

# DUROCAST® SERIES 550 CAST HEAT EXCHANGER

## Compact, Safe Heating for Gases, Solvents, Volatiles & Viscous Fluids



The Durocast® Series 550 is a compact, electric in-line circulation heater designed to quickly and safely heat liquids and gases. This cast-in-aluminum heat exchanger heats fluids indirectly providing a clean heating environment. This design also protects oils and other viscous fluids from thermal breakdown often found in direct immersion applications. The heater elements are protected from corrosive attack and yet provide rapid heat up of process fluids. The excellent thermal conductivity of aluminum provides fast thermal response and excellent controllability. Optional dual fluid path designs provide heat/cool capabilities for precise solvent, volatiles and viscous liquid temperature control. Or the dual tubing can be used to double the flow rate, halve the pressure drop or be used in a heat/heat configuration.

### DESIGN FEATURES

- **Low Mass Design**
  - enables quick thermal response
  - ensures excellent controllability
- **Seamless 316 SS Flow Tubing**
  - provides clean, contamination-free application
  - prevents internal leaks
  - allows up to 3,000 psi rating
- **Cast Aluminum Heat Exchanger Body**
  - enables indirect fluid heating
  - ensures robust, ruggedized performance
  - promotes long heater life
- **Dual Fluid Path Capability**
  - permits precision heat/cool temperature control
  - provides higher flow rate capability
- **Hazardous and Non-Hazardous Location Ratings**
  - use in laboratory and industrial settings

### APPLICATIONS

- Liquids:**
  - De-ionized water
  - Water, glycol & CIP solutions
  - Lube and heat transfer oils
  - Adhesives, resins & other viscous fluids
  - Temp sensitive inks, coatings & paints
- Solvents:** ACT, EKC, MEK, NMP, Others
- Gases:**
  - Nitrogen & similar gases
  - Supercritical cleaning
  - Steam generation & superheating
  - Sterilization gases
  - Other non-flammable gases

### SPECIFICATIONS

**Series 550 Construction:** 0.50" (12.7mm) x 0.065" (1.65mm) wall x 188" (480 cm) long, 316 stainless steel fluid tubing embedded in cast, grounded, aluminum heating body

**Fluid Connections:** Tube ends

**Temperature Range:** To 200°C (392°F)

**Pressure Rating:** To 3000 psi (205Bar)

**Voltage:** To 480V~ (ac), single or three phase

**Wattage:** To 15,000 Watts

**Mounting:** Two brackets, with mounting holes

**Electrical Enclosure:** NEMA 1 standard

### OPTIONS

- Process and high limit temperature sensors
- Thermostats for direct or pilot duty control
- Replaceable high limit thermal cutoff device
- NEMA 4, 7, NEC Class 1, Division 2, or ATEX rated electrical enclosure
- Passivated and electropolished wetted surface
- Insulated body up to 200°C (392°F) operation
- Stand-off electrical enclosure
- Other custom modifications available

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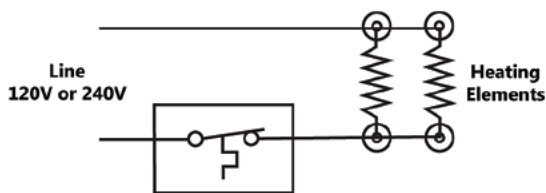
## ELECTRICAL DATA

### Thermostat Ratings

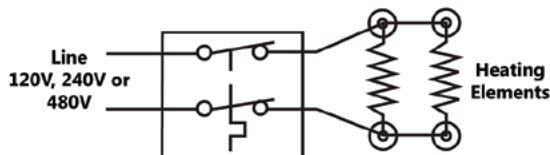
Thermostat Type	Amperage Rating for Various Line Voltages			
	120 V	240 V	277 V	480 V
SPST, 50 to 235F (10 to 110C)	20	20	20	N/A
DPST, 60 to 250F (15 to 120C)	30	30	30	10

### Thermostat Wiring for Direct Control

Thermostat rating is adequate for line voltage and total amperage load.



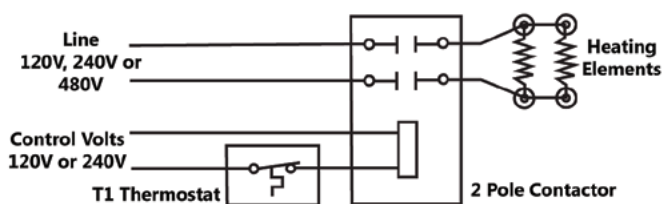
**Single Phase**



**Single Phase**

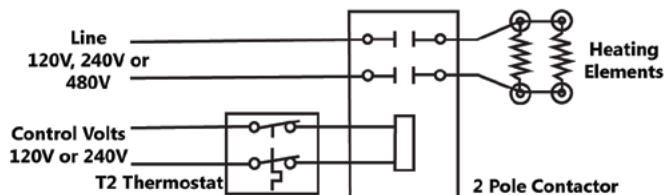
### Thermostat Wiring for Pilot Duty

Total amperage load is above thermostat rating. An external switch (such as an electromechanical relay) is required for load switching. Control voltage is the same as line voltage.



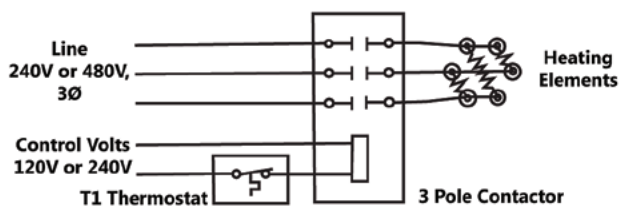
**Single Phase**

For 120V, 240V or 480V heaters when current exceeds thermostat rating

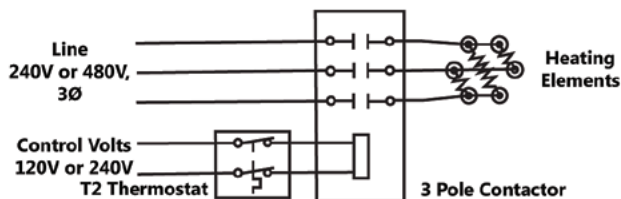


**Single Phase**

For 120V, 240V or 480V heaters when current exceeds thermostat rating



**All 3 Phase Heaters**



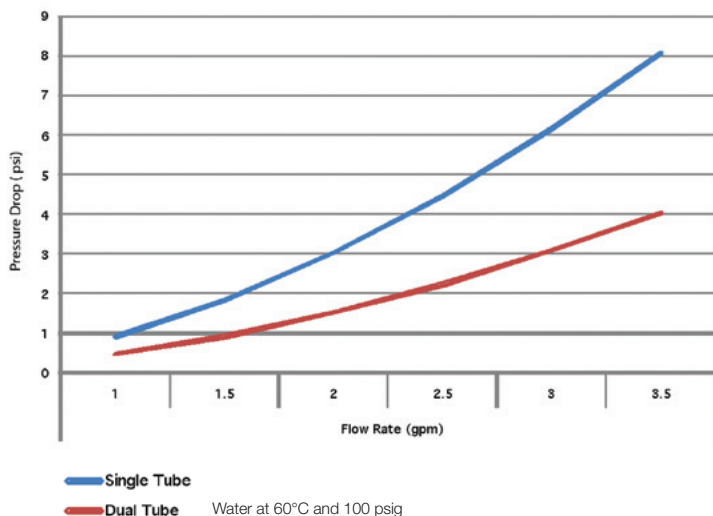
**All 3 Phase Heaters**

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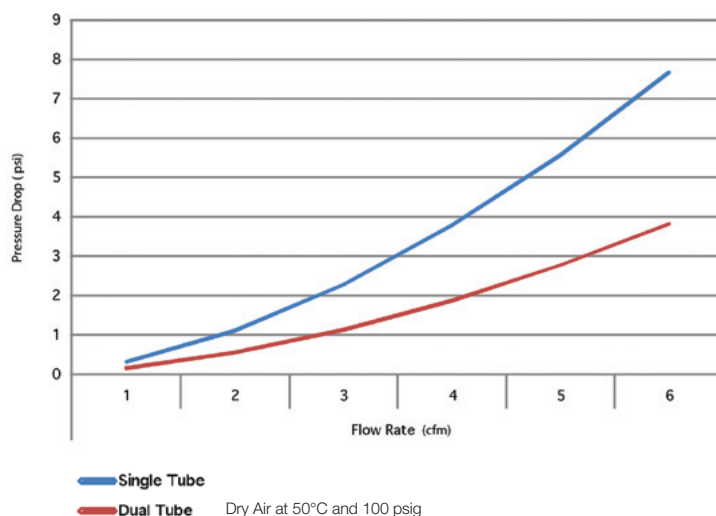
## PROCESS DATA

Use the graphs below as a general guide to assess pressure drop across the heater in various flow situations. In both cases the inlet pressure is 100psig. Values are approximate and will vary with changes in pressure and flow conditions.

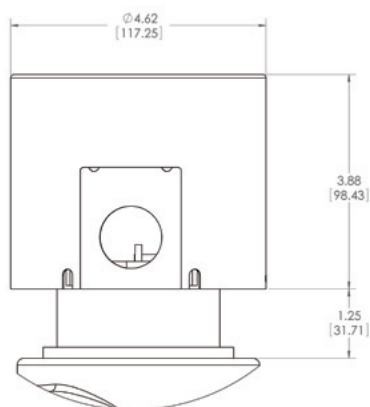
### Pressure Drop Data for Water-Based Solutions



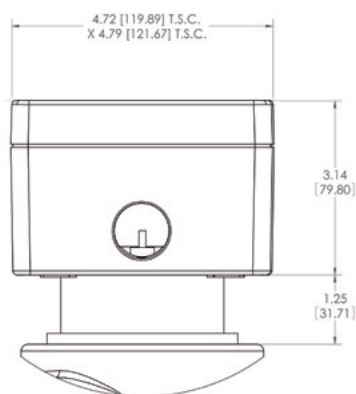
### Pressure Drop Data for Air & Similar Gases



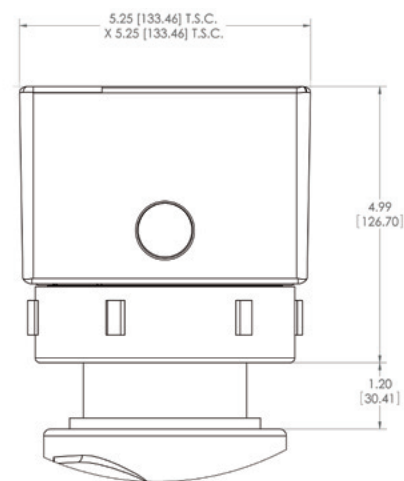
## DIMENSIONAL DATA



NEMA 1 Enclosure



NEMA 4 Enclosure

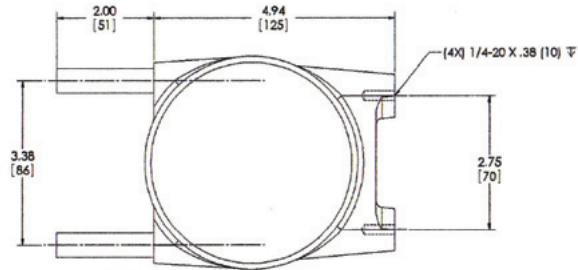


NEMA 7 Enclosure

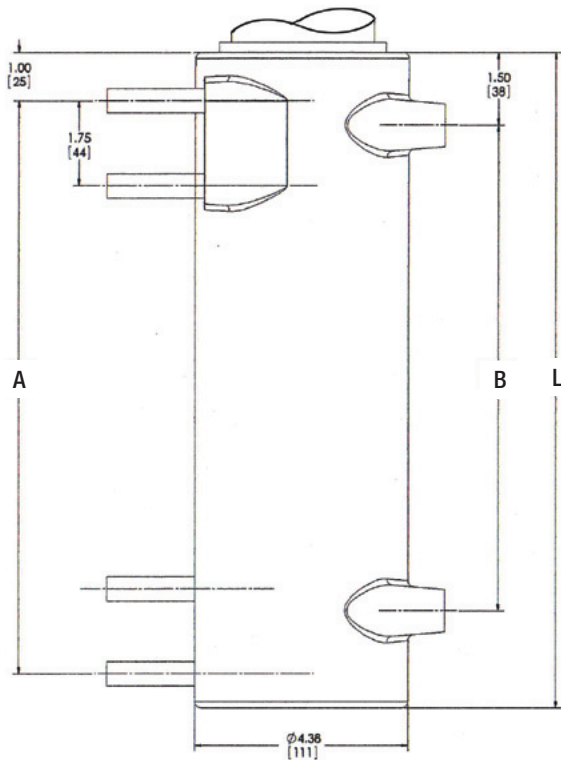
ALL DIMENSIONS ARE IN INCHES/MILLIMETERS

# DUROCAST® SERIES 550 CAST HEAT EXCHANGER

## DIMENSIONAL DATA



Heater Body Top View



Heater Body Front View

Heater Length Code	(L) Overall Body Length (in./mm)	(A) Inlet-to-Outlet Centerline (in./mm)	(B) Mounting Brackets (in./mm)
R	13.5 (343mm)	11.8 (300mm)	10 (254mm)
M	19.5 (495mm)	17.8 (452mm)	16 (406mm)
L	25.5 (648mm)	23.8 (605mm)	22 (559mm)

## PRODUCT CONFIGURATION & ORDERING

Model Numbering: **DF55** - - - - - **-00**

### Base Unit

Cast Heat Exchanger with electric heater, 0.50" (12.7mm) O.D., seamless 316 SS flow tube, and NEMA 1 electrical enclosure.

### Length

- R** = 13.5" OAL for units up to 6kW
- M** = 19.5" OAL for units between 6kW and 9kW
- L** = 25.5" OAL for units above 9kW

### Tube Configuration

- S** = Single Flow Tube
- D** = Dual Flow Tube

### Fittings

- 1** = Tube Ends (Standard)
- 2** = Swagelok® Compression Fittings

### Enclosure

- N** = NEMA 1 (Standard)
- W** = NEMA 4
- E** = NEMA 7

### Sensors

- J** = Type J T/C in Thermowell Only (Standard)
- K** = Type K T/C in Thermowell
- L** = Thermostat, SPST, 85 to 230F (30 to 110C)
- M** = Thermostat, DPST, 60 to 250F (15 to 120C)
- A** = Two (2) Type J T/Cs in Thermowells
- B** = Two (2) Type K T/Cs in Thermowells

### Wattage & Voltage

- 1500K** = 1.5kW, 240V~ (ac), 1phase
- 1500N** = 1.5kW, 480V~ (ac), 1phase
- 2250G** = 2.25kW, 208V~ (ac), 1 phase
- 3000K** = 3kW, 240V~ (ac), 1phase
- 3000N** = 3kW, 480V~ (ac), 1phase
- 1500W** = 1.5kW, 240V~ (ac), 3phase
- 1500Z** = 1.5kW, 480V~ (ac), 3phase
- 2250U** = 2.25kW, 208V~ (ac), 3 phase
- 3000W** = 3kW, 240V~ (ac), 3phase
- 3000Z** = 3kW, 480V~ (ac), 3phase
- 3375U** = 3.375kW, 208V~ (ac), 3phase
- 4500U** = 4.5kW, 208V~ (ac), 3phase
- 4500W** = 4.5kW, 240V~ (ac), 3phase
- 4500Z** = 4.5kW, 480V~ (ac), 3phase
- 6000W** = 6kW, 240V~ (ac), 3phase
- 6000Z** = 6kW, 480V~ (ac), 3phase
- 7500W** = 7.5kW, 240V~ (ac), 3phase
- 7500Z** = 7.5kW, 480V~ (ac), 3phase
- 9000W** = 9kW, 240V~ (ac), 3phase
- 9000Z** = 9kW, 480V~ (ac), 3phase
- 1050CW** = 10.5kW, 240V~ (ac), 3phase
- 105CZ** = 10.5kW, 480V~ (ac), 3phase
- 120CW** = 12kW, 240V~ (ac), 3phase
- 120CZ** = 12kW, 480V~ (ac), 3phase