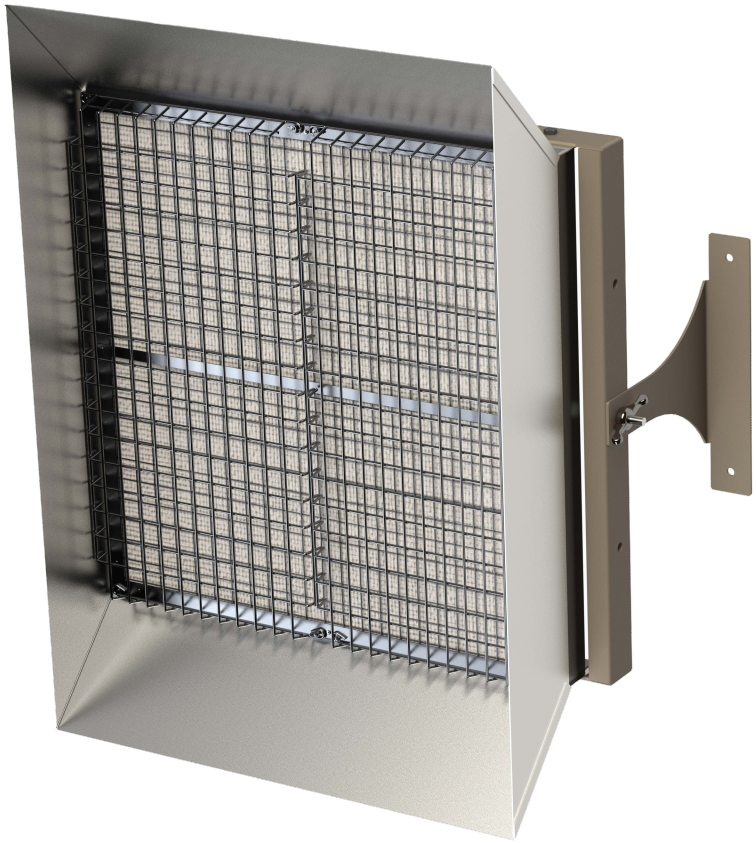

Contents

Product Overview 2
Installation & Operation 2
Product Specifications 4
Configuration & Accessory Guide 5

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888-436-2099
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Product Overview

Catco catalytic heaters bring fuel and oxygen together in the presence of a heated catalyst. This causes a chemical reaction that produces infrared heat but no flame, and the catalyst is not consumed by the reaction. Once it's operational, a catalytic heater can operate indefinitely if it has a clean source of fuel and sufficient air.

The operating characteristics of Catco catalytic heaters have made them a safe and effective solution in a variety of industrial applications for decades. They are particularly well suited for use in hazardous areas and remote locations. Catco catalytic heaters can be configured with certification by FM or CSA for use in Class I, Division 1 & 2, Group D areas.

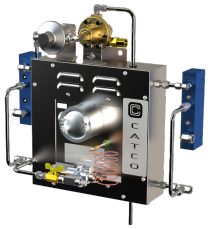
Applications

Heated Enclosure Packages

To prevent freezing in valves, regulators, or other at-risk equipment, Catco heaters are often installed in a stainless steel housing and mounted directly to equipment.

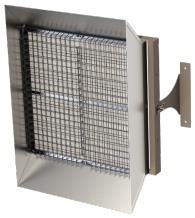
Instrument Gas Heating

Catalytic heaters are the heat source for systems designed to heat and condition gas for pilot operated regulators and instrument gas/air systems.



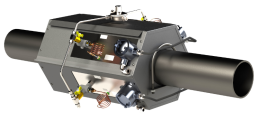
Space Heating

Many Catco heaters are used in space heating applications for meter houses, compressor buildings, measurement sheds, or instrumentation enclosures.



Pipeline Packs

Pipeline packs position one or more Catco heaters next to a pipe to heat the gas or other fluid flowing through it ahead of pressure regulation or other processes.



Installation & Operation

Installation & Mounting

Regardless of whether your catalytic heater is installed as a standalone space heater or as part of a larger assembly (such as an instrument gas heater, heated enclosure package, or pipeline pack), make sure the unit can't be easily dislocated or tipped over. The face of the heater should be protected from rain and snow.

For more information, see the complete *Installation, Operation, and Maintenance Manual for Catalytic Infrared Heaters* or the relevant product bulletin for the assembly.

Operation

Start-up

1. Verify the unit has been installed in accordance with the Installation, Operation, and Maintenance Manual and all applicable codes.
2. Make sure the electrical supply matches the voltage specified by the product label and turn on the electrical supply.
3. Wait 15 minutes to allow the catalyst bed to come up to temperature (this may take longer in extremely cold weather).
4. Start gas flow to the heater. If the unit is configured with a shutoff valve and thermocouple, press and release the button on the valve. The plunger on the valve will return to its original position but the valve will be held open internally. This will start the catalytic reaction. If the valve doesn't stay open wait several more minutes and retry.
5. Continue electrical power until the catalytic reaction is fully established. This will be indicated by a rapid rise in face temperature and the emission of hot exhaust gases. Under normal conditions, this phase will take 5-10 minutes.
6. Once the reaction is established, turn off the electrical power. The heater is now in normal operation.

Normal Operation

The catalyst material is not consumed or destroyed by the catalytic reaction, and the reaction will continue as long as the heater is provided with a clean fuel supply and adequate combustion air.

Shut Down

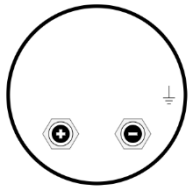
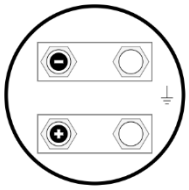
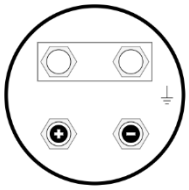
1. Ensure the electrical power is turned off.
2. Turn off the fuel supply.
3. Removing the fuel supply will cause the catalytic reaction to stop. Don't handle the unit until it's sufficiently cooled.

Electrical Setup

The only electrical component of the heater is the heating element(s) that preheat the catalyst bed during the start-up phase of operation (typically no more than 30 minutes). The element terminals are in the junction box in the back of the heater. Elements have no polarity, so positive and negative leads can be placed in either location.

Depending on the heater model, there can be two or four terminal posts. When four posts are present, units can be bussed in parallel or in series. Detailed wiring information can be found in each model's spec sheet.

Bussing and Element Arrangements

Single Element	Dual Element, Parallel	Dual Element, Series
Two Terminals and Ground	Four Terminals and Ground	Four Terminals and Ground
No Bus Bars	Two Bus Bars	One Bus Bar
		

Amperage Requirements During Heater Startup

Model	Starting Amps, A				
	12 V	24 V	120 V	240 V	480 V
66	6.7	4.2	0.6	–	–
88	6.7	4.2	0.6	0.4	–
612	8.3	4.2	0.8	0.4	–
1012	8.3	4.2	0.8	0.4	–
1212	8.3	4.2	0.8	0.4	–
624	16.7	4.2	1.9	1.9	–
1224	16.7	8.3	1.7	0.8	0.4
1236	33.3	16.7	3.8	1.9	1.9
1248	33.3	16.7	3.8	1.9	1.9
2424	33.3	16.7	3.8	1.9	1.9
1836	33.3	16.7	3.8	1.9	1.9
1260	33.3	16.7	3.8	1.9	1.9
1848	33.3	16.7	3.8	1.9	1.9
1860	33.3	16.7	3.8	1.9	1.9
2448	33.3	16.7	8.3	4.2	2.1
2460	33.3	16.7	8.3	4.2	2.1
2472	33.3	16.7	8.3	4.2	2.1
8RD	6.7	4.2	0.6	–	–
12RD	8.3	4.2	0.8	0.4	–

Note: Not all voltages available in all configurations.

Fuel Gas Setup Best Practices

Cut to heater input pressure as close to the unit as possible.

The heater operates on relatively low pressure (4.5 inches w.c. is only 0.16 psig). Even the pressure drop from a few inches can have a significant impact on heater performance. The thermostat (if used) and final cut pressure regulator should be placed directly upstream of the heater orifice.

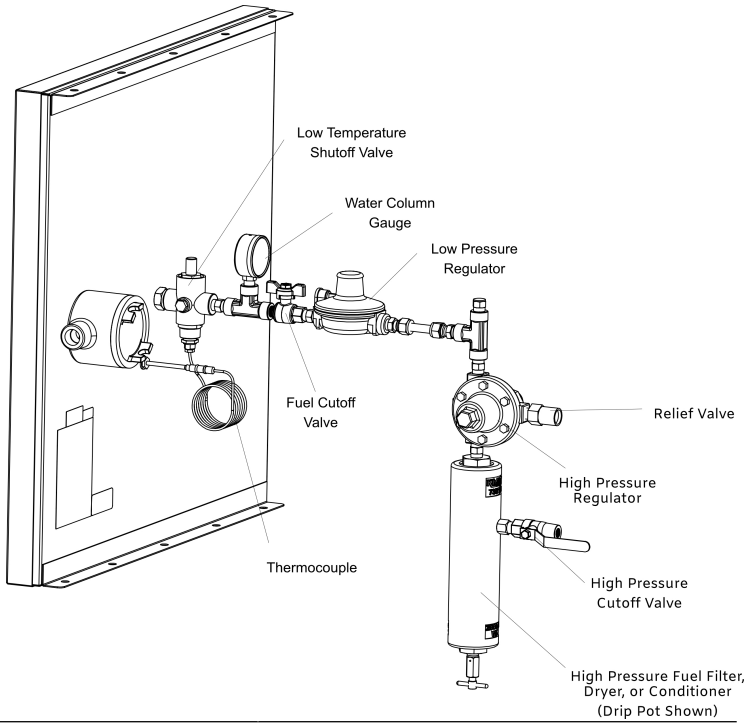
Filter and dry fuel gas.

The biggest factor affecting the longevity of a heater is the quality of fuel. Sulfur is especially detrimental to catalytic heaters. Heater fuel gas should be run through a filter or dryer with media suited to your fuel conditions. Contact Catco for recommendations for your application.

Use a pressure gauge to monitor fuel pressure.

The most common cause of poor heater performance is improper fuel pressure. Troubleshooting or reinstalling a heater is considerably easier with a pressure gauge directly upstream of the heater orifice. If a gauge isn't installed, there's a 1/8" NPT port on the downstream side of the low temperature shutoff valve (if present).

Recommended Piping Arrangement



Product Specifications

Part Number Structure

90-1212S1G-40

Model
Corresponds to nominal dimensions of the heater in inches, e.g., 12” x 12”

Voltage
1 - 12 V
2 - 120 V
3 - 240 V
4 - 24 V
5 - 480 V

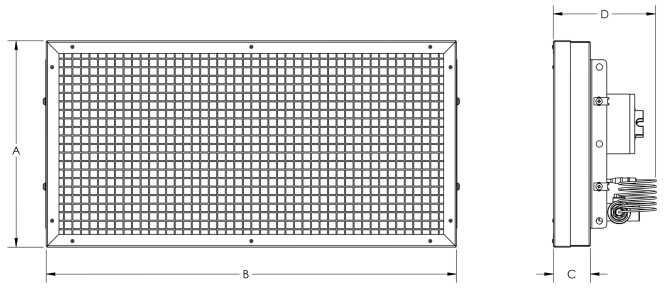
Fuel
G - Nat. gas
L - Propane

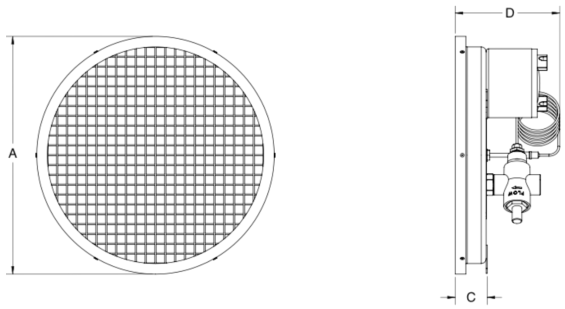
Configuration
See Table 1 for details on heater configurations

Available Heater Configurations

Config	Hazardous Location Listing		Junction Box		Valve and Thermo-couple
	Class I Div 1 Group D	Class I Div 2 Group D	Plain	EP	
-10			•		
-20				•	
-30		FM	•		•
-40	FM	FM		•	•
-50	CSA	CSA		•	•

Product Dimension Reference





Product Specification Table

Model	Rating, BTU/hr (kW)	Hourly Fuel Consumption		Nominal Size, inches (mm), Dimensions from Figure 2				Approx. Weight, lb (kg)
		Natural Gas SCFH (m3/hr)	Propane lb/hr (kg/hr)	A	B	C	D	
66	1500 (0.44)	1.5 (0.04)	0.07 (0.03)	6 (152)	6 (152)	1 ¾ (44)	7 (178)	5 (2.3)
88	2667 (0.67)	2.7 (0.08)	0.12 (0.06)	6 (152)	8 (203)	1 ¾ (44)	7 (178)	5 (2.3)
612	3000 (0.88)	3.0 (0.08)	0.14 (0.06)	6 (152)	12 (305)	1 ¾ (44)	7 (178)	7 (3.2)
1012	5000 (1.47)	5.0 (0.14)	0.23 (0.10)	10 (254)	12 (305)	1 ¾ (44)	7 (178)	8 (3.6)
1212	6000 (1.76)	6.0 (0.17)	0.28 (0.13)	12 (305)	12 (305)	1 ¾ (44)	7 (178)	10 (4.5)
624	6000 (1.76)	6.0 (0.17)	0.28 (0.13)	6 (152)	24 (610)	2 (51)	7 ¼ (184)	10 (4.5)
1224	12,000 (3.52)	12.0 (0.34)	0.56 (0.25)	12 (305)	24 (610)	2 (51)	7 ¼ (184)	15 (6.8)
1236	18,000 (5.28)	18.0 (0.51)	0.83 (0.38)	12 (305)	36 (914)	2 (51)	7 ¼ (184)	20 (9.1)
1248	24,000 (7.03)	24.0 (0.68)	1.11 (0.50)	12 (305)	48 (1219)	2 (51)	7 ¼ (184)	30 (13.6)
2424	24,000 (7.03)	24.0 (0.68)	1.11 (0.50)	24 (610)	24 (610)	2 (51)	7 ¼ (184)	30 (13.6)
1836	27,000 (7.91)	27.0 (0.76)	1.25 (0.57)	18 (457)	36 (914)	2 (51)	7 ¼ (184)	30 (13.6)
1260	30,000 (8.79)	30.0 (0.85)	1.39 (0.63)	12 (305)	60 (1524)	2 (51)	7 ¼ (184)	40 (18.1)
1848	36,000 (10.55)	36.0 (1.02)	1.67 (0.76)	18 (457)	48 (1219)	2 (51)	7 ¼ (184)	40 (18.1)
1860	45,000 (13.19)	45.0 (1.27)	2.08 (0.94)	18 (457)	60 (1524)	2 (51)	7 ¼ (184)	45 (20.4)
2448	48,000 (14.07)	48.0 (1.36)	2.22 (1.01)	24 (610)	48 (1219)	2 (51)	7 ¼ (184)	45 (20.4)
2460	60,000 (17.58)	60.0 (1.70)	2.78 (1.26)	24 (610)	60 (1524)	2 (51)	7 ¼ (184)	60 (27.4)
2472	72,000 (21.10)	72.0 (2.04)	3.33 (1.51)	24 (610)	72 (1829)	2 (51)	7 ¼ (184)	65 (29.4)
8RD	1500 (0.44)	1.5 (0.04)	0.07 (0.03)	8 (203)	–	1 ¾ (44)	7 (178)	4 (1.8)
12RD	5000 (1.47)	5.0 (0.14)	0.23 (0.10)	12 (305)	–	1 ¾ (44)	7 (178)	5 (2.3)

Configuration & Accessory Guide

Catco offers a wide range of accessories to ensure your Catco heaters meet the needs of the installation and engineering requirements. Contact Catco for assistance in choosing the right accessories for your application.

Pressure Control

High-Pressure Regulators

For inlet pressures greater than 150 psig or when it's preferred to reduce pressure in two stages.

Low-Pressure Regulators

To reduce fuel pressure from supply pressure to the required inlet pressure of the heater.

Relief Valves

Provides overpressure protection for the low pressure regulator and the heater itself.

Gauges

Water column and psi gauges to monitor pressures in the fuel manifold. This is particularly useful for installation and troubleshooting.

Fuel Gas Accessories

Filters

Aluminum or acrylic body for knocking liquid out of fuel lines.

Drip Pots

Drip pots remove moisture from the fuel stream, which improves heater performance and longevity. They're often used in conjunction with a high-pressure regulator for high-pressure applications.

Temperature Control

Thermostat

A thermostat uses a temperature probe and valve to sense the temperature of the gas in the pipe and modulate the heater BTU output. When the thermostat's set point is reached, the fuel input to the heater is reduced. With lower heat input into the pipe, the temperature will decrease.

Turndown Valve

A turndown valve operates the same way as the thermostat, but manually. A ball valve is modified with a bypass so that when it's in the closed position, heater output is reduced by half.

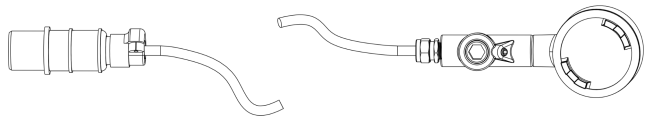
Starting Cables

Standard

Standard cables connect to the terminal posts of the heating element with forks at one end and have battery clips (12V DC) or a standard male plug (120V AC) at the other. The cables connect to the junction box via a fitting.

Explosion-Proof Sealed Connections

Sealed cable connections use an explosion-proof fitting at the outlet of the heater's explosion-proof junction box and are sealed with a sealing compound. Sealed connections are installed to the explosion proof junction box at the factory.



Other Accessories

Facegrills

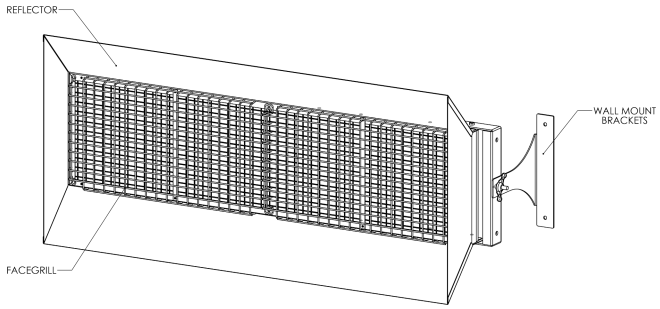
Metal grills that provide a standoff away from the face of the heater. Recommended in space heating applications when the heater is installed where it may receive accidental contact from people and equipment.

Reflectors

Stainless steel panels that direct infrared heat toward specific areas in space heating applications.

Wall & Floor Mount Brackets

Stainless steel hardware for securing a heater in place for space heating applications.



Selected Accessory & Replacement Part Info

Equipment Type	Catco Part Number	Description
Appliance Regulator	50-000	Aluminum; 1/4" NPT; max inlet 1/2 psig, outlet 3-7 inches wc, for natural gas fueled heaters
Low Pressure Regulator	50-005	Zinc; 1/4" NPT; max inlet 250 psig, outlet 3-7 inches w.c., for natural gas fueled heaters
	50-010	Zinc; 1/4" NPT; max inlet 250 psig, outlet 10-15 inches w.c., for LP gas fueled heaters
Instrument Supply Reg.	50-025	Aluminum; 1/4" NPT; max inlet 250 psig, outlet range 3-35 psig
High Pressure Regulator	50-035	Brass; 1/4" NPT; max inlet 5500 psig, outlet range 0-125 psig; two outlets
	50-040	Brass; 1/4" NPT; max inlet 5500 psig, outlet range 10-75 psig; two outlets
	50-036	Brass; 1/4" NPT; max inlet 5500 psig, max outlet 550 psig; two outlets; T-handle
	50-037	Stainless steel; 1/4" NPT; max inlet 5500 psig, outlet range 0-225 psig; three outlets
	50-041	Stainless steel; 1/4" NPT; max inlet 5500 psig, outlet range 0-75 psig; two outlets
Relief Valve	30-058	Brass; 1/4" NPT; relieves at 150 psig
	30-059	Stainless steel; 1/4" NPT; relieves at 150 psig
	30-060	Aluminum; 1/4" NPT; relieves at 1/2 psig
Low Temp. Shutoff Valve	30-127	Sometimes called a safety valve; 1/4" NPT; max inlet 1/2 psig
Thermocouple	30-010	Type K; 18" lead; for use in conjunction with low temperature shutoff valve
	30-012	Type K; 72" lead; for use in conjunction with low temperature shutoff valve
Thermostat	40-037	3/8" NPT; set point range 32-230° F; specify BTU rating of heater when ordering
Turndown Valve	30-030	1/4" NPT; Specify BTU rating when ordering
Standard Starting Cables	20-020	16' cable; battery clips; 12 V start; for use with plain junction box
	20-021	16' cable; battery clips; 12 V start; for use with EP junction box
	20-023	16' cable; three-prong plug; 120 V start; for use with EP junction box
	20-030	30' cable; battery clips; 12 V start; for use with plain junction box
	20-031	30' cable; battery clips; 12 V start; for use with EP junction box
Explosion-Proof Sealed Connection Cables	20-026	2' cable; explosion-proof male plug; 12 V start; for use w/ EP junction box; sealed at factory
	20-032	2' cable; explosion-proof male plug; 120 V start; for use w/ EP junction box; sealed at factory
Wall Mount Brackets	10-010	Wall Mount Bracket for 6×12, 6×24, 12×12, 12×24 heaters; stainless steel
	10-025	Wall mount bracket for 12×36, 12×48, 12×60 heaters; stainless steel
	10-026	Wall mount bracket for 18×36, 18×48, 18×60 heaters; stainless steel
	10-027	Wall mount bracket for 24×24, 24×48, 24×60, 24×72 heaters; stainless steel
Gauge	35-073	0-15 inches w.c.; 1/4" NPT; back mount
	35-076	0-15 inches w.c.; 1/4" NPT; bottom mount
	35-083	0-200 psig; 1/4" NPT; liquid filled; bottom mount
	35-084	0-2000 psig; 1/4" NPT; liquid filled; bottom mount
Filter	30-090	Fuel gas filter assembly; max inlet 150 psig; clear acryllic bowl
	30-091	Fuel gas filter assembly; max inlet 500 psig; aluminum bowl
Drip Pot	30-070	Max inlet 2000 psig
	30-071	Max inlet 6000 psig