CAST-X 3000
Circulation Heater

CAST-X 3000 is a very popular heater, with wide use across industrial gas and fluid handling sectors.

SPECIFICATIONS:

- **Power:**
  - 1 kW Total to 24.6 kW Total
  - Voltage Range: 208 - 480 V
  - Max Line Current: 35 A per circuit

- **Tubing:**
  - .750” OD (3/4”) (19.1 mm)
  - .065” Wall (1.7 mm)
  - Overall Process Tube Length: 142” (3606 mm) each
  - 316L Stainless Steel (standard)
  - Inconel (optional upgrade)
  - Passivated or Electro-Polished (optional upgrades)

- **Max Pressure:**
  - 3300 psi (227 bar)

- **Enclosures:**
  - NEMA 4 (moisture-resistant)
  - NEMA 7 / ATEX (explosion-proof)

- **Max Working Temperatures:**
  - NEMA 4 (moisture-resistant): 572°F (300°C)
  - NEMA 7 / ATEX (explosion-proof): 482°F (250°C)

Published temperatures are for housing at 12 o’clock position; higher temps may be possible at 6 o’clock position. See factory for details.

- **Sensors:**
  - K or J Type Thermocouples Standard
  - Process and High-Limit Thermocouples

- **Available Accessories:**
  - Insulating Jackets
  - Compression Fittings

APPLICATIONS:

- Packaging Sterilization
- Foodservice Pasteurization
- Diesel & Jet Fuel Heating
- Mud Testing Applications (oil exploration)
- Fuel Gas Conditioning (moisture removal)
- Powder Coating Pre-Wash Systems
- Thermal Fluid Heating For Heat Transfer Systems

FEATURES & BENEFITS:

- SS 316L Fluid Path is Separate from Heating Elements
  (allows safe heating of sensitive materials and prevents contamination)
- Compact Design Replaces Larger Heat Exchangers
- Long Heater Life, Due To Cast-In Design
- Clean & Safe (self-draining, non-welded)
- Supports High Flowrate Applications
- Operable in Single-Tube or Dual-Tube Mode
- Dual Tube Mode Can Run in Series or Parallel

Designed and manufactured by Cast Aluminum Solutions (CAS), CAST-X Circulation Heaters are engineered using the latest thermal modeling and finite element analysis technology. CAST-X heaters feature low-watt-density heating elements cast into aluminum bodies which also contain the helical-coiled stainless steel flowpath tubes.

The media is sequestered in these tubes, never touching the heating elements: a critical safety benefit, especially when heating explosive or sensitive media. All CAST-X units are capable of heating liquids and gases alike.

CAST-X heaters are self-draining, for safety and cleanliness. With compact, non-welded bodies, plus NEMA & ATEX enclosures, CAST-X units are small-footprint, high-output heaters that meet the needs of high-purity processes, flammable operations, and your most critical heating applications.

Tel: 630-879-2696 • Sales@CastAluminumSolutions.com • www.CastAluminumSolutions.com • 1310 Kingsland Drive • Batavia, Illinois 60510 USA
CAST-X 3000 Heating Profile: Delta-T Water
(Process Fluid = Water @ 42°F / 5.6°C Inlet Temp, Single Pass Using One Tube, 100% Power, Set Point 752°F / 400°C)

CAST-X 3000 Pressure Drop Profile: Delta-P Water
(Process Fluid = Water. Change in Pressure from Inlet to Outlet, Single Pass Using One Tube)

MOISTURE-RESISTANT (NEMA 4) ENCLOSURE

CAST-X 3000 Circulation Heater

Heater Wattage:
- 28.4kW
- 21.3kW
- 14.2kW
- 9.5kW
- 3.5kW

Temperature Increase (Delta-T, °F)
- 180
- 160
- 140
- 120
- 100
- 80
- 60
- 40
- 20
- 0

Pressure Drop (Delta-P, PSI)
- 0 2 4 6 8 10 12 gpm
- 0 7.6 15.1 22.7 30.3 37.9 45.4 l/min

3/8"-16 or M10 x 1.5 tapped holes

MOISTURE-RESISTANT (NEMA 4) ENCLOSURE

Contact Information:
Tel: 630-879-2696 • Sales@CastAluminumSolutions.com • www.CastAluminumSolutions.com • 1310 Kingsland Drive • Batavia, Illinois 60510 USA
EXPLOSION-PROOF (NEMA 7 / ATEX) ENCLOSURE

CAST-X 3000 Heating Profile: Delta-T Air
(Process Fluid = Air @ 100 psi (689 kPa), 70.7°F / 21.5°C, Single Pass Using One Tube, Set Point 752°F / 400°C)

CAST-X 3000 Heating Profile: Delta-P Air
(Process Fluid = Air @ 100 psi (689 kPa), 70.7°F / 21.5°C, Single Pass Using One Tube, Set Point 752°F / 400°C)
CAST-X 3000 Circulation Heater

Engineering Expertise • Speed to Market • Operational Excellence

Cast Aluminum Solutions (CAS) manufactures the CAST-X line of circulation heaters, plus a broad range of heating, cooling, and non-thermal components. We are relied upon by OEMs and end-users alike throughout the semiconductor, medical device, aerospace, industrial gas, fluid-handling, food equipment, and energy markets.

Our multi-discipline team of engineers and technicians works closely with customers to develop practical solutions to complex process challenges. We utilize industry standard applications such as Finite Element Analysis (FEA), SolidWorks® 3-D CAD technology, and a range of structural analysis & thermal modeling tools.

CAS is an ISO 9001 Certified company with a fully-equipped R&D facility. Testing capabilities include X-Ray, ultrasound, helium leak, and infra-red technology, plus the latest coordinate measuring machines (CMM). Our in-house casting facility utilizes a permanent mold low-pressure casting process which reliably produces low-porosity, high-quality aluminum products. We offer an array of precision CNC machining options, finishing options such as electroless nickel plating, Teflon® coatings, clear-coat and hard-coat anodizing, plus high-value-added testing and inspection services.

Headquartered in Batavia, Illinois (just outside Chicago) we serve customers worldwide. See the below map to locate a Sales Engineer, or contact CAS directly. We look forward to working with you.
### VOLTAGE, POWER, CIRCUIT TYPE

Volts refers to line volts (VL). Amps refers to line current (IL).

<table>
<thead>
<tr>
<th>Section &quot;AAAA&quot;</th>
<th>Volts (V)</th>
<th>Watts (kW)</th>
<th>Circuit Type</th>
<th>Amps (A) (per circuit)</th>
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<tbody>
<tr>
<td>300A</td>
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### ENCLOSURES AND SENSORS

All thermocouples are ungrounded, for optimal performance.

<table>
<thead>
<tr>
<th>Section &quot;BBB&quot;</th>
<th>Description</th>
<th>Thermocouple Qty.</th>
<th>Enclosure</th>
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<td>K-TYPE THERMOCOUPLE IN THERMOWELL</td>
<td>1</td>
<td>NEMA 4</td>
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<td>WJJ</td>
<td>J-TYPE THERMOCOUPLES IN THERMOWELLS</td>
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<td>NEMA 4</td>
</tr>
<tr>
<td>WKK</td>
<td>K-TYPE THERMOCOUPLES IN THERMOWELLS</td>
<td>2</td>
<td>NEMA 4</td>
</tr>
<tr>
<td>E00</td>
<td>NO SENSOR</td>
<td>0</td>
<td>NEMA 7 / ATEX</td>
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</tr>
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### METRIC MOUNTING HOLES

Place an "M" in section C if metric mounting holes are required.

If standard Imperial mounting holes are desired, section C can be left blank.

<table>
<thead>
<tr>
<th>Section &quot;C&quot;</th>
<th>Metric Mounting Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>M10 x 1.5 Metric Tapped Mounting Holes</td>
</tr>
</tbody>
</table>

### CUSTOM DESIGNS & COMPONENTS

CAS offers several options for special tubes, sensors, and finishes.

For these options, please call a CAS Representative for a quote.

**Options**

- INCONEL, MONEL OR HASTELLO Y TUBES
- ELECTRO-POLISHED OR PASSIVATED TUBES
- SINGLE TUBE DESIGNS
- SPECIAL HIGH-LIMIT SWITCHES OR RTDs
- NPT FITTINGS
- THICK WALL TUBES
CAST-X 3000 Available Circuit Types

The CAST-X 3000 is manufactured with these types of circuit configurations.

*Wiring schematic only shows heater elements. Refer to I&M Manual for further details on wiring of snap-action switches (if applicable).

ACCESSORIES

These PNs are totally separate from the PNs for the heater

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Component</th>
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</thead>
<tbody>
<tr>
<td>274-55-6-7</td>
<td>COMPRESSION FITTINGS (HIGH PRESSURE) / PAIR (SHIPPED LOOSE)</td>
</tr>
<tr>
<td>307-0-16-1</td>
<td>INSULATION JACKET, MAXIMUM TEMPERATURE 986°F (530°C)</td>
</tr>
</tbody>
</table>

Need Help with Part Numbers or Engineering Calculations?

The CAS Team is ready and available to help you work through part number configurations, provide engineering advice, and ensure customers purchase the heater most appropriate for their particular application.

Contact CAS Directly:
Main Tel: 630-879-2696
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