire, and depth gauge.
 - a. Color: White.
 - b. Color: Almond.
 10. Grill: 20 gauge epoxy powder-coated, louvered, one-piece design, R rounded edges and corners.
 - a. Color: White.
 - b. Color: Almond.
 11. Thermostat: Factory installed, single pole.
 12. Thermostat: Factory installed, double pole.
- B. Basis of Design: LPWC - series Pic-A-Watt ceiling mount heater as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed; ULC and UL-E41422.
 3. Ratings: 1250 to 4000 W at 120, 208, 240 or 277 V.
 4. Motor: Cast iron, unit bearing, permanently lubricated with 20cc oil reservoir, 1300 RPM. Enclosed impedance protected with intake air cooling motor for increased bearing life.
 5. Fan: 5-Blade aluminum impeller, high efficiency, dynamically balanced. 185 cu ft per min (5.24 cu m per min) air movement.
 6. Heating Elements: Three steel sheathed heating tubes in furnace-brazed, plate-finned, block design. Each tube contains coiled Ni-Chrome wire embedded in magnesium oxide insulator. Seven possible wattage configurations available for selection during field installation.



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7. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 8. Fan Delay Switch: Fan operates after thermostat shuts off.
 9. Wall Recessed Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 10. Wall Surface Enclosure: 20 gauge electro-galvanized steel recessed wall can with knockouts, ground wire.
 11. Grill: 12 gauge extruded aluminum, epoxy powder-coated, louvered, one-piece design, R rounded edges and corners.
 - a. Color: White.
 - b. Color: Almond.
 12. Thermostat: factory installed, tamper proof.
 13. Thermostat: single pole.
 14. Transformer: 208, 240,277 VAC to 24V.
 - a. Power contactor.
- C. Basis of Design: KDS - series large ceiling heater as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed by CSA; USA and Canada.
 3. Rating: 2000 to 10000 W at 208V, 240V, 277V, 347V, 480V, 600V, 1 or-3 phase.
 4. Fan: Totally enclosed and lifetime-lubricated ball bearing motor. Fan delay purges heater of residual heat.
 5. Heating Element: Three stainless steel tubular heating elements with aluminum fins.
 6. Controls: Line voltage control standard.
 - a. Built-In 240V Contactor: Units from 5 to 10kW, at 347V, 480V, 600V, and 3-phase.
 - b. 24V and 120V control circuit.
 - c. 24V relay with transformer available.
 - d. 24V relay without transformer available.
 - e. Built in fan only switch.
 - f. Built in disconnect switch.
 7. Thermostat: Built-in, and tamperproof.
 8. Continuous Circulation: Controlled by built-in switch with power-on indicator light available. Remote thermostat or relay must be connected to the heater control terminal block.
 9. Grille: Flat ribbon wire.
 10. High-limit temperature control with automatic reset.
 11. Finish: Standard: epoxy/polyester powder paint.
 12. Color: White.
 13. Color: almond.
 14. Color: metallic silver.
 15. Color: bronze.
 16. Color: metallic charcoal.
 17. Color: textured black.
 18. Color: beige-grey.
 19. Color: semi-gloss black.
 20. Color: _____.

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2.4 BASEBOARD HEATERS

- A. Basis of Design: K series convection baseboard heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed by CSA; USA and Canada - E29778.
 3. Air Intake: Lower front.
 4. Air Discharge: Top front.
 5. Rating: 120 V, 500 through 1,500 Watts; 250 Watts per lineal foot.
 6. Rating: 240/208 V, 375 to 2,400 Watts; 250 or 187 Watts per lineal foot.
 7. Rating: 277/240 V, 500 to 2,400 Watts; 250 to 187 Watts per lineal foot.
 8. Enclosure: Back, bottom, top, and front panel; 22 gauge electro-galvanized steel. Rounded ends, edges, and corners. Front panel to be ribbed longitudinally with center supports.
 - a. Front Cover: 22 gauge.
 - b. Front Cover: 18 gauge.
 - c. Junction Box: Both ends. Five 1/2 in (12 mm) knockouts located on the back, side and bottom.
 9. Finish: Baked enamel.
 10. Heater Element: 80 percent Nickel, 20 percent Chromium alloy corrosion-resistant wire surrounded by magnesium oxide and enclosed in rust-resistant sheath. Ribbon aluminum finning compression welded to sheathed element providing chimney-type flue for heat transfer.
 11. Thermal Protection: Continuous fail-safe capillary sensor tube extends full length of heating element, rated at 175 degrees F (79.4 degrees C).
 12. High altitude.
 13. Heater shield.
 14. Thermostat: Built-in.
 15. Thermostat: Built-in and tamperproof.
 16. Control Box: Relay.
 17. Control Box: Dual relay.
 18. Baseboard Shield: Sheet metal construction. Expanded metal front and top with louvered sides. Mounting flanges for wall and floor with baseboard cut out.
 19. Color: White.
 20. Color: Almond.
- B. Basis of Design: CB series baseboard heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed by CSA; USA and Canada - E29778.
 3. Air intake: Lower front.
 4. Air Discharge: Top front.
 5. Rating: 120 V, 350 through 1,250 Watts.
 6. Rating: 240/208 V, 350 to 1,500 Watts.
 7. Enclosure: 22 gauge steel casing. Rounded ends, edges, and corners. Junction boxes and element hangers welded to casing.
 - a. Front Cover: 18 gauge.
 - b. Junction Boxes: Both ends with knockouts in rear, side and bottom.
 - c. Single screw access to wiring compartment.



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8. Finish: Baked enamel.
9. Heater Element: 7/8 in (22 mm) diameter aluminum tube filled with high density dielectric ceramic surrounding spiral nichrome wire elements.
 - a. Fins: 4.875 sq in (3145 sq mm) by 0.015 in (0.38 mm) thick high grade aluminum.
 - b. Safety: The large heating element and low watt density produce low surface temperatures.
10. Thermal Protection: Continuous capillary sensor along the full length of baseboard, turning element off when over temperature conditions occur.
 - a. Automatic reset when the normal temperature returns.
 - b. Manual reset.
11. Baseboard Shield: Sheet metal construction. Expanded metal front and top with louvered sides. Mounting flanges for wall and floor with baseboard cut out.
12. Thermostat: Single pole, built in, 45 to 80 degrees F (7 to 27 degrees C).
13. Thermostat: Single pole, built in, tamperproof 45 to 80 degrees F (7 to 27 degrees C).
14. Thermostat: Double pole, built in, 45 to 80 degrees F (7 to 27 degrees C).
15. Thermostat: Double pole, built in, tamperproof 45 to 80 degrees F (7 to 27 degrees C).
16. Color: White.
17. Color: Almond.
18. Color: _____, as an option. Custom colors are available upon request.

2.5 COVE HEATERS

- A. Basis of Design: KCV series cove heaters as manufactured by King Electrical Manufacturing Company.
 1. Model: _____. Radiant and convection heater.
 2. Standards Compliance: Listed; UL and ULC.
 3. Rating: 250 to 1,500 W at 120V.
 4. Rating: 450 to 1,800 W at 208 V.
 5. Rating: 450/338 to 1,800/1350 W at 240/208 V.
 6. Enclosure: Extruded aluminum front panel with maximum cross section thickness of 0.962 in (24.4 mm).
 - a. Profile: Sawtooth; increasing radiating surface area.
 - b. Openings: Top and bottom for maximum convection.
 - c. Junction box: Both ends. 1/2 in (13 mm) knockouts on back and top.
 - d. Full length back case: 22 gauge electrogalvanized steel.
 7. Finish: Baked enamel.
 8. Elements: Ni-Chrome wire embedded in Magnesium Oxide powder enclosed and sealed in aluminum sheath.
 - a. Wattage Density: 150 watts per linear foot; approximate value.
 9. Color: White.
 10. Color Almond.
 11. Thermostat: Single pole, built in, right side wiring.
 12. Thermostat: Single pole, built in, left side wiring.
 13. Thermostat: Double pole, built in, right side wiring.
 14. Thermostat: Double pole, built in, left side wiring.

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2.6 GARAGE AND SHOP HEATERS

- A. Basis of Design: EKB series economy garage and shop heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed; ULC and UL-E41422.
 3. Rating: 2850 to 5000 W at 120, 208, or 240 V.
 4. Enclosure: 22 ga steel, inlet and outlet perforation, special side and top safety air inlets. Baked enamel, textured exterior finish.
 5. Mounting Bracket: 18 ga steel, multiple mounting options for ceiling or wall.
 6. Motor: Permanently lubricated, cast aluminum unit bearing, 4 to 6 Watt output 4 pole motor, 1550 rpm, 20 cc oil supply.
 7. Fan: Aluminum fan blade. 270 cu ft per min (7.65 cu m per min) air movement.
 8. Heating Elements: Rigid muscovite mica construction with 80-20 nichrome heating wire. Manual reset safety sensor on each element.
 9. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 10. Thermostat: Factory installed single pole, 40 to 85 degrees F (4.4 to 29.4 degrees C)..
- B. Basis of Design: KBP Pic-A-Watt series compact unit heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed by CSA; USA and Canada. UL 2021 tested.
 3. Rating: 950 to 6000 W at 120, 208, 240, 277, or 480 V.
 4. Enclosure: 22 ga steel, inlet and outlet louvered. Powder-coated, textured exterior finish.
 5. Mounting Bracket: 18 ga steel, multiple mounting options for ceiling or wall.
 6. Motor: Permanently lubricated, unit bearing, 4 pole motor, 1300 rpm, 20 cc oil supply, enclosed rotor.
 7. Fan: Aluminum fan blade. 270 cu ft per min (7.65 cu m per min) air movement.
 8. Heating Elements: Steel sheath elements of various resistance, copper brazed to steel plate fins producing a multi-wattage heating element. Element allows field adjustment to several wattages at time of installation.
 10. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 11. Thermostat: Built-in single pole factory installed hydraulic capillary tube with . operating range 40 to 90 degrees F (4.4 to 32.2 degrees C).
 12. Prewired for remote wall thermostat.
- C. Basis of Design: KB-ECO2S series electronic unit heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Rating: 4000 to 15000 W at 208 and 240/208 V.
 3. Standards Compliance: Listed; ULC and UL-E41422.
 4. Enclosure: 20 gauge electrogalvanized steel. Smooth rounded corners and protective edge trim. Rust inhibiting baked enamel textured finish.
 - a. Adjustable Outlet Louver: Direct air up or down.
 - b. Rear Intake Screen: Heavy gauge steel protecting fan blades.



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5. Mounting Bracket: 18 ga steel, multiple mounting options for ceiling or wall.
 6. Motor: Permanently lubricated, unit bearing, epoxy coated.
 7. Fan: Aluminum, five blade impeller, direct motor mount. 400 to 925 cu ft per min (11.3 to 26.2 cu m per min) air movement depending on model.
 8. Heating Elements: Metal sheath elements, copper brazed with spiral fins molded into a coil configuration.
 9. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 - a. Fan Delay: Fan continues to operate after thermostat shuts off.
 10. Electronic Control: Remote controlled. Up and down temperature mode. Start and stop Control voltage is equal to the line voltage (208, 240) for 5 kW models. Over 5kW the line voltage control is operating the contactors. Fan only and timer modes. Manual reset high limit.
 11. Color: Gray.
- D. Basis of Design: GH compact heavy duty unit heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Rating: 62 to 1000 W at 120 to 240 V.
 3. Standards Compliance: Listed; ULC and UL-E41422.
 4. Enclosure: 20 gauge electrogalvanized steel. Smooth rounded corners and protective edge trim. Durable rust inhibiting baked enamel finish.
 - a. Adjustable Outlet Louver: Direct air up or down.
 - b. Rear Intake Screen: Heavy gauge steel protecting fan blades.
 5. Mounting Bracket: 18 ga steel, multiple mounting options for ceiling or wall.
 6. Motor: Permanently lubricated, unit bearing, epoxy coated., 20 cc oil.
 7. Fan: Aluminum, five blade impeller, direct motor mount. 400 to 925 cu ft per min (11.3 to 20.5 cu m per min) air movement depending on model.
 8. Heating Elements: Metal sheath elements, copper brazed with spiral fins molded into a coil configuration.
 9. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 10. Electronic Control: Remote controlled. Up and down temperature mode. Start and stop Control voltage is equal to the line voltage (208, 240) for 5 kW models. Over 5kW the line voltage control is operating the contactors. Fan only and timer modes. Auto reset high limit.
 11. Color: Gray.

2.7 PUMPHOUSE HEATERS

- A. Basis of Design: U series pumphouse heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed by ETL; USA and Canada. ASSE-1060.
 3. Rating: 62 to 1000 W at 120 or 240 V.
 4. Enclosure: Steel case with an expanded steel metal element shield. Built in mounting bracket. Vertical or horizontal mounting.
 5. Finish: Baked enamel.
 6. Element: 304 or 840 Stainless Steel.
 7. Thermostat: Built-in snap action with a range of 40 to 90 degrees F (4.4 to 32.2 degrees C).

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8. Safety Limit: Capillary tube running the full length of the element providing over-temperature protection. Automatic reset when temperature drops.
- B. Basis of Design: U-SS - series pumphouse heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed by ETL; USA and Canada. ASSE-1060.
 3. Rating: 62 to 1000 W at 120 or 240 V.
 4. Enclosure: 20 gauge 304 stainless steel with an expanded steel metal element shield. Built in mounting bracket. Vertical or horizontal mounting.
 5. Finish: Brushed stainless steel.
 6. Element: 304 or 840 Stainless Steel.
 7. Thermostat: Built-in snap action with a range of 40 to 90 degrees F (4.4 to 32.2 degrees C)
 8. Safety Limit: Capillary tube running the full length of the element providing over-temperature protection. Automatic reset when temperature drops.

2.8 RADIANT HEATERS

- A. Basis of Design: OK series Detroit radiant heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed; UL and ULC.
 3. Element: Ni-Chrome wire embedded in Magnesium Oxide with an Incolmetal sheath.
 4. Junction Box: Extruded Aluminum.
 - a. O-ring seals to seal off junctionbox from moisture (included on OKH units only).
 - b. Single or dual Incoloy elements and shall swivel to direct radiant pattern to best meet the needs of application. For indoor use only.
 5. Rating: 1600 W, at 120 or 240 V.
 6. Anodized reflector:
 7. Tilting swivel bracket.
 8. Set screw adjustment.
 9. Mounting: 2 eyehooks per heater for chain hanging.
 10. Rating: 3000 W at 208, 240, and 480 V.
 11. Rating: 5000 W, at 208, 240, and 480 V.
 12. Moisture resistant housing.
 13. Sliding mounting pads.
- B. Basis of Design: RH eries radiant heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed ETL; USA and Canada. CSA 22.2 No. 46, UL 2021. ETL Listed for indoor & outdoor applications
 3. Rating: 2500, 3200, or 5000 W at 208 or 240 V.
 4. Rating: 7500 W at 480 V.
 5. Rating (W at V): _____.
 6. Housing: Aluminized steel, wide symmetrical design, with black powder-coat finish. Adjustable Mounting Brackets: 0 to 45 degree.
 7. Housing: Stainless steel. Adjustable Mounting Brackets: 0 to 45 degree.
 8. Reflectors: Gold colored anodized aluminum.

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9. Lamps: Coiled tungsten filament in sealed quartz tube. Porcelain end caps. Instantaneous heat-up & cool-down.
10. Lamp Color: Clear (white).
11. Lamp Color: Glare reducing ruby quartz.

2.9 CABINET HEATERS

- A. Basis of Design: KCF series small fan forced cabinet heaters as manufactured by King Electrical Manufacturing Company.
 1. Model: _____.
 2. Standards Compliance: UL listed.
 3. Ratings: 2000 W at 208, 240, 277, or 480 V, one or three phase, 70 cu ft per min (1.98 cu m per min).
 4. Ratings: 3000 W at 208, 240, 277, or 480 V, one or three phase, 140 cu ft per min (3.96 cu m per min).
 5. Ratings: 4000 or 5000 W at 208, 240, 277, or 480 V, one or three phase. 210 cu ft per min (5.95 cu m per min).
 6. Motor: shaded pole, permanently lubricated, C-frame type motor with impedance protection and sealed bearings, the same voltage as heaters.
 - a. All 480 V units use 277 V motors and contactors requiring a neutral connection.
 7. Fan: Up to 3 tangential cylindrical blowers, delivering 70 cu ft per min (1.98 cu m per min) each.
 8. Heating Elements: 7/8 in (22 mm) diameter aluminum tube filled with high density fired, refractory ceramic, core, surrounding nickel chromium coils attached with high temperature stainless connectors and stranded nickel wire, terminated in a junctionbox.
 - a. Fins: 4.875 sq in (3145 sq mm) by 0.015 in (0.38 mm) thick high grade aluminum.
 9. Thermal Protection: Built-in thermal cutout automatically shuts off heater in case of overheating.
 10. Enclosure: 18 gauge galvanized steel.
 - a. Mounting: Surface wall.
 - b. Mounting: Recessed wall.
 - c. Sub-base for direct floor contact.
 11. Front Cover: Louvered intake and outlet grills.
 12. Finish: Epoxy powder coat.
 13. Color: Almond.
 14. Color: _____.
 15. Thermostat: Built-in capillary tube type thermostat with 40 to 95 degree F () range.
 - a. Disconnect switch and contactors.
 16. Control Options:
 - a. Line voltage terminal block for wiring to remote line voltage thermostat.
 - b. Power contactor with line voltage coil to remotely switch the heater.
 - c. Power contactor and 24V transformer to remotely switch the heater.
 - d. 3-position switch for manual Heat, fan, off control.
 - e. 2-Pole disconnect switch 1-Phase heaters.
 - f. 3-Pole disconnect for 3-Phase heaters.
 - g. Built-in 1-Pole thermostat.
 - h. Built-in 2-Pole thermostat.
 - i. Tamperproof built-in screw driver adjusted thermostat.

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- B. Basis of Design: KCF "SAFE TOUCH" series fan forced cabinet heaters as manufactured by King Electrical Manufacturing Company.
- a. www.king-electric.com/pdfs/KCF%20Safe_touch.pdf((BAD LINK - NEED INFO))
- C. Basis of Design: KCC series small convection cabinet heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed; UL and ULC.
 3. Ratings: 2000 to 5000 W at 208, 240, 277, or 480 V, one or three phase.
 4. Heating Elements: 7/8 in (22 mm) diameter aluminum tube filled with high density fired, refractory ceramic, core, surrounding nickel chromium coils attached with high temperature stainless connectors and stranded nickel wire, terminated in a junctionbox.
 - a. Fins: 4.875 sq in (3145 sq mm) by 0.015 in (0.38 mm) thick high grade aluminum.
 5. Thermal Protection: Built-in thermal cutout automatically shuts off heater in case of overheating.
 6. Enclosure: 18 gauge galvanized steel.
 - a. Mounting: Surface wall.
 - b. Mounting: Recessed wall.
 - c. Sub-base for direct floor contact.
 7. Front Cover: Louvered intake and outlet grills
 8. Finish: Epoxy powder coat
 9. Color: Almond.
 10. Color: _____.
 11. Thermostat: Built-in capillary tube type thermostat with 40 to 95 degree F () range.
 - a. Disconnect switch and contactors.
 12. Control Options:
 - a. Line voltage terminal block for wiring to remote line voltage thermostat.
 - b. Power contactor with line voltage coil to remotely switch the heater.
 - c. Power contactor and 24V transformer to remotely switch the heater.
 - d. 3-position switch for manual Heat, fan, off control.
 - e. 2-Pole disconnect switch 1-Phase heaters.
 - f. 3-Pole disconnect for 3-Phase heaters.
 - g. Built-in 1-Pole thermostat.
 - h. Built-in 2-Pole thermostat.
 - i. Tamperproof built-in screw driver adjusted thermostat.
- D. Basis of Design: KCA series cabinet unit heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL, ULC, ETL, and CSA; USA and Canada.
 3. Rating: 1333- 2000 to 16000-24000 W at 208, 240, 277, 347, 480, or 600 V, 1 or 3 phase.
 4. Motor: 2 speed, permanently lubricated, 208 or 240 V.
 - a. All 480 V units use 277 V motors and contactors requiring a neutral connection.
 5. Fan: Direct drive, variable speed squirrel-cage fan operating at 48 dBA at low speed and 50 dBA at high speed.

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6. Heating Elements: Tubular heating elements with fins.
 7. Thermal Protection: Built-in thermal cutout automatically shuts off heater in case of overheating. Automatic reset.
 8. Enclosure: 18 gauge galvanized steel, with extruded aluminum grill. Field changeable inlet and outlet.
 9. Mounting: Surface, recessed, or semi-recessed on wall or ceiling.
 10. Front Cover: Louvered intake and outlet grills.
 11. Finish: Epoxy powder coat.
 12. Color: White.
 13. Color: _____.
 14. Control Circuit: 240 V. Fan delay.
 15. Control Options:
 - a. 24V relay with transformer
 - b. 24V relay without transformer
 - c. Factory Installed 24V fan relay
 - d. Factory Installed 24V relay (On / Off)
 - e. Factory Installed 24V relay (Hi / Lo)
 - f. Single-pole tamperproof thermostat
 - g. 2-Stage tamperproof thermostat
 - h. Factory Installed disconnect switch, 40A
 - i. Factory Installed disconnect switch, 80A
 - j. Factory Installed On / Auto switch
 - k. Factory Installed Hi / Low switch
 - l. On / Off switch
 - m. Fresh air inlet
 - n. Power operated fresh air inlet
- E. Basis of Design: KLA series high density architectural cabinet heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL, ULC, ETL, and CSA; USA and Canada.
 3. Rating: 208V, 240V, 277V, 347V, 480V, 600V, 1 or 3-Phase.
 - a. Watt density: High and low settings.
 4. Heating Element: Three stainless steel tubular heating elements with aluminum fins. Floating heating elements on high-temperature bushings, eliminating expansion noises.
 5. Thermal Protection: Linear high-limit temperature control with automatic reset.
 6. Enclosure: 20-gauge steel cabinet. 16-gauge steel front cover. Extruded aluminum bar grilles. Front fresh air inlet.
 - a. Warm Air Outlet: Top.
 - b. Warm Air Outlet: Front. Unit must be recessed.
 - c. Clean back.
 - d. Subbase.
 7. Finish: Epoxy, polyester powder coat.
 8. Color: Almond.
 9. Color: _____.
 10. Thermostat: Built-in tamperproof thermostat.
 - a. Relays: Mechanical,
 - b. Relays: Electronic
 - c. Relays: Pneumatic

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11. Control Options:
 - a. Single-pole tamperproof thermostat 30A, 250V max. - 15A, 600V max.
 - b. Double-pole tamperproof thermostat 30A, 250V max. - 15A, 600V max.
 - c. Single-pole relay, coil (240V), 25A, 240V - 12.5A, 600V.
 - d. Double-pole relay, coil (240V) 25A, 240V - 12.5A, 600V.
 - e. Single-pole relay, coil (24V) 22A, 208V, 240V - 22A, 208V.
 - f. Double-pole relay, coil (24V) 25A, 240V - 12.5A, 600V.
 - g. Single-pole relay, coil (24V) Transformer (208V / 24V) - 4500W, 208V / 22A.
 - h. Single-pole relay, coil (24V) Transformer (240V / 24V) - 5200W, 240V / 22A.
 - i. Single-pole relay, coil (24V) Transformer (277V / 24A) - 5200W, 277V / 19A.
 - j. Transformer, 208V / 24V - 50VA.
 - k. Transformer, 240 / 24V - 50VA.
 - l. Transformer, 277V / 24V - 50VA.
 - m. Transformer, 277V / 240V - 50VA.
 - n. Factory installed pneumatic relay, 20A / 600V max.
 - o. Factory installed disconnect switch 600V, three-pole, 40A.

- F. Basis of Design: KLI series high density architectural sloped top cabinet heaters as manufactured by King Electrical Manufacturing Company.
 1. Model: _____.
 2. Standards Compliance: Listed UL, ULC, ETL, and CSA; USA and Canada.
 3. Rating: 208V, 240V, 277V, 347V, 600V, 1 or 3-Phase.
 - a. Watt density: High and low settings.
 4. Heating Element: Three stainless steel tubular heating elements with aluminum fins. Floating heating elements on high-temperature bushings, eliminating expansion noises.
 5. Thermal Protection: Linear high-limit temperature control with automatic reset.
 6. Enclosure: 20-gauge steel cabinet. 16-gauge steel front cover. Extruded aluminum bar grilles. Front fresh air inlet.
 - a. Warm Air Outlet: Top.
 - b. Warm Air Outlet: Front. Unit must be recessed.
 - c. Clean back.
 - d. Subbase.
 7. Finish: Epoxy, polyester powder paint.
 8. Color: White.
 9. Color: Almond.
 10. Color: _____.
 11. Thermostat: Built-in tamperproof thermostat.
 - a. Relays: Mechanical.
 - b. Relays: Electronic.
 - c. Relays: Pneumatic.
 12. Control Options:
 - a. Single-pole tamperproof thermostat 30A, 250V max. - 15A, 600V max.
 - b. Double-pole tamperproof thermostat 30A, 250V max. - 15A, 600V max.
 - c. Single-pole relay, coil (240V), 25A, 240V - 12.5A, 600V.
 - d. Double-pole relay, coil (240V) 25A, 240V - 12.5A, 600V.
 - e. Single-pole relay, coil (24V) 22A, 208V, 240V - 22A, 208V.
 - f. Double-pole relay, coil (24V) 25A, 240V - 12.5A, 600V.
 - g. Single-pole relay, coil (24V) Transformer (208V / 24V) - 4500W, 208V / 22A.

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- h. Single-pole relay, coil (24V) Transformer (240V / 24V) - 5200W, 240V / 22A.
- i. Single-pole relay, coil (24V) Transformer (277V / 24A) - 5200W, 277V / 19A.
- j. Transformer, 208V / 24V - 50VA.
- k. Transformer, 240 / 24V - 50VA.
- l. Transformer, 277V / 24V - 50VA.
- m. Transformer, 277V / 240V - 50VA.
- n. Factory installed pneumatic relay, 20A / 600V max.
- o. Factory installed disconnect switch 600V, three-pole, 40A.

2.10 DRAFT BARRIER HEATERS

- A. Basis of Design: SB series draft barrier heaters as manufactured by King Electrical Manufacturing Company.
 - 1. Model: _____.
 - 2. Standards Compliance: UL 1042 and listed. SBST approved for residential use.
 - 3. Rating: 400 to 2500 W at 120, 208, 240, 277 V, 1 or 3-Phase
 - 4. Heating elements: Stainless steel or aluminum tubing center anchored and free-floating in nylon bushings at each end, with mechanically bonded fins. Maximum fin temperature not exceed 350 degrees F (149 degrees C).
 - 5. Thermal Protection: Full length thermal overheat protector with automatic reset.
 - 6. Front Cover: One-piece 14 gauge extruded aluminum construction. with 1/4 in (6 mm) pencil-proof intake and discharge grilles available in lengths up to 12 ft (3658 mm). Mounts to back panel with no visible fasteners.
 - a. (H by D) 5 by 3 in (127 by 76 mm). Lengths 2 to 10 ft (609 to 3048 mm).
 - 7. Finish: Painted.
 - 8. Finish: Anodized
 - 9. Color: White.
 - 10. Color: Almond
 - 11. Color: _____
 - 12. Back Panel: 14 gauge aluminum suitable for mullion-to-mullion mounting.
 - 13. Raceway: 3/4 in (19 mm) EMT built-in raceway
 - a. Factory wiring.
 - b. Field wiring from either end. Controls are not included.
 - 14. Junction Boxes: Each end of heater. Knockouts provided in side and rear permitting end-to-end wiring. Blank sections fully enclosed to allow branch circuit wiring.
 - 15. Control sections include 6 or 12 in (152 or 305 mm) with disconnect, thermostat, pneumatic relay, transformer relay, relay, fused disconnect or duplex receptacle.
 - 16. Thermostats: Single pole and disconnect switch.
 - 17. Thermostats: Double pole and disconnect switch.
 - 18. Controls: Built-in, tamperproof. Adjustable with blade screwdriver through discharge louver.
 - 19. Accessories: Blank sections, inside and outside corners. end caps, splice plates and wall trim.
- B. Basis of Design: LB series draft barrier heaters as manufactured by King Electrical Manufacturing Company.
 - 1. Model: _____.
 - 2. Standards Compliance: Listed UL and UL 1042
 - 3. Rating: , 400 to 2500 W at 120, 208, 240, 277 V, 1 or 3-Phase.

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4. Heating elements: Stainless steel or aluminum tubing center anchored and free-floating in nylon bushings at each end, with mechanically bonded fins. Maximum fin temperature not exceed 350 degrees F (149 degrees C).
 5. Thermal Protection: Full length thermal overheat protector with automatic reset.
 6. Front Cover: One-piece 14 gauge extruded aluminum construction. with 1/4 in (6 mm) pencil-proof intake and discharge grilles available in lengths up to 12 ft (3658 mm). Mounts to back panel with no visible fasteners.
 - a. (H by D) 7 by 5 in (178 by 127 mm). Lengths 2 to 10 ft (609 to 3048 mm).
 7. Finish: Painted.
 8. Finish: Anodized
 9. Color: White.
 10. Color: Almond
 11. Color: _____
 12. Back Panel: 12 gauge aluminum suitable for mullion-to-mullion mounting.
 13. Raceway: 3/4 in (19 mm) EMT built-in raceway
 - a. Factory wiring.
 - b. Field wiring from either end. Controls are not included.
 14. Junction Boxes: Each end of heater. Knockouts provided in side and rear permitting end-to-end wiring. Blank sections fully enclosed to allow branch circuit wiring.
 15. Control sections include 6 or 12 in (152 or 305 mm) with disconnect, thermostat, pneumatic relay, transformer relay, relay, fused disconnect or duplex receptacle.
 16. Thermostats: Single pole and disconnect switch.
 17. Thermostats: Double pole and disconnect switch.
 18. Controls: Built-in, tamperproof. Adjustable with blade screwdriver through discharge louver.
 19. Accessories: Blank sections, inside and outside corners. end caps, splice plates and wall trim.
- C. Basis of Design: KDBA series heavy-duty steel draft barrier heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL, ULC, ETL, and CSA. USA and Canada.
 3. Rating: 120, 208, 240, 277, 347, 600 V, 50 to 60 Hz, 1-Phase.
 - a. Watt density: 275 W per ft. High and low settings.
 4. Heating Element: Stainless steel tubular heating elements with aluminum fins. Floating heating elements on high-temperature bushings, eliminating expansion noises.
 5. Thermal Protection: Linear high-limit temperature control with automatic reset.
 - a. High altitude version required.
 6. Enclosure: 18-gauge steel cabinet.16-gauge steel front cover. Full length built-in wireway. Endcaps included.
 - a. Warm Air Outlet: Top.
 - b. Fresh Air Inlet: Front.
 - c. Fresh Air Inlet: Bottom.
 - d. Clean back.
 7. Finish: Epoxy, polyester powder paint.
 8. Color: White.
 9. Color: Almond.
 10. Color: _____.

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11. Thermostat: Built-in tamperproof or control knob. Single or double pole.
 - a. Relays: Mechanical, electronic, or pneumatic.
12. Accessories: Blank sections, inside and outside corners. end caps, splice plates and wall trim.

D. Basis of Design: KDIA series steel sloped top draft barrier heaters as manufactured by King Electrical Manufacturing Company.

1. Model: _____.
2. Standards Compliance: Listed UL, ULC, ETL, and CSA; USA and Canada.
3. Rating: 120, 208, 240, 277, 347, 600 V, 50 to 60 Hz, 1-Phase.
 - a. Watt density: 275 W per ft. High and low settings.
4. Heating Element: Stainless steel tubular heating elements with aluminum fins. Floating heating elements on high-temperature bushings, eliminating expansion noises.
5. Thermal Protection: Linear high-limit temperature control with automatic reset.
 - a. High altitude version required.
6. Enclosure: 18-gauge steel cabinet.16-gauge steel front cover. Full length built-in wireway. Endcaps included.
 - a. Warm Air Outlet: Top.
 - b. Fresh Air Inlet: Front.
 - c. Fresh Air Inlet: Bottom.
 - d. Clean back.
7. Finish: Epoxy, polyester powder paint.
8. Color: White.
9. Color: Almond.
10. Color: _____.
11. Thermostat: Built-in tamperproof or control knob. Single or double pole.
 - a. Relays: Mechanical, electronic, or pneumatic.
12. Accessories: Blank sections, inside and outside corners. end caps, splice plates and wall trim.

2.11 UNIT, PLENUM, AND EXPLOSION PROOF HEATERS

A. Basis of Design: KB series unit heaters as manufactured by King Electrical Manufacturing Company.

1. Model: _____.
2. Rating: 3 to 60 KW at 208, 240, 240/208, 277, 480 V.
3. Standards Compliance: Listed ULC and UL-E41422.
4. Enclosure: 20 gauge electrogalvanized steel. Smooth rounded corners and protective edge trim. Durable rust inhibiting baked enamel textured finish.
 - a. Adjustable Outlet Louver: Direct air up or down.
 - b. Rear Intake Screen: Heavy gauge steel protecting fan blades.
5. Color: Gray.
6. Mounting Bracket: 18 ga steel, multiple mounting options for ceiling or wall.
 - a. 5 lugs are provided to securely mount heater in heavy industrial or marine vessel applications. Includes 5-hole bracket.
7. Motor: Totally enclosed, permanently lubricated, unit bearing with 20 cc of oil. Epoxy coated.
8. Fan: Aluminum impeller, direct motor mount. 400 to 925 cu ft per min (11.33 to 26.19 cu m per min) air movement depending on model.

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9. Heating Elements: Metal sheath elements, copper brazed with spiral fins molded into a coil configuration.
 10. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Element energizes automatically when normal operating temperature returns.
 - a. Fan Delay: Fan continues to operate after thermostat shuts off. Standard on models 12.5-kW and above.
 11. Internal Controls:
 - a. Magnetic Contactors: on 1 phase, 480, 208, 240, 277 V heaters above 6 kW, and 3-phase heaters.
 - b. Control Voltage: Equal to the line voltage for 208, 240, and 277 V models.
 - c. Control Voltage: Transformer provided for 24V control option on all models.
 12. Internal circuit fusing: Provide to comply with N.E.C. standards when heater ampacity exceeds 48 Amps.
 13. Control Options:
 - a. 1-Pole or 2-Pole thermostat temperature indicated label with 44 degrees F (6.7 degrees C) energy code setting.
 - b. Built-in two-stage thermostat on single phase heaters.
 - c. Summer fan switch.
 - d. 3-position switch (Heat-Off-Fan).
 - e. Pilot light (power On indication).
 - f. Padlocking disconnect.
 - g. Wall-mounted thermostat line or low voltage.
 - h. Optional ECO2S Energy-saving automatic 2-stage heating with remote.
- B. Basis of Design: SKB compact heavy duty unit heater as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed ULC and UL-E41422.
 3. Rating: 5000 to 10000 W at 208, 240/208 V.
 4. Enclosure: 20 gauge electrogalvanized steel. Smooth rounded corner. Durable rust inhibiting baked enamel textured finish.
 - a. Adjustable Outlet Louver: Direct air up or down.
 - b. Rear Intake Screen: Heavy gauge steel protecting fan blades.
 5. Color: Gray.
 6. Mounting Bracket: 18 ga steel, multiple mounting options for ceiling or wall.
 - a. 5 lugs are provided to securely mount heater in heavy industrial or marine vessel applications. Includes 5-hole bracket.
 7. Motor: Totally enclose, permanently lubricated, unit bearing with 20 cc of oil. Epoxy coated.
 8. Fan: Aluminum impeller, direct motor mount. 400 to 725 cu ft per min (11.33 to 20.53 cu m per min) air movement depending on model.
 9. Heating Elements: Metal sheath elements, copper brazed with spiral fins molded into a coil configuration.
 10. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Manual reset required by turning off unit for 15 minutes.
 - a. Fan Delay: Fan continues to operate after thermostat shuts off.
 11. Controls: Prewired for remote wall thermostat.

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- C. Basis of Design: KBS series stainless steel unit heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL, ULC.
 3. Rating: 3000 to 20000 W at 208, 240, 240/208, 277, 480 V.
 4. Enclosure: 18 gauge stainless steel. Smooth rounded corners. All hardware to be stainless steel.
 - a. Adjustable Outlet Louver: Direct air up or down.
 - b. Rear Intake Screen: Heavy gauge steel protecting fan blades.
 - c. NEMA 4 Enclosure: Every electrical component in the wiring compartment is sealed with a polyurethane adhesive. The bottom access panel is sealed with 1/4 in (6 mm) high density polyurethane gasket.
 - d. All optional control accessories are NEMA 4 rated.
 5. Mounting Bracket: Universal mounting bracket made from Stainless steel.
 - a. Low profile rough service bracket.
 6. Motor: Totally enclosed, permanently lubricated, unit bearing and epoxy coated.
 7. Fan: Aluminum impeller, direct motor mount. 400 to 1100 cu ft per min (11.33 to 31.15 cu m per min) air movement depending on model.
 - a. Corrosion protection
 8. Heating Elements: Stainless steel spiral fin elements molded into a coil configuration.
 9. Thermal Protection: Automatic shutdown during unsafe temperature intervals at inlet or outlet. Element energizes automatically when normal operating temperature returns.
 - a. Fan Delay: Fan continues to operate after thermostat shuts off.
 10. Internal Controls:
 - a. Magnetic Contactors: on 1 phase, 480, 208, 240, 277 V heaters above 6 kW, and 3-phase heaters.
 - b. Control Voltage: Equal to the line voltage for 208, 240, and 277 V models.
 - c. Control Voltage: Transformer provided for 24V control on all models.
 11. Internal Circuit Fusing: Complies with N.E.C. standards when heater ampacity exceeds 48 Amps.
 12. Controls: 120 V.
 13. NEMA 4 Control Options:
 - a. SPST or DPDT thermostat.
 - b. Two stage thermostat (single phase only).
 - c. Summer fan switch.
 - d. 3-position switch (Heat-Fan-Off).
 - e. Pilot light (power on indicator).
 - f. Padlock disconnect.
- D. Basis of Design: KFUH series high air velocity unit heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL-E41422
 3. Rating: 5,000 to 34,500 W at 208, 240, or 480 V, 1 or 3-Phase.
 4. Enclosure: 22 gauge steel casing. Rounded ends, edges, and corners. Welded mounting channels. Adjustable louver hood.
 5. Mounting: Horizontal ceiling or vertical wall or post mounted.
 6. Transformer: Heavy duty 24 V for thermostat control circuit.

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7. Heating Elements: Quick heating, long life ni-chrome elements.
 8. Terminal Block: For single strike field wiring.
 9. Low Voltage Terminal Block: For 24 Volt control.
 10. Air Filter, Standard replaceable 1 in (25 mm) thick.
 11. Motor: Long life, low noise, 3 speed, 48 frame capacitor run, thermally protected, permanently lubricated, direct drive motor.
 - a. 1/3 hp motor & blower for 3 to 18 kW units.
 - b. 1/2 hp motor & blower for 20 to 35 kW units.
 - c. 1/3 hp ECM motor.
 12. Blower: 775 to 1540 cu ft per min (21.9 to 43.6 cu m per min) air movement depending on model.
 13. Protection: 208 and 240 V, 60 amp circuit breakers with single strike terminal block. Units over 48 amps have 60 amp fusing.
 14. Overcurrent Protection: 480 volt models have single strike terminal block. Units over 48 amps have 60 amp fusing.
 15. Limit Control: Integral automatic high temperature limit control in each heating element bank prevents delivery of air at unsafe temperatures.
 - a. 20 to 35 kW models use manual reset limit control to shut heater off should overtemperature occur.
 16. Fan Relay: Heavy duty fan relay standard with summer fan operation.
 17. Thermostat: Factory installed (SPST). Range: 40 to 100 degrees F (4.4 to 37.8 degrees C).
 18. Thermostat: Factory installed (DPST). Range: 40 to 100 degrees F (4.4 to 37.8 degrees C).
 19. Thermostat: Wall mount thermostat, 24V, range 50 to 90 degrees F (10 to 32.2 degrees C).
 20. Control Relays & Contactor: 2-Stage Element Control, 1 or 3 phase heaters.
 21. Disconnect Switch: Factory Installed 40, 60, 80 or 100 A, 3 pole non-fused, and locking.
 22. Portability Kit. Includes casters and mounting bracket (no cord).
 23. No Diffuser: 1 in (25 mm) duct collar, discharge side for 14 in (356 mm) square duct.
 24. Diffuser: Standard KFUH air diffuser.
 25. Diffuser: Radial for wide pattern heat dispersion.
 26. Diffuser: Right angle elbow, adjustable louvers.
 27. Diffuser: Right angle elbow with radial diffuser.
- E. Basis of Design: CK series plenum heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: ETL Certified complying with standard for Heating and Cooling Equipment ANSI/UL 1995 fourth edition. Meets stringent City of Chicago codes for plenum use.
 3. Rating: 3,300 to 33,000 W at 208, 240, 480 V, 1 or 3 phase.
 4. Enclosure: Welded high tensile 18 gauge electrogalvanized steel.
 - a. Finish: Rust inhibiting epoxy coating.
 - b. Fixed Outlet Louvers.
 - c. Intake and Discharge Screen: Heavy gauge steel.
 - d. Air Filter: Convenient access for replacement of standard 1 in (25 mm) filter.



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- e. NEMA 12 Wiring Compartment: Sealed with a 1/4 in (6 mm) high density polyurethane gasket. All optional control accessories are NEMA 12 rated.
 - f. Discharge diffuser.
 5. Mounting: Frame mounts.
 6. Elements: Metal sheath element brazed with spiral fins and formed into a coil configuration.
 7. Motor: Totally enclosed outdoor ball bearing fan motor. Permanently lubricated, class B insulation, auto-protected, permanent split capacitor and 140 degrees F (60 degrees C) ambient.

 8. Blower: Large capacity dual-inlet. Motor leads are enclosed in a Sealtite raceway. 600 to 1500 cu ft per min (17 to 42.5 cu m per min) air movement depending on model.
 9. Air Intake Temperature Control: Built-in thermostat located at the intake blower factory set at 100 degrees F (38 degrees C).
 10. Auto-Reset Thermal Cutout: Power is disconnected from element if overheating occurs. The element is re-energized automatically when the normal operating temperature returns.
 - a. Fan delay is standard on models above 11kW.
 11. Internal Controls:
 - a. Magnetic contactors.
 - b. Transformer for 24 V control.
 - c. Subcircuit fusing when ampacity exceeds 48 A.
 12. Options:
 - a. Thermostat: NEMA 4X thermostat.
 - b. 120 Volt Control: Circuit outboard supply by Contractor.
 - c. Element Step Control: 2-Stage control.
 - d. Disconnect Switch: 3-Pole non -fused with a padlock provision.
 - e. Remote Fuse Panel: Available when heater is mounted in an inaccessible area allowing fuses to be located in an electrical closet where they can be easily serviced.
- F. Basis of Design: CKL series large plenum heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards compliance: ETL Certified to comply with standard for Heating and Cooling Equipment ANSI/UL 1995 fourth edition. Meets stringent City of Chicago codes for plenum use.
 3. Rating: 30,000 to 240,000 W at 208, 240, 480 V, 1 or 3 phase.
 4. Enclosure: Welded high tensile 18 gauge electrogalvanized steel.
 - a. Finish: Rust inhibiting epoxy coating.
 - b. Fixed Outlet Louvers.
 - c. Intake and Discharge Screen: Heavy gauge steel.
 - d. Air Filter: Convenient access for replacement of standard 1 in (25 mm) filter.
 - e. NEMA 12 Wiring Compartment: Sealed with a 1/4 in (6 mm) high density polyurethane gasket. All optional control accessories are NEMA 12 rated.
 - f. Discharge diffuser.
 5. Mounting: Frame mounts.
 6. Elements: Metal sheath element brazed with spiral fins and formed into a coil configuration.

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7. Motor: Totally enclosed outdoor ball bearing fan motor. Permanently lubricated, class B insulation, auto-protected, permanent split capacitor and 140 degrees F (60 degrees C) ambient. 7.5 maximum HP.
 8. Blower: Large capacity dual-inlet. Motor leads are enclosed in a sealtite raceway. 3000 to 10,000 cu ft per min (85 to 283 cu m per min) air movement depending on model.
 - a. Wheel: Forward curve, 18 in (457 mm) diameter, dynamically balanced, galvanized.
 - b. Keyed shaft extensions and sealed ball bearings for higher horsepower motors.
 - c. Galvanized mounting supports, vibro-pads and heavyduty mounting hardware.
 - d. Belt Drive: Allows field adjustment of blower RPM to adjust for changes in system static pressure.
 9. Air Intake Temperature Control: Built-in thermostat located at the intake blower factory set at 100 degrees F (38 degrees C).
 10. Auto-Reset Thermal Cutout: Power is disconnected from element if overheating occurs. Fan continues to run dissipating excess heat from element. The element is re-energized automatically when the normal operating temperature returns.
 - a. Fan delay is standard on all models.
 11. Internal Controls:
 - a. Magnetic contactors.
 - b. Transformer for 24 V control.
 - c. Subcircuit fusing when ampacity exceeds 48 A.
 12. Options:
 - a. Element Step Control: 8-stage step controller.
 - 1) Vernier control.
 - b. Remote Fuse Panel: Available when heater is mounted in an inaccessible area allowing fuses to be located in an electrical closet where they can be easily serviced.
- G. Basis of Design: FX5 series explosion proof heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL and ULC.
 3. Rating: 3000 to 35000 W at 208, 240, 480, 600 V, 1 or 3-Phase, 50 or 60 Hz.
 4. Hazardous Locations Classifications:
 - a. Class I, Divisions 1 and 2, Group C and D.
 - b. Class II, Divisions 1 and 2, Group E, F and G.
 - c. Class I, Zones 1 and 2, Group IIA and IIB.
 - d. Temperature Code T3B 329 degrees F (165 degrees C).
 5. Cabinet Material: 14 gauge epoxy powder coated steel. Wall or ceiling mount. HD Core.
 - a. Mounting Holes: Four 9/16 in (14 mm) diameter holes at the top of heater.
 6. Cabinet Material: 14 gauge stainless steel with Heresite coating.
 - a. Mounting Holes: Four 9/16 in (14 mm) diameter holes at the top of heater.
 7. Motor Type: Explosion-proof, thermally protected, and permanently lubricated ball bearings.

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8. Fan: Aluminum blade. Steel spider and hub with 5/8 in (15 mm) bore.
 - a. Fan Guard: Split design with close wire spacing. 1/4 in (6.3 mm) diameter probe.
 - b. 3000 to 10,000 cu ft per min (85 to 283 cu m per min) air movement depending on model.
 9. Heating Elements: Long-life metal-sheathed elements (propylene glycol).
 10. Operational Temperature Range: Minus 4 to 104 degrees F (minus 20 to 40 degrees C).
 11. Temperature High-Limit: Automatic reset type, snap-action bimetal, open on temperature rise. Rated 100,000 cycles at 10 amp, handles 0.128 amps, plus an additional ambient high limit.
 12. Control Circuit: 120V, 0.128 amps, 15 VA. (Grounded).
 13. Thermostat: Built-In, explosion-proof 36 to 82 degrees F (2 to 28 degrees C).
 14. Control Transformer: Multiple voltage primary, 120V secondary, 25VA.
 15. Contactor: 40 or 75 amp. Rated for 500,000 mechanical operations. 120 V, 15 VA coil (separately fuse-protected).
 16. Conduit Material: Heavy wall, 0.122 in (3 mm), steel.
 17. Overpressure Protection: Preset 100 psig (690 kPa) pressure relief valve, aluminum body, no serviceable parts.
 18. Junction Box (HxWxD): 10.25 by 8.00 by 9.12 in (230 by 180 by 205 mm).
 19. Field Connection: Two 1 in NPT.
 20. Optional Built-In Disconnect Switch: DS5 uses x-Max construction.
 21. Optional Pilot Light: Explosion-proof light fixture with replaceable bulb.
 22. Optional 3-Way Switch: Explosion-proof 3 position fan switch (on, off, fan only).
- H. Basis of Design: CX1 series explosion proof sloped top heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL and ULC.
 3. Rating: 1200 to 7600 W at 120, 208, 240, 277, 380, 400, 415, or 480 V.
 4. Hazardous Location Classifications Without Built-in Thermostat:
 - a. Defender Housing Class I, Div. 1 & 2, Groups B, C, & D; Zones 1 & 2, Groups IIA, IIB
 - b. H,x-Max Housing Class I, Div. 1 & 2, Groups A, B, C, & D; Zones 1 & 2, Groups IIA, IIB, & IIC.
 5. Hazardous Location Classifications Without Built-in Thermostat:
 - a. Defender Housing Class With Built-In Thermostat: XCT Defender, Class I, Div. 1 & 2, Groups C & D; Zones 1 & 2, Groups IIA & IIB
 - b. XT Thermostat: Class I, Div. 1 & 2, Groups A, B, C, & D; Zones 1 & 2, Groups IIA, IIB, & IIC.
 6. Enclosure: Defender housing is cast aluminum with bolt on cover.
 7. Enclosure: Groups IIB, x-Max housing is extruded aluminum with two screwed on covers.
 - a. x-Max housing offers IP55 moisture ingress protection. Groups IIC.
 8. Cabinet Material: 14 gauge epoxy coated steel with galvanized rear panel.
 9. Cabinet Material: 14 gauge 304 stainless-steel cabinet and mounting hardware available

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10. Mounting Brackets: Two 14 gauge galvanized steel brackets for standard cabinet. Stainless-steel brackets provided with optional stainless-steel cabinet.
11. Heating Elements: Two Incoloy 840 sheathed elements.
12. Temperature Code Rating: Temperature Code T2A - 536 degrees F (280 degrees C) or T3 - 392 degrees F (200 degrees C).
13. Temperature Limitations:
 - a. Operational: Minus 49 to 104 degrees F (Minus 45 to 40 degrees C)
 - b. Storage: Minus 49 to 176 degrees F (Minus 45 to 80 degrees C).
 - c. Storage: Minus 49 to 300 degrees F (Minus 45 to 149 degrees C)..

2.12 INDUSTRIAL PORTABLE HEATERS

- A. Basis of Design: PKB series portable utility heaters as manufactured by King Electrical Manufacturing Company.
 1. Model: _____.
 2. Standards Compliance: Listed ETL; USA and Canada.
 3. Rating: 10,000 to 30,000 W, at 208, 240/208, 480 V.
 4. Construction: 20 gauge steel. Dual carrying handles. Adjustable louvers.
 5. Finish: High visibility safety yellow.
 6. Elements: Spiral Finned.
 7. Fan: Aluminum, heavy duty 16 gauge wheel base. 825 to 1350 cu ft per min (23.4 to 38.2 cu m per min)
 8. Cord Length: 6 ft (1.83 m) no plug.
 9. Motor: Unit Bearing.
 10. Controls:
 - a. Built-in Thermostat: 40 to 100 degrees F (4.4 to 37.8 degrees C).
 - b. Fan only switch
 - c. High limit thermal cutout safety device
 - d. Non-Mercury tip over switch
- B. Basis of Design: PCK series portable unit heater as manufactured by King Electrical Manufacturing Company.
 1. Model: _____.
 2. Standards Compliance: Listed UL and ULC.
 3. Rating: 10,000 to 30,000 W at 208, 240, 480 V, 1 or 3-Phase.
 4. Construction: 18 gauge steel. NEMA 12 gasket construction. Dual carrying handles. 12 in (mm) diameter duct suitable for flexible connection. Adjustable louvers.
 - a. Frame.
 5. Finish: High visibility safety yellow.
 6. Elements: Spiral Finned.
 7. Fan Blade: Dual inlet.1500 cu ft per min (42.5 cu m per min)
 8. Cord Length: 6 ft (1.83 m) no plug.
 9. Motor: TEOC, Totally enclosed air over.
 10. Accessories:
 - a. Cord storage shelf.
 - b. Outdoor rated inlet rain baffle with electrical and cord covers.
 - c. Remote thermostat with 100 ft (30.5 m) cord.

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2.13 ELECTRIC FURNACES

- A. Basis of Design: KF and KFS Endura Pro series forced air convection electric furnace as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Approvals:
 - a. Listed UL-E48864.
 - b. Approved for mobile home and manufactured home use. Add 1 in (25 mm) clearance around casing.
 3. Motor: Direct drive, 3 speed, thermally protected.
 4. Blower: Dual inlet.
 5. Enclosure: Welded galvanized steel construction.
 6. Finish: Baked enamel.
 7. Mounting: Horizontal or vertical.
 8. Transformer: Heavy-duty 24 V for thermostat control circuit.
 9. Contactor or Time Delay Sequencer: Actuates heating element banks at random intervals minimizing electrical surges compliant with EEI and NEMA standards.
 10. Heating Elements: Heavy duty, open coil, quick heating, ni-chrome elements sized to provide proper watt density for maximum heat dissipation by fan-forced air convection currents.
 11. Air Filter: Convenient access for replacement of standard non-pleated filter.
 12. Overcurrent Protection:
 - a. 208 and 240 V units have 60 amp circuit breakers.
 - b. 480 V units have terminal blocks. Internal 60 amp fusing for models over 48 amps.
 - c. Manual reset on units 20 kW and larger.
 13. Limit Control: Integral automatic high temperature limit control in each heating element bank.
 - a. 20 to 35 kW units use a manual reset limit control to completely shut the furnace off should an over temperature occur.
 14. Fan Relay: Heavy-duty dual speed fan.
 15. Low Voltage Terminal Block: 24 Volt control screw terminals.
 16. Accessories:
 - a. 4-Pole Jumper Bar - 15kW to 20kW; for single strike connection.
 - b. 6-Pole Jumper Bar - 25kW to 30kW; for single strike connection
 - c. 1 in (25 mm) discharge sub base.
 - d. Small Cooling Cabinet.
 - e. Large Cooling Cabinet
 - f. Transition from 14 in (356 mm) square outlet to 12 in (305 mm) round.
 - g. Mobile home mounting bracket.
 17. Options:
 - a. 15 kW to 30 kW, 1-phase.
 - b. 1/3 HP motor and blower - 3 kW to 18 kW.
 - c. 1/2 HP motor and blower - 3 kW to 35 kW.
 - d. Two stage control, 1-phase models.
 - e. Two stage control, 3-phase models.

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- f. Three Stage control, 1-phase models.
- g. 1/5 hp electronically controlled motor.
- h. 1/3 hp electronically controlled motor.
- i. Disconnect Switch: Factory installed.
 - 1) 40 Amp, 3-pole disconnect switch with padlock provision.
 - 2) 60 Amp, 3-pole disconnect switch with padlock provision.
 - 3) 80 Amp, 3-pole disconnect switch with padlock provision.

2.14 ELECTRIC MARINE HEATERS

- A. Basis of Design: PAW-SS Pic-A-Watt stainless steel marine heaters as manufactured by King Electrical Manufacturing Company.
 - 1. Model: _____.
 - 2. Standards Compliance: UL listed or equivalent.
 - 3. Ratings: 250 to 2,250 W at 120, 208, or 240 V.
 - 4. Construction: Wall can and heat box, 20 gauge 304 stainless steel.
 - a. Wall Can: Depth gauge label on top of the wall can. Flanges on each side of wall can for mounting to wooden bulkheads. Minimum three knockouts for power leads. Factory installed copper ground wire.
 - 1) Angled top: For surface mounting on an inspected vessel.
 - b. Fasteners: Stainless steel or nickel plated.
 - 5. Grill: 304 stainless steel, louvered, one-piece design, square corners all sides. Clear epoxy powder-coated.
 - 6. Motor: Shaded pole, permanently lubricated, C-frame type motor with impedance protection and sealed bearings. Same voltage as heater.
 - 7. Blower: Tangential cylindrical, 65 cu ft per min (1.84 cu m per min).
 - 8. Elements: Three steel sheathed heating tubes in a furnace-brazed, plate-finned, block design. Each tube containing coiled ni-chrome wire embedded in magnesium oxide insulator. Provide up to 7 possible wattage configurations available for selection during field installation.
 - 9. Thermal Overload: Disconnects elements and motor in the event normal operating temperatures are exceeded. Manually reset by turning the heater off for fifteen minutes.
 - 10. Options:
 - a. Bulkhead Can with Flange - Stainless Steel. Inspected vessel.
 - b. Recessed Surface Can - Stainless Steel.
 - c. Marine Grille - Stainless Steel.
 - d. Single Pole Thermostat Kit.
 - e. Double Pole Thermostat Kit.
- B. Basis of Design: DAW-SS Dial-A-Watt stainless steel marine heaters as manufactured by King Electrical Manufacturing Company.
 - 1. Model: _____.
 - 2. Standards Compliance: UL listed or equivalent.
 - 3. Ratings: 250 to 2,250 W at 120, 208, 240, or 277 V.
 - 4. Construction: Wall can and heat box to be 20 gauge 304 stainless steel.
 - a. Wall Can: Depth gauge label on top of the wall can. Flanges: Each side of wall can for mounting to wooden bulkheads. Minimum three knockouts for power leads. Factory installed copper ground wire.
 - b. Fasteners: Stainless steel or nickel plated.

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5. Grill: 20 gauge, 304 stainless steel, louvered, one-piece design, square corners all sides. Clear epoxy powder-coated.
 6. Motor: Shaded pole, permanently lubricated, C-frame type motor with impedance protection and sealed bearings. Same voltage as heater.
 7. Blower: Tangential cylindrical, 65 cu ft per min (1.84 cu m per min).
 8. Elements: Three steel sheathed heating tubes in a furnace-brazed, plate-finned, block design. Each tube containing coiled ni-chrome wire embedded in magnesium oxide insulator.
 9. Selector Switch: Provide up to 7 wattage settings adjustable from switch on front of heater.
 10. Thermal Overload: Disconnects elements and motor in the event normal operating temperatures are exceeded. Manually reset by turning the heater off for fifteen minutes.
 11. Indicator: Green pilot light indicating heater is operating.
 12. Thermostat: 45 to 80 degrees F (7 to 27 degrees C).
- C. Basis of Design: MKT-SS stainless steel low profile kick-space heaters as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed UL and ULC or equivalent.
 3. Ratings: 375 to 1,500 W at 120, or 240 V.
 4. Construction: 20 gauge type 304 brushed stainless steel. All fasteners and hardware are stainless steel.
 5. Grill: 20 gauge 304 stainless steel, clear epoxy finish.
 6. Motor: Thermally protected and permanently lubricated.
 7. Fan: Tangential (squirrel cage) blower; 70 cu ft per min (1.98 cu m per min).
 8. Element: Ni-chrome alloy open-coil wire wrapped around a mica insulator. Field adjustable dual wattage element.
 9. Thermal Cutout: Turns off power to element if overheating. Automatic reset.
 10. Thermal Overload: Disconnects elements and motor if normal operating temperatures are exceeded. Manually reset by turning the heater off for fifteen minutes.
 11. Accessories:
 - a. Stainless steel grill with 1/2 in (mm) overlap.
 - b. Thermostat: Single pole single throw.
 - c. Thermostat: Double pole single throw.

2.15 THERMOSTATS

- A. Basis of Design: ATMOZ-WIFI Programmable with Smartphone App. as manufactured by King Electrical Manufacturing Company.
1. Model: ATMOZ1-240-WIFI
 2. Model: ATMOZ2-240-WIFI
 3. Standards Compliance: Listed ETL; USA and Canada.
 4. Programmable with Atmoz Smart Phone App.
 - a. Program 4 or 6 time periods for maximum flexibility.
 5. Back-lit buttons and display.
 6. Mounting: Directly to 2x4 in (51 x 102 mm) vertical electrical outlet box.
 7. Temperature Range: 41 to 90 degrees F (5 to 32 degrees C).
 - a. Electronic Sensing Accuracy: 1 degree F (0.55 degrees C).

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8. Single or double pole line voltage.
 9. Max Power: 3328 W at 208 VAC (16A)
 10. Max Power: 3840W @ 240VAC (16A)
- B. Basis of Design: ATMOZ-Bluetooth Programmable with Smartphone App. as manufactured by King Electrical Manufacturing Company.
1. Model: ATMOS1-B- 1P Bluetooth Programmable Electronic Thermostat, AA Battery Powered (included). 120/240 V.
 2. Model: ATMOS2-B - 2P Bluetooth Programmable Electronic Thermostat, 240 V.
 3. Standards Compliance: Listed ETL; USA and Canada.
 4. Programmable with Atmos Smart Phone App.
 - a. Program 4 or 6 time periods for maximum flexibility.
 5. Back-lit buttons and display.
 6. Mounting: Directly to 2x4 in (51 x 102 mm) vertical electrical outlet box.
 7. Temperature Range: 41 to 90 degrees F (5 to 32 degrees C).
 - a. Electronic Sensing Accuracy: 1 degree F (0.55 degrees C).
 8. Single pole battery powered or double pole line voltage.
 9. Max Power: 1920W at 120VAC (16A) (ATMOS1-B Only)
 10. Max Power: 3328W at 208VAC (16A)
 11. Max Power: 3840W at 240VAC (16A)
- C. Basis of Design: K202E-TEMP 360, 2P Electronic Thermostat, 120, 208/240 V as manufactured by King Electrical Manufacturing Company.
1. Standards Compliance: Listed ETL; USA and Canada.
 2. Fully vented cover allows air sensing in all directions.
 3. Temperature Range: 40 to 90 degree F (5 to 30 degrees C).
 - a. Electronic Sensing Accuracy: 1 degree F (0.55 degrees C).
 4. Temperature Lock limiter: Set maximum temperature of 75 degreesF (24 degreesC)
 5. 120 or 208/240V selectable by jumper, 16 A max (resistive).
 6. Max Power: 1920W at 120VAC (16A)
 7. Max Power: 3328W at 208VAC (16A)
 8. Max Power: 3840W at 240VAC (16A)
 9. Double Pole line voltage (4 wire)
- D. Basis of Design: WR and WRP - Window Watcher Programmable as manufactured by King Electrical Manufacturing Company.
1. Model WR230: Simple electronic thermostat.
 2. Model WRP230: Simple electronic thermostat with 7 day programming.
 3. Standards Compliance: Listed UL.
 4. Temperature Range: 40 to 75 degrees F (4 to 24 degrees C).
 5. Power Failure Restart: Occupant's set point.
 6. Display Format: Liquid crystal display.
 7. Remote-Controlled Set Back: Yes (volt-free).
 8. Occupancy Sensing: 1, 3 or 6 hour delay.
 - a. Unoccupied Temperature: 58 degrees F (14 degrees C).
 9. Window Activation: OFF (on display).
 - a. 40 degrees F (4 degrees C) set back when window is open.
 10. Relay Rating: 16 Amps resistive or inductive.
 11. Illumination: Seattle blue, on touch of key.
 12. Heat Indicator: LCD, "Heater On."

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13. Sample Rate: 1 minute.
 14. Delay On or Off: 2-3 minutes.
 15. Accuracy: Plus or minus .9 degrees F (0.5 degrees C).
 16. Max Watts: 3320/3840 at 208/240 V.
 17. Minimum Watts: Zero.
 18. Power Supply: 120 or 208/240 V.
 19. Total Loop Distance: 15 ft (45.72 m).
- E. Basis of design: AUTO - Double Setback Electronic Stat as manufactured by King Electrical Manufacturing Company.
1. Model: K702E-2-T2H S B.
 2. Standards Compliance: Listed ETL; USA and Canada.
 3. 2 preset setback temperatures. After 2 hours, 66 degrees F (19 degrees C) and after 48 hours, 55 degrees F (13 degrees C). Simple 2 button operation.
 4. Fully vented cover. Sensing in all directions
 5. Mounting: Directly to single gang vertical electrical outlet box
 6. Double Pole line voltage, 4 wire
 7. Temperature Range: 41 to 74 degrees F (5 to 23 degrees C)
 - a. Max Room Temperature: 74 degrees F (23 degrees C)
 - b. Electronic Sensing Accuracy: Plus or minus 1 degree F (0.55 degrees C).
 8. Max Power: 3328 W at 208 VAC (16A)
 9. Max Power: 3840 W at 240 VAC (16A)
- F. Basis of Design: K101 and K102 mechanical thermostat as manufactured by King Electrical Manufacturing Company.
1. Model: _____.
 2. Standards Compliance: Listed ETL; USA and Canada.
 3. Clean, beveled style. Sits flush against wall. Includes F and C degree dials.
 - a. No ground wire design.
 - b. Large knob easy adjustment to all temperatures.
 - c. Single or Double Pole (positive off).
 - d. Mounts directly to a 2 x 4 in (51 x 102 mm) vertical electrical outlet box
 4. Temperature Range: 41 to 90 degrees F (5 to 32 degrees C)
 - a. Accuracy: plus or minus 3 degrees F (plus or minus 1.6 degrees C)
 5. Sensing Element: Bi-metal mechanical
 6. Max Power: 2640 W at 120 V (22 A).
 7. Max Power: 4576 W at 208 V (22 A).
 8. Max Power: 5280 W at 240 V (22 A).
 9. Max Power: 6094 W at 277 V (22 A).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

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3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction. Test for proper operation and adjust until satisfactory results are obtained.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION